THE COMET HANDBOOK FOR 2017

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Comet 95P/(2060) Chiron

Epoch = 2017 July 26.0 TT
T = 1996 Mar. 1.22102 TT
Peri. = 339.66613 e = 0.3823251
Node = 209.20099 2000.0 a = 13.6472398 AU
Incl. = 6.94969 n = 0.01954955
q = 8.4295575 AU P = 50.42 years

H = 5.8 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	23 20.89	+00 05.2	18.865	18.462	+0.14	+0.6	18.8	64.5
Jan. 17	23 22.29	+00 11.5	19.018	18.467	+0.16	+0.8	18.8	54.7
Jan. 27	23 23.94	+00 19.7	19.156	18.472	+0.19	+1.0	18.8	45.0
Feb. 6	23 25.79	+00 29.5	19.273	18.477	+0.20	+1.1	18.8	35.4
Feb. 16	23 27.81	+00 40.7	19.366	18.482	+0.21	+1.2	18.8	25.9
Feb. 26	23 29.94	+00 53.1	19.434	18.487	+0.22	+1.3	18.7	16.5
Mar. 8	23 32.14	+01 06.2	19.475	18.492	+0.22	+1.4	18.7	7.7
Mar. 18	23 34.37	+01 19.9	19.489	18.497	+0.22	+1.4	18.6	4.6
Mar. 28	23 36.57	+01 33.8	19.475	18.502	+0.21	+1.4	18.7	12.6
Apr. 7	23 38.70	+01 47.6	19.433	18.507	+0.20	+1.3	18.7	21.6
Apr. 17	23 40.72	+02 00.9	19.367	18.511	+0.19	+1.3	18.8	30.8
Apr. 27	23 42.58	+02 13.7	19.276	18.516	+0.17	+1.2	18.8	40.0
May 7	23 44.26	+02 25.4	19.165	18.521	+0.14	+1.1	18.8	49.2
May 17	23 45.70	+02 35.9	19.036	18.525	+0.12	+0.9	18.8	58.4
May 27	23 46.89	+02 45.0	18.892	18.530	+0.09	+0.7	18.8	67.6
June 6	23 47.80	+02 52.4	18.738	18.535	+0.06	+0.6	18.8	76.9
June 16	23 48.41	+02 57.9	18.577	18.539	+0.03	+0.4	18.8	86.3
June 26	23 48.69	+03 01.5	18.415	18.544	0.00	+0.1	18.8	95.7
July 6	23 48.66	+03 02.9	18.255	18.548	-0.04	-0.1	18.8	105.2
July 16	23 48.31	+03 02.1	18.103	18.553	-0.07	-0.3	18.7	114.8
July 26	23 47.65	+02 59.3	17.963	18.557	-0.09	-0.5	18.7	124.5
Aug. 5	23 46.71	+02 54.4	17.839	18.562	-0.12	-0.7	18.7	134.3
Aug. 15	23 45.53	+02 47.6	17.736	18.566	-0.14	-0.8	18.6	144.1
Aug. 25	23 44.14	+02 39.1	17.656	18.570	-0.15	-1.0	18.6	154.1
Sept. 4	23 42.59	+02 29.3	17.603	18.575	-0.16	-1.1	18.5	163.9
Sept. 14	23 40.96	+02 18.4	17.580	18.579	-0.17	-1.1	18.5	173.3
Sept. 24	23 39.31	+02 07.0	17.586	18.583	-0.16	-1.2	18.4	173.7
Oct. 4	23 37.70	+01 55.4	17.622	18.587	-0.15	-1.1	18.5	164.4
Oct. 14	23 36.20	+01 44.1	17.687	18.592	-0.13	-1.1	18.6	154.3
Oct. 24	23 34.88	+01 33.5	17.781	18.596	-0.11	-0.9	18.6	144.1
Nov. 3	23 33.78	+01 24.1	17.898	18.600	-0.08	-0.8	18.7	133.9
Nov. 13	23 32.96	+01 16.3	18.037	18.604	-0.05	-0.6	18.7	123.7
Nov. 23	23 32.45	+01 10.2	18.193	18.608	-0.02	-0.4	18.7	113.4
Dec. 3	23 32.27	+01 06.1	18.361	18.612	+0.02	-0.2	18.8	103.3
Dec. 13	23 32.43	+01 04.2	18.536	18.616	+0.05	0.0	18.8	93.2
Dec. 23	23 32.93	+01 04.6	18.712	18.620	+0.08	+0.3	18.8	83.1
Jan. 2	23 33.76	+01 07.1	18.885	18.624	+0.11	+0.5	18.8	73.2
Jan. 12	23 34.89	+01 11.8	19.049	18.628	+0.14	+0.7	18.8	63.3
Jan. 22	23 36.30	+01 18.5	19.200	18.632	+0.16	+0.8	18.8	53.5
Feb. 1	23 37.95	+01 27.0	19.334	18.636	+0.18	+1.0	18.8	43.8
Feb. 11	23 39.79	+01 37.1	19.447	18.639	+0.20	+1.1	18.8	34.2
Feb. 21	23 41.80	+01 48.4	19.537	18.643	+0.21	+1.2	18.8	24.7
Mar. 3	23 43.92	+02 00.9	19.601	18.647	+0.22	+1.3	18.7	15.4
Mar. 13	23 46.10	+02 14.0	19.638	18.651	+0.22	+1.4	18.7	6.6
Mar. 23	23 48.30	+02 27.7	19.647	18.654	+0.22	+1.4	18.7	5.1

Comet C/2006 S3 (LONEOS)

Epoch = 2017 July 26.0 TT
T = 2012 Apr. 12.97222 TT
Peri. = 140.02460
Node = 38.34206 2000.0
Incl. = 166.02276
q = 5.1387943 AU
e = 0.9997674

m1 = 3.6 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	10 33.51	-04 41.9	12.117	12.691	-0.30	+0.8	17.3	123.8
Jan. 17	10 30.47	-04 34.1	12.037	12.744	-0.34	+1.2	17.3	134.3
Jan. 27	10 27.04	-04 22.4	11.981	12.796	-0.37	+1.5	17.3	144.6
Feb. 6	10 23.34	-04 07.3	11.952	12.849	-0.39	+1.8	17.3	154.5
Feb. 16	10 19.48	-03 49.2	11.954	12.901	-0.39	+2.1	17.3	162.9
Feb. 26	10 15.58	-03 28.6	11.988	12.954	-0.38	+2.2	17.3	166.7
Mar. 8	10 11.76	-03 06.3	12.056	13.006	-0.36	+2.3	17.4	162.6
Mar. 18	10 08.15	-02 43.1	12.156	13.059	-0.33	+2.3	17.4	154.2
Mar. 28	10 04.85	-02 19.7	12.285	13.111	-0.29	+2.3	17.4	144.6
Apr. 7	10 01.95	-01 57.1	12.442	13.164	-0.25	+2.1	17.5	134.6
Apr. 17	09 59.50	-01 35.7	12.621	13.216	-0.20	+1.9	17.5	124.6
Apr. 27	09 57.54	-01 16.3	12.818	13.268	-0.14	+1.7	17.6	114.6
May 7	09 56.10	-00 59.2	13.028	13.320	-0.09	+1.4	17.6	104.7
May 17	09 55.17	-00 44.8	13.246	13.373	-0.04	+1.2	17.7	95.0
May 27	09 54.73	-00 33.3	13.467	13.425	0.00	+0.9	17.7	85.5
June 6	09 54.75	-00 24.8	13.685	13.477	+0.04	+0.6	17.8	76.1
June 16	09 55.19	-00 19.3	13.897	13.529	+0.08	+0.3	17.8	66.8
June 26	09 56.00	-00 16.8	14.097	13.581	+0.11	0.0	17.8	57.7
July 6	09 57.14	-00 17.0	14.282	13.633	+0.14	-0.3	17.9	48.7
July 16	09 58.53	-00 19.9	14.449	13.685	+0.16	-0.5	17.9	40.0
July 26	10 00.14	-00 25.2	14.594	13.737	+0.18	-0.7	18.0	31.4
Aug. 5	10 01.89	-00 32.7	14.715	13.789	+0.18	-0.9	18.0	23.3
Aug. 15	10 03.72	-00 42.1	14.811	13.841	+0.19	-1.1	18.0	16.1
Aug. 25	10 05.59	-00 53.1	14.880	13.893	+0.18	-1.2	18.0	12.0
Sept. 4	10 07.42	-01 05.3	14.922	13.944	+0.17	-1.3	18.1	13.8
Sept.14	10 09.16	-01 18.5	14.936	13.996	+0.16	-1.4	18.1	20.1
Sept.24	10 10.76	-01 32.2	14.924	14.048	+0.14	-1.4	18.1	28.2
Oct. 4	10 12.14	-01 46.1	14.887	14.099	+0.11	-1.4	18.1	36.8
Oct. 14	10 13.26	-01 59.7	14.827	14.151	+0.08	-1.3	18.1	45.9
Oct. 24	10 14.07	-02 12.6	14.747	14.203	+0.04	-1.2	18.1	55.2
Nov. 3	10 14.51	-02 24.5	14.649	14.254	0.00	-1.0	18.1	64.7
Nov. 13	10 14.55	-02 34.8	14.539	14.306	-0.04	-0.8	18.1	74.4
Nov. 23	10 14.14	-02 43.1	14.421	14.357	-0.09	-0.6	18.1	84.3
Dec. 3	10 13.28	-02 49.1	14.300	14.409	-0.13	-0.3	18.1	94.4
Dec. 13	10 11.95	-02 52.4	14.182	14.460	-0.18	0.0	18.1	104.5
Dec. 23	10 10.16	-02 52.7	14.071	14.511	-0.22	+0.3	18.1	114.8
Jan. 2	10 07.94	-02 49.9	13.975	14.563	-0.26	+0.6	18.1	125.1
Jan. 12	10 05.34	-02 43.9	13.897	14.614	-0.29	+0.9	18.1	135.4
Jan. 22	10 02.43	-02 34.7	13.843	14.665	-0.31	+1.2	18.1	145.5
Feb. 1	09 59.28	-02 22.5	13.817	14.716	-0.33	+1.5	18.1	155.1
Feb. 11	09 56.01	-02 07.8	13.821	14.767	-0.33	+1.7	18.1	163.0
Feb. 21	09 52.70	-01 51.0	13.856	14.818	-0.32	+1.8	18.1	166.1
Mar. 3	09 49.47	-01 32.7	13.925	14.869	-0.31	+1.9	18.1	161.8
Mar. 13	09 46.41	-01 13.5	14.024	14.920	-0.28	+1.9	18.1	153.5
Mar. 23	09 43.62	-00 54.1	14.154	14.971	-0.25	+1.9	18.2	144.0

Comet 158P/Kowal-LINEAR

Epoch = 2017 July 26.0 TT
T = 2013 Jan. 12.71359 TT
Peri. = 244.72733 e = 0.0266372
Node = 137.21014 2000.0 a = 4.7581704 AU
Incl. = 7.88715 n = 0.09496074
q = 4.6314261 AU P = 10.38 years

m1 = 2.2 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 38.61	+06 19.3	4.370	4.854	-0.01	+1.7	19.1	114.0
Jan. 17	11 38.55	+06 36.1	4.233	4.855	-0.14	+2.5	19.1	124.3
Jan. 27	11 37.16	+07 01.4	4.112	4.857	-0.26	+3.3	19.0	134.9
Feb. 6	11 34.53	+07 34.1	4.011	4.858	-0.37	+3.8	18.9	145.7
Feb. 16	11 30.83	+08 12.4	3.936	4.859	-0.45	+4.2	18.9	156.8
Feb. 26	11 26.30	+08 54.0	3.889	4.861	-0.50	+4.2	18.9	167.6
Mar. 8	11 21.29	+09 36.1	3.872	4.862	-0.51	+4.0	18.9	175.0
Mar. 18	11 16.21	+10 15.9	3.886	4.863	-0.48	+3.5	18.9	167.5
Mar. 28	11 11.43	+10 50.7	3.931	4.864	-0.41	+2.8	18.9	156.8
Apr. 7	11 07.33	+11 18.5	4.003	4.865	-0.31	+2.0	19.0	146.0
Apr. 17	11 04.20	+11 38.0	4.099	4.866	-0.20	+1.1	19.0	135.5
Apr. 27	11 02.20	+11 48.7	4.216	4.867	-0.07	+0.2	19.1	125.3
May 7	11 01.47	+11 50.4	4.349	4.868	+0.05	-0.7	19.1	115.4
May 17	11 02.00	+11 43.5	4.492	4.869	+0.18	-1.5	19.2	106.0
May 27	11 03.75	+11 28.7	4.643	4.870	+0.29	-2.2	19.3	96.9
June 6	11 06.66	+11 06.7	4.797	4.871	+0.40	-2.8	19.4	88.2
June 16	11 10.62	+10 38.3	4.950	4.872	+0.49	-3.4	19.4	79.7
June 26	11 15.51	+10 04.3	5.098	4.873	+0.57	-3.9	19.5	71.5
July 6	11 21.22	+09 25.5	5.240	4.874	+0.64	-4.3	19.6	63.6
July 16	11 27.63	+08 42.5	5.372	4.875	+0.70	-4.6	19.6	55.8
July 26	11 34.66	+07 56.0	5.493	4.875	+0.75	-4.9	19.7	48.2
Aug. 5	11 42.21	+07 06.6	5.599	4.876	+0.80	-5.2	19.7	40.8
Aug. 15	11 50.18	+06 15.1	5.690	4.877	+0.83	-5.3	19.7	33.4
Aug. 25	11 58.50	+05 21.9	5.765	4.878	+0.86	-5.4	19.8	26.2
Sept. 4	12 07.09	+04 27.8	5.821	4.878	+0.88	-5.5	19.8	19.0
Sept.14	12 15.89	+03 33.2	5.858	4.879	+0.89	-5.4	19.8	12.1
Sept.24	12 24.82	+02 38.8	5.876	4.880	+0.90	-5.4	19.8	6.2
Oct. 4	12 33.83	+01 45.2	5.874	4.880	+0.90	-5.2	19.8	6.2
Oct. 14	12 42.83	+00 53.0	5.851	4.881	+0.89	-5.0	19.8	12.2
Oct. 24	12 51.77	+00 02.9	5.809	4.881	+0.88	-4.7	19.8	19.3
Nov. 3	13 00.55	-00 44.6	5.747	4.882	+0.86	-4.4	19.8	26.8
Nov. 13	13 09.11	-01 28.8	5.666	4.882	+0.82	-4.0	19.7	34.4
Nov. 23	13 17.35	-02 08.9	5.568	4.883	+0.78	-3.6	19.7	42.3
Dec. 3	13 25.17	-02 44.5	5.453	4.883	+0.73	-3.0	19.7	50.3
Dec. 13	13 32.46	-03 14.7	5.325	4.883	+0.66	-2.4	19.6	58.5
Dec. 23	13 39.11	-03 39.1	5.184	4.884	+0.59	-1.8	19.5	66.9
Jan. 2	13 44.97	-03 57.0	5.035	4.884	+0.50	-1.1	19.5	75.6
Jan. 12	13 49.94	-04 07.9	4.879	4.884	+0.39	-0.3	19.4	84.5
Jan. 22	13 53.87	-04 11.4	4.721	4.884	+0.28	+0.4	19.3	93.7
Feb. 1	13 56.65	-04 07.2	4.566	4.884	+0.15	+1.2	19.3	103.1
Feb. 11	13 58.18	-03 55.4	4.416	4.885	+0.02	+1.9	19.2	112.9
Feb. 21	13 58.38	-03 36.2	4.277	4.885	-0.11	+2.6	19.1	122.9
Mar. 3	13 57.26	-03 10.3	4.153	4.885	-0.24	+3.1	19.1	133.1
Mar. 13	13 54.88	-02 38.9	4.049	4.885	-0.35	+3.5	19.0	143.6
Mar. 23	13 51.37	-02 03.6	3.969	4.885	-0.44	+3.7	19.0	154.0

Comet C/2011 J2 (LINEAR)

Epoch = 2017 July 26.0 TT
T = 2013 Dec. 25.92399 TT
Peri. = 85.29736
Node = 163.93832 2000.0
Incl. = 122.78304
q = 3.4407034 AU
e = 1.0016535

m1 = 7.0 + 5 log(Delta) + 7.5 log(r(t-50))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	22 34.71	-18 34.4	10.165	9.527	+0.25	+0.7	19.3	47.4
Jan. 17	22 37.26	-18 27.6	10.345	9.590	+0.29	+0.8	19.3	38.1
Jan. 27	22 40.14	-18 19.7	10.502	9.653	+0.31	+0.8	19.4	29.0
Feb. 6	22 43.27	-18 11.4	10.634	9.716	+0.33	+0.8	19.4	20.4
Feb. 16	22 46.57	-18 03.4	10.739	9.779	+0.34	+0.7	19.5	13.0
Feb. 26	22 49.94	-17 56.1	10.816	9.841	+0.34	+0.6	19.5	9.7
Mar. 8	22 53.31	-17 50.2	10.865	9.904	+0.33	+0.4	19.5	13.8
Mar. 18	22 56.60	-17 46.2	10.887	9.966	+0.31	+0.2	19.6	21.3
Mar. 28	22 59.73	-17 44.7	10.883	10.029	+0.29	-0.1	19.6	29.7
Apr. 7	23 02.62	-17 46.1	10.855	10.091	+0.26	-0.5	19.6	38.5
Apr. 17	23 05.21	-17 50.8	10.804	10.153	+0.22	-0.8	19.6	47.5
Apr. 27	23 07.43	-17 59.3	10.735	10.215	+0.18	-1.3	19.6	56.6
May 7	23 09.22	-18 11.9	10.650	10.278	+0.13	-1.7	19.6	65.8
May 17	23 10.50	-18 28.8	10.554	10.339	+0.07	-2.1	19.6	75.0
May 27	23 11.25	-18 50.0	10.451	10.401	+0.01	-2.6	19.6	84.4
June 6	23 11.40	-19 15.7	10.345	10.463	-0.05	-3.0	19.6	93.9
June 16	23 10.92	-19 45.6	10.241	10.525	-0.11	-3.4	19.6	103.5
June 26	23 09.81	-20 19.4	10.145	10.586	-0.18	-3.7	19.6	113.2
July 6	23 08.06	-20 56.4	10.061	10.648	-0.24	-3.9	19.6	122.9
July 16	23 05.69	-21 35.9	9.995	10.709	-0.29	-4.1	19.6	132.6
July 26	23 02.76	-22 16.9	9.950	10.771	-0.34	-4.1	19.6	142.2
Aug. 5	22 59.34	-22 58.2	9.930	10.832	-0.38	-4.1	19.7	151.4
Aug. 15	22 55.54	-23 38.8	9.939	10.893	-0.41	-3.9	19.7	159.4
Aug. 25	22 51.49	-24 17.4	9.979	10.954	-0.42	-3.6	19.7	164.0
Sept. 4	22 47.33	-24 52.9	10.049	11.015	-0.41	-3.2	19.7	162.4
Sept.14	22 43.21	-25 24.5	10.151	11.076	-0.39	-2.7	19.8	155.7
Sept.24	22 39.30	-25 51.3	10.283	11.136	-0.36	-2.2	19.8	146.9
Oct. 4	22 35.73	-26 13.1	10.441	11.197	-0.31	-1.7	19.9	137.3
Oct. 14	22 32.61	-26 29.6	10.624	11.258	-0.26	-1.1	19.9	127.4
Oct. 24	22 30.05	-26 41.0	10.825	11.318	-0.19	-0.7	20.0	117.5
Nov. 3	22 28.11	-26 47.6	11.041	11.379	-0.13	-0.2	20.0	107.5
Nov. 13	22 26.81	-26 49.8	11.266	11.439	-0.06	+0.2	20.1	97.6
Nov. 23	22 26.18	-26 48.3	11.495	11.499	0.00	+0.5	20.2	87.8
Dec. 3	22 26.19	-26 43.5	11.723	11.559	+0.06	+0.7	20.2	78.1
Dec. 13	22 26.79	-26 36.1	11.944	11.619	+0.12	+0.9	20.3	68.5
Dec. 23	22 27.95	-26 26.8	12.154	11.679	+0.16	+1.1	20.3	59.1
Jan. 2	22 29.60	-26 16.1	12.349	11.739	+0.21	+1.1	20.4	49.9
Jan. 12	22 31.66	-26 04.6	12.524	11.799	+0.24	+1.2	20.4	40.9
Jan. 22	22 34.06	-25 53.0	12.678	11.858	+0.27	+1.1	20.5	32.4
Feb. 1	22 36.73	-25 41.8	12.807	11.918	+0.28	+1.0	20.5	24.6
Feb. 11	22 39.57	-25 31.4	12.909	11.977	+0.30	+0.9	20.6	18.5
Feb. 21	22 42.53	-25 22.4	12.985	12.037	+0.30	+0.7	20.6	15.9
Mar. 3	22 45.52	-25 15.3	13.033	12.096	+0.29	+0.5	20.6	18.3
Mar. 13	22 48.47	-25 10.4	13.054	12.155	+0.28	+0.2	20.6	24.3
Mar. 23	22 51.30	-25 08.3	13.050	12.215	+0.27	-0.1	20.6	31.8

Comet 117P/Helin-Roman-Alu

Epoch = 2017 July 26.0 TT
T = 2014 Mar. 27.01768 TT
Peri. = 222.49902 e = 0.2545869
Node = 58.87510 2000.0 a = 4.0927001 AU
Incl. = 8.70125 n = 0.11903898
q = 3.0507523 AU P = 8.28 years

m1 = 6.4 + 5 log(Delta) + 12.5 log(r(t-120))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	03 25.53	+19 32.2	4.128	4.789	-0.14	+0.2	17.8	127.3
Jan. 17	03 24.15	+19 34.4	4.277	4.802	+0.01	+0.7	17.9	116.8
Jan. 27	03 24.30	+19 41.4	4.439	4.816	+0.16	+1.2	18.0	106.7
Feb. 6	03 25.92	+19 53.2	4.609	4.829	+0.30	+1.6	18.1	97.0
Feb. 16	03 28.91	+20 09.4	4.781	4.842	+0.42	+2.0	18.2	87.6
Feb. 26	03 33.13	+20 29.1	4.952	4.854	+0.53	+2.3	18.3	78.6
Mar. 8	03 38.46	+20 51.9	5.118	4.867	+0.63	+2.5	18.3	69.9
Mar. 18	03 44.74	+21 16.9	5.276	4.879	+0.71	+2.6	18.4	61.4
Mar. 28	03 51.86	+21 43.4	5.422	4.890	+0.78	+2.7	18.5	53.2
Apr. 7	03 59.69	+22 10.7	5.555	4.902	+0.84	+2.7	18.6	45.2
Apr. 17	04 08.10	+22 38.1	5.672	4.913	+0.89	+2.7	18.6	37.4
Apr. 27	04 16.99	+23 05.2	5.772	4.924	+0.93	+2.6	18.7	29.8
May 7	04 26.27	+23 31.4	5.854	4.935	+0.96	+2.5	18.7	22.3
May 17	04 35.82	+23 56.3	5.916	4.945	+0.97	+2.3	18.8	14.9
May 27	04 45.57	+24 19.7	5.958	4.955	+0.99	+2.2	18.8	7.7
June 6	04 55.42	+24 41.3	5.979	4.965	+0.99	+2.0	18.8	2.1
June 16	05 05.28	+25 01.0	5.980	4.975	+0.98	+1.8	18.8	7.5
June 26	05 15.07	+25 18.8	5.961	4.984	+0.96	+1.6	18.9	14.7
July 6	05 24.70	+25 34.6	5.922	4.993	+0.94	+1.4	18.9	22.0
July 16	05 34.07	+25 48.7	5.863	5.002	+0.90	+1.2	18.8	29.4
July 26	05 43.08	+26 01.2	5.786	5.011	+0.85	+1.1	18.8	36.9
Aug. 5	05 51.63	+26 12.3	5.692	5.019	+0.80	+1.0	18.8	44.5
Aug. 15	05 59.60	+26 22.5	5.582	5.027	+0.73	+1.0	18.8	52.3
Aug. 25	06 06.88	+26 32.1	5.459	5.035	+0.65	+1.0	18.7	60.3
Sept. 4	06 13.33	+26 41.6	5.324	5.042	+0.55	+1.0	18.7	68.5
Sept. 14	06 18.83	+26 51.5	5.180	5.049	+0.44	+1.1	18.6	77.0
Sept. 24	06 23.22	+27 02.2	5.031	5.056	+0.31	+1.2	18.6	85.7
Oct. 4	06 26.36	+27 14.0	4.879	5.062	+0.18	+1.3	18.5	94.8
Oct. 14	06 28.13	+27 27.2	4.729	5.069	+0.03	+1.5	18.5	104.3
Oct. 24	06 28.41	+27 42.0	4.586	5.075	-0.13	+1.6	18.4	114.1
Nov. 3	06 27.13	+27 57.8	4.454	5.080	-0.28	+1.7	18.4	124.4
Nov. 13	06 24.31	+28 14.4	4.338	5.086	-0.43	+1.6	18.3	135.0
Nov. 23	06 20.02	+28 30.6	4.243	5.091	-0.55	+1.5	18.3	145.9
Dec. 3	06 14.50	+28 45.4	4.174	5.096	-0.64	+1.2	18.3	157.0
Dec. 13	06 08.07	+28 57.6	4.134	5.100	-0.69	+0.9	18.2	167.8
Dec. 23	06 01.18	+29 06.5	4.125	5.105	-0.69	+0.5	18.3	174.3
Jan. 2	05 54.32	+29 11.5	4.148	5.109	-0.63	+0.1	18.3	166.2
Jan. 12	05 48.00	+29 12.9	4.203	5.112	-0.54	-0.2	18.3	155.2
Jan. 22	05 42.64	+29 11.2	4.286	5.116	-0.41	-0.4	18.4	144.1
Feb. 1	05 38.57	+29 07.5	4.394	5.119	-0.26	-0.5	18.4	133.2
Feb. 11	05 36.00	+29 02.6	4.522	5.122	-0.10	-0.5	18.5	122.6
Feb. 21	05 34.99	+28 57.6	4.666	5.124	+0.06	-0.5	18.6	112.3
Mar. 3	05 35.56	+28 52.9	4.820	5.127	+0.21	-0.4	18.6	102.5
Mar. 13	05 37.62	+28 48.8	4.980	5.129	+0.34	-0.3	18.7	93.0
Mar. 23	05 41.06	+28 45.5	5.141	5.130	+0.47	-0.3	18.8	83.8

Comet C/2012 K8 (Lemmon)

Epoch = 2017 July 26.0 TT
T = 2014 Aug. 19.38014 TT
Peri. = 75.89223
Node = 312.79059 2000.0
Incl. = 106.12631
q = 6.4663778 AU
e = 0.9992597

m1 = 7.8 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	12 00.00	+50 31.0	8.127	8.639	-0.57	+4.5	19.4	118.4
Jan. 17	11 54.32	+51 15.8	8.080	8.680	-0.70	+4.2	19.4	124.9
Jan. 27	11 47.28	+51 57.8	8.054	8.722	-0.83	+3.6	19.4	130.2
Feb. 6	11 39.00	+52 34.1	8.051	8.764	-0.92	+2.8	19.4	133.9
Feb. 16	11 29.76	+53 01.9	8.075	8.806	-0.99	+1.7	19.4	135.4
Feb. 26	11 19.89	+53 19.1	8.125	8.848	-1.01	+0.5	19.5	134.6
Mar. 8	11 09.82	+53 24.3	8.201	8.891	-0.98	-0.7	19.5	131.6
Mar. 18	11 00.00	+53 17.0	8.302	8.933	-0.92	-1.9	19.5	126.7
Mar. 28	10 50.83	+52 57.7	8.427	8.976	-0.82	-3.0	19.6	120.6
Apr. 7	10 42.65	+52 27.7	8.570	9.019	-0.70	-3.9	19.6	113.7
Apr. 17	10 35.66	+51 48.7	8.730	9.062	-0.57	-4.6	19.7	106.3
Apr. 27	10 29.99	+51 02.6	8.901	9.106	-0.43	-5.1	19.7	98.6
May 7	10 25.67	+50 11.2	9.080	9.149	-0.30	-5.5	19.8	90.8
May 17	10 22.63	+49 16.4	9.262	9.193	-0.18	-5.7	19.9	82.9
May 27	10 20.79	+48 19.7	9.443	9.237	-0.08	-5.7	19.9	75.2
June 6	10 20.03	+47 22.4	9.619	9.280	+0.02	-5.7	20.0	67.6
June 16	10 20.20	+46 25.5	9.787	9.324	+0.10	-5.6	20.0	60.3
June 26	10 21.18	+45 29.9	9.942	9.369	+0.16	-5.4	20.1	53.2
July 6	10 22.82	+44 36.4	10.083	9.413	+0.22	-5.1	20.1	46.5
July 16	10 25.01	+43 45.4	10.207	9.457	+0.26	-4.8	20.2	40.5
July 26	10 27.63	+42 57.5	10.311	9.502	+0.29	-4.4	20.2	35.4
Aug. 5	10 30.55	+42 13.0	10.394	9.546	+0.31	-4.1	20.2	31.7
Aug. 15	10 33.67	+41 32.4	10.455	9.591	+0.32	-3.6	20.3	30.0
Aug. 25	10 36.90	+40 56.1	10.494	9.636	+0.32	-3.2	20.3	30.5
Sept. 4	10 40.14	+40 24.3	10.509	9.681	+0.31	-2.7	20.3	33.2
Sept. 14	10 43.28	+39 57.3	10.502	9.726	+0.30	-2.2	20.3	37.8
Sept. 24	10 46.25	+39 35.5	10.473	9.771	+0.27	-1.6	20.3	43.7
Oct. 4	10 48.93	+39 19.2	10.423	9.817	+0.23	-1.1	20.3	50.5
Oct. 14	10 51.23	+39 08.5	10.356	9.862	+0.18	-0.5	20.3	57.9
Oct. 24	10 53.06	+39 03.6	10.273	9.908	+0.13	+0.1	20.3	65.9
Nov. 3	10 54.33	+39 04.5	10.177	9.953	+0.06	+0.7	20.3	74.2
Nov. 13	10 54.92	+39 11.1	10.074	9.999	-0.02	+1.2	20.3	82.8
Nov. 23	10 54.77	+39 22.9	9.966	10.045	-0.10	+1.7	20.3	91.7
Dec. 3	10 53.78	+39 39.5	9.860	10.090	-0.19	+2.0	20.3	100.8
Dec. 13	10 51.90	+39 59.9	9.759	10.136	-0.28	+2.3	20.3	109.9
Dec. 23	10 49.11	+40 22.9	9.669	10.182	-0.37	+2.4	20.3	119.0
Jan. 2	10 45.39	+40 47.2	9.596	10.228	-0.46	+2.4	20.3	127.8
Jan. 12	10 40.82	+41 11.2	9.543	10.274	-0.53	+2.2	20.3	136.1
Jan. 22	10 35.48	+41 33.0	9.515	10.321	-0.59	+1.8	20.3	143.3
Feb. 1	10 29.54	+41 51.0	9.515	10.367	-0.63	+1.3	20.3	148.4
Feb. 11	10 23.20	+42 03.7	9.544	10.413	-0.65	+0.6	20.3	150.4
Feb. 21	10 16.70	+42 10.0	9.603	10.460	-0.64	-0.1	20.4	148.6
Mar. 3	10 10.29	+42 09.3	9.692	10.506	-0.61	-0.8	20.4	143.6
Mar. 13	10 04.21	+42 01.5	9.809	10.553	-0.56	-1.5	20.4	136.5
Mar. 23	09 58.66	+41 46.7	9.951	10.599	-0.49	-2.1	20.5	128.4

Comet C/2015 K1 (MASTER)

Epoch = 2017 July 26.0 TT
T = 2014 Oct. 13.83036 TT
Peri. = 280.16698
Node = 5.17184 2000.0
Incl. = 29.37995
q = 2.5549480 AU
e = 0.9861383

m1 = 8.6 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	01 09.92	+23 37.4	7.580	7.783	+0.15	-0.2	19.7	98.3
Jan. 17	01 11.42	+23 35.5	7.813	7.853	+0.23	+0.3	19.8	88.8
Jan. 27	01 13.70	+23 38.8	8.045	7.924	+0.30	+0.8	19.9	79.4
Feb. 6	01 16.67	+23 47.2	8.272	7.994	+0.36	+1.3	20.0	70.3
Feb. 16	01 20.23	+24 00.3	8.490	8.064	+0.41	+1.7	20.0	61.4
Feb. 26	01 24.30	+24 17.8	8.695	8.133	+0.45	+2.1	20.1	52.7
Mar. 8	01 28.77	+24 39.2	8.884	8.203	+0.48	+2.5	20.2	44.3
Mar. 18	01 33.55	+25 04.1	9.055	8.272	+0.50	+2.8	20.3	36.2
Mar. 28	01 38.56	+25 31.9	9.205	8.341	+0.51	+3.0	20.3	28.5
Apr. 7	01 43.70	+26 02.2	9.333	8.410	+0.52	+3.2	20.4	21.6
Apr. 17	01 48.91	+26 34.6	9.438	8.479	+0.52	+3.4	20.4	16.3
Apr. 27	01 54.09	+27 08.5	9.519	8.548	+0.51	+3.5	20.5	14.5
May 7	01 59.17	+27 43.7	9.576	8.616	+0.49	+3.6	20.5	17.1
May 17	02 04.08	+28 19.7	9.610	8.685	+0.47	+3.6	20.6	22.6
May 27	02 08.73	+28 56.2	9.620	8.753	+0.43	+3.7	20.6	29.5
June 6	02 13.05	+29 32.9	9.610	8.821	+0.39	+3.6	20.6	37.0
June 16	02 16.97	+30 09.2	9.579	8.889	+0.34	+3.6	20.6	44.9
June 26	02 20.41	+30 45.1	9.531	8.957	+0.29	+3.5	20.6	53.0
July 6	02 23.29	+31 20.0	9.468	9.024	+0.22	+3.4	20.6	61.3
July 16	02 25.54	+31 53.5	9.392	9.092	+0.16	+3.2	20.7	69.8
July 26	02 27.09	+32 25.3	9.308	9.159	+0.08	+2.9	20.7	78.5
Aug. 5	02 27.89	+32 54.7	9.218	9.226	0.00	+2.7	20.7	87.3
Aug. 15	02 27.91	+33 21.2	9.127	9.293	-0.08	+2.3	20.7	96.3
Aug. 25	02 27.11	+33 44.4	9.040	9.360	-0.16	+1.9	20.7	105.4
Sept. 4	02 25.51	+34 03.3	8.960	9.426	-0.24	+1.4	20.7	114.7
Sept.14	02 23.16	+34 17.7	8.893	9.493	-0.30	+0.9	20.7	124.0
Sept.24	02 20.13	+34 26.8	8.843	9.559	-0.36	+0.4	20.7	133.3
Oct. 4	02 16.54	+34 30.3	8.814	9.625	-0.40	-0.2	20.7	142.3
Oct. 14	02 12.56	+34 28.3	8.810	9.691	-0.42	-0.8	20.7	150.6
Oct. 24	02 08.37	+34 20.8	8.833	9.757	-0.42	-1.2	20.8	157.1
Nov. 3	02 04.17	+34 08.3	8.886	9.823	-0.40	-1.6	20.8	159.8
Nov. 13	02 00.17	+33 51.9	8.968	9.888	-0.36	-1.9	20.8	157.3
Nov. 23	01 56.55	+33 32.5	9.080	9.954	-0.31	-2.1	20.9	150.8
Dec. 3	01 53.47	+33 11.5	9.220	10.019	-0.24	-2.1	20.9	142.4
Dec. 13	01 51.05	+32 50.1	9.384	10.084	-0.17	-2.0	21.0	133.2
Dec. 23	01 49.36	+32 29.7	9.570	10.149	-0.09	-1.8	21.1	123.7
Jan. 2	01 48.45	+32 11.3	9.774	10.214	-0.01	-1.5	21.1	114.0
Jan. 12	01 48.32	+31 55.9	9.989	10.279	+0.06	-1.2	21.2	104.4
Jan. 22	01 48.94	+31 43.9	10.213	10.343	+0.13	-0.8	21.3	94.9
Feb. 1	01 50.26	+31 35.9	10.439	10.408	+0.20	-0.4	21.3	85.5
Feb. 11	01 52.22	+31 32.1	10.662	10.472	+0.25	0.0	21.4	76.3
Feb. 21	01 54.76	+31 32.4	10.879	10.536	+0.30	+0.4	21.5	67.2
Mar. 3	01 57.78	+31 36.7	11.085	10.600	+0.34	+0.8	21.5	58.4
Mar. 13	02 01.22	+31 44.8	11.277	10.664	+0.38	+1.2	21.6	49.9
Mar. 23	02 04.99	+31 56.5	11.452	10.728	+0.40	+1.5	21.6	41.7

Comet C/2013 A1 (Siding Spring)

Epoch = 2017 July 26.0 TT
T = 2014 Oct. 24.75115 TT
Peri. = 2.44120
Node = 300.99695 2000.0
Incl. = 129.03785
q = 1.4007941 AU
e = 0.9996675

m1 = 8.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 57.45	+40 38.6	7.835	8.345	-0.40	+5.3	19.4	118.2
Jan. 17	11 53.42	+41 31.7	7.803	8.421	-0.51	+5.2	19.4	126.2
Jan. 27	11 48.28	+42 23.8	7.792	8.498	-0.61	+4.8	19.4	133.3
Feb. 6	11 42.14	+43 12.3	7.806	8.574	-0.69	+4.2	19.5	138.9
Feb. 16	11 35.20	+43 54.5	7.848	8.650	-0.75	+3.4	19.5	142.2
Feb. 26	11 27.72	+44 28.4	7.918	8.725	-0.77	+2.4	19.5	142.6
Mar. 8	11 20.00	+44 52.4	8.016	8.800	-0.76	+1.3	19.6	140.1
Mar. 18	11 12.39	+45 05.7	8.142	8.875	-0.72	+0.3	19.7	135.2
Mar. 28	11 05.18	+45 08.4	8.293	8.950	-0.65	-0.7	19.7	128.7
Apr. 7	10 58.66	+45 01.1	8.465	9.025	-0.56	-1.6	19.8	121.2
Apr. 17	10 53.01	+44 44.8	8.656	9.099	-0.46	-2.4	19.9	113.2
Apr. 27	10 48.37	+44 21.2	8.861	9.173	-0.36	-3.0	20.0	105.0
May 7	10 44.79	+43 51.6	9.074	9.247	-0.25	-3.4	20.0	96.7
May 17	10 42.28	+43 17.6	9.293	9.320	-0.15	-3.7	20.1	88.4
May 27	10 40.78	+42 40.6	9.511	9.393	-0.06	-3.9	20.2	80.3
June 6	10 40.22	+42 01.8	9.726	9.467	+0.03	-4.0	20.3	72.3
June 16	10 40.51	+41 22.2	9.933	9.539	+0.10	-3.9	20.3	64.5
June 26	10 41.53	+40 42.7	10.129	9.612	+0.17	-3.9	20.4	56.9
July 6	10 43.20	+40 04.1	10.310	9.684	+0.22	-3.7	20.5	49.7
July 16	10 45.39	+39 27.0	10.474	9.756	+0.26	-3.5	20.5	43.1
July 26	10 48.02	+38 52.0	10.619	9.828	+0.30	-3.2	20.6	37.1
Aug. 5	10 50.98	+38 19.6	10.743	9.900	+0.32	-2.9	20.6	32.3
Aug. 15	10 54.18	+37 50.2	10.844	9.972	+0.33	-2.6	20.7	29.1
Aug. 25	10 57.53	+37 24.4	10.922	10.043	+0.34	-2.2	20.7	28.2
Sept. 4	11 00.93	+37 02.4	10.976	10.114	+0.34	-1.8	20.7	29.8
Sept.14	11 04.32	+36 44.7	11.007	10.185	+0.33	-1.3	20.8	33.7
Sept.24	11 07.59	+36 31.7	11.014	10.255	+0.31	-0.8	20.8	39.1
Oct. 4	11 10.67	+36 23.7	11.001	10.326	+0.28	-0.3	20.8	45.6
Oct. 14	11 13.46	+36 21.0	10.967	10.396	+0.24	+0.3	20.8	52.9
Oct. 24	11 15.89	+36 23.9	10.916	10.466	+0.20	+0.9	20.8	60.7
Nov. 3	11 17.86	+36 32.4	10.851	10.536	+0.14	+1.4	20.8	69.0
Nov. 13	11 19.29	+36 46.5	10.776	10.606	+0.08	+2.0	20.9	77.5
Nov. 23	11 20.09	+37 06.1	10.694	10.675	+0.01	+2.5	20.9	86.2
Dec. 3	11 20.20	+37 30.7	10.611	10.744	-0.07	+2.9	20.9	95.2
Dec. 13	11 19.55	+37 59.7	10.530	10.813	-0.15	+3.2	20.9	104.2
Dec. 23	11 18.10	+38 32.2	10.458	10.882	-0.23	+3.5	20.9	113.1
Jan. 2	11 15.82	+39 06.9	10.399	10.951	-0.31	+3.6	20.9	121.9
Jan. 12	11 12.75	+39 42.4	10.358	11.019	-0.38	+3.5	20.9	130.3
Jan. 22	11 08.92	+40 17.2	10.339	11.088	-0.45	+3.2	20.9	137.8
Feb. 1	11 04.46	+40 49.7	10.345	11.156	-0.50	+2.9	20.9	143.9
Feb. 11	10 59.49	+41 18.2	10.379	11.224	-0.53	+2.3	21.0	147.5
Feb. 21	10 54.20	+41 41.4	10.441	11.292	-0.54	+1.7	21.0	147.9
Mar. 3	10 48.79	+41 58.4	10.533	11.359	-0.53	+1.0	21.0	145.0
Mar. 13	10 43.47	+42 08.6	10.652	11.427	-0.50	+0.3	21.1	139.6
Mar. 23	10 38.43	+42 11.9	10.797	11.494	-0.46	-0.3	21.1	132.5

Comet C/2013 U2 (Holvorcem)

Epoch = 2017 July 26.0 TT
T = 2014 Oct. 27.59198 TT
Peri. = 107.94140
Node = 6.88348 2000.0
Incl. = 43.22783
q = 5.1421959 AU
e = 0.9917360

m1 = 5.0 + 5 log(Delta) + 12.5 log(r(t-90))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	12 50.61	-04 42.8	7.636	7.753	0.00	-2.3	20.2	93.2
Jan. 17	12 50.62	-05 06.0	7.520	7.804	-0.08	-1.9	20.2	103.2
Jan. 27	12 49.79	-05 24.7	7.411	7.854	-0.17	-1.4	20.2	113.4
Feb. 6	12 48.12	-05 38.8	7.313	7.905	-0.24	-1.0	20.2	123.9
Feb. 16	12 45.68	-05 48.5	7.233	7.956	-0.31	-0.6	20.2	134.5
Feb. 26	12 42.56	-05 54.2	7.174	8.007	-0.37	-0.2	20.3	145.2
Mar. 8	12 38.89	-05 56.4	7.141	8.059	-0.40	0.0	20.3	156.1
Mar. 18	12 34.85	-05 55.9	7.138	8.110	-0.42	+0.2	20.3	166.9
Mar. 28	12 30.64	-05 53.6	7.165	8.161	-0.42	+0.3	20.4	176.8
Apr. 7	12 26.47	-05 50.4	7.223	8.213	-0.39	+0.3	20.4	170.8
Apr. 17	12 22.52	-05 47.5	7.313	8.265	-0.35	+0.2	20.5	160.3
Apr. 27	12 18.99	-05 45.6	7.431	8.316	-0.30	0.0	20.5	149.8
May 7	12 16.00	-05 45.8	7.576	8.368	-0.23	-0.3	20.6	139.4
May 17	12 13.66	-05 48.7	7.744	8.420	-0.16	-0.6	20.7	129.3
May 27	12 12.03	-05 54.7	7.929	8.472	-0.09	-1.0	20.8	119.4
June 6	12 11.14	-06 04.3	8.129	8.524	-0.02	-1.3	20.9	109.7
June 16	12 10.99	-06 17.5	8.339	8.577	+0.06	-1.7	21.0	100.2
June 26	12 11.54	-06 34.4	8.553	8.629	+0.12	-2.1	21.1	90.9
July 6	12 12.76	-06 54.9	8.768	8.681	+0.18	-2.4	21.1	81.8
July 16	12 14.58	-07 18.9	8.978	8.734	+0.24	-2.7	21.2	72.9
July 26	12 16.94	-07 46.1	9.182	8.786	+0.28	-3.0	21.3	64.1
Aug. 5	12 19.79	-08 16.2	9.374	8.839	+0.32	-3.3	21.4	55.5
Aug. 15	12 23.03	-08 49.0	9.552	8.892	+0.36	-3.5	21.5	46.9
Aug. 25	12 26.62	-09 24.1	9.713	8.944	+0.38	-3.7	21.5	38.5
Sept. 4	12 30.46	-10 01.2	9.855	8.997	+0.40	-3.9	21.6	30.1
Sept. 14	12 34.51	-10 40.0	9.975	9.050	+0.42	-4.0	21.7	21.9
Sept. 24	12 38.68	-11 20.1	10.073	9.103	+0.42	-4.1	21.7	14.1
Oct. 4	12 42.90	-12 01.2	10.146	9.156	+0.42	-4.2	21.8	7.8
Oct. 14	12 47.10	-12 42.9	10.194	9.208	+0.41	-4.2	21.8	8.5
Oct. 24	12 51.21	-13 24.9	10.217	9.261	+0.39	-4.2	21.8	15.3
Nov. 3	12 55.16	-14 06.7	10.216	9.314	+0.37	-4.1	21.9	23.5
Nov. 13	12 58.86	-14 48.1	10.191	9.368	+0.34	-4.1	21.9	32.2
Nov. 23	13 02.24	-15 28.6	10.143	9.421	+0.30	-3.9	21.9	41.0
Dec. 3	13 05.22	-16 07.8	10.076	9.474	+0.25	-3.8	21.9	50.1
Dec. 13	13 07.73	-16 45.3	9.992	9.527	+0.20	-3.5	22.0	59.3
Dec. 23	13 09.70	-17 20.8	9.894	9.580	+0.14	-3.3	22.0	68.7
Jan. 2	13 11.07	-17 53.7	9.785	9.633	+0.07	-3.0	22.0	78.2
Jan. 12	13 11.77	-18 23.6	9.672	9.686	0.00	-2.6	22.0	87.9
Jan. 22	13 11.78	-18 50.0	9.557	9.740	-0.07	-2.3	22.0	97.8
Feb. 1	13 11.08	-19 12.6	9.447	9.793	-0.14	-1.8	22.0	107.8
Feb. 11	13 09.70	-19 31.0	9.347	9.846	-0.20	-1.4	22.0	117.8
Feb. 21	13 07.66	-19 44.9	9.261	9.899	-0.26	-0.9	22.0	127.9
Mar. 3	13 05.04	-19 54.2	9.194	9.953	-0.31	-0.5	22.0	138.0
Mar. 13	13 01.96	-19 59.0	9.150	10.006	-0.34	0.0	22.0	147.9
Mar. 23	12 58.55	-19 59.5	9.134	10.059	-0.36	+0.3	22.1	157.1

Comet 269P/Jedicke

Epoch = 2017 July 26.0 TT
T = 2014 Oct. 18.78052 TT
Peri. = 226.24381 e = 0.4391289
Node = 242.04381 2000.0 a = 7.1442998 AU
Incl. = 6.97808 n = 0.05161365
q = 4.0070313 AU P = 19.10 years

m1 = 1.6 + 5 log(Delta) + 20.0 log(r(t-120))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	13 40.18	-15 23.4	5.924	5.798	+0.32	-2.2	20.1	77.9
Jan. 17	13 43.39	-15 45.7	5.795	5.830	+0.22	-1.7	20.1	87.2
Jan. 27	13 45.58	-16 02.4	5.664	5.861	+0.11	-1.1	20.1	96.7
Feb. 6	13 46.66	-16 12.9	5.536	5.893	0.00	-0.4	20.1	106.5
Feb. 16	13 46.62	-16 16.9	5.416	5.924	-0.12	+0.3	20.1	116.6
Feb. 26	13 45.46	-16 14.1	5.308	5.956	-0.22	+1.0	20.2	126.9
Mar. 8	13 43.26	-16 04.6	5.218	5.987	-0.31	+1.6	20.2	137.4
Mar. 18	13 40.17	-15 48.6	5.151	6.018	-0.38	+2.2	20.2	148.0
Mar. 28	13 36.38	-15 26.9	5.109	6.050	-0.42	+2.6	20.2	158.7
Apr. 7	13 32.16	-15 00.6	5.095	6.081	-0.44	+2.9	20.3	169.1
Apr. 17	13 27.78	-14 31.3	5.112	6.112	-0.42	+3.1	20.3	174.9
Apr. 27	13 23.55	-14 00.5	5.159	6.143	-0.38	+3.0	20.4	166.9
May 7	13 19.73	-13 30.3	5.235	6.174	-0.32	+2.8	20.5	156.6
May 17	13 16.55	-13 02.4	5.339	6.205	-0.24	+2.4	20.6	146.3
May 27	13 14.18	-12 38.1	5.467	6.236	-0.15	+1.9	20.6	136.0
June 6	13 12.72	-12 18.7	5.616	6.267	-0.05	+1.4	20.8	126.1
June 16	13 12.23	-12 04.9	5.781	6.298	+0.05	+0.8	20.9	116.4
June 26	13 12.71	-11 56.9	5.958	6.329	+0.14	+0.2	21.0	106.9
July 6	13 14.13	-11 54.8	6.143	6.360	+0.23	-0.4	21.1	97.7
July 16	13 16.43	-11 58.5	6.332	6.391	+0.31	-0.9	21.2	88.7
July 26	13 19.55	-12 07.6	6.520	6.421	+0.39	-1.4	21.3	80.0
Aug. 5	13 23.41	-12 21.5	6.704	6.452	+0.45	-1.8	21.4	71.4
Aug. 15	13 27.93	-12 39.7	6.880	6.482	+0.51	-2.2	21.5	62.9
Aug. 25	13 33.02	-13 01.7	7.046	6.513	+0.56	-2.5	21.6	54.6
Sept. 4	13 38.60	-13 26.8	7.198	6.543	+0.60	-2.8	21.7	46.4
Sept. 14	13 44.60	-13 54.4	7.334	6.573	+0.63	-3.0	21.8	38.2
Sept. 24	13 50.94	-14 23.9	7.452	6.603	+0.66	-3.1	21.9	30.1
Oct. 4	13 57.54	-14 54.9	7.550	6.633	+0.68	-3.2	21.9	22.0
Oct. 14	14 04.33	-15 26.6	7.627	6.663	+0.69	-3.2	22.0	13.9
Oct. 24	14 11.22	-15 58.7	7.682	6.693	+0.69	-3.2	22.1	6.1
Nov. 3	14 18.15	-16 30.6	7.713	6.723	+0.69	-3.1	22.1	3.8
Nov. 13	14 25.02	-17 01.8	7.720	6.753	+0.67	-3.0	22.1	11.3
Nov. 23	14 31.75	-17 31.9	7.705	6.782	+0.65	-2.9	22.2	19.6
Dec. 3	14 38.25	-18 00.5	7.666	6.812	+0.62	-2.7	22.2	28.1
Dec. 13	14 44.43	-18 27.2	7.606	6.841	+0.58	-2.4	22.2	36.7
Dec. 23	14 50.20	-18 51.7	7.526	6.871	+0.52	-2.2	22.3	45.4
Jan. 2	14 55.44	-19 13.6	7.428	6.900	+0.46	-1.9	22.3	54.3
Jan. 12	15 00.06	-19 32.7	7.315	6.929	+0.39	-1.6	22.3	63.3
Jan. 22	15 03.97	-19 48.6	7.190	6.958	+0.31	-1.2	22.3	72.5
Feb. 1	15 07.06	-20 01.0	7.057	6.987	+0.22	-0.9	22.3	81.9
Feb. 11	15 09.26	-20 09.9	6.920	7.016	+0.12	-0.5	22.3	91.5
Feb. 21	15 10.51	-20 14.9	6.784	7.045	+0.03	-0.1	22.3	101.3
Mar. 3	15 10.76	-20 15.8	6.653	7.073	-0.07	+0.3	22.3	111.3
Mar. 13	15 10.03	-20 12.6	6.532	7.102	-0.17	+0.7	22.3	121.5
Mar. 23	15 08.34	-20 05.3	6.427	7.130	-0.25	+1.1	22.3	131.8

Comet C/2013 P3 (Palomar)

Epoch = 2017 July 26.0 TT
T = 2014 Nov. 21.76572 TT
Peri. = 177.06977
Node = 177.27114 2000.0
Incl. = 93.91431
q = 8.6426545 AU
e = 1.0005270

m1 = -6.0 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 20.42	-36 16.0	10.088	9.744	+0.20	+1.7	18.8	66.9
Jan. 17	00 22.42	-35 58.8	10.233	9.770	+0.26	+1.8	18.8	59.5
Jan. 27	00 25.06	-35 41.2	10.363	9.797	+0.32	+1.7	18.9	52.7
Feb. 6	00 28.27	-35 24.1	10.475	9.824	+0.37	+1.6	18.9	46.6
Feb. 16	00 31.96	-35 08.6	10.569	9.851	+0.41	+1.3	19.0	41.5
Feb. 26	00 36.06	-34 55.4	10.641	9.878	+0.44	+1.0	19.0	37.9
Mar. 8	00 40.49	-34 45.3	10.692	9.906	+0.47	+0.6	19.1	35.9
Mar. 18	00 45.15	-34 39.1	10.722	9.933	+0.48	+0.2	19.1	36.0
Mar. 28	00 49.97	-34 37.3	10.730	9.961	+0.49	-0.3	19.1	37.9
Apr. 7	00 54.87	-34 40.5	10.718	9.989	+0.49	-0.9	19.1	41.5
Apr. 17	00 59.77	-34 49.3	10.686	10.018	+0.48	-1.5	19.2	46.2
Apr. 27	01 04.61	-35 04.0	10.638	10.046	+0.47	-2.1	19.2	51.8
May 7	01 09.29	-35 25.1	10.574	10.075	+0.45	-2.8	19.2	57.9
May 17	01 13.76	-35 52.7	10.499	10.104	+0.42	-3.4	19.2	64.5
May 27	01 17.92	-36 27.0	10.414	10.133	+0.38	-4.1	19.2	71.3
June 6	01 21.70	-37 07.9	10.322	10.163	+0.33	-4.7	19.2	78.2
June 16	01 25.02	-37 55.4	10.228	10.193	+0.28	-5.4	19.2	85.2
June 26	01 27.80	-38 48.9	10.134	10.222	+0.22	-5.9	19.2	92.1
July 6	01 29.96	-39 47.9	10.045	10.252	+0.15	-6.4	19.2	99.0
July 16	01 31.43	-40 51.5	9.963	10.283	+0.07	-6.7	19.2	105.6
July 26	01 32.15	-41 58.5	9.892	10.313	-0.01	-6.9	19.2	111.8
Aug. 5	01 32.06	-43 07.4	9.836	10.344	-0.09	-6.9	19.3	117.5
Aug. 15	01 31.14	-44 16.8	9.797	10.374	-0.18	-6.8	19.3	122.4
Aug. 25	01 29.38	-45 24.6	9.777	10.405	-0.26	-6.4	19.3	126.2
Sept. 4	01 26.83	-46 29.1	9.777	10.436	-0.33	-5.9	19.3	128.6
Sept.14	01 23.56	-47 28.3	9.800	10.468	-0.39	-5.2	19.4	129.4
Sept.24	01 19.70	-48 20.6	9.844	10.499	-0.43	-4.4	19.4	128.6
Oct. 4	01 15.43	-49 04.5	9.910	10.531	-0.45	-3.5	19.4	126.1
Oct. 14	01 10.94	-49 39.2	9.996	10.563	-0.45	-2.5	19.5	122.3
Oct. 24	01 06.47	-50 04.0	10.100	10.595	-0.42	-1.5	19.5	117.4
Nov. 3	01 02.25	-50 19.0	10.219	10.627	-0.38	-0.6	19.6	111.8
Nov. 13	00 58.49	-50 24.6	10.350	10.659	-0.31	+0.3	19.6	105.6
Nov. 23	00 55.36	-50 21.7	10.490	10.692	-0.24	+1.0	19.7	99.1
Dec. 3	00 53.00	-50 11.5	10.636	10.724	-0.15	+1.6	19.7	92.5
Dec. 13	00 51.49	-49 55.3	10.783	10.757	-0.06	+2.1	19.8	85.9
Dec. 23	00 50.88	-49 34.4	10.928	10.790	+0.03	+2.4	19.9	79.4
Jan. 2	00 51.16	-49 10.3	11.067	10.823	+0.11	+2.6	19.9	73.2
Jan. 12	00 52.30	-48 44.4	11.198	10.857	+0.19	+2.7	20.0	67.3
Jan. 22	00 54.25	-48 17.7	11.318	10.890	+0.27	+2.6	20.0	61.9
Feb. 1	00 56.93	-47 51.7	11.425	10.924	+0.33	+2.5	20.1	57.3
Feb. 11	01 00.25	-47 27.1	11.516	10.957	+0.39	+2.2	20.1	53.5
Feb. 21	01 04.15	-47 05.1	11.591	10.991	+0.44	+1.9	20.1	50.7
Mar. 3	01 08.51	-46 46.4	11.649	11.025	+0.48	+1.5	20.2	49.1
Mar. 13	01 13.27	-46 31.7	11.689	11.059	+0.51	+1.0	20.2	48.8
Mar. 23	01 18.33	-46 21.8	11.712	11.094	+0.53	+0.5	20.2	49.7

Comet C/2014 Q2 (Lovejoy)

Epoch = 2017 July 26.0 TT
T = 2015 Jan. 29.86361 TT
Peri. = 12.40638
Node = 95.00885 2000.0
Incl. = 80.26248
q = 1.2915431 AU
e = 0.9975527

m1 = 4.6 + 5 log(Delta) + 10.0 log(r(t-20))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	18 01.78	+08 15.0	8.425	7.642	+0.46	+0.1	18.0	35.2
Jan. 17	18 06.35	+08 16.3	8.455	7.722	+0.42	+0.7	18.0	39.5
Jan. 27	18 10.54	+08 23.1	8.464	7.801	+0.37	+1.2	18.1	45.2
Feb. 6	18 14.26	+08 35.1	8.454	7.880	+0.32	+1.6	18.1	51.6
Feb. 16	18 17.43	+08 51.6	8.427	7.959	+0.25	+2.0	18.1	58.7
Feb. 26	18 19.96	+09 11.8	8.385	8.038	+0.18	+2.3	18.2	66.3
Mar. 8	18 21.77	+09 34.9	8.331	8.116	+0.10	+2.5	18.2	74.1
Mar. 18	18 22.82	+10 00.0	8.270	8.193	+0.02	+2.6	18.2	82.2
Mar. 28	18 23.05	+10 26.0	8.204	8.271	-0.06	+2.6	18.3	90.4
Apr. 7	18 22.43	+10 51.8	8.139	8.348	-0.15	+2.4	18.3	98.6
Apr. 17	18 20.97	+11 16.1	8.078	8.425	-0.23	+2.2	18.3	106.9
Apr. 27	18 18.70	+11 37.7	8.027	8.502	-0.30	+1.8	18.3	115.0
May 7	18 15.68	+11 55.3	7.988	8.578	-0.37	+1.2	18.4	122.9
May 17	18 12.00	+12 07.7	7.967	8.654	-0.42	+0.6	18.4	130.2
May 27	18 07.81	+12 14.1	7.966	8.730	-0.46	0.0	18.4	136.6
June 6	18 03.25	+12 13.7	7.989	8.805	-0.47	-0.8	18.5	141.5
June 16	17 58.51	+12 06.1	8.037	8.881	-0.47	-1.5	18.5	144.2
June 26	17 53.78	+11 51.3	8.111	8.956	-0.45	-2.2	18.6	144.2
July 6	17 49.24	+11 29.6	8.211	9.030	-0.42	-2.8	18.7	141.6
July 16	17 45.06	+11 01.8	8.337	9.105	-0.37	-3.3	18.7	136.8
July 26	17 41.38	+10 28.8	8.486	9.179	-0.31	-3.7	18.8	130.6
Aug. 5	17 38.32	+09 51.6	8.656	9.253	-0.24	-4.0	18.9	123.4
Aug. 15	17 35.95	+09 11.5	8.844	9.327	-0.16	-4.2	19.0	115.6
Aug. 25	17 34.31	+08 29.6	9.046	9.400	-0.09	-4.3	19.0	107.5
Sept. 4	17 33.42	+07 47.0	9.258	9.473	-0.02	-4.2	19.1	99.3
Sept.14	17 33.26	+07 04.8	9.475	9.546	+0.05	-4.1	19.2	91.0
Sept.24	17 33.80	+06 23.8	9.695	9.619	+0.12	-3.9	19.3	82.7
Oct. 4	17 34.99	+05 44.9	9.911	9.691	+0.18	-3.6	19.4	74.5
Oct. 14	17 36.76	+05 08.5	10.121	9.764	+0.23	-3.3	19.5	66.3
Oct. 24	17 39.06	+04 35.4	10.321	9.836	+0.27	-3.0	19.5	58.3
Nov. 3	17 41.80	+04 05.8	10.507	9.907	+0.31	-2.6	19.6	50.6
Nov. 13	17 44.91	+03 40.1	10.676	9.979	+0.34	-2.2	19.7	43.3
Nov. 23	17 48.29	+03 18.5	10.825	10.050	+0.36	-1.7	19.7	36.7
Dec. 3	17 51.88	+03 01.1	10.953	10.121	+0.37	-1.3	19.8	31.1
Dec. 13	17 55.57	+02 48.0	11.057	10.192	+0.37	-0.9	19.8	27.3
Dec. 23	17 59.29	+02 39.2	11.137	10.263	+0.37	-0.5	19.9	26.1
Jan. 2	18 02.95	+02 34.6	11.192	10.334	+0.35	-0.1	19.9	27.9
Jan. 12	18 06.46	+02 34.0	11.223	10.404	+0.33	+0.3	20.0	32.2
Jan. 22	18 09.76	+02 37.2	11.230	10.474	+0.30	+0.7	20.0	38.2
Feb. 1	18 12.74	+02 43.8	11.215	10.544	+0.26	+1.0	20.0	45.2
Feb. 11	18 15.35	+02 53.5	11.180	10.614	+0.22	+1.2	20.0	52.9
Feb. 21	18 17.52	+03 05.9	11.128	10.683	+0.17	+1.4	20.1	61.0
Mar. 3	18 19.18	+03 20.4	11.062	10.752	+0.11	+1.6	20.1	69.3
Mar. 13	18 20.28	+03 36.4	10.986	10.821	+0.05	+1.7	20.1	77.9
Mar. 23	18 20.79	+03 53.3	10.903	10.890	-0.01	+1.7	20.1	86.6

Comet C/2014 N3 (NEOWISE)

Epoch = 2017 July 26.0 TT
T = 2015 Mar. 12.77975 TT
Peri. = 353.49058
Node = 19.93186 2000.0
Incl. = 61.64333
q = 3.8795814 AU
e = 0.9982618

m1 = 5.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 20.37	+81 30.6	6.296	6.700	+0.84	-4.8	18.1	110.3
Jan. 17	00 28.79	+80 42.4	6.406	6.761	+1.23	-4.1	18.1	107.1
Jan. 27	00 41.07	+80 01.2	6.526	6.822	+1.52	-3.4	18.2	103.5
Feb. 6	00 56.25	+79 27.3	6.653	6.884	+1.75	-2.6	18.3	99.4
Feb. 16	01 13.73	+79 00.9	6.787	6.945	+1.94	-2.0	18.4	95.1
Feb. 26	01 33.15	+78 41.3	6.925	7.006	+2.12	-1.3	18.5	90.7
Mar. 8	01 54.32	+78 28.1	7.064	7.067	+2.28	-0.8	18.5	86.2
Mar. 18	02 17.08	+78 20.2	7.204	7.129	+2.43	-0.4	18.6	81.7
Mar. 28	02 41.36	+78 16.5	7.342	7.190	+2.57	-0.1	18.7	77.4
Apr. 7	03 07.11	+78 15.9	7.476	7.252	+2.71	+0.1	18.8	73.3
Apr. 17	03 34.21	+78 17.2	7.606	7.313	+2.84	+0.2	18.8	69.4
Apr. 27	04 02.58	+78 19.0	7.729	7.375	+2.94	+0.1	18.9	65.9
May 7	04 32.02	+78 20.4	7.845	7.437	+3.03	0.0	19.0	62.7
May 17	05 02.30	+78 20.4	7.953	7.498	+3.08	-0.2	19.1	60.0
May 27	05 33.15	+78 18.1	8.051	7.560	+3.11	-0.5	19.1	57.8
June 6	06 04.22	+78 13.1	8.140	7.621	+3.09	-0.8	19.2	56.2
June 16	06 35.15	+78 05.1	8.218	7.683	+3.05	-1.1	19.2	55.2
June 26	07 05.64	+77 54.2	8.286	7.745	+2.97	-1.3	19.3	54.8
July 6	07 35.37	+77 40.8	8.343	7.806	+2.87	-1.5	19.3	55.1
July 16	08 04.12	+77 25.4	8.390	7.868	+2.76	-1.7	19.4	56.1
July 26	08 31.75	+77 08.8	8.426	7.930	+2.64	-1.7	19.4	57.7
Aug. 5	08 58.17	+76 51.8	8.453	7.991	+2.52	-1.6	19.5	59.8
Aug. 15	09 23.33	+76 35.3	8.471	8.053	+2.39	-1.5	19.5	62.5
Aug. 25	09 47.27	+76 20.3	8.480	8.115	+2.27	-1.3	19.5	65.6
Sept. 4	10 10.01	+76 07.7	8.482	8.176	+2.16	-0.9	19.6	69.1
Sept. 14	10 31.59	+75 58.5	8.478	8.238	+2.05	-0.5	19.6	72.9
Sept. 24	10 52.07	+75 53.3	8.469	8.299	+1.94	0.0	19.6	76.9
Oct. 4	11 11.46	+75 53.1	8.456	8.361	+1.83	+0.5	19.7	81.2
Oct. 14	11 29.79	+75 58.2	8.442	8.422	+1.73	+1.1	19.7	85.5
Oct. 24	11 47.04	+76 09.3	8.429	8.484	+1.61	+1.7	19.7	89.8
Nov. 3	12 03.15	+76 26.7	8.417	8.545	+1.49	+2.4	19.7	94.1
Nov. 13	12 18.02	+76 50.4	8.410	8.607	+1.35	+3.0	19.8	98.2
Nov. 23	12 31.48	+77 20.3	8.409	8.668	+1.18	+3.6	19.8	102.0
Dec. 3	12 43.26	+77 56.1	8.416	8.729	+0.98	+4.1	19.8	105.4
Dec. 13	12 53.02	+78 37.0	8.432	8.791	+0.72	+4.5	19.9	108.3
Dec. 23	13 00.24	+79 22.1	8.459	8.852	+0.40	+4.8	19.9	110.5
Jan. 2	13 04.22	+80 10.0	8.499	8.913	-0.01	+4.9	19.9	112.0
Jan. 12	13 04.09	+80 58.9	8.551	8.974	-0.54	+4.7	20.0	112.6
Jan. 22	12 58.71	+81 46.3	8.616	9.035	-1.18	+4.3	20.0	112.3
Feb. 1	12 46.90	+82 29.0	8.694	9.096	-1.90	+3.4	20.1	111.2
Feb. 11	12 27.92	+83 03.3	8.784	9.157	-2.57	+2.2	20.1	109.2
Feb. 21	12 02.22	+83 25.0	8.886	9.218	-2.98	+0.6	20.2	106.6
Mar. 3	11 32.39	+83 30.5	8.999	9.279	-2.97	-1.2	20.2	103.4
Mar. 13	11 02.72	+83 18.5	9.120	9.340	-2.54	-2.8	20.3	99.8
Mar. 23	10 37.28	+82 50.2	9.248	9.401	-1.90	-4.1	20.4	95.8

Comet 44P/Reinmuth

Epoch = 2017 July 26.0 TT
T = 2015 Mar. 23.80248 TT
Peri. = 58.20818 e = 0.4261920
Node = 286.46063 2000.0 a = 3.6911462 AU
Incl. = 5.89671 n = 0.13898317
q = 2.1180092 AU P = 7.09 years

m1 = 12.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	08 19.99	+17 48.4	3.366	4.317	-0.74	+1.6	19.4	163.4
Jan. 17	08 12.60	+18 04.6	3.366	4.347	-0.75	+1.6	19.4	175.1
Jan. 27	08 05.10	+18 21.0	3.398	4.376	-0.70	+1.5	19.5	172.3
Feb. 6	07 58.07	+18 36.1	3.463	4.405	-0.61	+1.3	19.5	160.6
Feb. 16	07 52.01	+18 48.8	3.557	4.433	-0.47	+1.0	19.6	149.1
Feb. 26	07 47.29	+18 58.4	3.677	4.461	-0.31	+0.6	19.7	137.9
Mar. 8	07 44.15	+19 04.5	3.819	4.488	-0.15	+0.3	19.8	127.1
Mar. 18	07 42.67	+19 07.0	3.978	4.515	+0.02	-0.1	19.9	116.8
Mar. 28	07 42.82	+19 06.0	4.149	4.541	+0.17	-0.5	20.0	106.9
Apr. 7	07 44.52	+19 01.5	4.328	4.567	+0.31	-0.8	20.1	97.5
Apr. 17	07 47.60	+18 53.4	4.509	4.593	+0.43	-1.2	20.2	88.4
Apr. 27	07 51.92	+18 41.8	4.690	4.618	+0.54	-1.5	20.3	79.7
May 7	07 57.29	+18 26.8	4.866	4.642	+0.63	-1.9	20.4	71.3
May 17	08 03.55	+18 08.3	5.034	4.666	+0.70	-2.2	20.5	63.2
May 27	08 10.54	+17 46.3	5.192	4.689	+0.76	-2.5	20.6	55.3
June 6	08 18.14	+17 20.9	5.337	4.712	+0.81	-2.9	20.7	47.6
June 16	08 26.20	+16 52.3	5.468	4.735	+0.84	-3.2	20.8	40.0
June 26	08 34.61	+16 20.6	5.582	4.757	+0.87	-3.5	20.8	32.6
July 6	08 43.28	+15 45.9	5.678	4.778	+0.88	-3.7	20.9	25.2
July 16	08 52.10	+15 08.5	5.756	4.799	+0.89	-4.0	20.9	18.0
July 26	09 00.99	+14 28.7	5.814	4.820	+0.89	-4.2	20.9	10.8
Aug. 5	09 09.87	+13 46.8	5.852	4.840	+0.88	-4.4	21.0	4.0
Aug. 15	09 18.66	+13 03.2	5.868	4.860	+0.86	-4.5	21.0	4.8
Aug. 25	09 27.28	+12 18.2	5.864	4.879	+0.84	-4.6	21.0	11.8
Sept. 4	09 35.67	+11 32.4	5.839	4.898	+0.81	-4.6	21.0	19.2
Sept. 14	09 43.73	+10 46.2	5.794	4.916	+0.77	-4.6	21.0	26.7
Sept. 24	09 51.40	+10 00.2	5.729	4.934	+0.72	-4.5	21.0	34.4
Oct. 4	09 58.58	+09 15.2	5.645	4.951	+0.66	-4.4	21.0	42.3
Oct. 14	10 05.18	+08 31.6	5.544	4.968	+0.59	-4.1	20.9	50.4
Oct. 24	10 11.10	+07 50.3	5.428	4.984	+0.51	-3.8	20.9	58.7
Nov. 3	10 16.23	+07 12.2	5.300	5.000	+0.42	-3.4	20.9	67.2
Nov. 13	10 20.46	+06 38.0	5.161	5.015	+0.32	-2.9	20.8	76.1
Nov. 23	10 23.67	+06 08.7	5.016	5.030	+0.21	-2.4	20.8	85.2
Dec. 3	10 25.73	+05 45.2	4.868	5.045	+0.08	-1.7	20.7	94.7
Dec. 13	10 26.57	+05 28.2	4.721	5.059	-0.05	-1.0	20.7	104.5
Dec. 23	10 26.10	+05 18.7	4.582	5.072	-0.18	-0.2	20.6	114.7
Jan. 2	10 24.30	+05 16.9	4.454	5.085	-0.31	+0.6	20.5	125.3
Jan. 12	10 21.20	+05 23.2	4.343	5.098	-0.43	+1.4	20.5	136.1
Jan. 22	10 16.94	+05 37.0	4.254	5.110	-0.52	+2.1	20.5	147.3
Feb. 1	10 11.72	+05 57.7	4.192	5.122	-0.58	+2.6	20.4	158.6
Feb. 11	10 05.88	+06 23.5	4.159	5.133	-0.61	+2.9	20.4	169.5
Feb. 21	09 59.76	+06 52.8	4.159	5.144	-0.60	+3.0	20.4	174.4
Mar. 3	09 53.80	+07 23.2	4.190	5.154	-0.54	+2.9	20.5	165.1
Mar. 13	09 48.38	+07 52.6	4.252	5.164	-0.46	+2.7	20.5	154.0
Mar. 23	09 43.81	+08 19.2	4.342	5.173	-0.35	+2.2	20.5	143.0

Comet C/2012 F3 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2015 Apr. 6.95254 TT
Peri. = 104.04390
Node = 164.60889 2000.0
Incl. = 11.35284
q = 3.4570075 AU
e = 1.0030679

m1 = 8.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	23 15.92	-06 48.4	6.932	6.506	+0.53	+2.9	18.3	60.6
Jan. 17	23 21.23	-06 19.5	7.134	6.571	+0.57	+3.2	18.4	51.8
Jan. 27	23 26.96	-05 47.7	7.321	6.637	+0.60	+3.4	18.5	43.2
Feb. 6	23 33.00	-05 13.8	7.490	6.702	+0.63	+3.5	18.6	34.6
Feb. 16	23 39.25	-04 38.5	7.640	6.768	+0.64	+3.6	18.6	26.2
Feb. 26	23 45.65	-04 02.3	7.769	6.834	+0.65	+3.6	18.7	17.9
Mar. 8	23 52.11	-03 25.8	7.875	6.899	+0.64	+3.6	18.8	9.7
Mar. 18	23 58.55	-02 49.7	7.959	6.965	+0.63	+3.5	18.8	2.7
Mar. 28	00 04.89	-02 14.5	8.019	7.030	+0.62	+3.4	18.9	7.5
Apr. 7	00 11.08	-01 40.8	8.055	7.096	+0.60	+3.2	18.9	15.5
Apr. 17	00 17.04	-01 09.0	8.070	7.161	+0.57	+2.9	18.9	23.6
Apr. 27	00 22.70	-00 39.7	8.062	7.227	+0.53	+2.6	19.0	31.9
May 7	00 28.00	-00 13.3	8.035	7.292	+0.49	+2.3	19.0	40.2
May 17	00 32.87	+00 09.7	7.989	7.358	+0.44	+1.9	19.0	48.5
May 27	00 37.24	+00 29.0	7.927	7.423	+0.38	+1.5	19.0	57.0
June 6	00 41.06	+00 44.0	7.851	7.489	+0.32	+1.1	19.0	65.6
June 16	00 44.26	+00 54.6	7.765	7.554	+0.25	+0.6	19.0	74.3
June 26	00 46.78	+01 00.4	7.672	7.619	+0.18	+0.1	19.0	83.2
July 6	00 48.58	+01 01.3	7.576	7.685	+0.10	-0.4	19.0	92.3
July 16	00 49.62	+00 57.0	7.481	7.750	+0.03	-0.9	19.0	101.6
July 26	00 49.88	+00 47.8	7.391	7.815	-0.05	-1.4	19.0	111.1
Aug. 5	00 49.38	+00 33.9	7.312	7.880	-0.12	-1.8	19.0	120.9
Aug. 15	00 48.13	+00 15.6	7.246	7.945	-0.19	-2.2	19.1	130.8
Aug. 25	00 46.21	-00 06.4	7.200	8.010	-0.25	-2.5	19.1	140.9
Sept. 4	00 43.72	-00 31.1	7.177	8.075	-0.29	-2.6	19.1	151.2
Sept. 14	00 40.79	-00 57.6	7.180	8.140	-0.32	-2.7	19.1	161.5
Sept. 24	00 37.58	-01 24.6	7.212	8.205	-0.33	-2.6	19.1	171.3
Oct. 4	00 34.27	-01 50.7	7.274	8.270	-0.32	-2.4	19.2	173.8
Oct. 14	00 31.06	-02 14.9	7.368	8.334	-0.30	-2.1	19.2	164.8
Oct. 24	00 28.11	-02 35.9	7.491	8.399	-0.25	-1.7	19.3	154.4
Nov. 3	00 25.58	-02 52.8	7.642	8.463	-0.20	-1.2	19.4	143.9
Nov. 13	00 23.61	-03 05.1	7.817	8.528	-0.13	-0.7	19.4	133.4
Nov. 23	00 22.28	-03 12.4	8.014	8.592	-0.06	-0.2	19.5	123.0
Dec. 3	00 21.64	-03 14.5	8.226	8.656	+0.01	+0.3	19.6	112.8
Dec. 13	00 21.72	-03 11.6	8.450	8.721	+0.08	+0.8	19.7	102.7
Dec. 23	00 22.52	-03 04.0	8.681	8.785	+0.15	+1.2	19.8	92.8
Jan. 2	00 23.98	-02 52.0	8.913	8.849	+0.21	+1.6	19.9	83.1
Jan. 12	00 26.08	-02 36.3	9.141	8.913	+0.27	+1.9	19.9	73.5
Jan. 22	00 28.73	-02 17.3	9.362	8.977	+0.31	+2.2	20.0	64.1
Feb. 1	00 31.88	-01 55.6	9.571	9.041	+0.36	+2.4	20.1	54.9
Feb. 11	00 35.45	-01 31.8	9.765	9.104	+0.39	+2.5	20.1	45.8
Feb. 21	00 39.35	-01 06.5	9.940	9.168	+0.42	+2.6	20.2	36.8
Mar. 3	00 43.53	-00 40.2	10.095	9.231	+0.44	+2.7	20.3	28.0
Mar. 13	00 47.89	-00 13.5	10.226	9.295	+0.45	+2.7	20.3	19.4
Mar. 23	00 52.36	+00 13.0	10.334	9.358	+0.45	+2.6	20.4	11.2

Comet 174P/(60558) Echeclus

Epoch = 2017 July 26.0 TT
T = 2015 Apr. 21.19568 TT
Peri. = 162.80655 e = 0.4556334
Node = 173.33416 2000.0 a = 10.6813860 AU
Incl. = 4.34451 n = 0.02823337
q = 5.8145898 AU P = 34.91 years

H = 9.6 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	01 04.43	+04 20.8	6.448	6.520	+0.30	+1.9	18.3	89.9
Jan. 17	01 07.43	+04 40.2	6.630	6.540	+0.38	+2.4	18.4	80.5
Jan. 27	01 11.20	+05 04.2	6.809	6.561	+0.45	+2.8	18.4	71.4
Feb. 6	01 15.68	+05 32.1	6.980	6.582	+0.51	+3.1	18.5	62.4
Feb. 16	01 20.77	+06 03.2	7.140	6.603	+0.56	+3.4	18.5	53.7
Feb. 26	01 26.37	+06 36.8	7.286	6.624	+0.60	+3.5	18.5	45.1
Mar. 8	01 32.40	+07 12.1	7.415	6.646	+0.64	+3.6	18.5	36.7
Mar. 18	01 38.78	+07 48.6	7.525	6.667	+0.66	+3.7	18.5	28.5
Mar. 28	01 45.42	+08 25.6	7.616	6.689	+0.68	+3.7	18.4	20.3
Apr. 7	01 52.24	+09 02.6	7.685	6.711	+0.69	+3.6	18.4	12.4
Apr. 17	01 59.17	+09 39.1	7.733	6.733	+0.70	+3.5	18.3	4.8
Apr. 27	02 06.13	+10 14.5	7.759	6.756	+0.69	+3.4	18.3	4.5
May 7	02 13.05	+10 48.4	7.762	6.778	+0.68	+3.2	18.4	11.9
May 17	02 19.85	+11 20.4	7.744	6.801	+0.66	+3.0	18.5	19.7
May 27	02 26.46	+11 50.3	7.705	6.824	+0.63	+2.7	18.6	27.6
June 6	02 32.80	+12 17.6	7.646	6.847	+0.60	+2.4	18.6	35.6
June 16	02 38.80	+12 42.0	7.570	6.870	+0.56	+2.1	18.6	43.6
June 26	02 44.38	+13 03.3	7.476	6.893	+0.51	+1.8	18.7	51.7
July 6	02 49.45	+13 21.3	7.369	6.916	+0.45	+1.4	18.7	60.0
July 16	02 53.93	+13 35.8	7.250	6.940	+0.38	+1.1	18.7	68.4
July 26	02 57.74	+13 46.5	7.122	6.964	+0.31	+0.7	18.6	77.0
Aug. 5	03 00.80	+13 53.5	6.988	6.987	+0.22	+0.3	18.6	85.8
Aug. 15	03 03.04	+13 56.5	6.853	7.011	+0.14	-0.1	18.6	94.8
Aug. 25	03 04.40	+13 55.6	6.720	7.035	+0.04	-0.5	18.5	104.1
Sept. 4	03 04.85	+13 50.8	6.594	7.059	-0.05	-0.8	18.5	113.7
Sept. 14	03 04.38	+13 42.3	6.479	7.084	-0.14	-1.2	18.4	123.5
Sept. 24	03 03.03	+13 30.4	6.379	7.108	-0.22	-1.5	18.3	133.6
Oct. 4	03 00.87	+13 15.6	6.300	7.133	-0.28	-1.7	18.3	144.0
Oct. 14	02 58.03	+12 58.5	6.244	7.157	-0.34	-1.9	18.2	154.5
Oct. 24	02 54.68	+12 40.0	6.216	7.182	-0.36	-1.9	18.1	165.1
Nov. 3	02 51.03	+12 21.1	6.218	7.207	-0.37	-1.8	18.0	174.8
Nov. 13	02 47.33	+12 02.9	6.251	7.232	-0.35	-1.6	18.0	171.6
Nov. 23	02 43.81	+11 46.4	6.315	7.257	-0.31	-1.4	18.2	161.1
Dec. 3	02 40.69	+11 32.8	6.409	7.282	-0.25	-1.0	18.3	150.4
Dec. 13	02 38.17	+11 22.8	6.529	7.307	-0.18	-0.6	18.4	139.7
Dec. 23	02 36.38	+11 17.0	6.672	7.333	-0.09	-0.1	18.5	129.1
Jan. 2	02 35.43	+11 15.7	6.835	7.358	-0.01	+0.3	18.6	118.7
Jan. 12	02 35.36	+11 18.9	7.011	7.383	+0.08	+0.8	18.7	108.5
Jan. 22	02 36.18	+11 26.6	7.197	7.409	+0.17	+1.2	18.8	98.6
Feb. 1	02 37.86	+11 38.3	7.387	7.435	+0.25	+1.5	18.8	88.9
Feb. 11	02 40.35	+11 53.6	7.577	7.460	+0.32	+1.8	18.9	79.5
Feb. 21	02 43.58	+12 11.9	7.762	7.486	+0.39	+2.1	18.9	70.2
Mar. 3	02 47.48	+12 32.7	7.939	7.512	+0.45	+2.3	19.0	61.2
Mar. 13	02 51.96	+12 55.2	8.103	7.538	+0.50	+2.4	19.0	52.4
Mar. 23	02 56.93	+13 19.1	8.252	7.564	+0.54	+2.5	19.0	43.7

Comet C/2015 LC2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2015 May 1.93961 TT
Peri. = 341.89369
Node = 223.56699 2000.0
Incl. = 93.71059
q = 5.8937885 AU
e = 1.0005790

m1 = 5.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	15 40.00	+13 05.2	7.679	7.284	+0.36	+6.2	18.5	62.9
Jan. 17	15 43.65	+14 07.5	7.585	7.323	+0.30	+7.0	18.4	71.0
Jan. 27	15 46.62	+15 17.5	7.484	7.363	+0.22	+7.7	18.4	79.2
Feb. 6	15 48.82	+16 34.7	7.382	7.404	+0.13	+8.3	18.4	87.4
Feb. 16	15 50.15	+17 58.2	7.282	7.444	+0.04	+8.9	18.4	95.6
Feb. 26	15 50.55	+19 26.7	7.190	7.485	-0.06	+9.2	18.4	103.6
Mar. 8	15 49.96	+20 58.6	7.109	7.526	-0.16	+9.3	18.4	111.3
Mar. 18	15 48.36	+22 31.6	7.044	7.568	-0.26	+9.2	18.4	118.4
Mar. 28	15 45.79	+24 03.4	6.998	7.609	-0.35	+8.8	18.4	124.6
Apr. 7	15 42.30	+25 31.5	6.974	7.651	-0.43	+8.2	18.5	129.7
Apr. 17	15 38.04	+26 53.1	6.974	7.694	-0.49	+7.3	18.5	133.0
Apr. 27	15 33.16	+28 06.0	7.000	7.736	-0.53	+6.2	18.5	134.3
May 7	15 27.89	+29 08.3	7.050	7.779	-0.54	+5.0	18.6	133.5
May 17	15 22.48	+29 58.8	7.126	7.822	-0.53	+3.8	18.6	130.7
May 27	15 17.17	+30 36.9	7.223	7.866	-0.50	+2.6	18.7	126.3
June 6	15 12.21	+31 02.7	7.341	7.909	-0.44	+1.4	18.7	120.8
June 16	15 07.79	+31 17.1	7.475	7.953	-0.37	+0.4	18.8	114.7
June 26	15 04.08	+31 21.2	7.622	7.997	-0.29	-0.5	18.8	108.1
July 6	15 01.20	+31 16.6	7.780	8.041	-0.20	-1.2	18.9	101.3
July 16	14 59.21	+31 05.0	7.943	8.086	-0.11	-1.7	19.0	94.5
July 26	14 58.13	+30 48.1	8.108	8.130	-0.02	-2.1	19.0	87.7
Aug. 5	14 57.95	+30 27.5	8.272	8.175	+0.07	-2.3	19.1	81.0
Aug. 15	14 58.64	+30 04.8	8.431	8.220	+0.15	-2.3	19.2	74.6
Aug. 25	15 00.15	+29 41.3	8.583	8.265	+0.23	-2.3	19.2	68.5
Sept. 4	15 02.40	+29 18.5	8.724	8.311	+0.29	-2.1	19.3	62.7
Sept.14	15 05.32	+28 57.5	8.854	8.356	+0.35	-1.8	19.4	57.5
Sept.24	15 08.84	+28 39.3	8.968	8.402	+0.40	-1.4	19.4	53.0
Oct. 4	15 12.86	+28 24.9	9.067	8.448	+0.44	-1.0	19.5	49.3
Oct. 14	15 17.31	+28 15.1	9.148	8.494	+0.48	-0.4	19.5	46.6
Oct. 24	15 22.10	+28 10.7	9.212	8.541	+0.50	+0.2	19.5	45.2
Nov. 3	15 27.13	+28 12.4	9.258	8.587	+0.52	+0.8	19.6	45.2
Nov. 13	15 32.33	+28 20.8	9.285	8.634	+0.53	+1.6	19.6	46.5
Nov. 23	15 37.59	+28 36.5	9.295	8.680	+0.52	+2.3	19.6	49.0
Dec. 3	15 42.83	+28 59.8	9.290	8.727	+0.51	+3.1	19.6	52.7
Dec. 13	15 47.94	+29 31.1	9.269	8.774	+0.49	+3.9	19.7	57.1
Dec. 23	15 52.83	+30 10.4	9.236	8.821	+0.46	+4.7	19.7	62.3
Jan. 2	15 57.38	+30 57.7	9.193	8.869	+0.41	+5.5	19.7	67.8
Jan. 12	16 01.50	+31 52.8	9.142	8.916	+0.36	+6.2	19.7	73.7
Jan. 22	16 05.09	+32 55.1	9.087	8.963	+0.29	+6.9	19.7	79.7
Feb. 1	16 08.03	+34 03.9	9.031	9.011	+0.22	+7.4	19.7	85.7
Feb. 11	16 10.22	+35 18.1	8.977	9.059	+0.14	+7.8	19.7	91.6
Feb. 21	16 11.59	+36 36.3	8.928	9.107	+0.05	+8.1	19.7	97.3
Mar. 3	16 12.04	+37 56.8	8.888	9.155	-0.05	+8.1	19.8	102.6
Mar. 13	16 11.54	+39 17.8	8.858	9.203	-0.15	+7.9	19.8	107.3
Mar. 23	16 10.06	+40 37.2	8.842	9.251	-0.24	+7.6	19.8	111.3

Comet C/2014 W11 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2015 June 16.65146 TT
Peri. = 225.63014 e = 0.6476768
Node = 295.86785 2000.0 a = 9.7271190 AU
Incl. = 12.70460 n = 0.03248836
q = 3.4270897 AU P = 30.34 years

m1 = 7.6 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	16 34.77	-30 41.9	6.003	5.239	+0.91	-1.9	16.9	36.0
Jan. 17	16 43.87	-31 01.3	5.950	5.286	+0.84	-1.8	16.9	43.9
Jan. 27	16 52.26	-31 19.2	5.880	5.332	+0.76	-1.7	16.9	52.1
Feb. 6	16 59.81	-31 35.8	5.796	5.379	+0.66	-1.5	16.9	60.5
Feb. 16	17 06.41	-31 51.1	5.700	5.426	+0.55	-1.4	16.9	69.0
Feb. 26	17 11.92	-32 05.3	5.596	5.473	+0.43	-1.3	16.9	77.8
Mar. 8	17 16.24	-32 18.4	5.486	5.520	+0.30	-1.2	16.9	86.8
Mar. 18	17 19.25	-32 30.4	5.374	5.566	+0.16	-1.1	16.8	96.0
Mar. 28	17 20.88	-32 40.9	5.265	5.613	+0.02	-0.9	16.8	105.4
Apr. 7	17 21.09	-32 49.7	5.164	5.660	-0.12	-0.6	16.8	115.0
Apr. 17	17 19.90	-32 56.2	5.073	5.707	-0.25	-0.3	16.8	124.9
Apr. 27	17 17.39	-32 59.6	4.999	5.754	-0.37	0.0	16.8	134.9
May 7	17 13.70	-32 59.3	4.946	5.801	-0.46	+0.5	16.8	145.0
May 17	17 09.10	-32 54.7	4.916	5.848	-0.52	+0.9	16.8	154.9
May 27	17 03.87	-32 45.4	4.913	5.894	-0.55	+1.4	16.8	164.2
June 6	16 58.37	-32 31.6	4.939	5.941	-0.54	+1.8	16.9	170.1
June 16	16 52.99	-32 13.7	4.995	5.988	-0.49	+2.1	16.9	166.8
June 26	16 48.05	-31 52.8	5.079	6.035	-0.42	+2.3	17.0	158.2
July 6	16 43.87	-31 30.0	5.191	6.081	-0.32	+2.3	17.1	148.5
July 16	16 40.65	-31 06.5	5.328	6.128	-0.21	+2.3	17.1	138.7
July 26	16 38.54	-30 43.7	5.486	6.174	-0.09	+2.1	17.2	128.9
Aug. 5	16 37.61	-30 22.3	5.662	6.221	+0.03	+1.9	17.3	119.3
Aug. 15	16 37.87	-30 03.2	5.851	6.267	+0.14	+1.7	17.4	109.8
Aug. 25	16 39.28	-29 46.7	6.049	6.313	+0.25	+1.4	17.5	100.6
Sept. 4	16 41.78	-29 32.9	6.253	6.360	+0.35	+1.1	17.6	91.5
Sept. 14	16 45.28	-29 21.7	6.457	6.406	+0.44	+0.9	17.7	82.6
Sept. 24	16 49.68	-29 13.0	6.659	6.452	+0.52	+0.7	17.8	73.8
Oct. 4	16 54.88	-29 06.2	6.854	6.498	+0.59	+0.5	17.9	65.2
Oct. 14	17 00.76	-29 01.2	7.039	6.544	+0.65	+0.4	18.0	56.6
Oct. 24	17 07.23	-28 57.4	7.211	6.589	+0.69	+0.3	18.0	48.2
Nov. 3	17 14.18	-28 54.5	7.367	6.635	+0.73	+0.2	18.1	39.8
Nov. 13	17 21.50	-28 52.0	7.505	6.681	+0.76	+0.2	18.2	31.5
Nov. 23	17 29.10	-28 49.8	7.622	6.726	+0.78	+0.2	18.2	23.2
Dec. 3	17 36.87	-28 47.4	7.718	6.772	+0.78	+0.3	18.3	15.1
Dec. 13	17 44.71	-28 44.9	7.791	6.817	+0.78	+0.3	18.3	7.8
Dec. 23	17 52.52	-28 41.9	7.840	6.862	+0.77	+0.3	18.3	5.9
Jan. 2	18 00.20	-28 38.6	7.864	6.907	+0.74	+0.4	18.4	12.4
Jan. 12	18 07.65	-28 34.9	7.865	6.952	+0.71	+0.4	18.4	20.4
Jan. 22	18 14.77	-28 30.9	7.843	6.997	+0.67	+0.4	18.4	28.8
Feb. 1	18 21.45	-28 26.7	7.799	7.041	+0.62	+0.4	18.4	37.4
Feb. 11	18 27.61	-28 22.6	7.735	7.086	+0.55	+0.4	18.4	46.1
Feb. 21	18 33.15	-28 18.8	7.653	7.130	+0.48	+0.3	18.4	54.9
Mar. 3	18 37.97	-28 15.5	7.557	7.175	+0.40	+0.3	18.4	63.8
Mar. 13	18 41.98	-28 13.0	7.448	7.219	+0.31	+0.2	18.4	72.9
Mar. 23	18 45.11	-28 11.3	7.332	7.263	+0.22	+0.1	18.4	82.1

Comet 162P/Siding Spring

Epoch = 2017 July 26.0 TT
T = 2015 July 11.56560 TT
Peri. = 356.96535 e = 0.5923429
Node = 31.06832 2000.0 a = 3.0706400 AU
Incl. = 27.88789 n = 0.18317269
q = 1.2517682 AU P = 5.38 years

H = 13.6 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	13 24.30	+06 46.2	4.051	4.165	+0.19	+0.4	20.5	89.8
Jan. 17	13 26.18	+06 50.0	3.928	4.199	+0.03	+1.3	20.5	99.2
Jan. 27	13 26.49	+07 03.3	3.807	4.232	-0.14	+2.2	20.4	109.0
Feb. 6	13 25.12	+07 25.3	3.695	4.264	-0.31	+2.9	20.3	119.2
Feb. 16	13 22.03	+07 54.5	3.597	4.295	-0.47	+3.4	20.2	129.6
Feb. 26	13 17.29	+08 28.7	3.518	4.326	-0.62	+3.6	20.1	140.2
Mar. 8	13 11.07	+09 05.2	3.463	4.355	-0.74	+3.5	20.0	150.6
Mar. 18	13 03.70	+09 40.5	3.436	4.384	-0.81	+3.1	19.9	159.8
Mar. 28	12 55.63	+10 11.3	3.440	4.411	-0.83	+2.3	19.8	165.1
Apr. 7	12 47.37	+10 34.5	3.475	4.438	-0.79	+1.3	19.9	162.3
Apr. 17	12 39.47	+10 47.9	3.540	4.465	-0.71	+0.2	20.0	154.0
Apr. 27	12 32.39	+10 50.3	3.635	4.490	-0.59	-0.9	20.2	144.2
May 7	12 26.48	+10 41.6	3.754	4.514	-0.45	-1.9	20.4	134.0
May 17	12 21.97	+10 22.4	3.894	4.538	-0.30	-2.9	20.5	124.0
May 27	12 18.95	+09 53.9	4.051	4.561	-0.15	-3.7	20.6	114.2
June 6	12 17.43	+09 17.2	4.218	4.583	-0.01	-4.3	20.8	104.8
June 16	12 17.33	+08 33.9	4.392	4.604	+0.12	-4.9	20.9	95.6
June 26	12 18.53	+07 45.0	4.568	4.625	+0.24	-5.3	21.0	86.8
July 6	12 20.90	+06 51.7	4.743	4.644	+0.34	-5.7	21.1	78.3
July 16	12 24.30	+05 54.8	4.912	4.663	+0.43	-6.0	21.1	70.0
July 26	12 28.59	+04 55.1	5.073	4.681	+0.51	-6.2	21.2	61.9
Aug. 5	12 33.66	+03 53.5	5.223	4.699	+0.57	-6.3	21.2	54.0
Aug. 15	12 39.37	+02 50.3	5.360	4.715	+0.63	-6.4	21.2	46.2
Aug. 25	12 45.63	+01 46.3	5.481	4.731	+0.67	-6.4	21.2	38.5
Sept. 4	12 52.34	+00 41.8	5.584	4.746	+0.71	-6.4	21.2	30.8
Sept.14	12 59.40	-00 22.6	5.667	4.760	+0.73	-6.4	21.2	23.3
Sept.24	13 06.73	-01 26.4	5.731	4.774	+0.75	-6.3	21.1	15.9
Oct. 4	13 14.25	-02 29.4	5.772	4.786	+0.76	-6.2	21.0	8.9
Oct. 14	13 21.88	-03 30.9	5.792	4.798	+0.77	-6.0	21.0	4.7
Oct. 24	13 29.53	-04 30.7	5.789	4.810	+0.76	-5.8	21.1	9.3
Nov. 3	13 37.12	-05 28.3	5.763	4.820	+0.74	-5.5	21.1	16.6
Nov. 13	13 44.56	-06 23.3	5.715	4.830	+0.72	-5.2	21.2	24.3
Nov. 23	13 51.74	-07 15.3	5.645	4.839	+0.68	-4.9	21.3	32.3
Dec. 3	13 58.56	-08 03.8	5.554	4.847	+0.63	-4.5	21.3	40.5
Dec. 13	14 04.90	-08 48.6	5.445	4.855	+0.57	-4.1	21.3	48.9
Dec. 23	14 10.63	-09 29.2	5.319	4.862	+0.50	-3.6	21.3	57.5
Jan. 2	14 15.61	-10 05.3	5.179	4.868	+0.41	-3.1	21.3	66.3
Jan. 12	14 19.70	-10 36.5	5.029	4.873	+0.30	-2.6	21.2	75.3
Jan. 22	14 22.74	-11 02.6	4.870	4.877	+0.18	-2.0	21.2	84.6
Feb. 1	14 24.59	-11 23.0	4.709	4.881	+0.05	-1.5	21.1	94.2
Feb. 11	14 25.10	-11 37.8	4.548	4.884	-0.09	-0.9	21.0	104.2
Feb. 21	14 24.18	-11 46.4	4.394	4.887	-0.24	-0.3	20.9	114.4
Mar. 3	14 21.76	-11 49.0	4.252	4.888	-0.39	+0.4	20.8	125.0
Mar. 13	14 17.86	-11 45.5	4.126	4.889	-0.53	+0.9	20.7	135.9
Mar. 23	14 12.60	-11 36.2	4.022	4.889	-0.64	+1.4	20.6	147.2

Comet C/2012 LP26 (Palomar)

Epoch = 2017 July 26.0 TT
T = 2015 Aug. 16.62398 TT
Peri. = 145.14356
Node = 153.98603 2000.0
Incl. = 25.37308
q = 6.5355928 AU
e = 1.0008449

m1 = 5.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	22 19.98	-12 12.3	8.016	7.364	+0.60	+1.9	18.8	45.8
Jan. 17	22 25.98	-11 53.0	8.155	7.394	+0.63	+2.2	18.8	37.1
Jan. 27	22 32.26	-11 31.3	8.275	7.425	+0.65	+2.3	18.9	28.5
Feb. 6	22 38.75	-11 07.9	8.374	7.456	+0.66	+2.5	18.9	20.1
Feb. 16	22 45.36	-10 43.3	8.452	7.487	+0.67	+2.5	19.0	11.8
Feb. 26	22 52.01	-10 18.2	8.506	7.519	+0.66	+2.5	19.0	4.2
Mar. 8	22 58.64	-09 53.1	8.537	7.551	+0.65	+2.4	19.0	6.1
Mar. 18	23 05.17	-09 28.7	8.546	7.584	+0.64	+2.3	19.1	14.0
Mar. 28	23 11.53	-09 05.5	8.532	7.617	+0.61	+2.1	19.1	22.2
Apr. 7	23 17.65	-08 44.2	8.496	7.650	+0.58	+1.9	19.1	30.5
Apr. 17	23 23.47	-08 25.3	8.440	7.684	+0.55	+1.6	19.1	38.8
Apr. 27	23 28.93	-08 09.4	8.367	7.718	+0.50	+1.2	19.1	47.2
May 7	23 33.96	-07 57.0	8.277	7.753	+0.45	+0.8	19.1	55.7
May 17	23 38.50	-07 48.5	8.174	7.788	+0.40	+0.4	19.1	64.2
May 27	23 42.49	-07 44.5	8.061	7.823	+0.34	-0.1	19.1	72.8
June 6	23 45.87	-07 45.4	7.942	7.858	+0.27	-0.6	19.1	81.6
June 16	23 48.59	-07 51.3	7.818	7.894	+0.20	-1.1	19.0	90.6
June 26	23 50.62	-08 02.4	7.696	7.930	+0.13	-1.6	19.0	99.7
July 6	23 51.91	-08 18.7	7.578	7.967	+0.06	-2.1	19.0	108.9
July 16	23 52.48	-08 40.0	7.470	8.003	-0.02	-2.6	19.0	118.4
July 26	23 52.31	-09 05.8	7.375	8.040	-0.09	-3.0	19.0	128.0
Aug. 5	23 51.45	-09 35.4	7.298	8.077	-0.15	-3.3	19.0	137.7
Aug. 15	23 49.98	-10 07.9	7.242	8.115	-0.20	-3.4	19.0	147.5
Aug. 25	23 48.00	-10 42.1	7.212	8.153	-0.24	-3.5	19.0	157.2
Sept. 4	23 45.63	-11 16.7	7.209	8.191	-0.26	-3.3	19.0	166.0
Sept. 14	23 43.05	-11 50.2	7.235	8.229	-0.26	-3.1	19.1	170.8
Sept. 24	23 40.42	-12 21.2	7.291	8.268	-0.25	-2.7	19.1	166.1
Oct. 4	23 37.93	-12 48.5	7.376	8.307	-0.22	-2.3	19.1	157.1
Oct. 14	23 35.73	-13 11.2	7.489	8.346	-0.17	-1.7	19.2	147.3
Oct. 24	23 33.99	-13 28.5	7.628	8.385	-0.12	-1.2	19.2	137.2
Nov. 3	23 32.82	-13 40.1	7.789	8.425	-0.05	-0.6	19.3	127.2
Nov. 13	23 32.30	-13 45.9	7.967	8.465	+0.02	0.0	19.4	117.2
Nov. 23	23 32.49	-13 46.0	8.159	8.505	+0.09	+0.5	19.5	107.3
Dec. 3	23 33.39	-13 40.7	8.359	8.545	+0.16	+1.0	19.5	97.6
Dec. 13	23 35.00	-13 30.5	8.563	8.585	+0.23	+1.4	19.6	88.0
Dec. 23	23 37.28	-13 16.1	8.767	8.626	+0.29	+1.8	19.7	78.6
Jan. 2	23 40.18	-12 57.9	8.965	8.667	+0.35	+2.1	19.7	69.3
Jan. 12	23 43.64	-12 36.8	9.155	8.708	+0.39	+2.4	19.8	60.2
Jan. 22	23 47.59	-12 13.2	9.331	8.749	+0.44	+2.5	19.9	51.3
Feb. 1	23 51.95	-11 48.0	9.491	8.791	+0.47	+2.6	19.9	42.6
Feb. 11	23 56.64	-11 21.7	9.633	8.833	+0.50	+2.7	20.0	34.1
Feb. 21	00 01.60	-10 54.8	9.754	8.874	+0.51	+2.7	20.0	25.9
Mar. 3	00 06.74	-10 28.2	9.852	8.916	+0.53	+2.6	20.1	18.3
Mar. 13	00 11.99	-10 02.1	9.927	8.959	+0.53	+2.5	20.1	12.3
Mar. 23	00 17.29	-09 37.4	9.978	9.001	+0.53	+2.3	20.1	10.7

Comet P/2015 M2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2015 Aug. 30.80295 TT
Peri. = 224.77025 e = 0.1798890
Node = 86.58877 2000.0 a = 7.2088130 AU
Incl. = 3.97338 n = 0.05092235
q = 5.9120268 AU P = 19.36 years

m1 = 3.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	22 51.74	-11 09.0	6.625	6.091	+0.60	+4.0	19.7	53.5
Jan. 17	22 57.74	-10 28.6	6.755	6.098	+0.64	+4.3	19.7	44.9
Jan. 27	23 04.18	-09 45.8	6.868	6.105	+0.68	+4.5	19.8	36.5
Feb. 6	23 10.98	-09 00.9	6.963	6.112	+0.71	+4.6	19.8	28.3
Feb. 16	23 18.03	-08 14.7	7.037	6.119	+0.72	+4.7	19.8	20.1
Feb. 26	23 25.26	-07 27.6	7.091	6.127	+0.73	+4.7	19.9	12.2
Mar. 8	23 32.59	-06 40.3	7.122	6.134	+0.73	+4.7	19.9	5.0
Mar. 18	23 39.92	-05 53.3	7.132	6.142	+0.73	+4.6	19.9	5.5
Mar. 28	23 47.20	-05 07.1	7.119	6.150	+0.71	+4.5	19.9	12.7
Apr. 7	23 54.35	-04 22.3	7.085	6.157	+0.69	+4.3	19.9	20.5
Apr. 17	00 01.28	-03 39.4	7.031	6.165	+0.67	+4.1	19.9	28.3
Apr. 27	00 07.94	-02 58.8	6.957	6.173	+0.63	+3.8	19.9	36.2
May 7	00 14.25	-02 21.3	6.865	6.182	+0.59	+3.4	19.8	44.2
May 17	00 20.13	-01 47.2	6.757	6.190	+0.54	+3.0	19.8	52.2
May 27	00 25.51	-01 17.0	6.636	6.198	+0.48	+2.6	19.8	60.4
June 6	00 30.30	-00 51.3	6.503	6.207	+0.41	+2.1	19.8	68.7
June 16	00 34.43	-00 30.5	6.362	6.215	+0.34	+1.6	19.7	77.1
June 26	00 37.81	-00 14.9	6.215	6.224	+0.26	+1.0	19.7	85.8
July 6	00 40.38	-00 05.1	6.067	6.233	+0.17	+0.4	19.6	94.6
July 16	00 42.06	-00 01.1	5.921	6.241	+0.07	-0.2	19.6	103.7
July 26	00 42.80	-00 03.0	5.782	6.250	-0.02	-0.8	19.5	113.1
Aug. 5	00 42.59	-00 10.9	5.653	6.259	-0.11	-1.3	19.5	122.7
Aug. 15	00 41.45	-00 24.2	5.538	6.268	-0.20	-1.8	19.5	132.6
Aug. 25	00 39.41	-00 42.4	5.443	6.278	-0.28	-2.2	19.4	142.7
Sept. 4	00 36.60	-01 04.5	5.371	6.287	-0.34	-2.5	19.4	153.1
Sept. 14	00 33.19	-01 29.1	5.325	6.296	-0.38	-2.6	19.4	163.4
Sept. 24	00 29.37	-01 54.6	5.308	6.306	-0.40	-2.5	19.4	173.1
Oct. 4	00 25.41	-02 19.4	5.322	6.315	-0.38	-2.2	19.4	172.6
Oct. 14	00 21.57	-02 41.7	5.365	6.325	-0.35	-1.8	19.5	162.7
Oct. 24	00 18.09	-03 00.0	5.438	6.334	-0.29	-1.3	19.5	152.1
Nov. 3	00 15.22	-03 13.2	5.538	6.344	-0.21	-0.7	19.6	141.5
Nov. 13	00 13.11	-03 20.3	5.661	6.354	-0.12	-0.1	19.6	131.0
Nov. 23	00 11.90	-03 20.9	5.803	6.364	-0.03	+0.6	19.7	120.7
Dec. 3	00 11.64	-03 14.9	5.960	6.374	+0.07	+1.2	19.7	110.6
Dec. 13	00 12.36	-03 02.6	6.127	6.384	+0.17	+1.8	19.8	100.7
Dec. 23	00 14.04	-02 44.2	6.300	6.394	+0.26	+2.4	19.9	91.0
Jan. 2	00 16.61	-02 20.3	6.473	6.404	+0.34	+2.9	20.0	81.6
Jan. 12	00 20.00	-01 51.6	6.642	6.414	+0.41	+3.3	20.0	72.4
Jan. 22	00 24.13	-01 18.7	6.804	6.424	+0.48	+3.6	20.1	63.4
Feb. 1	00 28.90	-00 42.4	6.955	6.435	+0.53	+3.9	20.1	54.6
Feb. 11	00 34.23	-00 03.2	7.092	6.445	+0.58	+4.1	20.2	46.0
Feb. 21	00 40.02	+00 38.1	7.212	6.455	+0.62	+4.3	20.2	37.5
Mar. 3	00 46.17	+01 20.8	7.313	6.466	+0.64	+4.4	20.3	29.2
Mar. 13	00 52.61	+02 04.5	7.394	6.476	+0.66	+4.4	20.3	21.0
Mar. 23	00 59.26	+02 48.4	7.454	6.487	+0.68	+4.4	20.3	13.1

Comet C/2014 A4 (SONEAR)

Epoch = 2017 July 26.0 TT
T = 2015 Sept. 5.56058 TT
Peri. = 356.74030
Node = 29.73420 2000.0
Incl. = 121.36787
q = 4.1784669 AU
e = 1.0005062

m1 = 8.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	21 22.52	+31 26.0	6.168	5.776	+0.29	-0.5	17.7	62.2
Jan. 17	21 25.40	+31 21.4	6.316	5.830	+0.32	+0.7	17.7	56.4
Jan. 27	21 28.60	+31 28.8	6.446	5.883	+0.34	+1.9	17.8	51.5
Feb. 6	21 31.97	+31 47.7	6.558	5.938	+0.34	+2.9	17.9	47.6
Feb. 16	21 35.33	+32 17.1	6.649	5.992	+0.32	+3.9	17.9	45.0
Feb. 26	21 38.53	+32 56.3	6.721	6.047	+0.29	+4.8	18.0	44.0
Mar. 8	21 41.43	+33 44.4	6.771	6.102	+0.24	+5.6	18.0	44.4
Mar. 18	21 43.87	+34 40.5	6.802	6.158	+0.18	+6.3	18.1	46.4
Mar. 28	21 45.72	+35 43.5	6.814	6.213	+0.11	+6.9	18.1	49.6
Apr. 7	21 46.82	+36 52.5	6.808	6.269	+0.02	+7.4	18.1	53.8
Apr. 17	21 47.00	+38 06.1	6.788	6.326	-0.09	+7.7	18.2	58.8
Apr. 27	21 46.13	+39 23.0	6.754	6.382	-0.21	+7.8	18.2	64.3
May 7	21 44.04	+40 41.4	6.711	6.439	-0.35	+7.8	18.2	70.1
May 17	21 40.58	+41 59.2	6.662	6.496	-0.49	+7.5	18.2	76.2
May 27	21 35.63	+43 14.3	6.609	6.553	-0.65	+7.0	18.2	82.4
June 6	21 29.11	+44 23.9	6.557	6.610	-0.81	+6.1	18.2	88.6
June 16	21 21.02	+45 24.9	6.510	6.668	-0.96	+5.0	18.2	94.5
June 26	21 11.43	+46 14.5	6.470	6.725	-1.09	+3.5	18.3	100.2
July 6	21 00.56	+46 49.6	6.443	6.783	-1.18	+1.8	18.3	105.4
July 16	20 48.75	+47 07.8	6.430	6.841	-1.23	0.0	18.3	109.8
July 26	20 36.46	+47 07.6	6.434	6.899	-1.23	-1.9	18.3	113.3
Aug. 5	20 24.19	+46 48.5	6.458	6.957	-1.17	-3.7	18.4	115.6
Aug. 15	20 12.49	+46 11.5	6.502	7.016	-1.07	-5.3	18.4	116.7
Aug. 25	20 01.79	+45 18.7	6.568	7.074	-0.93	-6.6	18.5	116.3
Sept. 4	19 52.44	+44 13.2	6.654	7.133	-0.78	-7.5	18.5	114.6
Sept. 14	19 44.64	+42 58.6	6.759	7.192	-0.62	-8.0	18.6	111.7
Sept. 24	19 38.48	+41 38.7	6.881	7.250	-0.45	-8.2	18.6	107.8
Oct. 4	19 33.93	+40 17.0	7.017	7.309	-0.30	-8.0	18.7	103.1
Oct. 14	19 30.91	+38 56.7	7.164	7.368	-0.16	-7.6	18.8	97.9
Oct. 24	19 29.28	+37 40.5	7.319	7.427	-0.04	-7.0	18.9	92.4
Nov. 3	19 28.87	+36 30.6	7.479	7.486	+0.06	-6.2	18.9	86.6
Nov. 13	19 29.51	+35 28.5	7.639	7.545	+0.15	-5.3	19.0	80.9
Nov. 23	19 31.03	+34 35.3	7.795	7.605	+0.22	-4.3	19.1	75.3
Dec. 3	19 33.27	+33 51.9	7.946	7.664	+0.28	-3.3	19.1	69.9
Dec. 13	19 36.05	+33 18.7	8.087	7.723	+0.32	-2.3	19.2	65.0
Dec. 23	19 39.23	+32 55.8	8.217	7.782	+0.34	-1.3	19.3	60.7
Jan. 2	19 42.66	+32 43.2	8.332	7.842	+0.35	-0.3	19.3	57.1
Jan. 12	19 46.21	+32 40.6	8.432	7.901	+0.35	+0.7	19.4	54.5
Jan. 22	19 49.74	+32 47.7	8.515	7.961	+0.34	+1.6	19.4	52.9
Feb. 1	19 53.11	+33 04.0	8.581	8.020	+0.31	+2.5	19.4	52.6
Feb. 11	19 56.22	+33 28.8	8.629	8.080	+0.27	+3.3	19.5	53.4
Feb. 21	19 58.93	+34 01.4	8.660	8.139	+0.22	+3.9	19.5	55.4
Mar. 3	20 01.12	+34 40.9	8.676	8.199	+0.16	+4.5	19.5	58.3
Mar. 13	20 02.70	+35 26.2	8.677	8.258	+0.08	+5.0	19.6	62.1
Mar. 23	20 03.53	+36 16.4	8.665	8.318	0.00	+5.4	19.6	66.5

Comet C/2013 C2 (Tenagra)

Epoch = 2017 July 26.0 TT
T = 2015 Sept. 6.15370 TT
Peri. = 309.08619 e = 0.4313539
Node = 247.53082 2000.0 a = 16.0648616 AU
Incl. = 21.33722 n = 0.01530695
q = 9.1352209 AU P = 64.39 years

m1 = 4.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	14 34.56	-25 48.7	9.725	9.315	+0.32	-1.7	18.6	62.7
Jan. 17	14 37.79	-26 05.3	9.580	9.322	+0.26	-1.4	18.6	71.9
Jan. 27	14 40.37	-26 19.5	9.427	9.329	+0.19	-1.1	18.6	81.3
Feb. 6	14 42.26	-26 30.9	9.271	9.337	+0.11	-0.8	18.5	90.8
Feb. 16	14 43.40	-26 39.0	9.114	9.345	+0.04	-0.5	18.5	100.5
Feb. 26	14 43.79	-26 43.6	8.963	9.353	-0.04	-0.1	18.5	110.3
Mar. 8	14 43.43	-26 44.3	8.822	9.361	-0.11	+0.3	18.4	120.2
Mar. 18	14 42.35	-26 40.8	8.696	9.369	-0.17	+0.8	18.4	130.2
Mar. 28	14 40.65	-26 33.1	8.589	9.377	-0.22	+1.2	18.4	140.1
Apr. 7	14 38.42	-26 21.1	8.505	9.385	-0.26	+1.6	18.4	150.0
Apr. 17	14 35.81	-26 05.3	8.447	9.394	-0.28	+1.9	18.4	159.5
Apr. 27	14 32.97	-25 46.0	8.417	9.402	-0.29	+2.2	18.4	167.4
May 7	14 30.08	-25 24.0	8.417	9.411	-0.28	+2.4	18.4	169.5
May 17	14 27.31	-25 00.1	8.447	9.420	-0.25	+2.5	18.4	163.3
May 27	14 24.82	-24 35.3	8.505	9.429	-0.21	+2.5	18.4	154.4
June 6	14 22.75	-24 10.6	8.590	9.438	-0.15	+2.4	18.4	144.9
June 16	14 21.22	-23 47.0	8.699	9.448	-0.09	+2.2	18.5	135.3
June 26	14 20.29	-23 25.3	8.828	9.457	-0.03	+1.9	18.5	125.7
July 6	14 20.02	-23 06.3	8.974	9.466	+0.04	+1.6	18.5	116.1
July 16	14 20.44	-22 50.4	9.133	9.476	+0.11	+1.2	18.6	106.7
July 26	14 21.54	-22 37.9	9.300	9.486	+0.18	+0.9	18.6	97.5
Aug. 5	14 23.31	-22 29.0	9.471	9.496	+0.24	+0.5	18.7	88.3
Aug. 15	14 25.70	-22 23.7	9.641	9.506	+0.30	+0.2	18.7	79.3
Aug. 25	14 28.68	-22 21.8	9.807	9.516	+0.35	-0.1	18.7	70.4
Sept. 4	14 32.20	-22 23.1	9.964	9.526	+0.40	-0.4	18.8	61.6
Sept. 14	14 36.19	-22 27.4	10.110	9.537	+0.44	-0.7	18.8	52.9
Sept. 24	14 40.59	-22 34.2	10.241	9.547	+0.48	-0.9	18.9	44.2
Oct. 4	14 45.35	-22 43.2	10.353	9.558	+0.50	-1.1	18.9	35.6
Oct. 14	14 50.38	-22 54.1	10.446	9.569	+0.53	-1.2	18.9	27.1
Oct. 24	14 55.64	-23 06.3	10.517	9.579	+0.54	-1.3	18.9	18.7
Nov. 3	15 01.03	-23 19.4	10.563	9.590	+0.55	-1.4	18.9	10.7
Nov. 13	15 06.49	-23 33.2	10.586	9.602	+0.55	-1.4	18.9	5.8
Nov. 23	15 11.95	-23 47.2	10.583	9.613	+0.54	-1.4	19.0	10.3
Dec. 3	15 17.31	-24 01.1	10.555	9.624	+0.52	-1.3	19.0	18.4
Dec. 13	15 22.51	-24 14.5	10.503	9.636	+0.49	-1.3	18.9	27.0
Dec. 23	15 27.46	-24 27.2	10.427	9.647	+0.46	-1.2	18.9	35.8
Jan. 2	15 32.07	-24 38.8	10.331	9.659	+0.42	-1.0	18.9	44.9
Jan. 12	15 36.27	-24 49.1	10.216	9.671	+0.37	-0.9	18.9	54.0
Jan. 22	15 39.97	-24 57.8	10.085	9.683	+0.31	-0.7	18.9	63.3
Feb. 1	15 43.09	-25 04.8	9.943	9.695	+0.25	-0.5	18.9	72.7
Feb. 11	15 45.59	-25 09.7	9.792	9.707	+0.18	-0.3	18.8	82.2
Feb. 21	15 47.39	-25 12.5	9.637	9.719	+0.11	0.0	18.8	91.8
Mar. 3	15 48.47	-25 12.9	9.483	9.731	+0.03	+0.2	18.8	101.6
Mar. 13	15 48.81	-25 10.7	9.336	9.744	-0.04	+0.5	18.7	111.5
Mar. 23	15 48.42	-25 05.9	9.198	9.756	-0.11	+0.8	18.7	121.5

Comet 61P/Shajn-Schaldachh

Epoch = 2017 July 26.0 TT
T = 2015 Oct. 2.05852 TT
Peri. = 221.98331 e = 0.4250783
Node = 163.01871 2000.0 a = 3.6806459 AU
Incl. = 6.00528 n = 0.13957834
q = 2.1160832 AU P = 7.06 years

m1 = 12.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	10 03.97	+08 35.7	2.875	3.652	-0.48	+3.1	20.3	136.6
Jan. 17	09 59.14	+09 06.3	2.819	3.691	-0.62	+4.0	20.3	148.0
Jan. 27	09 52.94	+09 45.9	2.789	3.728	-0.71	+4.5	20.3	159.8
Feb. 6	09 45.87	+10 31.3	2.788	3.766	-0.73	+4.8	20.4	171.5
Feb. 16	09 38.57	+11 19.0	2.818	3.803	-0.69	+4.6	20.5	175.2
Feb. 26	09 31.65	+12 05.3	2.879	3.839	-0.60	+4.2	20.5	163.8
Mar. 8	09 25.69	+12 47.0	2.969	3.876	-0.46	+3.5	20.6	152.3
Mar. 18	09 21.12	+13 21.8	3.086	3.911	-0.29	+2.7	20.8	141.1
Mar. 28	09 18.19	+13 48.5	3.226	3.946	-0.12	+1.8	20.9	130.4
Apr. 7	09 17.00	+14 06.5	3.383	3.981	+0.05	+0.9	21.0	120.2
Apr. 17	09 17.52	+14 15.9	3.553	4.016	+0.21	+0.1	21.2	110.4
Apr. 27	09 19.62	+14 17.2	3.732	4.049	+0.35	-0.6	21.3	101.2
May 7	09 23.16	+14 10.7	3.916	4.083	+0.48	-1.3	21.5	92.3
May 17	09 27.93	+13 57.2	4.100	4.116	+0.58	-2.0	21.6	83.8
May 27	09 33.77	+13 37.3	4.282	4.148	+0.67	-2.6	21.7	75.7
June 6	09 40.49	+13 11.5	4.458	4.180	+0.75	-3.1	21.9	67.8
June 16	09 47.94	+12 40.6	4.626	4.212	+0.80	-3.6	22.0	60.1
June 26	09 55.98	+12 05.0	4.783	4.243	+0.85	-4.0	22.1	52.6
July 6	10 04.50	+11 25.2	4.928	4.274	+0.89	-4.3	22.2	45.2
July 16	10 13.36	+10 41.9	5.059	4.304	+0.91	-4.6	22.3	38.0
July 26	10 22.50	+09 55.5	5.174	4.333	+0.93	-4.9	22.3	30.8
Aug. 5	10 31.82	+09 06.6	5.272	4.363	+0.94	-5.1	22.4	23.7
Aug. 15	10 41.23	+08 15.7	5.353	4.391	+0.95	-5.2	22.5	16.6
Aug. 25	10 50.69	+07 23.3	5.414	4.420	+0.94	-5.3	22.5	9.5
Sept. 4	11 00.12	+06 30.1	5.455	4.447	+0.93	-5.3	22.6	2.3
Sept.14	11 09.44	+05 36.7	5.476	4.475	+0.92	-5.3	22.6	4.9
Sept.24	11 18.62	+04 43.5	5.477	4.501	+0.89	-5.2	22.6	12.3
Oct. 4	11 27.56	+03 51.3	5.457	4.528	+0.86	-5.1	22.6	19.7
Oct. 14	11 36.20	+03 00.8	5.417	4.553	+0.83	-4.8	22.7	27.3
Oct. 24	11 44.46	+02 12.6	5.358	4.579	+0.78	-4.5	22.7	35.0
Nov. 3	11 52.25	+01 27.5	5.281	4.604	+0.72	-4.1	22.6	42.9
Nov. 13	11 59.48	+00 46.2	5.187	4.628	+0.66	-3.7	22.6	51.0
Nov. 23	12 06.04	+00 09.6	5.078	4.652	+0.58	-3.1	22.6	59.3
Dec. 3	12 11.81	-00 21.4	4.956	4.675	+0.49	-2.5	22.6	67.9
Dec. 13	12 16.68	-00 46.1	4.824	4.698	+0.38	-1.7	22.5	76.8
Dec. 23	12 20.51	-01 03.5	4.687	4.721	+0.27	-0.9	22.5	86.0
Jan. 2	12 23.18	-01 12.9	4.547	4.743	+0.14	-0.1	22.4	95.5
Jan. 12	12 24.58	-01 13.7	4.409	4.764	0.00	+0.8	22.4	105.3
Jan. 22	12 24.63	-01 05.3	4.277	4.785	-0.13	+1.7	22.4	115.6
Feb. 1	12 23.29	-00 47.8	4.158	4.806	-0.27	+2.6	22.3	126.1
Feb. 11	12 20.61	-00 21.6	4.056	4.826	-0.39	+3.4	22.3	137.1
Feb. 21	12 16.70	+00 12.3	3.976	4.845	-0.49	+4.0	22.3	148.3
Mar. 3	12 11.81	+00 52.2	3.923	4.864	-0.56	+4.3	22.2	159.7
Mar. 13	12 06.23	+01 35.7	3.899	4.883	-0.59	+4.4	22.2	171.1
Mar. 23	12 00.35	+02 20.0	3.906	4.901	-0.58	+4.2	22.3	176.4

Comet C/2013 V4 (Catalina)

Epoch = 2017 July 26.0 TT
T = 2015 Oct. 7.49735 TT
Peri. = 40.44931
Node = 55.63522 2000.0
Incl. = 67.85951
q = 5.1858054 AU
e = 1.0013319

m1 = 7.2 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	15 17.45	+66 43.5	5.968	6.202	+0.85	+3.6	17.0	99.2
Jan. 17	15 25.93	+67 19.1	5.981	6.242	+0.62	+4.2	17.0	100.9
Jan. 27	15 32.18	+68 01.3	6.000	6.282	+0.37	+4.7	17.1	102.2
Feb. 6	15 35.83	+68 48.3	6.027	6.323	+0.07	+4.9	17.1	103.0
Feb. 16	15 36.58	+69 37.4	6.061	6.364	-0.25	+4.8	17.1	103.5
Feb. 26	15 34.09	+70 25.8	6.102	6.406	-0.59	+4.4	17.2	103.5
Mar. 8	15 28.14	+71 09.7	6.152	6.448	-0.94	+3.5	17.2	103.0
Mar. 18	15 18.75	+71 45.1	6.209	6.491	-1.25	+2.3	17.3	102.1
Mar. 28	15 06.26	+72 08.2	6.273	6.534	-1.48	+0.7	17.3	100.8
Apr. 7	14 51.45	+72 15.3	6.344	6.577	-1.59	-1.1	17.3	99.1
Apr. 17	14 35.51	+72 03.9	6.422	6.621	-1.57	-3.1	17.4	97.0
Apr. 27	14 19.77	+71 33.2	6.507	6.665	-1.43	-4.9	17.4	94.7
May 7	14 05.44	+70 43.7	6.597	6.710	-1.21	-6.6	17.5	92.1
May 17	13 53.37	+69 37.6	6.691	6.755	-0.94	-8.0	17.5	89.3
May 27	13 43.97	+68 17.6	6.790	6.800	-0.67	-9.1	17.6	86.3
June 6	13 37.29	+66 46.8	6.891	6.846	-0.41	-9.9	17.7	83.2
June 16	13 33.16	+65 08.1	6.994	6.892	-0.19	-10.4	17.7	80.1
June 26	13 31.27	+63 24.2	7.098	6.938	+0.01	-10.7	17.8	76.9
July 6	13 31.32	+61 37.3	7.201	6.985	+0.17	-10.8	17.8	73.7
July 16	13 32.99	+59 49.5	7.303	7.031	+0.30	-10.7	17.9	70.6
July 26	13 35.99	+58 02.4	7.403	7.079	+0.41	-10.5	17.9	67.6
Aug. 5	13 40.10	+56 17.4	7.498	7.126	+0.50	-10.2	18.0	64.8
Aug. 15	13 45.10	+54 35.8	7.588	7.174	+0.57	-9.7	18.0	62.3
Aug. 25	13 50.82	+52 58.5	7.672	7.222	+0.63	-9.2	18.1	60.1
Sept. 4	13 57.11	+51 26.7	7.749	7.270	+0.67	-8.6	18.1	58.3
Sept.14	14 03.84	+50 01.0	7.818	7.319	+0.71	-7.9	18.1	57.0
Sept.24	14 10.91	+48 42.1	7.877	7.367	+0.73	-7.1	18.2	56.2
Oct. 4	14 18.20	+47 30.9	7.927	7.416	+0.74	-6.3	18.2	56.1
Oct. 14	14 25.62	+46 27.9	7.967	7.465	+0.75	-5.4	18.3	56.7
Oct. 24	14 33.08	+45 33.5	7.996	7.515	+0.74	-4.5	18.3	57.9
Nov. 3	14 40.47	+44 48.3	8.014	7.564	+0.72	-3.6	18.3	59.8
Nov. 13	14 47.71	+44 12.5	8.022	7.614	+0.70	-2.6	18.3	62.4
Nov. 23	14 54.69	+43 46.5	8.021	7.664	+0.66	-1.6	18.4	65.5
Dec. 3	15 01.32	+43 30.3	8.010	7.714	+0.62	-0.6	18.4	69.1
Dec. 13	15 07.48	+43 23.8	7.991	7.764	+0.56	+0.3	18.4	73.2
Dec. 23	15 13.06	+43 26.9	7.966	7.815	+0.49	+1.2	18.4	77.6
Jan. 2	15 17.95	+43 39.0	7.936	7.865	+0.41	+2.0	18.4	82.3
Jan. 12	15 22.01	+43 59.3	7.903	7.916	+0.31	+2.8	18.4	87.2
Jan. 22	15 25.15	+44 26.9	7.870	7.967	+0.21	+3.3	18.4	92.1
Feb. 1	15 27.23	+45 00.3	7.839	8.018	+0.09	+3.8	18.5	97.0
Feb. 11	15 28.17	+45 37.8	7.811	8.069	-0.03	+4.0	18.5	101.7
Feb. 21	15 27.89	+46 17.5	7.791	8.120	-0.15	+4.0	18.5	106.1
Mar. 3	15 26.35	+46 57.0	7.779	8.172	-0.28	+3.7	18.5	110.0
Mar. 13	15 23.57	+47 34.0	7.779	8.223	-0.40	+3.2	18.5	113.3
Mar. 23	15 19.61	+48 05.9	7.792	8.275	-0.50	+2.4	18.5	115.9

Comet 22P/Kopff

Epoch = 2017 July 26.0 TT
T = 2015 Oct. 25.20211 TT
Peri. = 162.88761 e = 0.5480689
Node = 120.85573 2000.0 a = 3.4454314 AU
Incl. = 4.73747 n = 0.15411278
q = 1.5570976 AU P = 6.40 years

m1 = 8.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	02 37.20	+10 04.1	3.234	3.735	+0.13	+2.3	19.3	113.4
Jan. 17	02 38.48	+10 26.8	3.425	3.780	+0.29	+2.9	19.5	103.6
Jan. 27	02 41.39	+10 56.1	3.623	3.826	+0.44	+3.4	19.7	94.3
Feb. 6	02 45.75	+11 30.5	3.822	3.870	+0.56	+3.8	19.9	85.4
Feb. 16	02 51.35	+12 08.6	4.019	3.914	+0.67	+4.1	20.1	76.8
Feb. 26	02 58.02	+12 49.2	4.210	3.957	+0.76	+4.2	20.3	68.5
Mar. 8	03 05.58	+13 31.3	4.394	3.999	+0.83	+4.3	20.4	60.5
Mar. 18	03 13.89	+14 13.8	4.566	4.040	+0.89	+4.2	20.6	52.7
Mar. 28	03 22.80	+14 55.9	4.725	4.081	+0.94	+4.1	20.7	45.0
Apr. 7	03 32.21	+15 36.9	4.869	4.121	+0.98	+3.9	20.9	37.6
Apr. 17	03 42.00	+16 16.1	4.997	4.160	+1.01	+3.7	21.0	30.2
Apr. 27	03 52.07	+16 53.1	5.107	4.199	+1.03	+3.4	21.1	23.0
May 7	04 02.33	+17 27.3	5.198	4.237	+1.04	+3.1	21.2	15.9
May 17	04 12.69	+17 58.6	5.270	4.274	+1.04	+2.8	21.3	9.0
May 27	04 23.07	+18 26.6	5.321	4.310	+1.03	+2.5	21.3	3.4
June 6	04 33.38	+18 51.2	5.353	4.346	+1.02	+2.1	21.4	6.5
June 16	04 43.54	+19 12.3	5.364	4.381	+0.99	+1.8	21.5	13.2
June 26	04 53.46	+19 29.8	5.355	4.416	+0.96	+1.4	21.5	20.3
July 6	05 03.05	+19 43.9	5.327	4.449	+0.92	+1.1	21.6	27.5
July 16	05 12.21	+19 54.7	5.279	4.482	+0.86	+0.8	21.6	34.8
July 26	05 20.85	+20 02.4	5.214	4.514	+0.80	+0.5	21.6	42.3
Aug. 5	05 28.84	+20 07.1	5.132	4.546	+0.72	+0.2	21.6	49.9
Aug. 15	05 36.08	+20 09.3	5.036	4.577	+0.64	0.0	21.6	57.8
Aug. 25	05 42.43	+20 09.4	4.926	4.607	+0.53	-0.2	21.6	65.9
Sept. 4	05 47.76	+20 07.6	4.807	4.637	+0.42	-0.3	21.6	74.3
Sept. 14	05 51.93	+20 04.5	4.680	4.666	+0.29	-0.4	21.6	83.0
Sept. 24	05 54.79	+20 00.4	4.549	4.694	+0.14	-0.5	21.6	92.1
Oct. 4	05 56.21	+19 55.9	4.418	4.722	-0.01	-0.5	21.5	101.6
Oct. 14	05 56.10	+19 51.2	4.292	4.749	-0.17	-0.5	21.5	111.5
Oct. 24	05 54.38	+19 46.6	4.176	4.775	-0.33	-0.4	21.5	121.8
Nov. 3	05 51.07	+19 42.2	4.075	4.801	-0.48	-0.4	21.5	132.5
Nov. 13	05 46.29	+19 38.1	3.993	4.826	-0.60	-0.4	21.5	143.6
Nov. 23	05 40.24	+19 34.3	3.937	4.850	-0.70	-0.4	21.5	155.0
Dec. 3	05 33.29	+19 30.6	3.910	4.874	-0.74	-0.3	21.5	166.5
Dec. 13	05 25.88	+19 27.4	3.915	4.897	-0.74	-0.3	21.5	176.1
Dec. 23	05 18.51	+19 24.7	3.952	4.920	-0.68	-0.2	21.6	168.5
Jan. 2	05 11.68	+19 23.1	4.021	4.942	-0.59	0.0	21.6	157.0
Jan. 12	05 05.81	+19 22.9	4.120	4.963	-0.46	+0.2	21.7	145.6
Jan. 22	05 01.21	+19 24.8	4.245	4.984	-0.31	+0.4	21.8	134.4
Feb. 1	04 58.07	+19 28.8	4.392	5.004	-0.16	+0.6	21.9	123.5
Feb. 11	04 56.47	+19 35.2	4.554	5.023	-0.01	+0.9	22.0	113.1
Feb. 21	04 56.39	+19 43.8	4.727	5.042	+0.14	+1.0	22.1	103.0
Mar. 3	04 57.77	+19 54.2	4.906	5.060	+0.27	+1.2	22.2	93.3
Mar. 13	05 00.46	+20 05.9	5.086	5.078	+0.39	+1.3	22.3	83.9
Mar. 23	05 04.34	+20 18.5	5.263	5.095	+0.49	+1.3	22.4	74.9

Comet C/2015 X4 (Elenin)

Epoch = 2017 July 26.0 TT
T = 2015 Nov. 3.52695 TT
Peri. = 176.38812 e = 0.8124728
Node = 262.62022 2000.0 a = 18.1117363 AU
Incl. = 29.50110 n = 0.01278686
q = 3.3964432 AU P = 77.08 years

m1 = 5.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	09 46.55	-19 56.6	4.238	4.849	-0.41	-3.9	19.0	123.3
Jan. 17	09 42.49	-20 36.1	4.200	4.902	-0.49	-2.4	19.1	131.0
Jan. 27	09 37.60	-21 00.1	4.181	4.955	-0.54	-0.8	19.1	137.8
Feb. 6	09 32.23	-21 08.1	4.186	5.009	-0.54	+0.7	19.2	143.0
Feb. 16	09 26.82	-21 00.7	4.217	5.064	-0.51	+2.1	19.3	145.7
Feb. 26	09 21.75	-20 39.6	4.273	5.118	-0.43	+3.2	19.4	145.3
Mar. 8	09 17.40	-20 07.6	4.354	5.173	-0.33	+4.0	19.5	142.0
Mar. 18	09 14.05	-19 27.8	4.460	5.228	-0.22	+4.4	19.6	136.5
Mar. 28	09 11.88	-18 43.8	4.588	5.283	-0.09	+4.5	19.8	129.8
Apr. 7	09 10.98	-17 58.7	4.734	5.338	+0.04	+4.3	19.9	122.4
Apr. 17	09 11.35	-17 15.5	4.896	5.393	+0.16	+3.9	20.0	114.7
Apr. 27	09 12.94	-16 36.2	5.070	5.449	+0.27	+3.4	20.2	106.9
May 7	09 15.65	-16 02.6	5.253	5.504	+0.37	+2.7	20.3	99.2
May 17	09 19.36	-15 35.7	5.440	5.560	+0.46	+2.0	20.5	91.5
May 27	09 23.95	-15 16.1	5.630	5.616	+0.53	+1.2	20.6	84.1
June 6	09 29.30	-15 04.3	5.818	5.672	+0.60	+0.4	20.7	76.8
June 16	09 35.28	-15 00.2	6.002	5.728	+0.65	-0.3	20.9	69.6
June 26	09 41.76	-15 03.7	6.179	5.784	+0.69	-1.1	21.0	62.7
July 6	09 48.66	-15 14.5	6.348	5.840	+0.72	-1.8	21.1	56.0
July 16	09 55.87	-15 32.3	6.505	5.897	+0.74	-2.4	21.2	49.6
July 26	10 03.31	-15 56.5	6.649	5.953	+0.76	-3.0	21.3	43.4
Aug. 5	10 10.88	-16 26.9	6.779	6.009	+0.76	-3.6	21.4	37.8
Aug. 15	10 18.52	-17 02.9	6.893	6.065	+0.76	-4.1	21.5	32.7
Aug. 25	10 26.15	-17 43.9	6.989	6.122	+0.75	-4.6	21.6	28.7
Sept. 4	10 33.69	-18 29.6	7.067	6.178	+0.74	-5.0	21.7	26.1
Sept. 14	10 41.08	-19 19.3	7.127	6.234	+0.72	-5.3	21.8	25.5
Sept. 24	10 48.25	-20 12.5	7.168	6.291	+0.69	-5.6	21.9	27.0
Oct. 4	10 55.12	-21 08.8	7.189	6.347	+0.65	-5.9	21.9	30.4
Oct. 14	11 01.61	-22 07.4	7.192	6.403	+0.60	-6.0	22.0	35.3
Oct. 24	11 07.65	-23 07.8	7.176	6.460	+0.55	-6.1	22.0	41.1
Nov. 3	11 13.13	-24 09.3	7.144	6.516	+0.49	-6.2	22.1	47.6
Nov. 13	11 17.98	-25 11.1	7.095	6.572	+0.41	-6.1	22.1	54.6
Nov. 23	11 22.11	-26 12.4	7.034	6.628	+0.33	-6.0	22.2	62.0
Dec. 3	11 25.41	-27 12.2	6.961	6.684	+0.24	-5.7	22.2	69.8
Dec. 13	11 27.82	-28 09.4	6.879	6.740	+0.14	-5.3	22.2	77.8
Dec. 23	11 29.25	-29 02.8	6.793	6.796	+0.04	-4.8	22.2	86.0
Jan. 2	11 29.65	-29 51.0	6.706	6.852	-0.06	-4.2	22.3	94.4
Jan. 12	11 29.02	-30 32.7	6.621	6.908	-0.17	-3.4	22.3	102.9
Jan. 22	11 27.37	-31 06.4	6.544	6.964	-0.26	-2.4	22.3	111.4
Feb. 1	11 24.78	-31 30.7	6.478	7.020	-0.34	-1.4	22.4	119.7
Feb. 11	11 21.40	-31 44.7	6.428	7.075	-0.40	-0.3	22.4	127.7
Feb. 21	11 17.42	-31 47.6	6.397	7.131	-0.43	+0.8	22.4	135.0
Mar. 3	11 13.09	-31 39.4	6.388	7.186	-0.44	+1.9	22.5	141.1
Mar. 13	11 08.69	-31 20.6	6.404	7.242	-0.42	+2.8	22.5	145.1
Mar. 23	11 04.47	-30 52.5	6.446	7.297	-0.38	+3.6	22.6	146.4

Comet 10P/Tempel

Epoch = 2017 July 26.0 TT
T = 2015 Nov. 14.26523 TT
Peri. = 195.50909 e = 0.5375171
Node = 117.79547 2000.0 a = 3.0630307 AU
Incl. = 12.03159 n = 0.18385568
q = 1.4165993 AU P = 5.36 years

H = 13.6 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	05 31.14	+15 26.7	2.619	3.535	-0.69	+2.6	18.9	155.2
Jan. 17	05 24.22	+15 52.7	2.737	3.579	-0.49	+2.8	19.2	143.9
Jan. 27	05 19.32	+16 20.6	2.879	3.621	-0.27	+2.9	19.4	132.8
Feb. 6	05 16.58	+16 50.0	3.041	3.663	-0.06	+3.0	19.6	122.2
Feb. 16	05 15.98	+17 20.0	3.217	3.704	+0.14	+3.0	19.8	112.1
Feb. 26	05 17.37	+17 50.1	3.403	3.743	+0.32	+2.9	20.0	102.4
Mar. 8	05 20.55	+18 19.5	3.594	3.782	+0.47	+2.8	20.1	93.2
Mar. 18	05 25.30	+18 47.6	3.786	3.820	+0.61	+2.6	20.2	84.4
Mar. 28	05 31.39	+19 13.7	3.975	3.857	+0.72	+2.4	20.3	76.0
Apr. 7	05 38.62	+19 37.4	4.159	3.894	+0.82	+2.1	20.4	67.9
Apr. 17	05 46.79	+19 58.1	4.334	3.929	+0.89	+1.7	20.5	60.0
Apr. 27	05 55.73	+20 15.6	4.497	3.964	+0.96	+1.4	20.6	52.4
May 7	06 05.30	+20 29.5	4.648	3.998	+1.00	+1.0	20.6	44.9
May 17	06 15.34	+20 39.8	4.784	4.030	+1.04	+0.6	20.6	37.6
May 27	06 25.74	+20 46.2	4.903	4.063	+1.07	+0.3	20.6	30.4
June 6	06 36.39	+20 48.8	5.005	4.094	+1.08	-0.1	20.6	23.4
June 16	06 47.18	+20 47.6	5.089	4.124	+1.08	-0.5	20.6	16.4
June 26	06 58.03	+20 42.9	5.153	4.154	+1.08	-0.8	20.5	9.4
July 6	07 08.84	+20 34.8	5.198	4.183	+1.07	-1.1	20.4	2.9
July 16	07 19.54	+20 23.7	5.222	4.211	+1.05	-1.4	20.5	5.1
July 26	07 30.03	+20 09.8	5.226	4.238	+1.02	-1.6	20.6	12.0
Aug. 5	07 40.24	+19 53.7	5.210	4.264	+0.98	-1.8	20.7	19.1
Aug. 15	07 50.07	+19 35.9	5.174	4.290	+0.94	-1.9	20.8	26.4
Aug. 25	07 59.46	+19 17.1	5.118	4.314	+0.88	-1.9	20.9	33.7
Sept. 4	08 08.29	+18 57.7	5.045	4.338	+0.82	-1.9	20.9	41.3
Sept. 14	08 16.48	+18 38.8	4.954	4.362	+0.74	-1.8	20.9	49.0
Sept. 24	08 23.90	+18 21.0	4.849	4.384	+0.65	-1.6	20.9	57.0
Oct. 4	08 30.44	+18 05.4	4.730	4.406	+0.55	-1.3	20.9	65.3
Oct. 14	08 35.98	+17 52.8	4.600	4.427	+0.44	-0.8	20.9	73.8
Oct. 24	08 40.36	+17 44.4	4.462	4.447	+0.31	-0.3	20.8	82.7
Nov. 3	08 43.44	+17 41.0	4.321	4.466	+0.16	+0.3	20.8	92.0
Nov. 13	08 45.08	+17 43.7	4.179	4.485	+0.01	+0.9	20.7	101.6
Nov. 23	08 45.16	+17 53.1	4.042	4.502	-0.16	+1.6	20.6	111.7
Dec. 3	08 43.59	+18 09.5	3.915	4.519	-0.32	+2.3	20.5	122.3
Dec. 13	08 40.37	+18 32.7	3.804	4.536	-0.48	+2.9	20.4	133.3
Dec. 23	08 35.55	+19 02.1	3.713	4.551	-0.62	+3.4	20.3	144.7
Jan. 2	08 29.38	+19 36.0	3.648	4.566	-0.72	+3.6	20.1	156.4
Jan. 12	08 22.19	+20 12.5	3.613	4.580	-0.77	+3.7	20.0	168.4
Jan. 22	08 14.45	+20 49.1	3.610	4.594	-0.77	+3.5	19.8	178.9
Feb. 1	08 06.72	+21 23.7	3.640	4.606	-0.72	+3.1	20.0	167.4
Feb. 11	07 59.55	+21 54.4	3.702	4.618	-0.61	+2.6	20.2	155.6
Feb. 21	07 53.40	+22 20.1	3.793	4.629	-0.48	+2.0	20.4	144.0
Mar. 3	07 48.64	+22 40.3	3.909	4.640	-0.32	+1.5	20.5	132.8
Mar. 13	07 45.47	+22 55.1	4.045	4.649	-0.15	+1.0	20.6	122.0
Mar. 23	07 43.97	+23 04.7	4.197	4.658	+0.01	+0.5	20.8	111.7

Comet C/2013 US10 (Catalina)

Epoch = 2017 July 26.0 TT
T = 2015 Nov. 15.70486 TT
Peri. = 340.40070
Node = 186.15643 2000.0
Incl. = 148.87581
q = 0.8239242 AU
e = 1.0003475

m1 = 4.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	03 06.69	+50 59.4	4.826	5.451	-0.67	-8.9	15.4	125.1
Jan. 17	03 00.00	+49 30.0	5.044	5.547	-0.40	-8.2	15.6	116.0
Jan. 27	02 56.00	+48 07.9	5.279	5.642	-0.17	-7.2	15.7	106.7
Feb. 6	02 54.27	+46 55.6	5.525	5.736	+0.01	-6.1	15.9	97.4
Feb. 16	02 54.40	+45 54.2	5.776	5.830	+0.16	-5.1	16.1	88.2
Feb. 26	02 56.04	+45 03.7	6.027	5.923	+0.28	-4.0	16.2	79.2
Mar. 8	02 58.88	+44 23.7	6.273	6.015	+0.38	-3.0	16.4	70.5
Mar. 18	03 02.66	+43 53.3	6.510	6.107	+0.45	-2.2	16.5	62.1
Mar. 28	03 07.18	+43 31.7	6.733	6.199	+0.51	-1.4	16.7	54.0
Apr. 7	03 12.23	+43 17.8	6.940	6.289	+0.54	-0.7	16.8	46.2
Apr. 17	03 17.66	+43 10.8	7.127	6.380	+0.57	-0.1	16.9	39.1
Apr. 27	03 23.33	+43 09.8	7.294	6.469	+0.58	+0.4	17.0	32.6
May 7	03 29.11	+43 14.0	7.437	6.558	+0.58	+0.9	17.1	27.4
May 17	03 34.87	+43 22.7	7.557	6.647	+0.56	+1.3	17.2	24.1
May 27	03 40.51	+43 35.4	7.652	6.735	+0.54	+1.6	17.3	23.5
June 6	03 45.90	+43 51.6	7.723	6.823	+0.50	+1.9	17.4	25.7
June 16	03 50.94	+44 10.9	7.769	6.910	+0.46	+2.2	17.4	30.1
June 26	03 55.51	+44 32.9	7.793	6.997	+0.40	+2.4	17.5	36.1
July 6	03 59.48	+44 57.3	7.794	7.083	+0.33	+2.6	17.6	42.9
July 16	04 02.74	+45 23.6	7.775	7.169	+0.24	+2.8	17.6	50.3
July 26	04 05.16	+45 51.4	7.738	7.254	+0.14	+2.9	17.6	58.2
Aug. 5	04 06.61	+46 20.3	7.687	7.339	+0.03	+2.9	17.7	66.4
Aug. 15	04 06.95	+46 49.5	7.624	7.423	-0.09	+2.9	17.7	74.8
Aug. 25	04 06.06	+47 18.1	7.553	7.507	-0.22	+2.7	17.7	83.6
Sept. 4	04 03.86	+47 45.2	7.480	7.591	-0.36	+2.4	17.8	92.5
Sept. 14	04 00.27	+48 09.3	7.408	7.674	-0.50	+2.0	17.8	101.6
Sept. 24	03 55.29	+48 29.0	7.343	7.757	-0.63	+1.3	17.8	110.9
Oct. 4	03 48.99	+48 42.4	7.290	7.840	-0.74	+0.6	17.9	120.1
Oct. 14	03 41.54	+48 48.1	7.255	7.922	-0.83	-0.3	17.9	129.1
Oct. 24	03 33.20	+48 44.7	7.241	8.003	-0.89	-1.3	17.9	137.5
Nov. 3	03 24.32	+48 31.3	7.254	8.085	-0.90	-2.3	18.0	144.8
Nov. 13	03 15.31	+48 07.9	7.296	8.166	-0.87	-3.3	18.0	149.7
Nov. 23	03 06.57	+47 35.2	7.368	8.246	-0.81	-4.0	18.1	151.1
Dec. 3	02 58.51	+46 54.9	7.472	8.327	-0.71	-4.6	18.2	148.2
Dec. 13	02 51.41	+46 09.0	7.607	8.406	-0.59	-4.9	18.3	142.2
Dec. 23	02 45.48	+45 20.1	7.769	8.486	-0.46	-5.0	18.3	134.3
Jan. 2	02 40.84	+44 30.6	7.956	8.565	-0.33	-4.8	18.4	125.5
Jan. 12	02 37.51	+43 42.7	8.164	8.644	-0.21	-4.5	18.5	116.3
Jan. 22	02 35.44	+42 58.0	8.386	8.723	-0.09	-4.0	18.6	106.9
Feb. 1	02 34.56	+42 18.0	8.619	8.801	+0.02	-3.5	18.7	97.5
Feb. 11	02 34.74	+41 43.4	8.856	8.879	+0.11	-2.9	18.8	88.2
Feb. 21	02 35.85	+41 14.7	9.092	8.957	+0.19	-2.3	18.9	79.0
Mar. 3	02 37.76	+40 52.0	9.323	9.034	+0.26	-1.7	19.0	70.1
Mar. 13	02 40.35	+40 35.1	9.545	9.111	+0.31	-1.1	19.1	61.4
Mar. 23	02 43.48	+40 23.7	9.753	9.188	+0.36	-0.6	19.2	53.0

Comet C/2014 S2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2015 Dec. 10.17184 TT
Peri. = 87.46524
Node = 8.07170 2000.0
Incl. = 64.44672
q = 2.0837543 AU
e = 0.9893351

m1 = 2.0 + 5 log(Delta) + 17.5 log(r(t-40))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	13 15.47	-12 01.4	4.671	4.684	-0.07	-5.9	16.5	84.7
Jan. 17	13 14.73	-13 00.6	4.585	4.767	-0.22	-5.3	16.6	94.7
Jan. 27	13 12.50	-13 53.1	4.502	4.850	-0.38	-4.5	16.7	104.9
Feb. 6	13 08.74	-14 38.2	4.426	4.932	-0.52	-3.7	16.8	115.5
Feb. 16	13 03.51	-15 15.0	4.365	5.015	-0.65	-2.8	16.9	126.4
Feb. 26	12 56.97	-15 43.0	4.324	5.097	-0.76	-1.9	17.0	137.4
Mar. 8	12 49.36	-16 01.7	4.308	5.179	-0.83	-1.0	17.2	148.3
Mar. 18	12 41.07	-16 11.4	4.321	5.261	-0.85	-0.2	17.3	158.7
Mar. 28	12 32.52	-16 13.0	4.366	5.342	-0.83	+0.5	17.5	166.6
Apr. 7	12 24.18	-16 08.0	4.445	5.424	-0.77	+0.9	17.6	166.6
Apr. 17	12 16.45	-15 58.7	4.556	5.505	-0.68	+1.1	17.8	158.9
Apr. 27	12 09.66	-15 47.2	4.698	5.585	-0.56	+1.1	18.0	149.1
May 7	12 04.05	-15 35.9	4.867	5.666	-0.43	+0.9	18.2	138.8
May 17	11 59.74	-15 26.8	5.060	5.746	-0.30	+0.5	18.4	128.7
May 27	11 56.74	-15 21.3	5.270	5.826	-0.17	+0.1	18.6	118.8
June 6	11 55.03	-15 20.5	5.495	5.906	-0.05	-0.5	18.8	109.2
June 16	11 54.50	-15 25.1	5.728	5.986	+0.06	-1.0	19.0	99.9
June 26	11 55.06	-15 35.2	5.965	6.065	+0.15	-1.6	19.2	90.8
July 6	11 56.58	-15 51.0	6.202	6.144	+0.23	-2.1	19.4	82.0
July 16	11 58.92	-16 12.3	6.435	6.223	+0.30	-2.6	19.5	73.5
July 26	12 01.97	-16 38.7	6.660	6.301	+0.36	-3.1	19.7	65.2
Aug. 5	12 05.61	-17 10.0	6.874	6.380	+0.41	-3.6	19.9	57.1
Aug. 15	12 09.73	-17 45.8	7.074	6.458	+0.45	-4.0	20.0	49.2
Aug. 25	12 14.23	-18 25.7	7.258	6.536	+0.48	-4.4	20.2	41.5
Sept. 4	12 19.01	-19 09.3	7.424	6.613	+0.50	-4.7	20.3	34.1
Sept.14	12 23.98	-19 56.2	7.569	6.690	+0.51	-5.0	20.5	27.3
Sept.24	12 29.05	-20 45.9	7.692	6.767	+0.51	-5.2	20.6	21.4
Oct. 4	12 34.14	-21 38.1	7.792	6.844	+0.50	-5.4	20.7	17.4
Oct. 14	12 39.15	-22 32.5	7.869	6.921	+0.49	-5.6	20.8	17.0
Oct. 24	12 44.00	-23 28.5	7.921	6.997	+0.46	-5.7	20.9	20.3
Nov. 3	12 48.59	-24 25.8	7.950	7.073	+0.42	-5.8	21.0	26.1
Nov. 13	12 52.82	-25 24.0	7.956	7.149	+0.38	-5.9	21.1	33.2
Nov. 23	12 56.61	-26 22.6	7.941	7.224	+0.32	-5.8	21.2	41.0
Dec. 3	12 59.84	-27 21.1	7.906	7.300	+0.26	-5.8	21.3	49.2
Dec. 13	13 02.40	-28 18.9	7.854	7.375	+0.18	-5.6	21.3	57.7
Dec. 23	13 04.20	-29 15.3	7.788	7.450	+0.09	-5.4	21.4	66.4
Jan. 2	13 05.14	-30 09.5	7.711	7.524	0.00	-5.1	21.5	75.4
Jan. 12	13 05.14	-31 00.7	7.628	7.599	-0.10	-4.7	21.5	84.6
Jan. 22	13 04.13	-31 47.8	7.544	7.673	-0.20	-4.2	21.6	93.8
Feb. 1	13 02.09	-32 29.7	7.462	7.747	-0.30	-3.6	21.6	103.2
Feb. 11	12 59.04	-33 05.3	7.389	7.820	-0.40	-2.8	21.7	112.5
Feb. 21	12 55.05	-33 33.5	7.328	7.894	-0.48	-2.0	21.7	121.8
Mar. 3	12 50.25	-33 53.3	7.285	7.967	-0.54	-1.1	21.8	130.7
Mar. 13	12 44.82	-34 04.2	7.264	8.040	-0.58	-0.2	21.9	138.9
Mar. 23	12 39.01	-34 06.0	7.268	8.113	-0.59	+0.7	21.9	145.9

Comet P/2014 W4 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2015 Dec. 31.36245 TT
Peri. = 67.67285 e = 0.3536295
Node = 33.33980 2000.0 a = 6.5967565 AU
Incl. = 15.27537 n = 0.05817125
q = 4.2639488 AU P = 16.94 years

m1 = 5.4 + 5 log(Delta) + 17.5 log(r(t-50))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 02.67	+23 55.0	3.968	4.631	-0.17	+3.0	19.9	127.4
Jan. 17	11 00.98	+24 25.2	3.879	4.650	-0.31	+3.3	19.9	137.2
Jan. 27	10 57.85	+24 58.0	3.812	4.668	-0.44	+3.2	19.9	146.9
Feb. 6	10 53.49	+25 30.3	3.771	4.687	-0.52	+2.8	19.9	155.7
Feb. 16	10 48.24	+25 58.7	3.757	4.707	-0.57	+2.2	19.9	162.0
Feb. 26	10 42.52	+26 20.3	3.773	4.726	-0.57	+1.2	19.9	162.4
Mar. 8	10 36.80	+26 32.6	3.818	4.746	-0.52	+0.2	20.0	156.7
Mar. 18	10 31.57	+26 34.2	3.891	4.766	-0.44	-0.9	20.1	148.2
Mar. 28	10 27.19	+26 24.9	3.990	4.787	-0.32	-2.0	20.1	138.9
Apr. 7	10 23.98	+26 05.2	4.110	4.807	-0.19	-2.9	20.2	129.3
Apr. 17	10 22.10	+25 36.0	4.249	4.828	-0.05	-3.7	20.3	119.9
Apr. 27	10 21.60	+24 58.9	4.401	4.850	+0.09	-4.4	20.5	110.7
May 7	10 22.46	+24 14.9	4.564	4.871	+0.21	-4.9	20.6	101.8
May 17	10 24.61	+23 25.5	4.732	4.893	+0.33	-5.4	20.7	93.2
May 27	10 27.91	+22 31.6	4.902	4.915	+0.43	-5.8	20.8	84.8
June 6	10 32.25	+21 34.1	5.071	4.937	+0.52	-6.0	20.9	76.7
June 16	10 37.47	+20 33.7	5.235	4.959	+0.60	-6.3	21.0	68.8
June 26	10 43.45	+19 31.1	5.392	4.982	+0.66	-6.4	21.1	61.1
July 6	10 50.07	+18 26.7	5.540	5.004	+0.71	-6.6	21.2	53.6
July 16	10 57.20	+17 21.1	5.676	5.027	+0.76	-6.6	21.3	46.2
July 26	11 04.76	+16 14.6	5.799	5.050	+0.79	-6.7	21.4	39.0
Aug. 5	11 12.65	+15 07.6	5.907	5.074	+0.81	-6.7	21.4	31.9
Aug. 15	11 20.78	+14 00.7	5.998	5.097	+0.83	-6.7	21.5	24.9
Aug. 25	11 29.08	+12 54.1	6.071	5.121	+0.84	-6.6	21.6	18.2
Sept. 4	11 37.48	+11 48.3	6.125	5.144	+0.84	-6.5	21.6	12.2
Sept.14	11 45.90	+10 43.8	6.161	5.168	+0.84	-6.3	21.7	8.5
Sept.24	11 54.29	+09 40.9	6.176	5.192	+0.83	-6.1	21.7	10.3
Oct. 4	12 02.56	+08 40.3	6.171	5.216	+0.81	-5.8	21.7	15.8
Oct. 14	12 10.66	+07 42.3	6.147	5.240	+0.78	-5.5	21.8	22.7
Oct. 24	12 18.50	+06 47.5	6.102	5.265	+0.75	-5.1	21.8	30.0
Nov. 3	12 26.00	+05 56.5	6.040	5.289	+0.71	-4.7	21.8	37.7
Nov. 13	12 33.08	+05 09.8	5.959	5.314	+0.66	-4.2	21.8	45.6
Nov. 23	12 39.63	+04 27.9	5.863	5.338	+0.59	-3.6	21.8	53.7
Dec. 3	12 45.57	+03 51.4	5.753	5.363	+0.52	-3.1	21.8	62.1
Dec. 13	12 50.77	+03 20.8	5.631	5.388	+0.44	-2.4	21.8	70.8
Dec. 23	12 55.14	+02 56.5	5.502	5.412	+0.34	-1.8	21.8	79.7
Jan. 2	12 58.56	+02 38.8	5.367	5.437	+0.24	-1.1	21.7	88.9
Jan. 12	13 00.93	+02 28.0	5.233	5.462	+0.12	-0.4	21.7	98.3
Jan. 22	13 02.16	+02 24.1	5.102	5.487	+0.01	+0.3	21.7	108.1
Feb. 1	13 02.21	+02 26.8	4.979	5.512	-0.11	+0.9	21.7	118.1
Feb. 11	13 01.08	+02 35.5	4.870	5.538	-0.23	+1.4	21.7	128.4
Feb. 21	12 58.80	+02 49.3	4.779	5.563	-0.33	+1.7	21.7	138.9
Mar. 3	12 55.51	+03 06.8	4.711	5.588	-0.41	+2.0	21.7	149.5
Mar. 13	12 51.41	+03 26.3	4.669	5.613	-0.47	+2.0	21.7	159.9
Mar. 23	12 46.75	+03 46.0	4.656	5.638	-0.49	+1.8	21.7	169.2

