

THE COMET HANDBOOK FOR 2022

彗星年表 2022

彗星年表編集委員会発行
Published by the Editorial Committee
for the Comet Handbook

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Comet 29P/Schwassmann-Wachmann

Epoch = 2022 June 30.0 TT
 T = 2019 Apr. 11.57727 TT
 Peri. = 50.30396 e = 0.0448360
 Node = 312.38692 2000.0 a = 6.0443017 AU
 Incl. = 9.36557 n = 0.06632616
 q = 5.7732994 AU P = 14.86 years

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	04 21.88	+31 01.0	5.092	5.945	-0.38	-2.2	.	147.4
Jan. 11	04 18.54	+30 38.7	5.192	5.948	-0.27	-2.2	.	136.9
Jan. 21	04 16.40	+30 17.3	5.313	5.951	-0.14	-2.1	.	126.4
Jan. 31	04 15.56	+29 57.6	5.452	5.954	-0.01	-1.8	.	116.2
Feb. 10	04 16.04	+29 40.8	5.604	5.957	+0.12	-1.5	.	106.3
Feb. 20	04 17.81	+29 27.1	5.764	5.960	+0.24	-1.2	.	96.6
Mar. 2	04 20.77	+29 16.7	5.927	5.963	+0.36	-0.9	.	87.3
Mar. 12	04 24.84	+29 09.4	6.089	5.966	+0.46	-0.6	.	78.2
Mar. 22	04 29.89	+29 05.0	6.246	5.969	+0.55	-0.3	.	69.4
Apr. 1	04 35.82	+29 03.0	6.394	5.972	+0.64	-0.1	.	60.9
Apr. 11	04 42.49	+29 02.8	6.531	5.975	+0.70	+0.1	.	52.5
Apr. 21	04 49.79	+29 03.9	6.654	5.978	+0.76	+0.2	.	44.4
May 1	04 57.62	+29 05.9	6.761	5.981	+0.81	+0.2	.	36.5
May 11	05 05.87	+29 08.3	6.849	5.984	+0.84	+0.2	.	28.8
May 21	05 14.44	+29 10.7	6.919	5.987	+0.87	+0.2	.	21.2
May 31	05 23.23	+29 12.8	6.969	5.990	+0.89	+0.2	.	14.0
June 10	05 32.16	+29 14.3	6.997	5.993	+0.90	+0.1	.	7.8
June 20	05 41.14	+29 15.0	7.005	5.996	+0.90	0.0	.	6.4
June 30	05 50.08	+29 14.9	6.992	6.000	+0.89	-0.1	.	11.6
July 10	05 58.88	+29 14.0	6.957	6.003	+0.87	-0.1	.	18.6
July 20	06 07.46	+29 12.3	6.903	6.006	+0.84	-0.2	.	26.0
July 30	06 15.74	+29 10.0	6.829	6.009	+0.81	-0.3	.	33.5
Aug. 9	06 23.61	+29 07.2	6.737	6.012	+0.76	-0.3	.	41.3
Aug. 19	06 30.97	+29 04.2	6.628	6.015	+0.70	-0.3	.	49.2
Aug. 29	06 37.72	+29 01.3	6.504	6.018	+0.64	-0.3	.	57.3
Sept. 8	06 43.75	+28 58.9	6.368	6.021	+0.56	-0.2	.	65.6
Sept. 18	06 48.95	+28 57.2	6.222	6.025	+0.47	-0.1	.	74.1
Sept. 28	06 53.21	+28 56.6	6.069	6.028	+0.37	0.0	.	82.9
Oct. 8	06 56.41	+28 57.4	5.913	6.031	+0.26	+0.2	.	92.0
Oct. 18	06 58.45	+28 59.6	5.758	6.034	+0.14	+0.3	.	101.4
Oct. 28	06 59.25	+29 03.3	5.608	6.037	+0.01	+0.4	.	111.1
Nov. 7	06 58.77	+29 08.2	5.468	6.040	-0.12	+0.5	.	121.1
Nov. 17	06 57.01	+29 13.8	5.343	6.043	-0.24	+0.6	.	131.5
Nov. 27	06 54.03	+29 19.6	5.237	6.047	-0.36	+0.5	.	142.1
Dec. 7	06 49.99	+29 24.5	5.156	6.050	-0.45	+0.4	.	152.9
Dec. 17	06 45.15	+29 27.8	5.103	6.053	-0.52	+0.2	.	163.5
Dec. 27	06 39.79	+29 28.6	5.079	6.056	-0.55	-0.1	.	172.6
Jan. 6	06 34.31	+29 26.4	5.088	6.059	-0.54	-0.4	.	170.2
Jan. 16	06 29.08	+29 21.0	5.128	6.062	-0.50	-0.7	.	160.2
Jan. 26	06 24.46	+29 12.8	5.197	6.065	-0.42	-1.0	.	149.4
Feb. 5	06 20.74	+29 02.2	5.293	6.068	-0.31	-1.2	.	138.6
Feb. 15	06 18.14	+28 49.8	5.412	6.072	-0.19	-1.3	.	128.1
Feb. 25	06 16.78	+28 36.4	5.550	6.075	-0.07	-1.4	.	117.8
Mar. 7	06 16.71	+28 22.3	5.701	6.078	+0.06	-1.4	.	107.8
Mar. 17	06 17.89	+28 08.0	5.860	6.081	+0.19	-1.4	.	98.1
Mar. 27	06 20.27	+27 53.7	6.023	6.084	+0.30	-1.4	.	88.8

Comet C/2018 N2 (ASASSN)

Epoch = 2022 June 30.0 TT
 T = 2019 Nov. 11.16672 TT
 Peri. = 24.44939
 Node = 25.21175 2000.0
 Incl. = 77.54676
 q = 3.1262793 AU
 e = 1.0005862

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	14 50.29	+41 21.3	7.494	7.459	+0.28	+2.6	17.7	84.2
Jan. 11	14 52.65	+41 51.4	7.462	7.527	+0.18	+3.4	17.7	90.0
Jan. 21	14 53.98	+42 28.7	7.430	7.594	+0.07	+4.1	17.8	95.9
Jan. 31	14 54.15	+43 11.4	7.402	7.662	-0.05	+4.5	17.8	101.7
Feb. 10	14 53.08	+43 57.7	7.380	7.730	-0.18	+4.7	17.8	107.2
Feb. 20	14 50.71	+44 44.8	7.369	7.797	-0.31	+4.7	17.9	112.2
Mar. 2	14 47.05	+45 30.3	7.371	7.865	-0.44	+4.4	17.9	116.6
Mar. 12	14 42.16	+46 11.3	7.388	7.932	-0.55	+3.7	17.9	120.0
Mar. 22	14 36.18	+46 45.1	7.423	7.999	-0.65	+2.9	18.0	122.3
Apr. 1	14 29.34	+47 09.2	7.476	8.066	-0.72	+1.8	18.0	123.2
Apr. 11	14 21.92	+47 21.8	7.549	8.133	-0.76	+0.6	18.1	122.7
Apr. 21	14 14.28	+47 21.9	7.640	8.200	-0.76	-0.7	18.2	120.8
May 1	14 06.76	+47 09.0	7.751	8.267	-0.73	-2.0	18.2	117.7
May 11	13 59.68	+46 43.7	7.878	8.334	-0.67	-3.2	18.3	113.6
May 21	13 53.31	+46 07.0	8.020	8.400	-0.59	-4.2	18.4	108.8
May 31	13 47.84	+45 20.4	8.175	8.467	-0.49	-5.1	18.4	103.3
June 10	13 43.41	+44 25.8	8.340	8.533	-0.38	-5.8	18.5	97.6
June 20	13 40.07	+43 25.1	8.512	8.599	-0.28	-6.3	18.6	91.6
June 30	13 37.79	+42 20.1	8.687	8.666	-0.17	-6.7	18.7	85.4
July 10	13 36.55	+41 12.5	8.864	8.732	-0.07	-6.8	18.7	79.2
July 20	13 36.27	+40 03.8	9.038	8.798	+0.02	-6.9	18.8	73.1
July 30	13 36.86	+38 55.3	9.208	8.863	+0.10	-6.8	18.9	67.2
Aug. 9	13 38.23	+37 48.1	9.369	8.929	+0.17	-6.6	19.0	61.4
Aug. 19	13 40.26	+36 43.4	9.521	8.995	+0.24	-6.3	19.0	56.1
Aug. 29	13 42.87	+35 41.7	9.659	9.060	+0.29	-6.0	19.1	51.2
Sept. 8	13 45.96	+34 44.0	9.783	9.126	+0.33	-5.5	19.2	47.0
Sept. 18	13 49.42	+33 50.9	9.891	9.191	+0.36	-5.0	19.2	43.7
Sept. 28	13 53.18	+33 02.8	9.981	9.256	+0.39	-4.5	19.3	41.6
Oct. 8	13 57.14	+32 20.3	10.053	9.321	+0.40	-3.9	19.3	41.0
Oct. 18	14 01.20	+31 43.8	10.105	9.386	+0.41	-3.3	19.3	41.8
Oct. 28	14 05.30	+31 13.8	10.138	9.451	+0.41	-2.6	19.4	44.2
Nov. 7	14 09.32	+30 50.4	10.153	9.516	+0.40	-2.0	19.4	47.8
Nov. 17	14 13.19	+30 34.0	10.149	9.580	+0.37	-1.3	19.4	52.6
Nov. 27	14 16.81	+30 24.6	10.129	9.645	+0.34	-0.5	19.5	58.1
Dec. 7	14 20.09	+30 22.4	10.094	9.709	+0.31	+0.2	19.5	64.4
Dec. 17	14 22.94	+30 27.1	10.048	9.773	+0.26	+0.8	19.5	71.1
Dec. 27	14 25.27	+30 38.5	9.992	9.837	+0.20	+1.5	19.5	78.2
Jan. 6	14 26.99	+30 56.0	9.930	9.902	+0.14	+2.1	19.5	85.5
Jan. 16	14 28.03	+31 18.9	9.866	9.965	+0.06	+2.6	19.6	92.9
Jan. 26	14 28.33	+31 46.3	9.805	10.029	-0.01	+2.9	19.6	100.4
Feb. 5	14 27.83	+32 16.9	9.749	10.093	-0.09	+3.2	19.6	107.7
Feb. 15	14 26.51	+32 49.2	9.703	10.157	-0.18	+3.3	19.6	114.8
Feb. 25	14 24.39	+33 21.7	9.670	10.220	-0.26	+3.2	19.6	121.3
Mar. 7	14 21.51	+33 52.6	9.655	10.283	-0.33	+2.9	19.6	127.1
Mar. 17	14 17.95	+34 20.1	9.660	10.347	-0.39	+2.5	19.7	131.6
Mar. 27	14 13.83	+34 42.7	9.686	10.410	-0.44	+1.9	19.7	134.5

Comet C/2019 K7 (Smith)

Epoch = 2022 June 30.0 TT
 T = 2020 June 17.41138 TT
 Peri. = 27.37520
 Node = 307.94114 2000.0
 Incl. = 103.54113
 q = 4.4774205 AU
 e = 1.0005610

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	16 55.69	+50 08.4	6.438	6.291	+0.49	+6.6	17.4	77.1
Jan. 11	17 00.38	+51 20.1	6.438	6.344	+0.43	+7.9	17.5	80.1
Jan. 21	17 04.34	+52 44.4	6.437	6.396	+0.35	+9.1	17.5	83.3
Jan. 31	17 07.32	+54 20.0	6.436	6.449	+0.23	+10.1	17.6	86.4
Feb. 10	17 09.02	+56 05.2	6.438	6.502	+0.09	+11.0	17.6	89.4
Feb. 20	17 09.09	+57 57.6	6.446	6.556	-0.10	+11.5	17.7	92.0
Mar. 2	17 07.15	+59 54.6	6.461	6.609	-0.32	+11.8	17.8	94.3
Mar. 12	17 02.75	+61 52.5	6.486	6.663	-0.59	+11.7	17.8	96.0
Mar. 22	16 55.45	+63 47.4	6.521	6.717	-0.91	+11.1	17.9	97.1
Apr. 1	16 44.84	+65 34.6	6.569	6.772	-1.26	+10.1	17.9	97.5
Apr. 11	16 30.66	+67 09.1	6.628	6.826	-1.61	+8.6	18.0	97.2
Apr. 21	16 13.01	+68 25.9	6.700	6.881	-1.94	+6.5	18.1	96.2
May 1	15 52.44	+69 20.7	6.783	6.936	-2.18	+4.1	18.2	94.5
May 11	15 30.12	+69 50.6	6.876	6.991	-2.27	+1.6	18.3	92.3
May 21	15 07.62	+69 54.8	6.978	7.046	-2.20	-0.9	18.3	89.7
May 31	14 46.50	+69 35.3	7.087	7.102	-1.98	-3.1	18.4	86.7
June 10	14 27.99	+68 55.5	7.201	7.157	-1.68	-4.9	18.5	83.5
June 20	14 12.75	+68 00.3	7.318	7.213	-1.34	-6.2	18.6	80.1
June 30	14 00.90	+66 54.2	7.434	7.269	-1.00	-7.0	18.7	76.7
July 10	13 52.25	+65 41.6	7.550	7.325	-0.70	-7.5	18.8	73.4
July 20	13 46.42	+64 26.3	7.661	7.381	-0.44	-7.6	18.8	70.3
July 30	13 43.00	+63 10.9	7.766	7.437	-0.23	-7.4	18.9	67.5
Aug. 9	13 41.57	+61 58.0	7.864	7.493	-0.05	-7.1	19.0	65.1
Aug. 19	13 41.78	+60 49.2	7.952	7.550	+0.10	-6.6	19.1	63.2
Aug. 29	13 43.30	+59 46.1	8.030	7.606	+0.22	-5.9	19.1	61.9
Sept. 8	13 45.89	+58 50.0	8.096	7.663	+0.31	-5.2	19.2	61.3
Sept. 18	13 49.29	+58 01.6	8.150	7.720	+0.38	-4.4	19.3	61.4
Sept. 28	13 53.33	+57 22.0	8.192	7.777	+0.43	-3.5	19.3	62.3
Oct. 8	13 57.82	+56 51.8	8.221	7.833	+0.47	-2.5	19.4	63.9
Oct. 18	14 02.60	+56 31.7	8.238	7.890	+0.49	-1.4	19.4	66.3
Oct. 28	14 07.51	+56 22.1	8.244	7.947	+0.49	-0.4	19.5	69.3
Nov. 7	14 12.39	+56 23.4	8.240	8.004	+0.48	+0.7	19.5	72.9
Nov. 17	14 17.10	+56 35.8	8.228	8.062	+0.45	+1.9	19.6	76.9
Nov. 27	14 21.46	+56 59.5	8.210	8.119	+0.41	+3.0	19.6	81.3
Dec. 7	14 25.28	+57 34.1	8.188	8.176	+0.35	+4.0	19.7	85.8
Dec. 17	14 28.37	+58 19.0	8.166	8.233	+0.26	+5.0	19.7	90.5
Dec. 27	14 30.50	+59 13.6	8.145	8.291	+0.15	+5.9	19.7	95.1
Jan. 6	14 31.42	+60 16.3	8.128	8.348	+0.02	+6.7	19.8	99.5
Jan. 16	14 30.86	+61 25.5	8.120	8.405	-0.15	+7.2	19.8	103.6
Jan. 26	14 28.55	+62 38.8	8.122	8.463	-0.34	+7.5	19.9	107.0
Feb. 5	14 24.19	+63 53.4	8.136	8.520	-0.56	+7.4	19.9	109.7
Feb. 15	14 17.57	+65 06.1	8.165	8.578	-0.79	+7.0	20.0	111.6
Feb. 25	14 08.53	+66 13.3	8.210	8.635	-1.04	+6.3	20.0	112.3
Mar. 7	13 57.11	+67 11.4	8.272	8.692	-1.26	+5.2	20.1	112.0
Mar. 17	13 43.58	+67 57.0	8.349	8.750	-1.45	+3.8	20.1	110.7
Mar. 27	13 28.49	+68 27.4	8.443	8.807	-1.57	+2.1	20.2	108.3

Comet 254P/McNaught

Epoch = 2022 June 30.0 TT
 T = 2020 Sept. 30.18231 TT
 Peri. = 219.60120 e = 0.3197661
 Node = 129.17984 2000.0 a = 4.6142114 AU
 Incl. = 32.57052 n = 0.09943925
 q = 3.1387430 AU P = 9.91 years

$$m1 = 1.8 + 5 \log(\Delta) + 25.0 \log(r(t-390))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° ' "			m	' "		°
Jan. 1	04 28.60	-13 47.5	3.204	3.913	-0.45	+7.8	16.8	130.4
Jan. 11	04 24.76	-12 24.4	3.312	3.940	-0.29	+8.9	16.9	123.4
Jan. 21	04 22.59	-10 51.8	3.438	3.967	-0.12	+9.6	17.0	115.8
Jan. 31	04 22.13	-09 13.5	3.578	3.994	+0.05	+10.0	17.1	108.0
Feb. 10	04 23.35	-07 33.1	3.728	4.021	+0.21	+10.1	17.3	100.1
Feb. 20	04 26.14	-05 53.3	3.886	4.047	+0.36	+9.9	17.4	92.3
Mar. 2	04 30.35	-04 16.2	4.047	4.074	+0.49	+9.5	17.5	84.6
Mar. 12	04 35.82	-02 43.5	4.209	4.101	+0.61	+9.0	17.6	77.0
Mar. 22	04 42.37	-01 16.4	4.368	4.128	+0.71	+8.4	17.8	69.7
Apr. 1	04 49.86	+00 04.5	4.521	4.155	+0.79	+7.7	17.9	62.5
Apr. 11	04 58.14	+01 18.5	4.667	4.182	+0.87	+7.0	18.0	55.5
Apr. 21	05 07.07	+02 25.5	4.804	4.209	+0.92	+6.3	18.1	48.7
May 1	05 16.52	+03 25.2	4.928	4.236	+0.97	+5.6	18.2	42.2
May 11	05 26.38	+04 17.5	5.040	4.263	+1.00	+4.8	18.3	35.9
May 21	05 36.53	+05 02.5	5.137	4.290	+1.03	+4.1	18.4	30.0
May 31	05 46.90	+05 40.4	5.218	4.317	+1.04	+3.4	18.5	24.6
June 10	05 57.38	+06 11.3	5.283	4.344	+1.05	+2.7	18.6	20.1
June 20	06 07.87	+06 35.5	5.331	4.371	+1.05	+2.1	18.7	17.2
June 30	06 18.30	+06 53.4	5.361	4.397	+1.04	+1.4	18.8	16.8
July 10	06 28.58	+07 05.1	5.373	4.424	+1.02	+0.9	18.8	19.0
July 20	06 38.63	+07 11.2	5.367	4.450	+0.99	+0.3	18.9	23.1
July 30	06 48.36	+07 12.2	5.343	4.477	+0.95	-0.2	18.9	28.5
Aug. 9	06 57.68	+07 08.6	5.301	4.503	+0.91	-0.6	19.0	34.6
Aug. 19	07 06.50	+07 01.0	5.242	4.529	+0.85	-1.0	19.0	41.1
Aug. 29	07 14.72	+06 50.0	5.168	4.555	+0.79	-1.2	19.1	48.0
Sept. 8	07 22.23	+06 36.6	5.079	4.581	+0.71	-1.4	19.1	55.3
Sept. 18	07 28.93	+06 21.5	4.977	4.606	+0.62	-1.6	19.1	62.9
Sept. 28	07 34.71	+06 05.7	4.863	4.632	+0.52	-1.6	19.2	70.8
Oct. 8	07 39.43	+05 50.4	4.742	4.657	+0.41	-1.5	19.2	79.1
Oct. 18	07 42.97	+05 36.7	4.615	4.683	+0.29	-1.2	19.2	87.7
Oct. 28	07 45.23	+05 26.0	4.487	4.708	+0.15	-0.9	19.2	96.7
Nov. 7	07 46.10	+05 19.6	4.361	4.733	+0.01	-0.3	19.2	106.1
Nov. 17	07 45.53	+05 19.0	4.242	4.758	-0.14	+0.3	19.2	115.9
Nov. 27	07 43.50	+05 25.3	4.136	4.782	-0.28	+1.1	19.3	126.0
Dec. 7	07 40.09	+05 39.7	4.046	4.807	-0.41	+1.9	19.3	136.3
Dec. 17	07 35.47	+06 02.7	3.979	4.831	-0.52	+2.8	19.3	146.6
Dec. 27	07 29.90	+06 34.4	3.937	4.855	-0.59	+3.6	19.4	156.5
Jan. 6	07 23.77	+07 14.0	3.926	4.879	-0.63	+4.3	19.4	164.0
Jan. 16	07 17.50	+08 00.1	3.946	4.903	-0.62	+4.9	19.5	164.9
Jan. 26	07 11.54	+08 51.0	3.998	4.926	-0.56	+5.3	19.6	158.2
Feb. 5	07 06.31	+09 44.6	4.081	4.950	-0.47	+5.4	19.7	148.7
Feb. 15	07 02.13	+10 38.9	4.190	4.973	-0.35	+5.4	19.9	138.4
Feb. 25	06 59.22	+11 32.0	4.324	4.996	-0.21	+5.2	20.0	128.1
Mar. 7	06 57.72	+12 22.6	4.476	5.018	-0.07	+4.9	20.2	118.0
Mar. 17	06 57.64	+13 09.7	4.642	5.041	+0.07	+4.5	20.3	108.2
Mar. 27	06 58.95	+13 52.5	4.817	5.063	+0.20	+4.0	20.5	98.6

Comet 246P/NEAT

Epoch = 2022 June 30.0 TT
 T = 2021 Feb. 24.69185 TT
 Peri. = 176.86528 e = 0.2890165
 Node = 78.53925 2000.0 a = 4.0306899 AU
 Incl. = 15.96602 n = 0.12179655
 q = 2.8657540 AU P = 8.09 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	21 05.47	-28 25.7	4.083	3.291	+1.54 +6.2	15.8	32.1
Jan. 11	21 20.88	-27 22.1	4.169	3.315	+1.54 +6.5	15.9	26.1
Jan. 21	21 36.20	-26 15.8	4.243	3.339	+1.52 +6.8	16.0	20.5
Jan. 31	21 51.36	-25 07.4	4.301	3.363	+1.51 +6.9	16.1	15.6
Feb. 10	22 06.31	-23 57.9	4.345	3.387	+1.48 +7.0	16.1	12.2
Feb. 20	22 20.97	-22 47.9	4.373	3.412	+1.45 +7.0	16.2	11.9
Mar. 2	22 35.32	-21 38.4	4.386	3.437	+1.42 +6.9	16.3	14.7
Mar. 12	22 49.30	-20 30.1	4.384	3.462	+1.38 +6.7	16.3	19.3
Mar. 22	23 02.87	-19 24.1	4.366	3.487	+1.33 +6.4	16.3	24.8
Apr. 1	23 15.99	-18 21.2	4.334	3.512	+1.29 +6.1	16.4	30.7
Apr. 11	23 28.62	-17 22.3	4.287	3.538	+1.23 +5.6	16.4	36.9
Apr. 21	23 40.70	-16 28.3	4.227	3.564	+1.18 +5.1	16.4	43.3
May 1	23 52.18	-15 40.2	4.155	3.589	+1.11 +4.5	16.4	49.9
May 11	00 02.98	-14 58.8	4.072	3.615	+1.04 +3.7	16.4	56.6
May 21	00 13.02	-14 25.1	3.979	3.641	+0.96 +2.9	16.4	63.5
May 31	00 22.21	-14 00.0	3.877	3.667	+0.87 +2.0	16.4	70.6
June 10	00 30.44	-13 44.2	3.770	3.693	+0.76 +1.0	16.4	77.9
June 20	00 37.57	-13 38.5	3.658	3.718	+0.65 0.0	16.4	85.5
June 30	00 43.49	-13 43.4	3.545	3.744	+0.52 -1.1	16.3	93.3
July 10	00 48.03	-13 59.2	3.433	3.770	+0.37 -2.2	16.3	101.5
July 20	00 51.05	-14 25.6	3.326	3.796	+0.21 -3.2	16.3	110.0
July 30	00 52.43	-15 01.9	3.228	3.822	+0.04 -4.1	16.3	118.8
Aug. 9	00 52.08	-15 46.5	3.142	3.847	-0.13 -4.8	16.3	127.8
Aug. 19	00 50.00	-16 36.9	3.072	3.873	-0.30 -5.2	16.3	136.9
Aug. 29	00 46.28	-17 29.8	3.022	3.898	-0.46 -5.3	16.3	145.7
Sept. 8	00 41.15	-18 20.7	2.997	3.924	-0.58 -4.8	16.3	153.4
Sept. 18	00 34.99	-19 05.2	2.997	3.949	-0.65 -3.9	16.3	158.4
Sept. 28	00 28.30	-19 39.2	3.025	3.974	-0.68 -2.7	16.4	158.4
Oct. 8	00 21.64	-19 59.6	3.082	3.999	-0.64 -1.2	16.5	153.2
Oct. 18	00 15.56	-20 04.6	3.165	4.024	-0.56 +0.4	16.6	145.3
Oct. 28	00 10.53	-19 54.2	3.272	4.049	-0.43 +1.9	16.7	136.3
Nov. 7	00 06.87	-19 29.1	3.400	4.073	-0.28 +3.2	16.8	126.9
Nov. 17	00 04.76	-18 51.3	3.545	4.098	-0.12 +4.4	16.9	117.5
Nov. 27	00 04.26	-18 02.8	3.704	4.122	+0.04 +5.4	17.1	108.3
Dec. 7	00 05.33	-17 05.6	3.871	4.146	+0.19 +6.1	17.2	99.3
Dec. 17	00 07.84	-16 01.6	4.043	4.170	+0.33 +6.7	17.3	90.6
Dec. 27	00 11.67	-14 52.5	4.215	4.194	+0.45 +7.1	17.5	82.0
Jan. 6	00 16.65	-13 39.7	4.385	4.217	+0.55 +7.4	17.6	73.7
Jan. 16	00 22.61	-12 24.4	4.550	4.240	+0.64 +7.6	17.7	65.7
Jan. 26	00 29.41	-11 07.5	4.706	4.263	+0.72 +7.7	17.8	57.8
Feb. 5	00 36.91	-09 49.9	4.850	4.286	+0.78 +7.8	17.9	50.2
Feb. 15	00 44.98	-08 32.5	4.982	4.309	+0.83 +7.7	18.0	42.7
Feb. 25	00 53.52	-07 15.8	5.099	4.331	+0.88 +7.6	18.1	35.5
Mar. 7	01 02.41	-06 00.6	5.199	4.353	+0.91 +7.4	18.2	28.5
Mar. 17	01 11.57	-04 47.3	5.282	4.375	+0.93 +7.2	18.2	21.9
Mar. 27	01 20.92	-03 36.5	5.347	4.397	+0.94 +6.9	18.3	16.1

Comet C/2019 03 (Palomar)

Epoch = 2022 Jan. 21.0 TT
 T = 2021 Mar. 9.15383 TT
 Peri. = 60.10816
 Node = 300.39746 2000.0
 Incl. = 89.81949
 q = 8.8202665 AU
 e = 1.0039200

$$m1 = -35.5 + 5 \log(\Delta) + 50.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	18 48.79	+47 44.4	9.263	8.987	+0.54	+3.0	17.0	70.8
Jan. 11	18 54.23	+48 18.4	9.277	8.999	+0.54	+3.9	17.0	70.6
Jan. 21	18 59.64	+49 01.9	9.285	9.010	+0.53	+4.9	17.1	70.9
Jan. 31	19 04.89	+49 54.6	9.286	9.022	+0.51	+5.8	17.1	71.5
Feb. 10	19 09.83	+50 55.9	9.281	9.035	+0.47	+6.6	17.1	72.6
Feb. 20	19 14.33	+52 05.3	9.272	9.047	+0.42	+7.3	17.2	73.8
Mar. 2	19 18.24	+53 21.7	9.260	9.060	+0.35	+8.0	17.2	75.4
Mar. 12	19 21.38	+54 44.2	9.245	9.074	+0.27	+8.5	17.2	77.0
Mar. 22	19 23.60	+56 11.4	9.230	9.087	+0.16	+8.9	17.2	78.7
Apr. 1	19 24.71	+57 42.0	9.214	9.101	+0.04	+9.2	17.3	80.4
Apr. 11	19 24.50	+59 14.2	9.200	9.116	-0.10	+9.2	17.3	82.1
Apr. 21	19 22.80	+60 46.1	9.188	9.130	-0.26	+9.1	17.3	83.6
May 1	19 19.40	+62 15.7	9.179	9.145	-0.44	+8.7	17.4	84.9
May 11	19 14.14	+63 40.7	9.174	9.161	-0.63	+8.2	17.4	86.1
May 21	19 06.93	+64 58.8	9.173	9.177	-0.83	+7.3	17.4	87.0
May 31	18 57.77	+66 07.6	9.177	9.193	-1.02	+6.3	17.5	87.7
June 10	18 46.80	+67 05.0	9.185	9.209	-1.18	+5.0	17.5	88.2
June 20	18 34.37	+67 49.1	9.197	9.226	-1.31	+3.6	17.6	88.4
June 30	18 20.99	+68 18.7	9.214	9.243	-1.37	+2.1	17.6	88.5
July 10	18 07.34	+68 33.5	9.234	9.260	-1.35	+0.7	17.7	88.3
July 20	17 54.12	+68 34.0	9.258	9.277	-1.27	-0.7	17.7	88.0
July 30	17 41.99	+68 21.6	9.284	9.295	-1.13	-1.9	17.8	87.5
Aug. 9	17 31.47	+67 58.4	9.312	9.314	-0.95	-2.8	17.8	87.0
Aug. 19	17 22.87	+67 26.9	9.340	9.332	-0.75	-3.5	17.9	86.4
Aug. 29	17 16.33	+66 49.6	9.370	9.351	-0.54	-3.9	17.9	85.8
Sept. 8	17 11.86	+66 09.2	9.398	9.370	-0.34	-4.1	18.0	85.3
Sept. 18	17 09.33	+65 28.0	9.426	9.390	-0.15	-4.1	18.0	84.8
Sept. 28	17 08.59	+64 48.0	9.453	9.409	+0.02	-3.8	18.1	84.5
Oct. 8	17 09.45	+64 11.3	9.477	9.429	+0.17	-3.4	18.1	84.3
Oct. 18	17 11.70	+63 39.3	9.499	9.450	+0.29	-2.9	18.2	84.2
Oct. 28	17 15.16	+63 13.3	9.519	9.470	+0.41	-2.2	18.2	84.2
Nov. 7	17 19.63	+62 54.5	9.536	9.491	+0.50	-1.4	18.3	84.4
Nov. 17	17 24.95	+62 43.8	9.551	9.512	+0.57	-0.6	18.3	84.8
Nov. 27	17 30.95	+62 41.8	9.565	9.534	+0.63	+0.3	18.4	85.2
Dec. 7	17 37.45	+62 49.1	9.577	9.556	+0.67	+1.2	18.4	85.8
Dec. 17	17 44.32	+63 05.8	9.588	9.578	+0.70	+2.2	18.5	86.4
Dec. 27	17 51.40	+63 32.0	9.600	9.600	+0.71	+3.2	18.5	87.1
Jan. 6	17 58.51	+64 07.8	9.612	9.622	+0.71	+4.1	18.6	87.7
Jan. 16	18 05.51	+64 52.6	9.625	9.645	+0.69	+5.0	18.6	88.2
Jan. 26	18 12.21	+65 46.0	9.641	9.668	+0.65	+5.8	18.7	88.6
Feb. 5	18 18.41	+66 47.3	9.660	9.692	+0.58	+6.5	18.7	88.9
Feb. 15	18 23.90	+67 55.6	9.683	9.715	+0.50	+7.2	18.8	89.0
Feb. 25	18 28.40	+69 09.9	9.709	9.739	+0.39	+7.7	18.9	88.8
Mar. 7	18 31.62	+70 28.9	9.740	9.763	+0.24	+8.1	18.9	88.4
Mar. 17	18 33.18	+71 51.0	9.775	9.788	+0.05	+8.3	19.0	87.8
Mar. 27	18 32.61	+73 14.7	9.814	9.812	-0.20	+8.4	19.0	87.0

Comet 28P/Neujmin

Epoch = 2022 June 30.0 TT
 T = 2021 Mar. 11.87413 TT
 Peri. = 347.43894
 Node = 346.33213 2000.0
 Incl. = 14.31207
 q = 1.5791181 AU

e = 0.7737171
 a = 6.9785127 AU
 n = 0.05346379
 P = 18.44 years

H = 12.0 , G = 0.15

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	V	Elong.
2020/21	h m	° '			m		°
Jan. 1	04 17.57	+40 44.4	2.622	3.470	-0.57	-5.5	144.5
Jan. 11	04 13.09	+39 49.3	2.782	3.547	-0.30	-5.4	135.1
Jan. 21	04 11.30	+38 56.6	2.962	3.623	-0.04	-5.0	125.5
Jan. 31	04 12.00	+38 09.2	3.158	3.699	+0.20	-4.4	116.1
Feb. 10	04 14.90	+37 28.4	3.366	3.774	+0.40	-3.7	106.9
Feb. 20	04 19.68	+36 54.7	3.583	3.849	+0.57	-3.0	98.1
Mar. 2	04 26.04	+36 27.5	3.803	3.923	+0.71	-2.4	89.6
Mar. 12	04 33.70	+36 06.0	4.023	3.997	+0.83	-1.9	81.4
Mar. 22	04 42.42	+35 49.1	4.241	4.070	+0.92	-1.5	73.4
Apr. 1	04 51.99	+35 35.8	4.453	4.142	+1.00	-1.2	65.6
Apr. 11	05 02.22	+35 25.2	4.657	4.214	+1.05	-1.0	58.1
Apr. 21	05 12.97	+35 16.4	4.850	4.285	+1.10	-0.8	50.7
May 1	05 24.08	+35 08.6	5.031	4.356	+1.13	-0.7	43.5
May 11	05 35.45	+35 01.2	5.197	4.427	+1.15	-0.7	36.5
May 21	05 46.95	+34 53.9	5.347	4.496	+1.15	-0.7	29.7
May 31	05 58.50	+34 46.4	5.479	4.565	+1.15	-0.8	23.3
June 10	06 10.00	+34 38.4	5.593	4.634	+1.14	-0.8	17.3
June 20	06 21.35	+34 30.0	5.688	4.702	+1.13	-0.9	12.7
June 30	06 32.50	+34 21.2	5.763	4.770	+1.10	-0.9	11.2
July 10	06 43.35	+34 12.2	5.818	4.837	+1.06	-0.9	13.9
July 20	06 53.82	+34 03.2	5.852	4.903	+1.02	-0.9	19.1
July 30	07 03.83	+33 54.7	5.866	4.969	+0.97	-0.8	25.5
Aug. 9	07 13.30	+33 46.9	5.860	5.034	+0.91	-0.7	32.5
Aug. 19	07 22.14	+33 40.5	5.836	5.099	+0.85	-0.5	39.8
Aug. 29	07 30.27	+33 35.9	5.793	5.164	+0.77	-0.3	47.4
Sept. 8	07 37.56	+33 33.8	5.735	5.228	+0.68	-0.1	55.3
Sept. 18	07 43.93	+33 34.6	5.662	5.291	+0.58	+0.3	63.5
Sept. 28	07 49.26	+33 38.9	5.579	5.354	+0.47	+0.6	72.0
Oct. 8	07 53.41	+33 47.1	5.486	5.416	+0.35	+1.0	80.8
Oct. 18	07 56.29	+33 59.4	5.389	5.478	+0.21	+1.5	89.9
Oct. 28	07 57.77	+34 15.9	5.291	5.540	+0.07	+1.9	99.3
Nov. 7	07 57.76	+34 36.1	5.198	5.600	-0.08	+2.2	109.1
Nov. 17	07 56.23	+34 59.1	5.114	5.661	-0.24	+2.4	119.1
Nov. 27	07 53.17	+35 23.9	5.044	5.721	-0.39	+2.5	129.4
Dec. 7	07 48.68	+35 48.5	4.993	5.780	-0.52	+2.4	139.8
Dec. 17	07 42.97	+36 11.0	4.967	5.840	-0.63	+2.1	149.9
Dec. 27	07 36.35	+36 29.5	4.969	5.898	-0.70	+1.6	159.2
Jan. 6	07 29.22	+36 42.2	5.001	5.956	-0.72	+0.9	165.0
Jan. 16	07 22.03	+36 48.1	5.066	6.014	-0.70	+0.2	163.2
Jan. 26	07 15.23	+36 46.9	5.161	6.071	-0.64	-0.5	155.6
Feb. 5	07 09.25	+36 39.1	5.287	6.128	-0.54	-1.1	145.9
Feb. 15	07 04.37	+36 25.6	5.438	6.185	-0.42	-1.6	135.8
Feb. 25	07 00.79	+36 07.7	5.612	6.241	-0.28	-2.0	125.6
Mar. 7	06 58.61	+35 46.7	5.804	6.296	-0.14	-2.2	115.6
Mar. 17	06 57.82	+35 23.7	6.008	6.352	0.00	-2.4	105.8
Mar. 27	06 58.36	+34 59.7	6.220	6.406	+0.12	-2.4	96.3

Comet C/2020 F5 (MASTER)

Epoch = 2022 June 30.0 TT
 T = 2021 Mar. 19.11495 TT
 Peri. = 310.73941
 Node = 350.52467 2000.0
 Incl. = 52.26404
 q = 4.3230043 AU
 e = 0.9808376

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	22 39.35	-15 07.3	5.398	4.912	+0.54	+9.6	15.8	55.7
Jan. 11	22 44.98	-13 31.3	5.562	4.950	+0.59	+9.6	15.9	47.4
Jan. 21	22 51.11	-11 56.2	5.713	4.989	+0.63	+9.5	16.0	39.2
Jan. 31	22 57.59	-10 21.8	5.847	5.028	+0.66	+9.4	16.0	31.0
Feb. 10	23 04.32	-08 48.3	5.962	5.069	+0.68	+9.3	16.1	23.0
Feb. 20	23 11.19	-07 15.8	6.059	5.110	+0.69	+9.2	16.2	15.0
Mar. 2	23 18.11	-05 44.2	6.134	5.152	+0.69	+9.1	16.3	7.1
Mar. 12	23 24.98	-04 13.8	6.189	5.195	+0.68	+9.0	16.3	0.9
Mar. 22	23 31.71	-02 44.6	6.222	5.239	+0.66	+8.8	16.4	8.6
Apr. 1	23 38.23	-01 16.8	6.234	5.283	+0.64	+8.7	16.4	16.5
Apr. 11	23 44.45	+00 09.5	6.225	5.328	+0.60	+8.5	16.4	24.4
Apr. 21	23 50.28	+01 34.0	6.197	5.374	+0.56	+8.3	16.5	32.3
May 1	23 55.65	+02 56.5	6.150	5.420	+0.51	+8.1	16.5	40.2
May 11	00 00.47	+04 16.9	6.086	5.467	+0.45	+7.9	16.5	48.3
May 21	00 04.65	+05 34.9	6.008	5.514	+0.38	+7.7	16.5	56.5
May 31	00 08.09	+06 50.2	5.918	5.562	+0.30	+7.4	16.5	64.8
June 10	00 10.70	+08 02.5	5.818	5.611	+0.21	+7.0	16.5	73.3
June 20	00 12.39	+09 11.2	5.712	5.659	+0.12	+6.7	16.5	81.9
June 30	00 13.07	+10 15.9	5.603	5.709	+0.01	+6.2	16.5	90.8
July 10	00 12.68	+11 16.0	5.496	5.759	-0.10	+5.7	16.5	99.9
July 20	00 11.18	+12 10.7	5.395	5.809	-0.21	+5.2	16.5	109.2
July 30	00 08.55	+12 59.4	5.303	5.860	-0.32	+4.5	16.5	118.8
Aug. 9	00 04.84	+13 41.3	5.227	5.911	-0.43	+3.8	16.5	128.4
Aug. 19	00 00.17	+14 15.7	5.170	5.962	-0.51	+3.0	16.5	138.2
Aug. 29	23 54.71	+14 42.3	5.136	6.014	-0.58	+2.2	16.5	147.7
Sept. 8	23 48.71	+15 00.9	5.129	6.066	-0.62	+1.4	16.6	156.4
Sept. 18	23 42.46	+15 12.1	5.152	6.119	-0.63	+0.7	16.6	162.7
Sept. 28	23 36.27	+15 16.8	5.205	6.171	-0.60	+0.2	16.7	163.2
Oct. 8	23 30.49	+15 16.4	5.289	6.225	-0.55	-0.2	16.8	157.6
Oct. 18	23 25.36	+15 12.7	5.402	6.278	-0.47	-0.5	16.8	149.1
Oct. 28	23 21.13	+15 07.6	5.543	6.332	-0.37	-0.5	16.9	139.5
Nov. 7	23 17.92	+15 03.1	5.706	6.386	-0.26	-0.4	17.0	129.7
Nov. 17	23 15.82	+15 00.8	5.889	6.440	-0.15	-0.1	17.1	119.9
Nov. 27	23 14.84	+15 01.9	6.086	6.494	-0.04	+0.4	17.2	110.2
Dec. 7	23 14.95	+15 07.6	6.294	6.549	+0.07	+0.8	17.4	100.7
Dec. 17	23 16.06	+15 18.5	6.506	6.604	+0.16	+1.4	17.5	91.4
Dec. 27	23 18.09	+15 34.8	6.719	6.659	+0.25	+2.0	17.6	82.3
Jan. 6	23 20.93	+15 56.9	6.928	6.714	+0.32	+2.5	17.7	73.4
Jan. 16	23 24.46	+16 24.6	7.129	6.769	+0.39	+3.1	17.8	64.8
Jan. 26	23 28.57	+16 57.7	7.319	6.825	+0.44	+3.6	17.9	56.5
Feb. 5	23 33.15	+17 35.9	7.495	6.881	+0.48	+4.1	18.0	48.4
Feb. 15	23 38.09	+18 18.8	7.654	6.937	+0.51	+4.5	18.0	40.8
Feb. 25	23 43.29	+19 06.1	7.795	6.993	+0.53	+5.0	18.1	33.7
Mar. 7	23 48.66	+19 57.3	7.914	7.049	+0.54	+5.3	18.2	27.4
Mar. 17	23 54.10	+20 51.9	8.013	7.105	+0.54	+5.6	18.2	22.7
Mar. 27	23 59.53	+21 49.6	8.089	7.162	+0.54	+5.9	18.3	20.2

Comet 10P/Tempel

Epoch = 2022 June 30.0 TT
 T = 2021 Mar. 24.21952 TT
 Peri. = 195.50983 e = 0.5383795
 Node = 117.81156 2000.0 a = 3.0610315 AU
 Incl. = 12.03855 n = 0.18403582
 q = 1.4130349 AU P = 5.36 years

H = 12.5 , G = 0.15

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		V	Elong.
2020/21	h m	° '			m	'		°
Jan. 1	03 46.32	+07 12.9	2.074	2.850	-0.36	+5.1	17.2	134.4
Jan. 11	03 43.91	+08 06.4	2.235	2.906	-0.10	+5.7	17.4	124.4
Jan. 21	03 44.01	+09 04.8	2.410	2.961	+0.14	+6.0	17.7	114.8
Jan. 31	03 46.36	+10 05.8	2.596	3.015	+0.35	+6.2	17.9	105.7
Feb. 10	03 50.69	+11 07.9	2.788	3.068	+0.53	+6.2	18.1	96.9
Feb. 20	03 56.71	+12 09.3	2.984	3.120	+0.68	+6.1	18.3	88.6
Mar. 2	04 04.14	+13 09.0	3.179	3.172	+0.81	+5.8	18.5	80.6
Mar. 12	04 12.76	+14 06.0	3.371	3.222	+0.92	+5.5	18.6	72.9
Mar. 22	04 22.36	+14 59.6	3.558	3.272	+1.01	+5.1	18.7	65.4
Apr. 1	04 32.75	+15 49.1	3.737	3.321	+1.08	+4.7	18.8	58.2
Apr. 11	04 43.78	+16 34.2	3.906	3.368	+1.13	+4.2	18.9	51.1
Apr. 21	04 55.32	+17 14.3	4.063	3.415	+1.18	+3.7	18.9	44.2
May 1	05 07.24	+17 49.4	4.207	3.461	+1.21	+3.2	19.0	37.4
May 11	05 19.44	+18 19.3	4.336	3.506	+1.23	+2.7	19.0	30.7
May 21	05 31.82	+18 43.9	4.450	3.550	+1.24	+2.2	19.0	24.1
May 31	05 44.28	+19 03.2	4.547	3.593	+1.25	+1.6	19.0	17.6
June 10	05 56.75	+19 17.4	4.626	3.635	+1.24	+1.1	18.9	11.2
June 20	06 09.13	+19 26.6	4.687	3.677	+1.23	+0.7	18.9	5.5
June 30	06 21.35	+19 31.1	4.729	3.717	+1.21	+0.2	18.9	4.8
July 10	06 33.34	+19 31.2	4.753	3.757	+1.18	-0.2	19.0	10.3
July 20	06 45.00	+19 27.4	4.757	3.795	+1.15	-0.6	19.2	16.7
July 30	06 56.27	+19 20.0	4.743	3.833	+1.10	-0.9	19.3	23.5
Aug. 9	07 07.05	+19 09.8	4.710	3.870	+1.05	-1.2	19.4	30.4
Aug. 19	07 17.25	+18 57.3	4.659	3.906	+0.99	-1.3	19.4	37.6
Aug. 29	07 26.79	+18 43.2	4.592	3.941	+0.91	-1.5	19.5	44.9
Sept. 8	07 35.54	+18 28.4	4.508	3.976	+0.83	-1.5	19.5	52.5
Sept. 18	07 43.39	+18 13.7	4.411	4.009	+0.73	-1.4	19.5	60.3
Sept. 28	07 50.21	+18 00.0	4.301	4.042	+0.62	-1.3	19.5	68.4
Oct. 8	07 55.85	+17 48.5	4.182	4.074	+0.49	-1.0	19.4	76.9
Oct. 18	08 00.18	+17 40.2	4.056	4.104	+0.35	-0.6	19.4	85.8
Oct. 28	08 03.02	+17 36.0	3.927	4.135	+0.20	-0.1	19.3	95.0
Nov. 7	08 04.23	+17 37.0	3.800	4.164	+0.03	+0.4	19.3	104.7
Nov. 17	08 03.71	+17 43.8	3.679	4.192	-0.15	+1.0	19.2	114.9
Nov. 27	08 01.36	+17 56.9	3.569	4.220	-0.33	+1.7	19.1	125.6
Dec. 7	07 57.23	+18 16.2	3.475	4.247	-0.51	+2.2	19.0	136.8
Dec. 17	07 51.47	+18 40.8	3.404	4.273	-0.66	+2.7	18.8	148.3
Dec. 27	07 44.36	+19 09.4	3.360	4.298	-0.77	+3.0	18.7	160.2
Jan. 6	07 36.38	+19 40.2	3.347	4.323	-0.82	+3.1	18.5	172.2
Jan. 16	07 28.09	+20 11.3	3.366	4.347	-0.82	+3.0	18.5	175.1
Jan. 26	07 20.09	+20 40.8	3.418	4.370	-0.76	+2.8	18.7	163.2
Feb. 5	07 12.98	+21 07.5	3.501	4.392	-0.65	+2.5	18.9	151.4
Feb. 15	07 07.18	+21 30.8	3.612	4.413	-0.49	+2.1	19.1	139.9
Feb. 25	07 02.99	+21 50.3	3.746	4.434	-0.32	+1.7	19.2	128.8
Mar. 7	07 00.57	+22 06.1	3.898	4.454	-0.14	+1.4	19.4	118.2
Mar. 17	06 59.92	+22 18.5	4.064	4.473	+0.03	+1.1	19.5	108.0
Mar. 27	07 00.95	+22 27.6	4.237	4.491	+0.19	+0.7	19.6	98.3

Comet C/2020 J1 (SONEAR)

Epoch = 2022 June 30.0 TT
 T = 2021 Apr. 18.65283 TT
 Peri. = 341.76362
 Node = 226.59031 2000.0
 Incl. = 142.30172
 q = 3.3550520 AU
 e = 1.0007767

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	14 28.63	+04 18.5	4.373	4.109	+0.07	+9.4	14.9	68.1
Jan. 11	14 28.68	+05 59.8	4.246	4.161	-0.07	+11.0	14.9	78.4
Jan. 21	14 27.22	+07 57.5	4.115	4.214	-0.24	+12.7	14.9	89.0
Jan. 31	14 24.00	+10 11.8	3.987	4.268	-0.43	+14.3	14.9	99.9
Feb. 10	14 18.79	+12 41.7	3.872	4.323	-0.64	+15.7	14.9	110.9
Feb. 20	14 11.46	+15 24.1	3.776	4.379	-0.85	+16.8	14.9	121.8
Mar. 2	14 01.94	+18 14.1	3.709	4.435	-1.07	+17.1	14.9	132.2
Mar. 12	13 50.38	+21 04.0	3.677	4.493	-1.26	+16.7	15.0	141.1
Mar. 22	13 37.13	+23 45.3	3.684	4.551	-1.40	+15.3	15.0	146.9
Apr. 1	13 22.76	+26 09.3	3.733	4.610	-1.47	+13.2	15.1	147.8
Apr. 11	13 08.02	+28 09.5	3.824	4.669	-1.46	+10.5	15.2	143.7
Apr. 21	12 53.71	+29 42.4	3.953	4.729	-1.38	+7.8	15.3	136.2
May 1	12 40.54	+30 48.1	4.115	4.790	-1.23	+5.1	15.5	127.1
May 11	12 29.02	+31 29.0	4.303	4.851	-1.05	+2.9	15.6	117.4
May 21	12 19.46	+31 49.3	4.509	4.913	-0.84	+1.1	15.8	107.7
May 31	12 11.94	+31 53.3	4.728	4.975	-0.64	-0.3	15.9	98.2
June 10	12 06.40	+31 45.4	4.953	5.037	-0.45	-1.3	16.1	88.9
June 20	12 02.68	+31 29.2	5.178	5.100	-0.28	-2.0	16.2	80.0
June 30	12 00.58	+31 07.5	5.397	5.163	-0.13	-2.4	16.4	71.4
July 10	11 59.88	+30 42.7	5.607	5.227	0.00	-2.6	16.5	63.1
July 20	12 00.37	+30 16.8	5.803	5.290	+0.11	-2.6	16.7	55.3
July 30	12 01.85	+29 51.2	5.982	5.355	+0.20	-2.5	16.8	47.9
Aug. 9	12 04.15	+29 27.2	6.141	5.419	+0.27	-2.3	16.9	41.1
Aug. 19	12 07.09	+29 05.8	6.279	5.484	+0.32	-2.0	17.0	35.3
Aug. 29	12 10.53	+28 48.0	6.393	5.549	+0.37	-1.5	17.1	30.7
Sept. 8	12 14.34	+28 34.8	6.483	5.614	+0.40	-1.0	17.2	28.0
Sept. 18	12 18.39	+28 27.0	6.548	5.679	+0.41	-0.5	17.2	27.9
Sept. 28	12 22.55	+28 25.4	6.588	5.744	+0.42	+0.2	17.3	30.3
Oct. 8	12 26.71	+28 31.1	6.603	5.810	+0.41	+1.0	17.3	34.8
Oct. 18	12 30.75	+28 44.9	6.594	5.876	+0.39	+1.9	17.4	40.7
Oct. 28	12 34.54	+29 07.7	6.564	5.941	+0.36	+2.8	17.4	47.7
Nov. 7	12 37.94	+29 40.3	6.515	6.007	+0.31	+3.8	17.5	55.4
Nov. 17	12 40.82	+30 23.4	6.449	6.073	+0.25	+4.9	17.5	63.5
Nov. 27	12 43.01	+31 17.6	6.372	6.139	+0.18	+6.0	17.5	72.0
Dec. 7	12 44.35	+32 23.2	6.286	6.206	+0.08	+7.2	17.5	80.8
Dec. 17	12 44.67	+33 39.9	6.197	6.272	-0.03	+8.3	17.5	89.8
Dec. 27	12 43.79	+35 07.0	6.112	6.338	-0.16	+9.2	17.6	98.9
Jan. 6	12 41.53	+36 42.8	6.034	6.405	-0.31	+10.0	17.6	107.9
Jan. 16	12 37.75	+38 24.9	5.971	6.471	-0.47	+10.4	17.6	116.5
Jan. 26	12 32.35	+40 10.1	5.928	6.537	-0.63	+10.5	17.6	124.6
Feb. 5	12 25.30	+41 54.1	5.910	6.604	-0.79	+10.2	17.7	131.4
Feb. 15	12 16.71	+43 32.3	5.920	6.670	-0.94	+9.3	17.7	136.4
Feb. 25	12 06.79	+45 00.4	5.961	6.737	-1.05	+8.1	17.8	138.8
Mar. 7	11 55.92	+46 14.4	6.033	6.803	-1.12	+6.5	17.8	138.0
Mar. 17	11 44.59	+47 11.6	6.136	6.870	-1.14	+4.7	17.9	134.5
Mar. 27	11 33.35	+47 51.0	6.267	6.936	-1.10	+3.0	18.0	128.8

Comet C/2020 P3 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2021 Apr. 20.95915 TT
 Peri. = 82.25681
 Node = 19.46914 2000.0
 Incl. = 61.88767
 q = 6.8123171 AU
 e = 1.0002371

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	13 30.15	+68 25.1	6.660	7.016	+0.29	+3.8	17.6	107.3
Jan. 11	13 31.96	+69 04.9	6.633	7.032	+0.04	+4.2	17.6	110.1
Jan. 21	13 31.07	+69 47.2	6.617	7.048	-0.25	+4.3	17.6	112.2
Jan. 31	13 27.20	+70 29.0	6.613	7.065	-0.56	+4.0	17.6	113.6
Feb. 10	13 20.19	+71 06.5	6.621	7.083	-0.87	+3.4	17.6	114.2
Feb. 20	13 10.14	+71 35.7	6.644	7.101	-1.16	+2.3	17.6	113.8
Mar. 2	12 57.47	+71 52.8	6.679	7.119	-1.38	+0.9	17.6	112.6
Mar. 12	12 43.03	+71 54.5	6.728	7.139	-1.50	-0.8	17.7	110.6
Mar. 22	12 27.97	+71 38.6	6.790	7.158	-1.49	-2.6	17.7	107.8
Apr. 1	12 13.50	+71 04.8	6.864	7.179	-1.37	-4.3	17.7	104.5
Apr. 11	12 00.67	+70 14.0	6.948	7.199	-1.16	-5.9	17.8	100.6
Apr. 21	11 50.15	+69 08.3	7.041	7.221	-0.91	-7.3	17.8	96.3
May 1	11 42.22	+67 50.6	7.141	7.242	-0.65	-8.3	17.9	91.8
May 11	11 36.86	+66 23.6	7.246	7.265	-0.40	-9.1	17.9	87.1
May 21	11 33.87	+64 50.1	7.355	7.288	-0.18	-9.6	18.0	82.2
May 31	11 32.93	+63 12.2	7.465	7.311	+0.01	-9.9	18.0	77.4
June 10	11 33.76	+61 32.1	7.575	7.335	+0.17	-10.1	18.1	72.5
June 20	11 36.02	+59 51.4	7.682	7.359	+0.30	-10.1	18.1	67.8
June 30	11 39.48	+58 11.4	7.785	7.383	+0.40	-9.9	18.1	63.3
July 10	11 43.89	+56 33.1	7.881	7.409	+0.49	-9.7	18.2	59.0
July 20	11 49.06	+54 57.6	7.969	7.434	+0.55	-9.4	18.2	55.1
July 30	11 54.83	+53 25.5	8.048	7.460	+0.60	-9.0	18.3	51.6
Aug. 9	12 01.05	+51 57.7	8.116	7.487	+0.64	-8.5	18.3	48.7
Aug. 19	12 07.61	+50 34.7	8.172	7.513	+0.67	-8.0	18.3	46.6
Aug. 29	12 14.40	+49 17.0	8.215	7.541	+0.69	-7.5	18.3	45.4
Sept. 8	12 21.33	+48 05.3	8.244	7.569	+0.70	-6.8	18.4	45.2
Sept. 18	12 28.31	+46 59.9	8.259	7.597	+0.70	-6.2	18.4	46.1
Sept. 28	12 35.25	+46 01.5	8.259	7.625	+0.69	-5.4	18.4	48.0
Oct. 8	12 42.06	+45 10.6	8.245	7.654	+0.67	-4.7	18.4	50.9
Oct. 18	12 48.67	+44 27.4	8.217	7.684	+0.65	-3.9	18.4	54.7
Oct. 28	12 54.99	+43 52.4	8.175	7.713	+0.61	-3.0	18.4	59.2
Nov. 7	13 00.91	+43 25.9	8.121	7.744	+0.57	-2.2	18.4	64.3
Nov. 17	13 06.35	+43 08.1	8.057	7.774	+0.51	-1.3	18.4	70.0
Nov. 27	13 11.20	+42 59.0	7.984	7.805	+0.45	-0.4	18.4	76.0
Dec. 7	13 15.33	+42 58.5	7.905	7.836	+0.37	+0.4	18.4	82.4
Dec. 17	13 18.65	+43 06.1	7.823	7.868	+0.28	+1.2	18.4	89.0
Dec. 27	13 21.04	+43 21.2	7.741	7.900	+0.18	+1.9	18.4	95.7
Jan. 6	13 22.37	+43 42.6	7.661	7.932	+0.07	+2.4	18.4	102.5
Jan. 16	13 22.58	+44 08.9	7.588	7.965	-0.04	+2.8	18.4	109.1
Jan. 26	13 21.58	+44 38.2	7.526	7.998	-0.17	+3.0	18.4	115.4
Feb. 5	13 19.36	+45 08.3	7.476	8.031	-0.29	+3.0	18.4	121.2
Feb. 15	13 15.95	+45 36.7	7.443	8.064	-0.40	+2.7	18.4	126.1
Feb. 25	13 11.44	+46 00.9	7.429	8.098	-0.50	+2.1	18.4	129.8
Mar. 7	13 06.01	+46 18.3	7.436	8.133	-0.58	+1.3	18.5	132.0
Mar. 17	12 59.92	+46 26.8	7.464	8.167	-0.64	+0.3	18.5	132.3
Mar. 27	12 53.45	+46 24.9	7.515	8.202	-0.66	-0.8	18.5	130.8

Comet C/2021 K1 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2021 May 4.66930 TT
 Peri. = 184.27996 e = 0.8032195
 Node = 140.90201 2000.0 a = 12.6929477 AU
 Incl. = 16.27578 n = 0.02179517
 q = 2.4977246 AU P = 45.22 years

$$m1 = 8.2 + 5 \log(\Delta) + 15.0 \log(r(t-100))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	01 09.97	-10 01.0	3.195	3.373	+0.68	+7.7	17.5	91.9
Jan. 11	01 17.26	-08 42.7	3.390	3.433	+0.78	+8.0	17.8	84.2
Jan. 21	01 25.49	-07 22.1	3.584	3.493	+0.87	+8.1	18.0	76.8
Jan. 31	01 34.50	-06 00.5	3.777	3.554	+0.94	+8.2	18.2	69.5
Feb. 10	01 44.16	-04 39.3	3.965	3.616	+1.00	+8.1	18.4	62.5
Feb. 20	01 54.34	-03 19.6	4.146	3.678	+1.04	+7.9	18.6	55.6
Mar. 2	02 04.93	-02 02.3	4.319	3.741	+1.08	+7.6	18.8	48.8
Mar. 12	02 15.85	+00 48.0	4.481	3.804	+1.11	+7.2	19.0	42.2
Mar. 22	02 26.99	+00 22.4	4.631	3.868	+1.12	+6.8	19.2	35.8
Apr. 1	02 38.29	+01 28.5	4.769	3.931	+1.14	+6.4	19.4	29.6
Apr. 11	02 49.66	+02 29.7	4.892	3.996	+1.14	+5.8	19.6	23.8
Apr. 21	03 01.04	+03 25.8	5.000	4.060	+1.14	+5.3	19.7	18.6
May 1	03 12.37	+04 16.3	5.092	4.125	+1.13	+4.7	19.9	14.6
May 11	03 23.57	+05 01.1	5.166	4.189	+1.11	+4.1	20.0	13.1
May 21	03 34.58	+05 39.9	5.224	4.254	+1.09	+3.5	20.2	14.9
May 31	03 45.33	+06 12.6	5.265	4.319	+1.06	+2.9	20.3	19.0
June 10	03 55.75	+06 39.1	5.288	4.384	+1.02	+2.3	20.4	24.4
June 20	04 05.75	+06 59.4	5.295	4.449	+0.97	+1.7	20.5	30.5
June 30	04 15.27	+07 13.6	5.284	4.514	+0.92	+1.1	20.6	37.0
July 10	04 24.20	+07 21.6	5.258	4.579	+0.86	+0.5	20.7	43.8
July 20	04 32.46	+07 23.8	5.218	4.645	+0.79	-0.1	20.8	50.9
July 30	04 39.96	+07 20.4	5.164	4.710	+0.70	-0.7	20.9	58.3
Aug. 9	04 46.59	+07 11.5	5.098	4.775	+0.61	-1.2	21.0	65.9
Aug. 19	04 52.23	+06 57.7	5.023	4.839	+0.51	-1.6	21.0	73.8
Aug. 29	04 56.80	+06 39.4	4.942	4.904	+0.39	-2.1	21.1	82.0
Sept. 8	05 00.18	+06 17.3	4.857	4.969	+0.27	-2.4	21.2	90.5
Sept. 18	05 02.30	+05 52.2	4.772	5.034	+0.14	-2.6	21.2	99.3
Sept. 28	05 03.08	+05 25.1	4.691	5.098	0.00	-2.8	21.3	108.5
Oct. 8	05 02.51	+04 57.0	4.619	5.162	-0.13	-2.8	21.3	117.9
Oct. 18	05 00.62	+04 29.5	4.560	5.227	-0.26	-2.7	21.4	127.5
Oct. 28	04 57.51	+04 04.0	4.518	5.291	-0.37	-2.4	21.5	137.2
Nov. 7	04 53.37	+03 41.9	4.499	5.355	-0.46	-2.0	21.6	146.6
Nov. 17	04 48.46	+03 24.8	4.506	5.418	-0.52	-1.4	21.7	154.9
Nov. 27	04 43.09	+03 13.9	4.542	5.482	-0.55	-0.7	21.8	160.4
Dec. 7	04 37.65	+03 10.0	4.608	5.545	-0.53	0.0	21.9	160.3
Dec. 17	04 32.49	+03 13.5	4.704	5.609	-0.49	+0.7	22.0	154.6
Dec. 27	04 27.92	+03 24.1	4.828	5.672	-0.41	+1.4	.	146.1
Jan. 6	04 24.22	+03 41.5	4.979	5.734	-0.32	+2.1	.	136.7
Jan. 16	04 21.55	+04 04.5	5.152	5.797	-0.21	+2.6	.	126.9
Jan. 26	04 20.02	+04 32.1	5.344	5.859	-0.09	+3.0	.	117.2
Feb. 5	04 19.66	+05 03.2	5.549	5.922	+0.03	+3.3	.	107.6
Feb. 15	04 20.43	+05 36.6	5.763	5.984	+0.14	+3.4	.	98.2
Feb. 25	04 22.27	+06 11.2	5.981	6.046	+0.24	+3.5	.	89.0
Mar. 7	04 25.09	+06 46.1	6.199	6.107	+0.33	+3.5	.	80.1
Mar. 17	04 28.77	+07 20.4	6.413	6.169	+0.41	+3.4	.	71.4
Mar. 27	04 33.21	+07 53.6	6.619	6.230	+0.48	+3.2	.	63.0

Comet C/2020 T2 (Palomar)

Epoch = 2022 June 30.0 TT
 T = 2021 July 11.21262 TT
 Peri. = 150.45343
 Node = 83.01972 2000.0
 Incl. = 27.86206
 q = 2.0557338 AU
 e = 0.9936800

$$m1 = 1.3 + 5 \log(\Delta) + 25.0 \log(r(t-20))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	19 39.48	-33 20.1	3.807	2.874	+2.09	+0.2	15.1	15.9
Jan. 11	20 00.11	-33 14.6	3.899	2.951	+2.03	+1.0	15.4	13.3
Jan. 21	20 20.04	-33 02.1	3.979	3.029	+1.95	+1.6	15.8	13.2
Jan. 31	20 39.20	-32 44.4	4.047	3.109	+1.87	+2.0	16.1	15.5
Feb. 10	20 57.55	-32 23.5	4.101	3.189	+1.79	+2.2	16.4	19.6
Feb. 20	21 15.03	-32 00.9	4.142	3.271	+1.70	+2.3	16.7	24.7
Mar. 2	21 31.63	-31 38.5	4.170	3.353	+1.61	+2.2	17.0	30.4
Mar. 12	21 47.31	-31 17.9	4.184	3.435	+1.52	+1.9	17.3	36.4
Mar. 22	22 02.05	-31 00.7	4.185	3.518	+1.42	+1.5	17.5	42.7
Apr. 1	22 15.80	-30 48.3	4.174	3.602	+1.32	+0.9	17.8	49.2
Apr. 11	22 28.52	-30 42.2	4.151	3.685	+1.21	+0.2	18.0	56.0
Apr. 21	22 40.16	-30 43.7	4.119	3.769	+1.10	-0.6	18.3	62.9
May 1	22 50.66	-30 53.9	4.079	3.854	+0.98	-1.5	18.5	70.1
May 11	22 59.94	-31 13.7	4.032	3.938	+0.86	-2.5	18.7	77.5
May 21	23 07.89	-31 43.7	3.982	4.022	+0.72	-3.6	18.9	85.0
May 31	23 14.42	-32 24.3	3.930	4.107	+0.57	-4.6	19.2	92.8
June 10	23 19.41	-33 15.3	3.881	4.191	+0.41	-5.6	19.4	100.8
June 20	23 22.76	-34 15.5	3.838	4.276	+0.24	-6.5	19.6	108.9
June 30	23 24.37	-35 23.5	3.803	4.360	+0.06	-7.1	19.8	117.0
July 10	23 24.18	-36 36.6	3.782	4.444	-0.12	-7.5	20.0	125.0
July 20	23 22.21	-37 51.2	3.778	4.528	-0.29	-7.4	20.2	132.6
July 30	23 18.57	-39 03.4	3.794	4.612	-0.45	-6.9	20.4	139.4
Aug. 9	23 13.49	-40 08.7	3.833	4.696	-0.57	-6.0	20.6	144.6
Aug. 19	23 07.34	-41 03.1	3.896	4.780	-0.66	-4.7	20.9	147.4
Aug. 29	23 00.58	-41 43.4	3.984	4.863	-0.69	-3.2	21.1	147.1
Sept. 8	22 53.76	-42 07.6	4.098	4.946	-0.66	-1.5	21.3	143.7
Sept. 18	22 47.40	-42 15.1	4.237	5.029	-0.59	+0.1	21.6	138.1
Sept. 28	22 41.93	-42 06.8	4.397	5.112	-0.48	+1.6	21.9	131.1
Oct. 8	22 37.70	-41 44.4	4.577	5.195	-0.35	+2.9	.	123.4
Oct. 18	22 34.90	-41 10.2	4.773	5.277	-0.20	+4.0	.	115.4
Oct. 28	22 33.59	-40 26.6	4.981	5.359	-0.05	+4.8	.	107.2
Nov. 7	22 33.75	-39 35.7	5.199	5.441	+0.09	+5.4	.	98.9
Nov. 17	22 35.28	-38 39.8	5.421	5.523	+0.22	+5.8	.	90.7
Nov. 27	22 38.05	-37 40.3	5.645	5.604	+0.34	+6.1	.	82.6
Dec. 7	22 41.90	-36 38.7	5.866	5.686	+0.44	+6.2	.	74.7
Dec. 17	22 46.67	-35 36.3	6.082	5.766	+0.52	+6.3	.	66.9
Dec. 27	22 52.20	-34 33.7	6.288	5.847	+0.59	+6.2	.	59.3
Jan. 6	22 58.37	-33 32.0	6.484	5.927	+0.65	+6.1	.	51.9
Jan. 16	23 05.02	-32 31.7	6.665	6.008	+0.69	+5.9	.	44.8
Jan. 26	23 12.04	-31 33.5	6.830	6.087	+0.72	+5.7	.	38.3
Feb. 5	23 19.32	-30 38.0	6.977	6.167	+0.74	+5.4	.	32.4
Feb. 15	23 26.75	-29 45.7	7.104	6.246	+0.75	+5.0	.	27.7
Feb. 25	23 34.26	-28 57.0	7.212	6.325	+0.75	+4.6	.	24.6
Mar. 7	23 41.74	-28 12.7	7.298	6.404	+0.74	+4.2	.	24.0
Mar. 17	23 49.14	-27 33.0	7.363	6.483	+0.73	+3.7	.	25.9
Mar. 27	23 56.36	-26 58.5	7.408	6.561	+0.71	+3.1	.	29.9

Comet P/2020 V4 (Rankin)

Epoch = 2022 June 30.0 TT
 T = 2021 July 17.79214 TT
 Peri. = 256.99566 e = 0.4497197
 Node = 203.48934 2000.0 a = 9.3559573 AU
 Incl. = 14.24335 n = 0.03444068
 q = 5.1483990 AU P = 28.62 years

$$m1 = 7.2 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	07 59.84	+02 59.4	4.323	5.218	-0.40	+0.1	17.6	152.9
Jan. 11	07 55.62	+03 04.2	4.291	5.226	-0.44	+0.9	17.5	160.1
Jan. 21	07 51.18	+03 16.7	4.288	5.235	-0.44	+1.6	17.6	162.6
Jan. 31	07 46.89	+03 36.0	4.315	5.244	-0.41	+2.3	17.6	158.7
Feb. 10	07 43.12	+04 00.8	4.370	5.254	-0.34	+2.7	17.6	150.9
Feb. 20	07 40.15	+04 29.1	4.452	5.265	-0.24	+3.0	17.7	141.8
Mar. 2	07 38.21	+04 59.1	4.558	5.275	-0.13	+3.0	17.7	132.3
Mar. 12	07 37.45	+05 29.3	4.683	5.286	-0.01	+3.0	17.8	122.7
Mar. 22	07 37.92	+05 58.0	4.824	5.298	+0.12	+2.7	17.9	113.3
Apr. 1	07 39.62	+06 24.0	4.976	5.310	+0.24	+2.4	17.9	104.2
Apr. 11	07 42.49	+06 46.4	5.135	5.322	+0.35	+2.0	18.0	95.3
Apr. 21	07 46.45	+07 04.4	5.297	5.335	+0.45	+1.5	18.1	86.8
May 1	07 51.37	+07 17.6	5.458	5.349	+0.54	+1.0	18.2	78.5
May 11	07 57.16	+07 25.6	5.616	5.362	+0.62	+0.5	18.2	70.4
May 21	08 03.68	+07 28.4	5.767	5.376	+0.69	0.0	18.3	62.6
May 31	08 10.81	+07 26.0	5.909	5.391	+0.74	-0.5	18.4	55.0
June 10	08 18.46	+07 18.3	6.039	5.406	+0.79	-1.1	18.4	47.5
June 20	08 26.51	+07 05.5	6.156	5.421	+0.82	-1.5	18.5	40.3
June 30	08 34.87	+06 47.9	6.258	5.437	+0.85	-2.0	18.5	33.3
July 10	08 43.44	+06 25.7	6.344	5.453	+0.87	-2.5	18.6	26.5
July 20	08 52.15	+05 59.2	6.412	5.469	+0.87	-2.9	18.6	20.1
July 30	09 00.91	+05 28.8	6.463	5.486	+0.88	-3.2	18.6	14.5
Aug. 9	09 09.65	+04 54.9	6.494	5.503	+0.87	-3.6	18.7	11.1
Aug. 19	09 18.30	+04 17.9	6.506	5.520	+0.86	-3.9	18.7	12.0
Aug. 29	09 26.78	+03 38.2	6.499	5.538	+0.84	-4.1	18.7	16.5
Sept. 8	09 35.03	+02 56.5	6.473	5.556	+0.81	-4.3	18.7	22.6
Sept. 18	09 42.96	+02 13.2	6.428	5.575	+0.77	-4.4	18.7	29.4
Sept. 28	09 50.50	+01 29.0	6.365	5.593	+0.73	-4.4	18.7	36.7
Oct. 8	09 57.58	+00 44.5	6.285	5.613	+0.68	-4.4	18.7	44.3
Oct. 18	10 04.10	+00 00.5	6.189	5.632	+0.62	-4.3	18.7	52.1
Oct. 28	10 09.99	+00 42.3	6.080	5.652	+0.55	-4.2	18.6	60.2
Nov. 7	10 15.14	-01 22.9	5.959	5.672	+0.47	-3.9	18.6	68.5
Nov. 17	10 19.47	-02 00.5	5.830	5.692	+0.38	-3.6	18.6	77.1
Nov. 27	10 22.89	-02 34.1	5.696	5.712	+0.29	-3.1	18.5	86.0
Dec. 7	10 25.31	-03 02.7	5.560	5.733	+0.19	-2.5	18.5	95.2
Dec. 17	10 26.69	-03 25.2	5.427	5.754	+0.08	-1.9	18.5	104.6
Dec. 27	10 26.98	-03 40.8	5.300	5.776	-0.03	-1.1	18.4	114.4
Jan. 6	10 26.20	-03 48.5	5.186	5.798	-0.13	-0.3	18.4	124.3
Jan. 16	10 24.42	-03 47.9	5.088	5.819	-0.23	+0.5	18.4	134.5
Jan. 26	10 21.76	-03 38.8	5.011	5.842	-0.31	+1.4	18.4	144.7
Feb. 5	10 18.42	-03 21.4	4.959	5.864	-0.36	+2.2	18.4	154.5
Feb. 15	10 14.64	-02 56.8	4.935	5.887	-0.39	+2.8	18.4	163.1
Feb. 25	10 10.72	-02 26.3	4.940	5.909	-0.39	+3.3	18.4	167.2
Mar. 7	10 06.95	-01 51.7	4.976	5.933	-0.36	+3.6	18.4	163.1
Mar. 17	10 03.61	-01 15.2	5.042	5.956	-0.30	+3.7	18.5	154.6
Mar. 27	10 00.94	+00 38.9	5.135	5.979	-0.22	+3.6	18.5	144.9

Comet 241P/LINEAR

Epoch = 2022 June 30.0 TT
 T = 2021 July 25.87676 TT
 Peri. = 111.44222 e = 0.6102002
 Node = 305.48231 2000.0 a = 4.9193427 AU
 Incl. = 21.10475 n = 0.09033238
 q = 1.9175588 AU P = 10.91 years

$$m1 = 10.9 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	09 07.87	+19 29.5	1.545	2.426	-0.88	-6.0	17.6	146.5
Jan. 11	08 58.07	+18 31.2	1.538	2.480	-1.08	-5.6	17.8	158.7
Jan. 21	08 46.91	+17 36.3	1.559	2.536	-1.14	-5.3	17.9	171.2
Jan. 31	08 35.71	+16 44.3	1.608	2.592	-1.07	-5.0	18.1	175.8
Feb. 10	08 25.75	+15 55.2	1.688	2.649	-0.89	-4.7	18.4	163.7
Feb. 20	08 17.97	+15 09.1	1.794	2.707	-0.64	-4.4	18.7	151.9
Mar. 2	08 12.85	+14 26.1	1.925	2.765	-0.36	-4.1	18.9	140.8
Mar. 12	08 10.50	+13 45.6	2.077	2.824	-0.09	-4.0	19.3	130.4
Mar. 22	08 10.77	+13 06.6	2.244	2.883	+0.16	-3.9	19.6	120.7
Apr. 1	08 13.33	+12 28.1	2.424	2.943	+0.37	-3.9	19.9	111.6
Apr. 11	08 17.86	+11 48.9	2.613	3.002	+0.55	-4.0	20.1	103.1
Apr. 21	08 24.01	+11 08.0	2.806	3.062	+0.69	-4.2	20.4	95.0
May 1	08 31.45	+10 24.7	3.003	3.122	+0.81	-4.5	20.7	87.3
May 11	08 39.93	+09 38.3	3.199	3.181	+0.90	-4.8	21.0	79.9
May 21	08 49.21	+08 48.5	3.392	3.241	+0.96	-5.2	21.2	72.8
May 31	08 59.10	+07 55.1	3.581	3.300	+1.02	-5.5	21.4	66.0
June 10	09 09.44	+06 57.9	3.763	3.360	+1.05	-5.9	21.7	59.3
June 20	09 20.09	+05 57.1	3.937	3.419	+1.08	-6.3	21.9	52.7
June 30	09 30.96	+04 52.6	4.102	3.478	+1.10	-6.6	.	46.3
July 10	09 41.95	+03 44.8	4.254	3.536	+1.10	-7.0	.	40.0
July 20	09 52.98	+02 33.7	4.394	3.595	+1.10	-7.3	.	33.8
July 30	10 03.99	+01 19.8	4.521	3.653	+1.10	-7.5	.	27.7
Aug. 9	10 14.92	+00 03.2	4.632	3.710	+1.09	-7.8	.	21.9
Aug. 19	10 25.71	-01 15.6	4.727	3.767	+1.07	-8.0	.	16.5
Aug. 29	10 36.32	-02 36.4	4.805	3.824	+1.05	-8.2	.	12.3
Sept. 8	10 46.70	-03 58.8	4.866	3.881	+1.02	-8.3	.	10.9
Sept. 18	10 56.78	-05 22.4	4.908	3.937	+0.99	-8.4	.	13.3
Sept. 28	11 06.52	-06 46.9	4.932	3.992	+0.95	-8.5	.	18.2
Oct. 8	11 15.84	-08 11.8	4.938	4.048	+0.91	-8.5	.	24.2
Oct. 18	11 24.68	-09 36.6	4.926	4.103	+0.85	-8.5	.	30.9
Oct. 28	11 32.96	-11 01.0	4.896	4.157	+0.79	-8.4	.	37.9
Nov. 7	11 40.57	-12 24.4	4.849	4.211	+0.72	-8.3	.	45.3
Nov. 17	11 47.42	-13 46.2	4.787	4.264	+0.64	-8.1	.	52.9
Nov. 27	11 53.39	-15 05.7	4.712	4.317	+0.54	-7.8	.	60.8
Dec. 7	11 58.34	-16 22.2	4.625	4.370	+0.43	-7.4	.	69.0
Dec. 17	12 02.14	-17 34.7	4.529	4.422	+0.31	-7.0	.	77.5
Dec. 27	12 04.66	-18 42.1	4.428	4.474	+0.18	-6.4	.	86.3
Jan. 6	12 05.78	-19 43.0	4.326	4.525	+0.03	-5.7	.	95.4
Jan. 16	12 05.40	-20 36.0	4.226	4.576	-0.12	-4.8	.	104.7
Jan. 26	12 03.49	-21 19.4	4.133	4.626	-0.27	-3.7	.	114.3
Feb. 5	12 00.10	-21 51.4	4.053	4.676	-0.42	-2.5	.	124.0
Feb. 15	11 55.36	-22 10.7	3.990	4.725	-0.54	-1.2	.	133.6
Feb. 25	11 49.54	-22 16.1	3.948	4.774	-0.63	+0.2	.	142.9
Mar. 7	11 43.01	-22 07.5	3.931	4.823	-0.68	+1.6	.	151.0
Mar. 17	11 36.21	-21 46.1	3.943	4.871	-0.68	+2.8	.	156.5
Mar. 27	11 29.60	-21 13.7	3.983	4.918	-0.63	+3.7	.	157.3

Comet C/2021 01 (Nishimura)

Epoch = 2022 June 30.0 TT
 T = 2021 Aug. 13.93313 TT
 Peri. = 74.43400
 Node = 41.61918 2000.0
 Incl. = 27.57765
 q = 0.7867731 AU
 e = 1.0008767

$$m1 = 9.0 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	15 53.46	-22 04.9	3.102	2.424	+1.31 -9.0	15.3	39.4
Jan. 11	16 05.93	-23 30.8	3.127	2.551	+1.16 -8.2	15.5	46.5
Jan. 21	16 16.86	-24 49.3	3.135	2.677	+1.00 -7.5	15.8	54.0
Jan. 31	16 26.13	-26 01.8	3.127	2.801	+0.83 -7.0	15.9	61.9
Feb. 10	16 33.55	-27 09.8	3.107	2.924	+0.63 -6.6	16.1	70.2
Feb. 20	16 38.94	-28 14.2	3.076	3.045	+0.42 -6.3	16.3	78.9
Mar. 2	16 42.11	-29 15.8	3.038	3.164	+0.19 -6.0	16.4	88.1
Mar. 12	16 42.86	-30 14.5	2.997	3.282	-0.06 -5.7	16.5	97.8
Mar. 22	16 41.08	-31 09.6	2.959	3.399	-0.32 -5.3	16.7	107.8
Apr. 1	16 36.72	-31 59.7	2.928	3.514	-0.58 -4.7	16.8	118.3
Apr. 11	16 29.89	-32 42.5	2.911	3.628	-0.81 -3.8	16.9	129.1
Apr. 21	16 20.94	-33 15.7	2.914	3.740	-0.99 -2.7	17.1	140.1
May 1	16 10.40	-33 36.9	2.940	3.852	-1.11 -1.4	17.2	150.9
May 11	15 59.02	-33 45.0	2.995	3.962	-1.15 -0.1	17.4	160.6
May 21	15 47.65	-33 40.6	3.080	4.071	-1.11 +1.1	17.5	166.4
May 31	15 37.05	-33 25.7	3.197	4.179	-0.99 +1.9	17.7	163.5
June 10	15 27.85	-33 03.7	3.343	4.285	-0.83 +2.4	17.9	155.1
June 20	15 20.45	-32 38.3	3.517	4.391	-0.63 +2.6	18.2	145.3
June 30	15 15.01	-32 12.9	3.716	4.496	-0.43 +2.4	18.4	135.3
July 10	15 11.56	-31 50.0	3.934	4.600	-0.24 +2.1	18.6	125.5
July 20	15 09.98	-31 31.4	4.168	4.703	-0.06 +1.6	18.8	116.0
July 30	15 10.10	-31 18.0	4.414	4.805	+0.10 +1.0	19.0	106.7
Aug. 9	15 11.73	-31 10.2	4.667	4.906	+0.24 +0.5	19.3	97.7
Aug. 19	15 14.69	-31 07.9	4.922	5.007	+0.36 0.0	19.5	88.9
Aug. 29	15 18.77	-31 10.5	5.177	5.106	+0.46 -0.5	19.7	80.4
Sept. 8	15 23.82	-31 17.8	5.428	5.205	+0.55 -1.0	19.8	72.0
Sept. 18	15 29.67	-31 28.9	5.670	5.303	+0.62 -1.3	20.0	63.7
Sept. 28	15 36.19	-31 43.4	5.902	5.400	+0.68 -1.6	20.2	55.6
Oct. 8	15 43.25	-32 00.7	6.120	5.497	+0.73 -1.9	20.3	47.6
Oct. 18	15 50.73	-32 20.1	6.322	5.593	+0.77 -2.0	20.5	39.8
Oct. 28	15 58.53	-32 41.3	6.505	5.688	+0.79 -2.2	20.6	32.1
Nov. 7	16 06.53	-33 03.9	6.668	5.782	+0.81 -2.3	20.7	24.7
Nov. 17	16 14.64	-33 27.4	6.809	5.876	+0.81 -2.4	20.9	18.0
Nov. 27	16 22.75	-33 51.8	6.926	5.969	+0.81 -2.5	21.0	13.2
Dec. 7	16 30.76	-34 16.8	7.019	6.062	+0.79 -2.5	21.1	12.7
Dec. 17	16 38.55	-34 42.2	7.088	6.154	+0.76 -2.6	21.1	17.0
Dec. 27	16 46.03	-35 08.1	7.133	6.246	+0.73 -2.6	21.2	23.8
Jan. 6	16 53.07	-35 34.5	7.154	6.337	+0.68 -2.7	21.3	31.5
Jan. 16	16 59.56	-36 01.4	7.153	6.427	+0.61 -2.7	21.4	39.7
Jan. 26	17 05.39	-36 28.9	7.132	6.517	+0.54 -2.8	21.4	48.2
Feb. 5	17 10.43	-36 57.1	7.092	6.606	+0.46 -2.8	21.5	56.9
Feb. 15	17 14.56	-37 25.8	7.038	6.695	+0.36 -2.9	21.5	65.8
Feb. 25	17 17.67	-37 55.1	6.973	6.783	+0.25 -2.9	21.5	74.9
Mar. 7	17 19.66	-38 24.6	6.899	6.871	+0.13 -3.0	21.6	84.2
Mar. 17	17 20.44	-38 54.1	6.824	6.958	+0.01 -2.9	21.6	93.7
Mar. 27	17 19.94	-39 22.9	6.749	7.045	-0.12 -2.8	21.6	103.2

Comet C/2020 M5 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2021 Aug. 19.87011 TT
 Peri. = 126.33037
 Node = 352.09386 2000.0
 Incl. = 93.22535
 q = 3.0040859 AU
 e = 1.0003656

$$m1 = 5.1 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	13 16.17	+14 18.7	3.157	3.282	-0.40	-5.2	15.3	88.5
Jan. 11	13 11.07	+13 30.5	3.024	3.322	-0.65	-4.4	15.3	98.9
Jan. 21	13 03.31	+12 49.4	2.897	3.364	-0.93	-3.8	15.3	110.1
Jan. 31	12 52.66	+12 13.6	2.782	3.409	-1.23	-3.4	15.3	122.0
Feb. 10	12 39.11	+11 40.3	2.689	3.455	-1.51	-3.3	15.3	134.7
Feb. 20	12 22.95	+11 06.3	2.626	3.503	-1.73	-3.6	15.4	147.9
Mar. 2	12 04.91	+10 28.6	2.600	3.553	-1.87	-4.1	15.4	161.3
Mar. 12	11 46.05	+09 45.2	2.618	3.605	-1.88	-4.7	15.5	172.2
Mar. 22	11 27.64	+08 55.3	2.680	3.658	-1.77	-5.3	15.7	167.0
Apr. 1	11 10.80	+07 59.6	2.785	3.712	-1.56	-5.8	15.9	154.5
Apr. 11	10 56.33	+06 59.6	2.929	3.768	-1.30	-6.2	16.1	141.9
Apr. 21	10 44.63	+05 56.9	3.104	3.825	-1.01	-6.4	16.3	129.8
May 1	10 35.72	+04 52.5	3.303	3.883	-0.74	-6.5	16.5	118.3
May 11	10 29.45	+03 47.1	3.518	3.943	-0.49	-6.6	16.8	107.6
May 21	10 25.49	+02 40.7	3.744	4.003	-0.28	-6.7	17.0	97.4
May 31	10 23.50	+01 33.4	3.974	4.064	-0.10	-6.8	17.2	87.9
June 10	10 23.17	+00 24.8	4.202	4.126	+0.05	-6.9	17.5	78.7
June 20	10 24.19	+00 45.3	4.425	4.189	+0.17	-7.1	17.7	70.1
June 30	10 26.29	-01 57.2	4.639	4.252	+0.26	-7.3	17.9	61.7
July 10	10 29.26	-03 11.2	4.840	4.317	+0.34	-7.5	18.1	53.7
July 20	10 32.90	-04 27.3	5.026	4.382	+0.39	-7.7	18.2	46.0
July 30	10 37.04	-05 45.9	5.195	4.447	+0.44	-8.0	18.4	38.6
Aug. 9	10 41.54	-07 06.9	5.345	4.513	+0.46	-8.2	18.6	31.6
Aug. 19	10 46.27	-08 30.5	5.474	4.579	+0.48	-8.5	18.7	25.4
Aug. 29	10 51.10	-09 56.7	5.581	4.646	+0.48	-8.8	18.8	20.3
Sept. 8	10 55.92	-11 25.5	5.665	4.714	+0.48	-9.0	19.0	17.5
Sept. 18	11 00.63	-12 56.9	5.727	4.781	+0.46	-9.3	19.1	18.0
Sept. 28	11 05.10	-14 30.9	5.766	4.849	+0.43	-9.5	19.2	21.8
Oct. 8	11 09.23	-16 07.2	5.783	4.918	+0.39	-9.8	19.3	27.5
Oct. 18	11 12.88	-17 45.7	5.778	4.986	+0.33	-10.0	19.4	34.3
Oct. 28	11 15.93	-19 26.2	5.754	5.055	+0.27	-10.1	19.5	41.7
Nov. 7	11 18.22	-21 08.1	5.712	5.124	+0.18	-10.3	19.5	49.5
Nov. 17	11 19.62	-22 50.9	5.654	5.193	+0.08	-10.3	19.6	57.7
Nov. 27	11 19.96	-24 33.7	5.585	5.263	-0.03	-10.2	19.7	66.1
Dec. 7	11 19.07	-26 15.3	5.507	5.332	-0.16	-10.0	19.7	74.7
Dec. 17	11 16.80	-27 54.2	5.425	5.402	-0.31	-9.7	19.8	83.4
Dec. 27	11 13.03	-29 28.2	5.344	5.472	-0.46	-9.0	19.8	92.3
Jan. 6	11 07.68	-30 55.0	5.268	5.542	-0.62	-8.2	19.9	101.1
Jan. 16	11 00.76	-32 11.7	5.203	5.612	-0.78	-7.0	19.9	109.7
Jan. 26	10 52.37	-33 15.5	5.154	5.682	-0.91	-5.6	20.0	117.9
Feb. 5	10 42.79	-34 03.6	5.125	5.752	-1.01	-3.9	20.0	125.3
Feb. 15	10 32.38	-34 34.3	5.120	5.822	-1.07	-2.1	20.1	131.5
Feb. 25	10 21.64	-34 46.8	5.142	5.892	-1.07	-0.3	20.2	135.8
Mar. 7	10 11.09	-34 41.9	5.193	5.962	-1.02	+1.4	20.3	137.6
Mar. 17	10 01.23	-34 21.7	5.271	6.033	-0.93	+2.7	20.4	136.6
Mar. 27	09 52.47	-33 49.4	5.377	6.103	-0.80	+3.7	20.5	133.1

Comet 4P/Faye

Epoch = 2022 June 30.0 TT
 T = 2021 Sept. 8.87190 TT
 Peri. = 207.01998 e = 0.5767410
 Node = 192.92649 2000.0 a = 3.8250468 AU
 Incl. = 8.00865 n = 0.13174949
 q = 1.6189855 AU P = 7.48 years

$$m_1 = 8.0 + 5 \log(\Delta) + 15.0 \log(r(t-15))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	06 34.24	+07 25.1	1.012	1.976	-0.79	+3.2	12.2	164.2
Jan. 11	06 27.09	+08 04.9	1.079	2.031	-0.60	+4.9	12.5	159.8
Jan. 21	06 22.21	+08 58.3	1.169	2.087	-0.34	+5.8	12.9	151.5
Jan. 31	06 20.20	+09 58.4	1.280	2.145	-0.04	+6.2	13.2	142.2
Feb. 10	06 21.20	+10 59.5	1.409	2.204	+0.26	+6.0	13.6	133.1
Feb. 20	06 25.03	+11 57.2	1.554	2.265	+0.52	+5.5	14.0	124.4
Mar. 2	06 31.32	+12 48.7	1.711	2.326	+0.75	+4.7	14.4	116.2
Mar. 12	06 39.68	+13 32.2	1.879	2.387	+0.93	+3.9	14.8	108.4
Mar. 22	06 49.71	+14 06.6	2.055	2.449	+1.08	+2.9	15.1	101.0
Apr. 1	07 01.04	+14 31.5	2.236	2.511	+1.19	+2.0	15.5	93.9
Apr. 11	07 13.40	+14 46.8	2.421	2.573	+1.28	+1.0	15.8	87.1
Apr. 21	07 26.50	+14 52.6	2.607	2.635	+1.34	+0.1	16.2	80.5
May 1	07 40.14	+14 49.4	2.793	2.697	+1.39	-0.8	16.5	74.1
May 11	07 54.15	+14 37.4	2.976	2.758	+1.41	-1.7	16.8	67.8
May 21	08 08.37	+14 17.3	3.156	2.820	+1.43	-2.4	17.0	61.7
May 31	08 22.70	+13 49.7	3.330	2.881	+1.43	-3.1	17.3	55.6
June 10	08 37.03	+13 15.3	3.497	2.942	+1.43	-3.8	17.5	49.6
June 20	08 51.28	+12 34.6	3.655	3.002	+1.42	-4.4	17.8	43.6
June 30	09 05.41	+11 48.5	3.803	3.062	+1.40	-4.9	18.0	37.6
July 10	09 19.36	+10 57.4	3.940	3.121	+1.38	-5.3	18.2	31.6
July 20	09 33.08	+10 02.3	4.065	3.179	+1.36	-5.7	18.4	25.7
July 30	09 46.54	+09 03.7	4.175	3.237	+1.33	-6.0	18.6	19.7
Aug. 9	09 59.71	+08 02.2	4.271	3.295	+1.30	-6.3	18.7	13.7
Aug. 19	10 12.57	+06 58.7	4.352	3.352	+1.27	-6.4	18.9	7.8
Aug. 29	10 25.08	+05 53.7	4.415	3.408	+1.23	-6.6	19.0	3.8
Sept. 8	10 37.21	+04 47.9	4.462	3.464	+1.19	-6.6	19.2	7.0
Sept. 18	10 48.92	+03 42.0	4.490	3.518	+1.15	-6.6	19.3	13.0
Sept. 28	11 00.18	+02 36.7	4.501	3.573	+1.10	-6.5	19.4	19.6
Oct. 8	11 10.92	+01 32.8	4.493	3.626	+1.04	-6.3	19.5	26.5
Oct. 18	11 21.10	+00 30.9	4.468	3.679	+0.98	-6.0	19.6	33.6
Oct. 28	11 30.64	+00 28.1	4.426	3.732	+0.92	-5.7	19.7	40.9
Nov. 7	11 39.45	-01 23.4	4.367	3.783	+0.84	-5.3	19.7	48.5
Nov. 17	11 47.43	-02 14.1	4.293	3.834	+0.75	-4.8	19.8	56.3
Nov. 27	11 54.47	-02 59.4	4.206	3.884	+0.65	-4.2	19.8	64.5
Dec. 7	12 00.44	-03 38.0	4.107	3.934	+0.53	-3.5	19.9	73.0
Dec. 17	12 05.21	-04 09.2	4.001	3.983	+0.41	-2.7	19.9	81.9
Dec. 27	12 08.63	-04 31.8	3.891	4.031	+0.26	-1.7	19.9	91.1
Jan. 6	12 10.57	-04 44.6	3.780	4.079	+0.11	-0.7	19.9	100.7
Jan. 16	12 10.94	-04 47.0	3.673	4.126	-0.05	+0.4	19.9	110.8
Jan. 26	12 09.69	-04 38.3	3.575	4.172	-0.21	+1.5	20.0	121.3
Feb. 5	12 06.85	-04 18.1	3.492	4.218	-0.37	+2.6	20.0	132.2
Feb. 15	12 02.56	-03 47.2	3.428	4.263	-0.50	+3.6	20.0	143.5
Feb. 25	11 57.08	-03 06.7	3.389	4.307	-0.60	+4.5	20.1	155.0
Mar. 7	11 50.79	-02 19.1	3.379	4.351	-0.66	+5.0	20.1	166.7
Mar. 17	11 44.16	-01 27.5	3.400	4.394	-0.66	+5.3	20.2	176.9
Mar. 27	11 37.67	+00 35.2	3.452	4.436	-0.62	+5.1	20.3	169.0

Comet 108P/Ciffreo

Epoch = 2022 June 30.0 TT
 T = 2021 Sept. 10.12750 TT
 Peri. = 354.44135 e = 0.5559810
 Node = 50.28540 2000.0 a = 3.7394150 AU
 Incl. = 11.43650 n = 0.13630085
 q = 1.6603713 AU P = 7.23 years

$$m1 = 11.0 + 5 \log(\Delta) + 17.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	07 03.18	+40 16.2	1.026	1.986	-1.06 +4.9	16.3	162.3
Jan. 11	06 53.03	+40 49.6	1.086	2.037	-0.92 +1.5	16.6	159.6
Jan. 21	06 45.07	+40 51.2	1.168	2.090	-0.62 -1.3	16.9	152.2
Jan. 31	06 40.51	+40 28.2	1.272	2.145	-0.24 -3.3	17.3	143.4
Feb. 10	06 39.82	+39 49.1	1.393	2.201	+0.14 -4.5	17.7	134.5
Feb. 20	06 42.80	+39 00.4	1.531	2.258	+0.48 -5.2	18.1	125.9
Mar. 2	06 48.91	+38 06.5	1.681	2.315	+0.76 -5.6	18.5	117.8
Mar. 12	06 57.60	+37 09.6	1.842	2.374	+0.99 -5.8	18.9	110.0
Mar. 22	07 08.28	+36 10.6	2.011	2.433	+1.16 -6.0	19.3	102.7
Apr. 1	07 20.47	+35 09.7	2.186	2.492	+1.29 -6.2	19.6	95.7
Apr. 11	07 33.76	+34 06.6	2.365	2.552	+1.38 -6.4	20.0	88.9
Apr. 21	07 47.81	+33 01.3	2.546	2.611	+1.44 -6.7	20.3	82.4
May 1	08 02.37	+31 53.6	2.727	2.671	+1.48 -6.9	20.6	76.1
May 11	08 17.24	+30 43.2	2.906	2.730	+1.50 -7.2	20.9	69.9
May 21	08 32.24	+29 30.3	3.082	2.789	+1.50 -7.4	21.2	63.9
May 31	08 47.27	+28 14.9	3.254	2.848	+1.50 -7.7	21.5	57.9
June 10	09 02.23	+26 57.4	3.419	2.906	+1.49 -7.9	21.8	52.0
June 20	09 17.05	+25 37.9	3.576	2.964	+1.47 -8.0	22.0	46.2
June 30	09 31.67	+24 16.9	3.724	3.022	+1.45 -8.2	.	40.4
July 10	09 46.07	+22 54.7	3.861	3.079	+1.43 -8.3	.	34.6
July 20	10 00.20	+21 31.9	3.987	3.136	+1.40 -8.3	.	28.9
July 30	10 14.06	+20 08.8	4.100	3.192	+1.37 -8.3	.	23.2
Aug. 9	10 27.61	+18 45.9	4.199	3.248	+1.34 -8.3	.	17.7
Aug. 19	10 40.84	+17 23.9	4.283	3.303	+1.31 -8.1	.	12.6
Aug. 29	10 53.75	+16 03.1	4.351	3.357	+1.27 -8.0	.	8.9
Sept. 8	11 06.29	+14 44.2	4.403	3.411	+1.23 -7.8	.	8.8
Sept. 18	11 18.45	+13 27.8	4.438	3.464	+1.19 -7.5	.	12.6
Sept. 28	11 30.20	+12 14.5	4.455	3.517	+1.15 -7.1	.	18.2
Oct. 8	11 41.50	+11 05.0	4.455	3.569	+1.10 -6.7	.	24.4
Oct. 18	11 52.29	+09 59.9	4.437	3.620	+1.05 -6.2	.	31.1
Oct. 28	12 02.52	+09 00.0	4.401	3.671	+0.99 -5.7	.	38.1
Nov. 7	12 12.10	+08 06.0	4.350	3.721	+0.92 -5.0	.	45.4
Nov. 17	12 20.95	+07 18.7	4.283	3.770	+0.84 -4.3	.	52.9
Nov. 27	12 28.96	+06 39.0	4.202	3.819	+0.75 -3.5	.	60.8
Dec. 7	12 36.00	+06 07.6	4.109	3.867	+0.65 -2.7	.	69.0
Dec. 17	12 41.95	+05 45.1	4.008	3.914	+0.53 -1.7	.	77.5
Dec. 27	12 46.65	+05 32.4	3.899	3.961	+0.40 -0.7	.	86.4
Jan. 6	12 49.95	+05 29.9	3.789	4.007	+0.25 +0.3	.	95.7
Jan. 16	12 51.72	+05 37.7	3.680	4.053	+0.09 +1.3	.	105.3
Jan. 26	12 51.84	+05 55.7	3.578	4.098	-0.08 +2.3	.	115.4
Feb. 5	12 50.27	+06 23.0	3.487	4.142	-0.25 +3.2	.	125.8
Feb. 15	12 47.03	+06 58.1	3.413	4.185	-0.41 +3.8	.	136.5
Feb. 25	12 42.27	+07 38.5	3.361	4.228	-0.55 +4.2	.	147.3
Mar. 7	12 36.27	+08 21.2	3.335	4.270	-0.65 +4.3	.	157.9
Mar. 17	12 29.44	+09 02.7	3.338	4.312	-0.71 +3.9	.	166.6
Mar. 27	12 22.27	+09 39.4	3.372	4.353	-0.72 +3.3	.	168.1

Comet 284P/McNaught

Epoch = 2022 June 30.0 TT
 T = 2021 Sept. 12.57717 TT
 Peri. = 202.41430 e = 0.3754982
 Node = 144.26052 2000.0 a = 3.6760245 AU
 Incl. = 11.86120 n = 0.13984163
 q = 2.2956839 AU P = 7.05 years

$$m1 = 9.1 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	00 07.82	-10 02.3	2.428	2.418	+1.38	+10.0	16.8	77.7
Jan. 11	00 21.99	-08 19.9	2.565	2.440	+1.45	+10.5	17.0	71.6
Jan. 21	00 36.78	-06 34.0	2.701	2.463	+1.51	+10.7	17.1	65.6
Jan. 31	00 52.07	-04 46.3	2.833	2.488	+1.55	+10.8	17.3	59.8
Feb. 10	01 07.77	-02 58.1	2.961	2.514	+1.59	+10.8	17.5	54.1
Feb. 20	01 23.79	-01 11.0	3.085	2.541	+1.62	+10.6	17.6	48.6
Mar. 2	01 40.07	+00 33.9	3.202	2.569	+1.64	+10.3	17.8	43.1
Mar. 12	01 56.57	+02 15.5	3.312	2.598	+1.66	+9.9	17.9	37.8
Mar. 22	02 13.22	+03 52.7	3.414	2.629	+1.67	+9.4	18.1	32.5
Apr. 1	02 29.99	+05 24.7	3.507	2.660	+1.68	+8.9	18.2	27.4
Apr. 11	02 46.85	+06 50.6	3.591	2.692	+1.69	+8.2	18.3	22.3
Apr. 21	03 03.73	+08 09.9	3.665	2.724	+1.69	+7.5	18.4	17.6
May 1	03 20.60	+09 21.9	3.729	2.757	+1.69	+6.8	18.6	13.2
May 11	03 37.42	+10 26.3	3.781	2.791	+1.68	+6.0	18.7	9.8
May 21	03 54.12	+11 22.7	3.821	2.825	+1.66	+5.2	18.8	8.8
May 31	04 10.66	+12 11.0	3.850	2.860	+1.64	+4.4	18.9	10.7
June 10	04 26.96	+12 50.9	3.866	2.895	+1.61	+3.5	19.0	14.6
June 20	04 42.95	+13 22.6	3.870	2.931	+1.58	+2.7	19.0	19.4
June 30	04 58.57	+13 46.1	3.861	2.966	+1.54	+1.9	19.1	24.6
July 10	05 13.72	+14 01.8	3.839	3.002	+1.49	+1.1	19.2	30.1
July 20	05 28.33	+14 09.9	3.804	3.038	+1.43	+0.4	19.2	35.8
July 30	05 42.29	+14 10.9	3.757	3.075	+1.36	-0.3	19.3	41.7
Aug. 9	05 55.49	+14 05.4	3.698	3.111	+1.27	-0.9	19.3	47.9
Aug. 19	06 07.82	+13 54.2	3.628	3.147	+1.18	-1.4	19.4	54.4
Aug. 29	06 19.17	+13 37.9	3.547	3.184	+1.07	-1.9	19.4	61.1
Sept. 8	06 29.36	+13 17.5	3.456	3.220	+0.95	-2.2	19.4	68.1
Sept. 18	06 38.27	+12 54.1	3.359	3.256	+0.81	-2.5	19.4	75.5
Sept. 28	06 45.72	+12 28.8	3.255	3.292	+0.66	-2.6	19.4	83.3
Oct. 8	06 51.53	+12 03.0	3.148	3.328	+0.48	-2.5	19.4	91.5
Oct. 18	06 55.52	+11 38.2	3.041	3.364	+0.29	-2.4	19.4	100.2
Oct. 28	06 57.55	+11 15.8	2.938	3.400	+0.09	-2.0	19.4	109.4
Nov. 7	06 57.48	+10 57.6	2.842	3.436	-0.12	-1.5	19.4	119.1
Nov. 17	06 55.31	+10 45.1	2.759	3.471	-0.33	-0.9	19.4	129.3
Nov. 27	06 51.10	+10 39.5	2.693	3.506	-0.52	-0.1	19.4	139.9
Dec. 7	06 45.15	+10 42.0	2.649	3.541	-0.67	+0.7	19.5	150.7
Dec. 17	06 37.92	+10 52.6	2.632	3.576	-0.77	+1.5	19.5	160.9
Dec. 27	06 30.01	+11 11.3	2.643	3.610	-0.80	+2.3	19.6	167.7
Jan. 6	06 22.15	+11 36.8	2.686	3.644	-0.75	+2.9	19.7	164.9
Jan. 16	06 15.04	+12 07.8	2.759	3.678	-0.65	+3.3	19.8	155.9
Jan. 26	06 09.24	+12 42.5	2.859	3.712	-0.49	+3.6	19.9	145.4
Feb. 5	06 05.15	+13 19.4	2.985	3.745	-0.31	+3.7	20.1	134.8
Feb. 15	06 02.97	+13 56.7	3.130	3.778	-0.11	+3.7	20.2	124.5
Feb. 25	06 02.73	+14 33.4	3.291	3.810	+0.08	+3.6	20.4	114.6
Mar. 7	06 04.36	+15 08.3	3.463	3.843	+0.26	+3.4	20.6	105.1
Mar. 17	06 07.69	+15 40.6	3.642	3.874	+0.42	+3.1	20.7	96.0
Mar. 27	06 12.55	+16 09.6	3.823	3.906	+0.56	+2.7	20.9	87.3

