THE COMET HANDBOOK FOR 2012

彗 星 年 表

2012

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INDEX TO EPHEMERIDES

Comet 95P/(2060) Chiron
Epoch 1996 Feb. 7.0 TT = JDT 2450120.5
T 1996 Feb. 14.74554 TT CHB

		(2000.0)	P	Q
q	8.4539297			
n	0.01942786	Peri.	339.55372	-0.98660431	+0.15201011
a	13.7041713	Node	209.38447	-0.12782267	-0.94583865
e	0.3831127	Incl.	6.92995	-0.10135729	-0.28684870
P	50.73				

From 1091 observations 1895 Apr. 24-2011 Nov. 24, mean residual 0″.49.

Comet 29P/Schwassmann-Wachmann
Epoch 2004 July 14.0 TT = JDT 2453200.5
T 2004 July 10.83266 TT CHB

		(2000.0)	P	Q
q	5.7235781			
n	0.06726260	Peri.	48.95663	+0.99214573	-0.03564711
a	5.9880711	Node	312.71549	-0.02847892	+0.86898908
e	0.0441700	Incl.	9.39208	+0.12180232	+0.49354560
P	14.65				

From 16555 observations 1902 Mar. 5-2011 Dec. 29, mean residual 0″.68.

Comet C/2007 D1 (LINEAR)
Epoch 2007 June 29.0 TT = JDT 2454280.5
T 2007 June 19.45523 TT CHB

		(2000.0)	P	Q
q	8.7936980			
z	-0.0002168	Peri.	340.15894	-0.88994393	-0.44441853
	+/-0.0000016	Node	171.09853	+0.45350853	-0.83856770
e	1.0019063	Incl.	41.45028	-0.04826827	+0.31511329

From 473 observations 2007 Feb. 17-2011 Dec. 30, mean residual 0″.63.

Comet C/2005 L3 (McNaught)
Epoch 2008 Jan. 15.0 TT = JDT 2454480.5
T 2008 Jan. 16.00587 TT CHB

		(2000.0)	P	Q
q	5.5932708			
z	+0.0000158	Peri.	47.09694	-0.30837260	-0.72516364
	+/-0.0000002	Node	288.73910	-0.94495803	+0.30792603
e	0.9999119	Incl.	139.44875	+0.10936481	+0.61588899

From 5063 observations 2004 July 16-2011 Dec. 29, mean residual 0″.59.

Comet P/2010 TO20 (LINEAR-Grauer)
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2008 Aug. 28.54124 TT CHB

		(2000.0)	P	Q
q	5.0779231			
n	0.07454807	Peri.	250.46853	+0.41180767	+0.91070661
a	5.5912869	Node	43.89387	-0.81778208	+0.38485360
e	0.0918150	Incl.	2.65045	-0.40205338	+0.15000394
P	13.22				

From 48 observations 2010 Oct. 1-2011 Oct. 30, mean residual 0″.64.

Comet C/2007 S2 (Lemmon)
Epoch 2008 Sept. 11.0 TT = JDT 2454720.5
T 2008 Sept. 14.76158 TT CHB

		(2000.0)	P	Q
q	5.5579734			
n	0.02218512	Peri.	210.45735	-0.81635138	-0.51564531
a	12.5437737	Node	296.25209	+0.57092499	-0.65241809
e	0.5569138	Incl.	16.86236	+0.08726441	-0.55539225
P	44.43				

From 403 observations 2006 Dec. 16-2011 May 9, mean residual 0″.47.

Comet 74P/Smirnova-Chernykh
Epoch 2009 July 28.0 TT = JDT 2455040.5
T 2009 July 30.32392 TT CHB

		(2000.0)	P	Q
q	3.5576646			
n	0.11559929	Peri.	87.24248	-0.95634913	-0.26956249
a	4.1734889	Node	77.10053	+0.20023953	-0.88572002
e	0.1475562	Incl.	6.64743	+0.21283909	-0.37793664
P	8.53				

From 2259 observations 1992 Feb. 5-2011 Oct. 1, mean residual 0″.70.

Comet C/2009 T1 (McNaught)
Epoch 2009 Oct. 16.0 TT = JDT 2455120.5
T 2009 Oct. 8.17269 TT CHB

q	6.2203824	(2000.0)	P	Q
z +0.0002509	Peri.	282.52140	+0.12763867	+0.56795087
+/-0.0000029	Node	54.40057	+0.54911203	+0.64223642
e 0.9984391	Incl.	89.89651	-0.82594452	+0.51474673

From 133 observations 2009 Oct. 9-2011 Oct. 4, mean residual 0″.70.

Comet P/2010 J5 (McNaught)
Epoch 2009 Nov. 25.0 TT = JDT 2455160.5
T 2009 Nov. 6.59397 TT CHB

q	3.7487219	(2000.0)	P	Q
n	0.11831001	Peri.	150.37699	-0.80486788	+0.58188084
a	4.1094944	Node	65.66630	-0.56654744	-0.69488667
e	0.0877900	Incl.	7.35408	-0.17666833	-0.42254846
P	8.33				

From 112 observations 2005 Nov. 1-2011 Aug. 26, mean residual 0″.58.

Comet C/2009 F2 (McNaught)
Epoch 2009 Nov. 25.0 TT = JDT 2455160.5
T 2009 Nov. 14.27393 TT CHB

q	5.8751764	(2000.0)	P	Q
z +0.0028575	Peri.	336.35850	-0.87340874	-0.07073149
+/-0.0000022	Node	214.05812	-0.17809481	-0.87446841
e 0.9832118	Incl.	59.35570	-0.45325424	+0.47989796

From 329 observations 2009 Mar. 19-2011 July 31, mean residual 0″.70.

Comet 65P/Gunn
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Mar. 2.14374 TT CHB

q	2.4403939	(2000.0)	P	Q
n	0.14516982	Peri.	196.63904	-0.09163116	+0.98159102
a	3.5855173	Node	68.35440	-0.89185825	-0.00604138
e	0.3193747	Incl.	10.38682	-0.44293633	-0.19089938
P	6.79				

From 2085 observations 2008 Jan. 5-2012 Jan. 17, mean residual 0″.62.

Comet 162P/Siding Spring
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 8.42275 TT CHB

q	1.2330702	(2000.0)	P	Q
n	0.18479702	Peri.	356.30645	+0.88277480	-0.40266328
a	3.0526199	Node	31.24009	+0.44210415	+0.53777752
e	0.5960617	Incl.	27.81678	+0.15891058	+0.74071427
P	5.33				

From 1400 observations 1990 Mar. 23-2011 May 28, mean residual 0″.43.

Comet C/2007 V053 (Spacewatch)
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 Apr. 26.49819 TT CHB

q	4.8426347	(2000.0)	P	Q
z +0.0000552	Peri.	75.02980	+0.08637426	-0.49858216
+/-0.0000006	Node	59.73684	-0.15559081	-0.86189147
e 0.9997329	Incl.	86.99032	+0.98403810	-0.09251444

From 642 observations 2007 Oct. 20-2011 Sept. 21, mean residual 0″.62.

Comet 215P/NEAT
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 8.04036 TT CHB

q	3.2133750	(2000.0)	P	Q
n	0.12217684	Peri.	222.45311	+0.45162670	+0.86609594
a	4.0223217	Node	75.44084	-0.74758316	+0.49842643
e	0.2011144	Incl.	12.78996	-0.48698330	+0.03806463
P	8.07				

From 213 observations 1994 Oct. 10-2011 Nov. 18, mean residual 0″.65.

Comet C/2009 U5 (Grauer)
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 22.37014 TT CHB

q	6.0943265	(2000.0)	P	Q
z	+0.0000548	Peri.	23.80403	-0.78535215	-0.49782911
	+/-0.0000022	Node	121.17238	+0.47614266	-0.86561998
e	0.9996658	Incl.	25.47033	+0.39561367	+0.05355588

From 168 observations 2009 Oct. 23-2011 Apr. 2, mean residual 0″.64.

Comet P/2010 R2 (La Sagra)
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 25.83600 TT CHB

q	2.6226846	(2000.0)	P	Q
n	0.18073503	Peri.	59.54846	+0.80926907	+0.46042800
a	3.0981884	Node	270.75802	-0.58031404	+0.72302913
e	0.1534780	Incl.	21.39813	+0.09120958	+0.51500965
P	5.45				

From 371 observations 2010 Aug. 12-2011 Aug. 29, mean residual 0″.51.

Comet 10P/Tempel
Epoch 2010 July 23.0 TT = JDT 2455400.5
T 2010 July 4.90438 TT CHB

q	1.4226937	(2000.0)	P	Q
n	0.18337685	Peri.	195.65998	+0.68293490	+0.70687136
a	3.0683605	Node	117.82551	-0.64584882	+0.70211836
e	0.5363342	Incl.	12.02233	-0.34129054	+0.08580609
P	5.37				

From 2718 observations 1951 July 5-2011 Mar. 5, mean residual 0″.70.
Nongravitational parameters A1 = +0.09, A2 = +0.0086.

Comet P/2011 P1 (McNaught)
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2010 July 23.52846 TT CHB

q	4.9518077	(2000.0)	P	Q
n	0.04517973	Peri.	342.16466	+0.99030789	+0.13758752
a	7.8074098	Node	9.98440	-0.11033099	+0.86228107
e	0.3657554	Incl.	6.28231	-0.08436442	+0.48738181
P	21.82				

From 119 observations 2011 Aug. 1-Dec. 26, mean residual 0″.67.

Comet C/2011 P2 (PANSTARRS)
Epoch 2010 Sept. 1.0 TT = JDT 2455440.5
T 2010 Sept. 12.46029 TT CHB

q	6.1471139	(2000.0)	P	Q
n	0.03222718	Peri.	76.30516	+0.17411626	+0.98267116
a	9.7796010	Node	204.00470	-0.95305518	+0.15192499
e	0.3714351	Incl.	8.98986	-0.24772840	+0.10618939
P	30.58				

From 41 observations 2011 June 22-Aug. 27, mean residual 0″.31.

Comet C/2008 FK75 (Lemmon-Siding Spring)
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Sept. 29.25665 TT CHB

q	4.5108605	(2000.0)	P	Q
z	-0.0005643	Peri.	80.42043	+0.16377947	+0.82386121
	+/-0.0000003	Node	218.26849	-0.78064346	+0.44452635
e	1.0025455	Incl.	61.17599	+0.60313521	+0.35163763

From 3252 observations 2008 Mar. 31-2012 Jan. 19, mean residual 0″.59.

Comet 31P/Schwassmann-Wachmann
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Sept. 29.48939 TT CHB

q	3.4243135	(2000.0)	P	Q
n	0.11280059	Peri.	17.93489	-0.66984739	-0.73896913
a	4.2422390	Node	114.18865	+0.67115099	-0.64425898
e	0.1928051	Incl.	4.54675	+0.31758595	-0.19711670
P	8.74				

From 802 observations 1960 Sept. 25-2011 June 13, mean residual 0″.79.
Nongravitational parameters A1 = +3.12, A2 = -0.4295.

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Comet C/2010 L3 (Catalina)
Epoch 2010 Nov. 20.0 TT = JDT 2455520.5
T 2010 Nov. 10.40771 TT                                    CHB
q   9.8829146            (2000.0)            P             Q
z  +0.0000856      Peri.  121.77156     -0.29819304     -0.73872298
 +/-0.0000028      Node    38.27589     -0.76313064     -0.19586908
e   0.9991543      Incl.  102.63072     +0.57333457     -0.64492144
From 106 observations 2010 June 15-2011 June 27, mean residual 0".54.

Comet C/2010 FB87 (WISE-Garradd)
Epoch 2010 Nov. 20.0 TT = JDT 2455520.5
T 2010 Nov. 7.38596 TT                                     CHB
q   2.8427148            (2000.0)            P             Q
z  +0.0032956      Peri.  265.02224     -0.30182739     -0.02451454
 +/-0.0000009      Node    89.89875     +0.29855141     +0.94695717
e   0.9906315      Incl.  107.62685     -0.90541001     +0.32042340
From 446 observations 2010 Mar. 28-2012 Jan. 16, mean residual 0".45.

Comet 240P/NEAT
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Oct. 4.27599 TT                                     CHB
q   2.1237739            (2000.0)            P             Q
n   0.12986524     Peri.  351.92751     +0.38103437     -0.84037498
a   3.8619569      Node    74.97453     +0.86900162     +0.18317944
e   0.4500783      Incl.   23.52252     +0.31567230     +0.51011291
P   7.59
From 1543 observations 2010 Aug. 10-2012 Jan. 5, mean residual 0".57.

Comet 254P/McNaught
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Oct. 26.63559 TT                                    CHB
q   3.2151113            (2000.0)            P             Q
n   0.09721206     Peri.  220.77424     +0.90889176     +0.06803307
a   4.6844212      Node   130.08044     -0.06665665     +0.99761876
e   0.3136588      Incl.   32.52977     -0.41167058     -0.01132756
P  10.14
From 113 observations 1980 Oct. 5-2011 Dec. 13, mean residual 0".54.

Comet C/2009 UG89 (Lemmon)
Epoch 2010 Dec. 30.0 TT = JDT 2455560.5
T 2010 Dec. 16.26985 TT                                    CHB
q   3.9311712            (2000.0)            P             Q
z  -0.0020512      Peri.   60.65371     +0.02763348     -0.87612578
 +/-0.0000006      Node   321.00843     -0.94852698     +0.12897569
e   1.0080637      Incl.  130.10046     +0.31548846     +0.46450930
From 901 observations 2009 Oct. 22-2011 Dec. 7, mean residual 0".57.

Comet 9P/Tempel
Epoch 2010 Dec. 30.0 TT = JDT 2455560.5
T 2011 Jan. 12.36574 TT                                    CHB
q   1.5103021            (2000.0)            P             Q
n   0.17850138     Peri.  178.92336     -0.37705413     +0.91038429
a   3.1239806      Node    68.90707     -0.85112293     -0.26803023
e   0.5165456      Incl.   10.52239     -0.36526695     -0.31521461
P   5.52
From 5442 observations 1982 Dec. 11-2011 Nov. 26, mean residual 0".55.
   Nongravitational parameters A1 = -0.19, A2 = -0.1255.

Comet C/2009 Y1 (Catalina)
Epoch 2011 Feb. 8.0 TT = JDT 2455600.5
T 2011 Jan. 28.90261 TT                                    CHB
q   2.5204957            (2000.0)            P             Q
z  +0.0026530      Peri.  127.39166     +0.65144175     +0.68689728
 +/-0.0000004      Node   160.27725     -0.28549168     -0.17149606
e   0.9933130      Incl.  107.31641     +0.70293538     -0.70623029
From 1629 observations 2009 Dec. 17-2011 Dec. 11, mean residual 0".52.
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Comet C/2010 B1 (Cardinal)
Epoch 2011 Feb. 8.0 TT = JDT 2455600.5
T 2011 Feb. 7.08136 TT CHB

q	2.9414625	(2000.0)	P	Q
z	+0.0003318	Peri.	211.52599	+0.00060817	+0.24113693
	+/-0.0000019	Node	277.21359	+0.99183922	-0.12387681
e	0.9990241	Incl.	101.97625	-0.12749353	-0.96255260

From 2026 observations 2010 Jan. 19-2012 Jan. 13, mean residual 0″.49.

Comet 243P/NEAT
Epoch 2011 Mar. 20.0 TT = JDT 2455640.5
T 2011 Mar. 3.33364 TT CHB

q	2.4561947	(2000.0)	P	Q
n	0.13113533	Peri.	283.92160	+0.97090084	-0.19931867
a	3.8369803	Node	87.70016	+0.23644016	+0.88587890
e	0.3598626	Incl.	7.63495	-0.03804743	+0.41891603
P	7.52				

From 308 observations 2003 Aug. 1-2012 Jan. 18, mean residual 0″.71.

Comet P/2010 JC81 (WISE)
Epoch 2011 Apr. 29.0 TT = JDT 2455680.5
T 2011 Apr. 26.56266 TT CHB

q	1.8107217	(2000.0)	P	Q
n	0.04243230	Peri.	12.57280	+0.75172377	-0.57675944
a	8.1408853	Node	30.76791	+0.53791242	+0.25571821
e	0.7775768	Incl.	38.69008	+0.38152537	+0.77585871
P	23.23				

From 286 observations 2010 May 10-2012 Jan. 23, mean residual 0″.59.

Comet P/2010 UH55 (Spacewatch)
Epoch 2011 Apr. 29.0 TT = JDT 2455680.5
T 2011 May 10.35908 TT CHB

q	2.7679619	(2000.0)	P	Q
n	0.05927357	Peri.	221.61739	-0.11360030	-0.98578662
a	6.5147138	Node	235.26469	+0.94670065	-0.06960781
e	0.5751215	Incl.	8.66246	+0.30141808	-0.15290356
P	16.63				

From 125 observations 2010 Sept. 12-2011 Dec. 29, mean residual 0″.49.

Comet 231P/LINEAR-NEAT
Epoch 2011 Apr. 29.0 TT = JDT 2455680.5
T 2011 May 16.69904 TT CHB

q	3.0328619	(2000.0)	P	Q
n	0.12204058	Peri.	42.47208	-0.98564846	-0.06480193
a	4.0253149	Node	133.09926	+0.02326470	-0.96671920
e	0.2465529	Incl.	12.32642	+0.16720006	-0.24749687
P	8.08				

From 277 observations 1950 Apr. 20-2011 June 27, mean residual 0″.71.

Comet 164P/Christensen
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 2.34886 TT CHB

q	1.6753303	(2000.0)	P	Q
n	0.14115476	Peri.	325.84947	+0.56283631	-0.77773805
a	3.6531909	Node	88.32754	+0.80704855	+0.44392476
e	0.5414063	Incl.	16.26080	+0.17857190	+0.44503295
P	6.98				

From 489 observations 1998 Jan. 24-2012 Jan. 19, mean residual 0″.67.
Nongravitational parameters A1 = -0.04, A2 = +0.0243.

Comet C/2008 S3 (Boattini)
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 7.40504 TT CHB

q	8.0178572	(2000.0)	P	Q
z	-0.0001254	Peri.	39.96468	+0.94225614	+0.23005741
	+/-0.0000008	Node	54.94140	+0.17644690	-0.95869222
e	1.0010054	Incl.	162.70402	+0.28463987	-0.16728063

From 1276 observations 2006 Dec. 27-2012 Jan. 15, mean residual 0″.65.

Comet 213P/Van Ness
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 16.26262 TT CHB

q	2.1225788	(2000.0)	P	Q
n	0.15574942	Peri. 3.33171	+0.71872383	+0.68290131
a	3.4212522	Node 312.67362	-0.64196034	+0.57956120
e	0.3795901	Incl. 10.23960	-0.26706362	+0.44469610
P	6.33			

From 2927 observations 2005 Aug. 4-2012 Jan. 17, mean residual 0″.65.

Comet 130P/McNaught-Hughes
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 24.77650 TT CHB

q	2.0980630	(2000.0)	P	Q
n	0.14821844	Peri. 224.36567	+0.69123215	+0.71135118
a	3.5361816	Node 89.81405	-0.62258503	+0.67559009
e	0.4066869	Incl. 7.30735	-0.36685965	+0.19379763
P	6.65			

From 678 observations 1991 Sept. 14-2011 Nov. 26, mean residual 0″.62.

Comet 62P/Tsuchinshan
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 June 30.39375 TT CHB

q	1.3836367	(2000.0)	P	Q
n	0.15467809	Peri. 30.23302	-0.50094264	-0.84887814
a	3.4370315	Node 90.30834	+0.75643798	-0.52414794
e	0.5974326	Incl. 9.71285	+0.42054496	-0.06837283
P	6.37			

From 681 observations 1984 Sept. 6-2005 June 7, mean residual 0″.78.
Nongravitational parameters A1 = +0.55, A2 = -0.0066.
From H. Sato orbit (CHB 2010).

Comet 176P/LINEAR
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 June 30.93935 TT CHB

q	2.5764089	(2000.0)	P	Q
n	0.17232798	Peri. 35.59350	+0.92682109	-0.37550199
a	3.1981502	Node 346.46175	+0.34355840	+0.84900648
e	0.1944065	Incl. 0.23562	+0.15155956	+0.37173411
P	5.72			

From 248 observations 1999 Aug. 17-2012 Jan. 16, mean residual 0″.48.

Comet 123P/West-Hartley
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 July 4.47173 TT CHB

q	2.1288977	(2000.0)	P	Q
n	0.13000387	Peri. 102.82344	-0.83564776	-0.51445879
a	3.8592110	Node 46.59923	+0.34205922	-0.76152328
e	0.4483594	Incl. 15.35705	+0.42975378	-0.39422638
P	7.58			

From 2073 observations 1989 Mar. 14-2011 Dec. 28, mean residual 0″.69.

Comet P/2010 T2 (PANSTARRS)
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 July 10.89306 TT CHB

q	3.7530753	(2000.0)	P	Q
n	0.07605111	Peri. 356.14092	+0.56250210	-0.81797996
a	5.5173728	Node 59.59066	+0.76225933	+0.45665490
e	0.3197713	Incl. 8.02613	+0.32023757	+0.34982150
P	12.96			

From 33 observations 2010 Oct. 6-2011 Jan. 2, mean residual 0″.73.

Comet 69P/Taylor
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 July 17.50328 TT CHB

q	2.2726944	(2000.0)	P	Q
n	0.12889544	Peri. 343.42910	+0.00935578	-0.93183153
a	3.8813041	Node 104.87983	+0.95475230	-0.09952051
e	0.4144508	Incl. 22.04642	+0.29725495	+0.34897804
P	7.65			

From 428 observations 1998 Jan. 28-2011 Dec. 28, mean residual 0″.79.
Nongravitational parameters A1 = +0.66, A2 = -0.2265,

Comet P/(300163) 2006 VW139
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 July 18.61287 TT CHB

q	2.4378817	(2000.0)	P	Q
n	0.18493406	Peri. 281.90196	+0.99446788	-0.08880142
a	3.0511118	Node 83.21152	+0.10393569	+0.90915959
e	0.2009858	Incl. 3.23909	-0.01519887	+0.40686995
P	5.33			

From 83 observations 2000 Sept. 3-2011 Dec. 30, mean residual 0″.56.

Comet C/2011 L3 (McNaught)
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Aug. 10.50194 TT CHB

q	1.9238455	(2000.0)	P	Q
z	-0.0000513	Peri. 27.72784	+0.56049719	-0.24965033
	+/-0.0000085	Node 307.75522	-0.81377599	+0.01088416
e	1.0000986	Incl. 87.11445	+0.15366047	+0.96827488

From 747 observations 2011 June 3-Nov. 24, mean residual 0″.72.

Comet 97P/Metcalf-Brewington
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Aug. 20.93623 TT CHB

q	2.5966982	(2000.0)	P	Q
n	0.09364364	Peri. 228.20666	+0.59928980	-0.80004657
a	4.8026823	Node 185.20804	+0.79487023	+0.59882485
e	0.4593234	Incl. 17.88633	+0.09504239	+0.03652786
P	10.53			

From 98 observations 2000 Sept. 1-2011 Dec. 3, mean residual 0″.67.

Comet 228P/LINEAR
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Aug. 23.83279 TT CHB

q	3.4304721	(2000.0)	P	Q
n	0.11577657	Peri. 114.79248	-0.82319342	-0.56329629
a	4.1692276	Node 31.06629	+0.45839605	-0.73325021
e	0.1771924	Incl. 7.91537	+0.33500098	-0.38084305
P	8.51			

From 205 observations 2001 Dec. 9-2011 Nov. 26, mean residual 0″.79.

Comet C/2010 G2 (Hill)
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Sept. 2.05250 TT CHB

q	1.9807699	(2000.0)	P	Q
z	+0.0103913	Peri. 137.42630	+0.14259765	+0.42752748
	+/-0.0000002	Node 246.78088	+0.41765813	+0.79168187
e	0.9794173	Incl. 103.74535	+0.89734475	-0.43641732

From 3369 observations 2010 Apr. 10-2012 Jan. 20, mean residual 0″.57.

Comet C/2011 G1 (McNaught)
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Sept. 16.41358 TT CHB

q	2.1551395	(2000.0)	P	Q
z	-0.0004815	Peri. 354.55066	-0.92536348	+0.35209683
	+/-0.0000013	Node 152.59114	+0.35830892	+0.69142259
e	1.0010376	Incl. 162.23378	+0.12376249	+0.63084278

From 289 observations 2011 Apr. 5-2012 Jan. 19, mean residual 0″.69.

Comet C/2011 Q4 (SWAN)
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Sept. 21.08288 TT CHB

q	1.1121976	(2000.0)	P	Q
z	+0.0232695	Peri. 1.88051	-0.33384025	-0.79502937
	+/-0.0000148	Node 252.08707	-0.87164471	+0.05582291
e	0.9741197	Incl. 147.84322	-0.35886791	+0.60399677

From 138 observations 2011 Sept. 4-2012 Jan. 5, mean residual 0″.58.

Comet 45P/Honda-Mrkos-Pajdusakova
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Sept. 28.78125 TT CHB

q	0.5296408	(2000.0)	P	Q
n	0.18777560	Peri. 326.24443	+0.56846497	-0.81936013
a	3.0202527	Node 89.00573	+0.77026119	+0.49840048
e	0.8246369	Incl. 4.25238	+0.28904200	+0.28327714
P	5.25			

From 841 observations 2006 May 30-2011 Dec. 7, mean residual 0".63.
Nongravitational parameters A1 = +0.44, A2 = -0.0092.

Comet 48P/Johnson
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Sept. 29.30372 TT CHB

q	2.3011163	(2000.0)	P	Q
n	0.14197698	Peri. 207.95708	+0.80964600	+0.54808533
a	3.6390729	Node 117.27176	-0.48477012	+0.82613559
e	0.3676641	Incl. 13.66221	-0.33086444	+0.13077636
P	6.94			

From 1174 observations 1949 Sept. 24-2012 Jan. 9, mean residual 0".66.
Nongravitational parameters A1 = +0.60, A2 = -0.0200.

Comet 115P/Maury
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 6.94585 TT CHB

q	2.0350560	(2000.0)	P	Q
n	0.11256326	Peri. 120.06309	+0.44985507	+0.89302065
a	4.2481998	Node 176.60289	-0.87325920	+0.44264245
e	0.5209604	Incl. 11.70613	-0.18721321	+0.08112817
P	8.76			

From 683 observations 1985 Aug. 17-2011 Dec. 2, mean residual 0".70.
Nongravitational parameters A1 = +0.66, A2 = -0.0286.

Comet 73P/Schwassmann-Wachmann C
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 16.89736 TT CHB

q	0.9427961	(2000.0)	P	Q
n	0.18382708	Peri. 198.86522	-0.02848556	+0.98228501
a	3.0633484	Node 69.84443	-0.88986397	+0.05948423
e	0.6922335	Incl. 11.37899	-0.45533580	-0.17770141
P	5.36			

From 3059 observations 2005 Oct. 13-2011 Dec. 6, mean residual 0".71.
Nongravitational parameters A1 = +0.70, A2 = +0.1053.

Comet C/2011 N2 (McNaught)
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 18.74617 TT CHB

q	2.5633274	(2000.0)	P	Q
z	+0.0001702	Peri. 357.04276	+0.02716243	+0.83265272
	+/-0.0000532	Node 274.01878	-0.90538884	-0.21404915
e	0.9995639	Incl. 33.67576	-0.42371365	+0.51075670

From 49 observations 2011 July 4-Sept. 13, mean residual 0".38.

Comet 49P/Arend-Rigaux
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 19.07811 TT CHB

q	1.4238284	(2000.0)	P	Q
n	0.14656299	Peri. 332.78982	-0.05100792	-0.95692700
a	3.5627595	Node 118.87653	+0.96536525	-0.12056415
e	0.6003580	Incl. 19.05017	+0.25586740	+0.26411171
P	6.72			

From 1424 observations 1951 Apr. 6-2012 Jan. 19, mean residual 0".68.
Nongravitational parameters A1 = +0.04, A2 = -0.0007.

Comet C/2011 S2 (Kowalski)
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Oct. 26.34763 TT CHB

q	1.1151131	(2000.0)	P	Q
n	0.01497666	Peri. 192.18984	-0.49455512	-0.82038660
a	16.3001928	Node 288.07000	+0.82063618	-0.33197338
e	0.9315890	Incl. 17.57247	+0.28630663	-0.46557439
P	65.81			

From 310 observations 2011 Sept. 30-Dec. 31, mean residual 0″.64.

Comet P/2011 W2 (Rinner)
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 6.20989 TT CHB

q	2.3030743	(2000.0)	P	Q
n	0.13312375	Peri. 221.06681	-0.03889673	-0.98146400
a	3.7986770	Node 232.01642	+0.96770303	+0.00981277
e	0.3937167	Incl. 13.77372	+0.24907407	-0.19139523
P	7.40			

From 300 observations 2011 Nov. 28-2012 Jan. 19, mean residual 0″.45.

Comet 41P/Tuttle-Giacobini-Kresak
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 11.54529 TT CHB

q	1.0494350	(2000.0)	P	Q
n	0.18171763	Peri. 62.16845	-0.91168148	+0.39836070
a	3.0870098	Node 141.07053	-0.41023350	-0.86850438
e	0.6600480	Incl. 9.22421	-0.02335294	-0.29497270
P	5.42			

From 524 observations 2000 Nov. 17-2006 Aug. 27, mean residual 0″.78.
Nongravitational parameters A1 = +1.62, A2 = -0.0753,

Comet P/2004 H3 (Larsen)
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 23.20297 TT CHB

q	2.4502467	(2000.0)	P	Q
n	0.12771642	Peri. 346.48950	-0.87303241	+0.40045873
a	3.9051546	Node 220.94697	-0.39860324	-0.91475567
e	0.3725609	Incl. 25.12800	-0.28094459	+0.05343092
P	7.72			

From 86 observations 2004 Apr. 22-June 13, mean residual 0″.61.

Comet 253P/PANSTARRS
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 24.11110 TT CHB

q	2.0394606	(2000.0)	P	Q
n	0.15229261	Peri. 230.99806	+0.94983934	-0.30919080
a	3.4728298	Node 146.93562	+0.30690223	+0.89266086
e	0.4127381	Incl. 4.93893	+0.06013533	+0.32795981
P	6.47			

From 325 observations 1998 Sept. 14-2011 Dec. 30, mean residual 0″.57.

Comet P/2011 UA134 (Spacewatch-PANSTARRS)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 7.20043 TT

q	2.0515155	(2000.0)	P	Q
n	0.07469061	Peri. 32.32485	+0.29886701	-0.94683008
a	5.5841709	Node 40.63800	+0.83203214	+0.19740568
e	0.6326195	Incl. 10.53949	+0.46733396	+0.25405472
P	13.20			

From 121 observations 2011 Oct. 24-2012 Jan. 11, mean residual 0″.58.

Comet 37P/Forbes
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 11.02934 TT CHB

q	1.5753114	(2000.0)	P	Q
n	0.15516644	Peri. 329.38999	+0.25343368	+0.96107625
a	3.4298162	Node 315.03111	-0.85301344	+0.16839079
e	0.5407009	Incl. 8.95580	-0.45622301	+0.21903648
P	6.35			

From 508 observations 1999 Apr. 14-2011 Oct. 12, mean residual 0″.69.
Nongravitational parameters A1 = +0.35, A2 = -0.0283.

Comet C/2009 S3 (Lemmon)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 11.29925 TT CHB

q	6.4746056	(2000.0)	P	Q
z	−0.0002264	Peri. 129.76492	+0.72046780	+0.31824858
+/−	0.0000022	Node 225.13253	−0.09575430	+0.92562476
e	1.0014661	Incl. 60.38466	+0.68684588	−0.20478438

From 153 observations 2009 Sept. 24-2012 Jan. 15, mean residual 0″.67.

Comet 71P/Clark
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 15.90153 TT CHB

q	1.5674881	(2000.0)	P	Q
n	0.17837727	Peri. 208.82841	−0.03303494	+0.98930312
a	3.1254295	Node 59.60417	−0.88248592	+0.03786314
e	0.4984727	Incl. 9.48132	−0.46917725	−0.14087483
P	5.53			

From 655 observations 1997 Dec. 29-2011 July 1, mean residual 0″.77.
Nongravitational parameters A1 = +2.59, A2 = −0.3235.

Comet C/2011 A3 (Gibbs)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 16.08804 TT CHB

q	2.3448764	(2000.0)	P	Q
z	+0.0009370	Peri. 141.16373	−0.01645774	+0.93259855
+/−	0.0000018	Node 124.89052	−0.99145383	+0.03145080
e	0.9978029	Incl. 26.07522	−0.12941581	−0.35954247

From 1483 observations 2011 Jan. 15-Oct. 24, mean residual 0″.50.

Comet C/2009 P1 (Garradd)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 23.67592 TT CHB

q	1.5505485	(2000.0)	P	Q
z	−0.0006394	Peri. 90.74589	−0.16658700	−0.82691658
+/−	0.0000017	Node 325.99770	−0.58721245	+0.52076839
e	1.0009914	Incl. 106.17750	+0.79210499	+0.21215386

From 5139 observations 2009 Aug. 13-2012 Jan. 18, mean residual 0″.39.
Nongravitational parameters A1 = +2.20, A2 = −0.8178.

Comet 36P/Whipple
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 29.58806 TT CHB

q	3.0878915	(2000.0)	P	Q
n	0.11541111	Peri. 201.59735	+0.91385713	−0.40597214
a	4.1780245	Node 182.39116	+0.39320052	+0.88925026
e	0.2609207	Incl. 9.93094	+0.10128425	+0.21076195
P	8.54			

From 418 observations 1955 May 26-2011 Nov. 14, mean residual 0″.69.

Comet C/2009 F4 (McNaught)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 31.90789 TT CHB

q	5.4547491	(2000.0)	P	Q
z	−0.0002831	Peri. 260.38540	+0.04751773	+0.61014569
+/−	0.0000008	Node 53.58434	+0.16284908	+0.77643200
e	1.0015444	Incl. 79.34745	−0.98550608	+0.15771995

From 629 observations 2009 Mar. 19-2012 Jan. 16, mean residual 0″.50.

Comet P/2005 JN (Spacewatch)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2012 Jan. 6.10518 TT CHB

q	2.2858089	(2000.0)	P	Q
n	0.15026303	Peri. 153.56643	−0.71000104	+0.68904991
a	3.5040311	Node 70.78986	−0.67027222	−0.59798503
e	0.3476631	Incl. 8.85042	−0.21594831	−0.40941925
P	6.56			

From 27 observations 2005 Apr. 4-May 25, mean residual 0″.60.

Comet 131P/Mueller
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2012 Jan. 7.37873 TT CHB

q	2.4180734	(2000.0)	P	Q
n	0.13931097	Peri. 179.52350	+0.83150795	-0.55082724
a	3.6853537	Node 214.21857	+0.50924860	+0.80761190
e	0.3438694	Incl. 7.35590	+0.22194681	+0.21060002
P	7.07			

From 426 observations 1990 Sept. 15-2011 Dec. 13, mean residual 0″.72.
Nongravitational parameters A1 = +1.32, A2 = -0.0571.

Comet P/2011 C2 (Gibbs)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2012 Jan. 7.87478 TT CHB

q	5.3885253	(2000.0)	P	Q
n	0.04927118	Peri. 160.56054	-0.99076259	-0.12957187
a	7.3689807	Node 12.20275	+0.08512211	-0.82388994
e	0.2687557	Incl. 10.91056	+0.10556378	-0.55173953
P	20.00			

From 109 observations 2011 Jan. 30-Nov. 26, mean residual 0″.44.

Comet 78P/Gehrels
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2012 Jan. 12.91347 TT CHB

q	2.0085743	(2000.0)	P	Q
n	0.13631380	Peri. 192.79730	+0.72777285	-0.68357730
a	3.7391782	Node 210.55868	+0.63843634	+0.70478088
e	0.4628300	Incl. 6.25524	+0.25049096	+0.18975245
P	7.23			

From 4372 observations 1996 June 18-2012 Jan. 20, mean residual 0″.54.
Nongravitational parameters A1 = +0.87, A2 = -0.1261.

Comet 255P/Levy
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Jan. 14.94154 TT CHB

q	1.0074600	(2000.0)	P	Q
n	0.18623580	Peri. 179.62805	-0.16320088	-0.93699036
a	3.0368774	Node 279.74597	+0.90437000	-0.01694612
e	0.6682579	Incl. 18.26519	+0.39430999	-0.34894396
P	5.29			

From 418 observations 2006 Oct. 2-2012 Jan. 20, mean residual 0″.84.

Comet P/2005 J1 (McNaught)
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Jan. 15.58894 TT CHB

q	1.5370476	(2000.0)	P	Q
n	0.14593829	Peri. 338.97355	-0.32456700	+0.78621157
a	3.5729194	Node 268.80451	-0.77529559	-0.53960559
e	0.5698062	Incl. 31.73380	-0.54182378	+0.30115973
P	6.75			

From 94 observations 2005 May 3-Aug. 7, mean residual 0″.57.

Comet C/2011 Q2 (McNaught)
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Jan. 19.78334 TT CHB

q	1.3499792	(2000.0)	P	Q
z	-0.0002737	Peri. 34.61083	+0.67932434	+0.45891269
	+/-0.0001676	Node 287.36402	-0.73183754	+0.48124522
e	1.0003695	Incl. 36.86871	+0.05415028	+0.74686156

From 101 observations 2011 Aug. 26-Oct. 19, mean residual 0″.42.

Comet 244P/Scotti
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Jan. 20.31526 TT CHB

q	3.9181915	(2000.0)	P	Q
n	0.09094256	Peri. 92.59097	+0.05661315	-0.99838813
a	4.8973138	Node 354.15907	+0.89963443	+0.05275490
e	0.1999305	Incl. 2.25905	+0.43295825	+0.02092989
P	10.84			

From 590 observations 2000 Nov. 29-2012 Jan. 18, mean residual 0″.63.

Comet P/2011 JB15 (Spacewatch-Boattini)
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Jan. 20.69120 TT CHB

q	5.0194258	(2000.0)	P	Q
n	0.04937069	Peri. 110.83252	-0.07142854	+0.98685133
a	7.3590753	Node 153.75771	-0.99277779	-0.05629238
e	0.3179271	Incl. 19.14194	-0.09638585	-0.15151111

P 19.96
From 106 observations 2011 May 8-Oct. 2, mean residual 0″.63.

Comet 5D/Brorsen [Orbit 3]
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Jan. 21.13925 TT CHB

q	0.5376900	(2000.0)	P	Q
n	0.17572992	Peri. 19.89129	-0.42582871	-0.83864545
a	3.1567407	Node 96.60858	+0.77698066	-0.53127741
e	0.8296693	Incl. 19.99235	+0.46364961	+0.12007551

P 5.61
From 72 observations 1873-1879, mean residual 2″.12.
From K. Muraoka orbit (CHB 2010).

Comet P/2011 W1 (PANSTARRS)
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Jan. 23.87524 TT CHB

q	3.3110088	(2000.0)	P	Q
n	0.09810030	Peri. 282.73575	+0.09331989	-0.99543170
a	4.6561022	Node 161.87286	+0.93679502	+0.08092307
e	0.2888883	Incl. 3.71839	+0.33720394	+0.05066740

P 10.05
From 117 observations 2011 Nov. 23-Dec. 28, mean residual 0″.43.

Comet 5D/Brorsen [Orbit 1]
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Feb. 5.24389 TT CHB

q	0.5285893	(2000.0)	P	Q
n	0.17566418	Peri. 19.36743	-0.42116964	-0.84172416
a	3.1575282	Node 96.78821	+0.78080070	-0.52599843
e	0.8325940	Incl. 19.88883	+0.46148283	+0.12176246

P 5.61
From 149 observations 1868-1879, mean residual 2″.50.
Nongravitational parameters A1 = +1.26, A2 = +0.1345.
From K. Muraoka orbit (CHB 2010).

Comet D/1886 K1 (Brooks)
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Feb. 6.4301 TT CHB

q	1.885686	(2000.0)	P	Q
n	0.1472265	Peri. 208.6135	-0.3833084	+0.9158142
a	3.552047	Node 39.1880	-0.8071725	-0.2690893
e	0.469127	Incl. 10.9319	-0.4489401	-0.2981196

P 6.69
From 39 observations 1886 May 25-July 3, mean residual 5″.00.
From K. Muraoka (CHB 2010), calculated From R. J. Buckley orbit (1979).

Comet 21P/Giacobini-Zinner
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Feb. 11.73463 TT CHB

q	1.0304951	(2000.0)	P	Q
n	0.14940019	Peri. 172.60336	+0.98510184	-0.09938663
a	3.5175095	Node 195.39691	+0.11783385	+0.98449906
e	0.7070384	Incl. 31.91075	+0.12525797	-0.14451262

P 6.60
From 644 observations 2004 June 22-2012 Jan. 19, mean residual 0″.70.
Nongravitational parameters A1 = +0.28, A2 = -0.1087.

Comet 198P/ODAS
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Feb. 15.84726 TT CHB

q	1.9965789	(2000.0)	P	Q
n	0.14447432	Peri. 68.96748	+0.38156441	-0.92434208
a	3.5970152	Node 358.60152	+0.83913437	+0.34665024
e	0.4449346	Incl. 1.34208	+0.38763657	+0.15945323
P	6.82			

From 182 observations 1998-2006, mean residual 0″.58. Nongravitational parameters A1 = -2.27, A2 = +1.1833, A3 = -2.31.
From K. Muraoka orbit (CHB 2011).

Comet 105P/Singer Brewster
Epoch 2012 Mar. 14.0 TT = JDT 2456000.5
T 2012 Feb. 26.15951 TT CHB

q	2.0508684	(2000.0)	P	Q
n	0.15236713	Peri. 46.67118	-0.51569434	+0.85608683
a	3.4716974	Node 192.41856	-0.82495933	-0.50694804
e	0.4092606	Incl. 9.17055	-0.23130380	-0.10059333
P	6.47			

From 233 observations 1993 July 20-2011 Feb. 5, mean residual 0″.67. Nongravitational parameters A1 = +0.41, A2 = -0.3142.

Comet 3D/Biela [Orbit 2]
Epoch 2012 Mar. 14.0 TT = JDT 2456000.5
T 2012 Feb. 27.03360 TT CHB

q	0.8044423	(2000.0)	P	Q
n	0.14959274	Peri. 274.26466	-0.31051698	-0.94998363
a	3.5144904	Node 193.96473	+0.91770218	-0.29045879
e	0.7711070	Incl. 7.93656	+0.24779411	-0.11473793
P	6.59			

From 19 observations 1846-1852, mean residual 3″.41.
From K. Muraoka orbit (CHB 2010).

Comet 182P/LONEOS
Epoch 2012 Mar. 14.0 TT = JDT 2456000.5
T 2012 Mar. 5.44571 TT CHB

q	1.0085294	(2000.0)	P	Q
n	0.19338827	Peri. 53.76172	-0.56585580	-0.77993791
a	2.9615288	Node 72.86834	+0.63780086	-0.61959151
e	0.6594565	Incl. 16.24933	+0.52251055	-0.08833580
P	5.10			

From 192 observations 2001 Oct. 26-2011 Nov. 20, mean residual 0″.59.

Comet P/2011 Y2 (Boattini)
Epoch 2012 Mar. 14.0 TT = JDT 2456000.5
T 2012 Mar. 21.69132 TT CHB

q	1.7871986	(2000.0)	P	Q
n	0.06351584	Peri. 131.19228	+0.14942679	-0.98513515
a	6.2213028	Node 310.00894	+0.87084514	+0.17170922
e	0.7127292	Incl. 6.35168	+0.46829519	-0.00496813
P	15.52			

From 82 observations 2011 Sept. 4-2012 Jan. 15, mean residual 0″.44.

Comet P/2011 R3 (Novichonok-Gerke)
Epoch 2012 Mar. 14.0 TT = JDT 2456000.5
T 2012 Apr. 2.92081 TT CHB

q	3.5579981	(2000.0)	P	Q
n	0.09215876	Peri. 225.15927	+0.56966654	-0.81962759
a	4.8541326	Node 190.62133	+0.81589109	+0.57287536
e	0.2670167	Incl. 19.24443	+0.09900385	-0.00494414
P	10.69			

From 328 observations 2011 Sept. 7-2012 Jan. 25, mean residual 0″.58.

Comet 242P/Spahr
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 3.58408 TT CHB

q	3.9799247	(2000.0)	P	Q
n	0.07601922	Peri. 247.68543	+0.36912677	-0.92935080
a	5.5189161	Node 180.77314	+0.91824880	+0.36349190
e	0.2788576	Incl. 32.48279	-0.14340350	-0.06465853
P	12.97			

From 352 observations 1997 Oct. 29-2012 Jan. 20, mean residual 0″.67.

Comet 58P/Jackson-Neujmin
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 10.00272 TT CHB

q	1.3744402	(2000.0)	P	Q
n	0.11987419	Peri. 200.48723	+0.99660648	-0.02815132
a	4.0736676	Node 160.63481	+0.04208460	+0.98185786
e	0.6626037	Incl. 13.48975	-0.07074186	+0.18751703
P	8.22			

From 316 observations 1970 Sept. 30-1996 Feb. 17, mean residual 0".72.
Nongravitational parameters A1 = +0.35, A2 = -0.0313.

Comet 163P/NEAT
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 12.74917 TT CHB

q	2.0566700	(2000.0)	P	Q
n	0.13505528	Peri. 349.63670	-0.03492914	-0.97593761
a	3.7623715	Node 102.11766	+0.93195431	-0.10957847
e	0.4533581	Incl. 12.71721	+0.36088935	+0.18851614
P	7.30			

From 319 observations 1990 Oct. 24-2011 Nov. 3, mean residual 0".67.

Comet C/2006 S3 (LONEOS)
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 16.34634 TT CHB

q	5.1310429	(2000.0)	P	Q
z	-0.0006734	Peri. 140.13096	-0.21560164	-0.96491887
	+/-0.0000004	Node 38.36954	-0.94613222	+0.24438269
e	1.0034552	Incl. 166.03268	-0.24155694	-0.09596180

From 2864 observations 2006 Aug. 29-2011 Oct. 26, mean residual 0".60.

Comet 171P/Spahr
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 30.52262 TT CHB

q	1.7646467	(2000.0)	P	Q
n	0.14721001	Peri. 347.08305	+0.00502742	-0.93060603
a	3.5523124	Node 101.71982	+0.94749819	-0.11258417
e	0.5032400	Incl. 21.94894	+0.31972162	+0.34827750
P	6.70			

From 302 observations 1998 Nov. 13-2011 Dec. 27, mean residual 0".78.
Nongravitational parameters A1 = +0.33, A2 = -0.2096.

Comet P/2011 U2 (Bressi)
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 May 6.13381 TT CHB

q	4.8376261	(2000.0)	P	Q
n	0.07766622	Peri. 157.59640	+0.42843374	-0.88800651
a	5.4406143	Node 266.69496	+0.80158596	+0.45882726
e	0.1108309	Incl. 9.62960	+0.41701855	+0.03036426
P	12.69			

From 96 observations 2011 Oct. 24-Dec. 29, mean residual 0".48.

Comet 60P/Tsuchinshan
Epoch 2012 June 2.0 TT = JDT 2456080.5
T 2012 May 13.52504 TT CHB

q	1.6181561	(2000.0)	P	Q
n	0.15015071	Peri. 216.38141	-0.55897128	-0.82679597
a	3.5057783	Node 267.68460	+0.77485075	-0.49381689
e	0.5384317	Incl. 3.61066	+0.29522437	-0.26935721
P	6.56			

From 296 observations 1971 Sept. 19-2011 Nov. 21, mean residual 0".73.
Nongravitational parameters A1 = -0.00, A2 = +0.0005.

Comet C/2010 R1 (LINEAR)
Epoch 2012 May 13.0 TT = JDT 2456060.5
T 2012 May 18.92195 TT CHB

q	5.6213776	(2000.0)	P	Q
z	-0.0006576	Peri. 114.49873	-0.63359888	-0.76575861
	+/-0.0000037	Node 343.64880	-0.77177598	+0.63554611
e	1.0036963	Incl. 156.93359	+0.05398418	+0.09846269

From 294 observations 2010 Sept. 4-2012 Jan. 17, mean residual 0".65.

Comet P/2006 Y2 (Gibbs)
Epoch 2012 June 2.0 TT = JDT 2456080.5
T 2012 May 20.81118 TT CHB

q	1.2633511	(2000.0)	P	Q
n	0.18405799	Peri. 34.48803	-0.75912630	-0.62187871
a	3.0607857	Node 105.87722	+0.54308471	-0.76796105
e	0.5872461	Incl. 11.53505	+0.35886803	-0.15330589
P	5.35			

From 132 observations 2006 Nov. 10-2007 May 11, mean residual 0″.66.

Comet P/2011 N1 (ASH)
Epoch 2012 June 2.0 TT = JDT 2456080.5
T 2012 May 31.08652 TT CHB

q	2.8580033	(2000.0)	P	Q
n	0.06228727	Peri. 331.01841	+0.57122889	-0.59080681
a	6.3028437	Node 77.67632	+0.81942875	+0.37051434
e	0.5465534	Incl. 35.67698	+0.04726604	+0.71670527
P	15.82			

From 209 observations 2011 July 1-2012 Jan. 18, mean residual 0″.35.

Comet C/2011 U3 (PANSTARRS)
Epoch 2012 June 2.0 TT = JDT 2456080.5
T 2012 June 3.96592 TT CHB

q	1.0690570	(2000.0)	P	Q
z	+0.0012792	Peri. 287.97070	+0.11482126	-0.73549210
	+/-0.0008170	Node 228.38018	-0.13428828	-0.67750082
e	0.9986324	Incl. 116.72100	-0.98426761	+0.00663467

From 54 observations 2011 Oct. 24-Nov. 27, mean residual 0″.43.

Comet P/2003 O2 (LINEAR)
Epoch 2012 June 2.0 TT = JDT 2456080.5
T 2012 June 10.61765 TT CHB

q	1.4989327	(2000.0)	P	Q
n	0.11267347	Peri. 32.85488	+0.94854740	-0.30952100
a	4.2454293	Node 344.74055	+0.20692763	+0.76551412
e	0.6469302	Incl. 14.69009	+0.23966389	+0.56407880
P	8.75			

From 495 observations 2003 July 29-Dec. 15, mean residual 0″.75.

Comet 138P/Shoemaker-Levy
Epoch 2012 June 2.0 TT = JDT 2456080.5
T 2012 June 11.73069 TT CHB

q	1.7005741	(2000.0)	P	Q
n	0.14288351	Peri. 95.62228	+0.69485178	-0.70631578
a	3.6236645	Node 309.40837	+0.57084379	+0.65611491
e	0.5307032	Incl. 10.08331	+0.43739956	+0.26576537
P	6.90			

From 75 observations 1991 Nov. 13-2006 Feb. 24, mean residual 0″.58.
Nongravitational parameters A1 = +0.02, A2 = -0.0220.

Comet P/2011 U1 (PANSTARRS)
Epoch 2012 June 2.0 TT = JDT 2456080.5
T 2012 June 20.67467 TT CHB

q	2.3561794	(2000.0)	P	Q
n	0.12110920	Peri. 353.14895	-0.62076176	-0.76164250
a	4.0459262	Node 135.00631	+0.73120504	-0.64798755
e	0.4176415	Incl. 15.24332	+0.28283214	+0.00358242
P	8.14			

From 55 observations 2004 Feb. 14-2012 Jan. 25, mean residual 0″.32.

Comet 152P/Helin-Lawrence
Epoch 2012 July 12.0 TT = JDT 2456120.5
T 2012 July 9.23225 TT CHB

q	3.1164532	(2000.0)	P	Q
n	0.10327109	Peri. 163.79975	-0.24270519	+0.95486119
a	4.4993543	Node 91.91024	-0.90798589	-0.16143708
e	0.3073555	Incl. 9.86736	-0.34154915	-0.24935554
P	9.54			

From 167 observations 1997 Dec. 29-2011 Dec. 29, mean residual 0″.79.

Comet 96P/Machholz
Epoch 2012 July 12.0 TT = JDT 2456120.5
T 2012 July 14.78361 TT CHB

q	0.1237916	(2000.0)	P	Q
n	0.18658506	Peri. 14.75590	-0.20637583	-0.48750534
a	3.0330865	Node 94.32427	+0.78923999	-0.59544057
e	0.9591863	Incl. 58.29894	+0.57836775	+0.63858365
P	5.28			

From 623 observations 1988 May 15-2007 Aug. 12, mean residual 0″.56.
Nongravitational parameters A1 = -0.09, A2 = -0.0087.

Comet 189P/NEAT
Epoch 2012 July 12.0 TT = JDT 2456120.5
T 2012 July 20.43364 TT CHB

q	1.1772259	(2000.0)	P	Q
n	0.19755759	Peri. 15.35468	+0.44567638	+0.82796349
a	2.9197134	Node 282.15334	-0.85362963	+0.27855560
e	0.5968009	Incl. 20.37538	-0.26960900	+0.48670653
P	4.99			

From 641 observations 2002 July 30-2007 Oct. 28, mean residual 0″.72.

Comet C/2011 UF305 (LINEAR)
Epoch 2012 July 12.0 TT = JDT 2456120.5
T 2012 July 22.16189 TT CHB

q	2.1381838	(2000.0)	P	Q
z	-0.0003039	Peri. 121.99290	-0.29609961	-0.35829324
	+/-0.0000184	Node 297.43559	+0.07010730	+0.91632565
e	1.0006499	Incl. 93.96029	+0.95258070	-0.17881069

From 101 observations 2011 July 25-2012 Jan. 22, mean residual 0″.39.

Comet 185P/Petriew
Epoch 2012 Aug. 21.0 TT = JDT 2456160.5
T 2012 Aug. 13.54706 TT CHB

q	0.9318563	(2000.0)	P	Q
n	0.18051641	Peri. 181.94485	+0.80922078	-0.57162534
a	3.1006893	Node 214.09041	+0.54223988	+0.81557214
e	0.6994680	Incl. 14.00760	+0.22613633	+0.08992523
P	5.46			

From 492 observations 2001 Aug. 19-2007 Apr. 29, mean residual 0″.73.

Comet C/2011 O1 (LINEAR)
Epoch 2012 Aug. 21.0 TT = JDT 2456160.5
T 2012 Aug. 18.47182 TT CHB

q	3.8905066	(2000.0)	P	Q
z	+0.0008032	Peri. 232.38544	+0.18299027	+0.14503365
	+/-0.0000335	Node 89.81673	-0.25413710	+0.96241941
e	0.9968752	Incl. 76.49826	-0.94969937	-0.22959553

From 77 observations 2011 July 31-Nov. 3, mean residual 0″.48.

Comet P/2006 Q2 (LONEOS)
Epoch 2012 Aug. 21.0 TT = JDT 2456160.5
T 2012 Aug. 22.40130 TT CHB

q	1.3361279	(2000.0)	P	Q
n	0.16543553	Peri. 97.19241	+0.94821460	+0.30607920
a	3.2863730	Node 245.01450	-0.31563130	+0.87804591
e	0.5934339	Incl. 5.37325	-0.03558024	+0.36790067
P	5.96			

From 151 observations 2006 Aug. 29-Oct. 17, mean residual 0″.53.

Comet P/2005 K3 (McNaught)
Epoch 2012 Sept. 30.0 TT = JDT 2456200.5
T 2012 Sept. 12.73199 TT CHB

q	1.4971393	(2000.0)	P	Q
n	0.13943592	Peri. 15.69496	+0.98966627	-0.13828434
a	3.6831517	Node 351.96186	+0.08385191	+0.77266921
e	0.5935168	Incl. 15.73571	+0.11631654	+0.61956415
P	7.07			

From 515 observations 2005 May 20-2006 Feb. 4, mean residual 0″.53.

Comet 160P/LINEAR
Epoch 2012 Sept. 30.0 TT = JDT 2456200.5
T 2012 Sept. 18.52132 TT CHB

q	2.0665500	(2000.0)	P	Q
n	0.12472943	Peri. 18.19725	+0.99098691	+0.06695047
a	3.9672547	Node 337.00175	-0.12557802	+0.76584582
e	0.4790982	Incl. 17.27590	+0.04663799	+0.63952937
P	7.90			

From 190 observations 1996 Sept. 8-2005 Jan. 4, mean residual 0″.70.

Comet 158P/Kowal-LINEAR
Epoch 2012 Sept. 30.0 TT = JDT 2456200.5
T 2012 Sept. 27.47804 TT CHB

q	4.5764194	(2000.0)	P	Q
n	0.09607373	Peri. 232.84912	+0.97919939	-0.18018329
a	4.7213509	Node 137.30459	+0.20024890	+0.93228874
e	0.0306970	Incl. 7.90735	-0.03269461	+0.31364261
P	10.26			

From 379 observations 1979 July 24-2011 Nov. 16, mean residual 0″.73.

Comet P/2005 N3 (Larson)
Epoch 2012 Sept. 30.0 TT = JDT 2456200.5
T 2012 Sept. 29.39419 TT CHB

q	2.1869049	(2000.0)	P	Q
n	0.14532702	Peri. 58.82108	+0.99431303	+0.04430764
a	3.5829312	Node 298.48055	-0.08296707	+0.89239686
e	0.3896325	Incl. 6.32546	+0.06676873	+0.44907091
P	6.78			

From 100 observations 2005 July 3-Dec. 2, mean residual 0″.68.

Comet 168P/Hergenrother
Epoch 2012 Sept. 30.0 TT = JDT 2456200.5
T 2012 Oct. 1.68917 TT CHB

q	1.4149542	(2000.0)	P	Q
n	0.14295308	Peri. 13.96701	+0.98238310	-0.18545702
a	3.6224887	Node 356.46870	+0.11433669	+0.69384060
e	0.6093972	Incl. 21.92958	+0.14781940	+0.69583828
P	6.89			

From 250 observations 1998 Nov. 21-2006 Feb. 2, mean residual 0″.75.

Comet P/2005 T2 (Christensen)
Epoch 2012 Sept. 30.0 TT = JDT 2456200.5
T 2012 Oct. 7.19540 TT CHB

q	2.2091453	(2000.0)	P	Q
n	0.13192463	Peri. 58.65146	+0.74700816	+0.64925400
a	3.8216607	Node 260.45343	-0.64853979	+0.66436250
e	0.4219410	Incl. 8.33756	-0.14620177	+0.37025897
P	7.47			

From 69 observations 2005 Oct. 7-Nov. 25, mean residual 0″.62.

Comet C/2011 R1 (McNaught)
Epoch 2012 Sept. 30.0 TT = JDT 2456200.5
T 2012 Oct. 19.61971 TT CHB

q	2.0796050	(2000.0)	P	Q
z	-0.0003429	Peri. 308.86049	-0.24321281	-0.76722160
	+/-0.0000048	Node 221.40831	-0.33937137	-0.50587292
e	1.0007131	Incl. 116.19710	-0.90866639	+0.39428872

From 366 observations 2011 Sept. 3-2012 Jan. 17, mean residual 0″.45.

Comet C/2012 A2 (LINEAR)
T 2012 Nov. 3.42309 TT CHB

q	3.5450900	(2000.0)	P	Q
z	-0.0017405	Peri. 101.39185	+0.07971475	+0.98379090
		Node 191.43374	+0.23658190	+0.13786355
e	1.0061704	Incl. 125.87599	+0.96833598	-0.11466956

From 161 observations 2012 Jan. 15-30, mean residual 0″.47.

Comet P/1994 X1 (McNaught-Russell)
Epoch 2012 Dec. 19.0 TT = JDT 2456280.5
T 2012 Dec. 4.53020 TT CHB

q	1.2799198	(2000.0)	P	Q
n	0.05399553	Peri. 171.19322	+0.86099648	-0.41122398
a	6.9326215	Node 218.01161	+0.43202160	+0.90185571
e	0.8153772	Incl. 29.07907	+0.26840715	-0.13248060
P	18.25			

From 126 observations 1994 Dec. 12-1995 Apr. 17, mean residual 0″.72.

Comet P/2006 F4 (Spacewatch)
Epoch 2012 Dec. 19.0 TT = JDT 2456280.5
T 2012 Dec. 13.92101 TT CHB

q	2.3420193	(2000.0)	P	Q
n	0.14856866	Peri. 31.04230	-0.81894808	+0.57366654
a	3.5306222	Node 184.06280	-0.56062756	-0.80542635
e	0.3366554	Incl. 12.38022	-0.12255929	-0.14898020
P	6.63			

From 46 observations 2006 Mar. 26-May 31, mean residual 0″.68.

Comet P/1999 RO28 (LONEOS)
Epoch 2012 Dec. 19.0 TT = JDT 2456280.5
T 2012 Dec. 21.14083 TT CHB

q	1.2194371	(2000.0)	P	Q
n	0.14959253	Peri. 220.08331	+0.98581232	-0.15025692
a	3.5144938	Node 148.32108	+0.16545810	+0.94489247
e	0.6530263	Incl. 8.19007	-0.02824353	+0.29086265
P	6.59			

From 108 observations 1999 Sept. 7-Nov. 13, mean residual 0″.72.

Comet P/1999 D1 (Hermann)
Epoch 2012 Dec. 19.0 TT = JDT 2456280.5
T 2012 Dec. 22.56161 TT CHB

q	1.6437850	(2000.0)	P	Q
n	0.07154932	Peri. 173.96972	-0.95638517	-0.28338134
a	5.7464424	Node 348.77296	+0.25048737	-0.67079796
e	0.7139474	Incl. 21.34581	+0.15027803	-0.68536495
P	13.78			

From 111 observations 1999 Feb. 20-Apr. 14, mean residual 0″.78.

Comet C/2011 F1 (LINEAR)
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 8.00243 TT CHB

q	1.8190266	(2000.0)	P	Q
z	-0.0000572	Peri. 192.55436	+0.03605367	+0.55369813
	+/-0.0000024	Node 85.11458	-0.82944391	+0.48092570
e	1.0001042	Incl. 56.61272	-0.55742528	-0.67980060

From 1165 observations 2011 Mar. 17-2012 Jan. 18, mean residual 0″.51.

Comet 246P/NEAT
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 28.71122 TT CHB

q	2.8797622	(2000.0)	P	Q
n	0.12191751	Peri. 176.18920	-0.25681331	+0.92800719
a	4.0280234	Node 78.78049	-0.89382645	-0.12184217
e	0.2850682	Incl. 15.97187	-0.36758836	-0.35207547
P	8.08			

From 1200 observations 2002 Jan. 6-2012 Jan. 18, mean residual 0″.54.

Comet 133P/(7968) Elst-Pizarro
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Feb. 8.98115 TT CHB

q	2.6499749	(2000.0)	P	Q
n	0.17540298	Peri. 132.16234	+0.37972514	+0.92506285
a	3.1606621	Node 160.14975	-0.85573836	+0.35461559
e	0.1615760	Incl. 1.38679	-0.35145508	+0.13603859
P	5.62			

From 446 observations 1979 July 24-2011 Mar. 5, mean residual 0″.45.

Comet 125P/Spacewatch
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Feb. 16.98110 TT CHB

q	1.5254639	(2000.0)	P	Q
n	0.17815260	Peri. 87.22731	-0.48686781	+0.86996690
a	3.1280566	Node 153.18910	-0.85438065	-0.45569085
e	0.5123285	Incl. 9.98578	-0.18164096	-0.18842356
P	5.53			

From 337 observations 1991 Sept. 8-2007 Oct. 6, mean residual 0″.64.
Nongravitational parameters A1 = +0.03, A2 = +0.0084

Comet 120P/Mueller
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Feb. 22.43337 TT CHB

q	2.7290435	(2000.0)	P	Q
n	0.11749061	Peri. 30.11225	+0.82396837	-0.56651154
a	4.1285791	Node 4.44998	+0.48457133	+0.69362620
e	0.3389872	Incl. 8.79674	+0.29371202	+0.44491277
P	8.39			

From 87 observations 1987 Oct. 18-2004 Dec. 8, mean residual 0″.70.

Comet P/2004 F1 (NEAT)
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Feb. 27.74959 TT CHB

q	2.4168629	(2000.0)	P	Q
n	0.10530935	Peri. 27.87792	-0.71405445	-0.63588603
a	4.4411090	Node 109.50274	+0.57054875	-0.77099245
e	0.4557974	Incl. 18.10144	+0.40570971	-0.03492269
P	9.36			

From 59 observations 2003 Dec. 1-2004 Apr. 21, mean residual 0″.55.

Comet 91P/Russell
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Mar. 1.14559 TT CHB

q	2.6167748	(2000.0)	P	Q
n	0.12796446	Peri. 354.64459	-0.45891004	+0.85944564
a	3.9001065	Node 247.87108	-0.80587178	-0.50941022
e	0.3290504	Incl. 14.07565	-0.37412866	+0.04306295
P	7.70			

From 167 observations 1998 May 21-2006 Aug. 23, mean residual 0″.75.

Comet C/2011 L4 (PANSTARRS)
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Mar. 10.18522 TT CHB

q	0.3015235	(2000.0)	P	Q
z	-0.0000790	Peri. 333.65365	+0.41006453	+0.10046919
	+/-0.0000225	Node 65.66582	+0.90783539	+0.05055097
e	1.0000238	Incl. 84.20798	-0.08764692	+0.99365514

From 186 observations 2011 May 21-2012 Jan. 17, mean residual 0″.43.

Comet P/2003 HT15 = 2012 B2 (LINEAR)
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Mar. 17.31266 TT CHB

q	2.6898961	(2000.0)	P	Q
n	0.09899278	Peri. 124.10779	-0.80875839	+0.36810665
a	4.6280746	Node 81.44689	-0.56144058	-0.71553251
e	0.4187872	Incl. 27.63651	+0.17519803	-0.59372614
P	9.96			

From 52 observations 2003 Jan. 27-2012 Jan. 29, mean residual 0″.69.

Comet 197P/LINEAR
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Mar. 24.85080 TT CHB

q	1.0614593	(2000.0)	P	Q
n	0.20304132	Peri. 188.74081	-0.27022243	+0.87800165
a	2.8669036	Node 66.38997	-0.85523782	-0.03042117
e	0.6297541	Incl. 25.54240	-0.44220822	-0.47768992
P	4.85			

From 275 observations 2003 May 23-2008 Oct. 23, mean residual 0″.76.

Comet 63P/Wild
Epoch 2013 Apr. 18.0 TT = JDT 2456400.5
T 2013 Apr. 10.95295 TT CHB

q	1.9504846	(2000.0)	P	Q
n	0.07469573	Peri. 169.00656	-0.97482745	-0.22265084
a	5.5839156	Node 358.01044	+0.17013296	-0.70876078
e	0.6506959	Incl. 19.78164	+0.14410491	-0.66939134
P	13.19			

From 89 observations 1973 Jan. 8-2000 June 2, mean residual 0″.80.

Comet 76P/West-Kohoutek-Ikemura
Epoch 2013 Apr. 18.0 TT = JDT 2456400.5
T 2013 May 7.73608 TT CHB

q	1.6002784	(2000.0)	P	Q
n	0.15237592	Peri. 0.05874	+0.10150523	-0.85735341
a	3.4715638	Node 84.12353	+0.91253628	-0.12177088
e	0.5390324	Incl. 30.48324	+0.39619972	+0.50011696
P	6.47			

From 603 observations 1980 Nov. 12-2007 Mar. 24, mean residual 0″.78.
Nongravitational parameters A1 = -0.23, A2 = -0.0566.

Comet 114P/Wiseman-Skiff
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 May 13.89953 TT CHB

q	1.5748570	(2000.0)	P	Q
n	0.14775168	Peri. 172.84492	+0.09998102	-0.94425229
a	3.5436251	Node 271.05483	+0.89663689	+0.22216712
e	0.5555803	Incl. 18.28399	+0.43133059	-0.24295965
P	6.67			

From 383 observations 1986 Dec. 28-2007 Apr. 18, mean residual 0″.73.
Nongravitational parameters A1 = +0.30, A2 = +0.0119.

Comet C/2010 S1 (LINEAR)
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 May 20.31984 TT CHB

q	5.8997828	(2000.0)	P	Q
z	-0.0003196	Peri. 118.61688	+0.53546330	-0.22398755
	+/-0.0000006	Node 93.43033	-0.69562626	-0.66375010
e	1.0018855	Incl. 125.33579	+0.47893962	-0.71362833

From 1857 observations 2010 Sept. 21-2012 Jan. 12, mean residual 0″.45.

Comet 175P/Hergenrother
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 May 23.60426 TT CHB

q	1.9462510	(2000.0)	P	Q
n	0.15534101	Peri. 55.98690	-0.99609135	-0.00475164
a	3.4272462	Node 123.59077	-0.02578367	-0.93942083
e	0.4321240	Incl. 6.07801	+0.08448204	-0.34273303
P	6.34			

From 208 observations 2000 Jan. 4-2007 June 18, mean residual 0″.73.

Comet P/2005 JY126 (Catalina)
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 June 4.42335 TT CHB

q	2.1290402	(2000.0)	P	Q
n	0.13553739	Peri. 117.81261	+0.80036302	+0.57728438
a	3.7534443	Node 207.86762	-0.59471133	+0.79859517
e	0.4327769	Incl. 20.24484	+0.07574610	+0.17026009
P	7.27			

From 257 observations 2005 Apr. 17-2007 Jan. 13, mean residual 0″.68.

Comet P/1997 C1 (Gehrels)
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 8.67998 TT CHB

q	3.6014989	(2000.0)	P	Q
n	0.05485846	Peri. 210.93536	+0.23852669	-0.97049058
a	6.8597296	Node 225.29179	+0.90087508	+0.23473488
e	0.4749795	Incl. 2.85497	+0.36266941	+0.05520483
P	17.97			

From 156 observations 1997 Feb. 1-1998 Feb. 2, mean residual 0″.69.

Comet P/2012 B1 (PANSTARRS)
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 21.91734 TT CHB

q	3.8237836	(2000.0)	P	Q
n	0.05948713	Peri. 162.12795	-0.94790533	+0.30877940
a	6.4991120	Node 36.15719	-0.30606786	-0.81467788
e	0.4116452	Incl. 7.62622	-0.08830597	-0.49087191

P 16.57
From 27 observations 2011 Dec. 31-2012 Jan. 27, mean residual 0″.36..

Comet 98P/Takamizawa
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Aug. 5.36210 TT CHB

q	1.6735661	(2000.0)	P	Q
n	0.13256647	Peri. 157.89100	+0.05168243	+0.98473772
a	3.8093153	Node 114.74041	-0.94147017	+0.10355257
e	0.5606649	Incl. 10.54399	-0.33311086	-0.13988743

P 7.43
From 194 observations 1984 July 6-2006 Sept. 25, mean residual 0″.94.
Nongravitational parameters A1 = +0.60, A2 = +0.0734.

Comet P/2006 U5 (Christensen)
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Aug. 31.56851 TT CHB

q	2.3280351	(2000.0)	P	Q
n	0.14839809	Peri. 98.01171	-0.22560972	-0.97420363
a	3.5333271	Node 5.03616	+0.86863128	-0.20359380
e	0.3411210	Incl. 3.42686	+0.44111218	-0.09734908

P 6.64
From 329 observations 2006 Oct. 27-2008 Apr. 30, mean residual 0″.61.

Comet 121P/Shoemaker-Holt
Epoch 2013 Sept. 5.0 TT = JDT 2456540.5
T 2013 Sept. 8.62220 TT CHB

q	3.7549179	(2000.0)	P	Q
n	0.09914123	Peri. 12.56904	-0.27564037	-0.89766943
a	4.6234536	Node 94.22581	+0.84940623	-0.39490688
e	0.1878543	Incl. 20.16696	+0.45003494	+0.19554576

P 9.94
From 498 observations 1989 Mar. 4-2006 May 26, mean residual 0″.64.

Comet 2P/Encke
Epoch 2013 Nov. 4.0 TT = JDT 2456600.5
T 2013 Nov. 21.69208 TT CHB

q	0.3361279	(2000.0)	P	Q
n	0.29903412	Peri. 186.53570	-0.94510505	-0.31479233
a	2.2147373	Node 334.57293	+0.30828613	-0.77005301
e	0.8482312	Incl. 11.77895	+0.10833335	-0.55490914

P 3.30
From 1422 observations 1993 July 22-2011 Oct. 19, mean residual 0″.64.
Nongravitational parameters A1 = +0.02, A2 = +0.0013.

Comet P/2005 L1 (McNaught)
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Nov. 24.63634 TT CHB

q	3.1594043	(2000.0)	P	Q
n	0.12382453	Peri. 149.76859	+0.31259487	+0.94565532
a	3.9865596	Node 138.26340	-0.89622857	+0.32486236
e	0.2074860	Incl. 7.73139	-0.31473608	+0.01415812

P 7.96
From 247 observations 2005 May 16-Sept. 15, mean residual 0″.50.

Comet C/2012 A1 (PANSTARRS)
T 2013 Nov. 29.35596 TT CHB

q	7.5985659	(2000.0)	P	Q
z	-0.0010429	Peri. 191.81850	-0.03115981	+0.52658541
		Node 277.95240	+0.97264354	+0.21173454
e	1.0079249	Incl. 120.92953	+0.23020341	-0.82333243

From 68 observations 2012 Jan. 2-30, mean residual 0″.38.

Comet 87P/Bus
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 19.53497 TT CHB

q	2.1017663	(2000.0)	P	Q
n	0.15455408	Peri.	24.70911	-0.89409269	+0.44787943
a	3.4388698	Node	181.90059	-0.41809976	-0.83583948
e	0.3888206	Incl.	2.60068	-0.16059529	-0.31745295
P	6.38				

From 255 observations 1987 Jan. 29-2007 May 20, mean residual 0″.76.
Nongravitational parameters A1 = +1.99, A2 = -0.3412.

Comet C/2011 J2 (LINEAR)
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 25.36204 TT CHB

q	3.4437388	(2000.0)	P	Q
z	-0.0001419	Peri.	85.29214	+0.07039631	+0.97006085
	+/-0.0000209	Node	163.94780	+0.16355867	-0.24108494
e	1.0004887	Incl.	122.79692	+0.98401876	-0.02932583

From 95 observations 2011 Mar. 10-2012 Jan. 19, mean residual 0″.46.

Comet 129P/Shoemaker-Levy
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Feb. 13.73426 TT CHB

q	3.8923770	(2000.0)	P	Q
n	0.11140985	Peri.	309.98275	-0.71189063	-0.70226751
a	4.2774703	Node	185.41683	+0.66124228	-0.66754309
e	0.0900283	Incl.	3.43939	+0.23658058	-0.24739961
P	8.85				

From 471 observations 1996 Oct. 17-2006 June 20, mean residual 0″.69.
Nongravitational parameters A1 = -20.69, A2 = -25.1188.

Comet P/1998 U3 (Jager)
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Mar. 14.43959 TT CHB

q	2.1562468	(2000.0)	P	Q
n	0.06481408	Peri.	180.72769	-0.56081894	-0.78181175
a	6.1379474	Node	303.42497	+0.76125857	-0.35752029
e	0.6487023	Incl.	19.05602	+0.32552651	-0.51083229
P	15.21				

From 788 observations 1998 Oct. 24-1999 May 11, mean residual 0″.64.

Comet 117P/Helin-Roman-Alu
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Mar. 27.15575 TT CHB

q	3.0563352	(2000.0)	P	Q
n	0.11888590	Peri.	222.68188	+0.19404588	+0.97241030
a	4.0962125	Node	58.89724	-0.85433769	+0.23238245
e	0.2538631	Incl.	8.69740	-0.48213412	-0.02041106
P	8.29				

From 1843 observations 1993 Jan. 24-2012 Jan. 17, mean residual 0″.72.
Nongravitational parameters A1 = +30.65, A2 = -9.0872.

Comet 17P/Holmes
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Mar. 27.47373 TT CHB

q	2.0565686	(2000.0)	P	Q
n	0.14311008	Peri.	24.51332	+0.97592851	+0.12420882
a	3.6198388	Node	326.76485	-0.21061872	+0.75008970
e	0.4318618	Incl.	19.09158	+0.05659768	+0.64956726
P	6.89				

From 3533 observations 1965 Jan. 2-2011 Jan. 5, mean residual 0″.61.
Nongravitational parameters A1 = +0.27, A2 = -0.0321.

Comet 119P/Parker-Hartley
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Apr. 2.59734 TT CHB

q	3.0264993	(2000.0)	P	Q
n	0.11139573	Peri.	181.30517	+0.41627013	-0.90558426
a	4.2778317	Node	244.10081	+0.83503065	+0.41620990
e	0.2925156	Incl.	5.19577	+0.35978186	+0.08177082
P	8.85				

From 603 observations 1995 June 23-2006 Apr. 9, mean residual 0″.71.

Comet P/2011 S1 (Gibbs)
Epoch 2014 Sept. 20.0 TT = JDT 2456920.5
T 2014 Sept. 6.76641 TT CHB

q	7.1482223	(2000.0)	P	Q
n	0.04087139	Peri. 191.37456	+0.64893164	-0.76028286
a	8.3468592	Node 218.17465	+0.70172788	+0.61294150
e	0.1436033	Incl. 2.71595	+0.29405050	+0.21511088

P 24.11
From 41 observations 2011 Sept. 18-Nov. 14, mean residual 0″.54.

Comet P/1996 A1 (Jedicke)
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Nov. 15.31330 TT CHB

q	4.0793762	(2000.0)	P	Q
n	0.04971038	Peri. 223.37536	-0.37186133	-0.92208516
a	7.3255119	Node 248.71728	+0.88001083	-0.31343155
e	0.4431275	Incl. 6.60232	+0.29546589	-0.22697936

P 19.83
From 317 observations 1996 Jan. 14-1998 June 23, mean residual 0″.56.

Comet 174P/(60558) Echeclus
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 22.52707 TT CHB

q	5.8170532	(2000.0)	P	Q
n	0.02822878	Peri. 162.93345	+0.91553926	+0.40213256
a	10.6825434	Node 173.33504	-0.37731546	+0.86619952
e	0.4554618	Incl. 4.34370	-0.13935894	+0.29662738

P 34.91
From 313 observations 1979 Sept. 23-2011 Oct. 2, mean residual 0″.48.

Comet C/2010 U3 (Boattini)
Epoch 2019 Mar. 18.0 TT = JDT 2458560.5
T 2019 Feb. 28.16549 TT CHB

q	8.4476467	(2000.0)	P	Q
z	+0.0003178	Peri. 88.09990	-0.36221799	-0.74297228
	+/-0.0000644	Node 43.06717	+0.07240542	-0.62445003
e	0.9973152	Incl. 55.51221	+0.92927691	-0.24094472

From 121 observations 2010 Oct. 31-2011 Dec. 19, mean residual 0″.67.

References:

Comet P/2010 U1 (Boattini)
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 28.00376 TT CHB

q	4.9029824	(2000.0)	P	Q
n	0.05739136	Peri. 88.83598	+0.97364250	-0.17966818
a	6.6563841	Node 281.50248	+0.10574326	+0.90138958
e	0.2634165	Incl. 8.24333	+0.20208575	+0.39397484

P 17.17
From 109 observations 2010 Oct. 1-2011 Oct. 5, mean residual 0″.55.

Comet 27P/Crommelin
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 Aug. 3.80895 TT CHB

q	0.7478750	(2000.0)	P	Q
n	0.03529844	Peri. 195.98030	+0.09146195	-0.88487058
a	9.2037687	Node 250.63782	+0.95843499	+0.20270754
e	0.9187425	Incl. 28.95698	+0.27025374	-0.41942068

P 27.92
From 275 observations 1983 Aug. 9-2011 July 25, mean residual 0″.84.
Nongravitational parameters A1 = +0.14, A2 = +0.0257.

Comet P/2011 Q3 (McNaught)
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Aug. 14.28591 TT CHB

q	2.3677980	(2000.0)	P	Q
n	0.08677333	Peri. 310.22161	+0.96586030	+0.25179102
a	5.0529525	Node 35.31802	-0.19389642	+0.85864065
e	0.5314031	Incl. 6.05210	-0.17180821	+0.44647231

P 11.36
From 148 observations 2011 Aug. 29-Dec. 24, mean residual 0″.61.

Comet C/2011 Y3 (Boattini)
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Aug. 21.04798 TT CHB

q	3.4974831	(2000.0)	P	Q
n	0.02385219	Peri. 340.30712	+0.38527630	-0.80812066
a	11.9522730	Node 84.81204	+0.89524578	+0.21021682
e	0.7073793	Incl. 26.57505	+0.22382396	+0.55022713
P	41.32			

From 50 observations 2011 Dec. 25-2012 Jan. 17, mean residual 0″.54.

Comet P/1996 R2 (Lagerkvist)
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 17.05656 TT CHB

q	2.6119035	(2000.0)	P	Q
n	0.13363748	Peri. 333.99046	+0.96920752	-0.24449350
a	3.7889353	Node 40.19683	+0.23310958	+0.87260770
e	0.3106498	Incl. 2.60382	+0.07935181	+0.42282233
P	7.38			

From 125 observations 1996 Aug. 12-1997 Jan. 12, mean residual 0″.62
From H. Sato orbit (CHB 2010).

Comet C/2011 L2 (McNaught)
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 1.27754 TT CHB

q	1.9434296	(2000.0)	P	Q
z	-0.0009043	Peri. 257.03037	-0.03189763	-0.68527303
	+/-0.0000135	Node 131.34811	+0.07564298	+0.72421494
e	1.0017575	Incl. 104.25734	-0.99662464	+0.07689993

From 43 observations 2011 June 2-2012 Jan. 16, mean residual 0″.56.

Comet 5D/Brorsen [Orbit 2]
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 26.44983 TT CHB

q	0.5460056	(2000.0)	P	Q
n	0.17541871	Peri. 22.86112	-0.43296092	-0.85925473
a	3.1604732	Node 93.73444	+0.77909226	-0.50872738
e	0.8272393	Incl. 15.84432	+0.45338736	+0.05364475
P	5.62			

From 72 observations 1873-1879, mean residual 2″.00.
Nongravitational parameters A1 = +1.51, A2 = -0.4298.
From K. Muraoka orbit (CHB 2010).

Comet P/2004 R3 (LINEAR-NEAT)
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 28.70979 TT CHB

q	2.1324142	(2000.0)	P	Q
n	0.13164709	Peri. 5.54909	+0.81122671	+0.57752598
a	3.8270300	Node 318.72736	-0.54167601	+0.68328832
e	0.4428018	Incl. 7.97459	-0.22022335	+0.44674468
P	7.49			

From 140 observations 2004 Sept. 10-Nov. 16, mean residual 0″.60.
From H. Sato orbit (CHB 2010).

Comet 111P/Helin-Roman-Crocket
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 30.65912 TT CHB

q	3.7042767	(2000.0)	P	Q
n	0.11614603	Peri. 3.37889	-0.05519308	-0.99574908
a	4.1603812	Node 89.79425	+0.91434608	-0.08007584
e	0.1096305	Incl. 4.22882	+0.40115455	+0.04551506
P	8.49			

From 116 observations 1989 Jan. 3-2001 Sept. 20, mean residual 0″.78.

Comet P/2000 R2 (LINEAR)
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 31.35424 TT CHB

q	1.4559214	(2000.0)	P	Q
n	0.16095073	Peri. 172.36914	+0.91032583	+0.41017232
a	3.3471415	Node 163.08374	-0.38908144	+0.89368415
e	0.5650254	Incl. 10.96930	-0.14114714	+0.18189915
P	6.12			

From 54 observations 2000 Sept. 3-Nov. 29, mean residual 0″.64.

Comet 124P/Mrkos
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Apr. 9.61110 TT CHB

q	1.6453255	(2000.0)	P	Q
n	0.16319148	Peri. 183.71012	-0.99747887	+0.07086308
a	3.3164318	Node 0.41468	-0.04376972	-0.57237624
e	0.5038868	Incl. 31.52902	-0.05585797	-0.81692341
P	6.04			

From 581 observations 1991 Mar. 19-2008 Aug. 3, mean residual 0″.59.

Comet P/2008 J2 (Beshore)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 30.30983 TT CHB

q	2.3459322	(2000.0)	P	Q
n	0.15419079	Peri. 132.16423	-0.63261791	+0.75382034
a	3.4442693	Node 97.70657	-0.75287112	-0.54480774
e	0.3188883	Incl. 10.32553	-0.18160301	-0.36734101
P	6.39			

From 479 observations 2008 May 6-Aug. 3, mean residual 0″.56.

Comet P/2007 H1 (McNaught)
Epoch 2014 Sept. 20.0 TT = JDT 2456920.5
T 2014 Sept. 2.71569 TT CHB

q	2.2894920	(2000.0)	P	Q
n	0.13997402	Peri. 202.86066	+0.97012809	+0.21084571
a	3.6737062	Node 144.29328	-0.17839955	+0.95520600
e	0.3767896	Incl. 11.86321	-0.16439309	+0.20766700
P	7.04			

From 1059 observations 2007 Apr. 17-2008 Feb. 8, mean residual 0″.57.

Comet P/1997 T3 (Lagerkvist-Carsenty)
Epoch 2015 May 18.0 TT = JDT 2457160.5
T 2015 May 8.65725 TT CHB

q	4.2257704	(2000.0)	P	Q
n	0.05762552	Peri. 334.06254	+0.79520943	-0.60163054
a	6.6383395	Node 63.13033	+0.56996958	+0.69930798
e	0.3634296	Incl. 4.84768	+0.20682514	+0.38601690
P	17.10			

From 164 observations 1997 Oct. 5-1999 Feb. 13, mean residual 0″.57.

Comet P/2004 FY140 (LINEAR)
Epoch 2015 Aug. 6.0 TT = JDT 2457240.5
T 2015 July 24.84103 TT CHB

q	4.0592852	(2000.0)	P	Q
n	0.09108177	Peri. 241.96554	-0.87638345	+0.48118067
a	4.8923225	Node 326.78530	-0.42774718	-0.79715246
e	0.1702744	Incl. 2.13695	-0.22132419	-0.36470963
P	10.82			

From 52 observations 2004 Mar. 27-July 12, mean residual 0″.42.

Comet P/2005 RV25 (LONEOS-Christensen)
Epoch 2015 Oct. 25.0 TT = JDT 2457320.5
T 2015 Oct. 28.52706 TT CHB

q	3.5820804	(2000.0)	P	Q
n	0.11029230	Peri. 191.79109	+0.19959765	-0.96704054
a	4.3063162	Node 246.85903	+0.91241713	+0.24224985
e	0.1681799	Incl. 9.89982	+0.35728947	-0.07840672
P	8.94			

From 103 observations 2005 Sept. 11-2006 Jan. 28, mean residual 0″.74.