Comet 116P/Wild

Epoch = 2017 July 26.0 TT
T = 2016 Jan. 11.58769 TT
Peri. = 173.35304 e = 0.3721423
Node = 20.99504 2000.0 a = 3.4848173 AU
Incl. = 3.60816 n = 0.15150747
q = 2.1879694 AU P = 6.51 years

m1 = 4.6 + 5 log(Delta) + 22.5 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	19 31.32	-24 34.1	4.136	3.158	+1.60	+3.7	18.6	4.9
Jan. 17	19 47.34	-23 57.1	4.175	3.194	+1.56	+4.1	18.7	3.7
Jan. 27	20 02.92	-23 16.0	4.198	3.231	+1.51	+4.4	18.8	9.4
Feb. 6	20 17.97	-22 31.5	4.204	3.267	+1.45	+4.7	19.0	15.8
Feb. 16	20 32.43	-21 44.5	4.194	3.303	+1.38	+4.9	19.1	22.4
Feb. 26	20 46.24	-20 55.9	4.168	3.338	+1.31	+4.9	19.2	29.1
Mar. 8	20 59.34	-20 06.6	4.127	3.374	+1.23	+4.9	19.2	36.0
Mar. 18	21 11.65	-19 17.8	4.070	3.409	+1.15	+4.7	19.3	42.9
Mar. 28	21 23.10	-18 30.4	4.000	3.444	+1.05	+4.5	19.4	50.0
Apr. 7	21 33.63	-17 45.5	3.917	3.478	+0.95	+4.1	19.4	57.2
Apr. 17	21 43.12	-17 04.2	3.823	3.512	+0.84	+3.7	19.5	64.6
Apr. 27	21 51.51	-16 27.7	3.721	3.546	+0.71	+3.1	19.5	72.3
May 7	21 58.65	-15 57.1	3.611	3.580	+0.58	+2.4	19.6	80.2
May 17	22 04.44	-15 33.5	3.497	3.613	+0.43	+1.6	19.6	88.4
May 27	22 08.75	-15 17.9	3.382	3.646	+0.27	+0.7	19.6	96.9
June 6	22 11.44	-15 11.2	3.269	3.678	+0.10	-0.3	19.6	105.8
June 16	22 12.41	-15 13.7	3.162	3.710	-0.08	-1.2	19.7	115.2
June 26	22 11.58	-15 25.8	3.065	3.741	-0.26	-2.1	19.7	124.9
July 6	22 08.96	-15 46.6	2.983	3.772	-0.43	-2.8	19.7	135.1
July 16	22 04.65	-16 14.9	2.920	3.803	-0.58	-3.4	19.7	145.7
July 26	21 58.88	-16 48.4	2.880	3.833	-0.68	-3.6	19.8	156.6
Aug. 5	21 52.06	-17 24.2	2.866	3.863	-0.74	-3.5	19.9	167.6
Aug. 15	21 44.69	-17 59.1	2.882	3.893	-0.73	-3.1	20.0	175.8
Aug. 25	21 37.36	-18 30.0	2.927	3.922	-0.67	-2.5	20.1	168.1
Sept. 4	21 30.65	-18 54.5	3.001	3.950	-0.56	-1.7	20.2	157.2
Sept. 14	21 25.07	-19 11.1	3.102	3.978	-0.41	-0.8	20.3	146.3
Sept. 24	21 20.95	-19 19.3	3.227	4.006	-0.24	0.0	20.5	135.6
Oct. 4	21 18.52	-19 19.0	3.371	4.033	-0.07	+0.8	20.7	125.3
Oct. 14	21 17.83	-19 10.7	3.531	4.059	+0.10	+1.6	20.8	115.3
Oct. 24	21 18.83	-18 55.1	3.702	4.085	+0.26	+2.2	21.0	105.7
Nov. 3	21 21.41	-18 32.8	3.880	4.111	+0.40	+2.8	21.2	96.4
Nov. 13	21 25.41	-18 04.6	4.060	4.136	+0.52	+3.4	21.3	87.5
Nov. 23	21 30.65	-17 30.8	4.239	4.161	+0.63	+3.9	21.5	78.8
Dec. 3	21 36.96	-16 52.2	4.414	4.185	+0.72	+4.3	21.6	70.3
Dec. 13	21 44.14	-16 09.1	4.581	4.209	+0.79	+4.7	21.8	62.0
Dec. 23	21 52.06	-15 22.0	4.737	4.232	+0.85	+5.1	21.9	53.9
Jan. 2	22 00.55	-14 31.4	4.880	4.255	+0.89	+5.4	22.0	45.9
Jan. 12	22 09.49	-13 37.7	5.009	4.278	+0.93	+5.6	22.1	38.1
Jan. 22	22 18.76	-12 41.5	5.120	4.299	+0.95	+5.8	22.2	30.3
Feb. 1	22 28.24	-11 43.3	5.213	4.321	+0.96	+6.0	22.3	22.7
Feb. 11	22 37.86	-10 43.6	5.287	4.342	+0.97	+6.1	22.4	15.2
Feb. 21	22 47.52	-09 42.9	5.340	4.362	+0.96	+6.1	22.5	7.8
Mar. 3	22 57.13	-08 41.8	5.373	4.382	+0.95	+6.1	22.6	1.8
Mar. 13	23 06.63	-07 40.8	5.385	4.402	+0.93	+6.0	22.6	7.6
Mar. 23	23 15.95	-06 40.6	5.376	4.421	+0.91	+5.9	22.6	14.9

Comet C/2016 KA (Catalina)

Epoch = 2017 July 26.0 TT
T = 2016 Feb. 1.50246 TT
Peri. = 63.12450
Node = 317.54892 2000.0
Incl. = 104.63074
q = 5.4015683 AU
e = 0.9984243

m1 = 8.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	16 36.41	+50 25.3	6.033	5.951	+0.26	+8.3	20.2	80.5
Jan. 17	16 38.98	+51 48.4	5.998	5.981	+0.14	+9.6	20.3	84.3
Jan. 27	16 40.39	+53 24.6	5.964	6.012	-0.01	+10.7	20.3	88.1
Feb. 6	16 40.26	+55 12.0	5.934	6.044	-0.21	+11.6	20.3	91.7
Feb. 16	16 38.17	+57 07.8	5.910	6.077	-0.45	+12.1	20.3	95.0
Feb. 26	16 33.64	+59 08.7	5.895	6.110	-0.75	+12.1	20.3	97.9
Mar. 8	16 26.12	+61 10.0	5.892	6.144	-1.10	+11.6	20.3	100.1
Mar. 18	16 15.12	+63 06.4	5.903	6.178	-1.49	+10.5	20.4	101.5
Mar. 28	16 00.23	+64 51.6	5.929	6.213	-1.89	+8.7	20.4	102.0
Apr. 7	15 41.37	+66 18.9	5.971	6.249	-2.23	+6.3	20.4	101.6
Apr. 17	15 19.07	+67 22.1	6.029	6.285	-2.46	+3.4	20.5	100.2
Apr. 27	14 54.50	+67 56.5	6.102	6.321	-2.50	+0.4	20.5	98.0
May 7	14 29.46	+68 00.2	6.189	6.359	-2.36	-2.5	20.6	95.1
May 17	14 05.85	+67 34.8	6.287	6.396	-2.07	-5.0	20.7	91.6
May 27	13 45.11	+66 44.6	6.396	6.434	-1.71	-6.9	20.7	87.7
June 6	13 28.03	+65 35.3	6.511	6.473	-1.33	-8.2	20.8	83.4
June 16	13 14.73	+64 12.8	6.631	6.512	-0.98	-9.0	20.8	78.9
June 26	13 04.93	+62 42.4	6.751	6.552	-0.67	-9.4	20.9	74.4
July 6	12 58.19	+61 08.5	6.870	6.592	-0.42	-9.4	21.0	70.0
July 16	12 53.98	+59 34.3	6.985	6.632	-0.21	-9.2	21.0	65.7
July 26	12 51.85	+58 02.5	7.093	6.673	-0.05	-8.7	21.1	61.8
Aug. 5	12 51.40	+56 35.1	7.191	6.714	+0.09	-8.2	21.2	58.3
Aug. 15	12 52.25	+55 13.4	7.278	6.756	+0.19	-7.5	21.2	55.5
Aug. 25	12 54.15	+53 58.6	7.352	6.798	+0.27	-6.7	21.3	53.4
Sept. 4	12 56.83	+52 51.7	7.412	6.840	+0.33	-5.8	21.3	52.2
Sept. 14	13 00.10	+51 53.4	7.456	6.883	+0.37	-4.9	21.3	52.1
Sept. 24	13 03.76	+51 04.4	7.484	6.926	+0.39	-3.9	21.4	53.0
Oct. 4	13 07.66	+50 25.4	7.495	6.970	+0.40	-2.9	21.4	55.0
Oct. 14	13 11.63	+49 56.8	7.491	7.014	+0.39	-1.8	21.4	58.0
Oct. 24	13 15.52	+49 39.2	7.472	7.058	+0.37	-0.6	21.5	61.9
Nov. 3	13 19.18	+49 33.0	7.439	7.102	+0.33	+0.5	21.5	66.5
Nov. 13	13 22.44	+49 38.3	7.394	7.147	+0.27	+1.7	21.5	71.8
Nov. 23	13 25.13	+49 55.2	7.340	7.192	+0.19	+2.8	21.5	77.5
Dec. 3	13 27.06	+50 23.6	7.280	7.238	+0.10	+3.9	21.5	83.7
Dec. 13	13 28.02	+51 02.8	7.216	7.283	-0.02	+4.9	21.5	90.0
Dec. 23	13 27.81	+51 51.8	7.154	7.329	-0.16	+5.7	21.5	96.4
Jan. 2	13 26.18	+52 49.0	7.095	7.375	-0.33	+6.3	21.5	102.8
Jan. 12	13 22.93	+53 52.1	7.046	7.422	-0.51	+6.6	21.5	108.8
Jan. 22	13 17.85	+54 58.2	7.009	7.468	-0.70	+6.6	21.6	114.3
Feb. 1	13 10.82	+56 03.7	6.988	7.515	-0.90	+6.1	21.6	119.0
Feb. 11	13 01.80	+57 04.7	6.987	7.562	-1.09	+5.2	21.6	122.4
Feb. 21	12 50.93	+57 56.9	7.007	7.610	-1.24	+4.0	21.6	124.4
Mar. 3	12 38.54	+58 36.5	7.050	7.657	-1.34	+2.4	21.7	124.6
Mar. 13	12 25.14	+59 00.7	7.117	7.705	-1.37	+0.7	21.7	123.1
Mar. 23	12 11.39	+59 07.6	7.206	7.753	-1.34	-1.1	21.8	120.0

Comet 50P/Arend

Epoch = 2017 July 26.0 TT
T = 2016 Feb. 8.22388 TT
Peri. = 49.30895 e = 0.5299528
Node = 355.18151 2000.0 a = 4.0870417 AU
Incl. = 19.13275 n = 0.11928627
q = 1.9211025 AU P = 8.26 years

m1 = 12.8 + 5 log(Delta) + 10.0 log(r(t-60))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 09.88	+18 03.5	2.616	3.274	-0.39	+1.6	19.6	124.4
Jan. 17	11 05.99	+18 19.8	2.555	3.326	-0.60	+2.2	19.6	135.2
Jan. 27	10 59.94	+18 42.0	2.514	3.378	-0.78	+2.4	19.7	146.3
Feb. 6	10 52.13	+19 05.9	2.498	3.429	-0.89	+2.1	19.7	157.4
Feb. 16	10 43.19	+19 27.0	2.511	3.480	-0.93	+1.4	19.8	167.0
Feb. 26	10 33.86	+19 41.3	2.554	3.531	-0.89	+0.5	19.9	169.1
Mar. 8	10 24.95	+19 46.1	2.628	3.581	-0.78	-0.6	20.0	161.1
Mar. 18	10 17.18	+19 40.0	2.731	3.631	-0.62	-1.7	20.2	150.6
Mar. 28	10 11.03	+19 23.2	2.860	3.680	-0.42	-2.6	20.4	139.9
Apr. 7	10 06.79	+18 56.8	3.012	3.729	-0.23	-3.5	20.5	129.5
Apr. 17	10 04.51	+18 22.1	3.180	3.778	-0.04	-4.2	20.7	119.6
Apr. 27	10 04.11	+17 40.6	3.362	3.826	+0.13	-4.7	20.9	110.1
May 7	10 05.43	+16 53.4	3.552	3.874	+0.28	-5.2	21.1	101.0
May 17	10 08.27	+16 01.7	3.747	3.921	+0.41	-5.6	21.3	92.3
May 27	10 12.39	+15 06.1	3.944	3.967	+0.52	-5.9	21.4	84.0
June 6	10 17.60	+14 07.2	4.137	4.013	+0.61	-6.2	21.6	75.9
June 16	10 23.70	+13 05.5	4.326	4.059	+0.68	-6.4	21.8	68.1
June 26	10 30.53	+12 01.5	4.508	4.104	+0.74	-6.6	21.9	60.5
July 6	10 37.95	+10 55.4	4.679	4.149	+0.79	-6.8	22.0	53.1
July 16	10 45.81	+09 47.6	4.838	4.193	+0.82	-6.9	22.2	45.8
July 26	10 54.03	+08 38.3	4.983	4.237	+0.85	-7.0	22.3	38.5
Aug. 5	11 02.50	+07 28.0	5.113	4.280	+0.86	-7.1	22.4	31.4
Aug. 15	11 11.15	+06 17.0	5.226	4.322	+0.87	-7.1	22.5	24.2
Aug. 25	11 19.89	+05 05.5	5.321	4.365	+0.88	-7.2	22.6	17.0
Sept. 4	11 28.66	+03 53.9	5.396	4.406	+0.87	-7.1	22.6	9.9
Sept.14	11 37.38	+02 42.7	5.452	4.447	+0.86	-7.1	22.7	2.6
Sept.24	11 46.00	+01 32.1	5.487	4.488	+0.84	-6.9	22.8	4.7
Oct. 4	11 54.43	+00 22.6	5.501	4.528	+0.82	-6.8	22.8	12.1
Oct. 14	12 02.62	-00 45.3	5.494	4.568	+0.79	-6.6	22.9	19.7
Oct. 24	12 10.48	-01 51.2	5.467	4.607	+0.74	-6.3	22.9	27.4
Nov. 3	12 17.92	-02 54.7	5.420	4.645	+0.69	-6.0	22.9	35.3
Nov. 13	12 24.85	-03 55.2	5.354	4.683	+0.63	-5.7	22.9	43.3
Nov. 23	12 31.17	-04 52.2	5.271	4.721	+0.56	-5.3	22.9	51.6
Dec. 3	12 36.75	-05 45.0	5.172	4.758	+0.47	-4.8	22.9	60.1
Dec. 13	12 41.48	-06 33.3	5.061	4.795	+0.38	-4.3	22.9	68.8
Dec. 23	12 45.23	-07 16.2	4.941	4.831	+0.26	-3.7	22.9	77.9
Jan. 2	12 47.87	-07 53.1	4.814	4.866	+0.14	-3.0	22.9	87.2
Jan. 12	12 49.29	-08 23.4	4.686	4.901	+0.01	-2.3	22.9	96.9
Jan. 22	12 49.38	-08 46.5	4.560	4.936	-0.13	-1.5	22.8	106.9
Feb. 1	12 48.10	-09 01.7	4.442	4.970	-0.27	-0.7	22.8	117.2
Feb. 11	12 45.45	-09 08.8	4.337	5.004	-0.39	+0.1	22.8	127.8
Feb. 21	12 41.50	-09 07.7	4.251	5.037	-0.50	+0.9	22.8	138.8
Mar. 3	12 36.46	-08 58.6	4.188	5.069	-0.59	+1.6	22.8	149.9
Mar. 13	12 30.59	-08 42.7	4.152	5.102	-0.64	+2.1	22.8	161.0
Mar. 23	12 24.23	-08 21.2	4.146	5.133	-0.64	+2.5	22.8	171.4

Comet C/2016 C1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 Feb. 19.30293 TT
Peri. = 328.73945
Node = 181.78024 2000.0
Incl. = 56.17852
q = 8.4626006 AU
e = 1.0051486

m1 = 0.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 44.09	-10 43.8	8.358	8.675	-0.01	+1.7	18.7	105.6
Jan. 17	11 44.01	-10 26.8	8.216	8.688	-0.08	+2.3	18.7	115.8
Jan. 27	11 43.24	-10 03.5	8.086	8.702	-0.14	+3.0	18.6	126.0
Feb. 6	11 41.84	-09 33.8	7.975	8.716	-0.19	+3.6	18.6	136.4
Feb. 16	11 39.90	-08 58.2	7.886	8.730	-0.23	+4.1	18.6	146.8
Feb. 26	11 37.56	-08 17.1	7.824	8.745	-0.26	+4.5	18.6	157.1
Mar. 8	11 34.96	-07 31.7	7.792	8.760	-0.27	+4.9	18.6	166.4
Mar. 18	11 32.28	-06 43.2	7.791	8.775	-0.26	+5.0	18.6	171.0
Mar. 28	11 29.69	-05 53.0	7.821	8.791	-0.23	+5.0	18.6	165.5
Apr. 7	11 27.35	-05 02.7	7.882	8.807	-0.19	+4.9	18.7	156.1
Apr. 17	11 25.40	-04 13.9	7.972	8.823	-0.14	+4.6	18.7	146.1
Apr. 27	11 23.95	-03 27.7	8.089	8.840	-0.09	+4.2	18.7	136.0
May 7	11 23.09	-02 45.4	8.227	8.857	-0.02	+3.8	18.8	126.0
May 17	11 22.87	-02 07.6	8.383	8.875	+0.04	+3.3	18.8	116.1
May 27	11 23.31	-01 34.8	8.552	8.892	+0.11	+2.7	18.9	106.5
June 6	11 24.41	-01 07.4	8.730	8.911	+0.17	+2.2	19.0	97.0
June 16	11 26.13	-00 45.4	8.912	8.929	+0.23	+1.7	19.0	87.7
June 26	11 28.45	-00 28.4	9.093	8.948	+0.29	+1.2	19.1	78.6
July 6	11 31.31	-00 16.4	9.270	8.967	+0.33	+0.8	19.1	69.7
July 16	11 34.65	-00 08.8	9.438	8.987	+0.38	+0.4	19.2	60.8
July 26	11 38.42	-00 05.2	9.594	9.006	+0.41	0.0	19.2	52.1
Aug. 5	11 42.56	-00 05.1	9.735	9.026	+0.44	-0.3	19.3	43.5
Aug. 15	11 47.00	-00 07.9	9.858	9.047	+0.47	-0.5	19.3	35.0
Aug. 25	11 51.68	-00 13.1	9.962	9.068	+0.49	-0.7	19.4	26.4
Sept. 4	11 56.55	-00 20.1	10.043	9.089	+0.50	-0.8	19.4	17.9
Sept.14	12 01.52	-00 28.3	10.101	9.110	+0.50	-0.9	19.4	9.4
Sept.24	12 06.55	-00 37.1	10.135	9.132	+0.50	-0.9	19.4	0.9
Oct. 4	12 11.57	-00 45.9	10.144	9.154	+0.49	-0.8	19.5	7.8
Oct. 14	12 16.51	-00 54.1	10.128	9.176	+0.48	-0.7	19.5	16.5
Oct. 24	12 21.31	-01 01.0	10.089	9.199	+0.46	-0.5	19.5	25.3
Nov. 3	12 25.89	-01 06.0	10.026	9.222	+0.43	-0.3	19.5	34.2
Nov. 13	12 30.20	-01 08.6	9.941	9.245	+0.40	0.0	19.5	43.2
Nov. 23	12 34.15	-01 08.2	9.838	9.268	+0.35	+0.4	19.5	52.4
Dec. 3	12 37.68	-01 04.1	9.718	9.292	+0.30	+0.8	19.5	61.7
Dec. 13	12 40.72	-00 56.0	9.586	9.316	+0.25	+1.3	19.4	71.2
Dec. 23	12 43.21	-00 43.3	9.445	9.340	+0.19	+1.8	19.4	80.9
Jan. 2	12 45.09	-00 25.7	9.300	9.365	+0.12	+2.3	19.4	90.7
Jan. 12	12 46.34	-00 03.1	9.156	9.390	+0.06	+2.8	19.4	100.8
Jan. 22	12 46.92	+00 24.5	9.018	9.415	-0.01	+3.2	19.4	110.9
Feb. 1	12 46.83	+00 56.8	8.892	9.441	-0.07	+3.7	19.4	121.3
Feb. 11	12 46.10	+01 33.5	8.781	9.466	-0.13	+4.0	19.4	131.7
Feb. 21	12 44.79	+02 13.7	8.692	9.492	-0.18	+4.3	19.4	142.2
Mar. 3	12 42.98	+02 56.5	8.628	9.518	-0.22	+4.4	19.4	152.6
Mar. 13	12 40.78	+03 40.7	8.592	9.545	-0.25	+4.4	19.4	162.6
Mar. 23	12 38.32	+04 25.0	8.587	9.572	-0.26	+4.3	19.4	170.7

Comet C/2014 W2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 Mar. 10.45378 TT
Peri. = 85.02480
Node = 69.96050 2000.0
Incl. = 82.00814
q = 2.6708272 AU
e = 0.9979672

m1 = 6.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 01.80	-03 08.0	4.791	4.050	+0.64	-5.2	16.3	37.0
Jan. 17	17 08.20	-03 59.8	4.771	4.120	+0.56	-4.6	16.3	44.0
Jan. 27	17 13.79	-04 45.3	4.732	4.191	+0.46	-4.0	16.4	51.6
Feb. 6	17 18.41	-05 25.8	4.675	4.263	+0.35	-3.6	16.4	59.7
Feb. 16	17 21.91	-06 02.2	4.603	4.335	+0.22	-3.4	16.5	68.2
Feb. 26	17 24.16	-06 35.8	4.520	4.408	+0.08	-3.2	16.5	77.2
Mar. 8	17 25.00	-07 07.8	4.429	4.481	-0.07	-3.1	16.5	86.5
Mar. 18	17 24.30	-07 39.2	4.336	4.554	-0.23	-3.2	16.6	96.3
Mar. 28	17 21.98	-08 11.2	4.245	4.627	-0.40	-3.3	16.6	106.4
Apr. 7	17 17.98	-08 44.6	4.162	4.701	-0.56	-3.6	16.6	116.9
Apr. 17	17 12.34	-09 20.3	4.093	4.774	-0.71	-3.8	16.6	127.7
Apr. 27	17 05.21	-09 58.5	4.045	4.848	-0.84	-4.1	16.7	138.8
May 7	16 56.84	-10 39.5	4.022	4.922	-0.92	-4.3	16.7	150.0
May 17	16 47.59	-11 22.8	4.030	4.996	-0.97	-4.5	16.8	160.8
May 27	16 37.92	-12 08.1	4.071	5.070	-0.96	-4.7	16.9	169.4
June 6	16 28.31	-12 54.6	4.147	5.145	-0.91	-4.7	17.0	168.3
June 16	16 19.25	-13 41.7	4.257	5.219	-0.81	-4.7	17.1	159.1
June 26	16 11.11	-14 29.1	4.399	5.293	-0.69	-4.7	17.3	148.6
July 6	16 04.20	-15 16.4	4.570	5.368	-0.55	-4.7	17.4	137.9
July 16	15 58.68	-16 03.5	4.765	5.442	-0.41	-4.7	17.5	127.3
July 26	15 54.62	-16 50.4	4.979	5.516	-0.26	-4.7	17.7	117.1
Aug. 5	15 52.01	-17 37.0	5.208	5.590	-0.12	-4.6	17.9	107.1
Aug. 15	15 50.79	-18 23.4	5.445	5.665	0.00	-4.6	18.0	97.4
Aug. 25	15 50.84	-19 09.7	5.686	5.739	+0.12	-4.6	18.2	87.9
Sept. 4	15 52.04	-19 55.7	5.926	5.813	+0.22	-4.6	18.3	78.7
Sept. 14	15 54.26	-20 41.4	6.160	5.887	+0.31	-4.5	18.4	69.7
Sept. 24	15 57.36	-21 26.7	6.386	5.961	+0.39	-4.5	18.6	60.8
Oct. 4	16 01.23	-22 11.6	6.599	6.035	+0.45	-4.4	18.7	52.0
Oct. 14	16 05.72	-22 55.9	6.796	6.108	+0.50	-4.4	18.8	43.3
Oct. 24	16 10.73	-23 39.6	6.974	6.182	+0.54	-4.3	18.9	34.7
Nov. 3	16 16.13	-24 22.6	7.131	6.256	+0.57	-4.2	19.0	26.1
Nov. 13	16 21.82	-25 04.8	7.265	6.329	+0.59	-4.2	19.1	17.6
Nov. 23	16 27.67	-25 46.4	7.374	6.402	+0.59	-4.1	19.2	9.5
Dec. 3	16 33.59	-26 27.3	7.458	6.476	+0.59	-4.0	19.3	4.5
Dec. 13	16 39.44	-27 07.5	7.516	6.549	+0.57	-4.0	19.3	10.1
Dec. 23	16 45.13	-27 47.3	7.547	6.622	+0.54	-3.9	19.4	18.5
Jan. 2	16 50.52	-28 26.8	7.554	6.694	+0.50	-3.9	19.4	27.2
Jan. 12	16 55.51	-29 06.0	7.537	6.767	+0.45	-3.9	19.5	36.1
Jan. 22	16 59.98	-29 45.4	7.498	6.840	+0.38	-4.0	19.5	45.2
Feb. 1	17 03.78	-30 24.9	7.439	6.912	+0.30	-4.0	19.6	54.4
Feb. 11	17 06.82	-31 04.8	7.365	6.984	+0.21	-4.0	19.6	63.7
Feb. 21	17 08.97	-31 45.1	7.278	7.057	+0.11	-4.1	19.6	73.2
Mar. 3	17 10.11	-32 25.7	7.184	7.129	0.00	-4.1	19.6	82.9
Mar. 13	17 10.16	-33 06.5	7.086	7.200	-0.11	-4.0	19.6	92.6
Mar. 23	17 09.04	-33 46.9	6.990	7.272	-0.23	-4.0	19.6	102.6

Comet 190P/Mueller

Epoch = 2017 July 26.0 TT
T = 2016 Apr. 7.78116 TT
Peri. = 50.41294 e = 0.5204892
Node = 335.54722 2000.0 a = 4.2403696 AU
Incl. = 2.17267 n = 0.11287519
q = 2.0333030 AU P = 8.73 years

m1 = 13.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	07 49.73	+23 17.8	2.016	2.992	-0.91	+1.7	20.1	171.3
Jan. 17	07 40.62	+23 34.7	2.061	3.042	-0.84	+1.2	20.2	175.6
Jan. 27	07 32.19	+23 46.7	2.135	3.093	-0.69	+0.6	20.4	163.9
Feb. 6	07 25.29	+23 52.9	2.238	3.144	-0.48	+0.1	20.5	152.2
Feb. 16	07 20.49	+23 53.6	2.366	3.195	-0.25	-0.4	20.7	141.0
Feb. 26	07 18.02	+23 49.5	2.515	3.246	-0.01	-0.8	20.9	130.4
Mar. 8	07 17.90	+23 41.4	2.681	3.296	+0.21	-1.2	21.1	120.4
Mar. 18	07 19.97	+23 29.7	2.860	3.347	+0.40	-1.5	21.3	110.9
Mar. 28	07 23.97	+23 14.8	3.047	3.397	+0.57	-1.8	21.5	102.0
Apr. 7	07 29.64	+22 56.7	3.239	3.447	+0.71	-2.1	21.7	93.4
Apr. 17	07 36.70	+22 35.3	3.433	3.497	+0.82	-2.5	21.9	85.3
Apr. 27	07 44.89	+22 10.5	3.626	3.546	+0.91	-2.8	22.1	77.5
May 7	07 53.99	+21 42.3	3.815	3.596	+0.98	-3.2	22.3	69.9
May 17	08 03.79	+21 10.5	3.997	3.645	+1.03	-3.5	22.4	62.6
May 27	08 14.14	+20 35.2	4.172	3.693	+1.07	-3.9	22.6	55.5
June 6	08 24.87	+19 56.4	4.336	3.741	+1.10	-4.2	22.7	48.5
June 16	08 35.88	+19 14.4	4.488	3.789	+1.12	-4.5	22.8	41.6
June 26	08 47.04	+18 29.3	4.627	3.837	+1.12	-4.8	23.0	34.8
July 6	08 58.28	+17 41.3	4.751	3.884	+1.12	-5.0	.	28.1
July 16	09 09.51	+16 50.9	4.859	3.930	+1.12	-5.3	.	21.3
July 26	09 20.67	+15 58.3	4.951	3.976	+1.10	-5.4	.	14.6
Aug. 5	09 31.68	+15 04.0	5.025	4.022	+1.08	-5.6	.	7.9
Aug. 15	09 42.50	+14 08.5	5.080	4.068	+1.06	-5.6	.	1.1
Aug. 25	09 53.06	+13 12.2	5.117	4.113	+1.02	-5.6	.	5.9
Sept. 4	10 03.30	+12 15.7	5.134	4.157	+0.99	-5.6	.	12.9
Sept.14	10 13.17	+11 19.6	5.133	4.201	+0.94	-5.5	.	20.0
Sept.24	10 22.60	+10 24.5	5.112	4.245	+0.89	-5.3	.	27.3
Oct. 4	10 31.52	+09 31.1	5.073	4.288	+0.83	-5.1	.	34.7
Oct. 14	10 39.86	+08 40.1	5.016	4.331	+0.77	-4.8	.	42.4
Oct. 24	10 47.53	+07 52.3	4.942	4.373	+0.69	-4.4	.	50.2
Nov. 3	10 54.42	+07 08.5	4.854	4.415	+0.60	-3.9	.	58.4
Nov. 13	11 00.43	+06 29.7	4.753	4.456	+0.50	-3.3	.	66.8
Nov. 23	11 05.45	+05 56.7	4.642	4.497	+0.39	-2.6	.	75.5
Dec. 3	11 09.34	+05 30.3	4.524	4.538	+0.27	-1.9	.	84.6
Dec. 13	11 12.01	+05 11.6	4.403	4.578	+0.13	-1.0	.	94.0
Dec. 23	11 13.33	+05 01.1	4.283	4.618	-0.01	-0.2	.	103.8
Jan. 2	11 13.24	+04 59.5	4.170	4.657	-0.15	+0.7	.	114.0
Jan. 12	11 11.71	+05 06.9	4.067	4.695	-0.29	+1.6	.	124.6
Jan. 22	11 08.77	+05 23.0	3.981	4.733	-0.42	+2.4	.	135.5
Feb. 1	11 04.57	+05 46.8	3.916	4.771	-0.52	+3.0	.	146.8
Feb. 11	10 59.35	+06 16.8	3.877	4.809	-0.59	+3.4	.	158.3
Feb. 21	10 53.44	+06 50.9	3.868	4.845	-0.62	+3.5	.	170.0
Mar. 3	10 47.26	+07 26.3	3.891	4.882	-0.60	+3.4	.	178.3
Mar. 13	10 41.23	+08 00.6	3.945	4.918	-0.55	+3.1	.	166.7
Mar. 23	10 35.76	+08 31.4	4.030	4.953	-0.46	+2.5	.	155.3

Comet C/2013 X1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 Apr. 20.69639 TT
Peri. = 164.91619
Node = 131.34770 2000.0
Incl. = 163.20955
q = 1.3167580 AU
e = 1.0013865

m1 = 6.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	15 07.14	-32 54.4	4.116	3.635	-0.12	-3.6	17.5	54.5
Jan. 17	15 05.98	-33 30.8	4.055	3.737	-0.31	-3.4	17.6	64.4
Jan. 27	15 02.91	-34 04.7	3.979	3.838	-0.53	-2.9	17.8	74.7
Feb. 6	14 57.65	-34 34.1	3.894	3.938	-0.77	-2.2	17.9	85.3
Feb. 16	14 50.00	-34 56.1	3.808	4.038	-1.01	-1.1	18.0	96.3
Feb. 26	14 39.86	-35 07.2	3.727	4.137	-1.25	+0.4	18.1	107.7
Mar. 8	14 27.32	-35 03.5	3.659	4.236	-1.46	+2.2	18.2	119.4
Mar. 18	14 12.75	-34 41.2	3.614	4.334	-1.59	+4.3	18.3	131.1
Mar. 28	13 56.81	-33 58.0	3.597	4.431	-1.64	+6.4	18.5	142.5
Apr. 7	13 40.36	-32 53.5	3.617	4.528	-1.60	+8.3	18.6	152.4
Apr. 17	13 24.36	-31 30.9	3.675	4.624	-1.47	+9.5	18.8	158.6
Apr. 27	13 09.64	-29 55.4	3.774	4.719	-1.28	+10.1	19.0	157.5
May 7	12 56.80	-28 14.0	3.912	4.814	-1.06	+10.1	19.2	150.3
May 17	12 46.17	-26 33.3	4.085	4.909	-0.84	+9.5	19.4	140.6
May 27	12 37.81	-24 58.8	4.288	5.002	-0.62	+8.5	19.6	130.2
June 6	12 31.63	-23 34.1	4.515	5.096	-0.42	+7.3	19.9	119.8
June 16	12 27.42	-22 21.5	4.759	5.188	-0.25	+6.0	20.1	109.5
June 26	12 24.94	-21 21.4	5.015	5.281	-0.10	+4.8	20.3	99.6
July 6	12 23.94	-20 33.9	5.276	5.372	+0.02	+3.6	20.6	89.9
July 16	12 24.18	-19 58.1	5.537	5.463	+0.13	+2.5	20.8	80.6
July 26	12 25.44	-19 32.9	5.792	5.554	+0.21	+1.5	21.0	71.5
Aug. 5	12 27.54	-19 17.5	6.038	5.644	+0.28	+0.7	21.2	62.6
Aug. 15	12 30.30	-19 10.4	6.271	5.733	+0.33	0.0	21.4	53.9
Aug. 25	12 33.58	-19 10.6	6.487	5.823	+0.37	-0.7	21.5	45.5
Sept. 4	12 37.25	-19 17.2	6.683	5.911	+0.39	-1.2	21.7	37.2
Sept. 14	12 41.17	-19 29.1	6.856	5.999	+0.41	-1.6	21.9	29.3
Sept. 24	12 45.24	-19 45.4	7.006	6.087	+0.41	-2.0	22.0	21.9
Oct. 4	12 49.36	-20 05.4	7.129	6.174	+0.40	-2.3	22.1	16.0
Oct. 14	12 53.40	-20 28.3	7.226	6.261	+0.39	-2.5	22.2	13.6
Oct. 24	12 57.29	-20 53.2	7.296	6.347	+0.36	-2.6	22.4	16.4
Nov. 3	13 00.89	-21 19.6	7.338	6.433	+0.32	-2.7	22.5	22.6
Nov. 13	13 04.11	-21 46.6	7.353	6.519	+0.27	-2.7	22.5	30.4
Nov. 23	13 06.84	-22 13.6	7.344	6.604	+0.21	-2.6	22.6	38.9
Dec. 3	13 08.96	-22 39.9	7.311	6.688	+0.14	-2.5	22.7	47.8
Dec. 13	13 10.36	-23 04.5	7.258	6.773	+0.06	-2.2	22.8	57.0
Dec. 23	13 10.93	-23 26.8	7.188	6.857	-0.04	-1.9	22.8	66.6
Jan. 2	13 10.57	-23 45.6	7.106	6.940	-0.14	-1.4	22.9	76.3
Jan. 12	13 09.21	-24 00.1	7.017	7.023	-0.24	-0.9	22.9	86.4
Jan. 22	13 06.78	-24 09.2	6.925	7.106	-0.35	-0.3	23.0	96.6
Feb. 1	13 03.29	-24 11.8	6.837	7.188	-0.45	+0.5	23.0	107.1
Feb. 11	12 58.76	-24 07.1	6.760	7.270	-0.55	+1.3	.	117.7
Feb. 21	12 53.31	-23 54.2	6.698	7.352	-0.62	+2.1	.	128.3
Mar. 3	12 47.09	-23 32.9	6.659	7.433	-0.68	+3.0	.	138.8
Mar. 13	12 40.34	-23 03.2	6.646	7.514	-0.70	+3.7	.	148.8
Mar. 23	12 33.32	-22 25.9	6.665	7.595	-0.70	+4.4	.	157.5

Comet 53P/Van Biesbroeck

Epoch = 2017 July 26.0 TT
T = 2016 Apr. 30.02249 TT
Peri. = 134.21504 e = 0.5519683
Node = 148.91889 2000.0 a = 5.4171747 AU
Incl. = 6.60765 n = 0.07817085
q = 2.4270660 AU P = 12.61 years

m1 = 8.0 + 5 log(Delta) + 12.5 log(r(t-50))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	22 38.97	-10 51.8	3.658	3.128	+1.35	+7.4	16.6	50.6
Jan. 17	22 52.51	-09 37.9	3.807	3.174	+1.36	+7.7	16.8	44.0
Jan. 27	23 06.09	-08 21.3	3.946	3.220	+1.36	+7.8	16.9	37.4
Feb. 6	23 19.67	-07 03.0	4.073	3.267	+1.35	+7.9	17.1	30.9
Feb. 16	23 33.18	-05 43.7	4.188	3.314	+1.34	+7.9	17.2	24.4
Feb. 26	23 46.57	-04 24.3	4.289	3.362	+1.32	+7.9	17.4	18.0
Mar. 8	23 59.81	-03 05.6	4.376	3.410	+1.30	+7.7	17.5	11.7
Mar. 18	00 12.84	-01 48.4	4.447	3.458	+1.28	+7.5	17.6	5.7
Mar. 28	00 25.64	-00 33.2	4.502	3.506	+1.25	+7.2	17.7	3.4
Apr. 7	00 38.17	+00 39.2	4.541	3.555	+1.22	+6.9	17.8	8.7
Apr. 17	00 50.36	+01 48.2	4.563	3.603	+1.18	+6.5	17.9	15.0
Apr. 27	01 02.20	+02 53.2	4.570	3.652	+1.14	+6.1	18.0	21.5
May 7	01 13.61	+03 53.8	4.560	3.701	+1.09	+5.6	18.0	28.2
May 17	01 24.55	+04 49.3	4.534	3.750	+1.04	+5.0	18.1	34.9
May 27	01 34.93	+05 39.4	4.494	3.799	+0.98	+4.4	18.1	41.8
June 6	01 44.69	+06 23.5	4.440	3.848	+0.90	+3.8	18.2	48.8
June 16	01 53.73	+07 01.2	4.372	3.897	+0.82	+3.1	18.2	56.0
June 26	02 01.94	+07 32.2	4.294	3.945	+0.73	+2.4	18.3	63.4
July 6	02 09.22	+07 56.1	4.206	3.994	+0.62	+1.6	18.3	71.1
July 16	02 15.44	+08 12.5	4.110	4.043	+0.50	+0.9	18.3	79.1
July 26	02 20.48	+08 21.3	4.010	4.091	+0.37	+0.1	18.3	87.4
Aug. 5	02 24.21	+08 22.0	3.909	4.140	+0.23	-0.7	18.3	96.0
Aug. 15	02 26.50	+08 14.8	3.809	4.188	+0.08	-1.5	18.4	105.0
Aug. 25	02 27.29	+07 59.7	3.716	4.236	-0.08	-2.3	18.4	114.5
Sept. 4	02 26.52	+07 37.1	3.633	4.284	-0.23	-2.9	18.4	124.4
Sept. 14	02 24.23	+07 08.0	3.565	4.331	-0.37	-3.4	18.4	134.6
Sept. 24	02 20.56	+06 33.6	3.517	4.379	-0.48	-3.8	18.4	145.2
Oct. 4	02 15.75	+05 55.9	3.494	4.426	-0.56	-3.9	18.5	156.0
Oct. 14	02 10.14	+05 17.2	3.498	4.473	-0.60	-3.7	18.6	166.3
Oct. 24	02 04.16	+04 40.1	3.531	4.520	-0.59	-3.3	18.6	172.5
Nov. 3	01 58.27	+04 07.3	3.596	4.566	-0.54	-2.6	18.7	166.3
Nov. 13	01 52.91	+03 41.1	3.691	4.612	-0.45	-1.8	18.9	155.9
Nov. 23	01 48.44	+03 22.9	3.814	4.658	-0.33	-0.9	19.0	145.1
Dec. 3	01 45.13	+03 13.7	3.962	4.704	-0.20	0.0	19.1	134.4
Dec. 13	01 43.12	+03 13.5	4.130	4.750	-0.06	+0.9	19.3	123.9
Dec. 23	01 42.48	+03 22.1	4.314	4.795	+0.07	+1.7	19.4	113.7
Jan. 2	01 43.18	+03 38.7	4.509	4.840	+0.20	+2.3	19.6	103.9
Jan. 12	01 45.14	+04 02.1	4.710	4.884	+0.31	+2.9	19.7	94.3
Jan. 22	01 48.26	+04 31.2	4.914	4.929	+0.41	+3.4	19.9	85.1
Feb. 1	01 52.40	+05 05.1	5.115	4.973	+0.50	+3.7	20.0	76.2
Feb. 11	01 57.44	+05 42.5	5.311	5.017	+0.58	+4.0	20.1	67.5
Feb. 21	02 03.25	+06 22.5	5.497	5.060	+0.65	+4.2	20.3	59.0
Mar. 3	02 09.71	+07 04.1	5.672	5.103	+0.70	+4.2	20.4	50.8
Mar. 13	02 16.70	+07 46.6	5.832	5.146	+0.74	+4.2	20.5	42.7
Mar. 23	02 24.12	+08 29.1	5.975	5.189	+0.77	+4.2	20.6	34.9

Comet 302P/Lemmon-PANSTARRS

Epoch = 2017 July 26.0 TT
T = 2016 Apr. 30.28331 TT
Peri. = 208.23687 e = 0.2286993
Node = 121.77212 2000.0 a = 4.2806945 AU
Incl. = 6.03050 n = 0.11128400
q = 3.3017027 AU P = 8.86 years

m1 = 6.2 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 03.08	-05 37.6	3.663	3.485	+0.90	+6.8	19.9	71.9
Jan. 17	00 12.12	-04 29.2	3.812	3.499	+0.98	+7.2	20.0	64.3
Jan. 27	00 21.92	-03 16.9	3.953	3.513	+1.04	+7.5	20.1	56.9
Feb. 6	00 32.36	-02 02.0	4.085	3.528	+1.10	+7.7	20.2	49.7
Feb. 16	00 43.32	-00 45.3	4.206	3.543	+1.14	+7.8	20.3	42.6
Feb. 26	00 54.72	+00 32.3	4.314	3.558	+1.17	+7.8	20.4	35.7
Mar. 8	01 06.45	+01 50.0	4.409	3.573	+1.20	+7.7	20.5	29.0
Mar. 18	01 18.45	+03 06.9	4.489	3.589	+1.22	+7.5	20.6	22.4
Mar. 28	01 30.64	+04 22.3	4.554	3.606	+1.23	+7.3	20.6	16.0
Apr. 7	01 42.98	+05 35.7	4.604	3.622	+1.24	+7.1	20.7	10.0
Apr. 17	01 55.38	+06 46.3	4.637	3.639	+1.24	+6.7	20.8	5.2
Apr. 27	02 07.81	+07 53.6	4.655	3.656	+1.24	+6.4	20.8	6.3
May 7	02 20.20	+08 57.1	4.656	3.673	+1.23	+5.9	20.8	11.6
May 17	02 32.47	+09 56.4	4.641	3.691	+1.21	+5.5	20.9	17.7
May 27	02 44.59	+10 51.1	4.610	3.708	+1.19	+5.0	20.9	24.1
June 6	02 56.45	+11 40.9	4.565	3.726	+1.15	+4.4	20.9	30.5
June 16	03 07.99	+12 25.4	4.505	3.744	+1.11	+3.9	20.9	37.1
June 26	03 19.11	+13 04.4	4.431	3.763	+1.06	+3.3	20.9	43.8
July 6	03 29.71	+13 37.9	4.344	3.781	+1.00	+2.8	20.9	50.6
July 16	03 39.68	+14 05.7	4.246	3.800	+0.92	+2.2	20.9	57.6
July 26	03 48.89	+14 27.7	4.137	3.818	+0.83	+1.6	20.9	64.9
Aug. 5	03 57.18	+14 44.1	4.021	3.837	+0.72	+1.1	20.9	72.4
Aug. 15	04 04.42	+14 55.0	3.898	3.856	+0.60	+0.5	20.9	80.2
Aug. 25	04 10.44	+15 00.4	3.771	3.875	+0.46	0.0	20.8	88.3
Sept. 4	04 15.06	+15 00.8	3.644	3.894	+0.31	-0.4	20.8	96.8
Sept. 14	04 18.13	+14 56.4	3.519	3.914	+0.14	-0.9	20.8	105.7
Sept. 24	04 19.51	+14 47.6	3.401	3.933	-0.04	-1.3	20.8	115.1
Oct. 4	04 19.12	+14 35.1	3.293	3.952	-0.22	-1.6	20.7	125.0
Oct. 14	04 16.95	+14 19.4	3.201	3.972	-0.38	-1.8	20.7	135.3
Oct. 24	04 13.13	+14 01.6	3.128	3.991	-0.52	-1.9	20.7	146.0
Nov. 3	04 07.90	+13 42.8	3.080	4.011	-0.62	-1.8	20.7	156.8
Nov. 13	04 01.69	+13 24.4	3.059	4.030	-0.67	-1.6	20.7	167.3
Nov. 23	03 55.00	+13 08.2	3.068	4.050	-0.66	-1.3	20.8	172.8
Dec. 3	03 48.42	+12 55.6	3.108	4.069	-0.59	-0.7	20.9	165.3
Dec. 13	03 42.51	+12 48.3	3.178	4.089	-0.48	-0.1	20.9	154.6
Dec. 23	03 37.72	+12 47.1	3.275	4.108	-0.33	+0.6	21.0	143.6
Jan. 2	03 34.39	+12 52.7	3.396	4.128	-0.17	+1.2	21.2	132.8
Jan. 12	03 32.68	+13 04.8	3.536	4.147	0.00	+1.8	21.3	122.4
Jan. 22	03 32.65	+13 23.2	3.692	4.167	+0.16	+2.4	21.4	112.4
Feb. 1	03 34.26	+13 46.9	3.857	4.186	+0.31	+2.8	21.6	102.7
Feb. 11	03 37.40	+14 15.0	4.028	4.205	+0.45	+3.1	21.7	93.5
Feb. 21	03 41.93	+14 46.4	4.201	4.225	+0.58	+3.4	21.8	84.6
Mar. 3	03 47.70	+15 19.9	4.372	4.244	+0.68	+3.5	22.0	76.1
Mar. 13	03 54.55	+15 54.7	4.537	4.263	+0.78	+3.5	22.1	67.8
Mar. 23	04 02.34	+16 29.7	4.695	4.282	+0.86	+3.4	22.2	59.9

Comet C/2015 D3 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 May 2.20526 TT
Peri. = 2.93653
Node = 156.98266 2000.0
Incl. = 128.51102
q = 8.1501333 AU
e = 1.0023891

m1 = 5.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	10 33.99	+25 20.4	7.574	8.288	-0.47	+7.3	19.2	134.0
Jan. 17	10 29.24	+26 33.3	7.479	8.299	-0.56	+7.4	19.2	144.5
Jan. 27	10 23.67	+27 46.9	7.414	8.310	-0.62	+7.2	19.1	154.0
Feb. 6	10 17.45	+28 58.9	7.384	8.322	-0.67	+6.8	19.1	161.0
Feb. 16	10 10.80	+30 07.0	7.389	8.335	-0.68	+6.2	19.2	162.1
Feb. 26	10 03.98	+31 09.1	7.431	8.348	-0.67	+5.5	19.2	156.4
Mar. 8	09 57.27	+32 03.8	7.506	8.361	-0.63	+4.6	19.2	147.6
Mar. 18	09 50.96	+32 50.2	7.612	8.374	-0.57	+3.8	19.2	137.6
Mar. 28	09 45.26	+33 28.1	7.745	8.388	-0.49	+3.0	19.3	127.4
Apr. 7	09 40.38	+33 57.8	7.899	8.403	-0.40	+2.2	19.3	117.1
Apr. 17	09 36.41	+34 20.1	8.068	8.417	-0.30	+1.6	19.4	107.1
Apr. 27	09 33.43	+34 36.0	8.247	8.433	-0.20	+1.1	19.4	97.2
May 7	09 31.46	+34 46.6	8.430	8.448	-0.10	+0.6	19.5	87.6
May 17	09 30.44	+34 53.0	8.612	8.464	-0.01	+0.3	19.6	78.2
May 27	09 30.33	+34 56.1	8.788	8.480	+0.07	+0.1	19.6	69.2
June 6	09 31.05	+34 57.0	8.953	8.497	+0.14	-0.1	19.7	60.4
June 16	09 32.50	+34 56.5	9.103	8.514	+0.21	-0.1	19.7	51.9
June 26	09 34.58	+34 55.3	9.236	8.532	+0.26	-0.1	19.7	43.8
July 6	09 37.19	+34 54.2	9.349	8.549	+0.30	0.0	19.8	36.2
July 16	09 40.24	+34 53.9	9.439	8.568	+0.34	+0.1	19.8	29.4
July 26	09 43.63	+34 54.9	9.505	8.586	+0.36	+0.3	19.8	23.9
Aug. 5	09 47.26	+34 57.9	9.546	8.605	+0.38	+0.6	19.8	20.8
Aug. 15	09 51.04	+35 03.6	9.561	8.624	+0.38	+0.9	19.9	21.1
Aug. 25	09 54.88	+35 12.4	9.551	8.644	+0.38	+1.3	19.9	24.8
Sept. 4	09 58.68	+35 25.2	9.516	8.664	+0.37	+1.7	19.9	30.6
Sept. 14	10 02.34	+35 42.4	9.458	8.684	+0.34	+2.2	19.9	37.7
Sept. 24	10 05.77	+36 04.8	9.378	8.705	+0.31	+2.8	19.9	45.5
Oct. 4	10 08.86	+36 32.9	9.279	8.726	+0.26	+3.4	19.8	53.8
Oct. 14	10 11.50	+37 07.2	9.164	8.747	+0.21	+4.1	19.8	62.4
Oct. 24	10 13.58	+37 48.2	9.036	8.769	+0.14	+4.8	19.8	71.4
Nov. 3	10 14.98	+38 36.1	8.901	8.791	+0.06	+5.5	19.8	80.5
Nov. 13	10 15.57	+39 30.9	8.762	8.813	-0.03	+6.1	19.8	89.8
Nov. 23	10 15.24	+40 32.2	8.625	8.836	-0.14	+6.7	19.7	99.2
Dec. 3	10 13.86	+41 39.4	8.496	8.859	-0.25	+7.2	19.7	108.6
Dec. 13	10 11.35	+42 51.1	8.379	8.882	-0.37	+7.5	19.7	117.9
Dec. 23	10 07.64	+44 05.7	8.282	8.906	-0.49	+7.5	19.7	126.8
Jan. 2	10 02.72	+45 20.8	8.207	8.930	-0.61	+7.3	19.7	135.0
Jan. 12	09 56.65	+46 34.0	8.161	8.954	-0.71	+6.9	19.7	141.8
Jan. 22	09 49.56	+47 42.6	8.144	8.979	-0.79	+6.1	19.7	146.2
Feb. 1	09 41.69	+48 44.1	8.159	9.003	-0.84	+5.2	19.7	147.2
Feb. 11	09 33.33	+49 36.5	8.206	9.029	-0.85	+4.2	19.7	144.6
Feb. 21	09 24.85	+50 18.6	8.284	9.054	-0.82	+3.1	19.8	139.0
Mar. 3	09 16.62	+50 49.9	8.389	9.080	-0.76	+2.1	19.8	131.8
Mar. 13	09 09.00	+51 10.8	8.519	9.106	-0.67	+1.2	19.8	123.5
Mar. 23	09 02.27	+51 22.3	8.669	9.132	-0.56	+0.4	19.9	114.8

Comet C/2015 B2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 May 6.59464 TT
Peri. = 284.76700
Node = 341.90517 2000.0
Incl. = 105.08043
q = 3.3693608 AU
e = 1.0008523

m1 = 8.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	23 14.02	-29 39.9	4.554	4.058	+0.19	+13.4	18.2	54.2
Jan. 17	23 15.92	-27 25.7	4.731	4.108	+0.28	+12.6	18.3	45.9
Jan. 27	23 18.73	-25 19.8	4.893	4.160	+0.35	+11.8	18.4	37.8
Feb. 6	23 22.20	-23 21.7	5.036	4.212	+0.39	+11.1	18.6	30.1
Feb. 16	23 26.11	-21 31.0	5.158	4.266	+0.42	+10.4	18.7	22.9
Feb. 26	23 30.27	-19 47.1	5.257	4.320	+0.43	+9.7	18.8	17.1
Mar. 8	23 34.52	-18 09.7	5.331	4.376	+0.42	+9.1	18.8	14.1
Mar. 18	23 38.71	-16 38.5	5.381	4.432	+0.40	+8.5	18.9	15.8
Mar. 28	23 42.73	-15 13.3	5.405	4.489	+0.37	+7.9	19.0	21.1
Apr. 7	23 46.43	-13 53.9	5.405	4.546	+0.33	+7.4	19.0	28.1
Apr. 17	23 49.69	-12 40.3	5.381	4.605	+0.27	+6.8	19.1	35.8
Apr. 27	23 52.38	-11 32.5	5.336	4.664	+0.20	+6.2	19.1	44.0
May 7	23 54.37	-10 30.5	5.270	4.724	+0.12	+5.6	19.2	52.5
May 17	23 55.54	-09 34.4	5.187	4.784	+0.02	+5.0	19.2	61.2
May 27	23 55.73	-08 44.3	5.091	4.845	-0.09	+4.4	19.2	70.3
June 6	23 54.81	-08 00.5	4.984	4.906	-0.22	+3.8	19.2	79.7
June 16	23 52.66	-07 22.9	4.872	4.968	-0.35	+3.1	19.2	89.4
June 26	23 49.14	-06 51.7	4.760	5.030	-0.50	+2.5	19.2	99.5
July 6	23 44.19	-06 26.9	4.654	5.092	-0.64	+1.9	19.2	110.0
July 16	23 37.78	-06 08.1	4.559	5.155	-0.78	+1.3	19.2	120.9
July 26	23 29.97	-05 55.1	4.482	5.219	-0.91	+0.8	19.2	132.2
Aug. 5	23 20.90	-05 47.1	4.430	5.282	-1.00	+0.4	19.3	143.8
Aug. 15	23 10.87	-05 43.1	4.407	5.346	-1.06	+0.1	19.3	155.6
Aug. 25	23 00.24	-05 41.8	4.418	5.410	-1.08	0.0	19.4	167.7
Sept. 4	22 49.47	-05 41.8	4.466	5.475	-1.04	0.0	19.4	178.3
Sept. 14	22 39.03	-05 41.6	4.552	5.539	-0.97	+0.2	19.5	167.7
Sept. 24	22 29.34	-05 40.1	4.674	5.604	-0.86	+0.4	19.6	155.8
Oct. 4	22 20.78	-05 36.2	4.829	5.669	-0.72	+0.7	19.8	144.0
Oct. 14	22 13.56	-05 29.0	5.013	5.734	-0.58	+1.1	19.9	132.5
Oct. 24	22 07.80	-05 18.1	5.220	5.800	-0.43	+1.5	20.0	121.3
Nov. 3	22 03.53	-05 03.2	5.444	5.865	-0.28	+1.9	20.2	110.5
Nov. 13	22 00.69	-04 44.3	5.679	5.931	-0.15	+2.3	20.3	99.9
Nov. 23	21 59.16	-04 21.2	5.919	5.996	-0.04	+2.7	20.4	89.7
Dec. 3	21 58.80	-03 54.0	6.159	6.062	+0.07	+3.1	20.6	79.8
Dec. 13	21 59.47	-03 22.9	6.393	6.128	+0.15	+3.5	20.7	70.1
Dec. 23	22 00.99	-02 48.1	6.617	6.194	+0.22	+3.8	20.8	60.6
Jan. 2	22 03.22	-02 09.8	6.826	6.260	+0.28	+4.2	20.9	51.4
Jan. 12	22 06.00	-01 28.2	7.018	6.326	+0.32	+4.5	21.0	42.4
Jan. 22	22 09.21	-00 43.6	7.188	6.393	+0.35	+4.7	21.1	33.7
Feb. 1	22 12.69	+00 03.8	7.335	6.459	+0.36	+5.0	21.2	25.4
Feb. 11	22 16.34	+00 53.7	7.457	6.525	+0.37	+5.2	21.3	17.9
Feb. 21	22 20.04	+01 45.6	7.553	6.591	+0.36	+5.4	21.4	12.5
Mar. 3	22 23.67	+02 39.4	7.623	6.658	+0.35	+5.5	21.4	12.3
Mar. 13	22 27.14	+03 34.5	7.666	6.724	+0.32	+5.6	21.5	17.3
Mar. 23	22 30.35	+04 30.7	7.684	6.790	+0.28	+5.7	21.5	24.6

Comet 77P/Longmore

Epoch = 2017 July 26.0 TT
T = 2016 May 13.71322 TT
Peri. = 196.75958 e = 0.3534423
Node = 14.80328 2000.0 a = 3.6164522 AU
Incl. = 24.34617 n = 0.14331115
q = 2.3382450 AU P = 6.88 years

m1 = 6.2 + 5 log(Delta) + 20.0 log(r(t-50))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	18 54.35	-40 56.1	3.699	2.787	+2.28	+1.8	17.5	18.9
Jan. 17	19 17.20	-40 37.8	3.712	2.819	+2.22	+2.6	17.6	21.4
Jan. 27	19 39.35	-40 12.1	3.713	2.851	+2.13	+3.2	17.7	25.0
Feb. 6	20 00.69	-39 40.5	3.703	2.884	+2.04	+3.6	17.8	29.4
Feb. 16	20 21.10	-39 04.8	3.681	2.917	+1.94	+3.8	17.8	34.2
Feb. 26	20 40.54	-38 26.4	3.648	2.950	+1.84	+3.9	17.9	39.4
Mar. 8	20 58.92	-37 47.3	3.604	2.984	+1.73	+3.8	18.0	44.9
Mar. 18	21 16.19	-37 09.2	3.550	3.018	+1.61	+3.5	18.1	50.6
Mar. 28	21 32.29	-36 33.8	3.486	3.052	+1.49	+3.1	18.1	56.6
Apr. 7	21 47.16	-36 02.9	3.413	3.086	+1.36	+2.5	18.2	62.8
Apr. 17	22 00.72	-35 38.1	3.332	3.120	+1.22	+1.7	18.2	69.2
Apr. 27	22 12.89	-35 21.1	3.246	3.154	+1.06	+0.8	18.3	75.8
May 7	22 23.53	-35 13.3	3.154	3.188	+0.90	-0.3	18.3	82.7
May 17	22 32.53	-35 15.8	3.061	3.222	+0.72	-1.4	18.3	89.9
May 27	22 39.70	-35 29.5	2.967	3.256	+0.51	-2.5	18.3	97.4
June 6	22 44.84	-35 54.6	2.876	3.290	+0.29	-3.6	18.4	105.2
June 16	22 47.76	-36 30.5	2.790	3.324	+0.05	-4.5	18.4	113.2
June 26	22 48.26	-37 15.5	2.714	3.358	-0.21	-5.1	18.4	121.5
July 6	22 46.21	-38 06.4	2.651	3.392	-0.46	-5.2	18.5	129.7
July 16	22 41.61	-38 58.7	2.604	3.425	-0.70	-4.8	18.5	137.8
July 26	22 34.64	-39 46.6	2.578	3.459	-0.89	-3.7	18.6	144.9
Aug. 5	22 25.75	-40 23.6	2.575	3.492	-1.01	-2.1	18.7	150.2
Aug. 15	22 15.67	-40 44.4	2.597	3.524	-1.04	-0.1	18.8	152.1
Aug. 25	22 05.29	-40 45.3	2.645	3.557	-0.97	+2.0	18.9	150.0
Sept. 4	21 55.55	-40 25.2	2.720	3.589	-0.83	+4.0	19.1	144.6
Sept.14	21 47.27	-39 45.4	2.818	3.621	-0.63	+5.6	19.2	137.3
Sept.24	21 40.98	-38 49.3	2.937	3.653	-0.40	+6.9	19.4	129.0
Oct. 4	21 36.96	-37 40.4	3.075	3.685	-0.17	+7.8	19.6	120.5
Oct. 14	21 35.24	-36 22.5	3.228	3.716	+0.04	+8.4	19.8	111.8
Oct. 24	21 35.68	-34 58.7	3.391	3.747	+0.24	+8.8	20.0	103.3
Nov. 3	21 38.07	-33 31.0	3.561	3.777	+0.41	+9.0	20.1	94.9
Nov. 13	21 42.13	-32 01.3	3.735	3.807	+0.55	+9.1	20.3	86.6
Nov. 23	21 47.62	-30 30.3	3.909	3.837	+0.67	+9.1	20.5	78.6
Dec. 3	21 54.28	-28 58.8	4.080	3.867	+0.76	+9.2	20.7	70.7
Dec. 13	22 01.89	-27 27.3	4.244	3.896	+0.84	+9.1	20.8	62.9
Dec. 23	22 10.26	-25 55.9	4.400	3.925	+0.90	+9.1	21.0	55.3
Jan. 2	22 19.22	-24 25.0	4.545	3.953	+0.94	+9.0	21.1	47.8
Jan. 12	22 28.61	-22 54.7	4.677	3.981	+0.97	+8.9	21.2	40.5
Jan. 22	22 38.32	-21 25.3	4.794	4.009	+0.99	+8.8	21.4	33.4
Feb. 1	22 48.23	-19 56.9	4.894	4.036	+1.00	+8.7	21.5	26.4
Feb. 11	22 58.24	-18 30.0	4.977	4.063	+1.00	+8.5	21.6	19.9
Feb. 21	23 08.29	-17 04.8	5.041	4.089	+1.00	+8.3	21.7	14.1
Mar. 3	23 18.28	-15 41.7	5.086	4.115	+0.99	+8.1	21.7	10.5
Mar. 13	23 28.14	-14 21.0	5.111	4.141	+0.97	+7.8	21.8	11.2
Mar. 23	23 37.82	-13 03.1	5.117	4.166	+0.94	+7.5	21.9	15.7

Comet C/2015 Y1 (LINEAR)

Epoch = 2017 July 26.0 TT
T = 2016 May 15.15111 TT
Peri. = 24.71379
Node = 135.77701 2000.0
Incl. = 71.21173
q = 2.5144921 AU
e = 0.9910549

m1 = 10.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 19.16	+38 34.8	3.800	3.525	+1.77	+2.3	19.2	66.5
Jan. 17	17 36.83	+38 58.1	3.846	3.595	+1.63	+3.4	19.3	68.0
Jan. 27	17 53.12	+39 31.8	3.891	3.665	+1.48	+4.4	19.4	69.6
Feb. 6	18 07.92	+40 15.3	3.934	3.736	+1.32	+5.2	19.5	71.3
Feb. 16	18 21.12	+41 07.8	3.974	3.808	+1.15	+6.0	19.6	73.2
Feb. 26	18 32.64	+42 08.0	4.012	3.881	+0.97	+6.6	19.7	75.3
Mar. 8	18 42.33	+43 14.5	4.046	3.954	+0.78	+7.1	19.8	77.6
Mar. 18	18 50.10	+44 25.3	4.077	4.028	+0.57	+7.3	19.9	80.1
Mar. 28	18 55.83	+45 38.4	4.105	4.102	+0.35	+7.3	20.0	82.8
Apr. 7	18 59.37	+46 51.3	4.129	4.176	+0.13	+6.9	20.1	85.7
Apr. 17	19 00.65	+48 00.8	4.152	4.251	-0.10	+6.3	20.2	88.8
Apr. 27	18 59.63	+49 03.7	4.175	4.326	-0.33	+5.3	20.3	91.9
May 7	18 56.34	+49 56.3	4.198	4.401	-0.54	+3.9	20.4	95.0
May 17	18 50.96	+50 34.8	4.224	4.477	-0.72	+2.1	20.4	98.0
May 27	18 43.79	+50 55.7	4.253	4.553	-0.85	0.0	20.5	100.8
June 6	18 35.32	+50 55.9	4.289	4.629	-0.92	-2.2	20.6	103.3
June 16	18 26.16	+50 33.6	4.333	4.705	-0.92	-4.5	20.7	105.3
June 26	18 16.96	+49 48.1	4.386	4.781	-0.86	-6.8	20.8	106.8
July 6	18 08.36	+48 40.3	4.451	4.857	-0.75	-8.8	20.9	107.7
July 16	18 00.89	+47 12.6	4.527	4.933	-0.60	-10.4	21.0	107.8
July 26	17 54.89	+45 28.3	4.616	5.009	-0.43	-11.7	21.1	107.1
Aug. 5	17 50.57	+43 31.4	4.719	5.085	-0.26	-12.5	21.2	105.5
Aug. 15	17 47.98	+41 26.0	4.834	5.161	-0.09	-13.0	21.3	103.2
Aug. 25	17 47.06	+39 16.2	4.962	5.238	+0.06	-13.1	21.5	100.3
Sept. 4	17 47.71	+37 05.6	5.102	5.314	+0.21	-12.8	21.6	96.7
Sept. 14	17 49.76	+34 57.6	5.250	5.390	+0.33	-12.3	21.7	92.5
Sept. 24	17 53.05	+32 54.5	5.407	5.466	+0.44	-11.6	21.8	88.0
Oct. 4	17 57.42	+30 58.6	5.570	5.542	+0.53	-10.7	22.0	83.2
Oct. 14	18 02.69	+29 11.5	5.735	5.617	+0.60	-9.7	22.1	78.2
Oct. 24	18 08.73	+27 34.2	5.902	5.693	+0.66	-8.7	22.2	73.1
Nov. 3	18 15.37	+26 07.6	6.066	5.769	+0.71	-7.6	22.3	68.0
Nov. 13	18 22.48	+24 52.0	6.226	5.844	+0.75	-6.4	22.4	63.0
Nov. 23	18 29.95	+23 47.8	6.380	5.919	+0.77	-5.3	22.5	58.2
Dec. 3	18 37.64	+22 54.8	6.524	5.994	+0.78	-4.2	22.7	53.7
Dec. 13	18 45.45	+22 12.9	6.658	6.070	+0.78	-3.1	22.7	49.8
Dec. 23	18 53.28	+21 41.8	6.778	6.144	+0.77	-2.1	22.8	46.6
Jan. 2	19 01.01	+21 21.0	6.884	6.219	+0.75	-1.1	22.9	44.4
Jan. 12	19 08.55	+21 10.0	6.973	6.294	+0.73	-0.2	23.0	43.3
Jan. 22	19 15.80	+21 08.1	7.047	6.368	+0.69	+0.7	.	43.5
Feb. 1	19 22.66	+21 14.7	7.103	6.443	+0.64	+1.4	.	44.9
Feb. 11	19 29.05	+21 28.8	7.142	6.517	+0.58	+2.1	.	47.6
Feb. 21	19 34.88	+21 49.6	7.165	6.591	+0.52	+2.7	.	51.2
Mar. 3	19 40.05	+22 16.2	7.172	6.665	+0.44	+3.1	.	55.8
Mar. 13	19 44.49	+22 47.4	7.164	6.738	+0.36	+3.5	.	61.0
Mar. 23	19 48.11	+23 22.2	7.144	6.812	+0.27	+3.7	.	66.7

Comet C/2011 KP36 (Spacewatch)

Epoch = 2017 July 26.0 TT
T = 2016 May 26.64936 TT
Peri. = 180.56690 e = 0.8729621
Node = 173.39689 2000.0 a = 38.4347671 AU
Incl. = 18.98518 n = 0.00413635
q = 4.8826721 AU P = 238.28 years

m1 = 3.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 45.99	-04 27.3	5.187	5.148	+0.55	+3.1	14.5	82.3
Jan. 17	00 51.49	-03 56.6	5.361	5.171	+0.63	+3.5	14.6	73.7
Jan. 27	00 57.78	-03 21.3	5.529	5.195	+0.70	+3.9	14.7	65.3
Feb. 6	01 04.75	-02 42.4	5.688	5.220	+0.75	+4.1	14.8	57.2
Feb. 16	01 12.29	-02 01.2	5.837	5.245	+0.80	+4.3	14.8	49.2
Feb. 26	01 20.31	-01 18.4	5.972	5.272	+0.84	+4.3	14.9	41.5
Mar. 8	01 28.73	-00 35.0	6.092	5.299	+0.87	+4.3	15.0	34.0
Mar. 18	01 37.44	+00 08.2	6.196	5.327	+0.89	+4.2	15.0	26.8
Mar. 28	01 46.38	+00 50.4	6.282	5.355	+0.91	+4.1	15.1	20.0
Apr. 7	01 55.47	+01 30.9	6.350	5.385	+0.92	+3.8	15.1	14.0
Apr. 17	02 04.64	+02 09.0	6.400	5.415	+0.92	+3.5	15.2	10.3
Apr. 27	02 13.80	+02 44.3	6.430	5.446	+0.91	+3.2	15.2	11.0
May 7	02 22.90	+03 16.1	6.442	5.477	+0.90	+2.8	15.2	15.7
May 17	02 31.86	+03 44.0	6.435	5.510	+0.88	+2.4	15.3	21.9
May 27	02 40.61	+04 07.6	6.411	5.542	+0.85	+1.9	15.3	28.6
June 6	02 49.08	+04 26.4	6.369	5.576	+0.81	+1.4	15.3	35.7
June 16	02 57.17	+04 40.1	6.312	5.610	+0.77	+0.8	15.3	42.9
June 26	03 04.83	+04 48.6	6.240	5.645	+0.71	+0.3	15.3	50.3
July 6	03 11.94	+04 51.4	6.155	5.680	+0.65	-0.3	15.3	57.9
July 16	03 18.44	+04 48.6	6.060	5.716	+0.58	-0.9	15.3	65.6
July 26	03 24.21	+04 40.0	5.956	5.752	+0.50	-1.4	15.3	73.6
Aug. 5	03 29.18	+04 25.8	5.847	5.789	+0.41	-2.0	15.3	81.7
Aug. 15	03 33.25	+04 06.0	5.735	5.826	+0.31	-2.5	15.2	90.1
Aug. 25	03 36.35	+03 41.1	5.624	5.864	+0.21	-2.9	15.2	98.8
Sept. 4	03 38.40	+03 11.7	5.518	5.902	+0.10	-3.3	15.2	107.7
Sept. 14	03 39.39	+02 38.5	5.420	5.941	-0.01	-3.6	15.2	116.7
Sept. 24	03 39.29	+02 02.6	5.336	5.981	-0.11	-3.7	15.2	126.0
Oct. 4	03 38.16	+01 25.5	5.268	6.020	-0.21	-3.7	15.2	135.3
Oct. 14	03 36.11	+00 48.6	5.222	6.060	-0.28	-3.5	15.2	144.4
Oct. 24	03 33.29	+00 13.7	5.200	6.101	-0.34	-3.1	15.2	152.8
Nov. 3	03 29.92	-00 17.4	5.205	6.142	-0.37	-2.6	15.3	159.1
Nov. 13	03 26.26	-00 43.1	5.239	6.183	-0.37	-1.9	15.3	161.1
Nov. 23	03 22.59	-01 02.2	5.302	6.225	-0.34	-1.1	15.4	157.3
Dec. 3	03 19.20	-01 13.6	5.394	6.267	-0.29	-0.4	15.4	150.0
Dec. 13	03 16.32	-01 17.2	5.512	6.309	-0.22	+0.4	15.5	141.2
Dec. 23	03 14.16	-01 13.1	5.654	6.352	-0.13	+1.1	15.6	131.8
Jan. 2	03 12.85	-01 01.7	5.816	6.395	-0.04	+1.8	15.7	122.2
Jan. 12	03 12.49	-00 44.1	5.994	6.439	+0.06	+2.3	15.8	112.7
Jan. 22	03 13.09	-00 21.1	6.183	6.482	+0.16	+2.7	15.9	103.4
Feb. 1	03 14.66	+00 06.0	6.379	6.526	+0.25	+3.0	16.0	94.2
Feb. 11	03 17.13	+00 36.2	6.578	6.570	+0.33	+3.2	16.1	85.3
Feb. 21	03 20.45	+01 08.4	6.775	6.615	+0.41	+3.3	16.2	76.5
Mar. 3	03 24.53	+01 41.7	6.967	6.660	+0.47	+3.3	16.2	68.0
Mar. 13	03 29.27	+02 15.0	7.150	6.705	+0.53	+3.3	16.3	59.8
Mar. 23	03 34.60	+02 47.8	7.321	6.750	+0.58	+3.1	16.4	51.8

Comet 341P/Gibbs

Epoch = 2017 July 26.0 TT
T = 2016 May 26.69700 TT
Peri. = 312.14850 e = 0.4138574
Node = 30.06393 2000.0 a = 4.2996854 AU
Incl. = 3.79348 n = 0.11054753
q = 2.5202288 AU P = 8.92 years

m1 = 10.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	01 20.06	+09 19.6	2.682	2.941	+0.84	+5.6	19.4	95.3
Jan. 17	01 28.45	+10 15.9	2.851	2.974	+0.96	+6.1	19.6	87.4
Jan. 27	01 38.06	+11 17.3	3.020	3.007	+1.06	+6.5	19.8	79.8
Feb. 6	01 48.70	+12 22.3	3.189	3.041	+1.15	+6.7	20.0	72.5
Feb. 16	02 00.21	+13 29.6	3.353	3.076	+1.22	+6.8	20.1	65.4
Feb. 26	02 12.43	+14 37.9	3.511	3.111	+1.28	+6.8	20.3	58.5
Mar. 8	02 25.25	+15 46.2	3.662	3.146	+1.33	+6.7	20.5	51.8
Mar. 18	02 38.57	+16 53.2	3.804	3.182	+1.37	+6.5	20.6	45.2
Mar. 28	02 52.30	+17 58.3	3.936	3.218	+1.41	+6.2	20.8	38.7
Apr. 7	03 06.35	+19 00.7	4.056	3.255	+1.43	+5.9	20.9	32.4
Apr. 17	03 20.65	+19 59.6	4.164	3.292	+1.45	+5.5	21.1	26.1
Apr. 27	03 35.12	+20 54.6	4.258	3.329	+1.46	+5.1	21.2	19.8
May 7	03 49.69	+21 45.2	4.338	3.366	+1.46	+4.6	21.3	13.7
May 17	04 04.30	+22 31.2	4.403	3.404	+1.46	+4.1	21.4	7.6
May 27	04 18.87	+23 12.3	4.453	3.441	+1.45	+3.6	21.5	2.1
June 6	04 33.33	+23 48.3	4.488	3.479	+1.43	+3.1	21.6	5.3
June 16	04 47.59	+24 19.5	4.506	3.516	+1.40	+2.6	21.7	11.4
June 26	05 01.59	+24 45.7	4.509	3.554	+1.36	+2.2	21.7	17.7
July 6	05 15.24	+25 07.3	4.496	3.592	+1.32	+1.7	21.8	24.1
July 16	05 28.43	+25 24.6	4.467	3.629	+1.27	+1.3	21.8	30.6
July 26	05 41.09	+25 38.0	4.423	3.667	+1.20	+1.0	21.9	37.3
Aug. 5	05 53.08	+25 48.0	4.365	3.705	+1.12	+0.7	21.9	44.1
Aug. 15	06 04.31	+25 55.3	4.293	3.742	+1.03	+0.5	22.0	51.2
Aug. 25	06 14.65	+26 00.6	4.208	3.780	+0.93	+0.4	22.0	58.5
Sept. 4	06 23.95	+26 04.6	4.113	3.817	+0.81	+0.4	22.0	66.1
Sept. 14	06 32.08	+26 08.2	4.009	3.854	+0.68	+0.4	22.0	74.0
Sept. 24	06 38.86	+26 12.3	3.898	3.891	+0.53	+0.5	22.0	82.2
Oct. 4	06 44.12	+26 17.5	3.784	3.928	+0.36	+0.7	22.0	90.8
Oct. 14	06 47.71	+26 24.5	3.670	3.965	+0.18	+0.9	22.0	99.9
Oct. 24	06 49.46	+26 33.7	3.559	4.001	-0.02	+1.2	22.0	109.4
Nov. 3	06 49.28	+26 45.2	3.456	4.037	-0.22	+1.3	22.0	119.4
Nov. 13	06 47.13	+26 58.6	3.367	4.073	-0.41	+1.4	22.0	129.9
Nov. 23	06 43.07	+27 12.9	3.296	4.109	-0.57	+1.4	22.0	140.9
Dec. 3	06 37.36	+27 26.7	3.248	4.145	-0.70	+1.2	22.0	152.2
Dec. 13	06 30.38	+27 38.7	3.227	4.180	-0.77	+0.9	22.1	163.6
Dec. 23	06 22.69	+27 47.3	3.236	4.215	-0.78	+0.5	22.1	174.1
Jan. 2	06 14.93	+27 51.8	3.276	4.250	-0.72	0.0	22.2	170.9
Jan. 12	06 07.74	+27 52.2	3.348	4.285	-0.61	-0.3	22.3	159.8
Jan. 22	06 01.68	+27 49.1	3.450	4.319	-0.45	-0.6	22.4	148.4
Feb. 1	05 57.15	+27 43.5	3.577	4.353	-0.28	-0.7	22.5	137.4
Feb. 11	05 54.37	+27 36.5	3.725	4.387	-0.10	-0.7	22.7	126.7
Feb. 21	05 53.41	+27 29.0	3.891	4.420	+0.08	-0.7	22.8	116.4
Mar. 3	05 54.23	+27 21.6	4.068	4.453	+0.25	-0.7	23.0	106.6
Mar. 13	05 56.70	+27 14.5	4.253	4.486	+0.40	-0.7	.	97.1
Mar. 23	06 00.66	+27 07.7	4.441	4.519	+0.53	-0.7	.	88.1

Comet 136P/Mueller

Epoch = 2017 July 26.0 TT
T = 2016 May 30.85891 TT
Peri. = 225.10464 e = 0.2911210
Node = 137.44259 2000.0 a = 4.2016877 AU
Incl. = 9.41593 n = 0.11443751
q = 2.9784882 AU P = 8.61 years

m1 = 4.2 + 5 log(Delta) + 25.0 log(r(t-160))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	02 09.82	+01 43.2	2.815	3.198	+0.49	+6.0	18.4	104.0
Jan. 17	02 14.74	+02 42.8	2.970	3.216	+0.65	+6.5	18.5	95.5
Jan. 27	02 21.20	+03 47.7	3.128	3.235	+0.78	+6.8	18.6	87.3
Feb. 6	02 29.01	+04 56.1	3.287	3.255	+0.90	+7.0	18.8	79.5
Feb. 16	02 37.99	+06 06.4	3.443	3.275	+1.00	+7.1	18.9	72.0
Feb. 26	02 47.98	+07 17.0	3.594	3.296	+1.08	+7.0	19.0	64.8
Mar. 8	02 58.82	+08 26.8	3.739	3.317	+1.16	+6.8	19.2	57.7
Mar. 18	03 10.38	+09 34.7	3.875	3.339	+1.22	+6.5	19.3	50.9
Mar. 28	03 22.56	+10 39.9	4.002	3.361	+1.27	+6.2	19.4	44.3
Apr. 7	03 35.23	+11 41.4	4.118	3.383	+1.31	+5.7	19.5	37.8
Apr. 17	03 48.31	+12 38.6	4.221	3.406	+1.34	+5.2	19.6	31.5
Apr. 27	04 01.71	+13 31.0	4.312	3.429	+1.36	+4.7	19.7	25.3
May 7	04 15.34	+14 18.2	4.388	3.452	+1.38	+4.2	19.8	19.3
May 17	04 29.12	+14 59.7	4.451	3.476	+1.39	+3.6	19.9	13.6
May 27	04 42.98	+15 35.4	4.498	3.500	+1.39	+3.0	20.0	8.7
June 6	04 56.84	+16 05.2	4.530	3.524	+1.38	+2.4	20.0	6.5
June 16	05 10.61	+16 28.8	4.547	3.548	+1.36	+1.8	20.1	9.3
June 26	05 24.22	+16 46.5	4.548	3.573	+1.34	+1.2	20.2	14.4
July 6	05 37.59	+16 58.4	4.534	3.598	+1.30	+0.6	20.2	20.3
July 16	05 50.61	+17 04.7	4.505	3.623	+1.26	+0.1	20.3	26.4
July 26	06 03.22	+17 05.7	4.460	3.648	+1.21	-0.4	20.3	32.8
Aug. 5	06 15.30	+17 02.0	4.401	3.673	+1.15	-0.8	20.4	39.3
Aug. 15	06 26.76	+16 54.0	4.328	3.698	+1.07	-1.2	20.4	46.0
Aug. 25	06 37.48	+16 42.4	4.243	3.723	+0.99	-1.4	20.4	53.0
Sept. 4	06 47.34	+16 27.9	4.146	3.749	+0.89	-1.6	20.4	60.2
Sept. 14	06 56.22	+16 11.5	4.039	3.774	+0.77	-1.7	20.5	67.7
Sept. 24	07 03.96	+15 54.1	3.924	3.800	+0.65	-1.7	20.5	75.5
Oct. 4	07 10.42	+15 36.7	3.803	3.825	+0.50	-1.6	20.5	83.7
Oct. 14	07 15.44	+15 20.5	3.680	3.851	+0.34	-1.4	20.5	92.3
Oct. 24	07 18.87	+15 06.6	3.557	3.876	+0.17	-1.0	20.5	101.3
Nov. 3	07 20.57	+14 56.2	3.438	3.902	-0.01	-0.6	20.5	110.8
Nov. 13	07 20.46	+14 50.3	3.329	3.927	-0.19	-0.1	20.5	120.7
Nov. 23	07 18.51	+14 49.7	3.233	3.953	-0.37	+0.5	20.5	131.1
Dec. 3	07 14.81	+14 55.0	3.155	3.978	-0.52	+1.1	20.5	141.9
Dec. 13	07 09.61	+15 06.1	3.101	4.003	-0.63	+1.6	20.6	153.0
Dec. 23	07 03.28	+15 22.5	3.074	4.029	-0.69	+2.1	20.6	164.0
Jan. 2	06 56.34	+15 43.3	3.077	4.054	-0.69	+2.4	20.7	172.6
Jan. 12	06 49.40	+16 07.2	3.111	4.079	-0.64	+2.6	20.8	168.3
Jan. 22	06 43.03	+16 32.9	3.176	4.104	-0.53	+2.6	20.9	157.8
Feb. 1	06 37.76	+16 59.2	3.269	4.129	-0.38	+2.6	21.0	146.7
Feb. 11	06 33.96	+17 25.2	3.388	4.154	-0.21	+2.5	21.2	135.9
Feb. 21	06 31.84	+17 50.0	3.527	4.178	-0.04	+2.3	21.4	125.4
Mar. 3	06 31.47	+18 13.1	3.683	4.203	+0.13	+2.1	21.5	115.3
Mar. 13	06 32.81	+18 33.9	3.849	4.227	+0.29	+1.8	21.7	105.6
Mar. 23	06 35.75	+18 52.1	4.023	4.251	+0.44	+1.5	21.9	96.4

Comet 157P/Tritton

Epoch = 2017 July 26.0 TT
T = 2016 June 10.56298 TT
Peri. = 149.02742 e = 0.6023069
Node = 299.83745 2000.0 a = 3.4106171 AU
Incl. = 7.28432 n = 0.15647848
q = 1.3563789 AU P = 6.30 years

m1 = 14.0 + 5 log(Delta) + 10.0 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	13 56.34	-18 59.2	2.611	2.508	+0.88	-7.5	19.7	73.1
Jan. 17	14 05.15	-20 14.0	2.543	2.576	+0.68	-6.5	19.8	80.8
Jan. 27	14 11.94	-21 19.0	2.470	2.643	+0.45	-5.4	19.8	89.0
Feb. 6	14 16.43	-22 13.3	2.394	2.710	+0.20	-4.3	19.9	97.8
Feb. 16	14 18.39	-22 56.0	2.320	2.776	-0.07	-3.0	19.9	107.1
Feb. 26	14 17.66	-23 25.6	2.251	2.841	-0.35	-1.5	20.0	117.0
Mar. 8	14 14.19	-23 40.2	2.193	2.906	-0.60	+0.2	20.0	127.5
Mar. 18	14 08.21	-23 38.4	2.150	2.969	-0.81	+1.9	20.1	138.4
Mar. 28	14 00.15	-23 19.2	2.129	3.031	-0.94	+3.6	20.2	149.5
Apr. 7	13 50.76	-22 43.3	2.132	3.093	-0.98	+4.9	20.3	160.3
Apr. 17	13 40.95	-21 53.9	2.164	3.154	-0.93	+5.8	20.4	168.5
Apr. 27	13 31.65	-20 55.7	2.225	3.213	-0.80	+6.1	20.6	166.9
May 7	13 23.64	-19 54.8	2.315	3.272	-0.62	+5.8	20.7	157.9
May 17	13 17.47	-18 56.9	2.432	3.330	-0.41	+5.0	20.9	147.6
May 27	13 13.36	-18 06.4	2.572	3.387	-0.20	+4.0	21.1	137.3
June 6	13 11.38	-17 26.4	2.732	3.443	0.00	+2.8	21.3	127.3
June 16	13 11.40	-16 57.9	2.907	3.498	+0.18	+1.7	21.5	117.8
June 26	13 13.24	-16 41.2	3.094	3.552	+0.34	+0.6	21.8	108.7
July 6	13 16.67	-16 35.5	3.288	3.606	+0.48	-0.4	22.0	100.0
July 16	13 21.48	-16 39.9	3.485	3.658	+0.60	-1.3	22.1	91.6
July 26	13 27.46	-16 53.0	3.683	3.709	+0.70	-2.1	22.3	83.6
Aug. 5	13 34.45	-17 13.5	3.879	3.760	+0.78	-2.7	22.5	75.7
Aug. 15	13 42.28	-17 40.3	4.069	3.810	+0.85	-3.2	22.7	68.1
Aug. 25	13 50.82	-18 12.0	4.252	3.859	+0.91	-3.6	22.8	60.6
Sept. 4	13 59.96	-18 47.6	4.425	3.906	+0.96	-3.9	23.0	53.3
Sept.14	14 09.60	-19 26.2	4.586	3.954	+1.00	-4.1	.	46.0
Sept.24	14 19.64	-20 06.8	4.733	4.000	+1.04	-4.2	.	38.8
Oct. 4	14 30.02	-20 48.6	4.864	4.045	+1.06	-4.2	.	31.6
Oct. 14	14 40.63	-21 30.9	4.977	4.090	+1.08	-4.2	.	24.4
Oct. 24	14 51.43	-22 13.1	5.072	4.134	+1.09	-4.2	.	17.4
Nov. 3	15 02.31	-22 54.7	5.147	4.176	+1.09	-4.0	.	10.6
Nov. 13	15 13.21	-23 35.1	5.202	4.219	+1.08	-3.9	.	5.7
Nov. 23	15 24.04	-24 13.9	5.236	4.260	+1.07	-3.7	.	8.0
Dec. 3	15 34.70	-24 50.9	5.248	4.300	+1.04	-3.5	.	14.5
Dec. 13	15 45.10	-25 25.8	5.239	4.340	+1.00	-3.3	.	21.8
Dec. 23	15 55.14	-25 58.4	5.208	4.379	+0.95	-3.0	.	29.5
Jan. 2	16 04.68	-26 28.6	5.158	4.417	+0.89	-2.8	.	37.3
Jan. 12	16 13.60	-26 56.5	5.090	4.455	+0.82	-2.6	.	45.4
Jan. 22	16 21.77	-27 22.1	5.004	4.491	+0.73	-2.3	.	53.6
Feb. 1	16 29.03	-27 45.4	4.904	4.527	+0.62	-2.1	.	62.1
Feb. 11	16 35.23	-28 06.6	4.791	4.562	+0.50	-1.9	.	70.8
Feb. 21	16 40.21	-28 25.8	4.670	4.596	+0.36	-1.7	.	79.7
Mar. 3	16 43.81	-28 42.8	4.543	4.630	+0.21	-1.5	.	88.8
Mar. 13	16 45.90	-28 57.6	4.415	4.663	+0.04	-1.2	.	98.3
Mar. 23	16 46.34	-29 09.8	4.290	4.695	-0.13	-0.9	.	108.1

Comet 202P/Scotti

Epoch = 2017 July 26.0 TT
T = 2016 June 11.55403 TT
Peri. = 255.89753 e = 0.3324275
Node = 194.51633 2000.0 a = 3.7743029 AU
Incl. = 2.18902 n = 0.13441538
q = 2.5196208 AU P = 7.33 years

m1 = 13.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	10 51.22	+04 57.4	2.146	2.821	-0.11	+0.5	19.2	124.4
Jan. 17	10 50.10	+05 02.7	2.066	2.847	-0.34	+2.0	19.1	134.8
Jan. 27	10 46.72	+05 23.0	2.004	2.873	-0.53	+3.4	19.1	145.9
Feb. 6	10 41.42	+05 56.7	1.965	2.900	-0.66	+4.3	19.1	157.4
Feb. 16	10 34.80	+06 39.9	1.952	2.928	-0.72	+4.8	19.1	169.2
Feb. 26	10 27.62	+07 28.0	1.967	2.956	-0.69	+4.7	19.2	177.5
Mar. 8	10 20.75	+08 15.4	2.011	2.985	-0.58	+4.2	19.3	166.5
Mar. 18	10 14.98	+08 57.3	2.083	3.014	-0.41	+3.3	19.4	155.0
Mar. 28	10 10.86	+09 30.1	2.179	3.044	-0.21	+2.2	19.5	144.0
Apr. 7	10 08.73	+09 51.8	2.298	3.074	0.00	+1.0	19.7	133.5
Apr. 17	10 08.69	+10 01.5	2.433	3.104	+0.20	-0.2	19.8	123.6
Apr. 27	10 10.65	+09 59.7	2.582	3.134	+0.38	-1.3	20.0	114.3
May 7	10 14.43	+09 46.8	2.740	3.165	+0.54	-2.3	20.2	105.6
May 17	10 19.81	+09 23.8	2.905	3.195	+0.67	-3.2	20.4	97.3
May 27	10 26.55	+08 51.9	3.073	3.226	+0.79	-4.0	20.5	89.4
June 6	10 34.43	+08 12.0	3.241	3.257	+0.88	-4.7	20.7	81.9
June 16	10 43.23	+07 25.0	3.408	3.288	+0.96	-5.3	20.8	74.7
June 26	10 52.80	+06 32.0	3.570	3.320	+1.02	-5.8	21.0	67.7
July 6	11 02.99	+05 33.6	3.726	3.351	+1.07	-6.3	21.1	60.8
July 16	11 13.67	+04 30.8	3.875	3.382	+1.11	-6.6	21.2	54.2
July 26	11 24.73	+03 24.4	4.015	3.413	+1.14	-6.9	21.3	47.6
Aug. 5	11 36.10	+02 14.9	4.144	3.444	+1.16	-7.2	21.5	41.1
Aug. 15	11 47.70	+01 03.2	4.261	3.475	+1.18	-7.3	21.6	34.6
Aug. 25	11 59.47	-00 10.1	4.365	3.506	+1.19	-7.4	21.6	28.2
Sept. 4	12 11.37	-01 24.4	4.454	3.537	+1.20	-7.5	21.7	21.7
Sept.14	12 23.32	-02 38.9	4.529	3.568	+1.20	-7.4	21.8	15.3
Sept.24	12 35.30	-03 53.1	4.587	3.599	+1.20	-7.3	21.9	8.7
Oct. 4	12 47.26	-05 06.4	4.629	3.629	+1.19	-7.2	21.9	2.1
Oct. 14	12 59.13	-06 18.2	4.653	3.660	+1.17	-7.0	22.0	4.6
Oct. 24	13 10.88	-07 27.8	4.660	3.690	+1.16	-6.7	22.0	11.3
Nov. 3	13 22.43	-08 34.7	4.649	3.720	+1.13	-6.4	22.0	18.3
Nov. 13	13 33.72	-09 38.4	4.620	3.749	+1.09	-6.0	22.1	25.3
Nov. 23	13 44.66	-10 38.2	4.574	3.779	+1.05	-5.5	22.1	32.5
Dec. 3	13 55.16	-11 33.7	4.511	3.808	+1.00	-5.1	22.1	39.9
Dec. 13	14 05.12	-12 24.3	4.433	3.837	+0.93	-4.5	22.1	47.5
Dec. 23	14 14.41	-13 09.6	4.341	3.866	+0.85	-4.0	22.1	55.3
Jan. 2	14 22.88	-13 49.2	4.236	3.895	+0.75	-3.3	22.0	63.3
Jan. 12	14 30.41	-14 22.5	4.121	3.923	+0.64	-2.7	22.0	71.6
Jan. 22	14 36.81	-14 49.3	3.998	3.951	+0.51	-2.0	22.0	80.2
Feb. 1	14 41.92	-15 09.1	3.871	3.978	+0.37	-1.3	21.9	89.1
Feb. 11	14 45.59	-15 21.6	3.743	4.006	+0.21	-0.5	21.9	98.3
Feb. 21	14 47.66	-15 26.5	3.618	4.033	+0.04	+0.3	21.8	107.9
Mar. 3	14 48.04	-15 23.5	3.501	4.060	-0.13	+1.1	21.8	117.9
Mar. 13	14 46.70	-15 12.7	3.396	4.086	-0.30	+1.8	21.8	128.2
Mar. 23	14 43.68	-14 54.3	3.308	4.112	-0.45	+2.5	21.7	139.0

Comet 118P/Shoemaker-Levy

Epoch = 2017 July 26.0 TT
T = 2016 June 17.34507 TT
Peri. = 302.46658 e = 0.4289266
Node = 151.68705 2000.0 a = 3.4673674 AU
Incl. = 8.50732 n = 0.15265263
q = 1.9801213 AU P = 6.46 years

m1 = 8.8 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	12 39.19	-01 27.7	2.191	2.509	+0.63	-0.1	17.5	97.1
Jan. 17	12 45.51	-01 29.0	2.102	2.551	+0.40	+1.6	17.5	105.8
Jan. 27	12 49.47	-01 12.6	2.018	2.594	+0.14	+3.4	17.6	115.1
Feb. 6	12 50.87	-00 38.3	1.944	2.637	-0.12	+5.1	17.6	125.1
Feb. 16	12 49.68	+00 13.0	1.883	2.680	-0.36	+6.6	17.7	135.7
Feb. 26	12 46.05	+01 18.6	1.841	2.724	-0.57	+7.5	17.7	146.8
Mar. 8	12 40.36	+02 33.7	1.821	2.768	-0.70	+7.8	17.8	158.2
Mar. 18	12 33.32	+03 51.5	1.828	2.811	-0.76	+7.3	18.0	168.9
Mar. 28	12 25.74	+05 04.9	1.863	2.855	-0.72	+6.2	18.1	172.0
Apr. 7	12 18.55	+06 07.2	1.927	2.899	-0.60	+4.7	18.3	163.0
Apr. 17	12 12.50	+06 53.8	2.017	2.943	-0.44	+2.9	18.5	152.2
Apr. 27	12 08.13	+07 22.8	2.132	2.986	-0.24	+1.1	18.8	141.6
May 7	12 05.73	+07 33.9	2.266	3.030	-0.04	-0.5	19.0	131.5
May 17	12 05.34	+07 28.6	2.417	3.073	+0.15	-2.0	19.2	121.9
May 27	12 06.85	+07 09.1	2.580	3.116	+0.33	-3.2	19.5	112.8
June 6	12 10.10	+06 37.5	2.751	3.159	+0.48	-4.1	19.7	104.3
June 16	12 14.86	+05 56.0	2.928	3.201	+0.61	-4.9	20.0	96.2
June 26	12 20.92	+05 06.6	3.108	3.243	+0.72	-5.6	20.2	88.4
July 6	12 28.09	+04 10.8	3.288	3.285	+0.81	-6.1	20.4	81.0
July 16	12 36.18	+03 10.2	3.465	3.326	+0.89	-6.4	20.6	73.7
July 26	12 45.04	+02 06.0	3.637	3.367	+0.95	-6.7	20.8	66.7
Aug. 5	12 54.55	+00 59.3	3.803	3.408	+1.00	-6.8	21.0	59.8
Aug. 15	13 04.59	-00 09.0	3.960	3.448	+1.05	-6.9	21.2	53.1
Aug. 25	13 15.09	-01 18.0	4.107	3.487	+1.09	-6.9	21.4	46.4
Sept. 4	13 25.96	-02 26.9	4.242	3.526	+1.12	-6.8	21.5	39.8
Sept.14	13 37.12	-03 34.9	4.364	3.565	+1.14	-6.7	21.7	33.2
Sept.24	13 48.53	-04 41.5	4.472	3.603	+1.16	-6.4	21.8	26.6
Oct. 4	14 00.11	-05 45.9	4.564	3.641	+1.17	-6.2	21.9	20.2
Oct. 14	14 11.80	-06 47.5	4.639	3.678	+1.18	-5.8	22.0	13.9
Oct. 24	14 23.56	-07 45.9	4.696	3.715	+1.18	-5.4	22.1	8.3
Nov. 3	14 35.31	-08 40.3	4.736	3.751	+1.17	-5.0	22.2	6.3
Nov. 13	14 46.99	-09 30.5	4.756	3.787	+1.15	-4.5	22.3	10.4
Nov. 23	14 58.51	-10 15.8	4.758	3.822	+1.13	-4.0	22.4	16.7
Dec. 3	15 09.79	-10 55.9	4.740	3.857	+1.09	-3.5	22.4	23.6
Dec. 13	15 20.74	-11 30.5	4.704	3.891	+1.05	-2.9	22.5	30.8
Dec. 23	15 31.25	-11 59.3	4.650	3.924	+0.99	-2.3	22.5	38.2
Jan. 2	15 41.20	-12 22.0	4.580	3.958	+0.93	-1.7	22.6	45.8
Jan. 12	15 50.47	-12 38.5	4.494	3.990	+0.84	-1.0	22.6	53.6
Jan. 22	15 58.91	-12 48.9	4.395	4.022	+0.75	-0.4	22.6	61.7
Feb. 1	16 06.37	-12 53.0	4.284	4.053	+0.63	+0.2	22.6	69.9
Feb. 11	16 12.71	-12 51.2	4.166	4.084	+0.50	+0.8	22.6	78.5
Feb. 21	16 17.76	-12 43.5	4.041	4.115	+0.36	+1.3	22.6	87.3
Mar. 3	16 21.37	-12 30.2	3.916	4.144	+0.20	+1.8	22.6	96.4
Mar. 13	16 23.41	-12 12.0	3.792	4.174	+0.04	+2.3	22.6	105.8
Mar. 23	16 23.78	-11 49.4	3.675	4.202	-0.13	+2.6	22.5	115.5

Comet C/2015 T4 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 June 18.94317 TT
Peri. = 270.15001
Node = 251.78853 2000.0
Incl. = 87.92672
q = 2.2966802 AU
e = 0.9734158

m1 = 7.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 06.84	-43 34.1	3.947	3.172	+1.12	+5.6	17.7	33.4
Jan. 17	17 18.07	-42 37.8	3.943	3.244	+0.96	+5.4	17.8	39.4
Jan. 27	17 27.68	-41 43.5	3.918	3.316	+0.79	+5.3	18.0	46.4
Feb. 6	17 35.57	-40 50.7	3.873	3.389	+0.61	+5.2	18.1	54.0
Feb. 16	17 41.62	-39 58.8	3.811	3.463	+0.41	+5.2	18.2	62.3
Feb. 26	17 45.70	-39 07.0	3.735	3.538	+0.19	+5.3	18.3	71.0
Mar. 8	17 47.62	-38 14.5	3.648	3.614	-0.04	+5.5	18.4	80.2
Mar. 18	17 47.25	-37 19.9	3.554	3.690	-0.28	+5.8	18.5	90.0
Mar. 28	17 44.48	-36 21.6	3.460	3.767	-0.52	+6.4	18.5	100.2
Apr. 7	17 39.24	-35 17.5	3.370	3.844	-0.76	+7.2	18.6	111.0
Apr. 17	17 31.63	-34 05.4	3.293	3.922	-0.97	+8.2	18.7	122.3
Apr. 27	17 21.92	-32 43.6	3.234	3.999	-1.14	+9.3	18.8	134.0
May 7	17 10.56	-31 11.0	3.200	4.077	-1.23	+10.3	18.9	146.2
May 17	16 58.21	-29 28.2	3.198	4.156	-1.26	+11.1	19.0	158.5
May 27	16 45.63	-27 37.5	3.231	4.234	-1.20	+11.4	19.1	170.6
June 6	16 33.59	-25 43.1	3.302	4.312	-1.09	+11.3	19.3	174.0
June 16	16 22.73	-23 50.0	3.410	4.391	-0.92	+10.7	19.5	162.9
June 26	16 13.49	-22 02.9	3.553	4.470	-0.74	+9.8	19.7	151.1
July 6	16 06.13	-20 25.2	3.726	4.548	-0.54	+8.6	19.9	139.6
July 16	16 00.71	-18 59.2	3.925	4.627	-0.35	+7.4	20.1	128.5
July 26	15 57.16	-17 45.5	4.144	4.706	-0.18	+6.2	20.4	117.9
Aug. 5	15 55.36	-16 43.7	4.378	4.784	-0.02	+5.1	20.6	107.7
Aug. 15	15 55.12	-15 52.8	4.620	4.863	+0.11	+4.1	20.8	97.8
Aug. 25	15 56.25	-15 11.3	4.865	4.941	+0.23	+3.4	21.0	88.4
Sept. 4	15 58.57	-14 37.7	5.110	5.019	+0.33	+2.7	21.3	79.2
Sept.14	16 01.89	-14 10.3	5.349	5.098	+0.42	+2.3	21.5	70.3
Sept.24	16 06.07	-13 47.6	5.578	5.176	+0.49	+1.9	21.6	61.5
Oct. 4	16 10.94	-13 28.3	5.795	5.254	+0.54	+1.7	21.8	53.0
Oct. 14	16 16.37	-13 11.1	5.996	5.331	+0.59	+1.6	22.0	44.5
Oct. 24	16 22.25	-12 54.9	6.179	5.409	+0.62	+1.6	22.2	36.3
Nov. 3	16 28.44	-12 38.7	6.340	5.486	+0.64	+1.7	22.3	28.2
Nov. 13	16 34.84	-12 21.6	6.479	5.564	+0.65	+1.9	22.4	20.6
Nov. 23	16 41.33	-12 03.0	6.594	5.641	+0.65	+2.1	22.6	14.0
Dec. 3	16 47.82	-11 42.0	6.683	5.718	+0.64	+2.4	22.7	10.7
Dec. 13	16 54.18	-11 18.3	6.748	5.794	+0.61	+2.7	22.8	13.4
Dec. 23	17 00.32	-10 51.3	6.787	5.871	+0.58	+3.1	22.9	19.8
Jan. 2	17 06.13	-10 20.5	6.801	5.947	+0.54	+3.5	23.0	27.6
Jan. 12	17 11.49	-09 45.9	6.792	6.024	+0.48	+3.9	.	35.9
Jan. 22	17 16.31	-09 07.1	6.762	6.100	+0.42	+4.3	.	44.6
Feb. 1	17 20.47	-08 24.1	6.712	6.175	+0.34	+4.7	.	53.4
Feb. 11	17 23.88	-07 36.9	6.647	6.251	+0.25	+5.1	.	62.4
Feb. 21	17 26.42	-06 45.6	6.569	6.326	+0.16	+5.5	.	71.6
Mar. 3	17 28.02	-05 50.7	6.483	6.401	+0.06	+5.8	.	80.9
Mar. 13	17 28.60	-04 52.5	6.394	6.476	-0.05	+6.1	.	90.3
Mar. 23	17 28.11	-03 51.7	6.306	6.551	-0.16	+6.2	.	99.9

Comet P/2017 A2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 June 22.50196 TT
Peri. = 133.89403 e = 0.3012837
Node = 313.72082 2000.0 a = 3.1670964 AU
Incl. = 17.57527 n = 0.17486873
q = 2.2129019 AU P = 5.64 years

m1 = 12.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 10.15	-01 23.6	1.913	2.521	-0.19	-8.0	19.4	117.4
Jan. 17	11 08.23	-02 43.2	1.830	2.549	-0.47	-6.5	19.4	127.3
Jan. 27	11 03.52	-03 48.1	1.762	2.577	-0.72	-4.8	19.4	137.7
Feb. 6	10 56.30	-04 36.1	1.713	2.605	-0.91	-3.0	19.4	148.4
Feb. 16	10 47.22	-05 05.9	1.689	2.634	-1.00	-1.2	19.4	158.6
Feb. 26	10 37.18	-05 18.1	1.692	2.663	-0.99	+0.3	19.5	165.9
Mar. 8	10 27.32	-05 15.6	1.723	2.693	-0.86	+1.2	19.6	164.6
Mar. 18	10 18.70	-05 03.1	1.781	2.722	-0.66	+1.7	19.8	156.3
Mar. 28	10 12.09	-04 46.0	1.865	2.752	-0.41	+1.7	19.9	146.4
Apr. 7	10 07.95	-04 29.4	1.971	2.783	-0.16	+1.2	20.1	136.4
Apr. 17	10 06.39	-04 17.5	2.095	2.813	+0.09	+0.5	20.3	126.7
Apr. 27	10 07.27	-04 12.7	2.233	2.844	+0.31	-0.4	20.6	117.7
May 7	10 10.38	-04 16.7	2.381	2.874	+0.50	-1.3	20.8	109.1
May 17	10 15.39	-04 30.1	2.537	2.905	+0.66	-2.3	21.0	101.0
May 27	10 22.01	-04 52.9	2.696	2.935	+0.80	-3.2	21.2	93.4
June 6	10 29.97	-05 24.7	2.856	2.966	+0.91	-4.0	21.4	86.1
June 16	10 39.03	-06 05.1	3.016	2.996	+1.00	-4.8	21.5	79.2
June 26	10 48.99	-06 53.3	3.173	3.026	+1.07	-5.5	21.7	72.5
July 6	10 59.68	-07 48.6	3.325	3.056	+1.13	-6.2	21.9	66.0
July 16	11 10.96	-08 50.3	3.472	3.086	+1.18	-6.7	22.0	59.7
July 26	11 22.72	-09 57.6	3.610	3.116	+1.22	-7.2	22.2	53.6
Aug. 5	11 34.88	-11 09.8	3.740	3.145	+1.25	-7.6	22.3	47.5
Aug. 15	11 47.36	-12 26.2	3.859	3.174	+1.27	-8.0	22.5	41.6
Aug. 25	12 00.10	-13 46.0	3.968	3.203	+1.30	-8.3	22.6	35.8
Sept. 4	12 13.06	-15 08.7	4.064	3.232	+1.31	-8.5	22.7	30.2
Sept.14	12 26.17	-16 33.6	4.146	3.260	+1.33	-8.7	22.8	24.8
Sept.24	12 39.43	-18 00.2	4.215	3.288	+1.33	-8.8	22.9	19.8
Oct. 4	12 52.76	-19 27.8	4.269	3.316	+1.34	-8.8	23.0	15.6
Oct. 14	13 06.15	-20 55.8	4.307	3.343	+1.34	-8.8	23.0	13.1
Oct. 24	13 19.54	-22 23.9	4.329	3.370	+1.33	-8.8	.	13.5
Nov. 3	13 32.87	-23 51.5	4.336	3.397	+1.32	-8.7	.	16.6
Nov. 13	13 46.10	-25 18.1	4.325	3.423	+1.30	-8.5	.	21.4
Nov. 23	13 59.15	-26 43.5	4.299	3.449	+1.28	-8.4	.	27.0
Dec. 3	14 11.92	-28 07.3	4.256	3.474	+1.24	-8.2	.	33.2
Dec. 13	14 24.32	-29 29.2	4.199	3.499	+1.19	-8.0	.	39.8
Dec. 23	14 36.23	-30 49.1	4.126	3.523	+1.13	-7.8	.	46.6
Jan. 2	14 47.49	-32 06.9	4.041	3.547	+1.05	-7.5	.	53.7
Jan. 12	14 57.95	-33 22.3	3.943	3.571	+0.95	-7.3	.	61.0
Jan. 22	15 07.40	-34 35.4	3.836	3.594	+0.82	-7.1	.	68.5
Feb. 1	15 15.64	-35 46.0	3.720	3.617	+0.68	-6.8	.	76.4
Feb. 11	15 22.42	-36 53.9	3.600	3.639	+0.51	-6.5	.	84.4
Feb. 21	15 27.47	-37 58.4	3.477	3.661	+0.31	-6.0	.	92.8
Mar. 3	15 30.56	-38 58.7	3.356	3.682	+0.09	-5.5	.	101.4
Mar. 13	15 31.45	-39 53.4	3.239	3.703	-0.15	-4.7	.	110.3
Mar. 23	15 29.97	-40 40.3	3.132	3.724	-0.39	-3.6	.	119.4

Comet 146P/Shoemaker-LINEAR

Epoch = 2017 July 26.0 TT
T = 2016 June 30.09504 TT
Peri. = 316.96716 e = 0.6458895
Node = 53.45328 2000.0 a = 4.0382993 AU
Incl. = 23.07330 n = 0.12145246
q = 1.4300042 AU P = 8.12 years

m1 = 14.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	06 45.88	+51 44.1	1.550	2.453	-1.40	+0.4	19.2	150.2
Jan. 17	06 31.89	+51 48.2	1.656	2.525	-1.01	-2.7	19.5	145.0
Jan. 27	06 21.77	+51 21.7	1.783	2.597	-0.56	-4.6	19.8	137.7
Feb. 6	06 16.18	+50 35.6	1.930	2.669	-0.12	-5.6	20.1	129.6
Feb. 16	06 14.95	+49 39.5	2.093	2.739	+0.25	-6.0	20.4	121.3
Feb. 26	06 17.48	+48 39.3	2.268	2.810	+0.57	-6.1	20.7	113.2
Mar. 8	06 23.13	+47 38.7	2.453	2.880	+0.81	-6.0	20.9	105.4
Mar. 18	06 31.24	+46 39.1	2.644	2.949	+1.00	-5.8	21.2	97.8
Mar. 28	06 41.26	+45 41.0	2.839	3.017	+1.15	-5.7	21.5	90.5
Apr. 7	06 52.72	+44 44.1	3.035	3.085	+1.25	-5.6	21.7	83.4
Apr. 17	07 05.25	+43 48.1	3.230	3.152	+1.33	-5.6	21.9	76.6
Apr. 27	07 18.55	+42 52.5	3.421	3.218	+1.38	-5.6	22.1	70.0
May 7	07 32.38	+41 56.8	3.607	3.284	+1.42	-5.6	22.3	63.5
May 17	07 46.53	+41 00.8	3.786	3.348	+1.43	-5.7	22.5	57.2
May 27	08 00.86	+40 04.2	3.956	3.412	+1.44	-5.7	22.7	51.1
June 6	08 15.25	+39 07.0	4.115	3.475	+1.43	-5.8	22.9	45.2
June 16	08 29.59	+38 09.3	4.263	3.538	+1.42	-5.8	23.0	39.4
June 26	08 43.80	+37 11.3	4.398	3.599	+1.40	-5.8	.	33.9
July 6	08 57.83	+36 13.3	4.518	3.660	+1.38	-5.8	.	28.8
July 16	09 11.61	+35 15.6	4.624	3.720	+1.35	-5.7	.	24.2
July 26	09 25.10	+34 18.8	4.713	3.779	+1.32	-5.5	.	20.5
Aug. 5	09 38.27	+33 23.3	4.786	3.837	+1.28	-5.4	.	18.5
Aug. 15	09 51.07	+32 29.7	4.842	3.895	+1.24	-5.1	.	18.6
Aug. 25	10 03.48	+31 38.8	4.879	3.952	+1.20	-4.8	.	21.0
Sept. 4	10 15.45	+30 51.2	4.899	4.008	+1.15	-4.3	.	25.0
Sept. 14	10 26.93	+30 07.8	4.901	4.063	+1.10	-3.8	.	30.2
Sept. 24	10 37.89	+29 29.4	4.885	4.118	+1.04	-3.2	.	36.1
Oct. 4	10 48.25	+28 56.9	4.853	4.172	+0.97	-2.6	.	42.6
Oct. 14	10 57.96	+28 31.3	4.805	4.225	+0.90	-1.8	.	49.5
Oct. 24	11 06.93	+28 13.5	4.742	4.277	+0.81	-0.9	.	56.7
Nov. 3	11 15.05	+28 04.5	4.666	4.329	+0.72	+0.1	.	64.3
Nov. 13	11 22.22	+28 05.3	4.580	4.380	+0.61	+1.1	.	72.2
Nov. 23	11 28.30	+28 16.5	4.486	4.430	+0.48	+2.2	.	80.4
Dec. 3	11 33.15	+28 38.7	4.388	4.479	+0.35	+3.3	.	89.0
Dec. 13	11 36.61	+29 11.9	4.289	4.528	+0.19	+4.4	.	97.8
Dec. 23	11 38.54	+29 55.7	4.194	4.576	+0.03	+5.3	.	106.8
Jan. 2	11 38.79	+30 48.8	4.107	4.624	-0.15	+6.0	.	116.0
Jan. 12	11 37.29	+31 48.9	4.034	4.670	-0.33	+6.4	.	125.2
Jan. 22	11 34.02	+32 52.9	3.978	4.716	-0.49	+6.4	.	134.1
Feb. 1	11 29.07	+33 56.4	3.945	4.762	-0.64	+5.9	.	142.2
Feb. 11	11 22.70	+34 55.1	3.937	4.807	-0.74	+4.9	.	148.5
Feb. 21	11 15.28	+35 44.5	3.958	4.851	-0.80	+3.6	.	151.6
Mar. 3	11 07.33	+36 20.7	4.007	4.894	-0.79	+2.1	.	150.5
Mar. 13	10 59.41	+36 41.7	4.084	4.937	-0.73	+0.5	.	145.7
Mar. 23	10 52.06	+36 46.6	4.188	4.979	-0.63	-1.0	.	138.5

Comet 345P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2016 July 15.74521 TT
Peri. = 196.52813 e = 0.2194258
Node = 154.51520 2000.0 a = 4.0456733 AU
Incl. = 2.72467 n = 0.12112056
q = 3.1579482 AU P = 8.14 years

m1 = 9.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 28.88	+00 52.0	3.271	3.254	+0.89	+5.9	19.9	80.3
Jan. 17	00 37.81	+01 51.4	3.421	3.265	+0.99	+6.5	20.0	72.6
Jan. 27	00 47.69	+02 56.2	3.566	3.276	+1.07	+6.9	20.1	65.1
Feb. 6	00 58.39	+04 05.0	3.704	3.288	+1.14	+7.2	20.2	57.9
Feb. 16	01 09.76	+05 16.6	3.834	3.300	+1.19	+7.3	20.3	50.9
Feb. 26	01 21.71	+06 30.0	3.953	3.313	+1.24	+7.4	20.4	44.0
Mar. 8	01 34.14	+07 44.1	4.061	3.326	+1.28	+7.4	20.5	37.3
Mar. 18	01 46.96	+08 57.9	4.156	3.340	+1.31	+7.3	20.5	30.7
Mar. 28	02 00.10	+10 10.6	4.238	3.354	+1.34	+7.1	20.6	24.3
Apr. 7	02 13.51	+11 21.4	4.306	3.368	+1.36	+6.8	20.7	18.0
Apr. 17	02 27.11	+12 29.5	4.359	3.383	+1.37	+6.5	20.7	11.7
Apr. 27	02 40.86	+13 34.4	4.398	3.398	+1.38	+6.1	20.8	5.7
May 7	02 54.68	+14 35.5	4.421	3.413	+1.38	+5.7	20.8	2.2
May 17	03 08.51	+15 32.3	4.430	3.429	+1.38	+5.2	20.9	7.3
May 27	03 22.31	+16 24.4	4.423	3.445	+1.37	+4.7	20.9	13.4
June 6	03 35.98	+17 11.5	4.401	3.462	+1.35	+4.2	20.9	19.6
June 16	03 49.46	+17 53.3	4.365	3.478	+1.32	+3.6	20.9	25.8
June 26	04 02.66	+18 29.7	4.314	3.495	+1.28	+3.1	20.9	32.1
July 6	04 15.49	+19 00.7	4.250	3.512	+1.24	+2.6	20.9	38.6
July 16	04 27.84	+19 26.3	4.172	3.530	+1.18	+2.0	20.9	45.1
July 26	04 39.60	+19 46.7	4.083	3.547	+1.10	+1.5	20.9	51.9
Aug. 5	04 50.63	+20 02.1	3.983	3.565	+1.02	+1.1	20.9	58.8
Aug. 15	05 00.80	+20 12.7	3.873	3.583	+0.91	+0.6	20.9	66.0
Aug. 25	05 09.95	+20 19.2	3.755	3.601	+0.79	+0.3	20.8	73.5
Sept. 4	05 17.88	+20 21.8	3.632	3.620	+0.66	-0.1	20.8	81.3
Sept.14	05 24.44	+20 21.3	3.506	3.638	+0.50	-0.3	20.7	89.5
Sept.24	05 29.43	+20 18.2	3.379	3.657	+0.32	-0.5	20.7	98.1
Oct. 4	05 32.66	+20 13.0	3.255	3.675	+0.13	-0.7	20.6	107.1
Oct. 14	05 33.99	+20 06.4	3.138	3.694	-0.07	-0.8	20.6	116.7
Oct. 24	05 33.32	+19 58.8	3.032	3.713	-0.27	-0.8	20.6	126.7
Nov. 3	05 30.67	+19 50.5	2.942	3.732	-0.45	-0.9	20.5	137.3
Nov. 13	05 26.20	+19 41.8	2.873	3.751	-0.60	-0.9	20.5	148.3
Nov. 23	05 20.20	+19 33.0	2.828	3.770	-0.70	-0.9	20.5	159.7
Dec. 3	05 13.22	+19 24.3	2.813	3.790	-0.74	-0.8	20.5	171.1
Dec. 13	05 05.86	+19 16.4	2.827	3.809	-0.70	-0.6	20.6	174.9
Dec. 23	04 58.81	+19 10.0	2.873	3.828	-0.61	-0.4	20.6	164.1
Jan. 2	04 52.71	+19 06.1	2.947	3.847	-0.47	-0.1	20.7	152.6
Jan. 12	04 48.03	+19 05.4	3.049	3.866	-0.29	+0.3	20.8	141.4
Jan. 22	04 45.08	+19 08.4	3.173	3.886	-0.11	+0.7	20.9	130.6
Feb. 1	04 44.01	+19 15.1	3.315	3.905	+0.08	+1.0	21.1	120.2
Feb. 11	04 44.81	+19 25.4	3.471	3.924	+0.26	+1.3	21.2	110.3
Feb. 21	04 47.40	+19 38.5	3.636	3.943	+0.42	+1.5	21.3	100.9
Mar. 3	04 51.62	+19 53.8	3.805	3.962	+0.57	+1.6	21.5	91.8
Mar. 13	04 57.29	+20 10.3	3.975	3.981	+0.69	+1.7	21.6	83.2
Mar. 23	05 04.24	+20 27.1	4.143	4.000	+0.80	+1.6	21.7	74.9

Comet 56P/Slaughter-Burnham

Epoch = 2017 July 26.0 TT
T = 2016 July 18.33492 TT
Peri. = 44.19778 e = 0.5063713
Node = 345.97932 2000.0 a = 5.0815252 AU
Incl. = 8.14799 n = 0.08604248
q = 2.5083867 AU P = 11.45 years

m1 = 5.0 + 5 log(Delta) + 22.5 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	04 03.27	+32 21.3	2.026	2.828	+0.08	-3.4	16.4	137.3
Jan. 17	04 04.05	+31 47.6	2.154	2.862	+0.34	-2.8	16.6	127.6
Jan. 27	04 07.43	+31 19.3	2.297	2.897	+0.57	-2.2	16.8	118.3
Feb. 6	04 13.17	+30 57.3	2.453	2.934	+0.78	-1.6	17.1	109.5
Feb. 16	04 20.96	+30 41.1	2.617	2.971	+0.95	-1.2	17.4	101.2
Feb. 26	04 30.47	+30 29.6	2.786	3.009	+1.10	-0.8	17.6	93.2
Mar. 8	04 41.45	+30 21.4	2.959	3.048	+1.22	-0.6	17.9	85.6
Mar. 18	04 53.60	+30 15.1	3.131	3.088	+1.31	-0.6	18.1	78.3
Mar. 28	05 06.71	+30 09.3	3.302	3.129	+1.39	-0.7	18.4	71.3
Apr. 7	05 20.58	+30 02.7	3.470	3.170	+1.44	-0.8	18.6	64.5
Apr. 17	05 35.02	+29 54.4	3.631	3.212	+1.49	-1.1	18.8	57.9
Apr. 27	05 49.88	+29 43.5	3.786	3.254	+1.51	-1.4	19.0	51.4
May 7	06 05.02	+29 29.4	3.932	3.297	+1.53	-1.8	19.2	45.0
May 17	06 20.32	+29 11.6	4.067	3.340	+1.53	-2.2	19.4	38.8
May 27	06 35.66	+28 49.9	4.192	3.383	+1.53	-2.6	19.6	32.6
June 6	06 50.97	+28 24.2	4.305	3.427	+1.52	-3.0	19.8	26.5
June 16	07 06.14	+27 54.5	4.404	3.471	+1.50	-3.3	20.0	20.5
June 26	07 21.10	+27 21.1	4.490	3.515	+1.47	-3.7	20.2	14.6
July 6	07 35.79	+26 44.2	4.560	3.559	+1.43	-4.0	20.3	9.0
July 16	07 50.13	+26 04.2	4.615	3.604	+1.39	-4.3	20.5	5.1
July 26	08 04.07	+25 21.5	4.654	3.649	+1.35	-4.5	20.6	7.1
Aug. 5	08 17.56	+24 36.8	4.677	3.693	+1.30	-4.6	20.8	12.5
Aug. 15	08 30.53	+23 50.6	4.684	3.738	+1.24	-4.7	20.9	18.6
Aug. 25	08 42.94	+23 03.6	4.674	3.783	+1.18	-4.7	21.0	25.1
Sept. 4	08 54.72	+22 16.6	4.647	3.828	+1.11	-4.6	21.1	31.8
Sept. 14	09 05.81	+21 30.3	4.605	3.873	+1.03	-4.5	21.2	38.8
Sept. 24	09 16.13	+20 45.7	4.547	3.917	+0.95	-4.2	21.3	46.0
Oct. 4	09 25.59	+20 03.6	4.476	3.962	+0.85	-3.9	21.4	53.4
Oct. 14	09 34.10	+19 25.0	4.391	4.007	+0.75	-3.4	21.4	61.2
Oct. 24	09 41.57	+18 50.9	4.296	4.051	+0.63	-2.9	21.5	69.2
Nov. 3	09 47.86	+18 22.2	4.192	4.095	+0.50	-2.2	21.6	77.6
Nov. 13	09 52.85	+17 00.0	4.083	4.140	+0.36	-1.5	21.6	86.3
Nov. 23	09 56.41	+17 45.0	3.972	4.184	+0.20	-0.7	21.7	95.5
Dec. 3	09 58.42	+17 37.8	3.862	4.228	+0.04	+0.1	21.7	105.1
Dec. 13	09 58.80	+17 38.7	3.759	4.271	-0.13	+0.9	21.8	115.1
Dec. 23	09 57.49	+17 47.5	3.667	4.315	-0.30	+1.6	21.8	125.6
Jan. 2	09 54.54	+18 03.2	3.592	4.358	-0.44	+2.1	21.9	136.5
Jan. 12	09 50.10	+18 24.3	3.539	4.401	-0.57	+2.4	21.9	147.7
Jan. 22	09 44.45	+18 48.6	3.511	4.444	-0.65	+2.5	22.0	159.0
Feb. 1	09 37.99	+19 13.5	3.513	4.487	-0.68	+2.3	22.1	170.1
Feb. 11	09 31.21	+19 36.4	3.546	4.529	-0.66	+1.9	22.2	174.4
Feb. 21	09 24.63	+19 55.1	3.611	4.572	-0.59	+1.3	22.4	164.6
Mar. 3	09 18.75	+20 08.0	3.705	4.614	-0.48	+0.6	22.5	153.5
Mar. 13	09 13.96	+20 14.3	3.827	4.655	-0.35	0.0	22.7	142.5
Mar. 23	09 10.50	+20 13.9	3.973	4.697	-0.20	-0.7	22.8	131.8

Comet 81P/Wild

Epoch = 2017 July 26.0 TT
T = 2016 July 20.26548 TT
Peri. = 41.69044 e = 0.5381926
Node = 136.12358 2000.0 a = 3.4479764 AU
Incl. = 3.23892 n = 0.15394219
q = 1.5923010 AU P = 6.40 years

m1 = 7.6 + 5 log(Delta) + 15.0 log(r(t+10))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 46.85	-21 26.9	3.152	2.251	+2.09	-0.3	15.5	19.8
Jan. 17	18 07.79	-21 29.7	3.163	2.310	+1.99	+0.7	15.7	25.1
Jan. 27	18 27.73	-21 22.5	3.163	2.369	+1.88	+1.6	15.9	30.6
Feb. 6	18 46.56	-21 06.7	3.151	2.428	+1.76	+2.3	16.0	36.3
Feb. 16	19 04.20	-20 44.0	3.127	2.487	+1.64	+2.8	16.2	42.3
Feb. 26	19 20.59	-20 16.1	3.092	2.546	+1.50	+3.1	16.3	48.5
Mar. 8	19 35.61	-19 44.8	3.045	2.605	+1.36	+3.3	16.4	55.0
Mar. 18	19 49.19	-19 11.7	2.988	2.664	+1.20	+3.3	16.5	61.7
Mar. 28	20 01.22	-18 38.6	2.921	2.722	+1.04	+3.1	16.6	68.7
Apr. 7	20 11.58	-18 07.3	2.846	2.780	+0.86	+2.8	16.7	76.0
Apr. 17	20 20.15	-17 39.4	2.765	2.838	+0.66	+2.3	16.7	83.8
Apr. 27	20 26.77	-17 16.8	2.681	2.895	+0.45	+1.6	16.8	91.9
May 7	20 31.29	-17 00.8	2.596	2.951	+0.23	+0.8	16.8	100.5
May 17	20 33.59	-16 52.9	2.513	3.007	0.00	-0.1	16.9	109.6
May 27	20 33.54	-16 53.9	2.437	3.062	-0.24	-1.0	16.9	119.2
June 6	20 31.13	-17 04.3	2.373	3.117	-0.47	-1.9	17.0	129.4
June 16	20 26.48	-17 23.3	2.324	3.171	-0.66	-2.6	17.1	140.1
June 26	20 19.84	-17 49.7	2.295	3.224	-0.81	-3.1	17.1	151.2
July 6	20 11.73	-18 20.9	2.292	3.276	-0.89	-3.3	17.2	162.7
July 16	20 02.83	-18 54.2	2.315	3.328	-0.89	-3.2	17.4	174.3
July 26	19 53.90	-19 26.7	2.368	3.379	-0.82	-2.9	17.5	173.6
Aug. 5	19 45.72	-19 56.0	2.450	3.430	-0.68	-2.5	17.7	162.2
Aug. 15	19 38.92	-20 20.7	2.559	3.480	-0.50	-2.0	17.9	151.0
Aug. 25	19 33.93	-20 40.2	2.693	3.529	-0.30	-1.4	18.1	140.1
Sept. 4	19 30.98	-20 54.4	2.847	3.577	-0.09	-0.9	18.3	129.7
Sept. 14	19 30.09	-21 03.4	3.018	3.625	+0.11	-0.4	18.5	119.8
Sept. 24	19 31.18	-21 07.6	3.201	3.671	+0.29	0.0	18.7	110.3
Oct. 4	19 34.09	-21 07.1	3.392	3.718	+0.45	+0.5	18.9	101.1
Oct. 14	19 38.59	-21 02.1	3.588	3.763	+0.59	+0.9	19.1	92.3
Oct. 24	19 44.48	-20 52.7	3.785	3.808	+0.71	+1.4	19.3	83.8
Nov. 3	19 51.55	-20 38.9	3.979	3.852	+0.80	+1.8	19.5	75.4
Nov. 13	19 59.58	-20 20.7	4.168	3.895	+0.88	+2.2	19.6	67.3
Nov. 23	20 08.41	-19 58.3	4.348	3.937	+0.95	+2.7	19.8	59.3
Dec. 3	20 17.86	-19 31.8	4.518	3.979	+0.99	+3.0	19.9	51.5
Dec. 13	20 27.78	-19 01.4	4.674	4.020	+1.03	+3.4	20.1	43.7
Dec. 23	20 38.04	-18 27.2	4.814	4.060	+1.05	+3.7	20.2	36.0
Jan. 2	20 48.52	-17 49.8	4.938	4.100	+1.06	+4.0	20.3	28.4
Jan. 12	20 59.10	-17 09.3	5.043	4.139	+1.06	+4.3	20.4	20.8
Jan. 22	21 09.70	-16 26.4	5.129	4.177	+1.05	+4.5	20.5	13.3
Feb. 1	21 20.22	-15 41.4	5.194	4.215	+1.03	+4.6	20.6	5.8
Feb. 11	21 30.56	-14 54.9	5.238	4.251	+1.01	+4.7	20.7	1.8
Feb. 21	21 40.67	-14 07.6	5.260	4.287	+0.98	+4.8	20.7	9.3
Mar. 3	21 50.46	-13 20.1	5.262	4.323	+0.94	+4.7	20.8	16.8
Mar. 13	21 59.86	-12 33.0	5.243	4.358	+0.89	+4.6	20.8	24.4
Mar. 23	22 08.79	-11 47.1	5.204	4.392	+0.84	+4.4	20.9	32.1

Comet P/2016 R4 (Gibbs)

Epoch = 2017 July 26.0 TT
T = 2016 July 20.41087 TT
Peri. = 174.03374 e = 0.4751147
Node = 168.34315 2000.0 a = 5.3347211 AU
Incl. = 10.86154 n = 0.07999015
q = 2.8001167 AU P = 12.32 years

m1 = 10.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 26.39	-03 49.9	3.092	3.042	+1.09	+6.6	19.9	78.0
Jan. 17	00 37.26	-02 43.7	3.250	3.070	+1.16	+7.1	20.1	70.8
Jan. 27	00 48.87	-01 33.1	3.404	3.098	+1.22	+7.4	20.2	63.8
Feb. 6	01 01.09	-00 19.5	3.552	3.127	+1.27	+7.5	20.4	57.0
Feb. 16	01 13.79	+00 55.7	3.693	3.157	+1.31	+7.6	20.5	50.4
Feb. 26	01 26.89	+02 11.3	3.826	3.188	+1.34	+7.5	20.7	43.9
Mar. 8	01 40.31	+03 26.2	3.949	3.220	+1.37	+7.3	20.8	37.6
Mar. 18	01 53.96	+04 39.4	4.060	3.253	+1.38	+7.1	20.9	31.4
Mar. 28	02 07.79	+05 50.0	4.160	3.286	+1.39	+6.7	21.0	25.4
Apr. 7	02 21.74	+06 57.2	4.247	3.320	+1.40	+6.3	21.2	19.5
Apr. 17	02 35.73	+08 00.3	4.320	3.355	+1.40	+5.8	21.3	14.0
Apr. 27	02 49.74	+08 58.8	4.380	3.390	+1.39	+5.3	21.4	9.2
May 7	03 03.68	+09 52.1	4.425	3.426	+1.38	+4.8	21.5	7.1
May 17	03 17.50	+10 39.7	4.456	3.463	+1.36	+4.2	21.5	9.6
May 27	03 31.15	+11 21.4	4.472	3.500	+1.34	+3.5	21.6	14.4
June 6	03 44.54	+11 56.8	4.473	3.537	+1.31	+2.9	21.7	20.1
June 16	03 57.60	+12 25.8	4.460	3.575	+1.27	+2.2	21.7	26.1
June 26	04 10.25	+12 48.3	4.432	3.613	+1.22	+1.6	21.8	32.3
July 6	04 22.40	+13 04.3	4.390	3.652	+1.16	+0.9	21.8	38.7
July 16	04 33.96	+13 13.8	4.335	3.691	+1.09	+0.3	21.9	45.2
July 26	04 44.81	+13 17.0	4.267	3.730	+1.00	-0.3	21.9	52.0
Aug. 5	04 54.83	+13 14.1	4.189	3.769	+0.91	-0.9	22.0	59.1
Aug. 15	05 03.90	+13 05.5	4.100	3.808	+0.80	-1.4	22.0	66.3
Aug. 25	05 11.88	+12 51.6	4.003	3.848	+0.67	-1.9	22.0	73.9
Sept. 4	05 18.61	+12 32.9	3.901	3.888	+0.54	-2.3	22.0	81.8
Sept. 14	05 23.97	+12 10.2	3.795	3.928	+0.38	-2.6	22.0	90.1
Sept. 24	05 27.80	+11 44.2	3.689	3.968	+0.22	-2.8	22.0	98.8
Oct. 4	05 29.98	+11 15.8	3.587	4.008	+0.05	-3.0	22.0	107.8
Oct. 14	05 30.43	+10 46.2	3.492	4.048	-0.13	-3.0	22.0	117.3
Oct. 24	05 29.13	+10 16.7	3.410	4.088	-0.30	-2.8	22.0	127.2
Nov. 3	05 26.16	+09 48.7	3.344	4.129	-0.44	-2.5	22.1	137.3
Nov. 13	05 21.72	+09 23.8	3.300	4.169	-0.56	-2.0	22.1	147.5
Nov. 23	05 16.12	+09 03.5	3.281	4.209	-0.63	-1.4	22.1	157.2
Dec. 3	05 09.84	+08 49.1	3.291	4.249	-0.65	-0.7	22.2	164.6
Dec. 13	05 03.37	+08 41.7	3.331	4.289	-0.61	0.0	22.3	165.0
Dec. 23	04 57.25	+08 41.7	3.401	4.329	-0.53	+0.7	22.4	158.1
Jan. 2	04 51.97	+08 49.1	3.500	4.369	-0.41	+1.4	22.5	148.6
Jan. 12	04 47.87	+09 03.4	3.625	4.409	-0.27	+2.0	22.7	138.4
Jan. 22	04 45.20	+09 23.5	3.772	4.449	-0.11	+2.5	22.8	128.2
Feb. 1	04 44.07	+09 48.4	3.937	4.489	+0.04	+2.8	23.0	118.3
Feb. 11	04 44.48	+10 16.7	4.115	4.528	+0.19	+3.0	.	108.6
Feb. 21	04 46.37	+10 47.1	4.302	4.568	+0.32	+3.1	.	99.3
Mar. 3	04 49.61	+11 18.5	4.494	4.607	+0.45	+3.1	.	90.3
Mar. 13	04 54.08	+11 49.8	4.686	4.646	+0.55	+3.0	.	81.6
Mar. 23	04 59.62	+12 20.2	4.874	4.685	+0.65	+2.9	.	73.2

Comet 150P/LONEOS

Epoch = 2017 July 26.0 TT
T = 2016 July 24.85402 TT
Peri. = 245.65496 e = 0.5468053
Node = 272.41241 2000.0 a = 3.8822032 AU
Incl. = 18.50964 n = 0.12885067
q = 1.7593939 AU P = 7.65 years

H = 14.4 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	16 13.91	-31 01.7	2.979	2.320	+2.02	-2.8	19.5	40.5
Jan. 17	16 34.13	-31 29.8	2.950	2.375	+1.90	-1.8	19.5	46.0
Jan. 27	16 53.11	-31 47.6	2.910	2.430	+1.75	-0.9	19.6	51.9
Feb. 6	17 10.65	-31 56.2	2.861	2.486	+1.59	-0.1	19.6	58.2
Feb. 16	17 26.57	-31 57.1	2.801	2.542	+1.41	+0.5	19.7	64.7
Feb. 26	17 40.68	-31 51.6	2.734	2.599	+1.21	+1.0	19.7	71.7
Mar. 8	17 52.75	-31 41.2	2.659	2.656	+0.98	+1.4	19.7	79.0
Mar. 18	18 02.58	-31 27.1	2.579	2.713	+0.74	+1.7	19.7	86.8
Mar. 28	18 09.97	-31 10.2	2.497	2.770	+0.47	+1.9	19.6	95.1
Apr. 7	18 14.69	-30 51.3	2.415	2.827	+0.19	+2.1	19.6	103.8
Apr. 17	18 16.60	-30 30.3	2.337	2.884	-0.10	+2.3	19.5	113.1
Apr. 27	18 15.60	-30 07.0	2.268	2.940	-0.39	+2.7	19.4	123.0
May 7	18 11.74	-29 40.4	2.211	2.997	-0.64	+3.1	19.3	133.5
May 17	18 05.34	-29 09.1	2.172	3.053	-0.84	+3.7	19.2	144.5
May 27	17 56.89	-28 32.0	2.156	3.108	-0.97	+4.3	19.1	155.8
June 6	17 47.19	-27 48.9	2.166	3.164	-1.00	+4.8	18.9	167.3
June 16	17 37.19	-27 00.6	2.204	3.219	-0.94	+5.1	18.8	176.3
June 26	17 27.77	-26 09.5	2.272	3.273	-0.80	+5.1	19.1	168.0
July 6	17 19.75	-25 18.5	2.368	3.327	-0.61	+4.8	19.4	156.9
July 16	17 13.64	-24 30.4	2.490	3.381	-0.40	+4.3	19.7	146.0
July 26	17 09.67	-23 47.4	2.634	3.434	-0.17	+3.7	19.9	135.5
Aug. 5	17 07.93	-23 10.6	2.798	3.486	+0.04	+3.0	20.1	125.5
Aug. 15	17 08.28	-22 40.3	2.975	3.538	+0.23	+2.4	20.3	116.0
Aug. 25	17 10.57	-22 16.0	3.164	3.589	+0.40	+1.9	20.5	106.8
Sept. 4	17 14.56	-21 56.6	3.359	3.640	+0.55	+1.6	20.7	98.0
Sept. 14	17 20.04	-21 41.1	3.558	3.691	+0.68	+1.3	20.9	89.6
Sept. 24	17 26.80	-21 28.2	3.757	3.740	+0.78	+1.1	21.0	81.4
Oct. 4	17 34.63	-21 16.8	3.952	3.789	+0.87	+1.1	21.1	73.4
Oct. 14	17 43.36	-21 05.7	4.142	3.838	+0.95	+1.2	21.2	65.5
Oct. 24	17 52.83	-20 54.1	4.323	3.886	+1.01	+1.3	21.3	57.8
Nov. 3	18 02.88	-20 41.1	4.494	3.933	+1.05	+1.5	21.3	50.2
Nov. 13	18 13.39	-20 26.0	4.651	3.980	+1.08	+1.8	21.4	42.7
Nov. 23	18 24.24	-20 08.4	4.793	4.026	+1.11	+2.1	21.4	35.2
Dec. 3	18 35.29	-19 47.8	4.919	4.072	+1.12	+2.4	21.4	27.7
Dec. 13	18 46.44	-19 24.0	5.026	4.117	+1.12	+2.7	21.4	20.4
Dec. 23	18 57.60	-18 56.8	5.114	4.161	+1.11	+3.0	21.4	13.1
Jan. 2	19 08.65	-18 26.3	5.181	4.205	+1.09	+3.4	21.3	6.4
Jan. 12	19 19.51	-17 52.6	5.228	4.249	+1.06	+3.7	21.3	5.0
Jan. 22	19 30.07	-17 15.8	5.253	4.291	+1.02	+4.0	21.4	11.1
Feb. 1	19 40.24	-16 36.3	5.257	4.333	+0.97	+4.2	21.6	18.4
Feb. 11	19 49.94	-15 54.3	5.241	4.375	+0.91	+4.4	21.7	26.0
Feb. 21	19 59.07	-15 10.5	5.205	4.416	+0.85	+4.5	21.7	33.7
Mar. 3	20 07.53	-14 25.2	5.150	4.456	+0.77	+4.6	21.8	41.5
Mar. 13	20 15.24	-13 39.1	5.078	4.496	+0.69	+4.6	21.8	49.4
Mar. 23	20 22.09	-12 52.7	4.991	4.535	+0.59	+4.6	21.8	57.5

Comet C/2015 X7 (ATLAS)

Epoch = 2017 July 26.0 TT
T = 2016 July 30.34346 TT
Peri. = 348.51583
Node = 139.87615 2000.0
Incl. = 57.56370
q = 3.6850720 AU
e = 1.0019635

m1 = 10.2 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 26.36	+24 01.1	3.342	3.954	+0.11	+15.0	17.3	122.1
Jan. 17	11 27.46	+26 31.0	3.266	3.986	-0.06	+15.8	17.3	131.4
Jan. 27	11 26.82	+29 08.9	3.215	4.021	-0.23	+15.9	17.3	140.1
Feb. 6	11 24.51	+31 48.4	3.193	4.056	-0.38	+15.3	17.3	147.1
Feb. 16	11 20.76	+34 21.7	3.201	4.094	-0.48	+14.0	17.3	151.1
Feb. 26	11 15.92	+36 41.6	3.241	4.132	-0.54	+12.0	17.4	150.7
Mar. 8	11 10.53	+38 41.8	3.310	4.173	-0.54	+9.7	17.5	146.3
Mar. 18	11 05.17	+40 18.7	3.408	4.214	-0.47	+7.2	17.5	139.4
Mar. 28	11 00.43	+41 31.0	3.530	4.257	-0.36	+4.9	17.7	131.5
Apr. 7	10 56.80	+42 19.7	3.671	4.300	-0.22	+2.7	17.8	123.1
Apr. 17	10 54.62	+42 47.1	3.828	4.345	-0.06	+0.9	17.9	114.8
Apr. 27	10 54.06	+42 56.5	3.995	4.392	+0.11	-0.6	18.0	106.7
May 7	10 55.18	+42 51.0	4.170	4.439	+0.27	-1.7	18.2	98.8
May 17	10 57.91	+42 33.7	4.348	4.487	+0.42	-2.7	18.3	91.3
May 27	11 02.10	+42 07.2	4.526	4.536	+0.55	-3.4	18.4	84.1
June 6	11 07.62	+41 33.6	4.701	4.586	+0.67	-3.9	18.5	77.3
June 16	11 14.28	+40 54.9	4.871	4.637	+0.76	-4.2	18.6	70.8
June 26	11 21.91	+40 12.5	5.033	4.688	+0.85	-4.5	18.7	64.6
July 6	11 30.37	+39 27.7	5.187	4.741	+0.91	-4.6	18.8	58.8
July 16	11 39.52	+38 41.6	5.329	4.794	+0.97	-4.6	18.9	53.4
July 26	11 49.23	+37 55.2	5.460	4.848	+1.02	-4.6	19.0	48.5
Aug. 5	11 59.41	+37 09.5	5.578	4.902	+1.05	-4.4	19.1	44.2
Aug. 15	12 09.95	+36 25.2	5.683	4.957	+1.08	-4.2	19.2	40.5
Aug. 25	12 20.79	+35 43.3	5.773	5.013	+1.11	-3.9	19.3	37.8
Sept. 4	12 31.84	+35 04.6	5.849	5.069	+1.12	-3.5	19.3	36.1
Sept.14	12 43.05	+34 29.9	5.910	5.126	+1.13	-3.0	19.4	35.6
Sept.24	12 54.35	+34 00.1	5.957	5.183	+1.13	-2.4	19.4	36.4
Oct. 4	13 05.68	+33 36.1	5.989	5.241	+1.13	-1.7	19.5	38.4
Oct. 14	13 16.98	+33 18.6	6.007	5.299	+1.12	-1.0	19.5	41.4
Oct. 24	13 28.18	+33 08.5	6.012	5.358	+1.10	-0.2	19.6	45.2
Nov. 3	13 39.21	+33 06.7	6.005	5.417	+1.08	+0.7	19.6	49.7
Nov. 13	13 49.99	+33 13.8	5.987	5.476	+1.05	+1.7	19.6	54.8
Nov. 23	14 00.44	+33 30.4	5.960	5.536	+1.00	+2.7	19.6	60.2
Dec. 3	14 10.46	+33 57.0	5.925	5.596	+0.95	+3.7	19.7	65.9
Dec. 13	14 19.95	+34 33.9	5.885	5.656	+0.88	+4.7	19.7	71.8
Dec. 23	14 28.79	+35 21.0	5.842	5.717	+0.81	+5.7	19.7	77.9
Jan. 2	14 36.85	+36 18.1	5.798	5.778	+0.72	+6.6	19.7	84.0
Jan. 12	14 44.00	+37 24.3	5.756	5.839	+0.61	+7.4	19.7	90.0
Jan. 22	14 50.10	+38 38.6	5.719	5.900	+0.49	+8.1	19.8	95.8
Feb. 1	14 55.01	+39 59.3	5.688	5.962	+0.36	+8.5	19.8	101.4
Feb. 11	14 58.62	+41 24.1	5.668	6.023	+0.22	+8.6	19.8	106.5
Feb. 21	15 00.81	+42 50.5	5.659	6.085	+0.07	+8.5	19.8	111.1
Mar. 3	15 01.53	+44 15.4	5.665	6.147	-0.08	+8.0	19.9	114.9
Mar. 13	15 00.78	+45 35.6	5.685	6.210	-0.22	+7.2	19.9	117.7
Mar. 23	14 58.62	+46 47.8	5.721	6.272	-0.34	+6.1	20.0	119.5

Comet 9P/Tempel

Epoch = 2017 July 26.0 TT
T = 2016 Aug. 2.62603 TT
Peri. = 179.23408 e = 0.5096714
Node = 68.74370 2000.0 a = 3.1462897 AU
Incl. = 10.47410 n = 0.17660623
q = 1.5427158 AU P = 5.58 years

m1 = 8.4 + 5 log(Delta) + 17.5 log(r(t-20))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	21 15.61	-23 39.2	2.934	2.121	+2.28	+10.4	16.0	28.4
Jan. 17	21 38.42	-21 55.1	3.039	2.177	+2.17	+10.9	16.3	24.0
Jan. 27	22 00.10	-20 06.6	3.138	2.234	+2.06	+11.1	16.6	19.5
Feb. 6	22 20.73	-18 15.4	3.229	2.292	+1.96	+11.2	16.9	15.1
Feb. 16	22 40.37	-16 23.4	3.311	2.349	+1.88	+11.1	17.1	11.0
Feb. 26	22 59.13	-14 32.0	3.383	2.407	+1.79	+11.0	17.3	8.0
Mar. 8	23 17.05	-12 42.3	3.444	2.464	+1.71	+10.7	17.6	7.8
Mar. 18	23 34.19	-10 55.5	3.492	2.521	+1.64	+10.3	17.8	10.6
Mar. 28	23 50.60	-09 12.6	3.528	2.577	+1.57	+9.8	18.0	15.1
Apr. 7	00 06.30	-07 34.3	3.551	2.634	+1.50	+9.3	18.2	20.1
Apr. 17	00 21.30	-06 01.4	3.560	2.689	+1.43	+8.7	18.4	25.6
Apr. 27	00 35.61	-04 34.6	3.555	2.744	+1.36	+8.0	18.5	31.2
May 7	00 49.20	-03 14.4	3.537	2.799	+1.28	+7.3	18.7	37.1
May 17	01 02.03	-02 01.6	3.505	2.853	+1.20	+6.5	18.8	43.2
May 27	01 14.07	-00 56.5	3.461	2.906	+1.12	+5.7	18.9	49.5
June 6	01 25.22	+00 00.3	3.404	2.959	+1.02	+4.8	19.0	56.0
June 16	01 35.40	+00 48.3	3.337	3.011	+0.91	+3.9	19.1	62.8
June 26	01 44.49	+01 27.1	3.259	3.062	+0.79	+2.9	19.2	69.9
July 6	01 52.35	+01 56.1	3.174	3.112	+0.65	+1.9	19.3	77.3
July 16	01 58.82	+02 15.0	3.083	3.162	+0.49	+0.9	19.3	85.1
July 26	02 03.72	+02 23.6	2.988	3.210	+0.32	-0.2	19.4	93.3
Aug. 5	02 06.88	+02 21.5	2.893	3.258	+0.13	-1.2	19.5	102.0
Aug. 15	02 08.13	+02 09.1	2.802	3.306	-0.08	-2.2	19.5	111.2
Aug. 25	02 07.35	+01 46.6	2.719	3.352	-0.29	-3.1	19.5	120.9
Sept. 4	02 04.49	+01 15.5	2.649	3.398	-0.48	-3.8	19.6	131.1
Sept. 14	01 59.66	+00 37.5	2.596	3.442	-0.66	-4.2	19.7	141.7
Sept. 24	01 53.10	-00 04.3	2.565	3.486	-0.78	-4.2	19.7	152.5
Oct. 4	01 45.28	-00 46.5	2.562	3.530	-0.85	-3.8	19.8	162.8
Oct. 14	01 36.80	-01 24.8	2.587	3.572	-0.85	-3.1	20.0	169.2
Oct. 24	01 28.35	-01 55.7	2.643	3.614	-0.77	-2.0	20.1	165.0
Nov. 3	01 20.61	-02 16.2	2.730	3.654	-0.65	-0.8	20.3	155.2
Nov. 13	01 14.11	-02 24.7	2.844	3.694	-0.49	+0.4	20.4	144.5
Nov. 23	01 09.23	-02 20.7	2.982	3.733	-0.31	+1.6	20.6	133.7
Dec. 3	01 06.16	-02 04.8	3.140	3.772	-0.12	+2.7	20.8	123.3
Dec. 13	01 04.91	-01 38.3	3.313	3.809	+0.05	+3.6	21.0	113.2
Dec. 23	01 05.41	-01 02.6	3.496	3.846	+0.21	+4.3	21.2	103.5
Jan. 2	01 07.52	-00 19.2	3.686	3.882	+0.35	+4.9	21.4	94.1
Jan. 12	01 11.04	+00 30.3	3.876	3.917	+0.48	+5.4	21.6	85.1
Jan. 22	01 15.80	+01 24.6	4.065	3.952	+0.58	+5.8	21.8	76.4
Feb. 1	01 21.63	+02 22.5	4.248	3.985	+0.67	+6.0	21.9	68.0
Feb. 11	01 28.34	+03 22.8	4.422	4.018	+0.75	+6.2	22.1	59.9
Feb. 21	01 35.81	+04 24.7	4.584	4.050	+0.81	+6.3	22.2	51.9
Mar. 3	01 43.89	+05 27.3	4.734	4.082	+0.86	+6.3	22.3	44.2
Mar. 13	01 52.47	+06 29.8	4.867	4.112	+0.90	+6.2	22.5	36.6
Mar. 23	02 01.45	+07 31.7	4.984	4.142	+0.93	+6.1	22.6	29.2

Comet C/2014 R3 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 Aug. 8.35067 TT
Peri. = 113.43559
Node = 334.10564 2000.0
Incl. = 90.84235
q = 7.2759158 AU
e = 0.9993074

m1 = -0.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	13 44.80	+56 43.8	7.035	7.340	-0.35	+5.3	16.8	104.3
Jan. 17	13 41.33	+57 37.2	6.964	7.348	-0.55	+5.6	16.8	109.3
Jan. 27	13 35.81	+58 33.3	6.906	7.358	-0.77	+5.5	16.8	113.7
Feb. 6	13 28.07	+59 28.1	6.862	7.367	-1.00	+4.9	16.8	117.4
Feb. 16	13 18.09	+60 17.4	6.836	7.378	-1.20	+3.9	16.8	119.8
Feb. 26	13 06.04	+60 56.9	6.830	7.388	-1.37	+2.6	16.8	121.0
Mar. 8	12 52.33	+61 22.4	6.844	7.400	-1.47	+0.9	16.8	120.7
Mar. 18	12 37.60	+61 31.0	6.879	7.411	-1.50	-1.0	16.8	118.9
Mar. 28	12 22.64	+61 20.9	6.935	7.424	-1.43	-2.9	16.9	115.8
Apr. 7	12 08.31	+60 52.0	7.010	7.437	-1.30	-4.6	16.9	111.6
Apr. 17	11 55.30	+60 05.9	7.103	7.450	-1.12	-6.1	16.9	106.5
Apr. 27	11 44.09	+59 05.0	7.209	7.464	-0.91	-7.3	17.0	100.8
May 7	11 34.94	+57 52.4	7.327	7.478	-0.71	-8.1	17.0	94.7
May 17	11 27.89	+56 31.4	7.454	7.493	-0.51	-8.7	17.1	88.3
May 27	11 22.82	+55 04.7	7.585	7.508	-0.33	-9.0	17.1	81.9
June 6	11 19.55	+53 34.9	7.717	7.524	-0.17	-9.1	17.2	75.3
June 16	11 17.85	+52 04.2	7.847	7.541	-0.04	-9.0	17.2	68.9
June 26	11 17.50	+50 34.1	7.972	7.557	+0.08	-8.8	17.3	62.6
July 6	11 18.28	+49 05.8	8.088	7.575	+0.17	-8.5	17.3	56.5
July 16	11 19.97	+47 40.5	8.194	7.593	+0.24	-8.2	17.4	50.8
July 26	11 22.41	+46 18.8	8.286	7.611	+0.30	-7.7	17.4	45.7
Aug. 5	11 25.42	+45 01.5	8.363	7.630	+0.34	-7.2	17.4	41.3
Aug. 15	11 28.87	+43 49.1	8.422	7.649	+0.38	-6.7	17.5	38.0
Aug. 25	11 32.63	+42 41.9	8.463	7.668	+0.39	-6.1	17.5	36.1
Sept. 4	11 36.58	+41 40.5	8.484	7.688	+0.40	-5.5	17.5	35.8
Sept.14	11 40.59	+40 45.2	8.484	7.709	+0.40	-4.9	17.5	37.4
Sept.24	11 44.57	+39 56.4	8.465	7.730	+0.38	-4.2	17.6	40.5
Oct. 4	11 48.41	+39 14.4	8.426	7.751	+0.36	-3.5	17.6	45.0
Oct. 14	11 51.99	+38 39.7	8.368	7.773	+0.32	-2.7	17.6	50.6
Oct. 24	11 55.21	+38 12.5	8.292	7.796	+0.27	-2.0	17.6	57.0
Nov. 3	11 57.94	+37 52.9	8.201	7.818	+0.21	-1.2	17.6	64.1
Nov. 13	12 00.08	+37 41.2	8.097	7.841	+0.14	-0.4	17.6	71.6
Nov. 23	12 01.50	+37 37.3	7.983	7.865	+0.06	+0.4	17.5	79.6
Dec. 3	12 02.07	+37 40.8	7.864	7.889	-0.04	+1.0	17.5	87.9
Dec. 13	12 01.69	+37 51.2	7.743	7.913	-0.15	+1.6	17.5	96.4
Dec. 23	12 00.23	+38 07.5	7.625	7.938	-0.26	+2.1	17.5	105.1
Jan. 2	11 57.63	+38 28.3	7.516	7.963	-0.38	+2.4	17.5	113.8
Jan. 12	11 53.85	+38 51.9	7.419	7.988	-0.50	+2.4	17.5	122.3
Jan. 22	11 48.90	+39 16.1	7.340	8.014	-0.60	+2.2	17.5	130.5
Feb. 1	11 42.86	+39 38.4	7.284	8.041	-0.70	+1.8	17.5	137.8
Feb. 11	11 35.90	+39 56.3	7.253	8.067	-0.76	+1.1	17.5	143.5
Feb. 21	11 28.25	+40 07.5	7.251	8.094	-0.80	+0.3	17.5	146.6
Mar. 3	11 20.23	+40 10.2	7.278	8.122	-0.81	-0.7	17.6	146.3
Mar. 13	11 12.17	+40 03.1	7.335	8.149	-0.78	-1.7	17.6	142.8
Mar. 23	11 04.41	+39 45.9	7.421	8.177	-0.72	-2.7	17.6	136.9