Comet 6P/d'Arrest

Epoch = 2022 June 30.0 TT
 T = 2021 Sept. 17.74519 TT
 Peri. = 178.08484 e = 0.6126582
 Node = 138.93542 2000.0 a = 3.4969239 AU
 Incl. = 19.51199 n = 0.15072136
 q = 1.3545048 AU P = 6.54 years

$$m1 = 8.3 + 5 \log(\Delta) + 20.0 \log(r(t-60))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	23 56.45	-19 27.1	1.827	1.785	+2.47	+16.8	12.8	71.9
Jan. 11	00 20.46	-16 39.4	1.971	1.853	+2.32	+16.7	13.3	68.5
Jan. 21	00 43.13	-13 54.1	2.120	1.922	+2.20	+16.3	13.7	64.9
Jan. 31	01 04.69	-11 13.8	2.272	1.992	+2.10	+15.7	14.2	61.1
Feb. 10	01 25.37	-08 40.6	2.426	2.062	+2.03	+14.9	14.6	57.0
Feb. 20	01 45.32	-06 15.7	2.580	2.133	+1.96	+14.0	15.1	52.8
Mar. 2	02 04.66	-04 00.2	2.733	2.205	+1.91	+13.0	15.5	48.5
Mar. 12	02 23.51	-01 54.6	2.883	2.276	+1.86	+12.0	16.0	44.0
Mar. 22	02 41.91	+00 00.6	3.028	2.347	+1.82	+10.9	16.4	39.5
Apr. 1	02 59.93	+01 45.3	3.168	2.418	+1.78	+9.9	16.8	35.0
Apr. 11	03 17.58	+03 19.3	3.300	2.488	+1.75	+8.8	17.2	30.4
Apr. 21	03 34.88	+04 42.7	3.423	2.557	+1.71	+7.8	17.6	25.9
May 1	03 51.84	+05 55.5	3.536	2.626	+1.68	+6.7	17.9	21.7
May 11	04 08.43	+06 58.0	3.638	2.694	+1.64	+5.7	18.2	17.8
May 21	04 24.64	+07 50.3	3.728	2.762	+1.60	+4.7	18.6	14.9
May 31	04 40.44	+08 32.9	3.804	2.828	+1.56	+3.7	18.9	13.5
June 10	04 55.79	+09 06.1	3.867	2.894	+1.51	+2.8	19.2	14.4
June 20	05 10.64	+09 30.3	3.915	2.959	+1.46	+1.9	19.4	17.2
June 30	05 24.95	+09 45.9	3.947	3.023	+1.40	+1.1	19.7	21.4
July 10	05 38.65	+09 53.4	3.964	3.086	+1.33	+0.3	19.9	26.3
July 20	05 51.67	+09 53.6	3.966	3.149	+1.26	-0.4	20.1	31.8
July 30	06 03.95	+09 46.8	3.952	3.210	+1.18	-1.0	20.3	37.7
Aug. 9	06 15.39	+09 33.9	3.923	3.270	+1.09	-1.6	20.5	44.0
Aug. 19	06 25.90	+09 15.5	3.879	3.330	+1.00	-2.1	20.7	50.6
Aug. 29	06 35.37	+08 52.4	3.822	3.388	+0.88	-2.5	20.8	57.5
Sept. 8	06 43.66	+08 25.6	3.753	3.446	+0.76	-2.8	21.0	64.8
Sept. 18	06 50.67	+07 56.0	3.673	3.503	+0.62	-3.1	21.1	72.4
Sept. 28	06 56.23	+07 24.9	3.585	3.558	+0.47	-3.2	21.2	80.4
Oct. 8	07 00.19	+06 53.4	3.492	3.613	+0.30	-3.1	21.3	88.9
Oct. 18	07 02.41	+06 23.1	3.397	3.667	+0.12	-2.9	21.4	97.8
Oct. 28	07 02.76	+05 55.6	3.304	3.720	-0.07	-2.5	21.5	107.2
Nov. 7	07 01.17	+05 32.7	3.219	3.773	-0.27	-2.0	21.6	117.0
Nov. 17	06 57.65	+05 16.1	3.145	3.824	-0.45	-1.2	21.7	127.1
Nov. 27	06 52.32	+05 07.5	3.089	3.875	-0.62	-0.4	21.8	137.5
Dec. 7	06 45.46	+05 08.4	3.056	3.924	-0.75	+0.6	21.9	147.7
Dec. 17	06 37.54	+05 19.4	3.049	3.973	-0.83	+1.7	22.0	156.8
Dec. 27	06 29.11	+05 40.3	3.073	4.021	-0.85	+2.6	.	162.2
Jan. 6	06 20.82	+06 10.3	3.128	4.068	-0.80	+3.4	.	160.4
Jan. 16	06 13.26	+06 47.8	3.215	4.114	-0.70	+4.1	.	152.8
Jan. 26	06 06.92	+07 30.5	3.330	4.160	-0.55	+4.5	.	143.2
Feb. 5	06 02.14	+08 16.5	3.470	4.204	-0.38	+4.7	.	133.0
Feb. 15	05 59.11	+09 03.6	3.631	4.248	-0.21	+4.7	.	122.9
Feb. 25	05 57.83	+09 50.4	3.807	4.291	-0.03	+4.6	.	113.0
Mar. 7	05 58.27	+10 35.3	3.995	4.334	+0.13	+4.4	.	103.4
Mar. 17	06 00.27	+11 17.5	4.189	4.375	+0.28	+4.0	.	94.2
Mar. 27	06 03.67	+11 56.2	4.385	4.416	+0.41	+3.7	.	85.3

Comet C/2020 PV6 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2021 Sept. 26.03814 TT
 Peri. = 71.39164 e = 0.9452510
 Node = 329.14557 2000.0 a = 41.9315129 AU
 Incl. = 128.23844 n = 0.00362989
 q = 2.2957084 AU P = 271.53 years

$$m1 = 5.2 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	16 13.51	+19 53.3	2.934	2.529	-0.06	+9.2	15.6	56.6
Jan. 11	16 12.20	+21 37.5	2.838	2.576	-0.23	+12.0	15.7	64.7
Jan. 21	16 08.89	+23 50.1	2.730	2.626	-0.47	+14.9	15.8	73.5
Jan. 31	16 02.85	+26 32.5	2.614	2.679	-0.79	+17.9	15.8	83.0
Feb. 10	15 53.12	+29 43.9	2.500	2.735	-1.22	+20.6	15.9	92.9
Feb. 20	15 38.58	+33 18.8	2.399	2.793	-1.77	+22.4	16.0	103.1
Mar. 2	15 18.04	+37 04.5	2.320	2.854	-2.42	+22.4	16.1	112.8
Mar. 12	14 50.66	+40 38.1	2.275	2.916	-3.12	+19.6	16.3	121.2
Mar. 22	14 16.80	+43 29.5	2.273	2.981	-3.67	+13.7	16.5	127.0
Apr. 1	13 38.82	+45 11.0	2.320	3.047	-3.88	+5.6	16.7	128.8
Apr. 11	13 00.83	+45 30.2	2.416	3.115	-3.63	-2.4	17.0	126.3
Apr. 21	12 26.97	+44 36.4	2.555	3.184	-3.05	-8.6	17.3	120.4
May 1	11 59.55	+42 52.1	2.732	3.254	-2.36	-12.3	17.6	112.5
May 11	11 38.91	+40 40.3	2.937	3.325	-1.72	-14.0	18.0	103.8
May 21	11 24.24	+38 18.5	3.161	3.397	-1.18	-14.3	18.3	94.7
May 31	11 14.36	+35 57.1	3.395	3.470	-0.77	-13.9	18.7	85.7
June 10	11 08.19	+33 41.5	3.634	3.544	-0.45	-13.1	19.0	76.9
June 20	11 04.84	+31 33.9	3.870	3.618	-0.21	-12.3	19.3	68.2
June 30	11 03.61	+29 35.1	4.098	3.693	-0.03	-11.4	19.6	59.8
July 10	11 03.98	+27 44.7	4.315	3.768	+0.11	-10.6	19.9	51.6
July 20	11 05.53	+26 02.4	4.516	3.844	+0.21	-9.8	20.2	43.5
July 30	11 07.94	+24 27.5	4.698	3.920	+0.28	-9.1	20.4	35.8
Aug. 9	11 10.98	+22 59.4	4.859	3.996	+0.33	-8.4	20.7	28.3
Aug. 19	11 14.42	+21 37.9	4.997	4.072	+0.36	-7.8	20.9	21.5
Aug. 29	11 18.11	+20 22.5	5.110	4.149	+0.38	-7.2	21.1	16.1
Sept. 8	11 21.88	+19 13.0	5.197	4.226	+0.38	-6.6	21.3	13.9
Sept. 18	11 25.58	+18 09.6	5.257	4.303	+0.36	-6.0	21.5	16.5
Sept. 28	11 29.10	+17 12.2	5.290	4.380	+0.34	-5.4	21.6	22.3
Oct. 8	11 32.29	+16 21.1	5.297	4.456	+0.29	-4.8	21.8	29.7
Oct. 18	11 35.00	+15 36.5	5.278	4.533	+0.24	-4.1	21.9	37.9
Oct. 28	11 37.10	+14 58.8	5.236	4.610	+0.17	-3.4	.	46.6
Nov. 7	11 38.42	+14 28.5	5.173	4.687	+0.08	-2.6	.	55.7
Nov. 17	11 38.79	+14 05.9	5.092	4.764	-0.02	-1.8	.	65.3
Nov. 27	11 38.06	+13 51.6	4.997	4.841	-0.14	-1.0	.	75.2
Dec. 7	11 36.04	+13 45.8	4.894	4.917	-0.28	-0.1	.	85.6
Dec. 17	11 32.59	+13 48.6	4.788	4.994	-0.43	+0.7	.	96.4
Dec. 27	11 27.58	+13 59.6	4.685	5.070	-0.59	+1.5	.	107.6
Jan. 6	11 20.95	+14 18.2	4.594	5.147	-0.75	+2.2	.	119.3
Jan. 16	11 12.75	+14 42.7	4.521	5.223	-0.90	+2.7	.	131.3
Jan. 26	11 03.12	+15 11.3	4.474	5.299	-1.03	+3.0	.	143.6
Feb. 5	10 52.38	+15 41.3	4.459	5.374	-1.12	+3.0	.	155.9
Feb. 15	10 40.94	+16 09.9	4.481	5.450	-1.16	+2.7	.	167.7
Feb. 25	10 29.34	+16 34.5	4.542	5.526	-1.15	+2.2	.	172.8
Mar. 7	10 18.10	+16 53.2	4.643	5.601	-1.08	+1.5	.	163.4
Mar. 17	10 07.72	+17 04.9	4.781	5.676	-0.98	+0.8	.	151.6
Mar. 27	09 58.55	+17 09.1	4.952	5.751	-0.84	0.0	.	139.8

Comet C/2020 H6 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2021 Sept. 30.99758 TT
 Peri. = 20.33796
 Node = 213.71284 2000.0
 Incl. = 79.97529
 q = 4.7028012 AU
 e = 1.0003260

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	15 43.33	+10 01.1	5.250	4.759	+0.81	+8.5	16.2	55.3
Jan. 11	15 51.21	+11 31.5	5.140	4.772	+0.76	+9.8	16.1	62.9
Jan. 21	15 58.48	+13 14.9	5.024	4.786	+0.69	+11.1	16.1	70.5
Jan. 31	16 04.98	+15 11.7	4.906	4.801	+0.60	+12.4	16.1	78.1
Feb. 10	16 10.56	+17 21.6	4.790	4.817	+0.50	+13.7	16.0	85.7
Feb. 20	16 15.07	+19 43.5	4.680	4.835	+0.39	+14.8	16.0	93.1
Mar. 2	16 18.35	+22 15.7	4.581	4.854	+0.25	+15.7	16.0	100.1
Mar. 12	16 20.23	+24 55.7	4.495	4.874	+0.11	+16.3	15.9	106.7
Mar. 22	16 20.62	+27 39.5	4.427	4.895	-0.05	+16.4	15.9	112.5
Apr. 1	16 19.43	+30 22.9	4.380	4.918	-0.21	+16.1	15.9	117.2
Apr. 11	16 16.65	+33 00.7	4.354	4.941	-0.36	+15.3	15.9	120.7
Apr. 21	16 12.37	+35 27.5	4.352	4.966	-0.50	+13.9	16.0	122.6
May 1	16 06.78	+37 38.6	4.372	4.992	-0.62	+12.1	16.0	122.9
May 11	16 00.21	+39 29.9	4.415	5.018	-0.70	+9.9	16.0	121.6
May 21	15 53.08	+40 58.8	4.478	5.046	-0.73	+7.6	16.1	118.9
May 31	15 45.88	+42 04.5	4.558	5.075	-0.71	+5.3	16.1	115.3
June 10	15 39.09	+42 47.3	4.654	5.105	-0.64	+3.1	16.2	110.9
June 20	15 33.15	+43 09.5	4.760	5.135	-0.53	+1.2	16.3	106.1
June 30	15 28.40	+43 13.5	4.875	5.167	-0.40	-0.5	16.4	101.0
July 10	15 25.07	+43 02.8	4.995	5.199	-0.25	-1.8	16.5	95.9
July 20	15 23.28	+42 40.7	5.118	5.233	-0.09	-2.7	16.5	90.9
July 30	15 23.04	+42 10.3	5.240	5.267	+0.06	-3.4	16.6	86.0
Aug. 9	15 24.34	+41 34.6	5.360	5.302	+0.21	-3.8	16.7	81.3
Aug. 19	15 27.06	+40 56.1	5.475	5.338	+0.35	-3.9	16.8	76.9
Aug. 29	15 31.12	+40 16.9	5.585	5.375	+0.47	-3.9	16.8	72.9
Sept. 8	15 36.40	+39 39.1	5.686	5.412	+0.59	-3.6	16.9	69.3
Sept. 18	15 42.76	+39 04.2	5.779	5.450	+0.69	-3.3	17.0	66.1
Sept. 28	15 50.11	+38 33.6	5.864	5.489	+0.78	-2.8	17.0	63.5
Oct. 8	15 58.31	+38 08.7	5.938	5.529	+0.86	-2.1	17.1	61.4
Oct. 18	16 07.27	+37 50.5	6.003	5.569	+0.93	-1.4	17.1	59.9
Oct. 28	16 16.88	+37 40.0	6.058	5.610	+0.99	-0.6	17.2	58.9
Nov. 7	16 27.03	+37 38.0	6.104	5.652	+1.04	+0.3	17.3	58.7
Nov. 17	16 37.63	+37 45.2	6.141	5.694	+1.08	+1.2	17.3	58.9
Nov. 27	16 48.58	+38 02.1	6.171	5.737	+1.11	+2.3	17.3	59.8
Dec. 7	16 59.77	+38 29.3	6.193	5.781	+1.13	+3.3	17.4	61.0
Dec. 17	17 11.10	+39 06.9	6.209	5.825	+1.14	+4.3	17.4	62.7
Dec. 27	17 22.46	+39 55.1	6.221	5.869	+1.13	+5.4	17.5	64.7
Jan. 6	17 33.74	+40 53.6	6.229	5.914	+1.12	+6.4	17.5	67.0
Jan. 16	17 44.81	+42 02.1	6.236	5.960	+1.09	+7.4	17.5	69.3
Jan. 26	17 55.57	+43 20.1	6.241	6.006	+1.05	+8.3	17.6	71.8
Feb. 5	18 05.87	+44 46.7	6.246	6.052	+1.00	+9.1	17.6	74.2
Feb. 15	18 15.59	+46 20.9	6.253	6.099	+0.93	+9.8	17.6	76.5
Feb. 25	18 24.57	+48 01.4	6.261	6.146	+0.85	+10.3	17.7	78.8
Mar. 7	18 32.67	+49 46.7	6.273	6.194	+0.76	+10.7	17.7	80.9
Mar. 17	18 39.73	+51 35.2	6.288	6.242	+0.64	+11.0	17.7	82.8
Mar. 27	18 45.58	+53 25.2	6.307	6.291	+0.51	+11.0	17.8	84.5

Comet P/2021 U1 (Wierzchos)

Epoch = 2022 June 30.0 TT
 T = 2021 Oct. 1.01350 TT
 Peri. = 145.05838 e = 0.7127959
 Node = 246.78804 2000.0 a = 8.5136048 AU
 Incl. = 30.55780 n = 0.03967654
 q = 2.4451422 AU P = 24.84 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	02 41.64	+19 22.2	1.910	2.588	+0.60	-11.5	18.1	123.7
Jan. 11	02 48.49	+17 38.7	2.053	2.619	+0.78	-8.9	18.3	114.6
Jan. 21	02 57.05	+16 19.7	2.208	2.653	+0.94	-6.7	18.6	106.0
Jan. 31	03 07.03	+15 21.5	2.371	2.689	+1.07	-4.8	18.8	97.8
Feb. 10	03 18.21	+14 39.9	2.541	2.728	+1.18	-3.4	19.0	90.1
Feb. 20	03 30.37	+14 10.9	2.713	2.768	+1.26	-2.3	19.2	82.8
Mar. 2	03 43.30	+13 51.0	2.885	2.811	+1.33	-1.6	19.4	75.8
Mar. 12	03 56.86	+13 37.0	3.056	2.855	+1.39	-1.2	19.6	69.0
Mar. 22	04 10.91	+13 26.4	3.223	2.901	+1.43	-1.0	19.8	62.5
Apr. 1	04 25.33	+13 17.0	3.385	2.949	+1.46	-1.0	19.9	56.2
Apr. 11	04 40.01	+13 06.9	3.541	2.998	+1.48	-1.1	20.1	50.1
Apr. 21	04 54.85	+12 54.7	3.688	3.049	+1.49	-1.4	20.3	44.2
May 1	05 09.76	+12 39.4	3.826	3.100	+1.49	-1.7	20.4	38.4
May 11	05 24.67	+12 19.9	3.953	3.153	+1.49	-2.2	20.6	32.9
May 21	05 39.50	+11 55.6	4.069	3.206	+1.48	-2.7	20.7	27.6
May 31	05 54.17	+11 26.0	4.174	3.261	+1.46	-3.3	20.8	22.6
June 10	06 08.63	+10 50.8	4.265	3.316	+1.43	-3.8	21.0	18.3
June 20	06 22.80	+10 09.9	4.343	3.372	+1.40	-4.4	21.1	15.1
June 30	06 36.63	+09 23.0	4.408	3.429	+1.36	-5.0	21.2	13.8
July 10	06 50.05	+08 30.3	4.458	3.486	+1.32	-5.6	21.3	15.1
July 20	07 03.00	+07 31.9	4.493	3.544	+1.27	-6.2	21.4	18.4
July 30	07 15.42	+06 27.9	4.515	3.602	+1.21	-6.7	21.4	23.0
Aug. 9	07 27.25	+05 18.6	4.521	3.661	+1.15	-7.2	21.5	28.3
Aug. 19	07 38.41	+04 04.3	4.514	3.719	+1.08	-7.7	21.6	34.1
Aug. 29	07 48.84	+02 45.4	4.492	3.779	+1.00	-8.1	21.6	40.3
Sept. 8	07 58.45	+01 22.4	4.458	3.838	+0.91	-8.5	21.7	46.7
Sept. 18	08 07.14	+00 04.2	4.412	3.897	+0.82	-8.8	21.7	53.4
Sept. 28	08 14.84	-01 33.7	4.354	3.957	+0.71	-9.1	21.8	60.4
Oct. 8	08 21.42	-03 05.3	4.288	4.017	+0.59	-9.2	21.8	67.7
Oct. 18	08 26.77	-04 37.9	4.215	4.077	+0.46	-9.3	21.8	75.3
Oct. 28	08 30.78	-06 10.3	4.137	4.136	+0.32	-9.2	21.8	83.1
Nov. 7	08 33.34	-07 40.8	4.058	4.196	+0.17	-8.9	21.9	91.2
Nov. 17	08 34.37	-09 07.6	3.981	4.256	+0.02	-8.4	21.9	99.5
Nov. 27	08 33.80	-10 28.5	3.909	4.316	-0.14	-7.7	21.9	107.9
Dec. 7	08 31.66	-11 40.9	3.848	4.376	-0.30	-6.7	21.9	116.4
Dec. 17	08 28.04	-12 42.0	3.800	4.436	-0.44	-5.4	22.0	124.8
Dec. 27	08 23.14	-13 29.5	3.771	4.496	-0.55	-3.9	22.0	132.6
Jan. 6	08 17.28	-14 01.2	3.764	4.555	-0.62	-2.3	.	139.4
Jan. 16	08 10.89	-14 16.3	3.780	4.615	-0.65	-0.6	.	144.2
Jan. 26	08 04.41	-14 14.7	3.824	4.674	-0.63	+1.0	.	146.2
Feb. 5	07 58.34	-13 58.1	3.894	4.733	-0.57	+2.4	.	144.8
Feb. 15	07 53.08	-13 29.0	3.989	4.792	-0.47	+3.5	.	140.4
Feb. 25	07 48.94	-12 50.6	4.109	4.851	-0.34	+4.2	.	134.2
Mar. 7	07 46.13	-12 06.6	4.250	4.910	-0.20	+4.6	.	126.8
Mar. 17	07 44.74	-11 20.2	4.409	4.968	-0.06	+4.7	.	119.0
Mar. 27	07 44.76	-10 34.3	4.582	5.027	+0.08	+4.5	.	111.0

Comet 52P/Harrington-Abell

Epoch = 2022 June 30.0 TT
 T = 2021 Oct. 5.17236 TT
 Peri. = 139.57777 e = 0.5401695
 Node = 336.83721 2000.0 a = 3.8644624 AU
 Incl. = 10.23143 n = 0.12973897
 q = 1.7769977 AU P = 7.60 years

$$m1 = 10.0 + 5 \log(\Delta) + 20.0 \log(r(t-10))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	12 32.39	-03 57.1	1.671	1.957	+1.12	-13.1	16.8	91.2
Jan. 11	12 42.45	-06 03.2	1.601	1.996	+0.86	-11.9	16.9	98.3
Jan. 21	12 49.81	-07 56.6	1.534	2.038	+0.57	-10.6	16.9	106.0
Jan. 31	12 54.13	-09 35.4	1.471	2.083	+0.25	-9.0	17.0	114.6
Feb. 10	12 55.13	-10 57.4	1.416	2.130	-0.09	-7.2	17.1	123.9
Feb. 20	12 52.74	-12 00.4	1.373	2.178	-0.42	-5.2	17.3	133.9
Mar. 2	12 47.19	-12 42.5	1.345	2.229	-0.71	-3.0	17.4	144.6
Mar. 12	12 39.12	-13 02.6	1.338	2.280	-0.91	-0.8	17.6	155.6
Mar. 22	12 29.63	-13 02.4	1.354	2.333	-0.98	+1.0	17.8	165.8
Apr. 1	12 20.02	-12 46.3	1.396	2.387	-0.92	+2.3	18.1	170.2
Apr. 11	12 11.54	-12 20.8	1.464	2.441	-0.75	+2.8	18.4	163.4
Apr. 21	12 05.12	-11 53.4	1.557	2.496	-0.51	+2.6	18.7	153.4
May 1	12 01.21	-11 30.0	1.672	2.551	-0.25	+1.9	19.1	143.3
May 11	11 59.94	-11 14.9	1.806	2.607	+0.01	+0.9	19.4	133.6
May 21	12 01.14	-11 10.4	1.956	2.663	+0.25	-0.2	19.8	124.5
May 31	12 04.53	-11 16.9	2.119	2.719	+0.45	-1.3	20.1	115.9
June 10	12 09.80	-11 34.2	2.291	2.775	+0.62	-2.3	20.5	107.8
June 20	12 16.64	-12 01.3	2.471	2.832	+0.76	-3.2	20.8	100.1
June 30	12 24.76	-12 37.0	2.654	2.888	+0.87	-4.0	21.2	92.8
July 10	12 33.95	-13 20.1	2.840	2.943	+0.97	-4.7	21.5	85.7
July 20	12 44.01	-14 09.3	3.025	2.999	+1.05	-5.2	21.8	78.8
July 30	12 54.78	-15 03.4	3.209	3.054	+1.11	-5.6	.	72.1
Aug. 9	13 06.16	-16 01.4	3.389	3.109	+1.17	-6.0	.	65.6
Aug. 19	13 18.03	-17 02.3	3.562	3.164	+1.21	-6.2	.	59.1
Aug. 29	13 30.31	-18 05.1	3.729	3.218	+1.25	-6.4	.	52.7
Sept. 8	13 42.94	-19 09.1	3.886	3.272	+1.28	-6.4	.	46.3
Sept. 18	13 55.84	-20 13.5	4.033	3.325	+1.30	-6.4	.	39.9
Sept. 28	14 08.98	-21 17.6	4.167	3.378	+1.32	-6.4	.	33.6
Oct. 8	14 22.30	-22 20.8	4.288	3.430	+1.34	-6.2	.	27.3
Oct. 18	14 35.73	-23 22.5	4.394	3.482	+1.35	-6.1	.	21.0
Oct. 28	14 49.24	-24 22.3	4.484	3.533	+1.35	-5.9	.	15.0
Nov. 7	15 02.75	-25 19.8	4.556	3.584	+1.35	-5.6	.	9.9
Nov. 17	15 16.19	-26 14.7	4.611	3.634	+1.34	-5.3	.	7.9
Nov. 27	15 29.50	-27 06.7	4.648	3.684	+1.32	-5.0	.	11.0
Dec. 7	15 42.58	-27 55.7	4.666	3.733	+1.29	-4.7	.	16.8
Dec. 17	15 55.33	-28 41.6	4.665	3.782	+1.25	-4.4	.	23.4
Dec. 27	16 07.66	-29 24.5	4.645	3.830	+1.20	-4.1	.	30.4
Jan. 6	16 19.44	-30 04.6	4.608	3.877	+1.14	-3.9	.	37.7
Jan. 16	16 30.54	-30 42.0	4.554	3.924	+1.07	-3.6	.	45.3
Jan. 26	16 40.81	-31 17.1	4.484	3.970	+0.98	-3.4	.	53.0
Feb. 5	16 50.10	-31 50.2	4.400	4.016	+0.87	-3.2	.	61.0
Feb. 15	16 58.24	-32 21.8	4.305	4.061	+0.74	-3.1	.	69.2
Feb. 25	17 05.06	-32 52.2	4.201	4.105	+0.60	-3.0	.	77.7
Mar. 7	17 10.36	-33 21.7	4.092	4.149	+0.44	-2.9	.	86.4
Mar. 17	17 13.99	-33 50.2	3.980	4.193	+0.26	-2.8	.	95.4
Mar. 27	17 15.77	-34 17.5	3.870	4.235	+0.07	-2.6	.	104.7

Comet 57P/du Toit-Neujmin-Delporte

Epoch = 2022 June 30. TT
 T = 2021 Oct. 17.31807 TT
 Peri. = 115.20434 e = 0.5009923
 Node = 188.77051 2000.0 a = 3.4458941 AU
 Incl. = 2.85211 n = 0.15408174
 q = 1.7195277 AU P = 6.40 years

$$m1 = 5.5 + 5 \log(\Delta) + 25.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	21 35.67	-13 19.3	2.470	1.854	+2.57 +11.7	14.2	41.6
Jan. 11	22 00.95	-11 18.9	2.565	1.889	+2.48 +12.4	14.5	37.9
Jan. 21	22 25.38	-09 12.2	2.661	1.927	+2.40 +12.9	14.7	34.1
Jan. 31	22 49.00	-07 01.5	2.756	1.968	+2.32 +13.2	15.1	30.2
Feb. 10	23 11.85	-04 48.9	2.849	2.011	+2.24 +13.3	15.4	26.1
Feb. 20	23 33.96	-02 36.5	2.939	2.056	+2.17 +13.2	15.7	22.0
Mar. 2	23 55.42	+00 25.8	3.026	2.103	+2.11 +12.9	16.0	17.7
Mar. 12	00 16.27	+01 41.7	3.106	2.152	+2.05 +12.5	16.3	13.3
Mar. 22	00 36.55	+03 44.9	3.181	2.202	+2.00 +12.0	16.6	8.8
Apr. 1	00 56.31	+05 42.6	3.248	2.252	+1.95 +11.5	16.9	4.2
Apr. 11	01 15.58	+07 34.2	3.306	2.304	+1.90 +10.8	17.2	0.6
Apr. 21	01 34.37	+09 18.9	3.355	2.357	+1.85 +10.1	17.4	5.3
May 1	01 52.70	+10 56.1	3.394	2.409	+1.81 +9.3	17.7	10.3
May 11	02 10.56	+12 25.6	3.422	2.463	+1.76 +8.5	18.0	15.3
May 21	02 27.92	+13 47.0	3.439	2.516	+1.71 +7.7	18.2	20.5
May 31	02 44.76	+15 00.1	3.443	2.570	+1.65 +6.9	18.4	25.9
June 10	03 01.02	+16 05.0	3.436	2.623	+1.59 +6.0	18.7	31.4
June 20	03 16.63	+17 01.5	3.416	2.677	+1.52 +5.2	18.9	37.1
June 30	03 31.52	+17 49.9	3.384	2.730	+1.45 +4.4	19.1	43.0
July 10	03 45.58	+18 30.4	3.341	2.784	+1.36 +3.6	19.2	49.1
July 20	03 58.69	+19 03.3	3.285	2.837	+1.25 +2.9	19.4	55.5
July 30	04 10.71	+19 28.9	3.220	2.889	+1.14 +2.2	19.6	62.2
Aug. 9	04 21.49	+19 47.7	3.144	2.941	+1.00 +1.5	19.7	69.2
Aug. 19	04 30.85	+20 00.1	3.061	2.993	+0.85 +0.9	19.8	76.6
Aug. 29	04 38.58	+20 06.8	2.972	3.045	+0.68 +0.4	20.0	84.4
Sept. 8	04 44.47	+20 08.1	2.879	3.095	+0.48 -0.1	20.1	92.7
Sept. 18	04 48.33	+20 04.5	2.786	3.146	+0.27 -0.6	20.2	101.6
Sept. 28	04 49.95	+19 56.5	2.697	3.196	+0.03 -1.0	20.3	111.0
Oct. 8	04 49.20	+19 44.4	2.615	3.245	-0.21 -1.4	20.4	121.0
Oct. 18	04 46.09	+19 28.3	2.546	3.293	-0.44 -1.8	20.5	131.6
Oct. 28	04 40.73	+19 08.6	2.495	3.342	-0.65 -2.2	20.6	142.8
Nov. 7	04 33.51	+18 45.8	2.467	3.389	-0.80 -2.4	20.7	154.5
Nov. 17	04 25.02	+18 21.0	2.467	3.436	-0.89 -2.5	20.9	166.4
Nov. 27	04 15.99	+17 55.7	2.497	3.482	-0.90 -2.5	21.0	176.6
Dec. 7	04 07.25	+17 32.0	2.558	3.528	-0.83 -2.2	21.2	168.2
Dec. 17	03 59.55	+17 11.9	2.649	3.573	-0.69 -1.7	21.4	156.4
Dec. 27	03 53.42	+16 57.4	2.769	3.617	-0.51 -1.1	21.7	144.8
Jan. 6	03 49.22	+16 49.6	2.912	3.661	-0.31 -0.4	21.9	133.7
Jan. 16	03 47.07	+16 48.8	3.075	3.704	-0.10 +0.3	.	123.0
Jan. 26	03 46.92	+16 54.7	3.253	3.746	+0.09 +0.9	.	112.8
Feb. 5	03 48.67	+17 06.6	3.440	3.788	+0.27 +1.5	.	103.1
Feb. 15	03 52.09	+17 23.3	3.633	3.829	+0.43 +1.9	.	93.9
Feb. 25	03 57.01	+17 43.7	3.827	3.869	+0.57 +2.2	.	85.0
Mar. 7	04 03.21	+18 06.6	4.019	3.909	+0.68 +2.4	.	76.5
Mar. 17	04 10.49	+18 30.9	4.206	3.948	+0.78 +2.5	.	68.3
Mar. 27	04 18.69	+18 55.6	4.384	3.987	+0.86 +2.5	.	60.4

Comet 110P/Hartley

Epoch = 2022 June 30.0 TT
 T = 2021 Oct. 18.31615 TT
 Peri. = 167.44809 e = 0.3185069
 Node = 287.53177 2000.0 a = 3.6033194 AU
 Incl. = 11.70531 n = 0.14409534
 q = 2.4556373 AU P = 6.84 years

$$m1 = 5.2 + 5 \log(\Delta) + 22.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	08 32.75	+15 47.9	1.579	2.498	-0.69 -3.7	15.1	153.5
Jan. 11	08 25.08	+15 14.2	1.547	2.510	-0.85 -3.0	15.1	165.0
Jan. 21	08 16.27	+14 46.3	1.542	2.524	-0.90 -2.5	15.2	174.6
Jan. 31	08 07.49	+14 23.3	1.565	2.538	-0.83 -2.1	15.3	168.6
Feb. 10	07 59.92	+14 04.0	1.615	2.554	-0.65 -1.8	15.4	157.4
Feb. 20	07 54.46	+13 46.9	1.690	2.571	-0.41 -1.6	15.6	146.3
Mar. 2	07 51.61	+13 31.0	1.786	2.590	-0.13 -1.6	15.8	135.7
Mar. 12	07 51.54	+13 14.7	1.899	2.609	+0.14 -1.7	16.0	125.9
Mar. 22	07 54.13	+12 56.7	2.026	2.629	+0.39 -1.9	16.2	116.7
Apr. 1	07 59.08	+12 35.8	2.164	2.651	+0.61 -2.3	16.4	108.2
Apr. 11	08 06.10	+12 10.8	2.308	2.673	+0.80 -2.8	16.6	100.2
Apr. 21	08 14.83	+11 40.9	2.456	2.696	+0.95 -3.3	16.8	92.7
May 1	08 24.95	+11 05.3	2.606	2.720	+1.08 -3.9	17.1	85.6
May 11	08 36.20	+10 23.8	2.756	2.745	+1.18 -4.5	17.3	78.8
May 21	08 48.31	+09 36.1	2.904	2.771	+1.25 -5.1	17.5	72.4
May 31	09 01.10	+08 42.2	3.049	2.797	+1.31 -5.7	17.7	66.2
June 10	09 14.39	+07 42.3	3.189	2.824	+1.35 -6.3	17.9	60.1
June 20	09 28.05	+06 36.5	3.323	2.851	+1.38 -6.9	18.0	54.2
June 30	09 41.97	+05 25.3	3.450	2.879	+1.40 -7.4	18.2	48.5
July 10	09 56.05	+04 09.1	3.569	2.907	+1.41 -7.9	18.4	42.8
July 20	10 10.23	+02 48.4	3.679	2.936	+1.42 -8.3	18.6	37.3
July 30	10 24.45	+01 23.7	3.779	2.965	+1.42 -8.7	18.7	31.7
Aug. 9	10 38.67	+00 04.5	3.869	2.994	+1.42 -9.0	18.9	26.3
Aug. 19	10 52.83	-01 35.6	3.947	3.023	+1.41 -9.2	19.0	21.0
Aug. 29	11 06.92	-03 09.0	4.012	3.053	+1.40 -9.5	19.1	15.9
Sept. 8	11 20.90	-04 44.2	4.065	3.083	+1.39 -9.6	19.2	11.4
Sept. 18	11 34.74	-06 20.6	4.104	3.113	+1.38 -9.7	19.4	8.6
Sept. 28	11 48.41	-07 57.6	4.128	3.144	+1.36 -9.7	19.5	9.4
Oct. 8	12 01.87	-09 34.6	4.138	3.174	+1.33 -9.7	19.6	13.2
Oct. 18	12 15.09	-11 11.1	4.134	3.204	+1.31 -9.6	19.7	18.5
Oct. 28	12 28.01	-12 46.6	4.114	3.235	+1.27 -9.5	19.7	24.3
Nov. 7	12 40.57	-14 20.4	4.080	3.265	+1.23 -9.3	19.8	30.5
Nov. 17	12 52.70	-15 52.1	4.031	3.296	+1.19 -9.0	19.9	37.0
Nov. 27	13 04.31	-17 21.2	3.968	3.326	+1.13 -8.7	19.9	43.8
Dec. 7	13 15.28	-18 47.0	3.892	3.356	+1.06 -8.4	20.0	50.8
Dec. 17	13 25.49	-20 09.3	3.804	3.387	+0.97 -8.0	20.0	58.0
Dec. 27	13 34.79	-21 27.3	3.705	3.417	+0.87 -7.5	20.0	65.5
Jan. 6	13 42.99	-22 40.6	3.598	3.447	+0.75 -7.0	20.1	73.3
Jan. 16	13 49.92	-23 48.3	3.484	3.476	+0.61 -6.4	20.1	81.4
Jan. 26	13 55.35	-24 49.8	3.367	3.506	+0.45 -5.8	20.1	89.9
Feb. 5	13 59.08	-25 43.9	3.250	3.536	+0.27 -5.0	20.1	98.7
Feb. 15	14 00.94	-26 29.4	3.136	3.565	+0.08 -4.0	20.1	107.8
Feb. 25	14 00.78	-27 04.6	3.030	3.594	-0.13 -2.9	20.1	117.3
Mar. 7	13 58.58	-27 27.6	2.936	3.623	-0.33 -1.6	20.1	127.2
Mar. 17	13 54.44	-27 36.8	2.858	3.651	-0.51 -0.1	20.1	137.2
Mar. 27	13 48.65	-27 30.8	2.801	3.680	-0.65 +1.5	20.2	147.2

Comet P/2021 U3 (Attard-Maury)

Epoch = 2022 June 30.0 TT
 T = 2021 Oct. 24.87289 TT
 Peri. = 335.21847 e = 0.5499738
 Node = 75.11032 2000.0 a = 4.1928819 AU
 Incl. = 69.96205 n = 0.11479821
 q = 1.8869067 AU P = 8.59 years

$$m1 = 14.5 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	03 30.76	+29 37.3	1.157	1.988	-2.30	+28.2	17.8	136.4
Jan. 11	03 11.20	+33 46.7	1.309	2.019	-1.54	+21.5	18.1	122.8
Jan. 21	02 58.95	+37 00.2	1.480	2.052	-0.86	+17.1	18.5	111.2
Jan. 31	02 52.98	+39 38.8	1.662	2.089	-0.29	+14.6	18.8	101.1
Feb. 10	02 52.20	+41 57.1	1.847	2.128	+0.17	+13.1	19.1	92.3
Feb. 20	02 55.58	+44 04.2	2.030	2.170	+0.54	+12.3	19.4	84.4
Mar. 2	03 02.41	+46 04.9	2.208	2.214	+0.85	+11.9	19.7	77.4
Mar. 12	03 12.17	+48 02.2	2.378	2.260	+1.12	+11.6	19.9	71.0
Mar. 22	03 24.50	+49 57.3	2.538	2.307	+1.37	+11.4	20.2	65.3
Apr. 1	03 39.22	+51 50.5	2.687	2.356	+1.60	+11.2	20.4	60.2
Apr. 11	03 56.23	+53 41.6	2.825	2.407	+1.83	+11.0	20.6	55.7
Apr. 21	04 15.50	+55 29.8	2.950	2.458	+2.05	+10.6	20.8	51.8
May 1	04 37.10	+57 13.9	3.062	2.510	+2.29	+10.1	20.9	48.5
May 11	05 01.12	+58 52.4	3.162	2.563	+2.54	+9.5	21.1	45.8
May 21	05 27.62	+60 23.5	3.251	2.617	+2.79	+8.6	21.2	43.9
May 31	05 56.68	+61 45.0	3.328	2.671	+3.05	+7.5	21.4	42.6
June 10	06 28.28	+62 54.5	3.395	2.726	+3.29	+6.2	21.5	42.0
June 20	07 02.21	+63 49.7	3.452	2.781	+3.51	+4.6	21.6	42.0
June 30	07 38.15	+64 28.2	3.500	2.836	+3.68	+2.9	21.7	42.6
July 10	08 15.52	+64 48.5	3.541	2.892	+3.79	+1.0	21.9	43.6
July 20	08 53.58	+64 49.8	3.575	2.947	+3.81	-0.9	22.0	45.1
July 30	09 31.56	+64 32.3	3.604	3.002	+3.76	-2.7	.	46.9
Aug. 9	10 08.72	+63 57.5	3.628	3.057	+3.65	-4.4	.	48.9
Aug. 19	10 44.49	+63 07.6	3.648	3.112	+3.49	-5.7	.	51.0
Aug. 29	11 18.53	+62 05.7	3.665	3.167	+3.30	-6.7	.	53.3
Sept. 8	11 50.65	+60 55.1	3.681	3.222	+3.10	-7.4	.	55.7
Sept. 18	12 20.84	+59 39.3	3.695	3.276	+2.92	-7.7	.	58.1
Sept. 28	12 49.19	+58 21.6	3.708	3.330	+2.74	-7.7	.	60.5
Oct. 8	13 15.81	+57 05.2	3.720	3.384	+2.57	-7.5	.	62.9
Oct. 18	13 40.85	+55 53.0	3.732	3.438	+2.42	-6.9	.	65.3
Oct. 28	14 04.44	+54 47.6	3.744	3.491	+2.28	-6.1	.	67.7
Nov. 7	14 26.68	+53 51.2	3.756	3.543	+2.15	-5.1	.	70.1
Nov. 17	14 47.63	+53 05.9	3.768	3.596	+2.03	-3.9	.	72.5
Nov. 27	15 07.35	+52 33.1	3.779	3.647	+1.90	-2.5	.	74.8
Dec. 7	15 25.82	+52 14.3	3.791	3.699	+1.78	-1.1	.	77.2
Dec. 17	15 43.02	+52 10.1	3.802	3.750	+1.65	+0.4	.	79.5
Dec. 27	15 58.87	+52 21.1	3.813	3.800	+1.51	+1.9	.	81.8
Jan. 6	16 13.25	+52 47.2	3.824	3.850	+1.35	+3.4	.	84.1
Jan. 16	16 26.03	+53 28.1	3.836	3.900	+1.18	+4.9	.	86.4
Jan. 26	16 37.00	+54 22.8	3.848	3.949	+0.99	+6.2	.	88.6
Feb. 5	16 45.91	+55 29.9	3.861	3.997	+0.77	+7.3	.	90.7
Feb. 15	16 52.47	+56 47.0	3.876	4.045	+0.51	+8.2	.	92.7
Feb. 25	16 56.34	+58 11.6	3.893	4.093	+0.22	+8.7	.	94.6
Mar. 7	16 57.10	+59 39.7	3.914	4.140	-0.11	+8.8	.	96.2
Mar. 17	16 54.40	+61 07.0	3.939	4.186	-0.48	+8.5	.	97.5
Mar. 27	16 47.89	+62 28.0	3.969	4.232	-0.87	+7.5	.	98.5

Comet 67P/Churyumov-Gerasimenko

Epoch = 2022 June 30.0 TT
 T = 2021 Nov. 2.07848 TT
 Peri. = 22.14253 e = 0.6497601
 Node = 36.33036 2000.0 a = 3.4564614 AU
 Incl. = 3.87169 n = 0.15337568
 q = 1.2105907 AU P = 6.43 years

$$m_1 = 10.0 + 5 \log(\Delta) + 12.5 \log(r(t-50)) +$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	08 59.11	+28 34.3	0.481	1.418	-0.65	+3.4	9.5	149.3
Jan. 11	08 50.91	+29 02.0	0.519	1.482	-0.97	+1.8	9.7	160.1
Jan. 21	08 40.84	+29 10.4	0.574	1.551	-1.00	-0.4	10.1	168.6
Jan. 31	08 31.66	+28 56.2	0.648	1.624	-0.79	-2.6	10.5	167.6
Feb. 10	08 25.32	+28 22.2	0.740	1.699	-0.43	-4.3	11.0	159.0
Feb. 20	08 22.68	+27 34.2	0.852	1.776	-0.06	-5.3	11.5	149.5
Mar. 2	08 23.64	+26 37.6	0.980	1.854	+0.28	-6.0	12.1	140.3
Mar. 12	08 27.77	+25 35.7	1.124	1.933	+0.56	-6.4	12.6	131.7
Mar. 22	08 34.46	+24 30.2	1.282	2.012	+0.78	-6.7	13.2	123.6
Apr. 1	08 43.09	+23 22.1	1.451	2.091	+0.95	-7.0	13.7	115.9
Apr. 11	08 53.21	+22 11.5	1.629	2.169	+1.08	-7.2	14.2	108.7
Apr. 21	09 04.40	+20 58.4	1.815	2.248	+1.16	-7.4	14.6	101.8
May 1	09 16.34	+19 43.1	2.007	2.325	+1.23	-7.7	15.1	95.1
May 11	09 28.82	+18 25.3	2.203	2.402	+1.27	-7.9	15.5	88.7
May 21	09 41.63	+17 05.4	2.400	2.478	+1.29	-8.1	15.9	82.4
May 31	09 54.65	+15 43.5	2.598	2.553	+1.31	-8.3	16.3	76.2
June 10	10 07.78	+14 19.8	2.794	2.627	+1.32	-8.5	16.6	70.1
June 20	10 20.94	+12 54.6	2.986	2.700	+1.32	-8.6	17.0	64.0
June 30	10 34.08	+11 28.3	3.173	2.772	+1.31	-8.7	17.3	58.0
July 10	10 47.17	+10 01.2	3.354	2.843	+1.30	-8.7	17.6	52.0
July 20	11 00.16	+08 33.7	3.526	2.912	+1.29	-8.8	17.8	46.0
July 30	11 13.04	+07 06.0	3.688	2.981	+1.28	-8.8	18.1	39.9
Aug. 9	11 25.79	+05 38.6	3.838	3.049	+1.27	-8.7	18.3	33.9
Aug. 19	11 38.39	+04 12.0	3.975	3.115	+1.25	-8.6	18.5	27.7
Aug. 29	11 50.83	+02 46.3	4.099	3.181	+1.23	-8.5	18.7	21.5
Sept. 8	12 03.08	+01 22.2	4.206	3.245	+1.21	-8.3	18.9	15.2
Sept. 18	12 15.13	+00 00.1	4.298	3.308	+1.19	-8.1	19.1	8.8
Sept. 28	12 26.95	-01 20.1	4.371	3.370	+1.17	-7.9	19.3	2.6
Oct. 8	12 38.50	-02 37.4	4.426	3.431	+1.14	-7.6	19.4	4.7
Oct. 18	12 49.74	-03 51.5	4.463	3.491	+1.11	-7.2	19.5	11.4
Oct. 28	13 00.62	-05 02.1	4.480	3.550	+1.07	-6.8	19.6	18.4
Nov. 7	13 11.08	-06 08.6	4.477	3.608	+1.02	-6.4	19.7	25.5
Nov. 17	13 21.04	-07 10.5	4.456	3.665	+0.97	-5.9	19.8	32.9
Nov. 27	13 30.41	-08 07.5	4.416	3.721	+0.90	-5.4	19.9	40.5
Dec. 7	13 39.09	-08 59.1	4.359	3.776	+0.82	-4.8	20.0	48.3
Dec. 17	13 46.95	-09 44.7	4.286	3.830	+0.74	-4.2	20.0	56.4
Dec. 27	13 53.85	-10 24.0	4.199	3.883	+0.63	-3.6	20.1	64.7
Jan. 6	13 59.65	-10 56.3	4.101	3.935	+0.51	-2.8	20.1	73.4
Jan. 16	14 04.19	-11 21.3	3.995	3.986	+0.38	-2.1	20.1	82.4
Jan. 26	14 07.31	-11 38.5	3.884	4.037	+0.23	-1.3	20.2	91.8
Feb. 5	14 08.86	-11 47.3	3.773	4.086	+0.06	-0.4	20.2	101.5
Feb. 15	14 08.74	-11 47.5	3.667	4.134	-0.11	+0.5	20.2	111.7
Feb. 25	14 06.90	-11 38.9	3.569	4.182	-0.28	+1.3	20.2	122.2
Mar. 7	14 03.37	-11 21.7	3.487	4.228	-0.44	+2.2	20.2	133.2
Mar. 17	13 58.31	-10 56.4	3.425	4.274	-0.58	+2.9	20.2	144.4
Mar. 27	13 52.00	-10 24.4	3.388	4.319	-0.68	+3.5	20.3	156.0

Comet 70P/Kojima

Epoch = 2022 June 30.0 TT
 T = 2021 Nov. 3.08345 TT
 Peri. = 1.81467 e = 0.4538279
 Node = 119.26559 2000.0 a = 3.6780103 AU
 Incl. = 6.59779 n = 0.13972839
 q = 2.0088266 AU P = 7.05 years

$$m1 = 10.7 + 5 \log(\Delta) + 15.0 \log(r(t-60))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° ' "			m	' "		°
Jan. 1	11 36.73	+06 44.5	1.535	2.065	+0.99	-1.1	16.2	108.2
Jan. 11	11 45.42	+06 42.7	1.454	2.085	+0.72	+1.0	16.1	116.3
Jan. 21	11 51.27	+07 02.0	1.381	2.108	+0.42	+3.1	16.0	125.2
Jan. 31	11 54.03	+07 42.6	1.321	2.133	+0.10	+5.2	15.9	134.9
Feb. 10	11 53.64	+08 42.0	1.277	2.161	-0.20	+6.8	15.9	145.2
Feb. 20	11 50.41	+09 54.2	1.252	2.191	-0.46	+7.6	15.9	155.8
Mar. 2	11 44.98	+11 10.6	1.249	2.223	-0.63	+7.5	15.9	166.0
Mar. 12	11 38.39	+12 20.9	1.271	2.257	-0.67	+6.3	16.0	170.8
Mar. 22	11 31.88	+13 15.9	1.318	2.293	-0.60	+4.4	16.2	164.2
Apr. 1	11 26.52	+13 50.1	1.390	2.330	-0.44	+2.2	16.4	154.2
Apr. 11	11 23.10	+14 01.2	1.483	2.369	-0.22	-0.1	16.6	144.1
Apr. 21	11 22.03	+13 50.4	1.595	2.408	+0.02	-2.2	16.8	134.5
May 1	11 23.33	+13 20.5	1.723	2.449	+0.26	-3.9	17.1	125.5
May 11	11 26.86	+12 34.7	1.863	2.491	+0.47	-5.3	17.4	117.1
May 21	11 32.34	+11 36.1	2.014	2.534	+0.64	-6.4	17.6	109.2
May 31	11 39.44	+10 27.6	2.172	2.577	+0.79	-7.3	17.9	101.8
June 10	11 47.91	+09 11.2	2.335	2.621	+0.91	-8.0	18.2	94.7
June 20	11 57.48	+07 49.0	2.501	2.665	+1.01	-8.5	18.4	87.9
June 30	12 07.93	+06 22.4	2.669	2.710	+1.09	-8.8	18.7	81.4
July 10	12 19.11	+04 52.8	2.836	2.755	+1.15	-9.1	18.9	75.1
July 20	12 30.86	+03 21.3	3.001	2.801	+1.20	-9.2	19.1	68.9
July 30	12 43.08	+01 48.9	3.163	2.846	+1.25	-9.3	19.4	62.8
Aug. 9	12 55.69	+00 16.3	3.320	2.892	+1.28	-9.2	19.6	56.8
Aug. 19	13 08.61	-01 15.5	3.471	2.938	+1.31	-9.1	19.8	50.8
Aug. 29	13 21.80	-02 45.8	3.613	2.983	+1.33	-8.9	20.0	44.8
Sept. 8	13 35.20	-04 14.2	3.747	3.029	+1.35	-8.7	20.2	38.9
Sept. 18	13 48.77	-05 39.7	3.870	3.074	+1.36	-8.4	20.3	32.9
Sept. 28	14 02.47	-07 02.1	3.981	3.120	+1.38	-8.0	20.5	26.9
Oct. 8	14 16.27	-08 20.6	4.079	3.165	+1.38	-7.6	20.7	20.8
Oct. 18	14 30.10	-09 34.8	4.163	3.210	+1.38	-7.2	20.8	14.8
Oct. 28	14 43.94	-10 44.2	4.232	3.254	+1.38	-6.7	21.0	9.1
Nov. 7	14 57.73	-11 48.4	4.285	3.299	+1.37	-6.1	21.1	5.0
Nov. 17	15 11.40	-12 47.2	4.322	3.343	+1.36	-5.6	21.2	7.2
Nov. 27	15 24.89	-13 40.1	4.341	3.386	+1.34	-5.0	21.3	13.0
Dec. 7	15 38.11	-14 26.9	4.343	3.430	+1.30	-4.3	21.4	19.5
Dec. 17	15 50.97	-15 07.7	4.328	3.473	+1.26	-3.7	21.5	26.3
Dec. 27	16 03.38	-15 42.2	4.296	3.515	+1.21	-3.1	21.6	33.3
Jan. 6	16 15.22	-16 10.6	4.247	3.558	+1.15	-2.5	21.6	40.5
Jan. 16	16 26.36	-16 33.0	4.184	3.599	+1.07	-1.9	21.7	47.9
Jan. 26	16 36.67	-16 49.6	4.105	3.641	+0.98	-1.4	21.7	55.6
Feb. 5	16 45.99	-17 00.9	4.015	3.682	+0.87	-0.8	21.7	63.5
Feb. 15	16 54.18	-17 07.2	3.914	3.722	+0.75	-0.4	21.8	71.6
Feb. 25	17 01.06	-17 09.2	3.806	3.762	+0.61	0.0	21.8	80.0
Mar. 7	17 06.48	-17 07.3	3.693	3.802	+0.46	+0.4	21.8	88.7
Mar. 17	17 10.28	-17 02.1	3.578	3.841	+0.29	+0.7	21.8	97.7
Mar. 27	17 12.32	-16 54.4	3.467	3.879	+0.10	+0.9	21.8	107.1

Comet 132P/Helin-Roman-Alu

Epoch = 2022 June 30.0 TT
 T = 2021 Nov. 13.13960 TT
 Peri. = 216.36468 e = 0.5646575
 Node = 173.99537 2000.0 a = 3.8863502 AU
 Incl. = 5.38271 n = 0.12864449
 q = 1.6918934 AU P = 7.66 years

$$m1 = 9.5 + 5 \log(\Delta) + 20.0 \log(r(t-20))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° ' "			m	' "		°
Jan. 1	01 38.44	+02 57.9	1.246	1.759	+1.81	+11.6	14.7	103.6
Jan. 11	01 56.98	+04 55.8	1.356	1.789	+1.91	+11.9	14.9	98.5
Jan. 21	02 16.44	+06 55.0	1.473	1.822	+1.99	+11.9	15.2	93.6
Jan. 31	02 36.59	+08 52.0	1.598	1.860	+2.05	+11.5	15.6	88.8
Feb. 10	02 57.28	+10 43.8	1.728	1.901	+2.09	+10.8	15.9	84.2
Feb. 20	03 18.37	+12 27.9	1.864	1.945	+2.12	+9.9	16.2	79.5
Mar. 2	03 39.72	+14 02.6	2.005	1.993	+2.15	+8.9	16.6	74.9
Mar. 12	04 01.26	+15 26.4	2.149	2.042	+2.16	+7.8	16.9	70.4
Mar. 22	04 22.86	+16 38.5	2.296	2.094	+2.16	+6.5	17.3	65.8
Apr. 1	04 44.44	+17 38.4	2.444	2.148	+2.15	+5.3	17.6	61.1
Apr. 11	05 05.92	+18 25.8	2.592	2.203	+2.14	+4.1	18.0	56.5
Apr. 21	05 27.20	+19 00.8	2.738	2.259	+2.11	+2.8	18.3	51.8
May 1	05 48.22	+19 23.7	2.883	2.317	+2.08	+1.6	18.7	47.0
May 11	06 08.89	+19 34.9	3.023	2.375	+2.05	+0.5	19.0	42.2
May 21	06 29.16	+19 35.2	3.158	2.433	+2.00	-0.6	19.3	37.4
May 31	06 48.98	+19 25.1	3.288	2.493	+1.95	-1.5	19.6	32.5
June 10	07 08.29	+19 05.7	3.409	2.552	+1.90	-2.4	19.9	27.5
June 20	07 27.05	+18 37.7	3.522	2.612	+1.85	-3.2	20.2	22.5
June 30	07 45.25	+18 02.0	3.625	2.671	+1.79	-4.0	20.4	17.3
July 10	08 02.86	+17 19.6	3.716	2.731	+1.73	-4.6	20.7	12.2
July 20	08 19.85	+16 31.4	3.796	2.790	+1.67	-5.1	20.9	7.0
July 30	08 36.22	+15 38.4	3.863	2.850	+1.60	-5.5	21.2	3.0
Aug. 9	08 51.94	+14 41.4	3.916	2.909	+1.54	-5.9	21.4	5.5
Aug. 19	09 07.01	+13 41.4	3.955	2.968	+1.47	-6.1	21.6	10.9
Aug. 29	09 21.41	+12 39.3	3.979	3.026	+1.40	-6.3	21.8	16.8
Sept. 8	09 35.10	+11 36.1	3.987	3.084	+1.33	-6.4	22.0	22.9
Sept. 18	09 48.06	+10 32.6	3.980	3.142	+1.25	-6.3	.	29.2
Sept. 28	10 00.25	+09 29.8	3.957	3.199	+1.17	-6.2	.	35.8
Oct. 8	10 11.60	+08 28.8	3.919	3.255	+1.09	-6.0	.	42.6
Oct. 18	10 22.05	+07 30.6	3.867	3.311	+0.99	-5.6	.	49.8
Oct. 28	10 31.53	+06 36.2	3.800	3.367	+0.89	-5.2	.	57.2
Nov. 7	10 39.90	+05 46.8	3.722	3.422	+0.77	-4.6	.	64.9
Nov. 17	10 47.07	+05 03.7	3.633	3.476	+0.65	-3.9	.	73.1
Nov. 27	10 52.89	+04 28.1	3.537	3.530	+0.50	-3.1	.	81.6
Dec. 7	10 57.21	+04 01.4	3.436	3.583	+0.34	-2.1	.	90.5
Dec. 17	10 59.91	+03 44.7	3.334	3.636	+0.17	-1.1	.	100.0
Dec. 27	11 00.84	+03 39.2	3.236	3.688	-0.01	+0.1	.	109.9
Jan. 6	10 59.95	+03 45.6	3.146	3.739	-0.19	+1.3	.	120.3
Jan. 16	10 57.25	+04 04.2	3.069	3.790	-0.37	+2.5	.	131.2
Jan. 26	10 52.85	+04 34.3	3.011	3.840	-0.52	+3.6	.	142.6
Feb. 5	10 47.04	+05 14.2	2.978	3.890	-0.64	+4.4	.	154.3
Feb. 15	10 40.25	+06 01.2	2.973	3.939	-0.71	+5.0	.	166.2
Feb. 25	10 33.01	+06 51.7	2.998	3.987	-0.73	+5.1	.	177.4
Mar. 7	10 25.93	+07 42.0	3.056	4.035	-0.68	+4.9	.	169.4
Mar. 17	10 19.53	+08 28.4	3.144	4.082	-0.58	+4.3	.	157.8
Mar. 27	10 14.27	+09 08.2	3.260	4.128	-0.45	+3.5	.	146.4

Comet P/2021 N2 (Fuls)

Epoch = 2022 June 30.0 TT
 T = 2021 Nov. 13.41408 TT
 Peri. = 177.36458 e = 0.4524171
 Node = 221.74130 2000.0 a = 6.9337375 AU
 Incl. = 13.06240 n = 0.05398250
 q = 3.7967961 AU P = 18.26 years

$$m1 = -1.1 + 5 \log(\Delta) + 25.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	02 04.91	+11 15.0	3.318	3.808	+0.28	-0.8	16.0	112.7
Jan. 11	02 08.43	+11 12.0	3.464	3.813	+0.44	+0.2	16.1	103.3
Jan. 21	02 13.43	+11 18.5	3.616	3.819	+0.58	+1.1	16.2	94.4
Jan. 31	02 19.77	+11 33.1	3.770	3.825	+0.70	+1.9	16.3	85.7
Feb. 10	02 27.32	+11 54.5	3.924	3.833	+0.81	+2.4	16.5	77.5
Feb. 20	02 35.92	+12 21.1	4.074	3.841	+0.91	+2.9	16.6	69.5
Mar. 2	02 45.42	+12 51.3	4.218	3.851	+1.00	+3.2	16.7	61.8
Mar. 12	02 55.72	+13 23.8	4.354	3.861	+1.07	+3.3	16.8	54.4
Mar. 22	03 06.68	+13 57.4	4.479	3.872	+1.13	+3.4	16.9	47.2
Apr. 1	03 18.19	+14 30.9	4.594	3.884	+1.18	+3.3	16.9	40.2
Apr. 11	03 30.17	+15 03.2	4.695	3.897	+1.22	+3.1	17.0	33.3
Apr. 21	03 42.51	+15 33.5	4.782	3.911	+1.25	+2.9	17.1	26.7
May 1	03 55.13	+16 01.0	4.855	3.925	+1.27	+2.6	17.2	20.1
May 11	04 07.95	+16 25.1	4.913	3.940	+1.29	+2.2	17.2	13.9
May 21	04 20.89	+16 45.1	4.955	3.956	+1.30	+1.8	17.3	8.1
May 31	04 33.86	+17 00.6	4.982	3.973	+1.30	+1.3	17.4	4.9
June 10	04 46.78	+17 11.4	4.992	3.990	+1.29	+0.8	17.4	8.2
June 20	04 59.57	+17 17.1	4.987	4.008	+1.27	+0.3	17.5	13.9
June 30	05 12.16	+17 17.6	4.966	4.027	+1.24	-0.2	17.5	20.2
July 10	05 24.44	+17 12.8	4.930	4.046	+1.21	-0.8	17.5	26.6
July 20	05 36.33	+17 02.9	4.879	4.067	+1.16	-1.3	17.6	33.2
July 30	05 47.73	+16 47.9	4.813	4.087	+1.11	-1.8	17.6	40.0
Aug. 9	05 58.53	+16 28.1	4.735	4.109	+1.04	-2.2	17.6	46.9
Aug. 19	06 08.64	+16 03.8	4.644	4.131	+0.97	-2.7	17.6	54.0
Aug. 29	06 17.92	+15 35.4	4.543	4.153	+0.88	-3.0	17.6	61.3
Sept. 8	06 26.26	+15 03.5	4.433	4.176	+0.78	-3.4	17.7	68.9
Sept. 18	06 33.53	+14 28.6	4.316	4.200	+0.66	-3.6	17.7	76.7
Sept. 28	06 39.59	+13 51.6	4.194	4.224	+0.53	-3.8	17.7	84.9
Oct. 8	06 44.31	+13 13.2	4.071	4.249	+0.39	-3.9	17.7	93.4
Oct. 18	06 47.57	+12 34.4	3.950	4.274	+0.24	-3.9	17.7	102.3
Oct. 28	06 49.28	+11 56.2	3.834	4.300	+0.08	-3.7	17.7	111.5
Nov. 7	06 49.38	+11 19.9	3.729	4.326	-0.08	-3.5	17.7	121.2
Nov. 17	06 47.90	+10 46.6	3.638	4.352	-0.23	-3.1	17.7	131.1
Nov. 27	06 44.94	+10 17.6	3.566	4.379	-0.37	-2.6	17.7	141.2
Dec. 7	06 40.73	+09 54.1	3.517	4.407	-0.48	-2.0	17.7	151.3
Dec. 17	06 35.60	+09 36.7	3.495	4.434	-0.55	-1.4	17.8	160.4
Dec. 27	06 29.99	+09 26.1	3.502	4.463	-0.57	-0.7	17.9	165.9
Jan. 6	06 24.39	+09 22.4	3.539	4.491	-0.54	0.0	18.0	163.5
Jan. 16	06 19.27	+09 25.1	3.606	4.520	-0.47	+0.6	18.1	155.5
Jan. 26	06 15.04	+09 33.5	3.701	4.549	-0.36	+1.1	18.2	145.8
Feb. 5	06 12.02	+09 46.4	3.820	4.578	-0.23	+1.5	18.3	135.7
Feb. 15	06 10.39	+10 02.6	3.961	4.608	-0.08	+1.7	18.5	125.8
Feb. 25	06 10.24	+10 20.7	4.117	4.638	+0.07	+1.9	18.6	116.0
Mar. 7	06 11.55	+10 39.4	4.286	4.668	+0.21	+1.9	18.8	106.6
Mar. 17	06 14.25	+10 57.7	4.463	4.699	+0.34	+1.8	18.9	97.6
Mar. 27	06 18.21	+11 14.5	4.643	4.729	+0.46	+1.6	19.1	88.8

Comet 430P/Scotti

Epoch = 2022 June 30.0 TT
 T = 2021 Dec. 2.17950 TT
 Peri. = 94.47444 e = 0.4993872
 Node = 54.67261 2000.0 a = 3.1050768 AU
 Incl. = 4.47519 n = 0.18013394
 q = 1.5544412 AU P = 5.47 years

$$m1 = 15.3 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	13 37.89	-05 32.3	1.507	1.581	+2.35	-13.5	18.2	75.6
Jan. 11	14 00.71	-07 41.2	1.453	1.602	+2.20	-12.1	18.2	79.7
Jan. 21	14 21.94	-09 35.5	1.399	1.627	+2.02	-10.6	18.1	84.2
Jan. 31	14 41.26	-11 14.4	1.345	1.658	+1.81	-9.0	18.1	89.4
Feb. 10	14 58.22	-12 37.6	1.291	1.693	+1.55	-7.5	18.1	95.1
Feb. 20	15 12.39	-13 45.8	1.238	1.732	+1.25	-6.0	18.1	101.5
Mar. 2	15 23.31	-14 39.9	1.186	1.774	+0.89	-4.7	18.2	108.8
Mar. 12	15 30.46	-15 20.8	1.139	1.819	+0.49	-3.4	18.2	116.9
Mar. 22	15 33.52	-15 49.8	1.098	1.867	+0.07	-2.3	18.2	126.1
Apr. 1	15 32.33	-16 07.8	1.067	1.917	-0.35	-1.2	18.3	136.2
Apr. 11	15 27.14	-16 15.4	1.050	1.968	-0.71	-0.2	18.3	147.2
Apr. 21	15 18.80	-16 14.2	1.051	2.021	-0.96	+0.5	18.5	158.9
May 1	15 08.62	-16 06.5	1.074	2.075	-1.06	+1.0	18.6	171.0
May 11	14 58.24	-15 56.0	1.121	2.130	-0.99	+1.0	18.8	176.6
May 21	14 49.17	-15 47.6	1.192	2.186	-0.79	+0.6	19.1	165.0
May 31	14 42.44	-15 44.9	1.287	2.241	-0.52	-0.2	19.4	153.8
June 10	14 38.59	-15 50.7	1.402	2.298	-0.22	-1.1	19.6	143.4
June 20	14 37.68	-16 05.9	1.534	2.354	+0.06	-2.0	19.9	133.7
June 30	14 39.48	-16 30.0	1.682	2.410	+0.32	-2.9	20.2	124.7
July 10	14 43.70	-17 01.9	1.841	2.466	+0.54	-3.6	20.5	116.3
July 20	14 49.98	-17 40.0	2.010	2.522	+0.73	-4.1	20.8	108.4
July 30	14 57.99	-18 22.5	2.186	2.577	+0.89	-4.4	21.1	100.8
Aug. 9	15 07.47	-19 08.0	2.366	2.632	+1.02	-4.7	21.4	93.6
Aug. 19	15 18.15	-19 54.9	2.548	2.687	+1.13	-4.7	21.6	86.7
Aug. 29	15 29.86	-20 41.9	2.731	2.741	+1.22	-4.7	21.9	79.9
Sept. 8	15 42.44	-21 28.0	2.913	2.794	+1.30	-4.5	.	73.2
Sept. 18	15 55.72	-22 12.1	3.091	2.847	+1.36	-4.3	.	66.7
Sept. 28	16 09.61	-22 53.4	3.264	2.899	+1.42	-3.9	.	60.2
Oct. 8	16 24.00	-23 31.0	3.430	2.950	+1.46	-3.5	.	53.7
Oct. 18	16 38.79	-24 04.5	3.587	3.001	+1.50	-3.1	.	47.3
Oct. 28	16 53.88	-24 33.3	3.733	3.051	+1.52	-2.6	.	40.8
Nov. 7	17 09.19	-24 57.1	3.868	3.100	+1.54	-2.1	.	34.3
Nov. 17	17 24.63	-25 15.5	3.990	3.149	+1.55	-1.5	.	27.8
Nov. 27	17 40.12	-25 28.6	4.096	3.196	+1.55	-1.0	.	21.2
Dec. 7	17 55.55	-25 36.2	4.187	3.243	+1.54	-0.5	.	14.6
Dec. 17	18 10.85	-25 38.6	4.261	3.289	+1.52	0.0	.	8.1
Dec. 27	18 25.93	-25 35.9	4.317	3.335	+1.49	+0.5	.	2.5
Jan. 6	18 40.69	-25 28.6	4.355	3.379	+1.46	+1.0	.	6.3
Jan. 16	18 55.04	-25 17.2	4.374	3.423	+1.41	+1.3	.	13.0
Jan. 26	19 08.92	-25 02.2	4.374	3.466	+1.36	+1.7	.	20.0
Feb. 5	19 22.20	-24 44.5	4.357	3.508	+1.29	+1.9	.	27.1
Feb. 15	19 34.82	-24 24.7	4.321	3.549	+1.22	+2.0	.	34.3
Feb. 25	19 46.68	-24 04.0	4.268	3.590	+1.14	+2.1	.	41.6
Mar. 7	19 57.67	-23 43.1	4.200	3.629	+1.05	+2.1	.	49.1
Mar. 17	20 07.70	-23 23.2	4.117	3.668	+0.95	+1.9	.	56.8
Mar. 27	20 16.66	-23 05.3	4.022	3.706	+0.83	+1.6	.	64.6

Comet 402P/LINEAR

Epoch = 2022 June 30.0 TT
 T = 2021 Dec. 14.58120 TT
 Peri. = 326.73344 e = 0.4390282
 Node = 123.09309 2000.0 a = 7.0197099 AU
 Incl. = 30.84884 n = 0.05299383
 q = 3.9378593 AU P = 18.60 years

$$m1 = 7.7 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	06 17.77	+03 19.9	3.004	3.939	-0.61	+6.4	16.0	159.3
Jan. 11	06 11.92	+04 28.1	3.030	3.941	-0.55	+7.3	16.1	154.6
Jan. 21	06 06.89	+05 44.4	3.085	3.944	-0.44	+8.0	16.1	146.6
Jan. 31	06 03.11	+07 05.9	3.166	3.947	-0.30	+8.3	16.2	137.3
Feb. 10	06 00.89	+08 29.3	3.270	3.952	-0.13	+8.3	16.2	127.7
Feb. 20	06 00.39	+09 52.1	3.393	3.957	+0.05	+8.1	16.3	118.2
Mar. 2	06 01.64	+11 12.0	3.530	3.963	+0.22	+7.8	16.4	108.9
Mar. 12	06 04.59	+12 27.6	3.677	3.970	+0.38	+7.3	16.5	99.9
Mar. 22	06 09.12	+13 37.7	3.830	3.977	+0.53	+6.7	16.6	91.2
Apr. 1	06 15.07	+14 41.6	3.985	3.986	+0.67	+6.0	16.7	82.8
Apr. 11	06 22.29	+15 39.1	4.139	3.995	+0.79	+5.4	16.8	74.8
Apr. 21	06 30.61	+16 29.7	4.289	4.005	+0.89	+4.7	16.9	67.0
May 1	06 39.87	+17 13.5	4.433	4.016	+0.97	+4.0	17.0	59.4
May 11	06 49.92	+17 50.6	4.568	4.027	+1.04	+3.3	17.0	52.1
May 21	07 00.61	+18 21.0	4.692	4.039	+1.10	+2.7	17.1	44.9
May 31	07 11.83	+18 45.1	4.804	4.052	+1.15	+2.1	17.2	37.9
June 10	07 23.46	+19 03.2	4.902	4.066	+1.18	+1.5	17.2	31.0
June 20	07 35.38	+19 15.5	4.986	4.080	+1.20	+0.9	17.3	24.2
June 30	07 47.51	+19 22.6	5.054	4.095	+1.22	+0.4	17.3	17.4
July 10	07 59.75	+19 25.0	5.106	4.111	+1.23	0.0	17.4	10.7
July 20	08 12.01	+19 23.3	5.141	4.128	+1.23	-0.4	17.4	4.0
July 30	08 24.24	+19 18.0	5.158	4.145	+1.22	-0.7	17.4	2.8
Aug. 9	08 36.34	+19 10.0	5.159	4.162	+1.20	-0.9	17.5	9.6
Aug. 19	08 48.24	+19 00.0	5.142	4.181	+1.18	-1.1	17.5	16.4
Aug. 29	08 59.88	+18 48.8	5.107	4.200	+1.15	-1.1	17.5	23.4
Sept. 8	09 11.18	+18 37.5	5.056	4.219	+1.11	-1.1	17.5	30.5
Sept. 18	09 22.06	+18 27.0	4.989	4.239	+1.06	-1.0	17.5	37.7
Sept. 28	09 32.45	+18 18.6	4.907	4.260	+1.01	-0.7	17.4	45.1
Oct. 8	09 42.25	+18 13.3	4.812	4.281	+0.94	-0.3	17.4	52.7
Oct. 18	09 51.36	+18 12.5	4.704	4.303	+0.87	+0.2	17.4	60.6
Oct. 28	09 59.69	+18 17.4	4.586	4.325	+0.78	+0.9	17.4	68.7
Nov. 7	10 07.10	+18 29.5	4.460	4.348	+0.69	+1.6	17.3	77.1
Nov. 17	10 13.48	+18 49.9	4.331	4.371	+0.58	+2.6	17.3	85.8
Nov. 27	10 18.69	+19 19.9	4.200	4.394	+0.45	+3.6	17.2	94.8
Dec. 7	10 22.59	+20 00.2	4.072	4.418	+0.31	+4.6	17.2	104.2
Dec. 17	10 25.07	+20 51.1	3.952	4.443	+0.17	+5.7	17.2	113.9
Dec. 27	10 26.04	+21 52.3	3.844	4.468	+0.01	+6.6	17.1	123.9
Jan. 6	10 25.46	+23 02.2	3.753	4.493	-0.14	+7.4	17.1	134.1
Jan. 16	10 23.39	+24 18.6	3.683	4.519	-0.28	+7.9	17.1	144.3
Jan. 26	10 19.98	+25 38.0	3.639	4.545	-0.40	+7.9	17.1	154.0
Feb. 5	10 15.52	+26 56.2	3.625	4.571	-0.49	+7.6	17.1	161.8
Feb. 15	10 10.40	+28 08.9	3.640	4.598	-0.53	+6.8	17.1	164.2
Feb. 25	10 05.07	+29 12.4	3.686	4.625	-0.52	+5.7	17.2	159.3
Mar. 7	10 00.06	+30 03.9	3.761	4.653	-0.47	+4.4	17.3	150.8
Mar. 17	09 55.80	+30 42.2	3.863	4.680	-0.37	+3.1	17.3	141.2
Mar. 27	09 52.63	+31 06.9	3.988	4.708	-0.25	+1.8	17.4	131.4

Comet C/2021 A1 (Leonard)

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 3.29958 TT
 Peri. = 225.08779
 Node = 255.90098 2000.0
 Incl. = 132.68498
 q = 0.6152914 AU
 e = 1.0002038

$$m1 = 9.1 + 5 \log(\Delta) + 17.5 \log(r(t+5))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	21 33.89	-35 26.1	0.832	0.617	+2.00	-9.4	5.0	38.6
Jan. 11	21 42.73	-36 20.0	1.187	0.638	-0.01	-1.9	6.5	32.5
Jan. 21	21 39.87	-36 21.7	1.479	0.724	-0.47	+1.4	8.1	25.3
Jan. 31	21 34.97	-36 00.7	1.698	0.851	-0.48	+2.6	9.6	20.7
Feb. 10	21 30.53	-35 33.6	1.852	0.997	-0.41	+2.6	11.0	21.0
Feb. 20	21 26.63	-35 09.9	1.951	1.150	-0.38	+2.0	12.1	26.2
Mar. 2	21 22.73	-34 54.8	2.002	1.305	-0.42	+0.9	13.1	34.0
Mar. 12	21 18.10	-34 51.6	2.013	1.459	-0.54	-0.4	13.9	43.3
Mar. 22	21 11.88	-35 02.7	1.990	1.611	-0.74	-1.9	14.6	53.5
Apr. 1	21 03.15	-35 29.4	1.942	1.760	-1.05	-3.6	15.1	64.5
Apr. 11	20 50.77	-36 11.8	1.875	1.907	-1.49	-5.0	15.7	76.4
Apr. 21	20 33.48	-37 07.1	1.800	2.050	-2.05	-6.0	16.1	89.3
May 1	20 10.03	-38 06.8	1.728	2.191	-2.72	-5.7	16.5	103.3
May 11	19 39.65	-38 55.0	1.672	2.329	-3.41	-3.3	16.9	118.5
May 21	19 03.08	-39 08.9	1.647	2.465	-3.90	+1.4	17.2	134.5
May 31	18 23.26	-38 28.8	1.666	2.598	-3.99	+7.3	17.7	150.6
June 10	17 44.70	-36 51.2	1.737	2.729	-3.62	+12.4	18.1	164.4
June 20	17 11.40	-34 33.7	1.862	2.857	-2.95	+14.9	18.6	165.7
June 30	16 45.18	-32 03.0	2.035	2.984	-2.22	+14.9	19.1	154.3
July 10	16 25.99	-29 40.4	2.248	3.108	-1.57	+13.3	19.6	141.4
July 20	16 12.81	-27 37.1	2.493	3.231	-1.04	+11.1	20.1	129.0
July 30	16 04.40	-25 56.2	2.760	3.352	-0.62	+8.9	20.6	117.5
Aug. 9	15 59.73	-24 36.6	3.041	3.471	-0.30	+6.9	21.1	106.7
Aug. 19	15 57.90	-23 35.4	3.330	3.589	-0.05	+5.2	21.5	96.5
Aug. 29	15 58.27	-22 49.1	3.621	3.705	+0.14	+3.9	22.0	86.8
Sept. 8	16 00.34	-22 14.7	3.909	3.820	+0.28	+2.9	.	77.5
Sept. 18	16 03.72	-21 49.5	4.190	3.933	+0.40	+2.1	.	68.4
Sept. 28	16 08.12	-21 31.2	4.459	4.045	+0.49	+1.5	.	59.6
Oct. 8	16 13.30	-21 18.0	4.713	4.156	+0.55	+1.1	.	50.9
Oct. 18	16 19.05	-21 08.2	4.950	4.265	+0.60	+0.8	.	42.3
Oct. 28	16 25.21	-21 00.7	5.165	4.374	+0.63	+0.7	.	33.7
Nov. 7	16 31.64	-20 54.5	5.358	4.481	+0.65	+0.6	.	25.2
Nov. 17	16 38.20	-20 48.6	5.526	4.587	+0.66	+0.6	.	16.7
Nov. 27	16 44.76	-20 42.5	5.667	4.693	+0.65	+0.6	.	8.2
Dec. 7	16 51.21	-20 35.7	5.781	4.797	+0.63	+0.7	.	2.0
Dec. 17	16 57.41	-20 27.6	5.868	4.900	+0.60	+0.9	.	9.6
Dec. 27	17 03.26	-20 17.9	5.926	5.002	+0.56	+1.1	.	18.3
Jan. 6	17 08.62	-20 06.5	5.958	5.104	+0.50	+1.2	.	27.3
Jan. 16	17 13.38	-19 53.2	5.964	5.205	+0.44	+1.4	.	36.3
Jan. 26	17 17.41	-19 37.9	5.947	5.304	+0.36	+1.6	.	45.6
Feb. 5	17 20.58	-19 20.4	5.908	5.403	+0.27	+1.9	.	55.0
Feb. 15	17 22.77	-19 00.9	5.852	5.501	+0.16	+2.1	.	64.6
Feb. 25	17 23.88	-18 39.3	5.783	5.599	+0.05	+2.3	.	74.4
Mar. 7	17 23.78	-18 15.7	5.705	5.696	-0.08	+2.5	.	84.5
Mar. 17	17 22.42	-17 50.0	5.623	5.792	-0.21	+2.7	.	94.8
Mar. 27	17 19.74	-17 22.5	5.544	5.887	-0.34	+2.9	.	105.3

Comet C/2019 L3 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 9.61232 TT
 Peri. = 171.60884
 Node = 290.78902 2000.0
 Incl. = 48.35773
 q = 3.5544520 AU
 e = 1.0017700

$$m1 = -3.8 + 5 \log(\Delta) + 20.0 \log(r) \text{ (vis)}$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	07 12.65	+32 56.3	2.587	3.555	-1.05 -10.9	9.3	168.3
Jan. 11	07 02.31	+31 03.0	2.584	3.554	-1.00 -11.8	9.3	169.1
Jan. 21	06 52.82	+29 02.0	2.615	3.556	-0.87 -12.3	9.3	160.1
Jan. 31	06 44.91	+26 58.3	2.679	3.560	-0.68 -12.3	9.4	149.0
Feb. 10	06 39.09	+24 56.7	2.772	3.566	-0.46 -11.9	9.5	137.9
Feb. 20	06 35.57	+23 01.0	2.889	3.574	-0.22 -11.2	9.6	127.2
Mar. 2	06 34.34	+21 13.2	3.026	3.585	0.00 -10.3	9.7	116.9
Mar. 12	06 35.26	+19 34.1	3.177	3.598	+0.20 -9.5	9.8	107.2
Mar. 22	06 38.09	+18 02.9	3.337	3.614	+0.38 -8.7	10.0	98.0
Apr. 1	06 42.58	+16 38.4	3.503	3.631	+0.53 -8.1	10.1	89.3
Apr. 11	06 48.48	+15 19.0	3.669	3.651	+0.66 -7.7	10.3	81.1
Apr. 21	06 55.55	+14 03.1	3.834	3.672	+0.76 -7.5	10.4	73.3
May 1	07 03.57	+12 49.1	3.993	3.696	+0.85 -7.3	10.6	65.8
May 11	07 12.36	+11 35.8	4.146	3.722	+0.91 -7.4	10.7	58.7
May 21	07 21.75	+10 21.8	4.290	3.750	+0.97 -7.5	10.8	51.8
May 31	07 31.59	+09 06.2	4.423	3.779	+1.00 -7.7	11.0	45.3
June 10	07 41.76	+07 48.2	4.544	3.811	+1.03 -8.0	11.1	39.1
June 20	07 52.15	+06 27.2	4.653	3.844	+1.05 -8.3	11.2	33.3
June 30	08 02.67	+05 02.7	4.747	3.879	+1.06 -8.7	11.4	28.0
July 10	08 13.22	+03 34.3	4.828	3.915	+1.05 -9.1	11.5	23.4
July 20	08 23.72	+02 01.7	4.894	3.954	+1.04 -9.5	11.6	19.9
July 30	08 34.10	+00 24.8	4.945	3.993	+1.03 -9.9	11.7	18.2
Aug. 9	08 44.29	-01 16.6	4.981	4.034	+1.00 -10.4	11.8	18.8
Aug. 19	08 54.21	-03 02.4	5.002	4.077	+0.97 -10.8	11.9	21.5
Aug. 29	09 03.80	-04 52.7	5.008	4.121	+0.94 -11.3	12.0	25.6
Sept. 8	09 12.97	-06 47.3	5.001	4.166	+0.89 -11.7	12.1	30.7
Sept. 18	09 21.64	-08 46.0	4.980	4.212	+0.84 -12.1	12.2	36.3
Sept. 28	09 29.74	-10 48.5	4.946	4.260	+0.77 -12.5	12.3	42.4
Oct. 8	09 37.14	-12 54.5	4.901	4.308	+0.70 -12.8	12.3	48.8
Oct. 18	09 43.76	-15 03.4	4.845	4.358	+0.61 -13.0	12.4	55.4
Oct. 28	09 49.48	-17 14.6	4.782	4.408	+0.52 -13.2	12.5	62.3
Nov. 7	09 54.14	-19 27.0	4.713	4.460	+0.40 -13.3	12.6	69.3
Nov. 17	09 57.64	-21 39.3	4.640	4.512	+0.28 -13.2	12.6	76.5
Nov. 27	09 59.82	-23 50.0	4.565	4.565	+0.14 -12.9	12.7	83.8
Dec. 7	10 00.56	-25 57.0	4.493	4.619	-0.01 -12.4	12.8	91.2
Dec. 17	09 59.76	-27 57.7	4.426	4.674	-0.17 -11.6	12.8	98.5
Dec. 27	09 57.38	-29 49.3	4.368	4.730	-0.32 -10.5	12.9	105.7
Jan. 6	09 53.46	-31 28.6	4.321	4.786	-0.47 -9.1	13.0	112.6
Jan. 16	09 48.15	-32 52.5	4.289	4.843	-0.60 -7.4	13.1	119.0
Jan. 26	09 41.71	-33 58.2	4.274	4.900	-0.69 -5.5	13.2	124.5
Feb. 5	09 34.56	-34 43.9	4.280	4.958	-0.74 -3.4	13.3	128.8
Feb. 15	09 27.18	-35 09.0	4.307	5.016	-0.73 -1.4	13.4	131.5
Feb. 25	09 20.07	-35 14.5	4.355	5.075	-0.68 +0.5	13.5	132.4
Mar. 7	09 13.74	-35 02.8	4.425	5.135	-0.58 +2.0	13.6	131.3
Mar. 17	09 08.55	-34 37.3	4.516	5.194	-0.45 +3.2	13.8	128.5
Mar. 27	09 04.75	-34 02.1	4.627	5.255	-0.30 +3.9	13.9	124.4

Comet 104P/Kowal

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 11.63522 TT
 Peri. = 227.26508 e = 0.6656386
 Node = 207.20777 2000.0 a = 3.2093986 AU
 Incl. = 5.70172 n = 0.17142280
 q = 1.0730990 AU P = 5.75 years

$$m1 = 11.5 + 5 \log(\Delta) + 25.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	00 04.84	-05 09.6	0.681	1.083	+3.76	+14.3	11.5	78.9
Jan. 11	00 44.61	-02 32.1	0.658	1.073	+4.24	+17.4	11.4	78.9
Jan. 21	01 28.97	+00 34.0	0.643	1.081	+4.67	+19.8	11.4	80.3
Jan. 31	02 17.31	+03 58.1	0.639	1.104	+5.01	+20.8	11.6	82.7
Feb. 10	03 08.36	+07 22.9	0.653	1.143	+5.18	+19.6	12.0	85.9
Feb. 20	04 00.10	+10 26.1	0.687	1.195	+5.12	+16.4	12.6	89.1
Mar. 2	04 50.27	+12 50.5	0.745	1.257	+4.86	+11.9	13.3	91.7
Mar. 12	05 37.16	+14 28.6	0.824	1.327	+4.46	+7.3	14.1	93.3
Mar. 22	06 19.78	+15 22.4	0.924	1.402	+4.02	+3.2	15.0	93.7
Apr. 1	06 57.99	+15 39.1	1.042	1.482	+3.59	0.0	15.9	93.1
Apr. 11	07 32.16	+15 26.9	1.176	1.565	+3.21	-2.5	16.7	91.5
Apr. 21	08 02.81	+14 53.1	1.323	1.649	+2.89	-4.3	17.5	89.1
May 1	08 30.51	+14 03.2	1.481	1.734	+2.63	-5.7	18.3	86.2
May 11	08 55.80	+13 01.3	1.648	1.820	+2.41	-6.7	19.1	82.7
May 21	09 19.11	+11 50.5	1.822	1.905	+2.23	-7.5	19.8	78.9
May 31	09 40.78	+10 33.1	2.001	1.990	+2.09	-8.0	20.5	74.7
June 10	10 01.13	+09 10.9	2.183	2.075	+1.97	-8.4	21.1	70.3
June 20	10 20.36	+07 45.1	2.366	2.158	+1.87	-8.7	21.7	65.7
June 30	10 38.67	+06 16.9	2.550	2.240	+1.79	-8.9	.	61.0
July 10	10 56.21	+04 47.1	2.730	2.321	+1.72	-9.0	.	56.0
July 20	11 13.08	+03 16.6	2.907	2.401	+1.66	-9.1	.	51.0
July 30	11 29.40	+01 45.9	3.078	2.479	+1.60	-9.1	.	45.8
Aug. 9	11 45.24	+00 15.6	3.242	2.556	+1.56	-9.0	.	40.4
Aug. 19	12 00.65	-01 13.6	3.397	2.632	+1.52	-8.9	.	34.9
Aug. 29	12 15.70	-02 41.4	3.541	2.706	+1.49	-8.7	.	29.3
Sept. 8	12 30.41	-04 07.3	3.673	2.779	+1.45	-8.5	.	23.6
Sept. 18	12 44.80	-05 30.8	3.792	2.851	+1.42	-8.2	.	17.7
Sept. 28	12 58.89	-06 51.4	3.896	2.921	+1.39	-7.9	.	11.7
Oct. 8	13 12.68	-08 08.8	3.983	2.990	+1.36	-7.5	.	5.5
Oct. 18	13 26.15	-09 22.5	4.054	3.058	+1.33	-7.2	.	0.9
Oct. 28	13 39.28	-10 32.2	4.107	3.124	+1.29	-6.7	.	7.4
Nov. 7	13 52.03	-11 37.4	4.141	3.189	+1.25	-6.3	.	14.1
Nov. 17	14 04.34	-12 37.7	4.156	3.253	+1.20	-5.8	.	21.0
Nov. 27	14 16.15	-13 33.0	4.153	3.315	+1.15	-5.2	.	28.1
Dec. 7	14 27.36	-14 22.7	4.131	3.376	+1.08	-4.7	.	35.4
Dec. 17	14 37.89	-15 06.6	4.091	3.436	+1.01	-4.1	.	42.9
Dec. 27	14 47.60	-15 44.6	4.035	3.495	+0.92	-3.4	.	50.6
Jan. 6	14 56.34	-16 16.2	3.963	3.552	+0.82	-2.8	.	58.7
Jan. 16	15 03.99	-16 41.3	3.878	3.609	+0.70	-2.1	.	67.0
Jan. 26	15 10.36	-16 59.7	3.783	3.664	+0.56	-1.5	.	75.6
Feb. 5	15 15.26	-17 11.1	3.680	3.718	+0.40	-0.8	.	84.6
Feb. 15	15 18.55	-17 15.4	3.573	3.771	+0.23	0.0	.	93.9
Feb. 25	15 20.06	-17 12.2	3.466	3.823	+0.05	+0.7	.	103.7
Mar. 7	15 19.66	-17 01.5	3.365	3.874	-0.15	+1.5	.	113.8
Mar. 17	15 17.35	-16 43.1	3.275	3.924	-0.34	+2.3	.	124.4
Mar. 27	15 13.16	-16 17.2	3.200	3.973	-0.51	+3.0	.	135.4

Comet 152P/Helin-Lawrence

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 13.80519 TT
 Peri. = 163.96979 e = 0.3085852
 Node = 91.85818 2000.0 a = 4.4763836 AU
 Incl. = 9.88049 n = 0.10406702
 q = 3.0950379 AU P = 9.47 years

$$m1 = 2.2 + 5 \log(\Delta) + 25.0 \log(r(t-30))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	17 16.44	-20 36.8	3.997	3.096	+1.66	-3.1	17.5	20.6
Jan. 11	17 33.01	-21 05.0	3.941	3.095	+1.65	-2.4	17.5	26.8
Jan. 21	17 49.36	-21 26.5	3.872	3.095	+1.62	-1.8	17.4	33.1
Jan. 31	18 05.39	-21 41.9	3.792	3.096	+1.58	-1.2	17.4	39.6
Feb. 10	18 20.95	-21 51.8	3.701	3.099	+1.53	-0.7	17.3	46.1
Feb. 20	18 35.92	-21 57.0	3.599	3.102	+1.46	-0.3	17.2	52.7
Mar. 2	18 50.17	-21 58.6	3.490	3.106	+1.38	0.0	17.2	59.5
Mar. 12	19 03.54	-21 57.8	3.372	3.111	+1.28	+0.2	17.1	66.4
Mar. 22	19 15.89	-21 55.9	3.250	3.116	+1.17	+0.2	17.0	73.5
Apr. 1	19 27.07	-21 54.4	3.123	3.123	+1.05	+0.1	17.0	80.8
Apr. 11	19 36.88	-21 55.0	2.994	3.131	+0.90	-0.2	16.9	88.4
Apr. 21	19 45.16	-21 59.2	2.866	3.139	+0.74	-0.7	16.8	96.3
May 1	19 51.72	-22 08.6	2.740	3.149	+0.55	-1.3	16.8	104.6
May 11	19 56.38	-22 24.6	2.621	3.159	+0.36	-2.0	16.7	113.3
May 21	19 58.99	-22 48.1	2.511	3.170	+0.14	-2.8	16.6	122.4
May 31	19 59.44	-23 19.4	2.414	3.182	-0.08	-3.5	16.6	132.0
June 10	19 57.73	-23 57.8	2.333	3.195	-0.28	-4.2	16.5	142.0
June 20	19 54.03	-24 41.6	2.273	3.208	-0.47	-4.6	16.5	152.4
June 30	19 48.65	-25 28.0	2.237	3.223	-0.61	-4.7	16.5	163.0
July 10	19 42.17	-26 13.7	2.227	3.238	-0.68	-4.4	16.5	172.8
July 20	19 35.29	-26 55.3	2.244	3.253	-0.68	-3.8	16.6	172.2
July 30	19 28.77	-27 30.3	2.288	3.270	-0.60	-3.1	16.7	162.3
Aug. 9	19 23.36	-27 57.0	2.358	3.287	-0.46	-2.2	16.8	151.7
Aug. 19	19 19.59	-28 15.4	2.452	3.304	-0.27	-1.4	17.0	141.4
Aug. 29	19 17.82	-28 25.8	2.566	3.323	-0.06	-0.6	17.1	131.5
Sept. 8	19 18.20	-28 29.2	2.697	3.342	+0.16	0.0	17.3	122.0
Sept. 18	19 20.69	-28 26.3	2.841	3.361	+0.36	+0.6	17.4	112.9
Sept. 28	19 25.17	-28 17.8	2.994	3.381	+0.55	+1.1	17.6	104.1
Oct. 8	19 31.45	-28 04.2	3.153	3.402	+0.72	+1.6	17.8	95.8
Oct. 18	19 39.30	-27 45.6	3.315	3.422	+0.86	+2.1	18.0	87.7
Oct. 28	19 48.49	-27 22.2	3.477	3.444	+0.99	+2.6	18.1	79.9
Nov. 7	19 58.81	-26 53.9	3.637	3.466	+1.09	+3.1	18.3	72.3
Nov. 17	20 10.05	-26 20.9	3.792	3.488	+1.17	+3.6	18.5	64.8
Nov. 27	20 22.02	-25 43.2	3.940	3.511	+1.23	+4.0	18.6	57.6
Dec. 7	20 34.55	-25 00.9	4.079	3.534	+1.28	+4.5	18.7	50.4
Dec. 17	20 47.50	-24 14.3	4.207	3.557	+1.31	+4.9	18.9	43.4
Dec. 27	21 00.73	-23 23.8	4.324	3.581	+1.33	+5.3	19.0	36.5
Jan. 6	21 14.13	-22 29.6	4.426	3.605	+1.34	+5.6	19.1	29.7
Jan. 16	21 27.59	-21 32.4	4.515	3.629	+1.35	+5.9	19.3	23.0
Jan. 26	21 41.03	-20 32.7	4.587	3.654	+1.34	+6.1	19.4	16.5
Feb. 5	21 54.37	-19 31.2	4.643	3.679	+1.33	+6.2	19.5	10.6
Feb. 15	22 07.54	-18 28.4	4.683	3.704	+1.31	+6.3	19.5	6.7
Feb. 25	22 20.49	-17 25.3	4.705	3.729	+1.28	+6.3	19.6	8.4
Mar. 7	22 33.14	-16 22.5	4.711	3.754	+1.25	+6.2	19.7	13.7
Mar. 17	22 45.45	-15 20.8	4.699	3.780	+1.21	+6.1	19.8	20.0
Mar. 27	22 57.37	-14 21.0	4.672	3.806	+1.17	+5.8	19.8	26.6

Comet P/2021 R5 (Rankin)

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 12.15409 TT
 Peri. = 167.37250 e = 0.3068350
 Node = 219.95907 2000.0 a = 4.7937198 AU
 Incl. = 7.85473 n = 0.09390638
 q = 3.3228388 AU P = 10.50 years

$$m1 = 5.7 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	00 26.77	+05 08.1	3.210	3.323	+0.78	+2.7	18.7	87.9
Jan. 11	00 35.08	+05 39.6	3.352	3.323	+0.90	+3.6	18.8	79.9
Jan. 21	00 44.51	+06 19.6	3.491	3.323	+1.00	+4.4	18.8	72.1
Jan. 31	00 54.90	+07 06.5	3.625	3.324	+1.09	+5.0	18.9	64.6
Feb. 10	01 06.12	+07 59.0	3.753	3.326	+1.16	+5.5	19.0	57.4
Feb. 20	01 18.04	+08 55.5	3.871	3.329	+1.23	+5.8	19.1	50.4
Mar. 2	01 30.57	+09 54.8	3.980	3.333	+1.28	+6.0	19.2	43.5
Mar. 12	01 43.61	+10 55.8	4.078	3.337	+1.33	+6.1	19.2	36.9
Mar. 22	01 57.08	+11 57.2	4.163	3.342	+1.37	+6.1	19.3	30.4
Apr. 1	02 10.90	+12 58.0	4.236	3.348	+1.40	+6.0	19.3	24.0
Apr. 11	02 25.02	+13 57.2	4.295	3.355	+1.43	+5.8	19.4	17.7
Apr. 21	02 39.37	+14 54.0	4.341	3.362	+1.44	+5.5	19.4	11.5
May 1	02 53.89	+15 47.6	4.372	3.371	+1.46	+5.2	19.5	5.4
May 11	03 08.51	+16 37.4	4.389	3.380	+1.47	+4.7	19.5	1.2
May 21	03 23.18	+17 22.6	4.392	3.390	+1.47	+4.3	19.5	6.9
May 31	03 37.82	+18 02.8	4.381	3.400	+1.46	+3.7	19.5	12.9
June 10	03 52.37	+18 37.6	4.356	3.411	+1.45	+3.2	19.6	19.0
June 20	04 06.73	+19 06.7	4.317	3.423	+1.42	+2.6	19.6	25.1
June 30	04 20.84	+19 29.9	4.264	3.436	+1.39	+2.0	19.6	31.3
July 10	04 34.57	+19 47.0	4.199	3.449	+1.35	+1.4	19.6	37.6
July 20	04 47.84	+19 58.2	4.122	3.463	+1.30	+0.8	19.6	44.0
July 30	05 00.52	+20 03.4	4.033	3.478	+1.23	+0.2	19.6	50.6
Aug. 9	05 12.49	+20 02.9	3.934	3.493	+1.15	-0.3	19.5	57.3
Aug. 19	05 23.60	+19 57.1	3.827	3.508	+1.06	-0.9	19.5	64.3
Aug. 29	05 33.70	+19 46.4	3.711	3.525	+0.95	-1.3	19.5	71.6
Sept. 8	05 42.62	+19 31.4	3.590	3.542	+0.82	-1.7	19.5	79.2
Sept. 18	05 50.19	+19 12.6	3.466	3.559	+0.68	-2.1	19.4	87.1
Sept. 28	05 56.23	+18 50.8	3.340	3.577	+0.51	-2.3	19.4	95.4
Oct. 8	06 00.55	+18 26.7	3.217	3.595	+0.33	-2.5	19.4	104.2
Oct. 18	06 03.01	+18 01.3	3.100	3.614	+0.14	-2.6	19.3	113.5
Oct. 28	06 03.49	+17 35.3	2.993	3.634	-0.06	-2.6	19.3	123.2
Nov. 7	06 01.98	+17 09.7	2.900	3.653	-0.26	-2.5	19.3	133.4
Nov. 17	05 58.60	+16 45.1	2.827	3.673	-0.43	-2.4	19.3	144.1
Nov. 27	05 53.60	+16 22.6	2.776	3.694	-0.57	-2.1	19.3	155.0
Dec. 7	05 47.43	+16 02.9	2.753	3.715	-0.66	-1.8	19.3	165.6
Dec. 17	05 40.69	+15 46.8	2.759	3.736	-0.68	-1.4	19.4	172.4
Dec. 27	05 34.02	+15 35.1	2.795	3.758	-0.64	-0.9	19.4	166.4
Jan. 6	05 28.06	+15 28.1	2.861	3.780	-0.53	-0.4	19.5	156.0
Jan. 16	05 23.36	+15 26.1	2.954	3.802	-0.39	+0.1	19.7	145.1
Jan. 26	05 20.25	+15 29.0	3.071	3.825	-0.21	+0.5	19.8	134.4
Feb. 5	05 18.94	+15 36.1	3.207	3.848	-0.03	+0.9	19.9	124.1
Feb. 15	05 19.47	+15 46.6	3.359	3.871	+0.15	+1.2	20.1	114.3
Feb. 25	05 21.78	+15 59.5	3.522	3.894	+0.32	+1.4	20.2	104.8
Mar. 7	05 25.73	+16 13.8	3.690	3.918	+0.48	+1.5	20.4	95.8
Mar. 17	05 31.15	+16 28.2	3.862	3.942	+0.62	+1.4	20.5	87.2
Mar. 27	05 37.86	+16 42.0	4.033	3.966	+0.74	+1.3	20.7	79.0

Comet 205P/Giacobini

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 13.75139 TT
 Peri. = 154.22233 e = 0.5680817
 Node = 179.60073 2000.0 a = 3.5424438 AU
 Incl. = 15.30635 n = 0.14782559
 q = 1.5300463 AU P = 6.67 years

$$m1 = 10.6 + 5 \log(\Delta) + 20.0 \log(r(t-70))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	20 38.00	-12 41.5	2.322	1.536	+3.18	+5.9	17.3	28.8
Jan. 11	21 09.81	-11 33.6	2.348	1.530	+3.18	+7.8	17.1	26.3
Jan. 21	21 41.44	-10 08.2	2.379	1.532	+3.14	+9.4	16.9	23.9
Jan. 31	22 12.68	-08 28.3	2.415	1.541	+3.10	+10.7	16.7	21.4
Feb. 10	22 43.35	-06 37.2	2.456	1.556	+3.03	+11.6	16.6	18.9
Feb. 20	23 13.34	-04 38.9	2.502	1.579	+2.96	+12.1	16.5	16.4
Mar. 2	23 42.57	-02 36.8	2.551	1.607	+2.88	+12.3	16.4	13.9
Mar. 12	00 11.03	+00 34.5	2.604	1.641	+2.80	+12.1	16.4	11.3
Mar. 22	00 38.70	+01 24.9	2.658	1.680	+2.72	+11.7	16.4	8.8
Apr. 1	01 05.60	+03 18.9	2.713	1.724	+2.65	+11.0	16.5	6.4
Apr. 11	01 31.75	+05 05.2	2.768	1.771	+2.57	+10.1	16.6	4.8
Apr. 21	01 57.14	+06 42.1	2.821	1.822	+2.50	+9.1	16.7	5.0
May 1	02 21.80	+08 08.3	2.871	1.876	+2.43	+8.0	16.9	7.2
May 11	02 45.73	+09 23.0	2.917	1.932	+2.35	+6.8	17.0	10.3
May 21	03 08.89	+10 25.5	2.958	1.990	+2.27	+5.6	17.3	13.8
May 31	03 31.29	+11 15.6	2.993	2.050	+2.20	+4.3	17.5	17.6
June 10	03 52.88	+11 53.2	3.020	2.110	+2.11	+3.1	17.7	21.7
June 20	04 13.60	+12 18.5	3.039	2.172	+2.02	+1.9	18.0	26.1
June 30	04 33.43	+12 32.0	3.048	2.234	+1.93	+0.7	18.2	30.6
July 10	04 52.28	+12 33.9	3.048	2.297	+1.83	-0.4	18.5	35.5
July 20	05 10.09	+12 25.2	3.038	2.360	+1.72	-1.4	18.7	40.5
July 30	05 26.79	+12 06.3	3.018	2.423	+1.60	-2.4	19.0	45.9
Aug. 9	05 42.27	+11 38.2	2.987	2.486	+1.48	-3.3	19.2	51.5
Aug. 19	05 56.43	+11 01.8	2.946	2.549	+1.34	-4.1	19.4	57.5
Aug. 29	06 09.17	+10 17.9	2.895	2.612	+1.19	-4.8	19.6	63.8
Sept. 8	06 20.33	+09 27.8	2.836	2.674	+1.02	-5.3	19.8	70.5
Sept. 18	06 29.77	+08 32.5	2.770	2.736	+0.84	-5.8	20.0	77.6
Sept. 28	06 37.32	+07 33.6	2.698	2.797	+0.64	-6.0	20.2	85.1
Oct. 8	06 42.80	+06 32.5	2.623	2.858	+0.43	-6.1	20.4	93.2
Oct. 18	06 46.04	+05 31.3	2.548	2.918	+0.20	-6.1	20.5	101.7
Oct. 28	06 46.89	+04 32.1	2.477	2.978	-0.05	-5.7	20.7	110.7
Nov. 7	06 45.28	+03 37.8	2.414	3.037	-0.29	-5.1	20.9	120.2
Nov. 17	06 41.28	+02 51.2	2.364	3.095	-0.53	-4.1	21.0	130.1
Nov. 27	06 35.10	+02 15.3	2.333	3.153	-0.72	-2.9	21.2	139.9
Dec. 7	06 27.22	+01 53.1	2.323	3.209	-0.86	-1.4	21.4	149.2
Dec. 17	06 18.30	+01 46.1	2.341	3.266	-0.92	+0.2	21.6	156.2
Dec. 27	06 09.14	+01 54.8	2.387	3.321	-0.90	+1.7	21.8	158.4
Jan. 6	06 00.57	+02 18.2	2.462	3.376	-0.80	+3.0	22.0	154.3
Jan. 16	05 53.27	+02 53.6	2.566	3.430	-0.64	+4.1	.	146.5
Jan. 26	05 47.74	+03 37.9	2.695	3.483	-0.44	+4.8	.	137.3
Feb. 5	05 44.24	+04 27.8	2.845	3.535	-0.24	+5.2	.	127.7
Feb. 15	05 42.81	+05 20.2	3.013	3.587	-0.03	+5.3	.	118.2
Feb. 25	05 43.38	+06 12.7	3.194	3.638	+0.16	+5.2	.	109.0
Mar. 7	05 45.78	+07 03.3	3.383	3.688	+0.33	+4.9	.	100.1
Mar. 17	05 49.79	+07 50.5	3.576	3.737	+0.48	+4.5	.	91.5
Mar. 27	05 55.21	+08 33.4	3.771	3.786	+0.61	+4.0	.	83.3