Comet 95P/(2060) Chiron

Epoch = 2012 July 12.0 TT
T = 1996 Jan. 27.11406 TT
Peri. = 339.41707 e = 0.3794773
Node = 209.37946 2000.0 a = 13.6655771 AU
Incl. = 6.92720 n = 0.01951022
q = 8.4798008 AU P = 50.52 years

H = 13.8 , G = 0.15

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 4	22 07.66	-05 40.9	17.637	17.011	+0.20	+0.8	18.5	49.3
Jan. 14	22 09.67	-05 32.5	17.767	17.022	+0.22	+1.0	18.4	39.7
Jan. 24	22 11.87	-05 22.4	17.876	17.033	+0.24	+1.2	18.4	30.2
Feb. 3	22 14.22	-05 10.9	17.961	17.044	+0.24	+1.3	18.4	20.9
Feb. 13	22 16.67	-04 58.2	18.019	17.054	+0.25	+1.3	18.4	12.0
Feb. 23	22 19.15	-04 44.8	18.049	17.065	+0.25	+1.4	18.3	5.5
Mar. 4	22 21.62	-04 30.7	18.052	17.076	+0.24	+1.4	18.4	9.7
Mar. 14	22 24.03	-04 16.4	18.028	17.086	+0.23	+1.4	18.4	18.2
Mar. 24	22 26.33	-04 02.2	17.977	17.097	+0.21	+1.4	18.4	27.2
Apr. 3	22 28.48	-03 48.4	17.902	17.107	+0.19	+1.3	18.5	36.4
Apr. 13	22 30.42	-03 35.2	17.805	17.118	+0.17	+1.2	18.5	45.6
Apr. 23	22 32.13	-03 23.0	17.688	17.128	+0.14	+1.1	18.5	54.8
May 3	22 33.57	-03 12.1	17.555	17.139	+0.11	+0.9	18.5	64.1
May 13	22 34.70	-03 02.7	17.411	17.149	+0.08	+0.8	18.5	73.4
May 23	22 35.50	-02 55.0	17.258	17.160	+0.05	+0.6	18.5	82.8
June 2	22 35.96	-02 49.3	17.102	17.170	+0.01	+0.4	18.5	92.2
June 12	22 36.07	-02 45.6	16.947	17.181	-0.02	+0.1	18.4	101.6
June 22	22 35.83	-02 44.2	16.798	17.191	-0.06	-0.1	18.4	111.2
July 2	22 35.25	-02 44.9	16.658	17.201	-0.09	-0.3	18.4	120.8
July 12	22 34.36	-02 47.8	16.534	17.211	-0.12	-0.5	18.3	130.5
July 22	22 33.18	-02 52.9	16.429	17.222	-0.14	-0.7	18.3	140.2
Aug. 1	22 31.76	-02 59.8	16.345	17.232	-0.16	-0.9	18.3	150.0
Aug. 11	22 30.15	-03 08.4	16.288	17.242	-0.17	-1.0	18.2	159.7
Aug. 21	22 28.43	-03 18.3	16.258	17.252	-0.18	-1.1	18.2	168.9
Aug. 31	22 26.65	-03 29.1	16.258	17.262	-0.18	-1.1	18.1	174.1
Sept.10	22 24.90	-03 40.5	16.287	17.272	-0.17	-1.1	18.2	167.7
Sept.20	22 23.25	-03 51.9	16.346	17.282	-0.15	-1.1	18.2	158.2
Sept.30	22 21.76	-04 03.0	16.433	17.292	-0.13	-1.0	18.3	148.2
Oct. 10	22 20.49	-04 13.2	16.545	17.302	-0.10	-0.9	18.3	138.2
Oct. 20	22 19.51	-04 22.3	16.680	17.312	-0.07	-0.7	18.4	128.1
Oct. 30	22 18.85	-04 29.8	16.834	17.322	-0.03	-0.6	18.4	118.0
Nov. 9	22 18.54	-04 35.5	17.002	17.332	+0.01	-0.4	18.5	107.9
Nov. 19	22 18.60	-04 39.1	17.178	17.342	+0.04	-0.2	18.5	97.9
Nov. 29	22 19.03	-04 40.7	17.359	17.351	+0.08	+0.1	18.5	87.9
Dec. 9	22 19.82	-04 40.0	17.539	17.361	+0.11	+0.3	18.5	78.0
Dec. 19	22 20.96	-04 37.1	17.713	17.371	+0.14	+0.5	18.5	68.2
Dec. 29	22 22.40	-04 32.2	17.876	17.381	+0.17	+0.7	18.6	58.4
Jan. 8	22 24.12	-04 25.2	18.024	17.390	+0.20	+0.9	18.5	48.7
Jan. 18	22 26.08	-04 16.4	18.152	17.400	+0.21	+1.0	18.5	39.1
Jan. 28	22 28.22	-04 06.1	18.259	17.410	+0.23	+1.2	18.5	29.6
Feb. 7	22 30.51	-03 54.4	18.341	17.419	+0.24	+1.3	18.5	20.3
Feb. 17	22 32.88	-03 41.6	18.396	17.429	+0.24	+1.4	18.4	11.4
Feb. 27	22 35.29	-03 28.0	18.424	17.438	+0.24	+1.4	18.4	5.1
Mar. 9	22 37.68	-03 13.9	18.425	17.448	+0.23	+1.4	18.4	10.0
Mar. 19	22 40.02	-02 59.6	18.398	17.457	+0.22	+1.4	18.5	18.6
Mar. 29	22 42.24	-02 45.5	18.344	17.467	+0.21	+1.4	18.5	27.7

Comet C/2007 D1 (LINEAR)

Epoch = 2012 July 12.0 TT
T = 2007 June 13.48052 TT
Peri. = 339.88552
Node = 171.05635 2000.0
Incl. = 41.52361
q = 8.7781754 AU
e = 0.9938933

m1 = 5.4 + 5 log(Delta) + 7.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	14 50.67	+13 50.5	13.066	12.768	+0.24	+1.8	19.3	70.3
Jan. 14	14 53.03	+14 08.5	12.962	12.806	+0.19	+2.2	19.3	78.7
Jan. 24	14 54.95	+14 30.3	12.853	12.844	+0.14	+2.5	19.3	87.3
Feb. 3	14 56.38	+14 55.2	12.744	12.882	+0.09	+2.8	19.3	95.9
Feb. 13	14 57.29	+15 22.8	12.638	12.920	+0.04	+3.0	19.2	104.5
Feb. 23	14 57.67	+15 52.4	12.542	12.959	-0.01	+3.1	19.2	112.9
Mar. 4	14 57.53	+16 22.9	12.457	12.997	-0.06	+3.1	19.2	121.1
Mar. 14	14 56.89	+16 53.6	12.389	13.035	-0.11	+3.0	19.2	128.8
Mar. 24	14 55.80	+17 23.3	12.341	13.074	-0.15	+2.8	19.2	135.7
Apr. 3	14 54.31	+17 51.1	12.315	13.112	-0.18	+2.5	19.2	141.5
Apr. 13	14 52.52	+18 16.0	12.313	13.150	-0.20	+2.1	19.2	145.4
Apr. 23	14 50.51	+18 37.2	12.337	13.189	-0.21	+1.7	19.3	146.8
May 3	14 48.39	+18 54.1	12.386	13.228	-0.21	+1.2	19.3	145.4
May 13	14 46.27	+19 06.2	12.460	13.266	-0.20	+0.7	19.3	141.6
May 23	14 44.26	+19 13.2	12.557	13.305	-0.18	+0.2	19.3	136.1
June 2	14 42.44	+19 15.2	12.676	13.344	-0.15	-0.3	19.4	129.5
June 12	14 40.91	+19 12.3	12.814	13.383	-0.12	-0.7	19.4	122.2
June 22	14 39.73	+19 04.9	12.967	13.422	-0.08	-1.2	19.4	114.6
July 2	14 38.96	+18 53.4	13.132	13.460	-0.03	-1.5	19.5	106.8
July 12	14 38.63	+18 38.4	13.305	13.499	+0.01	-1.8	19.5	98.9
July 22	14 38.76	+18 20.5	13.483	13.538	+0.06	-2.0	19.5	90.9
Aug. 1	14 39.36	+18 00.4	13.662	13.578	+0.11	-2.2	19.6	83.1
Aug. 11	14 40.41	+17 38.8	13.838	13.617	+0.15	-2.2	19.6	75.3
Aug. 21	14 41.90	+17 16.4	14.008	13.656	+0.19	-2.3	19.6	67.7
Aug. 31	14 43.79	+16 53.7	14.167	13.695	+0.23	-2.2	19.7	60.3
Sept.10	14 46.06	+16 31.3	14.314	13.734	+0.26	-2.1	19.7	53.2
Sept.20	14 48.66	+16 09.9	14.445	13.774	+0.29	-2.0	19.7	46.5
Sept.30	14 51.54	+15 49.9	14.559	13.813	+0.31	-1.8	19.8	40.5
Oct. 10	14 54.65	+15 32.0	14.652	13.852	+0.33	-1.6	19.8	35.6
Oct. 20	14 57.95	+15 16.4	14.725	13.892	+0.34	-1.3	19.8	32.1
Oct. 30	15 01.37	+15 03.7	14.775	13.931	+0.35	-1.0	19.8	30.8
Nov. 9	15 04.85	+14 54.1	14.803	13.971	+0.35	-0.6	19.8	31.8
Nov. 19	15 08.33	+14 48.1	14.808	14.010	+0.34	-0.2	19.9	35.0
Nov. 29	15 11.76	+14 45.8	14.791	14.050	+0.33	+0.2	19.9	40.0
Dec. 9	15 15.06	+14 47.4	14.754	14.089	+0.31	+0.6	19.9	46.1
Dec. 19	15 18.18	+14 53.1	14.699	14.129	+0.29	+1.0	19.9	53.0
Dec. 29	15 21.05	+15 02.7	14.627	14.169	+0.26	+1.3	19.9	60.5
Jan. 8	15 23.62	+15 16.2	14.543	14.208	+0.22	+1.7	19.9	68.3
Jan. 18	15 25.84	+15 33.3	14.449	14.248	+0.18	+2.0	19.9	76.3
Jan. 28	15 27.65	+15 53.8	14.348	14.288	+0.14	+2.3	19.8	84.5
Feb. 7	15 29.01	+16 17.0	14.247	14.328	+0.09	+2.6	19.8	92.8
Feb. 17	15 29.91	+16 42.6	14.147	14.368	+0.04	+2.7	19.8	101.0
Feb. 27	15 30.32	+17 09.6	14.054	14.408	-0.01	+2.8	19.8	109.0
Mar. 9	15 30.26	+17 37.4	13.972	14.448	-0.05	+2.8	19.8	116.9
Mar. 19	15 29.73	+18 05.1	13.903	14.487	-0.10	+2.7	19.8	124.3
Mar. 29	15 28.77	+18 31.7	13.853	14.527	-0.13	+2.5	19.8	131.0

Comet C/2005 L3 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2008 Jan. 16.50051 TT
Peri. = 47.15828
Node = 288.83055 2000.0
Incl. = 139.41067
q = 5.5872576 AU
e = 1.0007682

m1 = 2.4 + 5 log(Delta) + 10.0 log(r(t-380))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	10 47.97	+38 05.0	10.543	11.182	-0.43	+3.3	17.2	128.6
Jan. 14	10 43.70	+38 37.6	10.493	11.233	-0.49	+3.1	17.2	137.1
Jan. 24	10 38.75	+39 08.6	10.468	11.285	-0.55	+2.8	17.2	144.6
Feb. 3	10 33.27	+39 36.5	10.472	11.336	-0.58	+2.3	17.2	150.0
Feb. 13	10 27.43	+39 59.8	10.507	11.388	-0.60	+1.8	17.3	152.0
Feb. 23	10 21.42	+40 17.6	10.573	11.439	-0.60	+1.1	17.3	149.9
Mar. 4	10 15.46	+40 29.0	10.669	11.491	-0.57	+0.5	17.3	144.5
Mar. 14	10 09.76	+40 33.9	10.793	11.542	-0.53	-0.2	17.4	137.2
Mar. 24	10 04.50	+40 32.4	10.943	11.594	-0.47	-0.8	17.4	128.8
Apr. 3	09 59.84	+40 24.9	11.114	11.645	-0.40	-1.3	17.5	120.0
Apr. 13	09 55.87	+40 12.1	11.301	11.697	-0.32	-1.7	17.6	110.9
Apr. 23	09 52.66	+39 54.9	11.501	11.748	-0.24	-2.1	17.6	101.8
May 3	09 50.23	+39 34.2	11.709	11.799	-0.17	-2.3	17.7	92.7
May 13	09 48.58	+39 10.8	11.918	11.851	-0.09	-2.5	17.7	83.8
May 23	09 47.66	+38 45.5	12.125	11.902	-0.02	-2.6	17.8	75.0
June 2	09 47.42	+38 19.1	12.325	11.954	+0.04	-2.7	17.9	66.3
June 12	09 47.79	+37 52.2	12.514	12.005	+0.09	-2.7	17.9	57.9
June 22	09 48.69	+37 25.4	12.688	12.056	+0.14	-2.6	18.0	49.7
July 2	09 50.05	+36 59.2	12.845	12.108	+0.17	-2.5	18.0	42.0
July 12	09 51.77	+36 34.1	12.981	12.159	+0.20	-2.4	18.1	34.7
July 22	09 53.79	+36 10.4	13.095	12.210	+0.22	-2.2	18.1	28.4
Aug. 1	09 56.02	+35 48.6	13.185	12.262	+0.24	-2.0	18.1	23.6
Aug. 11	09 58.38	+35 28.9	13.249	12.313	+0.24	-1.7	18.2	21.6
Aug. 21	10 00.78	+35 11.7	13.288	12.364	+0.24	-1.4	18.2	23.1
Aug. 31	10 03.17	+34 57.3	13.302	12.415	+0.23	-1.1	18.2	27.5
Sept.10	10 05.44	+34 46.0	13.291	12.467	+0.21	-0.8	18.2	33.8
Sept.20	10 07.54	+34 38.1	13.256	12.518	+0.18	-0.4	18.3	41.2
Sept.30	10 09.38	+34 33.9	13.200	12.569	+0.15	0.0	18.3	49.2
Oct. 10	10 10.89	+34 33.4	13.125	12.620	+0.11	+0.3	18.3	57.7
Oct. 20	10 11.99	+34 36.8	13.034	12.671	+0.06	+0.7	18.3	66.6
Oct. 30	10 12.61	+34 44.2	12.932	12.722	+0.01	+1.1	18.3	75.7
Nov. 9	10 12.68	+34 55.3	12.822	12.774	-0.05	+1.5	18.3	85.0
Nov. 19	10 12.16	+35 10.0	12.709	12.825	-0.12	+1.8	18.3	94.5
Nov. 29	10 11.00	+35 27.9	12.599	12.876	-0.18	+2.0	18.3	104.1
Dec. 9	10 09.17	+35 48.3	12.497	12.927	-0.25	+2.2	18.3	113.8
Dec. 19	10 06.67	+36 10.4	12.408	12.978	-0.31	+2.3	18.3	123.5
Dec. 29	10 03.54	+36 33.3	12.338	13.029	-0.37	+2.3	18.3	133.0
Jan. 8	09 59.82	+36 55.9	12.291	13.080	-0.42	+2.1	18.3	142.0
Jan. 18	09 55.61	+37 17.2	12.270	13.131	-0.46	+1.9	18.3	149.9
Jan. 28	09 51.03	+37 36.0	12.279	13.181	-0.48	+1.5	18.4	155.4
Feb. 7	09 46.24	+37 51.5	12.319	13.232	-0.49	+1.1	18.4	156.9
Feb. 17	09 41.38	+38 02.9	12.391	13.283	-0.47	+0.7	18.4	153.6
Feb. 27	09 36.64	+38 09.7	12.492	13.334	-0.45	+0.2	18.4	147.0
Mar. 9	09 32.16	+38 12.0	12.622	13.385	-0.41	-0.2	18.5	138.7
Mar. 19	09 28.08	+38 09.6	12.777	13.436	-0.36	-0.7	18.5	129.7
Mar. 29	09 24.52	+38 03.0	12.954	13.486	-0.30	-1.0	18.6	120.4

Comet C/2007 S2 (Lemmon)

Epoch = 2012 July 12.0 TT
T = 2008 Sept. 12.42514 TT
Peri. = 210.31315 e = 0.5564724
Node = 296.10167 2000.0 a = 12.5094538 AU
Incl. = 16.86334 n = 0.02227648
q = 5.5482880 AU P = 44.24 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	15 25.23	-33 15.5	8.868	8.230	+0.49	-2.6	20.1	47.1
Jan. 14	15 30.16	-33 41.3	8.776	8.263	+0.43	-2.5	20.1	55.8
Jan. 24	15 34.45	-34 06.2	8.670	8.295	+0.36	-2.4	20.1	64.6
Feb. 3	15 38.00	-34 30.0	8.552	8.328	+0.27	-2.2	20.1	73.6
Feb. 13	15 40.75	-34 52.2	8.428	8.360	+0.19	-2.0	20.1	82.7
Feb. 23	15 42.61	-35 12.4	8.299	8.393	+0.09	-1.8	20.0	92.0
Mar. 4	15 43.53	-35 30.1	8.172	8.425	0.00	-1.5	20.0	101.5
Mar. 14	15 43.50	-35 44.7	8.051	8.458	-0.10	-1.1	20.0	111.0
Mar. 24	15 42.54	-35 55.8	7.940	8.491	-0.18	-0.7	20.0	120.6
Apr. 3	15 40.70	-36 02.6	7.844	8.523	-0.26	-0.2	20.0	130.2
Apr. 13	15 38.09	-36 04.9	7.767	8.556	-0.32	+0.3	20.0	139.7
Apr. 23	15 34.85	-36 02.2	7.713	8.588	-0.37	+0.8	20.0	148.8
May 3	15 31.18	-35 54.4	7.684	8.621	-0.39	+1.3	20.0	156.9
May 13	15 27.29	-35 41.9	7.684	8.653	-0.39	+1.7	20.0	162.6
May 23	15 23.41	-35 25.1	7.712	8.686	-0.37	+2.0	20.0	163.1
June 2	15 19.75	-35 04.9	7.769	8.719	-0.32	+2.3	20.1	158.1
June 12	15 16.52	-34 42.3	7.854	8.751	-0.27	+2.4	20.1	150.4
June 22	15 13.86	-34 18.5	7.965	8.784	-0.19	+2.4	20.1	141.6
July 2	15 11.92	-33 54.6	8.098	8.816	-0.12	+2.3	20.2	132.5
July 12	15 10.77	-33 31.6	8.251	8.849	-0.03	+2.1	20.3	123.2
July 22	15 10.43	-33 10.5	8.420	8.881	+0.05	+1.9	20.3	114.0
Aug. 1	15 10.94	-32 52.0	8.600	8.914	+0.13	+1.6	20.4	104.8
Aug. 11	15 12.25	-32 36.5	8.788	8.946	+0.21	+1.2	20.4	95.8
Aug. 21	15 14.34	-32 24.2	8.978	8.979	+0.28	+0.9	20.5	86.8
Aug. 31	15 17.15	-32 15.4	9.168	9.011	+0.35	+0.5	20.6	78.0
Sept.10	15 20.62	-32 09.9	9.352	9.044	+0.41	+0.2	20.6	69.2
Sept.20	15 24.67	-32 07.6	9.528	9.076	+0.46	-0.1	20.7	60.6
Sept.30	15 29.25	-32 08.3	9.691	9.109	+0.50	-0.3	20.7	52.0
Oct. 10	15 34.25	-32 11.7	9.838	9.141	+0.54	-0.6	20.8	43.6
Oct. 20	15 39.62	-32 17.4	9.968	9.174	+0.56	-0.8	20.8	35.3
Oct. 30	15 45.27	-32 25.2	10.077	9.206	+0.58	-1.0	20.9	27.3
Nov. 9	15 51.12	-32 34.7	10.164	9.238	+0.60	-1.1	20.9	19.9
Nov. 19	15 57.08	-32 45.7	10.227	9.271	+0.60	-1.2	20.9	13.9
Nov. 29	16 03.07	-32 57.8	10.265	9.303	+0.59	-1.3	20.9	12.1
Dec. 9	16 09.01	-33 10.8	10.278	9.335	+0.58	-1.4	21.0	15.9
Dec. 19	16 14.79	-33 24.4	10.267	9.367	+0.55	-1.4	21.0	22.8
Dec. 29	16 20.33	-33 38.5	10.232	9.400	+0.52	-1.4	21.0	30.7
Jan. 8	16 25.54	-33 52.8	10.174	9.432	+0.48	-1.4	21.0	39.2
Jan. 18	16 30.32	-34 07.3	10.095	9.464	+0.43	-1.4	21.0	47.9
Jan. 28	16 34.58	-34 21.7	9.999	9.496	+0.37	-1.4	21.0	56.8
Feb. 7	16 38.25	-34 35.8	9.888	9.528	+0.30	-1.4	21.0	65.9
Feb. 17	16 41.23	-34 49.5	9.766	9.561	+0.22	-1.3	21.0	75.1
Feb. 27	16 43.46	-35 02.5	9.637	9.593	+0.14	-1.2	20.9	84.5
Mar. 9	16 44.89	-35 14.5	9.505	9.625	+0.06	-1.1	20.9	93.9
Mar. 19	16 45.48	-35 25.3	9.376	9.657	-0.03	-0.9	20.9	103.5
Mar. 29	16 45.22	-35 34.3	9.253	9.689	-0.11	-0.7	20.9	113.1

Comet P/2010 TO20 (LINEAR-Grauer)

Epoch = 2012 July 12.0 TT
T = 2008 Dec. 9.00295 TT
Peri. = 261.59022 e = 0.0753625
Node = 44.15899 2000.0 a = 5.6796601 AU
Incl. = 2.55129 n = 0.07281495
q = 5.2516267 AU P = 13.54 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 37.99	+09 46.8	5.340	5.649	+0.18	+1.3	19.9	103.4
Jan. 14	01 39.76	+09 59.8	5.505	5.655	+0.28	+1.9	20.0	93.7
Jan. 24	01 42.58	+10 18.6	5.673	5.660	+0.38	+2.4	20.1	84.3
Feb. 3	01 46.38	+10 42.6	5.838	5.666	+0.47	+2.8	20.1	75.1
Feb. 13	01 51.05	+11 11.0	5.996	5.671	+0.54	+3.2	20.2	66.3
Feb. 23	01 56.48	+11 43.0	6.145	5.677	+0.61	+3.5	20.3	57.6
Mar. 4	02 02.58	+12 18.0	6.281	5.682	+0.67	+3.7	20.3	49.2
Mar. 14	02 09.24	+12 55.1	6.402	5.687	+0.71	+3.9	20.4	40.9
Mar. 24	02 16.37	+13 33.8	6.505	5.693	+0.75	+3.9	20.4	32.8
Apr. 3	02 23.88	+14 13.3	6.590	5.698	+0.78	+4.0	20.4	24.9
Apr. 13	02 31.67	+14 53.0	6.655	5.704	+0.80	+3.9	20.5	17.0
Apr. 23	02 39.68	+15 32.4	6.699	5.709	+0.81	+3.9	20.5	9.3
May 3	02 47.81	+16 11.1	6.722	5.714	+0.82	+3.8	20.5	1.6
May 13	02 55.99	+16 48.6	6.724	5.720	+0.82	+3.6	20.5	6.0
May 23	03 04.15	+17 24.6	6.704	5.725	+0.80	+3.4	20.5	13.6
June 2	03 12.20	+17 58.7	6.665	5.731	+0.79	+3.2	20.5	21.2
June 12	03 20.05	+18 30.7	6.605	5.736	+0.76	+3.0	20.5	28.8
June 22	03 27.63	+19 00.4	6.526	5.741	+0.72	+2.7	20.5	36.5
July 2	03 34.84	+19 27.6	6.431	5.747	+0.67	+2.5	20.4	44.3
July 12	03 41.57	+19 52.1	6.319	5.752	+0.62	+2.2	20.4	52.2
July 22	03 47.74	+20 13.9	6.194	5.757	+0.55	+1.9	20.4	60.2
Aug. 1	03 53.23	+20 32.9	6.057	5.762	+0.47	+1.6	20.3	68.5
Aug. 11	03 57.92	+20 49.1	5.912	5.768	+0.38	+1.3	20.3	76.9
Aug. 21	04 01.71	+21 02.3	5.762	5.773	+0.28	+1.0	20.2	85.6
Aug. 31	04 04.48	+21 12.6	5.609	5.778	+0.17	+0.7	20.2	94.6
Sept. 10	04 06.15	+21 19.8	5.459	5.783	+0.05	+0.4	20.1	103.9
Sept. 20	04 06.63	+21 24.0	5.314	5.789	-0.07	+0.1	20.1	113.5
Sept. 30	04 05.89	+21 24.9	5.181	5.794	-0.19	-0.2	20.0	123.5
Oct. 10	04 03.95	+21 22.6	5.063	5.799	-0.31	-0.6	20.0	133.8
Oct. 20	04 00.89	+21 17.0	4.965	5.804	-0.40	-0.9	19.9	144.4
Oct. 30	03 56.89	+21 08.3	4.892	5.809	-0.47	-1.1	19.9	155.3
Nov. 9	03 52.19	+20 57.1	4.847	5.814	-0.51	-1.3	19.9	166.4
Nov. 19	03 47.09	+20 43.8	4.832	5.819	-0.51	-1.4	19.9	177.6
Nov. 29	03 41.96	+20 29.5	4.848	5.824	-0.48	-1.4	19.9	170.9
Dec. 9	03 37.15	+20 15.3	4.896	5.829	-0.42	-1.3	19.9	159.6
Dec. 19	03 32.97	+20 02.4	4.973	5.834	-0.33	-1.0	20.0	148.5
Dec. 29	03 29.70	+19 52.1	5.076	5.839	-0.22	-0.7	20.0	137.5
Jan. 8	03 27.52	+19 45.1	5.202	5.844	-0.10	-0.3	20.1	126.8
Jan. 18	03 26.52	+19 42.0	5.345	5.849	+0.02	+0.1	20.1	116.4
Jan. 28	03 26.75	+19 43.2	5.501	5.854	+0.14	+0.5	20.2	106.2
Feb. 7	03 28.18	+19 48.6	5.665	5.858	+0.26	+0.9	20.3	96.5
Feb. 17	03 30.74	+19 57.8	5.832	5.863	+0.36	+1.3	20.4	87.0
Feb. 27	03 34.36	+20 10.6	5.997	5.868	+0.46	+1.6	20.4	77.8
Mar. 9	03 38.92	+20 26.2	6.157	5.873	+0.54	+1.8	20.5	68.8
Mar. 19	03 44.33	+20 44.0	6.309	5.877	+0.61	+2.0	20.5	60.2
Mar. 29	03 50.46	+21 03.6	6.448	5.882	+0.68	+2.1	20.6	51.7

Comet 74P/Smirnova-Chernykh

Epoch = 2012 July 12.0 TT
T = 2009 July 30.32392 TT
Peri. = 86.63571 e = 0.1475372
Node = 77.08284 2000.0 a = 4.1664593 AU
Incl. = 6.65094 n = 0.11589197
q = 3.5517516 AU P = 8.50 years

m1 = 6.8 + 5 log(Delta) + 12.5 log(r(t-180))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	18 54.05	-25 10.3	5.367	4.384	+1.19	+1.1	18.2	2.4
Jan. 14	19 05.94	-24 59.3	5.366	4.395	+1.17	+1.3	18.2	8.5
Jan. 24	19 17.65	-24 45.8	5.345	4.406	+1.14	+1.5	18.2	15.8
Feb. 3	19 29.08	-24 30.3	5.305	4.417	+1.10	+1.7	18.2	23.3
Feb. 13	19 40.12	-24 13.4	5.246	4.428	+1.06	+1.8	18.2	30.9
Feb. 23	19 50.67	-23 55.7	5.169	4.438	+1.00	+1.8	18.2	38.5
Mar. 4	20 00.64	-23 37.8	5.076	4.449	+0.93	+1.7	18.2	46.3
Mar. 14	20 09.93	-23 20.7	4.968	4.459	+0.85	+1.6	18.1	54.1
Mar. 24	20 18.42	-23 05.1	4.848	4.469	+0.76	+1.3	18.1	62.1
Apr. 3	20 26.00	-22 52.0	4.718	4.479	+0.66	+1.0	18.1	70.2
Apr. 13	20 32.57	-22 42.2	4.580	4.489	+0.54	+0.6	18.0	78.5
Apr. 23	20 38.01	-22 36.6	4.438	4.499	+0.42	+0.1	18.0	87.0
May 3	20 42.18	-22 36.1	4.294	4.508	+0.28	-0.5	17.9	95.8
May 13	20 45.00	-22 41.1	4.153	4.518	+0.14	-1.1	17.8	104.8
May 23	20 46.35	-22 52.2	4.018	4.527	-0.02	-1.7	17.8	114.2
June 2	20 46.17	-23 09.1	3.893	4.536	-0.17	-2.2	17.7	123.8
June 12	20 44.47	-23 31.6	3.783	4.545	-0.32	-2.7	17.7	133.8
June 22	20 41.29	-23 58.5	3.693	4.554	-0.45	-3.0	17.6	144.0
July 2	20 36.80	-24 28.2	3.625	4.563	-0.55	-3.1	17.6	154.4
July 12	20 31.29	-24 58.7	3.583	4.572	-0.62	-2.9	17.6	164.8
July 22	20 25.11	-25 27.8	3.570	4.580	-0.64	-2.6	17.6	173.2
Aug. 1	20 18.74	-25 53.5	3.586	4.588	-0.61	-2.1	17.6	170.0
Aug. 11	20 12.66	-26 14.2	3.631	4.597	-0.53	-1.5	17.7	160.1
Aug. 21	20 07.31	-26 28.9	3.703	4.605	-0.42	-0.8	17.7	149.6
Aug. 31	20 03.10	-26 37.2	3.801	4.612	-0.28	-0.2	17.8	139.2
Sept. 10	20 00.27	-26 39.5	3.920	4.620	-0.13	+0.3	17.9	129.0
Sept. 20	19 58.97	-26 36.2	4.056	4.628	+0.03	+0.8	18.0	119.1
Sept. 30	19 59.26	-26 27.8	4.205	4.635	+0.18	+1.3	18.1	109.4
Oct. 10	20 01.09	-26 14.9	4.362	4.642	+0.33	+1.7	18.2	100.1
Oct. 20	20 04.37	-25 57.9	4.524	4.649	+0.46	+2.1	18.2	91.0
Oct. 30	20 08.98	-25 37.2	4.687	4.656	+0.58	+2.4	18.3	82.1
Nov. 9	20 14.75	-25 13.1	4.846	4.662	+0.68	+2.7	18.4	73.5
Nov. 19	20 21.54	-24 45.6	4.998	4.669	+0.77	+3.1	18.5	65.1
Nov. 29	20 29.20	-24 15.0	5.141	4.675	+0.84	+3.4	18.6	56.8
Dec. 9	20 37.57	-23 41.4	5.272	4.681	+0.89	+3.6	18.6	48.7
Dec. 19	20 46.51	-23 04.9	5.388	4.687	+0.94	+3.9	18.7	40.8
Dec. 29	20 55.91	-22 25.9	5.488	4.693	+0.97	+4.1	18.7	32.9
Jan. 8	21 05.63	-21 44.7	5.570	4.699	+0.99	+4.3	18.8	25.2
Jan. 18	21 15.57	-21 01.4	5.632	4.704	+1.01	+4.5	18.8	17.7
Jan. 28	21 25.63	-20 16.6	5.674	4.709	+1.01	+4.6	18.8	10.5
Feb. 7	21 35.70	-19 30.6	5.696	4.714	+1.00	+4.7	18.9	5.2
Feb. 17	21 45.72	-18 44.1	5.697	4.719	+0.99	+4.7	18.9	7.7
Feb. 27	21 55.59	-17 57.5	5.677	4.724	+0.96	+4.6	18.9	14.4
Mar. 9	22 05.23	-17 11.5	5.637	4.729	+0.93	+4.5	18.9	21.7
Mar. 19	22 14.58	-16 26.7	5.578	4.733	+0.90	+4.3	18.8	29.1
Mar. 29	22 23.55	-15 43.9	5.500	4.737	+0.85	+4.0	18.8	36.7

Comet C/2009 T1 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2009 Oct. 8.59268 TT
Peri. = 282.63666
Node = 54.41358 2000.0
Incl. = 89.89225
q = 6.2278265 AU
e = 0.9961019

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	03 24.97	−00 50.0	7.703	8.287	−0.33	+4.2	19.6	123.5
Jan. 14	03 21.71	−00 08.0	7.886	8.329	−0.24	+4.5	19.7	113.6
Jan. 24	03 19.33	+00 36.9	8.084	8.371	−0.15	+4.7	19.8	103.7
Feb. 3	03 17.83	+01 23.7	8.290	8.414	−0.06	+4.8	19.8	93.9
Feb. 13	03 17.19	+02 11.8	8.500	8.457	+0.02	+4.9	19.9	84.2
Feb. 23	03 17.34	+03 00.4	8.708	8.500	+0.09	+4.9	20.0	74.7
Mar. 4	03 18.23	+03 49.0	8.909	8.543	+0.15	+4.8	20.1	65.3
Mar. 14	03 19.75	+04 37.1	9.100	8.586	+0.21	+4.7	20.1	56.2
Mar. 24	03 21.83	+05 24.3	9.275	8.630	+0.25	+4.6	20.2	47.2
Apr. 3	03 24.37	+06 10.2	9.433	8.673	+0.29	+4.4	20.3	38.5
Apr. 13	03 27.29	+06 54.5	9.571	8.717	+0.32	+4.3	20.3	30.0
Apr. 23	03 30.48	+07 37.1	9.686	8.761	+0.34	+4.1	20.4	22.0
May 3	03 33.87	+08 17.6	9.776	8.805	+0.35	+3.8	20.4	14.8
May 13	03 37.37	+08 56.1	9.842	8.850	+0.35	+3.6	20.4	10.3
May 23	03 40.89	+09 32.5	9.882	8.894	+0.35	+3.4	20.5	12.0
June 2	03 44.35	+10 06.5	9.897	8.939	+0.33	+3.2	20.5	18.1
June 12	03 47.66	+10 38.3	9.887	8.983	+0.31	+2.9	20.5	25.7
June 22	03 50.75	+11 07.8	9.854	9.028	+0.28	+2.7	20.5	33.9
July 2	03 53.54	+11 35.0	9.799	9.073	+0.24	+2.5	20.5	42.3
July 12	03 55.94	+12 00.0	9.724	9.119	+0.19	+2.3	20.5	51.0
July 22	03 57.89	+12 22.9	9.633	9.164	+0.14	+2.1	20.5	59.8
Aug. 1	03 59.29	+12 43.6	9.527	9.209	+0.08	+1.9	20.5	68.8
Aug. 11	04 00.08	+13 02.4	9.411	9.255	+0.01	+1.7	20.5	78.1
Aug. 21	04 00.20	+13 19.3	9.290	9.301	−0.06	+1.5	20.5	87.5
Aug. 31	03 59.60	+13 34.4	9.167	9.346	−0.14	+1.3	20.5	97.2
Sept. 10	03 58.25	+13 47.8	9.047	9.392	−0.21	+1.2	20.5	107.1
Sept. 20	03 56.14	+13 59.8	8.936	9.438	−0.29	+1.1	20.5	117.2
Sept. 30	03 53.28	+14 10.4	8.840	9.485	−0.35	+0.9	20.5	127.6
Oct. 10	03 49.75	+14 19.9	8.763	9.531	−0.41	+0.9	20.5	138.2
Oct. 20	03 45.62	+14 28.5	8.710	9.577	−0.46	+0.8	20.5	149.0
Oct. 30	03 41.03	+14 36.4	8.685	9.623	−0.49	+0.8	20.5	159.8
Nov. 9	03 36.15	+14 44.0	8.692	9.670	−0.50	+0.8	20.5	170.4
Nov. 19	03 31.15	+14 51.6	8.732	9.717	−0.49	+0.8	20.6	175.1
Nov. 29	03 26.24	+14 59.7	8.805	9.763	−0.46	+0.9	20.6	165.6
Dec. 9	03 21.60	+15 08.7	8.911	9.810	−0.42	+1.0	20.7	154.6
Dec. 19	03 17.39	+15 18.9	9.048	9.857	−0.36	+1.2	20.7	143.6
Dec. 29	03 13.76	+15 30.7	9.211	9.904	−0.30	+1.4	20.8	132.7
Jan. 8	03 10.79	+15 44.4	9.396	9.951	−0.22	+1.6	20.8	121.9
Jan. 18	03 08.56	+16 00.0	9.599	9.998	−0.15	+1.8	20.9	111.3
Jan. 28	03 07.07	+16 17.8	9.813	10.045	−0.07	+2.0	21.0	100.8
Feb. 7	03 06.33	+16 37.5	10.033	10.092	0.00	+2.2	21.0	90.6
Feb. 17	03 06.30	+16 59.2	10.254	10.140	+0.06	+2.3	21.1	80.6
Feb. 27	03 06.93	+17 22.6	10.470	10.187	+0.12	+2.5	21.2	70.8
Mar. 9	03 08.15	+17 47.6	10.677	10.234	+0.17	+2.6	21.2	61.1
Mar. 19	03 09.89	+18 13.9	10.869	10.282	+0.22	+2.7	21.3	51.7
Mar. 29	03 12.08	+18 41.2	11.045	10.329	+0.25	+2.8	21.4	42.4

Comet P/2010 J5 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2009 Nov. 2.32752 TT
Peri. = 149.80698 e = 0.0867693
Node = 65.67097 2000.0 a = 4.1035801 AU
Incl. = 7.35645 n = 0.11856587
q = 3.7475153 AU P = 8.31 years

m1 = 6.4 + 5 log(Delta) + 17.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	21 06.53	-22 43.7	4.980	4.159	+1.13	+5.2	20.7	30.1
Jan. 14	21 17.82	-21 52.2	5.055	4.166	+1.14	+5.4	20.8	22.8
Jan. 24	21 29.25	-20 58.6	5.111	4.173	+1.15	+5.5	20.8	15.8
Feb. 3	21 40.73	-20 03.3	5.149	4.180	+1.14	+5.6	20.8	9.4
Feb. 13	21 52.16	-19 07.0	5.168	4.187	+1.13	+5.7	20.8	5.8
Feb. 23	22 03.47	-18 10.2	5.168	4.194	+1.11	+5.7	20.9	9.2
Mar. 4	22 14.60	-17 13.4	5.149	4.201	+1.09	+5.6	20.9	15.4
Mar. 14	22 25.46	-16 17.4	5.111	4.208	+1.05	+5.5	20.9	22.3
Mar. 24	22 36.00	-15 22.7	5.056	4.215	+1.01	+5.2	20.9	29.3
Apr. 3	22 46.14	-14 30.3	4.984	4.222	+0.97	+5.0	20.8	36.5
Apr. 13	22 55.81	-13 40.8	4.896	4.228	+0.91	+4.6	20.8	43.7
Apr. 23	23 04.95	-12 54.9	4.794	4.235	+0.85	+4.1	20.8	51.0
May 3	23 13.46	-12 13.6	4.680	4.242	+0.78	+3.6	20.7	58.5
May 13	23 21.25	-11 37.6	4.555	4.248	+0.70	+3.0	20.7	66.1
May 23	23 28.24	-11 07.8	4.422	4.255	+0.61	+2.3	20.6	73.9
June 2	23 34.29	-10 45.0	4.283	4.261	+0.50	+1.5	20.6	81.9
June 12	23 39.31	-10 29.8	4.141	4.267	+0.39	+0.7	20.5	90.2
June 22	23 43.18	-10 23.1	3.999	4.274	+0.26	-0.2	20.4	98.7
July 2	23 45.76	-10 25.2	3.861	4.280	+0.12	-1.1	20.4	107.6
July 12	23 46.97	-10 36.2	3.730	4.286	-0.02	-2.0	20.3	116.8
July 22	23 46.73	-10 56.0	3.611	4.292	-0.17	-2.8	20.3	126.3
Aug. 1	23 45.02	-11 23.6	3.507	4.298	-0.31	-3.4	20.2	136.2
Aug. 11	23 41.92	-11 57.4	3.423	4.304	-0.43	-3.8	20.2	146.4
Aug. 21	23 37.58	-12 35.3	3.363	4.309	-0.53	-3.9	20.1	156.5
Aug. 31	23 32.30	-13 14.1	3.329	4.315	-0.58	-3.7	20.1	165.9
Sept. 10	23 26.46	-13 50.8	3.324	4.321	-0.59	-3.1	20.1	170.6
Sept. 20	23 20.52	-14 22.1	3.349	4.326	-0.56	-2.3	20.2	164.9
Sept. 30	23 14.95	-14 45.6	3.402	4.332	-0.48	-1.4	20.2	155.2
Oct. 10	23 10.18	-14 59.4	3.483	4.337	-0.36	-0.3	20.3	144.8
Oct. 20	23 06.55	-15 02.8	3.587	4.342	-0.23	+0.7	20.3	134.4
Oct. 30	23 04.29	-14 55.5	3.711	4.347	-0.08	+1.7	20.4	124.2
Nov. 9	23 03.51	-14 38.4	3.850	4.352	+0.07	+2.6	20.5	114.3
Nov. 19	23 04.23	-14 12.0	4.001	4.357	+0.21	+3.5	20.6	104.6
Nov. 29	23 06.37	-13 37.4	4.158	4.362	+0.35	+4.2	20.7	95.3
Dec. 9	23 09.84	-12 55.8	4.318	4.367	+0.47	+4.8	20.8	86.3
Dec. 19	23 14.49	-12 08.0	4.476	4.371	+0.57	+5.3	20.9	77.6
Dec. 29	23 20.18	-11 15.1	4.630	4.376	+0.66	+5.7	20.9	69.1
Jan. 8	23 26.77	-10 17.8	4.775	4.380	+0.73	+6.1	21.0	60.8
Jan. 18	23 34.12	-09 16.9	4.910	4.385	+0.80	+6.4	21.1	52.7
Jan. 28	23 42.10	-08 13.3	5.031	4.389	+0.85	+6.6	21.1	44.9
Feb. 7	23 50.58	-07 07.6	5.138	4.393	+0.89	+6.7	21.2	37.2
Feb. 17	23 59.49	-06 00.4	5.228	4.397	+0.92	+6.8	21.2	29.6
Feb. 27	00 08.70	-04 52.4	5.301	4.401	+0.94	+6.8	21.3	22.3
Mar. 9	00 18.14	-03 44.3	5.355	4.404	+0.96	+6.8	21.3	15.2
Mar. 19	00 27.73	-02 36.6	5.390	4.408	+0.97	+6.7	21.3	8.7
Mar. 29	00 37.40	-01 29.8	5.405	4.411	+0.97	+6.5	21.3	5.1

Comet C/2009 F2 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2009 Nov. 13.15144 TT
Peri. = 336.23945
Node = 214.05617 2000.0
Incl. = 59.37841
q = 5.8704134 AU
e = 0.9822404

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	16 19.65	+08 25.4	8.539	7.933	+0.50	+3.5	19.9	49.4
Jan. 14	16 24.69	+09 00.7	8.475	7.977	+0.46	+4.1	19.9	56.7
Jan. 24	16 29.24	+09 42.0	8.399	8.021	+0.40	+4.7	19.9	64.3
Feb. 3	16 33.22	+10 29.2	8.313	8.065	+0.33	+5.2	19.9	72.1
Feb. 13	16 36.54	+11 21.6	8.221	8.109	+0.26	+5.7	19.9	80.1
Feb. 23	16 39.13	+12 18.7	8.127	8.154	+0.18	+6.1	19.9	88.1
Mar. 4	16 40.94	+13 19.4	8.035	8.199	+0.10	+6.3	19.9	96.0
Mar. 14	16 41.92	+14 22.6	7.948	8.243	+0.01	+6.4	19.9	103.9
Mar. 24	16 42.05	+15 27.0	7.871	8.289	-0.07	+6.4	19.9	111.5
Apr. 3	16 41.36	+16 30.8	7.807	8.334	-0.15	+6.2	19.9	118.7
Apr. 13	16 39.87	+17 32.4	7.760	8.379	-0.22	+5.8	19.9	125.3
Apr. 23	16 37.68	+18 30.0	7.732	8.425	-0.28	+5.2	19.9	130.9
May 3	16 34.89	+19 22.0	7.725	8.470	-0.32	+4.5	19.9	135.2
May 13	16 31.67	+20 06.8	7.742	8.516	-0.35	+3.7	19.9	137.7
May 23	16 28.17	+20 43.3	7.782	8.562	-0.36	+2.7	20.0	138.1
June 2	16 24.59	+21 10.7	7.845	8.609	-0.35	+1.8	20.0	136.5
June 12	16 21.12	+21 28.9	7.931	8.655	-0.32	+0.9	20.1	133.0
June 22	16 17.94	+21 37.9	8.037	8.701	-0.27	0.0	20.1	128.1
July 2	16 15.19	+21 38.4	8.162	8.748	-0.22	-0.7	20.2	122.3
July 12	16 13.01	+21 31.2	8.303	8.795	-0.15	-1.4	20.2	115.9
July 22	16 11.48	+21 17.6	8.456	8.841	-0.08	-1.9	20.3	109.2
Aug. 1	16 10.66	+20 58.7	8.619	8.888	-0.01	-2.3	20.4	102.2
Aug. 11	16 10.59	+20 36.0	8.787	8.935	+0.07	-2.5	20.4	95.2
Aug. 21	16 11.25	+20 10.6	8.959	8.983	+0.14	-2.7	20.5	88.1
Aug. 31	16 12.64	+19 43.8	9.129	9.030	+0.21	-2.7	20.6	81.2
Sept. 10	16 14.72	+19 16.9	9.296	9.077	+0.27	-2.6	20.6	74.4
Sept. 20	16 17.43	+18 50.8	9.457	9.125	+0.33	-2.4	20.7	67.8
Sept. 30	16 20.71	+18 26.5	9.608	9.172	+0.38	-2.2	20.7	61.5
Oct. 10	16 24.50	+18 04.9	9.747	9.220	+0.42	-1.8	20.8	55.7
Oct. 20	16 28.73	+17 46.7	9.872	9.268	+0.46	-1.4	20.8	50.3
Oct. 30	16 33.33	+17 32.5	9.981	9.316	+0.49	-0.9	20.9	45.8
Nov. 9	16 38.20	+17 23.1	10.073	9.364	+0.51	-0.4	20.9	42.3
Nov. 19	16 43.28	+17 18.8	10.146	9.412	+0.52	+0.1	21.0	40.1
Nov. 29	16 48.49	+17 20.0	10.201	9.460	+0.52	+0.7	21.0	39.4
Dec. 9	16 53.73	+17 27.1	10.237	9.508	+0.52	+1.3	21.0	40.3
Dec. 19	16 58.92	+17 40.2	10.255	9.556	+0.51	+1.9	21.1	42.8
Dec. 29	17 03.98	+17 59.4	10.254	9.605	+0.48	+2.5	21.1	46.6
Jan. 8	17 08.82	+18 24.7	10.237	9.653	+0.45	+3.1	21.1	51.3
Jan. 18	17 13.35	+18 56.0	10.206	9.702	+0.41	+3.7	21.1	56.8
Jan. 28	17 17.50	+19 32.9	10.161	9.750	+0.37	+4.2	21.1	62.8
Feb. 7	17 21.18	+20 14.9	10.106	9.799	+0.31	+4.7	21.1	69.1
Feb. 17	17 24.32	+21 01.5	10.044	9.847	+0.25	+5.0	21.1	75.7
Feb. 27	17 26.84	+21 51.8	9.978	9.896	+0.19	+5.3	21.1	82.4
Mar. 9	17 28.71	+22 44.8	9.910	9.945	+0.12	+5.5	21.2	89.2
Mar. 19	17 29.87	+23 39.6	9.844	9.994	+0.04	+5.5	21.2	95.8
Mar. 29	17 30.29	+24 34.6	9.784	10.042	-0.03	+5.4	21.2	102.2

Comet 162P/Siding Spring

Epoch = 2012 July 12.0 TT
T = 2010 Mar. 8.52700 TT
Peri. = 356.39109 e = 0.5958263
Node = 31.23559 2000.0 a = 3.0552950 AU
Incl. = 27.81490 n = 0.18455437
q = 1.2348699 AU P = 5.34 years

H = 13.8 , G = 0.15

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 4	13 42.42	+00 14.5	4.593	4.516	+0.29	-1.3	21.1	79.4
Jan. 14	13 45.34	+00 01.9	4.455	4.539	+0.16	-0.5	21.1	88.6
Jan. 24	13 46.95	-00 02.7	4.315	4.562	+0.02	+0.3	21.0	98.3
Feb. 3	13 47.13	+00 00.7	4.179	4.583	-0.14	+1.1	20.9	108.2
Feb. 13	13 45.77	+00 11.7	4.050	4.604	-0.29	+1.8	20.8	118.5
Feb. 23	13 42.86	+00 29.5	3.936	4.624	-0.44	+2.3	20.7	129.2
Mar. 4	13 38.43	+00 52.9	3.840	4.644	-0.58	+2.7	20.6	140.0
Mar. 14	13 32.67	+01 19.9	3.768	4.662	-0.68	+2.9	20.5	151.0
Mar. 24	13 25.83	+01 48.5	3.723	4.680	-0.75	+2.7	20.4	161.5
Apr. 3	13 18.32	+02 15.9	3.710	4.697	-0.77	+2.4	20.3	169.6
Apr. 13	13 10.59	+02 39.5	3.728	4.713	-0.75	+1.8	20.3	167.7
Apr. 23	13 03.11	+02 57.2	3.778	4.728	-0.68	+1.0	20.5	158.5
May 3	12 56.32	+03 07.3	3.858	4.743	-0.58	+0.2	20.6	147.9
May 13	12 50.55	+03 08.8	3.964	4.756	-0.45	-0.7	20.8	137.3
May 23	12 46.04	+03 01.7	4.092	4.769	-0.31	-1.6	20.9	126.9
June 2	12 42.91	+02 46.0	4.237	4.782	-0.17	-2.3	21.0	116.9
June 12	12 41.18	+02 22.5	4.394	4.793	-0.04	-3.1	21.1	107.2
June 22	12 40.80	+01 52.0	4.560	4.804	+0.09	-3.7	21.2	97.8
July 2	12 41.70	+01 15.4	4.728	4.814	+0.21	-4.2	21.3	88.7
July 12	12 43.75	+00 33.5	4.895	4.823	+0.31	-4.6	21.4	80.0
July 22	12 46.83	-00 12.9	5.057	4.832	+0.40	-5.0	21.4	71.5
Aug. 1	12 50.83	-01 02.9	5.212	4.839	+0.48	-5.3	21.5	63.2
Aug. 11	12 55.63	-01 55.9	5.355	4.846	+0.55	-5.5	21.5	55.1
Aug. 21	13 01.10	-02 51.2	5.485	4.853	+0.61	-5.7	21.5	47.1
Aug. 31	13 07.16	-03 48.4	5.598	4.858	+0.65	-5.8	21.5	39.2
Sept.10	13 13.70	-04 46.7	5.694	4.863	+0.69	-5.9	21.5	31.4
Sept.20	13 20.64	-05 45.8	5.770	4.867	+0.72	-5.9	21.4	23.7
Sept.30	13 27.89	-06 45.2	5.825	4.870	+0.75	-5.9	21.4	15.9
Oct. 10	13 35.37	-07 44.3	5.859	4.873	+0.76	-5.9	21.3	8.3
Oct. 20	13 42.99	-08 42.8	5.870	4.874	+0.77	-5.7	21.2	1.8
Oct. 30	13 50.66	-09 40.2	5.857	4.875	+0.76	-5.6	21.3	7.8
Nov. 9	13 58.31	-10 36.2	5.822	4.876	+0.75	-5.4	21.4	15.6
Nov. 19	14 05.83	-11 30.4	5.764	4.875	+0.73	-5.2	21.4	23.6
Nov. 29	14 13.12	-12 22.4	5.685	4.874	+0.70	-4.9	21.5	31.8
Dec. 9	14 20.07	-13 11.8	5.585	4.872	+0.65	-4.7	21.5	40.0
Dec. 19	14 26.56	-13 58.4	5.466	4.869	+0.59	-4.3	21.5	48.5
Dec. 29	14 32.45	-14 41.9	5.330	4.866	+0.52	-4.0	21.5	57.1
Jan. 8	14 37.60	-15 21.9	5.181	4.862	+0.43	-3.6	21.5	65.9
Jan. 18	14 41.86	-15 58.2	5.020	4.857	+0.32	-3.2	21.4	74.9
Jan. 28	14 45.05	-16 30.5	4.852	4.851	+0.20	-2.8	21.4	84.2
Feb. 7	14 47.04	-16 58.4	4.680	4.845	+0.06	-2.3	21.3	93.7
Feb. 17	14 47.65	-17 21.6	4.510	4.838	-0.09	-1.8	21.2	103.6
Feb. 27	14 46.77	-17 39.6	4.345	4.830	-0.24	-1.2	21.1	113.7
Mar. 9	14 44.34	-17 52.1	4.192	4.821	-0.40	-0.6	21.0	124.2
Mar. 19	14 40.34	-17 58.5	4.055	4.812	-0.55	0.0	20.8	135.1
Mar. 29	14 34.89	-17 58.6	3.940	4.802	-0.67	+0.6	20.7	146.2

Comet 65P/Gunn

Epoch = 2012 July 12.0 TT
T = 2010 Mar. 14.98780 TT
Peri. = 200.47630 e = 0.3199730
Node = 67.72098 2000.0 a = 3.6507428 AU
Incl. = 10.55912 n = 0.14129676
q = 2.4826037 AU P = 6.98 years

m1 = 7.8 + 5 log(Delta) + 12.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 29.37	+02 50.7	3.790	4.059	+0.30	+4.5	18.3	98.8
Jan. 14	01 32.40	+03 35.2	3.968	4.083	+0.43	+5.0	18.4	89.7
Jan. 24	01 36.72	+04 25.1	4.146	4.106	+0.55	+5.4	18.6	80.8
Feb. 3	01 42.18	+05 19.0	4.321	4.130	+0.64	+5.7	18.7	72.3
Feb. 13	01 48.62	+06 15.9	4.489	4.153	+0.73	+5.9	18.8	64.0
Feb. 23	01 55.90	+07 14.8	4.647	4.176	+0.80	+6.0	18.9	56.0
Mar. 4	02 03.89	+08 14.9	4.793	4.198	+0.86	+6.0	19.0	48.2
Mar. 14	02 12.45	+09 15.3	4.925	4.220	+0.91	+6.0	19.1	40.6
Mar. 24	02 21.50	+10 15.3	5.042	4.241	+0.94	+5.9	19.2	33.1
Apr. 3	02 30.94	+11 14.3	5.141	4.263	+0.97	+5.7	19.2	25.7
Apr. 13	02 40.67	+12 11.7	5.222	4.283	+0.99	+5.5	19.3	18.6
Apr. 23	02 50.60	+13 07.1	5.284	4.304	+1.01	+5.3	19.3	11.5
May 3	03 00.67	+14 00.1	5.327	4.324	+1.01	+5.0	19.4	5.0
May 13	03 10.79	+14 50.4	5.351	4.344	+1.01	+4.7	19.4	4.2
May 23	03 20.89	+15 37.6	5.354	4.363	+1.00	+4.4	19.4	10.5
June 2	03 30.89	+16 21.5	5.339	4.382	+0.98	+4.1	19.5	17.5
June 12	03 40.69	+17 02.1	5.304	4.400	+0.95	+3.7	19.5	24.5
June 22	03 50.22	+17 39.1	5.251	4.419	+0.92	+3.3	19.5	31.7
July 2	03 59.37	+18 12.6	5.181	4.436	+0.87	+3.0	19.5	38.9
July 12	04 08.05	+18 42.6	5.094	4.454	+0.81	+2.7	19.4	46.3
July 22	04 16.14	+19 09.1	4.993	4.471	+0.74	+2.3	19.4	53.9
Aug. 1	04 23.50	+19 32.4	4.879	4.487	+0.65	+2.0	19.4	61.7
Aug. 11	04 30.02	+19 52.5	4.754	4.503	+0.55	+1.7	19.4	69.7
Aug. 21	04 35.54	+20 09.7	4.621	4.519	+0.44	+1.4	19.3	78.0
Aug. 31	04 39.91	+20 24.2	4.482	4.534	+0.31	+1.2	19.3	86.6
Sept.10	04 42.98	+20 36.1	4.341	4.549	+0.16	+1.0	19.2	95.5
Sept.20	04 44.60	+20 45.8	4.202	4.564	+0.01	+0.7	19.2	104.8
Sept.30	04 44.65	+20 53.1	4.070	4.578	-0.16	+0.5	19.1	114.6
Oct. 10	04 43.08	+20 58.2	3.948	4.592	-0.32	+0.3	19.1	124.8
Oct. 20	04 39.89	+21 01.0	3.842	4.605	-0.47	0.0	19.0	135.5
Oct. 30	04 35.19	+21 01.3	3.757	4.618	-0.60	-0.2	19.0	146.5
Nov. 9	04 29.23	+20 59.3	3.698	4.631	-0.68	-0.4	19.0	157.9
Nov. 19	04 22.38	+20 55.0	3.668	4.643	-0.73	-0.6	19.0	169.6
Nov. 29	04 15.13	+20 49.0	3.669	4.655	-0.71	-0.7	19.0	178.6
Dec. 9	04 08.00	+20 42.3	3.702	4.666	-0.65	-0.6	19.0	166.8
Dec. 19	04 01.50	+20 36.1	3.766	4.677	-0.54	-0.4	19.1	155.1
Dec. 29	03 56.07	+20 31.6	3.859	4.688	-0.41	-0.2	19.1	143.7
Jan. 8	03 52.00	+20 30.0	3.976	4.698	-0.25	+0.2	19.2	132.6
Jan. 18	03 49.48	+20 32.1	4.114	4.707	-0.09	+0.6	19.3	121.8
Jan. 28	03 48.58	+20 38.3	4.267	4.717	+0.07	+1.0	19.4	111.4
Feb. 7	03 49.25	+20 48.7	4.429	4.726	+0.22	+1.4	19.5	101.5
Feb. 17	03 51.41	+21 02.9	4.597	4.734	+0.35	+1.8	19.6	91.9
Feb. 27	03 54.95	+21 20.6	4.765	4.742	+0.48	+2.0	19.6	82.7
Mar. 9	03 59.70	+21 40.9	4.929	4.750	+0.58	+2.2	19.7	73.8
Mar. 19	04 05.53	+22 03.3	5.087	4.757	+0.68	+2.4	19.8	65.3
Mar. 29	04 12.30	+22 27.0	5.234	4.764	+0.76	+2.4	19.9	57.0

Comet C/2007 V053 (Spacewatch)

Epoch = 2012 July 12.0 TT
T = 2010 Apr. 27.08016 TT
Peri. = 75.08334
Node = 59.71489 2000.0
Incl. = 87.00068
q = 4.8436514 AU
e = 1.0012651

m1 = 6.8 + 5 log(Delta) + 10.0 log(r(t-100))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	16 35.20	+15 40.2	7.293	6.727	+0.39	-1.2	19.1	51.6
Jan. 14	16 39.07	+15 28.4	7.252	6.777	+0.33	-0.5	19.1	57.6
Jan. 24	16 42.34	+15 23.9	7.196	6.827	+0.25	+0.2	19.1	64.3
Feb. 3	16 44.87	+15 25.9	7.127	6.877	+0.17	+0.8	19.1	71.4
Feb. 13	16 46.58	+15 33.7	7.049	6.928	+0.08	+1.2	19.1	79.0
Feb. 23	16 47.37	+15 46.0	6.964	6.979	-0.02	+1.6	19.1	86.8
Mar. 4	16 47.15	+16 01.7	6.877	7.030	-0.13	+1.7	19.1	94.8
Mar. 14	16 45.89	+16 19.1	6.793	7.081	-0.23	+1.8	19.1	102.9
Mar. 24	16 43.56	+16 36.7	6.715	7.133	-0.34	+1.6	19.1	111.0
Apr. 3	16 40.18	+16 52.4	6.648	7.184	-0.43	+1.2	19.2	118.9
Apr. 13	16 35.83	+17 04.4	6.597	7.236	-0.52	+0.6	19.2	126.4
Apr. 23	16 30.65	+17 10.8	6.565	7.288	-0.58	-0.1	19.2	133.0
May 3	16 24.80	+17 10.0	6.556	7.341	-0.63	-0.9	19.2	138.4
May 13	16 18.53	+17 00.7	6.573	7.393	-0.65	-1.8	19.3	141.8
May 23	16 12.07	+16 42.2	6.616	7.446	-0.64	-2.8	19.3	142.6
June 2	16 05.71	+16 14.4	6.687	7.499	-0.60	-3.7	19.4	140.6
June 12	15 59.67	+15 37.6	6.785	7.552	-0.55	-4.5	19.4	136.3
June 22	15 54.19	+14 52.8	6.908	7.605	-0.48	-5.2	19.5	130.3
July 2	15 49.42	+14 01.1	7.053	7.658	-0.39	-5.7	19.6	123.3
July 12	15 45.48	+13 04.0	7.218	7.712	-0.30	-6.1	19.7	115.6
July 22	15 42.45	+12 03.0	7.398	7.765	-0.21	-6.3	19.7	107.5
Aug. 1	15 40.34	+10 59.5	7.590	7.819	-0.12	-6.5	19.8	99.3
Aug. 11	15 39.13	+09 54.8	7.789	7.872	-0.03	-6.5	19.9	91.0
Aug. 21	15 38.80	+08 50.0	7.991	7.926	+0.05	-6.4	20.0	82.7
Aug. 31	15 39.28	+07 46.1	8.192	7.980	+0.12	-6.2	20.1	74.4
Sept.10	15 40.49	+06 43.8	8.387	8.034	+0.19	-6.0	20.2	66.2
Sept.20	15 42.36	+05 43.8	8.573	8.089	+0.24	-5.7	20.2	58.2
Sept.30	15 44.80	+04 46.6	8.747	8.143	+0.29	-5.4	20.3	50.2
Oct. 10	15 47.71	+03 52.7	8.904	8.197	+0.33	-5.0	20.4	42.6
Oct. 20	15 51.02	+03 02.4	9.044	8.252	+0.36	-4.6	20.5	35.3
Oct. 30	15 54.63	+02 15.9	9.162	8.306	+0.38	-4.2	20.5	28.9
Nov. 9	15 58.44	+01 33.5	9.257	8.361	+0.39	-3.8	20.6	23.8
Nov. 19	16 02.37	+00 55.3	9.329	8.415	+0.40	-3.4	20.6	21.2
Nov. 29	16 06.32	+00 21.5	9.376	8.470	+0.39	-3.0	20.7	22.1
Dec. 9	16 10.20	-00 08.0	9.397	8.525	+0.37	-2.5	20.7	26.2
Dec. 19	16 13.91	-00 33.2	9.395	8.580	+0.34	-2.1	20.7	32.3
Dec. 29	16 17.36	-00 54.1	9.368	8.635	+0.31	-1.7	20.7	39.7
Jan. 8	16 20.45	-01 10.8	9.321	8.689	+0.26	-1.3	20.8	47.7
Jan. 18	16 23.10	-01 23.6	9.253	8.744	+0.21	-0.9	20.8	56.2
Jan. 28	16 25.22	-01 32.7	9.170	8.799	+0.15	-0.6	20.8	65.0
Feb. 7	16 26.72	-01 38.6	9.074	8.855	+0.08	-0.3	20.8	74.1
Feb. 17	16 27.53	-01 41.5	8.969	8.910	+0.01	-0.1	20.8	83.4
Feb. 27	16 27.61	-01 42.2	8.861	8.965	-0.07	+0.1	20.8	92.8
Mar. 9	16 26.91	-01 41.1	8.754	9.020	-0.15	+0.2	20.8	102.4
Mar. 19	16 25.42	-01 38.9	8.653	9.075	-0.23	+0.2	20.8	112.1
Mar. 29	16 23.16	-01 36.5	8.564	9.130	-0.30	+0.2	20.8	121.8

Comet C/2009 U5 (Grauer)

Epoch = 2012 July 12.0 TT
T = 2010 June 22.49528 TT
Peri. = 23.84698
Node = 121.11152 2000.0
Incl. = 25.45512
q = 6.0938135 AU
e = 1.0018517

m1 = 9.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	13 42.47	+14 59	7.219	7.208	+0.34	+2′.0	19.7	85.4
Jan. 14	13 45.89	+15 20.3	7.106	7.244	+0.26	+2.6	19.7	94.1
Jan. 24	13 48.46	+15 46.6	6.997	7.280	+0.17	+3.1	19.7	102.9
Feb. 3	13 50.14	+16 17.9	6.895	7.317	+0.08	+3.5	19.7	111.7
Feb. 13	13 50.91	+16 53.0	6.804	7.354	-0.01	+3.7	19.7	120.4
Feb. 23	13 50.78	+17 30.5	6.729	7.391	-0.10	+3.8	19.7	129.0
Mar. 4	13 49.80	+18 08.4	6.673	7.429	-0.17	+3.7	19.7	137.0
Mar. 14	13 48.07	+18 44.9	6.640	7.467	-0.23	+3.3	19.7	144.0
Mar. 24	13 45.72	+19 18.1	6.631	7.505	-0.28	+2.8	19.7	149.2
Apr. 3	13 42.93	+19 46.1	6.649	7.544	-0.30	+2.1	19.7	151.7
Apr. 13	13 39.91	+20 07.3	6.693	7.583	-0.30	+1.3	19.7	150.6
Apr. 23	13 36.87	+20 20.8	6.764	7.622	-0.29	+0.5	19.8	146.5
May 3	13 34.01	+20 25.8	6.859	7.662	-0.25	-0.3	19.8	140.3
May 13	13 31.52	+20 22.4	6.977	7.702	-0.20	-1.2	19.9	133.0
May 23	13 29.55	+20 10.7	7.116	7.742	-0.13	-1.9	19.9	125.1
June 2	13 28.22	+19 51.5	7.270	7.782	-0.06	-2.6	20.0	116.9
June 12	13 27.60	+19 25.6	7.438	7.823	+0.01	-3.2	20.1	108.7
June 22	13 27.72	+18 54.1	7.615	7.864	+0.09	-3.6	20.1	100.5
July 2	13 28.60	+18 17.9	7.797	7.906	+0.16	-4.0	20.2	92.4
July 12	13 30.20	+17 38.1	7.982	7.947	+0.23	-4.2	20.3	84.4
July 22	13 32.49	+16 55.7	8.164	7.989	+0.29	-4.4	20.3	76.5
Aug. 1	13 35.43	+16 11.6	8.342	8.031	+0.35	-4.5	20.4	68.8
Aug. 11	13 38.95	+15 26.6	8.512	8.073	+0.40	-4.5	20.5	61.2
Aug. 21	13 42.99	+14 41.5	8.672	8.116	+0.45	-4.5	20.5	53.8
Aug. 31	13 47.48	+13 56.9	8.818	8.159	+0.49	-4.3	20.6	46.7
Sept.10	13 52.36	+13 13.6	8.949	8.202	+0.52	-4.2	20.6	39.9
Sept.20	13 57.56	+12 32.1	9.063	8.245	+0.54	-3.9	20.7	33.6
Sept.30	14 03.01	+11 53.0	9.157	8.288	+0.56	-3.6	20.7	28.2
Oct. 10	14 08.64	+11 16.8	9.232	8.332	+0.57	-3.3	20.7	24.4
Oct. 20	14 14.38	+10 43.9	9.285	8.376	+0.58	-2.9	20.8	22.8
Oct. 30	14 20.16	+10 14.9	9.317	8.420	+0.57	-2.5	20.8	24.0
Nov. 9	14 25.90	+09 50.1	9.328	8.464	+0.56	-2.0	20.8	27.8
Nov. 19	14 31.54	+09 29.9	9.317	8.509	+0.54	-1.5	20.8	33.3
Nov. 29	14 36.98	+09 14.6	9.287	8.553	+0.52	-1.0	20.8	39.9
Dec. 9	14 42.15	+09 04.5	9.237	8.598	+0.48	-0.5	20.8	47.2
Dec. 19	14 46.98	+08 59.7	9.171	8.643	+0.44	+0.1	20.8	54.9
Dec. 29	14 51.37	+09 00.3	9.091	8.688	+0.39	+0.6	20.8	63.0
Jan. 8	14 55.25	+09 06.2	8.999	8.733	+0.33	+1.1	20.8	71.3
Jan. 18	14 58.56	+09 17.3	8.899	8.778	+0.27	+1.6	20.8	79.8
Jan. 28	15 01.21	+09 33.1	8.796	8.824	+0.20	+2.0	20.8	88.4
Feb. 7	15 03.16	+09 53.0	8.692	8.870	+0.12	+2.3	20.8	97.2
Feb. 17	15 04.38	+10 16.4	8.592	8.915	+0.05	+2.6	20.8	106.0
Feb. 27	15 04.84	+10 42.4	8.501	8.961	-0.03	+2.7	20.8	114.8
Mar. 9	15 04.56	+11 09.6	8.422	9.008	-0.10	+2.7	20.8	123.4
Mar. 19	15 03.57	+11 37.1	8.361	9.054	-0.16	+2.6	20.8	131.7
Mar. 29	15 01.95	+12 03.2	8.319	9.100	-0.21	+2.4	20.8	139.3

Comet P/2010 R2 (La Sagra)

Epoch = 2012 July 12.0 TT
T = 2010 June 23.27719 TT
Peri. = 58.97738 e = 0.1538081
Node = 270.65000 2000.0 a = 3.0942829 AU
Incl. = 21.41963 n = 0.18107732
q = 2.6183571 AU P = 5.44 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	05 21.35	+24 48.6	2.320	3.254	-0.70	-5.8	19.7	158.3
Jan. 14	05 14.35	+23 50.5	2.402	3.268	-0.48	-5.3	19.8	146.5
Jan. 24	05 09.57	+22 57.2	2.508	3.281	-0.23	-4.7	19.9	135.2
Feb. 3	05 07.23	+22 10.6	2.635	3.294	+0.01	-3.9	20.1	124.4
Feb. 13	05 07.29	+21 31.5	2.776	3.307	+0.23	-3.2	20.2	114.2
Feb. 23	05 09.58	+20 59.5	2.928	3.319	+0.43	-2.6	20.3	104.6
Mar. 4	05 13.88	+20 33.4	3.086	3.331	+0.60	-2.2	20.5	95.6
Mar. 14	05 19.92	+20 11.9	3.245	3.343	+0.75	-1.8	20.6	87.0
Mar. 24	05 27.44	+19 53.4	3.403	3.355	+0.88	-1.7	20.7	78.8
Apr. 3	05 36.22	+19 36.4	3.557	3.366	+0.98	-1.7	20.9	71.0
Apr. 13	05 46.04	+19 19.5	3.704	3.378	+1.07	-1.8	21.0	63.5
Apr. 23	05 56.71	+19 01.6	3.842	3.389	+1.14	-2.0	21.1	56.3
May 3	06 08.08	+18 41.5	3.970	3.399	+1.19	-2.3	21.2	49.3
May 13	06 19.98	+18 18.5	4.085	3.410	+1.23	-2.7	21.2	42.5
May 23	06 32.30	+17 51.8	4.187	3.420	+1.26	-3.1	21.3	36.0
June 2	06 44.92	+17 21.0	4.275	3.429	+1.28	-3.5	21.4	29.6
June 12	06 57.74	+16 45.6	4.348	3.439	+1.29	-4.0	21.4	23.4
June 22	07 10.67	+16 05.4	4.405	3.448	+1.29	-4.5	21.5	17.4
July 2	07 23.61	+15 20.2	4.445	3.457	+1.29	-5.0	21.5	11.9
July 12	07 36.49	+14 29.9	4.470	3.466	+1.28	-5.5	21.5	7.9
July 22	07 49.25	+13 34.6	4.478	3.474	+1.26	-6.0	21.6	7.8
Aug. 1	08 01.80	+12 34.4	4.469	3.482	+1.23	-6.5	21.6	11.9
Aug. 11	08 14.08	+11 29.5	4.443	3.489	+1.19	-6.9	21.6	17.4
Aug. 21	08 26.02	+10 20.0	4.402	3.497	+1.15	-7.4	21.6	23.4
Aug. 31	08 37.54	+09 06.4	4.344	3.504	+1.10	-7.8	21.6	29.7
Sept. 10	08 48.58	+07 48.8	4.271	3.510	+1.05	-8.1	21.5	36.3
Sept. 20	08 59.03	+06 27.8	4.184	3.516	+0.98	-8.4	21.5	43.0
Sept. 30	09 08.81	+05 03.9	4.084	3.522	+0.90	-8.6	21.5	49.9
Oct. 10	09 17.81	+03 37.6	3.971	3.528	+0.81	-8.8	21.4	57.0
Oct. 20	09 25.91	+02 09.6	3.849	3.533	+0.71	-8.9	21.3	64.3
Oct. 30	09 32.96	+00 40.7	3.718	3.538	+0.59	-8.9	21.3	71.9
Nov. 9	09 38.82	-00 48.0	3.580	3.543	+0.45	-8.7	21.2	79.9
Nov. 19	09 43.31	-02 15.5	3.440	3.547	+0.29	-8.5	21.1	88.1
Nov. 29	09 46.24	-03 40.1	3.299	3.551	+0.12	-8.0	21.0	96.6
Dec. 9	09 47.46	-05 00.1	3.162	3.554	-0.06	-7.3	21.0	105.5
Dec. 19	09 46.82	-06 13.2	3.032	3.558	-0.26	-6.4	20.9	114.7
Dec. 29	09 44.25	-07 16.8	2.914	3.560	-0.45	-5.1	20.8	124.1
Jan. 8	09 39.79	-08 08.1	2.813	3.563	-0.62	-3.6	20.7	133.6
Jan. 18	09 33.64	-08 44.4	2.732	3.565	-0.74	-1.9	20.7	142.7
Jan. 28	09 26.20	-09 03.8	2.676	3.567	-0.82	-0.2	20.6	150.6
Feb. 7	09 18.03	-09 05.6	2.647	3.568	-0.82	+1.5	20.6	155.5
Feb. 17	09 09.82	-08 50.7	2.647	3.569	-0.75	+2.9	20.6	155.4
Feb. 27	09 02.29	-08 21.9	2.675	3.570	-0.63	+3.9	20.6	150.4
Mar. 9	08 56.02	-07 43.4	2.730	3.570	-0.46	+4.4	20.7	142.7
Mar. 19	08 51.45	-06 59.6	2.808	3.570	-0.26	+4.5	20.7	133.8
Mar. 29	08 48.83	-06 15.0	2.905	3.570	-0.06	+4.2	20.8	124.7

Comet 215P/NEAT

Epoch = 2012 July 12.0 TT
T = 2010 June 25.40327 TT
Peri. = 225.77872 e = 0.2073329
Node = 74.97066 2000.0 a = 4.0751833 AU
Incl. = 12.89596 n = 0.11980732
q = 3.2302637 AU P = 8.23 years

m1 = 5.2 + 5 log(Delta) + 20.0 log(r(t-130))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 17.62	-01 54.9	3.708	3.906	+0.40	+6.2	19.3	94.3
Jan. 14	01 21.66	-00 52.5	3.876	3.924	+0.53	+6.7	19.5	85.5
Jan. 24	01 26.94	+00 14.1	4.043	3.942	+0.64	+7.0	19.6	77.1
Feb. 3	01 33.31	+01 23.6	4.206	3.960	+0.73	+7.1	19.7	68.9
Feb. 13	01 40.60	+02 35.0	4.362	3.978	+0.81	+7.2	19.9	61.0
Feb. 23	01 48.70	+03 47.3	4.508	3.996	+0.88	+7.2	20.0	53.3
Mar. 4	01 57.46	+04 59.8	4.642	4.014	+0.93	+7.2	20.1	45.8
Mar. 14	02 06.78	+06 11.6	4.762	4.032	+0.98	+7.1	20.2	38.5
Mar. 24	02 16.56	+07 22.1	4.868	4.050	+1.01	+6.9	20.3	31.3
Apr. 3	02 26.71	+08 30.8	4.958	4.067	+1.04	+6.6	20.3	24.3
Apr. 13	02 37.13	+09 37.1	5.030	4.085	+1.06	+6.4	20.4	17.5
Apr. 23	02 47.76	+10 40.7	5.085	4.102	+1.08	+6.0	20.5	11.0
May 3	02 58.52	+11 41.0	5.122	4.120	+1.08	+5.7	20.5	5.8
May 13	03 09.33	+12 37.9	5.140	4.137	+1.08	+5.3	20.6	6.3
May 23	03 20.12	+13 31.0	5.140	4.155	+1.07	+4.9	20.6	11.9
June 2	03 30.81	+14 20.2	5.122	4.172	+1.05	+4.5	20.7	18.3
June 12	03 41.33	+15 05.3	5.087	4.189	+1.03	+4.1	20.7	25.1
June 22	03 51.58	+15 46.2	5.034	4.206	+0.99	+3.7	20.7	31.9
July 2	04 01.47	+16 23.0	4.965	4.223	+0.94	+3.3	20.7	38.9
July 12	04 10.89	+16 55.8	4.881	4.240	+0.89	+2.9	20.7	46.1
July 22	04 19.75	+17 24.6	4.783	4.256	+0.82	+2.5	20.7	53.4
Aug. 1	04 27.90	+17 49.6	4.672	4.273	+0.73	+2.2	20.7	61.0
Aug. 11	04 35.22	+18 11.1	4.551	4.289	+0.63	+1.8	20.7	68.7
Aug. 21	04 41.56	+18 29.5	4.422	4.305	+0.52	+1.5	20.7	76.8
Aug. 31	04 46.76	+18 44.9	4.287	4.321	+0.39	+1.3	20.6	85.2
Sept.10	04 50.67	+18 57.9	4.150	4.337	+0.25	+1.1	20.6	93.9
Sept.20	04 53.14	+19 08.6	4.015	4.353	+0.09	+0.9	20.6	103.0
Sept.30	04 54.02	+19 17.6	3.885	4.368	-0.08	+0.7	20.5	112.6
Oct. 10	04 53.24	+19 24.9	3.764	4.384	-0.25	+0.6	20.5	122.6
Oct. 20	04 50.77	+19 30.8	3.658	4.399	-0.41	+0.4	20.5	133.1
Oct. 30	04 46.71	+19 35.2	3.572	4.414	-0.54	+0.3	20.4	143.9
Nov. 9	04 41.28	+19 38.4	3.510	4.429	-0.65	+0.2	20.4	155.2
Nov. 19	04 34.81	+19 40.4	3.476	4.443	-0.70	+0.1	20.5	166.7
Nov. 29	04 27.79	+19 41.7	3.472	4.458	-0.70	+0.1	20.5	177.6
Dec. 9	04 20.76	+19 42.9	3.500	4.472	-0.65	+0.2	20.5	169.4
Dec. 19	04 14.25	+19 44.8	3.560	4.486	-0.55	+0.4	20.6	157.9
Dec. 29	04 08.74	+19 48.5	3.648	4.500	-0.42	+0.6	20.7	146.4
Jan. 8	04 04.58	+19 54.8	3.761	4.514	-0.26	+1.0	20.8	135.3
Jan. 18	04 01.98	+20 04.3	3.896	4.527	-0.10	+1.3	20.9	124.6
Jan. 28	04 01.03	+20 17.3	4.047	4.541	+0.07	+1.7	21.0	114.2
Feb. 7	04 01.70	+20 33.9	4.209	4.554	+0.22	+2.0	21.1	104.3
Feb. 17	04 03.93	+20 53.6	4.378	4.567	+0.37	+2.2	21.2	94.7
Feb. 27	04 07.59	+21 16.0	4.548	4.580	+0.49	+2.4	21.4	85.6
Mar. 9	04 12.52	+21 40.5	4.716	4.592	+0.61	+2.6	21.5	76.8
Mar. 19	04 18.59	+22 06.3	4.879	4.604	+0.70	+2.7	21.6	68.3
Mar. 29	04 25.63	+22 32.8	5.033	4.616	+0.79	+2.7	21.7	60.0

Comet 10P/Tempel

Epoch = 2012 July 12.0 TT
T = 2010 July 4.63155 TT
Peri. = 195.57791 e = 0.5362670
Node = 117.80124 2000.0 a = 3.0652867 AU
Incl. = 12.02551 n = 0.18365274
q = 1.4214746 AU P = 5.37 years

H = 13.6 , G = 0.15

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 4	06 50.60	+18 34.9	3.043	4.024	-0.86	+2.6	19.2	175.6
Jan. 14	06 41.98	+19 01.1	3.094	4.056	-0.78	+2.6	19.4	166.3
Jan. 24	06 34.20	+19 26.7	3.176	4.087	-0.64	+2.4	19.6	154.6
Feb. 3	06 27.80	+19 50.7	3.288	4.118	-0.47	+2.2	19.8	143.0
Feb. 13	06 23.12	+20 13.0	3.423	4.148	-0.28	+2.0	20.0	131.8
Feb. 23	06 20.31	+20 33.4	3.578	4.176	-0.09	+1.8	20.2	121.1
Mar. 4	06 19.41	+20 51.8	3.748	4.205	+0.09	+1.6	20.3	110.9
Mar. 14	06 20.32	+21 08.1	3.927	4.232	+0.26	+1.4	20.5	101.1
Mar. 24	06 22.88	+21 22.3	4.110	4.258	+0.40	+1.2	20.6	91.7
Apr. 3	06 26.91	+21 34.0	4.293	4.284	+0.53	+0.9	20.7	82.8
Apr. 13	06 32.22	+21 43.3	4.473	4.309	+0.64	+0.6	20.8	74.2
Apr. 23	06 38.61	+21 49.7	4.646	4.333	+0.73	+0.4	20.9	65.9
May 3	06 45.91	+21 53.2	4.808	4.356	+0.80	0.0	20.9	57.9
May 13	06 53.95	+21 53.7	4.959	4.379	+0.86	-0.3	20.9	50.0
May 23	07 02.60	+21 51.1	5.095	4.401	+0.91	-0.6	21.0	42.4
June 2	07 11.72	+21 45.2	5.215	4.422	+0.95	-0.9	21.0	34.9
June 12	07 21.19	+21 36.3	5.317	4.442	+0.97	-1.2	20.9	27.6
June 22	07 30.90	+21 24.3	5.401	4.461	+0.99	-1.5	20.9	20.3
July 2	07 40.75	+21 09.5	5.465	4.480	+0.99	-1.7	20.8	13.0
July 12	07 50.65	+20 52.1	5.508	4.498	+0.99	-2.0	20.8	5.8
July 22	08 00.52	+20 32.5	5.531	4.515	+0.98	-2.2	20.7	1.4
Aug. 1	08 10.27	+20 10.9	5.533	4.532	+0.96	-2.3	20.8	8.6
Aug. 11	08 19.83	+19 47.9	5.514	4.548	+0.93	-2.4	20.9	15.9
Aug. 21	08 29.10	+19 24.0	5.474	4.563	+0.89	-2.4	21.0	23.3
Aug. 31	08 38.00	+18 59.7	5.414	4.577	+0.85	-2.4	21.1	30.9
Sept.10	08 46.45	+18 35.9	5.335	4.590	+0.79	-2.3	21.1	38.5
Sept.20	08 54.36	+18 13.1	5.239	4.603	+0.72	-2.1	21.1	46.4
Sept.30	09 01.60	+17 52.3	5.126	4.615	+0.65	-1.8	21.1	54.4
Oct. 10	09 08.07	+17 34.3	4.999	4.626	+0.56	-1.4	21.1	62.7
Oct. 20	09 13.66	+17 20.2	4.860	4.637	+0.46	-0.9	21.1	71.3
Oct. 30	09 18.21	+17 10.9	4.713	4.647	+0.34	-0.3	21.0	80.1
Nov. 9	09 21.59	+17 07.5	4.560	4.656	+0.21	+0.3	21.0	89.4
Nov. 19	09 23.67	+17 10.8	4.407	4.664	+0.06	+1.1	20.9	99.0
Nov. 29	09 24.31	+17 21.6	4.257	4.672	-0.09	+1.9	20.8	109.0
Dec. 9	09 23.41	+17 40.2	4.116	4.679	-0.25	+2.6	20.7	119.4
Dec. 19	09 20.93	+18 06.4	3.989	4.685	-0.40	+3.3	20.6	130.3
Dec. 29	09 16.90	+18 39.6	3.881	4.691	-0.54	+3.9	20.4	141.5
Jan. 8	09 11.47	+19 18.1	3.798	4.695	-0.66	+4.2	20.3	153.0
Jan. 18	09 04.91	+19 59.8	3.743	4.700	-0.73	+4.2	20.1	164.7
Jan. 28	08 57.64	+20 42.0	3.720	4.703	-0.75	+4.0	20.0	175.5
Feb. 7	08 50.15	+21 22.0	3.730	4.705	-0.72	+3.5	20.1	170.3
Feb. 17	08 42.96	+21 57.5	3.773	4.707	-0.64	+2.9	20.2	158.7
Feb. 27	08 36.58	+22 26.8	3.845	4.709	-0.52	+2.2	20.4	147.2
Mar. 9	08 31.38	+22 49.2	3.944	4.709	-0.37	+1.5	20.5	136.0
Mar. 19	08 27.65	+23 04.6	4.065	4.709	-0.21	+0.9	20.7	125.2
Mar. 29	08 25.50	+23 13.1	4.201	4.708	-0.05	+0.2	20.8	114.8

Comet P/2011 P1 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2010 July 17.18755 TT
Peri. = 346.03866 e = 0.3362832
Node = 6.35070 2000.0 a = 7.5186339 AU
Incl. = 5.73258 n = 0.04780746
q = 4.9902436 AU P = 20.62 years

m1 = 4.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	02 00.92	+16 18.7	5.079	5.507	+0.15	+0.5	18.6	110.9
Jan. 14	02 02.44	+16 24.1	5.250	5.525	+0.27	+1.1	18.7	101.1
Jan. 24	02 05.09	+16 35.2	5.427	5.542	+0.37	+1.7	18.8	91.6
Feb. 3	02 08.81	+16 51.8	5.604	5.560	+0.47	+2.1	18.9	82.4
Feb. 13	02 13.47	+17 13.2	5.778	5.578	+0.55	+2.6	19.0	73.5
Feb. 23	02 18.98	+17 38.8	5.946	5.597	+0.62	+2.9	19.1	64.8
Mar. 4	02 25.23	+18 07.7	6.104	5.615	+0.69	+3.2	19.2	56.3
Mar. 14	02 32.10	+18 39.4	6.250	5.634	+0.74	+3.4	19.2	48.1
Mar. 24	02 39.50	+19 13.1	6.380	5.653	+0.78	+3.5	19.3	40.0
Apr. 3	02 47.33	+19 48.1	6.494	5.672	+0.82	+3.6	19.4	32.1
Apr. 13	02 55.51	+20 23.8	6.590	5.691	+0.84	+3.6	19.4	24.3
Apr. 23	03 03.94	+20 59.7	6.666	5.710	+0.86	+3.6	19.5	16.8
May 3	03 12.54	+21 35.4	6.722	5.730	+0.87	+3.5	19.5	9.5
May 13	03 21.23	+22 10.4	6.757	5.749	+0.87	+3.4	19.5	3.8
May 23	03 29.93	+22 44.3	6.772	5.769	+0.86	+3.3	19.6	7.3
June 2	03 38.57	+23 17.0	6.766	5.789	+0.85	+3.1	19.6	14.4
June 12	03 47.05	+23 48.2	6.740	5.809	+0.82	+3.0	19.6	21.8
June 22	03 55.29	+24 17.7	6.695	5.829	+0.79	+2.8	19.6	29.3
July 2	04 03.20	+24 45.4	6.631	5.850	+0.75	+2.6	19.6	36.9
July 12	04 10.69	+25 11.4	6.550	5.870	+0.70	+2.4	19.6	44.6
July 22	04 17.66	+25 35.5	6.453	5.891	+0.63	+2.2	19.6	52.5
Aug. 1	04 24.00	+25 57.8	6.343	5.911	+0.56	+2.1	19.6	60.6
Aug. 11	04 29.61	+26 18.4	6.222	5.932	+0.48	+1.9	19.6	68.8
Aug. 21	04 34.36	+26 37.3	6.093	5.953	+0.38	+1.7	19.5	77.3
Aug. 31	04 38.15	+26 54.4	5.958	5.974	+0.27	+1.5	19.5	86.1
Sept.10	04 40.87	+27 09.7	5.821	5.995	+0.16	+1.3	19.5	95.1
Sept.20	04 42.44	+27 23.1	5.687	6.016	+0.04	+1.1	19.5	104.4
Sept.30	04 42.79	+27 34.5	5.559	6.037	-0.09	+0.9	19.4	114.1
Oct. 10	04 41.91	+27 43.4	5.443	6.059	-0.21	+0.6	19.4	124.0
Oct. 20	04 39.83	+27 49.4	5.343	6.080	-0.32	+0.3	19.4	134.3
Oct. 30	04 36.66	+27 52.3	5.263	6.102	-0.41	-0.1	19.4	144.8
Nov. 9	04 32.58	+27 51.8	5.208	6.123	-0.47	-0.4	19.4	155.5
Nov. 19	04 27.87	+27 47.6	5.181	6.145	-0.50	-0.8	19.4	165.9
Nov. 29	04 22.84	+27 40.1	5.185	6.167	-0.50	-1.0	19.4	173.8
Dec. 9	04 17.84	+27 29.8	5.220	6.188	-0.46	-1.2	19.5	168.5
Dec. 19	04 13.23	+27 17.7	5.286	6.210	-0.39	-1.3	19.5	158.2
Dec. 29	04 09.32	+27 04.8	5.381	6.232	-0.30	-1.2	19.6	147.4
Jan. 8	04 06.33	+26 52.3	5.501	6.254	-0.19	-1.1	19.6	136.7
Jan. 18	04 04.44	+26 41.3	5.644	6.276	-0.07	-0.9	19.7	126.2
Jan. 28	04 03.72	+26 32.6	5.805	6.298	+0.05	-0.6	19.8	115.9
Feb. 7	04 04.20	+26 26.7	5.978	6.320	+0.16	-0.3	19.9	105.9
Feb. 17	04 05.85	+26 23.7	6.159	6.342	+0.27	0.0	20.0	96.2
Feb. 27	04 08.58	+26 23.7	6.343	6.364	+0.37	+0.3	20.1	86.8
Mar. 9	04 12.32	+26 26.5	6.525	6.386	+0.46	+0.5	20.2	77.6
Mar. 19	04 16.95	+26 31.6	6.702	6.409	+0.54	+0.7	20.2	68.7
Mar. 29	04 22.36	+26 38.7	6.870	6.431	+0.61	+0.9	20.3	60.1

Comet C/2011 P2 (PANSTARRS)

Epoch = 2012 July 12.0 TT
T = 2010 Sept. 12.07524 TT
Peri. = 76.29183 e = 0.3696403
Node = 204.00582 2000.0 a = 9.7517492 AU
Incl. = 8.99029 n = 0.03236535
q = 6.1471097 AU P = 30.45 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	20 47.01	-10 14.7	7.302	6.463	+0.73	+2.4	20.3	29.4
Jan. 14	20 54.35	-09 50.3	7.381	6.476	+0.75	+2.7	20.3	21.4
Jan. 24	21 01.81	-09 22.9	7.440	6.489	+0.75	+3.0	20.3	13.9
Feb. 3	21 09.31	-08 52.8	7.476	6.502	+0.75	+3.2	20.4	8.1
Feb. 13	21 16.76	-08 20.4	7.490	6.515	+0.73	+3.4	20.4	8.4
Feb. 23	21 24.09	-07 46.2	7.482	6.529	+0.71	+3.5	20.4	14.5
Mar. 4	21 31.20	-07 10.7	7.451	6.542	+0.68	+3.6	20.4	22.0
Mar. 14	21 38.02	-06 34.5	7.400	6.556	+0.65	+3.6	20.4	29.8
Mar. 24	21 44.47	-05 58.2	7.329	6.570	+0.60	+3.6	20.4	37.8
Apr. 3	21 50.49	-05 22.2	7.240	6.585	+0.55	+3.5	20.4	46.0
Apr. 13	21 55.99	-04 47.4	7.136	6.599	+0.49	+3.3	20.4	54.2
Apr. 23	22 00.91	-04 14.2	7.017	6.614	+0.43	+3.1	20.3	62.5
May 3	22 05.16	-03 43.4	6.888	6.629	+0.35	+2.8	20.3	71.0
May 13	22 08.70	-03 15.7	6.752	6.644	+0.28	+2.4	20.3	79.6
May 23	22 11.46	-02 51.6	6.611	6.659	+0.19	+2.0	20.3	88.3
June 2	22 13.38	-02 31.8	6.470	6.674	+0.11	+1.5	20.2	97.3
June 12	22 14.43	-02 17.0	6.332	6.690	+0.02	+0.9	20.2	106.4
June 22	22 14.60	-02 07.5	6.202	6.706	-0.07	+0.4	20.2	115.7
July 2	22 13.90	-02 03.8	6.083	6.722	-0.15	-0.2	20.1	125.3
July 12	22 12.38	-02 06.0	5.981	6.738	-0.23	-0.8	20.1	135.0
July 22	22 10.13	-02 14.1	5.898	6.754	-0.28	-1.4	20.1	144.8
Aug. 1	22 07.28	-02 27.7	5.839	6.770	-0.33	-1.8	20.1	154.7
Aug. 11	22 04.02	-02 45.9	5.807	6.787	-0.35	-2.2	20.1	164.1
Aug. 21	22 00.54	-03 08.0	5.803	6.804	-0.35	-2.5	20.1	171.0
Aug. 31	21 57.08	-03 32.6	5.828	6.821	-0.32	-2.6	20.1	168.6
Sept. 10	21 53.86	-03 58.3	5.883	6.838	-0.28	-2.5	20.2	160.0
Sept. 20	21 51.09	-04 23.7	5.966	6.855	-0.21	-2.4	20.2	150.1
Sept. 30	21 48.95	-04 47.5	6.074	6.872	-0.14	-2.1	20.3	140.1
Oct. 10	21 47.59	-05 08.6	6.205	6.890	-0.05	-1.7	20.3	130.0
Oct. 20	21 47.07	-05 25.9	6.355	6.907	+0.04	-1.3	20.4	120.0
Oct. 30	21 47.47	-05 38.8	6.519	6.925	+0.13	-0.8	20.5	110.2
Nov. 9	21 48.76	-05 46.9	6.693	6.943	+0.22	-0.3	20.6	100.5
Nov. 19	21 50.92	-05 49.9	6.873	6.961	+0.30	+0.2	20.6	91.0
Nov. 29	21 53.90	-05 47.7	7.053	6.979	+0.37	+0.7	20.7	81.7
Dec. 9	21 57.62	-05 40.5	7.230	6.997	+0.44	+1.2	20.8	72.5
Dec. 19	22 02.01	-05 28.4	7.399	7.015	+0.49	+1.7	20.8	63.5
Dec. 29	22 06.95	-05 11.8	7.557	7.034	+0.54	+2.1	20.9	54.6
Jan. 8	22 12.37	-04 51.1	7.702	7.052	+0.58	+2.5	21.0	45.9
Jan. 18	22 18.18	-04 26.6	7.829	7.071	+0.61	+2.8	21.0	37.3
Jan. 28	22 24.27	-03 58.8	7.937	7.090	+0.63	+3.1	21.1	28.8
Feb. 7	22 30.56	-03 28.2	8.024	7.109	+0.64	+3.3	21.1	20.6
Feb. 17	22 36.97	-02 55.4	8.089	7.128	+0.64	+3.5	21.1	12.6
Feb. 27	22 43.41	-02 20.8	8.131	7.147	+0.64	+3.6	21.2	6.1
Mar. 9	22 49.82	-01 45.0	8.150	7.166	+0.63	+3.6	21.2	7.4
Mar. 19	22 56.11	-01 08.6	8.145	7.186	+0.61	+3.7	21.2	14.5
Mar. 29	23 02.21	-00 32.1	8.118	7.205	+0.58	+3.6	21.2	22.4

Comet C/2008 FK75 (Lemmon-Siding Spring)

Epoch = 2012 July 12.0 TT
T = 2010 Sept. 29.25665 TT
Peri. = 80.42043
Node = 218.26849 2000.0
Incl. = 61.17599
q = 4.5108605 AU
e = 1.0025455

m1 = 5.8 + 5 log(Delta) + 10.0 log(r(t+90))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	23 00.95	+33 41.9	5.874	5.806	+0.82	-5.0	17.6	81.2
Jan. 14	23 09.11	+32 51.6	6.050	5.853	+0.85	-3.9	17.7	73.8
Jan. 24	23 17.65	+32 12.4	6.224	5.902	+0.88	-2.9	17.8	66.6
Feb. 3	23 26.47	+31 43.7	6.391	5.951	+0.90	-1.9	17.9	59.4
Feb. 13	23 35.48	+31 24.5	6.550	6.000	+0.91	-1.1	18.0	52.5
Feb. 23	23 44.58	+31 13.8	6.697	6.050	+0.91	-0.3	18.1	45.9
Mar. 4	23 53.70	+31 10.8	6.829	6.100	+0.91	+0.4	18.1	39.8
Mar. 14	00 02.76	+31 14.3	6.946	6.151	+0.89	+0.9	18.2	34.3
Mar. 24	00 11.69	+31 23.5	7.045	6.202	+0.87	+1.4	18.3	30.0
Apr. 3	00 20.42	+31 37.3	7.126	6.253	+0.85	+1.8	18.3	27.2
Apr. 13	00 28.89	+31 54.8	7.186	6.304	+0.81	+2.0	18.4	26.4
Apr. 23	00 37.03	+32 15.3	7.227	6.356	+0.77	+2.3	18.4	27.9
May 3	00 44.77	+32 37.9	7.248	6.409	+0.73	+2.4	18.5	31.4
May 13	00 52.05	+33 01.9	7.249	6.461	+0.67	+2.5	18.5	36.2
May 23	00 58.78	+33 26.5	7.231	6.514	+0.61	+2.4	18.5	42.0
June 2	01 04.90	+33 50.9	7.195	6.567	+0.54	+2.4	18.6	48.5
June 12	01 10.32	+34 14.5	7.143	6.620	+0.46	+2.2	18.6	55.4
June 22	01 14.96	+34 36.5	7.077	6.674	+0.38	+2.0	18.6	62.8
July 2	01 18.74	+34 56.1	6.999	6.728	+0.28	+1.6	18.6	70.5
July 12	01 21.59	+35 12.2	6.912	6.782	+0.19	+1.2	18.6	78.4
July 22	01 23.44	+35 24.2	6.820	6.836	+0.08	+0.7	18.6	86.7
Aug. 1	01 24.25	+35 30.7	6.725	6.890	-0.02	0.0	18.6	95.1
Aug. 11	01 24.00	+35 30.9	6.632	6.945	-0.13	-0.7	18.6	103.9
Aug. 21	01 22.72	+35 23.7	6.546	7.000	-0.22	-1.6	18.6	112.8
Aug. 31	01 20.47	+35 08.0	6.470	7.055	-0.31	-2.5	18.6	121.8
Sept.10	01 17.39	+34 43.1	6.410	7.110	-0.37	-3.4	18.6	130.9
Sept.20	01 13.65	+34 08.8	6.370	7.165	-0.42	-4.4	18.7	139.7
Sept.30	01 09.49	+33 25.1	6.354	7.221	-0.43	-5.2	18.7	147.7
Oct. 10	01 05.16	+32 33.0	6.365	7.276	-0.42	-5.9	18.7	154.1
Oct. 20	01 00.94	+31 33.8	6.405	7.332	-0.39	-6.4	18.8	157.0
Oct. 30	00 57.08	+30 29.5	6.476	7.388	-0.33	-6.7	18.8	155.0
Nov. 9	00 53.81	+29 22.6	6.577	7.444	-0.25	-6.7	18.9	149.1
Nov. 19	00 51.29	+28 15.4	6.706	7.500	-0.17	-6.5	19.0	141.0
Nov. 29	00 49.64	+27 10.3	6.862	7.556	-0.07	-6.1	19.0	131.9
Dec. 9	00 48.90	+26 09.3	7.039	7.613	+0.02	-5.5	19.1	122.4
Dec. 19	00 49.10	+25 13.8	7.234	7.669	+0.11	-4.9	19.2	112.8
Dec. 29	00 50.19	+24 24.9	7.443	7.726	+0.19	-4.2	19.3	103.1
Jan. 8	00 52.12	+23 43.2	7.659	7.782	+0.27	-3.4	19.4	93.6
Jan. 18	00 54.82	+23 08.8	7.879	7.839	+0.34	-2.7	19.5	84.1
Jan. 28	00 58.19	+22 41.5	8.096	7.896	+0.39	-2.1	19.6	74.8
Feb. 7	01 02.13	+22 21.0	8.308	7.953	+0.44	-1.4	19.7	65.7
Feb. 17	01 06.57	+22 06.7	8.509	8.009	+0.48	-0.9	19.8	56.7
Feb. 27	01 11.40	+21 57.9	8.696	8.066	+0.51	-0.4	19.8	48.0
Mar. 9	01 16.54	+21 53.8	8.866	8.123	+0.54	0.0	19.9	39.4
Mar. 19	01 21.90	+21 53.9	9.017	8.180	+0.55	+0.3	20.0	31.1
Mar. 29	01 27.40	+21 57.2	9.145	8.237	+0.56	+0.6	20.0	23.2

Comet 31P/Schwassmann-Wachmann

Epoch = 2012 July 12.0 TT
T = 2010 Sept. 29.83668 TT
Peri. = 17.98656 e = 0.1936731
Node = 114.16411 2000.0 a = 4.2460557 AU
Incl. = 4.54616 n = 0.11264854
q = 3.4237089 AU P = 8.75 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion ″/m	m1	Elong. °
Jan. 4	14 26.59	-10 03.8	4.162	3.856	+0.80	-3.0	20.1	65.3
Jan. 14	14 34.63	-10 34.0	4.036	3.872	+0.70	-2.3	20.0	73.4
Jan. 24	14 41.61	-10 57.0	3.904	3.888	+0.57	-1.6	20.0	81.8
Feb. 3	14 47.35	-11 12.5	3.768	3.904	+0.43	-0.8	20.0	90.5
Feb. 13	14 51.70	-11 20.6	3.633	3.920	+0.28	0.0	19.9	99.6
Feb. 23	14 54.49	-11 21.0	3.502	3.936	+0.11	+0.7	19.8	109.0
Mar. 4	14 55.62	-11 13.9	3.379	3.952	-0.06	+1.4	19.8	118.7
Mar. 14	14 55.03	-10 59.9	3.269	3.969	-0.23	+2.0	19.8	128.8
Mar. 24	14 52.76	-10 39.6	3.175	3.985	-0.38	+2.5	19.7	139.3
Apr. 3	14 48.96	-10 14.3	3.104	4.001	-0.50	+2.9	19.7	150.0
Apr. 13	14 43.94	-09 45.7	3.057	4.018	-0.58	+3.0	19.7	160.8
Apr. 23	14 38.09	-09 16.1	3.038	4.034	-0.62	+2.8	19.7	170.9
May 3	14 31.93	-08 48.0	3.049	4.051	-0.60	+2.4	19.7	172.7
May 13	14 25.96	-08 23.7	3.088	4.067	-0.53	+1.8	19.8	163.5
May 23	14 20.67	-08 05.5	3.156	4.083	-0.42	+1.1	19.9	152.9
June 2	14 16.44	-07 54.9	3.249	4.100	-0.29	+0.2	20.0	142.5
June 12	14 13.54	-07 52.6	3.363	4.116	-0.14	-0.6	20.1	132.4
June 22	14 12.09	-07 58.8	3.496	4.133	+0.01	-1.4	20.2	122.6
July 2	14 12.15	-08 13.3	3.642	4.149	+0.15	-2.2	20.3	113.2
July 12	14 13.67	-08 35.1	3.798	4.166	+0.29	-2.8	20.4	104.2
July 22	14 16.57	-09 03.6	3.961	4.182	+0.42	-3.4	20.5	95.5
Aug. 1	14 20.74	-09 37.5	4.125	4.198	+0.53	-3.8	20.6	87.1
Aug. 11	14 26.05	-10 15.9	4.289	4.215	+0.63	-4.2	20.7	79.0
Aug. 21	14 32.39	-10 57.7	4.449	4.231	+0.72	-4.4	20.8	71.1
Aug. 31	14 39.63	-11 42.0	4.602	4.247	+0.80	-4.6	20.9	63.4
Sept.10	14 47.67	-12 27.9	4.746	4.263	+0.87	-4.7	21.0	55.8
Sept.20	14 56.41	-13 14.5	4.880	4.279	+0.93	-4.7	21.1	48.4
Sept.30	15 05.75	-14 01.1	5.001	4.295	+0.98	-4.6	21.2	41.0
Oct. 10	15 15.60	-14 46.9	5.107	4.311	+1.03	-4.4	21.3	33.7
Oct. 20	15 25.88	-15 31.3	5.196	4.327	+1.06	-4.2	21.3	26.4
Oct. 30	15 36.49	-16 13.7	5.269	4.343	+1.09	-4.0	21.4	19.1
Nov. 9	15 47.36	-16 53.7	5.323	4.359	+1.10	-3.7	21.4	12.0
Nov. 19	15 58.40	-17 30.7	5.357	4.374	+1.11	-3.4	21.5	5.1
Nov. 29	16 09.52	-18 04.3	5.372	4.390	+1.11	-3.0	21.5	4.3
Dec. 9	16 20.63	-18 34.4	5.368	4.405	+1.10	-2.6	21.5	11.0
Dec. 19	16 31.62	-19 00.7	5.343	4.420	+1.08	-2.2	21.5	18.4
Dec. 29	16 42.39	-19 23.2	5.299	4.435	+1.04	-1.9	21.5	25.9
Jan. 8	16 52.83	-19 41.7	5.236	4.450	+1.00	-1.5	21.5	33.6
Jan. 18	17 02.82	-19 56.4	5.156	4.465	+0.94	-1.1	21.5	41.4
Jan. 28	17 12.23	-20 07.6	5.059	4.480	+0.87	-0.8	21.5	49.3
Feb. 7	17 20.95	-20 15.5	4.948	4.494	+0.79	-0.5	21.5	57.4
Feb. 17	17 28.82	-20 20.4	4.826	4.509	+0.69	-0.2	21.4	65.7
Feb. 27	17 35.70	-20 22.9	4.693	4.523	+0.58	-0.1	21.4	74.1
Mar. 9	17 41.47	-20 23.4	4.555	4.538	+0.45	+0.1	21.3	82.7
Mar. 19	17 45.98	-20 22.5	4.413	4.552	+0.31	+0.2	21.3	91.7
Mar. 29	17 49.10	-20 20.6	4.272	4.566	+0.16	+0.2	21.2	100.8