Comet 43P/Wolf-Harrington

Epoch = 2017 July 26.0 TT
T = 2016 Aug. 19.80919 TT
Peri. = 191.68575 e = 0.5948864
Node = 249.78340 2000.0 a = 3.3523873 AU
Incl. = 15.97444 n = 0.16057310
q = 1.3580977 AU P = 6.14 years

m1 = 8.0 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	12 23.38	-22 56.0	1.724	2.011	+0.55	-10.7	14.5	91.8
Jan. 17	12 28.90	-24 42.6	1.678	2.080	+0.23	-8.5	14.7	99.5
Jan. 27	12 31.19	-26 08.0	1.633	2.150	-0.11	-6.0	14.9	107.8
Feb. 6	12 30.04	-27 07.8	1.593	2.219	-0.45	-3.0	15.1	116.8
Feb. 16	12 25.56	-27 37.5	1.561	2.289	-0.74	+0.4	15.3	126.3
Feb. 26	12 18.18	-27 33.0	1.542	2.358	-0.94	+4.1	15.5	136.0
Mar. 8	12 08.78	-26 52.4	1.543	2.426	-1.02	+7.4	15.7	145.5
Mar. 18	11 58.60	-25 38.3	1.565	2.494	-0.97	+10.0	15.9	153.2
Mar. 28	11 48.93	-23 58.3	1.613	2.562	-0.81	+11.5	16.2	157.0
Apr. 7	11 40.87	-22 03.6	1.688	2.629	-0.57	+11.7	16.5	154.9
Apr. 17	11 35.13	-20 06.2	1.788	2.695	-0.32	+11.0	16.8	148.4
Apr. 27	11 31.97	-18 16.0	1.912	2.760	-0.06	+9.6	17.1	140.1
May 7	11 31.35	-16 40.1	2.056	2.824	+0.17	+7.8	17.5	131.2
May 17	11 33.03	-15 21.8	2.217	2.888	+0.37	+6.0	17.8	122.4
May 27	11 36.70	-14 22.0	2.391	2.950	+0.54	+4.2	18.1	113.9
June 6	11 42.05	-13 40.2	2.575	3.012	+0.67	+2.5	18.4	105.7
June 16	11 48.77	-13 14.9	2.766	3.073	+0.78	+1.1	18.7	97.8
June 26	11 56.61	-13 04.1	2.961	3.133	+0.88	-0.2	19.0	90.1
July 6	12 05.36	-13 06.0	3.157	3.192	+0.95	-1.3	19.3	82.8
July 16	12 14.84	-13 18.6	3.350	3.250	+1.01	-2.2	19.6	75.6
July 26	12 24.91	-13 40.1	3.541	3.307	+1.06	-2.9	19.8	68.5
Aug. 5	12 35.46	-14 09.1	3.725	3.363	+1.09	-3.5	20.1	61.6
Aug. 15	12 46.39	-14 44.0	3.900	3.418	+1.12	-4.0	20.3	54.8
Aug. 25	12 57.62	-15 23.7	4.066	3.473	+1.15	-4.3	20.5	48.0
Sept. 4	13 09.10	-16 07.1	4.220	3.526	+1.16	-4.6	20.7	41.3
Sept. 14	13 20.74	-16 53.0	4.360	3.579	+1.18	-4.8	20.9	34.6
Sept. 24	13 32.52	-17 40.7	4.486	3.630	+1.18	-4.9	21.1	27.9
Oct. 4	13 44.37	-18 29.2	4.595	3.681	+1.19	-4.9	21.2	21.3
Oct. 14	13 56.24	-19 17.9	4.686	3.731	+1.18	-4.8	21.4	14.9
Oct. 24	14 08.07	-20 06.2	4.758	3.779	+1.17	-4.7	21.5	9.1
Nov. 3	14 19.80	-20 53.3	4.811	3.827	+1.16	-4.6	21.6	6.6
Nov. 13	14 31.37	-21 38.8	4.844	3.875	+1.13	-4.3	21.7	10.4
Nov. 23	14 42.69	-22 22.3	4.856	3.921	+1.10	-4.1	21.8	16.7
Dec. 3	14 53.67	-23 03.2	4.848	3.966	+1.05	-3.8	21.9	23.8
Dec. 13	15 04.22	-23 41.3	4.820	4.011	+1.00	-3.5	22.0	31.2
Dec. 23	15 14.22	-24 16.3	4.773	4.054	+0.93	-3.2	22.0	38.9
Jan. 2	15 23.54	-24 47.9	4.708	4.097	+0.85	-2.8	22.1	46.7
Jan. 12	15 32.05	-25 16.0	4.626	4.139	+0.75	-2.4	22.1	54.9
Jan. 22	15 39.60	-25 40.3	4.530	4.180	+0.64	-2.0	22.2	63.2
Feb. 1	15 46.01	-26 00.8	4.423	4.221	+0.51	-1.6	22.2	71.8
Feb. 11	15 51.14	-26 17.2	4.307	4.260	+0.37	-1.2	22.2	80.7
Feb. 21	15 54.81	-26 29.2	4.185	4.299	+0.21	-0.7	22.2	89.9
Mar. 3	15 56.86	-26 36.4	4.063	4.337	+0.03	-0.2	22.2	99.4
Mar. 13	15 57.20	-26 38.4	3.944	4.374	-0.15	+0.4	22.2	109.3
Mar. 23	15 55.74	-26 34.4	3.833	4.411	-0.32	+1.1	22.2	119.5

Comet 33P/Daniel

Epoch = 2017 July 26.0 TT
T = 2016 Aug. 22.60356 TT
Peri. = 19.13639 e = 0.4631688
Node = 66.47833 2000.0 a = 4.0252059 AU
Incl. = 22.39503 n = 0.12204554
q = 2.1608561 AU P = 8.08 years

m1 = 12.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	10 57.01	+40 07.8	1.662	2.412	-0.02	+11.8	17.7	129.7
Jan. 17	10 56.85	+42 06.1	1.636	2.446	-0.39	+11.0	17.8	136.5
Jan. 27	10 52.98	+43 55.9	1.630	2.481	-0.71	+8.9	17.8	142.0
Feb. 6	10 45.91	+45 25.1	1.645	2.518	-0.92	+5.8	17.9	145.1
Feb. 16	10 36.75	+46 23.3	1.682	2.556	-0.98	+2.1	18.0	145.1
Feb. 26	10 26.97	+46 44.7	1.742	2.595	-0.88	-1.6	18.1	142.0
Mar. 8	10 18.13	+46 28.6	1.822	2.635	-0.67	-4.9	18.3	136.8
Mar. 18	10 11.44	+45 39.7	1.921	2.675	-0.39	-7.5	18.5	130.4
Mar. 28	10 07.51	+44 24.6	2.037	2.717	-0.10	-9.4	18.7	123.4
Apr. 7	10 06.51	+42 50.5	2.166	2.759	+0.17	-10.7	18.9	116.3
Apr. 17	10 08.24	+41 03.5	2.307	2.802	+0.41	-11.5	19.1	109.2
Apr. 27	10 12.31	+39 08.3	2.457	2.845	+0.60	-12.0	19.3	102.2
May 7	10 18.33	+37 08.2	2.613	2.889	+0.76	-12.3	19.5	95.5
May 17	10 25.89	+35 05.5	2.773	2.933	+0.88	-12.4	19.7	88.9
May 27	10 34.66	+33 01.6	2.935	2.977	+0.97	-12.4	19.9	82.5
June 6	10 44.38	+30 57.7	3.098	3.022	+1.04	-12.3	20.1	76.2
June 16	10 54.79	+28 54.4	3.259	3.066	+1.09	-12.2	20.2	70.1
June 26	11 05.74	+26 52.2	3.418	3.111	+1.13	-12.1	20.4	64.1
July 6	11 17.09	+24 51.6	3.571	3.156	+1.16	-11.9	20.6	58.2
July 16	11 28.71	+22 53.0	3.718	3.201	+1.18	-11.6	20.7	52.4
July 26	11 40.55	+20 56.6	3.858	3.246	+1.20	-11.4	20.8	46.6
Aug. 5	11 52.51	+19 02.9	3.989	3.290	+1.20	-11.1	21.0	41.0
Aug. 15	12 04.56	+17 12.2	4.109	3.335	+1.21	-10.7	21.1	35.4
Aug. 25	12 16.65	+15 24.8	4.218	3.379	+1.21	-10.4	21.2	29.9
Sept. 4	12 28.73	+13 41.1	4.313	3.424	+1.20	-10.0	21.3	24.7
Sept.14	12 40.77	+12 01.5	4.396	3.468	+1.20	-9.5	21.4	20.0
Sept.24	12 52.74	+10 26.3	4.463	3.512	+1.19	-9.0	21.5	16.4
Oct. 4	13 04.59	+08 56.0	4.514	3.555	+1.17	-8.5	21.6	14.6
Oct. 14	13 16.28	+07 31.0	4.550	3.599	+1.15	-7.9	21.7	15.6
Oct. 24	13 27.76	+06 11.7	4.568	3.642	+1.12	-7.3	21.7	19.0
Nov. 3	13 38.97	+04 58.6	4.569	3.684	+1.09	-6.7	21.8	23.9
Nov. 13	13 49.85	+03 52.0	4.553	3.727	+1.05	-6.0	21.8	29.8
Nov. 23	14 00.32	+02 52.5	4.520	3.769	+1.00	-5.2	21.8	36.2
Dec. 3	14 10.27	+02 00.5	4.471	3.811	+0.93	-4.4	21.9	43.1
Dec. 13	14 19.62	+01 16.2	4.406	3.852	+0.86	-3.6	21.9	50.3
Dec. 23	14 28.23	+00 40.0	4.328	3.894	+0.77	-2.8	21.9	57.8
Jan. 2	14 35.98	+00 12.1	4.237	3.934	+0.67	-1.9	21.9	65.6
Jan. 12	14 42.72	-00 07.3	4.136	3.975	+0.56	-1.1	21.9	73.8
Jan. 22	14 48.29	-00 18.2	4.028	4.015	+0.42	-0.3	21.9	82.2
Feb. 1	14 52.54	-00 20.8	3.916	4.054	+0.28	+0.5	21.8	91.0
Feb. 11	14 55.32	-00 15.6	3.804	4.094	+0.12	+1.2	21.8	100.1
Feb. 21	14 56.49	-00 03.2	3.695	4.132	-0.05	+1.8	21.8	109.5
Mar. 3	14 55.98	+00 15.3	3.595	4.171	-0.22	+2.3	21.8	119.3
Mar. 13	14 53.77	+00 38.2	3.509	4.209	-0.38	+2.5	21.8	129.3
Mar. 23	14 49.94	+01 03.5	3.440	4.246	-0.52	+2.5	21.8	139.4

Comet C/2015 TQ209 (LINEAR)

Epoch = 2017 July 26.0 TT
T = 2016 Aug. 27.54978 TT
Peri. = 281.47807
Node = 224.08377 2000.0
Incl. = 11.39619
q = 1.4123858 AU
e = 0.9988158

m1 = 10.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	15 52.79	-20 29.9	2.868	2.300	+1.69	-1.8	15.9	46.2
Jan. 17	16 09.67	-20 47.8	2.869	2.400	+1.51	-0.7	16.1	52.5
Jan. 27	16 24.75	-20 55.2	2.859	2.502	+1.32	+0.2	16.3	59.2
Feb. 6	16 37.91	-20 53.3	2.838	2.603	+1.11	+1.0	16.4	66.3
Feb. 16	16 49.03	-20 43.3	2.808	2.705	+0.89	+1.7	16.6	73.8
Feb. 26	16 57.96	-20 26.4	2.771	2.807	+0.66	+2.3	16.7	81.9
Mar. 8	17 04.58	-20 03.6	2.729	2.910	+0.42	+2.8	16.8	90.4
Mar. 18	17 08.78	-19 35.9	2.685	3.012	+0.17	+3.2	16.9	99.4
Mar. 28	17 10.50	-19 04.3	2.643	3.114	-0.08	+3.5	17.0	108.9
Apr. 7	17 09.74	-18 29.4	2.609	3.215	-0.31	+3.7	17.2	119.0
Apr. 17	17 06.66	-17 52.2	2.587	3.317	-0.51	+3.9	17.3	129.5
Apr. 27	17 01.52	-17 13.6	2.582	3.418	-0.68	+3.9	17.4	140.4
May 7	16 54.77	-16 35.0	2.598	3.518	-0.78	+3.7	17.5	151.5
May 17	16 47.00	-15 57.7	2.641	3.618	-0.81	+3.4	17.7	162.5
May 27	16 38.87	-15 23.4	2.712	3.718	-0.78	+3.0	17.9	171.9
June 6	16 31.06	-14 53.7	2.813	3.817	-0.69	+2.4	18.1	170.3
June 16	16 24.11	-14 30.0	2.943	3.915	-0.57	+1.7	18.3	160.6
June 26	16 18.44	-14 13.0	3.100	4.013	-0.41	+1.0	18.5	150.1
July 6	16 14.30	-14 03.0	3.281	4.110	-0.25	+0.3	18.7	139.8
July 16	16 11.79	-13 59.7	3.483	4.207	-0.09	-0.3	18.9	129.8
July 26	16 10.89	-14 02.3	3.702	4.303	+0.06	-0.8	19.2	120.2
Aug. 5	16 11.51	-14 10.1	3.934	4.399	+0.20	-1.2	19.4	110.9
Aug. 15	16 13.52	-14 21.9	4.175	4.494	+0.33	-1.5	19.6	101.9
Aug. 25	16 16.77	-14 36.7	4.421	4.589	+0.43	-1.7	19.8	93.1
Sept. 4	16 21.12	-14 53.5	4.669	4.683	+0.53	-1.8	20.1	84.6
Sept. 14	16 26.40	-15 11.3	4.914	4.777	+0.61	-1.8	20.2	76.3
Sept. 24	16 32.49	-15 29.5	5.155	4.870	+0.68	-1.8	20.4	68.1
Oct. 4	16 39.24	-15 47.2	5.387	4.962	+0.73	-1.7	20.6	60.0
Oct. 14	16 46.54	-16 03.7	5.608	5.054	+0.77	-1.5	20.8	51.9
Oct. 24	16 54.27	-16 18.7	5.815	5.146	+0.81	-1.3	20.9	44.0
Nov. 3	17 02.32	-16 31.7	6.006	5.237	+0.83	-1.1	21.1	36.1
Nov. 13	17 10.59	-16 42.2	6.179	5.327	+0.84	-0.8	21.2	28.2
Nov. 23	17 18.99	-16 50.0	6.331	5.417	+0.84	-0.5	21.3	20.4
Dec. 3	17 27.40	-16 55.0	6.462	5.506	+0.83	-0.2	21.5	13.0
Dec. 13	17 35.73	-16 57.0	6.571	5.595	+0.82	+0.1	21.6	7.1
Dec. 23	17 43.89	-16 56.1	6.656	5.684	+0.79	+0.4	21.7	8.1
Jan. 2	17 51.78	-16 52.2	6.717	5.772	+0.75	+0.7	21.7	14.8
Jan. 12	17 59.29	-16 45.6	6.756	5.860	+0.71	+0.9	21.8	22.6
Jan. 22	18 06.35	-16 36.4	6.771	5.947	+0.65	+1.2	21.9	30.8
Feb. 1	18 12.84	-16 24.9	6.764	6.034	+0.58	+1.4	22.0	39.2
Feb. 11	18 18.67	-16 11.4	6.739	6.120	+0.51	+1.5	22.0	47.8
Feb. 21	18 23.76	-15 56.3	6.695	6.206	+0.43	+1.6	22.1	56.6
Mar. 3	18 28.02	-15 40.0	6.637	6.291	+0.33	+1.7	22.1	65.5
Mar. 13	18 31.36	-15 22.9	6.568	6.377	+0.24	+1.7	22.1	74.6
Mar. 23	18 33.71	-15 05.6	6.491	6.461	+0.13	+1.7	22.2	83.9

Comet C/2015 V4 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 Aug. 28.99783 TT
Peri. = 307.00714 e = 0.7061105
Node = 179.89781 2000.0 a = 18.5795991 AU
Incl. = 60.74833 n = 0.01230693
q = 5.4603491 AU P = 80.09 years

m1 = 4.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	10 14.60	-29 42.8	5.077	5.520	-0.25	+1.2	19.3	111.9
Jan. 17	10 12.12	-29 31.0	4.973	5.529	-0.34	+2.7	19.2	119.9
Jan. 27	10 08.70	-29 03.9	4.884	5.539	-0.41	+4.4	19.2	127.6
Feb. 6	10 04.61	-28 20.2	4.813	5.550	-0.44	+6.0	19.2	134.6
Feb. 16	10 00.16	-27 20.0	4.766	5.561	-0.44	+7.6	19.2	140.2
Feb. 26	09 55.73	-26 04.5	4.744	5.573	-0.41	+8.9	19.2	143.8
Mar. 8	09 51.66	-24 35.9	4.750	5.586	-0.34	+9.8	19.2	144.3
Mar. 18	09 48.26	-22 57.8	4.783	5.599	-0.25	+10.4	19.2	141.8
Mar. 28	09 45.77	-21 13.9	4.844	5.613	-0.14	+10.6	19.3	136.8
Apr. 7	09 44.35	-19 28.3	4.930	5.628	-0.03	+10.4	19.3	130.1
Apr. 17	09 44.07	-17 44.8	5.039	5.643	+0.09	+9.9	19.4	122.5
Apr. 27	09 44.94	-16 06.2	5.167	5.658	+0.20	+9.1	19.5	114.4
May 7	09 46.92	-14 35.1	5.311	5.675	+0.30	+8.2	19.5	106.1
May 17	09 49.93	-13 13.0	5.466	5.692	+0.39	+7.2	19.6	97.8
May 27	09 53.86	-12 00.7	5.628	5.709	+0.48	+6.2	19.7	89.5
June 6	09 58.61	-10 58.5	5.792	5.727	+0.55	+5.2	19.8	81.3
June 16	10 04.07	-10 06.4	5.956	5.746	+0.61	+4.2	19.9	73.2
June 26	10 10.12	-09 23.9	6.116	5.765	+0.66	+3.3	19.9	65.3
July 6	10 16.67	-08 50.5	6.268	5.785	+0.69	+2.5	20.0	57.5
July 16	10 23.62	-08 25.4	6.409	5.805	+0.73	+1.8	20.1	49.8
July 26	10 30.88	-08 07.8	6.538	5.826	+0.75	+1.1	20.2	42.2
Aug. 5	10 38.37	-07 56.9	6.651	5.847	+0.76	+0.5	20.2	34.9
Aug. 15	10 46.01	-07 51.7	6.747	5.869	+0.77	0.0	20.3	27.7
Aug. 25	10 53.74	-07 51.5	6.824	5.891	+0.77	-0.4	20.3	21.0
Sept. 4	11 01.47	-07 55.4	6.880	5.914	+0.77	-0.7	20.4	15.4
Sept. 14	11 09.14	-08 02.4	6.916	5.938	+0.75	-0.9	20.4	12.4
Sept. 24	11 16.69	-08 11.8	6.930	5.961	+0.73	-1.1	20.4	14.0
Oct. 4	11 24.04	-08 22.6	6.921	5.986	+0.71	-1.1	20.5	19.2
Oct. 14	11 31.12	-08 33.8	6.891	6.010	+0.67	-1.1	20.5	26.0
Oct. 24	11 37.85	-08 44.7	6.840	6.036	+0.63	-0.9	20.5	33.5
Nov. 3	11 44.15	-08 54.1	6.768	6.061	+0.58	-0.7	20.5	41.5
Nov. 13	11 49.95	-09 01.3	6.678	6.087	+0.52	-0.4	20.5	49.9
Nov. 23	11 55.13	-09 05.0	6.571	6.114	+0.45	+0.1	20.5	58.5
Dec. 3	11 59.62	-09 04.3	6.450	6.141	+0.37	+0.6	20.5	67.5
Dec. 13	12 03.33	-08 58.2	6.320	6.168	+0.28	+1.3	20.5	76.7
Dec. 23	12 06.17	-08 45.6	6.182	6.196	+0.19	+2.0	20.4	86.2
Jan. 2	12 08.06	-08 25.6	6.043	6.224	+0.09	+2.8	20.4	96.0
Jan. 12	12 08.96	-07 57.4	5.907	6.252	-0.01	+3.7	20.4	106.1
Jan. 22	12 08.84	-07 20.4	5.779	6.281	-0.11	+4.6	20.4	116.6
Feb. 1	12 07.73	-06 34.5	5.665	6.310	-0.20	+5.5	20.4	127.2
Feb. 11	12 05.70	-05 39.9	5.570	6.340	-0.28	+6.2	20.4	138.2
Feb. 21	12 02.87	-04 37.7	5.499	6.370	-0.34	+6.8	20.4	149.3
Mar. 3	11 59.43	-03 29.2	5.457	6.400	-0.38	+7.3	20.4	160.6
Mar. 13	11 55.62	-02 16.6	5.445	6.430	-0.39	+7.4	20.4	171.8
Mar. 23	11 51.69	-01 02.3	5.467	6.461	-0.38	+7.3	20.4	176.0

Comet 330P/Catalina

Epoch = 2017 July 26.0 TT
T = 2016 Aug. 30.31235 TT
Peri. = 187.06235 e = 0.5515959
Node = 294.32651 2000.0 a = 6.5870317 AU
Incl. = 15.55651 n = 0.05830012
q = 2.9536520 AU P = 16.91 years

m1 = 8.8 + 5 log(Delta) + 15.0 log(r(t+30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	10 53.57	-05 32.6	2.505	3.105	-0.11	-6.6	18.3	119.1
Jan. 17	10 52.44	-06 38.6	2.418	3.128	-0.31	-5.2	18.3	128.6
Jan. 27	10 49.34	-07 30.4	2.348	3.152	-0.48	-3.6	18.3	138.4
Feb. 6	10 44.52	-08 06.2	2.298	3.178	-0.60	-1.9	18.3	148.0
Feb. 16	10 38.48	-08 25.4	2.273	3.205	-0.66	-0.3	18.3	156.8
Feb. 26	10 31.85	-08 28.7	2.275	3.234	-0.65	+1.0	18.4	162.7
Mar. 8	10 25.37	-08 18.6	2.305	3.263	-0.56	+2.0	18.5	162.1
Mar. 18	10 19.73	-07 58.9	2.361	3.294	-0.43	+2.5	18.6	155.7
Mar. 28	10 15.47	-07 34.1	2.444	3.326	-0.25	+2.5	18.8	147.0
Apr. 7	10 12.95	-07 08.7	2.549	3.358	-0.06	+2.2	18.9	137.8
Apr. 17	10 12.31	-06 46.4	2.674	3.392	+0.12	+1.7	19.1	128.6
Apr. 27	10 13.54	-06 29.9	2.815	3.427	+0.30	+0.9	19.3	119.7
May 7	10 16.52	-06 21.0	2.968	3.462	+0.46	0.0	19.5	111.1
May 17	10 21.08	-06 20.7	3.130	3.499	+0.59	-0.8	19.6	103.0
May 27	10 27.00	-06 29.2	3.298	3.536	+0.71	-1.7	19.8	95.1
June 6	10 34.09	-06 46.5	3.469	3.573	+0.81	-2.6	20.0	87.6
June 16	10 42.15	-07 12.1	3.641	3.612	+0.89	-3.3	20.2	80.3
June 26	10 51.02	-07 45.4	3.810	3.651	+0.95	-4.0	20.4	73.3
July 6	11 00.56	-08 25.9	3.976	3.690	+1.01	-4.7	20.5	66.5
July 16	11 10.63	-09 12.7	4.136	3.730	+1.05	-5.2	20.7	59.8
July 26	11 21.14	-10 05.2	4.289	3.771	+1.08	-5.7	20.8	53.3
Aug. 5	11 31.98	-11 02.6	4.433	3.812	+1.11	-6.2	21.0	46.9
Aug. 15	11 43.09	-12 04.2	4.566	3.853	+1.13	-6.5	21.1	40.6
Aug. 25	11 54.39	-13 09.5	4.687	3.895	+1.14	-6.8	21.2	34.4
Sept. 4	12 05.83	-14 17.6	4.795	3.937	+1.15	-7.0	21.3	28.4
Sept.14	12 17.34	-15 28.0	4.889	3.980	+1.15	-7.2	21.5	22.6
Sept.24	12 28.89	-16 40.1	4.968	4.023	+1.15	-7.3	21.6	17.5
Oct. 4	12 40.40	-17 53.3	5.031	4.066	+1.14	-7.4	21.7	13.6
Oct. 14	12 51.83	-19 07.1	5.077	4.109	+1.13	-7.4	21.7	12.5
Oct. 24	13 03.12	-20 21.0	5.106	4.152	+1.11	-7.3	21.8	14.9
Nov. 3	13 14.19	-21 34.5	5.117	4.196	+1.08	-7.3	21.9	19.7
Nov. 13	13 24.97	-22 47.0	5.110	4.240	+1.04	-7.1	22.0	25.6
Nov. 23	13 35.38	-23 58.4	5.087	4.284	+0.99	-7.0	22.0	32.2
Dec. 3	13 45.31	-25 08.0	5.046	4.328	+0.93	-6.8	22.1	39.2
Dec. 13	13 54.66	-26 15.5	4.990	4.372	+0.86	-6.5	22.1	46.5
Dec. 23	14 03.30	-27 20.6	4.919	4.416	+0.78	-6.2	22.1	54.2
Jan. 2	14 11.08	-28 22.8	4.836	4.460	+0.68	-5.9	22.2	62.0
Jan. 12	14 17.87	-29 21.7	4.742	4.504	+0.56	-5.5	22.2	70.1
Jan. 22	14 23.51	-30 16.7	4.641	4.549	+0.43	-5.0	22.2	78.5
Feb. 1	14 27.83	-31 07.1	4.535	4.593	+0.29	-4.5	22.2	87.2
Feb. 11	14 30.70	-31 52.3	4.427	4.637	+0.13	-3.9	22.2	96.1
Feb. 21	14 32.00	-32 31.0	4.323	4.682	-0.03	-3.1	22.2	105.3
Mar. 3	14 31.68	-33 02.0	4.226	4.726	-0.19	-2.2	22.2	114.7
Mar. 13	14 29.75	-33 24.0	4.140	4.770	-0.34	-1.2	22.2	124.2
Mar. 23	14 26.32	-33 35.8	4.070	4.814	-0.47	0.0	22.3	133.8

Comet C/2016 A8 (LINEAR)

Epoch = 2017 July 26.0 TT
T = 2016 Aug. 30.65433 TT
Peri. = 130.27295 e = 0.9461698
Node = 111.23648 2000.0 a = 34.9499649 AU
Incl. = 148.21286 n = 0.00477017
q = 1.8813636 AU P = 206.62 years

m1 = 9.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	19 07.23	-25 30.0	3.410	2.429	+0.49	-6.6	18.0	3.3
Jan. 17	19 12.08	-26 35.6	3.459	2.502	+0.45	-6.6	18.3	11.5
Jan. 27	19 16.57	-27 42.0	3.475	2.578	+0.39	-7.0	18.5	20.7
Feb. 6	19 20.43	-28 51.7	3.460	2.655	+0.30	-7.5	18.7	30.2
Feb. 16	19 23.39	-30 07.1	3.418	2.733	+0.17	-8.4	18.8	39.8
Feb. 26	19 25.13	-31 30.6	3.350	2.813	+0.01	-9.4	19.0	49.7
Mar. 8	19 25.23	-33 04.7	3.262	2.895	-0.20	-10.7	19.1	59.9
Mar. 18	19 23.22	-34 51.4	3.158	2.977	-0.47	-12.1	19.2	70.5
Mar. 28	19 18.49	-36 52.1	3.045	3.059	-0.82	-13.5	19.3	81.4
Apr. 7	19 10.29	-39 06.7	2.930	3.143	-1.25	-14.5	19.4	92.9
Apr. 17	18 57.76	-41 32.1	2.822	3.227	-1.77	-14.9	19.5	104.7
Apr. 27	18 40.04	-44 00.9	2.731	3.311	-2.35	-13.9	19.6	116.9
May 7	18 16.58	-46 20.1	2.668	3.396	-2.89	-11.2	19.7	129.2
May 17	17 47.65	-48 12.2	2.640	3.481	-3.28	-6.8	19.8	140.6
May 27	17 14.90	-49 20.3	2.656	3.566	-3.36	-1.5	20.0	149.5
June 6	16 41.31	-49 35.1	2.718	3.651	-3.11	+3.4	20.2	152.9
June 16	16 10.20	-49 00.6	2.828	3.736	-2.63	+6.9	20.4	149.1
June 26	15 43.89	-47 51.2	2.979	3.821	-2.06	+8.7	20.7	140.7
July 6	15 23.27	-46 24.2	3.167	3.906	-1.52	+9.0	21.0	130.6
July 16	15 08.08	-44 54.3	3.383	3.991	-1.05	+8.3	21.3	120.1
July 26	14 57.56	-43 30.8	3.618	4.075	-0.67	+7.2	21.5	109.8
Aug. 5	14 50.86	-42 19.1	3.866	4.160	-0.37	+5.8	21.8	99.7
Aug. 15	14 47.17	-41 20.9	4.120	4.244	-0.13	+4.4	22.1	90.1
Aug. 25	14 45.85	-40 36.5	4.374	4.328	+0.05	+3.1	22.3	80.8
Sept. 4	14 46.38	-40 05.1	4.622	4.412	+0.20	+2.0	22.6	71.8
Sept.14	14 48.33	-39 45.4	4.859	4.495	+0.31	+0.9	22.8	63.1
Sept.24	14 51.40	-39 36.2	5.083	4.579	+0.39	0.0	23.0	54.8
Oct. 4	14 55.30	-39 36.2	5.289	4.662	+0.45	-0.8	.	46.8
Oct. 14	14 59.81	-39 44.2	5.474	4.744	+0.49	-1.5	.	39.3
Oct. 24	15 04.74	-39 59.4	5.637	4.827	+0.52	-2.1	.	32.4
Nov. 3	15 09.92	-40 20.8	5.775	4.909	+0.53	-2.7	.	26.7
Nov. 13	15 15.18	-40 47.7	5.887	4.991	+0.52	-3.2	.	22.9
Nov. 23	15 20.36	-41 19.5	5.972	5.072	+0.49	-3.6	.	22.2
Dec. 3	15 25.29	-41 55.9	6.031	5.153	+0.45	-4.0	.	24.9
Dec. 13	15 29.81	-42 36.2	6.063	5.234	+0.39	-4.4	.	30.1
Dec. 23	15 33.73	-43 20.2	6.069	5.314	+0.31	-4.7	.	36.8
Jan. 2	15 36.86	-44 07.5	6.052	5.395	+0.21	-5.0	.	44.5
Jan. 12	15 38.99	-44 57.5	6.014	5.474	+0.09	-5.2	.	52.7
Jan. 22	15 39.89	-45 49.7	5.957	5.554	-0.06	-5.3	.	61.4
Feb. 1	15 39.32	-46 43.1	5.887	5.633	-0.23	-5.3	.	70.4
Feb. 11	15 37.07	-47 36.4	5.807	5.712	-0.42	-5.2	.	79.6
Feb. 21	15 32.90	-48 27.9	5.723	5.791	-0.62	-4.7	.	89.0
Mar. 3	15 26.66	-49 15.2	5.639	5.869	-0.84	-4.0	.	98.5
Mar. 13	15 18.30	-49 55.5	5.563	5.947	-1.04	-3.0	.	108.1
Mar. 23	15 07.87	-50 25.5	5.500	6.024	-1.22	-1.6	.	117.4

Comet 144P/Kushida

Epoch = 2017 July 26.0 TT
T = 2016 Aug. 31.17554 TT
Peri. = 216.19228 e = 0.6294208
Node = 245.43720 2000.0 a = 3.8603910 AU
Incl. = 4.11938 n = 0.12994427
q = 1.4305806 AU P = 7.58 years

m1 = 4.6 + 5 log(Delta) + 40.0 log(r(t-50))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	13 27.98	-13 35.8	1.891	1.995	+1.11	-7.3	15.0	81.3
Jan. 17	13 39.09	-14 48.6	1.840	2.064	+0.85	-5.7	15.5	88.5
Jan. 27	13 47.59	-15 45.3	1.786	2.134	+0.56	-4.0	16.0	96.4
Feb. 6	13 53.18	-16 24.9	1.732	2.204	+0.25	-2.1	16.6	105.0
Feb. 16	13 55.63	-16 46.3	1.681	2.275	-0.08	-0.2	17.1	114.4
Feb. 26	13 54.82	-16 48.6	1.637	2.346	-0.40	+1.8	17.7	124.6
Mar. 8	13 50.84	-16 31.1	1.606	2.416	-0.67	+3.7	18.2	135.6
Mar. 18	13 44.14	-15 54.3	1.592	2.487	-0.87	+5.3	18.8	147.2
Mar. 28	13 35.48	-15 00.9	1.600	2.558	-0.95	+6.5	19.3	159.2
Apr. 7	13 25.94	-13 55.8	1.634	2.628	-0.93	+7.0	19.9	170.9
Apr. 17	13 16.66	-12 46.2	1.697	2.697	-0.81	+6.7	20.6	173.8
Apr. 27	13 08.60	-11 39.3	1.787	2.766	-0.61	+5.8	21.2	163.1
May 7	13 02.45	-10 41.4	1.904	2.834	-0.39	+4.5	21.8	151.9
May 17	12 58.54	-09 56.4	2.044	2.902	-0.16	+3.0	22.5	141.1
May 27	12 56.91	-09 25.9	2.204	2.969	+0.05	+1.6	.	131.0
June 6	12 57.42	-09 10.0	2.380	3.035	+0.24	+0.2	.	121.5
June 16	12 59.85	-09 07.7	2.567	3.101	+0.41	-0.9	.	112.5
June 26	13 03.93	-09 17.2	2.764	3.166	+0.55	-2.0	.	103.9
July 6	13 09.42	-09 36.8	2.965	3.230	+0.67	-2.8	.	95.8
July 16	13 16.10	-10 04.8	3.169	3.293	+0.77	-3.5	.	87.9
July 26	13 23.76	-10 39.5	3.373	3.355	+0.85	-4.0	.	80.4
Aug. 5	13 32.25	-11 19.5	3.573	3.417	+0.92	-4.4	.	73.0
Aug. 15	13 41.42	-12 03.4	3.769	3.478	+0.97	-4.7	.	65.7
Aug. 25	13 51.16	-12 50.2	3.957	3.538	+1.02	-4.9	.	58.6
Sept. 4	14 01.38	-13 38.8	4.136	3.597	+1.06	-4.9	.	51.6
Sept.14	14 11.97	-14 28.2	4.303	3.655	+1.09	-5.0	.	44.6
Sept.24	14 22.88	-15 17.8	4.457	3.713	+1.11	-4.9	.	37.6
Oct. 4	14 34.03	-16 06.8	4.597	3.770	+1.13	-4.8	.	30.5
Oct. 14	14 45.34	-16 54.6	4.720	3.826	+1.14	-4.6	.	23.5
Oct. 24	14 56.76	-17 40.5	4.825	3.881	+1.14	-4.4	.	16.4
Nov. 3	15 08.21	-18 24.2	4.911	3.935	+1.14	-4.1	.	9.2
Nov. 13	15 19.61	-19 05.1	4.978	3.989	+1.13	-3.8	.	2.1
Nov. 23	15 30.89	-19 43.0	5.024	4.042	+1.11	-3.5	.	5.4
Dec. 3	15 41.96	-20 17.5	5.049	4.094	+1.08	-3.1	.	12.9
Dec. 13	15 52.71	-20 48.5	5.053	4.145	+1.04	-2.7	.	20.5
Dec. 23	16 03.07	-21 15.8	5.037	4.196	+0.98	-2.4	.	28.2
Jan. 2	16 12.89	-21 39.4	5.001	4.246	+0.92	-2.0	.	36.0
Jan. 12	16 22.08	-21 59.3	4.947	4.295	+0.84	-1.6	.	44.1
Jan. 22	16 30.49	-22 15.6	4.875	4.343	+0.75	-1.3	.	52.3
Feb. 1	16 37.99	-22 28.5	4.788	4.391	+0.64	-1.0	.	60.7
Feb. 11	16 44.43	-22 38.1	4.689	4.438	+0.52	-0.7	.	69.3
Feb. 21	16 49.67	-22 44.7	4.580	4.484	+0.39	-0.4	.	78.2
Mar. 3	16 53.56	-22 48.4	4.465	4.529	+0.24	-0.1	.	87.4
Mar. 13	16 55.97	-22 49.4	4.348	4.574	+0.08	+0.2	.	96.8
Mar. 23	16 56.80	-22 47.7	4.234	4.618	-0.08	+0.4	.	106.6

Comet 226P/Pigott-LINEAR-Kowalski

Epoch = 2017 July 26.0 TT
T = 2016 Sept. 5.10896 TT
Peri. = 341.11435 e = 0.5287341
Node = 54.00713 2000.0 a = 3.7692672 AU
Incl. = 44.00461 n = 0.13468483
q = 1.7763271 AU P = 7.32 years

m1 = 10.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	03 01.13	+58 54.2	1.400	2.104	-0.40	+0.7	16.4	123.0
Jan. 17	02 57.15	+59 01.4	1.534	2.151	+0.32	+0.4	16.7	115.6
Jan. 27	03 00.40	+59 05.2	1.676	2.200	+0.92	+0.6	17.1	108.7
Feb. 6	03 09.59	+59 11.4	1.823	2.250	+1.40	+1.0	17.4	102.3
Feb. 16	03 23.55	+59 21.2	1.972	2.301	+1.79	+1.2	17.7	96.4
Feb. 26	03 41.41	+59 33.2	2.122	2.354	+2.11	+1.2	18.0	90.8
Mar. 8	04 02.49	+59 45.0	2.272	2.407	+2.37	+0.9	18.3	85.5
Mar. 18	04 26.16	+59 54.1	2.420	2.461	+2.57	+0.3	18.6	80.6
Mar. 28	04 51.90	+59 57.6	2.566	2.515	+2.73	-0.5	18.9	75.8
Apr. 7	05 19.19	+59 53.0	2.709	2.570	+2.83	-1.4	19.1	71.4
Apr. 17	05 47.49	+59 38.7	2.848	2.625	+2.88	-2.6	19.4	67.1
Apr. 27	06 16.30	+59 13.1	2.983	2.680	+2.88	-3.7	19.6	62.9
May 7	06 45.14	+58 36.0	3.114	2.735	+2.84	-4.9	19.8	59.0
May 17	07 13.57	+57 47.4	3.240	2.790	+2.77	-5.9	20.0	55.2
May 27	07 41.28	+56 47.9	3.361	2.845	+2.68	-6.9	20.2	51.6
June 6	08 08.04	+55 38.8	3.476	2.900	+2.56	-7.7	20.4	48.2
June 16	08 33.68	+54 21.4	3.584	2.955	+2.45	-8.4	20.6	45.1
June 26	08 58.14	+52 57.3	3.685	3.009	+2.33	-8.9	20.8	42.1
July 6	09 21.42	+51 28.3	3.778	3.063	+2.21	-9.2	21.0	39.5
July 16	09 43.54	+49 55.9	3.864	3.117	+2.10	-9.4	21.1	37.3
July 26	10 04.58	+48 21.6	3.940	3.170	+2.00	-9.4	21.3	35.6
Aug. 5	10 24.59	+46 47.2	4.008	3.223	+1.91	-9.3	21.4	34.5
Aug. 15	10 43.65	+45 14.0	4.065	3.276	+1.82	-9.1	21.6	34.1
Aug. 25	11 01.85	+43 43.3	4.113	3.328	+1.74	-8.7	21.7	34.4
Sept. 4	11 19.23	+42 16.6	4.149	3.379	+1.66	-8.2	21.8	35.5
Sept. 14	11 35.86	+40 55.1	4.174	3.430	+1.59	-7.5	21.9	37.5
Sept. 24	11 51.77	+39 39.9	4.187	3.481	+1.52	-6.7	22.0	40.1
Oct. 4	12 06.97	+38 32.4	4.189	3.531	+1.45	-5.9	22.1	43.4
Oct. 14	12 21.48	+37 33.7	4.180	3.580	+1.38	-4.9	22.2	47.4
Oct. 24	12 35.29	+36 44.9	4.159	3.629	+1.31	-3.8	22.3	51.8
Nov. 3	12 48.34	+36 07.2	4.127	3.677	+1.23	-2.6	22.4	56.7
Nov. 13	13 00.60	+35 41.6	4.085	3.725	+1.14	-1.3	22.4	62.0
Nov. 23	13 11.96	+35 29.0	4.034	3.772	+1.04	+0.1	22.5	67.7
Dec. 3	13 22.32	+35 30.3	3.976	3.818	+0.92	+1.6	22.5	73.7
Dec. 13	13 31.55	+35 45.9	3.913	3.864	+0.79	+3.0	22.6	80.0
Dec. 23	13 39.47	+36 16.1	3.845	3.910	+0.64	+4.4	22.6	86.5
Jan. 2	13 45.89	+37 00.4	3.777	3.954	+0.47	+5.7	22.6	93.1
Jan. 12	13 50.59	+37 57.8	3.711	3.999	+0.28	+6.8	22.7	99.8
Jan. 22	13 53.34	+39 06.1	3.651	4.042	+0.06	+7.6	22.7	106.5
Feb. 1	13 53.93	+40 22.4	3.599	4.085	-0.17	+8.0	22.7	113.0
Feb. 11	13 52.18	+41 42.2	3.559	4.128	-0.42	+7.8	22.8	118.9
Feb. 21	13 48.02	+43 00.2	3.534	4.169	-0.65	+7.0	22.8	124.1
Mar. 3	13 41.53	+44 10.1	3.528	4.211	-0.85	+5.6	22.9	128.0
Mar. 13	13 33.03	+45 05.8	3.541	4.251	-1.00	+3.6	23.0	130.2
Mar. 23	13 23.03	+45 41.7	3.575	4.291	-1.07	+1.2	.	130.6

Comet C/2015 H2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 Sept. 13.38841 TT
Peri. = 287.91711
Node = 350.69508 2000.0
Incl. = 33.70366
q = 4.9672570 AU
e = 1.0038743

m1 = 7.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	20 15.40	-44 00.4	5.919	5.047	+1.36	+6.3	17.9	25.2
Jan. 17	20 29.02	-42 56.9	5.950	5.061	+1.33	+6.2	17.9	23.2
Jan. 27	20 42.31	-41 54.5	5.965	5.076	+1.29	+6.1	17.9	23.4
Feb. 6	20 55.17	-40 53.6	5.963	5.093	+1.24	+5.9	17.9	25.7
Feb. 16	21 07.54	-39 54.7	5.945	5.110	+1.18	+5.6	18.0	29.6
Feb. 26	21 19.36	-38 58.3	5.911	5.129	+1.12	+5.3	18.0	34.7
Mar. 8	21 30.55	-38 05.1	5.862	5.148	+1.05	+4.9	18.0	40.5
Mar. 18	21 41.06	-37 15.6	5.798	5.169	+0.98	+4.5	18.0	46.9
Mar. 28	21 50.82	-36 30.5	5.721	5.191	+0.89	+4.0	17.9	53.5
Apr. 7	21 59.75	-35 50.3	5.633	5.213	+0.80	+3.5	17.9	60.5
Apr. 17	22 07.79	-35 15.5	5.534	5.237	+0.71	+2.9	17.9	67.7
Apr. 27	22 14.84	-34 46.6	5.428	5.262	+0.60	+2.3	17.9	75.2
May 7	22 20.82	-34 24.0	5.317	5.287	+0.48	+1.6	17.9	82.9
May 17	22 25.65	-34 07.6	5.203	5.314	+0.36	+1.0	17.8	90.8
May 27	22 29.23	-33 57.5	5.090	5.341	+0.23	+0.4	17.8	98.9
June 6	22 31.48	-33 53.3	4.981	5.370	+0.09	-0.1	17.8	107.2
June 16	22 32.36	-33 54.1	4.880	5.399	-0.05	-0.5	17.8	115.7
June 26	22 31.82	-33 58.7	4.790	5.429	-0.19	-0.7	17.7	124.4
July 6	22 29.90	-34 05.4	4.715	5.460	-0.32	-0.7	17.7	133.1
July 16	22 26.69	-34 12.2	4.660	5.492	-0.43	-0.5	17.7	141.5
July 26	22 22.36	-34 16.7	4.626	5.524	-0.52	0.0	17.7	149.4
Aug. 5	22 17.17	-34 16.7	4.618	5.558	-0.57	+0.7	17.8	155.6
Aug. 15	22 11.46	-34 10.2	4.637	5.592	-0.58	+1.4	17.8	158.6
Aug. 25	22 05.62	-33 55.7	4.683	5.627	-0.56	+2.3	17.9	156.8
Sept. 4	22 00.04	-33 32.5	4.758	5.662	-0.50	+3.2	17.9	151.2
Sept. 14	21 55.07	-33 00.5	4.859	5.698	-0.41	+4.0	18.0	143.5
Sept. 24	21 51.01	-32 20.4	4.984	5.735	-0.29	+4.7	18.1	134.8
Oct. 4	21 48.06	-31 33.2	5.131	5.773	-0.17	+5.3	18.2	125.8
Oct. 14	21 46.34	-30 40.1	5.296	5.811	-0.05	+5.8	18.3	116.6
Oct. 24	21 45.87	-29 42.3	5.474	5.850	+0.08	+6.1	18.4	107.5
Nov. 3	21 46.62	-28 41.1	5.663	5.889	+0.19	+6.4	18.5	98.4
Nov. 13	21 48.52	-27 37.2	5.856	5.929	+0.29	+6.6	18.6	89.4
Nov. 23	21 51.46	-26 31.4	6.052	5.970	+0.38	+6.7	18.7	80.6
Dec. 3	21 55.31	-25 24.4	6.245	6.011	+0.46	+6.8	18.8	71.8
Dec. 13	21 59.94	-24 16.5	6.432	6.053	+0.53	+6.8	18.9	63.3
Dec. 23	22 05.22	-23 08.2	6.609	6.095	+0.58	+6.8	19.0	54.8
Jan. 2	22 11.04	-21 59.8	6.774	6.138	+0.62	+6.8	19.0	46.4
Jan. 12	22 17.27	-20 51.5	6.924	6.181	+0.65	+6.8	19.1	38.2
Jan. 22	22 23.80	-19 43.7	7.056	6.225	+0.67	+6.7	19.2	30.1
Feb. 1	22 30.53	-18 36.5	7.170	6.269	+0.68	+6.6	19.2	22.2
Feb. 11	22 37.36	-17 30.4	7.263	6.313	+0.68	+6.5	19.3	14.8
Feb. 21	22 44.21	-16 25.5	7.334	6.358	+0.68	+6.3	19.4	8.9
Mar. 3	22 50.98	-15 22.3	7.383	6.404	+0.66	+6.1	19.4	8.4
Mar. 13	22 57.61	-14 20.9	7.410	6.450	+0.64	+5.9	19.4	13.9
Mar. 23	23 04.02	-13 21.8	7.415	6.496	+0.61	+5.7	19.5	21.2

Comet 314P/Montani

Epoch = 2017 July 26.0 TT
T = 2016 Oct. 8.34190 TT
Peri. = 213.81713 e = 0.4171703
Node = 267.69232 2000.0 a = 7.2649800 AU
Incl. = 3.97805 n = 0.05033296
q = 4.2342461 AU P = 19.58 years

m1 = 11.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	09 29.31	+11 04.9	3.416	4.262	-0.38	+0.9	18.4	145.4
Jan. 17	09 25.49	+11 13.5	3.349	4.269	-0.47	+1.4	18.4	156.4
Jan. 27	09 20.77	+11 27.8	3.310	4.276	-0.52	+1.8	18.3	167.4
Feb. 6	09 15.58	+11 46.0	3.300	4.284	-0.51	+2.0	18.3	176.0
Feb. 16	09 10.44	+12 05.8	3.320	4.292	-0.46	+1.9	18.4	168.4
Feb. 26	09 05.79	+12 25.3	3.370	4.301	-0.37	+1.7	18.4	157.5
Mar. 8	09 02.09	+12 42.4	3.447	4.311	-0.25	+1.3	18.4	146.7
Mar. 18	08 59.62	+12 55.7	3.549	4.321	-0.10	+0.8	18.5	136.1
Mar. 28	08 58.57	+13 04.1	3.670	4.332	+0.05	+0.3	18.6	126.0
Apr. 7	08 59.02	+13 06.9	3.808	4.344	+0.19	-0.3	18.7	116.2
Apr. 17	09 00.94	+13 03.9	3.957	4.356	+0.33	-0.9	18.8	106.9
Apr. 27	09 04.24	+12 54.8	4.114	4.369	+0.46	-1.5	18.9	98.0
May 7	09 08.80	+12 39.9	4.274	4.382	+0.57	-2.1	19.0	89.4
May 17	09 14.47	+12 19.2	4.435	4.396	+0.66	-2.6	19.1	81.2
May 27	09 21.09	+11 52.9	4.594	4.411	+0.74	-3.2	19.1	73.3
June 6	09 28.53	+11 21.3	4.747	4.426	+0.81	-3.7	19.2	65.6
June 16	09 36.64	+10 44.7	4.892	4.441	+0.87	-4.1	19.3	58.2
June 26	09 45.30	+10 03.6	5.028	4.457	+0.91	-4.5	19.4	50.9
July 6	09 54.41	+09 18.1	5.153	4.474	+0.94	-4.9	19.4	43.7
July 16	10 03.86	+08 28.8	5.265	4.491	+0.97	-5.3	19.5	36.7
July 26	10 13.56	+07 36.0	5.362	4.509	+0.99	-5.6	19.6	29.7
Aug. 5	10 23.43	+06 40.2	5.444	4.527	+1.00	-5.8	19.6	22.9
Aug. 15	10 33.41	+05 41.9	5.510	4.545	+1.00	-6.0	19.6	16.0
Aug. 25	10 43.42	+04 41.5	5.559	4.564	+1.00	-6.2	19.7	9.3
Sept. 4	10 53.40	+03 39.5	5.590	4.584	+0.99	-6.3	19.7	3.7
Sept.14	11 03.29	+02 36.5	5.603	4.604	+0.97	-6.4	19.7	6.1
Sept.24	11 13.03	+01 33.0	5.597	4.624	+0.95	-6.3	19.7	12.7
Oct. 4	11 22.54	+00 29.6	5.573	4.645	+0.92	-6.3	19.7	19.8
Oct. 14	11 31.77	-00 33.1	5.532	4.666	+0.89	-6.1	19.7	27.0
Oct. 24	11 40.63	-01 34.5	5.473	4.687	+0.84	-5.9	19.7	34.5
Nov. 3	11 49.05	-02 33.9	5.398	4.709	+0.79	-5.7	19.7	42.1
Nov. 13	11 56.93	-03 30.6	5.307	4.731	+0.72	-5.3	19.7	49.9
Nov. 23	12 04.18	-04 23.9	5.203	4.754	+0.65	-4.9	19.7	58.0
Dec. 3	12 10.68	-05 13.0	5.087	4.777	+0.56	-4.4	19.6	66.3
Dec. 13	12 16.33	-05 57.2	4.963	4.800	+0.47	-3.8	19.6	74.8
Dec. 23	12 21.01	-06 35.7	4.832	4.824	+0.36	-3.2	19.5	83.7
Jan. 2	12 24.59	-07 07.6	4.699	4.848	+0.24	-2.5	19.5	92.8
Jan. 12	12 26.99	-07 32.2	4.567	4.872	+0.11	-1.7	19.5	102.3
Jan. 22	12 28.13	-07 48.8	4.441	4.896	-0.02	-0.8	19.4	112.0
Feb. 1	12 27.98	-07 56.8	4.326	4.921	-0.14	+0.1	19.4	122.1
Feb. 11	12 26.57	-07 56.1	4.225	4.946	-0.26	+0.9	19.3	132.5
Feb. 21	12 23.99	-07 46.8	4.144	4.972	-0.35	+1.7	19.3	143.2
Mar. 3	12 20.45	-07 29.6	4.087	4.997	-0.42	+2.4	19.3	154.0
Mar. 13	12 16.23	-07 05.8	4.057	5.023	-0.46	+2.9	19.3	164.8
Mar. 23	12 11.64	-06 37.2	4.057	5.049	-0.46	+3.1	19.3	174.1

Comet 237P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2016 Oct. 11.72509 TT
Peri. = 25.06458 e = 0.4345923
Node = 245.42857 2000.0 a = 3.5106528 AU
Incl. = 14.02290 n = 0.14983810
q = 1.9849501 AU P = 6.58 years

m1 = 14.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	19 58.29	-12 05.7	3.037	2.103	+2.28	+9.1	18.8	15.1
Jan. 17	20 21.14	-10 34.8	3.082	2.130	+2.22	+10.0	18.9	11.9
Jan. 27	20 43.35	-08 55.0	3.123	2.159	+2.15	+10.7	19.0	9.7
Feb. 6	21 04.88	-07 07.8	3.158	2.190	+2.08	+11.3	19.0	9.2
Feb. 16	21 25.69	-05 14.8	3.186	2.223	+2.01	+11.7	19.1	10.7
Feb. 26	21 45.79	-03 17.3	3.207	2.257	+1.94	+12.1	19.2	13.7
Mar. 8	22 05.17	-01 16.7	3.221	2.293	+1.87	+12.2	19.2	17.5
Mar. 18	22 23.82	+00 45.5	3.227	2.331	+1.79	+12.3	19.3	21.7
Mar. 28	22 41.76	+02 48.3	3.224	2.370	+1.72	+12.2	19.4	26.2
Apr. 7	22 58.97	+04 50.5	3.212	2.409	+1.65	+12.0	19.4	30.9
Apr. 17	23 15.44	+06 51.0	3.192	2.450	+1.57	+11.8	19.4	35.9
Apr. 27	23 31.16	+08 48.9	3.162	2.491	+1.49	+11.4	19.5	41.0
May 7	23 46.08	+10 43.4	3.123	2.534	+1.41	+11.0	19.5	46.3
May 17	00 00.14	+12 33.6	3.075	2.576	+1.31	+10.5	19.5	51.9
May 27	00 13.29	+14 18.8	3.018	2.620	+1.21	+10.0	19.5	57.7
June 6	00 25.40	+15 58.3	2.953	2.663	+1.10	+9.3	19.5	63.7
June 16	00 36.36	+17 31.3	2.881	2.707	+0.97	+8.6	19.5	70.0
June 26	00 46.03	+18 57.2	2.802	2.751	+0.82	+7.8	19.5	76.6
July 6	00 54.22	+20 14.7	2.719	2.795	+0.65	+6.8	19.5	83.7
July 16	01 00.72	+21 22.8	2.632	2.840	+0.46	+5.7	19.5	91.1
July 26	01 05.34	+22 20.2	2.545	2.884	+0.25	+4.5	19.5	99.0
Aug. 5	01 07.86	+23 05.0	2.461	2.928	+0.03	+3.0	19.5	107.4
Aug. 15	01 08.16	+23 35.0	2.382	2.972	-0.20	+1.3	19.4	116.3
Aug. 25	01 06.16	+23 48.1	2.313	3.016	-0.42	-0.6	19.4	125.7
Sept. 4	01 01.99	+23 42.0	2.258	3.060	-0.60	-2.7	19.4	135.6
Sept. 14	00 56.00	+23 15.5	2.221	3.104	-0.73	-4.7	19.4	145.6
Sept. 24	00 48.73	+22 28.7	2.208	3.147	-0.78	-6.4	19.5	155.3
Oct. 4	00 40.93	+21 24.5	2.221	3.190	-0.75	-7.7	19.5	162.8
Oct. 14	00 33.43	+20 07.7	2.262	3.233	-0.65	-8.3	19.6	164.1
Oct. 24	00 26.95	+18 44.9	2.332	3.275	-0.49	-8.2	19.7	157.9
Nov. 3	00 22.06	+17 23.0	2.430	3.317	-0.30	-7.5	19.8	148.7
Nov. 13	00 19.07	+16 08.1	2.552	3.359	-0.10	-6.4	20.0	138.6
Nov. 23	00 18.09	+15 04.3	2.696	3.400	+0.10	-5.0	20.1	128.5
Dec. 3	00 19.09	+14 14.2	2.857	3.441	+0.28	-3.6	20.3	118.7
Dec. 13	00 21.89	+13 38.4	3.031	3.482	+0.44	-2.2	20.5	109.2
Dec. 23	00 26.30	+13 16.7	3.214	3.522	+0.58	-0.9	20.6	100.1
Jan. 2	00 32.12	+13 08.1	3.401	3.561	+0.70	+0.3	20.8	91.3
Jan. 12	00 39.12	+13 11.2	3.589	3.600	+0.80	+1.3	20.9	82.8
Jan. 22	00 47.13	+13 24.2	3.775	3.639	+0.88	+2.2	21.1	74.6
Feb. 1	00 55.96	+13 45.8	3.956	3.677	+0.95	+2.8	21.2	66.6
Feb. 11	01 05.48	+14 14.3	4.128	3.715	+1.01	+3.4	21.4	58.8
Feb. 21	01 15.55	+14 48.2	4.291	3.752	+1.05	+3.8	21.5	51.3
Mar. 3	01 26.06	+15 26.4	4.440	3.788	+1.09	+4.1	21.6	43.8
Mar. 13	01 36.92	+16 07.5	4.576	3.825	+1.11	+4.3	21.7	36.6
Mar. 23	01 48.05	+16 50.5	4.696	3.860	+1.13	+4.4	21.8	29.5

Comet 94P/Russell

Epoch = 2017 July 26.0 TT
T = 2016 Oct. 27.42560 TT
Peri. = 92.70173 e = 0.3649244
Node = 70.86363 2000.0 a = 3.5102988 AU
Incl. = 6.18736 n = 0.14986077
q = 2.2293051 AU P = 6.58 years

m1 = 11.6 + 5 log(Delta) + 12.5 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	14 09.13	-07 21.0	2.348	2.284	+1.45	-6.9	17.9	74.1
Jan. 17	14 23.62	-08 29.7	2.248	2.299	+1.31	-5.8	17.8	80.5
Jan. 27	14 36.73	-09 28.0	2.146	2.317	+1.14	-4.8	17.7	87.2
Feb. 6	14 48.18	-10 15.6	2.044	2.336	+0.95	-3.7	17.6	94.4
Feb. 16	14 57.66	-10 52.4	1.944	2.357	+0.72	-2.6	17.6	102.0
Feb. 26	15 04.85	-11 18.7	1.848	2.380	+0.46	-1.6	17.5	110.2
Mar. 8	15 09.41	-11 35.0	1.760	2.404	+0.17	-0.7	17.4	119.1
Mar. 18	15 11.14	-11 42.0	1.681	2.429	-0.12	+0.1	17.4	128.5
Mar. 28	15 09.92	-11 40.9	1.616	2.456	-0.40	+0.8	17.3	138.6
Apr. 7	15 05.93	-11 33.3	1.569	2.483	-0.63	+1.2	17.3	149.3
Apr. 17	14 59.65	-11 21.5	1.544	2.512	-0.78	+1.3	17.4	160.4
Apr. 27	14 51.87	-11 08.5	1.543	2.542	-0.82	+1.1	17.4	171.2
May 7	14 43.62	-10 57.8	1.568	2.573	-0.76	+0.5	17.5	173.5
May 17	14 35.98	-10 52.7	1.619	2.604	-0.62	-0.3	17.6	163.5
May 27	14 29.80	-10 55.8	1.695	2.637	-0.41	-1.3	17.8	152.7
June 6	14 25.68	-11 08.5	1.793	2.670	-0.18	-2.3	18.0	142.4
June 16	14 23.88	-11 31.2	1.910	2.703	+0.05	-3.2	18.2	132.6
June 26	14 24.43	-12 03.2	2.043	2.737	+0.28	-4.0	18.4	123.4
July 6	14 27.20	-12 43.4	2.188	2.772	+0.48	-4.7	18.6	114.7
July 16	14 31.96	-13 30.2	2.343	2.806	+0.65	-5.2	18.8	106.5
July 26	14 38.49	-14 22.1	2.504	2.842	+0.81	-5.6	19.1	98.8
Aug. 5	14 46.56	-15 17.7	2.669	2.877	+0.94	-5.8	19.3	91.3
Aug. 15	14 55.95	-16 15.4	2.835	2.913	+1.05	-5.9	19.5	84.2
Aug. 25	15 06.49	-17 14.0	3.002	2.948	+1.15	-5.8	19.7	77.2
Sept. 4	15 18.01	-18 12.4	3.166	2.984	+1.24	-5.7	19.8	70.5
Sept. 14	15 30.38	-19 09.5	3.325	3.020	+1.31	-5.5	20.0	63.9
Sept. 24	15 43.48	-20 04.3	3.479	3.056	+1.37	-5.2	20.2	57.3
Oct. 4	15 57.21	-20 56.0	3.626	3.092	+1.42	-4.8	20.3	50.8
Oct. 14	16 11.45	-21 44.0	3.763	3.128	+1.47	-4.4	20.5	44.3
Oct. 24	16 26.13	-22 27.5	3.890	3.164	+1.50	-3.9	20.6	37.9
Nov. 3	16 41.15	-23 06.2	4.004	3.200	+1.53	-3.3	20.7	31.4
Nov. 13	16 56.42	-23 39.5	4.106	3.235	+1.54	-2.8	20.9	24.9
Nov. 23	17 11.85	-24 07.4	4.193	3.271	+1.55	-2.2	21.0	18.4
Dec. 3	17 27.35	-24 29.5	4.264	3.306	+1.55	-1.6	21.1	11.9
Dec. 13	17 42.81	-24 45.9	4.320	3.341	+1.53	-1.1	21.2	5.4
Dec. 23	17 58.16	-24 56.8	4.358	3.376	+1.51	-0.6	21.2	2.1
Jan. 2	18 13.27	-25 02.3	4.380	3.410	+1.48	-0.1	21.3	8.4
Jan. 12	18 28.07	-25 03.0	4.384	3.444	+1.44	+0.4	21.4	15.2
Jan. 22	18 42.45	-24 59.3	4.370	3.478	+1.39	+0.7	21.4	22.1
Feb. 1	18 56.30	-24 51.9	4.340	3.512	+1.32	+1.0	21.4	29.1
Feb. 11	19 09.53	-24 41.6	4.293	3.545	+1.25	+1.2	21.5	36.2
Feb. 21	19 22.04	-24 29.3	4.230	3.578	+1.17	+1.3	21.5	43.5
Mar. 3	19 33.70	-24 16.0	4.154	3.611	+1.07	+1.3	21.5	50.9
Mar. 13	19 44.42	-24 02.8	4.064	3.643	+0.97	+1.2	21.5	58.4
Mar. 23	19 54.08	-23 50.7	3.963	3.675	+0.85	+1.0	21.5	66.2

Comet P/2015 TP200 (LINEAR)

Epoch = 2017 July 26.0 TT
T = 2016 Oct. 28.23891 TT
Peri. = 82.74678 e = 0.5358958
Node = 6.97433 2000.0 a = 7.2945907 AU
Incl. = 8.77241 n = 0.05002679
q = 3.3854502 AU P = 19.70 years

m1 = 4.2 + 5 log(Delta) + 20.0 log(r(t-50))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	06 59.01	+35 00.0	2.454	3.420	-0.65	-0.3	16.7	167.1
Jan. 17	06 52.49	+34 56.7	2.488	3.430	-0.54	-1.3	16.8	160.2
Jan. 27	06 47.05	+34 43.4	2.549	3.442	-0.37	-2.2	16.9	150.6
Feb. 6	06 43.34	+34 21.8	2.636	3.455	-0.16	-2.8	16.9	140.6
Feb. 16	06 41.72	+33 54.0	2.743	3.469	+0.06	-3.2	17.0	130.6
Feb. 26	06 42.32	+33 22.2	2.868	3.484	+0.28	-3.4	17.2	121.1
Mar. 8	06 45.12	+32 47.7	3.007	3.500	+0.48	-3.6	17.3	111.9
Mar. 18	06 49.93	+32 11.6	3.156	3.518	+0.66	-3.7	17.4	103.2
Mar. 28	06 56.53	+31 34.1	3.310	3.537	+0.81	-3.9	17.6	94.8
Apr. 7	07 04.66	+30 55.3	3.468	3.557	+0.94	-4.0	17.7	86.9
Apr. 17	07 14.08	+30 14.9	3.627	3.578	+1.05	-4.2	17.8	79.2
Apr. 27	07 24.54	+29 32.5	3.783	3.600	+1.13	-4.5	18.0	71.9
May 7	07 35.84	+28 47.9	3.935	3.623	+1.19	-4.7	18.1	64.8
May 17	07 47.78	+28 00.6	4.082	3.647	+1.24	-5.0	18.2	58.0
May 27	08 00.21	+27 10.5	4.220	3.672	+1.28	-5.3	18.3	51.3
June 6	08 12.98	+26 17.5	4.350	3.698	+1.30	-5.6	18.5	44.7
June 16	08 25.96	+25 21.5	4.469	3.725	+1.31	-5.9	18.6	38.3
June 26	08 39.06	+24 22.7	4.577	3.753	+1.31	-6.1	18.7	31.9
July 6	08 52.18	+23 21.3	4.672	3.781	+1.31	-6.4	18.8	25.7
July 16	09 05.25	+22 17.6	4.753	3.811	+1.29	-6.6	18.9	19.5
July 26	09 18.19	+21 11.8	4.821	3.841	+1.28	-6.7	19.0	13.5
Aug. 5	09 30.96	+20 04.4	4.873	3.871	+1.25	-6.9	19.1	7.9
Aug. 15	09 43.49	+18 55.9	4.911	3.903	+1.22	-6.9	19.1	5.0
Aug. 25	09 55.74	+17 46.7	4.932	3.935	+1.19	-6.9	19.2	8.4
Sept. 4	10 07.65	+16 37.6	4.937	3.967	+1.15	-6.9	19.3	14.2
Sept.14	10 19.17	+15 29.1	4.926	4.000	+1.11	-6.7	19.4	20.6
Sept.24	10 30.25	+14 21.7	4.899	4.034	+1.06	-6.5	19.4	27.3
Oct. 4	10 40.82	+13 16.4	4.856	4.069	+1.00	-6.3	19.5	34.3
Oct. 14	10 50.82	+12 13.8	4.798	4.103	+0.94	-5.9	19.5	41.4
Oct. 24	11 00.17	+11 14.6	4.726	4.139	+0.86	-5.5	19.5	48.8
Nov. 3	11 08.78	+10 19.8	4.640	4.174	+0.78	-5.0	19.6	56.4
Nov. 13	11 16.55	+09 30.0	4.544	4.211	+0.68	-4.4	19.6	64.3
Nov. 23	11 23.37	+08 46.3	4.437	4.247	+0.57	-3.7	19.6	72.6
Dec. 3	11 29.12	+08 09.4	4.324	4.284	+0.46	-2.9	19.6	81.1
Dec. 13	11 33.68	+07 40.1	4.208	4.321	+0.32	-2.1	19.7	90.0
Dec. 23	11 36.93	+07 19.0	4.091	4.359	+0.18	-1.2	19.7	99.3
Jan. 2	11 38.76	+07 06.5	3.978	4.397	+0.04	-0.4	19.7	108.9
Jan. 12	11 39.12	+07 02.7	3.874	4.435	-0.11	+0.5	19.7	119.0
Jan. 22	11 38.00	+07 07.3	3.783	4.473	-0.25	+1.2	19.7	129.4
Feb. 1	11 35.45	+07 19.4	3.711	4.512	-0.38	+1.8	19.8	140.2
Feb. 11	11 31.67	+07 37.5	3.661	4.551	-0.48	+2.2	19.8	151.2
Feb. 21	11 26.91	+07 59.5	3.638	4.590	-0.54	+2.3	19.9	162.3
Mar. 3	11 21.56	+08 22.8	3.644	4.629	-0.55	+2.2	19.9	173.0
Mar. 13	11 16.04	+08 45.0	3.680	4.668	-0.53	+1.9	20.0	173.3
Mar. 23	11 10.77	+09 03.7	3.747	4.708	-0.46	+1.3	20.2	162.7

Comet 344P/Read

Epoch = 2017 July 26.0 TT
T = 2016 Nov. 1.21743 TT
Peri. = 140.60437 e = 0.4216141
Node = 273.18123 2000.0 a = 4.8764048 AU
Incl. = 3.48978 n = 0.09152810
q = 2.8204438 AU P = 10.77 years

m1 = 3.0 + 5 log(Delta) + 30.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	03 26.50	+20 38.6	2.145	2.855	+0.27	-0.7	18.3	127.8
Jan. 17	03 29.23	+20 32.0	2.267	2.866	+0.50	+0.2	18.5	118.2
Jan. 27	03 34.22	+20 34.2	2.400	2.878	+0.71	+1.0	18.7	109.2
Feb. 6	03 41.28	+20 43.9	2.542	2.892	+0.89	+1.6	18.9	100.7
Feb. 16	03 50.14	+20 59.4	2.689	2.907	+1.04	+1.9	19.1	92.7
Feb. 26	04 00.56	+21 18.8	2.838	2.924	+1.18	+2.1	19.2	85.0
Mar. 8	04 12.32	+21 40.3	2.988	2.942	+1.29	+2.2	19.4	77.7
Mar. 18	04 25.21	+22 02.0	3.135	2.961	+1.38	+2.1	19.6	70.8
Mar. 28	04 39.02	+22 22.6	3.279	2.981	+1.46	+1.8	19.8	64.1
Apr. 7	04 53.61	+22 40.6	3.417	3.002	+1.52	+1.4	20.0	57.6
Apr. 17	05 08.81	+22 54.9	3.549	3.025	+1.57	+1.0	20.2	51.3
Apr. 27	05 24.48	+23 04.6	3.674	3.048	+1.60	+0.4	20.3	45.1
May 7	05 40.50	+23 09.1	3.789	3.073	+1.62	-0.1	20.5	39.1
May 17	05 56.73	+23 07.7	3.895	3.098	+1.64	-0.7	20.7	33.2
May 27	06 13.10	+23 00.3	3.990	3.125	+1.64	-1.4	20.8	27.3
June 6	06 29.48	+22 46.6	4.074	3.152	+1.63	-2.0	21.0	21.5
June 16	06 45.78	+22 26.8	4.146	3.180	+1.62	-2.6	21.2	15.8
June 26	07 01.93	+22 00.8	4.205	3.209	+1.59	-3.2	21.3	10.0
July 6	07 17.85	+21 29.1	4.251	3.238	+1.56	-3.7	21.5	4.2
July 16	07 33.46	+20 51.9	4.284	3.269	+1.52	-4.2	21.6	1.9
July 26	07 48.70	+20 09.9	4.303	3.300	+1.48	-4.6	21.7	7.6
Aug. 5	08 03.50	+19 23.5	4.308	3.331	+1.43	-5.0	21.8	13.6
Aug. 15	08 17.81	+18 33.4	4.299	3.363	+1.38	-5.3	22.0	19.7
Aug. 25	08 31.56	+17 40.4	4.275	3.395	+1.31	-5.5	22.1	26.0
Sept. 4	08 44.68	+16 45.1	4.237	3.428	+1.24	-5.7	22.2	32.4
Sept. 14	08 57.11	+15 48.6	4.186	3.462	+1.17	-5.7	22.3	38.9
Sept. 24	09 08.79	+14 51.6	4.121	3.495	+1.08	-5.6	22.4	45.7
Oct. 4	09 19.60	+13 55.2	4.044	3.530	+0.99	-5.5	22.5	52.8
Oct. 14	09 29.48	+13 00.4	3.955	3.564	+0.88	-5.2	22.5	60.1
Oct. 24	09 38.30	+12 08.3	3.857	3.599	+0.76	-4.8	22.6	67.7
Nov. 3	09 45.93	+11 20.2	3.750	3.634	+0.63	-4.3	22.7	75.6
Nov. 13	09 52.26	+10 37.3	3.638	3.669	+0.49	-3.7	22.7	84.0
Nov. 23	09 57.14	+10 00.8	3.524	3.704	+0.33	-2.9	22.8	92.7
Dec. 3	10 00.43	+09 31.9	3.410	3.740	+0.16	-2.0	22.9	101.9
Dec. 13	10 02.01	+09 11.8	3.301	3.776	-0.02	-1.1	22.9	111.6
Dec. 23	10 01.82	+09 01.2	3.202	3.812	-0.20	-0.1	23.0	121.7
Jan. 2	09 59.85	+09 00.5	3.116	3.848	-0.36	+0.9	23.0	132.3
Jan. 12	09 56.23	+09 09.4	3.050	3.884	-0.50	+1.7	.	143.3
Jan. 22	09 51.21	+09 26.8	3.007	3.920	-0.60	+2.4	.	154.7
Feb. 1	09 45.20	+09 51.0	2.992	3.956	-0.65	+2.8	.	166.2
Feb. 11	09 38.71	+10 19.2	3.007	3.992	-0.64	+2.9	.	176.1
Feb. 21	09 32.30	+10 48.7	3.053	4.029	-0.58	+2.8	.	169.2
Mar. 3	09 26.55	+11 16.6	3.129	4.065	-0.47	+2.4	.	158.0
Mar. 13	09 21.89	+11 40.8	3.232	4.101	-0.33	+1.9	.	146.9
Mar. 23	09 18.64	+11 59.6	3.360	4.137	-0.17	+1.2	.	136.2

Comet 338P/McNaught

Epoch = 2017 July 26.0 TT
T = 2016 Nov. 22.07225 TT
Peri. = 4.53186 e = 0.4103538
Node = 9.80838 2000.0 a = 3.9036168 AU
Incl. = 25.35026 n = 0.12779189
q = 2.3017528 AU P = 7.71 years

m1 = 10.4 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	23 58.75	+08 53.7	2.344	2.326	+1.29	+14.0	18.7	76.8
Jan. 17	00 11.64	+11 13.3	2.472	2.337	+1.40	+14.0	18.8	70.6
Jan. 27	00 25.63	+13 33.1	2.596	2.351	+1.49	+14.0	19.0	64.7
Feb. 6	00 40.57	+15 52.7	2.717	2.366	+1.58	+13.9	19.1	59.0
Feb. 16	00 56.37	+18 11.4	2.833	2.384	+1.66	+13.7	19.3	53.6
Feb. 26	01 12.95	+20 28.3	2.943	2.403	+1.73	+13.4	19.4	48.4
Mar. 8	01 30.25	+22 42.7	3.048	2.424	+1.80	+13.1	19.5	43.4
Mar. 18	01 48.22	+24 53.5	3.145	2.447	+1.86	+12.6	19.7	38.6
Mar. 28	02 06.85	+26 59.9	3.235	2.472	+1.92	+12.1	19.8	34.0
Apr. 7	02 26.09	+29 01.1	3.318	2.498	+1.98	+11.5	20.0	29.7
Apr. 17	02 45.91	+30 56.0	3.393	2.525	+2.04	+10.8	20.1	25.6
Apr. 27	03 06.28	+32 43.8	3.459	2.554	+2.09	+10.0	20.2	22.0
May 7	03 27.16	+34 23.8	3.517	2.584	+2.13	+9.1	20.3	19.0
May 17	03 48.48	+35 55.2	3.566	2.615	+2.17	+8.2	20.5	16.9
May 27	04 10.17	+37 17.5	3.606	2.647	+2.20	+7.3	20.6	16.1
June 6	04 32.14	+38 30.5	3.637	2.680	+2.21	+6.3	20.7	16.7
June 16	04 54.28	+39 34.0	3.658	2.714	+2.22	+5.4	20.8	18.6
June 26	05 16.48	+40 27.9	3.669	2.749	+2.21	+4.5	20.9	21.6
July 6	05 38.58	+41 12.9	3.670	2.785	+2.19	+3.6	21.0	25.2
July 16	06 00.44	+41 49.2	3.662	2.821	+2.15	+2.9	21.1	29.4
July 26	06 21.94	+42 18.0	3.644	2.858	+2.10	+2.2	21.2	33.9
Aug. 5	06 42.89	+42 40.2	3.615	2.895	+2.03	+1.7	21.3	38.8
Aug. 15	07 03.17	+42 57.3	3.577	2.932	+1.95	+1.4	21.3	43.9
Aug. 25	07 22.62	+43 10.9	3.528	2.970	+1.85	+1.2	21.4	49.3
Sept. 4	07 41.10	+43 22.6	3.471	3.009	+1.74	+1.2	21.5	55.0
Sept. 14	07 58.48	+43 34.3	3.406	3.047	+1.61	+1.4	21.5	61.0
Sept. 24	08 14.59	+43 48.2	3.332	3.086	+1.47	+1.8	21.6	67.2
Oct. 4	08 29.25	+44 06.1	3.253	3.125	+1.31	+2.4	21.6	73.8
Oct. 14	08 42.31	+44 29.9	3.168	3.164	+1.12	+3.2	21.7	80.7
Oct. 24	08 53.53	+45 01.5	3.081	3.203	+0.91	+4.1	21.7	87.9
Nov. 3	09 02.64	+45 42.1	2.993	3.242	+0.67	+5.0	21.7	95.5
Nov. 13	09 09.37	+46 32.2	2.908	3.282	+0.40	+5.9	21.7	103.4
Nov. 23	09 13.39	+47 31.5	2.829	3.321	+0.10	+6.6	21.8	111.5
Dec. 3	09 14.37	+48 37.7	2.759	3.360	-0.23	+6.9	21.8	119.8
Dec. 13	09 12.08	+49 47.0	2.703	3.399	-0.56	+6.7	21.9	128.0
Dec. 23	09 06.43	+50 53.6	2.665	3.438	-0.87	+5.7	21.9	135.6
Jan. 2	08 57.68	+51 50.2	2.648	3.476	-1.12	+3.9	22.0	142.0
Jan. 12	08 46.52	+52 29.4	2.655	3.515	-1.25	+1.6	22.1	146.1
Jan. 22	08 34.04	+52 45.6	2.688	3.553	-1.24	-0.9	22.2	146.8
Feb. 1	08 21.66	+52 36.2	2.748	3.592	-1.10	-3.4	22.3	144.0
Feb. 11	08 10.66	+52 02.5	2.832	3.630	-0.86	-5.4	22.5	138.4
Feb. 21	08 02.03	+51 08.5	2.939	3.667	-0.58	-6.9	22.6	131.2
Mar. 3	07 56.28	+49 59.8	3.067	3.705	-0.28	-7.8	22.8	123.3
Mar. 13	07 53.48	+48 41.7	3.210	3.742	0.00	-8.3	23.0	115.1
Mar. 23	07 53.45	+47 18.3	3.366	3.779	+0.24	-8.5	.	107.0

Comet C/2016 B1 (NEOWISE)

Epoch = 2017 July 26.0 TT
T = 2016 Dec. 4.74617 TT
Peri. = 8.56948
Node = 231.95411 2000.0
Incl. = 50.47677
q = 3.2062423 AU
e = 0.9923963

m1 = 6.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	16 50.52	-12 07.0	3.975	3.222	+1.43	+8.2	16.8	35.2
Jan. 17	17 04.79	-10 45.1	3.894	3.233	+1.36	+9.4	16.8	42.1
Jan. 27	17 18.40	-09 11.2	3.805	3.246	+1.28	+10.6	16.8	49.1
Feb. 6	17 31.23	-07 24.9	3.708	3.263	+1.19	+11.9	16.7	56.1
Feb. 16	17 43.13	-05 25.7	3.607	3.282	+1.08	+13.2	16.7	63.2
Feb. 26	17 53.96	-03 13.8	3.503	3.303	+0.96	+14.4	16.7	70.3
Mar. 8	18 03.55	-00 49.3	3.398	3.327	+0.82	+15.6	16.7	77.5
Mar. 18	18 11.76	+01 46.7	3.297	3.354	+0.67	+16.6	16.7	84.7
Mar. 28	18 18.43	+04 33.1	3.201	3.383	+0.50	+17.4	16.7	91.8
Apr. 7	18 23.41	+07 27.4	3.113	3.414	+0.32	+17.9	16.7	98.9
Apr. 17	18 26.58	+10 26.4	3.036	3.448	+0.13	+18.0	16.7	105.8
Apr. 27	18 27.84	+13 26.0	2.974	3.483	-0.07	+17.5	16.7	112.3
May 7	18 27.18	+16 21.0	2.929	3.521	-0.25	+16.5	16.7	118.3
May 17	18 24.68	+19 05.6	2.902	3.560	-0.41	+14.8	16.8	123.4
May 27	18 20.54	+21 33.8	2.896	3.602	-0.54	+12.6	16.9	127.4
June 6	18 15.10	+23 40.0	2.910	3.645	-0.62	+10.0	16.9	129.9
June 16	18 08.85	+25 20.4	2.946	3.690	-0.65	+7.2	17.1	130.7
June 26	18 02.34	+26 32.7	3.001	3.736	-0.62	+4.4	17.2	129.9
July 6	17 56.16	+27 16.9	3.076	3.784	-0.53	+1.8	17.3	127.7
July 16	17 50.84	+27 35.3	3.168	3.833	-0.41	-0.4	17.5	124.2
July 26	17 46.78	+27 31.1	3.276	3.884	-0.25	-2.2	17.6	120.0
Aug. 5	17 44.27	+27 08.8	3.396	3.936	-0.08	-3.6	17.8	115.2
Aug. 15	17 43.42	+26 33.0	3.527	3.989	+0.09	-4.5	18.0	110.0
Aug. 25	17 44.28	+25 48.0	3.667	4.043	+0.25	-5.0	18.1	104.7
Sept. 4	17 46.78	+24 57.8	3.813	4.099	+0.40	-5.2	18.3	99.3
Sept. 14	17 50.80	+24 05.8	3.964	4.155	+0.54	-5.1	18.5	93.9
Sept. 24	17 56.20	+23 14.7	4.117	4.212	+0.66	-4.8	18.6	88.5
Oct. 4	18 02.84	+22 26.9	4.272	4.270	+0.77	-4.3	18.8	83.2
Oct. 14	18 10.54	+21 44.2	4.425	4.329	+0.86	-3.6	19.0	78.0
Oct. 24	18 19.16	+21 08.0	4.576	4.389	+0.94	-2.9	19.1	72.9
Nov. 3	18 28.55	+20 39.4	4.724	4.449	+1.00	-2.0	19.3	68.0
Nov. 13	18 38.57	+20 19.3	4.867	4.510	+1.05	-1.1	19.4	63.3
Nov. 23	18 49.08	+20 08.3	5.003	4.572	+1.09	-0.2	19.6	58.9
Dec. 3	18 59.96	+20 06.7	5.132	4.634	+1.11	+0.8	19.7	54.8
Dec. 13	19 11.08	+20 14.7	5.253	4.697	+1.13	+1.8	19.9	51.1
Dec. 23	19 22.35	+20 32.3	5.364	4.760	+1.13	+2.7	20.0	47.9
Jan. 2	19 33.64	+20 59.4	5.465	4.824	+1.12	+3.6	20.1	45.3
Jan. 12	19 44.86	+21 35.7	5.555	4.888	+1.11	+4.5	20.3	43.4
Jan. 22	19 55.92	+22 20.9	5.634	4.952	+1.08	+5.4	20.4	42.4
Feb. 1	20 06.71	+23 14.4	5.701	5.017	+1.04	+6.1	20.5	42.3
Feb. 11	20 17.14	+24 15.6	5.757	5.082	+1.00	+6.8	20.6	43.1
Feb. 21	20 27.14	+25 24.0	5.801	5.147	+0.95	+7.5	20.7	44.8
Mar. 3	20 36.61	+26 38.6	5.833	5.213	+0.89	+8.0	20.8	47.3
Mar. 13	20 45.47	+27 58.7	5.855	5.279	+0.82	+8.5	20.9	50.5
Mar. 23	20 53.63	+29 23.3	5.866	5.345	+0.74	+8.8	21.0	54.2

Comet 315P/LONEOS

Epoch = 2017 July 26.0 TT
T = 2016 Dec. 6.91301 TT
Peri. = 67.22645 e = 0.5178395
Node = 69.52993 2000.0 a = 5.0198094 AU
Incl. = 17.91784 n = 0.08763412
q = 2.4203538 AU P = 11.25 years

m1 = 5.8 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 55.48	+26 12.1	1.834	2.433	+0.67	+5.9	14.8	116.1
Jan. 17	12 02.15	+27 10.9	1.754	2.442	+0.38	+7.0	14.8	123.8
Jan. 27	12 05.92	+28 20.5	1.687	2.454	+0.07	+7.5	14.7	131.6
Feb. 6	12 06.62	+29 35.2	1.638	2.468	-0.23	+7.1	14.7	139.0
Feb. 16	12 04.33	+30 46.2	1.607	2.485	-0.48	+5.8	14.7	145.5
Feb. 26	11 59.48	+31 44.1	1.597	2.504	-0.66	+3.5	14.8	150.0
Mar. 8	11 52.88	+32 19.3	1.610	2.525	-0.72	+0.6	14.9	151.2
Mar. 18	11 45.65	+32 25.6	1.645	2.548	-0.67	-2.5	15.0	148.6
Mar. 28	11 38.91	+32 00.8	1.703	2.574	-0.53	-5.4	15.2	143.3
Apr. 7	11 33.65	+31 06.6	1.782	2.601	-0.32	-7.9	15.4	136.5
Apr. 17	11 30.47	+29 47.8	1.878	2.630	-0.09	-9.8	15.6	129.1
Apr. 27	11 29.59	+28 09.9	1.991	2.660	+0.14	-11.2	15.8	121.6
May 7	11 31.01	+26 18.3	2.116	2.693	+0.35	-12.1	16.0	114.2
May 17	11 34.51	+24 17.5	2.253	2.726	+0.53	-12.6	16.3	107.0
May 27	11 39.81	+22 11.0	2.398	2.762	+0.68	-13.0	16.5	100.1
June 6	11 46.63	+20 01.3	2.549	2.798	+0.81	-13.1	16.8	93.3
June 16	11 54.71	+17 50.3	2.704	2.836	+0.91	-13.1	17.0	86.8
June 26	12 03.80	+15 39.1	2.862	2.874	+0.99	-13.0	17.3	80.5
July 6	12 13.73	+13 28.9	3.020	2.914	+1.06	-12.9	17.5	74.3
July 16	12 24.32	+11 20.3	3.178	2.954	+1.11	-12.6	17.7	68.2
July 26	12 35.46	+09 13.9	3.333	2.996	+1.16	-12.4	17.9	62.1
Aug. 5	12 47.05	+07 10.2	3.483	3.038	+1.19	-12.1	18.2	56.2
Aug. 15	12 58.99	+05 09.6	3.629	3.081	+1.22	-11.7	18.4	50.2
Aug. 25	13 11.23	+03 12.5	3.767	3.124	+1.25	-11.3	18.6	44.3
Sept. 4	13 23.71	+01 19.2	3.896	3.168	+1.27	-10.9	18.8	38.4
Sept.14	13 36.38	-00 29.8	4.016	3.213	+1.28	-10.5	19.0	32.5
Sept.24	13 49.19	-02 14.4	4.124	3.258	+1.29	-10.0	19.1	26.5
Oct. 4	14 02.10	-03 54.1	4.220	3.303	+1.30	-9.5	19.3	20.6
Oct. 14	14 15.06	-05 28.8	4.303	3.348	+1.30	-8.9	19.5	14.9
Oct. 24	14 28.03	-06 58.1	4.370	3.394	+1.29	-8.4	19.6	9.7
Nov. 3	14 40.94	-08 21.7	4.423	3.440	+1.28	-7.8	19.8	6.9
Nov. 13	14 53.74	-09 39.6	4.459	3.486	+1.26	-7.2	19.9	9.4
Nov. 23	15 06.36	-10 51.5	4.478	3.532	+1.23	-6.6	20.0	14.8
Dec. 3	15 18.70	-11 57.4	4.480	3.579	+1.20	-6.0	20.1	21.2
Dec. 13	15 30.70	-12 57.2	4.466	3.625	+1.15	-5.4	20.2	27.9
Dec. 23	15 42.24	-13 51.1	4.434	3.672	+1.10	-4.8	20.3	35.0
Jan. 2	15 53.21	-14 39.1	4.386	3.718	+1.03	-4.2	20.4	42.3
Jan. 12	16 03.48	-15 21.5	4.324	3.765	+0.94	-3.7	20.5	49.8
Jan. 22	16 12.92	-15 58.6	4.247	3.811	+0.85	-3.2	20.6	57.6
Feb. 1	16 21.37	-16 30.9	4.159	3.857	+0.73	-2.8	20.6	65.6
Feb. 11	16 28.69	-16 58.7	4.061	3.904	+0.60	-2.4	20.7	73.9
Feb. 21	16 34.71	-17 22.7	3.956	3.950	+0.46	-2.1	20.7	82.4
Mar. 3	16 39.27	-17 43.4	3.848	3.996	+0.30	-1.8	20.8	91.3
Mar. 13	16 42.22	-18 01.4	3.739	4.042	+0.12	-1.6	20.8	100.6
Mar. 23	16 43.45	-18 17.0	3.635	4.087	-0.06	-1.4	20.8	110.2

Comet C/2014 OE4 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2016 Dec. 10.95150 TT
Peri. = 65.76120
Node = 240.39375 2000.0
Incl. = 81.34706
q = 6.2444812 AU
e = 0.9998967

m1 = 1.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 55.44	+35 56.4	6.663	6.247	+0.91	+7.2	17.1	61.1
Jan. 17	18 04.53	+37 08.6	6.625	6.250	+0.89	+8.3	17.0	63.6
Jan. 27	18 13.46	+38 31.4	6.583	6.253	+0.87	+9.3	17.0	66.3
Feb. 6	18 22.11	+40 04.5	6.539	6.257	+0.82	+10.2	17.0	69.2
Feb. 16	18 30.35	+41 47.0	6.493	6.261	+0.77	+11.1	17.0	72.2
Feb. 26	18 38.06	+43 37.9	6.448	6.267	+0.70	+11.8	17.0	75.1
Mar. 8	18 45.07	+45 35.8	6.405	6.273	+0.62	+12.3	17.0	77.9
Mar. 18	18 51.24	+47 39.3	6.366	6.280	+0.52	+12.7	17.0	80.6
Mar. 28	18 56.40	+49 46.5	6.331	6.288	+0.40	+12.9	17.0	83.0
Apr. 7	19 00.37	+51 55.4	6.301	6.296	+0.26	+12.8	17.0	85.1
Apr. 17	19 02.96	+54 03.7	6.278	6.305	+0.10	+12.5	17.0	87.0
Apr. 27	19 03.99	+56 08.9	6.262	6.315	-0.07	+12.0	17.0	88.5
May 7	19 03.27	+58 08.5	6.251	6.326	-0.26	+11.1	17.0	89.6
May 17	19 00.68	+59 59.7	6.247	6.337	-0.45	+10.0	17.0	90.5
May 27	18 56.17	+61 39.9	6.249	6.349	-0.64	+8.7	17.0	91.1
June 6	18 49.78	+63 06.6	6.256	6.362	-0.80	+7.1	17.0	91.4
June 16	18 41.75	+64 17.6	6.268	6.375	-0.92	+5.4	17.1	91.5
June 26	18 32.50	+65 11.3	6.283	6.389	-0.99	+3.6	17.1	91.4
July 6	18 22.64	+65 46.9	6.302	6.404	-0.98	+1.8	17.1	91.2
July 16	18 12.89	+66 04.7	6.322	6.420	-0.89	+0.1	17.1	90.9
July 26	18 03.96	+66 05.7	6.345	6.436	-0.74	-1.4	17.1	90.6
Aug. 5	17 56.51	+65 52.1	6.368	6.453	-0.55	-2.6	17.2	90.3
Aug. 15	17 50.99	+65 26.4	6.392	6.470	-0.33	-3.5	17.2	89.9
Aug. 25	17 47.67	+64 51.3	6.416	6.489	-0.10	-4.2	17.2	89.6
Sept. 4	17 46.66	+64 09.8	6.440	6.508	+0.12	-4.5	17.2	89.4
Sept.14	17 47.91	+63 24.4	6.464	6.527	+0.34	-4.7	17.3	89.1
Sept.24	17 51.30	+62 37.5	6.488	6.547	+0.54	-4.6	17.3	88.9
Oct. 4	17 56.68	+61 51.2	6.513	6.568	+0.72	-4.4	17.3	88.7
Oct. 14	18 03.85	+61 07.3	6.539	6.589	+0.88	-4.0	17.4	88.5
Oct. 24	18 12.62	+60 27.1	6.566	6.611	+1.02	-3.5	17.4	88.3
Nov. 3	18 22.81	+59 51.9	6.595	6.634	+1.14	-2.9	17.4	87.9
Nov. 13	18 34.24	+59 22.7	6.627	6.657	+1.25	-2.3	17.5	87.5
Nov. 23	18 46.75	+59 00.1	6.662	6.681	+1.34	-1.5	17.5	86.8
Dec. 3	19 00.17	+58 44.9	6.700	6.705	+1.42	-0.8	17.5	86.1
Dec. 13	19 14.36	+58 37.2	6.742	6.730	+1.48	0.0	17.6	85.1
Dec. 23	19 29.19	+58 37.3	6.789	6.755	+1.53	+0.8	17.6	83.9
Jan. 2	19 44.50	+58 45.2	6.839	6.781	+1.57	+1.6	17.6	82.5
Jan. 12	20 00.19	+59 00.7	6.893	6.808	+1.59	+2.3	17.7	80.9
Jan. 22	20 16.14	+59 23.6	6.951	6.835	+1.61	+3.0	17.7	79.2
Feb. 1	20 32.23	+59 53.5	7.012	6.863	+1.61	+3.6	17.8	77.3
Feb. 11	20 48.38	+60 29.8	7.074	6.891	+1.61	+4.2	17.8	75.3
Feb. 21	21 04.48	+61 12.0	7.138	6.920	+1.60	+4.8	17.9	73.3
Mar. 3	21 20.44	+61 59.5	7.202	6.949	+1.58	+5.2	17.9	71.3
Mar. 13	21 36.20	+62 51.7	7.265	6.978	+1.55	+5.6	18.0	69.5
Mar. 23	21 51.66	+63 47.8	7.325	7.008	+1.51	+5.9	18.0	67.7

Comet 89P/Russell

Epoch = 2017 July 26.0 TT
T = 2016 Dec. 14.72729 TT
Peri. = 250.16277 e = 0.4082124
Node = 41.44337 2000.0 a = 3.7522228 AU
Incl. = 12.07655 n = 0.13560358
q = 2.2205189 AU P = 7.27 years

m1 = 4.8 + 5 log(Delta) + 30.0 log(r(t-60))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	19 57.00	-29 08.1	3.179	2.227	+2.48	+6.8	17.8	12.1
Jan. 17	20 21.83	-27 59.9	3.199	2.234	+2.43	+8.0	17.8	9.4
Jan. 27	20 46.09	-26 39.8	3.213	2.243	+2.36	+9.0	17.7	8.4
Feb. 6	21 09.67	-25 09.6	3.221	2.255	+2.28	+9.9	17.7	9.7
Feb. 16	21 32.49	-23 30.9	3.222	2.269	+2.20	+10.5	17.7	12.6
Feb. 26	21 54.53	-21 45.7	3.217	2.285	+2.12	+11.0	17.7	16.4
Mar. 8	22 15.76	-19 55.8	3.206	2.303	+2.04	+11.3	17.8	20.5
Mar. 18	22 36.17	-18 03.2	3.187	2.323	+1.96	+11.4	17.8	24.9
Mar. 28	22 55.77	-16 09.4	3.162	2.345	+1.88	+11.3	17.8	29.4
Apr. 7	23 14.56	-14 16.2	3.129	2.368	+1.80	+11.1	17.9	34.2
Apr. 17	23 32.52	-12 25.0	3.089	2.394	+1.71	+10.8	17.9	39.0
Apr. 27	23 49.67	-10 37.2	3.042	2.421	+1.63	+10.3	18.0	44.0
May 7	00 05.97	-08 54.1	2.987	2.449	+1.54	+9.7	18.0	49.2
May 17	00 21.39	-07 16.7	2.925	2.479	+1.45	+9.0	18.1	54.5
May 27	00 35.86	-05 46.3	2.856	2.510	+1.34	+8.3	18.2	60.1
June 6	00 49.31	-04 23.6	2.781	2.543	+1.23	+7.4	18.3	66.0
June 16	01 01.64	-03 09.5	2.700	2.576	+1.11	+6.5	18.3	72.1
June 26	01 12.70	-02 04.8	2.615	2.610	+0.96	+5.5	18.4	78.5
July 6	01 22.32	-01 10.1	2.525	2.645	+0.80	+4.4	18.5	85.4
July 16	01 30.33	-00 26.1	2.434	2.681	+0.62	+3.3	18.6	92.7
July 26	01 36.49	+00 07.0	2.343	2.718	+0.41	+2.2	18.6	100.5
Aug. 5	01 40.59	+00 28.8	2.255	2.755	+0.18	+1.1	18.7	108.8
Aug. 15	01 42.44	+00 39.7	2.174	2.793	-0.06	0.0	18.8	117.7
Aug. 25	01 41.87	+00 40.1	2.102	2.831	-0.30	-0.9	18.9	127.3
Sept. 4	01 38.89	+00 31.4	2.044	2.870	-0.52	-1.5	19.0	137.5
Sept. 14	01 33.67	+00 16.1	2.005	2.909	-0.71	-1.9	19.2	148.2
Sept. 24	01 26.61	-00 02.9	1.988	2.948	-0.82	-1.9	19.3	159.2
Oct. 4	01 18.38	-00 21.6	1.998	2.987	-0.86	-1.4	19.5	169.2
Oct. 14	01 09.81	-00 36.0	2.037	3.027	-0.81	-0.7	19.7	171.2
Oct. 24	01 01.75	-00 42.6	2.104	3.066	-0.68	+0.4	20.0	162.1
Nov. 3	00 54.96	-00 39.0	2.199	3.106	-0.50	+1.5	20.2	151.3
Nov. 13	00 49.93	-00 24.2	2.319	3.146	-0.30	+2.6	20.5	140.5
Nov. 23	00 46.94	+00 01.8	2.459	3.185	-0.09	+3.6	20.8	130.0
Dec. 3	00 46.06	+00 38.2	2.617	3.225	+0.11	+4.6	21.1	120.0
Dec. 13	00 47.17	+01 23.8	2.788	3.264	+0.29	+5.3	21.5	110.4
Dec. 23	00 50.11	+02 17.2	2.967	3.304	+0.46	+6.0	21.8	101.3
Jan. 2	00 54.67	+03 17.0	3.152	3.343	+0.59	+6.5	22.1	92.6
Jan. 12	01 00.61	+04 22.0	3.338	3.382	+0.71	+6.9	22.3	84.2
Jan. 22	01 07.73	+05 30.9	3.522	3.421	+0.81	+7.2	22.6	76.1
Feb. 1	01 15.85	+06 42.8	3.702	3.460	+0.89	+7.4	22.9	68.2
Feb. 11	01 24.79	+07 56.5	3.875	3.498	+0.96	+7.5	.	60.6
Feb. 21	01 34.42	+09 11.4	4.040	3.537	+1.02	+7.5	.	53.2
Mar. 3	01 44.61	+10 26.5	4.192	3.574	+1.06	+7.5	.	45.9
Mar. 13	01 55.26	+11 41.2	4.333	3.612	+1.10	+7.4	.	38.8
Mar. 23	02 06.27	+12 54.8	4.459	3.649	+1.13	+7.2	.	31.8

Comet C/2016 T2 (Matheny)

Epoch = 2017 July 26.0 TT
T = 2016 Dec. 29.12817 TT
Peri. = 92.29873
Node = 339.09845 2000.0
Incl. = 81.30739
q = 1.9078539 AU
e = 0.9812701

m1 = 13.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	18 29.64	+48 48.5	1.973	1.911	+0.28	+20.0	17.7	71.8
Jan. 17	18 32.44	+52 08.3	1.922	1.922	+0.16	+25.5	17.7	75.1
Jan. 27	18 34.04	+56 23.8	1.865	1.941	-0.12	+31.5	17.6	79.3
Feb. 6	18 32.80	+61 38.5	1.808	1.967	-0.78	+37.3	17.6	84.0
Feb. 16	18 25.03	+67 51.1	1.760	2.000	-2.52	+41.7	17.6	88.8
Feb. 26	17 59.79	+74 47.9	1.729	2.040	-8.98	+40.1	17.7	93.2
Mar. 8	16 30.01	+81 28.4	1.725	2.086	-25.66	+7.6	17.8	96.5
Mar. 18	12 13.44	+82 44.8	1.753	2.137	-13.24	-37.8	17.9	98.3
Mar. 28	10 01.01	+76 26.5	1.819	2.193	-3.47	-46.0	18.1	98.0
Apr. 7	09 26.30	+68 46.0	1.921	2.254	-0.99	-44.2	18.3	95.8
Apr. 17	09 16.37	+61 23.6	2.057	2.319	-0.11	-40.2	18.6	92.0
Apr. 27	09 15.29	+54 41.5	2.219	2.387	+0.30	-35.7	18.9	86.9
May 7	09 18.29	+48 44.4	2.403	2.458	+0.52	-31.4	19.2	81.1
May 17	09 23.46	+43 29.9	2.601	2.532	+0.64	-27.7	19.5	74.8
May 27	09 29.87	+38 52.9	2.807	2.609	+0.72	-24.5	19.8	68.3
June 6	09 37.05	+34 47.5	3.016	2.687	+0.76	-21.9	20.1	61.6
June 16	09 44.69	+31 08.2	3.224	2.766	+0.79	-19.8	20.4	54.8
June 26	09 52.61	+27 50.4	3.426	2.848	+0.81	-18.0	20.6	48.0
July 6	10 00.67	+24 50.1	3.619	2.930	+0.81	-16.6	20.9	41.1
July 16	10 08.75	+22 04.1	3.799	3.013	+0.81	-15.4	21.1	34.2
July 26	10 16.81	+19 29.7	3.966	3.098	+0.79	-14.5	21.3	27.2
Aug. 5	10 24.75	+17 05.1	4.115	3.183	+0.78	-13.7	21.5	20.2
Aug. 15	10 32.52	+14 48.5	4.246	3.268	+0.75	-13.0	21.7	13.2
Aug. 25	10 40.05	+12 38.7	4.357	3.354	+0.72	-12.4	21.9	6.4
Sept. 4	10 47.28	+10 34.6	4.446	3.440	+0.69	-11.9	22.0	3.5
Sept. 14	10 54.14	+08 35.6	4.514	3.527	+0.64	-11.5	22.1	9.7
Sept. 24	11 00.55	+06 40.9	4.560	3.613	+0.59	-11.1	22.3	17.2
Oct. 4	11 06.42	+04 50.2	4.583	3.700	+0.52	-10.7	22.4	24.9
Oct. 14	11 11.67	+03 03.3	4.585	3.787	+0.45	-10.3	22.5	33.0
Oct. 24	11 16.16	+01 19.9	4.566	3.874	+0.36	-10.0	22.6	41.2
Nov. 3	11 19.78	-00 19.9	4.528	3.960	+0.26	-9.6	22.7	49.8
Nov. 13	11 22.40	-01 56.0	4.474	4.047	+0.14	-9.2	22.7	58.6
Nov. 23	11 23.84	-03 28.0	4.406	4.134	+0.01	-8.7	22.8	67.7
Dec. 3	11 23.96	-04 55.5	4.327	4.220	-0.13	-8.2	22.8	77.2
Dec. 13	11 22.61	-06 17.6	4.243	4.306	-0.29	-7.6	22.9	87.0
Dec. 23	11 19.67	-07 33.3	4.159	4.392	-0.46	-6.8	22.9	97.2
Jan. 2	11 15.04	-08 41.2	4.080	4.478	-0.63	-5.9	23.0	107.7
Jan. 12	11 08.74	-09 40.0	4.013	4.564	-0.79	-4.8	23.0	118.5
Jan. 22	11 00.88	-10 27.9	3.963	4.649	-0.92	-3.6	.	129.3
Feb. 1	10 51.73	-11 03.8	3.937	4.734	-1.01	-2.3	.	140.0
Feb. 11	10 41.68	-11 26.8	3.941	4.819	-1.05	-1.0	.	149.8
Feb. 21	10 31.22	-11 37.3	3.976	4.904	-1.03	+0.1	.	157.3
Mar. 3	10 20.93	-11 36.4	4.047	4.988	-0.96	+1.0	.	159.6
Mar. 13	10 11.31	-11 26.5	4.151	5.072	-0.85	+1.6	.	155.4
Mar. 23	10 02.80	-11 10.4	4.288	5.156	-0.71	+1.9	.	147.3

Comet 45P/Honda-Mrkos-Pajdusakova

Epoch = 2017 July 26.0 TT
T = 2016 Dec. 31.27789 TT
Peri. = 326.33069 e = 0.8239756
Node = 88.94146 2000.0 a = 3.0257936 AU
Incl. = 4.24778 n = 0.18726005
q = 0.5326135 AU P = 5.26 years

m1 = 14.0 + 5 log(Delta) + 20.0 log(r(t-10))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	21 09.46	-17 12.0	0.567	0.552	+0.05	+18.3	7.4	28.0
Jan. 17	21 09.97	-14 09.1	0.379	0.638	-2.57	+30.2	6.7	19.0
Jan. 27	20 44.25	-09 07.4	0.226	0.763	-9.42	+92.2	6.9	9.5
Feb. 6	19 10.06	+06 15.1	0.109	0.903	-31.59	161.2	6.8	38.6
Feb. 16	13 54.11	+33 07.5	0.103	1.047	-14.37	-30.3	8.2	122.5
Feb. 26	11 30.38	+28 04.8	0.213	1.189	-3.86	-22.6	11.0	156.9
Mar. 8	10 51.80	+24 18.9	0.350	1.327	-1.46	-14.5	13.2	160.0
Mar. 18	10 37.23	+21 54.2	0.503	1.461	-0.51	-11.2	15.0	152.6
Mar. 28	10 32.15	+20 02.2	0.671	1.590	+0.01	-9.8	16.4	143.7
Apr. 7	10 32.26	+18 24.6	0.853	1.714	+0.34	-9.0	17.7	135.1
Apr. 17	10 35.61	+16 54.1	1.047	1.834	+0.55	-8.7	18.8	126.9
Apr. 27	10 41.14	+15 27.2	1.252	1.950	+0.71	-8.5	19.8	119.1
May 7	10 48.24	+14 02.0	1.465	2.063	+0.82	-8.4	20.6	111.6
May 17	10 56.45	+12 37.6	1.686	2.171	+0.90	-8.4	21.4	104.4
May 27	11 05.48	+11 13.7	1.912	2.276	+0.96	-8.4	22.1	97.4
June 6	11 15.13	+09 49.9	2.140	2.378	+1.01	-8.4	22.8	90.6
June 16	11 25.22	+08 26.3	2.369	2.476	+1.04	-8.3	.	83.9
June 26	11 35.65	+07 02.9	2.597	2.572	+1.07	-8.3	.	77.3
July 6	11 46.34	+05 39.9	2.821	2.665	+1.09	-8.2	.	70.8
July 16	11 57.20	+04 17.4	3.040	2.755	+1.10	-8.2	.	64.3
July 26	12 08.20	+02 55.7	3.251	2.843	+1.11	-8.1	.	57.8
Aug. 5	12 19.30	+01 35.1	3.453	2.928	+1.11	-7.9	.	51.3
Aug. 15	12 30.45	+00 15.8	3.643	3.011	+1.12	-7.8	.	44.9
Aug. 25	12 41.62	-01 01.9	3.821	3.092	+1.12	-7.6	.	38.3
Sept. 4	12 52.79	-02 17.7	3.983	3.171	+1.11	-7.4	.	31.7
Sept. 14	13 03.92	-03 31.3	4.130	3.247	+1.11	-7.1	.	25.1
Sept. 24	13 14.99	-04 42.3	4.258	3.322	+1.10	-6.8	.	18.4
Oct. 4	13 25.95	-05 50.4	4.368	3.395	+1.08	-6.5	.	11.7
Oct. 14	13 36.75	-06 55.3	4.458	3.465	+1.06	-6.1	.	5.2
Oct. 24	13 47.37	-07 56.6	4.526	3.535	+1.03	-5.7	.	4.0
Nov. 3	13 57.72	-08 54.0	4.573	3.602	+1.00	-5.3	.	10.4
Nov. 13	14 07.74	-09 47.0	4.599	3.668	+0.96	-4.8	.	17.7
Nov. 23	14 17.35	-10 35.4	4.602	3.732	+0.91	-4.3	.	25.2
Dec. 3	14 26.46	-11 18.9	4.584	3.795	+0.85	-3.8	.	32.9
Dec. 13	14 34.96	-11 57.0	4.546	3.856	+0.78	-3.3	.	40.8
Dec. 23	14 42.72	-12 29.6	4.489	3.915	+0.69	-2.7	.	49.0
Jan. 2	14 49.61	-12 56.2	4.415	3.973	+0.59	-2.0	.	57.5
Jan. 12	14 55.48	-13 16.6	4.326	4.030	+0.47	-1.4	.	66.2
Jan. 22	15 00.18	-13 30.5	4.225	4.085	+0.33	-0.7	.	75.2
Feb. 1	15 03.52	-13 37.7	4.116	4.139	+0.19	0.0	.	84.5
Feb. 11	15 05.37	-13 37.9	4.003	4.192	+0.02	+0.7	.	94.2
Feb. 21	15 05.59	-13 31.0	3.890	4.243	-0.15	+1.4	.	104.2
Mar. 3	15 04.08	-13 16.9	3.784	4.293	-0.32	+2.1	.	114.7
Mar. 13	15 00.83	-12 55.7	3.689	4.342	-0.49	+2.8	.	125.5
Mar. 23	14 55.91	-12 27.9	3.611	4.390	-0.64	+3.3	.	136.7

Comet 128P/Shoemaker-Holt

Epoch = 2017 July 26.0 TT
T = 2017 Jan. 10.71189 TT
Peri. = 210.56203 e = 0.3209290
Node = 214.29470 2000.0 a = 4.4999990 AU
Incl. = 4.36474 n = 0.10324890
q = 3.0558188 AU P = 9.55 years

m1 = 7.4 + 5 log(Delta) + 17.5 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	03 05.46	+14 35.1	2.427	3.056	+0.27	+0.9	17.8	121.4
Jan. 17	03 08.19	+14 44.2	2.550	3.056	+0.48	+1.8	17.9	111.9
Jan. 27	03 12.97	+15 02.3	2.683	3.057	+0.67	+2.6	18.0	102.9
Feb. 6	03 19.63	+15 27.9	2.821	3.059	+0.83	+3.1	18.1	94.4
Feb. 16	03 27.97	+15 58.9	2.962	3.062	+0.98	+3.5	18.2	86.4
Feb. 26	03 37.78	+16 33.5	3.102	3.067	+1.11	+3.7	18.4	78.8
Mar. 8	03 48.86	+17 10.1	3.240	3.072	+1.22	+3.7	18.5	71.5
Mar. 18	04 01.04	+17 46.8	3.373	3.078	+1.31	+3.6	18.5	64.5
Mar. 28	04 14.15	+18 22.4	3.500	3.085	+1.39	+3.3	18.6	57.7
Apr. 7	04 28.06	+18 55.4	3.620	3.093	+1.46	+2.9	18.7	51.2
Apr. 17	04 42.62	+19 24.8	3.731	3.102	+1.51	+2.5	18.8	44.9
Apr. 27	04 57.73	+19 49.7	3.833	3.112	+1.55	+2.0	18.9	38.8
May 7	05 13.25	+20 09.3	3.924	3.123	+1.58	+1.4	19.0	32.7
May 17	05 29.09	+20 23.0	4.004	3.135	+1.61	+0.7	19.0	26.8
May 27	05 45.15	+20 30.4	4.072	3.147	+1.62	+0.1	19.1	21.0
June 6	06 01.32	+20 31.2	4.128	3.161	+1.62	-0.6	19.1	15.3
June 16	06 17.52	+20 25.3	4.172	3.175	+1.61	-1.3	19.2	9.7
June 26	06 33.67	+20 12.7	4.202	3.190	+1.60	-1.9	19.2	4.6
July 6	06 49.67	+19 53.5	4.220	3.206	+1.58	-2.5	19.3	3.8
July 16	07 05.43	+19 28.0	4.224	3.223	+1.55	-3.1	19.3	8.6
July 26	07 20.90	+18 56.7	4.215	3.240	+1.51	-3.7	19.3	14.2
Aug. 5	07 35.99	+18 19.9	4.192	3.258	+1.46	-4.2	19.4	20.0
Aug. 15	07 50.62	+17 38.3	4.156	3.277	+1.41	-4.6	19.4	26.0
Aug. 25	08 04.73	+16 52.6	4.107	3.296	+1.35	-4.9	19.4	32.2
Sept. 4	08 18.21	+16 03.6	4.046	3.316	+1.28	-5.1	19.4	38.5
Sept. 14	08 31.01	+15 12.2	3.972	3.336	+1.20	-5.3	19.4	44.9
Sept. 24	08 43.02	+14 19.2	3.886	3.357	+1.11	-5.3	19.4	51.7
Oct. 4	08 54.14	+13 25.9	3.790	3.379	+1.01	-5.3	19.4	58.6
Oct. 14	09 04.27	+12 33.2	3.685	3.401	+0.90	-5.1	19.4	65.9
Oct. 24	09 13.27	+11 42.6	3.572	3.424	+0.77	-4.7	19.4	73.4
Nov. 3	09 21.00	+10 55.3	3.454	3.447	+0.63	-4.2	19.3	81.3
Nov. 13	09 27.32	+10 12.8	3.332	3.470	+0.47	-3.6	19.3	89.6
Nov. 23	09 32.06	+09 36.6	3.210	3.494	+0.30	-2.8	19.3	98.4
Dec. 3	09 35.07	+09 08.2	3.092	3.518	+0.12	-1.9	19.3	107.6
Dec. 13	09 36.26	+08 48.8	2.981	3.543	-0.07	-0.9	19.2	117.3
Dec. 23	09 35.54	+08 39.7	2.882	3.568	-0.26	+0.2	19.2	127.6
Jan. 2	09 32.97	+08 41.2	2.799	3.593	-0.42	+1.2	19.2	138.3
Jan. 12	09 28.74	+08 53.2	2.738	3.618	-0.56	+2.1	19.2	149.3
Jan. 22	09 23.19	+09 14.6	2.701	3.644	-0.64	+2.9	19.2	160.6
Feb. 1	09 16.83	+09 43.2	2.694	3.670	-0.66	+3.3	19.3	171.1
Feb. 11	09 10.28	+10 16.1	2.716	3.696	-0.61	+3.4	19.3	172.3
Feb. 21	09 04.16	+10 50.3	2.769	3.723	-0.51	+3.2	19.4	162.3
Mar. 3	08 59.05	+11 22.7	2.850	3.749	-0.37	+2.8	19.6	151.3
Mar. 13	08 55.35	+11 51.1	2.956	3.776	-0.20	+2.3	19.7	140.5
Mar. 23	08 53.33	+12 13.7	3.084	3.803	-0.03	+1.6	19.8	130.1

Comet C/2016 U1 (NEOWISE)

Epoch = 2017 July 26.0 TT
T = 2017 Jan. 14.01702 TT
Peri. = 162.75730
Node = 61.42400 2000.0
Incl. = 46.43623
q = 0.3192275 AU
e = 1.0002747

m1 = 12.6 + 5 log(Delta) + 12.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 58.80	-08 53.5	1.001	0.382	+6.45	-88.6	7.4	22.2
Jan. 17	19 03.32	-23 40.0	1.217	0.332	+8.31	-48.8	7.0	12.4
Jan. 27	20 26.45	-31 48.3	1.395	0.494	+7.52	-11.0	9.5	13.5
Feb. 6	21 41.67	-33 38.8	1.567	0.707	+5.96	+6.9	11.7	18.7
Feb. 16	22 41.23	-32 29.8	1.750	0.917	+4.60	+13.5	13.3	22.4
Feb. 26	23 27.27	-30 14.6	1.940	1.117	+3.62	+15.0	14.6	24.5
Mar. 8	00 03.50	-27 45.0	2.129	1.307	+2.94	+14.3	15.7	25.7
Mar. 18	00 32.93	-25 22.4	2.312	1.488	+2.47	+12.8	16.6	26.4
Mar. 28	00 57.58	-23 14.7	2.485	1.661	+2.12	+11.0	17.3	27.2
Apr. 7	01 18.78	-21 24.7	2.645	1.828	+1.86	+9.2	18.0	28.4
Apr. 17	01 37.36	-19 52.7	2.790	1.988	+1.65	+7.4	18.6	30.3
Apr. 27	01 53.89	-18 38.3	2.918	2.144	+1.48	+5.7	19.1	32.9
May 7	02 08.70	-17 40.9	3.029	2.295	+1.33	+4.1	19.5	36.3
May 17	02 22.02	-17 00.0	3.122	2.442	+1.20	+2.5	19.9	40.4
May 27	02 33.97	-16 35.1	3.197	2.586	+1.06	+0.9	20.3	45.2
June 6	02 44.61	-16 25.7	3.255	2.726	+0.93	-0.6	20.6	50.6
June 16	02 53.94	-16 31.5	3.297	2.863	+0.80	-2.1	20.9	56.4
June 26	03 01.91	-16 52.2	3.323	2.997	+0.65	-3.5	21.2	62.7
July 6	03 08.45	-17 27.4	3.337	3.129	+0.50	-4.9	21.4	69.5
July 16	03 13.45	-18 16.3	3.340	3.258	+0.33	-6.2	21.6	76.6
July 26	03 16.78	-19 18.1	3.336	3.385	+0.15	-7.3	21.8	84.0
Aug. 5	03 18.28	-20 31.2	3.328	3.510	-0.04	-8.2	22.0	91.8
Aug. 15	03 17.84	-21 53.3	3.321	3.633	-0.25	-8.8	22.2	99.8
Aug. 25	03 15.35	-23 21.3	3.318	3.754	-0.46	-9.0	22.4	107.9
Sept. 4	03 10.75	-24 50.9	3.326	3.873	-0.66	-8.6	22.6	115.9
Sept. 14	03 04.14	-26 17.1	3.348	3.991	-0.84	-7.7	22.7	123.4
Sept. 24	02 55.71	-27 34.4	3.389	4.107	-0.98	-6.3	22.9	130.1
Oct. 4	02 45.88	-28 37.1	3.452	4.222	-1.07	-4.4	.	135.2
Oct. 14	02 35.18	-29 21.0	3.542	4.335	-1.09	-2.2	.	138.0
Oct. 24	02 24.27	-29 43.3	3.658	4.447	-1.05	0.0	.	138.0
Nov. 3	02 13.79	-29 43.4	3.801	4.558	-0.95	+2.1	.	135.1
Nov. 13	02 04.33	-29 22.8	3.969	4.667	-0.80	+3.8	.	130.0
Nov. 23	01 56.29	-28 44.3	4.161	4.775	-0.64	+5.3	.	123.4
Dec. 3	01 49.92	-27 51.5	4.371	4.882	-0.46	+6.3	.	115.9
Dec. 13	01 45.28	-26 48.2	4.597	4.988	-0.29	+7.0	.	107.9
Dec. 23	01 42.35	-25 37.8	4.833	5.093	-0.13	+7.5	.	99.8
Jan. 2	01 41.01	-24 23.2	5.077	5.197	+0.01	+7.6	.	91.6
Jan. 12	01 41.09	-23 06.8	5.322	5.300	+0.13	+7.6	.	83.4
Jan. 22	01 42.41	-21 50.5	5.566	5.402	+0.24	+7.5	.	75.4
Feb. 1	01 44.78	-20 35.7	5.804	5.504	+0.33	+7.2	.	67.6
Feb. 11	01 48.05	-19 23.5	6.033	5.604	+0.40	+6.9	.	59.9
Feb. 21	01 52.04	-18 14.8	6.250	5.703	+0.46	+6.4	.	52.6
Mar. 3	01 56.61	-17 10.3	6.451	5.802	+0.50	+6.0	.	45.7
Mar. 13	02 01.62	-16 10.5	6.636	5.900	+0.54	+5.5	.	39.2
Mar. 23	02 06.97	-15 15.9	6.802	5.997	+0.56	+4.9	.	33.6

Comet P/2016 G1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 Jan. 26.28381 TT
Peri. = 111.30460 e = 0.2102464
Node = 204.07430 2000.0 a = 2.5836936 AU
Incl. = 10.96862 n = 0.23732450
q = 2.0404813 AU P = 4.15 years

m1 = 13.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	20 07.67	-12 44.2	2.968	2.043	+2.33	+6.8	20.0	16.4
Jan. 17	20 30.98	-11 36.0	2.990	2.041	+2.31	+7.9	20.0	12.5
Jan. 27	20 54.10	-10 16.7	3.007	2.040	+2.29	+8.9	20.0	9.2
Feb. 6	21 16.95	-08 47.6	3.017	2.041	+2.25	+9.7	20.0	6.9
Feb. 16	21 39.49	-07 10.2	3.021	2.044	+2.22	+10.4	20.1	6.9
Feb. 26	22 01.69	-05 25.9	3.019	2.047	+2.18	+10.9	20.1	9.2
Mar. 8	22 23.54	-03 36.5	3.010	2.053	+2.15	+11.3	20.1	12.5
Mar. 18	22 45.02	-01 43.5	2.996	2.059	+2.11	+11.5	20.1	16.3
Mar. 28	23 06.16	+00 11.4	2.974	2.068	+2.08	+11.5	20.1	20.3
Apr. 7	23 26.94	+02 06.7	2.947	2.077	+2.04	+11.4	20.1	24.4
Apr. 17	23 47.37	+04 00.8	2.913	2.088	+2.01	+11.2	20.1	28.6
Apr. 27	00 07.47	+05 52.3	2.872	2.100	+1.97	+10.7	20.1	32.9
May 7	00 27.22	+07 39.8	2.824	2.113	+1.94	+10.2	20.1	37.3
May 17	00 46.60	+09 21.9	2.771	2.127	+1.90	+9.6	20.1	41.8
May 27	01 05.59	+10 57.5	2.710	2.142	+1.85	+8.8	20.1	46.5
June 6	01 24.13	+12 25.4	2.643	2.159	+1.80	+7.9	20.1	51.3
June 16	01 42.14	+13 44.6	2.570	2.176	+1.74	+7.0	20.1	56.2
June 26	01 59.54	+14 54.1	2.491	2.194	+1.66	+5.9	20.1	61.4
July 6	02 16.18	+15 53.0	2.406	2.213	+1.57	+4.8	20.1	66.8
July 16	02 31.91	+16 40.6	2.317	2.232	+1.46	+3.6	20.1	72.5
July 26	02 46.53	+17 16.2	2.223	2.253	+1.32	+2.3	20.0	78.5
Aug. 5	02 59.77	+17 39.0	2.125	2.273	+1.16	+1.0	20.0	85.0
Aug. 15	03 11.38	+17 48.6	2.026	2.294	+0.96	-0.4	19.9	91.8
Aug. 25	03 21.02	+17 44.4	1.927	2.316	+0.73	-1.9	19.9	99.3
Sept. 4	03 28.34	+17 25.8	1.830	2.338	+0.47	-3.3	19.8	107.3
Sept. 14	03 33.02	+16 52.5	1.739	2.360	+0.17	-4.8	19.8	116.1
Sept. 24	03 34.75	+16 04.4	1.655	2.383	-0.14	-6.2	19.8	125.6
Oct. 4	03 33.39	+15 02.1	1.585	2.406	-0.43	-7.5	19.7	135.9
Oct. 14	03 29.06	+13 47.4	1.531	2.429	-0.69	-8.3	19.7	146.9
Oct. 24	03 22.17	+12 24.1	1.499	2.452	-0.86	-8.6	19.7	158.4
Nov. 3	03 13.58	+10 58.0	1.493	2.475	-0.92	-8.2	19.8	169.2
Nov. 13	03 04.42	+09 36.5	1.515	2.498	-0.86	-7.0	19.9	171.5
Nov. 23	02 55.87	+08 26.7	1.564	2.521	-0.69	-5.2	20.0	161.6
Dec. 3	02 48.97	+07 34.3	1.640	2.543	-0.46	-3.3	20.2	150.3
Dec. 13	02 44.37	+07 01.7	1.739	2.566	-0.20	-1.3	20.3	139.2
Dec. 23	02 42.39	+06 48.9	1.857	2.589	+0.06	+0.5	20.5	128.7
Jan. 2	02 43.03	+06 54.0	1.990	2.611	+0.31	+2.0	20.7	118.9
Jan. 12	02 46.12	+07 13.9	2.134	2.633	+0.53	+3.2	21.0	109.7
Jan. 22	02 51.39	+07 45.5	2.285	2.655	+0.72	+4.0	21.2	101.0
Feb. 1	02 58.57	+08 25.6	2.440	2.677	+0.88	+4.6	21.4	92.8
Feb. 11	03 07.38	+09 11.5	2.596	2.698	+1.02	+4.9	21.5	85.1
Feb. 21	03 17.57	+10 00.8	2.751	2.719	+1.14	+5.1	21.7	77.7
Mar. 3	03 28.94	+10 51.4	2.902	2.739	+1.23	+5.0	21.9	70.7
Mar. 13	03 41.28	+11 41.5	3.048	2.759	+1.32	+4.8	22.0	63.9
Mar. 23	03 54.46	+12 29.6	3.186	2.779	+1.39	+4.5	22.2	57.4

Comet 343P/NEAT-LONEOS

Epoch = 2017 July 26.0 TT
T = 2017 Jan. 27.68863 TT
Peri. = 137.53269 e = 0.5834765
Node = 257.24072 2000.0 a = 5.4741848 AU
Incl. = 5.58212 n = 0.07695288
q = 2.2801266 AU P = 12.81 years

m1 = 7.0 + 5 log(Delta) + 25.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 03.29	+04 57.3	2.314	2.287	+1.66	+8.1	17.8	76.1
Jan. 17	00 19.87	+06 17.9	2.418	2.282	+1.75	+8.7	17.9	70.3
Jan. 27	00 37.39	+07 45.0	2.520	2.280	+1.83	+9.2	18.0	64.7
Feb. 6	00 55.70	+09 16.6	2.622	2.282	+1.90	+9.4	18.0	59.3
Feb. 16	01 14.68	+10 50.5	2.721	2.286	+1.96	+9.4	18.2	54.1
Feb. 26	01 34.25	+12 24.8	2.818	2.294	+2.01	+9.3	18.3	49.1
Mar. 8	01 54.31	+13 57.5	2.912	2.306	+2.05	+8.9	18.4	44.1
Mar. 18	02 14.79	+15 26.9	3.002	2.320	+2.08	+8.4	18.5	39.3
Mar. 28	02 35.63	+16 51.3	3.089	2.337	+2.11	+7.8	18.7	34.6
Apr. 7	02 56.75	+18 09.2	3.172	2.358	+2.13	+7.0	18.8	29.9
Apr. 17	03 18.06	+19 19.5	3.250	2.381	+2.14	+6.1	19.0	25.3
Apr. 27	03 39.51	+20 20.9	3.322	2.407	+2.15	+5.2	19.1	20.7
May 7	04 00.99	+21 12.8	3.389	2.435	+2.14	+4.2	19.3	16.1
May 17	04 22.42	+21 54.5	3.449	2.466	+2.13	+3.1	19.5	11.4
May 27	04 43.70	+22 25.7	3.503	2.499	+2.10	+2.1	19.7	6.7
June 6	05 04.74	+22 46.3	3.548	2.535	+2.07	+1.0	19.8	2.0
June 16	05 25.42	+22 56.4	3.586	2.572	+2.02	0.0	20.0	2.8
June 26	05 45.67	+22 56.4	3.615	2.611	+1.97	-1.0	20.2	7.7
July 6	06 05.37	+22 46.9	3.634	2.651	+1.91	-1.8	20.4	12.7
July 16	06 24.45	+22 28.4	3.643	2.694	+1.84	-2.7	20.6	17.8
July 26	06 42.83	+22 01.8	3.642	2.737	+1.76	-3.4	20.7	23.1
Aug. 5	07 00.40	+21 28.1	3.631	2.782	+1.67	-4.0	20.9	28.5
Aug. 15	07 17.11	+20 48.3	3.608	2.828	+1.58	-4.5	21.1	34.2
Aug. 25	07 32.89	+20 03.5	3.574	2.875	+1.47	-4.9	21.2	40.0
Sept. 4	07 47.63	+19 14.8	3.530	2.923	+1.36	-5.1	21.4	46.1
Sept. 14	08 01.26	+18 23.6	3.474	2.972	+1.24	-5.3	21.5	52.5
Sept. 24	08 13.69	+17 31.0	3.409	3.021	+1.11	-5.3	21.7	59.2
Oct. 4	08 24.80	+16 38.4	3.335	3.071	+0.97	-5.1	21.8	66.2
Oct. 14	08 34.48	+15 47.3	3.252	3.122	+0.81	-4.8	21.9	73.6
Oct. 24	08 42.59	+14 59.0	3.164	3.173	+0.64	-4.4	22.0	81.5
Nov. 3	08 48.98	+14 15.0	3.072	3.224	+0.45	-3.8	22.1	89.8
Nov. 13	08 53.51	+13 36.8	2.980	3.276	+0.25	-3.1	22.3	98.6
Nov. 23	08 56.04	+13 05.8	2.890	3.328	+0.04	-2.3	22.4	107.9
Dec. 3	08 56.46	+12 43.0	2.807	3.381	-0.17	-1.4	22.5	117.8
Dec. 13	08 54.79	+12 29.4	2.737	3.433	-0.37	-0.4	22.6	128.2
Dec. 23	08 51.11	+12 25.1	2.683	3.486	-0.54	+0.5	22.7	139.1
Jan. 2	08 45.70	+12 29.7	2.650	3.539	-0.67	+1.2	22.8	150.4
Jan. 12	08 39.02	+12 41.9	2.644	3.592	-0.74	+1.8	23.0	161.8
Jan. 22	08 31.67	+12 59.7	2.667	3.644	-0.73	+2.1	.	172.2
Feb. 1	08 24.33	+13 20.7	2.721	3.697	-0.67	+2.2	.	171.2
Feb. 11	08 17.68	+13 42.6	2.804	3.750	-0.54	+2.1	.	160.7
Feb. 21	08 12.25	+14 03.2	2.917	3.803	-0.38	+1.8	.	149.6
Mar. 3	08 08.41	+14 21.0	3.054	3.855	-0.21	+1.4	.	138.7
Mar. 13	08 06.34	+14 35.0	3.213	3.908	-0.03	+0.9	.	128.3
Mar. 23	08 06.08	+14 44.4	3.389	3.960	+0.14	+0.5	.	118.3

Comet P/2013 YG46 (Spacewatch)

Epoch = 2017 July 26.0 TT
T = 2017 Jan. 28.84007 TT
Peri. = 242.31731 e = 0.4539526
Node = 48.92679 2000.0 a = 3.2766082 AU
Incl. = 7.85831 n = 0.16617562
q = 1.7891834 AU P = 5.93 years

H = 16.0 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		V	Mot./PA ′ °	Elong. °
Jan. 7	18 55.83	-26 48.9	2.775	1.799	-1.43	-0.3	19.8	40.8/ 87	5.8
Jan. 17	19 26.14	-26 15.2	2.759	1.792	-1.43	-1.5	19.9	40.9/ 84	8.7
Jan. 27	19 56.16	-25 20.3	2.742	1.789	-1.41	-2.6	19.9	40.8/ 81	11.8
Feb. 6	20 25.60	-24 05.7	2.725	1.791	-1.39	-3.7	20.0	40.5/ 78	15.0
Feb. 16	20 54.27	-22 33.9	2.708	1.796	-1.35	-4.7	20.1	40.1/ 76	18.2
Feb. 26	21 22.01	-20 47.4	2.690	1.806	-1.30	-5.5	20.1	39.5/ 74	21.5
Mar. 8	21 48.72	-18 49.5	2.671	1.819	-1.24	-6.2	20.2	38.7/ 72	24.9
Mar. 18	22 14.35	-16 43.1	2.651	1.837	-1.19	-6.7	20.3	37.8/ 70	28.3
Mar. 28	22 38.90	-14 31.3	2.629	1.858	-1.13	-7.1	20.3	36.8/ 69	31.9
Apr. 7	23 02.36	-12 16.9	2.605	1.882	-1.08	-7.4	20.4	35.6/ 68	35.5
Apr. 17	23 24.75	-10 02.5	2.577	1.910	-1.03	-7.6	20.4	34.3/ 68	39.3
Apr. 27	23 46.10	-07 50.3	2.546	1.941	-0.99	-7.6	20.5	32.8/ 67	43.3
May 7	00 06.41	-05 42.5	2.510	1.974	-0.95	-7.7	20.5	31.3/ 67	47.5
May 17	00 25.68	-03 40.6	2.470	2.010	-0.91	-7.7	20.6	29.6/ 67	51.9
May 27	00 43.90	-01 46.1	2.425	2.048	-0.88	-7.6	20.6	27.7/ 68	56.5
June 6	01 00.99	-00 00.3	2.374	2.087	-0.86	-7.6	20.6	25.7/ 68	61.4
June 16	01 16.89	+01 36.0	2.317	2.129	-0.84	-7.6	20.6	23.5/ 68	66.6
June 26	01 31.49	+03 01.9	2.255	2.172	-0.83	-7.5	20.6	21.0/ 69	72.2
July 6	01 44.63	+04 16.8	2.189	2.216	-0.83	-7.6	20.6	18.3/ 70	78.1
July 16	01 56.12	+05 20.3	2.118	2.261	-0.83	-7.6	20.6	15.3/ 70	84.6
July 26	02 05.73	+06 11.9	2.045	2.307	-0.85	-7.8	20.6	11.8/ 70	91.5
Aug. 5	02 13.20	+06 51.4	1.970	2.354	-0.88	-8.0	20.5	8.0/ 70	99.1
Aug. 15	02 18.27	+07 18.6	1.898	2.401	-0.91	-8.2	20.4	3.9/ 67	107.3
Aug. 25	02 20.68	+07 33.5	1.829	2.449	-0.96	-8.5	20.3	0.7/294	116.2
Sept. 4	02 20.22	+07 36.5	1.769	2.497	-1.02	-8.9	20.2	5.0/261	125.9
Sept.14	02 16.89	+07 28.5	1.721	2.546	-1.08	-9.3	20.1	9.1/259	136.3
Sept.24	02 10.90	+07 11.2	1.691	2.594	-1.13	-9.6	19.9	12.3/259	147.5
Oct. 4	02 02.77	+06 47.5	1.684	2.642	-1.18	-9.9	19.8	14.2/260	159.1
Oct. 14	01 53.38	+06 21.3	1.702	2.691	-1.20	-9.9	19.6	14.6/261	170.6
Oct. 24	01 43.74	+05 57.1	1.748	2.739	-1.19	-9.8	19.7	13.3/262	173.8
Nov. 3	01 34.92	+05 39.3	1.823	2.787	-1.15	-9.5	20.0	10.8/266	163.1
Nov. 13	01 27.73	+05 31.2	1.925	2.835	-1.10	-9.0	20.3	7.5/273	151.6
Nov. 23	01 22.70	+05 34.5	2.051	2.882	-1.03	-8.4	20.6	4.2/291	140.5
Dec. 3	01 20.05	+05 49.8	2.198	2.929	-0.95	-7.8	20.9	2.7/350	129.9
Dec. 13	01 19.74	+06 16.3	2.361	2.976	-0.88	-7.2	21.1	4.6/ 37	119.8
Dec. 23	01 21.60	+06 52.8	2.536	3.022	-0.81	-6.6	21.4	7.2/ 51	110.3
Jan. 2	01 25.40	+07 37.8	2.720	3.068	-0.75	-6.0	21.6	9.6/ 57	101.3
Jan. 12	01 30.85	+08 29.6	2.908	3.114	-0.69	-5.5	21.7	11.7/ 61	92.7
Jan. 22	01 37.73	+09 26.8	3.098	3.158	-0.64	-5.1	21.9	13.4/ 63	84.4
Feb. 1	01 45.79	+10 28.0	3.286	3.203	-0.60	-4.7	22.0	14.8/ 64	76.5
Feb. 11	01 54.85	+11 31.8	3.470	3.247	-0.56	-4.3	22.1	15.9/ 65	68.8
Feb. 21	02 04.73	+12 37.3	3.647	3.290	-0.53	-4.0	22.2	16.8/ 67	61.3
Mar. 3	02 15.30	+13 43.3	3.816	3.332	-0.50	-3.7	22.3	17.4/ 68	54.1
Mar. 13	02 26.41	+14 49.0	3.973	3.375	-0.48	-3.4	22.4	18.0/ 69	47.0
Mar. 23	02 37.99	+15 53.6	4.119	3.416	-0.46	-3.1	22.4	18.3/ 69	40.0

Comet C/2017 A3 (Elenin)

Epoch = 2017 July 26.0 TT
T = 2017 Jan. 31.33017 TT
Peri. = 304.21678
Node = 97.83007 2000.0
Incl. = 98.54942
q = 3.8578774 AU
e = 0.9196260

m1 = 6.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	06 49.97	-50 47.7	3.465	3.863	-1.82	+15.5	17.9	106.6
Jan. 17	06 31.74	-48 12.4	3.433	3.860	-1.55	+19.3	17.9	108.5
Jan. 27	06 16.20	-44 59.3	3.426	3.858	-1.23	+22.2	17.9	108.8
Feb. 6	06 03.93	-41 17.5	3.446	3.858	-0.89	+23.9	17.9	107.4
Feb. 16	05 55.01	-37 18.0	3.493	3.860	-0.58	+24.6	17.9	104.5
Feb. 26	05 49.22	-33 11.6	3.565	3.864	-0.30	+24.4	18.0	100.1
Mar. 8	05 46.17	-29 07.5	3.660	3.869	-0.07	+23.5	18.0	94.7
Mar. 18	05 45.46	-25 13.0	3.774	3.877	+0.12	+22.0	18.1	88.5
Mar. 28	05 46.68	-21 32.6	3.901	3.886	+0.28	+20.3	18.2	81.8
Apr. 7	05 49.49	-18 09.3	4.037	3.897	+0.41	+18.5	18.3	74.8
Apr. 17	05 53.56	-15 04.3	4.178	3.910	+0.51	+16.7	18.4	67.8
Apr. 27	05 58.63	-12 17.5	4.318	3.924	+0.59	+14.9	18.5	60.7
May 7	06 04.50	-09 48.5	4.453	3.940	+0.65	+13.2	18.6	53.7
May 17	06 10.96	-07 36.0	4.580	3.958	+0.69	+11.7	18.7	46.9
May 27	06 17.85	-05 38.7	4.695	3.978	+0.72	+10.3	18.8	40.4
June 6	06 25.04	-03 55.4	4.796	3.999	+0.73	+9.1	18.8	34.3
June 16	06 32.39	-02 24.5	4.879	4.021	+0.74	+8.0	18.9	29.0
June 26	06 39.79	-01 04.7	4.944	4.046	+0.73	+7.0	19.0	25.0
July 6	06 47.13	+00 05.4	4.989	4.071	+0.72	+6.2	19.0	22.9
July 16	06 54.30	+01 07.1	5.012	4.098	+0.69	+5.5	19.1	23.3
July 26	07 01.20	+02 01.8	5.014	4.127	+0.65	+4.9	19.1	26.2
Aug. 5	07 07.71	+02 50.7	4.993	4.157	+0.60	+4.4	19.2	31.0
Aug. 15	07 13.72	+03 35.2	4.951	4.188	+0.54	+4.1	19.2	37.1
Aug. 25	07 19.11	+04 16.6	4.888	4.221	+0.46	+4.0	19.2	44.1
Sept. 4	07 23.74	+04 56.3	4.806	4.255	+0.37	+4.0	19.2	51.7
Sept. 14	07 27.47	+05 36.0	4.707	4.290	+0.27	+4.1	19.2	59.8
Sept. 24	07 30.13	+06 17.2	4.592	4.326	+0.14	+4.4	19.3	68.5
Oct. 4	07 31.55	+07 01.6	4.467	4.363	0.00	+4.9	19.2	77.6
Oct. 14	07 31.54	+07 51.0	4.334	4.402	-0.16	+5.6	19.2	87.3
Oct. 24	07 29.94	+08 47.1	4.200	4.441	-0.34	+6.4	19.2	97.5
Nov. 3	07 26.58	+09 51.3	4.070	4.482	-0.52	+7.3	19.2	108.3
Nov. 13	07 21.36	+11 04.7	3.952	4.523	-0.71	+8.3	19.2	119.6
Nov. 23	07 14.26	+12 27.6	3.851	4.566	-0.89	+9.2	19.2	131.5
Dec. 3	07 05.40	+13 59.1	3.776	4.609	-1.03	+9.8	19.2	143.8
Dec. 13	06 55.06	+15 37.2	3.733	4.653	-1.14	+10.2	19.3	156.5
Dec. 23	06 43.70	+17 18.7	3.728	4.698	-1.18	+10.1	19.3	169.0
Jan. 2	06 31.92	+18 60.0	3.764	4.743	-1.15	+9.8	19.4	174.4
Jan. 12	06 20.39	+20 37.5	3.840	4.790	-1.07	+9.1	19.5	163.1
Jan. 22	06 09.73	+22 08.7	3.956	4.837	-0.93	+8.3	19.7	150.6
Feb. 1	06 00.46	+23 32.0	4.105	4.885	-0.76	+7.5	19.8	138.3
Feb. 11	05 52.90	+24 47.3	4.283	4.933	-0.57	+6.8	20.0	126.4
Feb. 21	05 47.22	+25 55.1	4.482	4.982	-0.38	+6.1	20.1	115.0
Mar. 3	05 43.44	+26 56.4	4.697	5.032	-0.20	+5.6	20.3	104.2
Mar. 13	05 41.45	+27 52.3	4.919	5.082	-0.03	+5.2	20.4	93.8
Mar. 23	05 41.11	+28 43.8	5.144	5.133	+0.11	+4.8	20.6	83.8

Comet C/2016 T1 (Matheny)

Epoch = 2017 July 26.0 TT
T = 2017 Feb. 2.02459 TT
Peri. = 137.50036
Node = 56.22726 2000.0
Incl. = 129.82624
q = 2.2975032 AU
e = 0.9803794

m1 = 12.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	18 35.65	+03 40.3	3.143	2.316	+0.34	-8.0	18.7	27.6
Jan. 17	18 39.00	+02 20.6	3.106	2.305	+0.28	-7.0	18.7	29.8
Jan. 27	18 41.82	+01 10.6	3.040	2.299	+0.20	-6.3	18.6	34.6
Feb. 6	18 43.78	+00 07.7	2.945	2.298	+0.07	-5.9	18.6	41.3
Feb. 16	18 44.53	-00 50.8	2.822	2.303	-0.09	-5.7	18.5	49.3
Feb. 26	18 43.63	-01 47.8	2.676	2.313	-0.32	-5.9	18.4	58.2
Mar. 8	18 40.47	-02 46.7	2.509	2.329	-0.62	-6.5	18.3	68.1
Mar. 18	18 34.31	-03 51.6	2.328	2.350	-1.01	-7.5	18.1	78.9
Mar. 28	18 24.17	-05 07.0	2.141	2.376	-1.54	-9.1	18.0	90.9
Apr. 7	18 08.80	-06 38.0	1.957	2.406	-2.19	-11.1	17.9	104.2
Apr. 17	17 46.86	-08 28.8	1.790	2.442	-2.96	-13.0	17.7	119.2
Apr. 27	17 17.31	-10 38.9	1.657	2.481	-3.69	-14.0	17.6	136.0
May 7	16 40.40	-12 59.0	1.577	2.525	-4.15	-13.1	17.6	154.5
May 17	15 58.85	-15 09.9	1.565	2.572	-4.14	-10.3	17.7	173.0
May 27	15 17.49	-16 52.8	1.629	2.623	-3.64	-7.0	17.8	165.7
June 6	14 41.08	-18 02.9	1.761	2.677	-2.90	-4.6	18.1	148.1
June 16	14 12.06	-18 48.9	1.946	2.733	-2.16	-3.4	18.4	132.1
June 26	13 50.50	-19 22.9	2.168	2.793	-1.52	-3.1	18.7	117.9
July 6	13 35.35	-19 54.1	2.413	2.855	-1.01	-3.3	19.1	105.3
July 16	13 25.23	-20 27.5	2.668	2.919	-0.63	-3.8	19.4	93.8
July 26	13 18.96	-21 05.4	2.926	2.984	-0.34	-4.3	19.7	83.4
Aug. 5	13 15.59	-21 48.7	3.178	3.052	-0.12	-4.9	20.0	73.6
Aug. 15	13 14.39	-22 37.5	3.421	3.121	+0.04	-5.4	20.2	64.5
Aug. 25	13 14.83	-23 31.6	3.649	3.192	+0.17	-5.9	20.5	55.8
Sept. 4	13 16.50	-24 30.8	3.859	3.264	+0.26	-6.4	20.7	47.5
Sept. 14	13 19.06	-25 34.7	4.048	3.337	+0.32	-6.8	20.9	39.7
Sept. 24	13 22.26	-26 43.2	4.214	3.410	+0.36	-7.3	21.1	32.5
Oct. 4	13 25.86	-27 55.9	4.355	3.485	+0.38	-7.7	21.2	26.1
Oct. 14	13 29.68	-29 12.8	4.471	3.561	+0.38	-8.1	21.4	21.4
Oct. 24	13 33.52	-30 33.7	4.559	3.637	+0.37	-8.5	21.5	19.5
Nov. 3	13 37.20	-31 58.6	4.621	3.713	+0.33	-8.9	21.6	21.1
Nov. 13	13 40.51	-33 27.3	4.657	3.791	+0.27	-9.3	21.7	25.8
Nov. 23	13 43.25	-34 59.9	4.667	3.868	+0.19	-9.6	21.8	32.3
Dec. 3	13 45.17	-36 36.1	4.654	3.946	+0.08	-9.9	21.9	39.7
Dec. 13	13 46.01	-38 15.4	4.619	4.024	-0.06	-10.2	22.0	47.8
Dec. 23	13 45.44	-39 57.4	4.566	4.103	-0.23	-10.3	22.0	56.3
Jan. 2	13 43.13	-41 40.8	4.498	4.182	-0.44	-10.3	22.1	65.2
Jan. 12	13 38.69	-43 23.7	4.421	4.260	-0.70	-10.0	22.1	74.2
Jan. 22	13 31.73	-45 03.2	4.339	4.339	-0.98	-9.2	22.2	83.5
Feb. 1	13 21.90	-46 35.2	4.258	4.418	-1.29	-7.9	22.2	92.8
Feb. 11	13 09.02	-47 54.3	4.186	4.497	-1.59	-6.0	22.2	102.1
Feb. 21	12 53.16	-48 54.2	4.127	4.576	-1.84	-3.4	22.3	111.1
Mar. 3	12 34.80	-49 28.3	4.088	4.655	-1.99	-0.3	22.3	119.4
Mar. 13	12 14.88	-49 31.8	4.076	4.734	-2.02	+2.9	22.4	126.5
Mar. 23	11 54.66	-49 02.7	4.093	4.813	-1.92	+5.9	22.5	131.7

Comet 336P/McNaught

Epoch = 2017 July 26.0 TT
T = 2017 Feb. 3.09347 TT
Peri. = 308.50197 e = 0.4461629
Node = 298.25787 2000.0 a = 5.0224741 AU
Incl. = 17.83946 n = 0.08756439
q = 2.7816325 AU P = 11.26 years

m1 = 9.0 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	16 38.36	-34 07.9	3.528	2.788	+2.05	-2.6	19.5	35.6
Jan. 17	16 58.86	-34 34.3	3.450	2.784	+2.01	-1.7	19.5	41.1
Jan. 27	17 18.99	-34 51.6	3.363	2.782	+1.95	-0.9	19.4	46.7
Feb. 6	17 38.53	-35 00.3	3.269	2.782	+1.88	-0.1	19.3	52.6
Feb. 16	17 57.29	-35 00.8	3.168	2.783	+1.78	+0.7	19.3	58.6
Feb. 26	18 15.08	-34 54.1	3.061	2.786	+1.66	+1.3	19.2	64.7
Mar. 8	18 31.65	-34 41.2	2.949	2.791	+1.52	+1.8	19.1	71.1
Mar. 18	18 46.80	-34 23.2	2.834	2.797	+1.35	+2.2	19.1	77.8
Mar. 28	19 00.32	-34 01.6	2.716	2.805	+1.16	+2.4	19.0	84.7
Apr. 7	19 11.96	-33 37.5	2.598	2.815	+0.95	+2.5	18.9	91.9
Apr. 17	19 21.50	-33 12.2	2.482	2.826	+0.72	+2.6	18.9	99.5
Apr. 27	19 28.70	-32 46.5	2.369	2.839	+0.46	+2.6	18.8	107.5
May 7	19 33.34	-32 21.0	2.263	2.854	+0.19	+2.6	18.7	116.0
May 17	19 35.29	-31 55.4	2.167	2.869	-0.08	+2.6	18.7	125.0
May 27	19 34.46	-31 29.0	2.084	2.887	-0.35	+2.9	18.7	134.6
June 6	19 30.98	-31 00.2	2.018	2.906	-0.58	+3.3	18.6	144.6
June 16	19 25.22	-30 27.2	1.973	2.926	-0.74	+3.9	18.6	155.0
June 26	19 17.78	-29 48.2	1.952	2.947	-0.82	+4.6	18.7	165.4
July 6	19 09.53	-29 02.5	1.957	2.970	-0.81	+5.2	18.7	173.3
July 16	19 01.44	-28 10.6	1.990	2.993	-0.71	+5.6	18.8	168.7
July 26	18 54.38	-27 14.4	2.050	3.018	-0.53	+5.8	19.0	158.7
Aug. 5	18 49.07	-26 16.4	2.134	3.044	-0.32	+5.7	19.1	148.3
Aug. 15	18 45.91	-25 18.9	2.241	3.071	-0.09	+5.5	19.3	138.2
Aug. 25	18 45.05	-24 23.7	2.368	3.099	+0.14	+5.2	19.5	128.5
Sept. 4	18 46.47	-23 31.4	2.510	3.128	+0.35	+4.9	19.7	119.2
Sept. 14	18 49.98	-22 42.1	2.664	3.158	+0.54	+4.7	19.9	110.4
Sept. 24	18 55.37	-21 55.1	2.827	3.189	+0.70	+4.6	20.1	101.9
Oct. 4	19 02.38	-21 09.6	2.995	3.220	+0.84	+4.5	20.3	93.8
Oct. 14	19 10.77	-20 24.4	3.166	3.252	+0.95	+4.6	20.5	86.0
Oct. 24	19 20.30	-19 38.6	3.338	3.285	+1.05	+4.7	20.7	78.4
Nov. 3	19 30.78	-18 51.1	3.507	3.318	+1.12	+5.0	20.8	71.0
Nov. 13	19 41.98	-18 01.3	3.671	3.352	+1.18	+5.3	21.0	63.7
Nov. 23	19 53.77	-17 08.5	3.829	3.387	+1.22	+5.6	21.2	56.6
Dec. 3	20 05.98	-16 12.4	3.978	3.422	+1.25	+6.0	21.3	49.5
Dec. 13	20 18.48	-15 12.5	4.117	3.457	+1.27	+6.4	21.5	42.6
Dec. 23	20 31.16	-14 08.9	4.244	3.493	+1.27	+6.7	21.6	35.8
Jan. 2	20 43.90	-13 01.5	4.357	3.529	+1.27	+7.1	21.8	29.0
Jan. 12	20 56.62	-11 50.4	4.456	3.566	+1.26	+7.4	21.9	22.3
Jan. 22	21 09.23	-10 36.0	4.539	3.602	+1.24	+7.7	22.0	15.9
Feb. 1	21 21.65	-09 18.5	4.606	3.639	+1.22	+8.0	22.1	9.9
Feb. 11	21 33.83	-07 58.4	4.656	3.677	+1.19	+8.2	22.2	6.3
Feb. 21	21 45.69	-06 36.0	4.689	3.714	+1.15	+8.4	22.3	8.6
Mar. 3	21 57.17	-05 11.9	4.705	3.752	+1.10	+8.5	22.4	14.2
Mar. 13	22 08.21	-03 46.6	4.703	3.790	+1.05	+8.6	22.5	20.7
Mar. 23	22 18.76	-02 20.5	4.685	3.828	+1.00	+8.6	22.6	27.4

Comet 346P/Catalina

Epoch = 2017 July 26.0 TT
T = 2017 Feb. 15.50830 TT
Peri. = 335.90248 e = 0.5037187
Node = 102.51424 2000.0 a = 4.4749877 AU
Incl. = 22.18358 n = 0.10411572
q = 2.2208527 AU P = 9.47 years

m1 = 10.0 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	03 01.47	-02 12.8	1.655	2.244	+0.44	+17.7	18.1	114.2
Jan. 17	03 05.89	+00 44.7	1.743	2.234	+0.71	+17.8	18.2	106.7
Jan. 27	03 12.95	+03 42.6	1.840	2.227	+0.95	+17.4	18.3	99.6
Feb. 6	03 22.43	+06 36.8	1.945	2.222	+1.16	+16.8	18.4	92.7
Feb. 16	03 34.03	+09 24.4	2.054	2.221	+1.35	+15.9	18.5	86.3
Feb. 26	03 47.50	+12 03.3	2.167	2.223	+1.51	+14.8	18.6	80.1
Mar. 8	04 02.62	+14 31.7	2.282	2.227	+1.66	+13.7	18.7	74.2
Mar. 18	04 19.17	+16 48.3	2.397	2.235	+1.78	+12.4	18.9	68.6
Mar. 28	04 36.97	+18 52.1	2.512	2.245	+1.89	+11.0	19.0	63.2
Apr. 7	04 55.84	+20 42.2	2.626	2.259	+1.98	+9.6	19.2	57.9
Apr. 17	05 15.62	+22 18.1	2.737	2.275	+2.05	+8.1	19.3	52.8
Apr. 27	05 36.13	+23 39.4	2.845	2.294	+2.11	+6.6	19.5	47.8
May 7	05 57.23	+24 45.8	2.949	2.315	+2.15	+5.2	19.6	43.0
May 17	06 18.74	+25 37.5	3.048	2.339	+2.18	+3.7	19.8	38.2
May 27	06 40.52	+26 14.6	3.143	2.365	+2.19	+2.3	20.0	33.5
June 6	07 02.41	+26 37.9	3.231	2.394	+2.19	+1.0	20.1	28.9
June 16	07 24.27	+26 48.0	3.313	2.424	+2.17	-0.2	20.3	24.4
June 26	07 45.97	+26 45.8	3.387	2.456	+2.14	-1.3	20.5	20.0
July 6	08 07.41	+26 32.6	3.454	2.491	+2.11	-2.3	20.6	15.7
July 16	08 28.49	+26 09.5	3.512	2.526	+2.07	-3.2	20.8	11.8
July 26	08 49.14	+25 37.8	3.562	2.563	+2.02	-3.9	20.9	8.9
Aug. 5	09 09.30	+24 59.2	3.602	2.602	+1.96	-4.4	21.1	8.2
Aug. 15	09 28.91	+24 15.0	3.632	2.642	+1.90	-4.8	21.2	10.3
Aug. 25	09 47.96	+23 26.8	3.651	2.683	+1.84	-5.1	21.4	14.2
Sept. 4	10 06.41	+22 36.1	3.660	2.725	+1.78	-5.2	21.5	18.8
Sept. 14	10 24.23	+21 44.6	3.658	2.767	+1.72	-5.1	21.7	23.8
Sept. 24	10 41.42	+20 53.7	3.644	2.811	+1.65	-4.9	21.8	29.2
Oct. 4	10 57.94	+20 05.1	3.619	2.855	+1.58	-4.5	21.9	34.8
Oct. 14	11 13.75	+19 20.4	3.583	2.900	+1.51	-3.9	22.0	40.7
Oct. 24	11 28.82	+18 41.1	3.535	2.946	+1.43	-3.2	22.1	46.9
Nov. 3	11 43.08	+18 09.0	3.478	2.992	+1.34	-2.4	22.2	53.3
Nov. 13	11 56.46	+17 45.5	3.411	3.038	+1.24	-1.3	22.3	59.9
Nov. 23	12 08.85	+17 32.2	3.335	3.085	+1.13	-0.1	22.4	66.9
Dec. 3	12 20.13	+17 30.7	3.253	3.132	+1.00	+1.2	22.5	74.2
Dec. 13	12 30.16	+17 42.3	3.166	3.179	+0.86	+2.6	22.5	81.8
Dec. 23	12 38.77	+18 07.9	3.077	3.226	+0.70	+4.0	22.6	89.7
Jan. 2	12 45.76	+18 48.1	2.989	3.273	+0.52	+5.5	22.7	98.0
Jan. 12	12 50.95	+19 42.7	2.905	3.321	+0.32	+6.8	22.7	106.5
Jan. 22	12 54.15	+20 50.5	2.829	3.368	+0.11	+7.9	22.8	115.2
Feb. 1	12 55.22	+22 09.1	2.764	3.415	-0.11	+8.5	22.9	124.1
Feb. 11	12 54.12	+23 34.3	2.716	3.463	-0.32	+8.6	23.0	132.7
Feb. 21	12 50.90	+25 00.7	2.688	3.510	-0.50	+8.1	.	140.7
Mar. 3	12 45.86	+26 21.8	2.684	3.557	-0.64	+6.9	.	147.1
Mar. 13	12 39.42	+27 31.2	2.705	3.604	-0.72	+5.2	.	150.6
Mar. 23	12 32.21	+28 23.2	2.752	3.651	-0.73	+3.1	.	150.2

Comet 188P/LINEAR-Mueller

Epoch = 2017 July 26.0 TT
T = 2017 Feb. 16.98236 TT
Peri. = 26.75714 e = 0.4148008
Node = 358.97886 2000.0 a = 4.3832334 AU
Incl. = 10.51097 n = 0.10740195
q = 2.5650647 AU P = 9.18 years

m1 = 11.2 + 5 log(Delta) + 10.0 log(r(t-90))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	23 31.55	-00 20.7	2.806	2.581	+1.36	+11.0	17.8	66.7
Jan. 17	23 45.18	+01 29.7	2.913	2.574	+1.44	+11.4	17.8	60.4
Jan. 27	23 59.61	+03 24.1	3.016	2.569	+1.51	+11.8	17.9	54.3
Feb. 6	00 14.73	+05 21.6	3.112	2.566	+1.57	+12.0	17.9	48.5
Feb. 16	00 30.45	+07 21.2	3.201	2.565	+1.63	+12.1	17.9	42.8
Feb. 26	00 46.71	+09 21.8	3.283	2.566	+1.67	+12.1	18.0	37.2
Mar. 8	01 03.45	+11 22.3	3.357	2.568	+1.72	+11.9	18.0	31.9
Mar. 18	01 20.62	+13 21.6	3.424	2.573	+1.76	+11.7	18.0	26.6
Mar. 28	01 38.19	+15 18.8	3.481	2.579	+1.79	+11.4	18.0	21.6
Apr. 7	01 56.13	+17 12.8	3.530	2.587	+1.83	+11.0	18.1	16.6
Apr. 17	02 14.41	+19 02.5	3.571	2.597	+1.86	+10.5	18.1	12.0
Apr. 27	02 32.99	+20 47.2	3.602	2.609	+1.88	+9.9	18.1	8.0
May 7	02 51.83	+22 26.0	3.624	2.622	+1.91	+9.2	18.1	5.8
May 17	03 10.90	+23 58.1	3.637	2.637	+1.92	+8.5	18.1	7.3
May 27	03 30.13	+25 23.0	3.641	2.654	+1.93	+7.7	18.1	11.1
June 6	03 49.46	+26 40.2	3.635	2.672	+1.93	+6.9	18.1	15.6
June 16	04 08.80	+27 49.3	3.620	2.691	+1.93	+6.1	18.1	20.4
June 26	04 28.07	+28 50.3	3.595	2.712	+1.91	+5.3	18.1	25.4
July 6	04 47.16	+29 43.2	3.561	2.735	+1.88	+4.5	18.1	30.6
July 16	05 05.95	+30 28.2	3.517	2.759	+1.84	+3.8	18.1	35.9
July 26	05 24.32	+31 06.0	3.464	2.783	+1.78	+3.1	18.1	41.3
Aug. 5	05 42.12	+31 37.1	3.402	2.809	+1.71	+2.5	18.0	46.9
Aug. 15	05 59.20	+32 02.6	3.332	2.837	+1.62	+2.1	18.0	52.8
Aug. 25	06 15.40	+32 23.5	3.253	2.865	+1.51	+1.8	18.0	58.9
Sept. 4	06 30.53	+32 41.1	3.167	2.894	+1.39	+1.6	18.0	65.3
Sept.14	06 44.42	+32 56.9	3.075	2.924	+1.24	+1.6	17.9	72.0
Sept.24	06 56.87	+33 12.5	2.977	2.955	+1.08	+1.7	17.9	79.0
Oct. 4	07 07.62	+33 29.4	2.876	2.987	+0.88	+2.0	17.9	86.5
Oct. 14	07 16.45	+33 49.0	2.774	3.019	+0.66	+2.4	17.8	94.4
Oct. 24	07 23.09	+34 12.6	2.674	3.052	+0.42	+2.8	17.8	102.8
Nov. 3	07 27.29	+34 40.4	2.578	3.086	+0.15	+3.2	17.7	111.7
Nov. 13	07 28.82	+35 12.4	2.491	3.120	-0.13	+3.4	17.7	121.1
Nov. 23	07 27.56	+35 46.8	2.417	3.155	-0.40	+3.4	17.7	131.0
Dec. 3	07 23.55	+36 21.0	2.361	3.190	-0.65	+3.0	17.7	141.2
Dec. 13	07 17.09	+36 50.8	2.326	3.225	-0.83	+2.1	17.7	151.4
Dec. 23	07 08.78	+37 12.2	2.317	3.261	-0.93	+0.9	17.7	160.6
Jan. 2	06 59.52	+37 21.5	2.336	3.297	-0.91	-0.4	17.8	165.4
Jan. 12	06 50.38	+37 17.4	2.385	3.334	-0.81	-1.7	17.9	161.9
Jan. 22	06 42.32	+37 00.4	2.462	3.370	-0.62	-2.7	18.0	153.4
Feb. 1	06 36.14	+36 33.1	2.565	3.407	-0.39	-3.4	18.1	143.4
Feb. 11	06 32.28	+35 58.8	2.691	3.444	-0.14	-3.8	18.3	133.4
Feb. 21	06 30.89	+35 20.5	2.836	3.482	+0.10	-4.0	18.5	123.5
Mar. 3	06 31.92	+34 40.6	2.996	3.519	+0.32	-4.0	18.6	114.1
Mar. 13	06 35.12	+34 00.4	3.167	3.556	+0.51	-4.0	18.8	105.0
Mar. 23	06 40.26	+33 20.5	3.344	3.594	+0.68	-3.9	19.0	96.4