Comet 422P/Christensen

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 13.70356 TT
 Peri. = 305.14281 e = 0.5086061
 Node = 36.02708 2000.0 a = 6.3188619 AU
 Incl. = 39.55616 n = 0.06205057
 q = 3.1050502 AU P = 15.88 years

$$m1 = 7.5 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	22 51.99	-37 35.9	3.575	3.106	+1.33 +17.6	17.6	54.4
Jan. 11	23 05.40	-34 40.4	3.662	3.105	+1.35 +17.4	17.7	48.9
Jan. 21	23 18.92	-31 47.6	3.745	3.105	+1.36 +17.1	17.7	43.5
Jan. 31	23 32.49	-28 57.9	3.821	3.107	+1.36 +16.8	17.8	38.2
Feb. 10	23 46.06	-26 11.9	3.890	3.111	+1.35 +16.4	17.8	33.1
Feb. 20	23 59.56	-23 30.1	3.950	3.116	+1.35 +15.9	17.9	28.4
Mar. 2	00 12.97	-20 52.7	4.000	3.122	+1.33 +15.5	17.9	24.1
Mar. 12	00 26.24	-18 20.3	4.040	3.130	+1.32 +15.0	18.0	20.7
Mar. 22	00 39.34	-15 53.0	4.069	3.140	+1.30 +14.4	18.0	18.5
Apr. 1	00 52.26	-13 31.2	4.085	3.151	+1.28 +13.9	18.0	18.1
Apr. 11	01 04.94	-11 15.1	4.090	3.164	+1.25 +13.3	18.1	19.6
Apr. 21	01 17.36	-09 04.8	4.081	3.177	+1.23 +12.7	18.1	22.6
May 1	01 29.47	-07 00.4	4.060	3.193	+1.19 +12.1	18.1	26.8
May 11	01 41.23	-05 02.1	4.025	3.209	+1.15 +11.5	18.1	31.6
May 21	01 52.56	-03 09.8	3.978	3.227	+1.11 +10.9	18.1	37.0
May 31	02 03.43	-01 23.5	3.918	3.247	+1.06 +10.3	18.1	42.7
June 10	02 13.72	+00 16.9	3.846	3.267	+0.99 +9.7	18.1	48.7
June 20	02 23.34	+01 51.6	3.763	3.289	+0.92 +9.2	18.1	55.1
June 30	02 32.18	+03 20.8	3.670	3.312	+0.84 +8.6	18.1	61.7
July 10	02 40.10	+04 44.8	3.568	3.336	+0.74 +8.1	18.1	68.7
July 20	02 46.94	+06 03.9	3.459	3.361	+0.62 +7.7	18.1	76.0
July 30	02 52.53	+07 18.7	3.344	3.387	+0.48 +7.2	18.1	83.7
Aug. 9	02 56.65	+08 29.3	3.227	3.414	+0.32 +6.9	18.0	91.9
Aug. 19	02 59.10	+09 36.5	3.111	3.442	+0.15 +6.5	18.0	100.5
Aug. 29	02 59.69	+10 40.4	2.999	3.471	-0.05 +6.2	18.0	109.6
Sept. 8	02 58.24	+11 41.3	2.895	3.501	-0.26 +5.9	18.0	119.4
Sept. 18	02 54.68	+12 39.2	2.804	3.531	-0.47 +5.6	18.0	129.7
Sept. 28	02 49.02	+13 33.6	2.731	3.563	-0.67 +5.2	18.0	140.6
Oct. 8	02 41.50	+14 24.3	2.682	3.595	-0.84 +4.8	18.0	151.9
Oct. 18	02 32.55	+15 10.5	2.661	3.628	-0.95 +4.4	18.0	163.7
Oct. 28	02 22.80	+15 52.1	2.670	3.661	-0.99 +3.9	18.1	175.3
Nov. 7	02 13.02	+16 29.4	2.711	3.695	-0.95 +3.5	18.2	171.8
Nov. 17	02 03.95	+17 03.5	2.785	3.730	-0.84 +3.3	18.3	160.0
Nov. 27	01 56.21	+17 36.0	2.889	3.765	-0.68 +3.2	18.4	148.4
Dec. 7	01 50.25	+18 08.7	3.019	3.801	-0.49 +3.4	18.6	137.1
Dec. 17	01 46.30	+18 43.3	3.171	3.837	-0.28 +3.6	18.8	126.3
Dec. 27	01 44.38	+19 21.1	3.340	3.874	-0.08 +4.0	18.9	116.0
Jan. 6	01 44.44	+20 03.0	3.521	3.911	+0.11 +4.4	19.1	106.2
Jan. 16	01 46.29	+20 49.1	3.709	3.948	+0.28 +4.9	19.3	96.8
Jan. 26	01 49.75	+21 39.6	3.900	3.986	+0.43 +5.3	19.5	87.8
Feb. 5	01 54.62	+22 34.2	4.091	4.024	+0.56 +5.7	19.6	79.2
Feb. 15	02 00.70	+23 32.4	4.277	4.062	+0.67 +6.0	19.8	70.9
Feb. 25	02 07.83	+24 33.8	4.455	4.101	+0.76 +6.3	19.9	62.9
Mar. 7	02 15.85	+25 37.7	4.624	4.140	+0.84 +6.5	20.1	55.3
Mar. 17	02 24.61	+26 43.6	4.781	4.179	+0.91 +6.7	20.2	47.9
Mar. 27	02 34.00	+27 51.1	4.924	4.218	+0.97 +6.8	20.3	40.7

Comet C/2021 Q3 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 26.06870 TT
 Peri. = 114.08733 e = 0.9307541
 Node = 307.90619 2000.0 a = 75.1633700 AU
 Incl. = 77.77465 n = 0.00151250
 q = 5.2047552 AU P = 651.64 years

$$m1 = 7.9 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	17 13.65	+79 58.6	4.886	5.208	+2.23	+9.0	18.5	103.8
Jan. 11	17 38.00	+81 35.2	4.874	5.206	+2.75	+10.4	18.5	104.4
Jan. 21	18 09.58	+83 23.4	4.874	5.205	+3.82	+11.3	18.5	104.3
Jan. 31	18 57.87	+85 18.4	4.888	5.205	+6.60	+11.5	18.5	103.4
Feb. 10	20 36.35	+87 06.2	4.915	5.206	+15.89	+8.9	18.5	101.7
Feb. 20	00 22.90	+87 47.6	4.957	5.208	+25.39	-3.6	18.5	99.3
Mar. 2	03 24.47	+86 24.7	5.012	5.211	+10.47	-12.0	18.6	96.1
Mar. 12	04 39.33	+84 14.6	5.079	5.215	+5.05	-13.8	18.6	92.3
Mar. 22	05 20.40	+81 53.7	5.158	5.220	+3.27	-14.3	18.6	88.1
Apr. 1	05 49.22	+79 30.6	5.245	5.226	+2.51	-14.3	18.7	83.4
Apr. 11	06 12.38	+77 08.7	5.339	5.233	+2.12	-14.0	18.7	78.5
Apr. 21	06 32.40	+74 49.9	5.438	5.241	+1.88	-13.7	18.8	73.5
May 1	06 50.42	+72 35.2	5.538	5.250	+1.72	-13.2	18.8	68.3
May 11	07 07.08	+70 25.5	5.637	5.260	+1.60	-12.7	18.9	63.2
May 21	07 22.67	+68 21.1	5.733	5.271	+1.51	-12.1	18.9	58.2
May 31	07 37.40	+66 22.3	5.824	5.283	+1.43	-11.6	19.0	53.5
June 10	07 51.39	+64 29.3	5.906	5.296	+1.36	-11.0	19.0	49.0
June 20	08 04.70	+62 42.3	5.979	5.310	+1.30	-10.4	19.0	45.1
June 30	08 17.39	+61 01.3	6.040	5.325	+1.24	-9.8	19.1	41.8
July 10	08 29.47	+59 26.5	6.087	5.341	+1.17	-9.1	19.1	39.4
July 20	08 40.94	+57 57.9	6.120	5.357	+1.11	-8.5	19.1	38.1
July 30	08 51.80	+56 35.8	6.137	5.375	+1.05	-7.8	19.1	38.1
Aug. 9	09 02.03	+55 20.4	6.138	5.393	+0.99	-7.2	19.2	39.4
Aug. 19	09 11.57	+54 12.0	6.122	5.413	+0.92	-6.5	19.2	42.0
Aug. 29	09 20.40	+53 10.8	6.089	5.433	+0.84	-5.7	19.2	45.8
Sept. 8	09 28.44	+52 17.3	6.040	5.454	+0.76	-4.9	19.2	50.5
Sept. 18	09 35.61	+51 31.8	5.974	5.476	+0.67	-4.1	19.2	56.0
Sept. 28	09 41.81	+50 54.6	5.895	5.498	+0.56	-3.2	19.2	62.1
Oct. 8	09 46.91	+50 26.2	5.802	5.522	+0.44	-2.4	19.1	68.9
Oct. 18	09 50.76	+50 06.6	5.699	5.546	+0.31	-1.5	19.1	76.2
Oct. 28	09 53.20	+49 55.7	5.589	5.571	+0.16	-0.6	19.1	83.9
Nov. 7	09 54.04	+49 53.1	5.475	5.597	-0.01	+0.2	19.1	91.9
Nov. 17	09 53.09	+49 57.9	5.361	5.624	-0.20	+0.8	19.0	100.4
Nov. 27	09 50.18	+50 08.3	5.252	5.651	-0.41	+1.3	19.0	109.0
Dec. 7	09 45.16	+50 22.1	5.152	5.679	-0.62	+1.4	19.0	117.8
Dec. 17	09 38.01	+50 35.8	5.067	5.708	-0.83	+1.2	19.0	126.5
Dec. 27	09 28.83	+50 45.7	5.002	5.737	-1.02	+0.6	19.0	134.7
Jan. 6	09 17.92	+50 47.6	4.962	5.767	-1.17	-0.4	19.0	141.8
Jan. 16	09 05.82	+50 37.7	4.950	5.798	-1.25	-1.8	19.0	146.8
Jan. 26	08 53.19	+50 13.3	4.968	5.830	-1.26	-3.3	19.0	148.4
Feb. 5	08 40.83	+49 33.6	5.018	5.862	-1.19	-4.8	19.1	146.0
Feb. 15	08 29.43	+48 39.3	5.099	5.894	-1.06	-6.1	19.1	140.4
Feb. 25	08 19.54	+47 32.8	5.209	5.928	-0.89	-7.2	19.2	132.9
Mar. 7	08 11.53	+46 17.0	5.345	5.961	-0.69	-8.0	19.3	124.4
Mar. 17	08 05.51	+44 55.3	5.502	5.996	-0.49	-8.4	19.4	115.4
Mar. 27	08 01.45	+43 30.5	5.675	6.031	-0.30	-8.5	19.5	106.3

Comet C/2021 U5 (Catalina)

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 26.62818 TT
 Peri. = 321.47897
 Node = 182.75195 2000.0
 Incl. = 39.05118
 q = 2.3630693 AU
 e = 0.9889678

$$m1 = 11.7 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	10 11.85	-28 23.0	1.881	2.380	+0.62	-1.9	16.8	108.3
Jan. 11	10 17.09	-28 27.2	1.776	2.369	+0.41	+1.6	16.7	115.3
Jan. 21	10 20.21	-27 53.3	1.681	2.364	+0.20	+5.7	16.6	122.8
Jan. 31	10 21.35	-26 34.7	1.598	2.364	+0.02	+10.6	16.5	130.9
Feb. 10	10 20.89	-24 26.0	1.531	2.368	-0.11	+15.7	16.4	139.3
Feb. 20	10 19.50	-21 27.2	1.485	2.379	-0.16	+20.4	16.3	147.4
Mar. 2	10 17.95	-17 45.0	1.465	2.394	-0.13	+24.1	16.3	153.6
Mar. 12	10 17.07	-13 33.3	1.474	2.414	-0.02	+26.1	16.4	155.6
Mar. 22	10 17.55	-09 11.8	1.513	2.439	+0.14	+25.9	16.5	152.1
Apr. 1	10 19.77	-05 00.0	1.583	2.468	+0.33	+24.0	16.6	145.0
Apr. 11	10 23.91	-01 13.3	1.680	2.502	+0.52	+20.9	16.8	136.4
Apr. 21	10 29.92	+01 59.3	1.800	2.541	+0.70	+17.2	17.0	127.5
May 1	10 37.60	+04 35.1	1.941	2.583	+0.85	+13.6	17.3	118.9
May 11	10 46.72	+06 35.1	2.097	2.628	+0.98	+10.2	17.5	110.6
May 21	10 57.01	+08 02.8	2.265	2.677	+1.08	+7.2	17.8	102.8
May 31	11 08.23	+09 02.7	2.442	2.729	+1.17	+4.6	18.0	95.3
June 10	11 20.18	+09 39.1	2.624	2.784	+1.23	+2.5	18.2	88.2
June 20	11 32.67	+09 56.3	2.809	2.842	+1.27	+0.8	18.5	81.5
June 30	11 45.55	+09 57.8	2.995	2.902	+1.31	-0.6	18.7	74.9
July 10	11 58.73	+09 46.8	3.180	2.964	+1.33	-1.7	18.9	68.6
July 20	12 12.11	+09 26.2	3.361	3.028	+1.35	-2.5	19.1	62.5
July 30	12 25.63	+08 58.3	3.538	3.094	+1.36	-3.1	19.3	56.4
Aug. 9	12 39.23	+08 25.2	3.708	3.162	+1.36	-3.5	19.5	50.5
Aug. 19	12 52.86	+07 48.8	3.870	3.231	+1.36	-3.8	19.7	44.7
Aug. 29	13 06.51	+07 10.5	4.023	3.301	+1.36	-3.9	19.9	39.1
Sept. 8	13 20.13	+06 31.8	4.165	3.373	+1.36	-3.8	20.1	33.6
Sept. 18	13 33.68	+05 54.2	4.296	3.445	+1.35	-3.7	20.2	28.4
Sept. 28	13 47.16	+05 18.6	4.413	3.519	+1.34	-3.4	20.4	23.7
Oct. 8	14 00.51	+04 46.3	4.517	3.593	+1.33	-3.0	20.5	19.8
Oct. 18	14 13.70	+04 18.3	4.606	3.668	+1.31	-2.5	20.7	17.5
Oct. 28	14 26.69	+03 55.4	4.679	3.743	+1.29	-2.0	20.8	17.5
Nov. 7	14 39.42	+03 38.6	4.737	3.819	+1.26	-1.3	20.9	19.8
Nov. 17	14 51.83	+03 28.7	4.778	3.896	+1.22	-0.6	21.0	24.0
Nov. 27	15 03.87	+03 26.4	4.804	3.973	+1.18	+0.2	21.1	29.3
Dec. 7	15 15.43	+03 32.4	4.814	4.050	+1.13	+1.1	21.2	35.3
Dec. 17	15 26.44	+03 47.1	4.809	4.128	+1.07	+2.0	21.3	41.8
Dec. 27	15 36.80	+04 11.0	4.790	4.205	+1.00	+2.9	21.3	48.6
Jan. 6	15 46.39	+04 44.5	4.759	4.283	+0.91	+3.9	21.4	55.8
Jan. 16	15 55.12	+05 27.4	4.717	4.362	+0.82	+4.8	21.5	63.1
Jan. 26	16 02.87	+06 19.8	4.667	4.440	+0.71	+5.7	21.5	70.7
Feb. 5	16 09.50	+07 21.1	4.611	4.518	+0.60	+6.6	21.6	78.5
Feb. 15	16 14.91	+08 30.7	4.553	4.597	+0.47	+7.4	21.6	86.4
Feb. 25	16 18.99	+09 47.2	4.495	4.675	+0.33	+8.0	21.7	94.3
Mar. 7	16 21.66	+11 09.0	4.441	4.754	+0.19	+8.4	21.7	102.4
Mar. 17	16 22.88	+12 33.9	4.396	4.832	+0.04	+8.6	21.8	110.3
Mar. 27	16 22.62	+13 59.3	4.362	4.910	-0.10	+8.4	21.8	118.0

Comet 382P/Larson

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 30.89521 TT
 Peri. = 168.91044 e = 0.3075057
 Node = 173.71731 2000.0 a = 6.3736008 AU
 Incl. = 8.43957 n = 0.06125292
 q = 4.4136822 AU P = 16.09 years

$$m1 = 5.4 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° ' "			m	' "		°
Jan. 1	22 03.50	-09 53.9	4.995	4.416	+0.93	+3.8	18.6	49.2
Jan. 11	22 13.00	-09 13.4	5.103	4.415	+0.97	+4.3	18.6	41.5
Jan. 21	22 22.92	-08 28.3	5.197	4.414	+1.01	+4.7	18.7	33.8
Jan. 31	22 33.15	-07 39.4	5.275	4.414	+1.04	+5.1	18.7	26.3
Feb. 10	22 43.60	-06 47.3	5.336	4.414	+1.05	+5.4	18.7	18.9
Feb. 20	22 54.18	-05 52.7	5.379	4.415	+1.06	+5.6	18.7	11.6
Mar. 2	23 04.83	-04 56.2	5.403	4.416	+1.07	+5.7	18.7	4.4
Mar. 12	23 15.47	-03 58.6	5.409	4.417	+1.06	+5.8	18.7	3.0
Mar. 22	23 26.02	-03 00.6	5.397	4.420	+1.05	+5.8	18.7	10.0
Apr. 1	23 36.44	-02 02.9	5.367	4.422	+1.03	+5.7	18.7	17.2
Apr. 11	23 46.66	-01 06.1	5.319	4.425	+1.01	+5.6	18.7	24.3
Apr. 21	23 56.60	+00 11.0	5.255	4.429	+0.98	+5.4	18.7	31.4
May 1	00 06.21	+00 41.8	5.175	4.433	+0.94	+5.1	18.7	38.6
May 11	00 15.40	+01 31.4	5.081	4.437	+0.89	+4.8	18.6	45.9
May 21	00 24.11	+02 17.2	4.973	4.442	+0.84	+4.3	18.6	53.2
May 31	00 32.24	+02 58.6	4.855	4.447	+0.78	+3.9	18.6	60.7
June 10	00 39.70	+03 34.7	4.727	4.453	+0.71	+3.3	18.5	68.3
June 20	00 46.39	+04 04.9	4.592	4.459	+0.62	+2.7	18.4	76.1
June 30	00 52.19	+04 28.4	4.453	4.466	+0.53	+2.0	18.4	84.2
July 10	00 57.00	+04 44.6	4.312	4.473	+0.42	+1.2	18.3	92.5
July 20	01 00.70	+04 52.8	4.172	4.480	+0.31	+0.4	18.3	101.1
July 30	01 03.19	+04 52.6	4.037	4.488	+0.18	-0.5	18.2	110.1
Aug. 9	01 04.39	+04 43.7	3.911	4.496	+0.05	-1.4	18.2	119.4
Aug. 19	01 04.28	+04 26.0	3.797	4.505	-0.08	-2.2	18.1	129.2
Aug. 29	01 02.88	+04 00.0	3.701	4.514	-0.21	-3.0	18.1	139.3
Sept. 8	01 00.30	+03 26.9	3.625	4.524	-0.32	-3.6	18.0	149.7
Sept. 18	00 56.75	+02 48.3	3.575	4.534	-0.40	-4.1	18.0	160.4
Sept. 28	00 52.52	+02 06.5	3.551	4.544	-0.45	-4.3	18.0	171.0
Oct. 8	00 47.98	+01 24.3	3.558	4.555	-0.45	-4.1	18.0	175.6
Oct. 18	00 43.54	+00 44.8	3.594	4.566	-0.42	-3.7	18.1	165.6
Oct. 28	00 39.59	+00 10.4	3.660	4.578	-0.35	-3.1	18.1	154.7
Nov. 7	00 36.47	+00 16.5	3.752	4.589	-0.26	-2.2	18.2	143.8
Nov. 17	00 34.43	+00 34.5	3.867	4.602	-0.14	-1.3	18.3	133.3
Nov. 27	00 33.63	+00 43.0	4.002	4.614	-0.01	-0.3	18.4	123.0
Dec. 7	00 34.13	+00 41.7	4.153	4.627	+0.12	+0.6	18.5	113.0
Dec. 17	00 35.94	+00 31.3	4.314	4.640	+0.25	+1.5	18.6	103.3
Dec. 27	00 38.98	+00 12.4	4.481	4.654	+0.37	+2.3	18.7	94.0
Jan. 6	00 43.17	+00 14.0	4.650	4.668	+0.48	+3.0	18.8	85.0
Jan. 16	00 48.38	+00 46.9	4.818	4.682	+0.57	+3.6	18.9	76.2
Jan. 26	00 54.50	+01 25.1	4.981	4.697	+0.66	+4.1	19.0	67.7
Feb. 5	01 01.42	+02 07.6	5.135	4.712	+0.73	+4.4	19.1	59.5
Feb. 15	01 09.00	+02 53.4	5.279	4.727	+0.79	+4.7	19.1	51.4
Feb. 25	01 17.15	+03 41.6	5.410	4.742	+0.84	+4.9	19.2	43.6
Mar. 7	01 25.77	+04 31.2	5.526	4.758	+0.88	+5.0	19.3	35.9
Mar. 17	01 34.76	+05 21.5	5.626	4.774	+0.92	+5.0	19.3	28.4
Mar. 27	01 44.04	+06 11.6	5.708	4.790	+0.94	+5.0	19.4	21.0

Comet C/2022 A1 (Sarneczky)

Epoch = 2022 June 30.0 TT
 T = 2022 Jan. 31.09189 TT
 Peri. = 201.15043
 Node = 285.52173 2000.0
 Incl. = 116.54808
 q = 1.2531853 AU
 e = 1.0020341

$$m1 = 18.0 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	09 26.93	+38 25.5	0.414	1.335	-18.36	-34.6	17.3	142.2
Jan. 11	05 50.33	+17 53.9	0.327	1.291	-18.35	193.5	16.7	156.6
Jan. 21	03 50.15	-05 42.1	0.514	1.263	-6.37	-78.6	17.6	110.9
Jan. 31	03 07.33	-14 23.3	0.791	1.253	-2.52	-30.5	18.5	89.0
Feb. 10	02 49.36	-18 06.6	1.076	1.262	-1.14	-15.2	19.2	75.3
Feb. 20	02 41.20	-20 08.2	1.346	1.290	-0.50	-9.3	19.8	65.0
Mar. 2	02 37.89	-21 27.9	1.592	1.334	-0.15	-6.7	20.3	56.6
Mar. 12	02 37.41	-22 29.7	1.810	1.393	+0.07	-5.7	20.7	49.8
Mar. 22	02 38.77	-23 25.8	1.997	1.464	+0.21	-5.6	21.2	44.5
Apr. 1	02 41.42	-24 23.1	2.150	1.545	+0.32	-6.0	21.6	41.1
Apr. 11	02 45.00	-25 27.1	2.272	1.634	+0.40	-7.0	21.9	39.8
Apr. 21	02 49.23	-26 42.3	2.361	1.728	+0.45	-8.3	.	40.7
May 1	02 53.88	-28 12.5	2.422	1.827	+0.48	-10.0	.	43.5
May 11	02 58.74	-30 01.9	2.456	1.930	+0.49	-12.1	.	47.9
May 21	03 03.58	-32 14.0	2.468	2.035	+0.47	-14.6	.	53.5
May 31	03 08.14	-34 52.9	2.461	2.141	+0.43	-17.5	.	60.0
June 10	03 12.09	-38 02.2	2.440	2.249	+0.35	-20.7	.	67.1
June 20	03 15.00	-41 44.5	2.412	2.357	+0.21	-24.1	.	74.7
June 30	03 16.27	-46 01.2	2.384	2.466	0.00	-27.5	.	82.5
July 10	03 14.94	-50 50.5	2.362	2.575	-0.33	-30.5	.	90.2
July 20	03 09.50	-56 06.2	2.355	2.684	-0.85	-32.6	.	97.5
July 30	02 57.43	-61 36.0	2.370	2.792	-1.72	-33.0	.	103.8
Aug. 9	02 34.34	-66 58.5	2.413	2.900	-3.16	-30.7	.	108.6
Aug. 19	01 53.29	-71 40.6	2.487	3.008	-5.41	-24.3	.	111.4
Aug. 29	00 47.36	-74 54.8	2.595	3.115	-7.91	-12.5	.	111.8
Sept. 8	23 23.90	-75 53.1	2.735	3.221	-8.27	+2.2	.	110.0
Sept. 18	22 10.29	-74 37.9	2.903	3.327	-6.00	+12.8	.	106.2
Sept. 28	21 21.89	-72 04.5	3.095	3.432	-3.55	+17.5	.	101.1
Oct. 8	20 54.39	-69 03.7	3.306	3.537	-1.91	+18.4	.	95.0
Oct. 18	20 40.12	-66 02.2	3.530	3.640	-0.92	+17.7	.	88.4
Oct. 28	20 33.88	-63 11.2	3.761	3.743	-0.31	+16.3	.	81.4
Nov. 7	20 32.65	-60 34.6	3.995	3.846	+0.07	+14.8	.	74.2
Nov. 17	20 34.61	-58 13.2	4.226	3.948	+0.33	+13.3	.	67.1
Nov. 27	20 38.70	-56 06.3	4.450	4.049	+0.50	+11.9	.	60.1
Dec. 7	20 44.20	-54 12.8	4.663	4.149	+0.61	+10.7	.	53.2
Dec. 17	20 50.63	-52 31.5	4.862	4.248	+0.68	+9.5	.	46.8
Dec. 27	20 57.65	-51 01.5	5.043	4.347	+0.72	+8.4	.	40.9
Jan. 6	21 05.00	-49 41.9	5.205	4.446	+0.75	+7.4	.	35.8
Jan. 16	21 12.49	-48 32.1	5.346	4.543	+0.75	+6.5	.	32.1
Jan. 26	21 19.95	-47 31.7	5.464	4.640	+0.74	+5.5	.	30.3
Feb. 5	21 27.24	-46 40.5	5.558	4.737	+0.71	+4.6	.	30.7
Feb. 15	21 34.23	-45 58.5	5.628	4.833	+0.68	+3.7	.	33.2
Feb. 25	21 40.79	-45 25.7	5.675	4.928	+0.63	+2.8	.	37.6
Mar. 7	21 46.80	-45 02.4	5.699	5.022	+0.57	+1.8	.	43.2
Mar. 17	21 52.13	-44 48.7	5.702	5.116	+0.49	+0.8	.	49.8
Mar. 27	21 56.67	-44 45.0	5.686	5.210	+0.40	-0.2	.	57.0

Comet 19P/Borrelly

Epoch = 2022 June 30.0 TT
 T = 2022 Feb. 1.82997 TT
 Peri. = 351.92063 e = 0.6376898
 Node = 74.24480 2000.0 a = 3.6054395 AU
 Incl. = 29.30415 n = 0.14396826
 q = 1.3062875 AU P = 6.85 years

$$m_1 = 6.5 + 5 \log(\Delta) + 20.0 \log(r(t-60))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	00 17.92	-18 12.1	1.185	1.361	+1.96	+42.4	11.4	77.1
Jan. 11	00 38.25	-11 01.6	1.201	1.332	+2.12	+43.7	11.1	74.4
Jan. 21	01 00.06	-03 43.3	1.226	1.314	+2.26	+43.8	10.8	72.0
Jan. 31	01 23.37	+03 31.7	1.261	1.306	+2.42	+42.9	10.5	69.9
Feb. 10	01 48.31	+10 32.3	1.307	1.310	+2.59	+40.8	10.3	68.0
Feb. 20	02 15.05	+17 07.7	1.364	1.324	+2.78	+37.8	10.1	66.3
Mar. 2	02 43.81	+23 09.0	1.431	1.349	+3.00	+34.0	10.0	64.7
Mar. 12	03 14.79	+28 29.2	1.508	1.383	+3.22	+29.5	9.9	63.3
Mar. 22	03 48.01	+33 02.5	1.594	1.426	+3.44	+24.6	9.9	61.8
Apr. 1	04 23.37	+36 45.4	1.687	1.476	+3.64	+19.4	10.0	60.4
Apr. 11	05 00.49	+39 35.9	1.788	1.532	+3.79	+14.1	10.1	58.8
Apr. 21	05 38.71	+41 33.8	1.895	1.593	+3.85	+9.0	10.3	57.2
May 1	06 17.18	+42 41.4	2.008	1.658	+3.83	+4.1	10.6	55.4
May 11	06 55.01	+43 03.1	2.125	1.726	+3.71	-0.1	11.0	53.5
May 21	07 31.39	+42 44.8	2.246	1.797	+3.53	-3.8	11.3	51.3
May 31	08 05.78	+41 53.3	2.370	1.869	+3.32	-6.7	11.8	49.0
June 10	08 37.90	+40 35.9	2.496	1.943	+3.08	-8.9	12.2	46.5
June 20	09 07.67	+38 58.9	2.623	2.017	+2.85	-10.5	12.6	43.9
June 30	09 35.20	+37 08.2	2.750	2.092	+2.64	-11.6	13.1	41.0
July 10	10 00.70	+35 08.3	2.875	2.167	+2.44	-12.3	13.5	38.1
July 20	10 24.35	+33 03.2	2.997	2.242	+2.27	-12.7	14.0	35.0
July 30	10 46.43	+30 55.9	3.115	2.317	+2.13	-12.8	14.4	32.0
Aug. 9	11 07.12	+28 48.8	3.227	2.391	+2.00	-12.6	14.8	28.9
Aug. 19	11 26.62	+26 43.8	3.333	2.464	+1.89	-12.3	15.2	26.1
Aug. 29	11 45.08	+24 42.5	3.430	2.538	+1.80	-11.9	15.6	23.7
Sept. 8	12 02.65	+22 46.0	3.518	2.610	+1.71	-11.3	15.9	21.9
Sept. 18	12 19.40	+20 55.5	3.595	2.681	+1.64	-10.7	16.3	21.1
Sept. 28	12 35.44	+19 11.7	3.660	2.752	+1.57	-10.0	16.6	21.5
Oct. 8	12 50.80	+17 35.6	3.712	2.822	+1.50	-9.2	16.9	23.3
Oct. 18	13 05.52	+16 07.8	3.751	2.891	+1.44	-8.3	17.2	26.2
Oct. 28	13 19.60	+14 49.1	3.775	2.959	+1.37	-7.4	17.5	30.2
Nov. 7	13 33.03	+13 40.1	3.785	3.026	+1.31	-6.3	17.7	35.0
Nov. 17	13 45.77	+12 41.3	3.779	3.092	+1.23	-5.3	18.0	40.3
Nov. 27	13 57.77	+11 53.4	3.759	3.157	+1.16	-4.2	18.2	46.2
Dec. 7	14 08.94	+11 16.9	3.725	3.222	+1.07	-3.0	18.4	52.5
Dec. 17	14 19.18	+10 52.3	3.678	3.285	+0.97	-1.8	18.5	59.2
Dec. 27	14 28.37	+10 39.9	3.619	3.347	+0.85	-0.6	18.7	66.3
Jan. 6	14 36.35	+10 40.0	3.550	3.408	+0.73	+0.7	18.9	73.8
Jan. 16	14 42.97	+10 52.4	3.474	3.469	+0.58	+1.9	19.0	81.6
Jan. 26	14 48.05	+11 17.0	3.393	3.528	+0.42	+3.1	19.1	89.7
Feb. 5	14 51.41	+11 52.7	3.311	3.587	+0.23	+4.1	19.3	98.2
Feb. 15	14 52.88	+12 38.2	3.232	3.644	+0.04	+5.0	19.4	106.9
Feb. 25	14 52.36	+13 31.2	3.161	3.701	-0.17	+5.6	19.5	115.8
Mar. 7	14 49.77	+14 28.3	3.102	3.757	-0.37	+5.8	19.6	124.8
Mar. 17	14 45.21	+15 25.6	3.059	3.812	-0.56	+5.6	19.7	133.4
Mar. 27	14 38.87	+16 18.4	3.037	3.866	-0.72	+4.8	19.9	141.2

Comet C/2021 D2 (ZTF)

Epoch = 2022 June 30.0 TT
 T = 2022 Feb. 3.98408 TT
 Peri. = 125.02945
 Node = 305.68014 2000.0
 Incl. = 83.82846
 q = 2.9462836 AU
 e = 1.0016093

$$m1 = 7.4 + 5 \log(\Delta) + 15.0 \log(r(t+220))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	16 30.67	+70 27.1	2.690	2.966	+0.84	+19.9	17.7	96.4
Jan. 11	16 38.58	+74 04.4	2.625	2.956	+0.70	+23.9	17.7	99.8
Jan. 21	16 44.13	+78 20.4	2.575	2.950	+0.28	+27.6	17.8	102.6
Jan. 31	16 41.03	+83 09.6	2.544	2.947	-1.66	+30.4	17.8	104.3
Feb. 10	15 05.78	+88 12.7	2.537	2.947	-52.15	+24.6	17.9	104.7
Feb. 20	06 35.76	+85 45.1	2.558	2.951	-5.42	-33.0	18.0	103.6
Mar. 2	06 15.23	+80 09.5	2.606	2.958	-0.12	-33.7	18.2	100.9
Mar. 12	06 18.41	+74 36.0	2.682	2.968	+0.67	-32.7	18.3	96.8
Mar. 22	06 26.36	+69 16.1	2.783	2.982	+0.91	-31.0	18.5	91.6
Apr. 1	06 36.01	+64 15.8	2.905	2.999	+1.02	-28.8	18.7	85.6
Apr. 11	06 46.44	+59 38.1	3.043	3.019	+1.07	-26.5	18.9	79.2
Apr. 21	06 57.21	+55 23.7	3.192	3.043	+1.09	-24.2	19.1	72.4
May 1	07 08.10	+51 31.4	3.348	3.069	+1.09	-22.1	19.3	65.4
May 11	07 19.00	+47 59.4	3.505	3.098	+1.09	-20.2	19.5	58.4
May 21	07 29.81	+44 45.1	3.660	3.130	+1.07	-18.5	19.7	51.4
May 31	07 40.46	+41 46.1	3.809	3.165	+1.06	-17.1	19.9	44.4
June 10	07 50.91	+39 00.1	3.949	3.202	+1.03	-16.0	20.1	37.4
June 20	08 01.10	+36 25.0	4.076	3.242	+1.00	-15.0	20.3	30.5
June 30	08 11.00	+33 59.0	4.189	3.284	+0.97	-14.2	20.4	23.7
July 10	08 20.55	+31 40.5	4.286	3.328	+0.93	-13.5	20.6	17.2
July 20	08 29.72	+29 28.1	4.364	3.374	+0.89	-12.9	20.7	11.6
July 30	08 38.46	+27 20.8	4.422	3.422	+0.85	-12.5	20.8	8.7
Aug. 9	08 46.70	+25 17.7	4.461	3.472	+0.79	-12.1	20.9	11.3
Aug. 19	08 54.39	+23 17.9	4.479	3.524	+0.74	-11.8	21.0	17.1
Aug. 29	09 01.46	+21 20.8	4.476	3.577	+0.67	-11.6	21.1	24.1
Sept. 8	09 07.82	+19 26.0	4.453	3.632	+0.59	-11.4	21.2	31.5
Sept. 18	09 13.37	+17 32.9	4.410	3.688	+0.51	-11.2	21.3	39.3
Sept. 28	09 17.99	+15 41.4	4.350	3.746	+0.41	-11.1	21.3	47.5
Oct. 8	09 21.56	+13 51.1	4.273	3.805	+0.29	-11.0	21.4	56.0
Oct. 18	09 23.92	+12 02.0	4.183	3.864	+0.16	-10.8	21.4	64.8
Oct. 28	09 24.92	+10 14.1	4.082	3.925	+0.02	-10.7	21.5	73.9
Nov. 7	09 24.37	+08 27.7	3.976	3.987	-0.15	-10.5	21.5	83.5
Nov. 17	09 22.14	+06 43.1	3.868	4.050	-0.32	-10.3	21.5	93.5
Nov. 27	09 18.07	+05 01.2	3.764	4.114	-0.51	-10.0	21.5	103.8
Dec. 7	09 12.10	+03 23.3	3.672	4.178	-0.70	-9.5	21.6	114.5
Dec. 17	09 04.28	+01 50.8	3.596	4.243	-0.88	-8.9	21.6	125.4
Dec. 27	08 54.78	+00 25.9	3.544	4.309	-1.03	-8.0	21.6	136.3
Jan. 6	08 43.96	+00 49.3	3.521	4.375	-1.13	-6.9	21.7	146.5
Jan. 16	08 32.36	-01 53.1	3.532	4.442	-1.18	-5.7	21.8	154.7
Jan. 26	08 20.58	-02 44.2	3.580	4.509	-1.16	-4.4	21.9	158.2
Feb. 5	08 09.30	-03 22.7	3.664	4.577	-1.08	-3.2	22.0	155.0
Feb. 15	07 59.09	-03 49.6	3.782	4.645	-0.94	-2.1	.	147.4
Feb. 25	07 50.37	-04 06.8	3.932	4.713	-0.78	-1.3	.	137.9
Mar. 7	07 43.40	-04 17.1	4.107	4.782	-0.60	-0.7	.	128.0
Mar. 17	07 38.25	-04 22.9	4.302	4.851	-0.42	-0.4	.	118.2
Mar. 27	07 34.89	-04 26.5	4.511	4.921	-0.24	-0.3	.	108.6

Comet P/2011 W1 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2022 Feb. 7.93358 TT
 Peri. = 282.76185 e = 0.2878554
 Node = 161.78655 2000.0 a = 4.6648356 AU
 Incl. = 3.71866 n = 0.09782493
 q = 3.3220375 AU P = 10.08 years

$$m1 = 8.6 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation	m1	Mot. /PA	Elong.
2022/23	h m	° '			for T=+1 day			°
Jan. 1	04 30.89	+16 46.8	2.452	3.328	-1.02 -2.1	18.4	6.1/271	148.0
Jan. 11	04 27.49	+16 50.6	2.536	3.325	-0.97 -2.1	18.4	3.4/282	137.2
Jan. 21	04 26.10	+17 00.4	2.639	3.323	-0.93 -2.0	18.5	1.3/346	126.8
Jan. 31	04 26.84	+17 15.9	2.758	3.322	-0.89 -1.9	18.6	3.3/56	116.9
Feb. 10	04 29.67	+17 36.2	2.889	3.322	-0.85 -1.8	18.7	6.1/68	107.5
Feb. 20	04 34.47	+18 00.0	3.027	3.323	-0.81 -1.7	18.8	8.7/73	98.6
Mar. 2	04 41.05	+18 26.0	3.169	3.324	-0.78 -1.5	18.9	11.0/76	90.2
Mar. 12	04 49.23	+18 52.8	3.312	3.326	-0.75 -1.3	19.0	13.0/78	82.2
Mar. 22	04 58.78	+19 19.1	3.453	3.329	-0.72 -1.1	19.1	14.7/80	74.5
Apr. 1	05 09.53	+19 43.7	3.590	3.332	-0.70 -1.0	19.2	16.2/82	67.2
Apr. 11	05 21.29	+20 05.5	3.720	3.337	-0.68 -0.8	19.3	17.4/83	60.2
Apr. 21	05 33.90	+20 23.7	3.843	3.342	-0.66 -0.6	19.4	18.4/85	53.4
May 1	05 47.22	+20 37.4	3.957	3.348	-0.65 -0.4	19.5	19.2/87	46.8
May 11	06 01.10	+20 46.2	4.060	3.354	-0.64 -0.2	19.5	19.8/88	40.3
May 21	06 15.42	+20 49.4	4.152	3.362	-0.62 0.0	19.6	20.3/90	34.1
May 31	06 30.06	+20 46.8	4.232	3.370	-0.61 +0.2	19.6	20.7/92	27.9
June 10	06 44.93	+20 38.3	4.300	3.378	-0.60 +0.4	19.7	21.0/93	21.8
June 20	06 59.91	+20 23.8	4.354	3.388	-0.59 +0.6	19.7	21.2/95	15.8
June 30	07 14.92	+20 03.5	4.395	3.398	-0.58 +0.7	19.8	21.3/96	9.9
July 10	07 29.88	+19 37.4	4.422	3.409	-0.57 +0.9	19.8	21.2/98	4.3
July 20	07 44.70	+19 06.0	4.434	3.420	-0.56 +1.1	19.8	21.1/99	3.2
July 30	07 59.32	+18 29.6	4.433	3.432	-0.56 +1.2	19.9	21.0/101	8.6
Aug. 9	08 13.66	+17 48.9	4.417	3.445	-0.55 +1.4	19.9	20.7/102	14.6
Aug. 19	08 27.65	+17 04.3	4.386	3.458	-0.54 +1.5	19.9	20.3/103	20.7
Aug. 29	08 41.22	+16 16.6	4.342	3.472	-0.54 +1.6	19.9	19.8/104	27.0
Sept. 8	08 54.31	+15 26.6	4.283	3.486	-0.53 +1.7	19.9	19.2/105	33.4
Sept. 18	09 06.83	+14 35.1	4.211	3.501	-0.53 +1.8	19.9	18.4/106	40.0
Sept. 28	09 18.71	+13 43.0	4.127	3.517	-0.53 +1.9	19.9	17.5/107	46.8
Oct. 8	09 29.85	+12 51.5	4.031	3.533	-0.53 +2.0	19.8	16.5/108	53.7
Oct. 18	09 40.17	+12 01.7	3.924	3.550	-0.54 +2.1	19.8	15.2/109	61.0
Oct. 28	09 49.53	+11 14.7	3.809	3.567	-0.54 +2.2	19.8	13.7/109	68.5
Nov. 7	09 57.82	+10 31.8	3.686	3.584	-0.55 +2.3	19.7	12.0/110	76.3
Nov. 17	10 04.89	+09 54.5	3.559	3.602	-0.57 +2.4	19.7	10.0/110	84.5
Nov. 27	10 10.60	+09 24.1	3.429	3.620	-0.58 +2.6	19.7	7.7/110	93.1
Dec. 7	10 14.78	+09 02.1	3.301	3.639	-0.60 +2.7	19.6	5.2/109	102.2
Dec. 17	10 17.31	+08 49.5	3.179	3.658	-0.63 +2.8	19.6	2.4/106	111.7
Dec. 27	10 18.08	+08 47.5	3.065	3.678	-0.65 +2.9	19.5	0.5/320	121.7
Jan. 6	10 17.05	+08 56.5	2.965	3.698	-0.68 +3.0	19.5	3.3/297	132.1
Jan. 16	10 14.32	+09 16.0	2.884	3.718	-0.70 +3.2	19.5	5.9/295	143.1
Jan. 26	10 10.07	+09 44.9	2.826	3.738	-0.73 +3.2	19.4	8.0/294	154.4
Feb. 5	10 04.69	+10 20.9	2.795	3.759	-0.74 +3.3	19.5	9.4/294	166.0
Feb. 15	09 58.69	+11 00.7	2.794	3.780	-0.75 +3.3	19.5	9.9/294	177.4
Feb. 25	09 52.63	+11 41.0	2.822	3.802	-0.75 +3.2	19.6	9.4/295	170.5
Mar. 7	09 47.13	+12 18.3	2.881	3.824	-0.74 +3.1	19.6	8.1/295	159.0
Mar. 17	09 42.67	+12 50.0	2.967	3.845	-0.72 +3.0	19.7	6.1/297	147.8
Mar. 27	09 39.61	+13 14.1	3.077	3.868	-0.70 +2.8	19.9	3.7/301	137.0

Comet 348P/PANSTARRS

Epoch = 2022 June 30.0 TT
 T = 2022 Feb. 12.53311 TT
 Peri. = 135.66472 e = 0.3069188
 Node = 312.94196 2000.0 a = 3.1509436 AU
 Incl. = 17.73959 n = 0.17621510
 q = 2.1838598 AU P = 5.59 years

$$m1 = 12.5 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	03 06.88	+42 20.8	1.425	2.201	+0.29 -12.2	18.4	131.3
Jan. 11	03 11.58	+40 22.3	1.494	2.194	+0.68 -11.3	18.5	123.3
Jan. 21	03 19.91	+38 35.3	1.577	2.189	+1.01 -10.0	18.6	115.5
Jan. 31	03 31.28	+37 01.8	1.670	2.185	+1.28 -8.6	18.7	108.0
Feb. 10	03 45.16	+35 41.5	1.772	2.184	+1.51 -7.4	18.8	100.8
Feb. 20	04 01.06	+34 32.4	1.880	2.184	+1.68 -6.4	19.0	94.0
Mar. 2	04 18.55	+33 31.5	1.992	2.187	+1.82 -5.7	19.1	87.6
Mar. 12	04 37.28	+32 35.9	2.106	2.191	+1.93 -5.4	19.2	81.5
Mar. 22	04 56.95	+31 42.7	2.221	2.197	+2.01 -5.3	19.4	75.6
Apr. 1	05 17.29	+30 49.3	2.337	2.205	+2.06 -5.4	19.5	70.0
Apr. 11	05 38.09	+29 53.7	2.451	2.215	+2.10 -5.8	19.6	64.6
Apr. 21	05 59.14	+28 54.2	2.563	2.226	+2.11 -6.2	19.8	59.4
May 1	06 20.28	+27 49.4	2.672	2.239	+2.11 -6.8	19.9	54.3
May 11	06 41.38	+26 38.6	2.778	2.254	+2.10 -7.4	20.0	49.3
May 21	07 02.30	+25 21.3	2.879	2.271	+2.08 -8.1	20.1	44.5
May 31	07 22.96	+23 57.3	2.975	2.288	+2.05 -8.8	20.3	39.7
June 10	07 43.28	+22 26.6	3.065	2.308	+2.01 -9.4	20.4	34.9
June 20	08 03.20	+20 49.5	3.149	2.328	+1.97 -10.1	20.5	30.2
June 30	08 22.70	+19 06.2	3.226	2.350	+1.92 -10.6	20.6	25.5
July 10	08 41.73	+17 17.3	3.295	2.373	+1.88 -11.2	20.7	20.8
July 20	09 00.30	+15 23.3	3.356	2.397	+1.83 -11.7	20.8	16.2
July 30	09 18.39	+13 24.9	3.408	2.422	+1.78 -12.1	20.9	11.5
Aug. 9	09 36.01	+11 22.5	3.451	2.448	+1.74 -12.4	21.0	7.0
Aug. 19	09 53.16	+09 16.8	3.483	2.474	+1.69 -12.7	21.1	3.7
Aug. 29	10 09.85	+07 08.5	3.506	2.502	+1.64 -13.0	21.2	5.2
Sept. 8	10 26.08	+04 58.1	3.517	2.530	+1.60 -13.1	21.3	9.7
Sept. 18	10 41.85	+02 46.3	3.518	2.558	+1.55 -13.2	21.4	14.7
Sept. 28	10 57.15	+00 33.5	3.506	2.588	+1.50 -13.3	21.4	20.0
Oct. 8	11 11.97	-01 39.6	3.484	2.617	+1.45 -13.3	21.5	25.5
Oct. 18	11 26.28	-03 52.4	3.449	2.647	+1.40 -13.3	21.5	31.2
Oct. 28	11 40.04	-06 04.5	3.403	2.678	+1.34 -13.2	21.6	37.1
Nov. 7	11 53.19	-08 15.4	3.345	2.708	+1.28 -13.0	21.6	43.1
Nov. 17	12 05.64	-10 24.4	3.277	2.739	+1.20 -12.8	21.6	49.4
Nov. 27	12 17.31	-12 31.3	3.199	2.770	+1.12 -12.5	21.7	56.0
Dec. 7	12 28.05	-14 35.2	3.111	2.801	+1.02 -12.2	21.7	62.8
Dec. 17	12 37.70	-16 35.8	3.016	2.833	+0.90 -11.9	21.7	69.9
Dec. 27	12 46.08	-18 32.4	2.915	2.864	+0.76 -11.4	21.7	77.3
Jan. 6	12 52.93	-20 23.9	2.810	2.895	+0.59 -10.8	21.7	85.0
Jan. 16	12 58.04	-22 09.2	2.703	2.926	+0.40 -10.1	21.7	93.1
Jan. 26	13 01.11	-23 46.8	2.598	2.957	+0.19 -9.2	21.6	101.6
Feb. 5	13 01.92	-25 14.4	2.498	2.988	-0.05 -8.1	21.6	110.4
Feb. 15	13 00.29	-26 29.1	2.407	3.019	-0.30 -6.6	21.6	119.6
Feb. 25	12 56.20	-27 27.7	2.329	3.050	-0.54 -4.8	21.6	129.0
Mar. 7	12 49.83	-28 06.4	2.268	3.080	-0.74 -2.7	21.6	138.3
Mar. 17	12 41.68	-28 22.8	2.229	3.111	-0.89 -0.3	21.6	147.0
Mar. 27	12 32.46	-28 15.6	2.214	3.141	-0.94 +2.0	21.7	153.9

Comet 431P/Scotti

Epoch = 2022 June 30.0 TT
 T = 2022 Feb. 13.38060 TT
 Peri. = 199.86402 e = 0.4776951
 Node = 202.84523 2000.0 a = 3.4725236 AU
 Incl. = 22.39197 n = 0.15231275
 q = 1.8137161 AU P = 6.47 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	23 28.59	-02 56.5	1.916	1.853	+2.14	+2.3	18.4	71.4
Jan. 11	23 50.35	-02 25.8	1.995	1.837	+2.22	+3.9	18.5	66.4
Jan. 21	00 12.85	-01 40.9	2.073	1.825	+2.29	+5.2	18.5	61.7
Jan. 31	00 35.96	+00 44.8	2.150	1.818	+2.34	+6.1	18.6	57.3
Feb. 10	00 59.56	+00 19.6	2.225	1.814	+2.38	+6.8	18.6	53.1
Feb. 20	01 23.56	+01 29.3	2.299	1.815	+2.42	+7.1	18.7	49.2
Mar. 2	01 47.88	+02 41.3	2.372	1.820	+2.45	+7.2	18.8	45.5
Mar. 12	02 12.47	+03 53.2	2.443	1.829	+2.47	+7.1	18.9	41.9
Mar. 22	02 37.26	+05 02.2	2.513	1.842	+2.49	+6.7	19.0	38.6
Apr. 1	03 02.19	+06 06.1	2.582	1.859	+2.50	+6.0	19.1	35.4
Apr. 11	03 27.19	+07 02.9	2.649	1.880	+2.50	+5.2	19.2	32.3
Apr. 21	03 52.18	+07 50.9	2.716	1.905	+2.50	+4.3	19.4	29.4
May 1	04 17.08	+08 28.6	2.781	1.933	+2.48	+3.2	19.5	26.6
May 11	04 41.80	+08 55.1	2.844	1.964	+2.46	+2.0	19.7	23.9
May 21	05 06.24	+09 09.6	2.905	1.998	+2.43	+0.8	19.8	21.4
May 31	05 30.32	+09 11.9	2.964	2.034	+2.38	-0.4	20.0	19.2
June 10	05 53.94	+09 01.9	3.020	2.073	+2.33	-1.7	20.1	17.3
June 20	06 17.00	+08 40.0	3.072	2.113	+2.27	-2.8	20.3	15.8
June 30	06 39.46	+08 06.6	3.121	2.156	+2.21	-3.9	20.5	15.1
July 10	07 01.24	+07 22.6	3.164	2.200	+2.14	-5.0	20.6	15.3
July 20	07 22.28	+06 28.8	3.201	2.245	+2.06	-5.9	20.8	16.5
July 30	07 42.55	+05 26.2	3.231	2.291	+1.98	-6.7	20.9	18.5
Aug. 9	08 02.01	+04 15.8	3.254	2.339	+1.90	-7.4	21.1	21.3
Aug. 19	08 20.62	+02 58.7	3.269	2.387	+1.81	-8.0	21.2	24.7
Aug. 29	08 38.38	+01 36.0	3.275	2.436	+1.73	-8.5	21.4	28.5
Sept. 8	08 55.24	+00 08.9	3.270	2.485	+1.63	-8.9	21.5	32.9
Sept. 18	09 11.16	-01 21.7	3.256	2.535	+1.54	-9.2	21.6	37.6
Sept. 28	09 26.13	-02 54.6	3.231	2.584	+1.44	-9.4	21.7	42.6
Oct. 8	09 40.06	-04 28.8	3.196	2.635	+1.33	-9.4	21.8	48.0
Oct. 18	09 52.90	-06 03.0	3.150	2.685	+1.22	-9.4	21.9	53.8
Oct. 28	10 04.55	-07 36.1	3.093	2.735	+1.10	-9.2	22.0	60.0
Nov. 7	10 14.90	-09 06.7	3.027	2.785	+0.96	-8.9	.	66.5
Nov. 17	10 23.81	-10 33.4	2.953	2.835	+0.81	-8.4	.	73.5
Nov. 27	10 31.13	-11 54.5	2.873	2.885	+0.64	-7.7	.	80.8
Dec. 7	10 36.66	-13 07.8	2.787	2.934	+0.45	-6.8	.	88.6
Dec. 17	10 40.25	-14 11.0	2.700	2.983	+0.25	-5.7	.	96.9
Dec. 27	10 41.73	-15 01.4	2.615	3.032	+0.03	-4.2	.	105.7
Jan. 6	10 41.01	-15 35.6	2.535	3.081	-0.19	-2.4	.	114.9
Jan. 16	10 38.13	-15 50.7	2.466	3.129	-0.40	-0.3	.	124.4
Jan. 26	10 33.25	-15 43.7	2.411	3.177	-0.58	+2.0	.	134.2
Feb. 5	10 26.79	-15 13.1	2.377	3.224	-0.71	+4.4	.	143.6
Feb. 15	10 19.35	-14 19.5	2.366	3.271	-0.77	+6.5	.	151.9
Feb. 25	10 11.64	-13 05.6	2.383	3.317	-0.75	+8.3	.	157.0
Mar. 7	10 04.45	-11 36.9	2.428	3.362	-0.66	+9.4	.	156.7
Mar. 17	09 58.42	-10 00.5	2.503	3.408	-0.52	+9.8	.	151.1
Mar. 27	09 54.00	-08 23.1	2.604	3.452	-0.34	+9.5	.	142.9

Comet C/2021 L3 (Borisov)

Epoch = 2022 June 30.0 TT
 T = 2022 Feb. 14.27946 TT
 Peri. = 91.62943
 Node = 344.96782 2000.0
 Incl. = 78.57982
 q = 8.4572647 AU
 e = 1.0019958

$$m1 = 5.5 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	19 00.21	+70 10.9	8.348	8.461	+0.82	+1.2	19.4	93.3
Jan. 11	19 08.49	+70 28.3	8.361	8.460	+0.83	+2.4	19.4	92.4
Jan. 21	19 16.84	+70 56.7	8.376	8.458	+0.83	+3.4	19.4	91.5
Jan. 31	19 25.07	+71 35.8	8.394	8.458	+0.81	+4.5	19.4	90.4
Feb. 10	19 32.95	+72 25.0	8.413	8.457	+0.76	+5.5	19.4	89.2
Feb. 20	19 40.21	+73 23.7	8.435	8.457	+0.68	+6.4	19.4	87.9
Mar. 2	19 46.55	+74 31.0	8.459	8.458	+0.57	+7.2	19.4	86.6
Mar. 12	19 51.51	+75 45.9	8.485	8.459	+0.40	+7.9	19.4	85.1
Mar. 22	19 54.51	+77 07.0	8.512	8.460	+0.16	+8.4	19.4	83.7
Apr. 1	19 54.66	+78 33.0	8.541	8.462	-0.19	+8.8	19.4	82.1
Apr. 11	19 50.52	+80 01.9	8.570	8.464	-0.73	+8.9	19.4	80.6
Apr. 21	19 39.80	+81 30.8	8.601	8.466	-1.56	+8.8	19.4	79.0
May 1	19 18.68	+82 55.6	8.632	8.469	-2.90	+8.0	19.5	77.4
May 11	18 41.21	+84 09.3	8.662	8.472	-4.91	+6.3	19.5	75.9
May 21	17 41.63	+84 59.9	8.693	8.476	-7.17	+3.2	19.5	74.4
May 31	16 24.74	+85 12.9	8.722	8.480	-7.84	-1.1	19.5	72.9
June 10	15 12.75	+84 43.1	8.750	8.485	-6.11	-5.0	19.5	71.6
June 20	14 22.07	+83 41.1	8.775	8.490	-3.86	-7.4	19.5	70.5
June 30	13 51.47	+82 21.1	8.798	8.495	-2.21	-8.6	19.5	69.5
July 10	13 34.45	+80 52.7	8.817	8.501	-1.17	-9.1	19.5	68.7
July 20	13 25.93	+79 21.5	8.832	8.507	-0.52	-9.1	19.5	68.2
July 30	13 22.79	+77 50.7	8.842	8.514	-0.10	-9.0	19.5	68.0
Aug. 9	13 23.17	+76 22.6	8.848	8.521	+0.18	-8.6	19.5	68.1
Aug. 19	13 25.91	+74 58.5	8.847	8.528	+0.37	-8.1	19.5	68.5
Aug. 29	13 30.29	+73 39.7	8.841	8.536	+0.51	-7.5	19.5	69.3
Sept. 8	13 35.81	+72 27.4	8.829	8.544	+0.60	-6.9	19.5	70.4
Sept. 18	13 42.12	+71 22.2	8.811	8.553	+0.66	-6.1	19.5	71.9
Sept. 28	13 48.97	+70 25.1	8.787	8.562	+0.71	-5.2	19.5	73.8
Oct. 8	13 56.15	+69 36.7	8.757	8.571	+0.73	-4.3	19.5	76.1
Oct. 18	14 03.49	+68 57.6	8.722	8.581	+0.74	-3.4	19.5	78.6
Oct. 28	14 10.83	+68 28.5	8.683	8.591	+0.73	-2.4	19.5	81.4
Nov. 7	14 18.00	+68 09.6	8.641	8.602	+0.70	-1.3	19.5	84.4
Nov. 17	14 24.84	+68 01.3	8.597	8.613	+0.66	-0.3	19.5	87.6
Nov. 27	14 31.17	+68 03.6	8.552	8.624	+0.60	+0.8	19.5	90.9
Dec. 7	14 36.77	+68 16.3	8.508	8.636	+0.51	+1.8	19.5	94.2
Dec. 17	14 41.42	+68 39.1	8.467	8.648	+0.40	+2.8	19.5	97.3
Dec. 27	14 44.83	+69 11.2	8.430	8.661	+0.26	+3.7	19.5	100.3
Jan. 6	14 46.66	+69 51.4	8.399	8.673	+0.08	+4.4	19.5	103.0
Jan. 16	14 46.53	+70 38.1	8.377	8.687	-0.14	+5.0	19.5	105.2
Jan. 26	14 44.03	+71 29.3	8.363	8.700	-0.40	+5.3	19.5	106.9
Feb. 5	14 38.67	+72 22.0	8.360	8.714	-0.71	+5.2	19.5	107.9
Feb. 15	14 30.06	+73 13.2	8.369	8.729	-1.05	+4.9	19.5	108.2
Feb. 25	14 17.90	+73 59.0	8.390	8.743	-1.41	+4.1	19.5	107.8
Mar. 7	14 02.22	+74 35.3	8.423	8.758	-1.75	+2.9	19.6	106.6
Mar. 17	13 43.54	+74 58.2	8.469	8.774	-2.00	+1.4	19.6	104.7
Mar. 27	13 22.95	+75 04.4	8.526	8.790	-2.11	-0.4	19.6	102.1

Comet 97P/Metcalf-Brewington

Epoch = 2022 June 30.0 TT
 T = 2022 Feb. 15.56885 TT
 Peri. = 229.97699 e = 0.4599619
 Node = 184.07722 2000.0 a = 4.7593040 AU
 Incl. = 17.95193 n = 0.09492681
 q = 2.5702055 AU P = 10.38 years

$$m1 = 8.4 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	01 21.32	-04 29.5	2.286	2.591	+0.85	+4.3	18.5	96.7
Jan. 11	01 30.63	-03 40.5	2.403	2.583	+1.02	+5.5	18.5	89.2
Jan. 21	01 41.49	-02 41.1	2.521	2.577	+1.16	+6.4	18.6	82.1
Jan. 31	01 53.69	-01 34.0	2.638	2.573	+1.29	+7.0	18.7	75.4
Feb. 10	02 07.07	+00 21.6	2.752	2.571	+1.40	+7.4	18.8	69.1
Feb. 20	02 21.46	+00 53.7	2.862	2.570	+1.49	+7.6	18.9	63.1
Mar. 2	02 36.72	+02 09.9	2.968	2.572	+1.57	+7.6	19.0	57.3
Mar. 12	02 52.74	+03 25.1	3.069	2.576	+1.64	+7.4	19.1	51.8
Mar. 22	03 09.40	+04 37.7	3.165	2.582	+1.70	+7.0	19.1	46.5
Apr. 1	03 26.60	+05 46.1	3.253	2.590	+1.75	+6.6	19.2	41.4
Apr. 11	03 44.27	+06 49.1	3.336	2.600	+1.79	+6.0	19.3	36.6
Apr. 21	04 02.31	+07 45.4	3.411	2.612	+1.82	+5.2	19.4	31.9
May 1	04 20.63	+08 34.2	3.479	2.626	+1.85	+4.4	19.5	27.4
May 11	04 39.16	+09 14.7	3.540	2.642	+1.86	+3.6	19.6	23.2
May 21	04 57.80	+09 46.1	3.593	2.659	+1.87	+2.6	19.7	19.4
May 31	05 16.47	+10 08.3	3.638	2.679	+1.87	+1.7	19.8	16.1
June 10	05 35.08	+10 20.7	3.674	2.699	+1.85	+0.7	19.9	13.8
June 20	05 53.53	+10 23.5	3.702	2.722	+1.83	-0.2	19.9	13.0
June 30	06 11.76	+10 16.8	3.721	2.746	+1.81	-1.2	20.0	14.0
July 10	06 29.68	+10 00.7	3.731	2.771	+1.77	-2.1	20.1	16.5
July 20	06 47.19	+09 35.8	3.731	2.798	+1.73	-3.0	20.2	20.0
July 30	07 04.22	+09 02.5	3.722	2.826	+1.67	-3.8	20.3	24.2
Aug. 9	07 20.70	+08 21.6	3.702	2.855	+1.61	-4.5	20.4	28.8
Aug. 19	07 36.55	+07 33.9	3.672	2.885	+1.55	-5.1	20.4	33.7
Aug. 29	07 51.68	+06 40.1	3.633	2.917	+1.47	-5.7	20.5	38.9
Sept. 8	08 06.02	+05 41.3	3.583	2.949	+1.39	-6.1	20.6	44.5
Sept. 18	08 19.48	+04 38.5	3.523	2.983	+1.29	-6.5	20.6	50.3
Sept. 28	08 31.96	+03 32.9	3.454	3.017	+1.19	-6.7	20.7	56.4
Oct. 8	08 43.35	+02 25.8	3.376	3.052	+1.07	-6.7	20.7	62.8
Oct. 18	08 53.54	+01 18.5	3.290	3.088	+0.95	-6.7	20.8	69.6
Oct. 28	09 02.39	+00 12.6	3.198	3.124	+0.80	-6.4	20.8	76.8
Nov. 7	09 09.74	+00 50.1	3.101	3.161	+0.65	-6.0	20.9	84.3
Nov. 17	09 15.45	-01 47.6	3.002	3.199	+0.48	-5.4	20.9	92.3
Nov. 27	09 19.37	-02 37.8	2.904	3.237	+0.29	-4.5	20.9	100.8
Dec. 7	09 21.37	-03 18.0	2.810	3.275	+0.09	-3.4	20.9	109.7
Dec. 17	09 21.38	-03 45.9	2.724	3.314	-0.11	-2.0	21.0	119.0
Dec. 27	09 19.43	-03 59.0	2.650	3.354	-0.30	-0.4	21.0	128.7
Jan. 6	09 15.69	-03 55.3	2.593	3.393	-0.46	+1.3	21.1	138.6
Jan. 16	09 10.49	-03 33.9	2.557	3.433	-0.58	+3.1	21.2	148.3
Jan. 26	09 04.32	-02 55.4	2.547	3.473	-0.65	+4.7	21.2	156.7
Feb. 5	08 57.81	-02 02.0	2.565	3.514	-0.64	+6.0	21.4	161.5
Feb. 15	08 51.63	+00 57.7	2.612	3.554	-0.58	+6.9	21.5	159.6
Feb. 25	08 46.37	+00 12.8	2.687	3.595	-0.46	+7.2	21.7	152.6
Mar. 7	08 42.50	+01 24.7	2.790	3.635	-0.30	+7.1	21.8	143.5
Mar. 17	08 40.29	+02 33.6	2.915	3.676	-0.12	+6.6	22.0	133.9
Mar. 27	08 39.85	+03 36.3	3.061	3.717	+0.05	+5.8	.	124.4

Comet C/2020 R2 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2022 Feb. 24.63072 TT
 Peri. = 211.75378
 Node = 195.09333 2000.0
 Incl. = 53.22828
 q = 4.6919625 AU
 e = 0.9884161

$$m1 = 8.0 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh	TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23		h m	° '			m	'		°
Jan. 1	01	35.76	-11 48.6	4.492	4.712	+0.26	-1.0	18.0	96.9
Jan. 11	01	38.89	-11 54.2	4.636	4.705	+0.38	0.0	18.1	88.0
Jan. 21	01	43.21	-11 51.1	4.779	4.700	+0.49	+0.7	18.1	79.5
Jan. 31	01	48.62	-11 41.3	4.917	4.696	+0.60	+1.3	18.2	71.4
Feb. 10	01	55.01	-11 26.7	5.047	4.693	+0.69	+1.7	18.2	63.6
Feb. 20	02	02.28	-11 08.9	5.167	4.692	+0.77	+1.9	18.3	56.3
Mar. 2	02	10.32	-10 49.4	5.275	4.692	+0.84	+2.0	18.3	49.5
Mar. 12	02	19.02	-10 29.6	5.369	4.694	+0.90	+1.9	18.4	43.1
Mar. 22	02	28.28	-10 11.0	5.448	4.696	+0.95	+1.8	18.4	37.5
Apr. 1	02	38.03	-09 54.5	5.511	4.700	+1.00	+1.5	18.4	32.6
Apr. 11	02	48.17	-09 41.3	5.558	4.706	+1.03	+1.1	18.5	28.9
Apr. 21	02	58.62	-09 32.4	5.589	4.712	+1.06	+0.6	18.5	26.6
May 1	03	09.32	-09 28.7	5.604	4.720	+1.08	+0.1	18.5	26.1
May 11	03	20.17	-09 31.1	5.603	4.729	+1.09	-0.6	18.5	27.4
May 21	03	31.10	-09 40.2	5.588	4.740	+1.10	-1.3	18.5	30.1
May 31	03	42.05	-09 56.9	5.559	4.752	+1.09	-2.1	18.5	33.9
June 10	03	52.93	-10 21.7	5.518	4.765	+1.08	-3.0	18.5	38.5
June 20	04	03.65	-10 55.2	5.465	4.779	+1.06	-3.8	18.5	43.5
June 30	04	14.14	-11 37.9	5.401	4.795	+1.03	-4.8	18.5	48.9
July 10	04	24.30	-12 30.1	5.330	4.812	+0.99	-5.8	18.5	54.5
July 20	04	34.02	-13 32.0	5.251	4.830	+0.94	-6.7	18.4	60.3
July 30	04	43.21	-14 43.5	5.168	4.849	+0.88	-7.7	18.4	66.2
Aug. 9	04	51.75	-16 04.6	5.081	4.869	+0.81	-8.6	18.4	72.3
Aug. 19	04	59.50	-17 34.6	4.994	4.891	+0.73	-9.5	18.4	78.3
Aug. 29	05	06.36	-19 12.8	4.908	4.913	+0.63	-10.2	18.4	84.4
Sept. 8	05	12.18	-20 57.9	4.826	4.937	+0.52	-10.8	18.4	90.4
Sept. 18	05	16.85	-22 48.0	4.749	4.962	+0.40	-11.2	18.3	96.3
Sept. 28	05	20.24	-24 41.0	4.681	4.987	+0.26	-11.4	18.3	102.0
Oct. 8	05	22.25	-26 34.1	4.624	5.014	+0.12	-11.2	18.3	107.4
Oct. 18	05	22.86	-28 23.8	4.579	5.042	-0.02	-10.7	18.3	112.3
Oct. 28	05	22.05	-30 06.7	4.549	5.071	-0.16	-9.8	18.3	116.5
Nov. 7	05	19.92	-31 38.8	4.535	5.101	-0.28	-8.5	18.4	119.8
Nov. 17	05	16.66	-32 56.7	4.538	5.132	-0.38	-6.9	18.4	122.0
Nov. 27	05	12.54	-33 57.3	4.559	5.163	-0.45	-5.0	18.4	123.0
Dec. 7	05	07.93	-34 38.5	4.597	5.196	-0.47	-3.0	18.5	122.7
Dec. 17	05	03.25	-34 59.5	4.652	5.229	-0.46	-1.0	18.5	121.1
Dec. 27	04	58.91	-35 00.7	4.724	5.264	-0.40	+0.9	18.6	118.5
Jan. 6	04	55.29	-34 43.7	4.809	5.299	-0.31	+2.6	18.7	114.9
Jan. 16	04	52.70	-34 10.9	4.908	5.335	-0.20	+4.0	18.7	110.7
Jan. 26	04	51.32	-33 25.3	5.017	5.372	-0.07	+5.1	18.8	106.0
Feb. 5	04	51.28	-32 30.2	5.135	5.409	+0.07	+5.9	18.9	100.9
Feb. 15	04	52.58	-31 28.7	5.259	5.447	+0.20	+6.4	19.0	95.8
Feb. 25	04	55.18	-30 23.6	5.387	5.486	+0.33	+6.6	19.0	90.5
Mar. 7	04	59.02	-29 17.7	5.517	5.526	+0.45	+6.5	19.1	85.4
Mar. 17	05	03.96	-28 13.1	5.647	5.566	+0.55	+6.3	19.2	80.3
Mar. 27	05	09.89	-27 11.6	5.776	5.607	+0.64	+5.9	19.3	75.3

Comet C/2021 S1 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2022 Feb. 28.75420 TT
 Peri. = 148.16883
 Node = 299.87617 2000.0
 Incl. = 52.08512
 q = 6.1192535 AU
 e = 1.0011766

$$m1 = 6.0 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	06 22.26	+56 56.7	5.294	6.133	-0.86	-4.9	17.5	145.9
Jan. 11	06 14.09	+56 01.7	5.313	6.129	-0.76	-6.2	17.5	143.2
Jan. 21	06 07.10	+54 55.5	5.359	6.125	-0.62	-7.1	17.5	138.0
Jan. 31	06 01.69	+53 40.7	5.430	6.123	-0.44	-7.8	17.5	131.1
Feb. 10	05 58.09	+52 20.2	5.524	6.121	-0.26	-8.2	17.6	123.2
Feb. 20	05 56.35	+50 56.9	5.637	6.120	-0.07	-8.4	17.6	114.9
Mar. 2	05 56.40	+49 33.3	5.766	6.119	+0.10	-8.3	17.7	106.4
Mar. 12	05 58.11	+48 11.1	5.906	6.120	+0.25	-8.1	17.7	97.8
Mar. 22	06 01.28	+46 51.6	6.052	6.121	+0.39	-7.8	17.8	89.3
Apr. 1	06 05.72	+45 35.4	6.202	6.123	+0.51	-7.4	17.8	80.9
Apr. 11	06 11.23	+44 22.9	6.350	6.126	+0.60	-7.1	17.9	72.6
Apr. 21	06 17.64	+43 13.9	6.494	6.130	+0.68	-6.7	17.9	64.6
May 1	06 24.77	+42 08.3	6.629	6.134	+0.75	-6.4	18.0	56.7
May 11	06 32.47	+41 05.7	6.755	6.139	+0.80	-6.1	18.0	49.0
May 21	06 40.60	+40 05.6	6.867	6.145	+0.83	-5.9	18.1	41.5
May 31	06 49.03	+39 07.8	6.964	6.152	+0.86	-5.7	18.1	34.2
June 10	06 57.67	+38 11.8	7.044	6.160	+0.87	-5.5	18.1	27.3
June 20	07 06.39	+37 17.3	7.106	6.168	+0.87	-5.4	18.2	21.0
June 30	07 15.11	+36 24.2	7.149	6.177	+0.87	-5.3	18.2	15.9
July 10	07 23.74	+35 32.2	7.172	6.187	+0.85	-5.1	18.2	13.4
July 20	07 32.20	+34 41.2	7.174	6.198	+0.83	-5.0	18.2	14.9
July 30	07 40.39	+33 51.2	7.156	6.209	+0.80	-4.9	18.2	19.6
Aug. 9	07 48.25	+33 02.4	7.118	6.221	+0.76	-4.8	18.2	25.8
Aug. 19	07 55.67	+32 14.6	7.060	6.234	+0.72	-4.7	18.2	32.8
Aug. 29	08 02.60	+31 28.1	6.983	6.247	+0.66	-4.6	18.2	40.3
Sept. 8	08 08.92	+30 43.2	6.890	6.262	+0.60	-4.4	18.2	48.1
Sept. 18	08 14.55	+29 59.8	6.780	6.277	+0.52	-4.2	18.1	56.2
Sept. 28	08 19.39	+29 18.4	6.657	6.293	+0.44	-4.0	18.1	64.6
Oct. 8	08 23.35	+28 39.1	6.524	6.309	+0.34	-3.8	18.1	73.3
Oct. 18	08 26.34	+28 02.0	6.383	6.326	+0.24	-3.6	18.0	82.2
Oct. 28	08 28.25	+27 27.2	6.239	6.344	+0.13	-3.3	18.0	91.5
Nov. 7	08 29.01	+26 54.8	6.096	6.363	+0.01	-3.1	18.0	101.1
Nov. 17	08 28.57	+26 24.4	5.959	6.382	-0.11	-2.9	17.9	111.1
Nov. 27	08 26.91	+25 55.9	5.832	6.402	-0.23	-2.8	17.9	121.4
Dec. 7	08 24.07	+25 28.7	5.721	6.422	-0.35	-2.7	17.9	132.0
Dec. 17	08 20.15	+25 02.2	5.631	6.443	-0.45	-2.6	17.8	142.9
Dec. 27	08 15.32	+24 35.7	5.567	6.465	-0.52	-2.7	17.8	154.0
Jan. 6	08 09.83	+24 08.5	5.532	6.488	-0.57	-2.8	17.8	165.1
Jan. 16	08 04.00	+23 40.1	5.529	6.511	-0.59	-2.9	17.8	175.6
Jan. 26	07 58.16	+23 10.2	5.560	6.534	-0.57	-3.1	17.9	171.2
Feb. 5	07 52.63	+22 38.8	5.623	6.559	-0.52	-3.2	17.9	160.2
Feb. 15	07 47.73	+22 05.9	5.717	6.584	-0.45	-3.4	18.0	149.1
Feb. 25	07 43.69	+21 31.9	5.838	6.609	-0.35	-3.5	18.0	138.2
Mar. 7	07 40.66	+20 57.0	5.984	6.635	-0.24	-3.5	18.1	127.6
Mar. 17	07 38.74	+20 21.7	6.148	6.662	-0.13	-3.6	18.2	117.2
Mar. 27	07 37.94	+19 45.9	6.326	6.689	-0.02	-3.6	18.3	107.2

Comet 9P/Tempel

Epoch = 2022 June 30.0 TT
 T = 2022 Mar. 4.96635 TT
 Peri. = 179.36153 e = 0.5091779
 Node = 68.71291 2000.0 a = 3.1463310 AU
 Incl. = 10.46979 n = 0.17660275
 q = 1.5442888 AU P = 5.58 years

$$m1 = 9.0 + 5 \log(\Delta) + 17.5 \log(r(t-20))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	15 37.51	-14 23.6	2.206	1.662	+2.88	-13.0	14.9	44.9
Jan. 11	16 06.77	-16 27.8	2.119	1.629	+2.99	-11.7	14.7	47.7
Jan. 21	16 37.08	-18 18.2	2.037	1.601	+3.08	-10.2	14.4	50.4
Jan. 31	17 08.30	-19 52.2	1.961	1.578	+3.16	-8.4	14.2	53.0
Feb. 10	17 40.17	-21 07.7	1.890	1.561	+3.21	-6.5	14.0	55.6
Feb. 20	18 12.40	-22 03.2	1.824	1.550	+3.23	-4.4	13.8	58.1
Mar. 2	18 44.65	-22 38.4	1.763	1.545	+3.21	-2.4	13.6	60.8
Mar. 12	19 16.48	-22 54.2	1.707	1.546	+3.14	-0.6	13.5	63.5
Mar. 22	19 47.51	-22 52.7	1.655	1.553	+3.05	+1.0	13.4	66.4
Apr. 1	20 17.38	-22 36.8	1.606	1.567	+2.91	+2.2	13.3	69.5
Apr. 11	20 45.75	-22 10.7	1.559	1.587	+2.74	+3.0	13.3	72.9
Apr. 21	21 12.34	-21 38.7	1.514	1.612	+2.55	+3.3	13.3	76.6
May 1	21 36.94	-21 05.5	1.469	1.642	+2.34	+3.2	13.3	80.7
May 11	21 59.31	-20 36.0	1.424	1.677	+2.11	+2.6	13.4	85.3
May 21	22 19.27	-20 14.6	1.379	1.715	+1.86	+1.5	13.5	90.3
May 31	22 36.59	-20 05.5	1.335	1.758	+1.58	+0.1	13.6	95.9
June 10	22 50.99	-20 12.5	1.291	1.803	+1.27	-1.7	13.7	102.2
June 20	23 02.21	-20 38.0	1.250	1.852	+0.93	-3.6	13.8	109.2
June 30	23 09.91	-21 23.5	1.212	1.902	+0.56	-5.6	13.9	116.9
July 10	23 13.79	-22 28.1	1.182	1.954	+0.17	-7.4	14.0	125.3
July 20	23 13.71	-23 47.6	1.161	2.008	-0.23	-8.5	14.2	134.4
July 30	23 09.74	-25 14.8	1.155	2.063	-0.60	-8.7	14.4	143.8
Aug. 9	23 02.42	-26 38.6	1.166	2.119	-0.88	-7.7	14.6	152.7
Aug. 19	22 52.81	-27 47.4	1.199	2.176	-1.03	-5.7	14.9	159.4
Aug. 29	22 42.32	-28 31.7	1.254	2.233	-1.04	-2.9	15.2	160.8
Sept. 8	22 32.51	-28 46.8	1.333	2.290	-0.89	+0.1	15.5	155.9
Sept. 18	22 24.61	-28 33.6	1.434	2.347	-0.65	+2.7	15.9	147.9
Sept. 28	22 19.35	-27 56.2	1.556	2.405	-0.37	+4.9	16.3	139.0
Oct. 8	22 17.01	-27 00.0	1.696	2.462	-0.08	+6.4	16.6	130.1
Oct. 18	22 17.45	-25 50.2	1.851	2.519	+0.19	+7.6	17.0	121.4
Oct. 28	22 20.35	-24 30.9	2.018	2.575	+0.41	+8.3	17.4	113.1
Nov. 7	22 25.38	-23 04.8	2.195	2.631	+0.60	+8.9	17.7	105.0
Nov. 17	22 32.12	-21 34.0	2.377	2.687	+0.76	+9.3	18.1	97.2
Nov. 27	22 40.25	-19 59.9	2.564	2.742	+0.88	+9.6	18.4	89.7
Dec. 7	22 49.48	-18 23.3	2.753	2.797	+0.97	+9.8	18.7	82.3
Dec. 17	22 59.56	-16 45.2	2.940	2.851	+1.05	+9.9	19.0	75.1
Dec. 27	23 10.31	-15 06.1	3.124	2.904	+1.11	+10.0	19.3	68.1
Jan. 6	23 21.56	-13 26.5	3.302	2.956	+1.15	+10.0	19.6	61.2
Jan. 16	23 33.18	-11 47.0	3.474	3.008	+1.18	+9.9	19.8	54.3
Jan. 26	23 45.08	-10 07.9	3.635	3.059	+1.20	+9.9	20.0	47.6
Feb. 5	23 57.16	-08 30.0	3.786	3.110	+1.21	+9.7	20.3	40.9
Feb. 15	00 09.34	-06 53.6	3.925	3.159	+1.22	+9.5	20.5	34.4
Feb. 25	00 21.58	-05 19.1	4.049	3.208	+1.22	+9.3	20.7	27.9
Mar. 7	00 33.82	-03 47.1	4.159	3.256	+1.22	+9.0	20.8	21.5
Mar. 17	00 46.00	-02 18.1	4.252	3.303	+1.21	+8.7	21.0	15.3
Mar. 27	00 58.09	+00 52.3	4.328	3.349	+1.20	+8.4	21.2	9.8

Comet 22P/Kopff

Epoch = 2022 June 30.0 TT
 T = 2022 Mar. 18.13012 TT
 Peri. = 163.02816 e = 0.5489100
 Node = 120.83028 2000.0 a = 3.4414733 AU
 Incl. = 4.74198 n = 0.15437873
 q = 1.5524142 AU P = 6.38 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	16 51.19	-19 38.8	2.553	1.731	+2.99	-5.6	13.8	26.6
Jan. 11	17 21.63	-20 26.3	2.474	1.690	+3.10	-3.7	13.6	29.5
Jan. 21	17 53.07	-20 53.3	2.399	1.653	+3.19	-1.5	13.4	32.3
Jan. 31	18 25.27	-20 57.6	2.328	1.622	+3.25	+0.9	13.2	34.9
Feb. 10	18 57.89	-20 38.2	2.262	1.595	+3.27	+3.2	13.0	37.4
Feb. 20	19 30.58	-19 55.2	2.202	1.575	+3.26	+5.6	12.9	39.8
Mar. 2	20 03.00	-18 49.7	2.147	1.561	+3.21	+7.7	12.8	42.1
Mar. 12	20 34.82	-17 24.2	2.098	1.554	+3.14	+9.5	12.7	44.5
Mar. 22	21 05.75	-15 41.9	2.054	1.553	+3.04	+11.0	12.6	46.8
Apr. 1	21 35.59	-13 46.7	2.015	1.559	+2.92	+12.1	12.6	49.2
Apr. 11	22 04.19	-11 43.0	1.979	1.571	+2.79	+12.7	12.6	51.8
Apr. 21	22 31.43	-09 35.0	1.945	1.590	+2.65	+12.9	12.7	54.6
May 1	22 57.27	-07 26.7	1.912	1.615	+2.50	+12.7	12.7	57.6
May 11	23 21.64	-05 21.9	1.880	1.646	+2.35	+12.2	12.8	60.9
May 21	23 44.50	-03 23.7	1.846	1.681	+2.20	+11.4	12.9	64.6
May 31	00 05.80	-01 34.7	1.810	1.721	+2.04	+10.3	13.0	68.6
June 10	00 25.42	+00 02.6	1.771	1.765	+1.87	+9.0	13.1	73.0
June 20	00 43.28	+01 26.5	1.729	1.812	+1.68	+7.6	13.3	77.9
June 30	00 59.21	+02 35.5	1.684	1.863	+1.48	+6.0	13.4	83.3
July 10	01 12.99	+03 28.0	1.636	1.915	+1.25	+4.3	13.5	89.3
July 20	01 24.39	+04 03.2	1.586	1.970	+1.00	+2.5	13.6	95.9
July 30	01 33.13	+04 20.3	1.536	2.027	+0.72	+0.7	13.7	103.3
Aug. 9	01 38.90	+04 18.5	1.487	2.085	+0.41	-1.2	13.8	111.5
Aug. 19	01 41.51	+03 58.3	1.444	2.144	+0.08	-3.0	14.0	120.5
Aug. 29	01 40.80	+03 20.5	1.410	2.203	-0.25	-4.7	14.1	130.4
Sept. 8	01 36.89	+02 28.0	1.389	2.264	-0.55	-5.9	14.2	141.1
Sept. 18	01 30.25	+01 25.6	1.387	2.324	-0.79	-6.5	14.4	152.4
Sept. 28	01 21.68	+00 20.0	1.407	2.385	-0.92	-6.4	14.6	163.7
Oct. 8	01 12.31	+00 40.9	1.452	2.446	-0.93	-5.5	14.8	172.0
Oct. 18	01 03.32	-01 30.1	1.525	2.507	-0.84	-4.1	15.1	167.2
Oct. 28	00 55.72	-02 02.9	1.625	2.567	-0.65	-2.3	15.4	156.6
Nov. 7	00 50.21	-02 17.2	1.749	2.628	-0.42	-0.4	15.7	145.8
Nov. 17	00 47.10	-02 13.3	1.894	2.688	-0.18	+1.3	16.0	135.3
Nov. 27	00 46.40	-01 53.3	2.056	2.747	+0.06	+2.8	16.3	125.3
Dec. 7	00 47.97	-01 19.4	2.233	2.806	+0.27	+4.0	16.7	115.8
Dec. 17	00 51.52	+00 34.4	2.420	2.865	+0.45	+5.0	17.0	106.9
Dec. 27	00 56.78	+00 19.4	2.614	2.923	+0.61	+5.8	17.3	98.3
Jan. 6	01 03.49	+01 20.0	2.812	2.980	+0.74	+6.3	17.6	90.1
Jan. 16	01 11.38	+02 25.3	3.010	3.037	+0.85	+6.7	17.8	82.2
Jan. 26	01 20.26	+03 34.0	3.207	3.093	+0.94	+7.0	18.1	74.5
Feb. 5	01 29.94	+04 44.7	3.399	3.148	+1.01	+7.1	18.3	67.0
Feb. 15	01 40.27	+05 56.2	3.584	3.203	+1.06	+7.2	18.6	59.8
Feb. 25	01 51.13	+07 07.6	3.760	3.257	+1.11	+7.1	18.8	52.7
Mar. 7	02 02.41	+08 18.0	3.926	3.310	+1.15	+7.0	19.0	45.7
Mar. 17	02 14.00	+09 26.6	4.079	3.362	+1.17	+6.7	19.2	38.8
Mar. 27	02 25.84	+10 32.9	4.218	3.414	+1.19	+6.5	19.3	32.0

Comet 230P/LINEAR

Epoch = 2022 June 30.0 TT
 T = 2022 Mar. 19.33958 TT
 Peri. = 313.43410 e = 0.5454589
 Node = 106.98435 2000.0 a = 3.4513737 AU
 Incl. = 15.47002 n = 0.15371495
 q = 1.5687912 AU P = 6.41 years

$$m_1 = 14.6 + 5 \log(\Delta) + 7.5 \log(r(t-60))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	23 23.66	-19 09.8	1.927	1.748	+2.05 +16.8	18.4	64.6
Jan. 11	23 44.70	-16 15.7	1.963	1.707	+2.17 +18.1	18.3	60.4
Jan. 21	00 06.81	-13 09.3	1.997	1.671	+2.27 +19.2	18.3	56.6
Jan. 31	00 29.90	-09 52.6	2.030	1.640	+2.36 +20.2	18.2	53.1
Feb. 10	00 53.88	-06 27.9	2.062	1.614	+2.45 +20.8	18.2	49.9
Feb. 20	01 18.71	-02 58.6	2.095	1.593	+2.53 +21.1	18.1	46.9
Mar. 2	01 44.35	+00 32.0	2.131	1.579	+2.61 +21.0	18.1	44.2
Mar. 12	02 10.79	+03 59.9	2.169	1.571	+2.69 +20.5	18.0	41.5
Mar. 22	02 38.00	+07 20.8	2.212	1.569	+2.76 +19.6	18.0	39.0
Apr. 1	03 05.94	+10 30.8	2.259	1.574	+2.83 +18.2	18.0	36.6
Apr. 11	03 34.56	+13 25.8	2.311	1.585	+2.89 +16.5	18.0	34.2
Apr. 21	04 03.73	+16 02.4	2.367	1.603	+2.94 +14.5	18.0	31.8
May 1	04 33.33	+18 17.9	2.428	1.627	+2.98 +12.3	18.0	29.3
May 11	05 03.17	+20 10.2	2.493	1.656	+2.99 +9.9	18.1	26.8
May 21	05 33.03	+21 38.4	2.562	1.690	+2.98 +7.5	18.1	24.1
May 31	06 02.69	+22 42.4	2.632	1.728	+2.95 +5.1	18.2	21.4
June 10	06 31.93	+23 23.0	2.704	1.771	+2.89 +2.8	18.3	18.5
June 20	07 00.51	+23 41.7	2.776	1.817	+2.82 +0.7	18.4	15.5
June 30	07 28.28	+23 40.4	2.846	1.866	+2.73 -1.1	18.5	12.3
July 10	07 55.10	+23 21.7	2.914	1.917	+2.63 -2.7	18.6	9.2
July 20	08 20.88	+22 48.1	2.979	1.971	+2.52 -4.1	18.7	6.1
July 30	08 45.57	+22 02.2	3.038	2.027	+2.41 -5.2	18.8	4.1
Aug. 9	09 09.16	+21 06.6	3.091	2.084	+2.30 -6.0	18.9	5.2
Aug. 19	09 31.66	+20 03.7	3.137	2.142	+2.19 -6.6	19.0	8.6
Aug. 29	09 53.09	+18 55.9	3.174	2.200	+2.09 -7.0	19.1	12.7
Sept. 8	10 13.50	+17 45.2	3.202	2.260	+1.99 -7.1	19.2	17.3
Sept. 18	10 32.91	+16 33.7	3.220	2.320	+1.89 -7.1	19.3	22.1
Sept. 28	10 51.37	+15 23.1	3.227	2.380	+1.79 -6.9	19.4	27.2
Oct. 8	11 08.88	+14 15.2	3.222	2.440	+1.70 -6.6	19.5	32.6
Oct. 18	11 25.45	+13 11.6	3.205	2.500	+1.61 -6.1	19.6	38.3
Oct. 28	11 41.08	+12 13.9	3.176	2.560	+1.51 -5.4	19.7	44.3
Nov. 7	11 55.70	+11 23.7	3.136	2.620	+1.41 -4.6	19.7	50.5
Nov. 17	12 09.28	+10 42.4	3.084	2.680	+1.30 -3.6	19.8	57.1
Nov. 27	12 21.72	+10 11.6	3.022	2.739	+1.18 -2.5	19.8	64.1
Dec. 7	12 32.90	+09 52.7	2.951	2.798	+1.04 -1.2	19.9	71.4
Dec. 17	12 42.68	+09 46.9	2.873	2.856	+0.89 +0.2	19.9	79.1
Dec. 27	12 50.88	+09 55.6	2.790	2.913	+0.72 +1.7	19.9	87.2
Jan. 6	12 57.29	+10 19.5	2.705	2.970	+0.54 +3.2	19.9	95.8
Jan. 16	13 01.73	+10 58.8	2.622	3.027	+0.33 +4.8	19.9	104.8
Jan. 26	13 04.00	+11 53.2	2.545	3.083	+0.10 +6.2	19.9	114.2
Feb. 5	13 03.96	+13 00.6	2.478	3.138	-0.13 +7.3	19.9	124.0
Feb. 15	13 01.58	+14 17.8	2.426	3.192	-0.36 +8.1	19.9	134.0
Feb. 25	12 57.00	+15 39.8	2.395	3.246	-0.57 +8.2	20.0	143.7
Mar. 7	12 50.54	+17 00.2	2.388	3.299	-0.73 +7.7	20.0	152.4
Mar. 17	12 42.78	+18 12.2	2.407	3.351	-0.82 +6.5	20.1	158.2
Mar. 27	12 34.41	+19 09.9	2.456	3.403	-0.84 +4.8	20.2	158.3

Comet 325P/Yang-Gao

Epoch = 2022 June 30.0 TT
 T = 2022 Mar. 29.21729 TT
 Peri. = 343.70764 e = 0.5933715
 Node = 257.55953 2000.0 a = 3.5227314 AU
 Incl. = 16.69401 n = 0.14906812
 q = 1.4324430 AU P = 6.61 years

$$m1 = 16.0 + 5 \log(\Delta) + 5.0 \log(r(t-100))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	14 02.06	-27 30.2	1.915	1.713	+2.99	-15.1	19.3	63.1
Jan. 11	14 32.94	-29 53.6	1.797	1.658	+3.21	-13.3	19.1	65.8
Jan. 21	15 06.12	-31 55.8	1.688	1.608	+3.44	-10.8	18.9	68.3
Jan. 31	15 41.52	-33 28.8	1.586	1.563	+3.65	-7.4	18.7	70.5
Feb. 10	16 18.72	-34 24.4	1.493	1.523	+3.79	-3.2	18.5	72.6
Feb. 20	16 56.99	-34 35.3	1.408	1.490	+3.85	+1.6	18.3	74.6
Mar. 2	17 35.37	-33 57.1	1.333	1.464	+3.80	+6.6	18.1	76.5
Mar. 12	18 12.67	-32 28.7	1.265	1.445	+3.63	+11.5	17.9	78.5
Mar. 22	18 47.88	-30 12.9	1.206	1.435	+3.37	+16.0	17.7	80.7
Apr. 1	19 20.19	-27 15.6	1.153	1.433	+3.05	+19.7	17.5	83.2
Apr. 11	19 49.04	-23 45.2	1.106	1.439	+2.68	+22.5	17.4	86.0
Apr. 21	20 14.18	-19 50.5	1.065	1.454	+2.30	+24.5	17.2	89.3
May 1	20 35.46	-15 40.4	1.028	1.477	+1.91	+25.5	17.1	93.1
May 11	20 52.77	-11 23.6	0.995	1.508	+1.51	+25.8	17.0	97.5
May 21	21 06.06	-07 07.7	0.966	1.545	+1.10	+25.3	16.8	102.7
May 31	21 15.18	-03 00.1	0.941	1.588	+0.68	+24.0	16.7	108.5
June 10	21 20.00	+00 51.0	0.922	1.636	+0.25	+21.9	16.7	115.1
June 20	21 20.55	+04 17.5	0.910	1.688	-0.18	+19.0	16.6	122.3
June 30	21 16.99	+07 10.3	0.907	1.744	-0.56	+15.1	16.6	130.0
July 10	21 09.93	+09 20.3	0.916	1.803	-0.86	+10.4	16.6	137.7
July 20	21 00.50	+10 41.9	0.940	1.865	-1.02	+5.4	16.7	144.8
July 30	20 50.15	+11 13.7	0.981	1.928	-1.02	+0.6	16.8	149.9
Aug. 9	20 40.48	+11 00.9	1.041	1.993	-0.87	-3.3	16.9	151.7
Aug. 19	20 32.79	+10 14.4	1.121	2.059	-0.63	-6.0	17.1	149.6
Aug. 29	20 27.84	+09 06.8	1.220	2.126	-0.33	-7.4	17.4	144.6
Sept. 8	20 25.95	+07 50.2	1.338	2.193	-0.02	-7.8	17.6	138.1
Sept. 18	20 27.01	+06 34.1	1.471	2.261	+0.26	-7.3	17.9	130.9
Sept. 28	20 30.70	+05 24.8	1.620	2.328	+0.50	-6.4	18.2	123.5
Oct. 8	20 36.67	+04 26.3	1.780	2.396	+0.71	-5.2	18.5	116.2
Oct. 18	20 44.49	+03 40.7	1.951	2.463	+0.87	-3.8	18.7	109.0
Oct. 28	20 53.81	+03 08.7	2.131	2.530	+1.00	-2.4	19.0	101.9
Nov. 7	21 04.32	+02 50.3	2.316	2.596	+1.11	-1.1	19.2	94.9
Nov. 17	21 15.74	+02 44.9	2.505	2.662	+1.18	+0.1	19.5	88.1
Nov. 27	21 27.86	+02 51.7	2.696	2.727	+1.24	+1.3	19.7	81.3
Dec. 7	21 40.49	+03 09.8	2.886	2.792	+1.28	+2.4	19.9	74.6
Dec. 17	21 53.48	+03 38.1	3.074	2.856	+1.31	+3.3	20.1	68.0
Dec. 27	22 06.71	+04 15.4	3.258	2.919	+1.33	+4.2	20.3	61.5
Jan. 6	22 20.08	+05 00.7	3.435	2.981	+1.34	+4.9	20.5	55.0
Jan. 16	22 33.49	+05 52.9	3.603	3.043	+1.34	+5.6	20.7	48.6
Jan. 26	22 46.90	+06 51.1	3.762	3.104	+1.34	+6.1	20.8	42.2
Feb. 5	23 00.23	+07 54.1	3.908	3.164	+1.33	+6.5	21.0	36.0
Feb. 15	23 13.45	+09 01.1	4.042	3.223	+1.31	+6.9	21.1	29.9
Feb. 25	23 26.50	+10 11.2	4.160	3.282	+1.29	+7.2	21.2	24.0
Mar. 7	23 39.35	+11 23.6	4.264	3.339	+1.27	+7.3	21.3	18.7
Mar. 17	23 51.96	+12 37.5	4.350	3.396	+1.25	+7.4	21.4	14.4
Mar. 27	00 04.29	+13 52.3	4.420	3.452	+1.22	+7.5	21.5	12.3

Comet 440P/Kobayashi = P/1997 B1

Epoch = 2022 June 30.0 TT
 T = 2022 Mar. 29.94021 TT
 Peri. = 183.31413 e = 0.7604669
 Node = 328.88176 2000.0 a = 8.5842120 AU
 Incl. = 12.33929 n = 0.03918803
 q = 2.0562029 AU P = 25.15 years

$$m1 = 6.3 + 5 \log(\Delta) + 30.0 \log(r(t-70))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	08 54.63	+29 14.9	1.341	2.249	-0.22	-2.6	19.4	150.2
Jan. 11	08 51.17	+28 44.7	1.259	2.210	-0.49	-3.6	19.0	160.1
Jan. 21	08 45.40	+28 03.1	1.200	2.174	-0.67	-5.0	18.6	168.8
Jan. 31	08 38.39	+27 06.1	1.166	2.143	-0.71	-6.6	18.2	169.9
Feb. 10	08 31.62	+25 52.1	1.157	2.116	-0.60	-8.3	18.0	161.7
Feb. 20	08 26.55	+24 22.9	1.171	2.094	-0.37	-9.6	17.7	151.6
Mar. 2	08 24.21	+22 42.7	1.206	2.077	-0.06	-10.5	17.5	141.7
Mar. 12	08 25.18	+20 55.6	1.260	2.065	+0.28	-10.9	17.4	132.5
Mar. 22	08 29.50	+19 04.9	1.328	2.058	+0.61	-11.2	17.2	124.0
Apr. 1	08 36.86	+17 12.4	1.409	2.056	+0.89	-11.3	17.2	116.2
Apr. 11	08 46.87	+15 18.5	1.501	2.060	+1.13	-11.5	17.1	109.2
Apr. 21	08 59.03	+13 23.0	1.601	2.069	+1.31	-11.6	17.1	102.7
May 1	09 12.87	+11 25.7	1.708	2.083	+1.46	-11.9	17.1	96.8
May 11	09 28.01	+09 26.0	1.821	2.103	+1.57	-12.1	17.1	91.3
May 21	09 44.10	+07 23.9	1.940	2.127	+1.65	-12.3	17.2	86.1
May 31	10 00.86	+05 19.6	2.063	2.155	+1.71	-12.5	17.3	81.2
June 10	10 18.10	+03 13.2	2.190	2.188	+1.74	-12.7	17.4	76.5
June 20	10 35.64	+01 05.5	2.321	2.225	+1.77	-12.8	17.5	71.9
June 30	10 53.37	-01 03.1	2.454	2.266	+1.78	-12.9	17.7	67.3
July 10	11 11.21	-03 11.8	2.589	2.310	+1.79	-12.9	17.9	62.9
July 20	11 29.07	-05 20.0	2.726	2.357	+1.79	-12.8	18.2	58.4
July 30	11 46.94	-07 26.9	2.862	2.408	+1.79	-12.6	18.4	53.9
Aug. 9	12 04.79	-09 31.8	2.998	2.460	+1.78	-12.4	18.7	49.3
Aug. 19	12 22.60	-11 34.2	3.132	2.515	+1.78	-12.1	19.0	44.7
Aug. 29	12 40.36	-13 33.3	3.263	2.573	+1.77	-11.7	19.3	40.0
Sept. 8	12 58.06	-15 28.7	3.389	2.632	+1.77	-11.3	19.6	35.2
Sept. 18	13 15.70	-17 19.8	3.510	2.692	+1.76	-10.9	19.9	30.4
Sept. 28	13 33.28	-19 06.2	3.625	2.754	+1.75	-10.4	20.3	25.5
Oct. 8	13 50.77	-20 47.5	3.731	2.817	+1.74	-9.8	20.6	20.6
Oct. 18	14 08.14	-22 23.3	3.827	2.882	+1.73	-9.3	20.9	15.9
Oct. 28	14 25.39	-23 53.5	3.913	2.947	+1.72	-8.7	21.3	11.7
Nov. 7	14 42.45	-25 17.7	3.987	3.013	+1.69	-8.1	21.6	9.2
Nov. 17	14 59.28	-26 35.9	4.048	3.079	+1.67	-7.5	21.9	10.1
Nov. 27	15 15.81	-27 48.0	4.095	3.146	+1.63	-6.9	.	14.0
Dec. 7	15 31.96	-28 54.3	4.128	3.214	+1.59	-6.3	.	19.3
Dec. 17	15 47.63	-29 54.7	4.145	3.282	+1.54	-5.7	.	25.2
Dec. 27	16 02.73	-30 49.8	4.148	3.350	+1.47	-5.2	.	31.6
Jan. 6	16 17.13	-31 39.9	4.136	3.419	+1.40	-4.7	.	38.3
Jan. 16	16 30.70	-32 25.5	4.109	3.487	+1.31	-4.3	.	45.2
Jan. 26	16 43.29	-33 07.2	4.069	3.556	+1.20	-4.0	.	52.5
Feb. 5	16 54.75	-33 45.8	4.016	3.625	+1.08	-3.7	.	60.0
Feb. 15	17 04.91	-34 21.9	3.953	3.694	+0.94	-3.5	.	67.8
Feb. 25	17 13.59	-34 56.2	3.880	3.762	+0.78	-3.3	.	75.8
Mar. 7	17 20.61	-35 29.1	3.802	3.831	+0.60	-3.2	.	84.2
Mar. 17	17 25.80	-36 00.9	3.722	3.899	+0.41	-3.1	.	92.8
Mar. 27	17 29.00	-36 31.6	3.642	3.968	+0.21	-3.0	.	101.8

Comet 319P/Catalina-McNaught

Epoch = 2022 June 30.0 TT
 T = 2022 Mar. 31.42854 TT
 Peri. = 203.67643 e = 0.6666804
 Node = 111.36697 2000.0 a = 3.5669898 AU
 Incl. = 15.09449 n = 0.14630234
 q = 1.1889476 AU P = 6.74 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	17 13.65	-15 53.5	2.482	1.619	+3.07	-7.5	19.5	22.5
Jan. 11	17 45.30	-17 01.1	2.381	1.543	+3.28	-5.8	19.3	24.7
Jan. 21	18 19.10	-17 50.3	2.284	1.472	+3.50	-3.8	19.1	26.6
Jan. 31	18 54.98	-18 17.3	2.196	1.405	+3.70	-1.3	18.8	28.0
Feb. 10	19 32.73	-18 18.0	2.117	1.344	+3.87	+1.5	18.6	29.1
Feb. 20	20 11.99	-17 49.7	2.051	1.291	+3.99	+4.5	18.4	29.8
Mar. 2	20 52.29	-16 50.9	1.999	1.247	+4.06	+7.6	18.2	30.3
Mar. 12	21 33.00	-15 22.2	1.961	1.215	+4.07	+10.4	18.1	30.5
Mar. 22	22 13.49	-13 27.1	1.939	1.195	+4.02	+12.8	18.0	30.6
Apr. 1	22 53.20	-11 10.9	1.931	1.189	+3.91	+14.5	18.0	30.8
Apr. 11	23 31.66	-08 40.9	1.937	1.197	+3.76	+15.5	18.0	31.1
Apr. 21	00 08.51	-06 04.7	1.953	1.218	+3.59	+15.7	18.1	31.6
May 1	00 43.59	-03 29.6	1.979	1.252	+3.40	+15.2	18.2	32.5
May 11	01 16.78	-01 01.6	2.010	1.296	+3.21	+14.2	18.4	33.6
May 21	01 48.05	+01 14.5	2.045	1.350	+3.02	+12.8	18.5	35.2
May 31	02 17.45	+03 15.9	2.080	1.412	+2.84	+11.3	18.7	37.2
June 10	02 44.99	+05 00.8	2.113	1.479	+2.65	+9.5	18.9	39.6
June 20	03 10.71	+06 28.7	2.141	1.552	+2.47	+7.9	19.1	42.5
June 30	03 34.64	+07 39.7	2.164	1.627	+2.29	+6.2	19.3	45.8
July 10	03 56.78	+08 34.5	2.178	1.705	+2.11	+4.6	19.4	49.6
July 20	04 17.10	+09 14.5	2.184	1.785	+1.93	+3.2	19.6	53.9
July 30	04 35.57	+09 40.8	2.181	1.866	+1.74	+1.9	19.7	58.6
Aug. 9	04 52.09	+09 55.0	2.167	1.947	+1.54	+0.8	19.8	63.9
Aug. 19	05 06.58	+09 58.7	2.143	2.029	+1.33	-0.1	20.0	69.7
Aug. 29	05 18.88	+09 53.7	2.110	2.110	+1.10	-0.9	20.1	76.1
Sept. 8	05 28.82	+09 41.6	2.070	2.191	+0.86	-1.5	20.1	83.1
Sept. 18	05 36.19	+09 24.4	2.023	2.271	+0.59	-1.9	20.2	90.8
Sept. 28	05 40.78	+09 04.2	1.973	2.351	+0.30	-2.1	20.3	99.2
Oct. 8	05 42.36	+08 43.1	1.923	2.430	-0.01	-2.1	20.3	108.3
Oct. 18	05 40.81	+08 23.5	1.879	2.507	-0.33	-1.8	20.4	118.1
Oct. 28	05 36.13	+08 08.0	1.844	2.584	-0.63	-1.2	20.4	128.7
Nov. 7	05 28.56	+07 58.9	1.825	2.660	-0.90	-0.5	20.5	139.8
Nov. 17	05 18.70	+07 58.3	1.828	2.735	-1.08	+0.5	20.6	151.0
Nov. 27	05 07.40	+08 07.5	1.857	2.808	-1.17	+1.5	20.7	161.0
Dec. 7	04 55.81	+08 27.0	1.915	2.881	-1.13	+2.5	20.9	165.9
Dec. 17	04 45.00	+08 56.1	2.004	2.952	-1.00	+3.4	21.0	161.0
Dec. 27	04 35.88	+09 33.4	2.123	3.023	-0.79	+4.1	21.2	151.3
Jan. 6	04 29.03	+10 17.1	2.268	3.092	-0.55	+4.6	21.5	140.7
Jan. 16	04 24.67	+11 05.2	2.435	3.160	-0.30	+5.0	21.7	130.2
Jan. 26	04 22.79	+11 56.1	2.620	3.227	-0.06	+5.2	21.9	120.0
Feb. 5	04 23.23	+12 48.1	2.818	3.293	+0.16	+5.2	.	110.3
Feb. 15	04 25.71	+13 40.1	3.025	3.358	+0.35	+5.2	.	101.1
Feb. 25	04 29.97	+14 31.0	3.236	3.421	+0.51	+5.0	.	92.3
Mar. 7	04 35.74	+15 19.8	3.449	3.484	+0.65	+4.7	.	83.8
Mar. 17	04 42.75	+16 06.0	3.659	3.546	+0.76	+4.4	.	75.6
Mar. 27	04 50.80	+16 48.9	3.864	3.606	+0.86	+4.1	.	67.7