Comet 240P/NEAT

Epoch = 2012 July 12.0 TT
T = 2010 Oct. 4.52726 TT
Peri. = 352.04280 e = 0.4502243
Node = 74.95804 2000.0 a = 3.8655122 AU
Incl. = 23.52282 n = 0.12968612
q = 2.1251647 AU P = 7.60 years

m1 = 5.0 + 5 log(Delta) + 17.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	13 38.54	+14 45.8	3.644	3.710	+0.53	+2.1	17.8	86.2
Jan. 14	13 43.79	+15 07.3	3.544	3.751	+0.37	+3.3	17.8	94.5
Jan. 24	13 47.46	+15 40.3	3.445	3.791	+0.19	+4.3	17.8	103.1
Feb. 3	13 49.36	+16 23.8	3.353	3.831	0.00	+5.2	17.8	111.9
Feb. 13	13 49.40	+17 15.5	3.271	3.871	-0.19	+5.7	17.9	120.8
Feb. 23	13 47.52	+18 12.5	3.203	3.910	-0.37	+5.8	17.9	129.7
Mar. 4	13 43.79	+19 10.6	3.154	3.949	-0.54	+5.4	17.9	138.2
Mar. 14	13 38.43	+20 05.1	3.128	3.987	-0.66	+4.6	18.0	145.5
Mar. 24	13 31.79	+20 51.1	3.127	4.025	-0.74	+3.3	18.1	150.6
Apr. 3	13 24.38	+21 24.2	3.153	4.062	-0.76	+1.7	18.1	152.0
Apr. 13	13 16.78	+21 41.4	3.206	4.099	-0.72	0.0	18.3	149.2
Apr. 23	13 09.55	+21 41.3	3.286	4.136	-0.63	-1.7	18.4	143.3
May 3	13 03.20	+21 24.0	3.390	4.172	-0.51	-3.3	18.5	135.8
May 13	12 58.11	+20 51.1	3.515	4.208	-0.36	-4.6	18.7	127.5
May 23	12 54.47	+20 05.0	3.658	4.243	-0.21	-5.7	18.8	119.1
June 2	12 52.39	+19 08.2	3.815	4.278	-0.06	-6.5	19.0	110.6
June 12	12 51.82	+18 03.2	3.981	4.312	+0.09	-7.1	19.1	102.3
June 22	12 52.70	+16 52.2	4.154	4.346	+0.22	-7.5	19.3	94.1
July 2	12 54.89	+15 37.1	4.329	4.380	+0.34	-7.8	19.4	86.1
July 12	12 58.24	+14 19.3	4.503	4.413	+0.44	-7.9	19.5	78.4
July 22	13 02.61	+13 00.1	4.674	4.445	+0.53	-8.0	19.7	70.8
Aug. 1	13 07.88	+11 40.4	4.839	4.477	+0.60	-7.9	19.8	63.4
Aug. 11	13 13.90	+10 21.1	4.995	4.509	+0.67	-7.8	19.9	56.1
Aug. 21	13 20.57	+09 02.8	5.139	4.540	+0.72	-7.7	20.1	49.0
Aug. 31	13 27.78	+07 46.2	5.271	4.571	+0.77	-7.5	20.2	42.0
Sept. 10	13 35.43	+06 31.6	5.387	4.601	+0.80	-7.2	20.3	35.2
Sept. 20	13 43.44	+05 19.7	5.487	4.631	+0.83	-6.9	20.3	28.6
Sept. 30	13 51.73	+04 10.9	5.569	4.660	+0.85	-6.5	20.4	22.5
Oct. 10	14 00.22	+03 05.6	5.632	4.689	+0.86	-6.1	20.5	17.4
Oct. 20	14 08.83	+02 04.2	5.675	4.717	+0.86	-5.7	20.6	14.4
Oct. 30	14 17.47	+01 07.2	5.698	4.745	+0.86	-5.2	20.6	14.9
Nov. 9	14 26.07	+00 14.9	5.700	4.773	+0.85	-4.7	20.7	18.8
Nov. 19	14 34.53	-00 32.2	5.681	4.800	+0.82	-4.2	20.7	24.5
Nov. 29	14 42.77	-01 13.8	5.642	4.826	+0.79	-3.6	20.7	31.3
Dec. 9	14 50.68	-01 49.7	5.583	4.852	+0.75	-3.0	20.7	38.6
Dec. 19	14 58.16	-02 19.4	5.506	4.878	+0.69	-2.3	20.7	46.2
Dec. 29	15 05.07	-02 42.9	5.413	4.903	+0.62	-1.7	20.8	54.2
Jan. 8	15 11.31	-02 59.9	5.305	4.928	+0.54	-1.1	20.7	62.4
Jan. 18	15 16.73	-03 10.4	5.186	4.952	+0.45	-0.4	20.7	70.9
Jan. 28	15 21.21	-03 14.5	5.058	4.976	+0.34	+0.2	20.7	79.6
Feb. 7	15 24.61	-03 12.3	4.924	4.999	+0.22	+0.8	20.7	88.6
Feb. 17	15 26.80	-03 04.2	4.790	5.022	+0.09	+1.3	20.7	97.9
Feb. 27	15 27.69	-02 50.9	4.659	5.044	-0.05	+1.8	20.6	107.4
Mar. 9	15 27.22	-02 33.2	4.535	5.066	-0.19	+2.1	20.6	117.2
Mar. 19	15 25.35	-02 12.2	4.425	5.088	-0.32	+2.3	20.6	127.1
Mar. 29	15 22.15	-01 49.5	4.332	5.109	-0.44	+2.3	20.6	137.1

Comet 254P/McNaught

Epoch = 2012 July 12.0 TT
T = 2010 Oct. 25.18108 TT
Peri. = 220.64550 e = 0.3126921
Node = 129.93022 2000.0 a = 4.6752723 AU
Incl. = 32.52707 n = 0.09749755
q = 3.2133516 AU P = 10.11 years

m1 = 7.8 + 5 log(Delta) + 15.0 log(r(t-160))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	04 10.90	-15 17.6	3.250	3.892	-0.27	+9.0	18.6	124.5
Jan. 14	04 08.21	-13 47.9	3.368	3.918	-0.10	+9.8	18.7	117.3
Jan. 24	04 07.22	-12 10.0	3.500	3.943	+0.07	+10.2	18.8	109.8
Feb. 3	04 07.94	-10 27.9	3.644	3.969	+0.23	+10.3	18.9	102.1
Feb. 13	04 10.28	-08 44.6	3.796	3.994	+0.38	+10.2	19.1	94.4
Feb. 23	04 14.10	-07 02.8	3.952	4.020	+0.51	+9.8	19.2	86.8
Mar. 4	04 19.24	-05 24.4	4.110	4.046	+0.63	+9.4	19.3	79.4
Mar. 14	04 25.53	-03 50.8	4.266	4.072	+0.73	+8.8	19.4	72.1
Mar. 24	04 32.81	-02 22.9	4.418	4.098	+0.81	+8.1	19.5	65.0
Apr. 3	04 40.95	-01 01.6	4.564	4.124	+0.88	+7.4	19.7	58.1
Apr. 13	04 49.77	+00 12.7	4.701	4.150	+0.94	+6.7	19.8	51.4
Apr. 23	04 59.18	+01 19.8	4.827	4.177	+0.99	+6.0	19.9	44.9
May 3	05 09.04	+02 19.5	4.942	4.203	+1.02	+5.2	20.0	38.7
May 13	05 19.24	+03 11.7	5.042	4.229	+1.05	+4.5	20.0	32.8
May 23	05 29.69	+03 56.4	5.128	4.255	+1.06	+3.7	20.1	27.4
June 2	05 40.30	+04 33.9	5.198	4.281	+1.07	+3.0	20.2	22.8
June 12	05 50.96	+05 04.2	5.252	4.307	+1.06	+2.3	20.3	19.4
June 22	06 01.60	+05 27.7	5.289	4.334	+1.05	+1.7	20.3	18.0
July 2	06 12.13	+05 44.6	5.308	4.360	+1.03	+1.1	20.4	19.0
July 12	06 22.46	+05 55.3	5.310	4.386	+1.01	+0.5	20.4	22.2
July 22	06 32.52	+06 00.1	5.294	4.412	+0.97	0.0	20.4	26.9
Aug. 1	06 42.20	+05 59.7	5.261	4.438	+0.92	-0.5	20.5	32.4
Aug. 11	06 51.43	+05 54.4	5.211	4.463	+0.87	-0.9	20.5	38.6
Aug. 21	07 00.11	+05 45.1	5.145	4.489	+0.80	-1.3	20.5	45.2
Aug. 31	07 08.12	+05 32.2	5.064	4.515	+0.73	-1.5	20.5	52.1
Sept.10	07 15.38	+05 16.8	4.969	4.540	+0.64	-1.7	20.5	59.4
Sept.20	07 21.76	+04 59.6	4.863	4.566	+0.54	-1.8	20.5	67.0
Sept.30	07 27.13	+04 41.7	4.747	4.591	+0.43	-1.7	20.5	75.0
Oct. 10	07 31.39	+04 24.4	4.625	4.616	+0.30	-1.6	20.5	83.3
Oct. 20	07 34.40	+04 08.7	4.499	4.641	+0.17	-1.2	20.5	92.0
Oct. 30	07 36.05	+03 56.3	4.373	4.666	+0.02	-0.8	20.4	101.1
Nov. 9	07 36.28	+03 48.5	4.252	4.691	-0.12	-0.2	20.4	110.5
Nov. 19	07 35.03	+03 46.9	4.140	4.716	-0.27	+0.6	20.4	120.3
Nov. 29	07 32.34	+03 52.9	4.042	4.741	-0.40	+1.5	20.4	130.3
Dec. 9	07 28.33	+04 07.5	3.964	4.765	-0.51	+2.4	20.4	140.5
Dec. 19	07 23.21	+04 31.3	3.910	4.789	-0.59	+3.3	20.4	150.3
Dec. 29	07 17.32	+05 04.3	3.883	4.813	-0.63	+4.1	20.4	158.9
Jan. 8	07 11.07	+05 45.7	3.887	4.837	-0.62	+4.8	20.5	163.4
Jan. 18	07 04.89	+06 33.9	3.922	4.861	-0.56	+5.3	20.5	160.7
Jan. 28	06 59.25	+07 27.1	3.988	4.885	-0.47	+5.6	20.6	152.8
Feb. 7	06 54.51	+08 23.0	4.083	4.908	-0.36	+5.7	20.7	143.2
Feb. 17	06 50.96	+09 19.5	4.204	4.932	-0.22	+5.5	20.8	133.1
Feb. 27	06 48.76	+10 14.9	4.345	4.955	-0.08	+5.3	20.9	123.0
Mar. 9	06 48.00	+11 07.8	4.504	4.978	+0.07	+4.9	21.0	113.1
Mar. 19	06 48.65	+11 57.0	4.674	5.001	+0.20	+4.5	21.1	103.5
Mar. 29	06 50.65	+12 41.9	4.850	5.023	+0.32	+4.0	21.2	94.2

Comet C/2010 FB87 (WISE-Garradd)

Epoch = 2012 July 12.0 TT
T = 2010 Nov. 7.23292 TT
Peri. = 265.04089
Node = 89.90200 2000.0
Incl. = 107.63942
q = 2.8442016 AU
e = 0.9898240

m1 = 7.8 + 5 log(Delta) + 10.0 log(r(t-200))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	06 07.14	+07 25.0	3.992	4.930	-1.07	+8.2	16.4	160.7
Jan. 14	05 56.47	+08 46.9	4.110	5.001	-0.94	+8.1	16.5	152.2
Jan. 24	05 47.07	+10 08.4	4.265	5.072	-0.78	+7.9	16.7	141.5
Feb. 3	05 39.27	+11 27.5	4.450	5.143	-0.61	+7.5	16.8	130.4
Feb. 13	05 33.19	+12 42.9	4.660	5.214	-0.43	+7.1	17.0	119.3
Feb. 23	05 28.85	+13 54.0	4.888	5.286	-0.27	+6.6	17.2	108.5
Mar. 4	05 26.18	+15 00.5	5.128	5.357	-0.11	+6.2	17.3	98.0
Mar. 14	05 25.03	+16 02.4	5.373	5.429	+0.02	+5.8	17.5	87.9
Mar. 24	05 25.24	+16 59.9	5.618	5.500	+0.14	+5.3	17.7	78.1
Apr. 3	05 26.61	+17 53.3	5.857	5.572	+0.24	+5.0	17.8	68.7
Apr. 13	05 28.98	+18 42.9	6.087	5.643	+0.32	+4.6	18.0	59.4
Apr. 23	05 32.18	+19 28.9	6.302	5.715	+0.39	+4.3	18.1	50.5
May 3	05 36.04	+20 11.6	6.501	5.786	+0.44	+4.0	18.3	41.7
May 13	05 40.41	+20 51.4	6.679	5.858	+0.48	+3.7	18.4	33.0
May 23	05 45.18	+21 28.5	6.836	5.929	+0.50	+3.5	18.5	24.5
June 2	05 50.21	+22 03.3	6.969	6.001	+0.52	+3.3	18.6	16.1
June 12	05 55.37	+22 36.1	7.077	6.072	+0.52	+3.1	18.7	7.7
June 22	06 00.58	+23 07.1	7.160	6.144	+0.51	+3.0	18.8	0.8
July 2	06 05.71	+23 36.9	7.217	6.215	+0.49	+2.9	18.9	9.0
July 12	06 10.66	+24 05.8	7.249	6.286	+0.47	+2.8	19.0	17.5
July 22	06 15.33	+24 34.2	7.255	6.357	+0.43	+2.8	19.0	26.0
Aug. 1	06 19.60	+25 02.5	7.238	6.429	+0.38	+2.9	19.1	34.6
Aug. 11	06 23.36	+25 31.3	7.199	6.500	+0.32	+3.0	19.1	43.3
Aug. 21	06 26.52	+26 00.9	7.141	6.570	+0.24	+3.1	19.2	52.3
Aug. 31	06 28.93	+26 31.7	7.065	6.641	+0.16	+3.2	19.2	61.4
Sept. 10	06 30.50	+27 04.2	6.976	6.712	+0.06	+3.4	19.2	70.8
Sept. 20	06 31.10	+27 38.6	6.878	6.783	-0.05	+3.6	19.3	80.4
Sept. 30	06 30.61	+28 15.0	6.774	6.853	-0.16	+3.8	19.3	90.3
Oct. 10	06 28.96	+28 53.2	6.672	6.924	-0.29	+4.0	19.3	100.5
Oct. 20	06 26.08	+29 33.0	6.575	6.994	-0.41	+4.1	19.3	111.0
Oct. 30	06 21.94	+30 13.5	6.491	7.064	-0.53	+4.0	19.4	121.8
Nov. 9	06 16.59	+30 53.9	6.424	7.134	-0.64	+3.9	19.4	132.8
Nov. 19	06 10.15	+31 32.8	6.382	7.204	-0.73	+3.6	19.4	143.9
Nov. 29	06 02.83	+32 09.0	6.369	7.274	-0.79	+3.2	19.5	154.9
Dec. 9	05 54.90	+32 41.1	6.388	7.344	-0.82	+2.7	19.6	165.1
Dec. 19	05 46.71	+33 08.4	6.442	7.413	-0.81	+2.2	19.6	170.3
Dec. 29	05 38.64	+33 30.5	6.531	7.483	-0.76	+1.7	19.7	164.3
Jan. 8	05 31.03	+33 47.4	6.655	7.552	-0.68	+1.2	19.8	154.1
Jan. 18	05 24.20	+33 59.9	6.811	7.621	-0.58	+0.9	19.9	143.2
Jan. 28	05 18.39	+34 08.8	6.994	7.690	-0.47	+0.7	20.0	132.2
Feb. 7	05 13.74	+34 15.3	7.199	7.759	-0.34	+0.5	20.1	121.4
Feb. 17	05 10.31	+34 20.4	7.422	7.828	-0.22	+0.5	20.2	110.8
Feb. 27	05 08.10	+34 25.2	7.655	7.896	-0.10	+0.5	20.3	100.5
Mar. 9	05 07.06	+34 30.3	7.894	7.965	0.00	+0.6	20.5	90.5
Mar. 19	05 07.09	+34 36.2	8.133	8.033	+0.10	+0.7	20.6	80.7
Mar. 29	05 08.10	+34 43.2	8.367	8.101	+0.18	+0.8	20.7	71.3

Comet C/2010 L3 (Catalina)

Epoch = 2012 July 12.0 TT
T = 2010 Nov. 10.20375 TT
Peri. = 121.75201
Node = 38.27057 2000.0
Incl. = 102.63399
q = 9.8823183 AU
e = 1.0016724

m1 = 6.8 + 5 log(Delta) + 7.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	16 01.62	+16 43.7	10.630	10.145	+0.18	-0.2	19.5	58.1
Jan. 14	16 03.38	+16 41.8	10.530	10.157	+0.13	+0.3	19.5	65.3
Jan. 24	16 04.66	+16 44.9	10.417	10.170	+0.07	+0.8	19.4	72.8
Feb. 3	16 05.36	+16 52.5	10.295	10.183	+0.01	+1.1	19.4	80.7
Feb. 13	16 05.42	+17 03.9	10.168	10.196	-0.06	+1.4	19.4	88.9
Feb. 23	16 04.78	+17 18.2	10.041	10.210	-0.14	+1.6	19.4	97.1
Mar. 4	16 03.41	+17 34.4	9.917	10.224	-0.21	+1.7	19.4	105.3
Mar. 14	16 01.29	+17 51.3	9.801	10.238	-0.29	+1.6	19.3	113.4
Mar. 24	15 58.44	+18 07.6	9.699	10.252	-0.35	+1.4	19.3	121.3
Apr. 3	15 54.90	+18 21.9	9.614	10.267	-0.41	+1.1	19.3	128.6
Apr. 13	15 50.77	+18 32.9	9.549	10.281	-0.46	+0.6	19.3	134.9
Apr. 23	15 46.14	+18 39.4	9.508	10.297	-0.50	+0.1	19.3	139.8
May 3	15 41.17	+18 40.3	9.493	10.312	-0.52	-0.5	19.3	142.6
May 13	15 36.01	+18 34.9	9.504	10.327	-0.52	-1.2	19.3	142.8
May 23	15 30.85	+18 22.7	9.543	10.343	-0.50	-1.9	19.3	140.4
June 2	15 25.84	+18 03.7	9.608	10.359	-0.47	-2.6	19.3	135.8
June 12	15 21.14	+17 38.2	9.698	10.376	-0.43	-3.2	19.4	129.7
June 22	15 16.89	+17 06.6	9.810	10.392	-0.37	-3.7	19.4	122.6
July 2	15 13.18	+16 29.8	9.941	10.409	-0.31	-4.1	19.4	114.9
July 12	15 10.10	+15 48.6	10.087	10.426	-0.24	-4.5	19.5	106.8
July 22	15 07.68	+15 04.0	10.243	10.444	-0.17	-4.7	19.5	98.6
Aug. 1	15 05.94	+14 16.9	10.407	10.461	-0.11	-4.9	19.5	90.3
Aug. 11	15 04.86	+13 28.3	10.572	10.479	-0.04	-4.9	19.6	82.0
Aug. 21	15 04.44	+12 38.9	10.736	10.497	+0.02	-4.9	19.6	73.7
Aug. 31	15 04.61	+11 49.7	10.893	10.516	+0.07	-4.9	19.6	65.5
Sept.10	15 05.34	+11 01.2	11.041	10.534	+0.12	-4.7	19.7	57.5
Sept.20	15 06.55	+10 14.0	11.175	10.553	+0.16	-4.5	19.7	49.7
Sept.30	15 08.19	+09 28.8	11.292	10.572	+0.20	-4.3	19.7	42.2
Oct. 10	15 10.17	+08 45.9	11.389	10.591	+0.23	-4.0	19.8	35.4
Oct. 20	15 12.44	+08 05.8	11.465	10.611	+0.25	-3.7	19.8	29.6
Oct. 30	15 14.90	+07 28.7	11.518	10.630	+0.26	-3.4	19.8	25.5
Nov. 9	15 17.48	+06 55.1	11.545	10.650	+0.26	-3.0	19.8	24.3
Nov. 19	15 20.10	+06 25.1	11.548	10.670	+0.26	-2.6	19.8	26.3
Nov. 29	15 22.68	+05 58.9	11.525	10.691	+0.24	-2.2	19.8	30.9
Dec. 9	15 25.12	+05 36.7	11.478	10.711	+0.22	-1.8	19.8	37.3
Dec. 19	15 27.35	+05 18.5	11.408	10.732	+0.19	-1.4	19.8	44.8
Dec. 29	15 29.28	+05 04.4	11.317	10.753	+0.16	-1.0	19.8	52.9
Jan. 8	15 30.83	+04 54.1	11.209	10.774	+0.11	-0.6	19.8	61.5
Jan. 18	15 31.93	+04 47.7	11.086	10.796	+0.06	-0.3	19.8	70.4
Jan. 28	15 32.50	+04 44.7	10.953	10.817	0.00	0.0	19.8	79.5
Feb. 7	15 32.48	+04 44.8	10.814	10.839	-0.06	+0.3	19.7	88.9
Feb. 17	15 31.84	+04 47.5	10.674	10.861	-0.13	+0.5	19.7	98.3
Feb. 27	15 30.54	+04 52.3	10.539	10.884	-0.20	+0.6	19.7	107.9
Mar. 9	15 28.58	+04 58.3	10.413	10.906	-0.26	+0.7	19.7	117.4
Mar. 19	15 25.98	+05 04.9	10.302	10.929	-0.32	+0.6	19.7	126.9
Mar. 29	15 22.79	+05 11.1	10.210	10.952	-0.37	+0.5	19.6	136.1

Comet C/2009 UG89 (Lemmon)

Epoch = 2012 July 12.0 TT
T = 2010 Dec. 16.25203 TT
Peri. = 60.66048
Node = 321.03420 2000.0
Incl. = 130.09275
q = 3.9305993 AU
e = 1.0084675

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	14 41.52	+28 38.3	5.185	5.107	-0.16	+7.2	18.7	80.0
Jan. 14	14 39.92	+29 50.5	5.092	5.159	-0.32	+8.4	18.7	88.4
Jan. 24	14 36.75	+31 14.4	5.000	5.212	-0.50	+9.3	18.7	96.9
Feb. 3	14 31.78	+32 47.5	4.916	5.265	-0.70	+9.9	18.7	105.5
Feb. 13	14 24.83	+34 26.2	4.844	5.319	-0.91	+9.9	18.7	113.8
Feb. 23	14 15.78	+36 05.7	4.792	5.374	-1.11	+9.4	18.7	121.4
Mar. 4	14 04.65	+37 40.1	4.764	5.428	-1.30	+8.3	18.7	127.8
Mar. 14	13 51.69	+39 03.3	4.765	5.484	-1.44	+6.6	18.8	132.3
Mar. 24	13 37.32	+40 09.6	4.798	5.540	-1.51	+4.5	18.8	134.2
Apr. 3	13 22.19	+40 54.6	4.864	5.596	-1.51	+2.2	18.9	133.2
Apr. 13	13 07.07	+41 16.2	4.962	5.652	-1.44	-0.1	19.0	129.5
Apr. 23	12 52.68	+41 14.9	5.089	5.709	-1.30	-2.2	19.1	123.8
May 3	12 39.64	+40 52.9	5.242	5.767	-1.13	-3.9	19.2	116.8
May 13	12 28.35	+40 13.8	5.416	5.824	-0.93	-5.2	19.3	109.0
May 23	12 19.02	+39 21.8	5.606	5.882	-0.74	-6.1	19.4	100.9
June 2	12 11.65	+38 20.7	5.806	5.940	-0.55	-6.7	19.6	92.7
June 12	12 06.15	+37 14.1	6.012	5.999	-0.38	-7.0	19.7	84.4
June 22	12 02.34	+36 04.6	6.219	6.058	-0.23	-7.0	19.8	76.2
July 2	12 00.02	+34 54.3	6.421	6.117	-0.11	-6.9	19.9	68.2
July 12	11 58.96	+33 45.0	6.614	6.176	0.00	-6.7	20.0	60.4
July 22	11 58.97	+32 37.7	6.796	6.235	+0.09	-6.4	20.1	52.9
Aug. 1	11 59.85	+31 33.4	6.962	6.295	+0.16	-6.1	20.2	45.7
Aug. 11	12 01.44	+30 32.9	7.109	6.355	+0.21	-5.6	20.3	39.1
Aug. 21	12 03.58	+29 36.5	7.236	6.415	+0.25	-5.2	20.4	33.3
Aug. 31	12 06.12	+28 45.0	7.341	6.475	+0.28	-4.6	20.4	28.9
Sept.10	12 08.93	+27 58.7	7.421	6.535	+0.30	-4.1	20.5	26.5
Sept.20	12 11.89	+27 18.0	7.477	6.596	+0.30	-3.5	20.6	26.7
Sept.30	12 14.88	+26 43.5	7.508	6.656	+0.29	-2.8	20.6	29.6
Oct. 10	12 17.78	+26 15.5	7.515	6.717	+0.27	-2.1	20.7	34.6
Oct. 20	12 20.47	+25 54.5	7.497	6.778	+0.24	-1.4	20.7	41.0
Oct. 30	12 22.82	+25 41.0	7.458	6.839	+0.19	-0.6	20.7	48.4
Nov. 9	12 24.73	+25 35.2	7.399	6.900	+0.13	+0.2	20.7	56.4
Nov. 19	12 26.05	+25 37.5	7.322	6.961	+0.06	+1.1	20.8	64.9
Nov. 29	12 26.66	+25 48.0	7.233	7.022	-0.02	+1.9	20.8	73.8
Dec. 9	12 26.44	+26 06.7	7.135	7.084	-0.12	+2.7	20.8	83.1
Dec. 19	12 25.25	+26 33.2	7.032	7.145	-0.23	+3.4	20.8	92.6
Dec. 29	12 22.99	+27 06.7	6.932	7.207	-0.34	+3.9	20.8	102.4
Jan. 8	12 19.58	+27 46.1	6.839	7.268	-0.46	+4.3	20.8	112.2
Jan. 18	12 14.99	+28 29.6	6.759	7.330	-0.58	+4.5	20.8	122.1
Jan. 28	12 09.24	+29 14.9	6.700	7.391	-0.68	+4.5	20.8	131.7
Feb. 7	12 02.42	+29 59.6	6.665	7.453	-0.77	+4.1	20.8	140.6
Feb. 17	11 54.70	+30 40.9	6.658	7.514	-0.84	+3.5	20.9	148.0
Feb. 27	11 46.34	+31 16.1	6.684	7.576	-0.87	+2.7	20.9	152.4
Mar. 9	11 37.67	+31 43.2	6.744	7.638	-0.87	+1.8	21.0	152.5
Mar. 19	11 29.01	+32 00.8	6.836	7.700	-0.83	+0.7	21.0	148.1
Mar. 29	11 20.71	+32 08.0	6.961	7.761	-0.76	-0.3	21.1	140.9

Comet 9P/Tempel

Epoch = 2012 July 12.0 TT
T = 2011 Jan. 12.35028 TT
Peri. = 179.18685 e = 0.5158165
Node = 68.86865 2000.0 a = 3.1301127 AU
Incl. = 10.52740 n = 0.17797710
q = 1.5155489 AU P = 5.54 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	23 54.93	-09 43.7	3.374	3.214	+0.88	+8.7	19.0	72.3
Jan. 14	00 03.71	-08 17.1	3.558	3.263	+0.94	+8.7	19.3	64.8
Jan. 24	00 13.13	-06 49.7	3.735	3.310	+0.99	+8.7	19.5	57.4
Feb. 3	00 23.08	-05 22.2	3.902	3.357	+1.03	+8.7	19.6	50.2
Feb. 13	00 33.42	-03 55.3	4.057	3.403	+1.06	+8.6	19.8	43.1
Feb. 23	00 44.06	-02 29.5	4.198	3.448	+1.09	+8.4	20.0	36.1
Mar. 4	00 54.91	-01 05.3	4.324	3.492	+1.10	+8.2	20.1	29.2
Mar. 14	01 05.90	+00 16.7	4.434	3.535	+1.11	+7.9	20.3	22.5
Mar. 24	01 16.97	+01 36.0	4.526	3.578	+1.11	+7.6	20.4	15.9
Apr. 3	01 28.04	+02 52.3	4.601	3.620	+1.10	+7.3	20.5	9.9
Apr. 13	01 39.07	+04 05.2	4.657	3.661	+1.09	+6.9	20.6	5.9
Apr. 23	01 49.99	+05 14.2	4.694	3.701	+1.07	+6.5	20.7	8.0
May 3	02 00.73	+06 19.1	4.712	3.740	+1.05	+6.0	20.8	13.7
May 13	02 11.24	+07 19.5	4.711	3.778	+1.02	+5.6	20.8	20.1
May 23	02 21.45	+08 15.1	4.692	3.816	+0.98	+5.1	20.9	26.8
June 2	02 31.28	+09 05.8	4.655	3.853	+0.94	+4.5	20.9	33.7
June 12	02 40.64	+09 51.3	4.602	3.889	+0.88	+4.0	21.0	40.7
June 22	02 49.43	+10 31.4	4.532	3.924	+0.81	+3.5	21.0	47.9
July 2	02 57.55	+11 05.9	4.448	3.959	+0.73	+2.9	21.0	55.3
July 12	03 04.88	+11 34.8	4.351	3.992	+0.64	+2.3	21.0	62.9
July 22	03 11.27	+11 57.9	4.243	4.025	+0.53	+1.7	21.0	70.8
Aug. 1	03 16.59	+12 15.0	4.126	4.057	+0.41	+1.1	21.0	79.0
Aug. 11	03 20.68	+12 26.3	4.005	4.088	+0.27	+0.5	21.0	87.5
Aug. 21	03 23.37	+12 31.5	3.881	4.119	+0.12	-0.1	21.0	96.4
Aug. 31	03 24.53	+12 30.8	3.759	4.149	-0.05	-0.7	20.9	105.8
Sept.10	03 24.05	+12 24.2	3.644	4.178	-0.22	-1.2	20.9	115.5
Sept.20	03 21.85	+12 12.1	3.539	4.206	-0.39	-1.7	20.9	125.8
Sept.30	03 17.97	+11 55.0	3.451	4.233	-0.54	-2.1	20.9	136.4
Oct. 10	03 12.55	+11 33.8	3.384	4.260	-0.67	-2.4	20.9	147.5
Oct. 20	03 05.88	+11 09.8	3.343	4.286	-0.75	-2.5	20.9	158.8
Oct. 30	02 58.38	+10 44.7	3.331	4.311	-0.78	-2.4	20.9	169.6
Nov. 9	02 50.57	+10 20.7	3.350	4.336	-0.76	-2.1	21.0	173.3
Nov. 19	02 42.99	+09 60.0	3.402	4.359	-0.68	-1.6	21.1	163.6
Nov. 29	02 36.17	+09 44.4	3.485	4.382	-0.56	-0.9	21.1	152.3
Dec. 9	02 30.52	+09 35.6	3.595	4.405	-0.42	-0.1	21.2	141.0
Dec. 19	02 26.32	+09 34.3	3.730	4.426	-0.26	+0.7	21.3	129.9
Dec. 29	02 23.71	+09 40.9	3.883	4.447	-0.10	+1.4	21.5	119.2
Jan. 8	02 22.71	+09 55.0	4.050	4.467	+0.06	+2.1	21.6	108.9
Jan. 18	02 23.26	+10 16.1	4.226	4.486	+0.20	+2.7	21.7	99.0
Jan. 28	02 25.27	+10 43.1	4.405	4.505	+0.33	+3.2	21.8	89.5
Feb. 7	02 28.57	+11 15.2	4.584	4.523	+0.45	+3.6	21.9	80.3
Feb. 17	02 33.03	+11 51.4	4.757	4.540	+0.55	+3.9	22.0	71.4
Feb. 27	02 38.49	+12 30.6	4.923	4.557	+0.63	+4.1	.	62.8
Mar. 9	02 44.81	+13 11.9	5.077	4.572	+0.71	+4.3	.	54.5
Mar. 19	02 51.86	+13 54.5	5.217	4.587	+0.77	+4.3	.	46.4
Mar. 29	02 59.52	+14 37.7	5.342	4.602	+0.82	+4.3	.	38.5

Comet C/2009 Y1 (Catalina)

Epoch = 2012 July 12.0 TT
T = 2011 Jan. 28.86417 TT
Peri. = 127.40282
Node = 160.28476 2000.0
Incl. = 107.30857
q = 2.5210240 AU
e = 0.9931138

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	22 12.99	-35 03.5	4.927	4.280	+0.71	0.0	17.4	44.4
Jan. 14	22 20.12	-35 03.2	5.093	4.355	+0.77	0.0	17.5	37.6
Jan. 24	22 27.80	-35 03.3	5.236	4.430	+0.81	-0.2	17.7	31.8
Feb. 3	22 35.88	-35 05.2	5.357	4.506	+0.83	-0.5	17.8	27.6
Feb. 13	22 44.23	-35 10.1	5.453	4.582	+0.85	-0.9	17.9	25.5
Feb. 23	22 52.74	-35 19.1	5.526	4.658	+0.86	-1.4	18.0	26.1
Mar. 4	23 01.30	-35 33.5	5.575	4.734	+0.85	-2.1	18.1	29.1
Mar. 14	23 09.81	-35 54.3	5.602	4.810	+0.84	-2.8	18.2	34.0
Mar. 24	23 18.19	-36 22.7	5.609	4.886	+0.81	-3.7	18.2	39.9
Apr. 3	23 26.34	-36 59.8	5.596	4.962	+0.78	-4.7	18.3	46.6
Apr. 13	23 34.16	-37 46.6	5.567	5.038	+0.74	-5.7	18.4	53.7
Apr. 23	23 41.55	-38 44.1	5.525	5.115	+0.68	-6.9	18.4	61.0
May 3	23 48.40	-39 53.1	5.473	5.191	+0.62	-8.1	18.4	68.6
May 13	23 54.58	-41 14.1	5.414	5.267	+0.54	-9.3	18.5	76.3
May 23	23 59.94	-42 47.5	5.353	5.343	+0.44	-10.5	18.5	84.0
June 2	00 04.32	-44 32.8	5.293	5.419	+0.32	-11.6	18.6	91.7
June 12	00 07.52	-46 29.3	5.240	5.495	+0.18	-12.6	18.6	99.2
June 22	00 09.33	-48 35.4	5.197	5.571	+0.02	-13.3	18.6	106.4
July 2	00 09.49	-50 48.4	5.169	5.647	-0.17	-13.7	18.7	113.1
July 12	00 07.77	-53 04.9	5.159	5.722	-0.39	-13.6	18.7	119.1
July 22	00 03.91	-55 20.7	5.171	5.798	-0.62	-13.0	18.8	123.8
Aug. 1	23 57.75	-57 30.8	5.206	5.873	-0.85	-11.9	18.9	127.0
Aug. 11	23 49.26	-59 30.0	5.266	5.949	-1.07	-10.4	19.0	128.4
Aug. 21	23 38.57	-61 13.6	5.351	6.024	-1.24	-8.4	19.0	127.8
Aug. 31	23 26.14	-62 37.4	5.460	6.099	-1.35	-6.2	19.1	125.3
Sept. 10	23 12.69	-63 39.4	5.591	6.174	-1.36	-3.9	19.2	121.3
Sept. 20	22 59.12	-64 18.7	5.742	6.249	-1.27	-1.8	19.4	116.1
Sept. 30	22 46.43	-64 36.9	5.908	6.323	-1.10	0.0	19.5	110.1
Oct. 10	22 35.41	-64 36.6	6.087	6.398	-0.88	+1.5	19.6	103.7
Oct. 20	22 26.60	-64 21.5	6.275	6.472	-0.63	+2.6	19.7	97.0
Oct. 30	22 20.29	-63 55.3	6.467	6.546	-0.38	+3.4	19.8	90.2
Nov. 9	22 16.45	-63 21.6	6.660	6.620	-0.15	+3.8	19.9	83.4
Nov. 19	22 14.94	-62 43.1	6.849	6.694	+0.06	+4.1	20.0	76.9
Nov. 29	22 15.53	-62 02.5	7.032	6.768	+0.24	+4.1	20.1	70.5
Dec. 9	22 17.93	-61 21.6	7.205	6.841	+0.39	+4.0	20.2	64.6
Dec. 19	22 21.87	-60 41.9	7.366	6.915	+0.52	+3.7	20.3	59.2
Dec. 29	22 27.09	-60 04.6	7.513	6.988	+0.63	+3.4	20.4	54.5
Jan. 8	22 33.35	-59 30.7	7.643	7.061	+0.71	+3.0	20.5	50.7
Jan. 18	22 40.45	-59 01.1	7.755	7.134	+0.78	+2.5	20.6	48.0
Jan. 28	22 48.21	-58 36.5	7.849	7.206	+0.83	+1.9	20.7	46.5
Feb. 7	22 56.48	-58 17.4	7.925	7.279	+0.86	+1.3	20.7	46.3
Feb. 17	23 05.13	-58 04.6	7.982	7.351	+0.89	+0.6	20.8	47.6
Feb. 27	23 14.03	-57 58.6	8.021	7.423	+0.90	-0.1	20.8	50.0
Mar. 9	23 23.07	-57 59.8	8.045	7.495	+0.91	-0.9	20.9	53.4
Mar. 19	23 32.17	-58 09.0	8.053	7.567	+0.91	-1.7	20.9	57.7
Mar. 29	23 41.22	-58 26.4	8.048	7.639	+0.89	-2.6	21.0	62.5

Comet C/2010 B1 (Cardinal)

Epoch = 2012 July 12.0 TT
T = 2011 Feb. 7.15634 TT
Peri. = 211.55631
Node = 277.20546 2000.0
Incl. = 101.97834
q = 2.9423807 AU
e = 0.9989128

m1 = 8.2 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 28.80	-74 55.5	4.637	4.336	-0.86	+11.8	17.9	66.3
Jan. 14	00 20.20	-72 57.8	4.748	4.402	-0.28	+10.9	18.0	63.7
Jan. 24	00 17.44	-71 08.7	4.849	4.469	+0.10	+9.8	18.1	61.8
Feb. 3	00 18.45	-69 31.2	4.939	4.537	+0.35	+8.4	18.2	60.6
Feb. 13	00 21.95	-68 06.9	5.016	4.605	+0.52	+7.0	18.3	60.1
Feb. 23	00 27.13	-66 56.7	5.080	4.673	+0.63	+5.5	18.4	60.5
Mar. 4	00 33.46	-66 01.5	5.129	4.741	+0.71	+4.0	18.5	61.8
Mar. 14	00 40.56	-65 21.6	5.165	4.810	+0.76	+2.4	18.6	63.9
Mar. 24	00 48.15	-64 57.6	5.187	4.880	+0.79	+0.8	18.7	66.7
Apr. 3	00 56.01	-64 50.0	5.198	4.949	+0.79	-0.9	18.7	70.2
Apr. 13	01 03.93	-64 58.9	5.199	5.019	+0.78	-2.6	18.8	74.2
Apr. 23	01 11.76	-65 24.8	5.192	5.089	+0.75	-4.3	18.8	78.6
May 3	01 19.27	-66 07.8	5.179	5.159	+0.70	-6.0	18.9	83.2
May 13	01 26.24	-67 07.6	5.164	5.229	+0.61	-7.6	18.9	88.1
May 23	01 32.38	-68 23.8	5.150	5.299	+0.49	-9.2	19.0	92.9
June 2	01 37.28	-69 55.5	5.140	5.370	+0.31	-10.6	19.1	97.7
June 12	01 40.33	-71 41.1	5.136	5.440	+0.03	-11.7	19.1	102.1
June 22	01 40.66	-73 38.3	5.144	5.511	-0.39	-12.5	19.2	106.0
July 2	01 36.78	-75 43.7	5.165	5.582	-1.05	-12.9	19.2	109.2
July 12	01 26.30	-77 52.4	5.201	5.652	-2.12	-12.5	19.3	111.4
July 22	01 05.15	-79 57.0	5.255	5.723	-3.81	-10.9	19.4	112.6
Aug. 1	00 27.02	-81 45.6	5.329	5.794	-6.10	-7.4	19.5	112.6
Aug. 11	23 25.98	-82 59.4	5.421	5.865	-7.77	-1.8	19.6	111.3
Aug. 21	22 08.29	-83 17.1	5.532	5.936	-7.02	+4.3	19.6	108.8
Aug. 31	20 58.05	-82 34.3	5.660	6.007	-4.74	+8.5	19.8	105.4
Sept. 10	20 10.65	-81 09.8	5.804	6.077	-2.72	+10.5	19.9	101.0
Sept. 20	19 43.45	-79 25.0	5.960	6.148	-1.39	+11.2	20.0	96.1
Sept. 30	19 29.59	-77 33.3	6.127	6.219	-0.56	+11.1	20.1	90.6
Oct. 10	19 23.97	-75 41.9	6.299	6.290	-0.04	+10.7	20.2	84.9
Oct. 20	19 23.57	-73 54.5	6.476	6.360	+0.30	+10.2	20.3	79.0
Oct. 30	19 26.55	-72 12.9	6.651	6.431	+0.52	+9.5	20.4	73.0
Nov. 9	19 31.77	-70 38.1	6.823	6.502	+0.67	+8.8	20.5	67.1
Nov. 19	19 38.51	-69 10.5	6.988	6.572	+0.78	+8.0	20.6	61.4
Nov. 29	19 46.26	-67 50.5	7.142	6.642	+0.84	+7.3	20.7	56.1
Dec. 9	19 54.66	-66 37.9	7.284	6.713	+0.88	+6.5	20.8	51.3
Dec. 19	20 03.46	-65 32.8	7.411	6.783	+0.90	+5.8	20.9	47.4
Dec. 29	20 12.44	-64 35.2	7.520	6.853	+0.90	+5.0	20.9	44.5
Jan. 8	20 21.42	-63 45.1	7.612	6.923	+0.88	+4.2	21.0	42.9
Jan. 18	20 30.26	-63 02.6	7.684	6.993	+0.86	+3.5	21.1	42.8
Jan. 28	20 38.83	-62 27.8	7.736	7.063	+0.82	+2.7	21.1	44.2
Feb. 7	20 46.99	-62 00.9	7.768	7.133	+0.76	+1.9	21.2	47.1
Feb. 17	20 54.62	-61 42.1	7.782	7.203	+0.70	+1.1	21.2	51.1
Feb. 27	21 01.59	-61 31.5	7.778	7.272	+0.62	+0.2	21.3	56.1
Mar. 9	21 07.77	-61 29.3	7.758	7.342	+0.52	-0.6	21.3	61.8
Mar. 19	21 13.02	-61 35.5	7.725	7.411	+0.41	-1.4	21.3	68.1
Mar. 29	21 17.15	-61 49.9	7.681	7.480	+0.29	-2.2	21.4	74.8

Comet 243P/NEAT

Epoch = 2012 July 12.0 TT
T = 2011 Mar. 2.58234 TT
Peri. = 283.74433 e = 0.3590089
Node = 87.67341 2000.0 a = 3.8298869 AU
Incl. = 7.63995 n = 0.13149982
q = 2.4549234 AU P = 7.50 years

m1 = 7.2 + 5 log(Delta) + 22.5 log(r(t-40))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	05 28.49	+23 30.3	2.156	3.098	-0.62	+1.5	19.5	159.9
Jan. 14	05 22.32	+23 45.3	2.251	3.131	-0.40	+1.4	19.7	148.3
Jan. 24	05 18.32	+23 59.4	2.370	3.164	-0.16	+1.4	19.9	137.3
Feb. 3	05 16.72	+24 13.4	2.509	3.198	+0.08	+1.4	20.1	126.8
Feb. 13	05 17.53	+24 27.6	2.664	3.232	+0.30	+1.4	20.4	116.8
Feb. 23	05 20.58	+24 42.1	2.829	3.265	+0.51	+1.4	20.6	107.4
Mar. 4	05 25.65	+24 56.4	3.002	3.299	+0.68	+1.4	20.8	98.6
Mar. 14	05 32.48	+25 10.0	3.179	3.333	+0.83	+1.2	21.1	90.1
Mar. 24	05 40.80	+25 22.1	3.356	3.367	+0.96	+1.0	21.3	82.1
Apr. 3	05 50.38	+25 32.2	3.531	3.400	+1.06	+0.7	21.5	74.4
Apr. 13	06 00.99	+25 39.5	3.701	3.434	+1.14	+0.4	21.7	66.9
Apr. 23	06 12.43	+25 43.6	3.864	3.468	+1.21	0.0	21.9	59.8
May 3	06 24.55	+25 43.9	4.018	3.501	+1.26	-0.4	22.1	52.8
May 13	06 37.16	+25 40.3	4.162	3.535	+1.30	-0.8	22.3	46.0
May 23	06 50.15	+25 32.5	4.294	3.568	+1.32	-1.2	22.4	39.3
June 2	07 03.40	+25 20.4	4.413	3.601	+1.34	-1.6	22.6	32.7
June 12	07 16.78	+25 04.1	4.517	3.634	+1.34	-2.0	22.7	26.2
June 22	07 30.22	+24 43.8	4.607	3.667	+1.34	-2.4	22.9	19.8
July 2	07 43.62	+24 19.7	4.681	3.700	+1.33	-2.8	23.0	13.5
July 12	07 56.90	+23 52.2	4.738	3.732	+1.31	-3.1	.	7.4
July 22	08 10.00	+23 21.6	4.778	3.764	+1.28	-3.3	.	3.2
Aug. 1	08 22.85	+22 48.6	4.801	3.796	+1.25	-3.5	.	7.2
Aug. 11	08 35.38	+22 13.7	4.807	3.828	+1.21	-3.6	.	13.4
Aug. 21	08 47.53	+21 37.5	4.794	3.859	+1.17	-3.7	.	20.0
Aug. 31	08 59.22	+21 00.7	4.765	3.891	+1.12	-3.6	.	26.8
Sept.10	09 10.40	+20 24.3	4.718	3.922	+1.06	-3.5	.	33.8
Sept.20	09 20.99	+19 49.0	4.655	3.952	+0.99	-3.3	.	41.0
Sept.30	09 30.89	+19 15.9	4.577	3.982	+0.91	-3.0	.	48.3
Oct. 10	09 40.03	+18 46.0	4.485	4.012	+0.83	-2.6	.	55.9
Oct. 20	09 48.29	+18 20.3	4.381	4.042	+0.73	-2.0	.	63.8
Oct. 30	09 55.56	+17 60.0	4.267	4.072	+0.61	-1.4	.	72.0
Nov. 9	10 01.70	+17 46.2	4.145	4.101	+0.49	-0.6	.	80.6
Nov. 19	10 06.57	+17 40.0	4.018	4.129	+0.35	+0.2	.	89.5
Nov. 29	10 10.04	+17 42.4	3.891	4.158	+0.19	+1.1	.	98.8
Dec. 9	10 11.96	+17 53.8	3.768	4.186	+0.03	+2.1	.	108.5
Dec. 19	10 12.23	+18 14.7	3.653	4.213	-0.14	+3.0	.	118.6
Dec. 29	10 10.80	+18 44.4	3.551	4.241	-0.31	+3.7	.	129.2
Jan. 8	10 07.71	+19 21.6	3.467	4.268	-0.46	+4.3	.	140.0
Jan. 18	10 03.10	+20 04.1	3.407	4.295	-0.58	+4.5	.	151.1
Jan. 28	09 57.26	+20 48.8	3.373	4.321	-0.66	+4.4	.	162.1
Feb. 7	09 50.64	+21 32.4	3.370	4.347	-0.69	+3.9	.	170.9
Feb. 17	09 43.73	+22 11.4	3.398	4.372	-0.66	+3.2	.	169.0
Feb. 27	09 37.12	+22 43.3	3.458	4.398	-0.58	+2.3	.	159.2
Mar. 9	09 31.29	+23 06.2	3.546	4.422	-0.46	+1.3	.	148.4
Mar. 19	09 26.66	+23 19.5	3.660	4.447	-0.32	+0.4	.	137.7
Mar. 29	09 23.49	+23 23.5	3.795	4.471	-0.16	-0.5	.	127.3

Comet P/2010 JC81 (WISE)

Epoch = 2012 July 12.0 TT
T = 2011 Apr. 26.55968 TT
Peri. = 12.59201 e = 0.7773604
Node = 30.77143 2000.0 a = 8.1361276 AU
Incl. = 38.68938 n = 0.04246953
q = 1.8114242 AU P = 23.21 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	12 05.61	+53 12.0	2.627	3.177	-0.23	+8.7	17.5	115.5
Jan. 14	12 03.29	+54 39.1	2.631	3.252	-0.64	+8.2	17.7	121.2
Jan. 24	11 56.93	+56 01.1	2.651	3.326	-1.02	+6.8	18.0	126.0
Feb. 3	11 46.72	+57 08.7	2.688	3.400	-1.33	+4.4	18.2	129.5
Feb. 13	11 33.46	+57 53.1	2.744	3.475	-1.50	+1.5	18.4	131.2
Feb. 23	11 18.42	+58 07.9	2.822	3.549	-1.52	-1.8	18.7	130.9
Mar. 4	11 03.26	+57 50.2	2.920	3.623	-1.37	-4.8	18.9	128.6
Mar. 14	10 49.56	+57 01.9	3.039	3.696	-1.12	-7.4	19.2	124.7
Mar. 24	10 38.38	+55 47.8	3.176	3.770	-0.81	-9.4	19.4	119.6
Apr. 3	10 30.26	+54 14.2	3.330	3.843	-0.50	-10.7	19.7	113.7
Apr. 13	10 25.24	+52 27.5	3.497	3.915	-0.22	-11.5	20.0	107.4
Apr. 23	10 23.03	+50 32.8	3.675	3.988	+0.02	-11.8	20.3	100.8
May 3	10 23.26	+48 34.4	3.861	4.060	+0.22	-11.9	20.5	94.1
May 13	10 25.50	+46 35.0	4.053	4.131	+0.39	-11.8	20.8	87.4
May 23	10 29.35	+44 36.7	4.246	4.203	+0.51	-11.6	21.0	80.7
June 2	10 34.50	+42 40.6	4.439	4.274	+0.61	-11.3	21.3	74.1
June 12	10 40.65	+40 47.7	4.629	4.344	+0.69	-10.9	21.5	67.6
June 22	10 47.58	+38 58.3	4.814	4.414	+0.75	-10.5	21.7	61.2
July 2	10 55.11	+37 12.9	4.990	4.484	+0.80	-10.1	21.9	54.9
July 12	11 03.08	+35 31.6	5.157	4.553	+0.83	-9.7	22.1	48.8
July 22	11 11.37	+33 54.7	5.313	4.622	+0.85	-9.2	22.3	43.0
Aug. 1	11 19.87	+32 22.3	5.455	4.690	+0.86	-8.8	22.5	37.5
Aug. 11	11 28.50	+30 54.7	5.582	4.758	+0.87	-8.3	22.7	32.5
Aug. 21	11 37.19	+29 32.0	5.693	4.826	+0.87	-7.7	22.9	28.3
Aug. 31	11 45.87	+28 14.5	5.786	4.893	+0.86	-7.2	23.0	25.3
Sept. 10	11 54.46	+27 02.6	5.862	4.960	+0.85	-6.6	.	24.1
Sept. 20	12 02.91	+25 56.6	5.918	5.026	+0.82	-6.0	.	25.0
Sept. 30	12 11.15	+24 56.8	5.954	5.092	+0.80	-5.3	.	28.0
Oct. 10	12 19.11	+24 03.8	5.972	5.157	+0.76	-4.6	.	32.5
Oct. 20	12 26.72	+23 18.0	5.970	5.222	+0.72	-3.8	.	38.1
Oct. 30	12 33.89	+22 39.8	5.950	5.287	+0.67	-3.0	.	44.5
Nov. 9	12 40.55	+22 09.8	5.912	5.351	+0.60	-2.1	.	51.4
Nov. 19	12 46.59	+21 48.3	5.859	5.415	+0.53	-1.3	.	58.9
Nov. 29	12 51.91	+21 35.7	5.793	5.478	+0.45	-0.3	.	66.7
Dec. 9	12 56.40	+21 32.2	5.716	5.541	+0.35	+0.6	.	74.9
Dec. 19	12 59.94	+21 37.8	5.632	5.604	+0.25	+1.5	.	83.3
Dec. 29	13 02.41	+21 52.4	5.544	5.666	+0.13	+2.3	.	92.1
Jan. 8	13 03.73	+22 15.1	5.457	5.728	+0.01	+3.0	.	101.1
Jan. 18	13 03.79	+22 44.9	5.376	5.789	-0.12	+3.5	.	110.2
Jan. 28	13 02.56	+23 20.3	5.304	5.850	-0.25	+3.9	.	119.3
Feb. 7	13 00.05	+23 59.0	5.248	5.911	-0.37	+3.9	.	128.4
Feb. 17	12 56.31	+24 38.4	5.211	5.971	-0.48	+3.7	.	136.9
Feb. 27	12 51.51	+25 15.6	5.197	6.031	-0.56	+3.2	.	144.5
Mar. 9	12 45.88	+25 47.8	5.210	6.090	-0.62	+2.5	.	150.0
Mar. 19	12 39.71	+26 12.3	5.251	6.149	-0.64	+1.5	.	152.2
Mar. 29	12 33.36	+26 27.2	5.321	6.208	-0.62	+0.4	.	150.3

Comet P/2010 UH55 (Spacewatch)

Epoch = 2012 July 12.0 TT
T = 2011 May 10.57166 TT
Peri. = 221.67613 e = 0.5755506
Node = 235.25916 2000.0 a = 6.5227931 AU
Incl. = 8.66248 n = 0.05916347
q = 2.7685956 AU P = 16.66 years

m1 = 7.0 + 5 log(Delta) + 20.0 log(r(t-80))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	11 05.71	-05 12.1	2.802	3.311	+0.02	-2.7	18.9	112.9
Jan. 14	11 05.94	-05 39.3	2.717	3.351	-0.16	-1.3	18.9	122.6
Jan. 24	11 04.29	-05 51.8	2.645	3.392	-0.33	+0.3	18.9	132.7
Feb. 3	11 00.95	-05 48.9	2.593	3.433	-0.47	+1.8	19.0	143.2
Feb. 13	10 56.25	-05 31.0	2.563	3.475	-0.56	+3.1	19.0	153.6
Feb. 23	10 50.68	-04 59.8	2.559	3.518	-0.58	+4.1	19.1	163.2
Mar. 4	10 44.85	-04 18.4	2.584	3.561	-0.55	+4.7	19.3	168.6
Mar. 14	10 39.37	-03 31.1	2.637	3.605	-0.46	+4.9	19.4	164.5
Mar. 24	10 34.77	-02 42.1	2.719	3.650	-0.33	+4.6	19.6	155.4
Apr. 3	10 31.48	-01 55.7	2.828	3.694	-0.18	+4.0	19.8	145.4
Apr. 13	10 29.71	-01 15.2	2.959	3.740	-0.01	+3.2	20.0	135.4
Apr. 23	10 29.57	-00 42.9	3.109	3.785	+0.14	+2.3	20.2	125.7
May 3	10 31.01	-00 20.1	3.275	3.831	+0.29	+1.3	20.4	116.4
May 13	10 33.93	-00 07.1	3.452	3.877	+0.42	+0.3	20.6	107.5
May 23	10 38.17	-00 03.8	3.637	3.923	+0.54	-0.6	20.8	98.9
June 2	10 43.56	-00 09.8	3.826	3.970	+0.64	-1.5	21.1	90.7
June 12	10 49.93	-00 24.4	4.016	4.017	+0.72	-2.2	21.3	82.8
June 22	10 57.13	-00 46.7	4.204	4.064	+0.79	-2.9	21.5	75.1
July 2	11 05.01	-01 15.9	4.389	4.111	+0.84	-3.5	21.7	67.6
July 12	11 13.45	-01 51.1	4.566	4.158	+0.89	-4.1	21.9	60.3
July 22	11 22.34	-02 31.6	4.735	4.205	+0.92	-4.5	22.0	53.2
Aug. 1	11 31.58	-03 16.6	4.893	4.253	+0.95	-4.9	.	46.1
Aug. 11	11 41.08	-04 05.2	5.039	4.300	+0.97	-5.2	.	39.1
Aug. 21	11 50.78	-04 56.9	5.171	4.347	+0.98	-5.4	.	32.1
Aug. 31	12 00.61	-05 50.9	5.287	4.395	+0.99	-5.6	.	25.2
Sept.10	12 10.50	-06 46.5	5.387	4.442	+0.99	-5.7	.	18.3
Sept.20	12 20.40	-07 43.1	5.469	4.490	+0.98	-5.7	.	11.6
Sept.30	12 30.25	-08 40.2	5.532	4.537	+0.97	-5.7	.	6.0
Oct. 10	12 39.97	-09 37.1	5.575	4.584	+0.95	-5.6	.	6.3
Oct. 20	12 49.52	-10 33.2	5.599	4.631	+0.93	-5.5	.	12.3
Oct. 30	12 58.80	-11 27.9	5.603	4.678	+0.90	-5.3	.	19.4
Nov. 9	13 07.76	-12 20.8	5.588	4.726	+0.85	-5.0	.	26.9
Nov. 19	13 16.31	-13 11.3	5.553	4.772	+0.80	-4.7	.	34.6
Nov. 29	13 24.34	-13 58.7	5.500	4.819	+0.74	-4.4	.	42.5
Dec. 9	13 31.76	-14 42.6	5.430	4.866	+0.67	-4.0	.	50.7
Dec. 19	13 38.45	-15 22.3	5.346	4.913	+0.58	-3.5	.	59.0
Dec. 29	13 44.30	-15 57.5	5.249	4.959	+0.49	-3.0	.	67.7
Jan. 8	13 49.18	-16 27.4	5.142	5.005	+0.38	-2.4	.	76.5
Jan. 18	13 52.98	-16 51.5	5.029	5.051	+0.26	-1.8	.	85.7
Jan. 28	13 55.58	-17 09.2	4.914	5.097	+0.13	-1.1	.	95.1
Feb. 7	13 56.91	-17 20.0	4.801	5.143	0.00	-0.3	.	104.9
Feb. 17	13 56.92	-17 23.4	4.694	5.189	-0.13	+0.4	.	114.9
Feb. 27	13 55.62	-17 19.0	4.600	5.234	-0.25	+1.2	.	125.3
Mar. 9	13 53.10	-17 06.9	4.522	5.280	-0.36	+2.0	.	135.8
Mar. 19	13 49.50	-16 47.1	4.465	5.325	-0.44	+2.6	.	146.6
Mar. 29	13 45.08	-16 20.7	4.434	5.370	-0.49	+3.2	.	157.5

Comet 231P/LINEAR-NEAT

Epoch = 2012 July 12.0 TT
T = 2011 May 16.41239 TT
Peri. = 42.42217 e = 0.2468215
Node = 133.07956 2000.0 a = 4.0259824 AU
Incl. = 12.32587 n = 0.12201023
q = 3.0322834 AU P = 8.08 years

m1 = 9.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	15 41.53	-08 53.5	3.797	3.231	+1.27	-2.3	19.5	48.5
Jan. 14	15 54.27	-09 16.3	3.704	3.247	+1.20	-1.5	19.5	55.3
Jan. 24	16 06.24	-09 30.9	3.601	3.263	+1.10	-0.6	19.5	62.4
Feb. 3	16 17.29	-09 37.3	3.490	3.280	+0.99	+0.1	19.5	69.7
Feb. 13	16 27.23	-09 35.8	3.373	3.298	+0.87	+0.9	19.4	77.2
Feb. 23	16 35.89	-09 27.0	3.252	3.316	+0.72	+1.6	19.4	85.0
Mar. 4	16 43.06	-09 11.4	3.130	3.334	+0.55	+2.1	19.3	93.1
Mar. 14	16 48.57	-08 50.1	3.010	3.352	+0.37	+2.6	19.3	101.5
Mar. 24	16 52.24	-08 24.2	2.894	3.371	+0.17	+2.9	19.2	110.2
Apr. 3	16 53.93	-07 55.2	2.787	3.390	-0.03	+3.0	19.2	119.3
Apr. 13	16 53.61	-07 25.0	2.692	3.410	-0.23	+2.9	19.1	128.7
Apr. 23	16 51.29	-06 55.6	2.613	3.429	-0.41	+2.6	19.1	138.3
May 3	16 47.18	-06 29.4	2.554	3.449	-0.56	+2.1	19.1	147.9
May 13	16 41.62	-06 08.9	2.519	3.470	-0.65	+1.3	19.1	156.7
May 23	16 35.11	-05 56.2	2.509	3.490	-0.69	+0.3	19.1	163.1
June 2	16 28.25	-05 52.9	2.527	3.511	-0.66	-0.7	19.2	163.4
June 12	16 21.69	-05 60.0	2.572	3.532	-0.57	-1.7	19.3	157.5
June 22	16 16.00	-06 17.3	2.643	3.553	-0.44	-2.7	19.4	149.0
July 2	16 11.62	-06 44.1	2.737	3.574	-0.28	-3.5	19.5	139.7
July 12	16 08.84	-07 19.0	2.852	3.595	-0.10	-4.1	19.6	130.3
July 22	16 07.81	-08 00.5	2.984	3.616	+0.07	-4.6	19.7	121.2
Aug. 1	16 08.54	-08 46.9	3.129	3.638	+0.24	-5.0	19.9	112.3
Aug. 11	16 10.98	-09 36.4	3.284	3.660	+0.40	-5.1	20.0	103.7
Aug. 21	16 15.00	-10 27.6	3.444	3.681	+0.55	-5.2	20.2	95.5
Aug. 31	16 20.47	-11 19.3	3.608	3.703	+0.68	-5.1	20.3	87.4
Sept. 10	16 27.23	-12 10.2	3.771	3.725	+0.79	-4.9	20.4	79.7
Sept. 20	16 35.14	-12 59.4	3.932	3.747	+0.89	-4.7	20.6	72.1
Sept. 30	16 44.05	-13 45.9	4.088	3.768	+0.98	-4.3	20.7	64.6
Oct. 10	16 53.84	-14 29.1	4.236	3.790	+1.05	-3.9	20.8	57.3
Oct. 20	17 04.37	-15 08.4	4.374	3.812	+1.12	-3.5	20.9	50.1
Oct. 30	17 15.52	-15 43.2	4.501	3.834	+1.17	-3.0	21.0	42.9
Nov. 9	17 27.18	-16 13.1	4.615	3.856	+1.21	-2.5	21.1	35.9
Nov. 19	17 39.24	-16 37.8	4.714	3.877	+1.24	-1.9	21.2	28.8
Nov. 29	17 51.60	-16 57.1	4.797	3.899	+1.25	-1.4	21.3	21.9
Dec. 9	18 04.13	-17 10.9	4.863	3.921	+1.26	-0.8	21.3	15.2
Dec. 19	18 16.76	-17 19.3	4.911	3.942	+1.26	-0.3	21.4	9.0
Dec. 29	18 29.35	-17 22.3	4.941	3.964	+1.25	+0.2	21.4	5.9
Jan. 8	18 41.83	-17 20.3	4.952	3.985	+1.23	+0.7	21.5	9.6
Jan. 18	18 54.09	-17 13.6	4.944	4.007	+1.19	+1.1	21.5	15.9
Jan. 28	19 06.02	-17 02.6	4.917	4.028	+1.15	+1.5	21.5	22.8
Feb. 7	19 17.54	-16 48.0	4.873	4.049	+1.10	+1.8	21.5	30.0
Feb. 17	19 28.53	-16 30.3	4.811	4.070	+1.04	+2.0	21.6	37.4
Feb. 27	19 38.89	-16 10.5	4.733	4.091	+0.96	+2.1	21.6	44.8
Mar. 9	19 48.54	-15 49.4	4.641	4.111	+0.88	+2.2	21.5	52.4
Mar. 19	19 57.34	-15 27.8	4.535	4.132	+0.79	+2.1	21.5	60.2
Mar. 29	20 05.20	-15 06.8	4.419	4.152	+0.68	+1.9	21.5	68.1

Comet 164P/Christensen

Epoch = 2012 July 12.0 TT
T = 2011 June 2.34886 TT
Peri. = 325.84947 e = 0.5414063
Node = 88.32754 2000.0 a = 3.6531908 AU
Incl. = 16.26080 n = 0.14115476
q = 1.6753303 AU P = 6.98 years

m1 = 12.8 + 5 log(Delta) + 10.0 log(r(t-100))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	11 21.23	+23 27.0	1.921	2.554	+0.01	+9.2	17.2	119.6
Jan. 14	11 21.38	+24 59.2	1.876	2.612	-0.29	+10.2	17.3	129.2
Jan. 24	11 18.46	+26 41.0	1.847	2.669	-0.58	+10.3	17.4	139.0
Feb. 3	11 12.70	+28 23.7	1.840	2.727	-0.80	+9.4	17.5	148.1
Feb. 13	11 04.70	+29 57.6	1.858	2.785	-0.94	+7.6	17.6	155.2
Feb. 23	10 55.34	+31 13.2	1.902	2.842	-0.96	+5.1	17.8	157.6
Mar. 4	10 45.78	+32 04.1	1.974	2.899	-0.87	+2.4	17.9	154.2
Mar. 14	10 37.12	+32 27.8	2.072	2.956	-0.69	-0.2	18.1	147.0
Mar. 24	10 30.19	+32 25.8	2.193	3.012	-0.47	-2.4	18.4	138.3
Apr. 3	10 25.52	+32 01.8	2.335	3.067	-0.23	-4.1	18.6	129.3
Apr. 13	10 23.25	+31 20.5	2.492	3.123	0.00	-5.4	18.9	120.4
Apr. 23	10 23.29	+30 26.1	2.663	3.177	+0.21	-6.4	19.1	111.9
May 3	10 25.43	+29 22.2	2.842	3.231	+0.39	-7.1	19.3	103.6
May 13	10 29.36	+28 11.7	3.027	3.285	+0.54	-7.5	19.6	95.7
May 23	10 34.78	+26 56.3	3.214	3.338	+0.67	-7.9	19.8	88.1
June 2	10 41.45	+25 37.6	3.402	3.390	+0.76	-8.1	20.0	80.8
June 12	10 49.10	+24 16.7	3.587	3.442	+0.84	-8.2	20.2	73.7
June 22	10 57.54	+22 54.4	3.767	3.493	+0.91	-8.3	20.4	66.7
July 2	11 06.60	+21 31.3	3.941	3.543	+0.95	-8.3	20.6	60.0
July 12	11 16.14	+20 08.0	4.106	3.593	+0.99	-8.3	20.7	53.4
July 22	11 26.06	+18 44.9	4.260	3.642	+1.02	-8.2	20.9	46.9
Aug. 1	11 36.25	+17 22.5	4.403	3.691	+1.04	-8.1	21.0	40.5
Aug. 11	11 46.64	+16 01.4	4.532	3.739	+1.05	-8.0	21.2	34.3
Aug. 21	11 57.17	+14 41.9	4.647	3.786	+1.06	-7.7	21.3	28.3
Aug. 31	12 07.76	+13 24.5	4.745	3.833	+1.06	-7.5	21.4	22.5
Sept.10	12 18.37	+12 09.7	4.827	3.879	+1.06	-7.2	21.5	17.5
Sept.20	12 28.95	+10 58.1	4.892	3.924	+1.05	-6.8	21.6	13.8
Sept.30	12 39.44	+09 50.1	4.937	3.968	+1.03	-6.4	21.7	13.1
Oct. 10	12 49.78	+08 46.2	4.964	4.012	+1.01	-5.9	21.8	15.7
Oct. 20	12 59.93	+07 47.1	4.972	4.056	+0.99	-5.4	21.8	20.6
Oct. 30	13 09.80	+06 53.5	4.961	4.098	+0.95	-4.8	21.9	26.7
Nov. 9	13 19.32	+06 05.7	4.931	4.140	+0.91	-4.1	21.9	33.4
Nov. 19	13 28.42	+05 24.6	4.884	4.182	+0.86	-3.4	22.0	40.5
Nov. 29	13 36.98	+04 50.7	4.819	4.222	+0.79	-2.6	22.0	48.0
Dec. 9	13 44.91	+04 24.6	4.739	4.262	+0.72	-1.8	22.0	55.7
Dec. 19	13 52.08	+04 06.8	4.646	4.302	+0.63	-0.9	22.0	63.7
Dec. 29	13 58.36	+03 57.9	4.541	4.341	+0.52	0.0	22.0	72.1
Jan. 8	14 03.60	+03 58.1	4.429	4.379	+0.41	+1.0	22.0	80.7
Jan. 18	14 07.67	+04 07.6	4.312	4.416	+0.27	+1.9	22.0	89.6
Jan. 28	14 10.42	+04 26.3	4.194	4.453	+0.13	+2.7	22.0	98.8
Feb. 7	14 11.74	+04 53.7	4.080	4.489	-0.02	+3.5	22.0	108.3
Feb. 17	14 11.53	+05 28.9	3.975	4.525	-0.18	+4.1	22.0	118.1
Feb. 27	14 09.77	+06 10.1	3.883	4.560	-0.33	+4.5	22.0	128.0
Mar. 9	14 06.52	+06 55.3	3.810	4.594	-0.46	+4.6	22.0	137.9
Mar. 19	14 01.92	+07 41.6	3.759	4.628	-0.57	+4.4	22.0	147.4
Mar. 29	13 56.24	+08 25.9	3.734	4.661	-0.64	+3.9	22.0	155.6

Comet C/2008 S3 (Boattini)

Epoch = 2012 July 12.0 TT
T = 2011 June 9.00859 TT
Peri. = 40.06874
Node = 54.94693 2000.0
Incl. = 162.70573
q = 8.0189886 AU
e = 1.0008753

m1 = 6.4 + 5 log(Delta) + 7.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	23 25.98	+10 51.9	8.332	8.119	-0.02	-1.2	17.8	74.2
Jan. 14	23 25.78	+10 40.0	8.509	8.128	+0.04	-0.6	17.9	64.2
Jan. 24	23 26.22	+10 34.0	8.672	8.139	+0.10	0.0	17.9	54.4
Feb. 3	23 27.19	+10 33.5	8.818	8.149	+0.14	+0.4	18.0	44.9
Feb. 13	23 28.58	+10 37.9	8.942	8.160	+0.17	+0.9	18.0	35.7
Feb. 23	23 30.27	+10 46.8	9.041	8.171	+0.19	+1.3	18.0	27.0
Mar. 4	23 32.15	+10 59.4	9.113	8.183	+0.20	+1.6	18.0	19.2
Mar. 14	23 34.12	+11 15.1	9.158	8.196	+0.20	+1.8	18.1	13.8
Mar. 24	23 36.07	+11 33.4	9.174	8.208	+0.18	+2.0	18.1	13.7
Apr. 3	23 37.91	+11 53.6	9.161	8.221	+0.16	+2.1	18.1	18.9
Apr. 13	23 39.52	+12 14.9	9.121	8.235	+0.13	+2.2	18.1	26.4
Apr. 23	23 40.83	+12 36.9	9.055	8.249	+0.09	+2.2	18.1	34.8
May 3	23 41.72	+12 58.8	8.965	8.263	+0.04	+2.1	18.0	43.5
May 13	23 42.12	+13 20.0	8.854	8.278	-0.02	+2.0	18.0	52.5
May 23	23 41.92	+13 39.7	8.725	8.293	-0.09	+1.7	18.0	61.7
June 2	23 41.04	+13 57.2	8.583	8.309	-0.16	+1.4	18.0	71.0
June 12	23 39.42	+14 11.6	8.431	8.325	-0.24	+1.1	17.9	80.5
June 22	23 36.99	+14 22.2	8.275	8.341	-0.33	+0.6	17.9	90.2
July 2	23 33.69	+14 28.1	8.120	8.358	-0.42	0.0	17.9	100.1
July 12	23 29.53	+14 28.5	7.971	8.375	-0.50	-0.6	17.8	110.1
July 22	23 24.53	+14 22.6	7.835	8.392	-0.58	-1.3	17.8	120.2
Aug. 1	23 18.74	+14 09.9	7.717	8.410	-0.65	-2.0	17.8	130.4
Aug. 11	23 12.28	+13 50.0	7.622	8.429	-0.70	-2.7	17.8	140.5
Aug. 21	23 05.31	+13 22.9	7.556	8.447	-0.73	-3.4	17.7	150.0
Aug. 31	22 58.04	+12 49.2	7.522	8.466	-0.73	-3.9	17.7	158.0
Sept. 10	22 50.69	+12 09.8	7.523	8.486	-0.72	-4.4	17.7	161.9
Sept. 20	22 43.51	+11 26.0	7.559	8.506	-0.68	-4.7	17.8	159.3
Sept. 30	22 36.72	+10 39.4	7.630	8.526	-0.62	-4.8	17.8	151.8
Oct. 10	22 30.53	+09 51.9	7.734	8.546	-0.54	-4.7	17.8	142.3
Oct. 20	22 25.08	+09 05.1	7.868	8.567	-0.46	-4.4	17.9	132.1
Oct. 30	22 20.49	+08 20.8	8.026	8.588	-0.37	-4.1	17.9	121.6
Nov. 9	22 16.80	+07 40.2	8.203	8.610	-0.28	-3.6	18.0	111.2
Nov. 19	22 14.04	+07 04.2	8.393	8.632	-0.19	-3.1	18.0	100.7
Nov. 29	22 12.15	+06 33.7	8.590	8.654	-0.11	-2.5	18.1	90.4
Dec. 9	22 11.10	+06 08.8	8.788	8.677	-0.03	-1.9	18.2	80.3
Dec. 19	22 10.79	+05 49.8	8.981	8.699	+0.03	-1.3	18.2	70.3
Dec. 29	22 11.13	+05 36.5	9.163	8.723	+0.09	-0.8	18.3	60.6
Jan. 8	22 12.02	+05 28.6	9.330	8.746	+0.13	-0.3	18.3	51.1
Jan. 18	22 13.36	+05 26.0	9.478	8.770	+0.17	+0.2	18.4	41.8
Jan. 28	22 15.04	+05 27.9	9.604	8.794	+0.19	+0.6	18.4	33.0
Feb. 7	22 16.95	+05 34.1	9.704	8.819	+0.20	+1.0	18.4	24.9
Feb. 17	22 18.98	+05 43.9	9.776	8.844	+0.21	+1.3	18.5	18.3
Feb. 27	22 21.05	+05 56.8	9.821	8.869	+0.20	+1.5	18.5	15.1
Mar. 9	22 23.05	+06 12.2	9.837	8.894	+0.18	+1.7	18.5	17.3
Mar. 19	22 24.88	+06 29.5	9.825	8.920	+0.16	+1.9	18.5	23.4
Mar. 29	22 26.46	+06 48.1	9.786	8.946	+0.12	+1.9	18.5	31.1

Comet 213P/Van Ness

Epoch = 2012 July 12.0 TT
T = 2011 June 16.71196 TT
Peri. = 3.56658 e = 0.3808204
Node = 312.52129 2000.0 a = 3.4271917 AU
Incl. = 10.23934 n = 0.15534471
q = 2.1220472 AU P = 6.34 years

m1 = 8.0 + 5 log(Delta) + 15.0 log(r(t+50))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	23 43.70	+08 34.8	2.575	2.542	+1.39	+7.2	16.6	77.0
Jan. 14	23 57.63	+09 47.2	2.731	2.578	+1.45	+7.7	16.8	70.6
Jan. 24	00 12.12	+11 04.4	2.885	2.614	+1.49	+8.1	17.0	64.3
Feb. 3	00 27.07	+12 25.3	3.034	2.650	+1.53	+8.3	17.2	58.2
Feb. 13	00 42.37	+13 48.5	3.177	2.687	+1.56	+8.5	17.4	52.2
Feb. 23	00 57.96	+15 13.0	3.314	2.724	+1.58	+8.5	17.6	46.2
Mar. 4	01 13.79	+16 37.8	3.442	2.762	+1.60	+8.4	17.7	40.4
Mar. 14	01 29.80	+18 01.8	3.560	2.800	+1.62	+8.2	17.9	34.6
Mar. 24	01 45.95	+19 24.2	3.669	2.838	+1.63	+8.0	18.0	29.0
Apr. 3	02 02.21	+20 44.2	3.766	2.876	+1.63	+7.7	18.2	23.4
Apr. 13	02 18.53	+22 01.0	3.851	2.914	+1.63	+7.3	18.3	18.1
Apr. 23	02 34.88	+23 14.1	3.923	2.953	+1.63	+6.9	18.4	13.0
May 3	02 51.20	+24 23.0	3.982	2.991	+1.63	+6.4	18.5	9.0
May 13	03 07.46	+25 27.2	4.028	3.029	+1.61	+5.9	18.6	7.7
May 23	03 23.60	+26 26.6	4.058	3.067	+1.60	+5.4	18.7	10.2
June 2	03 39.55	+27 20.9	4.075	3.105	+1.57	+4.9	18.8	14.8
June 12	03 55.25	+28 09.9	4.077	3.143	+1.54	+4.4	18.9	20.1
June 22	04 10.61	+28 53.9	4.064	3.180	+1.49	+3.9	18.9	25.9
July 2	04 25.55	+29 32.9	4.037	3.218	+1.44	+3.4	19.0	31.8
July 12	04 39.96	+30 07.2	3.995	3.255	+1.38	+3.0	19.0	38.0
July 22	04 53.74	+30 37.3	3.941	3.292	+1.30	+2.6	19.1	44.4
Aug. 1	05 06.74	+31 03.6	3.873	3.328	+1.21	+2.3	19.1	51.0
Aug. 11	05 18.84	+31 26.7	3.793	3.364	+1.10	+2.1	19.1	57.8
Aug. 21	05 29.86	+31 47.3	3.703	3.400	+0.98	+1.9	19.1	64.9
Aug. 31	05 39.64	+32 06.1	3.603	3.436	+0.83	+1.8	19.1	72.4
Sept.10	05 47.97	+32 23.9	3.497	3.471	+0.67	+1.7	19.1	80.2
Sept.20	05 54.64	+32 41.3	3.386	3.505	+0.48	+1.7	19.1	88.4
Sept.30	05 59.43	+32 58.6	3.274	3.540	+0.27	+1.7	19.1	97.1
Oct. 10	06 02.12	+33 15.9	3.164	3.574	+0.04	+1.7	19.1	106.2
Oct. 20	06 02.51	+33 33.0	3.060	3.607	-0.20	+1.6	19.1	115.9
Oct. 30	06 00.50	+33 48.6	2.967	3.640	-0.44	+1.2	19.1	126.0
Nov. 9	05 56.12	+34 01.0	2.890	3.673	-0.66	+0.7	19.1	136.6
Nov. 19	05 49.57	+34 08.1	2.834	3.705	-0.83	-0.1	19.1	147.4
Nov. 29	05 41.32	+34 07.4	2.803	3.737	-0.93	-1.0	19.1	158.2
Dec. 9	05 32.05	+33 57.7	2.801	3.768	-0.95	-1.9	19.1	167.3
Dec. 19	05 22.58	+33 38.4	2.830	3.799	-0.88	-2.7	19.2	168.3
Dec. 29	05 13.79	+33 11.1	2.890	3.829	-0.74	-3.3	19.3	160.0
Jan. 8	05 06.38	+32 38.3	2.980	3.859	-0.55	-3.5	19.4	149.4
Jan. 18	05 00.85	+32 03.0	3.096	3.889	-0.34	-3.5	19.5	138.6
Jan. 28	04 57.47	+31 28.2	3.234	3.918	-0.12	-3.2	19.7	128.0
Feb. 7	04 56.28	+30 56.0	3.389	3.946	+0.09	-2.8	19.8	117.7
Feb. 17	04 57.18	+30 27.5	3.557	3.974	+0.28	-2.4	20.0	107.9
Feb. 27	04 60.00	+30 03.2	3.733	4.001	+0.45	-2.0	20.1	98.5
Mar. 9	05 04.50	+29 42.9	3.913	4.028	+0.60	-1.7	20.2	89.5
Mar. 19	05 10.48	+29 26.0	4.092	4.055	+0.72	-1.4	20.4	80.9
Mar. 29	05 17.71	+29 11.8	4.267	4.081	+0.83	-1.2	20.5	72.6

Comet 130P/McNaught-Hughes

Epoch = 2012 July 12.0 TT
T = 2011 June 25.32753 TT
Peri. = 224.54248 e = 0.4081135
Node = 89.75339 2000.0 a = 3.5442358 AU
Incl. = 7.31374 n = 0.14771349
q = 2.0977853 AU P = 6.67 years

m1 = 10.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 00.91	−07 11.2	2.597	2.521	+1.34	+11.3	18.7	74.6
Jan. 14	00 14.30	−05 17.8	2.754	2.559	+1.39	+11.4	18.9	68.3
Jan. 24	00 28.17	−03 24.2	2.908	2.597	+1.42	+11.3	19.1	62.1
Feb. 3	00 42.40	−01 31.2	3.058	2.636	+1.45	+11.1	19.3	56.0
Feb. 13	00 56.91	+00 20.3	3.201	2.675	+1.47	+10.9	19.5	49.9
Feb. 23	01 11.65	+02 09.4	3.338	2.715	+1.49	+10.6	19.7	44.0
Mar. 4	01 26.56	+03 55.5	3.466	2.755	+1.50	+10.2	19.9	38.1
Mar. 14	01 41.59	+05 37.9	3.585	2.795	+1.51	+9.8	20.1	32.2
Mar. 24	01 56.71	+07 16.0	3.693	2.835	+1.52	+9.3	20.2	26.5
Apr. 3	02 11.87	+08 49.2	3.790	2.876	+1.52	+8.8	20.4	20.7
Apr. 13	02 27.03	+10 17.2	3.874	2.917	+1.51	+8.2	20.5	15.0
Apr. 23	02 42.17	+11 39.5	3.945	2.958	+1.51	+7.6	20.6	9.5
May 3	02 57.23	+12 55.8	4.002	2.999	+1.49	+7.0	20.8	4.7
May 13	03 12.17	+14 05.9	4.045	3.039	+1.48	+6.4	20.9	4.7
May 23	03 26.93	+15 09.7	4.074	3.080	+1.45	+5.7	21.0	9.6
June 2	03 41.46	+16 07.0	4.088	3.121	+1.42	+5.1	21.1	15.2
June 12	03 55.70	+16 57.8	4.087	3.161	+1.39	+4.4	21.2	21.2
June 22	04 09.56	+17 42.3	4.071	3.201	+1.34	+3.8	21.2	27.2
July 2	04 22.96	+18 20.5	4.040	3.241	+1.28	+3.2	21.3	33.5
July 12	04 35.81	+18 52.9	3.996	3.281	+1.22	+2.7	21.3	39.9
July 22	04 48.00	+19 19.7	3.937	3.320	+1.14	+2.2	21.4	46.5
Aug. 1	04 59.40	+19 41.5	3.866	3.360	+1.05	+1.7	21.4	53.3
Aug. 11	05 09.90	+19 58.6	3.783	3.399	+0.94	+1.3	21.5	60.4
Aug. 21	05 19.33	+20 11.8	3.690	3.437	+0.82	+1.0	21.5	67.8
Aug. 31	05 27.53	+20 21.8	3.588	3.475	+0.68	+0.7	21.5	75.5
Sept. 10	05 34.32	+20 29.2	3.481	3.513	+0.52	+0.6	21.5	83.5
Sept. 20	05 39.52	+20 34.8	3.370	3.550	+0.34	+0.5	21.5	92.1
Sept. 30	05 42.92	+20 39.4	3.258	3.587	+0.15	+0.4	21.5	101.0
Oct. 10	05 44.37	+20 43.5	3.151	3.624	−0.06	+0.4	21.5	110.5
Oct. 20	05 43.74	+20 47.6	3.052	3.660	−0.28	+0.4	21.5	120.6
Oct. 30	05 40.99	+20 51.7	2.966	3.696	−0.48	+0.4	21.5	131.2
Nov. 9	05 36.22	+20 55.9	2.898	3.731	−0.65	+0.4	21.5	142.3
Nov. 19	05 29.71	+20 59.9	2.854	3.766	−0.78	+0.3	21.5	153.9
Nov. 29	05 21.92	+21 03.2	2.837	3.801	−0.84	+0.3	21.6	165.7
Dec. 9	05 13.49	+21 05.8	2.851	3.835	−0.84	+0.2	21.6	177.2
Dec. 19	05 05.13	+21 07.8	2.896	3.868	−0.76	+0.2	21.7	169.8
Dec. 29	04 57.53	+21 10.0	2.973	3.901	−0.63	+0.3	21.8	157.9
Jan. 8	04 51.27	+21 13.2	3.078	3.934	−0.45	+0.5	22.0	146.3
Jan. 18	04 46.72	+21 18.2	3.208	3.966	−0.26	+0.7	.	135.1
Jan. 28	04 44.09	+21 25.6	3.359	3.998	−0.07	+1.0	.	124.3
Feb. 7	04 43.40	+21 35.6	3.525	4.029	+0.12	+1.3	.	114.1
Feb. 17	04 44.58	+21 48.1	3.702	4.060	+0.29	+1.5	.	104.2
Feb. 27	04 47.48	+22 02.7	3.885	4.090	+0.44	+1.6	.	94.9
Mar. 9	04 51.90	+22 18.8	4.070	4.119	+0.58	+1.7	.	85.9
Mar. 19	04 57.67	+22 35.6	4.253	4.149	+0.69	+1.7	.	77.3
Mar. 29	05 04.59	+22 52.6	4.430	4.177	+0.79	+1.6	.	69.0

Comet 176P/LINEAR

Epoch = 2012 July 12.0 TT
T = 2011 June 29.45720 TT
Peri. = 35.67792 e = 0.1937196
Node = 345.99806 2000.0 a = 3.1936228 AU
Incl. = 0.23496 n = 0.17269455
q = 2.5749555 AU P = 5.71 years

H = 15.2 , G = 0.15

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 4	03 21.94	+18 49.5	1.977	2.717	+0.11	+0.3	19.7	130.1
Jan. 14	03 23.02	+18 52.5	2.101	2.731	+0.36	+1.2	19.9	120.2
Jan. 24	03 26.61	+19 04.6	2.237	2.746	+0.59	+2.0	20.1	110.9
Feb. 3	03 32.48	+19 24.4	2.381	2.761	+0.79	+2.6	20.3	102.1
Feb. 13	03 40.34	+19 50.2	2.529	2.777	+0.96	+3.0	20.5	93.9
Feb. 23	03 49.93	+20 19.9	2.680	2.793	+1.11	+3.2	20.6	86.1
Mar. 4	04 01.00	+20 51.8	2.830	2.810	+1.23	+3.2	20.7	78.7
Mar. 14	04 13.32	+21 24.1	2.977	2.826	+1.34	+3.1	20.8	71.7
Mar. 24	04 26.68	+21 55.2	3.120	2.843	+1.42	+2.9	20.9	64.9
Apr. 3	04 40.93	+22 23.9	3.257	2.861	+1.50	+2.5	21.0	58.3
Apr. 13	04 55.88	+22 48.9	3.386	2.878	+1.55	+2.0	21.0	52.0
Apr. 23	05 11.41	+23 09.3	3.507	2.896	+1.60	+1.5	21.0	45.8
May 3	05 27.40	+23 24.4	3.618	2.915	+1.63	+0.9	21.1	39.7
May 13	05 43.71	+23 33.5	3.718	2.933	+1.65	+0.3	21.1	33.8
May 23	06 00.25	+23 36.4	3.807	2.951	+1.67	-0.4	21.1	28.0
June 2	06 16.92	+23 32.7	3.884	2.970	+1.67	-1.0	21.0	22.2
June 12	06 33.62	+23 22.3	3.949	2.989	+1.66	-1.7	21.0	16.4
June 22	06 50.27	+23 05.4	4.000	3.008	+1.65	-2.3	20.9	10.7
July 2	07 06.78	+22 42.2	4.038	3.027	+1.63	-2.9	20.8	5.0
July 12	07 23.08	+22 12.9	4.062	3.045	+1.60	-3.5	20.7	0.7
July 22	07 39.11	+21 38.0	4.072	3.064	+1.57	-4.0	20.9	6.5
Aug. 1	07 54.79	+20 58.0	4.067	3.083	+1.53	-4.4	21.1	12.3
Aug. 11	08 10.06	+20 13.6	4.049	3.102	+1.48	-4.8	21.2	18.3
Aug. 21	08 24.87	+19 25.3	4.015	3.121	+1.43	-5.1	21.2	24.3
Aug. 31	08 39.14	+18 34.2	3.968	3.140	+1.37	-5.3	21.3	30.5
Sept.10	08 52.81	+17 40.9	3.907	3.159	+1.30	-5.4	21.3	36.8
Sept.20	09 05.81	+16 46.4	3.833	3.178	+1.22	-5.5	21.4	43.3
Sept.30	09 18.05	+15 51.9	3.746	3.197	+1.14	-5.3	21.4	50.0
Oct. 10	09 29.44	+14 58.4	3.648	3.215	+1.04	-5.1	21.4	57.0
Oct. 20	09 39.88	+14 07.2	3.539	3.234	+0.93	-4.8	21.4	64.3
Oct. 30	09 49.22	+13 19.6	3.422	3.252	+0.81	-4.3	21.3	71.8
Nov. 9	09 57.34	+12 37.0	3.298	3.270	+0.67	-3.6	21.3	79.7
Nov. 19	10 04.05	+12 00.8	3.170	3.288	+0.51	-2.8	21.2	88.1
Nov. 29	10 09.19	+11 32.7	3.040	3.306	+0.34	-1.9	21.1	96.8
Dec. 9	10 12.56	+11 14.0	2.913	3.324	+0.14	-0.8	21.0	106.1
Dec. 19	10 14.00	+11 06.0	2.792	3.341	-0.06	+0.3	20.9	115.9
Dec. 29	10 13.39	+11 09.4	2.682	3.358	-0.27	+1.5	20.8	126.2
Jan. 8	10 10.70	+11 24.3	2.588	3.375	-0.46	+2.5	20.6	137.1
Jan. 18	10 06.05	+11 49.7	2.514	3.392	-0.63	+3.4	20.4	148.5
Jan. 28	09 59.77	+12 23.5	2.465	3.408	-0.74	+3.9	20.3	160.3
Feb. 7	09 52.38	+13 02.4	2.445	3.425	-0.78	+4.0	20.1	172.4
Feb. 17	09 44.55	+13 42.3	2.455	3.441	-0.75	+3.7	20.0	175.5
Feb. 27	09 37.06	+14 19.4	2.495	3.456	-0.65	+3.1	20.3	163.5
Mar. 9	09 30.58	+14 50.6	2.565	3.472	-0.49	+2.3	20.5	151.8
Mar. 19	09 25.63	+15 13.5	2.660	3.487	-0.31	+1.4	20.7	140.6
Mar. 29	09 22.56	+15 27.3	2.777	3.502	-0.11	+0.4	20.9	129.9

Comet 62P/Tsuchinshan

Epoch = 2012 July 12.0 TT
T = 2011 June 30.43579 TT
Peri. = 30.24568 e = 0.5976372
Node = 90.30151 2000.0 a = 3.4384170 AU
Incl. = 9.71376 n = 0.15458461
q = 1.3834911 AU P = 6.38 years

m1 = 6.2 + 5 log(Delta) + 35.0 log(r(t-25))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	15 36.67	-12 48.3	2.889	2.351	+1.51	-4.8	20.3	48.2
Jan. 14	15 51.76	-13 36.1	2.853	2.419	+1.38	-3.8	20.8	54.6
Jan. 24	16 05.53	-14 13.9	2.806	2.488	+1.23	-2.9	21.2	61.3
Feb. 3	16 17.79	-14 42.6	2.749	2.555	+1.06	-2.0	21.6	68.4
Feb. 13	16 28.36	-15 02.9	2.683	2.622	+0.87	-1.3	22.0	75.8
Feb. 23	16 37.04	-15 16.0	2.610	2.689	+0.66	-0.7	22.3	83.8
Mar. 4	16 43.60	-15 22.9	2.533	2.754	+0.42	-0.2	22.7	92.2
Mar. 14	16 47.84	-15 24.6	2.454	2.819	+0.17	+0.2	23.0	101.1
Mar. 24	16 49.57	-15 22.1	2.379	2.883	-0.09	+0.6	23.3	110.5
Apr. 3	16 48.66	-15 16.5	2.310	2.947	-0.35	+0.8	23.6	120.5
Apr. 13	16 45.15	-15 08.6	2.253	3.009	-0.60	+0.9	23.9	131.1
Apr. 23	16 39.19	-14 59.4	2.214	3.070	-0.80	+1.0	.	142.1
May 3	16 31.22	-14 49.6	2.196	3.131	-0.93	+0.9	.	153.5
May 13	16 21.90	-14 40.4	2.205	3.191	-0.99	+0.7	.	164.8
May 23	16 12.02	-14 33.2	2.242	3.250	-0.96	+0.4	.	173.3
June 2	16 02.45	-14 29.1	2.309	3.308	-0.85	0.0	.	168.1
June 12	15 53.97	-14 29.6	2.404	3.365	-0.69	-0.6	.	157.5
June 22	15 47.09	-14 35.4	2.526	3.421	-0.49	-1.2	.	146.6
July 2	15 42.18	-14 47.1	2.671	3.476	-0.29	-1.7	.	136.1
July 12	15 39.33	-15 04.5	2.835	3.531	-0.08	-2.3	.	126.1
July 22	15 38.49	-15 27.1	3.014	3.584	+0.11	-2.7	.	116.5
Aug. 1	15 39.55	-15 54.2	3.203	3.637	+0.28	-3.1	.	107.3
Aug. 11	15 42.31	-16 24.8	3.399	3.688	+0.43	-3.3	.	98.5
Aug. 21	15 46.58	-16 58.1	3.599	3.739	+0.56	-3.5	.	90.1
Aug. 31	15 52.18	-17 33.1	3.798	3.789	+0.67	-3.6	.	81.8
Sept.10	15 58.91	-18 08.8	3.995	3.838	+0.77	-3.6	.	73.9
Sept.20	16 06.63	-18 44.5	4.185	3.887	+0.86	-3.5	.	66.0
Sept.30	16 15.18	-19 19.5	4.367	3.934	+0.92	-3.4	.	58.3
Oct. 10	16 24.42	-19 53.1	4.537	3.981	+0.98	-3.2	.	50.7
Oct. 20	16 34.25	-20 24.8	4.695	4.027	+1.03	-2.9	.	43.2
Oct. 30	16 44.54	-20 54.1	4.837	4.071	+1.06	-2.7	.	35.6
Nov. 9	16 55.18	-21 20.6	4.962	4.116	+1.09	-2.3	.	28.1
Nov. 19	17 06.07	-21 44.0	5.069	4.159	+1.10	-2.0	.	20.6
Nov. 29	17 17.11	-22 04.2	5.156	4.201	+1.11	-1.7	.	13.1
Dec. 9	17 28.19	-22 21.1	5.222	4.243	+1.10	-1.4	.	5.6
Dec. 19	17 39.22	-22 34.6	5.267	4.284	+1.09	-1.0	.	2.2
Dec. 29	17 50.09	-22 44.9	5.290	4.324	+1.06	-0.7	.	9.8
Jan. 8	18 00.68	-22 52.2	5.291	4.364	+1.02	-0.5	.	17.5
Jan. 18	18 10.91	-22 56.8	5.271	4.402	+0.97	-0.2	.	25.4
Jan. 28	18 20.64	-22 59.1	5.230	4.440	+0.91	-0.1	.	33.3
Feb. 7	18 29.78	-22 59.6	5.170	4.477	+0.84	+0.1	.	41.3
Feb. 17	18 38.19	-22 58.9	5.092	4.514	+0.76	+0.1	.	49.5
Feb. 27	18 45.76	-22 57.6	4.998	4.549	+0.66	+0.1	.	57.8
Mar. 9	18 52.36	-22 56.4	4.891	4.584	+0.55	0.0	.	66.4
Mar. 19	18 57.86	-22 56.1	4.774	4.618	+0.43	-0.1	.	75.1
Mar. 29	19 02.12	-22 57.3	4.649	4.652	+0.29	-0.3	.	84.0