Comet 219P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2017 Feb. 20.58766 TT
Peri. = 107.40244 e = 0.3525988
Node = 231.02293 2000.0 a = 3.6533650 AU
Incl. = 11.52895 n = 0.14114467
q = 2.3651929 AU P = 6.98 years

m1 = 7.0 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	20 54.16	-08 34.3	3.205	2.384	+1.98	+7.8	17.1	28.1
Jan. 17	21 13.94	-07 16.7	3.248	2.376	+1.98	+8.6	17.1	23.3
Jan. 27	21 33.76	-05 50.6	3.283	2.371	+1.98	+9.4	17.1	18.7
Feb. 6	21 53.57	-04 16.9	3.310	2.367	+1.97	+10.0	17.1	14.3
Feb. 16	22 13.29	-02 37.0	3.330	2.365	+1.96	+10.5	17.1	10.5
Feb. 26	22 32.91	-00 51.9	3.342	2.365	+1.95	+10.9	17.1	8.0
Mar. 8	22 52.38	+00 57.0	3.346	2.367	+1.93	+11.1	17.1	7.9
Mar. 18	23 11.69	+02 48.4	3.343	2.371	+1.91	+11.3	17.1	10.4
Mar. 28	23 30.83	+04 41.0	3.333	2.377	+1.89	+11.2	17.1	14.1
Apr. 7	23 49.77	+06 33.5	3.314	2.384	+1.87	+11.1	17.1	18.2
Apr. 17	00 08.51	+08 24.5	3.288	2.393	+1.85	+10.8	17.2	22.6
Apr. 27	00 27.03	+10 13.0	3.255	2.404	+1.83	+10.5	17.2	27.2
May 7	00 45.30	+11 57.7	3.214	2.417	+1.80	+10.0	17.2	31.9
May 17	01 03.29	+13 37.6	3.166	2.431	+1.77	+9.4	17.2	36.7
May 27	01 20.96	+15 11.8	3.110	2.447	+1.73	+8.7	17.2	41.7
June 6	01 38.23	+16 39.2	3.047	2.465	+1.68	+8.0	17.3	46.7
June 16	01 55.02	+17 59.2	2.976	2.483	+1.62	+7.2	17.3	52.0
June 26	02 11.23	+19 11.0	2.900	2.504	+1.55	+6.3	17.3	57.4
July 6	02 26.71	+20 14.1	2.816	2.525	+1.46	+5.4	17.3	63.1
July 16	02 41.31	+21 07.9	2.727	2.548	+1.35	+4.4	17.3	69.1
July 26	02 54.85	+21 52.2	2.634	2.572	+1.22	+3.4	17.3	75.4
Aug. 5	03 07.08	+22 26.3	2.536	2.597	+1.07	+2.4	17.3	82.0
Aug. 15	03 17.77	+22 50.3	2.436	2.623	+0.89	+1.3	17.3	89.1
Aug. 25	03 26.63	+23 03.6	2.335	2.650	+0.67	+0.2	17.3	96.6
Sept. 4	03 33.37	+23 05.8	2.237	2.678	+0.44	-0.9	17.3	104.8
Sept. 14	03 37.74	+22 56.7	2.143	2.706	+0.18	-2.1	17.3	113.5
Sept. 24	03 39.50	+22 35.5	2.057	2.736	-0.09	-3.4	17.3	123.0
Oct. 4	03 38.58	+22 01.9	1.984	2.766	-0.35	-4.6	17.3	133.1
Oct. 14	03 35.11	+21 16.2	1.928	2.797	-0.57	-5.7	17.4	144.0
Oct. 24	03 29.42	+20 19.2	1.893	2.828	-0.72	-6.6	17.4	155.4
Nov. 3	03 22.23	+19 13.6	1.883	2.860	-0.78	-7.0	17.5	167.4
Nov. 13	03 14.42	+18 03.8	1.902	2.892	-0.75	-6.9	17.6	179.5
Nov. 23	03 06.93	+16 55.1	1.950	2.924	-0.63	-6.2	17.8	168.4
Dec. 3	03 00.65	+15 53.0	2.027	2.957	-0.45	-5.1	18.0	156.5
Dec. 13	02 56.17	+15 01.7	2.129	2.990	-0.23	-3.8	18.2	145.1
Dec. 23	02 53.85	+14 23.8	2.255	3.024	-0.01	-2.4	18.4	134.2
Jan. 2	02 53.77	+13 59.9	2.398	3.057	+0.21	-1.1	18.6	123.8
Jan. 12	02 55.84	+13 49.2	2.556	3.091	+0.40	+0.1	18.8	114.1
Jan. 22	02 59.88	+13 50.1	2.724	3.125	+0.58	+1.0	19.1	104.9
Feb. 1	03 05.68	+14 00.5	2.898	3.158	+0.73	+1.8	19.3	96.1
Feb. 11	03 12.98	+14 18.3	3.074	3.192	+0.86	+2.3	19.5	87.8
Feb. 21	03 21.59	+14 41.4	3.251	3.226	+0.97	+2.6	19.7	79.8
Mar. 3	03 31.28	+15 07.9	3.424	3.260	+1.06	+2.8	19.9	72.2
Mar. 13	03 41.88	+15 36.0	3.592	3.294	+1.14	+2.8	20.1	64.8
Mar. 23	03 53.25	+16 04.5	3.753	3.328	+1.20	+2.7	20.3	57.6

Comet 18D/Perrine-Mrkos [Orbit 2]

Epoch = 2017 July 26.0 TT
T = 2017 Feb. 26.20538 TT
Peri. = 157.01440 e = 0.5837868
Node = 237.95394 2000.0 a = 3.9553866 AU
Incl. = 16.87666 n = 0.12529123
q = 1.6462841 AU P = 7.87 years

m1 = 11.5 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	22 28.95	+01 59.6	2.111	1.724	-1.37	-5.2	17.9	39.6/ 78	53.8
Jan. 17	22 54.83	+03 21.6	2.150	1.697	-1.42	-5.0	17.8	41.0/ 77	50.1
Jan. 27	23 21.57	+04 53.2	2.190	1.675	-1.47	-4.7	17.7	42.2/ 76	46.7
Feb. 6	23 49.03	+06 31.7	2.231	1.659	-1.51	-4.4	17.6	42.9/ 76	43.4
Feb. 16	00 17.07	+08 13.7	2.275	1.650	-1.55	-3.9	17.6	43.5/ 76	40.3
Feb. 26	00 45.59	+09 56.0	2.321	1.646	-1.57	-3.4	17.7	43.7/ 76	37.3
Mar. 8	01 14.48	+11 35.3	2.371	1.649	-1.58	-2.7	17.7	43.7/ 77	34.3
Mar. 18	01 43.59	+13 08.3	2.424	1.659	-1.58	-2.0	17.8	43.4/ 78	31.5
Mar. 28	02 12.83	+14 32.3	2.480	1.674	-1.57	-1.2	17.9	42.9/ 79	28.7
Apr. 7	02 42.04	+15 44.7	2.539	1.696	-1.54	-0.3	18.1	42.2/ 81	25.8
Apr. 17	03 11.09	+16 43.7	2.601	1.722	-1.51	+0.5	18.3	41.4/ 83	23.0
Apr. 27	03 39.84	+17 28.0	2.665	1.754	-1.46	+1.3	18.5	40.5/ 85	20.2
May 7	04 08.14	+17 56.6	2.729	1.791	-1.40	+2.1	18.7	39.5/ 87	17.3
May 17	04 35.83	+18 09.4	2.794	1.832	-1.34	+2.7	19.0	38.5/ 89	14.5
May 27	05 02.81	+18 06.7	2.858	1.877	-1.26	+3.3	19.2	37.4/ 92	11.7
June 6	05 28.96	+17 49.0	2.920	1.925	-1.19	+3.8	19.5	36.2/ 94	9.1
June 16	05 54.18	+17 17.2	2.979	1.975	-1.12	+4.2	19.8	35.1/ 96	7.2
June 26	06 18.43	+16 32.6	3.034	2.028	-1.04	+4.5	20.1	33.9/ 99	6.8
July 6	06 41.63	+15 36.3	3.084	2.084	-0.97	+4.6	20.3	32.7/101	8.4
July 16	07 03.76	+14 29.6	3.128	2.141	-0.90	+4.7	20.6	31.6/103	11.3
July 26	07 24.81	+13 13.9	3.165	2.199	-0.84	+4.8	20.8	30.4/105	14.9
Aug. 5	07 44.77	+11 50.6	3.194	2.258	-0.78	+4.7	21.1	29.2/107	18.9
Aug. 15	08 03.63	+10 20.7	3.214	2.319	-0.73	+4.7	21.3	28.0/110	23.3
Aug. 25	08 21.40	+08 45.5	3.224	2.380	-0.69	+4.5	21.6	26.7/112	28.1
Sept. 4	08 38.06	+07 06.2	3.224	2.442	-0.65	+4.4	21.8	25.3/114	33.1
Sept.14	08 53.61	+05 23.8	3.213	2.503	-0.61	+4.2	22.0	23.9/116	38.4
Sept.24	09 08.00	+03 39.3	3.191	2.566	-0.58	+4.0	22.2	22.4/118	44.0
Oct. 4	09 21.20	+01 53.8	3.158	2.628	-0.56	+3.7	22.4	20.8/120	49.9
Oct. 14	09 33.13	+00 08.2	3.115	2.690	-0.54	+3.5	22.6	19.0/123	56.1
Oct. 24	09 43.71	-01 36.2	3.061	2.752	-0.53	+3.3	22.7	17.0/127	62.8
Nov. 3	09 52.83	-03 18.3	2.999	2.814	-0.52	+3.1	22.9	14.9/131	69.7
Nov. 13	10 00.34	-04 56.7	2.929	2.875	-0.52	+2.9	23.0	12.7/137	77.1
Nov. 23	10 06.11	-06 29.7	2.854	2.937	-0.53	+2.7	.	10.3/146	84.9
Dec. 3	10 09.94	-07 55.5	2.777	2.997	-0.54	+2.5	.	8.1/161	93.2
Dec. 13	10 11.71	-09 11.6	2.700	3.058	-0.56	+2.4	.	6.4/185	101.9
Dec. 23	10 11.30	-10 15.5	2.627	3.118	-0.59	+2.3	.	6.2/218	111.0
Jan. 2	10 08.69	-11 04.2	2.563	3.177	-0.62	+2.3	.	7.5/246	120.5
Jan. 12	10 04.01	-11 34.8	2.513	3.236	-0.65	+2.3	.	9.5/264	130.2
Jan. 22	09 57.57	-11 45.0	2.482	3.294	-0.68	+2.4	.	11.3/275	139.7
Feb. 1	09 49.89	-11 33.9	2.473	3.352	-0.70	+2.6	.	12.5/284	148.4
Feb. 11	09 41.66	-11 02.5	2.491	3.409	-0.72	+2.8	.	12.8/292	154.7
Feb. 21	09 33.60	-10 14.1	2.537	3.466	-0.72	+3.0	.	12.2/300	156.5
Mar. 3	09 26.45	-09 13.4	2.611	3.522	-0.71	+3.1	.	10.8/308	152.8
Mar. 13	09 20.72	-08 06.4	2.713	3.577	-0.69	+3.1	.	9.0/319	145.6
Mar. 23	09 16.76	-06 58.3	2.839	3.632	-0.66	+3.1	.	7.1/335	137.0

Comet 93P/Lovas

Epoch = 2017 July 26.0 TT
T = 2017 Mar. 1.44404 TT
Peri. = 74.89696 e = 0.6125608
Node = 339.62466 2000.0 a = 4.3881461 AU
Incl. = 12.20468 n = 0.10722164
q = 1.7001398 AU P = 9.19 years

m1 = 11.0 + 5 log(Delta) + 12.5 log(r(t-20))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	23 24.37	+04 59.1	1.916	1.786	+2.07	+15.5	15.8	67.4
Jan. 17	23 45.03	+07 33.9	1.969	1.758	+2.21	+16.1	15.7	63.1
Jan. 27	00 07.15	+10 14.8	2.020	1.735	+2.35	+16.4	15.7	59.1
Feb. 6	00 30.69	+12 59.1	2.071	1.717	+2.49	+16.4	15.6	55.5
Feb. 16	00 55.56	+15 43.6	2.122	1.706	+2.62	+16.1	15.6	52.2
Feb. 26	01 21.73	+18 24.5	2.176	1.701	+2.74	+15.4	15.6	49.1
Mar. 8	01 49.15	+20 58.0	2.231	1.701	+2.86	+14.2	15.6	46.1
Mar. 18	02 17.70	+23 20.1	2.290	1.709	+2.96	+12.7	15.7	43.3
Mar. 28	02 47.27	+25 26.9	2.352	1.722	+3.04	+10.8	15.7	40.6
Apr. 7	03 17.67	+27 15.2	2.418	1.741	+3.10	+8.7	15.8	37.9
Apr. 17	03 48.63	+28 42.2	2.488	1.766	+3.12	+6.4	15.9	35.2
Apr. 27	04 19.85	+29 46.1	2.562	1.796	+3.12	+4.0	16.1	32.5
May 7	04 51.02	+30 26.3	2.639	1.831	+3.07	+1.7	16.2	29.6
May 17	05 21.77	+30 43.0	2.718	1.870	+3.00	-0.6	16.4	26.7
May 27	05 51.81	+30 37.3	2.798	1.914	+2.91	-2.6	16.5	23.6
June 6	06 20.87	+30 11.1	2.879	1.960	+2.79	-4.4	16.7	20.4
June 16	06 48.76	+29 26.8	2.959	2.010	+2.66	-6.0	16.9	17.1
June 26	07 15.36	+28 26.9	3.036	2.062	+2.52	-7.3	17.1	13.6
July 6	07 40.60	+27 14.1	3.110	2.117	+2.39	-8.3	17.3	10.2
July 16	08 04.47	+25 50.9	3.179	2.174	+2.25	-9.1	17.4	7.0
July 26	08 27.01	+24 19.6	3.242	2.232	+2.12	-9.7	17.6	5.0
Aug. 5	08 48.25	+22 42.3	3.298	2.292	+2.00	-10.1	17.8	6.3
Aug. 15	09 08.25	+21 00.8	3.344	2.353	+1.88	-10.4	18.0	9.9
Aug. 25	09 27.08	+19 16.8	3.381	2.414	+1.77	-10.5	18.1	14.3
Sept. 4	09 44.78	+17 31.8	3.407	2.477	+1.66	-10.5	18.3	19.2
Sept. 14	10 01.40	+15 47.0	3.421	2.540	+1.56	-10.3	18.5	24.5
Sept. 24	10 16.97	+14 03.6	3.423	2.603	+1.45	-10.1	18.6	30.0
Oct. 4	10 31.50	+12 22.7	3.412	2.666	+1.35	-9.7	18.7	35.9
Oct. 14	10 44.97	+10 45.2	3.388	2.730	+1.24	-9.3	18.8	42.0
Oct. 24	10 57.36	+09 12.1	3.351	2.794	+1.12	-8.8	19.0	48.5
Nov. 3	11 08.59	+07 44.4	3.302	2.857	+1.00	-8.1	19.0	55.4
Nov. 13	11 18.60	+06 23.0	3.241	2.921	+0.87	-7.4	19.1	62.6
Nov. 23	11 27.27	+05 08.9	3.170	2.984	+0.72	-6.6	19.2	70.2
Dec. 3	11 34.45	+04 03.1	3.091	3.047	+0.55	-5.6	19.3	78.2
Dec. 13	11 39.99	+03 06.6	3.006	3.109	+0.37	-4.6	19.3	86.7
Dec. 23	11 43.73	+02 20.4	2.918	3.172	+0.18	-3.5	19.4	95.8
Jan. 2	11 45.50	+01 45.6	2.832	3.234	-0.03	-2.3	19.4	105.3
Jan. 12	11 45.20	+01 22.8	2.751	3.295	-0.24	-1.0	19.5	115.4
Jan. 22	11 42.77	+01 12.4	2.681	3.356	-0.45	+0.2	19.5	126.1
Feb. 1	11 38.31	+01 14.2	2.627	3.416	-0.62	+1.3	19.6	137.3
Feb. 11	11 32.09	+01 27.0	2.594	3.476	-0.76	+2.2	19.6	148.9
Feb. 21	11 24.54	+01 48.7	2.587	3.536	-0.83	+2.8	19.7	160.8
Mar. 3	11 16.28	+02 16.3	2.609	3.595	-0.83	+3.0	19.8	172.7
Mar. 13	11 08.01	+02 46.0	2.663	3.653	-0.76	+2.8	20.0	174.2
Mar. 23	11 00.39	+03 14.4	2.748	3.711	-0.64	+2.4	20.1	162.7

Comet C/2016 VZ18 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 Mar. 7.38033 TT
Peri. = 36.38841
Node = 98.94912 2000.0
Incl. = 24.03669
q = 0.9102016 AU
e = 0.9953414

m1 = 19.6 + 5 log(Delta) + 5.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	01 42.28	-11 13.0	0.910	1.369	+0.02	+32.3	20.1	92.6
Jan. 17	01 42.46	-05 50.5	0.867	1.252	+0.43	+38.1	19.8	84.9
Jan. 27	01 46.71	+00 30.6	0.820	1.144	+0.79	+44.8	19.5	78.1
Feb. 6	01 54.64	+07 58.3	0.766	1.049	+1.11	+52.6	19.1	72.3
Feb. 16	02 05.75	+16 43.9	0.707	0.974	+1.42	+61.6	18.8	67.8
Feb. 26	02 19.92	+26 59.5	0.649	0.926	+1.82	+71.1	18.5	64.9
Mar. 8	02 38.09	+38 50.5	0.595	0.910	+2.64	+79.4	18.3	64.4
Mar. 18	03 04.47	+52 04.3	0.554	0.930	+5.14	+82.4	18.2	66.9
Mar. 28	03 55.85	+65 48.4	0.531	0.982	+15.00	+65.2	18.2	72.8
Apr. 7	06 25.90	+76 40.0	0.531	1.060	+25.39	-15.7	18.4	81.3
Apr. 17	10 39.84	+74 03.4	0.558	1.157	+9.82	-68.5	18.6	91.0
Apr. 27	12 17.99	+62 38.4	0.612	1.266	+3.73	-70.0	19.0	100.1
May 7	12 55.29	+50 58.4	0.694	1.384	+2.04	-61.6	19.5	107.3
May 17	13 15.72	+40 42.3	0.802	1.507	+1.44	-52.0	20.0	111.9
May 27	13 30.07	+32 02.5	0.936	1.632	+1.19	-43.3	20.5	113.7
June 6	13 42.02	+24 49.7	1.092	1.759	+1.10	-36.0	21.0	113.2
June 16	13 52.98	+18 49.5	1.267	1.886	+1.06	-30.2	21.5	110.9
June 26	14 03.60	+13 47.6	1.460	2.013	+1.06	-25.6	21.9	107.4
July 6	14 14.22	+09 31.9	1.667	2.139	+1.07	-21.9	22.4	103.0
July 16	14 24.96	+05 53.1	1.887	2.264	+1.09	-18.9	22.8	98.0
July 26	14 35.89	+02 43.8	2.116	2.388	+1.12	-16.5	.	92.6
Aug. 5	14 47.05	-00 01.3	2.352	2.510	+1.14	-14.5	.	86.9
Aug. 15	14 58.41	-02 26.5	2.592	2.632	+1.16	-12.8	.	81.0
Aug. 25	15 09.97	-04 34.9	2.835	2.752	+1.17	-11.4	.	75.0
Sept. 4	15 21.71	-06 28.8	3.077	2.870	+1.19	-10.1	.	68.8
Sept. 14	15 33.58	-08 10.0	3.316	2.988	+1.20	-9.0	.	62.5
Sept. 24	15 45.57	-09 40.1	3.551	3.104	+1.21	-8.0	.	56.1
Oct. 4	15 57.64	-10 59.9	3.777	3.219	+1.21	-7.1	.	49.5
Oct. 14	16 09.72	-12 10.5	3.993	3.332	+1.21	-6.2	.	42.9
Oct. 24	16 21.79	-13 12.5	4.197	3.445	+1.20	-5.4	.	36.2
Nov. 3	16 33.79	-14 06.4	4.387	3.556	+1.19	-4.7	.	29.4
Nov. 13	16 45.66	-14 53.0	4.560	3.666	+1.17	-4.0	.	22.5
Nov. 23	16 57.34	-15 32.5	4.716	3.775	+1.14	-3.3	.	15.8
Dec. 3	17 08.76	-16 05.6	4.851	3.883	+1.11	-2.7	.	9.6
Dec. 13	17 19.83	-16 32.6	4.966	3.990	+1.07	-2.2	.	6.6
Dec. 23	17 30.50	-16 54.2	5.059	4.096	+1.02	-1.7	.	10.4
Jan. 2	17 40.66	-17 10.7	5.131	4.200	+0.96	-1.2	.	17.1
Jan. 12	17 50.24	-17 22.8	5.180	4.304	+0.89	-0.8	.	24.5
Jan. 22	17 59.13	-17 31.1	5.207	4.407	+0.81	-0.5	.	32.4
Feb. 1	18 07.24	-17 36.3	5.214	4.509	+0.72	-0.3	.	40.4
Feb. 11	18 14.47	-17 38.9	5.201	4.611	+0.62	-0.1	.	48.7
Feb. 21	18 20.72	-17 39.8	5.171	4.711	+0.52	0.0	.	57.3
Mar. 3	18 25.87	-17 39.6	5.127	4.810	+0.40	+0.1	.	66.0
Mar. 13	18 29.84	-17 39.0	5.071	4.909	+0.27	0.0	.	75.0
Mar. 23	18 32.53	-17 38.7	5.007	5.007	+0.13	-0.1	.	84.3

Comet 2P/Encke

Epoch = 2017 July 26.0 TT
T = 2017 Mar. 10.08986 TT
Peri. = 186.56283 e = 0.8483138
Node = 334.56009 2000.0 a = 2.2145093 AU
Incl. = 11.77801 n = 0.29908030
q = 0.3359105 AU P = 3.30 years

m1 = 13.6 + 5 log(Delta) + 12.5 log(r(t+10)) (r<2.0AU)
H = 14.4 , G = 0.15 (r>2.0AU)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	Mag.	Elong. °
Jan. 7	23 06.93	+04 22.2	1.412	1.308	+1.04	+3.9	15.1	63.3
Jan. 17	23 17.31	+05 01.0	1.376	1.158	+1.27	+5.3	14.3	55.8
Jan. 27	23 29.96	+05 54.1	1.311	0.997	+1.45	+5.9	13.1	49.0
Feb. 6	23 44.44	+06 53.5	1.211	0.826	+1.49	+4.3	11.6	42.6
Feb. 16	23 59.34	+07 36.9	1.069	0.644	+0.95	-5.1	9.6	36.2
Feb. 26	00 08.85	+06 46.2	0.877	0.463	-1.98	-42.6	7.5	27.9
Mar. 8	23 49.05	-00 20.0	0.684	0.341	-5.41	-75.1	7.8	10.0
Mar. 18	22 54.93	-12 51.2	0.696	0.397	-2.13	-27.9	9.7	18.1
Mar. 28	22 33.61	-17 30.1	0.849	0.566	+0.04	-4.1	11.7	34.5
Apr. 7	22 34.04	-18 10.9	0.984	0.751	+0.61	+1.8	13.2	44.4
Apr. 17	22 40.14	-17 52.6	1.081	0.927	+0.65	+2.7	14.2	52.6
Apr. 27	22 46.69	-17 25.4	1.144	1.092	+0.50	+1.9	15.1	60.6
May 7	22 51.73	-17 06.7	1.178	1.246	+0.26	+0.2	15.7	69.0
May 17	22 54.32	-17 04.3	1.190	1.391	-0.06	-1.8	16.3	77.9
May 27	22 53.73	-17 22.7	1.185	1.527	-0.45	-4.2	16.7	87.6
June 6	22 49.26	-18 04.7	1.169	1.656	-0.89	-6.6	17.1	98.3
June 16	22 40.34	-19 10.4	1.151	1.778	-1.38	-8.6	17.4	110.1
June 26	22 26.57	-20 36.3	1.137	1.894	-1.85	-9.7	17.7	123.0
July 6	22 08.09	-22 13.4	1.138	2.004	-2.21	-9.4	17.2	136.8
July 16	21 45.96	-23 47.8	1.161	2.109	-2.38	-7.7	17.1	151.1
July 26	21 22.17	-25 05.0	1.213	2.210	-2.29	-5.0	17.1	164.8
Aug. 5	20 59.28	-25 55.2	1.298	2.306	-1.98	-2.2	17.1	171.1
Aug. 15	20 39.48	-26 17.7	1.415	2.398	-1.55	0.0	17.6	161.7
Aug. 25	20 24.02	-26 17.5	1.561	2.486	-1.08	+1.6	18.1	149.6
Sept. 4	20 13.25	-26 01.6	1.731	2.571	-0.64	+2.5	18.5	138.0
Sept. 14	20 06.83	-25 36.2	1.921	2.652	-0.27	+3.1	18.9	127.1
Sept. 24	20 04.14	-25 05.1	2.125	2.730	+0.04	+3.5	19.2	116.9
Oct. 4	20 04.57	-24 30.5	2.339	2.805	+0.29	+3.7	19.5	107.4
Oct. 14	20 07.47	-23 53.5	2.558	2.877	+0.49	+3.9	19.7	98.3
Oct. 24	20 12.35	-23 14.3	2.780	2.946	+0.64	+4.1	20.0	89.6
Nov. 3	20 18.80	-22 33.0	3.000	3.013	+0.77	+4.3	20.1	81.3
Nov. 13	20 26.45	-21 49.5	3.215	3.077	+0.86	+4.6	20.3	73.1
Nov. 23	20 35.04	-21 03.7	3.422	3.138	+0.93	+4.8	20.4	65.2
Dec. 3	20 44.34	-20 15.5	3.619	3.197	+0.98	+5.1	20.6	57.4
Dec. 13	20 54.15	-19 24.9	3.804	3.254	+1.02	+5.3	20.6	49.7
Dec. 23	21 04.34	-18 32.0	3.973	3.308	+1.04	+5.5	20.7	42.0
Jan. 2	21 14.75	-17 37.0	4.125	3.361	+1.05	+5.7	20.7	34.5
Jan. 12	21 25.28	-16 40.2	4.258	3.411	+1.05	+5.8	20.8	27.0
Jan. 22	21 35.83	-15 41.8	4.371	3.459	+1.05	+6.0	20.7	19.5
Feb. 1	21 46.30	-14 42.2	4.462	3.505	+1.03	+6.0	20.7	12.1
Feb. 11	21 56.63	-13 42.0	4.532	3.549	+1.01	+6.1	20.6	4.7
Feb. 21	22 06.74	-12 41.5	4.578	3.591	+0.98	+6.0	20.6	3.0
Mar. 3	22 16.55	-11 41.2	4.602	3.631	+0.94	+5.9	20.8	10.3
Mar. 13	22 26.00	-10 41.9	4.603	3.670	+0.90	+5.8	20.9	17.8
Mar. 23	22 35.01	-09 44.0	4.582	3.706	+0.85	+5.6	21.1	25.3

Comet 176P/(118401) LINEAR

Epoch = 2017 July 26.0 TT
T = 2017 Mar. 12.06390 TT
Peri. = 35.35568 e = 0.1927711
Node = 345.95051 2000.0 a = 3.1958163 AU
Incl. = 0.23445 n = 0.17251679
q = 2.5797553 AU P = 5.71 years

H = 15.2 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	23 07.50	-05 33.0	2.961	2.597	+1.45	+9.2	20.6	59.1
Jan. 17	23 21.99	-04 00.9	3.065	2.592	+1.51	+9.7	20.6	52.9
Jan. 27	23 37.04	-02 23.9	3.161	2.588	+1.55	+10.1	20.6	46.8
Feb. 6	23 52.56	-00 42.9	3.249	2.585	+1.59	+10.4	20.6	40.9
Feb. 16	00 08.48	+01 01.0	3.327	2.582	+1.63	+10.6	20.6	35.1
Feb. 26	00 24.75	+02 46.6	3.397	2.581	+1.66	+10.6	20.6	29.4
Mar. 8	00 41.31	+04 33.1	3.456	2.580	+1.68	+10.6	20.6	23.9
Mar. 18	00 58.13	+06 19.3	3.504	2.580	+1.71	+10.5	20.5	18.5
Mar. 28	01 15.19	+08 04.2	3.543	2.581	+1.73	+10.3	20.4	13.1
Apr. 7	01 32.46	+09 46.9	3.571	2.583	+1.75	+9.9	20.3	7.9
Apr. 17	01 49.92	+11 26.4	3.588	2.585	+1.76	+9.5	20.2	2.7
Apr. 27	02 07.54	+13 01.8	3.594	2.589	+1.78	+9.1	20.2	2.5
May 7	02 25.30	+14 32.4	3.590	2.593	+1.79	+8.5	20.3	7.6
May 17	02 43.15	+15 57.3	3.575	2.598	+1.79	+7.9	20.5	12.8
May 27	03 01.07	+17 15.9	3.550	2.604	+1.79	+7.2	20.5	17.9
June 6	03 19.00	+18 27.6	3.514	2.611	+1.79	+6.4	20.6	23.1
June 16	03 36.87	+19 32.1	3.469	2.618	+1.77	+5.7	20.7	28.3
June 26	03 54.61	+20 28.8	3.413	2.627	+1.75	+4.9	20.7	33.5
July 6	04 12.12	+21 17.8	3.348	2.636	+1.72	+4.1	20.7	38.9
July 16	04 29.30	+21 58.8	3.275	2.645	+1.67	+3.3	20.7	44.4
July 26	04 46.04	+22 32.1	3.192	2.656	+1.61	+2.6	20.7	50.0
Aug. 5	05 02.18	+22 58.0	3.101	2.667	+1.54	+1.9	20.7	55.8
Aug. 15	05 17.58	+23 17.0	3.003	2.679	+1.45	+1.3	20.7	61.9
Aug. 25	05 32.06	+23 29.8	2.898	2.691	+1.34	+0.7	20.7	68.2
Sept. 4	05 45.41	+23 37.2	2.788	2.704	+1.20	+0.3	20.6	74.8
Sept. 14	05 57.43	+23 40.4	2.673	2.717	+1.04	0.0	20.6	81.7
Sept. 24	06 07.85	+23 40.6	2.556	2.731	+0.86	-0.2	20.5	89.1
Oct. 4	06 16.40	+23 39.0	2.439	2.746	+0.64	-0.2	20.4	97.0
Oct. 14	06 22.82	+23 36.9	2.323	2.761	+0.40	-0.1	20.2	105.4
Oct. 24	06 26.80	+23 35.5	2.213	2.776	+0.13	0.0	20.1	114.4
Nov. 3	06 28.12	+23 35.5	2.113	2.792	-0.15	+0.2	20.0	124.1
Nov. 13	06 26.63	+23 37.4	2.025	2.808	-0.42	+0.3	19.8	134.5
Nov. 23	06 22.39	+23 40.6	1.955	2.825	-0.67	+0.4	19.6	145.5
Dec. 3	06 15.73	+23 44.1	1.907	2.842	-0.84	+0.3	19.4	157.2
Dec. 13	06 07.33	+23 46.7	1.886	2.859	-0.92	0.0	19.2	169.2
Dec. 23	05 58.13	+23 47.1	1.893	2.876	-0.89	-0.2	19.0	178.4
Jan. 2	05 49.25	+23 45.3	1.930	2.894	-0.76	-0.3	19.3	166.3
Jan. 12	05 41.70	+23 41.9	1.994	2.912	-0.55	-0.4	19.6	154.3
Jan. 22	05 36.23	+23 38.2	2.085	2.930	-0.29	-0.3	19.8	142.9
Feb. 1	05 33.30	+23 35.4	2.196	2.949	-0.03	-0.1	20.1	132.1
Feb. 11	05 32.99	+23 34.1	2.325	2.967	+0.22	0.0	20.3	121.9
Feb. 21	05 35.23	+23 34.3	2.467	2.986	+0.46	+0.1	20.5	112.3
Mar. 3	05 39.80	+23 35.7	2.618	3.004	+0.66	+0.2	20.6	103.3
Mar. 13	05 46.39	+23 37.4	2.774	3.023	+0.83	+0.1	20.8	94.8
Mar. 23	05 54.73	+23 38.4	2.932	3.042	+0.98	-0.1	20.9	86.7

Comet 172P/Yeung

Epoch = 2017 July 26.0 TT
T = 2017 Mar. 13.17417 TT
Peri. = 209.13974 e = 0.2069325
Node = 30.88956 2000.0 a = 4.2076843 AU
Incl. = 11.23719 n = 0.11419296
q = 3.3369777 AU P = 8.63 years

H = 14.0 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	15 50.43	-23 02.0	3.952	3.349	+1.31	-6.0	20.3	46.3
Jan. 17	16 03.48	-24 01.8	3.838	3.345	+1.25	-5.6	20.3	53.3
Jan. 27	16 15.98	-24 58.0	3.715	3.343	+1.18	-5.3	20.3	60.5
Feb. 6	16 27.74	-25 50.9	3.584	3.340	+1.08	-5.0	20.3	67.9
Feb. 16	16 38.59	-26 41.0	3.447	3.339	+0.97	-4.8	20.2	75.5
Feb. 26	16 48.30	-27 28.9	3.305	3.338	+0.83	-4.6	20.1	83.3
Mar. 8	16 56.65	-28 15.2	3.163	3.337	+0.68	-4.5	20.0	91.3
Mar. 18	17 03.40	-29 00.4	3.022	3.337	+0.49	-4.5	19.9	99.7
Mar. 28	17 08.32	-29 45.1	2.885	3.338	+0.28	-4.4	19.8	108.4
Apr. 7	17 11.16	-30 29.1	2.757	3.339	+0.06	-4.3	19.7	117.5
Apr. 17	17 11.77	-31 12.1	2.640	3.340	-0.17	-4.1	19.5	126.9
Apr. 27	17 10.06	-31 52.8	2.538	3.342	-0.40	-3.7	19.4	136.7
May 7	17 06.11	-32 29.4	2.456	3.345	-0.59	-3.0	19.2	146.6
May 17	17 00.22	-32 59.7	2.397	3.348	-0.73	-2.2	19.0	156.5
May 27	16 52.91	-33 21.6	2.362	3.352	-0.80	-1.2	18.9	165.3
June 6	16 44.92	-33 33.9	2.355	3.357	-0.78	-0.3	18.8	168.8
June 16	16 37.10	-33 36.6	2.376	3.361	-0.69	+0.5	18.9	163.3
June 26	16 30.25	-33 31.2	2.423	3.367	-0.52	+1.1	19.1	154.1
July 6	16 25.04	-33 20.4	2.494	3.373	-0.32	+1.3	19.3	144.3
July 16	16 21.88	-33 07.1	2.587	3.379	-0.09	+1.3	19.4	134.6
July 26	16 20.96	-32 53.8	2.697	3.386	+0.14	+1.1	19.6	125.2
Aug. 5	16 22.33	-32 42.4	2.821	3.393	+0.35	+0.8	19.8	116.2
Aug. 15	16 25.87	-32 34.0	2.956	3.401	+0.55	+0.5	19.9	107.5
Aug. 25	16 31.41	-32 28.6	3.098	3.410	+0.74	+0.2	20.0	99.2
Sept. 4	16 38.77	-32 26.2	3.244	3.418	+0.90	0.0	20.1	91.2
Sept.14	16 47.72	-32 26.0	3.392	3.428	+1.04	-0.1	20.2	83.6
Sept.24	16 58.09	-32 27.0	3.537	3.437	+1.16	-0.1	20.3	76.1
Oct. 4	17 09.68	-32 28.4	3.680	3.447	+1.26	-0.1	20.4	68.9
Oct. 14	17 22.31	-32 29.2	3.816	3.458	+1.35	+0.1	20.4	61.8
Oct. 24	17 35.83	-32 28.4	3.945	3.469	+1.43	+0.3	20.5	54.8
Nov. 3	17 50.09	-32 25.3	4.065	3.480	+1.48	+0.6	20.5	48.0
Nov. 13	18 04.94	-32 19.1	4.174	3.492	+1.53	+1.0	20.5	41.3
Nov. 23	18 20.25	-32 09.2	4.271	3.504	+1.56	+1.4	20.5	34.7
Dec. 3	18 35.89	-31 55.4	4.354	3.516	+1.58	+1.8	20.5	28.2
Dec. 13	18 51.73	-31 37.3	4.423	3.529	+1.59	+2.2	20.4	21.9
Dec. 23	19 07.67	-31 15.0	4.478	3.542	+1.59	+2.6	20.4	16.0
Jan. 2	19 23.58	-30 48.5	4.516	3.556	+1.58	+3.0	20.3	11.0
Jan. 12	19 39.36	-30 18.2	4.539	3.570	+1.56	+3.4	20.3	8.7
Jan. 22	19 54.93	-29 44.5	4.545	3.584	+1.52	+3.7	20.4	11.0
Feb. 1	20 10.17	-29 07.9	4.535	3.598	+1.48	+3.9	20.4	16.0
Feb. 11	20 25.02	-28 29.1	4.509	3.613	+1.44	+4.0	20.5	22.0
Feb. 21	20 39.39	-27 49.0	4.467	3.627	+1.38	+4.1	20.6	28.4
Mar. 3	20 53.20	-27 08.4	4.410	3.643	+1.32	+4.0	20.6	35.0
Mar. 13	21 06.39	-26 28.2	4.339	3.658	+1.25	+3.9	20.7	41.8
Mar. 23	21 18.86	-25 49.6	4.255	3.674	+1.17	+3.6	20.7	48.6

Comet P/2016 S1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 Mar. 16.84294 TT
Peri. = 273.62152 e = 0.7087763
Node = 227.53932 2000.0 a = 8.2821477 AU
Incl. = 94.69079 n = 0.04135134
q = 2.4119577 AU P = 23.83 years

m1 = 9.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	01 49.96	-64 30.3	2.584	2.495	-1.13	+3.7	17.2	73.8
Jan. 17	01 38.71	-63 52.8	2.638	2.473	-0.53	+4.2	17.2	69.6
Jan. 27	01 33.39	-63 11.1	2.678	2.454	-0.02	+3.8	17.2	66.3
Feb. 6	01 33.22	-62 33.4	2.702	2.439	+0.42	+2.8	17.2	64.1
Feb. 16	01 37.47	-62 05.0	2.709	2.427	+0.82	+1.5	17.1	63.1
Feb. 26	01 45.68	-61 49.5	2.698	2.418	+1.20	0.0	17.1	63.2
Mar. 8	01 57.67	-61 49.7	2.669	2.413	+1.58	-1.7	17.1	64.4
Mar. 18	02 13.49	-62 07.2	2.626	2.412	+2.01	-3.5	17.0	66.7
Mar. 28	02 33.60	-62 42.6	2.569	2.414	+2.52	-5.3	17.0	69.8
Apr. 7	02 58.78	-63 35.2	2.503	2.420	+3.14	-6.6	16.9	73.6
Apr. 17	03 30.22	-64 41.6	2.433	2.429	+3.93	-7.2	16.9	77.9
Apr. 27	04 09.52	-65 53.7	2.363	2.442	+4.87	-6.4	16.9	82.3
May 7	04 58.22	-66 57.3	2.301	2.458	+5.83	-3.3	16.9	86.7
May 17	05 56.47	-67 30.6	2.252	2.478	+6.49	+2.1	16.9	90.6
May 27	07 01.38	-67 09.2	2.223	2.501	+6.53	+9.1	16.9	93.6
June 6	08 06.67	-65 38.5	2.220	2.527	+5.93	+15.6	17.0	95.4
June 16	09 05.99	-63 02.8	2.248	2.555	+5.04	+20.1	17.1	95.6
June 26	09 56.42	-59 42.1	2.306	2.587	+4.17	+22.1	17.2	94.2
July 6	10 38.15	-56 01.5	2.395	2.621	+3.46	+22.0	17.4	91.2
July 16	11 12.77	-52 21.5	2.511	2.658	+2.92	+20.6	17.6	86.9
July 26	11 42.02	-48 55.7	2.649	2.697	+2.53	+18.4	17.8	81.7
Aug. 5	12 07.29	-45 51.4	2.804	2.738	+2.23	+16.1	18.0	75.8
Aug. 15	12 29.59	-43 10.9	2.969	2.781	+2.01	+13.7	18.2	69.5
Aug. 25	12 49.69	-40 53.7	3.140	2.826	+1.84	+11.6	18.5	62.8
Sept. 4	13 08.10	-38 57.9	3.311	2.872	+1.71	+9.7	18.7	56.0
Sept. 14	13 25.18	-37 20.6	3.477	2.920	+1.60	+8.2	18.9	49.2
Sept. 24	13 41.21	-35 59.1	3.635	2.970	+1.51	+6.9	19.1	42.3
Oct. 4	13 56.35	-34 50.4	3.780	3.021	+1.44	+5.8	19.3	35.4
Oct. 14	14 10.71	-33 52.1	3.910	3.073	+1.37	+5.0	19.5	28.7
Oct. 24	14 24.40	-33 01.7	4.022	3.126	+1.30	+4.4	19.6	22.5
Nov. 3	14 37.42	-32 17.4	4.113	3.180	+1.24	+4.0	19.8	17.4
Nov. 13	14 49.78	-31 37.2	4.183	3.235	+1.17	+3.8	20.0	14.7
Nov. 23	15 01.46	-30 59.5	4.229	3.291	+1.09	+3.7	20.1	15.9
Dec. 3	15 12.41	-30 22.9	4.252	3.347	+1.01	+3.7	20.2	20.6
Dec. 13	15 22.56	-29 46.1	4.251	3.404	+0.92	+3.8	20.3	27.1
Dec. 23	15 31.81	-29 07.7	4.226	3.462	+0.82	+4.1	20.4	34.6
Jan. 2	15 40.03	-28 26.5	4.179	3.520	+0.71	+4.5	20.5	42.7
Jan. 12	15 47.10	-27 41.5	4.112	3.579	+0.58	+5.0	20.6	51.2
Jan. 22	15 52.86	-26 51.4	4.027	3.637	+0.43	+5.7	20.6	60.1
Feb. 1	15 57.13	-25 54.8	3.926	3.697	+0.26	+6.4	20.7	69.4
Feb. 11	15 59.75	-24 50.5	3.815	3.756	+0.08	+7.3	20.7	79.1
Feb. 21	16 00.53	-23 37.1	3.698	3.816	-0.12	+8.4	20.8	89.2
Mar. 3	15 59.34	-22 13.3	3.581	3.875	-0.33	+9.5	20.8	99.8
Mar. 13	15 56.09	-20 37.8	3.470	3.935	-0.53	+10.8	20.8	110.9
Mar. 23	15 50.77	-18 50.2	3.371	3.995	-0.72	+11.9	20.9	122.4

Comet 73P/Schwassmann-Wachmann

Epoch = 2017 July 26.0 TT
T = 2017 Mar. 16.84665 TT
Peri. = 199.39192 e = 0.6855517
Node = 69.66261 2000.0 a = 3.0917804 AU
Incl. = 11.23699 n = 0.18129720
q = 0.9722051 AU P = 5.44 years

m1 = 11.6 + 5 log(Delta) + 12.5 log(r(t+15))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	15 31.12	-11 38.1	1.684	1.356	+3.98	-17.3	13.9	53.6
Jan. 17	16 10.88	-14 31.4	1.577	1.270	+4.41	-15.8	13.4	53.6
Jan. 27	16 54.94	-17 09.6	1.491	1.190	+4.82	-12.9	12.9	52.8
Feb. 6	17 43.13	-19 18.6	1.428	1.118	+5.15	-8.4	12.5	51.3
Feb. 16	18 34.60	-20 42.8	1.391	1.056	+5.32	-2.7	12.3	49.2
Feb. 26	19 27.79	-21 09.8	1.380	1.009	+5.28	+3.4	12.2	46.9
Mar. 8	20 20.61	-20 35.5	1.393	0.981	+5.05	+9.0	12.2	44.8
Mar. 18	21 11.11	-19 05.3	1.426	0.972	+4.69	+13.3	12.4	42.9
Mar. 28	21 57.97	-16 52.6	1.474	0.985	+4.26	+15.9	12.7	41.7
Apr. 7	22 40.53	-14 13.4	1.531	1.019	+3.83	+17.1	13.0	41.1
Apr. 17	23 18.80	-11 22.8	1.593	1.069	+3.43	+17.0	13.5	41.3
Apr. 27	23 53.08	-08 32.4	1.655	1.133	+3.07	+16.2	13.9	42.2
May 7	00 23.82	-05 50.3	1.713	1.208	+2.76	+14.9	14.3	43.8
May 17	00 51.43	-03 21.4	1.765	1.290	+2.49	+13.3	14.7	46.1
May 27	01 16.31	-01 08.0	1.808	1.376	+2.24	+11.6	15.1	49.1
June 6	01 38.71	+00 48.4	1.840	1.466	+2.01	+9.9	15.5	52.6
June 16	01 58.82	+02 27.9	1.862	1.557	+1.79	+8.3	15.8	56.8
June 26	02 16.75	+03 50.6	1.871	1.649	+1.57	+6.6	16.1	61.5
July 6	02 32.50	+04 57.0	1.869	1.741	+1.35	+5.1	16.4	66.9
July 16	02 46.02	+05 47.8	1.855	1.833	+1.12	+3.6	16.6	72.8
July 26	02 57.18	+06 23.7	1.831	1.923	+0.86	+2.2	16.8	79.4
Aug. 5	03 05.79	+06 45.3	1.799	2.013	+0.58	+0.8	17.0	86.7
Aug. 15	03 11.64	+06 53.2	1.760	2.101	+0.28	-0.5	17.2	94.7
Aug. 25	03 14.45	+06 48.3	1.719	2.187	-0.05	-1.7	17.3	103.5
Sept. 4	03 13.99	+06 31.6	1.679	2.272	-0.38	-2.7	17.5	113.1
Sept. 14	03 10.17	+06 04.5	1.645	2.355	-0.71	-3.5	17.6	123.6
Sept. 24	03 03.08	+05 29.4	1.624	2.437	-0.99	-4.0	17.7	134.8
Oct. 4	02 53.17	+04 49.8	1.621	2.517	-1.19	-4.0	17.9	146.7
Oct. 14	02 41.26	+04 10.2	1.642	2.596	-1.28	-3.5	18.1	158.5
Oct. 24	02 28.49	+03 35.6	1.691	2.673	-1.24	-2.5	18.3	168.2
Nov. 3	02 16.13	+03 10.7	1.771	2.748	-1.09	-1.2	18.5	167.5
Nov. 13	02 05.26	+02 58.5	1.880	2.822	-0.86	+0.2	18.8	157.8
Nov. 23	01 56.62	+03 00.2	2.018	2.894	-0.60	+1.5	19.1	146.6
Dec. 3	01 50.58	+03 15.5	2.179	2.964	-0.34	+2.7	19.4	135.6
Dec. 13	01 47.15	+03 42.8	2.359	3.033	-0.10	+3.7	19.7	125.0
Dec. 23	01 46.18	+04 20.1	2.555	3.101	+0.12	+4.5	20.0	114.9
Jan. 2	01 47.39	+05 05.5	2.761	3.167	+0.31	+5.2	20.2	105.4
Jan. 12	01 50.47	+05 57.0	2.973	3.232	+0.47	+5.6	20.5	96.3
Jan. 22	01 55.14	+06 53.1	3.187	3.295	+0.60	+5.9	20.7	87.6
Feb. 1	02 01.14	+07 52.4	3.400	3.357	+0.71	+6.1	21.0	79.2
Feb. 11	02 08.22	+08 53.5	3.609	3.418	+0.80	+6.2	21.2	71.0
Feb. 21	02 16.19	+09 55.5	3.810	3.477	+0.87	+6.2	21.4	63.1
Mar. 3	02 24.90	+10 57.4	4.001	3.535	+0.93	+6.1	21.6	55.5
Mar. 13	02 34.19	+11 58.6	4.181	3.592	+0.98	+6.0	21.8	48.0
Mar. 23	02 43.94	+12 58.4	4.346	3.647	+1.01	+5.8	21.9	40.6

Comet 182P/LONEOS

Epoch = 2017 July 26.0 TT
T = 2017 Apr. 11.65010 TT
Peri. = 53.88217 e = 0.6595842
Node = 72.79185 2000.0 a = 2.9618058 AU
Incl. = 16.24093 n = 0.19336114
q = 1.0082455 AU P = 5.10 years

H = 19.0 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	00 31.96	-06 23.2	1.454	1.582	+1.19	+20.3	22.3	78.3
Jan. 17	00 43.86	-03 00.1	1.465	1.495	+1.47	+21.9	22.3	72.2
Jan. 27	00 58.61	+00 38.9	1.467	1.409	+1.76	+23.5	22.2	66.8
Feb. 6	01 16.17	+04 33.9	1.460	1.327	+2.04	+25.0	22.0	62.2
Feb. 16	01 36.61	+08 44.1	1.443	1.249	+2.36	+26.4	21.9	58.3
Feb. 26	02 00.20	+13 08.0	1.417	1.177	+2.72	+27.5	21.8	55.2
Mar. 8	02 27.38	+17 42.5	1.383	1.115	+3.14	+27.9	21.7	52.9
Mar. 18	02 58.76	+22 21.5	1.344	1.064	+3.64	+27.3	21.6	51.5
Mar. 28	03 35.19	+26 54.5	1.303	1.029	+4.24	+25.0	21.5	51.0
Apr. 7	04 17.56	+31 05.0	1.262	1.010	+4.89	+20.5	21.4	51.5
Apr. 17	05 06.44	+34 29.5	1.227	1.011	+5.50	+13.0	21.4	52.7
Apr. 27	06 01.43	+36 40.0	1.203	1.030	+5.90	+3.1	21.4	54.7
May 7	07 00.39	+37 11.2	1.195	1.067	+5.91	-7.8	21.5	57.2
May 17	07 59.49	+35 52.7	1.207	1.119	+5.54	-17.7	21.6	59.8
May 27	08 54.91	+32 55.7	1.241	1.182	+4.94	-24.7	21.7	62.3
June 6	09 44.34	+28 48.7	1.299	1.254	+4.29	-28.4	21.8	64.3
June 16	10 27.27	+24 04.3	1.380	1.332	+3.72	-29.5	22.0	65.5
June 26	11 04.42	+19 09.5	1.482	1.415	+3.25	-28.7	22.2	66.0
July 6	11 36.88	+14 22.2	1.602	1.501	+2.88	-27.0	22.4	65.5
July 16	12 05.68	+09 52.3	1.737	1.588	+2.60	-24.9	22.7	64.3
July 26	12 31.71	+05 43.8	1.884	1.675	+2.39	-22.6	22.9	62.3
Aug. 5	12 55.66	+01 57.6	2.040	1.763	+2.24	-20.5	.	59.8
Aug. 15	13 18.02	-01 27.0	2.202	1.850	+2.12	-18.5	.	56.7
Aug. 25	13 39.22	-04 31.7	2.367	1.936	+2.03	-16.6	.	53.1
Sept. 4	13 59.51	-07 18.2	2.533	2.022	+1.96	-15.0	.	49.1
Sept. 14	14 19.12	-09 48.0	2.697	2.106	+1.91	-13.5	.	44.8
Sept. 24	14 38.20	-12 02.8	2.857	2.188	+1.87	-12.1	.	40.2
Oct. 4	14 56.86	-14 03.7	3.011	2.269	+1.83	-10.8	.	35.3
Oct. 14	15 15.16	-15 51.8	3.158	2.349	+1.80	-9.6	.	30.1
Oct. 24	15 33.16	-17 28.1	3.295	2.427	+1.77	-8.5	.	24.7
Nov. 3	15 50.87	-18 53.4	3.420	2.504	+1.74	-7.5	.	19.2
Nov. 13	16 08.29	-20 08.3	3.531	2.579	+1.71	-6.5	.	13.4
Nov. 23	16 25.39	-21 13.6	3.629	2.652	+1.67	-5.6	.	7.4
Dec. 3	16 42.14	-22 10.0	3.710	2.724	+1.63	-4.8	.	1.3
Dec. 13	16 58.48	-22 58.0	3.774	2.795	+1.59	-4.1	.	5.1
Dec. 23	17 14.36	-23 38.6	3.820	2.863	+1.53	-3.4	.	11.6
Jan. 2	17 29.69	-24 12.4	3.849	2.931	+1.47	-2.8	.	18.2
Jan. 12	17 44.39	-24 40.4	3.859	2.997	+1.40	-2.3	.	25.0
Jan. 22	17 58.37	-25 03.5	3.850	3.061	+1.31	-1.9	.	32.1
Feb. 1	18 11.51	-25 22.8	3.824	3.124	+1.22	-1.7	.	39.3
Feb. 11	18 23.72	-25 39.3	3.781	3.186	+1.11	-1.5	.	46.6
Feb. 21	18 34.85	-25 54.3	3.723	3.246	+0.99	-1.5	.	54.3
Mar. 3	18 44.76	-26 09.1	3.650	3.305	+0.86	-1.6	.	62.1
Mar. 13	18 53.32	-26 24.9	3.566	3.362	+0.70	-1.8	.	70.2
Mar. 23	19 00.34	-26 42.9	3.473	3.418	+0.53	-2.1	.	78.6

Comet 41P/Tuttle-Giacobini-Kresak

Epoch = 2017 July 26.0 TT
T = 2017 Apr. 12.75049 TT
Peri. = 62.17935 e = 0.6610733
Node = 141.04441 2000.0 a = 3.0834281 AU
Incl. = 9.22700 n = 0.18203435
q = 1.0450561 AU P = 5.41 years

m1 = 11.6 + 5 log(Delta) + 25.0 log(r) (r<1.5AU)
m1 = 13.4 + 5 log(Delta) + 15.0 log(r) (r>1.5AU)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	09 22.41	+07 28.7	0.696	1.605	+0.48	+4.1	15.7	145.3
Jan. 17	09 27.25	+08 09.7	0.572	1.520	+0.32	+9.9	14.9	154.5
Jan. 27	09 30.46	+09 48.7	0.463	1.437	+0.21	+18.2	13.9	164.5
Feb. 6	09 32.59	+12 51.1	0.371	1.357	+0.26	+29.7	12.8	175.5
Feb. 16	09 35.19	+17 48.6	0.295	1.281	+0.60	+45.0	11.6	172.3
Feb. 26	09 41.14	+25 18.7	0.234	1.212	+1.57	+63.4	10.5	158.9
Mar. 8	09 56.82	+35 52.8	0.189	1.151	+4.02	+80.4	9.5	144.4
Mar. 18	10 36.99	+49 16.6	0.158	1.102	+10.17	+76.0	8.6	129.3
Mar. 28	12 18.70	+61 56.6	0.143	1.067	+17.68	+11.7	8.1	115.2
Apr. 7	15 15.52	+63 53.5	0.145	1.048	+11.66	-56.1	7.9	105.1
Apr. 17	17 12.15	+54 32.1	0.159	1.047	+4.95	-65.8	8.1	101.3
Apr. 27	18 01.62	+43 33.9	0.182	1.063	+2.13	-57.5	8.6	103.3
May 7	18 22.95	+33 58.5	0.209	1.096	+0.81	-49.6	9.2	109.3
May 17	18 31.01	+25 42.9	0.239	1.143	+0.02	-44.5	9.9	117.9
May 27	18 31.25	+18 18.0	0.273	1.202	-0.43	-41.3	10.8	128.3
June 6	18 26.97	+11 24.7	0.315	1.270	-0.61	-38.1	11.7	139.3
June 16	18 20.89	+05 04.1	0.366	1.345	-0.59	-33.9	12.6	149.7
June 26	18 15.02	-00 34.8	0.432	1.424	-0.40	-28.9	13.6	157.2
July 6	18 11.01	-05 23.8	0.513	1.507	-0.14	-23.7	14.6	159.0
July 16	18 09.64	-09 20.7	0.612	1.592	+0.15	-18.9	15.4	154.9
July 26	18 11.10	-12 29.9	0.728	1.678	+0.42	-14.8	16.1	148.0
Aug. 5	18 15.31	-14 58.2	0.860	1.764	+0.66	-11.4	16.8	140.4
Aug. 15	18 21.89	-16 52.6	1.006	1.850	+0.86	-8.7	17.4	132.8
Aug. 25	18 30.45	-18 19.4	1.167	1.936	+1.02	-6.4	18.0	125.3
Sept. 4	18 40.67	-19 23.5	1.339	2.021	+1.15	-4.5	18.6	118.1
Sept.14	18 52.18	-20 08.7	1.522	2.105	+1.25	-2.9	19.2	111.1
Sept.24	19 04.71	-20 37.8	1.713	2.187	+1.33	-1.5	19.7	104.2
Oct. 4	19 18.03	-20 53.0	1.910	2.269	+1.39	-0.3	20.1	97.5
Oct. 14	19 31.93	-20 56.0	2.112	2.349	+1.43	+0.8	20.6	90.8
Oct. 24	19 46.24	-20 48.1	2.317	2.427	+1.46	+1.7	21.0	84.2
Nov. 3	20 00.85	-20 30.7	2.522	2.504	+1.48	+2.6	21.4	77.6
Nov. 13	20 15.60	-20 04.6	2.726	2.580	+1.48	+3.4	21.8	71.0
Nov. 23	20 30.43	-19 30.9	2.926	2.654	+1.48	+4.1	22.1	64.5
Dec. 3	20 45.24	-18 50.4	3.120	2.727	+1.47	+4.6	22.4	57.9
Dec. 13	20 59.96	-18 04.0	3.306	2.798	+1.46	+5.2	22.7	51.3
Dec. 23	21 14.55	-17 12.4	3.482	2.868	+1.44	+5.6	23.0	44.7
Jan. 2	21 28.93	-16 16.6	3.647	2.937	+1.41	+5.9	.	38.1
Jan. 12	21 43.07	-15 17.3	3.799	3.004	+1.39	+6.2	.	31.5
Jan. 22	21 56.94	-14 15.3	3.935	3.070	+1.36	+6.4	.	24.8
Feb. 1	22 10.50	-13 11.4	4.055	3.134	+1.32	+6.5	.	18.2
Feb. 11	22 23.72	-12 06.4	4.158	3.197	+1.29	+6.5	.	11.5
Feb. 21	22 36.57	-11 01.1	4.243	3.259	+1.24	+6.5	.	5.0
Mar. 3	22 49.02	-09 56.3	4.308	3.319	+1.20	+6.4	.	3.2
Mar. 13	23 01.03	-08 52.6	4.355	3.378	+1.15	+6.2	.	9.4
Mar. 23	23 12.58	-07 50.9	4.382	3.436	+1.10	+5.9	.	16.2

Comet P/2016 A3 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 Apr. 14.16511 TT
Peri. = 338.53421 e = 0.3809420
Node = 187.79386 2000.0 a = 7.7364213 AU
Incl. = 8.59367 n = 0.04580300
q = 4.7892935 AU P = 21.52 years

m1 = 6.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 00.72	+00 42.8	4.239	4.812	-0.06	+0.4	19.4	120.4
Jan. 17	11 00.17	+00 46.5	4.108	4.808	-0.18	+1.3	19.3	130.7
Jan. 27	10 58.41	+00 59.4	3.996	4.804	-0.28	+2.2	19.2	141.3
Feb. 6	10 55.59	+01 21.1	3.907	4.800	-0.36	+2.9	19.2	152.1
Feb. 16	10 51.95	+01 50.3	3.844	4.797	-0.42	+3.5	19.1	162.9
Feb. 26	10 47.80	+02 25.2	3.811	4.795	-0.43	+3.8	19.1	173.0
Mar. 8	10 43.51	+03 03.4	3.807	4.793	-0.40	+3.9	19.1	172.3
Mar. 18	10 39.48	+03 42.2	3.834	4.791	-0.34	+3.7	19.1	162.1
Mar. 28	10 36.05	+04 19.1	3.890	4.790	-0.25	+3.3	19.2	151.4
Apr. 7	10 33.53	+04 51.6	3.971	4.789	-0.14	+2.7	19.2	140.9
Apr. 17	10 32.12	+05 18.1	4.074	4.789	-0.02	+1.9	19.3	130.7
Apr. 27	10 31.92	+05 37.5	4.196	4.790	+0.11	+1.2	19.3	120.8
May 7	10 32.98	+05 49.1	4.331	4.791	+0.23	+0.4	19.4	111.3
May 17	10 35.26	+05 52.7	4.476	4.792	+0.34	-0.4	19.5	102.2
May 27	10 38.69	+05 48.6	4.626	4.794	+0.45	-1.2	19.5	93.4
June 6	10 43.18	+05 37.0	4.779	4.796	+0.54	-1.9	19.6	84.9
June 16	10 48.61	+05 18.5	4.929	4.799	+0.63	-2.5	19.7	76.7
June 26	10 54.87	+04 53.6	5.076	4.802	+0.70	-3.1	19.7	68.8
July 6	11 01.85	+04 23.0	5.215	4.806	+0.76	-3.6	19.8	61.0
July 16	11 09.44	+03 47.4	5.345	4.810	+0.81	-4.0	19.9	53.5
July 26	11 17.55	+03 07.2	5.464	4.815	+0.85	-4.4	19.9	46.1
Aug. 5	11 26.09	+02 23.3	5.570	4.820	+0.89	-4.7	20.0	38.7
Aug. 15	11 34.98	+01 36.2	5.660	4.826	+0.92	-5.0	20.0	31.5
Aug. 25	11 44.14	+00 46.5	5.736	4.832	+0.94	-5.2	20.1	24.3
Sept. 4	11 53.52	-00 05.1	5.793	4.839	+0.95	-5.3	20.1	17.1
Sept.14	12 03.03	-00 57.9	5.834	4.846	+0.96	-5.4	20.1	10.0
Sept.24	12 12.63	-01 51.5	5.855	4.854	+0.96	-5.4	20.1	2.8
Oct. 4	12 22.24	-02 45.0	5.858	4.862	+0.96	-5.3	20.1	4.5
Oct. 14	12 31.80	-03 38.0	5.842	4.870	+0.94	-5.2	20.1	11.9
Oct. 24	12 41.24	-04 29.7	5.807	4.879	+0.92	-5.0	20.1	19.3
Nov. 3	12 50.49	-05 19.4	5.753	4.888	+0.90	-4.7	20.1	26.8
Nov. 13	12 59.46	-06 06.6	5.682	4.898	+0.86	-4.4	20.1	34.5
Nov. 23	13 08.08	-06 50.5	5.593	4.908	+0.82	-4.0	20.1	42.3
Dec. 3	13 16.24	-07 30.5	5.489	4.919	+0.76	-3.5	20.1	50.3
Dec. 13	13 23.83	-08 06.0	5.372	4.930	+0.69	-3.0	20.0	58.5
Dec. 23	13 30.75	-08 36.2	5.244	4.942	+0.61	-2.4	20.0	66.9
Jan. 2	13 36.86	-09 00.5	5.106	4.954	+0.52	-1.8	20.0	75.6
Jan. 12	13 42.07	-09 18.5	4.964	4.966	+0.42	-1.1	19.9	84.4
Jan. 22	13 46.23	-09 29.5	4.819	4.979	+0.30	-0.4	19.9	93.6
Feb. 1	13 49.25	-09 33.2	4.676	4.992	+0.18	+0.4	19.8	103.0
Feb. 11	13 51.05	-09 29.4	4.540	5.005	+0.05	+1.1	19.8	112.8
Feb. 21	13 51.57	-09 17.9	4.414	5.019	-0.07	+1.9	19.7	122.8
Mar. 3	13 50.85	-08 59.2	4.304	5.033	-0.19	+2.5	19.7	133.1
Mar. 13	13 48.96	-08 33.9	4.213	5.048	-0.29	+3.1	19.7	143.7
Mar. 23	13 46.06	-08 03.2	4.146	5.063	-0.37	+3.4	19.7	154.4

Comet 54P/de Vico-Swift-NEAT

Epoch = 2017 July 26.0 TT
T = 2017 Apr. 15.06588 TT
Peri. = 1.84839 e = 0.4245373
Node = 358.85272 2000.0 a = 3.7966911 AU
Incl. = 6.05699 n = 0.13322821
q = 2.1848541 AU P = 7.40 years

m1 = 12.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	21 11.92	-18 42.0	3.124	2.305	+2.03	+11.0	20.7	28.2
Jan. 17	21 32.21	-16 51.9	3.154	2.283	+2.04	+11.9	20.7	23.2
Jan. 27	21 52.59	-14 53.3	3.176	2.263	+2.04	+12.6	20.6	18.3
Feb. 6	22 12.98	-12 47.1	3.191	2.244	+2.04	+13.3	20.6	13.5
Feb. 16	22 33.33	-10 34.3	3.199	2.228	+2.03	+13.8	20.5	8.9
Feb. 26	22 53.64	-08 16.0	3.201	2.215	+2.02	+14.3	20.5	4.4
Mar. 8	23 13.87	-05 53.4	3.196	2.204	+2.02	+14.6	20.5	0.9
Mar. 18	23 34.03	-03 27.9	3.186	2.195	+2.01	+14.7	20.4	4.7
Mar. 28	23 54.12	-01 00.8	3.169	2.189	+2.00	+14.7	20.4	9.0
Apr. 7	00 14.14	+01 26.6	3.148	2.186	+2.00	+14.6	20.4	13.3
Apr. 17	00 34.10	+03 52.9	3.121	2.185	+1.99	+14.4	20.4	17.6
Apr. 27	00 54.02	+06 16.8	3.089	2.187	+1.99	+14.0	20.3	21.8
May 7	01 13.87	+08 37.1	3.052	2.191	+1.98	+13.5	20.3	26.1
May 17	01 33.65	+10 52.5	3.010	2.198	+1.97	+13.0	20.3	30.4
May 27	01 53.35	+13 02.1	2.963	2.208	+1.96	+12.3	20.3	34.8
June 6	02 12.91	+15 04.8	2.912	2.220	+1.94	+11.5	20.3	39.2
June 16	02 32.27	+16 59.9	2.855	2.234	+1.91	+10.7	20.3	43.7
June 26	02 51.37	+18 46.8	2.794	2.251	+1.87	+9.8	20.3	48.4
July 6	03 10.08	+20 25.0	2.727	2.270	+1.82	+8.9	20.3	53.3
July 16	03 28.28	+21 54.5	2.656	2.291	+1.75	+8.1	20.3	58.3
July 26	03 45.82	+23 15.4	2.580	2.314	+1.67	+7.3	20.3	63.6
Aug. 5	04 02.47	+24 27.9	2.500	2.340	+1.56	+6.5	20.3	69.2
Aug. 15	04 18.04	+25 32.7	2.415	2.366	+1.42	+5.8	20.3	75.1
Aug. 25	04 32.25	+26 30.6	2.328	2.395	+1.26	+5.2	20.3	81.4
Sept. 4	04 44.80	+27 22.6	2.239	2.425	+1.06	+4.7	20.3	88.1
Sept. 14	04 55.38	+28 09.7	2.149	2.457	+0.82	+4.3	20.3	95.4
Sept. 24	05 03.62	+28 53.0	2.061	2.489	+0.55	+4.0	20.3	103.2
Oct. 4	05 09.16	+29 32.8	1.976	2.523	+0.25	+3.6	20.3	111.7
Oct. 14	05 11.70	+30 09.2	1.900	2.559	-0.07	+3.2	20.3	120.8
Oct. 24	05 11.03	+30 41.3	1.834	2.595	-0.39	+2.6	20.3	130.7
Nov. 3	05 07.17	+31 06.9	1.784	2.632	-0.67	+1.7	20.4	141.2
Nov. 13	05 00.49	+31 23.6	1.754	2.669	-0.88	+0.5	20.4	152.1
Nov. 23	04 51.74	+31 28.6	1.748	2.708	-0.97	-0.7	20.5	162.9
Dec. 3	04 42.05	+31 21.1	1.769	2.747	-0.94	-1.9	20.6	170.6
Dec. 13	04 32.68	+31 02.6	1.819	2.786	-0.79	-2.6	20.8	166.8
Dec. 23	04 24.78	+30 36.4	1.896	2.826	-0.56	-2.9	21.0	156.7
Jan. 2	04 19.18	+30 07.3	1.999	2.867	-0.29	-2.8	21.2	145.9
Jan. 12	04 16.26	+29 39.4	2.124	2.907	-0.02	-2.4	21.4	135.3
Jan. 22	04 16.08	+29 15.6	2.268	2.948	+0.24	-1.8	21.6	125.3
Feb. 1	04 18.52	+28 57.4	2.427	2.989	+0.48	-1.2	21.9	115.7
Feb. 11	04 23.27	+28 44.9	2.596	3.031	+0.68	-0.7	22.1	106.7
Feb. 21	04 30.04	+28 37.5	2.772	3.072	+0.85	-0.3	22.3	98.1
Mar. 3	04 38.52	+28 34.1	2.952	3.113	+0.99	-0.1	22.5	90.0
Mar. 13	04 48.41	+28 33.2	3.132	3.155	+1.11	0.0	22.8	82.2
Mar. 23	04 59.46	+28 33.7	3.311	3.196	+1.20	+0.1	23.0	74.7

Comet 103P/Hartley

Epoch = 2017 July 26.0 TT
T = 2017 Apr. 20.50333 TT
Peri. = 181.30055 e = 0.6934467
Node = 219.72369 2000.0 a = 3.4772932 AU
Incl. = 13.59378 n = 0.15199948
q = 1.0659757 AU P = 6.48 years

m1 = 11.4 + 5 log(Delta) + 15.0 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	20 21.60	-10 22.4	2.590	1.704	+2.58	+7.6	17.9	20.5
Jan. 17	20 47.43	-09 06.2	2.530	1.616	+2.74	+9.4	17.5	17.1
Jan. 27	21 14.85	-07 32.0	2.464	1.529	+2.91	+11.3	17.2	14.2
Feb. 6	21 43.91	-05 39.3	2.396	1.445	+3.08	+13.1	16.8	11.8
Feb. 16	22 14.69	-03 28.8	2.327	1.364	+3.26	+14.7	16.4	9.9
Feb. 26	22 47.32	-01 01.9	2.260	1.288	+3.46	+16.0	15.9	8.3
Mar. 8	23 21.88	+01 38.3	2.199	1.220	+3.66	+16.9	15.5	6.9
Mar. 18	23 58.43	+04 27.1	2.147	1.161	+3.85	+17.1	15.1	5.9
Mar. 28	00 36.98	+07 17.9	2.105	1.114	+4.04	+16.5	14.7	5.1
Apr. 7	01 17.38	+10 02.5	2.076	1.082	+4.19	+14.9	14.3	4.8
Apr. 17	01 59.31	+12 31.8	2.063	1.067	+4.30	+12.5	13.9	5.2
Apr. 27	02 42.29	+14 37.3	2.065	1.070	+4.33	+9.5	13.7	6.1
May 7	03 25.60	+16 12.1	2.084	1.090	+4.29	+6.0	13.5	7.2
May 17	04 08.45	+17 12.3	2.118	1.127	+4.16	+2.5	13.5	8.2
May 27	04 50.09	+17 37.4	2.167	1.177	+3.98	-0.8	13.5	9.0
June 6	05 29.88	+17 29.6	2.229	1.239	+3.75	-3.6	13.7	9.5
June 16	06 07.37	+16 53.4	2.301	1.310	+3.50	-6.0	14.0	9.5
June 26	06 42.35	+15 53.9	2.381	1.388	+3.24	-7.8	14.3	9.3
July 6	07 14.76	+14 36.3	2.466	1.470	+2.99	-9.1	14.8	8.8
July 16	07 44.70	+13 05.3	2.553	1.555	+2.76	-10.0	15.2	8.4
July 26	08 12.33	+11 24.9	2.640	1.642	+2.55	-10.7	15.6	8.3
Aug. 5	08 37.83	+09 38.3	2.724	1.730	+2.36	-11.0	16.1	9.2
Aug. 15	09 01.42	+07 47.9	2.803	1.819	+2.19	-11.2	16.5	11.0
Aug. 25	09 23.28	+05 55.7	2.875	1.908	+2.03	-11.3	16.9	13.7
Sept. 4	09 43.57	+04 03.1	2.937	1.996	+1.89	-11.2	17.3	17.2
Sept. 14	10 02.43	+02 11.4	2.989	2.083	+1.75	-11.0	17.7	21.3
Sept. 24	10 19.97	+00 21.5	3.028	2.170	+1.63	-10.7	18.0	25.8
Oct. 4	10 36.25	-01 25.8	3.055	2.256	+1.51	-10.4	18.3	30.9
Oct. 14	10 51.31	-03 09.7	3.068	2.340	+1.39	-10.0	18.6	36.3
Oct. 24	11 05.17	-04 49.6	3.066	2.423	+1.26	-9.5	18.9	42.2
Nov. 3	11 17.79	-06 24.7	3.050	2.505	+1.13	-9.0	19.1	48.5
Nov. 13	11 29.12	-07 54.2	3.021	2.586	+0.99	-8.3	19.3	55.1
Nov. 23	11 39.05	-09 17.3	2.978	2.665	+0.84	-7.6	19.5	62.2
Dec. 3	11 47.46	-10 33.0	2.923	2.743	+0.67	-6.7	19.7	69.8
Dec. 13	11 54.20	-11 40.0	2.859	2.820	+0.49	-5.7	19.9	77.8
Dec. 23	11 59.09	-12 37.1	2.787	2.895	+0.28	-4.5	20.0	86.3
Jan. 2	12 01.93	-13 22.3	2.711	2.969	+0.07	-3.2	20.1	95.3
Jan. 12	12 02.59	-13 53.9	2.636	3.041	-0.16	-1.6	20.3	104.9
Jan. 22	12 00.95	-14 09.7	2.566	3.113	-0.39	+0.2	20.4	115.0
Feb. 1	11 57.05	-14 07.7	2.506	3.183	-0.60	+2.1	20.5	125.6
Feb. 11	11 51.09	-13 46.7	2.462	3.251	-0.76	+4.0	20.6	136.7
Feb. 21	11 43.46	-13 06.4	2.440	3.319	-0.87	+5.8	20.7	147.8
Mar. 3	11 34.80	-12 08.8	2.444	3.385	-0.89	+7.1	20.9	158.3
Mar. 13	11 25.86	-10 57.9	2.478	3.450	-0.85	+7.9	21.1	165.8
Mar. 23	11 17.39	-09 39.2	2.543	3.514	-0.73	+8.0	21.2	164.7

Comet 255P/Levy

Epoch = 2017 July 26.0 TT
T = 2017 May 4.13318 TT
Peri. = 179.71505 e = 0.6679487
Node = 279.71015 2000.0 a = 3.0397710 AU
Incl. = 18.25492 n = 0.18596995
q = 1.0093599 AU P = 5.30 years

m1 = 16.8 + 5 log(Delta) + 30.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	22 15.11	+04 49.5	2.209	1.787	+1.96	+7.8	.	52.3
Jan. 17	22 34.74	+06 07.7	2.201	1.699	+2.15	+9.3	.	47.5
Jan. 27	22 56.29	+07 40.4	2.182	1.610	+2.36	+10.6	.	43.1
Feb. 6	23 19.88	+09 26.5	2.153	1.522	+2.58	+11.7	.	39.2
Feb. 16	23 45.67	+11 23.8	2.115	1.436	+2.82	+12.5	.	35.8
Feb. 26	00 13.91	+13 29.2	2.070	1.352	+3.10	+12.9	22.3	33.0
Mar. 8	00 44.89	+15 38.4	2.021	1.271	+3.40	+12.6	21.5	30.6
Mar. 18	01 18.90	+17 44.8	1.969	1.197	+3.73	+11.5	20.6	28.8
Mar. 28	01 56.17	+19 40.1	1.918	1.132	+4.06	+9.4	19.8	27.5
Apr. 7	02 36.75	+21 13.8	1.871	1.077	+4.36	+6.1	19.1	26.9
Apr. 17	03 20.36	+22 14.4	1.830	1.037	+4.60	+1.7	18.6	26.8
Apr. 27	04 06.34	+22 31.5	1.798	1.014	+4.73	-3.3	18.3	27.3
May 7	04 53.60	+21 58.3	1.779	1.010	+4.72	-8.5	18.2	28.2
May 17	05 40.84	+20 33.6	1.775	1.025	+4.60	-13.1	18.4	29.6
May 27	06 26.86	+18 22.6	1.788	1.058	+4.39	-16.8	18.8	31.1
June 6	07 10.75	+15 35.0	1.819	1.107	+4.12	-19.2	19.4	32.5
June 16	07 51.97	+12 22.6	1.867	1.168	+3.84	-20.6	20.2	33.7
June 26	08 30.37	+08 56.6	1.934	1.239	+3.56	-21.0	21.0	34.6
July 6	09 05.99	+05 26.6	2.015	1.317	+3.30	-20.7	21.9	34.9
July 16	09 39.03	+01 59.4	2.110	1.399	+3.08	-20.0	22.8	34.6
July 26	10 09.79	-01 20.3	2.216	1.485	+2.87	-19.0	.	33.8
Aug. 5	10 38.53	-04 30.2	2.330	1.572	+2.70	-17.9	.	32.5
Aug. 15	11 05.53	-07 28.7	2.450	1.661	+2.55	-16.7	.	30.6
Aug. 25	11 31.04	-10 15.7	2.572	1.749	+2.42	-15.6	.	28.3
Sept. 4	11 55.28	-12 51.2	2.694	1.837	+2.31	-14.4	.	25.6
Sept. 14	12 18.43	-15 15.6	2.814	1.925	+2.22	-13.4	.	22.6
Sept. 24	12 40.65	-17 29.5	2.929	2.011	+2.14	-12.4	.	19.4
Oct. 4	13 02.04	-19 33.4	3.038	2.096	+2.07	-11.4	.	16.3
Oct. 14	13 22.72	-21 27.8	3.138	2.180	+2.00	-10.5	.	13.5
Oct. 24	13 42.73	-23 13.1	3.227	2.263	+1.94	-9.7	.	11.9
Nov. 3	14 02.12	-24 49.9	3.304	2.344	+1.88	-8.9	.	12.2
Nov. 13	14 20.89	-26 18.5	3.368	2.423	+1.82	-8.1	.	14.6
Nov. 23	14 39.04	-27 39.2	3.417	2.501	+1.75	-7.3	.	18.6
Dec. 3	14 56.52	-28 52.6	3.451	2.578	+1.68	-6.6	.	23.6
Dec. 13	15 13.27	-29 58.9	3.469	2.653	+1.59	-6.0	.	29.2
Dec. 23	15 29.21	-30 58.9	3.470	2.726	+1.50	-5.4	.	35.2
Jan. 2	15 44.21	-31 52.9	3.455	2.798	+1.39	-4.9	.	41.7
Jan. 12	15 58.16	-32 41.5	3.424	2.868	+1.27	-4.4	.	48.5
Jan. 22	16 10.89	-33 25.5	3.379	2.937	+1.13	-4.0	.	55.6
Feb. 1	16 22.21	-34 05.4	3.320	3.005	+0.97	-3.6	.	63.1
Feb. 11	16 31.93	-34 41.8	3.249	3.071	+0.79	-3.3	.	70.9
Feb. 21	16 39.81	-35 15.2	3.169	3.135	+0.58	-3.1	.	79.0
Mar. 3	16 45.60	-35 45.9	3.083	3.198	+0.35	-2.8	.	87.6
Mar. 13	16 49.07	-36 13.6	2.993	3.260	+0.09	-2.4	.	96.6
Mar. 23	16 49.98	-36 37.5	2.905	3.320	-0.18	-1.9	.	106.0

Comet 334P/NEAT

Epoch = 2017 July 26.0 TT
T = 2017 May 5.44947 TT
Peri. = 80.55351 e = 0.3601011
Node = 92.62691 2000.0 a = 6.5395219 AU
Incl. = 19.05360 n = 0.05893660
q = 4.1846329 AU P = 16.72 years

m1 = 5.4 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 50.63	+22 35.9	3.698	4.227	+0.17	+4.9	19.2	116.3
Jan. 17	11 52.37	+23 25.0	3.573	4.220	+0.01	+5.6	19.1	125.4
Jan. 27	11 52.50	+24 21.4	3.465	4.214	-0.15	+6.1	19.0	134.5
Feb. 6	11 51.02	+25 22.1	3.378	4.208	-0.29	+6.1	19.0	143.1
Feb. 16	11 48.08	+26 22.8	3.315	4.203	-0.41	+5.6	18.9	150.6
Feb. 26	11 43.94	+27 19.1	3.278	4.199	-0.50	+4.7	18.9	155.5
Mar. 8	11 38.99	+28 06.3	3.268	4.195	-0.53	+3.4	18.9	156.1
Mar. 18	11 33.74	+28 40.7	3.286	4.192	-0.50	+1.9	18.9	152.1
Mar. 28	11 28.70	+28 59.6	3.330	4.189	-0.43	+0.3	18.9	145.2
Apr. 7	11 24.37	+29 02.2	3.399	4.187	-0.32	-1.3	18.9	137.1
Apr. 17	11 21.16	+28 48.7	3.487	4.186	-0.19	-2.8	19.0	128.4
Apr. 27	11 19.30	+28 20.7	3.593	4.185	-0.04	-4.1	19.1	119.8
May 7	11 18.94	+27 40.0	3.712	4.185	+0.12	-5.1	19.1	111.2
May 17	11 20.10	+26 48.8	3.840	4.185	+0.26	-6.0	19.2	103.0
May 27	11 22.70	+25 48.9	3.975	4.186	+0.39	-6.7	19.3	94.9
June 6	11 26.64	+24 42.1	4.113	4.188	+0.51	-7.2	19.4	87.2
June 16	11 31.78	+23 30.1	4.250	4.190	+0.62	-7.6	19.4	79.7
June 26	11 37.97	+22 13.9	4.385	4.193	+0.71	-7.9	19.5	72.5
July 6	11 45.07	+20 54.6	4.516	4.196	+0.79	-8.1	19.6	65.4
July 16	11 52.96	+19 33.2	4.639	4.200	+0.85	-8.3	19.6	58.6
July 26	12 01.51	+18 10.4	4.754	4.205	+0.91	-8.4	19.7	51.9
Aug. 5	12 10.62	+16 46.8	4.859	4.210	+0.96	-8.4	19.8	45.5
Aug. 15	12 20.20	+15 23.2	4.952	4.216	+1.00	-8.3	19.8	39.2
Aug. 25	12 30.16	+14 00.1	5.033	4.222	+1.03	-8.2	19.9	33.1
Sept. 4	12 40.44	+12 38.2	5.099	4.229	+1.05	-8.0	19.9	27.3
Sept.14	12 50.97	+11 18.0	5.152	4.237	+1.07	-7.8	19.9	22.1
Sept.24	13 01.68	+10 00.1	5.189	4.245	+1.08	-7.5	20.0	17.8
Oct. 4	13 12.51	+08 45.1	5.210	4.253	+1.09	-7.1	20.0	15.4
Oct. 14	13 23.40	+07 33.6	5.214	4.263	+1.09	-6.7	20.0	15.7
Oct. 24	13 34.29	+06 26.2	5.202	4.272	+1.08	-6.3	20.0	18.7
Nov. 3	13 45.11	+05 23.5	5.174	4.283	+1.07	-5.7	20.0	23.5
Nov. 13	13 55.78	+04 26.1	5.130	4.293	+1.04	-5.2	20.0	29.3
Nov. 23	14 06.23	+03 34.5	5.069	4.305	+1.01	-4.5	20.0	35.6
Dec. 3	14 16.35	+02 49.2	4.994	4.317	+0.97	-3.8	20.0	42.4
Dec. 13	14 26.06	+02 10.8	4.904	4.329	+0.92	-3.1	20.0	49.4
Dec. 23	14 35.23	+01 39.6	4.803	4.342	+0.85	-2.4	20.0	56.8
Jan. 2	14 43.74	+01 16.0	4.690	4.355	+0.77	-1.6	19.9	64.3
Jan. 12	14 51.47	+01 00.2	4.569	4.369	+0.68	-0.8	19.9	72.2
Jan. 22	14 58.27	+00 52.1	4.441	4.383	+0.57	0.0	19.9	80.3
Feb. 1	15 03.98	+00 51.8	4.310	4.398	+0.45	+0.7	19.8	88.6
Feb. 11	15 08.49	+00 58.7	4.179	4.413	+0.32	+1.4	19.8	97.2
Feb. 21	15 11.65	+01 12.2	4.052	4.429	+0.17	+1.9	19.7	106.1
Mar. 3	15 13.37	+01 31.3	3.932	4.445	+0.02	+2.3	19.7	115.1
Mar. 13	15 13.60	+01 54.5	3.824	4.462	-0.13	+2.5	19.7	124.4
Mar. 23	15 12.33	+02 19.9	3.732	4.479	-0.27	+2.5	19.7	133.7

Comet C/2015 ER61 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 May 9.94661 TT
Peri. = 68.19889
Node = 235.21702 2000.0
Incl. = 6.34908
q = 1.0421385 AU
e = 0.9973280

m1 = 7.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	15 20.36	-20 36.0	2.590	2.157	+2.45	-7.0	13.0	53.6
Jan. 17	15 44.90	-21 46.4	2.382	2.039	+2.71	-6.0	12.6	57.9
Jan. 27	16 11.97	-22 46.5	2.178	1.920	+3.01	-4.5	12.1	61.8
Feb. 6	16 42.05	-23 31.3	1.982	1.802	+3.36	-2.2	11.6	65.0
Feb. 16	17 15.66	-23 53.6	1.797	1.685	+3.76	+1.0	11.1	67.4
Feb. 26	17 53.26	-23 43.6	1.628	1.571	+4.18	+5.4	10.6	68.9
Mar. 8	18 35.05	-22 49.3	1.479	1.461	+4.57	+11.1	10.1	69.3
Mar. 18	19 20.80	-20 57.8	1.355	1.357	+4.88	+17.7	9.6	68.5
Mar. 28	20 09.58	-18 00.4	1.262	1.261	+5.02	+24.2	9.1	66.6
Apr. 7	20 59.80	-13 58.4	1.203	1.178	+4.98	+29.1	8.7	63.8
Apr. 17	21 49.61	-09 07.4	1.179	1.111	+4.78	+31.3	8.4	60.5
Apr. 27	22 37.42	-03 53.9	1.188	1.065	+4.48	+30.8	8.2	57.3
May 7	23 22.20	+01 14.0	1.223	1.043	+4.13	+28.2	8.2	54.7
May 17	00 03.54	+05 55.7	1.276	1.049	+3.78	+24.5	8.3	53.0
May 27	00 41.37	+10 00.3	1.341	1.081	+3.44	+20.4	8.6	52.4
June 6	01 15.72	+13 24.7	1.409	1.136	+3.10	+16.6	8.9	52.9
June 16	01 46.73	+16 10.7	1.475	1.210	+2.77	+13.2	9.3	54.4
June 26	02 14.48	+18 22.2	1.535	1.299	+2.45	+10.2	9.7	56.9
July 6	02 39.01	+20 04.1	1.586	1.398	+2.14	+7.7	10.1	60.4
July 16	03 00.39	+21 20.9	1.626	1.505	+1.82	+5.6	10.4	64.7
July 26	03 18.60	+22 16.7	1.655	1.617	+1.50	+3.8	10.8	69.9
Aug. 5	03 33.57	+22 55.0	1.672	1.733	+1.16	+2.3	11.1	76.0
Aug. 15	03 45.22	+23 18.4	1.680	1.850	+0.82	+1.1	11.4	82.8
Aug. 25	03 53.40	+23 28.9	1.679	1.968	+0.46	-0.1	11.7	90.6
Sept. 4	03 57.96	+23 27.6	1.673	2.087	+0.09	-1.3	11.9	99.2
Sept. 14	03 58.85	+23 15.0	1.666	2.206	-0.28	-2.4	12.1	108.8
Sept. 24	03 56.08	+22 51.1	1.664	2.324	-0.61	-3.5	12.4	119.2
Oct. 4	03 49.94	+22 15.7	1.671	2.442	-0.89	-4.6	12.6	130.5
Oct. 14	03 41.05	+21 29.2	1.695	2.560	-1.08	-5.6	12.8	142.6
Oct. 24	03 30.30	+20 33.5	1.740	2.676	-1.14	-6.1	13.1	155.2
Nov. 3	03 18.86	+19 32.2	1.813	2.791	-1.10	-6.2	13.4	168.0
Nov. 13	03 07.91	+18 30.3	1.916	2.906	-0.95	-5.7	13.6	178.8
Nov. 23	02 58.39	+17 33.1	2.050	3.019	-0.74	-4.8	14.0	166.6
Dec. 3	02 50.95	+16 44.9	2.213	3.132	-0.51	-3.7	14.3	154.5
Dec. 13	02 45.85	+16 08.1	2.402	3.243	-0.28	-2.4	14.6	143.0
Dec. 23	02 43.10	+15 43.6	2.614	3.354	-0.06	-1.3	14.9	132.1
Jan. 2	02 42.55	+15 31.0	2.844	3.463	+0.14	-0.2	15.3	121.7
Jan. 12	02 43.94	+15 28.8	3.087	3.572	+0.31	+0.7	15.6	111.8
Jan. 22	02 47.00	+15 35.6	3.340	3.679	+0.45	+1.4	15.9	102.4
Feb. 1	02 51.49	+15 49.4	3.598	3.786	+0.56	+1.9	16.2	93.3
Feb. 11	02 57.14	+16 08.7	3.858	3.891	+0.66	+2.3	16.4	84.6
Feb. 21	03 03.75	+16 32.0	4.116	3.996	+0.74	+2.6	16.7	76.1
Mar. 3	03 11.14	+16 58.0	4.369	4.100	+0.80	+2.7	16.9	67.9
Mar. 13	03 19.14	+17 25.5	4.613	4.203	+0.85	+2.8	17.2	59.9
Mar. 23	03 27.62	+17 53.5	4.847	4.305	+0.88	+2.8	17.4	52.0

Comet C/2017 A1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 May 17.12985 TT
Peri. = 2.04134
Node = 121.04987 2000.0
Incl. = 49.80980
q = 2.2910623 AU
e = 0.9721601

m1 = 9.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	05 18.91	-23 14.6	1.999	2.704	-0.68	+21.3	17.8	126.7
Jan. 17	05 12.10	-19 41.5	1.979	2.648	-0.44	+24.4	17.6	123.1
Jan. 27	05 07.67	-15 37.3	1.982	2.596	-0.17	+26.4	17.5	118.1
Feb. 6	05 05.99	-11 13.4	2.007	2.546	+0.12	+27.2	17.4	112.0
Feb. 16	05 07.18	-06 41.7	2.051	2.501	+0.40	+27.0	17.3	105.3
Feb. 26	05 11.16	-02 11.9	2.112	2.459	+0.66	+26.0	17.3	98.3
Mar. 8	05 17.76	+02 08.3	2.187	2.421	+0.90	+24.5	17.3	91.2
Mar. 18	05 26.74	+06 13.7	2.272	2.387	+1.11	+22.7	17.3	84.3
Mar. 28	05 37.87	+10 01.1	2.364	2.359	+1.31	+20.8	17.3	77.5
Apr. 7	05 50.95	+13 28.9	2.461	2.335	+1.48	+18.7	17.3	70.9
Apr. 17	06 05.75	+16 36.4	2.561	2.316	+1.63	+16.7	17.3	64.6
Apr. 27	06 22.09	+19 23.6	2.660	2.302	+1.77	+14.7	17.4	58.6
May 7	06 39.79	+21 50.8	2.758	2.294	+1.89	+12.8	17.4	52.8
May 17	06 58.69	+23 58.6	2.852	2.291	+1.99	+10.9	17.5	47.3
May 27	07 18.63	+25 47.6	2.942	2.294	+2.08	+9.1	17.6	42.1
June 6	07 39.45	+27 18.6	3.027	2.302	+2.15	+7.4	17.6	37.2
June 16	08 01.00	+28 32.5	3.106	2.315	+2.21	+5.8	17.7	32.6
June 26	08 23.14	+29 30.4	3.178	2.334	+2.26	+4.3	17.8	28.4
July 6	08 45.70	+30 13.2	3.243	2.358	+2.29	+2.9	17.9	24.7
July 16	09 08.55	+30 42.3	3.301	2.387	+2.30	+1.7	18.1	21.7
July 26	09 31.57	+30 59.0	3.353	2.420	+2.31	+0.6	18.2	19.6
Aug. 5	09 54.63	+31 04.9	3.396	2.458	+2.30	-0.3	18.3	18.7
Aug. 15	10 17.62	+31 01.5	3.434	2.499	+2.28	-1.1	18.4	19.2
Aug. 25	10 40.46	+30 50.8	3.464	2.545	+2.26	-1.6	18.6	20.8
Sept. 4	11 03.05	+30 34.5	3.488	2.594	+2.23	-2.0	18.7	23.5
Sept. 14	11 25.34	+30 14.7	3.506	2.647	+2.19	-2.1	18.9	26.7
Sept. 24	11 47.27	+29 53.3	3.518	2.702	+2.15	-2.1	19.0	30.5
Oct. 4	12 08.78	+29 32.4	3.525	2.760	+2.10	-1.8	19.1	34.6
Oct. 14	12 29.81	+29 13.9	3.527	2.821	+2.05	-1.4	19.3	38.9
Oct. 24	12 50.32	+28 59.9	3.524	2.884	+1.99	-0.8	19.4	43.4
Nov. 3	13 10.25	+28 52.2	3.517	2.949	+1.93	0.0	19.6	48.1
Nov. 13	13 29.52	+28 52.6	3.506	3.015	+1.85	+1.0	19.7	53.0
Nov. 23	13 48.05	+29 02.6	3.492	3.084	+1.77	+2.1	19.9	57.9
Dec. 3	14 05.75	+29 23.6	3.476	3.153	+1.67	+3.3	20.0	63.0
Dec. 13	14 22.49	+29 56.5	3.459	3.224	+1.57	+4.6	20.1	68.1
Dec. 23	14 38.16	+30 42.0	3.441	3.297	+1.44	+5.8	20.3	73.4
Jan. 2	14 52.59	+31 40.3	3.423	3.370	+1.30	+7.1	20.4	78.6
Jan. 12	15 05.63	+32 51.0	3.407	3.444	+1.15	+8.2	20.5	83.9
Jan. 22	15 17.08	+34 13.3	3.394	3.519	+0.97	+9.2	20.6	89.1
Feb. 1	15 26.74	+35 45.3	3.385	3.594	+0.77	+9.9	20.8	94.2
Feb. 11	15 34.44	+37 24.7	3.383	3.671	+0.55	+10.4	20.9	99.1
Feb. 21	15 39.98	+39 08.4	3.387	3.747	+0.32	+10.4	21.1	103.7
Mar. 3	15 43.19	+40 52.1	3.401	3.824	+0.08	+9.9	21.2	107.9
Mar. 13	15 44.02	+42 31.5	3.425	3.902	-0.16	+9.0	21.3	111.6
Mar. 23	15 42.44	+44 01.4	3.461	3.980	-0.38	+7.5	21.5	114.6

Comet C/2015 T2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 May 20.34378 TT
Peri. = 30.75461
Node = 51.06107 2000.0
Incl. = 124.54781
q = 6.9354008 AU
e = 1.0002076

m1 = 7.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	01 27.21	+28 10.5	6.695	6.990	-0.33	-0.8	19.6	103.5
Jan. 17	01 23.93	+28 02.6	6.860	6.982	-0.21	-0.2	19.6	93.1
Jan. 27	01 21.85	+28 00.4	7.027	6.975	-0.10	+0.4	19.7	83.0
Feb. 6	01 20.85	+28 04.4	7.190	6.968	-0.01	+1.0	19.7	73.2
Feb. 16	01 20.78	+28 14.7	7.343	6.962	+0.07	+1.7	19.8	63.7
Feb. 26	01 21.52	+28 31.3	7.483	6.957	+0.14	+2.3	19.8	54.6
Mar. 8	01 22.90	+28 53.9	7.605	6.952	+0.19	+2.8	19.8	46.0
Mar. 18	01 24.80	+29 22.3	7.706	6.948	+0.23	+3.4	19.9	37.9
Mar. 28	01 27.09	+29 55.9	7.785	6.944	+0.25	+3.9	19.9	30.6
Apr. 7	01 29.62	+30 34.5	7.838	6.941	+0.27	+4.3	19.9	24.6
Apr. 17	01 32.27	+31 17.7	7.867	6.939	+0.27	+4.7	19.9	21.0
Apr. 27	01 34.93	+32 05.0	7.869	6.937	+0.25	+5.1	19.9	20.8
May 7	01 37.46	+32 56.2	7.846	6.936	+0.23	+5.5	19.9	24.0
May 17	01 39.73	+33 50.8	7.798	6.935	+0.19	+5.8	19.9	29.4
May 27	01 41.62	+34 48.5	7.727	6.936	+0.14	+6.0	19.9	36.2
June 6	01 42.99	+35 48.9	7.635	6.936	+0.07	+6.3	19.8	43.7
June 16	01 43.67	+36 51.5	7.524	6.938	-0.01	+6.4	19.8	51.5
June 26	01 43.53	+37 55.8	7.397	6.940	-0.12	+6.5	19.8	59.7
July 6	01 42.37	+39 00.9	7.258	6.942	-0.23	+6.5	19.7	68.1
July 16	01 40.05	+40 05.9	7.110	6.945	-0.37	+6.4	19.7	76.6
July 26	01 36.40	+41 09.4	6.958	6.949	-0.51	+6.0	19.6	85.3
Aug. 5	01 31.25	+42 09.7	6.807	6.953	-0.67	+5.5	19.6	94.1
Aug. 15	01 24.52	+43 04.7	6.662	6.958	-0.83	+4.7	19.5	102.9
Aug. 25	01 16.18	+43 52.0	6.529	6.964	-0.99	+3.7	19.5	111.6
Sept. 4	01 06.29	+44 28.8	6.411	6.970	-1.12	+2.4	19.5	120.0
Sept. 14	00 55.08	+44 52.7	6.315	6.977	-1.22	+0.9	19.4	127.8
Sept. 24	00 42.89	+45 01.4	6.245	6.985	-1.27	-0.7	19.4	134.5
Oct. 4	00 30.21	+44 54.0	6.204	6.993	-1.26	-2.3	19.4	139.3
Oct. 14	00 17.61	+44 30.7	6.194	7.001	-1.20	-3.8	19.4	141.4
Oct. 24	00 05.63	+43 53.1	6.217	7.010	-1.09	-4.9	19.4	140.3
Nov. 3	23 54.74	+43 04.2	6.271	7.020	-0.95	-5.6	19.5	136.2
Nov. 13	23 45.28	+42 07.8	6.354	7.031	-0.78	-6.0	19.5	130.0
Nov. 23	23 37.43	+41 08.0	6.462	7.042	-0.62	-5.9	19.5	122.4
Dec. 3	23 31.26	+40 08.7	6.592	7.053	-0.46	-5.6	19.6	114.2
Dec. 13	23 26.70	+39 13.1	6.738	7.065	-0.31	-4.9	19.6	105.5
Dec. 23	23 23.63	+38 23.9	6.893	7.078	-0.17	-4.1	19.7	96.8
Jan. 2	23 21.89	+37 42.8	7.054	7.091	-0.06	-3.2	19.7	88.2
Jan. 12	23 21.28	+37 11.0	7.214	7.105	+0.04	-2.2	19.8	79.7
Jan. 22	23 21.64	+36 49.1	7.368	7.119	+0.11	-1.2	19.9	71.6
Feb. 1	23 22.77	+36 37.2	7.513	7.134	+0.17	-0.2	19.9	63.9
Feb. 11	23 24.49	+36 35.1	7.644	7.150	+0.22	+0.7	20.0	56.7
Feb. 21	23 26.65	+36 42.5	7.757	7.166	+0.24	+1.6	20.0	50.3
Mar. 3	23 29.09	+36 58.9	7.852	7.182	+0.26	+2.5	20.0	44.8
Mar. 13	23 31.66	+37 23.7	7.926	7.199	+0.26	+3.3	20.1	40.5
Mar. 23	23 34.23	+37 56.3	7.977	7.217	+0.24	+4.0	20.1	37.9

Comet 229P/Gibbs

Epoch = 2017 July 26.0 TT
T = 2017 May 20.67737 TT
Peri. = 224.13306 e = 0.3761151
Node = 157.90687 2000.0 a = 3.9362610 AU
Incl. = 26.06684 n = 0.12620549
q = 2.4557738 AU P = 7.81 years

m1 = 5.2 + 5 log(Delta) + 30.0 log(r(t-150))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	22 05.06	-13 52.5	3.261	2.611	+1.71	+4.0	22.3	41.8
Jan. 17	22 22.15	-13 12.7	3.323	2.590	+1.75	+4.8	22.2	35.8
Jan. 27	22 39.69	-12 24.9	3.375	2.570	+1.79	+5.5	22.1	30.0
Feb. 6	22 57.59	-11 30.2	3.416	2.551	+1.82	+6.0	21.9	24.4
Feb. 16	23 15.77	-10 29.9	3.447	2.534	+1.84	+6.5	21.8	19.2
Feb. 26	23 34.20	-09 25.4	3.466	2.519	+1.86	+6.7	21.7	14.3
Mar. 8	23 52.83	-08 17.9	3.475	2.505	+1.88	+6.9	21.6	10.3
Mar. 18	00 11.63	-07 08.9	3.474	2.493	+1.89	+6.9	21.4	8.1
Mar. 28	00 30.57	-05 59.6	3.463	2.482	+1.91	+6.8	21.3	8.9
Apr. 7	00 49.63	-04 51.6	3.443	2.473	+1.92	+6.5	21.1	12.1
Apr. 17	01 08.79	-03 46.1	3.415	2.466	+1.92	+6.2	21.0	16.1
Apr. 27	01 28.03	-02 44.5	3.378	2.461	+1.93	+5.6	20.8	20.5
May 7	01 47.32	-01 48.1	3.334	2.458	+1.93	+5.0	20.7	25.1
May 17	02 06.60	-00 58.4	3.283	2.456	+1.92	+4.2	20.5	29.7
May 27	02 25.85	-00 16.3	3.226	2.456	+1.91	+3.3	20.4	34.3
June 6	02 44.99	+00 16.7	3.164	2.458	+1.90	+2.3	20.2	38.9
June 16	03 03.94	+00 39.8	3.096	2.462	+1.87	+1.2	20.1	43.6
June 26	03 22.63	+00 51.9	3.024	2.468	+1.83	0.0	19.9	48.3
July 6	03 40.92	+00 52.3	2.949	2.475	+1.78	-1.2	19.8	53.1
July 16	03 58.71	+00 40.4	2.869	2.485	+1.71	-2.5	19.6	58.0
July 26	04 15.84	+00 15.8	2.787	2.496	+1.63	-3.7	19.5	63.0
Aug. 5	04 32.15	-00 21.7	2.703	2.508	+1.53	-5.0	19.3	68.1
Aug. 15	04 47.46	-01 11.9	2.616	2.523	+1.41	-6.3	19.2	73.5
Aug. 25	05 01.57	-02 14.4	2.529	2.539	+1.27	-7.4	19.1	79.0
Sept. 4	05 14.26	-03 28.4	2.442	2.556	+1.10	-8.4	18.9	84.8
Sept. 14	05 25.29	-04 52.4	2.356	2.575	+0.91	-9.2	18.8	90.8
Sept. 24	05 34.43	-06 24.7	2.272	2.595	+0.70	-9.8	18.7	97.1
Oct. 4	05 41.40	-08 02.4	2.193	2.617	+0.46	-10.0	18.6	103.7
Oct. 14	05 46.00	-09 41.9	2.119	2.640	+0.20	-9.7	18.5	110.5
Oct. 24	05 48.03	-11 18.6	2.055	2.664	-0.06	-8.8	18.5	117.4
Nov. 3	05 47.42	-12 46.3	2.002	2.689	-0.31	-7.2	18.4	124.3
Nov. 13	05 44.30	-13 58.5	1.963	2.715	-0.53	-5.0	18.4	130.8
Nov. 23	05 38.99	-14 48.4	1.941	2.742	-0.69	-2.2	18.4	136.4
Dec. 3	05 32.13	-15 10.0	1.939	2.771	-0.76	+1.0	18.4	140.4
Dec. 13	05 24.55	-15 00.3	1.958	2.800	-0.74	+4.1	18.5	141.9
Dec. 23	05 17.16	-14 19.0	2.000	2.829	-0.63	+6.9	18.6	140.5
Jan. 2	05 10.85	-13 09.5	2.064	2.860	-0.46	+9.2	18.8	136.6
Jan. 12	05 06.25	-11 37.7	2.149	2.891	-0.25	+10.7	18.9	131.0
Jan. 22	05 03.76	-09 50.5	2.253	2.923	-0.02	+11.6	19.1	124.3
Feb. 1	05 03.54	-07 54.7	2.373	2.955	+0.20	+11.9	19.3	117.1
Feb. 11	05 05.52	-05 56.0	2.507	2.988	+0.40	+11.7	19.5	109.7
Feb. 21	05 09.56	-03 59.1	2.651	3.021	+0.59	+11.2	19.7	102.3
Mar. 3	05 15.44	-02 07.1	2.803	3.054	+0.75	+10.5	20.0	95.1
Mar. 13	05 22.90	-00 22.5	2.960	3.088	+0.88	+9.6	20.2	88.0
Mar. 23	05 31.73	+01 13.2	3.119	3.123	+1.00	+8.6	20.4	81.0

Comet C/2016 E1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 June 1.43132 TT
Peri. = 47.30721
Node = 233.03542 2000.0
Incl. = 131.89010
q = 8.1769865 AU
e = 1.0026971

m1 = 6.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	14 37.79	+13 09.6	8.406	8.224	+0.06	+5.8	20.2	76.0
Jan. 17	14 38.43	+14 07.2	8.240	8.218	-0.01	+6.5	20.1	85.3
Jan. 27	14 38.29	+15 12.1	8.074	8.212	-0.10	+7.2	20.1	94.6
Feb. 6	14 37.27	+16 23.7	7.913	8.207	-0.20	+7.7	20.0	104.0
Feb. 16	14 35.30	+17 41.0	7.763	8.202	-0.29	+8.1	20.0	113.2
Feb. 26	14 32.36	+19 02.5	7.629	8.197	-0.39	+8.4	19.9	122.0
Mar. 8	14 28.43	+20 26.0	7.517	8.193	-0.48	+8.3	19.9	130.3
Mar. 18	14 23.59	+21 49.4	7.430	8.190	-0.57	+8.1	19.9	137.3
Mar. 28	14 17.93	+23 09.9	7.373	8.186	-0.63	+7.5	19.9	142.4
Apr. 7	14 11.63	+24 25.0	7.347	8.184	-0.67	+6.7	19.9	144.7
Apr. 17	14 04.89	+25 32.5	7.352	8.182	-0.69	+5.8	19.9	143.6
Apr. 27	13 57.95	+26 30.4	7.389	8.180	-0.69	+4.7	19.9	139.5
May 7	13 51.10	+27 17.6	7.454	8.178	-0.65	+3.6	19.9	133.3
May 17	13 44.57	+27 53.8	7.545	8.178	-0.60	+2.5	19.9	125.8
May 27	13 38.57	+28 19.1	7.657	8.177	-0.53	+1.5	19.9	117.7
June 6	13 33.30	+28 34.3	7.786	8.177	-0.44	+0.6	20.0	109.3
June 16	13 28.85	+28 40.8	7.927	8.177	-0.35	-0.1	20.0	100.7
June 26	13 25.32	+28 39.8	8.075	8.178	-0.26	-0.7	20.1	92.3
July 6	13 22.71	+28 33.0	8.224	8.180	-0.17	-1.1	20.1	83.9
July 16	13 21.01	+28 21.8	8.371	8.181	-0.08	-1.4	20.1	75.8
July 26	13 20.19	+28 07.7	8.511	8.184	0.00	-1.6	20.2	67.9
Aug. 5	13 20.18	+27 52.0	8.639	8.186	+0.07	-1.6	20.2	60.4
Aug. 15	13 20.89	+27 35.9	8.754	8.189	+0.14	-1.5	20.2	53.3
Aug. 25	13 22.27	+27 20.6	8.851	8.193	+0.19	-1.4	20.3	46.9
Sept. 4	13 24.20	+27 07.1	8.928	8.197	+0.24	-1.1	20.3	41.3
Sept.14	13 26.60	+26 56.4	8.984	8.201	+0.28	-0.7	20.3	36.9
Sept.24	13 29.39	+26 49.3	9.017	8.206	+0.31	-0.2	20.3	34.2
Oct. 4	13 32.47	+26 46.8	9.026	8.211	+0.33	+0.3	20.3	33.6
Oct. 14	13 35.73	+26 49.7	9.012	8.217	+0.34	+0.9	20.3	35.2
Oct. 24	13 39.10	+26 58.7	8.975	8.223	+0.34	+1.6	20.3	38.8
Nov. 3	13 42.46	+27 14.8	8.915	8.230	+0.32	+2.4	20.3	43.9
Nov. 13	13 45.71	+27 38.5	8.836	8.237	+0.30	+3.2	20.3	50.1
Nov. 23	13 48.74	+28 10.5	8.738	8.244	+0.27	+4.1	20.3	57.1
Dec. 3	13 51.43	+28 51.2	8.626	8.252	+0.22	+5.0	20.2	64.6
Dec. 13	13 53.66	+29 41.1	8.503	8.260	+0.16	+5.9	20.2	72.5
Dec. 23	13 55.31	+30 40.2	8.372	8.269	+0.09	+6.8	20.2	80.6
Jan. 2	13 56.23	+31 48.2	8.240	8.278	+0.01	+7.6	20.2	88.8
Jan. 12	13 56.30	+33 04.4	8.110	8.288	-0.09	+8.3	20.1	97.0
Jan. 22	13 55.40	+34 27.9	7.987	8.298	-0.20	+8.9	20.1	105.1
Feb. 1	13 53.41	+35 56.8	7.878	8.308	-0.31	+9.2	20.1	112.7
Feb. 11	13 50.26	+37 28.9	7.786	8.319	-0.44	+9.3	20.1	119.7
Feb. 21	13 45.91	+39 01.6	7.715	8.330	-0.55	+9.0	20.0	125.6
Mar. 3	13 40.37	+40 31.7	7.669	8.342	-0.66	+8.4	20.0	130.1
Mar. 13	13 33.74	+41 56.1	7.651	8.354	-0.75	+7.6	20.0	132.5
Mar. 23	13 26.19	+43 11.9	7.660	8.367	-0.82	+6.5	20.0	132.6

Comet 234P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2017 June 1.63464 TT
Peri. = 358.08189 e = 0.2532329
Node = 179.72321 2000.0 a = 3.8135429 AU
Incl. = 11.52497 n = 0.13234609
q = 2.8478284 AU P = 7.45 years

m1 = 10.2 + 5 log(Delta) + 15.0 log(r(t-90))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	10 39.39	-00 37.7	2.270	2.942	-0.03	+0.6	19.3	124.6
Jan. 17	10 39.09	-00 31.4	2.153	2.930	-0.23	+2.5	19.2	134.7
Jan. 27	10 36.75	-00 06.8	2.055	2.919	-0.42	+4.3	19.0	145.3
Feb. 6	10 32.59	+00 36.4	1.978	2.908	-0.55	+6.0	18.9	156.3
Feb. 16	10 27.11	+01 35.9	1.927	2.898	-0.61	+7.2	18.8	167.0
Feb. 26	10 20.97	+02 47.6	1.904	2.889	-0.60	+7.8	18.8	172.9
Mar. 8	10 14.98	+04 05.3	1.910	2.881	-0.50	+7.7	18.7	165.4
Mar. 18	10 09.96	+05 22.1	1.943	2.874	-0.34	+7.0	18.7	154.6
Mar. 28	10 06.53	+06 32.2	2.001	2.868	-0.14	+5.9	18.8	143.8
Apr. 7	10 05.13	+07 30.8	2.081	2.862	+0.08	+4.5	18.8	133.4
Apr. 17	10 05.93	+08 15.4	2.177	2.857	+0.30	+2.9	18.9	123.6
Apr. 27	10 08.89	+08 44.8	2.287	2.854	+0.50	+1.4	19.0	114.4
May 7	10 13.89	+08 59.2	2.407	2.851	+0.68	0.0	19.1	105.7
May 17	10 20.71	+08 59.3	2.532	2.849	+0.84	-1.3	19.1	97.7
May 27	10 29.08	+08 46.2	2.661	2.848	+0.97	-2.5	19.2	90.1
June 6	10 38.80	+08 21.0	2.790	2.848	+1.08	-3.6	19.3	82.9
June 16	10 49.64	+07 45.2	2.918	2.849	+1.18	-4.5	19.4	76.0
June 26	11 01.40	+07 00.0	3.044	2.851	+1.25	-5.3	19.5	69.5
July 6	11 13.93	+06 06.6	3.165	2.853	+1.32	-6.0	19.6	63.1
July 16	11 27.09	+05 06.3	3.280	2.857	+1.37	-6.6	19.6	57.0
July 26	11 40.79	+04 00.1	3.389	2.861	+1.41	-7.1	19.7	51.1
Aug. 5	11 54.92	+02 49.2	3.490	2.867	+1.45	-7.5	19.7	45.2
Aug. 15	12 09.42	+01 34.7	3.582	2.873	+1.48	-7.7	19.8	39.5
Aug. 25	12 24.24	+00 17.6	3.665	2.880	+1.51	-7.9	19.8	33.8
Sept. 4	12 39.33	-01 01.1	3.738	2.888	+1.53	-7.9	19.9	28.2
Sept.14	12 54.65	-02 20.2	3.800	2.897	+1.55	-7.9	19.9	22.6
Sept.24	13 10.17	-03 38.8	3.851	2.907	+1.57	-7.7	20.0	17.0
Oct. 4	13 25.84	-04 56.0	3.890	2.917	+1.58	-7.5	20.0	11.6
Oct. 14	13 41.65	-06 10.8	3.917	2.928	+1.59	-7.1	20.0	6.6
Oct. 24	13 57.55	-07 22.2	3.931	2.940	+1.59	-6.7	20.0	4.4
Nov. 3	14 13.49	-08 29.4	3.932	2.953	+1.59	-6.2	20.0	8.0
Nov. 13	14 29.43	-09 31.4	3.921	2.967	+1.59	-5.6	20.0	13.4
Nov. 23	14 45.31	-10 27.5	3.896	2.981	+1.57	-4.9	20.0	19.2
Dec. 3	15 01.05	-11 16.9	3.857	2.996	+1.55	-4.2	20.0	25.3
Dec. 13	15 16.56	-11 59.1	3.806	3.011	+1.52	-3.4	20.0	31.5
Dec. 23	15 31.76	-12 33.4	3.743	3.027	+1.47	-2.6	20.0	37.8
Jan. 2	15 46.51	-12 59.4	3.668	3.044	+1.42	-1.7	20.0	44.4
Jan. 12	16 00.69	-13 16.9	3.582	3.061	+1.35	-0.9	20.0	51.0
Jan. 22	16 14.16	-13 25.7	3.486	3.078	+1.26	0.0	19.9	57.9
Feb. 1	16 26.74	-13 25.7	3.382	3.097	+1.15	+0.8	19.9	65.0
Feb. 11	16 38.29	-13 17.2	3.271	3.115	+1.03	+1.7	19.9	72.3
Feb. 21	16 48.59	-13 00.6	3.154	3.134	+0.89	+2.4	19.8	79.8
Mar. 3	16 57.46	-12 36.2	3.035	3.154	+0.72	+3.1	19.8	87.6
Mar. 13	17 04.71	-12 05.0	2.916	3.174	+0.54	+3.7	19.7	95.8
Mar. 23	17 10.12	-11 27.8	2.799	3.194	+0.34	+4.2	19.7	104.2

Comet 47P/Ashbrook-Jackson

Epoch = 2017 July 26.0 TT
T = 2017 June 10.15824 TT
Peri. = 357.66535 e = 0.3170985
Node = 356.97440 2000.0 a = 4.1268344 AU
Incl. = 13.03009 n = 0.11756513
q = 2.8182214 AU P = 8.38 years

m1 = 3.8 + 5 log(Delta) + 22.5 log(r(t+20))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	21 03.29	-23 15.9	3.808	2.952	+1.62	+9.5	17.2	25.6
Jan. 17	21 19.51	-21 41.3	3.844	2.936	+1.62	+9.9	17.1	19.6
Jan. 27	21 35.76	-20 02.1	3.867	2.921	+1.62	+10.3	17.1	13.8
Feb. 6	21 51.95	-18 18.6	3.878	2.906	+1.61	+10.7	17.1	8.4
Feb. 16	22 08.03	-16 31.5	3.876	2.893	+1.59	+11.0	17.0	4.8
Feb. 26	22 23.96	-14 41.1	3.862	2.881	+1.57	+11.3	17.0	6.6
Mar. 8	22 39.70	-12 48.2	3.836	2.870	+1.55	+11.5	17.0	11.4
Mar. 18	22 55.20	-10 53.3	3.797	2.859	+1.52	+11.6	16.9	16.8
Mar. 28	23 10.44	-08 57.1	3.748	2.850	+1.50	+11.7	16.9	22.4
Apr. 7	23 25.40	-07 00.4	3.687	2.842	+1.46	+11.7	16.8	28.0
Apr. 17	23 40.03	-05 03.7	3.616	2.835	+1.43	+11.6	16.7	33.6
Apr. 27	23 54.30	-03 07.7	3.536	2.830	+1.39	+11.5	16.7	39.3
May 7	00 08.17	-01 13.1	3.446	2.825	+1.34	+11.3	16.6	45.0
May 17	00 21.57	+00 39.6	3.349	2.822	+1.29	+11.0	16.5	50.9
May 27	00 34.46	+02 29.8	3.244	2.819	+1.23	+10.7	16.5	56.8
June 6	00 46.72	+04 16.9	3.133	2.818	+1.15	+10.4	16.4	62.8
June 16	00 58.27	+06 00.4	3.017	2.818	+1.07	+9.9	16.3	69.1
June 26	01 08.96	+07 39.9	2.896	2.820	+0.97	+9.5	16.3	75.5
July 6	01 18.63	+09 14.7	2.773	2.822	+0.85	+9.0	16.2	82.3
July 16	01 27.09	+10 44.4	2.649	2.826	+0.70	+8.4	16.1	89.3
July 26	01 34.11	+12 08.5	2.526	2.831	+0.53	+7.8	16.0	96.7
Aug. 5	01 39.45	+13 26.2	2.405	2.837	+0.34	+7.0	15.9	104.6
Aug. 15	01 42.87	+14 36.6	2.291	2.844	+0.12	+6.2	15.9	113.0
Aug. 25	01 44.12	+15 38.8	2.186	2.852	-0.11	+5.2	15.8	121.9
Sept. 4	01 43.05	+16 31.2	2.093	2.861	-0.34	+4.1	15.7	131.3
Sept. 14	01 39.66	+17 12.4	2.016	2.871	-0.55	+2.9	15.7	141.3
Sept. 24	01 34.14	+17 41.1	1.960	2.883	-0.71	+1.5	15.7	151.7
Oct. 4	01 26.99	+17 56.5	1.927	2.895	-0.80	+0.3	15.7	162.0
Oct. 14	01 18.96	+17 59.5	1.921	2.909	-0.80	-0.7	15.8	170.0
Oct. 24	01 10.95	+17 52.5	1.943	2.923	-0.71	-1.3	15.8	168.0
Nov. 3	01 03.87	+17 39.6	1.992	2.938	-0.54	-1.4	15.9	158.6
Nov. 13	00 58.46	+17 25.5	2.068	2.955	-0.33	-1.1	16.1	148.1
Nov. 23	00 55.17	+17 14.8	2.166	2.972	-0.09	-0.4	16.2	137.7
Dec. 3	00 54.23	+17 10.8	2.284	2.990	+0.14	+0.5	16.4	127.7
Dec. 13	00 55.60	+17 15.8	2.417	3.008	+0.35	+1.5	16.6	118.1
Dec. 23	00 59.15	+17 30.5	2.562	3.028	+0.55	+2.4	16.8	109.0
Jan. 2	01 04.66	+17 54.9	2.714	3.048	+0.72	+3.3	17.0	100.3
Jan. 12	01 11.87	+18 28.4	2.871	3.069	+0.87	+4.1	17.2	92.1
Jan. 22	01 20.57	+19 09.8	3.030	3.091	+1.00	+4.8	17.4	84.2
Feb. 1	01 30.54	+19 58.0	3.188	3.113	+1.10	+5.3	17.6	76.7
Feb. 11	01 41.59	+20 51.4	3.343	3.136	+1.20	+5.7	17.7	69.5
Feb. 21	01 53.57	+21 48.9	3.492	3.159	+1.28	+6.0	17.9	62.5
Mar. 3	02 06.33	+22 49.2	3.635	3.183	+1.34	+6.2	18.1	55.7
Mar. 13	02 19.77	+23 50.9	3.768	3.207	+1.40	+6.2	18.2	49.1
Mar. 23	02 33.79	+24 53.1	3.893	3.232	+1.45	+6.2	18.4	42.7

Comet C/2015 V2 (Johnson)

Epoch = 2017 July 26.0 TT
T = 2017 June 12.33972 TT
Peri. = 164.89645
Node = 69.84936 2000.0
Incl. = 49.87711
q = 1.6369820 AU
e = 1.0017455

m1 = 5.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	14 45.77	+44 02.6	2.391	2.587	+2.05	+0.8	11.6	90.1
Jan. 17	15 06.25	+44 10.1	2.251	2.495	+1.94	+1.6	11.3	92.5
Jan. 27	15 25.68	+44 25.8	2.116	2.406	+1.80	+2.4	11.0	94.7
Feb. 6	15 43.65	+44 49.4	1.987	2.318	+1.61	+3.0	10.7	96.6
Feb. 16	15 59.70	+45 19.5	1.862	2.233	+1.36	+3.5	10.4	98.5
Feb. 26	16 13.29	+45 54.9	1.740	2.150	+1.04	+3.7	10.1	100.3
Mar. 8	16 23.73	+46 32.3	1.620	2.071	+0.66	+3.5	9.8	102.2
Mar. 18	16 30.29	+47 06.9	1.502	1.995	+0.18	+2.4	9.5	104.2
Mar. 28	16 32.11	+47 31.4	1.385	1.925	-0.38	+0.2	9.2	106.6
Apr. 7	16 28.27	+47 33.2	1.269	1.860	-1.01	-4.0	8.8	109.4
Apr. 17	16 18.18	+46 53.7	1.157	1.801	-1.64	-10.8	8.5	112.8
Apr. 27	16 01.80	+45 06.1	1.051	1.750	-2.14	-21.0	8.1	116.6
May 7	15 40.42	+41 35.7	0.956	1.708	-2.36	-34.6	7.8	120.8
May 17	15 16.77	+35 49.8	0.878	1.675	-2.26	-49.5	7.6	124.7
May 27	14 54.21	+27 34.6	0.827	1.652	-1.86	-61.7	7.4	127.4
June 6	14 35.62	+17 17.3	0.811	1.639	-1.32	-66.9	7.3	127.4
June 16	14 22.45	+06 08.4	0.836	1.638	-0.75	-64.1	7.4	124.0
June 26	14 14.90	-04 33.0	0.901	1.647	-0.23	-56.4	7.5	118.3
July 6	14 12.60	-13 57.1	0.998	1.668	+0.23	-47.4	7.8	111.8
July 16	14 14.87	-21 51.1	1.119	1.698	+0.63	-39.3	8.1	105.2
July 26	14 21.14	-28 23.7	1.258	1.738	+0.98	-32.7	8.5	99.1
Aug. 5	14 30.95	-33 50.3	1.409	1.787	+1.30	-27.5	8.9	93.6
Aug. 15	14 43.94	-38 24.8	1.567	1.843	+1.60	-23.3	9.2	88.5
Aug. 25	14 59.89	-42 18.2	1.729	1.907	+1.88	-20.0	9.6	83.8
Sept. 4	15 18.66	-45 38.0	1.893	1.976	+2.14	-17.1	9.9	79.5
Sept. 14	15 40.10	-48 29.1	2.058	2.050	+2.40	-14.5	10.3	75.4
Sept. 24	16 04.11	-50 54.1	2.223	2.128	+2.64	-12.1	10.6	71.4
Oct. 4	16 30.52	-52 54.7	2.387	2.210	+2.85	-9.7	10.9	67.7
Oct. 14	16 59.05	-54 31.2	2.548	2.295	+3.03	-7.3	11.2	64.1
Oct. 24	17 29.35	-55 43.8	2.708	2.382	+3.16	-4.9	11.5	60.5
Nov. 3	18 00.94	-56 32.9	2.864	2.471	+3.23	-2.6	11.8	57.2
Nov. 13	18 33.22	-56 58.9	3.017	2.562	+3.24	-0.4	12.1	53.9
Nov. 23	19 05.60	-57 03.2	3.166	2.654	+3.19	+1.5	12.3	50.7
Dec. 3	19 37.50	-56 47.7	3.310	2.747	+3.09	+3.3	12.6	47.8
Dec. 13	20 08.44	-56 14.9	3.449	2.841	+2.96	+4.7	12.8	45.1
Dec. 23	20 38.08	-55 27.6	3.582	2.935	+2.81	+5.9	13.0	42.6
Jan. 2	21 06.23	-54 29.1	3.708	3.030	+2.66	+6.7	13.3	40.6
Jan. 12	21 32.79	-53 22.3	3.827	3.125	+2.50	+7.2	13.5	39.0
Jan. 22	21 57.79	-52 10.1	3.938	3.220	+2.35	+7.5	13.7	38.0
Feb. 1	22 21.27	-50 55.4	4.040	3.315	+2.21	+7.5	13.8	37.6
Feb. 11	22 43.34	-49 40.4	4.134	3.410	+2.08	+7.3	14.0	38.0
Feb. 21	23 04.10	-48 27.4	4.218	3.505	+1.96	+6.9	14.2	39.0
Mar. 3	23 23.66	-47 18.3	4.292	3.600	+1.84	+6.4	14.3	40.8
Mar. 13	23 42.09	-46 14.6	4.356	3.695	+1.74	+5.7	14.5	43.2
Mar. 23	23 59.50	-45 17.9	4.411	3.789	+1.64	+4.8	14.6	46.2

Comet P/1999 XN120 (Catalina) [Orbit-1]

Epoch = 2017 July 26.0 TT
T = 2017 June 12.50600 TT
Peri. = 162.03330 e = 0.2115584
Node = 285.29256 2000.0 a = 4.1819582 AU
Incl. = 5.02882 n = 0.11524830
q = 3.2972298 AU P = 8.55 years

m1 = 8.6 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	02 42.51	+20 19.9	2.794	3.366	-0.81	-3.1	21.4	3.8/103	117.7
Jan. 17	02 45.17	+20 11.5	2.918	3.358	-0.78	-2.9	21.4	6.5/ 89	108.1
Jan. 27	02 49.77	+20 12.3	3.051	3.350	-0.74	-2.7	21.5	9.0/ 84	99.0
Feb. 6	02 56.15	+20 21.4	3.187	3.343	-0.72	-2.5	21.6	11.3/ 81	90.4
Feb. 16	03 04.11	+20 37.5	3.324	3.336	-0.69	-2.2	21.7	13.3/ 80	82.1
Feb. 26	03 13.45	+20 58.9	3.458	3.329	-0.67	-2.0	21.7	15.0/ 80	74.3
Mar. 8	03 24.02	+21 24.2	3.588	3.324	-0.66	-1.8	21.8	16.4/ 80	66.7
Mar. 18	03 35.65	+21 51.9	3.711	3.319	-0.65	-1.6	21.9	17.7/ 80	59.5
Mar. 28	03 48.19	+22 20.4	3.825	3.314	-0.64	-1.3	21.9	18.7/ 81	52.5
Apr. 7	04 01.52	+22 48.5	3.929	3.310	-0.63	-1.1	22.0	19.5/ 81	45.8
Apr. 17	04 15.52	+23 15.0	4.022	3.306	-0.63	-0.9	22.0	20.2/ 82	39.2
Apr. 27	04 30.08	+23 39.0	4.104	3.303	-0.62	-0.7	22.0	20.7/ 84	32.8
May 7	04 45.11	+23 59.4	4.172	3.301	-0.62	-0.4	22.1	21.1/ 85	26.6
May 17	05 00.50	+24 15.6	4.228	3.299	-0.61	-0.2	22.1	21.4/ 86	20.5
May 27	05 16.17	+24 26.9	4.270	3.298	-0.61	0.0	22.1	21.6/ 88	14.4
June 6	05 32.02	+24 32.9	4.298	3.297	-0.61	+0.3	22.1	21.8/ 89	8.5
June 16	05 47.96	+24 33.3	4.312	3.297	-0.61	+0.5	22.1	21.8/ 91	2.7
June 26	06 03.92	+24 27.8	4.312	3.298	-0.61	+0.8	22.1	21.7/ 92	3.6
July 6	06 19.79	+24 16.5	4.298	3.299	-0.60	+1.0	22.1	21.6/ 94	9.4
July 16	06 35.49	+23 59.4	4.270	3.300	-0.60	+1.2	22.1	21.3/ 95	15.3
July 26	06 50.94	+23 36.8	4.228	3.303	-0.60	+1.5	22.1	21.0/ 97	21.3
Aug. 5	07 06.04	+23 08.9	4.173	3.305	-0.60	+1.7	22.1	20.5/ 98	27.4
Aug. 15	07 20.71	+22 36.3	4.105	3.309	-0.60	+1.9	22.1	20.0/100	33.6
Aug. 25	07 34.85	+21 59.6	4.025	3.313	-0.60	+2.1	22.0	19.3/101	39.9
Sept. 4	07 48.37	+21 19.4	3.932	3.317	-0.60	+2.4	22.0	18.4/103	46.3
Sept.14	08 01.16	+20 36.6	3.830	3.322	-0.61	+2.6	21.9	17.4/104	53.0
Sept.24	08 13.11	+19 52.2	3.717	3.328	-0.61	+2.8	21.9	16.2/106	59.8
Oct. 4	08 24.09	+19 07.2	3.596	3.334	-0.62	+3.0	21.8	14.7/107	67.0
Oct. 14	08 33.96	+18 22.7	3.468	3.340	-0.63	+3.2	21.8	13.0/109	74.4
Oct. 24	08 42.58	+17 40.0	3.335	3.348	-0.65	+3.4	21.7	11.0/111	82.2
Nov. 3	08 49.75	+17 00.5	3.200	3.355	-0.67	+3.6	21.6	8.7/113	90.3
Nov. 13	08 55.32	+16 25.5	3.065	3.363	-0.70	+3.8	21.6	6.2/118	98.9
Nov. 23	08 59.09	+15 56.3	2.933	3.372	-0.72	+4.0	21.5	3.4/130	108.0
Dec. 3	09 00.91	+15 34.2	2.810	3.381	-0.76	+4.2	21.4	1.5/193	117.6
Dec. 13	09 00.68	+15 19.9	2.698	3.391	-0.79	+4.4	21.4	3.4/260	127.7
Dec. 23	08 58.37	+15 13.9	2.602	3.401	-0.83	+4.6	21.3	6.1/272	138.4
Jan. 2	08 54.16	+15 15.7	2.527	3.411	-0.87	+4.7	21.3	8.4/276	149.5
Jan. 12	08 48.36	+15 24.1	2.477	3.422	-0.89	+4.7	21.3	10.0/278	161.0
Jan. 22	08 41.51	+15 37.3	2.455	3.433	-0.91	+4.6	21.3	10.5/279	172.6
Feb. 1	08 34.30	+15 52.8	2.463	3.445	-0.92	+4.5	21.3	10.0/279	174.4
Feb. 11	08 27.48	+16 08.1	2.501	3.457	-0.91	+4.4	21.4	8.4/279	163.1
Feb. 21	08 21.71	+16 21.4	2.568	3.470	-0.88	+4.2	21.5	6.1/279	151.6
Mar. 3	08 17.53	+16 30.9	2.659	3.483	-0.85	+3.9	21.6	3.3/279	140.6
Mar. 13	08 15.23	+16 35.9	2.772	3.496	-0.81	+3.7	21.7	0.4/268	130.1
Mar. 23	08 14.94	+16 35.7	2.902	3.510	-0.77	+3.6	21.8	2.5/103	120.1

Comet 90P/Gehrels

Epoch = 2017 July 26.0 TT
T = 2017 June 19.24955 TT
Peri. = 29.26263 e = 0.5097417
Node = 13.25077 2000.0 a = 6.0681422 AU
Incl. = 9.63511 n = 0.06593567
q = 2.9749571 AU P = 14.95 years

m1 = 0.8 + 5 log(Delta) + 30.0 log(r(t-90))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	23 24.58	-05 03.3	3.509	3.189	+1.08	+9.1	19.7	63.2
Jan. 17	23 35.35	-03 31.9	3.606	3.165	+1.16	+9.6	19.6	56.1
Jan. 27	23 46.95	-01 55.7	3.695	3.142	+1.23	+10.0	19.5	49.2
Feb. 6	23 59.26	-00 15.6	3.774	3.120	+1.29	+10.3	19.5	42.6
Feb. 16	00 12.19	+01 27.8	3.843	3.100	+1.35	+10.6	19.4	36.1
Feb. 26	00 25.65	+03 13.5	3.901	3.081	+1.39	+10.7	19.3	29.8
Mar. 8	00 39.58	+05 01.0	3.946	3.064	+1.43	+10.8	19.2	23.7
Mar. 18	00 53.91	+06 49.4	3.980	3.048	+1.47	+10.9	19.1	17.7
Mar. 28	01 08.61	+08 37.9	4.003	3.033	+1.50	+10.8	19.0	11.9
Apr. 7	01 23.63	+10 25.8	4.013	3.020	+1.53	+10.7	18.9	6.3
Apr. 17	01 38.94	+12 12.3	4.012	3.009	+1.56	+10.4	18.8	1.8
Apr. 27	01 54.50	+13 56.8	3.999	2.999	+1.58	+10.2	18.7	5.6
May 7	02 10.28	+15 38.5	3.975	2.991	+1.60	+9.8	18.6	11.0
May 17	02 26.23	+17 16.8	3.941	2.984	+1.61	+9.4	18.5	16.4
May 27	02 42.32	+18 51.2	3.896	2.980	+1.62	+9.0	18.4	21.9
June 6	02 58.48	+20 21.1	3.841	2.976	+1.62	+8.5	18.3	27.4
June 16	03 14.65	+21 46.1	3.776	2.975	+1.61	+8.0	18.2	32.9
June 26	03 30.77	+23 06.0	3.703	2.975	+1.60	+7.5	18.1	38.5
July 6	03 46.72	+24 20.7	3.621	2.977	+1.57	+6.9	18.0	44.2
July 16	04 02.40	+25 29.9	3.531	2.981	+1.53	+6.4	17.9	50.0
July 26	04 17.70	+26 34.0	3.434	2.986	+1.47	+5.9	17.8	55.9
Aug. 5	04 32.43	+27 33.2	3.331	2.993	+1.40	+5.5	17.7	62.1
Aug. 15	04 46.45	+28 28.0	3.223	3.002	+1.31	+5.1	17.6	68.4
Aug. 25	04 59.56	+29 19.0	3.110	3.013	+1.19	+4.8	17.5	75.1
Sept. 4	05 11.50	+30 07.1	2.995	3.024	+1.06	+4.6	17.4	82.0
Sept. 14	05 22.07	+30 53.0	2.878	3.038	+0.89	+4.5	17.3	89.3
Sept. 24	05 30.96	+31 37.7	2.763	3.053	+0.69	+4.4	17.2	97.1
Oct. 4	05 37.89	+32 21.7	2.651	3.070	+0.47	+4.4	17.1	105.2
Oct. 14	05 42.61	+33 05.3	2.545	3.088	+0.22	+4.3	17.1	113.9
Oct. 24	05 44.86	+33 48.2	2.450	3.107	-0.04	+4.1	17.0	123.1
Nov. 3	05 44.51	+34 29.0	2.368	3.128	-0.29	+3.7	17.0	132.8
Nov. 13	05 41.60	+35 05.7	2.304	3.150	-0.52	+3.0	16.9	142.8
Nov. 23	05 36.41	+35 35.4	2.262	3.173	-0.69	+2.0	16.9	152.8
Dec. 3	05 29.54	+35 55.2	2.246	3.198	-0.77	+0.8	17.0	162.0
Dec. 13	05 21.82	+36 03.4	2.256	3.223	-0.76	-0.4	17.0	167.1
Dec. 23	05 14.24	+35 59.6	2.296	3.250	-0.65	-1.4	17.1	163.4
Jan. 2	05 07.75	+35 45.6	2.363	3.278	-0.47	-2.1	17.3	154.6
Jan. 12	05 03.06	+35 24.6	2.456	3.307	-0.24	-2.5	17.4	144.6
Jan. 22	05 00.61	+34 59.9	2.571	3.337	0.00	-2.5	17.6	134.6
Feb. 1	05 00.58	+34 34.4	2.706	3.368	+0.23	-2.4	17.8	124.9
Feb. 11	05 02.90	+34 10.1	2.856	3.400	+0.45	-2.2	18.0	115.5
Feb. 21	05 07.40	+33 48.1	3.017	3.432	+0.64	-2.0	18.2	106.5
Mar. 3	05 13.85	+33 28.6	3.186	3.466	+0.81	-1.7	18.5	98.0
Mar. 13	05 21.96	+33 11.1	3.359	3.500	+0.95	-1.6	18.7	89.8
Mar. 23	05 31.48	+32 55.0	3.533	3.534	+1.07	-1.6	18.9	82.0

Comet 227P/Catalina-LINEAR

Epoch = 2017 July 26.0 TT
T = 2017 June 22.17390 TT
Peri. = 90.26128 e = 0.5011561
Node = 49.79998 2000.0 a = 3.5841362 AU
Incl. = 6.52709 n = 0.14525374
q = 1.7879245 AU P = 6.79 years

H = 16.4 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	02 59.65	+20 18.8	1.621	2.295	+0.19	+2.4	17.4	121.6
Jan. 17	03 01.54	+20 42.8	1.684	2.246	+0.53	+3.5	17.5	112.0
Jan. 27	03 06.81	+21 17.6	1.754	2.198	+0.84	+4.4	17.6	103.2
Feb. 6	03 15.25	+22 01.8	1.826	2.152	+1.13	+5.1	17.7	95.1
Feb. 16	03 26.59	+22 53.2	1.899	2.107	+1.40	+5.6	17.8	87.8
Feb. 26	03 40.56	+23 48.8	1.971	2.064	+1.64	+5.7	17.9	81.1
Mar. 8	03 56.96	+24 45.9	2.039	2.023	+1.86	+5.5	17.9	74.9
Mar. 18	04 15.56	+25 41.3	2.104	1.984	+2.06	+5.0	18.0	69.3
Mar. 28	04 36.17	+26 31.7	2.165	1.948	+2.24	+4.2	18.1	64.1
Apr. 7	04 58.61	+27 14.1	2.221	1.915	+2.40	+3.1	18.1	59.3
Apr. 17	05 22.66	+27 45.3	2.274	1.885	+2.54	+1.7	18.2	54.9
Apr. 27	05 48.09	+28 02.6	2.323	1.859	+2.66	+0.1	18.2	50.8
May 7	06 14.65	+28 03.7	2.369	1.836	+2.74	-1.7	18.3	47.0
May 17	06 42.05	+27 46.5	2.413	1.818	+2.80	-3.7	18.3	43.5
May 27	07 10.01	+27 09.9	2.456	1.804	+2.82	-5.6	18.4	40.1
June 6	07 38.21	+26 13.4	2.498	1.794	+2.82	-7.6	18.4	37.0
June 16	08 06.38	+24 57.5	2.540	1.789	+2.79	-9.4	18.4	33.9
June 26	08 34.27	+23 23.0	2.582	1.788	+2.74	-11.1	18.5	31.0
July 6	09 01.71	+21 31.8	2.624	1.792	+2.68	-12.6	18.5	28.1
July 16	09 28.53	+19 26.0	2.668	1.801	+2.61	-13.8	18.5	25.2
July 26	09 54.67	+17 08.0	2.712	1.814	+2.54	-14.7	18.6	22.3
Aug. 5	10 20.08	+14 40.7	2.757	1.832	+2.47	-15.4	18.6	19.4
Aug. 15	10 44.76	+12 06.6	2.803	1.853	+2.40	-15.8	18.6	16.4
Aug. 25	11 08.75	+09 28.3	2.848	1.878	+2.33	-16.0	18.7	13.3
Sept. 4	11 32.08	+06 48.2	2.892	1.907	+2.27	-16.0	18.7	10.1
Sept. 14	11 54.80	+04 08.6	2.935	1.940	+2.22	-15.7	18.7	6.9
Sept. 24	12 16.98	+01 31.3	2.975	1.975	+2.17	-15.3	18.8	3.9
Oct. 4	12 38.66	-01 01.8	3.011	2.013	+2.12	-14.8	18.8	3.2
Oct. 14	12 59.87	-03 29.3	3.043	2.054	+2.08	-14.1	18.8	6.1
Oct. 24	13 20.65	-05 50.0	3.069	2.096	+2.04	-13.3	18.8	10.0
Nov. 3	13 41.01	-08 02.8	3.088	2.141	+1.99	-12.4	18.8	14.4
Nov. 13	14 00.95	-10 06.9	3.099	2.187	+1.95	-11.5	18.9	19.0
Nov. 23	14 20.44	-12 01.8	3.101	2.234	+1.90	-10.5	18.9	23.9
Dec. 3	14 39.44	-13 46.9	3.094	2.283	+1.84	-9.5	18.9	29.0
Dec. 13	14 57.88	-15 22.2	3.078	2.333	+1.78	-8.5	18.8	34.4
Dec. 23	15 15.67	-16 47.6	3.050	2.384	+1.70	-7.6	18.8	40.1
Jan. 2	15 32.70	-18 03.3	3.012	2.435	+1.61	-6.6	18.8	46.0
Jan. 12	15 48.84	-19 09.8	2.964	2.487	+1.51	-5.8	18.8	52.2
Jan. 22	16 03.93	-20 07.6	2.906	2.539	+1.38	-5.0	18.7	58.8
Feb. 1	16 17.77	-20 57.4	2.838	2.591	+1.24	-4.3	18.7	65.6
Feb. 11	16 30.20	-21 40.3	2.763	2.644	+1.08	-3.7	18.6	72.7
Feb. 21	16 40.96	-22 17.2	2.681	2.696	+0.89	-3.2	18.5	80.3
Mar. 3	16 49.82	-22 49.1	2.595	2.749	+0.67	-2.8	18.5	88.2
Mar. 13	16 56.56	-23 17.0	2.507	2.801	+0.43	-2.5	18.4	96.6
Mar. 23	17 00.90	-23 41.7	2.420	2.854	+0.18	-2.2	18.3	105.6

Comet P/2000 S1 (Skiff)

Epoch = 2017 July 26.0 TT
T = 2017 June 24.87599 TT
Peri. = 309.09629 e = 0.6170768
Node = 28.15978 2000.0 a = 6.6229826 AU
Incl. = 21.01846 n = 0.05782607
q = 2.5360937 AU P = 17.04 years

m1 = 5.4 + 5 log(Delta) + 22.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	19 29.56	-37 34.9	3.834	2.899	-0.89	-1.3	18.7	26.7/ 82	15.6
Jan. 17	19 51.58	-36 50.9	3.793	2.861	-0.91	-2.1	18.6	27.1/ 80	16.1
Jan. 27	20 13.63	-35 57.8	3.743	2.825	-0.92	-2.8	18.4	27.5/ 79	18.2
Feb. 6	20 35.57	-34 56.0	3.684	2.790	-0.92	-3.6	18.3	27.8/ 77	21.5
Feb. 16	20 57.28	-33 45.9	3.616	2.757	-0.92	-4.3	18.1	28.0/ 75	25.4
Feb. 26	21 18.67	-32 28.3	3.541	2.726	-0.92	-5.1	17.9	28.0/ 74	29.7
Mar. 8	21 39.64	-31 04.2	3.460	2.696	-0.92	-5.8	17.8	28.0/ 73	34.2
Mar. 18	22 00.12	-29 34.7	3.372	2.669	-0.91	-6.6	17.6	27.8/ 72	38.7
Mar. 28	22 20.04	-28 01.0	3.280	2.645	-0.90	-7.3	17.5	27.5/ 71	43.4
Apr. 7	22 39.35	-26 24.4	3.183	2.622	-0.89	-8.1	17.3	27.1/ 70	48.1
Apr. 17	22 57.99	-24 46.2	3.082	2.602	-0.88	-8.8	17.2	26.5/ 69	52.9
Apr. 27	23 15.93	-23 07.9	2.978	2.585	-0.87	-9.5	17.0	25.7/ 69	57.7
May 7	23 33.08	-21 30.8	2.872	2.570	-0.87	-10.2	16.9	24.7/ 68	62.7
May 17	23 49.39	-19 56.3	2.763	2.557	-0.86	-10.9	16.8	23.6/ 68	67.7
May 27	00 04.75	-18 25.7	2.653	2.548	-0.86	-11.6	16.7	22.2/ 68	73.0
June 6	00 19.06	-17 00.1	2.542	2.541	-0.86	-12.3	16.5	20.5/ 68	78.4
June 16	00 32.18	-15 40.7	2.431	2.537	-0.87	-13.0	16.4	18.5/ 67	84.1
June 26	00 43.93	-14 28.5	2.321	2.536	-0.89	-13.8	16.3	16.2/ 67	90.2
July 6	00 54.11	-13 24.1	2.212	2.538	-0.91	-14.6	16.2	13.5/ 66	96.5
July 16	01 02.49	-12 27.8	2.107	2.542	-0.94	-15.4	16.1	10.4/ 63	103.4
July 26	01 08.79	-11 39.8	2.007	2.550	-0.98	-16.2	16.1	7.1/ 55	110.7
Aug. 5	01 12.76	-10 59.5	1.914	2.560	-1.03	-17.0	16.0	4.0/ 32	118.6
Aug. 15	01 14.18	-10 25.6	1.831	2.573	-1.09	-17.8	15.9	3.5/328	127.2
Aug. 25	01 12.91	-09 55.9	1.762	2.588	-1.15	-18.4	15.9	6.4/296	136.3
Sept. 4	01 09.01	-09 27.6	1.709	2.606	-1.22	-18.8	15.9	9.7/288	145.9
Sept.14	01 02.82	-08 56.9	1.677	2.627	-1.27	-19.0	16.0	12.2/287	155.7
Sept.24	00 54.94	-08 20.5	1.670	2.650	-1.30	-18.9	16.0	13.6/289	164.5
Oct. 4	00 46.30	-07 35.3	1.689	2.675	-1.30	-18.5	16.2	13.7/294	168.0
Oct. 14	00 37.92	-06 39.8	1.735	2.703	-1.28	-17.8	16.3	12.6/301	162.5
Oct. 24	00 30.69	-05 34.0	1.808	2.732	-1.23	-16.9	16.5	11.0/313	153.1
Nov. 3	00 25.34	-04 19.0	1.906	2.764	-1.16	-15.9	16.7	9.5/331	143.1
Nov. 13	00 22.23	-02 56.5	2.025	2.797	-1.08	-14.8	17.0	8.9/353	133.2
Nov. 23	00 21.46	-01 28.2	2.164	2.833	-1.00	-13.8	17.3	9.5/ 13	123.6
Dec. 3	00 22.94	+00 04.7	2.317	2.869	-0.92	-12.8	17.5	11.0/ 29	114.5
Dec. 13	00 26.46	+01 40.7	2.481	2.908	-0.85	-11.9	17.8	12.7/ 39	105.8
Dec. 23	00 31.77	+03 19.2	2.653	2.948	-0.79	-11.0	18.1	14.3/ 46	97.5
Jan. 2	00 38.62	+04 59.3	2.830	2.989	-0.74	-10.3	18.4	15.8/ 50	89.5
Jan. 12	00 46.76	+06 40.4	3.010	3.031	-0.69	-9.6	18.6	17.1/ 53	81.9
Jan. 22	00 55.99	+08 22.0	3.188	3.075	-0.65	-8.9	18.9	18.1/ 56	74.5
Feb. 1	01 06.13	+10 03.5	3.364	3.119	-0.61	-8.3	19.2	18.9/ 58	67.3
Feb. 11	01 17.01	+11 44.5	3.536	3.165	-0.58	-7.8	19.4	19.6/ 59	60.3
Feb. 21	01 28.51	+13 24.3	3.700	3.211	-0.55	-7.2	19.6	20.0/ 60	53.5
Mar. 3	01 40.52	+15 02.7	3.856	3.259	-0.53	-6.8	19.9	20.3/ 61	46.8
Mar. 13	01 52.94	+16 39.0	4.002	3.307	-0.51	-6.3	20.1	20.5/ 62	40.2
Mar. 23	02 05.71	+18 12.9	4.137	3.355	-0.49	-5.9	20.3	20.6/ 63	33.8

Comet 71P/Clark

Epoch = 2017 July 26.0 TT
T = 2017 June 30.20634 TT
Peri. = 208.92458 e = 0.4943292
Node = 59.43673 2000.0 a = 3.1369745 AU
Incl. = 9.44780 n = 0.17739346
q = 1.5862764 AU P = 5.56 years

m1 = 10.4 + 5 log(Delta) + 15.0 log(r(t-40))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	14 10.00	-05 15.7	2.268	2.220	+1.70	-8.5	18.0	74.6
Jan. 17	14 26.96	-06 40.7	2.102	2.165	+1.69	-8.1	17.7	80.3
Jan. 27	14 43.87	-08 01.3	1.938	2.112	+1.67	-7.6	17.3	86.0
Feb. 6	15 00.58	-09 17.3	1.777	2.058	+1.64	-7.2	17.0	91.7
Feb. 16	15 16.98	-10 29.1	1.622	2.006	+1.59	-6.8	16.6	97.5
Feb. 26	15 32.87	-11 37.2	1.472	1.956	+1.51	-6.6	16.3	103.5
Mar. 8	15 47.99	-12 43.0	1.329	1.907	+1.41	-6.5	15.9	109.6
Mar. 18	16 02.07	-13 48.5	1.195	1.860	+1.27	-6.8	15.5	115.9
Mar. 28	16 14.72	-14 56.4	1.071	1.815	+1.08	-7.4	15.1	122.6
Apr. 7	16 25.50	-16 10.4	0.958	1.773	+0.85	-8.4	14.7	129.7
Apr. 17	16 33.96	-17 34.8	0.858	1.734	+0.57	-9.9	14.3	137.3
Apr. 27	16 39.62	-19 13.9	0.771	1.699	+0.25	-11.7	13.9	145.5
May 7	16 42.10	-21 10.8	0.700	1.668	-0.07	-13.5	13.5	154.5
May 17	16 41.44	-23 25.4	0.646	1.641	-0.33	-14.7	13.2	164.0
May 27	16 38.12	-25 52.7	0.609	1.620	-0.47	-15.0	12.9	173.0
June 6	16 33.44	-28 23.0	0.592	1.603	-0.41	-14.2	12.7	172.3
June 16	16 29.31	-30 45.0	0.592	1.592	-0.17	-12.4	12.6	163.1
June 26	16 27.61	-32 49.4	0.610	1.587	+0.23	-10.2	12.6	153.8
July 6	16 29.91	-34 31.8	0.643	1.587	+0.70	-8.0	12.6	145.2
July 16	16 36.90	-35 51.9	0.689	1.593	+1.16	-5.8	12.7	137.5
July 26	16 48.51	-36 49.8	0.746	1.605	+1.58	-3.7	12.8	130.7
Aug. 5	17 04.29	-37 26.7	0.814	1.623	+1.91	-1.6	13.0	124.7
Aug. 15	17 23.41	-37 43.0	0.892	1.645	+2.16	+0.4	13.2	119.3
Aug. 25	17 45.01	-37 38.7	0.980	1.673	+2.33	+2.4	13.4	114.4
Sept. 4	18 08.32	-37 14.7	1.076	1.704	+2.42	+4.3	13.6	109.7
Sept. 14	18 32.57	-36 32.0	1.181	1.740	+2.46	+6.0	13.9	105.2
Sept. 24	18 57.18	-35 31.9	1.295	1.780	+2.46	+7.5	14.2	100.7
Oct. 4	19 21.75	-34 16.5	1.417	1.822	+2.42	+8.9	14.5	96.3
Oct. 14	19 45.90	-32 47.8	1.546	1.867	+2.36	+10.0	14.8	91.8
Oct. 24	20 09.48	-31 07.8	1.683	1.914	+2.29	+10.9	15.1	87.3
Nov. 3	20 32.36	-29 18.6	1.825	1.964	+2.21	+11.6	15.5	82.7
Nov. 13	20 54.47	-27 22.2	1.972	2.015	+2.14	+12.2	15.8	78.0
Nov. 23	21 15.82	-25 20.0	2.123	2.067	+2.06	+12.6	16.1	73.2
Dec. 3	21 36.44	-23 13.8	2.276	2.120	+1.99	+12.9	16.4	68.3
Dec. 13	21 56.36	-21 04.8	2.430	2.174	+1.93	+13.1	16.7	63.3
Dec. 23	22 15.62	-18 54.1	2.584	2.228	+1.87	+13.1	17.0	58.2
Jan. 2	22 34.29	-16 42.8	2.735	2.283	+1.81	+13.1	17.3	53.0
Jan. 12	22 52.39	-14 31.8	2.883	2.339	+1.76	+13.0	17.6	47.8
Jan. 22	23 10.01	-12 21.9	3.026	2.394	+1.71	+12.8	17.9	42.4
Feb. 1	23 27.15	-10 13.8	3.162	2.449	+1.67	+12.6	18.1	37.0
Feb. 11	23 43.87	-08 08.2	3.291	2.504	+1.63	+12.3	18.4	31.6
Feb. 21	00 00.21	-06 05.6	3.409	2.559	+1.60	+11.9	18.6	26.1
Mar. 3	00 16.18	-04 06.7	3.517	2.613	+1.56	+11.5	18.8	20.7
Mar. 13	00 31.79	-02 11.8	3.613	2.667	+1.53	+11.0	19.0	15.2
Mar. 23	00 47.08	-00 21.5	3.697	2.721	+1.49	+10.5	19.2	9.9

Comet 311P/PANSTARRS

Epoch = 2017 July 26.0 TT
T = 2017 July 10.63375 TT
Peri. = 143.98392 e = 0.1156481
Node = 279.25779 2000.0 a = 2.1886915 AU
Incl. = 4.96654 n = 0.30438780
q = 1.9355735 AU P = 3.24 years

H = 17.8 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	22 19.56	-06 18.6	2.596	2.070	+1.91	+10.8	22.5	47.9
Jan. 17	22 38.67	-04 30.6	2.667	2.058	+1.95	+11.5	22.5	42.8
Jan. 27	22 58.15	-02 35.9	2.731	2.046	+1.98	+12.0	22.4	37.9
Feb. 6	23 17.96	-00 35.6	2.787	2.034	+2.01	+12.5	22.4	33.1
Feb. 16	23 38.07	+01 29.1	2.835	2.023	+2.04	+12.8	22.4	28.5
Feb. 26	23 58.48	+03 36.8	2.876	2.012	+2.07	+12.9	22.3	24.0
Mar. 8	00 19.20	+05 46.3	2.909	2.002	+2.10	+13.0	22.3	19.6
Mar. 18	00 40.24	+07 55.9	2.934	1.992	+2.14	+12.8	22.2	15.4
Mar. 28	01 01.65	+10 04.3	2.952	1.983	+2.18	+12.6	22.1	11.3
Apr. 7	01 23.44	+12 10.0	2.963	1.975	+2.22	+12.1	22.0	7.4
Apr. 17	01 45.63	+14 11.2	2.967	1.967	+2.26	+11.5	21.9	4.0
Apr. 27	02 08.25	+16 06.6	2.964	1.960	+2.31	+10.8	21.8	3.2
May 7	02 31.32	+17 54.6	2.955	1.954	+2.35	+9.9	21.9	5.9
May 17	02 54.83	+19 33.5	2.939	1.949	+2.39	+8.9	22.0	9.5
May 27	03 18.77	+21 02.1	2.918	1.945	+2.43	+7.7	22.1	13.1
June 6	03 43.09	+22 19.0	2.890	1.941	+2.46	+6.4	22.1	16.8
June 16	04 07.73	+23 22.8	2.856	1.938	+2.49	+5.0	22.2	20.6
June 26	04 32.61	+24 12.8	2.817	1.937	+2.50	+3.5	22.2	24.3
July 6	04 57.60	+24 48.0	2.772	1.936	+2.50	+2.0	22.3	28.1
July 16	05 22.59	+25 08.1	2.722	1.936	+2.48	+0.5	22.3	31.9
July 26	05 47.44	+25 12.8	2.666	1.937	+2.45	-1.0	22.3	35.9
Aug. 5	06 11.98	+25 02.5	2.605	1.939	+2.41	-2.5	22.3	39.9
Aug. 15	06 36.07	+24 37.6	2.539	1.941	+2.35	-3.9	22.3	44.0
Aug. 25	06 59.55	+23 59.0	2.467	1.945	+2.27	-5.1	22.3	48.2
Sept. 4	07 22.28	+23 07.8	2.390	1.949	+2.18	-6.2	22.3	52.6
Sept. 14	07 44.12	+22 05.5	2.308	1.955	+2.08	-7.2	22.2	57.1
Sept. 24	08 04.96	+20 53.7	2.222	1.961	+1.97	-7.9	22.2	61.9
Oct. 4	08 24.63	+19 34.3	2.131	1.968	+1.84	-8.5	22.2	66.9
Oct. 14	08 43.03	+18 09.1	2.036	1.975	+1.70	-8.9	22.1	72.3
Oct. 24	09 00.00	+16 40.3	1.938	1.984	+1.53	-9.0	22.0	77.9
Nov. 3	09 15.33	+15 10.4	1.837	1.993	+1.35	-8.9	21.9	83.9
Nov. 13	09 28.84	+13 41.6	1.734	2.003	+1.14	-8.5	21.8	90.4
Nov. 23	09 40.24	+12 16.7	1.632	2.013	+0.90	-7.8	21.7	97.4
Dec. 3	09 49.20	+10 58.6	1.530	2.024	+0.62	-6.8	21.5	105.0
Dec. 13	09 55.38	+09 50.3	1.433	2.035	+0.30	-5.5	21.3	113.3
Dec. 23	09 58.36	+08 54.9	1.343	2.046	-0.05	-3.9	21.1	122.5
Jan. 2	09 57.86	+08 15.5	1.263	2.059	-0.41	-2.1	20.9	132.5
Jan. 12	09 53.75	+07 54.3	1.197	2.071	-0.75	-0.2	20.7	143.4
Jan. 22	09 46.29	+07 52.1	1.150	2.084	-1.00	+1.5	20.4	155.0
Feb. 1	09 36.33	+08 07.0	1.125	2.097	-1.11	+2.8	20.1	166.8
Feb. 11	09 25.23	+08 34.6	1.126	2.110	-1.06	+3.4	20.0	173.7
Feb. 21	09 14.63	+09 08.4	1.153	2.123	-0.86	+3.3	20.3	164.8
Mar. 3	09 06.07	+09 41.6	1.205	2.137	-0.55	+2.7	20.6	153.2
Mar. 13	09 00.54	+10 09.0	1.278	2.150	-0.21	+1.8	20.9	142.0
Mar. 23	08 58.45	+10 27.2	1.369	2.164	+0.13	+0.7	21.2	131.6