Comet A/2021 F1

Epoch = 2022 June 30.0 TT
 T = 2022 Apr. 6.87235 TT
 Peri. = 146.82125
 Node = 203.45187 2000.0
 Incl. = 107.32537
 q = 0.9954654 AU
 e = 0.9958021

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

Oh	TT	R. A. (2000)		Decl.	Delta	r	Daily motion		m1	Elong.
2022/23		h	m	°			m	'		°
Jan.	1	16	00.55	+33 11.4	1.946	1.830	+3.47	+24.2	15.7	68.5
Jan.	11	16	39.68	+37 33.9	1.745	1.709	+4.53	+28.4	14.8	71.5
Jan.	21	17	31.43	+42 24.7	1.580	1.590	+6.05	+28.8	13.9	72.5
Jan.	31	18	39.94	+46 44.9	1.466	1.475	+7.82	+20.7	13.0	70.9
Feb.	10	20	03.81	+48 55.9	1.414	1.363	+8.81	+2.4	12.3	66.5
Feb.	20	21	30.00	+47 45.6	1.427	1.260	+8.07	-17.7	11.7	59.6
Mar.	2	22	43.04	+43 46.2	1.495	1.167	+6.31	-29.8	11.3	51.2
Mar.	12	23	38.47	+38 26.1	1.600	1.089	+4.68	-33.6	11.2	42.0
Mar.	22	00	19.72	+32 49.6	1.720	1.032	+3.53	-33.3	11.4	32.6
Apr.	1	00	51.36	+27 23.7	1.838	1.001	+2.78	-31.7	11.7	23.2
Apr.	11	01	16.82	+22 14.8	1.939	0.998	+2.30	-30.0	12.3	14.1
Apr.	21	01	38.40	+17 20.8	2.015	1.025	+2.01	-28.7	12.9	6.8
May	1	01	57.63	+12 37.2	2.063	1.077	+1.83	-28.0	13.7	8.6
May	11	02	15.47	+07 57.5	2.083	1.152	+1.73	-28.0	14.4	16.5
May	21	02	32.52	+03 14.4	2.080	1.242	+1.68	-28.8	15.0	25.3
May	31	02	49.18	-01 39.8	2.058	1.344	+1.65	-30.3	15.7	34.1
June	10	03	05.64	-06 52.9	2.025	1.454	+1.64	-32.6	16.3	42.8
June	20	03	22.04	-12 31.1	1.986	1.570	+1.64	-35.4	16.8	51.5
June	30	03	38.45	-18 38.8	1.949	1.688	+1.64	-38.5	17.4	60.0
July	10	03	54.85	-25 16.8	1.923	1.809	+1.64	-41.3	17.9	68.1
July	20	04	11.23	-32 20.6	1.914	1.930	+1.63	-43.5	18.3	75.5
July	30	04	27.50	-39 40.8	1.928	2.051	+1.62	-44.4	18.8	82.1
Aug.	9	04	43.50	-47 03.9	1.969	2.173	+1.58	-43.8	19.3	87.3
Aug.	19	04	58.99	-54 14.2	2.040	2.293	+1.51	-41.8	19.8	91.0
Aug.	29	05	13.60	-60 58.7	2.140	2.413	+1.39	-38.6	20.3	93.0
Sept.	8	05	26.60	-67 07.9	2.266	2.533	+1.17	-34.7	20.8	93.3
Sept.	18	05	36.76	-72 36.8	2.413	2.651	+0.78	-30.6	21.3	92.3
Sept.	28	05	41.43	-77 24.6	2.577	2.768	-0.03	-26.5	21.8	90.2
Oct.	8	05	34.08	-81 30.7	2.754	2.884	-1.92	-22.2	.	87.2
Oct.	18	04	55.35	-84 50.3	2.937	2.999	-7.38	-16.7	.	83.8
Oct.	28	02	47.55	-86 51.7	3.124	3.112	-19.60	-4.6	.	80.2
Nov.	7	23	48.21	-86 26.8	3.310	3.225	-11.76	+9.0	.	76.4
Nov.	17	22	35.80	-84 39.9	3.493	3.337	-3.35	+11.7	.	72.8
Nov.	27	22	17.43	-82 44.1	3.668	3.447	-0.51	+11.3	.	69.4
Dec.	7	22	18.06	-80 55.7	3.835	3.557	+0.60	+10.3	.	66.4
Dec.	17	22	26.83	-79 17.6	3.990	3.665	+1.15	+9.2	.	63.9
Dec.	27	22	39.81	-77 49.9	4.134	3.772	+1.45	+8.2	.	61.9
Jan.	6	22	55.27	-76 32.5	4.264	3.879	+1.64	+7.2	.	60.7
Jan.	16	23	12.32	-75 24.8	4.380	3.984	+1.78	+6.2	.	60.2
Jan.	26	23	30.56	-74 26.6	4.482	4.089	+1.88	+5.3	.	60.5
Feb.	5	23	49.75	-73 37.7	4.571	4.192	+1.96	+4.4	.	61.6
Feb.	15	00	09.75	-72 57.9	4.648	4.295	+2.05	+3.5	.	63.3
Feb.	25	00	30.58	-72 27.1	4.712	4.397	+2.13	+2.6	.	65.6
Mar.	7	00	52.22	-72 05.2	4.767	4.498	+2.21	+1.7	.	68.4
Mar.	17	01	14.72	-71 51.8	4.814	4.598	+2.30	+0.9	.	71.6
Mar.	27	01	38.19	-71 46.8	4.854	4.698	+2.40	+0.1	.	75.1

Comet 135P/Shoemaker-Levy

Epoch = 2022 June 30.0 TT
 T = 2022 Apr. 7.35506 TT
 Peri. = 22.32383 e = 0.2948210
 Node = 213.02616 2000.0 a = 3.8005956 AU
 Incl. = 6.06330 n = 0.13302295
 q = 2.6801002 AU P = 7.41 years

$$m1 = 8.0 + 5 \log(\Delta) + 20.0 \log(r(t+50))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	15 00.55	-17 16.0	3.219	2.735	+1.61	-5.4	19.1	52.6
Jan. 11	15 16.42	-18 05.9	3.099	2.725	+1.56	-4.5	19.0	58.9
Jan. 21	15 31.79	-18 47.4	2.973	2.715	+1.50	-3.7	18.9	65.4
Jan. 31	15 46.49	-19 20.3	2.843	2.707	+1.42	-2.8	18.8	72.0
Feb. 10	16 00.29	-19 44.3	2.709	2.699	+1.32	-1.9	18.7	78.9
Feb. 20	16 12.97	-19 59.3	2.574	2.693	+1.20	-1.0	18.6	86.0
Mar. 2	16 24.27	-20 05.5	2.439	2.688	+1.04	-0.1	18.5	93.5
Mar. 12	16 33.90	-20 03.1	2.307	2.684	+0.86	+0.7	18.4	101.3
Mar. 22	16 41.57	-19 52.6	2.180	2.682	+0.65	+1.5	18.3	109.4
Apr. 1	16 47.03	-19 34.5	2.061	2.680	+0.41	+2.2	18.2	118.1
Apr. 11	16 50.02	-19 09.6	1.952	2.680	+0.16	+2.8	18.1	127.2
Apr. 21	16 50.45	-18 38.7	1.858	2.681	-0.10	+3.4	18.0	136.9
May 1	16 48.35	-18 03.1	1.781	2.683	-0.34	+3.8	17.9	147.1
May 11	16 44.03	-17 24.3	1.725	2.687	-0.54	+4.0	17.9	157.7
May 21	16 38.05	-16 44.6	1.693	2.692	-0.66	+3.9	17.9	168.1
May 31	16 31.21	-16 06.8	1.687	2.697	-0.70	+3.6	17.9	174.3
June 10	16 24.44	-15 33.9	1.706	2.704	-0.64	+2.9	18.0	166.7
June 20	16 18.66	-15 08.8	1.751	2.713	-0.50	+2.0	18.1	156.3
June 30	16 14.53	-14 53.2	1.819	2.722	-0.30	+1.0	18.2	146.0
July 10	16 12.53	-14 47.8	1.907	2.732	-0.07	0.0	18.3	136.1
July 20	16 12.84	-14 52.3	2.012	2.744	+0.16	-0.9	18.5	126.8
July 30	16 15.44	-15 05.4	2.130	2.756	+0.38	-1.7	18.7	118.0
Aug. 9	16 20.24	-15 25.2	2.259	2.770	+0.59	-2.3	18.9	109.7
Aug. 19	16 27.02	-15 49.9	2.395	2.784	+0.78	-2.7	19.1	101.8
Aug. 29	16 35.57	-16 17.4	2.536	2.800	+0.94	-2.8	19.2	94.3
Sept. 8	16 45.69	-16 45.9	2.680	2.816	+1.09	-2.8	19.4	87.1
Sept. 18	16 57.15	-17 13.5	2.825	2.833	+1.21	-2.7	19.6	80.2
Sept. 28	17 09.76	-17 38.8	2.969	2.851	+1.32	-2.4	19.8	73.5
Oct. 8	17 23.37	-18 00.5	3.109	2.870	+1.41	-1.9	19.9	67.0
Oct. 18	17 37.79	-18 17.4	3.246	2.889	+1.48	-1.4	20.1	60.6
Oct. 28	17 52.88	-18 28.6	3.377	2.910	+1.54	-0.8	20.2	54.2
Nov. 7	18 08.51	-18 33.3	3.500	2.931	+1.59	-0.1	20.4	48.0
Nov. 17	18 24.54	-18 31.1	3.615	2.952	+1.62	+0.6	20.5	41.8
Nov. 27	18 40.84	-18 21.6	3.721	2.974	+1.64	+1.4	20.7	35.6
Dec. 7	18 57.31	-18 04.6	3.815	2.997	+1.65	+2.1	20.8	29.5
Dec. 17	19 13.83	-17 40.1	3.898	3.020	+1.65	+2.8	20.9	23.4
Dec. 27	19 30.30	-17 08.5	3.969	3.044	+1.64	+3.6	21.0	17.3
Jan. 6	19 46.63	-16 29.9	4.026	3.068	+1.62	+4.2	21.1	11.5
Jan. 16	20 02.72	-15 44.9	4.069	3.093	+1.59	+4.8	21.2	6.3
Jan. 26	20 18.52	-14 54.0	4.097	3.118	+1.56	+5.4	21.3	5.0
Feb. 5	20 33.92	-13 58.0	4.111	3.143	+1.52	+5.9	21.4	9.5
Feb. 15	20 48.88	-12 57.7	4.110	3.169	+1.47	+6.2	21.4	15.3
Feb. 25	21 03.34	-11 53.8	4.095	3.195	+1.42	+6.6	21.5	21.5
Mar. 7	21 17.22	-10 47.2	4.064	3.221	+1.35	+6.8	21.6	27.8
Mar. 17	21 30.48	-09 38.9	4.020	3.247	+1.29	+6.9	21.6	34.3
Mar. 27	21 43.06	-08 29.8	3.963	3.274	+1.22	+6.9	21.6	40.8

Comet C/2020 U4 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2022 Apr. 8.09127 TT
 Peri. = 69.54638
 Node = 120.01421 2000.0
 Incl. = 167.03588
 q = 5.3537265 AU
 e = 1.0013110

$$m1 = 3.4 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	03 13.39	+31 11.6	4.686	5.402	-1.20	-5.8	17.7	132.8
Jan. 11	03 02.35	+30 14.5	4.827	5.393	-0.98	-5.6	17.8	120.5
Jan. 21	02 53.54	+29 20.9	4.990	5.384	-0.76	-5.0	17.9	108.5
Jan. 31	02 46.85	+28 33.6	5.167	5.377	-0.56	-4.3	17.9	97.0
Feb. 10	02 42.11	+27 54.0	5.351	5.371	-0.38	-3.5	18.0	85.9
Feb. 20	02 39.05	+27 22.6	5.532	5.365	-0.22	-2.7	18.1	75.2
Mar. 2	02 37.42	+26 59.2	5.707	5.361	-0.09	-1.9	18.1	64.8
Mar. 12	02 36.98	+26 43.6	5.867	5.358	+0.01	-1.2	18.2	54.9
Mar. 22	02 37.49	+26 34.8	6.010	5.355	+0.10	-0.5	18.2	45.3
Apr. 1	02 38.75	+26 32.0	6.130	5.354	+0.16	0.0	18.3	36.0
Apr. 11	02 40.56	+26 34.5	6.226	5.354	+0.20	+0.5	18.3	27.1
Apr. 21	02 42.75	+26 41.4	6.295	5.355	+0.23	+0.9	18.3	18.9
May 1	02 45.15	+26 52.0	6.336	5.356	+0.25	+1.2	18.3	12.4
May 11	02 47.60	+27 05.6	6.348	5.359	+0.24	+1.5	18.3	10.7
May 21	02 49.96	+27 21.5	6.332	5.363	+0.22	+1.7	18.3	15.5
May 31	02 52.07	+27 39.2	6.287	5.368	+0.19	+1.8	18.3	23.0
June 10	02 53.77	+27 58.1	6.215	5.374	+0.14	+1.9	18.3	31.4
June 20	02 54.89	+28 17.6	6.118	5.381	+0.07	+2.0	18.3	40.1
June 30	02 55.27	+28 37.2	5.999	5.389	-0.01	+1.9	18.3	49.2
July 10	02 54.72	+28 56.2	5.860	5.398	-0.11	+1.8	18.2	58.5
July 20	02 53.04	+29 13.5	5.705	5.408	-0.24	+1.6	18.2	68.1
July 30	02 50.02	+29 28.3	5.539	5.419	-0.38	+1.3	18.1	77.9
Aug. 9	02 45.48	+29 39.0	5.368	5.431	-0.54	+0.8	18.1	88.2
Aug. 19	02 39.25	+29 43.9	5.197	5.444	-0.72	+0.1	18.0	98.8
Aug. 29	02 31.21	+29 40.9	5.033	5.458	-0.91	-0.8	18.0	109.8
Sept. 8	02 21.35	+29 27.6	4.884	5.473	-1.08	-2.0	17.9	121.1
Sept. 18	02 09.78	+29 01.7	4.757	5.489	-1.24	-3.4	17.9	132.7
Sept. 28	01 56.80	+28 21.2	4.660	5.505	-1.36	-4.9	17.9	144.3
Oct. 8	01 42.89	+27 25.6	4.600	5.523	-1.42	-6.4	17.8	155.2
Oct. 18	01 28.64	+26 15.7	4.580	5.542	-1.42	-7.7	17.9	163.1
Oct. 28	01 14.72	+24 54.3	4.605	5.561	-1.35	-8.6	17.9	162.7
Nov. 7	01 01.74	+23 25.8	4.672	5.581	-1.23	-9.1	17.9	154.2
Nov. 17	00 50.18	+21 55.1	4.781	5.603	-1.07	-9.0	18.0	143.1
Nov. 27	00 40.34	+20 27.1	4.925	5.625	-0.88	-8.5	18.1	131.3
Dec. 7	00 32.34	+19 05.6	5.097	5.648	-0.70	-7.7	18.2	119.5
Dec. 17	00 26.16	+17 53.5	5.290	5.672	-0.52	-6.6	18.3	107.9
Dec. 27	00 21.68	+16 52.0	5.497	5.696	-0.36	-5.5	18.4	96.7
Jan. 6	00 18.74	+16 01.8	5.709	5.722	-0.22	-4.4	18.5	85.8
Jan. 16	00 17.13	+15 22.5	5.919	5.748	-0.10	-3.4	18.7	75.2
Jan. 26	00 16.65	+14 53.3	6.122	5.775	+0.01	-2.4	18.8	65.0
Feb. 5	00 17.10	+14 33.4	6.311	5.802	+0.09	-1.5	18.9	55.0
Feb. 15	00 18.28	+14 21.5	6.482	5.831	+0.15	-0.8	18.9	45.4
Feb. 25	00 20.03	+14 16.6	6.631	5.860	+0.20	-0.1	19.0	36.1
Mar. 7	00 22.19	+14 17.5	6.756	5.890	+0.23	+0.4	19.1	27.1
Mar. 17	00 24.60	+14 23.2	6.853	5.921	+0.25	+0.8	19.2	18.9
Mar. 27	00 27.14	+14 32.7	6.923	5.952	+0.26	+1.1	19.2	12.4

Comet 274P/Tombaugh-Tenagra

Epoch = 2022 June 30.0 TT
 T = 2022 Apr. 8.48361 TT
 Peri. = 38.47580 e = 0.4394119
 Node = 81.33771 2000.0 a = 4.3760554 AU
 Incl. = 15.81533 n = 0.10766632
 q = 2.4531646 AU P = 9.15 years

$$m1 = 10.5 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	05 33.52	+27 19.9	1.594	2.552	-0.81	+6.4	17.6	163.4
Jan. 11	05 26.21	+28 20.7	1.624	2.534	-0.61	+5.7	17.6	151.7
Jan. 21	05 21.28	+29 14.5	1.678	2.517	-0.33	+5.0	17.6	140.5
Jan. 31	05 19.36	+30 01.7	1.751	2.502	-0.01	+4.4	17.7	130.0
Feb. 10	05 20.76	+30 43.4	1.840	2.488	+0.32	+3.9	17.8	120.3
Feb. 20	05 25.43	+31 20.3	1.940	2.477	+0.64	+3.4	17.8	111.3
Mar. 2	05 33.14	+31 52.5	2.048	2.468	+0.93	+2.9	17.9	103.0
Mar. 12	05 43.59	+32 19.5	2.161	2.461	+1.18	+2.4	18.0	95.3
Mar. 22	05 56.39	+32 40.6	2.277	2.456	+1.40	+1.7	18.1	88.2
Apr. 1	06 11.20	+32 54.6	2.393	2.454	+1.58	+1.0	18.2	81.6
Apr. 11	06 27.68	+33 00.5	2.508	2.453	+1.73	+0.1	18.3	75.3
Apr. 21	06 45.50	+32 57.3	2.621	2.455	+1.84	-0.9	18.4	69.4
May 1	07 04.36	+32 44.2	2.731	2.459	+1.93	-1.9	18.5	63.8
May 11	07 24.00	+32 20.8	2.837	2.465	+2.00	-2.9	18.6	58.5
May 21	07 44.15	+31 46.7	2.939	2.473	+2.04	-4.0	18.7	53.4
May 31	08 04.62	+31 02.2	3.037	2.483	+2.06	-5.0	18.8	48.4
June 10	08 25.21	+30 07.5	3.129	2.495	+2.06	-6.0	18.9	43.6
June 20	08 45.77	+29 03.3	3.216	2.509	+2.05	-6.9	19.0	39.0
June 30	09 06.17	+27 50.4	3.297	2.525	+2.03	-7.7	19.1	34.4
July 10	09 26.33	+26 29.7	3.372	2.543	+2.00	-8.5	19.2	30.0
July 20	09 46.17	+25 02.4	3.440	2.562	+1.96	-9.1	19.3	25.7
July 30	10 05.64	+23 29.5	3.501	2.584	+1.93	-9.5	19.4	21.5
Aug. 9	10 24.72	+21 52.4	3.555	2.607	+1.88	-9.9	19.5	17.6
Aug. 19	10 43.38	+20 12.2	3.600	2.631	+1.84	-10.1	19.6	14.3
Aug. 29	11 01.62	+18 30.1	3.637	2.657	+1.80	-10.3	19.7	12.0
Sept. 8	11 19.44	+16 47.4	3.664	2.684	+1.76	-10.3	19.8	11.5
Sept. 18	11 36.83	+15 05.3	3.683	2.713	+1.72	-10.1	19.8	13.0
Sept. 28	11 53.80	+13 24.8	3.691	2.743	+1.67	-9.9	19.9	16.2
Oct. 8	12 10.33	+11 47.2	3.688	2.774	+1.63	-9.6	20.0	20.4
Oct. 18	12 26.41	+10 13.6	3.675	2.806	+1.58	-9.1	20.0	25.2
Oct. 28	12 42.01	+08 44.8	3.651	2.839	+1.53	-8.6	20.1	30.4
Nov. 7	12 57.09	+07 22.1	3.616	2.873	+1.48	-7.9	20.2	36.0
Nov. 17	13 11.60	+06 06.3	3.569	2.908	+1.42	-7.2	20.2	41.8
Nov. 27	13 25.46	+04 58.3	3.512	2.943	+1.35	-6.3	20.3	47.9
Dec. 7	13 38.58	+03 59.0	3.444	2.979	+1.27	-5.4	20.3	54.3
Dec. 17	13 50.85	+03 09.1	3.367	3.016	+1.18	-4.5	20.3	61.0
Dec. 27	14 02.14	+02 29.2	3.281	3.053	+1.07	-3.4	20.4	68.1
Jan. 6	14 12.28	+02 00.0	3.189	3.091	+0.94	-2.3	20.4	75.4
Jan. 16	14 21.11	+01 41.5	3.091	3.129	+0.80	-1.2	20.4	83.1
Jan. 26	14 28.42	+01 34.1	2.991	3.168	+0.64	-0.1	20.4	91.2
Feb. 5	14 34.01	+01 37.5	2.892	3.207	+0.46	+0.9	20.4	99.6
Feb. 15	14 37.72	+01 51.0	2.795	3.246	+0.26	+1.9	20.4	108.5
Feb. 25	14 39.37	+02 13.4	2.706	3.286	+0.05	+2.7	20.4	117.7
Mar. 7	14 38.89	+02 42.8	2.629	3.326	-0.16	+3.2	20.4	127.3
Mar. 17	14 36.33	+03 16.4	2.568	3.365	-0.37	+3.5	20.5	137.1
Mar. 27	14 31.85	+03 50.9	2.527	3.406	-0.54	+3.3	20.5	146.8

Comet 99P/Kowal

Epoch = 2022 June 30.0 TT
 T = 2022 Apr. 12.46449 TT
 Peri. = 174.91420 e = 0.2290817
 Node = 28.10163 2000.0 a = 6.1045189 AU
 Incl. = 4.33979 n = 0.06534719
 q = 4.7060853 AU P = 15.08 years

$$m1 = 0.5 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	13 30.22	-08 11.8	4.856	4.722	+0.55	-3.5	17.4	76.3
Jan. 11	13 35.32	-08 44.2	4.699	4.719	+0.45	-2.9	17.3	85.2
Jan. 21	13 39.36	-09 10.2	4.540	4.716	+0.34	-2.2	17.3	94.2
Jan. 31	13 42.21	-09 29.5	4.383	4.714	+0.22	-1.5	17.2	103.6
Feb. 10	13 43.76	-09 41.6	4.233	4.712	+0.08	-0.8	17.1	113.4
Feb. 20	13 43.96	-09 46.5	4.093	4.710	-0.05	-0.1	17.0	123.4
Mar. 2	13 42.80	-09 44.2	3.969	4.709	-0.19	+0.6	17.0	133.7
Mar. 12	13 40.36	-09 35.1	3.865	4.708	-0.31	+1.3	16.9	144.3
Mar. 22	13 36.80	-09 20.0	3.784	4.707	-0.41	+1.8	16.8	155.2
Apr. 1	13 32.40	-09 00.4	3.730	4.706	-0.47	+2.1	16.8	166.2
Apr. 11	13 27.50	-08 38.1	3.705	4.706	-0.50	+2.3	16.8	177.3
Apr. 21	13 22.50	-08 15.2	3.710	4.706	-0.49	+2.2	16.8	171.6
May 1	13 17.80	-07 53.8	3.744	4.707	-0.44	+2.0	16.8	160.6
May 11	13 13.76	-07 36.2	3.806	4.707	-0.36	+1.5	16.9	149.9
May 21	13 10.67	-07 24.1	3.893	4.708	-0.25	+0.9	16.9	139.5
May 31	13 08.72	-07 18.5	4.001	4.710	-0.13	+0.2	17.0	129.4
June 10	13 08.02	-07 20.2	4.126	4.711	0.00	-0.6	17.0	119.7
June 20	13 08.60	-07 29.3	4.263	4.713	+0.13	-1.3	17.1	110.3
June 30	13 10.43	-07 45.7	4.410	4.715	+0.25	-2.0	17.2	101.3
July 10	13 13.45	-08 08.8	4.562	4.718	+0.36	-2.7	17.3	92.6
July 20	13 17.57	-08 38.1	4.715	4.721	+0.47	-3.2	17.3	84.2
July 30	13 22.68	-09 12.9	4.866	4.724	+0.56	-3.7	17.4	76.0
Aug. 9	13 28.70	-09 52.3	5.012	4.727	+0.65	-4.2	17.5	68.1
Aug. 19	13 35.51	-10 35.7	5.151	4.731	+0.72	-4.5	17.6	60.3
Aug. 29	13 43.03	-11 22.2	5.280	4.735	+0.79	-4.8	17.6	52.6
Sept. 8	13 51.16	-12 11.1	5.397	4.740	+0.84	-5.0	17.7	45.1
Sept. 18	13 59.84	-13 01.8	5.500	4.744	+0.89	-5.1	17.7	37.7
Sept. 28	14 08.97	-13 53.6	5.588	4.749	+0.94	-5.2	17.8	30.3
Oct. 8	14 18.49	-14 45.8	5.659	4.754	+0.97	-5.2	17.8	22.9
Oct. 18	14 28.31	-15 37.8	5.712	4.760	+1.00	-5.2	17.8	15.5
Oct. 28	14 38.37	-16 29.2	5.747	4.765	+1.02	-5.1	17.9	8.2
Nov. 7	14 48.60	-17 19.3	5.762	4.771	+1.03	-4.9	17.9	1.3
Nov. 17	14 58.89	-18 07.7	5.758	4.778	+1.03	-4.7	17.9	6.9
Nov. 27	15 09.19	-18 54.1	5.734	4.784	+1.03	-4.5	17.9	14.4
Dec. 7	15 19.39	-19 38.0	5.691	4.791	+1.01	-4.2	17.9	22.0
Dec. 17	15 29.39	-20 19.2	5.629	4.798	+0.99	-4.0	17.9	29.7
Dec. 27	15 39.09	-20 57.5	5.549	4.806	+0.95	-3.7	17.9	37.5
Jan. 6	15 48.36	-21 32.7	5.452	4.813	+0.90	-3.4	17.8	45.5
Jan. 16	15 57.09	-22 04.9	5.340	4.821	+0.84	-3.0	17.8	53.5
Jan. 26	16 05.15	-22 33.8	5.216	4.829	+0.76	-2.7	17.8	61.8
Feb. 5	16 12.39	-22 59.7	5.082	4.838	+0.67	-2.4	17.7	70.2
Feb. 15	16 18.67	-23 22.6	4.940	4.846	+0.57	-2.1	17.7	78.9
Feb. 25	16 23.84	-23 42.6	4.793	4.855	+0.45	-1.8	17.6	87.7
Mar. 7	16 27.77	-23 59.8	4.646	4.864	+0.32	-1.6	17.6	96.8
Mar. 17	16 30.36	-24 14.2	4.502	4.874	+0.18	-1.3	17.5	106.2
Mar. 27	16 31.50	-24 25.8	4.366	4.883	+0.03	-1.0	17.5	115.8

Comet C/2021 03 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2022 Apr. 21.04800 TT
 Peri. = 299.99041
 Node = 189.01971 2000.0
 Incl. = 56.79205
 q = 0.2873093 AU
 e = 1.0000843

$$m1 = 10.6 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	22 14.71	+03 09.4	2.646	2.275	+0.90	-6.6	16.3	57.5
Jan. 11	22 24.55	+02 09.9	2.628	2.122	+1.08	-5.2	16.0	49.3
Jan. 21	22 36.14	+01 23.3	2.590	1.964	+1.26	-4.0	15.6	41.5
Jan. 31	22 49.52	+00 47.6	2.530	1.801	+1.44	-3.0	15.2	34.1
Feb. 10	23 04.80	+00 20.9	2.446	1.631	+1.64	-2.3	14.7	27.1
Feb. 20	23 22.20	+00 00.7	2.337	1.454	+1.87	-1.8	14.1	20.6
Mar. 2	23 42.18	+00 15.4	2.202	1.269	+2.16	-1.5	13.3	14.8
Mar. 12	00 05.48	+00 30.4	2.038	1.074	+2.56	-1.6	12.5	10.0
Mar. 22	00 33.39	+00 47.1	1.845	0.867	+3.12	-1.8	11.3	7.5
Apr. 1	01 08.26	-01 05.3	1.615	0.647	+4.01	-1.5	9.7	8.9
Apr. 11	01 54.20	-01 00.9	1.333	0.423	+5.40	+5.9	7.5	13.0
Apr. 21	02 51.93	+03 20.9	0.964	0.287	+5.39	+71.0	5.1	16.6
May 1	03 33.22	+23 46.7	0.663	0.420	+3.14	171.9	5.9	17.0
May 11	04 08.97	+53 20.1	0.605	0.644	+5.00	163.3	7.6	37.4
May 21	05 41.24	+75 25.4	0.698	0.864	+19.14	+89.0	9.2	57.2
May 31	10 56.36	+80 52.7	0.852	1.072	+27.22	-33.2	10.6	69.5
June 10	13 24.77	+73 29.3	1.027	1.267	+6.39	-46.5	11.7	76.7
June 20	14 08.34	+66 16.1	1.211	1.452	+2.81	-39.4	12.6	80.9
June 30	14 31.21	+60 09.7	1.399	1.629	+1.84	-33.6	13.4	83.2
July 10	14 47.75	+54 54.8	1.592	1.799	+1.49	-29.2	14.2	84.1
July 20	15 01.84	+50 19.2	1.787	1.962	+1.34	-25.8	14.8	84.0
July 30	15 14.89	+46 14.6	1.986	2.120	+1.28	-23.0	15.4	83.1
Aug. 9	15 27.55	+42 36.4	2.187	2.273	+1.26	-20.5	15.9	81.6
Aug. 19	15 40.06	+39 21.5	2.391	2.422	+1.25	-18.3	16.3	79.6
Aug. 29	15 52.56	+36 27.5	2.595	2.567	+1.25	-16.3	16.8	77.1
Sept. 8	16 05.12	+33 53.1	2.800	2.708	+1.26	-14.4	17.2	74.3
Sept. 18	16 17.74	+31 37.2	3.005	2.846	+1.26	-12.6	17.5	71.3
Sept. 28	16 30.41	+29 38.6	3.207	2.982	+1.27	-10.9	17.9	68.1
Oct. 8	16 43.12	+27 56.9	3.405	3.114	+1.27	-9.3	18.2	64.8
Oct. 18	16 55.82	+26 31.4	3.599	3.244	+1.27	-7.7	18.5	61.5
Oct. 28	17 08.48	+25 21.5	3.787	3.372	+1.26	-6.1	18.8	58.3
Nov. 7	17 21.05	+24 26.9	3.966	3.498	+1.25	-4.6	19.0	55.3
Nov. 17	17 33.47	+23 46.9	4.137	3.621	+1.23	-3.2	19.3	52.5
Nov. 27	17 45.68	+23 21.1	4.298	3.743	+1.21	-1.8	19.5	50.2
Dec. 7	17 57.62	+23 09.2	4.447	3.863	+1.18	-0.5	19.7	48.3
Dec. 17	18 09.22	+23 10.6	4.585	3.981	+1.14	+0.8	19.9	47.2
Dec. 27	18 20.40	+23 24.7	4.709	4.098	+1.09	+2.1	20.1	46.8
Jan. 6	18 31.09	+23 51.0	4.819	4.213	+1.04	+3.3	20.3	47.2
Jan. 16	18 41.19	+24 28.8	4.917	4.327	+0.98	+4.4	20.4	48.4
Jan. 26	18 50.63	+25 17.4	5.000	4.439	+0.90	+5.4	20.6	50.5
Feb. 5	18 59.31	+26 15.9	5.070	4.550	+0.82	+6.4	20.7	53.3
Feb. 15	19 07.13	+27 23.4	5.128	4.660	+0.73	+7.2	20.8	56.8
Feb. 25	19 13.99	+28 38.8	5.174	4.769	+0.63	+7.9	21.0	60.7
Mar. 7	19 19.78	+30 00.9	5.210	4.876	+0.52	+8.5	21.1	65.1
Mar. 17	19 24.39	+31 28.1	5.237	4.983	+0.39	+8.9	21.2	69.9
Mar. 27	19 27.72	+32 58.8	5.257	5.088	+0.26	+9.2	21.3	74.8

Comet 44P/Reinmuth

Epoch = 2022 June 30.0 TT
 T = 2022 Apr. 23.22497 TT
 Peri. = 58.07795 e = 0.4278300
 Node = 286.45704 2000.0 a = 3.6923259 AU
 Incl. = 5.89535 n = 0.13891657
 q = 2.1126381 AU P = 7.09 years

$$m1 = 12.7 + 5 \log(\Delta) + 7.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	19 53.45	-19 37.3	3.206	2.279	+2.18	+7.3	17.9	16.4
Jan. 11	20 15.27	-18 19.3	3.207	2.252	+2.19	+8.4	17.9	11.6
Jan. 21	20 37.15	-16 49.9	3.201	2.228	+2.19	+9.6	17.8	6.9
Jan. 31	20 59.02	-15 09.5	3.188	2.205	+2.18	+10.6	17.8	2.8
Feb. 10	21 20.81	-13 18.9	3.169	2.184	+2.17	+11.6	17.7	3.2
Feb. 20	21 42.46	-11 19.1	3.143	2.166	+2.16	+12.4	17.7	7.3
Mar. 2	22 03.93	-09 11.3	3.112	2.151	+2.14	+13.2	17.7	11.6
Mar. 12	22 25.19	-06 56.8	3.076	2.138	+2.11	+13.8	17.6	15.8
Mar. 22	22 46.23	-04 37.0	3.036	2.127	+2.09	+14.2	17.6	20.0
Apr. 1	23 07.05	-02 13.5	2.991	2.120	+2.07	+14.5	17.5	24.2
Apr. 11	23 27.65	+00 12.3	2.943	2.115	+2.05	+14.6	17.5	28.3
Apr. 21	23 48.02	+02 38.7	2.891	2.113	+2.02	+14.6	17.4	32.5
May 1	00 08.16	+05 04.2	2.835	2.113	+2.00	+14.5	17.4	36.6
May 11	00 28.06	+07 27.4	2.776	2.117	+1.98	+14.1	17.4	40.8
May 21	00 47.70	+09 46.7	2.715	2.124	+1.95	+13.7	17.3	45.0
May 31	01 07.04	+12 01.0	2.649	2.133	+1.92	+13.1	17.3	49.4
June 10	01 26.02	+14 08.9	2.581	2.145	+1.87	+12.4	17.2	53.8
June 20	01 44.56	+16 09.4	2.509	2.159	+1.83	+11.6	17.2	58.5
June 30	02 02.54	+18 01.7	2.435	2.176	+1.76	+10.7	17.2	63.3
July 10	02 19.81	+19 45.0	2.357	2.195	+1.68	+9.8	17.1	68.4
July 20	02 36.20	+21 18.8	2.276	2.217	+1.58	+8.9	17.1	73.7
July 30	02 51.47	+22 43.0	2.193	2.241	+1.46	+7.9	17.0	79.4
Aug. 9	03 05.35	+23 57.2	2.108	2.267	+1.30	+6.9	17.0	85.5
Aug. 19	03 17.53	+25 01.4	2.022	2.295	+1.11	+5.9	16.9	92.1
Aug. 29	03 27.66	+25 55.7	1.937	2.324	+0.88	+4.9	16.9	99.3
Sept. 8	03 35.35	+26 39.6	1.855	2.356	+0.62	+3.8	16.8	107.0
Sept. 18	03 40.27	+27 12.8	1.778	2.388	+0.33	+2.7	16.8	115.4
Sept. 28	03 42.10	+27 34.2	1.708	2.422	+0.01	+1.4	16.7	124.6
Oct. 8	03 40.75	+27 42.3	1.651	2.458	-0.31	0.0	16.7	134.5
Oct. 18	03 36.38	+27 35.6	1.611	2.494	-0.59	-1.5	16.7	145.1
Oct. 28	03 29.51	+27 13.0	1.591	2.532	-0.79	-3.1	16.7	156.2
Nov. 7	03 21.12	+26 35.4	1.595	2.570	-0.88	-4.5	16.8	166.9
Nov. 17	03 12.38	+25 46.1	1.626	2.609	-0.85	-5.4	16.9	172.2
Nov. 27	03 04.49	+24 50.6	1.685	2.649	-0.70	-5.6	17.0	164.5
Dec. 7	02 58.43	+23 55.8	1.770	2.689	-0.48	-5.2	17.2	153.7
Dec. 17	02 54.77	+23 07.2	1.880	2.730	-0.22	-4.4	17.3	142.9
Dec. 27	02 53.70	+22 28.7	2.011	2.771	+0.04	-3.2	17.5	132.5
Jan. 6	02 55.21	+22 02.1	2.158	2.813	+0.28	-2.0	17.7	122.6
Jan. 16	02 59.05	+21 47.4	2.320	2.855	+0.50	-0.9	17.9	113.3
Jan. 26	03 04.94	+21 43.3	2.490	2.897	+0.69	+0.1	18.1	104.4
Feb. 5	03 12.61	+21 48.2	2.667	2.939	+0.85	+0.9	18.3	96.0
Feb. 15	03 21.76	+22 00.0	2.847	2.981	+0.99	+1.5	18.5	88.0
Feb. 25	03 32.16	+22 16.9	3.028	3.024	+1.10	+1.9	18.7	80.4
Mar. 7	03 43.59	+22 36.9	3.206	3.066	+1.19	+2.1	18.9	73.0
Mar. 17	03 55.85	+22 58.3	3.380	3.108	+1.27	+2.2	19.0	65.8
Mar. 27	04 08.81	+23 19.9	3.548	3.151	+1.33	+2.1	19.2	58.9

Comet 45P/Honda-Mrkos-Pajdusakova

Epoch = 2022 June 30.0 TT
 T = 2022 Apr. 26.65466 TT
 Peri. = 327.90560 e = 0.8175672
 Node = 87.70348 2000.0 a = 3.0543005 AU
 Incl. = 4.32271 n = 0.18464452
 q = 0.5572046 AU P = 5.34 years

$$m1 = 13.0 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	19 13.28	-23 28.4	2.900	1.927	+2.21	+3.3	21.0	6.6
Jan. 11	19 36.10	-22 48.9	2.793	1.811	+2.37	+4.8	20.4	2.0
Jan. 21	20 00.63	-21 52.8	2.673	1.691	+2.56	+6.6	19.7	3.1
Jan. 31	20 27.11	-20 36.8	2.541	1.567	+2.76	+8.9	18.9	6.8
Feb. 10	20 55.79	-18 56.6	2.401	1.439	+3.00	+11.5	18.1	10.0
Feb. 20	21 27.04	-16 46.9	2.255	1.307	+3.28	+14.8	17.1	12.3
Mar. 2	22 01.35	-14 01.2	2.110	1.170	+3.62	+18.8	16.0	13.7
Mar. 12	22 39.36	-10 32.1	1.969	1.032	+4.03	+23.6	14.7	13.8
Mar. 22	23 21.83	-06 12.9	1.839	0.892	+4.53	+28.9	13.3	12.4
Apr. 1	00 09.74	+00 59.6	1.727	0.759	+5.13	+34.2	11.8	9.3
Apr. 11	01 04.11	+05 02.0	1.637	0.643	+5.83	+38.1	10.2	4.4
Apr. 21	02 05.61	+11 27.3	1.571	0.570	+6.53	+38.1	9.1	2.9
May 1	03 13.50	+17 26.0	1.526	0.564	+7.04	+31.9	8.9	10.4
May 11	04 24.72	+21 57.0	1.508	0.630	+7.14	+20.5	9.9	18.0
May 21	05 34.93	+24 24.2	1.529	0.742	+6.80	+7.7	11.3	24.7
May 31	06 39.94	+24 51.0	1.593	0.874	+6.09	-2.9	12.8	29.9
June 10	07 37.05	+23 47.0	1.693	1.013	+5.24	-10.0	14.3	33.3
June 20	08 25.69	+21 48.3	1.823	1.152	+4.43	-13.7	15.5	35.2
June 30	09 06.77	+19 22.9	1.972	1.289	+3.75	-15.3	16.7	35.6
July 10	09 41.69	+16 48.4	2.133	1.422	+3.21	-15.5	17.7	34.8
July 20	10 11.81	+14 14.5	2.301	1.550	+2.79	-15.2	18.6	32.9
July 30	10 38.23	+11 45.6	2.471	1.675	+2.48	-14.5	19.4	30.3
Aug. 9	11 01.82	+09 23.9	2.638	1.795	+2.23	-13.7	20.2	27.0
Aug. 19	11 23.20	+07 10.1	2.800	1.911	+2.04	-13.0	20.9	23.2
Aug. 29	11 42.85	+05 04.1	2.952	2.024	+1.88	-12.2	21.5	18.9
Sept. 8	12 01.09	+03 05.8	3.094	2.133	+1.76	-11.4	22.0	14.3
Sept. 18	12 18.18	+01 15.1	3.224	2.238	+1.65	-10.7	.	9.4
Sept. 28	12 34.30	+00 28.4	3.338	2.340	+1.56	-10.0	.	4.6
Oct. 8	12 49.57	-02 04.7	3.436	2.439	+1.48	-9.2	.	3.7
Oct. 18	13 04.06	-03 34.0	3.516	2.536	+1.41	-8.5	.	8.7
Oct. 28	13 17.82	-04 56.1	3.578	2.629	+1.34	-7.8	.	14.7
Nov. 7	13 30.85	-06 11.1	3.621	2.720	+1.26	-7.1	.	21.2
Nov. 17	13 43.14	-07 18.8	3.644	2.808	+1.19	-6.4	.	27.9
Nov. 27	13 54.62	-08 19.1	3.647	2.894	+1.10	-5.6	.	34.9
Dec. 7	14 05.23	-09 11.8	3.632	2.978	+1.01	-4.8	.	42.3
Dec. 17	14 14.87	-09 56.5	3.598	3.059	+0.91	-4.0	.	49.9
Dec. 27	14 23.41	-10 33.2	3.548	3.138	+0.79	-3.2	.	57.9
Jan. 6	14 30.68	-11 01.4	3.483	3.216	+0.65	-2.3	.	66.2
Jan. 16	14 36.53	-11 20.9	3.406	3.291	+0.50	-1.5	.	74.9
Jan. 26	14 40.77	-11 31.4	3.321	3.364	+0.33	-0.5	.	84.1
Feb. 5	14 43.21	-11 32.4	3.230	3.436	+0.14	+0.4	.	93.6
Feb. 15	14 43.69	-11 23.9	3.139	3.506	-0.07	+1.4	.	103.6
Feb. 25	14 42.08	-11 05.6	3.053	3.574	-0.28	+2.4	.	114.1
Mar. 7	14 38.36	-10 37.9	2.978	3.640	-0.48	+3.3	.	125.1
Mar. 17	14 32.64	-10 01.4	2.919	3.705	-0.67	+4.1	.	136.6
Mar. 27	14 25.17	-09 17.7	2.883	3.768	-0.83	+4.7	.	148.4

Comet C/2020 U5 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2022 Apr. 27.90693 TT
 Peri. = 75.42062
 Node = 107.33439 2000.0
 Incl. = 97.26988
 q = 3.7559374 AU
 e = 0.9992014

$$m1 = 8.0 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	11 44.14	+87 42.1	3.396	3.896	+14.33	+21.8	16.6	113.6
Jan. 11	21 12.21	+88 22.2	3.419	3.873	+17.93	-19.5	16.6	110.4
Jan. 21	22 28.68	+85 09.0	3.464	3.853	+3.03	-18.3	16.6	106.0
Jan. 31	22 51.86	+82 17.5	3.525	3.834	+1.78	-15.6	16.6	100.8
Feb. 10	23 07.77	+79 54.1	3.598	3.817	+1.42	-12.7	16.6	95.2
Feb. 20	23 21.06	+78 00.1	3.678	3.802	+1.24	-9.8	16.6	89.6
Mar. 2	23 32.94	+76 34.8	3.759	3.790	+1.13	-7.0	16.7	84.2
Mar. 12	23 43.79	+75 37.2	3.837	3.779	+1.03	-4.3	16.7	79.2
Mar. 22	23 53.67	+75 05.4	3.909	3.770	+0.93	-1.8	16.7	74.7
Apr. 1	00 02.53	+74 57.7	3.971	3.764	+0.82	+0.5	16.8	70.8
Apr. 11	00 10.14	+75 12.2	4.022	3.759	+0.68	+2.6	16.8	67.7
Apr. 21	00 16.12	+75 47.1	4.061	3.756	+0.49	+4.5	16.8	65.5
May 1	00 19.83	+76 40.7	4.086	3.756	+0.21	+6.3	16.8	64.1
May 11	00 20.13	+77 51.3	4.097	3.758	-0.23	+7.9	16.8	63.5
May 21	00 15.00	+79 16.3	4.096	3.762	-0.93	+9.2	16.8	63.9
May 31	00 00.63	+80 51.9	4.083	3.767	-2.19	+9.9	16.8	64.9
June 10	23 29.40	+82 30.0	4.061	3.775	-4.52	+9.4	16.8	66.7
June 20	22 28.15	+83 51.7	4.030	3.785	-8.30	+6.0	16.8	68.9
June 30	20 50.08	+84 19.4	3.995	3.797	-10.82	-1.9	16.8	71.5
July 10	19 11.16	+83 17.8	3.957	3.811	-8.02	-10.9	16.8	74.4
July 20	18 08.81	+81 00.2	3.920	3.827	-4.30	-16.7	16.8	77.3
July 30	17 36.98	+77 56.6	3.887	3.845	-2.06	-20.1	16.8	80.1
Aug. 9	17 22.39	+74 25.1	3.863	3.865	-0.85	-22.3	16.8	82.6
Aug. 19	17 17.25	+70 35.5	3.849	3.887	-0.17	-23.7	16.8	84.6
Aug. 29	17 17.60	+66 34.5	3.848	3.910	+0.25	-24.5	16.8	86.0
Sept. 8	17 21.38	+62 27.6	3.863	3.936	+0.52	-24.8	16.9	86.7
Sept. 18	17 27.38	+58 20.3	3.896	3.963	+0.69	-24.6	16.9	86.5
Sept. 28	17 34.89	+54 17.4	3.945	3.992	+0.82	-23.9	17.0	85.4
Oct. 8	17 43.45	+50 23.7	4.011	4.022	+0.90	-22.7	17.1	83.5
Oct. 18	17 52.73	+46 43.0	4.091	4.054	+0.96	-21.2	17.1	80.8
Oct. 28	18 02.51	+43 18.4	4.185	4.087	+1.00	-19.5	17.2	77.6
Nov. 7	18 12.60	+40 12.1	4.287	4.122	+1.02	-17.6	17.3	73.8
Nov. 17	18 22.86	+37 25.4	4.396	4.159	+1.03	-15.6	17.4	69.7
Nov. 27	18 33.17	+34 58.8	4.508	4.197	+1.03	-13.5	17.5	65.5
Dec. 7	18 43.41	+32 52.4	4.619	4.236	+1.02	-11.6	17.6	61.4
Dec. 17	18 53.49	+31 05.5	4.725	4.276	+1.00	-9.7	17.7	57.4
Dec. 27	19 03.31	+29 37.2	4.823	4.318	+0.96	-7.8	17.8	53.9
Jan. 6	19 12.78	+28 26.5	4.911	4.360	+0.92	-6.2	17.9	51.1
Jan. 16	19 21.81	+27 31.8	4.986	4.404	+0.87	-4.6	17.9	49.1
Jan. 26	19 30.30	+26 52.0	5.046	4.449	+0.82	-3.2	18.0	48.1
Feb. 5	19 38.16	+26 25.6	5.090	4.495	+0.75	-2.0	18.1	48.3
Feb. 15	19 45.29	+26 10.9	5.117	4.542	+0.67	-0.9	18.1	49.8
Feb. 25	19 51.59	+26 06.6	5.127	4.590	+0.58	+0.1	18.2	52.4
Mar. 7	19 56.94	+26 11.1	5.119	4.639	+0.48	+0.9	18.2	56.1
Mar. 17	20 01.25	+26 22.6	5.095	4.689	+0.37	+1.5	18.2	60.7
Mar. 27	20 04.39	+26 39.5	5.057	4.739	+0.24	+1.9	18.3	66.0

Comet 286P/Christensen

Epoch = 2022 June 30.0 TT
 T = 2022 May 12.64600 TT
 Peri. = 24.86187 e = 0.4257484
 Node = 283.95336 2000.0 a = 4.1114417 AU
 Incl. = 17.04294 n = 0.11822596
 q = 2.3610020 AU P = 8.34 years

$$m1 = 17.0 + 5 \log(\Delta) + 2.5 \log(r(t-60))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	18 09.14	-26 43.4	3.511	2.544	+2.14	+3.9	20.8	8.8
Jan. 11	18 30.50	-25 59.3	3.463	2.519	+2.13	+5.0	20.8	13.8
Jan. 21	18 51.72	-25 03.6	3.405	2.495	+2.11	+6.2	20.7	19.0
Jan. 31	19 12.69	-23 56.3	3.338	2.473	+2.08	+7.4	20.7	24.3
Feb. 10	19 33.28	-22 37.6	3.263	2.453	+2.03	+8.5	20.6	29.5
Feb. 20	19 53.39	-21 08.0	3.181	2.434	+1.98	+9.5	20.5	34.7
Mar. 2	20 12.93	-19 28.1	3.092	2.418	+1.92	+10.5	20.5	40.0
Mar. 12	20 31.81	-17 38.4	2.997	2.403	+1.85	+11.5	20.4	45.2
Mar. 22	20 49.95	-15 40.1	2.898	2.391	+1.77	+12.3	20.3	50.5
Apr. 1	21 07.28	-13 33.8	2.794	2.380	+1.69	+13.0	20.2	55.8
Apr. 11	21 23.73	-11 20.7	2.688	2.372	+1.59	+13.6	20.1	61.1
Apr. 21	21 39.21	-09 01.9	2.579	2.366	+1.49	+14.2	20.0	66.6
May 1	21 53.64	-06 38.3	2.468	2.363	+1.38	+14.6	19.9	72.1
May 11	22 06.89	-04 11.4	2.357	2.361	+1.26	+14.8	19.8	77.9
May 21	22 18.85	-01 42.2	2.247	2.362	+1.12	+15.0	19.7	83.8
May 31	22 29.34	+00 47.7	2.138	2.365	+0.96	+15.0	19.6	89.9
June 10	22 38.17	+03 16.7	2.032	2.370	+0.78	+14.8	19.5	96.3
June 20	22 45.13	+05 42.6	1.932	2.378	+0.58	+14.3	19.4	103.1
June 30	22 49.98	+08 03.1	1.837	2.387	+0.36	+13.6	19.3	110.2
July 10	22 52.48	+10 14.7	1.751	2.399	+0.12	+12.5	19.1	117.7
July 20	22 52.51	+12 13.5	1.676	2.413	-0.14	+11.0	19.1	125.5
July 30	22 50.01	+13 54.8	1.615	2.429	-0.38	+9.0	19.0	133.6
Aug. 9	22 45.19	+15 13.5	1.570	2.446	-0.59	+6.5	18.9	141.5
Aug. 19	22 38.59	+16 05.8	1.544	2.466	-0.73	+3.7	18.9	148.7
Aug. 29	22 30.99	+16 29.4	1.540	2.487	-0.78	+0.8	18.9	154.0
Sept. 8	22 23.41	+16 25.5	1.559	2.511	-0.72	-1.7	18.9	155.4
Sept. 18	22 16.87	+15 59.2	1.601	2.535	-0.56	-3.6	19.0	152.5
Sept. 28	22 12.17	+15 17.4	1.666	2.562	-0.35	-4.7	19.1	146.5
Oct. 8	22 09.84	+14 28.4	1.751	2.589	-0.09	-5.0	19.2	139.0
Oct. 18	22 10.07	+13 39.6	1.855	2.618	+0.16	-4.6	19.3	130.9
Oct. 28	22 12.79	+12 56.7	1.974	2.648	+0.40	-3.8	19.5	122.8
Nov. 7	22 17.81	+12 23.6	2.107	2.680	+0.62	-2.7	19.6	114.9
Nov. 17	22 24.83	+12 02.4	2.250	2.712	+0.80	-1.4	19.8	107.2
Nov. 27	22 33.54	+11 53.9	2.401	2.745	+0.95	-0.1	19.9	99.7
Dec. 7	22 43.68	+11 58.3	2.557	2.780	+1.08	+1.1	20.1	92.5
Dec. 17	22 54.96	+12 14.7	2.716	2.815	+1.18	+2.3	20.2	85.5
Dec. 27	23 07.16	+12 42.3	2.877	2.850	+1.26	+3.3	20.4	78.6
Jan. 6	23 20.11	+13 19.8	3.036	2.887	+1.33	+4.2	20.5	72.0
Jan. 16	23 33.64	+14 05.9	3.193	2.924	+1.38	+5.0	20.6	65.4
Jan. 26	23 47.62	+14 59.3	3.345	2.962	+1.42	+5.7	20.7	59.0
Feb. 5	00 01.96	+15 58.6	3.491	3.000	+1.45	+6.2	20.8	52.8
Feb. 15	00 16.56	+17 02.6	3.630	3.038	+1.47	+6.6	20.9	46.7
Feb. 25	00 31.36	+18 10.2	3.760	3.077	+1.49	+6.9	21.0	40.6
Mar. 7	00 46.30	+19 20.1	3.879	3.116	+1.50	+7.1	21.1	34.8
Mar. 17	01 01.33	+20 31.3	3.987	3.155	+1.51	+7.2	21.2	29.1
Mar. 27	01 16.41	+21 43.0	4.083	3.195	+1.51	+7.2	21.2	23.6

Comet 420P/Hill

Epoch = 2022 June 30.0 TT
 T = 2022 May 22.44764 TT
 Peri. = 157.07920 e = 0.4962541
 Node = 173.95100 2000.0 a = 5.5353302 AU
 Incl. = 14.50472 n = 0.07568133
 q = 2.7883999 AU P = 13.02 years

$$m1 = 7.2 + 5 \log(\Delta) + 20.0 \log(r(t+100))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	19 31.35	-12 22.2	3.904	2.968	+1.72	+2.1	19.1	15.4
Jan. 11	19 48.66	-11 57.4	3.903	2.944	+1.74	+3.0	19.1	11.0
Jan. 21	20 06.11	-11 24.1	3.891	2.922	+1.75	+3.8	19.1	8.7
Jan. 31	20 23.61	-10 42.6	3.868	2.902	+1.75	+4.6	19.0	9.8
Feb. 10	20 41.08	-09 53.7	3.833	2.883	+1.74	+5.3	19.0	13.5
Feb. 20	20 58.43	-08 58.1	3.787	2.866	+1.73	+5.9	19.0	18.3
Mar. 2	21 15.60	-07 56.7	3.732	2.850	+1.70	+6.4	19.0	23.4
Mar. 12	21 32.52	-06 50.6	3.666	2.836	+1.68	+6.8	19.0	28.7
Mar. 22	21 49.13	-05 40.9	3.592	2.824	+1.64	+7.1	18.9	34.2
Apr. 1	22 05.39	-04 28.8	3.509	2.813	+1.60	+7.3	18.9	39.7
Apr. 11	22 21.23	-03 15.5	3.418	2.805	+1.56	+7.3	18.9	45.2
Apr. 21	22 36.60	-02 02.4	3.321	2.798	+1.51	+7.2	18.8	50.9
May 1	22 51.43	+00 50.9	3.217	2.793	+1.45	+7.0	18.8	56.6
May 11	23 05.65	+00 17.6	3.108	2.790	+1.38	+6.6	18.8	62.5
May 21	23 19.16	+01 21.5	2.994	2.788	+1.31	+6.1	18.8	68.6
May 31	23 31.87	+02 19.4	2.877	2.789	+1.22	+5.4	18.7	74.8
June 10	23 43.64	+03 09.4	2.758	2.792	+1.12	+4.5	18.7	81.3
June 20	23 54.33	+03 49.9	2.638	2.796	+1.00	+3.5	18.7	88.2
June 30	00 03.78	+04 19.1	2.519	2.802	+0.87	+2.2	18.6	95.3
July 10	00 11.77	+04 35.0	2.403	2.811	+0.71	+0.8	18.6	102.9
July 20	00 18.15	+04 36.0	2.292	2.820	+0.54	-0.8	18.6	111.0
July 30	00 22.70	+04 20.5	2.190	2.832	+0.35	-2.5	18.6	119.6
Aug. 9	00 25.29	+03 47.4	2.098	2.846	+0.15	-4.3	18.5	128.8
Aug. 19	00 25.89	+02 56.8	2.022	2.861	-0.05	-6.0	18.5	138.6
Aug. 29	00 24.57	+01 50.0	1.965	2.878	-0.23	-7.5	18.6	149.0
Sept. 8	00 21.62	+00 30.4	1.929	2.896	-0.37	-8.5	18.6	159.8
Sept. 18	00 17.52	+00 56.4	1.920	2.916	-0.45	-8.8	18.7	170.7
Sept. 28	00 12.89	-02 24.0	1.937	2.938	-0.46	-8.5	18.8	175.7
Oct. 8	00 08.47	-03 45.2	1.983	2.961	-0.40	-7.5	18.9	165.4
Oct. 18	00 04.90	-04 53.8	2.055	2.985	-0.29	-6.0	19.1	154.4
Oct. 28	00 02.68	-05 46.1	2.151	3.011	-0.13	-4.2	19.3	143.7
Nov. 7	00 02.17	-06 19.9	2.270	3.037	+0.05	-2.4	19.5	133.4
Nov. 17	00 03.46	-06 35.5	2.405	3.066	+0.23	-0.6	19.7	123.6
Nov. 27	00 06.55	-06 34.0	2.555	3.095	+0.40	+1.0	20.0	114.3
Dec. 7	00 11.32	-06 17.4	2.715	3.125	+0.56	+2.4	20.2	105.4
Dec. 17	00 17.58	-05 47.9	2.882	3.156	+0.70	+3.6	20.4	97.0
Dec. 27	00 25.16	-05 07.7	3.053	3.189	+0.82	+4.5	20.6	88.9
Jan. 6	00 33.86	-04 18.9	3.225	3.222	+0.92	+5.3	20.8	81.1
Jan. 16	00 43.49	-03 23.4	3.395	3.256	+1.01	+5.8	21.1	73.5
Jan. 26	00 53.91	-02 23.0	3.561	3.291	+1.08	+6.3	21.3	66.3
Feb. 5	01 04.97	-01 19.1	3.722	3.326	+1.14	+6.5	21.4	59.2
Feb. 15	01 16.56	+00 13.2	3.875	3.362	+1.18	+6.6	21.6	52.3
Feb. 25	01 28.57	+00 53.4	4.018	3.399	+1.22	+6.7	21.8	45.5
Mar. 7	01 40.91	+01 59.7	4.151	3.437	+1.25	+6.6	22.0	39.0
Mar. 17	01 53.51	+03 04.7	4.272	3.475	+1.27	+6.4	.	32.6
Mar. 27	02 06.29	+04 07.4	4.379	3.513	+1.29	+6.1	.	26.3

Comet P/2012 03 (McNaught)

Epoch = 2022 June 30.0 TT
 T = 2022 May 29.70659 TT
 Peri. = 344.75197 e = 0.6471858
 Node = 336.41417 2000.0 a = 4.5744837 AU
 Incl. = 16.61554 n = 0.10073745
 q = 1.6139428 AU P = 9.78 years

$$m1 = 13.5 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation	m1	Mot. /PA	Elong.
2022/23	h m	°			for T=+1 day			°
Jan. 1	17 04.60	-34 48.2	3.084	2.229	-1.22 +0.2	.	33.2/ 96	24.7
Jan. 11	17 31.92	-35 15.0	2.975	2.165	-1.32 -0.9	.	34.3/ 93	28.7
Jan. 21	18 00.35	-35 24.4	2.863	2.102	-1.41 -2.2	.	35.4/ 90	32.6
Jan. 31	18 29.71	-35 13.9	2.749	2.040	-1.49 -3.7	21.9	36.6/ 87	36.3
Feb. 10	18 59.74	-34 41.1	2.634	1.981	-1.55 -5.4	21.5	37.7/ 83	39.9
Feb. 20	19 30.16	-33 44.3	2.520	1.924	-1.60 -7.3	21.2	38.7/ 80	43.3
Mar. 2	20 00.68	-32 22.2	2.409	1.871	-1.63 -9.3	20.9	39.8/ 76	46.5
Mar. 12	20 30.97	-30 34.5	2.301	1.821	-1.63 -11.3	20.5	40.7/ 73	49.6
Mar. 22	21 00.75	-28 21.6	2.198	1.775	-1.62 -13.3	20.2	41.5/ 70	52.4
Apr. 1	21 29.82	-25 44.7	2.100	1.734	-1.59 -15.3	19.9	42.2/ 67	55.1
Apr. 11	21 57.97	-22 45.8	2.009	1.698	-1.56 -17.1	19.6	42.7/ 64	57.6
Apr. 21	22 25.10	-19 27.6	1.923	1.668	-1.52 -18.6	19.4	42.9/ 61	60.1
May 1	22 51.15	-15 53.1	1.844	1.644	-1.47 -19.9	19.1	42.9/ 59	62.5
May 11	23 16.06	-12 05.9	1.771	1.627	-1.44 -20.8	19.0	42.6/ 57	65.0
May 21	23 39.82	-08 09.5	1.704	1.617	-1.41 -21.4	18.8	41.9/ 55	67.6
May 31	00 02.42	-04 07.6	1.641	1.614	-1.39 -21.7	18.7	40.9/ 53	70.4
June 10	00 23.79	+00 03.8	1.584	1.619	-1.38 -21.6	18.7	39.5/ 52	73.4
June 20	00 43.88	+03 59.1	1.530	1.630	-1.39 -21.2	18.7	37.7/ 50	76.7
June 30	01 02.58	+07 58.2	1.478	1.649	-1.41 -20.5	18.7	35.5/ 48	80.4
July 10	01 19.68	+11 51.1	1.430	1.675	-1.45 -19.6	18.8	32.9/ 46	84.6
July 20	01 34.95	+15 36.2	1.384	1.707	-1.51 -18.5	18.8	30.0/ 43	89.3
July 30	01 48.03	+19 12.0	1.339	1.744	-1.59 -17.2	19.0	26.7/ 38	94.6
Aug. 9	01 58.49	+22 36.5	1.298	1.786	-1.69 -16.0	19.1	23.3/ 32	100.5
Aug. 19	02 05.87	+25 48.1	1.260	1.833	-1.82 -14.8	19.3	19.8/ 22	107.1
Aug. 29	02 09.62	+28 43.5	1.227	1.884	-1.97 -13.8	19.4	16.6/ 7	114.4
Sept. 8	02 09.32	+31 17.9	1.202	1.939	-2.14 -13.2	19.7	14.4/347	122.4
Sept. 18	02 04.89	+33 25.0	1.188	1.996	-2.31 -13.0	19.9	13.7/323	130.9
Sept. 28	01 56.67	+34 57.2	1.188	2.056	-2.44 -13.3	20.1	14.1/300	139.5
Oct. 8	01 45.76	+35 48.5	1.206	2.118	-2.51 -14.0	20.4	14.6/281	147.5
Oct. 18	01 33.86	+35 58.2	1.244	2.181	-2.49 -14.7	20.7	14.3/265	153.4
Oct. 28	01 22.79	+35 31.4	1.305	2.246	-2.38 -15.3	21.1	12.9/251	155.2
Nov. 7	01 14.10	+34 39.4	1.389	2.312	-2.21 -15.4	21.5	10.6/235	152.1
Nov. 17	01 08.62	+33 35.2	1.496	2.379	-2.01 -15.0	21.9	8.0/214	145.7
Nov. 27	01 06.57	+32 30.2	1.623	2.446	-1.81 -14.1	.	6.2/182	137.9
Dec. 7	01 07.77	+31 32.6	1.769	2.514	-1.62 -13.0	.	6.3/145	129.6
Dec. 17	01 11.79	+30 46.8	1.930	2.582	-1.45 -11.8	.	7.9/119	121.3
Dec. 27	01 18.17	+30 14.7	2.104	2.650	-1.31 -10.6	.	10.1/104	113.2
Jan. 6	01 26.49	+29 56.1	2.287	2.719	-1.19 -9.4	.	12.1/ 95	105.4
Jan. 16	01 36.37	+29 49.8	2.478	2.787	-1.08 -8.3	.	13.8/ 90	97.8
Jan. 26	01 47.51	+29 54.1	2.674	2.855	-1.00 -7.3	.	15.3/ 86	90.4
Feb. 5	01 59.66	+30 07.2	2.871	2.923	-0.92 -6.4	.	16.5/ 84	83.2
Feb. 15	02 12.62	+30 27.1	3.068	2.990	-0.85 -5.6	.	17.4/ 82	76.2
Feb. 25	02 26.22	+30 52.2	3.263	3.057	-0.80 -4.9	.	18.1/ 81	69.3
Mar. 7	02 40.34	+31 21.0	3.453	3.124	-0.75 -4.3	.	18.6/ 81	62.7
Mar. 17	02 54.86	+31 51.8	3.636	3.190	-0.70 -3.7	.	19.0/ 80	56.1
Mar. 27	03 09.69	+32 23.8	3.811	3.256	-0.66 -3.2	.	19.2/ 80	49.7

Comet 179P/Jedicke

Epoch = 2022 June 30.0 TT
 T = 2022 May 30.38833 TT
 Peri. = 296.93053 e = 0.3058634
 Node = 115.51282 2000.0 a = 5.9321573 AU
 Incl. = 19.89823 n = 0.06821582
 q = 4.1177275 AU P = 14.45 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	01 40.76	-12 11.4	3.928	4.176	+0.24	+6.9	18.3	97.8
Jan. 11	01 43.75	-10 59.5	4.061	4.169	+0.37	+7.5	18.3	89.4
Jan. 21	01 48.08	-09 42.7	4.195	4.162	+0.50	+7.9	18.4	81.3
Jan. 31	01 53.60	-08 22.7	4.328	4.155	+0.61	+8.1	18.5	73.4
Feb. 10	02 00.21	-07 00.9	4.455	4.149	+0.71	+8.2	18.5	65.8
Feb. 20	02 07.75	-05 38.7	4.575	4.144	+0.80	+8.2	18.6	58.4
Mar. 2	02 16.12	-04 16.9	4.686	4.139	+0.88	+8.1	18.6	51.3
Mar. 12	02 25.21	-02 56.7	4.785	4.134	+0.94	+7.9	18.6	44.4
Mar. 22	02 34.89	-01 38.7	4.872	4.131	+1.00	+7.6	18.7	37.8
Apr. 1	02 45.08	+00 23.6	4.945	4.127	+1.04	+7.3	18.7	31.5
Apr. 11	02 55.69	+00 47.9	5.004	4.124	+1.08	+6.9	18.7	25.7
Apr. 21	03 06.63	+01 55.3	5.048	4.122	+1.11	+6.5	18.7	20.5
May 1	03 17.84	+02 58.1	5.076	4.120	+1.13	+6.0	18.8	16.5
May 11	03 29.22	+03 56.0	5.088	4.119	+1.15	+5.5	18.8	14.6
May 21	03 40.71	+04 48.6	5.085	4.118	+1.15	+5.0	18.8	15.4
May 31	03 52.24	+05 35.7	5.065	4.118	+1.15	+4.4	18.7	18.7
June 10	04 03.72	+06 16.9	5.031	4.118	+1.14	+3.8	18.7	23.3
June 20	04 15.07	+06 52.3	4.981	4.119	+1.13	+3.2	18.7	28.7
June 30	04 26.21	+07 21.6	4.916	4.120	+1.10	+2.6	18.7	34.6
July 10	04 37.04	+07 45.0	4.838	4.122	+1.06	+2.0	18.7	40.8
July 20	04 47.47	+08 02.6	4.747	4.125	+1.02	+1.4	18.6	47.2
July 30	04 57.39	+08 14.4	4.644	4.127	+0.96	+0.9	18.6	53.9
Aug. 9	05 06.67	+08 20.9	4.530	4.131	+0.89	+0.4	18.5	60.8
Aug. 19	05 15.19	+08 22.3	4.407	4.135	+0.81	-0.1	18.5	67.9
Aug. 29	05 22.81	+08 19.3	4.277	4.140	+0.71	-0.5	18.4	75.4
Sept. 8	05 29.39	+08 12.5	4.143	4.145	+0.59	-0.9	18.3	83.1
Sept. 18	05 34.77	+08 02.8	4.006	4.150	+0.47	-1.1	18.3	91.2
Sept. 28	05 38.80	+07 51.2	3.869	4.156	+0.32	-1.2	18.2	99.6
Oct. 8	05 41.35	+07 38.9	3.737	4.163	+0.17	-1.2	18.2	108.4
Oct. 18	05 42.32	+07 27.2	3.613	4.170	+0.01	-1.1	18.1	117.6
Oct. 28	05 41.64	+07 17.8	3.501	4.177	-0.16	-0.8	18.0	127.2
Nov. 7	05 39.36	+07 12.2	3.406	4.185	-0.31	-0.3	18.0	137.0
Nov. 17	05 35.62	+07 11.9	3.331	4.194	-0.45	+0.3	18.0	146.8
Nov. 27	05 30.68	+07 18.3	3.282	4.203	-0.55	+1.1	17.9	156.1
Dec. 7	05 24.95	+07 32.4	3.260	4.212	-0.60	+1.8	17.9	163.1
Dec. 17	05 18.91	+07 54.4	3.268	4.222	-0.60	+2.6	18.0	164.0
Dec. 27	05 13.09	+08 24.1	3.305	4.233	-0.55	+3.4	18.0	157.9
Jan. 6	05 07.99	+09 00.7	3.372	4.244	-0.45	+4.0	18.1	148.8
Jan. 16	05 04.03	+09 43.0	3.465	4.255	-0.32	+4.5	18.1	138.8
Jan. 26	05 01.48	+10 29.6	3.580	4.266	-0.17	+4.8	18.2	128.8
Feb. 5	05 00.52	+11 19.0	3.714	4.279	-0.01	+5.0	18.3	118.9
Feb. 15	05 01.17	+12 09.7	3.862	4.291	+0.15	+5.1	18.4	109.3
Feb. 25	05 03.41	+13 00.6	4.019	4.304	+0.31	+5.1	18.5	100.1
Mar. 7	05 07.13	+13 50.6	4.182	4.317	+0.45	+4.9	18.6	91.2
Mar. 17	05 12.20	+14 38.7	4.346	4.331	+0.58	+4.7	18.7	82.6
Mar. 27	05 18.47	+15 24.3	4.508	4.345	+0.69	+4.4	18.8	74.3

Comet 113P/Spitaler

Epoch = 2022 June 30.0 TT
 T = 2022 June 1.43345 TT
 Peri. = 115.51633 e = 0.4197144
 Node = 306.67673 2000.0 a = 3.6907499 AU
 Incl. = 5.29008 n = 0.13900555
 q = 2.1416890 AU P = 7.09 years

$$m1 = 11.0 + 5 \log(\Delta) + 12.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	23 08.18	+00 48.6	2.615	2.418	+1.39	+8.2	17.9	67.6
Jan. 11	23 22.56	+00 37.6	2.697	2.386	+1.50	+9.1	17.9	61.3
Jan. 21	23 38.00	+02 12.1	2.772	2.356	+1.60	+9.9	17.9	55.3
Jan. 31	23 54.38	+03 53.6	2.840	2.326	+1.69	+10.5	17.9	49.6
Feb. 10	00 11.61	+05 41.0	2.902	2.299	+1.77	+11.0	17.8	44.2
Feb. 20	00 29.62	+07 32.6	2.956	2.274	+1.84	+11.3	17.8	38.9
Mar. 2	00 48.36	+09 27.1	3.003	2.250	+1.91	+11.5	17.8	33.9
Mar. 12	01 07.82	+11 22.8	3.043	2.228	+1.98	+11.6	17.8	29.1
Mar. 22	01 27.94	+13 18.2	3.076	2.209	+2.05	+11.4	17.7	24.5
Apr. 1	01 48.74	+15 11.4	3.103	2.192	+2.12	+11.1	17.7	20.0
Apr. 11	02 10.19	+17 00.9	3.124	2.177	+2.18	+10.7	17.7	15.8
Apr. 21	02 32.27	+18 44.7	3.139	2.165	+2.24	+10.0	17.7	11.7
May 1	02 54.95	+20 21.2	3.149	2.155	+2.30	+9.2	17.7	7.8
May 11	03 18.19	+21 48.7	3.153	2.148	+2.35	+8.2	17.6	4.5
May 21	03 41.91	+23 05.7	3.153	2.143	+2.40	+7.1	17.6	3.5
May 31	04 06.03	+24 10.7	3.147	2.142	+2.43	+5.8	17.6	6.0
June 10	04 30.45	+25 02.8	3.137	2.143	+2.45	+4.5	17.6	9.6
June 20	04 55.01	+25 41.0	3.122	2.146	+2.46	+3.0	17.6	13.3
June 30	05 19.60	+26 04.8	3.102	2.153	+2.45	+1.6	17.6	17.2
July 10	05 44.02	+26 14.2	3.078	2.162	+2.43	+0.2	17.6	21.2
July 20	06 08.11	+26 09.4	3.048	2.173	+2.39	-1.2	17.6	25.3
July 30	06 31.73	+25 51.1	3.013	2.187	+2.33	-2.5	17.6	29.5
Aug. 9	06 54.70	+25 20.1	2.972	2.204	+2.26	-3.7	17.7	33.8
Aug. 19	07 16.88	+24 37.8	2.926	2.222	+2.17	-4.8	17.7	38.3
Aug. 29	07 38.16	+23 45.6	2.873	2.243	+2.07	-5.7	17.7	43.0
Sept. 8	07 58.40	+22 45.3	2.814	2.266	+1.96	-6.4	17.7	47.9
Sept. 18	08 17.51	+21 38.6	2.749	2.292	+1.84	-6.9	17.7	53.1
Sept. 28	08 35.39	+20 27.5	2.678	2.318	+1.71	-7.3	17.7	58.6
Oct. 8	08 51.90	+19 14.0	2.600	2.347	+1.57	-7.4	17.7	64.3
Oct. 18	09 06.95	+18 00.0	2.518	2.377	+1.42	-7.3	17.7	70.4
Oct. 28	09 20.40	+16 47.7	2.430	2.409	+1.25	-7.1	17.7	77.0
Nov. 7	09 32.07	+15 39.2	2.338	2.442	+1.06	-6.6	17.7	84.0
Nov. 17	09 41.78	+14 36.6	2.245	2.476	+0.86	-5.8	17.7	91.4
Nov. 27	09 49.31	+13 42.1	2.152	2.511	+0.62	-4.9	17.7	99.5
Dec. 7	09 54.43	+12 57.8	2.061	2.548	+0.37	-3.8	17.6	108.2
Dec. 17	09 56.95	+12 25.2	1.977	2.585	+0.10	-2.6	17.6	117.6
Dec. 27	09 56.70	+12 05.6	1.902	2.623	-0.18	-1.2	17.6	127.8
Jan. 6	09 53.72	+11 59.4	1.843	2.661	-0.44	+0.1	17.6	138.6
Jan. 16	09 48.25	+12 05.4	1.803	2.700	-0.67	+1.2	17.7	150.1
Jan. 26	09 40.82	+12 21.2	1.787	2.740	-0.82	+2.0	17.7	162.0
Feb. 5	09 32.28	+12 43.0	1.798	2.780	-0.88	+2.3	17.8	174.0
Feb. 15	09 23.64	+13 06.5	1.838	2.821	-0.83	+2.3	18.0	173.1
Feb. 25	09 15.89	+13 27.7	1.907	2.862	-0.69	+1.9	18.1	161.3
Mar. 7	09 09.83	+13 43.5	2.002	2.903	-0.49	+1.2	18.3	149.8
Mar. 17	09 05.95	+13 52.2	2.121	2.944	-0.26	+0.4	18.5	138.9
Mar. 27	09 04.41	+13 53.0	2.259	2.985	-0.02	-0.4	18.7	128.7

Comet 238P/Read

Epoch = 2022 June 30.0 TT
 T = 2022 June 5.50281 TT
 Peri. = 324.22706 e = 0.2519012
 Node = 51.62470 2000.0 a = 3.1672020 AU
 Incl. = 1.26407 n = 0.17485998
 q = 2.3693800 AU P = 5.64 years

$$m1 = 7.8 + 5 \log(\Delta) + 30.0 \log(r(t-120))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	21 19.72	-16 36.8	3.234	2.518	+1.76	+8.3	.	37.0
Jan. 11	21 37.44	-15 10.3	3.289	2.501	+1.79	+9.1	.	31.3
Jan. 21	21 55.39	-13 36.6	3.334	2.485	+1.80	+9.7	.	25.7
Jan. 31	22 13.49	-11 56.5	3.370	2.469	+1.82	+10.3	.	20.3
Feb. 10	22 31.70	-10 10.6	3.395	2.454	+1.82	+10.9	.	14.9
Feb. 20	22 49.96	-08 19.9	3.410	2.441	+1.83	+11.3	.	9.7
Mar. 2	23 08.24	-06 25.4	3.415	2.428	+1.83	+11.6	.	4.6
Mar. 12	23 26.54	-04 27.8	3.410	2.417	+1.83	+11.9	.	0.9
Mar. 22	23 44.82	-02 28.5	3.396	2.407	+1.83	+12.0	.	5.6
Apr. 1	00 03.10	+00 28.2	3.373	2.397	+1.83	+12.0	.	10.4
Apr. 11	00 21.37	+01 31.8	3.341	2.390	+1.83	+11.9	.	15.3
Apr. 21	00 39.61	+03 30.6	3.301	2.383	+1.82	+11.8	.	20.1
May 1	00 57.84	+05 27.1	3.253	2.378	+1.82	+11.5	.	24.9
May 11	01 16.03	+07 20.4	3.198	2.374	+1.82	+11.1	.	29.7
May 21	01 34.15	+09 09.3	3.135	2.371	+1.81	+10.6	.	34.5
May 31	01 52.20	+10 53.3	3.065	2.370	+1.80	+10.1	22.0	39.3
June 10	02 10.11	+12 31.2	2.989	2.370	+1.78	+9.4	21.9	44.2
June 20	02 27.81	+14 02.5	2.906	2.371	+1.76	+8.7	21.7	49.2
June 30	02 45.25	+15 26.4	2.818	2.373	+1.72	+8.0	21.6	54.3
July 10	03 02.28	+16 42.6	2.725	2.377	+1.68	+7.2	21.5	59.6
July 20	03 18.80	+17 50.6	2.627	2.382	+1.62	+6.4	21.3	65.0
July 30	03 34.62	+18 50.4	2.525	2.389	+1.54	+5.5	21.2	70.7
Aug. 9	03 49.55	+19 41.9	2.419	2.397	+1.43	+4.7	21.1	76.6
Aug. 19	04 03.35	+20 25.4	2.311	2.406	+1.31	+3.9	20.9	82.9
Aug. 29	04 15.74	+21 01.2	2.202	2.416	+1.15	+3.2	20.8	89.6
Sept. 8	04 26.41	+21 30.0	2.093	2.427	+0.96	+2.5	20.7	96.7
Sept. 18	04 35.01	+21 52.3	1.987	2.439	+0.73	+1.9	20.5	104.4
Sept. 28	04 41.20	+22 08.9	1.885	2.453	+0.47	+1.4	20.4	112.7
Oct. 8	04 44.60	+22 20.1	1.790	2.467	+0.18	+0.8	20.3	121.8
Oct. 18	04 45.01	+22 26.3	1.707	2.483	-0.13	+0.3	20.2	131.6
Oct. 28	04 42.33	+22 27.3	1.639	2.499	-0.43	-0.2	20.1	142.1
Nov. 7	04 36.80	+22 22.9	1.591	2.517	-0.69	-0.7	20.1	153.4
Nov. 17	04 29.06	+22 13.0	1.566	2.535	-0.86	-1.3	20.1	165.3
Nov. 27	04 20.09	+21 58.4	1.567	2.554	-0.92	-1.6	20.1	177.4
Dec. 7	04 11.14	+21 41.4	1.597	2.573	-0.84	-1.7	20.2	170.3
Dec. 17	04 03.42	+21 24.9	1.653	2.594	-0.67	-1.5	20.3	158.3
Dec. 27	03 57.81	+21 12.2	1.735	2.615	-0.42	-0.9	20.5	146.8
Jan. 6	03 54.86	+21 05.9	1.839	2.636	-0.14	-0.2	20.7	135.9
Jan. 16	03 54.72	+21 07.0	1.961	2.658	+0.14	+0.5	20.9	125.7
Jan. 26	03 57.30	+21 15.4	2.097	2.681	+0.40	+1.2	21.1	116.2
Feb. 5	04 02.37	+21 30.3	2.243	2.704	+0.63	+1.8	21.3	107.2
Feb. 15	04 09.60	+21 50.1	2.395	2.727	+0.83	+2.2	21.5	98.8
Feb. 25	04 18.72	+22 13.0	2.552	2.751	+1.00	+2.4	21.8	90.9
Mar. 7	04 29.42	+22 37.3	2.709	2.775	+1.15	+2.4	22.0	83.4
Mar. 17	04 41.44	+23 01.3	2.865	2.799	+1.27	+2.3	.	76.2
Mar. 27	04 54.57	+23 23.7	3.018	2.824	+1.37	+2.1	.	69.3

Comet C/2021 T2 (Fuls)

Epoch = 2022 June 30.0 TT
 T = 2022 June 7.89541 TT
 Peri. = 263.60030
 Node = 223.23328 2000.0
 Incl. = 117.52741
 q = 1.2475619 AU
 e = 1.0001054

$$m1 = 12.1 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	01 19.09	+17 09.5	2.123	2.551	-0.79	-25.4	17.8	104.3
Jan. 11	01 12.89	+13 11.0	2.212	2.443	-0.43	-21.9	17.7	91.4
Jan. 21	01 10.02	+09 47.4	2.307	2.334	-0.13	-18.6	17.6	79.3
Jan. 31	01 09.88	+06 54.8	2.399	2.225	+0.12	-15.7	17.5	68.0
Feb. 10	01 11.96	+04 27.7	2.479	2.118	+0.31	-13.6	17.3	57.4
Feb. 20	01 15.86	+02 19.6	2.541	2.011	+0.48	-12.0	17.2	47.6
Mar. 2	01 21.26	+00 24.3	2.580	1.907	+0.61	-11.1	17.0	38.5
Mar. 12	01 27.94	-01 24.1	2.592	1.804	+0.73	-10.7	16.7	30.2
Mar. 22	01 35.75	-03 11.3	2.575	1.706	+0.84	-10.9	16.5	23.3
Apr. 1	01 44.64	-05 02.8	2.527	1.612	+0.95	-11.6	16.2	18.6
Apr. 11	01 54.65	-07 04.7	2.446	1.524	+1.07	-13.0	15.9	17.9
Apr. 21	02 05.93	-09 23.8	2.334	1.445	+1.21	-15.1	15.5	21.3
May 1	02 18.83	-12 08.1	2.192	1.375	+1.40	-18.2	15.2	27.2
May 11	02 33.96	-15 28.7	2.022	1.319	+1.67	-22.6	14.8	34.4
May 21	02 52.42	-19 39.8	1.833	1.278	+2.10	-28.6	14.5	42.1
May 31	03 16.26	-25 00.0	1.632	1.253	+2.80	-36.7	14.1	50.2
June 10	03 49.27	-31 49.9	1.436	1.248	+4.04	-46.4	13.8	58.2
June 20	04 38.80	-40 11.5	1.269	1.261	+6.31	-53.4	13.6	65.9
June 30	05 57.50	-48 46.6	1.162	1.293	+9.97	-44.4	13.5	72.4
July 10	07 51.89	-53 43.3	1.145	1.341	+12.48	-7.5	13.7	76.4
July 20	09 48.77	-51 59.0	1.227	1.403	+9.98	+27.9	14.0	76.8
July 30	11 11.47	-46 22.1	1.390	1.477	+6.38	+36.7	14.5	73.9
Aug. 9	12 04.20	-40 30.4	1.605	1.560	+4.16	+32.2	15.1	68.9
Aug. 19	12 39.80	-35 39.3	1.847	1.650	+2.96	+25.4	15.6	62.7
Aug. 29	13 06.01	-31 53.5	2.098	1.746	+2.28	+19.4	16.1	55.9
Sept. 8	13 26.79	-29 00.3	2.348	1.847	+1.87	+15.0	16.6	48.8
Sept. 18	13 44.20	-26 46.4	2.586	1.950	+1.61	+11.7	17.1	41.4
Sept. 28	13 59.41	-25 01.0	2.809	2.056	+1.43	+9.3	17.5	33.9
Oct. 8	14 13.06	-23 36.2	3.012	2.163	+1.30	+7.6	17.8	26.3
Oct. 18	14 25.54	-22 25.9	3.192	2.271	+1.19	+6.4	18.2	18.6
Oct. 28	14 37.08	-21 25.4	3.347	2.379	+1.11	+5.6	18.5	11.0
Nov. 7	14 47.77	-20 31.2	3.475	2.488	+1.03	+5.2	18.8	4.4
Nov. 17	14 57.67	-19 40.2	3.575	2.597	+0.95	+5.0	19.0	7.1
Nov. 27	15 06.78	-18 50.2	3.647	2.706	+0.86	+5.0	19.2	14.9
Dec. 7	15 15.02	-17 58.9	3.691	2.814	+0.77	+5.3	19.4	23.4
Dec. 17	15 22.34	-17 04.5	3.709	2.922	+0.68	+5.7	19.6	32.1
Dec. 27	15 28.60	-16 05.2	3.701	3.029	+0.56	+6.3	19.8	41.1
Jan. 6	15 33.66	-14 59.3	3.670	3.136	+0.43	+7.0	19.9	50.4
Jan. 16	15 37.36	-13 45.2	3.619	3.243	+0.29	+7.9	20.0	60.1
Jan. 26	15 39.52	-12 21.4	3.554	3.348	+0.12	+9.0	20.1	70.1
Feb. 5	15 39.93	-10 46.6	3.477	3.453	-0.06	+10.1	20.2	80.4
Feb. 15	15 38.44	-08 59.9	3.397	3.558	-0.26	+11.3	20.3	91.2
Feb. 25	15 34.88	-07 00.9	3.319	3.661	-0.47	+12.6	20.3	102.4
Mar. 7	15 29.19	-04 50.5	3.251	3.764	-0.69	+13.6	20.4	113.9
Mar. 17	15 21.42	-02 30.8	3.201	3.866	-0.88	+14.3	20.5	125.7
Mar. 27	15 11.78	+00 05.8	3.177	3.968	-1.05	+14.6	20.6	137.3

Comet C/2019 T4 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2022 June 9.11497 TT
 Peri. = 351.19781
 Node = 199.93889 2000.0
 Incl. = 53.62960
 q = 4.2424246 AU
 e = 0.9957841

$$m1 = 3.2 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	12 00.92	-29 28.6	4.374	4.443	+0.44	-1.7	12.9	87.6
Jan. 11	12 04.73	-29 40.6	4.208	4.420	+0.31	-0.6	12.8	95.9
Jan. 21	12 07.16	-29 40.7	4.046	4.397	+0.16	+0.7	12.7	104.5
Jan. 31	12 08.15	-29 26.5	3.889	4.376	+0.02	+2.3	12.6	113.5
Feb. 10	12 07.69	-28 55.2	3.743	4.357	-0.12	+4.1	12.5	122.7
Feb. 20	12 05.91	-28 04.9	3.613	4.338	-0.24	+6.1	12.4	132.1
Mar. 2	12 03.01	-26 54.1	3.503	4.322	-0.34	+8.2	12.3	141.4
Mar. 12	11 59.34	-25 22.8	3.417	4.307	-0.39	+10.2	12.2	150.1
Mar. 22	11 55.31	-23 32.7	3.360	4.293	-0.41	+11.9	12.2	156.8
Apr. 1	11 51.37	-21 27.5	3.333	4.281	-0.37	+13.2	12.1	159.2
Apr. 11	11 47.98	-19 12.5	3.337	4.271	-0.29	+13.8	12.1	155.8
Apr. 21	11 45.49	-16 54.0	3.373	4.262	-0.19	+13.8	12.1	148.5
May 1	11 44.15	-14 38.1	3.437	4.255	-0.06	+13.2	12.2	139.6
May 11	11 44.14	-12 30.0	3.528	4.249	+0.07	+12.2	12.2	130.1
May 21	11 45.50	-10 33.6	3.640	4.245	+0.21	+10.9	12.3	120.6
May 31	11 48.18	-08 51.2	3.768	4.243	+0.34	+9.4	12.4	111.3
June 10	11 52.13	-07 23.7	3.910	4.242	+0.46	+7.9	12.4	102.2
June 20	11 57.22	-06 11.1	4.059	4.243	+0.57	+6.5	12.5	93.4
June 30	12 03.35	-05 12.5	4.213	4.246	+0.66	+5.1	12.6	84.9
July 10	12 10.37	-04 26.8	4.367	4.250	+0.75	+3.9	12.7	76.7
July 20	12 18.19	-03 52.4	4.518	4.256	+0.82	+2.9	12.8	68.7
July 30	12 26.67	-03 27.8	4.663	4.264	+0.88	+2.0	12.8	61.0
Aug. 9	12 35.75	-03 11.5	4.800	4.273	+0.94	+1.2	12.9	53.4
Aug. 19	12 45.30	-03 01.8	4.925	4.283	+0.98	+0.7	13.0	45.9
Aug. 29	12 55.28	-02 57.3	5.038	4.295	+1.02	+0.2	13.0	38.6
Sept. 8	13 05.59	-02 56.6	5.137	4.309	+1.05	-0.1	13.1	31.4
Sept. 18	13 16.17	-02 58.4	5.220	4.325	+1.07	-0.3	13.1	24.4
Sept. 28	13 26.97	-03 01.3	5.286	4.341	+1.09	-0.3	13.2	17.6
Oct. 8	13 37.91	-03 04.0	5.335	4.360	+1.10	-0.2	13.2	11.5
Oct. 18	13 48.93	-03 05.5	5.365	4.380	+1.10	0.0	13.3	7.9
Oct. 28	13 59.97	-03 04.4	5.376	4.401	+1.10	+0.3	13.3	10.1
Nov. 7	14 10.96	-02 59.7	5.369	4.424	+1.09	+0.7	13.3	15.8
Nov. 17	14 21.81	-02 50.1	5.343	4.448	+1.08	+1.3	13.3	22.7
Nov. 27	14 32.46	-02 34.8	5.300	4.473	+1.05	+1.9	13.3	30.0
Dec. 7	14 42.81	-02 12.4	5.241	4.500	+1.01	+2.7	13.3	37.5
Dec. 17	14 52.75	-01 42.2	5.166	4.528	+0.97	+3.5	13.3	45.2
Dec. 27	15 02.19	-01 03.2	5.079	4.557	+0.91	+4.4	13.3	53.1
Jan. 6	15 11.00	+00 14.5	4.980	4.587	+0.84	+5.4	13.3	61.1
Jan. 16	15 19.06	+00 44.3	4.874	4.619	+0.76	+6.5	13.3	69.3
Jan. 26	15 26.23	+01 53.8	4.762	4.652	+0.66	+7.5	13.3	77.6
Feb. 5	15 32.40	+03 13.8	4.649	4.686	+0.56	+8.6	13.2	86.1
Feb. 15	15 37.43	+04 44.2	4.539	4.721	+0.44	+9.6	13.2	94.6
Feb. 25	15 41.22	+06 23.9	4.434	4.757	+0.31	+10.4	13.2	103.1
Mar. 7	15 43.66	+08 11.4	4.340	4.794	+0.17	+11.1	13.2	111.6
Mar. 17	15 44.73	+10 04.3	4.260	4.832	+0.03	+11.5	13.2	119.8
Mar. 27	15 44.41	+11 59.6	4.199	4.871	-0.11	+11.5	13.2	127.5

Comet C/2021 E3 (ZTF)

Epoch = 2022 June 30.0 TT
 T = 2022 June 11.91433 TT
 Peri. = 228.85071
 Node = 104.46853 2000.0
 Incl. = 112.55485
 q = 1.7773847 AU
 e = 1.0008724

$$m1 = 7.5 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	19 16.35	-07 13.9	3.598	2.677	+0.88 -10.4	14.6	17.6
Jan. 11	19 25.35	-08 55.5	3.541	2.592	+0.92 -9.9	14.4	13.0
Jan. 21	19 34.78	-10 34.0	3.457	2.508	+0.96 -9.8	14.2	12.9
Jan. 31	19 44.56	-12 12.1	3.349	2.426	+0.99 -9.9	14.0	17.3
Feb. 10	19 54.62	-13 53.1	3.214	2.346	+1.02 -10.4	13.7	23.9
Feb. 20	20 04.94	-15 41.1	3.056	2.270	+1.04 -11.4	13.5	31.3
Mar. 2	20 15.49	-17 41.2	2.875	2.196	+1.07 -12.9	13.2	39.0
Mar. 12	20 26.30	-20 00.1	2.675	2.126	+1.10 -15.2	12.9	47.0
Mar. 22	20 37.43	-22 46.5	2.459	2.061	+1.14 -18.6	12.6	55.3
Apr. 1	20 49.05	-26 12.8	2.232	2.001	+1.20 -23.4	12.3	63.7
Apr. 11	21 01.43	-30 35.8	2.000	1.946	+1.30 -30.3	11.9	72.3
Apr. 21	21 15.17	-36 18.6	1.773	1.898	+1.49 -39.8	11.5	81.1
May 1	21 31.53	-43 50.3	1.562	1.857	+1.87 -52.3	11.2	89.9
May 11	21 53.60	-53 38.7	1.385	1.824	+2.79 -66.8	10.8	98.0
May 21	22 31.68	-65 42.3	1.263	1.800	+5.80 -77.4	10.6	104.0
May 31	00 20.13	-78 07.2	1.215	1.784	+22.69 -60.0	10.4	106.0
June 10	05 52.58	-79 53.8	1.248	1.778	+24.23 +49.3	10.5	103.0
June 20	08 05.21	-70 05.1	1.353	1.780	+5.96 +59.7	10.7	96.4
June 30	08 46.73	-61 00.5	1.506	1.793	+2.73 +47.4	10.9	88.4
July 10	09 08.71	-54 04.2	1.686	1.814	+1.72 +35.1	11.2	80.2
July 20	09 23.64	-48 59.4	1.875	1.844	+1.27 +25.4	11.5	72.4
July 30	09 35.15	-45 20.6	2.062	1.882	+1.02 +18.0	11.8	65.4
Aug. 9	09 44.59	-42 46.8	2.238	1.927	+0.86 +12.5	12.1	59.2
Aug. 19	09 52.55	-41 01.9	2.397	1.979	+0.73 +8.2	12.4	54.0
Aug. 29	09 59.28	-39 55.1	2.535	2.037	+0.61 +4.9	12.6	49.9
Sept. 8	10 04.86	-39 18.5	2.649	2.101	+0.49 +2.3	12.8	47.3
Sept. 18	10 09.24	-39 06.0	2.739	2.169	+0.37 +0.1	13.0	46.2
Sept. 28	10 12.30	-39 13.5	2.802	2.241	+0.23 -1.7	13.2	46.9
Oct. 8	10 13.82	-39 37.2	2.841	2.316	+0.06 -3.1	13.4	49.3
Oct. 18	10 13.51	-40 13.9	2.855	2.395	-0.14 -4.3	13.6	53.2
Oct. 28	10 11.01	-41 00.2	2.847	2.476	-0.39 -5.0	13.7	58.5
Nov. 7	10 05.85	-41 51.9	2.819	2.559	-0.68 -5.3	13.8	64.8
Nov. 17	09 57.54	-42 43.6	2.777	2.644	-1.02 -4.9	13.9	72.0
Nov. 27	09 45.61	-43 28.1	2.725	2.730	-1.41 -3.7	14.0	79.9
Dec. 7	09 29.74	-43 55.7	2.670	2.818	-1.80 -1.4	14.1	88.3
Dec. 17	09 10.06	-43 54.5	2.619	2.907	-2.16 +2.2	14.2	96.9
Dec. 27	08 47.28	-43 12.2	2.580	2.996	-2.40 +6.9	14.3	105.5
Jan. 6	08 22.91	-41 38.9	2.562	3.086	-2.45 +12.3	14.4	113.3
Jan. 16	07 58.87	-39 12.2	2.572	3.176	-2.31 +17.5	14.6	119.7
Jan. 26	07 37.02	-35 58.0	2.617	3.267	-2.01 +21.5	14.7	123.6
Feb. 5	07 18.63	-32 10.3	2.700	3.358	-1.62 +23.9	14.9	124.5
Feb. 15	07 04.21	-28 06.6	2.819	3.449	-1.22 +24.6	15.1	122.3
Feb. 25	06 53.71	-24 02.9	2.974	3.541	-0.85 +23.9	15.4	117.5
Mar. 7	06 46.72	-20 11.2	3.158	3.632	-0.53 +22.2	15.6	110.9
Mar. 17	06 42.72	-16 38.7	3.365	3.723	-0.26 +20.0	15.8	103.4
Mar. 27	06 41.18	-13 28.9	3.589	3.814	-0.04 +17.7	16.1	95.4

Comet 148P/Anderson-LINEAR

Epoch = 2022 June 30.0 TT
 T = 2022 June 13.68262 TT
 Peri. = 8.03470 e = 0.5497925
 Node = 89.20640 2000.0 a = 3.6176341 AU
 Incl. = 3.65800 n = 0.14324093
 q = 1.6286860 AU P = 6.88 years

$$m1 = 11.4 + 5 \log(\Delta) + 17.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	23 48.59	-04 53.0	2.279	2.240	+1.18	+9.3	19.3	75.2
Jan. 11	00 01.16	-03 15.2	2.341	2.183	+1.35	+10.3	19.2	68.6
Jan. 21	00 15.37	-01 27.6	2.396	2.126	+1.50	+11.3	19.0	62.4
Jan. 31	00 31.07	+00 28.7	2.443	2.071	+1.65	+12.1	18.9	56.6
Feb. 10	00 48.19	+02 32.3	2.483	2.017	+1.79	+12.7	18.7	51.2
Feb. 20	01 06.65	+04 41.5	2.516	1.965	+1.92	+13.2	18.5	46.2
Mar. 2	01 26.43	+06 54.8	2.541	1.915	+2.05	+13.5	18.4	41.5
Mar. 12	01 47.52	+09 10.3	2.560	1.868	+2.18	+13.6	18.2	37.2
Mar. 22	02 09.93	+11 25.6	2.574	1.824	+2.31	+13.4	18.0	33.2
Apr. 1	02 33.68	+13 38.3	2.584	1.783	+2.45	+13.0	17.9	29.5
Apr. 11	02 58.81	+15 45.6	2.590	1.746	+2.59	+12.3	17.7	26.1
Apr. 21	03 25.29	+17 44.4	2.594	1.713	+2.72	+11.3	17.6	22.9
May 1	03 53.09	+19 31.5	2.597	1.686	+2.85	+9.9	17.4	20.0
May 11	04 22.14	+21 03.5	2.600	1.663	+2.97	+8.2	17.3	17.3
May 21	04 52.28	+22 17.3	2.604	1.646	+3.07	+6.3	17.3	14.7
May 31	05 23.29	+23 10.1	2.611	1.634	+3.14	+4.0	17.2	12.3
June 10	05 54.89	+23 39.9	2.619	1.629	+3.18	+1.7	17.2	10.0
June 20	06 26.74	+23 45.5	2.631	1.630	+3.19	-0.8	17.2	7.8
June 30	06 58.51	+23 26.7	2.646	1.637	+3.16	-3.2	17.3	5.5
July 10	07 29.83	+22 44.7	2.664	1.650	+3.10	-5.4	17.3	3.3
July 20	08 00.43	+21 41.2	2.684	1.668	+3.01	-7.4	17.4	1.4
July 30	08 30.08	+20 19.0	2.707	1.692	+2.91	-9.1	17.6	2.1
Aug. 9	08 58.61	+18 41.1	2.730	1.722	+2.79	-10.5	17.7	4.6
Aug. 19	09 25.95	+16 50.9	2.754	1.755	+2.67	-11.6	17.9	7.4
Aug. 29	09 52.07	+14 51.6	2.778	1.793	+2.54	-12.3	18.1	10.4
Sept. 8	10 16.97	+12 46.3	2.799	1.835	+2.42	-12.7	18.2	13.7
Sept. 18	10 40.70	+10 38.0	2.817	1.880	+2.31	-12.9	18.4	17.2
Sept. 28	11 03.31	+08 29.0	2.830	1.928	+2.20	-12.8	18.6	21.0
Oct. 8	11 24.85	+06 21.5	2.838	1.979	+2.10	-12.6	18.9	25.1
Oct. 18	11 45.37	+04 17.6	2.839	2.031	+2.00	-12.1	19.1	29.4
Oct. 28	12 04.90	+02 18.7	2.832	2.085	+1.90	-11.6	19.2	34.1
Nov. 7	12 23.44	+00 26.3	2.817	2.141	+1.80	-10.8	19.4	39.1
Nov. 17	12 40.98	-01 18.5	2.792	2.198	+1.70	-10.0	19.6	44.4
Nov. 27	12 57.48	-02 54.5	2.758	2.255	+1.59	-9.1	19.8	50.1
Dec. 7	13 12.87	-04 21.0	2.714	2.314	+1.47	-8.1	19.9	56.1
Dec. 17	13 27.03	-05 37.2	2.660	2.373	+1.34	-7.0	20.1	62.5
Dec. 27	13 39.84	-06 42.3	2.598	2.432	+1.20	-5.9	20.2	69.3
Jan. 6	13 51.11	-07 35.8	2.529	2.492	+1.03	-4.7	20.4	76.6
Jan. 16	14 00.64	-08 17.3	2.454	2.551	+0.85	-3.5	20.5	84.3
Jan. 26	14 08.20	-08 46.2	2.375	2.611	+0.64	-2.2	20.6	92.5
Feb. 5	14 13.56	-09 02.1	2.295	2.670	+0.41	-0.9	20.7	101.3
Feb. 15	14 16.50	-09 05.1	2.219	2.729	+0.15	+0.4	20.8	110.7
Feb. 25	14 16.86	-08 55.1	2.149	2.788	-0.11	+1.7	20.9	120.7
Mar. 7	14 14.61	-08 32.8	2.092	2.846	-0.36	+2.8	21.0	131.3
Mar. 17	14 09.92	-07 59.9	2.051	2.904	-0.59	+3.8	21.1	142.5
Mar. 27	14 03.17	-07 18.8	2.032	2.962	-0.76	+4.4	21.2	154.1