Comet 123P/West-Hartley

Epoch = 2012 July 12.0 TT
T = 2011 July 4.49201 TT
Peri. = 102.81834 e = 0.4486451
Node = 46.59827 2000.0 a = 3.8607238 AU
Incl. = 15.35695 n = 0.12992747
q = 2.1286290 AU P = 7.59 years

m1 = 6.0 + 5 log(Delta) + 22.5 log(r(t-50))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	15 13.20	-14 24.8	3.010	2.545	+1.43	-8.3	16.8	53.1
Jan. 14	15 27.52	-15 48.1	2.939	2.584	+1.33	-7.6	16.9	59.6
Jan. 24	15 40.80	-17 04.3	2.859	2.624	+1.20	-7.0	17.0	66.3
Feb. 3	15 52.82	-18 13.9	2.773	2.665	+1.05	-6.4	17.0	73.4
Feb. 13	16 03.37	-19 17.8	2.681	2.706	+0.88	-5.9	17.1	80.9
Feb. 23	16 12.18	-20 16.9	2.585	2.748	+0.68	-5.5	17.2	88.8
Mar. 4	16 18.99	-21 11.9	2.489	2.791	+0.46	-5.2	17.3	97.1
Mar. 14	16 23.54	-22 03.6	2.395	2.834	+0.20	-4.9	17.3	105.9
Mar. 24	16 25.59	-22 52.4	2.307	2.877	-0.06	-4.6	17.4	115.2
Apr. 3	16 24.96	-23 38.0	2.228	2.920	-0.33	-4.2	17.5	125.1
Apr. 13	16 21.64	-24 19.7	2.164	2.964	-0.58	-3.6	17.6	135.5
Apr. 23	16 15.80	-24 56.1	2.118	3.008	-0.79	-3.0	17.7	146.4
May 3	16 07.90	-25 25.7	2.096	3.052	-0.92	-2.2	17.8	157.6
May 13	15 58.68	-25 47.3	2.099	3.096	-0.97	-1.3	17.9	168.4
May 23	15 49.02	-26 00.7	2.131	3.140	-0.91	-0.6	18.1	174.0
June 2	15 39.89	-26 07.2	2.191	3.184	-0.78	-0.2	18.3	165.6
June 12	15 32.11	-26 09.2	2.279	3.227	-0.59	0.0	18.5	154.9
June 22	15 26.22	-26 09.5	2.391	3.271	-0.37	-0.1	18.8	144.3
July 2	15 22.54	-26 11.0	2.525	3.315	-0.14	-0.4	19.1	134.2
July 12	15 21.13	-26 15.4	2.676	3.358	+0.08	-0.9	19.3	124.5
July 22	15 21.91	-26 23.9	2.842	3.401	+0.28	-1.3	19.6	115.2
Aug. 1	15 24.71	-26 37.0	3.017	3.444	+0.46	-1.7	19.8	106.4
Aug. 11	15 29.31	-26 54.3	3.198	3.487	+0.62	-2.1	20.1	98.0
Aug. 21	15 35.49	-27 15.4	3.383	3.529	+0.76	-2.4	20.4	89.9
Aug. 31	15 43.06	-27 39.6	3.567	3.571	+0.88	-2.6	20.6	82.1
Sept.10	15 51.82	-28 05.9	3.750	3.613	+0.98	-2.8	20.8	74.4
Sept.20	16 01.62	-28 33.6	3.927	3.654	+1.07	-2.8	21.1	67.0
Sept.30	16 12.30	-29 01.8	4.098	3.695	+1.14	-2.8	21.3	59.7
Oct. 10	16 23.72	-29 29.7	4.259	3.736	+1.21	-2.7	21.5	52.5
Oct. 20	16 35.77	-29 56.7	4.408	3.776	+1.26	-2.6	21.7	45.4
Oct. 30	16 48.33	-30 22.3	4.544	3.816	+1.30	-2.4	21.8	38.4
Nov. 9	17 01.29	-30 45.8	4.666	3.855	+1.33	-2.1	22.0	31.4
Nov. 19	17 14.55	-31 07.1	4.771	3.894	+1.35	-1.9	.	24.6
Nov. 29	17 28.00	-31 25.8	4.859	3.933	+1.35	-1.6	.	18.0
Dec. 9	17 41.54	-31 41.8	4.929	3.972	+1.35	-1.3	.	12.2
Dec. 19	17 55.08	-31 55.3	4.979	4.009	+1.34	-1.1	.	8.6
Dec. 29	18 08.49	-32 06.2	5.010	4.047	+1.32	-0.9	.	10.4
Jan. 8	18 21.68	-32 15.0	5.022	4.084	+1.29	-0.7	.	15.7
Jan. 18	18 34.55	-32 22.1	5.013	4.121	+1.24	-0.6	.	22.4
Jan. 28	18 46.97	-32 28.0	4.986	4.157	+1.19	-0.5	.	29.4
Feb. 7	18 58.86	-32 33.4	4.941	4.192	+1.12	-0.6	.	36.8
Feb. 17	19 10.08	-32 39.0	4.878	4.228	+1.04	-0.7	.	44.3
Feb. 27	19 20.53	-32 45.8	4.800	4.263	+0.96	-0.9	.	52.0
Mar. 9	19 30.09	-32 54.5	4.708	4.297	+0.85	-1.2	.	59.9
Mar. 19	19 38.62	-33 06.2	4.605	4.331	+0.74	-1.5	.	67.9
Mar. 29	19 46.00	-33 21.7	4.493	4.364	+0.61	-2.0	.	76.2

Comet P/2010 T2 (PANSTARRS)

Epoch = 2012 July 12.0 TT
T = 2011 July 10.46665 TT
Peri. = 356.09113 e = 0.3178877
Node = 59.59305 2000.0 a = 5.5021902 AU
Incl. = 8.02814 n = 0.07636611
q = 3.7531116 AU P = 12.91 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	04 57.18	+26 48.0	2.954	3.855	-0.42	+0.1	19.7	152.8
Jan. 14	04 52.97	+26 49.3	3.046	3.867	-0.24	+0.1	19.8	141.8
Jan. 24	04 50.53	+26 50.7	3.160	3.879	-0.05	+0.2	19.9	131.1
Feb. 3	04 50.04	+26 53.1	3.292	3.892	+0.15	+0.4	20.0	120.9
Feb. 13	04 51.50	+26 57.2	3.438	3.905	+0.33	+0.6	20.2	111.2
Feb. 23	04 54.82	+27 03.1	3.594	3.918	+0.50	+0.7	20.3	101.9
Mar. 4	04 59.86	+27 10.6	3.754	3.932	+0.66	+0.9	20.4	93.0
Mar. 14	05 06.41	+27 19.2	3.917	3.947	+0.79	+0.9	20.5	84.5
Mar. 24	05 14.31	+27 28.2	4.078	3.962	+0.91	+0.9	20.6	76.3
Apr. 3	05 23.37	+27 36.9	4.234	3.978	+1.00	+0.8	20.7	68.5
Apr. 13	05 33.40	+27 44.6	4.384	3.994	+1.08	+0.6	20.8	60.9
Apr. 23	05 44.25	+27 50.7	4.525	4.010	+1.15	+0.4	20.9	53.6
May 3	05 55.77	+27 54.6	4.655	4.027	+1.20	+0.1	21.0	46.4
May 13	06 07.82	+27 55.8	4.773	4.044	+1.25	-0.2	21.1	39.5
May 23	06 20.28	+27 54.0	4.878	4.062	+1.28	-0.5	21.2	32.7
June 2	06 33.04	+27 49.0	4.968	4.080	+1.29	-0.8	21.2	26.0
June 12	06 45.99	+27 40.8	5.042	4.099	+1.30	-1.2	21.3	19.5
June 22	06 59.03	+27 29.1	5.101	4.118	+1.30	-1.5	21.4	13.2
July 2	07 12.08	+27 14.4	5.143	4.137	+1.30	-1.8	21.4	7.4
July 12	07 25.05	+26 56.6	5.168	4.156	+1.28	-2.0	21.4	5.0
July 22	07 37.85	+26 36.2	5.176	4.176	+1.26	-2.3	21.5	9.1
Aug. 1	07 50.42	+26 13.6	5.168	4.196	+1.22	-2.4	21.5	15.2
Aug. 11	08 02.66	+25 49.3	5.142	4.217	+1.19	-2.5	21.5	21.7
Aug. 21	08 14.51	+25 23.9	5.099	4.238	+1.14	-2.6	21.5	28.5
Aug. 31	08 25.89	+24 58.2	5.041	4.259	+1.08	-2.5	21.6	35.4
Sept. 10	08 36.70	+24 32.8	4.967	4.280	+1.02	-2.4	21.6	42.6
Sept. 20	08 46.87	+24 08.8	4.879	4.302	+0.94	-2.2	21.5	49.9
Sept. 30	08 56.28	+23 47.0	4.779	4.323	+0.86	-1.9	21.5	57.5
Oct. 10	09 04.84	+23 28.4	4.667	4.346	+0.76	-1.4	21.5	65.3
Oct. 20	09 12.43	+23 14.1	4.547	4.368	+0.65	-0.9	21.5	73.4
Oct. 30	09 18.91	+23 05.0	4.420	4.390	+0.53	-0.3	21.5	81.8
Nov. 9	09 24.18	+23 02.1	4.290	4.413	+0.39	+0.4	21.4	90.6
Nov. 19	09 28.07	+23 06.1	4.160	4.436	+0.24	+1.1	21.4	99.8
Nov. 29	09 30.47	+23 17.5	4.035	4.459	+0.08	+1.9	21.4	109.3
Dec. 9	09 31.30	+23 36.3	3.918	4.482	-0.08	+2.6	21.3	119.2
Dec. 19	09 30.50	+24 01.8	3.815	4.505	-0.24	+3.1	21.3	129.5
Dec. 29	09 28.11	+24 32.8	3.731	4.529	-0.38	+3.4	21.3	140.0
Jan. 8	09 24.28	+25 07.0	3.669	4.552	-0.50	+3.5	21.3	150.7
Jan. 18	09 19.27	+25 42.0	3.634	4.576	-0.58	+3.3	21.3	161.1
Jan. 28	09 13.49	+26 14.7	3.629	4.600	-0.61	+2.8	21.3	169.2
Feb. 7	09 07.41	+26 42.6	3.654	4.624	-0.59	+2.1	21.4	168.1
Feb. 17	09 01.55	+27 03.4	3.710	4.648	-0.51	+1.3	21.5	159.4
Feb. 27	08 56.40	+27 16.1	3.794	4.672	-0.41	+0.4	21.5	149.1
Mar. 9	08 52.34	+27 20.3	3.905	4.696	-0.27	-0.4	21.6	138.7
Mar. 19	08 49.64	+27 16.5	4.037	4.720	-0.12	-1.1	21.7	128.4
Mar. 29	08 48.44	+27 05.3	4.186	4.745	+0.03	-1.8	21.9	118.5

Comet P/(300163) 2006 VW139

Epoch = 2012 July 12.0 TT
T = 2011 July 17.34634 TT
Peri. = 281.54326 e = 0.2012669
Node = 83.18977 2000.0 a = 3.0494519 AU
Incl. = 3.24063 n = 0.18508507
q = 2.4356982 AU P = 5.33 years

m1 = 11.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 54.87	+09 32.7	2.103	2.571	+0.68	+5.4	19.2	107.2
Jan. 14	02 01.71	+10 26.7	2.244	2.586	+0.87	+6.1	19.3	98.9
Jan. 24	02 10.37	+11 27.9	2.390	2.602	+1.02	+6.6	19.5	91.1
Feb. 3	02 20.61	+12 34.0	2.537	2.618	+1.16	+6.9	19.7	83.7
Feb. 13	02 32.19	+13 43.1	2.683	2.635	+1.27	+7.0	19.9	76.6
Feb. 23	02 44.91	+14 53.5	2.826	2.652	+1.37	+7.0	20.0	69.8
Mar. 4	02 58.63	+16 03.6	2.965	2.669	+1.45	+6.8	20.2	63.2
Mar. 14	03 13.17	+17 12.0	3.098	2.687	+1.53	+6.5	20.3	56.9
Mar. 24	03 28.42	+18 17.4	3.224	2.706	+1.59	+6.1	20.4	50.7
Apr. 3	03 44.29	+19 18.9	3.342	2.724	+1.64	+5.6	20.5	44.7
Apr. 13	04 00.66	+20 15.3	3.451	2.743	+1.68	+5.1	20.7	38.9
Apr. 23	04 17.44	+21 06.1	3.550	2.763	+1.71	+4.4	20.8	33.1
May 3	04 34.55	+21 50.4	3.638	2.782	+1.73	+3.7	20.9	27.4
May 13	04 51.90	+22 27.9	3.714	2.802	+1.75	+3.0	21.0	21.8
May 23	05 09.41	+22 58.2	3.779	2.822	+1.76	+2.3	21.0	16.3
June 2	05 26.99	+23 21.0	3.832	2.841	+1.76	+1.5	21.1	10.7
June 12	05 44.57	+23 36.3	3.871	2.862	+1.75	+0.8	21.2	5.2
June 22	06 02.06	+23 44.2	3.898	2.882	+1.73	+0.1	21.2	0.5
July 2	06 19.37	+23 44.9	3.911	2.902	+1.71	-0.6	21.3	5.9
July 12	06 36.44	+23 38.7	3.911	2.922	+1.67	-1.3	21.3	11.6
July 22	06 53.18	+23 26.0	3.897	2.942	+1.63	-1.8	21.4	17.3
Aug. 1	07 09.51	+23 07.6	3.870	2.963	+1.58	-2.4	21.4	23.0
Aug. 11	07 25.35	+22 44.1	3.829	2.983	+1.53	-2.8	21.4	29.0
Aug. 21	07 40.62	+22 16.3	3.775	3.003	+1.46	-3.1	21.4	35.0
Aug. 31	07 55.24	+21 45.2	3.708	3.023	+1.39	-3.3	21.5	41.2
Sept. 10	08 09.11	+21 11.8	3.629	3.043	+1.30	-3.4	21.4	47.7
Sept. 20	08 22.15	+20 37.3	3.538	3.063	+1.21	-3.4	21.4	54.3
Sept. 30	08 34.22	+20 03.0	3.437	3.082	+1.10	-3.3	21.4	61.2
Oct. 10	08 45.21	+19 30.3	3.327	3.102	+0.98	-3.0	21.4	68.4
Oct. 20	08 54.97	+19 00.8	3.209	3.121	+0.84	-2.5	21.3	76.0
Oct. 30	09 03.33	+18 36.0	3.086	3.140	+0.68	-1.8	21.3	83.9
Nov. 9	09 10.11	+18 17.5	2.960	3.159	+0.50	-1.0	21.3	92.3
Nov. 19	09 15.09	+18 07.0	2.834	3.178	+0.30	-0.1	21.2	101.2
Nov. 29	09 18.07	+18 05.9	2.713	3.196	+0.08	+0.9	21.1	110.6
Dec. 9	09 18.89	+18 15.0	2.599	3.215	-0.15	+2.0	21.1	120.6
Dec. 19	09 17.41	+18 34.7	2.499	3.233	-0.38	+2.9	21.0	131.2
Dec. 29	09 13.65	+19 04.0	2.416	3.250	-0.58	+3.7	21.0	142.3
Jan. 8	09 07.83	+19 40.9	2.356	3.268	-0.75	+4.1	21.0	154.0
Jan. 18	09 00.35	+20 21.9	2.322	3.285	-0.84	+4.1	21.0	165.8
Jan. 28	08 51.94	+21 02.8	2.318	3.302	-0.85	+3.7	21.0	176.3
Feb. 7	08 43.39	+21 39.6	2.345	3.318	-0.78	+3.0	21.1	168.8
Feb. 17	08 35.58	+22 09.3	2.402	3.335	-0.64	+2.1	21.1	157.1
Feb. 27	08 29.23	+22 30.1	2.486	3.350	-0.44	+1.2	21.3	145.6
Mar. 9	08 24.82	+22 41.6	2.594	3.366	-0.22	+0.3	21.4	134.6
Mar. 19	08 22.60	+22 44.3	2.720	3.381	0.00	-0.5	21.5	124.1
Mar. 29	08 22.60	+22 38.8	2.861	3.396	+0.21	-1.3	21.6	114.3

Comet 69P/Taylor

Epoch = 2012 July 12.0 TT
T = 2011 July 17.62794 TT
Peri. = 343.47947 e = 0.4145128
Node = 104.87419 2000.0 a = 3.8824746 AU
Incl. = 22.04480 n = 0.12883716
q = 2.2731392 AU P = 7.65 years

m1 = 9.4 + 5 log(Delta) + 20.0 log(r(t-40))

0h TT 2012/13	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	11 09.47	+24 38.9	1.913	2.578	+0.24	+11.7	18.6	122.5
Jan. 14	11 11.89	+26 35.4	1.852	2.611	-0.05	+12.7	18.7	131.6
Jan. 24	11 11.44	+28 42.9	1.810	2.644	-0.32	+12.9	18.7	140.5
Feb. 3	11 08.21	+30 52.3	1.789	2.679	-0.56	+12.0	18.8	148.3
Feb. 13	11 02.64	+32 52.7	1.794	2.714	-0.72	+10.1	18.9	153.6
Feb. 23	10 55.48	+34 33.5	1.824	2.750	-0.77	+7.3	19.0	154.5
Mar. 4	10 47.79	+35 46.6	1.880	2.786	-0.71	+4.2	19.2	150.5
Mar. 14	10 40.68	+36 28.4	1.960	2.824	-0.56	+1.1	19.4	143.7
Mar. 24	10 35.08	+36 39.6	2.062	2.861	-0.35	-1.6	19.6	135.6
Apr. 3	10 31.60	+36 23.7	2.183	2.899	-0.11	-3.8	19.9	127.3
Apr. 13	10 30.48	+35 45.8	2.318	2.938	+0.12	-5.5	20.1	119.0
Apr. 23	10 31.69	+34 50.9	2.464	2.977	+0.34	-6.8	20.4	111.0
May 3	10 35.04	+33 43.1	2.619	3.016	+0.52	-7.7	20.6	103.4
May 13	10 40.24	+32 25.9	2.779	3.055	+0.67	-8.4	20.9	96.0
May 23	10 46.99	+31 01.8	2.943	3.095	+0.80	-8.9	21.1	89.0
June 2	10 55.01	+29 32.7	3.107	3.134	+0.90	-9.2	21.3	82.2
June 12	11 04.05	+28 00.2	3.270	3.174	+0.99	-9.5	21.6	75.6
June 22	11 13.90	+26 25.3	3.429	3.214	+1.05	-9.6	21.8	69.3
July 2	11 24.40	+24 49.1	3.584	3.254	+1.10	-9.7	22.0	63.1
July 12	11 35.39	+23 12.3	3.733	3.293	+1.14	-9.7	22.2	57.1
July 22	11 46.76	+21 35.5	3.874	3.333	+1.17	-9.6	22.4	51.2
Aug. 1	11 58.43	+19 59.5	4.006	3.373	+1.19	-9.5	22.6	45.5
Aug. 11	12 10.32	+18 24.9	4.128	3.412	+1.21	-9.3	22.7	39.8
Aug. 21	12 22.37	+16 52.2	4.238	3.451	+1.22	-9.0	22.9	34.4
Aug. 31	12 34.53	+15 22.0	4.336	3.490	+1.22	-8.7	23.0	29.3
Sept.10	12 46.75	+13 55.0	4.421	3.529	+1.22	-8.3	.	24.5
Sept.20	12 58.99	+12 31.8	4.491	3.568	+1.22	-7.9	.	20.6
Sept.30	13 11.20	+11 12.8	4.546	3.607	+1.21	-7.4	.	18.0
Oct. 10	13 23.34	+09 58.9	4.585	3.645	+1.20	-6.8	.	17.4
Oct. 20	13 35.36	+08 50.4	4.609	3.683	+1.18	-6.2	.	19.2
Oct. 30	13 47.20	+07 48.2	4.615	3.721	+1.16	-5.5	.	22.9
Nov. 9	13 58.81	+06 52.7	4.606	3.758	+1.13	-4.8	.	27.8
Nov. 19	14 10.10	+06 04.7	4.580	3.795	+1.09	-4.0	.	33.5
Nov. 29	14 20.99	+05 24.6	4.538	3.832	+1.04	-3.2	.	39.8
Dec. 9	14 31.40	+04 52.9	4.481	3.868	+0.98	-2.3	.	46.4
Dec. 19	14 41.20	+04 30.3	4.410	3.905	+0.91	-1.3	.	53.5
Dec. 29	14 50.27	+04 17.0	4.326	3.940	+0.82	-0.4	.	60.8
Jan. 8	14 58.49	+04 13.2	4.232	3.976	+0.72	+0.6	.	68.4
Jan. 18	15 05.70	+04 19.3	4.130	4.011	+0.60	+1.6	.	76.2
Jan. 28	15 11.75	+04 34.9	4.022	4.046	+0.47	+2.5	.	84.4
Feb. 7	15 16.48	+04 59.7	3.912	4.080	+0.33	+3.3	.	92.8
Feb. 17	15 19.74	+05 32.9	3.803	4.114	+0.17	+4.0	.	101.4
Feb. 27	15 21.41	+06 13.3	3.699	4.148	0.00	+4.6	.	110.3
Mar. 9	15 21.42	+06 59.0	3.605	4.181	-0.17	+4.9	.	119.3
Mar. 19	15 19.72	+07 47.5	3.524	4.214	-0.33	+4.8	.	128.3
Mar. 29	15 16.41	+08 35.9	3.462	4.246	-0.47	+4.5	.	137.0

Comet C/2011 L3 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2011 Aug. 10.48572 TT
Peri. = 27.72962
Node = 307.75922 2000.0
Incl. = 87.11380
q = 1.9239619 AU
e = 0.9999081

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	18 41.32	+47 02.3	2.778	2.609	+1.40	+19.3	18.8	69.9
Jan. 14	18 55.28	+50 15.6	2.816	2.687	+1.50	+21.4	18.9	72.4
Jan. 24	19 10.27	+53 49.7	2.856	2.767	+1.62	+23.2	19.1	74.9
Feb. 3	19 26.42	+57 42.1	2.901	2.849	+1.76	+24.7	19.3	77.2
Feb. 13	19 44.05	+61 48.8	2.954	2.932	+1.97	+25.6	19.4	79.1
Feb. 23	20 03.77	+66 05.1	3.018	3.015	+2.29	+26.0	19.6	80.4
Mar. 4	20 26.69	+70 25.6	3.096	3.100	+2.85	+25.8	19.8	81.0
Mar. 14	20 55.24	+74 43.5	3.188	3.185	+3.98	+24.7	19.9	80.9
Mar. 24	21 35.07	+78 50.7	3.294	3.272	+6.65	+22.2	20.1	80.0
Apr. 3	22 41.61	+82 32.6	3.414	3.358	+13.47	+15.5	20.3	78.4
Apr. 13	00 56.34	+85 07.3	3.545	3.445	+19.83	-0.4	20.5	76.1
Apr. 23	04 14.67	+85 03.1	3.687	3.532	+12.17	-13.7	20.7	73.3
May 3	06 16.33	+82 45.7	3.836	3.620	+6.06	-17.2	20.9	70.1
May 13	07 16.91	+79 53.4	3.989	3.707	+3.69	-17.3	21.1	66.7
May 23	07 53.82	+77 00.3	4.144	3.795	+2.66	-16.5	21.3	63.1
June 2	08 20.38	+74 15.5	4.298	3.883	+2.12	-15.4	21.5	59.5
June 12	08 41.59	+71 41.8	4.448	3.970	+1.81	-14.2	21.6	56.0
June 22	08 59.65	+69 20.0	4.591	4.058	+1.60	-13.0	21.8	52.8
July 2	09 15.66	+67 10.4	4.726	4.145	+1.45	-11.8	21.9	50.0
July 12	09 30.19	+65 12.7	4.849	4.233	+1.34	-10.6	22.1	47.7
July 22	09 43.61	+63 26.9	4.960	4.320	+1.25	-9.4	22.2	46.2
Aug. 1	09 56.10	+61 53.0	5.057	4.407	+1.17	-8.2	22.4	45.6
Aug. 11	10 07.78	+60 30.8	5.139	4.494	+1.09	-7.0	22.5	45.9
Aug. 21	10 18.72	+59 20.5	5.205	4.581	+1.02	-5.8	22.6	47.3
Aug. 31	10 28.94	+58 22.2	5.255	4.667	+0.95	-4.6	22.7	49.8
Sept.10	10 38.42	+57 36.2	5.289	4.753	+0.87	-3.3	22.8	53.1
Sept.20	10 47.12	+57 03.0	5.306	4.839	+0.78	-2.0	22.9	57.4
Sept.30	10 54.96	+56 42.8	5.310	4.925	+0.69	-0.7	22.9	62.3
Oct. 10	11 01.82	+56 36.0	5.300	5.010	+0.58	+0.7	23.0	67.9
Oct. 20	11 07.58	+56 43.0	5.279	5.095	+0.44	+2.1	.	74.0
Oct. 30	11 12.01	+57 03.6	5.250	5.180	+0.29	+3.4	.	80.6
Nov. 9	11 14.90	+57 37.6	5.215	5.265	+0.10	+4.6	.	87.5
Nov. 19	11 15.94	+58 24.1	5.179	5.349	-0.11	+5.7	.	94.6
Nov. 29	11 14.80	+59 21.3	5.146	5.433	-0.37	+6.5	.	101.8
Dec. 9	11 11.10	+60 26.6	5.119	5.517	-0.66	+6.9	.	108.9
Dec. 19	11 04.46	+61 36.0	5.104	5.600	-0.98	+6.8	.	115.6
Dec. 29	10 54.62	+62 44.3	5.105	5.684	-1.31	+6.1	.	121.7
Jan. 8	10 41.51	+63 45.7	5.126	5.766	-1.61	+4.8	.	126.6
Jan. 18	10 25.43	+64 33.6	5.169	5.849	-1.82	+2.9	.	129.9
Jan. 28	10 07.19	+65 02.5	5.237	5.931	-1.91	+0.6	.	131.1
Feb. 7	09 48.04	+65 08.8	5.331	6.013	-1.86	-1.7	.	130.0
Feb. 17	09 29.44	+64 51.6	5.450	6.095	-1.67	-3.9	.	126.9
Feb. 27	09 12.71	+64 12.9	5.593	6.176	-1.40	-5.6	.	122.1
Mar. 9	08 58.72	+63 16.7	5.756	6.257	-1.09	-6.9	.	116.1
Mar. 19	08 47.85	+62 07.8	5.938	6.338	-0.78	-7.7	.	109.4
Mar. 29	08 40.10	+60 50.8	6.133	6.418	-0.49	-8.1	.	102.2

Comet 97P/Metcalf-Brewington

Epoch = 2012 July 12.0 TT
T = 2011 Aug. 20.82214 TT
Peri. = 228.19348 e = 0.4586046
Node = 185.19968 2000.0 a = 4.7964347 AU
Incl. = 17.88567 n = 0.09382666
q = 2.5967677 AU P = 10.50 years

m1 = 10.0 + 5 log(Delta) + 17.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	05 34.57	-03 19.5	1.895	2.773	-0.43	+4.3	19.1	147.2
Jan. 14	05 30.23	-02 36.7	1.970	2.798	-0.24	+5.9	19.3	140.3
Jan. 24	05 27.85	-01 38.0	2.066	2.824	-0.01	+6.9	19.5	132.4
Feb. 3	05 27.70	-00 28.6	2.180	2.852	+0.21	+7.5	19.7	124.2
Feb. 13	05 29.81	+00 46.2	2.308	2.881	+0.42	+7.6	19.9	116.0
Feb. 23	05 34.05	+02 02.2	2.448	2.911	+0.62	+7.4	20.1	108.1
Mar. 4	05 40.22	+03 16.1	2.596	2.942	+0.79	+6.9	20.3	100.4
Mar. 14	05 48.09	+04 25.4	2.751	2.974	+0.93	+6.3	20.5	93.0
Mar. 24	05 57.40	+05 28.2	2.908	3.007	+1.05	+5.5	20.7	85.9
Apr. 3	06 07.93	+06 23.4	3.067	3.041	+1.15	+4.7	20.9	79.1
Apr. 13	06 19.46	+07 10.1	3.225	3.076	+1.23	+3.8	21.1	72.5
Apr. 23	06 31.78	+07 47.9	3.380	3.111	+1.30	+2.9	21.3	66.0
May 3	06 44.74	+08 16.6	3.531	3.147	+1.34	+2.0	21.5	59.8
May 13	06 58.16	+08 36.2	3.676	3.183	+1.38	+1.1	21.6	53.7
May 23	07 11.92	+08 46.9	3.814	3.221	+1.40	+0.2	21.8	47.7
June 2	07 25.90	+08 48.8	3.943	3.258	+1.41	-0.6	22.0	41.8
June 12	07 39.99	+08 42.5	4.063	3.296	+1.41	-1.4	22.1	36.0
June 22	07 54.10	+08 28.3	4.172	3.335	+1.41	-2.1	22.3	30.4
July 2	08 08.16	+08 06.9	4.269	3.374	+1.39	-2.8	22.4	24.9
July 12	08 22.08	+07 38.7	4.353	3.413	+1.37	-3.4	22.5	19.7
July 22	08 35.81	+07 04.5	4.424	3.453	+1.35	-4.0	22.6	15.0
Aug. 1	08 49.28	+06 24.9	4.480	3.492	+1.32	-4.4	22.8	11.6
Aug. 11	09 02.44	+05 40.7	4.522	3.532	+1.28	-4.8	22.9	10.9
Aug. 21	09 15.25	+04 52.4	4.548	3.572	+1.24	-5.1	23.0	13.5
Aug. 31	09 27.65	+04 01.0	4.559	3.613	+1.19	-5.4	.	18.1
Sept.10	09 39.57	+03 07.2	4.553	3.653	+1.14	-5.5	.	23.6
Sept.20	09 50.98	+02 11.7	4.531	3.693	+1.08	-5.6	.	29.8
Sept.30	10 01.78	+01 15.6	4.494	3.734	+1.01	-5.6	.	36.3
Oct. 10	10 11.93	+00 19.6	4.442	3.774	+0.94	-5.5	.	43.1
Oct. 20	10 21.33	-00 35.2	4.375	3.815	+0.85	-5.3	.	50.2
Oct. 30	10 29.87	-01 27.7	4.294	3.855	+0.76	-4.9	.	57.7
Nov. 9	10 37.48	-02 16.9	4.202	3.896	+0.65	-4.5	.	65.4
Nov. 19	10 44.01	-03 01.5	4.101	3.936	+0.53	-3.9	.	73.5
Nov. 29	10 49.34	-03 40.2	3.992	3.977	+0.40	-3.1	.	82.0
Dec. 9	10 53.35	-04 11.5	3.880	4.017	+0.26	-2.2	.	90.8
Dec. 19	10 55.92	-04 33.9	3.767	4.057	+0.10	-1.2	.	100.1
Dec. 29	10 56.96	-04 46.0	3.659	4.097	-0.05	-0.1	.	109.8
Jan. 8	10 56.43	-04 46.5	3.558	4.137	-0.21	+1.2	.	119.9
Jan. 18	10 54.36	-04 34.4	3.472	4.177	-0.35	+2.5	.	130.3
Jan. 28	10 50.89	-04 09.5	3.405	4.217	-0.46	+3.7	.	141.1
Feb. 7	10 46.26	-03 32.2	3.360	4.256	-0.54	+4.8	.	151.9
Feb. 17	10 40.85	-02 44.3	3.343	4.295	-0.57	+5.6	.	162.3
Feb. 27	10 35.10	-01 48.5	3.356	4.334	-0.56	+6.0	.	169.7
Mar. 9	10 29.49	-00 48.2	3.400	4.373	-0.50	+6.1	.	166.9
Mar. 19	10 24.48	+00 12.9	3.475	4.412	-0.40	+5.8	.	157.6
Mar. 29	10 20.44	+01 11.1	3.578	4.450	-0.28	+5.3	.	147.2

Comet 228P/LINEAR

Epoch = 2012 July 12.0 TT
T = 2011 Aug. 24.08314 TT
Peri. = 114.82526 e = 0.1777171
Node = 31.06946 2000.0 a = 4.1719211 AU
Incl. = 7.91469 n = 0.11566446
q = 3.4304994 AU P = 8.52 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	12 26.70	+03 29.5	3.192	3.469	+0.39	-2.0	19.8	98.1
Jan. 14	12 30.55	+03 09.9	3.055	3.475	+0.21	-0.9	19.7	107.2
Jan. 24	12 32.68	+03 00.7	2.926	3.482	+0.03	+0.1	19.7	116.7
Feb. 3	12 32.94	+03 02.1	2.808	3.488	-0.16	+1.1	19.6	126.8
Feb. 13	12 31.33	+03 13.2	2.706	3.495	-0.34	+2.0	19.5	137.2
Feb. 23	12 27.91	+03 32.7	2.624	3.503	-0.50	+2.5	19.5	148.1
Mar. 4	12 22.94	+03 58.1	2.566	3.511	-0.61	+2.8	19.4	159.1
Mar. 14	12 16.86	+04 26.2	2.536	3.519	-0.66	+2.7	19.4	169.8
Mar. 24	12 10.23	+04 53.1	2.535	3.528	-0.65	+2.2	19.4	173.6
Apr. 3	12 03.70	+05 15.2	2.563	3.537	-0.58	+1.4	19.5	164.4
Apr. 13	11 57.88	+05 29.5	2.620	3.546	-0.46	+0.5	19.5	153.6
Apr. 23	11 53.25	+05 34.1	2.701	3.555	-0.31	-0.6	19.6	142.9
May 3	11 50.17	+05 27.8	2.805	3.565	-0.14	-1.7	19.7	132.6
May 13	11 48.78	+05 10.8	2.926	3.576	+0.03	-2.7	19.8	122.8
May 23	11 49.11	+04 43.6	3.060	3.586	+0.20	-3.7	19.9	113.5
June 2	11 51.10	+04 07.1	3.205	3.597	+0.35	-4.5	20.1	104.6
June 12	11 54.60	+03 22.4	3.355	3.608	+0.49	-5.2	20.2	96.1
June 22	11 59.46	+02 30.5	3.508	3.619	+0.61	-5.8	20.3	88.1
July 2	12 05.52	+01 32.4	3.661	3.631	+0.71	-6.3	20.4	80.3
July 12	12 12.61	+00 29.2	3.811	3.643	+0.80	-6.8	20.5	72.8
July 22	12 20.59	-00 38.4	3.956	3.655	+0.88	-7.1	20.6	65.6
Aug. 1	12 29.35	-01 49.6	4.094	3.667	+0.94	-7.4	20.7	58.5
Aug. 11	12 38.76	-03 03.5	4.224	3.680	+1.00	-7.6	20.8	51.6
Aug. 21	12 48.74	-04 19.5	4.342	3.693	+1.05	-7.7	20.9	44.7
Aug. 31	12 59.19	-05 36.9	4.449	3.706	+1.09	-7.8	21.0	38.0
Sept.10	13 10.06	-06 55.0	4.543	3.719	+1.12	-7.8	21.0	31.3
Sept.20	13 21.27	-08 13.4	4.622	3.732	+1.15	-7.8	21.1	24.6
Sept.30	13 32.75	-09 31.3	4.686	3.746	+1.17	-7.7	21.2	17.9
Oct. 10	13 44.46	-10 48.3	4.734	3.760	+1.19	-7.6	21.2	11.2
Oct. 20	13 56.34	-12 03.8	4.766	3.774	+1.20	-7.4	21.2	4.5
Oct. 30	14 08.31	-13 17.3	4.780	3.788	+1.20	-7.1	21.3	2.4
Nov. 9	14 20.31	-14 28.4	4.776	3.802	+1.20	-6.8	21.3	9.2
Nov. 19	14 32.28	-15 36.6	4.755	3.816	+1.18	-6.5	21.3	16.2
Nov. 29	14 44.12	-16 41.5	4.717	3.830	+1.16	-6.1	21.3	23.3
Dec. 9	14 55.75	-17 42.9	4.661	3.845	+1.13	-5.8	21.3	30.5
Dec. 19	15 07.07	-18 40.5	4.590	3.860	+1.09	-5.4	21.3	37.8
Dec. 29	15 17.94	-19 34.2	4.503	3.874	+1.03	-5.0	21.3	45.3
Jan. 8	15 28.25	-20 23.8	4.402	3.889	+0.96	-4.6	21.3	52.9
Jan. 18	15 37.84	-21 09.4	4.290	3.904	+0.87	-4.2	21.2	60.7
Jan. 28	15 46.57	-21 51.0	4.167	3.919	+0.77	-3.8	21.2	68.8
Feb. 7	15 54.25	-22 28.7	4.036	3.934	+0.65	-3.4	21.2	77.0
Feb. 17	16 00.70	-23 02.7	3.901	3.949	+0.50	-3.0	21.1	85.6
Feb. 27	16 05.74	-23 33.1	3.763	3.964	+0.35	-2.7	21.1	94.4
Mar. 9	16 09.20	-23 59.8	3.628	3.979	+0.17	-2.3	21.0	103.5
Mar. 19	16 10.92	-24 22.8	3.498	3.994	-0.01	-1.9	20.9	113.0
Mar. 29	16 10.80	-24 41.8	3.379	4.010	-0.20	-1.5	20.9	122.9

Comet C/2010 G2 (Hill)

Epoch = 2012 July 12.0 TT
T = 2011 Sept. 1.97831 TT
Peri. = 137.38803
Node = 246.78659 2000.0
Incl. = 103.76120
q = 1.9799208 AU
e = 0.9792005

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	03 02.40	+02 56.3	1.820	2.465	-0.71	-19.0	12.4	120.2
Jan. 14	02 55.26	-00 13.3	2.059	2.535	-0.31	-13.4	12.8	107.5
Jan. 24	02 52.13	-02 27.0	2.308	2.606	-0.01	-9.4	13.2	96.3
Feb. 3	02 52.03	-04 01.5	2.560	2.680	+0.22	-6.8	13.5	86.1
Feb. 13	02 54.22	-05 09.1	2.807	2.756	+0.39	-5.0	13.8	76.9
Feb. 23	02 58.13	-05 58.7	3.045	2.834	+0.52	-3.8	14.1	68.4
Mar. 4	03 03.37	-06 37.0	3.271	2.913	+0.63	-3.2	14.4	60.5
Mar. 14	03 09.63	-07 08.6	3.480	2.993	+0.70	-2.9	14.7	53.2
Mar. 24	03 16.67	-07 37.3	3.672	3.074	+0.76	-2.9	14.9	46.6
Apr. 3	03 24.29	-08 05.8	3.844	3.156	+0.81	-3.1	15.1	40.8
Apr. 13	03 32.35	-08 36.5	3.996	3.239	+0.84	-3.5	15.3	36.0
Apr. 23	03 40.71	-09 11.0	4.126	3.322	+0.85	-4.0	15.5	32.5
May 3	03 49.25	-09 51.2	4.236	3.406	+0.86	-4.7	15.7	30.6
May 13	03 57.86	-10 38.2	4.324	3.491	+0.86	-5.5	15.8	30.5
May 23	04 06.45	-11 33.3	4.391	3.575	+0.85	-6.4	15.9	32.2
June 2	04 14.91	-12 37.8	4.439	3.660	+0.82	-7.5	16.1	35.4
June 12	04 23.15	-13 52.4	4.469	3.745	+0.79	-8.6	16.2	39.7
June 22	04 31.06	-15 18.1	4.483	3.830	+0.75	-9.8	16.3	44.9
July 2	04 38.52	-16 55.7	4.482	3.915	+0.69	-11.0	16.4	50.5
July 12	04 45.41	-18 45.5	4.469	4.000	+0.62	-12.3	16.5	56.6
July 22	04 51.59	-20 48.1	4.447	4.085	+0.53	-13.5	16.6	62.9
Aug. 1	04 56.90	-23 03.3	4.419	4.170	+0.43	-14.7	16.6	69.3
Aug. 11	05 01.17	-25 30.5	4.388	4.255	+0.30	-15.8	16.7	75.8
Aug. 21	05 04.20	-28 08.5	4.358	4.340	+0.16	-16.7	16.8	82.3
Aug. 31	05 05.77	-30 55.4	4.333	4.424	-0.01	-17.3	16.8	88.5
Sept. 10	05 05.66	-33 48.1	4.317	4.509	-0.20	-17.5	16.9	94.5
Sept. 20	05 03.64	-36 42.9	4.312	4.593	-0.41	-17.2	17.0	99.9
Sept. 30	04 59.52	-39 34.6	4.323	4.677	-0.64	-16.3	17.1	104.6
Oct. 10	04 53.17	-42 17.6	4.351	4.761	-0.86	-14.8	17.2	108.3
Oct. 20	04 44.58	-44 45.9	4.399	4.844	-1.06	-12.8	17.3	110.9
Oct. 30	04 33.95	-46 53.4	4.468	4.928	-1.22	-10.2	17.4	112.1
Nov. 9	04 21.70	-48 35.5	4.556	5.011	-1.32	-7.4	17.5	111.9
Nov. 19	04 08.49	-49 49.2	4.664	5.094	-1.34	-4.4	17.6	110.4
Nov. 29	03 55.14	-50 33.7	4.790	5.176	-1.27	-1.7	17.7	107.7
Dec. 9	03 42.45	-50 50.6	4.930	5.258	-1.13	+0.7	17.9	104.2
Dec. 19	03 31.15	-50 43.3	5.082	5.340	-0.94	+2.7	18.0	99.9
Dec. 29	03 21.72	-50 16.4	5.243	5.422	-0.73	+4.1	18.1	95.3
Jan. 8	03 14.42	-49 35.0	5.409	5.504	-0.51	+5.1	18.3	90.4
Jan. 18	03 09.30	-48 43.7	5.577	5.585	-0.30	+5.7	18.4	85.4
Jan. 28	03 06.25	-47 46.8	5.743	5.666	-0.12	+5.9	18.5	80.6
Feb. 7	03 05.09	-46 47.9	5.906	5.746	+0.05	+5.8	18.7	75.9
Feb. 17	03 05.62	-45 49.9	6.062	5.827	+0.20	+5.5	18.8	71.6
Feb. 27	03 07.58	-44 55.1	6.210	5.907	+0.32	+5.0	18.9	67.8
Mar. 9	03 10.77	-44 05.3	6.347	5.986	+0.42	+4.3	19.0	64.5
Mar. 19	03 14.99	-43 21.8	6.473	6.066	+0.51	+3.6	19.1	61.8
Mar. 29	03 20.05	-42 46.0	6.586	6.145	+0.57	+2.7	19.2	59.8

Comet C/2011 G1 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2011 Sept. 16.49867 TT
Peri. = 354.62574
Node = 152.62947 2000.0
Incl. = 162.23718
q = 2.1559632 AU
e = 1.0013446

m1 = 11.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	08 45.93	+35 57.4	1.585	2.500	-5.37	+24.3	16.6	152.8
Jan. 14	07 52.26	+40 00.4	1.608	2.559	-5.43	+11.5	16.7	161.3
Jan. 24	06 57.98	+41 55.6	1.715	2.621	-4.58	+0.4	17.0	151.3
Feb. 3	06 12.14	+41 59.8	1.891	2.686	-3.38	-5.5	17.3	135.7
Feb. 13	05 38.32	+41 04.9	2.117	2.753	-2.29	-7.2	17.6	120.5
Feb. 23	05 15.37	+39 52.5	2.374	2.822	-1.46	-6.8	18.0	106.7
Mar. 4	05 00.73	+38 44.0	2.647	2.894	-0.87	-5.7	18.3	94.2
Mar. 14	04 52.02	+37 47.3	2.923	2.967	-0.45	-4.4	18.7	82.8
Mar. 24	04 47.50	+37 03.8	3.195	3.041	-0.16	-3.1	19.0	72.2
Apr. 3	04 45.95	+36 32.3	3.455	3.117	+0.05	-2.1	19.2	62.2
Apr. 13	04 46.49	+36 11.2	3.699	3.195	+0.20	-1.2	19.5	52.8
Apr. 23	04 48.52	+35 58.8	3.923	3.273	+0.31	-0.5	19.7	43.8
May 3	04 51.59	+35 53.4	4.123	3.352	+0.38	+0.1	19.9	35.3
May 13	04 55.35	+35 54.0	4.298	3.431	+0.42	+0.6	20.1	27.3
May 23	04 59.53	+35 59.5	4.445	3.512	+0.44	+1.0	20.3	20.2
June 2	05 03.90	+36 09.5	4.564	3.593	+0.44	+1.4	20.5	14.9
June 12	05 08.25	+36 23.3	4.654	3.674	+0.42	+1.8	20.6	13.6
June 22	05 12.40	+36 40.8	4.715	3.756	+0.38	+2.1	20.7	17.2
July 2	05 16.16	+37 01.9	4.748	3.838	+0.32	+2.5	20.8	23.7
July 12	05 19.33	+37 26.5	4.753	3.921	+0.24	+2.8	20.9	31.3
July 22	05 21.72	+37 54.6	4.733	4.003	+0.14	+3.2	21.0	39.6
Aug. 1	05 23.08	+38 26.3	4.690	4.086	+0.01	+3.5	21.1	48.3
Aug. 11	05 23.17	+39 01.5	4.626	4.169	-0.15	+3.8	21.1	57.4
Aug. 21	05 21.72	+39 39.8	4.546	4.252	-0.33	+4.1	21.2	66.9
Aug. 31	05 18.41	+40 20.6	4.454	4.335	-0.55	+4.2	21.2	76.7
Sept.10	05 12.94	+41 02.5	4.355	4.418	-0.79	+4.1	21.2	87.0
Sept.20	05 05.03	+41 43.2	4.256	4.501	-1.06	+3.6	21.3	97.6
Sept.30	04 54.48	+42 19.5	4.164	4.583	-1.32	+2.8	21.3	108.7
Oct. 10	04 41.25	+42 47.0	4.086	4.666	-1.57	+1.4	21.3	120.0
Oct. 20	04 25.57	+43 00.9	4.031	4.749	-1.75	-0.4	21.4	131.4
Oct. 30	04 08.04	+42 56.4	4.006	4.831	-1.85	-2.6	21.5	142.4
Nov. 9	03 49.56	+42 30.9	4.017	4.914	-1.84	-4.7	21.5	152.0
Nov. 19	03 31.20	+41 44.3	4.068	4.996	-1.71	-6.5	21.6	157.7
Nov. 29	03 14.05	+40 39.8	4.160	5.078	-1.51	-7.7	21.8	156.2
Dec. 9	02 58.92	+39 23.2	4.293	5.160	-1.26	-8.2	21.9	148.7
Dec. 19	02 46.28	+38 01.1	4.462	5.242	-1.00	-8.1	22.0	138.7
Dec. 29	02 36.29	+36 39.7	4.662	5.323	-0.74	-7.6	.	127.9
Jan. 8	02 28.85	+35 23.9	4.887	5.404	-0.51	-6.7	.	117.0
Jan. 18	02 23.73	+34 16.8	5.129	5.485	-0.31	-5.7	.	106.2
Jan. 28	02 20.63	+33 19.8	5.382	5.566	-0.14	-4.6	.	95.7
Feb. 7	02 19.24	+32 33.6	5.638	5.647	0.00	-3.6	.	85.5
Feb. 17	02 19.28	+31 57.8	5.892	5.728	+0.12	-2.6	.	75.6
Feb. 27	02 20.48	+31 31.6	6.139	5.808	+0.21	-1.8	.	66.1
Mar. 9	02 22.60	+31 14.1	6.372	5.888	+0.28	-1.0	.	56.8
Mar. 19	02 25.44	+31 04.2	6.589	5.968	+0.34	-0.3	.	47.9
Mar. 29	02 28.81	+31 01.0	6.786	6.047	+0.38	+0.2	.	39.3

Comet C/2011 Q4 (SWAN)

Epoch = 2012 July 12.0 TT
T = 2011 Sept. 21.06670 TT
Peri. = 1.87241
Node = 252.09026 2000.0
Incl. = 147.84374
q = 1.1120466 AU
e = 0.9739113

m1 = 11.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl.	Delta	r	Daily motion m		m1	Elong.
Jan. 4	14 23.29	+21°34'	1.849	1.934	-0.97	+38'	15.6	79°8
Jan. 14	14 13.55	+27 55.4	1.747	2.047	-1.65	+43.9	15.7	92.8
Jan. 24	13 57.08	+35 14.4	1.670	2.160	-2.63	+46.7	15.9	106.0
Feb. 3	13 30.79	+43 01.8	1.635	2.273	-3.93	+43.4	16.0	118.2
Feb. 13	12 51.47	+50 15.5	1.655	2.386	-5.28	+32.2	16.3	127.2
Feb. 23	11 58.67	+55 37.3	1.737	2.498	-5.94	+15.8	16.6	130.8
Mar. 4	10 59.31	+58 15.1	1.878	2.610	-5.36	+0.8	16.9	128.2
Mar. 14	10 05.75	+58 22.7	2.068	2.721	-4.02	-8.5	17.3	121.4
Mar. 24	09 25.60	+56 57.9	2.294	2.832	-2.67	-12.4	17.7	112.6
Apr. 3	08 58.92	+54 54.4	2.545	2.941	-1.64	-13.0	18.1	103.3
Apr. 13	08 42.56	+52 43.9	2.811	3.050	-0.92	-12.4	18.5	94.0
Apr. 23	08 33.40	+50 40.2	3.082	3.158	-0.42	-11.2	18.8	85.0
May 3	08 29.19	+48 48.4	3.353	3.265	-0.08	-9.9	19.2	76.3
May 13	08 28.37	+47 09.2	3.618	3.371	+0.15	-8.7	19.5	67.9
May 23	08 29.91	+45 41.7	3.872	3.476	+0.32	-7.7	19.8	59.9
June 2	08 33.09	+44 24.8	4.112	3.580	+0.43	-6.8	20.0	52.1
June 12	08 37.42	+43 17.3	4.334	3.683	+0.51	-5.9	20.2	44.8
June 22	08 42.53	+42 18.1	4.536	3.786	+0.56	-5.2	20.5	37.9
July 2	08 48.17	+41 26.5	4.717	3.887	+0.59	-4.5	20.7	31.6
July 12	08 54.10	+40 41.9	4.873	3.988	+0.61	-3.8	20.8	26.4
July 22	09 00.16	+40 04.1	5.005	4.088	+0.60	-3.1	21.0	22.9
Aug. 1	09 06.20	+39 33.1	5.111	4.187	+0.59	-2.4	21.2	22.0
Aug. 11	09 12.08	+39 08.9	5.191	4.285	+0.56	-1.7	21.3	24.0
Aug. 21	09 17.68	+38 51.7	5.246	4.383	+0.52	-1.0	21.4	28.5
Aug. 31	09 22.86	+38 42.1	5.275	4.479	+0.46	-0.2	21.5	34.5
Sept.10	09 27.48	+38 40.5	5.281	4.575	+0.39	+0.7	21.6	41.5
Sept.20	09 31.41	+38 47.5	5.264	4.671	+0.30	+1.6	21.7	49.2
Sept.30	09 34.45	+39 03.7	5.228	4.765	+0.20	+2.6	21.8	57.5
Oct. 10	09 36.45	+39 29.6	5.176	4.859	+0.07	+3.6	21.8	66.2
Oct. 20	09 37.19	+40 05.6	5.110	4.952	-0.08	+4.6	21.9	75.3
Oct. 30	09 36.44	+40 51.6	5.037	5.045	-0.25	+5.5	21.9	84.8
Nov. 9	09 33.96	+41 47.0	4.961	5.136	-0.44	+6.3	22.0	94.6
Nov. 19	09 29.52	+42 50.4	4.889	5.227	-0.66	+6.9	22.0	104.7
Nov. 29	09 22.93	+43 59.1	4.827	5.318	-0.89	+7.1	.	114.9
Dec. 9	09 14.08	+45 09.6	4.781	5.408	-1.11	+6.8	.	125.1
Dec. 19	09 02.99	+46 17.2	4.758	5.497	-1.30	+5.9	.	134.9
Dec. 29	08 49.95	+47 16.7	4.764	5.586	-1.45	+4.6	.	143.6
Jan. 8	08 35.47	+48 03.2	4.802	5.674	-1.52	+3.0	.	149.8
Jan. 18	08 20.29	+48 33.1	4.876	5.761	-1.50	+1.2	.	151.7
Jan. 28	08 05.30	+48 44.8	4.985	5.848	-1.40	-0.6	.	148.6
Feb. 7	07 51.32	+48 39.2	5.128	5.935	-1.23	-2.0	.	141.8
Feb. 17	07 39.02	+48 18.8	5.302	6.021	-1.02	-3.2	.	133.2
Feb. 27	07 28.82	+47 47.3	5.501	6.106	-0.80	-3.9	.	123.7
Mar. 9	07 20.86	+47 08.5	5.721	6.191	-0.57	-4.3	.	114.0
Mar. 19	07 15.13	+46 25.5	5.955	6.276	-0.37	-4.4	.	104.3
Mar. 29	07 11.45	+45 41.2	6.198	6.359	-0.19	-4.4	.	94.8

Comet 45P/Honda-Mrkos-Pajdusakova

Epoch = 2012 July 12.0 TT
T = 2011 Sept. 28.78524 TT
Peri. = 326.26231 e = 0.8246622
Node = 89.00013 2000.0 a = 3.0215669 AU
Incl. = 4.25248 n = 0.18765310
q = 0.5297949 AU P = 5.25 years

m1 = 13.8 + 5 log(Delta) + 17.5 log(r(t-5))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	13 59.35	-07 41.5	1.741	1.721	+0.76	-2.0	18.9	72.4
Jan. 14	14 06.94	-08 01.0	1.723	1.841	+0.45	-0.2	19.4	80.7
Jan. 24	14 11.48	-08 02.5	1.695	1.957	+0.12	+1.7	19.8	89.8
Feb. 3	14 12.70	-07 45.5	1.661	2.069	-0.23	+3.6	20.2	99.7
Feb. 13	14 10.38	-07 09.7	1.625	2.178	-0.59	+5.4	20.6	110.5
Feb. 23	14 04.43	-06 15.6	1.596	2.283	-0.94	+7.0	20.9	122.2
Mar. 4	13 55.05	-05 05.1	1.580	2.384	-1.22	+8.2	21.2	134.8
Mar. 14	13 42.86	-03 43.0	1.584	2.483	-1.40	+8.7	21.6	147.9
Mar. 24	13 28.89	-02 15.9	1.615	2.578	-1.44	+8.3	21.9	161.1
Apr. 3	13 14.47	-00 52.4	1.677	2.671	-1.35	+7.2	22.3	172.4
Apr. 13	13 00.96	+00 19.6	1.771	2.761	-1.16	+5.5	22.6	168.7
Apr. 23	12 49.36	+01 15.1	1.896	2.849	-0.91	+3.7	23.0	157.0
May 3	12 40.30	+01 51.7	2.048	2.934	-0.63	+1.8	23.4	145.3
May 13	12 33.98	+02 10.1	2.224	3.017	-0.37	+0.2	23.8	134.2
May 23	12 30.27	+02 12.1	2.417	3.097	-0.13	-1.2	.	123.8
June 2	12 28.94	+02 00.1	2.624	3.176	+0.07	-2.3	.	114.1
June 12	12 29.65	+01 36.8	2.840	3.252	+0.24	-3.2	.	104.9
June 22	12 32.09	+01 04.3	3.061	3.327	+0.39	-4.0	.	96.1
July 2	12 35.97	+00 24.5	3.284	3.399	+0.51	-4.5	.	87.8
July 12	12 41.02	-00 20.9	3.505	3.470	+0.60	-5.0	.	79.7
July 22	12 47.04	-01 10.6	3.721	3.539	+0.68	-5.3	.	71.9
Aug. 1	12 53.86	-02 03.5	3.929	3.606	+0.75	-5.5	.	64.3
Aug. 11	13 01.31	-02 58.6	4.128	3.672	+0.80	-5.7	.	56.8
Aug. 21	13 09.29	-03 55.2	4.315	3.736	+0.84	-5.7	.	49.4
Aug. 31	13 17.68	-04 52.5	4.488	3.799	+0.87	-5.7	.	42.0
Sept. 10	13 26.39	-05 49.8	4.644	3.859	+0.90	-5.7	.	34.7
Sept. 20	13 35.35	-06 46.6	4.783	3.919	+0.91	-5.6	.	27.4
Sept. 30	13 44.47	-07 42.3	4.902	3.977	+0.92	-5.4	.	20.2
Oct. 10	13 53.68	-08 36.4	5.001	4.033	+0.92	-5.2	.	12.9
Oct. 20	14 02.91	-09 28.4	5.078	4.089	+0.92	-4.9	.	5.8
Oct. 30	14 12.07	-10 17.9	5.133	4.142	+0.90	-4.7	.	3.8
Nov. 9	14 21.10	-11 04.4	5.165	4.195	+0.88	-4.3	.	10.5
Nov. 19	14 29.89	-11 47.5	5.174	4.246	+0.85	-3.9	.	18.2
Nov. 29	14 38.36	-12 26.9	5.161	4.296	+0.80	-3.5	.	26.0
Dec. 9	14 46.40	-13 02.1	5.125	4.345	+0.75	-3.1	.	34.1
Dec. 19	14 53.89	-13 32.9	5.069	4.392	+0.68	-2.6	.	42.3
Dec. 29	15 00.70	-13 59.0	4.994	4.439	+0.60	-2.1	.	50.8
Jan. 8	15 06.71	-14 20.0	4.903	4.484	+0.50	-1.6	.	59.5
Jan. 18	15 11.75	-14 35.7	4.797	4.528	+0.39	-1.0	.	68.4
Jan. 28	15 15.68	-14 45.9	4.680	4.570	+0.27	-0.5	.	77.6
Feb. 7	15 18.35	-14 50.4	4.556	4.612	+0.13	+0.1	.	87.1
Feb. 17	15 19.62	-14 49.0	4.430	4.653	-0.02	+0.7	.	96.9
Feb. 27	15 19.39	-14 41.6	4.306	4.692	-0.18	+1.3	.	107.0
Mar. 9	15 17.57	-14 28.2	4.190	4.731	-0.34	+1.9	.	117.5
Mar. 19	15 14.18	-14 08.8	4.087	4.768	-0.49	+2.5	.	128.3
Mar. 29	15 09.31	-13 44.0	4.002	4.805	-0.61	+2.9	.	139.4

Comet 48P/Johnson

Epoch = 2012 July 12.0 TT
T = 2011 Sept. 29.61460 TT
Peri. = 208.08008 e = 0.3683742
Node = 117.23292 2000.0 a = 3.6437484 AU
Incl. = 13.66202 n = 0.14170380
q = 2.3014855 AU P = 6.96 years

m1 = 5.4 + 5 log(Delta) + 22.5 log(r(t-100))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	22 46.20	-18 26.3	2.840	2.393	+1.80	+10.9	15.8	53.7
Jan. 14	23 04.23	-16 37.6	2.950	2.413	+1.80	+11.3	15.9	48.4
Jan. 24	23 22.27	-14 45.1	3.056	2.433	+1.80	+11.5	16.0	43.2
Feb. 3	23 40.27	-12 50.0	3.155	2.456	+1.79	+11.6	16.1	38.1
Feb. 13	23 58.17	-10 53.9	3.248	2.479	+1.78	+11.6	16.2	33.0
Feb. 23	00 15.98	-08 57.8	3.333	2.504	+1.77	+11.5	16.3	28.1
Mar. 4	00 33.66	-07 03.0	3.410	2.530	+1.75	+11.2	16.3	23.3
Mar. 14	00 51.19	-05 10.7	3.479	2.557	+1.74	+10.9	16.4	18.8
Mar. 24	01 08.58	-03 21.7	3.538	2.586	+1.72	+10.5	16.5	14.7
Apr. 3	01 25.81	-01 37.1	3.588	2.615	+1.70	+9.9	16.6	11.4
Apr. 13	01 42.85	+00 02.2	3.627	2.645	+1.69	+9.3	16.7	9.9
Apr. 23	01 59.71	+01 35.6	3.656	2.676	+1.66	+8.7	16.8	11.0
May 3	02 16.34	+03 02.3	3.675	2.708	+1.64	+8.0	16.9	14.1
May 13	02 32.72	+04 21.9	3.682	2.740	+1.61	+7.2	17.0	18.2
May 23	02 48.81	+05 33.9	3.678	2.773	+1.57	+6.4	17.1	22.9
June 2	03 04.54	+06 37.9	3.662	2.806	+1.53	+5.6	17.2	27.9
June 12	03 19.87	+07 33.6	3.635	2.840	+1.48	+4.7	17.3	33.2
June 22	03 34.72	+08 20.9	3.597	2.875	+1.43	+3.9	17.4	38.7
July 2	03 48.98	+08 59.7	3.548	2.909	+1.36	+3.0	17.4	44.4
July 12	04 02.58	+09 30.2	3.488	2.944	+1.28	+2.2	17.5	50.3
July 22	04 15.39	+09 52.4	3.418	2.979	+1.19	+1.4	17.6	56.4
Aug. 1	04 27.27	+10 06.6	3.339	3.015	+1.08	+0.7	17.6	62.9
Aug. 11	04 38.08	+10 13.3	3.252	3.050	+0.96	0.0	17.7	69.6
Aug. 21	04 47.64	+10 12.9	3.158	3.086	+0.81	-0.7	17.7	76.7
Aug. 31	04 55.77	+10 06.3	3.059	3.122	+0.65	-1.2	17.8	84.2
Sept. 10	05 02.28	+09 54.2	2.957	3.157	+0.47	-1.7	17.8	92.0
Sept. 20	05 06.95	+09 37.6	2.855	3.193	+0.27	-2.0	17.9	100.4
Sept. 30	05 09.61	+09 18.0	2.757	3.229	+0.05	-2.1	17.9	109.3
Oct. 10	05 10.11	+08 56.7	2.666	3.264	-0.17	-2.1	18.0	118.7
Oct. 20	05 08.38	+08 35.6	2.586	3.300	-0.39	-1.9	18.0	128.5
Oct. 30	05 04.49	+08 16.7	2.523	3.335	-0.58	-1.5	18.1	138.8
Nov. 9	04 58.69	+08 02.1	2.482	3.370	-0.73	-0.8	18.2	149.1
Nov. 19	04 51.42	+07 53.7	2.465	3.405	-0.81	0.0	18.3	158.9
Nov. 29	04 43.33	+07 53.3	2.477	3.440	-0.82	+0.9	18.4	165.4
Dec. 9	04 35.17	+08 01.9	2.519	3.475	-0.75	+1.8	18.5	163.7
Dec. 19	04 27.65	+08 19.6	2.590	3.509	-0.62	+2.6	18.7	155.5
Dec. 29	04 21.42	+08 46.0	2.690	3.543	-0.45	+3.4	18.9	145.4
Jan. 8	04 16.89	+09 19.9	2.813	3.577	-0.26	+4.0	19.1	135.1
Jan. 18	04 14.29	+09 59.9	2.957	3.611	-0.06	+4.5	19.3	124.8
Jan. 28	04 13.69	+10 44.5	3.117	3.644	+0.13	+4.7	19.5	115.0
Feb. 7	04 14.99	+11 31.9	3.289	3.677	+0.31	+4.9	19.8	105.5
Feb. 17	04 18.06	+12 21.0	3.467	3.710	+0.47	+4.9	20.0	96.4
Feb. 27	04 22.71	+13 10.2	3.648	3.743	+0.60	+4.8	20.2	87.7
Mar. 9	04 28.74	+13 58.6	3.829	3.775	+0.72	+4.7	20.4	79.4
Mar. 19	04 35.98	+14 45.3	4.006	3.806	+0.82	+4.4	20.6	71.3
Mar. 29	04 44.22	+15 29.5	4.177	3.838	+0.91	+4.1	20.8	63.6

Comet 115P/Maury

Epoch = 2012 July 12.0 TT
T = 2011 Oct. 7.06132 TT
Peri. = 120.11554 e = 0.5211185
Node = 176.59943 2000.0 a = 4.2507190 AU
Incl. = 11.70374 n = 0.11246321
q = 2.0355907 AU P = 8.76 years

m1 = 11.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	21 16.16	-12 06.5	2.905	2.175	+2.23	+7.3	18.4	35.0
Jan. 14	21 38.46	-10 53.8	2.997	2.206	+2.18	+8.1	18.5	30.4
Jan. 24	22 00.26	-09 33.2	3.085	2.239	+2.13	+8.7	18.7	25.7
Feb. 3	22 21.52	-08 06.5	3.168	2.275	+2.07	+9.1	18.9	20.9
Feb. 13	22 42.21	-06 35.4	3.244	2.312	+2.01	+9.4	19.0	16.1
Feb. 23	23 02.35	-05 01.6	3.314	2.352	+1.96	+9.5	19.2	11.2
Mar. 4	23 21.93	-03 26.7	3.376	2.393	+1.90	+9.5	19.3	6.3
Mar. 14	23 40.97	-01 52.1	3.430	2.436	+1.85	+9.3	19.5	1.3
Mar. 24	23 59.47	-00 19.0	3.474	2.480	+1.80	+9.0	19.6	3.8
Apr. 3	00 17.45	+01 11.2	3.508	2.526	+1.74	+8.6	19.8	9.0
Apr. 13	00 34.90	+02 37.6	3.532	2.572	+1.69	+8.2	19.9	14.3
Apr. 23	00 51.82	+03 59.2	3.544	2.619	+1.64	+7.6	20.0	19.7
May 3	01 08.19	+05 15.2	3.545	2.667	+1.58	+7.0	20.1	25.1
May 13	01 23.97	+06 24.8	3.535	2.716	+1.52	+6.3	20.3	30.7
May 23	01 39.15	+07 27.4	3.513	2.766	+1.45	+5.5	20.4	36.5
June 2	01 53.64	+08 22.4	3.480	2.815	+1.37	+4.7	20.5	42.4
June 12	02 07.39	+09 09.2	3.435	2.866	+1.29	+3.8	20.5	48.5
June 22	02 20.30	+09 47.5	3.380	2.916	+1.20	+2.9	20.6	54.9
July 2	02 32.25	+10 16.7	3.315	2.967	+1.09	+2.0	20.7	61.4
July 12	02 43.13	+10 36.7	3.242	3.018	+0.97	+1.0	20.7	68.3
July 22	02 52.79	+10 47.0	3.161	3.068	+0.83	0.0	20.8	75.5
Aug. 1	03 01.05	+10 47.5	3.075	3.119	+0.67	-0.9	20.8	83.1
Aug. 11	03 07.74	+10 38.0	2.985	3.170	+0.49	-1.9	20.9	91.1
Aug. 21	03 12.68	+10 18.5	2.896	3.221	+0.30	-2.9	20.9	99.5
Aug. 31	03 15.71	+09 49.3	2.809	3.272	+0.10	-3.8	21.0	108.5
Sept. 10	03 16.69	+09 11.0	2.730	3.323	-0.11	-4.6	21.0	117.9
Sept. 20	03 15.59	+08 24.5	2.662	3.373	-0.31	-5.3	21.0	127.9
Sept. 30	03 12.46	+07 31.7	2.610	3.423	-0.49	-5.6	21.1	138.3
Oct. 10	03 07.56	+06 35.3	2.579	3.473	-0.63	-5.7	21.2	148.9
Oct. 20	03 01.26	+05 38.4	2.574	3.523	-0.71	-5.3	21.3	159.2
Oct. 30	02 54.14	+04 45.1	2.597	3.572	-0.73	-4.6	21.4	167.3
Nov. 9	02 46.86	+03 59.0	2.650	3.621	-0.68	-3.6	21.5	166.9
Nov. 19	02 40.05	+03 23.3	2.732	3.670	-0.58	-2.3	21.7	158.5
Nov. 29	02 34.28	+02 59.8	2.843	3.718	-0.43	-1.1	21.8	148.2
Dec. 9	02 29.96	+02 49.2	2.980	3.767	-0.27	+0.2	22.0	137.7
Dec. 19	02 27.28	+02 51.1	3.137	3.814	-0.09	+1.3	.	127.3
Dec. 29	02 26.35	+03 04.3	3.311	3.862	+0.07	+2.3	.	117.3
Jan. 8	02 27.10	+03 27.0	3.497	3.908	+0.23	+3.0	.	107.6
Jan. 18	02 29.42	+03 57.5	3.691	3.955	+0.37	+3.6	.	98.3
Jan. 28	02 33.17	+04 33.9	3.889	4.001	+0.50	+4.1	.	89.4
Feb. 7	02 38.15	+05 14.7	4.086	4.047	+0.61	+4.4	.	80.8
Feb. 17	02 44.22	+05 58.3	4.280	4.092	+0.70	+4.5	.	72.5
Feb. 27	02 51.20	+06 43.5	4.467	4.137	+0.78	+4.6	.	64.4
Mar. 9	02 58.95	+07 29.0	4.645	4.181	+0.84	+4.5	.	56.6
Mar. 19	03 07.35	+08 14.1	4.811	4.225	+0.89	+4.4	.	49.0
Mar. 29	03 16.26	+08 57.7	4.964	4.269	+0.93	+4.2	.	41.6

Comet 73P/Schwassmann-Wachmann C

Epoch = 2012 July 12.0 TT
T = 2011 Oct. 16.93578 TT
Peri. = 198.92328 e = 0.6923302
Node = 69.83614 2000.0 a = 3.0663263 AU
Incl. = 11.38077 n = 0.18355935
q = 0.9434160 AU P = 5.37 years

m1 = 11.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	21 53.20	-21 15.6	2.031	1.441	+3.30	+18.9	14.9	41.0
Jan. 14	22 26.22	-18 06.6	2.164	1.534	+2.95	+18.9	15.5	39.3
Jan. 24	22 55.70	-14 58.0	2.305	1.628	+2.66	+18.3	16.0	36.9
Feb. 3	23 22.32	-11 55.1	2.449	1.722	+2.43	+17.4	16.5	34.0
Feb. 13	23 46.64	-09 00.6	2.595	1.816	+2.25	+16.5	17.0	30.6
Feb. 23	00 09.12	-06 16.0	2.738	1.908	+2.10	+15.4	17.4	26.8
Mar. 4	00 30.11	-03 41.8	2.877	1.999	+1.98	+14.4	17.8	22.7
Mar. 14	00 49.86	-01 18.3	3.008	2.088	+1.87	+13.3	18.2	18.3
Mar. 24	01 08.59	+00 54.8	3.131	2.176	+1.79	+12.3	18.5	13.9
Apr. 3	01 26.45	+02 57.7	3.242	2.262	+1.71	+11.3	18.9	9.5
Apr. 13	01 43.52	+04 50.6	3.342	2.347	+1.64	+10.3	19.2	6.0
Apr. 23	01 59.90	+06 34.0	3.427	2.429	+1.57	+9.4	19.5	6.0
May 3	02 15.63	+08 08.2	3.498	2.510	+1.51	+8.5	19.7	9.8
May 13	02 30.71	+09 33.4	3.553	2.590	+1.44	+7.7	20.0	14.9
May 23	02 45.15	+10 49.9	3.592	2.667	+1.38	+6.8	20.2	20.5
June 2	02 58.93	+11 58.1	3.615	2.743	+1.31	+6.0	20.4	26.3
June 12	03 12.00	+12 58.4	3.622	2.818	+1.23	+5.3	20.5	32.4
June 22	03 24.30	+13 50.9	3.612	2.890	+1.14	+4.5	20.7	38.8
July 2	03 35.75	+14 36.1	3.586	2.961	+1.05	+3.8	20.8	45.4
July 12	03 46.24	+15 14.4	3.545	3.031	+0.94	+3.2	21.0	52.3
July 22	03 55.67	+15 46.0	3.490	3.099	+0.82	+2.5	21.1	59.4
Aug. 1	04 03.86	+16 11.4	3.422	3.166	+0.68	+2.0	21.2	66.9
Aug. 11	04 10.67	+16 31.0	3.345	3.231	+0.52	+1.4	21.3	74.8
Aug. 21	04 15.90	+16 45.0	3.259	3.294	+0.35	+0.9	21.3	83.1
Aug. 31	04 19.37	+16 54.0	3.168	3.357	+0.15	+0.4	21.4	91.9
Sept. 10	04 20.90	+16 58.0	3.076	3.417	-0.06	-0.1	21.4	101.2
Sept. 20	04 20.30	+16 57.4	2.988	3.477	-0.28	-0.5	21.5	111.0
Sept. 30	04 17.49	+16 52.4	2.907	3.535	-0.50	-0.9	21.5	121.5
Oct. 10	04 12.51	+16 43.0	2.841	3.592	-0.70	-1.3	21.6	132.5
Oct. 20	04 05.50	+16 29.7	2.795	3.648	-0.86	-1.7	21.7	144.0
Oct. 30	03 56.88	+16 13.0	2.773	3.702	-0.97	-1.9	21.7	156.0
Nov. 9	03 47.22	+15 54.2	2.781	3.755	-1.00	-1.9	21.8	168.0
Nov. 19	03 37.23	+15 34.8	2.821	3.807	-0.96	-1.8	22.0	176.1
Nov. 29	03 27.68	+15 17.0	2.893	3.858	-0.85	-1.4	.	166.0
Dec. 9	03 19.22	+15 02.8	2.998	3.907	-0.69	-0.9	.	154.1
Dec. 19	03 12.33	+14 54.1	3.131	3.956	-0.50	-0.2	.	142.3
Dec. 29	03 07.32	+14 51.8	3.289	4.003	-0.31	+0.5	.	131.0
Jan. 8	03 04.26	+14 56.5	3.465	4.049	-0.11	+1.1	.	120.2
Jan. 18	03 03.11	+15 07.9	3.656	4.094	+0.06	+1.8	.	109.8
Jan. 28	03 03.76	+15 25.5	3.855	4.138	+0.22	+2.3	.	99.8
Feb. 7	03 06.00	+15 48.4	4.058	4.181	+0.37	+2.7	.	90.3
Feb. 17	03 09.65	+16 15.5	4.261	4.223	+0.49	+3.0	.	81.2
Feb. 27	03 14.52	+16 45.9	4.459	4.264	+0.59	+3.3	.	72.4
Mar. 9	03 20.42	+17 18.7	4.648	4.304	+0.68	+3.4	.	63.8
Mar. 19	03 27.19	+17 52.9	4.827	4.343	+0.75	+3.5	.	55.6
Mar. 29	03 34.67	+18 27.7	4.993	4.381	+0.81	+3.5	.	47.5

Comet C/2011 N2 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2011 Oct. 18.72145 TT
Peri. = 357.03711
Node = 274.02053 2000.0
Incl. = 33.67785
q = 2.5633261 AU
e = 0.9992099

m1 = 11.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	19 22.04	-13 02.0	3.649	2.693	+1.80	+11.3	18.5	11.6
Jan. 14	19 40.05	-11 09.3	3.689	2.728	+1.74	+11.9	18.6	10.3
Jan. 24	19 57.49	-09 10.0	3.721	2.765	+1.68	+12.5	18.7	11.9
Feb. 3	20 14.30	-07 04.6	3.744	2.807	+1.61	+13.1	18.7	15.4
Feb. 13	20 30.42	-04 53.8	3.758	2.851	+1.54	+13.6	18.8	20.0
Feb. 23	20 45.82	-02 38.2	3.764	2.898	+1.46	+14.0	18.9	25.1
Mar. 4	21 00.44	-00 18.3	3.760	2.948	+1.38	+14.3	19.0	30.4
Mar. 14	21 14.24	+02 05.1	3.748	3.000	+1.29	+14.6	19.0	35.9
Mar. 24	21 27.17	+04 31.2	3.729	3.055	+1.20	+14.8	19.1	41.5
Apr. 3	21 39.17	+06 59.3	3.701	3.112	+1.10	+14.9	19.2	47.3
Apr. 13	21 50.17	+09 28.5	3.667	3.171	+0.99	+15.0	19.2	53.3
Apr. 23	22 00.10	+11 58.1	3.627	3.231	+0.87	+14.9	19.3	59.3
May 3	22 08.85	+14 26.9	3.581	3.294	+0.75	+14.7	19.3	65.5
May 13	22 16.33	+16 54.0	3.532	3.357	+0.61	+14.4	19.4	71.8
May 23	22 22.42	+19 17.9	3.481	3.423	+0.46	+13.9	19.5	78.3
June 2	22 26.99	+21 37.1	3.428	3.489	+0.29	+13.2	19.5	85.0
June 12	22 29.93	+23 49.5	3.378	3.557	+0.12	+12.3	19.6	91.7
June 22	22 31.15	+25 53.0	3.331	3.625	-0.06	+11.2	19.6	98.6
July 2	22 30.58	+27 44.6	3.289	3.695	-0.23	+9.7	19.7	105.6
July 12	22 28.25	+29 21.5	3.257	3.765	-0.40	+7.9	19.7	112.5
July 22	22 24.29	+30 40.5	3.236	3.836	-0.53	+5.8	19.8	119.2
Aug. 1	22 18.95	+31 38.8	3.230	3.908	-0.63	+3.6	19.9	125.5
Aug. 11	22 12.65	+32 14.6	3.241	3.981	-0.68	+1.2	20.0	131.1
Aug. 21	22 05.89	+32 27.0	3.270	4.054	-0.66	-1.0	20.1	135.4
Aug. 31	21 59.25	+32 17.2	3.321	4.127	-0.60	-2.9	20.2	138.0
Sept. 10	21 53.27	+31 47.9	3.393	4.201	-0.49	-4.5	20.3	138.5
Sept. 20	21 48.40	+31 03.1	3.487	4.275	-0.34	-5.5	20.4	136.8
Sept. 30	21 44.99	+30 07.7	3.603	4.350	-0.18	-6.1	20.6	133.2
Oct. 10	21 43.17	+29 06.8	3.739	4.425	-0.02	-6.2	20.7	128.1
Oct. 20	21 43.00	+28 04.8	3.892	4.500	+0.14	-5.9	20.9	122.0
Oct. 30	21 44.44	+27 05.9	4.062	4.575	+0.29	-5.3	21.0	115.3
Nov. 9	21 47.33	+26 12.8	4.244	4.650	+0.42	-4.5	21.2	108.3
Nov. 19	21 51.54	+25 27.8	4.436	4.726	+0.54	-3.6	21.4	101.1
Nov. 29	21 56.89	+24 52.2	4.634	4.802	+0.63	-2.6	21.5	93.8
Dec. 9	22 03.20	+24 26.6	4.836	4.878	+0.71	-1.5	21.7	86.6
Dec. 19	22 10.32	+24 11.4	5.039	4.953	+0.78	-0.5	21.9	79.4
Dec. 29	22 18.08	+24 06.3	5.240	5.029	+0.83	+0.5	22.0	72.3
Jan. 8	22 26.34	+24 11.0	5.435	5.105	+0.86	+1.4	.	65.4
Jan. 18	22 34.99	+24 24.8	5.623	5.181	+0.89	+2.2	.	58.7
Jan. 28	22 43.90	+24 47.0	5.801	5.257	+0.91	+3.0	.	52.3
Feb. 7	22 52.97	+25 17.0	5.967	5.333	+0.92	+3.7	.	46.2
Feb. 17	23 02.12	+25 53.8	6.119	5.409	+0.91	+4.3	.	40.7
Feb. 27	23 11.26	+26 36.8	6.256	5.485	+0.90	+4.8	.	35.9
Mar. 9	23 20.31	+27 25.0	6.377	5.560	+0.89	+5.3	.	32.0
Mar. 19	23 29.20	+28 17.9	6.481	5.636	+0.87	+5.7	.	29.6
Mar. 29	23 37.85	+29 14.7	6.566	5.711	+0.83	+6.0	.	28.8

Comet 49P/Arend-Rigaux

Epoch = 2012 July 12.0 TT
T = 2011 Oct. 19.09782 TT
Peri. = 332.81001 e = 0.6003947
Node = 118.87106 2000.0 a = 3.5634843 AU
Incl. = 19.04927 n = 0.14651828
q = 1.4239872 AU P = 6.73 years

m1 = 12.4 + 5 log(Delta) + 10.0 log(r(t-20))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	12 06.06	+11 55.0	1.086	1.653	+1.27	+13.3	14.5	105.9
Jan. 14	12 18.77	+14 07.8	1.057	1.708	+0.86	+16.0	14.6	113.6
Jan. 24	12 27.41	+16 47.9	1.036	1.766	+0.42	+18.0	14.7	122.0
Feb. 3	12 31.63	+19 48.0	1.025	1.828	-0.02	+18.7	14.8	130.7
Feb. 13	12 31.39	+22 54.9	1.030	1.891	-0.43	+17.7	14.9	139.2
Feb. 23	12 27.05	+25 51.4	1.053	1.956	-0.75	+14.8	15.1	146.5
Mar. 4	12 19.59	+28 19.2	1.097	2.022	-0.91	+10.5	15.4	151.1
Mar. 14	12 10.54	+30 04.2	1.162	2.090	-0.90	+5.7	15.6	151.3
Mar. 24	12 01.52	+31 00.8	1.249	2.158	-0.75	+1.0	15.9	147.4
Apr. 3	11 53.98	+31 11.0	1.357	2.226	-0.52	-2.8	16.3	141.2
Apr. 13	11 48.81	+30 42.5	1.482	2.294	-0.25	-5.8	16.6	133.9
Apr. 23	11 46.31	+29 44.4	1.623	2.363	+0.01	-7.9	16.9	126.3
May 3	11 46.46	+28 25.2	1.778	2.431	+0.25	-9.3	17.3	118.9
May 13	11 48.96	+26 51.8	1.942	2.499	+0.45	-10.3	17.6	111.7
May 23	11 53.43	+25 09.2	2.116	2.566	+0.61	-10.8	17.9	104.6
June 2	11 59.54	+23 21.1	2.295	2.633	+0.74	-11.1	18.2	97.9
June 12	12 06.96	+21 30.2	2.478	2.699	+0.85	-11.2	18.5	91.3
June 22	12 15.42	+19 38.2	2.663	2.765	+0.93	-11.2	18.7	84.9
July 2	12 24.72	+17 46.4	2.849	2.830	+1.00	-11.1	19.0	78.6
July 12	12 34.67	+15 55.8	3.033	2.894	+1.05	-10.9	19.2	72.5
July 22	12 45.16	+14 07.3	3.214	2.958	+1.09	-10.6	19.5	66.4
Aug. 1	12 56.07	+12 21.3	3.390	3.021	+1.12	-10.3	19.7	60.4
Aug. 11	13 07.31	+10 38.5	3.559	3.083	+1.15	-9.9	19.9	54.5
Aug. 21	13 18.83	+08 59.2	3.721	3.144	+1.17	-9.5	20.1	48.6
Aug. 31	13 30.55	+07 24.0	3.872	3.205	+1.19	-9.1	20.2	42.7
Sept.10	13 42.43	+05 53.3	4.012	3.264	+1.20	-8.6	20.4	36.9
Sept.20	13 54.44	+04 27.4	4.140	3.323	+1.21	-8.1	20.5	31.3
Sept.30	14 06.51	+03 06.8	4.254	3.381	+1.21	-7.5	20.7	25.8
Oct. 10	14 18.60	+01 51.8	4.353	3.438	+1.21	-6.9	20.8	20.8
Oct. 20	14 30.67	+00 42.9	4.435	3.494	+1.20	-6.3	20.9	16.8
Oct. 30	14 42.65	-00 19.6	4.500	3.549	+1.18	-5.6	21.0	14.8
Nov. 9	14 54.50	-01 15.4	4.548	3.604	+1.16	-4.9	21.1	15.6
Nov. 19	15 06.14	-02 04.1	4.577	3.657	+1.13	-4.1	21.2	19.1
Nov. 29	15 17.48	-02 45.4	4.588	3.710	+1.10	-3.4	21.3	24.2
Dec. 9	15 28.46	-03 19.1	4.580	3.762	+1.05	-2.6	21.3	30.3
Dec. 19	15 38.96	-03 45.0	4.554	3.813	+0.99	-1.8	21.4	36.9
Dec. 29	15 48.88	-04 02.9	4.511	3.864	+0.92	-1.0	21.4	43.9
Jan. 8	15 58.10	-04 12.8	4.453	3.913	+0.84	-0.2	21.5	51.3
Jan. 18	16 06.50	-04 14.8	4.379	3.962	+0.74	+0.6	21.5	58.9
Jan. 28	16 13.91	-04 09.0	4.294	4.010	+0.63	+1.3	21.5	66.9
Feb. 7	16 20.22	-03 55.7	4.198	4.057	+0.50	+2.0	21.5	75.1
Feb. 17	16 25.25	-03 35.3	4.096	4.104	+0.36	+2.7	21.5	83.5
Feb. 27	16 28.88	-03 08.6	3.990	4.149	+0.21	+3.2	21.5	92.3
Mar. 9	16 30.97	-02 36.6	3.885	4.194	+0.04	+3.6	21.5	101.3
Mar. 19	16 31.42	-02 00.4	3.784	4.238	-0.12	+3.9	21.5	110.6
Mar. 29	16 30.19	-01 21.6	3.693	4.281	-0.29	+3.9	21.5	120.1

Comet C/2011 S2 (Kowalski)

Epoch = 2012 July 12.0 TT
T = 2011 Oct. 26.36067 TT
Peri. = 192.20292 e = 0.9317251
Node = 288.06186 2000.0 a = 16.3328353 AU
Incl. = 17.57324 n = 0.01493178
q = 1.1151227 AU P = 66.01 years

m1 = 14.4 + 5 log(Delta) + 10.0 log(r(t-40))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	14 10.29	-29 30.7	1.700	1.537	+2.00	-16.5	16.4	63.4
Jan. 14	14 30.27	-32 16.1	1.721	1.638	+1.73	-14.3	16.6	68.4
Jan. 24	14 47.52	-34 38.7	1.733	1.742	+1.42	-12.3	16.9	74.0
Feb. 3	15 01.68	-36 41.7	1.737	1.849	+1.07	-10.6	17.2	80.4
Feb. 13	15 12.38	-38 27.6	1.734	1.957	+0.69	-9.0	17.5	87.4
Feb. 23	15 19.27	-39 57.6	1.726	2.065	+0.27	-7.4	17.7	95.2
Mar. 4	15 21.97	-41 11.1	1.716	2.175	-0.16	-5.5	18.0	103.6
Mar. 14	15 20.37	-42 05.8	1.708	2.284	-0.58	-3.2	18.2	112.7
Mar. 24	15 14.58	-42 37.8	1.707	2.393	-0.94	-0.5	18.5	122.3
Apr. 3	15 05.21	-42 42.3	1.718	2.501	-1.18	+2.6	18.7	132.1
Apr. 13	14 53.39	-42 16.3	1.747	2.609	-1.28	+5.6	19.0	141.7
Apr. 23	14 40.59	-41 20.1	1.797	2.715	-1.22	+8.1	19.3	150.1
May 3	14 28.37	-39 58.6	1.873	2.821	-1.04	+9.8	19.6	155.5
May 13	14 17.96	-38 20.8	1.975	2.927	-0.79	+10.4	19.9	155.9
May 23	14 10.06	-36 36.6	2.104	3.031	-0.51	+10.1	20.2	151.2
June 2	14 04.94	-34 55.3	2.258	3.134	-0.24	+9.2	20.5	143.8
June 12	14 02.50	-33 23.3	2.435	3.237	0.00	+7.9	20.8	135.3
June 22	14 02.48	-32 04.3	2.630	3.338	+0.21	+6.5	21.2	126.6
July 2	14 04.55	-30 59.8	2.842	3.439	+0.38	+5.0	21.5	118.0
July 12	14 08.37	-30 09.6	3.065	3.538	+0.53	+3.7	21.8	109.6
July 22	14 13.65	-29 32.7	3.298	3.637	+0.65	+2.5	22.1	101.4
Aug. 1	14 20.13	-29 07.6	3.535	3.734	+0.75	+1.5	22.4	93.3
Aug. 11	14 27.58	-28 52.5	3.775	3.831	+0.83	+0.7	22.6	85.5
Aug. 21	14 35.85	-28 46.0	4.015	3.927	+0.89	0.0	22.9	77.8
Aug. 31	14 44.78	-28 46.4	4.250	4.022	+0.95	-0.6	.	70.2
Sept. 10	14 54.23	-28 52.4	4.480	4.117	+0.99	-1.0	.	62.7
Sept. 20	15 04.11	-29 02.6	4.700	4.210	+1.02	-1.4	.	55.3
Sept. 30	15 14.32	-29 16.2	4.909	4.303	+1.04	-1.6	.	47.9
Oct. 10	15 24.77	-29 32.0	5.105	4.394	+1.06	-1.7	.	40.6
Oct. 20	15 35.38	-29 49.4	5.284	4.485	+1.07	-1.8	.	33.3
Oct. 30	15 46.06	-30 07.7	5.446	4.576	+1.07	-1.9	.	26.1
Nov. 9	15 56.73	-30 26.3	5.589	4.665	+1.06	-1.9	.	19.2
Nov. 19	16 07.32	-30 44.8	5.711	4.754	+1.04	-1.8	.	13.0
Nov. 29	16 17.73	-31 02.9	5.812	4.842	+1.01	-1.7	.	9.6
Dec. 9	16 27.87	-31 20.3	5.890	4.929	+0.98	-1.7	.	11.7
Dec. 19	16 37.65	-31 37.0	5.945	5.016	+0.93	-1.6	.	17.6
Dec. 29	16 46.96	-31 52.9	5.977	5.102	+0.87	-1.5	.	24.9
Jan. 8	16 55.69	-32 08.0	5.988	5.187	+0.80	-1.4	.	32.7
Jan. 18	17 03.74	-32 22.5	5.977	5.272	+0.72	-1.4	.	40.8
Jan. 28	17 10.98	-32 36.4	5.947	5.356	+0.63	-1.4	.	49.2
Feb. 7	17 17.30	-32 50.0	5.901	5.440	+0.53	-1.3	.	57.8
Feb. 17	17 22.57	-33 03.2	5.839	5.522	+0.41	-1.3	.	66.6
Feb. 27	17 26.68	-33 16.3	5.767	5.605	+0.28	-1.3	.	75.7
Mar. 9	17 29.52	-33 29.1	5.687	5.686	+0.15	-1.2	.	84.9
Mar. 19	17 30.99	-33 41.4	5.605	5.767	+0.01	-1.1	.	94.4
Mar. 29	17 31.05	-33 52.9	5.523	5.848	-0.14	-1.0	.	104.1

Comet P/2011 W2 (Rinner)

Epoch = 2012 July 12.0 TT
T = 2011 Nov. 6.28117 TT
Peri. = 221.09206 e = 0.3936857
Node = 232.01658 2000.0 a = 3.7987986 AU
Incl. = 13.77376 n = 0.13311735
q = 2.3032659 AU P = 7.40 years

m1 = 10.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	07 45.72	+00 49.2	1.413	2.341	-0.74	-2.8	16.9	154.9
Jan. 14	07 38.29	+00 20.8	1.410	2.354	-0.73	-0.3	16.9	158.9
Jan. 24	07 30.98	+00 17.4	1.431	2.370	-0.61	+1.8	17.0	157.1
Feb. 3	07 24.91	+00 35.7	1.477	2.387	-0.39	+3.4	17.1	150.8
Feb. 13	07 20.97	+01 10.1	1.546	2.406	-0.13	+4.4	17.3	142.6
Feb. 23	07 19.63	+01 54.4	1.633	2.427	+0.14	+4.8	17.4	134.0
Mar. 4	07 21.05	+02 42.4	1.738	2.449	+0.41	+4.7	17.6	125.4
Mar. 14	07 25.12	+03 28.9	1.855	2.473	+0.64	+4.2	17.8	117.2
Mar. 24	07 31.56	+04 10.4	1.983	2.499	+0.85	+3.4	18.1	109.4
Apr. 3	07 40.05	+04 44.3	2.119	2.525	+1.02	+2.5	18.3	102.1
Apr. 13	07 50.25	+05 08.9	2.261	2.553	+1.16	+1.4	18.5	95.1
Apr. 23	08 01.83	+05 23.4	2.406	2.583	+1.27	+0.4	18.7	88.4
May 3	08 14.52	+05 27.3	2.553	2.613	+1.35	-0.6	18.9	82.1
May 13	08 28.05	+05 20.9	2.701	2.644	+1.42	-1.7	19.1	76.0
May 23	08 42.22	+05 04.3	2.847	2.676	+1.46	-2.6	19.3	70.0
June 2	08 56.85	+04 38.1	2.991	2.709	+1.49	-3.5	19.5	64.2
June 12	09 11.79	+04 02.9	3.132	2.743	+1.51	-4.3	19.7	58.6
June 22	09 26.94	+03 19.4	3.267	2.777	+1.52	-5.1	19.8	53.0
July 2	09 42.19	+02 28.5	3.397	2.812	+1.53	-5.7	20.0	47.5
July 12	09 57.46	+01 31.0	3.519	2.848	+1.52	-6.3	20.1	42.1
July 22	10 12.71	+00 27.7	3.634	2.884	+1.52	-6.8	20.3	36.7
Aug. 1	10 27.88	-00 40.5	3.739	2.920	+1.51	-7.2	20.4	31.3
Aug. 11	10 42.93	-01 52.9	3.834	2.957	+1.49	-7.6	20.6	26.0
Aug. 21	10 57.85	-03 08.5	3.919	2.994	+1.47	-7.8	20.7	20.7
Aug. 31	11 12.59	-04 26.7	3.991	3.031	+1.46	-8.0	20.8	15.7
Sept.10	11 27.14	-05 46.6	4.050	3.069	+1.43	-8.1	20.9	11.2
Sept.20	11 41.49	-07 07.5	4.096	3.106	+1.41	-8.1	21.0	8.5
Sept.30	11 55.58	-08 28.6	4.128	3.144	+1.38	-8.1	21.1	9.4
Oct. 10	12 09.39	-09 49.2	4.144	3.182	+1.35	-7.9	21.2	13.5
Oct. 20	12 22.89	-11 08.7	4.146	3.220	+1.31	-7.8	21.3	18.8
Oct. 30	12 36.02	-12 26.2	4.132	3.257	+1.27	-7.5	21.4	24.8
Nov. 9	12 48.71	-13 41.2	4.103	3.295	+1.22	-7.2	21.4	31.2
Nov. 19	13 00.91	-14 53.0	4.058	3.333	+1.16	-6.8	21.5	37.8
Nov. 29	13 12.50	-16 00.9	3.999	3.370	+1.09	-6.3	21.5	44.7
Dec. 9	13 23.38	-17 04.2	3.926	3.408	+1.00	-5.8	21.6	51.9
Dec. 19	13 33.42	-18 02.4	3.841	3.445	+0.91	-5.2	21.6	59.4
Dec. 29	13 42.48	-18 54.6	3.745	3.482	+0.79	-4.6	21.6	67.1
Jan. 8	13 50.38	-19 40.3	3.639	3.519	+0.66	-3.8	21.6	75.2
Jan. 18	13 56.94	-20 18.6	3.528	3.556	+0.50	-3.0	21.6	83.6
Jan. 28	14 01.98	-20 48.6	3.413	3.592	+0.34	-2.1	21.6	92.4
Feb. 7	14 05.34	-21 09.4	3.299	3.629	+0.15	-1.0	21.6	101.6
Feb. 17	14 06.84	-21 19.9	3.189	3.665	-0.04	+0.1	21.6	111.2
Feb. 27	14 06.43	-21 19.0	3.088	3.700	-0.23	+1.3	21.6	121.3
Mar. 9	14 04.12	-21 05.9	3.001	3.736	-0.41	+2.6	21.6	131.7
Mar. 19	14 00.07	-20 40.0	2.932	3.771	-0.55	+3.8	21.6	142.5
Mar. 29	13 54.60	-20 01.6	2.886	3.806	-0.64	+4.9	21.6	153.5