Comet 251P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2017 July 16.50172 TT
Peri. = 31.14871 e = 0.5059231
Node = 219.40625 2000.0 a = 3.5066284 AU
Incl. = 23.42121 n = 0.15009611
q = 1.7325441 AU P = 6.57 years

m1 = 14.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	12 37.97	-24 36.1	2.217	2.394	+1.21	-8.9	21.8	88.1
Jan. 17	12 50.05	-26 04.8	2.048	2.342	+1.11	-7.8	21.5	94.6
Jan. 27	13 01.16	-27 23.2	1.881	2.290	+0.98	-6.4	21.2	101.4
Feb. 6	13 10.98	-28 27.4	1.720	2.238	+0.82	-4.5	20.8	108.5
Feb. 16	13 19.19	-29 12.8	1.566	2.188	+0.62	-2.1	20.5	116.0
Feb. 26	13 25.41	-29 33.4	1.420	2.139	+0.39	+1.2	20.1	124.1
Mar. 8	13 29.28	-29 21.8	1.287	2.091	+0.14	+5.2	19.8	132.7
Mar. 18	13 30.64	-28 29.6	1.167	2.045	-0.11	+10.1	19.4	141.9
Mar. 28	13 29.54	-26 48.3	1.065	2.001	-0.31	+15.6	19.1	151.7
Apr. 7	13 26.47	-24 12.5	0.983	1.959	-0.40	+20.8	18.7	161.6
Apr. 17	13 22.43	-20 44.5	0.925	1.919	-0.38	+24.7	18.5	168.8
Apr. 27	13 18.68	-16 37.4	0.892	1.883	-0.21	+26.3	18.3	165.5
May 7	13 16.54	-12 14.4	0.883	1.850	+0.05	+25.2	18.1	155.6
May 17	13 17.00	-08 02.6	0.898	1.820	+0.36	+22.0	18.1	144.8
May 27	13 20.55	-04 23.0	0.933	1.794	+0.68	+17.5	18.1	134.5
June 6	13 27.33	-01 27.9	0.982	1.773	+0.98	+12.8	18.1	125.2
June 16	13 37.09	+00 40.3	1.043	1.756	+1.24	+8.5	18.2	117.0
June 26	13 49.49	+02 04.9	1.113	1.743	+1.47	+4.7	18.3	109.8
July 6	14 04.15	+02 51.4	1.188	1.735	+1.65	+1.6	18.4	103.5
July 16	14 20.68	+03 07.0	1.268	1.733	+1.81	-0.9	18.5	98.0
July 26	14 38.78	+02 58.0	1.351	1.735	+1.94	-2.8	18.6	93.2
Aug. 5	14 58.20	+02 30.5	1.437	1.742	+2.05	-4.1	18.8	88.8
Aug. 15	15 18.69	+01 50.0	1.525	1.754	+2.14	-4.9	19.0	84.9
Aug. 25	15 40.09	+01 01.0	1.616	1.771	+2.22	-5.3	19.2	81.2
Sept. 4	16 02.24	+00 08.1	1.710	1.792	+2.27	-5.3	19.4	77.8
Sept. 14	16 24.99	-00 45.0	1.807	1.817	+2.32	-5.0	19.6	74.5
Sept. 24	16 48.20	-01 35.0	1.907	1.847	+2.36	-4.4	19.8	71.2
Oct. 4	17 11.76	-02 19.2	2.010	1.879	+2.37	-3.6	20.0	68.0
Oct. 14	17 35.51	-02 55.1	2.116	1.916	+2.38	-2.6	20.3	64.7
Oct. 24	17 59.34	-03 21.2	2.226	1.955	+2.38	-1.5	20.5	61.3
Nov. 3	18 23.11	-03 36.0	2.338	1.996	+2.36	-0.3	20.7	57.9
Nov. 13	18 46.70	-03 39.0	2.453	2.040	+2.33	+0.9	21.0	54.3
Nov. 23	19 10.00	-03 29.9	2.569	2.086	+2.29	+2.1	21.2	50.6
Dec. 3	19 32.91	-03 08.8	2.685	2.134	+2.24	+3.2	21.5	46.7
Dec. 13	19 55.34	-02 36.3	2.801	2.183	+2.19	+4.3	21.7	42.7
Dec. 23	20 17.25	-01 53.3	2.915	2.233	+2.13	+5.3	22.0	38.6
Jan. 2	20 38.56	-01 00.7	3.026	2.284	+2.07	+6.1	22.2	34.5
Jan. 12	20 59.25	+00 00.3	3.133	2.336	+2.01	+6.8	22.4	30.3
Jan. 22	21 19.30	+01 08.5	3.233	2.389	+1.94	+7.4	22.6	26.1
Feb. 1	21 38.71	+02 22.7	3.326	2.442	+1.88	+7.9	22.8	22.1
Feb. 11	21 57.46	+03 41.6	3.411	2.496	+1.81	+8.3	23.0	18.6
Feb. 21	22 15.57	+05 04.1	3.487	2.549	+1.75	+8.5	.	15.8
Mar. 3	22 33.03	+06 29.1	3.551	2.603	+1.68	+8.6	.	14.5
Mar. 13	22 49.85	+07 55.5	3.604	2.657	+1.62	+8.7	.	15.1
Mar. 23	23 06.04	+09 22.4	3.645	2.711	+1.55	+8.6	.	17.5

Comet 217P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2017 July 16.55345 TT
Peri. = 246.95170 e = 0.6877661
Node = 125.45407 2000.0 a = 3.9565832 AU
Incl. = 12.85625 n = 0.12523439
q = 1.2353794 AU P = 7.87 years

m1 = 10.6 + 5 log(Delta) + 15.0 log(r(t-20))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	18 19.95	-17 55.1	3.417	2.469	+1.99	-0.4	19.6	13.0
Jan. 17	18 39.85	-17 59.4	3.305	2.389	+2.07	+0.6	19.3	18.0
Jan. 27	19 00.59	-17 53.8	3.182	2.308	+2.16	+1.6	19.0	23.0
Feb. 6	19 22.14	-17 37.7	3.050	2.227	+2.24	+2.7	18.7	27.9
Feb. 16	19 44.54	-17 10.5	2.911	2.145	+2.33	+3.9	18.4	32.5
Feb. 26	20 07.83	-16 31.5	2.767	2.063	+2.42	+5.1	18.0	36.9
Mar. 8	20 32.06	-15 40.3	2.620	1.981	+2.52	+6.4	17.7	41.0
Mar. 18	20 57.31	-14 36.5	2.472	1.900	+2.64	+7.7	17.3	44.8
Mar. 28	21 23.69	-13 19.5	2.325	1.819	+2.76	+9.0	16.9	48.2
Apr. 7	21 51.32	-11 49.1	2.183	1.740	+2.90	+10.4	16.5	51.2
Apr. 17	22 20.35	-10 05.2	2.047	1.662	+3.06	+11.7	16.1	53.7
Apr. 27	22 50.93	-08 08.2	1.920	1.588	+3.22	+12.9	15.6	55.7
May 7	23 23.16	-05 59.1	1.804	1.517	+3.40	+13.9	15.2	57.2
May 17	23 57.13	-03 39.9	1.701	1.451	+3.57	+14.6	14.8	58.2
May 27	00 32.81	-01 13.7	1.614	1.391	+3.72	+14.8	14.4	58.7
June 6	01 10.01	+01 14.5	1.544	1.339	+3.84	+14.4	14.0	58.8
June 16	01 48.44	+03 38.8	1.492	1.295	+3.91	+13.4	13.6	58.6
June 26	02 27.58	+05 52.7	1.456	1.263	+3.92	+11.7	13.3	58.2
July 6	03 06.78	+07 50.0	1.436	1.243	+3.86	+9.6	13.1	57.9
July 16	03 45.39	+09 26.1	1.430	1.235	+3.73	+7.3	12.9	57.7
July 26	04 22.73	+10 38.7	1.433	1.241	+3.55	+4.9	12.8	57.9
Aug. 5	04 58.22	+11 27.4	1.443	1.260	+3.32	+2.7	12.8	58.6
Aug. 15	05 31.46	+11 54.3	1.456	1.291	+3.07	+0.8	12.8	59.9
Aug. 25	06 02.16	+12 02.3	1.469	1.333	+2.79	-0.7	12.9	61.8
Sept. 4	06 30.09	+11 55.3	1.478	1.385	+2.51	-1.8	13.1	64.5
Sept.14	06 55.18	+11 37.5	1.483	1.444	+2.22	-2.4	13.3	67.8
Sept.24	07 17.34	+11 13.2	1.481	1.509	+1.91	-2.7	13.6	71.9
Oct. 4	07 36.48	+10 46.7	1.471	1.580	+1.60	-2.5	13.8	76.8
Oct. 14	07 52.51	+10 22.1	1.454	1.654	+1.28	-1.9	14.1	82.6
Oct. 24	08 05.28	+10 03.5	1.430	1.731	+0.93	-0.8	14.4	89.2
Nov. 3	08 14.57	+09 55.1	1.401	1.810	+0.56	+0.6	14.6	96.8
Nov. 13	08 20.20	+10 00.9	1.370	1.891	+0.17	+2.3	14.9	105.4
Nov. 23	08 21.92	+10 24.2	1.339	1.972	-0.23	+4.3	15.1	115.0
Dec. 3	08 19.66	+11 07.5	1.316	2.054	-0.60	+6.3	15.3	125.8
Dec. 13	08 13.62	+12 10.8	1.304	2.136	-0.92	+8.0	15.6	137.5
Dec. 23	08 04.38	+13 31.0	1.310	2.217	-1.13	+9.1	15.9	150.0
Jan. 2	07 53.03	+15 01.7	1.341	2.299	-1.20	+9.3	16.2	162.9
Jan. 12	07 41.03	+16 34.7	1.399	2.380	-1.12	+8.7	16.5	174.5
Jan. 22	07 29.88	+18 02.2	1.487	2.460	-0.91	+7.7	16.9	169.0
Feb. 1	07 20.81	+19 18.9	1.603	2.540	-0.63	+6.4	17.3	157.1
Feb. 11	07 14.53	+20 22.6	1.745	2.618	-0.33	+5.1	17.7	145.4
Feb. 21	07 11.28	+21 13.4	1.909	2.696	-0.03	+3.9	18.1	134.5
Mar. 3	07 10.95	+21 52.3	2.090	2.773	+0.23	+2.8	18.5	124.3
Mar. 13	07 13.21	+22 20.6	2.286	2.849	+0.45	+1.9	18.9	114.8
Mar. 23	07 17.70	+22 39.7	2.491	2.924	+0.63	+1.1	19.2	105.8

Comet 18D/Perrine-Mrkos [Orbit 3]

Epoch = 2017 July 26.0 TT
T = 2017 July 22.08322 TT
Peri. = 153.45485 e = 0.5725531
Node = 237.43955 2000.0 a = 4.1101711 AU
Incl. = 15.22975 n = 0.11828079
q = 1.7568799 AU P = 8.33 years

m1 = 11.5 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ / °	Elong. °
Jan. 7	20 13.30	-08 58.2	3.417	2.514	-0.69	-3.1	22.2	28.0/ 77	19.9
Jan. 17	20 31.70	-07 53.8	3.390	2.456	-0.72	-3.3	22.0	29.2/ 75	15.6
Jan. 27	20 50.64	-06 38.5	3.352	2.399	-0.76	-3.6	21.7	30.3/ 74	12.3
Feb. 6	21 10.08	-05 12.3	3.304	2.342	-0.80	-3.8	21.5	31.3/ 72	10.7
Feb. 16	21 29.98	-03 35.6	3.247	2.286	-0.85	-4.1	21.2	32.3/ 71	11.2
Feb. 26	21 50.32	-01 49.0	3.183	2.232	-0.90	-4.4	21.0	33.3/ 70	13.4
Mar. 8	22 11.11	+00 06.9	3.113	2.179	-0.95	-4.6	20.7	34.2/ 69	16.4
Mar. 18	22 32.35	+02 11.0	3.037	2.127	-1.01	-4.8	20.5	35.1/ 68	19.7
Mar. 28	22 54.08	+04 22.2	2.958	2.078	-1.07	-5.0	20.2	35.9/ 67	23.2
Apr. 7	23 16.33	+06 38.9	2.876	2.030	-1.13	-5.0	19.9	36.7/ 67	26.5
Apr. 17	23 39.15	+08 59.2	2.793	1.986	-1.20	-5.0	19.7	37.4/ 67	29.8
Apr. 27	00 02.62	+11 21.1	2.710	1.944	-1.27	-4.9	19.4	38.1/ 68	33.0
May 7	00 26.76	+13 42.3	2.627	1.906	-1.35	-4.6	19.2	38.6/ 68	36.0
May 17	00 51.63	+15 59.8	2.546	1.871	-1.42	-4.2	19.0	39.0/ 69	39.0
May 27	01 17.25	+18 10.9	2.467	1.840	-1.50	-3.6	18.8	39.3/ 71	41.8
June 6	01 43.61	+20 12.4	2.390	1.814	-1.57	-2.8	18.6	39.4/ 73	44.6
June 16	02 10.65	+22 00.9	2.315	1.792	-1.63	-1.8	18.4	39.3/ 75	47.5
June 26	02 38.27	+23 33.5	2.243	1.775	-1.69	-0.7	18.2	39.0/ 78	50.3
July 6	03 06.26	+24 47.3	2.174	1.764	-1.73	+0.6	18.1	38.5/ 81	53.2
July 16	03 34.37	+25 40.0	2.107	1.758	-1.75	+1.9	18.0	37.8/ 84	56.2
July 26	04 02.30	+26 10.1	2.041	1.757	-1.76	+3.2	17.9	36.8/ 87	59.4
Aug. 5	04 29.66	+26 16.8	1.977	1.762	-1.75	+4.5	17.9	35.6/ 91	62.8
Aug. 15	04 56.07	+26 00.3	1.913	1.772	-1.72	+5.7	17.9	34.1/ 95	66.5
Aug. 25	05 21.14	+25 21.6	1.849	1.788	-1.69	+6.8	17.9	32.3/ 99	70.5
Sept. 4	05 44.48	+24 22.4	1.786	1.809	-1.65	+7.6	17.9	30.2/104	75.0
Sept.14	06 05.75	+23 05.0	1.722	1.834	-1.62	+8.3	17.9	27.8/109	79.8
Sept.24	06 24.62	+21 32.1	1.657	1.864	-1.60	+8.8	18.0	25.0/114	85.2
Oct. 4	06 40.76	+19 46.6	1.593	1.898	-1.58	+9.1	18.1	21.9/121	91.1
Oct. 14	06 53.91	+17 51.7	1.530	1.935	-1.59	+9.1	18.2	18.6/130	97.7
Oct. 24	07 03.76	+15 50.6	1.470	1.976	-1.62	+9.0	18.3	15.4/143	105.0
Nov. 3	07 10.04	+13 47.0	1.414	2.020	-1.68	+8.8	18.4	12.8/163	113.0
Nov. 13	07 12.60	+11 45.0	1.366	2.067	-1.75	+8.4	18.5	11.7/189	121.9
Nov. 23	07 11.40	+09 49.3	1.329	2.116	-1.84	+7.9	18.6	12.5/214	131.4
Dec. 3	07 06.74	+08 05.3	1.308	2.167	-1.93	+7.4	18.8	14.1/232	141.3
Dec. 13	06 59.31	+06 38.5	1.307	2.220	-2.00	+7.0	19.0	15.1/245	151.1
Dec. 23	06 50.16	+05 33.7	1.328	2.274	-2.03	+6.6	19.3	14.8/254	159.1
Jan. 2	06 40.66	+04 53.2	1.375	2.330	-2.00	+6.2	19.5	12.9/263	161.8
Jan. 12	06 32.11	+04 36.4	1.448	2.386	-1.93	+5.9	19.9	9.9/272	157.4
Jan. 22	06 25.52	+04 39.9	1.546	2.444	-1.81	+5.6	20.2	6.3/287	149.2
Feb. 1	06 21.52	+04 58.6	1.665	2.502	-1.68	+5.3	20.6	3.4/327	140.0
Feb. 11	06 20.25	+05 27.2	1.804	2.560	-1.54	+5.0	20.9	3.9/ 32	130.8
Feb. 21	06 21.65	+06 00.7	1.958	2.619	-1.40	+4.7	21.3	6.6/ 59	121.9
Mar. 3	06 25.44	+06 35.1	2.125	2.678	-1.27	+4.4	21.7	9.3/ 69	113.4
Mar. 13	06 31.28	+07 07.6	2.301	2.737	-1.16	+4.2	22.1	11.6/ 76	105.3
Mar. 23	06 38.85	+07 35.9	2.484	2.797	-1.05	+4.0	22.4	13.5/ 80	97.6

Comet 259P/Garradd

Epoch = 2017 July 26.0 TT
T = 2017 Aug. 4.02523 TT
Peri. = 257.50331 e = 0.3377134
Node = 51.48463 2000.0 a = 2.7313767 AU
Incl. = 15.88947 n = 0.21833918
q = 1.8089542 AU P = 4.51 years

m1 = 14.0 + 5 log(Delta) + 17.5 log(r(t-100))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	16 08.67	-20 00.1	2.935	2.311	+1.98	-8.6	.	42.7
Jan. 17	16 28.48	-21 25.8	2.811	2.274	+2.02	-8.0	.	48.0
Jan. 27	16 48.70	-22 46.1	2.680	2.237	+2.06	-7.5	.	53.4
Feb. 6	17 09.25	-24 01.1	2.545	2.201	+2.08	-7.0	.	58.7
Feb. 16	17 30.08	-25 10.9	2.408	2.166	+2.10	-6.5	23.0	64.1
Feb. 26	17 51.12	-26 16.3	2.268	2.131	+2.12	-6.2	22.7	69.4
Mar. 8	18 12.27	-27 18.0	2.129	2.098	+2.12	-5.9	22.5	74.7
Mar. 18	18 33.45	-28 17.3	1.990	2.065	+2.11	-5.9	22.2	80.0
Mar. 28	18 54.54	-29 16.0	1.854	2.033	+2.08	-6.0	21.9	85.4
Apr. 7	19 15.37	-30 15.9	1.722	2.003	+2.04	-6.4	21.7	90.8
Apr. 17	19 35.82	-31 19.4	1.595	1.975	+1.98	-7.0	21.4	96.3
Apr. 27	19 55.67	-32 29.5	1.473	1.948	+1.90	-8.0	21.1	101.9
May 7	20 14.64	-33 49.1	1.360	1.923	+1.78	-9.2	20.8	107.6
May 17	20 32.46	-35 21.1	1.255	1.900	+1.62	-10.7	20.5	113.5
May 27	20 48.69	-37 08.0	1.160	1.879	+1.41	-12.3	20.2	119.5
June 6	21 02.79	-39 11.0	1.077	1.861	+1.14	-13.8	19.9	125.6
June 16	21 14.17	-41 28.7	1.006	1.845	+0.79	-14.8	19.6	131.7
June 26	21 22.11	-43 56.5	0.949	1.832	+0.38	-14.8	19.4	137.4
July 6	21 25.95	-46 24.5	0.908	1.822	-0.05	-13.4	19.2	142.3
July 16	21 25.42	-48 38.7	0.882	1.814	-0.46	-10.4	19.0	145.7
July 26	21 20.80	-50 22.3	0.872	1.810	-0.73	-5.7	18.9	146.9
Aug. 5	21 13.53	-51 19.7	0.879	1.809	-0.77	-0.3	18.8	145.6
Aug. 15	21 05.81	-51 23.0	0.901	1.811	-0.59	+5.0	18.7	142.2
Aug. 25	20 59.90	-50 32.6	0.938	1.816	-0.24	+9.6	18.7	137.4
Sept. 4	20 57.48	-48 56.2	0.988	1.823	+0.16	+13.1	18.8	131.9
Sept. 14	20 59.11	-46 44.9	1.051	1.834	+0.55	+15.6	18.8	126.2
Sept. 24	21 04.56	-44 08.9	1.125	1.848	+0.87	+17.2	18.9	120.4
Oct. 4	21 13.28	-41 16.7	1.210	1.864	+1.12	+18.2	19.0	114.7
Oct. 14	21 24.49	-38 14.4	1.304	1.883	+1.31	+18.8	19.1	109.1
Oct. 24	21 37.57	-35 06.2	1.407	1.904	+1.44	+19.1	19.3	103.6
Nov. 3	21 52.00	-31 55.1	1.517	1.927	+1.53	+19.2	19.4	98.2
Nov. 13	22 07.33	-28 43.1	1.634	1.953	+1.60	+19.1	19.6	92.9
Nov. 23	22 23.30	-25 31.6	1.757	1.980	+1.64	+19.0	19.7	87.6
Dec. 3	22 39.67	-22 21.8	1.885	2.009	+1.66	+18.7	19.9	82.4
Dec. 13	22 56.29	-19 14.4	2.017	2.039	+1.68	+18.4	20.1	77.2
Dec. 23	23 13.07	-16 10.2	2.150	2.071	+1.69	+18.1	20.3	72.1
Jan. 2	23 29.93	-13 09.6	2.285	2.104	+1.69	+17.6	20.5	66.9
Jan. 12	23 46.84	-10 13.3	2.420	2.138	+1.69	+17.2	20.7	61.7
Jan. 22	00 03.77	-07 21.7	2.554	2.173	+1.69	+16.7	20.8	56.6
Feb. 1	00 20.71	-04 35.1	2.685	2.208	+1.69	+16.1	21.0	51.4
Feb. 11	00 37.65	-01 54.0	2.811	2.244	+1.70	+15.5	21.2	46.2
Feb. 21	00 54.60	+00 41.4	2.933	2.281	+1.70	+14.9	21.4	41.0
Mar. 3	01 11.56	+03 10.5	3.048	2.318	+1.70	+14.3	21.6	35.8
Mar. 13	01 28.53	+05 33.2	3.155	2.355	+1.70	+13.6	21.8	30.6
Mar. 23	01 45.52	+07 49.2	3.254	2.392	+1.70	+12.9	22.0	25.4

Comet 189P/NEAT

Epoch = 2017 July 26.0 TT
T = 2017 Aug. 5.93574 TT
Peri. = 16.21469 e = 0.5882364
Node = 281.75203 2000.0 a = 2.9467537 AU
Incl. = 20.06619 n = 0.19484458
q = 1.2133659 AU P = 5.06 years

m1 = 18.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	13 23.26	-30 04.3	2.483	2.452	+1.36	-14.5	.	76.7
Jan. 17	13 36.81	-32 29.4	2.299	2.383	+1.33	-14.9	.	82.7
Jan. 27	13 50.13	-34 58.2	2.116	2.314	+1.29	-15.2	.	88.7
Feb. 6	14 03.03	-37 30.5	1.936	2.243	+1.23	-15.5	.	94.7
Feb. 16	14 15.34	-40 06.0	1.761	2.172	+1.14	-15.8	.	100.6
Feb. 26	14 26.78	-42 44.3	1.592	2.100	+1.02	-16.0	.	106.5
Mar. 8	14 36.96	-45 24.0	1.431	2.028	+0.85	-15.9	.	112.3
Mar. 18	14 45.42	-48 03.2	1.280	1.955	+0.61	-15.5	.	118.0
Mar. 28	14 51.50	-50 38.5	1.139	1.882	+0.29	-14.5	23.0	123.4
Apr. 7	14 54.43	-53 03.6	1.009	1.810	-0.09	-12.6	22.5	128.4
Apr. 17	14 53.52	-55 09.3	0.891	1.738	-0.52	-9.3	21.9	132.9
Apr. 27	14 48.29	-56 42.0	0.785	1.667	-0.90	-4.1	21.4	136.6
May 7	14 39.30	-57 23.2	0.691	1.597	-1.06	+2.9	20.8	139.2
May 17	14 28.70	-56 53.9	0.609	1.530	-0.88	+11.7	20.3	140.4
May 27	14 19.93	-54 57.1	0.538	1.467	-0.31	+21.4	19.7	140.0
June 6	14 16.83	-51 22.6	0.479	1.407	+0.49	+31.3	19.2	138.0
June 16	14 21.74	-46 09.2	0.430	1.354	+1.33	+40.9	18.7	134.7
June 26	14 35.07	-39 20.2	0.394	1.307	+2.10	+49.0	18.3	130.4
July 6	14 56.02	-31 10.6	0.370	1.268	+2.68	+54.0	18.0	125.6
July 16	15 22.82	-22 10.9	0.360	1.239	+3.07	+54.3	17.8	120.5
July 26	15 53.57	-13 08.2	0.366	1.220	+3.31	+49.4	17.7	115.9
Aug. 5	16 26.63	-04 53.8	0.386	1.213	+3.39	+41.1	17.8	112.1
Aug. 15	17 00.56	+01 57.6	0.419	1.218	+3.39	+31.6	18.0	109.5
Aug. 25	17 34.49	+07 14.0	0.463	1.235	+3.35	+22.8	18.3	107.9
Sept. 4	18 07.99	+11 02.0	0.517	1.262	+3.27	+15.5	18.7	107.2
Sept. 14	18 40.72	+13 36.7	0.580	1.299	+3.19	+9.8	19.1	106.9
Sept. 24	19 12.61	+15 14.5	0.651	1.344	+3.10	+5.7	19.6	106.8
Oct. 4	19 43.61	+16 11.9	0.730	1.397	+3.00	+3.1	20.1	106.6
Oct. 14	20 13.62	+16 42.7	0.819	1.455	+2.90	+1.5	20.6	106.0
Oct. 24	20 42.60	+16 57.8	0.919	1.518	+2.79	+0.9	21.1	104.9
Nov. 3	21 10.54	+17 06.3	1.029	1.584	+2.68	+0.8	21.7	103.2
Nov. 13	21 37.39	+17 14.3	1.150	1.653	+2.58	+1.2	22.2	100.9
Nov. 23	22 03.18	+17 25.8	1.282	1.724	+2.48	+1.8	22.7	98.0
Dec. 3	22 27.98	+17 43.4	1.424	1.796	+2.38	+2.5	.	94.6
Dec. 13	22 51.81	+18 08.0	1.575	1.869	+2.30	+3.2	.	90.8
Dec. 23	23 14.80	+18 39.6	1.735	1.941	+2.22	+3.8	.	86.5
Jan. 2	23 37.03	+19 17.7	1.901	2.014	+2.15	+4.4	.	82.0
Jan. 12	23 58.56	+20 01.3	2.072	2.087	+2.09	+4.8	.	77.2
Jan. 22	00 19.51	+20 49.3	2.246	2.159	+2.04	+5.1	.	72.2
Feb. 1	00 39.95	+21 40.6	2.422	2.230	+2.00	+5.3	.	67.0
Feb. 11	00 59.92	+22 33.8	2.597	2.300	+1.96	+5.4	.	61.7
Feb. 21	01 19.51	+23 27.8	2.770	2.370	+1.92	+5.4	.	56.4
Mar. 3	01 38.75	+24 21.7	2.938	2.439	+1.89	+5.3	.	51.0
Mar. 13	01 57.67	+25 14.3	3.101	2.506	+1.86	+5.1	.	45.5
Mar. 23	02 16.31	+26 04.9	3.255	2.573	+1.84	+4.8	.	40.0

Comet P/2010 P4 (WISE)

Epoch = 2017 July 26.0 TT
T = 2017 Aug. 18.34185 TT
Peri. = 354.15580 e = 0.4978528
Node = 2.23355 2000.0 a = 3.7055499 AU
Incl. = 24.07873 n = 0.13817360
q = 1.8607315 AU P = 7.13 years

m1 = 15.6 + 5 log(Delta) + 15.0 log(r(t-60))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	18 38.54	-40 49.9	3.523	2.619	-0.96	-1.6	.	28.1/ 87	19.7
Jan. 17	19 03.14	-40 23.7	3.449	2.568	-0.99	-2.5	.	28.7/ 84	22.5
Jan. 27	19 27.97	-39 45.5	3.366	2.518	-1.02	-3.5	.	29.3/ 82	26.0
Feb. 6	19 52.83	-38 54.9	3.274	2.468	-1.04	-4.6	.	29.8/ 80	29.8
Feb. 16	20 17.56	-37 51.9	3.176	2.419	-1.05	-5.7	.	30.2/ 77	33.9
Feb. 26	20 42.04	-36 36.6	3.071	2.370	-1.06	-6.8	.	30.5/ 75	38.0
Mar. 8	21 06.14	-35 09.6	2.962	2.323	-1.06	-8.0	.	30.8/ 73	42.1
Mar. 18	21 29.74	-33 31.4	2.849	2.277	-1.06	-9.3	.	31.1/ 71	46.2
Mar. 28	21 52.78	-31 42.8	2.733	2.231	-1.06	-10.6	.	31.2/ 69	50.3
Apr. 7	22 15.19	-29 44.9	2.614	2.188	-1.05	-11.9	.	31.3/ 67	54.4
Apr. 17	22 36.92	-27 38.5	2.494	2.146	-1.05	-13.2	.	31.2/ 66	58.4
Apr. 27	22 57.94	-25 24.6	2.374	2.106	-1.04	-14.6	.	31.1/ 64	62.4
May 7	23 18.20	-23 04.2	2.253	2.068	-1.04	-16.0	22.9	30.8/ 63	66.4
May 17	23 37.67	-20 38.0	2.134	2.032	-1.05	-17.5	22.6	30.4/ 61	70.5
May 27	23 56.29	-18 06.9	2.014	2.000	-1.06	-19.0	22.3	29.8/ 59	74.6
June 6	00 13.99	-15 31.4	1.896	1.970	-1.09	-20.5	22.1	29.0/ 57	78.8
June 16	00 30.66	-12 51.7	1.780	1.943	-1.12	-22.1	21.8	28.1/ 55	83.2
June 26	00 46.17	-10 08.0	1.667	1.920	-1.17	-23.7	21.6	26.9/ 52	87.9
July 6	01 00.30	-07 20.0	1.556	1.900	-1.24	-25.4	21.3	25.5/ 47	92.8
July 16	01 12.83	-04 27.0	1.448	1.884	-1.33	-27.1	21.0	23.9/ 42	98.2
July 26	01 23.41	-01 28.1	1.345	1.872	-1.45	-28.8	20.8	22.3/ 33	104.1
Aug. 5	01 31.60	+01 37.9	1.248	1.865	-1.60	-30.6	20.5	21.0/ 22	110.6
Aug. 15	01 36.93	+04 52.1	1.159	1.861	-1.78	-32.3	20.2	20.4/ 8	117.8
Aug. 25	01 38.81	+08 14.6	1.080	1.862	-2.00	-33.8	20.0	21.1/352	125.8
Sept. 4	01 36.71	+11 43.4	1.014	1.867	-2.23	-35.2	19.8	22.9/336	134.7
Sept.14	01 30.38	+15 12.8	0.965	1.876	-2.47	-36.4	19.6	24.9/324	144.3
Sept.24	01 20.03	+18 32.6	0.936	1.889	-2.66	-37.4	19.5	25.8/314	153.8
Oct. 4	01 06.75	+21 29.7	0.931	1.906	-2.76	-37.9	19.5	24.5/307	161.5
Oct. 14	00 52.40	+23 53.1	0.950	1.927	-2.74	-37.9	19.5	20.9/301	163.2
Oct. 24	00 39.19	+25 38.8	0.995	1.951	-2.60	-37.1	19.6	15.5/299	157.5
Nov. 3	00 29.06	+26 51.7	1.062	1.979	-2.39	-35.4	19.8	9.5/302	149.0
Nov. 13	00 23.05	+27 42.0	1.149	2.010	-2.15	-33.2	20.0	4.4/330	139.9
Nov. 23	00 21.41	+28 20.0	1.253	2.044	-1.93	-30.5	20.2	4.7/ 43	131.3
Dec. 3	00 23.89	+28 54.5	1.370	2.080	-1.74	-27.7	20.5	8.7/ 65	123.2
Dec. 13	00 29.92	+29 30.6	1.498	2.119	-1.58	-24.9	20.8	12.4/ 70	115.6
Dec. 23	00 38.94	+30 11.2	1.635	2.159	-1.45	-22.4	21.0	15.5/ 72	108.5
Jan. 2	00 50.43	+30 57.3	1.779	2.202	-1.35	-20.0	21.3	18.0/ 73	101.8
Jan. 12	01 03.91	+31 48.6	1.927	2.246	-1.28	-17.8	21.6	20.0/ 73	95.5
Jan. 22	01 19.05	+32 44.1	2.080	2.292	-1.22	-15.8	21.8	21.5/ 73	89.4
Feb. 1	01 35.56	+33 42.9	2.234	2.338	-1.17	-14.0	22.1	22.7/ 73	83.6
Feb. 11	01 53.19	+34 43.1	2.390	2.386	-1.13	-12.4	22.4	23.6/ 74	77.9
Feb. 21	02 11.79	+35 43.3	2.545	2.435	-1.10	-10.9	22.6	24.2/ 74	72.4
Mar. 3	02 31.19	+36 42.2	2.699	2.484	-1.07	-9.5	22.9	24.6/ 75	67.0
Mar. 13	02 51.24	+37 38.3	2.850	2.534	-1.05	-8.2	.	24.9/ 76	61.7
Mar. 23	03 11.86	+38 30.3	2.997	2.585	-1.02	-7.1	.	25.0/ 78	56.5

Comet 30P/Reinmuth

Epoch = 2017 July 26.0 TT
T = 2017 Aug. 19.16703 TT
Peri. = 13.28898 e = 0.5020368
Node = 119.70401 2000.0 a = 3.7687070 AU
Incl. = 8.12886 n = 0.13471486
q = 1.8766774 AU P = 7.32 years

m1 = 9.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	02 02.66	+02 57.4	2.238	2.637	+0.45	+6.5	17.5	102.8
Jan. 17	02 07.21	+04 02.9	2.321	2.586	+0.68	+7.5	17.4	94.2
Jan. 27	02 14.03	+05 18.2	2.404	2.535	+0.89	+8.3	17.4	86.1
Feb. 6	02 22.94	+06 41.0	2.485	2.486	+1.08	+8.8	17.3	78.6
Feb. 16	02 33.76	+08 09.3	2.561	2.436	+1.26	+9.2	17.2	71.6
Feb. 26	02 46.32	+09 41.0	2.632	2.388	+1.42	+9.3	17.2	64.9
Mar. 8	03 00.49	+11 14.5	2.696	2.340	+1.57	+9.3	17.1	58.7
Mar. 18	03 16.16	+12 47.7	2.753	2.294	+1.71	+9.1	17.0	52.9
Mar. 28	03 33.24	+14 18.9	2.801	2.249	+1.84	+8.7	16.9	47.4
Apr. 7	03 51.66	+15 46.4	2.842	2.205	+1.97	+8.2	16.8	42.2
Apr. 17	04 11.34	+17 08.3	2.874	2.163	+2.09	+7.5	16.7	37.3
Apr. 27	04 32.23	+18 22.8	2.900	2.123	+2.20	+6.5	16.6	32.7
May 7	04 54.26	+19 28.1	2.919	2.085	+2.31	+5.4	16.5	28.3
May 17	05 17.33	+20 22.5	2.931	2.050	+2.40	+4.2	16.4	24.1
May 27	05 41.37	+21 04.4	2.938	2.017	+2.49	+2.8	16.3	20.1
June 6	06 06.24	+21 32.2	2.941	1.987	+2.56	+1.3	16.2	16.3
June 16	06 31.80	+21 44.7	2.939	1.960	+2.61	-0.4	16.1	12.7
June 26	06 57.91	+21 41.2	2.934	1.937	+2.65	-2.0	16.0	9.1
July 6	07 24.37	+21 21.2	2.926	1.917	+2.67	-3.7	16.0	5.7
July 16	07 51.02	+20 44.5	2.916	1.901	+2.67	-5.3	15.9	2.4
July 26	08 17.70	+19 51.8	2.904	1.889	+2.65	-6.8	15.9	0.9
Aug. 5	08 44.24	+18 44.0	2.891	1.881	+2.63	-8.2	15.8	4.1
Aug. 15	09 10.50	+17 22.4	2.877	1.877	+2.59	-9.4	15.8	7.4
Aug. 25	09 36.39	+15 48.9	2.862	1.877	+2.54	-10.4	15.8	10.6
Sept. 4	10 01.81	+14 05.3	2.845	1.882	+2.49	-11.1	15.8	14.0
Sept. 14	10 26.70	+12 14.1	2.827	1.891	+2.43	-11.7	15.8	17.4
Sept. 24	10 51.04	+10 17.4	2.807	1.903	+2.37	-12.0	15.8	20.9
Oct. 4	11 14.79	+08 17.7	2.785	1.920	+2.31	-12.0	15.9	24.5
Oct. 14	11 37.93	+06 17.3	2.760	1.941	+2.25	-11.9	15.9	28.4
Oct. 24	12 00.46	+04 18.5	2.731	1.965	+2.19	-11.5	16.0	32.4
Nov. 3	12 22.35	+02 23.4	2.699	1.992	+2.12	-10.9	16.0	36.6
Nov. 13	12 43.56	+00 34.0	2.662	2.022	+2.05	-10.2	16.1	41.0
Nov. 23	13 04.05	-01 08.1	2.620	2.056	+1.97	-9.3	16.2	45.7
Dec. 3	13 23.75	-02 41.2	2.573	2.091	+1.88	-8.3	16.3	50.6
Dec. 13	13 42.57	-04 04.0	2.520	2.130	+1.78	-7.1	16.3	55.9
Dec. 23	14 00.39	-05 15.4	2.461	2.170	+1.66	-5.9	16.4	61.4
Jan. 2	14 17.03	-06 14.5	2.396	2.212	+1.53	-4.6	16.5	67.3
Jan. 12	14 32.34	-07 00.9	2.327	2.256	+1.38	-3.3	16.5	73.6
Jan. 22	14 46.09	-07 34.0	2.253	2.302	+1.19	-2.0	16.6	80.3
Feb. 1	14 58.03	-07 53.7	2.176	2.348	+0.99	-0.7	16.6	87.4
Feb. 11	15 07.91	-08 00.3	2.097	2.396	+0.75	+0.6	16.7	95.1
Feb. 21	15 15.44	-07 54.2	2.020	2.444	+0.49	+1.8	16.7	103.3
Mar. 3	15 20.37	-07 36.2	1.947	2.494	+0.21	+2.8	16.8	112.0
Mar. 13	15 22.51	-07 08.0	1.881	2.544	-0.07	+3.7	16.9	121.3
Mar. 23	15 21.78	-06 31.4	1.827	2.594	-0.35	+4.2	16.9	131.2

Comet P/2010 EY90 = 2017 B1 (Lemmon)

Epoch = 2017 July 26.0 TT
T = 2017 Aug. 26.77792 TT
Peri. = 255.98203 e = 0.3006911
Node = 331.79005 2000.0 a = 3.5729113 AU
Incl. = 5.49258 n = 0.14593878
q = 2.4985687 AU P = 6.75 years

H = 15.4 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	12 24.14	-04 25.1	2.499	2.830	+0.56	-5.9	20.6	99.3
Jan. 17	12 29.79	-05 23.7	2.343	2.806	+0.38	-4.9	20.5	107.8
Jan. 27	12 33.58	-06 12.7	2.195	2.782	+0.17	-3.8	20.3	116.8
Feb. 6	12 35.24	-06 50.4	2.057	2.758	-0.06	-2.5	20.1	126.3
Feb. 16	12 34.62	-07 15.6	1.934	2.735	-0.30	-1.2	19.8	136.4
Feb. 26	12 31.67	-07 27.1	1.829	2.713	-0.51	+0.2	19.6	146.9
Mar. 8	12 26.58	-07 24.8	1.746	2.692	-0.67	+1.5	19.3	158.0
Mar. 18	12 19.87	-07 09.9	1.688	2.672	-0.76	+2.4	19.0	168.9
Mar. 28	12 12.29	-06 45.5	1.657	2.652	-0.75	+2.9	18.9	174.7
Apr. 7	12 04.80	-06 16.1	1.653	2.634	-0.64	+2.9	19.0	165.5
Apr. 17	11 58.37	-05 47.5	1.675	2.616	-0.46	+2.3	19.2	154.4
Apr. 27	11 53.76	-05 24.6	1.720	2.600	-0.23	+1.3	19.4	143.7
May 7	11 51.45	-05 11.7	1.785	2.584	+0.02	+0.1	19.6	133.5
May 17	11 51.65	-05 11.1	1.865	2.570	+0.27	-1.3	19.8	123.9
May 27	11 54.31	-05 23.9	1.958	2.557	+0.50	-2.6	19.9	115.1
June 6	11 59.28	-05 50.1	2.059	2.545	+0.70	-3.9	20.1	106.8
June 16	12 06.32	-06 28.7	2.166	2.535	+0.89	-5.0	20.2	99.2
June 26	12 15.18	-07 18.5	2.276	2.525	+1.05	-6.0	20.3	92.0
July 6	12 25.64	-08 18.1	2.388	2.518	+1.18	-6.8	20.4	85.3
July 16	12 37.47	-09 26.1	2.499	2.511	+1.30	-7.5	20.5	78.9
July 26	12 50.51	-10 40.8	2.610	2.506	+1.41	-8.0	20.6	72.9
Aug. 5	13 04.62	-12 00.9	2.717	2.502	+1.51	-8.4	20.6	67.0
Aug. 15	13 19.68	-13 24.6	2.821	2.500	+1.59	-8.6	20.7	61.4
Aug. 25	13 35.60	-14 50.7	2.920	2.499	+1.67	-8.7	20.7	55.9
Sept. 4	13 52.31	-16 17.6	3.015	2.499	+1.74	-8.6	20.7	50.6
Sept.14	14 09.74	-17 43.8	3.104	2.501	+1.81	-8.4	20.7	45.3
Sept.24	14 27.85	-19 08.2	3.187	2.504	+1.87	-8.1	20.7	40.1
Oct. 4	14 46.58	-20 29.2	3.263	2.509	+1.93	-7.6	20.7	34.9
Oct. 14	15 05.89	-21 45.5	3.332	2.515	+1.98	-7.1	20.7	29.8
Oct. 24	15 25.71	-22 56.0	3.392	2.522	+2.03	-6.4	20.7	24.6
Nov. 3	15 45.98	-23 59.5	3.444	2.531	+2.06	-5.6	20.6	19.5
Nov. 13	16 06.62	-24 55.1	3.488	2.541	+2.09	-4.7	20.6	14.4
Nov. 23	16 27.55	-25 41.8	3.522	2.553	+2.11	-3.7	20.5	9.4
Dec. 3	16 48.66	-26 19.0	3.546	2.565	+2.12	-2.7	20.4	5.1
Dec. 13	17 09.84	-26 46.3	3.560	2.579	+2.11	-1.7	20.4	4.4
Dec. 23	17 30.97	-27 03.5	3.563	2.594	+2.09	-0.7	20.5	8.5
Jan. 2	17 51.91	-27 10.6	3.556	2.610	+2.06	+0.3	20.7	13.6
Jan. 12	18 12.54	-27 07.9	3.538	2.627	+2.02	+1.2	20.8	19.0
Jan. 22	18 32.73	-26 56.0	3.508	2.646	+1.96	+2.0	20.8	24.6
Feb. 1	18 52.34	-26 35.6	3.468	2.665	+1.89	+2.8	20.9	30.3
Feb. 11	19 11.26	-26 07.8	3.418	2.685	+1.81	+3.4	21.0	36.1
Feb. 21	19 29.39	-25 33.6	3.357	2.706	+1.72	+3.9	21.0	42.1
Mar. 3	19 46.59	-24 54.4	3.287	2.727	+1.62	+4.3	21.0	48.2
Mar. 13	20 02.78	-24 11.5	3.207	2.750	+1.51	+4.5	21.0	54.4
Mar. 23	20 17.85	-23 26.6	3.120	2.773	+1.38	+4.5	21.0	60.8

Comet C/2015 VL62 (Lemmon-Yeung-PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 Aug. 28.59811 TT
Peri. = 128.36404
Node = 94.55103 2000.0
Incl. = 165.61409
q = 2.7202998 AU
e = 1.0018469

m1 = 5.8 + 5 log(Delta) + 12.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 15.32	+16 23.8	3.583	3.609	-0.43	-6.6	15.5	83.7
Jan. 17	00 11.06	+15 18.1	3.718	3.546	-0.24	-4.9	15.5	72.4
Jan. 27	00 08.66	+14 28.7	3.844	3.485	-0.09	-3.5	15.5	61.6
Feb. 6	00 07.76	+13 54.0	3.954	3.424	+0.03	-2.2	15.5	51.3
Feb. 16	00 08.03	+13 31.8	4.042	3.365	+0.11	-1.1	15.4	41.4
Feb. 26	00 09.18	+13 20.3	4.106	3.308	+0.18	-0.2	15.4	32.0
Mar. 8	00 10.95	+13 17.9	4.141	3.252	+0.22	+0.5	15.3	23.2
Mar. 18	00 13.11	+13 22.7	4.147	3.199	+0.23	+1.1	15.2	15.5
Mar. 28	00 15.44	+13 33.5	4.121	3.147	+0.23	+1.5	15.1	11.0
Apr. 7	00 17.75	+13 49.0	4.064	3.098	+0.21	+1.9	15.0	13.2
Apr. 17	00 19.82	+14 07.8	3.975	3.051	+0.16	+2.1	14.9	19.9
Apr. 27	00 21.43	+14 29.0	3.856	3.006	+0.09	+2.2	14.7	28.1
May 7	00 22.30	+14 51.1	3.708	2.964	-0.02	+2.2	14.5	36.9
May 17	00 22.15	+15 12.9	3.534	2.925	-0.16	+2.0	14.4	46.1
May 27	00 20.60	+15 32.8	3.337	2.889	-0.34	+1.6	14.2	55.6
June 6	00 17.16	+15 48.5	3.121	2.856	-0.59	+0.9	14.0	65.6
June 16	00 11.23	+15 57.0	2.891	2.826	-0.92	-0.3	13.7	76.2
June 26	00 02.03	+15 53.8	2.653	2.800	-1.35	-2.2	13.5	87.5
July 6	23 48.58	+15 32.1	2.417	2.777	-1.88	-5.0	13.3	99.8
July 16	23 29.82	+14 41.9	2.193	2.758	-2.50	-9.2	13.0	113.3
July 26	23 04.83	+13 10.2	1.997	2.743	-3.14	-14.6	12.8	128.1
Aug. 5	22 33.42	+10 43.9	1.846	2.731	-3.64	-20.5	12.6	143.9
Aug. 15	21 57.02	+07 19.2	1.758	2.724	-3.81	-24.8	12.5	158.0
Aug. 25	21 18.88	+03 11.5	1.748	2.721	-3.58	-25.7	12.4	160.2
Sept. 4	20 43.12	-01 05.6	1.817	2.721	-3.03	-23.4	12.5	147.4
Sept. 14	20 12.80	-04 59.7	1.953	2.726	-2.37	-19.5	12.7	131.5
Sept. 24	19 49.07	-08 14.8	2.140	2.734	-1.74	-15.5	12.9	116.1
Oct. 4	19 31.64	-10 49.8	2.359	2.747	-1.21	-12.1	13.1	102.0
Oct. 14	19 19.51	-12 51.0	2.593	2.763	-0.79	-9.5	13.4	89.0
Oct. 24	19 11.61	-14 25.9	2.831	2.783	-0.46	-7.5	13.6	77.1
Nov. 3	19 06.96	-15 40.8	3.062	2.807	-0.22	-6.0	13.8	65.9
Nov. 13	19 04.78	-16 40.7	3.279	2.834	-0.03	-4.8	14.0	55.2
Nov. 23	19 04.46	-17 29.1	3.476	2.865	+0.10	-4.0	14.2	45.0
Dec. 3	19 05.50	-18 08.8	3.649	2.899	+0.20	-3.3	14.4	35.1
Dec. 13	19 07.50	-18 41.7	3.795	2.935	+0.26	-2.8	14.5	25.3
Dec. 23	19 10.13	-19 09.6	3.910	2.975	+0.30	-2.4	14.7	15.8
Jan. 2	19 13.10	-19 33.7	3.993	3.018	+0.31	-2.2	14.8	6.5
Jan. 12	19 16.16	-19 55.3	4.043	3.063	+0.29	-2.0	14.9	4.3
Jan. 22	19 19.06	-20 15.5	4.061	3.111	+0.25	-2.0	15.0	13.3
Feb. 1	19 21.56	-20 35.5	4.046	3.161	+0.19	-2.1	15.1	22.8
Feb. 11	19 23.41	-20 56.5	4.001	3.213	+0.09	-2.3	15.1	32.5
Feb. 21	19 24.34	-21 19.6	3.928	3.268	-0.03	-2.6	15.2	42.5
Mar. 3	19 24.05	-21 46.0	3.830	3.324	-0.18	-3.1	15.2	52.7
Mar. 13	19 22.21	-22 17.0	3.712	3.381	-0.38	-3.6	15.3	63.2
Mar. 23	19 18.44	-22 53.4	3.578	3.441	-0.61	-4.3	15.3	74.1

Comet 145P/Shoemaker-Levy

Epoch = 2017 July 26.0 TT
T = 2017 Aug. 31.90190 TT
Peri. = 10.36759 e = 0.5407853
Node = 26.81044 2000.0 a = 4.1464622 AU
Incl. = 11.25981 n = 0.11673135
q = 1.9041164 AU P = 8.44 years

m1 = 11.8 + 5 log(Delta) + 12.5 log(r(t-60))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	20 45.37	-26 27.9	3.660	2.769	+1.77	+8.3	20.7	21.6
Jan. 17	21 03.02	-25 04.8	3.647	2.715	+1.80	+9.0	20.6	16.1
Jan. 27	21 21.00	-23 34.4	3.620	2.662	+1.82	+9.8	20.5	11.3
Feb. 6	21 39.24	-21 56.6	3.582	2.609	+1.84	+10.5	20.4	8.0
Feb. 16	21 57.67	-20 11.7	3.532	2.556	+1.86	+11.2	20.3	7.8
Feb. 26	22 16.25	-18 19.8	3.471	2.504	+1.87	+11.8	20.1	10.7
Mar. 8	22 34.97	-16 21.4	3.400	2.453	+1.88	+12.5	20.0	14.8
Mar. 18	22 53.79	-14 16.9	3.320	2.403	+1.89	+13.0	19.8	19.2
Mar. 28	23 12.73	-12 06.7	3.233	2.354	+1.91	+13.5	19.7	23.7
Apr. 7	23 31.78	-09 51.5	3.140	2.307	+1.92	+14.0	19.5	28.2
Apr. 17	23 50.97	-07 32.0	3.041	2.260	+1.93	+14.3	19.3	32.5
Apr. 27	00 10.31	-05 08.8	2.939	2.216	+1.95	+14.6	19.1	36.8
May 7	00 29.81	-02 42.7	2.833	2.173	+1.97	+14.8	18.9	40.9
May 17	00 49.52	-00 14.6	2.725	2.133	+1.99	+14.9	18.7	45.0
May 27	01 09.44	+02 14.6	2.616	2.095	+2.01	+14.9	18.5	49.0
June 6	01 29.58	+04 44.0	2.507	2.060	+2.04	+14.8	18.3	52.9
June 16	01 49.96	+07 12.4	2.398	2.028	+2.06	+14.7	18.1	56.8
June 26	02 10.56	+09 39.0	2.290	1.999	+2.08	+14.4	17.9	60.7
July 6	02 31.34	+12 02.6	2.183	1.974	+2.09	+14.0	17.7	64.6
July 16	02 52.24	+14 22.3	2.079	1.952	+2.09	+13.5	17.5	68.5
July 26	03 13.17	+16 37.3	1.977	1.934	+2.08	+13.0	17.3	72.6
Aug. 5	03 33.97	+18 46.9	1.878	1.920	+2.05	+12.4	17.1	76.8
Aug. 15	03 54.46	+20 50.8	1.781	1.910	+1.99	+11.8	16.9	81.3
Aug. 25	04 14.38	+22 49.2	1.688	1.905	+1.90	+11.3	16.7	86.0
Sept. 4	04 33.40	+24 42.4	1.597	1.904	+1.78	+10.9	16.5	91.0
Sept. 14	04 51.15	+26 31.7	1.511	1.908	+1.60	+10.7	16.3	96.5
Sept. 24	05 07.14	+28 18.4	1.429	1.916	+1.37	+10.6	16.2	102.5
Oct. 4	05 20.82	+30 04.0	1.353	1.928	+1.08	+10.6	16.0	109.1
Oct. 14	05 31.61	+31 50.0	1.284	1.944	+0.72	+10.7	15.9	116.4
Oct. 24	05 38.85	+33 36.5	1.223	1.965	+0.32	+10.5	15.7	124.4
Nov. 3	05 42.05	+35 21.7	1.175	1.989	-0.11	+9.9	15.6	133.1
Nov. 13	05 40.94	+37 01.1	1.141	2.017	-0.52	+8.6	15.6	142.3
Nov. 23	05 35.74	+38 27.3	1.125	2.048	-0.83	+6.5	15.6	151.5
Dec. 3	05 27.47	+39 32.0	1.130	2.082	-0.97	+3.7	15.6	159.5
Dec. 13	05 17.82	+40 09.3	1.157	2.118	-0.91	+0.9	15.7	163.0
Dec. 23	05 08.75	+40 18.5	1.209	2.158	-0.67	-1.4	15.9	159.4
Jan. 2	05 02.03	+40 04.7	1.284	2.199	-0.33	-2.9	16.1	151.7
Jan. 12	04 58.68	+39 35.9	1.380	2.243	+0.04	-3.6	16.3	142.7
Jan. 22	04 59.03	+38 59.5	1.495	2.289	+0.39	-3.8	16.6	133.7
Feb. 1	05 02.93	+38 21.1	1.626	2.336	+0.70	-3.8	16.8	125.1
Feb. 11	05 09.90	+37 43.4	1.770	2.384	+0.95	-3.6	17.1	116.8
Feb. 21	05 19.44	+37 07.5	1.925	2.434	+1.16	-3.4	17.4	109.0
Mar. 3	05 31.05	+36 33.2	2.088	2.485	+1.32	-3.4	17.7	101.6
Mar. 13	05 44.27	+35 59.4	2.256	2.536	+1.44	-3.4	18.0	94.5
Mar. 23	05 58.71	+35 25.2	2.429	2.589	+1.53	-3.6	18.2	87.7

Comet C/2016 T3 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 Sept. 6.97180 TT
Peri. = 194.67236
Node = 271.75080 2000.0
Incl. = 22.67537
q = 2.6495720 AU
e = 0.9813111

m1 = 7.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	01 22.70	+28 39.2	3.273	3.619	+0.65	-4.6	18.4	102.7
Jan. 17	01 29.20	+27 53.3	3.345	3.554	+0.82	-3.4	18.3	94.1
Jan. 27	01 37.43	+27 18.8	3.421	3.490	+0.98	-2.4	18.2	85.8
Feb. 6	01 47.25	+26 55.3	3.496	3.427	+1.12	-1.4	18.1	77.9
Feb. 16	01 58.50	+26 41.5	3.569	3.366	+1.25	-0.5	18.1	70.3
Feb. 26	02 11.04	+26 36.0	3.636	3.306	+1.37	+0.1	18.0	63.0
Mar. 8	02 24.76	+26 37.2	3.697	3.248	+1.48	+0.6	17.9	56.0
Mar. 18	02 39.55	+26 43.1	3.750	3.192	+1.58	+0.9	17.8	49.3
Mar. 28	02 55.31	+26 51.9	3.794	3.137	+1.67	+1.0	17.7	42.9
Apr. 7	03 11.96	+27 01.9	3.829	3.085	+1.74	+0.9	17.7	36.7
Apr. 17	03 29.41	+27 11.0	3.853	3.034	+1.82	+0.7	17.6	30.7
Apr. 27	03 47.58	+27 17.6	3.868	2.986	+1.88	+0.3	17.5	25.0
May 7	04 06.37	+27 20.2	3.873	2.941	+1.93	-0.3	17.4	19.5
May 17	04 25.71	+27 17.0	3.868	2.898	+1.98	-1.0	17.3	14.1
May 27	04 45.48	+27 06.8	3.854	2.858	+2.01	-1.8	17.2	9.1
June 6	05 05.60	+26 48.3	3.831	2.821	+2.03	-2.8	17.1	4.7
June 16	05 25.92	+26 20.5	3.800	2.787	+2.04	-3.8	17.0	4.0
June 26	05 46.36	+25 42.6	3.761	2.757	+2.04	-4.9	16.9	7.8
July 6	06 06.77	+24 53.9	3.714	2.730	+2.03	-6.0	16.8	12.4
July 16	06 27.04	+23 54.1	3.661	2.707	+2.00	-7.1	16.7	17.3
July 26	06 47.04	+22 43.0	3.601	2.687	+1.96	-8.2	16.6	22.1
Aug. 5	07 06.66	+21 20.8	3.535	2.672	+1.91	-9.3	16.5	27.1
Aug. 15	07 25.79	+19 47.8	3.464	2.660	+1.85	-10.3	16.5	32.1
Aug. 25	07 44.32	+18 04.4	3.388	2.653	+1.78	-11.3	16.4	37.1
Sept. 4	08 02.15	+16 11.4	3.307	2.650	+1.70	-12.2	16.3	42.3
Sept. 14	08 19.18	+14 09.5	3.223	2.651	+1.61	-13.0	16.3	47.6
Sept. 24	08 35.32	+11 59.7	3.134	2.656	+1.51	-13.7	16.2	53.1
Oct. 4	08 50.44	+09 43.1	3.043	2.665	+1.40	-14.2	16.2	58.7
Oct. 14	09 04.46	+07 21.0	2.950	2.678	+1.28	-14.6	16.2	64.6
Oct. 24	09 17.25	+04 54.5	2.855	2.695	+1.14	-14.9	16.1	70.7
Nov. 3	09 28.65	+02 25.3	2.760	2.716	+0.99	-15.0	16.1	77.1
Nov. 13	09 38.53	-00 05.0	2.665	2.740	+0.82	-14.9	16.1	83.8
Nov. 23	09 46.71	-02 34.5	2.573	2.769	+0.63	-14.6	16.1	90.8
Dec. 3	09 52.99	-05 00.6	2.485	2.800	+0.42	-14.0	16.1	98.2
Dec. 13	09 57.24	-07 20.8	2.403	2.835	+0.21	-13.1	16.1	105.9
Dec. 23	09 59.30	-09 31.7	2.331	2.874	-0.02	-11.7	16.1	113.9
Jan. 2	09 59.15	-11 29.1	2.270	2.915	-0.23	-10.0	16.1	122.1
Jan. 12	09 56.89	-13 09.2	2.225	2.959	-0.41	-7.9	16.2	130.4
Jan. 22	09 52.79	-14 28.0	2.199	3.005	-0.54	-5.5	16.3	138.2
Feb. 1	09 47.36	-15 22.5	2.193	3.054	-0.61	-2.9	16.4	145.1
Feb. 11	09 41.27	-15 51.9	2.212	3.105	-0.60	-0.6	16.5	149.9
Feb. 21	09 35.27	-15 57.4	2.255	3.159	-0.52	+1.5	16.7	151.4
Mar. 3	09 30.09	-15 42.9	2.322	3.214	-0.38	+2.9	16.8	149.2
Mar. 13	09 26.28	-15 13.7	2.414	3.271	-0.21	+3.8	17.0	144.1
Mar. 23	09 24.21	-14 35.7	2.528	3.330	-0.02	+4.1	17.3	137.4

Comet C/2014 B1 (Schwartz)

Epoch = 2017 July 26.0 TT
T = 2017 Sept. 10.44140 TT
Peri. = 345.83695
Node = 161.39607 2000.0
Incl. = 28.37167
q = 9.5566473 AU
e = 1.0038861

m1 = 1.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	09 20.28	+01 53.4	8.854	9.655	-0.19	+1.6	16.2	142.7
Jan. 17	09 18.39	+02 09.0	8.764	9.647	-0.22	+2.0	16.2	152.5
Jan. 27	09 16.21	+02 28.6	8.701	9.640	-0.23	+2.3	16.1	161.4
Feb. 6	09 13.87	+02 51.9	8.669	9.632	-0.23	+2.6	16.1	167.1
Feb. 16	09 11.54	+03 17.8	8.667	9.626	-0.22	+2.8	16.1	165.4
Feb. 26	09 09.36	+03 45.6	8.695	9.619	-0.19	+2.9	16.1	157.9
Mar. 8	09 07.50	+04 14.2	8.752	9.613	-0.14	+2.8	16.1	148.6
Mar. 18	09 06.07	+04 42.6	8.835	9.607	-0.09	+2.7	16.2	138.9
Mar. 28	09 05.17	+05 09.9	8.942	9.602	-0.03	+2.5	16.2	129.0
Apr. 7	09 04.87	+05 35.2	9.067	9.596	+0.03	+2.3	16.2	119.3
Apr. 17	09 05.20	+05 58.1	9.207	9.591	+0.10	+2.0	16.2	109.7
Apr. 27	09 06.19	+06 17.9	9.357	9.587	+0.16	+1.6	16.3	100.2
May 7	09 07.82	+06 34.3	9.512	9.583	+0.22	+1.3	16.3	91.0
May 17	09 10.06	+06 47.2	9.668	9.579	+0.28	+0.9	16.3	81.9
May 27	09 12.87	+06 56.4	9.822	9.575	+0.33	+0.6	16.4	73.0
June 6	09 16.19	+07 02.0	9.968	9.572	+0.38	+0.2	16.4	64.3
June 16	09 19.96	+07 04.1	10.104	9.569	+0.42	-0.1	16.4	55.7
June 26	09 24.13	+07 02.8	10.226	9.566	+0.45	-0.4	16.5	47.3
July 6	09 28.64	+06 58.5	10.333	9.564	+0.48	-0.7	16.5	39.0
July 16	09 33.40	+06 51.3	10.421	9.562	+0.50	-1.0	16.5	30.8
July 26	09 38.37	+06 41.5	10.489	9.560	+0.51	-1.2	16.5	22.7
Aug. 5	09 43.48	+06 29.5	10.535	9.559	+0.52	-1.4	16.5	15.0
Aug. 15	09 48.65	+06 15.7	10.559	9.558	+0.52	-1.5	16.5	8.3
Aug. 25	09 53.85	+06 00.4	10.559	9.557	+0.51	-1.6	16.5	7.1
Sept. 4	09 58.99	+05 44.2	10.536	9.557	+0.50	-1.7	16.5	13.1
Sept.14	10 04.01	+05 27.4	10.490	9.557	+0.48	-1.7	16.5	20.9
Sept.24	10 08.86	+05 10.5	10.421	9.557	+0.46	-1.6	16.5	29.1
Oct. 4	10 13.47	+04 54.0	10.331	9.558	+0.43	-1.5	16.5	37.6
Oct. 14	10 17.77	+04 38.5	10.221	9.558	+0.39	-1.4	16.5	46.2
Oct. 24	10 21.70	+04 24.6	10.094	9.560	+0.35	-1.2	16.4	55.1
Nov. 3	10 25.19	+04 12.7	9.952	9.561	+0.30	-0.9	16.4	64.1
Nov. 13	10 28.19	+04 03.5	9.799	9.563	+0.24	-0.6	16.4	73.4
Nov. 23	10 30.64	+03 57.5	9.639	9.565	+0.19	-0.2	16.3	82.8
Dec. 3	10 32.49	+03 55.2	9.475	9.568	+0.12	+0.2	16.3	92.4
Dec. 13	10 33.72	+03 56.9	9.313	9.571	+0.06	+0.6	16.3	102.3
Dec. 23	10 34.30	+04 03.1	9.157	9.574	-0.01	+1.1	16.2	112.3
Jan. 2	10 34.24	+04 13.7	9.012	9.578	-0.07	+1.5	16.2	122.6
Jan. 12	10 33.58	+04 28.9	8.884	9.581	-0.12	+1.9	16.2	133.0
Jan. 22	10 32.37	+04 48.2	8.776	9.586	-0.17	+2.3	16.1	143.5
Feb. 1	10 30.71	+05 11.2	8.694	9.590	-0.20	+2.6	16.1	154.1
Feb. 11	10 28.71	+05 37.2	8.639	9.595	-0.22	+2.8	16.1	164.7
Feb. 21	10 26.52	+06 05.2	8.615	9.600	-0.22	+2.9	16.1	174.7
Mar. 3	10 24.28	+06 34.2	8.622	9.605	-0.21	+2.9	16.1	172.6
Mar. 13	10 22.15	+07 03.1	8.659	9.611	-0.19	+2.8	16.1	162.4
Mar. 23	10 20.28	+07 31.0	8.726	9.617	-0.15	+2.6	16.1	152.0

Comet P/2010 H2 (Vales) [Orbit-1]

Epoch = 2017 July 26.0 TT
T = 2017 Sept. 16.00999 TT
Peri. = 129.54624 e = 0.1947854
Node = 64.27188 2000.0 a = 3.8455750 AU
Incl. = 14.26299 n = 0.13069596
q = 3.0965131 AU P = 7.54 years

m1 = 10.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	11 15.04	+24 12.0	2.612	3.273	-0.88	+5.8	19.8	5.4/ 3	124.7
Jan. 17	11 15.23	+25 06.2	2.498	3.260	-0.93	+6.1	19.7	6.8/336	134.1
Jan. 27	11 13.18	+26 08.0	2.404	3.248	-0.98	+6.3	19.6	8.5/319	143.4
Feb. 6	11 09.00	+27 12.1	2.332	3.236	-1.03	+6.4	19.5	9.9/307	151.9
Feb. 16	11 03.03	+28 12.1	2.286	3.224	-1.07	+6.3	19.4	10.7/298	158.1
Feb. 26	10 55.84	+29 01.5	2.268	3.213	-1.09	+6.1	19.4	10.5/289	159.3
Mar. 8	10 48.24	+29 34.3	2.277	3.202	-1.10	+5.8	19.4	9.4/278	154.7
Mar. 18	10 41.10	+29 47.1	2.312	3.192	-1.08	+5.4	19.4	7.8/264	146.9
Mar. 28	10 35.18	+29 39.1	2.370	3.182	-1.05	+5.0	19.4	6.0/243	137.9
Apr. 7	10 31.07	+29 11.4	2.449	3.173	-1.00	+4.7	19.5	5.2/211	128.7
Apr. 17	10 29.08	+28 26.7	2.544	3.164	-0.95	+4.5	19.5	5.9/178	119.7
Apr. 27	10 29.27	+27 27.9	2.651	3.156	-0.89	+4.4	19.6	7.7/156	111.1
May 7	10 31.57	+26 17.8	2.767	3.148	-0.84	+4.3	19.7	9.7/144	102.8
May 17	10 35.78	+24 58.9	2.888	3.140	-0.79	+4.2	19.8	11.8/137	94.9
May 27	10 41.67	+23 32.9	3.012	3.134	-0.75	+4.3	19.8	13.7/132	87.4
June 6	10 49.01	+22 01.2	3.136	3.127	-0.71	+4.3	19.9	15.4/128	80.2
June 16	10 57.56	+20 24.9	3.258	3.122	-0.68	+4.3	20.0	16.8/126	73.3
June 26	11 07.13	+18 44.8	3.376	3.117	-0.65	+4.4	20.0	18.1/124	66.7
July 6	11 17.56	+17 01.7	3.488	3.112	-0.62	+4.5	20.1	19.2/123	60.3
July 16	11 28.68	+15 16.1	3.593	3.108	-0.60	+4.5	20.2	20.1/122	54.1
July 26	11 40.39	+13 28.6	3.691	3.105	-0.58	+4.6	20.2	20.9/121	48.0
Aug. 5	11 52.59	+11 39.7	3.780	3.102	-0.56	+4.6	20.3	21.6/120	42.1
Aug. 15	12 05.19	+09 50.0	3.858	3.100	-0.55	+4.7	20.3	22.1/120	36.2
Aug. 25	12 18.15	+08 00.0	3.926	3.098	-0.53	+4.7	20.3	22.6/119	30.5
Sept. 4	12 31.40	+06 10.3	3.983	3.097	-0.52	+4.7	20.4	22.9/118	24.8
Sept.14	12 44.90	+04 21.4	4.028	3.097	-0.52	+4.7	20.4	23.2/118	19.3
Sept.24	12 58.61	+02 33.9	4.060	3.097	-0.51	+4.8	20.4	23.3/117	14.1
Oct. 4	13 12.48	+00 48.4	4.079	3.097	-0.51	+4.8	20.4	23.4/116	9.7
Oct. 14	13 26.49	-00 54.6	4.085	3.099	-0.51	+4.8	20.4	23.4/115	7.6
Oct. 24	13 40.60	-02 34.4	4.077	3.101	-0.51	+4.8	20.4	23.3/114	9.6
Nov. 3	13 54.74	-04 10.4	4.055	3.103	-0.51	+4.8	20.4	23.0/114	14.2
Nov. 13	14 08.88	-05 42.2	4.020	3.107	-0.51	+4.7	20.4	22.7/113	19.7
Nov. 23	14 22.96	-07 09.2	3.971	3.110	-0.52	+4.7	20.4	22.3/112	25.6
Dec. 3	14 36.89	-08 31.0	3.909	3.115	-0.53	+4.7	20.4	21.7/111	31.8
Dec. 13	14 50.60	-09 47.2	3.834	3.120	-0.54	+4.7	20.3	21.0/110	38.2
Dec. 23	15 03.98	-10 57.5	3.746	3.125	-0.55	+4.7	20.3	20.1/109	44.7
Jan. 2	15 16.91	-12 01.8	3.647	3.131	-0.56	+4.7	20.2	19.0/108	51.5
Jan. 12	15 29.25	-13 00.0	3.539	3.138	-0.58	+4.7	20.2	17.7/107	58.4
Jan. 22	15 40.86	-13 52.3	3.421	3.145	-0.60	+4.8	20.1	16.2/107	65.6
Feb. 1	15 51.53	-14 38.8	3.296	3.152	-0.62	+4.8	20.1	14.5/107	73.0
Feb. 11	16 01.10	-15 20.0	3.166	3.160	-0.65	+4.9	20.0	12.4/107	80.7
Feb. 21	16 09.33	-15 56.4	3.034	3.169	-0.68	+5.0	19.9	10.1/109	88.7
Mar. 3	16 15.99	-16 28.6	2.901	3.178	-0.71	+5.1	19.8	7.6/112	97.0
Mar. 13	16 20.86	-16 57.3	2.771	3.188	-0.75	+5.2	19.8	4.8/122	105.8
Mar. 23	16 23.72	-17 23.1	2.647	3.198	-0.79	+5.4	19.7	2.5/158	115.0

Comet C/2016 N4 (MASTER)

Epoch = 2017 July 26.0 TT
T = 2017 Sept. 16.59729 TT
Peri. = 55.95571
Node = 354.03182 2000.0
Incl. = 72.55772
q = 3.1990927 AU
e = 0.9994232

m1 = 8.4 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	22 53.54	-04 07.9	4.444	3.987	+0.41	+10.6	16.1	56.5
Jan. 17	22 57.66	-02 22.1	4.522	3.933	+0.50	+11.0	16.1	48.0
Jan. 27	23 02.65	-00 32.1	4.585	3.881	+0.57	+11.4	16.1	39.9
Feb. 6	23 08.36	+01 22.3	4.629	3.830	+0.63	+11.9	16.1	32.1
Feb. 16	23 14.64	+03 21.3	4.654	3.780	+0.67	+12.4	16.1	24.8
Feb. 26	23 21.38	+05 25.3	4.660	3.732	+0.71	+12.9	16.0	18.2
Mar. 8	23 28.47	+07 34.6	4.645	3.685	+0.73	+13.5	16.0	13.1
Mar. 18	23 35.80	+09 49.7	4.610	3.640	+0.75	+14.1	15.9	11.5
Mar. 28	23 43.30	+12 10.9	4.555	3.596	+0.76	+14.8	15.9	14.2
Apr. 7	23 50.85	+14 38.9	4.483	3.554	+0.75	+15.5	15.8	19.4
Apr. 17	23 58.38	+17 14.2	4.393	3.515	+0.74	+16.3	15.7	25.6
Apr. 27	00 05.81	+19 57.6	4.289	3.477	+0.72	+17.2	15.6	32.0
May 7	00 13.01	+22 49.9	4.171	3.441	+0.69	+18.2	15.5	38.6
May 17	00 19.88	+25 51.8	4.042	3.407	+0.64	+19.3	15.4	45.3
May 27	00 26.28	+29 04.3	3.906	3.376	+0.57	+20.4	15.3	51.9
June 6	00 32.03	+32 28.2	3.764	3.347	+0.49	+21.6	15.2	58.4
June 16	00 36.89	+36 04.0	3.620	3.320	+0.37	+22.8	15.1	64.9
June 26	00 40.56	+39 52.0	3.478	3.296	+0.20	+24.0	15.0	71.3
July 6	00 42.60	+43 51.8	3.340	3.274	-0.02	+25.0	14.9	77.5
July 16	00 42.43	+48 01.7	3.210	3.255	-0.33	+25.7	14.8	83.5
July 26	00 39.18	+52 18.6	3.092	3.239	-0.75	+25.8	14.7	89.1
Aug. 5	00 31.63	+56 36.8	2.989	3.225	-1.35	+25.0	14.6	94.2
Aug. 15	00 18.16	+60 47.1	2.903	3.214	-2.15	+22.9	14.5	98.6
Aug. 25	23 56.63	+64 36.1	2.838	3.206	-3.15	+18.9	14.5	102.2
Sept. 4	23 25.17	+67 45.6	2.793	3.201	-4.14	+13.0	14.4	104.7
Sept. 14	22 43.82	+69 55.5	2.769	3.199	-4.69	+5.6	14.4	106.2
Sept. 24	21 56.89	+70 51.4	2.766	3.200	-4.45	-1.6	14.4	106.6
Oct. 4	21 12.39	+70 35.3	2.781	3.203	-3.56	-6.9	14.4	106.0
Oct. 14	20 36.79	+69 26.8	2.811	3.210	-2.48	-9.6	14.4	104.5
Oct. 24	20 11.99	+67 50.8	2.854	3.219	-1.53	-10.2	14.5	102.5
Nov. 3	19 56.72	+66 09.0	2.906	3.231	-0.79	-9.3	14.5	100.1
Nov. 13	19 48.79	+64 35.9	2.964	3.246	-0.25	-7.6	14.6	97.6
Nov. 23	19 46.34	+63 20.1	3.026	3.264	+0.16	-5.3	14.7	95.0
Dec. 3	19 47.91	+62 27.0	3.089	3.284	+0.46	-2.8	14.7	92.6
Dec. 13	19 52.48	+61 59.0	3.151	3.307	+0.69	-0.2	14.8	90.4
Dec. 23	19 59.38	+61 57.4	3.211	3.332	+0.87	+2.5	14.9	88.4
Jan. 2	20 08.07	+62 22.2	3.269	3.360	+1.02	+5.1	14.9	86.8
Jan. 12	20 18.25	+63 13.0	3.324	3.390	+1.15	+7.6	15.0	85.4
Jan. 22	20 29.73	+64 28.9	3.377	3.423	+1.27	+10.0	15.1	84.3
Feb. 1	20 42.40	+66 08.5	3.429	3.458	+1.39	+12.2	15.1	83.4
Feb. 11	20 56.32	+68 10.0	3.480	3.494	+1.54	+14.1	15.2	82.7
Feb. 21	21 11.74	+70 31.5	3.532	3.533	+1.74	+15.9	15.3	82.0
Mar. 3	21 29.17	+73 10.4	3.587	3.574	+2.06	+17.3	15.3	81.3
Mar. 13	21 49.82	+76 03.5	3.645	3.617	+2.66	+18.4	15.4	80.5
Mar. 23	22 16.39	+79 07.3	3.708	3.661	+3.98	+18.8	15.5	79.6

Comet 213P/Van Ness

Epoch = 2017 July 26.0 TT
T = 2017 Sept. 24.37786 TT
Peri. = 5.54321 e = 0.4075095
Node = 311.32824 2000.0 a = 3.3475408 AU
Incl. = 10.37894 n = 0.16092194
q = 1.9833861 AU P = 6.12 years

m1 = 7.2 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	16 04.80	-29 13.7	3.364	2.721	+1.86	-5.3	17.4	42.4
Jan. 17	16 23.38	-30 07.1	3.230	2.679	+1.87	-4.7	17.2	48.4
Jan. 27	16 42.09	-30 54.1	3.088	2.637	+1.87	-4.0	17.0	54.3
Feb. 6	17 00.82	-31 34.5	2.940	2.596	+1.86	-3.4	16.8	60.3
Feb. 16	17 19.42	-32 08.0	2.787	2.555	+1.83	-2.7	16.6	66.3
Feb. 26	17 37.75	-32 34.8	2.631	2.514	+1.78	-2.0	16.3	72.3
Mar. 8	17 55.59	-32 55.1	2.473	2.474	+1.72	-1.4	16.1	78.5
Mar. 18	18 12.75	-33 09.4	2.315	2.434	+1.62	-0.9	15.8	84.7
Mar. 28	18 29.00	-33 18.6	2.159	2.396	+1.50	-0.5	15.5	91.1
Apr. 7	18 44.03	-33 23.4	2.005	2.358	+1.35	-0.1	15.2	97.7
Apr. 17	18 57.55	-33 24.9	1.856	2.321	+1.17	+0.1	14.9	104.5
Apr. 27	19 09.20	-33 24.1	1.714	2.285	+0.94	+0.2	14.7	111.6
May 7	19 18.58	-33 21.9	1.579	2.251	+0.67	+0.3	14.4	119.2
May 17	19 25.28	-33 18.6	1.455	2.217	+0.36	+0.5	14.1	127.2
May 27	19 28.89	-33 13.6	1.343	2.186	+0.02	+0.9	13.8	135.7
June 6	19 29.12	-33 05.0	1.246	2.156	-0.31	+1.6	13.5	144.8
June 16	19 25.97	-32 49.3	1.166	2.128	-0.62	+2.7	13.3	154.3
June 26	19 19.81	-32 22.4	1.106	2.102	-0.82	+4.3	13.1	163.9
July 6	19 11.63	-31 39.9	1.068	2.078	-0.87	+6.0	12.9	170.7
July 16	19 02.92	-30 40.3	1.053	2.057	-0.76	+7.5	12.8	167.4
July 26	18 55.28	-29 25.8	1.060	2.038	-0.51	+8.4	12.7	158.1
Aug. 5	18 50.15	-28 01.3	1.088	2.022	-0.18	+8.8	12.7	148.2
Aug. 15	18 48.39	-26 32.9	1.134	2.008	+0.19	+8.8	12.8	138.6
Aug. 25	18 50.29	-25 05.0	1.195	1.997	+0.55	+8.5	12.8	129.6
Sept. 4	18 55.76	-23 39.8	1.269	1.990	+0.86	+8.2	12.9	121.3
Sept. 14	19 04.40	-22 17.8	1.354	1.985	+1.14	+8.0	13.1	113.7
Sept. 24	19 15.75	-20 57.5	1.446	1.983	+1.36	+8.0	13.2	106.7
Oct. 4	19 29.36	-19 37.3	1.545	1.985	+1.54	+8.2	13.4	100.3
Oct. 14	19 44.75	-18 15.2	1.649	1.989	+1.68	+8.6	13.5	94.2
Oct. 24	20 01.54	-16 49.6	1.758	1.997	+1.79	+9.0	13.7	88.5
Nov. 3	20 19.39	-15 19.1	1.869	2.007	+1.86	+9.6	13.9	83.0
Nov. 13	20 38.01	-13 42.9	1.983	2.020	+1.91	+10.2	14.0	77.8
Nov. 23	20 57.16	-12 00.6	2.099	2.037	+1.95	+10.8	14.2	72.7
Dec. 3	21 16.65	-10 12.2	2.215	2.055	+1.97	+11.4	14.4	67.7
Dec. 13	21 36.32	-08 18.0	2.332	2.076	+1.98	+11.9	14.6	62.9
Dec. 23	21 56.07	-06 18.6	2.448	2.100	+1.97	+12.4	14.8	58.0
Jan. 2	22 15.81	-04 14.7	2.563	2.126	+1.97	+12.7	15.0	53.3
Jan. 12	22 35.48	-02 07.3	2.675	2.154	+1.96	+13.0	15.2	48.5
Jan. 22	22 55.04	+00 02.6	2.785	2.183	+1.94	+13.1	15.4	43.8
Feb. 1	23 14.46	+02 13.9	2.891	2.215	+1.93	+13.2	15.5	39.1
Feb. 11	23 33.74	+04 25.6	2.993	2.248	+1.91	+13.1	15.7	34.4
Feb. 21	23 52.88	+06 36.7	3.088	2.282	+1.90	+12.9	15.9	29.7
Mar. 3	00 11.87	+08 46.2	3.178	2.318	+1.89	+12.7	16.1	25.0
Mar. 13	00 30.72	+10 53.0	3.261	2.355	+1.87	+12.3	16.3	20.4
Mar. 23	00 49.44	+12 56.5	3.335	2.393	+1.86	+11.9	16.4	16.0

Comet 263P/Gibbs

Epoch = 2017 July 26.0 TT
T = 2017 Sept. 29.84870 TT
Peri. = 34.60081 e = 0.5874236
Node = 105.83059 2000.0 a = 3.0607611 AU
Incl. = 11.53133 n = 0.18406021
q = 1.2627978 AU P = 5.35 years

m1 = 18.2 + 5 log(Delta) + 5.0 log(r(t-40))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 21.57	-09 46.3	2.915	2.819	+0.77	+8.7	23.0	74.7
Jan. 17	00 29.27	-08 19.8	2.989	2.757	+0.92	+9.3	23.0	67.0
Jan. 27	00 38.47	-06 46.6	3.053	2.693	+1.06	+9.9	23.0	59.7
Feb. 6	00 49.04	-05 07.8	3.106	2.628	+1.18	+10.3	23.0	52.7
Feb. 16	01 00.85	-03 24.5	3.146	2.563	+1.30	+10.7	22.9	46.1
Feb. 26	01 13.80	-01 37.4	3.174	2.496	+1.40	+11.0	22.9	39.9
Mar. 8	01 27.84	+00 12.7	3.187	2.428	+1.51	+11.2	22.9	33.9
Mar. 18	01 42.93	+02 05.0	3.188	2.359	+1.61	+11.4	22.8	28.3
Mar. 28	01 59.06	+03 58.6	3.175	2.290	+1.72	+11.4	22.8	23.1
Apr. 7	02 16.25	+05 52.8	3.149	2.220	+1.83	+11.4	22.7	18.2
Apr. 17	02 34.53	+07 46.6	3.111	2.149	+1.94	+11.2	22.6	13.7
Apr. 27	02 53.96	+09 39.0	3.063	2.078	+2.07	+11.0	22.5	9.8
May 7	03 14.62	+11 28.7	3.005	2.007	+2.20	+10.6	22.4	7.0
May 17	03 36.58	+13 14.5	2.938	1.936	+2.34	+10.0	22.3	6.0
May 27	03 59.97	+14 54.7	2.865	1.865	+2.49	+9.3	22.1	7.3
June 6	04 24.87	+16 27.2	2.787	1.794	+2.65	+8.3	22.0	9.6
June 16	04 51.39	+17 49.9	2.705	1.725	+2.82	+7.0	21.9	12.1
June 26	05 19.60	+19 00.0	2.622	1.657	+3.00	+5.5	21.7	14.5
July 6	05 49.56	+19 54.6	2.538	1.592	+3.17	+3.6	21.6	16.7
July 16	06 21.23	+20 30.5	2.457	1.529	+3.33	+1.4	21.4	18.7
July 26	06 54.54	+20 44.2	2.380	1.471	+3.47	-1.1	21.3	20.3
Aug. 5	07 29.29	+20 33.0	2.309	1.417	+3.59	-3.9	21.1	21.7
Aug. 15	08 05.20	+19 54.4	2.245	1.370	+3.67	-6.7	21.0	22.9
Aug. 25	08 41.94	+18 47.4	2.190	1.330	+3.71	-9.5	20.8	23.8
Sept. 4	09 19.06	+17 12.3	2.145	1.298	+3.71	-12.1	20.7	24.6
Sept. 14	09 56.17	+15 11.5	2.111	1.276	+3.67	-14.3	20.6	25.3
Sept. 24	10 32.88	+12 49.0	2.087	1.265	+3.60	-15.9	20.5	26.0
Oct. 4	11 08.86	+10 10.2	2.074	1.264	+3.50	-16.9	20.4	26.8
Oct. 14	11 43.89	+07 21.6	2.070	1.274	+3.39	-17.2	20.3	27.7
Oct. 24	12 17.82	+04 29.5	2.074	1.294	+3.27	-16.9	20.3	28.8
Nov. 3	12 50.52	+01 40.3	2.084	1.324	+3.14	-16.1	20.3	30.2
Nov. 13	13 21.97	-01 00.8	2.098	1.363	+3.02	-14.9	20.3	32.0
Nov. 23	13 52.12	-03 29.8	2.113	1.409	+2.88	-13.4	20.4	34.1
Dec. 3	14 20.94	-05 43.6	2.129	1.461	+2.75	-11.7	20.4	36.6
Dec. 13	14 48.40	-07 40.6	2.142	1.519	+2.61	-9.9	20.5	39.6
Dec. 23	15 14.46	-09 19.9	2.150	1.581	+2.46	-8.2	20.5	43.0
Jan. 2	15 39.03	-10 41.5	2.153	1.646	+2.30	-6.5	20.6	46.9
Jan. 12	16 02.04	-11 46.2	2.148	1.713	+2.14	-4.9	20.7	51.2
Jan. 22	16 23.40	-12 35.1	2.135	1.782	+1.96	-3.5	20.8	56.0
Feb. 1	16 42.95	-13 09.7	2.114	1.852	+1.76	-2.2	20.8	61.2
Feb. 11	17 00.57	-13 32.0	2.083	1.923	+1.55	-1.2	20.9	66.9
Feb. 21	17 16.10	-13 43.9	2.044	1.995	+1.32	-0.4	20.9	73.1
Mar. 3	17 29.33	-13 47.6	1.997	2.066	+1.07	+0.2	21.0	79.8
Mar. 13	17 40.07	-13 45.4	1.944	2.137	+0.80	+0.6	21.0	87.1
Mar. 23	17 48.08	-13 39.4	1.886	2.208	+0.50	+0.7	21.0	94.9

Comet 18D/Perrine-Mrkos [Orbit 1]

Epoch = 2017 July 26.0 TT
T = 2017 Oct. 11.14919 TT
Peri. = 152.14987 e = 0.5729117
Node = 236.76191 2000.0 a = 4.1972744 AU
Incl. = 13.34659 n = 0.11461805
q = 1.7926068 AU P = 8.60 years

m1 = 11.5 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	19 24.21	-13 37.1	3.971	3.005	-0.54	-2.0	.	23.6/ 79	9.2
Jan. 17	19 40.08	-12 52.0	3.915	2.947	-0.57	-2.3	.	24.3/ 78	8.7
Jan. 27	19 56.26	-11 58.1	3.844	2.888	-0.60	-2.5	.	24.9/ 76	11.9
Feb. 6	20 12.68	-10 55.2	3.760	2.829	-0.63	-2.8	.	25.5/ 74	16.7
Feb. 16	20 29.28	-09 43.4	3.663	2.771	-0.67	-3.0	22.9	26.1/ 72	21.9
Feb. 26	20 46.02	-08 22.6	3.554	2.712	-0.71	-3.3	22.7	26.6/ 71	27.2
Mar. 8	21 02.85	-06 53.0	3.436	2.653	-0.75	-3.7	22.4	27.0/ 69	32.5
Mar. 18	21 19.75	-05 15.0	3.309	2.595	-0.80	-4.0	22.1	27.5/ 67	37.8
Mar. 28	21 36.70	-03 28.7	3.175	2.537	-0.85	-4.4	21.8	27.9/ 66	43.0
Apr. 7	21 53.68	-01 34.7	3.036	2.480	-0.91	-4.7	21.8	28.3/ 65	48.0
Apr. 17	22 10.70	+00 26.6	2.892	2.424	-0.98	-5.1	21.5	28.6/ 63	52.9
Apr. 27	22 27.75	+02 34.6	2.746	2.368	-1.06	-5.4	21.2	28.9/ 62	57.8
May 7	22 44.85	+04 48.5	2.598	2.313	-1.14	-5.7	20.9	29.1/ 61	62.5
May 17	23 02.00	+07 07.5	2.451	2.259	-1.24	-6.0	20.5	29.3/ 60	67.2
May 27	23 19.22	+09 30.7	2.304	2.207	-1.35	-6.3	20.2	29.3/ 60	71.7
June 6	23 36.50	+11 56.6	2.160	2.157	-1.47	-6.5	19.8	29.3/ 59	76.2
June 16	23 53.85	+14 23.9	2.019	2.108	-1.62	-6.5	19.5	29.1/ 59	80.7
June 26	00 11.24	+16 50.8	1.883	2.062	-1.78	-6.5	19.2	28.7/ 59	85.1
July 6	00 28.60	+19 15.1	1.751	2.018	-1.96	-6.4	18.8	28.0/ 59	89.6
July 16	00 45.87	+21 34.4	1.624	1.977	-2.17	-6.1	18.5	27.0/ 60	94.2
July 26	01 02.89	+23 45.7	1.503	1.940	-2.41	-5.7	18.1	25.5/ 61	98.9
Aug. 5	01 19.43	+25 45.4	1.389	1.906	-2.68	-5.2	17.8	23.6/ 63	103.8
Aug. 15	01 35.20	+27 29.7	1.282	1.876	-2.98	-4.6	17.5	21.0/ 65	109.0
Aug. 25	01 49.76	+28 54.2	1.183	1.850	-3.31	-3.9	17.2	17.8/ 70	114.7
Sept. 4	02 02.61	+29 53.5	1.092	1.828	-3.65	-3.4	16.9	14.1/ 77	121.0
Sept.14	02 13.23	+30 22.5	1.011	1.812	-4.01	-3.1	16.7	10.2/ 94	127.9
Sept.24	02 21.08	+30 15.2	0.941	1.800	-4.36	-3.2	16.5	7.9/127	135.7
Oct. 4	02 25.89	+29 26.7	0.884	1.794	-4.66	-3.8	16.3	9.5/164	144.4
Oct. 14	02 27.81	+27 55.2	0.843	1.793	-4.87	-4.8	16.2	13.2/182	153.9
Oct. 24	02 27.46	+25 43.7	0.820	1.797	-4.94	-6.0	16.2	16.1/187	163.8
Nov. 3	02 26.05	+23 03.6	0.819	1.806	-4.85	-6.8	16.2	17.1/185	171.8
Nov. 13	02 24.92	+20 13.0	0.840	1.821	-4.61	-7.0	16.3	16.2/178	168.5
Nov. 23	02 25.25	+17 31.5	0.884	1.840	-4.27	-6.5	16.5	14.1/165	158.9
Dec. 3	02 27.82	+15 15.1	0.950	1.864	-3.89	-5.5	16.8	12.7/144	148.8
Dec. 13	02 32.88	+13 31.6	1.034	1.892	-3.50	-4.3	17.1	13.0/122	139.2
Dec. 23	02 40.37	+12 22.0	1.135	1.925	-3.13	-3.1	17.5	14.8/105	130.4
Jan. 2	02 50.07	+11 42.9	1.251	1.961	-2.80	-2.0	17.8	17.0/ 95	122.2
Jan. 12	03 01.62	+11 28.3	1.379	2.000	-2.51	-1.2	18.2	19.2/ 88	114.7
Jan. 22	03 14.71	+11 32.4	1.517	2.043	-2.25	-0.5	18.6	21.1/ 85	107.6
Feb. 1	03 29.06	+11 49.4	1.663	2.088	-2.03	+0.1	19.0	22.6/ 83	101.0
Feb. 11	03 44.40	+12 14.5	1.815	2.135	-1.84	+0.6	19.4	23.8/ 83	94.7
Feb. 21	04 00.53	+12 43.6	1.973	2.185	-1.68	+1.0	19.8	24.7/ 83	88.6
Mar. 3	04 17.27	+13 13.6	2.134	2.237	-1.53	+1.4	20.1	25.2/ 83	82.8
Mar. 13	04 34.46	+13 41.7	2.297	2.290	-1.40	+1.7	20.5	25.6/ 84	77.1
Mar. 23	04 51.97	+14 06.1	2.461	2.344	-1.29	+2.0	20.9	25.8/ 85	71.5

Comet P/2004 T1 (LINEAR-NEAT)

Epoch = 2017 July 26.0 TT
T = 2017 Oct. 13.26393 TT
Peri. = 336.34606 e = 0.5064574
Node = 51.45955 2000.0 a = 3.4768261 AU
Incl. = 11.03277 n = 0.15203011
q = 1.7159618 AU P = 6.48 years

m1 = 10.8 + 5 log(Delta) + 20.0 log(r(t+50))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	19 14.41	-29 07.7	3.839	2.865	-0.66	-0.3	22.0	24.6/ 85	6.7
Jan. 17	19 33.03	-28 40.8	3.778	2.812	-0.69	-0.7	21.8	25.2/ 83	9.4
Jan. 27	19 51.98	-28 06.6	3.702	2.758	-0.72	-1.2	21.6	25.8/ 82	14.2
Feb. 6	20 11.16	-27 25.2	3.614	2.704	-0.76	-1.7	21.3	26.3/ 80	19.5
Feb. 16	20 30.52	-26 36.5	3.513	2.650	-0.79	-2.2	21.1	26.8/ 79	24.9
Feb. 26	20 49.99	-25 40.8	3.402	2.596	-0.83	-2.8	20.8	27.3/ 78	30.3
Mar. 8	21 09.53	-24 38.4	3.281	2.542	-0.87	-3.4	20.5	27.7/ 77	35.7
Mar. 18	21 29.10	-23 29.7	3.153	2.488	-0.91	-4.1	20.2	28.1/ 76	40.9
Mar. 28	21 48.69	-22 15.3	3.018	2.434	-0.96	-4.9	19.9	28.4/ 75	46.0
Apr. 7	22 08.25	-20 55.7	2.878	2.380	-1.01	-5.7	19.6	28.7/ 74	51.1
Apr. 17	22 27.78	-19 31.6	2.735	2.327	-1.06	-6.6	19.3	29.1/ 73	56.0
Apr. 27	22 47.28	-18 03.8	2.589	2.274	-1.11	-7.5	19.0	29.3/ 73	60.8
May 7	23 06.73	-16 33.1	2.442	2.223	-1.17	-8.5	18.7	29.5/ 72	65.5
May 17	23 26.13	-15 00.3	2.296	2.172	-1.24	-9.6	18.4	29.6/ 72	70.1
May 27	23 45.46	-13 26.3	2.152	2.122	-1.32	-10.8	18.0	29.7/ 72	74.7
June 6	00 04.68	-11 52.2	2.009	2.074	-1.40	-12.1	17.7	29.6/ 72	79.2
June 16	00 23.76	-10 18.9	1.871	2.028	-1.50	-13.6	17.4	29.4/ 72	83.7
June 26	00 42.61	-08 47.3	1.736	1.983	-1.61	-15.1	17.1	28.9/ 72	88.1
July 6	01 01.12	-07 18.6	1.607	1.941	-1.73	-16.7	16.8	28.2/ 73	92.6
July 16	01 19.14	-05 53.4	1.484	1.901	-1.87	-18.5	16.5	27.1/ 73	97.2
July 26	01 36.45	-04 32.5	1.367	1.865	-2.03	-20.4	16.3	25.5/ 73	102.0
Aug. 5	01 52.74	-03 16.4	1.256	1.831	-2.21	-22.5	16.0	23.5/ 72	107.0
Aug. 15	02 07.67	-02 04.7	1.153	1.802	-2.43	-24.7	15.8	20.8/ 71	112.4
Aug. 25	02 20.77	-00 56.9	1.059	1.776	-2.68	-27.0	15.6	17.4/ 68	118.2
Sept. 4	02 31.49	+00 08.7	0.973	1.754	-2.96	-29.4	15.4	13.4/ 61	124.6
Sept.14	02 39.28	+01 14.6	0.897	1.738	-3.29	-31.7	15.3	9.5/ 43	131.8
Sept.24	02 43.57	+02 24.1	0.832	1.725	-3.63	-33.9	15.2	7.7/ 5	139.9
Oct. 4	02 44.04	+03 41.1	0.782	1.718	-3.96	-35.7	15.2	10.0/331	148.9
Oct. 14	02 40.83	+05 09.0	0.748	1.716	-4.24	-36.9	15.2	13.6/317	158.8
Oct. 24	02 34.68	+06 48.9	0.732	1.719	-4.39	-37.3	15.3	15.8/315	168.8
Nov. 3	02 27.09	+08 39.5	0.738	1.727	-4.39	-36.9	15.4	15.8/318	173.6
Nov. 13	02 19.92	+10 37.1	0.764	1.740	-4.22	-35.6	15.7	14.1/328	165.4
Nov. 23	02 14.83	+12 37.1	0.812	1.757	-3.93	-33.6	16.0	12.2/347	155.1
Dec. 3	02 13.01	+14 36.1	0.879	1.779	-3.58	-31.1	16.3	11.9/ 13	145.2
Dec. 13	02 14.83	+16 32.1	0.963	1.806	-3.23	-28.3	16.7	13.6/ 34	136.0
Dec. 23	02 20.23	+18 23.9	1.062	1.836	-2.91	-25.3	17.1	16.3/ 48	127.6
Jan. 2	02 28.86	+20 11.2	1.174	1.870	-2.63	-22.5	17.5	18.9/ 57	119.9
Jan. 12	02 40.23	+21 53.0	1.296	1.907	-2.40	-19.7	17.9	21.2/ 62	112.8
Jan. 22	02 53.89	+23 28.7	1.428	1.947	-2.20	-17.2	18.3	23.1/ 67	106.2
Feb. 1	03 09.44	+24 57.7	1.568	1.990	-2.03	-14.9	18.7	24.4/ 70	99.9
Feb. 11	03 26.50	+26 18.9	1.713	2.034	-1.88	-12.7	19.1	25.5/ 72	93.9
Feb. 21	03 44.78	+27 31.6	1.864	2.081	-1.76	-10.8	19.5	26.2/ 75	88.1
Mar. 3	04 04.02	+28 35.0	2.018	2.129	-1.65	-9.1	19.9	26.7/ 77	82.5
Mar. 13	04 23.99	+29 28.4	2.174	2.179	-1.55	-7.5	20.2	27.0/ 80	77.1
Mar. 23	04 44.49	+30 11.5	2.332	2.230	-1.45	-6.1	20.6	27.2/ 82	71.7

Comet 65P/Gunn

Epoch = 2017 July 26.0 TT
T = 2017 Oct. 16.74731 TT
Peri. = 213.52738 e = 0.2501029
Node = 62.01963 2000.0 a = 3.8806102 AU
Incl. = 9.18507 n = 0.12893002
q = 2.9100583 AU P = 7.64 years

m1 = 5.8 + 5 log(Delta) + 15.0 log(r(t+90))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	15 21.14	-14 56.8	3.681	3.218	+1.23	-5.3	15.9	54.9
Jan. 17	15 33.41	-15 49.8	3.541	3.199	+1.16	-4.8	15.8	62.0
Jan. 27	15 45.06	-16 37.6	3.393	3.180	+1.08	-4.3	15.7	69.2
Feb. 6	15 55.89	-17 20.5	3.240	3.162	+0.98	-3.8	15.6	76.7
Feb. 16	16 05.72	-17 58.6	3.083	3.144	+0.86	-3.4	15.4	84.4
Feb. 26	16 14.31	-18 32.3	2.926	3.127	+0.71	-3.0	15.3	92.3
Mar. 8	16 21.42	-19 02.2	2.770	3.110	+0.54	-2.7	15.1	100.6
Mar. 18	16 26.80	-19 28.9	2.619	3.094	+0.34	-2.4	15.0	109.2
Mar. 28	16 30.20	-19 52.8	2.476	3.078	+0.12	-2.2	14.8	118.3
Apr. 7	16 31.41	-20 14.4	2.345	3.063	-0.11	-2.0	14.7	127.8
Apr. 17	16 30.32	-20 33.9	2.229	3.048	-0.34	-1.7	14.6	137.8
Apr. 27	16 26.95	-20 51.3	2.131	3.034	-0.54	-1.5	14.5	148.3
May 7	16 21.53	-21 06.5	2.056	3.021	-0.70	-1.3	14.4	159.3
May 17	16 14.56	-21 19.2	2.006	3.008	-0.78	-1.0	14.3	170.5
May 27	16 06.75	-21 29.7	1.983	2.996	-0.78	-0.9	14.3	178.0
June 6	15 58.97	-21 38.7	1.988	2.985	-0.69	-0.9	14.3	166.8
June 16	15 52.09	-21 47.7	2.019	2.974	-0.53	-1.1	14.3	155.7
June 26	15 46.79	-21 58.2	2.074	2.964	-0.32	-1.4	14.3	145.0
July 6	15 43.60	-22 12.0	2.150	2.955	-0.08	-1.8	14.4	134.8
July 16	15 42.76	-22 30.1	2.243	2.947	+0.15	-2.3	14.5	125.1
July 26	15 44.30	-22 52.9	2.349	2.940	+0.39	-2.7	14.6	116.0
Aug. 5	15 48.17	-23 20.2	2.465	2.933	+0.60	-3.1	14.7	107.4
Aug. 15	15 54.20	-23 51.4	2.588	2.927	+0.80	-3.4	14.8	99.3
Aug. 25	16 02.19	-24 25.3	2.714	2.922	+0.98	-3.6	14.9	91.6
Sept. 4	16 11.97	-25 00.9	2.841	2.918	+1.13	-3.6	15.0	84.2
Sept. 14	16 23.31	-25 36.7	2.968	2.915	+1.28	-3.5	15.2	77.2
Sept. 24	16 36.06	-26 11.5	3.092	2.912	+1.40	-3.2	15.3	70.4
Oct. 4	16 50.05	-26 43.9	3.212	2.911	+1.51	-2.9	15.3	63.7
Oct. 14	17 05.12	-27 12.7	3.325	2.910	+1.60	-2.4	15.4	57.3
Oct. 24	17 21.12	-27 36.9	3.432	2.910	+1.68	-1.9	15.5	51.0
Nov. 3	17 37.92	-27 55.5	3.530	2.911	+1.74	-1.2	15.6	44.8
Nov. 13	17 55.36	-28 07.7	3.620	2.913	+1.80	-0.5	15.7	38.7
Nov. 23	18 13.33	-28 12.9	3.699	2.916	+1.83	+0.2	15.8	32.6
Dec. 3	18 31.67	-28 10.6	3.767	2.920	+1.86	+1.0	15.8	26.7
Dec. 13	18 50.27	-28 00.5	3.824	2.924	+1.87	+1.8	15.9	20.8
Dec. 23	19 08.99	-27 42.8	3.868	2.930	+1.87	+2.5	15.9	15.1
Jan. 2	19 27.72	-27 17.6	3.900	2.936	+1.86	+3.2	16.0	9.8
Jan. 12	19 46.34	-26 45.3	3.919	2.943	+1.84	+3.9	16.0	5.9
Jan. 22	20 04.76	-26 06.4	3.926	2.951	+1.81	+4.5	16.0	6.8
Feb. 1	20 22.87	-25 21.7	3.919	2.959	+1.77	+5.0	16.1	11.4
Feb. 11	20 40.61	-24 32.1	3.899	2.969	+1.73	+5.4	16.1	16.9
Feb. 21	20 57.89	-23 38.5	3.867	2.979	+1.68	+5.6	16.1	22.7
Mar. 3	21 14.64	-22 42.0	3.822	2.990	+1.62	+5.8	16.1	28.6
Mar. 13	21 30.82	-21 43.8	3.766	3.001	+1.55	+5.9	16.1	34.6
Mar. 23	21 46.36	-20 45.2	3.698	3.014	+1.48	+5.8	16.1	40.7

Comet 96P/Machholz

Epoch = 2017 July 26.0 TT
T = 2017 Oct. 27.96253 TT
Peri. = 14.79287 e = 0.9591608
Node = 94.25473 2000.0 a = 3.0350668 AU
Incl. = 58.13796 n = 0.18640248
q = 0.1239497 AU P = 5.29 years

H = 14.6 , G = 0.15 (r>2.4AU)
m1 = 12.8 + 5 log(Delta) + 12.5 log(r) (r<2.4AU)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	Mag.	Elong. °
Jan. 7	19 33.84	-40 03.2	4.821	3.900	+1.17	+1.4	21.4	18.2
Jan. 17	19 45.54	-39 49.2	4.744	3.828	+1.20	+1.2	21.3	19.1
Jan. 27	19 57.55	-39 37.3	4.643	3.755	+1.22	+0.9	21.3	22.8
Feb. 6	20 09.76	-39 27.9	4.520	3.680	+1.23	+0.6	21.2	28.1
Feb. 16	20 22.09	-39 21.8	4.376	3.603	+1.24	+0.2	21.2	34.3
Feb. 26	20 34.47	-39 19.8	4.212	3.523	+1.24	-0.3	21.1	40.9
Mar. 8	20 46.84	-39 23.1	4.030	3.442	+1.23	-1.0	21.0	47.7
Mar. 18	20 59.12	-39 33.1	3.833	3.358	+1.21	-1.9	20.9	54.7
Mar. 28	21 11.27	-39 51.7	3.622	3.272	+1.19	-2.9	20.8	61.8
Apr. 7	21 23.19	-40 21.1	3.401	3.183	+1.16	-4.3	20.7	69.0
Apr. 17	21 34.82	-41 04.0	3.172	3.091	+1.13	-6.0	20.5	76.2
Apr. 27	21 46.09	-42 03.9	2.938	2.997	+1.08	-8.1	20.3	83.5
May 7	21 56.86	-43 24.9	2.703	2.899	+1.01	-10.7	20.1	90.8
May 17	22 06.98	-45 12.0	2.470	2.799	+0.92	-14.0	19.8	98.1
May 27	22 16.21	-47 31.6	2.243	2.694	+0.79	-17.9	19.5	105.3
June 6	22 24.15	-50 30.5	2.026	2.587	+0.60	-22.6	19.2	112.2
June 16	22 30.17	-54 16.1	1.824	2.475	+0.28	-27.9	18.9	118.5
June 26	22 32.97	-58 55.0	1.640	2.358	-0.31	-33.4	18.5	123.4
July 6	22 29.88	-64 29.3	1.481	2.237	-1.57	-38.2	18.0	126.2
July 16	22 14.22	-70 50.8	1.349	2.111	-4.94	-39.3	17.5	125.8
July 26	21 24.81	-77 23.5	1.248	1.979	-14.82	-26.5	17.0	121.6
Aug. 5	18 56.63	-81 48.3	1.177	1.840	-19.24	+13.4	16.5	114.0
Aug. 15	15 44.25	-79 34.5	1.132	1.694	-7.65	+36.5	15.9	104.2
Aug. 25	14 27.77	-73 29.1	1.106	1.538	-2.64	+39.1	15.4	93.1
Sept. 4	14 01.39	-66 57.9	1.089	1.372	-1.03	+37.4	14.7	81.6
Sept. 14	13 51.13	-60 43.8	1.072	1.194	-0.46	+36.4	13.9	70.0
Sept. 24	13 46.49	-54 39.6	1.045	0.998	-0.38	+39.5	12.9	58.3
Oct. 4	13 42.70	-48 04.3	0.999	0.779	-0.60	+53.7	11.4	45.9
Oct. 14	13 36.68	-39 07.0	0.932	0.526	-0.65	106.0	9.2	31.4
Oct. 24	13 30.14	-21 26.6	0.881	0.217	+7.77	+99.1	4.2	11.3
Nov. 3	14 47.84	-04 55.7	1.192	0.285	+6.44	-19.8	6.4	10.7
Nov. 13	15 52.26	-08 14.0	1.495	0.582	+4.16	-17.2	10.7	13.7
Nov. 23	16 33.82	-11 06.0	1.756	0.827	+3.12	-12.3	13.0	13.3
Dec. 3	17 05.06	-13 09.1	1.989	1.040	+2.54	-8.7	14.5	11.2
Dec. 13	17 30.44	-14 36.6	2.195	1.232	+2.16	-6.2	15.6	8.8
Dec. 23	17 52.01	-15 38.9	2.374	1.408	+1.88	-4.4	16.5	8.3
Jan. 2	18 10.81	-16 22.9	2.524	1.571	+1.66	-3.1	17.3	11.1
Jan. 12	18 27.46	-16 53.6	2.647	1.724	+1.48	-2.1	17.9	16.1
Jan. 22	18 42.29	-17 14.6	2.743	1.869	+1.32	-1.4	18.4	22.3
Feb. 1	18 55.46	-17 28.7	2.811	2.007	+1.16	-1.0	18.8	29.0
Feb. 11	19 07.07	-17 38.3	2.853	2.137	+1.00	-0.7	19.2	36.2
Feb. 21	19 17.10	-17 45.6	2.870	2.263	+0.84	-0.7	19.5	43.9
Mar. 3	19 25.49	-17 52.3	2.863	2.383	+0.67	-0.8	19.8	51.9
Mar. 13	19 32.14	-18 00.4	2.837	2.498	+0.47	-1.1	19.9	60.3
Mar. 23	19 36.88	-18 11.6	2.792	2.609	+0.26	-1.6	19.9	69.1

Comet 183P/Korlevic-Juric

Epoch = 2017 July 26.0 TT
T = 2017 Nov. 11.07104 TT
Peri. = 161.22419 e = 0.1369962
Node = 5.84401 2000.0 a = 4.4871057 AU
Incl. = 18.75386 n = 0.10369424
q = 3.8723893 AU P = 9.50 years

m1 = 8.4 + 5 log(Delta) + 15.0 log(r(t-90))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	09 32.85	+36 36.4	3.137	3.994	-0.63	+3.3	20.0	146.5
Jan. 17	09 26.60	+37 09.1	3.077	3.986	-0.76	+2.4	20.0	154.3
Jan. 27	09 19.04	+37 33.2	3.045	3.979	-0.82	+1.2	19.9	158.9
Feb. 6	09 10.84	+37 45.0	3.041	3.972	-0.81	-0.3	19.9	157.9
Feb. 16	09 02.78	+37 41.9	3.067	3.966	-0.72	-1.8	19.9	151.9
Feb. 26	08 55.59	+37 23.7	3.119	3.959	-0.57	-3.2	19.9	143.5
Mar. 8	08 49.88	+36 51.5	3.196	3.953	-0.38	-4.4	20.0	134.2
Mar. 18	08 46.06	+36 07.5	3.292	3.946	-0.18	-5.3	20.0	124.8
Mar. 28	08 44.27	+35 14.3	3.405	3.941	+0.03	-6.0	20.1	115.6
Apr. 7	08 44.53	+34 14.2	3.530	3.935	+0.22	-6.5	20.2	106.6
Apr. 17	08 46.71	+33 09.2	3.663	3.929	+0.39	-6.9	20.2	97.9
Apr. 27	08 50.62	+32 00.5	3.800	3.924	+0.54	-7.1	20.3	89.6
May 7	08 56.03	+30 49.0	3.938	3.919	+0.67	-7.4	20.4	81.6
May 17	09 02.71	+29 35.3	4.073	3.914	+0.78	-7.6	20.4	73.9
May 27	09 10.47	+28 19.7	4.204	3.910	+0.86	-7.7	20.5	66.4
June 6	09 19.10	+27 02.4	4.327	3.906	+0.93	-7.9	20.5	59.2
June 16	09 28.44	+25 43.3	4.441	3.902	+0.99	-8.1	20.6	52.2
June 26	09 38.35	+24 22.7	4.545	3.898	+1.03	-8.2	20.6	45.3
July 6	09 48.70	+23 00.6	4.636	3.894	+1.07	-8.4	20.7	38.6
July 16	09 59.37	+21 37.0	4.715	3.891	+1.09	-8.5	20.7	32.1
July 26	10 10.30	+20 12.3	4.779	3.888	+1.11	-8.6	20.7	25.7
Aug. 5	10 21.38	+18 46.4	4.827	3.885	+1.12	-8.7	20.7	19.4
Aug. 15	10 32.55	+17 19.9	4.860	3.883	+1.12	-8.7	20.7	13.5
Aug. 25	10 43.76	+15 52.8	4.877	3.881	+1.12	-8.7	20.7	8.6
Sept. 4	10 54.93	+14 25.5	4.877	3.879	+1.11	-8.7	20.7	7.2
Sept.14	11 06.02	+12 58.6	4.860	3.877	+1.09	-8.6	20.7	10.8
Sept.24	11 16.96	+11 32.3	4.827	3.876	+1.07	-8.5	20.7	16.6
Oct. 4	11 27.70	+10 07.2	4.776	3.874	+1.05	-8.3	20.7	22.9
Oct. 14	11 38.18	+08 43.7	4.709	3.873	+1.01	-8.1	20.6	29.6
Oct. 24	11 48.31	+07 22.4	4.627	3.873	+0.97	-7.8	20.6	36.5
Nov. 3	11 58.03	+06 03.9	4.529	3.872	+0.92	-7.5	20.5	43.7
Nov. 13	12 07.23	+04 48.8	4.418	3.872	+0.86	-7.1	20.5	51.0
Nov. 23	12 15.80	+03 37.7	4.294	3.873	+0.78	-6.6	20.4	58.6
Dec. 3	12 23.63	+02 31.3	4.160	3.873	+0.69	-6.1	20.3	66.4
Dec. 13	12 30.57	+01 30.2	4.018	3.874	+0.59	-5.5	20.2	74.5
Dec. 23	12 36.47	+00 35.1	3.870	3.875	+0.47	-4.8	20.2	83.0
Jan. 2	12 41.16	-00 13.3	3.720	3.876	+0.33	-4.1	20.1	91.7
Jan. 12	12 44.48	-00 54.6	3.570	3.878	+0.18	-3.4	20.0	100.9
Jan. 22	12 46.25	-01 28.2	3.425	3.879	+0.01	-2.6	19.9	110.4
Feb. 1	12 46.35	-01 53.7	3.289	3.881	-0.16	-1.7	19.8	120.4
Feb. 11	12 44.73	-02 11.2	3.167	3.884	-0.33	-1.0	19.7	130.8
Feb. 21	12 41.40	-02 20.9	3.063	3.886	-0.49	-0.3	19.7	141.6
Mar. 3	12 36.54	-02 23.7	2.982	3.889	-0.61	+0.3	19.6	152.7
Mar. 13	12 30.47	-02 21.0	2.927	3.892	-0.68	+0.6	19.6	164.2
Mar. 23	12 23.62	-02 14.7	2.901	3.896	-0.71	+0.7	19.5	175.7

Comet 62P/Tsuchinshan

Epoch = 2017 July 26.0 TT
T = 2017 Nov. 16.26035 TT
Peri. = 30.35448 e = 0.5975290
Node = 90.24243 2000.0 a = 3.4383123 AU
Incl. = 9.70776 n = 0.15459167
q = 1.3838210 AU P = 6.38 years

m1 = 6.2 + 5 log(Delta) + 35.0 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	23 17.52	-13 55.7	3.566	3.165	+0.94	+8.0	.	58.5
Jan. 17	23 26.92	-12 35.9	3.627	3.105	+1.04	+8.5	.	51.1
Jan. 27	23 37.35	-11 11.0	3.676	3.044	+1.13	+8.9	.	43.9
Feb. 6	23 48.68	-09 41.6	3.709	2.982	+1.21	+9.3	.	37.1
Feb. 16	00 00.82	-08 08.2	3.727	2.920	+1.29	+9.7	.	30.5
Feb. 26	00 13.70	-06 31.3	3.729	2.856	+1.36	+10.0	.	24.3
Mar. 8	00 27.27	-04 51.5	3.716	2.792	+1.42	+10.2	.	18.4
Mar. 18	00 41.48	-03 09.4	3.687	2.726	+1.48	+10.4	.	13.0
Mar. 28	00 56.33	-01 25.3	3.643	2.660	+1.55	+10.5	.	8.6
Apr. 7	01 11.81	+00 20.1	3.585	2.594	+1.61	+10.6	.	6.7
Apr. 17	01 27.93	+02 06.2	3.514	2.526	+1.68	+10.6	.	8.8
Apr. 27	01 44.73	+03 52.5	3.430	2.459	+1.75	+10.6	.	12.8
May 7	02 02.25	+05 38.4	3.336	2.390	+1.83	+10.5	.	17.2
May 17	02 20.52	+07 23.0	3.231	2.321	+1.91	+10.3	22.8	21.6
May 27	02 39.63	+09 05.8	3.119	2.252	+2.00	+10.0	22.3	26.0
June 6	02 59.65	+10 45.7	3.000	2.183	+2.10	+9.6	21.8	30.2
June 16	03 20.65	+12 21.8	2.875	2.114	+2.21	+9.1	21.3	34.2
June 26	03 42.73	+13 53.0	2.747	2.045	+2.33	+8.5	20.7	38.1
July 6	04 05.99	+15 18.0	2.617	1.977	+2.45	+7.7	20.2	41.7
July 16	04 30.52	+16 35.2	2.486	1.910	+2.59	+6.8	19.6	45.1
July 26	04 56.41	+17 43.0	2.356	1.844	+2.73	+5.6	18.9	48.3
Aug. 5	05 23.72	+18 39.3	2.228	1.780	+2.88	+4.3	18.3	51.3
Aug. 15	05 52.49	+19 22.1	2.105	1.718	+3.02	+2.7	17.7	54.0
Aug. 25	06 22.73	+19 49.2	1.987	1.659	+3.16	+0.9	17.0	56.5
Sept. 4	06 54.36	+19 58.4	1.876	1.603	+3.29	-1.1	16.3	58.7
Sept.14	07 27.24	+19 47.9	1.773	1.552	+3.39	-3.2	15.7	60.7
Sept.24	08 01.18	+19 16.4	1.679	1.506	+3.47	-5.3	15.0	62.5
Oct. 4	08 35.83	+18 23.6	1.595	1.466	+3.50	-7.3	14.4	64.1
Oct. 14	09 10.88	+17 10.4	1.521	1.434	+3.50	-9.1	13.8	65.6
Oct. 24	09 45.89	+15 39.3	1.457	1.408	+3.45	-10.5	13.2	67.1
Nov. 3	10 20.43	+13 54.2	1.402	1.392	+3.37	-11.4	12.8	68.7
Nov. 13	10 54.12	+12 00.1	1.356	1.384	+3.24	-11.7	12.3	70.4
Nov. 23	11 26.56	+10 02.9	1.316	1.386	+3.08	-11.4	12.0	72.4
Dec. 3	11 57.41	+08 08.4	1.282	1.397	+2.90	-10.6	11.8	74.7
Dec. 13	12 26.37	+06 22.2	1.252	1.416	+2.68	-9.3	11.6	77.5
Dec. 23	12 53.14	+04 49.0	1.224	1.444	+2.43	-7.6	11.6	80.9
Jan. 2	13 17.42	+03 32.5	1.197	1.479	+2.15	-5.7	11.7	84.9
Jan. 12	13 38.93	+02 35.2	1.169	1.521	+1.84	-3.6	11.8	89.5
Jan. 22	13 57.30	+01 58.8	1.140	1.569	+1.49	-1.5	12.1	95.0
Feb. 1	14 12.16	+01 43.6	1.111	1.622	+1.10	+0.5	12.4	101.2
Feb. 11	14 23.16	+01 49.0	1.082	1.679	+0.67	+2.4	12.7	108.4
Feb. 21	14 29.90	+02 13.1	1.056	1.739	+0.23	+3.9	13.2	116.5
Mar. 3	14 32.15	+02 51.9	1.035	1.802	-0.22	+4.8	13.6	125.5
Mar. 13	14 29.95	+03 39.7	1.024	1.867	-0.62	+4.9	14.1	135.3
Mar. 23	14 23.73	+04 28.7	1.027	1.933	-0.92	+4.1	14.7	145.6

Comet 24P/Schaumasse

Epoch = 2017 July 26.0 TT
T = 2017 Nov. 16.85314 TT
Peri. = 58.05464 e = 0.7046116
Node = 79.62995 2000.0 a = 4.0839407 AU
Incl. = 11.73450 n = 0.11942216
q = 1.2063487 AU P = 8.25 years

m1 = 10.2 + 5 log(Delta) + 20.0 log(r(t-20))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 07.34	-10 18.9	3.614	3.426	+0.62	+7.3	.	71.2
Jan. 17	00 13.52	-09 05.9	3.685	3.356	+0.75	+7.9	.	63.0
Jan. 27	00 20.98	-07 47.1	3.746	3.285	+0.86	+8.4	.	55.2
Feb. 6	00 29.61	-06 23.5	3.792	3.213	+0.97	+8.8	.	47.7
Feb. 16	00 39.27	-04 55.7	3.824	3.140	+1.06	+9.1	.	40.5
Feb. 26	00 49.88	-03 24.6	3.840	3.065	+1.15	+9.4	.	33.7
Mar. 8	01 01.37	-01 50.6	3.839	2.990	+1.23	+9.6	.	27.1
Mar. 18	01 13.66	-00 14.3	3.822	2.914	+1.31	+9.8	22.8	20.9
Mar. 28	01 26.74	+01 23.6	3.788	2.837	+1.38	+9.9	22.6	15.1
Apr. 7	01 40.59	+03 02.8	3.738	2.758	+1.46	+10.0	22.4	10.0
Apr. 17	01 55.19	+04 42.7	3.673	2.679	+1.54	+10.0	22.1	6.8
Apr. 27	02 10.58	+06 22.8	3.593	2.599	+1.62	+10.0	21.8	7.6
May 7	02 26.79	+08 02.5	3.500	2.517	+1.71	+9.9	21.5	11.2
May 17	02 43.86	+09 41.3	3.394	2.435	+1.80	+9.7	21.1	15.6
May 27	03 01.87	+11 18.5	3.278	2.353	+1.90	+9.5	20.8	20.2
June 6	03 20.91	+12 53.5	3.152	2.269	+2.02	+9.2	20.4	24.6
June 16	03 41.07	+14 25.4	3.019	2.185	+2.14	+8.8	20.0	28.9
June 26	04 02.49	+15 53.2	2.880	2.101	+2.28	+8.2	19.6	32.9
July 6	04 25.30	+17 15.7	2.737	2.016	+2.44	+7.6	19.2	36.7
July 16	04 49.68	+18 31.3	2.592	1.932	+2.61	+6.7	18.7	40.3
July 26	05 15.80	+19 38.2	2.447	1.848	+2.80	+5.6	18.2	43.5
Aug. 5	05 43.81	+20 34.0	2.305	1.765	+3.01	+4.2	17.7	46.4
Aug. 15	06 13.90	+21 15.7	2.166	1.684	+3.23	+2.4	17.2	48.9
Aug. 25	06 46.19	+21 39.9	2.035	1.605	+3.45	+0.3	16.7	51.0
Sept. 4	07 20.71	+21 42.5	1.912	1.529	+3.67	-2.3	16.1	52.7
Sept. 14	07 57.39	+21 19.3	1.801	1.458	+3.86	-5.3	15.6	54.0
Sept. 24	08 35.98	+20 26.5	1.704	1.392	+4.00	-8.5	15.0	54.8
Oct. 4	09 16.03	+19 01.6	1.623	1.334	+4.09	-11.7	14.5	55.2
Oct. 14	09 56.95	+17 04.6	1.558	1.285	+4.11	-14.6	14.0	55.2
Oct. 24	10 38.02	+14 38.5	1.510	1.246	+4.05	-16.9	13.6	55.1
Nov. 3	11 18.51	+11 49.7	1.480	1.220	+3.93	-18.3	13.2	55.0
Nov. 13	11 57.81	+08 46.8	1.464	1.207	+3.76	-18.7	12.9	54.9
Nov. 23	12 35.43	+05 39.6	1.460	1.209	+3.56	-18.2	12.7	55.2
Dec. 3	13 11.03	+02 37.1	1.465	1.225	+3.34	-17.0	12.7	55.9
Dec. 13	13 44.42	-00 13.4	1.476	1.254	+3.11	-15.3	12.7	57.2
Dec. 23	14 15.49	-02 46.8	1.488	1.295	+2.86	-13.3	12.8	59.1
Jan. 2	14 44.13	-05 00.3	1.499	1.346	+2.62	-11.3	13.0	61.6
Jan. 12	15 10.28	-06 53.1	1.507	1.407	+2.36	-9.3	13.3	64.9
Jan. 22	15 33.84	-08 25.8	1.508	1.474	+2.08	-7.4	13.7	68.8
Feb. 1	15 54.67	-09 39.8	1.503	1.546	+1.80	-5.8	14.0	73.5
Feb. 11	16 12.63	-10 37.6	1.491	1.623	+1.49	-4.4	14.4	79.0
Feb. 21	16 27.51	-11 21.6	1.471	1.702	+1.15	-3.3	14.8	85.2
Mar. 3	16 39.05	-11 54.8	1.446	1.784	+0.80	-2.5	15.2	92.2
Mar. 13	16 47.01	-12 19.9	1.417	1.867	+0.41	-2.0	15.6	100.0
Mar. 23	16 51.11	-12 39.6	1.386	1.951	+0.01	-1.7	15.9	108.8

Comet 236P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2017 Nov. 20.15997 TT
Peri. = 119.26827 e = 0.5077796
Node = 245.67250 2000.0 a = 3.7330671 AU
Incl. = 16.33320 n = 0.13664866
q = 1.8374918 AU P = 7.21 years

m1 = 14.2 + 5 log(Delta) + 12.5 log(r(t-40))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 50.51	-19 48.5	4.022	3.110	+1.58	+2.3	.	19.2
Jan. 17	18 06.28	-19 25.2	3.916	3.059	+1.58	+3.1	.	25.6
Jan. 27	18 22.09	-18 53.7	3.796	3.007	+1.58	+4.0	.	32.0
Feb. 6	18 37.85	-18 13.6	3.664	2.955	+1.56	+4.9	.	38.4
Feb. 16	18 53.45	-17 24.7	3.520	2.903	+1.54	+5.8	.	44.7
Feb. 26	19 08.82	-16 26.7	3.368	2.851	+1.50	+6.7	22.9	51.0
Mar. 8	19 23.85	-15 19.5	3.207	2.798	+1.46	+7.6	22.7	57.3
Mar. 18	19 38.43	-14 03.1	3.041	2.746	+1.40	+8.6	22.5	63.5
Mar. 28	19 52.47	-12 37.5	2.870	2.693	+1.34	+9.5	22.3	69.8
Apr. 7	20 05.85	-11 02.8	2.697	2.641	+1.26	+10.4	22.0	76.1
Apr. 17	20 18.44	-09 19.3	2.524	2.589	+1.17	+11.2	21.8	82.4
Apr. 27	20 30.11	-07 27.0	2.352	2.537	+1.06	+12.0	21.5	88.7
May 7	20 40.67	-05 26.6	2.183	2.486	+0.93	+12.8	21.3	95.2
May 17	20 49.96	-03 18.7	2.019	2.435	+0.78	+13.5	21.0	101.7
May 27	20 57.74	-01 04.2	1.863	2.385	+0.60	+13.9	20.7	108.4
June 6	21 03.75	+01 15.2	1.715	2.335	+0.40	+14.2	20.4	115.2
June 16	21 07.75	+03 37.0	1.579	2.287	+0.17	+14.1	20.1	122.1
June 26	21 09.47	+05 57.7	1.455	2.240	-0.07	+13.4	19.8	129.1
July 6	21 08.73	+08 11.7	1.347	2.194	-0.32	+12.1	19.6	135.9
July 16	21 05.53	+10 12.3	1.255	2.150	-0.54	+9.9	19.3	142.2
July 26	21 00.13	+11 51.5	1.181	2.108	-0.69	+7.0	19.1	147.2
Aug. 5	20 53.21	+13 01.2	1.127	2.068	-0.74	+3.5	18.8	149.9
Aug. 15	20 45.84	+13 36.1	1.092	2.030	-0.66	-0.1	18.7	149.4
Aug. 25	20 39.29	+13 34.8	1.076	1.995	-0.44	-3.3	18.5	145.9
Sept. 4	20 34.87	+13 01.3	1.077	1.963	-0.13	-5.7	18.4	140.5
Sept. 14	20 33.53	+12 04.2	1.094	1.934	+0.23	-7.1	18.3	134.1
Sept. 24	20 35.82	+10 53.0	1.124	1.908	+0.61	-7.5	18.3	127.4
Oct. 4	20 41.91	+09 37.8	1.166	1.886	+0.97	-7.1	18.3	120.9
Oct. 14	20 51.57	+08 26.9	1.217	1.868	+1.29	-6.1	18.3	114.6
Oct. 24	21 04.47	+07 26.3	1.277	1.854	+1.57	-4.6	18.3	108.7
Nov. 3	21 20.16	+06 40.2	1.344	1.844	+1.80	-2.9	18.3	103.2
Nov. 13	21 38.13	+06 11.1	1.418	1.839	+1.98	-1.1	18.4	98.0
Nov. 23	21 57.93	+05 59.6	1.499	1.838	+2.12	+0.6	18.5	93.0
Dec. 3	22 19.15	+06 05.7	1.586	1.841	+2.22	+2.2	18.6	88.2
Dec. 13	22 41.37	+06 28.0	1.678	1.849	+2.29	+3.7	18.6	83.6
Dec. 23	23 04.31	+07 04.9	1.776	1.861	+2.34	+4.9	18.8	79.1
Jan. 2	23 27.69	+07 53.9	1.879	1.878	+2.36	+5.9	18.9	74.7
Jan. 12	23 51.32	+08 52.5	1.987	1.898	+2.37	+6.6	19.0	70.4
Jan. 22	00 15.05	+09 58.0	2.099	1.922	+2.37	+7.0	19.1	66.0
Feb. 1	00 38.76	+11 07.9	2.214	1.950	+2.36	+7.2	19.3	61.7
Feb. 11	01 02.38	+12 19.7	2.331	1.981	+2.35	+7.1	19.5	57.3
Feb. 21	01 25.87	+13 31.1	2.450	2.015	+2.33	+6.9	19.6	52.9
Mar. 3	01 49.17	+14 40.2	2.568	2.051	+2.31	+6.5	19.8	48.5
Mar. 13	02 12.26	+15 45.1	2.686	2.090	+2.29	+5.9	20.0	44.1
Mar. 23	02 35.13	+16 44.5	2.802	2.132	+2.26	+5.3	20.1	39.7

Comet C/2016 A1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 Nov. 23.31318 TT
Peri. = 10.31317
Node = 128.17435 2000.0
Incl. = 121.18282
q = 5.3278799 AU
e = 1.0019146

m1 = 5.2 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	09 28.46	-09 40.1	5.109	5.832	-0.79	+6.9	16.4	133.7
Jan. 17	09 20.55	-08 31.2	4.978	5.802	-0.87	+8.3	16.3	144.0
Jan. 27	09 11.84	-07 08.0	4.879	5.774	-0.92	+9.6	16.3	153.0
Feb. 6	09 02.69	-05 32.1	4.818	5.746	-0.92	+10.6	16.2	158.4
Feb. 16	08 53.53	-03 46.2	4.795	5.719	-0.87	+11.2	16.2	157.2
Feb. 26	08 44.78	-01 53.8	4.812	5.693	-0.80	+11.5	16.2	150.2
Mar. 8	08 36.83	+00 00.9	4.866	5.667	-0.69	+11.3	16.2	140.6
Mar. 18	08 29.97	+01 54.2	4.952	5.643	-0.56	+10.9	16.2	129.9
Mar. 28	08 24.40	+03 42.9	5.065	5.619	-0.42	+10.2	16.2	119.1
Apr. 7	08 20.21	+05 24.7	5.199	5.596	-0.28	+9.4	16.3	108.4
Apr. 17	08 17.40	+06 58.2	5.347	5.574	-0.15	+8.5	16.3	97.9
Apr. 27	08 15.92	+08 23.0	5.502	5.553	-0.02	+7.6	16.3	87.6
May 7	08 15.68	+09 39.0	5.658	5.532	+0.09	+6.8	16.4	77.7
May 17	08 16.53	+10 46.6	5.809	5.513	+0.18	+6.0	16.4	68.1
May 27	08 18.35	+11 46.5	5.951	5.494	+0.27	+5.3	16.5	58.7
June 6	08 21.00	+12 39.4	6.079	5.477	+0.33	+4.7	16.5	49.6
June 16	08 24.35	+13 26.2	6.190	5.460	+0.39	+4.2	16.5	40.7
June 26	08 28.26	+14 07.8	6.281	5.444	+0.44	+3.7	16.5	31.9
July 6	08 32.62	+14 45.0	6.349	5.429	+0.47	+3.4	16.6	23.2
July 16	08 37.30	+15 18.9	6.393	5.416	+0.49	+3.1	16.6	14.6
July 26	08 42.20	+15 50.4	6.411	5.403	+0.50	+3.0	16.6	6.2
Aug. 5	08 47.21	+16 20.4	6.404	5.391	+0.50	+3.0	16.5	3.1
Aug. 15	08 52.22	+16 50.0	6.369	5.380	+0.49	+3.0	16.5	11.3
Aug. 25	08 57.13	+17 20.2	6.309	5.370	+0.47	+3.2	16.5	20.0
Sept. 4	09 01.81	+17 52.2	6.224	5.361	+0.43	+3.5	16.5	28.7
Sept. 14	09 06.15	+18 27.2	6.115	5.354	+0.39	+3.9	16.4	37.6
Sept. 24	09 10.02	+19 06.6	5.984	5.347	+0.33	+4.5	16.4	46.7
Oct. 4	09 13.28	+19 51.9	5.835	5.341	+0.25	+5.3	16.3	56.1
Oct. 14	09 15.76	+20 44.5	5.670	5.336	+0.15	+6.1	16.2	65.7
Oct. 24	09 17.30	+21 45.8	5.493	5.333	+0.04	+7.2	16.2	75.5
Nov. 3	09 17.69	+22 57.4	5.311	5.330	-0.10	+8.3	16.1	85.8
Nov. 13	09 16.73	+24 20.3	5.128	5.328	-0.25	+9.5	16.0	96.3
Nov. 23	09 14.22	+25 55.2	4.950	5.328	-0.43	+10.6	15.9	107.3
Dec. 3	09 09.94	+27 41.7	4.787	5.328	-0.62	+11.7	15.9	118.5
Dec. 13	09 03.75	+29 38.3	4.643	5.330	-0.82	+12.4	15.8	130.0
Dec. 23	08 55.56	+31 42.1	4.527	5.332	-1.01	+12.6	15.7	141.5
Jan. 2	08 45.45	+33 48.4	4.446	5.336	-1.18	+12.3	15.7	152.3
Jan. 12	08 33.66	+35 51.8	4.403	5.341	-1.30	+11.4	15.7	160.6
Jan. 22	08 20.65	+37 46.2	4.402	5.346	-1.36	+10.1	15.7	162.0
Feb. 1	08 07.08	+39 26.8	4.442	5.353	-1.34	+8.4	15.7	155.3
Feb. 11	07 53.70	+40 50.7	4.522	5.361	-1.25	+6.6	15.8	145.1
Feb. 21	07 41.22	+41 57.1	4.635	5.370	-1.10	+5.0	15.8	134.0
Mar. 3	07 30.27	+42 47.5	4.777	5.379	-0.91	+3.7	15.9	122.8
Mar. 13	07 21.20	+43 24.7	4.940	5.390	-0.70	+2.7	16.0	111.9
Mar. 23	07 14.23	+43 51.8	5.117	5.402	-0.49	+2.0	16.1	101.4

Comet 14P/Wolf

Epoch = 2017 July 26.0 TT
T = 2017 Dec. 2.02957 TT
Peri. = 159.03143 e = 0.3558965
Node = 202.11605 2000.0 a = 4.2586612 AU
Incl. = 27.90313 n = 0.11214875
q = 2.7430186 AU P = 8.79 years

m1 = 14.2 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	19 07.47	-00 43.8	4.245	3.352	+1.47	+3.1	21.3	21.7
Jan. 17	19 22.20	-00 13.2	4.212	3.322	+1.48	+4.0	21.2	22.1
Jan. 27	19 36.98	+00 26.6	4.166	3.292	+1.48	+4.9	21.2	24.1
Feb. 6	19 51.74	+01 15.4	4.107	3.262	+1.46	+5.7	21.1	27.3
Feb. 16	20 06.38	+02 12.7	4.036	3.233	+1.45	+6.5	21.1	31.3
Feb. 26	20 20.84	+03 18.0	3.955	3.205	+1.42	+7.3	21.0	35.8
Mar. 8	20 35.02	+04 30.8	3.863	3.177	+1.38	+7.9	20.9	40.7
Mar. 18	20 48.85	+05 50.0	3.761	3.149	+1.34	+8.5	20.8	45.8
Mar. 28	21 02.26	+07 15.1	3.651	3.122	+1.29	+9.0	20.7	51.1
Apr. 7	21 15.16	+08 45.1	3.534	3.096	+1.23	+9.4	20.6	56.5
Apr. 17	21 27.46	+10 18.7	3.411	3.070	+1.16	+9.6	20.5	62.0
Apr. 27	21 39.08	+11 55.0	3.282	3.045	+1.08	+9.8	20.4	67.6
May 7	21 49.88	+13 32.5	3.149	3.020	+0.99	+9.7	20.3	73.4
May 17	21 59.77	+15 09.8	3.014	2.996	+0.88	+9.5	20.2	79.3
May 27	22 08.59	+16 45.1	2.877	2.973	+0.76	+9.1	20.0	85.5
June 6	22 16.17	+18 16.3	2.740	2.951	+0.62	+8.5	19.9	91.8
June 16	22 22.36	+19 41.0	2.605	2.930	+0.46	+7.5	19.8	98.3
June 26	22 26.96	+20 56.1	2.474	2.910	+0.28	+6.2	19.6	105.1
July 6	22 29.80	+21 58.0	2.349	2.891	+0.10	+4.5	19.5	112.2
July 16	22 30.78	+22 42.7	2.232	2.872	-0.09	+2.3	19.4	119.5
July 26	22 29.85	+23 05.5	2.125	2.855	-0.27	-0.4	19.3	127.1
Aug. 5	22 27.15	+23 01.6	2.033	2.839	-0.41	-3.4	19.1	134.6
Aug. 15	22 23.01	+22 27.6	1.958	2.824	-0.51	-6.6	19.0	141.8
Aug. 25	22 17.95	+21 21.4	1.903	2.810	-0.52	-9.7	19.0	147.8
Sept. 4	22 12.72	+19 44.6	1.870	2.797	-0.46	-12.2	18.9	151.3
Sept. 14	22 08.09	+17 42.2	1.862	2.786	-0.33	-14.0	18.9	151.1
Sept. 24	22 04.77	+15 22.6	1.880	2.776	-0.14	-14.7	18.9	147.1
Oct. 4	22 03.33	+12 55.9	1.921	2.767	+0.07	-14.4	18.9	140.5
Oct. 14	22 04.06	+10 32.2	1.985	2.760	+0.30	-13.3	19.0	132.6
Oct. 24	22 07.06	+08 19.3	2.069	2.754	+0.52	-11.6	19.1	124.2
Nov. 3	22 12.25	+06 23.2	2.169	2.749	+0.72	-9.6	19.2	115.7
Nov. 13	22 19.44	+04 46.7	2.282	2.746	+0.90	-7.6	19.3	107.4
Nov. 23	22 28.39	+03 30.9	2.405	2.744	+1.05	-5.5	19.4	99.3
Dec. 3	22 38.87	+02 35.6	2.535	2.743	+1.17	-3.6	19.5	91.5
Dec. 13	22 50.60	+01 59.3	2.667	2.744	+1.28	-1.9	19.6	83.9
Dec. 23	23 03.38	+01 40.3	2.801	2.746	+1.36	-0.4	19.7	76.6
Jan. 2	23 17.02	+01 36.5	2.934	2.750	+1.43	+0.9	19.8	69.6
Jan. 12	23 31.34	+01 45.7	3.063	2.755	+1.49	+2.0	19.9	62.7
Jan. 22	23 46.21	+02 05.9	3.187	2.761	+1.53	+2.9	20.0	56.1
Feb. 1	00 01.51	+02 35.0	3.304	2.769	+1.56	+3.6	20.1	49.6
Feb. 11	00 17.15	+03 10.9	3.413	2.778	+1.59	+4.1	20.2	43.3
Feb. 21	00 33.07	+03 52.0	3.513	2.788	+1.61	+4.4	20.3	37.1
Mar. 3	00 49.19	+04 36.4	3.602	2.800	+1.63	+4.6	20.3	31.0
Mar. 13	01 05.46	+05 22.6	3.681	2.813	+1.64	+4.6	20.4	25.1
Mar. 23	01 21.86	+06 09.1	3.748	2.827	+1.65	+4.5	20.5	19.3

Comet 139P/Vaisala-Oterma

Epoch = 2017 July 26.0 TT
T = 2017 Dec. 10.96283 TT
Peri. = 166.08600 e = 0.2463518
Node = 242.21015 2000.0 a = 4.5304988 AU
Incl. = 2.33274 n = 0.10220803
q = 3.4144023 AU P = 9.64 years

m1 = 3.0 + 5 log(Delta) + 25.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	22 45.43	-05 48.5	4.226	3.733	+1.01	+5.8	20.4	54.0
Jan. 17	22 55.56	-04 51.0	4.325	3.717	+1.07	+6.3	20.4	46.5
Jan. 27	23 06.28	-03 48.3	4.411	3.700	+1.12	+6.7	20.4	39.2
Feb. 6	23 17.47	-02 41.2	4.482	3.684	+1.16	+7.1	20.4	32.1
Feb. 16	23 29.04	-01 30.5	4.539	3.668	+1.19	+7.4	20.4	25.1
Feb. 26	23 40.92	-00 16.7	4.580	3.653	+1.21	+7.6	20.4	18.2
Mar. 8	23 53.03	+00 59.4	4.605	3.638	+1.23	+7.8	20.3	11.5
Mar. 18	00 05.30	+02 16.9	4.613	3.623	+1.24	+7.8	20.3	5.0
Mar. 28	00 17.70	+03 35.4	4.606	3.609	+1.25	+7.9	20.3	2.4
Apr. 7	00 30.16	+04 54.0	4.582	3.595	+1.25	+7.8	20.2	8.4
Apr. 17	00 42.63	+06 12.1	4.543	3.581	+1.24	+7.7	20.1	14.8
Apr. 27	00 55.07	+07 29.1	4.488	3.568	+1.23	+7.5	20.1	21.2
May 7	01 07.42	+08 44.3	4.420	3.556	+1.22	+7.3	20.0	27.6
May 17	01 19.61	+09 57.2	4.337	3.544	+1.20	+7.0	19.9	34.0
May 27	01 31.61	+11 07.1	4.242	3.532	+1.17	+6.6	19.8	40.4
June 6	01 43.30	+12 13.5	4.135	3.521	+1.13	+6.2	19.7	46.9
June 16	01 54.63	+13 15.9	4.018	3.510	+1.08	+5.8	19.7	53.5
June 26	02 05.47	+14 13.8	3.891	3.500	+1.02	+5.3	19.6	60.3
July 6	02 15.72	+15 06.7	3.757	3.490	+0.95	+4.7	19.4	67.2
July 16	02 25.23	+15 54.1	3.617	3.481	+0.86	+4.1	19.3	74.3
July 26	02 33.84	+16 35.5	3.472	3.473	+0.75	+3.5	19.2	81.6
Aug. 5	02 41.37	+17 10.6	3.325	3.465	+0.63	+2.8	19.1	89.3
Aug. 15	02 47.62	+17 38.8	3.179	3.457	+0.48	+2.1	19.0	97.3
Aug. 25	02 52.40	+17 59.6	3.036	3.450	+0.31	+1.3	18.9	105.8
Sept. 4	02 55.49	+18 12.6	2.899	3.444	+0.13	+0.5	18.7	114.7
Sept. 14	02 56.75	+18 17.2	2.773	3.438	-0.07	-0.4	18.6	124.0
Sept. 24	02 56.08	+18 13.0	2.660	3.433	-0.26	-1.3	18.5	134.0
Oct. 4	02 53.53	+17 59.8	2.565	3.429	-0.42	-2.2	18.4	144.4
Oct. 14	02 49.28	+17 38.2	2.493	3.425	-0.55	-2.9	18.3	155.4
Oct. 24	02 43.73	+17 09.3	2.446	3.422	-0.63	-3.4	18.3	166.7
Nov. 3	02 37.46	+16 35.2	2.427	3.419	-0.63	-3.6	18.3	178.0
Nov. 13	02 31.15	+15 59.2	2.438	3.417	-0.57	-3.4	18.3	169.9
Nov. 23	02 25.48	+15 24.9	2.478	3.415	-0.44	-2.9	18.3	158.4
Dec. 3	02 21.06	+14 55.6	2.544	3.415	-0.28	-2.1	18.4	147.1
Dec. 13	02 18.28	+14 34.3	2.635	3.414	-0.09	-1.2	18.4	136.2
Dec. 23	02 17.40	+14 22.6	2.745	3.415	+0.11	-0.1	18.5	125.8
Jan. 2	02 18.48	+14 21.1	2.871	3.416	+0.30	+0.8	18.6	115.8
Jan. 12	02 21.46	+14 29.6	3.007	3.418	+0.48	+1.8	18.7	106.4
Jan. 22	02 26.21	+14 47.1	3.151	3.420	+0.64	+2.5	18.8	97.4
Feb. 1	02 32.58	+15 12.4	3.298	3.423	+0.78	+3.2	19.0	88.8
Feb. 11	02 40.37	+15 44.0	3.446	3.426	+0.90	+3.6	19.1	80.6
Feb. 21	02 49.42	+16 20.4	3.591	3.431	+1.01	+4.0	19.2	72.8
Mar. 3	02 59.56	+17 00.0	3.730	3.435	+1.11	+4.2	19.3	65.2
Mar. 13	03 10.64	+17 41.5	3.863	3.441	+1.19	+4.2	19.4	58.0
Mar. 23	03 22.55	+18 23.6	3.987	3.447	+1.26	+4.2	19.4	50.9

Comet C/2015 V1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 Dec. 17.78993 TT
Peri. = 179.64716
Node = 197.19383 2000.0
Incl. = 139.23028
q = 4.2667754 AU
e = 1.0005640

m1 = 4.2 + 5 log(Delta) + 12.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	02 04.09	+47 43.0	4.624	5.117	-0.62	-14.1	16.4	114.9
Jan. 17	01 57.88	+45 21.6	4.728	5.073	-0.36	-13.0	16.4	105.0
Jan. 27	01 54.24	+43 11.2	4.848	5.031	-0.15	-11.7	16.4	95.0
Feb. 6	01 52.74	+41 14.4	4.976	4.989	+0.02	-10.2	16.4	85.1
Feb. 16	01 52.97	+39 32.3	5.105	4.948	+0.16	-8.8	16.4	75.3
Feb. 26	01 54.56	+38 04.6	5.230	4.908	+0.27	-7.4	16.4	65.8
Mar. 8	01 57.24	+36 50.7	5.344	4.869	+0.35	-6.2	16.4	56.6
Mar. 18	02 00.74	+35 49.2	5.443	4.830	+0.41	-5.1	16.4	47.8
Mar. 28	02 04.86	+34 58.5	5.523	4.793	+0.45	-4.1	16.4	39.4
Apr. 7	02 09.41	+34 17.2	5.581	4.757	+0.48	-3.3	16.4	31.5
Apr. 17	02 14.22	+33 43.7	5.615	4.721	+0.49	-2.7	16.4	24.6
Apr. 27	02 19.14	+33 16.8	5.624	4.687	+0.49	-2.2	16.3	19.5
May 7	02 24.04	+32 54.9	5.605	4.654	+0.47	-1.8	16.3	17.7
May 17	02 28.78	+32 37.0	5.560	4.622	+0.44	-1.5	16.2	19.9
May 27	02 33.20	+32 21.8	5.488	4.591	+0.40	-1.4	16.2	25.2
June 6	02 37.17	+32 08.3	5.389	4.562	+0.33	-1.3	16.1	32.1
June 16	02 40.52	+31 55.1	5.267	4.533	+0.26	-1.4	16.0	39.8
June 26	02 43.08	+31 41.3	5.121	4.506	+0.16	-1.6	15.9	48.1
July 6	02 44.64	+31 25.4	4.955	4.480	+0.04	-2.0	15.8	56.8
July 16	02 45.00	+31 05.9	4.773	4.456	-0.11	-2.5	15.7	65.9
July 26	02 43.92	+30 40.9	4.577	4.433	-0.28	-3.3	15.6	75.5
Aug. 5	02 41.13	+30 08.2	4.374	4.411	-0.47	-4.3	15.5	85.5
Aug. 15	02 36.42	+29 25.0	4.168	4.391	-0.69	-5.7	15.3	96.0
Aug. 25	02 29.55	+28 28.1	3.967	4.372	-0.91	-7.4	15.2	107.1
Sept. 4	02 20.41	+27 13.6	3.778	4.355	-1.14	-9.5	15.1	118.8
Sept. 14	02 09.04	+25 38.2	3.610	4.339	-1.34	-11.9	15.0	131.2
Sept. 24	01 55.67	+23 39.4	3.471	4.325	-1.48	-14.3	14.9	144.2
Oct. 4	01 40.83	+21 16.8	3.371	4.312	-1.56	-16.3	14.8	157.4
Oct. 14	01 25.26	+18 33.9	3.317	4.301	-1.54	-17.6	14.7	169.2
Oct. 24	01 09.84	+15 37.7	3.311	4.291	-1.44	-18.0	14.7	168.6
Nov. 3	00 55.42	+12 37.9	3.356	4.283	-1.27	-17.4	14.7	156.4
Nov. 13	00 42.67	+09 44.3	3.446	4.277	-1.06	-15.9	14.8	142.8
Nov. 23	00 32.03	+07 05.0	3.576	4.272	-0.84	-14.0	14.8	129.4
Dec. 3	00 23.65	+04 44.8	3.736	4.269	-0.61	-11.9	14.9	116.5
Dec. 13	00 17.51	+02 45.5	3.917	4.267	-0.41	-9.9	15.0	104.2
Dec. 23	00 13.44	+01 06.6	4.111	4.267	-0.22	-8.0	15.1	92.4
Jan. 2	00 11.21	-00 13.8	4.307	4.269	-0.06	-6.5	15.2	81.2
Jan. 12	00 10.57	-01 18.3	4.499	4.272	+0.07	-5.1	15.3	70.4
Jan. 22	00 11.26	-02 09.6	4.681	4.277	+0.18	-4.1	15.4	60.1
Feb. 1	00 13.06	-02 50.4	4.847	4.283	+0.27	-3.3	15.5	50.2
Feb. 11	00 15.73	-03 23.1	4.993	4.291	+0.34	-2.7	15.6	40.5
Feb. 21	00 19.11	-03 50.1	5.116	4.301	+0.39	-2.3	15.7	31.2
Mar. 3	00 23.00	-04 13.3	5.213	4.312	+0.43	-2.1	15.7	22.3
Mar. 13	00 27.26	-04 34.6	5.282	4.325	+0.45	-2.1	15.8	14.1
Mar. 23	00 31.74	-04 55.9	5.323	4.340	+0.46	-2.3	15.8	8.3

Comet P/2010 D1 (WISE)

Epoch = 2017 July 26.0 TT
T = 2017 Dec. 18.94276 TT
Peri. = 226.15082 e = 0.3543715
Node = 160.80902 2000.0 a = 4.1658060 AU
Incl. = 9.63008 n = 0.11591924
q = 2.6895631 AU P = 8.50 years

m1 = 9.0 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	20 27.03	-15 13.4	4.279	3.365	-0.52	-0.7	21.4	21.1/ 80	19.1
Jan. 17	20 41.35	-14 34.6	4.288	3.334	-0.53	-0.8	21.3	21.6/ 78	12.6
Jan. 27	20 55.89	-13 49.8	4.280	3.304	-0.54	-1.0	21.2	22.0/ 77	6.4
Feb. 6	21 10.56	-12 59.4	4.257	3.273	-0.55	-1.1	21.2	22.3/ 76	3.3
Feb. 16	21 25.28	-12 04.0	4.219	3.243	-0.56	-1.3	21.1	22.4/ 75	8.0
Feb. 26	21 40.00	-11 04.3	4.165	3.213	-0.57	-1.5	21.0	22.5/ 74	14.0
Mar. 8	21 54.65	-10 00.9	4.097	3.184	-0.59	-1.6	20.9	22.5/ 73	20.2
Mar. 18	22 09.17	-08 54.7	4.016	3.155	-0.61	-1.8	20.8	22.4/ 73	26.4
Mar. 28	22 23.53	-07 46.4	3.922	3.127	-0.62	-1.9	20.6	22.2/ 72	32.5
Apr. 7	22 37.67	-06 37.1	3.816	3.099	-0.65	-2.1	20.5	21.8/ 72	38.7
Apr. 17	22 51.54	-05 27.5	3.700	3.071	-0.67	-2.3	20.4	21.4/ 71	44.8
Apr. 27	23 05.09	-04 18.9	3.575	3.044	-0.70	-2.4	20.2	20.8/ 71	51.0
May 7	23 18.26	-03 12.2	3.442	3.018	-0.72	-2.6	20.1	20.1/ 72	57.3
May 17	23 30.97	-02 08.6	3.302	2.992	-0.76	-2.7	19.9	19.2/ 72	63.6
May 27	23 43.16	-01 09.4	3.157	2.967	-0.79	-2.9	19.8	18.1/ 73	70.0
June 6	23 54.70	-00 15.8	3.008	2.943	-0.84	-3.1	19.6	16.8/ 74	76.6
June 16	00 05.48	+00 30.6	2.858	2.920	-0.88	-3.3	19.4	15.3/ 76	83.4
June 26	00 15.35	+01 08.4	2.707	2.898	-0.94	-3.5	19.2	13.4/ 78	90.4
July 6	00 24.12	+01 36.0	2.557	2.876	-1.00	-3.7	19.1	11.3/ 82	97.7
July 16	00 31.61	+01 51.6	2.412	2.856	-1.06	-4.0	18.9	9.0/ 89	105.4
July 26	00 37.59	+01 53.6	2.273	2.836	-1.13	-4.3	18.7	6.5/102	113.6
Aug. 5	00 41.84	+01 40.6	2.143	2.817	-1.21	-4.6	18.5	4.5/129	122.2
Aug. 15	00 44.18	+01 11.7	2.025	2.800	-1.29	-5.0	18.4	4.5/174	131.4
Aug. 25	00 44.47	+00 26.8	1.923	2.784	-1.37	-5.3	18.2	6.5/203	141.2
Sept. 4	00 42.76	-00 32.6	1.841	2.769	-1.44	-5.6	18.1	8.8/217	151.4
Sept. 14	00 39.27	-01 43.0	1.781	2.755	-1.49	-5.9	18.0	10.5/224	162.0
Sept. 24	00 34.45	-02 59.0	1.746	2.742	-1.53	-5.9	17.9	11.0/227	171.5
Oct. 4	00 29.00	-04 13.6	1.738	2.731	-1.53	-5.8	17.8	10.2/230	171.1
Oct. 14	00 23.75	-05 19.4	1.757	2.721	-1.51	-5.6	17.8	8.2/231	161.3
Oct. 24	00 19.46	-06 10.6	1.801	2.712	-1.47	-5.3	17.9	5.1/231	150.6
Nov. 3	00 16.81	-06 43.0	1.869	2.705	-1.40	-4.9	17.9	1.6/218	140.0
Nov. 13	00 16.16	-06 55.3	1.955	2.699	-1.33	-4.6	18.0	2.4/ 72	129.9
Nov. 23	00 17.70	-06 48.0	2.057	2.694	-1.25	-4.3	18.1	6.1/ 65	120.4
Dec. 3	00 21.42	-06 22.6	2.171	2.691	-1.18	-4.1	18.2	9.5/ 64	111.4
Dec. 13	00 27.15	-05 41.6	2.293	2.690	-1.11	-3.9	18.3	12.5/ 64	102.9
Dec. 23	00 34.71	-04 47.3	2.420	2.690	-1.05	-3.7	18.4	15.2/ 65	94.9
Jan. 2	00 43.86	-03 42.3	2.551	2.691	-1.00	-3.6	18.6	17.4/ 65	87.4
Jan. 12	00 54.38	-02 28.8	2.682	2.694	-0.96	-3.5	18.7	19.3/ 66	80.2
Jan. 22	01 06.08	-01 08.9	2.811	2.698	-0.92	-3.4	18.8	20.8/ 66	73.3
Feb. 1	01 18.78	+00 15.5	2.938	2.704	-0.88	-3.3	18.9	22.1/ 67	66.7
Feb. 11	01 32.33	+01 42.7	3.060	2.711	-0.85	-3.2	19.0	23.2/ 67	60.3
Feb. 21	01 46.61	+03 11.1	3.177	2.719	-0.83	-3.1	19.1	24.0/ 68	54.2
Mar. 3	02 01.52	+04 39.2	3.287	2.729	-0.81	-3.0	19.2	24.6/ 69	48.2
Mar. 13	02 16.95	+06 05.7	3.390	2.740	-0.79	-2.9	19.3	25.1/ 70	42.4
Mar. 23	02 32.85	+07 29.5	3.485	2.752	-0.77	-2.7	19.4	25.4/ 71	36.8

Comet P/2009 S2 (McNaught)