Comet C/2020 Y2 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2022 June 17.68903 TT
 Peri. = 266.10379
 Node = 26.51453 2000.0
 Incl. = 101.29740
 q = 3.1324617 AU
 e = 0.9971185

$$m1 = 6.3 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° ' "			m		°
Jan. 1	12 45.78	-52 52.5	3.706	3.522	-0.52 -22.0	14.6	71.6
Jan. 11	12 38.38	-56 37.3	3.542	3.480	-1.04 -23.0	14.5	78.4
Jan. 21	12 24.73	-60 28.5	3.386	3.440	-1.81 -23.1	14.3	84.8
Jan. 31	12 01.81	-64 14.2	3.246	3.402	-2.95 -21.5	14.2	90.6
Feb. 10	11 25.69	-67 32.4	3.126	3.366	-4.47 -17.1	14.0	95.4
Feb. 20	10 33.81	-69 48.5	3.031	3.332	-5.98 -8.6	13.9	99.0
Mar. 2	09 30.56	-70 24.5	2.965	3.301	-6.46 +2.9	13.8	101.0
Mar. 12	08 29.48	-69 05.4	2.928	3.272	-5.46 +13.6	13.8	101.3
Mar. 22	07 42.08	-66 15.4	2.920	3.245	-3.86 +20.4	13.7	100.0
Apr. 1	07 10.06	-62 35.2	2.939	3.222	-2.47 +23.4	13.7	97.3
Apr. 11	06 50.04	-58 38.9	2.980	3.200	-1.50 +23.6	13.7	93.5
Apr. 21	06 38.23	-54 48.6	3.037	3.182	-0.84 +22.2	13.7	89.0
May 1	06 31.91	-51 16.8	3.105	3.166	-0.41 +19.9	13.8	84.2
May 11	06 29.25	-48 10.2	3.179	3.154	-0.12 +17.1	13.8	79.4
May 21	06 29.02	-45 31.6	3.252	3.144	+0.08 +14.3	13.8	74.9
May 31	06 30.41	-43 21.4	3.321	3.137	+0.20 +11.5	13.9	70.8
June 10	06 32.84	-41 39.4	3.382	3.133	+0.28 +8.7	13.9	67.3
June 20	06 35.85	-40 24.4	3.431	3.133	+0.32 +6.1	13.9	64.6
June 30	06 39.12	-39 35.2	3.466	3.135	+0.33 +3.5	14.0	62.8
July 10	06 42.32	-39 10.7	3.487	3.140	+0.30 +1.1	14.0	62.0
July 20	06 45.15	-39 09.7	3.491	3.148	+0.25 -1.2	14.0	62.2
July 30	06 47.34	-39 31.4	3.480	3.159	+0.17 -3.4	14.0	63.4
Aug. 9	06 48.55	-40 14.9	3.454	3.173	+0.05 -5.5	14.0	65.7
Aug. 19	06 48.39	-41 18.9	3.413	3.190	-0.11 -7.5	14.0	68.8
Aug. 29	06 46.42	-42 42.3	3.362	3.210	-0.32 -9.3	14.0	72.7
Sept. 8	06 42.06	-44 22.8	3.301	3.232	-0.59 -10.9	14.0	77.3
Sept. 18	06 34.62	-46 16.6	3.236	3.257	-0.94 -11.9	14.0	82.3
Sept. 28	06 23.31	-48 18.2	3.171	3.285	-1.38 -12.3	14.0	87.6
Oct. 8	06 07.27	-50 18.4	3.111	3.315	-1.89 -11.5	14.0	92.9
Oct. 18	05 45.87	-52 04.3	3.062	3.347	-2.44 -9.2	14.0	97.9
Oct. 28	05 19.08	-53 19.8	3.029	3.382	-2.94 -5.2	14.0	102.2
Nov. 7	04 48.07	-53 47.9	3.019	3.419	-3.24 +0.3	14.0	105.4
Nov. 17	04 15.37	-53 16.3	3.035	3.458	-3.24 +6.6	14.1	107.2
Nov. 27	03 44.12	-51 42.5	3.080	3.499	-2.93 +12.6	14.2	107.1
Dec. 7	03 16.95	-49 14.7	3.155	3.542	-2.43 +17.2	14.3	105.1
Dec. 17	02 55.15	-46 08.4	3.259	3.587	-1.88 +20.1	14.4	101.5
Dec. 27	02 38.77	-42 39.7	3.389	3.634	-1.36 +21.5	14.6	96.5
Jan. 6	02 27.22	-39 02.8	3.539	3.682	-0.92 +21.7	14.7	90.5
Jan. 16	02 19.64	-35 27.7	3.706	3.731	-0.57 +21.1	14.9	83.9
Jan. 26	02 15.25	-32 00.8	3.883	3.782	-0.29 +20.1	15.0	76.9
Feb. 5	02 13.34	-28 45.9	4.064	3.835	-0.08 +18.8	15.2	69.7
Feb. 15	02 13.36	-25 44.5	4.246	3.888	+0.09 +17.4	15.3	62.4
Feb. 25	02 14.86	-22 57.2	4.423	3.943	+0.22 +16.0	15.5	55.3
Mar. 7	02 17.49	-20 23.8	4.590	3.999	+0.31 +14.6	15.6	48.3
Mar. 17	02 20.96	-18 03.6	4.745	4.056	+0.38 +13.3	15.8	41.7
Mar. 27	02 25.05	-15 56.0	4.884	4.114	+0.43 +12.1	15.9	35.6

Comet 117P/Helin-Roman-Alu

Epoch = 2022 June 30.0 TT
 T = 2022 July 7.79614 TT
 Peri. = 222.94631 e = 0.2555002
 Node = 58.84162 2000.0 a = 4.0827460 AU
 Incl. = 8.70399 n = 0.11947458
 q = 3.0396036 AU P = 8.25 years

$$m_1 = 4.5 + 5 \log(\Delta) + 15.0 \log(r(t-150))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	16 42.21	-22 50.0	4.010	3.177	+1.58	-4.3	15.6	28.1
Jan. 11	16 57.99	-23 30.9	3.923	3.163	+1.57	-3.8	15.5	34.6
Jan. 21	17 13.60	-24 06.5	3.823	3.150	+1.55	-3.3	15.4	41.2
Jan. 31	17 28.93	-24 37.0	3.713	3.138	+1.51	-2.8	15.3	47.8
Feb. 10	17 43.81	-25 02.9	3.592	3.126	+1.46	-2.4	15.2	54.6
Feb. 20	17 58.11	-25 25.0	3.464	3.115	+1.39	-2.0	15.1	61.5
Mar. 2	18 11.68	-25 44.1	3.329	3.105	+1.31	-1.8	14.9	68.5
Mar. 12	18 24.33	-26 01.3	3.188	3.095	+1.21	-1.7	14.8	75.6
Mar. 22	18 35.86	-26 17.9	3.045	3.086	+1.09	-1.7	14.7	83.0
Apr. 1	18 46.10	-26 35.2	2.901	3.078	+0.94	-1.8	14.5	90.6
Apr. 11	18 54.80	-26 54.5	2.758	3.071	+0.78	-2.1	14.4	98.5
Apr. 21	19 01.74	-27 17.3	2.619	3.064	+0.59	-2.5	14.2	106.8
May 1	19 06.70	-27 44.6	2.487	3.058	+0.38	-3.0	14.1	115.4
May 11	19 09.45	-28 17.0	2.366	3.053	+0.15	-3.5	14.0	124.5
May 21	19 09.86	-28 54.3	2.258	3.049	-0.09	-4.0	13.8	134.0
May 31	19 07.87	-29 35.4	2.168	3.045	-0.33	-4.2	13.7	143.8
June 10	19 03.64	-30 17.9	2.098	3.043	-0.53	-4.2	13.6	153.9
June 20	18 57.56	-30 58.6	2.052	3.041	-0.69	-3.8	13.5	163.8
June 30	18 50.25	-31 34.1	2.032	3.040	-0.77	-3.1	13.5	170.9
July 10	18 42.58	-32 01.5	2.038	3.040	-0.75	-2.2	13.5	167.8
July 20	18 35.49	-32 19.3	2.071	3.040	-0.65	-1.2	13.5	158.6
July 30	18 29.78	-32 27.6	2.129	3.042	-0.47	-0.3	13.5	148.6
Aug. 9	18 26.10	-32 27.6	2.208	3.044	-0.24	+0.4	13.6	138.6
Aug. 19	18 24.81	-32 21.3	2.307	3.047	+0.01	+0.9	13.7	129.0
Aug. 29	18 26.00	-32 10.2	2.420	3.051	+0.26	+1.3	13.7	119.8
Sept. 8	18 29.64	-31 55.5	2.545	3.055	+0.49	+1.6	13.8	111.1
Sept. 18	18 35.51	-31 37.9	2.678	3.061	+0.70	+1.9	13.9	102.7
Sept. 28	18 43.38	-31 17.4	2.817	3.067	+0.89	+2.2	14.0	94.8
Oct. 8	18 53.00	-30 53.8	2.958	3.074	+1.05	+2.5	14.1	87.1
Oct. 18	19 04.10	-30 26.6	3.099	3.082	+1.18	+2.9	14.2	79.7
Oct. 28	19 16.44	-29 55.5	3.239	3.090	+1.29	+3.4	14.3	72.6
Nov. 7	19 29.79	-29 19.9	3.375	3.099	+1.38	+3.8	14.4	65.6
Nov. 17	19 43.94	-28 39.4	3.504	3.109	+1.45	+4.3	14.5	58.8
Nov. 27	19 58.70	-27 53.8	3.627	3.120	+1.50	+4.8	14.5	52.1
Dec. 7	20 13.92	-27 03.0	3.741	3.131	+1.54	+5.4	14.6	45.6
Dec. 17	20 29.43	-26 07.1	3.845	3.143	+1.56	+5.9	14.7	39.1
Dec. 27	20 45.13	-25 06.3	3.938	3.156	+1.57	+6.3	14.7	32.8
Jan. 6	21 00.88	-24 00.9	4.018	3.169	+1.58	+6.8	14.8	26.5
Jan. 16	21 16.61	-22 51.4	4.086	3.183	+1.57	+7.2	14.8	20.4
Jan. 26	21 32.22	-21 38.5	4.140	3.197	+1.55	+7.5	14.9	14.6
Feb. 5	21 47.65	-20 22.7	4.180	3.212	+1.53	+7.7	14.9	9.4
Feb. 15	22 02.84	-19 04.8	4.206	3.227	+1.50	+7.9	14.9	6.7
Feb. 25	22 17.74	-17 45.5	4.218	3.243	+1.47	+8.0	14.9	8.9
Mar. 7	22 32.30	-16 25.8	4.214	3.260	+1.44	+8.0	14.9	13.9
Mar. 17	22 46.49	-15 06.4	4.197	3.277	+1.40	+7.9	14.9	19.7
Mar. 27	23 00.25	-13 48.1	4.165	3.294	+1.35	+7.7	14.9	25.7

Comet 169P/NEAT

Epoch = 2022 June 30.0 TT
 T = 2022 July 9.68354 TT
 Peri. = 218.04392 e = 0.7683475
 Node = 176.10666 2000.0 a = 2.6022896 AU
 Incl. = 11.29901 n = 0.23478515
 q = 0.6028269 AU P = 4.20 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	17 26.37	-15 02.0	3.453	2.552	+1.69	-0.9	21.1	20.1
Jan. 11	17 43.56	-15 07.1	3.316	2.467	+1.76	0.0	21.0	25.7
Jan. 21	18 01.42	-15 02.9	3.164	2.379	+1.83	+1.0	20.8	31.3
Jan. 31	18 20.01	-14 48.4	3.001	2.289	+1.90	+2.0	20.6	36.8
Feb. 10	18 39.38	-14 22.7	2.826	2.195	+1.98	+3.2	20.4	42.0
Feb. 20	18 59.62	-13 44.5	2.644	2.098	+2.08	+4.6	20.1	47.0
Mar. 2	19 20.89	-12 52.3	2.455	1.998	+2.19	+6.1	19.9	51.7
Mar. 12	19 43.40	-11 44.4	2.262	1.895	+2.33	+7.7	19.6	56.0
Mar. 22	20 07.47	-10 18.4	2.069	1.788	+2.51	+9.7	19.2	59.7
Apr. 1	20 33.59	-08 31.2	1.879	1.677	+2.75	+12.0	18.9	62.8
Apr. 11	21 02.40	-06 19.2	1.694	1.562	+3.06	+14.7	18.5	65.0
Apr. 21	21 34.80	-03 37.8	1.519	1.444	+3.48	+17.9	18.1	66.2
May 1	22 12.05	+00 22.4	1.361	1.322	+4.05	+21.5	17.7	65.9
May 11	22 55.62	+03 29.0	1.225	1.196	+4.77	+25.0	17.2	63.9
May 21	23 47.05	+07 50.0	1.122	1.069	+5.62	+27.1	16.8	59.8
May 31	00 47.11	+12 18.6	1.061	0.941	+6.46	+25.8	16.4	53.9
June 10	01 54.65	+16 14.3	1.052	0.819	+7.04	+20.0	16.1	46.6
June 20	03 06.17	+18 55.9	1.098	0.710	+7.20	+11.2	15.9	39.0
June 30	04 17.43	+20 07.2	1.194	0.631	+6.97	+2.4	15.8	31.9
July 10	05 25.17	+19 58.7	1.324	0.603	+6.49	-4.5	15.9	25.8
July 20	06 27.12	+18 51.1	1.469	0.635	+5.81	-9.2	16.2	21.0
July 30	07 21.71	+17 04.6	1.614	0.716	+5.03	-12.1	16.7	17.7
Aug. 9	08 08.70	+14 56.3	1.754	0.826	+4.31	-13.5	17.2	15.8
Aug. 19	08 48.92	+12 39.3	1.886	0.949	+3.70	-13.8	17.7	15.3
Aug. 29	09 23.60	+10 21.6	2.010	1.077	+3.21	-13.6	18.1	16.0
Sept. 8	09 53.80	+08 07.8	2.124	1.204	+2.81	-13.0	18.4	17.8
Sept. 18	10 20.42	+06 00.4	2.224	1.329	+2.49	-12.3	18.8	20.4
Sept. 28	10 44.14	+04 00.7	2.310	1.451	+2.23	-11.5	19.0	23.8
Oct. 8	11 05.45	+02 09.4	2.380	1.569	+2.01	-10.7	19.3	28.0
Oct. 18	11 24.69	+00 26.8	2.434	1.684	+1.82	-9.8	19.5	32.7
Oct. 28	11 42.10	-01 06.7	2.470	1.794	+1.65	-8.8	19.6	38.0
Nov. 7	11 57.82	-02 30.6	2.488	1.901	+1.48	-7.8	19.8	43.8
Nov. 17	12 11.91	-03 44.5	2.489	2.004	+1.32	-6.8	19.9	50.1
Nov. 27	12 24.35	-04 47.7	2.473	2.104	+1.15	-5.7	20.0	56.9
Dec. 7	12 35.08	-05 39.3	2.442	2.201	+0.97	-4.5	20.1	64.3
Dec. 17	12 43.97	-06 18.4	2.396	2.294	+0.78	-3.2	20.1	72.1
Dec. 27	12 50.83	-06 43.8	2.339	2.384	+0.57	-1.7	20.1	80.6
Jan. 6	12 55.44	-06 53.8	2.274	2.472	+0.33	-0.1	20.1	89.6
Jan. 16	12 57.57	-06 47.3	2.205	2.557	+0.07	+1.6	20.2	99.4
Jan. 26	12 57.02	-06 22.6	2.137	2.639	-0.21	+3.5	20.2	109.8
Feb. 5	12 53.65	-05 39.0	2.075	2.718	-0.49	+5.4	20.2	121.1
Feb. 15	12 47.53	-04 36.6	2.027	2.795	-0.76	+7.2	20.2	133.0
Feb. 25	12 38.93	-03 17.6	1.999	2.870	-0.97	+8.7	20.2	145.5
Mar. 7	12 28.49	-01 46.5	1.997	2.943	-1.11	+9.5	20.2	158.6
Mar. 17	12 17.09	+00 10.3	2.025	3.013	-1.16	+9.6	20.3	171.7
Mar. 27	12 05.72	+01 23.4	2.086	3.081	-1.10	+8.9	20.4	174.7

Comet C/2020 F2 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2022 July 15.69161 TT
 Peri. = 48.35445
 Node = 250.27253 2000.0
 Incl. = 163.58492
 q = 8.8171863 AU
 e = 1.0051339

$$m1 = -6.6 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	14 38.99	-05 27.4	9.316	8.890	+0.05 +1.5	17.2	61.6
Jan. 11	14 39.18	-05 10.0	9.143	8.883	-0.02 +2.0	17.2	71.7
Jan. 21	14 38.68	-04 47.9	8.961	8.876	-0.09 +2.5	17.1	81.9
Jan. 31	14 37.41	-04 21.0	8.774	8.870	-0.17 +3.0	17.1	92.4
Feb. 10	14 35.32	-03 49.1	8.589	8.863	-0.26 +3.5	17.0	103.0
Feb. 20	14 32.37	-03 12.6	8.413	8.858	-0.34 +3.9	17.0	113.7
Mar. 2	14 28.56	-02 31.8	8.252	8.852	-0.43 +4.3	16.9	124.6
Mar. 12	14 23.92	-01 47.4	8.111	8.847	-0.51 +4.6	16.9	135.5
Mar. 22	14 18.55	-01 00.5	7.997	8.843	-0.57 +4.8	16.8	146.3
Apr. 1	14 12.56	+00 12.3	7.913	8.839	-0.63 +4.8	16.8	156.6
Apr. 11	14 06.14	+00 35.8	7.863	8.835	-0.66 +4.7	16.8	164.9
Apr. 21	13 59.48	+01 22.2	7.850	8.831	-0.67 +4.5	16.8	166.9
May 1	13 52.81	+02 05.8	7.872	8.828	-0.66 +4.1	16.8	160.5
May 11	13 46.33	+02 45.0	7.929	8.825	-0.63 +3.7	16.8	150.9
May 21	13 40.25	+03 19.2	8.018	8.823	-0.58 +3.1	16.8	140.5
May 31	13 34.72	+03 47.6	8.135	8.821	-0.52 +2.5	16.9	130.0
June 10	13 29.87	+04 10.1	8.274	8.820	-0.44 +1.9	16.9	119.6
June 20	13 25.78	+04 26.7	8.431	8.818	-0.37 +1.4	16.9	109.3
June 30	13 22.49	+04 37.8	8.599	8.818	-0.29 +0.8	17.0	99.1
July 10	13 19.99	+04 43.8	8.772	8.817	-0.21 +0.3	17.0	89.2
July 20	13 18.27	+04 45.5	8.946	8.817	-0.13 -0.1	17.1	79.5
July 30	13 17.28	+04 43.4	9.114	8.818	-0.06 -0.4	17.1	69.9
Aug. 9	13 16.95	+04 38.2	9.272	8.818	0.00 -0.7	17.1	60.6
Aug. 19	13 17.23	+04 30.8	9.416	8.819	+0.06 -0.8	17.2	51.3
Aug. 29	13 18.02	+04 21.7	9.542	8.821	+0.10 -1.0	17.2	42.3
Sept. 8	13 19.25	+04 11.7	9.645	8.823	+0.14 -1.0	17.2	33.5
Sept. 18	13 20.83	+04 01.5	9.725	8.825	+0.17 -1.0	17.3	25.1
Sept. 28	13 22.69	+03 51.6	9.779	8.828	+0.20 -0.9	17.3	17.4
Oct. 8	13 24.72	+03 42.9	9.805	8.831	+0.21 -0.8	17.3	12.3
Oct. 18	13 26.84	+03 35.8	9.802	8.834	+0.21 -0.6	17.3	13.0
Oct. 28	13 28.96	+03 31.0	9.771	8.838	+0.21 -0.3	17.3	19.1
Nov. 7	13 30.98	+03 29.1	9.712	8.842	+0.19 0.0	17.3	27.2
Nov. 17	13 32.80	+03 30.8	9.627	8.847	+0.17 +0.4	17.3	36.0
Nov. 27	13 34.34	+03 36.5	9.518	8.852	+0.13 +0.8	17.2	45.3
Dec. 7	13 35.47	+03 46.9	9.387	8.857	+0.09 +1.3	17.2	54.9
Dec. 17	13 36.12	+04 02.3	9.239	8.863	+0.03 +1.8	17.2	64.7
Dec. 27	13 36.17	+04 23.2	9.077	8.869	-0.03 +2.4	17.1	74.7
Jan. 6	13 35.54	+04 49.8	8.908	8.875	-0.10 +3.0	17.1	84.9
Jan. 16	13 34.16	+05 22.1	8.736	8.882	-0.18 +3.5	17.1	95.3
Jan. 26	13 31.95	+06 00.0	8.568	8.889	-0.27 +4.1	17.0	105.9
Feb. 5	13 28.88	+06 43.0	8.411	8.897	-0.35 +4.6	17.0	116.6
Feb. 15	13 24.97	+07 30.3	8.270	8.904	-0.44 +4.9	17.0	127.4
Feb. 25	13 20.24	+08 20.8	8.152	8.913	-0.51 +5.2	17.0	138.0
Mar. 7	13 14.79	+09 13.1	8.062	8.921	-0.58 +5.3	16.9	148.3
Mar. 17	13 08.76	+10 05.5	8.003	8.930	-0.63 +5.2	16.9	157.5
Mar. 27	13 02.31	+10 56.3	7.980	8.940	-0.66 +4.9	16.9	163.3

Comet 116P/Wild

Epoch = 2022 June 30.0 TT
 T = 2022 July 16.92429 TT
 Peri. = 173.28780 e = 0.3705459
 Node = 20.98434 2000.0 a = 3.4903925 AU
 Incl. = 3.60327 n = 0.15114461
 q = 2.1970419 AU P = 6.52 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	10 09.19	+16 30.7	1.810	2.571	+0.06	+0.9	15.1	131.6
Jan. 11	10 08.61	+16 45.5	1.691	2.539	-0.21	+2.1	14.8	142.0
Jan. 21	10 05.36	+17 11.6	1.591	2.508	-0.47	+3.1	14.6	152.8
Jan. 31	09 59.67	+17 45.8	1.515	2.477	-0.68	+3.7	14.4	164.1
Feb. 10	09 52.15	+18 22.6	1.464	2.448	-0.82	+3.6	14.2	174.0
Feb. 20	09 43.82	+18 55.6	1.441	2.420	-0.83	+2.8	14.1	169.6
Mar. 2	09 35.88	+19 18.8	1.443	2.393	-0.72	+1.6	14.0	158.4
Mar. 12	09 29.54	+19 28.2	1.470	2.367	-0.51	+0.1	14.0	147.2
Mar. 22	09 25.68	+19 22.0	1.518	2.343	-0.23	-1.5	14.0	136.5
Apr. 1	09 24.77	+19 00.4	1.582	2.320	+0.08	-3.0	14.0	126.6
Apr. 11	09 26.93	+18 24.6	1.659	2.299	+0.38	-4.3	14.0	117.4
Apr. 21	09 31.97	+17 35.7	1.745	2.280	+0.65	-5.5	14.1	109.1
May 1	09 39.57	+16 35.1	1.837	2.262	+0.89	-6.7	14.1	101.4
May 11	09 49.38	+15 23.6	1.933	2.247	+1.09	-7.7	14.2	94.3
May 21	10 01.02	+14 02.0	2.030	2.233	+1.25	-8.7	14.2	87.8
May 31	10 14.16	+12 31.1	2.129	2.222	+1.39	-9.6	14.3	81.7
June 10	10 28.53	+10 51.7	2.226	2.212	+1.49	-10.4	14.4	76.0
June 20	10 43.88	+09 04.6	2.323	2.205	+1.58	-11.1	14.4	70.6
June 30	11 00.04	+07 10.7	2.418	2.200	+1.65	-11.7	14.5	65.5
July 10	11 16.87	+05 10.9	2.510	2.198	+1.71	-12.3	14.6	60.6
July 20	11 34.23	+03 06.5	2.600	2.197	+1.76	-12.7	14.7	55.9
July 30	11 52.07	+00 58.5	2.687	2.199	+1.81	-13.0	14.7	51.3
Aug. 9	12 10.32	-01 11.9	2.771	2.203	+1.85	-13.1	14.8	46.7
Aug. 19	12 28.95	-03 23.3	2.851	2.209	+1.88	-13.2	14.9	42.3
Aug. 29	12 47.92	-05 34.7	2.927	2.218	+1.92	-13.1	15.0	37.8
Sept. 8	13 07.23	-07 44.6	2.999	2.229	+1.95	-12.9	15.1	33.4
Sept. 18	13 26.86	-09 51.7	3.067	2.241	+1.98	-12.5	15.2	29.0
Sept. 28	13 46.80	-11 54.9	3.129	2.256	+2.01	-12.1	15.3	24.5
Oct. 8	14 07.05	-13 52.8	3.186	2.273	+2.04	-11.5	15.4	20.0
Oct. 18	14 27.57	-15 44.3	3.237	2.291	+2.07	-10.8	15.5	15.4
Oct. 28	14 48.35	-17 28.4	3.281	2.312	+2.09	-10.0	15.5	10.8
Nov. 7	15 09.35	-19 04.0	3.317	2.334	+2.11	-9.1	15.6	6.1
Nov. 17	15 30.50	-20 30.2	3.346	2.357	+2.12	-8.1	15.7	1.8
Nov. 27	15 51.75	-21 46.5	3.366	2.383	+2.13	-7.1	15.8	4.2
Dec. 7	16 12.99	-22 52.3	3.376	2.409	+2.12	-6.0	15.9	9.2
Dec. 17	16 34.14	-23 47.4	3.378	2.437	+2.11	-4.9	16.0	14.4
Dec. 27	16 55.08	-24 31.7	3.369	2.466	+2.08	-3.8	16.1	19.7
Jan. 6	17 15.67	-25 05.4	3.350	2.496	+2.04	-2.8	16.2	25.2
Jan. 16	17 35.79	-25 29.2	3.321	2.527	+1.98	-1.9	16.3	30.8
Jan. 26	17 55.31	-25 43.7	3.281	2.558	+1.91	-1.0	16.3	36.5
Feb. 5	18 14.08	-25 49.9	3.231	2.591	+1.83	-0.2	16.4	42.5
Feb. 15	18 31.96	-25 49.0	3.172	2.625	+1.73	+0.4	16.4	48.6
Feb. 25	18 48.80	-25 42.5	3.102	2.659	+1.62	+0.9	16.5	54.8
Mar. 7	19 04.47	-25 31.8	3.024	2.693	+1.50	+1.2	16.5	61.3
Mar. 17	19 18.82	-25 18.6	2.939	2.728	+1.36	+1.4	16.6	68.1
Mar. 27	19 31.70	-25 04.7	2.847	2.764	+1.20	+1.4	16.6	75.1

Comet 272P/NEAT

Epoch = 2022 June 30.0 TT
 T = 2022 July 17.04953 TT
 Peri. = 27.89647 e = 0.4546955
 Node = 109.46994 2000.0 a = 4.4602379 AU
 Incl. = 18.07408 n = 0.10463260
 q = 2.4321878 AU P = 9.42 years

$$m1 = 9.2 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	04 55.42	+10 13.7	1.917	2.817	-0.68 +6.5	19.6	151.0
Jan. 11	04 49.47	+11 23.6	1.952	2.783	-0.48 +7.5	19.5	140.6
Jan. 21	04 45.78	+12 41.0	2.009	2.751	-0.23 +8.1	19.5	130.4
Jan. 31	04 44.69	+14 03.3	2.084	2.719	+0.04 +8.4	19.5	120.4
Feb. 10	04 46.35	+15 28.0	2.171	2.688	+0.32 +8.5	19.5	111.1
Feb. 20	04 50.69	+16 52.5	2.267	2.659	+0.58 +8.4	19.5	102.3
Mar. 2	04 57.55	+18 15.2	2.368	2.631	+0.82 +8.1	19.5	94.1
Mar. 12	05 06.72	+19 34.2	2.472	2.605	+1.04 +7.6	19.5	86.4
Mar. 22	05 17.96	+20 48.1	2.575	2.580	+1.23 +7.1	19.5	79.1
Apr. 1	05 31.04	+21 55.5	2.676	2.557	+1.40 +6.3	19.5	72.3
Apr. 11	05 45.76	+22 55.3	2.773	2.535	+1.55 +5.5	19.5	65.9
Apr. 21	06 01.88	+23 46.3	2.866	2.516	+1.68 +4.6	19.5	59.9
May 1	06 19.23	+24 27.6	2.952	2.498	+1.80 +3.6	19.5	54.1
May 11	06 37.63	+24 58.5	3.033	2.482	+1.89 +2.5	19.5	48.5
May 21	06 56.88	+25 18.4	3.106	2.469	+1.97 +1.4	19.5	43.3
May 31	07 16.83	+25 26.8	3.173	2.457	+2.03 +0.2	19.5	38.2
June 10	07 37.32	+25 23.7	3.232	2.448	+2.07 -1.0	19.5	33.3
June 20	07 58.18	+25 09.0	3.284	2.440	+2.10 -2.1	19.5	28.5
June 30	08 19.28	+24 43.1	3.329	2.435	+2.12 -3.2	19.5	24.0
July 10	08 40.51	+24 06.5	3.367	2.433	+2.12 -4.2	19.6	19.6
July 20	09 01.73	+23 19.9	3.397	2.432	+2.12 -5.2	19.6	15.4
July 30	09 22.88	+22 24.2	3.420	2.434	+2.11 -6.0	19.6	11.7
Aug. 9	09 43.86	+21 20.5	3.435	2.438	+2.09 -6.8	19.6	8.8
Aug. 19	10 04.61	+20 10.0	3.443	2.444	+2.06 -7.4	19.6	7.8
Aug. 29	10 25.09	+18 54.0	3.444	2.453	+2.03 -7.8	19.7	9.4
Sept. 8	10 45.26	+17 34.0	3.437	2.464	+2.00 -8.2	19.7	12.6
Sept. 18	11 05.09	+16 11.5	3.423	2.477	+1.96 -8.3	19.7	16.6
Sept. 28	11 24.56	+14 47.8	3.401	2.491	+1.93 -8.4	19.8	21.0
Oct. 8	11 43.65	+13 24.7	3.371	2.508	+1.89 -8.2	19.8	25.7
Oct. 18	12 02.31	+12 03.6	3.334	2.527	+1.84 -7.9	19.9	30.6
Oct. 28	12 20.53	+10 46.1	3.288	2.548	+1.80 -7.5	19.9	35.7
Nov. 7	12 38.25	+09 33.8	3.236	2.570	+1.74 -6.9	19.9	40.9
Nov. 17	12 55.42	+08 28.1	3.175	2.594	+1.68 -6.2	20.0	46.4
Nov. 27	13 11.96	+07 30.4	3.108	2.620	+1.62 -5.3	20.0	52.1
Dec. 7	13 27.77	+06 42.2	3.033	2.647	+1.54 -4.3	20.1	58.1
Dec. 17	13 42.75	+06 04.7	2.953	2.676	+1.45 -3.1	20.1	64.2
Dec. 27	13 56.73	+05 38.9	2.867	2.706	+1.34 -1.9	20.1	70.7
Jan. 6	14 09.55	+05 25.8	2.778	2.737	+1.21 -0.6	20.2	77.4
Jan. 16	14 21.03	+05 25.9	2.685	2.770	+1.07 +0.8	20.2	84.5
Jan. 26	14 30.93	+05 39.7	2.592	2.803	+0.89 +2.1	20.2	91.9
Feb. 5	14 39.03	+06 06.9	2.501	2.838	+0.70 +3.4	20.2	99.6
Feb. 15	14 45.12	+06 46.5	2.414	2.873	+0.49 +4.6	20.3	107.7
Feb. 25	14 48.96	+07 36.8	2.334	2.909	+0.26 +5.5	20.3	116.1
Mar. 7	14 50.44	+08 35.1	2.266	2.946	+0.02 +6.1	20.4	124.7
Mar. 17	14 49.52	+09 37.0	2.212	2.984	-0.22 +6.2	20.4	133.4
Mar. 27	14 46.33	+10 37.6	2.176	3.022	-0.43 +5.8	20.5	141.6

Comet C/2021 P4 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2022 July 30.37360 TT
 Peri. = 175.82122
 Node = 348.09482 2000.0
 Incl. = 56.31109
 q = 1.0804476 AU
 e = 0.9966221

$$m1 = 9.0 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	22 38.37	+52 32.9	2.981	3.156	+0.69	-6.3	16.4	91.0
Jan. 11	22 46.47	+51 38.8	2.963	3.045	+0.95	-4.3	16.2	85.3
Jan. 21	22 56.99	+51 05.5	2.941	2.932	+1.18	-2.2	16.0	79.9
Jan. 31	23 09.79	+50 53.4	2.914	2.819	+1.40	0.0	15.8	74.7
Feb. 10	23 24.84	+51 02.8	2.880	2.706	+1.63	+2.1	15.6	70.0
Feb. 20	23 42.21	+51 32.7	2.838	2.591	+1.87	+4.1	15.4	65.6
Mar. 2	00 02.14	+52 21.4	2.786	2.475	+2.15	+5.8	15.2	61.7
Mar. 12	00 25.05	+53 26.8	2.726	2.359	+2.47	+7.3	14.9	58.3
Mar. 22	00 51.50	+54 45.0	2.657	2.243	+2.87	+8.3	14.6	55.2
Apr. 1	01 22.32	+56 10.3	2.581	2.126	+3.36	+8.6	14.3	52.5
Apr. 11	01 58.45	+57 34.5	2.499	2.010	+3.94	+7.9	14.0	50.1
Apr. 21	02 40.80	+58 44.8	2.414	1.894	+4.60	+5.6	13.7	47.9
May 1	03 29.72	+59 23.5	2.329	1.779	+5.23	+1.4	13.3	45.8
May 11	04 24.23	+59 09.7	2.245	1.666	+5.66	-5.1	13.0	43.6
May 21	05 21.43	+57 42.6	2.167	1.556	+5.72	-13.4	12.6	41.2
May 31	06 17.32	+54 49.1	2.098	1.451	+5.37	-22.3	12.2	38.6
June 10	07 08.45	+50 28.0	2.041	1.353	+4.77	-30.6	11.9	35.7
June 20	07 53.16	+44 48.7	1.998	1.265	+4.11	-37.7	11.5	32.5
June 30	08 31.50	+38 06.8	1.971	1.190	+3.52	-43.0	11.2	29.1
July 10	09 04.37	+30 40.0	1.959	1.131	+3.03	-46.5	11.0	25.6
July 20	09 32.95	+22 45.3	1.961	1.094	+2.67	-48.4	10.9	22.5
July 30	09 58.40	+14 37.7	1.975	1.080	+2.41	-49.0	10.8	20.2
Aug. 9	10 21.76	+06 29.2	1.999	1.092	+2.26	-48.5	10.9	19.1
Aug. 19	10 43.92	-01 31.0	2.031	1.128	+2.18	-47.3	11.1	19.4
Aug. 29	11 05.66	-09 17.1	2.071	1.184	+2.18	-45.7	11.3	21.0
Sept. 8	11 27.60	-16 44.9	2.119	1.259	+2.23	-43.6	11.6	23.3
Sept. 18	11 50.32	-23 51.2	2.175	1.346	+2.33	-41.3	12.0	26.0
Sept. 28	12 14.32	-30 33.3	2.239	1.443	+2.49	-38.8	12.3	28.8
Oct. 8	12 40.08	-36 48.4	2.312	1.548	+2.69	-35.9	12.7	31.3
Oct. 18	13 08.10	-42 33.1	2.395	1.657	+2.94	-32.7	13.1	33.5
Oct. 28	13 38.86	-47 44.5	2.485	1.770	+3.25	-29.2	13.5	35.3
Nov. 7	14 12.83	-52 19.0	2.582	1.885	+3.59	-25.3	13.8	36.8
Nov. 17	14 50.31	-56 13.3	2.684	2.001	+3.95	-21.1	14.2	38.0
Nov. 27	15 31.35	-59 24.7	2.791	2.117	+4.29	-16.7	14.5	39.0
Dec. 7	16 15.46	-61 51.5	2.899	2.234	+4.54	-12.2	14.8	39.8
Dec. 17	17 01.54	-63 33.7	3.008	2.350	+4.66	-7.9	15.1	40.7
Dec. 27	17 48.01	-64 34.4	3.114	2.466	+4.60	-4.0	15.4	41.6
Jan. 6	18 33.09	-64 59.3	3.216	2.582	+4.37	-0.8	15.7	42.7
Jan. 16	19 15.38	-64 55.9	3.313	2.697	+4.04	+1.6	15.9	44.2
Jan. 26	19 54.06	-64 32.6	3.403	2.811	+3.65	+3.1	16.1	46.1
Feb. 5	20 28.84	-63 57.3	3.484	2.924	+3.27	+3.9	16.4	48.4
Feb. 15	20 59.87	-63 16.6	3.556	3.036	+2.91	+4.1	16.6	51.2
Feb. 25	21 27.49	-62 36.0	3.618	3.147	+2.59	+3.9	16.8	54.4
Mar. 7	21 52.06	-61 59.9	3.670	3.257	+2.30	+3.2	17.0	58.1
Mar. 17	22 13.94	-61 31.3	3.712	3.367	+2.05	+2.3	17.1	62.3
Mar. 27	22 33.44	-61 13.1	3.745	3.475	+1.83	+1.2	17.3	66.8

Comet 100P/Hartley

Epoch = 2022 June 30.0 TT
 T = 2022 Aug. 10.96287 TT
 Peri. = 181.97471 e = 0.4121571
 Node = 37.68711 2000.0 a = 3.4322595 AU
 Incl. = 25.56583 n = 0.15500078
 q = 2.0176294 AU P = 6.36 years

$$m1 = 6.5 + 5 \log(\Delta) + 30.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° ' "			m	' "		°
Jan. 1	12 11.72	+32 34.8	2.099	2.588	+0.85	+3.5	20.5	108.7
Jan. 11	12 19.16	+33 16.7	1.961	2.547	+0.61	+5.0	20.1	115.8
Jan. 21	12 23.99	+34 11.9	1.833	2.507	+0.32	+6.1	19.8	122.9
Jan. 31	12 25.71	+35 17.2	1.719	2.468	-0.02	+6.9	19.4	129.8
Feb. 10	12 23.88	+36 25.8	1.620	2.430	-0.39	+6.7	19.1	136.2
Feb. 20	12 18.30	+37 27.9	1.539	2.392	-0.76	+5.4	18.8	141.4
Mar. 2	12 09.20	+38 11.1	1.478	2.355	-1.08	+2.7	18.5	144.4
Mar. 12	11 57.43	+38 21.9	1.438	2.320	-1.27	-1.1	18.3	144.5
Mar. 22	11 44.52	+37 50.5	1.420	2.285	-1.29	-5.7	18.0	141.5
Apr. 1	11 32.22	+36 33.1	1.423	2.252	-1.13	-10.2	17.8	136.1
Apr. 11	11 22.16	+34 32.7	1.445	2.221	-0.84	-14.1	17.7	129.5
Apr. 21	11 15.35	+31 57.4	1.484	2.191	-0.49	-17.1	17.6	122.2
May 1	11 12.11	+28 57.0	1.537	2.164	-0.13	-19.1	17.5	114.9
May 11	11 12.37	+25 40.0	1.602	2.138	+0.20	-20.3	17.4	107.7
May 21	11 15.73	+22 13.3	1.675	2.114	+0.49	-21.0	17.4	100.9
May 31	11 21.73	+18 41.6	1.755	2.093	+0.73	-21.3	17.3	94.4
June 10	11 29.96	+15 07.7	1.839	2.074	+0.93	-21.4	17.3	88.3
June 20	11 40.02	+11 33.8	1.926	2.057	+1.09	-21.4	17.3	82.5
June 30	11 51.61	+08 00.8	2.015	2.044	+1.24	-21.2	17.3	77.1
July 10	12 04.52	+04 29.5	2.105	2.033	+1.36	-21.0	17.4	71.9
July 20	12 18.55	+01 00.8	2.195	2.025	+1.46	-20.7	17.4	66.9
July 30	12 33.59	-02 24.9	2.284	2.020	+1.56	-20.4	17.5	62.1
Aug. 9	12 49.58	-05 46.9	2.371	2.018	+1.65	-20.0	17.5	57.5
Aug. 19	13 06.44	-09 04.7	2.457	2.019	+1.73	-19.5	17.6	53.1
Aug. 29	13 24.18	-12 17.3	2.540	2.022	+1.82	-19.0	17.7	48.8
Sept. 8	13 42.79	-15 24.0	2.621	2.029	+1.91	-18.3	17.8	44.5
Sept. 18	14 02.27	-18 23.7	2.698	2.039	+2.00	-17.5	17.9	40.4
Sept. 28	14 22.66	-21 15.3	2.771	2.052	+2.09	-16.7	18.1	36.3
Oct. 8	14 43.97	-23 57.8	2.841	2.067	+2.18	-15.7	18.2	32.3
Oct. 18	15 06.20	-26 29.7	2.906	2.085	+2.27	-14.6	18.4	28.5
Oct. 28	15 29.35	-28 49.9	2.967	2.105	+2.37	-13.3	18.6	24.7
Nov. 7	15 53.39	-30 57.1	3.022	2.128	+2.45	-12.0	18.7	21.2
Nov. 17	16 18.26	-32 50.1	3.072	2.153	+2.53	-10.5	18.9	18.0
Nov. 27	16 43.86	-34 27.8	3.116	2.180	+2.59	-8.9	19.1	15.4
Dec. 7	17 10.04	-35 49.7	3.153	2.209	+2.64	-7.3	19.3	13.8
Dec. 17	17 36.63	-36 55.1	3.184	2.240	+2.67	-5.6	19.5	13.6
Dec. 27	18 03.43	-37 44.3	3.209	2.272	+2.68	-4.0	19.7	14.9
Jan. 6	18 30.19	-38 17.6	3.225	2.306	+2.67	-2.5	19.9	17.4
Jan. 16	18 56.70	-38 36.1	3.234	2.341	+2.63	-1.1	20.1	20.8
Jan. 26	19 22.73	-38 41.0	3.236	2.377	+2.57	+0.2	20.3	24.7
Feb. 5	19 48.06	-38 34.3	3.229	2.415	+2.49	+1.2	20.5	29.0
Feb. 15	20 12.55	-38 18.0	3.214	2.453	+2.40	+2.1	20.7	33.6
Feb. 25	20 36.05	-37 54.4	3.191	2.492	+2.29	+2.7	20.9	38.4
Mar. 7	20 58.44	-37 26.0	3.159	2.532	+2.18	+3.0	21.1	43.4
Mar. 17	21 19.66	-36 55.1	3.120	2.572	+2.06	+3.1	21.3	48.5
Mar. 27	21 39.65	-36 24.4	3.073	2.613	+1.93	+3.0	21.4	53.9

Comet 119P/Parker-Hartley

Epoch = 2022 June 30.0 TT
 T = 2022 Aug. 11.96573 TT
 Peri. = 322.05022 e = 0.3881878
 Node = 104.57208 2000.0 a = 3.8042483 AU
 Incl. = 7.39355 n = 0.13283141
 q = 2.3274855 AU P = 7.42 years

$$m1 = 9.1 + 5 \log(\Delta) + 12.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	23 08.91	-12 32.6	3.067	2.769	+1.20	+8.8	17.1	63.3
Jan. 11	23 21.37	-11 01.5	3.151	2.736	+1.30	+9.4	17.1	56.6
Jan. 21	23 34.73	-09 24.6	3.226	2.703	+1.38	+10.0	17.0	50.1
Jan. 31	23 48.89	-07 42.6	3.292	2.671	+1.46	+10.5	17.0	43.9
Feb. 10	00 03.74	-05 56.3	3.348	2.641	+1.52	+10.8	17.0	38.0
Feb. 20	00 19.21	-04 06.7	3.393	2.611	+1.58	+11.1	17.0	32.2
Mar. 2	00 35.22	-02 14.8	3.429	2.582	+1.63	+11.3	16.9	26.7
Mar. 12	00 51.75	+00 21.4	3.454	2.554	+1.68	+11.4	16.9	21.3
Mar. 22	01 08.75	+01 32.2	3.468	2.528	+1.73	+11.3	16.8	16.3
Apr. 1	01 26.21	+03 25.3	3.473	2.502	+1.77	+11.2	16.8	11.5
Apr. 11	01 44.09	+05 16.6	3.469	2.478	+1.81	+11.0	16.7	7.3
Apr. 21	02 02.39	+07 05.2	3.455	2.456	+1.85	+10.7	16.7	5.0
May 1	02 21.10	+08 50.0	3.433	2.435	+1.89	+10.2	16.6	6.6
May 11	02 40.19	+10 29.9	3.403	2.416	+1.93	+9.7	16.5	10.3
May 21	02 59.63	+12 03.9	3.365	2.398	+1.96	+9.0	16.5	14.5
May 31	03 19.40	+13 31.2	3.320	2.383	+1.99	+8.3	16.4	18.8
June 10	03 39.45	+14 50.7	3.268	2.369	+2.02	+7.5	16.4	23.2
June 20	03 59.72	+16 01.7	3.210	2.357	+2.04	+6.6	16.3	27.6
June 30	04 20.15	+17 03.6	3.146	2.347	+2.05	+5.7	16.2	32.0
July 10	04 40.63	+17 55.8	3.076	2.339	+2.05	+4.7	16.2	36.6
July 20	05 01.07	+18 38.2	3.001	2.333	+2.04	+3.7	16.1	41.1
July 30	05 21.36	+19 10.8	2.920	2.329	+2.01	+2.7	16.0	45.8
Aug. 9	05 41.33	+19 33.7	2.835	2.328	+1.98	+1.8	15.9	50.6
Aug. 19	06 00.86	+19 47.5	2.745	2.328	+1.92	+0.9	15.9	55.6
Aug. 29	06 19.79	+19 53.1	2.651	2.331	+1.85	+0.1	15.8	60.7
Sept. 8	06 37.92	+19 51.7	2.553	2.335	+1.76	-0.5	15.7	66.1
Sept. 18	06 55.08	+19 44.7	2.452	2.342	+1.66	-0.9	15.7	71.8
Sept. 28	07 11.06	+19 34.0	2.348	2.351	+1.52	-1.2	15.6	77.8
Oct. 8	07 25.63	+19 21.8	2.242	2.361	+1.37	-1.2	15.5	84.2
Oct. 18	07 38.55	+19 10.4	2.136	2.374	+1.19	-1.0	15.4	91.1
Oct. 28	07 49.55	+19 02.5	2.031	2.389	+0.98	-0.5	15.4	98.4
Nov. 7	07 58.31	+19 00.8	1.930	2.405	+0.74	+0.3	15.3	106.4
Nov. 17	08 04.57	+19 08.0	1.833	2.424	+0.48	+1.3	15.2	115.0
Nov. 27	08 08.03	+19 26.1	1.746	2.443	+0.18	+2.5	15.2	124.4
Dec. 7	08 08.52	+19 56.5	1.672	2.465	-0.12	+3.7	15.1	134.5
Dec. 17	08 06.06	+20 38.5	1.614	2.488	-0.40	+4.8	15.1	145.4
Dec. 27	08 00.94	+21 29.7	1.578	2.512	-0.64	+5.5	15.1	156.9
Jan. 6	07 53.83	+22 25.6	1.566	2.538	-0.78	+5.6	15.1	168.8
Jan. 16	07 45.78	+23 20.7	1.582	2.565	-0.81	+5.3	15.2	177.6
Jan. 26	07 37.97	+24 09.9	1.626	2.593	-0.72	+4.5	15.3	166.6
Feb. 5	07 31.53	+24 49.9	1.696	2.623	-0.53	+3.4	15.5	154.9
Feb. 15	07 27.30	+25 19.2	1.791	2.653	-0.28	+2.4	15.7	143.8
Feb. 25	07 25.70	+25 38.2	1.906	2.684	-0.01	+1.4	15.9	133.4
Mar. 7	07 26.84	+25 47.7	2.038	2.716	+0.26	+0.5	16.1	123.6
Mar. 17	07 30.55	+25 48.6	2.184	2.749	+0.50	-0.3	16.3	114.5
Mar. 27	07 36.54	+25 41.7	2.339	2.782	+0.71	-1.1	16.5	105.9

Comet 437P/PANSTARRS = P/2021 V3

Epoch = 2022 June 30.0 TT
 T = 2022 Aug. 18.43730 TT
 Peri. = 206.71480 e = 0.2542205
 Node = 245.86813 2000.0 a = 4.5592252 AU
 Incl. = 3.68945 n = 0.10124358
 q = 3.4001767 AU P = 9.74 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	02 27.31	+15 34.2	2.976	3.562	+0.09	-0.6	20.5	119.3
Jan. 11	02 29.07	+15 32.8	3.097	3.549	+0.28	+0.4	20.6	109.5
Jan. 21	02 32.67	+15 40.7	3.227	3.536	+0.46	+1.3	20.6	100.2
Jan. 31	02 37.97	+15 57.0	3.361	3.524	+0.62	+2.0	20.7	91.3
Feb. 10	02 44.82	+16 20.4	3.496	3.513	+0.76	+2.7	20.8	82.9
Feb. 20	02 53.04	+16 49.4	3.628	3.501	+0.89	+3.2	20.8	74.8
Mar. 2	03 02.47	+17 22.7	3.756	3.491	+1.01	+3.5	20.9	67.1
Mar. 12	03 12.98	+17 58.7	3.876	3.481	+1.10	+3.7	21.0	59.6
Mar. 22	03 24.42	+18 36.1	3.987	3.471	+1.19	+3.8	21.0	52.4
Apr. 1	03 36.67	+19 13.7	4.088	3.462	+1.27	+3.7	21.1	45.5
Apr. 11	03 49.62	+19 50.3	4.177	3.454	+1.33	+3.6	21.1	38.8
Apr. 21	04 03.17	+20 25.0	4.254	3.446	+1.38	+3.3	21.1	32.2
May 1	04 17.23	+20 56.7	4.318	3.439	+1.43	+3.0	21.1	25.8
May 11	04 31.70	+21 24.8	4.367	3.432	+1.47	+2.6	21.2	19.5
May 21	04 46.50	+21 48.6	4.403	3.426	+1.49	+2.1	21.2	13.4
May 31	05 01.55	+22 07.5	4.424	3.421	+1.52	+1.6	21.2	7.3
June 10	05 16.76	+22 21.1	4.431	3.416	+1.53	+1.1	21.2	1.4
June 20	05 32.04	+22 29.1	4.423	3.412	+1.53	+0.5	21.2	4.9
June 30	05 47.32	+22 31.4	4.401	3.408	+1.52	-0.1	21.1	10.9
July 10	06 02.50	+22 27.9	4.365	3.405	+1.51	-0.7	21.1	16.9
July 20	06 17.48	+22 18.6	4.315	3.403	+1.49	-1.2	21.1	23.0
July 30	06 32.20	+22 03.9	4.253	3.401	+1.45	-1.8	21.1	29.1
Aug. 9	06 46.54	+21 44.0	4.177	3.400	+1.41	-2.3	21.0	35.3
Aug. 19	07 00.40	+21 19.4	4.089	3.400	+1.36	-2.7	21.0	41.7
Aug. 29	07 13.68	+20 50.6	3.990	3.401	+1.29	-3.1	20.9	48.2
Sept. 8	07 26.26	+20 18.5	3.880	3.402	+1.21	-3.4	20.9	54.9
Sept. 18	07 38.02	+19 43.9	3.761	3.403	+1.13	-3.6	20.8	61.8
Sept. 28	07 48.83	+19 07.7	3.635	3.406	+1.02	-3.7	20.7	69.0
Oct. 8	07 58.53	+18 31.1	3.502	3.408	+0.90	-3.6	20.6	76.4
Oct. 18	08 06.97	+17 55.2	3.365	3.412	+0.77	-3.5	20.6	84.2
Oct. 28	08 13.97	+17 21.3	3.227	3.416	+0.61	-3.2	20.5	92.4
Nov. 7	08 19.33	+16 50.9	3.090	3.421	+0.44	-2.8	20.4	101.0
Nov. 17	08 22.91	+16 25.1	2.958	3.427	+0.25	-2.3	20.3	110.2
Nov. 27	08 24.54	+16 05.3	2.834	3.433	+0.05	-1.6	20.2	119.8
Dec. 7	08 24.13	+15 52.4	2.723	3.439	-0.15	-0.9	20.1	129.9
Dec. 17	08 21.72	+15 46.7	2.629	3.447	-0.35	-0.2	20.1	140.6
Dec. 27	08 17.47	+15 48.3	2.557	3.455	-0.51	+0.5	20.0	151.7
Jan. 6	08 11.76	+15 56.1	2.511	3.463	-0.63	+1.1	20.0	163.0
Jan. 16	08 05.14	+16 08.6	2.493	3.472	-0.69	+1.4	20.0	173.7
Jan. 26	07 58.29	+16 24.0	2.504	3.482	-0.67	+1.6	20.0	171.8
Feb. 5	07 51.96	+16 40.1	2.546	3.492	-0.58	+1.6	20.1	160.8
Feb. 15	07 46.76	+16 55.2	2.615	3.503	-0.44	+1.4	20.1	149.6
Feb. 25	07 43.19	+17 08.1	2.709	3.514	-0.25	+1.1	20.2	138.7
Mar. 7	07 41.53	+17 17.7	2.824	3.526	-0.06	+0.7	20.3	128.3
Mar. 17	07 41.86	+17 23.3	2.955	3.538	+0.14	+0.3	20.4	118.4
Mar. 27	07 44.12	+17 24.6	3.098	3.550	+0.33	-0.1	20.6	109.0

Comet P/2014 R5 (Lemmon-PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2022 Aug. 18.73572 TT
 Peri. = 213.71160 e = 0.4142632
 Node = 126.56330 2000.0 a = 4.0596980 AU
 Incl. = 1.08838 n = 0.12049346
 q = 2.3779145 AU P = 8.18 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation	m1	Mot. /PA	Elong.
2022/23	h m	° '			for T=+1 day			°
Jan. 1	18 29.85	-22 50.7	3.836	2.855	-0.72 -0.3	21.5	25.6/87	3.4
Jan. 11	18 48.47	-22 34.9	3.786	2.820	-0.74 -0.7	21.4	26.0/86	9.3
Jan. 21	19 07.24	-22 10.6	3.725	2.786	-0.77 -1.0	21.3	26.3/84	15.1
Jan. 31	19 26.07	-21 37.7	3.651	2.753	-0.79 -1.4	21.2	26.5/82	20.8
Feb. 10	19 44.85	-20 56.7	3.567	2.721	-0.81 -1.8	21.1	26.6/80	26.6
Feb. 20	20 03.51	-20 07.8	3.473	2.689	-0.84 -2.2	21.0	26.7/79	32.2
Mar. 2	20 21.95	-19 11.6	3.371	2.659	-0.86 -2.6	20.9	26.6/77	37.8
Mar. 12	20 40.10	-18 08.8	3.261	2.629	-0.89 -3.1	20.8	26.4/76	43.4
Mar. 22	20 57.87	-17 00.5	3.144	2.601	-0.91 -3.5	20.6	26.2/74	49.0
Apr. 1	21 15.22	-15 47.5	3.022	2.574	-0.94 -4.0	20.5	25.8/73	54.6
Apr. 11	21 32.05	-14 31.0	2.895	2.549	-0.97 -4.4	20.4	25.2/72	60.1
Apr. 21	21 48.29	-13 12.4	2.765	2.525	-1.01 -4.9	20.2	24.5/71	65.8
May 1	22 03.86	-11 52.8	2.633	2.502	-1.05 -5.4	20.1	23.6/70	71.5
May 11	22 18.66	-10 34.0	2.499	2.482	-1.09 -5.9	19.9	22.5/70	77.3
May 21	22 32.58	-09 17.4	2.366	2.462	-1.14 -6.4	19.8	21.2/69	83.3
May 31	22 45.48	-08 04.9	2.234	2.445	-1.20 -6.9	19.6	19.5/69	89.5
June 10	22 57.17	-06 58.4	2.104	2.430	-1.27 -7.4	19.5	17.5/69	96.0
June 20	23 07.48	-05 59.7	1.979	2.416	-1.35 -8.0	19.3	15.1/69	102.8
June 30	23 16.16	-05 11.1	1.859	2.404	-1.43 -8.7	19.2	12.2/70	110.0
July 10	23 22.95	-04 34.6	1.746	2.395	-1.53 -9.3	19.0	9.0/71	117.8
July 20	23 27.63	-04 12.0	1.643	2.387	-1.64 -10.1	18.9	5.3/74	126.1
July 30	23 29.97	-04 04.8	1.553	2.382	-1.75 -10.8	18.7	1.5/96	135.0
Aug. 9	23 29.88	-04 13.4	1.478	2.379	-1.86 -11.5	18.6	2.7/231	144.7
Aug. 19	23 27.50	-04 36.6	1.422	2.378	-1.95 -12.1	18.5	6.1/240	155.0
Aug. 29	23 23.20	-05 11.2	1.387	2.379	-2.02 -12.4	18.5	8.6/243	165.8
Sept. 8	23 17.71	-05 52.2	1.376	2.382	-2.05 -12.5	18.5	9.6/244	176.8
Sept. 18	23 11.98	-06 32.8	1.389	2.388	-2.04 -12.3	18.5	9.0/245	171.5
Sept. 28	23 06.98	-07 06.8	1.427	2.395	-1.98 -11.8	18.6	6.9/246	160.5
Oct. 8	23 03.58	-07 29.0	1.489	2.405	-1.88 -11.1	18.7	3.7/247	149.7
Oct. 18	23 02.33	-07 36.3	1.571	2.417	-1.77 -10.4	18.8	0.2/27	139.5
Oct. 28	23 03.48	-07 27.6	1.671	2.430	-1.64 -9.7	19.0	4.1/65	129.9
Nov. 7	23 07.03	-07 03.3	1.785	2.446	-1.52 -9.0	19.1	7.9/66	120.8
Nov. 17	23 12.78	-06 24.6	1.911	2.463	-1.41 -8.4	19.3	11.2/66	112.3
Nov. 27	23 20.48	-05 33.1	2.047	2.483	-1.30 -7.9	19.5	14.2/66	104.3
Dec. 7	23 29.84	-04 30.5	2.188	2.504	-1.21 -7.4	19.7	16.7/66	96.8
Dec. 17	23 40.58	-03 18.6	2.334	2.526	-1.13 -7.0	19.9	18.7/66	89.5
Dec. 27	23 52.46	-01 59.0	2.483	2.550	-1.05 -6.6	20.0	20.4/66	82.6
Jan. 6	00 05.26	+00 33.4	2.632	2.576	-0.99 -6.2	20.2	21.7/66	75.9
Jan. 16	00 18.81	+00 56.8	2.780	2.603	-0.94 -5.9	20.4	22.8/66	69.4
Jan. 26	00 32.96	+02 30.2	2.925	2.631	-0.89 -5.6	20.5	23.6/66	63.1
Feb. 5	00 47.61	+04 05.4	3.066	2.660	-0.85 -5.2	20.7	24.2/67	57.0
Feb. 15	01 02.65	+05 41.3	3.202	2.691	-0.81 -4.9	20.8	24.7/67	50.9
Feb. 25	01 18.01	+07 16.6	3.331	2.722	-0.77 -4.6	21.0	24.9/68	45.0
Mar. 7	01 33.63	+08 50.4	3.452	2.754	-0.75 -4.3	21.1	25.1/68	39.1
Mar. 17	01 49.45	+10 21.7	3.565	2.788	-0.72 -4.0	21.2	25.1/69	33.3
Mar. 27	02 05.42	+11 49.7	3.668	2.822	-0.70 -3.7	21.3	25.1/70	27.6

Comet P/2011 Q3 (McNaught)

Epoch = 2022 June 30.0 TT
 T = 2022 Aug. 19.13264 TT
 Peri. = 310.97213 e = 0.5333010
 Node = 32.02079 2000.0 a = 4.9761572 AU
 Incl. = 6.05719 n = 0.08878977
 q = 2.3223676 AU P = 11.10 years

$$m1 = 11.5 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation	m1	Mot. /PA	Elong.
2022/23	h m	° ' "			for T=+1 day			°
Jan. 1	18 31.25	-27 20.0	3.925	2.947	-0.73 -0.2	21.5	25.0/88	5.2
Jan. 11	18 50.16	-27 06.5	3.866	2.903	-0.76 -0.6	21.4	25.5/86	10.1
Jan. 21	19 09.31	-26 45.1	3.794	2.859	-0.79 -1.0	21.2	25.9/84	15.7
Jan. 31	19 28.62	-26 15.7	3.711	2.816	-0.82 -1.5	21.1	26.3/83	21.4
Feb. 10	19 47.98	-25 38.2	3.617	2.775	-0.84 -2.0	20.9	26.5/81	27.0
Feb. 20	20 07.28	-24 53.2	3.514	2.734	-0.87 -2.5	20.8	26.7/79	32.6
Mar. 2	20 26.46	-24 00.9	3.403	2.695	-0.90 -3.1	20.6	26.7/78	38.2
Mar. 12	20 45.42	-23 02.0	3.285	2.657	-0.93 -3.7	20.4	26.7/77	43.7
Mar. 22	21 04.09	-21 57.4	3.160	2.620	-0.96 -4.3	20.3	26.6/75	49.2
Apr. 1	21 22.41	-20 47.9	3.032	2.585	-0.99 -4.9	20.1	26.4/74	54.6
Apr. 11	21 40.28	-19 34.7	2.899	2.551	-1.02 -5.6	19.9	26.0/73	60.1
Apr. 21	21 57.64	-18 18.9	2.764	2.520	-1.06 -6.2	19.7	25.5/73	65.5
May 1	22 14.42	-17 01.8	2.628	2.490	-1.10 -6.9	19.5	24.8/72	71.0
May 11	22 30.51	-15 45.0	2.492	2.462	-1.14 -7.7	19.4	23.9/71	76.6
May 21	22 45.81	-14 29.8	2.356	2.437	-1.19 -8.4	19.2	22.8/71	82.3
May 31	23 00.19	-13 17.9	2.223	2.413	-1.24 -9.2	19.0	21.3/71	88.2
June 10	23 13.48	-12 11.0	2.093	2.393	-1.30 -10.1	18.8	19.6/71	94.3
June 20	23 25.48	-11 10.8	1.967	2.374	-1.37 -11.0	18.6	17.4/71	100.6
June 30	23 35.97	-10 18.9	1.846	2.359	-1.45 -11.9	18.4	14.8/72	107.4
July 10	23 44.67	-09 36.9	1.733	2.346	-1.55 -12.9	18.2	11.8/72	114.6
July 20	23 51.32	-09 06.0	1.629	2.336	-1.65 -13.9	18.1	8.4/73	122.3
July 30	23 55.62	-08 46.9	1.536	2.328	-1.76 -14.9	17.9	4.5/74	130.6
Aug. 9	23 57.39	-08 39.3	1.457	2.324	-1.87 -15.8	17.8	0.6/70	139.6
Aug. 19	23 56.60	-08 41.3	1.395	2.322	-1.98 -16.6	17.7	3.2/259	149.1
Aug. 29	23 53.45	-08 49.9	1.352	2.324	-2.07 -17.1	17.6	6.4/261	159.1
Sept. 8	23 48.50	-09 00.4	1.332	2.328	-2.13 -17.2	17.6	8.4/264	168.7
Sept. 18	23 42.62	-09 07.0	1.335	2.335	-2.13 -17.0	17.7	8.9/268	172.9
Sept. 28	23 36.81	-09 05.0	1.362	2.345	-2.09 -16.4	17.7	8.0/276	165.3
Oct. 8	23 32.12	-08 50.4	1.414	2.358	-2.00 -15.6	17.8	6.0/292	155.2
Oct. 18	23 29.29	-08 21.7	1.487	2.374	-1.89 -14.7	18.0	4.4/327	145.1
Oct. 28	23 28.76	-07 38.9	1.580	2.392	-1.75 -13.7	18.2	5.2/13	135.4
Nov. 7	23 30.67	-06 43.0	1.690	2.413	-1.62 -12.8	18.4	7.9/38	126.3
Nov. 17	23 34.89	-05 35.7	1.813	2.436	-1.49 -11.9	18.6	10.9/48	117.7
Nov. 27	23 41.21	-04 18.9	1.948	2.461	-1.37 -11.1	18.8	13.7/54	109.6
Dec. 7	23 49.36	-02 54.0	2.092	2.489	-1.26 -10.4	19.0	16.2/57	101.9
Dec. 17	23 59.03	-01 22.8	2.242	2.519	-1.17 -9.7	19.3	18.2/59	94.5
Dec. 27	00 09.96	+00 13.4	2.396	2.550	-1.09 -9.0	19.5	19.9/60	87.5
Jan. 6	00 21.94	+01 53.2	2.553	2.584	-1.02 -8.5	19.7	21.3/62	80.7
Jan. 16	00 34.76	+03 35.3	2.711	2.619	-0.95 -7.9	19.9	22.3/63	74.1
Jan. 26	00 48.28	+05 18.6	2.867	2.655	-0.90 -7.4	20.1	23.1/63	67.7
Feb. 5	01 02.36	+07 02.1	3.021	2.693	-0.85 -6.9	20.4	23.7/64	61.5
Feb. 15	01 16.89	+08 44.8	3.171	2.733	-0.81 -6.4	20.6	24.1/65	55.3
Feb. 25	01 31.80	+10 25.7	3.315	2.773	-0.77 -5.9	20.7	24.4/66	49.3
Mar. 7	01 47.01	+12 04.0	3.453	2.815	-0.74 -5.5	20.9	24.5/67	43.3
Mar. 17	02 02.46	+13 38.9	3.583	2.858	-0.71 -5.0	21.1	24.5/68	37.4
Mar. 27	02 18.09	+15 09.9	3.704	2.901	-0.69 -4.6	21.3	24.4/69	31.6

Comet 107P/(4015) Wilson-Harrington

Epoch = 2022 June 30.0 TT
 T = 2022 Aug. 24.66330 TT
 Peri. = 95.43964 e = 0.6317576
 Node = 266.77896 2000.0 a = 2.6250119 AU
 Incl. = 2.79927 n = 0.23174328
 q = 0.9666407 AU P = 4.25 years

H = 15.8 , G = 0.15

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	V	Elong.
2022/23	h m	° '			m		°
Jan. 1	16 10.68	-22 19.2	3.388	2.648	+1.70 -4.2	21.3	35.4
Jan. 11	16 27.92	-22 58.2	3.233	2.581	+1.75 -3.6	21.2	41.5
Jan. 21	16 45.58	-23 30.9	3.068	2.512	+1.79 -2.9	21.1	47.6
Jan. 31	17 03.66	-23 56.6	2.893	2.441	+1.83 -2.2	21.0	53.6
Feb. 10	17 22.11	-24 14.8	2.711	2.369	+1.86 -1.4	20.9	59.6
Feb. 20	17 40.92	-24 24.6	2.523	2.294	+1.90 -0.5	20.7	65.4
Mar. 2	18 00.10	-24 25.6	2.332	2.218	+1.94 +0.4	20.5	71.1
Mar. 12	18 19.64	-24 16.9	2.140	2.140	+1.97 +1.4	20.3	76.6
Mar. 22	18 39.57	-23 57.8	1.948	2.061	+2.02 +2.5	20.1	82.0
Apr. 1	18 59.99	-23 27.2	1.759	1.980	+2.07 +3.7	19.8	87.2
Apr. 11	19 20.96	-22 43.8	1.573	1.897	+2.14 +5.1	19.5	92.2
Apr. 21	19 42.71	-21 45.5	1.394	1.813	+2.23 +6.8	19.2	96.8
May 1	20 05.52	-20 29.3	1.223	1.728	+2.35 +8.7	18.9	101.1
May 11	20 29.79	-18 51.0	1.061	1.642	+2.53 +11.3	18.5	104.9
May 21	20 56.23	-16 43.6	0.910	1.555	+2.80 +14.7	18.1	107.9
May 31	21 25.79	-13 56.8	0.773	1.469	+3.17 +19.4	17.7	109.9
June 10	21 59.83	-10 16.1	0.651	1.384	+3.72 +25.8	17.3	110.4
June 20	22 40.32	-05 22.2	0.548	1.301	+4.49 +34.2	16.9	108.8
June 30	23 29.40	+01 00.5	0.468	1.221	+5.45 +43.1	16.6	104.5
July 10	00 28.52	+08 39.7	0.417	1.148	+6.45 +48.0	16.4	97.4
July 20	01 36.43	+16 27.2	0.399	1.083	+7.09 +43.1	16.4	88.7
July 30	02 47.48	+22 40.4	0.411	1.029	+6.98 +29.3	16.6	80.3
Aug. 9	03 54.27	+26 24.9	0.448	0.991	+6.24 +14.6	16.8	74.2
Aug. 19	04 52.43	+27 59.7	0.500	0.970	+5.30 +4.0	17.0	70.7
Aug. 29	05 41.36	+28 08.1	0.559	0.969	+4.42 -2.4	17.2	69.5
Sept. 8	06 22.15	+27 25.9	0.617	0.987	+3.69 -6.0	17.3	70.2
Sept. 18	06 56.21	+26 16.0	0.670	1.023	+3.08 -7.9	17.4	72.2
Sept. 28	07 24.44	+24 53.1	0.714	1.075	+2.52 -8.6	17.5	75.5
Oct. 8	07 47.33	+23 27.3	0.748	1.139	+2.01 -8.4	17.6	79.9
Oct. 18	08 05.15	+22 05.9	0.771	1.211	+1.50 -7.7	17.7	85.5
Oct. 28	08 17.86	+20 54.8	0.783	1.290	+0.98 -6.3	17.7	92.3
Nov. 7	08 25.24	+19 58.7	0.787	1.372	+0.44 -4.6	17.7	100.4
Nov. 17	08 27.04	+19 20.9	0.786	1.457	-0.14 -2.7	17.7	109.9
Nov. 27	08 22.98	+19 02.9	0.784	1.544	-0.73 -0.7	17.6	120.9
Dec. 7	08 13.20	+19 03.5	0.789	1.630	-1.26 +0.9	17.5	133.3
Dec. 17	07 58.64	+19 18.0	0.806	1.716	-1.66 +1.9	17.4	146.8
Dec. 27	07 41.15	+19 39.2	0.843	1.802	-1.81 +2.2	17.4	161.1
Jan. 6	07 23.35	+20 00.1	0.904	1.886	-1.70 +1.9	17.2	175.1
Jan. 16	07 07.71	+20 16.5	0.992	1.969	-1.37 +1.4	17.7	170.4
Jan. 26	06 55.84	+20 27.9	1.106	2.050	-0.94 +0.9	18.2	157.5
Feb. 5	06 48.41	+20 35.3	1.242	2.130	-0.50 +0.6	18.8	145.7
Feb. 15	06 45.22	+20 39.7	1.398	2.208	-0.11 +0.3	19.2	134.8
Feb. 25	06 45.73	+20 41.6	1.569	2.284	+0.23 0.0	19.6	124.9
Mar. 7	06 49.32	+20 40.6	1.753	2.359	+0.50 -0.3	20.0	115.7
Mar. 17	06 55.35	+20 36.4	1.945	2.432	+0.72 -0.6	20.3	107.1
Mar. 27	07 03.29	+20 28.5	2.143	2.503	+0.88 -1.0	20.5	99.1

Comet 73P/Schwassmann-Wachmann

Epoch = 2022 June 30.0 TT
 T = 2022 Aug. 25.78923 TT
 Peri. = 199.48688 e = 0.6853553
 Node = 69.61084 2000.0 a = 3.0922698 AU
 Incl. = 11.22761 n = 0.18125417
 q = 0.9729663 AU P = 5.44 years

$$m1 = 12.6 + 5 \log(\Delta) + 12.5 \log(r(t+15))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	11 07.58	+20 36.8	2.172	2.790	+0.25	+5.0	19.6	119.4
Jan. 11	11 09.00	+21 36.1	1.986	2.715	0.00	+7.0	19.3	129.1
Jan. 21	11 07.70	+22 55.4	1.816	2.639	-0.30	+9.0	18.9	139.0
Jan. 31	11 03.26	+24 32.6	1.667	2.562	-0.63	+10.5	18.6	148.9
Feb. 10	10 55.43	+26 22.4	1.542	2.482	-0.97	+11.3	18.2	157.4
Feb. 20	10 44.37	+28 14.4	1.444	2.402	-1.26	+10.8	17.9	161.3
Mar. 2	10 30.78	+29 55.6	1.374	2.319	-1.45	+9.0	17.6	157.0
Mar. 12	10 16.07	+31 12.0	1.332	2.235	-1.46	+5.9	17.3	147.7
Mar. 22	10 02.07	+31 54.5	1.313	2.150	-1.29	+2.2	17.0	136.7
Apr. 1	09 50.52	+32 00.4	1.313	2.062	-0.96	-1.4	16.8	125.7
Apr. 11	09 42.71	+31 32.4	1.325	1.974	-0.55	-4.4	16.5	115.3
Apr. 21	09 39.23	+30 36.2	1.345	1.884	-0.11	-7.0	16.3	105.7
May 1	09 40.10	+29 16.7	1.365	1.793	+0.32	-9.1	16.0	97.0
May 11	09 45.06	+27 37.4	1.383	1.702	+0.71	-10.9	15.7	89.2
May 21	09 53.68	+25 40.0	1.395	1.610	+1.05	-12.7	15.4	82.3
May 31	10 05.54	+23 24.2	1.398	1.518	+1.35	-14.6	15.1	76.2
June 10	10 20.30	+20 48.7	1.391	1.427	+1.62	-16.7	14.7	70.8
June 20	10 37.66	+17 51.3	1.373	1.338	+1.87	-19.0	14.3	66.2
June 30	10 57.46	+14 29.1	1.344	1.254	+2.11	-21.7	13.9	62.4
July 10	11 19.65	+10 39.1	1.304	1.175	+2.35	-24.6	13.6	59.3
July 20	11 44.25	+06 18.4	1.256	1.104	+2.60	-27.9	13.2	57.0
July 30	12 11.49	+01 24.7	1.200	1.046	+2.88	-31.2	12.9	55.6
Aug. 9	12 41.77	-04 02.3	1.141	1.003	+3.22	-34.4	12.7	55.1
Aug. 19	13 15.72	-09 59.0	1.082	0.978	+3.63	-37.0	12.7	55.6
Aug. 29	13 54.33	-16 15.7	1.030	0.974	+4.17	-38.1	12.7	57.0
Sept. 8	14 38.85	-22 32.9	0.989	0.991	+4.82	-36.6	12.9	59.5
Sept. 18	15 30.29	-28 18.0	0.968	1.028	+5.54	-31.2	13.1	62.8
Sept. 28	16 28.58	-32 49.2	0.970	1.082	+6.13	-21.5	13.5	66.5
Oct. 8	17 31.22	-35 28.8	1.000	1.148	+6.33	-9.0	13.9	70.1
Oct. 18	18 33.45	-36 03.0	1.058	1.225	+6.00	+3.0	14.4	73.1
Oct. 28	19 30.58	-34 49.1	1.143	1.307	+5.32	+12.0	14.9	75.1
Nov. 7	20 20.23	-32 22.1	1.252	1.395	+4.54	+17.3	15.4	75.9
Nov. 17	21 02.32	-29 15.9	1.381	1.485	+3.83	+19.8	15.9	75.6
Nov. 27	21 38.03	-25 54.2	1.527	1.576	+3.28	+20.4	16.4	74.2
Dec. 7	22 08.75	-22 31.1	1.686	1.668	+2.85	+20.1	16.9	71.9
Dec. 17	22 35.68	-19 13.9	1.855	1.760	+2.52	+19.3	17.4	69.0
Dec. 27	22 59.79	-16 05.5	2.031	1.852	+2.28	+18.3	17.9	65.4
Jan. 6	23 21.77	-13 07.4	2.212	1.942	+2.10	+17.2	18.3	61.3
Jan. 16	23 42.13	-10 19.5	2.394	2.031	+1.96	+16.2	18.7	56.9
Jan. 26	00 01.24	-07 41.5	2.575	2.118	+1.85	+15.3	19.0	52.1
Feb. 5	00 19.38	-05 13.0	2.753	2.205	+1.77	+14.3	19.4	47.1
Feb. 15	00 36.73	-02 53.5	2.926	2.289	+1.70	+13.5	19.7	42.0
Feb. 25	00 53.45	+00 42.6	3.092	2.372	+1.64	+12.6	20.0	36.6
Mar. 7	01 09.63	+01 20.1	3.248	2.454	+1.59	+11.8	20.3	31.2
Mar. 17	01 25.35	+03 14.8	3.393	2.533	+1.55	+11.0	20.5	25.6
Mar. 27	01 40.67	+05 01.8	3.526	2.611	+1.51	+10.3	20.8	20.0

Comet 189P/NEAT

Epoch = 2022 June 30.0 TT
 T = 2022 Aug. 28.84410 TT
 Peri. = 16.32901 e = 0.5886787
 Node = 281.71679 2000.0 a = 2.9454458 AU
 Incl. = 20.06864 n = 0.19497437
 q = 1.2115246 AU P = 5.06 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	12 51.29	-26 47.1	2.659	2.644	+1.07 -13.6	.	78.4
Jan. 11	13 01.66	-29 04.8	2.471	2.578	+0.99 -14.0	.	85.0
Jan. 21	13 11.18	-31 25.9	2.283	2.512	+0.89 -14.3	.	91.7
Jan. 31	13 19.56	-33 49.9	2.098	2.444	+0.76 -14.5	.	98.4
Feb. 10	13 26.40	-36 15.7	1.918	2.376	+0.58 -14.6	.	105.2
Feb. 20	13 31.27	-38 41.6	1.746	2.306	+0.36 -14.5	.	112.0
Mar. 2	13 33.58	-41 05.0	1.584	2.236	+0.06 -14.0	.	118.7
Mar. 12	13 32.67	-43 20.6	1.433	2.164	-0.29 -12.9	.	125.3
Mar. 22	13 27.96	-45 20.9	1.296	2.092	-0.70 -10.8	.	131.4
Apr. 1	13 19.10	-46 54.9	1.174	2.020	-1.11 -7.4	.	136.6
Apr. 11	13 06.44	-47 48.9	1.068	1.947	-1.43 -2.7	.	140.2
Apr. 21	12 51.43	-47 50.0	0.980	1.874	-1.55 +3.2	.	141.5
May 1	12 36.46	-46 50.6	0.909	1.801	-1.38 +9.3	.	140.1
May 11	12 24.43	-44 52.8	0.853	1.729	-0.95 +14.5	21.8	136.1
May 21	12 17.57	-42 09.6	0.812	1.658	-0.35 +18.2	21.4	130.5
May 31	12 17.01	-38 58.2	0.782	1.589	+0.31 +20.0	21.1	123.9
June 10	12 23.02	-35 36.1	0.761	1.522	+0.95 +20.3	20.7	117.2
June 20	12 35.20	-32 15.7	0.747	1.459	+1.53 +19.7	20.4	110.8
June 30	12 52.96	-29 03.0	0.737	1.400	+2.06 +18.7	20.1	104.8
July 10	13 15.74	-25 59.9	0.730	1.347	+2.53 +17.8	19.9	99.6
July 20	13 42.86	-23 04.0	0.726	1.301	+2.93 +17.3	19.6	95.1
July 30	14 13.70	-20 11.6	0.726	1.263	+3.27 +17.2	19.4	91.4
Aug. 9	14 47.61	-17 19.5	0.730	1.235	+3.53 +17.3	19.3	88.6
Aug. 19	15 23.79	-14 25.4	0.739	1.217	+3.71 +17.5	19.2	86.6
Aug. 29	16 01.50	-11 30.1	0.756	1.212	+3.83 +17.5	19.2	85.3
Sept. 8	16 40.04	-08 36.3	0.781	1.218	+3.87 +17.2	19.3	84.8
Sept. 18	17 18.69	-05 47.7	0.817	1.235	+3.85 +16.4	19.5	84.7
Sept. 28	17 56.97	-03 08.1	0.862	1.264	+3.79 +15.3	19.8	85.0
Oct. 8	18 34.48	+00 40.1	0.920	1.302	+3.69 +14.1	20.1	85.3
Oct. 18	19 10.87	+01 35.7	0.989	1.348	+3.57 +12.9	20.5	85.6
Oct. 28	19 45.97	+03 39.7	1.070	1.402	+3.43 +11.8	20.9	85.5
Nov. 7	20 19.65	+05 33.7	1.163	1.461	+3.28 +10.9	21.4	85.0
Nov. 17	20 51.79	+07 19.7	1.269	1.524	+3.13 +10.2	21.9	84.0
Nov. 27	21 22.42	+08 59.6	1.386	1.591	+2.98 +9.7	.	82.4
Dec. 7	21 51.58	+10 35.3	1.514	1.660	+2.84 +9.4	.	80.2
Dec. 17	22 19.33	+12 07.9	1.651	1.731	+2.70 +9.1	.	77.6
Dec. 27	22 45.80	+13 38.3	1.797	1.803	+2.58 +8.9	.	74.5
Jan. 6	23 11.11	+15 07.0	1.950	1.876	+2.47 +8.8	.	71.0
Jan. 16	23 35.38	+16 33.9	2.109	1.949	+2.38 +8.6	.	67.1
Jan. 26	23 58.75	+17 58.9	2.270	2.022	+2.29 +8.4	.	62.9
Feb. 5	00 21.32	+19 21.7	2.433	2.095	+2.22 +8.1	.	58.5
Feb. 15	00 43.20	+20 41.9	2.596	2.167	+2.15 +7.9	.	53.9
Feb. 25	01 04.48	+21 59.0	2.757	2.238	+2.10 +7.5	.	49.1
Mar. 7	01 25.24	+23 12.6	2.913	2.308	+2.05 +7.1	.	44.2
Mar. 17	01 45.51	+24 22.1	3.064	2.378	+2.00 +6.7	.	39.2
Mar. 27	02 05.37	+25 27.2	3.207	2.446	+1.96 +6.2	.	34.2

Comet 327P/Van Ness

Epoch = 2022 June 30.0 TT
 T = 2022 Sept. 2.42153 TT
 Peri. = 185.04004 e = 0.5632981
 Node = 173.98509 2000.0 a = 3.5631885 AU
 Incl. = 36.25114 n = 0.14653652
 q = 1.5560512 AU P = 6.73 years

$$m1 = 12.4 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	17 38.88	+03 46.2	3.510	2.718	+1.79 +0.3	.	31.2
Jan. 11	17 56.94	+03 54.9	3.413	2.657	+1.83 +1.5	.	34.1
Jan. 21	18 15.40	+04 15.5	3.307	2.595	+1.87 +2.7	.	37.4
Jan. 31	18 34.19	+04 48.2	3.195	2.533	+1.90 +3.9	.	40.9
Feb. 10	18 53.27	+05 33.1	3.077	2.471	+1.92 +5.1	.	44.4
Feb. 20	19 12.57	+06 29.8	2.955	2.409	+1.94 +6.3	.	48.0
Mar. 2	19 32.06	+07 37.8	2.830	2.347	+1.96 +7.4	.	51.6
Mar. 12	19 51.69	+08 56.3	2.702	2.285	+1.97 +8.4	21.7	55.1
Mar. 22	20 11.43	+10 24.0	2.574	2.224	+1.98 +9.2	21.4	58.6
Apr. 1	20 31.28	+11 59.6	2.444	2.163	+1.99 +9.9	21.0	62.0
Apr. 11	20 51.22	+13 41.4	2.315	2.102	+2.00 +10.4	20.7	65.3
Apr. 21	21 11.26	+15 26.9	2.185	2.043	+2.01 +10.7	20.3	68.5
May 1	21 31.42	+17 13.9	2.057	1.986	+2.02 +10.7	19.9	71.7
May 11	21 51.73	+18 59.2	1.929	1.930	+2.04 +10.3	19.5	74.9
May 21	22 12.22	+20 39.4	1.802	1.876	+2.06 +9.6	19.1	78.1
May 31	22 32.95	+22 10.6	1.677	1.824	+2.09 +8.4	18.7	81.3
June 10	22 53.93	+23 27.7	1.552	1.776	+2.11 +6.7	18.3	84.8
June 20	23 15.21	+24 24.9	1.429	1.731	+2.14 +4.4	17.9	88.4
June 30	23 36.76	+24 55.3	1.308	1.690	+2.17 +1.2	17.5	92.4
July 10	23 58.49	+24 49.4	1.189	1.653	+2.18 -3.0	17.1	96.8
July 20	00 20.29	+23 56.0	1.074	1.622	+2.17 -8.5	16.8	101.7
July 30	00 41.86	+22 00.9	0.965	1.596	+2.13 -15.6	16.4	107.4
Aug. 9	01 02.76	+18 46.5	0.864	1.576	+2.03 -24.5	16.0	113.9
Aug. 19	01 22.41	+13 55.6	0.776	1.563	+1.87 -35.0	15.7	121.3
Aug. 29	01 40.04	+07 15.8	0.705	1.557	+1.62 -46.0	15.5	129.5
Sept. 8	01 54.84	-01 05.7	0.658	1.557	+1.30 -54.5	15.3	137.3
Sept. 18	02 06.12	-10 28.4	0.640	1.564	+0.91 -57.1	15.3	143.0
Sept. 28	02 13.44	-19 42.6	0.653	1.578	+0.51 -52.0	15.4	144.2
Oct. 8	02 16.98	-27 37.9	0.693	1.599	+0.17 -41.3	15.7	141.0
Oct. 18	02 17.56	-33 34.6	0.756	1.625	-0.06 -28.7	16.0	135.5
Oct. 28	02 16.46	-37 27.1	0.836	1.657	-0.14 -16.8	16.4	129.6
Nov. 7	02 15.24	-39 29.3	0.928	1.694	-0.07 -7.0	16.8	123.9
Nov. 17	02 15.16	-40 03.1	1.028	1.736	+0.09 +0.7	17.2	118.7
Nov. 27	02 16.97	-39 29.1	1.134	1.781	+0.30 +6.4	17.7	114.0
Dec. 7	02 21.04	-38 05.0	1.245	1.830	+0.53 +10.6	18.1	109.7
Dec. 17	02 27.32	-36 05.7	1.361	1.882	+0.74 +13.4	18.6	105.6
Dec. 27	02 35.59	-33 41.9	1.480	1.936	+0.93 +15.4	19.0	101.7
Jan. 6	02 45.61	-31 02.6	1.603	1.992	+1.09 +16.5	19.4	97.9
Jan. 16	02 57.07	-28 15.1	1.730	2.050	+1.22 +17.0	19.8	94.1
Jan. 26	03 09.74	-25 24.5	1.861	2.109	+1.32 +17.0	20.2	90.2
Feb. 5	03 23.39	-22 35.6	1.996	2.169	+1.41 +16.7	20.6	86.4
Feb. 15	03 37.84	-19 51.9	2.135	2.230	+1.48 +16.0	21.0	82.4
Feb. 25	03 52.92	-17 15.9	2.276	2.292	+1.54 +15.1	21.4	78.4
Mar. 7	04 08.52	-14 50.1	2.420	2.354	+1.58 +14.0	21.8	74.3
Mar. 17	04 24.49	-12 35.9	2.566	2.416	+1.61 +12.7	.	70.1
Mar. 27	04 40.74	-10 34.3	2.713	2.478	+1.64 +11.4	.	65.8

Comet P/2015 X1 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2022 Sept. 6.69634 TT
 Peri. = 218.75524 e = 0.4194108
 Node = 161.75880 2000.0 a = 3.6377160 AU
 Incl. = 12.15226 n = 0.14205643
 q = 2.1120186 AU P = 6.94 years

$$m1 = 15.9 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation	m1	Mot. /PA	Elong.
2022/23	h m	° '			for T=+1 day			°
Jan. 1	19 51.24	-15 06.4	3.684	2.763	-0.67 -0.1	.	25.3/ 84	17.6
Jan. 11	20 08.78	-14 36.1	3.677	2.722	-0.69 -0.3	.	26.0/ 82	12.0
Jan. 21	20 26.66	-13 57.0	3.656	2.682	-0.71 -0.6	.	26.6/ 81	7.1
Jan. 31	20 44.82	-13 09.3	3.623	2.642	-0.73 -0.8	.	27.2/ 79	4.8
Feb. 10	21 03.18	-12 13.6	3.578	2.603	-0.76 -1.1	.	27.7/ 78	7.7
Feb. 20	21 21.69	-11 10.5	3.522	2.565	-0.78 -1.3	.	28.1/ 76	12.4
Mar. 2	21 40.30	-10 00.7	3.455	2.527	-0.81 -1.6	.	28.5/ 75	17.5
Mar. 12	21 58.98	-08 44.9	3.378	2.490	-0.84 -1.8	.	28.8/ 74	22.5
Mar. 22	22 17.70	-07 24.3	3.293	2.454	-0.87 -2.1	.	29.1/ 73	27.6
Apr. 1	22 36.45	-05 59.9	3.201	2.419	-0.90 -2.3	.	29.3/ 73	32.6
Apr. 11	22 55.21	-04 32.7	3.101	2.386	-0.94 -2.6	.	29.4/ 73	37.5
Apr. 21	23 13.96	-03 04.2	2.996	2.354	-0.98 -2.8	22.0	29.5/ 72	42.4
May 1	23 32.72	-01 35.5	2.886	2.323	-1.02 -3.0	21.9	29.5/ 73	47.2
May 11	23 51.46	+00 08.1	2.772	2.294	-1.07 -3.2	21.7	29.4/ 73	52.0
May 21	00 10.15	+01 16.4	2.656	2.266	-1.12 -3.3	21.6	29.2/ 74	56.8
May 31	00 28.78	+02 36.4	2.537	2.240	-1.17 -3.5	21.4	28.9/ 75	61.6
June 10	00 47.28	+03 50.2	2.417	2.217	-1.23 -3.6	21.3	28.4/ 76	66.5
June 20	01 05.59	+04 56.1	2.297	2.195	-1.29 -3.7	21.1	27.8/ 77	71.4
June 30	01 23.60	+05 52.2	2.177	2.176	-1.36 -3.9	21.0	27.0/ 79	76.4
July 10	01 41.16	+06 36.6	2.059	2.159	-1.43 -4.0	20.8	26.0/ 82	81.6
July 20	01 58.10	+07 07.5	1.942	2.145	-1.51 -4.1	20.7	24.7/ 85	87.0
July 30	02 14.19	+07 23.2	1.828	2.133	-1.60 -4.3	20.5	23.1/ 88	92.7
Aug. 9	02 29.13	+07 21.8	1.719	2.123	-1.69 -4.6	20.3	21.1/ 93	98.7
Aug. 19	02 42.59	+07 02.4	1.614	2.117	-1.79 -5.0	20.2	18.9/ 99	105.1
Aug. 29	02 54.17	+06 23.9	1.516	2.113	-1.91 -5.4	20.1	16.3/108	112.0
Sept. 8	03 03.48	+05 26.5	1.427	2.112	-2.03 -6.0	19.9	13.6/120	119.4
Sept. 18	03 10.13	+04 11.7	1.348	2.114	-2.17 -6.7	19.8	11.3/138	127.3
Sept. 28	03 13.80	+02 42.6	1.282	2.118	-2.30 -7.4	19.7	10.0/163	135.8
Oct. 8	03 14.39	+01 04.9	1.232	2.126	-2.43 -8.1	19.6	10.1/189	144.4
Oct. 18	03 12.13	+00 33.1	1.201	2.136	-2.53 -8.5	19.6	10.9/210	152.7
Oct. 28	03 07.59	-02 01.2	1.191	2.148	-2.58 -8.6	19.6	11.3/226	159.0
Nov. 7	03 01.77	-03 09.1	1.204	2.163	-2.57 -8.3	19.7	10.5/239	160.4
Nov. 17	02 55.88	-03 49.5	1.240	2.181	-2.50 -7.8	19.8	8.6/254	156.0
Nov. 27	02 51.02	-03 59.0	1.298	2.201	-2.38 -7.1	19.9	5.9/277	148.4
Dec. 7	02 48.11	-03 38.5	1.377	2.223	-2.22 -6.3	20.1	4.3/326	139.8
Dec. 17	02 47.61	-02 52.5	1.473	2.247	-2.05 -5.7	20.3	5.9/ 13	131.2
Dec. 27	02 49.67	-01 46.5	1.585	2.273	-1.88 -5.2	20.5	9.1/ 35	122.8
Jan. 6	02 54.21	+00 26.2	1.708	2.301	-1.73 -4.7	20.7	12.2/ 45	114.8
Jan. 16	03 00.98	+01 03.2	1.842	2.331	-1.58 -4.3	20.9	15.0/ 52	107.2
Jan. 26	03 09.71	+02 37.4	1.983	2.362	-1.46 -3.9	21.1	17.4/ 57	100.0
Feb. 5	03 20.14	+04 13.2	2.130	2.394	-1.35 -3.6	21.3	19.3/ 60	93.1
Feb. 15	03 31.97	+05 47.5	2.280	2.428	-1.26 -3.3	21.5	20.9/ 64	86.5
Feb. 25	03 45.01	+07 18.5	2.432	2.463	-1.17 -3.0	21.7	22.1/ 66	80.1
Mar. 7	03 59.03	+08 44.3	2.584	2.500	-1.10 -2.7	21.9	23.0/ 69	74.0
Mar. 17	04 13.85	+10 03.6	2.736	2.537	-1.03 -2.4	.	23.7/ 71	68.0
Mar. 27	04 29.34	+11 15.4	2.885	2.575	-0.98 -2.1	.	24.2/ 74	62.2

Comet 157P/Tritton

Epoch = 2022 June 30.0 TT
 T = 2022 Sept. 9.78858 TT
 Peri. = 155.05223 e = 0.5565978
 Node = 287.54963 2000.0 a = 3.5448085 AU
 Incl. = 12.42078 n = 0.14767769
 q = 1.5717759 AU P = 6.67 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	21 39.82	-05 20.0	3.349	2.755	+1.32	+6.5	21.3	45.8
Jan. 11	21 53.40	-04 10.9	3.383	2.695	+1.40	+7.4	21.2	39.3
Jan. 21	22 07.80	-02 52.6	3.402	2.635	+1.48	+8.3	21.2	33.2
Jan. 31	22 22.95	-01 25.5	3.409	2.574	+1.55	+9.2	21.1	27.4
Feb. 10	22 38.79	+00 10.3	3.401	2.513	+1.62	+10.0	21.0	21.9
Feb. 20	22 55.29	+01 54.0	3.381	2.451	+1.69	+10.8	20.9	16.9
Mar. 2	23 12.45	+03 45.3	3.348	2.390	+1.75	+11.5	20.7	12.5
Mar. 12	23 30.28	+05 43.5	3.304	2.329	+1.82	+12.2	20.6	9.3
Mar. 22	23 48.80	+07 47.8	3.250	2.268	+1.89	+12.7	20.5	8.3
Apr. 1	00 08.08	+09 57.2	3.186	2.208	+1.97	+13.2	20.3	9.8
Apr. 11	00 28.19	+12 10.8	3.115	2.148	+2.06	+13.5	20.1	12.6
Apr. 21	00 49.21	+14 27.0	3.037	2.090	+2.16	+13.7	20.0	16.0
May 1	01 11.28	+16 44.2	2.954	2.032	+2.27	+13.7	19.8	19.4
May 11	01 34.48	+19 00.5	2.868	1.976	+2.39	+13.5	19.6	22.7
May 21	01 58.96	+21 13.4	2.780	1.921	+2.52	+13.0	19.4	25.9
May 31	02 24.85	+23 20.1	2.691	1.869	+2.67	+12.2	19.2	28.9
June 10	02 52.21	+25 17.1	2.603	1.820	+2.82	+11.0	19.0	31.8
June 20	03 21.10	+27 00.5	2.516	1.773	+2.97	+9.4	18.8	34.4
June 30	03 51.50	+28 26.4	2.433	1.730	+3.12	+7.5	18.6	36.9
July 10	04 23.25	+29 30.4	2.352	1.692	+3.24	+5.0	18.5	39.2
July 20	04 56.10	+30 08.5	2.277	1.657	+3.33	+2.3	18.3	41.4
July 30	05 29.67	+30 17.7	2.206	1.628	+3.38	-0.8	18.1	43.6
Aug. 9	06 03.46	+29 55.9	2.139	1.605	+3.37	-3.9	17.9	45.7
Aug. 19	06 36.96	+29 02.7	2.078	1.587	+3.31	-7.0	17.8	47.9
Aug. 29	07 09.65	+27 39.3	2.021	1.576	+3.21	-9.9	17.6	50.1
Sept. 8	07 41.08	+25 48.3	1.967	1.572	+3.06	-12.5	17.5	52.5
Sept. 18	08 10.92	+23 33.4	1.917	1.574	+2.89	-14.6	17.4	55.1
Sept. 28	08 38.95	+20 59.1	1.868	1.583	+2.70	-16.3	17.3	57.9
Oct. 8	09 05.03	+18 10.2	1.822	1.598	+2.50	-17.5	17.3	61.0
Oct. 18	09 29.08	+15 11.2	1.775	1.619	+2.29	-18.3	17.2	64.5
Oct. 28	09 51.07	+12 06.4	1.728	1.646	+2.08	-18.6	17.2	68.4
Nov. 7	10 10.93	+08 59.8	1.680	1.679	+1.87	-18.6	17.2	72.8
Nov. 17	10 28.60	+05 54.8	1.630	1.716	+1.64	-18.3	17.2	77.6
Nov. 27	10 43.96	+02 54.3	1.578	1.757	+1.40	-17.7	17.2	83.1
Dec. 7	10 56.81	+00 01.5	1.525	1.803	+1.14	-16.8	17.2	89.1
Dec. 17	11 06.94	-02 41.2	1.472	1.851	+0.85	-15.6	17.2	95.8
Dec. 27	11 14.04	-05 10.7	1.419	1.902	+0.53	-14.1	17.2	103.2
Jan. 6	11 17.82	-07 23.4	1.370	1.956	+0.19	-12.2	17.2	111.4
Jan. 16	11 18.08	-09 15.3	1.327	2.012	-0.17	-9.9	17.3	120.3
Jan. 26	11 14.76	-10 41.8	1.294	2.069	-0.52	-7.1	17.4	130.0
Feb. 5	11 08.20	-11 38.3	1.275	2.127	-0.81	-3.9	17.4	140.0
Feb. 15	10 59.17	-12 02.4	1.275	2.186	-1.00	-0.6	17.6	149.9
Feb. 25	10 48.88	-11 54.7	1.297	2.247	-1.04	+2.4	17.7	158.2
Mar. 7	10 38.77	-11 20.4	1.345	2.307	-0.95	+4.5	17.9	161.6
Mar. 17	10 30.13	-10 28.7	1.417	2.368	-0.75	+5.8	18.2	157.8
Mar. 27	10 23.85	-09 29.5	1.514	2.429	-0.48	+6.0	18.4	150.0

Comet 255P/Levy

Epoch = 2022 June 30.0 TT
 T = 2022 Sept. 11.25991 TT
 Peri. = 186.16198 e = 0.7121864
 Node = 275.57133 2000.0 a = 2.9446392 AU
 Incl. = 13.19190 n = 0.19505449
 q = 0.8475072 AU P = 5.05 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° ' "			m	' "		°
Jan. 1	20 58.19	-08 45.0	3.703	2.952	+1.21	+4.9	.	35.0
Jan. 11	21 10.62	-07 52.5	3.708	2.880	+1.28	+5.7	.	28.3
Jan. 21	21 23.75	-06 51.6	3.695	2.806	+1.35	+6.6	.	22.0
Jan. 31	21 37.51	-05 42.1	3.664	2.731	+1.41	+7.4	.	16.1
Feb. 10	21 51.87	-04 24.1	3.615	2.653	+1.47	+8.3	.	11.1
Feb. 20	22 06.78	-02 57.6	3.548	2.574	+1.52	+9.1	.	8.3
Mar. 2	22 22.26	-01 22.5	3.466	2.492	+1.58	+10.0	.	9.2
Mar. 12	22 38.31	+00 21.1	3.368	2.409	+1.64	+10.8	.	12.8
Mar. 22	22 54.98	+02 13.3	3.256	2.324	+1.71	+11.7	.	17.3
Apr. 1	23 12.38	+04 14.0	3.132	2.236	+1.78	+12.6	.	21.9
Apr. 11	23 30.60	+06 23.4	2.997	2.147	+1.87	+13.4	.	26.4
Apr. 21	23 49.82	+08 41.3	2.854	2.055	+1.99	+14.3	.	30.6
May 1	00 10.27	+11 07.7	2.705	1.961	+2.12	+15.1	.	34.6
May 11	00 32.24	+13 42.2	2.552	1.866	+2.29	+15.9	.	38.2
May 21	00 56.13	+16 23.8	2.398	1.768	+2.51	+16.5	.	41.3
May 31	01 22.46	+19 10.9	2.244	1.669	+2.79	+16.9	.	43.9
June 10	01 51.84	+22 00.0	2.095	1.568	+3.14	+16.8	.	45.9
June 20	02 25.06	+24 45.3	1.954	1.467	+3.57	+16.0	.	47.2
June 30	03 02.96	+27 17.3	1.825	1.365	+4.08	+13.9	.	47.7
July 10	03 46.22	+29 20.8	1.710	1.265	+4.64	+10.1	21.0	47.3
July 20	04 35.05	+30 35.9	1.616	1.167	+5.17	+4.0	19.9	46.0
July 30	05 28.71	+30 39.9	1.545	1.074	+5.56	-4.3	18.7	43.8
Aug. 9	06 25.15	+29 14.2	1.501	0.991	+5.69	-13.8	17.6	41.0
Aug. 19	07 21.62	+26 14.0	1.486	0.922	+5.55	-22.9	16.6	37.6
Aug. 29	08 15.66	+21 51.3	1.498	0.873	+5.20	-29.9	15.9	34.2
Sept. 8	09 05.81	+16 31.8	1.535	0.849	+4.78	-33.9	15.6	31.0
Sept. 18	09 51.74	+10 45.2	1.592	0.854	+4.37	-35.1	15.8	28.4
Sept. 28	10 33.70	+04 57.9	1.661	0.887	+3.99	-34.0	16.3	26.6
Oct. 8	11 12.14	+00 31.5	1.739	0.944	+3.67	-31.5	17.3	25.7
Oct. 18	11 47.53	-05 32.3	1.821	1.019	+3.39	-28.3	18.3	25.7
Oct. 28	12 20.31	-10 00.4	1.902	1.106	+3.15	-25.0	19.5	26.5
Nov. 7	12 50.79	-13 55.3	1.979	1.200	+2.93	-21.7	20.7	28.2
Nov. 17	13 19.26	-17 19.0	2.050	1.299	+2.74	-18.8	21.8	30.5
Nov. 27	13 45.88	-20 14.5	2.112	1.400	+2.57	-16.1	.	33.6
Dec. 7	14 10.76	-22 44.7	2.162	1.502	+2.39	-13.8	.	37.3
Dec. 17	14 33.96	-24 52.9	2.200	1.603	+2.23	-11.7	.	41.6
Dec. 27	14 55.45	-26 41.9	2.225	1.703	+2.05	-10.0	.	46.4
Jan. 6	15 15.16	-28 14.5	2.235	1.802	+1.87	-8.4	.	51.8
Jan. 16	15 33.00	-29 33.0	2.232	1.899	+1.67	-7.2	.	57.7
Jan. 26	15 48.78	-30 39.7	2.215	1.994	+1.46	-6.1	.	64.2
Feb. 5	16 02.29	-31 36.5	2.185	2.087	+1.22	-5.2	.	71.1
Feb. 15	16 13.29	-32 25.2	2.145	2.178	+0.95	-4.5	.	78.6
Feb. 25	16 21.48	-33 06.7	2.096	2.267	+0.65	-3.8	.	86.7
Mar. 7	16 26.52	-33 41.5	2.042	2.353	+0.32	-3.1	.	95.4
Mar. 17	16 28.13	-34 09.2	1.987	2.438	-0.04	-2.3	.	104.8
Mar. 27	16 26.06	-34 28.0	1.934	2.521	-0.41	-1.3	.	114.8

Comet 41P/Tuttle-Giacobini-Kresak

Epoch = 2022 June 30.0 TT
 T = 2022 Sept. 13.45322 TT
 Peri. = 62.21511 e = 0.6599726
 Node = 140.98925 2000.0 a = 3.0883643 AU
 Incl. = 9.22075 n = 0.18159809
 q = 1.0501285 AU P = 5.43 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	04 22.86	+09 33.3	2.024	2.875	-0.93 +0.9	21.8	143.6
Jan. 11	04 14.55	+09 48.1	2.050	2.806	-0.70 +2.1	21.7	132.1
Jan. 21	04 08.77	+10 14.5	2.095	2.734	-0.43 +3.2	21.6	121.0
Jan. 31	04 05.81	+10 51.2	2.152	2.662	-0.14 +4.2	21.4	110.5
Feb. 10	04 05.77	+11 36.6	2.217	2.588	+0.15 +4.9	21.3	100.6
Feb. 20	04 08.54	+12 28.6	2.284	2.512	+0.43 +5.5	21.2	91.5
Mar. 2	04 13.97	+13 25.5	2.349	2.435	+0.68 +5.9	21.1	83.0
Mar. 12	04 21.86	+14 25.3	2.408	2.357	+0.92 +6.1	20.9	75.1
Mar. 22	04 32.03	+15 26.1	2.459	2.277	+1.14 +6.1	20.7	67.8
Apr. 1	04 44.32	+16 26.2	2.499	2.196	+1.34 +5.9	20.5	61.0
Apr. 11	04 58.62	+17 23.9	2.529	2.114	+1.54 +5.6	20.3	54.7
Apr. 21	05 14.83	+18 17.3	2.546	2.031	+1.72 +5.0	20.0	48.8
May 1	05 32.91	+19 04.7	2.550	1.946	+1.91 +4.3	19.8	43.4
May 11	05 52.82	+19 44.2	2.543	1.861	+2.09 +3.4	19.5	38.5
May 21	06 14.56	+20 13.6	2.523	1.775	+2.27 +2.3	19.1	33.9
May 31	06 38.13	+20 30.7	2.492	1.689	+2.46 +0.9	18.8	29.8
June 10	07 03.55	+20 32.8	2.452	1.604	+2.64 -0.7	18.4	26.1
June 20	07 30.83	+20 17.4	2.403	1.519	+2.83 -2.6	18.0	22.9
June 30	07 59.97	+19 41.6	2.347	1.436	+3.02 -4.8	17.4	20.2
July 10	08 30.94	+18 42.4	2.287	1.357	+3.20 -7.3	16.7	18.0
July 20	09 03.70	+17 17.3	2.225	1.282	+3.37 -10.0	16.0	16.3
July 30	09 38.17	+15 24.1	2.163	1.213	+3.54 -12.9	15.4	15.3
Aug. 9	10 14.23	+13 01.7	2.104	1.154	+3.69 -15.8	14.8	14.8
Aug. 19	10 51.70	+10 10.9	2.052	1.105	+3.82 -18.6	14.2	14.9
Aug. 29	11 30.42	+06 54.5	2.010	1.071	+3.93 -20.8	13.9	15.5
Sept. 8	12 10.13	+03 18.3	1.980	1.053	+4.02 -22.4	13.6	16.5
Sept. 18	12 50.58	+00 29.1	1.965	1.052	+4.08 -23.0	13.6	17.6
Sept. 28	13 31.49	-04 17.6	1.967	1.069	+4.10 -22.5	13.8	18.8
Oct. 8	14 12.52	-07 55.5	1.988	1.102	+4.09 -20.8	14.1	19.9
Oct. 18	14 53.28	-11 12.8	2.027	1.149	+4.05 -18.3	14.6	20.6
Oct. 28	15 33.41	-14 01.5	2.084	1.207	+3.96 -15.1	15.2	20.8
Nov. 7	16 12.48	-16 16.8	2.155	1.275	+3.83 -11.6	15.9	20.5
Nov. 17	16 50.13	-17 57.3	2.240	1.349	+3.68 -8.2	16.6	19.6
Nov. 27	17 26.09	-19 04.2	2.334	1.429	+3.49 -5.0	17.3	18.0
Dec. 7	18 00.12	-19 40.7	2.434	1.511	+3.29 -2.1	18.0	15.9
Dec. 17	18 32.13	-19 50.7	2.537	1.596	+3.09 +0.3	18.5	13.3
Dec. 27	19 02.11	-19 38.5	2.640	1.681	+2.89 +2.3	18.9	10.2
Jan. 6	19 30.09	-19 08.4	2.740	1.767	+2.69 +3.8	19.3	6.7
Jan. 16	19 56.16	-18 24.2	2.834	1.853	+2.51 +5.1	19.7	3.2
Jan. 26	20 20.45	-17 29.3	2.921	1.938	+2.34 +6.0	20.0	2.9
Feb. 5	20 43.06	-16 26.5	2.998	2.023	+2.17 +6.6	20.4	7.0
Feb. 15	21 04.13	-15 18.6	3.063	2.106	+2.03 +7.0	20.7	11.8
Feb. 25	21 23.76	-14 07.4	3.116	2.189	+1.89 +7.2	21.0	17.0
Mar. 7	21 42.03	-12 55.1	3.156	2.270	+1.76 +7.2	21.2	22.4
Mar. 17	21 59.02	-11 43.2	3.181	2.350	+1.63 +7.1	21.5	28.0
Mar. 27	22 14.79	-10 33.1	3.191	2.428	+1.51 +6.9	21.7	33.9