Comet 41P/Tuttle-Giacobini-Kresak

Epoch = 2012 July 12.0 TT
T = 2011 Nov. 11.53351 TT
Peri. = 62.15196 e = 0.6600542
Node = 141.07262 2000.0 a = 3.0867324 AU
Incl. = 9.22425 n = 0.18174213
q = 1.0493217 AU P = 5.42 years

m1 = 11.6 + 5 log(Delta) + 25.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	17 57.52	-18 44.1	2.197	1.267	+3.54	-0.1	15.9	14.2
Jan. 14	18 32.94	-18 45.5	2.260	1.341	+3.29	+2.3	16.6	15.8
Jan. 24	19 05.86	-18 22.5	2.322	1.420	+3.04	+4.2	17.2	18.0
Feb. 3	19 36.26	-17 40.6	2.382	1.502	+2.80	+5.6	17.9	20.8
Feb. 13	20 04.21	-16 44.8	2.435	1.586	+2.57	+6.5	18.5	24.1
Feb. 23	20 29.86	-15 39.3	2.481	1.672	+2.35	+7.1	19.2	27.9
Mar. 4	20 53.35	-14 28.0	2.517	1.758	+2.15	+7.4	19.7	32.1
Mar. 14	21 14.82	-13 14.0	2.543	1.844	+1.96	+7.4	20.3	36.7
Mar. 24	21 34.42	-11 59.8	2.557	1.929	+1.78	+7.2	20.8	41.6
Apr. 3	21 52.22	-10 47.8	2.558	2.014	+1.61	+6.8	21.2	47.0
Apr. 13	22 08.31	-09 39.8	2.548	2.097	+1.44	+6.2	21.7	52.7
Apr. 23	22 22.70	-08 37.8	2.525	2.180	+1.27	+5.4	22.1	58.8
May 3	22 35.38	-07 43.4	2.490	2.261	+1.09	+4.5	22.4	65.2
May 13	22 46.31	-06 58.2	2.445	2.341	+0.91	+3.4	22.8	72.1
May 23	22 55.39	-06 23.9	2.391	2.420	+0.71	+2.2	23.1	79.4
June 2	23 02.50	-06 02.2	2.331	2.497	+0.50	+0.8	.	87.3
June 12	23 07.49	-05 54.6	2.266	2.573	+0.27	-0.8	.	95.6
June 22	23 10.19	-06 02.6	2.201	2.647	+0.03	-2.5	.	104.6
July 2	23 10.45	-06 27.3	2.140	2.720	-0.22	-4.1	.	114.3
July 12	23 08.20	-07 08.7	2.086	2.791	-0.47	-5.7	.	124.6
July 22	23 03.49	-08 06.0	2.046	2.861	-0.69	-7.0	.	135.5
Aug. 1	22 56.56	-09 16.1	2.026	2.930	-0.87	-7.8	.	147.1
Aug. 11	22 47.91	-10 34.4	2.029	2.997	-0.97	-8.0	.	159.0
Aug. 21	22 38.23	-11 54.7	2.060	3.063	-0.98	-7.6	.	171.0
Aug. 31	22 28.40	-13 10.6	2.121	3.127	-0.91	-6.6	.	174.9
Sept. 10	22 19.28	-14 16.6	2.212	3.191	-0.77	-5.3	.	163.6
Sept. 20	22 11.59	-15 09.1	2.332	3.252	-0.58	-3.7	.	151.9
Sept. 30	22 05.82	-15 46.5	2.477	3.313	-0.36	-2.3	.	140.7
Oct. 10	22 02.18	-16 09.2	2.643	3.372	-0.15	-0.9	.	129.9
Oct. 20	22 00.69	-16 18.3	2.826	3.430	+0.05	+0.3	.	119.7
Oct. 30	22 01.24	-16 15.2	3.022	3.487	+0.24	+1.4	.	109.9
Nov. 9	22 03.61	-16 01.6	3.225	3.542	+0.39	+2.3	.	100.5
Nov. 19	22 07.55	-15 39.0	3.433	3.596	+0.53	+3.0	.	91.5
Nov. 29	22 12.84	-15 08.8	3.640	3.650	+0.64	+3.7	.	82.7
Dec. 9	22 19.24	-14 32.1	3.845	3.701	+0.73	+4.2	.	74.3
Dec. 19	22 26.55	-13 49.9	4.042	3.752	+0.80	+4.7	.	66.0
Dec. 29	22 34.58	-13 03.2	4.231	3.802	+0.86	+5.0	.	58.0
Jan. 8	22 43.17	-12 12.9	4.407	3.851	+0.90	+5.3	.	50.1
Jan. 18	22 52.19	-11 19.6	4.569	3.898	+0.93	+5.5	.	42.3
Jan. 28	23 01.52	-10 24.2	4.714	3.944	+0.95	+5.7	.	34.7
Feb. 7	23 11.05	-09 27.3	4.842	3.990	+0.96	+5.8	.	27.1
Feb. 17	23 20.69	-08 29.6	4.951	4.034	+0.97	+5.8	.	19.7
Feb. 27	23 30.36	-07 32.0	5.039	4.077	+0.96	+5.7	.	12.5
Mar. 9	23 39.98	-06 34.9	5.106	4.120	+0.95	+5.6	.	6.0
Mar. 19	23 49.49	-05 39.0	5.151	4.161	+0.93	+5.4	.	5.1
Mar. 29	23 58.81	-04 45.1	5.176	4.201	+0.91	+5.1	.	11.3

Comet P/2004 H3 (Larsen)

Epoch = 2012 July 12.0 TT
T = 2011 Nov. 23.11566 TT
Peri. = 346.46266 e = 0.3725750
Node = 220.94648 2000.0 a = 3.9049917 AU
Incl. = 25.12777 n = 0.12772441
q = 2.4500894 AU P = 7.72 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	15 37.47	-19 45.6	3.044	2.466	-0.95	-3.1	20.3	26.3/ 90	46.1
Jan. 14	15 56.06	-19 40.3	2.955	2.475	-0.95	-3.6	20.2	25.3/ 87	52.0
Jan. 24	16 13.93	-19 21.7	2.859	2.485	-0.96	-4.0	20.2	24.2/ 83	58.2
Feb. 3	16 30.88	-18 49.3	2.758	2.497	-0.97	-4.4	20.2	23.0/ 79	64.5
Feb. 13	16 46.72	-18 03.0	2.652	2.510	-0.98	-4.7	20.1	21.6/ 74	71.0
Feb. 23	17 01.22	-17 02.7	2.543	2.525	-0.99	-5.0	20.1	20.0/ 69	77.8
Mar. 4	17 14.13	-15 48.4	2.432	2.542	-1.01	-5.3	20.0	18.3/ 62	84.8
Mar. 14	17 25.24	-14 20.7	2.323	2.560	-1.04	-5.5	20.0	16.6/ 53	92.1
Mar. 24	17 34.28	-12 40.3	2.216	2.580	-1.07	-5.6	19.9	14.9/ 42	99.8
Apr. 3	17 41.03	-10 48.6	2.115	2.601	-1.11	-5.6	19.9	13.7/ 28	107.8
Apr. 13	17 45.30	-08 47.4	2.022	2.623	-1.15	-5.6	19.9	13.0/ 11	116.1
Apr. 23	17 46.95	-06 39.7	1.942	2.646	-1.21	-5.5	19.8	13.1/354	124.7
May 3	17 45.98	-04 29.9	1.877	2.671	-1.26	-5.3	19.8	13.6/338	133.3
May 13	17 42.57	-02 23.3	1.830	2.697	-1.31	-5.1	19.9	14.3/325	141.7
May 23	17 37.11	-00 26.4	1.806	2.723	-1.35	-4.9	19.9	14.4/314	148.9
June 2	17 30.24	+01 14.2	1.805	2.751	-1.38	-4.8	20.0	13.7/305	153.6
June 12	17 22.78	+02 33.0	1.829	2.779	-1.38	-4.7	20.1	12.1/297	154.3
June 22	17 15.58	+03 27.1	1.878	2.809	-1.35	-4.6	20.2	9.6/287	150.7
July 2	17 09.43	+03 55.9	1.950	2.838	-1.30	-4.6	20.4	6.8/275	144.3
July 12	17 04.92	+04 01.8	2.042	2.869	-1.24	-4.5	20.6	4.0/251	136.8
July 22	17 02.39	+03 48.4	2.153	2.900	-1.17	-4.3	20.8	2.9/192	128.9
Aug. 1	17 01.99	+03 20.3	2.278	2.932	-1.10	-4.2	21.0	4.6/146	120.9
Aug. 11	17 03.69	+02 42.1	2.415	2.965	-1.02	-4.0	21.2	7.1/129	113.2
Aug. 21	17 07.35	+01 57.6	2.561	2.998	-0.95	-3.8	21.4	9.5/120	105.7
Aug. 31	17 12.82	+01 10.2	2.714	3.031	-0.89	-3.6	21.6	11.6/114	98.4
Sept.10	17 19.86	+00 22.8	2.869	3.064	-0.83	-3.4	21.8	13.4/110	91.4
Sept.20	17 28.30	-00 22.6	3.027	3.098	-0.78	-3.3	22.0	15.0/106	84.6
Sept.30	17 37.94	-01 04.0	3.184	3.132	-0.74	-3.1	.	16.4/103	78.0
Oct. 10	17 48.58	-01 40.0	3.339	3.167	-0.70	-3.0	.	17.5/100	71.5
Oct. 20	18 00.08	-02 09.8	3.490	3.201	-0.66	-2.8	.	18.4/ 97	65.1
Oct. 30	18 12.28	-02 32.2	3.634	3.236	-0.63	-2.7	.	19.2/ 94	58.9
Nov. 9	18 25.03	-02 46.8	3.772	3.271	-0.60	-2.7	.	19.8/ 92	52.9
Nov. 19	18 38.21	-02 53.2	3.901	3.306	-0.57	-2.6	.	20.2/ 89	46.9
Nov. 29	18 51.70	-02 51.1	4.020	3.341	-0.54	-2.5	.	20.5/ 87	41.2
Dec. 9	19 05.39	-02 40.5	4.127	3.375	-0.52	-2.4	.	20.7/ 85	35.6
Dec. 19	19 19.17	-02 21.3	4.222	3.410	-0.50	-2.4	.	20.8/ 82	30.5
Dec. 29	19 32.93	-01 53.8	4.303	3.445	-0.48	-2.3	.	20.8/ 80	25.9
Jan. 8	19 46.60	-01 18.3	4.371	3.480	-0.46	-2.2	.	20.7/ 78	22.2
Jan. 18	20 00.07	-00 35.2	4.423	3.515	-0.45	-2.2	.	20.4/ 76	20.0
Jan. 28	20 13.27	+00 15.0	4.460	3.550	-0.43	-2.1	.	20.1/ 74	19.8
Feb. 7	20 26.12	+01 11.8	4.482	3.584	-0.42	-2.0	.	19.7/ 71	21.7
Feb. 17	20 38.54	+02 14.5	4.488	3.618	-0.41	-1.9	.	19.1/ 69	25.2
Feb. 27	20 50.46	+03 22.4	4.479	3.653	-0.40	-1.8	.	18.5/ 67	29.8
Mar. 9	21 01.81	+04 34.8	4.455	3.687	-0.40	-1.8	.	17.7/ 64	35.1
Mar. 19	21 12.51	+05 50.9	4.417	3.721	-0.39	-1.7	.	16.8/ 62	40.8
Mar. 29	21 22.47	+07 09.9	4.365	3.754	-0.39	-1.6	.	15.8/ 59	46.9

Comet 253P/PANSTARRS

Epoch = 2012 July 12.0 TT
T = 2011 Nov. 23.90824 TT
Peri. = 230.94321 e = 0.4127358
Node = 146.90438 2000.0 a = 3.4717236 AU
Incl. = 4.93909 n = 0.15236540
q = 2.0388190 AU P = 6.47 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 29.15	-02 08.1	1.937	2.063	+1.67	+11.6	18.2	83.0
Jan. 14	00 45.84	-00 12.6	2.055	2.077	+1.75	+11.9	18.3	77.5
Jan. 24	01 03.31	+01 46.3	2.173	2.092	+1.81	+12.0	18.5	72.1
Feb. 3	01 21.45	+03 46.2	2.292	2.111	+1.87	+11.9	18.7	66.9
Feb. 13	01 40.13	+05 45.2	2.411	2.132	+1.91	+11.6	18.8	61.9
Feb. 23	01 59.26	+07 41.5	2.528	2.155	+1.95	+11.2	19.0	56.9
Mar. 4	02 18.80	+09 33.4	2.644	2.180	+1.98	+10.6	19.2	52.1
Mar. 14	02 38.64	+11 19.3	2.757	2.207	+2.01	+9.9	19.4	47.3
Mar. 24	02 58.76	+12 58.1	2.866	2.236	+2.03	+9.1	19.5	42.6
Apr. 3	03 19.10	+14 28.6	2.971	2.267	+2.05	+8.1	19.7	37.9
Apr. 13	03 39.58	+15 50.0	3.072	2.299	+2.06	+7.1	19.9	33.2
Apr. 23	04 00.15	+17 01.5	3.166	2.333	+2.06	+6.1	20.0	28.5
May 3	04 20.75	+18 02.6	3.254	2.368	+2.05	+5.0	20.2	23.9
May 13	04 41.29	+18 53.1	3.335	2.404	+2.04	+4.0	20.3	19.2
May 23	05 01.72	+19 32.8	3.408	2.441	+2.02	+2.9	20.5	14.5
June 2	05 21.94	+20 01.7	3.473	2.479	+1.99	+1.9	20.6	9.9
June 12	05 41.89	+20 20.3	3.527	2.518	+1.96	+0.9	20.8	5.4
June 22	06 01.48	+20 28.8	3.572	2.558	+1.92	-0.1	20.9	3.0
July 2	06 20.64	+20 27.9	3.606	2.598	+1.87	-1.0	21.0	6.2
July 12	06 39.30	+20 18.1	3.629	2.639	+1.81	-1.8	21.1	11.0
July 22	06 57.40	+20 00.4	3.640	2.680	+1.75	-2.5	21.2	16.2
Aug. 1	07 14.86	+19 35.6	3.639	2.721	+1.68	-3.1	21.3	21.5
Aug. 11	07 31.62	+19 04.8	3.626	2.762	+1.60	-3.6	21.4	27.1
Aug. 21	07 47.61	+18 28.9	3.600	2.804	+1.52	-4.0	21.5	32.8
Aug. 31	08 02.77	+17 49.1	3.561	2.846	+1.43	-4.2	21.6	38.8
Sept.10	08 17.02	+17 06.6	3.511	2.888	+1.33	-4.4	21.6	45.0
Sept.20	08 30.29	+16 22.8	3.448	2.929	+1.22	-4.4	21.7	51.5
Sept.30	08 42.47	+15 38.9	3.374	2.971	+1.10	-4.2	21.7	58.2
Oct. 10	08 53.46	+14 56.4	3.290	3.013	+0.97	-4.0	21.8	65.3
Oct. 20	09 03.13	+14 16.9	3.197	3.054	+0.82	-3.5	21.8	72.8
Oct. 30	09 11.32	+13 41.9	3.097	3.096	+0.66	-2.9	21.8	80.7
Nov. 9	09 17.89	+13 13.1	2.993	3.137	+0.48	-2.1	21.8	89.0
Nov. 19	09 22.65	+12 52.2	2.888	3.178	+0.28	-1.1	21.8	97.9
Nov. 29	09 25.42	+12 40.8	2.784	3.218	+0.07	-0.1	21.8	107.3
Dec. 9	09 26.08	+12 40.0	2.688	3.259	-0.15	+1.1	21.8	117.3
Dec. 19	09 24.53	+12 50.7	2.602	3.299	-0.37	+2.2	21.9	127.8
Dec. 29	09 20.84	+13 12.7	2.533	3.338	-0.56	+3.2	21.9	139.0
Jan. 8	09 15.23	+13 44.8	2.486	3.378	-0.71	+4.0	21.9	150.6
Jan. 18	09 08.12	+14 24.5	2.465	3.416	-0.80	+4.4	22.0	162.6
Jan. 28	09 00.15	+15 08.3	2.473	3.455	-0.81	+4.4	22.0	174.6
Feb. 7	08 52.06	+15 52.6	2.512	3.493	-0.75	+4.1	22.1	172.7
Feb. 17	08 44.60	+16 33.7	2.583	3.531	-0.62	+3.5	22.3	160.8
Feb. 27	08 38.43	+17 09.0	2.681	3.568	-0.45	+2.8	22.4	149.1
Mar. 9	08 33.98	+17 37.0	2.805	3.605	-0.25	+2.0	22.6	138.0
Mar. 19	08 31.47	+17 57.0	2.950	3.641	-0.05	+1.2	22.8	127.4
Mar. 29	08 30.96	+18 09.0	3.110	3.677	+0.14	+0.4	22.9	117.3

Comet P/2011 UA134 (Spacewatch-PANSTARRS)

Epoch = 2012 July 12.0 TT
T = 2011 Dec. 7.19770 TT
Peri. = 32.32769 e = 0.6324020
Node = 40.63791 2000.0 a = 5.5810891 AU
Incl. = 10.53948 n = 0.07475249
q = 2.0515972 AU P = 13.18 years

m1 = 12.2 + 5 log(Delta) + 20.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	04 18.49	+34 22.1	1.192	2.069	+0.23	+1.5	18.9	143.8
Jan. 14	04 20.81	+34 37.6	1.270	2.083	+0.60	+1.0	19.1	134.7
Jan. 24	04 26.78	+34 47.6	1.364	2.101	+0.94	+0.7	19.3	126.2
Feb. 3	04 36.16	+34 54.1	1.471	2.124	+1.23	+0.3	19.6	118.3
Feb. 13	04 48.47	+34 57.5	1.588	2.150	+1.47	0.0	19.9	111.0
Feb. 23	05 03.18	+34 57.1	1.715	2.180	+1.67	-0.5	20.1	104.2
Mar. 4	05 19.84	+34 52.0	1.849	2.213	+1.81	-1.1	20.4	97.8
Mar. 14	05 37.94	+34 40.8	1.988	2.249	+1.92	-1.8	20.7	91.7
Mar. 24	05 57.09	+34 22.6	2.133	2.288	+1.99	-2.6	21.0	85.9
Apr. 3	06 16.95	+33 56.6	2.280	2.330	+2.02	-3.4	21.3	80.3
Apr. 13	06 37.19	+33 22.4	2.430	2.374	+2.04	-4.3	21.6	74.8
Apr. 23	06 57.58	+32 39.9	2.582	2.420	+2.03	-5.1	21.9	69.5
May 3	07 17.92	+31 49.3	2.733	2.469	+2.01	-5.8	22.2	64.3
May 13	07 38.03	+30 51.0	2.883	2.518	+1.98	-6.5	22.5	59.1
May 23	07 57.79	+29 45.8	3.031	2.570	+1.93	-7.2	22.8	54.0
June 2	08 17.13	+28 34.2	3.176	2.623	+1.88	-7.7	23.1	48.9
June 12	08 35.97	+27 17.3	3.316	2.677	+1.83	-8.2	23.4	43.8
June 22	08 54.29	+25 55.7	3.450	2.732	+1.78	-8.5	.	38.7
July 2	09 12.05	+24 30.3	3.578	2.788	+1.72	-8.8	.	33.6
July 12	09 29.26	+23 02.2	3.697	2.844	+1.67	-9.0	.	28.4
July 22	09 45.92	+21 32.0	3.807	2.902	+1.61	-9.1	.	23.3
Aug. 1	10 02.03	+20 00.6	3.907	2.960	+1.56	-9.2	.	18.2
Aug. 11	10 17.60	+18 28.7	3.996	3.018	+1.50	-9.2	.	13.2
Aug. 21	10 32.64	+16 57.2	4.072	3.077	+1.45	-9.0	.	9.0
Aug. 31	10 47.16	+15 26.7	4.135	3.136	+1.40	-8.9	.	7.2
Sept.10	11 01.14	+13 58.0	4.183	3.195	+1.35	-8.6	.	9.6
Sept.20	11 14.60	+12 31.8	4.217	3.254	+1.29	-8.3	.	14.4
Sept.30	11 27.49	+11 08.8	4.236	3.314	+1.23	-7.9	.	20.1
Oct. 10	11 39.81	+09 49.6	4.239	3.373	+1.17	-7.5	.	26.3
Oct. 20	11 51.51	+08 35.1	4.226	3.433	+1.10	-6.9	.	32.9
Oct. 30	12 02.53	+07 26.0	4.198	3.492	+1.03	-6.3	.	39.7
Nov. 9	12 12.80	+06 22.9	4.154	3.551	+0.94	-5.6	.	46.8
Nov. 19	12 22.25	+05 26.7	4.097	3.610	+0.85	-4.9	.	54.3
Nov. 29	12 30.76	+04 38.1	4.027	3.669	+0.75	-4.0	.	62.0
Dec. 9	12 38.22	+03 57.7	3.946	3.728	+0.63	-3.1	.	70.1
Dec. 19	12 44.49	+03 26.4	3.857	3.787	+0.49	-2.2	.	78.5
Dec. 29	12 49.43	+03 04.6	3.763	3.845	+0.35	-1.2	.	87.4
Jan. 8	12 52.91	+02 52.7	3.666	3.903	+0.19	-0.2	.	96.6
Jan. 18	12 54.80	+02 51.1	3.572	3.961	+0.02	+0.8	.	106.2
Jan. 28	12 55.00	+02 59.3	3.484	4.018	-0.15	+1.7	.	116.3
Feb. 7	12 53.51	+03 16.7	3.408	4.076	-0.31	+2.5	.	126.7
Feb. 17	12 50.38	+03 41.9	3.350	4.132	-0.46	+3.1	.	137.5
Feb. 27	12 45.80	+04 12.8	3.313	4.189	-0.57	+3.4	.	148.5
Mar. 9	12 40.08	+04 46.6	3.301	4.245	-0.64	+3.4	.	159.4
Mar. 19	12 33.64	+05 20.2	3.319	4.301	-0.67	+3.0	.	169.1
Mar. 29	12 26.97	+05 50.4	3.368	4.357	-0.64	+2.4	.	170.8

Comet 37P/Forbes

Epoch = 2012 July 12.0 TT
T = 2011 Dec. 11.05657 TT
Peri. = 329.41492 e = 0.5407264
Node = 315.02532 2000.0 a = 3.4304765 AU
Incl. = 8.95516 n = 0.15512164
q = 1.5755273 AU P = 6.35 years

m1 = 10.2 + 5 log(Delta) + 17.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	19 40.59	-22 58.5	2.552	1.594	+3.16	+12.1	15.8	10.3
Jan. 14	20 12.16	-20 57.3	2.581	1.612	+3.02	+13.9	15.9	7.6
Jan. 24	20 42.38	-18 38.0	2.614	1.636	+2.88	+15.3	16.0	4.9
Feb. 3	21 11.17	-16 04.8	2.650	1.665	+2.73	+16.3	16.2	2.0
Feb. 13	21 38.52	-13 21.8	2.686	1.699	+2.60	+16.9	16.4	1.2
Feb. 23	22 04.49	-10 32.6	2.723	1.738	+2.47	+17.2	16.6	4.3
Mar. 4	22 29.16	-07 40.6	2.758	1.780	+2.35	+17.2	16.8	7.7
Mar. 14	22 52.63	-04 48.5	2.791	1.826	+2.24	+17.0	17.0	11.2
Mar. 24	23 15.00	-01 58.4	2.820	1.875	+2.14	+16.6	17.2	14.9
Apr. 3	23 36.36	+00 47.6	2.845	1.926	+2.04	+16.1	17.5	18.8
Apr. 13	23 56.77	+03 28.3	2.864	1.979	+1.95	+15.4	17.7	22.9
Apr. 23	00 16.32	+06 02.7	2.876	2.034	+1.87	+14.7	17.9	27.2
May 3	00 35.01	+08 29.8	2.880	2.091	+1.79	+13.9	18.1	31.7
May 13	00 52.88	+10 49.2	2.876	2.148	+1.70	+13.1	18.3	36.4
May 23	01 09.92	+13 00.6	2.863	2.206	+1.62	+12.3	18.5	41.3
June 2	01 26.08	+15 03.7	2.841	2.265	+1.52	+11.5	18.7	46.5
June 12	01 41.30	+16 58.5	2.810	2.325	+1.42	+10.7	18.9	51.9
June 22	01 55.51	+18 45.1	2.769	2.384	+1.30	+9.8	19.0	57.6
July 2	02 08.56	+20 23.4	2.719	2.444	+1.17	+9.0	19.2	63.7
July 12	02 20.30	+21 53.8	2.661	2.504	+1.02	+8.2	19.3	70.0
July 22	02 30.54	+23 16.2	2.596	2.563	+0.85	+7.4	19.4	76.8
Aug. 1	02 39.04	+24 30.6	2.525	2.622	+0.65	+6.6	19.5	84.1
Aug. 11	02 45.56	+25 36.9	2.451	2.681	+0.43	+5.8	19.6	91.8
Aug. 21	02 49.82	+26 34.5	2.376	2.740	+0.17	+4.8	19.7	100.1
Aug. 31	02 51.55	+27 22.4	2.303	2.798	-0.10	+3.6	19.8	108.9
Sept. 10	02 50.60	+27 58.8	2.236	2.856	-0.37	+2.3	19.9	118.4
Sept. 20	02 46.89	+28 21.8	2.180	2.913	-0.63	+0.7	20.0	128.4
Sept. 30	02 40.62	+28 28.9	2.140	2.969	-0.84	-1.0	20.1	138.9
Oct. 10	02 32.25	+28 18.6	2.121	3.025	-0.97	-2.8	20.2	149.6
Oct. 20	02 22.55	+27 50.5	2.127	3.080	-1.00	-4.4	20.4	159.8
Oct. 30	02 12.51	+27 06.9	2.161	3.135	-0.94	-5.4	20.6	166.6
Nov. 9	02 03.13	+26 12.5	2.224	3.189	-0.79	-5.9	20.7	164.3
Nov. 19	01 55.22	+25 13.3	2.317	3.242	-0.58	-5.8	21.0	155.5
Nov. 29	01 49.38	+24 15.7	2.437	3.295	-0.35	-5.1	21.2	145.1
Dec. 9	01 45.83	+23 24.7	2.580	3.346	-0.12	-4.1	21.4	134.6
Dec. 19	01 44.60	+22 43.5	2.743	3.397	+0.09	-2.9	21.7	124.4
Dec. 29	01 45.54	+22 14.1	2.921	3.448	+0.29	-1.8	21.9	114.5
Jan. 8	01 48.44	+21 56.3	3.110	3.497	+0.46	-0.7	.	105.1
Jan. 18	01 53.03	+21 49.8	3.305	3.546	+0.60	+0.3	.	96.0
Jan. 28	01 59.08	+21 53.2	3.503	3.594	+0.73	+1.2	.	87.3
Feb. 7	02 06.35	+22 05.2	3.700	3.642	+0.83	+1.9	.	78.9
Feb. 17	02 14.64	+22 24.2	3.892	3.688	+0.91	+2.5	.	70.9
Feb. 27	02 23.79	+22 48.8	4.078	3.734	+0.98	+2.9	.	63.0
Mar. 9	02 33.63	+23 17.6	4.254	3.779	+1.04	+3.2	.	55.4
Mar. 19	02 44.04	+23 49.4	4.418	3.824	+1.09	+3.4	.	48.0
Mar. 29	02 54.90	+24 23.2	4.569	3.867	+1.12	+3.5	.	40.7

Comet C/2009 S3 (Lemmon)

Epoch = 2012 July 12.0 TT
T = 2011 Dec. 11.77505 TT
Peri. = 129.80527
Node = 225.13215 2000.0
Incl. = 60.38488
q = 6.4749866 AU
e = 1.0016050

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	23 01.62	+38 07.7	6.508	6.477	+0.79	-5.0	18.8	83.8
Jan. 14	23 09.55	+37 17.5	6.633	6.479	+0.84	-4.1	18.8	76.8
Jan. 24	23 17.99	+36 36.9	6.756	6.482	+0.88	-3.1	18.8	69.7
Feb. 3	23 26.82	+36 05.6	6.875	6.485	+0.91	-2.2	18.9	62.8
Feb. 13	23 35.95	+35 43.1	6.987	6.489	+0.93	-1.4	18.9	56.1
Feb. 23	23 45.29	+35 28.8	7.089	6.494	+0.95	-0.7	18.9	49.7
Mar. 4	23 54.75	+35 22.0	7.179	6.499	+0.95	0.0	19.0	43.8
Mar. 14	00 04.25	+35 21.9	7.255	6.506	+0.95	+0.6	19.0	38.4
Mar. 24	00 13.73	+35 27.4	7.315	6.512	+0.94	+1.1	19.0	34.0
Apr. 3	00 23.11	+35 38.0	7.357	6.520	+0.92	+1.5	19.0	30.9
Apr. 13	00 32.32	+35 52.6	7.382	6.528	+0.90	+1.8	19.1	29.5
Apr. 23	00 41.30	+36 10.5	7.389	6.537	+0.87	+2.0	19.1	30.0
May 3	00 49.97	+36 31.0	7.376	6.547	+0.83	+2.2	19.1	32.3
May 13	00 58.27	+36 53.2	7.346	6.557	+0.78	+2.3	19.1	36.2
May 23	01 06.11	+37 16.5	7.297	6.568	+0.73	+2.4	19.0	41.1
June 2	01 13.42	+37 40.2	7.232	6.580	+0.67	+2.3	19.0	46.9
June 12	01 20.12	+38 03.4	7.150	6.592	+0.60	+2.2	19.0	53.2
June 22	01 26.10	+38 25.5	7.055	6.605	+0.52	+2.0	19.0	60.0
July 2	01 31.28	+38 45.7	6.947	6.619	+0.43	+1.7	19.0	67.1
July 12	01 35.58	+39 03.0	6.830	6.633	+0.33	+1.4	18.9	74.6
July 22	01 38.90	+39 16.7	6.706	6.648	+0.23	+0.9	18.9	82.4
Aug. 1	01 41.16	+39 25.5	6.578	6.664	+0.12	+0.3	18.9	90.4
Aug. 11	01 42.32	+39 28.4	6.450	6.680	0.00	-0.4	18.8	98.8
Aug. 21	01 42.36	+39 24.2	6.326	6.696	-0.11	-1.3	18.8	107.3
Aug. 31	01 41.29	+39 11.5	6.209	6.714	-0.21	-2.2	18.8	116.0
Sept.10	01 39.22	+38 49.3	6.105	6.732	-0.29	-3.3	18.7	124.9
Sept.20	01 36.27	+38 16.8	6.018	6.751	-0.36	-4.3	18.7	133.6
Sept.30	01 32.66	+37 33.4	5.952	6.770	-0.40	-5.4	18.7	142.0
Oct. 10	01 28.67	+36 39.6	5.911	6.790	-0.41	-6.3	18.7	149.4
Oct. 20	01 24.57	+35 36.2	5.898	6.810	-0.39	-7.1	18.7	154.5
Oct. 30	01 20.68	+34 25.0	5.914	6.831	-0.34	-7.7	18.7	155.7
Nov. 9	01 17.27	+33 08.3	5.961	6.853	-0.27	-7.9	18.7	152.2
Nov. 19	01 14.57	+31 49.0	6.037	6.875	-0.18	-7.9	18.8	145.5
Nov. 29	01 12.75	+30 29.9	6.142	6.897	-0.08	-7.6	18.8	137.1
Dec. 9	01 11.91	+29 13.6	6.271	6.921	+0.02	-7.1	18.9	128.0
Dec. 19	01 12.07	+28 02.2	6.422	6.944	+0.12	-6.5	19.0	118.4
Dec. 29	01 13.25	+26 57.3	6.588	6.969	+0.21	-5.7	19.0	108.9
Jan. 8	01 15.38	+25 60.0	6.767	6.993	+0.30	-4.9	19.1	99.3
Jan. 18	01 18.39	+25 10.7	6.952	7.019	+0.38	-4.1	19.2	89.8
Jan. 28	01 22.21	+24 29.3	7.139	7.045	+0.45	-3.4	19.2	80.5
Feb. 7	01 26.71	+23 55.6	7.323	7.071	+0.51	-2.7	19.3	71.4
Feb. 17	01 31.82	+23 29.0	7.501	7.098	+0.56	-2.0	19.4	62.4
Feb. 27	01 37.44	+23 08.6	7.667	7.125	+0.60	-1.5	19.4	53.6
Mar. 9	01 43.45	+22 53.8	7.820	7.153	+0.63	-1.0	19.5	45.0
Mar. 19	01 49.79	+22 43.6	7.956	7.181	+0.66	-0.6	19.5	36.6
Mar. 29	01 56.36	+22 37.2	8.072	7.210	+0.67	-0.4	19.6	28.4

Comet 71P/Clark

Epoch = 2012 July 12.0 TT
T = 2011 Dec. 15.90258 TT
Peri. = 208.83223 e = 0.4984507
Node = 59.60317 2000.0 a = 3.1254698 AU
Incl. = 9.48149 n = 0.17837382
q = 1.5675772 AU P = 5.53 years

m1 = 10.0 + 5 log(Delta) + 15.0 log(r(t-40))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	18 48.92	-26 45.8	2.557	1.578	+3.39	+2.4	15.0	4.2
Jan. 14	19 22.87	-26 22.1	2.567	1.593	+3.32	+5.0	15.0	6.2
Jan. 24	19 56.03	-25 32.1	2.579	1.612	+3.20	+7.3	15.0	8.6
Feb. 3	20 28.05	-24 18.9	2.593	1.637	+3.06	+9.2	15.0	11.2
Feb. 13	20 58.69	-22 46.6	2.608	1.667	+2.91	+10.7	15.1	14.0
Feb. 23	21 27.83	-20 59.2	2.623	1.701	+2.76	+11.8	15.1	16.9
Mar. 4	21 55.42	-19 01.1	2.637	1.739	+2.60	+12.5	15.2	20.1
Mar. 14	22 21.47	-16 56.3	2.648	1.780	+2.46	+12.8	15.3	23.4
Mar. 24	22 46.05	-14 48.2	2.656	1.825	+2.32	+12.8	15.5	27.0
Apr. 3	23 09.22	-12 39.8	2.660	1.872	+2.18	+12.6	15.6	30.7
Apr. 13	23 31.06	-10 33.8	2.658	1.921	+2.06	+12.2	15.7	34.7
Apr. 23	23 51.64	-08 32.2	2.650	1.972	+1.94	+11.5	15.9	38.9
May 3	00 11.01	-06 36.8	2.634	2.024	+1.82	+10.8	16.0	43.4
May 13	00 29.19	-04 48.9	2.611	2.077	+1.70	+9.9	16.2	48.1
May 23	00 46.20	-03 09.8	2.580	2.132	+1.58	+8.9	16.3	53.1
June 2	01 01.99	-01 40.3	2.541	2.187	+1.45	+7.9	16.4	58.4
June 12	01 16.51	-00 21.3	2.493	2.242	+1.32	+6.8	16.6	64.0
June 22	01 29.67	+00 46.7	2.438	2.298	+1.17	+5.6	16.7	70.0
July 2	01 41.32	+01 42.9	2.376	2.354	+1.00	+4.4	16.8	76.4
July 12	01 51.32	+02 27.2	2.308	2.410	+0.81	+3.2	16.9	83.2
July 22	01 59.44	+02 58.9	2.237	2.466	+0.60	+1.9	17.0	90.6
Aug. 1	02 05.46	+03 17.8	2.163	2.521	+0.37	+0.6	17.1	98.5
Aug. 11	02 09.17	+03 24.1	2.090	2.577	+0.12	-0.6	17.2	107.0
Aug. 21	02 10.32	+03 17.7	2.023	2.632	-0.15	-1.8	17.3	116.3
Aug. 31	02 08.79	+02 59.8	1.963	2.686	-0.42	-2.8	17.3	126.2
Sept.10	02 04.61	+02 32.0	1.918	2.740	-0.66	-3.5	17.4	136.8
Sept.20	01 58.00	+01 57.0	1.891	2.793	-0.85	-3.8	17.5	147.8
Sept.30	01 49.50	+01 18.9	1.888	2.846	-0.96	-3.6	17.7	159.1
Oct. 10	01 39.90	+00 42.6	1.912	2.898	-0.98	-3.0	17.8	168.9
Oct. 20	01 30.12	+00 12.6	1.964	2.949	-0.90	-1.9	18.0	169.6
Oct. 30	01 21.13	-00 06.8	2.047	3.000	-0.75	-0.7	18.2	160.2
Nov. 9	01 13.67	-00 13.5	2.156	3.050	-0.55	+0.7	18.5	149.3
Nov. 19	01 08.22	-00 06.7	2.291	3.099	-0.32	+2.0	18.7	138.3
Nov. 29	01 04.99	+00 13.1	2.445	3.148	-0.10	+3.1	19.0	127.8
Dec. 9	01 03.97	+00 44.4	2.616	3.196	+0.10	+4.1	19.2	117.7
Dec. 19	01 05.00	+01 25.7	2.799	3.243	+0.29	+4.9	19.5	108.1
Dec. 29	01 07.89	+02 15.1	2.989	3.289	+0.45	+5.6	19.7	99.0
Jan. 8	01 12.37	+03 10.9	3.182	3.334	+0.58	+6.1	20.0	90.2
Jan. 18	01 18.21	+04 11.8	3.376	3.379	+0.70	+6.4	20.2	81.8
Jan. 28	01 25.21	+05 16.3	3.567	3.423	+0.80	+6.7	20.4	73.6
Feb. 7	01 33.17	+06 23.2	3.752	3.466	+0.88	+6.8	20.6	65.8
Feb. 17	01 41.92	+07 31.7	3.929	3.508	+0.94	+6.9	20.8	58.1
Feb. 27	01 51.33	+08 40.7	4.094	3.550	+0.99	+6.9	21.0	50.6
Mar. 9	02 01.26	+09 49.5	4.248	3.590	+1.04	+6.8	21.2	43.3
Mar. 19	02 11.62	+10 57.4	4.387	3.630	+1.07	+6.6	21.3	36.1
Mar. 29	02 22.30	+12 03.7	4.510	3.669	+1.09	+6.4	21.4	29.0

Comet C/2011 A3 (Gibbs)

Epoch = 2012 July 12.0 TT
T = 2011 Dec. 16.07303 TT
Peri. = 141.16066
Node = 124.89009 2000.0
Incl. = 26.07668
q = 2.3448716 AU
e = 0.9976004

m1 = 8.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	18 32.85	-13 48.7	3.314	2.354	+2.29	-3.5	14.7	10.5
Jan. 14	18 55.70	-14 24.0	3.317	2.367	+2.26	-2.3	14.7	12.6
Jan. 24	19 18.28	-14 47.4	3.316	2.385	+2.22	-1.3	14.8	15.9
Feb. 3	19 40.45	-15 00.1	3.310	2.408	+2.16	-0.4	14.8	20.0
Feb. 13	20 02.06	-15 03.6	3.299	2.436	+2.10	+0.4	14.9	24.5
Feb. 23	20 23.02	-14 59.7	3.281	2.468	+2.02	+0.9	14.9	29.4
Mar. 4	20 43.21	-14 50.2	3.258	2.505	+1.93	+1.3	15.0	34.5
Mar. 14	21 02.55	-14 37.3	3.227	2.545	+1.84	+1.4	15.0	39.9
Mar. 24	21 20.96	-14 22.9	3.190	2.590	+1.74	+1.3	15.1	45.5
Apr. 3	21 38.37	-14 09.4	3.146	2.638	+1.63	+1.1	15.1	51.3
Apr. 13	21 54.70	-13 58.9	3.096	2.690	+1.52	+0.5	15.2	57.3
Apr. 23	22 09.89	-13 53.4	3.039	2.744	+1.39	-0.2	15.2	63.6
May 3	22 23.83	-13 55.1	2.978	2.802	+1.26	-1.1	15.2	70.2
May 13	22 36.45	-14 06.0	2.913	2.861	+1.12	-2.2	15.3	77.1
May 23	22 47.62	-14 27.8	2.845	2.924	+0.96	-3.4	15.3	84.3
June 2	22 57.22	-15 02.3	2.777	2.988	+0.79	-4.8	15.4	91.9
June 12	23 05.13	-15 50.4	2.711	3.054	+0.61	-6.3	15.4	99.9
June 22	23 11.21	-16 52.9	2.649	3.122	+0.41	-7.6	15.5	108.3
July 2	23 15.34	-18 09.4	2.597	3.191	+0.21	-8.9	15.5	117.1
July 12	23 17.45	-19 38.1	2.557	3.262	+0.01	-9.8	15.6	126.2
July 22	23 17.55	-21 16.1	2.532	3.334	-0.18	-10.3	15.6	135.5
Aug. 1	23 15.74	-22 58.7	2.528	3.407	-0.34	-10.1	15.7	144.6
Aug. 11	23 12.31	-24 40.1	2.547	3.481	-0.47	-9.4	15.8	152.9
Aug. 21	23 07.65	-26 14.2	2.593	3.555	-0.53	-8.1	16.0	159.0
Aug. 31	23 02.32	-27 35.3	2.665	3.631	-0.54	-6.4	16.1	160.2
Sept. 10	22 56.94	-28 39.2	2.765	3.707	-0.49	-4.5	16.3	155.9
Sept. 20	22 52.08	-29 23.8	2.891	3.784	-0.38	-2.5	16.5	148.5
Sept. 30	22 48.24	-29 48.9	3.041	3.861	-0.25	-0.7	16.7	139.9
Oct. 10	22 45.75	-29 56.0	3.212	3.939	-0.10	+0.9	16.9	130.9
Oct. 20	22 44.78	-29 47.2	3.401	4.017	+0.06	+2.2	17.1	121.9
Oct. 30	22 45.38	-29 25.1	3.604	4.095	+0.21	+3.3	17.3	113.0
Nov. 9	22 47.48	-28 52.2	3.817	4.174	+0.35	+4.1	17.5	104.3
Nov. 19	22 50.96	-28 10.8	4.037	4.252	+0.47	+4.8	17.7	95.8
Nov. 29	22 55.65	-27 22.8	4.260	4.331	+0.57	+5.3	17.9	87.6
Dec. 9	23 01.38	-26 30.0	4.483	4.410	+0.66	+5.6	18.1	79.5
Dec. 19	23 08.00	-25 33.6	4.702	4.489	+0.73	+5.9	18.3	71.6
Dec. 29	23 15.33	-24 34.9	4.916	4.569	+0.79	+6.0	18.5	63.9
Jan. 8	23 23.23	-23 35.0	5.121	4.648	+0.84	+6.0	18.6	56.3
Jan. 18	23 31.59	-22 34.5	5.314	4.727	+0.87	+6.0	18.8	49.0
Jan. 28	23 40.28	-21 34.6	5.494	4.807	+0.89	+5.9	18.9	41.9
Feb. 7	23 49.19	-20 35.8	5.659	4.886	+0.91	+5.7	19.1	35.2
Feb. 17	23 58.26	-19 38.9	5.806	4.965	+0.91	+5.4	19.2	29.0
Feb. 27	00 07.37	-18 44.6	5.936	5.044	+0.91	+5.1	19.3	23.6
Mar. 9	00 16.47	-17 53.5	6.047	5.123	+0.90	+4.7	19.4	19.7
Mar. 19	00 25.49	-17 06.2	6.139	5.202	+0.89	+4.3	19.5	18.2
Mar. 29	00 34.35	-16 23.2	6.210	5.281	+0.86	+3.8	19.6	19.7

Comet C/2009 P1 (Garradd)

Epoch = 2012 July 12.0 TT
T = 2011 Dec. 23.66835 TT
Peri. = 90.74313
Node = 325.99931 2000.0
Incl. = 106.17542
q = 1.5505434 AU
e = 1.0009099

m1 = 4.2 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	17 29.87	+27 46.6	1.904	1.558	-0.17	+22.4	7.5	54.7
Jan. 14	17 28.13	+31 30.7	1.787	1.578	-0.42	+29.2	7.4	61.6
Jan. 24	17 23.93	+36 22.9	1.656	1.609	-0.89	+37.8	7.4	69.9
Feb. 3	17 15.01	+42 40.6	1.521	1.651	-1.84	+47.4	7.3	79.3
Feb. 13	16 56.63	+50 35.0	1.398	1.703	-3.92	+55.1	7.2	89.4
Feb. 23	16 17.41	+59 46.2	1.306	1.762	-8.75	+50.3	7.2	99.4
Mar. 4	14 49.87	+68 08.8	1.266	1.829	-15.11	+13.4	7.3	107.6
Mar. 14	12 18.82	+70 22.5	1.294	1.903	-11.77	-34.5	7.6	111.8
Mar. 24	10 21.07	+64 37.5	1.393	1.981	-5.42	-49.5	7.9	110.8
Apr. 3	09 26.90	+56 22.1	1.553	2.064	-2.37	-45.9	8.3	105.8
Apr. 13	09 03.20	+48 42.9	1.758	2.150	-1.01	-38.4	8.7	98.6
Apr. 23	08 53.07	+42 18.5	1.991	2.239	-0.33	-31.5	9.2	90.5
May 3	08 49.75	+37 03.4	2.241	2.330	+0.05	-26.0	9.6	82.3
May 13	08 50.22	+32 43.5	2.497	2.423	+0.28	-21.8	10.0	74.0
May 23	08 52.97	+29 05.2	2.753	2.517	+0.42	-18.7	10.4	66.0
June 2	08 57.17	+25 58.0	3.003	2.613	+0.51	-16.4	10.8	58.1
June 12	09 02.28	+23 13.9	3.243	2.709	+0.57	-14.7	11.1	50.3
June 22	09 07.98	+20 47.0	3.468	2.806	+0.61	-13.4	11.4	42.6
July 2	09 14.04	+18 33.1	3.677	2.904	+0.62	-12.4	11.7	35.0
July 12	09 20.28	+16 28.8	3.866	3.001	+0.63	-11.7	11.9	27.5
July 22	09 26.57	+14 31.9	4.034	3.099	+0.62	-11.1	12.1	20.0
Aug. 1	09 32.78	+12 40.6	4.180	3.197	+0.60	-10.7	12.4	12.5
Aug. 11	09 38.82	+10 53.5	4.301	3.294	+0.58	-10.4	12.5	5.7
Aug. 21	09 44.58	+09 09.7	4.398	3.392	+0.54	-10.1	12.7	5.1
Aug. 31	09 49.97	+07 28.3	4.470	3.489	+0.49	-9.9	12.9	11.9
Sept.10	09 54.87	+05 49.0	4.518	3.586	+0.43	-9.8	13.0	19.7
Sept.20	09 59.19	+04 11.2	4.541	3.683	+0.36	-9.6	13.1	27.8
Sept.30	10 02.79	+02 34.8	4.541	3.779	+0.28	-9.5	13.3	36.2
Oct. 10	10 05.55	+00 59.9	4.520	3.875	+0.18	-9.3	13.4	44.8
Oct. 20	10 07.31	-00 33.5	4.479	3.971	+0.06	-9.1	13.4	53.6
Oct. 30	10 07.90	-02 05.0	4.423	4.066	-0.07	-8.9	13.5	62.8
Nov. 9	10 07.19	-03 34.0	4.354	4.161	-0.22	-8.6	13.6	72.3
Nov. 19	10 04.98	-04 59.5	4.277	4.255	-0.38	-8.1	13.6	82.1
Nov. 29	10 01.15	-06 20.2	4.198	4.349	-0.55	-7.4	13.7	92.2
Dec. 9	09 55.60	-07 34.5	4.123	4.442	-0.73	-6.6	13.8	102.6
Dec. 19	09 48.31	-08 40.3	4.057	4.535	-0.89	-5.5	13.8	113.2
Dec. 29	09 39.38	-09 35.4	4.008	4.628	-1.03	-4.2	13.9	123.8
Jan. 8	09 29.06	-10 17.6	3.983	4.720	-1.13	-2.8	13.9	134.0
Jan. 18	09 17.75	-10 45.3	3.987	4.812	-1.18	-1.3	14.0	143.3
Jan. 28	09 05.98	-10 58.0	4.024	4.903	-1.16	+0.2	14.1	150.2
Feb. 7	08 54.34	-10 56.3	4.096	4.993	-1.09	+1.4	14.2	152.8
Feb. 17	08 43.41	-10 42.3	4.204	5.084	-0.98	+2.3	14.4	150.0
Feb. 27	08 33.66	-10 19.0	4.345	5.173	-0.83	+2.9	14.5	143.4
Mar. 9	08 25.40	-09 49.6	4.516	5.263	-0.66	+3.2	14.7	134.8
Mar. 19	08 18.81	-09 17.5	4.712	5.352	-0.49	+3.2	14.9	125.5
Mar. 29	08 13.91	-08 45.6	4.927	5.440	-0.33	+3.0	15.0	116.1

Comet 36P/Whipple

Epoch = 2012 July 12.0 TT
T = 2011 Dec. 28.49803 TT
Peri. = 201.44106 e = 0.2619941
Node = 182.31191 2000.0 a = 4.1826071 AU
Incl. = 9.91685 n = 0.11522149
q = 3.0867887 AU P = 8.55 years

m1 = 6.6 + 5 log(Delta) + 20.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 29.20	-01 04.1	3.041	3.087	+0.93	+5.1	18.8	83.4
Jan. 14	00 38.53	-00 13.5	3.179	3.088	+1.04	+5.8	18.9	75.8
Jan. 24	00 48.92	+00 44.1	3.314	3.090	+1.13	+6.3	19.0	68.4
Feb. 3	01 00.23	+01 47.1	3.443	3.092	+1.21	+6.7	19.1	61.3
Feb. 13	01 12.31	+02 54.1	3.564	3.096	+1.27	+7.0	19.2	54.4
Feb. 23	01 25.05	+04 03.6	3.677	3.100	+1.33	+7.1	19.3	47.7
Mar. 4	01 38.36	+05 14.4	3.780	3.105	+1.38	+7.1	19.3	41.3
Mar. 14	01 52.13	+06 25.1	3.872	3.110	+1.42	+7.0	19.4	35.0
Mar. 24	02 06.31	+07 34.9	3.953	3.117	+1.45	+6.8	19.5	28.9
Apr. 3	02 20.83	+08 42.6	4.021	3.124	+1.48	+6.5	19.5	22.9
Apr. 13	02 35.61	+09 47.3	4.076	3.132	+1.50	+6.1	19.6	17.1
Apr. 23	02 50.62	+10 48.2	4.119	3.141	+1.52	+5.6	19.6	11.7
May 3	03 05.77	+11 44.5	4.148	3.150	+1.52	+5.1	19.7	7.1
May 13	03 21.02	+12 35.6	4.164	3.161	+1.53	+4.5	19.7	5.8
May 23	03 36.31	+13 20.9	4.167	3.171	+1.52	+3.9	19.7	9.2
June 2	03 51.56	+13 60.0	4.156	3.183	+1.51	+3.2	19.7	14.3
June 12	04 06.70	+14 32.3	4.132	3.195	+1.50	+2.5	19.8	19.8
June 22	04 21.66	+14 57.8	4.096	3.208	+1.47	+1.8	19.8	25.5
July 2	04 36.34	+15 16.2	4.047	3.221	+1.43	+1.1	19.8	31.3
July 12	04 50.65	+15 27.4	3.985	3.235	+1.38	+0.4	19.8	37.3
July 22	05 04.50	+15 31.6	3.913	3.250	+1.33	-0.3	19.8	43.4
Aug. 1	05 17.76	+15 28.8	3.829	3.265	+1.25	-0.9	19.8	49.7
Aug. 11	05 30.30	+15 19.4	3.735	3.281	+1.17	-1.6	19.8	56.2
Aug. 21	05 42.00	+15 03.8	3.633	3.297	+1.07	-2.1	19.8	62.9
Aug. 31	05 52.70	+14 42.5	3.523	3.314	+0.95	-2.6	19.7	69.9
Sept. 10	06 02.24	+14 16.2	3.407	3.331	+0.82	-3.0	19.7	77.1
Sept. 20	06 10.43	+13 45.9	3.287	3.349	+0.67	-3.3	19.7	84.8
Sept. 30	06 17.10	+13 12.4	3.166	3.367	+0.50	-3.5	19.6	92.8
Oct. 10	06 22.06	+12 37.0	3.046	3.385	+0.31	-3.6	19.6	101.2
Oct. 20	06 25.14	+12 01.1	2.930	3.404	+0.11	-3.5	19.6	110.1
Oct. 30	06 26.20	+11 26.1	2.823	3.423	-0.10	-3.2	19.5	119.5
Nov. 9	06 25.20	+10 53.8	2.729	3.443	-0.30	-2.8	19.5	129.3
Nov. 19	06 22.18	+10 26.0	2.651	3.463	-0.48	-2.2	19.5	139.5
Nov. 29	06 17.39	+10 04.3	2.595	3.483	-0.62	-1.4	19.5	149.8
Dec. 9	06 11.22	+09 50.2	2.565	3.503	-0.70	-0.6	19.5	159.4
Dec. 19	06 04.26	+09 44.6	2.562	3.524	-0.71	+0.3	19.6	165.8
Dec. 29	05 57.20	+09 48.0	2.589	3.545	-0.65	+1.2	19.7	164.1
Jan. 8	05 50.73	+09 59.8	2.645	3.567	-0.53	+1.9	19.8	156.0
Jan. 18	05 45.43	+10 19.1	2.729	3.588	-0.37	+2.5	19.9	146.1
Jan. 28	05 41.77	+10 44.3	2.837	3.610	-0.18	+2.9	20.0	135.9
Feb. 7	05 39.96	+11 13.7	2.965	3.632	+0.01	+3.2	20.2	125.8
Feb. 17	05 40.08	+11 45.6	3.109	3.654	+0.20	+3.3	20.3	116.1
Feb. 27	05 42.09	+12 18.4	3.265	3.676	+0.38	+3.2	20.5	106.8
Mar. 9	05 45.84	+12 50.5	3.427	3.698	+0.53	+3.0	20.6	98.0
Mar. 19	05 51.17	+13 20.8	3.594	3.720	+0.67	+2.7	20.8	89.5
Mar. 29	05 57.88	+13 48.3	3.761	3.743	+0.79	+2.4	20.9	81.3

Comet C/2009 F4 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2011 Dec. 31.95166 TT
Peri. = 260.39153
Node = 53.58418 2000.0
Incl. = 79.34747
q = 5.4548186 AU
e = 1.0009949

m1 = 2.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 15.45	-85 02.8	5.774	5.455	+3.52	+14.9	13.8	66.4
Jan. 14	00 50.68	-82 34.1	5.762	5.456	+2.39	+15.3	13.8	67.1
Jan. 24	01 14.60	-80 00.7	5.750	5.457	+1.93	+15.5	13.8	68.0
Feb. 3	01 33.90	-77 25.5	5.739	5.460	+1.69	+15.5	13.8	68.8
Feb. 13	01 50.82	-74 50.7	5.729	5.464	+1.56	+15.3	13.8	69.6
Feb. 23	02 06.38	-72 17.8	5.721	5.469	+1.47	+14.9	13.8	70.4
Mar. 4	02 21.05	-69 48.8	5.715	5.475	+1.40	+14.4	13.8	71.1
Mar. 14	02 35.07	-67 25.3	5.711	5.481	+1.35	+13.7	13.8	71.7
Mar. 24	02 48.58	-65 08.6	5.710	5.489	+1.31	+12.8	13.8	72.3
Apr. 3	03 01.65	-63 00.3	5.710	5.498	+1.26	+11.9	13.8	72.8
Apr. 13	03 14.30	-61 01.6	5.712	5.507	+1.22	+10.8	13.8	73.2
Apr. 23	03 26.54	-59 13.6	5.715	5.518	+1.18	+9.6	13.8	73.7
May 3	03 38.36	-57 37.1	5.717	5.529	+1.14	+8.4	13.8	74.2
May 13	03 49.72	-56 13.0	5.719	5.542	+1.09	+7.1	13.8	74.9
May 23	04 00.57	-55 01.7	5.720	5.555	+1.03	+5.8	13.8	75.6
June 2	04 10.86	-54 03.7	5.718	5.570	+0.96	+4.5	13.8	76.5
June 12	04 20.51	-53 19.1	5.714	5.585	+0.89	+3.1	13.9	77.6
June 22	04 29.44	-52 47.9	5.707	5.601	+0.81	+1.8	13.9	78.9
July 2	04 37.53	-52 29.9	5.696	5.618	+0.71	+0.5	13.9	80.5
July 12	04 44.68	-52 24.8	5.682	5.636	+0.61	-0.7	13.9	82.3
July 22	04 50.74	-52 31.8	5.666	5.655	+0.48	-1.8	13.9	84.2
Aug. 1	04 55.54	-52 50.1	5.647	5.675	+0.34	-2.8	13.9	86.4
Aug. 11	04 58.91	-53 18.2	5.626	5.695	+0.17	-3.6	13.9	88.8
Aug. 21	05 00.64	-53 54.6	5.604	5.717	-0.01	-4.2	13.9	91.3
Aug. 31	05 00.50	-54 37.0	5.583	5.739	-0.22	-4.6	13.9	93.8
Sept.10	04 58.32	-55 22.5	5.564	5.762	-0.44	-4.5	13.9	96.3
Sept.20	04 53.90	-56 07.9	5.548	5.786	-0.68	-4.1	13.9	98.7
Sept.30	04 47.14	-56 48.9	5.539	5.810	-0.90	-3.2	14.0	100.8
Oct. 10	04 38.12	-57 21.4	5.536	5.836	-1.11	-1.9	14.0	102.6
Oct. 20	04 27.05	-57 40.7	5.542	5.862	-1.26	-0.2	14.0	103.9
Oct. 30	04 14.42	-57 42.5	5.560	5.889	-1.35	+1.9	14.0	104.6
Nov. 9	04 00.92	-57 23.9	5.589	5.916	-1.36	+4.1	14.1	104.6
Nov. 19	03 47.36	-56 43.1	5.631	5.944	-1.28	+6.3	14.1	103.8
Nov. 29	03 34.55	-55 40.0	5.686	5.973	-1.14	+8.3	14.1	102.2
Dec. 9	03 23.16	-54 16.6	5.755	6.003	-0.95	+10.1	14.2	99.9
Dec. 19	03 13.62	-52 35.9	5.836	6.033	-0.75	+11.4	14.2	96.9
Dec. 29	03 06.15	-50 41.6	5.929	6.064	-0.54	+12.4	14.3	93.2
Jan. 8	03 00.77	-48 37.7	6.032	6.096	-0.34	+13.0	14.4	89.1
Jan. 18	02 57.36	-46 28.0	6.143	6.128	-0.16	+13.2	14.4	84.6
Jan. 28	02 55.73	-44 16.0	6.259	6.161	-0.01	+13.1	14.5	79.8
Feb. 7	02 55.67	-42 04.6	6.379	6.195	+0.13	+12.9	14.5	74.9
Feb. 17	02 56.95	-39 55.9	6.499	6.229	+0.24	+12.4	14.6	69.9
Feb. 27	02 59.34	-37 52.1	6.617	6.264	+0.33	+11.8	14.7	65.0
Mar. 9	03 02.66	-35 54.4	6.730	6.299	+0.41	+11.0	14.7	60.4
Mar. 19	03 06.72	-34 03.9	6.837	6.335	+0.46	+10.2	14.8	56.0
Mar. 29	03 11.37	-32 21.5	6.934	6.371	+0.51	+9.4	14.8	52.2

Comet P/2005 JN (Spacewatch)

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 6.03836 TT
Peri. = 153.54462 e = 0.3476187
Node = 70.78978 2000.0 a = 3.5036633 AU
Incl. = 8.85063 n = 0.15028669
q = 2.2857244 AU P = 6.56 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	15 57.09	-17 13.2	2.917	2.286	-0.97	+5.3	20.7	29.7/105	42.2
Jan. 14	16 17.30	-18 25.5	2.834	2.286	-1.00	+5.1	20.6	29.0/103	47.4
Jan. 24	16 37.26	-19 28.5	2.747	2.289	-1.04	+4.8	20.6	28.1/102	52.7
Feb. 3	16 56.79	-20 22.5	2.654	2.293	-1.07	+4.4	20.5	27.0/101	58.2
Feb. 13	17 15.74	-21 08.0	2.557	2.300	-1.10	+4.1	20.5	25.6/ 99	63.8
Feb. 23	17 33.89	-21 46.0	2.457	2.308	-1.14	+3.7	20.4	24.0/ 98	69.7
Mar. 4	17 51.01	-22 17.8	2.354	2.318	-1.18	+3.3	20.3	22.2/ 98	75.7
Mar. 14	18 06.89	-22 45.2	2.250	2.330	-1.23	+3.0	20.3	20.0/ 98	82.1
Mar. 24	18 21.27	-23 10.0	2.144	2.344	-1.28	+2.6	20.2	17.5/ 99	88.7
Apr. 3	18 33.85	-23 34.6	2.040	2.359	-1.34	+2.2	20.1	14.7/101	95.7
Apr. 13	18 44.36	-24 01.1	1.938	2.377	-1.41	+1.9	20.1	11.5/106	103.2
Apr. 23	18 52.48	-24 31.7	1.841	2.395	-1.49	+1.5	20.0	8.2/117	111.1
May 3	18 57.89	-25 08.3	1.752	2.415	-1.58	+1.2	20.0	5.5/142	119.7
May 13	19 00.38	-25 51.7	1.673	2.437	-1.68	+1.0	19.9	5.1/189	128.8
May 23	18 59.79	-26 41.7	1.607	2.460	-1.79	+0.9	19.9	7.2/221	138.6
June 2	18 56.20	-27 36.1	1.559	2.484	-1.89	+0.9	19.9	9.8/236	148.9
June 12	18 50.04	-28 31.1	1.532	2.509	-1.97	+1.1	19.9	11.7/244	159.5
June 22	18 42.05	-29 22.1	1.529	2.535	-2.02	+1.4	20.0	12.1/249	169.5
July 2	18 33.34	-30 04.8	1.551	2.562	-2.02	+1.9	20.1	11.1/253	172.5
July 12	18 25.12	-30 36.7	1.598	2.590	-1.97	+2.3	20.2	8.8/256	163.9
July 22	18 18.45	-30 57.3	1.670	2.619	-1.89	+2.6	20.4	5.7/259	153.5
Aug. 1	18 14.12	-31 08.1	1.765	2.649	-1.78	+2.7	20.6	2.1/261	143.4
Aug. 11	18 12.52	-31 11.4	1.878	2.680	-1.65	+2.6	20.8	1.5/ 81	133.6
Aug. 21	18 13.70	-31 09.1	2.007	2.711	-1.53	+2.4	21.0	5.0/ 83	124.4
Aug. 31	18 17.53	-31 02.6	2.149	2.742	-1.42	+2.1	21.2	8.0/ 83	115.7
Sept.10	18 23.71	-30 52.7	2.301	2.774	-1.31	+1.8	21.5	10.7/ 83	107.5
Sept.20	18 31.95	-30 39.5	2.459	2.807	-1.21	+1.4	21.7	13.0/ 83	99.6
Sept.30	18 41.94	-30 22.9	2.622	2.840	-1.12	+1.0	21.9	14.9/ 83	92.0
Oct. 10	18 53.35	-30 02.4	2.787	2.873	-1.05	+0.6	22.1	16.6/ 82	84.7
Oct. 20	19 05.94	-29 37.6	2.952	2.906	-0.98	+0.2	22.3	17.9/ 81	77.7
Oct. 30	19 19.44	-29 08.2	3.114	2.940	-0.91	-0.1	22.5	19.0/ 80	70.7
Nov. 9	19 33.65	-28 33.9	3.272	2.974	-0.85	-0.5	.	19.9/ 79	64.0
Nov. 19	19 48.39	-27 54.5	3.425	3.008	-0.80	-0.8	.	20.6/ 78	57.3
Nov. 29	20 03.49	-27 10.1	3.569	3.042	-0.75	-1.0	.	21.1/ 77	50.7
Dec. 9	20 18.81	-26 20.7	3.705	3.076	-0.71	-1.2	.	21.5/ 76	44.2
Dec. 19	20 34.23	-25 26.8	3.830	3.110	-0.67	-1.4	.	21.8/ 75	37.7
Dec. 29	20 49.64	-24 28.6	3.943	3.144	-0.63	-1.6	.	21.9/ 74	31.3
Jan. 8	21 04.96	-23 26.7	4.042	3.178	-0.60	-1.8	.	21.9/ 73	24.9
Jan. 18	21 20.11	-22 21.6	4.128	3.212	-0.57	-1.9	.	21.8/ 73	18.7
Jan. 28	21 35.02	-21 14.1	4.198	3.246	-0.54	-2.0	.	21.7/ 72	12.9
Feb. 7	21 49.64	-20 04.9	4.253	3.279	-0.51	-2.1	.	21.4/ 71	8.0
Feb. 17	22 03.93	-18 54.6	4.292	3.313	-0.49	-2.2	.	21.0/ 71	6.9
Feb. 27	22 17.83	-17 44.3	4.314	3.346	-0.47	-2.3	.	20.5/ 71	10.8
Mar. 9	22 31.31	-16 34.5	4.319	3.379	-0.45	-2.3	.	20.0/ 70	16.5
Mar. 19	22 44.32	-15 26.2	4.309	3.412	-0.44	-2.4	.	19.3/ 70	22.7
Mar. 29	22 56.82	-14 20.3	4.282	3.444	-0.42	-2.4	.	18.5/ 71	29.1

Comet 131P/Mueller

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 6.97183 TT
Peri. = 179.40371 e = 0.3437039
Node = 214.21456 2000.0 a = 3.6835864 AU
Incl. = 7.35528 n = 0.13941124
q = 2.4175234 AU P = 7.07 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 31.97	+03 40.4	2.279	2.418	+1.32	+5.8	18.9	85.9
Jan. 14	00 45.15	+04 38.2	2.402	2.418	+1.43	+6.6	19.0	79.2
Jan. 24	00 59.45	+05 44.3	2.523	2.420	+1.52	+7.2	19.1	72.7
Feb. 3	01 14.69	+06 56.6	2.642	2.424	+1.60	+7.6	19.2	66.5
Feb. 13	01 30.74	+08 12.8	2.758	2.429	+1.67	+7.8	19.3	60.5
Feb. 23	01 47.48	+09 31.1	2.869	2.437	+1.73	+7.9	19.5	54.8
Mar. 4	02 04.81	+10 49.7	2.976	2.445	+1.78	+7.7	19.6	49.2
Mar. 14	02 22.65	+12 06.8	3.076	2.456	+1.83	+7.4	19.7	43.8
Mar. 24	02 40.94	+13 21.0	3.170	2.468	+1.87	+7.0	19.8	38.5
Apr. 3	02 59.60	+14 31.0	3.256	2.482	+1.90	+6.4	19.9	33.3
Apr. 13	03 18.56	+15 35.4	3.335	2.497	+1.92	+5.8	20.0	28.2
Apr. 23	03 37.77	+16 33.3	3.406	2.513	+1.94	+5.0	20.1	23.2
May 3	03 57.16	+17 23.6	3.469	2.531	+1.95	+4.2	20.2	18.2
May 13	04 16.64	+18 05.8	3.523	2.550	+1.95	+3.3	20.3	13.4
May 23	04 36.15	+18 39.2	3.567	2.571	+1.95	+2.4	20.3	8.7
June 2	04 55.61	+19 03.4	3.602	2.593	+1.93	+1.5	20.4	4.7
June 12	05 14.92	+19 18.3	3.627	2.615	+1.91	+0.6	20.5	4.2
June 22	05 34.02	+19 23.8	3.642	2.639	+1.88	-0.4	20.6	8.0
July 2	05 52.81	+19 20.2	3.646	2.664	+1.84	-1.3	20.7	12.7
July 12	06 11.20	+19 07.6	3.640	2.690	+1.79	-2.1	20.7	17.7
July 22	06 29.11	+18 46.5	3.623	2.716	+1.73	-2.9	20.8	22.9
Aug. 1	06 46.45	+18 17.6	3.595	2.743	+1.67	-3.6	20.8	28.3
Aug. 11	07 03.13	+17 41.5	3.556	2.771	+1.59	-4.2	20.9	33.8
Aug. 21	07 19.08	+16 59.1	3.506	2.800	+1.51	-4.8	20.9	39.5
Aug. 31	07 34.19	+16 11.3	3.445	2.830	+1.42	-5.2	21.0	45.4
Sept.10	07 48.37	+15 19.1	3.375	2.859	+1.31	-5.5	21.0	51.5
Sept.20	08 01.51	+14 23.7	3.294	2.890	+1.20	-5.7	21.1	58.0
Sept.30	08 13.50	+13 26.4	3.205	2.921	+1.07	-5.8	21.1	64.7
Oct. 10	08 24.20	+12 28.4	3.109	2.952	+0.93	-5.7	21.1	71.7
Oct. 20	08 33.46	+11 31.2	3.006	2.983	+0.77	-5.5	21.1	79.1
Oct. 30	08 41.12	+10 36.5	2.900	3.015	+0.59	-5.1	21.1	87.0
Nov. 9	08 47.00	+09 46.0	2.792	3.047	+0.39	-4.4	21.1	95.3
Nov. 19	08 50.91	+09 01.6	2.686	3.080	+0.18	-3.7	21.1	104.1
Nov. 29	08 52.70	+08 25.0	2.585	3.112	-0.04	-2.7	21.1	113.5
Dec. 9	08 52.29	+07 58.3	2.493	3.145	-0.26	-1.5	21.1	123.4
Dec. 19	08 49.65	+07 42.8	2.416	3.177	-0.47	-0.3	21.1	133.8
Dec. 29	08 44.97	+07 39.5	2.357	3.210	-0.63	+0.9	21.1	144.7
Jan. 8	08 38.62	+07 48.5	2.322	3.243	-0.74	+2.0	21.2	155.5
Jan. 18	08 31.18	+08 08.6	2.314	3.276	-0.78	+2.9	21.2	165.4
Jan. 28	08 23.40	+08 37.5	2.335	3.308	-0.74	+3.5	21.3	169.4
Feb. 7	08 16.04	+09 12.1	2.387	3.341	-0.62	+3.7	21.5	162.6
Feb. 17	08 09.83	+09 49.2	2.467	3.374	-0.46	+3.6	21.6	152.4
Feb. 27	08 05.27	+10 25.5	2.573	3.406	-0.26	+3.3	21.8	141.8
Mar. 9	08 02.65	+10 58.8	2.700	3.439	-0.06	+2.8	21.9	131.4
Mar. 19	08 02.08	+11 27.1	2.846	3.471	+0.14	+2.2	.	121.5
Mar. 29	08 03.48	+11 49.4	3.005	3.503	+0.32	+1.6	.	112.0

Comet P/2011 C2 (Gibbs)

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 7.68708 TT
Peri. = 160.53977 e = 0.2693176
Node = 12.20528 2000.0 a = 7.3745709 AU
Incl. = 10.90832 n = 0.04921516
q = 5.3884692 AU P = 20.03 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	12 17.61	+02 17.7	5.135	5.388	+0.15	-1.3	19.9	99.7
Jan. 14	12 19.06	+02 04.8	4.981	5.389	+0.03	-0.6	19.9	109.4
Jan. 24	12 19.35	+01 58.8	4.836	5.389	-0.09	+0.1	19.8	119.5
Feb. 3	12 18.45	+01 59.4	4.705	5.389	-0.20	+0.7	19.7	129.8
Feb. 13	12 16.43	+02 06.1	4.592	5.390	-0.30	+1.2	19.7	140.4
Feb. 23	12 13.38	+02 17.9	4.503	5.391	-0.39	+1.5	19.6	151.3
Mar. 4	12 09.52	+02 33.3	4.440	5.393	-0.44	+1.7	19.6	162.2
Mar. 14	12 05.11	+02 50.7	4.407	5.394	-0.46	+1.7	19.6	172.9
Mar. 24	12 00.47	+03 08.0	4.403	5.396	-0.45	+1.5	19.6	174.4
Apr. 3	11 55.94	+03 23.3	4.430	5.399	-0.41	+1.2	19.6	164.0
Apr. 13	11 51.83	+03 34.9	4.487	5.401	-0.34	+0.7	19.6	153.3
Apr. 23	11 48.43	+03 41.5	4.569	5.404	-0.25	0.0	19.7	142.7
May 3	11 45.93	+03 41.9	4.675	5.407	-0.15	-0.6	19.7	132.5
May 13	11 44.48	+03 35.9	4.799	5.410	-0.04	-1.3	19.8	122.5
May 23	11 44.13	+03 23.1	4.939	5.414	+0.08	-1.9	19.9	112.9
June 2	11 44.89	+03 03.9	5.089	5.418	+0.18	-2.5	19.9	103.6
June 12	11 46.71	+02 38.4	5.244	5.422	+0.28	-3.1	20.0	94.6
June 22	11 49.53	+02 07.2	5.403	5.426	+0.37	-3.6	20.1	85.9
July 2	11 53.26	+01 30.8	5.559	5.431	+0.45	-4.1	20.1	77.5
July 12	11 57.80	+00 49.8	5.711	5.436	+0.53	-4.5	20.2	69.3
July 22	12 03.07	+00 04.7	5.856	5.441	+0.59	-4.9	20.3	61.2
Aug. 1	12 08.97	-00 44.0	5.991	5.446	+0.64	-5.2	20.3	53.4
Aug. 11	12 15.41	-01 35.6	6.112	5.452	+0.69	-5.4	20.4	45.6
Aug. 21	12 22.32	-02 29.8	6.220	5.458	+0.73	-5.6	20.4	37.9
Aug. 31	12 29.60	-03 25.9	6.311	5.464	+0.76	-5.8	20.5	30.3
Sept.10	12 37.18	-04 23.5	6.385	5.470	+0.78	-5.9	20.5	22.8
Sept.20	12 45.01	-05 22.0	6.440	5.477	+0.80	-5.9	20.5	15.2
Sept.30	12 52.99	-06 21.1	6.475	5.484	+0.81	-5.9	20.5	7.6
Oct. 10	13 01.06	-07 20.2	6.489	5.491	+0.81	-5.9	20.6	0.8
Oct. 20	13 09.16	-08 18.9	6.483	5.498	+0.80	-5.8	20.6	7.8
Oct. 30	13 17.20	-09 16.6	6.456	5.506	+0.79	-5.6	20.6	15.5
Nov. 9	13 25.10	-10 13.1	6.409	5.514	+0.77	-5.5	20.6	23.4
Nov. 19	13 32.77	-11 07.7	6.342	5.522	+0.74	-5.2	20.5	31.4
Nov. 29	13 40.13	-12 00.2	6.256	5.530	+0.69	-5.0	20.5	39.5
Dec. 9	13 47.07	-12 50.0	6.153	5.539	+0.64	-4.7	20.5	47.7
Dec. 19	13 53.49	-13 36.8	6.035	5.548	+0.58	-4.3	20.5	56.2
Dec. 29	13 59.26	-14 20.2	5.904	5.557	+0.50	-4.0	20.4	64.8
Jan. 8	14 04.28	-14 59.7	5.763	5.566	+0.41	-3.5	20.4	73.6
Jan. 18	14 08.43	-15 35.1	5.615	5.575	+0.32	-3.1	20.3	82.6
Jan. 28	14 11.58	-16 05.8	5.465	5.585	+0.21	-2.6	20.3	91.9
Feb. 7	14 13.65	-16 31.6	5.315	5.595	+0.09	-2.0	20.2	101.4
Feb. 17	14 14.55	-16 52.1	5.171	5.605	-0.03	-1.5	20.2	111.2
Feb. 27	14 14.26	-17 06.9	5.038	5.615	-0.15	-0.9	20.2	121.2
Mar. 9	14 12.80	-17 16.0	4.919	5.626	-0.26	-0.3	20.1	131.5
Mar. 19	14 10.24	-17 19.2	4.819	5.636	-0.35	+0.2	20.1	141.9
Mar. 29	14 06.74	-17 16.9	4.743	5.647	-0.42	+0.7	20.1	152.5

Comet 78P/Gehrels

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 12.78592 TT
Peri. = 192.74857 e = 0.4625202
Node = 210.55653 2000.0 a = 3.7366039 AU
Incl. = 6.25511 n = 0.13645470
q = 2.0083491 AU P = 7.22 years

m1 = 5.0 + 5 log(Delta) + 20.0 log(r(t-50))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 39.61	+03 04.1	1.797	2.010	+1.70	+8.1	12.6	87.5
Jan. 14	00 56.62	+04 24.7	1.899	2.008	+1.82	+8.8	12.6	81.7
Jan. 24	01 14.78	+05 53.0	2.002	2.010	+1.91	+9.3	12.7	76.3
Feb. 3	01 33.92	+07 26.3	2.106	2.016	+1.99	+9.5	12.7	71.1
Feb. 13	01 53.86	+09 01.5	2.211	2.025	+2.06	+9.5	12.8	66.2
Feb. 23	02 14.50	+10 36.2	2.316	2.037	+2.12	+9.2	12.9	61.4
Mar. 4	02 35.72	+12 08.0	2.420	2.052	+2.17	+8.7	13.0	56.8
Mar. 14	02 57.41	+13 34.8	2.523	2.070	+2.21	+8.0	13.1	52.3
Mar. 24	03 19.49	+14 54.6	2.624	2.091	+2.24	+7.1	13.2	47.9
Apr. 3	03 41.88	+16 05.9	2.724	2.115	+2.26	+6.1	13.3	43.6
Apr. 13	04 04.45	+17 07.4	2.821	2.142	+2.27	+5.1	13.4	39.3
Apr. 23	04 27.13	+17 58.0	2.916	2.170	+2.27	+3.9	13.6	35.0
May 3	04 49.81	+18 37.0	3.006	2.201	+2.26	+2.7	13.7	30.8
May 13	05 12.37	+19 04.1	3.093	2.235	+2.24	+1.5	13.9	26.5
May 23	05 34.75	+19 19.1	3.174	2.270	+2.21	+0.3	14.0	22.3
June 2	05 56.81	+19 22.3	3.249	2.306	+2.17	-0.8	14.2	18.0
June 12	06 18.49	+19 13.9	3.318	2.344	+2.12	-1.9	14.3	13.7
June 22	06 39.69	+18 54.6	3.380	2.384	+2.07	-2.9	14.5	9.6
July 2	07 00.35	+18 25.1	3.434	2.425	+2.00	-3.9	14.7	5.8
July 12	07 20.39	+17 46.4	3.479	2.466	+1.94	-4.7	14.8	4.4
July 22	07 39.79	+16 59.3	3.514	2.509	+1.87	-5.4	15.0	7.1
Aug. 1	07 58.48	+16 04.9	3.539	2.553	+1.80	-6.1	15.1	11.4
Aug. 11	08 16.43	+15 04.3	3.554	2.597	+1.72	-6.6	15.3	16.3
Aug. 21	08 33.62	+13 58.6	3.557	2.642	+1.64	-7.0	15.4	21.4
Aug. 31	08 50.00	+12 48.8	3.549	2.687	+1.55	-7.3	15.6	26.8
Sept.10	09 05.55	+11 36.2	3.528	2.733	+1.47	-7.4	15.7	32.5
Sept.20	09 20.22	+10 21.8	3.495	2.778	+1.37	-7.5	15.9	38.3
Sept.30	09 33.95	+09 06.9	3.451	2.825	+1.27	-7.4	16.0	44.5
Oct. 10	09 46.68	+07 52.5	3.394	2.871	+1.17	-7.3	16.1	50.9
Oct. 20	09 58.35	+06 40.0	3.327	2.917	+1.05	-6.9	16.2	57.6
Oct. 30	10 08.83	+05 30.7	3.249	2.964	+0.92	-6.5	16.3	64.7
Nov. 9	10 18.01	+04 25.9	3.162	3.010	+0.77	-5.9	16.4	72.2
Nov. 19	10 25.76	+03 27.2	3.069	3.057	+0.61	-5.1	16.5	80.0
Nov. 29	10 31.90	+02 36.1	2.970	3.103	+0.44	-4.2	16.5	88.3
Dec. 9	10 36.29	+01 54.4	2.871	3.149	+0.25	-3.1	16.6	97.1
Dec. 19	10 38.75	+01 23.6	2.773	3.195	+0.04	-1.8	16.7	106.5
Dec. 29	10 39.17	+01 05.6	2.681	3.240	-0.17	-0.4	16.7	116.4
Jan. 8	10 37.51	+01 01.4	2.601	3.285	-0.37	+1.0	16.8	126.8
Jan. 18	10 33.83	+01 11.8	2.536	3.331	-0.54	+2.5	16.9	137.7
Jan. 28	10 28.41	+01 36.4	2.493	3.375	-0.67	+3.7	16.9	149.0
Feb. 7	10 21.68	+02 13.5	2.475	3.420	-0.74	+4.6	17.1	160.4
Feb. 17	10 14.24	+02 60.0	2.485	3.464	-0.74	+5.2	17.2	170.4
Feb. 27	10 06.81	+03 51.6	2.527	3.507	-0.68	+5.2	17.3	170.6
Mar. 9	10 00.05	+04 43.9	2.598	3.551	-0.55	+4.9	17.5	160.7
Mar. 19	09 54.53	+05 32.8	2.698	3.593	-0.39	+4.2	17.7	149.8
Mar. 29	09 50.63	+06 15.1	2.823	3.636	-0.21	+3.4	17.9	139.0

Comet 255P/Levy

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 14.94810 TT
Peri. = 179.64097 e = 0.6682887
Node = 279.74134 2000.0 a = 3.0373487 AU
Incl. = 18.26473 n = 0.18619246
q = 1.0075229 AU P = 5.29 years

m1 = 19.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 16.23	+18 11.8	0.298	1.019	+5.84	-49.4	16.5	88.3
Jan. 14	01 14.59	+09 57.5	0.257	1.008	+7.23	-66.5	16.1	87.9
Jan. 24	02 26.91	-01 07.7	0.237	1.015	+7.93	-67.6	16.0	90.8
Feb. 3	03 46.21	-12 23.3	0.246	1.042	+7.44	-47.2	16.2	96.4
Feb. 13	05 00.58	-20 15.8	0.283	1.085	+6.21	-23.1	16.8	102.7
Feb. 23	06 02.65	-24 06.7	0.341	1.142	+4.98	-6.7	17.5	108.0
Mar. 4	06 52.43	-25 13.2	0.414	1.210	+4.03	+2.4	18.3	112.1
Mar. 14	07 32.77	-24 49.7	0.497	1.285	+3.38	+6.8	19.1	114.9
Mar. 24	08 06.56	-23 41.9	0.591	1.366	+2.94	+8.3	19.9	116.4
Apr. 3	08 35.97	-22 18.4	0.696	1.451	+2.63	+8.3	20.6	116.6
Apr. 13	09 02.29	-20 55.8	0.812	1.538	+2.41	+7.3	21.4	115.6
Apr. 23	09 26.41	-19 42.7	0.939	1.627	+2.25	+5.8	22.0	113.5
May 3	09 48.92	-18 44.2	1.078	1.715	+2.12	+4.2	22.7	110.6
May 13	10 10.15	-18 02.0	1.227	1.804	+2.02	+2.6	23.3	107.0
May 23	10 30.36	-17 35.7	1.387	1.892	+1.94	+1.1	23.9	102.9
June 2	10 49.76	-17 24.5	1.555	1.978	+1.87	-0.2	.	98.5
June 12	11 08.48	-17 26.7	1.731	2.064	+1.82	-1.4	.	93.8
June 22	11 26.63	-17 40.4	1.913	2.149	+1.77	-2.4	.	88.9
July 2	11 44.32	-18 04.0	2.099	2.232	+1.73	-3.2	.	83.8
July 12	12 01.60	-18 35.6	2.289	2.314	+1.70	-3.8	.	78.6
July 22	12 18.56	-19 13.8	2.479	2.394	+1.67	-4.3	.	73.3
Aug. 1	12 35.25	-19 57.1	2.668	2.472	+1.65	-4.7	.	67.9
Aug. 11	12 51.71	-20 44.2	2.855	2.549	+1.63	-5.0	.	62.4
Aug. 21	13 07.98	-21 34.1	3.038	2.625	+1.61	-5.2	.	56.8
Aug. 31	13 24.10	-22 25.8	3.214	2.699	+1.60	-5.2	.	51.2
Sept.10	13 40.08	-23 18.3	3.383	2.771	+1.59	-5.3	.	45.5
Sept.20	13 55.95	-24 10.8	3.542	2.842	+1.57	-5.2	.	39.7
Sept.30	14 11.69	-25 02.7	3.690	2.912	+1.56	-5.1	.	33.8
Oct. 10	14 27.31	-25 53.2	3.825	2.979	+1.55	-4.9	.	27.9
Oct. 20	14 42.80	-26 42.0	3.945	3.046	+1.53	-4.6	.	22.1
Oct. 30	14 58.12	-27 28.4	4.050	3.111	+1.51	-4.4	.	16.6
Nov. 9	15 13.24	-28 12.2	4.137	3.175	+1.49	-4.1	.	11.9
Nov. 19	15 28.11	-28 53.0	4.207	3.237	+1.45	-3.8	.	9.7
Nov. 29	15 42.66	-29 30.5	4.257	3.298	+1.42	-3.4	.	11.7
Dec. 9	15 56.82	-30 04.8	4.289	3.357	+1.37	-3.1	.	16.7
Dec. 19	16 10.50	-30 35.8	4.301	3.416	+1.31	-2.8	.	22.9
Dec. 29	16 23.60	-31 03.6	4.293	3.473	+1.24	-2.5	.	29.6
Jan. 8	16 36.01	-31 28.4	4.267	3.528	+1.16	-2.2	.	36.8
Jan. 18	16 47.60	-31 50.6	4.222	3.583	+1.06	-2.0	.	44.2
Jan. 28	16 58.21	-32 10.3	4.161	3.636	+0.95	-1.8	.	51.9
Feb. 7	17 07.70	-32 28.2	4.084	3.688	+0.82	-1.6	.	59.8
Feb. 17	17 15.89	-32 44.6	3.995	3.739	+0.67	-1.5	.	68.0
Feb. 27	17 22.59	-32 59.8	3.895	3.789	+0.50	-1.4	.	76.5
Mar. 9	17 27.63	-33 14.2	3.788	3.837	+0.32	-1.3	.	85.3
Mar. 19	17 30.80	-33 27.6	3.678	3.885	+0.11	-1.2	.	94.5
Mar. 29	17 31.93	-33 39.9	3.569	3.931	-0.10	-1.0	.	104.0

Comet P/2005 J1 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 15.57907 TT
Peri. = 338.96889 e = 0.5697396
Node = 268.80496 2000.0 a = 3.5723562 AU
Incl. = 31.73425 n = 0.14597280
q = 1.5370434 AU P = 6.75 years

m1 = 15.2 + 5 log(Delta) + 17.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	17 09.77	-32 22.0	2.373	1.542	-1.73	-11.1	20.4	45.3/ 81	25.3
Jan. 14	17 44.51	-30 50.5	2.343	1.537	-1.62	-12.9	20.3	44.9/ 76	27.3
Jan. 24	18 17.70	-28 46.5	2.314	1.540	-1.50	-14.4	20.3	44.3/ 72	29.8
Feb. 3	18 49.00	-26 13.6	2.286	1.549	-1.38	-15.5	20.3	43.6/ 68	32.5
Feb. 13	19 18.26	-23 16.0	2.259	1.565	-1.26	-16.2	20.4	42.8/ 64	35.6
Feb. 23	19 45.45	-19 58.1	2.231	1.588	-1.15	-16.6	20.5	41.7/ 60	38.9
Mar. 4	20 10.60	-16 23.9	2.203	1.617	-1.06	-16.7	20.6	40.6/ 57	42.5
Mar. 14	20 33.78	-12 37.2	2.173	1.652	-0.98	-16.5	20.7	39.3/ 54	46.3
Mar. 24	20 55.10	-08 41.2	2.143	1.691	-0.92	-16.0	20.8	37.8/ 51	50.4
Apr. 3	21 14.62	-04 38.9	2.111	1.735	-0.87	-15.4	21.0	36.3/ 47	54.6
Apr. 13	21 32.39	-00 32.8	2.079	1.783	-0.84	-14.6	21.2	34.5/ 44	59.0
Apr. 23	21 48.45	+03 35.1	2.045	1.834	-0.82	-13.6	21.4	32.7/ 41	63.6
May 3	22 02.73	+07 42.6	2.010	1.888	-0.82	-12.6	21.5	30.7/ 37	68.4
May 13	22 15.18	+11 47.8	1.974	1.944	-0.82	-11.5	21.7	28.5/ 32	73.4
May 23	22 25.67	+15 48.8	1.937	2.002	-0.84	-10.3	21.9	26.3/ 27	78.7
June 2	22 34.00	+19 43.3	1.901	2.062	-0.88	-9.2	22.1	24.0/ 20	84.1
June 12	22 39.94	+23 28.6	1.867	2.123	-0.93	-8.1	22.3	21.7/ 12	89.8
June 22	22 43.22	+27 01.2	1.834	2.184	-0.99	-7.1	22.5	19.5/ 1	95.7
July 2	22 43.55	+30 16.3	1.806	2.246	-1.07	-6.3	22.6	17.6/349	101.8
July 12	22 40.77	+33 08.3	1.784	2.309	-1.16	-5.7	22.8	16.0/333	108.0
July 22	22 34.85	+35 30.3	1.769	2.372	-1.25	-5.5	23.0	14.9/316	114.1
Aug. 1	22 26.13	+37 15.2	1.765	2.435	-1.34	-5.6	.	14.2/297	119.9
Aug. 11	22 15.35	+38 17.4	1.774	2.498	-1.40	-6.0	.	13.9/278	125.1
Aug. 21	22 03.62	+38 33.9	1.798	2.561	-1.43	-6.7	.	13.6/259	129.3
Aug. 31	21 52.30	+38 06.4	1.838	2.624	-1.41	-7.4	.	13.2/241	132.1
Sept.10	21 42.60	+37 01.6	1.897	2.686	-1.36	-8.0	.	12.7/224	132.9
Sept.20	21 35.40	+35 29.2	1.975	2.748	-1.28	-8.4	.	12.1/206	131.8
Sept.30	21 31.13	+33 40.4	2.070	2.809	-1.18	-8.5	.	11.6/188	128.9
Oct. 10	21 29.82	+31 45.9	2.183	2.870	-1.09	-8.4	.	11.3/170	124.6
Oct. 20	21 31.26	+29 54.1	2.312	2.931	-1.00	-8.1	.	11.4/153	119.3
Oct. 30	21 35.15	+28 11.6	2.455	2.990	-0.91	-7.7	.	11.9/138	113.3
Nov. 9	21 41.08	+26 42.3	2.609	3.049	-0.83	-7.2	.	12.7/125	107.0
Nov. 19	21 48.71	+25 28.4	2.772	3.108	-0.77	-6.7	.	13.5/115	100.5
Nov. 29	21 57.72	+24 30.9	2.942	3.165	-0.71	-6.1	.	14.4/106	93.9
Dec. 9	22 07.81	+23 49.7	3.116	3.222	-0.66	-5.6	.	15.3/ 99	87.2
Dec. 19	22 18.76	+23 24.0	3.292	3.279	-0.61	-5.1	.	16.0/ 93	80.6
Dec. 29	22 30.38	+23 12.8	3.467	3.334	-0.57	-4.7	.	16.7/ 89	74.1
Jan. 8	22 42.48	+23 14.9	3.638	3.389	-0.54	-4.3	.	17.2/ 85	67.7
Jan. 18	22 54.95	+23 28.8	3.805	3.443	-0.51	-3.9	.	17.6/ 81	61.3
Jan. 28	23 07.67	+23 53.3	3.964	3.496	-0.48	-3.5	.	17.9/ 79	55.1
Feb. 7	23 20.54	+24 26.8	4.115	3.549	-0.46	-3.2	.	18.1/ 76	49.1
Feb. 17	23 33.50	+25 08.3	4.254	3.601	-0.44	-2.9	.	18.2/ 74	43.4
Feb. 27	23 46.48	+25 56.4	4.381	3.652	-0.42	-2.6	.	18.2/ 72	38.0
Mar. 9	23 59.42	+26 50.1	4.495	3.702	-0.40	-2.3	.	18.1/ 70	33.0
Mar. 19	00 12.27	+27 48.3	4.593	3.752	-0.39	-2.0	.	17.9/ 69	28.8
Mar. 29	00 24.98	+28 50.1	4.676	3.800	-0.38	-1.8	.	17.6/ 68	25.6

Comet C/2011 Q2 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 19.79584 TT
Peri. = 34.62669
Node = 287.35428 2000.0
Incl. = 36.87096
q = 1.3500620 AU
e = 1.0005143