Epoch = 2017 July 26.0 TT
T = 2017 Dec. 21.00659 TT
Peri. = 230.39427 e = 0.4690907
Node = 121.57491 2000.0 a = 4.1702210 AU
Incl. = 28.41482 n = 0.11573520
q = 2.2140091 AU P = 8.52 years

m1 = 14.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	17 53.67	-08 43.3	4.210	3.330	-0.49	+3.3	22.3	21.0/ 96	23.3
Jan. 17	18 07.75	-09 03.4	4.116	3.285	-0.51	+3.4	22.2	20.9/ 94	28.5
Jan. 27	18 21.84	-09 16.9	4.008	3.240	-0.54	+3.4	22.1	20.7/ 92	34.1
Feb. 6	18 35.84	-09 24.1	3.886	3.195	-0.58	+3.4	22.0	20.4/ 91	40.1
Feb. 16	18 49.65	-09 25.8	3.752	3.151	-0.61	+3.5	21.9	20.0/ 89	46.2
Feb. 26	19 03.18	-09 22.7	3.607	3.106	-0.65	+3.5	21.7	19.5/ 88	52.5
Mar. 8	19 16.32	-09 15.8	3.453	3.062	-0.69	+3.6	21.6	18.7/ 87	58.9
Mar. 18	19 28.95	-09 06.2	3.291	3.017	-0.74	+3.7	21.4	17.8/ 87	65.5
Mar. 28	19 40.98	-08 55.5	3.123	2.973	-0.80	+3.8	21.2	16.7/ 87	72.2
Apr. 7	19 52.25	-08 45.5	2.951	2.930	-0.86	+3.9	21.0	15.4/ 87	79.0
Apr. 17	20 02.63	-08 38.1	2.776	2.886	-0.93	+4.0	20.8	13.8/ 89	86.1
Apr. 27	20 11.96	-08 35.8	2.601	2.844	-1.00	+4.1	20.6	12.0/ 93	93.4
May 7	20 20.03	-08 41.6	2.428	2.801	-1.09	+4.3	20.4	10.0/100	101.0
May 17	20 26.65	-08 58.6	2.260	2.760	-1.19	+4.5	20.2	8.0/114	109.0
May 27	20 31.59	-09 30.7	2.098	2.719	-1.30	+4.7	20.0	6.8/139	117.5
June 6	20 34.60	-10 21.7	1.948	2.678	-1.42	+5.0	19.7	7.5/170	126.5
June 16	20 35.48	-11 35.2	1.811	2.639	-1.55	+5.3	19.5	10.1/192	136.1
June 26	20 34.08	-13 13.9	1.692	2.601	-1.68	+5.7	19.3	13.5/203	146.5
July 6	20 30.42	-15 18.2	1.594	2.563	-1.80	+6.3	19.1	16.8/209	157.5
July 16	20 24.78	-17 44.9	1.522	2.527	-1.91	+7.0	18.9	19.0/211	169.1
July 26	20 17.72	-20 26.7	1.477	2.493	-1.98	+7.8	18.8	19.7/212	178.8
Aug. 5	20 10.16	-23 13.1	1.461	2.459	-2.01	+8.7	18.7	18.5/210	166.8
Aug. 15	20 03.22	-25 52.7	1.472	2.428	-1.99	+9.5	18.7	15.9/206	154.9
Aug. 25	19 57.99	-28 16.0	1.508	2.398	-1.94	+10.1	18.7	12.6/196	143.5
Sept. 4	19 55.38	-30 17.4	1.566	2.370	-1.87	+10.4	18.7	9.8/176	132.8
Sept.14	19 55.93	-31 55.1	1.639	2.343	-1.80	+10.4	18.8	8.9/147	122.9
Sept.24	19 59.83	-33 09.2	1.725	2.319	-1.72	+10.1	18.8	10.4/121	113.8
Oct. 4	20 07.02	-34 01.2	1.818	2.297	-1.65	+9.5	18.9	13.0/105	105.5
Oct. 14	20 17.23	-34 32.6	1.917	2.278	-1.60	+8.7	19.0	15.9/ 95	97.8
Oct. 24	20 30.09	-34 44.8	2.018	2.261	-1.55	+7.8	19.1	18.7/ 89	90.7
Nov. 3	20 45.22	-34 38.7	2.120	2.246	-1.51	+6.9	19.1	21.1/ 85	84.1
Nov. 13	21 02.20	-34 15.3	2.220	2.234	-1.48	+5.8	19.2	23.3/ 81	78.0
Nov. 23	21 20.64	-33 35.2	2.318	2.225	-1.44	+4.8	19.3	25.2/ 79	72.2
Dec. 3	21 40.20	-32 39.5	2.412	2.219	-1.41	+3.7	19.4	26.8/ 76	66.9
Dec. 13	22 00.56	-31 29.1	2.504	2.215	-1.37	+2.7	19.4	28.2/ 74	61.8
Dec. 23	22 21.47	-30 05.2	2.591	2.214	-1.33	+1.7	19.5	29.4/ 72	57.0
Jan. 2	22 42.70	-28 29.3	2.674	2.216	-1.29	+0.7	19.6	30.3/ 71	52.4
Jan. 12	23 04.09	-26 43.1	2.754	2.221	-1.25	-0.2	19.7	31.1/ 70	48.1
Jan. 22	23 25.52	-24 48.2	2.829	2.228	-1.20	-1.0	19.7	31.7/ 69	44.0
Feb. 1	23 46.89	-22 46.7	2.900	2.239	-1.16	-1.7	19.8	32.2/ 68	40.1
Feb. 11	00 08.13	-20 40.6	2.968	2.252	-1.12	-2.3	19.9	32.5/ 68	36.5
Feb. 21	00 29.21	-18 31.7	3.031	2.267	-1.08	-2.8	20.0	32.6/ 67	33.0
Mar. 3	00 50.09	-16 22.1	3.091	2.285	-1.03	-3.2	20.0	32.6/ 67	29.9
Mar. 13	01 10.77	-14 13.5	3.147	2.306	-0.99	-3.6	20.1	32.4/ 68	27.0
Mar. 23	01 31.23	-12 07.8	3.199	2.329	-0.96	-3.8	20.2	32.1/ 68	24.5

Comet C/2015 X5 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2017 Dec. 31.11295 TT
Peri. = 27.75947
Node = 122.31247 2000.0
Incl. = 124.28322
q = 6.8011871 AU
e = 1.0029797

m1 = 7.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	08 27.26	+19 46.6	6.254	7.197	-0.77	+6.8	19.6	162.3
Jan. 17	08 19.52	+20 54.4	6.196	7.176	-0.81	+6.7	19.5	174.4
Jan. 27	08 11.46	+22 01.8	6.177	7.156	-0.81	+6.5	19.5	172.9
Feb. 6	08 03.39	+23 06.7	6.197	7.136	-0.77	+6.1	19.5	160.8
Feb. 16	07 55.68	+24 07.5	6.253	7.116	-0.71	+5.6	19.5	148.8
Feb. 26	07 48.62	+25 03.2	6.341	7.097	-0.61	+5.0	19.5	137.0
Mar. 8	07 42.47	+25 53.3	6.457	7.079	-0.51	+4.5	19.5	125.5
Mar. 18	07 37.40	+26 37.8	6.593	7.061	-0.39	+3.9	19.6	114.3
Mar. 28	07 33.50	+27 17.1	6.745	7.044	-0.27	+3.5	19.6	103.4
Apr. 7	07 30.79	+27 51.7	6.905	7.027	-0.15	+3.1	19.7	92.9
Apr. 17	07 29.25	+28 22.3	7.066	7.011	-0.04	+2.7	19.7	82.8
Apr. 27	07 28.81	+28 49.6	7.224	6.995	+0.06	+2.5	19.7	72.9
May 7	07 29.36	+29 14.4	7.374	6.980	+0.14	+2.3	19.8	63.4
May 17	07 30.79	+29 37.0	7.510	6.966	+0.22	+2.1	19.8	54.1
May 27	07 33.00	+29 58.3	7.629	6.952	+0.29	+2.0	19.8	45.1
June 6	07 35.86	+30 18.6	7.729	6.938	+0.34	+2.0	19.9	36.4
June 16	07 39.25	+30 38.5	7.806	6.926	+0.38	+2.0	19.9	28.0
June 26	07 43.06	+30 58.4	7.859	6.914	+0.41	+2.1	19.9	20.1
July 6	07 47.18	+31 19.0	7.887	6.902	+0.43	+2.2	19.9	13.5
July 16	07 51.49	+31 40.7	7.888	6.891	+0.44	+2.3	19.9	10.5
July 26	07 55.89	+32 04.1	7.863	6.881	+0.44	+2.6	19.9	13.8
Aug. 5	08 00.28	+32 29.9	7.812	6.871	+0.42	+2.9	19.8	20.5
Aug. 15	08 04.53	+32 58.7	7.736	6.862	+0.40	+3.3	19.8	28.4
Aug. 25	08 08.53	+33 31.3	7.637	6.854	+0.36	+3.7	19.8	36.8
Sept. 4	08 12.16	+34 08.4	7.516	6.846	+0.31	+4.2	19.7	45.4
Sept. 14	08 15.28	+34 50.8	7.376	6.839	+0.25	+4.8	19.7	54.4
Sept. 24	08 17.74	+35 39.2	7.220	6.832	+0.16	+5.5	19.6	63.5
Oct. 4	08 19.39	+36 34.5	7.053	6.826	+0.07	+6.2	19.6	72.9
Oct. 14	08 20.05	+37 36.9	6.879	6.821	-0.05	+7.0	19.5	82.5
Oct. 24	08 19.53	+38 46.9	6.703	6.816	-0.19	+7.7	19.5	92.3
Nov. 3	08 17.63	+40 04.0	6.531	6.812	-0.35	+8.3	19.4	102.4
Nov. 13	08 14.17	+41 27.5	6.368	6.809	-0.52	+8.8	19.4	112.5
Nov. 23	08 08.98	+42 55.7	6.222	6.806	-0.70	+9.0	19.3	122.7
Dec. 3	08 01.96	+44 26.1	6.098	6.804	-0.89	+8.9	19.3	132.6
Dec. 13	07 53.10	+45 55.2	6.002	6.802	-1.06	+8.4	19.2	141.7
Dec. 23	07 42.52	+47 19.4	5.938	6.801	-1.20	+7.5	19.2	149.2
Jan. 2	07 30.55	+48 34.5	5.910	6.801	-1.29	+6.3	19.2	153.1
Jan. 12	07 17.69	+49 37.4	5.918	6.802	-1.31	+4.9	19.2	151.9
Jan. 22	07 04.54	+50 26.2	5.962	6.803	-1.27	+3.4	19.2	146.3
Feb. 1	06 51.82	+51 00.4	6.040	6.804	-1.17	+2.1	19.2	138.1
Feb. 11	06 40.13	+51 21.3	6.146	6.807	-1.02	+1.0	19.3	128.7
Feb. 21	06 29.95	+51 31.1	6.277	6.810	-0.84	+0.2	19.3	118.9
Mar. 3	06 21.60	+51 33.0	6.426	6.813	-0.64	-0.3	19.4	109.0
Mar. 13	06 15.17	+51 29.6	6.586	6.818	-0.45	-0.6	19.4	99.3
Mar. 23	06 10.68	+51 23.7	6.752	6.823	-0.27	-0.6	19.5	89.8

Comet P/1998 VS24 (LINEAR)

Epoch = 2017 July 26.0 TT
T = 2018 Jan. 19.33272 TT
Peri. = 244.97236 e = 0.2416638
Node = 159.05544 2000.0 a = 4.5344128 AU
Incl. = 5.02254 n = 0.10207573
q = 3.4386094 AU P = 9.66 years

m1 = 4.4 + 5 log(Delta) + 25.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	22 19.65	-10 46.8	4.429	3.815	-0.45	-1.9	22.2	16.7/ 71	46.2
Jan. 17	22 30.33	-09 51.4	4.514	3.798	-0.44	-1.9	22.2	17.5/ 70	38.8
Jan. 27	22 41.46	-08 51.5	4.584	3.780	-0.44	-2.0	22.1	18.2/ 70	31.5
Feb. 6	22 52.97	-07 47.8	4.639	3.764	-0.44	-2.0	22.1	18.8/ 69	24.4
Feb. 16	23 04.76	-06 40.9	4.678	3.747	-0.44	-2.1	22.1	19.2/ 69	17.5
Feb. 26	23 16.75	-05 31.5	4.700	3.731	-0.44	-2.1	22.1	19.5/ 69	10.6
Mar. 8	23 28.88	-04 20.3	4.704	3.715	-0.44	-2.2	22.0	19.6/ 69	3.9
Mar. 18	23 41.08	-03 08.1	4.693	3.699	-0.45	-2.2	22.0	19.7/ 68	3.1
Mar. 28	23 53.31	-01 55.5	4.664	3.684	-0.45	-2.3	21.9	19.7/ 68	9.6
Apr. 7	00 05.50	-00 43.2	4.619	3.669	-0.46	-2.3	21.8	19.5/ 69	16.2
Apr. 17	00 17.60	+00 28.1	4.559	3.654	-0.47	-2.4	21.8	19.3/ 69	22.7
Apr. 27	00 29.57	+01 37.7	4.484	3.640	-0.48	-2.4	21.7	18.9/ 69	29.3
May 7	00 41.34	+02 44.8	4.395	3.626	-0.49	-2.5	21.6	18.4/ 70	35.9
May 17	00 52.85	+03 48.8	4.294	3.613	-0.50	-2.5	21.5	17.8/ 70	42.4
May 27	01 04.04	+04 49.0	4.181	3.600	-0.52	-2.6	21.4	17.0/ 71	49.1
June 6	01 14.80	+05 44.7	4.057	3.587	-0.54	-2.6	21.3	16.1/ 72	55.9
June 16	01 25.05	+06 35.1	3.924	3.575	-0.56	-2.7	21.2	15.0/ 73	62.7
June 26	01 34.67	+07 19.7	3.785	3.563	-0.58	-2.7	21.1	13.7/ 74	69.8
July 6	01 43.54	+07 57.6	3.639	3.552	-0.60	-2.8	21.0	12.2/ 75	77.0
July 16	01 51.50	+08 28.2	3.490	3.541	-0.63	-2.9	20.8	10.5/ 77	84.5
July 26	01 58.40	+08 50.8	3.340	3.531	-0.66	-3.0	20.7	8.5/ 80	92.3
Aug. 5	02 04.04	+09 04.7	3.192	3.521	-0.69	-3.1	20.6	6.3/ 86	100.5
Aug. 15	02 08.25	+09 09.5	3.048	3.512	-0.73	-3.2	20.5	3.9/ 97	109.1
Aug. 25	02 10.86	+09 04.6	2.912	3.503	-0.77	-3.4	20.3	2.0/139	118.1
Sept. 4	02 11.74	+08 49.9	2.787	3.495	-0.80	-3.6	20.2	2.8/209	127.6
Sept. 14	02 10.83	+08 25.9	2.678	3.487	-0.84	-3.8	20.1	5.1/230	137.5
Sept. 24	02 08.19	+07 53.4	2.588	3.480	-0.87	-3.9	20.0	7.3/238	148.0
Oct. 4	02 04.03	+07 14.6	2.522	3.473	-0.90	-4.1	19.9	8.9/242	158.7
Oct. 14	01 58.75	+06 32.1	2.482	3.467	-0.91	-4.2	19.9	9.7/244	169.3
Oct. 24	01 52.88	+05 49.7	2.470	3.461	-0.91	-4.2	19.8	9.5/246	174.2
Nov. 3	01 47.04	+05 11.2	2.488	3.457	-0.90	-4.2	19.8	8.3/248	165.2
Nov. 13	01 41.88	+04 40.4	2.534	3.452	-0.88	-4.1	19.9	6.3/251	154.2
Nov. 23	01 37.89	+04 19.9	2.606	3.449	-0.85	-4.0	19.9	3.7/257	143.3
Dec. 3	01 35.48	+04 11.5	2.700	3.445	-0.81	-3.8	20.0	1.0/293	132.7
Dec. 13	01 34.84	+04 15.5	2.813	3.443	-0.78	-3.6	20.1	2.4/ 48	122.5
Dec. 23	01 36.04	+04 31.4	2.939	3.441	-0.74	-3.5	20.2	5.2/ 59	112.7
Jan. 2	01 39.02	+04 58.3	3.076	3.440	-0.71	-3.3	20.3	7.8/ 62	103.4
Jan. 12	01 43.66	+05 34.6	3.218	3.439	-0.68	-3.1	20.3	10.2/ 64	94.6
Jan. 22	01 49.81	+06 18.6	3.362	3.439	-0.65	-3.0	20.4	12.3/ 66	86.1
Feb. 1	01 57.31	+07 09.0	3.506	3.439	-0.63	-2.9	20.5	14.0/ 67	78.0
Feb. 11	02 05.99	+08 03.9	3.646	3.440	-0.61	-2.7	20.6	15.5/ 68	70.2
Feb. 21	02 15.70	+09 02.1	3.780	3.442	-0.59	-2.6	20.7	16.8/ 69	62.8
Mar. 3	02 26.31	+10 02.1	3.907	3.444	-0.58	-2.5	20.8	17.8/ 70	55.5
Mar. 13	02 37.69	+11 02.9	4.023	3.447	-0.57	-2.3	20.9	18.7/ 71	48.5
Mar. 23	02 49.74	+12 03.2	4.130	3.450	-0.56	-2.2	20.9	19.4/ 72	41.7

Comet 130P/McNaught-Hughes

Epoch = 2017 July 26.0 TT
T = 2018 Jan. 21.72471 TT
Peri. = 245.89301 e = 0.4608618
Node = 70.25671 2000.0 a = 3.3826865 AU
Incl. = 6.06516 n = 0.15842053
q = 1.8237355 AU P = 6.22 years

m1 = 10.6 + 5 log(Delta) + 15.0 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	14 28.88	-10 13.7	3.519	3.288	+0.97	-4.3	21.3	68.5
Jan. 17	14 38.55	-10 56.3	3.335	3.243	+0.88	-3.6	21.1	76.2
Jan. 27	14 47.40	-11 32.6	3.146	3.198	+0.78	-3.0	20.9	84.1
Feb. 6	14 55.19	-12 02.2	2.957	3.153	+0.65	-2.2	20.7	92.2
Feb. 16	15 01.68	-12 24.6	2.768	3.107	+0.49	-1.5	20.5	100.7
Feb. 26	15 06.62	-12 39.7	2.584	3.061	+0.31	-0.7	20.2	109.5
Mar. 8	15 09.69	-12 47.0	2.408	3.014	+0.10	0.0	20.0	118.7
Mar. 18	15 10.66	-12 46.7	2.244	2.966	-0.14	+0.8	19.7	128.4
Mar. 28	15 09.30	-12 38.7	2.094	2.919	-0.38	+1.5	19.5	138.6
Apr. 7	15 05.53	-12 23.7	1.964	2.871	-0.60	+2.1	19.3	149.3
Apr. 17	14 59.51	-12 02.8	1.857	2.823	-0.79	+2.5	19.0	160.4
Apr. 27	14 51.61	-11 38.1	1.775	2.775	-0.90	+2.6	18.8	171.4
May 7	14 42.57	-11 12.6	1.721	2.726	-0.92	+2.2	18.6	173.6
May 17	14 33.35	-10 50.2	1.695	2.678	-0.84	+1.5	18.5	162.9
May 27	14 24.92	-10 35.0	1.694	2.629	-0.67	+0.5	18.4	151.5
June 6	14 18.20	-10 30.4	1.716	2.581	-0.44	-0.8	18.3	140.4
June 16	14 13.83	-10 38.6	1.757	2.532	-0.17	-2.2	18.2	130.0
June 26	14 12.12	-11 00.6	1.813	2.484	+0.11	-3.6	18.2	120.2
July 6	14 13.21	-11 36.2	1.878	2.436	+0.38	-4.8	18.1	111.1
July 16	14 17.01	-12 24.0	1.950	2.389	+0.64	-5.9	18.1	102.7
July 26	14 23.39	-13 22.6	2.025	2.342	+0.88	-6.7	18.1	95.0
Aug. 5	14 32.16	-14 30.0	2.100	2.296	+1.10	-7.4	18.0	87.8
Aug. 15	14 43.14	-15 44.2	2.174	2.251	+1.30	-7.9	18.0	81.1
Aug. 25	14 56.17	-17 03.2	2.245	2.207	+1.50	-8.2	17.9	74.8
Sept. 4	15 11.15	-18 24.7	2.311	2.165	+1.68	-8.2	17.8	69.0
Sept. 14	15 27.93	-19 46.5	2.373	2.123	+1.85	-8.0	17.8	63.4
Sept. 24	15 46.46	-21 06.3	2.430	2.084	+2.02	-7.5	17.7	58.2
Oct. 4	16 06.66	-22 21.7	2.481	2.046	+2.18	-6.8	17.6	53.2
Oct. 14	16 28.43	-23 30.0	2.527	2.010	+2.33	-5.9	17.5	48.5
Oct. 24	16 51.69	-24 28.8	2.568	1.977	+2.46	-4.7	17.4	44.0
Nov. 3	17 16.33	-25 15.6	2.605	1.947	+2.58	-3.2	17.3	39.7
Nov. 13	17 42.18	-25 47.8	2.637	1.919	+2.69	-1.6	17.3	35.5
Nov. 23	18 09.07	-26 03.4	2.665	1.894	+2.77	+0.3	17.2	31.5
Dec. 3	18 36.76	-26 00.7	2.690	1.873	+2.82	+2.2	17.1	27.6
Dec. 13	19 04.99	-25 38.5	2.712	1.856	+2.85	+4.2	17.0	23.9
Dec. 23	19 33.52	-24 56.4	2.733	1.842	+2.86	+6.2	16.9	20.3
Jan. 2	20 02.08	-23 54.5	2.751	1.832	+2.83	+8.1	16.9	16.8
Jan. 12	20 30.41	-22 33.9	2.768	1.826	+2.79	+9.8	16.8	13.4
Jan. 22	20 58.35	-20 56.0	2.785	1.824	+2.74	+11.3	16.8	10.1
Feb. 1	21 25.71	-19 03.2	2.800	1.826	+2.67	+12.5	16.8	7.0
Feb. 11	21 52.41	-16 57.8	2.814	1.832	+2.60	+13.5	16.8	4.6
Feb. 21	22 18.38	-14 42.5	2.828	1.842	+2.52	+14.2	16.8	4.0
Mar. 3	22 43.60	-12 20.0	2.840	1.856	+2.45	+14.7	16.8	5.9
Mar. 13	23 08.06	-09 53.2	2.850	1.874	+2.37	+14.9	16.8	8.8
Mar. 23	23 31.80	-07 24.4	2.858	1.896	+2.30	+14.8	16.9	12.1

Comet 74P/Smirnova-Chernykh

Epoch = 2017 July 26.0 TT
T = 2018 Jan. 26.38644 TT
Peri. = 87.08108 e = 0.1491679
Node = 77.05764 2000.0 a = 4.1566025 AU
Incl. = 6.65397 n = 0.11630445
q = 3.5365708 AU P = 8.47 years

m1 = 5.6 + 5 log(Delta) + 15.0 log(r(t-90))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	07 08.03	+26 51.4	2.789	3.770	-0.74	+2.1	16.6	175.4
Jan. 17	07 00.60	+27 12.4	2.797	3.759	-0.67	+1.6	16.6	165.9
Jan. 27	06 53.85	+27 28.2	2.835	3.748	-0.54	+1.0	16.6	154.6
Feb. 6	06 48.43	+27 38.4	2.900	3.738	-0.36	+0.5	16.7	143.3
Feb. 16	06 44.79	+27 43.7	2.988	3.728	-0.16	+0.1	16.7	132.5
Feb. 26	06 43.18	+27 44.7	3.095	3.718	+0.05	-0.2	16.8	122.1
Mar. 8	06 43.68	+27 42.2	3.217	3.708	+0.26	-0.5	16.8	112.2
Mar. 18	06 46.23	+27 36.8	3.347	3.698	+0.45	-0.8	16.9	102.9
Mar. 28	06 50.69	+27 28.7	3.483	3.689	+0.62	-1.1	17.0	94.0
Apr. 7	06 56.85	+27 17.9	3.620	3.680	+0.77	-1.4	17.0	85.5
Apr. 17	07 04.51	+27 04.3	3.755	3.671	+0.89	-1.7	17.1	77.5
Apr. 27	07 13.46	+26 47.4	3.886	3.662	+1.00	-2.0	17.2	69.8
May 7	07 23.49	+26 27.1	4.011	3.653	+1.09	-2.4	17.2	62.3
May 17	07 34.43	+26 03.0	4.126	3.645	+1.17	-2.8	17.2	55.2
May 27	07 46.10	+25 34.8	4.232	3.637	+1.23	-3.2	17.3	48.3
June 6	07 58.37	+25 02.6	4.325	3.629	+1.27	-3.6	17.3	41.6
June 16	08 11.10	+24 26.2	4.406	3.622	+1.31	-4.1	17.3	35.0
June 26	08 24.18	+23 45.5	4.474	3.615	+1.33	-4.5	17.4	28.6
July 6	08 37.50	+23 00.8	4.527	3.608	+1.35	-4.9	17.4	22.4
July 16	08 50.98	+22 12.3	4.566	3.601	+1.36	-5.2	17.4	16.2
July 26	09 04.54	+21 20.2	4.590	3.595	+1.36	-5.5	17.4	10.3
Aug. 5	09 18.10	+20 24.9	4.597	3.589	+1.35	-5.8	17.4	5.5
Aug. 15	09 31.61	+19 26.9	4.590	3.583	+1.34	-6.0	17.3	5.5
Aug. 25	09 45.01	+18 26.8	4.567	3.578	+1.32	-6.2	17.3	10.5
Sept. 4	09 58.24	+17 25.2	4.528	3.573	+1.30	-6.3	17.3	16.5
Sept.14	10 11.24	+16 22.6	4.475	3.568	+1.27	-6.3	17.2	22.7
Sept.24	10 23.96	+15 20.0	4.406	3.564	+1.24	-6.2	17.2	29.1
Oct. 4	10 36.33	+14 18.2	4.324	3.559	+1.20	-6.0	17.1	35.7
Oct. 14	10 48.29	+13 18.0	4.227	3.556	+1.15	-5.8	17.1	42.4
Oct. 24	10 59.76	+12 20.4	4.119	3.552	+1.09	-5.4	17.0	49.4
Nov. 3	11 10.65	+11 26.6	3.999	3.549	+1.02	-4.9	16.9	56.5
Nov. 13	11 20.85	+10 37.6	3.869	3.546	+0.94	-4.3	16.9	63.9
Nov. 23	11 30.25	+09 54.7	3.731	3.544	+0.84	-3.6	16.8	71.5
Dec. 3	11 38.69	+09 19.0	3.588	3.542	+0.73	-2.7	16.7	79.4
Dec. 13	11 46.04	+08 51.8	3.441	3.540	+0.61	-1.8	16.6	87.7
Dec. 23	11 52.11	+08 34.2	3.293	3.539	+0.46	-0.7	16.5	96.3
Jan. 2	11 56.72	+08 27.3	3.149	3.538	+0.30	+0.4	16.4	105.3
Jan. 12	11 59.70	+08 31.7	3.011	3.537	+0.12	+1.6	16.3	114.7
Jan. 22	12 00.91	+08 47.6	2.884	3.537	-0.06	+2.7	16.2	124.6
Feb. 1	12 00.27	+09 14.2	2.772	3.537	-0.25	+3.6	16.1	134.8
Feb. 11	11 57.82	+09 49.9	2.680	3.537	-0.41	+4.2	16.0	145.4
Feb. 21	11 53.72	+10 31.8	2.611	3.538	-0.54	+4.4	15.9	156.0
Mar. 3	11 48.34	+11 16.1	2.569	3.539	-0.62	+4.2	15.9	165.9
Mar. 13	11 42.18	+11 58.1	2.556	3.540	-0.63	+3.6	15.9	170.7
Mar. 23	11 35.87	+12 33.7	2.572	3.542	-0.58	+2.5	15.9	164.5

Comet C/2016 Q4 (Kowalski)

Epoch = 2017 July 26.0 TT
T = 2018 Jan. 27.49823 TT
Peri. = 99.44769 e = 0.5784118
Node = 271.30843 2000.0 a = 16.8058603 AU
Incl. = 7.25621 n = 0.01430583
q = 7.0851524 AU P = 68.90 years

m1 = 1.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	22 35.21	-01 53.7	7.876	7.332	+0.53	+2.7	19.3	53.3
Jan. 17	22 40.48	-01 27.1	7.987	7.319	+0.57	+3.0	19.3	44.6
Jan. 27	22 46.14	-00 56.8	8.080	7.307	+0.60	+3.4	19.3	36.1
Feb. 6	22 52.12	-00 23.2	8.154	7.296	+0.62	+3.6	19.3	27.7
Feb. 16	22 58.32	+00 13.3	8.207	7.284	+0.64	+3.9	19.3	19.6
Feb. 26	23 04.68	+00 52.1	8.239	7.273	+0.64	+4.1	19.3	12.0
Mar. 8	23 11.11	+01 32.8	8.247	7.262	+0.64	+4.2	19.3	6.6
Mar. 18	23 17.54	+02 14.9	8.234	7.252	+0.64	+4.3	19.3	8.8
Mar. 28	23 23.90	+02 57.9	8.198	7.242	+0.62	+4.3	19.3	15.7
Apr. 7	23 30.11	+03 41.2	8.140	7.232	+0.60	+4.3	19.2	23.4
Apr. 17	23 36.11	+04 24.3	8.061	7.222	+0.57	+4.2	19.2	31.3
Apr. 27	23 41.83	+05 06.8	7.964	7.213	+0.54	+4.1	19.2	39.3
May 7	23 47.20	+05 48.1	7.849	7.204	+0.49	+4.0	19.1	47.4
May 17	23 52.14	+06 27.7	7.719	7.195	+0.45	+3.7	19.1	55.5
May 27	23 56.59	+07 05.1	7.576	7.187	+0.39	+3.5	19.0	63.8
June 6	00 00.47	+07 39.7	7.423	7.179	+0.33	+3.1	19.0	72.2
June 16	00 03.73	+08 10.9	7.264	7.171	+0.26	+2.7	18.9	80.8
June 26	00 06.29	+08 38.3	7.101	7.164	+0.18	+2.3	18.9	89.5
July 6	00 08.10	+09 01.3	6.938	7.157	+0.10	+1.8	18.8	98.4
July 16	00 09.13	+09 19.3	6.779	7.150	+0.02	+1.3	18.8	107.4
July 26	00 09.35	+09 32.0	6.628	7.143	-0.06	+0.7	18.7	116.8
Aug. 5	00 08.77	+09 39.0	6.490	7.137	-0.13	+0.1	18.7	126.3
Aug. 15	00 07.43	+09 40.2	6.369	7.132	-0.20	-0.5	18.6	136.0
Aug. 25	00 05.42	+09 35.5	6.268	7.126	-0.26	-1.0	18.6	145.8
Sept. 4	00 02.87	+09 25.3	6.191	7.121	-0.29	-1.5	18.5	155.6
Sept. 14	23 59.93	+09 10.4	6.140	7.116	-0.31	-1.9	18.5	164.9
Sept. 24	23 56.80	+08 51.5	6.119	7.112	-0.31	-2.1	18.5	171.3
Oct. 4	23 53.71	+08 30.2	6.127	7.108	-0.28	-2.2	18.5	167.9
Oct. 14	23 50.86	+08 07.7	6.164	7.104	-0.24	-2.2	18.5	158.9
Oct. 24	23 48.46	+07 45.7	6.230	7.101	-0.18	-2.0	18.5	148.9
Nov. 3	23 46.68	+07 25.6	6.322	7.098	-0.10	-1.7	18.6	138.7
Nov. 13	23 45.64	+07 08.7	6.436	7.095	-0.02	-1.3	18.6	128.6
Nov. 23	23 45.43	+06 56.1	6.568	7.092	+0.07	-0.8	18.6	118.5
Dec. 3	23 46.10	+06 48.5	6.714	7.090	+0.15	-0.2	18.7	108.6
Dec. 13	23 47.63	+06 46.4	6.870	7.089	+0.24	+0.4	18.7	98.9
Dec. 23	23 50.00	+06 49.9	7.030	7.087	+0.32	+0.9	18.8	89.3
Jan. 2	23 53.17	+06 59.1	7.190	7.086	+0.39	+1.5	18.8	80.0
Jan. 12	23 57.05	+07 13.7	7.346	7.086	+0.45	+2.0	18.9	70.9
Jan. 22	00 01.58	+07 33.3	7.495	7.085	+0.51	+2.4	18.9	61.9
Feb. 1	00 06.67	+07 57.6	7.632	7.085	+0.56	+2.8	19.0	53.2
Feb. 11	00 12.24	+08 25.9	7.754	7.086	+0.60	+3.2	19.0	44.6
Feb. 21	00 18.20	+08 57.7	7.860	7.086	+0.63	+3.5	19.0	36.2
Mar. 3	00 24.48	+09 32.6	7.947	7.087	+0.65	+3.7	19.1	28.0
Mar. 13	00 30.98	+10 09.8	8.014	7.089	+0.67	+3.9	19.1	20.0
Mar. 23	00 37.65	+10 48.9	8.060	7.090	+0.67	+4.0	19.1	12.5

Comet 185P/Petriew

Epoch = 2017 July 26.0 TT
T = 2018 Jan. 27.67916 TT
Peri. = 181.91984 e = 0.6988938
Node = 214.09889 2000.0 a = 3.1013320 AU
Incl. = 13.99420 n = 0.18046030
q = 0.9338303 AU P = 5.46 years

m1 = 15.0 + 5 log(Delta) + 7.5 log(r) (r>1.5AU)
m1 = 11.8 + 5 log(Delta) + 25.0 log(r) (r<1.5AU)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 05.78	-16 06.1	4.577	3.762	+1.12	+0.2	22.6	30.4
Jan. 17	17 16.96	-16 04.1	4.436	3.708	+1.10	+0.8	22.5	37.8
Jan. 27	17 27.93	-15 56.3	4.278	3.652	+1.06	+1.4	22.4	45.2
Feb. 6	17 38.54	-15 42.6	4.106	3.596	+1.01	+2.0	22.2	52.8
Feb. 16	17 48.66	-15 22.8	3.921	3.538	+0.95	+2.6	22.1	60.3
Feb. 26	17 58.16	-14 57.0	3.725	3.478	+0.87	+3.2	21.9	68.0
Mar. 8	18 06.84	-14 25.1	3.522	3.418	+0.77	+3.8	21.7	75.9
Mar. 18	18 14.54	-13 47.2	3.313	3.356	+0.65	+4.4	21.5	83.9
Mar. 28	18 21.05	-13 03.7	3.102	3.292	+0.51	+4.9	21.3	92.0
Apr. 7	18 26.12	-12 14.8	2.892	3.228	+0.34	+5.4	21.1	100.4
Apr. 17	18 29.49	-11 20.9	2.687	3.161	+0.14	+5.8	20.9	109.1
Apr. 27	18 30.91	-10 22.9	2.489	3.094	-0.08	+6.1	20.7	118.1
May 7	18 30.07	-09 21.7	2.303	3.024	-0.33	+6.3	20.4	127.4
May 17	18 26.78	-08 18.9	2.132	2.954	-0.59	+6.2	20.2	137.0
May 27	18 20.88	-07 16.5	1.981	2.881	-0.84	+5.9	19.9	146.6
June 6	18 12.45	-06 17.5	1.853	2.807	-1.06	+5.2	19.7	155.4
June 16	18 01.88	-05 25.3	1.751	2.732	-1.20	+4.1	19.5	161.1
June 26	17 49.84	-04 44.0	1.676	2.655	-1.25	+2.7	19.3	160.1
July 6	17 37.37	-04 17.0	1.629	2.576	-1.17	+1.1	19.1	152.8
July 16	17 25.65	-04 06.5	1.608	2.495	-0.99	-0.6	19.0	142.9
July 26	17 15.74	-04 12.9	1.609	2.413	-0.72	-2.2	18.9	132.4
Aug. 5	17 08.50	-04 34.8	1.626	2.329	-0.41	-3.5	18.8	122.0
Aug. 15	17 04.41	-05 09.7	1.655	2.243	-0.07	-4.5	18.7	112.2
Aug. 25	17 03.67	-05 54.4	1.690	2.155	+0.26	-5.1	18.6	103.0
Sept. 4	17 06.30	-06 45.8	1.726	2.066	+0.59	-5.5	18.5	94.5
Sept.14	17 12.16	-07 41.0	1.759	1.975	+0.90	-5.6	18.4	86.7
Sept.24	17 21.12	-08 37.2	1.787	1.883	+1.19	-5.5	18.3	79.5
Oct. 4	17 33.04	-09 31.9	1.806	1.789	+1.48	-5.1	18.2	73.0
Oct. 14	17 47.82	-10 22.6	1.815	1.695	+1.76	-4.4	18.0	67.0
Oct. 24	18 05.41	-11 06.9	1.813	1.600	+2.04	-3.5	17.8	61.6
Nov. 3	18 25.82	-11 42.2	1.799	1.504	+2.32	-2.4	17.6	56.7
Nov. 13	18 49.06	-12 05.9	1.774	1.410	+2.62	-0.9	16.8	52.5
Nov. 23	19 15.24	-12 14.9	1.738	1.317	+2.92	+0.9	16.0	48.8
Dec. 3	19 44.44	-12 06.1	1.692	1.228	+3.23	+2.9	15.2	45.8
Dec. 13	20 16.78	-11 36.7	1.638	1.144	+3.56	+5.3	14.3	43.4
Dec. 23	20 52.35	-10 43.7	1.578	1.070	+3.88	+7.8	13.5	41.8
Jan. 2	21 31.16	-09 25.2	1.516	1.008	+4.19	+10.4	12.8	41.0
Jan. 12	22 13.11	-07 40.8	1.455	0.962	+4.48	+12.9	12.2	41.1
Jan. 22	22 57.94	-05 32.2	1.401	0.938	+4.72	+14.8	11.8	41.9
Feb. 1	23 45.16	-03 03.8	1.358	0.936	+4.89	+16.1	11.7	43.6
Feb. 11	00 34.03	-00 22.9	1.333	0.958	+4.96	+16.4	12.0	45.8
Feb. 21	01 23.66	+02 21.0	1.329	1.000	+4.93	+15.6	12.4	48.4
Mar. 3	02 12.93	+04 56.7	1.351	1.060	+4.78	+13.7	13.1	51.1
Mar. 13	03 00.78	+07 14.2	1.399	1.133	+4.56	+11.2	13.9	53.4
Mar. 23	03 46.33	+09 06.4	1.471	1.216	+4.26	+8.4	14.8	55.0

Comet 197P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2018 Jan. 28.84799 TT
Peri. = 188.69208 e = 0.6301011
Node = 66.39596 2000.0 a = 2.8651569 AU
Incl. = 25.55607 n = 0.20322702
q = 1.0598184 AU P = 4.85 years

m1 = 18.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	07 36.72	+45 55.9	2.623	3.544	-1.40	+5.2	.	155.9
Jan. 17	07 22.76	+46 48.0	2.589	3.495	-1.40	+2.9	.	153.2
Jan. 27	07 08.75	+47 17.2	2.585	3.445	-1.27	+0.6	.	146.0
Feb. 6	06 56.07	+47 23.6	2.607	3.394	-1.02	-1.3	.	136.8
Feb. 16	06 45.86	+47 10.5	2.653	3.342	-0.71	-2.7	.	127.0
Feb. 26	06 38.79	+46 43.0	2.716	3.288	-0.36	-3.7	.	117.2
Mar. 8	06 35.17	+46 06.5	2.791	3.233	-0.03	-4.1	.	107.7
Mar. 18	06 34.91	+45 25.1	2.873	3.177	+0.28	-4.3	.	98.6
Mar. 28	06 37.75	+44 41.7	2.957	3.120	+0.56	-4.4	.	89.9
Apr. 7	06 43.38	+43 57.8	3.039	3.061	+0.80	-4.4	.	81.8
Apr. 17	06 51.42	+43 13.8	3.116	3.001	+1.01	-4.4	.	74.1
Apr. 27	07 01.56	+42 29.5	3.185	2.939	+1.19	-4.5	.	66.8
May 7	07 13.51	+41 44.0	3.244	2.876	+1.35	-4.7	.	60.0
May 17	07 27.00	+40 56.6	3.292	2.811	+1.48	-5.1	.	53.6
May 27	07 41.83	+40 06.1	3.326	2.745	+1.60	-5.5	.	47.5
June 6	07 57.82	+39 11.5	3.347	2.678	+1.70	-6.0	.	41.9
June 16	08 14.80	+38 11.7	3.353	2.609	+1.79	-6.6	.	36.6
June 26	08 32.65	+37 05.8	3.346	2.539	+1.86	-7.3	.	31.7
July 6	08 51.28	+35 52.8	3.325	2.467	+1.93	-8.1	.	27.4
July 16	09 10.57	+34 31.9	3.290	2.394	+1.99	-9.0	.	23.6
July 26	09 30.50	+33 02.2	3.242	2.319	+2.05	-9.9	.	20.6
Aug. 5	09 51.00	+31 23.1	3.182	2.243	+2.11	-10.9	.	18.4
Aug. 15	10 12.05	+29 33.8	3.111	2.165	+2.16	-12.0	23.0	17.3
Aug. 25	10 33.67	+27 33.5	3.030	2.087	+2.22	-13.2	22.8	17.3
Sept. 4	10 55.85	+25 21.5	2.941	2.007	+2.28	-14.4	22.6	18.1
Sept.14	11 18.65	+22 57.3	2.844	1.926	+2.35	-15.7	22.4	19.6
Sept.24	11 42.13	+20 19.9	2.742	1.844	+2.42	-17.1	22.2	21.3
Oct. 4	12 06.37	+17 28.9	2.636	1.762	+2.51	-18.5	21.9	23.2
Oct. 14	12 31.49	+14 23.6	2.529	1.679	+2.61	-20.0	21.7	25.0
Oct. 24	12 57.64	+11 03.8	2.423	1.597	+2.73	-21.4	21.4	26.6
Nov. 3	13 24.96	+07 29.4	2.319	1.516	+2.87	-22.8	21.2	28.0
Nov. 13	13 53.67	+03 41.0	2.219	1.437	+3.03	-24.1	20.9	29.0
Nov. 23	14 24.01	-00 19.8	2.127	1.360	+3.22	-25.0	20.6	29.7
Dec. 3	14 56.23	-04 30.1	2.044	1.288	+3.44	-25.5	20.4	30.0
Dec. 13	15 30.63	-08 45.2	1.972	1.222	+3.69	-25.3	20.1	30.0
Dec. 23	16 07.51	-12 58.0	1.912	1.164	+3.96	-24.1	19.9	29.7
Jan. 2	16 47.06	-16 58.8	1.867	1.117	+4.23	-21.7	19.7	29.2
Jan. 12	17 29.36	-20 35.8	1.836	1.083	+4.48	-18.0	19.6	28.8
Jan. 22	18 14.15	-23 36.0	1.821	1.064	+4.66	-13.2	19.5	28.4
Feb. 1	19 00.73	-25 47.7	1.820	1.061	+4.72	-7.6	19.5	28.3
Feb. 11	19 47.98	-27 03.4	1.832	1.074	+4.65	-1.9	19.5	28.5
Feb. 21	20 34.50	-27 22.1	1.857	1.103	+4.45	+3.3	19.7	29.1
Mar. 3	21 18.96	-26 49.5	1.891	1.146	+4.15	+7.3	19.8	30.0
Mar. 13	22 00.46	-25 36.1	1.932	1.200	+3.81	+10.2	20.0	31.3
Mar. 23	22 38.51	-23 54.4	1.979	1.263	+3.45	+11.8	20.2	32.8

Comet 250P/Larson

Epoch = 2017 July 26.0 TT
T = 2018 Feb. 2.19376 TT
Peri. = 45.08648 e = 0.4069908
Node = 73.67935 2000.0 a = 3.7319455 AU
Incl. = 13.29039 n = 0.13671027
q = 2.2130780 AU P = 7.21 years

m1 = 14.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 24.65	-08 53.1	3.473	3.368	+0.69	+8.5	22.4	75.7
Jan. 17	00 31.55	-07 27.9	3.573	3.329	+0.81	+9.0	22.4	67.8
Jan. 27	00 39.66	-05 58.1	3.666	3.289	+0.92	+9.3	22.4	60.2
Feb. 6	00 48.86	-04 24.7	3.749	3.250	+1.01	+9.6	22.4	52.9
Feb. 16	00 59.01	-02 48.7	3.820	3.210	+1.10	+9.8	22.4	45.8
Feb. 26	01 09.99	-01 10.7	3.878	3.171	+1.17	+9.9	22.4	39.0
Mar. 8	01 21.73	+00 28.3	3.923	3.131	+1.24	+9.9	22.3	32.5
Mar. 18	01 34.13	+02 07.7	3.953	3.091	+1.30	+9.9	22.3	26.2
Mar. 28	01 47.15	+03 46.9	3.970	3.052	+1.36	+9.8	22.2	20.1
Apr. 7	02 00.72	+05 25.1	3.972	3.012	+1.41	+9.7	22.2	14.4
Apr. 17	02 14.82	+07 01.8	3.959	2.973	+1.46	+9.5	22.1	9.2
Apr. 27	02 29.40	+08 36.3	3.933	2.933	+1.50	+9.2	22.0	5.9
May 7	02 44.44	+10 08.1	3.893	2.894	+1.55	+8.8	22.0	7.2
May 17	02 59.90	+11 36.5	3.840	2.855	+1.59	+8.5	21.9	11.4
May 27	03 15.78	+13 01.1	3.775	2.817	+1.62	+8.0	21.8	16.4
June 6	03 32.02	+14 21.4	3.698	2.779	+1.66	+7.5	21.7	21.5
June 16	03 48.61	+15 36.9	3.610	2.741	+1.69	+7.0	21.6	26.7
June 26	04 05.50	+16 47.2	3.513	2.704	+1.72	+6.5	21.4	32.0
July 6	04 22.66	+17 51.9	3.406	2.668	+1.74	+5.9	21.3	37.2
July 16	04 40.02	+18 51.0	3.291	2.632	+1.75	+5.3	21.2	42.4
July 26	04 57.52	+19 44.2	3.168	2.597	+1.76	+4.8	21.0	47.7
Aug. 5	05 15.07	+20 31.8	3.040	2.563	+1.75	+4.2	20.9	53.1
Aug. 15	05 32.59	+21 13.9	2.906	2.529	+1.74	+3.7	20.7	58.5
Aug. 25	05 49.97	+21 51.2	2.767	2.497	+1.71	+3.3	20.6	64.1
Sept. 4	06 07.05	+22 24.3	2.626	2.466	+1.67	+3.0	20.4	69.8
Sept. 14	06 23.70	+22 54.6	2.482	2.437	+1.60	+2.9	20.2	75.7
Sept. 24	06 39.74	+23 23.4	2.337	2.408	+1.52	+2.9	20.1	81.8
Oct. 4	06 54.94	+23 52.7	2.193	2.382	+1.41	+3.2	19.9	88.2
Oct. 14	07 09.07	+24 24.8	2.051	2.356	+1.28	+3.8	19.7	94.9
Oct. 24	07 21.82	+25 02.4	1.913	2.333	+1.10	+4.6	19.5	102.0
Nov. 3	07 32.85	+25 48.6	1.781	2.311	+0.89	+5.8	19.3	109.6
Nov. 13	07 41.80	+26 46.2	1.657	2.292	+0.64	+7.1	19.1	117.8
Nov. 23	07 48.22	+27 57.7	1.544	2.274	+0.35	+8.6	18.9	126.5
Dec. 3	07 51.71	+29 23.9	1.445	2.258	+0.03	+9.9	18.7	135.8
Dec. 13	07 52.00	+31 03.2	1.363	2.245	-0.30	+10.7	18.6	145.5
Dec. 23	07 49.01	+32 50.5	1.302	2.234	-0.58	+10.6	18.5	155.3
Jan. 2	07 43.19	+34 36.9	1.265	2.225	-0.77	+9.5	18.4	163.4
Jan. 12	07 35.54	+36 11.7	1.253	2.219	-0.80	+7.4	18.3	165.5
Jan. 22	07 27.52	+37 25.7	1.266	2.215	-0.67	+4.8	18.4	159.5
Feb. 1	07 20.84	+38 13.7	1.303	2.213	-0.40	+2.2	18.4	150.3
Feb. 11	07 16.85	+38 36.1	1.361	2.214	-0.05	0.0	18.5	140.6
Feb. 21	07 16.34	+38 36.1	1.437	2.217	+0.32	-1.8	18.6	131.3
Mar. 3	07 19.56	+38 18.1	1.527	2.223	+0.67	-3.2	18.8	122.5
Mar. 13	07 26.24	+37 45.8	1.629	2.231	+0.97	-4.4	18.9	114.4
Mar. 23	07 35.95	+37 01.7	1.739	2.242	+1.22	-5.4	19.1	107.0

Comet P/2010 J5 = 2017 B1 (McNaught)

Epoch = 2017 July 26.0 TT
T = 2018 Feb. 4.68928 TT
Peri. = 147.54890 e = 0.0888148
Node = 65.57564 2000.0 a = 4.1155400 AU
Incl. = 7.35608 n = 0.11804942
q = 3.7500191 AU P = 8.35 years

H = 15.2 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	11 44.71	+10 52.7	3.374	3.883	+0.07	+1.7	21.6	114.2
Jan. 17	11 45.45	+11 09.7	3.238	3.876	-0.10	+2.7	21.4	124.2
Jan. 27	11 44.47	+11 36.5	3.116	3.870	-0.27	+3.5	21.3	134.5
Feb. 6	11 41.80	+12 11.4	3.015	3.865	-0.42	+4.0	21.1	145.1
Feb. 16	11 37.62	+12 51.7	2.937	3.859	-0.54	+4.2	20.9	155.7
Feb. 26	11 32.22	+13 33.9	2.887	3.853	-0.62	+4.0	20.8	165.5
Mar. 8	11 26.07	+14 13.9	2.866	3.848	-0.63	+3.4	20.7	170.3
Mar. 18	11 19.73	+14 47.9	2.875	3.842	-0.60	+2.5	20.8	164.3
Mar. 28	11 13.78	+15 12.6	2.912	3.837	-0.50	+1.3	20.9	154.4
Apr. 7	11 08.74	+15 25.9	2.976	3.832	-0.37	+0.1	21.1	144.0
Apr. 17	11 05.01	+15 27.1	3.063	3.827	-0.22	-1.1	21.2	133.7
Apr. 27	11 02.83	+15 16.3	3.169	3.822	-0.05	-2.2	21.4	123.8
May 7	11 02.32	+14 54.2	3.289	3.817	+0.11	-3.2	21.5	114.3
May 17	11 03.46	+14 22.1	3.420	3.812	+0.27	-4.1	21.6	105.2
May 27	11 06.14	+13 41.2	3.557	3.808	+0.41	-4.9	21.7	96.6
June 6	11 10.24	+12 52.7	3.696	3.804	+0.54	-5.5	21.8	88.3
June 16	11 15.60	+11 57.5	3.835	3.799	+0.65	-6.1	21.9	80.4
June 26	11 22.05	+10 56.8	3.971	3.795	+0.74	-6.6	21.9	72.7
July 6	11 29.47	+09 51.3	4.101	3.792	+0.82	-7.0	22.0	65.3
July 16	11 37.70	+08 41.8	4.224	3.788	+0.89	-7.3	22.0	58.2
July 26	11 46.63	+07 28.9	4.337	3.784	+0.95	-7.6	22.0	51.2
Aug. 5	11 56.15	+06 13.3	4.439	3.781	+1.00	-7.8	22.0	44.4
Aug. 15	12 06.18	+04 55.7	4.529	3.778	+1.05	-7.9	22.0	37.6
Aug. 25	12 16.63	+03 36.5	4.605	3.775	+1.08	-8.0	22.0	31.0
Sept. 4	12 27.43	+02 16.4	4.667	3.772	+1.11	-8.0	21.9	24.4
Sept.14	12 38.52	+00 56.0	4.713	3.769	+1.13	-8.0	21.9	17.9
Sept.24	12 49.85	-00 24.2	4.744	3.767	+1.15	-7.9	21.8	11.6
Oct. 4	13 01.36	-01 43.6	4.758	3.764	+1.16	-7.8	21.7	6.0
Oct. 14	13 12.98	-03 01.7	4.755	3.762	+1.17	-7.6	21.6	5.1
Oct. 24	13 24.68	-04 17.8	4.735	3.760	+1.17	-7.4	21.7	10.3
Nov. 3	13 36.37	-05 31.4	4.698	3.758	+1.16	-7.1	21.8	16.7
Nov. 13	13 48.00	-06 41.9	4.644	3.757	+1.15	-6.7	21.9	23.4
Nov. 23	13 59.49	-07 48.9	4.574	3.755	+1.13	-6.3	21.9	30.4
Dec. 3	14 10.74	-08 51.7	4.488	3.754	+1.09	-5.8	21.9	37.4
Dec. 13	14 21.67	-09 49.9	4.388	3.753	+1.05	-5.3	22.0	44.7
Dec. 23	14 32.15	-10 43.2	4.275	3.752	+0.99	-4.8	21.9	52.1
Jan. 2	14 42.05	-11 31.0	4.150	3.751	+0.92	-4.2	21.9	59.7
Jan. 12	14 51.22	-12 13.2	4.015	3.751	+0.83	-3.6	21.9	67.5
Jan. 22	14 59.51	-12 49.4	3.873	3.750	+0.72	-3.0	21.8	75.5
Feb. 1	15 06.74	-13 19.6	3.726	3.750	+0.60	-2.4	21.8	83.8
Feb. 11	15 12.72	-13 43.5	3.576	3.750	+0.45	-1.8	21.7	92.4
Feb. 21	15 17.25	-14 01.3	3.428	3.750	+0.29	-1.2	21.6	101.4
Mar. 3	15 20.18	-14 12.9	3.284	3.751	+0.12	-0.6	21.5	110.7
Mar. 13	15 21.35	-14 18.5	3.150	3.751	-0.07	0.0	21.3	120.3
Mar. 23	15 20.69	-14 18.4	3.028	3.752	-0.25	+0.5	21.2	130.4

Comet 245P/WISE

Epoch = 2017 July 26.0 TT
T = 2018 Feb. 8.61581 TT
Peri. = 316.65349 e = 0.4580662
Node = 316.69910 2000.0 a = 4.0412643 AU
Incl. = 21.20058 n = 0.12131883
q = 2.1900977 AU P = 8.12 years

m1 = 9.8 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	12 02.12	-14 39.0	3.206	3.512	+0.15	-8.5	.	100.0
Jan. 17	12 03.65	-16 03.6	3.024	3.469	-0.03	-7.9	23.0	108.8
Jan. 27	12 03.33	-17 22.2	2.851	3.425	-0.24	-7.0	22.8	118.0
Feb. 6	12 00.97	-18 32.2	2.691	3.382	-0.44	-5.9	22.5	127.3
Feb. 16	11 56.54	-19 30.7	2.549	3.338	-0.64	-4.4	22.3	136.7
Feb. 26	11 50.14	-20 14.7	2.428	3.294	-0.80	-2.7	22.1	145.7
Mar. 8	11 42.13	-20 41.3	2.332	3.250	-0.90	-0.8	21.9	153.4
Mar. 18	11 33.11	-20 49.3	2.262	3.206	-0.92	+1.0	21.7	157.7
Mar. 28	11 23.87	-20 39.2	2.221	3.162	-0.86	+2.5	21.5	156.5
Apr. 7	11 15.29	-20 13.9	2.207	3.118	-0.71	+3.5	21.4	150.6
Apr. 17	11 08.17	-19 38.7	2.218	3.074	-0.51	+3.9	21.3	142.3
Apr. 27	11 03.07	-18 59.4	2.250	3.030	-0.27	+3.8	21.2	133.2
May 7	11 00.35	-18 21.9	2.301	2.986	-0.02	+3.1	21.1	124.1
May 17	11 00.10	-17 50.9	2.365	2.943	+0.22	+2.1	21.0	115.3
May 27	11 02.27	-17 29.7	2.438	2.899	+0.44	+0.9	21.0	106.9
June 6	11 06.70	-17 20.4	2.517	2.857	+0.65	-0.4	20.9	99.0
June 16	11 13.18	-17 24.0	2.598	2.814	+0.83	-1.7	20.9	91.5
June 26	11 21.52	-17 40.5	2.679	2.772	+1.00	-2.9	20.8	84.5
July 6	11 31.53	-18 09.7	2.758	2.731	+1.15	-4.1	20.7	77.8
July 16	11 43.03	-18 50.7	2.833	2.690	+1.29	-5.2	20.7	71.6
July 26	11 55.90	-19 42.5	2.903	2.650	+1.41	-6.2	20.6	65.6
Aug. 5	12 10.04	-20 44.1	2.967	2.612	+1.53	-7.0	20.5	60.0
Aug. 15	12 25.36	-21 54.0	3.024	2.573	+1.65	-7.7	20.4	54.6
Aug. 25	12 41.83	-23 10.8	3.074	2.537	+1.76	-8.2	20.3	49.5
Sept. 4	12 59.41	-24 33.0	3.117	2.501	+1.87	-8.6	20.2	44.6
Sept.14	13 18.09	-25 58.8	3.153	2.466	+1.98	-8.8	20.1	39.8
Sept.24	13 37.88	-27 26.4	3.182	2.433	+2.09	-8.8	20.0	35.3
Oct. 4	13 58.78	-28 53.9	3.203	2.402	+2.20	-8.5	19.9	31.0
Oct. 14	14 20.79	-30 19.1	3.218	2.372	+2.31	-8.1	19.8	26.9
Oct. 24	14 43.91	-31 39.7	3.226	2.344	+2.42	-7.4	19.7	23.1
Nov. 3	15 08.09	-32 53.5	3.228	2.318	+2.52	-6.4	19.6	19.7
Nov. 13	15 33.28	-33 57.9	3.224	2.294	+2.61	-5.3	19.6	16.7
Nov. 23	15 59.39	-34 50.8	3.214	2.273	+2.69	-3.9	19.5	14.6
Dec. 3	16 26.25	-35 30.0	3.199	2.253	+2.74	-2.4	19.4	13.6
Dec. 13	16 53.65	-35 53.6	3.179	2.236	+2.77	-0.7	19.3	14.0
Dec. 23	17 21.38	-36 00.5	3.153	2.222	+2.78	+1.1	19.2	15.7
Jan. 2	17 49.15	-35 49.6	3.122	2.210	+2.75	+2.9	19.2	18.3
Jan. 12	18 16.67	-35 20.8	3.086	2.201	+2.70	+4.6	19.1	21.5
Jan. 22	18 43.69	-34 34.5	3.045	2.194	+2.63	+6.3	19.0	25.1
Feb. 1	19 09.94	-33 31.6	3.000	2.191	+2.53	+7.8	19.0	29.0
Feb. 11	19 35.23	-32 13.4	2.949	2.190	+2.42	+9.2	19.0	33.1
Feb. 21	19 59.40	-30 41.8	2.893	2.192	+2.29	+10.3	18.9	37.4
Mar. 3	20 22.32	-28 58.7	2.833	2.197	+2.16	+11.3	18.9	41.9
Mar. 13	20 43.92	-27 06.0	2.767	2.205	+2.02	+12.0	18.9	46.5
Mar. 23	21 04.15	-25 05.7	2.696	2.215	+1.88	+12.6	18.9	51.3

Comet C/2015 O1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2018 Feb. 18.97551 TT
Peri. = 89.58161
Node = 299.84829 2000.0
Incl. = 127.20893
q = 3.7295998 AU
e = 1.0000370

m1 = 5.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	18 52.09	-05 14.5	6.056	5.129	+0.41	+4.9	16.0	17.8
Jan. 17	18 56.21	-04 25.8	5.973	5.073	+0.40	+5.5	15.9	21.8
Jan. 27	19 00.17	-03 30.5	5.864	5.017	+0.36	+6.3	15.8	28.2
Feb. 6	19 03.82	-02 28.0	5.730	4.963	+0.32	+7.0	15.7	35.7
Feb. 16	19 06.99	-01 17.8	5.574	4.909	+0.25	+7.8	15.6	43.8
Feb. 26	19 09.51	+00 00.5	5.399	4.855	+0.17	+8.7	15.5	52.2
Mar. 8	19 11.19	+01 27.4	5.207	4.802	+0.06	+9.6	15.4	60.9
Mar. 18	19 11.82	+03 03.2	5.003	4.750	-0.06	+10.5	15.3	69.7
Mar. 28	19 11.19	+04 48.0	4.792	4.699	-0.22	+11.4	15.1	78.7
Apr. 7	19 09.03	+06 41.8	4.578	4.648	-0.39	+12.2	15.0	87.8
Apr. 17	19 05.12	+08 44.0	4.369	4.598	-0.59	+12.9	14.8	96.9
Apr. 27	18 59.19	+10 53.1	4.169	4.550	-0.82	+13.4	14.7	105.9
May 7	18 51.04	+13 06.6	3.986	4.502	-1.05	+13.4	14.5	114.7
May 17	18 40.53	+15 20.7	3.826	4.455	-1.28	+12.9	14.4	122.7
May 27	18 27.69	+17 30.0	3.695	4.409	-1.50	+11.8	14.3	129.4
June 6	18 12.74	+19 27.9	3.598	4.364	-1.66	+10.0	14.2	133.9
June 16	17 56.17	+21 07.8	3.538	4.320	-1.74	+7.7	14.1	135.3
June 26	17 38.74	+22 24.3	3.517	4.277	-1.74	+5.0	14.0	133.2
July 6	17 21.33	+23 14.4	3.532	4.236	-1.65	+2.4	14.0	128.1
July 16	17 04.83	+23 38.4	3.580	4.195	-1.49	+0.1	14.0	121.1
July 26	16 49.97	+23 39.1	3.655	4.157	-1.27	-1.8	14.0	112.9
Aug. 5	16 37.24	+23 21.5	3.751	4.119	-1.04	-3.0	14.0	104.2
Aug. 15	16 26.84	+22 51.1	3.861	4.083	-0.81	-3.8	14.0	95.4
Aug. 25	16 18.79	+22 13.0	3.977	4.048	-0.58	-4.1	14.1	86.8
Sept. 4	16 12.95	+21 31.6	4.094	4.015	-0.38	-4.1	14.1	78.4
Sept. 14	16 09.11	+20 50.6	4.205	3.983	-0.21	-3.8	14.1	70.5
Sept. 24	16 07.02	+20 12.9	4.306	3.954	-0.06	-3.2	14.1	63.0
Oct. 4	16 06.44	+19 40.7	4.393	3.925	+0.07	-2.5	14.2	56.2
Oct. 14	16 07.11	+19 15.7	4.461	3.899	+0.17	-1.6	14.2	50.2
Oct. 24	16 08.82	+18 59.7	4.509	3.874	+0.25	-0.6	14.2	45.3
Nov. 3	16 11.35	+18 54.0	4.534	3.851	+0.31	+0.6	14.1	41.7
Nov. 13	16 14.49	+18 59.9	4.536	3.830	+0.36	+1.9	14.1	39.9
Nov. 23	16 18.07	+19 18.9	4.514	3.811	+0.38	+3.4	14.1	40.0
Dec. 3	16 21.88	+19 52.6	4.467	3.794	+0.38	+5.0	14.0	42.1
Dec. 13	16 25.73	+20 42.3	4.398	3.778	+0.37	+6.8	14.0	45.8
Dec. 23	16 29.40	+21 49.9	4.308	3.765	+0.32	+8.7	13.9	50.9
Jan. 2	16 32.65	+23 17.1	4.200	3.754	+0.26	+10.9	13.9	56.9
Jan. 12	16 35.21	+25 05.7	4.077	3.745	+0.15	+13.2	13.8	63.6
Jan. 22	16 36.76	+27 17.4	3.943	3.738	+0.01	+15.6	13.7	70.9
Feb. 1	16 36.89	+29 53.4	3.805	3.733	-0.18	+18.0	13.6	78.4
Feb. 11	16 35.12	+32 53.8	3.667	3.730	-0.43	+20.4	13.5	86.0
Feb. 21	16 30.83	+36 17.4	3.538	3.730	-0.76	+22.3	13.5	93.4
Mar. 3	16 23.25	+39 59.9	3.423	3.731	-1.18	+23.4	13.4	100.4
Mar. 13	16 11.48	+43 53.4	3.330	3.735	-1.69	+23.2	13.3	106.4
Mar. 23	15 54.53	+47 45.2	3.266	3.740	-2.29	+21.3	13.3	111.0

Comet P/2006 F1 (Kowalski) [Orbit 1]

Epoch = 2017 July 26.0 TT
T = 2018 Mar. 14.51517 TT
Peri. = 186.10044 e = 0.1200939
Node = 124.74752 2000.0 a = 4.6690783 AU
Incl. = 21.28141 n = 0.09769163
q = 4.1083505 AU P = 10.09 years

m1 = 8.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ / °	Elong. °
Jan. 7	17 41.47	-10 45.4	5.163	4.288	-0.37	+1.8	21.2	16.2/ 94	24.6
Jan. 17	17 52.44	-10 55.0	5.092	4.281	-0.38	+1.8	21.2	15.7/ 92	31.1
Jan. 27	18 03.09	-10 59.4	5.006	4.273	-0.39	+1.8	21.2	15.0/ 90	38.0
Feb. 6	18 13.31	-10 59.0	4.903	4.266	-0.39	+1.8	21.1	14.2/ 88	45.2
Feb. 16	18 22.97	-10 54.3	4.786	4.259	-0.40	+1.8	21.0	13.3/ 87	52.5
Feb. 26	18 31.96	-10 46.1	4.658	4.251	-0.42	+1.8	21.0	12.1/ 85	60.1
Mar. 8	18 40.15	-10 35.1	4.518	4.245	-0.43	+1.8	20.9	10.8/ 83	67.8
Mar. 18	18 47.40	-10 22.2	4.371	4.238	-0.44	+1.8	20.8	9.2/ 82	75.8
Mar. 28	18 53.58	-10 08.5	4.219	4.231	-0.46	+1.8	20.7	7.5/ 80	83.9
Apr. 7	18 58.56	-09 55.1	4.065	4.225	-0.48	+1.9	20.6	5.5/ 78	92.3
Apr. 17	19 02.20	-09 43.3	3.911	4.218	-0.50	+1.9	20.5	3.4/ 75	100.9
Apr. 27	19 04.41	-09 34.4	3.762	4.212	-0.52	+2.0	20.4	1.1/ 65	109.9
May 7	19 05.08	-09 29.8	3.622	4.206	-0.54	+2.1	20.4	1.3/266	119.1
May 17	19 04.19	-09 30.7	3.494	4.200	-0.56	+2.1	20.3	3.6/258	128.6
May 27	19 01.78	-09 38.3	3.383	4.194	-0.59	+2.2	20.2	5.8/255	138.3
June 6	18 57.97	-09 53.5	3.292	4.189	-0.60	+2.3	20.1	7.7/252	148.2
June 16	18 53.02	-10 16.4	3.225	4.183	-0.62	+2.3	20.1	9.0/250	157.7
June 26	18 47.27	-10 46.9	3.185	4.178	-0.63	+2.4	20.0	9.7/247	165.7
July 6	18 41.17	-11 24.2	3.174	4.173	-0.63	+2.5	20.0	9.7/244	167.8
July 16	18 35.21	-12 06.9	3.191	4.168	-0.62	+2.5	20.0	9.1/239	161.7
July 26	18 29.87	-12 53.4	3.236	4.163	-0.61	+2.5	20.0	7.9/232	152.5
Aug. 5	18 25.57	-13 42.1	3.306	4.159	-0.60	+2.5	20.1	6.5/221	142.7
Aug. 15	18 22.63	-14 31.3	3.400	4.154	-0.58	+2.5	20.1	5.2/203	132.8
Aug. 25	18 21.23	-15 19.6	3.512	4.150	-0.56	+2.5	20.2	4.7/175	123.0
Sept. 4	18 21.49	-16 06.0	3.639	4.146	-0.54	+2.4	20.3	5.1/148	113.6
Sept.14	18 23.39	-16 49.6	3.776	4.142	-0.52	+2.3	20.3	6.4/129	104.4
Sept.24	18 26.87	-17 29.6	3.920	4.139	-0.50	+2.2	20.4	7.9/117	95.5
Oct. 4	18 31.83	-18 05.5	4.067	4.135	-0.49	+2.1	20.5	9.5/110	86.9
Oct. 14	18 38.14	-18 36.8	4.214	4.132	-0.47	+2.0	20.6	11.0/104	78.5
Oct. 24	18 45.65	-19 03.3	4.357	4.129	-0.46	+1.9	20.6	12.3/100	70.3
Nov. 3	18 54.23	-19 24.7	4.492	4.126	-0.45	+1.8	20.7	13.5/ 97	62.3
Nov. 13	19 03.71	-19 40.8	4.619	4.124	-0.45	+1.7	20.8	14.5/ 95	54.5
Nov. 23	19 13.97	-19 51.6	4.734	4.121	-0.44	+1.5	20.8	15.4/ 92	46.8
Dec. 3	19 24.87	-19 57.0	4.836	4.119	-0.43	+1.4	20.8	16.1/ 91	39.2
Dec. 13	19 36.27	-19 57.1	4.922	4.117	-0.43	+1.3	20.9	16.7/ 89	31.7
Dec. 23	19 48.07	-19 52.2	4.992	4.115	-0.43	+1.2	20.9	17.1/ 87	24.2
Jan. 2	20 00.15	-19 42.6	5.045	4.114	-0.43	+1.0	20.9	17.4/ 86	16.9
Jan. 12	20 12.39	-19 28.7	5.079	4.112	-0.42	+0.9	20.9	17.5/ 85	9.5
Jan. 22	20 24.71	-19 10.9	5.094	4.111	-0.42	+0.8	20.9	17.6/ 84	2.2
Feb. 1	20 37.01	-18 49.8	5.091	4.110	-0.42	+0.7	20.9	17.5/ 83	5.0
Feb. 11	20 49.19	-18 26.2	5.068	4.109	-0.43	+0.6	20.9	17.3/ 82	12.3
Feb. 21	21 01.18	-18 00.7	5.027	4.109	-0.43	+0.5	20.9	16.9/ 81	19.5
Mar. 3	21 12.89	-17 34.4	4.969	4.108	-0.43	+0.4	20.9	16.5/ 81	26.8
Mar. 13	21 24.25	-17 07.9	4.893	4.108	-0.44	+0.3	20.9	15.9/ 81	34.1
Mar. 23	21 35.18	-16 42.4	4.802	4.108	-0.44	+0.3	20.8	15.2/ 81	41.4

Comet 235P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2018 Mar. 17.41825 TT
Peri. = 333.72774 e = 0.3152294
Node = 204.46052 2000.0 a = 3.9901252 AU
Incl. = 8.90371 n = 0.12365859
q = 2.7323204 AU P = 7.97 years

m1 = 5.6 + 5 log(Delta) + 25.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	05 28.71	+12 25.9	2.669	3.576	-0.57	+0.4	21.6	153.4
Jan. 17	05 23.04	+12 29.4	2.715	3.547	-0.40	+1.0	21.5	142.7
Jan. 27	05 19.05	+12 39.4	2.783	3.519	-0.20	+1.6	21.5	132.0
Feb. 6	05 17.03	+12 55.0	2.870	3.490	+0.01	+2.0	21.5	121.7
Feb. 16	05 17.10	+13 14.9	2.971	3.462	+0.21	+2.3	21.4	111.8
Feb. 26	05 19.24	+13 37.9	3.081	3.434	+0.41	+2.5	21.4	102.4
Mar. 8	05 23.35	+14 02.4	3.196	3.405	+0.59	+2.5	21.4	93.6
Mar. 18	05 29.26	+14 27.1	3.312	3.377	+0.75	+2.3	21.4	85.2
Mar. 28	05 36.80	+14 50.6	3.426	3.349	+0.90	+2.1	21.4	77.2
Apr. 7	05 45.78	+15 11.7	3.535	3.322	+1.02	+1.8	21.4	69.6
Apr. 17	05 56.01	+15 29.3	3.637	3.294	+1.13	+1.3	21.3	62.4
Apr. 27	06 07.35	+15 42.6	3.731	3.267	+1.23	+0.8	21.3	55.5
May 7	06 19.62	+15 50.7	3.814	3.240	+1.31	+0.2	21.3	48.8
May 17	06 32.70	+15 53.0	3.887	3.213	+1.37	-0.4	21.2	42.4
May 27	06 46.44	+15 48.9	3.948	3.187	+1.43	-1.1	21.2	36.2
June 6	07 00.75	+15 38.0	3.996	3.161	+1.48	-1.8	21.1	30.2
June 16	07 15.51	+15 20.1	4.032	3.135	+1.51	-2.5	21.0	24.4
June 26	07 30.62	+14 55.0	4.055	3.110	+1.54	-3.2	21.0	18.9
July 6	07 46.00	+14 22.6	4.064	3.086	+1.56	-4.0	20.9	13.6
July 16	08 01.56	+13 43.0	4.061	3.061	+1.57	-4.7	20.8	9.1
July 26	08 17.24	+12 56.4	4.044	3.038	+1.57	-5.3	20.7	6.6
Aug. 5	08 32.97	+12 03.0	4.015	3.015	+1.57	-6.0	20.6	8.2
Aug. 15	08 48.68	+11 03.3	3.974	2.992	+1.56	-6.6	20.5	12.4
Aug. 25	09 04.32	+09 57.5	3.920	2.971	+1.55	-7.1	20.4	17.4
Sept. 4	09 19.84	+08 46.5	3.854	2.950	+1.53	-7.6	20.3	22.7
Sept. 14	09 35.17	+07 30.7	3.777	2.929	+1.51	-8.0	20.2	28.2
Sept. 24	09 50.28	+06 10.9	3.689	2.910	+1.48	-8.3	20.0	33.8
Oct. 4	10 05.10	+04 48.0	3.591	2.891	+1.45	-8.5	19.9	39.6
Oct. 14	10 19.56	+03 22.9	3.484	2.874	+1.41	-8.6	19.8	45.5
Oct. 24	10 33.61	+01 56.6	3.367	2.857	+1.35	-8.6	19.6	51.5
Nov. 3	10 47.16	+00 30.2	3.243	2.841	+1.29	-8.5	19.5	57.8
Nov. 13	11 00.10	-00 55.0	3.113	2.826	+1.22	-8.3	19.3	64.2
Nov. 23	11 12.34	-02 17.7	2.977	2.812	+1.14	-7.9	19.2	70.8
Dec. 3	11 23.70	-03 36.3	2.837	2.799	+1.03	-7.3	19.0	77.8
Dec. 13	11 34.05	-04 49.2	2.695	2.787	+0.91	-6.5	18.9	85.0
Dec. 23	11 43.17	-05 54.5	2.552	2.776	+0.77	-5.6	18.7	92.6
Jan. 2	11 50.85	-06 50.1	2.412	2.766	+0.60	-4.4	18.6	100.6
Jan. 12	11 56.86	-07 33.9	2.276	2.758	+0.41	-2.9	18.4	109.0
Jan. 22	12 00.95	-08 03.3	2.148	2.751	+0.20	-1.3	18.2	118.0
Feb. 1	12 02.95	-08 16.1	2.031	2.745	-0.02	+0.6	18.1	127.5
Feb. 11	12 02.77	-08 10.3	1.929	2.740	-0.23	+2.5	18.0	137.5
Feb. 21	12 00.49	-07 44.9	1.846	2.736	-0.41	+4.4	17.9	148.1
Mar. 3	11 56.42	-07 00.4	1.785	2.734	-0.53	+6.0	17.8	159.0
Mar. 13	11 51.14	-06 00.0	1.749	2.732	-0.57	+7.1	17.7	169.6
Mar. 23	11 45.41	-04 48.9	1.740	2.733	-0.53	+7.5	17.7	173.2

Comet P/2011 VJ5 (Lemmon)

Epoch = 2017 July 26.0 TT
T = 2018 Mar. 22.29730 TT
Peri. = 315.27423 e = 0.5570849
Node = 169.91901 2000.0 a = 3.4043427 AU
Incl. = 3.97532 n = 0.15691128
q = 1.5078348 AU P = 6.28 years

m1 = 15.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	22 49.62	-07 40.8	4.234	3.745	-0.31	-1.4	.	13.8/ 69	54.2
Jan. 17	22 58.26	-06 51.6	4.308	3.698	-0.31	-1.5	.	15.1/ 69	46.3
Jan. 27	23 07.67	-05 56.8	4.367	3.650	-0.32	-1.6	.	16.2/ 68	38.7
Feb. 6	23 17.73	-04 57.0	4.409	3.602	-0.32	-1.6	.	17.1/ 68	31.2
Feb. 16	23 28.35	-03 53.1	4.433	3.552	-0.33	-1.7	.	17.9/ 68	23.9
Feb. 26	23 39.44	-02 45.5	4.438	3.502	-0.35	-1.8	.	18.6/ 68	16.9
Mar. 8	23 50.95	-01 34.9	4.425	3.452	-0.36	-1.9	.	19.2/ 68	9.9
Mar. 18	00 02.80	-00 21.9	4.393	3.400	-0.38	-2.0	.	19.7/ 68	3.2
Mar. 28	00 14.97	+00 52.7	4.343	3.348	-0.40	-2.1	.	20.1/ 68	3.6
Apr. 7	00 27.40	+02 08.4	4.275	3.294	-0.42	-2.2	.	20.4/ 68	10.0
Apr. 17	00 40.05	+03 24.6	4.191	3.240	-0.44	-2.4	.	20.7/ 68	16.4
Apr. 27	00 52.91	+04 40.7	4.090	3.186	-0.47	-2.5	.	20.9/ 69	22.7
May 7	01 05.95	+05 56.0	3.975	3.130	-0.50	-2.6	.	21.0/ 69	28.9
May 17	01 19.13	+07 10.0	3.846	3.074	-0.54	-2.8	.	21.0/ 70	35.1
May 27	01 32.44	+08 21.9	3.704	3.017	-0.58	-2.9	.	21.0/ 70	41.2
June 6	01 45.83	+09 31.2	3.552	2.959	-0.63	-3.0	.	20.9/ 71	47.3
June 16	01 59.27	+10 37.2	3.390	2.901	-0.68	-3.2	.	20.7/ 72	53.4
June 26	02 12.72	+11 39.2	3.220	2.842	-0.74	-3.3	.	20.4/ 73	59.5
July 6	02 26.10	+12 36.6	3.043	2.782	-0.81	-3.5	.	20.0/ 75	65.6
July 16	02 39.34	+13 28.6	2.862	2.722	-0.89	-3.6	.	19.5/ 76	71.8
July 26	02 52.33	+14 14.6	2.678	2.661	-0.98	-3.8	.	18.7/ 78	78.1
Aug. 5	03 04.94	+14 53.7	2.492	2.599	-1.08	-3.9	.	17.8/ 79	84.5
Aug. 15	03 17.01	+15 25.3	2.306	2.538	-1.20	-4.1	.	16.5/ 82	91.2
Aug. 25	03 28.32	+15 48.6	2.122	2.475	-1.34	-4.3	.	14.9/ 84	98.1
Sept. 4	03 38.59	+16 02.8	1.943	2.413	-1.50	-4.5	22.8	12.9/ 88	105.2
Sept.14	03 47.53	+16 07.3	1.770	2.350	-1.69	-4.8	22.4	10.4/ 93	112.8
Sept.24	03 54.72	+16 01.2	1.605	2.288	-1.90	-5.1	22.0	7.4/103	120.9
Oct. 4	03 59.73	+15 44.1	1.451	2.226	-2.14	-5.6	21.6	4.5/129	129.5
Oct. 14	04 02.15	+15 15.7	1.311	2.164	-2.40	-6.1	21.2	4.0/192	138.8
Oct. 24	04 01.57	+14 36.1	1.187	2.102	-2.67	-6.7	20.8	7.3/228	148.7
Nov. 3	03 57.87	+13 47.0	1.083	2.041	-2.94	-7.3	20.4	11.0/240	159.3
Nov. 13	03 51.32	+12 51.7	1.001	1.982	-3.15	-7.9	20.1	13.7/246	169.4
Nov. 23	03 42.76	+11 55.7	0.942	1.923	-3.28	-8.3	19.7	14.2/250	171.2
Dec. 3	03 33.70	+11 07.4	0.906	1.867	-3.31	-8.3	19.5	12.0/255	161.4
Dec. 13	03 25.89	+10 35.1	0.892	1.813	-3.23	-8.1	19.2	7.4/262	149.9
Dec. 23	03 20.92	+10 25.2	0.897	1.761	-3.09	-7.6	19.1	2.1/317	138.9
Jan. 2	03 19.95	+10 40.6	0.916	1.713	-2.92	-7.1	18.9	6.5/ 53	128.7
Jan. 12	03 23.47	+11 20.1	0.945	1.668	-2.77	-6.6	18.8	13.3/ 63	119.7
Jan. 22	03 31.54	+12 20.1	0.981	1.628	-2.64	-6.2	18.7	19.6/ 67	111.8
Feb. 1	03 43.95	+13 35.4	1.022	1.592	-2.56	-5.8	18.7	25.3/ 70	105.0
Feb. 11	04 00.33	+14 59.8	1.066	1.562	-2.52	-5.4	18.6	30.1/ 73	99.1
Feb. 21	04 20.30	+16 26.9	1.112	1.538	-2.50	-4.9	18.6	34.2/ 75	94.0
Mar. 3	04 43.47	+17 50.4	1.160	1.521	-2.51	-4.1	18.7	37.6/ 78	89.7
Mar. 13	05 09.35	+19 03.9	1.211	1.511	-2.52	-3.2	18.7	40.2/ 81	85.9
Mar. 23	05 37.50	+20 01.9	1.266	1.508	-2.53	-2.0	18.8	42.2/ 84	82.7

Comet P/2012 T1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2018 Apr. 11.82770 TT
Peri. = 299.91884 e = 0.2374692
Node = 85.72527 2000.0 a = 3.1499180 AU
Incl. = 11.05679 n = 0.17630117
q = 2.4019095 AU P = 5.59 years

m1 = 12.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	18 41.62	-24 48.7	4.183	3.210	-0.56	+0.9	.	21.9/ 90	7.4
Jan. 17	18 57.68	-24 44.9	4.134	3.188	-0.57	+0.6	23.0	21.9/ 88	13.9
Jan. 27	19 13.74	-24 35.8	4.069	3.165	-0.59	+0.4	23.0	21.8/ 87	20.4
Feb. 6	19 29.70	-24 22.0	3.989	3.142	-0.61	+0.2	22.9	21.6/ 86	26.9
Feb. 16	19 45.46	-24 04.0	3.896	3.119	-0.63	-0.1	22.8	21.3/ 85	33.4
Feb. 26	20 00.95	-23 42.6	3.789	3.095	-0.65	-0.4	22.7	20.9/ 84	39.9
Mar. 8	20 16.07	-23 18.7	3.670	3.072	-0.67	-0.6	22.5	20.4/ 84	46.5
Mar. 18	20 30.72	-22 53.3	3.541	3.049	-0.70	-0.9	22.4	19.7/ 83	53.1
Mar. 28	20 44.83	-22 27.7	3.403	3.025	-0.73	-1.2	22.3	18.8/ 83	59.7
Apr. 7	20 58.28	-22 03.2	3.257	3.001	-0.76	-1.5	22.1	17.8/ 84	66.5
Apr. 17	21 10.98	-21 41.3	3.106	2.978	-0.80	-1.9	22.0	16.6/ 84	73.3
Apr. 27	21 22.80	-21 23.6	2.951	2.954	-0.84	-2.2	21.8	15.1/ 86	80.3
May 7	21 33.59	-21 12.1	2.794	2.930	-0.89	-2.6	21.6	13.4/ 89	87.6
May 17	21 43.19	-21 08.4	2.638	2.907	-0.94	-3.0	21.5	11.5/ 94	95.0
May 27	21 51.42	-21 14.7	2.485	2.883	-1.01	-3.4	21.3	9.4/101	102.8
June 6	21 58.03	-21 32.8	2.337	2.860	-1.08	-3.9	21.1	7.3/115	110.9
June 16	22 02.80	-22 04.1	2.197	2.836	-1.16	-4.3	20.9	5.9/141	119.4
June 26	22 05.49	-22 49.5	2.068	2.813	-1.25	-4.7	20.7	5.9/175	128.3
July 6	22 05.86	-23 48.5	1.954	2.790	-1.34	-5.0	20.5	7.6/201	137.6
July 16	22 03.82	-24 59.0	1.859	2.768	-1.44	-5.2	20.4	9.8/217	147.1
July 26	21 59.42	-26 16.5	1.784	2.745	-1.53	-5.2	20.2	11.6/227	156.4
Aug. 5	21 53.01	-27 34.4	1.734	2.723	-1.60	-5.0	20.1	12.4/235	163.9
Aug. 15	21 45.26	-28 45.0	1.710	2.702	-1.64	-4.6	20.0	12.1/242	165.3
Aug. 25	21 37.11	-29 41.0	1.711	2.680	-1.64	-4.1	20.0	10.3/249	159.2
Sept. 4	21 29.65	-30 17.2	1.738	2.659	-1.61	-3.5	20.0	7.6/259	150.1
Sept.14	21 23.86	-30 31.8	1.786	2.639	-1.55	-3.0	20.0	4.5/278	140.3
Sept.24	21 20.45	-30 25.2	1.854	2.619	-1.47	-2.6	20.0	2.7/341	130.6
Oct. 4	21 19.79	-29 59.9	1.936	2.600	-1.38	-2.5	20.1	5.0/ 34	121.3
Oct. 14	21 21.94	-29 18.6	2.030	2.582	-1.30	-2.4	20.1	8.4/ 49	112.5
Oct. 24	21 26.74	-28 23.8	2.132	2.564	-1.22	-2.5	20.2	11.6/ 56	104.1
Nov. 3	21 33.94	-27 17.5	2.239	2.546	-1.15	-2.7	20.2	14.5/ 59	96.3
Nov. 13	21 43.17	-26 01.2	2.349	2.530	-1.08	-3.0	20.3	17.1/ 61	88.8
Nov. 23	21 54.14	-24 36.0	2.458	2.514	-1.03	-3.2	20.4	19.4/ 62	81.7
Dec. 3	22 06.54	-23 02.7	2.566	2.500	-0.98	-3.5	20.4	21.3/ 63	75.0
Dec. 13	22 20.09	-21 22.1	2.671	2.486	-0.94	-3.8	20.5	23.0/ 63	68.5
Dec. 23	22 34.57	-19 34.9	2.772	2.473	-0.90	-4.1	20.5	24.4/ 63	62.3
Jan. 2	22 49.80	-17 41.7	2.866	2.461	-0.87	-4.4	20.6	25.6/ 63	56.3
Jan. 12	23 05.62	-15 43.4	2.955	2.450	-0.84	-4.7	20.6	26.6/ 63	50.5
Jan. 22	23 21.92	-13 40.8	3.036	2.440	-0.82	-4.9	20.6	27.5/ 63	44.9
Feb. 1	23 38.60	-11 34.8	3.110	2.431	-0.80	-5.1	20.7	28.2/ 63	39.4
Feb. 11	23 55.58	-09 26.4	3.176	2.423	-0.78	-5.3	20.7	28.7/ 63	34.1
Feb. 21	00 12.84	-07 16.4	3.234	2.417	-0.77	-5.4	20.7	29.1/ 64	29.0
Mar. 3	00 30.31	-05 06.0	3.283	2.412	-0.76	-5.5	20.7	29.4/ 64	24.0
Mar. 13	00 47.98	-02 56.2	3.323	2.407	-0.75	-5.6	20.7	29.7/ 64	19.2
Mar. 23	01 05.83	-00 47.9	3.355	2.404	-0.75	-5.6	20.7	29.8/ 65	14.7

Comet 169P/NEAT

Epoch = 2017 July 26.0 TT
T = 2018 Apr. 29.61809 TT
Peri. = 218.05783 e = 0.7679500
Node = 176.09950 2000.0 a = 2.6028701 AU
Incl. = 11.29611 n = 0.23470662
q = 0.6039960 AU P = 4.20 years

m1 = 16.4 + 5 log(Delta) + 5.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	15 53.36	-12 12.4	4.728	4.140	+0.80	-0.7	22.9	48.3
Jan. 17	16 01.32	-12 19.8	4.567	4.106	+0.73	-0.2	22.8	56.5
Jan. 27	16 08.62	-12 21.4	4.392	4.071	+0.65	+0.5	22.7	64.8
Feb. 6	16 15.07	-12 16.6	4.207	4.035	+0.54	+1.1	22.5	73.3
Feb. 16	16 20.50	-12 05.5	4.013	3.997	+0.42	+1.8	22.4	82.0
Feb. 26	16 24.69	-11 47.7	3.816	3.959	+0.27	+2.4	22.3	91.0
Mar. 8	16 27.44	-11 23.4	3.618	3.918	+0.11	+3.1	22.2	100.2
Mar. 18	16 28.54	-10 52.5	3.424	3.877	-0.08	+3.7	22.0	109.8
Mar. 28	16 27.78	-10 15.3	3.239	3.834	-0.28	+4.3	21.9	119.8
Apr. 7	16 25.02	-09 32.5	3.067	3.789	-0.48	+4.7	21.7	130.0
Apr. 17	16 20.22	-08 45.2	2.914	3.743	-0.68	+5.0	21.6	140.5
Apr. 27	16 13.42	-07 54.9	2.783	3.695	-0.85	+5.1	21.5	151.0
May 7	16 04.90	-07 04.0	2.679	3.646	-0.98	+4.9	21.3	160.5
May 17	15 55.13	-06 15.4	2.606	3.596	-1.04	+4.3	21.3	166.1
May 27	15 44.72	-05 32.4	2.563	3.543	-1.03	+3.4	21.2	162.7
June 6	15 34.43	-04 58.1	2.552	3.490	-0.94	+2.3	21.1	153.5
June 16	15 24.99	-04 34.9	2.568	3.434	-0.80	+1.1	21.1	143.0
June 26	15 16.98	-04 24.0	2.609	3.377	-0.61	-0.2	21.1	132.2
July 6	15 10.85	-04 25.7	2.668	3.318	-0.40	-1.4	21.1	121.7
July 16	15 06.82	-04 39.2	2.742	3.257	-0.19	-2.4	21.2	111.6
July 26	15 04.96	-05 03.3	2.824	3.194	+0.03	-3.3	21.2	102.0
Aug. 5	15 05.25	-05 36.3	2.909	3.129	+0.23	-4.0	21.2	92.9
Aug. 15	15 07.55	-06 16.6	2.994	3.062	+0.42	-4.6	21.2	84.2
Aug. 25	15 11.74	-07 02.7	3.074	2.994	+0.59	-5.0	21.2	75.9
Sept. 4	15 17.67	-07 53.0	3.146	2.923	+0.75	-5.3	21.2	68.1
Sept. 14	15 25.21	-08 46.2	3.207	2.850	+0.90	-5.5	21.2	60.5
Sept. 24	15 34.25	-09 41.0	3.255	2.774	+1.04	-5.5	21.2	53.3
Oct. 4	15 44.69	-10 36.2	3.288	2.697	+1.18	-5.4	21.1	46.3
Oct. 14	15 56.46	-11 30.6	3.306	2.616	+1.31	-5.3	21.1	39.6
Oct. 24	16 09.51	-12 23.2	3.307	2.534	+1.43	-5.0	21.0	33.2
Nov. 3	16 23.81	-13 12.8	3.290	2.448	+1.55	-4.5	20.9	27.1
Nov. 13	16 39.34	-13 58.3	3.255	2.360	+1.68	-4.0	20.8	21.2
Nov. 23	16 56.13	-14 38.4	3.203	2.269	+1.81	-3.3	20.7	15.9
Dec. 3	17 14.20	-15 11.8	3.133	2.175	+1.94	-2.5	20.6	11.2
Dec. 13	17 33.60	-15 37.2	3.047	2.077	+2.08	-1.6	20.4	8.1
Dec. 23	17 54.43	-15 52.9	2.946	1.977	+2.24	-0.4	20.2	7.9
Jan. 2	18 16.78	-15 57.3	2.831	1.872	+2.40	+0.9	20.0	10.3
Jan. 12	18 40.83	-15 48.2	2.705	1.765	+2.60	+2.5	19.8	13.6
Jan. 22	19 06.78	-15 23.3	2.569	1.653	+2.81	+4.4	19.5	17.0
Feb. 1	19 34.90	-14 39.6	2.427	1.538	+3.06	+6.6	19.3	19.9
Feb. 11	20 05.54	-13 33.7	2.282	1.419	+3.36	+9.2	19.0	22.3
Feb. 21	20 39.13	-12 01.6	2.137	1.296	+3.71	+12.3	18.6	23.8
Mar. 3	21 16.21	-09 58.9	1.999	1.170	+4.12	+15.7	18.2	24.4
Mar. 13	21 57.37	-07 21.5	1.873	1.042	+4.59	+19.5	17.9	23.7
Mar. 23	22 43.24	-04 07.0	1.765	0.916	+5.11	+22.9	17.4	21.6

Comet C/2015 XY1 (Lemmon)

Epoch = 2017 July 26.0 TT
T = 2018 Apr. 30.17890 TT
Peri. = 196.36416
Node = 281.61477 2000.0
Incl. = 148.84060
q = 7.9280105 AU
e = 1.0033460

m1 = 5.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	07 44.24	+28 31.9	7.474	8.445	-0.87	0.0	18.6	170.5
Jan. 17	07 35.57	+28 32.4	7.452	8.425	-0.86	-0.3	18.6	171.0
Jan. 27	07 26.98	+28 28.9	7.467	8.405	-0.82	-0.7	18.6	161.0
Feb. 6	07 18.79	+28 21.5	7.519	8.385	-0.75	-1.1	18.6	149.6
Feb. 16	07 11.27	+28 10.3	7.604	8.365	-0.66	-1.4	18.6	138.1
Feb. 26	07 04.62	+27 56.0	7.716	8.346	-0.56	-1.7	18.7	126.8
Mar. 8	06 58.99	+27 39.3	7.850	8.328	-0.45	-1.8	18.7	115.6
Mar. 18	06 54.46	+27 20.8	8.001	8.309	-0.34	-2.0	18.7	104.7
Mar. 28	06 51.02	+27 01.2	8.160	8.291	-0.24	-2.0	18.7	94.1
Apr. 7	06 48.65	+26 41.0	8.323	8.274	-0.14	-2.0	18.8	83.8
Apr. 17	06 47.25	+26 20.6	8.482	8.257	-0.05	-2.0	18.8	73.7
Apr. 27	06 46.74	+26 00.1	8.634	8.240	+0.03	-2.0	18.8	63.8
May 7	06 47.01	+25 39.8	8.773	8.224	+0.09	-2.0	18.9	54.2
May 17	06 47.93	+25 19.6	8.894	8.208	+0.15	-2.0	18.9	44.8
May 27	06 49.40	+24 59.5	8.995	8.192	+0.19	-2.0	18.9	35.6
June 6	06 51.29	+24 39.5	9.073	8.177	+0.22	-2.0	18.9	26.4
June 16	06 53.50	+24 19.6	9.126	8.163	+0.24	-2.0	18.9	17.4
June 26	06 55.91	+23 59.7	9.152	8.148	+0.25	-2.0	18.9	8.5
July 6	06 58.42	+23 39.8	9.151	8.134	+0.25	-2.0	18.9	1.1
July 16	07 00.92	+23 19.8	9.122	8.121	+0.24	-2.0	18.9	9.5
July 26	07 03.30	+22 59.8	9.065	8.108	+0.22	-2.0	18.9	18.4
Aug. 5	07 05.46	+22 39.9	8.982	8.096	+0.18	-2.0	18.8	27.5
Aug. 15	07 07.29	+22 19.9	8.874	8.083	+0.14	-2.0	18.8	36.6
Aug. 25	07 08.68	+22 00.1	8.743	8.072	+0.08	-2.0	18.8	45.9
Sept. 4	07 09.51	+21 40.6	8.592	8.061	+0.02	-1.9	18.7	55.3
Sept. 14	07 09.68	+21 21.3	8.424	8.050	-0.06	-1.9	18.7	64.9
Sept. 24	07 09.08	+21 02.4	8.244	8.039	-0.15	-1.8	18.6	74.8
Oct. 4	07 07.60	+20 44.0	8.056	8.030	-0.25	-1.8	18.6	84.9
Oct. 14	07 05.15	+20 26.1	7.865	8.020	-0.35	-1.8	18.5	95.3
Oct. 24	07 01.65	+20 08.6	7.679	8.011	-0.46	-1.7	18.5	106.0
Nov. 3	06 57.08	+19 51.4	7.502	8.003	-0.56	-1.7	18.4	117.1
Nov. 13	06 51.44	+19 34.5	7.343	7.994	-0.66	-1.7	18.4	128.3
Nov. 23	06 44.80	+19 17.5	7.206	7.987	-0.75	-1.7	18.3	139.9
Dec. 3	06 37.30	+19 00.4	7.098	7.980	-0.82	-1.7	18.3	151.6
Dec. 13	06 29.14	+18 43.0	7.025	7.973	-0.85	-1.8	18.2	163.4
Dec. 23	06 20.60	+18 25.3	6.988	7.967	-0.86	-1.8	18.2	173.8
Jan. 2	06 11.98	+18 07.4	6.991	7.961	-0.84	-1.8	18.2	170.1
Jan. 12	06 03.60	+17 49.5	7.031	7.956	-0.79	-1.8	18.2	158.7
Jan. 22	05 55.75	+17 31.9	7.108	7.951	-0.71	-1.7	18.3	146.9
Feb. 1	05 48.67	+17 15.1	7.218	7.946	-0.61	-1.6	18.3	135.1
Feb. 11	05 42.54	+16 59.3	7.354	7.942	-0.51	-1.5	18.3	123.6
Feb. 21	05 37.46	+16 44.8	7.510	7.939	-0.40	-1.3	18.4	112.4
Mar. 3	05 33.47	+16 31.6	7.680	7.936	-0.29	-1.2	18.4	101.4
Mar. 13	05 30.56	+16 19.7	7.858	7.934	-0.19	-1.1	18.5	90.8
Mar. 23	05 28.67	+16 08.9	8.036	7.931	-0.10	-1.0	18.5	80.4

Comet 37P/Forbes

Epoch = 2017 July 26.0 TT
T = 2018 May 4.16327 TT
Peri. = 329.97978 e = 0.5343918
Node = 314.62574 2000.0 a = 3.4571930 AU
Incl. = 8.95867 n = 0.15332700
q = 1.6096974 AU P = 6.43 years

m1 = 9.8 + 5 log(Delta) + 17.5 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	10 54.21	+03 40.5	3.268	3.894	-0.26	-0.4	22.9	123.2
Jan. 17	10 51.57	+03 36.1	3.103	3.851	-0.44	+0.6	22.8	133.9
Jan. 27	10 47.14	+03 42.1	2.958	3.807	-0.61	+1.6	22.6	145.0
Feb. 6	10 41.06	+03 58.2	2.838	3.763	-0.74	+2.5	22.4	156.5
Feb. 16	10 33.66	+04 23.0	2.746	3.718	-0.82	+3.1	22.2	168.0
Feb. 26	10 25.43	+04 54.3	2.684	3.672	-0.84	+3.5	22.1	175.3
Mar. 8	10 17.03	+05 28.8	2.655	3.625	-0.79	+3.4	22.0	165.9
Mar. 18	10 09.14	+06 03.2	2.655	3.578	-0.68	+3.1	21.9	154.3
Mar. 28	10 02.38	+06 33.9	2.683	3.530	-0.51	+2.4	21.8	142.8
Apr. 7	09 57.25	+06 58.3	2.735	3.481	-0.32	+1.6	21.8	131.7
Apr. 17	09 54.05	+07 14.4	2.804	3.432	-0.12	+0.7	21.7	121.1
Apr. 27	09 52.87	+07 21.3	2.887	3.382	+0.09	-0.3	21.7	111.1
May 7	09 53.73	+07 18.4	2.978	3.331	+0.28	-1.3	21.6	101.6
May 17	09 56.50	+07 05.6	3.072	3.279	+0.45	-2.2	21.6	92.7
May 27	10 01.02	+06 43.3	3.166	3.227	+0.61	-3.2	21.6	84.3
June 6	10 07.11	+06 11.5	3.256	3.174	+0.75	-4.1	21.5	76.4
June 16	10 14.60	+05 30.8	3.340	3.121	+0.87	-4.9	21.4	68.8
June 26	10 23.31	+04 41.5	3.416	3.067	+0.98	-5.8	21.4	61.6
July 6	10 33.12	+03 44.0	3.481	3.012	+1.08	-6.5	21.3	54.8
July 16	10 43.88	+02 38.6	3.535	2.956	+1.16	-7.3	21.2	48.2
July 26	10 55.52	+01 25.8	3.577	2.900	+1.24	-8.0	21.1	41.9
Aug. 5	11 07.95	+00 06.0	3.605	2.844	+1.32	-8.7	21.0	35.8
Aug. 15	11 21.10	-01 20.5	3.619	2.787	+1.38	-9.3	20.8	29.9
Aug. 25	11 34.95	-02 53.3	3.620	2.730	+1.45	-9.9	20.7	24.2
Sept. 4	11 49.47	-04 31.8	3.608	2.672	+1.52	-10.4	20.5	18.7
Sept. 14	12 04.65	-06 15.6	3.582	2.614	+1.59	-10.8	20.4	13.5
Sept. 24	12 20.52	-08 04.1	3.542	2.556	+1.66	-11.3	20.2	8.8
Oct. 4	12 37.08	-09 56.6	3.491	2.497	+1.73	-11.6	20.0	5.7
Oct. 14	12 54.39	-11 52.3	3.427	2.439	+1.81	-11.8	19.8	6.6
Oct. 24	13 12.49	-13 50.6	3.352	2.380	+1.90	-12.0	19.6	10.3
Nov. 3	13 31.44	-15 50.2	3.268	2.322	+1.99	-12.0	19.3	14.7
Nov. 13	13 51.32	-17 50.0	3.174	2.264	+2.09	-11.9	19.1	19.3
Nov. 23	14 12.23	-19 48.7	3.073	2.207	+2.20	-11.6	18.8	23.9
Dec. 3	14 34.22	-21 44.6	2.966	2.150	+2.32	-11.1	18.6	28.4
Dec. 13	14 57.42	-23 35.7	2.854	2.095	+2.45	-10.4	18.3	32.7
Dec. 23	15 21.89	-25 19.7	2.738	2.040	+2.58	-9.4	18.0	37.0
Jan. 2	15 47.68	-26 54.2	2.620	1.987	+2.72	-8.2	17.7	41.1
Jan. 12	16 14.83	-28 16.3	2.502	1.936	+2.85	-6.7	17.4	45.0
Jan. 22	16 43.30	-29 22.8	2.384	1.887	+2.97	-4.8	17.1	48.8
Feb. 1	17 12.99	-30 10.6	2.268	1.841	+3.07	-2.6	16.8	52.4
Feb. 11	17 43.72	-30 36.6	2.156	1.797	+3.15	-0.2	16.5	55.8
Feb. 21	18 15.19	-30 38.3	2.048	1.757	+3.19	+2.5	16.2	59.0
Mar. 3	18 47.04	-30 13.7	1.945	1.721	+3.18	+5.2	15.9	62.1
Mar. 13	19 18.87	-29 21.9	1.848	1.689	+3.14	+7.9	15.6	65.1
Mar. 23	19 50.23	-28 03.2	1.757	1.663	+3.05	+10.4	15.3	67.9

Comet 143P/Kowal-Mrkos

Epoch = 2017 July 26.0 TT
T = 2018 May 7.41261 TT
Peri. = 320.88375 e = 0.4101704
Node = 245.31260 2000.0 a = 4.2931604 AU
Incl. = 4.69557 n = 0.11079965
q = 2.5322331 AU P = 8.90 years

H = 13.4 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	06 59.11	+18 44.0	2.906	3.887	-0.75	+0.5	18.8	175.2
Jan. 17	06 51.57	+18 49.1	2.892	3.850	-0.69	+0.6	19.0	164.9
Jan. 27	06 44.66	+18 54.8	2.908	3.813	-0.57	+0.6	19.1	153.3
Feb. 6	06 38.99	+19 00.6	2.951	3.776	-0.40	+0.6	19.3	141.9
Feb. 16	06 35.00	+19 06.3	3.017	3.739	-0.21	+0.5	19.4	130.9
Feb. 26	06 32.94	+19 11.5	3.101	3.702	0.00	+0.4	19.5	120.4
Mar. 8	06 32.94	+19 15.9	3.199	3.665	+0.20	+0.3	19.6	110.4
Mar. 18	06 34.96	+19 19.1	3.305	3.627	+0.39	+0.1	19.6	100.9
Mar. 28	06 38.89	+19 20.5	3.415	3.590	+0.57	-0.1	19.7	91.9
Apr. 7	06 44.56	+19 19.6	3.526	3.553	+0.72	-0.4	19.8	83.4
Apr. 17	06 51.80	+19 15.5	3.633	3.515	+0.86	-0.8	19.8	75.3
Apr. 27	07 00.41	+19 07.8	3.734	3.478	+0.98	-1.2	19.8	67.6
May 7	07 10.23	+18 55.7	3.828	3.441	+1.08	-1.7	19.8	60.3
May 17	07 21.07	+18 38.6	3.912	3.404	+1.17	-2.2	19.8	53.2
May 27	07 32.78	+18 16.3	3.984	3.367	+1.25	-2.8	19.8	46.4
June 6	07 45.24	+17 48.2	4.045	3.330	+1.31	-3.4	19.7	39.9
June 16	07 58.32	+17 14.1	4.092	3.293	+1.36	-4.0	19.7	33.5
June 26	08 11.90	+16 33.7	4.126	3.257	+1.40	-4.7	19.6	27.3
July 6	08 25.90	+15 47.1	4.147	3.221	+1.43	-5.3	19.5	21.3
July 16	08 40.22	+14 54.2	4.153	3.185	+1.46	-5.9	19.4	15.5
July 26	08 54.81	+13 55.2	4.145	3.149	+1.48	-6.5	19.3	9.8
Aug. 5	09 09.58	+12 50.1	4.124	3.114	+1.49	-7.1	19.1	4.8
Aug. 15	09 24.48	+11 39.2	4.089	3.080	+1.50	-7.6	19.1	4.1
Aug. 25	09 39.47	+10 23.0	4.041	3.046	+1.50	-8.1	19.1	8.8
Sept. 4	09 54.50	+09 01.7	3.979	3.012	+1.50	-8.6	19.2	14.2
Sept.14	10 09.52	+07 36.0	3.906	2.979	+1.50	-9.0	19.2	19.8
Sept.24	10 24.50	+06 06.3	3.820	2.947	+1.49	-9.3	19.2	25.5
Oct. 4	10 39.39	+04 33.3	3.724	2.915	+1.48	-9.6	19.2	31.2
Oct. 14	10 54.15	+02 57.8	3.617	2.884	+1.46	-9.7	19.2	37.1
Oct. 24	11 08.75	+01 20.4	3.500	2.854	+1.44	-9.8	19.2	43.0
Nov. 3	11 23.11	-00 17.8	3.375	2.825	+1.41	-9.8	19.1	49.0
Nov. 13	11 37.17	-01 56.0	3.243	2.797	+1.37	-9.7	19.1	55.1
Nov. 23	11 50.86	-03 33.2	3.104	2.770	+1.32	-9.5	19.0	61.4
Dec. 3	12 04.07	-05 08.2	2.959	2.744	+1.26	-9.2	18.9	67.8
Dec. 13	12 16.67	-06 40.0	2.812	2.719	+1.18	-8.7	18.8	74.5
Dec. 23	12 28.52	-08 07.1	2.662	2.696	+1.09	-8.1	18.7	81.4
Jan. 2	12 39.41	-09 28.3	2.512	2.674	+0.97	-7.4	18.6	88.5
Jan. 12	12 49.15	-10 42.0	2.364	2.653	+0.83	-6.5	18.4	96.0
Jan. 22	12 57.47	-11 46.7	2.219	2.634	+0.66	-5.4	18.3	103.8
Feb. 1	13 04.08	-12 40.4	2.081	2.616	+0.47	-4.1	18.1	112.1
Feb. 11	13 08.74	-13 21.3	1.952	2.600	+0.24	-2.6	17.9	120.9
Feb. 21	13 11.19	-13 47.4	1.834	2.585	+0.01	-1.0	17.7	130.2
Mar. 3	13 11.32	-13 56.9	1.733	2.572	-0.21	+0.8	17.5	140.0
Mar. 13	13 09.20	-13 48.9	1.650	2.561	-0.40	+2.5	17.2	150.3
Mar. 23	13 05.15	-13 23.5	1.589	2.552	-0.53	+4.0	17.0	161.0

Comet 253P/PANSTARRS

Epoch = 2017 July 26.0 TT
T = 2018 May 7.78598 TT
Peri. = 230.74037 e = 0.4127868
Node = 146.88394 2000.0 a = 3.4684769 AU
Incl. = 4.94061 n = 0.15257939
q = 2.0367354 AU P = 6.46 years

m1 = 9.8 + 5 log(Delta) + 22.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 29.70	-19 29.9	4.533	3.657	+1.30	-0.6	.	24.1
Jan. 17	17 42.68	-19 36.3	4.427	3.621	+1.28	-0.1	.	31.1
Jan. 27	17 55.50	-19 37.7	4.306	3.584	+1.25	+0.3	.	38.2
Feb. 6	18 08.04	-19 34.4	4.170	3.547	+1.21	+0.8	.	45.4
Feb. 16	18 20.16	-19 26.7	4.021	3.510	+1.16	+1.2	.	52.6
Feb. 26	18 31.76	-19 14.9	3.861	3.472	+1.09	+1.5	.	59.9
Mar. 8	18 42.68	-18 59.8	3.692	3.434	+1.01	+1.8	.	67.3
Mar. 18	18 52.78	-18 42.0	3.516	3.395	+0.91	+2.0	.	74.9
Mar. 28	19 01.90	-18 22.4	3.336	3.356	+0.79	+2.0	.	82.6
Apr. 7	19 09.84	-18 02.0	3.153	3.317	+0.66	+2.0	.	90.5
Apr. 17	19 16.42	-17 42.0	2.971	3.277	+0.50	+1.8	.	98.7
Apr. 27	19 21.43	-17 23.7	2.793	3.237	+0.32	+1.5	.	107.2
May 7	19 24.65	-17 08.4	2.622	3.196	+0.12	+1.1	.	116.0
May 17	19 25.88	-16 57.4	2.461	3.155	-0.09	+0.5	23.0	125.3
May 27	19 24.97	-16 51.9	2.314	3.114	-0.31	-0.1	22.7	135.1
June 6	19 21.85	-16 52.8	2.184	3.073	-0.52	-0.8	22.5	145.3
June 16	19 16.62	-17 00.4	2.076	3.032	-0.70	-1.4	22.2	155.9
June 26	19 09.59	-17 14.5	1.992	2.990	-0.83	-1.9	22.0	166.7
July 6	19 01.34	-17 34.0	1.934	2.948	-0.87	-2.3	21.8	174.8
July 16	18 52.67	-17 57.4	1.904	2.906	-0.82	-2.6	21.6	168.1
July 26	18 44.47	-18 23.2	1.901	2.865	-0.68	-2.7	21.5	157.2
Aug. 5	18 37.65	-18 49.8	1.923	2.823	-0.47	-2.6	21.4	146.1
Aug. 15	18 32.91	-19 16.1	1.966	2.781	-0.22	-2.5	21.3	135.5
Aug. 25	18 30.67	-19 41.2	2.027	2.739	+0.05	-2.3	21.2	125.4
Sept. 4	18 31.18	-20 04.4	2.101	2.698	+0.32	-2.0	21.1	115.9
Sept. 14	18 34.42	-20 24.7	2.184	2.657	+0.58	-1.7	21.0	106.9
Sept. 24	18 40.27	-20 41.2	2.272	2.616	+0.83	-1.2	21.0	98.5
Oct. 4	18 48.54	-20 52.9	2.363	2.576	+1.04	-0.6	20.9	90.6
Oct. 14	18 58.97	-20 58.6	2.453	2.536	+1.24	+0.1	20.8	83.2
Oct. 24	19 11.34	-20 57.2	2.541	2.496	+1.41	+1.0	20.8	76.1
Nov. 3	19 25.40	-20 47.6	2.625	2.458	+1.55	+1.9	20.7	69.4
Nov. 13	19 40.92	-20 28.8	2.703	2.420	+1.68	+2.9	20.6	63.0
Nov. 23	19 57.69	-20 00.1	2.775	2.384	+1.78	+3.9	20.5	56.9
Dec. 3	20 15.52	-19 20.9	2.840	2.348	+1.87	+5.0	20.4	51.0
Dec. 13	20 34.21	-18 30.7	2.897	2.313	+1.94	+6.1	20.3	45.3
Dec. 23	20 53.62	-17 29.4	2.947	2.280	+2.00	+7.2	20.2	39.9
Jan. 2	21 13.59	-16 17.2	2.988	2.249	+2.04	+8.3	20.1	34.6
Jan. 12	21 34.01	-14 54.4	3.021	2.219	+2.08	+9.3	20.0	29.5
Jan. 22	21 54.79	-13 21.6	3.047	2.191	+2.10	+10.2	19.9	24.6
Feb. 1	22 15.82	-11 39.6	3.065	2.164	+2.12	+11.0	19.8	19.8
Feb. 11	22 37.06	-09 49.6	3.077	2.140	+2.14	+11.7	19.7	15.2
Feb. 21	22 58.47	-07 52.6	3.082	2.118	+2.15	+12.2	19.6	10.8
Mar. 3	23 20.01	-05 50.1	3.080	2.099	+2.17	+12.7	19.5	6.6
Mar. 13	23 41.67	-03 43.5	3.074	2.082	+2.18	+12.9	19.4	2.7
Mar. 23	00 03.45	-01 34.5	3.062	2.067	+2.19	+13.0	19.3	2.6

Comet C/2016 R2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2018 May 9.60910 TT
Peri. = 33.19415
Node = 80.57001 2000.0
Incl. = 58.21918
q = 2.6023800 AU
e = 0.9964678

m1 = 5.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	02 48.86	-35 44.7	5.231	5.404	-0.19	+10.8	16.5	94.9
Jan. 17	02 46.96	-33 56.4	5.262	5.329	-0.04	+11.5	16.5	88.5
Jan. 27	02 46.56	-32 01.3	5.297	5.253	+0.11	+11.9	16.4	82.1
Feb. 6	02 47.61	-30 02.0	5.333	5.178	+0.24	+12.1	16.4	75.7
Feb. 16	02 50.00	-28 01.0	5.367	5.103	+0.36	+12.1	16.3	69.4
Feb. 26	02 53.59	-26 00.1	5.397	5.028	+0.47	+11.9	16.3	63.2
Mar. 8	02 58.27	-24 00.8	5.420	4.953	+0.56	+11.6	16.2	57.2
Mar. 18	03 03.88	-22 04.5	5.434	4.878	+0.64	+11.2	16.2	51.5
Mar. 28	03 10.33	-20 12.0	5.438	4.803	+0.72	+10.8	16.1	46.3
Apr. 7	03 17.49	-18 24.2	5.430	4.728	+0.78	+10.3	16.0	41.6
Apr. 17	03 25.24	-16 41.6	5.408	4.653	+0.83	+9.7	15.9	37.6
Apr. 27	03 33.51	-15 04.7	5.373	4.578	+0.87	+9.1	15.9	34.4
May 7	03 42.19	-13 33.8	5.323	4.504	+0.90	+8.5	15.8	32.4
May 17	03 51.19	-12 09.1	5.259	4.430	+0.92	+7.8	15.7	31.7
May 27	04 00.44	-10 50.7	5.179	4.356	+0.94	+7.2	15.6	32.3
June 6	04 09.85	-09 38.8	5.084	4.282	+0.95	+6.6	15.4	34.2
June 16	04 19.33	-08 33.2	4.974	4.209	+0.95	+5.9	15.3	37.2
June 26	04 28.81	-07 34.1	4.849	4.136	+0.94	+5.3	15.2	41.0
July 6	04 38.19	-06 41.1	4.711	4.064	+0.92	+4.7	15.1	45.5
July 16	04 47.37	-05 54.1	4.559	3.992	+0.89	+4.1	14.9	50.6
July 26	04 56.24	-05 12.7	4.395	3.920	+0.84	+3.6	14.7	56.1
Aug. 5	05 04.67	-04 36.3	4.220	3.850	+0.79	+3.2	14.6	62.0
Aug. 15	05 12.53	-04 04.2	4.036	3.780	+0.71	+2.9	14.4	68.3
Aug. 25	05 19.65	-03 35.6	3.843	3.710	+0.62	+2.6	14.2	74.9
Sept. 4	05 25.84	-03 09.2	3.645	3.642	+0.51	+2.6	14.0	81.9
Sept. 14	05 30.89	-02 43.4	3.442	3.574	+0.37	+2.7	13.8	89.3
Sept. 24	05 34.56	-02 16.3	3.239	3.508	+0.20	+3.1	13.6	97.2
Oct. 4	05 36.56	-01 45.0	3.037	3.443	+0.01	+3.8	13.4	105.5
Oct. 14	05 36.62	-01 06.6	2.842	3.379	-0.22	+4.9	13.2	114.4
Oct. 24	05 34.44	-00 17.1	2.657	3.316	-0.46	+6.5	12.9	123.9
Nov. 3	05 29.80	+00 47.7	2.487	3.255	-0.72	+8.4	12.7	134.0
Nov. 13	05 22.60	+02 12.0	2.338	3.196	-0.97	+10.7	12.5	144.4
Nov. 23	05 12.94	+03 58.8	2.216	3.138	-1.17	+13.1	12.3	154.8
Dec. 3	05 01.25	+06 09.3	2.126	3.082	-1.29	+15.2	12.1	163.0
Dec. 13	04 48.32	+08 41.2	2.072	3.029	-1.32	+16.8	12.0	163.6
Dec. 23	04 35.16	+11 29.1	2.054	2.978	-1.22	+17.7	11.9	155.6
Jan. 2	04 22.91	+14 25.6	2.073	2.929	-1.03	+17.8	11.8	144.5
Jan. 12	04 12.57	+17 23.6	2.123	2.883	-0.78	+17.4	11.8	132.8
Jan. 22	04 04.81	+20 17.9	2.199	2.840	-0.48	+16.8	11.8	121.5
Feb. 1	04 00.03	+23 05.6	2.295	2.800	-0.17	+16.0	11.9	110.8
Feb. 11	03 58.30	+25 45.9	2.403	2.763	+0.12	+15.3	11.9	100.8
Feb. 21	03 59.54	+28 19.0	2.519	2.729	+0.40	+14.7	12.0	91.5
Mar. 3	04 03.57	+30 45.8	2.636	2.700	+0.66	+14.1	12.0	82.9
Mar. 13	04 10.20	+33 07.0	2.752	2.673	+0.90	+13.6	12.1	75.0
Mar. 23	04 19.24	+35 23.1	2.864	2.651	+1.13	+13.1	12.1	67.7

Comet 240P/NEAT

Epoch = 2017 July 26.0 TT
T = 2018 May 16.10624 TT
Peri. = 352.11942 e = 0.4489779
Node = 74.93030 2000.0 a = 3.8721113 AU
Incl. = 23.50317 n = 0.12935473
q = 2.1336189 AU P = 7.62 years

m1 = 9.0 + 5 log(Delta) + 15.0 log(r(t-90))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	20 41.88	-34 22.1	4.747	3.861	+1.37	+4.5	21.7	23.0
Jan. 17	20 55.60	-33 37.3	4.742	3.822	+1.40	+4.6	21.7	18.5
Jan. 27	21 09.58	-32 51.0	4.718	3.782	+1.42	+4.8	21.6	16.0
Feb. 6	21 23.74	-32 03.3	4.677	3.741	+1.42	+4.8	21.5	16.4
Feb. 16	21 37.99	-31 14.9	4.618	3.701	+1.43	+4.9	21.4	19.4
Feb. 26	21 52.26	-30 26.2	4.543	3.660	+1.42	+4.8	21.3	23.9
Mar. 8	22 06.51	-29 38.0	4.451	3.618	+1.41	+4.7	21.2	29.3
Mar. 18	22 20.65	-28 51.1	4.345	3.577	+1.40	+4.5	21.1	35.1
Mar. 28	22 34.65	-28 06.1	4.226	3.535	+1.38	+4.2	21.0	41.1
Apr. 7	22 48.46	-27 24.2	4.095	3.492	+1.35	+3.8	20.9	47.2
Apr. 17	23 02.00	-26 46.4	3.953	3.450	+1.32	+3.3	20.7	53.4
Apr. 27	23 15.24	-26 13.7	3.803	3.407	+1.29	+2.6	20.6	59.7
May 7	23 28.10	-25 47.4	3.645	3.364	+1.24	+1.9	20.4	66.0
May 17	23 40.49	-25 28.8	3.483	3.320	+1.18	+1.0	20.2	72.4
May 27	23 52.34	-25 19.2	3.317	3.277	+1.12	-0.1	20.1	78.9
June 6	00 03.51	-25 20.1	3.150	3.233	+1.04	-1.3	19.9	85.5
June 16	00 13.86	-25 32.8	2.983	3.189	+0.94	-2.6	19.7	92.3
June 26	00 23.22	-25 58.5	2.820	3.146	+0.81	-4.0	19.5	99.1
July 6	00 31.35	-26 38.1	2.662	3.102	+0.67	-5.4	19.3	106.1
July 16	00 38.02	-27 32.1	2.512	3.058	+0.49	-6.8	19.1	113.2
July 26	00 42.93	-28 40.0	2.372	3.014	+0.28	-8.0	18.9	120.2
Aug. 5	00 45.77	-29 59.9	2.245	2.970	+0.05	-8.8	18.7	127.2
Aug. 15	00 46.26	-31 28.1	2.134	2.926	-0.21	-9.1	18.5	133.7
Aug. 25	00 44.18	-32 58.8	2.040	2.883	-0.47	-8.5	18.3	139.3
Sept. 4	00 39.53	-34 23.7	1.967	2.840	-0.69	-7.0	18.1	143.2
Sept. 14	00 32.59	-35 33.5	1.916	2.797	-0.86	-4.5	18.0	144.6
Sept. 24	00 24.00	-36 18.7	1.886	2.754	-0.92	-1.3	17.8	143.0
Oct. 4	00 14.75	-36 31.8	1.878	2.712	-0.88	+2.2	17.7	138.8
Oct. 14	00 05.99	-36 09.3	1.891	2.671	-0.72	+5.8	17.7	132.8
Oct. 24	23 58.79	-35 11.6	1.921	2.630	-0.48	+8.9	17.6	125.8
Nov. 3	23 53.95	-33 42.4	1.967	2.590	-0.21	+11.5	17.6	118.4
Nov. 13	23 51.84	-31 47.2	2.025	2.551	+0.07	+13.6	17.5	110.9
Nov. 23	23 52.56	-29 31.7	2.092	2.513	+0.34	+15.1	17.5	103.5
Dec. 3	23 55.96	-27 00.8	2.166	2.475	+0.58	+16.2	17.5	96.3
Dec. 13	00 01.75	-24 18.9	2.243	2.440	+0.79	+17.0	17.5	89.3
Dec. 23	00 09.66	-21 28.7	2.323	2.405	+0.97	+17.6	17.4	82.7
Jan. 2	00 19.38	-18 32.9	2.404	2.372	+1.13	+18.0	17.4	76.3
Jan. 12	00 30.64	-15 33.3	2.483	2.340	+1.26	+18.2	17.4	70.2
Jan. 22	00 43.23	-12 31.2	2.560	2.310	+1.37	+18.3	17.3	64.3
Feb. 1	00 56.96	-09 28.1	2.634	2.282	+1.47	+18.3	17.3	58.6
Feb. 11	01 11.71	-06 25.1	2.705	2.257	+1.57	+18.2	17.3	53.2
Feb. 21	01 27.36	-03 23.3	2.771	2.233	+1.65	+18.0	17.2	47.9
Mar. 3	01 43.83	-00 23.8	2.833	2.211	+1.72	+17.6	17.2	42.9
Mar. 13	02 01.08	+02 32.3	2.889	2.192	+1.80	+17.2	17.1	37.9
Mar. 23	02 19.06	+05 23.9	2.941	2.176	+1.87	+16.6	17.1	33.1

Comet 66P/du Toit

Epoch = 2017 July 26.0 TT
T = 2018 May 19.24782 TT
Peri. = 257.24974 e = 0.7869019
Node = 21.89533 2000.0 a = 6.0509423 AU
Incl. = 18.67804 n = 0.06621701
q = 1.2894443 AU P = 14.88 years

m1 = 13.8 + 5 log(Delta) + 12.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 02.60	+25 26.9	4.304	4.966	-0.28	+4.2	.	127.7
Jan. 17	10 59.77	+26 09.2	4.129	4.900	-0.44	+4.6	.	137.6
Jan. 27	10 55.34	+26 55.5	3.976	4.834	-0.59	+4.7	.	147.3
Feb. 6	10 49.44	+27 42.5	3.851	4.767	-0.71	+4.4	.	155.7
Feb. 16	10 42.32	+28 26.3	3.755	4.699	-0.79	+3.7	.	160.9
Feb. 26	10 34.40	+29 03.1	3.690	4.631	-0.82	+2.6	.	159.8
Mar. 8	10 26.19	+29 29.2	3.655	4.562	-0.79	+1.3	.	153.1
Mar. 18	10 18.28	+29 42.6	3.649	4.493	-0.71	0.0	.	144.0
Mar. 28	10 11.21	+29 42.2	3.670	4.422	-0.58	-1.4	.	134.1
Apr. 7	10 05.43	+29 28.2	3.711	4.351	-0.42	-2.6	.	124.0
Apr. 17	10 01.25	+29 02.0	3.769	4.279	-0.24	-3.7	.	114.2
Apr. 27	09 58.82	+28 25.1	3.838	4.207	-0.06	-4.6	.	104.6
May 7	09 58.18	+27 39.1	3.914	4.133	+0.11	-5.3	.	95.4
May 17	09 59.27	+26 45.8	3.991	4.059	+0.27	-6.0	.	86.6
May 27	10 01.97	+25 46.1	4.067	3.984	+0.42	-6.5	.	78.1
June 6	10 06.13	+24 41.1	4.137	3.909	+0.55	-7.0	.	70.0
June 16	10 11.61	+23 31.4	4.198	3.832	+0.66	-7.4	.	62.2
June 26	10 18.24	+22 17.5	4.249	3.755	+0.77	-7.8	.	54.7
July 6	10 25.89	+20 59.6	4.287	3.677	+0.85	-8.2	.	47.5
July 16	10 34.44	+19 38.0	4.310	3.598	+0.93	-8.5	.	40.5
July 26	10 43.79	+18 12.6	4.317	3.518	+1.00	-8.9	.	33.7
Aug. 5	10 53.83	+16 43.7	4.308	3.437	+1.07	-9.2	.	27.2
Aug. 15	11 04.51	+15 11.2	4.282	3.356	+1.12	-9.6	.	20.9
Aug. 25	11 15.75	+13 35.3	4.239	3.274	+1.18	-9.9	.	15.1
Sept. 4	11 27.52	+11 55.9	4.179	3.191	+1.23	-10.3	.	10.0
Sept.14	11 39.78	+10 13.0	4.102	3.107	+1.27	-10.6	23.0	7.4
Sept.24	11 52.52	+08 26.8	4.008	3.022	+1.32	-11.0	22.8	9.2
Oct. 4	12 05.72	+06 37.2	3.899	2.937	+1.37	-11.3	22.6	13.7
Oct. 14	12 19.37	+04 44.3	3.775	2.851	+1.41	-11.6	22.4	19.1
Oct. 24	12 33.49	+02 48.1	3.637	2.764	+1.46	-12.0	22.1	24.6
Nov. 3	12 48.10	+00 48.5	3.487	2.677	+1.51	-12.3	21.9	30.2
Nov. 13	13 03.24	-01 14.6	3.325	2.588	+1.57	-12.7	21.6	35.8
Nov. 23	13 18.94	-03 21.3	3.154	2.500	+1.63	-13.1	21.3	41.4
Dec. 3	13 35.27	-05 31.9	2.976	2.411	+1.70	-13.5	20.9	46.8
Dec. 13	13 52.31	-07 46.7	2.792	2.322	+1.79	-14.0	20.6	52.1
Dec. 23	14 10.18	-10 06.4	2.604	2.233	+1.88	-14.5	20.2	57.3
Jan. 2	14 29.02	-12 31.4	2.415	2.144	+2.00	-15.1	19.9	62.3
Jan. 12	14 49.03	-15 02.8	2.227	2.055	+2.14	-15.9	19.4	67.1
Jan. 22	15 10.46	-17 41.5	2.042	1.968	+2.32	-16.7	19.0	71.6
Feb. 1	15 33.67	-20 28.4	1.863	1.881	+2.55	-17.6	18.6	75.8
Feb. 11	15 59.15	-23 24.0	1.692	1.797	+2.83	-18.4	18.1	79.5
Feb. 21	16 27.50	-26 27.9	1.532	1.715	+3.20	-19.0	17.7	82.7
Mar. 3	16 59.50	-29 37.7	1.385	1.637	+3.66	-18.9	17.2	85.3
Mar. 13	17 36.09	-32 47.0	1.255	1.563	+4.20	-17.7	16.7	87.2
Mar. 23	18 18.11	-35 43.8	1.143	1.495	+4.78	-14.5	16.3	88.3

Comet 159P/LONEOS

Epoch = 2017 July 26.0 TT
T = 2018 May 23.00892 TT
Peri. = 4.79751 e = 0.3816978
Node = 55.02535 2000.0 a = 5.8627568 AU
Incl. = 23.46151 n = 0.06943065
q = 3.6249554 AU P = 14.20 years

m1 = 0.8 + 5 log(Delta) + 25.0 log(r(t-330))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	23 12.96	-26 06.1	4.984	4.486	+0.79	+8.9	22.7	54.5
Jan. 17	23 20.86	-24 37.4	5.067	4.458	+0.86	+8.9	22.7	47.3
Jan. 27	23 29.42	-23 08.0	5.136	4.430	+0.91	+8.9	22.6	40.3
Feb. 6	23 38.52	-21 38.5	5.190	4.403	+0.95	+8.9	22.6	33.6
Feb. 16	23 48.04	-20 09.5	5.228	4.376	+0.99	+8.8	22.6	27.5
Feb. 26	23 57.91	-18 41.4	5.250	4.349	+1.01	+8.7	22.5	22.1
Mar. 8	00 08.03	-17 14.7	5.254	4.322	+1.03	+8.5	22.4	18.1
Mar. 18	00 18.32	-15 49.9	5.241	4.295	+1.04	+8.2	22.4	16.3
Mar. 28	00 28.72	-14 27.5	5.211	4.269	+1.04	+8.0	22.3	17.3
Apr. 7	00 39.17	-13 07.9	5.164	4.243	+1.04	+7.6	22.2	20.7
Apr. 17	00 49.58	-11 51.6	5.101	4.217	+1.03	+7.3	22.1	25.5
Apr. 27	00 59.91	-10 39.1	5.022	4.192	+1.02	+6.8	22.0	31.1
May 7	01 10.08	-09 30.8	4.928	4.167	+0.99	+6.4	21.9	37.0
May 17	01 20.02	-08 27.3	4.820	4.142	+0.96	+5.8	21.8	43.3
May 27	01 29.65	-07 29.0	4.699	4.118	+0.92	+5.3	21.7	49.7
June 6	01 38.90	-06 36.3	4.568	4.094	+0.88	+4.7	21.6	56.4
June 16	01 47.65	-05 49.6	4.426	4.070	+0.82	+4.0	21.5	63.2
June 26	01 55.80	-05 09.2	4.277	4.047	+0.74	+3.4	21.3	70.2
July 6	02 03.22	-04 35.7	4.122	4.024	+0.66	+2.7	21.2	77.4
July 16	02 09.77	-04 09.0	3.963	4.002	+0.55	+2.0	21.0	84.9
July 26	02 15.29	-03 49.4	3.802	3.980	+0.43	+1.3	20.9	92.6
Aug. 5	02 19.62	-03 36.7	3.643	3.959	+0.30	+0.6	20.7	100.7
Aug. 15	02 22.60	-03 30.7	3.488	3.938	+0.15	0.0	20.5	109.1
Aug. 25	02 24.06	-03 30.6	3.341	3.918	-0.02	-0.5	20.4	117.9
Sept. 4	02 23.87	-03 35.4	3.206	3.898	-0.19	-0.8	20.2	127.0
Sept. 14	02 22.00	-03 43.4	3.087	3.879	-0.35	-0.9	20.1	136.4
Sept. 24	02 18.46	-03 52.5	2.987	3.860	-0.50	-0.7	19.9	146.0
Oct. 4	02 13.44	-03 59.8	2.911	3.842	-0.62	-0.3	19.8	155.1
Oct. 14	02 07.28	-04 02.6	2.862	3.824	-0.68	+0.5	19.7	162.4
Oct. 24	02 00.44	-03 57.9	2.840	3.808	-0.69	+1.4	19.6	164.3
Nov. 3	01 53.52	-03 43.4	2.849	3.791	-0.64	+2.6	19.6	159.0
Nov. 13	01 47.08	-03 17.8	2.885	3.776	-0.54	+3.7	19.5	150.1
Nov. 23	01 41.67	-02 40.6	2.948	3.761	-0.40	+4.8	19.5	140.3
Dec. 3	01 37.68	-01 52.2	3.034	3.747	-0.23	+5.8	19.5	130.2
Dec. 13	01 35.35	-00 53.8	3.139	3.733	-0.06	+6.7	19.5	120.3
Dec. 23	01 34.80	+00 13.2	3.258	3.721	+0.12	+7.4	19.5	110.7
Jan. 2	01 36.00	+01 27.4	3.387	3.709	+0.29	+8.0	19.5	101.4
Jan. 12	01 38.87	+02 47.2	3.523	3.697	+0.44	+8.4	19.6	92.4
Jan. 22	01 43.29	+04 11.5	3.660	3.687	+0.58	+8.7	19.6	83.8
Feb. 1	01 49.08	+05 38.9	3.796	3.677	+0.70	+9.0	19.6	75.6
Feb. 11	01 56.11	+07 08.5	3.929	3.668	+0.81	+9.1	19.6	67.6
Feb. 21	02 04.23	+08 39.4	4.054	3.660	+0.91	+9.1	19.6	59.9
Mar. 3	02 13.30	+10 10.7	4.171	3.653	+0.99	+9.1	19.6	52.5
Mar. 13	02 23.20	+11 41.8	4.277	3.647	+1.06	+9.0	19.6	45.3
Mar. 23	02 33.83	+13 12.1	4.371	3.641	+1.13	+8.9	19.6	38.3

Comet 107P/(4015) Wilson-Harrington

Epoch = 2017 July 26.0 TT
T = 2018 May 23.49443 TT
Peri. = 95.33238 e = 0.6308075
Node = 266.84771 2000.0 a = 2.6285006 AU
Incl. = 2.79578 n = 0.23128207
q = 0.9704227 AU P = 4.26 years

H = 15.8 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	14 11.26	-15 45.9	4.101	3.889	+0.59	-3.5	22.6	70.7
Jan. 17	14 17.16	-16 20.6	3.918	3.859	+0.47	-2.9	22.5	79.4
Jan. 27	14 21.89	-16 49.6	3.728	3.828	+0.33	-2.2	22.4	88.3
Feb. 6	14 25.24	-17 12.0	3.538	3.795	+0.17	-1.5	22.3	97.6
Feb. 16	14 26.98	-17 26.8	3.350	3.762	-0.01	-0.6	22.1	107.2
Feb. 26	14 26.89	-17 33.1	3.169	3.727	-0.21	+0.3	21.9	117.2
Mar. 8	14 24.81	-17 29.8	2.999	3.691	-0.41	+1.4	21.8	127.7
Mar. 18	14 20.68	-17 15.7	2.847	3.654	-0.61	+2.5	21.5	138.7
Mar. 28	14 14.56	-16 50.4	2.716	3.615	-0.78	+3.7	21.3	150.1
Apr. 7	14 06.71	-16 13.8	2.611	3.576	-0.91	+4.6	21.1	161.8
Apr. 17	13 57.64	-15 27.3	2.536	3.535	-0.96	+5.4	20.8	173.3
Apr. 27	13 48.00	-14 33.6	2.491	3.492	-0.94	+5.7	20.7	172.8
May 7	13 38.55	-13 36.6	2.478	3.449	-0.85	+5.5	20.9	161.1
May 17	13 30.04	-12 41.2	2.495	3.404	-0.70	+5.0	21.0	149.3
May 27	13 23.03	-11 51.7	2.536	3.357	-0.51	+4.0	21.2	137.9
June 6	13 17.96	-11 11.6	2.599	3.310	-0.30	+2.8	21.3	126.9
June 16	13 14.99	-10 43.3	2.678	3.260	-0.08	+1.6	21.4	116.5
June 26	13 14.16	-10 27.5	2.767	3.210	+0.12	+0.3	21.5	106.7
July 6	13 15.40	-10 24.4	2.861	3.158	+0.32	-0.9	21.5	97.4
July 16	13 18.56	-10 33.3	2.957	3.104	+0.49	-2.0	21.6	88.7
July 26	13 23.48	-10 53.1	3.050	3.049	+0.65	-3.0	21.6	80.4
Aug. 5	13 30.01	-11 22.6	3.137	2.993	+0.80	-3.8	21.6	72.5
Aug. 15	13 38.00	-12 00.5	3.216	2.934	+0.93	-4.5	21.6	65.0
Aug. 25	13 47.33	-12 45.5	3.284	2.875	+1.06	-5.1	21.6	57.7
Sept. 4	13 57.91	-13 36.5	3.340	2.813	+1.17	-5.6	21.5	50.8
Sept.14	14 09.65	-14 32.0	3.383	2.750	+1.29	-5.9	21.5	44.1
Sept.24	14 22.50	-15 31.0	3.411	2.686	+1.39	-6.1	21.4	37.5
Oct. 4	14 36.44	-16 32.3	3.423	2.619	+1.50	-6.2	21.3	31.2
Oct. 14	14 51.45	-17 34.6	3.420	2.551	+1.61	-6.2	21.1	25.1
Oct. 24	15 07.53	-18 36.7	3.400	2.482	+1.72	-6.1	21.0	19.1
Nov. 3	15 24.70	-19 37.3	3.365	2.410	+1.83	-5.8	20.8	13.3
Nov. 13	15 42.98	-20 35.0	3.314	2.337	+1.94	-5.3	20.6	7.7
Nov. 23	16 02.42	-21 28.3	3.248	2.262	+2.06	-4.7	20.3	2.3
Dec. 3	16 23.06	-22 15.4	3.169	2.185	+2.19	-3.9	20.2	3.2
Dec. 13	16 44.95	-22 54.7	3.077	2.107	+2.32	-2.9	20.2	8.2
Dec. 23	17 08.17	-23 23.9	2.973	2.027	+2.46	-1.7	20.2	13.0
Jan. 2	17 32.75	-23 40.9	2.860	1.945	+2.60	-0.2	20.1	17.5
Jan. 12	17 58.77	-23 43.0	2.739	1.862	+2.75	+1.6	20.0	21.8
Jan. 22	18 26.29	-23 27.4	2.613	1.778	+2.91	+3.7	19.9	25.6
Feb. 1	18 55.34	-22 50.9	2.484	1.692	+3.06	+6.1	19.8	29.1
Feb. 11	19 25.98	-21 50.0	2.355	1.606	+3.22	+8.9	19.7	32.1
Feb. 21	19 58.23	-20 21.4	2.228	1.520	+3.38	+12.0	19.5	34.5
Mar. 3	20 32.07	-18 21.5	2.107	1.434	+3.54	+15.4	19.3	36.3
Mar. 13	21 07.51	-15 47.6	1.996	1.350	+3.70	+18.9	19.2	37.5
Mar. 23	21 44.52	-12 38.5	1.897	1.269	+3.85	+22.3	19.0	37.9

Comet P/2008 T4 (Hill)

Epoch = 2017 July 26.0 TT
T = 2018 May 29.76596 TT
Peri. = 1.56765 e = 0.4342773
Node = 44.60905 2000.0 a = 4.4656182 AU
Incl. = 6.30886 n = 0.10444356
q = 2.5263016 AU P = 9.44 years

m1 = 9.6 + 5 log(Delta) + 17.5 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	20 10.40	-25 10.4	4.989	4.040	-0.39	-1.1	.	17.4/ 77	13.6
Jan. 17	20 22.85	-24 30.6	4.975	4.001	-0.40	-1.2	.	17.8/ 77	7.3
Jan. 27	20 35.45	-23 47.8	4.942	3.963	-0.41	-1.4	.	18.0/ 76	5.3
Feb. 6	20 48.12	-23 02.4	4.891	3.924	-0.42	-1.6	.	18.1/ 75	10.2
Feb. 16	21 00.76	-22 14.6	4.821	3.886	-0.43	-1.8	.	18.1/ 75	16.8
Feb. 26	21 13.30	-21 25.0	4.734	3.847	-0.44	-2.0	.	18.0/ 74	23.6
Mar. 8	21 25.65	-20 34.1	4.630	3.808	-0.45	-2.2	.	17.8/ 74	30.5
Mar. 18	21 37.76	-19 42.6	4.511	3.769	-0.47	-2.4	.	17.5/ 73	37.4
Mar. 28	21 49.54	-18 51.1	4.378	3.730	-0.48	-2.6	23.0	17.0/ 73	44.3
Apr. 7	22 00.93	-18 00.5	4.233	3.691	-0.50	-2.8	22.9	16.3/ 73	51.3
Apr. 17	22 11.83	-17 11.6	4.077	3.651	-0.52	-3.1	22.7	15.6/ 73	58.3
Apr. 27	22 22.17	-16 25.3	3.912	3.612	-0.55	-3.4	22.6	14.6/ 73	65.5
May 7	22 31.84	-15 42.8	3.741	3.573	-0.58	-3.7	22.4	13.4/ 74	72.7
May 17	22 40.73	-15 05.0	3.565	3.534	-0.61	-4.0	22.2	12.0/ 75	80.1
May 27	22 48.72	-14 33.1	3.386	3.495	-0.64	-4.3	22.0	10.4/ 76	87.7
June 6	22 55.65	-14 08.4	3.208	3.455	-0.68	-4.7	21.8	8.5/ 79	95.5
June 16	23 01.36	-13 51.8	3.032	3.417	-0.72	-5.0	21.6	6.3/ 84	103.6
June 26	23 05.66	-13 44.6	2.863	3.378	-0.77	-5.4	21.4	4.0/ 94	112.0
July 6	23 08.36	-13 47.5	2.702	3.339	-0.82	-5.8	21.2	1.9/134	120.8
July 16	23 09.31	-14 00.8	2.553	3.301	-0.88	-6.2	21.0	2.7/210	130.1
July 26	23 08.38	-14 24.1	2.421	3.263	-0.93	-6.5	20.8	5.2/232	139.8
Aug. 5	23 05.55	-14 56.0	2.308	3.225	-0.98	-6.7	20.6	7.6/240	149.8
Aug. 15	23 00.97	-15 33.7	2.217	3.187	-1.03	-6.9	20.4	9.5/245	159.9
Aug. 25	22 54.96	-16 13.3	2.152	3.150	-1.06	-6.9	20.3	10.6/249	168.9
Sept. 4	22 48.08	-16 49.9	2.115	3.114	-1.08	-6.8	20.1	10.5/254	170.4
Sept.14	22 41.05	-17 18.9	2.105	3.078	-1.07	-6.6	20.0	9.3/259	162.1
Sept.24	22 34.65	-17 36.4	2.121	3.042	-1.05	-6.4	20.0	7.2/267	151.7
Oct. 4	22 29.60	-17 40.0	2.162	3.007	-1.02	-6.1	19.9	4.7/284	141.2
Oct. 14	22 26.42	-17 28.7	2.222	2.973	-0.98	-5.8	19.9	2.9/331	130.9
Oct. 24	22 25.43	-17 02.9	2.300	2.939	-0.93	-5.6	19.9	4.4/ 26	121.1
Nov. 3	22 26.74	-16 23.7	2.389	2.907	-0.89	-5.5	19.9	7.2/ 45	111.7
Nov. 13	22 30.26	-15 32.2	2.487	2.875	-0.84	-5.4	19.9	10.2/ 53	102.9
Nov. 23	22 35.86	-14 29.8	2.591	2.844	-0.81	-5.4	19.9	13.0/ 57	94.5
Dec. 3	22 43.31	-13 17.5	2.696	2.814	-0.78	-5.4	19.9	15.6/ 59	86.5
Dec. 13	22 52.38	-11 56.5	2.800	2.785	-0.75	-5.4	19.9	17.8/ 60	79.0
Dec. 23	23 02.86	-10 27.5	2.902	2.757	-0.74	-5.4	19.9	19.8/ 61	71.8
Jan. 2	23 14.53	-08 51.4	3.000	2.731	-0.72	-5.5	19.8	21.5/ 62	64.9
Jan. 12	23 27.23	-07 09.2	3.091	2.706	-0.71	-5.6	19.8	22.9/ 62	58.2
Jan. 22	23 40.81	-05 21.5	3.175	2.682	-0.70	-5.7	19.8	24.2/ 63	51.9
Feb. 1	23 55.14	-03 29.4	3.252	2.660	-0.70	-5.7	19.8	25.3/ 63	45.7
Feb. 11	00 10.13	-01 33.8	3.320	2.639	-0.70	-5.8	19.8	26.2/ 63	39.8
Feb. 21	00 25.69	+00 24.4	3.379	2.619	-0.70	-5.8	19.7	26.9/ 64	34.1
Mar. 3	00 41.78	+02 24.3	3.430	2.602	-0.71	-5.8	19.7	27.6/ 64	28.5
Mar. 13	00 58.33	+04 24.7	3.471	2.586	-0.72	-5.8	19.7	28.1/ 64	23.1
Mar. 23	01 15.32	+06 24.8	3.503	2.572	-0.72	-5.8	19.6	28.5/ 65	17.8

Comet 187P/LINEAR

Epoch = 2017 July 26.0 TT
T = 2018 May 31.05782 TT
Peri. = 133.53755 e = 0.1579441
Node = 110.34239 2000.0 a = 4.6055103 AU
Incl. = 13.56933 n = 0.09972119
q = 3.8780971 AU P = 9.88 years

m1 = -1.0 + 5 log(Delta) + 30.0 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	12 59.04	+07 58.7	4.007	4.225	+0.39	+1.6	20.9	96.0
Jan. 17	13 02.98	+08 14.8	3.848	4.214	+0.26	+2.6	20.8	105.1
Jan. 27	13 05.54	+08 41.2	3.697	4.202	+0.11	+3.6	20.7	114.5
Feb. 6	13 06.60	+09 17.2	3.557	4.190	-0.05	+4.4	20.5	124.1
Feb. 16	13 06.12	+10 01.4	3.434	4.179	-0.20	+5.0	20.4	133.8
Feb. 26	13 04.10	+10 51.6	3.330	4.168	-0.34	+5.3	20.3	143.5
Mar. 8	13 00.67	+11 44.6	3.250	4.157	-0.46	+5.2	20.2	152.7
Mar. 18	12 56.11	+12 36.5	3.196	4.146	-0.53	+4.7	20.2	160.0
Mar. 28	12 50.79	+13 23.3	3.171	4.135	-0.56	+3.8	20.1	162.7
Apr. 7	12 45.17	+14 01.1	3.175	4.124	-0.54	+2.6	20.1	158.8
Apr. 17	12 39.76	+14 27.0	3.207	4.114	-0.48	+1.2	20.1	151.0
Apr. 27	12 35.01	+14 39.4	3.264	4.103	-0.37	-0.2	20.1	141.9
May 7	12 31.30	+14 37.6	3.343	4.093	-0.24	-1.5	20.1	132.5
May 17	12 28.90	+14 22.2	3.441	4.083	-0.10	-2.8	20.1	123.2
May 27	12 27.94	+13 54.5	3.553	4.073	+0.05	-3.9	20.1	114.1
June 6	12 28.46	+13 15.9	3.676	4.064	+0.20	-4.8	20.2	105.3
June 16	12 30.43	+12 28.2	3.805	4.054	+0.33	-5.5	20.2	96.9
June 26	12 33.74	+11 33.0	3.937	4.045	+0.46	-6.1	20.3	88.8
July 6	12 38.30	+10 31.6	4.069	4.036	+0.57	-6.6	20.3	80.9
July 16	12 43.96	+09 25.4	4.199	4.027	+0.67	-7.0	20.4	73.4
July 26	12 50.62	+08 15.4	4.323	4.018	+0.75	-7.3	20.4	66.0
Aug. 5	12 58.17	+07 02.7	4.439	4.010	+0.83	-7.5	20.4	58.9
Aug. 15	13 06.47	+05 48.2	4.546	4.002	+0.90	-7.6	20.4	51.9
Aug. 25	13 15.46	+04 32.6	4.642	3.994	+0.96	-7.6	20.5	45.1
Sept. 4	13 25.03	+03 16.7	4.726	3.986	+1.01	-7.5	20.5	38.4
Sept. 14	13 35.11	+02 01.2	4.796	3.978	+1.05	-7.4	20.5	31.9
Sept. 24	13 45.63	+00 46.8	4.852	3.971	+1.09	-7.3	20.5	25.6
Oct. 4	13 56.53	-00 25.9	4.892	3.964	+1.12	-7.0	20.5	19.6
Oct. 14	14 07.73	-01 36.2	4.916	3.957	+1.14	-6.7	20.4	14.4
Oct. 24	14 19.18	-02 43.5	4.923	3.951	+1.16	-6.4	20.4	10.9
Nov. 3	14 30.80	-03 47.3	4.913	3.944	+1.17	-6.0	20.4	11.2
Nov. 13	14 42.53	-04 46.9	4.886	3.938	+1.18	-5.5	20.4	15.0
Nov. 23	14 54.29	-05 41.9	4.842	3.932	+1.17	-5.0	20.3	20.6
Dec. 3	15 05.99	-06 31.7	4.781	3.927	+1.16	-4.4	20.3	26.8
Dec. 13	15 17.55	-07 15.9	4.705	3.922	+1.13	-3.8	20.2	33.5
Dec. 23	15 28.86	-07 54.2	4.613	3.917	+1.09	-3.2	20.2	40.4
Jan. 2	15 39.81	-08 26.2	4.508	3.912	+1.05	-2.6	20.1	47.6
Jan. 12	15 50.26	-08 51.8	4.390	3.908	+0.98	-1.9	20.0	54.9
Jan. 22	16 00.09	-09 11.0	4.261	3.904	+0.91	-1.3	19.9	62.4
Feb. 1	16 09.14	-09 23.7	4.123	3.900	+0.81	-0.7	19.8	70.1
Feb. 11	16 17.26	-09 30.3	3.979	3.896	+0.70	-0.1	19.8	78.1
Feb. 21	16 24.28	-09 30.9	3.830	3.893	+0.57	+0.5	19.7	86.3
Mar. 3	16 30.01	-09 26.2	3.681	3.890	+0.43	+0.9	19.6	94.7
Mar. 13	16 34.31	-09 16.9	3.535	3.888	+0.27	+1.3	19.5	103.4
Mar. 23	16 37.02	-09 03.9	3.394	3.885	+0.10	+1.6	19.4	112.5

Comet 164P/Christensen

Epoch = 2017 July 26.0 TT
T = 2018 May 31.43152 TT
Peri. = 325.94470 e = 0.5396677
Node = 88.31015 2000.0 a = 3.6606063 AU
Incl. = 16.25298 n = 0.14072607
q = 1.6850953 AU P = 7.00 years

m1 = 14.0 + 5 log(Delta) + 7.5 log(r(t-200))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	18 55.73	-25 54.6	5.048	4.069	+1.22	+0.4	22.6	5.1
Jan. 17	19 07.98	-25 50.2	4.984	4.026	+1.23	+0.7	22.6	12.0
Jan. 27	19 20.27	-25 43.4	4.899	3.983	+1.23	+0.9	22.5	19.3
Feb. 6	19 32.53	-25 34.6	4.795	3.938	+1.21	+1.0	22.4	26.6
Feb. 16	19 44.64	-25 24.3	4.674	3.893	+1.19	+1.1	22.4	34.0
Feb. 26	19 56.52	-25 13.2	4.536	3.848	+1.15	+1.1	22.3	41.3
Mar. 8	20 08.06	-25 02.1	4.382	3.802	+1.11	+1.0	22.2	48.7
Mar. 18	20 19.17	-24 51.8	4.216	3.755	+1.06	+0.8	22.1	56.2
Mar. 28	20 29.75	-24 43.5	4.040	3.707	+0.99	+0.5	22.0	63.7
Apr. 7	20 39.65	-24 38.5	3.854	3.659	+0.91	0.0	21.8	71.3
Apr. 17	20 48.77	-24 38.0	3.663	3.610	+0.82	-0.6	21.7	79.1
Apr. 27	20 56.96	-24 43.5	3.468	3.560	+0.71	-1.3	21.5	87.0
May 7	21 04.03	-24 56.8	3.273	3.510	+0.58	-2.2	21.4	95.2
May 17	21 09.81	-25 19.3	3.080	3.460	+0.43	-3.3	21.2	103.6
May 27	21 14.07	-25 52.5	2.893	3.408	+0.25	-4.5	21.1	112.3
June 6	21 16.57	-26 37.6	2.715	3.356	+0.05	-5.7	20.9	121.3
June 16	21 17.09	-27 35.1	2.551	3.304	-0.17	-6.9	20.7	130.6
June 26	21 15.41	-28 44.2	2.403	3.250	-0.40	-7.8	20.6	140.2
July 6	21 11.43	-30 02.7	2.276	3.197	-0.62	-8.4	20.4	149.9
July 16	21 05.20	-31 26.3	2.174	3.142	-0.82	-8.3	20.3	158.7
July 26	20 57.03	-32 49.1	2.097	3.088	-0.95	-7.5	20.2	164.4
Aug. 5	20 47.56	-34 04.1	2.049	3.032	-0.99	-6.1	20.1	162.7
Aug. 15	20 37.70	-35 05.2	2.027	2.977	-0.92	-4.3	20.0	155.0
Aug. 25	20 28.50	-35 48.1	2.032	2.920	-0.75	-2.3	20.0	145.3
Sept. 4	20 21.02	-36 11.4	2.059	2.864	-0.50	-0.5	20.0	135.2
Sept. 14	20 16.01	-36 16.4	2.104	2.807	-0.21	+1.1	20.0	125.2
Sept. 24	20 13.95	-36 05.3	2.163	2.750	+0.11	+2.4	20.0	115.6
Oct. 4	20 15.00	-35 40.9	2.231	2.692	+0.41	+3.6	20.1	106.6
Oct. 14	20 19.06	-35 05.4	2.303	2.635	+0.69	+4.5	20.1	98.0
Oct. 24	20 25.94	-34 20.1	2.378	2.577	+0.94	+5.4	20.1	90.0
Nov. 3	20 35.34	-33 26.0	2.451	2.519	+1.16	+6.3	20.1	82.4
Nov. 13	20 46.94	-32 23.0	2.519	2.462	+1.35	+7.2	20.1	75.3
Nov. 23	21 00.44	-31 11.1	2.583	2.405	+1.51	+8.1	20.2	68.6
Dec. 3	21 15.57	-29 49.8	2.639	2.348	+1.65	+9.1	20.1	62.3
Dec. 13	21 32.07	-28 18.7	2.687	2.292	+1.77	+10.1	20.1	56.3
Dec. 23	21 49.73	-26 37.5	2.727	2.236	+1.86	+11.2	20.1	50.7
Jan. 2	22 08.37	-24 45.9	2.758	2.182	+1.95	+12.2	20.1	45.3
Jan. 12	22 27.82	-22 43.9	2.780	2.128	+2.02	+13.2	20.1	40.4
Jan. 22	22 47.99	-20 31.6	2.795	2.077	+2.08	+14.2	20.0	35.7
Feb. 1	23 08.77	-18 09.5	2.802	2.026	+2.13	+15.1	20.0	31.3
Feb. 11	23 30.11	-15 38.2	2.803	1.978	+2.19	+16.0	19.9	27.3
Feb. 21	23 51.98	-12 58.4	2.798	1.932	+2.24	+16.7	19.8	23.5
Mar. 3	00 14.35	-10 11.6	2.789	1.889	+2.29	+17.3	19.8	20.1
Mar. 13	00 37.23	-07 19.0	2.777	1.849	+2.34	+17.7	19.7	17.0
Mar. 23	01 00.65	-04 22.4	2.762	1.813	+2.40	+17.9	19.6	14.2

Comet P/2001 T3 (NEAT)

Epoch = 2017 July 26.0 TT
T = 2018 June 11.00694 TT
Peri. = 356.80359 e = 0.6143902
Node = 55.16542 2000.0 a = 6.4445328 AU
Incl. = 19.39707 n = 0.06024443
q = 2.4850750 AU P = 16.36 years

m1 = 6.4 + 5 log(Delta) + 22.5 log(r(t-40))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	20 46.01	-34 09.2	5.504	4.621	-0.35	-0.9	.	15.1/ 73	23.7
Jan. 17	20 57.51	-33 22.9	5.491	4.569	-0.36	-1.0	.	15.5/ 73	18.6
Jan. 27	21 09.28	-32 35.8	5.457	4.517	-0.36	-1.2	.	15.9/ 73	15.8
Feb. 6	21 21.24	-31 48.4	5.404	4.465	-0.37	-1.4	.	16.1/ 74	16.1
Feb. 16	21 33.27	-31 01.1	5.333	4.413	-0.38	-1.6	.	16.2/ 74	19.4
Feb. 26	21 45.32	-30 14.1	5.243	4.361	-0.39	-1.8	.	16.3/ 74	24.5
Mar. 8	21 57.31	-29 28.2	5.136	4.309	-0.41	-2.1	.	16.1/ 75	30.4
Mar. 18	22 09.15	-28 44.1	5.012	4.256	-0.42	-2.3	.	15.9/ 75	36.7
Mar. 28	22 20.80	-28 02.3	4.874	4.204	-0.43	-2.5	.	15.6/ 76	43.3
Apr. 7	22 32.17	-27 23.7	4.724	4.151	-0.45	-2.8	.	15.1/ 77	50.0
Apr. 17	22 43.19	-26 49.2	4.561	4.098	-0.47	-3.1	.	14.5/ 79	56.8
Apr. 27	22 53.78	-26 19.6	4.390	4.046	-0.49	-3.4	.	13.8/ 81	63.7
May 7	23 03.86	-25 56.2	4.211	3.993	-0.51	-3.7	.	12.9/ 83	70.7
May 17	23 13.32	-25 39.7	4.028	3.940	-0.54	-4.0	.	11.8/ 86	77.8
May 27	23 22.04	-25 31.2	3.841	3.887	-0.57	-4.4	.	10.6/ 91	85.1
June 6	23 29.89	-25 31.9	3.655	3.835	-0.60	-4.7	22.9	9.3/ 97	92.5
June 16	23 36.71	-25 42.4	3.470	3.782	-0.64	-5.1	22.6	7.9/106	100.0
June 26	23 42.32	-26 03.5	3.291	3.730	-0.68	-5.5	22.4	6.5/120	107.8
July 6	23 46.52	-26 35.3	3.120	3.677	-0.73	-5.9	22.1	5.4/141	115.7
July 16	23 49.11	-27 17.3	2.960	3.625	-0.78	-6.2	21.9	5.2/168	123.8
July 26	23 49.90	-28 07.9	2.815	3.573	-0.83	-6.5	21.6	5.9/195	131.8
Aug. 5	23 48.75	-29 04.4	2.687	3.522	-0.88	-6.7	21.4	7.1/215	139.6
Aug. 15	23 45.63	-30 02.6	2.580	3.471	-0.93	-6.8	21.2	8.4/229	146.6
Aug. 25	23 40.66	-30 57.1	2.496	3.420	-0.97	-6.7	21.0	9.4/241	151.8
Sept. 4	23 34.19	-31 41.5	2.436	3.369	-1.00	-6.6	20.8	9.8/253	153.6
Sept.14	23 26.80	-32 09.9	2.401	3.319	-1.01	-6.4	20.6	9.6/265	151.3
Sept.24	23 19.23	-32 17.6	2.392	3.270	-1.00	-6.1	20.5	8.9/280	145.7
Oct. 4	23 12.29	-32 02.1	2.406	3.221	-0.98	-5.8	20.3	8.1/298	138.2
Oct. 14	23 06.73	-31 23.5	2.440	3.173	-0.95	-5.6	20.2	7.6/322	129.9
Oct. 24	23 03.07	-30 23.6	2.492	3.126	-0.90	-5.5	20.1	8.1/346	121.3
Nov. 3	23 01.63	-29 05.2	2.558	3.080	-0.86	-5.5	20.0	9.4/ 7	112.7
Nov. 13	23 02.49	-27 31.8	2.634	3.034	-0.82	-5.6	19.9	11.3/ 22	104.3
Nov. 23	23 05.57	-25 46.2	2.717	2.990	-0.78	-5.7	19.9	13.5/ 32	96.3
Dec. 3	23 10.71	-23 50.8	2.803	2.947	-0.74	-5.9	19.8	15.6/ 38	88.5
Dec. 13	23 17.68	-21 47.7	2.891	2.905	-0.71	-6.1	19.7	17.7/ 43	81.0
Dec. 23	23 26.25	-19 38.2	2.977	2.864	-0.69	-6.3	19.6	19.5/ 47	73.8
Jan. 2	23 36.21	-17 23.5	3.061	2.825	-0.67	-6.6	19.5	21.2/ 50	67.0
Jan. 12	23 47.35	-15 04.6	3.139	2.787	-0.66	-6.8	19.4	22.7/ 52	60.4
Jan. 22	23 59.52	-12 42.2	3.212	2.751	-0.65	-7.1	19.4	24.0/ 53	54.0
Feb. 1	00 12.57	-10 17.2	3.278	2.717	-0.64	-7.3	19.3	25.2/ 55	47.8
Feb. 11	00 26.38	-07 50.1	3.337	2.684	-0.64	-7.5	19.2	26.2/ 56	41.9
Feb. 21	00 40.87	-05 21.8	3.387	2.654	-0.64	-7.7	19.1	27.0/ 57	36.2
Mar. 3	00 55.96	-02 53.0	3.430	2.626	-0.65	-7.9	19.0	27.8/ 58	30.6
Mar. 13	01 11.60	-00 24.5	3.464	2.600	-0.66	-8.0	18.9	28.4/ 59	25.3
Mar. 23	01 27.76	+02 02.9	3.490	2.577	-0.67	-8.1	18.8	28.8/ 60	20.1