Comet C/2020 R7 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2022 Sept. 16.22994 TT
 Peri. = 347.83787
 Node = 268.28220 2000.0
 Incl. = 114.89064
 q = 2.9558434 AU
 e = 1.0000665

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	22 19.17	-64 56.2	4.375	3.882	-0.18	+12.7	16.1	54.2
Jan. 11	22 18.62	-62 53.6	4.380	3.822	+0.07	+11.7	16.0	50.0
Jan. 21	22 20.17	-61 01.2	4.368	3.763	+0.24	+10.6	16.0	46.8
Jan. 31	22 23.12	-59 20.0	4.338	3.706	+0.35	+9.5	15.9	44.9
Feb. 10	22 26.97	-57 51.0	4.287	3.650	+0.42	+8.2	15.8	44.5
Feb. 20	22 31.28	-56 35.1	4.216	3.595	+0.44	+6.8	15.7	45.6
Mar. 2	22 35.74	-55 33.0	4.124	3.542	+0.44	+5.4	15.6	48.2
Mar. 12	22 40.04	-54 46.0	4.011	3.490	+0.41	+3.8	15.4	52.1
Mar. 22	22 43.85	-54 15.1	3.878	3.440	+0.34	+2.1	15.3	57.1
Apr. 1	22 46.85	-54 02.0	3.726	3.391	+0.24	+0.3	15.2	63.0
Apr. 11	22 48.61	-54 08.6	3.560	3.345	+0.09	-1.8	15.0	69.6
Apr. 21	22 48.58	-54 36.8	3.380	3.301	-0.13	-4.1	14.8	76.9
May 1	22 46.00	-55 28.6	3.192	3.259	-0.44	-6.5	14.7	84.8
May 11	22 39.76	-56 45.4	3.000	3.219	-0.88	-9.0	14.5	93.2
May 21	22 28.23	-58 26.0	2.810	3.181	-1.53	-11.2	14.3	102.1
May 31	22 09.06	-60 24.9	2.630	3.146	-2.45	-12.4	14.1	111.5
June 10	21 39.15	-62 26.5	2.469	3.114	-3.70	-11.3	13.9	120.8
June 20	20 55.82	-63 59.5	2.335	3.084	-5.08	-6.0	13.7	129.7
June 30	20 00.32	-64 18.0	2.238	3.057	-5.94	+4.0	13.6	136.5
July 10	19 01.45	-62 42.8	2.187	3.033	-5.59	+16.2	13.5	139.5
July 20	18 10.84	-59 15.0	2.187	3.013	-4.33	+25.6	13.5	137.2
July 30	17 33.86	-54 34.4	2.237	2.995	-2.96	+30.1	13.5	130.2
Aug. 9	17 09.46	-49 29.0	2.333	2.980	-1.87	+30.4	13.6	120.7
Aug. 19	16 54.50	-44 33.4	2.464	2.969	-1.09	+28.2	13.7	110.2
Aug. 29	16 46.17	-40 05.4	2.623	2.961	-0.55	+25.0	13.8	99.5
Sept. 8	16 42.47	-36 11.0	2.798	2.957	-0.17	+21.6	13.9	89.0
Sept. 18	16 42.04	-32 49.1	2.981	2.956	+0.10	+18.5	14.1	78.9
Sept. 28	16 43.95	-29 55.7	3.164	2.958	+0.29	+16.0	14.2	69.1
Oct. 8	16 47.57	-27 25.6	3.340	2.964	+0.44	+13.9	14.3	59.7
Oct. 18	16 52.44	-25 13.8	3.505	2.973	+0.54	+12.3	14.5	50.5
Oct. 28	16 58.24	-23 15.9	3.654	2.985	+0.62	+11.2	14.6	41.6
Nov. 7	17 04.69	-21 27.9	3.784	3.001	+0.67	+10.4	14.7	32.9
Nov. 17	17 11.59	-19 46.3	3.891	3.019	+0.71	+9.9	14.7	24.5
Nov. 27	17 18.75	-18 08.1	3.975	3.041	+0.73	+9.7	14.8	16.5
Dec. 7	17 26.02	-16 30.8	4.032	3.066	+0.73	+9.8	14.9	9.9
Dec. 17	17 33.23	-14 52.0	4.064	3.094	+0.71	+10.0	15.0	8.5
Dec. 27	17 40.25	-13 09.7	4.069	3.125	+0.68	+10.5	15.0	14.1
Jan. 6	17 46.91	-11 21.7	4.050	3.158	+0.64	+11.2	15.0	21.8
Jan. 16	17 53.06	-09 26.4	4.006	3.194	+0.58	+12.0	15.1	30.2
Jan. 26	17 58.52	-07 21.7	3.940	3.232	+0.50	+13.0	15.1	38.8
Feb. 5	18 03.11	-05 06.0	3.855	3.273	+0.40	+14.2	15.1	47.6
Feb. 15	18 06.61	-02 37.5	3.755	3.316	+0.28	+15.6	15.1	56.6
Feb. 25	18 08.81	+00 05.1	3.644	3.361	+0.14	+17.1	15.1	65.7
Mar. 7	18 09.43	+03 02.9	3.527	3.408	-0.03	+18.6	15.1	75.0
Mar. 17	18 08.20	+06 16.2	3.411	3.457	-0.24	+20.2	15.1	84.3
Mar. 27	18 04.83	+09 44.0	3.301	3.508	-0.47	+21.5	15.0	93.6

Comet D/1952 B1 (Harrington-Wilson)

Epoch = 2022 June 30.0 TT
 T = 2022 Sept. 21.72040 TT
 Peri. = 1.68521 e = 0.6046176
 Node = 118.10556 2000.0 a = 3.1106089 AU
 Incl. = 14.44393 n = 0.17965362
 q = 1.2298800 AU P = 5.49 years

$$m1 = 15.5 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation	m1	Mot. /PA	Elong.
2022/23	h m	° '			for T=+1 day			°
Jan. 1	23 06.82	-17 56.4	3.178	2.838	-0.46 -1.2	.	16.1/60	61.1
Jan. 11	23 17.19	-16 34.2	3.235	2.773	-0.47 -1.5	.	18.0/62	54.0
Jan. 21	23 28.73	-15 05.9	3.279	2.708	-0.48 -1.8	.	19.8/63	47.2
Jan. 31	23 41.32	-13 32.0	3.309	2.641	-0.50 -2.1	.	21.5/63	40.7
Feb. 10	23 54.89	-11 53.1	3.324	2.573	-0.52 -2.4	.	23.0/64	34.5
Feb. 20	00 09.34	-10 09.6	3.325	2.504	-0.54 -2.8	.	24.4/64	28.8
Mar. 2	00 24.64	-08 22.0	3.312	2.434	-0.57 -3.1	22.0	25.8/65	23.4
Mar. 12	00 40.78	-06 30.9	3.284	2.364	-0.61 -3.5	21.8	27.2/65	18.6
Mar. 22	00 57.75	-04 36.8	3.244	2.292	-0.65 -3.9	21.7	28.5/66	14.4
Apr. 1	01 15.58	-02 40.3	3.191	2.220	-0.70 -4.4	21.5	29.9/67	11.3
Apr. 11	01 34.33	+00 41.9	3.127	2.146	-0.75 -4.8	21.3	31.3/68	9.8
Apr. 21	01 54.05	+01 17.5	3.053	2.073	-0.82 -5.3	21.1	32.7/69	10.4
May 1	02 14.85	+03 17.2	2.971	1.999	-0.89 -5.7	20.9	34.2/70	12.3
May 11	02 36.82	+05 16.1	2.883	1.925	-0.97 -6.2	20.6	35.8/71	14.9
May 21	03 00.08	+07 12.9	2.790	1.851	-1.07 -6.5	20.4	37.6/72	17.6
May 31	03 24.78	+09 06.2	2.694	1.778	-1.18 -6.9	20.2	39.4/74	20.2
June 10	03 51.03	+10 54.0	2.597	1.706	-1.29 -7.1	19.9	41.3/75	22.6
June 20	04 18.97	+12 34.0	2.501	1.635	-1.42 -7.2	19.6	43.4/77	24.8
June 30	04 48.71	+14 03.5	2.408	1.567	-1.56 -7.1	19.4	45.5/79	26.6
July 10	05 20.30	+15 19.4	2.320	1.502	-1.70 -6.8	19.1	47.6/82	28.1
July 20	05 53.71	+16 18.2	2.238	1.441	-1.84 -6.2	18.8	49.7/84	29.3
July 30	06 28.85	+16 56.4	2.165	1.385	-1.97 -5.4	18.6	51.7/87	30.2
Aug. 9	07 05.46	+17 10.9	2.101	1.336	-2.08 -4.2	18.4	53.5/90	30.8
Aug. 19	07 43.21	+16 59.4	2.048	1.294	-2.16 -2.9	18.2	54.9/93	31.3
Aug. 29	08 21.65	+16 20.9	2.006	1.263	-2.21 -1.4	18.0	55.9/95	31.6
Sept. 8	09 00.27	+15 16.2	1.975	1.241	-2.21 +0.2	17.9	56.3/98	32.0
Sept. 18	09 38.55	+13 47.9	1.955	1.231	-2.17 +1.6	17.9	56.2/100	32.4
Sept. 28	10 16.08	+12 00.3	1.945	1.232	-2.09 +2.8	17.9	55.5/102	33.0
Oct. 8	10 52.45	+09 59.0	1.944	1.245	-1.99 +3.8	17.9	54.2/103	33.9
Oct. 18	11 27.43	+07 50.0	1.949	1.270	-1.87 +4.4	18.0	52.4/104	35.0
Oct. 28	12 00.87	+05 39.2	1.959	1.304	-1.74 +4.8	18.1	50.3/105	36.6
Nov. 7	12 32.67	+03 31.9	1.972	1.348	-1.60 +5.0	18.3	47.9/105	38.6
Nov. 17	13 02.80	+01 32.7	1.985	1.398	-1.47 +5.1	18.4	45.2/105	41.0
Nov. 27	13 31.25	+00 15.1	1.996	1.456	-1.35 +5.0	18.6	42.5/104	43.9
Dec. 7	13 57.99	-01 48.9	2.004	1.518	-1.23 +4.9	18.8	39.6/102	47.2
Dec. 17	14 23.02	-03 07.2	2.007	1.584	-1.13 +4.7	19.0	36.7/101	51.0
Dec. 27	14 46.29	-04 09.1	2.003	1.653	-1.03 +4.7	19.2	33.7/99	55.2
Jan. 6	15 07.71	-04 54.2	1.991	1.724	-0.95 +4.7	19.4	30.7/97	59.9
Jan. 16	15 27.20	-05 23.0	1.972	1.796	-0.89 +4.7	19.5	27.5/94	65.1
Jan. 26	15 44.61	-05 35.8	1.945	1.870	-0.84 +4.9	19.7	24.2/91	70.8
Feb. 5	15 59.76	-05 33.5	1.910	1.944	-0.80 +5.1	19.8	20.7/87	77.1
Feb. 15	16 12.47	-05 17.5	1.869	2.018	-0.78 +5.4	19.9	17.0/82	83.8
Feb. 25	16 22.51	-04 48.9	1.823	2.092	-0.77 +5.8	20.0	13.1/75	91.1
Mar. 7	16 29.61	-04 09.8	1.774	2.165	-0.79 +6.3	20.1	9.2/61	99.1
Mar. 17	16 33.58	-03 22.5	1.726	2.238	-0.82 +6.8	20.2	6.0/32	107.6
Mar. 27	16 34.21	-02 29.9	1.682	2.310	-0.87 +7.3	20.3	5.7/341	116.8

Comet 224P/LINEAR-NEAT

Epoch = 2022 June 30.0 TT
 T = 2022 Sept. 29.94616 TT
 Peri. = 16.65978 e = 0.4060975
 Node = 40.03872 2000.0 a = 3.4450195 AU
 Incl. = 13.30482 n = 0.15414042
 q = 2.0460057 AU P = 6.39 years

$$m1 = 13.6 + 5 \log(\Delta) + 17.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° ' "			m		°
Jan. 1	21 36.22	-24 47.6	3.494	2.801	+1.52 +9.8	.	39.1
Jan. 11	21 51.64	-23 07.3	3.531	2.760	+1.57 +10.3	.	33.0
Jan. 21	22 07.49	-21 21.7	3.557	2.719	+1.61 +10.8	.	27.2
Jan. 31	22 23.69	-19 31.0	3.569	2.678	+1.64 +11.3	.	21.6
Feb. 10	22 40.19	-17 35.5	3.570	2.638	+1.66 +11.8	.	16.4
Feb. 20	22 56.92	-15 35.6	3.558	2.598	+1.68 +12.2	.	11.8
Mar. 2	23 13.84	-13 31.7	3.534	2.558	+1.70 +12.6	.	8.4
Mar. 12	23 30.95	-11 24.2	3.500	2.519	+1.72 +12.9	.	7.9
Mar. 22	23 48.22	-09 13.9	3.455	2.481	+1.74 +13.2	.	10.4
Apr. 1	00 05.65	-07 01.3	3.400	2.444	+1.75 +13.4	.	14.3
Apr. 11	00 23.25	-04 47.0	3.336	2.407	+1.77 +13.5	.	18.6
Apr. 21	00 41.01	-02 31.8	3.264	2.372	+1.79 +13.6	.	23.0
May 1	00 58.97	+00 16.2	3.184	2.337	+1.81 +13.5	.	27.5
May 11	01 17.13	+01 58.9	3.098	2.304	+1.83 +13.5	.	31.9
May 21	01 35.49	+04 12.8	3.007	2.272	+1.85 +13.3	.	36.3
May 31	01 54.07	+06 24.9	2.910	2.242	+1.87 +13.1	.	40.7
June 10	02 12.86	+08 34.4	2.810	2.213	+1.89 +12.8	21.9	45.1
June 20	02 31.85	+10 40.6	2.706	2.186	+1.91 +12.4	21.7	49.5
June 30	02 51.03	+12 43.0	2.599	2.161	+1.93 +12.0	21.5	53.8
July 10	03 10.34	+14 41.0	2.490	2.139	+1.94 +11.5	21.4	58.3
July 20	03 29.72	+16 34.1	2.380	2.118	+1.94 +11.0	21.2	62.8
July 30	03 49.09	+18 22.3	2.269	2.100	+1.93 +10.5	21.0	67.4
Aug. 9	04 08.30	+20 05.5	2.157	2.084	+1.91 +10.1	20.9	72.2
Aug. 19	04 27.21	+21 44.2	2.045	2.071	+1.87 +9.6	20.7	77.2
Aug. 29	04 45.60	+23 18.9	1.935	2.061	+1.80 +9.3	20.5	82.4
Sept. 8	05 03.20	+24 50.9	1.826	2.053	+1.71 +9.1	20.4	87.9
Sept. 18	05 19.71	+26 21.7	1.719	2.048	+1.58 +9.1	20.2	93.8
Sept. 28	05 34.74	+27 53.3	1.616	2.046	+1.40 +9.3	20.1	100.1
Oct. 8	05 47.81	+29 27.9	1.519	2.047	+1.18 +9.7	20.0	107.0
Oct. 18	05 58.44	+31 07.4	1.427	2.051	+0.91 +10.3	19.8	114.4
Oct. 28	06 06.01	+32 53.2	1.345	2.057	+0.57 +10.9	19.7	122.5
Nov. 7	06 09.96	+34 44.7	1.275	2.067	+0.18 +11.4	19.6	131.2
Nov. 17	06 09.90	+36 38.4	1.219	2.079	-0.24 +11.3	19.6	140.3
Nov. 27	06 05.70	+38 27.6	1.182	2.093	-0.63 +10.3	19.6	149.6
Dec. 7	05 57.94	+40 02.3	1.166	2.111	-0.92 +8.3	19.6	157.7
Dec. 17	05 47.99	+41 13.2	1.173	2.130	-1.05 +5.5	19.7	162.0
Dec. 27	05 37.73	+41 54.4	1.204	2.152	-0.96 +2.5	19.8	159.3
Jan. 6	05 29.24	+42 06.9	1.258	2.176	-0.69 -0.1	20.0	152.0
Jan. 16	05 23.98	+41 56.6	1.335	2.202	-0.32 -2.0	20.2	143.2
Jan. 26	05 22.65	+41 31.4	1.430	2.230	+0.09 -3.1	20.5	134.2
Feb. 5	05 25.35	+40 58.0	1.540	2.260	+0.48 -3.6	20.7	125.5
Feb. 15	05 31.64	+40 20.7	1.664	2.291	+0.81 -3.8	21.0	117.3
Feb. 25	05 41.02	+39 41.7	1.797	2.324	+1.09 -4.0	21.3	109.5
Mar. 7	05 52.90	+39 01.6	1.939	2.358	+1.30 -4.1	21.6	102.3
Mar. 17	06 06.73	+38 19.8	2.085	2.393	+1.47 -4.3	21.8	95.4
Mar. 27	06 22.06	+37 35.5	2.236	2.429	+1.60 -4.6	.	88.8

Comet 51P-D/Harrington

Epoch = 2022 June 30.0 TT
 T = 2022 Oct. 1.78140 TT
 Peri. = 269.30424 e = 0.5435753
 Node = 83.65855 2000.0 a = 3.7078909 AU
 Incl. = 5.42669 n = 0.13804277
 q = 1.6923730 AU P = 7.14 years

$$m1 = 14.3 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	17 14.43	-22 13.3	3.797	2.898	+1.72	-2.6	.	20.8
Jan. 11	17 31.81	-22 36.6	3.683	2.841	+1.76	-2.0	.	26.9
Jan. 21	17 49.53	-22 53.1	3.557	2.784	+1.79	-1.3	.	33.0
Jan. 31	18 07.52	-23 02.6	3.420	2.726	+1.81	-0.6	.	39.0
Feb. 10	18 25.70	-23 04.9	3.273	2.669	+1.83	+0.2	.	45.0
Feb. 20	18 44.01	-23 00.2	3.119	2.611	+1.83	+0.9	.	50.9
Mar. 2	19 02.37	-22 48.6	2.958	2.553	+1.84	+1.5	.	56.7
Mar. 12	19 20.71	-22 30.4	2.793	2.495	+1.83	+2.2	.	62.5
Mar. 22	19 38.94	-22 06.3	2.625	2.438	+1.82	+2.7	.	68.2
Apr. 1	19 57.02	-21 36.9	2.455	2.381	+1.80	+3.2	.	73.9
Apr. 11	20 14.85	-21 03.3	2.286	2.324	+1.77	+3.5	.	79.6
Apr. 21	20 32.36	-20 26.7	2.118	2.268	+1.73	+3.8	.	85.3
May 1	20 49.46	-19 48.4	1.954	2.213	+1.68	+3.9	.	90.9
May 11	21 06.05	-19 10.2	1.794	2.159	+1.63	+3.7	.	96.7
May 21	21 22.01	-18 34.3	1.641	2.106	+1.56	+3.4	21.8	102.5
May 31	21 37.19	-18 02.8	1.494	2.055	+1.47	+2.8	21.4	108.5
June 10	21 51.38	-17 38.7	1.357	2.006	+1.36	+1.9	21.0	114.7
June 20	22 04.37	-17 24.6	1.229	1.959	+1.22	+0.7	20.6	121.2
June 30	22 15.84	-17 23.7	1.113	1.915	+1.05	-0.7	20.2	128.1
July 10	22 25.45	-17 38.4	1.009	1.873	+0.85	-2.4	19.8	135.3
July 20	22 32.86	-18 10.0	0.918	1.835	+0.61	-4.1	19.4	143.1
July 30	22 37.73	-18 57.8	0.844	1.801	+0.34	-5.5	19.0	151.2
Aug. 9	22 39.98	-19 57.1	0.786	1.771	+0.09	-6.2	18.7	159.3
Aug. 19	22 39.89	-20 59.0	0.746	1.745	-0.12	-5.9	18.5	166.0
Aug. 29	22 38.15	-21 51.9	0.724	1.724	-0.22	-4.3	18.3	167.5
Sept. 8	22 36.02	-22 22.9	0.721	1.708	-0.18	-1.5	18.2	162.1
Sept. 18	22 34.91	-22 22.9	0.736	1.698	-0.01	+1.9	18.2	154.2
Sept. 28	22 35.95	-21 48.8	0.767	1.693	+0.26	+5.3	18.3	145.9
Oct. 8	22 39.88	-20 41.5	0.813	1.693	+0.56	+8.4	18.4	138.0
Oct. 18	22 46.85	-19 06.0	0.873	1.700	+0.85	+10.9	18.6	130.7
Oct. 28	22 56.58	-17 08.0	0.944	1.711	+1.11	+12.8	18.8	124.0
Nov. 7	23 08.71	-14 52.8	1.027	1.729	+1.32	+14.3	19.1	117.8
Nov. 17	23 22.69	-12 25.6	1.121	1.751	+1.48	+15.2	19.4	112.0
Nov. 27	23 38.11	-09 50.6	1.224	1.778	+1.61	+15.8	19.7	106.5
Dec. 7	23 54.61	-07 11.1	1.336	1.809	+1.70	+16.1	20.1	101.3
Dec. 17	00 11.89	-04 30.4	1.457	1.844	+1.76	+16.1	20.4	96.2
Dec. 27	00 29.74	-01 50.6	1.585	1.883	+1.81	+15.8	20.8	91.2
Jan. 6	00 48.03	+00 46.1	1.720	1.925	+1.85	+15.4	21.2	86.3
Jan. 16	01 06.62	+03 18.1	1.861	1.970	+1.87	+14.9	21.5	81.4
Jan. 26	01 25.45	+05 44.0	2.006	2.018	+1.90	+14.2	21.9	76.5
Feb. 5	01 44.48	+08 02.9	2.155	2.067	+1.91	+13.5	.	71.6
Feb. 15	02 03.64	+10 13.7	2.306	2.119	+1.92	+12.6	.	66.6
Feb. 25	02 22.93	+12 15.8	2.459	2.172	+1.93	+11.7	.	61.7
Mar. 7	02 42.30	+14 08.7	2.610	2.226	+1.94	+10.8	.	56.7
Mar. 17	03 01.71	+15 51.8	2.760	2.281	+1.94	+9.8	.	51.7
Mar. 27	03 21.16	+17 25.0	2.906	2.337	+1.94	+8.8	.	46.7

Comet 51P/Harrington

Epoch = 2022 June 30.0 TT
 T = 2022 Oct. 3.91868 TT
 Peri. = 269.26225 e = 0.5436246
 Node = 83.67479 2000.0 a = 3.7087214 AU
 Incl. = 5.42593 n = 0.13799640
 q = 1.6925692 AU P = 7.14 years

$$m1 = 11.3 + 5 \log(\Delta) + 12.5 \log(r(t-80))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	17 12.98	-22 09.8	3.806	2.911	+1.71	-2.7	20.8	21.1
Jan. 11	17 30.26	-22 33.5	3.692	2.854	+1.75	-2.0	20.6	27.3
Jan. 21	17 47.86	-22 50.5	3.565	2.796	+1.78	-1.3	20.4	33.4
Jan. 31	18 05.72	-23 00.6	3.427	2.739	+1.80	-0.6	20.3	39.5
Feb. 10	18 23.77	-23 03.7	3.279	2.681	+1.81	+0.1	20.1	45.4
Feb. 20	18 41.93	-22 59.8	3.124	2.623	+1.82	+0.8	19.9	51.4
Mar. 2	19 00.13	-22 49.1	2.962	2.565	+1.82	+1.4	19.7	57.2
Mar. 12	19 18.29	-22 32.1	2.796	2.508	+1.81	+2.0	19.4	63.1
Mar. 22	19 36.33	-22 09.3	2.627	2.450	+1.80	+2.6	19.2	68.8
Apr. 1	19 54.19	-21 41.4	2.456	2.393	+1.77	+3.0	18.9	74.6
Apr. 11	20 11.78	-21 09.5	2.286	2.336	+1.74	+3.4	18.7	80.3
Apr. 21	20 29.01	-20 34.8	2.117	2.280	+1.70	+3.6	18.4	86.0
May 1	20 45.81	-19 58.7	1.952	2.225	+1.65	+3.6	18.1	91.8
May 11	21 02.05	-19 23.1	1.791	2.170	+1.59	+3.5	17.8	97.7
May 21	21 17.61	-18 50.1	1.637	2.117	+1.51	+3.1	17.5	103.6
May 31	21 32.33	-18 22.0	1.490	2.066	+1.42	+2.4	17.2	109.7
June 10	21 45.99	-18 01.8	1.352	2.016	+1.30	+1.5	16.8	116.1
June 20	21 58.37	-17 52.1	1.225	1.969	+1.16	+0.3	16.5	122.7
June 30	22 09.14	-17 56.1	1.108	1.924	+0.97	-1.3	16.1	129.7
July 10	22 17.95	-18 16.2	1.005	1.882	+0.76	-2.9	15.8	137.2
July 20	22 24.48	-18 53.2	0.916	1.843	+0.52	-4.6	15.4	145.1
July 30	22 28.45	-19 46.0	0.842	1.808	+0.25	-6.0	15.1	153.4
Aug. 9	22 29.83	-20 49.2	0.786	1.777	+0.01	-6.5	14.9	161.5
Aug. 19	22 29.03	-21 53.1	0.748	1.750	-0.17	-6.0	14.6	167.4
Aug. 29	22 26.88	-22 45.6	0.729	1.728	-0.24	-4.1	14.4	166.8
Sept. 8	22 24.72	-23 14.3	0.729	1.711	-0.16	-1.2	14.3	160.1
Sept. 18	22 23.96	-23 11.1	0.746	1.700	+0.04	+2.2	14.2	151.9
Sept. 28	22 25.64	-22 33.7	0.779	1.694	+0.33	+5.6	14.2	143.6
Oct. 8	22 30.40	-21 23.8	0.827	1.693	+0.65	+8.6	14.2	135.8
Oct. 18	22 38.24	-19 46.3	0.887	1.698	+0.94	+11.0	14.3	128.6
Oct. 28	22 48.83	-17 46.7	0.959	1.709	+1.20	+13.0	14.3	122.1
Nov. 7	23 01.74	-15 30.2	1.042	1.725	+1.40	+14.4	14.4	116.0
Nov. 17	23 16.43	-13 01.7	1.135	1.746	+1.55	+15.3	14.5	110.4
Nov. 27	23 32.47	-10 25.2	1.237	1.772	+1.66	+16.0	14.7	105.0
Dec. 7	23 49.51	-07 44.0	1.348	1.802	+1.75	+16.2	14.8	99.9
Dec. 17	00 07.25	-05 01.5	1.468	1.836	+1.80	+16.2	15.0	94.9
Dec. 27	00 25.51	-02 19.8	1.595	1.875	+1.85	+16.0	15.2	90.1
Jan. 6	00 44.15	+00 19.0	1.729	1.916	+1.88	+15.6	15.4	85.2
Jan. 16	01 03.04	+02 53.1	1.868	1.961	+1.90	+15.1	15.6	80.4
Jan. 26	01 22.13	+05 21.2	2.012	2.008	+1.92	+14.4	15.8	75.6
Feb. 5	01 41.39	+07 42.2	2.159	2.057	+1.93	+13.7	16.0	70.7
Feb. 15	02 00.75	+09 55.0	2.309	2.108	+1.94	+12.8	16.2	65.9
Feb. 25	02 20.22	+11 59.1	2.460	2.160	+1.95	+11.9	16.5	61.0
Mar. 7	02 39.74	+13 53.8	2.610	2.214	+1.95	+10.9	16.7	56.1
Mar. 17	02 59.30	+15 38.7	2.758	2.270	+1.96	+9.9	16.9	51.1
Mar. 27	03 18.87	+17 13.5	2.903	2.326	+1.96	+8.9	17.1	46.1

Comet 211P/Hill

Epoch = 2022 June 30.0 TT
 T = 2022 Oct. 4.58925 TT
 Peri. = 4.27729 e = 0.3436676
 Node = 117.13156 2000.0 a = 3.5463771 AU
 Incl. = 18.92102 n = 0.14757973
 q = 2.3276022 AU P = 6.68 years

$$m1 = 11.0 + 5 \log(\Delta) + 12.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	02 07.15	-09 35.0	2.478	2.890	+0.18	+9.6	18.7	104.8
Jan. 11	02 09.90	-07 55.0	2.573	2.858	+0.39	+10.5	18.8	96.6
Jan. 21	02 14.73	-06 07.3	2.671	2.826	+0.59	+11.1	18.8	88.7
Jan. 31	02 21.46	-04 14.7	2.769	2.794	+0.77	+11.5	18.8	81.2
Feb. 10	02 29.90	-02 19.2	2.865	2.763	+0.93	+11.6	18.8	74.1
Feb. 20	02 39.88	+00 22.9	2.957	2.732	+1.07	+11.6	18.8	67.3
Mar. 2	02 51.22	+01 32.9	3.044	2.702	+1.20	+11.5	18.8	60.8
Mar. 12	03 03.79	+03 26.8	3.124	2.673	+1.32	+11.2	18.8	54.6
Mar. 22	03 17.46	+05 17.5	3.196	2.644	+1.42	+10.9	18.8	48.6
Apr. 1	03 32.13	+07 04.0	3.259	2.616	+1.52	+10.4	18.8	42.8
Apr. 11	03 47.72	+08 45.4	3.314	2.589	+1.61	+9.8	18.8	37.3
Apr. 21	04 04.14	+10 20.7	3.360	2.563	+1.68	+9.2	18.7	32.0
May 1	04 21.33	+11 49.0	3.396	2.538	+1.76	+8.4	18.7	26.9
May 11	04 39.21	+13 09.7	3.422	2.514	+1.82	+7.6	18.7	21.9
May 21	04 57.71	+14 21.9	3.440	2.491	+1.88	+6.7	18.6	17.2
May 31	05 16.78	+15 25.2	3.448	2.469	+1.94	+5.8	18.6	12.7
June 10	05 36.34	+16 18.9	3.447	2.449	+1.98	+4.8	18.5	8.9
June 20	05 56.30	+17 02.8	3.437	2.430	+2.02	+3.8	18.5	6.4
June 30	06 16.60	+17 36.6	3.418	2.412	+2.05	+2.8	18.4	7.0
July 10	06 37.16	+18 00.4	3.391	2.396	+2.07	+1.8	18.4	10.0
July 20	06 57.87	+18 14.1	3.355	2.381	+2.08	+0.8	18.3	13.9
July 30	07 18.68	+18 18.3	3.311	2.369	+2.08	-0.1	18.3	18.3
Aug. 9	07 39.47	+18 13.4	3.260	2.357	+2.08	-1.0	18.2	22.7
Aug. 19	08 00.18	+18 00.2	3.200	2.348	+2.06	-1.7	18.2	27.4
Aug. 29	08 20.73	+17 39.7	3.134	2.340	+2.04	-2.4	18.1	32.1
Sept. 8	08 41.03	+17 13.0	3.060	2.334	+2.01	-3.0	18.0	36.9
Sept. 18	09 01.01	+16 41.5	2.980	2.330	+1.98	-3.3	18.0	41.9
Sept. 28	09 20.60	+16 06.9	2.893	2.328	+1.93	-3.6	17.9	47.0
Oct. 8	09 39.73	+15 31.0	2.800	2.328	+1.88	-3.6	17.8	52.3
Oct. 18	09 58.30	+14 55.8	2.702	2.329	+1.82	-3.4	17.7	57.8
Oct. 28	10 16.25	+14 23.4	2.600	2.333	+1.75	-3.0	17.7	63.5
Nov. 7	10 33.44	+13 56.4	2.493	2.338	+1.67	-2.3	17.6	69.5
Nov. 17	10 49.77	+13 37.4	2.384	2.345	+1.58	-1.4	17.5	75.7
Nov. 27	11 05.08	+13 29.1	2.273	2.354	+1.47	-0.1	17.4	82.3
Dec. 7	11 19.17	+13 34.6	2.162	2.365	+1.33	+1.4	17.3	89.3
Dec. 17	11 31.82	+13 56.5	2.054	2.377	+1.18	+3.2	17.3	96.6
Dec. 27	11 42.76	+14 37.4	1.949	2.391	+0.99	+5.2	17.2	104.4
Jan. 6	11 51.69	+15 39.4	1.851	2.407	+0.77	+7.4	17.1	112.6
Jan. 16	11 58.30	+17 02.9	1.763	2.424	+0.52	+9.5	17.0	121.3
Jan. 26	12 02.29	+18 46.5	1.688	2.443	+0.25	+11.3	17.0	130.2
Feb. 5	12 03.47	+20 45.6	1.630	2.463	-0.04	+12.5	17.0	139.2
Feb. 15	12 01.88	+22 52.4	1.593	2.484	-0.30	+12.7	17.0	147.6
Feb. 25	11 57.79	+24 56.3	1.579	2.506	-0.52	+11.8	17.0	154.0
Mar. 7	11 51.89	+26 45.1	1.590	2.530	-0.65	+9.6	17.0	156.4
Mar. 17	11 45.14	+28 08.8	1.626	2.555	-0.68	+6.7	17.1	153.5
Mar. 27	11 38.62	+29 01.0	1.686	2.581	-0.60	+3.4	17.3	147.1

Comet 408P/Novichonok-Gerke

Epoch = 2022 June 30.0 TT
 T = 2022 Oct. 4.86333 TT
 Peri. = 226.42693 e = 0.2693468
 Node = 189.43987 2000.0 a = 4.7458564 AU
 Incl. = 19.35627 n = 0.09533057
 q = 3.4675752 AU P = 10.34 years

$$m1 = 8.9 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	23 43.62	-02 05.2	3.830	3.703	+0.79	+2.1	17.5	75.2
Jan. 11	23 52.00	-01 40.7	3.957	3.687	+0.89	+2.9	17.6	67.1
Jan. 21	00 01.30	-01 08.4	4.077	3.672	+0.97	+3.6	17.6	59.2
Jan. 31	00 11.38	+00 29.7	4.186	3.657	+1.05	+4.2	17.6	51.7
Feb. 10	00 22.14	+00 14.4	4.284	3.643	+1.11	+4.7	17.7	44.3
Feb. 20	00 33.46	+01 02.5	4.368	3.629	+1.16	+5.0	17.7	37.1
Mar. 2	00 45.26	+01 53.6	4.438	3.616	+1.20	+5.2	17.7	30.2
Mar. 12	00 57.46	+02 46.5	4.493	3.603	+1.24	+5.3	17.7	23.4
Mar. 22	01 10.00	+03 40.1	4.533	3.591	+1.27	+5.4	17.7	16.8
Apr. 1	01 22.80	+04 33.5	4.557	3.579	+1.29	+5.3	17.7	10.6
Apr. 11	01 35.82	+05 25.8	4.564	3.568	+1.31	+5.1	17.7	5.4
Apr. 21	01 49.00	+06 15.9	4.556	3.557	+1.32	+4.9	17.7	5.5
May 1	02 02.28	+07 03.2	4.532	3.547	+1.33	+4.5	17.7	10.7
May 11	02 15.61	+07 46.7	4.493	3.537	+1.33	+4.1	17.6	16.6
May 21	02 28.92	+08 25.6	4.440	3.528	+1.33	+3.6	17.6	22.8
May 31	02 42.17	+08 59.3	4.373	3.520	+1.32	+3.1	17.6	29.0
June 10	02 55.27	+09 27.1	4.292	3.512	+1.30	+2.4	17.5	35.2
June 20	03 08.14	+09 48.1	4.200	3.505	+1.27	+1.7	17.5	41.6
June 30	03 20.69	+10 02.0	4.096	3.498	+1.23	+1.0	17.4	48.0
July 10	03 32.82	+10 08.1	3.982	3.492	+1.18	+0.2	17.3	54.6
July 20	03 44.41	+10 05.9	3.860	3.487	+1.12	-0.7	17.3	61.2
July 30	03 55.32	+09 55.0	3.731	3.482	+1.05	-1.6	17.2	68.1
Aug. 9	04 05.41	+09 35.2	3.596	3.478	+0.96	-2.5	17.1	75.2
Aug. 19	04 14.50	+09 06.2	3.459	3.475	+0.85	-3.4	17.0	82.5
Aug. 29	04 22.41	+08 27.9	3.320	3.472	+0.72	-4.3	16.9	90.1
Sept. 8	04 28.96	+07 40.7	3.182	3.470	+0.57	-5.2	16.8	98.1
Sept. 18	04 33.95	+06 45.1	3.049	3.469	+0.41	-6.0	16.7	106.3
Sept. 28	04 37.21	+05 42.1	2.924	3.468	+0.22	-6.7	16.6	114.9
Oct. 8	04 38.60	+04 33.3	2.810	3.468	+0.03	-7.1	16.5	123.8
Oct. 18	04 38.08	+03 21.2	2.712	3.468	-0.16	-7.3	16.5	132.9
Oct. 28	04 35.69	+02 08.9	2.633	3.469	-0.33	-7.1	16.4	141.9
Nov. 7	04 31.66	+01 00.3	2.576	3.471	-0.48	-6.5	16.4	150.1
Nov. 17	04 26.39	+00 00.3	2.546	3.474	-0.58	-5.5	16.3	156.3
Nov. 27	04 20.40	+00 48.8	2.542	3.477	-0.61	-4.1	16.3	158.0
Dec. 7	04 14.34	-01 22.1	2.567	3.481	-0.58	-2.4	16.4	154.3
Dec. 17	04 08.87	-01 38.6	2.618	3.485	-0.49	-0.7	16.4	147.1
Dec. 27	04 04.51	-01 38.3	2.693	3.490	-0.36	+0.9	16.5	138.4
Jan. 6	04 01.70	-01 22.6	2.790	3.496	-0.19	+2.3	16.6	129.3
Jan. 16	04 00.65	+00 54.0	2.904	3.502	0.00	+3.5	16.7	120.1
Jan. 26	04 01.45	+00 15.2	3.031	3.509	+0.18	+4.3	16.8	111.2
Feb. 5	04 04.06	+00 30.9	3.168	3.517	+0.36	+4.9	16.9	102.6
Feb. 15	04 08.38	+01 21.6	3.310	3.525	+0.52	+5.2	17.0	94.3
Feb. 25	04 14.25	+02 14.6	3.455	3.534	+0.67	+5.3	17.1	86.4
Mar. 7	04 21.51	+03 07.9	3.600	3.543	+0.80	+5.3	17.2	78.8
Mar. 17	04 29.98	+03 59.8	3.741	3.553	+0.91	+5.1	17.3	71.5
Mar. 27	04 39.50	+04 49.0	3.878	3.564	+1.00	+4.7	17.4	64.5

Comet P/2007 S1 (Zhao)

Epoch = 2022 June 30.0 TT
 T = 2022 Oct. 8.15206 TT
 Peri. = 245.28684 e = 0.3397692
 Node = 141.36327 2000.0 a = 3.8237628 AU
 Incl. = 5.96214 n = 0.13181586
 q = 2.5245660 AU P = 7.48 years

$$m1 = 10.5 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation		m1	Mot. /PA	Elong.
2022/23	h m	°			for T=+1 day				°
Jan. 1	20 41.21	-17 54.0	3.865	3.030	-0.61	-1.3	20.7	22.6/78	27.8
Jan. 11	20 56.81	-17 02.3	3.895	3.000	-0.61	-1.5	20.6	23.3/76	21.4
Jan. 21	21 12.71	-16 04.1	3.910	2.971	-0.62	-1.8	20.6	23.9/75	15.1
Jan. 31	21 28.82	-14 59.7	3.911	2.942	-0.63	-2.0	20.5	24.4/74	9.0
Feb. 10	21 45.08	-13 49.5	3.899	2.914	-0.64	-2.2	20.4	24.9/73	3.0
Feb. 20	22 01.41	-12 34.3	3.873	2.886	-0.65	-2.4	20.3	25.2/72	3.0
Mar. 2	22 17.77	-11 14.7	3.834	2.859	-0.66	-2.6	20.3	25.4/71	8.9
Mar. 12	22 34.12	-09 51.5	3.783	2.833	-0.67	-2.9	20.2	25.6/71	14.6
Mar. 22	22 50.42	-08 25.6	3.720	2.807	-0.69	-3.1	20.1	25.7/70	20.3
Apr. 1	23 06.64	-06 57.8	3.646	2.782	-0.70	-3.3	20.0	25.7/70	25.9
Apr. 11	23 22.75	-05 29.0	3.562	2.758	-0.72	-3.5	19.9	25.5/70	31.5
Apr. 21	23 38.72	-04 00.4	3.468	2.735	-0.74	-3.7	19.8	25.4/70	37.1
May 1	23 54.53	-02 32.6	3.367	2.712	-0.76	-3.8	19.6	25.1/70	42.6
May 11	00 10.14	-01 07.0	3.258	2.691	-0.79	-4.0	19.5	24.7/70	48.2
May 21	00 25.49	+00 15.6	3.142	2.671	-0.82	-4.2	19.4	24.2/71	53.7
May 31	00 40.54	+01 34.0	3.021	2.652	-0.85	-4.4	19.3	23.5/71	59.4
June 10	00 55.21	+02 47.2	2.895	2.634	-0.89	-4.5	19.1	22.7/72	65.1
June 20	01 09.40	+03 53.9	2.767	2.617	-0.93	-4.7	19.0	21.7/73	70.9
June 30	01 22.99	+04 53.2	2.635	2.601	-0.98	-4.9	18.8	20.5/75	76.9
July 10	01 35.83	+05 43.7	2.503	2.587	-1.03	-5.1	18.7	19.0/76	83.2
July 20	01 47.73	+06 24.5	2.371	2.574	-1.09	-5.3	18.5	17.2/78	89.7
July 30	01 58.47	+06 54.5	2.241	2.563	-1.16	-5.6	18.4	15.1/81	96.5
Aug. 9	02 07.78	+07 12.5	2.114	2.553	-1.23	-5.9	18.2	12.6/85	103.8
Aug. 19	02 15.39	+07 17.9	1.993	2.544	-1.31	-6.2	18.1	9.8/91	111.5
Aug. 29	02 21.00	+07 10.0	1.879	2.537	-1.40	-6.6	17.9	6.7/103	119.8
Sept. 8	02 24.33	+06 49.0	1.777	2.532	-1.49	-7.1	17.8	4.1/133	128.6
Sept. 18	02 25.21	+06 15.7	1.689	2.528	-1.58	-7.6	17.7	4.0/191	138.1
Sept. 28	02 23.60	+05 32.2	1.618	2.525	-1.67	-8.0	17.6	6.5/222	148.1
Oct. 8	02 19.75	+04 42.2	1.569	2.525	-1.73	-8.4	17.5	8.9/235	158.4
Oct. 18	02 14.22	+03 51.2	1.543	2.525	-1.77	-8.6	17.5	10.5/242	167.7
Oct. 28	02 07.81	+03 05.1	1.543	2.528	-1.77	-8.6	17.5	10.6/247	170.2
Nov. 7	02 01.52	+02 30.3	1.569	2.532	-1.74	-8.4	17.5	9.1/253	162.4
Nov. 17	01 56.30	+02 11.2	1.620	2.537	-1.67	-8.0	17.6	6.6/262	152.1
Nov. 27	01 52.87	+02 10.1	1.695	2.544	-1.58	-7.6	17.7	3.5/285	141.7
Dec. 7	01 51.69	+02 27.2	1.788	2.552	-1.48	-7.1	17.9	2.7/5	131.7
Dec. 17	01 52.91	+03 00.8	1.898	2.562	-1.38	-6.6	18.0	5.6/42	122.3
Dec. 27	01 56.48	+03 48.6	2.021	2.574	-1.29	-6.2	18.2	9.0/53	113.3
Jan. 6	02 02.22	+04 47.7	2.152	2.587	-1.21	-5.7	18.4	12.1/58	104.9
Jan. 16	02 09.89	+05 55.4	2.290	2.601	-1.13	-5.3	18.5	14.7/61	97.0
Jan. 26	02 19.26	+07 09.0	2.432	2.616	-1.07	-5.0	18.7	17.0/63	89.5
Feb. 5	02 30.09	+08 26.3	2.576	2.633	-1.01	-4.6	18.9	18.8/65	82.4
Feb. 15	02 42.16	+09 45.1	2.719	2.651	-0.97	-4.3	19.0	20.3/67	75.5
Feb. 25	02 55.31	+11 03.9	2.860	2.670	-0.92	-4.0	19.2	21.6/69	69.0
Mar. 7	03 09.36	+12 20.8	2.998	2.690	-0.89	-3.6	19.3	22.5/70	62.6
Mar. 17	03 24.17	+13 34.7	3.131	2.712	-0.86	-3.3	19.5	23.3/72	56.5
Mar. 27	03 39.63	+14 44.2	3.258	2.734	-0.83	-3.0	19.6	23.8/74	50.5

Comet 61P/Shajin-Schaldach

Epoch = 2022 June 30.0 TT
 T = 2022 Oct. 23.91021 TT
 Peri. = 221.69071 e = 0.4242877
 Node = 162.96398 2000.0 a = 3.6921553 AU
 Incl. = 6.00007 n = 0.13892619
 q = 2.1256192 AU P = 7.09 years

$$m1 = 12.0 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	19 37.12	-18 15.4	3.923	2.974	+1.64	+3.0	19.7	13.2
Jan. 11	19 53.64	-17 41.7	3.905	2.932	+1.67	+3.8	19.6	7.3
Jan. 21	20 10.44	-17 00.3	3.873	2.890	+1.69	+4.6	19.5	3.0
Jan. 31	20 27.44	-16 11.3	3.826	2.849	+1.71	+5.3	19.5	6.2
Feb. 10	20 44.58	-15 15.2	3.766	2.808	+1.72	+6.0	19.4	11.8
Feb. 20	21 01.79	-14 12.2	3.694	2.766	+1.72	+6.7	19.3	17.5
Mar. 2	21 19.01	-13 02.9	3.609	2.726	+1.72	+7.3	19.1	23.1
Mar. 12	21 36.21	-11 48.0	3.514	2.685	+1.72	+7.8	19.0	28.7
Mar. 22	21 53.34	-10 28.2	3.410	2.646	+1.71	+8.2	18.9	34.2
Apr. 1	22 10.38	-09 04.2	3.296	2.607	+1.70	+8.6	18.8	39.7
Apr. 11	22 27.29	-07 37.1	3.176	2.568	+1.68	+8.9	18.6	45.1
Apr. 21	22 44.05	-06 07.8	3.049	2.531	+1.67	+9.0	18.5	50.4
May 1	23 00.64	-04 37.2	2.917	2.494	+1.65	+9.1	18.3	55.8
May 11	23 17.02	-03 06.7	2.782	2.458	+1.62	+9.0	18.1	61.1
May 21	23 33.15	-01 37.5	2.643	2.424	+1.60	+8.8	18.0	66.5
May 31	23 48.98	+00 10.7	2.503	2.390	+1.56	+8.5	17.8	71.9
June 10	00 04.42	+01 11.9	2.363	2.358	+1.52	+8.0	17.6	77.3
June 20	00 19.39	+02 28.8	2.223	2.328	+1.47	+7.3	17.4	82.9
June 30	00 33.76	+03 38.5	2.085	2.299	+1.40	+6.5	17.2	88.7
July 10	00 47.34	+04 38.9	1.950	2.272	+1.31	+5.5	17.0	94.8
July 20	00 59.93	+05 28.1	1.818	2.247	+1.20	+4.2	16.8	101.1
July 30	01 11.26	+06 04.1	1.693	2.224	+1.05	+2.8	16.6	107.8
Aug. 9	01 21.00	+06 24.8	1.574	2.203	+0.87	+1.2	16.4	115.0
Aug. 19	01 28.83	+06 28.5	1.465	2.185	+0.66	-0.6	16.2	122.7
Aug. 29	01 34.38	+06 13.5	1.366	2.168	+0.42	-2.6	16.0	131.1
Sept. 8	01 37.36	+05 39.5	1.281	2.155	+0.15	-4.4	15.9	140.2
Sept. 18	01 37.68	+04 48.1	1.213	2.143	-0.11	-6.0	15.7	150.0
Sept. 28	01 35.51	+03 43.0	1.165	2.135	-0.34	-7.0	15.6	160.2
Oct. 8	01 31.41	+02 31.2	1.138	2.129	-0.48	-7.2	15.6	169.9
Oct. 18	01 26.33	+01 22.0	1.135	2.126	-0.52	-6.4	15.6	171.9
Oct. 28	01 21.40	+00 24.8	1.156	2.126	-0.44	-4.7	15.6	163.0
Nov. 7	01 17.76	+00 12.6	1.199	2.128	-0.26	-2.5	15.7	152.6
Nov. 17	01 16.21	+00 26.1	1.263	2.134	-0.02	0.0	15.8	142.4
Nov. 27	01 17.20	+00 15.4	1.345	2.142	+0.25	+2.4	16.0	132.8
Dec. 7	01 20.86	+00 17.6	1.441	2.152	+0.51	+4.4	16.1	123.9
Dec. 17	01 27.03	+01 09.4	1.550	2.166	+0.74	+6.1	16.3	115.6
Dec. 27	01 35.45	+02 16.1	1.668	2.181	+0.96	+7.4	16.5	107.9
Jan. 6	01 45.84	+03 34.1	1.793	2.200	+1.13	+8.3	16.7	100.7
Jan. 16	01 57.88	+04 59.6	1.924	2.220	+1.29	+8.8	16.9	93.9
Jan. 26	02 11.33	+06 29.7	2.059	2.243	+1.41	+9.2	17.1	87.4
Feb. 5	02 25.96	+08 01.8	2.197	2.267	+1.52	+9.2	17.3	81.3
Feb. 15	02 41.56	+09 33.4	2.335	2.294	+1.61	+9.1	17.4	75.3
Feb. 25	02 57.98	+11 02.6	2.474	2.323	+1.68	+8.7	17.6	69.6
Mar. 7	03 15.09	+12 27.6	2.611	2.353	+1.74	+8.2	17.8	64.0
Mar. 17	03 32.75	+13 47.1	2.747	2.384	+1.79	+7.6	18.0	58.6
Mar. 27	03 50.87	+14 59.8	2.879	2.417	+1.83	+6.9	18.1	53.2

Comet 204P/LINEAR-NEAT

Epoch = 2022 June 30.0 TT
 T = 2022 Nov. 16.84876 TT
 Peri. = 356.63847 e = 0.4877870
 Node = 108.50073 2000.0 a = 3.5814075 AU
 Incl. = 6.59620 n = 0.14541977
 q = 1.8344435 AU P = 6.78 years

$$m1 = 11.6 + 5 \log(\Delta) + 20.0 \log(r(t-60))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	23 12.76	-11 20.0	3.369	3.079	+0.93	+7.0	.	64.6
Jan. 11	23 22.59	-10 06.8	3.447	3.029	+1.04	+7.7	.	57.2
Jan. 21	23 33.47	-08 47.3	3.514	2.979	+1.14	+8.3	.	50.0
Jan. 31	23 45.29	-07 22.3	3.569	2.929	+1.23	+8.8	.	43.2
Feb. 10	23 57.94	-05 52.4	3.610	2.879	+1.31	+9.2	.	36.6
Feb. 20	00 11.33	-04 18.5	3.638	2.828	+1.38	+9.6	.	30.3
Mar. 2	00 25.41	-02 41.3	3.652	2.778	+1.44	+9.9	.	24.2
Mar. 12	00 40.12	-01 01.4	3.652	2.727	+1.50	+10.1	.	18.4
Mar. 22	00 55.42	+00 40.3	3.638	2.676	+1.56	+10.2	.	12.9
Apr. 1	01 11.31	+02 23.1	3.611	2.625	+1.62	+10.3	.	8.0
Apr. 11	01 27.79	+04 06.2	3.572	2.575	+1.68	+10.3	.	4.9
Apr. 21	01 44.84	+05 48.6	3.521	2.525	+1.74	+10.2	.	6.3
May 1	02 02.48	+07 29.6	3.459	2.475	+1.80	+10.0	.	10.3
May 11	02 20.73	+09 08.3	3.388	2.425	+1.86	+9.7	.	14.8
May 21	02 39.60	+10 43.5	3.308	2.377	+1.92	+9.3	.	19.3
May 31	02 59.11	+12 14.3	3.220	2.329	+1.99	+8.8	.	23.8
June 10	03 19.28	+13 39.7	3.126	2.282	+2.05	+8.2	.	28.1
June 20	03 40.09	+14 58.4	3.026	2.236	+2.12	+7.5	22.0	32.4
June 30	04 01.57	+16 09.5	2.922	2.191	+2.18	+6.6	21.8	36.6
July 10	04 23.67	+17 11.7	2.815	2.148	+2.24	+5.7	21.5	40.7
July 20	04 46.35	+18 04.1	2.704	2.107	+2.30	+4.7	21.3	44.7
July 30	05 09.57	+18 45.6	2.593	2.067	+2.35	+3.5	21.0	48.6
Aug. 9	05 33.23	+19 15.4	2.480	2.030	+2.39	+2.3	20.7	52.6
Aug. 19	05 57.21	+19 33.1	2.368	1.995	+2.41	+1.1	20.5	56.5
Aug. 29	06 21.41	+19 38.4	2.256	1.963	+2.42	-0.2	20.2	60.4
Sept. 8	06 45.63	+19 31.5	2.145	1.934	+2.42	-1.3	19.9	64.3
Sept. 18	07 09.72	+19 13.0	2.036	1.909	+2.40	-2.4	19.6	68.3
Sept. 28	07 33.49	+18 44.2	1.928	1.887	+2.35	-3.4	19.3	72.5
Oct. 8	07 56.71	+18 06.8	1.823	1.868	+2.28	-4.1	19.1	76.8
Oct. 18	08 19.19	+17 23.0	1.721	1.853	+2.20	-4.6	18.8	81.3
Oct. 28	08 40.67	+16 35.9	1.622	1.843	+2.08	-4.8	18.5	86.0
Nov. 7	09 00.89	+15 49.0	1.526	1.837	+1.94	-4.5	18.2	91.2
Nov. 17	09 19.57	+15 06.0	1.434	1.834	+1.77	-3.9	18.0	96.7
Nov. 27	09 36.38	+14 31.4	1.346	1.837	+1.56	-2.8	17.8	102.8
Dec. 7	09 50.94	+14 09.7	1.264	1.843	+1.32	-1.3	17.5	109.4
Dec. 17	10 02.85	+14 05.4	1.188	1.854	+1.03	+0.7	17.3	116.8
Dec. 27	10 11.68	+14 22.1	1.121	1.868	+0.70	+2.9	17.2	125.1
Jan. 6	10 17.07	+15 01.9	1.065	1.887	+0.34	+5.2	17.0	134.2
Jan. 16	10 18.85	+16 03.6	1.023	1.909	-0.02	+7.2	16.9	144.2
Jan. 26	10 17.16	+17 22.3	0.998	1.935	-0.34	+8.5	16.9	154.8
Feb. 5	10 12.69	+18 48.1	0.995	1.964	-0.56	+8.5	16.9	165.3
Feb. 15	10 06.62	+20 08.9	1.014	1.996	-0.64	+7.3	17.0	172.0
Feb. 25	10 00.40	+21 13.5	1.056	2.031	-0.57	+5.2	17.1	166.1
Mar. 7	09 55.49	+21 54.6	1.122	2.068	-0.38	+2.7	17.4	156.1
Mar. 17	09 52.85	+22 10.3	1.208	2.108	-0.12	+0.2	17.6	146.0
Mar. 27	09 52.94	+22 02.3	1.313	2.149	+0.16	-2.0	17.9	136.4

Comet 244P/Scotti

Epoch = 2022 June 30.0 TT
 T = 2022 Nov. 17.02310 TT
 Peri. = 93.07603 e = 0.1991278
 Node = 353.99101 2000.0 a = 4.8952553 AU
 Incl. = 2.25937 n = 0.09099993
 q = 3.9204739 AU P = 10.83 years

$$m_1 = 4.7 + 5 \log(\Delta) + 17.5 \log(r(t-200))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	01 52.54	+13 37.9	3.652	4.105	+0.16	+0.6	18.7	110.7
Jan. 11	01 54.86	+13 47.9	3.789	4.094	+0.32	+1.5	18.8	101.1
Jan. 21	01 58.68	+14 05.9	3.930	4.084	+0.46	+2.2	18.8	91.9
Jan. 31	02 03.89	+14 31.0	4.073	4.073	+0.59	+2.9	18.9	83.1
Feb. 10	02 10.34	+15 02.4	4.213	4.064	+0.71	+3.4	18.9	74.6
Feb. 20	02 17.90	+15 38.8	4.347	4.054	+0.81	+3.9	19.0	66.4
Mar. 2	02 26.44	+16 19.1	4.473	4.045	+0.90	+4.2	19.0	58.5
Mar. 12	02 35.83	+17 02.3	4.588	4.036	+0.98	+4.4	19.0	50.9
Mar. 22	02 45.95	+17 47.4	4.691	4.027	+1.05	+4.6	19.1	43.5
Apr. 1	02 56.72	+18 33.3	4.781	4.019	+1.11	+4.6	19.1	36.2
Apr. 11	03 08.03	+19 19.3	4.855	4.010	+1.16	+4.6	19.1	29.2
Apr. 21	03 19.80	+20 04.5	4.914	4.003	+1.20	+4.4	19.1	22.3
May 1	03 31.95	+20 48.2	4.957	3.995	+1.23	+4.3	19.1	15.5
May 11	03 44.41	+21 29.9	4.983	3.988	+1.26	+4.0	19.1	8.9
May 21	03 57.09	+22 08.9	4.992	3.981	+1.28	+3.7	19.1	2.7
May 31	04 09.93	+22 45.0	4.984	3.975	+1.29	+3.4	19.0	4.8
June 10	04 22.84	+23 17.7	4.960	3.969	+1.29	+3.1	19.0	11.2
June 20	04 35.74	+23 46.7	4.919	3.963	+1.29	+2.7	19.0	17.7
June 30	04 48.56	+24 12.1	4.863	3.958	+1.27	+2.3	18.9	24.2
July 10	05 01.19	+24 33.7	4.791	3.953	+1.25	+1.9	18.9	30.9
July 20	05 13.54	+24 51.5	4.705	3.948	+1.22	+1.6	18.8	37.6
July 30	05 25.51	+25 05.8	4.605	3.944	+1.17	+1.2	18.7	44.4
Aug. 9	05 36.97	+25 16.9	4.492	3.940	+1.11	+0.9	18.7	51.3
Aug. 19	05 47.80	+25 25.1	4.369	3.936	+1.04	+0.7	18.6	58.5
Aug. 29	05 57.86	+25 30.9	4.236	3.933	+0.96	+0.5	18.5	65.9
Sept. 8	06 06.99	+25 35.0	4.096	3.930	+0.86	+0.3	18.4	73.5
Sept. 18	06 15.03	+25 37.9	3.950	3.927	+0.74	+0.3	18.3	81.4
Sept. 28	06 21.81	+25 40.4	3.802	3.925	+0.60	+0.3	18.2	89.6
Oct. 8	06 27.12	+25 43.2	3.653	3.924	+0.44	+0.3	18.1	98.3
Oct. 18	06 30.80	+25 46.8	3.508	3.922	+0.27	+0.4	18.0	107.3
Oct. 28	06 32.69	+25 51.6	3.371	3.921	+0.08	+0.6	17.9	116.8
Nov. 7	06 32.66	+25 57.6	3.245	3.921	-0.11	+0.7	17.8	126.8
Nov. 17	06 30.73	+26 04.6	3.136	3.920	-0.30	+0.7	17.7	137.3
Nov. 27	06 26.96	+26 11.8	3.047	3.921	-0.47	+0.7	17.6	148.2
Dec. 7	06 21.65	+26 18.2	2.983	3.921	-0.60	+0.5	17.6	159.5
Dec. 17	06 15.26	+26 22.7	2.948	3.922	-0.68	+0.3	17.5	170.8
Dec. 27	06 08.36	+26 24.4	2.942	3.924	-0.69	0.0	17.5	175.8
Jan. 6	06 01.64	+26 23.0	2.967	3.925	-0.64	-0.3	17.5	165.0
Jan. 16	05 55.76	+26 18.9	3.022	3.927	-0.52	-0.5	17.6	153.6
Jan. 26	05 51.22	+26 13.0	3.103	3.930	-0.36	-0.7	17.6	142.5
Feb. 5	05 48.41	+26 06.0	3.207	3.933	-0.18	-0.7	17.7	131.8
Feb. 15	05 47.50	+25 59.0	3.329	3.936	+0.02	-0.7	17.7	121.4
Feb. 25	05 48.52	+25 52.2	3.466	3.940	+0.21	-0.6	17.8	111.6
Mar. 7	05 51.42	+25 46.0	3.612	3.943	+0.39	-0.6	17.9	102.2
Mar. 17	05 56.02	+25 40.1	3.764	3.948	+0.55	-0.6	18.0	93.3
Mar. 27	06 02.15	+25 34.0	3.917	3.952	+0.69	-0.6	18.1	84.7

Comet 176P/(118401) LINEAR

Epoch = 2022 June 30.0 TT
 T = 2022 Nov. 21.70368 TT
 Peri. = 34.36397 e = 0.1934521
 Node = 346.09270 2000.0 a = 3.1990648 AU
 Incl. = 0.23336 n = 0.17225408
 q = 2.5801990 AU P = 5.72 years

H = 14.8 , G = 0.15

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	V	Elong.
2022/23	h m	° '			m		°
Jan. 1	20 00.25	-20 41.3	3.870	2.948	+1.66 +4.8	20.5	17.7
Jan. 11	20 16.86	-19 50.4	3.887	2.930	+1.67 +5.5	20.4	11.5
Jan. 21	20 33.56	-18 52.8	3.890	2.911	+1.67 +6.1	20.3	5.4
Jan. 31	20 50.25	-17 49.0	3.879	2.893	+1.67 +6.7	20.1	0.7
Feb. 10	21 06.88	-16 39.3	3.853	2.876	+1.66 +7.3	20.3	6.7
Feb. 20	21 23.37	-15 24.5	3.815	2.858	+1.64 +7.7	20.4	12.6
Mar. 2	21 39.67	-14 05.1	3.763	2.841	+1.62 +8.2	20.4	18.5
Mar. 12	21 55.74	-12 41.9	3.699	2.824	+1.59 +8.5	20.5	24.4
Mar. 22	22 11.53	-11 15.8	3.623	2.807	+1.56 +8.7	20.5	30.2
Apr. 1	22 27.00	-09 47.4	3.536	2.791	+1.53 +8.9	20.5	36.1
Apr. 11	22 42.11	-08 17.9	3.439	2.775	+1.49 +9.0	20.5	41.9
Apr. 21	22 56.81	-06 48.0	3.334	2.760	+1.45 +9.0	20.5	47.7
May 1	23 11.06	-05 18.7	3.220	2.745	+1.40 +8.9	20.4	53.6
May 11	23 24.79	-03 51.1	3.099	2.730	+1.34 +8.6	20.4	59.6
May 21	23 37.93	-02 26.2	2.972	2.716	+1.28 +8.3	20.3	65.7
May 31	23 50.39	-01 04.9	2.841	2.703	+1.20 +7.9	20.3	71.9
June 10	00 02.05	+00 11.4	2.706	2.690	+1.12 +7.3	20.2	78.3
June 20	00 12.77	+01 21.6	2.569	2.678	+1.01 +6.6	20.1	84.9
June 30	00 22.38	+02 24.4	2.433	2.666	+0.89 +5.8	19.9	91.8
July 10	00 30.65	+03 18.5	2.297	2.655	+0.75 +4.9	19.8	99.1
July 20	00 37.38	+04 02.3	2.166	2.645	+0.58 +3.8	19.6	106.8
July 30	00 42.28	+04 34.5	2.040	2.635	+0.38 +2.5	19.5	115.0
Aug. 9	00 45.11	+04 53.4	1.923	2.626	+0.16 +1.1	19.3	123.8
Aug. 19	00 45.68	+04 58.1	1.818	2.618	-0.07 -0.3	19.1	133.3
Aug. 29	00 43.88	+04 47.9	1.729	2.611	-0.31 -1.8	18.8	143.4
Sept. 8	00 39.84	+04 23.5	1.660	2.604	-0.51 -3.1	18.6	154.2
Sept. 18	00 33.97	+03 47.2	1.613	2.598	-0.67 -4.1	18.4	165.5
Sept. 28	00 26.92	+03 03.1	1.591	2.593	-0.73 -4.6	18.0	177.2
Oct. 8	00 19.65	+02 17.2	1.597	2.589	-0.70 -4.4	18.2	171.0
Oct. 18	00 13.12	+01 35.7	1.629	2.585	-0.58 -3.7	18.5	159.4
Oct. 28	00 08.16	+01 04.1	1.685	2.583	-0.38 -2.4	18.7	148.1
Nov. 7	00 05.38	+00 46.4	1.764	2.581	-0.15 -0.9	18.9	137.3
Nov. 17	00 05.03	+00 44.3	1.860	2.580	+0.10 +0.7	19.1	127.2
Nov. 27	00 07.13	+00 58.1	1.970	2.580	+0.34 +2.2	19.3	117.6
Dec. 7	00 11.57	+01 27.0	2.091	2.581	+0.56 +3.6	19.5	108.7
Dec. 17	00 18.09	+02 09.2	2.218	2.583	+0.76 +4.9	19.7	100.3
Dec. 27	00 26.43	+03 03.0	2.350	2.586	+0.93 +6.0	19.8	92.4
Jan. 6	00 36.35	+04 06.6	2.484	2.589	+1.07 +6.8	19.9	84.9
Jan. 16	00 47.60	+05 17.9	2.617	2.593	+1.19 +7.5	20.0	77.8
Jan. 26	01 00.00	+06 35.4	2.748	2.598	+1.30 +8.0	20.1	70.9
Feb. 5	01 13.38	+07 57.3	2.875	2.604	+1.38 +8.4	20.2	64.4
Feb. 15	01 27.58	+09 22.0	2.996	2.611	+1.46 +8.6	20.2	58.0
Feb. 25	01 42.51	+10 48.1	3.111	2.618	+1.53 +8.6	20.3	51.9
Mar. 7	01 58.07	+12 14.1	3.218	2.627	+1.59 +8.6	20.3	45.9
Mar. 17	02 14.17	+13 38.9	3.318	2.636	+1.64 +8.4	20.3	40.1
Mar. 27	02 30.76	+15 01.2	3.408	2.645	+1.68 +8.1	20.3	34.4

Comet 118P/Shoemaker-Levy

Epoch = 2022 June 30.0 TT
 T = 2022 Nov. 24.36581 TT
 Peri. = 314.81860 e = 0.4535418
 Node = 142.11236 2000.0 a = 3.3470183 AU
 Incl. = 10.09038 n = 0.16095962
 q = 1.8290056 AU P = 6.12 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	22 34.64	-13 31.4	3.488	3.035	+1.12 +6.0	19.9	55.1
Jan. 11	22 46.27	-12 27.9	3.556	2.988	+1.21 +6.7	19.9	48.0
Jan. 21	22 58.74	-11 18.2	3.611	2.942	+1.29 +7.3	19.8	41.1
Jan. 31	23 11.97	-10 02.7	3.652	2.895	+1.36 +7.8	19.7	34.5
Feb. 10	23 25.84	-08 42.2	3.679	2.848	+1.42 +8.3	19.6	28.2
Feb. 20	23 40.30	-07 17.4	3.692	2.800	+1.48 +8.7	19.5	22.1
Mar. 2	23 55.29	-05 49.1	3.690	2.753	+1.53 +9.0	19.3	16.3
Mar. 12	00 10.77	-04 17.9	3.674	2.705	+1.57 +9.2	19.2	10.9
Mar. 22	00 26.72	-02 44.7	3.644	2.657	+1.62 +9.4	19.0	6.5
Apr. 1	00 43.13	-01 10.2	3.602	2.609	+1.67 +9.5	18.9	5.5
Apr. 11	00 59.99	+00 24.6	3.547	2.561	+1.71 +9.5	18.7	8.8
Apr. 21	01 17.31	+01 58.9	3.481	2.514	+1.76 +9.4	18.5	13.3
May 1	01 35.11	+03 31.8	3.405	2.467	+1.81 +9.2	18.3	18.0
May 11	01 53.39	+05 02.2	3.320	2.420	+1.85 +8.9	18.1	22.7
May 21	02 12.16	+06 29.2	3.227	2.373	+1.91 +8.5	17.9	27.3
May 31	02 31.45	+07 51.8	3.127	2.327	+1.96 +8.0	17.7	31.8
June 10	02 51.25	+09 08.7	3.021	2.282	+2.01 +7.3	17.5	36.3
June 20	03 11.56	+10 18.8	2.910	2.238	+2.06 +6.6	17.2	40.6
June 30	03 32.38	+11 21.1	2.796	2.195	+2.11 +5.7	17.0	44.9
July 10	03 53.66	+12 14.3	2.679	2.154	+2.15 +4.8	16.8	49.0
July 20	04 15.37	+12 57.5	2.560	2.113	+2.19 +3.7	16.5	53.1
July 30	04 37.43	+13 29.6	2.441	2.075	+2.22 +2.6	16.3	57.2
Aug. 9	04 59.74	+13 49.8	2.321	2.038	+2.24 +1.4	16.0	61.3
Aug. 19	05 22.18	+13 57.8	2.203	2.004	+2.25 +0.1	15.8	65.3
Aug. 29	05 44.61	+13 53.2	2.085	1.972	+2.24 -1.1	15.6	69.4
Sept. 8	06 06.85	+13 36.4	1.970	1.943	+2.21 -2.3	15.3	73.6
Sept. 18	06 28.70	+13 08.0	1.857	1.916	+2.16 -3.4	15.1	77.9
Sept. 28	06 49.96	+12 29.4	1.746	1.893	+2.08 -4.4	14.9	82.3
Oct. 8	07 10.35	+11 42.5	1.639	1.873	+1.98 -5.0	14.6	86.9
Oct. 18	07 29.64	+10 50.1	1.535	1.857	+1.86 -5.4	14.4	91.8
Oct. 28	07 47.51	+09 55.2	1.435	1.844	+1.70 -5.5	14.2	97.1
Nov. 7	08 03.62	+09 02.2	1.339	1.835	+1.50 -5.0	14.0	102.9
Nov. 17	08 17.62	+08 16.0	1.249	1.830	+1.27 -4.1	13.9	109.2
Nov. 27	08 29.10	+07 41.9	1.165	1.829	+0.99 -2.5	13.7	116.2
Dec. 7	08 37.65	+07 26.4	1.089	1.832	+0.68 -0.3	13.6	124.0
Dec. 17	08 42.95	+07 35.2	1.023	1.839	+0.34 +2.4	13.5	132.7
Dec. 27	08 44.78	+08 13.2	0.971	1.850	0.00 +5.5	13.4	142.5
Jan. 6	08 43.34	+09 22.2	0.934	1.865	-0.30 +8.5	13.4	153.1
Jan. 16	08 39.29	+10 58.5	0.917	1.883	-0.51 +10.8	13.4	164.2
Jan. 26	08 33.75	+12 53.3	0.923	1.905	-0.58 +12.0	13.5	173.9
Feb. 5	08 28.28	+14 53.4	0.952	1.930	-0.48 +11.8	13.7	169.4
Feb. 15	08 24.31	+16 45.7	1.005	1.958	-0.27 +10.4	13.9	158.5
Feb. 25	08 22.87	+18 20.8	1.080	1.989	+0.02 +8.3	14.2	147.8
Mar. 7	08 24.49	+19 33.8	1.173	2.022	+0.33 +6.0	14.5	137.9
Mar. 17	08 29.13	+20 23.6	1.283	2.057	+0.62 +3.7	14.8	128.8
Mar. 27	08 36.52	+20 51.4	1.405	2.095	+0.87 +1.6	15.2	120.4

Comet P/2010 T020 (LINEAR-Grauer)

Epoch = 2022 June 30.0 TT
 T = 2022 Nov. 26.32250 TT
 Peri. = 267.33368 e = 0.0556100
 Node = 43.28597 2000.0 a = 5.8328864 AU
 Incl. = 2.47875 n = 0.06996467
 q = 5.5085196 AU P = 14.09 years

$$m1 = 8.0 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation	m1	Mot. /PA	Elong.
2022/23	h m	° '			for T=+1 day			°
Jan. 1	19 02.48	-24 31.5	6.517	5.537	-0.29 -0.3	19.5	13.2/84	4.4
Jan. 11	19 12.07	-24 17.2	6.516	5.536	-0.29 -0.4	19.5	13.2/83	4.5
Jan. 21	19 21.57	-24 01.2	6.492	5.534	-0.29 -0.5	19.5	13.0/83	12.2
Jan. 31	19 30.90	-23 43.8	6.447	5.532	-0.29 -0.5	19.5	12.8/82	20.1
Feb. 10	19 39.95	-23 25.4	6.381	5.531	-0.29 -0.6	19.5	12.3/81	28.2
Feb. 20	19 48.62	-23 06.5	6.296	5.529	-0.29 -0.7	19.4	11.8/81	36.2
Mar. 2	19 56.83	-22 47.6	6.193	5.528	-0.29 -0.8	19.4	11.1/80	44.4
Mar. 12	20 04.46	-22 29.2	6.074	5.527	-0.30 -0.8	19.3	10.3/80	52.6
Mar. 22	20 11.43	-22 11.9	5.941	5.525	-0.30 -0.9	19.3	9.3/80	60.9
Apr. 1	20 17.63	-21 56.3	5.797	5.524	-0.31 -0.9	19.2	8.1/80	69.3
Apr. 11	20 22.97	-21 43.2	5.645	5.523	-0.32 -1.0	19.2	6.8/80	77.9
Apr. 21	20 27.35	-21 33.1	5.488	5.521	-0.32 -1.1	19.1	5.4/81	86.7
May 1	20 30.68	-21 26.6	5.330	5.520	-0.33 -1.1	19.1	3.8/83	95.6
May 11	20 32.87	-21 24.1	5.175	5.519	-0.34 -1.2	19.0	2.2/89	104.8
May 21	20 33.87	-21 25.8	5.026	5.518	-0.35 -1.2	18.9	0.6/131	114.2
May 31	20 33.65	-21 31.8	4.888	5.517	-0.36 -1.3	18.9	1.5/236	123.9
June 10	20 32.22	-21 41.8	4.765	5.516	-0.38 -1.3	18.8	3.1/247	133.8
June 20	20 29.65	-21 55.2	4.662	5.515	-0.39 -1.3	18.8	4.6/251	143.9
June 30	20 26.08	-22 11.2	4.581	5.515	-0.39 -1.3	18.7	5.9/253	154.3
July 10	20 21.71	-22 28.5	4.527	5.514	-0.40 -1.3	18.7	6.7/255	164.7
July 20	20 16.84	-22 45.9	4.500	5.513	-0.41 -1.2	18.7	7.2/256	174.8
July 30	20 11.78	-23 02.0	4.503	5.512	-0.41 -1.2	18.7	7.1/258	172.9
Aug. 9	20 06.91	-23 15.9	4.536	5.512	-0.40 -1.1	18.7	6.5/259	162.6
Aug. 19	20 02.55	-23 26.6	4.597	5.511	-0.40 -1.1	18.7	5.5/261	152.1
Aug. 29	19 59.00	-23 33.7	4.683	5.511	-0.39 -1.0	18.8	4.2/263	141.6
Sept. 8	19 56.49	-23 36.9	4.792	5.510	-0.38 -1.0	18.8	2.6/267	131.4
Sept. 18	19 55.17	-23 36.3	4.919	5.510	-0.37 -0.9	18.9	0.9/287	121.4
Sept. 28	19 55.11	-23 32.1	5.060	5.509	-0.36 -0.9	18.9	1.1/55	111.7
Oct. 8	19 56.34	-23 24.2	5.212	5.509	-0.35 -0.9	19.0	2.8/70	102.1
Oct. 18	19 58.79	-23 13.0	5.369	5.509	-0.34 -0.9	19.1	4.5/73	92.8
Oct. 28	20 02.40	-22 58.6	5.528	5.509	-0.33 -0.9	19.1	6.0/74	83.7
Nov. 7	20 07.07	-22 41.0	5.684	5.509	-0.32 -0.9	19.2	7.4/75	74.9
Nov. 17	20 12.66	-22 20.4	5.834	5.509	-0.31 -0.9	19.2	8.7/75	66.2
Nov. 27	20 19.07	-21 56.8	5.974	5.509	-0.30 -0.9	19.3	9.8/75	57.6
Dec. 7	20 26.17	-21 30.3	6.102	5.509	-0.29 -1.0	19.3	10.7/75	49.2
Dec. 17	20 33.84	-21 01.1	6.215	5.509	-0.29 -1.0	19.4	11.5/75	40.9
Dec. 27	20 41.95	-20 29.3	6.311	5.509	-0.28 -1.0	19.4	12.2/74	32.7
Jan. 6	20 50.40	-19 55.1	6.388	5.509	-0.28 -1.1	19.4	12.6/74	24.6
Jan. 16	20 59.08	-19 18.9	6.445	5.509	-0.27 -1.1	19.5	13.0/73	16.6
Jan. 26	21 07.89	-18 40.8	6.481	5.510	-0.27 -1.2	19.5	13.2/73	8.7
Feb. 5	21 16.74	-18 01.4	6.495	5.510	-0.27 -1.2	19.5	13.2/72	2.2
Feb. 15	21 25.53	-17 21.1	6.487	5.510	-0.26 -1.3	19.5	13.1/72	7.7
Feb. 25	21 34.18	-16 40.3	6.458	5.511	-0.26 -1.3	19.5	12.9/72	15.5
Mar. 7	21 42.61	-15 59.6	6.408	5.511	-0.26 -1.3	19.4	12.6/71	23.3
Mar. 17	21 50.74	-15 19.5	6.338	5.512	-0.26 -1.4	19.4	12.1/71	31.2
Mar. 27	21 58.49	-14 40.7	6.250	5.512	-0.27 -1.4	19.4	11.5/71	39.2

Comet P/2007 A2 (Christensen)

Epoch = 2022 June 30.0 TT
 T = 2022 Nov. 30.17978 TT
 Peri. = 186.68341 e = 0.5582709
 Node = 300.91309 2000.0 a = 6.3358350 AU
 Incl. = 26.48911 n = 0.06180140
 q = 2.7987227 AU P = 15.95 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation		m1	Mot. /PA	Elong.
2022/23	h m	° ' "			for T=+1 day			' °	°
Jan. 1	02 04.26	+43 18.8	3.119	3.707	-0.81	-3.0	21.2	8.4/167	119.8
Jan. 11	02 07.08	+41 59.7	3.188	3.663	-0.78	-2.7	21.2	8.8/148	111.4
Jan. 21	02 12.20	+40 49.1	3.268	3.620	-0.75	-2.4	21.2	9.7/132	103.1
Jan. 31	02 19.39	+39 48.6	3.356	3.578	-0.73	-2.0	21.2	11.0/120	94.9
Feb. 10	02 28.45	+38 58.6	3.447	3.536	-0.72	-1.6	21.2	12.5/111	87.0
Feb. 20	02 39.12	+38 18.7	3.539	3.494	-0.72	-1.2	21.2	14.0/104	79.4
Mar. 2	02 51.22	+37 47.6	3.629	3.454	-0.71	-0.8	21.2	15.4/100	72.0
Mar. 12	03 04.58	+37 24.0	3.715	3.413	-0.71	-0.5	21.2	16.8/97	64.9
Mar. 22	03 19.03	+37 06.0	3.794	3.374	-0.72	-0.1	21.2	18.0/95	58.0
Apr. 1	03 34.44	+36 51.9	3.865	3.335	-0.72	+0.3	21.2	19.1/94	51.4
Apr. 11	03 50.69	+36 39.9	3.927	3.297	-0.73	+0.7	21.2	20.1/93	45.1
Apr. 21	04 07.64	+36 28.4	3.979	3.260	-0.73	+1.1	21.1	20.9/93	39.0
May 1	04 25.21	+36 15.8	4.020	3.224	-0.74	+1.6	21.1	21.7/94	33.1
May 11	04 43.28	+36 00.7	4.050	3.189	-0.74	+2.0	21.1	22.3/94	27.5
May 21	05 01.74	+35 41.7	4.068	3.155	-0.74	+2.5	21.0	22.8/95	22.2
May 31	05 20.49	+35 17.8	4.075	3.122	-0.74	+2.9	21.0	23.3/97	17.4
June 10	05 39.41	+34 48.2	4.069	3.090	-0.74	+3.4	20.9	23.6/98	13.3
June 20	05 58.40	+34 12.1	4.052	3.060	-0.74	+3.9	20.9	23.9/99	10.8
June 30	06 17.36	+33 28.9	4.022	3.030	-0.74	+4.4	20.8	24.1/101	10.9
July 10	06 36.17	+32 38.4	3.982	3.003	-0.73	+4.9	20.8	24.2/103	13.5
July 20	06 54.74	+31 40.2	3.930	2.977	-0.73	+5.4	20.7	24.3/105	17.5
July 30	07 12.98	+30 34.5	3.867	2.952	-0.72	+5.9	20.6	24.3/107	22.2
Aug. 9	07 30.79	+29 21.3	3.793	2.929	-0.71	+6.4	20.6	24.2/108	27.3
Aug. 19	07 48.08	+28 00.9	3.710	2.908	-0.70	+7.0	20.5	24.0/110	32.5
Aug. 29	08 04.78	+26 33.7	3.616	2.888	-0.70	+7.5	20.4	23.7/112	38.0
Sept. 8	08 20.79	+25 00.0	3.514	2.870	-0.69	+8.0	20.3	23.3/114	43.7
Sept. 18	08 36.02	+23 20.4	3.403	2.854	-0.69	+8.5	20.2	22.8/117	49.5
Sept. 28	08 50.40	+21 35.6	3.285	2.840	-0.69	+9.0	20.1	22.1/119	55.5
Oct. 8	09 03.81	+19 46.0	3.160	2.828	-0.69	+9.5	20.0	21.3/122	61.8
Oct. 18	09 16.13	+17 52.5	3.030	2.818	-0.70	+10.0	19.9	20.3/125	68.3
Oct. 28	09 27.22	+15 55.6	2.896	2.810	-0.71	+10.6	19.8	19.1/128	75.1
Nov. 7	09 36.91	+13 56.2	2.760	2.804	-0.73	+11.1	19.7	17.6/133	82.3
Nov. 17	09 45.02	+11 55.2	2.623	2.801	-0.75	+11.7	19.6	16.1/139	89.8
Nov. 27	09 51.34	+09 53.3	2.489	2.799	-0.79	+12.2	19.4	14.4/148	97.8
Dec. 7	09 55.62	+07 52.0	2.360	2.799	-0.83	+12.8	19.3	12.9/159	106.2
Dec. 17	09 57.67	+05 52.5	2.239	2.802	-0.87	+13.3	19.2	11.8/175	115.1
Dec. 27	09 57.30	+03 56.9	2.130	2.806	-0.93	+13.9	19.1	11.6/193	124.4
Jan. 6	09 54.45	+02 07.4	2.038	2.813	-0.99	+14.4	19.0	12.2/211	134.2
Jan. 16	09 49.27	+00 27.0	1.965	2.822	-1.04	+14.8	19.0	13.4/225	144.1
Jan. 26	09 42.11	-01 01.2	1.917	2.832	-1.08	+15.1	18.9	14.4/236	153.5
Feb. 5	09 33.67	-02 14.6	1.895	2.845	-1.11	+15.2	18.9	14.7/244	160.8
Feb. 15	09 24.84	-03 11.8	1.902	2.860	-1.12	+15.2	19.0	13.9/250	162.5
Feb. 25	09 16.58	-03 53.1	1.938	2.876	-1.10	+15.0	19.0	11.8/254	157.3
Mar. 7	09 09.75	-04 21.0	2.000	2.895	-1.06	+14.6	19.1	8.9/256	148.9
Mar. 17	09 04.95	-04 39.0	2.085	2.915	-1.01	+14.0	19.2	5.5/255	139.6
Mar. 27	09 02.49	-04 51.2	2.191	2.937	-0.95	+13.4	19.4	2.0/238	130.4

Comet 129P/Shoemaker-Levy

Epoch = 2022 June 30.0 TT
 T = 2022 Nov. 30.51683 TT
 Peri. = 307.50135 e = 0.0845425
 Node = 184.86573 2000.0 a = 4.2867662 AU
 Incl. = 3.44226 n = 0.11104765
 q = 3.9243523 AU P = 8.88 years

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	05 40.37	+18 51.8	3.054	4.010	-0.64 0.0	19.7	164.5
Jan. 11	05 34.40	+18 52.5	3.103	4.005	-0.53 +0.2	19.7	153.2
Jan. 21	05 29.70	+18 55.5	3.179	4.000	-0.39 +0.4	19.7	142.0
Jan. 31	05 26.58	+19 00.9	3.278	3.996	-0.22 +0.7	19.8	131.2
Feb. 10	05 25.26	+19 08.7	3.395	3.991	-0.03 +0.9	19.9	120.8
Feb. 20	05 25.79	+19 18.5	3.527	3.987	+0.15 +1.1	19.9	110.8
Mar. 2	05 28.11	+19 29.6	3.667	3.983	+0.33 +1.2	20.0	101.4
Mar. 12	05 32.12	+19 41.6	3.813	3.979	+0.49 +1.2	20.1	92.3
Mar. 22	05 37.65	+19 53.4	3.959	3.975	+0.63 +1.2	20.2	83.7
Apr. 1	05 44.52	+20 04.5	4.103	3.971	+0.76 +1.0	20.2	75.4
Apr. 11	05 52.58	+20 13.9	4.241	3.967	+0.86 +0.8	20.3	67.5
Apr. 21	06 01.65	+20 21.0	4.372	3.964	+0.96 +0.6	20.4	59.9
May 1	06 11.57	+20 25.1	4.493	3.961	+1.03 +0.2	20.4	52.5
May 11	06 22.22	+20 25.9	4.602	3.957	+1.10 -0.1	20.5	45.3
May 21	06 33.44	+20 22.7	4.698	3.954	+1.15 -0.5	20.5	38.3
May 31	06 45.12	+20 15.5	4.781	3.951	+1.19 -1.0	20.5	31.4
June 10	06 57.15	+20 03.8	4.848	3.948	+1.22 -1.4	20.6	24.7
June 20	07 09.43	+19 47.7	4.899	3.946	+1.24 -1.9	20.6	18.1
June 30	07 21.87	+19 27.2	4.934	3.943	+1.25 -2.3	20.6	11.7
July 10	07 34.38	+19 02.3	4.952	3.941	+1.25 -2.7	20.6	5.5
July 20	07 46.88	+18 33.2	4.953	3.939	+1.25 -3.1	20.6	3.1
July 30	07 59.28	+18 00.2	4.937	3.937	+1.23 -3.5	20.6	8.7
Aug. 9	08 11.52	+17 23.7	4.905	3.935	+1.21 -3.8	20.6	15.1
Aug. 19	08 23.52	+16 44.0	4.856	3.933	+1.18 -4.1	20.6	21.7
Aug. 29	08 35.20	+16 01.8	4.791	3.931	+1.15 -4.3	20.5	28.4
Sept. 8	08 46.47	+15 17.6	4.710	3.930	+1.10 -4.5	20.5	35.2
Sept. 18	08 57.27	+14 32.1	4.615	3.929	+1.05 -4.6	20.4	42.2
Sept. 28	09 07.50	+13 46.2	4.506	3.928	+0.99 -4.6	20.4	49.4
Oct. 8	09 17.05	+13 00.7	4.384	3.927	+0.91 -4.5	20.3	56.8
Oct. 18	09 25.81	+12 16.6	4.252	3.926	+0.83 -4.3	20.3	64.4
Oct. 28	09 33.68	+11 34.9	4.112	3.925	+0.73 -4.0	20.2	72.3
Nov. 7	09 40.49	+10 57.0	3.965	3.925	+0.62 -3.5	20.1	80.5
Nov. 17	09 46.13	+10 23.9	3.814	3.925	+0.49 -3.0	20.0	89.1
Nov. 27	09 50.43	+09 57.1	3.663	3.924	+0.35 -2.3	19.9	98.0
Dec. 7	09 53.25	+09 37.8	3.516	3.924	+0.20 -1.5	19.8	107.4
Dec. 17	09 54.47	+09 27.0	3.376	3.925	+0.03 -0.6	19.7	117.2
Dec. 27	09 54.00	+09 25.7	3.249	3.925	-0.14 +0.4	19.7	127.4
Jan. 6	09 51.87	+09 34.2	3.138	3.925	-0.30 +1.4	19.6	138.1
Jan. 16	09 48.20	+09 52.0	3.049	3.926	-0.44 +2.3	19.5	149.2
Jan. 26	09 43.23	+10 18.0	2.985	3.927	-0.55 +3.0	19.5	160.6
Feb. 5	09 37.39	+10 50.1	2.950	3.928	-0.61 +3.4	19.5	171.9
Feb. 15	09 31.19	+11 25.4	2.945	3.929	-0.62 +3.6	19.5	174.7
Feb. 25	09 25.22	+12 01.0	2.970	3.930	-0.56 +3.5	19.5	163.8
Mar. 7	09 20.02	+12 33.9	3.025	3.932	-0.46 +3.1	19.5	152.5
Mar. 17	09 16.03	+13 02.0	3.106	3.934	-0.32 +2.5	19.6	141.5
Mar. 27	09 13.56	+13 23.5	3.209	3.935	-0.16 +1.8	19.7	130.9

Comet 81P/Wild

Epoch = 2022 June 30.0 TT
 T = 2022 Dec. 15.66409 TT
 Peri. = 41.64221 e = 0.5371651
 Node = 136.10117 2000.0 a = 3.4534435 AU
 Incl. = 3.23647 n = 0.15357677
 q = 1.5983742 AU P = 6.42 years

$$m1 = 7.8 + 5 \log(\Delta) + 15.0 \log(r(t+10))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	02 59.61	+12 53.7	2.590	3.265	-0.32	-0.1	17.5	125.9
Jan. 11	02 57.45	+12 57.0	2.667	3.212	-0.09	+0.9	17.4	115.2
Jan. 21	02 57.60	+13 10.7	2.755	3.159	+0.14	+1.9	17.4	105.2
Jan. 31	02 59.98	+13 33.7	2.848	3.105	+0.36	+2.8	17.3	95.7
Feb. 10	03 04.47	+14 05.0	2.942	3.050	+0.56	+3.5	17.3	86.8
Feb. 20	03 10.91	+14 42.9	3.034	2.995	+0.74	+4.1	17.2	78.4
Mar. 2	03 19.12	+15 25.9	3.119	2.939	+0.91	+4.5	17.2	70.4
Mar. 12	03 28.95	+16 12.4	3.197	2.883	+1.07	+4.8	17.1	62.9
Mar. 22	03 40.24	+17 00.9	3.264	2.826	+1.21	+4.9	17.0	55.8
Apr. 1	03 52.88	+17 49.8	3.320	2.768	+1.33	+4.9	16.9	49.0
Apr. 11	04 06.78	+18 37.8	3.363	2.711	+1.45	+4.7	16.8	42.5
Apr. 21	04 21.83	+19 23.5	3.393	2.652	+1.57	+4.4	16.7	36.4
May 1	04 37.98	+20 05.4	3.411	2.594	+1.67	+3.9	16.5	30.5
May 11	04 55.15	+20 42.4	3.415	2.535	+1.77	+3.4	16.4	24.9
May 21	05 13.30	+21 13.1	3.406	2.476	+1.87	+2.7	16.2	19.6
May 31	05 32.38	+21 36.4	3.386	2.417	+1.96	+1.9	16.0	14.4
June 10	05 52.34	+21 51.0	3.353	2.358	+2.04	+0.9	15.9	9.5
June 20	06 13.11	+21 55.7	3.310	2.300	+2.12	-0.1	15.7	4.9
June 30	06 34.66	+21 49.5	3.258	2.241	+2.20	-1.3	15.5	1.4
July 10	06 56.92	+21 31.4	3.196	2.184	+2.26	-2.5	15.2	4.4
July 20	07 19.82	+21 00.5	3.127	2.127	+2.32	-3.8	15.0	8.5
July 30	07 43.33	+20 16.1	3.051	2.071	+2.38	-5.2	14.8	12.4
Aug. 9	08 07.36	+19 17.5	2.970	2.016	+2.43	-6.6	14.6	16.3
Aug. 19	08 31.86	+18 04.6	2.884	1.963	+2.47	-8.1	14.3	19.9
Aug. 29	08 56.79	+16 37.1	2.796	1.912	+2.51	-9.5	14.1	23.4
Sept. 8	09 22.08	+14 55.4	2.707	1.864	+2.55	-10.9	13.9	26.8
Sept. 18	09 47.72	+13 00.1	2.617	1.817	+2.58	-12.3	13.6	30.0
Sept. 28	10 13.67	+10 52.1	2.527	1.775	+2.61	-13.5	13.4	33.1
Oct. 8	10 39.91	+08 32.8	2.440	1.735	+2.64	-14.5	13.2	36.1
Oct. 18	11 06.44	+06 04.1	2.355	1.700	+2.67	-15.3	13.0	39.0
Oct. 28	11 33.27	+03 28.4	2.274	1.669	+2.70	-15.9	12.8	41.7
Nov. 7	12 00.35	+00 48.5	2.197	1.644	+2.72	-16.1	12.7	44.5
Nov. 17	12 27.69	-01 52.5	2.124	1.624	+2.75	-16.0	12.5	47.2
Nov. 27	12 55.25	-04 31.2	2.056	1.609	+2.76	-15.6	12.4	49.9
Dec. 7	13 22.94	-07 03.8	1.992	1.601	+2.77	-14.8	12.4	52.7
Dec. 17	13 50.68	-09 27.1	1.932	1.598	+2.77	-13.7	12.3	55.6
Dec. 27	14 18.29	-11 37.7	1.875	1.602	+2.75	-12.3	12.3	58.7
Jan. 6	14 45.57	-13 33.1	1.821	1.612	+2.70	-10.6	12.3	62.0
Jan. 16	15 12.27	-15 11.3	1.769	1.628	+2.63	-8.8	12.3	65.5
Jan. 26	15 38.09	-16 31.4	1.717	1.650	+2.52	-7.0	12.3	69.3
Feb. 5	16 02.69	-17 33.0	1.666	1.677	+2.38	-5.2	12.4	73.5
Feb. 15	16 25.73	-18 17.3	1.614	1.709	+2.20	-3.5	12.5	78.1
Feb. 25	16 46.83	-18 45.5	1.561	1.745	+1.99	-2.0	12.5	83.1
Mar. 7	17 05.59	-19 00.1	1.507	1.786	+1.73	-0.8	12.6	88.7
Mar. 17	17 21.66	-19 03.9	1.453	1.829	+1.44	+0.1	12.7	94.9
Mar. 27	17 34.65	-18 59.6	1.399	1.876	+1.11	+0.7	12.8	101.7

Comet C/2017 K2 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2022 Dec. 19.67740 TT
 Peri. = 236.19510
 Node = 88.23541 2000.0
 Incl. = 87.56120
 q = 1.7969795 AU
 e = 1.0008045

$$m1 = 3.3 + 5 \log(\Delta) + 7.5 \log(r) \text{ (vis)}$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	17 57.58	+13 17.3	5.127	4.395	+0.81	-4.4	11.7	38.1
Jan. 11	18 05.68	+12 37.4	5.012	4.306	+0.81	-3.5	11.6	40.0
Jan. 21	18 13.67	+12 06.4	4.879	4.216	+0.79	-2.6	11.4	43.2
Jan. 31	18 21.43	+11 43.6	4.728	4.126	+0.76	-1.8	11.3	47.5
Feb. 10	18 28.82	+11 28.7	4.559	4.036	+0.71	-1.1	11.1	52.6
Feb. 20	18 35.67	+11 20.7	4.375	3.946	+0.65	-0.4	11.0	58.3
Mar. 2	18 41.83	+11 18.8	4.176	3.855	+0.57	+0.1	10.8	64.5
Mar. 12	18 47.10	+11 22.0	3.965	3.764	+0.47	+0.5	10.6	71.2
Mar. 22	18 51.26	+11 28.5	3.744	3.674	+0.35	+0.8	10.4	78.3
Apr. 1	18 54.06	+11 36.8	3.515	3.583	+0.19	+0.8	10.2	85.8
Apr. 11	18 55.19	+11 44.3	3.283	3.492	+0.01	+0.6	10.0	93.6
Apr. 21	18 54.34	+11 47.7	3.050	3.401	-0.21	0.0	9.7	101.8
May 1	18 51.11	+11 43.1	2.821	3.311	-0.47	-1.1	9.5	110.5
May 11	18 45.09	+11 24.8	2.601	3.220	-0.77	-2.8	9.2	119.5
May 21	18 35.93	+10 45.9	2.395	3.130	-1.10	-5.3	8.9	128.8
May 31	18 23.39	+09 38.4	2.210	3.041	-1.44	-8.7	8.6	138.0
June 10	18 07.50	+07 53.8	2.054	2.952	-1.76	-12.8	8.4	146.2
June 20	17 48.77	+05 26.5	1.932	2.864	-2.00	-17.2	8.2	151.1
June 30	17 28.19	+02 15.9	1.850	2.776	-2.10	-21.2	8.0	149.9
July 10	17 07.24	-01 30.7	1.811	2.690	-2.05	-24.1	7.8	142.5
July 20	16 47.50	-05 39.3	1.815	2.605	-1.86	-25.5	7.7	131.9
July 30	16 30.24	-09 54.4	1.855	2.522	-1.55	-25.4	7.7	120.2
Aug. 9	16 16.29	-14 03.9	1.923	2.441	-1.20	-24.3	7.6	108.4
Aug. 19	16 05.91	-18 01.1	2.011	2.362	-0.84	-22.9	7.6	97.2
Aug. 29	15 59.06	-21 44.3	2.109	2.286	-0.50	-21.6	7.6	86.8
Sept. 8	15 55.47	-25 15.0	2.210	2.214	-0.19	-20.5	7.6	77.0
Sept. 18	15 54.82	-28 36.0	2.307	2.145	+0.09	-19.7	7.6	68.0
Sept. 28	15 56.83	-31 50.7	2.396	2.080	+0.34	-19.2	7.6	59.8
Oct. 8	16 01.27	-35 02.1	2.471	2.020	+0.57	-19.1	7.6	52.3
Oct. 18	16 07.98	-38 13.3	2.529	1.966	+0.80	-19.2	7.5	45.6
Oct. 28	16 16.97	-41 27.0	2.570	1.919	+1.03	-19.6	7.5	40.0
Nov. 7	16 28.35	-44 45.7	2.592	1.878	+1.28	-20.2	7.4	35.7
Nov. 17	16 42.42	-48 11.3	2.594	1.845	+1.57	-21.0	7.4	33.0
Nov. 27	16 59.77	-51 45.5	2.577	1.820	+1.95	-21.9	7.3	32.2
Dec. 7	17 21.41	-55 28.9	2.544	1.804	+2.46	-22.8	7.2	33.4
Dec. 17	17 49.06	-59 19.7	2.497	1.797	+3.19	-23.3	7.2	36.1
Dec. 27	18 25.63	-63 11.8	2.440	1.799	+4.31	-22.8	7.2	39.9
Jan. 6	19 15.63	-66 49.4	2.380	1.811	+5.96	-19.9	7.1	44.3
Jan. 16	20 24.62	-69 39.5	2.321	1.831	+8.08	-12.5	7.1	48.9
Jan. 26	21 53.24	-70 48.6	2.271	1.859	+9.52	+0.9	7.1	53.3
Feb. 5	23 27.21	-69 28.6	2.238	1.896	+8.84	+16.5	7.1	57.3
Feb. 15	00 46.84	-65 44.4	2.227	1.940	+6.83	+28.6	7.2	60.4
Feb. 25	01 46.48	-60 24.9	2.243	1.991	+5.01	+35.1	7.3	62.5
Mar. 7	02 30.59	-54 20.4	2.288	2.047	+3.77	+37.4	7.4	63.5
Mar. 17	03 04.46	-48 07.3	2.362	2.109	+2.98	+36.8	7.6	63.2
Mar. 27	03 31.77	-42 09.0	2.461	2.176	+2.46	+34.4	7.8	61.8

Comet P/2013 YG46 (Spacewatch)

Epoch = 2022 June 30.0 TT
 T = 2023 Jan. 5.85787 TT
 Peri. = 242.51612 e = 0.4543136
 Node = 48.85526 2000.0 a = 3.2747124 AU
 Incl. = 7.85653 n = 0.16631995
 q = 1.7869660 AU P = 5.93 years

$$m1 = 13.5 + 5 \log(\Delta) + 5.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Variation	m1	Mot. /PA	Elong.
2022/23	h m	° '			for T=+1 day			°
Jan. 1	13 04.06	+00 03.9	3.134	3.210	-0.61 +5.1	18.5	11.9/108	85.5
Jan. 11	13 11.07	+00 28.5	2.945	3.166	-0.66 +5.4	18.3	9.9/106	93.8
Jan. 21	13 16.76	+00 51.5	2.757	3.121	-0.72 +5.9	18.2	7.5/103	102.5
Jan. 31	13 20.88	-01 04.2	2.575	3.076	-0.78 +6.3	18.0	4.8/98	111.5
Feb. 10	13 23.14	-01 05.8	2.401	3.030	-0.85 +6.8	17.8	1.8/74	121.0
Feb. 20	13 23.29	+00 55.9	2.240	2.984	-0.91 +7.3	17.6	2.3/315	131.0
Mar. 2	13 21.15	+00 34.9	2.096	2.937	-0.98 +7.8	17.4	5.8/297	141.5
Mar. 12	13 16.68	+00 04.0	1.973	2.890	-1.04 +8.3	17.3	9.2/292	152.4
Mar. 22	13 10.07	+00 33.7	1.874	2.843	-1.09 +8.7	17.1	12.1/289	163.4
Apr. 1	13 01.80	+01 14.2	1.802	2.795	-1.12 +8.9	17.0	14.0/287	172.3
Apr. 11	12 52.63	+01 51.8	1.758	2.747	-1.12 +8.9	16.9	14.3/284	168.3
Apr. 21	12 43.54	+02 21.0	1.743	2.699	-1.10 +8.8	16.9	13.2/280	157.6
May 1	12 35.47	+02 37.0	1.752	2.650	-1.05 +8.6	16.8	10.8/274	146.3
May 11	12 29.25	+02 36.9	1.784	2.602	-1.00 +8.4	16.8	7.5/263	135.4
May 21	12 25.41	+02 19.4	1.833	2.553	-0.94 +8.1	16.9	4.5/234	125.1
May 31	12 24.18	+01 45.0	1.895	2.505	-0.89 +7.8	16.9	4.4/175	115.5
June 10	12 25.59	+00 54.7	1.965	2.457	-0.84 +7.6	16.9	7.2/144	106.7
June 20	12 29.51	+00 09.7	2.040	2.409	-0.81 +7.5	17.0	10.6/132	98.5
June 30	12 35.74	-01 26.5	2.116	2.361	-0.79 +7.4	17.0	13.9/127	90.9
July 10	12 44.09	-02 54.2	2.191	2.314	-0.77 +7.4	17.0	16.9/123	83.8
July 20	12 54.34	-04 31.2	2.264	2.268	-0.77 +7.4	17.1	19.6/121	77.3
July 30	13 06.33	-06 15.9	2.332	2.223	-0.78 +7.4	17.1	22.1/119	71.1
Aug. 9	13 19.95	-08 07.1	2.396	2.178	-0.79 +7.4	17.1	24.3/118	65.4
Aug. 19	13 35.09	-10 03.2	2.453	2.135	-0.82 +7.4	17.1	26.3/117	60.0
Aug. 29	13 51.69	-12 02.6	2.505	2.093	-0.85 +7.4	17.1	28.2/115	54.9
Sept. 8	14 09.73	-14 03.7	2.550	2.053	-0.89 +7.3	17.1	29.9/114	50.0
Sept. 18	14 29.18	-16 04.5	2.589	2.015	-0.94 +7.2	17.1	31.5/112	45.4
Sept. 28	14 50.06	-18 03.1	2.623	1.978	-0.99 +7.0	17.1	33.0/111	41.0
Oct. 8	15 12.37	-19 57.0	2.651	1.944	-1.05 +6.7	17.1	34.4/109	36.7
Oct. 18	15 36.10	-21 43.8	2.675	1.913	-1.12 +6.3	17.0	35.6/107	32.7
Oct. 28	16 01.24	-23 20.8	2.694	1.885	-1.18 +5.7	17.0	36.8/104	28.8
Nov. 7	16 27.73	-24 45.1	2.710	1.860	-1.25 +5.0	17.0	37.8/102	25.1
Nov. 17	16 55.45	-25 53.9	2.723	1.838	-1.31 +4.2	17.0	38.7/99	21.4
Nov. 27	17 24.27	-26 44.7	2.733	1.820	-1.36 +3.2	17.0	39.5/96	18.0
Dec. 7	17 53.94	-27 15.1	2.742	1.806	-1.40 +2.1	17.0	40.1/93	14.6
Dec. 17	18 24.19	-27 23.7	2.749	1.795	-1.43 +0.9	17.0	40.6/90	11.4
Dec. 27	18 54.72	-27 09.5	2.756	1.789	-1.44 -0.3	17.0	40.9/86	8.5
Jan. 6	19 25.19	-26 32.7	2.762	1.787	-1.43 -1.5	17.0	41.0/83	6.0
Jan. 16	19 55.29	-25 34.3	2.768	1.789	-1.41 -2.6	17.0	41.0/80	4.7
Jan. 26	20 24.79	-24 15.9	2.773	1.795	-1.37 -3.7	17.0	40.7/78	5.6
Feb. 5	20 53.45	-22 40.1	2.777	1.806	-1.32 -4.6	17.0	40.3/75	7.9
Feb. 15	21 21.14	-20 49.6	2.781	1.820	-1.27 -5.4	17.0	39.8/73	10.8
Feb. 25	21 47.78	-18 47.5	2.784	1.839	-1.21 -6.0	17.0	39.1/71	13.9
Mar. 7	22 13.34	-16 37.0	2.784	1.860	-1.15 -6.5	17.1	38.3/70	17.3
Mar. 17	22 37.81	-14 20.9	2.782	1.886	-1.09 -6.8	17.1	37.4/68	20.8
Mar. 27	23 01.24	-12 02.0	2.777	1.914	-1.04 -7.1	17.1	36.3/67	24.5