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

0h TT 2012/13	R.A.(2000) h m	Decl.	Delta	r	Daily motion m		m1	Elong.
Jan. 4	19 43.07	-13°57′	2.301	1.370	+3.12	+26′.6	12.2	14°.3
Jan. 14	20 14.29	-09 31.5	2.282	1.353	+3.11	+28.6	12.1	14.6
Jan. 24	20 45.35	-04 45.9	2.272	1.351	+3.09	+29.9	12.1	15.7
Feb. 3	21 16.25	+00 13.0	2.275	1.366	+3.07	+30.4	12.1	17.3
Feb. 13	21 47.00	+05 17.3	2.292	1.397	+3.06	+30.2	12.3	19.0
Feb. 23	22 17.62	+10 19.1	2.325	1.441	+3.05	+29.1	12.4	20.5
Mar. 4	22 48.12	+15 10.6	2.372	1.498	+3.03	+27.4	12.6	21.8
Mar. 14	23 18.46	+19 45.0	2.434	1.565	+3.01	+25.3	12.9	22.7
Mar. 24	23 48.58	+23 57.6	2.509	1.641	+2.98	+22.8	13.1	23.3
Apr. 3	00 18.41	+27 45.3	2.593	1.725	+2.94	+20.1	13.4	23.6
Apr. 13	00 47.83	+31 06.5	2.685	1.814	+2.89	+17.5	13.7	23.8
Apr. 23	01 16.73	+34 01.5	2.781	1.907	+2.82	+15.0	14.0	24.0
May 3	01 44.96	+36 31.4	2.879	2.004	+2.74	+12.7	14.3	24.3
May 13	02 12.37	+38 38.1	2.974	2.103	+2.65	+10.6	14.6	25.1
May 23	02 38.83	+40 23.8	3.066	2.204	+2.54	+8.7	14.9	26.3
June 2	03 04.19	+41 51.0	3.151	2.307	+2.41	+7.1	15.1	28.2
June 12	03 28.33	+43 02.3	3.227	2.411	+2.28	+5.8	15.4	30.7
June 22	03 51.13	+44 00.3	3.292	2.515	+2.13	+4.7	15.6	34.0
July 2	04 12.47	+44 47.3	3.346	2.619	+1.98	+3.8	15.8	37.9
July 12	04 32.24	+45 25.7	3.388	2.724	+1.81	+3.2	16.0	42.4
July 22	04 50.35	+45 57.6	3.416	2.829	+1.63	+2.7	16.2	47.4
Aug. 1	05 06.68	+46 24.9	3.431	2.933	+1.44	+2.4	16.4	53.0
Aug. 11	05 21.10	+46 49.4	3.432	3.038	+1.24	+2.3	16.5	59.0
Aug. 21	05 33.47	+47 12.7	3.422	3.141	+1.02	+2.3	16.6	65.6
Aug. 31	05 43.63	+47 35.8	3.401	3.245	+0.78	+2.4	16.8	72.6
Sept. 10	05 51.39	+47 59.6	3.371	3.348	+0.52	+2.5	16.9	80.1
Sept. 20	05 56.55	+48 24.2	3.335	3.450	+0.23	+2.5	17.0	88.1
Sept. 30	05 58.89	+48 49.2	3.296	3.552	-0.06	+2.4	17.1	96.6
Oct. 10	05 58.27	+49 12.9	3.258	3.654	-0.37	+2.0	17.2	105.5
Oct. 20	05 54.58	+49 32.8	3.227	3.755	-0.66	+1.3	17.3	114.8
Oct. 30	05 47.94	+49 45.3	3.207	3.855	-0.92	+0.1	17.4	124.3
Nov. 9	05 38.71	+49 46.5	3.203	3.954	-1.12	-1.4	17.5	133.8
Nov. 19	05 27.55	+49 32.7	3.221	4.053	-1.22	-3.1	17.6	142.9
Nov. 29	05 15.39	+49 01.4	3.266	4.152	-1.21	-4.8	17.8	150.4
Dec. 9	05 03.28	+48 13.0	3.339	4.250	-1.11	-6.3	17.9	154.6
Dec. 19	04 52.22	+47 09.9	3.443	4.347	-0.93	-7.3	18.1	153.7
Dec. 29	04 42.94	+45 56.6	3.577	4.444	-0.71	-7.8	18.2	148.3
Jan. 8	04 35.88	+44 38.5	3.739	4.540	-0.47	-7.8	18.4	140.3
Jan. 18	04 31.18	+43 20.2	3.927	4.635	-0.24	-7.5	18.6	131.2
Jan. 28	04 28.77	+42 05.5	4.136	4.730	-0.03	-6.9	18.8	121.8
Feb. 7	04 28.46	+40 56.9	4.362	4.824	+0.15	-6.1	19.0	112.4
Feb. 17	04 30.00	+39 55.6	4.600	4.918	+0.31	-5.4	19.2	103.1
Feb. 27	04 33.12	+39 02.0	4.844	5.011	+0.44	-4.6	19.4	94.0
Mar. 9	04 37.56	+38 15.8	5.092	5.104	+0.55	-3.9	19.6	85.1
Mar. 19	04 43.10	+37 36.4	5.338	5.196	+0.64	-3.4	19.8	76.5
Mar. 29	04 49.52	+37 02.8	5.579	5.288	+0.71	-2.9	20.0	68.0

Comet P/2011 JB15 (Spacewatch-Boattini)

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 20.45154 TT
Peri. = 110.81621 e = 0.3176941
Node = 153.75027 2000.0 a = 7.3564690 AU
Incl. = 19.14332 n = 0.04939693
q = 5.0193622 AU P = 19.95 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	17 48.84	-08 11.0	5.920	5.020	+0.99	0.0	19.4	21.7
Jan. 14	17 58.74	-08 10.6	5.870	5.019	+0.96	+0.6	19.4	27.7
Jan. 24	18 08.35	-08 04.9	5.802	5.019	+0.92	+1.1	19.3	34.3
Feb. 3	18 17.58	-07 54.3	5.717	5.020	+0.87	+1.5	19.3	41.4
Feb. 13	18 26.32	-07 39.2	5.617	5.020	+0.81	+1.9	19.3	48.7
Feb. 23	18 34.45	-07 20.1	5.503	5.021	+0.74	+2.3	19.2	56.2
Mar. 4	18 41.87	-06 57.5	5.378	5.023	+0.66	+2.5	19.2	64.0
Mar. 14	18 48.47	-06 32.2	5.244	5.025	+0.57	+2.7	19.1	71.9
Mar. 24	18 54.14	-06 05.2	5.104	5.027	+0.46	+2.8	19.1	80.0
Apr. 3	18 58.78	-05 37.2	4.960	5.029	+0.35	+2.8	19.0	88.2
Apr. 13	19 02.30	-05 09.6	4.816	5.032	+0.23	+2.6	18.9	96.7
Apr. 23	19 04.62	-04 43.3	4.675	5.036	+0.11	+2.4	18.9	105.4
May 3	19 05.69	-04 19.7	4.542	5.039	-0.02	+2.0	18.8	114.2
May 13	19 05.50	-04 00.1	4.419	5.043	-0.14	+1.4	18.8	123.2
May 23	19 04.10	-03 45.8	4.311	5.048	-0.25	+0.8	18.7	132.2
June 2	19 01.58	-03 38.0	4.222	5.052	-0.34	0.0	18.7	141.2
June 12	18 58.14	-03 37.7	4.155	5.057	-0.41	-0.8	18.7	149.6
June 22	18 54.00	-03 45.3	4.113	5.063	-0.45	-1.6	18.6	156.9
July 2	18 49.48	-04 01.0	4.097	5.069	-0.45	-2.3	18.6	161.0
July 12	18 44.93	-04 24.3	4.109	5.075	-0.42	-3.0	18.6	159.8
July 22	18 40.69	-04 54.3	4.148	5.081	-0.36	-3.5	18.7	154.1
Aug. 1	18 37.08	-05 29.8	4.213	5.088	-0.27	-3.9	18.7	146.2
Aug. 11	18 34.36	-06 09.2	4.303	5.095	-0.16	-4.2	18.8	137.4
Aug. 21	18 32.73	-06 50.9	4.413	5.103	-0.04	-4.2	18.8	128.4
Aug. 31	18 32.31	-07 33.3	4.541	5.111	+0.08	-4.2	18.9	119.3
Sept. 10	18 33.14	-08 15.2	4.683	5.119	+0.21	-4.0	19.0	110.2
Sept. 20	18 35.22	-08 55.2	4.835	5.128	+0.33	-3.7	19.1	101.3
Sept. 30	18 38.51	-09 32.4	4.992	5.136	+0.44	-3.4	19.2	92.6
Oct. 10	18 42.93	-10 06.1	5.152	5.146	+0.54	-2.9	19.2	84.1
Oct. 20	18 48.37	-10 35.6	5.310	5.155	+0.64	-2.5	19.3	75.7
Oct. 30	18 54.72	-11 00.4	5.464	5.165	+0.72	-2.0	19.4	67.4
Nov. 9	19 01.88	-11 20.4	5.610	5.175	+0.78	-1.5	19.5	59.3
Nov. 19	19 09.72	-11 35.2	5.745	5.185	+0.84	-1.0	19.5	51.3
Nov. 29	19 18.13	-11 44.7	5.868	5.196	+0.89	-0.4	19.6	43.5
Dec. 9	19 26.98	-11 49.1	5.975	5.207	+0.92	+0.1	19.6	35.7
Dec. 19	19 36.18	-11 48.5	6.066	5.219	+0.94	+0.6	19.7	28.1
Dec. 29	19 45.61	-11 42.9	6.138	5.230	+0.96	+1.0	19.7	20.8
Jan. 8	19 55.18	-11 32.8	6.190	5.242	+0.96	+1.4	19.8	14.1
Jan. 18	20 04.77	-11 18.5	6.223	5.254	+0.95	+1.8	19.8	9.4
Jan. 28	20 14.31	-11 00.5	6.234	5.267	+0.94	+2.1	19.8	9.8
Feb. 7	20 23.68	-10 39.2	6.226	5.279	+0.91	+2.4	19.8	15.1
Feb. 17	20 32.82	-10 15.3	6.196	5.292	+0.88	+2.6	19.8	21.9
Feb. 27	20 41.63	-09 49.5	6.148	5.306	+0.84	+2.7	19.8	29.3
Mar. 9	20 50.02	-09 22.4	6.080	5.319	+0.79	+2.8	19.8	36.8
Mar. 19	20 57.91	-08 54.7	5.996	5.333	+0.73	+2.7	19.8	44.6
Mar. 29	21 05.22	-08 27.3	5.896	5.347	+0.66	+2.6	19.8	52.5

Comet 244P/Scotti

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 20.53464 TT
Peri. = 92.64328 e = 0.1993967
Node = 354.14023 2000.0 a = 4.8941773 AU
Incl. = 2.25925 n = 0.09103000
q = 3.9182945 AU P = 10.83 years

m1 = 4.6 + 5 log(Delta) + 17.5 log(r(t-200))

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	',	m1	Elong. °
Jan. 4	05 09.08	+25 53.1	3.003	3.919	-0.47	-1.0	17.5	155.5
Jan. 14	05 04.35	+25 42.8	3.077	3.918	-0.31	-1.0	17.6	144.3
Jan. 24	05 01.28	+25 33.1	3.175	3.918	-0.12	-0.8	17.6	133.5
Feb. 3	05 00.10	+25 25.2	3.293	3.919	+0.08	-0.6	17.7	123.1
Feb. 13	05 00.85	+25 19.7	3.425	3.919	+0.26	-0.3	17.8	113.1
Feb. 23	05 03.48	+25 16.7	3.568	3.920	+0.44	-0.1	17.8	103.6
Mar. 4	05 07.87	+25 15.9	3.716	3.922	+0.60	+0.1	17.9	94.6
Mar. 14	05 13.84	+25 16.8	3.867	3.924	+0.74	+0.2	18.0	85.9
Mar. 24	05 21.21	+25 18.5	4.016	3.926	+0.86	+0.2	18.1	77.7
Apr. 3	05 29.80	+25 20.4	4.162	3.929	+0.96	+0.1	18.1	69.7
Apr. 13	05 39.43	+25 21.5	4.300	3.932	+1.05	0.0	18.2	62.1
Apr. 23	05 49.93	+25 21.1	4.430	3.935	+1.12	-0.3	18.3	54.7
May 3	06 01.16	+25 18.6	4.549	3.939	+1.18	-0.5	18.3	47.5
May 13	06 12.98	+25 13.3	4.656	3.943	+1.23	-0.8	18.3	40.5
May 23	06 25.26	+25 04.8	4.750	3.947	+1.26	-1.2	18.4	33.7
June 2	06 37.90	+24 52.9	4.829	3.952	+1.29	-1.6	18.4	26.9
June 12	06 50.77	+24 37.2	4.894	3.957	+1.30	-1.9	18.4	20.3
June 22	07 03.79	+24 17.8	4.942	3.963	+1.31	-2.3	18.5	13.8
July 2	07 16.87	+23 54.5	4.975	3.969	+1.30	-2.7	18.5	7.4
July 12	07 29.91	+23 27.6	4.991	3.975	+1.29	-3.0	18.5	1.7
July 22	07 42.84	+22 57.2	4.990	3.982	+1.27	-3.3	18.5	6.1
Aug. 1	07 55.58	+22 23.8	4.973	3.988	+1.25	-3.6	18.5	12.5
Aug. 11	08 08.05	+21 47.6	4.939	3.996	+1.21	-3.8	18.4	19.1
Aug. 21	08 20.18	+21 09.3	4.890	4.003	+1.17	-4.0	18.4	25.8
Aug. 31	08 31.89	+20 29.3	4.824	4.011	+1.12	-4.1	18.4	32.6
Sept.10	08 43.10	+19 48.5	4.744	4.019	+1.06	-4.1	18.4	39.6
Sept.20	08 53.72	+19 07.5	4.649	4.028	+0.99	-4.0	18.3	46.8
Sept.30	09 03.65	+18 27.3	4.541	4.037	+0.91	-3.9	18.3	54.1
Oct. 10	09 12.79	+17 48.7	4.423	4.046	+0.82	-3.6	18.2	61.7
Oct. 20	09 21.03	+17 12.8	4.294	4.055	+0.72	-3.2	18.2	69.5
Oct. 30	09 28.24	+16 40.7	4.159	4.065	+0.60	-2.7	18.1	77.7
Nov. 9	09 34.28	+16 13.4	4.019	4.075	+0.47	-2.1	18.0	86.2
Nov. 19	09 39.00	+15 52.1	3.877	4.085	+0.33	-1.4	18.0	95.1
Nov. 29	09 42.28	+15 37.7	3.738	4.096	+0.17	-0.7	17.9	104.4
Dec. 9	09 44.00	+15 30.8	3.605	4.107	+0.01	+0.1	17.8	114.1
Dec. 19	09 44.05	+15 32.1	3.483	4.118	-0.16	+0.9	17.8	124.2
Dec. 29	09 42.45	+15 41.2	3.376	4.129	-0.32	+1.6	17.7	134.8
Jan. 8	09 39.28	+15 57.5	3.290	4.140	-0.45	+2.2	17.7	145.8
Jan. 18	09 34.74	+16 19.2	3.228	4.152	-0.55	+2.5	17.6	157.1
Jan. 28	09 29.20	+16 44.3	3.194	4.164	-0.61	+2.6	17.6	168.6
Feb. 7	09 23.14	+17 10.1	3.190	4.176	-0.61	+2.4	17.6	178.2
Feb. 17	09 17.08	+17 34.1	3.218	4.189	-0.55	+2.0	17.7	167.9
Feb. 27	09 11.57	+17 54.0	3.275	4.201	-0.45	+1.4	17.7	156.5
Mar. 9	09 07.07	+18 08.2	3.359	4.214	-0.32	+0.8	17.8	145.4
Mar. 19	09 03.91	+18 16.0	3.467	4.227	-0.16	+0.1	17.9	134.7
Mar. 29	09 02.29	+18 16.9	3.595	4.240	0.00	-0.6	18.0	124.4

Comet 5D/Brorsen [Orbit 3]

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 21.14193 TT
Peri. = 19.89363 e = 0.8296926
Node = 96.60626 2000.0 a = 3.1570584 AU
Incl. = 19.99333 n = 0.17570340
q = 0.5376704 AU P = 5.61 years

m1 = 20.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	21 50.29	-24 35.2	0.608	0.646	+6.63	+2.3	16.1	66.4/308	39.8
Jan. 14	21 13.74	-17 31.0	0.496	0.559	+12.45	-14.4	14.7	113.4/296	22.5
Jan. 24	20 05.08	-08 39.5	0.460	0.541	+15.89	-21.7	14.3	92.4/292	11.5
Feb. 3	19 07.99	-02 42.1	0.530	0.602	+11.04	+6.2	15.3	38.6/289	31.7
Feb. 13	18 43.63	-00 37.4	0.638	0.715	+6.17	+23.3	16.8	11.1/288	46.3
Feb. 23	18 36.63	-00 02.9	0.733	0.852	+3.61	+27.6	18.3	2.5/300	56.9
Mar. 4	18 35.18	+00 09.8	0.804	0.995	+2.28	+28.0	19.5	2.1/299	66.3
Mar. 14	18 33.98	+00 19.8	0.851	1.138	+1.47	+27.5	20.5	5.4/281	75.7
Mar. 24	18 30.46	+00 30.5	0.878	1.278	+0.90	+26.9	21.3	11.0/274	85.7
Apr. 3	18 23.12	+00 39.0	0.893	1.414	+0.42	+26.3	22.0	17.8/270	96.5
Apr. 13	18 11.22	+00 40.2	0.902	1.546	-0.04	+25.6	22.6	25.0/267	108.4
Apr. 23	17 54.59	+00 28.4	0.914	1.673	-0.48	+24.5	.	31.1/264	121.2
May 3	17 33.97	-00 01.8	0.938	1.796	-0.89	+22.9	.	34.6/262	134.6
May 13	17 11.14	-00 52.3	0.983	1.914	-1.22	+20.6	.	34.7/259	147.6
May 23	16 48.43	-02 01.1	1.054	2.029	-1.42	+18.1	.	31.5/255	158.0
June 2	16 28.12	-03 22.7	1.156	2.140	-1.48	+15.5	.	26.1/250	160.9
June 12	16 11.66	-04 50.4	1.286	2.247	-1.44	+13.1	.	20.1/244	155.0
June 22	15 59.55	-06 19.5	1.442	2.352	-1.34	+11.0	.	14.6/233	145.6
July 2	15 51.68	-07 46.8	1.620	2.453	-1.22	+9.3	.	10.4/216	135.7
July 12	15 47.52	-09 10.6	1.816	2.551	-1.09	+7.9	.	8.1/191	126.1
July 22	15 46.50	-10 30.5	2.026	2.646	-0.97	+6.7	.	7.9/163	117.0
Aug. 1	15 48.06	-11 46.2	2.245	2.739	-0.86	+5.8	.	8.9/143	108.3
Aug. 11	15 51.72	-12 57.6	2.472	2.829	-0.76	+5.0	.	10.3/131	99.9
Aug. 21	15 57.08	-14 04.7	2.702	2.917	-0.68	+4.3	.	11.6/123	91.9
Aug. 31	16 03.84	-15 07.4	2.933	3.002	-0.61	+3.7	.	12.8/117	84.1
Sept.10	16 11.73	-16 05.7	3.161	3.085	-0.54	+3.3	.	13.8/113	76.5
Sept.20	16 20.53	-16 59.6	3.384	3.166	-0.49	+2.9	.	14.5/110	69.0
Sept.30	16 30.10	-17 49.0	3.600	3.246	-0.44	+2.5	.	15.2/108	61.6
Oct. 10	16 40.26	-18 33.8	3.805	3.323	-0.40	+2.2	.	15.6/105	54.3
Oct. 20	16 50.90	-19 13.8	3.999	3.398	-0.37	+2.0	.	15.9/103	46.9
Oct. 30	17 01.90	-19 49.2	4.178	3.471	-0.33	+1.7	.	16.1/101	39.6
Nov. 9	17 13.14	-20 19.9	4.340	3.543	-0.31	+1.6	.	16.2/100	32.3
Nov. 19	17 24.55	-20 45.9	4.485	3.613	-0.28	+1.4	.	16.2/ 98	24.9
Nov. 29	17 36.01	-21 07.4	4.610	3.681	-0.26	+1.3	.	16.1/ 97	17.5
Dec. 9	17 47.43	-21 24.5	4.713	3.748	-0.24	+1.2	.	15.8/ 95	10.1
Dec. 19	17 58.71	-21 37.5	4.795	3.813	-0.22	+1.1	.	15.4/ 94	3.0
Dec. 29	18 09.76	-21 46.6	4.854	3.877	-0.20	+1.0	.	14.9/ 93	5.5
Jan. 8	18 20.46	-21 52.4	4.891	3.939	-0.19	+0.9	.	14.3/ 92	13.0
Jan. 18	18 30.74	-21 55.3	4.904	4.000	-0.18	+0.9	.	13.5/ 91	20.8
Jan. 28	18 40.46	-21 55.9	4.895	4.059	-0.17	+0.8	.	12.6/ 90	28.7
Feb. 7	18 49.54	-21 54.7	4.865	4.117	-0.16	+0.8	.	11.6/ 89	36.7
Feb. 17	18 57.84	-21 52.6	4.815	4.174	-0.15	+0.8	.	10.3/ 89	44.9
Feb. 27	19 05.26	-21 50.4	4.746	4.229	-0.15	+0.8	.	8.9/ 89	53.3
Mar. 9	19 11.66	-21 48.7	4.662	4.283	-0.14	+0.8	.	7.3/ 90	61.8
Mar. 19	19 16.92	-21 48.4	4.564	4.336	-0.14	+0.8	.	5.5/ 92	70.6
Mar. 29	19 20.89	-21 50.4	4.457	4.387	-0.14	+0.8	.	3.6/ 98	79.6

Comet P/2011 W1 (PANSTARRS)

Epoch = 2012 July 12.0 TT
T = 2012 Jan. 23.90127 TT
Peri. = 282.75088 e = 0.2883896
Node = 161.86565 2000.0 a = 4.6529161 AU
Incl. = 3.71865 n = 0.09820107
q = 3.3110635 AU P = 10.04 years

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

2012/13	0h TT	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan.	4	04 45.70	+17 17.6	2.431	3.313	-0.35	+0.5	18.3	149.0
Jan.	14	04 42.15	+17 22.7	2.513	3.311	-0.15	+1.0	18.4	138.1
Jan.	24	04 40.62	+17 33.1	2.616	3.311	+0.06	+1.5	18.5	127.7
Feb.	3	04 41.23	+17 48.5	2.735	3.311	+0.27	+1.9	18.6	117.8
Feb.	13	04 43.97	+18 08.0	2.866	3.313	+0.47	+2.2	18.7	108.4
Feb.	23	04 48.68	+18 30.3	3.005	3.315	+0.65	+2.4	18.8	99.5
Mar.	4	04 55.21	+18 54.2	3.148	3.317	+0.81	+2.4	18.9	91.0
Mar.	14	05 03.34	+19 18.4	3.292	3.321	+0.95	+2.3	19.0	83.0
Mar.	24	05 12.86	+19 41.7	3.434	3.325	+1.07	+2.1	19.1	75.3
Apr.	3	05 23.58	+20 02.8	3.573	3.330	+1.17	+1.8	19.2	68.0
Apr.	13	05 35.31	+20 20.9	3.705	3.336	+1.26	+1.4	19.3	61.0
Apr.	23	05 47.89	+20 34.9	3.830	3.342	+1.33	+0.9	19.4	54.1
May	3	06 01.17	+20 44.4	3.947	3.350	+1.38	+0.4	19.5	47.5
May	13	06 14.99	+20 48.6	4.052	3.358	+1.43	-0.1	19.5	41.1
May	23	06 29.25	+20 47.3	4.147	3.366	+1.46	-0.7	19.6	34.8
June	2	06 43.81	+20 40.1	4.230	3.376	+1.48	-1.3	19.7	28.6
June	12	06 58.57	+20 27.0	4.301	3.386	+1.49	-1.9	19.7	22.6
June	22	07 13.45	+20 08.0	4.358	3.396	+1.49	-2.5	19.8	16.5
July	2	07 28.33	+19 43.3	4.402	3.408	+1.48	-3.0	19.8	10.6
July	12	07 43.15	+19 13.0	4.432	3.420	+1.47	-3.5	19.8	4.9
July	22	07 57.83	+18 37.6	4.447	3.432	+1.45	-4.0	19.9	2.6
Aug.	1	08 12.29	+17 57.5	4.448	3.446	+1.42	-4.4	19.9	7.9
Aug.	11	08 26.47	+17 13.3	4.434	3.459	+1.38	-4.8	19.9	13.9
Aug.	21	08 40.30	+16 25.5	4.406	3.474	+1.34	-5.1	19.9	20.1
Aug.	31	08 53.71	+15 35.0	4.364	3.489	+1.29	-5.3	19.9	26.4
Sept.	10	09 06.64	+14 42.5	4.308	3.504	+1.24	-5.4	19.9	32.8
Sept.	20	09 19.02	+13 48.7	4.238	3.520	+1.17	-5.4	19.9	39.4
Sept.	30	09 30.75	+12 54.9	4.155	3.537	+1.10	-5.3	19.9	46.2
Oct.	10	09 41.77	+12 01.8	4.060	3.554	+1.02	-5.1	19.9	53.2
Oct.	20	09 51.97	+11 10.7	3.955	3.572	+0.93	-4.8	19.9	60.5
Oct.	30	10 01.23	+10 22.8	3.840	3.590	+0.82	-4.3	19.8	68.1
Nov.	9	10 09.43	+09 39.3	3.718	3.608	+0.70	-3.8	19.8	75.9
Nov.	19	10 16.43	+09 01.7	3.591	3.627	+0.56	-3.0	19.8	84.2
Nov.	29	10 22.08	+08 31.2	3.462	3.646	+0.42	-2.2	19.7	92.8
Dec.	9	10 26.23	+08 09.2	3.335	3.666	+0.25	-1.2	19.7	101.8
Dec.	19	10 28.74	+07 56.9	3.212	3.685	+0.08	-0.2	19.6	111.3
Dec.	29	10 29.52	+07 55.4	3.098	3.706	-0.10	+0.9	19.6	121.3
Jan.	8	10 28.53	+08 04.8	2.998	3.726	-0.27	+2.0	19.6	131.8
Jan.	18	10 25.83	+08 25.1	2.917	3.747	-0.42	+3.0	19.5	142.7
Jan.	28	10 21.65	+08 54.7	2.858	3.769	-0.53	+3.7	19.5	154.0
Feb.	7	10 16.34	+09 31.4	2.827	3.790	-0.60	+4.1	19.5	165.6
Feb.	17	10 10.38	+10 12.2	2.824	3.812	-0.60	+4.1	19.6	177.2
Feb.	27	10 04.37	+10 53.2	2.853	3.834	-0.55	+3.8	19.6	170.9
Mar.	9	09 58.88	+11 31.3	2.911	3.856	-0.45	+3.2	19.7	159.4
Mar.	19	09 54.39	+12 03.6	2.996	3.878	-0.31	+2.4	19.8	148.2
Mar.	29	09 51.29	+12 28.1	3.107	3.901	-0.15	+1.6	19.9	137.5

Comet 5D/Brorsen [Orbit 1]

Epoch = 2012 July 12.0 TT
T = 2012 Feb. 5.24556 TT
Peri. = 19.36966 e = 0.8326081
Node = 96.78551 2000.0 a = 3.1576982 AU
Incl. = 19.88968 n = 0.17565000
q = 0.5285731 AU P = 5.61 years

m1 = 20.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	22 36.36	-24 19.0	0.999	0.841	+0.96	-0.3	18.9	33.5/ 30	50.2
Jan. 14	22 48.32	-19 28.5	0.868	0.704	+1.96	-5.0	17.4	37.8/ 8	44.1
Jan. 24	22 51.92	-13 14.2	0.712	0.590	+4.36	-12.1	15.8	56.4/328	36.4
Feb. 3	22 31.88	-05 13.9	0.559	0.531	+9.49	-19.4	14.6	99.1/300	24.6
Feb. 13	21 34.90	+03 09.0	0.471	0.554	+14.84	-5.2	14.5	103.0/287	17.0
Feb. 23	20 28.67	+07 59.2	0.477	0.648	+13.27	+33.3	15.6	66.0/278	33.6
Mar. 4	19 44.45	+09 17.6	0.528	0.778	+8.68	+52.5	17.0	39.5/271	51.1
Mar. 14	19 17.76	+09 23.9	0.580	0.921	+5.36	+55.4	18.3	29.5/269	65.6
Mar. 24	18 57.82	+09 17.3	0.619	1.066	+3.24	+53.8	19.4	29.2/268	78.8
Apr. 3	18 38.13	+09 06.7	0.646	1.209	+1.76	+51.2	20.3	33.5/267	92.0
Apr. 13	18 15.60	+08 45.5	0.669	1.348	+0.56	+48.0	21.1	39.2/264	105.8
Apr. 23	17 49.32	+08 03.0	0.696	1.483	-0.44	+43.8	21.8	43.6/261	120.2
May 3	17 20.41	+06 50.3	0.736	1.613	-1.23	+38.3	22.4	44.3/257	134.6
May 13	16 51.55	+05 07.4	0.799	1.738	-1.74	+32.1	.	40.8/253	147.5
May 23	16 25.59	+03 03.2	0.890	1.859	-1.95	+26.1	.	34.2/247	155.6
June 2	16 04.55	+00 50.0	1.009	1.976	-1.94	+20.9	.	26.7/240	155.4
June 12	15 49.09	-01 21.8	1.154	2.090	-1.80	+16.7	.	19.8/231	148.7
June 22	15 38.86	-03 26.6	1.323	2.199	-1.61	+13.5	.	14.4/216	139.7
July 2	15 33.16	-05 22.5	1.511	2.305	-1.41	+11.1	.	11.1/196	130.5
July 12	15 31.13	-07 09.2	1.714	2.408	-1.23	+9.2	.	9.9/172	121.6
July 22	15 32.04	-08 47.3	1.929	2.508	-1.08	+7.7	.	10.3/152	113.1
Aug. 1	15 35.31	-10 17.9	2.153	2.605	-0.94	+6.5	.	11.3/138	104.9
Aug. 11	15 40.43	-11 41.4	2.382	2.699	-0.83	+5.5	.	12.4/129	97.0
Aug. 21	15 47.05	-12 58.5	2.613	2.790	-0.73	+4.7	.	13.5/122	89.3
Aug. 31	15 54.88	-14 09.6	2.844	2.880	-0.65	+4.1	.	14.3/117	81.8
Sept.10	16 03.68	-15 14.9	3.073	2.966	-0.58	+3.5	.	15.1/114	74.5
Sept.20	16 13.28	-16 14.8	3.296	3.051	-0.52	+3.1	.	15.7/111	67.2
Sept.30	16 23.53	-17 09.2	3.512	3.133	-0.47	+2.7	.	16.1/108	60.0
Oct. 10	16 34.27	-17 58.2	3.717	3.213	-0.42	+2.4	.	16.5/106	52.8
Oct. 20	16 45.43	-18 41.9	3.910	3.291	-0.38	+2.1	.	16.7/104	45.6
Oct. 30	16 56.88	-19 20.4	4.088	3.368	-0.35	+1.8	.	16.8/102	38.4
Nov. 9	17 08.52	-19 53.7	4.251	3.442	-0.32	+1.6	.	16.8/100	31.2
Nov. 19	17 20.27	-20 21.9	4.395	3.515	-0.29	+1.5	.	16.7/ 99	24.0
Nov. 29	17 32.04	-20 45.2	4.519	3.586	-0.27	+1.3	.	16.5/ 97	16.7
Dec. 9	17 43.72	-21 03.9	4.623	3.655	-0.25	+1.2	.	16.2/ 96	9.4
Dec. 19	17 55.24	-21 18.1	4.705	3.722	-0.23	+1.1	.	15.7/ 94	2.7
Dec. 29	18 06.48	-21 28.3	4.764	3.788	-0.21	+1.0	.	15.2/ 93	6.3
Jan. 8	18 17.36	-21 34.9	4.801	3.853	-0.19	+1.0	.	14.5/ 92	13.8
Jan. 18	18 27.78	-21 38.4	4.815	3.916	-0.18	+0.9	.	13.7/ 91	21.5
Jan. 28	18 37.62	-21 39.4	4.806	3.977	-0.17	+0.9	.	12.8/ 90	29.3
Feb. 7	18 46.78	-21 38.5	4.777	4.037	-0.16	+0.8	.	11.7/ 89	37.3
Feb. 17	18 55.15	-21 36.6	4.727	4.096	-0.15	+0.8	.	10.4/ 89	45.5
Feb. 27	19 02.60	-21 34.3	4.660	4.153	-0.15	+0.8	.	8.9/ 89	53.8
Mar. 9	19 09.02	-21 32.6	4.577	4.210	-0.14	+0.8	.	7.3/ 90	62.4
Mar. 19	19 14.25	-21 32.2	4.481	4.264	-0.14	+0.8	.	5.5/ 92	71.1
Mar. 29	19 18.17	-21 33.9	4.375	4.318	-0.14	+0.8	.	3.5/ 98	80.2

Comet D/1886 K1 (Brooks)

Epoch = 2012 July 12.0 TT
T = 2012 Feb. 6.4102 TT
Peri. = 208.6065 e = 0.469043
Node = 39.1870 2000.0 a = 3.551448 AU
Incl. = 10.9318 n = 0.1472638
q = 1.885665 AU P = 6.69 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	16 27.86	-23 34.7	2.643	1.907	-1.32	+6.3	19.9	38.0/105	33.9
Jan. 14	16 54.87	-25 03.8	2.575	1.896	-1.38	+5.5	19.8	37.9/103	37.8
Jan. 24	17 22.36	-26 17.3	2.506	1.889	-1.43	+4.5	19.8	37.6/100	41.8
Feb. 3	17 50.10	-27 14.6	2.437	1.886	-1.48	+3.5	19.7	37.1/ 98	45.7
Feb. 13	18 17.84	-27 55.4	2.368	1.887	-1.51	+2.3	19.6	36.4/ 96	49.7
Feb. 23	18 45.31	-28 20.3	2.299	1.891	-1.53	+1.1	19.6	35.5/ 93	53.8
Mar. 4	19 12.23	-28 30.5	2.229	1.899	-1.54	-0.1	19.5	34.4/ 91	58.0
Mar. 14	19 38.32	-28 28.1	2.160	1.911	-1.53	-1.4	19.5	33.0/ 89	62.2
Mar. 24	20 03.34	-28 15.5	2.090	1.927	-1.52	-2.6	19.5	31.4/ 88	66.7
Apr. 3	20 27.02	-27 55.8	2.020	1.946	-1.50	-3.8	19.4	29.5/ 87	71.4
Apr. 13	20 49.17	-27 32.1	1.949	1.969	-1.48	-4.9	19.4	27.3/ 86	76.3
Apr. 23	21 09.59	-27 08.1	1.878	1.995	-1.46	-6.0	19.4	24.8/ 86	81.5
May 3	21 28.06	-26 47.3	1.807	2.023	-1.44	-7.1	19.3	21.9/ 87	87.0
May 13	21 44.39	-26 32.8	1.737	2.054	-1.44	-8.2	19.3	18.7/ 89	93.0
May 23	21 58.34	-26 28.1	1.668	2.088	-1.45	-9.2	19.3	15.2/ 93	99.4
June 2	22 09.63	-26 35.6	1.603	2.124	-1.47	-10.3	19.3	11.4/101	106.3
June 12	22 18.00	-26 57.0	1.542	2.162	-1.52	-11.4	19.3	7.7/118	113.8
June 22	22 23.14	-27 32.7	1.488	2.201	-1.59	-12.3	19.3	5.3/155	121.9
July 2	22 24.84	-28 21.1	1.444	2.243	-1.67	-13.2	19.3	6.1/203	130.6
July 12	22 23.04	-29 17.7	1.413	2.285	-1.77	-13.7	19.3	8.8/228	139.7
July 22	22 17.94	-30 15.8	1.400	2.329	-1.87	-13.8	19.4	11.2/243	148.7
Aug. 1	22 10.19	-31 06.6	1.407	2.374	-1.95	-13.5	19.5	12.5/253	156.8
Aug. 11	22 00.83	-31 41.8	1.437	2.419	-1.99	-12.6	19.6	12.4/263	161.5
Aug. 21	21 51.15	-31 55.5	1.491	2.466	-1.97	-11.5	19.8	11.1/275	160.0
Aug. 31	21 42.50	-31 45.7	1.569	2.513	-1.90	-10.3	20.0	9.0/290	153.5
Sept.10	21 35.87	-31 14.3	1.669	2.561	-1.78	-9.1	20.2	7.2/313	145.0
Sept.20	21 31.81	-30 25.2	1.791	2.608	-1.65	-8.1	20.4	6.5/345	136.0
Sept.30	21 30.51	-29 22.7	1.929	2.657	-1.50	-7.3	20.7	7.4/ 13	127.1
Oct. 10	21 31.81	-28 10.8	2.083	2.705	-1.36	-6.7	20.9	9.2/ 32	118.5
Oct. 20	21 35.44	-26 52.2	2.247	2.753	-1.22	-6.2	21.2	11.3/ 43	110.1
Oct. 30	21 41.06	-25 28.8	2.421	2.802	-1.10	-5.8	21.4	13.1/ 49	102.1
Nov. 9	21 48.30	-24 02.1	2.600	2.850	-0.99	-5.5	21.6	14.8/ 53	94.3
Nov. 19	21 56.86	-22 32.6	2.782	2.899	-0.90	-5.2	21.8	16.2/ 56	86.7
Nov. 29	22 06.47	-21 01.0	2.965	2.947	-0.82	-5.0	.	17.4/ 58	79.3
Dec. 9	22 16.88	-19 27.8	3.147	2.995	-0.74	-4.8	.	18.3/ 59	72.1
Dec. 19	22 27.91	-17 53.1	3.324	3.042	-0.68	-4.6	.	19.1/ 60	65.0
Dec. 29	22 39.41	-16 17.4	3.495	3.090	-0.62	-4.5	.	19.6/ 61	58.1
Jan. 8	22 51.22	-14 41.1	3.658	3.137	-0.58	-4.3	.	20.0/ 62	51.2
Jan. 18	23 03.27	-13 04.5	3.812	3.184	-0.53	-4.1	.	20.3/ 62	44.4
Jan. 28	23 15.44	-11 28.0	3.953	3.230	-0.50	-4.0	.	20.4/ 62	37.7
Feb. 7	23 27.68	-09 52.2	4.082	3.276	-0.46	-3.9	.	20.5/ 63	31.0
Feb. 17	23 39.91	-08 17.3	4.196	3.322	-0.44	-3.7	.	20.4/ 63	24.4
Feb. 27	23 52.08	-06 44.0	4.295	3.367	-0.41	-3.6	.	20.2/ 63	17.9
Mar. 9	00 04.15	-05 12.7	4.378	3.411	-0.39	-3.5	.	19.9/ 64	11.7
Mar. 19	00 16.07	-03 43.7	4.443	3.456	-0.37	-3.4	.	19.5/ 64	6.3
Mar. 29	00 27.78	-02 17.6	4.491	3.499	-0.35	-3.3	.	19.1/ 64	5.6

Comet 21P/Giacobini-Zinner

Epoch = 2012 July 12.0 TT
T = 2012 Feb. 11.72634 TT
Peri. = 172.59403 e = 0.7070102
Node = 195.39391 2000.0 a = 3.5168357 AU
Incl. = 31.91017 n = 0.14944313
q = 1.0303970 AU P = 6.60 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	20 22.27	-04 42.5	1.943	1.165	+4.00	0.0	12.0	27.6
Jan. 14	21 02.28	-04 42.0	1.902	1.107	+4.19	+1.5	11.7	26.2
Jan. 24	21 44.19	-04 27.4	1.872	1.064	+4.32	+2.7	11.4	25.0
Feb. 3	22 27.41	-03 60.0	1.854	1.038	+4.38	+3.8	11.2	24.3
Feb. 13	23 11.25	-03 21.7	1.851	1.031	+4.38	+4.7	11.1	24.0
Feb. 23	23 55.03	-02 35.0	1.862	1.043	+4.31	+5.2	11.2	24.3
Mar. 4	00 38.11	-01 42.6	1.887	1.074	+4.19	+5.5	11.4	25.0
Mar. 14	01 19.99	-00 47.7	1.928	1.121	+4.03	+5.4	11.8	25.9
Mar. 24	02 00.30	+00 06.7	1.982	1.181	+3.85	+5.0	12.2	26.8
Apr. 3	02 38.82	+00 57.1	2.049	1.252	+3.66	+4.4	12.6	27.6
Apr. 13	03 15.40	+01 40.7	2.128	1.331	+3.46	+3.5	13.1	28.1
Apr. 23	03 50.03	+02 15.3	2.217	1.415	+3.27	+2.4	13.6	28.3
May 3	04 22.70	+02 39.2	2.314	1.503	+3.08	+1.2	14.1	28.1
May 13	04 53.45	+02 51.6	2.418	1.592	+2.89	+0.1	14.5	27.6
May 23	05 22.39	+02 52.3	2.525	1.684	+2.72	-1.1	15.0	26.8
June 2	05 49.58	+02 41.4	2.634	1.775	+2.55	-2.2	15.4	25.7
June 12	06 15.12	+02 19.5	2.743	1.867	+2.40	-3.2	15.9	24.5
June 22	06 39.13	+01 47.4	2.850	1.958	+2.26	-4.2	16.3	23.3
July 2	07 01.69	+01 05.9	2.952	2.048	+2.12	-5.0	16.6	22.3
July 12	07 22.88	+00 16.0	3.049	2.138	+1.99	-5.7	17.0	21.7
July 22	07 42.80	-00 41.5	3.137	2.226	+1.87	-6.4	17.3	21.7
Aug. 1	08 01.50	-01 45.5	3.217	2.313	+1.75	-7.0	17.6	22.6
Aug. 11	08 19.04	-02 55.2	3.286	2.398	+1.64	-7.5	17.9	24.3
Aug. 21	08 35.47	-04 09.9	3.343	2.483	+1.53	-7.9	18.1	26.8
Aug. 31	08 50.80	-05 28.7	3.387	2.565	+1.42	-8.2	18.4	30.2
Sept.10	09 05.04	-06 50.8	3.417	2.647	+1.31	-8.5	18.6	34.3
Sept.20	09 18.19	-08 15.4	3.434	2.727	+1.20	-8.6	18.8	39.0
Sept.30	09 30.20	-09 41.8	3.435	2.805	+1.08	-8.7	19.0	44.2
Oct. 10	09 41.02	-11 09.1	3.423	2.883	+0.96	-8.7	19.2	49.9
Oct. 20	09 50.57	-12 36.4	3.397	2.958	+0.82	-8.6	19.3	56.0
Oct. 30	09 58.75	-14 02.5	3.358	3.033	+0.67	-8.4	19.5	62.7
Nov. 9	10 05.43	-15 26.1	3.308	3.106	+0.50	-8.0	19.6	69.7
Nov. 19	10 10.47	-16 45.7	3.248	3.178	+0.32	-7.3	19.7	77.2
Nov. 29	10 13.70	-17 59.1	3.181	3.248	+0.13	-6.5	19.8	85.1
Dec. 9	10 14.99	-19 04.1	3.111	3.317	-0.08	-5.4	19.9	93.4
Dec. 19	10 14.20	-19 57.6	3.040	3.385	-0.29	-3.9	20.0	102.0
Dec. 29	10 11.32	-20 36.3	2.975	3.452	-0.49	-2.0	20.0	111.0
Jan. 8	10 06.42	-20 56.8	2.919	3.517	-0.67	+0.1	20.1	120.2
Jan. 18	09 59.75	-20 55.8	2.878	3.582	-0.80	+2.4	20.2	129.2
Jan. 28	09 51.75	-20 31.4	2.856	3.645	-0.87	+4.8	20.3	137.6
Feb. 7	09 43.05	-19 43.5	2.859	3.707	-0.87	+6.9	20.4	144.5
Feb. 17	09 34.32	-18 34.2	2.888	3.767	-0.81	+8.6	20.5	148.6
Feb. 27	09 26.27	-17 08.0	2.947	3.827	-0.68	+9.7	20.7	148.6
Mar. 9	09 19.45	-15 31.0	3.034	3.886	-0.52	+10.1	20.9	144.6
Mar. 19	09 14.24	-13 49.6	3.148	3.943	-0.34	+10.0	21.0	137.9
Mar. 29	09 10.86	-12 09.8	3.286	4.000	-0.16	+9.4	21.2	129.9

Comet 198P/ODAS

Epoch = 2012 July 12.0 TT
T = 2012 Feb. 15.80054 TT
Peri. = 68.96684 e = 0.4446110
Node = 358.58503 2000.0 a = 3.5948461 AU
Incl. = 1.34206 n = 0.14460510
q = 1.9965380 AU P = 6.82 years

m1 = 11.8 + 5 log(Delta) + 17.5 log(r(t-110))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 15.77	+09 24.5	1.637	2.026	+1.35	+8.0	19.3	98.2
Jan. 14	01 29.32	+10 44.1	1.731	2.014	+1.55	+8.8	19.3	91.6
Jan. 24	01 44.79	+12 11.6	1.826	2.005	+1.72	+9.3	19.3	85.5
Feb. 3	02 01.95	+13 44.2	1.923	1.999	+1.86	+9.4	19.3	79.8
Feb. 13	02 20.57	+15 18.7	2.021	1.997	+1.99	+9.4	19.3	74.4
Feb. 23	02 40.46	+16 52.3	2.119	1.997	+2.10	+9.0	19.3	69.4
Mar. 4	03 01.48	+18 22.4	2.216	2.001	+2.20	+8.4	19.3	64.5
Mar. 14	03 23.46	+19 46.4	2.313	2.009	+2.28	+7.6	19.3	59.9
Mar. 24	03 46.24	+21 02.2	2.410	2.019	+2.35	+6.6	19.3	55.5
Apr. 3	04 09.70	+22 07.8	2.505	2.033	+2.40	+5.4	19.3	51.1
Apr. 13	04 33.66	+23 01.5	2.599	2.049	+2.43	+4.1	19.3	46.9
Apr. 23	04 57.97	+23 42.3	2.691	2.069	+2.45	+2.7	19.3	42.8
May 3	05 22.46	+24 09.2	2.781	2.091	+2.45	+1.3	19.3	38.7
May 13	05 46.96	+24 21.9	2.868	2.116	+2.44	-0.1	19.4	34.6
May 23	06 11.32	+24 20.4	2.953	2.143	+2.41	-1.5	19.4	30.5
June 2	06 35.39	+24 05.1	3.033	2.172	+2.36	-2.8	19.5	26.4
June 12	06 59.03	+23 36.7	3.110	2.204	+2.31	-4.1	19.5	22.3
June 22	07 22.15	+22 56.1	3.181	2.237	+2.25	-5.2	19.6	18.1
July 2	07 44.66	+22 04.4	3.246	2.272	+2.18	-6.1	19.7	13.8
July 12	08 06.48	+21 03.0	3.305	2.308	+2.11	-7.0	19.7	9.4
July 22	08 27.59	+19 53.0	3.357	2.346	+2.04	-7.7	19.8	5.0
Aug. 1	08 47.96	+18 35.9	3.400	2.385	+1.96	-8.3	19.9	0.8
Aug. 11	09 07.56	+17 13.1	3.435	2.426	+1.89	-8.7	20.0	4.4
Aug. 21	09 26.41	+15 45.8	3.460	2.467	+1.81	-9.0	20.1	9.2
Aug. 31	09 44.50	+14 15.3	3.475	2.509	+1.73	-9.2	20.2	14.3
Sept.10	10 01.82	+12 42.8	3.479	2.552	+1.66	-9.3	20.3	19.5
Sept.20	10 18.39	+11 09.6	3.472	2.595	+1.58	-9.3	20.4	24.9
Sept.30	10 34.18	+09 36.9	3.453	2.639	+1.50	-9.1	20.5	30.5
Oct. 10	10 49.17	+08 05.6	3.422	2.683	+1.42	-8.9	20.6	36.3
Oct. 20	11 03.33	+06 37.0	3.379	2.728	+1.33	-8.5	20.7	42.4
Oct. 30	11 16.60	+05 12.2	3.324	2.772	+1.23	-8.0	20.8	48.8
Nov. 9	11 28.91	+03 52.3	3.258	2.817	+1.13	-7.4	20.8	55.5
Nov. 19	11 40.17	+02 38.3	3.182	2.862	+1.01	-6.7	20.9	62.5
Nov. 29	11 50.24	+01 31.6	3.096	2.907	+0.88	-5.8	21.0	69.8
Dec. 9	11 59.00	+00 33.3	3.003	2.952	+0.73	-4.9	21.1	77.6
Dec. 19	12 06.25	-00 15.4	2.905	2.997	+0.56	-3.8	21.1	85.8
Dec. 29	12 11.81	-00 53.2	2.804	3.042	+0.37	-2.6	21.2	94.4
Jan. 8	12 15.51	-01 19.0	2.704	3.087	+0.17	-1.3	21.2	103.6
Jan. 18	12 17.16	-01 31.7	2.608	3.131	-0.05	+0.1	21.3	113.3
Jan. 28	12 16.67	-01 30.7	2.522	3.175	-0.26	+1.5	21.3	123.6
Feb. 7	12 14.04	-01 16.2	2.451	3.219	-0.46	+2.7	21.4	134.5
Feb. 17	12 09.41	-00 48.9	2.398	3.263	-0.62	+3.8	21.4	145.8
Feb. 27	12 03.17	-00 11.3	2.369	3.306	-0.73	+4.4	21.5	157.6
Mar. 9	11 55.85	+00 33.2	2.368	3.349	-0.77	+4.7	21.7	169.6
Mar. 19	11 48.13	+01 20.1	2.397	3.392	-0.74	+4.5	21.8	178.4
Mar. 29	11 40.77	+02 04.7	2.455	3.434	-0.64	+3.8	22.0	166.5

Comet 105P/Singer Brewster

Epoch = 2012 July 12.0 TT
T = 2012 Feb. 26.13899 TT
Peri. = 46.66513 e = 0.4092095
Node = 192.41699 2000.0 a = 3.4713486 AU
Incl. = 9.17047 n = 0.15239009
q = 2.0508398 AU P = 6.47 years

m1 = 10.6 + 5 log(Delta) + 15.0 log(r(t-90))

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	',	m1	Elong. °
Jan. 4	15 43.81	-16 33.5	2.660	2.091	+2.32	-3.7	18.2	45.4
Jan. 14	16 06.98	-17 10.8	2.567	2.077	+2.31	-2.3	18.0	50.1
Jan. 24	16 30.08	-17 33.6	2.472	2.067	+2.28	-0.8	17.8	54.8
Feb. 3	16 52.91	-17 41.5	2.375	2.059	+2.23	+0.7	17.7	59.5
Feb. 13	17 15.24	-17 34.1	2.278	2.053	+2.16	+2.2	17.5	64.3
Feb. 23	17 36.85	-17 11.9	2.180	2.051	+2.06	+3.6	17.3	69.3
Mar. 4	17 57.48	-16 35.6	2.083	2.052	+1.94	+4.9	17.2	74.4
Mar. 14	18 16.89	-15 46.5	1.986	2.055	+1.79	+6.0	17.0	79.6
Mar. 24	18 34.82	-14 46.4	1.891	2.061	+1.62	+6.9	16.8	85.1
Apr. 3	18 50.98	-13 37.3	1.797	2.070	+1.41	+7.5	16.7	90.9
Apr. 13	19 05.13	-12 22.0	1.706	2.082	+1.18	+7.9	16.5	97.0
Apr. 23	19 16.98	-11 03.3	1.619	2.096	+0.93	+7.9	16.4	103.6
May 3	19 26.24	-09 44.7	1.537	2.113	+0.65	+7.5	16.2	110.6
May 13	19 32.70	-08 29.9	1.462	2.133	+0.34	+6.7	16.1	118.1
May 23	19 36.13	-07 23.0	1.396	2.155	+0.04	+5.4	16.0	126.2
June 2	19 36.49	-06 28.5	1.341	2.178	-0.25	+3.8	15.9	134.8
June 12	19 33.95	-05 50.4	1.302	2.204	-0.50	+1.8	15.9	143.8
June 22	19 28.95	-05 32.2	1.280	2.232	-0.66	-0.3	15.8	152.7
July 2	19 22.31	-05 35.2	1.278	2.262	-0.72	-2.3	15.9	160.4
July 12	19 15.08	-05 58.5	1.299	2.293	-0.67	-4.0	15.9	163.8
July 22	19 08.38	-06 38.7	1.343	2.326	-0.52	-5.2	16.1	160.4
Aug. 1	19 03.20	-07 30.9	1.410	2.360	-0.30	-5.8	16.2	153.0
Aug. 11	19 00.22	-08 29.2	1.498	2.395	-0.05	-6.0	16.4	144.2
Aug. 21	18 59.75	-09 28.7	1.605	2.431	+0.21	-5.7	16.6	135.4
Aug. 31	19 01.87	-10 25.2	1.728	2.468	+0.45	-5.1	16.9	126.8
Sept. 10	19 06.40	-11 15.9	1.865	2.506	+0.67	-4.3	17.1	118.5
Sept. 20	19 13.10	-11 58.6	2.012	2.545	+0.86	-3.4	17.3	110.6
Sept. 30	19 21.68	-12 32.2	2.168	2.584	+1.01	-2.4	17.6	103.0
Oct. 10	19 31.82	-12 56.0	2.331	2.624	+1.14	-1.4	17.8	95.6
Oct. 20	19 43.25	-13 09.7	2.497	2.665	+1.25	-0.3	18.1	88.5
Oct. 30	19 55.71	-13 13.1	2.665	2.705	+1.33	+0.6	18.3	81.6
Nov. 9	20 08.97	-13 06.7	2.833	2.746	+1.39	+1.6	18.6	74.9
Nov. 19	20 22.85	-12 50.6	2.999	2.787	+1.43	+2.5	18.8	68.2
Nov. 29	20 37.17	-12 25.5	3.161	2.829	+1.46	+3.4	19.0	61.6
Dec. 9	20 51.77	-11 51.9	3.317	2.870	+1.48	+4.1	19.2	55.1
Dec. 19	21 06.56	-11 10.5	3.466	2.911	+1.49	+4.8	19.4	48.6
Dec. 29	21 21.41	-10 22.2	3.606	2.953	+1.48	+5.4	19.6	42.2
Jan. 8	21 36.25	-09 27.7	3.736	2.994	+1.48	+6.0	19.7	35.8
Jan. 18	21 51.00	-08 27.9	3.853	3.035	+1.46	+6.4	19.9	29.4
Jan. 28	22 05.59	-07 23.7	3.958	3.076	+1.44	+6.8	20.1	23.1
Feb. 7	22 19.99	-06 16.0	4.048	3.117	+1.41	+7.0	20.2	16.8
Feb. 17	22 34.13	-05 05.6	4.124	3.158	+1.39	+7.2	20.4	10.6
Feb. 27	22 47.99	-03 53.4	4.184	3.198	+1.35	+7.3	20.5	5.0
Mar. 9	23 01.53	-02 40.3	4.227	3.238	+1.32	+7.3	20.6	4.4
Mar. 19	23 14.71	-01 27.1	4.254	3.278	+1.28	+7.3	20.7	9.9
Mar. 29	23 27.48	-00 14.6	4.265	3.317	+1.23	+7.1	20.8	16.1

Comet 3D/Biela [Orbit 2]

Epoch = 2012 July 12.0 TT
T = 2012 Feb. 27.03670 TT
Peri. = 274.27413 e = 0.7710569
Node = 193.96031 2000.0 a = 3.5137643 AU
Incl. = 7.93649 n = 0.14963911
q = 0.8044521 AU P = 6.59 years

m1 = 16.9 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	23 11.43	-07 59.4	1.239	1.180	-0.80	+2.8	18.1	35.2/ 76	62.9
Jan. 14	23 34.37	-06 34.5	1.187	1.076	-0.91	+3.2	17.6	40.9/ 75	58.5
Jan. 24	00 00.82	-04 48.8	1.117	0.980	-1.05	+3.6	17.1	47.0/ 75	55.2
Feb. 3	00 31.05	-02 42.8	1.030	0.898	-1.21	+4.1	16.5	53.5/ 74	52.9
Feb. 13	01 05.41	-00 17.2	0.929	0.838	-1.39	+4.8	16.0	61.1/ 74	51.8
Feb. 23	01 44.64	+02 27.9	0.820	0.807	-1.63	+5.4	15.5	70.7/ 74	52.0
Mar. 4	02 30.21	+05 34.1	0.710	0.811	-2.06	+5.3	15.2	84.0/ 75	53.9
Mar. 14	03 24.93	+09 02.6	0.610	0.848	-2.93	+3.7	15.1	102.1/ 76	58.0
Mar. 24	04 32.63	+12 41.0	0.536	0.913	-4.50	+1.3	15.1	119.8/ 79	65.2
Apr. 3	05 54.10	+15 38.4	0.500	0.997	-6.51	+2.4	15.4	124.6/ 84	75.2
Apr. 13	07 20.53	+16 41.7	0.515	1.095	-7.73	+9.7	15.9	111.0/ 90	86.1
Apr. 23	08 37.48	+15 39.9	0.580	1.201	-7.40	+17.3	16.5	88.9/ 96	94.6
May 3	09 38.07	+13 29.7	0.686	1.310	-6.23	+20.0	17.3	69.1/101	99.6
May 13	10 24.11	+11 01.9	0.820	1.421	-5.00	+19.0	18.0	54.7/104	101.3
May 23	10 59.84	+08 37.8	0.976	1.532	-3.98	+16.6	18.7	45.1/107	100.7
June 2	11 28.76	+06 22.8	1.148	1.642	-3.21	+14.0	19.4	38.6/109	98.6
June 12	11 53.17	+04 17.2	1.333	1.751	-2.62	+11.7	20.0	34.2/110	95.5
June 22	12 14.58	+02 19.6	1.527	1.857	-2.17	+9.7	20.5	31.1/111	91.6
July 2	12 33.97	+00 29.0	1.728	1.962	-1.83	+8.1	21.0	28.9/111	87.3
July 12	12 51.93	-01 15.6	1.934	2.065	-1.56	+6.8	21.5	27.3/111	82.6
July 22	13 08.91	-02 54.7	2.143	2.166	-1.34	+5.7	21.9	26.1/111	77.6
Aug. 1	13 25.17	-04 28.7	2.354	2.264	-1.17	+4.7	.	25.1/111	72.4
Aug. 11	13 40.92	-05 57.8	2.563	2.361	-1.03	+4.0	.	24.4/110	67.1
Aug. 21	13 56.29	-07 22.0	2.770	2.455	-0.91	+3.3	.	23.8/110	61.5
Aug. 31	14 11.38	-08 41.3	2.972	2.547	-0.81	+2.8	.	23.2/109	55.9
Sept.10	14 26.25	-09 55.6	3.167	2.637	-0.72	+2.3	.	22.7/108	50.1
Sept.20	14 40.94	-11 04.8	3.354	2.725	-0.65	+1.9	.	22.3/107	44.2
Sept.30	14 55.47	-12 08.7	3.530	2.812	-0.59	+1.5	.	21.8/106	38.2
Oct. 10	15 09.85	-13 07.1	3.694	2.896	-0.54	+1.2	.	21.4/105	32.0
Oct. 20	15 24.08	-13 60.0	3.844	2.979	-0.49	+1.0	.	20.9/103	25.8
Oct. 30	15 38.12	-14 47.1	3.978	3.060	-0.45	+0.8	.	20.4/102	19.5
Nov. 9	15 51.95	-15 28.3	4.095	3.139	-0.41	+0.6	.	19.9/101	13.2
Nov. 19	16 05.52	-16 03.5	4.195	3.217	-0.38	+0.4	.	19.3/ 99	7.3
Nov. 29	16 18.78	-16 32.8	4.274	3.293	-0.35	+0.3	.	18.6/ 98	4.9
Dec. 9	16 31.65	-16 56.1	4.334	3.367	-0.32	+0.2	.	17.9/ 96	9.6
Dec. 19	16 44.06	-17 13.6	4.374	3.440	-0.30	+0.1	.	17.0/ 94	16.3
Dec. 29	16 55.93	-17 25.3	4.393	3.512	-0.28	0.0	.	16.1/ 93	23.4
Jan. 8	17 07.15	-17 31.6	4.392	3.582	-0.26	-0.1	.	15.0/ 91	30.7
Jan. 18	17 17.62	-17 32.8	4.371	3.651	-0.24	-0.1	.	13.7/ 89	38.4
Jan. 28	17 27.23	-17 29.1	4.331	3.718	-0.23	-0.2	.	12.4/ 87	46.2
Feb. 7	17 35.84	-17 21.2	4.275	3.784	-0.22	-0.2	.	10.8/ 84	54.2
Feb. 17	17 43.33	-17 09.5	4.204	3.849	-0.21	-0.2	.	9.0/ 81	62.5
Feb. 27	17 49.55	-16 54.6	4.121	3.912	-0.21	-0.2	.	7.1/ 76	71.0
Mar. 9	17 54.37	-16 37.0	4.028	3.974	-0.21	-0.2	.	5.1/ 68	79.8
Mar. 19	17 57.64	-16 17.5	3.929	4.036	-0.21	-0.2	.	3.1/ 48	88.9
Mar. 29	17 59.24	-15 56.7	3.829	4.095	-0.21	-0.1	.	2.2/354	98.4

Comet 182P/LONEOS

Epoch = 2012 July 12.0 TT
T = 2012 Mar. 5.44957 TT
Peri. = 53.76754 e = 0.6594783
Node = 72.86668 2000.0 a = 2.9617698 AU
Incl. = 16.24960 n = 0.19336466
q = 1.0085469 AU P = 5.10 years

H = 19.0 , G = 0.15

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 4	00 57.08	+01 10.4	0.840	1.302	+0.87	+28.2	21.0	90.7
Jan. 14	01 05.80	+05 52.4	0.834	1.225	+1.29	+31.1	21.0	84.4
Jan. 24	01 18.74	+11 03.6	0.820	1.156	+1.72	+34.0	20.9	79.1
Feb. 3	01 35.92	+16 43.7	0.800	1.097	+2.18	+36.8	20.9	75.0
Feb. 13	01 57.71	+22 51.4	0.774	1.051	+2.74	+39.1	20.8	72.2
Feb. 23	02 25.14	+29 22.0	0.743	1.021	+3.51	+40.2	20.7	70.6
Mar. 4	03 00.23	+36 04.3	0.711	1.009	+4.60	+38.9	20.7	70.5
Mar. 14	03 46.21	+42 33.4	0.682	1.016	+6.10	+32.7	20.6	71.9
Mar. 24	04 47.24	+48 00.0	0.660	1.041	+7.74	+18.6	20.6	74.7
Apr. 3	06 04.67	+51 06.4	0.652	1.083	+8.53	-2.8	20.5	78.8
Apr. 13	07 29.95	+50 38.6	0.662	1.138	+7.74	-24.2	20.6	83.6
Apr. 23	08 47.39	+46 36.4	0.694	1.204	+6.12	-37.7	20.7	88.3
May 3	09 48.60	+40 19.8	0.750	1.279	+4.64	-42.2	20.8	92.1
May 13	10 34.96	+33 18.1	0.830	1.359	+3.59	-41.1	21.1	94.6
May 23	11 10.83	+26 27.4	0.933	1.442	+2.90	-37.4	21.3	95.6
June 2	11 39.87	+20 13.1	1.055	1.528	+2.46	-33.1	21.7	95.2
June 12	12 04.48	+14 41.8	1.193	1.616	+2.17	-29.0	22.0	93.7
June 22	12 26.21	+09 51.3	1.345	1.703	+1.98	-25.5	22.3	91.2
July 2	12 46.04	+05 36.6	1.509	1.791	+1.86	-22.4	22.6	88.0
July 12	13 04.60	+01 52.3	1.682	1.878	+1.77	-19.9	22.9	84.3
July 22	13 22.31	-01 26.6	1.862	1.964	+1.71	-17.8	.	80.2
Aug. 1	13 39.45	-04 24.1	2.047	2.048	+1.68	-15.9	.	75.7
Aug. 11	13 56.21	-07 03.4	2.234	2.132	+1.65	-14.4	.	71.0
Aug. 21	14 12.73	-09 27.2	2.422	2.214	+1.64	-13.0	.	66.1
Aug. 31	14 29.10	-11 37.3	2.609	2.295	+1.63	-11.8	.	60.9
Sept.10	14 45.38	-13 35.2	2.793	2.374	+1.62	-10.7	.	55.6
Sept.20	15 01.62	-15 22.0	2.971	2.452	+1.62	-9.7	.	50.1
Sept.30	15 17.82	-16 58.6	3.143	2.528	+1.62	-8.7	.	44.5
Oct. 10	15 34.00	-18 25.6	3.305	2.602	+1.61	-7.8	.	38.7
Oct. 20	15 50.15	-19 43.7	3.457	2.675	+1.61	-7.0	.	32.8
Oct. 30	16 06.24	-20 53.3	3.596	2.747	+1.60	-6.1	.	26.8
Nov. 9	16 22.24	-21 54.8	3.722	2.817	+1.59	-5.4	.	20.6
Nov. 19	16 38.11	-22 48.5	3.832	2.885	+1.57	-4.6	.	14.3
Nov. 29	16 53.78	-23 35.0	3.926	2.952	+1.54	-4.0	.	7.9
Dec. 9	17 09.21	-24 14.7	4.001	3.017	+1.51	-3.3	.	1.8
Dec. 19	17 24.31	-24 48.0	4.059	3.081	+1.47	-2.8	.	5.6
Dec. 29	17 39.00	-25 15.7	4.097	3.144	+1.42	-2.3	.	12.4
Jan. 8	17 53.19	-25 38.4	4.116	3.205	+1.36	-1.8	.	19.3
Jan. 18	18 06.80	-25 56.8	4.116	3.265	+1.29	-1.5	.	26.5
Jan. 28	18 19.71	-26 11.9	4.097	3.323	+1.21	-1.3	.	33.7
Feb. 7	18 31.83	-26 24.6	4.060	3.380	+1.12	-1.1	.	41.2
Feb. 17	18 43.03	-26 36.0	4.006	3.436	+1.01	-1.1	.	48.8
Feb. 27	18 53.17	-26 47.2	3.936	3.490	+0.90	-1.2	.	56.6
Mar. 9	19 02.13	-26 59.3	3.854	3.544	+0.76	-1.4	.	64.6
Mar. 19	19 09.76	-27 13.6	3.760	3.596	+0.61	-1.8	.	72.9
Mar. 29	19 15.88	-27 31.1	3.658	3.646	+0.45	-2.2	.	81.5

Comet P/2011 Y2 (Boattini)

Epoch = 2012 July 12.0 TT
T = 2012 Mar. 21.68392 TT
Peri. = 131.19195 e = 0.7125426
Node = 310.00647 2000.0 a = 6.2172569 AU
Incl. = 6.35211 n = 0.06357785
q = 1.7871965 AU P = 15.50 years

m1 = 13.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 32.17	+11 22.3	1.726	1.972	+1.59	+7.2	19.4	89.0
Jan. 14	00 48.08	+12 34.4	1.785	1.930	+1.81	+8.3	19.3	83.0
Jan. 24	01 06.21	+13 57.7	1.844	1.892	+2.02	+9.2	19.3	77.5
Feb. 3	01 26.36	+15 29.2	1.903	1.860	+2.20	+9.6	19.2	72.4
Feb. 13	01 48.36	+17 05.3	1.961	1.833	+2.37	+9.7	19.2	67.8
Feb. 23	02 12.07	+18 42.3	2.020	1.812	+2.53	+9.4	19.2	63.6
Mar. 4	02 37.32	+20 16.2	2.080	1.797	+2.66	+8.7	19.2	59.7
Mar. 14	03 03.93	+21 43.2	2.141	1.789	+2.78	+7.6	19.2	56.1
Mar. 24	03 31.71	+22 59.4	2.206	1.787	+2.87	+6.2	19.3	52.7
Apr. 3	04 00.41	+24 01.5	2.273	1.792	+2.93	+4.5	19.4	49.5
Apr. 13	04 29.75	+24 46.8	2.343	1.804	+2.97	+2.7	19.5	46.4
Apr. 23	04 59.40	+25 13.5	2.417	1.821	+2.97	+0.7	19.6	43.3
May 3	05 29.06	+25 20.4	2.495	1.845	+2.93	-1.3	19.8	40.3
May 13	05 58.40	+25 07.6	2.577	1.874	+2.87	-3.2	19.9	37.2
May 23	06 27.14	+24 35.8	2.661	1.909	+2.79	-4.9	20.1	34.1
June 2	06 55.05	+23 46.5	2.748	1.949	+2.69	-6.5	20.3	30.9
June 12	07 21.95	+22 41.7	2.837	1.993	+2.58	-7.8	20.6	27.6
June 22	07 47.76	+21 23.5	2.926	2.041	+2.46	-8.9	20.8	24.1
July 2	08 12.40	+19 54.2	3.014	2.093	+2.35	-9.8	21.0	20.5
July 12	08 35.87	+18 16.1	3.101	2.147	+2.23	-10.5	21.2	16.8
July 22	08 58.20	+16 31.1	3.184	2.205	+2.12	-11.0	21.5	12.9
Aug. 1	09 19.41	+14 41.1	3.263	2.265	+2.02	-11.3	21.7	8.8
Aug. 11	09 39.57	+12 47.8	3.336	2.327	+1.92	-11.5	21.9	4.5
Aug. 21	09 58.74	+10 52.6	3.402	2.390	+1.82	-11.6	.	1.4
Aug. 31	10 16.97	+08 56.8	3.459	2.455	+1.73	-11.5	.	5.2
Sept.10	10 34.29	+07 01.4	3.507	2.522	+1.65	-11.4	.	10.1
Sept.20	10 50.76	+05 07.5	3.544	2.589	+1.56	-11.2	.	15.3
Sept.30	11 06.39	+03 16.0	3.570	2.657	+1.48	-10.8	.	20.8
Oct. 10	11 21.18	+01 27.5	3.583	2.726	+1.40	-10.5	.	26.5
Oct. 20	11 35.14	-00 17.2	3.583	2.795	+1.31	-10.0	.	32.5
Oct. 30	11 48.21	-01 57.4	3.570	2.865	+1.21	-9.5	.	38.8
Nov. 9	12 00.35	-03 32.5	3.544	2.935	+1.11	-8.9	.	45.4
Nov. 19	12 11.50	-05 01.8	3.505	3.005	+1.00	-8.3	.	52.3
Nov. 29	12 21.53	-06 24.5	3.454	3.075	+0.88	-7.6	.	59.6
Dec. 9	12 30.35	-07 40.1	3.392	3.145	+0.75	-6.8	.	67.2
Dec. 19	12 37.81	-08 47.8	3.322	3.215	+0.59	-5.9	.	75.2
Dec. 29	12 43.74	-09 46.7	3.245	3.284	+0.43	-4.9	.	83.6
Jan. 8	12 48.00	-10 36.0	3.164	3.354	+0.24	-3.9	.	92.5
Jan. 18	12 50.42	-11 14.6	3.083	3.424	+0.05	-2.7	.	101.8
Jan. 28	12 50.92	-11 41.6	3.007	3.493	-0.15	-1.5	.	111.7
Feb. 7	12 49.45	-11 56.2	2.940	3.562	-0.34	-0.2	.	122.0
Feb. 17	12 46.09	-11 57.7	2.887	3.630	-0.50	+1.1	.	132.7
Feb. 27	12 41.07	-11 46.3	2.853	3.698	-0.63	+2.3	.	143.8
Mar. 9	12 34.78	-11 22.9	2.843	3.766	-0.71	+3.3	.	155.0
Mar. 19	12 27.72	-10 49.7	2.861	3.833	-0.72	+4.0	.	165.8
Mar. 29	12 20.51	-10 09.8	2.908	3.900	-0.68	+4.3	.	172.7

Comet P/2011 R3 (Novichonok-Gerke)

Epoch = 2012 July 12.0 TT
T = 2012 Apr. 1.86033 TT
Peri. = 225.05126 e = 0.2659612
Node = 190.55266 2000.0 a = 4.8468603 AU
Incl. = 19.22626 n = 0.09236625
q = 3.5577835 AU P = 10.67 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	01 43.22	-00 36.3	3.267	3.582	+0.46	+2.4	18.5	100.7
Jan. 14	01 47.86	-00 11.8	3.407	3.577	+0.61	+3.3	18.6	91.9
Jan. 24	01 53.91	+00 21.3	3.548	3.572	+0.73	+4.0	18.6	83.5
Feb. 3	02 01.26	+01 01.3	3.686	3.569	+0.85	+4.5	18.7	75.5
Feb. 13	02 09.72	+01 46.1	3.820	3.565	+0.95	+4.8	18.8	67.8
Feb. 23	02 19.18	+02 34.3	3.946	3.562	+1.03	+5.0	18.9	60.4
Mar. 4	02 29.49	+03 24.3	4.064	3.560	+1.10	+5.0	18.9	53.3
Mar. 14	02 40.53	+04 14.7	4.170	3.559	+1.17	+5.0	19.0	46.4
Mar. 24	02 52.22	+05 04.4	4.266	3.558	+1.22	+4.8	19.0	39.9
Apr. 3	03 04.44	+05 52.2	4.348	3.558	+1.27	+4.5	19.1	33.6
Apr. 13	03 17.10	+06 37.2	4.417	3.558	+1.30	+4.1	19.1	27.6
Apr. 23	03 30.13	+07 18.6	4.472	3.559	+1.33	+3.7	19.1	22.0
May 3	03 43.46	+07 55.4	4.512	3.561	+1.35	+3.2	19.1	17.0
May 13	03 56.99	+08 27.2	4.539	3.563	+1.37	+2.6	19.2	13.4
May 23	04 10.67	+08 53.1	4.550	3.566	+1.37	+2.0	19.2	12.0
June 2	04 24.42	+09 12.9	4.547	3.569	+1.37	+1.3	19.2	13.5
June 12	04 38.14	+09 26.0	4.530	3.573	+1.36	+0.6	19.2	17.3
June 22	04 51.78	+09 32.1	4.500	3.578	+1.35	-0.1	19.2	22.1
July 2	05 05.23	+09 31.0	4.455	3.583	+1.32	-0.8	19.2	27.4
July 12	05 18.42	+09 22.5	4.398	3.589	+1.28	-1.6	19.1	33.1
July 22	05 31.25	+09 06.7	4.328	3.596	+1.24	-2.3	19.1	39.0
Aug. 1	05 43.61	+08 43.5	4.246	3.603	+1.18	-3.0	19.1	45.1
Aug. 11	05 55.40	+08 13.1	4.154	3.610	+1.11	-3.7	19.1	51.4
Aug. 21	06 06.49	+07 35.9	4.053	3.619	+1.03	-4.4	19.0	57.9
Aug. 31	06 16.76	+06 52.1	3.943	3.627	+0.93	-5.0	19.0	64.7
Sept. 10	06 26.07	+06 02.5	3.826	3.636	+0.82	-5.5	18.9	71.6
Sept. 20	06 34.26	+05 07.7	3.704	3.646	+0.69	-5.9	18.9	78.9
Sept. 30	06 41.19	+04 08.8	3.580	3.657	+0.55	-6.2	18.8	86.4
Oct. 10	06 46.69	+03 07.0	3.456	3.667	+0.39	-6.3	18.8	94.2
Oct. 20	06 50.61	+02 03.9	3.334	3.679	+0.22	-6.2	18.7	102.4
Oct. 30	06 52.80	+01 01.5	3.218	3.691	+0.04	-5.9	18.6	110.9
Nov. 9	06 53.21	+00 02.1	3.112	3.703	-0.14	-5.4	18.6	119.6
Nov. 19	06 51.80	-00 51.4	3.020	3.716	-0.31	-4.5	18.6	128.4
Nov. 29	06 48.68	-01 36.1	2.945	3.729	-0.46	-3.3	18.5	137.1
Dec. 9	06 44.11	-02 09.1	2.892	3.743	-0.56	-1.9	18.5	145.1
Dec. 19	06 38.46	-02 27.9	2.863	3.757	-0.62	-0.3	18.5	151.4
Dec. 29	06 32.28	-02 31.2	2.861	3.771	-0.61	+1.2	18.5	154.3
Jan. 8	06 26.15	-02 18.8	2.886	3.786	-0.55	+2.7	18.6	152.5
Jan. 18	06 20.65	-01 52.1	2.939	3.801	-0.44	+3.9	18.6	146.9
Jan. 28	06 16.29	-01 13.6	3.016	3.817	-0.29	+4.7	18.7	139.3
Feb. 7	06 13.42	-00 26.3	3.116	3.833	-0.12	+5.3	18.8	130.7
Feb. 17	06 12.24	+00 26.3	3.235	3.850	+0.06	+5.5	18.9	121.9
Feb. 27	06 12.82	+01 21.2	3.368	3.866	+0.23	+5.5	19.0	113.1
Mar. 9	06 15.10	+02 15.7	3.513	3.883	+0.39	+5.2	19.2	104.6
Mar. 19	06 18.98	+03 07.8	3.664	3.901	+0.53	+4.8	19.3	96.3
Mar. 29	06 24.31	+03 55.7	3.820	3.918	+0.66	+4.3	19.4	88.3

Comet 242P/Spahr

Epoch = 2012 July 12.0 TT
T = 2012 Apr. 3.60096 TT
Peri. = 247.70368 e = 0.2784480
Node = 180.75587 2000.0 a = 5.5158083 AU
Incl. = 32.48044 n = 0.07608347
q = 3.9799425 AU P = 12.95 years

m1 = 4.8 + 5 log(Delta) + 17.5 log(r(t-30))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	02 55.79	-14 25.8	3.550	4.001	+0.09	+4.2	18.1	110.5
Jan. 14	02 56.65	-13 44.2	3.671	3.997	+0.24	+5.1	18.2	102.2
Jan. 24	02 59.07	-12 53.6	3.798	3.993	+0.39	+5.7	18.2	94.2
Feb. 3	03 02.99	-11 56.8	3.927	3.989	+0.53	+6.1	18.3	86.5
Feb. 13	03 08.29	-10 56.1	4.055	3.987	+0.65	+6.2	18.4	79.0
Feb. 23	03 14.82	-09 53.7	4.179	3.984	+0.76	+6.2	18.4	71.9
Mar. 4	03 22.46	-08 51.2	4.298	3.982	+0.86	+6.1	18.5	65.1
Mar. 14	03 31.07	-07 50.3	4.408	3.981	+0.94	+5.8	18.5	58.6
Mar. 24	03 40.51	-06 52.0	4.510	3.980	+1.02	+5.4	18.6	52.4
Apr. 3	03 50.68	-05 57.7	4.600	3.980	+1.08	+5.0	18.6	46.6
Apr. 13	04 01.46	-05 08.1	4.679	3.980	+1.13	+4.4	18.7	41.2
Apr. 23	04 12.75	-04 24.1	4.746	3.981	+1.17	+3.8	18.7	36.3
May 3	04 24.45	-03 46.3	4.800	3.982	+1.20	+3.1	18.7	32.1
May 13	04 36.47	-03 15.2	4.841	3.984	+1.23	+2.4	18.7	28.6
May 23	04 48.74	-02 51.4	4.869	3.986	+1.24	+1.6	18.7	26.3
June 2	05 01.15	-02 35.2	4.883	3.989	+1.25	+0.8	18.7	25.3
June 12	05 13.63	-02 26.9	4.883	3.992	+1.25	0.0	18.7	25.7
June 22	05 26.10	-02 26.8	4.871	3.996	+1.24	-0.8	18.7	27.4
July 2	05 38.47	-02 34.9	4.845	4.001	+1.22	-1.6	18.7	30.3
July 12	05 50.65	-02 51.3	4.807	4.005	+1.19	-2.5	18.7	34.1
July 22	06 02.56	-03 16.0	4.757	4.011	+1.15	-3.3	18.7	38.4
Aug. 1	06 14.10	-03 48.9	4.695	4.017	+1.11	-4.1	18.7	43.3
Aug. 11	06 25.16	-04 29.6	4.623	4.023	+1.05	-4.8	18.7	48.5
Aug. 21	06 35.66	-05 17.9	4.540	4.030	+0.98	-5.5	18.6	54.0
Aug. 31	06 45.47	-06 13.3	4.449	4.037	+0.90	-6.2	18.6	59.8
Sept.10	06 54.48	-07 15.1	4.350	4.045	+0.81	-6.7	18.6	65.9
Sept.20	07 02.56	-08 22.4	4.245	4.053	+0.70	-7.2	18.5	72.2
Sept.30	07 09.56	-09 34.3	4.136	4.062	+0.58	-7.5	18.5	78.8
Oct. 10	07 15.35	-10 49.1	4.024	4.071	+0.44	-7.6	18.4	85.6
Oct. 20	07 19.79	-12 05.4	3.912	4.080	+0.30	-7.5	18.4	92.6
Oct. 30	07 22.75	-13 20.6	3.803	4.091	+0.14	-7.2	18.4	99.8
Nov. 9	07 24.14	-14 32.4	3.699	4.101	-0.02	-6.5	18.3	107.1
Nov. 19	07 23.89	-15 37.4	3.604	4.112	-0.18	-5.5	18.3	114.4
Nov. 29	07 22.04	-16 32.3	3.521	4.123	-0.33	-4.1	18.2	121.5
Dec. 9	07 18.72	-17 13.5	3.453	4.135	-0.45	-2.4	18.2	128.2
Dec. 19	07 14.18	-17 37.6	3.404	4.147	-0.54	-0.5	18.2	133.9
Dec. 29	07 08.80	-17 42.3	3.375	4.159	-0.57	+1.6	18.2	138.1
Jan. 8	07 03.07	-17 26.5	3.370	4.172	-0.56	+3.6	18.2	140.2
Jan. 18	06 57.49	-16 50.6	3.388	4.186	-0.49	+5.4	18.3	139.6
Jan. 28	06 52.59	-15 56.8	3.430	4.199	-0.38	+6.8	18.3	136.5
Feb. 7	06 48.77	-14 48.6	3.495	4.213	-0.24	+7.8	18.4	131.5
Feb. 17	06 46.33	-13 30.1	3.580	4.228	-0.09	+8.4	18.5	125.2
Feb. 27	06 45.45	-12 05.8	3.683	4.242	+0.07	+8.6	18.5	118.2
Mar. 9	06 46.16	-10 39.6	3.802	4.257	+0.23	+8.5	18.6	110.8
Mar. 19	06 48.43	-09 15.0	3.932	4.272	+0.37	+8.0	18.7	103.3
Mar. 29	06 52.16	-07 54.7	4.070	4.288	+0.50	+7.4	18.8	95.8

Comet 58P/Jackson-Neujmin

Epoch = 2012 July 12.0 TT
T = 2012 Apr. 10.00201 TT
Peri. = 200.48890 e = 0.6627106
Node = 160.63035 2000.0 a = 4.0748583 AU
Incl. = 13.48924 n = 0.11982165
q = 1.3744065 AU P = 8.23 years

m1 = 10.8 + 5 log(Delta) + 22.5 log(r(t-60))

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	19 33.23	-15 38.8	2.724	1.770	+2.78	+3.3	20.7	11.4
Jan. 14	20 01.04	-15 06.0	2.672	1.704	+2.90	+5.1	20.3	8.2
Jan. 24	20 29.99	-14 14.8	2.618	1.641	+3.00	+7.0	19.9	5.5
Feb. 3	20 59.97	-13 04.7	2.565	1.583	+3.09	+8.9	19.5	3.8
Feb. 13	21 30.82	-11 36.0	2.513	1.530	+3.16	+10.6	19.1	3.7
Feb. 23	22 02.45	-09 49.8	2.466	1.483	+3.23	+12.2	18.7	4.8
Mar. 4	22 34.71	-07 48.1	2.424	1.443	+3.27	+13.4	18.3	6.4
Mar. 14	23 07.44	-05 33.8	2.390	1.412	+3.31	+14.3	17.9	7.9
Mar. 24	23 40.52	-03 10.5	2.364	1.389	+3.33	+14.8	17.5	9.4
Apr. 3	00 13.79	-00 42.8	2.346	1.377	+3.33	+14.7	17.1	10.8
Apr. 13	00 47.10	+01 44.6	2.339	1.375	+3.32	+14.2	16.8	12.2
Apr. 23	01 20.29	+04 06.8	2.340	1.383	+3.29	+13.3	16.5	13.6
May 3	01 53.18	+06 19.3	2.350	1.401	+3.24	+11.9	16.2	15.1
May 13	02 25.59	+08 18.4	2.368	1.429	+3.17	+10.3	16.0	16.7
May 23	02 57.33	+10 01.1	2.391	1.466	+3.09	+8.4	15.9	18.4
June 2	03 28.22	+11 25.6	2.419	1.510	+2.99	+6.5	15.8	20.4
June 12	03 58.08	+12 31.0	2.449	1.561	+2.87	+4.6	15.9	22.6
June 22	04 26.77	+13 17.4	2.480	1.617	+2.74	+2.8	15.9	25.1
July 2	04 54.15	+13 45.6	2.509	1.678	+2.60	+1.1	16.1	27.8
July 12	05 20.10	+13 56.9	2.535	1.743	+2.45	-0.4	16.3	30.9
July 22	05 44.57	+13 53.1	2.556	1.811	+2.29	-1.7	16.6	34.4
Aug. 1	06 07.47	+13 36.1	2.571	1.882	+2.13	-2.8	16.9	38.2
Aug. 11	06 28.77	+13 07.7	2.578	1.954	+1.97	-3.8	17.2	42.4
Aug. 21	06 48.42	+12 30.2	2.576	2.027	+1.80	-4.5	17.6	47.1
Aug. 31	07 06.37	+11 45.4	2.565	2.102	+1.62	-5.0	17.9	52.1
Sept. 10	07 22.58	+10 55.3	2.544	2.177	+1.44	-5.3	18.3	57.6
Sept. 20	07 36.98	+10 01.8	2.513	2.252	+1.25	-5.5	18.6	63.5
Sept. 30	07 49.47	+09 06.9	2.473	2.327	+1.05	-5.4	18.9	69.9
Oct. 10	07 59.93	+08 12.7	2.425	2.403	+0.83	-5.1	19.3	76.8
Oct. 20	08 08.23	+07 21.2	2.369	2.478	+0.60	-4.6	19.6	84.3
Oct. 30	08 14.19	+06 34.8	2.309	2.552	+0.35	-3.9	19.9	92.4
Nov. 9	08 17.65	+05 55.7	2.248	2.627	+0.08	-2.9	20.2	101.2
Nov. 19	08 18.48	+05 26.6	2.189	2.700	-0.19	-1.7	20.4	110.6
Nov. 29	08 16.60	+05 10.0	2.137	2.773	-0.45	-0.2	20.7	120.7
Dec. 9	08 12.11	+05 07.7	2.097	2.846	-0.68	+1.3	21.0	131.4
Dec. 19	08 05.30	+05 21.1	2.075	2.917	-0.86	+2.9	21.3	142.4
Dec. 29	07 56.73	+05 50.1	2.077	2.988	-0.95	+4.3	21.5	153.3
Jan. 8	07 47.22	+06 32.8	2.106	3.058	-0.96	+5.3	21.9	162.6
Jan. 18	07 37.66	+07 25.8	2.165	3.128	-0.87	+5.9	.	165.8
Jan. 28	07 28.97	+08 24.9	2.254	3.196	-0.71	+6.1	.	159.8
Feb. 7	07 21.86	+09 25.9	2.372	3.264	-0.51	+5.9	.	150.0
Feb. 17	07 16.78	+10 25.3	2.517	3.331	-0.29	+5.5	.	139.5
Feb. 27	07 13.92	+11 20.2	2.683	3.397	-0.07	+4.9	.	129.2
Mar. 9	07 13.24	+12 09.3	2.866	3.462	+0.14	+4.2	.	119.3
Mar. 19	07 14.60	+12 51.5	3.062	3.526	+0.32	+3.5	.	109.8
Mar. 29	07 17.78	+13 26.4	3.267	3.590	+0.47	+2.8	.	100.7

Comet 163P/NEAT

Epoch = 2012 July 12.0 TT
T = 2012 Apr. 12.74917 TT
Peri. = 349.63670 e = 0.4533581
Node = 102.11766 2000.0 a = 3.7623717 AU
Incl. = 12.71721 n = 0.13505527
q = 2.0566700 AU P = 7.30 years

m1 = 11.0 + 5 log(Delta) + 20.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	02 02.33	-00 29.5	1.734	2.205	+0.71	+12.7	19.1	105.1
Jan. 14	02 09.47	+01 37.1	1.818	2.178	+0.96	+13.3	19.1	97.6
Jan. 24	02 19.06	+03 50.4	1.906	2.154	+1.18	+13.7	19.1	90.6
Feb. 3	02 30.85	+06 07.1	1.995	2.131	+1.38	+13.8	19.1	84.0
Feb. 13	02 44.61	+08 24.7	2.085	2.112	+1.55	+13.6	19.1	77.9
Feb. 23	03 00.12	+10 40.5	2.174	2.095	+1.71	+13.2	19.1	72.2
Mar. 4	03 17.23	+12 52.4	2.262	2.081	+1.85	+12.6	19.1	66.8
Mar. 14	03 35.77	+14 58.2	2.348	2.071	+1.98	+11.8	19.2	61.7
Mar. 24	03 55.59	+16 55.8	2.432	2.063	+2.10	+10.8	19.2	56.8
Apr. 3	04 16.59	+18 43.4	2.514	2.058	+2.20	+9.6	19.3	52.2
Apr. 13	04 38.60	+20 19.2	2.593	2.057	+2.29	+8.2	19.3	47.7
Apr. 23	05 01.49	+21 41.7	2.670	2.058	+2.36	+6.8	19.4	43.4
May 3	05 25.12	+22 49.6	2.744	2.063	+2.42	+5.2	19.5	39.2
May 13	05 49.29	+23 42.1	2.815	2.071	+2.46	+3.6	19.6	35.1
May 23	06 13.86	+24 18.5	2.883	2.082	+2.48	+2.0	19.7	31.1
June 2	06 38.63	+24 38.6	2.947	2.096	+2.48	+0.4	19.8	27.1
June 12	07 03.41	+24 42.9	3.008	2.113	+2.46	-1.1	19.9	23.2
June 22	07 28.04	+24 31.8	3.065	2.132	+2.43	-2.5	20.0	19.3
July 2	07 52.38	+24 06.3	3.117	2.155	+2.39	-3.9	20.1	15.5
July 12	08 16.29	+23 27.8	3.165	2.179	+2.34	-5.0	20.3	11.7
July 22	08 39.67	+22 37.6	3.207	2.206	+2.28	-6.0	20.4	8.1
Aug. 1	09 02.44	+21 37.5	3.244	2.235	+2.21	-6.8	20.5	5.4
Aug. 11	09 24.56	+20 29.1	3.274	2.267	+2.14	-7.5	20.7	5.2
Aug. 21	09 45.99	+19 14.2	3.297	2.299	+2.07	-8.0	20.8	8.0
Aug. 31	10 06.72	+17 54.6	3.312	2.334	+2.00	-8.3	21.0	12.0
Sept.10	10 26.73	+16 32.0	3.319	2.370	+1.93	-8.4	21.1	16.4
Sept.20	10 46.04	+15 08.0	3.317	2.408	+1.86	-8.4	21.2	21.1
Sept.30	11 04.63	+13 44.3	3.306	2.447	+1.79	-8.2	21.4	26.1
Oct. 10	11 22.50	+12 22.5	3.285	2.486	+1.71	-7.8	21.5	31.3
Oct. 20	11 39.63	+11 04.2	3.255	2.527	+1.64	-7.3	21.6	36.7
Oct. 30	11 55.99	+09 50.8	3.214	2.569	+1.56	-6.7	21.7	42.4
Nov. 9	12 11.55	+08 43.7	3.163	2.611	+1.47	-5.9	21.8	48.3
Nov. 19	12 26.22	+07 44.4	3.103	2.654	+1.37	-5.0	21.9	54.6
Nov. 29	12 39.92	+06 54.2	3.033	2.698	+1.26	-4.0	22.0	61.1
Dec. 9	12 52.54	+06 14.5	2.955	2.742	+1.14	-2.8	.	67.9
Dec. 19	13 03.93	+05 46.5	2.871	2.786	+1.00	-1.5	.	75.2
Dec. 29	13 13.92	+05 31.3	2.782	2.831	+0.84	-0.2	.	82.8
Jan. 8	13 22.32	+05 29.7	2.689	2.876	+0.66	+1.3	.	90.8
Jan. 18	13 28.91	+05 42.4	2.597	2.921	+0.46	+2.7	.	99.2
Jan. 28	13 33.48	+06 09.3	2.508	2.966	+0.24	+4.0	.	108.1
Feb. 7	13 35.86	+06 49.7	2.426	3.011	+0.01	+5.2	.	117.5
Feb. 17	13 35.92	+07 41.8	2.356	3.056	-0.22	+6.0	.	127.2
Feb. 27	13 33.67	+08 42.2	2.302	3.101	-0.44	+6.4	.	137.1
Mar. 9	13 29.30	+09 46.5	2.268	3.146	-0.61	+6.3	.	146.9
Mar. 19	13 23.17	+10 49.1	2.257	3.191	-0.73	+5.5	.	155.6
Mar. 29	13 15.90	+11 43.7	2.274	3.235	-0.77	+4.2	.	161.2

Comet C/2006 S3 (LONEOS)

Epoch = 2012 July 12.0 TT
T = 2012 Apr. 16.31178 TT
Peri. = 140.12678
Node = 38.36971 2000.0
Incl. = 166.03262
q = 5.1310230 AU
e = 1.0035808

m1 = 5.8 + 5 log(Delta) + 7.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	18 07.45	-14 08.8	6.138	5.191	+0.25	-0.4	15.1	14.4
Jan. 14	18 09.91	-14 12.8	6.075	5.180	+0.21	-0.2	15.1	22.5
Jan. 24	18 12.02	-14 14.3	5.984	5.170	+0.16	+0.1	15.0	31.5
Feb. 3	18 13.58	-14 13.6	5.866	5.161	+0.08	+0.3	15.0	40.9
Feb. 13	18 14.41	-14 10.9	5.724	5.154	-0.01	+0.4	14.9	50.6
Feb. 23	18 14.30	-14 06.4	5.561	5.147	-0.13	+0.6	14.9	60.5
Mar. 4	18 13.04	-14 00.6	5.383	5.142	-0.26	+0.7	14.8	70.7
Mar. 14	18 10.42	-13 53.6	5.195	5.137	-0.42	+0.8	14.7	81.2
Mar. 24	18 06.22	-13 45.7	5.001	5.134	-0.60	+0.9	14.6	92.0
Apr. 3	18 00.25	-13 37.2	4.810	5.132	-0.79	+0.9	14.5	103.2
Apr. 13	17 52.35	-13 28.1	4.629	5.131	-0.99	+1.0	14.5	114.8
Apr. 23	17 42.46	-13 18.4	4.466	5.131	-1.18	+1.0	14.4	126.7
May 3	17 30.63	-13 08.2	4.329	5.133	-1.35	+1.1	14.3	139.0
May 13	17 17.12	-12 57.3	4.225	5.135	-1.48	+1.1	14.3	151.4
May 23	17 02.32	-12 46.0	4.161	5.139	-1.55	+1.1	14.2	163.2
June 2	16 46.83	-12 34.5	4.141	5.143	-1.55	+1.1	14.2	170.3
June 12	16 31.35	-12 23.7	4.166	5.149	-1.48	+0.9	14.2	163.9
June 22	16 16.55	-12 14.4	4.235	5.156	-1.35	+0.7	14.3	152.3
July 2	16 03.00	-12 07.7	4.344	5.164	-1.19	+0.3	14.3	140.0
July 12	15 51.11	-12 04.3	4.486	5.173	-1.00	-0.1	14.4	127.9
July 22	15 41.07	-12 04.9	4.654	5.183	-0.81	-0.5	14.5	116.2
Aug. 1	15 32.96	-12 09.6	4.842	5.195	-0.63	-0.9	14.6	104.8
Aug. 11	15 26.70	-12 18.3	5.040	5.207	-0.46	-1.2	14.7	93.9
Aug. 21	15 22.13	-12 30.8	5.241	5.220	-0.30	-1.6	14.8	83.3
Aug. 31	15 19.09	-12 46.5	5.440	5.235	-0.17	-1.8	14.9	73.0
Sept. 10	15 17.37	-13 04.9	5.630	5.250	-0.06	-2.1	15.0	63.0
Sept. 20	15 16.78	-13 25.4	5.806	5.267	+0.03	-2.2	15.0	53.3
Sept. 30	15 17.12	-13 47.5	5.964	5.285	+0.11	-2.3	15.1	43.7
Oct. 10	15 18.21	-14 10.6	6.099	5.303	+0.17	-2.4	15.2	34.2
Oct. 20	15 19.89	-14 34.2	6.210	5.323	+0.21	-2.4	15.2	24.8
Oct. 30	15 21.98	-14 57.9	6.293	5.343	+0.24	-2.3	15.3	15.6
Nov. 9	15 24.33	-15 21.1	6.347	5.365	+0.25	-2.2	15.3	6.6
Nov. 19	15 26.79	-15 43.5	6.372	5.387	+0.24	-2.1	15.3	4.6
Nov. 29	15 29.20	-16 04.7	6.366	5.411	+0.22	-2.0	15.3	13.3
Dec. 9	15 31.39	-16 24.3	6.330	5.435	+0.18	-1.8	15.3	22.7
Dec. 19	15 33.21	-16 41.9	6.266	5.460	+0.13	-1.5	15.3	32.3
Dec. 29	15 34.48	-16 57.1	6.175	5.486	+0.05	-1.3	15.3	42.1
Jan. 8	15 35.02	-17 09.7	6.062	5.513	-0.04	-0.9	15.3	52.1
Jan. 18	15 34.65	-17 19.2	5.928	5.541	-0.15	-0.6	15.2	62.4
Jan. 28	15 33.17	-17 25.0	5.780	5.569	-0.27	-0.2	15.2	72.8
Feb. 7	15 30.43	-17 26.8	5.622	5.599	-0.42	+0.3	15.2	83.6
Feb. 17	15 26.24	-17 23.7	5.461	5.629	-0.58	+0.8	15.1	94.7
Feb. 27	15 20.49	-17 15.3	5.304	5.660	-0.74	+1.5	15.1	106.1
Mar. 9	15 13.12	-17 00.7	5.158	5.691	-0.90	+2.1	15.0	117.9
Mar. 19	15 04.17	-16 39.5	5.032	5.724	-1.04	+2.8	15.0	130.0
Mar. 29	14 53.79	-16 11.3	4.933	5.757	-1.15	+3.5	15.0	142.5