Comet P/2002 EJ57 (LINEAR)

Epoch = 2017 July 26.0 TT
T = 2018 June 18.46297 TT
Peri. = 166.99442 e = 0.5937332
Node = 330.44092 2000.0 a = 6.4670086 AU
Incl. = 4.97637 n = 0.05993064
q = 2.6273309 AU P = 16.45 years

m1 = 14.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	01 28.58	+14 31.6	4.376	4.636	-0.31	-2.1	22.2	4.0/ 80	99.2
Jan. 17	01 31.28	+14 38.2	4.485	4.586	-0.31	-2.1	22.2	6.0/ 76	89.7
Jan. 27	01 35.30	+14 52.7	4.594	4.537	-0.31	-2.0	22.2	7.9/ 74	80.5
Feb. 6	01 40.55	+15 14.3	4.698	4.487	-0.31	-2.0	22.2	9.6/ 73	71.7
Feb. 16	01 46.90	+15 42.4	4.794	4.438	-0.31	-1.9	22.3	11.1/ 72	63.2
Feb. 26	01 54.25	+16 16.0	4.880	4.388	-0.31	-1.9	22.3	12.5/ 72	55.0
Mar. 8	02 02.49	+16 54.2	4.952	4.338	-0.32	-1.9	22.3	13.6/ 72	47.1
Mar. 18	02 11.52	+17 36.2	5.010	4.288	-0.33	-1.8	22.2	14.6/ 72	39.5
Mar. 28	02 21.26	+18 20.9	5.051	4.238	-0.34	-1.8	22.2	15.5/ 72	32.0
Apr. 7	02 31.64	+19 07.7	5.076	4.189	-0.35	-1.8	22.2	16.2/ 72	24.8
Apr. 17	02 42.56	+19 55.6	5.083	4.139	-0.37	-1.7	22.2	16.8/ 73	17.8
Apr. 27	02 53.99	+20 43.9	5.072	4.089	-0.39	-1.7	22.1	17.3/ 73	11.2
May 7	03 05.84	+21 32.0	5.042	4.039	-0.40	-1.6	22.1	17.6/ 74	5.4
May 17	03 18.06	+22 19.1	4.996	3.989	-0.43	-1.6	22.0	17.9/ 75	5.0
May 27	03 30.60	+23 04.9	4.931	3.939	-0.45	-1.5	21.9	18.1/ 75	10.5
June 6	03 43.40	+23 48.6	4.851	3.890	-0.47	-1.5	21.9	18.2/ 76	16.7
June 16	03 56.39	+24 29.9	4.754	3.840	-0.50	-1.4	21.8	18.3/ 77	23.1
June 26	04 09.50	+25 08.4	4.643	3.791	-0.53	-1.3	21.7	18.2/ 78	29.5
July 6	04 22.67	+25 43.9	4.517	3.742	-0.56	-1.1	21.6	18.0/ 79	35.9
July 16	04 35.81	+26 16.1	4.379	3.693	-0.59	-1.0	21.5	17.7/ 80	42.4
July 26	04 48.82	+26 44.9	4.230	3.645	-0.63	-0.8	21.3	17.3/ 81	49.0
Aug. 5	05 01.58	+27 10.3	4.070	3.597	-0.67	-0.7	21.2	16.7/ 82	55.7
Aug. 15	05 13.99	+27 32.5	3.902	3.549	-0.71	-0.5	21.1	15.9/ 82	62.4
Aug. 25	05 25.90	+27 51.7	3.727	3.502	-0.76	-0.3	20.9	15.0/ 83	69.4
Sept. 4	05 37.12	+28 08.3	3.548	3.455	-0.81	-0.1	20.8	13.8/ 83	76.5
Sept.14	05 47.49	+28 22.7	3.365	3.408	-0.87	+0.2	20.6	12.3/ 83	83.9
Sept.24	05 56.78	+28 35.6	3.181	3.363	-0.93	+0.4	20.5	10.5/ 83	91.6
Oct. 4	06 04.75	+28 47.6	3.000	3.317	-1.00	+0.7	20.3	8.5/ 82	99.6
Oct. 14	06 11.14	+28 59.3	2.823	3.273	-1.07	+0.9	20.1	6.1/ 78	108.1
Oct. 24	06 15.68	+29 11.2	2.655	3.229	-1.15	+1.1	19.9	3.4/ 69	116.9
Nov. 3	06 18.11	+29 23.3	2.497	3.187	-1.23	+1.2	19.8	1.2/ 9	126.3
Nov. 13	06 18.25	+29 35.3	2.355	3.145	-1.32	+1.3	19.6	3.1/291	136.2
Nov. 23	06 16.02	+29 46.1	2.231	3.104	-1.40	+1.2	19.4	5.8/278	146.6
Dec. 3	06 11.56	+29 54.0	2.131	3.064	-1.47	+1.1	19.3	8.1/272	157.3
Dec. 13	06 05.32	+29 56.9	2.056	3.025	-1.52	+0.8	19.2	9.5/268	167.9
Dec. 23	05 57.99	+29 53.2	2.009	2.988	-1.54	+0.5	19.1	9.7/264	173.4
Jan. 2	05 50.55	+29 42.0	1.990	2.952	-1.54	+0.2	19.0	8.7/259	165.3
Jan. 12	05 44.01	+29 24.2	1.999	2.917	-1.50	-0.1	19.0	6.6/250	154.4
Jan. 22	05 39.26	+29 01.8	2.033	2.884	-1.45	-0.2	19.0	3.9/231	143.4
Feb. 1	05 36.92	+28 37.1	2.089	2.852	-1.39	-0.2	19.0	2.5/169	132.9
Feb. 11	05 37.30	+28 12.3	2.162	2.823	-1.33	-0.1	19.1	4.8/119	122.9
Feb. 21	05 40.45	+27 48.5	2.248	2.794	-1.27	0.0	19.1	8.0/106	113.5
Mar. 3	05 46.26	+27 26.0	2.344	2.768	-1.22	+0.3	19.2	11.2/101	104.8
Mar. 13	05 54.47	+27 04.2	2.445	2.744	-1.17	+0.6	19.2	14.0/ 99	96.6
Mar. 23	06 04.82	+26 42.0	2.550	2.722	-1.13	+0.9	19.3	16.5/ 98	89.0

Comet P/2011 CR42 (Catalina)

Epoch = 2017 July 26.0 TT
T = 2018 June 23.11370 TT
Peri. = 173.25534 e = 0.2809926
Node = 58.72705 2000.0 a = 3.5062636 AU
Incl. = 8.46420 n = 0.15011954
q = 2.5210295 AU P = 6.57 years

m1 = 11.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	08 39.15	+28 49.3	2.670	3.607	-0.84	+2.2	19.5	11.0/294	159.4
Jan. 17	08 31.45	+29 33.0	2.614	3.582	-0.86	+2.0	19.4	11.7/289	168.0
Jan. 27	08 22.93	+30 10.4	2.588	3.557	-0.87	+1.7	19.4	11.3/285	167.9
Feb. 6	08 14.44	+30 38.1	2.593	3.532	-0.87	+1.5	19.3	10.0/280	159.1
Feb. 16	08 06.81	+30 54.3	2.626	3.506	-0.85	+1.2	19.3	7.8/274	148.4
Feb. 26	08 00.74	+30 58.7	2.684	3.480	-0.82	+1.0	19.4	5.2/263	137.6
Mar. 8	07 56.75	+30 52.5	2.763	3.454	-0.78	+0.9	19.4	2.6/235	127.1
Mar. 18	07 55.07	+30 37.3	2.858	3.428	-0.75	+0.8	19.4	2.4/159	117.1
Mar. 28	07 55.73	+30 14.8	2.964	3.401	-0.71	+0.8	19.5	4.7/127	107.5
Apr. 7	07 58.63	+29 46.1	3.078	3.375	-0.68	+0.9	19.5	7.3/117	98.5
Apr. 17	08 03.57	+29 12.3	3.194	3.348	-0.65	+1.0	19.6	9.7/113	90.0
Apr. 27	08 10.31	+28 33.7	3.309	3.321	-0.63	+1.1	19.6	11.8/111	81.9
May 7	08 18.61	+27 50.7	3.422	3.295	-0.61	+1.3	19.6	13.7/110	74.3
May 17	08 28.23	+27 03.2	3.528	3.268	-0.60	+1.4	19.7	15.3/109	67.0
May 27	08 38.95	+26 11.2	3.627	3.241	-0.58	+1.6	19.7	16.7/109	60.0
June 6	08 50.60	+25 14.6	3.717	3.214	-0.57	+1.8	19.7	18.0/109	53.2
June 16	09 02.99	+24 13.3	3.796	3.187	-0.56	+2.0	19.7	19.1/110	46.8
June 26	09 16.00	+23 07.3	3.864	3.160	-0.56	+2.2	19.7	20.0/110	40.5
July 6	09 29.52	+21 56.8	3.919	3.133	-0.55	+2.4	19.7	20.8/110	34.4
July 16	09 43.42	+20 41.7	3.962	3.107	-0.55	+2.7	19.7	21.6/111	28.5
July 26	09 57.64	+19 22.5	3.992	3.080	-0.55	+2.9	19.7	22.2/111	22.7
Aug. 5	10 12.10	+17 59.2	4.008	3.054	-0.55	+3.1	19.7	22.7/112	17.2
Aug. 15	10 26.75	+16 32.3	4.011	3.028	-0.55	+3.3	19.6	23.2/112	12.0
Aug. 25	10 41.55	+15 02.3	4.000	3.002	-0.55	+3.5	19.6	23.6/113	7.7
Sept. 4	10 56.45	+13 29.5	3.976	2.976	-0.56	+3.8	19.5	23.9/113	6.3
Sept.14	11 11.42	+11 54.6	3.939	2.950	-0.57	+4.0	19.5	24.1/113	9.3
Sept.24	11 26.44	+10 18.1	3.888	2.925	-0.58	+4.2	19.4	24.3/113	14.1
Oct. 4	11 41.47	+08 40.8	3.825	2.900	-0.59	+4.4	19.3	24.3/113	19.4
Oct. 14	11 56.49	+07 03.3	3.750	2.876	-0.60	+4.7	19.3	24.3/113	24.9
Oct. 24	12 11.46	+05 26.3	3.662	2.852	-0.62	+4.9	19.2	24.2/113	30.6
Nov. 3	12 26.34	+03 50.8	3.564	2.828	-0.63	+5.1	19.1	24.0/113	36.4
Nov. 13	12 41.10	+02 17.6	3.456	2.806	-0.66	+5.3	19.0	23.6/112	42.4
Nov. 23	12 55.66	+00 47.4	3.338	2.783	-0.68	+5.6	18.9	23.1/112	48.4
Dec. 3	13 09.96	-00 38.7	3.212	2.761	-0.71	+5.8	18.7	22.4/111	54.6
Dec. 13	13 23.89	-02 00.1	3.079	2.740	-0.74	+6.1	18.6	21.5/111	61.0
Dec. 23	13 37.36	-03 15.8	2.940	2.720	-0.78	+6.4	18.5	20.4/110	67.5
Jan. 2	13 50.19	-04 24.9	2.796	2.700	-0.82	+6.7	18.3	19.0/109	74.2
Jan. 12	14 02.24	-05 26.9	2.650	2.681	-0.87	+7.0	18.2	17.3/108	81.2
Jan. 22	14 13.28	-06 21.0	2.502	2.663	-0.93	+7.4	18.0	15.3/108	88.4
Feb. 1	14 23.05	-07 06.8	2.356	2.646	-1.00	+7.8	17.9	12.8/107	95.9
Feb. 11	14 31.31	-07 44.0	2.213	2.630	-1.07	+8.2	17.7	9.9/107	103.9
Feb. 21	14 37.72	-08 12.4	2.075	2.615	-1.15	+8.7	17.6	6.6/107	112.2
Mar. 3	14 41.99	-08 32.0	1.946	2.600	-1.25	+9.3	17.4	3.0/113	121.1
Mar. 13	14 43.85	-08 43.5	1.829	2.587	-1.34	+9.9	17.2	1.2/249	130.5
Mar. 23	14 43.12	-08 47.7	1.727	2.575	-1.44	+10.6	17.1	4.9/272	140.5

Comet P/2013 CU129 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2018 June 24.32808 TT
Peri. = 211.92965 e = 0.7226131
Node = 46.22847 2000.0 a = 2.8767685 AU
Incl. = 12.15532 n = 0.20199783
q = 0.7979779 AU P = 4.88 years

H = 17.2 , G = 0.15 (r>1.3AU)
m1 = 17.2 + 5 log(Delta) + 20.0 log(r) (r<1.3AU)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		Mag.	Mot./PA ′ °	Elong. °
Jan. 7	06 12.62	+35 18.8	3.436	4.380	-0.36	-0.7	.	12.1/270	161.7
Jan. 17	06 02.75	+35 16.6	3.457	4.347	-0.34	-0.8	.	10.6/265	151.4
Jan. 27	05 54.16	+35 06.4	3.508	4.312	-0.32	-0.9	.	8.5/260	140.3
Feb. 6	05 47.38	+34 50.3	3.583	4.276	-0.31	-0.9	.	6.1/252	129.3
Feb. 16	05 42.69	+34 30.9	3.677	4.239	-0.29	-0.9	.	3.7/236	118.5
Feb. 26	05 40.20	+34 10.2	3.785	4.201	-0.27	-0.9	.	2.1/191	108.2
Mar. 8	05 39.87	+33 50.0	3.902	4.161	-0.26	-0.9	.	2.8/132	98.2
Mar. 18	05 41.56	+33 31.1	4.020	4.121	-0.25	-0.8	.	4.7/111	88.8
Mar. 28	05 45.09	+33 14.0	4.137	4.079	-0.24	-0.7	.	6.7/103	79.7
Apr. 7	05 50.25	+32 58.5	4.249	4.037	-0.24	-0.6	.	8.4/ 99	71.1
Apr. 17	05 56.84	+32 44.4	4.351	3.993	-0.24	-0.6	.	10.0/ 97	62.8
Apr. 27	06 04.69	+32 31.1	4.441	3.948	-0.24	-0.5	.	11.4/ 96	54.8
May 7	06 13.61	+32 18.2	4.516	3.901	-0.25	-0.4	.	12.6/ 95	47.2
May 17	06 23.44	+32 04.9	4.576	3.853	-0.26	-0.3	.	13.6/ 95	39.8
May 27	06 34.07	+31 50.8	4.618	3.805	-0.26	-0.2	.	14.5/ 95	32.7
June 6	06 45.36	+31 35.5	4.641	3.754	-0.27	-0.1	.	15.3/ 96	25.9
June 16	06 57.20	+31 18.4	4.646	3.703	-0.29	+0.1	.	15.9/ 96	19.4
June 26	07 09.51	+30 59.4	4.630	3.650	-0.30	+0.2	.	16.5/ 97	13.6
July 6	07 22.19	+30 38.1	4.595	3.595	-0.32	+0.3	.	16.9/ 97	9.3
July 16	07 35.17	+30 14.6	4.540	3.540	-0.33	+0.5	.	17.3/ 98	8.9
July 26	07 48.37	+29 48.6	4.466	3.483	-0.35	+0.7	.	17.6/ 98	12.7
Aug. 5	08 01.73	+29 20.5	4.373	3.424	-0.38	+0.9	.	17.9/ 99	18.2
Aug. 15	08 15.17	+28 50.3	4.262	3.364	-0.40	+1.1	.	18.0/ 99	24.2
Aug. 25	08 28.66	+28 18.5	4.134	3.302	-0.43	+1.3	.	18.1/100	30.4
Sept. 4	08 42.11	+27 45.4	3.989	3.239	-0.46	+1.6	.	18.1/100	36.8
Sept.14	08 55.48	+27 11.6	3.830	3.174	-0.49	+1.9	.	18.0/100	43.3
Sept.24	09 08.71	+26 38.0	3.657	3.107	-0.53	+2.3	.	17.8/100	49.9
Oct. 4	09 21.71	+26 05.4	3.472	3.039	-0.57	+2.7	.	17.4/ 99	56.6
Oct. 14	09 34.43	+25 35.0	3.277	2.969	-0.63	+3.1	.	16.9/ 98	63.5
Oct. 24	09 46.76	+25 08.2	3.073	2.897	-0.69	+3.6	22.9	16.2/ 97	70.5
Nov. 3	09 58.60	+24 46.6	2.864	2.823	-0.76	+4.2	22.7	15.4/ 95	77.6
Nov. 13	10 09.81	+24 32.2	2.651	2.748	-0.84	+4.8	22.5	14.2/ 91	85.0
Nov. 23	10 20.22	+24 27.5	2.436	2.670	-0.94	+5.6	22.3	12.8/ 86	92.6
Dec. 3	10 29.59	+24 35.1	2.222	2.590	-1.06	+6.4	22.1	11.2/ 78	100.5
Dec. 13	10 37.65	+24 58.4	2.013	2.509	-1.20	+7.4	21.8	9.6/ 63	108.7
Dec. 23	10 43.99	+25 40.9	1.811	2.425	-1.38	+8.4	21.4	8.6/ 40	117.2
Jan. 2	10 48.10	+26 46.1	1.620	2.339	-1.59	+9.4	21.1	9.3/ 10	126.1
Jan. 12	10 49.34	+28 17.2	1.443	2.251	-1.84	+10.3	20.7	12.2/345	135.3
Jan. 22	10 46.89	+30 14.9	1.283	2.160	-2.14	+10.8	20.3	16.7/328	144.4
Feb. 1	10 39.87	+32 35.8	1.144	2.068	-2.46	+10.6	19.8	21.7/316	152.2
Feb. 11	10 27.57	+35 09.0	1.029	1.972	-2.77	+9.1	19.4	25.9/306	156.2
Feb. 21	10 09.88	+37 34.8	0.939	1.875	-2.97	+6.2	19.2	28.0/295	153.1
Mar. 3	09 48.06	+39 27.3	0.873	1.775	-2.98	+2.1	19.1	27.3/284	144.3
Mar. 13	09 24.84	+40 25.1	0.829	1.674	-2.73	-2.0	19.1	24.0/270	133.1
Mar. 23	09 03.81	+40 19.5	0.800	1.570	-2.27	-5.1	19.1	19.4/252	121.4

Comet 82P/Gehrels

Epoch = 2017 July 26.0 TT
T = 2018 June 28.49764 TT
Peri. = 227.19007 e = 0.1229156
Node = 239.30578 2000.0 a = 4.1434601 AU
Incl. = 1.12787 n = 0.11685824
q = 3.6341642 AU P = 8.43 years

m1 = 7.0 + 5 log(Delta) + 20.0 log(r(t-90))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	00 58.00	+06 48.3	3.852	3.964	+0.54	+3.0	22.1	89.3
Jan. 17	01 03.36	+07 18.7	3.994	3.954	+0.65	+3.7	22.1	80.6
Jan. 27	01 09.90	+07 56.2	4.133	3.944	+0.76	+4.3	22.2	72.1
Feb. 6	01 17.49	+08 39.6	4.265	3.934	+0.85	+4.8	22.2	64.0
Feb. 16	01 25.97	+09 27.9	4.388	3.924	+0.93	+5.2	22.3	56.1
Feb. 26	01 35.24	+10 19.9	4.500	3.914	+0.99	+5.5	22.3	48.5
Mar. 8	01 45.19	+11 14.7	4.598	3.905	+1.05	+5.6	22.3	41.1
Mar. 18	01 55.71	+12 11.1	4.682	3.895	+1.10	+5.7	22.4	33.8
Mar. 28	02 06.73	+13 08.5	4.750	3.885	+1.14	+5.7	22.4	26.8
Apr. 7	02 18.17	+14 05.8	4.802	3.876	+1.18	+5.7	22.4	19.8
Apr. 17	02 29.94	+15 02.5	4.838	3.866	+1.20	+5.5	22.4	13.0
Apr. 27	02 41.98	+15 57.7	4.856	3.857	+1.23	+5.3	22.4	6.3
May 7	02 54.24	+16 50.9	4.857	3.848	+1.24	+5.1	22.3	0.4
May 17	03 06.63	+17 41.6	4.841	3.839	+1.25	+4.8	22.3	6.9
May 27	03 19.11	+18 29.2	4.808	3.830	+1.25	+4.4	22.3	13.4
June 6	03 31.58	+19 13.4	4.759	3.821	+1.24	+4.0	22.2	20.0
June 16	03 43.98	+19 53.8	4.694	3.812	+1.22	+3.6	22.2	26.5
June 26	03 56.23	+20 30.3	4.614	3.804	+1.20	+3.2	22.1	33.2
July 6	04 08.23	+21 02.6	4.520	3.796	+1.16	+2.8	22.0	39.8
July 16	04 19.87	+21 30.6	4.413	3.787	+1.12	+2.4	22.0	46.6
July 26	04 31.05	+21 54.4	4.294	3.779	+1.06	+2.0	21.9	53.5
Aug. 5	04 41.62	+22 14.0	4.164	3.771	+0.98	+1.6	21.8	60.6
Aug. 15	04 51.45	+22 29.7	4.025	3.764	+0.89	+1.2	21.7	67.9
Aug. 25	05 00.37	+22 41.8	3.880	3.756	+0.78	+0.9	21.6	75.5
Sept. 4	05 08.20	+22 50.4	3.730	3.749	+0.66	+0.6	21.5	83.3
Sept. 14	05 14.75	+22 56.1	3.577	3.742	+0.51	+0.3	21.4	91.5
Sept. 24	05 19.82	+22 59.2	3.425	3.735	+0.34	+0.1	21.3	100.1
Oct. 4	05 23.20	+23 00.1	3.278	3.728	+0.15	-0.1	21.2	109.2
Oct. 14	05 24.74	+22 59.0	3.138	3.721	-0.04	-0.3	21.1	118.7
Oct. 24	05 24.30	+22 56.0	3.011	3.715	-0.24	-0.5	20.9	128.7
Nov. 3	05 21.87	+22 51.2	2.900	3.709	-0.43	-0.7	20.8	139.3
Nov. 13	05 17.59	+22 44.3	2.811	3.703	-0.58	-0.9	20.8	150.3
Nov. 23	05 11.75	+22 35.3	2.746	3.697	-0.69	-1.1	20.7	161.8
Dec. 3	05 04.86	+22 24.2	2.711	3.692	-0.73	-1.3	20.6	173.5
Dec. 13	04 57.58	+22 11.7	2.705	3.686	-0.70	-1.3	20.6	174.6
Dec. 23	04 50.62	+21 58.8	2.730	3.681	-0.60	-1.2	20.6	162.8
Jan. 2	04 44.65	+21 46.9	2.784	3.677	-0.45	-0.9	20.7	151.3
Jan. 12	04 40.20	+21 37.4	2.864	3.672	-0.26	-0.6	20.7	140.0
Jan. 22	04 37.61	+21 31.6	2.965	3.668	-0.06	-0.2	20.8	129.2
Feb. 1	04 37.04	+21 29.8	3.084	3.664	+0.14	+0.2	20.8	118.9
Feb. 11	04 38.48	+21 32.3	3.215	3.660	+0.34	+0.6	20.9	109.1
Feb. 21	04 41.85	+21 38.5	3.355	3.656	+0.51	+0.9	21.0	99.8
Mar. 3	04 47.00	+21 47.7	3.499	3.653	+0.67	+1.1	21.1	91.0
Mar. 13	04 53.72	+21 58.7	3.643	3.650	+0.81	+1.2	21.1	82.6
Mar. 23	05 01.84	+22 10.7	3.785	3.647	+0.93	+1.2	21.2	74.5

Comet 49P/Arend-Rigaux

Epoch = 2017 July 26.0 TT
T = 2018 July 15.50470 TT
Peri. = 332.89776 e = 0.5994915
Node = 118.83121 2000.0 a = 3.5687739 AU
Incl. = 19.04434 n = 0.14619264
q = 1.4293243 AU P = 6.74 years

m1 = 15.0 + 5 log(Delta) + 5.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	20 28.58	-21 44.9	5.323	4.396	+1.02	+2.5	21.8	17.7
Jan. 17	20 38.81	-21 19.7	5.320	4.355	+1.05	+2.8	21.8	10.1
Jan. 27	20 49.27	-20 52.1	5.295	4.313	+1.06	+3.0	21.8	3.6
Feb. 6	20 59.88	-20 22.5	5.249	4.270	+1.07	+3.1	21.8	6.4
Feb. 16	21 10.54	-19 51.4	5.181	4.227	+1.06	+3.2	21.7	13.6
Feb. 26	21 21.17	-19 19.3	5.092	4.182	+1.05	+3.2	21.6	21.0
Mar. 8	21 31.69	-18 47.1	4.983	4.137	+1.03	+3.2	21.6	28.4
Mar. 18	21 42.03	-18 15.4	4.856	4.092	+1.01	+3.0	21.5	35.9
Mar. 28	21 52.09	-17 45.1	4.713	4.045	+0.97	+2.8	21.4	43.3
Apr. 7	22 01.81	-17 17.1	4.554	3.998	+0.93	+2.5	21.3	50.8
Apr. 17	22 11.09	-16 52.6	4.382	3.949	+0.88	+2.0	21.2	58.4
Apr. 27	22 19.84	-16 32.7	4.199	3.900	+0.81	+1.4	21.1	66.0
May 7	22 27.95	-16 18.6	4.008	3.851	+0.73	+0.7	20.9	73.8
May 17	22 35.29	-16 11.8	3.812	3.800	+0.64	-0.2	20.8	81.7
May 27	22 41.74	-16 13.7	3.612	3.749	+0.54	-1.2	20.7	89.9
June 6	22 47.11	-16 25.9	3.412	3.697	+0.41	-2.4	20.5	98.2
June 16	22 51.24	-16 50.0	3.216	3.644	+0.27	-3.7	20.3	106.9
June 26	22 53.92	-17 27.2	3.027	3.590	+0.10	-5.1	20.2	115.9
July 6	22 54.95	-18 18.6	2.850	3.535	-0.08	-6.6	20.0	125.2
July 16	22 54.13	-19 24.1	2.687	3.480	-0.28	-7.9	19.9	134.9
July 26	22 51.34	-20 42.7	2.543	3.423	-0.48	-8.9	19.7	144.8
Aug. 5	22 46.54	-22 11.3	2.422	3.366	-0.66	-9.4	19.6	154.4
Aug. 15	22 39.91	-23 45.3	2.328	3.308	-0.81	-9.3	19.4	162.5
Aug. 25	22 31.81	-25 18.1	2.262	3.249	-0.89	-8.4	19.3	165.0
Sept. 4	22 22.91	-26 42.5	2.225	3.189	-0.89	-7.0	19.3	159.4
Sept.14	22 14.03	-27 52.2	2.217	3.129	-0.80	-5.1	19.2	150.0
Sept.24	22 06.04	-28 42.8	2.234	3.067	-0.63	-3.0	19.2	139.6
Oct. 4	21 59.76	-29 12.6	2.272	3.005	-0.40	-1.0	19.2	129.2
Oct. 14	21 55.74	-29 22.1	2.326	2.942	-0.14	+0.9	19.2	119.0
Oct. 24	21 54.30	-29 13.1	2.392	2.879	+0.12	+2.5	19.2	109.3
Nov. 3	21 55.53	-28 47.9	2.465	2.814	+0.38	+3.9	19.2	100.1
Nov. 13	21 59.31	-28 08.9	2.540	2.749	+0.62	+5.1	19.2	91.5
Nov. 23	22 05.48	-27 17.6	2.613	2.683	+0.83	+6.2	19.2	83.3
Dec. 3	22 13.79	-26 15.5	2.682	2.617	+1.02	+7.2	19.2	75.6
Dec. 13	22 23.99	-25 03.5	2.744	2.550	+1.19	+8.1	19.2	68.3
Dec. 23	22 35.87	-23 42.2	2.797	2.483	+1.33	+9.0	19.2	61.5
Jan. 2	22 49.22	-22 12.1	2.840	2.415	+1.46	+9.9	19.2	55.0
Jan. 12	23 03.86	-20 33.6	2.872	2.347	+1.58	+10.7	19.1	49.0
Jan. 22	23 19.68	-18 46.8	2.893	2.279	+1.69	+11.5	19.1	43.3
Feb. 1	23 36.57	-16 52.2	2.901	2.211	+1.79	+12.2	19.0	38.0
Feb. 11	23 54.46	-14 50.0	2.899	2.143	+1.89	+12.9	19.0	33.2
Feb. 21	00 13.31	-12 40.6	2.887	2.075	+1.98	+13.6	18.9	28.7
Mar. 3	00 33.12	-10 24.7	2.865	2.008	+2.08	+14.2	18.8	24.7
Mar. 13	00 53.88	-08 02.8	2.836	1.942	+2.18	+14.7	18.7	21.2
Mar. 23	01 15.65	-05 35.8	2.799	1.878	+2.28	+15.1	18.6	18.2

Comet C/2016 N6 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2018 July 18.12615 TT
Peri. = 162.79873
Node = 298.97741 2000.0
Incl. = 105.82935
q = 2.6689943 AU
e = 0.9986632

m1 = 7.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	18 04.07	+31 31.1	6.412	5.923	+0.57	+5.3	18.8	56.3
Jan. 17	18 09.72	+32 23.9	6.296	5.849	+0.55	+6.7	18.7	58.9
Jan. 27	18 15.17	+33 30.5	6.169	5.775	+0.51	+8.1	18.6	62.1
Feb. 6	18 20.25	+34 51.1	6.032	5.701	+0.45	+9.5	18.5	65.9
Feb. 16	18 24.78	+36 25.6	5.888	5.627	+0.38	+10.8	18.4	70.0
Feb. 26	18 28.56	+38 13.8	5.738	5.552	+0.28	+12.1	18.2	74.3
Mar. 8	18 31.35	+40 15.1	5.586	5.478	+0.15	+13.3	18.1	78.6
Mar. 18	18 32.89	+42 28.1	5.436	5.404	0.00	+14.3	18.0	82.9
Mar. 28	18 32.87	+44 51.3	5.290	5.329	-0.20	+15.1	17.9	86.9
Apr. 7	18 30.91	+47 22.0	5.150	5.255	-0.43	+15.5	17.8	90.5
Apr. 17	18 26.60	+49 56.8	5.021	5.180	-0.71	+15.4	17.6	93.5
Apr. 27	18 19.47	+52 31.1	4.904	5.106	-1.04	+14.8	17.5	95.9
May 7	18 09.06	+54 59.1	4.801	5.032	-1.40	+13.5	17.4	97.4
May 17	17 55.04	+57 14.0	4.713	4.958	-1.77	+11.4	17.3	98.1
May 27	17 37.32	+59 08.3	4.641	4.883	-2.10	+8.6	17.2	97.8
June 6	17 16.28	+60 34.8	4.584	4.809	-2.33	+5.3	17.1	96.7
June 16	16 52.95	+61 27.9	4.542	4.736	-2.41	+1.7	17.0	94.7
June 26	16 28.89	+61 45.0	4.513	4.662	-2.30	-1.8	17.0	92.1
July 6	16 05.87	+61 27.3	4.495	4.588	-2.05	-4.8	16.9	88.9
July 16	15 45.37	+60 39.7	4.484	4.515	-1.71	-7.1	16.8	85.3
July 26	15 28.29	+59 28.9	4.478	4.442	-1.34	-8.6	16.7	81.4
Aug. 5	15 14.93	+58 02.5	4.475	4.369	-0.98	-9.5	16.7	77.5
Aug. 15	15 05.13	+56 27.5	4.469	4.297	-0.66	-9.8	16.6	73.7
Aug. 25	14 58.53	+54 49.5	4.460	4.225	-0.38	-9.6	16.5	70.2
Sept. 4	14 54.69	+53 13.6	4.443	4.154	-0.15	-9.0	16.4	67.0
Sept.14	14 53.15	+51 43.4	4.417	4.082	+0.04	-8.1	16.3	64.3
Sept.24	14 53.53	+50 22.0	4.379	4.012	+0.19	-7.0	16.2	62.3
Oct. 4	14 55.48	+49 12.0	4.328	3.942	+0.32	-5.6	16.1	61.0
Oct. 14	14 58.70	+48 15.7	4.263	3.873	+0.42	-4.1	16.0	60.7
Oct. 24	15 02.95	+47 35.0	4.182	3.804	+0.50	-2.3	15.9	61.2
Nov. 3	15 07.99	+47 12.4	4.086	3.737	+0.56	-0.3	15.8	62.7
Nov. 13	15 13.62	+47 09.8	3.976	3.670	+0.60	+2.0	15.6	65.1
Nov. 23	15 19.65	+47 29.8	3.852	3.604	+0.62	+4.5	15.5	68.2
Dec. 3	15 25.85	+48 15.3	3.716	3.540	+0.61	+7.4	15.3	72.1
Dec. 13	15 31.97	+49 28.9	3.571	3.476	+0.57	+10.5	15.2	76.5
Dec. 23	15 37.72	+51 14.0	3.420	3.414	+0.49	+14.0	15.0	81.4
Jan. 2	15 42.64	+53 33.7	3.267	3.353	+0.35	+17.7	14.8	86.5
Jan. 12	15 46.13	+56 30.7	3.117	3.294	+0.10	+21.6	14.6	91.6
Jan. 22	15 47.14	+60 06.5	2.976	3.237	-0.34	+25.3	14.5	96.4
Feb. 1	15 43.76	+64 19.8	2.849	3.181	-1.15	+28.4	14.3	100.6
Feb. 11	15 32.22	+69 04.3	2.743	3.127	-2.84	+29.8	14.1	103.7
Feb. 21	15 03.77	+74 02.6	2.664	3.076	-6.61	+26.6	14.0	105.3
Mar. 3	13 57.67	+78 29.1	2.616	3.026	-12.93	+12.3	13.9	104.9
Mar. 13	11 48.33	+80 31.7	2.601	2.980	-12.97	-12.5	13.8	102.6
Mar. 23	09 38.59	+78 26.6	2.620	2.936	-6.65	-27.4	13.8	98.4

Comet P/2005 JN (Spacewatch)

Epoch = 2017 July 26.0 TT
T = 2018 July 23.60564 TT
Peri. = 153.46275 e = 0.3489352
Node = 70.77006 2000.0 a = 3.4973500 AU
Incl. = 8.85701 n = 0.15069381
q = 2.2770015 AU P = 6.54 years

m1 = 13.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	06 39.77	+29 08.1	2.824	3.796	-0.73	-0.8	.	11.3/279	170.1
Jan. 17	06 31.23	+29 24.0	2.832	3.767	-0.71	-1.0	.	9.9/276	159.1
Jan. 27	06 23.71	+29 33.7	2.869	3.738	-0.69	-1.1	.	7.7/273	147.6
Feb. 6	06 17.83	+29 37.8	2.931	3.708	-0.66	-1.2	.	5.0/270	136.4
Feb. 16	06 14.01	+29 37.6	3.015	3.678	-0.64	-1.3	.	2.1/261	125.6
Feb. 26	06 12.45	+29 34.4	3.114	3.648	-0.61	-1.2	.	1.1/118	115.2
Mar. 8	06 13.17	+29 29.4	3.224	3.617	-0.58	-1.2	.	3.8/ 99	105.4
Mar. 18	06 16.06	+29 23.0	3.341	3.586	-0.56	-1.1	.	6.4/ 96	96.1
Mar. 28	06 20.94	+29 15.5	3.459	3.555	-0.55	-1.0	.	8.8/ 95	87.3
Apr. 7	06 27.62	+29 06.7	3.575	3.523	-0.53	-0.8	.	10.9/ 95	79.0
Apr. 17	06 35.88	+28 56.2	3.686	3.491	-0.53	-0.7	.	12.7/ 95	71.0
Apr. 27	06 45.50	+28 43.3	3.789	3.459	-0.52	-0.5	.	14.3/ 96	63.5
May 7	06 56.31	+28 27.7	3.883	3.426	-0.52	-0.3	.	15.7/ 96	56.2
May 17	07 08.11	+28 08.7	3.966	3.393	-0.52	-0.1	.	16.9/ 97	49.2
May 27	07 20.75	+27 45.8	4.037	3.360	-0.52	+0.1	.	18.0/ 98	42.5
June 6	07 34.10	+27 18.6	4.094	3.327	-0.52	+0.3	.	18.9/ 99	36.0
June 16	07 48.03	+26 46.8	4.137	3.294	-0.53	+0.5	.	19.7/100	29.7
June 26	08 02.43	+26 10.2	4.166	3.260	-0.53	+0.8	.	20.4/101	23.6
July 6	08 17.20	+25 28.7	4.179	3.226	-0.54	+1.0	.	21.0/102	17.7
July 16	08 32.25	+24 42.3	4.178	3.192	-0.55	+1.3	.	21.5/103	12.2
July 26	08 47.51	+23 51.0	4.162	3.158	-0.56	+1.5	.	21.9/104	7.5
Aug. 5	09 02.92	+22 55.1	4.131	3.124	-0.57	+1.8	.	22.3/105	5.9
Aug. 15	09 18.42	+21 54.9	4.086	3.089	-0.58	+2.1	.	22.6/106	9.1
Aug. 25	09 33.95	+20 50.8	4.026	3.055	-0.59	+2.4	.	22.9/107	14.0
Sept. 4	09 49.47	+19 43.3	3.953	3.021	-0.60	+2.7	.	23.0/107	19.5
Sept.14	10 04.93	+18 32.9	3.867	2.987	-0.62	+3.0	.	23.1/108	25.2
Sept.24	10 20.30	+17 20.4	3.768	2.953	-0.64	+3.3	22.9	23.1/108	30.9
Oct. 4	10 35.53	+16 06.6	3.658	2.919	-0.66	+3.7	22.8	23.0/108	36.8
Oct. 14	10 50.58	+14 52.3	3.537	2.885	-0.68	+4.0	22.6	22.8/108	42.7
Oct. 24	11 05.40	+13 38.5	3.407	2.851	-0.70	+4.4	22.5	22.4/108	48.8
Nov. 3	11 19.92	+12 26.4	3.268	2.818	-0.73	+4.8	22.3	21.9/108	55.0
Nov. 13	11 34.08	+11 17.1	3.122	2.785	-0.77	+5.2	22.1	21.2/108	61.3
Nov. 23	11 47.79	+10 11.9	2.970	2.753	-0.81	+5.7	22.0	20.3/107	67.8
Dec. 3	12 00.92	+09 12.2	2.814	2.721	-0.85	+6.2	21.8	19.2/106	74.4
Dec. 13	12 13.36	+08 19.5	2.656	2.689	-0.90	+6.7	21.6	17.7/104	81.3
Dec. 23	12 24.92	+07 35.3	2.496	2.658	-0.96	+7.3	21.4	15.9/102	88.4
Jan. 2	12 35.39	+07 01.4	2.339	2.628	-1.03	+8.0	21.1	13.8/ 99	95.9
Jan. 12	12 44.52	+06 38.9	2.184	2.598	-1.11	+8.7	20.9	11.2/ 95	103.6
Jan. 22	12 52.03	+06 29.5	2.036	2.569	-1.20	+9.5	20.7	8.3/ 87	111.8
Feb. 1	12 57.60	+06 33.8	1.896	2.542	-1.30	+10.3	20.5	5.3/ 70	120.4
Feb. 11	13 00.93	+06 51.9	1.769	2.515	-1.41	+11.2	20.2	3.3/ 22	129.5
Feb. 21	13 01.75	+07 22.7	1.656	2.489	-1.53	+12.0	20.0	4.8/327	139.0
Mar. 3	12 59.96	+08 03.1	1.562	2.464	-1.64	+12.7	19.8	7.8/306	148.8
Mar. 13	12 55.70	+08 48.2	1.489	2.440	-1.74	+13.2	19.7	10.2/295	158.2
Mar. 23	12 49.43	+09 30.9	1.441	2.418	-1.80	+13.4	19.5	11.5/287	165.3

Comet C/2016 M1 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2018 Aug. 10.21367 TT
Peri. = 209.82620
Node = 92.20396 2000.0
Incl. = 90.99382
q = 2.2106675 AU
e = 0.9988896

m1 = 5.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	18 22.10	+45 07.1	6.481	6.188	+0.85	-1.2	17.0	68.5
Jan. 17	18 30.56	+44 54.8	6.401	6.109	+0.81	-0.1	16.9	68.5
Jan. 27	18 38.68	+44 54.3	6.314	6.031	+0.76	+1.1	16.8	69.0
Feb. 6	18 46.33	+45 05.2	6.219	5.952	+0.70	+2.2	16.7	69.9
Feb. 16	18 53.33	+45 27.1	6.115	5.873	+0.62	+3.2	16.6	71.2
Feb. 26	18 59.55	+45 59.1	6.005	5.793	+0.52	+4.1	16.5	73.0
Mar. 8	19 04.79	+46 40.5	5.887	5.714	+0.41	+4.9	16.4	75.2
Mar. 18	19 08.85	+47 29.9	5.762	5.634	+0.27	+5.6	16.3	77.7
Mar. 28	19 11.54	+48 25.9	5.633	5.554	+0.11	+6.1	16.2	80.4
Apr. 7	19 12.61	+49 26.5	5.499	5.474	-0.08	+6.3	16.1	83.4
Apr. 17	19 11.83	+50 29.3	5.363	5.394	-0.29	+6.2	16.0	86.4
Apr. 27	19 08.97	+51 31.2	5.225	5.313	-0.51	+5.7	15.8	89.5
May 7	19 03.84	+52 28.7	5.089	5.233	-0.75	+4.9	15.7	92.6
May 17	18 56.32	+53 17.3	4.956	5.152	-0.99	+3.5	15.6	95.5
May 27	18 46.46	+53 52.3	4.828	5.071	-1.20	+1.6	15.5	98.1
June 6	18 34.49	+54 08.3	4.706	4.990	-1.35	-0.8	15.3	100.4
June 16	18 20.96	+54 00.8	4.594	4.909	-1.44	-3.5	15.2	102.1
June 26	18 06.59	+53 25.8	4.493	4.827	-1.43	-6.5	15.1	103.2
July 6	17 52.29	+52 21.2	4.405	4.746	-1.33	-9.4	15.0	103.5
July 16	17 38.95	+50 47.0	4.330	4.664	-1.17	-12.2	14.9	103.0
July 26	17 27.29	+48 45.3	4.270	4.582	-0.95	-14.5	14.8	101.6
Aug. 5	17 17.79	+46 19.8	4.224	4.501	-0.71	-16.4	14.7	99.3
Aug. 15	17 10.68	+43 35.7	4.193	4.419	-0.47	-17.8	14.6	96.2
Aug. 25	17 05.96	+40 38.1	4.176	4.337	-0.24	-18.6	14.5	92.4
Sept. 4	17 03.53	+37 32.4	4.170	4.255	-0.04	-18.9	14.4	87.9
Sept. 14	17 03.17	+34 23.5	4.175	4.174	+0.15	-18.8	14.3	83.0
Sept. 24	17 04.67	+31 15.5	4.187	4.092	+0.31	-18.4	14.2	77.7
Oct. 4	17 07.80	+28 11.9	4.203	4.011	+0.45	-17.7	14.2	72.1
Oct. 14	17 12.33	+25 15.2	4.222	3.930	+0.57	-16.8	14.1	66.4
Oct. 24	17 18.07	+22 27.5	4.238	3.849	+0.68	-15.7	14.0	60.6
Nov. 3	17 24.83	+19 50.0	4.251	3.768	+0.76	-14.6	13.9	54.8
Nov. 13	17 32.44	+17 23.6	4.256	3.688	+0.83	-13.5	13.8	49.3
Nov. 23	17 40.76	+15 08.6	4.251	3.608	+0.89	-12.4	13.7	44.1
Dec. 3	17 49.65	+13 05.0	4.234	3.528	+0.93	-11.3	13.6	39.4
Dec. 13	17 58.98	+11 12.4	4.202	3.450	+0.96	-10.2	13.5	35.6
Dec. 23	18 08.63	+09 30.4	4.154	3.372	+0.98	-9.2	13.4	33.0
Jan. 2	18 18.47	+07 58.2	4.089	3.294	+0.99	-8.4	13.2	31.8
Jan. 12	18 28.40	+06 34.7	4.005	3.218	+0.99	-7.6	13.1	32.4
Jan. 22	18 38.30	+05 18.7	3.902	3.143	+0.97	-7.0	12.9	34.7
Feb. 1	18 48.05	+04 08.8	3.780	3.069	+0.95	-6.6	12.8	38.4
Feb. 11	18 57.53	+03 03.2	3.639	2.996	+0.91	-6.3	12.6	43.2
Feb. 21	19 06.61	+01 59.9	3.479	2.925	+0.85	-6.4	12.4	48.8
Mar. 3	19 15.14	+00 56.3	3.303	2.856	+0.78	-6.7	12.2	55.2
Mar. 13	19 22.95	-00 10.8	3.112	2.788	+0.69	-7.4	11.9	62.0
Mar. 23	19 29.85	-01 25.1	2.908	2.723	+0.57	-8.7	11.7	69.5

Comet 105P/Singer Brewster

Epoch = 2017 July 26.0 TT
T = 2018 Aug. 10.49967 TT
Peri. = 46.53418 e = 0.4101839
Node = 192.43220 2000.0 a = 3.4659513 AU
Incl. = 9.17664 n = 0.15274619
q = 2.0442739 AU P = 6.45 years

m1 = 15.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	07 09.22	+10 16.2	3.001	3.968	-0.78	+1.6	.	167.8
Jan. 17	07 01.45	+10 32.1	2.983	3.936	-0.73	+2.2	.	163.5
Jan. 27	06 54.15	+10 53.8	2.996	3.905	-0.62	+2.6	.	153.9
Feb. 6	06 47.92	+11 19.6	3.037	3.872	-0.47	+2.8	.	143.2
Feb. 16	06 43.22	+11 48.0	3.103	3.840	-0.29	+2.9	.	132.5
Feb. 26	06 40.31	+12 17.3	3.187	3.806	-0.10	+2.9	.	122.0
Mar. 8	06 39.35	+12 46.3	3.287	3.773	+0.10	+2.7	.	112.0
Mar. 18	06 40.34	+13 13.5	3.396	3.738	+0.28	+2.5	.	102.4
Mar. 28	06 43.18	+13 38.1	3.509	3.704	+0.46	+2.1	.	93.3
Apr. 7	06 47.74	+13 59.1	3.624	3.668	+0.61	+1.7	.	84.7
Apr. 17	06 53.85	+14 15.8	3.735	3.633	+0.75	+1.2	.	76.4
Apr. 27	07 01.33	+14 27.7	3.841	3.597	+0.87	+0.6	.	68.5
May 7	07 10.01	+14 34.1	3.938	3.560	+0.97	+0.1	.	61.0
May 17	07 19.72	+14 34.7	4.025	3.523	+1.06	-0.5	.	53.7
May 27	07 30.32	+14 29.3	4.100	3.485	+1.14	-1.2	.	46.8
June 6	07 41.69	+14 17.6	4.162	3.448	+1.20	-1.8	.	40.0
June 16	07 53.69	+13 59.5	4.210	3.409	+1.25	-2.5	.	33.5
June 26	08 06.22	+13 35.0	4.243	3.371	+1.30	-3.1	.	27.2
July 6	08 19.20	+13 03.9	4.260	3.332	+1.33	-3.7	.	21.1
July 16	08 32.52	+12 26.6	4.262	3.292	+1.36	-4.4	.	15.2
July 26	08 46.14	+11 42.9	4.248	3.252	+1.38	-5.0	.	9.8
Aug. 5	08 59.98	+10 53.3	4.219	3.212	+1.40	-5.5	.	6.2
Aug. 15	09 13.98	+09 58.0	4.174	3.172	+1.41	-6.1	.	7.2
Aug. 25	09 28.10	+08 57.3	4.114	3.131	+1.42	-6.6	23.0	11.7
Sept. 4	09 42.27	+07 51.7	4.040	3.090	+1.42	-7.0	22.9	17.2
Sept. 14	09 56.48	+06 41.7	3.951	3.049	+1.42	-7.4	22.8	22.9
Sept. 24	10 10.66	+05 27.8	3.849	3.008	+1.41	-7.7	22.7	28.7
Oct. 4	10 24.78	+04 10.7	3.734	2.967	+1.40	-8.0	22.6	34.7
Oct. 14	10 38.80	+02 51.1	3.608	2.925	+1.39	-8.1	22.4	40.7
Oct. 24	10 52.67	+01 29.8	3.471	2.884	+1.37	-8.2	22.3	46.8
Nov. 3	11 06.32	+00 07.8	3.325	2.842	+1.34	-8.2	22.1	53.1
Nov. 13	11 19.70	-01 14.0	3.170	2.800	+1.30	-8.0	22.0	59.5
Nov. 23	11 32.72	-02 34.3	3.009	2.759	+1.25	-7.8	21.8	66.0
Dec. 3	11 45.27	-03 51.9	2.843	2.718	+1.20	-7.3	21.6	72.7
Dec. 13	11 57.23	-05 05.2	2.674	2.677	+1.12	-6.7	21.4	79.6
Dec. 23	12 08.45	-06 12.7	2.503	2.636	+1.03	-6.0	21.2	86.7
Jan. 2	12 18.73	-07 12.3	2.333	2.596	+0.91	-5.0	21.0	94.1
Jan. 12	12 27.85	-08 02.0	2.166	2.556	+0.77	-3.7	20.8	101.9
Jan. 22	12 35.52	-08 39.2	2.004	2.517	+0.59	-2.2	20.5	110.0
Feb. 1	12 41.47	-09 01.3	1.850	2.479	+0.39	-0.4	20.3	118.7
Feb. 11	12 45.39	-09 05.4	1.707	2.441	+0.16	+1.7	20.0	127.9
Feb. 21	12 47.03	-08 48.7	1.579	2.404	-0.08	+3.9	19.8	137.7
Mar. 3	12 46.27	-08 09.3	1.468	2.368	-0.30	+6.2	19.6	148.2
Mar. 13	12 43.23	-07 07.1	1.377	2.334	-0.49	+8.2	19.4	159.3
Mar. 23	12 38.32	-05 44.8	1.311	2.300	-0.59	+9.6	19.2	170.9

Comet 48P/Johnson

Epoch = 2017 July 26.0 TT
T = 2018 Aug. 11.91141 TT
Peri. = 216.41978 e = 0.4273904
Node = 110.17517 2000.0 a = 3.5020990 AU
Incl. = 12.20114 n = 0.15038740
q = 2.0053355 AU P = 6.55 years

m1 = 7.8 + 5 log(Delta) + 17.5 log(r(t-60))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	14 01.32	+00 20.6	4.099	4.025	+0.61	-0.3	21.8	78.8
Jan. 17	14 07.37	+00 18.0	3.916	3.993	+0.49	+0.7	21.6	87.3
Jan. 27	14 12.30	+00 24.9	3.732	3.960	+0.36	+1.7	21.5	96.1
Feb. 6	14 15.90	+00 41.7	3.551	3.927	+0.21	+2.7	21.3	105.2
Feb. 16	14 18.01	+01 08.5	3.377	3.893	+0.05	+3.6	21.1	114.6
Feb. 26	14 18.47	+01 44.6	3.213	3.859	-0.13	+4.4	21.0	124.3
Mar. 8	14 17.15	+02 28.9	3.066	3.824	-0.31	+5.0	20.8	134.1
Mar. 18	14 14.08	+03 19.3	2.938	3.788	-0.47	+5.3	20.7	144.0
Mar. 28	14 09.35	+04 12.7	2.833	3.752	-0.61	+5.3	20.5	153.4
Apr. 7	14 03.24	+05 05.4	2.756	3.716	-0.70	+4.7	20.4	160.9
Apr. 17	13 56.21	+05 52.8	2.707	3.679	-0.74	+3.8	20.3	163.2
Apr. 27	13 48.79	+06 30.9	2.686	3.642	-0.72	+2.5	20.2	158.5
May 7	13 41.62	+06 56.1	2.694	3.604	-0.63	+1.0	20.1	150.1
May 17	13 35.29	+07 06.5	2.727	3.566	-0.50	-0.5	20.1	140.5
May 27	13 30.25	+07 01.3	2.782	3.527	-0.34	-2.0	20.1	130.7
June 6	13 26.83	+06 41.2	2.854	3.488	-0.16	-3.4	20.1	121.1
June 16	13 25.21	+06 07.4	2.939	3.448	+0.02	-4.6	20.0	111.8
June 26	13 25.41	+05 21.8	3.033	3.408	+0.20	-5.6	20.0	102.9
July 6	13 27.40	+04 26.2	3.131	3.367	+0.37	-6.4	20.0	94.5
July 16	13 31.07	+03 22.3	3.231	3.326	+0.52	-7.1	20.0	86.4
July 26	13 36.30	+02 11.8	3.329	3.285	+0.66	-7.6	20.0	78.7
Aug. 5	13 42.94	+00 56.0	3.423	3.244	+0.79	-8.0	20.0	71.3
Aug. 15	13 50.88	-00 23.8	3.510	3.202	+0.91	-8.3	19.9	64.2
Aug. 25	13 59.99	-01 46.5	3.588	3.159	+1.02	-8.5	19.9	57.3
Sept. 4	14 10.19	-03 11.1	3.657	3.117	+1.12	-8.5	19.8	50.7
Sept.14	14 21.38	-04 36.5	3.714	3.074	+1.21	-8.6	19.8	44.2
Sept.24	14 33.50	-06 02.0	3.759	3.031	+1.30	-8.5	19.7	37.9
Oct. 4	14 46.48	-07 26.7	3.792	2.988	+1.38	-8.3	19.6	31.8
Oct. 14	15 00.28	-08 49.7	3.811	2.945	+1.46	-8.0	19.5	25.8
Oct. 24	15 14.85	-10 10.1	3.816	2.901	+1.53	-7.7	19.5	20.0
Nov. 3	15 30.14	-11 27.1	3.807	2.858	+1.60	-7.3	19.3	14.5
Nov. 13	15 46.13	-12 39.8	3.785	2.814	+1.66	-6.8	19.2	9.7
Nov. 23	16 02.78	-13 47.4	3.749	2.771	+1.73	-6.2	19.1	6.8
Dec. 3	16 20.03	-14 49.2	3.700	2.728	+1.78	-5.5	19.0	8.2
Dec. 13	16 37.84	-15 44.3	3.638	2.685	+1.83	-4.8	18.8	12.5
Dec. 23	16 56.17	-16 32.1	3.563	2.642	+1.88	-4.0	18.7	17.5
Jan. 2	17 14.93	-17 12.1	3.478	2.599	+1.91	-3.2	18.5	22.8
Jan. 12	17 34.08	-17 43.9	3.382	2.557	+1.95	-2.3	18.3	28.2
Jan. 22	17 53.54	-18 07.0	3.276	2.516	+1.97	-1.4	18.1	33.6
Feb. 1	18 13.22	-18 21.5	3.163	2.475	+1.98	-0.6	17.9	38.9
Feb. 11	18 33.04	-18 27.5	3.042	2.435	+1.99	+0.2	17.7	44.3
Feb. 21	18 52.92	-18 25.2	2.915	2.396	+1.98	+1.0	17.5	49.6
Mar. 3	19 12.75	-18 15.3	2.784	2.358	+1.97	+1.7	17.3	54.9
Mar. 13	19 32.47	-17 58.6	2.649	2.321	+1.95	+2.2	17.1	60.2
Mar. 23	19 51.97	-17 36.2	2.511	2.285	+1.92	+2.7	16.8	65.5

Comet 243P/NEAT

Epoch = 2017 July 26.0 TT
T = 2018 Aug. 26.10949 TT
Peri. = 283.56978 e = 0.3590042
Node = 87.66170 2000.0 a = 3.8292532 AU
Incl. = 7.64165 n = 0.13153246
q = 2.4545352 AU P = 7.49 years

m1 = 8.4 + 5 log(Delta) + 20.0 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 12.29	-21 18.3	4.882	4.038	+1.17	-1.7	.	27.8
Jan. 17	17 23.95	-21 35.8	4.772	4.008	+1.14	-1.4	.	35.2
Jan. 27	17 35.33	-21 49.8	4.645	3.978	+1.10	-1.1	.	42.7
Feb. 6	17 46.31	-22 00.6	4.504	3.948	+1.04	-0.8	.	50.3
Feb. 16	17 56.76	-22 08.6	4.350	3.917	+0.98	-0.6	.	58.0
Feb. 26	18 06.52	-22 14.5	4.185	3.886	+0.89	-0.4	.	65.8
Mar. 8	18 15.45	-22 18.7	4.013	3.855	+0.79	-0.3	.	73.8
Mar. 18	18 23.38	-22 22.2	3.834	3.824	+0.68	-0.4	.	81.9
Mar. 28	18 30.13	-22 25.7	3.653	3.792	+0.54	-0.4	23.0	90.3
Apr. 7	18 35.51	-22 30.2	3.472	3.760	+0.38	-0.6	22.8	98.9
Apr. 17	18 39.34	-22 36.5	3.295	3.728	+0.21	-0.9	22.6	107.9
Apr. 27	18 41.44	-22 45.5	3.126	3.695	+0.02	-1.2	22.5	117.1
May 7	18 41.64	-22 57.5	2.968	3.663	-0.18	-1.5	22.3	126.8
May 17	18 39.87	-23 12.8	2.825	3.630	-0.37	-1.8	22.1	136.9
May 27	18 36.13	-23 31.1	2.702	3.597	-0.55	-2.0	21.9	147.4
June 6	18 30.59	-23 51.4	2.601	3.564	-0.70	-2.1	21.8	158.3
June 16	18 23.60	-24 12.5	2.527	3.530	-0.79	-2.0	21.6	169.4
June 26	18 15.71	-24 33.0	2.481	3.497	-0.81	-1.9	21.5	178.6
July 6	18 07.61	-24 51.6	2.463	3.463	-0.76	-1.6	21.4	167.7
July 16	18 00.06	-25 07.7	2.473	3.430	-0.63	-1.4	21.3	156.5
July 26	17 53.72	-25 21.3	2.509	3.396	-0.46	-1.1	21.3	145.6
Aug. 5	17 49.16	-25 32.7	2.568	3.362	-0.24	-1.0	21.2	135.0
Aug. 15	17 46.72	-25 42.9	2.644	3.328	-0.02	-0.9	21.2	124.8
Aug. 25	17 46.55	-25 52.1	2.735	3.294	+0.21	-0.9	21.2	115.2
Sept. 4	17 48.69	-26 00.8	2.835	3.261	+0.43	-0.8	21.2	106.0
Sept.14	17 53.02	-26 08.8	2.941	3.227	+0.64	-0.7	21.2	97.3
Sept.24	17 59.41	-26 15.6	3.050	3.193	+0.83	-0.5	21.2	89.0
Oct. 4	18 07.68	-26 20.7	3.158	3.160	+0.99	-0.2	21.2	81.0
Oct. 14	18 17.63	-26 23.2	3.262	3.127	+1.14	+0.1	21.1	73.4
Oct. 24	18 29.07	-26 22.1	3.361	3.093	+1.28	+0.5	21.1	66.0
Nov. 3	18 41.83	-26 16.7	3.452	3.061	+1.39	+1.1	21.1	58.9
Nov. 13	18 55.72	-26 06.1	3.535	3.028	+1.49	+1.7	21.0	52.0
Nov. 23	19 10.58	-25 49.6	3.607	2.996	+1.57	+2.3	21.0	45.3
Dec. 3	19 26.27	-25 26.6	3.667	2.964	+1.64	+3.0	20.9	38.8
Dec. 13	19 42.63	-24 56.6	3.716	2.932	+1.69	+3.7	20.9	32.4
Dec. 23	19 59.53	-24 19.4	3.751	2.901	+1.73	+4.5	20.8	26.2
Jan. 2	20 16.84	-23 34.7	3.774	2.871	+1.76	+5.2	20.7	20.1
Jan. 12	20 34.46	-22 42.8	3.784	2.841	+1.78	+5.9	20.6	14.3
Jan. 22	20 52.30	-21 43.7	3.780	2.812	+1.79	+6.6	20.5	8.8
Feb. 1	21 10.24	-20 37.8	3.764	2.783	+1.80	+7.2	20.4	4.6
Feb. 11	21 28.24	-19 25.8	3.736	2.756	+1.80	+7.8	20.3	5.7
Feb. 21	21 46.22	-18 08.1	3.696	2.729	+1.79	+8.3	20.2	10.4
Mar. 3	22 04.13	-16 45.6	3.644	2.702	+1.78	+8.7	20.1	15.6
Mar. 13	22 21.93	-15 19.1	3.582	2.677	+1.77	+9.0	20.0	20.9
Mar. 23	22 39.59	-13 49.4	3.510	2.653	+1.75	+9.2	19.8	26.3

Comet 125P/Spacewatch

Epoch = 2017 July 26.0 TT
T = 2018 Aug. 28.00016 TT
Peri. = 87.18162 e = 0.5133549
Node = 153.18301 2000.0 a = 3.1241593 AU
Incl. = 9.98908 n = 0.17848607
q = 1.5203568 AU P = 5.52 years

m1 = 11.6 + 5 log(Delta) + 20.0 log(r(t-20))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	05 43.16	+11 56.3	3.224	4.143	-0.70	+1.5	.	156.3
Jan. 17	05 36.15	+12 11.5	3.264	4.114	-0.57	+2.0	.	145.6
Jan. 27	05 30.47	+12 31.5	3.331	4.084	-0.40	+2.4	.	134.6
Feb. 6	05 26.46	+12 55.4	3.419	4.052	-0.22	+2.7	.	123.9
Feb. 16	05 24.30	+13 22.2	3.523	4.021	-0.03	+2.9	.	113.6
Feb. 26	05 24.00	+13 50.9	3.637	3.988	+0.15	+3.0	.	103.6
Mar. 8	05 25.54	+14 20.5	3.757	3.955	+0.32	+3.0	.	94.1
Mar. 18	05 28.77	+14 50.0	3.878	3.921	+0.48	+2.9	.	85.1
Mar. 28	05 33.56	+15 18.6	3.997	3.886	+0.62	+2.7	.	76.4
Apr. 7	05 39.74	+15 45.3	4.109	3.850	+0.74	+2.4	.	68.2
Apr. 17	05 47.16	+16 09.5	4.211	3.813	+0.85	+2.1	.	60.2
Apr. 27	05 55.65	+16 30.6	4.302	3.776	+0.94	+1.7	.	52.6
May 7	06 05.09	+16 47.9	4.379	3.738	+1.02	+1.3	.	45.2
May 17	06 15.33	+17 00.9	4.442	3.699	+1.09	+0.8	.	38.1
May 27	06 26.26	+17 09.4	4.488	3.659	+1.15	+0.4	.	31.2
June 6	06 37.78	+17 12.9	4.517	3.618	+1.20	-0.2	.	24.5
June 16	06 49.78	+17 11.3	4.529	3.577	+1.24	-0.7	.	18.0
June 26	07 02.19	+17 04.4	4.523	3.535	+1.27	-1.2	.	11.9
July 6	07 14.91	+16 52.1	4.499	3.492	+1.30	-1.8	.	6.8
July 16	07 27.87	+16 34.4	4.457	3.448	+1.31	-2.3	.	5.8
July 26	07 41.00	+16 11.4	4.398	3.403	+1.32	-2.8	.	10.1
Aug. 5	07 54.24	+15 43.2	4.322	3.357	+1.33	-3.3	.	15.8
Aug. 15	08 07.50	+15 10.0	4.229	3.311	+1.32	-3.8	.	21.9
Aug. 25	08 20.75	+14 32.2	4.120	3.264	+1.31	-4.2	.	28.1
Sept. 4	08 33.90	+13 50.2	3.997	3.216	+1.30	-4.6	.	34.4
Sept. 14	08 46.88	+13 04.5	3.859	3.167	+1.28	-4.9	.	40.8
Sept. 24	08 59.64	+12 15.7	3.709	3.117	+1.24	-5.1	.	47.3
Oct. 4	09 12.08	+11 24.7	3.548	3.067	+1.20	-5.2	.	53.9
Oct. 14	09 24.13	+10 32.2	3.376	3.015	+1.15	-5.3	.	60.6
Oct. 24	09 35.68	+09 39.4	3.197	2.963	+1.09	-5.2	.	67.6
Nov. 3	09 46.61	+08 47.6	3.011	2.910	+1.02	-4.9	.	74.7
Nov. 13	09 56.77	+07 58.3	2.821	2.857	+0.92	-4.5	.	82.0
Nov. 23	10 06.00	+07 13.3	2.628	2.803	+0.81	-3.8	23.0	89.7
Dec. 3	10 14.07	+06 35.0	2.436	2.748	+0.67	-2.9	22.7	97.7
Dec. 13	10 20.76	+06 05.7	2.248	2.692	+0.50	-1.7	22.3	106.1
Dec. 23	10 25.77	+05 48.5	2.065	2.636	+0.30	-0.2	22.0	115.0
Jan. 2	10 28.77	+05 46.7	1.892	2.579	+0.07	+1.7	21.6	124.5
Jan. 12	10 29.47	+06 03.6	1.733	2.522	-0.19	+3.9	21.2	134.6
Jan. 22	10 27.60	+06 42.3	1.590	2.465	-0.45	+6.2	20.8	145.4
Feb. 1	10 23.09	+07 44.1	1.469	2.407	-0.69	+8.4	20.5	157.0
Feb. 11	10 16.16	+09 07.7	1.372	2.349	-0.87	+10.0	20.1	169.2
Feb. 21	10 07.43	+10 48.1	1.302	2.291	-0.94	+10.8	19.8	177.8
Mar. 3	09 58.02	+12 36.4	1.260	2.232	-0.87	+10.5	19.5	165.1
Mar. 13	09 49.28	+14 21.6	1.244	2.174	-0.67	+9.2	19.3	152.5
Mar. 23	09 42.54	+15 54.1	1.251	2.117	-0.37	+7.3	19.1	140.5

Comet 21P/Giacobini-Zinner

Epoch = 2017 July 26.0 TT
T = 2018 Sept. 10.50356 TT
Peri. = 172.74826 e = 0.7103661
Node = 195.41834 2000.0 a = 3.5033468 AU
Incl. = 32.01225 n = 0.15030706
q = 1.0146880 AU P = 6.56 years

m1 = 9.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	14 42.55	-07 03.0	5.247	4.937	+0.51	+0.9	.	66.5
Jan. 17	14 47.66	-06 54.4	5.054	4.899	+0.42	+1.6	.	75.4
Jan. 27	14 51.88	-06 38.0	4.854	4.860	+0.32	+2.5	.	84.5
Feb. 6	14 55.03	-06 13.2	4.651	4.820	+0.19	+3.4	.	93.9
Feb. 16	14 56.98	-05 39.6	4.451	4.779	+0.06	+4.3	23.0	103.5
Feb. 26	14 57.57	-04 57.0	4.257	4.738	-0.09	+5.1	22.9	113.4
Mar. 8	14 56.70	-04 05.8	4.074	4.696	-0.24	+5.9	22.7	123.5
Mar. 18	14 54.33	-03 06.7	3.908	4.652	-0.39	+6.6	22.6	133.8
Mar. 28	14 50.47	-02 01.1	3.763	4.608	-0.52	+7.0	22.4	144.1
Apr. 7	14 45.25	-00 51.3	3.643	4.563	-0.63	+7.1	22.3	153.9
Apr. 17	14 38.92	+00 19.7	3.553	4.518	-0.71	+6.9	22.2	161.8
Apr. 27	14 31.84	+01 28.4	3.493	4.471	-0.74	+6.3	22.1	164.4
May 7	14 24.46	+02 31.3	3.465	4.423	-0.72	+5.4	22.0	159.2
May 17	14 17.26	+03 25.1	3.467	4.375	-0.66	+4.2	21.9	150.3
May 27	14 10.70	+04 07.6	3.497	4.325	-0.55	+3.0	21.9	140.4
June 6	14 05.17	+04 37.4	3.550	4.275	-0.42	+1.7	21.8	130.2
June 16	14 00.95	+04 54.3	3.621	4.224	-0.27	+0.5	21.8	120.2
June 26	13 58.20	+04 58.8	3.706	4.171	-0.12	-0.7	21.7	110.4
July 6	13 57.01	+04 52.2	3.800	4.118	+0.03	-1.6	21.7	101.1
July 16	13 57.36	+04 35.9	3.898	4.064	+0.18	-2.4	21.7	92.1
July 26	13 59.20	+04 11.5	3.995	4.008	+0.32	-3.1	21.7	83.5
Aug. 5	14 02.43	+03 40.4	4.088	3.952	+0.45	-3.6	21.6	75.2
Aug. 15	14 06.96	+03 04.2	4.174	3.895	+0.57	-4.0	21.6	67.2
Aug. 25	14 12.67	+02 24.1	4.249	3.836	+0.68	-4.3	21.5	59.5
Sept. 4	14 19.48	+01 41.4	4.311	3.776	+0.78	-4.4	21.4	52.1
Sept. 14	14 27.27	+00 57.3	4.358	3.716	+0.87	-4.5	21.3	45.0
Sept. 24	14 35.99	+00 12.7	4.389	3.654	+0.95	-4.4	21.3	38.2
Oct. 4	14 45.53	-00 31.2	4.403	3.591	+1.03	-4.2	21.1	31.7
Oct. 14	14 55.84	-01 13.4	4.398	3.526	+1.10	-4.0	21.0	25.8
Oct. 24	15 06.87	-01 53.1	4.374	3.461	+1.17	-3.6	20.9	20.6
Nov. 3	15 18.54	-02 29.1	4.331	3.394	+1.23	-3.1	20.7	16.9
Nov. 13	15 30.81	-03 00.4	4.269	3.326	+1.28	-2.6	20.6	15.5
Nov. 23	15 43.64	-03 26.1	4.188	3.257	+1.33	-1.9	20.4	17.0
Dec. 3	15 56.97	-03 45.1	4.090	3.186	+1.38	-1.1	20.2	20.7
Dec. 13	16 10.76	-03 56.2	3.974	3.115	+1.42	-0.2	20.0	25.5
Dec. 23	16 24.95	-03 58.5	3.842	3.041	+1.45	+0.8	19.8	31.0
Jan. 2	16 39.49	-03 50.6	3.697	2.967	+1.48	+1.9	19.5	36.7
Jan. 12	16 54.34	-03 31.4	3.538	2.891	+1.51	+3.2	19.3	42.5
Jan. 22	17 09.44	-02 59.7	3.369	2.813	+1.53	+4.6	19.0	48.4
Feb. 1	17 24.72	-02 14.2	3.191	2.735	+1.54	+6.1	18.7	54.2
Feb. 11	17 40.14	-01 13.4	3.007	2.654	+1.55	+7.7	18.3	60.0
Feb. 21	17 55.63	+00 03.9	2.818	2.573	+1.55	+9.5	18.0	65.6
Mar. 3	18 11.15	+01 39.4	2.627	2.489	+1.55	+11.5	17.6	71.1
Mar. 13	18 26.65	+03 34.5	2.437	2.405	+1.54	+13.6	17.3	76.3
Mar. 23	18 42.08	+05 51.0	2.249	2.319	+1.53	+15.9	16.8	81.3

Comet 79P/du Toit-Hartley

Epoch = 2017 July 26.0 TT
T = 2018 Sept. 13.32336 TT
Peri. = 281.81855 e = 0.6192240
Node = 280.53375 2000.0 a = 2.9447003 AU
Incl. = 3.14681 n = 0.19504841
q = 1.1212712 AU P = 5.05 years

m1 = 16.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	01 42.68	+13 45.1	4.064	4.377	+0.15	0.0	.	102.1
Jan. 17	01 44.13	+13 44.8	4.200	4.351	+0.29	+0.8	.	92.3
Jan. 27	01 47.02	+13 52.9	4.335	4.324	+0.42	+1.6	.	82.8
Feb. 6	01 51.22	+14 08.7	4.467	4.296	+0.54	+2.2	.	73.7
Feb. 16	01 56.58	+14 31.0	4.590	4.267	+0.64	+2.8	.	65.0
Feb. 26	02 02.96	+14 58.9	4.702	4.237	+0.73	+3.3	.	56.5
Mar. 8	02 10.24	+15 31.4	4.800	4.206	+0.80	+3.6	.	48.3
Mar. 18	02 18.28	+16 07.5	4.882	4.174	+0.87	+3.9	.	40.4
Mar. 28	02 27.00	+16 46.1	4.946	4.141	+0.93	+4.0	.	32.6
Apr. 7	02 36.29	+17 26.5	4.991	4.107	+0.98	+4.1	.	25.1
Apr. 17	02 46.06	+18 07.9	5.017	4.072	+1.02	+4.2	.	17.8
Apr. 27	02 56.25	+18 49.5	5.022	4.037	+1.05	+4.1	.	10.6
May 7	03 06.77	+19 30.7	5.006	4.000	+1.08	+4.0	.	3.8
May 17	03 17.55	+20 11.0	4.970	3.962	+1.10	+3.9	.	4.2
May 27	03 28.53	+20 49.7	4.914	3.923	+1.11	+3.7	.	10.9
June 6	03 39.63	+21 26.6	4.838	3.883	+1.12	+3.5	.	17.7
June 16	03 50.78	+22 01.2	4.743	3.843	+1.11	+3.2	.	24.6
June 26	04 01.91	+22 33.2	4.630	3.801	+1.10	+2.9	.	31.5
July 6	04 12.92	+23 02.4	4.501	3.758	+1.08	+2.6	.	38.4
July 16	04 23.71	+23 28.6	4.355	3.714	+1.05	+2.3	.	45.4
July 26	04 34.18	+23 51.8	4.196	3.668	+1.00	+2.0	.	52.6
Aug. 5	04 44.19	+24 12.0	4.025	3.622	+0.94	+1.7	.	59.8
Aug. 15	04 53.59	+24 29.2	3.843	3.575	+0.86	+1.4	.	67.2
Aug. 25	05 02.22	+24 43.6	3.652	3.526	+0.76	+1.2	22.9	74.9
Sept. 4	05 09.86	+24 55.4	3.456	3.476	+0.64	+0.9	22.8	82.8
Sept. 14	05 16.28	+25 04.9	3.256	3.425	+0.49	+0.7	22.6	91.0
Sept. 24	05 21.20	+25 12.3	3.057	3.373	+0.31	+0.5	22.4	99.7
Oct. 4	05 24.32	+25 17.8	2.860	3.320	+0.10	+0.4	22.2	108.8
Oct. 14	05 25.34	+25 21.3	2.671	3.266	-0.14	+0.1	22.0	118.4
Oct. 24	05 23.92	+25 22.5	2.493	3.210	-0.41	-0.2	21.8	128.6
Nov. 3	05 19.85	+25 20.5	2.332	3.153	-0.68	-0.6	21.6	139.5
Nov. 13	05 13.07	+25 14.1	2.191	3.095	-0.93	-1.3	21.4	151.1
Nov. 23	05 03.77	+25 01.6	2.076	3.035	-1.12	-2.0	21.2	163.2
Dec. 3	04 52.53	+24 41.7	1.991	2.974	-1.22	-2.7	21.0	175.5
Dec. 13	04 40.32	+24 14.6	1.936	2.912	-1.20	-3.3	20.9	170.7
Dec. 23	04 28.32	+23 42.0	1.913	2.849	-1.06	-3.5	20.8	157.9
Jan. 2	04 17.75	+23 07.5	1.919	2.784	-0.82	-3.2	20.8	145.3
Jan. 12	04 09.55	+22 35.2	1.949	2.718	-0.52	-2.6	20.7	133.2
Jan. 22	04 04.32	+22 09.0	1.998	2.651	-0.20	-1.8	20.7	121.7
Feb. 1	04 02.30	+21 51.2	2.059	2.582	+0.12	-0.9	20.7	111.0
Feb. 11	04 03.46	+21 42.5	2.127	2.512	+0.42	0.0	20.6	101.1
Feb. 21	04 07.62	+21 42.4	2.197	2.441	+0.69	+0.7	20.6	92.0
Mar. 3	04 14.56	+21 49.7	2.265	2.368	+0.94	+1.3	20.6	83.6
Mar. 13	04 24.00	+22 02.2	2.327	2.294	+1.18	+1.6	20.5	75.7
Mar. 23	04 35.75	+22 17.9	2.381	2.219	+1.39	+1.7	20.5	68.5

Comet P/2005 R1 (NEAT)

Epoch = 2017 July 26.0 TT
T = 2018 Sept. 14.36538 TT
Peri. = 118.80067 e = 0.6254903
Node = 257.98037 2000.0 a = 5.5218679 AU
Incl. = 15.48444 n = 0.07595827
q = 2.0679931 AU P = 12.98 years

m1 = 11.2 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	17 14.39	-23 51.0	5.912	5.056	-0.28	-0.7	.	12.7/ 90	27.1
Jan. 17	17 23.63	-23 50.7	5.779	5.007	-0.29	-0.8	.	12.3/ 89	35.1
Jan. 27	17 32.55	-23 47.9	5.627	4.957	-0.30	-0.8	.	11.7/ 88	43.3
Feb. 6	17 41.04	-23 42.5	5.459	4.906	-0.32	-0.9	.	10.9/ 86	51.5
Feb. 16	17 48.96	-23 34.6	5.277	4.855	-0.34	-1.0	.	10.0/ 85	59.8
Feb. 26	17 56.18	-23 24.5	5.082	4.804	-0.35	-1.2	.	8.9/ 82	68.2
Mar. 8	18 02.55	-23 12.2	4.880	4.752	-0.37	-1.3	.	7.5/ 79	76.8
Mar. 18	18 07.91	-22 58.0	4.672	4.700	-0.39	-1.4	.	6.0/ 75	85.5
Mar. 28	18 12.11	-22 42.2	4.462	4.648	-0.42	-1.5	.	4.4/ 67	94.5
Apr. 7	18 15.00	-22 25.1	4.254	4.595	-0.44	-1.6	.	2.7/ 48	103.7
Apr. 17	18 16.45	-22 06.8	4.053	4.542	-0.46	-1.7	.	1.9/355	113.1
Apr. 27	18 16.33	-21 47.6	3.861	4.488	-0.49	-1.8	.	3.2/309	122.9
May 7	18 14.58	-21 27.4	3.684	4.434	-0.51	-1.9	.	5.1/294	133.0
May 17	18 11.22	-21 06.3	3.527	4.380	-0.53	-2.0	.	7.2/288	143.4
May 27	18 06.36	-20 44.3	3.391	4.325	-0.54	-2.1	.	8.9/285	154.1
June 6	18 00.24	-20 21.3	3.282	4.270	-0.55	-2.1	.	10.1/283	164.9
June 16	17 53.25	-19 57.7	3.202	4.215	-0.56	-2.1	.	10.7/283	175.0
June 26	17 45.85	-19 33.7	3.151	4.159	-0.55	-2.1	.	10.5/283	171.4
July 6	17 38.62	-19 10.3	3.130	4.103	-0.54	-2.1	.	9.5/283	160.6
July 16	17 32.09	-18 48.3	3.137	4.047	-0.53	-2.0	.	7.9/284	149.6
July 26	17 26.72	-18 28.6	3.169	3.990	-0.51	-2.0	.	5.7/287	138.9
Aug. 5	17 22.89	-18 12.0	3.221	3.933	-0.49	-2.0	.	3.2/294	128.4
Aug. 15	17 20.81	-17 59.0	3.290	3.876	-0.47	-2.0	.	1.0/342	118.4
Aug. 25	17 20.59	-17 49.4	3.372	3.818	-0.46	-1.9	.	2.5/ 75	108.7
Sept. 4	17 22.25	-17 42.9	3.460	3.761	-0.44	-1.9	.	5.0/ 85	99.5
Sept.14	17 25.71	-17 38.9	3.552	3.703	-0.43	-1.9	.	7.4/ 88	90.7
Sept.24	17 30.87	-17 36.3	3.643	3.645	-0.43	-1.9	.	9.7/ 89	82.2
Oct. 4	17 37.63	-17 34.1	3.731	3.586	-0.43	-1.9	.	11.7/ 89	74.0
Oct. 14	17 45.82	-17 31.2	3.811	3.528	-0.43	-2.0	.	13.6/ 88	66.1
Oct. 24	17 55.34	-17 26.5	3.883	3.469	-0.44	-2.0	.	15.3/ 88	58.5
Nov. 3	18 06.04	-17 18.9	3.944	3.411	-0.45	-2.1	.	16.9/ 86	51.2
Nov. 13	18 17.78	-17 07.2	3.991	3.352	-0.46	-2.2	.	18.3/ 85	44.1
Nov. 23	18 30.47	-16 50.6	4.026	3.293	-0.47	-2.3	.	19.5/ 84	37.2
Dec. 3	18 43.98	-16 28.0	4.045	3.235	-0.49	-2.4	.	20.7/ 82	30.5
Dec. 13	18 58.19	-15 58.8	4.050	3.176	-0.50	-2.6	23.0	21.7/ 81	24.1
Dec. 23	19 13.02	-15 22.1	4.039	3.118	-0.53	-2.8	22.9	22.7/ 79	18.0
Jan. 2	19 28.35	-14 37.5	4.012	3.060	-0.55	-3.0	22.7	23.5/ 77	12.5
Jan. 12	19 44.11	-13 44.4	3.971	3.002	-0.57	-3.2	22.5	24.3/ 76	8.4
Jan. 22	20 00.20	-12 42.5	3.916	2.945	-0.60	-3.5	22.4	25.0/ 74	8.0
Feb. 1	20 16.56	-11 31.7	3.847	2.888	-0.63	-3.8	22.2	25.7/ 72	11.4
Feb. 11	20 33.12	-10 11.7	3.766	2.831	-0.66	-4.1	22.0	26.3/ 71	16.2
Feb. 21	20 49.82	-08 42.7	3.673	2.776	-0.69	-4.4	21.8	26.8/ 69	21.4
Mar. 3	21 06.61	-07 04.6	3.570	2.721	-0.73	-4.7	21.6	27.3/ 67	26.6
Mar. 13	21 23.46	-05 17.9	3.459	2.667	-0.77	-5.1	21.4	27.8/ 66	31.9
Mar. 23	21 40.35	-03 22.6	3.340	2.614	-0.81	-5.4	21.1	28.1/ 64	37.0

Comet 59P/Kearns-Kwee

Epoch = 2017 July 26.0 TT
T = 2018 Sept. 16.84581 TT
Peri. = 127.72125 e = 0.4753169
Node = 312.84114 2000.0 a = 4.4946443 AU
Incl. = 9.34025 n = 0.10343347
q = 2.3582639 AU P = 9.53 years

m1 = 8.6 + 5 log(Delta) + 17.5 log(r(t-50))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	21 09.03	-15 12.3	5.377	4.537	+0.93	+4.9	.	28.5
Jan. 17	21 18.34	-14 23.7	5.405	4.499	+0.96	+5.2	.	20.7
Jan. 27	21 27.96	-13 31.5	5.414	4.460	+0.98	+5.5	.	13.1
Feb. 6	21 37.78	-12 36.1	5.401	4.421	+0.99	+5.8	.	5.6
Feb. 16	21 47.72	-11 37.8	5.368	4.382	+1.00	+6.1	.	2.6
Feb. 26	21 57.69	-10 37.0	5.315	4.342	+0.99	+6.3	.	9.7
Mar. 8	22 07.62	-09 34.1	5.242	4.302	+0.98	+6.5	.	17.0
Mar. 18	22 17.43	-08 29.6	5.149	4.262	+0.96	+6.6	.	24.3
Mar. 28	22 27.04	-07 23.9	5.039	4.221	+0.93	+6.6	.	31.6
Apr. 7	22 36.38	-06 17.5	4.912	4.180	+0.90	+6.6	.	38.9
Apr. 17	22 45.38	-05 11.1	4.770	4.139	+0.86	+6.6	.	46.2
Apr. 27	22 53.95	-04 05.2	4.615	4.098	+0.80	+6.5	23.0	53.5
May 7	23 01.99	-03 00.4	4.449	4.056	+0.74	+6.3	22.9	61.0
May 17	23 09.40	-01 57.4	4.273	4.014	+0.67	+6.0	22.7	68.5
May 27	23 16.09	-00 56.9	4.090	3.972	+0.58	+5.7	22.5	76.2
June 6	23 21.90	+00 00.1	3.903	3.929	+0.48	+5.3	22.4	84.0
June 16	23 26.71	+00 53.0	3.714	3.887	+0.37	+4.8	22.2	92.1
June 26	23 30.36	+01 40.6	3.527	3.844	+0.23	+4.1	22.0	100.5
July 6	23 32.69	+02 21.8	3.344	3.801	+0.09	+3.4	21.8	109.2
July 16	23 33.55	+02 55.5	3.169	3.758	-0.07	+2.5	21.6	118.2
July 26	23 32.82	+03 20.6	3.006	3.714	-0.24	+1.5	21.4	127.7
Aug. 5	23 30.42	+03 35.9	2.858	3.671	-0.40	+0.5	21.2	137.5
Aug. 15	23 26.42	+03 40.6	2.730	3.627	-0.55	-0.6	21.0	147.8
Aug. 25	23 20.96	+03 34.7	2.625	3.583	-0.66	-1.6	20.8	158.2
Sept. 4	23 14.40	+03 18.7	2.547	3.540	-0.71	-2.4	20.7	168.0
Sept. 14	23 07.26	+02 54.7	2.497	3.496	-0.71	-2.9	20.6	171.8
Sept. 24	23 00.14	+02 25.3	2.476	3.452	-0.64	-3.1	20.5	164.1
Oct. 4	22 53.72	+01 54.3	2.483	3.408	-0.52	-2.9	20.4	153.5
Oct. 14	22 48.57	+01 25.5	2.516	3.364	-0.35	-2.3	20.3	142.7
Oct. 24	22 45.11	+01 02.2	2.571	3.321	-0.15	-1.5	20.3	132.0
Nov. 3	22 43.64	+00 47.3	2.644	3.277	+0.06	-0.5	20.2	121.8
Nov. 13	22 44.24	+00 42.4	2.730	3.234	+0.26	+0.6	20.2	112.0
Nov. 23	22 46.88	+00 48.6	2.825	3.191	+0.46	+1.8	20.2	102.7
Dec. 3	22 51.46	+01 06.3	2.924	3.148	+0.63	+2.9	20.2	93.8
Dec. 13	22 57.79	+01 35.2	3.025	3.105	+0.79	+4.0	20.1	85.4
Dec. 23	23 05.70	+02 15.1	3.123	3.063	+0.93	+5.0	20.1	77.4
Jan. 2	23 15.02	+03 05.2	3.217	3.021	+1.06	+6.0	20.1	69.8
Jan. 12	23 25.57	+04 04.8	3.304	2.980	+1.16	+6.8	20.0	62.5
Jan. 22	23 37.22	+05 12.9	3.382	2.939	+1.26	+7.6	20.0	55.5
Feb. 1	23 49.84	+06 28.8	3.451	2.899	+1.35	+8.3	19.9	48.8
Feb. 11	00 03.31	+07 51.3	3.510	2.860	+1.43	+8.8	19.8	42.4
Feb. 21	00 17.58	+09 19.5	3.557	2.821	+1.50	+9.3	19.8	36.3
Mar. 3	00 32.57	+10 52.4	3.593	2.783	+1.57	+9.6	19.7	30.4
Mar. 13	00 48.24	+12 28.7	3.617	2.746	+1.63	+9.9	19.6	24.7
Mar. 23	01 04.56	+14 07.5	3.631	2.711	+1.69	+10.0	19.5	19.4

Comet 133P/(7968) Elst-Pizarro

Epoch = 2017 July 26.0 TT
T = 2018 Sept. 20.18898 TT
Peri. = 131.41606 e = 0.1587366
Node = 160.13754 2000.0 a = 3.1661465 AU
Incl. = 1.38910 n = 0.17494743
q = 2.6635632 AU P = 5.63 years

H = 15.8 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	12 12.25	-01 07.6	3.027	3.393	+0.26	-1.4	21.7	103.4
Jan. 17	12 14.86	-01 21.2	2.874	3.380	+0.08	-0.1	21.6	112.9
Jan. 27	12 15.64	-01 22.5	2.729	3.367	-0.12	+1.2	21.4	122.9
Feb. 6	12 14.47	-01 11.0	2.599	3.353	-0.31	+2.4	21.2	133.4
Feb. 16	12 11.38	-00 46.8	2.487	3.340	-0.49	+3.6	21.0	144.3
Feb. 26	12 06.51	-00 11.0	2.398	3.326	-0.63	+4.5	20.8	155.8
Mar. 8	12 00.23	+00 34.0	2.336	3.312	-0.71	+5.0	20.6	167.5
Mar. 18	11 53.11	+01 24.1	2.303	3.298	-0.73	+5.1	20.3	179.2
Mar. 28	11 45.83	+02 14.7	2.299	3.284	-0.67	+4.6	20.5	168.6
Apr. 7	11 39.11	+03 00.9	2.325	3.269	-0.55	+3.8	20.7	156.9
Apr. 17	11 33.59	+03 38.5	2.377	3.255	-0.39	+2.6	20.9	145.6
Apr. 27	11 29.72	+04 04.9	2.451	3.240	-0.20	+1.4	21.1	134.7
May 7	11 27.76	+04 18.5	2.544	3.225	0.00	0.0	21.2	124.5
May 17	11 27.79	+04 19.0	2.651	3.210	+0.20	-1.2	21.3	114.8
May 27	11 29.74	+04 06.8	2.767	3.195	+0.38	-2.4	21.5	105.8
June 6	11 33.49	+03 42.9	2.889	3.180	+0.54	-3.4	21.6	97.2
June 16	11 38.85	+03 08.4	3.013	3.164	+0.68	-4.4	21.7	89.1
June 26	11 45.64	+02 24.5	3.136	3.149	+0.80	-5.2	21.7	81.4
July 6	11 53.69	+01 32.3	3.256	3.133	+0.91	-5.9	21.8	74.0
July 16	12 02.82	+00 33.1	3.371	3.118	+1.01	-6.5	21.8	67.0
July 26	12 12.91	-00 32.4	3.479	3.102	+1.09	-7.1	21.9	60.2
Aug. 5	12 23.83	-01 42.9	3.579	3.087	+1.17	-7.5	21.9	53.6
Aug. 15	12 35.49	-02 57.6	3.668	3.071	+1.23	-7.8	21.9	47.2
Aug. 25	12 47.80	-04 15.6	3.747	3.056	+1.29	-8.0	21.8	40.9
Sept. 4	13 00.71	-05 36.0	3.814	3.040	+1.34	-8.2	21.8	34.7
Sept.14	13 14.15	-06 58.0	3.869	3.025	+1.39	-8.3	21.8	28.6
Sept.24	13 28.08	-08 20.6	3.911	3.009	+1.44	-8.2	21.7	22.6
Oct. 4	13 42.47	-09 43.1	3.939	2.994	+1.48	-8.1	21.6	16.6
Oct. 14	13 57.27	-11 04.6	3.954	2.979	+1.52	-8.0	21.5	10.6
Oct. 24	14 12.45	-12 24.2	3.954	2.964	+1.55	-7.7	21.3	4.7
Nov. 3	14 27.98	-13 41.2	3.940	2.949	+1.58	-7.4	21.2	1.7
Nov. 13	14 43.80	-14 54.7	3.913	2.934	+1.61	-6.9	21.4	7.5
Nov. 23	14 59.88	-16 04.0	3.871	2.920	+1.63	-6.4	21.5	13.5
Dec. 3	15 16.15	-17 08.3	3.815	2.905	+1.64	-5.9	21.5	19.6
Dec. 13	15 32.55	-18 07.0	3.746	2.891	+1.64	-5.3	21.6	25.7
Dec. 23	15 48.99	-18 59.5	3.665	2.877	+1.64	-4.6	21.6	31.9
Jan. 2	16 05.38	-19 45.5	3.572	2.863	+1.62	-3.9	21.6	38.1
Jan. 12	16 21.62	-20 24.5	3.468	2.850	+1.60	-3.2	21.6	44.4
Jan. 22	16 37.57	-20 56.4	3.353	2.837	+1.55	-2.5	21.5	50.9
Feb. 1	16 53.08	-21 21.4	3.231	2.824	+1.49	-1.8	21.5	57.4
Feb. 11	17 08.02	-21 39.5	3.100	2.812	+1.42	-1.2	21.4	64.0
Feb. 21	17 22.20	-21 51.2	2.964	2.800	+1.32	-0.6	21.4	70.8
Mar. 3	17 35.41	-21 57.2	2.823	2.788	+1.20	-0.1	21.3	77.8
Mar. 13	17 47.45	-21 58.3	2.680	2.777	+1.06	+0.3	21.2	85.0
Mar. 23	17 58.08	-21 55.5	2.537	2.766	+0.90	+0.6	21.1	92.5

Comet P/2011 V1 (Boattini)

Epoch = 2017 July 26.0 TT
T = 2018 Sept. 30.52387 TT
Peri. = 269.25314 e = 0.5513569
Node = 46.80031 2000.0 a = 3.8553320 AU
Incl. = 7.38177 n = 0.13020012
q = 1.7296681 AU P = 7.57 years

m1 = 12.2 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	12 41.13	+02 06.4	4.398	4.638	-0.31	+2.5	.	2.5/ 91	98.0
Jan. 17	12 42.78	+02 06.2	4.204	4.600	-0.32	+2.6	.	1.0/ 26	107.7
Jan. 27	12 43.05	+02 14.8	4.019	4.562	-0.34	+2.8	.	2.5/314	117.8
Feb. 6	12 41.85	+02 32.3	3.846	4.523	-0.36	+2.9	.	4.8/303	128.2
Feb. 16	12 39.15	+02 58.1	3.691	4.484	-0.37	+3.0	.	7.0/298	139.0
Feb. 26	12 35.01	+03 31.1	3.559	4.444	-0.38	+3.1	.	8.9/295	150.0
Mar. 8	12 29.61	+04 09.2	3.453	4.403	-0.39	+3.1	.	10.3/293	161.0
Mar. 18	12 23.25	+04 49.8	3.376	4.362	-0.39	+3.1	.	11.1/291	170.9
Mar. 28	12 16.35	+05 29.7	3.331	4.320	-0.39	+3.1	.	11.0/289	171.2
Apr. 7	12 09.41	+06 05.5	3.317	4.278	-0.38	+3.0	.	10.1/287	161.4
Apr. 17	12 02.92	+06 34.5	3.333	4.235	-0.37	+2.9	.	8.6/284	150.5
Apr. 27	11 57.32	+06 54.4	3.374	4.191	-0.36	+2.8	.	6.5/278	139.6
May 7	11 52.97	+07 03.9	3.438	4.147	-0.34	+2.7	.	4.3/268	128.9
May 17	11 50.09	+07 02.7	3.520	4.102	-0.33	+2.7	.	2.3/239	118.7
May 27	11 48.76	+06 50.9	3.613	4.057	-0.32	+2.6	.	2.2/170	108.9
June 6	11 49.02	+06 29.2	3.715	4.011	-0.31	+2.5	.	4.1/140	99.6
June 16	11 50.79	+05 58.3	3.820	3.965	-0.30	+2.5	.	6.2/129	90.7
June 26	11 53.97	+05 19.1	3.924	3.917	-0.29	+2.5	.	8.2/125	82.2
July 6	11 58.45	+04 32.6	4.025	3.869	-0.29	+2.5	.	10.0/122	74.0
July 16	12 04.09	+03 39.7	4.118	3.821	-0.29	+2.5	.	11.6/120	66.1
July 26	12 10.79	+02 40.9	4.202	3.772	-0.29	+2.5	.	13.1/119	58.5
Aug. 5	12 18.43	+01 37.2	4.274	3.722	-0.29	+2.6	.	14.4/118	51.1
Aug. 15	12 26.91	+00 29.2	4.334	3.672	-0.30	+2.7	.	15.6/117	43.9
Aug. 25	12 36.16	-00 42.5	4.378	3.621	-0.31	+2.7	.	16.7/117	36.9
Sept. 4	12 46.08	-01 57.3	4.407	3.570	-0.32	+2.8	.	17.6/116	30.1
Sept.14	12 56.63	-03 14.7	4.419	3.518	-0.33	+2.9	.	18.4/116	23.3
Sept.24	13 07.75	-04 34.0	4.415	3.465	-0.35	+3.0	.	19.2/115	16.6
Oct. 4	13 19.40	-05 54.6	4.393	3.412	-0.36	+3.1	.	19.8/114	10.1
Oct. 14	13 31.53	-07 16.1	4.353	3.359	-0.39	+3.2	.	20.4/114	3.9
Oct. 24	13 44.12	-08 37.8	4.296	3.304	-0.41	+3.3	.	20.9/113	3.8
Nov. 3	13 57.13	-09 59.2	4.222	3.250	-0.44	+3.4	.	21.3/112	9.9
Nov. 13	14 10.51	-11 19.7	4.132	3.195	-0.47	+3.5	.	21.7/112	16.3
Nov. 23	14 24.26	-12 38.7	4.026	3.139	-0.50	+3.6	.	21.9/111	22.8
Dec. 3	14 38.31	-13 55.7	3.905	3.083	-0.54	+3.7	.	22.1/110	29.2
Dec. 13	14 52.63	-15 10.1	3.771	3.026	-0.59	+3.8	.	22.2/109	35.7
Dec. 23	15 07.17	-16 21.6	3.624	2.970	-0.64	+3.9	.	22.2/108	42.2
Jan. 2	15 21.86	-17 29.6	3.467	2.912	-0.70	+3.9	23.0	22.0/108	48.7
Jan. 12	15 36.64	-18 33.9	3.300	2.855	-0.76	+4.0	22.8	21.8/107	55.2
Jan. 22	15 51.42	-19 34.3	3.125	2.797	-0.83	+4.1	22.5	21.4/106	61.7
Feb. 1	16 06.09	-20 30.6	2.946	2.740	-0.92	+4.1	22.2	20.9/105	68.3
Feb. 11	16 20.54	-21 23.2	2.762	2.682	-1.01	+4.1	21.9	20.2/105	75.0
Feb. 21	16 34.61	-22 12.1	2.576	2.624	-1.12	+4.1	21.6	19.3/104	81.7
Mar. 3	16 48.13	-22 58.1	2.391	2.566	-1.25	+4.1	21.3	18.1/105	88.6
Mar. 13	17 00.90	-23 41.9	2.208	2.508	-1.39	+4.1	20.9	16.7/105	95.6
Mar. 23	17 12.67	-24 24.7	2.029	2.451	-1.56	+4.1	20.6	14.9/107	102.8

Comet 26P/Grigg-Skjellerup

Epoch = 2017 July 26.0 TT
T = 2018 Oct. 1.81296 TT
Peri. = 2.17574 e = 0.6409175
Node = 211.53475 2000.0 a = 3.0152402 AU
Incl. = 22.44970 n = 0.18824402
q = 1.0827200 AU P = 5.24 years

H = 15.8 , G = 0.15 (r>2.3AU)
m1 = 14.0 + 5 log(Delta) + 12.5 log(r(t-10)) (r<2.3AU)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	02 37.37	+06 20.3	4.072	4.534	-0.07	+0.1	22.8	112.1
Jan. 17	02 36.67	+06 21.0	4.202	4.508	+0.08	+0.9	22.9	101.9
Jan. 27	02 37.48	+06 29.8	4.336	4.480	+0.22	+1.6	23.0	92.0
Feb. 6	02 39.73	+06 45.3	4.470	4.452	+0.35	+2.1	23.0	82.6
Feb. 16	02 43.27	+07 06.2	4.600	4.423	+0.47	+2.5	.	73.5
Feb. 26	02 47.99	+07 31.5	4.722	4.393	+0.58	+2.8	.	64.8
Mar. 8	02 53.74	+07 59.7	4.832	4.362	+0.67	+3.0	.	56.4
Mar. 18	03 00.41	+08 29.9	4.927	4.330	+0.75	+3.1	.	48.3
Mar. 28	03 07.86	+09 00.9	5.007	4.297	+0.81	+3.1	.	40.5
Apr. 7	03 16.00	+09 31.8	5.068	4.263	+0.87	+3.0	23.0	33.0
Apr. 17	03 24.72	+10 01.8	5.110	4.228	+0.92	+2.8	22.9	25.8
Apr. 27	03 33.93	+10 30.0	5.132	4.193	+0.96	+2.6	22.9	19.0
May 7	03 43.53	+10 55.8	5.133	4.156	+0.99	+2.3	22.8	13.0
May 17	03 53.46	+11 18.5	5.114	4.118	+1.02	+1.9	22.7	9.1
May 27	04 03.63	+11 37.6	5.074	4.080	+1.03	+1.5	22.7	10.0
June 6	04 13.96	+11 52.4	5.013	4.040	+1.04	+1.0	22.7	14.7
June 16	04 24.37	+12 02.4	4.933	3.999	+1.04	+0.5	22.7	20.7
June 26	04 34.80	+12 07.2	4.835	3.958	+1.03	-0.1	22.7	27.2
July 6	04 45.13	+12 06.4	4.718	3.915	+1.02	-0.7	22.7	33.9
July 16	04 55.28	+11 59.5	4.585	3.871	+0.99	-1.3	22.7	40.7
July 26	05 05.16	+11 46.2	4.436	3.826	+0.95	-2.0	22.6	47.6
Aug. 5	05 14.63	+11 26.1	4.274	3.780	+0.89	-2.7	22.6	54.7
Aug. 15	05 23.58	+10 59.0	4.100	3.733	+0.83	-3.4	22.5	62.0
Aug. 25	05 31.86	+10 24.5	3.917	3.685	+0.74	-4.2	22.4	69.4
Sept. 4	05 39.28	+09 42.5	3.726	3.636	+0.64	-5.0	22.3	77.1
Sept.14	05 45.68	+08 52.8	3.531	3.585	+0.51	-5.7	22.2	85.0
Sept.24	05 50.82	+07 55.6	3.334	3.534	+0.36	-6.5	22.0	93.1
Oct. 4	05 54.46	+06 50.9	3.138	3.481	+0.19	-7.1	21.9	101.6
Oct. 14	05 56.38	+05 39.4	2.948	3.427	-0.01	-7.7	21.7	110.5
Oct. 24	05 56.29	+04 22.1	2.767	3.372	-0.23	-8.1	21.5	119.6
Nov. 3	05 54.00	+03 00.8	2.601	3.315	-0.46	-8.3	21.3	128.9
Nov. 13	05 49.41	+01 38.2	2.452	3.258	-0.69	-8.0	21.0	138.2
Nov. 23	05 42.53	+00 18.2	2.326	3.199	-0.89	-7.3	20.8	146.8
Dec. 3	05 33.67	-00 54.3	2.227	3.138	-1.03	-6.0	20.6	153.2
Dec. 13	05 23.39	-01 54.2	2.156	3.077	-1.09	-4.3	20.5	155.0
Dec. 23	05 12.52	-02 36.8	2.116	3.014	-1.05	-2.2	20.4	151.0
Jan. 2	05 02.03	-02 59.0	2.103	2.950	-0.92	-0.1	20.5	143.2
Jan. 12	04 52.86	-03 00.2	2.115	2.884	-0.71	+1.8	20.5	133.7
Jan. 22	04 45.75	-02 42.1	2.148	2.817	-0.46	+3.4	20.6	123.8
Feb. 1	04 41.19	-02 07.9	2.196	2.749	-0.18	+4.6	20.7	114.1
Feb. 11	04 39.37	-01 21.5	2.253	2.679	+0.09	+5.5	20.7	104.7
Feb. 21	04 40.31	-00 26.7	2.315	2.608	+0.36	+6.0	20.8	95.8
Mar. 3	04 43.89	+00 33.0	2.377	2.536	+0.60	+6.2	20.8	87.6
Mar. 13	04 49.92	+01 34.6	2.435	2.462	+0.83	+6.1	20.8	79.8
Mar. 23	04 58.23	+02 35.7	2.486	2.387	+1.04	+5.9	20.8	72.6

Comet P/2001 R6 (LINEAR-Skiff)

Epoch = 2017 July 26.0 TT
T = 2018 Oct. 4.29014 TT
Peri. = 308.47385 e = 0.4756361
Node = 67.33630 2000.0 a = 4.1790709 AU
Incl. = 17.37951 n = 0.11536776
q = 2.1913539 AU P = 8.54 years

m1 = 10.4 + 5 log(Delta) + 20.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	16 55.89	-23 00.5	5.339	4.528	-0.31	+1.8	.	13.9/102	31.4
Jan. 17	17 05.78	-23 28.4	5.210	4.492	-0.33	+1.8	.	13.4/102	39.2
Jan. 27	17 15.33	-23 54.3	5.065	4.455	-0.34	+1.8	.	12.7/102	47.2
Feb. 6	17 24.42	-24 18.8	4.904	4.418	-0.37	+1.8	.	11.8/102	55.3
Feb. 16	17 32.89	-24 42.1	4.732	4.380	-0.39	+1.7	.	10.7/103	63.4
Feb. 26	17 40.59	-25 04.9	4.549	4.342	-0.41	+1.8	.	9.5/104	71.7
Mar. 8	17 47.36	-25 27.6	4.359	4.303	-0.44	+1.8	.	8.0/107	80.2
Mar. 18	17 53.02	-25 51.1	4.165	4.264	-0.47	+1.8	.	6.4/113	88.9
Mar. 28	17 57.38	-26 15.9	3.971	4.225	-0.50	+1.8	.	4.7/125	97.8
Apr. 7	18 00.25	-26 42.5	3.780	4.185	-0.53	+1.9	.	3.3/151	107.0
Apr. 17	18 01.46	-27 11.3	3.597	4.145	-0.56	+2.0	.	3.2/195	116.6
Apr. 27	18 00.85	-27 42.2	3.426	4.104	-0.60	+2.1	.	4.7/225	126.4
May 7	17 58.34	-28 14.9	3.271	4.063	-0.63	+2.3	.	6.7/240	136.6
May 17	17 53.94	-28 48.2	3.136	4.022	-0.65	+2.5	.	8.7/248	147.0
May 27	17 47.79	-29 20.7	3.025	3.980	-0.67	+2.8	.	10.3/253	157.6
June 6	17 40.24	-29 50.6	2.941	3.938	-0.68	+3.0	.	11.3/256	167.7
June 16	17 31.80	-30 16.1	2.886	3.896	-0.68	+3.3	.	11.4/259	173.0
June 26	17 23.10	-30 36.2	2.860	3.853	-0.67	+3.5	.	10.7/262	165.6
July 6	17 14.86	-30 50.5	2.864	3.810	-0.65	+3.7	.	9.2/264	155.2
July 16	17 07.76	-30 59.9	2.893	3.767	-0.63	+3.8	.	7.1/265	144.5
July 26	17 02.29	-31 05.9	2.946	3.723	-0.60	+3.9	.	4.5/264	134.0
Aug. 5	16 58.84	-31 10.1	3.017	3.680	-0.57	+3.9	.	1.7/256	123.9
Aug. 15	16 57.56	-31 14.1	3.102	3.635	-0.55	+3.8	.	1.3/112	114.1
Aug. 25	16 58.51	-31 18.9	3.197	3.591	-0.53	+3.7	.	4.0/ 99	104.8
Sept. 4	17 01.63	-31 25.2	3.297	3.546	-0.52	+3.5	.	6.6/ 97	96.0
Sept.14	17 06.79	-31 33.1	3.399	3.502	-0.51	+3.3	.	9.1/ 96	87.5
Sept.24	17 13.85	-31 42.1	3.499	3.457	-0.51	+3.1	.	11.3/ 96	79.3
Oct. 4	17 22.65	-31 51.9	3.594	3.411	-0.51	+2.9	.	13.2/ 95	71.5
Oct. 14	17 33.03	-32 01.4	3.683	3.366	-0.52	+2.7	.	15.0/ 94	64.0
Oct. 24	17 44.83	-32 09.8	3.762	3.321	-0.53	+2.5	.	16.6/ 93	56.7
Nov. 3	17 57.92	-32 16.2	3.830	3.275	-0.55	+2.3	.	18.0/ 92	49.6
Nov. 13	18 12.15	-32 19.6	3.885	3.230	-0.57	+2.0	.	19.3/ 91	42.8
Nov. 23	18 27.40	-32 19.2	3.927	3.184	-0.59	+1.7	.	20.5/ 90	36.2
Dec. 3	18 43.53	-32 14.1	3.955	3.139	-0.61	+1.4	.	21.5/ 88	29.9
Dec. 13	19 00.43	-32 03.6	3.969	3.094	-0.63	+1.0	.	22.4/ 87	23.8
Dec. 23	19 17.98	-31 47.3	3.967	3.048	-0.65	+0.7	.	23.2/ 86	18.2
Jan. 2	19 36.05	-31 24.7	3.951	3.003	-0.68	+0.3	22.9	23.9/ 84	13.4
Jan. 12	19 54.55	-30 55.5	3.921	2.959	-0.70	-0.1	22.8	24.6/ 83	10.4
Jan. 22	20 13.39	-30 19.7	3.876	2.914	-0.73	-0.6	22.6	25.1/ 82	10.6
Feb. 1	20 32.44	-29 37.5	3.818	2.870	-0.75	-1.1	22.5	25.6/ 80	13.6
Feb. 11	20 51.65	-28 48.9	3.748	2.826	-0.78	-1.6	22.3	26.0/ 79	18.0
Feb. 21	21 10.94	-27 54.6	3.667	2.783	-0.80	-2.1	22.1	26.4/ 78	23.0
Mar. 3	21 30.23	-26 54.9	3.575	2.741	-0.82	-2.7	21.9	26.7/ 77	28.1
Mar. 13	21 49.48	-25 50.7	3.474	2.699	-0.85	-3.2	21.7	26.9/ 76	33.3
Mar. 23	22 08.65	-24 42.7	3.365	2.658	-0.87	-3.9	21.5	27.0/ 76	38.5

Comet P/2005 J1 (McNaught)

Epoch = 2017 July 26.0 TT
T = 2018 Oct. 12.60000 TT
Peri. = 338.92568 e = 0.5701712
Node = 268.79593 2000.0 a = 3.5682649 AU
Incl. = 31.76586 n = 0.14622393
q = 1.5337430 AU P = 6.74 years

m1 = 15.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	06 25.96	+15 46.6	3.678	4.642	-0.30	+3.1	.	11.5/261	167.2
Jan. 17	06 18.11	+15 28.0	3.690	4.608	-0.29	+3.1	.	10.2/261	156.3
Jan. 27	06 11.14	+15 11.8	3.733	4.573	-0.28	+3.0	.	8.3/261	144.9
Feb. 6	06 05.45	+14 58.4	3.801	4.537	-0.27	+3.0	.	6.1/260	133.6
Feb. 16	06 01.31	+14 47.7	3.891	4.501	-0.26	+2.9	.	3.6/257	122.6
Feb. 26	05 58.87	+14 39.4	3.996	4.464	-0.25	+2.8	.	1.2/238	112.1
Mar. 8	05 58.15	+14 33.0	4.112	4.427	-0.24	+2.7	.	1.5/111	102.0
Mar. 18	05 59.09	+14 27.8	4.233	4.388	-0.23	+2.7	.	3.6/ 97	92.4
Mar. 28	06 01.57	+14 23.0	4.353	4.349	-0.22	+2.6	.	5.7/ 95	83.2
Apr. 7	06 05.47	+14 17.8	4.469	4.310	-0.22	+2.6	.	7.5/ 95	74.4
Apr. 17	06 10.61	+14 11.4	4.578	4.269	-0.22	+2.5	.	9.1/ 95	66.0
Apr. 27	06 16.84	+14 03.0	4.676	4.228	-0.22	+2.5	.	10.5/ 96	57.9
May 7	06 24.03	+13 52.0	4.760	4.187	-0.22	+2.5	.	11.7/ 97	50.2
May 17	06 32.04	+13 37.6	4.830	4.144	-0.22	+2.5	.	12.8/ 98	42.7
May 27	06 40.73	+13 19.3	4.882	4.101	-0.22	+2.5	.	13.7/ 99	35.6
June 6	06 49.99	+12 56.5	4.917	4.057	-0.23	+2.5	.	14.5/101	28.7
June 16	06 59.71	+12 29.0	4.933	4.012	-0.24	+2.6	.	15.2/102	22.3
June 26	07 09.81	+11 56.2	4.930	3.967	-0.24	+2.6	.	15.7/104	16.6
July 6	07 20.19	+11 17.8	4.908	3.920	-0.25	+2.7	.	16.2/106	12.4
July 16	07 30.76	+10 33.7	4.866	3.874	-0.26	+2.8	.	16.6/107	11.1
July 26	07 41.44	+09 43.4	4.805	3.826	-0.28	+2.9	.	16.8/109	13.7
Aug. 5	07 52.16	+08 46.9	4.726	3.777	-0.29	+3.1	.	17.0/111	18.5
Aug. 15	08 02.83	+07 43.9	4.629	3.728	-0.30	+3.2	.	17.2/114	24.2
Aug. 25	08 13.38	+06 34.4	4.515	3.678	-0.32	+3.4	.	17.2/116	30.4
Sept. 4	08 23.72	+05 18.2	4.385	3.628	-0.34	+3.6	.	17.2/119	36.8
Sept.14	08 33.77	+03 55.2	4.241	3.576	-0.36	+3.8	.	17.0/122	43.3
Sept.24	08 43.43	+02 25.3	4.084	3.524	-0.39	+4.0	.	16.8/125	50.0
Oct. 4	08 52.57	+00 48.5	3.915	3.471	-0.42	+4.3	.	16.5/129	56.9
Oct. 14	09 01.09	-00 55.2	3.737	3.417	-0.45	+4.6	.	16.0/134	63.9
Oct. 24	09 08.83	-02 45.7	3.552	3.363	-0.48	+5.0	.	15.5/139	71.0
Nov. 3	09 15.61	-04 42.7	3.362	3.308	-0.52	+5.4	.	14.9/146	78.4
Nov. 13	09 21.24	-06 46.0	3.170	3.252	-0.57	+5.8	.	14.3/154	85.8
Nov. 23	09 25.48	-08 54.7	2.979	3.195	-0.62	+6.3	.	13.8/164	93.5
Dec. 3	09 28.06	-11 07.7	2.792	3.138	-0.68	+6.9	.	13.6/176	101.3
Dec. 13	09 28.71	-13 23.0	2.613	3.080	-0.74	+7.6	.	13.6/190	109.2
Dec. 23	09 27.13	-15 37.5	2.445	3.021	-0.80	+8.4	.	14.2/204	117.0
Jan. 2	09 23.09	-17 46.8	2.291	2.962	-0.86	+9.3	.	15.1/218	124.5
Jan. 12	09 16.51	-19 45.2	2.156	2.902	-0.92	+10.3	.	16.1/231	131.4
Jan. 22	09 07.51	-21 25.5	2.042	2.841	-0.95	+11.3	.	16.9/243	136.9
Feb. 1	08 56.59	-22 40.6	1.951	2.780	-0.97	+12.4	.	17.1/254	140.1
Feb. 11	08 44.59	-23 24.8	1.885	2.718	-0.95	+13.4	22.9	16.5/266	140.3
Feb. 21	08 32.66	-23 35.7	1.843	2.656	-0.91	+14.2	22.7	14.8/277	137.3
Mar. 3	08 22.02	-23 15.5	1.823	2.593	-0.85	+14.6	22.5	12.4/291	132.1
Mar. 13	08 13.70	-22 30.4	1.821	2.531	-0.78	+14.7	22.3	9.6/310	125.5
Mar. 23	08 08.39	-21 28.6	1.834	2.468	-0.72	+14.5	22.2	7.5/338	118.3

Comet P/2010 A1 (Hill)

Epoch = 2017 July 26.0 TT
T = 2018 Oct. 14.33615 TT
Peri. = 13.33104 e = 0.5539708
Node = 47.31686 2000.0 a = 4.3874565 AU
Incl. = 10.30849 n = 0.10724692
q = 1.9569337 AU P = 9.19 years

m1 = 12.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	19 22.81	-29 39.9	5.800	4.827	-0.28	-0.3	.	14.1/ 83	7.6
Jan. 17	19 33.53	-29 21.7	5.753	4.787	-0.29	-0.4	.	14.2/ 83	9.9
Jan. 27	19 44.28	-29 02.5	5.684	4.745	-0.30	-0.5	.	14.2/ 83	16.1
Feb. 6	19 54.96	-28 42.7	5.593	4.703	-0.31	-0.6	.	14.0/ 82	23.2
Feb. 16	20 05.47	-28 22.7	5.483	4.661	-0.32	-0.7	.	13.7/ 82	30.7
Feb. 26	20 15.71	-28 03.1	5.355	4.618	-0.33	-0.8	.	13.2/ 82	38.2
Mar. 8	20 25.58	-27 44.4	5.210	4.575	-0.35	-1.0	.	12.6/ 83	45.9
Mar. 18	20 34.98	-27 27.3	5.050	4.531	-0.36	-1.1	.	11.8/ 83	53.7
Mar. 28	20 43.80	-27 12.8	4.877	4.487	-0.38	-1.3	.	10.9/ 85	61.5
Apr. 7	20 51.93	-27 01.7	4.694	4.442	-0.40	-1.4	.	9.8/ 86	69.5
Apr. 17	20 59.24	-26 54.9	4.503	4.397	-0.42	-1.6	.	8.5/ 89	77.5
Apr. 27	21 05.60	-26 53.4	4.308	4.352	-0.44	-1.7	.	7.0/ 94	85.8
May 7	21 10.85	-26 58.1	4.111	4.305	-0.47	-1.9	.	5.5/103	94.3
May 17	21 14.85	-27 09.8	3.917	4.259	-0.50	-2.0	.	3.9/120	103.0
May 27	21 17.42	-27 29.1	3.728	4.212	-0.53	-2.1	.	3.0/154	111.9
June 6	21 18.40	-27 56.3	3.548	4.164	-0.56	-2.2	.	3.6/196	121.1
June 16	21 17.67	-28 30.8	3.382	4.116	-0.60	-2.3	.	5.3/219	130.6
June 26	21 15.13	-29 11.5	3.233	4.068	-0.63	-2.3	.	7.2/231	140.3
July 6	21 10.80	-29 56.1	3.106	4.019	-0.66	-2.3	.	9.0/239	150.0
July 16	21 04.83	-30 41.7	3.004	3.970	-0.68	-2.2	.	10.3/245	159.1
July 26	20 57.53	-31 24.5	2.928	3.920	-0.69	-2.0	.	11.0/250	165.5
Aug. 5	20 49.43	-32 00.6	2.882	3.870	-0.70	-1.8	.	10.8/255	164.8
Aug. 15	20 41.17	-32 26.9	2.863	3.819	-0.69	-1.6	23.0	9.9/261	157.6
Aug. 25	20 33.46	-32 41.2	2.872	3.768	-0.68	-1.4	22.9	8.2/268	148.0
Sept. 4	20 26.96	-32 43.0	2.906	3.717	-0.65	-1.2	22.9	6.1/279	138.0
Sept.14	20 22.18	-32 33.1	2.960	3.665	-0.63	-1.1	22.8	4.0/300	127.9
Sept.24	20 19.47	-32 12.8	3.031	3.613	-0.60	-1.0	22.8	3.0/348	118.1
Oct. 4	20 18.99	-31 43.8	3.113	3.560	-0.58	-1.0	22.7	4.2/ 31	108.5
Oct. 14	20 20.71	-31 07.5	3.203	3.507	-0.55	-1.1	22.7	6.5/ 49	99.4
Oct. 24	20 24.53	-30 25.0	3.297	3.454	-0.54	-1.2	22.7	8.9/ 58	90.6
Nov. 3	20 30.29	-29 37.1	3.390	3.401	-0.53	-1.4	22.6	11.1/ 62	82.2
Nov. 13	20 37.78	-28 44.1	3.479	3.347	-0.52	-1.5	22.6	13.2/ 65	74.1
Nov. 23	20 46.79	-27 46.2	3.562	3.293	-0.51	-1.7	22.5	15.1/ 66	66.3
Dec. 3	20 57.12	-26 43.2	3.637	3.239	-0.51	-2.0	22.5	16.9/ 67	58.8
Dec. 13	21 08.57	-25 35.2	3.701	3.184	-0.51	-2.2	22.4	18.4/ 67	51.6
Dec. 23	21 20.99	-24 21.8	3.753	3.130	-0.52	-2.5	22.3	19.8/ 67	44.6
Jan. 2	21 34.22	-23 03.2	3.791	3.075	-0.52	-2.7	22.2	21.0/ 67	37.9
Jan. 12	21 48.13	-21 39.3	3.817	3.020	-0.53	-3.0	22.1	22.2/ 67	31.4
Jan. 22	22 02.61	-20 10.1	3.827	2.966	-0.54	-3.4	22.0	23.2/ 67	25.1
Feb. 1	22 17.56	-18 35.7	3.824	2.911	-0.55	-3.7	21.9	24.1/ 66	19.2
Feb. 11	22 32.93	-16 56.4	3.806	2.857	-0.57	-4.0	21.7	24.9/ 66	13.7
Feb. 21	22 48.64	-15 12.3	3.775	2.803	-0.59	-4.4	21.6	25.7/ 66	9.1
Mar. 3	23 04.66	-13 24.0	3.730	2.749	-0.61	-4.8	21.4	26.4/ 65	6.9
Mar. 13	23 20.96	-11 31.8	3.674	2.696	-0.63	-5.2	21.3	27.0/ 65	8.8
Mar. 23	23 37.52	-09 36.0	3.605	2.643	-0.65	-5.6	21.1	27.6/ 65	12.8

Comet P/2008 O2 (McNaught)

Epoch = 2017 July 26.0 TT
T = 2018 Oct. 20.21483 TT
Peri. = 26.98234 e = 0.1512716
Node = 325.84420 2000.0 a = 4.4951638 AU
Incl. = 9.51324 n = 0.10341554
q = 3.8151732 AU P = 9.53 years

m1 = -1.0 + 5 log(Delta) + 30.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	18 09.81	-29 59.4	5.265	4.328	-0.42	-0.6	21.7	16.4/ 89	15.9
Jan. 17	18 22.42	-29 53.2	5.205	4.315	-0.42	-0.8	21.6	16.1/ 88	22.8
Jan. 27	18 34.76	-29 44.8	5.127	4.303	-0.43	-1.0	21.6	15.6/ 87	30.1
Feb. 6	18 46.73	-29 34.5	5.032	4.291	-0.44	-1.1	21.5	15.0/ 86	37.4
Feb. 16	18 58.20	-29 22.8	4.921	4.279	-0.44	-1.3	21.4	14.3/ 86	44.9
Feb. 26	19 09.06	-29 10.1	4.796	4.266	-0.45	-1.5	21.3	13.3/ 85	52.5
Mar. 8	19 19.19	-28 57.2	4.659	4.254	-0.46	-1.7	21.2	12.2/ 85	60.2
Mar. 18	19 28.45	-28 44.8	4.512	4.242	-0.48	-1.8	21.1	10.9/ 85	68.1
Mar. 28	19 36.72	-28 33.5	4.357	4.230	-0.49	-2.0	21.0	9.4/ 85	76.1
Apr. 7	19 43.84	-28 24.2	4.197	4.218	-0.51	-2.2	20.9	7.7/ 85	84.3
Apr. 17	19 49.68	-28 17.5	4.036	4.206	-0.53	-2.4	20.7	5.8/ 87	92.8
Apr. 27	19 54.09	-28 14.1	3.876	4.194	-0.55	-2.5	20.6	3.7/ 90	101.5
May 7	19 56.92	-28 14.3	3.721	4.183	-0.57	-2.7	20.5	1.6/104	110.5
May 17	19 58.07	-28 18.2	3.575	4.171	-0.60	-2.8	20.4	1.1/228	119.8
May 27	19 57.46	-28 25.4	3.441	4.159	-0.62	-2.9	20.3	3.3/253	129.5
June 6	19 55.08	-28 35.1	3.324	4.148	-0.65	-3.0	20.1	5.4/258	139.4
June 16	19 51.06	-28 45.9	3.228	4.136	-0.67	-3.0	20.0	7.2/262	149.6
June 26	19 45.63	-28 55.9	3.156	4.125	-0.69	-3.0	20.0	8.5/265	159.8
July 6	19 39.16	-29 03.3	3.111	4.114	-0.71	-2.9	19.9	9.1/268	169.2
July 16	19 32.20	-29 06.3	3.094	4.103	-0.71	-2.8	19.8	9.1/271	172.0
July 26	19 25.29	-29 03.8	3.106	4.092	-0.71	-2.6	19.8	8.2/275	164.1
Aug. 5	19 19.05	-28 55.4	3.145	4.081	-0.70	-2.5	19.8	6.8/281	154.0
Aug. 15	19 13.98	-28 41.6	3.210	4.071	-0.68	-2.3	19.8	5.0/291	143.7
Aug. 25	19 10.43	-28 23.0	3.298	4.060	-0.65	-2.2	19.8	3.2/313	133.5
Sept. 4	19 08.65	-28 00.8	3.404	4.050	-0.63	-2.1	19.9	2.5/ 2	123.6
Sept.14	19 08.72	-27 35.8	3.524	4.040	-0.60	-2.0	19.9	3.7/ 43	114.0
Sept.24	19 10.60	-27 08.6	3.655	4.029	-0.58	-2.0	20.0	5.6/ 59	104.8
Oct. 4	19 14.21	-26 39.4	3.793	4.020	-0.55	-2.0	20.0	7.6/ 66	95.8
Oct. 14	19 19.38	-26 08.5	3.933	4.010	-0.53	-2.0	20.1	9.5/ 70	87.2
Oct. 24	19 25.97	-25 35.5	4.072	4.000	-0.51	-2.1	20.1	11.2/ 72	78.8
Nov. 3	19 33.79	-25 00.2	4.208	3.991	-0.49	-2.1	20.2	12.7/ 73	70.7
Nov. 13	19 42.65	-24 22.3	4.336	3.982	-0.47	-2.2	20.2	14.0/ 74	62.8
Nov. 23	19 52.41	-23 41.5	4.456	3.973	-0.46	-2.3	20.2	15.1/ 74	55.0
Dec. 3	20 02.89	-22 57.4	4.565	3.964	-0.45	-2.3	20.2	16.0/ 73	47.4
Dec. 13	20 13.95	-22 10.0	4.660	3.955	-0.44	-2.4	20.3	16.8/ 73	39.9
Dec. 23	20 25.47	-21 19.0	4.741	3.947	-0.43	-2.5	20.3	17.5/ 72	32.5
Jan. 2	20 37.30	-20 24.4	4.806	3.939	-0.42	-2.6	20.3	18.0/ 72	25.2
Jan. 12	20 49.36	-19 26.5	4.854	3.931	-0.41	-2.7	20.3	18.3/ 71	18.0
Jan. 22	21 01.52	-18 25.2	4.885	3.923	-0.41	-2.8	20.3	18.5/ 70	10.9
Feb. 1	21 13.71	-17 21.1	4.898	3.916	-0.40	-2.9	20.2	18.6/ 69	4.0
Feb. 11	21 25.83	-16 14.3	4.893	3.908	-0.40	-3.0	20.2	18.6/ 69	3.4
Feb. 21	21 37.82	-15 05.2	4.870	3.901	-0.40	-3.1	20.2	18.5/ 68	10.3
Mar. 3	21 49.59	-13 54.5	4.830	3.895	-0.40	-3.2	20.1	18.2/ 67	17.3
Mar. 13	22 01.07	-12 42.6	4.773	3.888	-0.40	-3.3	20.1	17.9/ 66	24.2
Mar. 23	22 12.21	-11 30.1	4.700	3.882	-0.40	-3.4	20.0	17.4/ 66	31.2

Comet 64P/Swift-Gehrels

Epoch = 2017 July 26.0 TT
T = 2018 Nov. 3.89935 TT
Peri. = 97.13554 e = 0.6872446
Node = 300.00514 2000.0 a = 4.4558767 AU
Incl. = 8.94724 n = 0.10478626
q = 1.3935995 AU P = 9.41 years

m1 = 9.6 + 5 log(Delta) + 17.5 log(r(t-30))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	17 04.26	-28 33.9	6.204	5.370	+0.85	-1.2	.	29.4
Jan. 17	17 12.71	-28 45.6	6.071	5.325	+0.81	-1.1	.	37.6
Jan. 27	17 20.80	-28 56.4	5.918	5.280	+0.76	-1.0	.	45.9
Feb. 6	17 28.37	-29 06.5	5.748	5.234	+0.69	-1.0	.	54.3
Feb. 16	17 35.30	-29 16.0	5.564	5.188	+0.61	-0.9	.	62.8
Feb. 26	17 41.43	-29 25.2	5.368	5.141	+0.52	-0.9	.	71.5
Mar. 8	17 46.60	-29 34.1	5.164	5.093	+0.41	-0.9	.	80.4
Mar. 18	17 50.67	-29 43.1	4.956	5.045	+0.28	-0.9	.	89.4
Mar. 28	17 53.45	-29 52.1	4.747	4.996	+0.14	-0.9	.	98.6
Apr. 7	17 54.81	-30 01.2	4.542	4.946	-0.02	-0.9	.	108.1
Apr. 17	17 54.60	-30 10.1	4.345	4.896	-0.19	-0.8	.	117.9
Apr. 27	17 52.74	-30 18.2	4.161	4.845	-0.35	-0.7	.	127.9
May 7	17 49.20	-30 24.7	3.994	4.794	-0.51	-0.4	.	138.3
May 17	17 44.07	-30 28.6	3.848	4.742	-0.65	0.0	.	148.8
May 27	17 37.53	-30 28.5	3.728	4.689	-0.76	+0.5	.	159.3
June 6	17 29.94	-30 23.4	3.635	4.636	-0.82	+1.1	.	169.1
June 16	17 21.75	-30 12.7	3.573	4.582	-0.82	+1.6	.	172.3
June 26	17 13.51	-29 56.5	3.541	4.527	-0.77	+2.1	.	164.0
July 6	17 05.79	-29 35.7	3.539	4.472	-0.67	+2.4	.	153.5
July 16	16 59.09	-29 11.9	3.563	4.415	-0.53	+2.5	.	142.7
July 26	16 53.81	-28 46.8	3.611	4.359	-0.36	+2.5	.	132.2
Aug. 5	16 50.23	-28 22.3	3.678	4.301	-0.18	+2.3	.	121.9
Aug. 15	16 48.47	-27 59.7	3.759	4.243	+0.01	+2.0	.	112.0
Aug. 25	16 48.56	-27 40.1	3.849	4.184	+0.19	+1.6	.	102.4
Sept. 4	16 50.46	-27 23.8	3.944	4.124	+0.36	+1.3	.	93.1
Sept. 14	16 54.06	-27 10.9	4.039	4.063	+0.52	+1.0	.	84.2
Sept. 24	16 59.26	-27 00.9	4.132	4.002	+0.67	+0.8	.	75.6
Oct. 4	17 05.93	-26 53.2	4.217	3.940	+0.80	+0.6	.	67.3
Oct. 14	17 13.91	-26 47.1	4.292	3.877	+0.92	+0.6	.	59.2
Oct. 24	17 23.10	-26 41.5	4.356	3.814	+1.03	+0.6	.	51.3
Nov. 3	17 33.36	-26 35.7	4.404	3.749	+1.12	+0.7	.	43.6
Nov. 13	17 44.57	-26 28.6	4.437	3.684	+1.21	+0.9	.	36.1
Nov. 23	17 56.64	-26 19.4	4.453	3.618	+1.28	+1.2	23.0	28.7
Dec. 3	18 09.45	-26 07.4	4.450	3.551	+1.34	+1.6	22.9	21.5
Dec. 13	18 22.90	-25 51.6	4.428	3.484	+1.40	+2.0	22.7	14.5
Dec. 23	18 36.90	-25 31.5	4.388	3.415	+1.45	+2.5	22.6	7.6
Jan. 2	18 51.36	-25 06.5	4.329	3.346	+1.48	+3.0	22.4	2.2
Jan. 12	19 06.18	-24 36.2	4.251	3.276	+1.51	+3.6	22.2	6.8
Jan. 22	19 21.30	-24 00.0	4.156	3.206	+1.53	+4.2	22.0	13.3
Feb. 1	19 36.63	-23 17.9	4.044	3.134	+1.55	+4.8	21.8	19.8
Feb. 11	19 52.10	-22 29.4	3.916	3.062	+1.56	+5.5	21.6	26.3
Feb. 21	20 07.65	-21 34.6	3.774	2.989	+1.56	+6.1	21.3	32.6
Mar. 3	20 23.22	-20 33.3	3.620	2.916	+1.55	+6.8	21.1	38.9
Mar. 13	20 38.76	-19 25.5	3.455	2.841	+1.55	+7.4	20.8	45.1
Mar. 23	20 54.23	-18 11.2	3.280	2.766	+1.54	+8.1	20.5	51.2

Comet 38P/Stephan-Oterma

Epoch = 2017 July 26.0 TT
T = 2018 Nov. 10.91298 TT
Peri. = 359.60270 e = 0.8592136
Node = 78.00907 2000.0 a = 11.2791477 AU
Incl. = 18.35371 n = 0.02601894
q = 1.5879506 AU P = 37.88 years

m1 = 6.4 + 5 log(Delta) + 22.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	20 39.48	-31 06.5	7.377	6.470	+0.74	+2.7	.	21.3
Jan. 17	20 46.90	-30 39.7	7.348	6.404	+0.77	+2.6	.	15.2
Jan. 27	20 54.56	-30 13.3	7.295	6.336	+0.78	+2.6	.	12.3
Feb. 6	21 02.37	-29 47.6	7.218	6.269	+0.79	+2.5	.	14.6
Feb. 16	21 10.23	-29 23.0	7.118	6.201	+0.78	+2.3	.	20.3
Feb. 26	21 18.05	-29 00.0	6.996	6.132	+0.77	+2.1	.	27.3
Mar. 8	21 25.74	-28 39.3	6.852	6.064	+0.75	+1.8	.	34.8
Mar. 18	21 33.21	-28 21.3	6.689	5.994	+0.72	+1.5	.	42.6
Mar. 28	21 40.37	-28 06.7	6.508	5.925	+0.67	+1.0	.	50.6
Apr. 7	21 47.12	-27 56.4	6.313	5.855	+0.62	+0.6	.	58.6
Apr. 17	21 53.36	-27 50.8	6.106	5.784	+0.56	0.0	.	66.8
Apr. 27	21 59.00	-27 50.9	5.889	5.713	+0.49	-0.6	.	75.1
May 7	22 03.91	-27 57.4	5.666	5.642	+0.41	-1.3	.	83.5
May 17	22 07.98	-28 10.8	5.441	5.570	+0.31	-2.1	.	92.1
May 27	22 11.09	-28 31.7	5.217	5.498	+0.20	-2.9	.	100.8
June 6	22 13.10	-29 00.4	4.999	5.425	+0.08	-3.6	.	109.7
June 16	22 13.89	-29 36.7	4.790	5.352	-0.05	-4.3	.	118.7
June 26	22 13.36	-30 20.1	4.594	5.278	-0.19	-4.9	.	127.8
July 6	22 11.42	-31 09.3	4.415	5.204	-0.34	-5.3	.	136.9
July 16	22 08.06	-32 02.4	4.258	5.130	-0.47	-5.4	.	145.7
July 26	22 03.35	-32 56.8	4.125	5.055	-0.59	-5.2	.	153.5
Aug. 5	21 57.46	-33 49.0	4.020	4.979	-0.68	-4.7	.	158.8
Aug. 15	21 50.71	-34 35.7	3.943	4.903	-0.72	-3.8	.	159.3
Aug. 25	21 43.51	-35 13.6	3.894	4.827	-0.71	-2.7	.	154.6
Sept. 4	21 36.36	-35 40.2	3.874	4.750	-0.66	-1.4	.	146.8
Sept. 14	21 29.80	-35 54.1	3.878	4.672	-0.55	-0.1	.	137.8
Sept. 24	21 24.29	-35 55.0	3.905	4.594	-0.41	+1.1	.	128.2
Oct. 4	21 20.22	-35 43.7	3.950	4.516	-0.24	+2.2	.	118.6
Oct. 14	21 17.84	-35 21.5	4.008	4.437	-0.06	+3.2	.	109.2
Oct. 24	21 17.28	-34 49.8	4.075	4.357	+0.13	+4.0	.	99.9
Nov. 3	21 18.55	-34 10.2	4.146	4.277	+0.30	+4.6	.	90.8
Nov. 13	21 21.57	-33 24.1	4.217	4.197	+0.47	+5.2	.	82.1
Nov. 23	21 26.24	-32 32.3	4.284	4.116	+0.62	+5.7	.	73.6
Dec. 3	21 32.41	-31 35.7	4.343	4.034	+0.75	+6.1	.	65.5
Dec. 13	21 39.92	-30 34.7	4.392	3.952	+0.87	+6.5	23.0	57.6
Dec. 23	21 48.61	-29 29.8	4.428	3.870	+0.97	+6.9	22.9	50.0
Jan. 2	21 58.33	-28 21.3	4.450	3.787	+1.06	+7.2	22.7	42.7
Jan. 12	22 08.95	-27 09.2	4.456	3.704	+1.14	+7.5	22.4	35.8
Jan. 22	22 20.37	-25 53.8	4.446	3.620	+1.21	+7.8	22.2	29.3
Feb. 1	22 32.46	-24 35.4	4.418	3.536	+1.27	+8.1	22.0	23.4
Feb. 11	22 45.15	-23 13.9	4.373	3.451	+1.32	+8.4	21.7	18.4
Feb. 21	22 58.37	-21 49.8	4.312	3.366	+1.37	+8.7	21.4	15.0
Mar. 3	23 12.06	-20 23.1	4.234	3.281	+1.41	+8.9	21.1	14.1
Mar. 13	23 26.18	-18 54.2	4.140	3.195	+1.45	+9.1	20.8	15.8
Mar. 23	23 40.72	-17 23.4	4.032	3.110	+1.49	+9.2	20.5	19.4

Comet P/2013 R3 (Catalina-PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2018 Dec. 5.94207 TT
Peri. = 10.77884 e = 0.2745242
Node = 342.13540 2000.0 a = 3.0354407 AU
Incl. = 0.86574 n = 0.18636804
q = 2.2021388 AU P = 5.29 years

m1 = 11.6 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ °	Elong. °
Jan. 7	14 21.56	-14 39.7	3.916	3.675	-0.45	+2.3	.	11.8/110	68.7
Jan. 17	14 29.23	-15 19.5	3.756	3.661	-0.48	+2.4	.	10.1/110	76.9
Jan. 27	14 35.81	-15 53.2	3.590	3.646	-0.51	+2.4	.	8.1/110	85.4
Feb. 6	14 41.10	-16 20.3	3.422	3.630	-0.54	+2.5	.	5.8/110	94.2
Feb. 16	14 44.88	-16 40.3	3.255	3.614	-0.57	+2.6	.	3.2/113	103.4
Feb. 26	14 46.94	-16 52.6	3.094	3.597	-0.60	+2.8	.	0.5/148	112.9
Mar. 8	14 47.12	-16 56.6	2.943	3.580	-0.64	+2.9	.	2.6/281	122.9
Mar. 18	14 45.31	-16 51.7	2.805	3.562	-0.67	+3.1	.	5.6/284	133.3
Mar. 28	14 41.54	-16 37.7	2.687	3.544	-0.70	+3.3	.	8.3/286	144.1
Apr. 7	14 35.99	-16 14.9	2.591	3.526	-0.73	+3.5	.	10.5/287	155.4
Apr. 17	14 29.04	-15 44.2	2.521	3.506	-0.74	+3.7	.	11.8/288	166.9
Apr. 27	14 21.24	-15 07.8	2.481	3.487	-0.75	+3.8	.	12.2/289	178.3
May 7	14 13.28	-14 28.6	2.470	3.467	-0.74	+3.9	23.0	11.4/289	169.5
May 17	14 05.87	-13 50.3	2.488	3.446	-0.72	+3.9	23.0	9.7/290	158.0
May 27	13 59.61	-13 16.4	2.532	3.425	-0.69	+3.8	23.0	7.3/291	146.8
June 6	13 54.97	-12 50.1	2.600	3.404	-0.66	+3.7	23.0	4.4/292	136.0
June 16	13 52.20	-12 33.4	2.687	3.382	-0.63	+3.6	23.0	1.3/298	125.7
June 26	13 51.41	-12 27.2	2.788	3.360	-0.60	+3.4	23.0	1.8/105	115.9
July 6	13 52.58	-12 31.6	2.900	3.337	-0.57	+3.3	.	4.7/108	106.7
July 16	13 55.61	-12 46.1	3.017	3.314	-0.55	+3.1	.	7.3/109	97.9
July 26	14 00.34	-13 09.7	3.136	3.290	-0.53	+3.0	.	9.7/109	89.6
Aug. 5	14 06.65	-13 41.3	3.255	3.266	-0.52	+2.8	.	11.8/109	81.7
Aug. 15	14 14.35	-14 19.5	3.370	3.242	-0.51	+2.7	.	13.7/109	74.0
Aug. 25	14 23.33	-15 03.1	3.479	3.217	-0.51	+2.6	.	15.4/108	66.7
Sept. 4	14 33.47	-15 50.7	3.581	3.192	-0.50	+2.5	.	16.9/108	59.6
Sept.14	14 44.64	-16 41.2	3.673	3.166	-0.51	+2.3	.	18.1/107	52.7
Sept.24	14 56.76	-17 33.3	3.754	3.140	-0.51	+2.2	.	19.3/106	46.0
Oct. 4	15 09.76	-18 25.9	3.822	3.114	-0.52	+2.1	.	20.3/105	39.4
Oct. 14	15 23.55	-19 17.8	3.878	3.088	-0.53	+2.0	.	21.1/104	32.9
Oct. 24	15 38.09	-20 08.1	3.919	3.061	-0.54	+1.8	.	21.9/103	26.5
Nov. 3	15 53.29	-20 55.8	3.946	3.034	-0.55	+1.7	23.0	22.5/102	20.1
Nov. 13	16 09.09	-21 39.8	3.958	3.007	-0.57	+1.5	23.0	23.1/101	13.8
Nov. 23	16 25.44	-22 19.3	3.955	2.979	-0.59	+1.3	22.9	23.5/ 99	7.6
Dec. 3	16 42.26	-22 53.5	3.937	2.952	-0.61	+1.1	22.8	23.9/ 98	1.5
Dec. 13	16 59.47	-23 21.7	3.904	2.924	-0.63	+0.9	22.7	24.2/ 96	4.8
Dec. 23	17 17.00	-23 43.3	3.856	2.896	-0.65	+0.6	22.6	24.4/ 94	10.9
Jan. 2	17 34.75	-23 57.8	3.793	2.868	-0.68	+0.4	22.5	24.5/ 93	17.1
Jan. 12	17 52.64	-24 04.9	3.717	2.840	-0.70	+0.1	22.4	24.5/ 91	23.2
Jan. 22	18 10.56	-24 04.6	3.629	2.811	-0.73	-0.2	22.3	24.5/ 89	29.3
Feb. 1	18 28.40	-23 56.8	3.528	2.783	-0.76	-0.6	22.1	24.3/ 87	35.3
Feb. 11	18 46.06	-23 41.6	3.417	2.755	-0.79	-0.9	22.0	24.0/ 86	41.4
Feb. 21	19 03.45	-23 19.7	3.296	2.727	-0.82	-1.3	21.8	23.6/ 84	47.5
Mar. 3	19 20.42	-22 51.4	3.166	2.699	-0.86	-1.7	21.6	23.1/ 82	53.6
Mar. 13	19 36.90	-22 17.6	3.029	2.671	-0.89	-2.2	21.5	22.4/ 81	59.8
Mar. 23	19 52.75	-21 39.2	2.887	2.644	-0.94	-2.6	21.3	21.5/ 79	66.0

Comet 137P/Shoemaker-Levy

Epoch = 2017 July 26.0 TT
T = 2018 Dec. 13.40206 TT
Peri. = 140.97898 e = 0.5725999
Node = 233.07663 2000.0 a = 4.5189519 AU
Incl. = 4.85322 n = 0.10260003
q = 1.9314005 AU P = 9.61 years

H = 14.4 , G = 0.15

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 7	16 14.41	-20 50.0	5.852	5.153	+0.78	-1.6	22.3	41.2
Jan. 17	16 22.24	-21 05.5	5.697	5.113	+0.73	-1.3	22.3	49.5
Jan. 27	16 29.56	-21 18.2	5.526	5.073	+0.67	-1.0	22.3	58.0
Feb. 6	16 36.21	-21 28.1	5.343	5.033	+0.58	-0.7	22.2	66.6
Feb. 16	16 42.05	-21 35.0	5.149	4.992	+0.49	-0.4	22.1	75.3
Feb. 26	16 46.93	-21 39.1	4.950	4.950	+0.38	-0.1	22.1	84.3
Mar. 8	16 50.70	-21 40.4	4.748	4.908	+0.25	+0.1	21.9	93.4
Mar. 18	16 53.20	-21 38.9	4.547	4.866	+0.11	+0.4	21.8	102.8
Mar. 28	16 54.31	-21 34.7	4.352	4.823	-0.04	+0.7	21.7	112.5
Apr. 7	16 53.92	-21 27.7	4.167	4.780	-0.19	+1.0	21.6	122.5
Apr. 17	16 51.99	-21 17.8	3.997	4.736	-0.34	+1.3	21.4	132.7
Apr. 27	16 48.54	-21 05.2	3.846	4.692	-0.48	+1.5	21.2	143.3
May 7	16 43.72	-20 49.7	3.718	4.647	-0.59	+1.8	21.0	154.1
May 17	16 37.77	-20 31.7	3.617	4.602	-0.67	+2.0	20.8	165.2
May 27	16 31.05	-20 11.7	3.544	4.556	-0.70	+2.1	20.6	176.1
June 6	16 24.01	-19 50.5	3.503	4.510	-0.69	+2.1	20.6	172.0
June 16	16 17.15	-19 29.4	3.490	4.463	-0.62	+2.0	20.7	160.9
June 26	16 10.93	-19 09.8	3.507	4.416	-0.51	+1.7	20.9	149.9
July 6	16 05.78	-18 53.2	3.548	4.368	-0.38	+1.3	20.9	139.2
July 16	16 02.00	-18 40.6	3.611	4.320	-0.22	+0.8	21.0	128.7
July 26	15 59.78	-18 32.9	3.691	4.272	-0.06	+0.2	21.1	118.6
Aug. 5	15 59.20	-18 30.4	3.783	4.223	+0.11	-0.3	21.2	108.9
Aug. 15	16 00.28	-18 33.0	3.883	4.173	+0.27	-0.7	21.2	99.6
Aug. 25	16 02.97	-18 40.3	3.986	4.123	+0.42	-1.1	21.3	90.6
Sept. 4	16 07.19	-18 51.7	4.089	4.073	+0.56	-1.5	21.3	82.0
Sept. 14	16 12.82	-19 06.4	4.187	4.022	+0.69	-1.7	21.3	73.6
Sept. 24	16 19.76	-19 23.3	4.279	3.971	+0.81	-1.8	21.3	65.5
Oct. 4	16 27.90	-19 41.5	4.361	3.919	+0.92	-1.9	21.3	57.7
Oct. 14	16 37.12	-20 00.1	4.431	3.867	+1.02	-1.8	21.3	50.0
Oct. 24	16 47.33	-20 18.2	4.488	3.814	+1.11	-1.7	21.2	42.5
Nov. 3	16 58.43	-20 34.7	4.529	3.761	+1.19	-1.4	21.2	35.1
Nov. 13	17 10.31	-20 48.8	4.553	3.707	+1.26	-1.1	21.1	27.9
Nov. 23	17 22.89	-20 59.8	4.560	3.654	+1.32	-0.7	21.0	20.8
Dec. 3	17 36.08	-21 06.9	4.549	3.599	+1.37	-0.2	20.8	13.8
Dec. 13	17 49.78	-21 09.3	4.520	3.545	+1.41	+0.3	20.7	7.1
Dec. 23	18 03.92	-21 06.7	4.473	3.490	+1.45	+0.8	20.5	2.3
Jan. 2	18 18.38	-20 58.6	4.408	3.435	+1.47	+1.4	20.5	7.4
Jan. 12	18 33.09	-20 44.5	4.326	3.379	+1.49	+2.0	20.6	13.9
Jan. 22	18 47.97	-20 24.3	4.227	3.324	+1.49	+2.6	20.6	20.6
Feb. 1	19 02.91	-19 57.8	4.113	3.268	+1.49	+3.3	20.6	27.2
Feb. 11	19 17.84	-19 25.2	3.985	3.211	+1.48	+3.9	20.6	33.7
Feb. 21	19 32.67	-18 46.4	3.845	3.155	+1.46	+4.5	20.5	40.2
Mar. 3	19 47.31	-18 01.7	3.693	3.099	+1.44	+5.0	20.5	46.7
Mar. 13	20 01.69	-17 11.5	3.532	3.042	+1.40	+5.5	20.4	53.2
Mar. 23	20 15.71	-16 16.3	3.362	2.986	+1.36	+6.0	20.3	59.7

Comet C/2010 U3 (Boattini)

Epoch = 2017 July 26.0 TT
T = 2019 Feb. 26.18996 TT
Peri. = 88.06743
Node = 43.07282 2000.0
Incl. = 55.51204
q = 8.4457835 AU
e = 1.0006953

m1 = 8.0 + 5 log(Delta) + 5.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	03 49.38	+61 48.2	8.968	9.602	-0.40	-1.6	17.7	127.8
Jan. 17	03 45.43	+61 32.1	9.028	9.574	-0.25	-1.9	17.7	121.2
Jan. 27	03 42.92	+61 13.4	9.105	9.548	-0.10	-1.9	17.7	114.0
Feb. 6	03 41.93	+60 54.1	9.194	9.521	+0.05	-1.8	17.7	106.5
Feb. 16	03 42.43	+60 35.6	9.291	9.495	+0.19	-1.6	17.7	98.9
Feb. 26	03 44.36	+60 19.3	9.393	9.468	+0.33	-1.3	17.7	91.3
Mar. 8	03 47.63	+60 06.0	9.497	9.443	+0.45	-1.0	17.8	83.9
Mar. 18	03 52.12	+59 56.5	9.597	9.417	+0.56	-0.5	17.8	76.6
Mar. 28	03 57.70	+59 51.0	9.691	9.392	+0.66	-0.1	17.8	69.7
Apr. 7	04 04.26	+59 49.7	9.777	9.367	+0.74	+0.3	17.8	63.1
Apr. 17	04 11.67	+59 52.7	9.851	9.342	+0.82	+0.7	17.8	57.0
Apr. 27	04 19.85	+59 59.8	9.912	9.317	+0.88	+1.1	17.8	51.4
May 7	04 28.68	+60 10.9	9.958	9.293	+0.94	+1.5	17.8	46.6
May 17	04 38.06	+60 25.8	9.987	9.269	+0.99	+1.8	17.8	42.7
May 27	04 47.92	+60 44.2	10.000	9.245	+1.02	+2.2	17.8	39.9
June 6	04 58.16	+61 06.0	9.995	9.222	+1.05	+2.5	17.8	38.5
June 16	05 08.70	+61 31.0	9.972	9.199	+1.08	+2.8	17.8	38.5
June 26	05 19.45	+61 59.1	9.932	9.176	+1.09	+3.1	17.8	39.9
July 6	05 30.32	+62 30.2	9.876	9.154	+1.09	+3.4	17.8	42.6
July 16	05 41.22	+63 04.3	9.804	9.131	+1.08	+3.7	17.8	46.3
July 26	05 52.06	+63 41.4	9.717	9.109	+1.07	+4.0	17.7	50.8
Aug. 5	06 02.72	+64 21.6	9.617	9.088	+1.04	+4.3	17.7	55.9
Aug. 15	06 13.09	+65 04.8	9.506	9.067	+0.99	+4.6	17.7	61.5
Aug. 25	06 23.04	+65 51.3	9.386	9.046	+0.94	+5.0	17.6	67.4
Sept. 4	06 32.40	+66 40.9	9.259	9.025	+0.86	+5.3	17.6	73.5
Sept.14	06 41.01	+67 33.7	9.128	9.004	+0.76	+5.6	17.6	79.8
Sept.24	06 48.65	+68 29.4	8.995	8.984	+0.64	+5.8	17.5	86.2
Oct. 4	06 55.10	+69 27.7	8.863	8.965	+0.50	+6.0	17.5	92.6
Oct. 14	07 00.08	+70 28.1	8.736	8.945	+0.32	+6.2	17.5	98.9
Oct. 24	07 03.29	+71 29.6	8.616	8.926	+0.11	+6.1	17.4	105.0
Nov. 3	07 04.41	+72 31.0	8.507	8.908	-0.13	+6.0	17.4	110.8
Nov. 13	07 03.11	+73 30.6	8.410	8.889	-0.40	+5.6	17.4	116.0
Nov. 23	06 59.15	+74 26.3	8.329	8.871	-0.67	+5.0	17.3	120.5
Dec. 3	06 52.41	+75 15.9	8.265	8.853	-0.93	+4.1	17.3	124.0
Dec. 13	06 43.07	+75 56.8	8.219	8.836	-1.14	+3.0	17.3	126.2
Dec. 23	06 31.65	+76 26.9	8.193	8.819	-1.25	+1.8	17.3	126.9
Jan. 2	06 19.12	+76 44.8	8.187	8.802	-1.24	+0.5	17.3	126.1
Jan. 12	06 06.68	+76 50.3	8.200	8.786	-1.11	-0.6	17.3	123.9
Jan. 22	05 55.58	+76 44.1	8.230	8.770	-0.87	-1.6	17.3	120.4
Feb. 1	05 46.83	+76 27.9	8.277	8.754	-0.58	-2.4	17.3	116.0
Feb. 11	05 41.03	+76 04.2	8.337	8.739	-0.26	-2.9	17.3	111.0
Feb. 21	05 38.42	+75 35.3	8.408	8.724	+0.05	-3.2	17.3	105.5
Mar. 3	05 38.94	+75 03.3	8.488	8.710	+0.34	-3.3	17.3	99.7
Mar. 13	05 42.33	+74 30.0	8.573	8.695	+0.59	-3.3	17.4	93.8
Mar. 23	05 48.27	+73 56.6	8.661	8.682	+0.82	-3.3	17.4	87.9

Comet 29P/Schwassmann-Wachmann

Epoch = 2017 July 26.0 TT
T = 2019 Mar. 14.98547 TT
Peri. = 48.27415 e = 0.0419884
Node = 312.41125 2000.0 a = 6.0190090 AU
Incl. = 9.37362 n = 0.06674467
q = 5.7662804 AU P = 14.77 years

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	20 14.95	-21 06.0	6.821	5.875	+0.84	+3.4	.	14.6
Jan. 17	20 23.32	-20 32.4	6.849	5.872	+0.84	+3.5	.	6.5
Jan. 27	20 31.71	-19 57.3	6.854	5.870	+0.83	+3.6	.	2.0
Feb. 6	20 40.03	-19 21.0	6.836	5.867	+0.81	+3.7	.	9.9
Feb. 16	20 48.17	-18 44.0	6.797	5.865	+0.79	+3.7	.	17.9
Feb. 26	20 56.07	-18 06.6	6.736	5.863	+0.76	+3.7	.	26.0
Mar. 8	21 03.63	-17 29.3	6.655	5.860	+0.71	+3.7	.	34.1
Mar. 18	21 10.76	-16 52.5	6.556	5.858	+0.66	+3.6	.	42.3
Mar. 28	21 17.37	-16 17.0	6.439	5.856	+0.60	+3.4	.	50.5
Apr. 7	21 23.39	-15 43.1	6.308	5.853	+0.53	+3.2	.	58.8
Apr. 17	21 28.72	-15 11.5	6.165	5.851	+0.46	+2.9	.	67.3
Apr. 27	21 33.29	-14 42.8	6.013	5.849	+0.37	+2.5	.	75.8
May 7	21 37.00	-14 17.6	5.855	5.846	+0.28	+2.1	.	84.5
May 17	21 39.77	-13 56.4	5.696	5.844	+0.18	+1.7	.	93.4
May 27	21 41.55	-13 39.7	5.537	5.842	+0.07	+1.2	.	102.6
June 6	21 42.26	-13 27.8	5.385	5.840	-0.04	+0.7	.	111.9
June 16	21 41.90	-13 21.0	5.242	5.838	-0.14	+0.2	.	121.5
June 26	21 40.46	-13 19.2	5.114	5.836	-0.25	-0.3	.	131.4
July 6	21 38.00	-13 22.2	5.003	5.834	-0.34	-0.7	.	141.5
July 16	21 34.65	-13 29.4	4.916	5.832	-0.41	-1.0	.	151.8
July 26	21 30.57	-13 39.9	4.853	5.830	-0.46	-1.3	.	162.4
Aug. 5	21 26.02	-13 52.6	4.819	5.828	-0.47	-1.4	.	173.0
Aug. 15	21 21.27	-14 06.2	4.815	5.826	-0.46	-1.3	.	176.0
Aug. 25	21 16.63	-14 19.4	4.840	5.824	-0.42	-1.2	.	165.3
Sept. 4	21 12.40	-14 31.1	4.894	5.822	-0.35	-0.9	.	154.7
Sept. 14	21 08.85	-14 40.1	4.975	5.820	-0.27	-0.6	.	144.1
Sept. 24	21 06.20	-14 45.7	5.080	5.818	-0.16	-0.2	.	133.7
Oct. 4	21 04.59	-14 47.4	5.204	5.816	-0.05	+0.3	.	123.5
Oct. 14	21 04.10	-14 44.7	5.344	5.814	+0.07	+0.7	.	113.5
Oct. 24	21 04.76	-14 37.6	5.495	5.813	+0.18	+1.2	.	103.8
Nov. 3	21 06.55	-14 26.0	5.652	5.811	+0.28	+1.6	.	94.3
Nov. 13	21 09.39	-14 09.9	5.811	5.809	+0.38	+2.1	.	85.0
Nov. 23	21 13.21	-13 49.3	5.969	5.807	+0.47	+2.5	.	75.9
Dec. 3	21 17.89	-13 24.5	6.120	5.806	+0.54	+2.9	.	67.0
Dec. 13	21 23.32	-12 55.6	6.262	5.804	+0.61	+3.3	.	58.2
Dec. 23	21 29.40	-12 22.9	6.391	5.803	+0.66	+3.6	.	49.7
Jan. 2	21 36.01	-11 46.6	6.504	5.801	+0.70	+4.0	.	41.2
Jan. 12	21 43.03	-11 07.0	6.601	5.799	+0.73	+4.2	.	32.9
Jan. 22	21 50.37	-10 24.6	6.678	5.798	+0.76	+4.5	.	24.7
Feb. 1	21 57.93	-09 39.5	6.734	5.797	+0.77	+4.7	.	16.6
Feb. 11	22 05.61	-08 52.4	6.769	5.795	+0.77	+4.9	.	8.7
Feb. 21	22 13.33	-08 03.5	6.781	5.794	+0.77	+5.0	.	2.8
Mar. 3	22 21.00	-07 13.4	6.772	5.792	+0.75	+5.1	.	8.2
Mar. 13	22 28.54	-06 22.6	6.740	5.791	+0.73	+5.1	.	15.9
Mar. 23	22 35.88	-05 31.5	6.688	5.790	+0.71	+5.1	.	23.8