Comet 285P/LINEAR

Epoch = 2022 June 30.0 TT
 T = 2023 Jan. 12.38520 TT
 Peri. = 178.43978 e = 0.6186165
 Node = 185.50800 2000.0 a = 4.5079124 AU
 Incl. = 25.03832 n = 0.10297715
 q = 1.7192434 AU P = 9.57 years

$$m1 = 13.4 + 5 \log(\Delta) + 15.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	17 05.26	-04 24.2	4.488	3.673	+1.25	+0.5	.	30.4
Jan. 11	17 17.79	-04 15.1	4.361	3.614	+1.25	+1.4	.	36.2
Jan. 21	17 30.28	-03 56.9	4.220	3.555	+1.24	+2.3	.	42.3
Jan. 31	17 42.65	-03 29.4	4.066	3.495	+1.23	+3.3	.	48.7
Feb. 10	17 54.78	-02 52.1	3.902	3.434	+1.19	+4.3	.	55.1
Feb. 20	18 06.55	-02 04.9	3.730	3.373	+1.15	+5.3	.	61.6
Mar. 2	18 17.83	-01 07.7	3.551	3.312	+1.10	+6.3	.	68.1
Mar. 12	18 28.49	+00 00.5	3.367	3.250	+1.02	+7.3	.	74.7
Mar. 22	18 38.36	+01 16.4	3.181	3.188	+0.94	+8.2	.	81.4
Apr. 1	18 47.30	+02 42.5	2.995	3.125	+0.83	+9.1	.	88.0
Apr. 11	18 55.09	+04 17.3	2.812	3.062	+0.71	+9.9	.	94.8
Apr. 21	19 01.56	+05 59.2	2.633	2.999	+0.57	+10.5	.	101.5
May 1	19 06.48	+07 46.8	2.460	2.935	+0.40	+11.0	.	108.2
May 11	19 09.61	+09 37.3	2.297	2.872	+0.21	+11.1	.	114.9
May 21	19 10.76	+11 27.0	2.145	2.808	0.00	+10.8	21.8	121.4
May 31	19 09.77	+13 11.2	2.007	2.744	-0.22	+9.9	21.5	127.5
June 10	19 06.57	+14 43.5	1.884	2.680	-0.44	+8.3	21.2	132.9
June 20	19 01.32	+15 56.9	1.778	2.617	-0.63	+6.0	20.9	137.2
June 30	18 54.37	+16 44.0	1.692	2.554	-0.76	+3.0	20.6	139.8
July 10	18 46.41	+16 58.0	1.624	2.491	-0.82	-0.6	20.4	140.1
July 20	18 38.35	+16 35.3	1.576	2.428	-0.77	-4.3	20.2	138.1
July 30	18 31.20	+15 35.5	1.545	2.367	-0.63	-7.9	20.0	134.1
Aug. 9	18 25.94	+14 02.1	1.532	2.306	-0.39	-10.9	19.8	128.7
Aug. 19	18 23.30	+12 01.9	1.534	2.247	-0.10	-13.2	19.6	122.6
Aug. 29	18 23.75	+09 42.8	1.547	2.189	+0.23	-14.6	19.5	116.1
Sept. 8	18 27.51	+07 13.0	1.571	2.132	+0.56	-15.3	19.3	109.6
Sept. 18	18 34.56	+04 40.1	1.603	2.078	+0.88	-15.2	19.2	103.2
Sept. 28	18 44.78	+02 10.2	1.641	2.026	+1.19	-14.6	19.1	97.1
Oct. 8	18 57.99	+00 11.4	1.684	1.976	+1.47	-13.5	19.0	91.2
Oct. 18	19 13.90	-02 20.6	1.730	1.930	+1.73	-12.1	18.9	85.7
Oct. 28	19 32.27	-04 14.2	1.779	1.887	+1.96	-10.4	18.8	80.4
Nov. 7	19 52.82	-05 49.6	1.830	1.848	+2.16	-8.5	18.7	75.4
Nov. 17	20 15.23	-07 04.9	1.884	1.814	+2.33	-6.4	18.7	70.6
Nov. 27	20 39.20	-07 59.2	1.939	1.784	+2.47	-4.2	18.6	66.1
Dec. 7	21 04.42	-08 31.7	1.997	1.760	+2.58	-2.1	18.6	61.8
Dec. 17	21 30.57	-08 43.0	2.056	1.741	+2.66	0.0	18.6	57.6
Dec. 27	21 57.38	-08 34.1	2.118	1.728	+2.71	+1.9	18.6	53.7
Jan. 6	22 24.59	-08 06.6	2.181	1.721	+2.73	+3.7	18.6	49.9
Jan. 16	22 51.96	-07 22.9	2.246	1.720	+2.74	+5.2	18.7	46.3
Jan. 26	23 19.34	-06 25.5	2.313	1.725	+2.73	+6.4	18.8	42.7
Feb. 5	23 46.56	-05 17.5	2.382	1.736	+2.71	+7.3	18.9	39.4
Feb. 15	00 13.53	-04 01.8	2.452	1.754	+2.68	+7.9	19.0	36.1
Feb. 25	00 40.20	-02 41.4	2.524	1.777	+2.65	+8.2	19.2	33.0
Mar. 7	01 06.50	-01 19.3	2.596	1.805	+2.61	+8.2	19.3	29.9
Mar. 17	01 32.41	+00 01.8	2.668	1.838	+2.57	+8.0	19.5	27.0
Mar. 27	01 57.91	+01 19.7	2.740	1.876	+2.53	+7.5	19.7	24.2

Comet P/2021 V2 (Fuls)

Epoch = 2022 June 30.0 TT
 T = 2023 Jan. 21.47731 TT
 Peri. = 259.82576 e = 0.6133171
 Node = 232.28921 2000.0 a = 9.0432155 AU
 Incl. = 12.69455 n = 0.03624263
 q = 3.4968568 AU P = 27.19 years

$$m1 = 3.0 + 5 \log(\Delta) + 20.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	03 58.65	+15 53.3	3.601	4.404	-0.31	-2.1	18.7	140.4
Jan. 11	03 56.21	+15 35.0	3.671	4.364	-0.16	-1.5	18.6	129.6
Jan. 21	03 55.29	+15 23.3	3.759	4.326	0.00	-0.8	18.6	119.2
Jan. 31	03 55.98	+15 18.0	3.861	4.287	+0.16	-0.2	18.6	109.2
Feb. 10	03 58.29	+15 18.8	3.971	4.249	+0.32	+0.4	18.6	99.7
Feb. 20	04 02.15	+15 24.7	4.085	4.212	+0.47	+0.8	18.5	90.6
Mar. 2	04 07.45	+15 34.8	4.200	4.175	+0.61	+1.2	18.5	81.8
Mar. 12	04 14.09	+15 47.8	4.311	4.139	+0.73	+1.4	18.5	73.5
Mar. 22	04 21.92	+16 02.6	4.416	4.104	+0.84	+1.5	18.5	65.5
Apr. 1	04 30.82	+16 18.1	4.513	4.069	+0.94	+1.5	18.5	57.8
Apr. 11	04 40.67	+16 33.2	4.600	4.035	+1.03	+1.4	18.4	50.4
Apr. 21	04 51.34	+16 46.7	4.674	4.001	+1.11	+1.2	18.4	43.2
May 1	05 02.73	+16 57.9	4.735	3.969	+1.17	+1.0	18.3	36.3
May 11	05 14.73	+17 05.8	4.783	3.937	+1.23	+0.6	18.3	29.7
May 21	05 27.24	+17 09.9	4.815	3.906	+1.28	+0.2	18.2	23.3
May 31	05 40.17	+17 09.4	4.833	3.876	+1.31	-0.3	18.2	17.1
June 10	05 53.43	+17 03.8	4.836	3.846	+1.34	-0.8	18.1	11.5
June 20	06 06.93	+16 52.8	4.824	3.818	+1.36	-1.4	18.1	7.3
June 30	06 20.59	+16 36.1	4.797	3.791	+1.37	-2.0	18.0	7.4
July 10	06 34.31	+16 13.4	4.755	3.764	+1.37	-2.6	17.9	11.5
July 20	06 48.03	+15 44.6	4.700	3.739	+1.37	-3.2	17.8	16.9
July 30	07 01.65	+15 09.8	4.630	3.715	+1.35	-3.8	17.7	22.7
Aug. 9	07 15.08	+14 29.0	4.548	3.692	+1.33	-4.4	17.6	28.8
Aug. 19	07 28.24	+13 42.5	4.454	3.670	+1.30	-5.0	17.5	34.9
Aug. 29	07 41.05	+12 50.5	4.348	3.649	+1.26	-5.5	17.4	41.2
Sept. 8	07 53.40	+11 53.5	4.231	3.629	+1.21	-6.0	17.3	47.6
Sept. 18	08 05.18	+10 52.1	4.106	3.611	+1.14	-6.4	17.2	54.2
Sept. 28	08 16.30	+09 46.9	3.972	3.594	+1.07	-6.7	17.1	60.9
Oct. 8	08 26.61	+08 38.7	3.832	3.578	+0.98	-6.9	17.0	67.9
Oct. 18	08 36.01	+07 28.5	3.687	3.564	+0.88	-7.1	16.9	75.1
Oct. 28	08 44.33	+06 17.4	3.539	3.550	+0.77	-7.1	16.8	82.6
Nov. 7	08 51.43	+05 06.7	3.390	3.539	+0.64	-7.0	16.6	90.4
Nov. 17	08 57.15	+03 58.0	3.244	3.528	+0.49	-6.7	16.5	98.5
Nov. 27	09 01.34	+02 53.1	3.103	3.520	+0.33	-6.2	16.4	107.0
Dec. 7	09 03.85	+01 53.9	2.969	3.512	+0.16	-5.5	16.3	115.8
Dec. 17	09 04.64	+01 02.7	2.848	3.506	-0.02	-4.6	16.2	125.0
Dec. 27	09 03.68	+00 21.6	2.742	3.502	-0.19	-3.5	16.1	134.4
Jan. 6	09 01.11	+00 07.2	2.656	3.499	-0.33	-2.2	16.0	143.8
Jan. 16	08 57.22	+00 22.6	2.593	3.497	-0.45	-0.8	15.9	152.8
Jan. 26	08 52.44	+00 23.8	2.556	3.497	-0.51	+0.6	15.9	160.0
Feb. 5	08 47.34	+00 11.7	2.546	3.498	-0.50	+1.9	15.9	162.5
Feb. 15	08 42.53	+00 11.5	2.563	3.501	-0.44	+2.8	15.9	158.6
Feb. 25	08 38.58	+00 42.8	2.608	3.506	-0.33	+3.4	16.0	150.9
Mar. 7	08 35.98	+01 18.6	2.677	3.512	-0.17	+3.7	16.0	141.9
Mar. 17	08 35.00	+01 55.1	2.768	3.519	0.00	+3.6	16.1	132.6
Mar. 27	08 35.80	+02 29.3	2.878	3.528	+0.18	+3.2	16.2	123.5

Comet C/2021 P2 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2023 Jan. 22.27001 TT
 Peri. = 76.62401
 Node = 32.06212 2000.0
 Incl. = 150.05809
 q = 5.0695827 AU
 e = 0.9985743

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	23 06.92	+11 13.7	6.062	5.846	-0.11 -1.2	20.4	72.7
Jan. 11	23 06.24	+11 05.0	6.194	5.810	-0.02 -0.4	20.4	62.8
Jan. 21	23 06.43	+11 04.4	6.310	5.774	+0.06 +0.4	20.4	53.1
Jan. 31	23 07.34	+11 11.4	6.408	5.739	+0.12 +1.1	20.4	43.9
Feb. 10	23 08.80	+11 25.4	6.483	5.705	+0.17 +1.8	20.4	35.1
Feb. 20	23 10.65	+11 45.8	6.533	5.671	+0.20 +2.4	20.4	27.1
Mar. 2	23 12.76	+12 12.0	6.557	5.638	+0.22 +2.9	20.4	20.4
Mar. 12	23 14.98	+12 43.2	6.551	5.606	+0.22 +3.4	20.4	16.5
Mar. 22	23 17.15	+13 19.0	6.518	5.575	+0.21 +3.8	20.3	17.3
Apr. 1	23 19.16	+13 58.6	6.456	5.544	+0.19 +4.2	20.3	22.2
Apr. 11	23 20.85	+14 41.6	6.368	5.514	+0.15 +4.5	20.2	29.1
Apr. 21	23 22.07	+15 27.3	6.254	5.485	+0.09 +4.7	20.2	37.0
May 1	23 22.67	+16 15.0	6.117	5.457	+0.02 +4.9	20.1	45.4
May 11	23 22.47	+17 04.0	5.960	5.430	-0.07 +4.9	20.0	54.1
May 21	23 21.31	+17 53.4	5.786	5.403	-0.18 +4.9	19.9	63.1
May 31	23 18.99	+18 42.2	5.600	5.378	-0.30 +4.8	19.8	72.2
June 10	23 15.32	+19 28.9	5.405	5.353	-0.45 +4.5	19.8	81.7
June 20	23 10.11	+20 11.9	5.209	5.330	-0.61 +4.0	19.7	91.3
June 30	23 03.20	+20 49.1	5.016	5.307	-0.79 +3.3	19.6	101.1
July 10	22 54.47	+21 17.7	4.833	5.285	-0.97 +2.3	19.5	111.1
July 20	22 43.91	+21 34.9	4.667	5.264	-1.15 +1.0	19.4	121.1
July 30	22 31.63	+21 37.7	4.525	5.244	-1.31 -0.6	19.3	130.7
Aug. 9	22 17.93	+21 23.3	4.413	5.225	-1.43 -2.4	19.2	139.5
Aug. 19	22 03.29	+20 50.3	4.337	5.207	-1.49 -4.3	19.2	146.1
Aug. 29	21 48.32	+19 59.0	4.300	5.191	-1.49 -6.1	19.1	148.8
Sept. 8	21 33.71	+18 51.4	4.304	5.175	-1.42 -7.5	19.1	146.6
Sept. 18	21 20.08	+17 31.6	4.348	5.160	-1.29 -8.5	19.1	140.2
Sept. 28	21 07.94	+16 04.7	4.428	5.147	-1.12 -8.9	19.1	131.4
Oct. 8	20 57.60	+14 35.8	4.540	5.134	-0.93 -8.8	19.2	121.5
Oct. 18	20 49.20	+13 09.6	4.676	5.123	-0.73 -8.3	19.2	111.3
Oct. 28	20 42.72	+11 49.4	4.829	5.112	-0.55 -7.6	19.3	101.0
Nov. 7	20 38.04	+10 37.8	4.992	5.103	-0.38 -6.6	19.4	90.8
Nov. 17	20 34.98	+09 36.1	5.157	5.095	-0.23 -5.6	19.4	80.9
Nov. 27	20 33.33	+08 45.0	5.319	5.088	-0.10 -4.5	19.5	71.2
Dec. 7	20 32.86	+08 04.7	5.471	5.082	+0.01 -3.5	19.6	61.9
Dec. 17	20 33.36	+07 34.8	5.607	5.077	+0.09 -2.4	19.6	53.0
Dec. 27	20 34.62	+07 14.9	5.725	5.074	+0.16 -1.5	19.6	44.7
Jan. 6	20 36.43	+07 04.5	5.821	5.071	+0.20 -0.5	19.7	37.1
Jan. 16	20 38.62	+07 03.0	5.891	5.070	+0.23 +0.3	19.7	30.7
Jan. 26	20 41.01	+07 09.6	5.935	5.070	+0.24 +1.1	19.7	26.2
Feb. 5	20 43.41	+07 23.9	5.950	5.071	+0.24 +1.8	19.7	24.6
Feb. 15	20 45.68	+07 45.0	5.938	5.073	+0.21 +2.5	19.7	26.4
Feb. 25	20 47.65	+08 12.4	5.898	5.076	+0.17 +3.1	19.7	31.0
Mar. 7	20 49.15	+08 45.3	5.833	5.081	+0.12 +3.6	19.7	37.4
Mar. 17	20 50.02	+09 23.0	5.743	5.086	+0.05 +4.0	19.7	44.9
Mar. 27	20 50.07	+10 04.8	5.631	5.093	-0.05 +4.4	19.6	53.0

Comet 71P/Clark

Epoch = 2022 June 30.0 TT
 T = 2023 Jan. 22.79475 TT
 Peri. = 209.07218 e = 0.4938586
 Node = 59.39564 2000.0 a = 3.1390803 AU
 Incl. = 9.43777 n = 0.17721498
 q = 1.5888185 AU P = 5.56 years

$$m1 = 8.9 + 5 \log(\Delta) + 15.0 \log(r(t-40))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	10 56.29	+19 20.0	2.696	3.319	+0.05	+3.7	19.2	121.6
Jan. 11	10 55.76	+20 02.5	2.535	3.273	-0.18	+4.9	19.0	131.8
Jan. 21	10 52.94	+20 56.7	2.393	3.227	-0.41	+6.0	18.8	142.2
Jan. 31	10 47.78	+21 59.8	2.273	3.180	-0.64	+6.6	18.6	152.6
Feb. 10	10 40.49	+23 06.5	2.179	3.132	-0.83	+6.6	18.4	161.9
Feb. 20	10 31.55	+24 10.2	2.115	3.084	-0.96	+5.9	18.3	166.2
Mar. 2	10 21.74	+25 04.0	2.080	3.035	-0.99	+4.6	18.1	161.1
Mar. 12	10 12.05	+25 41.9	2.075	2.985	-0.92	+2.8	18.0	151.4
Mar. 22	10 03.48	+26 00.7	2.095	2.935	-0.76	+0.8	17.9	140.8
Apr. 1	09 56.84	+25 59.8	2.136	2.883	-0.53	-1.1	17.9	130.2
Apr. 11	09 52.67	+25 40.4	2.195	2.832	-0.27	-2.9	17.8	120.0
Apr. 21	09 51.18	+25 04.9	2.264	2.779	0.00	-4.3	17.8	110.4
May 1	09 52.35	+24 15.9	2.341	2.726	+0.26	-5.6	17.8	101.4
May 11	09 56.02	+23 15.2	2.421	2.673	+0.49	-6.6	17.7	93.1
May 21	10 01.92	+22 04.5	2.501	2.619	+0.70	-7.6	17.7	85.2
May 31	10 09.78	+20 44.8	2.577	2.565	+0.89	-8.4	17.6	77.9
June 10	10 19.37	+19 16.7	2.648	2.510	+1.04	-9.2	17.5	71.1
June 20	10 30.43	+17 40.7	2.712	2.455	+1.18	-10.0	17.5	64.6
June 30	10 42.79	+15 57.1	2.769	2.400	+1.30	-10.8	17.4	58.5
July 10	10 56.29	+14 06.0	2.816	2.345	+1.41	-11.5	17.3	52.8
July 20	11 10.80	+12 07.7	2.854	2.290	+1.50	-12.2	17.2	47.3
July 30	11 26.24	+10 02.4	2.882	2.235	+1.59	-12.9	17.0	42.1
Aug. 9	11 42.57	+07 50.4	2.901	2.180	+1.68	-13.6	16.9	37.1
Aug. 19	11 59.75	+05 32.1	2.911	2.126	+1.76	-14.2	16.8	32.4
Aug. 29	12 17.78	+03 07.9	2.912	2.073	+1.85	-14.7	16.6	27.8
Sept. 8	12 36.67	+00 38.7	2.905	2.021	+1.94	-15.2	16.5	23.5
Sept. 18	12 56.48	-01 54.6	2.890	1.970	+2.03	-15.5	16.3	19.3
Sept. 28	13 17.26	-04 31.1	2.869	1.921	+2.13	-15.8	16.1	15.4
Oct. 8	13 39.08	-07 09.3	2.842	1.873	+2.24	-15.8	15.9	11.5
Oct. 18	14 02.03	-09 47.3	2.810	1.828	+2.36	-15.7	15.7	7.9
Oct. 28	14 26.21	-12 23.2	2.775	1.786	+2.49	-15.4	15.5	4.5
Nov. 7	14 51.70	-14 54.4	2.737	1.746	+2.62	-14.7	15.3	1.6
Nov. 17	15 18.56	-17 18.0	2.697	1.710	+2.76	-13.8	15.1	2.7
Nov. 27	15 46.85	-19 30.7	2.657	1.678	+2.91	-12.5	15.0	5.6
Dec. 7	16 16.54	-21 28.9	2.618	1.650	+3.04	-10.9	14.8	8.5
Dec. 17	16 47.55	-23 09.0	2.581	1.627	+3.17	-8.9	14.6	11.3
Dec. 27	17 19.71	-24 27.8	2.545	1.609	+3.27	-6.6	14.4	14.1
Jan. 6	17 52.75	-25 22.3	2.513	1.597	+3.34	-4.0	14.3	16.8
Jan. 16	18 26.30	-25 50.7	2.483	1.590	+3.37	-1.4	14.1	19.5
Jan. 26	18 59.98	-25 52.2	2.457	1.589	+3.36	+1.3	14.0	22.2
Feb. 5	19 33.33	-25 27.5	2.434	1.594	+3.30	+3.8	13.9	24.8
Feb. 15	20 05.96	-24 38.5	2.413	1.604	+3.21	+6.1	13.9	27.6
Feb. 25	20 37.55	-23 28.3	2.395	1.620	+3.09	+8.1	13.8	30.4
Mar. 7	21 07.85	-22 00.6	2.377	1.641	+2.95	+9.6	13.8	33.3
Mar. 17	21 36.70	-20 19.5	2.361	1.667	+2.80	+10.7	13.8	36.4
Mar. 27	22 04.03	-18 29.2	2.343	1.698	+2.65	+11.4	13.8	39.6

Comet 96P/Machholz

Epoch = 2022 June 30.0 TT
 T = 2023 Jan. 31.06384 TT
 Peri. = 14.74908 e = 0.9615750
 Node = 93.95742 2000.0 a = 3.0298295 AU
 Incl. = 57.50674 n = 0.18688601
 q = 0.1164212 AU P = 5.27 years

$$m1 = 11.0 + 5 \log(\Delta) + 5.0 \log(r) \text{ (vis)}$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	19 19.10	-38 45.3	5.461	4.532	+0.98 +1.2	18.0	17.4
Jan. 11	19 29.04	-38 34.2	5.410	4.477	+1.01 +1.0	17.9	16.7
Jan. 21	19 39.18	-38 25.2	5.335	4.421	+1.02 +0.8	17.9	19.7
Jan. 31	19 49.39	-38 18.7	5.236	4.363	+1.02 +0.5	17.8	25.0
Feb. 10	19 59.58	-38 15.3	5.114	4.303	+1.01 +0.1	17.7	31.5
Feb. 20	20 09.62	-38 15.6	4.971	4.242	+0.99 -0.3	17.6	38.5
Mar. 2	20 19.42	-38 20.7	4.808	4.180	+0.96 -0.8	17.5	45.9
Mar. 12	20 28.83	-38 31.6	4.628	4.116	+0.92 -1.5	17.4	53.5
Mar. 22	20 37.74	-38 49.6	4.433	4.050	+0.86 -2.2	17.3	61.3
Apr. 1	20 46.00	-39 16.2	4.226	3.982	+0.78 -3.2	17.1	69.2
Apr. 11	20 53.42	-39 53.3	4.010	3.913	+0.69 -4.4	17.0	77.3
Apr. 21	20 59.79	-40 42.7	3.788	3.842	+0.57 -5.7	16.8	85.5
May 1	21 04.83	-41 46.4	3.565	3.769	+0.42 -7.2	16.6	93.9
May 11	21 08.20	-43 06.2	3.344	3.694	+0.23 -8.9	16.5	102.4
May 21	21 09.45	-44 43.7	3.129	3.617	-0.01 -10.7	16.3	111.0
May 31	21 08.00	-46 39.2	2.926	3.538	-0.32 -12.5	16.1	119.6
June 10	21 03.09	-48 51.6	2.738	3.457	-0.71 -14.0	15.9	128.0
June 20	20 53.87	-51 16.1	2.572	3.373	-1.20 -14.8	15.7	135.6
June 30	20 39.42	-53 44.3	2.430	3.287	-1.76 -14.5	15.5	141.5
July 10	20 19.10	-56 02.2	2.318	3.199	-2.35 -12.6	15.4	144.3
July 20	19 53.18	-57 52.8	2.236	3.108	-2.85 -8.9	15.2	142.9
July 30	19 23.39	-59 00.3	2.186	3.014	-3.07 -4.0	15.1	137.5
Aug. 9	18 53.03	-59 16.5	2.163	2.917	-2.92 +1.1	15.0	129.6
Aug. 19	18 25.75	-58 45.4	2.165	2.816	-2.45 +5.3	14.9	120.4
Aug. 29	18 04.09	-57 39.6	2.186	2.713	-1.81 +7.9	14.9	110.7
Sept. 8	17 48.99	-56 14.7	2.218	2.605	-1.16 +9.0	14.8	101.0
Sept. 18	17 40.12	-54 43.8	2.254	2.494	-0.57 +9.1	14.7	91.6
Sept. 28	17 36.72	-53 15.3	2.290	2.378	-0.07 +8.5	14.7	82.6
Oct. 8	17 37.92	-51 54.0	2.318	2.258	+0.34 +7.7	14.6	74.0
Oct. 18	17 42.95	-50 41.4	2.334	2.132	+0.69 +6.8	14.5	65.9
Oct. 28	17 51.28	-49 37.1	2.335	2.000	+1.00 +6.0	14.3	58.3
Nov. 7	18 02.51	-48 39.8	2.315	1.862	+1.27 +5.4	14.2	51.3
Nov. 17	18 16.40	-47 46.8	2.272	1.717	+1.53 +5.2	14.0	44.7
Nov. 27	18 32.87	-46 54.9	2.204	1.562	+1.79 +5.3	13.7	38.8
Dec. 7	18 51.99	-45 59.6	2.107	1.398	+2.06 +6.0	13.3	33.6
Dec. 17	19 13.97	-44 53.9	1.980	1.220	+2.37 +7.5	12.9	29.3
Dec. 27	19 39.28	-43 26.2	1.819	1.026	+2.74 +10.7	12.4	25.7
Jan. 6	20 08.57	-41 13.9	1.620	0.810	+3.18 +17.3	11.6	22.9
Jan. 16	20 42.46	-37 19.8	1.374	0.561	+3.62 +34.0	10.4	20.0
Jan. 26	21 16.52	-28 00.8	1.052	0.254	+1.83 106.8	8.1	13.8
Feb. 5	20 25.02	-07 28.9	0.996	0.249	-3.67 +23.2	8.0	14.4
Feb. 15	20 10.34	-06 28.3	1.243	0.557	-0.14 -1.9	10.2	25.8
Feb. 25	20 11.81	-06 54.2	1.400	0.807	+0.34 -2.9	11.3	34.4
Mar. 7	20 15.52	-07 21.7	1.498	1.023	+0.37 -2.6	11.9	42.8
Mar. 17	20 18.70	-07 46.8	1.552	1.218	+0.24 -2.5	12.4	51.6
Mar. 27	20 20.21	-08 12.4	1.573	1.395	+0.03 -2.7	12.7	61.0

Comet C/2020 S4 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2023 Feb. 9.28211 TT
 Peri. = 20.99895
 Node = 117.72248 2000.0
 Incl. = 20.57216
 q = 3.3696062 AU
 e = 1.0007147

$$m1 = 6.9 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	04 24.31	+03 14.0	4.160	4.961	-0.38	+3.0	17.0	140.7
Jan. 11	04 21.00	+03 47.7	4.196	4.899	-0.27	+3.8	16.9	131.1
Jan. 21	04 18.86	+04 28.8	4.251	4.838	-0.14	+4.5	16.9	121.5
Jan. 31	04 18.06	+05 15.8	4.322	4.777	0.00	+5.0	16.9	111.9
Feb. 10	04 18.69	+06 07.6	4.404	4.717	+0.14	+5.4	16.9	102.5
Feb. 20	04 20.77	+07 02.6	4.493	4.658	+0.29	+5.6	16.8	93.4
Mar. 2	04 24.25	+07 59.7	4.583	4.599	+0.42	+5.8	16.8	84.7
Mar. 12	04 29.07	+08 57.5	4.673	4.540	+0.55	+5.8	16.8	76.2
Mar. 22	04 35.14	+09 55.0	4.758	4.483	+0.67	+5.7	16.8	68.1
Apr. 1	04 42.34	+10 51.3	4.835	4.426	+0.78	+5.5	16.8	60.3
Apr. 11	04 50.60	+11 45.6	4.904	4.370	+0.88	+5.3	16.8	52.7
Apr. 21	04 59.79	+12 37.2	4.960	4.314	+0.97	+5.0	16.7	45.4
May 1	05 09.82	+13 25.4	5.004	4.260	+1.05	+4.6	16.7	38.3
May 11	05 20.60	+14 09.9	5.034	4.207	+1.12	+4.2	16.6	31.5
May 21	05 32.03	+14 50.1	5.050	4.154	+1.18	+3.8	16.6	24.9
May 31	05 44.04	+15 25.8	5.051	4.103	+1.23	+3.3	16.5	18.6
June 10	05 56.54	+15 56.6	5.037	4.053	+1.27	+2.8	16.5	12.7
June 20	06 09.44	+16 22.4	5.007	4.004	+1.31	+2.3	16.4	8.1
June 30	06 22.69	+16 43.2	4.963	3.956	+1.34	+1.8	16.4	7.0
July 10	06 36.19	+16 58.9	4.904	3.909	+1.36	+1.3	16.3	10.7
July 20	06 49.87	+17 09.6	4.831	3.864	+1.38	+0.8	16.2	16.1
July 30	07 03.66	+17 15.7	4.744	3.821	+1.38	+0.4	16.1	21.9
Aug. 9	07 17.47	+17 17.5	4.644	3.779	+1.38	0.0	16.0	28.0
Aug. 19	07 31.22	+17 15.5	4.532	3.738	+1.37	-0.4	15.9	34.2
Aug. 29	07 44.84	+17 10.2	4.409	3.700	+1.35	-0.7	15.8	40.5
Sept. 8	07 58.23	+17 02.6	4.276	3.663	+1.32	-0.9	15.7	46.9
Sept. 18	08 11.29	+16 53.6	4.134	3.628	+1.28	-0.9	15.6	53.5
Sept. 28	08 23.93	+16 44.3	3.984	3.595	+1.24	-0.9	15.5	60.3
Oct. 8	08 36.02	+16 36.1	3.828	3.564	+1.18	-0.7	15.3	67.3
Oct. 18	08 47.45	+16 30.6	3.668	3.535	+1.10	-0.4	15.2	74.5
Oct. 28	08 58.09	+16 29.3	3.505	3.508	+1.01	+0.2	15.1	82.0
Nov. 7	09 07.77	+16 34.2	3.343	3.483	+0.91	+0.9	14.9	89.8
Nov. 17	09 16.34	+16 47.3	3.183	3.461	+0.79	+1.8	14.8	97.9
Nov. 27	09 23.63	+17 10.4	3.028	3.441	+0.65	+2.9	14.7	106.5
Dec. 7	09 29.45	+17 45.2	2.882	3.423	+0.50	+4.2	14.5	115.5
Dec. 17	09 33.67	+18 32.8	2.748	3.408	+0.33	+5.5	14.4	124.9
Dec. 27	09 36.16	+19 33.5	2.631	3.395	+0.15	+6.8	14.3	134.7
Jan. 6	09 36.92	+20 46.3	2.533	3.385	-0.02	+7.8	14.2	144.8
Jan. 16	09 36.06	+22 08.2	2.460	3.377	-0.17	+8.5	14.1	155.1
Jan. 26	09 33.82	+23 35.0	2.413	3.372	-0.28	+8.7	14.1	164.7
Feb. 5	09 30.68	+25 01.0	2.394	3.370	-0.34	+8.3	14.1	170.1
Feb. 15	09 27.21	+26 20.7	2.405	3.370	-0.34	+7.4	14.1	165.4
Feb. 25	09 24.06	+27 28.9	2.444	3.373	-0.27	+6.0	14.1	156.1
Mar. 7	09 21.85	+28 22.3	2.509	3.378	-0.15	+4.5	14.2	146.1
Mar. 17	09 21.04	+28 59.5	2.597	3.386	+0.01	+2.8	14.3	136.3
Mar. 27	09 21.94	+29 20.5	2.704	3.397	+0.19	+1.2	14.4	126.8

Comet C/2021 C5 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2023 Feb. 11.07842 TT
 Peri. = 270.92040
 Node = 323.68878 2000.0
 Incl. = 50.78345
 q = 3.2418844 AU
 e = 0.9990096

$$m1 = 8.3 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	10 47.03	-10 01.9	4.472	4.927	-0.22 -7.9	18.5	112.1
Jan. 11	10 44.17	-11 19.2	4.275	4.863	-0.37 -7.5	18.3	121.6
Jan. 21	10 39.81	-12 31.0	4.095	4.799	-0.52 -6.8	18.2	131.1
Jan. 31	10 34.01	-13 35.6	3.938	4.736	-0.65 -6.0	18.0	140.1
Feb. 10	10 26.95	-14 30.8	3.807	4.674	-0.76 -5.0	17.9	148.1
Feb. 20	10 18.96	-15 15.3	3.706	4.612	-0.83 -3.8	17.8	153.6
Mar. 2	10 10.48	-15 48.3	3.634	4.551	-0.86 -2.6	17.7	154.8
Mar. 12	10 02.03	-16 09.8	3.594	4.490	-0.82 -1.6	17.6	151.2
Mar. 22	09 54.16	-16 21.5	3.582	4.430	-0.74 -0.7	17.5	144.3
Apr. 1	09 47.32	-16 25.7	3.597	4.370	-0.61 -0.1	17.5	135.9
Apr. 11	09 41.89	-16 25.4	3.634	4.311	-0.45 +0.1	17.4	127.0
Apr. 21	09 38.10	-16 24.1	3.688	4.253	-0.28 +0.1	17.4	118.0
May 1	09 36.05	-16 24.4	3.755	4.196	-0.11 -0.2	17.4	109.3
May 11	09 35.73	-16 29.2	3.830	4.140	+0.06 -0.8	17.4	100.8
May 21	09 37.08	-16 40.3	3.909	4.085	+0.22 -1.5	17.4	92.8
May 31	09 39.98	-16 59.3	3.988	4.031	+0.37 -2.4	17.4	85.2
June 10	09 44.30	-17 27.2	4.064	3.978	+0.50 -3.3	17.3	77.9
June 20	09 49.89	-18 04.8	4.134	3.926	+0.62 -4.3	17.3	71.2
June 30	09 56.62	-18 52.5	4.197	3.876	+0.73 -5.3	17.3	64.8
July 10	10 04.39	-19 50.7	4.251	3.826	+0.83 -6.4	17.3	58.9
July 20	10 13.08	-20 59.3	4.293	3.778	+0.92 -7.4	17.2	53.5
July 30	10 22.61	-22 18.5	4.325	3.732	+1.00 -8.5	17.2	48.6
Aug. 9	10 32.90	-23 48.3	4.346	3.687	+1.07 -9.5	17.2	44.2
Aug. 19	10 43.91	-25 28.4	4.355	3.644	+1.14 -10.6	17.1	40.5
Aug. 29	10 55.60	-27 18.6	4.352	3.603	+1.21 -11.6	17.1	37.4
Sept. 8	11 07.94	-29 18.9	4.339	3.563	+1.27 -12.6	17.0	35.2
Sept. 18	11 20.94	-31 28.7	4.315	3.525	+1.34 -13.5	16.9	33.9
Sept. 28	11 34.60	-33 47.7	4.282	3.490	+1.40 -14.4	16.9	33.5
Oct. 8	11 48.95	-36 15.3	4.240	3.456	+1.47 -15.2	16.8	33.9
Oct. 18	12 04.03	-38 50.8	4.191	3.425	+1.55 -15.9	16.8	35.2
Oct. 28	12 19.93	-41 33.2	4.136	3.395	+1.64 -16.6	16.7	37.0
Nov. 7	12 36.72	-44 21.6	4.075	3.368	+1.73 -17.1	16.6	39.4
Nov. 17	12 54.53	-47 14.5	4.011	3.344	+1.84 -17.5	16.6	42.1
Nov. 27	13 13.52	-50 10.4	3.943	3.322	+1.97 -17.7	16.5	45.2
Dec. 7	13 33.86	-53 07.4	3.874	3.303	+2.12 -17.7	16.4	48.3
Dec. 17	13 55.79	-56 03.2	3.805	3.286	+2.29 -17.4	16.4	51.6
Dec. 27	14 19.59	-58 55.3	3.735	3.272	+2.49 -16.9	16.3	55.0
Jan. 6	14 45.53	-61 40.9	3.665	3.260	+2.73 -16.1	16.3	58.4
Jan. 16	15 13.96	-64 17.0	3.597	3.251	+2.99 -15.0	16.2	61.9
Jan. 26	15 45.09	-66 40.4	3.530	3.246	+3.27 -13.5	16.2	65.4
Feb. 5	16 19.02	-68 47.9	3.463	3.242	+3.54 -11.8	16.1	68.9
Feb. 15	16 55.57	-70 37.2	3.399	3.242	+3.78 -9.8	16.1	72.5
Feb. 25	17 34.08	-72 06.6	3.335	3.245	+3.92 -7.8	16.0	76.2
Mar. 7	18 13.39	-73 16.1	3.272	3.250	+3.92 -5.9	16.0	80.0
Mar. 17	18 51.97	-74 07.6	3.211	3.258	+3.75 -4.3	16.0	83.8
Mar. 27	19 28.10	-74 45.1	3.150	3.269	+3.42 -3.1	15.9	87.9

Comet C/2019 U5 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2023 Mar. 29.94273 TT
 Peri. = 181.51787
 Node = 2.63709 2000.0
 Incl. = 113.52115
 q = 3.6238135 AU
 e = 1.0013595

$$m1 = 2.1 + 5 \log(\Delta) + 12.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	16 35.80	+31 00.8	5.735	5.348	+0.34	+1.4	15.0	62.2
Jan. 11	16 38.91	+31 21.3	5.596	5.289	+0.27	+2.8	14.9	66.9
Jan. 21	16 41.27	+31 55.5	5.445	5.230	+0.19	+4.2	14.8	72.3
Jan. 31	16 42.65	+32 43.3	5.284	5.171	+0.07	+5.5	14.6	78.1
Feb. 10	16 42.78	+33 44.2	5.117	5.113	-0.07	+6.8	14.5	84.2
Feb. 20	16 41.34	+34 56.8	4.949	5.055	-0.24	+7.8	14.4	90.5
Mar. 2	16 38.02	+36 19.3	4.782	4.997	-0.45	+8.7	14.2	96.8
Mar. 12	16 32.48	+37 48.6	4.622	4.940	-0.69	+9.1	14.1	103.0
Mar. 22	16 24.40	+39 20.3	4.473	4.884	-0.96	+9.1	14.0	108.7
Apr. 1	16 13.55	+40 48.7	4.340	4.829	-1.24	+8.4	13.8	113.7
Apr. 11	15 59.86	+42 06.5	4.227	4.773	-1.52	+6.9	13.7	117.5
Apr. 21	15 43.56	+43 05.8	4.139	4.719	-1.76	+4.6	13.6	119.8
May 1	15 25.20	+43 39.2	4.077	4.666	-1.92	+1.7	13.5	120.2
May 11	15 05.72	+43 41.1	4.044	4.613	-1.97	-1.7	13.4	118.6
May 21	14 46.26	+43 09.1	4.038	4.561	-1.90	-5.0	13.4	115.1
May 31	14 27.92	+42 04.5	4.059	4.509	-1.73	-8.1	13.3	110.1
June 10	14 11.59	+40 31.9	4.103	4.459	-1.50	-10.6	13.3	104.0
June 20	13 57.79	+38 37.7	4.167	4.410	-1.23	-12.4	13.3	97.1
June 30	13 46.66	+36 28.5	4.246	4.361	-0.97	-13.5	13.2	89.7
July 10	13 38.14	+34 10.4	4.335	4.314	-0.72	-14.1	13.2	82.1
July 20	13 32.00	+31 48.4	4.428	4.267	-0.50	-14.3	13.2	74.3
July 30	13 27.92	+29 26.1	4.522	4.222	-0.30	-14.1	13.2	66.6
Aug. 9	13 25.62	+27 06.2	4.610	4.178	-0.14	-13.8	13.2	58.9
Aug. 19	13 24.79	+24 50.3	4.690	4.135	-0.01	-13.3	13.2	51.4
Aug. 29	13 25.17	+22 39.4	4.757	4.094	+0.10	-12.8	13.1	44.2
Sept. 8	13 26.53	+20 34.2	4.809	4.054	+0.18	-12.2	13.1	37.3
Sept. 18	13 28.65	+18 34.9	4.842	4.015	+0.25	-11.6	13.1	31.2
Sept. 28	13 31.35	+16 41.7	4.854	3.978	+0.29	-11.0	13.0	26.1
Oct. 8	13 34.45	+14 54.6	4.843	3.942	+0.33	-10.4	13.0	23.0
Oct. 18	13 37.78	+13 13.5	4.809	3.908	+0.34	-9.8	12.9	22.7
Oct. 28	13 41.19	+11 38.4	4.750	3.876	+0.34	-9.2	12.8	25.4
Nov. 7	13 44.48	+10 09.3	4.666	3.845	+0.32	-8.6	12.8	30.5
Nov. 17	13 47.50	+08 46.0	4.559	3.816	+0.28	-8.0	12.7	37.0
Nov. 27	13 50.04	+07 28.6	4.428	3.789	+0.22	-7.4	12.6	44.6
Dec. 7	13 51.86	+06 16.9	4.277	3.764	+0.13	-6.9	12.5	52.8
Dec. 17	13 52.73	+05 10.8	4.107	3.741	+0.02	-6.3	12.3	61.6
Dec. 27	13 52.34	+04 10.3	3.922	3.720	-0.12	-5.7	12.2	71.0
Jan. 6	13 50.34	+03 15.3	3.726	3.700	-0.30	-5.2	12.1	80.9
Jan. 16	13 46.36	+02 25.5	3.525	3.683	-0.52	-4.7	11.9	91.4
Jan. 26	13 39.98	+01 40.7	3.325	3.668	-0.79	-4.2	11.8	102.6
Feb. 5	13 30.78	+01 00.7	3.133	3.655	-1.09	-3.8	11.6	114.6
Feb. 15	13 18.47	+00 24.9	2.960	3.645	-1.41	-3.4	11.5	127.3
Feb. 25	13 02.90	+00 07.1	2.814	3.636	-1.73	-3.0	11.4	140.9
Mar. 7	12 44.33	+00 35.8	2.706	3.630	-2.00	-2.7	11.3	155.1
Mar. 17	12 23.51	-01 02.1	2.642	3.626	-2.16	-2.5	11.2	169.9
Mar. 27	12 01.64	-01 26.7	2.629	3.624	-2.19	-2.4	11.2	175.1

Comet 77P/Longmore

Epoch = 2022 June 30.0 TT
 T = 2023 Apr. 3.22927 TT
 Peri. = 196.76807 e = 0.3518747
 Node = 14.76907 2000.0 a = 3.6234654 AU
 Incl. = 24.31860 n = 0.14289528
 q = 2.3484596 AU P = 6.90 years

$$m1 = 7.5 + 5 \log(\Delta) + 17.5 \log(r(t-50))$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	07 44.33	+54 52.8	2.662	3.522	-1.21	+4.1	19.5	146.3
Jan. 11	07 31.55	+55 22.5	2.627	3.489	-1.33	+1.5	19.4	146.5
Jan. 21	07 18.34	+55 25.7	2.618	3.456	-1.29	-1.2	19.4	143.2
Jan. 31	07 06.23	+55 02.4	2.633	3.423	-1.10	-3.7	19.3	137.3
Feb. 10	06 56.56	+54 15.7	2.671	3.390	-0.79	-5.7	19.3	129.9
Feb. 20	06 50.19	+53 11.4	2.727	3.356	-0.44	-7.2	19.2	121.9
Mar. 2	06 47.37	+51 55.5	2.799	3.323	-0.09	-8.0	19.2	113.6
Mar. 12	06 48.03	+50 32.9	2.882	3.289	+0.25	-8.5	19.2	105.5
Mar. 22	06 51.83	+49 07.2	2.972	3.255	+0.54	-8.6	19.2	97.5
Apr. 1	06 58.33	+47 40.5	3.065	3.221	+0.78	-8.7	19.2	89.8
Apr. 11	07 07.11	+46 13.6	3.160	3.187	+0.99	-8.7	19.2	82.5
Apr. 21	07 17.75	+44 46.7	3.252	3.153	+1.15	-8.7	19.2	75.4
May 1	07 29.91	+43 19.2	3.341	3.119	+1.29	-8.8	19.2	68.7
May 11	07 43.27	+41 50.6	3.424	3.085	+1.39	-9.0	19.1	62.2
May 21	07 57.56	+40 20.1	3.500	3.052	+1.47	-9.2	19.1	56.0
May 31	08 12.58	+38 47.1	3.567	3.018	+1.53	-9.5	19.1	50.1
June 10	08 28.14	+37 11.0	3.625	2.984	+1.58	-9.8	19.0	44.3
June 20	08 44.07	+35 31.3	3.673	2.951	+1.61	-10.2	19.0	38.8
June 30	09 00.26	+33 47.7	3.711	2.918	+1.63	-10.6	18.9	33.5
July 10	09 16.62	+32 00.1	3.738	2.885	+1.64	-11.0	18.8	28.5
July 20	09 33.06	+30 08.4	3.754	2.853	+1.65	-11.4	18.8	23.7
July 30	09 49.52	+28 12.6	3.758	2.821	+1.65	-11.8	18.7	19.4
Aug. 9	10 05.95	+26 13.0	3.752	2.790	+1.64	-12.2	18.6	15.8
Aug. 19	10 22.32	+24 09.9	3.734	2.759	+1.63	-12.5	18.5	13.3
Aug. 29	10 38.60	+22 03.4	3.704	2.728	+1.62	-12.8	18.4	12.7
Sept. 8	10 54.79	+19 54.1	3.664	2.698	+1.61	-13.1	18.3	14.2
Sept. 18	11 10.84	+17 42.3	3.612	2.669	+1.60	-13.3	18.2	17.3
Sept. 28	11 26.78	+15 28.5	3.550	2.641	+1.59	-13.5	18.0	21.2
Oct. 8	11 42.56	+13 13.2	3.478	2.614	+1.57	-13.6	17.9	25.7
Oct. 18	11 58.18	+10 57.0	3.395	2.587	+1.55	-13.7	17.8	30.6
Oct. 28	12 13.63	+08 40.1	3.303	2.562	+1.53	-13.7	17.6	35.7
Nov. 7	12 28.86	+06 23.3	3.202	2.538	+1.51	-13.7	17.5	40.9
Nov. 17	12 43.83	+04 06.9	3.092	2.514	+1.48	-13.6	17.3	46.4
Nov. 27	12 58.51	+01 51.2	2.975	2.492	+1.45	-13.5	17.2	52.0
Dec. 7	13 12.80	+00 23.5	2.851	2.472	+1.40	-13.4	17.0	57.8
Dec. 17	13 26.61	-02 36.9	2.722	2.452	+1.35	-13.3	16.8	63.8
Dec. 27	13 39.82	-04 49.1	2.587	2.435	+1.28	-13.2	16.6	70.1
Jan. 6	13 52.26	-07 00.2	2.450	2.418	+1.19	-13.1	16.5	76.5
Jan. 16	14 03.73	-09 10.6	2.311	2.404	+1.09	-13.0	16.3	83.3
Jan. 26	14 13.98	-11 20.9	2.173	2.390	+0.95	-13.0	16.1	90.3
Feb. 5	14 22.69	-13 31.6	2.036	2.379	+0.77	-13.1	15.9	97.8
Feb. 15	14 29.52	-15 43.5	1.904	2.369	+0.56	-13.3	15.7	105.6
Feb. 25	14 34.02	-17 57.1	1.780	2.361	+0.31	-13.4	15.5	113.9
Mar. 7	14 35.78	-20 12.1	1.666	2.355	+0.01	-13.5	15.3	122.8
Mar. 17	14 34.40	-22 27.1	1.565	2.351	-0.32	-13.4	15.1	132.1
Mar. 27	14 29.62	-24 38.7	1.483	2.349	-0.66	-12.8	14.9	141.8

Comet C/2021 Y1 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2023 Apr. 30.81052 TT
 Peri. = 245.80625
 Node = 244.76254 2000.0
 Incl. = 77.19420
 q = 2.0331459 AU
 e = 1.0005949

$$m1 = 7.3 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	01 21.98	+55 07.2	5.000	5.475	+0.04 -11.8	18.2	114.0
Jan. 11	01 23.31	+53 10.7	5.028	5.392	+0.24 -11.3	18.1	106.6
Jan. 21	01 26.55	+51 20.5	5.068	5.309	+0.42 -10.6	18.1	98.8
Jan. 31	01 31.42	+49 38.9	5.118	5.226	+0.57 -9.6	18.0	90.8
Feb. 10	01 37.69	+48 07.4	5.172	5.143	+0.69 -8.6	18.0	82.8
Feb. 20	01 45.12	+46 46.5	5.227	5.059	+0.80 -7.5	17.9	74.8
Mar. 2	01 53.53	+45 36.1	5.279	4.975	+0.89 -6.5	17.9	67.0
Mar. 12	02 02.76	+44 35.7	5.323	4.891	+0.96 -5.5	17.8	59.3
Mar. 22	02 12.66	+43 44.4	5.357	4.807	+1.02 -4.7	17.8	52.0
Apr. 1	02 23.12	+43 01.1	5.377	4.723	+1.07 -3.9	17.7	44.9
Apr. 11	02 34.05	+42 24.8	5.383	4.638	+1.11 -3.3	17.6	38.3
Apr. 21	02 45.34	+41 54.2	5.371	4.553	+1.15 -2.8	17.5	32.3
May 1	02 56.91	+41 28.2	5.341	4.468	+1.17 -2.4	17.4	27.1
May 11	03 08.69	+41 05.6	5.292	4.383	+1.19 -2.1	17.3	23.4
May 21	03 20.59	+40 45.4	5.223	4.298	+1.19 -1.9	17.2	21.6
May 31	03 32.55	+40 26.5	5.134	4.213	+1.20 -1.9	17.1	22.3
June 10	03 44.47	+40 08.0	5.024	4.128	+1.19 -1.9	17.0	25.1
June 20	03 56.27	+39 48.9	4.895	4.042	+1.17 -2.0	16.8	29.5
June 30	04 07.85	+39 28.5	4.747	3.957	+1.14 -2.2	16.7	35.0
July 10	04 19.10	+39 05.8	4.581	3.872	+1.10 -2.4	16.5	41.0
July 20	04 29.91	+38 39.9	4.398	3.787	+1.05 -2.8	16.3	47.5
July 30	04 40.12	+38 10.0	4.200	3.702	+0.98 -3.3	16.1	54.4
Aug. 9	04 49.55	+37 35.0	3.988	3.617	+0.89 -3.8	15.9	61.6
Aug. 19	04 58.03	+36 53.7	3.764	3.532	+0.79 -4.5	15.7	69.1
Aug. 29	05 05.30	+36 04.6	3.531	3.448	+0.65 -5.4	15.4	77.0
Sept. 8	05 11.08	+35 05.8	3.293	3.364	+0.48 -6.5	15.2	85.3
Sept. 18	05 15.05	+33 54.8	3.051	3.281	+0.28 -7.9	14.9	94.2
Sept. 28	05 16.85	+32 28.0	2.811	3.199	+0.04 -9.7	14.6	103.6
Oct. 8	05 16.04	+30 41.0	2.578	3.117	-0.24 -12.0	14.3	113.7
Oct. 18	05 12.26	+28 28.0	2.357	3.036	-0.56 -15.0	14.0	124.6
Oct. 28	05 05.19	+25 42.3	2.155	2.956	-0.90 -18.6	13.7	136.5
Nov. 7	04 54.74	+22 18.0	1.981	2.878	-1.22 -22.7	13.4	149.3
Nov. 17	04 41.23	+18 12.4	1.842	2.801	-1.49 -26.7	13.1	162.6
Nov. 27	04 25.47	+13 30.7	1.746	2.726	-1.65 -29.6	12.9	171.6
Dec. 7	04 08.78	+08 28.5	1.697	2.653	-1.66 -30.5	12.7	162.4
Dec. 17	03 52.73	+03 28.8	1.694	2.582	-1.51 -28.9	12.6	148.0
Dec. 27	03 38.70	-01 05.8	1.732	2.513	-1.25 -25.4	12.5	133.6
Jan. 6	03 27.69	-05 01.2	1.802	2.447	-0.91 -21.2	12.5	120.1
Jan. 16	03 20.13	-08 13.9	1.892	2.385	-0.56 -17.0	12.5	107.9
Jan. 26	03 16.05	-10 47.8	1.993	2.327	-0.22 -13.5	12.5	96.9
Feb. 5	03 15.25	-12 50.3	2.096	2.272	+0.09 -10.8	12.5	87.2
Feb. 15	03 17.38	-14 29.6	2.195	2.222	+0.36 -8.9	12.5	78.6
Feb. 25	03 22.15	-15 52.8	2.285	2.177	+0.61 -7.7	12.5	71.2
Mar. 7	03 29.26	-17 06.6	2.361	2.137	+0.83 -7.1	12.5	64.8
Mar. 17	03 38.47	-18 16.0	2.424	2.104	+1.03 -6.9	12.5	59.6
Mar. 27	03 49.64	-19 25.3	2.470	2.076	+1.22 -7.1	12.4	55.6

Comet C/2020 V2 (ZTF)

Epoch = 2022 June 30.0 TT
 T = 2023 May 8.52495 TT
 Peri. = 162.41442
 Node = 212.36894 2000.0
 Incl. = 131.61088
 q = 2.2280950 AU
 e = 1.0010521

$$m1 = 3.5 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° ' "			m	' "		°
Jan. 1	13 06.69	+41 21.7	5.221	5.495	+0.06	+11.9	14.5	101.1
Jan. 11	13 06.56	+43 28.4	5.019	5.415	-0.11	+13.5	14.3	108.7
Jan. 21	13 04.51	+45 49.6	4.834	5.334	-0.33	+14.8	14.2	115.7
Jan. 31	13 00.09	+48 22.0	4.670	5.254	-0.59	+15.7	14.1	121.6
Feb. 10	12 52.82	+51 00.3	4.532	5.173	-0.90	+15.9	13.9	126.0
Feb. 20	12 42.28	+53 37.1	4.423	5.092	-1.25	+15.3	13.8	128.1
Mar. 2	12 28.20	+56 03.8	4.344	5.011	-1.61	+13.7	13.7	127.6
Mar. 12	12 10.63	+58 10.9	4.297	4.930	-1.93	+11.3	13.6	124.7
Mar. 22	11 50.21	+59 50.1	4.278	4.849	-2.16	+8.2	13.5	119.7
Apr. 1	11 28.16	+60 56.3	4.284	4.768	-2.23	+4.7	13.4	113.2
Apr. 11	11 06.16	+61 28.1	4.312	4.686	-2.13	+1.4	13.4	105.9
Apr. 21	10 45.86	+61 28.8	4.354	4.605	-1.88	-1.4	13.3	98.1
May 1	10 28.48	+61 04.3	4.407	4.523	-1.55	-3.6	13.3	90.2
May 11	10 14.64	+60 21.7	4.463	4.442	-1.18	-5.0	13.2	82.3
May 21	10 04.41	+59 27.9	4.518	4.360	-0.83	-5.8	13.2	74.6
May 31	09 57.51	+58 28.2	4.567	4.279	-0.52	-6.1	13.1	67.3
June 10	09 53.53	+57 27.1	4.605	4.197	-0.25	-6.1	13.0	60.4
June 20	09 52.01	+56 27.5	4.629	4.116	-0.03	-5.8	13.0	54.1
June 30	09 52.53	+55 31.8	4.636	4.035	+0.15	-5.3	12.9	48.5
July 10	09 54.71	+54 41.5	4.623	3.954	+0.30	-4.7	12.8	43.9
July 20	09 58.24	+53 58.0	4.589	3.873	+0.42	-3.9	12.7	40.5
July 30	10 02.86	+53 22.6	4.532	3.792	+0.51	-3.1	12.6	38.6
Aug. 9	10 08.35	+52 56.5	4.453	3.712	+0.59	-2.0	12.4	38.4
Aug. 19	10 14.52	+52 41.0	4.349	3.633	+0.65	-0.9	12.3	40.0
Aug. 29	10 21.24	+52 37.9	4.223	3.553	+0.70	+0.5	12.1	43.1
Sept. 8	10 28.34	+52 49.4	4.075	3.475	+0.73	+2.0	12.0	47.5
Sept. 18	10 35.69	+53 18.1	3.906	3.397	+0.74	+3.9	11.8	53.0
Sept. 28	10 43.17	+54 07.4	3.720	3.320	+0.75	+6.2	11.6	59.2
Oct. 8	10 50.59	+55 21.6	3.518	3.244	+0.73	+9.0	11.3	66.1
Oct. 18	10 57.75	+57 06.1	3.305	3.169	+0.69	+12.4	11.1	73.5
Oct. 28	11 04.32	+59 27.5	3.086	3.095	+0.61	+16.5	10.9	81.3
Nov. 7	11 09.73	+62 33.7	2.867	3.022	+0.44	+21.4	10.6	89.3
Nov. 17	11 12.85	+66 32.8	2.656	2.951	+0.11	+27.1	10.3	97.4
Nov. 27	11 10.92	+71 32.1	2.461	2.882	-0.71	+33.4	10.1	105.2
Dec. 7	10 54.61	+77 32.0	2.295	2.815	-3.44	+38.7	9.8	111.9
Dec. 17	09 30.00	+83 58.1	2.167	2.750	-21.38	+33.3	9.6	116.4
Dec. 27	03 38.03	+84 27.3	2.087	2.687	-22.48	-36.7	9.4	117.5
Jan. 6	01 50.68	+76 57.4	2.062	2.627	-3.56	-49.4	9.3	114.5
Jan. 16	01 31.02	+68 44.0	2.090	2.570	-0.73	-48.3	9.2	108.0
Jan. 26	01 28.16	+61 00.6	2.165	2.516	+0.11	-43.6	9.2	99.1
Feb. 5	01 31.03	+54 11.6	2.275	2.466	+0.45	-37.5	9.2	89.2
Feb. 15	01 36.44	+48 23.6	2.408	2.420	+0.63	-31.5	9.2	78.9
Feb. 25	01 43.17	+43 33.6	2.553	2.378	+0.72	-26.1	9.3	68.7
Mar. 7	01 50.61	+39 33.7	2.698	2.341	+0.77	-21.6	9.3	58.7
Mar. 17	01 58.42	+36 14.6	2.835	2.309	+0.79	-18.0	9.4	49.0
Mar. 27	02 06.43	+33 27.6	2.958	2.281	+0.80	-15.2	9.4	39.7

Comet C/2020 K1 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2023 May 9.06044 TT
 Peri. = 213.97789
 Node = 94.35619 2000.0
 Incl. = 89.66311
 q = 3.0734467 AU
 e = 0.9999442

$$m1 = 2.7 + 5 \log(\Delta) + 12.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	18 16.65	+18 41.5	6.159	5.472	+0.70	-3.8	15.9	42.3
Jan. 11	18 23.59	+18 07.8	6.080	5.403	+0.69	-2.9	15.8	43.0
Jan. 21	18 30.37	+17 43.3	5.983	5.334	+0.67	-2.0	15.7	45.1
Jan. 31	18 36.88	+17 27.3	5.868	5.266	+0.63	-1.1	15.6	48.4
Feb. 10	18 42.98	+17 19.5	5.736	5.197	+0.58	-0.4	15.4	52.7
Feb. 20	18 48.53	+17 18.9	5.588	5.129	+0.52	+0.3	15.3	57.8
Mar. 2	18 53.39	+17 24.8	5.425	5.061	+0.44	+0.9	15.2	63.5
Mar. 12	18 57.41	+17 36.0	5.250	4.994	+0.35	+1.4	15.0	69.8
Mar. 22	19 00.43	+17 51.3	5.064	4.926	+0.24	+1.7	14.9	76.4
Apr. 1	19 02.28	+18 09.1	4.871	4.859	+0.11	+1.8	14.7	83.4
Apr. 11	19 02.77	+18 27.5	4.674	4.793	-0.03	+1.8	14.6	90.7
Apr. 21	19 01.77	+18 44.0	4.476	4.726	-0.19	+1.4	14.4	98.3
May 1	18 59.10	+18 55.9	4.281	4.660	-0.36	+0.8	14.2	106.0
May 11	18 54.66	+18 59.8	4.094	4.595	-0.54	-0.2	14.0	113.8
May 21	18 48.42	+18 51.7	3.919	4.530	-0.72	-1.6	13.9	121.4
May 31	18 40.43	+18 27.9	3.761	4.465	-0.89	-3.4	13.7	128.6
June 10	18 30.91	+17 44.4	3.626	4.401	-1.02	-5.6	13.5	134.9
June 20	18 20.23	+16 38.3	3.516	4.338	-1.11	-7.9	13.4	139.4
June 30	18 08.88	+15 08.1	3.435	4.275	-1.15	-10.3	13.3	141.2
July 10	17 57.50	+13 14.6	3.387	4.213	-1.12	-12.5	13.2	139.6
July 20	17 46.69	+11 00.7	3.370	4.152	-1.03	-14.3	13.1	135.0
July 30	17 37.00	+08 31.2	3.384	4.091	-0.89	-15.6	13.0	128.2
Aug. 9	17 28.87	+05 51.6	3.427	4.032	-0.72	-16.3	12.9	120.1
Aug. 19	17 22.56	+03 07.5	3.492	3.973	-0.53	-16.5	12.9	111.3
Aug. 29	17 18.17	+00 23.4	3.577	3.916	-0.33	-16.3	12.9	102.1
Sept. 8	17 15.71	-02 16.9	3.674	3.859	-0.14	-15.7	12.9	92.9
Sept. 18	17 15.11	-04 51.3	3.779	3.804	+0.04	-15.1	12.8	83.8
Sept. 28	17 16.22	-07 18.4	3.886	3.750	+0.20	-14.3	12.8	74.8
Oct. 8	17 18.91	-09 37.7	3.991	3.697	+0.35	-13.5	12.8	65.9
Oct. 18	17 23.02	-11 49.2	4.088	3.646	+0.48	-12.7	12.8	57.2
Oct. 28	17 28.38	-13 53.4	4.174	3.596	+0.60	-12.0	12.8	48.7
Nov. 7	17 34.87	-15 50.8	4.247	3.548	+0.70	-11.4	12.7	40.2
Nov. 17	17 42.33	-17 42.2	4.302	3.502	+0.80	-10.8	12.7	31.9
Nov. 27	17 50.66	-19 28.5	4.338	3.457	+0.88	-10.4	12.6	23.7
Dec. 7	17 59.73	-21 10.6	4.354	3.415	+0.94	-10.0	12.6	15.6
Dec. 17	18 09.44	-22 49.7	4.347	3.374	+1.00	-9.8	12.5	7.5
Dec. 27	18 19.69	-24 27.0	4.319	3.336	+1.05	-9.7	12.4	1.2
Jan. 6	18 30.39	-26 03.8	4.268	3.300	+1.09	-9.7	12.3	8.7
Jan. 16	18 41.46	-27 41.7	4.196	3.266	+1.12	-9.9	12.2	16.7
Jan. 26	18 52.82	-29 22.5	4.103	3.234	+1.15	-10.3	12.1	24.7
Feb. 5	19 04.38	-31 08.3	3.990	3.205	+1.17	-10.9	12.0	32.7
Feb. 15	19 16.10	-33 01.5	3.861	3.179	+1.18	-11.8	11.9	40.7
Feb. 25	19 27.90	-35 04.8	3.718	3.156	+1.18	-13.0	11.8	48.8
Mar. 7	19 39.71	-37 21.3	3.564	3.135	+1.18	-14.5	11.7	56.9
Mar. 17	19 51.49	-39 54.5	3.403	3.117	+1.17	-16.4	11.5	65.1
Mar. 27	20 03.15	-42 48.1	3.240	3.102	+1.16	-18.6	11.4	73.2

Comet A/2021 X1

Epoch = 2022 June 30.0 TT
 T = 2023 May 27.28182 TT
 Peri. = 334.59277
 Node = 10.58416 2000.0
 Incl. = 140.12116
 q = 3.2344093 AU
 e = 1.0005877

$$m1 = 10.5 + 5 \log(\Delta) + 5.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	07 55.44	-24 33.1	4.943	5.619	-1.22	-1.6	17.7	129.4
Jan. 11	07 42.78	-24 40.3	4.831	5.552	-1.31	+0.4	17.6	133.3
Jan. 21	07 29.52	-24 27.6	4.752	5.485	-1.34	+2.4	17.6	134.4
Jan. 31	07 16.27	-23 54.9	4.706	5.419	-1.30	+4.3	17.5	132.3
Feb. 10	07 03.62	-23 03.7	4.694	5.352	-1.21	+6.0	17.5	127.5
Feb. 20	06 52.10	-21 57.4	4.711	5.286	-1.07	+7.3	17.5	120.8
Mar. 2	06 42.08	-20 40.4	4.754	5.221	-0.91	+8.1	17.5	112.9
Mar. 12	06 33.76	-19 17.1	4.817	5.155	-0.73	+8.5	17.5	104.4
Mar. 22	06 27.22	-17 52.0	4.893	5.090	-0.56	+8.5	17.5	95.7
Apr. 1	06 22.40	-16 28.4	4.978	5.025	-0.39	+8.2	17.5	87.0
Apr. 11	06 19.18	-15 09.3	5.063	4.960	-0.24	+7.6	17.5	78.4
Apr. 21	06 17.37	-13 56.5	5.145	4.896	-0.11	+6.9	17.5	70.1
May 1	06 16.81	-12 51.5	5.218	4.832	0.00	+6.0	17.5	62.3
May 11	06 17.30	-11 55.0	5.278	4.769	+0.10	+5.2	17.5	54.9
May 21	06 18.64	-11 07.6	5.321	4.706	+0.17	+4.2	17.5	48.1
May 31	06 20.67	-10 29.6	5.344	4.643	+0.23	+3.3	17.5	42.2
June 10	06 23.22	-10 01.2	5.346	4.581	+0.28	+2.3	17.4	37.4
June 20	06 26.12	-09 42.4	5.325	4.520	+0.30	+1.4	17.4	34.1
June 30	06 29.22	-09 33.2	5.280	4.459	+0.31	+0.4	17.4	32.8
July 10	06 32.36	-09 33.9	5.210	4.399	+0.31	-0.6	17.3	33.6
July 20	06 35.37	-09 44.4	5.116	4.340	+0.29	-1.6	17.2	36.4
July 30	06 38.10	-10 04.9	4.998	4.281	+0.25	-2.6	17.2	40.8
Aug. 9	06 40.35	-10 35.7	4.858	4.223	+0.19	-3.6	17.1	46.5
Aug. 19	06 41.90	-11 16.8	4.697	4.167	+0.11	-4.7	17.0	53.0
Aug. 29	06 42.53	-12 08.6	4.518	4.111	0.00	-5.8	16.8	60.2
Sept. 8	06 41.94	-13 11.1	4.324	4.056	-0.14	-6.8	16.7	68.0
Sept. 18	06 39.79	-14 24.2	4.120	4.002	-0.31	-7.9	16.6	76.3
Sept. 28	06 35.69	-15 47.4	3.909	3.949	-0.53	-8.8	16.4	84.9
Oct. 8	06 29.19	-17 19.3	3.699	3.898	-0.80	-9.6	16.3	94.0
Oct. 18	06 19.81	-18 57.2	3.496	3.848	-1.12	-10.0	16.1	103.2
Oct. 28	06 07.06	-20 36.5	3.308	3.799	-1.47	-9.7	16.0	112.4
Nov. 7	05 50.63	-22 09.8	3.144	3.751	-1.85	-8.6	15.9	121.0
Nov. 17	05 30.53	-23 27.1	3.012	3.705	-2.20	-6.4	15.7	128.2
Nov. 27	05 07.30	-24 17.1	2.921	3.661	-2.45	-3.1	15.6	132.6
Dec. 7	04 42.16	-24 29.8	2.875	3.619	-2.56	+1.0	15.6	132.9
Dec. 17	04 16.81	-24 00.9	2.878	3.578	-2.48	+5.1	15.6	128.8
Dec. 27	03 53.00	-22 52.9	2.926	3.539	-2.24	+8.7	15.6	121.4
Jan. 6	03 32.09	-21 14.3	3.013	3.502	-1.90	+11.1	15.6	112.0
Jan. 16	03 14.72	-19 16.1	3.130	3.467	-1.53	+12.5	15.7	101.8
Jan. 26	03 01.02	-17 08.1	3.269	3.434	-1.18	+13.0	15.8	91.3
Feb. 5	02 50.70	-14 58.0	3.418	3.404	-0.86	+12.9	15.8	80.9
Feb. 15	02 43.30	-12 50.7	3.570	3.376	-0.60	+12.5	15.9	70.7
Feb. 25	02 38.34	-10 48.9	3.717	3.350	-0.38	+11.8	16.0	61.0
Mar. 7	02 35.34	-08 53.8	3.851	3.326	-0.21	+11.1	16.0	51.5
Mar. 17	02 33.89	-07 06.0	3.969	3.305	-0.07	+10.4	16.1	42.5
Mar. 27	02 33.63	-05 25.4	4.067	3.287	+0.03	+9.7	16.1	34.0

Comet C/2021 T4 (Lemmon)

Epoch = 2022 June 30.0 TT
 T = 2023 July 31.55534 TT
 Peri. = 329.79379
 Node = 257.79389 2000.0
 Incl. = 160.75399
 q = 1.4814660 AU
 e = 0.9997867

$$m1 = 7.5 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	03 00.68	+07 11.6	5.860	6.463	-0.59	-2.0	19.4	124.1
Jan. 11	02 55.32	+06 54.6	5.934	6.378	-0.47	-1.4	19.4	112.7
Jan. 21	02 51.11	+06 43.6	6.021	6.294	-0.36	-0.8	19.4	101.6
Jan. 31	02 48.09	+06 38.2	6.116	6.209	-0.24	-0.2	19.4	90.9
Feb. 10	02 46.24	+06 38.1	6.210	6.124	-0.12	+0.2	19.3	80.4
Feb. 20	02 45.49	+06 42.4	6.299	6.038	-0.02	+0.6	19.3	70.3
Mar. 2	02 45.75	+06 50.3	6.378	5.952	+0.08	+1.0	19.3	60.4
Mar. 12	02 46.92	+07 01.2	6.440	5.865	+0.16	+1.2	19.2	50.9
Mar. 22	02 48.87	+07 14.0	6.484	5.778	+0.23	+1.4	19.2	41.7
Apr. 1	02 51.51	+07 28.0	6.505	5.690	+0.30	+1.4	19.1	32.8
Apr. 11	02 54.70	+07 42.4	6.501	5.603	+0.35	+1.4	19.0	24.2
Apr. 21	02 58.35	+07 56.6	6.471	5.514	+0.38	+1.4	19.0	16.3
May 1	03 02.33	+08 09.6	6.414	5.425	+0.41	+1.2	18.9	10.1
May 11	03 06.54	+08 21.0	6.330	5.336	+0.43	+1.0	18.8	9.4
May 21	03 10.87	+08 29.9	6.218	5.246	+0.44	+0.7	18.7	14.9
May 31	03 15.22	+08 35.8	6.079	5.156	+0.43	+0.4	18.5	22.4
June 10	03 19.45	+08 37.9	5.915	5.066	+0.41	0.0	18.4	30.4
June 20	03 23.45	+08 35.4	5.727	4.974	+0.38	-0.5	18.3	38.7
June 30	03 27.07	+08 27.5	5.517	4.883	+0.34	-1.1	18.1	47.2
July 10	03 30.15	+08 13.5	5.287	4.791	+0.27	-1.8	17.9	55.8
July 20	03 32.52	+07 52.2	5.041	4.698	+0.19	-2.6	17.7	64.7
July 30	03 33.97	+07 22.5	4.782	4.605	+0.09	-3.5	17.5	73.9
Aug. 9	03 34.26	+06 43.2	4.514	4.511	-0.05	-4.5	17.3	83.4
Aug. 19	03 33.10	+05 52.8	4.243	4.417	-0.21	-5.7	17.1	93.2
Aug. 29	03 30.19	+04 49.8	3.973	4.323	-0.40	-7.1	16.9	103.5
Sept. 8	03 25.19	+03 32.8	3.711	4.228	-0.63	-8.5	16.6	114.3
Sept. 18	03 17.76	+02 00.7	3.465	4.132	-0.89	-10.1	16.4	125.6
Sept. 28	03 07.61	+00 13.2	3.242	4.036	-1.17	-11.5	16.1	137.2
Oct. 8	02 54.61	-01 47.9	3.051	3.939	-1.45	-12.7	15.9	148.7
Oct. 18	02 38.88	-03 58.5	2.899	3.842	-1.71	-13.3	15.7	158.2
Oct. 28	02 20.89	-06 11.7	2.793	3.745	-1.89	-13.1	15.5	160.6
Nov. 7	02 01.52	-08 18.2	2.735	3.647	-1.97	-11.9	15.3	153.1
Nov. 17	01 41.96	-10 09.0	2.725	3.548	-1.92	-9.9	15.2	141.0
Nov. 27	01 23.40	-11 37.7	2.756	3.450	-1.76	-7.5	15.1	127.7
Dec. 7	01 06.86	-12 41.7	2.821	3.351	-1.52	-5.1	15.0	114.4
Dec. 17	00 52.92	-13 22.1	2.909	3.251	-1.24	-2.9	14.9	101.5
Dec. 27	00 41.81	-13 42.3	3.008	3.152	-0.96	-1.1	14.9	89.2
Jan. 6	00 33.46	-13 46.7	3.109	3.052	-0.69	+0.3	14.8	77.5
Jan. 16	00 27.61	-13 39.2	3.204	2.952	-0.46	+1.3	14.7	66.5
Jan. 26	00 23.92	-13 23.3	3.284	2.852	-0.26	+1.9	14.6	55.9
Feb. 5	00 22.05	-13 01.9	3.345	2.752	-0.10	+2.3	14.5	45.9
Feb. 15	00 21.66	-12 37.6	3.381	2.653	+0.03	+2.5	14.4	36.5
Feb. 25	00 22.46	-12 12.0	3.389	2.554	+0.13	+2.6	14.2	27.7
Mar. 7	00 24.17	-11 47.0	3.366	2.456	+0.21	+2.4	14.0	19.8
Mar. 17	00 26.56	-11 24.2	3.310	2.358	+0.27	+2.1	13.8	14.2
Mar. 27	00 29.42	-11 05.1	3.220	2.263	+0.30	+1.6	13.6	13.5

Comet C/2021 S4 (Tsuchinshan)

Epoch = 2022 June 30.0 TT
 T = 2024 Jan. 1.17671 TT
 Peri. = 72.75142 e = 0.9589517
 Node = 5.49952 2000.0 a = 163.0355703 AU
 Incl. = 17.48254 n = 0.00047346
 q = 6.6923330 AU P = 2081.73 years

$$m1 = 6.2 + 5 \log(\Delta) + 10.0 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	01 02.54	+13 52.1	7.938	8.157	+0.11	+0.8	19.8	99.4
Jan. 11	01 03.99	+14 02.0	8.067	8.122	+0.19	+1.2	19.8	89.7
Jan. 21	01 06.21	+14 16.4	8.197	8.087	+0.26	+1.7	19.8	80.2
Jan. 31	01 09.15	+14 35.3	8.322	8.053	+0.33	+2.1	19.9	70.9
Feb. 10	01 12.75	+14 58.4	8.438	8.018	+0.39	+2.5	19.9	61.8
Feb. 20	01 16.93	+15 25.3	8.542	7.984	+0.45	+2.9	19.9	52.9
Mar. 2	01 21.63	+15 55.7	8.632	7.951	+0.50	+3.2	19.9	44.2
Mar. 12	01 26.76	+16 29.2	8.703	7.917	+0.53	+3.5	19.9	35.7
Mar. 22	01 32.27	+17 05.2	8.755	7.884	+0.57	+3.7	19.9	27.4
Apr. 1	01 38.06	+17 43.4	8.786	7.851	+0.59	+3.9	19.9	19.5
Apr. 11	01 44.07	+18 23.3	8.795	7.819	+0.61	+4.1	19.9	12.2
Apr. 21	01 50.22	+19 04.6	8.782	7.787	+0.62	+4.2	19.8	7.5
May 1	01 56.45	+19 46.8	8.746	7.755	+0.62	+4.3	19.8	9.7
May 11	02 02.69	+20 29.5	8.688	7.724	+0.62	+4.3	19.8	16.2
May 21	02 08.85	+21 12.5	8.609	7.693	+0.61	+4.3	19.7	23.6
May 31	02 14.87	+21 55.4	8.510	7.662	+0.59	+4.3	19.7	31.3
June 10	02 20.67	+22 38.0	8.391	7.631	+0.56	+4.2	19.6	39.2
June 20	02 26.17	+23 19.9	8.256	7.601	+0.53	+4.1	19.6	47.2
June 30	02 31.29	+24 01.0	8.105	7.572	+0.49	+4.0	19.5	55.2
July 10	02 35.93	+24 40.9	7.942	7.542	+0.44	+3.9	19.5	63.4
July 20	02 40.03	+25 19.3	7.769	7.514	+0.38	+3.8	19.4	71.8
July 30	02 43.48	+25 56.0	7.589	7.485	+0.31	+3.6	19.3	80.3
Aug. 9	02 46.20	+26 30.6	7.406	7.457	+0.23	+3.3	19.3	89.0
Aug. 19	02 48.11	+27 02.8	7.223	7.429	+0.14	+3.1	19.2	97.8
Aug. 29	02 49.15	+27 32.0	7.044	7.402	+0.05	+2.7	19.1	106.9
Sept. 8	02 49.27	+27 57.8	6.874	7.375	-0.04	+2.4	19.1	116.2
Sept. 18	02 48.48	+28 19.6	6.717	7.349	-0.13	+1.9	19.0	125.7
Sept. 28	02 46.80	+28 37.0	6.576	7.323	-0.21	+1.5	18.9	135.3
Oct. 8	02 44.32	+28 49.4	6.456	7.297	-0.29	+1.0	18.9	144.9
Oct. 18	02 41.19	+28 56.7	6.361	7.272	-0.34	+0.4	18.8	154.3
Oct. 28	02 37.59	+28 58.7	6.293	7.247	-0.38	-0.1	18.8	162.5
Nov. 7	02 33.78	+28 56.0	6.254	7.223	-0.38	-0.5	18.8	166.8
Nov. 17	02 30.02	+28 49.2	6.246	7.199	-0.36	-0.9	18.8	163.5
Nov. 27	02 26.57	+28 39.4	6.266	7.176	-0.32	-1.1	18.7	155.5
Dec. 7	02 23.68	+28 28.0	6.315	7.153	-0.25	-1.2	18.7	146.0
Dec. 17	02 21.54	+28 16.5	6.389	7.131	-0.17	-1.1	18.8	136.0
Dec. 27	02 20.31	+28 06.1	6.485	7.109	-0.07	-0.9	18.8	126.1
Jan. 6	02 20.07	+27 58.2	6.599	7.088	+0.03	-0.6	18.8	116.2
Jan. 16	02 20.87	+27 53.7	6.725	7.067	+0.14	-0.2	18.8	106.5
Jan. 26	02 22.70	+27 53.3	6.859	7.046	+0.24	+0.2	18.9	96.9
Feb. 5	02 25.53	+27 57.2	6.998	7.026	+0.33	+0.6	18.9	87.6
Feb. 15	02 29.28	+28 05.6	7.135	7.007	+0.42	+1.1	18.9	78.6
Feb. 25	02 33.90	+28 18.3	7.268	6.988	+0.51	+1.5	19.0	69.8
Mar. 7	02 39.29	+28 35.1	7.393	6.970	+0.58	+1.9	19.0	61.3
Mar. 17	02 45.37	+28 55.6	7.506	6.952	+0.64	+2.2	19.0	52.9
Mar. 27	02 52.05	+29 19.3	7.606	6.935	+0.70	+2.5	19.0	44.9

Comet C/2021 S3 (PANSTARRS)

Epoch = 2022 June 30.0 TT
 T = 2024 Feb. 14.85701 TT
 Peri. = 6.90229
 Node = 215.63159 2000.0
 Incl. = 58.53697
 q = 1.3191995 AU
 e = 0.9997518

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

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2022/23	h m	° '			m	'		°
Jan. 1	04 50.43	-26 13.5	7.581	8.166	-0.44	+0.9	18.5	123.5
Jan. 11	04 46.22	-26 00.0	7.578	8.087	-0.39	+1.9	18.5	118.1
Jan. 21	04 42.66	-25 37.3	7.591	8.009	-0.32	+2.7	18.4	111.8
Jan. 31	04 39.88	-25 06.8	7.616	7.930	-0.23	+3.4	18.4	105.1
Feb. 10	04 38.01	-24 30.1	7.651	7.851	-0.14	+3.9	18.4	98.1
Feb. 20	04 37.09	-23 49.2	7.690	7.772	-0.04	+4.3	18.3	91.1
Mar. 2	04 37.13	-23 05.7	7.730	7.692	+0.06	+4.4	18.3	84.1
Mar. 12	04 38.13	-22 21.4	7.769	7.612	+0.15	+4.4	18.3	77.3
Mar. 22	04 40.02	-21 37.7	7.802	7.532	+0.24	+4.3	18.2	70.7
Apr. 1	04 42.74	-20 56.0	7.826	7.452	+0.32	+4.0	18.2	64.5
Apr. 11	04 46.24	-20 17.5	7.840	7.371	+0.39	+3.6	18.1	58.8
Apr. 21	04 50.41	-19 43.2	7.840	7.289	+0.45	+3.2	18.1	53.6
May 1	04 55.17	-19 13.8	7.826	7.208	+0.51	+2.6	18.0	49.1
May 11	05 00.45	-18 50.2	7.797	7.125	+0.55	+2.0	18.0	45.5
May 21	05 06.16	-18 33.0	7.750	7.043	+0.59	+1.4	17.9	42.9
May 31	05 12.21	-18 22.5	7.687	6.960	+0.62	+0.6	17.9	41.5
June 10	05 18.52	-18 19.5	7.607	6.877	+0.64	-0.1	17.8	41.3
June 20	05 25.01	-18 24.2	7.509	6.793	+0.66	-0.9	17.7	42.4
June 30	05 31.59	-18 36.9	7.396	6.710	+0.66	-1.7	17.6	44.5
July 10	05 38.17	-18 58.1	7.267	6.625	+0.66	-2.6	17.5	47.6
July 20	05 44.67	-19 27.9	7.124	6.540	+0.64	-3.5	17.4	51.5
July 30	05 50.99	-20 06.4	6.969	6.455	+0.62	-4.3	17.3	56.0
Aug. 9	05 57.03	-20 53.9	6.802	6.370	+0.58	-5.2	17.2	60.8
Aug. 19	06 02.68	-21 50.1	6.625	6.284	+0.54	-6.1	17.1	66.1
Aug. 29	06 07.82	-22 55.1	6.442	6.197	+0.48	-7.0	17.0	71.6
Sept. 8	06 12.32	-24 08.2	6.254	6.110	+0.41	-7.7	16.8	77.2
Sept. 18	06 16.05	-25 29.0	6.063	6.023	+0.32	-8.5	16.7	83.0
Sept. 28	06 18.85	-26 56.4	5.873	5.935	+0.22	-9.1	16.6	88.7
Oct. 8	06 20.58	-28 29.1	5.685	5.847	+0.11	-9.5	16.4	94.4
Oct. 18	06 21.09	-30 05.1	5.504	5.758	-0.02	-9.7	16.3	99.8
Oct. 28	06 20.25	-31 42.0	5.331	5.669	-0.16	-9.6	16.2	104.9
Nov. 7	06 17.94	-33 16.6	5.169	5.579	-0.31	-9.2	16.0	109.5
Nov. 17	06 14.14	-34 45.6	5.021	5.489	-0.46	-8.4	15.9	113.4
Nov. 27	06 08.89	-36 04.9	4.888	5.398	-0.60	-7.2	15.8	116.3
Dec. 7	06 02.35	-37 10.6	4.771	5.307	-0.71	-5.7	15.6	118.1
Dec. 17	05 54.82	-37 59.1	4.673	5.215	-0.79	-3.8	15.5	118.5
Dec. 27	05 46.71	-38 27.7	4.592	5.123	-0.82	-1.7	15.4	117.7
Jan. 6	05 38.55	-38 34.9	4.527	5.030	-0.80	+0.5	15.3	115.5
Jan. 16	05 30.87	-38 20.8	4.478	4.936	-0.72	+2.5	15.2	112.3
Jan. 26	05 24.16	-37 47.0	4.443	4.843	-0.60	+4.4	15.1	108.3
Feb. 5	05 18.85	-36 56.2	4.418	4.748	-0.44	+5.9	15.0	103.6
Feb. 15	05 15.20	-35 52.0	4.401	4.653	-0.27	+7.0	14.9	98.6
Feb. 25	05 13.37	-34 38.0	4.390	4.557	-0.08	+7.8	14.8	93.4
Mar. 7	05 13.39	-33 18.1	4.382	4.461	+0.10	+8.2	14.7	88.1
Mar. 17	05 15.23	-31 55.7	4.374	4.364	+0.28	+8.3	14.6	82.9
Mar. 27	05 18.81	-30 33.5	4.363	4.266	+0.45	+8.1	14.5	77.8

Comet C/2021 G2 (ATLAS)

Epoch = 2022 June 30.0 TT
 T = 2024 Sept. 9.94558 TT
 Peri. = 343.36228
 Node = 221.10996 2000.0
 Incl. = 48.47253
 q = 4.9792536 AU
 e = 0.9988153

$$m1 = -3.5 + 5 \log(\Delta) + 17.5 \log(r)$$

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	m1	Elong.
2022/23	h m	° '			m		°
Jan. 1	07 30.23	-31 44.4	8.089	8.679	-0.37 -1.5	17.5	124.1
Jan. 11	07 26.44	-31 54.9	8.007	8.625	-0.39 -0.5	17.4	126.2
Jan. 21	07 22.59	-31 54.5	7.945	8.571	-0.38 +0.6	17.3	126.8
Jan. 31	07 18.90	-31 43.5	7.903	8.517	-0.35 +1.7	17.3	125.8
Feb. 10	07 15.59	-31 22.4	7.880	8.464	-0.30 +2.6	17.2	123.5
Feb. 20	07 12.86	-30 52.8	7.874	8.410	-0.23 +3.4	17.2	119.9
Mar. 2	07 10.86	-30 16.1	7.884	8.357	-0.15 +4.0	17.1	115.4
Mar. 12	07 09.71	-29 34.2	7.908	8.303	-0.07 +4.4	17.1	110.2
Mar. 22	07 09.47	-28 49.3	7.943	8.250	+0.03 +4.6	17.0	104.5
Apr. 1	07 10.16	-28 03.1	7.987	8.197	+0.12 +4.6	17.0	98.6
Apr. 11	07 11.77	-27 17.4	8.036	8.143	+0.21 +4.5	17.0	92.6
Apr. 21	07 14.26	-26 33.9	8.088	8.090	+0.29 +4.2	16.9	86.6
May 1	07 17.57	-25 53.9	8.141	8.037	+0.37 +3.8	16.9	80.6
May 11	07 21.63	-25 18.5	8.190	7.985	+0.44 +3.3	16.9	74.8
May 21	07 26.35	-24 48.6	8.235	7.932	+0.51 +2.7	16.8	69.2
May 31	07 31.66	-24 24.8	8.273	7.879	+0.56 +2.0	16.8	63.9
June 10	07 37.48	-24 07.6	8.302	7.827	+0.61 +1.3	16.7	58.9
June 20	07 43.71	-23 57.5	8.321	7.774	+0.64 +0.6	16.7	54.5
June 30	07 50.27	-23 54.6	8.328	7.722	+0.67 -0.1	16.6	50.6
July 10	07 57.10	-23 58.9	8.322	7.670	+0.69 -0.8	16.6	47.4
July 20	08 04.10	-24 10.6	8.303	7.618	+0.71 -1.6	16.5	45.0
July 30	08 11.20	-24 29.5	8.270	7.567	+0.71 -2.3	16.5	43.5
Aug. 9	08 18.33	-24 55.5	8.223	7.515	+0.71 -3.0	16.4	43.1
Aug. 19	08 25.40	-25 28.3	8.161	7.464	+0.70 -3.6	16.3	43.8
Aug. 29	08 32.34	-26 07.6	8.085	7.412	+0.68 -4.3	16.3	45.5
Sept. 8	08 39.07	-26 53.2	7.995	7.361	+0.66 -4.9	16.2	48.2
Sept. 18	08 45.49	-27 44.3	7.892	7.310	+0.62 -5.4	16.1	51.6
Sept. 28	08 51.53	-28 40.6	7.777	7.260	+0.58 -5.9	16.0	55.7
Oct. 8	08 57.08	-29 41.3	7.651	7.209	+0.53 -6.3	15.9	60.4
Oct. 18	09 02.06	-30 45.6	7.515	7.159	+0.46 -6.6	15.8	65.5
Oct. 28	09 06.37	-31 52.5	7.372	7.109	+0.39 -6.8	15.7	70.9
Nov. 7	09 09.88	-33 00.8	7.222	7.059	+0.31 -6.8	15.6	76.6
Nov. 17	09 12.53	-34 09.0	7.069	7.010	+0.21 -6.8	15.5	82.6
Nov. 27	09 14.22	-35 15.6	6.914	6.960	+0.11 -6.5	15.4	88.6
Dec. 7	09 14.87	-36 18.7	6.761	6.911	+0.01 -6.0	15.3	94.7
Dec. 17	09 14.47	-37 16.3	6.611	6.862	-0.10 -5.4	15.2	100.7
Dec. 27	09 13.02	-38 06.1	6.469	6.814	-0.20 -4.5	15.1	106.5
Jan. 6	09 10.59	-38 45.9	6.336	6.766	-0.29 -3.4	15.0	112.0
Jan. 16	09 07.32	-39 13.7	6.215	6.718	-0.36 -2.1	14.9	117.0
Jan. 26	09 03.44	-39 27.9	6.108	6.670	-0.41 -0.6	14.9	121.1
Feb. 5	08 59.21	-39 27.3	6.017	6.623	-0.43 +0.9	14.8	124.3
Feb. 15	08 54.97	-39 11.8	5.945	6.576	-0.41 +2.4	14.7	126.2
Feb. 25	08 51.04	-38 41.8	5.891	6.530	-0.36 +3.8	14.6	126.6
Mar. 7	08 47.74	-37 58.7	5.855	6.484	-0.29 +4.9	14.5	125.6
Mar. 17	08 45.32	-37 04.9	5.839	6.438	-0.19 +5.9	14.5	123.2
Mar. 27	08 43.97	-36 02.9	5.839	6.392	-0.07 +6.5	14.4	119.7

Comet 95P/(2060) Chiron

Epoch = 2022 June 30.0 TT
 T = 2046 Sept. 30.12134 TT
 Peri. = 339.55238 e = 0.3763148
 Node = 209.29734 2000.0 a = 13.7107148 AU
 Incl. = 6.92160 n = 0.01941395
 q = 8.5511699 AU P = 50.77 years

H = 5.8 , G = 0.15

Oh TT	R. A. (2000)	Decl.	Delta	r	Daily motion	V	Elong.
2022/23	h m	° '			m		°
Jan. 1	00 26.72	+05 14.3	18.871	18.862	+0.05 +0.1	18.9	88.0
Jan. 11	00 27.35	+05 16.3	19.042	18.861	+0.08 +0.3	18.9	77.9
Jan. 21	00 28.30	+05 20.5	19.207	18.860	+0.11 +0.5	18.9	68.0
Jan. 31	00 29.53	+05 26.7	19.360	18.859	+0.14 +0.7	18.9	58.2
Feb. 10	00 31.03	+05 34.7	19.499	18.859	+0.16 +0.9	18.9	48.4
Feb. 20	00 32.75	+05 44.2	19.618	18.858	+0.18 +1.0	18.9	38.8
Mar. 2	00 34.66	+05 55.0	19.715	18.857	+0.20 +1.1	18.8	29.3
Mar. 12	00 36.70	+06 06.8	19.787	18.856	+0.21 +1.2	18.8	19.8
Mar. 22	00 38.83	+06 19.4	19.833	18.855	+0.22 +1.3	18.8	10.5
Apr. 1	00 41.01	+06 32.5	19.852	18.854	+0.22 +1.3	18.7	2.2
Apr. 11	00 43.20	+06 45.7	19.843	18.853	+0.22 +1.3	18.8	8.4
Apr. 21	00 45.34	+06 58.7	19.807	18.852	+0.21 +1.3	18.8	17.5
May 1	00 47.39	+07 11.4	19.745	18.851	+0.20 +1.2	18.8	26.7
May 11	00 49.32	+07 23.4	19.659	18.850	+0.18 +1.1	18.9	35.8
May 21	00 51.08	+07 34.4	19.551	18.848	+0.17 +1.0	18.9	45.0
May 31	00 52.63	+07 44.3	19.423	18.847	+0.14 +0.9	18.9	54.2
June 10	00 53.95	+07 52.7	19.279	18.846	+0.12 +0.8	18.9	63.4
June 20	00 55.00	+07 59.6	19.123	18.845	+0.09 +0.6	18.9	72.6
June 30	00 55.77	+08 04.7	18.959	18.844	+0.06 +0.4	18.9	82.0
July 10	00 56.22	+08 08.0	18.791	18.842	+0.03 +0.2	18.9	91.4
July 20	00 56.36	+08 09.2	18.623	18.841	0.00 0.0	18.8	100.9
July 30	00 56.17	+08 08.4	18.461	18.840	-0.04 -0.2	18.8	110.5
Aug. 9	00 55.67	+08 05.6	18.308	18.838	-0.07 -0.4	18.8	120.1
Aug. 19	00 54.87	+08 00.9	18.171	18.837	-0.10 -0.6	18.7	130.0
Aug. 29	00 53.80	+07 54.3	18.052	18.835	-0.12 -0.7	18.7	139.9
Sept. 8	00 52.51	+07 46.2	17.955	18.834	-0.14 -0.9	18.6	149.9
Sept. 18	00 51.03	+07 36.7	17.885	18.832	-0.16 -1.0	18.6	160.0
Sept. 28	00 49.43	+07 26.2	17.843	18.831	-0.16 -1.1	18.5	170.1
Oct. 8	00 47.77	+07 15.1	17.830	18.829	-0.17 -1.1	18.5	178.0
Oct. 18	00 46.13	+07 03.8	17.849	18.827	-0.16 -1.1	18.5	168.9
Oct. 28	00 44.56	+06 52.8	17.897	18.826	-0.15 -1.1	18.6	158.6
Nov. 7	00 43.14	+06 42.5	17.974	18.824	-0.13 -1.0	18.7	148.2
Nov. 17	00 41.92	+06 33.4	18.077	18.822	-0.11 -0.8	18.7	137.9
Nov. 27	00 40.96	+06 25.6	18.203	18.821	-0.08 -0.7	18.7	127.5
Dec. 7	00 40.30	+06 19.7	18.348	18.819	-0.05 -0.5	18.8	117.2
Dec. 17	00 39.95	+06 15.8	18.507	18.817	-0.02 -0.3	18.8	106.9
Dec. 27	00 39.95	+06 13.9	18.674	18.815	+0.02 -0.1	18.8	96.7
Jan. 6	00 40.29	+06 14.3	18.845	18.813	+0.05 +0.2	18.9	86.6
Jan. 16	00 40.96	+06 16.8	19.015	18.811	+0.08 +0.4	18.9	76.6
Jan. 26	00 41.94	+06 21.4	19.177	18.809	+0.12 +0.6	18.9	66.7
Feb. 5	00 43.22	+06 27.9	19.328	18.808	+0.14 +0.7	18.9	56.9
Feb. 15	00 44.75	+06 36.1	19.463	18.806	+0.17 +0.9	18.9	47.2
Feb. 25	00 46.51	+06 45.8	19.578	18.803	+0.19 +1.0	18.9	37.6
Mar. 7	00 48.44	+06 56.8	19.671	18.801	+0.20 +1.2	18.8	28.1
Mar. 17	00 50.50	+07 08.7	19.739	18.799	+0.21 +1.2	18.8	18.6
Mar. 27	00 52.66	+07 21.2	19.781	18.797	+0.22 +1.3	18.8	9.4

Orbital elements:

Comet 29P/Schwassmann-Wachmann

Epoch 2019 Mar. 18.0 TT = JDT 2458560.5

T 2019 Mar. 7.75881 TT

		(2000.0)	P	Sato	Q
q	5.7668198				
n	0.06662629	Peri.	47.77455	+0.99270157	-0.00957176
a	6.0261368	Node	312.39459	-0.05134921	+0.86841784
e	0.0430320	Incl.	9.36831	+0.10911849	+0.49574069
P	14.79				

From 36767 observations 1902 Mar. 5–2022 Jan. 30, mean residual 0".63.

Comet C/2018 N2 (ASASSN)

Epoch 2019 Nov. 13.0 TT = JDT 2458800.5

T 2019 Nov. 10.95943 TT

		(2000.0)	P	Sato	Q
q	3.1246490				
z	-0.0000554	Peri.	24.39548	+0.78558832	-0.45744144
	+/-0.0000002	Node	25.25925	+0.27011906	-0.35227561
e	1.0001732	Incl.	77.53193	+0.55667467	+0.81648590

From 4541 observations 2018 July 10–2022 Jan. 14, mean residual 0".43.

Comet C/2019 K7 (Smith)

Epoch 2020 May 31.0 TT = JDT 2459000.5

T 2020 June 16.89651 TT

		(2000.0)	P	Sato	Q
q	4.4750070				
z	-0.0003339	Peri.	27.29104	+0.46155651	-0.44585414
	+/-0.0000004	Node	307.92351	-0.88100410	-0.12911262
e	1.0014943	Incl.	103.53347	+0.10391043	+0.88574489

From 2232 observations 2019 May 30–2022 Jan. 14, mean residual 0".51.

Comet 254P/McNaught

Epoch 2020 Sept. 28.0 TT = JDT 2459120.5

T 2020 Sept. 29.65855 TT

		(2000.0)	P	Sato	Q
q	3.1369500				
n	0.09945260	Peri.	219.47951	+0.90293064	+0.10262655
a	4.6137983	Node	129.17408	-0.10230709	+0.99448221
e	0.3200938	Incl.	32.57212	-0.41743206	-0.02174706
P	9.91				

From 615 observations 2010 Sept. 11–2022 Jan. 7, mean residual 0".53.

Comet 246P/NEAT

Epoch 2021 Mar. 7.0 TT = JDT 2459280.5

T 2021 Feb. 22.82524 TT

		(2000.0)	P	Sato	Q
q	2.8639247				
n	0.12245311	Peri.	176.30018	-0.25556499	+0.92828932
a	4.0162695	Node	78.74765	-0.89393375	-0.12048689
e	0.2869192	Incl.	15.98677	-0.36819694	-0.35179801
P	8.05				

From 3883 observations 2002 Jan. 6–2021 Nov. 26, mean residual 0".93.

Comet C/2019 03 (Palomar)

Epoch 2021 Mar. 7.0 TT = JDT 2459280.5

T 2021 Mar. 7.99684 TT

		(2000.0)	P	Sato	Q
q	8.8194525				
z	-0.0002630	Peri.	60.05091	+0.25489504	-0.43682279
	+/-0.0000005	Node	300.38081	-0.73850152	+0.48797335
e	1.0023198	Incl.	89.81513	+0.62421472	+0.75569032

From 1301 observations 2019 May 14–2022 Jan. 8, mean residual 0".45.

Comet 28P/Neujmin

Epoch 2021 Mar. 7.0 TT = JDT 2459280.5

T 2021 Mar. 11.88429 TT

		(2000.0)	P	Sato	Q
q	1.5782628				
n	0.05344616	Peri.	347.41110	+0.89842024	+0.43523477
a	6.9800476	Node	346.33232	-0.37842486	+0.69985002
e	0.7738894	Incl.	14.31173	-0.22279069	+0.56637501
P	18.44				

From 966 observations 1931 Aug. 20–2022 Jan. 7, mean residual 0".42.
Nongravitational parameters A1 = +0.02, A2 = +0.0015.

Comet C/2020 F5 (MASTER)

Epoch 2021 Mar. 7.0 TT = JDT 2459280.5

T 2021 Mar. 24.26928 TT

		(2000.0)	P	Sato	Q
q	4.3259471				
z	-0.0007786	Peri.	311.07094	+0.57216295	+0.81012372
	+/-0.0000008	Node	350.62968	-0.28568634	+0.05082152
e	1.0033680	Incl.	51.70689	-0.76877362	+0.58405199

From 732 observations 2020 Mar. 16–2022 Jan. 1, mean residual 0".47.

Comet 10P/Tempel

Epoch 2021 Mar. 7.0 TT = JDT 2459280.5

T 2021 Mar. 24.27850 TT

		(2000.0)	P	Sato	Q
q	1.4124789				
n	0.18398503	Peri.	195.50697	+0.68082958	+0.70882433
a	3.0615949	Node	117.80979	-0.64786860	+0.70030020
e	0.5386460	Incl.	12.03966	-0.34166849	+0.08454412
P	5.36				

From 4437 observations 1999 Feb. 14–2022 Jan. 8, mean residual 0".60.

Nongravitational parameters A1 = +0.05, A2 = +0.0150.

Comet C/2020 J1 (SONEAR)

Epoch 2021 Apr. 16.0 TT = JDT 2459320.5

T 2021 Apr. 18.56215 TT

		(2000.0)	P	Sato	Q
q	3.3551254				
z	-0.0000677	Peri.	341.74636	-0.47273151	-0.76102726
	+/-0.0000007	Node	226.58202	-0.71295058	+0.03401054
e	1.0002270	Incl.	142.29335	-0.51790578	+0.64782775

From 711 observations 2020 May 1–2022 Jan. 15, mean residual 0".50.

Comet C/2020 P3 (ATLAS)

Epoch 2021 Apr. 16.0 TT = JDT 2459320.5

T 2021 Apr. 20.86182 TT

		(2000.0)	P	Sato	Q
q	6.8123720				
z	+0.0001525	Peri.	82.24592	-0.02858803	-0.95529780
	+/-0.0000009	Node	19.48898	+0.09751861	-0.29564130
e	0.9989609	Incl.	61.88535	+0.99482302	+0.00152836

From 436 observations 2020 Aug. 9–2022 Jan. 7, mean residual 0".48.

Comet C/2021 K1 (ATLAS)

Epoch 2021 Apr. 16.0 TT = JDT 2459320.5

T 2021 May 4.66930 TT

		(2000.0)	P	Sato	Q
q	2.4979451				
n	0.02159379	Peri.	184.33337	+0.81962810	+0.54495489
a	12.7717433	Node	140.90564	-0.51683915	+0.83645314
e	0.8044163	Incl.	16.27568	-0.24715801	+0.05805439
P	45.64				

From 659 observations 2020 Apr. 20–2022 Jan. 3, mean residual 0".46.

Comet C/2020 T2 (Palomar)

Epoch 2021 July 5.0 TT = JDT 2459400.5

T 2021 July 11.14868 TT

		(2000.0)	P	Sato	Q
q	2.0546856				
z	+0.0032110	Peri.	150.38352	-0.53886929	+0.70303121
	+/-0.0000003	Node	83.04815	-0.83514261	-0.37374819
e	0.9934024	Incl.	27.87302	-0.11025744	-0.60502844

From 2420 observations 2019 Dec. 11–2021 Nov. 27, mean residual 0".40.

Comet P/2020 V4 (Rankin)

Epoch 2021 July 5.0 TT = JDT 2459400.5

T 2021 July 17.91031 TT

		(2000.0)	P	Sato	Q
q	5.1485929				
n	0.03451528	Peri.	256.99490	-0.17033934	-0.98048626
a	9.3424717	Node	203.50805	+0.97226883	-0.15104031
e	0.4489046	Incl.	14.24313	+0.16024306	-0.12583134
P	28.56				

From 450 observations 2019 Sept. 22–2022 Jan. 3, mean residual 0".46.