Comet 171P/Spahr

Epoch = 2012 July 12.0 TT
T = 2012 Apr. 30.51491 TT
Peri. = 347.07965 e = 0.5031212
Node = 101.71976 2000.0 a = 3.5514524 AU
Incl. = 21.94977 n = 0.14726349
q = 1.7646414 AU P = 6.69 years

m1 = 10.8 + 5 log(Delta) + 25.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 4	00 55.19	-17 38.1	1.924	2.053	+1.18	+19.2	20.0	83.1
Jan. 14	01 06.94	-14 25.8	1.982	2.011	+1.36	+19.9	19.9	77.4
Jan. 24	01 20.55	-11 07.2	2.039	1.971	+1.53	+20.3	19.7	72.0
Feb. 3	01 35.82	-07 44.6	2.095	1.934	+1.68	+20.4	19.6	66.9
Feb. 13	01 52.58	-04 20.2	2.149	1.900	+1.81	+20.4	19.4	62.1
Feb. 23	02 10.72	-00 56.0	2.202	1.868	+1.94	+20.2	19.3	57.6
Mar. 4	02 30.15	+02 25.7	2.254	1.841	+2.07	+19.7	19.2	53.3
Mar. 14	02 50.81	+05 42.5	2.304	1.817	+2.19	+19.0	19.1	49.2
Mar. 24	03 12.66	+08 52.1	2.354	1.798	+2.30	+18.0	19.0	45.3
Apr. 3	03 35.67	+11 52.0	2.403	1.783	+2.41	+16.8	19.0	41.5
Apr. 13	03 59.78	+14 39.6	2.452	1.772	+2.52	+15.3	19.0	37.9
Apr. 23	04 24.94	+17 12.6	2.501	1.766	+2.61	+13.6	19.0	34.5
May 3	04 51.06	+19 28.7	2.550	1.765	+2.70	+11.7	19.0	31.1
May 13	05 18.02	+21 26.0	2.598	1.768	+2.77	+9.7	19.1	27.8
May 23	05 45.67	+23 02.9	2.646	1.777	+2.82	+7.6	19.2	24.6
June 2	06 13.83	+24 18.5	2.694	1.790	+2.84	+5.4	19.3	21.5
June 12	06 42.26	+25 12.4	2.742	1.807	+2.85	+3.2	19.4	18.4
June 22	07 10.74	+25 44.7	2.788	1.829	+2.83	+1.2	19.6	15.4
July 2	07 39.05	+25 56.3	2.833	1.854	+2.79	-0.8	19.8	12.6
July 12	08 06.95	+25 48.7	2.876	1.883	+2.73	-2.5	20.0	10.1
July 22	08 34.28	+25 23.7	2.916	1.916	+2.66	-4.0	20.2	8.2
Aug. 1	09 00.89	+24 43.7	2.953	1.952	+2.58	-5.3	20.4	7.6
Aug. 11	09 26.68	+23 51.0	2.987	1.990	+2.49	-6.3	20.6	8.6
Aug. 21	09 51.59	+22 48.2	3.016	2.032	+2.40	-7.0	20.9	10.9
Aug. 31	10 15.58	+21 38.1	3.039	2.075	+2.31	-7.5	21.1	14.1
Sept.10	10 38.65	+20 22.9	3.057	2.120	+2.22	-7.8	21.4	17.7
Sept.20	11 00.82	+19 05.3	3.068	2.167	+2.13	-7.8	21.6	21.7
Sept.30	11 22.09	+17 47.4	3.072	2.215	+2.04	-7.6	21.9	25.9
Oct. 10	11 42.48	+16 31.4	3.068	2.264	+1.95	-7.2	22.1	30.4
Oct. 20	12 02.01	+15 19.4	3.056	2.315	+1.87	-6.6	21.4	35.2
Oct. 30	12 20.66	+14 13.1	3.034	2.366	+1.78	-5.9	21.6	40.3
Nov. 9	12 38.42	+13 14.5	3.004	2.418	+1.68	-4.9	21.9	45.6
Nov. 19	12 55.25	+12 25.1	2.965	2.470	+1.58	-3.9	22.3	51.3
Nov. 29	13 11.08	+11 46.4	2.918	2.523	+1.47	-2.7	22.6	57.2
Dec. 9	13 25.82	+11 19.9	2.862	2.576	+1.35	-1.3	22.8	63.4
Dec. 19	13 39.35	+11 06.9	2.799	2.629	+1.22	+0.1	23.0	69.9
Dec. 29	13 51.51	+11 08.2	2.730	2.682	+1.06	+1.7	.	76.8
Jan. 8	14 02.13	+11 24.8	2.657	2.735	+0.89	+3.2	.	84.0
Jan. 18	14 10.99	+11 56.8	2.581	2.788	+0.69	+4.7	.	91.6
Jan. 28	14 17.87	+12 44.0	2.507	2.841	+0.47	+6.1	.	99.5
Feb. 7	14 22.56	+13 45.2	2.436	2.894	+0.23	+7.3	.	107.8
Feb. 17	14 24.83	+14 58.1	2.373	2.946	-0.02	+8.1	.	116.2
Feb. 27	14 24.58	+16 18.7	2.321	2.998	-0.28	+8.3	.	124.8
Mar. 9	14 21.82	+17 41.7	2.284	3.049	-0.51	+7.9	.	133.0
Mar. 19	14 16.71	+19 00.6	2.267	3.101	-0.70	+6.7	.	140.5
Mar. 29	14 09.70	+20 08.1	2.272	3.151	-0.83	+5.0	.	146.2

Comet P/2011 U2 (Bressi)

Epoch = 2012 July 12.0 TT
T = 2012 May 5.20692 TT
Peri. = 157.62243 e = 0.1066902
Node = 266.58191 2000.0 a = 5.4153615 AU
Incl. = 9.68207 n = 0.07821011
q = 4.8375955 AU P = 12.60 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	02 32.15	+21 25.9	4.288	4.848	+0.08	-1.8	18.8	119.5
Jan. 14	02 32.99	+21 07.8	4.429	4.846	+0.22	-1.1	18.9	109.4
Jan. 24	02 35.24	+20 56.7	4.580	4.845	+0.36	-0.4	19.0	99.8
Feb. 3	02 38.82	+20 52.6	4.735	4.843	+0.48	+0.2	19.1	90.4
Feb. 13	02 43.60	+20 54.9	4.890	4.842	+0.59	+0.8	19.1	81.4
Feb. 23	02 49.47	+21 02.7	5.042	4.841	+0.68	+1.3	19.2	72.7
Mar. 4	02 56.31	+21 15.3	5.188	4.840	+0.77	+1.6	19.2	64.3
Mar. 14	03 03.97	+21 31.6	5.324	4.839	+0.84	+1.9	19.3	56.1
Mar. 24	03 12.36	+21 50.8	5.447	4.839	+0.90	+2.1	19.4	48.1
Apr. 3	03 21.36	+22 11.8	5.557	4.838	+0.95	+2.2	19.4	40.4
Apr. 13	03 30.86	+22 33.9	5.650	4.838	+0.99	+2.2	19.4	32.8
Apr. 23	03 40.78	+22 56.3	5.727	4.838	+1.02	+2.2	19.5	25.4
May 3	03 51.02	+23 18.4	5.786	4.838	+1.05	+2.1	19.5	18.1
May 13	04 01.50	+23 39.5	5.826	4.838	+1.06	+2.0	19.5	11.0
May 23	04 12.14	+23 59.2	5.847	4.838	+1.07	+1.8	19.5	4.4
June 2	04 22.85	+24 17.0	5.848	4.838	+1.07	+1.6	19.5	4.6
June 12	04 33.54	+24 32.7	5.831	4.839	+1.06	+1.3	19.5	11.2
June 22	04 44.14	+24 45.9	5.795	4.839	+1.04	+1.1	19.5	18.2
July 2	04 54.55	+24 56.6	5.740	4.840	+1.01	+0.8	19.5	25.3
July 12	05 04.68	+25 04.7	5.668	4.841	+0.98	+0.5	19.4	32.5
July 22	05 14.43	+25 10.2	5.579	4.842	+0.93	+0.3	19.4	39.8
Aug. 1	05 23.70	+25 13.2	5.474	4.843	+0.87	+0.1	19.4	47.2
Aug. 11	05 32.38	+25 13.8	5.356	4.844	+0.80	-0.2	19.3	54.8
Aug. 21	05 40.33	+25 12.2	5.226	4.845	+0.71	-0.3	19.3	62.6
Aug. 31	05 47.44	+25 08.8	5.086	4.847	+0.61	-0.5	19.2	70.7
Sept. 10	05 53.56	+25 03.9	4.939	4.849	+0.50	-0.6	19.2	79.0
Sept. 20	05 58.57	+24 57.7	4.788	4.850	+0.37	-0.7	19.1	87.6
Sept. 30	06 02.30	+24 50.6	4.635	4.852	+0.24	-0.8	19.0	96.5
Oct. 10	06 04.66	+24 42.8	4.486	4.854	+0.09	-0.8	19.0	105.9
Oct. 20	06 05.53	+24 34.4	4.343	4.856	-0.07	-0.9	18.9	115.6
Oct. 30	06 04.86	+24 25.4	4.212	4.859	-0.22	-1.0	18.8	125.7
Nov. 9	06 02.67	+24 15.8	4.098	4.861	-0.36	-1.1	18.8	136.2
Nov. 19	05 59.08	+24 05.3	4.004	4.864	-0.48	-1.2	18.7	147.1
Nov. 29	05 54.32	+23 53.6	3.936	4.866	-0.56	-1.3	18.7	158.3
Dec. 9	05 48.74	+23 40.6	3.897	4.869	-0.60	-1.4	18.7	169.7
Dec. 19	05 42.75	+23 26.5	3.888	4.872	-0.59	-1.5	18.7	178.7
Dec. 29	05 36.85	+23 11.5	3.911	4.875	-0.53	-1.5	18.7	167.2
Jan. 8	05 31.51	+22 56.4	3.965	4.878	-0.44	-1.4	18.7	155.8
Jan. 18	05 27.12	+22 41.9	4.047	4.882	-0.31	-1.3	18.8	144.5
Jan. 28	05 24.00	+22 28.8	4.153	4.885	-0.17	-1.1	18.8	133.6
Feb. 7	05 22.31	+22 17.5	4.280	4.889	-0.02	-0.9	18.9	123.1
Feb. 17	05 22.14	+22 08.3	4.422	4.892	+0.13	-0.7	19.0	112.9
Feb. 27	05 23.47	+22 01.2	4.574	4.896	+0.27	-0.5	19.0	103.2
Mar. 9	05 26.21	+21 56.0	4.733	4.900	+0.41	-0.4	19.1	93.8
Mar. 19	05 30.27	+21 52.0	4.894	4.904	+0.52	-0.3	19.2	84.7
Mar. 29	05 35.51	+21 48.8	5.052	4.908	+0.63	-0.3	19.3	76.0

Comet 60P/Tsuchinshan

Epoch = 2012 July 12.0 TT
T = 2012 May 13.52657 TT
Peri. = 216.38259 e = 0.5384291
Node = 267.68436 2000.0 a = 3.5057661 AU
Incl. = 3.61066 n = 0.15015150
q = 1.6181596 AU P = 6.56 years

m1 = 12.0 + 5 log(Delta) + 20.0 log(r(t-30))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 52.16	+14 05.1	1.506	2.039	+0.80	+1.6	19.8	108.2
Jan. 14	02 00.16	+14 21.2	1.565	1.987	+1.10	+3.2	19.6	99.9
Jan. 24	02 11.20	+14 53.5	1.626	1.936	+1.39	+4.6	19.5	92.4
Feb. 3	02 25.06	+15 39.1	1.686	1.887	+1.64	+5.5	19.3	85.7
Feb. 13	02 41.46	+16 34.3	1.743	1.841	+1.87	+6.1	19.2	79.6
Feb. 23	03 00.20	+17 35.3	1.798	1.799	+2.09	+6.3	19.0	74.1
Mar. 4	03 21.11	+18 38.4	1.850	1.759	+2.29	+6.1	18.9	69.1
Mar. 14	03 44.01	+19 39.4	1.898	1.724	+2.47	+5.5	18.7	64.6
Mar. 24	04 08.75	+20 34.5	1.944	1.693	+2.64	+4.5	18.5	60.5
Apr. 3	04 35.15	+21 19.9	1.989	1.667	+2.78	+3.2	18.4	56.8
Apr. 13	05 02.97	+21 51.7	2.032	1.646	+2.90	+1.5	18.3	53.5
Apr. 23	05 31.95	+22 07.0	2.075	1.631	+2.98	-0.4	18.2	50.4
May 3	06 01.79	+22 03.1	2.120	1.622	+3.04	-2.5	18.1	47.6
May 13	06 32.15	+21 38.6	2.166	1.618	+3.05	-4.6	18.0	45.0
May 23	07 02.68	+20 52.8	2.215	1.621	+3.04	-6.7	18.0	42.6
June 2	07 33.06	+19 46.1	2.267	1.630	+2.99	-8.6	18.0	40.2
June 12	08 03.00	+18 20.0	2.324	1.644	+2.93	-10.3	18.0	37.8
June 22	08 32.27	+16 36.5	2.384	1.664	+2.84	-11.8	18.1	35.5
July 2	09 00.71	+14 38.5	2.448	1.690	+2.75	-13.0	18.2	33.1
July 12	09 28.23	+12 28.8	2.516	1.720	+2.66	-13.8	18.3	30.6
July 22	09 54.80	+10 10.4	2.586	1.755	+2.56	-14.4	18.5	28.0
Aug. 1	10 20.41	+07 46.1	2.659	1.794	+2.47	-14.7	18.7	25.2
Aug. 11	10 45.12	+05 18.8	2.734	1.837	+2.39	-14.8	18.9	22.3
Aug. 21	11 08.99	+02 50.5	2.808	1.882	+2.31	-14.7	19.1	19.1
Aug. 31	11 32.08	+00 23.4	2.882	1.930	+2.24	-14.4	19.4	15.8
Sept.10	11 54.47	-02 00.8	2.954	1.981	+2.18	-14.0	19.6	12.3
Sept.20	12 16.22	-04 20.8	3.021	2.034	+2.12	-13.5	19.9	8.5
Sept.30	12 37.40	-06 35.3	3.084	2.088	+2.06	-12.8	20.2	4.7
Oct. 10	12 58.04	-08 43.4	3.140	2.143	+2.02	-12.1	20.4	2.3
Oct. 20	13 18.19	-10 44.4	3.189	2.200	+1.97	-11.3	20.7	5.3
Oct. 30	13 37.86	-12 37.5	3.229	2.257	+1.92	-10.5	20.9	9.8
Nov. 9	13 57.04	-14 22.2	3.259	2.315	+1.87	-9.6	21.2	14.7
Nov. 19	14 15.73	-15 58.4	3.278	2.373	+1.81	-8.7	21.4	20.0
Nov. 29	14 33.85	-17 25.6	3.285	2.432	+1.75	-7.8	21.7	25.5
Dec. 9	14 51.37	-18 43.9	3.280	2.490	+1.68	-6.9	21.9	31.2
Dec. 19	15 08.20	-19 53.2	3.262	2.549	+1.60	-6.1	.	37.2
Dec. 29	15 24.22	-20 53.8	3.231	2.608	+1.51	-5.2	.	43.5
Jan. 8	15 39.31	-21 45.9	3.188	2.666	+1.40	-4.4	.	50.1
Jan. 18	15 53.33	-22 29.9	3.133	2.724	+1.28	-3.6	.	56.9
Jan. 28	16 06.08	-23 06.4	3.067	2.782	+1.13	-3.0	.	64.1
Feb. 7	16 17.40	-23 36.0	2.992	2.839	+0.97	-2.3	.	71.6
Feb. 17	16 27.05	-23 59.2	2.909	2.896	+0.78	-1.7	.	79.5
Feb. 27	16 34.83	-24 16.6	2.821	2.953	+0.57	-1.2	.	87.7
Mar. 9	16 40.52	-24 28.8	2.731	3.008	+0.34	-0.7	.	96.4
Mar. 19	16 43.89	-24 36.1	2.642	3.064	+0.09	-0.2	.	105.6
Mar. 29	16 44.79	-24 38.4	2.558	3.118	-0.16	+0.3	.	115.3

Comet C/2010 R1 (LINEAR)

Epoch = 2012 July 12.0 TT
T = 2012 May 18.87518 TT
Peri. = 114.49661
Node = 343.65185 2000.0
Incl. = 156.93298
q = 5.6213665 AU
e = 1.0037355

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	16 39.05	-01 57.1	6.436	5.707	+0.15	+1.5	17.7	39.2
Jan. 14	16 40.50	-01 42.1	6.309	5.695	+0.08	+2.2	17.7	47.8
Jan. 24	16 41.28	-01 20.5	6.161	5.684	-0.01	+2.8	17.6	56.9
Feb. 3	16 41.21	-00 52.2	5.996	5.674	-0.11	+3.5	17.5	66.4
Feb. 13	16 40.09	-00 17.2	5.819	5.664	-0.23	+4.2	17.5	76.2
Feb. 23	16 37.74	+00 24.4	5.634	5.656	-0.37	+4.8	17.4	86.2
Mar. 4	16 34.00	+01 12.1	5.449	5.648	-0.53	+5.3	17.3	96.5
Mar. 14	16 28.71	+02 05.3	5.270	5.642	-0.69	+5.7	17.2	107.1
Mar. 24	16 21.78	+03 02.6	5.103	5.636	-0.86	+6.0	17.2	117.7
Apr. 3	16 13.18	+04 02.4	4.957	5.631	-1.02	+6.0	17.1	128.3
Apr. 13	16 03.01	+05 02.1	4.837	5.627	-1.15	+5.7	17.1	138.5
Apr. 23	15 51.49	+05 59.0	4.751	5.625	-1.25	+5.1	17.0	147.4
May 3	15 38.96	+06 50.1	4.703	5.623	-1.31	+4.2	17.0	153.4
May 13	15 25.91	+07 32.4	4.696	5.622	-1.31	+3.2	17.0	154.0
May 23	15 12.85	+08 04.0	4.729	5.621	-1.25	+2.0	17.0	149.1
June 2	15 00.32	+08 23.6	4.800	5.622	-1.16	+0.8	17.0	140.8
June 12	14 48.76	+08 31.2	4.906	5.624	-1.03	-0.3	17.1	130.9
June 22	14 38.49	+08 27.7	5.041	5.627	-0.88	-1.3	17.1	120.6
July 2	14 29.72	+08 14.6	5.198	5.630	-0.72	-2.1	17.2	110.2
July 12	14 22.50	+07 53.7	5.370	5.635	-0.57	-2.7	17.3	99.9
July 22	14 16.83	+07 26.6	5.551	5.641	-0.42	-3.2	17.4	89.9
Aug. 1	14 12.59	+06 55.1	5.733	5.647	-0.29	-3.4	17.4	80.0
Aug. 11	14 09.67	+06 20.6	5.912	5.654	-0.18	-3.6	17.5	70.5
Aug. 21	14 07.92	+05 44.4	6.082	5.663	-0.07	-3.7	17.6	61.1
Aug. 31	14 07.17	+05 07.5	6.237	5.672	+0.01	-3.7	17.6	52.0
Sept.10	14 07.26	+04 30.8	6.375	5.682	+0.08	-3.6	17.7	43.1
Sept.20	14 08.06	+03 55.1	6.491	5.693	+0.13	-3.4	17.7	34.6
Sept.30	14 09.40	+03 21.1	6.583	5.705	+0.17	-3.2	17.8	26.6
Oct. 10	14 11.15	+02 49.4	6.649	5.718	+0.20	-2.9	17.8	19.6
Oct. 20	14 13.17	+02 20.7	6.686	5.732	+0.21	-2.5	17.8	15.2
Oct. 30	14 15.32	+01 55.5	6.696	5.746	+0.21	-2.1	17.8	15.7
Nov. 9	14 17.45	+01 34.4	6.676	5.761	+0.20	-1.6	17.8	20.9
Nov. 19	14 19.44	+01 17.9	6.628	5.778	+0.17	-1.1	17.8	28.4
Nov. 29	14 21.13	+01 06.7	6.553	5.795	+0.12	-0.5	17.8	36.9
Dec. 9	14 22.37	+01 01.4	6.454	5.813	+0.06	+0.1	17.8	46.0
Dec. 19	14 23.00	+01 02.4	6.332	5.832	-0.02	+0.8	17.8	55.5
Dec. 29	14 22.84	+01 10.4	6.192	5.851	-0.11	+1.5	17.7	65.4
Jan. 8	14 21.74	+01 25.7	6.039	5.871	-0.22	+2.3	17.7	75.5
Jan. 18	14 19.53	+01 48.7	5.878	5.893	-0.35	+3.1	17.6	86.0
Jan. 28	14 16.06	+02 19.4	5.716	5.915	-0.49	+3.8	17.6	96.8
Feb. 7	14 11.21	+02 57.6	5.558	5.937	-0.63	+4.5	17.5	108.0
Feb. 17	14 04.89	+03 42.6	5.414	5.961	-0.78	+5.1	17.5	119.4
Feb. 27	13 57.13	+04 33.2	5.289	5.985	-0.91	+5.4	17.4	130.9
Mar. 9	13 48.03	+05 27.4	5.192	6.010	-1.02	+5.5	17.4	142.5
Mar. 19	13 37.79	+06 22.9	5.128	6.035	-1.10	+5.4	17.4	153.5
Mar. 29	13 26.74	+07 16.7	5.103	6.062	-1.14	+4.9	17.4	162.4

Comet P/2006 Y2 (Gibbs)

Epoch = 2012 July 12.0 TT
T = 2012 May 20.81194 TT
Peri. = 34.48885 e = 0.5872526
Node = 105.87700 2000.0 a = 3.0608375 AU
Incl. = 11.53503 n = 0.18405333
q = 1.2633527 AU P = 5.36 years

m1 = 17.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	01 44.71	-01 50.7	1.514	1.950	-1.02	-6.3	22.4	14.3/ 34	100.5
Jan. 14	01 50.10	+00 07.8	1.558	1.878	-0.98	-6.7	22.3	18.5/ 44	92.5
Jan. 24	01 58.67	+02 20.5	1.600	1.808	-0.96	-7.2	22.1	22.5/ 50	85.3
Feb. 3	02 10.23	+04 44.6	1.638	1.738	-0.97	-7.8	21.9	26.3/ 54	78.7
Feb. 13	02 24.58	+07 17.3	1.669	1.670	-1.00	-8.5	21.7	29.9/ 58	72.9
Feb. 23	02 41.63	+09 56.3	1.695	1.605	-1.06	-9.1	21.4	33.3/ 60	67.6
Mar. 4	03 01.36	+12 38.9	1.714	1.542	-1.13	-9.7	21.2	36.4/ 63	63.0
Mar. 14	03 23.75	+15 21.8	1.727	1.482	-1.24	-10.2	21.0	39.5/ 65	58.9
Mar. 24	03 48.90	+18 01.2	1.734	1.428	-1.37	-10.5	20.7	42.4/ 68	55.4
Apr. 3	04 16.88	+20 32.2	1.737	1.379	-1.52	-10.6	20.5	45.1/ 71	52.5
Apr. 13	04 47.75	+22 48.9	1.738	1.338	-1.69	-10.3	20.3	47.7/ 74	50.1
Apr. 23	05 21.46	+24 44.4	1.738	1.304	-1.87	-9.5	20.1	50.0/ 78	48.2
May 3	05 57.82	+26 11.5	1.739	1.280	-2.05	-8.1	20.0	51.9/ 82	46.8
May 13	06 36.38	+27 02.9	1.744	1.267	-2.22	-6.3	19.9	53.5/ 87	45.8
May 23	07 16.46	+27 13.1	1.755	1.264	-2.34	-3.9	19.9	54.6/ 91	45.1
June 2	07 57.19	+26 39.1	1.774	1.271	-2.40	-1.3	20.0	55.0/ 96	44.7
June 12	08 37.62	+25 21.6	1.802	1.290	-2.40	+1.4	20.1	55.0/100	44.4
June 22	09 16.94	+23 24.6	1.841	1.318	-2.34	+3.8	20.3	54.3/104	44.1
July 2	09 54.54	+20 55.4	1.892	1.355	-2.23	+5.9	20.6	53.1/107	43.8
July 12	10 30.09	+18 02.5	1.954	1.400	-2.09	+7.4	20.8	51.6/110	43.3
July 22	11 03.51	+14 54.3	2.029	1.451	-1.95	+8.4	21.2	49.8/112	42.4
Aug. 1	11 34.87	+11 39.1	2.113	1.508	-1.80	+8.9	21.5	47.7/114	41.3
Aug. 11	12 04.35	+08 23.2	2.207	1.569	-1.65	+9.0	21.9	45.7/114	39.8
Aug. 21	12 32.19	+05 11.6	2.309	1.633	-1.52	+8.8	22.2	43.6/115	37.9
Aug. 31	12 58.61	+02 08.2	2.416	1.700	-1.39	+8.4	22.6	41.6/114	35.6
Sept.10	13 23.82	-00 44.6	2.527	1.769	-1.28	+7.8	22.9	39.7/114	32.9
Sept.20	13 48.03	-03 25.3	2.640	1.839	-1.18	+7.2	.	37.9/113	29.8
Sept.30	14 11.37	-05 52.8	2.753	1.909	-1.09	+6.5	.	36.2/112	26.5
Oct. 10	14 33.98	-08 06.7	2.863	1.981	-1.01	+5.9	.	34.7/111	22.8
Oct. 20	14 55.94	-10 07.0	2.969	2.052	-0.94	+5.2	.	33.2/109	18.8
Oct. 30	15 17.31	-11 53.7	3.069	2.123	-0.87	+4.6	.	31.9/108	14.6
Nov. 9	15 38.13	-13 27.1	3.161	2.194	-0.81	+4.1	.	30.6/106	10.4
Nov. 19	15 58.42	-14 47.5	3.243	2.264	-0.76	+3.6	.	29.3/104	6.7
Nov. 29	16 18.15	-15 55.6	3.313	2.334	-0.71	+3.2	.	28.1/102	5.6
Dec. 9	16 37.30	-16 51.9	3.372	2.403	-0.67	+2.8	.	26.9/100	8.7
Dec. 19	16 55.83	-17 37.1	3.416	2.471	-0.63	+2.5	.	25.7/ 99	13.6
Dec. 29	17 13.66	-18 12.2	3.446	2.538	-0.59	+2.2	.	24.4/ 97	19.1
Jan. 8	17 30.75	-18 37.9	3.461	2.604	-0.56	+1.9	.	23.1/ 95	25.0
Jan. 18	17 47.00	-18 55.2	3.461	2.669	-0.53	+1.7	.	21.7/ 93	31.2
Jan. 28	18 02.32	-19 05.4	3.445	2.733	-0.50	+1.6	.	20.3/ 92	37.7
Feb. 7	18 16.62	-19 09.6	3.414	2.796	-0.48	+1.4	.	18.7/ 90	44.4
Feb. 17	18 29.79	-19 09.0	3.369	2.858	-0.47	+1.3	.	16.9/ 89	51.4
Feb. 27	18 41.70	-19 05.0	3.310	2.919	-0.45	+1.2	.	14.9/ 88	58.6
Mar. 9	18 52.23	-18 59.0	3.240	2.979	-0.44	+1.2	.	12.8/ 87	66.1
Mar. 19	19 01.23	-18 52.5	3.159	3.038	-0.44	+1.1	.	10.4/ 87	73.9
Mar. 29	19 08.54	-18 46.8	3.071	3.095	-0.44	+1.1	.	7.8/ 88	82.1

Comet P/2011 N1 (ASH)

Epoch = 2012 July 12.0 TT
T = 2012 May 31.01485 TT
Peri. = 331.00204 e = 0.5466754
Node = 77.67378 2000.0 a = 6.3044675 AU
Incl. = 35.68039 n = 0.06226320
q = 2.8579702 AU P = 15.83 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 41.21	-29 29.1	3.148	3.063	+0.83	+17.4	17.0	76.0
Jan. 14	00 49.47	-26 34.7	3.232	3.037	+0.95	+17.5	17.0	69.9
Jan. 24	00 58.94	-23 39.6	3.314	3.013	+1.05	+17.4	17.0	63.9
Feb. 3	01 09.45	-20 45.4	3.393	2.991	+1.14	+17.2	17.0	58.0
Feb. 13	01 20.82	-17 53.3	3.469	2.970	+1.21	+16.9	17.0	52.3
Feb. 23	01 32.92	-15 04.3	3.539	2.951	+1.27	+16.5	17.0	46.7
Mar. 4	01 45.65	-12 19.1	3.604	2.933	+1.33	+16.1	17.0	41.3
Mar. 14	01 58.91	-09 38.6	3.662	2.917	+1.37	+15.5	17.0	36.0
Mar. 24	02 12.61	-07 03.2	3.712	2.903	+1.41	+15.0	17.0	31.0
Apr. 3	02 26.70	-04 33.6	3.754	2.891	+1.44	+14.3	17.0	26.2
Apr. 13	02 41.12	-02 10.2	3.788	2.881	+1.47	+13.7	17.0	21.8
Apr. 23	02 55.81	+00 06.7	3.812	2.872	+1.49	+13.0	17.0	18.0
May 3	03 10.73	+02 16.8	3.826	2.866	+1.51	+12.3	17.0	15.2
May 13	03 25.82	+04 19.9	3.830	2.861	+1.52	+11.6	17.0	14.1
May 23	03 41.05	+06 16.0	3.824	2.859	+1.53	+10.9	17.0	15.0
June 2	03 56.34	+08 04.8	3.808	2.858	+1.53	+10.2	16.9	17.7
June 12	04 11.64	+09 46.7	3.780	2.859	+1.53	+9.5	16.9	21.5
June 22	04 26.89	+11 21.8	3.742	2.863	+1.51	+8.9	16.9	26.0
July 2	04 42.02	+12 50.5	3.692	2.868	+1.49	+8.3	16.9	30.9
July 12	04 56.94	+14 13.3	3.633	2.875	+1.46	+7.8	16.9	36.2
July 22	05 11.57	+15 30.8	3.562	2.885	+1.42	+7.3	16.9	41.7
Aug. 1	05 25.79	+16 44.0	3.482	2.896	+1.37	+7.0	16.8	47.6
Aug. 11	05 39.50	+17 54.0	3.392	2.909	+1.31	+6.8	16.8	53.7
Aug. 21	05 52.55	+19 01.9	3.294	2.923	+1.22	+6.7	16.8	60.0
Aug. 31	06 04.79	+20 09.4	3.188	2.940	+1.13	+6.9	16.7	66.7
Sept.10	06 16.05	+21 18.1	3.077	2.958	+1.01	+7.2	16.7	73.8
Sept.20	06 26.12	+22 30.0	2.961	2.978	+0.86	+7.7	16.7	81.2
Sept.30	06 34.76	+23 47.1	2.843	3.000	+0.70	+8.4	16.6	89.1
Oct. 10	06 41.72	+25 11.5	2.726	3.023	+0.50	+9.3	16.6	97.5
Oct. 20	06 46.71	+26 44.8	2.613	3.047	+0.27	+10.3	16.5	106.4
Oct. 30	06 49.42	+28 28.1	2.509	3.073	+0.02	+11.3	16.5	115.8
Nov. 9	06 49.60	+30 21.1	2.417	3.101	-0.25	+12.1	16.5	125.7
Nov. 19	06 47.06	+32 21.9	2.342	3.129	-0.53	+12.4	16.5	136.0
Nov. 29	06 41.79	+34 26.0	2.290	3.159	-0.77	+12.1	16.5	146.5
Dec. 9	06 34.10	+36 27.5	2.264	3.191	-0.95	+11.2	16.5	156.3
Dec. 19	06 24.57	+38 19.0	2.268	3.223	-1.04	+9.5	16.6	163.2
Dec. 29	06 14.21	+39 54.5	2.303	3.256	-1.01	+7.6	16.7	162.9
Jan. 8	06 04.15	+41 10.3	2.369	3.290	-0.87	+5.6	16.8	155.7
Jan. 18	05 55.48	+42 06.3	2.463	3.326	-0.64	+3.9	17.0	146.2
Jan. 28	05 49.08	+42 44.9	2.582	3.362	-0.37	+2.5	17.2	136.1
Feb. 7	05 45.41	+43 10.0	2.721	3.399	-0.08	+1.6	17.3	126.3
Feb. 17	05 44.61	+43 25.6	2.875	3.437	+0.20	+0.9	17.5	116.8
Feb. 27	05 46.61	+43 34.8	3.041	3.475	+0.45	+0.5	17.7	107.8
Mar. 9	05 51.14	+43 39.8	3.215	3.514	+0.68	+0.2	17.9	99.3
Mar. 19	05 57.91	+43 42.0	3.392	3.554	+0.87	0.0	18.1	91.2
Mar. 29	06 06.60	+43 41.9	3.569	3.594	+1.03	-0.2	18.3	83.4

Comet C/2011 U3 (PANSTARRS)

Epoch = 2012 July 12.0 TT
T = 2012 June 3.96647 TT
Peri. = 287.97134
Node = 228.38022 2000.0
Incl. = 116.72097
q = 1.0690587 AU
e = 0.9986487

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	01 31.67	-01 06.5	2.166	2.498	-0.75	-13.9	19.5	97.8
Jan. 14	01 24.14	-03 25.9	2.253	2.381	-0.44	-11.4	19.3	85.2
Jan. 24	01 19.72	-05 19.8	2.337	2.264	-0.17	-9.4	19.2	73.5
Feb. 3	01 18.00	-06 54.0	2.409	2.147	+0.06	-8.0	19.0	62.8
Feb. 13	01 18.57	-08 14.3	2.464	2.029	+0.25	-7.2	18.8	53.0
Feb. 23	01 21.08	-09 26.2	2.495	1.912	+0.42	-6.9	18.6	44.1
Mar. 4	01 25.26	-10 34.8	2.498	1.796	+0.56	-7.0	18.3	36.2
Mar. 14	01 30.90	-11 45.1	2.470	1.682	+0.70	-7.7	18.0	29.8
Mar. 24	01 37.91	-13 01.8	2.410	1.570	+0.84	-8.9	17.7	25.5
Apr. 3	01 46.29	-14 30.5	2.315	1.463	+0.99	-10.7	17.3	24.3
Apr. 13	01 56.20	-16 17.3	2.185	1.362	+1.19	-13.3	16.8	26.4
Apr. 23	02 08.07	-18 30.0	2.021	1.271	+1.47	-16.9	16.4	31.1
May 3	02 22.76	-21 19.4	1.825	1.192	+1.92	-22.1	15.9	37.3
May 13	02 42.01	-25 00.5	1.603	1.129	+2.75	-29.5	15.4	44.4
May 23	03 09.50	-29 55.1	1.364	1.087	+4.39	-39.2	14.8	51.9
June 2	03 53.44	-36 26.7	1.126	1.070	+7.88	-45.7	14.4	59.7
June 12	05 12.28	-44 03.3	0.926	1.077	+13.50	-22.0	14.0	67.2
June 22	07 27.24	-47 43.1	0.818	1.110	+14.03	+42.2	13.8	73.6
July 2	09 47.58	-40 40.6	0.853	1.165	+8.54	+67.4	14.1	76.5
July 12	11 12.96	-29 26.5	1.017	1.238	+4.82	+53.2	14.8	75.0
July 22	12 01.16	-20 34.7	1.255	1.325	+3.08	+36.3	15.5	70.5
Aug. 1	12 31.96	-14 31.7	1.523	1.422	+2.23	+24.7	16.2	64.6
Aug. 11	12 54.27	-10 24.3	1.798	1.527	+1.78	+17.4	16.9	58.1
Aug. 21	13 12.06	-07 30.3	2.067	1.637	+1.52	+12.7	17.5	51.3
Aug. 31	13 27.26	-05 23.1	2.322	1.750	+1.36	+9.7	18.1	44.5
Sept.10	13 40.84	-03 46.0	2.558	1.866	+1.25	+7.8	18.5	37.7
Sept.20	13 53.38	-02 28.3	2.774	1.983	+1.18	+6.6	19.0	31.1
Sept.30	14 05.18	-01 22.5	2.966	2.100	+1.12	+5.9	19.4	24.8
Oct. 10	14 16.42	-00 23.3	3.134	2.217	+1.08	+5.7	19.7	19.5
Oct. 20	14 27.20	+00 33.5	3.275	2.335	+1.03	+5.8	20.1	16.1
Oct. 30	14 37.54	+01 31.2	3.390	2.452	+0.99	+6.1	20.3	16.1
Nov. 9	14 47.42	+02 32.7	3.480	2.568	+0.94	+6.8	20.6	19.6
Nov. 19	14 56.83	+03 40.3	3.543	2.683	+0.88	+7.6	20.8	25.3
Nov. 29	15 05.67	+04 56.5	3.583	2.798	+0.82	+8.7	21.0	32.2
Dec. 9	15 13.85	+06 23.2	3.600	2.912	+0.74	+9.9	21.2	39.7
Dec. 19	15 21.25	+08 02.5	3.597	3.024	+0.65	+11.4	21.4	47.7
Dec. 29	15 27.71	+09 56.1	3.577	3.136	+0.53	+12.9	21.5	56.1
Jan. 8	15 33.05	+12 05.2	3.544	3.247	+0.40	+14.6	21.7	64.7
Jan. 18	15 37.07	+14 30.8	3.502	3.357	+0.24	+16.2	21.8	73.4
Jan. 28	15 39.52	+17 12.8	3.457	3.466	+0.06	+17.7	21.9	82.3
Feb. 7	15 40.16	+20 10.0	3.414	3.574	-0.14	+19.0	22.0	91.2
Feb. 17	15 38.73	+23 19.6	3.379	3.681	-0.37	+19.7	.	100.0
Feb. 27	15 35.01	+26 36.7	3.359	3.787	-0.62	+19.8	.	108.3
Mar. 9	15 28.83	+29 54.6	3.358	3.893	-0.87	+19.0	.	115.7
Mar. 19	15 20.16	+33 05.0	3.382	3.997	-1.10	+17.3	.	121.8
Mar. 29	15 09.19	+35 58.5	3.433	4.101	-1.28	+14.8	.	126.0

Comet P/2003 O2 (LINEAR)

Epoch = 2012 July 12.0 TT
T = 2012 June 10.61661 TT
Peri. = 32.85530 e = 0.6469926
Node = 344.73920 2000.0 a = 4.2461742 AU
Incl. = 14.68971 n = 0.11264382
q = 1.4989309 AU P = 8.75 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 4	19 44.64	-29 02.2	3.196	2.246	-0.88	-4.6	22.3	31.5/ 75	12.6
Jan. 14	20 07.51	-27 31.8	3.143	2.177	-0.91	-5.5	22.0	32.9/ 73	8.8
Jan. 24	20 30.80	-25 46.6	3.082	2.108	-0.95	-6.5	21.7	34.4/ 71	6.7
Feb. 3	20 54.42	-23 46.0	3.014	2.040	-0.98	-7.5	21.4	35.8/ 69	7.3
Feb. 13	21 18.31	-21 29.3	2.939	1.974	-1.01	-8.5	21.1	37.2/ 67	9.8
Feb. 23	21 42.42	-18 56.4	2.861	1.910	-1.05	-9.7	20.8	38.7/ 65	13.0
Mar. 4	22 06.75	-16 07.3	2.779	1.848	-1.08	-10.8	20.5	40.1/ 63	16.2
Mar. 14	22 31.29	-13 02.4	2.697	1.789	-1.12	-11.9	20.2	41.6/ 62	19.3
Mar. 24	22 56.10	-09 42.5	2.615	1.733	-1.16	-12.9	19.9	43.0/ 61	22.2
Apr. 3	23 21.23	-06 08.9	2.536	1.682	-1.21	-13.9	19.6	44.3/ 60	24.9
Apr. 13	23 46.75	-02 23.6	2.461	1.636	-1.26	-14.7	19.3	45.6/ 59	27.3
Apr. 23	00 12.80	+01 31.0	2.391	1.595	-1.31	-15.2	19.0	46.6/ 59	29.5
May 3	00 39.45	+05 31.6	2.327	1.561	-1.37	-15.5	18.8	47.4/ 59	31.6
May 13	01 06.83	+09 34.0	2.271	1.533	-1.44	-15.4	18.6	47.9/ 59	33.5
May 23	01 35.05	+13 33.7	2.223	1.514	-1.50	-15.0	18.5	48.0/ 60	35.3
June 2	02 04.17	+17 25.4	2.182	1.502	-1.57	-14.1	18.4	47.8/ 62	37.0
June 12	02 34.22	+21 03.8	2.149	1.499	-1.64	-12.8	18.3	47.2/ 63	38.8
June 22	03 05.15	+24 23.8	2.123	1.504	-1.70	-11.2	18.3	46.2/ 66	40.6
July 2	03 36.80	+27 20.8	2.102	1.518	-1.74	-9.3	18.4	44.9/ 68	42.6
July 12	04 08.90	+29 51.6	2.087	1.540	-1.76	-7.1	18.5	43.2/ 71	44.7
July 22	04 41.11	+31 54.3	2.074	1.569	-1.75	-4.9	18.6	41.3/ 75	47.1
Aug. 1	05 12.94	+33 28.7	2.062	1.606	-1.71	-2.7	18.8	39.1/ 78	49.8
Aug. 11	05 43.93	+34 36.2	2.050	1.648	-1.65	-0.7	19.0	36.7/ 81	52.8
Aug. 21	06 13.61	+35 19.9	2.036	1.696	-1.57	+1.2	19.2	34.2/ 84	56.2
Aug. 31	06 41.54	+35 43.7	2.018	1.748	-1.48	+2.8	19.4	31.5/ 87	60.0
Sept.10	07 07.40	+35 52.2	1.996	1.805	-1.38	+4.3	19.6	28.6/ 89	64.3
Sept.20	07 30.89	+35 50.4	1.969	1.864	-1.29	+5.5	19.8	25.4/ 90	69.1
Sept.30	07 51.79	+35 43.3	1.937	1.927	-1.20	+6.5	20.0	22.1/ 91	74.4
Oct. 10	08 09.91	+35 35.2	1.899	1.992	-1.13	+7.5	20.2	18.5/ 90	80.4
Oct. 20	08 25.03	+35 30.6	1.856	2.059	-1.09	+8.3	20.4	14.5/ 88	86.9
Oct. 30	08 36.90	+35 32.8	1.810	2.127	-1.06	+9.1	20.6	10.3/ 83	94.2
Nov. 9	08 45.29	+35 44.4	1.762	2.196	-1.07	+9.8	20.8	6.0/ 68	102.1
Nov. 19	08 49.87	+36 06.4	1.717	2.266	-1.10	+10.5	21.0	3.2/ 11	110.9
Nov. 29	08 50.39	+36 37.7	1.677	2.336	-1.17	+11.0	21.2	5.7/311	120.3
Dec. 9	08 46.74	+37 14.9	1.648	2.407	-1.26	+11.3	21.4	9.8/293	130.4
Dec. 19	08 39.09	+37 51.6	1.635	2.477	-1.37	+11.3	21.6	13.2/283	140.9
Dec. 29	08 28.15	+38 19.5	1.642	2.548	-1.48	+10.8	21.8	15.3/275	151.1
Jan. 8	08 15.14	+38 31.1	1.675	2.619	-1.55	+9.9	22.0	15.9/268	159.5
Jan. 18	08 01.67	+38 21.6	1.736	2.689	-1.58	+8.8	22.3	14.8/259	162.2
Jan. 28	07 49.40	+37 51.1	1.825	2.759	-1.55	+7.6	22.6	12.7/249	157.3
Feb. 7	07 39.53	+37 03.8	1.941	2.829	-1.48	+6.5	22.9	10.1/235	148.5
Feb. 17	07 32.74	+36 05.2	2.081	2.898	-1.38	+5.5	23.3	7.8/214	138.8
Feb. 27	07 29.17	+35 00.8	2.242	2.967	-1.26	+4.8	23.6	6.7/186	129.0
Mar. 9	07 28.58	+33 54.5	2.420	3.035	-1.15	+4.3	24.0	7.1/159	119.5
Mar. 19	07 30.63	+32 48.5	2.611	3.103	-1.04	+3.9	.	8.4/140	110.5
Mar. 29	07 34.87	+31 43.9	2.810	3.169	-0.93	+3.6	.	10.0/129	101.9

Comet 138P/Shoemaker-Levy

Epoch = 2012 July 12.0 TT
T = 2012 June 11.72076 TT
Peri. = 95.62061 e = 0.5307369
Node = 309.40445 2000.0 a = 3.6239123 AU
Incl. = 10.08344 n = 0.14286885
q = 1.7005683 AU P = 6.90 years

m1 = 15.6 + 5 log(Delta) + 12.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	21 17.68	-12 35.1	2.969	2.238	+1.86	+10.9	22.3	35.2
Jan. 14	21 36.32	-10 46.3	2.981	2.185	+1.93	+11.9	22.2	30.0
Jan. 24	21 55.63	-08 47.0	2.984	2.133	+1.99	+12.9	22.1	25.0
Feb. 3	22 15.55	-06 37.6	2.978	2.082	+2.05	+13.9	22.0	20.4
Feb. 13	22 36.05	-04 18.5	2.964	2.033	+2.11	+14.8	21.8	16.0
Feb. 23	22 57.13	-01 50.5	2.943	1.986	+2.17	+15.6	21.7	12.1
Mar. 4	23 18.81	+00 45.5	2.916	1.941	+2.23	+16.3	21.5	8.6
Mar. 14	23 41.12	+03 28.0	2.885	1.899	+2.30	+16.7	21.4	6.1
Mar. 24	00 04.13	+06 15.5	2.851	1.861	+2.38	+17.0	21.2	5.3
Apr. 3	00 27.89	+09 05.8	2.815	1.825	+2.46	+17.1	21.1	6.6
Apr. 13	00 52.46	+11 56.5	2.778	1.793	+2.55	+16.8	21.0	8.8
Apr. 23	01 17.94	+14 44.9	2.741	1.766	+2.64	+16.3	20.9	11.3
May 3	01 44.37	+17 27.9	2.705	1.743	+2.74	+15.4	20.8	13.8
May 13	02 11.77	+20 02.1	2.671	1.724	+2.84	+14.2	20.7	16.2
May 23	02 40.15	+22 23.9	2.639	1.711	+2.93	+12.6	20.6	18.7
June 2	03 09.43	+24 30.0	2.610	1.703	+3.00	+10.7	20.6	21.1
June 12	03 39.47	+26 17.2	2.583	1.701	+3.06	+8.6	20.5	23.4
June 22	04 10.08	+27 42.9	2.559	1.703	+3.09	+6.2	20.5	25.9
July 2	04 40.93	+28 45.2	2.536	1.712	+3.08	+3.8	20.5	28.4
July 12	05 11.72	+29 23.2	2.514	1.725	+3.04	+1.4	20.6	31.0
July 22	05 42.07	+29 37.2	2.493	1.744	+2.95	-0.9	20.6	33.9
Aug. 1	06 11.62	+29 28.3	2.471	1.767	+2.84	-3.0	20.7	36.9
Aug. 11	06 40.06	+28 58.6	2.447	1.795	+2.71	-4.8	20.7	40.1
Aug. 21	07 07.13	+28 10.7	2.420	1.827	+2.55	-6.3	20.8	43.6
Aug. 31	07 32.61	+27 07.8	2.390	1.863	+2.38	-7.5	20.9	47.5
Sept.10	07 56.39	+25 53.1	2.355	1.902	+2.20	-8.3	20.9	51.6
Sept.20	08 18.34	+24 29.9	2.315	1.944	+2.01	-8.9	21.0	56.2
Sept.30	08 38.40	+23 01.3	2.269	1.989	+1.81	-9.1	21.1	61.1
Oct. 10	08 56.50	+21 30.2	2.217	2.036	+1.60	-9.1	21.2	66.5
Oct. 20	09 12.54	+19 59.5	2.159	2.085	+1.39	-8.8	21.3	72.3
Oct. 30	09 26.43	+18 31.8	2.095	2.136	+1.16	-8.2	21.3	78.7
Nov. 9	09 38.02	+17 09.5	2.027	2.188	+0.91	-7.5	21.4	85.7
Nov. 19	09 47.12	+15 55.0	1.956	2.241	+0.64	-6.5	21.4	93.3
Nov. 29	09 53.51	+14 50.4	1.885	2.296	+0.35	-5.3	21.5	101.5
Dec. 9	09 56.99	+13 57.5	1.816	2.351	+0.04	-4.0	21.5	110.6
Dec. 19	09 57.36	+13 17.8	1.753	2.406	-0.28	-2.6	21.6	120.5
Dec. 29	09 54.57	+12 52.0	1.701	2.462	-0.58	-1.3	21.6	131.1
Jan. 8	09 48.79	+12 39.4	1.666	2.519	-0.83	-0.1	21.7	142.6
Jan. 18	09 40.49	+12 38.3	1.651	2.575	-0.99	+0.7	21.8	154.7
Jan. 28	09 30.57	+12 45.4	1.663	2.632	-1.04	+1.1	22.0	167.0
Feb. 7	09 20.14	+12 56.7	1.703	2.688	-0.98	+1.2	22.1	177.5
Feb. 17	09 10.37	+13 08.4	1.772	2.745	-0.81	+0.9	22.3	167.4
Feb. 27	09 02.25	+13 17.1	1.869	2.801	-0.58	+0.4	22.6	155.5
Mar. 9	08 56.41	+13 21.0	1.992	2.857	-0.33	-0.2	22.8	144.2
Mar. 19	08 53.12	+13 19.1	2.137	2.913	-0.08	-0.8	.	133.5
Mar. 29	08 52.36	+13 10.8	2.298	2.968	+0.15	-1.5	.	123.5

Comet P/2011 U1 (PANSTARRS)

Epoch = 2012 July 12.0 TT
T = 2012 June 20.68234 TT
Peri. = 353.15149 e = 0.4176214
Node = 135.00625 2000.0 a = 4.0457864 AU
Incl. = 15.24344 n = 0.12111548
q = 2.3561794 AU P = 8.14 years

m1 = 11.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	04 25.19	+02 41.0	1.824	2.640	-0.33	+7.2	19.4	138.3
Jan. 14	04 21.90	+03 53.2	1.877	2.611	-0.07	+8.4	19.4	129.0
Jan. 24	04 21.20	+05 17.2	1.947	2.582	+0.20	+9.2	19.4	119.8
Feb. 3	04 23.24	+06 49.0	2.030	2.555	+0.47	+9.6	19.4	111.0
Feb. 13	04 27.94	+08 24.7	2.121	2.529	+0.72	+9.6	19.5	102.7
Feb. 23	04 35.12	+10 01.1	2.217	2.504	+0.95	+9.4	19.5	94.9
Mar. 4	04 44.58	+11 35.5	2.317	2.482	+1.15	+9.0	19.5	87.6
Mar. 14	04 56.06	+13 05.6	2.417	2.460	+1.33	+8.4	19.6	80.7
Mar. 24	05 09.34	+14 29.6	2.516	2.441	+1.49	+7.6	19.6	74.2
Apr. 3	05 24.20	+15 45.9	2.613	2.423	+1.62	+6.7	19.7	68.0
Apr. 13	05 40.43	+16 53.1	2.706	2.408	+1.74	+5.7	19.7	62.2
Apr. 23	05 57.85	+17 50.2	2.796	2.394	+1.84	+4.6	19.7	56.6
May 3	06 16.27	+18 36.2	2.880	2.382	+1.92	+3.4	19.8	51.2
May 13	06 35.52	+19 10.5	2.959	2.373	+1.99	+2.2	19.8	46.1
May 23	06 55.43	+19 32.7	3.033	2.365	+2.04	+1.0	19.8	41.1
June 2	07 15.85	+19 42.6	3.101	2.360	+2.08	-0.2	19.9	36.2
June 12	07 36.63	+19 40.2	3.163	2.357	+2.10	-1.4	19.9	31.5
June 22	07 57.64	+19 25.9	3.218	2.356	+2.11	-2.6	19.9	26.8
July 2	08 18.74	+19 00.1	3.267	2.358	+2.11	-3.7	20.0	22.2
July 12	08 39.84	+18 23.5	3.310	2.361	+2.10	-4.6	20.0	17.7
July 22	09 00.84	+17 37.2	3.345	2.367	+2.08	-5.5	20.0	13.2
Aug. 1	09 21.67	+16 42.0	3.373	2.375	+2.06	-6.3	20.1	8.7
Aug. 11	09 42.25	+15 39.4	3.394	2.385	+2.03	-6.9	20.1	4.4
Aug. 21	10 02.56	+14 30.4	3.408	2.397	+2.00	-7.4	20.2	2.4
Aug. 31	10 22.54	+13 16.5	3.413	2.412	+1.96	-7.7	20.2	6.0
Sept.10	10 42.18	+11 59.2	3.411	2.428	+1.93	-7.9	20.2	10.6
Sept.20	11 01.46	+10 39.7	3.400	2.446	+1.89	-8.0	20.3	15.4
Sept.30	11 20.34	+09 19.8	3.380	2.466	+1.85	-7.9	20.3	20.4
Oct. 10	11 38.81	+08 00.7	3.352	2.487	+1.80	-7.7	20.4	25.5
Oct. 20	11 56.84	+06 44.0	3.314	2.511	+1.76	-7.3	20.4	30.7
Oct. 30	12 14.40	+05 31.2	3.268	2.535	+1.70	-6.7	20.4	36.2
Nov. 9	12 31.43	+04 23.8	3.213	2.562	+1.65	-6.1	20.5	41.8
Nov. 19	12 47.89	+03 23.2	3.149	2.589	+1.58	-5.2	20.5	47.7
Nov. 29	13 03.66	+02 30.8	3.077	2.618	+1.50	-4.3	20.5	53.8
Dec. 9	13 18.67	+01 47.9	2.998	2.648	+1.41	-3.2	20.5	60.1
Dec. 19	13 32.78	+01 15.9	2.911	2.679	+1.30	-2.0	20.5	66.7
Dec. 29	13 45.82	+00 56.0	2.820	2.712	+1.18	-0.7	20.5	73.6
Jan. 8	13 57.63	+00 49.1	2.724	2.745	+1.04	+0.7	20.6	80.8
Jan. 18	14 07.99	+00 56.2	2.626	2.779	+0.87	+2.1	20.6	88.4
Jan. 28	14 16.67	+01 17.6	2.528	2.814	+0.68	+3.6	20.6	96.4
Feb. 7	14 23.47	+01 53.4	2.434	2.849	+0.47	+5.0	20.6	104.7
Feb. 17	14 28.13	+02 43.0	2.346	2.885	+0.24	+6.1	20.6	113.5
Feb. 27	14 30.52	+03 44.4	2.267	2.922	0.00	+7.0	20.6	122.6
Mar. 9	14 30.55	+04 54.9	2.203	2.959	-0.23	+7.5	20.6	131.9
Mar. 19	14 28.28	+06 10.1	2.156	2.997	-0.43	+7.4	20.6	141.1
Mar. 29	14 23.98	+07 24.4	2.130	3.035	-0.58	+6.7	20.7	149.7

Comet 152P/Helin-Lawrence

Epoch = 2012 July 12.0 TT
T = 2012 July 9.23225 TT
Peri. = 163.79975 e = 0.3073555
Node = 91.91024 2000.0 a = 4.4993546 AU
Incl. = 9.86736 n = 0.10327109
q = 3.1164532 AU P = 9.54 years

m1 = 5.6 + 5 log(Delta) + 17.5 log(r(t-260))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	15 27.50	-11 49.9	3.806	3.272	+1.28	-4.4	18.7	50.7
Jan. 14	15 40.26	-12 33.9	3.677	3.257	+1.22	-3.8	18.6	57.6
Jan. 24	15 52.48	-13 11.6	3.540	3.242	+1.15	-3.1	18.5	64.6
Feb. 3	16 03.97	-13 43.1	3.396	3.228	+1.06	-2.5	18.3	71.8
Feb. 13	16 14.56	-14 08.5	3.248	3.215	+0.95	-2.0	18.2	79.3
Feb. 23	16 24.05	-14 28.3	3.098	3.202	+0.82	-1.5	18.0	87.0
Mar. 4	16 32.21	-14 43.0	2.948	3.190	+0.66	-1.0	17.9	95.0
Mar. 14	16 38.82	-14 53.4	2.800	3.179	+0.48	-0.7	17.7	103.3
Mar. 24	16 43.67	-15 00.3	2.659	3.169	+0.29	-0.4	17.5	112.0
Apr. 3	16 46.54	-15 04.8	2.526	3.160	+0.08	-0.3	17.4	121.1
Apr. 13	16 47.30	-15 08.0	2.406	3.152	-0.14	-0.3	17.2	130.6
Apr. 23	16 45.91	-15 10.8	2.302	3.144	-0.34	-0.4	17.1	140.5
May 3	16 42.48	-15 14.5	2.218	3.137	-0.52	-0.5	17.0	150.8
May 13	16 37.32	-15 19.9	2.158	3.132	-0.64	-0.8	16.8	161.3
May 23	16 30.93	-15 28.1	2.123	3.127	-0.69	-1.2	16.8	171.1
June 2	16 24.01	-15 39.8	2.115	3.123	-0.67	-1.6	16.7	172.4
June 12	16 17.33	-15 55.8	2.134	3.120	-0.57	-2.1	16.7	163.2
June 22	16 11.58	-16 16.6	2.179	3.118	-0.42	-2.6	16.7	152.8
July 2	16 07.38	-16 42.4	2.248	3.117	-0.23	-3.1	16.7	142.5
July 12	16 05.10	-17 13.2	2.337	3.116	-0.02	-3.5	16.7	132.6
July 22	16 04.92	-17 48.5	2.443	3.117	+0.20	-3.9	16.8	123.2
Aug. 1	16 06.88	-18 27.7	2.561	3.119	+0.40	-4.2	16.9	114.3
Aug. 11	16 10.90	-19 09.7	2.690	3.121	+0.59	-4.4	16.9	105.8
Aug. 21	16 16.84	-19 53.5	2.825	3.125	+0.77	-4.4	17.0	97.7
Aug. 31	16 24.53	-20 38.0	2.964	3.129	+0.93	-4.4	17.0	89.9
Sept.10	16 33.79	-21 22.0	3.103	3.135	+1.07	-4.2	17.1	82.5
Sept.20	16 44.44	-22 04.4	3.242	3.141	+1.19	-4.0	17.2	75.3
Sept.30	16 56.33	-22 44.1	3.378	3.148	+1.30	-3.6	17.2	68.3
Oct. 10	17 09.28	-23 20.1	3.509	3.156	+1.39	-3.2	17.3	61.5
Oct. 20	17 23.16	-23 51.6	3.633	3.165	+1.47	-2.6	17.3	54.8
Oct. 30	17 37.82	-24 17.9	3.750	3.175	+1.53	-2.0	17.3	48.2
Nov. 9	17 53.12	-24 38.3	3.857	3.185	+1.58	-1.4	17.4	41.6
Nov. 19	18 08.95	-24 52.4	3.953	3.197	+1.62	-0.8	17.4	35.2
Nov. 29	18 25.17	-24 60.0	4.038	3.209	+1.65	-0.1	17.4	28.8
Dec. 9	18 41.65	-25 00.7	4.111	3.222	+1.66	+0.6	17.4	22.4
Dec. 19	18 58.29	-24 54.7	4.170	3.236	+1.67	+1.2	17.4	16.0
Dec. 29	19 14.97	-24 42.3	4.215	3.250	+1.66	+1.9	17.4	9.8
Jan. 8	19 31.58	-24 23.7	4.245	3.265	+1.64	+2.4	17.4	4.0
Jan. 18	19 48.02	-23 59.5	4.261	3.281	+1.62	+2.9	17.4	4.4
Jan. 28	20 04.20	-23 30.3	4.262	3.298	+1.58	+3.3	17.4	10.2
Feb. 7	20 20.03	-22 57.0	4.248	3.315	+1.54	+3.7	17.4	16.6
Feb. 17	20 35.44	-22 20.4	4.219	3.332	+1.49	+3.9	17.4	23.0
Feb. 27	20 50.34	-21 41.6	4.177	3.351	+1.43	+4.0	17.4	29.5
Mar. 9	21 04.67	-21 01.5	4.120	3.370	+1.37	+4.0	17.3	36.1
Mar. 19	21 18.34	-20 21.4	4.051	3.389	+1.30	+3.9	17.3	42.8
Mar. 29	21 31.30	-19 42.5	3.970	3.409	+1.22	+3.7	17.2	49.6

Comet 96P/Machholz

Epoch = 2012 July 12.0 TT
T = 2012 July 14.78361 TT
Peri. = 14.75590 e = 0.9591863
Node = 94.32427 2000.0 a = 3.0330894 AU
Incl. = 58.29894 n = 0.18658480
q = 0.1237916 AU P = 5.28 years

m1 = 12.8 + 5 log(Delta) + 12.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. °′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	19 39.06	-41 33.6	3.979	3.080	+1.45	+2.3	21.7	20.8
Jan. 14	19 53.59	-41 10.2	3.891	2.985	+1.53	+2.3	21.5	19.9
Jan. 24	20 08.86	-40 47.0	3.780	2.887	+1.60	+2.3	21.2	21.5
Feb. 3	20 24.82	-40 24.3	3.648	2.786	+1.67	+2.2	21.0	25.0
Feb. 13	20 41.49	-40 01.9	3.495	2.682	+1.74	+2.2	20.7	29.6
Feb. 23	20 58.93	-39 40.0	3.323	2.574	+1.83	+2.1	20.3	34.8
Mar. 4	21 17.24	-39 18.9	3.134	2.461	+1.93	+2.0	20.0	40.2
Mar. 14	21 36.59	-38 58.6	2.931	2.344	+2.07	+1.9	19.6	45.6
Mar. 24	21 57.24	-38 39.3	2.714	2.223	+2.23	+1.9	19.1	50.8
Apr. 3	22 19.58	-38 20.6	2.488	2.096	+2.46	+1.9	18.6	55.8
Apr. 13	22 44.19	-38 01.5	2.255	1.963	+2.77	+2.2	18.1	60.4
Apr. 23	23 11.92	-37 39.2	2.018	1.823	+3.21	+3.1	17.5	64.3
May 3	23 43.97	-37 08.1	1.783	1.676	+3.81	+5.3	16.7	67.3
May 13	00 22.09	-36 15.2	1.554	1.519	+4.64	+10.0	15.9	69.0
May 23	01 08.52	-34 34.9	1.339	1.352	+5.69	+19.6	15.0	68.6
June 2	02 05.40	-31 18.7	1.151	1.172	+6.76	+36.8	13.9	65.2
June 12	03 13.04	-25 10.4	1.007	0.974	+7.45	+60.8	12.7	57.5
June 22	04 27.52	-15 02.5	0.935	0.752	+7.46	+83.0	11.2	45.1
July 2	05 42.10	-01 12.8	0.964	0.493	+7.86	105.6	9.0	28.7
July 12	07 00.70	+16 23.1	1.111	0.178	+13.38	+86.1	4.0	8.2
July 22	09 14.47	+30 44.2	0.983	0.324	+12.67	-27.4	6.9	18.6
Aug. 1	11 21.16	+26 10.4	0.894	0.613	+9.48	-63.2	10.0	36.8
Aug. 11	12 55.92	+15 38.7	0.969	0.853	+6.23	-57.7	11.9	50.9
Aug. 21	13 58.25	+06 01.7	1.145	1.064	+4.26	-42.3	13.4	58.7
Aug. 31	14 40.84	-01 01.6	1.373	1.253	+3.17	-30.2	14.7	61.3
Sept. 10	15 12.50	-06 03.5	1.622	1.428	+2.54	-22.0	15.7	60.5
Sept. 20	15 37.93	-09 43.9	1.880	1.590	+2.17	-16.6	16.6	57.8
Sept. 30	15 59.61	-12 29.9	2.136	1.742	+1.93	-12.8	17.3	53.7
Oct. 10	16 18.88	-14 38.2	2.387	1.886	+1.77	-10.1	18.0	48.8
Oct. 20	16 36.56	-16 19.5	2.627	2.022	+1.65	-8.1	18.6	43.4
Oct. 30	16 53.08	-17 40.2	2.854	2.152	+1.56	-6.5	19.1	37.5
Nov. 9	17 08.72	-18 45.0	3.065	2.277	+1.49	-5.2	19.5	31.3
Nov. 19	17 23.66	-19 36.9	3.258	2.396	+1.43	-4.1	19.9	24.8
Nov. 29	17 37.97	-20 18.2	3.430	2.511	+1.37	-3.3	20.3	18.1
Dec. 9	17 51.69	-20 50.8	3.581	2.622	+1.31	-2.5	20.6	11.2
Dec. 19	18 04.83	-21 16.0	3.708	2.728	+1.25	-1.9	20.9	4.4
Dec. 29	18 17.35	-21 35.2	3.811	2.831	+1.19	-1.4	21.1	3.9
Jan. 8	18 29.22	-21 49.5	3.890	2.931	+1.12	-1.0	21.4	11.0
Jan. 18	18 40.38	-21 60.0	3.944	3.027	+1.04	-0.8	21.6	18.5
Jan. 28	18 50.75	-22 07.7	3.973	3.121	+0.95	-0.6	21.7	26.3
Feb. 7	19 00.23	-22 13.8	3.978	3.211	+0.85	-0.6	21.9	34.3
Feb. 17	19 08.72	-22 19.4	3.960	3.299	+0.74	-0.6	22.0	42.4
Feb. 27	19 16.09	-22 25.6	3.922	3.385	+0.61	-0.8	.	50.8
Mar. 9	19 22.21	-22 33.5	3.865	3.468	+0.47	-1.1	.	59.5
Mar. 19	19 26.92	-22 44.3	3.792	3.549	+0.31	-1.5	.	68.4
Mar. 29	19 30.05	-22 59.0	3.708	3.627	+0.14	-1.9	.	77.6

Comet 189P/NEAT

Epoch = 2012 July 12.0 TT
T = 2012 July 20.43364 TT
Peri. = 15.35468 e = 0.5968009
Node = 282.15334 2000.0 a = 2.9197136 AU
Incl. = 20.37538 n = 0.19755758
q = 1.1772259 AU P = 4.99 years

m1 = 19.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	13 27.19	-30 05.1	2.477	2.372	+1.56	-15.0	.	72.4
Jan. 14	13 42.76	-32 34.7	2.295	2.301	+1.58	-15.4	.	78.0
Jan. 24	13 58.61	-35 08.2	2.114	2.229	+1.61	-15.7	.	83.5
Feb. 3	14 14.70	-37 45.5	1.935	2.156	+1.64	-16.1	.	89.0
Feb. 13	14 31.08	-40 26.2	1.761	2.083	+1.67	-16.4	.	94.3
Feb. 23	14 47.74	-43 10.0	1.591	2.009	+1.69	-16.6	23.0	99.6
Mar. 4	15 04.64	-45 56.1	1.429	1.934	+1.72	-16.7	22.6	104.6
Mar. 14	15 21.83	-48 43.1	1.275	1.859	+1.74	-16.6	22.2	109.4
Mar. 24	15 39.27	-51 29.4	1.129	1.784	+1.76	-16.2	21.8	114.0
Apr. 3	15 56.91	-54 11.6	0.992	1.710	+1.79	-15.3	21.3	118.3
Apr. 13	16 14.81	-56 45.0	0.865	1.637	+1.80	-13.8	20.8	122.2
Apr. 23	16 32.84	-59 02.9	0.748	1.565	+1.81	-11.1	20.3	125.8
May 3	16 50.95	-60 54.2	0.639	1.496	+1.82	-6.9	19.8	129.2
May 13	17 09.14	-62 03.2	0.539	1.430	+1.80	-0.2	19.2	132.4
May 23	17 27.11	-62 05.3	0.447	1.369	+1.76	+10.6	18.6	135.9
June 2	17 44.73	-60 18.9	0.363	1.314	+1.71	+28.4	18.0	140.3
June 12	18 01.86	-55 34.5	0.288	1.266	+1.62	+58.3	17.3	146.7
June 22	18 18.06	-45 51.5	0.225	1.227	+1.54	102.8	16.6	157.4
July 2	18 33.47	-28 43.9	0.183	1.199	+1.47	138.2	16.1	173.7
July 12	18 48.21	-05 41.9	0.173	1.182	+1.41	122.1	15.9	161.3
July 22	19 02.34	+14 38.7	0.197	1.177	+1.41	+76.9	16.2	141.7
Aug. 1	19 16.47	+27 27.6	0.244	1.186	+1.44	+41.4	16.7	129.7
Aug. 11	19 30.91	+34 22.0	0.301	1.206	+1.51	+19.5	17.2	123.6
Aug. 21	19 46.04	+37 36.9	0.363	1.238	+1.63	+6.1	17.7	121.0
Aug. 31	20 02.31	+38 37.7	0.427	1.280	+1.74	-2.4	18.2	120.5
Sept.10	20 19.76	+38 13.6	0.494	1.330	+1.86	-7.9	18.7	120.9
Sept.20	20 38.36	+36 54.6	0.566	1.388	+1.96	-11.1	19.2	121.6
Sept.30	20 57.97	+35 03.4	0.644	1.450	+2.03	-12.6	19.7	122.1
Oct. 10	21 18.25	+32 57.6	0.731	1.517	+2.07	-12.7	20.1	121.9
Oct. 20	21 38.94	+30 50.1	0.827	1.587	+2.09	-11.8	20.6	120.8
Oct. 30	21 59.82	+28 51.8	0.935	1.660	+2.08	-10.3	21.1	118.8
Nov. 9	22 20.63	+27 08.9	1.055	1.733	+2.06	-8.4	21.5	115.8
Nov. 19	22 41.26	+25 44.8	1.188	1.808	+2.04	-6.4	21.9	112.0
Nov. 29	23 01.62	+24 41.2	1.332	1.882	+2.00	-4.4	22.4	107.7
Dec. 9	23 21.66	+23 57.0	1.487	1.957	+1.97	-2.6	22.8	102.8
Dec. 19	23 41.37	+23 30.7	1.651	2.032	+1.94	-1.1	23.2	97.7
Dec. 29	00 00.77	+23 20.2	1.824	2.106	+1.91	+0.3	23.5	92.3
Jan. 8	00 19.85	+23 22.8	2.002	2.179	+1.88	+1.3	.	86.7
Jan. 18	00 38.67	+23 36.3	2.185	2.251	+1.86	+2.2	.	81.0
Jan. 28	00 57.23	+23 58.3	2.370	2.323	+1.83	+2.8	.	75.2
Feb. 7	01 15.57	+24 26.7	2.555	2.393	+1.81	+3.3	.	69.4
Feb. 17	01 33.72	+24 59.6	2.738	2.463	+1.80	+3.6	.	63.5
Feb. 27	01 51.68	+25 35.4	2.918	2.531	+1.78	+3.7	.	57.7
Mar. 9	02 09.47	+26 12.6	3.092	2.598	+1.76	+3.7	.	51.8
Mar. 19	02 27.09	+26 50.0	3.258	2.663	+1.74	+3.6	.	45.9
Mar. 29	02 44.54	+27 26.4	3.415	2.728	+1.73	+3.5	.	40.1

Comet C/2011 UF305 (LINEAR)

Epoch = 2012 July 12.0 TT
T = 2012 July 22.16189 TT
Peri. = 121.99290
Node = 297.43559 2000.0
Incl. = 93.96029
q = 2.1381838 AU
e = 1.0006499

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

0h TT 2012/13	R.A.(2000) h m	Decl.	Delta	r	Daily motion m		m1	Elong.
Jan. 4	18 59.18	+19°12′.4	3.775	3.115	+0.93	+10′.4	16.8	42°.0
Jan. 14	19 08.50	+20 56.1	3.682	3.039	+0.98	+12.7	16.7	43.1
Jan. 24	19 18.34	+23 02.6	3.573	2.964	+1.03	+15.2	16.5	45.2
Feb. 3	19 28.66	+25 34.5	3.451	2.890	+1.08	+18.0	16.3	48.2
Feb. 13	19 39.41	+28 34.4	3.319	2.818	+1.12	+21.1	16.1	51.8
Feb. 23	19 50.60	+32 05.1	3.182	2.747	+1.17	+24.4	15.9	55.6
Mar. 4	20 02.26	+36 09.4	3.043	2.679	+1.22	+28.0	15.7	59.5
Mar. 14	20 14.47	+40 49.3	2.908	2.614	+1.30	+31.7	15.5	63.2
Mar. 24	20 27.45	+46 05.8	2.782	2.551	+1.41	+35.2	15.3	66.3
Apr. 3	20 41.55	+51 58.1	2.671	2.491	+1.60	+38.4	15.1	68.8
Apr. 13	20 57.55	+58 22.2	2.580	2.435	+1.96	+40.8	14.9	70.4
Apr. 23	21 17.13	+65 10.5	2.513	2.383	+2.74	+42.0	14.8	70.9
May 3	21 44.54	+72 10.7	2.473	2.334	+4.99	+41.1	14.6	70.3
May 13	22 34.47	+79 01.3	2.460	2.290	+14.61	+33.2	14.6	68.5
May 23	01 00.60	+84 32.9	2.472	2.251	+29.57	-4.7	14.5	65.6
June 2	05 56.32	+83 46.0	2.506	2.218	+10.85	-31.9	14.5	61.9
June 12	07 44.78	+78 27.0	2.557	2.190	+4.11	-33.8	14.4	57.7
June 22	08 25.86	+72 49.2	2.619	2.167	+2.35	-31.8	14.5	53.1
July 2	08 49.32	+67 30.8	2.686	2.151	+1.65	-29.3	14.5	48.5
July 12	09 05.83	+62 37.7	2.752	2.142	+1.30	-26.7	14.5	44.0
July 22	09 18.83	+58 10.3	2.812	2.138	+1.08	-24.3	14.5	40.1
Aug. 1	09 29.64	+54 06.8	2.862	2.141	+0.93	-22.2	14.6	37.1
Aug. 11	09 38.90	+50 24.9	2.897	2.151	+0.80	-20.3	14.6	35.3
Aug. 21	09 46.91	+47 02.2	2.915	2.167	+0.69	-18.6	14.7	35.1
Aug. 31	09 53.77	+43 56.5	2.915	2.189	+0.57	-17.1	14.7	36.6
Sept.10	09 59.51	+41 05.6	2.894	2.217	+0.45	-15.8	14.8	39.8
Sept.20	10 04.04	+38 27.9	2.853	2.250	+0.32	-14.6	14.8	44.6
Sept.30	10 07.19	+36 01.6	2.791	2.289	+0.16	-13.6	14.8	50.5
Oct. 10	10 08.77	+33 45.2	2.710	2.333	-0.03	-12.8	14.8	57.6
Oct. 20	10 08.46	+31 37.4	2.612	2.381	-0.26	-12.1	14.9	65.6
Oct. 30	10 05.84	+29 36.5	2.501	2.433	-0.54	-11.6	14.9	74.6
Nov. 9	10 00.47	+27 40.3	2.380	2.489	-0.87	-11.4	14.8	84.5
Nov. 19	09 51.79	+25 46.4	2.257	2.549	-1.25	-11.5	14.8	95.5
Nov. 29	09 39.29	+23 51.3	2.140	2.612	-1.66	-12.0	14.8	107.5
Dec. 9	09 22.67	+21 51.3	2.037	2.677	-2.06	-12.8	14.8	120.7
Dec. 19	09 02.02	+19 42.8	1.960	2.745	-2.38	-13.8	14.8	135.0
Dec. 29	08 38.22	+17 24.6	1.920	2.815	-2.53	-14.5	14.9	150.1
Jan. 8	08 12.89	+15 00.1	1.926	2.887	-2.48	-14.3	15.0	164.8
Jan. 18	07 48.13	+12 37.1	1.984	2.961	-2.22	-13.2	15.2	171.6
Jan. 28	07 25.92	+10 24.6	2.092	3.036	-1.84	-11.5	15.4	160.0
Feb. 7	07 07.48	+08 29.5	2.244	3.113	-1.42	-9.5	15.7	146.3
Feb. 17	06 53.25	+06 54.2	2.431	3.190	-1.01	-7.7	16.0	133.3
Feb. 27	06 43.11	+05 37.1	2.645	3.269	-0.66	-6.2	16.3	121.2
Mar. 9	06 36.54	+04 34.8	2.876	3.349	-0.35	-5.1	16.5	110.1
Mar. 19	06 33.01	+03 43.6	3.117	3.429	-0.11	-4.4	16.8	99.8
Mar. 29	06 31.95	+02 59.7	3.361	3.510	+0.09	-3.9	17.1	90.2

Comet 185P/Petriew

Epoch = 2012 July 12.0 TT
T = 2012 Aug. 13.54712 TT
Peri. = 181.94483 e = 0.6994488
Node = 214.09038 2000.0 a = 3.1004934 AU
Incl. = 14.00763 n = 0.18053353
q = 0.9318570 AU P = 5.46 years

m1 = 14.6 + 5 log(Delta) + 10.0 log(r) (post-T & r>1.8AU)
m1 = 12.0 + 5 log(Delta) + 25.0 log(r(t-20)) (else)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	18 10.55	-14 54.9	3.656	2.709	+1.69	+1.9	.	13.3
Jan. 14	18 27.42	-14 35.4	3.546	2.631	+1.74	+2.9	.	18.4
Jan. 24	18 44.82	-14 06.0	3.421	2.552	+1.79	+4.0	.	23.9
Feb. 3	19 02.72	-13 25.7	3.283	2.470	+1.84	+5.2	.	29.3
Feb. 13	19 21.10	-12 33.9	3.133	2.388	+1.89	+6.4	.	34.6
Feb. 23	19 40.00	-11 29.7	2.974	2.303	+1.94	+7.7	.	39.8
Mar. 4	19 59.43	-10 12.4	2.808	2.216	+2.00	+9.1	23.7	44.7
Mar. 14	20 19.47	-08 40.9	2.637	2.128	+2.08	+10.7	23.2	49.4
Mar. 24	20 40.23	-06 54.2	2.462	2.038	+2.16	+12.3	22.6	53.8
Apr. 3	21 01.85	-04 51.3	2.287	1.947	+2.27	+14.0	22.0	57.8
Apr. 13	21 24.57	-02 31.0	2.114	1.854	+2.41	+15.9	21.4	61.3
Apr. 23	21 48.71	+00 08.0	1.945	1.760	+2.60	+17.9	18.5	64.3
May 3	22 14.66	+03 06.6	1.782	1.665	+2.84	+19.8	18.1	66.7
May 13	22 43.02	+06 25.0	1.630	1.570	+3.15	+21.7	17.6	68.4
May 23	23 14.48	+10 01.9	1.490	1.474	+3.54	+23.1	17.2	69.2
June 2	23 49.91	+13 52.4	1.366	1.380	+4.04	+23.4	16.7	69.0
June 12	00 30.28	+17 46.7	1.263	1.288	+4.61	+22.1	16.2	67.8
June 22	01 16.35	+21 27.4	1.182	1.200	+5.19	+18.2	15.8	65.7
July 2	02 08.21	+24 29.2	1.127	1.119	+5.65	+11.5	15.3	62.6
July 12	03 04.72	+26 24.5	1.101	1.047	+5.86	+3.0	15.0	59.1
July 22	04 03.31	+26 54.1	1.101	0.990	+5.74	-5.8	14.8	55.6
Aug. 1	05 00.66	+25 55.9	1.126	0.950	+5.35	-13.0	14.6	52.4
Aug. 11	05 54.16	+23 45.6	1.171	0.933	+4.83	-17.9	14.6	49.9
Aug. 21	06 42.42	+20 46.7	1.230	0.938	+4.27	-20.5	14.8	48.3
Aug. 31	07 25.16	+17 21.9	1.296	0.967	+3.76	-21.4	15.0	47.6
Sept.10	08 02.76	+13 48.0	1.363	1.016	+3.30	-21.2	15.3	47.9
Sept.20	08 35.77	+10 15.9	1.427	1.081	+2.90	-20.4	15.7	49.1
Sept.30	09 04.73	+06 51.9	1.484	1.157	+2.54	-19.3	16.1	51.1
Oct. 10	09 30.14	+03 39.1	1.532	1.242	+2.22	-18.0	16.5	54.0
Oct. 20	09 52.36	+00 39.2	1.568	1.332	+1.93	-16.6	16.8	57.5
Oct. 30	10 11.64	-02 07.1	1.593	1.426	+1.65	-15.2	17.2	61.9
Nov. 9	10 28.12	-04 39.6	1.605	1.521	+1.37	-13.8	17.4	67.0
Nov. 19	10 41.82	-06 57.7	1.605	1.616	+1.08	-12.3	17.7	72.8
Nov. 29	10 52.67	-09 00.4	1.593	1.712	+0.78	-10.6	17.9	79.3
Dec. 9	11 00.51	-10 46.5	1.573	1.806	+0.46	-8.7	18.2	86.7
Dec. 19	11 05.12	-12 13.6	1.545	1.900	+0.11	-6.5	18.8	94.8
Dec. 29	11 06.26	-13 18.7	1.514	1.992	-0.24	-3.9	19.3	103.8
Jan. 8	11 03.84	-13 57.7	1.484	2.083	-0.60	-0.9	19.8	113.6
Jan. 18	10 57.87	-14 06.4	1.460	2.172	-0.90	+2.5	20.3	124.2
Jan. 28	10 48.84	-13 41.2	1.450	2.259	-1.12	+5.9	20.8	135.3
Feb. 7	10 37.60	-12 42.0	1.459	2.344	-1.22	+8.9	21.2	146.3
Feb. 17	10 25.41	-11 12.8	1.492	2.428	-1.17	+11.0	21.7	156.0
Feb. 27	10 13.67	-09 22.6	1.553	2.510	-1.01	+11.9	22.2	161.0
Mar. 9	10 03.57	-07 23.4	1.643	2.591	-0.77	+11.7	22.7	158.0
Mar. 19	09 55.91	-05 26.5	1.761	2.669	-0.49	+10.6	23.2	149.9
Mar. 29	09 51.02	-03 40.7	1.904	2.746	-0.22	+9.0	23.7	140.2

Comet C/2011 O1 (LINEAR)

Epoch = 2012 July 12.0 TT
T = 2012 Aug. 18.46996 TT
Peri. = 232.38534
Node = 89.81590 2000.0
Incl. = 76.49757
q = 3.8905072 AU
e = 0.9969460

m1 = 6.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion ′	m1	Elong. °
Jan. 4	18 23.86	-34 36.0	5.306	4.357	+1.10	-6.7	16.6	13.7
Jan. 14	18 34.84	-35 42.5	5.230	4.319	+1.12	-6.9	16.5	20.0
Jan. 24	18 46.07	-36 51.9	5.134	4.283	+1.14	-7.3	16.5	27.3
Feb. 3	18 57.48	-38 05.3	5.020	4.248	+1.15	-7.9	16.4	34.8
Feb. 13	19 08.97	-39 23.9	4.889	4.215	+1.15	-8.5	16.3	42.5
Feb. 23	19 20.46	-40 49.2	4.745	4.183	+1.14	-9.4	16.2	50.3
Mar. 4	19 31.85	-42 22.8	4.589	4.152	+1.12	-10.4	16.1	58.1
Mar. 14	19 43.05	-44 06.4	4.426	4.123	+1.09	-11.5	16.0	66.0
Mar. 24	19 53.96	-46 01.8	4.258	4.095	+1.05	-12.9	15.9	73.9
Apr. 3	20 04.43	-48 10.7	4.091	4.069	+0.99	-14.4	15.8	81.7
Apr. 13	20 14.33	-50 34.6	3.928	4.045	+0.91	-16.0	15.6	89.5
Apr. 23	20 23.45	-53 14.5	3.773	4.022	+0.81	-17.6	15.5	97.1
May 3	20 31.53	-56 10.3	3.630	4.001	+0.67	-19.1	15.4	104.3
May 13	20 38.22	-59 21.1	3.505	3.982	+0.48	-20.3	15.3	111.1
May 23	20 42.99	-62 44.2	3.400	3.964	+0.21	-21.1	15.2	117.0
June 2	20 45.06	-66 14.8	3.320	3.948	-0.18	-21.2	15.2	121.7
June 12	20 43.30	-69 46.4	3.265	3.935	-0.74	-20.4	15.1	124.9
June 22	20 35.89	-73 10.6	3.236	3.923	-1.57	-18.6	15.1	126.1
July 2	20 20.23	-76 17.0	3.234	3.912	-2.72	-15.7	15.1	125.4
July 12	19 53.00	-78 54.0	3.257	3.904	-4.12	-11.5	15.1	123.0
July 22	19 11.82	-80 49.3	3.300	3.898	-5.16	-6.5	15.1	119.2
Aug. 1	18 20.20	-81 54.4	3.362	3.893	-5.04	-1.8	15.1	114.5
Aug. 11	17 29.76	-82 12.5	3.438	3.891	-3.76	+1.3	15.2	109.2
Aug. 21	16 52.17	-81 59.6	3.524	3.891	-2.12	+2.5	15.2	103.7
Aug. 31	16 30.97	-81 34.4	3.616	3.892	-0.70	+2.5	15.3	98.3
Sept. 10	16 24.01	-81 09.7	3.711	3.895	+0.45	+1.8	15.4	93.0
Sept. 20	16 28.47	-80 51.7	3.806	3.901	+1.39	+0.9	15.4	87.9
Sept. 30	16 42.36	-80 42.4	3.898	3.908	+2.22	+0.2	15.5	83.2
Oct. 10	17 04.56	-80 40.4	3.986	3.917	+3.02	-0.2	15.5	78.9
Oct. 20	17 34.74	-80 42.7	4.067	3.928	+3.78	-0.2	15.6	75.0
Oct. 30	18 12.56	-80 44.6	4.141	3.941	+4.47	+0.5	15.6	71.6
Nov. 9	18 57.21	-80 39.7	4.207	3.956	+4.97	+1.8	15.7	68.7
Nov. 19	19 46.91	-80 21.9	4.266	3.973	+5.17	+3.6	15.7	66.3
Nov. 29	20 38.62	-79 45.7	4.316	3.991	+5.04	+5.8	15.8	64.4
Dec. 9	21 29.04	-78 48.1	4.360	4.011	+4.67	+7.9	15.8	63.1
Dec. 19	22 15.74	-77 29.1	4.397	4.033	+4.18	+9.8	15.9	62.2
Dec. 29	22 57.58	-75 50.6	4.428	4.057	+3.70	+11.5	15.9	61.8
Jan. 8	23 34.56	-73 55.6	4.456	4.082	+3.27	+12.8	16.0	61.7
Jan. 18	00 07.29	-71 47.5	4.481	4.109	+2.92	+13.8	16.0	61.8
Jan. 28	00 36.47	-69 29.5	4.504	4.137	+2.63	+14.5	16.0	62.2
Feb. 7	01 02.79	-67 04.6	4.527	4.167	+2.41	+14.9	16.1	62.7
Feb. 17	01 26.84	-64 35.7	4.551	4.199	+2.22	+15.0	16.1	63.2
Feb. 27	01 49.07	-62 05.4	4.577	4.231	+2.07	+14.9	16.2	63.7
Mar. 9	02 09.82	-59 36.1	4.605	4.266	+1.95	+14.6	16.2	64.1
Mar. 19	02 29.34	-57 10.1	4.636	4.301	+1.85	+14.0	16.3	64.4
Mar. 29	02 47.82	-54 49.6	4.670	4.338	+1.76	+13.3	16.3	64.7

Comet P/2006 Q2 (LONEOS)

Epoch = 2012 July 12.0 TT
T = 2012 Aug. 22.39710 TT
Peri. = 97.18837 e = 0.5934483
Node = 245.01517 2000.0 a = 3.2865097 AU
Incl. = 5.37326 n = 0.16542521
q = 1.3361361 AU P = 5.96 years

m1 = 19.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	16 17.56	-22 12.2	3.354	2.629	-0.79	+1.0	.	25.7/ 98	36.4
Jan. 14	16 35.94	-22 44.3	3.202	2.562	-0.87	+0.7	.	26.1/ 96	42.4
Jan. 24	16 54.78	-23 08.4	3.041	2.495	-0.95	+0.4	.	26.6/ 94	48.2
Feb. 3	17 14.03	-23 23.6	2.873	2.427	-1.04	0.0	.	27.0/ 92	53.9
Feb. 13	17 33.66	-23 29.0	2.699	2.358	-1.15	-0.6	.	27.5/ 90	59.5
Feb. 23	17 53.62	-23 23.6	2.522	2.289	-1.26	-1.2	.	27.9/ 88	65.1
Mar. 4	18 13.86	-23 06.6	2.344	2.219	-1.39	-1.9	.	28.5/ 85	70.5
Mar. 14	18 34.34	-22 37.2	2.166	2.149	-1.54	-2.9	.	29.0/ 83	75.7
Mar. 24	18 55.03	-21 54.4	1.990	2.079	-1.70	-4.0	.	29.7/ 80	80.8
Apr. 3	19 15.88	-20 57.2	1.818	2.009	-1.89	-5.3	.	30.4/ 77	85.8
Apr. 13	19 36.89	-19 44.5	1.651	1.940	-2.10	-6.9	.	31.3/ 74	90.6
Apr. 23	19 58.04	-18 15.2	1.490	1.871	-2.35	-8.7	.	32.3/ 71	95.2
May 3	20 19.31	-16 28.0	1.338	1.804	-2.62	-10.9	.	33.5/ 69	99.5
May 13	20 40.77	-14 21.2	1.196	1.738	-2.94	-13.4	23.0	34.9/ 66	103.6
May 23	21 02.43	-11 53.5	1.064	1.675	-3.31	-16.2	22.5	36.5/ 63	107.5
June 2	21 24.34	-09 03.4	0.943	1.614	-3.74	-19.3	22.0	38.3/ 60	111.0
June 12	21 46.60	-05 49.8	0.835	1.557	-4.23	-22.6	21.5	40.2/ 58	114.2
June 22	22 09.24	-02 13.2	0.740	1.504	-4.80	-25.9	21.0	41.9/ 56	117.0
July 2	22 32.28	+01 43.9	0.658	1.457	-5.43	-28.8	20.5	43.2/ 54	119.5
July 12	22 55.71	+05 56.3	0.589	1.417	-6.13	-31.1	20.1	43.5/ 53	121.6
July 22	23 19.29	+10 13.8	0.532	1.383	-6.89	-32.3	19.7	42.3/ 53	123.6
Aug. 1	23 42.61	+14 22.4	0.488	1.358	-7.66	-32.4	19.4	39.3/ 55	125.7
Aug. 11	00 05.04	+18 05.5	0.454	1.343	-8.41	-31.5	19.2	34.1/ 57	128.2
Aug. 21	00 25.53	+21 05.8	0.431	1.336	-9.08	-30.4	19.1	27.2/ 62	131.5
Aug. 31	00 43.01	+23 09.1	0.416	1.340	-9.60	-30.0	19.0	19.6/ 72	135.9
Sept.10	00 56.60	+24 07.4	0.410	1.353	-9.90	-30.7	19.0	12.6/ 93	141.7
Sept.20	01 05.81	+23 59.1	0.414	1.375	-9.89	-32.5	19.2	10.0/132	148.9
Sept.30	01 11.21	+22 52.3	0.429	1.406	-9.53	-34.6	19.4	11.5/160	157.1
Oct. 10	01 14.06	+21 04.2	0.457	1.445	-8.85	-35.4	19.7	13.0/168	165.3
Oct. 20	01 15.91	+18 57.3	0.500	1.491	-7.93	-34.4	20.1	12.7/164	169.7
Oct. 30	01 18.34	+16 55.0	0.560	1.542	-6.91	-31.5	20.6	11.6/151	165.3
Nov. 9	01 22.25	+15 13.6	0.638	1.598	-5.91	-27.5	21.1	11.1/131	157.1
Nov. 19	01 28.03	+14 01.0	0.733	1.657	-5.02	-23.2	21.6	12.1/111	148.4
Nov. 29	01 35.77	+13 18.3	0.844	1.720	-4.25	-19.3	22.2	13.9/ 96	139.9
Dec. 9	01 45.25	+13 02.0	0.970	1.785	-3.61	-15.8	22.7	16.0/ 88	131.9
Dec. 19	01 56.22	+13 07.3	1.110	1.852	-3.09	-12.9	.	18.0/ 83	124.3
Dec. 29	02 08.45	+13 29.2	1.262	1.921	-2.66	-10.5	.	19.6/ 80	117.1
Jan. 8	02 21.68	+14 03.0	1.425	1.990	-2.32	-8.6	.	20.9/ 78	110.1
Jan. 18	02 35.74	+14 44.7	1.596	2.059	-2.03	-7.0	.	21.8/ 77	103.3
Jan. 28	02 50.49	+15 31.1	1.775	2.129	-1.79	-5.6	.	22.6/ 77	96.8
Feb. 7	03 05.76	+16 19.5	1.959	2.199	-1.60	-4.5	.	23.1/ 77	90.4
Feb. 17	03 21.47	+17 07.8	2.146	2.269	-1.43	-3.5	.	23.4/ 78	84.1
Feb. 27	03 37.52	+17 54.3	2.335	2.338	-1.29	-2.7	.	23.6/ 79	78.0
Mar. 9	03 53.81	+18 37.5	2.523	2.407	-1.17	-2.1	.	23.7/ 80	71.9
Mar. 19	04 10.30	+19 16.5	2.710	2.475	-1.06	-1.5	.	23.7/ 81	65.9
Mar. 29	04 26.91	+19 50.4	2.892	2.543	-0.97	-1.0	.	23.6/ 82	59.9