Comet 186P/Garradd

Epoch = 2017 July 26.0 TT
T = 2019 May 8.37293 TT
Peri. = 283.96304 e = 0.1217703
Node = 327.28199 2000.0 a = 4.9971790 AU
Incl. = 28.44638 n = 0.08823009
q = 4.3886710 AU P = 11.17 years

m1 = 8.4 + 5 log(Delta) + 10.0 log(r(t-360))

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	11 14.42	-03 39.2	4.410	4.913	-0.21	-3.5	18.8	115.4
Jan. 17	11 12.33	-04 14.0	4.264	4.903	-0.34	-2.7	18.7	125.6
Jan. 27	11 08.91	-04 41.1	4.137	4.894	-0.46	-1.9	18.7	136.1
Feb. 6	11 04.28	-04 59.9	4.031	4.884	-0.56	-1.1	18.6	146.6
Feb. 16	10 58.69	-05 10.4	3.951	4.875	-0.62	-0.3	18.5	156.8
Feb. 26	10 52.44	-05 13.1	3.901	4.866	-0.65	+0.4	18.5	165.4
Mar. 8	10 45.96	-05 09.3	3.882	4.856	-0.63	+0.9	18.5	167.7
Mar. 18	10 39.69	-05 00.6	3.893	4.847	-0.57	+1.1	18.5	161.4
Mar. 28	10 34.01	-04 49.1	3.935	4.838	-0.47	+1.2	18.5	151.8
Apr. 7	10 29.30	-04 37.3	4.003	4.828	-0.35	+1.0	18.5	141.7
Apr. 17	10 25.78	-04 27.1	4.094	4.819	-0.22	+0.7	18.6	131.5
Apr. 27	10 23.60	-04 20.5	4.205	4.810	-0.08	+0.2	18.6	121.6
May 7	10 22.82	-04 18.7	4.329	4.800	+0.06	-0.4	18.7	112.1
May 17	10 23.39	-04 22.8	4.463	4.791	+0.19	-1.1	18.7	102.9
May 27	10 25.24	-04 33.4	4.603	4.782	+0.30	-1.7	18.8	94.0
June 6	10 28.28	-04 50.7	4.744	4.773	+0.41	-2.4	18.9	85.5
June 16	10 32.37	-05 14.8	4.883	4.764	+0.50	-3.1	18.9	77.3
June 26	10 37.39	-05 45.5	5.016	4.755	+0.58	-3.7	19.0	69.4
July 6	10 43.22	-06 22.8	5.142	4.746	+0.65	-4.3	19.0	61.7
July 16	10 49.74	-07 06.2	5.257	4.737	+0.71	-4.9	19.1	54.3
July 26	10 56.86	-07 55.5	5.360	4.728	+0.76	-5.5	19.1	47.1
Aug. 5	11 04.47	-08 50.3	5.448	4.719	+0.80	-6.0	19.1	40.2
Aug. 15	11 12.48	-09 50.2	5.521	4.710	+0.83	-6.5	19.1	33.5
Aug. 25	11 20.83	-10 54.9	5.578	4.701	+0.86	-6.9	19.2	27.2
Sept. 4	11 29.43	-12 04.1	5.616	4.693	+0.88	-7.3	19.2	21.5
Sept.14	11 38.20	-13 17.2	5.637	4.684	+0.89	-7.7	19.2	17.0
Sept.24	11 47.10	-14 34.0	5.639	4.676	+0.89	-8.0	19.2	14.8
Oct. 4	11 56.03	-15 54.1	5.622	4.667	+0.89	-8.3	19.1	15.8
Oct. 14	12 04.94	-17 17.1	5.586	4.659	+0.88	-8.6	19.1	19.6
Oct. 24	12 13.74	-18 42.6	5.532	4.650	+0.86	-8.8	19.1	25.1
Nov. 3	12 22.35	-20 10.4	5.460	4.642	+0.83	-9.0	19.0	31.4
Nov. 13	12 30.68	-21 39.9	5.372	4.634	+0.79	-9.1	19.0	38.1
Nov. 23	12 38.62	-23 10.9	5.268	4.626	+0.74	-9.2	19.0	45.2
Dec. 3	12 46.06	-24 42.8	5.150	4.618	+0.68	-9.2	18.9	52.6
Dec. 13	12 52.87	-26 15.1	5.020	4.610	+0.60	-9.2	18.8	60.2
Dec. 23	12 58.89	-27 47.5	4.880	4.602	+0.51	-9.1	18.8	68.0
Jan. 2	13 03.95	-29 18.9	4.734	4.595	+0.39	-9.0	18.7	75.9
Jan. 12	13 07.90	-30 48.7	4.583	4.587	+0.26	-8.7	18.6	84.1
Jan. 22	13 10.53	-32 15.6	4.431	4.580	+0.12	-8.2	18.5	92.4
Feb. 1	13 11.69	-33 38.1	4.283	4.572	-0.05	-7.6	18.4	100.9
Feb. 11	13 11.23	-34 54.4	4.141	4.565	-0.22	-6.8	18.4	109.4
Feb. 21	13 09.07	-36 02.1	4.009	4.558	-0.38	-5.7	18.3	118.0
Mar. 3	13 05.23	-36 58.7	3.893	4.551	-0.54	-4.3	18.2	126.4
Mar. 13	12 59.87	-37 41.8	3.794	4.544	-0.66	-2.7	18.2	134.3
Mar. 23	12 53.28	-38 09.0	3.717	4.537	-0.73	-1.0	18.1	141.2

Comet C/2016 X1 (Lemmon)

Epoch = 2017 July 26.0 TT
T = 2019 May 2.09112 TT
Peri. = 224.22052
Node = 256.39180 2000.0
Incl. = 26.56564
q = 7.6139950 AU
e = 0.9831376

m1 = 1.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	04 24.40	+24 00.7	8.392	9.182	-0.17	-1.9	20.5	141.6
Jan. 17	04 22.71	+23 41.6	8.474	9.150	-0.10	-1.8	20.5	131.0
Jan. 27	04 21.72	+23 24.1	8.577	9.117	-0.02	-1.6	20.5	120.5
Feb. 6	04 21.51	+23 08.6	8.695	9.085	+0.06	-1.3	20.5	110.3
Feb. 16	04 22.09	+22 55.2	8.824	9.053	+0.14	-1.1	20.5	100.3
Feb. 26	04 23.47	+22 44.0	8.958	9.021	+0.21	-0.9	20.5	90.5
Mar. 8	04 25.62	+22 34.9	9.092	8.989	+0.29	-0.7	20.5	80.9
Mar. 18	04 28.48	+22 27.7	9.222	8.958	+0.35	-0.6	20.5	71.6
Mar. 28	04 32.00	+22 22.1	9.344	8.927	+0.41	-0.4	20.5	62.5
Apr. 7	04 36.11	+22 17.8	9.455	8.896	+0.46	-0.3	20.5	53.5
Apr. 17	04 40.74	+22 14.3	9.550	8.866	+0.51	-0.3	20.5	44.8
Apr. 27	04 45.80	+22 11.4	9.628	8.835	+0.54	-0.3	20.5	36.2
May 7	04 51.23	+22 08.7	9.686	8.805	+0.57	-0.3	20.5	27.7
May 17	04 56.94	+22 05.7	9.723	8.776	+0.59	-0.3	20.5	19.4
May 27	05 02.85	+22 02.3	9.738	8.746	+0.60	-0.4	20.5	11.1
June 6	05 08.90	+21 58.2	9.730	8.717	+0.61	-0.5	20.4	3.1
June 16	05 15.00	+21 53.1	9.699	8.688	+0.61	-0.6	20.4	5.4
June 26	05 21.09	+21 46.8	9.645	8.659	+0.60	-0.8	20.4	13.5
July 6	05 27.08	+21 39.2	9.568	8.631	+0.58	-0.9	20.3	21.6
July 16	05 32.89	+21 30.2	9.470	8.603	+0.56	-1.0	20.3	29.8
July 26	05 38.46	+21 19.7	9.352	8.575	+0.52	-1.2	20.3	38.0
Aug. 5	05 43.70	+21 07.8	9.216	8.548	+0.48	-1.3	20.2	46.4
Aug. 15	05 48.52	+20 54.3	9.064	8.521	+0.43	-1.5	20.1	54.8
Aug. 25	05 52.87	+20 39.5	8.897	8.494	+0.38	-1.6	20.1	63.5
Sept. 4	05 56.64	+20 23.3	8.721	8.468	+0.31	-1.7	20.0	72.2
Sept. 14	05 59.76	+20 06.0	8.536	8.441	+0.24	-1.8	20.0	81.2
Sept. 24	06 02.18	+19 47.6	8.349	8.416	+0.16	-1.9	19.9	90.4
Oct. 4	06 03.82	+19 28.3	8.162	8.390	+0.08	-2.0	19.8	99.8
Oct. 14	06 04.66	+19 08.3	7.980	8.365	0.00	-2.0	19.7	109.4
Oct. 24	06 04.66	+18 47.8	7.808	8.340	-0.08	-2.1	19.7	119.3
Nov. 3	06 03.84	+18 27.1	7.650	8.316	-0.16	-2.1	19.6	129.4
Nov. 13	06 02.25	+18 06.3	7.512	8.292	-0.23	-2.1	19.6	139.7
Nov. 23	05 59.98	+17 45.8	7.397	8.268	-0.28	-2.0	19.5	150.1
Dec. 3	05 57.18	+17 25.8	7.308	8.244	-0.32	-1.9	19.5	160.5
Dec. 13	05 54.01	+17 06.6	7.250	8.221	-0.33	-1.8	19.4	170.1
Dec. 23	05 50.67	+16 48.6	7.222	8.199	-0.33	-1.7	19.4	172.6
Jan. 2	05 47.40	+16 32.0	7.226	8.176	-0.30	-1.5	19.4	164.1
Jan. 12	05 44.39	+16 17.1	7.260	8.154	-0.25	-1.3	19.4	153.8
Jan. 22	05 41.85	+16 03.9	7.322	8.133	-0.19	-1.1	19.4	143.3
Feb. 1	05 39.94	+15 52.7	7.409	8.112	-0.12	-0.9	19.4	132.9
Feb. 11	05 38.78	+15 43.3	7.517	8.091	-0.03	-0.8	19.4	122.6
Feb. 21	05 38.44	+15 35.6	7.640	8.071	+0.05	-0.6	19.4	112.5
Mar. 3	05 38.96	+15 29.3	7.775	8.051	+0.14	-0.5	19.4	102.7
Mar. 13	05 40.34	+15 24.1	7.916	8.031	+0.22	-0.5	19.5	93.1
Mar. 23	05 42.54	+15 19.5	8.059	8.012	+0.30	-0.4	19.5	83.8

Comet 31P/Schwassmann-Wachmann

Epoch = 2017 July 26.0 TT
T = 2019 July 5.89075 TT
Peri. = 18.32585 e = 0.1936142
Node = 114.12486 2000.0 a = 4.2471368 AU
Incl. = 4.54601 n = 0.11260553
q = 3.4248308 AU P = 8.75 years

m1 = 6.6 + 5 log(Delta) + 17.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	23 59.24	-04 39.9	4.782	4.564	+0.59	+4.5	21.5	71.4
Jan. 17	00 05.14	-03 54.4	4.914	4.550	+0.67	+5.0	21.6	62.9
Jan. 27	00 11.87	-03 04.4	5.035	4.536	+0.74	+5.4	21.6	54.6
Feb. 6	00 19.32	-02 10.6	5.143	4.522	+0.80	+5.7	21.6	46.5
Feb. 16	00 27.37	-01 13.9	5.236	4.508	+0.86	+5.9	21.6	38.7
Feb. 26	00 35.92	-00 15.1	5.313	4.493	+0.90	+6.0	21.6	31.0
Mar. 8	00 44.89	+00 45.1	5.371	4.479	+0.93	+6.1	21.6	23.5
Mar. 18	00 54.18	+01 46.0	5.411	4.464	+0.95	+6.1	21.6	16.2
Mar. 28	01 03.73	+02 47.0	5.431	4.449	+0.97	+6.0	21.6	9.2
Apr. 7	01 13.45	+03 47.3	5.432	4.434	+0.98	+5.9	21.6	3.9
Apr. 17	01 23.28	+04 46.5	5.413	4.419	+0.99	+5.7	21.6	7.0
Apr. 27	01 33.16	+05 44.0	5.376	4.404	+0.98	+5.5	21.5	13.5
May 7	01 43.00	+06 39.3	5.320	4.388	+0.98	+5.2	21.5	20.4
May 17	01 52.76	+07 31.8	5.245	4.373	+0.96	+4.9	21.4	27.4
May 27	02 02.34	+08 21.0	5.155	4.357	+0.93	+4.6	21.3	34.5
June 6	02 11.67	+09 06.6	5.048	4.342	+0.90	+4.1	21.3	41.6
June 16	02 20.67	+09 48.1	4.927	4.326	+0.86	+3.7	21.2	48.8
June 26	02 29.22	+10 25.1	4.793	4.310	+0.80	+3.2	21.1	56.1
July 6	02 37.22	+10 57.2	4.649	4.294	+0.73	+2.7	21.0	63.6
July 16	02 44.55	+11 24.1	4.495	4.278	+0.65	+2.1	20.9	71.2
July 26	02 51.07	+11 45.4	4.335	4.262	+0.56	+1.5	20.8	79.1
Aug. 5	02 56.62	+12 00.9	4.171	4.246	+0.44	+0.9	20.7	87.3
Aug. 15	03 01.06	+12 10.2	4.006	4.230	+0.32	+0.3	20.6	95.8
Aug. 25	03 04.22	+12 13.2	3.843	4.213	+0.17	-0.3	20.5	104.6
Sept. 4	03 05.96	+12 09.8	3.687	4.197	+0.02	-1.0	20.3	113.8
Sept. 14	03 06.16	+12 00.1	3.541	4.181	-0.14	-1.6	20.2	123.5
Sept. 24	03 04.77	+11 44.4	3.409	4.164	-0.29	-2.1	20.1	133.6
Oct. 4	03 01.82	+11 23.3	3.296	4.148	-0.44	-2.5	20.0	144.0
Oct. 14	02 57.47	+10 58.0	3.207	4.131	-0.55	-2.8	19.9	154.8
Oct. 24	02 52.00	+10 30.1	3.144	4.115	-0.62	-2.8	19.8	165.6
Nov. 3	02 45.84	+10 01.7	3.111	4.099	-0.63	-2.6	19.8	174.1
Nov. 13	02 39.49	+09 35.5	3.108	4.082	-0.60	-2.2	19.8	168.5
Nov. 23	02 33.51	+09 13.7	3.135	4.066	-0.51	-1.5	19.7	157.7
Dec. 3	02 28.40	+08 58.7	3.190	4.049	-0.39	-0.7	19.7	146.5
Dec. 13	02 24.54	+08 51.9	3.270	4.033	-0.23	+0.2	19.8	135.6
Dec. 23	02 22.21	+08 54.2	3.371	4.016	-0.07	+1.1	19.8	125.0
Jan. 2	02 21.55	+09 05.5	3.487	4.000	+0.10	+2.0	19.8	114.7
Jan. 12	02 22.56	+09 25.4	3.615	3.984	+0.26	+2.8	19.9	104.9
Jan. 22	02 25.19	+09 53.1	3.749	3.967	+0.42	+3.4	19.9	95.6
Feb. 1	02 29.34	+10 27.4	3.886	3.951	+0.55	+4.0	20.0	86.6
Feb. 11	02 34.88	+11 07.1	4.020	3.935	+0.68	+4.4	20.0	78.0
Feb. 21	02 41.66	+11 50.9	4.151	3.919	+0.79	+4.7	20.1	69.7
Mar. 3	02 49.54	+12 37.8	4.273	3.903	+0.89	+4.9	20.1	61.7
Mar. 13	02 58.39	+13 26.6	4.386	3.887	+0.97	+5.0	20.1	54.0
Mar. 23	03 08.10	+14 16.2	4.487	3.871	+1.04	+5.0	20.1	46.6

Comet 246P/NEAT

Epoch = 2017 July 26.0 TT
T = 2021 Feb. 22.18840 TT
Peri. = 176.00882 e = 0.2862087
Node = 78.74548 2000.0 a = 4.0213694 AU
Incl. = 15.98347 n = 0.12222024
q = 2.8704185 AU P = 8.06 years

m1 = 6.4 + 5 log(Delta) + 12.5 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	04 15.27	+19 08.7	4.391	5.170	-0.34	+0.8	18.5	138.7
Jan. 17	04 11.90	+19 17.0	4.510	5.171	-0.20	+1.1	18.6	127.7
Jan. 27	04 09.94	+19 28.3	4.648	5.172	-0.05	+1.4	18.7	117.2
Feb. 6	04 09.42	+19 42.6	4.798	5.172	+0.09	+1.7	18.7	106.9
Feb. 16	04 10.34	+19 59.9	4.957	5.172	+0.23	+2.0	18.8	97.1
Feb. 26	04 12.59	+20 19.7	5.118	5.172	+0.35	+2.2	18.9	87.6
Mar. 8	04 16.08	+20 41.7	5.278	5.171	+0.46	+2.3	18.9	78.4
Mar. 18	04 20.68	+21 05.2	5.433	5.170	+0.56	+2.4	19.0	69.6
Mar. 28	04 26.27	+21 29.7	5.578	5.169	+0.64	+2.5	19.1	61.0
Apr. 7	04 32.72	+21 54.6	5.712	5.167	+0.72	+2.5	19.1	52.7
Apr. 17	04 39.89	+22 19.4	5.832	5.166	+0.78	+2.4	19.1	44.6
Apr. 27	04 47.69	+22 43.6	5.935	5.163	+0.83	+2.3	19.2	36.7
May 7	04 55.99	+23 07.0	6.021	5.161	+0.87	+2.2	19.2	28.9
May 17	05 04.70	+23 29.0	6.087	5.158	+0.90	+2.0	19.2	21.3
May 27	05 13.72	+23 49.4	6.133	5.155	+0.92	+1.9	19.2	13.8
June 6	05 22.96	+24 08.2	6.158	5.151	+0.94	+1.7	19.2	6.4
June 16	05 32.32	+24 25.1	6.163	5.147	+0.94	+1.5	19.2	1.6
June 26	05 41.71	+24 40.2	6.146	5.143	+0.93	+1.3	19.2	8.6
July 6	05 51.05	+24 53.6	6.109	5.139	+0.92	+1.2	19.2	16.0
July 16	06 00.24	+25 05.3	6.051	5.134	+0.90	+1.0	19.2	23.4
July 26	06 09.20	+25 15.6	5.973	5.129	+0.86	+0.9	19.2	30.9
Aug. 5	06 17.81	+25 24.8	5.878	5.124	+0.82	+0.9	19.1	38.6
Aug. 15	06 25.97	+25 33.3	5.765	5.118	+0.76	+0.8	19.1	46.3
Aug. 25	06 33.57	+25 41.7	5.637	5.112	+0.69	+0.9	19.0	54.2
Sept. 4	06 40.49	+25 50.3	5.495	5.106	+0.61	+1.0	19.0	62.3
Sept.14	06 46.60	+25 59.8	5.342	5.099	+0.52	+1.1	18.9	70.7
Sept.24	06 51.76	+26 10.9	5.182	5.092	+0.41	+1.3	18.8	79.3
Oct. 4	06 55.82	+26 24.1	5.016	5.085	+0.28	+1.6	18.7	88.2
Oct. 14	06 58.64	+26 39.8	4.850	5.077	+0.14	+1.9	18.6	97.5
Oct. 24	07 00.07	+26 58.5	4.687	5.069	-0.01	+2.2	18.6	107.1
Nov. 3	07 00.01	+27 20.2	4.532	5.061	-0.16	+2.4	18.5	117.1
Nov. 13	06 58.38	+27 44.7	4.389	5.052	-0.32	+2.6	18.4	127.5
Nov. 23	06 55.19	+28 11.1	4.265	5.044	-0.46	+2.7	18.3	138.2
Dec. 3	06 50.54	+28 38.4	4.163	5.034	-0.59	+2.7	18.3	149.2
Dec. 13	06 44.67	+29 05.1	4.088	5.025	-0.68	+2.4	18.2	160.2
Dec. 23	06 37.91	+29 29.5	4.043	5.015	-0.72	+2.1	18.2	170.4
Jan. 2	06 30.75	+29 50.3	4.030	5.005	-0.71	+1.6	18.2	172.0
Jan. 12	06 23.70	+30 06.6	4.048	4.995	-0.64	+1.2	18.2	162.4
Jan. 22	06 17.27	+30 18.2	4.098	4.984	-0.54	+0.7	18.2	151.3
Feb. 1	06 11.91	+30 25.4	4.175	4.973	-0.40	+0.4	18.2	140.2
Feb. 11	06 07.95	+30 29.1	4.276	4.962	-0.24	+0.1	18.3	129.4
Feb. 21	06 05.58	+30 30.2	4.396	4.950	-0.07	-0.1	18.3	118.9
Mar. 3	06 04.88	+30 29.7	4.529	4.938	+0.09	-0.2	18.3	108.8
Mar. 13	06 05.82	+30 28.0	4.670	4.926	+0.25	-0.2	18.4	99.1
Mar. 23	06 08.32	+30 25.8	4.816	4.913	+0.39	-0.3	18.5	89.7

Comet C/2014 F3 (Sheppard-Trujillo)

Epoch = 2017 July 26.0 TT
T = 2021 May 3.82181 TT
Peri. = 1.00738 e = 0.6467113
Node = 327.50726 2000.0 a = 16.2323077 AU
Incl. = 6.48146 n = 0.01507071
q = 5.7346909 AU P = 65.40 years

m1 = 0.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	15 36.04	-25 35.6	10.620	10.004	+0.37	-1.7	20.3	49.1
Jan. 17	15 39.71	-25 52.4	10.448	9.968	+0.32	-1.6	20.3	58.4
Jan. 27	15 42.89	-26 08.1	10.263	9.932	+0.26	-1.4	20.2	67.7
Feb. 6	15 45.50	-26 22.3	10.068	9.896	+0.20	-1.3	20.1	77.2
Feb. 16	15 47.48	-26 35.0	9.866	9.859	+0.13	-1.1	20.1	86.8
Feb. 26	15 48.76	-26 45.8	9.663	9.823	+0.05	-0.9	20.0	96.4
Mar. 8	15 49.31	-26 54.6	9.463	9.787	-0.02	-0.6	19.9	106.2
Mar. 18	15 49.11	-27 01.1	9.271	9.751	-0.09	-0.4	19.9	116.2
Mar. 28	15 48.18	-27 05.1	9.092	9.715	-0.16	-0.1	19.8	126.2
Apr. 7	15 46.55	-27 06.4	8.931	9.679	-0.22	+0.2	19.7	136.2
Apr. 17	15 44.31	-27 04.9	8.791	9.642	-0.27	+0.4	19.7	146.3
Apr. 27	15 41.57	-27 00.6	8.676	9.606	-0.31	+0.7	19.6	156.3
May 7	15 38.46	-26 53.6	8.589	9.570	-0.33	+0.9	19.6	165.8
May 17	15 35.15	-26 44.3	8.530	9.534	-0.33	+1.1	19.5	172.5
May 27	15 31.81	-26 33.0	8.502	9.498	-0.32	+1.3	19.5	168.8
June 6	15 28.63	-26 20.5	8.503	9.461	-0.29	+1.3	19.5	159.8
June 16	15 25.76	-26 07.4	8.531	9.425	-0.24	+1.3	19.5	150.1
June 26	15 23.36	-25 54.3	8.586	9.389	-0.18	+1.2	19.5	140.2
July 6	15 21.53	-25 42.2	8.662	9.353	-0.12	+1.1	19.5	130.4
July 16	15 20.37	-25 31.5	8.757	9.317	-0.04	+0.9	19.5	120.7
July 26	15 19.93	-25 22.8	8.867	9.281	+0.03	+0.6	19.5	111.1
Aug. 5	15 20.23	-25 16.6	8.987	9.244	+0.11	+0.4	19.5	101.6
Aug. 15	15 21.29	-25 12.9	9.112	9.208	+0.18	+0.1	19.5	92.3
Aug. 25	15 23.07	-25 12.0	9.238	9.172	+0.25	-0.2	19.5	83.1
Sept. 4	15 25.56	-25 13.8	9.361	9.136	+0.31	-0.4	19.5	74.1
Sept. 14	15 28.70	-25 18.2	9.477	9.100	+0.37	-0.7	19.5	65.1
Sept. 24	15 32.45	-25 24.9	9.582	9.064	+0.43	-0.9	19.5	56.3
Oct. 4	15 36.73	-25 33.8	9.673	9.027	+0.48	-1.1	19.5	47.5
Oct. 14	15 41.49	-25 44.6	9.747	8.991	+0.52	-1.2	19.5	38.8
Oct. 24	15 46.66	-25 56.8	9.801	8.955	+0.55	-1.3	19.4	30.2
Nov. 3	15 52.15	-26 10.3	9.833	8.919	+0.58	-1.4	19.4	21.7
Nov. 13	15 57.90	-26 24.6	9.842	8.883	+0.59	-1.5	19.4	13.5
Nov. 23	16 03.83	-26 39.6	9.827	8.847	+0.60	-1.5	19.4	6.8
Dec. 3	16 09.85	-26 54.8	9.787	8.811	+0.60	-1.5	19.3	7.8
Dec. 13	16 15.88	-27 10.1	9.722	8.775	+0.59	-1.5	19.3	15.2
Dec. 23	16 21.82	-27 25.4	9.632	8.739	+0.58	-1.5	19.2	23.5
Jan. 2	16 27.58	-27 40.3	9.519	8.703	+0.55	-1.4	19.2	32.2
Jan. 12	16 33.07	-27 54.7	9.385	8.667	+0.51	-1.4	19.1	41.0
Jan. 22	16 38.20	-28 08.7	9.232	8.632	+0.47	-1.3	19.1	50.0
Feb. 1	16 42.86	-28 22.0	9.062	8.596	+0.41	-1.3	19.0	59.0
Feb. 11	16 46.97	-28 34.6	8.878	8.560	+0.35	-1.2	18.9	68.1
Feb. 21	16 50.43	-28 46.4	8.685	8.524	+0.27	-1.1	18.9	77.4
Mar. 3	16 53.16	-28 57.3	8.486	8.489	+0.19	-1.0	18.8	86.8
Mar. 13	16 55.09	-29 07.3	8.286	8.453	+0.11	-0.9	18.7	96.3
Mar. 23	16 56.16	-29 16.1	8.089	8.417	+0.02	-0.7	18.6	105.9

Comet C/2016 Q2 (PANSTARRS)

Epoch = 2017 July 26.0 TT
T = 2021 May 19.06768 TT
Peri. = 84.13985
Node = 322.32139 2000.0
Incl. = 109.54280
q = 7.1451490 AU
e = 0.9902175

m1 = 3.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2017/18	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 7	21 16.96	-11 11.4	12.810	11.986	+0.21	+2.2	19.9	31.8
Jan. 17	21 19.07	-10 49.0	12.845	11.942	+0.23	+2.4	19.9	22.4
Jan. 27	21 21.35	-10 25.1	12.853	11.897	+0.24	+2.5	19.9	13.3
Feb. 6	21 23.73	-09 59.9	12.834	11.853	+0.24	+2.6	19.9	5.8
Feb. 16	21 26.12	-09 33.8	12.786	11.809	+0.23	+2.7	19.9	8.3
Feb. 26	21 28.46	-09 06.8	12.710	11.765	+0.22	+2.7	19.8	16.7
Mar. 8	21 30.66	-08 39.5	12.606	11.721	+0.20	+2.8	19.8	25.8
Mar. 18	21 32.66	-08 12.0	12.478	11.677	+0.17	+2.7	19.8	35.0
Mar. 28	21 34.39	-07 44.6	12.326	11.632	+0.14	+2.7	19.7	44.3
Apr. 7	21 35.78	-07 17.8	12.155	11.588	+0.10	+2.6	19.7	53.6
Apr. 17	21 36.75	-06 51.7	11.966	11.545	+0.05	+2.5	19.6	62.9
Apr. 27	21 37.27	-06 26.9	11.765	11.501	0.00	+2.3	19.6	72.4
May 7	21 37.28	-06 03.5	11.556	11.457	-0.05	+2.2	19.5	81.9
May 17	21 36.73	-05 41.9	11.342	11.413	-0.11	+1.9	19.4	91.5
May 27	21 35.60	-05 22.4	11.130	11.369	-0.17	+1.7	19.4	101.1
June 6	21 33.86	-05 05.3	10.924	11.326	-0.23	+1.5	19.3	110.9
June 16	21 31.54	-04 50.7	10.729	11.282	-0.29	+1.2	19.3	120.7
June 26	21 28.65	-04 39.0	10.550	11.238	-0.34	+0.9	19.2	130.6
July 6	21 25.23	-04 30.0	10.391	11.195	-0.39	+0.6	19.2	140.6
July 16	21 21.37	-04 23.8	10.257	11.152	-0.42	+0.3	19.1	150.3
July 26	21 17.17	-04 20.3	10.151	11.108	-0.44	+0.1	19.1	159.6
Aug. 5	21 12.74	-04 19.3	10.074	11.065	-0.45	-0.1	19.1	166.9
Aug. 15	21 08.22	-04 20.2	10.030	11.022	-0.45	-0.3	19.0	167.8
Aug. 25	21 03.76	-04 22.8	10.017	10.978	-0.43	-0.4	19.0	161.2
Sept. 4	20 59.50	-04 26.4	10.035	10.935	-0.39	-0.4	19.0	152.0
Sept.14	20 55.58	-04 30.5	10.081	10.892	-0.35	-0.4	19.0	142.1
Sept.24	20 52.10	-04 34.4	10.153	10.849	-0.29	-0.3	19.0	132.0
Oct. 4	20 49.17	-04 37.7	10.246	10.807	-0.23	-0.2	19.0	121.8
Oct. 14	20 46.84	-04 39.7	10.356	10.764	-0.17	0.0	19.0	111.7
Oct. 24	20 45.16	-04 40.0	10.477	10.721	-0.10	+0.2	19.0	101.6
Nov. 3	20 44.14	-04 38.1	10.604	10.679	-0.04	+0.4	19.0	91.6
Nov. 13	20 43.76	-04 33.8	10.732	10.636	+0.02	+0.7	19.0	81.8
Nov. 23	20 44.00	-04 26.8	10.856	10.594	+0.08	+1.0	19.0	72.1
Dec. 3	20 44.79	-04 16.8	10.970	10.551	+0.13	+1.3	19.0	62.5
Dec. 13	20 46.08	-04 03.8	11.070	10.509	+0.17	+1.6	19.0	53.1
Dec. 23	20 47.81	-03 47.7	11.153	10.467	+0.21	+1.9	19.0	44.0
Jan. 2	20 49.88	-03 28.5	11.214	10.425	+0.23	+2.2	19.0	35.1
Jan. 12	20 52.22	-03 06.3	11.251	10.383	+0.25	+2.5	19.0	26.8
Jan. 22	20 54.74	-02 41.2	11.263	10.341	+0.26	+2.8	19.0	19.6
Feb. 1	20 57.37	-02 13.3	11.248	10.299	+0.26	+3.0	19.0	15.0
Feb. 11	21 00.00	-01 42.8	11.205	10.258	+0.26	+3.3	19.0	15.5
Feb. 21	21 02.57	-01 10.0	11.136	10.216	+0.24	+3.5	18.9	20.6
Mar. 3	21 04.97	-00 35.1	11.040	10.175	+0.22	+3.7	18.9	27.9
Mar. 13	21 07.14	+00 01.6	10.920	10.133	+0.18	+3.8	18.8	36.1
Mar. 23	21 08.99	+00 39.7	10.777	10.092	+0.14	+3.9	18.8	44.6

Orbital elements:

```
Ccomet 95P/(2060) Chiron
Epoch 1996 Feb. 7.0 TT = JDT 2450120.5
T 1996 Feb. 14.74502 TT                                   Sato
q   8.4539293            (2000.0)            P               Q
n   0.01942785     Peri.  339.55379     -0.98660438     +0.15200975
a  13.7041744      Node   209.38438     -0.12782240     -0.94583866
e   0.3831128      Incl.    6.92994     -0.10135693     -0.28684886
P  50.73
From 1677 observations 1941 Jan. 23-2016 Dec. 18, mean residual 0″.44.

Comet C/2006 S3 (LONEOS)
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 16.32744 TT                                   Sato
q   5.1309331            (2000.0)            P               Q
z  -0.0007055      Peri.  140.12836     -0.21550444     -0.96494029
 +/-0.0000009      Node    38.37264     -0.94615210     +0.24428967
e   1.0036201      Incl.  166.03347     -0.24156579     -0.09598326
From 1147 observations 2013 June 2-2017 Jan. 27, mean residual 0″.70.

Comet 158P/Kowal-LINEAR
Epoch 2012 Sept. 30.0 TT = JDT 2456200.5
T 2012 Sept. 27.48089 TT                                  Sato
q   4.5764205            (2000.0)            P               Q
n   0.09607371     Peri.  232.84938     +0.97919867     -0.18018727
a   4.7213514      Node   137.30456     +0.20025266     +0.93228786
e   0.0306969      Incl.    7.90734     -0.03269319     +0.31364294
P  10.26
From 645 observations 1979 July 25-2016 June 6, mean residual 0″.73.

Comet C/2011 J2 (LINEAR)
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 25.29236 TT                                   Sato
q   3.4434103            (2000.0)            P               Q
z  -0.0001378      Peri.   85.29296     +0.07042369     +0.97005803
 +/-0.0000003      Node   163.94720     +0.16358659     -0.24109401
e   1.0004743      Incl.  122.79885     +0.98401216     -0.02934447
From 6351 observations 2011 Mar. 10-2017 Jan. 1, mean residual 0″.50.
   Nongravitational parameters Y1 = +1.40, Y2 = -0.3472.

Comet 117P/Helin-Roman-Alu
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Mar. 27.15687 TT                                   Sato
q   3.0563419            (2000.0)            P               Q
n   0.11888485     Peri.  222.68165     +0.19404163     +0.97241121
a   4.0962367      Node    58.89721     -0.85433885     +0.23237849
e   0.2538659      Incl.    8.69737     -0.48213378     -0.02041283
P   8.29
From 4042 observations 1993 Jan. 24-2017 Jan. 23, mean residual 0″.73.
   Nongravitational parameters A1 = +25.31, A2 = -4.9850.

Comet C/2012 K8 (Lemmon)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 19.35398 TT                                   Sato
q   6.4630030            (2000.0)            P               Q
z  -0.0002906      Peri.   75.85136     -0.03131465     -0.70868872
 +/-0.0000006      Node   312.80740     -0.70286317     +0.51697948
e   1.0018780      Incl.  106.11184     +0.71063546     +0.48009636
From 939 observations 2012 May 30-2016 June 8, mean residual 0″.55.

Comet C/2015 K1 (MASTER)
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 13.58896 TT                                   Sato
q   2.5577318            (2000.0)            P               Q
z  +0.0055836      Peri.  280.20289     +0.25384496     +0.96623010
 +/-0.0000045      Node     5.18033     -0.57689238     +0.18800044
e   0.9857186      Incl.   29.37959     -0.77637486     +0.17622494
From 578 observations 2015 May 17-2016 Jan. 30, mean residual 0″.55.
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Comet C/2013 A1 (Siding Spring)
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 25.30079 TT                                   Sato
q   1.3987231            (2000.0)            P               Q
z  -0.0002965      Peri.     2.42168     +0.49140835     -0.56132874
 +/-0.0000005      Node    300.97658     -0.81154852     -0.57261412
e   1.0004147      Incl.   129.04286     -0.31608042     +0.59751411
From 3114 observations 2012 Oct. 4-2016 Dec. 28, mean residual 0″.62.
   Nongravitational parameters A1 = +1.38, A2 = -0.3674.

Comet C/2013 U2 (Holvorcem)
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 25.86283 TT                                   Sato
q   5.1167457            (2000.0)            P               Q
z  +0.0011144      Peri.   107.37418     -0.38133704     -0.92067714
 +/-0.0000010      Node      7.00168     +0.34188267     -0.22415666
e   0.9942978      Incl.    43.09400     +0.85889365     -0.31954248
From 457 observations 2013 Oct. 23-2016 June 8, mean residual 0″.48.

Comet 269P/Jedicke
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Nov. 14.60920 TT                                   Sato
q   4.0793226            (2000.0)            P               Q
n   0.04971064     Peri.   223.36849     -0.37175770     -0.92212701
a   7.3254867      Node    248.71771     +0.88004565     -0.31333255
e   0.4431329      Incl.     6.60226     +0.29549258     -0.22694603
P  19.83
From 876 observations 1993 Oct. 12-2016 Apr. 29, mean residual 0″.57.

Comet C/2013 P3 (Palomar)
Epoch 2014 Dec. 9.0 TT = JDT 2457000.5
T 2014 Nov. 23.82621 TT                                   Sato
q   8.6465520            (2000.0)            P               Q
z  -0.0001403      Peri.   177.18343     +0.99782224     +0.04584544
 -/-0.0000011      Node    177.27548     -0.05998860     +0.33180926
e   1.0012129      Incl.    93.91020     +0.02742513     -0.94223183
From 471 observations 2013 Aug. 8-2016 Oct. 20, mean residual 0″.46.

Comet C/2014 Q2 (Lovejoy)
Epoch 2015 Jan. 18.0 TT = JDT 2457040.5
T 2015 Jan. 30.06924 TT                                   Sato
q   1.2903574            (2000.0)            P               Q
z  +0.0017105      Peri.    12.39493     -0.12073211     -0.14529019
 +/-0.0000002      Node     94.97561     +0.80568044     -0.59224013
e   0.9977929      Incl.    80.30209     +0.57991619     +0.79255435
From 7331 observations 2014 July 1-2016 Sept. 10, mean residual 0″.57.

Comet C/2014 N3 (NEOWISE)
Epoch 2015 Feb. 27.0 TT = JDT 2457080.5
T 2015 Mar. 13.23274 TT                                   Sato
q   3.8822691            (2000.0)            P               Q
z  +0.0001354      Peri.   353.57116     +0.95234663     -0.05563646
 +/-0.0000005      Node     19.92687     +0.30403798     +0.09440564
e   0.9994742      Incl.    61.63487     +0.02442941     +0.99397795
From 1542 observations 2014 July 4-2016 Nov. 7, mean residual 0″.52.

Comet 44P/Reinmuth
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Mar. 24.14432 TT                                   Sato
q   2.1186375            (2000.0)            P               Q
n   0.13880912     Peri.    58.28196     +0.96045995     +0.26041191
a   3.6942311      Node    286.46524     -0.27729426     +0.86296020
e   0.4265011      Incl.     5.89539     -0.02499170     +0.43299576
P   7.10
From 1218 observations 1993 Feb. 26-2016 Apr. 2, mean residual 0″.69.
   Nongravitational parameters A1 = -0.48, A2 = -0.4054.
```

Comet C/2012 F3 (PANSTARRS)
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 6.67448 TT Sato

q	3.4569652	(2000.0)	P	Q
z	-0.0005287	Peri. 104.01927	-0.01881152	+0.99845754
+/-	0.0000003	Node 164.61411	-0.97640528	-0.00710444
e	1.0018278	Incl. 11.35471	-0.21512519	-0.05506418

From 1671 observations 2012 Jan. 19-2016 Nov. 30, mean residual 0″.71.

Comet 174P/(60558) Echeclus
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 22.53237 TT Sato

q	5.8170659	(2000.0)	P	Q
n	0.02822877	Peri. 162.93197	+0.91553928	+0.40213255
a	10.6825465	Node 173.33653	-0.37731616	+0.86619964
e	0.4554607	Incl. 4.34376	-0.13935689	+0.29662704
P	34.92			

From 2359 observations 1979 Sept. 23-2016 Dec. 12, mean residual 0″.36.

Comet C/2015 LC2 (PANSTARRS)
Epoch 2015 May 18.0 TT = JDT 2457160.5
T 2015 May 1.59974 TT Sato

q	5.8905553	(2000.0)	P	Q
z	-0.0003311	Peri. 341.82541	-0.67449685	-0.26847003
+/-	0.0000018	Node 223.56558	-0.49040405	-0.53340512
e	1.0019504	Incl. 93.71806	-0.55186761	+0.80212394

From 220 observations 2015 June 7-2016 Aug. 24, mean residual 0″.56.

Comet C/2014 W11 (PANSTARRS)
Epoch 2015 June 27.0 TT = JDT 2457200.5
T 2015 June 17.32320 TT Sato

q	3.4268101	(2000.0)	P	Q
n	0.03217014	Peri. 225.64106	-0.93300831	-0.30062729
a	9.7911592	Node 295.93640	+0.35951995	-0.80242731
e	0.6500098	Incl. 12.70530	-0.01552078	-0.51549359
P	30.64			

From 1033 observations 2014 Nov. 3-2016 Sept. 28, mean residual 0″.44.

Comet 162P/Siding Spring
Epoch 2015 July 17.0 TT = JDT 2457220.5
T 2015 July 11.99094 TT Sato

q	1.2373504	(2000.0)	P	Q
n	0.18447143	Peri. 356.40938	+0.88228095	-0.40400320
a	3.0562108	Node 31.21292	+0.44266183	+0.53753851
e	0.5951358	Incl. 27.78637	+0.16009630	+0.74015793
P	5.34			

From 1934 observations 1990 Mar. 23-2016 May 8, mean residual 0″.44.

Comet C/2012 LP26 (Palomar)
Epoch 2015 Aug. 6.0 TT = JDT 2457240.5
T 2015 Aug. 16.60434 TT Sato

q	6.5360851	(2000.0)	P	Q
z	+0.0001189	Peri. 145.15564	+0.51117681	+0.83866740
+/-	0.0000011	Node 153.98749	-0.85327821	+0.52142169
e	0.9992229	Incl. 25.37973	-0.10302702	-0.15734170

From 345 observations 2012 May 23-2016 Nov. 22, mean residual 0″.57.

Comet C/2013 C2 (Tenagra)
Epoch 2015 Aug. 6.0 TT = JDT 2457240.5
T 2015 Aug. 29.95796 TT Sato

q	9.1310723	(2000.0)	P	Q
n	0.01531329	Peri. 308.77732	-0.91041150	+0.24101296
a	16.0604279	Node 247.52402	-0.16343080	-0.95619230
e	0.4314552	Incl. 21.33932	-0.38005431	-0.16615967
P	64.36			

From 384 observations 2013 Feb. 14-2016 June 11, mean residual 0″.54.

```
Comet P/2015 M2 (PANSTARRS)
Epoch 2015 Sept. 15.0 TT = JDT 2457280.5
T 2015 Aug. 31.68899 TT                                   Sato
q   5.9128588            (2000.0)            P               Q
n   0.05099733     Peri.  224.82491     +0.66014301     +0.74794711
a   7.2017451      Node    86.61506     -0.66826455     +0.62686690
e   0.1789686      Incl.    3.97403     -0.34297769     +0.21820406
P  19.33
From 120 observations 2015 June 22-2016 Aug. 27, mean residual 0″.45.

Comet C/2014 A4 (SONEAR)
Epoch 2015 Sept. 15.0 TT = JDT 2457280.5
T 2015 Sept. 5.86428 TT                                   Sato
q   4.1801824            (2000.0)            P               Q
z  -0.0001955      Peri.  356.78841     +0.85257563     +0.30629508
 +/-0.0000038      Node    29.72719     +0.49649604     -0.72761922
e   1.0008173      Incl.  121.35890     +0.16311489     +0.61380257
From 2650 observations 2014 Jan. 12-2017 Jan. 20, mean residual 0″.57.

Comet 61P/Shajn-Schaldachh
Epoch 2015 Sept. 15.0 TT = JDT 2457280.5
T 2015 Oct. 2.17215 TT                                    Sato
q   2.1139272            (2000.0)            P               Q
n   0.13952526     Peri.  221.92175     +0.90569037     -0.42283672
a   3.6815792      Node   163.01666     +0.41143980     +0.85932166
e   0.4258097      Incl.    6.00598     +0.10218731     +0.28770712
P   7.06
From 1327 observations 2008 June 7-2016 Feb. 7, mean residual 0″.84.
   Nongravitational parameters A1 = -11.39, A2 = -3.7915.

Comet C/2013 V4 (Catalina)
Epoch 2015 Oct. 25.0 TT = JDT 2457320.5
T 2015 Oct. 7.60442 TT                                    Sato
q   5.1853969            (2000.0)            P               Q
z  -0.0004956      Peri.   40.44968     +0.22785587     -0.60308170
 +/-0.0000003      Node    55.62130     +0.46388814     -0.62303367
e   1.0025698      Incl.   67.85536     +0.85608965     +0.49811797
From 2080 observations 2013 Oct. 23-2017 Jan. 8, mean residual 0″.52.

Comet 22P/Kopff
Epoch 2015 Oct. 25.0 TT = JDT 2457320.5
T 2015 Oct. 25.09266 TT                                   Sato
q   1.5582141            (2000.0)            P               Q
n   0.15416714     Peri.  162.89870     +0.23890569     +0.96845229
a   3.4446214      Node   120.87240     -0.90029548     +0.24826081
e   0.5476385      Incl.    4.73704     -0.36385729     +0.02160373
P   6.39
From 3394 observations 2002 Jan. 11-2016 Nov. 6, mean residual 0″.81.
   Nongravitational parameters A1 = +2.20, A2 = +1.2803.

Comet C/2015 X4 (Elenin)
Epoch 2015 Oct. 25.0 TT = JDT 2457320.5
T 2015 Nov. 3.43618 TT                                    Sato
q   3.3946410            (2000.0)            P               Q
n   0.01275779     Peri.  176.32214     +0.18328001     -0.85313831
a  18.1392388      Node   262.63577     +0.88890828     +0.35600478
e   0.8128565      Incl.   29.50450     +0.41982198     -0.38133399
P  77.26
From 577 observations 2015 Oct. 11-2016 Dec. 28, mean residual 0″.41.
```

Comet 10P/Tempel
Epoch 2015 Dec. 4.0 TT = JDT 2457360.5
T 2015 Nov. 14.25563 TT Sato

q	1.4176477		(2000.0)	P	Q
n	0.18374285	Peri.	195.54565	+0.68126037	+0.70845076
a	3.0642845	Node	117.80533	-0.64745955	+0.70063233
e	0.5373642	Incl.	12.02887	-0.34158518	+0.08492270
P	5.36				

From 3550 observations 1999 Feb. 14-2016 Dec. 3, mean residual 0″.62.
Nongravitational parameters A1 = +0.02, A2 = -0.0041.

Comet C/2013 US10 (Catalina)
Epoch 2015 Dec. 4.0 TT = JDT 2457360.5
T 2015 Nov. 15.72142 TT Sato

q	0.8229680		(2000.0)	P	Q
z	-0.0003432	Peri.	340.35829	-0.90560121	-0.42050657
	+/-0.0000006	Node	186.14460	-0.28587916	+0.50883742
e	1.0002824	Incl.	148.87835	-0.31330425	+0.75117156

From 4604 observations 2013 Aug. 14-2017 Jan. 27, mean residual 0″.50.
Nongravitational parameters A1 = +0.84, A2 = +0.0663.

Comet C/2014 S2 (PANSTARRS)
Epoch 2015 Dec. 4.0 TT = JDT 2457360.5
T 2015 Dec. 9.79845 TT Sato

q	2.1006370		(2000.0)	P	Q
z	+0.0059016	Peri.	87.80701	-0.02252004	-0.99155677
	+/-0.0000006	Node	8.12227	+0.03398976	-0.12842080
e	0.9876029	Incl.	64.67028	+0.99916843	-0.01797986

From 2920 observations 2014 Sept. 2-2017 Jan. 24, mean residual 0″.64.
Nongravitational parameters A1 = +8.24, A2 = +1.4756.

Comet P/2014 W4 (PANSTARRS)
Epoch 2016 Jan. 13.0 TT = JDT 2457400.5
T 2015 Dec. 29.66952 TT Sato

q	4.2610685		(2000.0)	P	Q
n	0.05829979	Peri.	67.43354	-0.16921138	-0.97487918
a	6.5870564	Node	33.35272	+0.77950507	-0.22230591
e	0.3531149	Incl.	15.27440	+0.60310808	+0.01380836
P	16.91				

From 66 observations 2014 Oct. 25-2016 May 5, mean residual 0″.31.

Comet 116P/Wild
Epoch 2016 Jan. 13.0 TT = JDT 2457400.5
T 2016 Jan. 11.54648 TT Sato

q	2.1870969		(2000.0)	P	Q
n	0.15149042	Peri.	173.31363	-0.96889515	+0.24644220
a	3.4850788	Node	20.99516	-0.22986592	-0.86247036
e	0.3724398	Incl.	3.60818	-0.09167246	-0.44205330
P	6.51				

From 2361 observations 2008 Oct. 5-2016 Oct. 11, mean residual 0″.68.
Nongravitational parameters A1 = +1.34, A2 = +1.0428.

Comet C/2016 KA (Catalina)
Epoch 2016 Feb. 2.0 TT = JDT 2457420.5
T 2016 Feb. 1.42156 TT Sato

q	5.4008442		(2000.0)	P	Q
z	+0.0001140	Peri.	63.10882	+0.18178364	-0.73528575
	+/-0.0000364	Node	317.56111	-0.77581601	+0.30074038
e	0.9993841	Incl.	104.63016	+0.60420546	+0.60737969

From 75 observations 2016 May 16-Aug. 22, mean residual 0″.57.

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Comet 50P/Arend
Epoch 2016 Feb. 22.0 TT = JDT 2457440.5
T 2016 Feb. 8.18648 TT                                  Sato
q   1.9188032            (2000.0)            P               Q
n   0.11940496     Peri.   49.22083     +0.71098912     -0.70266231
a   4.0843328      Node   355.17620     +0.50487187     +0.53736115
e   0.5302040      Incl.   19.13926     +0.48948837     +0.46637825
P   8.25
From 1603 observations 1959 July 6-2016 Apr. 3, mean residual 0″.70.
   Nongravitational parameters A1 = +0.40, A2 = -0.0243.

Comet C/2016 C1 (PANSTARRS)
Epoch 2016 Feb. 22.0 TT = JDT 2457440.5
T 2016 Feb. 16.43998 TT                                 Sato
q   8.4594491            (2000.0)            P               Q
z  -0.0005852      Peri.  328.57249     -0.86190919     -0.50640472
 +/-0.0000035      Node   181.78117     +0.41412476     -0.73240546
e   1.0049501      Incl.   56.17844     -0.29259737     +0.45512250
From 102 observations 2016 Feb. 12-Dec. 25, mean residual 0″.48

Comet C/2014 W2 (PANSTARRS)
Epoch 2016 Feb. 22.0 TT = JDT 2457440.5
T 2016 Mar. 10.48380 TT                                 Sato
q   2.6702042            (2000.0)            P               Q
z  +0.0006231      Peri.   85.00961     -0.10047095     -0.35270753
 +/-0.0000002      Node    69.96277     -0.27384008     -0.88913846
e   0.9983363      Incl.   81.99860     +0.95651304     -0.29159938
From 3127 observations 2014 Oct. 24-2017 Jan. 6, mean residual 0″.47.

Comet 190P/Mueller
Epoch 2016 Apr. 2.0 TT = JDT 2457480.5
T 2016 Apr. 7.86512 TT                                  Sato
q   2.0331985            (2000.0)            P               Q
n   0.11277924     Peri.   50.42250     +0.89875879     -0.43816260
a   4.2427745      Node   335.55213     +0.38974652     +0.81481513
e   0.5207856      Incl.    2.17264     +0.20082402     +0.37959168
P   8.74
From 289 observations 1998 Sept. 14-2016 Nov. 8, mean residual 0″.57.

Comet C/2013 X1 (PANSTARRS)
Epoch 2016 Apr. 2.0 TT = JDT 2457480.5
T 2016 Apr. 20.72613 TT                                 Sato
q   1.3142841            (2000.0)            P               Q
z  -0.0007623      Peri.  164.45986     +0.82526371     -0.52102753
 +/-0.0000031      Node   130.95790     -0.54401576     -0.62985445
e   1.0010018      Incl.  163.23154     -0.15161355     -0.57603272
From 2957 observations 2013 Oct. 17-2017 Jan. 6, mean residual 0″.66.
   Nongravitational parameters A1 = +1.59, A2 = +1.0417

Comet 53P/Van Biesbroeck
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 Apr. 29.93801 TT                                 Sato
q   2.4271121            (2000.0)            P               Q
n   0.07826317     Peri.  134.19773     +0.22946348     +0.97150277
a   5.4129133      Node   148.92305     -0.92260638     +0.23654604
e   0.5516071      Incl.    6.60840     -0.31007092     +0.01511112
P  12.59
From 2833 observations 1991 June 10-2017 Jan. 8, mean residual 0″.60.
   Nongravitational parameters A1 = -0.73, A2 = -0.0185.

Comet 302P/Lemmon-PANSTARRS
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 Apr. 30.53988 TT                                 Sato
q   3.3022482            (2000.0)            P               Q
n   0.11130472     Peri.  208.28019     +0.86435989     +0.49487970
a   4.2801633      Node   121.78444     -0.43931113     +0.82952839
e   0.2284761      Incl.    6.03090     -0.24471968     +0.25879861
P   8.86
From 71 observations 2007 Aug. 16-2016 Oct. 2, mean residual 0″.50.
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Comet C/2015 D3 (PANSTARRS)
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 Apr. 30.72364 TT                                  Sato
q   8.1489288            (2000.0)            P               Q
z  -0.0003138      Peri.     2.84585     -0.90714741     +0.28887813
 +/-0.0000030      Node    156.98040     +0.36898558     +0.19643680
e   1.0025573      Incl.   128.50956     +0.20231959     +0.93699627
From 162 observations 2015 Feb. 17-2016 Oct. 21, mean residual 0″.56.

Comet C/2015 B2 (PANSTARRS)
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 May 6.57602 TT                                    Sato
q   3.3696023            (2000.0)            P               Q
z  -0.0001219      Peri.   284.76931     +0.32050551     +0.89850768
 +/-0.0000013      Node    341.90205     +0.51822681     -0.43137179
e   1.0004109      Incl.   105.08810     -0.79291689     +0.08125472
From 216 observations 2015 Jan. 6-2016 Nov. 9, mean residual 0″.50.

Comet 77P/Longmore
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 May 13.64532 TT                                   Sato
q   2.3377197            (2000.0)            P               Q
n   0.14328445     Peri.   196.72724     -0.85890138     +0.50119273
a   3.6169014      Node     14.80326     -0.40989941     -0.54943963
e   0.3536678      Incl.    24.34603     -0.30703565     -0.66852221
P   6.88
From 1694 observations 1975 Oct. 4-2016 Sept. 8, mean residual 0″.72.
   Nongravitational parameters A1 = +0.17, A2 = -0.0517.

Comet C/2015 Y1 (LINEAR)
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 May 15.17138 TT                                   Sato
q   2.5140952            (2000.0)            P               Q
z  +0.0034156      Peri.    24.70645     -0.74489936     +0.09550588
 +/-0.0000027      Node    135.77700     +0.33543072     -0.80191229
e   0.9914129      Incl.    71.21592     +0.57672452     +0.58975868
From 552 observations 2015 Dec. 16-2016 July 1, mean residual 0″.53.

Comet C/2011 KP36 (Spacewatch)
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 May 26.89912 TT                                   Sato
q   4.8833005            (2000.0)            P               Q
n   0.00414057     Peri.   180.59806     +0.99445379     +0.09830290
a  38.4086634      Node    173.40038     -0.09509452     +0.99227974
e   0.8728594      Incl.    18.98676     -0.04492992     +0.07561386
P 238.04
From 2585 observations 2011 May 21-2017 Jan. 14, mean residual 0″.40.

Comet 341P/Gibbs
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 May 26.82338 TT                                   Sato
q   2.5208248            (2000.0)            P               Q
n   0.11051766     Peri.   312.19263     +0.95162509     +0.30546853
a   4.3004603      Node     30.06538     -0.25879796     +0.85500102
e   0.4138244      Incl.     3.79356     -0.16563005     +0.41912079
P   8.92
From 203 observations 2007 Sept. 10-2016 Dec. 7, mean residual 0″.79.

Comet 136P/Mueller
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 May 31.18493 TT                                  Sato
q   2.9790771            (2000.0)            P               Q
n   0.11437342     Peri.   225.16780     +0.99249301     -0.05215250
a   4.2032573      Node    137.45321     +0.08164772     +0.95598227
e   0.2912456      Incl.     9.41586     -0.09105644     +0.28875252
P   8.62
From 475 observations 1990 Sept. 17-2017 Jan. 27, mean residual 0″.72.
   Nongravitational parameters A1 = -14.79, A2 = -1.3011.
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Comet 157P/Tritton
Epoch 2016 June 21.0 TT = JDT 2457560.5
T 2016 June 10.35819 TT                                   Sato
q   1.3580840            (2000.0)            P               Q
n   0.15664529     Peri.  148.89182     +0.01573447     -0.99382735
a   3.4081954      Node   299.99965     +0.88933708     +0.06410674
e   0.6015240      Incl.    7.28497     +0.45698138     -0.09054013
P   6.29
From 1031 observations 2003 Oct. 6-2015 Oct. 16, mean residual 0".82.
   Nongravitational parameters A1 = +1.35, A2 = +0.0082.

Comet 202P/Scotti
Epoch 2016 June 21.0 TT = JDT 2457560.5
T 2016 June 11.00262 TT                                   Sato
q   2.5183301            (2000.0)            P               Q
n   0.13465085     Peri.  255.73539     -0.00441178     -0.99994440
a   3.7699013      Node   194.52754     +0.93156467     -0.00062758
e   0.3319904      Incl.    2.18825     +0.36354890     -0.01052652
P   7.32
From 388 observations 1929 Nov. 27-2016 Mar. 4, mean residual 0".65.
   Nongravitational parameters A1 = +2.30, A2 = +0.0352.

Comet 118P/Shoemaker-Levy
Epoch 2016 June 21.0 TT = JDT 2457560.5
T 2016 June 16.97041 TT                                   Sato
q   1.9800687            (2000.0)            P               Q
n   0.15299139     Peri.  302.33705     -0.07527858     -0.99469332
a   3.4622470      Node   151.72678     +0.95741101     -0.09175848
e   0.4280972      Incl.    8.51430     +0.27874233     +0.04653575
P   6.44
From 2016 observations 1991 Feb. 12-2017 Jan. 1, mean residual 0".78.
   Nongravitational parameters A1 = +0.01, A2 = -0.2454.

Comet C/2015 T4 (PANSTARRS)
Epoch 2016 June 21.0 TT = JDT 2457560.5
T 2016 June 18.95586 TT                                   Sato
q   2.2963251            (2000.0)            P               Q
z  +0.0114861      Peri.  270.14002     -0.03526229     -0.31242618
 +/-0.0000016      Node   251.78935     +0.40579673     -0.87252339
e   0.9736242      Incl.   87.91869     -0.91328286     -0.37562325
From 331 observations 2015 Oct. 14-2016 Aug. 26, mean residual 0".50.

Comet P/2017 A2 (PANSTARRS)
Epoch 2016 June 21.0 TT = JDT 2457560.5
T 2016 June 22.13618 TT                                   Sato
q   2.2121379            (2000.0)            P               Q
n   0.17507133     Peri.  133.75280     +0.01923786     -0.97570432
a   3.1646524      Node   313.74712     +0.80839073     +0.14362765
e   0.3009855      Incl.   17.58449     +0.58833182     -0.16544540
P   5.63
From 29 observations 2011 Jan. 13-2017 Jan. 5, mean residual 0".61.

Comet 146P/Shoemaker-LINEAR
Epoch 2016 June 21.0 TT = JDT 2457560.5
T 2016 June 30.13477 TT                                   Sato
q   1.4300941            (2000.0)            P               Q
n   0.12136631     Peri.  316.98334     +0.93961684     -0.13415519
a   4.0402100      Node    53.45287     +0.30235623     +0.75637267
e   0.6460347      Incl.   23.07260     -0.16031500     +0.64023649
P   8.12
From 129 observations 2000 Sept. 27-2016 Nov. 19, mean residual 0".66.
   Nongravitational parameters A1 = +0.26, A2 = +0.0193.
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Comet 345P/LINEAR
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 July 16.06536 TT                                   Sato
q   3.1583967            (2000.0)            P               Q
n   0.12110589     Peri.  196.59143     +0.98784645     +0.15408151
a   4.0460000      Node   154.51801     -0.13666261     +0.92368348
e   0.2193780      Incl.    2.72472     -0.07404542     +0.35081008
P   8.14
From 123 observations 2008 Sept. 2-2016 Dec. 27, mean residual 0″.59.

Comet 56P/Slaughter-Burnham
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 July 18.44395 TT                                   Sato
q   2.5086414            (2000.0)            P               Q
n   0.08595710     Peri.   44.22090     +0.86251517     -0.50486589
a   5.0848898      Node   345.98533     +0.41601322     +0.74606466
e   0.5066478      Incl.    8.14781     +0.28809822     +0.43416351
P  11.47
From 1766 observations 1959 Feb. 2-2017 Jan. 25, mean residual 0″.64.
   Nongravitational parameters A1 = -0.77, A2 = +0.0200.

Comet P/2016 R4 (Gibbs)
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 July 20.50238 TT                                   Sato
q   2.8005314            (2000.0)            P               Q
n   0.07999099     Peri.  174.05914     +0.95359680     +0.29867091
a   5.3346837      Node   168.34684     -0.28341979     +0.93310854
e   0.4750333      Incl.   10.86212     -0.10161875     +0.20026018
P  12.32
From 182 observations 2016 July 18-Nov. 26, mean residual 0″.50.

Comet 81P/Wild
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 July 20.30661 TT                                   Sato
q   1.5921652            (2000.0)            P               Q
n   0.15386505     Peri.   41.69715     -0.99854146     -0.03716809
a   3.4491286      Node   136.12539     +0.02061224     -0.93281200
e   0.5383862      Incl.    3.23899     +0.04990085     -0.35844150
P   6.41
From 5150 observations 1995 Jan. 2-2016 June 26, mean residual 0″.63.
   Nongravitational parameters A1 = +0.11, A2 = -0.0128.

Comet 150P/LONEOS
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 July 24.93675 TT                                   Sato
q   1.7597040            (2000.0)            P               Q
n   0.12875259     Peri.  245.67818     -0.88078929     -0.35163061
a   3.8841745      Node   272.42669     +0.45901906     -0.79847444
e   0.5469555      Incl.   18.50614     -0.11623994     -0.48866603
P   7.66
From 464 observations 1986 Mar. 14-2016 Apr. 4, mean residual 0″.51.

Comet C/2015 X7 (ATLAS)
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 July 30.23799 TT                                   Sato
q   3.6845501            (2000.0)            P               Q
z  -0.0004899      Peri.  348.48635     -0.68040209     -0.49112677
 +/-0.0000021      Node   139.88387     +0.72137667     -0.57961087
e   1.0018050      Incl.   57.58097     +0.12910730     +0.65026590
From 298 observations 2015 Dec. 12-2017 Jan. 31, mean residual 0″.60.
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Comet 9P/Tempel
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 Aug. 2.58224 TT Sato

q	1.5425393	(2000.0)	P		Q
n	0.17668237	Peri.	179.20619	-0.37510898	+0.91136561
a	3.1453857	Node	68.74946	-0.85148686	-0.26650809
e	0.5095866	Incl.	10.47400	-0.36641969	-0.31366570
P	5.58				

From 6920 observations 1982 Dec. 11-2016 Dec. 17, mean residual 0″.54.
Nongravitational parameters A1 = +0.02, A2 = +0.0031.

Comet C/2014 R3 (PANSTARRS)
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 Aug. 7.87716 TT Sato

q	7.2754092	(2000.0)	P		Q
z	+0.0000165	Peri.	113.39976	-0.36314723	-0.82312554
	+/-0.0000007	Node	334.11215	-0.21700619	+0.53038638
e	0.9998802	Incl.	90.83744	+0.90610838	-0.20286605

From 321 observations 2014 Sept. 6-2017 Jan. 30, mean residual 0″.34.

Comet 43P/Wolf-Harrington
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 Aug. 19.69430 TT Sato

q	1.3579469	(2000.0)	P		Q
n	0.16080922	Peri.	191.59710	+0.15629531	-0.95336704
a	3.3491049	Node	249.83295	+0.92678007	+0.23194577
e	0.5945344	Incl.	15.96530	+0.34154133	-0.19311255
P	6.13				

From 2832 observations 2003 June 17-2017 Jan. 27, mean residual 0″.71.
Nongravitational parameters A1 = +0.34, A2 = -0.0014.

Comet 33P/Daniel
Epoch 2016 Sept. 9.0 TT = JDT 2457640.5
T 2016 Aug. 22.46297 TT Sato

q	2.1602152	(2000.0)	P		Q
n	0.12214840	Peri.	19.06901	+0.10000382	-0.93163726
a	4.0229460	Node	66.49130	+0.85620099	-0.09829300
e	0.4630266	Incl.	22.39439	+0.50687189	+0.34984353
P	8.07				

From 322 observations 1992 July 29-2017 Jan. 27, mean residual 0″.77.
Nongravitational parameters A1 = +0.53, A2 = +0.0561.

Comet C/2015 TQ209 (LINEAR)
Epoch 2016 Sept. 9.0 TT = JDT 2457640.5
T 2016 Aug. 27.58715 TT Sato

q	1.4129697	(2000.0)	P		Q
z	+0.0006900	Peri.	281.51136	-0.81162454	-0.56778374
	+/-0.0000098	Node	224.08303	+0.58269285	-0.77006549
e	0.9990250	Incl.	11.39333	+0.04164905	-0.29089649

From 403 observations 2015 Oct. 10-2016 Mar. 5, mean residual 0″.39.

Comet C/2015 V4 (PANSTARRS)
Epoch 2016 Sept. 9.0 TT = JDT 2457640.5
T 2016 Aug. 28.27742 TT Sato

q	5.4594749	(2000.0)	P		Q
n	0.01233947	Peri.	306.93616	-0.60021208	-0.79983931
a	18.5469201	Node	179.89559	+0.63672578	-0.47660419
e	0.7056398	Incl.	60.75168	-0.48407203	+0.36483629
P	79.87				

From 67 observations 2015 Nov. 3-2016 Nov. 3, mean residual 0″.36.

Comet 330P/Catalina
Epoch 2016 Sept. 9.0 TT = JDT 2457640.5
T 2016 Aug. 29.96988 TT Sato

q	2.9530308		(2000.0)	P	Q
n	0.05850546	Peri.	186.94521	-0.51578748	-0.82111331
a	6.5716103	Node	294.37541	+0.79836457	-0.35719545
e	0.5506382	Incl.	15.56483	+0.31076887	-0.44517899

P 16.85
From 207 observations 1999 Nov. 5-2017 Jan. 27, mean residual 0″.64.

Comet C/2016 A8 (LINEAR)
Epoch 2016 Sept. 9.0 TT = JDT 2457640.5
T 2016 Aug. 30.66902 TT Sato

q	1.8811288		(2000.0)	P	Q
n	0.00475050	Peri.	130.26543	+0.83864316	-0.23573992
a	35.0463974	Node	111.23269	-0.49712315	-0.69967849
e	0.9463246	Incl.	148.21163	+0.22258983	-0.67444547

P 207.47
From 1371 observations 2016 Jan. 14-Nov. 3, mean residual 0″.56.

Comet 144P/Kushida
Epoch 2016 Sept. 9.0 TT = JDT 2457640.5
T 2016 Aug. 31.07658 TT Sato

q	1.4314348		(2000.0)	P	Q
n	0.13012229	Peri.	216.15031	-0.20037873	-0.97754046
a	3.8568692	Node	245.48973	+0.91487283	-0.16285748
e	0.6288609	Incl.	4.11497	+0.35050829	-0.13376129

P 7.57
From 2904 observations 1994 Jan. 7-2017 Jan. 30, mean residual 0″.58.
Nongravitational parameters A1 = +0.67, A2 = +0.0194.

Comet 226P/Pigott-LINEAR-Kowalski
Epoch 2016 Sept. 9.0 TT = JDT 2457640.5
T 2016 Sept. 5.14335 TT Sato

q	1.7763597		(2000.0)	P	Q
n	0.13461156	Peri.	341.12563	+0.74436002	-0.36056220
a	3.7706348	Node	54.00631	+0.66633095	+0.34564930
e	0.5288964	Incl.	44.00344	+0.04394563	+0.86632642

P 7.32
From 1022 observations 2003 Jan. 6-2017 Jan. 25, mean residual 0″.80.
Nongravitational parameters A1 = -0.27, A2 = +0.0133.

Comet C/2015 H2 (PANSTARRS)
Epoch 2016 Sept. 9.0 TT = JDT 2457640.5
T 2016 Sept. 13.26315 TT Sato

q	4.9670979		(2000.0)	P	Q
z	-0.0006459	Peri.	287.90657	+0.17538900	+0.98039985
	+/-0.0000018	Node	350.69250	-0.55230489	+0.02251851
e	1.0032081	Incl.	33.70515	-0.81498344	+0.19572700

From 89 observations 2015 Apr. 20-2016 Nov. 3, mean residual 0″.37.

Comet 314P/Montani
Epoch 2016 Oct. 19.0 TT = JDT 2457680.5
T 2016 Oct. 7.86484 TT Sato

q	4.2337677		(2000.0)	P	Q
n	0.05037361	Peri.	213.74145	-0.52035268	-0.85113264
a	7.2610707	Node	267.70425	+0.79801669	-0.45576493
e	0.4169224	Incl.	3.97857	+0.30397771	-0.26048333

P 19.57
From 243 observations 1997 Apr. 9-2017 Jan. 26, mean residual 0″.60.

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Comet 237P/LINEAR
Epoch 2016 Oct. 19.0 TT = JDT 2457680.5
T 2016 Oct. 11.67245 TT                                   Sato
q   1.9848340            (2000.0)            P               Q
n   0.14990690     Peri.   25.04084     -0.00319180     +0.97540954
a   3.5095786      Node   245.43359     -0.95343582     -0.06943016
e   0.4344523      Incl.   14.02298     -0.30157910     +0.20917857
P   6.57
From 442 observations 2002 May 17-2016 Nov. 13, mean residual 0″.61.

Comet 94P/Russell
Epoch 2016 Oct. 19.0 TT = JDT 2457680.5
T 2016 Oct. 27.67007 TT                                   Sato
q   2.2299892            (2000.0)            P               Q
n   0.14982436     Peri.   92.77341     -0.95409076     -0.28168508
a   3.5108674      Node    70.88168     +0.21363981     -0.87824356
e   0.3648324      Incl.    6.18554     +0.20992585     -0.38644762
P   6.58
From 1152 observations 1984 Mar. 2-2017 Jan. 24, mean residual 0″.59.
   Nongravitational parameters A1 = +0.00, A2 = +0.0019.

Comet P/2015 TP200 (LINEAR)
Epoch 2016 Oct. 19.0 TT = JDT 2457680.5
T 2016 Oct. 28.19636 TT                                   Sato
q   3.3853135            (2000.0)            P               Q
n   0.04998780     Peri.   82.73428     +0.00647371     -0.99980750
a   7.2983837      Node     6.97555     +0.84672558     -0.00437303
e   0.5361557      Incl.    8.77231     +0.53199049     +0.01912670
P  19.72
From 430 observations 2015 Sept. 12-2017 Jan. 28, mean residual 0″.52.

Comet 344P/Read
Epoch 2016 Oct. 19.0 TT = JDT 2457680.5
T 2016 Nov. 1.29959 TT                                    Sato
q   2.8205397            (2000.0)            P               Q
n   0.09145456     Peri.  140.62028     +0.58938719     -0.80556199
a   4.8790187      Node   273.18286     +0.72498175     +0.56061516
e   0.4219043      Incl.    3.48923     +0.35640455     +0.19178249
P  10.78
From 486 observations 1951 Dec. 1-2017 Jan. 25, mean residual 0″.59.

Comet 338P/McNaught
Epoch 2016 Nov. 28.0 TT = JDT 2457720.5
T 2016 Nov. 22.15020 TT                                   Sato
q   2.3019399            (2000.0)            P               Q
n   0.12773542     Peri.    4.55671     +0.97003110     -0.23177156
a   3.9047673      Node     9.80996     +0.20720483     +0.63223648
e   0.4104796      Incl.   25.35054     +0.12690875     +0.73929627
P   7.72
From 394 observations 2008 May 10-2017 Jan. 1, mean residual 0″.79.
   Nongravitational parameters A1 = +2.44, A2 = -2.6599.

Comet C/2016 B1 (NEOWISE)
Epoch 2016 Nov. 28.0 TT = JDT 2457720.5
T 2016 Dec. 4.72319 TT                                    Sato
q   3.2060937            (2000.0)            P               Q
z  +0.0022853      Peri.    8.56185     -0.53481949     +0.58734798
 +/-0.0000069       Node   231.95342     -0.81372775     -0.55168436
e   0.9926731      Incl.   50.47527     -0.22762965     +0.59217119
From 109 observations 2016 Jan. 17-Aug. 23, mean residual 0″.48.
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Comet 315P/LONEOS
Epoch 2016 Nov. 28.0 TT = JDT 2457720.5
T 2016 Dec. 6.82702 TT Sato

q	2.4204192		(2000.0)	P	Q
n	0.08780384	Peri.	67.18899	-0.68638466	-0.66768501
a	5.0133387	Node	69.55194	+0.50163430	-0.72163057
e	0.5172041	Incl.	17.91502	+0.52653503	-0.18288261

P 11.23
From 1110 observations 2004 Nov. 3-2017 Jan. 31, mean residual 0″.67.

Comet C/2014 OE4 (PANSTARRS)
Epoch 2016 Nov. 28.0 TT = JDT 2457720.5
T 2016 Dec. 10.74729 TT Sato

q	6.2443295		(2000.0)	P	Q
z	+0.0000846	Peri.	65.74312	-0.08368441	+0.50406441
	+/-0.0000006	Node	240.40000	-0.74841765	+0.53775144
e	0.9994715	Incl.	81.34884	+0.65792701	+0.67582724

From 791 observations 2014 May 8-2017 Jan. 2, mean residual 0″.44.

Comet 89P/Russell
Epoch 2016 Nov. 28.0 TT = JDT 2457720.5
T 2016 Dec. 14.69097 TT Sato

q	2.2204801		(2000.0)	P	Q
n	0.13567182	Peri.	250.15095	+0.35428450	+0.92482707
a	3.7509644	Node	41.44525	-0.76048158	+0.37111655
e	0.4080242	Incl.	12.07654	-0.54419690	+0.08347088

P 7.26
From 140 observations 1980 Aug. 9-2016 June 23, mean residual 0″.72.
Nongravitational parameters A1 = +1.15, A2 = -0.0442.

Comet C/2016 T2 (Matheny)
Epoch 2017 Jan. 7.0 TT = JDT 2457760.5
T 2016 Dec. 29.11625 TT Sato

q	1.9077439		(2000.0)	P	Q
z	+0.0098208	Peri.	92.29141	+0.01651158	-0.93559462
	+/-0.0000154	Node	339.09709	-0.25041648	+0.33762637
e	0.9812645	Incl.	81.31013	+0.96799739	+0.10330126

From 127 observations 2016 Oct. 10-2017 Jan. 1, mean residual 0″.57.

Comet 45P/Honda-Mrkos-Pajdusakova
Epoch 2017 Jan. 7.0 TT = JDT 2457760.5
T 2016 Dec. 31.26557 TT Sato

q	0.5325594		(2000.0)	P	Q
n	0.18738443	Peri.	326.26084	+0.56821805	-0.81953606
a	3.0244544	Node	89.00674	+0.77040158	+0.49818383
e	0.8239155	Incl.	4.24941	+0.28915335	+0.28314930

P 5.26
From 1239 observations 2011 June 5-2017 Jan. 9, mean residual 0″.83.
Nongravitational parameters A1 = +1.11, A2 = +0.0622.

Comet 128P/Shoemaker-Holt
Epoch 2017 Jan. 7.0 TT = JDT 2457760.5
T 2017 Jan. 10.78948 TT Sato

q	3.0558719		(2000.0)	P	Q
n	0.10318885	Peri.	210.57895	+0.42547907	-0.90395192
a	4.5017448	Node	214.29268	+0.84493201	+0.41377615
e	0.3211806	Incl.	4.36456	+0.32412569	+0.10798253

P 9.55
From 818 observations 1987 Sept. 24-2017 Jan. 25, mean residual 0″.73.
Nongravitational parameters A1 = -17.43, A2 = -0.5999.

Comet C/2016 U1 (NEOWISE)
Epoch 2017 Jan. 7.0 TT = JDT 2457760.5
T 2017 Jan. 14.01670 TT Sato

q	0.3191676		(2000.0)	P	Q
z	-0.0007895	Peri.	162.74866	-0.63623886	+0.43618879
	+/-0.0000324	Node	61.42828	-0.76529589	-0.25250120
e	1.0002520	Incl.	46.43473	-0.09758232	-0.86370277

From 317 observations 2016 Oct. 21-2017 Jan. 12, mean residual 0″.81.

Comet P/2016 G1 (PANSTARRS)
Epoch 2017 Jan. 7.0 TT = JDT 2457760.5
T 2017 Jan. 26.27093 TT Sato

q	2.0404889		(2000.0)	P	Q
n	0.23738682	Peri.	111.30088	+0.70479155	+0.70515547
a	2.5832414	Node	204.07535	-0.70074115	+0.67493875
e	0.2101052	Incl.	10.96856	-0.11059250	+0.21728657
P	4.15				

From 141 observations 2016 Mar. 12-Aug. 9, mean residual 0″.57.

Comet 343P/NEAT-LONEOS
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Jan. 27.71973 TT Sato

q	2.2802032		(2000.0)	P	Q
n	0.07692076	Peri.	137.54246	+0.81818491	-0.56707518
a	5.4757089	Node	257.24173	+0.49794269	+0.78136992
e	0.5835785	Incl.	5.58173	+0.28744830	+0.26055093
P	12.81				

From 260 observations 2003 Sept. 18-2017 Jan. 7, mean residual 0″.61.

Comet P/2013 YG46 (Spacewatch)
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Jan. 28.82036 TT Sato

q	1.7891486		(2000.0)	P	Q
n	0.16623574	Peri.	242.30843	+0.35594331	+0.92880582
a	3.2758182	Node	48.92767	-0.80201247	+0.36022717
e	0.4538315	Incl.	7.85830	-0.47966693	+0.08692602
P	5.93				

From 54 observations 2013 Dec. 26-2014 Feb. 20, mean residual 0″.45.
From CHB 2016.

Comet C/2017 A3 (Elenin)
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Jan. 31.30223 TT Sato

q	3.8578464		(2000.0)	P	Q
z	+0.0208551	Peri.	304.21255	-0.19837117	-0.02992536
	+/-0.0000239	Node	97.83288	+0.82098086	+0.54091464
e	0.9195441	Incl.	98.54610	-0.53538706	+0.84054496

From 94 observations 2017 Jan. 5-24, mean residual 0″.54.

Comet C/2016 T1 (Matheny)
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Feb. 2.00178 TT Sato

q	2.2974720		(2000.0)	P	Q
z	+0.0086379	Peri.	137.49382	-0.05014577	-0.76803719
	+/-0.0007557	Node	56.22678	-0.98934376	-0.04928918
e	0.9801547	Incl.	129.82071	+0.13669065	-0.63850564

From 104 observations 2016 Oct. 6-22, mean residual 0″.47.

Comet 336P/McNaught
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Feb. 3.05082 TT Sato

q	2.7815510		(2000.0)	P	Q
n	0.08755408	Peri.	308.48955	-0.36162732	+0.89242007
a	5.0228682	Node	298.25847	-0.73123373	-0.45103891
e	0.4462226	Incl.	17.83925	-0.57837956	+0.01226079
P	11.26				

From 153 observations 2006 Apr. 5-2016 July 3, mean residual 0″.59.

Comet 346P/Catalina
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Feb. 15.51298 TT Sato

q	2.2208437		(2000.0)	P	Q
n	0.10407772	Peri.	335.90291	+0.17127914	-0.91367545
a	4.4760770	Node	102.51447	+0.95410937	+0.06054726
e	0.5038415	Incl.	22.18282	+0.24563951	+0.40190943
P	9.47				

From 405 observations 1998 Jan. 29-2017 Jan. 28, mean residual 0″.75.

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Comet 188P/LINEAR-Mueller
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Feb. 17.03764 TT                                   Sato
q   2.5651362            (2000.0)            P               Q
n   0.10738315     Peri.   26.77059     +0.90054938     -0.43474164
a   4.3837450      Node   358.98132     +0.35900416     +0.74782853
e   0.4148528      Incl.   10.51134     +0.24520771     +0.50174914
P   9.18
From 1165 observations 1998 Sept. 17-2017 Jan. 25, mean residual 0".66.
   Nongravitational parameters A1 = +1.91, A2 = -0.2901.

Comet 219P/LINEAR
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Feb. 20.60303 TT                                   Sato
q   2.3652248            (2000.0)            P               Q
n   0.14118324     Peri.  107.40652     +0.91501322     +0.37230325
a   3.6526996      Node   231.02511     -0.40202566     +0.87353876
e   0.3524721      Incl.   11.52866     +0.03355843     +0.31356072
P   6.98
From 654 observations 2002 June 5-2016 Dec. 17, mean residual 0".74.
   Nongravitational parameters A1 = +0.50, A2 = -0.1010.

Comet 18D/Perrine-Mrkos [Orbit 2]
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Feb. 26.21747 TT                                   Sato
q   1.6463195            (2000.0)            P               Q
n   0.12525851     Peri.  157.02101     +0.80515027     -0.53961337
a   3.9560753      Node   237.95410     +0.48902276     +0.83879798
e   0.5838503      Incl.   16.87627     +0.33554402     +0.07235577
P   7.87
From 22 observations 1961-1968, mean residual 2".39.
From Muraoka's orbit (CHB 2009).

Comet 93P/Lovas
Epoch 2017 Mar. 8.0 TT = JDT 2457820.5
T 2017 Mar. 1.45191 TT                                    Sato
q   1.7001504            (2000.0)            P               Q
n   0.10718497     Peri.   74.89816     +0.57274859     -0.81642072
a   4.3891469      Node   339.62703     +0.64721668     +0.50548291
e   0.6126467      Incl.   12.20451     +0.50306026     +0.27918494
P   9.20
From 3010 observations 1980 Dec. 5-2017 Jan. 25, mean residual 0".50.
   Nongravitational parameters A1 = +0.03, A2 = -0.0049.

Comet C/2016 VZ18 (PANSTARRS)
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Mar. 7.37999 TT                                    Sato
q   0.9102676            (2000.0)            P               Q
z  +0.0051444      Peri.   36.38571     -0.66049235     -0.63393530
 +/-0.0000077      Node    98.95520     +0.55612156     -0.77306678
e   0.9953173      Incl.   24.03552     +0.50445878     +0.02222121
From 86 observations 2016 Oct. 8-2017 Jan. 27, mean residual 0".37.

Comet 2P/Encke
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Mar. 10.09235 TT                                   Sato
q   0.3358950            (2000.0)            P               Q
n   0.29903619     Peri.  186.56341     -0.94518188     -0.31455126
a   2.2147271      Node   334.55966     +0.30811373     -0.77014268
e   0.8483357      Incl.   11.77817     +0.10815337     -0.55492140
P   3.30
From 1895 observations 2008 July 30-2017 Jan. 29, mean residual 0".61.
   Nongravitational parameters A1 = -0.01, A2 = -0.0016.
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Comet 176P/(118401) LINEAR
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Mar. 12.14481 TT                                   Sato
q   2.5798033            (2000.0)            P                Q
n   0.17251310     Peri.   35.35893     +0.93151582     -0.36369945
a   3.1958619      Node   345.96854     +0.33273971     +0.85331627
e   0.1927676      Incl.    0.23451     +0.14684195     +0.37359611
P   5.71
From 700 observations 1999 Aug. 17-2017 Jan. 1, mean residual 0″.43.

Comet 172P/Yeung
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Mar. 13.11509 TT                                   Sato
q   3.3369389            (2000.0)            P                Q
n   0.11414278     Peri.  209.12781     -0.50452806     +0.85757954
a   4.2089176      Node    30.88957     -0.74962335     -0.37760229
e   0.2071741      Incl.   11.23718     -0.42838799     -0.34924753
P   8.63
From 482 observations 1993 Oct. 20-2016 June 9, mean residual 0″.53.

Comet P/2016 S1 (PANSTARRS)
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Mar. 16.82213 TT                                   Sato
q   2.4119028            (2000.0)            P                Q
n   0.04135251     Peri.  273.61437     +0.01764718     -0.67753557
a   8.2819922      Node   227.53999     +0.30244207     -0.69732440
e   0.7087775      Incl.   94.69021     -0.95300439     -0.23384659
P  23.83
From 111 observations 2016 Sept. 21-Dec. 19, mean residual 0″.43.

Comet 73P/Schwassmann-Wachmann
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Mar. 16.84331 TT                                   Sato
q   0.9721833            (2000.0)            P                Q
n   0.18134290     Peri.  199.38755     -0.02252926     +0.98290668
a   3.0912610      Node    69.66346     -0.88959592     +0.06368883
e   0.6855059      Incl.   11.23698     -0.45619243     -0.17273737
P   5.44
From 418 observations 2010 Nov. 28-2017 Jan. 13, mean residual 0″.71.
   Nongravitational parameters A1 = +0.39, A2 = -0.1216.

Comet 182P/LONEOS
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Apr. 11.64847 TT                                   Sato
q   1.0082675            (2000.0)            P                Q
n   0.19338312     Peri.   53.88044     -0.56647416     -0.77957405
a   2.9615814      Node    72.79387     +0.63724867     -0.61994103
e   0.6595510      Incl.   16.24053     +0.52251426     -0.08909222
P   5.10
From 195 observations 2001 Oct. 26-2012 Apr. 10, mean residual 0″.59.

Comet 41P/Tuttle-Giacobini-Kresak
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Apr. 12.75215 TT                                   Sato
q   1.0450510            (2000.0)            P                Q
n   0.18195106     Peri.   62.15420     -0.91178023     +0.39812337
a   3.0843690      Node   141.06966     -0.41002173     -0.86862081
e   0.6611784      Incl.    9.22814     -0.02321616     -0.29495029
P   5.42
From 606 observations 2006 Feb. 3-2017 Jan. 29, mean residual 0″.76.
   Nongravitational parameters A1 = +0.75, A2 = -0.2863.
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Comet P/2016 A3 (PANSTARRS)
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Apr. 13.79621 TT                                   Sato
q   4.7892268            (2000.0)            P               Q
n   0.04592104     Peri.  338.49616     -0.97094639     -0.23843768
a   7.7231582      Node   187.79305     +0.23551038     -0.93714577
e   0.3798875      Incl.    8.59415     +0.04240238     -0.25476513
P  21.46
From 48 observations 2016 Jan. 4-Dec. 13, mean residual 0″.42.

Comet 54P/de Vico-Swift-NEAT
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Apr. 15.08061 TT                                   Sato
q   2.1848682            (2000.0)            P               Q
n   0.13324378     Peri.    1.85333     +0.99992031     -0.01244674
a   3.7963952      Node   358.85343     +0.00979409     +0.87034135
e   0.4244887      Incl.    6.05724     +0.00796589     +0.49229159
P   7.40
From 124 observations 2002 Oct. 4-2009 Dec. 20, mean residual 0″.76.
   Nongravitational parameters Y1 = -0.37, Y2 = -0.3229.

Comet 103P/Hartley
Epoch 2017 May 7.0 TT = JDT 2457880.5
T 2017 Apr. 20.50649 TT                                   Sato
q   1.0659813            (2000.0)            P               Q
n   0.15199286     Peri.  181.30131     +0.75482292     -0.63849742
a   3.4773943      Node   219.72429     +0.60390605     +0.76586883
e   0.6934540      Incl.   13.59384     +0.25600748     +0.07593398
P   6.48
From 6064 observations 1997 May 2-2013 May 14, mean residual 0″.57.
   Nongravitational parameters A1 = +0.09, A2 = -0.0411.

Comet 255P/Levy
Epoch 2017 May 7.0 TT = JDT 2457880.5
T 2017 May 4.09195 TT                                     Sato
q   1.0093534            (2000.0)            P               Q
n   0.18602095     Peri.  179.71324     -0.16397751     -0.93690026
a   3.0392154      Node   279.71019     +0.90443833     -0.01783187
e   0.6678901      Incl.   18.25472     +0.39383077     -0.34914170
P   5.30
From 474 observations 2006 Oct. 2-2012 Feb. 15, mean residual 0″.76.
   Nongravitational parameters A1 = +0.40, A2 = +0.3910.

Comet 334P/NEAT
Epoch 2017 May 7.0 TT = JDT 2457880.5
T 2017 May 5.37491 TT                                     Sato
q   4.1846226            (2000.0)            P               Q
n   0.05901019     Peri.   80.52033     -0.93892624     -0.10985854
a   6.5340841      Node    92.65263     -0.01672735     -0.93198094
e   0.3595701      Incl.   19.05412     +0.34371166     -0.34546002
P  16.70
From 178 observations 2001 Feb. 24-2017 Jan. 10, mean residual 0″.65.

Comet C/2015 ER61 (PANSTARRS)
Epoch 2017 May 7.0 TT = JDT 2457880.5
T 2017 May 9.94545 TT                                     Sato
q   1.0421321            (2000.0)            P               Q
z  +0.0025868      Peri.   68.19708     +0.54601573     +0.83283697
 +/-0.0000012      Node   235.21748     -0.80369075     +0.49010519
e   0.9973042      Incl.    6.34906     -0.23653329     +0.25725376
From 612 observations 2015 Jan. 21-2017 Jan. 20, mean residual 0″.40.
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Comet C/2017 A1 (PANSTARRS)
Epoch 2017 May 7.0 TT = JDT 2457880.5
T 2017 May 17.12597 TT                                  Sato
q   2.2910553            (2000.0)            P               Q
z  +0.0121486      Peri.     2.03969     -0.53513633     -0.53415360
 +/-0.0003331      Node    121.04999     +0.76384074     -0.63683864
e   0.9721670      Incl.    49.80992     +0.36079971     +0.55598244
From 79 observations 2017 Jan. 2-26, mean residual 0″.62.

Comet C/2015 T2 (PANSTARRS)
Epoch 2017 May 7.0 TT = JDT 2457880.5
T 2017 May 20.43419 TT                                  Sato
q   6.9354138            (2000.0)            P               Q
z  -0.0000485      Peri.    30.76110     +0.76567037     +0.05757256
 +/-0.0000018      Node     51.06045     +0.27840516     -0.92752325
e   1.0003364      Incl.   124.54701     +0.57986158     +0.36930477
From 131 observations 2015 Oct. 9-2016 Dec. 21, mean residual 0″.38.

Comet 229P/Gibbs
Epoch 2017 May 7.0 TT = JDT 2457880.5
T 2017 May 20.69988 TT                                  Sato
q   2.4557833            (2000.0)            P               Q
n   0.12621039     Peri.   224.13848     +0.90023519     -0.40282076
a   3.9361591      Node    157.90844     +0.40589541     +0.91377498
e   0.3760965      Incl.    26.06739     -0.15756116     +0.05244724
P   7.81
From 151 observations 2001 Aug. 23-2016 July 9, mean residual 0″.78.
   Nongravitational parameters A1 = +5.32, A2 = -0.4472.

Comet C/2016 E1 (PANSTARRS)
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 1.27865 TT                                  Sato
q   8.1769633            (2000.0)            P               Q
z  -0.0003332      Peri.    47.29758     -0.79987201     +0.08010218
 +/-0.0000644      Node    233.03466     -0.44405831     +0.58772581
e   1.0027248      Incl.   131.88962     +0.40375363     +0.80508509
From 44 observations 2016 Mar. 3-May 31, mean residual 0″.28.

Comet 234P/LINEAR
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 1.69300 TT                                  Sato
q   2.8478508            (2000.0)            P               Q
n   0.13238454     Peri.   358.09547     -0.99927884     -0.03795882
a   3.8128044      Node    179.72355     +0.03694230     -0.97776158
e   0.2530824      Incl.    11.52559     +0.00877883     -0.20625573
P   7.45
From 168 observations 2001 Dec. 26-2017 Jan. 20, mean residual 0″.80.

Comet 47P/Ashbrook-Jackson
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 10.16521 TT                                 Sato
q   2.8182238            (2000.0)            P               Q
n   0.11757365     Peri.   357.66704     +0.99568518     +0.09202935
a   4.1266349      Node    356.97446     -0.08107006     +0.80028986
e   0.3170649      Incl.    13.03029     -0.04515159     +0.59250886
P   8.38
From 1436 observations 1948 Oct. 7-2016 Oct. 3, mean residual 0″.84.
   Nongravitational parameters A1 = +0.11, A2 = -0.0052.

Comet C/2015 V2 (Johnson)
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 12.34031 TT                                 Sato
q   1.6369824            (2000.0)            P               Q
z  -0.0010885      Peri.   164.89669     -0.49022667     +0.49433299
 +/-0.0000008      Node     69.84937     -0.85775221     -0.12741692
e   1.0017819      Incl.    49.87652     -0.15472218     -0.85988361
From 1814 observations 2015 Nov. 3-2017 Jan. 29, mean residual 0″.46.
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Copmet P/1999 XN120 (Catalina) [Orbit-1]
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 12.51784 TT                                   Sato
q   3.2972310            (2000.0)            P               Q
n   0.11524014     Peri.  162.03508     +0.04547399     -0.99538095
a   4.1821556      Node   285.29287     +0.90544300     +0.07682547
e   0.2115953      Incl.    5.02871     +0.42202499     -0.05757274
P   8.55
From 71 observations 1999 Nov. 3-2000 Mar. 30, mean residual 0".62.

Comet 90P/Gehrels
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 19.25978 TT                                   Sato
q   2.9749599            (2000.0)            P               Q
n   0.06593429     Peri.   29.26468     +0.73867153     -0.67297285
a   6.0682268      Node    13.25114     +0.58132393     +0.60719702
e   0.5097481      Incl.    9.63520     +0.34121380     +0.42239711
P  14.95
From 212 observations 1972 Nov. 10-2016 Dec. 17, mean residual 0".64.
   Nongravitational parameters Y1 = -0.37, Y2 = -0.0108.

Comet 227P/Catalina-LINEAR
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 22.17227 TT                                   Sato
q   1.7879238            (2000.0)            P               Q
n   0.14526636     Peri.   90.26018     -0.76177222     -0.64200061
a   3.5839285      Node    49.80034     +0.53994896     -0.70323180
e   0.5011274      Incl.    6.52709     +0.35799191     -0.30545090
P   6.78
From 157 observations 1997 Jan. 15-2016 Dec. 18, mean residual 0".59.

Comet P/2000 S1 (Skiff)
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 24.83186 TT                                   Sato
q   2.5360913            (2000.0)            P               Q
n   0.05776139     Peri.  309.09008     +0.89781564     +0.40654708
a   6.6279255      Node    28.15750     -0.20233096     +0.72219408
e   0.6173627      Incl.   21.01823     -0.39113841     +0.55960270
P  17.06
From 168 observations 2000 Aug. 26-Dec. 22, mean residual 0".76.

Comet 71P/Clark
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 30.20689 TT                                   Sato
q   1.5862767            (2000.0)            P               Q
n   0.17738403     Peri.  208.92610     -0.03424004     +0.98936924
a   3.1370856      Node    59.43552     -0.88246548     +0.03645360
e   0.4943470      Incl.    9.44748     -0.46912929     -0.14078226
P   5.56
From 841 observations 2005 Dec. 22-2017 Jan. 24, mean residual 0".85.
   Nongravitational parameters A1 = +2.08, A2 = +0.1025, A3 = -0.9425.

Comet 311P/PANSTARRS
Epoch 2017 July 26.0 TT = JDT 2457960.5
T 2017 July 10.63375 TT                                   Sato
q   1.9355735            (2000.0)            P               Q
n   0.30438783     Peri.  143.98392     +0.44804872     -0.88991644
a   2.1886914      Node   279.25779     +0.79865704     +0.44137865
e   0.1156481      Incl.    4.96654     +0.40174530     +0.11503745
P   3.24
From 138 observations 2010 Oct. 17-2016 July 13, mean residual 0".53.
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Comet 217P/LINEAR
Epoch 2017 July 26.0 TT = JDT 2457960.5
T 2017 July 16.55345 TT                                   Sato
q   1.2353794            (2000.0)            P               Q
n   0.12523441     Peri.  246.95170     +0.95786032     -0.22282832
a   3.9565829      Node   125.45407     +0.26627233     +0.92548769
e   0.6877661      Incl.   12.85625     -0.10771562     +0.30630062
P   7.87
From 2370 observations 2001 June 21-2016 June 5, mean residual 0″.56.
   Nongravitational parameters A1 = +0.39, A2 = -0.1093.

Comet 18D/Perrine-Mrkos [Orbit 3]
Epoch 2017 July 26.0 TT = JDT 2457960.5
T 2017 July 22.08322 TT                                   Sato
q   1.7568799            (2000.0)            P               Q
n   0.11828080     Peri.  153.45485     +0.84488686     -0.48697794
a   4.1101710      Node   237.43955     +0.43214002     +0.86526875
e   0.5725531      Incl.   15.22975     +0.31531126     +0.11900623
P   8.33
From 34 observations 1955 Oct. 20-1968 Dec. 26, mean residual 1″.76.
   Nongravitational parameters A1 = +3.06, A2 = -0.4865.
From CHB 2016.

Comet 259P/Garradd
Epoch 2017 July 26.0 TT = JDT 2457960.5
T 2017 Aug. 4.02523 TT                                    Sato
q   1.8089542            (2000.0)            P               Q
n   0.21833916     Peri.  257.50331     +0.59996923     +0.77080950
a   2.7313769      Node    51.48463     -0.58550199     +0.60552875
e   0.3377134      Incl.   15.88947     -0.54518285     +0.19795870
P   4.51
From 38 observations 2008 July 15-2012 Apr. 15, mean residual 0″.72.

Comet 189P/NEAT
Epoch 2017 July 26.0 TT = JDT 2457960.5
T 2017 Aug. 5.93574 TT                                    Sato
q   1.2133659            (2000.0)            P               Q
n   0.19484460     Peri.   16.21469     +0.45236336     +0.82615351
a   2.9467534      Node   281.75203     -0.85161634     +0.28831814
e   0.5882364      Incl.   20.06619     -0.26479614     +0.48408990
P   5.06
From 1318 observations 2002 July 30-2012 Oct. 15, mean residual 0″.67.
   Nongravitational parameters A1 = -0.11, A2 = -0.0107.

Comet P/2010 P4 (WISE)
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Aug. 18.34139 TT                                   Sato
q   1.8607315            (2000.0)            P               Q
n   0.13816725     Peri.  354.15556     +0.99766950     +0.06635312
a   3.7056634      Node     2.23359     -0.03313392     +0.67485725
e   0.4978682      Incl.   24.07862     -0.05964660     +0.73495915
P   7.13
From 61 observations 2010 Aug. 6-2011 Jan. 2, mean residual 0″.58.

Comet 30P/Reinmuth
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Aug. 19.17081 TT                                   Sato
q   1.8766770            (2000.0)            P               Q
n   0.13470825     Peri.   13.29083     -0.67992533     -0.72292255
a   3.7688303      Node   119.70394     +0.65918061     -0.67595351
e   0.5020532      Incl.    8.12883     +0.32122029     -0.14307286
P   7.32
From 2460 observations 1958 Jan. 20-2017 Jan. 27, mean residual 0″.75.
   Nongravitational parameters A1 = +0.30, A2 = -0.0217.
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Comet P/2010 EY90 = 2017 B1 (Lemmon)
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Aug. 26.73621 TT                                   Sato
q   2.4985764            (2000.0)            P               Q
n   0.14596988     Peri.  255.97765     -0.67013117     +0.74086179
a   3.5724039      Node   331.78238     -0.63870602     -0.60664132
e   0.3005896      Incl.    5.49234     -0.37812542     -0.28828824
P   6.75
From 41 observations 2010 Mar. 14-2017 Jan. 27, mean residual 0″.53.

Comet C/2015 VL62 (Lemmon-Yeung-PANSTARRS)
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Aug. 28.59957 TT                                   Sato
q   2.7202991            (2000.0)            P               Q
z  -0.0006663      Peri.  128.36492     +0.80634630     -0.53708983
 +/-0.0000019      Node    94.55150     -0.58984887     -0.69953696
e   1.0018127      Incl.  165.61401     -0.04340463     -0.47136245
From 856 observations 2015 Nov. 2-2017 Jan. 23, mean residual 0″.45.

Comet 145P/Shoemaker-Levy
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Aug. 31.89980 TT                                   Sato
q   1.9041180            (2000.0)            P               Q
n   0.11673049     Peri.   10.36662     +0.79833417     -0.59574020
a   4.1464825      Node    26.81043     +0.53760372     +0.63911861
e   0.5407872      Incl.   11.25978     +0.27137573     +0.48643706
P   8.44
From 203 observations 1991 Sept. 17-2010 Apr. 28, mean residual 0″.73.
   Nongravitational parameters A1 = +0.08, A2 = -0.0809.

Comet C/2016 T3 (PANSTARRS)
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Sept. 6.97335 TT                                   Sato
q   2.6495711            (2000.0)            P               Q
z  +0.0070640      Peri.  194.67276     -0.26316681     -0.88445603
 +/-0.0000240      Node   271.75086     +0.91943807     -0.10896295
e   0.9812836      Incl.   22.67553     +0.29219320     -0.45372304
From 155 observations 2016 Oct. 10-2017 Jan. 9, mean residual 0″.49.

Comet C/2014 B1 (Schwartz)
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Sept. 10.52715 TT                                  Sato
q   9.5566401            (2000.0)            P               Q
z  -0.0003963      Peri.  345.84128     -0.85029021     -0.50400713
 +/-0.0000018      Node   161.39571     +0.51719675     -0.85352931
e   1.0037875      Incl.   28.37227     +0.09754014     +0.13215341
From 320 observations 2014 Jan. 28-2017 Jan. 20, mean residual 0″.49.

Comet P/2010 H2 (Vales)
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Sept. 15.86835 TT                                  Sato
q   3.0965370            (2000.0)            P               Q
n   0.13065115     Peri.  129.52405     -0.94975276     +0.22069668
a   3.8464541      Node    64.26633     -0.30377244     -0.82084716
e   0.1949632      Incl.   14.26389     +0.07544527     -0.52678545
P   7.54
From 1598 observations 2010 Apr. 16-July 14, mean residual 0″.47.

Comet C/2016 N4 (MASTER)
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Sept. 16.59674 TT                                  Sato
q   3.1990937            (2000.0)            P               Q
z  +0.0001889      Peri.   55.95564     +0.58262655     -0.80666306
 +/-0.0000025      Node   354.03141     -0.14120968     +0.01973043
e   0.9993957      Incl.   72.55736     +0.80037874     +0.59068216
From 604 observations 2016 July 15-2017 Jan. 19, mean residual 0″.43.
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Comet 213P/Van Ness
Epoch 2017 Oct. 14.0 TT = JDT 2458040.5
T 2017 Sept. 24.37933 TT                                Sato
q   1.9833824            (2000.0)            P               Q
n   0.16089872     Peri.     5.54404     +0.72864379     +0.67139845
a   3.3478629      Node    311.32817     -0.63509729     +0.58841307
e   0.4075676      Incl.    10.37884     -0.25637796     +0.45054874
P   6.13
From 2982 observations 2005 Aug. 4-2012 Feb. 2, mean residual 0″.55.
   Nongravitational parameters A1 = +0.91, A2 = -2.2534.

Comet 263P/Gibbs
Epoch 2017 Oct. 14.0 TT = JDT 2458040.5
T 2017 Sept. 29.85117 TT                                Sato
q   1.2627934            (2000.0)            P               Q
n   0.18405428     Peri.    34.60320     -0.75985929     -0.62098811
a   3.0608269      Node    105.83042     +0.54212222     -0.76856772
e   0.5874339      Incl.    11.53131     +0.35877201     -0.15387473
P   5.35
From 146 observations 2006 Nov. 10-2012 June 14, mean residual 0″.67.

Comet P/2004 T1 (LINEAR-NEAT)
Epoch 2017 Oct. 14.0 TT = JDT 2458040.5
T 2017 Oct. 13.26078 TT                                 Sato
q   1.7159662            (2000.0)            P               Q
n   0.15202516     Peri.   336.34483     +0.87874792     -0.45320714
a   3.4769017      Node     51.45919     +0.46274066     +0.73215206
e   0.5064669      Incl.    11.03285     +0.11693233     +0.50848466
P   6.48
From 455 observations 2004 July 16-2005 Mar. 7, mean residual 0″.66.
From CHB 2015.

Comet 65P/Gunn
Epoch 2017 Oct. 14.0 TT = JDT 2458040.5
T 2017 Oct. 16.79913 TT                                 Sato
q   2.9100412            (2000.0)            P               Q
n   0.12895914     Peri.   213.53809     +0.09059853     +0.98585999
a   3.8800260      Node     62.01999     -0.87503821     +0.14638804
e   0.2499944      Incl.     9.18522     -0.47549977     -0.08155139
P   7.64
From 3569 observations 2004 June 23-2017 Jan. 31, mean residual 0″.67.
   Nongravitational parameters A1 = +0.83, A2 = +0.2149.

Comet 18D/Perrine-Mrkos [Orbit 1]
Epoch 2017 Oct. 14.0 TT = JDT 2458040.5
T 2017 Oct. 21.23154 TT                                 Sato
q   1.7927378            (2000.0)            P               Q
n   0.11460626     Peri.   152.14641     +0.86482030     -0.46347516
a   4.1975624      Node    236.76433     +0.40699929     +0.87231422
e   0.5729098      Incl.    13.34594     +0.29400242     +0.15575199
P   8.60
From 27 observations 1955 to 1969, mean residual 3″.02.
   Nongravitational parameters A1 = +1.15, A2 = -0.4481.
From Muraoka's orbit (CHB 2009).

Comet 96P/Machholz
Epoch 2017 Oct. 14.0 TT = JDT 2458040.5
T 2017 Oct. 27.96201 TT                                 Sato
q   0.1239488            (2000.0)            P               Q
n   0.18638290     Peri.    14.79284     -0.20613576     -0.49003473
a   3.0352794      Node     94.25442     +0.78919540     -0.59499145
e   0.9591640      Incl.    58.13775     +0.57851419     +0.63706447
P   5.29
From 1033 observations 1986 May 13-2012 Oct. 5, mean residual 0″.61.
   Nongravitational parameters A1 = -0.02, A2 = -0.0019.
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Comet 183P/Korlevic-Juric
Epoch 2017 Nov. 23.0 TT = JDT 2458080.5
T 2017 Nov. 11.31525 TT                                   Sato
q   3.8723570            (2000.0)            P               Q
n   0.10364346     Peri.  161.25693     -0.97303486     -0.22832215
a   4.4885711      Node     5.84589     +0.14812532     -0.72735874
e   0.1372851      Incl.   18.75251     +0.17681078     -0.64716169
P   9.51
From 182 observations 1954 Feb. 26-2016 Dec. 5, mean residual 0″.80.

Comet 62P/Tsuchinshan
Epoch 2017 Nov. 23.0 TT = JDT 2458080.5
T 2017 Nov. 16.26513 TT                                   Sato
q   1.3838092            (2000.0)            P               Q
n   0.15461565     Peri.   30.35800     -0.50180790     -0.84838361
a   3.4379567      Node    90.24224     +0.75584145     -0.52487013
e   0.5974908      Incl.    9.70792     +0.42058594     -0.06896808
P   6.37
From 569 observations 1965 Jan. 6-2005 June 7, mean residual 0″.66.
   Nongravitational parameters A1 = -0.12, A2 = +0.0206.

Comet24P/Schaumasse
Epoch 2017 Nov. 23.0 TT = JDT 2458080.5
T 2017 Nov. 16.85622 TT                                   Sato
q   1.2063351            (2000.0)            P               Q
n   0.11943727     Peri.   58.05749     -0.72203782     -0.66229804
a   4.0835963      Node    79.62993     +0.54604729     -0.72309014
e   0.7045900      Incl.   11.73461     +0.42484555     -0.19621913
P   8.25
From 584 observations 1984 Sept. 5-2001 July 23, mean residual 0″.79.
   Nongravitational parameters A1 = +0.04, A2 = -0.0881.

Comet 236P/LINEAR
Epoch 2017 Nov. 23.0 TT = JDT 2458080.5
T 2017 Nov. 20.15387 TT                                   Sato
q   1.8374930            (2000.0)            P               Q
n   0.13662439     Peri.  119.26732     +0.96420838     -0.06810541
a   3.7335091      Node   245.67101     -0.00529738     +0.96130744
e   0.5078375      Incl.   16.33325     +0.26509269     +0.26692632
P   7.21
From 552 observations 2003 Sept. 27-2011 Feb. 6, mean residual 0″.63.

Comet C/2016 A1 (PANSTARRS)
Epoch 2017 Nov. 23.0 TT = JDT 2458080.5
T 2017 Nov. 23.35937 TT                                   Sato
q   5.3278476            (2000.0)            P               Q
z  -0.0003833      Peri.   10.31877     -0.53514786     +0.51119475
 +/-0.0000017      Node   128.17461     +0.70123664     -0.17510612
e   1.0020420      Incl.  121.18567     +0.47104557     +0.84143792
From 232 observations 2016 Jan. 1-2017 Jan. 27, mean residual 0″.43.

Comet 14P/Wolf
Epoch 2017 Nov. 23.0 TT = JDT 2458080.5
T 2017 Dec. 1.99810 TT                                    Sato
q   2.7430367            (2000.0)            P               Q
n   0.11212500     Peri.  159.02398     +0.98413340     +0.02097318
a   4.2592625      Node   202.11606     -0.01300876     +0.99884571
e   0.3559832      Incl.   27.90312     +0.17695261     -0.04321304
P   8.79
From 234 observations 1950 June 18-2016 July 9, mean residual 0″.68.
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Comet 139P/Vaisala-Oterma
Epoch 2017 Nov. 23.0 TT = JDT 2458080.5
T 2017 Dec. 10.88891 TT Sato
q 3.4144374 (2000.0) P Q
n 0.10221284 Peri. 166.07536 +0.66527472 -0.74572971
a 4.5303569 Node 242.20769 +0.68103538 +0.62591154
e 0.2463204 Incl. 2.33294 +0.30594177 +0.22830233
P 9.64
From 297 observations 1998 Nov. 16-2016 Oct. 30, mean residual 0″.67.
Nongravitational parameters Y1 = -1.53, Y2 = +0.0289.

Comet C/2015 V1 (PANSTARRS)
Epoch 2018 Jan. 2.0 TT = JDT 2458120.5
T 2017 Dec. 17.73282 TT Sato
q 4.2668317 (2000.0) P Q
z -0.0001250 Peri. 179.63824 +0.95387625 +0.22990061
+/-0.0000012 Node 197.19410 +0.27376212 -0.40229850
e 1.0005334 Incl. 139.22916 +0.12318442 -0.88617246
From 612 observations 2015 Nov. 2-2017 Jan. 27, mean residual 0″.43.

Comet P/2010 D1 (WISE)
Epoch 2018 Jan. 2.0 TT = JDT 2458120.5
T 2017 Dec. 18.88884 TT Sato
q 2.6896035 (2000.0) P Q
n 0.11590298 Peri. 226.13847 +0.88809407 -0.45636041
a 4.1661954 Node 160.80754 +0.45493098 +0.85552132
e 0.3544221 Incl. 9.62967 +0.06577786 +0.24457811
P 8.50
From 16 observations 2009 Nov. 9-2010 Feb. 20, mean residual 0″.57.

Comet P/2009 S2 (McNaught)
Epoch 2018 Jan. 2.0 TT = JDT 2458120.5
T 2017 Dec. 20.99892 TT Sato
q 2.2140042 (2000.0) P Q
n 0.11570575 Peri. 230.39337 +0.91111469 +0.07431251
a 4.1709286 Node 121.57366 -0.02697090 +0.99225290
e 0.4691819 Incl. 28.41389 -0.41126948 +0.09955822
P 8.52
From 71 observations 2008 May 30-2010 Jan. 26, mean residual 0″.61.

Comet C/2015 X5 (PANSTARRS)
Epoch 2018 Jan. 2.0 TT = JDT 2458120.5
T 2017 Dec. 31.11046 TT Sato
q 6.8011781 (2000.0) P Q
z -0.0004765 Peri. 27.76129 -0.25127824 +0.67031172
+/-0.0000334 Node 122.31536 +0.66175581 -0.40747250
e 1.0032407 Incl. 124.28909 +0.70635579 +0.62020026
From 46 observations 2015 Dec. 6-2016 Apr. 4, mean residual 0″.29.

Comet P/1998 VS24 (LINEAR)
Epoch 2018 Jan. 2.0 TT = JDT 2458120.5
T 2018 Jan. 19.18924 TT Sato
q 3.4386887 (2000.0) P Q
n 0.10207450 Peri. 244.94979 +0.71806206 -0.69527502
a 4.5344492 Node 159.05304 +0.66593645 +0.67330158
e 0.2416524 Incl. 5.02236 +0.20227587 +0.25151070
P 9.66
From 47 observations 1998 Oct. 14-1999 Jan. 14, mean residual 0″.66.

Comet 130P/McNaught-Hughes
Epoch 2018 Jan. 2.0 TT = JDT 2458120.5
T 2018 Jan. 21.75897 TT Sato
q 1.8236358 (2000.0) P Q
n 0.15847040 Peri. 245.90834 +0.71652901 +0.69043144
a 3.3819767 Node 70.25680 -0.59547874 +0.67968043
e 0.4607781 Incl. 6.06536 -0.36330601 +0.24766701
P 6.22
From 711 observations 1991 Sept. 14-2016 Mar. 10, mean residual 0″.62
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Comet 74P/Smirnova-Chernykh
Epoch 2018 Feb. 11.0 TT = JDT 2458160.5
T 2018 Jan. 26.70728 TT Sato

q	3.5364717		(2000.0)	P	Q
n	0.11627544	Peri.	87.13519	-0.95561774	-0.27210691
a	4.1572938	Node	77.05559	+0.20253806	-0.88515036
e	0.1493332	Incl.	6.65391	+0.21394640	-0.37744757
P	8.48				

From 3423 observations 1981 Sept. 26-2017 Jan. 28, mean residual 0″.65.
Nongravitational parameters Y1 = +0.13 Y2 = -0.0216.

Comet C/2016 Q4 (Kowalski)
Epoch 2018 Feb. 11.0 TT = JDT 2458160.5
T 2018 Jan. 27.10538 TT Sato

q	7.0852576		(2000.0)	P	Q
n	0.01428969	Peri.	99.43458	+0.97461469	-0.18487984
a	16.8185094	Node	271.29607	+0.12110121	+0.90970142
e	0.5787226	Incl.	7.25632	+0.18831011	+0.37183702
P	68.97				

From 78 observations 2016 July 11-Nov. 19, mean residual 0″.68.

Comet 185P/Petriew
Epoch 2018 Feb. 11.0 TT = JDT 2458160.5
T 2018 Jan. 27.67592 TT Sato

q	0.9338077		(2000.0)	P	Q
n	0.18047356	Peri.	181.91862	+0.80939992	-0.57139530
a	3.1011801	Node	214.09835	+0.54196783	+0.81570030
e	0.6988864	Incl.	13.99418	+0.22614738	+0.09022429
P	5.46				

From 868 observations 2001 June 12-2013 Mar. 15, mean residual 0″.84.
Nongravitational parameters A1 = +0.87, A2 = +0.3684.

Comet 197P/LINEAR
Epoch 2018 Feb. 11.0 TT = JDT 2458160.5
T 2018 Jan. 28.83849 TT Sato

q	1.0599022		(2000.0)	P	Q
n	0.20318032	Peri.	188.68352	-0.27105380	+0.87764913
a	2.8655959	Node	66.39361	-0.85520362	-0.03109971
e	0.6301285	Incl.	25.55645	-0.44176533	-0.47829364
P	4.85				

From 304 observations 2003 May 23-2013 Sept. 25, mean residual 0″.73.
Nongravitational parameters A1 = +0.03, A2 = +0.0197.

Comet P/2010 J5 = 2017 B2 (McNaught)
Epoch 2018 Feb. 11.0 TT = JDT 2458160.5
T 2018 Jan. 29.26029 TT Sato

q	3.7508609		(2000.0)	P	Q
n	0.11768079	Peri.	146.70023	-0.84187258	+0.52692175
a	4.1241299	Node	65.52130	-0.51890481	-0.73095578
e	0.0905085	Incl.	7.36302	-0.14828473	-0.43365553
P	8.38				

From 114 observations 2005 Nov. 1-2017 Jan. 29, mean residual 0″.61.

Comet 250P/Larson
Epoch 2018 Feb. 11.0 TT = JDT 2458160.5
T 2018 Feb. 2.22197 TT Sato

q	2.2130552		(2000.0)	P	Q
n	0.13676448	Peri.	45.09450	-0.46315318	-0.85837688
a	3.7309592	Node	73.67973	+0.73453405	-0.51106963
e	0.4068402	Incl.	13.29088	+0.49593232	-0.04468744
P	7.21				

From 258 observations 1995 Dec. 22-2011 Apr. 29, mean residual 0″.69.

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Comet 245P/WISE
Epoch 2018 Feb. 11.0 TT = JDT 2458160.5
T 2018 Feb. 8.65073 TT                                  Sato
q   2.1901384            (2000.0)            P               Q
n   0.12141777     Peri.  316.67891     +0.09044538     +0.96449966
a   4.0390685      Node   316.67978     -0.78621493     -0.08377123
e   0.4577615      Incl.   21.20102     -0.61129838     +0.25044518
P   8.12
From 75 observations 2002 Aug. 27-2010 Oct. 11, mean residual 0″.50.

Comet C/2015 O1 (PANSTARRS)
Epoch 2018 Feb. 11.0 TT = JDT 2458160.5
T 2018 Feb. 19.03272 TT                                 Sato
q   3.7294564            (2000.0)            P               Q
z  -0.0000343      Peri.   89.59832     -0.52098682     -0.50148009
 +/-0.0000030      Node   299.85557     -0.59857128     +0.79153973
e   1.0001280      Incl.  127.21088     +0.60851061     +0.34926004
From 304 observations 2015 June 15-2016 Oct. 4, mean residual 0″.51.

Comet P/2006 F1 (Kowalski) [Orbit 1]
Epoch 2018 Mar. 23.0 TT = JDT 2458200.5
T 2018 Mar. 14.88476 TT                                 Sato
q   4.1082508            (2000.0)            P               Q
n   0.09766923     Peri.  186.14776     +0.64868032     +0.70020306
a   4.6697921      Node   124.74765     -0.68188806     +0.70874252
e   0.1202498      Incl.   21.28038     -0.33799781     -0.08602162
P  10.09
From 216 observations 2005 May 10-2007 Sept. 1, mean residual 0″.71.

Comet P/2006 F1 (Kowalski) [Orbit 1]
Epoch 2018 Mar. 23.0 TT = JDT 2458200.5
T 2018 Mar. 14.88478 TT                                 Sato
q   4.1082508            (2000.0)            P               Q
n   0.09766923     Peri.  186.14775     +0.64868027     +0.70020310
a   4.6697922      Node   124.74765     -0.68188811     +0.70874247
e   0.1202498      Incl.   21.28038     -0.33799780     -0.08602164
P  10.09
From 216 observations 2005 May 10-2007 Sept. 1, mean residual 0″.71.

Comet 235P/LINEAR
Epoch 2018 Mar. 23.0 TT = JDT 2458200.5
T 2018 Mar. 17.46292 TT                                 Sato
q   2.7322070            (2000.0)            P               Q
n   0.12360207     Peri.  333.74109     -0.99730016     -0.03584995
a   3.9913416      Node   204.46094     +0.05157214     -0.96321742
e   0.3154665      Incl.    8.90363     -0.05227531     -0.26632120
P   7.97
From 132 observations 2001 Dec. 26-2010 July 4, mean residual 0″.75.

Comet P/2011 VJ5 (Lemmon)
Epoch 2018 Mar. 23.0 TT = JDT 2458200.5
T 2018 Mar. 22.31012 TT                                 Sato
q   1.5078430            (2000.0)            P               Q
n   0.15695936     Peri.  315.28069     -0.57669645     -0.81686835
a   3.4036475      Node   169.91705     +0.76761113     -0.54688718
e   0.5569920      Incl.    3.97529     +0.27963255     -0.18341351
P   6.28
From 60 observations 2011 Nov. 3-2012 Mar. 30, mean residual 0″.78.
From CHB 2016.
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Comet P/2012 T1 (PANSTARRS)
Epoch 2018 Mar. 23.0 TT = JDT 2458200.5
T 2018 Apr. 11.72180 TT Sato

q	2.4020153	(2000.0)		P	Q
n	0.17624668	Peri.	299.89300	+0.88567661	-0.42308647
a	3.1505672	Node	85.72135	+0.46387615	+0.78866321
e	0.2375927	Incl.	11.05667	+0.01989613	+0.44610333
P	5.59				

From 165 observations 2012 Oct. 6-2013 Jan. 15, mean residual 0″.45.
From CHB 2016.

Comet 169P/NEAT
Epoch 2018 May 2.0 TT = JDT 2458240.5
T 2018 Apr. 29.60177 TT Sato

q	0.6036373	(2000.0)		P	Q
n	0.23477227	Peri.	218.08852	+0.82651013	-0.56276309
a	2.6023848	Node	176.08649	+0.55249553	+0.80642343
e	0.7680445	Incl.	11.29554	+0.10784106	+0.18160110
P	4.20				

From 1151 observations 1989 Mar. 7-2016 Apr. 3, mean residual 0″.47.

Comet C/2015 XY1 (Lemmon)
Epoch 2018 May 2.0 TT = JDT 2458240.5
T 2018 Apr. 29.88261 TT Sato

q	7.9281460	(2000.0)		P	Q
z	-0.0005163	Peri.	196.34885	+0.04273834	+0.86105111
	+/-0.0000024	Node	281.61665	+0.96477830	+0.09620079
e	1.0040932	Incl.	148.84764	+0.25956939	-0.49933595

From 113 observations 2015 Dec. 4-2017 Jan. 8, mean residual 0″.43.

Comet 37P/Forbes
Epoch 2018 May 2.0 TT = JDT 2458240.5
T 2018 May 4.15077 TT Sato

q	1.6103163	(2000.0)		P	Q
n	0.15331462	Peri.	329.98296	+0.25597140	+0.96030540
a	3.4573791	Node	314.59087	-0.85305216	+0.17044074
e	0.5342379	Incl.	8.95660	-0.45473142	+0.22082460
P	6.43				

From 696 observations 1993 Mar. 21-2012 Dec. 9, mean residual 0″.84.
Nongravitational parameters A1 = -1.99, A2 = -1.6362.

Comet 143P/Kowal-Mrkos
Epoch 2018 May 2.0 TT = JDT 2458240.5
T 2018 May 7.30260 TT Sato

q	2.5322561	(2000.0)		P	Q
n	0.11065434	Peri.	320.86792	-0.89555474	+0.43869059
a	4.2969182	Node	245.30337	-0.38492119	-0.84768361
e	0.4106809	Incl.	4.69591	-0.22319807	-0.29830029
P	8.91				

From 429 observations 1984 Apr. 23-2016 Jan. 7, mean residual 0″.51.

Comet 253P/PANSTARRS
Epoch 2018 May 2.0 TT = JDT 2458240.5
T 2018 May 7.74775 TT Sato

q	2.0367554	(2000.0)		P	Q
n	0.15252082	Peri.	230.72953	+0.95155223	-0.30386595
a	3.4693647	Node	146.88317	+0.30192276	+0.89435043
e	0.4129313	Incl.	4.94041	+0.05823219	+0.32833335
P	6.46				

From 339 observations 1998 Sept. 14-2012 Feb. 23, mean residual 0″.58.

Comet C/2016 R2 (PANSTARRS)
Epoch 2018 May 2.0 TT = JDT 2458240.5
T 2018 May 9.61354 TT Sato

q	2.6024458	(2000.0)		P	Q
z	+0.0014288	Peri.	33.19335	-0.14727718	-0.52443175
	+/-0.0000214	Node	80.56881	+0.61561208	-0.71222535
e	0.9962818	Incl.	58.22355	+0.77416484	+0.46659017

From 130 observations 2016 Aug. 30-2017 Jan. 28, mean residual 0″.51.

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Coemt 240P/NEAT
Epoch 2018 May 2.0 TT = JDT 2458240.5
T 2018 May 16.05869 TT                                  Sato
q   2.1338148            (2000.0)            P               Q
n   0.12932143     Peri.  352.10327     +0.37924644     -0.84135465
a   3.8727761      Node    74.92649     +0.86924751     +0.18130786
e   0.4490219      Incl.   23.50394     +0.31714493     +0.50916580
P   7.62
From 1667 observations 2002 Oct. 5-2012 May 16, mean residual 0″.61.
   Nongravitational parameters A1 = -2.37, A2 = -2.2646.

Comet 66P/du Toit
Epoch 2018 May 2.0 TT = JDT 2458240.5
T 2018 May 19.23191 TT                                  Sato
q   1.2901090            (2000.0)            P               Q
n   0.06616765     Peri.  257.21295     +0.13916960     +0.98304254
a   6.0539508      Node    21.89629     -0.73799176     +0.18336381
e   0.7868980      Incl.   18.67508     -0.66030295     +0.00225451
P  14.90
From 120 observations 1974 Mar. 22-2003 Sept. 8, mean residual 0″.62.

Comet159P/LONEOS
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 May 22.80168 TT                                  Sato
q   3.6252084            (2000.0)            P               Q
n   0.06943704     Peri.    4.76230     +0.50884942     -0.79664163
a   5.8623976      Node    55.02411     +0.77608835     +0.26053695
e   0.3816168      Incl.   23.46268     +0.37250387     +0.54541967
P  14.19
From 165 observations 1989 Dec. 17-2006 Feb. 18, mean residual 0″.62.

Comet 107P/(4015) Wilson-Harrington
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 May  23.52709 TT                                 Sato
q   0.9698821            (2000.0)            P               Q
n   0.23149236     Peri.   95.40707     +0.99806244     -0.03867426
a   2.6269085      Node   266.81578     +0.01631480     +0.91861573
e   0.6307895      Incl.    2.79807     +0.06004323     +0.39325493
P   4.26
From 816 observations 1949 Nov. 21-2016 Apr. 2, mean residual 0″.44.

Comet 187P/LINEAR
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 May 26.64450 TT                                  Sato
q   3.8806357            (2000.0)            P               Q
n   0.09995886     Peri.  133.25687     -0.43112680     +0.87480186
a   4.5982071      Node   109.97865     -0.88091437     -0.35508372
e   0.1560546      Incl.   13.60202     -0.19524227     -0.32960167
P   9.86
From 160 observations 1999 May 12-2008 Aug. 28, mean residual 0″.72.

Comet P/2008 T4 (Hill)
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 May 29.66558 TT                                  Sato
q   2.5265382            (2000.0)            P               Q
n   0.10440508     Peri.    1.53795     +0.69292565     -0.71686739
a   4.4667157      Node    44.60897     +0.66033418     +0.58799314
e   0.4343633      Incl.    6.30881     +0.28950443     +0.37465346
P   9.44
From 263 observations 2008 Sept. 28-2009 Feb. 27, mean residual 0″.59.
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Comet 164P/Christensen
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 May 31.39825 TT Sato

q	1.6852575	(2000.0)	P	Q
n	0.14067604	Peri. 325.93064	+0.56206255	-0.77834701
a	3.6614740	Node 88.30590	+0.80745138	+0.44309588
e	0.5397325	Incl. 16.25275	+0.17918692	+0.44479431
P	7.01			

From 888 observations 2004 Oct. 19-2012 May 18, mean residual 0″.67.

Comet P/2001 T3 (NEAT)
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 June 10.93847 TT Sato

q	2.4853449	(2000.0)	P	Q
n	0.06021593	Peri. 356.78276	+0.61378810	-0.74091424
a	6.4465659	Node 55.16332	+0.73153767	+0.40393408
e	0.6144699	Incl. 19.39753	+0.29684474	+0.53654762
P	16.37			

From 146 observations 2001 Aug. 20-2002 Feb. 7, mean residual 0″.61.
From CHB 2015.

Comet P/2002 EJ57 (LINEAR)
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 June 18.54027 TT Sato

q	2.6272067	(2000.0)	P	Q
n	0.06000513	Peri. 167.02121	-0.73714434	-0.67437798
a	6.4616554	Node 330.43210	+0.61196707	-0.63937510
e	0.5934158	Incl. 4.97681	+0.28655633	-0.36934241
P	16.43			

From 57 observations 2002 Feb. 16-May 12, mean residual 0″.59.

Comet P/2011 CR42 (Catalina)
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 June 22.57823 TT Sato

q	2.5216698	(2000.0)	P	Q
n	0.14989969	Peri. 173.11830	-0.61674849	+0.77704196
a	3.5096911	Node 58.72138	-0.72903995	-0.50359601
e	0.2815123	Incl. 8.46476	-0.29685358	-0.37761998
P	6.58			

From 119 observations 2011 Feb. 10-2013 Oct. 30, mean residual 0″.59.

Comet P/2013 CU129 (PANSTARRS)
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 June 24.30603 TT Sato

q	0.7978537	(2000.0)	P	Q
n	0.20191999	Peri. 211.92773	-0.21380401	+0.96497113
a	2.8775078	Node 46.22858	-0.84612996	-0.10514361
e	0.7227275	Incl. 12.15529	-0.48821301	-0.24036545
P	4.88			

From 159 observations 2013 Feb. 1-Nov. 5, mean residual 0″.64.

Comet 82P/Gehrels
Epoch 2018 June 11.0 TT = JDT 2458280.5
T 2018 June 28.61291 TT Sato

q	3.6342261	(2000.0)	P	Q
n	0.11693154	Peri. 227.19618	-0.28403299	-0.95866498
a	4.1417284	Node 239.31218	+0.88534169	-0.25544711
e	0.1225339	Incl. 1.12824	+0.36809693	-0.12533248
P	8.43			

From 107 observations 1975 Oct. 27-2011 Mar. 23, mean residual 0″.70.

Comet 49P/Arend-Rigaux
Epoch 2018 July 21.0 TT = JDT 2458320.5
T 2018 July 15.49698 TT Sato

q	1.4296053	(2000.0)	P		Q
n	0.14618308	Peri.	332.88781	-0.05172551	-0.95687571
a	3.5689296	Node	118.82413	+0.96518852	-0.12138702
e	0.5994302	Incl.	19.04317	+0.25638954	+0.26392056
P	6.74				

From 2746 observations 1951 Apr. 6-2012 May 14, mean residual 0″.60.
Nongravitational parameters A1 = +0.02, A2 = -0.0014.

Comet C/2016 N6 (PANSTARRS)
Epoch 2018 July 21.0 TT = JDT 2458320.5
T 2018 July 18.12338 TT Sato

q	2.6687525	(2000.0)	P		Q
z	+0.0004079	Peri.	162.80494	-0.53332859	+0.08478565
	+/-0.0000237	Node	298.97487	+0.61779042	+0.71869692
e	0.9989113	Incl.	105.83146	+0.57783701	-0.69013486

From 202 observations 2016 June 27-Dec. 26, mean residual 0″.45.

Comet P/2005 JN (Spacewatch)
Epoch 2018 July 21.0 TT = JDT 2458320.5
T 2018 July 23.42123 TT Sato

q	2.2770971	(2000.0)	P		Q
n	0.15052055	Peri.	153.41719	-0.71208789	+0.68687378
a	3.5000334	Node	70.76507	-0.66845360	-0.59995394
e	0.3494070	Incl.	8.85737	-0.21471055	-0.41019468
P	6.55				

From 27 observations 2005 Apr. 4-May 25, mean residual 0″.60.
From CHB 2016.

Comet C/2016 M1 (PANSTARRS)
Epoch 2018 Aug. 30.0 TT = JDT 2458360.5
T 2018 Aug. 10.17774 TT Sato

q	2.2105182	(2000.0)	P		Q
z	+0.0004128	Peri.	209.82588	+0.02469160	-0.03425331
	+/-0.0000070	Node	92.20399	-0.59785999	+0.80048796
e	0.9990876	Incl.	90.99976	-0.80122017	-0.59836923

From 495 observations 2016 June 22-2017 Jan. 6, mean residual 0″.54.

Comet 105P/Singer Brewster
Epoch 2018 Aug. 30.0 TT = JDT 2458360.5
T 2018 Aug. 10.31746 TT Sato

q	2.0445318	(2000.0)	P		Q
n	0.15259431	Peri.	46.47479	-0.51846711	+0.85440857
a	3.4682508	Node	192.42942	-0.82332118	-0.50963771
e	0.4105006	Incl.	9.17504	-0.23094173	-0.10126895
P	6.46				

From 303 observations 1986 May 3-2012 Nov. 6, mean residual 0″.71.
Nongravitational parameters A1 = +0.19, A2 = -0.1260.

Comet 48P/Johnson
Epoch 2018 Aug. 30.0 TT = JDT 2458360.5
T 2018 Aug. 12.19895 TT Sato

q	2.0045320	(2000.0)	P		Q
n	0.15064116	Peri.	216.56128	+0.82311161	+0.53204875
a	3.4981650	Node	110.13345	-0.45794112	+0.82861352
e	0.4269762	Incl.	12.20697	-0.33582318	+0.17413717
P	6.54				

From 1232 observations 1949 Sept. 24-2016 Mar. 30, mean residual 0″.66.
Nongravitational parameters A1 = +0.59, A2 = +0.0221.

Ccomet 243P/NEAT
Epoch 2018 Aug. 30.0 TT = JDT 2458360.5
T 2018 Aug. 26.03778 TT Sato

q	2.4544592		(2000.0)	P	Q
n	0.13144830	Peri.	283.55976	+0.97226719	-0.19246841
a	3.8308875	Node	87.65861	+0.23023800	+0.88747211
e	0.3592975	Incl.	7.64145	-0.04107271	+0.41874714
P	7.50				

From 337 observations 2003 Aug. 1-2012 Jan. 26, mean residual 0″.69.

Comet 125P/Spacewatch
Epoch 2018 Aug. 30.0 TT = JDT 2458360.5
T 2018 Aug. 27.95396 TT Sato

q	1.5201719		(2000.0)	P	Q
n	0.17840963	Peri.	87.17858	-0.48776602	+0.86945890
a	3.1250515	Node	153.17822	-0.85392073	-0.45656951
e	0.5135530	Incl.	9.98876	-0.18139375	-0.18864120
P	5.52				

From 462 observations 1991 Sep. 8-2013 Sep. 14, mean residual 0″.63.
Nongravitational parameters A1 = +0.05, A2 = +0.0225.

Comet 21P/Giacobini-Zinner
Epoch 2018 Aug. 30.0 TT = JDT 2458360.5
T 2018 Sept. 10.50721 TT Sato

q	1.0127723		(2000.0)	P	Q
n	0.15064122	Peri.	172.86304	+0.98462546	-0.10358318
a	3.4981639	Node	195.39313	+0.12225970	+0.98376452
e	0.7104846	Incl.	31.99767	+0.12476082	-0.14655340
P	6.54				

From 773 observations 2005 Mar. 5-2013 Apr. 1, mean residual 0″.73.
Nongravitational parameters A1 = +0.52, A2 = +0.1567.

Comet 79P/du Toit-Hartley
Epoch 2018 Aug. 30.0 TT = JDT 2458360.5
T 2018 Sept. 13.34209 TT Sato

q	1.1209317		(2000.0)	P	Q
n	0.19514031	Peri.	281.84989	-0.92325103	+0.38038549
a	2.9437758	Node	280.52655	-0.32765260	-0.85293521
e	0.6192197	Incl.	3.14766	-0.20062729	-0.35750301
P	5.05				

From 200 observations 1986 Dec. 27-2013 Apr. 4, mean residual 0″.73.
Nongravitational parameters A1 = -0.14, A2 = +0.0004.

Comet P/2005 R1 (NEAT)
Epoch 2018 Aug. 30.0 TT = JDT 2458360.5
T 2018 Sept. 14.32838 TT Sato

q	2.0677858		(2000.0)	P	Q
n	0.07589049	Peri.	118.80130	+0.92631227	-0.27159090
a	5.5251553	Node	257.97849	+0.17788997	+0.92623813
e	0.6257506	Incl.	15.48437	+0.33211554	+0.26138346
P	12.99				

From 355 observations 2005 July 5-2006 Jan. 28, mean residual 0″.59.
From CHB 2015.

Comet 59P/Kearns-Kwee
Epoch 2018 Aug. 30.0 TT = JDT 2458360.5
T 2018 Sept. 16.77036 TT Sato

q	2.3587567		(2000.0)	P	Q
n	0.10341995	Peri.	127.70063	+0.15686217	-0.98042303
a	4.4950361	Node	312.82804	+0.84735924	+0.19550688
e	0.4752530	Incl.	9.33933	+0.50732295	-0.02340378
P	9.53				

From 926 observations 1989 Sept. 10-2010 Mar. 10, mean residual 0″.71.
Nongravitational parameters A1 = +1.62, A2 = -0.1697.

Comet 133P/(7968) Elst-Pizarro
Epoch 2018 Oct. 9.0 TT = JDT 2458400.5
T 2018 Sept. 20.75212 TT

				Sato	
q	2.6648024		(2000.0)	P	Q
n	0.17525514	Peri.	131.49023	+0.36862856	+0.92954027
a	3.1624394	Node	160.13623	-0.85993110	+0.34436236
e	0.1573586	Incl.	1.38923	-0.35303184	+0.13179319
P	5.62				

From 687 observations 1979 July 24-2016 Feb. 10, mean residual 0″.43.

Comet 26P/Grigg-Skjellerup
Epoch 2018 Oct. 9.0 TT = JDT 2458400.5
T 2018 Oct. 1.82059 TT

				Sato	
q	1.0822949		(2000.0)	P	Q
n	0.18832324	Peri.	2.20046	-0.83314312	+0.51573673
a	3.0143946	Node	211.53390	-0.51307426	-0.85556569
e	0.6409578	Incl.	22.44969	-0.20646391	+0.04497745
P	5.23				

From 533 observations 1972 Feb. 12-2014 Sept. 30, mean residual 0″.72.
Nongravitational parameters A1 = +0.02, A2 = +0.0029.

Comet P/2011 V1 (Boattini)
Epoch 2018 Oct. 9.0 TT = JDT 2458400.5
T 2018 Sep. 30.85326 TT

				Sato	
q	1.7319792		(2000.0)	P	Q
n	0.13045836	Peri.	269.24625	+0.71375370	+0.69410605
a	3.8502427	Node	46.79139	-0.58058416	+0.66114095
e	0.5501636	Incl.	7.38309	-0.39176228	+0.28479719
P	7.55				

From 25 observations 2011 Oct. 22-Nov. 20, mean residual 0″.40.

Comet P/2001 R6 (LINEAR-Skiff)
Epoch 2018 Oct. 9.0 TT = JDT 2458400.5
T 2018 Oct. 4.24891 TT

				Sato	
q	2.1910765		(2000.0)	P	Q
n	0.11529116	Peri.	308.47544	+0.92918791	-0.24624704
a	4.1809218	Node	67.33511	+0.35562777	+0.79880548
e	0.4759346	Incl.	17.37940	-0.10069117	+0.54888269
P	8.55				

From 99 observations 2001 Aug. 19-2002 Feb. 1, mean residual 0″.69.
From CHB 2015.

Comet P/2005 J1 (McNaught)
Epoch 2018 Oct. 9.0 TT = JDT 2458400.5
T 2018 Oct. 12.55253 TT

				Sato	
q	1.5334417		(2000.0)	P	Q
n	0.14616381	Peri.	338.92433	-0.32526988	+0.78557929
a	3.5692433	Node	268.79575	-0.77471511	-0.54056597
e	0.5703735	Incl.	31.76831	-0.54223243	+0.30108738
P	6.74				

From 94 observations 2005 May 3-Aug. 7, mean residual 0″.57.
From CHB 2016.

Comet P/2010 A1 (Hill)
Epoch 2018 Oct. 9.0 TT = JDT 2458400.5
T 2018 Oct. 14.26029 TT

				Sato	
q	1.9574081		(2000.0)	P	Q
n	0.10715598	Peri.	13.29609	+0.49345806	-0.85976506
a	4.3899385	Node	47.31538	+0.78073398	+0.37119248
e	0.5541149	Incl.	10.30829	+0.38334528	+0.35074234
P	9.20				

From 159 observations 2010 Jan. 6-Mar. 17, mean residual 0″.70.

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Comet P/2008 O2 (McNaught)
Epoch 2018 Oct. 9.0 TT = JDT 2458400.5
T 2018 Oct. 19.88836 TT                                   Sato
q   3.8151751            (2000.0)            P               Q
n   0.10332246     Peri.   26.94344     +0.98858996     +0.11867180
a   4.4978631      Node   325.84392     -0.14970291     +0.84232441
e   0.1517805      Incl.    9.51113     +0.01670141     +0.52574385
P   9.54
From 405 observations 2008 July 28-2009 Dec. 9, mean residual 0″.64.

Comet 64P/Swift-Gehrels
Epoch 2018 Nov. 18.0 TT = JDT 2458440.5
T 2018 Nov. 3.84715 TT                                    Sato
q   1.3931830            (2000.0)            P               Q
n   0.10471951     Peri.   97.14941     +0.78662966     -0.60255029
a   4.4577698      Node   299.99760     +0.48710121     +0.73971000
e   0.6874708      Incl.    8.94850     +0.37940241     +0.29960351
P   9.41
From 204 observations 1981 July 31-2010 May 4, mean residual 0″.71.
   Nongravitational parameters A1 = +0.66, A2 = +0.2283.

Comcet 38P/Stephan-Oterma
Epoch 2018 Nov. 18.0 TT = JDT 2458440.5
T 2018 Nov. 10.89160 TT                                   Sato
q   1.5885882            (2000.0)            P               Q
n   0.02596615     Peri.  359.58307     +0.21466535     -0.92685545
a  11.2944318      Node    77.99980     +0.89700235     +0.06233595
e   0.8593477      Incl.   18.35301     +0.38640079     +0.37020696
P  37.96
From 166 observations 1942 Nov. 6-1981 Mar. 4, mean residual 0″.90.
   Nongravitational parameters A1 = -0.40, A2 = -0.0010.

Comet P/2013 R3 (Catalina-PANSTARRS)
Epoch 2018 Nov. 18.0 TT = JDT 2458440.5
T 2018 Dec. 6.42237 TT                                    Sato
q   2.2001795            (2000.0)            P               Q
n   0.18658952     Peri.   11.06542     +0.99275096     +0.12009918
a   3.0330382      Node   342.03476     -0.11139301     +0.90484209
e   0.2745955      Incl.    0.86561     -0.04513449     +0.40845682
P   5.28
From 314 observations 2013 Sept. 15-2014 Jan. 3, mean residual 0″.52.

Comet 137P/Shoemaker-Levy
Epoch 2018 Dec. 28.0 TT = JDT 2458480.5
T 2018 Dec. 13.38982 TT                                   Sato
q   1.9302201            (2000.0)            P               Q
n   0.10259453     Peri.  141.01632     +0.96808258     -0.24132967
a   4.5191134      Node   233.08033     +0.20352990     +0.91447968
e   0.5728764      Incl.    4.85382     +0.14625900     +0.32478747
P   9.61
From 270 observations 1990 Sept. 16-2011 Mar. 2, mean residual 0″.54.

Comet C/2010 U3 (Boattini)
Epoch 2019 Mar. 18.0 TT = JDT 2458560.5
T 2019 Feb. 26.62826 TT                                   Sato
q   8.4455584            (2000.0)            P               Q
z  +0.0001965      Peri.   88.08635     -0.36204776     -0.74305792
 +/-0.0000010      Node    43.06718     +0.07256042     -0.62443283
e   0.9983405      Incl.   55.51166     +0.92933116     -0.24072511
From 771 observations 2009 Sept. 16-2017 Jan. 27, mean residual 0″.66.
```

Comet 29P/Schwassmann-Wachmann
Epoch 2019 Mar. 18.0 TT = JDT 2458560.5
T 2019 Mar. 7.75377 TT Sato
q 5.7668176 (2000.0) P Q
n 0.06662630 Peri. 47.77424 +0.99270163 -0.00956697
a 6.0261360 Node 312.39462 -0.05135338 +0.86841756
e 0.0430323 Incl. 9.36831 +0.10911603 +0.49574128
P 14.79
From 21864 observations 1902 Mar. 5-2016 Dec. 24, mean residual 0″.67.

Comet 186P/Garradd
Epoch 2019 Apr. 27.0 TT = JDT 2458600.5
T 2019 May 4.94703 TT Sato
q 4.3894698 (2000.0) P Q
n 0.08790518 Peri. 283.79840 -0.26417875 +0.92914602
a 5.0094847 Node 327.06874 -0.59294833 -0.36797031
e 0.1237682 Incl. 28.40962 -0.76067199 -0.03585416
P 11.21
From 181 observations 1975 May 31-2016 May 2, mean residual 0″.62.

Comet C/2016 X1 (Lemmon)
Epoch 2019 Apr. 27.0 TT = JDT 2458600.5
T 2019 May 2.40539 TT Sato
q 7.6140983 (2000.0) P Q
z +0.0025683 Peri. 224.21647 -0.43761227 -0.78700797
+/-0.0016379 Node 256.39685 +0.89781843 -0.35600746
e 0.9804451 Incl. 26.57849 +0.04916876 -0.50386223
From 37 observations 2016 Nov. 26-2017 Jan. 1, mean residual 0″.64.

Comet 31P/Schwassmann-Wachmann
Epoch 2019 July 16.0 TT = JDT 2458680.5
T 2019 July 6.15379 TT Sato
q 3.4253810 (2000.0) P Q
n 0.11272684 Peri. 18.35483 -0.67426094 -0.73493942
a 4.2440892 Node 114.11218 +0.66723644 -0.64826370
e 0.1929055 Incl. 4.54714 +0.31649285 -0.19904328
P 8.74
From 724 observations 1993 Aug. 17-2012 May 21, mean residual 0″.86.

Comet 246P/NEAT
Epoch 2021 Mar. 7.0 TT = JDT 2459280.5
T 2021 Feb. 22.81669 TT Sato
q 2.8639227 (2000.0) P Q
n 0.12245324 Peri. 176.29994 -0.25557269 +0.92828714
a 4.0162665 Node 78.74742 -0.89393233 -0.12049381
e 0.2869192 Incl. 15.98680 -0.36819503 -0.35180139
P 8.05
From 2858 observations 2003 Jan. 24-2016 Mar. 6, mean residual 0″.58.

Comet C/2016 Q2 (PANSTARRS)
Epoch 2021 May 26.0 TT = JDT 2459360.5
T 2021 May 20.44141 TT Sato
q 7.1387467 (2000.0) P Q
z +0.0011265 Peri. 84.26394 -0.12406455 -0.80765390
+/-0.0013472 Node 322.29874 -0.67029183 +0.49657444
e 0.9919584 Incl. 109.50273 +0.73165351 +0.31797643
From 37 observations 2016 Aug. 26-Oct. 29, mean residual 0″.65.

Comet C/2014 F3 (Sheppard-Trujillo)
Epoch 2021 May 26.0 TT = JDT 2459360.5
T 2021 May 21.78149 TT Sato
q 5.6932174 (2000.0) P Q
n 0.01623468 Peri. 3.60674 +0.86883491 +0.49107287
a 15.4468581 Node 326.74326 -0.45707496 +0.74664350
e 0.6314320 Incl. 6.60041 -0.19028500 +0.44874371
P 60.71
From 15 observations 2014 Mar. 26-2015 Apr. 19, mean residual 0″.47.

References:

Comet 246P/NEAT
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 28.70965 TT Sato

q	2.8797635		(2000.0)	P	Q
n	0.12191754	Peri.	176.18899	-0.25681670	+0.92800667
a	4.0280229	Node	78.78050	-0.89382598	-0.12184607
e	0.2850677	Incl.	15.97178	-0.36758714	-0.35207550
P	8.08				

From 2858 observations 2003 Jan. 24-2016 Mar. 6, mean residual 0″.58.

Comet 347P/PANSTARRS
Epoch 2016 Sept. 9.0 TT = JDT 2457640.5
T 2016 Sept. 11.39529 TT Sato

q	2.2239806		(2000.0)	P	Q
n	0.14353552	Peri.	98.44906	+0.97950837	+0.01182857
a	3.6126825	Node	261.04728	-0.08519188	+0.92890320
e	0.3843963	Incl.	11.74378	+0.18249848	+0.37013366
P	6.87				

From 113 observations 2002 July 12-2017 Jan. 1, mean residual 0″.50.

Comet D/1952 B1 (Harrington-Wilson)
Epoch 2017 Feb. 16.0 TT = JDT 2457800.5
T 2017 Mar. 1.92038 TT Sato

q	1.2775678		(2000.0)	P	Q
n	0.17649905	Peri.	0.92728	-0.48943027	-0.84417996
a	3.1475633	Node	118.40523	+0.79847442	-0.53462922
e	0.5941089	Incl.	14.39495	+0.35056612	+0.03913820
P	5.58				

From 7 observations 1952 Jan. 30-Feb. 25, mean residual 0″.49.
From CHB 2016.

Comet P/1999 XN120 (Catalina) [Orbit-2]
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 12.41433 TT Sato

q	3.2972155		(2000.0)	P	Q
n	0.11524217	Peri.	162.03386	+0.04547119	-0.99538134
a	4.1821067	Node	285.29425	+0.90544271	+0.07682170
e	0.2115898	Incl.	5.02856	+0.42202592	-0.05757104
P	8.55				

From 74 observations 1999 Nov. 3-2007 Dec. 16, mean residual 0″.64.

Comet 3D/Biela [Orbit 1]
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 19.43007 TT Sato

q	0.7967180		(2000.0)	P	Q
n	0.15118624	Peri.	267.00963	-0.29721155	-0.95349831
a	3.4897518	Node	200.49627	+0.92296768	-0.27347596
e	0.7716978	Incl.	8.22011	+0.24453210	-0.12669599
P	6.52				

From 29 observations 1826-1852, mean residual 3″.25. Nongravitational parameters A1 = +0.32, A2 = -0.0926.
From Muraoka's orbit (CHB 2004).

Comert D/1894 F1 (Denning) [Orbit 2]
Epoch 2017 June 16.0 TT = JDT 2457920.5
T 2017 June 26.03781 TT Sato

q	1.6166561		(2000.0)	P	Q
n	0.10271599	Peri.	102.66382	-0.62952973	-0.77674993
a	4.5155504	Node	26.38012	+0.69547485	-0.57409463
e	0.6419803	Incl.	2.41960	+0.34642034	-0.25898824
P	9.60				

From 142 observations 1894 Mar. 27-June 5, mean residual 2″.72.
From Muraoka's orbit (CHB 2006).

Comet 251P/LINEAR
Epoch 2017 July 26.0 TT = JDT 2457960.5
T 2017 July 16.50172 TT Sato

q	1.7325441		(2000.0)	P	Q
n	0.15009609	Peri.	31.14871	-0.35995724	+0.89819812
a	3.5066288	Node	219.40625	-0.91672254	-0.39076061
e	0.5059231	Incl.	23.42121	-0.17335101	+0.20136108
P	6.57				

From 335 observations 2004 Apr. 17-2011 May 5, mean residual 0″.61.

Comet P/2010 H2 (Vales) {Orbit-2}
Epoch 2017 Sept. 4.0 TT = JDT 2458000.5
T 2017 Sept. 16.00632 TT Sato

q	3.0965637		(2000.0)	P	Q
n	0.13064875	Peri.	129.54127	-0.94968651	+0.22098140
a	3.8465012	Node	64.26629	-0.30401865	-0.82075585
e	0.1949661	Incl.	14.26391	+0.07528740	-0.52680836
P	7.54				

From 1599 observations 2010 Apr. 16-2015 Sept. 25, mean residual 0″.47.

Comet P/2006 F1 (Kowalski) [Orbit 2]
Epoch 2018 Mar. 23.0 TT = JDT 2458200.5
T 2018 Mar. 14.88780 TT Sato

q	4.1082524		(2000.0)	P	Q
n	0.09766908	Peri.	186.14747	+0.64867570	+0.70020714
a	4.6697968	Node	124.74757	-0.68189248	+0.70873821
e	0.1202503	Incl.	21.28039	-0.33799777	-0.08602393
P	10.09				

From 216 observations 2005 May 10-2016 Aug. 30, mean residual 0″.70.

Comet P/2007 T2 (Kowalski)
Epoch 2018 July 21.0 TT = JDT 2458320.5
T 2018 July 21.73455 TT Sato

q	0.6565317		(2000.0)	P	Q
n	0.18520875	Peri.	359.62718	+0.99859181	-0.05208930
a	3.0480942	Node	3.40781	+0.04910060	+0.83571274
e	0.7846091	Incl.	9.73871	+0.02008806	+0.54669088
P	5.32				

From 114 observations 2007 Oct. 9-2008 Jan. 18, mean residual 0″.77.

Comet 267P/LONEOS
Epoch 2018 July 21.0 TT = JDT 2458320.5
T 2018 July 22.31835 TT Sato

q	1.2411189		(2000.0)	P	Q
n	0.17120990	Peri.	114.07985	+0.95118568	+0.29798555
a	3.2120587	Node	228.68892	-0.30744508	+0.89223950
e	0.6136064	Incl.	6.13803	-0.02689475	+0.33928348
P	5.76				

From 189 observations 2006 Aug. 29-2012 Nov. 12, mean residual 0″.52.

Comet 3D/Biela [Orbit 2]
Epoch 2018 Oct. 9.0 TT = JDT 2458400.5
T 2018 Oct. 3.61567 TT Sato

q	0.8078392		(2000.0)	P	Q
n	0.14926486	Peri.	274.44599	-0.31062480	-0.94996314
a	3.5196353	Node	193.78805	+0.91764959	-0.29067469
e	0.7704764	Incl.	7.93410	+0.24785373	-0.11436020
P	6.60				

From 19 observations 1846-1852, mean residual 3″.41.
From Muraoka's orbit (CHB 2004).

Comet D/1886 K1 (Brooks)
Epoch 2018 Oct. 9.0 TT = JDT 2458400.5
T 2018 Oct. 12.0348 TT Sato

q	1.880668		(2000.0)	P	Q
n	0.1474341	Peri.	208.4584	-0.3856237	+0.9148314
a	3.548712	Node	39.1984	-0.8064845	-0.2710814
e	0.470042	Incl.	10.9368	-0.4481932	-0.2993300
P	6.69				

From 39 observations 1886 May 25-July 3, mean residual 5″.0.
From Buckley's orbit (1979).

Comet 300P/Catalina
Epoch 2018 Nov. 18.0 TT = JDT 2458440.5
T 2018 Nov. 2.07846 TT Sato

q	0.8328174		(2000.0)	P	Q
n	0.22223353	Peri.	222.85456	+0.74596381	+0.65867411
a	2.6993736	Node	95.67368	-0.58114782	+0.71596774
e	0.6914775	Incl.	5.67606	-0.32527711	+0.23138412
P	4.44				

From 638 observations 2005 May 6-2014 Aug. 2, mean residual 0″.63.

Comet 247P/LINEAR
Epoch 2018 Nov. 18.0 TT = JDT 2458440.5
T 2018 Dec. 2.10400 TT Sato

q	1.4890609		(2000.0)	P	Q
n	0.12454438	Peri.	47.44961	-0.18182683	-0.96458199
a	3.9711836	Node	54.01080	+0.81874212	-0.25614192
e	0.6250335	Incl.	13.66147	+0.54461027	+0.06303094
P	7.91				

From 953 observations 2002 Nov. 5-2011 Apr. 5, mean residual 0″.50.

Comet 60P/Tsuchinshan
Epoch 2018 Dec. 28.0 TT = JDT 2458480.5
T 2018 Dec. 11.23024 TT Sato

q	1.6226484		(2000.0)	P	Q
n	0.14986375	Peri.	216.55266	-0.55998263	-0.82611716
a	3.5102522	Node	267.58347	+0.77426239	-0.49481647
e	0.5377402	Incl.	3.60652	+0.29485115	-0.26960545
P	6.58				

From 334 observations 1978 Dec. 1-2012 May 28, mean residual 0″.74.

Comet 46P/Wirtanen
Epoch 2018 Dec. 28.0 TT = JDT 2458480.5
T 2018 Dec. 13.22862 TT Sato

q	1.0553911		(2000.0)	P	Q
n	0.18108514	Peri.	356.35367	+0.19782245	-0.95926805
a	3.0941938	Node	82.15955	+0.90442214	+0.09928034
e	0.6589124	Incl.	11.74602	+0.37800379	+0.26447728
P	5.44				

From 1208 observations 2007 Aug. 4-2014 Apr. 29, mean residual 0″.68.
Nongravitational parameters A1 = -0.71, A2 = -0.4171.

Comet 198P/ODAS
Epoch 2018 Dec. 28.0 TT = JDT 2458480.5
T 2018 Dec. 13.11757 TT Sato

q	2.0060208		(2000.0)	P	Q
n	0.14415333	Peri.	69.25643	+0.38144411	-0.92439165
a	3.6023530	Node	358.31995	+0.83920583	+0.34660255
e	0.4431360	Incl.	1.33571	+0.38760027	+0.15926941
P	6.84				

From 189 observations 1998 Dec. 15-2006 Mar. 24, mean residual 0″.66.
Nongravitational parameters A1 = -3.13, A2 = +0.6105.

Comet P/2006 D1 (Hill)
Epoch 2018 Dec. 28.0 TT = JDT 2458480.5
T 2018 Dec. 21.44783 TT Sato

q	1.8951424		(2000.0)	P	Q
n	0.07511958	Peri.	119.42596	-0.49077703	-0.87128518
a	5.5628917	Node	359.96407	+0.65957887	-0.37138685
e	0.6593242	Incl.	17.36471	+0.56929221	-0.32083319

P 13.12
From 80 observations 2005 Dec. 5-2006 Apr. 7, mean residual 0″.55.
From CHB 2015.

Comet 76P/West-Kohoutek-Ikemura
Epoch 2019 Nov. 13.0 TT = JDT 2458800.5
T 2019 Oct. 26.13976 TT Sato

q	1.6048040		(2000.0)	P	Q
n	0.15213560	Peri.	0.02187	+0.10202885	-0.85752104
a	3.4752188	Node	84.12513	+0.91261714	-0.12102723
e	0.5382150	Incl.	30.45704	+0.39587885	+0.50001007

P 6.48
From 611 observations 1993 July 20-2013 Mar. 1, mean residual 0″.77.
Nongravitational parameters A1 = -0.37, A2 = -0.1763.

Remarks.

Non-gravitational parameters Y1 and Y2 indicate that the Yabushita-style non-gravitational effect based on CO sublimation is taken into account (MN 283, 347).

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