Comet 241P/LINEAR

Epoch 2021 Aug. 14.0 TT = JDT 2459440.5

T 2021 July 25.82387 TT

		(2000.0)	P	Sato	Q
q	1.9175318				
n	0.09043348	Peri.	111.42722	+0.49509339	-0.81785955
a	4.9156756	Node	305.48319	+0.60207612	+0.56628298
e	0.6099149	Incl.	21.10734	+0.62640791	+0.10212419
P	10.90				

From 695 observations 1999 Oct. 30–2022 Jan. 3, mean residual 0".65.
Nongravitational parameters A1 = +0.17, A2 = +0.0401.

Comet C/2021 01 (Nishimura)

Epoch 2021 Aug. 14.0 TT = JDT 2459440.5

T 2021 Aug. 13.93179 TT

		(2000.0)	P	Sato	Q
q	0.7870839				
z	-0.0011982	Peri.	74.45254	-0.36679399	-0.87804323
	+/-0.0019472	Node	41.61706	+0.57170797	-0.47342943
e	1.0009430	Incl.	27.57223	+0.73390202	-0.07003333

From 79 observations 2021 July 19–Aug. 5, mean residual 0".76.

Comet C/2020 M5 (ATLAS)

Epoch 2021 Aug. 14.0 TT = JDT 2459440.5

T 2021 Aug. 19.88205 TT

		(2000.0)	P	Sato	Q
q	3.0043455				
z	+0.0000055	Peri.	126.33958	-0.59316703	-0.79328269
	+/-0.0000005	Node	352.09490	-0.28629183	+0.36725591
e	0.9999835	Incl.	93.22284	+0.75245589	-0.48561886

From 869 observations 2019 Aug. 10–2022 Jan. 27, mean residual 0".44.

Comet 4P/Faye

Epoch 2021 Sept. 23.0 TT = JDT 2459480.5

T 2021 Sept. 8.83153 TT

		(2000.0)	P	Sato	Q
q	1.6188579				
n	0.13183079	Peri.	206.99630	+0.76784320	-0.63987871
a	3.8234740	Node	192.93162	+0.61005866	+0.74518202
e	0.5766003	Incl.	8.00838	+0.19556390	+0.18777376
P	7.48				

From 5328 observations 1993 Jan. 23–2022 Jan. 20, mean residual 0".78.
Nongravitational parameters A1 = +0.53, A2 = -0.0479.

Comet 108P/Ciffreo

Epoch 2021 Sept. 23.0 TT = JDT 2459480.5

T 2021 Sept. 10.08524 TT

		(2000.0)	P	Sato	Q
q	1.6602665				
n	0.13638428	Peri.	354.41703	+0.70920609	-0.68830010
a	3.7378899	Node	50.29171	+0.65425724	+0.56196355
e	0.5558279	Incl.	11.43684	+0.26262939	+0.45873733
P	7.23				

From 1980 observations 1985 Nov. 8–2022 Jan. 29, mean residual 0".64.
Nongravitational parameters A1 = +0.34, A2 = -0.0446.

Comet 284P/McNaught

Epoch 2021 Sept. 23.0 TT = JDT 2459480.5

T 2021 Sept. 12.71454 TT

		(2000.0)	P	Sato	Q
q	2.2957334				
n	0.13965480	Peri.	202.44865	+0.96846345	+0.21832608
a	3.6793024	Node	144.26298	-0.18573648	+0.95378552
e	0.3760411	Incl.	11.86133	-0.16607379	+0.20646285
P	7.06				

From 2379 observations 2007 Apr. 17–2022 Jan. 1, mean residual 0".62.

Comet 6P/d' Arrest

Epoch 2021 Sept. 23.0 TT = JDT 2459480.5

T 2021 Sept. 17.77651 TT

			P	Sato	Q
q	1.3545615	(2000.0)			
n	0.15064133	Peri.	178.10045	+0.73304906	+0.64381701
a	3.4981623	Node	138.93694	-0.62837036	+0.76449329
e	0.6127791	Incl.	19.51215	-0.26036468	-0.03239867
P	6.54				

From 2724 observations 2008 Apr. 25–2022 Jan. 3, mean residual 0".71.

Nongravitational parameters Y1 = +0.73, Y2 = +0.1283, Y3 = -0.0444.

Comet C/2020 PV6 (PANSTARRS)

Epoch 2021 Sept. 23.0 TT = JDT 2459480.5

T 2021 Sept. 25.99776 TT

			P	Sato	Q
q	2.2956365	(2000.0)			
n	0.00366019	Peri.	71.38003	-0.02673506	-0.91488167
a	41.6997734	Node	329.14388	-0.90829733	+0.19052450
e	0.9449485	Incl.	128.23926	+0.41747000	+0.35593811
P	269.28				

From 1189 observations 2020 July 21–2022 Jan. 7, mean residual 0".53.

Comet P/2021 U1 (Wierzchos)

Epoch 2021 Sept. 23.0 TT = JDT 2459480.5

T 2021 Sept. 30.95603 TT

			P	Sato	Q
q	2.4449284	(2000.0)			
n	0.03969095	Peri.	145.03699	+0.77649044	-0.42273387
a	8.5115455	Node	246.78986	+0.39672282	+0.90411895
e	0.7127515	Incl.	30.55990	+0.48956470	-0.06216913
P	24.83				

From 203 observations 2021 Sept. 20–2022 Jan. 28, mean residual 0".43.

Comet C/2020 H6 (ATLAS)

Epoch 2021 Sept. 23.0 TT = JDT 2459480.5

T 2021 Oct. 1.07454 TT

			P	Sato	Q
q	4.7028941	(2000.0)			
z	-0.0001544	Peri.	20.34780	-0.74636445	+0.37990729
+/-	-0.0000008	Node	213.70649	-0.65980890	-0.31488174
e	1.0007262	Incl.	79.96725	+0.08713398	+0.86978155

From 780 observations 2020 Apr. 22–2022 Jan. 15, mean residual 0".46.

Comet 52P/Harrington–Abell

Epoch 2021 Sept. 23.0 TT = JDT 2459480.5

T 2021 Oct. 5.19435 TT

			P	Sato	Q
q	1.7772323	(2000.0)			
n	0.12975314	Peri.	139.59427	-0.44919257	-0.89069890
a	3.8641810	Node	336.83791	+0.76707549	-0.34438802
e	0.5400753	Incl.	10.23174	+0.45806248	-0.29673619
P	7.60				

From 1392 observations 1998 July 21–2022 Jan. 1, mean residual 0".64.

Nongravitational parameters A1 = -0.10, A2 = +0.0099.

Comet 57P/du Toit–Neujmin–Delporte

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Oct. 17.41536 TT

			P	Sato	Q
q	1.7201168	(2000.0)			
n	0.15399375	Peri.	115.26023	+0.55951417	+0.82878606
a	3.4472067	Node	188.77378	-0.77720036	+0.52146470
e	0.5010114	Incl.	2.85097	-0.28792967	+0.20294884
P	6.40				

From 1492 observations 2002 May 5–2022 Jan. 24, mean residual 0".66.

Nongravitational parameters A1 = +0.49, A2 = -0.0350.

Comet 110P/Hartley

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Oct. 18.29934 TT

		(2000.0)	P	Sato	Q
q	2.4557257				
n	0.14415777	Peri.	167.44403	-0.09111133	-0.97686568
a	3.6022790	Node	287.53548	+0.89522344	+0.00475548
e	0.3182855	Incl.	11.70675	+0.43620375	-0.21380090
P	6.84				

From 3124 observations 1993 June 23–2022 Jan. 23, mean residual 0".60.

Nongravitational parameters A1 = +0.06, A2 = -0.0204.

Comet P/2021 U3 (Attard–Maury)

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Oct. 24.85852 TT

		(2000.0)	P	Sato	Q
q	1.8868353				
n	0.11479990	Peri.	335.20936	+0.37206827	-0.19285377
a	4.1928409	Node	75.11283	+0.92780954	+0.10583586
e	0.5499864	Incl.	69.96521	-0.02710474	+0.97550305
P	8.59				

From 248 observations 2021 Oct. 24–2022 Jan. 3, mean residual 0".57.

Comet 67P/Churyumov–Gerasimenko

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Nov. 2.06254 TT

		(2000.0)	P	Sato	Q
q	1.2106125				
n	0.15341219	Peri.	22.13211	+0.52350074	-0.85108545
a	3.4559131	Node	36.33478	+0.77125059	+0.45339315
e	0.6496982	Incl.	3.87164	+0.36210426	+0.26474178
P	6.42				

From 8318 observations 1995 July 3–2022 Jan. 30, mean residual 0".66.

Nongravitational parameters Y1 = +0.14, Y2 = +0.0141.

Comet 70P/Kojima

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Nov. 3.11276 TT

		(2000.0)	P	Sato	Q
q	2.0090052				
n	0.13974180	Peri.	1.82761	-0.51628940	-0.85052818
a	3.6777750	Node	119.26840	+0.78427978	-0.51656873
e	0.4537444	Incl.	6.59808	+0.34402105	-0.09878545
P	7.05				

From 1431 observations 1977 Nov. 12–2022 Jan. 28, mean residual 0".57.

Nongravitational parameters A1 = +0.02, A2 = -0.0081.

Comet 132P/Helin–Roman–Alu

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Nov. 13.11080 TT

		(2000.0)	P	Sato	Q
q	1.6917706				
n	0.12865849	Peri.	216.34755	+0.86273157	-0.50556700
a	3.8860682	Node	173.99678	+0.48323848	+0.81860481
e	0.5646575	Incl.	5.38260	+0.14891210	+0.27255856
P	7.66				

From 1166 observations 1989 Oct. 29–2022 Jan. 24, mean residual 0".53.

Comet P/2021 N2 (Fuls)

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Nov. 13.18278 TT

		(2000.0)	P	Sato	Q
q	3.7965887				
n	0.05398713	Peri.	177.32622	+0.77558841	-0.61304058
a	6.9333412	Node	221.74236	+0.57487563	+0.78443737
e	0.4524157	Incl.	13.06275	+0.26073095	+0.09401738
P	18.26				

From 624 observations 2021 June 27–2022 Jan. 24, mean residual 0".30.

Comet 430P/Scotti

Epoch 2021 Dec. 12.0 TT = JDT 2459560.5

T 2021 Dec. 2.21440 TT

		(2000.0)	P	Sato	Q
q	1.5545963				
n	0.18004458	Peri.	94.49436	-0.85619655	-0.51271356
a	3.1061042	Node	54.67389	+0.43767381	-0.78526116
e	0.4995029	Incl.	4.47497	+0.27453434	-0.34711628
P	5.47				

From 283 observations 2011 Jan. 11–2022 Jan. 8, mean residual 0".80.
Nongravitational parameters A1 = +0.52, A2 = -1.2856.

Comet 402P/LINEAR

Epoch 2021 Dec. 12.0 TT = JDT 2459560.5

T 2021 Dec. 14.54801 TT

		(2000.0)	P	Sato	Q
q	3.9378772				
n	0.05304382	Peri.	326.73186	-0.06194667	-0.90087455
a	7.0152986	Node	123.09141	+0.99049350	-0.10846070
e	0.4386729	Incl.	30.85151	+0.12282201	+0.42031098
P	18.58				

From 1422 observations 2001 Nov. 22–2022 Jan. 6, mean residual 0".61.

Comet C/2021 A1 (Leonard)

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 3.29768 TT

		(2000.0)	P	Sato	Q
q	0.6152722				
z	+0.0000571	Peri.	225.08179	+0.63765703	+0.29176112
	+/-0.0000067	Node	255.89811	+0.72804081	-0.53065588
e	0.9999648	Incl.	132.68583	-0.25169443	-0.79578879

From 2038 observations 2020 Apr. 11–2022 Jan. 21, mean residual 0".65.
Nongravitational parameters A1 = +5.55, A2 = +1.9888, A3 = -1.0780.

Comet C/2019 L3 (ATLAS)

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 9.62140 TT

		(2000.0)	P	Sato	Q
q	3.5544974				
z	-0.0004490	Peri.	171.61109	-0.26052353	-0.66630641
	+/-0.0000003	Node	290.79004	+0.83676208	+0.20517415
e	1.0015960	Incl.	48.36123	+0.48161884	-0.71689563

From 3403 observations 2019 June 10–2022 Jan. 29, mean residual 0".41.

Comet 104P/Kowal

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 11.62553 TT

		(2000.0)	P	Sato	Q
q	1.0730869				
n	0.17149737	Peri.	227.25452	+0.26948250	-0.96193324
a	3.2084682	Node	207.21082	+0.91002136	+0.26980352
e	0.6655454	Incl.	5.70145	+0.31502428	+0.04347985
P	5.75				

From 543 observations 2016 Jan. 3–2022 Jan. 17, mean residual 0".65.
Nongravitational parameters Y1 = -0.67, Y2 = +0.765.

Comet P/2021 R5 (Rankin)

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 12.07044 TT

		(2000.0)	P	Sato	Q
q	3.3227486				
n	0.09384940	Peri.	167.35487	+0.88718464	-0.45299186
a	4.7956601	Node	219.95934	+0.41055019	+0.86178560
e	0.3071343	Incl.	7.85379	+0.21059905	+0.22830671
P	10.50				

From 217 observations 2021 June 22–Dec. 21, mean residual 0".45.

Comet 152P/Helin-Lawrence

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 13.67853 TT

		(2000.0)	P	Sato	Q
q	3.0949184				
n	0.10406760	Peri.	163.94277	-0.24118929	+0.95520354
a	4.4763669	Node	91.85827	-0.90821036	-0.15987936
e	0.3086093	Incl.	9.88058	-0.34202584	-0.24904776
P	9.47				

From 847 observations 1993 May 17-2021 Aug. 3, mean residual 0".76.

Nongravitational parameters A1 = +8.40, A2 = +3.2914.

Comet 205P/Giacobini

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 13.76430 TT

		(2000.0)	P	Sato	Q
q	1.5300144				
n	0.14769534	Peri.	154.22406	+0.89755609	+0.44089645
a	3.5445262	Node	179.60063	-0.43622819	+0.88864311
e	0.5683445	Incl.	15.30577	-0.06401589	+0.12618933
P	6.67				

From 292 observations 2015 Apr. 27-2021 Oct. 27, mean residual 0".95.

Nongravitational parameters A1 = -8.46, A2 = -0.3257.

Comet 422P/Christensen

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 13.84033 TT

		(2000.0)	P	Sato	Q
q	3.1052275				
n	0.06201813	Peri.	305.15593	+0.83659504	+0.39972278
a	6.3210655	Node	36.04812	+0.05017756	+0.62502535
e	0.5087494	Incl.	39.53756	-0.54551898	+0.67049610
P	15.89				

From 210 observations 2006 Sept. 22-2022 Jan. 17, mean residual 0".74.

Comet C/2021 Q3 (ATLAS)

Epoch 2021 Dec. 12.0 TT = JDT 2459560.5

T 2022 Jan. 26.03767 TT

		(2000.0)	P	Sato	Q
q	5.2047541				
n	0.00152835	Peri.	114.08564	-0.09818983	-0.62899689
a	74.6426709	Node	307.90148	+0.04946803	+0.77088375
e	0.9302711	Incl.	77.77742	+0.99393746	-0.10050451
P	644.88				

From 121 observations 2021 Aug. 19-Nov. 23, mean residual 0".48.

Comet C/2021 U5 (Catalina)

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 26.65207 TT

		(2000.0)	P	Sato	Q
q	2.3630875				
z	+0.0047105	Peri.	321.48948	-0.80479950	-0.59277614
	+/-0.0000455	Node	182.75088	+0.56472254	-0.78040392
e	0.9888686	Incl.	39.05016	-0.18271896	+0.19896272

From 116 observations 2021 Oct. 29-2022 Jan. 26, mean residual 0".57.

Comet C/2022 A1 (Sarneczky)

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 31.09267 TT

		(2000.0)	P	Sato	Q
q	1.2531527				
z	-0.0016643	Peri.	201.14776	-0.09418405	+0.49818619
	+/-0.0013121	Node	285.51995	+0.99245342	+0.11527016
e	1.0020856	Incl.	116.54835	+0.07852122	-0.85937379

From 225 observations 2022 Jan. 2-20, mean residual 0".45.

Comet 19P/Borrelly

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Feb. 1.82444 TT

		(2000.0)	P	Sato	Q
q	1.3062877				
n	0.14399423	Peri.	351.91591	+0.38681624	-0.79275809
a	3.6050059	Node	74.24707	+0.87108131	+0.14646982
e	0.6376462	Incl.	29.30471	+0.30263929	+0.59167660
P	6.84				

From 2482 observations 1995 Jan. 1–2022 Jan. 30, mean residual 0".80.

Nongravitational parameters A1 = +0.17, A2 = -0.0416.

Comet C/2021 D2 (ZTF)

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Feb. 3.98121 TT

		(2000.0)	P	Sato	Q
q	2.9463007				
z	-0.0004847	Peri.	125.02981	-0.26329867	-0.52769425
	+/-0.0000017	Node	305.67864	+0.15104212	+0.80426237
e	1.0014281	Incl.	83.83073	+0.95281692	-0.27331450

From 520 observations 2021 Feb. 19–2022 Jan. 26, mean residual 0".63.

Comet P/2011 W1 (PANSTARRS)

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Feb. 7.87657 TT

		(2000.0)	P	Sato	Q
q	3.3220284				
n	0.09787184	Peri.	282.75043	+0.09452541	-0.99531609
a	4.6633449	Node	161.78863	+0.93669035	+0.08202534
e	0.2876297	Incl.	3.71859	+0.33715892	+0.05116377
P	10.07				

From 167 observations 2011 Nov. 23–2013 Feb. 9, mean residual 0".55.

From CHB 2021.

Comet 348P/PANSTARRS

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Feb. 12.52131 TT

		(2000.0)	P	Sato	Q
q	2.1838666				
n	0.17625508	Peri.	135.66233	+0.00003538	-0.97480577
a	3.1504672	Node	312.94159	+0.81173082	+0.13029942
e	0.3068118	Incl.	17.74013	+0.58403173	-0.18104080
P	5.59				

From 78 observations 2009 Sept. 18–2021 Dec. 25, mean residual 0".61.

Comet C/2021 L3 (Borisov)

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Feb. 14.20372 TT

		(2000.0)	P	Sato	Q
q	8.4572485				
z	-0.0001644	Peri.	91.62570	+0.02393258	-0.96685103
	+/-0.0000121	Node	344.96839	-0.20761643	+0.24393897
e	1.0013899	Incl.	78.57979	+0.97791751	+0.07545113

From 152 observations 2021 June 8–Oct. 26, mean residual 0".54.

Comet 431P/Scotti

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Feb. 13.36781 TT

		(2000.0)	P	Sato	Q
q	1.8136762				
n	0.15232011	Peri.	199.85686	+0.74482256	-0.65066403
a	3.4724118	Node	202.84618	+0.65205081	+0.75679702
e	0.4776898	Incl.	22.39210	+0.14166542	-0.06240665
P	6.47				

From 429 observations 2002 Nov. 16–2022 Jan. 14, mean residual 0".62.

Nongravitational parameters A1 = -0.12, A2 = +0.0013.

Comet 97P/Metcalf-Brewington

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Feb. 15.53560 TT

			P	Sato	Q
q	2.5701606	(2000.0)			
n	0.09494112	Peri.	229.96660	+0.58980098	-0.80725106
a	4.7588258	Node	184.07839	+0.80244120	+0.58890290
e	0.4599171	Incl.	17.95203	+0.09068036	+0.03923137
P	10.38				

From 412 observations 1991 Jan. 8–2022 Jan. 1, mean residual 0".77.

Nongravitational parameters A1 = +0.49, A2 = -1.4420.

Comet 382P/Larson

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Feb. 17.40111 TT

			P	Sato	Q
q	4.4197510	(2000.0)			
n	0.05987776	Peri.	170.98553	+0.96485563	+0.26230755
a	6.4708157	Node	173.74029	-0.24920776	+0.93239820
e	0.3169716	Incl.	8.31048	-0.08336131	+0.24865306
P	16.46				

From 419 observations 2007 Sept. 4–2021 Nov. 27, mean residual 0".62.

Comet C/2020 R2 (PANSTARRS)

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Feb. 24.53419 TT

			P	Sato	Q
q	4.6918743	(2000.0)			
z	+0.0024498	Peri.	211.74021	+0.73910013	-0.64048699
	+/-0.0000015	Node	195.09354	+0.64976396	+0.59626880
e	0.9885060	Incl.	53.22841	-0.17758882	-0.48398341

From 354 observations 2020 Aug. 18–2022 Jan. 3, mean residual 0".53.

Comet C/2021 S1 (ATLAS)

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Feb. 28.78157 TT

			P	Sato	Q
q	6.1192685	(2000.0)			
z	-0.0001204	Peri.	148.17353	-0.14223129	-0.71534981
	+/-0.0000058	Node	299.87340	+0.65853102	+0.44762463
e	1.0007366	Incl.	52.08936	+0.73899063	-0.53656951

From 204 observations 2021 Sept. 27–2022 Jan. 28, mean residual 0".40.

Comet 9P/Tempel

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Mar. 4.94963 TT

			P	Sato	Q
q	1.5442318	(2000.0)			
n	0.17662923	Peri.	179.34956	-0.37339829	+0.91208725
a	3.1460165	Node	68.71421	-0.85194009	-0.26492307
e	0.5091470	Incl.	10.47000	-0.36711279	-0.31290992
P	5.58				

From 7188 observations 1982 Dec. 11–2022 Jan. 26, mean residual 0".54.

Nongravitational parameters A1 = +0.00, A2 = +0.0017.

Comet 22P/Kopff

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Mar. 18.11778 TT

			P	Sato	Q
q	1.5524093	(2000.0)			
n	0.15446588	Peri.	163.02095	+0.24028646	+0.96810284
a	3.4401787	Node	120.83184	-0.89992933	+0.24958299
e	0.5487417	Incl.	4.74215	-0.36385384	+0.02202795
P	6.38				

From 3601 observations 2002 Jan. 11–2021 June 30, mean residual 0".65.

Nongravitational parameters A1 = +0.61, A2 = -0.1791.

Comet 230P/LINEAR

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Mar. 19.33178 TT

		(2000.0)	P	Sato	Q
q	1.5687768				
n	0.15373477	Peri.	313.42963	+0.46856287	-0.84579627
a	3.4510769	Node	106.98455	+0.86785969	+0.38671957
e	0.5454240	Incl.	15.47019	+0.16513148	+0.36752774
P	6.41				

From 1406 observations 1997 Jan. 10–2022 Jan. 1, mean residual 0".42.

Comet 325P/Yang-Gao

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Mar. 29.21210 TT

		(2000.0)	P	Sato	Q
q	1.4324155				
n	0.14906364	Peri.	343.70308	-0.46924249	+0.83733007
a	3.5228020	Node	257.55977	-0.77475283	-0.54279749
e	0.5933875	Incl.	16.69408	-0.42375646	+0.06518615
P	6.61				

From 1099 observations 2009 June 15–2015 Sept. 6, mean residual 0".53.

Comet 440P/Kobayashi = P/1997 B1

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Mar. 29.95046 TT

		(2000.0)	P	Sato	Q
q	2.0562327				
n	0.03918396	Peri.	183.31836	-0.88389441	-0.45445936
a	8.5848063	Node	328.88220	+0.43386435	-0.70861278
e	0.7604800	Incl.	12.33946	+0.17462071	-0.53975423
P	25.15				

From 274 observations 1997 Jan. 30–2022 Jan. 28, mean residual 0".49.

Comet 319P/Catalina-McNaught

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Mar. 31.43216 TT

		(2000.0)	P	Sato	Q
q	1.1889774				
n	0.14630712	Peri.	203.67766	+0.69479131	+0.67709153
a	3.5669121	Node	111.37002	-0.61125026	+0.73360088
e	0.6666648	Incl.	15.09478	-0.37899625	+0.05811030
P	6.74				

From 352 observations 2008 Sept. 17–2016 Jan. 4, mean residual 0".54.

Comet A/2021 F1

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 6.87358 TT

		(2000.0)	P	Sato	Q
q	0.9954816				
z	+0.0042134	Peri.	146.82292	+0.70299462	+0.60121640
	+/-0.0000026	Node	203.45147	+0.23496863	+0.30785593
e	0.9958056	Incl.	107.32450	+0.67125875	-0.73740326

From 178 observations 2021 Mar. 19–2022 Jan. 30, mean residual 0".41.

Comet 135P/Shoemaker-Levy

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 7.34921 TT

		(2000.0)	P	Sato	Q
q	2.6800936				
n	0.13299138	Peri.	22.32321	-0.56974909	+0.81980014
a	3.8011970	Node	213.02475	-0.76906334	-0.55655740
e	0.2949343	Incl.	6.06307	-0.28970252	-0.13480203
P	7.41				

From 90 observations 1992 Mar. 30–1999 June 9, mean residual 0".83.

Comet C/2020 U4 (PANSTARRS)

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 7.99488 TT

		(2000.0)	P	Sato	Q
q	5.3536791				
z	-0.0002515	Peri.	69.53494	+0.61568651	+0.76367121
	+/-0.0000011	Node	120.01365	+0.61316959	-0.61914415
e	1.0013462	Incl.	167.03585	+0.49492745	-0.18293933

From 410 observations 2019 Nov. 9–2022 Jan. 8, mean residual 0".48.

Comet 274P/Tombaugh-Tenagra

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 8.48747 TT

		(2000.0)	P	Sato	Q
q	2.4531726				
n	0.10768644	Peri.	38.47536	-0.47391841	-0.83833442
a	4.3755103	Node	81.33981	+0.72533286	-0.54514313
e	0.4393402	Incl.	15.81578	+0.49929307	-0.00378914
P	9.15				

From 708 observations 2003 Nov. 21–2022 Jan. 27, mean residual 0".57.

Nongravitational parameters A1 = -10.13, A2 = -0.0200.

Comet 99P/Kowal

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 12.64216 TT

		(2000.0)	P	Sato	Q
q	4.7061068				
n	0.06532600	Peri.	174.93290	-0.92014960	+0.38994142
a	6.1058386	Node	28.10168	-0.36186179	-0.81203742
e	0.2292448	Incl.	4.33963	-0.14960199	-0.43421299
P	15.09				

From 1011 observations 1991 Feb. 21–2022 Jan. 7, mean residual 0".61.

Comet C/2021 03 (PANSTARRS)

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 21.04807 TT

		(2000.0)	P	Sato	Q
q	0.2873190				
z	-0.0003241	Peri.	299.99206	-0.56806187	-0.81246589
	+/-0.0000026	Node	189.01946	+0.64617049	-0.53901876
e	1.0000931	Incl.	56.79192	-0.50967580	+0.22216648

From 688 observations 2021 July 26–2022 Jan. 25, mean residual 0".43.

Comet 44P/Reinmuth

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 23.28592 TT

		(2000.0)	P	Sato	Q
q	2.1126835				
n	0.13891224	Peri.	58.08581	+0.95959646	+0.26357371
a	3.6924025	Node	286.47263	-0.28013710	+0.86203472
e	0.4278296	Incl.	5.89598	-0.02641672	+0.43292614
P	7.10				

From 1293 observations 1993 Feb. 26–2021 Sept. 28, mean residual 0".72.

Nongravitational parameters A1 = +0.09, A2 = -0.0699.

Comet 45P/Honda-Mrkos-Pajdusakova

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 26.65446 TT

		(2000.0)	P	Sato	Q
q	0.5572052				
n	0.18463345	Peri.	327.90470	+0.56333229	-0.82279073
a	3.0544226	Node	87.70394	+0.77309095	+0.49274448
e	0.8175743	Incl.	4.32272	+0.29152550	+0.28322834
P	5.34				

From 2024 observations 2011 Sep. 9–2017 May 27, mean residual 0".67.

Nongravitational parameters A1 = -0.22, A2 = -0.1837.

Comet C/2020 U5 (PANSTARRS)

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 27.89206 TT

		(2000.0)	P	Sato	Q
q	3.7559288				
z	+0.0001834	Peri.	75.41788	+0.04188714	+0.31879327
	+/-0.0000010	Node	107.33622	-0.12788760	-0.93822345
e	0.9993111	Incl.	97.27018	+0.99090374	-0.13456451

From 459 observations 2020 Sept. 25–2022 Jan. 1, mean residual 0".43.

Comet 286P/Christensen
 Epoch 2022 May 21.0 TT = JDT 2459720.5
 T 2022 May 12.63913 TT

	(2000.0)		P	Sato	Q
q	2.3610002				
n	0.11825937	Peri.	24.85783	+0.60886931	+0.74051653
a	4.1106674	Node	283.95562	-0.76798962	+0.46045928
e	0.4256407	Incl.	17.04391	-0.19867085	+0.48950232
P	8.33				

From 144 observations 2005 June 3–2021 July 5, mean residual 0".48.

Comet 420P/Hill
 Epoch 2022 May 21.0 TT = JDT 2459720.5
 T 2022 May 22.48971 TT

	(2000.0)		P	Sato	Q
q	2.7884173				
n	0.07573694	Peri.	157.09013	+0.87627823	+0.48108210
a	5.5326205	Node	173.95139	-0.47168482	+0.86775152
e	0.4960042	Incl.	14.50442	-0.09823388	+0.12476905
P	13.01				

From 172 observations 2009 Aug. 16–2021 Aug. 26, mean residual 0".67.

Comet P/2012 03 (McNaught)
 Epoch 2022 May 21.0 TT = JDT 2459720.5
 T 2022 May 29.70755 TT

	(2000.0)		P	Sato	Q
q	1.6139448				
n	0.10076439	Peri.	344.75279	+0.78336924	+0.61093493
a	4.5736684	Node	336.41407	-0.53616457	+0.57108004
e	0.6471225	Incl.	16.61580	-0.31442039	+0.54829380
P	9.78				

From 301 observations 2012 July 23–2013 Feb. 8, mean residual 0".53.
 From CHB 2021.

Comet 179P/Jedicke
 Epoch 2022 May 21.0 TT = JDT 2459720.5
 T 2022 May 30.31262 TT

	(2000.0)		P	Sato	Q
q	4.1177230				
n	0.06821719	Peri.	296.92021	+0.56164549	-0.76824859
a	5.9320778	Node	115.51294	+0.82691258	+0.50876316
e	0.3058549	Incl.	19.89821	+0.02774752	+0.38852818
P	14.45				

From 285 observations 1995 Jan. 8–2022 Jan. 19, mean residual 0".66.

Comet 113P/Spitaler
 Epoch 2022 May 21.0 TT = JDT 2459720.5
 T 2022 June 1.42604 TT

	(2000.0)		P	Sato	Q
q	2.1416879				
n	0.13900634	Peri.	115.51355	+0.46345357	-0.88303056
a	3.6907360	Node	306.67674	+0.77631012	+0.44484080
e	0.4197125	Incl.	5.29008	+0.42726266	+0.14957836
P	7.09				

From 622 observations 1986 Sept. 30–2022 Jan. 3, mean residual 0".67.

Comet 238P/Read
 Epoch 2022 May 21.0 TT = JDT 2459720.5
 T 2022 June 5.54129 TT

	(2000.0)		P	Sato	Q
q	2.3693813				
n	0.17481533	Peri.	324.23894	+0.96180494	-0.27318885
a	3.1677413	Node	51.62439	+0.25599721	+0.87530785
e	0.2520281	Incl.	1.26408	+0.09693646	+0.39900379
P	5.64				

From 211 observations 2005 Oct. 23–2017 Nov. 16, mean residual 0".58.

Comet C/2021 T2 (Fuls)

Epoch 2022 May 21.0 TT = JDT 2459720.5

T 2022 June 7.89453 TT

q	1.2475614	(2000.0)	P	Sato	Q
z	-0.0000948	Peri.	263.59937	+0.39582148	-0.68873950
	+/-0.0000264	Node	223.23315	+0.11359071	-0.61964588
e	1.0001182	Incl.	117.52738	-0.91127521	-0.37639991

From 162 observations 2021 Oct. 2-2022 Jan. 8, mean residual 0".61.

Comet C/2019 T4 (ATLAS)

Epoch 2022 May 21.0 TT = JDT 2459720.5

T 2022 June 9.13475 TT

q	4.2424251	(2000.0)	P	Sato	Q
z	+0.0009875	Peri.	351.20085	-0.95992744	+0.05604963
	+/-0.0000006	Node	199.93908	-0.18196372	-0.86982651
e	0.9958106	Incl.	53.62860	-0.21313966	+0.49016353

From 717 observations 2019 Feb. 5-2022 Jan. 21, mean residual 0".36.

Comet C/2021 E3 (ZTF)

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 June 11.91433 TT

q	1.7773847	(2000.0)	P	Sato	Q
z	-0.0004908	Peri.	228.85071	-0.11525944	-0.43252684
	+/-0.0000018	Node	104.46853	-0.37416996	+0.85282026
e	1.0008724	Incl.	112.55485	-0.92016961	-0.29260575

From 859 observations 2021 Mar. 9-Dec. 14, mean residual 0".39.

Comet 148P/Anderson-LINEAR

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 June 13.68262 TT

q	1.6286860	(2000.0)	P	Sato	Q
n	0.14324095	Peri.	8.03470	-0.12576009	-0.99000739
a	3.6176336	Node	89.20640	+0.90661388	-0.14079887
e	0.5497925	Incl.	3.65800	+0.40278488	+0.00781259
P	6.88				

From 217 observations 1993 Nov. 7-2021 Nov. 21, mean residual 0".64.

Nongravitational parameters A1 = +0.01, A2 = -0.0058.

Comet C/2020 Y2 (ATLAS)

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 June 17.68903 TT

q	3.1324617	(2000.0)	P	Sato	Q
z	+0.0009199	Peri.	266.10379	-0.14805566	+0.88681049
	+/-0.0000013	Node	26.51453	+0.52179699	+0.44607347
e	0.9971185	Incl.	101.29740	-0.84012346	+0.12077093

From 533 observations 2020 Mar. 25-2021 Dec. 8, mean residual 0".42.

Comet 117P/Helin-Roman-Alu

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 July 7.79614 TT

q	3.0396036	(2000.0)	P	Sato	Q
n	0.11947458	Peri.	222.94631	+0.19757536	+0.97169646
a	4.0827460	Node	58.84162	-0.85339603	+0.23549680
e	0.2555002	Incl.	8.70399	-0.48236832	-0.01863463
P	8.25				

From 4468 observations 2006 May 3-2021 Sept. 4, mean residual 0".65.

Nongravitational parameters Y1 = +0.05, Y2 = +0.1002.

Comet 169P/NEAT

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 July 9.68354 TT

q	0.6028269	(2000.0)	P	Sato	Q
n	0.23478522	Peri.	218.04392	+0.82675412	-0.56240612
a	2.6022892	Node	176.10666	+0.55214248	+0.80668174
e	0.7683475	Incl.	11.29901	+0.10777900	+0.18155969
P	4.20				

From 1214 observations 1989 Mar. 7-2021 June 7, mean residual 0".47.

Comet C/2020 F2 (ATLAS)

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 July 15.69090 TT

		(2000.0)	P	Sato Q
q	8.8171870			
z	-0.0005819	Peri.	48.35439	-0.89904681
	+/-0.0000007	Node	250.27253	-0.43591216
e	1.0051304	Incl.	163.58493	+0.04117554

From 700 observations 2019 May 27-2022 Jan. 7, mean residual 0".35.

Comet 116P/Wild

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 July 16.92429 TT

		(2000.0)	P	Sato Q
q	2.1970419			
n	0.15114463	Peri.	173.28780	-0.96905299
a	3.4903923	Node	20.98434	-0.22930470
e	0.3705459	Incl.	3.60327	-0.09140933

P 6.52

From 2722 observations 2006 Sept. 24-2022 Jan. 14, mean residual 0".58.

Nongravitational parameters A1 = +1.62, A2 = -0.2066, A3 = +0.8475.

Comet 272P/NEAT

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 July 17.04953 TT

		(2000.0)	P	Sato Q
q	2.4321878			
n	0.10463259	Peri.	27.89647	-0.71393353
a	4.4602382	Node	109.46994	+0.57073755
e	0.4546955	Incl.	18.07408	+0.40565694

P 9.42

From 173 observations 2003 Dec. 1-2022 Jan. 27, mean residual 0".62.

Comet C/2021 P4 (ATLAS)

Epoch 2022 Aug. 9.0 TT = JDT 2459800.5

T 2022 July 30.37289 TT

		(2000.0)	P	Sato Q
q	1.0804495			
z	+0.0031144	Peri.	175.82035	-0.96754822
	+/-0.0000053	Node	348.09486	+0.20093688
e	0.9966351	Incl.	56.31098	+0.15321493

From 440 observations 2021 Aug. 10-2022 Jan. 15, mean residual 0".47.

Comet 100P/Hartley

Epoch 2022 Aug. 9.0 TT = JDT 2459800.5

T 2022 Aug. 10.95799 TT

		(2000.0)	P	Sato Q
q	2.0176333			
n	0.15501259	Peri.	181.97268	-0.77190916
a	3.4320853	Node	37.68702	-0.57720510
e	0.4121261	Incl.	25.56614	-0.26644047

P 6.36

From 358 observations 1985 June 13-2016 July 14, mean residual 0".68.

Nongravitational parameters A1 = +0.23, A2 = -0.0040.

Comet 119P/Parker-Hartley

Epoch 2022 Aug. 9.0 TT = JDT 2459800.5

T 2022 Aug. 11.98061 TT

		(2000.0)	P	Sato Q
q	2.3274785			
n	0.13283988	Peri.	322.05538	+0.39176571
a	3.8040866	Node	104.57171	+0.87249088
e	0.3881636	Incl.	7.39359	+0.29202619

P 7.42

From 1916 observations 1989 Mar. 2-2022 Jan. 1, mean residual 0".67.

Nongravitational parameters A1 = -0.27, A2 = +1.0121.

Comet 437P/PANSTARRS = P/2021 V3
 Epoch 2022 Aug. 9.0 TT = JDT 2459800.5
 T 2022 Aug. 18.46073 TT

			P	Sato	Q
q	3.4001716	(2000.0)			
n	0.10123086	Peri.	206.71968	-0.04428928	-0.99729137
a	4.5596072	Node	245.86751	+0.92770581	-0.01924669
e	0.2542841	Incl.	3.68935	+0.37067559	-0.07098942
P	9.74				

From 101 observations 2004 Mar. 17–2021 Dec. 7, mean residual 0".38.

Comet P/2014 R5 (Lemmon-PANSTARRS)
 Epoch 2022 Aug. 9.0 TT = JDT 2459800.5
 T 2022 Aug. 18.70697 TT

			P	Sato	Q
q	2.3779292	(2000.0)			
n	0.12045210	Peri.	213.70154	+0.94119063	+0.33753138
a	4.0606272	Node	126.56458	-0.30565176	+0.86980336
e	0.4143936	Incl.	1.08843	-0.14400420	+0.35988147
P	8.18				

From 107 observations 2014 Sept. 7–Nov. 18, mean residual 0".57.

From CHB 2021.

Comet P/2011 Q3 (McNaught)
 Epoch 2022 Aug. 9.0 TT = JDT 2459800.5
 T 2022 Aug. 19.10947 TT

			P	Sato	Q
q	2.3223841	(2000.0)			
n	0.08875324	Peri.	310.96671	+0.95399450	+0.29455786
a	4.9775226	Node	32.01858	-0.23349664	+0.84695654
e	0.5334257	Incl.	6.05732	-0.18807929	+0.44260624
P	11.11				

From 148 observations 2011 Aug. 29–Dec. 24, mean residual 0".61.

From CHB 2021.

Comet 107P/(4015) Wilson-Harrington
 Epoch 2022 Aug. 9.0 TT = JDT 2459800.5
 T 2022 Aug. 24.66347 TT

			P	Sato	Q
q	0.9666385	(2000.0)			
n	0.23174749	Peri.	95.44152	+0.99806426	-0.03860434
a	2.6249801	Node	266.77737	+0.01624535	+0.91863046
e	0.6317540	Incl.	2.79922	+0.06003177	+0.39322740
P	4.25				

From 910 observations 1949 Nov. 21–2021 May 9, mean residual 0".44.

Comet 73P/Schwassmann-Wachmann
 Epoch 2022 Aug. 9.0 TT = JDT 2459800.5
 T 2022 Aug. 25.78943 TT

			P	Sato	Q
q	0.9729670	(2000.0)			
n	0.18125964	Peri.	199.48720	-0.02173003	+0.98296398
a	3.0922076	Node	69.61062	-0.88949027	+0.06433501
e	0.6853488	Incl.	11.22769	-0.45643714	-0.17217093
P	5.44				

From 1267 observations 2010 Nov. 28–2022 Jan. 28, mean residual 0".76.

Nongravitational parameters A1 = -0.05, A2 = +0.2543.

Comet 189P/NEAT
 Epoch 2022 Aug. 9.0 TT = JDT 2459800.5
 T 2022 Aug. 28.84531 TT

			P	Sato	Q
q	1.2115184	(2000.0)			
n	0.19497415	Peri.	16.33035	+0.45347935	+0.82550745
a	2.9454480	Node	281.71668	-0.85129491	+0.28955090
e	0.5886811	Incl.	20.06871	-0.26391942	+0.48445612
P	5.06				

From 1411 observations 2002 July 30–2017 Nov. 1, mean residual 0".68.

Nongravitational parameters A1 = -0.09, A2 = +0.0114.

Comet 327P/Van Ness

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 2.40844 TT

		(2000.0)	P	Sato	Q
q	1.5560683				
n	0.14651429	Peri.	185.03206	+0.99807371	-0.00305098
a	3.5635489	Node	173.98502	-0.01059902	+0.97572034
e	0.5633375	Incl.	36.25116	-0.06112716	-0.21899889
P	6.73				

From 117 observations 2002 Aug. 17–2016 Mar. 2, mean residual 0".81.

Comet P/2015 X1 (PANSTARRS)

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 6.65195 TT

		(2000.0)	P	Sato	Q
q	2.1120627				
n	0.14211481	Peri.	218.73867	+0.93230556	-0.35561800
a	3.6367196	Node	161.75763	+0.36143328	+0.90948390
e	0.4192396	Incl.	12.15181	+0.01312706	+0.21534824
P	6.94				

From 85 observations 2015 Aug. 12–2016 Jan. 3, mean residual 0".37.

Comet 157P/Tritton

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 9.79588 TT

		(2000.0)	P	Sato	Q
q	1.5717611				
n	0.14768801	Peri.	155.05751	+0.11927546	-0.97144993
a	3.5446435	Node	287.54879	+0.87104215	+0.20151744
e	0.5565813	Incl.	12.42091	+0.47650702	-0.12520287
P	6.67				

From 1220 observations 2003 Oct. 6–2021 Oct. 26, mean residual 0".79.

Nongravitational parameters A1 = +0.13, A2 = +0.2986.

Comet 255P/Levy

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 11.26160 TT

		(2000.0)	P	Sato	Q
q	0.8474931				
n	0.19506241	Peri.	186.16598	-0.20058368	-0.95298143
a	2.9445594	Node	275.57015	+0.90830484	-0.09402912
e	0.7121834	Incl.	13.19216	+0.36708105	-0.28807104
P	5.05				

From 473 observations 2006 Oct. 2–2012 Feb. 15, mean residual 0".76.

Nongravitational parameters Y1 = -0.01, Y2 = +0.0292, Y3 = -0.1104.

Comet 41P/Tuttle–Giacobini–Kresak

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 13.45002 TT

		(2000.0)	P	Sato	Q
q	1.0501513				
n	0.18160137	Peri.	62.21092	-0.91194041	+0.39773242
a	3.0883272	Node	140.98898	-0.40967145	-0.86871217
e	0.6599611	Incl.	9.22064	-0.02310806	-0.29520855
P	5.43				

From 4353 observations 2006 Feb. 3–2017 July 30, mean residual 0".53.

Nongravitational parameters A1 = +0.63, A2 = +0.0276.

Comet C/2020 R7 (ATLAS)

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 16.24143 TT

		(2000.0)	P	Sato	Q
q	2.9558260				
z	-0.0000370	Peri.	347.84106	+0.05930237	-0.41758595
+/-	-0.0000017	Node	268.28192	-0.82293678	-0.53457134
e	1.0001094	Incl.	114.89130	-0.56502946	+0.73474857

From 205 observations 2019 Dec. 3–2021 Dec. 20, mean residual 0".42.

Comet D/1952 B1 (Harrington-Wilson)

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 21.72227 TT

	(2000.0)		P	Sato	Q
q	1.2298627				
n	0.17963617	Peri.	1.68768	-0.49604912	-0.83995640
a	3.1108102	Node	118.10547	+0.79369398	-0.54138920
e	0.6046488	Incl.	14.44390	+0.35211524	+0.03702682
P	5.49				

From 7 observations 1952 Jan. 30-Feb. 25, mean residual 0".49.

From CHB 2021.

Comet 224P/LINEAR-NEAT

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 29.96709 TT

	(2000.0)		P	Sato	Q
q	2.0459945				
n	0.15421410	Peri.	16.66711	+0.55389705	-0.81931575
a	3.4439221	Node	40.03828	+0.73522077	+0.39788138
e	0.4059115	Incl.	13.30571	+0.39070255	+0.41281001
P	6.39				

From 93 observations 2003 Nov. 20-2009 Nov. 11, mean residual 0".56.

Comet 51P-D/Harrington

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Oct. 1.76686 TT

	(2000.0)		P	Sato	Q
q	1.6923969				
n	0.13799193	Peri.	269.30068	+0.98799744	+0.12258456
a	3.7088015	Node	83.65490	-0.07444997	+0.91102099
e	0.5436809	Incl.	5.42652	-0.13534500	+0.39371789
P	7.14				

From 216 observations 2001 Oct. 19-2015 Nov. 7, mean residual 0".74.

Comet 51P/Harrington

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Oct. 3.89605 TT

	(2000.0)		P	Sato	Q
q	1.6926196				
n	0.13794724	Peri.	269.25369	+0.98793291	+0.12311135
a	3.7096025	Node	83.67126	-0.07494360	+0.91099185
e	0.5437194	Incl.	5.42576	-0.13554347	+0.39362093
P	7.14				

From 594 observations 2001 Sept. 23-2015 Aug. 26, mean residual 0".74.

Nongravitational parameters A1 = +3.45, A2 = +0.4231.

Comet 211P/Hill

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Oct. 4.58536 TT

	(2000.0)		P	Sato	Q
q	2.3275981				
n	0.14754845	Peri.	4.27632	-0.51754784	-0.80552437
a	3.5468783	Node	117.13198	+0.77511625	-0.58420882
e	0.3437615	Incl.	18.92045	+0.36240726	+0.09914908
P	6.68				

From 653 observations 2003 Mar. 24-2021 Nov. 26, mean residual 0".72.

Nongravitational parameters A1 = -1.23, A2 = -0.1699.

Comet 408P/Novichonok-Gerke

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Oct. 5.03275 TT

	(2000.0)		P	Sato	Q
q	3.4675193				
n	0.09538048	Peri.	226.45392	+0.56743031	-0.82162447
a	4.7442005	Node	189.44121	+0.81816758	+0.57002646
e	0.2691035	Incl.	19.35689	+0.09286905	-0.00175023
P	10.33				

From 692 observations 2011 Sept. 7-2022 Jan. 3, mean residual 0".57.

Comet P/2007 S1 (Zhao)

Epoch 2022 Oct. 28.0 TT = JDT 2459880.5

T 2022 Oct. 8.01644 TT

		(2000.0)	P	Sato	Q
q	2.5246905				
n	0.13195546	Peri.	245.25771	+0.89101706	-0.44931227
a	3.8210654	Node	141.35125	+0.44493876	+0.83597481
e	0.3392705	Incl.	5.96119	+0.09010046	+0.31506286
P	7.47				

From 73 observations 2007 Sept. 8–Oct. 16, mean residual 0".80.

Comet 61P/Shajn-Schaldach

Epoch 2022 Oct. 28.0 TT = JDT 2459880.5

T 2022 Oct. 23.82447 TT

		(2000.0)	P	Sato	Q
q	2.1257800				
n	0.13898636	Peri.	221.65556	+0.90802405	-0.41779716
a	3.6910896	Node	162.96443	+0.40666352	+0.86155090
e	0.4240779	Incl.	6.00023	+0.10058383	+0.28840175
P	7.09				

From 1362 observations 2000 Apr. 22–2016 Mar. 3, mean residual 0".73.

Nongravitational parameters A1 = +2.38, A2 = +2.1527, A3 = +1.0862.

Comet 204P/LINEAR-NEAT

Epoch 2022 Oct. 28.0 TT = JDT 2459880.5

T 2022 Nov. 16.86986 TT

		(2000.0)	P	Sato	Q
q	1.8343696				
n	0.14543558	Peri.	356.64997	-0.26171102	-0.95897874
a	3.5811481	Node	108.49987	+0.88815312	-0.28347028
e	0.4877705	Incl.	6.59626	+0.37774511	+0.00209058
P	6.78				

From 1209 observations 2001 Oct. 13–2016 May 2, mean residual 0".68.

Nongravitational parameters A1 = +0.21, A2 = -0.0263.

Comet 244P/Scotti

Epoch 2022 Dec. 7.0 TT = JDT 2459920.5

T 2022 Nov. 17.29434 TT

		(2000.0)	P	Sato	Q
q	3.9204012				
n	0.09097381	Peri.	93.11275	+0.05041590	-0.99871979
a	4.8961921	Node	353.99275	+0.89994472	+0.04722027
e	0.1992959	Incl.	2.25937	+0.43307938	+0.01813923
P	10.83				

From 1392 observations 2000 Nov. 29–2022 Jan. 27, mean residual 0".62.

Nongravitational parameters Y1 = +0.10, Y2 = -0.0262.

Comet 176P/(118401) LINEAR

Epoch 2022 Dec. 7.0 TT = JDT 2459920.5

T 2022 Nov. 21.04201 TT

		(2000.0)	P	Sato	Q
q	2.5805953				
n	0.17229409	Peri.	34.31372	+0.93799527	-0.34664666
a	3.1985695	Node	345.96853	+0.31712948	+0.85925992
e	0.1932033	Incl.	0.23175	+0.13997771	+0.37617614
P	5.72				

From 829 observations 1999 Aug. 17–2020 June 23, mean residual 0".42.

Comet 118P/Shoemaker-Levy

Epoch 2022 Dec. 7.0 TT = JDT 2459920.5

T 2022 Nov. 24.41240 TT

		(2000.0)	P	Sato	Q
q	1.8288801				
n	0.16096530	Peri.	314.84387	-0.12781826	-0.98594384
a	3.3469395	Node	142.11074	+0.95220384	-0.15233846
e	0.4535664	Incl.	10.09036	+0.27743528	+0.06861293
P	6.12				

From 1962 observations 2002 Aug. 19–2017 May 3, mean residual 0".78.

Nongravitational parameters A1 = -5.01, A2 = +2.8050.

Comet P/2010 T020 (LINEAR-Grauer)
Epoch 2022 Dec. 7.0 TT = JDT 2459920.5

T 2022 Nov. 29.32790 TT		Sato	
	(2000.0)	P	Q
q	5.5084003		
n	0.06995918	Peri. 267.57218	+0.65351043
a	5.8331919	Node 43.28315	-0.67613787
e	0.0556799	Incl. 2.47874	-0.34023770

P 14.09
From 59 observations 2010 Oct. 1–2012 Nov. 15, mean residual 0".61.
From CHB 2021.

Comet 129P/Shoemaker-Levy
Epoch 2022 Dec. 7.0 TT = JDT 2459920.5

T 2022 Nov. 30.06004 TT		Sato	
	(2000.0)	P	Q
q	3.9243941		
n	0.11099365	Peri. 307.44531	-0.67299489
a	4.2881565	Node 184.86273	+0.69616456
e	0.0848295	Incl. 3.44236	+0.24986553

P 8.88
From 705 observations 1998 Jan. 2–2021 Nov. 29, mean residual 0".73.
Nongravitational parameters A1 = +1.64, A2 = -1.9868.

Comet P/2007 A2 (Christensen)
Epoch 2022 Dec. 7.0 TT = JDT 2459920.5

T 2022 Nov. 30.15972 TT		Sato	
	(2000.0)	P	Q
q	2.7987288		
n	0.06175448	Peri. 186.67881	-0.59957238
a	6.3390434	Node 300.91402	+0.75336899
e	0.5584935	Incl. 26.48720	+0.27008911

P 15.96
From 89 observations 2007 Jan. 10–Mar. 17, mean residual 0".59.
From CHB 2021.

Comet 81P/Wild
Epoch 2022 Dec. 7.0 TT = JDT 2459920.5

T 2022 Dec. 15.64429 TT		Sato	
	(2000.0)	P	Q
q	1.5984387		
n	0.15352332	Peri. 41.63135	-0.99848245
a	3.4542451	Node 136.10123	+0.02208126
e	0.5372538	Incl. 3.23623	+0.05045010

P 6.42
From 5229 observations 1996 Aug. 17–2022 Jan. 29, mean residual 0".71.
Nongravitational parameters A1 = -0.00, A2 = -0.0493, A3 = -0.1599.

Comet C/2017 K2 (PANSTARRS)
Epoch 2023 Dec. 2.0 TT = JDT 2460280.5

T 2022 Dec. 19.65634 TT		Sato	
	(2000.0)	P	Q
q	1.7972667		
z	-0.0003375	Peri. 236.20570	+0.01811585
+/-	-0.0000003	Node 88.23371	-0.18079980
e	1.0006066	Incl. 87.56713	-0.98335306

From 6769 observations 2013 May 12–2022 Jan. 29, mean residual 0".45.

Comet P/2013 YG46 (Spacewatch)
Epoch 2023 Jan. 16.0 TT = JDT 2459960.5

T 2023 Jan. 5.89031 TT		Sato	
	(2000.0)	P	Q
q	1.7869075		
n	0.16638026	Peri. 242.53003	+0.35836954
a	3.2739209	Node 48.85549	-0.80103897
e	0.4541996	Incl. 7.85683	-0.47948707

P 5.92
From 54 observations 2013 Dec. 26–2014 Feb. 20, mean residual 0".45.
From CHB 2021.

Comet 285P/LINEAR

Epoch 2023 Jan. 16.0 TT = JDT 2459960.5

T 2023 Jan. 12.35219 TT

		(2000.0)	P	Sato	Q
q	1.7192783				
n	0.10287815	Peri.	178.42623	+0.99739668	-0.05958254
a	4.5108038	Node	185.50724	+0.06067104	+0.99781616
e	0.6188532	Incl.	25.03841	+0.03897299	-0.02851016
P	9.58				

From 147 observations 2003 Sept. 19–2013 Oct. 14, mean residual 0".78

Comet P/2021 V2 (Fuls)

Epoch 2023 Jan. 16.0 TT = JDT 2459960.5

T 2023 Jan. 21.41773 TT

		(2000.0)	P	Sato	Q
q	3.4968017				
n	0.03618110	Peri.	259.82469	-0.65150220	-0.73846413
a	9.0534654	Node	232.28352	+0.75319212	-0.60218381
e	0.6137610	Incl.	12.69388	+0.09081026	-0.30338982
P	27.24				

From 90 observations 2021 Aug. 7–2022 Jan. 1, mean residual 0".28.

Comet C/2021 P2 (PANSTARRS)

Epoch 2023 Jan. 16.0 TT = JDT 2459960.5

T 2023 Jan. 22.67852 TT

		(2000.0)	P	Sato	Q
q	5.0690529				
z	+0.0004185	Peri.	76.68609	+0.64298173	-0.71856187
	+/-0.0000228	Node	32.07877	-0.73653378	-0.67501647
e	0.9978787	Incl.	150.06323	+0.20998211	-0.16739655

From 84 observations 2021 June 19–Nov. 8, mean residual 0".32.

Comet 71P/Clark

Epoch 2023 Jan. 16.0 TT = JDT 2459960.5

T 2023 Jan. 22.80935 TT

		(2000.0)	P	Sato	Q
q	1.5888465				
n	0.17728154	Peri.	209.07841	-0.03233086	+0.98946167
a	3.1382945	Node	59.39343	-0.88238049	+0.03806659
e	0.4937230	Incl.	9.43829	-0.46942453	-0.13970162
P	5.56				

From 990 observations 2012 July 17–2018 Jan. 17, weighting mean residual 0".84.

Comet 96P/Machholz

Epoch 2023 Jan. 16.0 TT = JDT 2459960.5

T 2023 Jan. 31.05716 TT

		(2000.0)	P	Sato	Q
q	0.1164252				
n	0.18680162	Peri.	14.74866	-0.20313384	-0.50076301
a	3.0307419	Node	93.95409	+0.79107798	-0.59032551
e	0.9615853	Incl.	57.50294	+0.57700283	+0.63304992
P	5.28				

From 975 observations 1997 Apr. 15–2017 Sept. 17, mean residual 0".62.

Nongravitational parameters A1 = -0.03, A2 = -0.0005.

Comet C/2020 S4 (PANSTARRS)

Epoch 2023 Feb. 25.0 TT = JDT 2460000.5

T 2023 Feb. 9.23313 TT

		(2000.0)	P	Sato	Q
q	3.3696755				
z	-0.0003625	Peri.	20.99064	-0.73120085	-0.60713772
	+/-0.0000044	Node	117.72261	+0.56506440	-0.79448899
e	1.0012216	Incl.	20.56953	+0.38216168	+0.01307778

From 361 observations 2020 Sept. 16–2022 Jan. 8, mean residual 0".47.

Comet C/2021 C5 (PANSTARRS)

Epoch 2023 Feb. 25.0 TT = JDT 2460000.5

T 2023 Feb. 11.08589 TT

		(2000.0)	P	Sato	Q
q	3.2419312				
z	+0.0004173	Peri.	270.92322	-0.36143946	+0.81167959
	+/-0.0000054	Node	323.68280	-0.16798060	-0.54074705
e	0.9986473	Incl.	50.78150	-0.91713905	-0.22083676

From 100 observations 2020 Dec. 22–2022 Jan. 14, mean residual 0".40.

Comet C/2019 U5 (PANSTARRS)

Epoch 2023 Apr. 6.0 TT = JDT 2460040.5

T 2023 Mar. 29.82818 TT

		(2000.0)	P	Sato	Q
q	3.6241376				
z	-0.0004141	Peri.	181.49494	-0.99907998	+0.00770594
+/-	-0.0000007	Node	2.63713	-0.02314209	+0.73133412
e	1.0015008	Incl.	113.52002	-0.03610604	-0.68197582

From 1225 observations 2019 Oct. 11–2022 Jan. 14, mean residual 0".35.

Comet 77P/Longmore

Epoch 2023 Apr. 6.0 TT = JDT 2460040.5

T 2023 Apr. 3.11735 TT

		(2000.0)	P	Sato	Q
q	2.3487635				
n	0.14286934	Peri.	196.73021	-0.85916623	+0.50081311
a	3.6239040	Node	14.76814	-0.40954462	-0.55003214
e	0.3518693	Incl.	24.31875	-0.30676798	-0.66831944
P	6.90				

From 1756 observations 1975 June 10–2022 Jan. 24, mean residual 0".72.

Nongravitational parameters A1 = +0.31, A2 = -0.1819.

Comet C/2021 Y1 (ATLAS)

Epoch 2023 May 16.0 TT = JDT 2460080.5

T 2023 Apr. 30.80928 TT

		(2000.0)	P	Sato	Q
q	2.0328943				
z	-0.0003623	Peri.	245.81639	-0.00816701	-0.47104334
+/-	-0.0000652	Node	244.76337	+0.77289681	-0.56266735
e	1.0007364	Incl.	77.19895	-0.63447917	-0.67935530

From 163 observations 2021 Nov. 8–2022 Jan. 24, mean residual 0".47.

Comet C/2020 V2 (ZTF)

Epoch 2023 May 16.0 TT = JDT 2460080.5

T 2023 May 8.55647 TT

		(2000.0)	P	Sato	Q
q	2.2277892				
z	-0.0005332	Peri.	162.42880	+0.69784889	+0.59393937
+/-	-0.0000014	Node	212.37156	+0.53387601	-0.05876245
e	1.0011878	Incl.	131.61180	+0.47747600	-0.80236089

From 1077 observations 2020 Apr. 18–2022 Jan. 16, mean residual 0".34.

Comet C/2020 K1 (PANSTARRS)

Epoch 2023 May 16.0 TT = JDT 2460080.5

T 2023 May 9.07339 TT

		(2000.0)	P	Sato	Q
q	3.0732899				
z	-0.0000020	Peri.	213.98421	+0.06617792	-0.03770041
+/-	-0.0000011	Node	94.35566	-0.53600781	+0.84151873
e	1.0000062	Incl.	89.67073	-0.84161518	-0.53891085

From 1093 observations 2020 Apr. 17–2022 Jan. 4, mean residual 0".35.

Comet A/2021 X1

Epoch 2023 May 16.0 TT = JDT 2460080.5

T 2023 May 27.27241 TT

		(2000.0)	P	Sato	Q
q	3.2340372				
z	-0.0004660	Peri.	334.59862	+0.82746858	+0.54901491
+/-	-0.0000650	Node	10.58710	+0.55854765	-0.78325139
e	1.0015070	Incl.	140.11911	-0.05762179	+0.29171885

From 110 observations 2021 Dec. 2–2022 Jan. 29, mean residual 0".24.

Comet C/2021 T4 (Lemmon)

Epoch 2023 Aug. 4.0 TT = JDT 2460160.5

T 2023 July 31.54313 TT

		(2000.0)	P	Sato	Q
q	1.4828856				
z	+0.0001589	Peri.	329.82927	+0.28246336	-0.90364002
+/-	-0.0000507	Node	257.88049	-0.80109566	-0.40682311
e	0.9997644	Incl.	160.77461	-0.52769327	+0.13390171

From 138 observations 2021 Aug. 7–Dec. 25, mean residual 0".42.

Comet C/2021 S4 (Tsuchinshan)

Epoch 2024 Jan. 11.0 TT = JDT 2460320.5

T 2024 Jan. 2.80090 TT

	(2000.0)	P	Sato	Q
q	6.6895234			
n	0.00047263	Peri. 72.89862	+0.20548537	-0.97823803
a	163.2253450	Node 5.49063	+0.74418845	+0.13711349
e	0.9590166	Incl. 17.48113	+0.63557794	+0.15572492

P2085.36

From 61 observations 2021 Sept. 8–Nov. 28, mean residual 0".39.

Comet C/2021 S3 (PANSTARRS)

Epoch 2024 Feb. 20.0 TT = JDT 2460360.5

T 2024 Feb. 14.79249 TT

	(2000.0)	P	Sato	Q
q	1.3202261			
z	-0.0001524	Peri. 6.86229	-0.77075393	+0.39897539
+/-	-0.0001055	Node 215.61943	-0.61756960	-0.65954916
e	1.0002012	Incl. 58.53201	-0.15667218	+0.63703496

From 69 observations 2021 Sept. 24–Dec. 19, mean residual 0".42.

Comet C/2021 G2 (ATLAS)

Epoch 2024 Sept. 7.0 TT = JDT 2460560.5

T 2024 Sept. 9.17565 TT

	(2000.0)	P	Sato	Q
q	4.9822402			
z	-0.0000666	Peri. 343.27880	-0.84713491	+0.20052090
+/-	-0.0000126	Node 221.09490	-0.35999992	-0.89773150
e	1.0003319	Incl. 48.47324	-0.39084844	+0.39226206

From 138 observations 2020 Nov. 3–2022 Jan. 2, mean residual 0".45.

Comet 95P/(2060) Chiron

Epoch 2046 Aug. 3.0 TT = JDT 2468560.5

T 2046 Aug. 3.23776 TT

	(2000.0)	P	Sato	Q
q	8.4622674			
n	0.01964670	Peri. 339.58190	-0.98687458	+0.15029644
a	13.6022140	Node 209.25687	-0.12624925	-0.94614534
e	0.3778757	Incl. 6.94232	-0.10069598	-0.28674025

P 50.17

From 3489 observations 1941 Jan. 23–2022 Jan. 5, mean residual 0".37.

References:

Comet 174P/(60558) Echeclus

Epoch 2015 Apr. 8.0 TT = JDT 2457120.5

T 2015 Apr. 22.53247 TT

	(2000.0)	P	Sato	Q
q	5.8170648			
n	0.02822877	Peri. 162.93182	+0.91553933	+0.40213244
a	10.6825465	Node 173.33668	-0.37731603	+0.86619938
e	0.4554608	Incl. 4.34371	-0.13935692	+0.29662793
P	34.92			

From 4127 observations 1979 Sept. 23–2021 Oct. 29, mean residual 0".39.

Comet P/2019 LD2 (ATLAS)

Epoch 2020 Apr. 21.0 TT = JDT 2458960.5

T 2020 Apr. 10.60571 TT

	(2000.0)	P	Sato	Q
q	4.5780283			
n	0.08082675	Peri. 123.42514	+0.54774756	+0.83664332
a	5.2978458	Node 179.78311	-0.81859866	+0.53612042
e	0.1358698	Incl. 11.54633	-0.17282608	+0.11226245
P	12.19			

From 372 observations 2018 May 9–2021 Dec. 13, mean residual 0".58.

Comet 88P/Howell

Epoch 2020 Sept. 28.0 TT = JDT 2459120.5

T 2020 Sept. 26.60343 TT

	(2000.0)	P	Sato	Q
q	1.3530847			
n	0.18002531	Peri. 235.91084	+0.38219192	+0.92187276
a	3.1063259	Node 56.68427	-0.82065786	+0.37037937
e	0.5644099	Incl. 4.38376	-0.42479408	+0.11388478
P	5.47			

From 2535 observations 2015 Jan. 12–2022 Jan. 1, mean residual 0".52.

Nongravitational parameters A1 = -0.31, A2 = -0.4549.

Comet C/2019 N1 (ATLAS)

Epoch 2020 Dec. 17.0 TT = JDT 2459200.5

T 2020 Dec. 1.79969 TT

	(2000.0)	P	Sato	Q
q	1.7046190			
z	+0.0000553	Peri. 193.44242	-0.93825040	+0.25605511
+/-0.0000026		Node 13.57323	-0.14508047	+0.31925304
e	0.9999057	Incl. 82.42760	-0.31406663	-0.91242166

From 1517 observations 2019 June 10–2021 Nov. 26, mean residual 0".53.

Nongravitational parameters A1 = +4.09, A2 = +1.1046.

Comet C/2020 H5 (Robinson)

Epoch 2020 Dec. 17.0 TT = JDT 2459200.5

T 2020 Dec. 12.27862 TT

	(2000.0)	P	Sato	Q
q	9.3453405			
z	+0.0002602	Peri. 326.41426	-0.81219606	-0.33219417
+/-0.0000023		Node 210.64165	-0.03465577	-0.79311727
e	0.9975676	Incl. 70.21036	-0.58235430	+0.51050175

From 144 observations 2020 Apr. 22–2022 Jan. 1, mean residual 0".48.

Comet C/2021 G4 (ATLAS)

Epoch 2021 Jan. 26.0 TT = JDT 2459240.5

T 2021 Jan. 17.01282 TT

	(2000.0)	P	Sato	Q
q	4.5041524			
z	+0.0002354	Peri. 320.22750	-0.63756486	-0.74886975
+/-0.0000036		Node 194.27835	-0.37409083	+0.09572856
e	0.9989393	Incl. 132.83973	-0.67347391	+0.65576684

From 194 observations 2021 Feb. 12–2022 Jan. 1, mean residual 0".51.

Comet 17P/Holmes

Epoch 2021 Mar. 7.0 TT = JDT 2459280.5

T 2021 Feb. 19.82235 TT

		(2000.0)	P	Sato	Q
q	2.0806836				
n	0.14215460	Peri.	24.46746	+0.97547061	+0.12754648
a	3.6360410	Node	326.62035	-0.21320668	+0.75022171
e	0.4277612	Incl.	19.03199	+0.05477221	+0.64876751
P	6.93				

From 5441 observations 2007 May 13–2021 Dec. 13, mean residual 0".59.

Nongravitational parameters A1 = +0.81, A2 = +0.3830.

Comet C/2019 T2 (Lemmon)

Epoch 2021 Apr. 16.0 TT = JDT 2459320.5

T 2021 Apr. 22.27090 TT

		(2000.0)	P	Sato	Q
q	2.6459946				
z	+0.0004969	Peri.	239.38491	+0.33391702	-0.86094637
	+/-0.0000014	Node	155.64260	-0.13766919	+0.35821662
e	0.9986852	Incl.	111.48893	-0.93249483	-0.36118167
P	6.93				

From 722 observations 2019 Aug. 26–2021 Apr. 11, mean residual 0".58.

Comet 7P/Pons–Winnecke

Epoch 2021 May 26.0 TT = JDT 2459360.5

T 2021 May 27.11212 TT

		(2000.0)	P	Sato	Q
q	1.2342355				
n	0.15624876	Peri.	172.59562	-0.06058356	+0.92307320
a	3.4139592	Node	93.37550	-0.93419550	+0.08159452
e	0.6384738	Incl.	22.36361	-0.35157985	-0.37586993
P	6.31				

From 1474 observations 1994 Dec. 31–2021 Dec. 14, mean residual 0".59.

Nongravitational parameters A1 = +0.03, A2 = +0.0129.

Comet C/2019 F1 (ATLAS–Africano)

Epoch 2021 July 5.0 TT = JDT 2459400.5

T 2021 June 22.86630 TT

		(2000.0)	P	Sato	Q
q	3.5957028				
z	-0.0010290	Peri.	251.13198	+0.09418651	+0.85665529
	+/-0.0000005	Node	38.72433	-0.27687029	+0.51192371
e	1.0037000	Incl.	54.17466	-0.95628016	-0.06384226
P	6.31				

From 1388 observations 2019 Feb. 8–2021 Dec. 17, mean residual 0".42.

Comet 15P/Finlay

Epoch 2021 July 5.0 TT = JDT 2459400.5

T 2021 July 13.47348 TT

		(2000.0)	P	Sato	Q
q	0.9919928				
n	0.15014216	Peri.	347.82334	+0.99928827	-0.02520761
a	3.5059114	Node	13.71449	+0.03587530	+0.86500173
e	0.7170514	Incl.	6.79791	-0.01165858	+0.50113529
P	6.56				

From 1380 observations 2008 May 20–2022 Jan. 1, mean residual 0".70.

Nongravitational parameters A1 = -0.04, A2 = -0.1087.

Comet 106P/Schuster

Epoch 2021 Aug. 14.0 TT = JDT 2459440.5

T 2021 Aug. 18.76845 TT

		(2000.0)	P	Sato	Q
q	1.5286343				
n	0.13507072	Peri.	353.66615	+0.73187702	-0.63315096
a	3.7620848	Node	48.88599	+0.63896402	+0.50914529
e	0.5936736	Incl.	19.53657	+0.23681428	+0.58300166
P	7.30				

From 579 observations 1977 Sept. 6–2022 Jan. 7, mean residual 0".72.

Nongravitational parameters A1 = +0.10, A2 = +0.0137.

Comet 193P/LINEAR-NEAT

Epoch 2021 Aug. 14.0 TT = JDT 2459440.5

T 2021 Aug. 25.30688 TT

		(2000.0)	P	Sato	Q
q	2.1680296				
n	0.14553792	Peri.	8.11530	+0.95674218	+0.28032225
a	3.5794690	Node	335.17434	-0.27626104	+0.79139835
e	0.3943153	Incl.	10.68846	-0.09123725	+0.54323853
P	6.77				

From 819 observations 2001 Aug. 17–2022 Jan. 3, mean residual 0".67.

Nongravitational parameters A1 = +0.41, A2 = -0.1671.

Comet 8P/Tuttle

Epoch 2021 Aug. 14.0 TT = JDT 2459440.5

T 2021 Aug. 27.73745 TT

		(2000.0)	P	Sato	Q
q	1.0260079				
n	0.07228009	Peri.	207.48902	-0.26849161	-0.50829874
a	5.7076446	Node	270.20391	+0.96326356	-0.13641411
e	0.8202397	Incl.	54.91122	+0.00596396	-0.85030793
P	13.64				

From 1606 observations 2007 Apr. 22–2021 Dec. 7, mean residual 0".57.

Nongravitational parameters A1 = +0.05, A2 = +0.0003.

Comet P/2021 Q5 (ATLAS)

Epoch 2021 Aug. 14.0 TT = JDT 2459440.5

T 2021 Aug. 30.42653 TT

		(2000.0)	P	Sato	Q
q	1.2345162				
n	0.16554639	Peri.	180.88847	+0.49016441	-0.85664359
a	3.2849057	Node	239.77555	+0.80084933	+0.51550070
e	0.6241852	Incl.	10.73439	+0.34406280	+0.02051314
P	5.95				

From 215 observations 2021 Aug. 29–Oct. 23, mean residual 0".62.

Comet 425P/Kowalski

Epoch 2021 Sept. 23.0 TT = JDT 2459480.5

T 2021 Sept. 20.40032 TT

		(2000.0)	P	Sato	Q
q	2.8900779				
n	0.06190458	Peri.	200.72971	+0.63902753	-0.75601444
a	6.3287926	Node	210.08804	+0.73951840	+0.65454017
e	0.5433445	Incl.	16.42130	+0.21155699	-0.00439814
P	15.92				

From 318 observations 2005 Sept. 30–2021 Dec. 12, mean residual 0".62.

Comet 424P/La Sagra

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Oct. 31.63397 TT

		(2000.0)	P	Sato	Q
q	1.3626995				
n	0.10624129	Peri.	312.47371	+0.99137908	-0.05766770
a	4.4150995	Node	51.17855	+0.10761468	+0.87060382
e	0.6913547	Incl.	8.68542	-0.07474354	+0.48859331
P	9.28				

From 581 observations 2012 Sept. 23–2022 Jan. 28, mean residual 0".44.

Comet C/2018 U1 (Lemmon)

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Nov. 3.07941 TT

		(2000.0)	P	Sato	Q
q	4.9929639				
z	-0.0002756	Peri.	180.46398	-0.25316617	-0.30190559
+/-0.0000004		Node	75.48029	-0.88450676	+0.45706160
e	1.0013759	Incl.	108.29887	-0.39186053	-0.83662878

From 2170 observations 2018 Oct. 27–2021 Oct. 4, mean residual 0".46.

Comet C/2020 F7 (Lemmon)

Epoch 2021 Nov. 2.0 TT = JDT 2459520.5

T 2021 Nov. 14.00421 TT

	(2000.0)	P	Sato	Q
q	5.3321203			
z	+0.0014380	Peri. 227.96943	-0.49516962	+0.61291090
+/-	0.0000010	Node 321.88673	+0.71087334	-0.12161966
e	0.9923327	Incl. 93.95344	-0.49946585	-0.78073612

From 451 observations 2020 Jan. 4-2022 Jan. 2, mean residual 0".47.

Comet 436P/Garradd

Epoch 2021 Dec. 12.0 TT = JDT 2459560.5

T 2021 Dec. 8.50755 TT

	(2000.0)	P	Sato	Q
q	1.9576190			
n	0.06821671	Peri. 282.59503	+0.92543270	-0.15658500
a	5.9321057	Node 87.19244	+0.29277533	+0.87356026
e	0.6699959	Incl. 20.20980	-0.24053464	+0.46084012

P 14.45

From 107 observations 2007 Aug. 12-2021 Dec. 14, mean residual 0".71.

Comet 429P/LINEAR-Hill

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 2.13538 TT

	(2000.0)	P	Sato	Q
q	1.8062261			
n	0.14730640	Peri. 75.53490	+0.78707993	-0.61158087
a	3.5507626	Node 322.07338	+0.50345155	+0.71226812
e	0.4913132	Incl. 7.52192	+0.35642913	+0.34444587

P 6.69

From 542 observations 2008 Aug. 25-2022 Jan. 28, mean residual 0".67.

Comet 181P/Shoemaker-Levy

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Jan. 8.77008 TT

	(2000.0)	P	Sato	Q
q	1.1598334			
n	0.12926658	Peri. 336.22755	+0.96867338	-0.17711748
a	3.8738715	Node 35.40394	+0.24708797	+0.75763848
e	0.7006010	Incl. 17.48575	-0.02488825	+0.62818256

P 7.62

From 63 observations 2006 Oct. 26-2014 June 15, mean residual 0".90.

Comet 86P/Wild

Epoch 2022 Jan. 21.0 TT = JDT 2459600.5

T 2022 Feb. 7.59877 TT

	(2000.0)	P	Sato	Q
q	2.2606670			
n	0.14423074	Peri. 179.40495	-0.31262602	+0.91521195
a	3.6010638	Node 72.35585	-0.87259300	-0.17094765
e	0.3722225	Incl. 15.47510	-0.37529511	-0.36491641

P 6.83

From 80 observations 1987 Jan. 29-2015 June 20, mean residual 0".82.

Nongravitational parameters A1 = +0.08, A2 = +0.0698.

Comet P/2016 J1-B (PANSTARRS)

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Feb. 20.53714 TT

	(2000.0)	P	Sato	Q
q	2.4497773			
n	0.17445756	Peri. 46.97011	-0.40194800	+0.91181190
a	3.1720706	Node 199.81134	-0.89550943	-0.41056309
e	0.2277041	Incl. 14.33002	-0.19105146	+0.00608294

P 5.65

From 53 observations 2016 Apr. 14-Aug. 4, mean residual 0".30.

From CHB 2021.

Comet P/2016 J1-A (PANSTARRS)

Epoch 2022 Mar. 2.0 TT = JDT 2459640.5

T 2022 Feb. 20.69120 TT

		(2000.0)	P	Sato	Q
q	2.4496841				
n	0.17445451	Peri.	46.98560	-0.40170051	+0.91192165
a	3.1721076	Node	199.81132	-0.89561741	-0.41031873
e	0.2277424	Incl.	14.32874	-0.19106585	+0.00611943
P	5.65				

From 71 observations 2016 Mar. 4-Aug. 4, mean residual 0".31.

From CHB 2021.

Comet A/2021 E4

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 25.31871 TT

		(2000.0)	P	Sato	Q
q	4.6760151				
z	+0.0014540	Peri.	48.27683	-0.60680089	+0.78287399
	+/-0.0000021	Node	171.17387	+0.12813754	-0.07435405
e	0.9932009	Incl.	116.36132	+0.78445742	+0.61772145

>From 77 observations 2020 Dec. 21-2022 Jan. 27, mean residual 0".34.

Comet C/2021 V1 (Rankin)

Epoch 2022 Apr. 11.0 TT = JDT 2459680.5

T 2022 Apr. 30.38542 TT

		(2000.0)	P	Sato	Q
q	3.0135146				
z	+0.0015379	Peri.	195.10861	+0.81668339	-0.37341975
	+/-0.0000349	Node	207.65170	+0.57676401	+0.50269792
e	0.9953656	Incl.	71.44999	-0.01927489	-0.77964896

From 57 observations 2021 Oct. 2-Dec. 9, mean residual 0".47.

Comet 182P/LONEOS

Epoch 2022 May 21.0 TT = JDT 2459720.5

T 2022 May 12.24378 TT

		(2000.0)	P	Sato	Q
q	0.9937504				
n	0.19446166	Peri.	54.23581	-0.56673627	-0.77962571
a	2.9506208	Node	72.45938	+0.63652842	-0.61965102
e	0.6632063	Incl.	16.22675	+0.52310761	-0.09064422
P	5.07				

From 195 observations 2001 Oct. 26-2012 Apr. 10, mean residual 0".59.

Comet C/2021 P1 (PANSTARRS)

Epoch 2022 May 21.0 TT = JDT 2459720.5

T 2022 June 2.09851 TT

		(2000.0)	P	Sato	Q
q	4.3742247				
z	+0.0003372	Peri.	40.41559	+0.76362687	-0.64564256
	+/-0.0000102	Node	359.67577	+0.16304437	+0.19947901
e	0.9985251	Incl.	51.63354	+0.62473237	+0.73712537

From 96 observations 2021 July 14-Nov. 6, mean residual 0".26.

Comet P/2013 G4 (PANSTARRS)

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 June 20.34150 TT

		(2000.0)	P	Sato	Q
q	2.6223181				
n	0.10532176	Peri.	214.57224	-0.96831814	+0.24713197
a	4.4407601	Node	339.64542	-0.19946952	-0.85184032
e	0.4094889	Incl.	5.91710	-0.15023941	-0.46183748
P	9.36				

From 41 observations 2013 Apr. 12-June 9, mean residual 0".36.

From CHB 2021.

Comet 337P/WISE

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 July 1.16326 TT

		(2000.0)	P	Sato	Q
q	1.6540593				
n	0.16549579	Peri.	161.03477	-0.03949923	+0.96620625
a	3.2855752	Node	106.06076	-0.94761987	+0.04463932
e	0.4965693	Incl.	15.37123	-0.31694858	-0.25387560
P	5.96				

From 186 observations 2010 Apr. 13-2016 July 8, mean residual 0".38.

Comet A/2021 X2

Epoch 2022 June 30.0 TT = JDT 2459760.5

T 2022 July 8.14211 TT

		(2000.0)	P	Sato	Q
q	2.9946559				
z	-0.0004763	Peri.	193.27906	+0.76780407	+0.38550109
+/-	0.0000616	Node	228.79707	+0.63221644	-0.32644949
e	1.0014265	Incl.	137.14503	+0.10382332	-0.86302934

From 30 observations 2021 Oct. 30–2022 Jan. 1, mean residual 0".24.

Comet 127P/Holt-Olmstead

Epoch 2022 Aug. 9.0 TT = JDT 2459800.5

T 2022 Aug. 10.49969 TT

		(2000.0)	P	Sato	Q
q	2.2111550				
n	0.15349462	Peri.	6.29189	+0.94110917	-0.33307329
a	3.4546757	Node	13.60437	+0.29843925	+0.73758834
e	0.3599529	Incl.	14.30070	+0.15889477	+0.58738883
P	6.42				

From 535 observations 1990 Sept. 16–2017 Jan. 3, mean residual 0".67.

Comet 335P/Gibbs

Epoch 2022 Aug. 9.0 TT = JDT 2459800.5

T 2022 Aug. 12.01056 TT

		(2000.0)	P	Sato	Q
q	1.6238438				
n	0.14563214	Peri.	162.30809	-0.68517617	-0.72574735
a	3.5779249	Node	330.84723	+0.65198907	-0.57325278
e	0.5461493	Incl.	7.29330	+0.32472122	-0.38035778
P	6.77				

From 413 observations 2008 Dec. 1–2021 Oct. 14, mean residual 0".53.

Comet P/2017 S8 (PANSTARRS)

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 15.20742 TT

		(2000.0)	P	Sato	Q
q	1.6923675				
n	0.21289315	Peri.	254.84819	+0.08892698	-0.99106669
a	2.7777613	Node	191.51932	+0.99162138	+0.07870384
e	0.3907441	Incl.	29.84870	-0.09369650	-0.10766853
P	4.63				

From 172 observations 2017 Sept. 25–2018 Feb. 9, mean residual 0".62.

From CHB 2021.

Comet 214P/LINEAR

Epoch 2022 Sept. 18.0 TT = JDT 2459840.5

T 2022 Sept. 26.22562 TT

		(2000.0)	P	Sato	Q
q	1.8609807				
n	0.14309567	Peri.	190.18495	-0.99836949	-0.02032998
a	3.6200818	Node	348.24913	+0.04903834	-0.78373919
e	0.4859285	Incl.	15.18326	-0.02921663	-0.62075726
P	6.89				

From 131 observations 2002 Jan. 15–2009 May 3, mean residual 0".65.

Comet 196P/Tichy

Epoch 2022 Oct. 28.0 TT = JDT 2459880.5

T 2022 Oct. 29.35244 TT

		(2000.0)	P	Sato	Q
q	2.1753381				
n	0.13276861	Peri.	12.05237	+0.81212636	-0.56764253
a	3.8054479	Node	24.11157	+0.50412198	+0.56609966
e	0.4283621	Incl.	19.30128	+0.29378871	+0.59775675
P	7.42				

From 233 observations 2000 Sept. 24–2015 Oct. 23, mean residual 0".61.

Comet 197P/LINEAR

Epoch 2022 Dec. 7.0 TT = JDT 2459920.5

T 2022 Dec. 7.72688 TT

		(2000.0)	P	Sato	Q
q	1.0629732				
n	0.20294063	Peri.	188.75069	-0.27052179	+0.87803940
a	2.8678518	Node	66.36219	-0.85514236	-0.03079114
e	0.6293486	Incl.	25.52818	-0.44220979	-0.47759681
P	4.86				

From 308 observations 2003 May 23–2013 Sept. 25, mean residual 0".75.

Nongravitational parameters A1 = +0.04, A2 = +0.0200.

Comet 80P/Peters–Hartley

Epoch 2022 Dec. 7.0 TT = JDT 2459920.5

T 2022 Dec. 8.89401 TT

		(2000.0)	P	Sato	Q
q	1.6153509				
n	0.12211957	Peri.	339.24676	-0.46791134	+0.73486933
a	4.0235790	Node	259.79593	-0.72415433	-0.63724138
e	0.5985288	Incl.	29.92289	-0.50661572	+0.23214324
P	8.07				

From 23 observations 1990 May 26–2014 July 26, mean residual 0".64.

Nongravitational parameters Y1 = +0.61, Y2 = -0.0527.

Comet 263P/Gibbs

Epoch 2023 Jan. 16.0 TT = JDT 2459960.5

T 2023 Jan. 30.58135 TT

		(2000.0)	P	Sato	Q
q	1.2363007				
n	0.18578793	Peri.	35.04150	-0.76105624	-0.61947469
a	3.0417561	Node	105.51085	+0.54016224	-0.76948816
e	0.5935569	Incl.	11.52200	+0.35919096	-0.15536756
P	5.31				

From 149 observations 2006 Nov. 10–2018 July 4, mean residual 0".66.

Comet P/2017 S9 (PANSTARRS)

Epoch 2023 Feb. 25.0 TT = JDT 2460000.5

T 2023 Feb. 26.09696 TT

		(2000.0)	P	Sato	Q
q	2.1916885				
n	0.17579703	Peri.	237.55227	+0.90101699	-0.41196276
a	3.1559372	Node	146.20883	+0.43217773	+0.87944828
e	0.3055348	Incl.	14.13810	-0.03729330	+0.23844792
P	5.61				

From 39 observations 2017 Sept. 19–Oct. 22, mean residual 0".41.

From CHB 2021.

Comet P/2019 A4 (PANSTARRS)

Epoch 2023 Feb. 25.0 TT = JDT 2460000.5

T 2023 Mar. 3.24608 TT

		(2000.0)	P	Sato	Q
q	2.3858218				
n	0.23328241	Peri.	342.99357	-0.21879485	-0.95487895
a	2.6134532	Node	119.24265	+0.91989731	-0.27049843
e	0.0870999	Incl.	13.30701	+0.32545008	+0.12262459
P	4.22				

From 65 observations 2018 Dec. 31–2019 Mar. 2, mean residual 0".54.

Comet 427P/ATLAS

Epoch 2023 Apr. 6.0 TT = JDT 2460040.5

T 2023 Mar. 19.37293 TT

		(2000.0)	P	Sato	Q
q	2.1705080				
n	0.17478831	Peri.	99.98194	+0.97103919	+0.13696312
a	3.1680677	Node	252.34964	-0.19706581	+0.92241319
e	0.3148795	Incl.	11.85503	+0.13508503	+0.36110249
P	5.64				

From 429 observations 2017 July 22–2021 June 13, mean residual 0".52.

Comet P/2014 A3 (PANSTARRS)

Epoch 2023 Apr. 6.0 TT = JDT 2460040.5

T 2023 Apr. 22.53225 TT

		(2000.0)	P	Sato	Q
q	3.4717361				
n	0.09966109	Peri.	214.16053	+0.11438320	-0.97669805
a	4.6073617	Node	229.97831	+0.95620151	+0.15781810
e	0.2464807	Incl.	13.71740	+0.26943488	-0.14544537
P	9.89				

From 56 observations 2014 Jan. 9–2015 Feb. 23, mean residual 0".41.

From CHB 2021.

Comet P/2008 L2 (Hill)

Epoch 2023 May 16.0 TT = JDT 2460080.5

T 2023 May 11.04256 TT

		(2000.0)	P	Sato	Q
q	2.3299421				
n	0.06649136	Peri.	141.25788	+0.96129852	+0.06086019
a	6.0342864	Node	218.01293	-0.07495989	+0.99627964
e	0.6138827	Incl.	25.86930	+0.26511538	+0.06101571
P	14.82				

From 656 observations 2008 June 12–2009 Jan. 29, mean residual 0".51.

From CHB 2021.

Comet P/2012 WA34 (Lemmon–PANSTARRS)

Epoch 2023 June 25.0 TT = JDT 2460120.5

T 2023 July 8.93620 TT

		(2000.0)	P	Sato	Q
q	3.0711926				
n	0.09741641	Peri.	356.65019	-0.00386126	-0.99438420
a	4.6778682	Node	93.55223	+0.91992053	-0.04499973
e	0.3434632	Incl.	6.08268	+0.39208584	+0.09578667
P	10.12				

From 30 observations 2011 Sept. 26–2013 Jan. 18, mean residual 0".37.

From CHB 2021.

Comet P/2005 E1 (Tubbiolo)

Epoch 2023 Sept. 13.0 TT = JDT 2460200.5

T 2023 Oct. 1.38121 TT

		(2000.0)	P	Sato	Q
q	4.4039811				
n	0.05254299	Peri.	193.91856	-0.98261531	-0.18307393
a	7.0598073	Node	335.46769	+0.17664983	-0.87086964
e	0.3761896	Incl.	4.25959	+0.05711379	-0.45614692
P	18.76				

From 60 observations 2005 Mar. 3–May 9, mean residual 0".77.

From CHB 2021.

Comet C/2019 E3 (ATLAS)

Epoch 2023 Dec. 2.0 TT = JDT 2460280.5

T 2023 Nov. 15.26665 TT

		(2000.0)	P	Sato	Q
q	10.3129651				
z	+0.0001239	Peri.	280.69920	+0.15949253	+0.96239863
+/-	-0.0000017	Node	347.23330	+0.26394420	-0.25620274
e	0.9987226	Incl.	84.29885	-0.95126000	+0.09027202

From 119 observations 2015 Jan. 22–2021 Dec. 17, mean residual 0".44.

Comet P/2007 T2 (Kowalski)

Epoch 2023 Dec. 2.0 TT = JDT 2460280.5

T 2023 Nov. 15.40677 TT

		(2000.0)	P	Sato	Q
q	0.6528640				
n	0.18559444	Peri.	359.67060	+0.99857749	-0.05237512
a	3.0438698	Node	3.38057	+0.04929933	+0.83553073
e	0.7855151	Incl.	9.75625	+0.02031205	+0.54694172
P	5.31				

From 114 observations 2007 Oct. 9–2008 Jan. 18, mean residual 0".77.

Comet P/2004 V3 (Siding Spring)

Epoch 2023 Dec. 2.0 TT = JDT 2460280.5

T 2023 Nov. 21.94473 TT

		(2000.0)	P	Sato	Q
q	3.9498607				
n	0.05183400	Peri.	322.55492	+0.76594919	+0.64078515
a	7.1240381	Node	356.12413	-0.21718398	+0.18160006
e	0.4455587	Incl.	50.44589	-0.60510574	+0.74593285

P 19.01

From 57 observations 2004 Nov. 3–2005 Oct. 7, mean residual 0".42.

From CHB 2021.

Comet C/2021 A9 (PANSTARRS)

Epoch 2023 Dec. 2.0 TT = JDT 2460280.5

T 2023 Dec. 2.07063 TT

		(2000.0)	P	Sato	Q
q	7.7587755				
z	-0.0001654	Peri.	211.48922	-0.25777328	+0.92901571
	+/-0.0000043	Node	314.83548	+0.94591655	+0.29866000
e	1.0012830	Incl.	158.01399	+0.19696398	-0.21847656

From 81 observations 2020 Dec. 12–2022 Jan. 29, mean residual 0".37.

Comet P/2014 W1 (PANSTARRS)

Epoch 2023 Dec. 2.0 TT = JDT 2460280.5

T 2023 Dec. 18.58593 TT

		(2000.0)	P	Sato	Q
q	2.7285873				
n	0.10405859	Peri.	152.03350	+0.78058027	-0.60904232
a	4.4766256	Node	246.18329	+0.54098925	+0.77094253
e	0.3904812	Incl.	8.83924	+0.31308957	+0.18631983

P 9.47

From 50 observations 2014 Nov. 17–2015 Feb. 14, mean residual 0".49.

From CHB 2021.

Comet P/2018 P3 (PANSTARRS)

Epoch 2023 Dec. 22.0 TT = JDT 2460300.5

T 2023 Dec. 26.59632 TT

		(2000.0)	P	Sato	Q
q	1.7506949				
n	0.18931169	Peri.	306.00938	+0.98754175	-0.08401331
a	3.0038927	Node	59.16062	+0.13713382	+0.87416944
e	0.4171913	Incl.	8.91468	-0.07717259	+0.47829860

P 5.21

From 277 observations 2018 Aug. 8–2019 Feb. 4, mean residual 0".58.

Comet P/2001 Q6 (NEAT)

Epoch 2024 Feb. 20.0 TT = JDT 2460360.5

T 2024 Feb. 28.88097 TT

		(2000.0)	P	Sato	Q
q	1.4057695				
n	0.04377762	Peri.	42.91746	+0.53773114	-0.78151115
a	7.9732358	Node	22.18569	+0.34263032	-0.14028997
e	0.8236890	Incl.	56.90902	+0.77035686	+0.60791368

P 22.51

From 354 observations 2001 Aug. 18–2002 Mar. 24, mean residual 0".62.

Comet P/2019 A3 (PANSTARRS)

Epoch 2024 Feb. 20.0 TT = JDT 2460360.5

T 2024 Mar. 2.68051 TT

		(2000.0)	P	Sato	Q
q	2.3071871				
n	0.17680940	Peri.	325.71504	+0.98816540	+0.06754955
a	3.1438790	Node	31.29334	+0.02733256	+0.80590726
e	0.2661336	Incl.	15.37514	-0.15093730	+0.58817561

P 5.57

From 41 observations 2018 Aug. 8–2021 Mar. 14, mean residual 0".35.

Comet P/2010 T2 (PANSTARRS)

Epoch 2024 Feb. 20.0 TT = JDT 2460360.5

T 2024 Mar. 4.76130 TT

		(2000.0)	P	Sato	Q
q	3.7792461				
n	0.07352819	Peri.	351.32046	+0.64618314	-0.75413780
a	5.6428712	Node	58.33326	+0.70820896	+0.53532832
e	0.3302619	Incl.	7.91129	+0.28440711	+0.38039421
P	13.40				

From 33 observations 2010 Oct. 6–2011 Jan. 2, mean residual 0".73.

Comet P/2013 R3 (Catalina–PANSTARRS)

Epoch 2024 Mar. 31.0 TT = JDT 2460400.5

T 2024 Mar. 20.51307 TT

		(2000.0)	P	Sato	Q
q	2.1956994				
n	0.18676712	Peri.	11.37955	+0.99323770	+0.11600430
a	3.0311151	Node	341.95690	-0.10766815	+0.90529935
e	0.2756133	Incl.	0.86505	-0.04343311	+0.40862707
P	5.28				

From 314 observations 2013 Sept. 15–2014 Jan. 3, mean residual 0".52.

Comet C/2021 Q6 (PANSTARRS)

Epoch 2024 Mar. 31.0 TT = JDT 2460400.5

T 2024 Mar. 24.98973 TT

		(2000.0)	P	Sato	Q
q	8.7082955				
z	-0.0001100	Peri.	141.01713	+0.96879269	-0.10212047
+/-	-0.0000109	Node	133.53778	-0.21718147	-0.78888607
e	1.0009578	Incl.	161.84652	+0.11946938	-0.60599519

From 124 observations 2021 Jan. 2–Dec. 8, mean residual 0".26.

Comet P/2011 N01 (Elenin)

Epoch 2024 May 10.0 TT = JDT 2460440.5

T 2024 May 5.95793 TT

		(2000.0)	P	Sato	Q
q	1.2436974				
n	0.07390191	Peri.	263.53873	-0.91132390	+0.33530556
a	5.6238313	Node	295.83166	-0.18516557	-0.85205467
e	0.7788523	Incl.	15.39002	-0.36769887	-0.40196147
P	13.34				

From 57 observations 2011 June 12–Aug. 2, mean residual 0".65.

Comet P/2004 D029 (Spacewatch–LINEAR)

Epoch 2024 June 19.0 TT = JDT 2460480.5

T 2024 June 2.94760 TT

		(2000.0)	P	Sato	Q
q	4.0775615				
n	0.04986230	Peri.	40.40192	-0.97963334	+0.14843977
a	7.3106250	Node	147.37504	-0.17280520	-0.96620792
e	0.4422417	Incl.	14.52520	+0.10225887	-0.21073181
P	19.77				

From 76 observations 2004 Feb. 11–2005 July 10, mean residual 0".60.

Comet P/2002 T6 (NEAT–LINEAR)

Epoch 2024 July 29.0 TT = JDT 2460520.5

T 2024 July 16.17540 TT

		(2000.0)	P	Sato	Q
q	3.3896136				
n	0.04498112	Peri.	218.95102	+0.42833197	-0.89985609
a	7.8303751	Node	205.99836	+0.86894566	+0.43519944
e	0.5671199	Incl.	10.83569	+0.24792170	+0.02933373
P	21.91				

From 412 observations 2002 Sept. 15–2004 Apr. 15, mean residual 0".69.

Comet P/2010 WK (LINEAR)

Epoch 2024 July 29.0 TT = JDT 2460520.5

T 2024 July 21.10527 TT

		(2000.0)	P	Sato	Q
q	1.7822714				
n	0.07116239	Peri.	41.00397	+0.61368043	-0.78859987
a	5.7672536	Node	11.32418	+0.66297310	+0.48797419
e	0.6909671	Incl.	11.40077	+0.42879249	+0.37415429
P	13.85				

From 584 observations 2010 Nov. 17–2011 Apr. 21, mean residual 0".57.

Comet P/2014 MG4 (Spacewatch-PANSTARRS)

Epoch 2024 Sept. 7.0 TT = JDT 2460560.5

T 2024 Sept. 6.72808 TT

		(2000.0)	P	Sato	Q
q	3.7168881				
n	0.08778285	Peri.	298.93844	-0.32294680	+0.93858446
a	5.0141379	Node	311.69220	-0.80178941	-0.33954409
e	0.2587184	Incl.	9.36496	-0.50283110	-0.06139237

P 11.23

From 189 observations 2014 June 20–2016 Nov. 6, mean residual 0".48.

Comet P/2012 US27 (Siding Spring)

Epoch 2024 Oct. 17.0 TT = JDT 2460600.5

T 2024 Oct. 21.33408 TT

		(2000.0)	P	Sato	Q
q	1.8149892				
n	0.08394292	Peri.	0.86483	+0.64436510	-0.59509785
a	5.1659078	Node	49.21111	+0.69775163	+0.20052023
e	0.6486602	Incl.	39.37007	+0.31294772	+0.77823530

P 11.74

From 297 observations 2012 Oct. 17–2013 Apr. 18, mean residual 0".43.

Comet P/2015 HG16 (PANSTARRS)

Epoch 2024 Oct. 17.0 TT = JDT 2460600.5

T 2024 Oct. 16.02526 TT

		(2000.0)	P	Sato	Q
q	3.1233040				
n	0.09433612	Peri.	46.74958	-0.20523746	-0.93978058
a	4.7791506	Node	57.05199	+0.77682057	-0.32627816
e	0.3464730	Incl.	19.00647	+0.59533804	+0.10175967

P 10.45

From 44 observations 2015 Jan. 14–2018 July 14, mean residual 0".35.

Comet P/2015 R2 (PANSTARRS)

Epoch 2025 Jan. 5.0 TT = JDT 2460680.5

T 2025 Jan. 21.04216 TT

		(2000.0)	P	Sato	Q
q	2.4633760				
n	0.10275902	Peri.	149.44848	+0.74689921	+0.66278182
a	4.5142896	Node	168.55325	-0.65147850	+0.74551429
e	0.4543159	Incl.	15.63804	-0.13310647	+0.07020467

P 9.59

From 24 observations 2015 Sept. 9–18, mean residual 0".45.

Comet P/2011 UA134 (Spacewatch-PANSTARRS)

Epoch 2025 Feb. 14.0 TT = JDT 2460720.5

T 2025 Feb. 17.35899 TT

		(2000.0)	P	Sato	Q
q	2.0752749				
n	0.07400458	Peri.	32.41018	+0.30149818	-0.94621077
a	5.6186287	Node	40.38733	+0.83160840	+0.20073105
e	0.6306439	Incl.	10.43936	+0.46639717	+0.25375624

P 13.32

From 126 observations 2011 Oct. 24–2012 Jan. 27, mean residual 0".60.

Comet P/2010 H2 (Vales)

Epoch 2025 Mar. 26.0 TT = JDT 2460760.5

T 2025 Mar. 10.04193 TT

		(2000.0)	P	Sato	Q
q	3.0758291				
n	0.13129922	Peri.	128.08530	-0.95524957	+0.19541859
a	3.8337867	Node	64.18812	-0.28198074	-0.82837477
e	0.1977047	Incl.	14.28047	+0.08935953	-0.52498269

P 7.51

From 1606 observations 2010 Apr. 16–Sept. 4, mean residual 0".47.

Comet P/2010 A3 (Hill)

Epoch 2025 Mar. 26.0 TT = JDT 2460760.5

T 2025 Mar. 11.31444 TT

		(2000.0)	P	Sato	Q
q	1.6210416				
n	0.06537984	Peri.	42.24898	-0.25284815	-0.94001593
a	6.1024866	Node	63.58579	+0.80516165	-0.33567662
e	0.7343638	Incl.	14.81426	+0.53645366	+0.06075577
P	15.08				

From 386 observations 2009 Oct. 14–2010 June 12, mean residual 0".51.

Comet P/2018 L5 (Leonard)

Epoch 2025 Mar. 26.0 TT = JDT 2460760.5

T 2025 Apr. 4.00758 TT

		(2000.0)	P	Sato	Q
q	2.3089985				
n	0.14261340	Peri.	93.94757	+0.68121238	+0.73168324
a	3.6282385	Node	219.02745	-0.68604704	+0.62644788
e	0.3636035	Incl.	2.20945	-0.25551744	+0.26870558
P	6.91				

From 197 observations 2018 June 8–2019 Dec. 19, mean residual 0".57.

Comet P/2005 T5 (Broughton)

Epoch 2025 June 14.0 TT = JDT 2460840.5

T 2025 June 15.01026 TT

		(2000.0)	P	Sato	Q
q	3.2535558				
n	0.05040265	Peri.	304.84620	+0.95209485	+0.00077908
a	7.2582811	Node	56.99973	+0.17682106	+0.81447636
e	0.5517457	Incl.	21.38470	-0.24949893	+0.58019622
P	19.55				

From 93 observations 2005 Aug. 26–2006 Jan. 6, mean residual 0".59.

Comet 65P/Gunn

Epoch 2025 June 14.0 TT = JDT 2460840.5

T 2025 June 16.46924 TT

		(2000.0)	P	Sato	Q
q	2.9262595				
n	0.12836367	Peri.	213.67373	+0.09218055	+0.98574314
a	3.8920162	Node	61.97579	-0.87479902	+0.14769499
e	0.2481379	Incl.	9.17530	-0.47563581	-0.08060177
P	7.68				

From 1615 observations 2015 Dec. 11–2021 Mar. 14, mean residual 0".61.

Comet P/2003 QX29 (NEAT)

Epoch 2025 July 24.0 TT = JDT 2460880.5

T 2025 Aug. 6.96959 TT

		(2000.0)	P	Sato	Q
q	4.2292330				
n	0.04356572	Peri.	37.69077	+0.52050028	+0.83088587
a	7.9990687	Node	264.48422	-0.82358747	+0.42772517
e	0.4712843	Incl.	11.40010	-0.22535115	+0.35592113
P	22.62				

From 96 observations 2002 June 11–2003 Oct. 20, mean residual 0".64.

Comet P/2017 R1 (PANSTARRS)

Epoch 2025 Sept. 2.0 TT = JDT 2460920.5

T 2025 Sept. 9.42540 TT

		(2000.0)	P	Sato	Q
q	3.3277728				
n	0.11734833	Peri.	178.83887	+0.79261591	+0.60913795
a	4.1319156	Node	143.59064	-0.55976981	+0.74432021
e	0.1946174	Incl.	2.57478	-0.24169771	+0.27374876
P	8.40				

From 71 observations 2017 July 18–2018 Jan. 6, mean residual 0".34.

Comet P/2016 A2 (Christensen)

Epoch 2025 Oct. 12.0 TT = JDT 2460960.5

T 2025 Oct. 25.45726 TT

	(2000.0)		P	Sato	Q
q	3.4705270				
n	0.09471247	Peri.	140.51943	+0.24456550	-0.87507997
a	4.7664817	Node	291.56921	+0.73659280	+0.44777490
e	0.2718892	Incl.	26.68513	+0.63057019	-0.18366457
P	10.41				

From 48 observations 2016 Jan. 2-17, mean residual 0".61.

Comet P/2015 T019 (Lemmon-PANSTARRS)

Epoch 2025 Nov. 21.0 TT = JDT 2461000.5

T 2025 Nov. 23.58003 TT

	(2000.0)		P	Sato	Q
q	2.9113113				
n	0.10165794	Peri.	89.41031	+0.62507173	-0.77738988
a	4.5468277	Node	321.60815	+0.66351138	+0.57664891
e	0.3597049	Incl.	6.50512	+0.41114229	+0.25127875
P	9.70				

From 54 observations 2015 Sept. 12-2016 Aug. 12, mean residual 0".39.

Comet P/1999 XN120 (Catalina)

Epoch 2025 Dec. 31.0 TT = JDT 2461040.5

T 2025 Dec. 20.79275 TT

	(2000.0)		P	Sato	Q
q	3.2980753				
n	0.11492588	Peri.	161.45255	+0.05597837	-0.99484341
a	4.1897762	Node	285.27064	+0.90459314	+0.08638751
e	0.2128278	Incl.	5.02963	+0.42258451	-0.05313927
P	8.58				

From 74 observations 1999 Nov. 3-2007 Dec. 16, mean residual 0".64.

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).

Acknowledgments:

This Comet Handbook has made use of data and/or services provided by the International Astronomical Union's Minor Planet Center.

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彗星年表 2022 web 版

2022年2月1日 発行

発行者 彗星年表編集委員会

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