Comet P/2005 K3 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2012 Sept. 12.72586 TT
Peri. = 15.69036 e = 0.5934831
Node = 351.96204 2000.0 a = 3.6828781 AU
Incl. = 15.73586 n = 0.13945146
q = 1.4971522 AU P = 7.07 years

m1 = 12.2 + 5 log(Delta) + 15.0 log(r(t-15))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	17 51.68	-35 13.9	3.722	2.808	-0.75	-0.5	22.0	25.2/ 92	18.7
Jan. 14	18 12.23	-35 16.0	3.617	2.744	-0.80	-1.0	21.8	25.8/ 90	23.5
Jan. 24	18 33.26	-35 10.2	3.501	2.679	-0.86	-1.6	21.6	26.3/ 88	28.7
Feb. 3	18 54.68	-34 55.9	3.373	2.614	-0.91	-2.3	21.3	26.9/ 87	33.9
Feb. 13	19 16.40	-34 32.5	3.237	2.548	-0.97	-3.1	21.1	27.4/ 85	39.1
Feb. 23	19 38.36	-33 59.5	3.092	2.483	-1.03	-4.1	20.8	27.9/ 83	44.3
Mar. 4	20 00.46	-33 16.6	2.942	2.417	-1.09	-5.1	20.6	28.4/ 81	49.4
Mar. 14	20 22.64	-32 23.6	2.786	2.350	-1.15	-6.3	20.3	29.0/ 79	54.4
Mar. 24	20 44.83	-31 20.2	2.628	2.284	-1.21	-7.6	20.0	29.5/ 77	59.2
Apr. 3	21 06.97	-30 06.5	2.468	2.219	-1.28	-9.1	19.6	30.0/ 75	63.9
Apr. 13	21 29.02	-28 42.2	2.308	2.153	-1.35	-10.7	19.3	30.6/ 73	68.5
Apr. 23	21 50.93	-27 07.2	2.150	2.089	-1.42	-12.6	19.0	31.1/ 71	72.9
May 3	22 12.67	-25 21.2	1.994	2.025	-1.50	-14.7	18.6	31.7/ 69	77.2
May 13	22 34.21	-23 23.8	1.842	1.963	-1.59	-16.9	18.2	32.3/ 67	81.3
May 23	22 55.52	-21 14.5	1.695	1.902	-1.68	-19.5	17.8	32.8/ 65	85.3
June 2	23 16.54	-18 52.7	1.554	1.843	-1.79	-22.2	17.4	33.4/ 63	89.2
June 12	23 37.24	-16 17.0	1.420	1.787	-1.92	-25.3	17.0	34.0/ 61	92.9
June 22	23 57.53	-13 26.4	1.293	1.734	-2.07	-28.5	16.6	34.5/ 58	96.7
July 2	00 17.29	-10 19.0	1.174	1.685	-2.25	-32.0	16.2	35.1/ 54	100.3
July 12	00 36.41	-06 52.8	1.064	1.640	-2.47	-35.5	15.8	35.5/ 50	104.0
July 22	00 54.64	-03 05.5	0.963	1.600	-2.74	-39.0	15.4	35.8/ 46	107.9
Aug. 1	01 11.70	+01 05.1	0.873	1.566	-3.06	-42.3	15.0	36.1/ 40	111.9
Aug. 11	01 27.24	+05 40.7	0.793	1.538	-3.45	-45.0	14.7	36.1/ 33	116.2
Aug. 21	01 40.70	+10 41.1	0.724	1.517	-3.93	-46.8	14.4	35.8/ 26	121.0
Aug. 31	01 51.44	+16 03.3	0.668	1.503	-4.50	-47.5	14.1	35.1/ 17	126.1
Sept.10	01 58.73	+21 38.8	0.625	1.497	-5.15	-47.1	13.9	33.6/ 7	131.7
Sept.20	02 01.78	+27 12.1	0.596	1.499	-5.84	-46.2	13.7	30.9/356	137.5
Sept.30	02 00.21	+32 20.7	0.583	1.509	-6.48	-45.5	13.7	26.9/345	143.1
Oct. 10	01 54.41	+36 39.8	0.585	1.526	-6.94	-45.6	13.7	21.5/333	147.7
Oct. 20	01 45.85	+39 49.1	0.604	1.550	-7.06	-46.3	13.8	15.0/320	150.5
Oct. 30	01 37.18	+41 42.5	0.638	1.581	-6.80	-46.7	14.0	8.3/305	150.7
Nov. 9	01 31.00	+42 29.0	0.689	1.618	-6.25	-45.7	14.3	2.2/264	148.4
Nov. 19	01 29.06	+42 26.7	0.754	1.660	-5.57	-43.0	14.6	4.4/133	144.4
Nov. 29	01 31.94	+41 56.0	0.834	1.707	-4.89	-39.0	15.0	9.3/117	139.3
Dec. 9	01 39.25	+41 13.2	0.927	1.758	-4.28	-34.2	15.4	13.3/109	133.6
Dec. 19	01 50.25	+40 28.4	1.035	1.812	-3.77	-29.4	15.9	16.5/103	127.7
Dec. 29	02 04.17	+39 47.9	1.154	1.870	-3.34	-24.7	16.3	18.9/ 99	121.8
Jan. 8	02 20.23	+39 13.8	1.286	1.929	-2.97	-20.5	16.7	20.8/ 96	115.8
Jan. 18	02 37.90	+38 46.3	1.428	1.991	-2.67	-16.8	17.2	22.2/ 94	109.9
Jan. 28	02 56.72	+38 24.6	1.579	2.054	-2.41	-13.6	17.6	23.2/ 93	104.1
Feb. 7	03 16.32	+38 07.1	1.738	2.118	-2.18	-10.8	18.0	23.9/ 92	98.2
Feb. 17	03 36.48	+37 52.1	1.904	2.183	-1.98	-8.5	18.4	24.3/ 92	92.5
Feb. 27	03 56.98	+37 38.0	2.076	2.248	-1.80	-6.5	18.8	24.6/ 92	86.7
Mar. 9	04 17.63	+37 23.3	2.250	2.314	-1.64	-4.8	19.1	24.8/ 92	81.1
Mar. 19	04 38.33	+37 06.8	2.427	2.380	-1.50	-3.4	19.5	24.8/ 93	75.4
Mar. 29	04 58.95	+36 47.5	2.604	2.446	-1.37	-2.2	19.8	24.7/ 94	69.8

Comet 160P/LINEAR

Epoch = 2012 July 12.0 TT
T = 2012 Sept. 18.50409 TT
Peri. = 18.19017 e = 0.4790905
Node = 337.00179 2000.0 a = 3.9672283 AU
Incl. = 17.27587 n = 0.12473068
q = 2.0665669 AU P = 7.90 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	18 30.86	-34 49.4	3.816	2.867	+2.04	+3.1	22.1	13.2
Jan. 14	18 51.29	-34 18.7	3.749	2.820	+2.05	+3.9	21.9	16.6
Jan. 24	19 11.82	-33 39.4	3.670	2.774	+2.05	+4.8	21.7	21.1
Feb. 3	19 32.34	-32 51.5	3.579	2.728	+2.04	+5.7	21.5	26.1
Feb. 13	19 52.72	-31 54.9	3.478	2.683	+2.02	+6.5	21.3	31.2
Feb. 23	20 12.88	-30 49.8	3.369	2.638	+1.98	+7.3	21.1	36.4
Mar. 4	20 32.73	-29 36.5	3.250	2.594	+1.94	+8.1	20.8	41.6
Mar. 14	20 52.17	-28 15.4	3.125	2.551	+1.90	+8.8	20.6	46.9
Mar. 24	21 11.15	-26 47.1	2.994	2.508	+1.84	+9.5	20.4	52.1
Apr. 3	21 29.58	-25 12.2	2.858	2.467	+1.78	+10.1	20.1	57.3
Apr. 13	21 47.41	-23 31.4	2.719	2.427	+1.72	+10.6	19.9	62.6
Apr. 23	22 04.57	-21 45.5	2.577	2.388	+1.64	+11.0	19.6	67.9
May 3	22 20.97	-19 55.1	2.434	2.350	+1.56	+11.4	19.4	73.2
May 13	22 36.53	-18 00.9	2.291	2.314	+1.46	+11.7	19.1	78.6
May 23	22 51.15	-16 03.6	2.149	2.280	+1.35	+12.0	18.8	84.2
June 2	23 04.65	-14 04.0	2.008	2.248	+1.22	+12.2	18.6	89.9
June 12	23 16.89	-12 02.4	1.871	2.218	+1.07	+12.3	18.3	95.8
June 22	23 27.63	-09 59.6	1.738	2.190	+0.90	+12.4	18.0	102.1
July 2	23 36.59	-07 55.9	1.612	2.165	+0.69	+12.4	17.7	108.8
July 12	23 43.45	-05 51.8	1.492	2.142	+0.44	+12.4	17.5	116.0
July 22	23 47.83	-03 48.1	1.383	2.122	+0.16	+12.3	17.2	123.7
Aug. 1	23 49.39	-01 45.4	1.285	2.105	-0.15	+12.0	17.0	132.1
Aug. 11	23 47.87	+00 14.7	1.202	2.091	-0.46	+11.5	16.8	141.2
Aug. 21	23 43.23	+02 09.9	1.137	2.080	-0.74	+10.7	16.6	150.9
Aug. 31	23 35.86	+03 57.1	1.092	2.072	-0.92	+9.6	16.5	160.9
Sept.10	23 26.65	+05 33.0	1.070	2.068	-0.97	+8.2	16.5	169.1
Sept.20	23 16.90	+06 54.9	1.073	2.067	-0.87	+6.8	16.5	168.5
Sept.30	23 08.16	+08 02.9	1.099	2.069	-0.65	+5.6	16.5	160.0
Oct. 10	23 01.71	+08 59.4	1.148	2.074	-0.34	+4.9	16.6	150.0
Oct. 20	22 58.35	+09 48.6	1.217	2.083	+0.01	+4.7	16.8	140.3
Oct. 30	22 58.41	+10 35.4	1.303	2.095	+0.34	+4.8	17.0	131.2
Nov. 9	23 01.77	+11 23.8	1.402	2.110	+0.63	+5.3	17.2	122.8
Nov. 19	23 08.10	+12 16.6	1.513	2.128	+0.89	+5.9	17.5	115.0
Nov. 29	23 17.01	+13 15.5	1.632	2.149	+1.10	+6.6	17.7	107.7
Dec. 9	23 28.06	+14 21.0	1.758	2.172	+1.28	+7.2	18.0	100.9
Dec. 19	23 40.88	+15 33.2	1.890	2.198	+1.43	+7.8	18.2	94.5
Dec. 29	23 55.16	+16 51.3	2.026	2.227	+1.55	+8.3	18.5	88.3
Jan. 8	00 10.62	+18 14.2	2.165	2.257	+1.64	+8.7	18.7	82.5
Jan. 18	00 27.07	+19 41.0	2.305	2.290	+1.73	+8.9	19.0	76.8
Jan. 28	00 44.33	+21 10.2	2.446	2.325	+1.79	+9.0	19.3	71.3
Feb. 7	01 02.26	+22 40.4	2.586	2.361	+1.85	+9.0	19.5	65.9
Feb. 17	01 20.77	+24 10.4	2.725	2.399	+1.90	+8.8	19.8	60.6
Feb. 27	01 39.76	+25 38.7	2.860	2.438	+1.94	+8.5	20.0	55.4
Mar. 9	01 59.16	+27 04.2	2.993	2.479	+1.98	+8.1	20.3	50.3
Mar. 19	02 18.92	+28 25.7	3.120	2.521	+2.00	+7.6	20.5	45.3
Mar. 29	02 38.95	+29 42.1	3.242	2.563	+2.03	+7.1	20.7	40.3

Comet 158P/Kowal-LINEAR

Epoch = 2012 July 12.0 TT
T = 2012 Sept. 25.17167 TT
Peri. = 232.61181 e = 0.0306088
Node = 137.30599 2000.0 a = 4.7209592 AU
Incl. = 7.90752 n = 0.09608569
q = 4.5764563 AU P = 10.26 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. °′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	22 24.87	-13 10.3	5.156	4.591	+0.85	+4.6	19.2	50.4
Jan. 14	22 33.32	-12 24.3	5.268	4.590	+0.89	+4.9	19.2	42.4
Jan. 24	22 42.24	-11 34.9	5.365	4.589	+0.93	+5.2	19.3	34.6
Feb. 3	22 51.52	-10 42.9	5.445	4.588	+0.95	+5.4	19.3	26.9
Feb. 13	23 01.05	-09 48.8	5.507	4.587	+0.97	+5.6	19.3	19.4
Feb. 23	23 10.77	-08 53.2	5.549	4.586	+0.98	+5.6	19.3	12.1
Mar. 4	23 20.58	-07 56.9	5.572	4.585	+0.98	+5.6	19.3	5.4
Mar. 14	23 30.41	-07 00.5	5.575	4.585	+0.98	+5.6	19.3	4.7
Mar. 24	23 40.19	-06 04.5	5.558	4.584	+0.97	+5.5	19.3	11.1
Apr. 3	23 49.86	-05 09.8	5.522	4.583	+0.95	+5.3	19.3	18.2
Apr. 13	23 59.34	-04 16.9	5.468	4.582	+0.92	+5.0	19.3	25.4
Apr. 23	00 08.58	-03 26.5	5.395	4.582	+0.89	+4.7	19.3	32.7
May 3	00 17.49	-02 39.2	5.307	4.581	+0.85	+4.3	19.2	40.0
May 13	00 26.00	-01 55.8	5.203	4.580	+0.80	+3.9	19.2	47.4
May 23	00 34.03	-01 16.9	5.086	4.580	+0.75	+3.4	19.1	54.9
June 2	00 41.49	-00 43.1	4.957	4.579	+0.68	+2.8	19.1	62.6
June 12	00 48.27	-00 15.2	4.819	4.579	+0.60	+2.1	19.0	70.3
June 22	00 54.29	+00 06.1	4.674	4.578	+0.51	+1.4	19.0	78.3
July 2	00 59.41	+00 20.3	4.525	4.578	+0.41	+0.7	18.9	86.6
July 12	01 03.52	+00 26.9	4.375	4.578	+0.30	-0.2	18.8	95.1
July 22	01 06.51	+00 25.2	4.226	4.577	+0.18	-1.0	18.7	103.9
Aug. 1	01 08.27	+00 15.1	4.084	4.577	+0.05	-1.8	18.7	113.0
Aug. 11	01 08.73	-00 03.3	3.952	4.577	-0.09	-2.6	18.6	122.5
Aug. 21	01 07.86	-00 29.6	3.834	4.577	-0.22	-3.3	18.5	132.3
Aug. 31	01 05.69	-01 02.9	3.735	4.577	-0.33	-3.8	18.5	142.5
Sept.10	01 02.36	-01 41.3	3.658	4.577	-0.43	-4.1	18.4	152.8
Sept.20	00 58.06	-02 22.8	3.607	4.576	-0.49	-4.2	18.4	162.9
Sept.30	00 53.14	-03 04.4	3.585	4.576	-0.52	-3.9	18.4	171.0
Oct. 10	00 47.97	-03 43.3	3.592	4.577	-0.50	-3.3	18.4	169.0
Oct. 20	00 42.96	-04 16.6	3.630	4.577	-0.44	-2.5	18.4	159.7
Oct. 30	00 38.54	-04 42.0	3.695	4.577	-0.35	-1.6	18.4	149.2
Nov. 9	00 35.03	-04 57.9	3.787	4.577	-0.24	-0.6	18.5	138.6
Nov. 19	00 32.68	-05 03.6	3.900	4.577	-0.10	+0.5	18.6	128.2
Nov. 29	00 31.64	-04 59.0	4.031	4.577	+0.03	+1.4	18.6	118.0
Dec. 9	00 31.96	-04 44.7	4.174	4.578	+0.17	+2.3	18.7	108.2
Dec. 19	00 33.63	-04 21.3	4.326	4.578	+0.29	+3.1	18.8	98.6
Dec. 29	00 36.58	-03 50.0	4.482	4.578	+0.41	+3.8	18.9	89.4
Jan. 8	00 40.69	-03 12.0	4.638	4.579	+0.52	+4.4	18.9	80.5
Jan. 18	00 45.86	-02 28.3	4.790	4.579	+0.61	+4.8	19.0	71.8
Jan. 28	00 51.96	-01 40.0	4.934	4.580	+0.69	+5.2	19.1	63.5
Feb. 7	00 58.87	-00 48.1	5.069	4.580	+0.76	+5.4	19.1	55.3
Feb. 17	01 06.46	+00 06.3	5.192	4.581	+0.82	+5.6	19.2	47.4
Feb. 27	01 14.64	+01 02.5	5.300	4.582	+0.87	+5.7	19.2	39.7
Mar. 9	01 23.31	+01 59.5	5.392	4.582	+0.91	+5.7	19.3	32.2
Mar. 19	01 32.36	+02 56.6	5.467	4.583	+0.94	+5.7	19.3	24.8
Mar. 29	01 41.73	+03 53.2	5.524	4.584	+0.96	+5.5	19.3	17.8

Comet P/2005 N3 (Larson)

Epoch = 2012 July 12.0 TT
T = 2012 Sept. 29.37019 TT
Peri. = 58.81263 e = 0.3896264
Node = 298.48026 2000.0 a = 3.5829341 AU
Incl. = 6.32541 n = 0.14532684
q = 2.1869284 AU P = 6.78 years

m1 = 8.4 + 5 log(Delta) + 25.0 log(r) (pre -T)
m1 = 11.8 + 5 log(Delta) + 15.0 log(r) (post-T)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	18 39.04	-24 49.9	3.825	2.845	-0.69	-1.6	.	25.4/ 84	4.3
Jan. 14	18 57.53	-24 19.0	3.771	2.808	-0.71	-2.0	.	25.8/ 82	10.1
Jan. 24	19 16.12	-23 39.6	3.704	2.770	-0.73	-2.4	.	26.1/ 80	15.9
Feb. 3	19 34.70	-22 51.8	3.624	2.733	-0.75	-2.9	.	26.3/ 79	21.7
Feb. 13	19 53.20	-21 55.6	3.534	2.697	-0.77	-3.3	21.9	26.4/ 77	27.4
Feb. 23	20 11.54	-20 51.3	3.434	2.660	-0.80	-3.8	21.7	26.4/ 75	33.1
Mar. 4	20 29.62	-19 39.4	3.324	2.625	-0.82	-4.2	21.5	26.4/ 73	38.8
Mar. 14	20 47.40	-18 20.3	3.206	2.590	-0.85	-4.8	21.3	26.3/ 72	44.3
Mar. 24	21 04.80	-16 54.7	3.082	2.556	-0.87	-5.3	21.0	26.1/ 70	49.9
Apr. 3	21 21.75	-15 23.4	2.952	2.523	-0.91	-5.8	20.8	25.7/ 69	55.5
Apr. 13	21 38.19	-13 47.1	2.817	2.491	-0.94	-6.4	20.6	25.3/ 67	61.0
Apr. 23	21 54.08	-12 06.7	2.680	2.460	-0.98	-6.9	20.3	24.7/ 66	66.6
May 3	22 09.30	-10 23.3	2.540	2.429	-1.03	-7.5	20.1	23.9/ 64	72.2
May 13	22 23.79	-08 37.8	2.400	2.401	-1.08	-8.1	19.8	22.9/ 63	77.9
May 23	22 37.42	-06 51.5	2.260	2.373	-1.14	-8.8	19.6	21.6/ 61	83.7
June 2	22 50.07	-05 05.7	2.121	2.347	-1.21	-9.4	19.3	20.1/ 59	89.8
June 12	23 01.56	-03 21.7	1.986	2.323	-1.30	-10.1	19.0	18.2/ 57	96.0
June 22	23 11.68	-01 41.0	1.854	2.300	-1.40	-10.9	18.8	15.9/ 53	102.6
July 2	23 20.18	-00 05.7	1.729	2.280	-1.51	-11.7	18.5	13.3/ 48	109.5
July 12	23 26.80	+01 22.5	1.611	2.261	-1.63	-12.5	18.3	10.3/ 40	116.9
July 22	23 31.22	+02 40.9	1.503	2.244	-1.77	-13.5	18.1	7.2/ 24	124.8
Aug. 1	23 33.20	+03 47.0	1.407	2.229	-1.92	-14.5	17.8	5.2/350	133.3
Aug. 11	23 32.60	+04 38.2	1.325	2.216	-2.07	-15.5	17.6	5.8/306	142.4
Aug. 21	23 29.47	+05 11.9	1.260	2.205	-2.20	-16.5	17.5	7.9/281	152.1
Aug. 31	23 24.26	+05 27.1	1.216	2.197	-2.30	-17.3	17.4	9.7/269	161.8
Sept.10	23 17.76	+05 24.7	1.193	2.191	-2.35	-17.9	17.3	10.2/261	169.6
Sept.20	23 11.05	+05 08.4	1.195	2.188	-2.34	-18.1	17.3	8.8/254	168.5
Sept.30	23 05.36	+04 44.3	1.220	2.187	-2.26	-17.8	17.3	6.1/246	159.8
Oct. 10	23 01.64	+04 19.4	1.266	2.188	-2.15	-17.1	17.4	2.5/220	149.9
Oct. 20	23 00.55	+03 60.0	1.333	2.192	-2.01	-16.2	17.5	2.8/109	140.1
Oct. 30	23 02.34	+03 51.0	1.417	2.198	-1.87	-15.1	17.7	6.9/ 87	130.8
Nov. 9	23 06.92	+03 55.0	1.515	2.207	-1.73	-13.9	17.9	10.8/ 80	122.1
Nov. 19	23 14.04	+04 13.0	1.624	2.217	-1.60	-12.8	18.0	14.3/ 77	113.9
Nov. 29	23 23.39	+04 45.0	1.742	2.230	-1.49	-11.8	18.2	17.3/ 75	106.3
Dec. 9	23 34.58	+05 29.7	1.868	2.246	-1.39	-10.9	18.4	19.8/ 73	99.1
Dec. 19	23 47.32	+06 25.9	1.998	2.263	-1.31	-10.0	18.6	21.8/ 72	92.3
Dec. 29	00 01.31	+07 31.7	2.132	2.282	-1.23	-9.2	18.8	23.5/ 71	85.8
Jan. 8	00 16.31	+08 45.3	2.267	2.303	-1.17	-8.5	19.0	24.8/ 71	79.6
Jan. 18	00 32.15	+10 04.9	2.404	2.326	-1.12	-7.8	19.2	25.7/ 71	73.6
Jan. 28	00 48.67	+11 28.7	2.540	2.350	-1.07	-7.1	19.4	26.5/ 71	67.7
Feb. 7	01 05.75	+12 55.0	2.674	2.377	-1.03	-6.5	19.6	27.0/ 71	62.0
Feb. 17	01 23.30	+14 22.2	2.805	2.404	-0.99	-5.9	19.8	27.4/ 71	56.5
Feb. 27	01 41.23	+15 48.8	2.932	2.433	-0.96	-5.3	19.9	27.6/ 72	51.0
Mar. 9	01 59.48	+17 13.3	3.054	2.463	-0.93	-4.7	20.1	27.7/ 72	45.6
Mar. 19	02 18.00	+18 34.7	3.170	2.495	-0.90	-4.2	20.3	27.6/ 73	40.3
Mar. 29	02 36.74	+19 51.6	3.279	2.527	-0.88	-3.7	20.4	27.5/ 74	35.0

Comet 168P/Hergenrother

Epoch = 2012 July 12.0 TT
T = 2012 Oct. 1.68274 TT
Peri. = 13.96155 e = 0.6093776
Node = 356.46888 2000.0 a = 3.6223737 AU
Incl. = 21.92953 n = 0.14295989
q = 1.4149803 AU P = 6.89 years

m1 = 15.8 + 5 log(Delta) + 12.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	,	m1	Elong. °
Jan. 4	17 32.69	-39 55.2	3.809	2.942	+2.07	-1.9	.	24.5
Jan. 14	17 53.35	-40 14.6	3.695	2.878	+2.12	-1.3	.	29.3
Jan. 24	18 14.57	-40 28.1	3.569	2.812	+2.17	-0.7	.	34.4
Feb. 3	18 36.24	-40 35.0	3.432	2.746	+2.20	0.0	.	39.6
Feb. 13	18 58.29	-40 34.8	3.286	2.679	+2.23	+0.8	.	44.9
Feb. 23	19 20.63	-40 27.2	3.132	2.611	+2.25	+1.5	.	50.1
Mar. 4	19 43.17	-40 12.1	2.972	2.543	+2.26	+2.3	.	55.3
Mar. 14	20 05.82	-39 49.3	2.808	2.474	+2.27	+3.0	23.0	60.5
Mar. 24	20 28.50	-39 19.0	2.641	2.405	+2.26	+3.8	22.7	65.5
Apr. 3	20 51.11	-38 41.3	2.472	2.336	+2.25	+4.5	22.4	70.4
Apr. 13	21 13.59	-37 56.3	2.304	2.266	+2.23	+5.2	22.1	75.2
Apr. 23	21 35.86	-37 04.3	2.137	2.197	+2.20	+5.9	21.7	79.9
May 3	21 57.83	-36 05.6	1.972	2.128	+2.16	+6.6	21.4	84.5
May 13	22 19.42	-34 60.0	1.812	2.059	+2.11	+7.2	21.0	89.0
May 23	22 40.53	-33 47.6	1.656	1.991	+2.05	+8.0	20.6	93.4
June 2	23 01.01	-32 28.0	1.505	1.924	+1.97	+8.8	20.2	97.7
June 12	23 20.75	-31 00.1	1.361	1.859	+1.88	+9.7	19.8	101.9
June 22	23 39.52	-29 22.8	1.223	1.795	+1.75	+11.0	19.4	106.2
July 2	23 57.03	-27 33.1	1.093	1.734	+1.60	+12.6	19.0	110.5
July 12	00 13.00	-25 27.1	0.970	1.676	+1.39	+14.8	18.5	115.0
July 22	00 26.92	-22 58.8	0.856	1.622	+1.13	+18.0	18.1	119.9
Aug. 1	00 38.23	-19 58.8	0.750	1.572	+0.80	+22.5	17.6	125.3
Aug. 11	00 46.27	-16 14.3	0.655	1.528	+0.39	+28.5	17.2	131.4
Aug. 21	00 50.13	-11 29.1	0.572	1.490	-0.11	+36.3	16.8	138.7
Aug. 31	00 49.03	-05 26.2	0.504	1.459	-0.66	+44.7	16.4	147.3
Sept. 10	00 42.47	+02 00.9	0.454	1.436	-1.18	+50.8	16.1	156.9
Sept. 20	00 30.70	+10 29.3	0.428	1.421	-1.52	+51.0	15.9	164.6
Sept. 30	00 15.54	+18 59.3	0.426	1.415	-1.54	+44.1	15.8	163.6
Oct. 10	00 00.16	+26 20.6	0.448	1.418	-1.21	+33.5	16.0	155.4
Oct. 20	23 48.07	+31 55.2	0.490	1.430	-0.62	+23.3	16.2	146.4
Oct. 30	23 41.88	+35 48.5	0.548	1.450	+0.05	+15.7	16.5	138.7
Nov. 9	23 42.42	+38 25.2	0.617	1.479	+0.70	+10.5	16.9	132.4
Nov. 19	23 49.39	+40 10.3	0.696	1.515	+1.25	+7.3	17.3	127.2
Nov. 29	00 01.90	+41 23.2	0.784	1.557	+1.69	+5.2	17.7	122.7
Dec. 9	00 18.79	+42 15.3	0.880	1.605	+2.03	+3.8	18.1	118.6
Dec. 19	00 39.08	+42 53.5	0.984	1.657	+2.28	+2.9	18.5	114.7
Dec. 29	01 01.89	+43 22.2	1.097	1.714	+2.45	+2.1	18.9	110.8
Jan. 8	01 26.43	+43 43.0	1.218	1.774	+2.57	+1.4	19.3	106.9
Jan. 18	01 52.14	+43 57.0	1.349	1.837	+2.64	+0.8	19.8	102.8
Jan. 28	02 18.54	+44 04.8	1.487	1.902	+2.67	+0.1	20.2	98.6
Feb. 7	02 45.22	+44 06.2	1.633	1.968	+2.67	-0.5	20.5	94.2
Feb. 17	03 11.92	+44 01.3	1.787	2.036	+2.65	-1.1	20.9	89.6
Feb. 27	03 38.42	+43 50.0	1.946	2.104	+2.61	-1.8	21.3	85.0
Mar. 9	04 04.52	+43 32.2	2.110	2.173	+2.56	-2.4	21.6	80.2
Mar. 19	04 30.12	+43 07.8	2.278	2.243	+2.50	-3.1	22.0	75.3
Mar. 29	04 55.09	+42 37.2	2.447	2.312	+2.43	-3.7	22.3	70.4

Comet P/2005 T2 (Christensen)

Epoch = 2012 July 12.0 TT
T = 2012 Oct. 7.18048 TT
Peri. = 58.64751 e = 0.4220379
Node = 260.45254 2000.0 a = 3.8223243 AU
Incl. = 8.33740 n = 0.13189027
q = 2.2091586 AU P = 7.47 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	16 29.12	-24 17.3	3.707	2.939	-0.74	+0.2	22.3	23.6/ 96	33.6
Jan. 14	16 46.30	-24 39.8	3.585	2.899	-0.78	-0.2	22.1	23.4/ 95	39.8
Jan. 24	17 03.48	-24 54.9	3.452	2.859	-0.83	-0.5	21.9	23.2/ 93	46.1
Feb. 3	17 20.53	-25 02.3	3.311	2.819	-0.87	-0.9	21.8	22.8/ 91	52.3
Feb. 13	17 37.32	-25 01.8	3.162	2.780	-0.92	-1.3	21.6	22.3/ 89	58.7
Feb. 23	17 53.71	-24 53.3	3.008	2.741	-0.98	-1.8	21.4	21.6/ 87	65.0
Mar. 4	18 09.53	-24 37.1	2.849	2.703	-1.04	-2.3	21.2	20.7/ 84	71.5
Mar. 14	18 24.61	-24 13.5	2.688	2.665	-1.10	-2.8	20.9	19.6/ 82	78.0
Mar. 24	18 38.75	-23 43.1	2.526	2.629	-1.17	-3.4	20.7	18.3/ 79	84.7
Apr. 3	18 51.74	-23 06.4	2.365	2.593	-1.25	-4.0	20.5	16.6/ 76	91.6
Apr. 13	19 03.36	-22 24.5	2.207	2.558	-1.34	-4.7	20.2	14.6/ 72	98.7
Apr. 23	19 13.34	-21 38.2	2.053	2.524	-1.44	-5.4	20.0	12.3/ 67	106.1
May 3	19 21.40	-20 48.8	1.907	2.491	-1.56	-6.1	19.7	9.7/ 58	113.8
May 13	19 27.28	-19 57.3	1.770	2.460	-1.68	-6.8	19.5	7.1/ 43	122.0
May 23	19 30.69	-19 05.2	1.645	2.429	-1.82	-7.4	19.3	5.3/ 12	130.7
June 2	19 31.45	-18 13.8	1.535	2.401	-1.96	-8.0	19.0	5.6/331	139.9
June 12	19 29.56	-17 24.2	1.441	2.374	-2.10	-8.5	18.8	7.8/306	149.6
June 22	19 25.19	-16 37.8	1.368	2.348	-2.22	-8.9	18.6	9.9/295	159.7
July 2	19 18.93	-15 55.8	1.318	2.324	-2.31	-9.1	18.5	11.1/289	169.3
July 12	19 11.70	-15 19.2	1.291	2.303	-2.35	-9.1	18.4	10.7/286	172.5
July 22	19 04.60	-14 49.1	1.288	2.283	-2.33	-9.0	18.3	8.7/285	164.3
Aug. 1	18 58.82	-14 25.8	1.309	2.266	-2.26	-8.7	18.3	5.4/288	154.1
Aug. 11	18 55.27	-14 09.0	1.350	2.250	-2.16	-8.5	18.3	1.6/316	144.1
Aug. 21	18 54.52	-13 57.6	1.408	2.237	-2.03	-8.2	18.4	3.4/ 77	134.5
Aug. 31	18 56.82	-13 49.7	1.482	2.227	-1.90	-7.9	18.5	7.7/ 85	125.6
Sept.10	19 02.09	-13 43.1	1.567	2.219	-1.78	-7.6	18.6	11.7/ 86	117.4
Sept.20	19 10.11	-13 35.2	1.662	2.213	-1.67	-7.4	18.7	15.3/ 86	109.7
Sept.30	19 20.56	-13 23.6	1.764	2.210	-1.57	-7.2	18.8	18.4/ 85	102.6
Oct. 10	19 33.09	-13 06.5	1.870	2.209	-1.48	-7.1	18.9	21.0/ 84	95.9
Oct. 20	19 47.35	-12 42.2	1.981	2.211	-1.40	-6.9	19.1	23.2/ 82	89.6
Oct. 30	20 03.02	-12 09.3	2.095	2.216	-1.33	-6.9	19.2	25.0/ 81	83.6
Nov. 9	20 19.79	-11 27.2	2.210	2.223	-1.26	-6.8	19.3	26.5/ 79	77.8
Nov. 19	20 37.43	-10 35.3	2.325	2.232	-1.20	-6.7	19.5	27.7/ 78	72.3
Nov. 29	20 55.69	-09 33.8	2.441	2.244	-1.15	-6.6	19.6	28.6/ 76	66.8
Dec. 9	21 14.37	-08 23.0	2.555	2.259	-1.10	-6.6	19.7	29.3/ 75	61.5
Dec. 19	21 33.34	-07 03.4	2.668	2.275	-1.05	-6.5	19.9	29.8/ 73	56.3
Dec. 29	21 52.46	-05 35.9	2.779	2.294	-1.01	-6.3	20.0	30.1/ 72	51.2
Jan. 8	22 11.62	-04 01.6	2.886	2.315	-0.97	-6.2	20.2	30.4/ 71	46.1
Jan. 18	22 30.75	-02 21.5	2.989	2.338	-0.93	-6.0	20.3	30.4/ 70	41.0
Jan. 28	22 49.79	-00 36.9	3.087	2.362	-0.90	-5.8	20.4	30.3/ 69	36.0
Feb. 7	23 08.71	+01 10.9	3.179	2.389	-0.87	-5.6	20.6	30.2/ 69	31.0
Feb. 17	23 27.47	+03 00.9	3.265	2.417	-0.84	-5.3	20.7	29.9/ 68	26.1
Feb. 27	23 46.06	+04 51.6	3.343	2.446	-0.81	-5.0	20.8	29.6/ 68	21.2
Mar. 9	00 04.47	+06 42.1	3.414	2.477	-0.79	-4.8	21.0	29.2/ 68	16.3
Mar. 19	00 22.70	+08 31.2	3.476	2.509	-0.77	-4.4	21.1	28.7/ 68	11.6
Mar. 29	00 40.72	+10 18.0	3.529	2.543	-0.75	-4.1	21.2	28.2/ 68	7.5

Comet C/2011 R1 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2012 Oct. 19.62374 TT
Peri. = 308.86152
Node = 221.40815 2000.0
Incl. = 116.19718
q = 2.0796044 AU
e = 1.0006056

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 08.12	-34 16.4	3.881	3.831	-0.33	+1.8	15.7	79.8
Jan. 14	01 04.83	-33 58.2	3.945	3.747	-0.13	+2.4	15.7	71.3
Jan. 24	01 03.55	-33 34.5	3.997	3.663	+0.06	+2.6	15.6	63.4
Feb. 3	01 04.13	-33 08.7	4.033	3.580	+0.22	+2.5	15.6	56.2
Feb. 13	01 06.34	-32 43.6	4.051	3.497	+0.37	+2.2	15.5	49.8
Feb. 23	01 10.03	-32 21.7	4.048	3.414	+0.50	+1.7	15.4	44.6
Mar. 4	01 15.02	-32 05.2	4.021	3.332	+0.62	+0.9	15.3	40.6
Mar. 14	01 21.18	-31 56.1	3.971	3.250	+0.72	0.0	15.2	38.3
Mar. 24	01 28.41	-31 56.5	3.898	3.170	+0.82	-1.2	15.1	37.8
Apr. 3	01 36.64	-32 08.7	3.801	3.090	+0.92	-2.7	15.0	39.1
Apr. 13	01 45.84	-32 35.3	3.683	3.012	+1.02	-4.4	14.8	41.9
Apr. 23	01 56.04	-33 19.0	3.544	2.934	+1.12	-6.4	14.7	45.9
May 3	02 07.28	-34 23.4	3.388	2.858	+1.24	-8.9	14.5	50.7
May 13	02 19.69	-35 52.4	3.218	2.784	+1.38	-11.8	14.3	56.1
May 23	02 33.52	-37 50.7	3.038	2.712	+1.56	-15.3	14.1	61.9
June 2	02 49.11	-40 23.7	2.853	2.641	+1.80	-19.3	13.8	67.8
June 12	03 07.08	-43 36.7	2.669	2.574	+2.14	-23.8	13.6	73.6
June 22	03 28.44	-47 34.5	2.494	2.509	+2.65	-28.4	13.4	79.1
July 2	03 54.90	-52 18.4	2.335	2.447	+3.47	-32.3	13.2	84.0
July 12	04 29.55	-57 41.4	2.202	2.388	+4.85	-34.0	12.9	87.7
July 22	05 18.05	-63 21.5	2.103	2.334	+7.15	-30.6	12.8	89.9
Aug. 1	06 29.51	-68 27.6	2.047	2.283	+10.11	-18.5	12.6	89.9
Aug. 11	08 10.65	-71 32.1	2.036	2.238	+11.27	+1.4	12.6	87.7
Aug. 21	10 03.37	-71 18.6	2.069	2.197	+9.06	+18.0	12.5	83.4
Aug. 31	11 33.94	-68 18.3	2.141	2.162	+6.19	+25.2	12.6	77.6
Sept. 10	12 35.87	-64 05.8	2.242	2.132	+4.27	+26.0	12.6	70.7
Sept. 20	13 18.61	-59 45.5	2.361	2.109	+3.14	+24.1	12.7	63.3
Sept. 30	13 50.01	-55 44.4	2.489	2.093	+2.46	+21.4	12.8	55.6
Oct. 10	14 14.59	-52 10.3	2.616	2.083	+2.02	+18.7	12.9	47.9
Oct. 20	14 34.83	-49 02.9	2.735	2.080	+1.73	+16.4	13.0	40.4
Oct. 30	14 52.10	-46 18.9	2.840	2.083	+1.51	+14.5	13.1	33.3
Nov. 9	15 07.21	-43 54.0	2.926	2.094	+1.34	+13.0	13.1	27.1
Nov. 19	15 20.61	-41 43.9	2.989	2.111	+1.19	+11.9	13.2	22.6
Nov. 29	15 32.55	-39 44.7	3.026	2.134	+1.06	+11.2	13.3	21.0
Dec. 9	15 43.15	-37 52.5	3.037	2.164	+0.93	+10.8	13.3	23.0
Dec. 19	15 52.43	-36 04.0	3.019	2.200	+0.79	+10.8	13.4	28.0
Dec. 29	16 00.33	-34 15.8	2.975	2.241	+0.64	+11.1	13.4	34.9
Jan. 8	16 06.71	-32 24.3	2.905	2.287	+0.47	+11.8	13.4	43.0
Jan. 18	16 11.37	-30 26.0	2.812	2.337	+0.27	+12.9	13.4	52.0
Jan. 28	16 14.04	-28 16.6	2.699	2.392	+0.04	+14.5	13.4	61.6
Feb. 7	16 14.39	-25 51.1	2.571	2.451	-0.24	+16.7	13.4	71.9
Feb. 17	16 12.03	-23 03.9	2.434	2.513	-0.55	+19.5	13.3	83.0
Feb. 27	16 06.56	-19 48.9	2.297	2.578	-0.89	+22.8	13.3	94.9
Mar. 9	15 57.64	-16 00.5	2.169	2.646	-1.26	+26.5	13.3	107.7
Mar. 19	15 45.07	-11 35.8	2.062	2.717	-1.60	+29.7	13.2	121.3
Mar. 29	15 29.02	-06 38.4	1.989	2.789	-1.89	+31.7	13.2	135.4

Comet C/2012 A2 (LINEAR)

T = 2012 Nov. 3.42309 TT
Peri. = 101.39185
Node = 191.43374 2000.0
Incl. = 125.87599
q = 3.5450900 AU
e = 1.0061704

m1 = 8.2 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	12 54.38	+38 33.0	4.129	4.474	-0.07	+19.4	17.8	104.3
Jan. 14	12 53.63	+41 46.6	3.952	4.422	-0.33	+21.4	17.6	112.4
Jan. 24	12 50.37	+45 21.1	3.799	4.371	-0.65	+22.9	17.5	119.7
Feb. 3	12 43.87	+49 10.0	3.676	4.320	-1.05	+23.3	17.4	125.2
Feb. 13	12 33.32	+53 03.4	3.589	4.271	-1.54	+22.5	17.3	128.3
Feb. 23	12 17.90	+56 48.0	3.538	4.223	-2.08	+20.1	17.2	128.3
Mar. 4	11 57.08	+60 08.6	3.525	4.176	-2.60	+16.2	17.1	125.2
Mar. 14	11 31.11	+62 50.9	3.547	4.130	-2.96	+11.4	17.1	119.7
Mar. 24	11 01.49	+64 45.0	3.598	4.086	-3.05	+6.4	17.1	112.5
Apr. 3	10 31.02	+65 48.5	3.674	4.042	-2.82	+1.9	17.1	104.5
Apr. 13	10 02.83	+66 07.6	3.766	4.000	-2.36	-1.4	17.1	96.2
Apr. 23	09 39.18	+65 53.3	3.867	3.960	-1.81	-3.5	17.1	87.9
May 3	09 21.04	+65 18.1	3.971	3.921	-1.28	-4.6	17.1	79.8
May 13	09 08.22	+64 32.4	4.072	3.884	-0.82	-4.9	17.1	72.2
May 23	09 00.03	+63 43.8	4.165	3.848	-0.44	-4.6	17.2	65.0
June 2	08 55.65	+62 57.6	4.245	3.814	-0.14	-4.1	17.2	58.5
June 12	08 54.28	+62 17.0	4.308	3.782	+0.10	-3.3	17.1	52.8
June 22	08 55.30	+61 44.2	4.353	3.751	+0.29	-2.4	17.1	48.1
July 2	08 58.18	+61 20.6	4.378	3.723	+0.43	-1.3	17.1	44.6
July 12	09 02.52	+61 07.5	4.380	3.696	+0.55	-0.1	17.1	42.6
July 22	09 08.00	+61 06.1	4.359	3.671	+0.64	+1.1	17.0	42.2
Aug. 1	09 14.36	+61 17.6	4.316	3.649	+0.70	+2.6	17.0	43.6
Aug. 11	09 21.39	+61 43.5	4.251	3.628	+0.75	+4.2	16.9	46.5
Aug. 21	09 28.93	+62 25.6	4.166	3.610	+0.79	+6.1	16.9	50.7
Aug. 31	09 36.78	+63 26.4	4.061	3.594	+0.80	+8.2	16.8	55.9
Sept.10	09 44.79	+64 48.3	3.941	3.580	+0.80	+10.6	16.7	62.0
Sept.20	09 52.78	+66 34.5	3.809	3.568	+0.77	+13.4	16.6	68.6
Sept.30	10 00.45	+68 48.3	3.670	3.559	+0.69	+16.5	16.5	75.8
Oct. 10	10 07.36	+71 33.1	3.528	3.552	+0.52	+19.9	16.4	83.3
Oct. 20	10 12.57	+74 51.7	3.391	3.548	+0.10	+23.4	16.4	90.8
Oct. 30	10 13.58	+78 45.5	3.265	3.545	-1.28	+26.6	16.3	98.2
Nov. 9	10 00.77	+83 12.0	3.159	3.545	-12.38	+27.2	16.2	104.9
Nov. 19	07 56.99	+87 43.9	3.080	3.548	-42.66	-12.1	16.1	110.4
Nov. 29	00 50.34	+85 42.6	3.035	3.553	-4.25	-33.0	16.1	114.0
Dec. 9	00 07.83	+80 13.0	3.028	3.560	-0.44	-33.7	16.1	115.2
Dec. 19	00 03.47	+74 35.6	3.061	3.570	+0.36	-32.5	16.2	113.5
Dec. 29	00 07.09	+69 10.8	3.132	3.581	+0.65	-30.0	16.2	109.4
Jan. 8	00 13.60	+64 10.7	3.238	3.596	+0.79	-26.8	16.3	103.4
Jan. 18	00 21.46	+59 42.4	3.372	3.612	+0.85	-23.3	16.4	96.1
Jan. 28	00 30.00	+55 49.3	3.525	3.630	+0.89	-19.8	16.5	88.2
Feb. 7	00 38.88	+52 30.9	3.691	3.651	+0.91	-16.6	16.7	80.0
Feb. 17	00 47.93	+49 45.0	3.862	3.674	+0.91	-13.7	16.8	71.7
Feb. 27	00 57.01	+47 28.1	4.031	3.699	+0.90	-11.2	16.9	63.6
Mar. 9	01 06.01	+45 36.4	4.193	3.726	+0.89	-9.0	17.0	55.7
Mar. 19	01 14.86	+44 06.4	4.343	3.754	+0.86	-7.2	17.1	48.2
Mar. 29	01 23.48	+42 54.4	4.477	3.785	+0.83	-5.7	17.2	41.3

Comet P/1994 X1 (McNaught-Russell)

Epoch = 2012 July 12.0 TT
T = 2012 Dec. 4.52706 TT
Peri. = 171.18829 e = 0.8153372
Node = 218.01178 2000.0 a = 6.9314729 AU
Incl. = 29.07918 n = 0.05400896
q = 1.2799852 AU P = 18.25 years

m1 = 12.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	17 57.50	-05 24.3	4.789	3.898	-0.33	-1.0	.	17.4/ 83	22.4
Jan. 14	18 09.07	-05 01.3	4.664	3.818	-0.36	-1.1	.	17.8/ 80	27.4
Jan. 24	18 20.77	-04 29.6	4.522	3.737	-0.39	-1.2	.	18.0/ 77	33.1
Feb. 3	18 32.49	-03 48.6	4.365	3.655	-0.42	-1.3	.	18.2/ 74	39.2
Feb. 13	18 44.16	-02 58.0	4.194	3.572	-0.46	-1.5	.	18.3/ 71	45.5
Feb. 23	18 55.68	-01 57.4	4.011	3.489	-0.50	-1.7	.	18.3/ 67	51.9
Mar. 4	19 06.94	-00 46.3	3.819	3.404	-0.55	-1.9	23.1	18.3/ 63	58.3
Mar. 14	19 17.85	+00 35.4	3.619	3.319	-0.61	-2.1	22.8	18.2/ 59	64.8
Mar. 24	19 28.31	+02 08.2	3.414	3.233	-0.67	-2.4	22.5	18.1/ 55	71.2
Apr. 3	19 38.17	+03 52.3	3.206	3.146	-0.74	-2.7	22.2	17.9/ 50	77.6
Apr. 13	19 47.32	+05 47.9	2.998	3.059	-0.81	-3.1	21.9	17.7/ 44	83.9
Apr. 23	19 55.60	+07 54.9	2.792	2.970	-0.90	-3.5	21.5	17.5/ 38	90.2
May 3	20 02.81	+10 13.2	2.590	2.881	-1.01	-4.0	21.2	17.3/ 30	96.4
May 13	20 08.77	+12 42.1	2.395	2.792	-1.13	-4.7	20.8	17.1/ 22	102.4
May 23	20 13.22	+15 20.5	2.208	2.701	-1.26	-5.5	20.4	17.0/ 13	108.2
June 2	20 15.89	+18 06.1	2.032	2.610	-1.41	-6.4	20.0	17.0/ 3	113.7
June 12	20 16.51	+20 55.4	1.868	2.519	-1.58	-7.6	19.6	17.0/352	118.8
June 22	20 14.79	+23 43.3	1.718	2.427	-1.76	-9.2	19.2	16.9/340	123.1
July 2	20 10.54	+26 22.1	1.583	2.335	-1.94	-11.1	18.7	16.7/328	126.4
July 12	20 03.78	+28 42.7	1.465	2.243	-2.11	-13.4	18.3	16.2/314	128.5
July 22	19 54.81	+30 34.1	1.361	2.152	-2.24	-16.1	17.9	15.1/299	129.1
Aug. 1	19 44.43	+31 45.8	1.273	2.060	-2.32	-19.0	17.4	13.7/281	128.1
Aug. 11	19 33.86	+32 10.0	1.198	1.970	-2.32	-21.9	17.0	12.1/258	125.7
Aug. 21	19 24.62	+31 42.8	1.135	1.881	-2.26	-24.2	16.6	11.2/227	122.3
Aug. 31	19 18.29	+30 26.0	1.081	1.794	-2.17	-25.8	16.2	12.4/194	118.2
Sept.10	19 16.09	+28 25.5	1.034	1.710	-2.07	-26.3	15.8	16.2/166	113.8
Sept.20	19 18.88	+25 48.2	0.992	1.629	-2.01	-25.7	15.4	21.8/148	109.4
Sept.30	19 27.19	+22 42.1	0.953	1.553	-2.02	-23.7	15.0	28.6/136	105.2
Oct. 10	19 41.20	+19 13.4	0.918	1.483	-2.10	-20.5	14.6	36.3/128	101.3
Oct. 20	20 01.02	+15 27.1	0.887	1.421	-2.27	-15.8	14.2	44.2/122	97.8
Oct. 30	20 26.58	+11 28.8	0.862	1.369	-2.53	-10.0	13.9	51.9/117	94.8
Nov. 9	20 57.57	+07 25.0	0.846	1.327	-2.86	-3.2	13.7	58.6/114	92.2
Nov. 19	21 33.40	+03 26.4	0.841	1.298	-3.23	+3.7	13.5	63.3/110	90.0
Nov. 29	22 13.01	-00 13.2	0.852	1.282	-3.57	+9.8	13.5	65.5/107	88.1
Dec. 9	22 54.88	-03 19.1	0.880	1.281	-3.82	+14.2	13.5	65.1/103	86.6
Dec. 19	23 37.38	-05 39.5	0.928	1.295	-3.93	+16.6	13.7	62.7/ 99	85.3
Dec. 29	00 18.98	-07 10.1	0.993	1.323	-3.89	+17.1	14.0	59.1/ 95	84.1
Jan. 8	00 58.59	-07 53.9	1.075	1.364	-3.72	+16.4	14.4	55.1/ 91	82.9
Jan. 18	01 35.71	-07 58.5	1.171	1.415	-3.47	+15.1	14.8	51.4/ 88	81.6
Jan. 28	02 10.23	-07 33.7	1.281	1.476	-3.17	+13.6	15.3	47.9/ 85	80.2
Feb. 7	02 42.30	-06 49.1	1.402	1.545	-2.87	+12.1	15.8	45.0/ 83	78.5
Feb. 17	03 12.23	-05 52.6	1.532	1.621	-2.58	+10.8	16.3	42.4/ 82	76.7
Feb. 27	03 40.32	-04 51.3	1.672	1.701	-2.31	+9.7	16.8	40.1/ 81	74.6
Mar. 9	04 06.82	-03 50.2	1.818	1.785	-2.07	+8.7	17.3	38.1/ 82	72.2
Mar. 19	04 31.99	-02 53.1	1.971	1.872	-1.85	+7.9	17.8	36.3/ 82	69.5
Mar. 29	04 55.99	-02 02.8	2.130	1.960	-1.66	+7.2	18.2	34.7/ 83	66.6

Comet P/2006 F4 (Spacewatch)

Epoch = 2012 July 12.0 TT
T = 2012 Dec. 13.92101 TT
Peri. = 31.04230 e = 0.3366554
Node = 184.06280 2000.0 a = 3.5306224 AU
Incl. = 12.38022 n = 0.14856865
q = 2.3420193 AU P = 6.63 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	09 01.65	+01 53.1	2.268	3.110	-1.02	+2.5	21.6	8.1/278	143.0
Jan. 14	08 56.27	+02 04.7	2.168	3.078	-1.06	+2.6	21.4	10.6/286	153.1
Jan. 24	08 49.44	+02 33.3	2.094	3.045	-1.09	+2.7	21.3	12.2/291	161.8
Feb. 3	08 41.84	+03 17.8	2.048	3.012	-1.11	+2.8	21.1	12.7/297	165.5
Feb. 13	08 34.29	+04 15.1	2.031	2.980	-1.10	+2.7	21.0	11.9/303	160.5
Feb. 23	08 27.63	+05 20.5	2.042	2.948	-1.08	+2.5	21.0	10.1/313	151.3
Mar. 4	08 22.63	+06 28.9	2.078	2.916	-1.04	+2.3	20.9	7.9/328	141.0
Mar. 14	08 19.78	+07 35.3	2.135	2.884	-1.00	+2.0	20.9	6.1/354	130.7
Mar. 24	08 19.36	+08 35.8	2.209	2.852	-0.96	+1.8	20.9	6.0/ 30	120.9
Apr. 3	08 21.42	+09 27.7	2.296	2.821	-0.92	+1.5	20.9	7.8/ 58	111.6
Apr. 13	08 25.85	+10 09.2	2.391	2.790	-0.89	+1.4	20.9	10.2/ 73	102.8
Apr. 23	08 32.45	+10 39.5	2.490	2.760	-0.86	+1.3	20.9	12.7/ 81	94.6
May 3	08 40.98	+10 57.9	2.592	2.730	-0.83	+1.2	20.9	15.0/ 87	87.0
May 13	08 51.19	+11 04.7	2.692	2.701	-0.81	+1.2	20.9	17.2/ 91	79.7
May 23	09 02.83	+10 59.8	2.789	2.673	-0.80	+1.2	20.9	19.0/ 95	72.9
June 2	09 15.70	+10 43.7	2.882	2.645	-0.79	+1.3	20.9	20.7/ 97	66.4
June 12	09 29.60	+10 16.8	2.969	2.618	-0.79	+1.4	20.9	22.1/ 99	60.3
June 22	09 44.36	+09 39.7	3.049	2.592	-0.78	+1.5	20.9	23.4/101	54.3
July 2	09 59.85	+08 53.0	3.122	2.566	-0.78	+1.6	20.8	24.5/103	48.7
July 12	10 15.94	+07 57.4	3.186	2.542	-0.78	+1.7	20.8	25.5/104	43.2
July 22	10 32.56	+06 53.7	3.243	2.519	-0.79	+1.9	20.8	26.4/105	37.8
Aug. 1	10 49.62	+05 42.7	3.291	2.497	-0.79	+2.0	20.7	27.2/106	32.7
Aug. 11	11 07.06	+04 25.5	3.329	2.476	-0.80	+2.1	20.7	27.9/107	27.6
Aug. 21	11 24.87	+03 02.9	3.360	2.456	-0.80	+2.2	20.7	28.5/108	22.6
Aug. 31	11 42.99	+01 36.1	3.381	2.438	-0.81	+2.3	20.6	29.0/108	17.6
Sept.10	12 01.40	+00 06.1	3.393	2.421	-0.82	+2.4	20.6	29.5/108	12.8
Sept.20	12 20.11	-01 25.7	3.396	2.406	-0.83	+2.4	20.5	29.9/108	7.9
Sept.30	12 39.10	-02 58.3	3.391	2.392	-0.84	+2.4	20.5	30.2/108	3.3
Oct. 10	12 58.35	-04 30.2	3.377	2.380	-0.86	+2.4	20.4	30.5/107	2.4
Oct. 20	13 17.86	-06 00.1	3.355	2.369	-0.87	+2.3	20.4	30.7/107	6.9
Oct. 30	13 37.61	-07 26.6	3.324	2.360	-0.89	+2.3	20.3	30.8/106	11.7
Nov. 9	13 57.57	-08 48.4	3.285	2.353	-0.90	+2.1	20.3	30.8/105	16.6
Nov. 19	14 17.72	-10 04.0	3.238	2.348	-0.92	+2.0	20.2	30.6/103	21.6
Nov. 29	14 37.99	-11 12.1	3.184	2.344	-0.93	+1.8	20.2	30.4/102	26.6
Dec. 9	14 58.32	-12 11.5	3.122	2.342	-0.95	+1.6	20.1	30.1/100	31.7
Dec. 19	15 18.62	-13 00.9	3.053	2.342	-0.97	+1.4	20.1	29.7/ 98	36.9
Dec. 29	15 38.77	-13 39.5	2.978	2.344	-0.98	+1.1	20.0	29.1/ 96	42.2
Jan. 8	15 58.65	-14 06.4	2.897	2.348	-1.00	+0.9	20.0	28.3/ 94	47.5
Jan. 18	16 18.11	-14 21.0	2.810	2.353	-1.01	+0.6	19.9	27.4/ 91	53.0
Jan. 28	16 36.97	-14 23.2	2.718	2.360	-1.03	+0.4	19.9	26.3/ 88	58.6
Feb. 7	16 55.05	-14 13.0	2.622	2.369	-1.04	+0.2	19.8	25.0/ 85	64.4
Feb. 17	17 12.14	-13 50.7	2.523	2.380	-1.06	0.0	19.8	23.4/ 82	70.3
Feb. 27	17 28.02	-13 16.9	2.421	2.392	-1.08	-0.1	19.7	21.6/ 79	76.5
Mar. 9	17 42.49	-12 32.6	2.318	2.406	-1.11	-0.2	19.7	19.5/ 74	82.9
Mar. 19	17 55.28	-11 39.2	2.215	2.421	-1.14	-0.3	19.6	17.1/ 69	89.6
Mar. 29	18 06.15	-10 38.2	2.113	2.438	-1.18	-0.3	19.6	14.5/ 63	96.6

Comet P/1999 RO28 (LONEOS)

Epoch = 2012 July 12.0 TT
T = 2012 Dec. 21.13149 TT
Peri. = 220.07318 e = 0.6530823
Node = 148.32263 2000.0 a = 3.5152628 AU
Incl. = 8.18976 n = 0.14954344
q = 1.2195069 AU P = 6.59 years

m1 = 20.0 + 5 log(Delta) + 12.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	16 25.57	-14 49.5	4.262	3.519	-0.43	+1.2	.	17.7/ 96	36.3
Jan. 14	16 37.70	-15 07.9	4.105	3.458	-0.46	+1.2	.	17.4/ 95	43.5
Jan. 24	16 49.68	-15 20.5	3.935	3.397	-0.50	+1.2	.	16.9/ 93	50.6
Feb. 3	17 01.38	-15 27.2	3.752	3.334	-0.54	+1.2	.	16.3/ 91	57.9
Feb. 13	17 12.68	-15 27.9	3.559	3.271	-0.59	+1.1	.	15.5/ 88	65.2
Feb. 23	17 23.43	-15 22.6	3.359	3.206	-0.65	+1.1	.	14.5/ 86	72.7
Mar. 4	17 33.44	-15 11.5	3.153	3.141	-0.71	+1.1	.	13.3/ 83	80.2
Mar. 14	17 42.53	-14 54.8	2.945	3.074	-0.78	+1.0	.	11.8/ 80	87.9
Mar. 24	17 50.49	-14 32.9	2.736	3.006	-0.85	+0.9	.	9.9/ 75	95.8
Apr. 3	17 57.05	-14 06.5	2.530	2.937	-0.94	+0.9	.	7.7/ 67	104.0
Apr. 13	18 01.95	-13 36.4	2.330	2.867	-1.04	+0.8	.	5.4/ 52	112.5
Apr. 23	18 04.87	-13 03.6	2.139	2.796	-1.15	+0.8	.	3.5/ 15	121.3
May 3	18 05.49	-12 29.5	1.959	2.724	-1.27	+0.7	.	4.4/320	130.5
May 13	18 03.54	-11 55.9	1.795	2.651	-1.39	+0.7	.	7.6/294	140.2
May 23	17 58.82	-11 24.9	1.649	2.577	-1.50	+0.7	.	11.3/283	150.1
June 2	17 51.36	-10 59.2	1.526	2.502	-1.60	+0.7	.	14.6/277	159.7
June 12	17 41.54	-10 41.4	1.426	2.426	-1.67	+0.8	.	16.9/272	166.7
June 22	17 30.10	-10 34.6	1.353	2.349	-1.69	+0.9	.	17.5/268	164.9
July 2	17 18.24	-10 41.0	1.305	2.271	-1.66	+1.1	.	16.2/262	155.9
July 12	17 07.30	-11 01.8	1.281	2.193	-1.59	+1.3	.	13.3/254	145.1
July 22	16 58.56	-11 37.3	1.277	2.114	-1.49	+1.6	.	9.5/239	134.2
Aug. 1	16 53.02	-12 26.2	1.288	2.035	-1.38	+1.9	.	6.6/204	123.8
Aug. 11	16 51.21	-13 26.4	1.309	1.956	-1.29	+2.3	.	7.6/156	114.2
Aug. 21	16 53.37	-14 35.4	1.335	1.877	-1.22	+2.7	.	11.7/130	105.4
Aug. 31	16 59.54	-15 50.3	1.364	1.799	-1.19	+3.2	.	16.4/119	97.5
Sept.10	17 09.57	-17 08.1	1.390	1.722	-1.19	+3.5	.	21.2/112	90.4
Sept.20	17 23.35	-18 25.5	1.413	1.647	-1.22	+3.9	.	25.8/107	84.0
Sept.30	17 40.76	-19 38.9	1.431	1.574	-1.28	+4.1	.	30.2/103	78.4
Oct. 10	18 01.68	-20 44.1	1.444	1.504	-1.38	+4.1	23.0	34.5/100	73.5
Oct. 20	18 26.03	-21 36.6	1.450	1.439	-1.50	+4.0	22.8	38.6/ 96	69.2
Oct. 30	18 53.67	-22 11.2	1.452	1.380	-1.65	+3.5	22.6	42.6/ 93	65.6
Nov. 9	19 24.37	-22 22.3	1.450	1.327	-1.82	+2.7	22.3	46.5/ 89	62.6
Nov. 19	19 57.87	-22 04.3	1.445	1.284	-2.00	+1.5	22.2	50.2/ 86	60.3
Nov. 29	20 33.70	-21 12.6	1.442	1.251	-2.16	-0.1	22.0	53.5/ 82	58.5
Dec. 9	21 11.27	-19 44.0	1.441	1.229	-2.31	-2.0	21.9	56.4/ 79	57.3
Dec. 19	21 49.94	-17 37.6	1.446	1.220	-2.42	-4.2	21.9	58.5/ 75	56.5
Dec. 29	22 29.01	-14 56.4	1.460	1.224	-2.49	-6.3	21.9	59.8/ 73	56.1
Jan. 8	23 07.85	-11 46.4	1.486	1.240	-2.51	-8.2	22.0	60.1/ 70	55.9
Jan. 18	23 45.99	-08 16.1	1.525	1.268	-2.49	-9.6	22.2	59.5/ 69	55.8
Jan. 28	00 23.08	-04 35.9	1.579	1.308	-2.43	-10.4	22.4	58.0/ 68	55.7
Feb. 7	00 58.90	-00 55.8	1.649	1.356	-2.34	-10.5	22.7	55.9/ 68	55.3
Feb. 17	01 33.39	+02 35.4	1.734	1.413	-2.23	-10.1	.	53.3/ 68	54.5
Feb. 27	02 06.53	+05 50.9	1.833	1.476	-2.11	-9.3	.	50.5/ 69	53.4
Mar. 9	02 38.33	+08 46.5	1.945	1.543	-1.98	-8.2	.	47.6/ 71	51.9
Mar. 19	03 08.88	+11 19.7	2.066	1.615	-1.84	-7.0	.	44.9/ 72	49.9
Mar. 29	03 38.20	+13 29.7	2.196	1.690	-1.71	-5.7	.	42.3/ 74	47.5

Comet P/1999 D1 (Hermann)

Epoch = 2012 July 12.0 TT
T = 2012 Dec. 22.54186 TT
Peri. = 173.95337 e = 0.7140208
Node = 348.77832 2000.0 a = 5.7482425 AU
Incl. = 21.34512 n = 0.07151571
q = 1.6438778 AU P = 13.78 years

m1 = 14.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	01 39.39	+33 47.6	3.297	3.765	-0.35	-4.4	.	4.0/155	111.1
Jan. 14	01 40.75	+33 11.8	3.367	3.696	-0.34	-4.2	.	5.1/120	101.8
Jan. 24	01 44.24	+32 46.3	3.442	3.627	-0.34	-4.0	.	7.1/101	92.9
Feb. 3	01 49.70	+32 31.9	3.517	3.557	-0.35	-3.8	.	9.2/ 92	84.3
Feb. 13	01 56.97	+32 28.4	3.589	3.487	-0.36	-3.6	.	11.3/ 86	76.1
Feb. 23	02 05.88	+32 35.2	3.655	3.416	-0.37	-3.5	.	13.3/ 82	68.3
Mar. 4	02 16.30	+32 51.2	3.712	3.345	-0.40	-3.3	.	15.0/ 80	61.0
Mar. 14	02 28.11	+33 15.0	3.758	3.273	-0.43	-3.1	.	16.7/ 79	54.0
Mar. 24	02 41.24	+33 45.3	3.792	3.201	-0.46	-3.0	.	18.2/ 78	47.4
Apr. 3	02 55.61	+34 20.4	3.812	3.129	-0.50	-2.8	.	19.6/ 78	41.1
Apr. 13	03 11.16	+34 58.8	3.819	3.056	-0.54	-2.6	.	20.9/ 78	35.3
Apr. 23	03 27.90	+35 38.8	3.812	2.984	-0.59	-2.4	.	22.1/ 78	29.9
May 3	03 45.78	+36 18.9	3.792	2.911	-0.65	-2.1	.	23.2/ 79	25.1
May 13	04 04.79	+36 57.2	3.758	2.837	-0.71	-1.8	.	24.3/ 80	21.0
May 23	04 24.94	+37 32.1	3.711	2.764	-0.77	-1.3	.	25.4/ 82	17.8
June 2	04 46.19	+38 01.7	3.652	2.691	-0.84	-0.8	.	26.4/ 83	15.9
June 12	05 08.51	+38 24.0	3.583	2.618	-0.91	-0.2	.	27.4/ 85	15.5
June 22	05 31.86	+38 37.4	3.503	2.546	-0.98	+0.5	.	28.5/ 88	16.6
July 2	05 56.16	+38 39.7	3.414	2.474	-1.05	+1.3	.	29.5/ 90	18.8
July 12	06 21.31	+38 29.1	3.318	2.402	-1.11	+2.3	.	30.6/ 93	21.6
July 22	06 47.18	+38 03.9	3.216	2.332	-1.17	+3.5	22.9	31.6/ 96	24.7
Aug. 1	07 13.61	+37 22.5	3.108	2.262	-1.22	+4.7	22.6	32.7/ 98	28.0
Aug. 11	07 40.42	+36 23.3	2.997	2.194	-1.26	+6.1	22.3	33.8/101	31.3
Aug. 21	08 07.44	+35 05.3	2.883	2.128	-1.30	+7.7	22.0	34.9/104	34.5
Aug. 31	08 34.47	+33 27.8	2.768	2.064	-1.32	+9.3	21.7	36.0/107	37.8
Sept.10	09 01.35	+31 30.3	2.652	2.003	-1.32	+11.0	21.4	37.1/110	40.9
Sept.20	09 27.94	+29 12.8	2.537	1.944	-1.33	+12.8	21.2	38.1/113	44.0
Sept.30	09 54.11	+26 35.9	2.425	1.889	-1.32	+14.5	20.9	39.0/115	47.0
Oct. 10	10 19.78	+23 40.0	2.315	1.838	-1.31	+16.2	20.6	39.9/118	49.9
Oct. 20	10 44.90	+20 26.5	2.208	1.792	-1.30	+17.9	20.3	40.7/120	52.8
Oct. 30	11 09.41	+16 56.8	2.106	1.751	-1.29	+19.4	20.1	41.3/122	55.7
Nov. 9	11 33.33	+13 12.4	2.008	1.716	-1.29	+20.8	19.8	41.7/124	58.7
Nov. 19	11 56.62	+09 15.5	1.914	1.687	-1.29	+22.0	19.6	41.8/126	61.7
Nov. 29	12 19.27	+05 08.2	1.826	1.665	-1.30	+22.9	19.4	41.7/128	64.8
Dec. 9	12 41.28	+00 52.6	1.743	1.651	-1.32	+23.5	19.3	41.3/129	68.1
Dec. 19	13 02.59	-03 28.7	1.665	1.644	-1.36	+23.7	19.1	40.5/131	71.6
Dec. 29	13 23.10	-07 53.4	1.591	1.646	-1.40	+23.6	19.1	39.3/133	75.3
Jan. 8	13 42.69	-12 19.3	1.523	1.654	-1.47	+23.1	19.0	37.7/135	79.4
Jan. 18	14 01.15	-16 44.4	1.459	1.671	-1.56	+22.2	19.0	35.6/138	83.9
Jan. 28	14 18.17	-21 06.6	1.400	1.695	-1.66	+20.9	19.0	33.2/142	88.8
Feb. 7	14 33.38	-25 24.4	1.347	1.725	-1.79	+19.4	19.0	30.4/146	94.1
Feb. 17	14 46.25	-29 35.7	1.299	1.762	-1.95	+17.6	19.1	27.3/153	99.9
Feb. 27	14 56.16	-33 37.9	1.257	1.805	-2.14	+15.7	19.1	24.2/162	106.2
Mar. 9	15 02.43	-37 27.3	1.223	1.852	-2.36	+13.9	19.3	21.2/174	113.0
Mar. 19	15 04.33	-40 57.9	1.199	1.905	-2.61	+12.5	19.4	18.6/190	120.1
Mar. 29	15 01.46	-44 01.4	1.187	1.961	-2.86	+11.7	19.6	16.7/208	127.4

Comet C/2011 F1 (LINEAR)

Epoch = 2012 July 12.0 TT
T = 2013 Jan. 8.01383 TT
Peri. = 192.56124
Node = 85.11617 2000.0
Incl. = 56.61135
q = 1.8189291 AU
e = 1.0001069

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	14 59.55	+44 23.6	4.502	4.543	+1.05	+4.1	15.4	86.1
Jan. 14	15 10.06	+45 04.4	4.339	4.455	+0.96	+5.3	15.3	90.3
Jan. 24	15 19.65	+45 57.8	4.179	4.366	+0.84	+6.5	15.1	94.4
Feb. 3	15 28.06	+47 02.8	4.025	4.277	+0.69	+7.5	15.0	98.1
Feb. 13	15 35.00	+48 18.0	3.877	4.188	+0.51	+8.3	14.8	101.5
Feb. 23	15 40.13	+49 41.5	3.737	4.098	+0.29	+8.9	14.7	104.5
Mar. 4	15 43.05	+51 10.0	3.605	4.008	+0.03	+8.9	14.5	107.0
Mar. 14	15 43.39	+52 39.4	3.483	3.919	-0.26	+8.5	14.4	108.8
Mar. 24	15 40.78	+54 04.5	3.371	3.829	-0.58	+7.4	14.2	110.0
Apr. 3	15 34.99	+55 18.6	3.270	3.738	-0.90	+5.6	14.1	110.4
Apr. 13	15 26.04	+56 14.6	3.179	3.648	-1.17	+3.0	13.9	110.2
Apr. 23	15 14.31	+56 45.0	3.099	3.558	-1.36	-0.2	13.8	109.2
May 3	15 00.67	+56 42.7	3.029	3.468	-1.43	-4.0	13.7	107.5
May 13	14 46.39	+56 03.2	2.969	3.378	-1.36	-7.9	13.5	105.2
May 23	14 32.81	+54 44.5	2.918	3.288	-1.16	-11.7	13.4	102.4
June 2	14 21.17	+52 47.7	2.877	3.199	-0.89	-15.1	13.3	99.1
June 12	14 12.24	+50 16.5	2.844	3.109	-0.59	-18.1	13.2	95.5
June 22	14 06.35	+47 15.6	2.819	3.021	-0.28	-20.5	13.1	91.5
July 2	14 03.52	+43 50.5	2.800	2.933	0.00	-22.4	12.9	87.2
July 12	14 03.53	+40 06.3	2.789	2.846	+0.25	-23.9	12.8	82.8
July 22	14 06.07	+36 07.6	2.783	2.760	+0.48	-24.9	12.7	78.2
Aug. 1	14 10.86	+31 58.4	2.782	2.675	+0.67	-25.6	12.6	73.4
Aug. 11	14 17.58	+27 42.3	2.785	2.591	+0.84	-26.0	12.5	68.5
Aug. 21	14 26.01	+23 21.9	2.792	2.510	+0.99	-26.2	12.4	63.5
Aug. 31	14 35.95	+18 59.9	2.801	2.430	+1.13	-26.2	12.3	58.4
Sept. 10	14 47.22	+14 38.4	2.813	2.353	+1.25	-26.0	12.2	53.3
Sept. 20	14 59.75	+10 18.9	2.825	2.279	+1.37	-25.6	12.1	48.0
Sept. 30	15 13.43	+06 03.0	2.837	2.209	+1.48	-25.1	12.0	42.7
Oct. 10	15 28.22	+01 51.9	2.848	2.142	+1.59	-24.5	12.0	37.4
Oct. 20	15 44.11	-02 13.5	2.857	2.080	+1.70	-23.9	11.9	32.0
Oct. 30	16 01.09	-06 12.2	2.862	2.023	+1.81	-23.1	11.8	26.5
Nov. 9	16 19.18	-10 03.6	2.864	1.971	+1.93	-22.4	11.7	21.0
Nov. 19	16 38.44	-13 47.1	2.861	1.927	+2.05	-21.5	11.6	15.5
Nov. 29	16 58.92	-17 22.1	2.853	1.889	+2.18	-20.6	11.5	9.9
Dec. 9	17 20.71	-20 48.1	2.839	1.859	+2.32	-19.6	11.5	4.4
Dec. 19	17 43.92	-24 04.2	2.820	1.837	+2.47	-18.5	11.4	1.2
Dec. 29	18 08.64	-27 09.5	2.796	1.823	+2.63	-17.4	11.4	6.7
Jan. 8	18 34.96	-30 03.1	2.768	1.819	+2.80	-16.0	11.4	12.2
Jan. 18	19 03.00	-32 43.3	2.737	1.823	+2.98	-14.5	11.3	17.5
Jan. 28	19 32.76	-35 08.6	2.704	1.837	+3.15	-12.8	11.3	22.8
Feb. 7	20 04.24	-37 17.0	2.672	1.859	+3.31	-11.0	11.4	27.9
Feb. 17	20 37.30	-39 06.8	2.640	1.889	+3.44	-9.0	11.4	32.9
Feb. 27	21 11.67	-40 36.4	2.612	1.926	+3.53	-6.8	11.4	37.7
Mar. 9	21 46.98	-41 44.7	2.589	1.971	+3.57	-4.7	11.5	42.3
Mar. 19	22 22.73	-42 32.1	2.572	2.022	+3.56	-2.8	11.5	46.6
Mar. 29	22 58.32	-42 59.8	2.562	2.079	+3.49	-1.1	11.6	50.7

Comet 246P/NEAT

Epoch = 2012 July 12.0 TT
T = 2013 Jan. 28.86122 TT
Peri. = 176.22301 e = 0.2850608
Node = 78.78196 2000.0 a = 4.0277547 AU
Incl. = 15.97131 n = 0.12192972
q = 2.8795997 AU P = 8.08 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	13 18.89	+09 20.3	3.377	3.490	+0.69	0.0	15.8	88.4
Jan. 14	13 25.77	+09 20.2	3.213	3.466	+0.55	+1.1	15.6	96.6
Jan. 24	13 31.27	+09 31.5	3.052	3.441	+0.39	+2.3	15.5	105.0
Feb. 3	13 35.19	+09 54.2	2.897	3.416	+0.21	+3.3	15.3	113.8
Feb. 13	13 37.31	+10 27.4	2.754	3.392	+0.02	+4.2	15.2	122.8
Feb. 23	13 37.49	+11 09.5	2.625	3.368	-0.18	+4.8	15.0	132.0
Mar. 4	13 35.66	+11 57.5	2.514	3.344	-0.38	+5.0	14.9	141.2
Mar. 14	13 31.89	+12 47.3	2.424	3.321	-0.54	+4.6	14.7	149.7
Mar. 24	13 26.45	+13 33.7	2.359	3.298	-0.66	+3.7	14.6	156.5
Apr. 3	13 19.80	+14 11.0	2.321	3.275	-0.72	+2.3	14.6	159.1
Apr. 13	13 12.61	+14 34.1	2.310	3.252	-0.70	+0.6	14.5	156.1
Apr. 23	13 05.57	+14 39.7	2.325	3.230	-0.62	-1.4	14.5	149.3
May 3	12 59.39	+14 25.8	2.364	3.208	-0.48	-3.3	14.5	140.7
May 13	12 54.62	+13 53.0	2.424	3.187	-0.30	-5.0	14.5	131.7
May 23	12 51.62	+13 03.0	2.502	3.166	-0.11	-6.5	14.5	122.8
June 2	12 50.57	+11 58.1	2.593	3.146	+0.09	-7.7	14.5	114.1
June 12	12 51.47	+10 41.2	2.694	3.126	+0.28	-8.7	14.6	105.7
June 22	12 54.24	+09 14.7	2.802	3.107	+0.45	-9.4	14.6	97.7
July 2	12 58.76	+07 40.6	2.914	3.088	+0.61	-10.0	14.7	90.1
July 12	13 04.82	+06 01.0	3.027	3.070	+0.75	-10.4	14.7	82.8
July 22	13 12.28	+04 17.2	3.138	3.053	+0.87	-10.7	14.8	75.8
Aug. 1	13 20.99	+02 30.6	3.246	3.036	+0.98	-10.8	14.8	69.1
Aug. 11	13 30.79	+00 42.1	3.350	3.020	+1.08	-10.9	14.8	62.6
Aug. 21	13 41.58	-01 07.2	3.447	3.005	+1.17	-10.9	14.9	56.2
Aug. 31	13 53.25	-02 56.6	3.537	2.991	+1.25	-10.9	14.9	50.0
Sept. 10	14 05.72	-04 45.1	3.619	2.977	+1.32	-10.7	14.9	43.9
Sept. 20	14 18.93	-06 32.1	3.691	2.964	+1.39	-10.5	14.9	37.9
Sept. 30	14 32.81	-08 16.7	3.753	2.952	+1.45	-10.2	14.9	32.0
Oct. 10	14 47.30	-09 58.2	3.804	2.941	+1.51	-9.8	14.9	26.2
Oct. 20	15 02.36	-11 36.0	3.843	2.930	+1.56	-9.3	14.9	20.4
Oct. 30	15 17.92	-13 09.3	3.871	2.921	+1.60	-8.8	14.9	14.6
Nov. 9	15 33.95	-14 37.5	3.886	2.912	+1.64	-8.3	14.9	9.1
Nov. 19	15 50.39	-16 00.0	3.889	2.905	+1.68	-7.6	14.9	4.5
Nov. 29	16 07.16	-17 16.4	3.879	2.898	+1.70	-7.0	14.9	5.3
Dec. 9	16 24.19	-18 26.1	3.856	2.893	+1.72	-6.3	14.9	10.3
Dec. 19	16 41.42	-19 29.0	3.821	2.888	+1.73	-5.6	14.8	16.0
Dec. 29	16 58.73	-20 24.8	3.773	2.884	+1.73	-4.9	14.8	21.9
Jan. 8	17 16.05	-21 13.8	3.713	2.882	+1.72	-4.2	14.7	28.0
Jan. 18	17 33.25	-21 56.0	3.642	2.880	+1.70	-3.6	14.7	34.1
Jan. 28	17 50.21	-22 32.1	3.559	2.880	+1.66	-3.0	14.6	40.3
Feb. 7	18 06.82	-23 02.6	3.467	2.880	+1.61	-2.6	14.6	46.6
Feb. 17	18 22.93	-23 28.4	3.365	2.881	+1.55	-2.2	14.5	53.0
Feb. 27	18 38.40	-23 50.9	3.256	2.884	+1.47	-2.0	14.5	59.6
Mar. 9	18 53.10	-24 11.1	3.139	2.887	+1.37	-2.0	14.4	66.3
Mar. 19	19 06.85	-24 30.9	3.018	2.892	+1.26	-2.1	14.3	73.2
Mar. 29	19 19.47	-24 51.9	2.893	2.897	+1.13	-2.4	14.2	80.3

Comet 133P/(7968) Elst-Pizarro

Epoch = 2012 July 12.0 TT
T = 2013 Feb. 9.04253 TT
Peri. = 132.17684 e = 0.1617461
Node = 160.15336 2000.0 a = 3.1611950 AU
Incl. = 1.38676 n = 0.17535863
q = 2.6498840 AU P = 5.62 years

H = 15.8 , G = 0.15

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 4	14 31.40	-13 59.4	3.390	3.069	+1.15	-5.0	21.8	62.9
Jan. 14	14 42.93	-14 49.6	3.244	3.053	+1.07	-4.3	21.7	70.1
Jan. 24	14 53.65	-15 33.1	3.092	3.037	+0.97	-3.6	21.6	77.6
Feb. 3	15 03.32	-16 09.3	2.937	3.022	+0.84	-2.9	21.5	85.4
Feb. 13	15 11.71	-16 38.1	2.780	3.006	+0.69	-2.1	21.4	93.5
Feb. 23	15 18.58	-16 59.0	2.626	2.990	+0.51	-1.3	21.2	101.9
Mar. 4	15 23.64	-17 11.7	2.476	2.975	+0.30	-0.4	21.1	110.7
Mar. 14	15 26.65	-17 16.0	2.335	2.959	+0.07	+0.4	20.9	120.0
Mar. 24	15 27.40	-17 11.8	2.205	2.944	-0.16	+1.3	20.7	129.7
Apr. 3	15 25.77	-16 58.9	2.091	2.929	-0.39	+2.1	20.5	140.1
Apr. 13	15 21.86	-16 37.9	1.997	2.914	-0.59	+2.8	20.3	150.9
Apr. 23	15 15.96	-16 09.7	1.926	2.899	-0.73	+3.3	20.0	162.1
May 3	15 08.64	-15 36.4	1.881	2.885	-0.79	+3.5	19.7	173.4
May 13	15 00.73	-15 01.2	1.863	2.870	-0.76	+3.3	19.7	174.2
May 23	14 53.09	-14 27.8	1.873	2.856	-0.65	+2.8	19.9	162.9
June 2	14 46.60	-14 00.3	1.908	2.843	-0.47	+1.9	20.1	151.7
June 12	14 41.89	-13 41.6	1.967	2.829	-0.25	+0.8	20.3	141.0
June 22	14 39.35	-13 33.9	2.044	2.816	-0.02	-0.4	20.5	130.8
July 2	14 39.17	-13 37.8	2.137	2.803	+0.21	-1.5	20.6	121.3
July 12	14 41.32	-13 52.8	2.241	2.791	+0.44	-2.5	20.8	112.3
July 22	14 45.67	-14 17.9	2.353	2.779	+0.64	-3.4	20.9	103.9
Aug. 1	14 52.06	-14 51.4	2.470	2.767	+0.82	-4.0	21.0	96.0
Aug. 11	15 00.28	-15 31.6	2.589	2.756	+0.99	-4.5	21.1	88.5
Aug. 21	15 10.14	-16 16.6	2.707	2.745	+1.13	-4.8	21.2	81.4
Aug. 31	15 21.47	-17 04.7	2.824	2.735	+1.26	-4.9	21.3	74.6
Sept.10	15 34.11	-17 54.2	2.937	2.725	+1.38	-4.9	21.3	68.0
Sept.20	15 47.94	-18 43.4	3.045	2.716	+1.49	-4.7	21.4	61.7
Sept.30	16 02.83	-19 30.9	3.146	2.707	+1.58	-4.4	21.4	55.5
Oct. 10	16 18.65	-20 15.2	3.240	2.699	+1.67	-4.0	21.4	49.4
Oct. 20	16 35.32	-20 55.0	3.326	2.692	+1.74	-3.4	21.4	43.5
Oct. 30	16 52.72	-21 29.2	3.402	2.685	+1.80	-2.7	21.4	37.6
Nov. 9	17 10.75	-21 56.7	3.469	2.678	+1.86	-2.0	21.3	31.8
Nov. 19	17 29.31	-22 16.5	3.525	2.673	+1.90	-1.2	21.3	26.0
Nov. 29	17 48.29	-22 28.1	3.570	2.667	+1.93	-0.3	21.2	20.3
Dec. 9	18 07.56	-22 30.8	3.604	2.663	+1.95	+0.6	21.2	14.6
Dec. 19	18 27.04	-22 24.4	3.626	2.659	+1.95	+1.6	21.0	9.0
Dec. 29	18 46.59	-22 08.6	3.637	2.656	+1.95	+2.5	20.9	3.4
Jan. 8	19 06.10	-21 43.7	3.635	2.653	+1.94	+3.4	20.9	2.5
Jan. 18	19 25.49	-21 09.8	3.622	2.652	+1.91	+4.2	21.0	8.0
Jan. 28	19 44.63	-20 27.5	3.597	2.650	+1.88	+5.0	21.1	13.7
Feb. 7	20 03.45	-19 37.5	3.561	2.650	+1.84	+5.7	21.2	19.3
Feb. 17	20 21.86	-18 40.6	3.513	2.650	+1.79	+6.3	21.3	25.0
Feb. 27	20 39.79	-17 37.8	3.454	2.651	+1.74	+6.8	21.3	30.6
Mar. 9	20 57.17	-16 30.0	3.386	2.653	+1.68	+7.2	21.3	36.4
Mar. 19	21 13.93	-15 18.5	3.308	2.655	+1.61	+7.4	21.3	42.1
Mar. 29	21 30.02	-14 04.4	3.221	2.658	+1.54	+7.5	21.3	48.0

Comet 125P/Spacewatch

Epoch = 2012 July 12.0 TT
T = 2013 Feb. 17.00475 TT
Peri. = 87.23894 e = 0.5122144
Node = 153.19069 2000.0 a = 3.1271528 AU
Incl. = 9.98632 n = 0.17822984
q = 1.5253801 AU P = 5.53 years

m1 = 11.4 + 5 log(Delta) + 20.0 log(r(t-20))

0h TT 2012/13	R.A.(2000) h m	Decl. °′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	07 34.59	+12 04.0	2.493	3.455	-0.91	+2.9	.	165.8
Jan. 14	07 25.49	+12 33.0	2.436	3.410	-0.93	+3.5	.	170.5
Jan. 24	07 16.19	+13 08.4	2.411	3.365	-0.86	+4.0	.	163.0
Feb. 3	07 07.55	+13 47.9	2.417	3.319	-0.72	+4.1	.	151.9
Feb. 13	07 00.32	+14 29.2	2.449	3.272	-0.53	+4.1	.	140.5
Feb. 23	06 55.06	+15 10.3	2.504	3.224	-0.29	+3.9	.	129.4
Mar. 4	06 52.13	+15 49.4	2.577	3.175	-0.05	+3.6	.	118.7
Mar. 14	06 51.65	+16 25.5	2.662	3.126	+0.19	+3.2	.	108.7
Mar. 24	06 53.57	+16 57.4	2.754	3.075	+0.42	+2.7	.	99.2
Apr. 3	06 57.76	+17 24.5	2.848	3.024	+0.63	+2.2	.	90.4
Apr. 13	07 04.01	+17 46.0	2.941	2.973	+0.81	+1.5	.	82.0
Apr. 23	07 12.12	+18 01.4	3.030	2.920	+0.98	+0.9	.	74.1
May 3	07 21.87	+18 10.1	3.112	2.867	+1.12	+0.2	.	66.7
May 13	07 33.06	+18 11.7	3.184	2.813	+1.25	-0.6	.	59.7
May 23	07 45.52	+18 05.7	3.247	2.758	+1.36	-1.4	.	53.0
June 2	07 59.09	+17 51.7	3.297	2.703	+1.45	-2.2	23.0	46.6
June 12	08 13.63	+17 29.5	3.336	2.647	+1.54	-3.1	22.8	40.5
June 22	08 29.04	+16 58.7	3.362	2.591	+1.62	-3.9	22.7	34.6
July 2	08 45.22	+16 19.3	3.374	2.534	+1.69	-4.8	22.5	29.0
July 12	09 02.07	+15 31.1	3.374	2.476	+1.75	-5.7	22.3	23.6
July 22	09 19.57	+14 34.0	3.362	2.419	+1.81	-6.6	22.1	18.4
Aug. 1	09 37.64	+13 28.2	3.337	2.361	+1.86	-7.4	21.9	13.3
Aug. 11	09 56.27	+12 13.9	3.301	2.303	+1.92	-8.3	21.7	8.4
Aug. 21	10 15.46	+10 51.1	3.254	2.245	+1.97	-9.1	21.4	3.7
Aug. 31	10 35.19	+09 20.5	3.196	2.187	+2.03	-9.8	21.2	1.0
Sept.10	10 55.49	+07 42.3	3.130	2.130	+2.09	-10.5	20.9	5.4
Sept.20	11 16.41	+05 57.2	3.056	2.073	+2.16	-11.1	20.6	9.7
Sept.30	11 37.98	+04 06.0	2.975	2.017	+2.23	-11.6	20.3	13.8
Oct. 10	12 00.28	+02 09.8	2.888	1.961	+2.31	-12.0	20.0	17.8
Oct. 20	12 23.37	+00 09.6	2.797	1.908	+2.40	-12.3	19.7	21.7
Oct. 30	12 47.33	-01 53.0	2.704	1.856	+2.49	-12.3	19.4	25.3
Nov. 9	13 12.25	-03 56.1	2.609	1.806	+2.60	-12.1	19.1	28.8
Nov. 19	13 38.21	-05 57.6	2.514	1.758	+2.71	-11.7	18.8	32.2
Nov. 29	14 05.27	-07 54.8	2.421	1.714	+2.82	-11.0	18.5	35.3
Dec. 9	14 33.46	-09 45.0	2.331	1.673	+2.93	-10.0	18.1	38.3
Dec. 19	15 02.77	-11 24.9	2.244	1.636	+3.03	-8.6	17.8	41.1
Dec. 29	15 33.12	-12 51.2	2.163	1.603	+3.13	-7.0	17.5	43.7
Jan. 8	16 04.37	-14 00.8	2.087	1.576	+3.19	-5.0	17.3	46.2
Jan. 18	16 36.28	-14 50.9	2.018	1.554	+3.23	-2.9	17.0	48.6
Jan. 28	17 08.54	-15 19.7	1.955	1.538	+3.23	-0.7	16.8	51.0
Feb. 7	17 40.79	-15 26.2	1.898	1.529	+3.18	+1.5	16.6	53.3
Feb. 17	18 12.63	-15 10.8	1.847	1.525	+3.10	+3.6	16.5	55.6
Feb. 27	18 43.66	-14 35.1	1.800	1.529	+2.99	+5.3	16.4	58.1
Mar. 9	19 13.56	-13 41.8	1.757	1.538	+2.85	+6.7	16.3	60.7
Mar. 19	19 42.02	-12 34.4	1.717	1.554	+2.68	+7.8	16.3	63.5
Mar. 29	20 08.81	-11 16.9	1.678	1.576	+2.50	+8.4	16.3	66.6

Comet 120P/Mueller

Epoch = 2012 July 12.0 TT
T = 2013 Feb. 22.38898 TT
Peri. = 30.09486 e = 0.3386459
Node = 4.45261 2000.0 a = 4.1266715 AU
Incl. = 8.79789 n = 0.11757209
q = 2.7291911 AU P = 8.38 years

m1 = 6.8 + 5 log(Delta) + 25.0 log(r(t-80))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	20 27.72	-25 06.5	4.473	3.573	+1.38	+5.9	.	21.1
Jan. 14	20 41.51	-24 07.5	4.486	3.543	+1.40	+6.3	.	14.5
Jan. 24	20 55.47	-23 04.7	4.482	3.512	+1.40	+6.6	.	8.6
Feb. 3	21 09.52	-21 58.2	4.462	3.482	+1.40	+7.0	.	5.4
Feb. 13	21 23.55	-20 48.5	4.425	3.452	+1.40	+7.3	.	8.5
Feb. 23	21 37.52	-19 35.9	4.372	3.422	+1.38	+7.5	.	14.3
Mar. 4	21 51.36	-18 20.8	4.303	3.392	+1.36	+7.7	.	20.5
Mar. 14	22 04.99	-17 04.0	4.220	3.363	+1.34	+7.8	.	26.8
Mar. 24	22 18.38	-15 45.8	4.123	3.333	+1.31	+7.9	.	33.2
Apr. 3	22 31.45	-14 27.0	4.013	3.304	+1.27	+7.9	.	39.5
Apr. 13	22 44.15	-13 08.4	3.892	3.275	+1.23	+7.8	.	45.9
Apr. 23	22 56.43	-11 50.5	3.761	3.247	+1.18	+7.6	.	52.4
May 3	23 08.20	-10 34.3	3.621	3.219	+1.12	+7.4	23.0	58.9
May 13	23 19.39	-09 20.4	3.474	3.191	+1.05	+7.1	22.9	65.5
May 23	23 29.90	-08 09.8	3.321	3.164	+0.97	+6.6	22.7	72.3
June 2	23 39.61	-07 03.5	3.164	3.137	+0.88	+6.1	22.5	79.2
June 12	23 48.39	-06 02.2	3.006	3.110	+0.77	+5.5	22.3	86.3
June 22	23 56.06	-05 07.0	2.847	3.085	+0.64	+4.8	22.0	93.7
July 2	00 02.45	-04 18.9	2.690	3.059	+0.49	+4.0	21.8	101.5
July 12	00 07.36	-03 38.8	2.539	3.035	+0.32	+3.1	21.6	109.6
July 22	00 10.56	-03 07.7	2.395	3.011	+0.13	+2.2	21.4	118.2
Aug. 1	00 11.85	-02 46.2	2.261	2.987	-0.07	+1.2	21.2	127.3
Aug. 11	00 11.11	-02 34.5	2.143	2.965	-0.28	+0.2	21.0	136.9
Aug. 21	00 08.29	-02 32.2	2.042	2.943	-0.47	-0.6	20.8	147.1
Aug. 31	00 03.54	-02 38.1	1.962	2.922	-0.63	-1.2	20.6	157.9
Sept. 10	23 57.27	-02 49.7	1.907	2.902	-0.72	-1.4	20.4	169.0
Sept. 20	23 50.06	-03 03.6	1.879	2.883	-0.73	-1.2	20.3	178.0
Sept. 30	23 42.75	-03 15.7	1.878	2.865	-0.66	-0.6	20.2	167.6
Oct. 10	23 36.17	-03 22.1	1.905	2.847	-0.51	+0.2	20.2	156.3
Oct. 20	23 31.05	-03 19.8	1.956	2.831	-0.31	+1.3	20.1	145.2
Oct. 30	23 27.95	-03 06.4	2.028	2.816	-0.08	+2.5	20.1	134.6
Nov. 9	23 27.11	-02 41.3	2.119	2.802	+0.15	+3.7	20.1	124.6
Nov. 19	23 28.60	-02 04.3	2.223	2.789	+0.37	+4.8	20.2	115.1
Nov. 29	23 32.33	-01 15.8	2.336	2.777	+0.58	+5.9	20.2	106.2
Dec. 9	23 38.08	-00 16.9	2.457	2.767	+0.76	+6.8	20.2	97.7
Dec. 19	23 45.65	+00 51.5	2.581	2.758	+0.91	+7.7	20.3	89.7
Dec. 29	23 54.79	+02 08.2	2.705	2.750	+1.05	+8.4	20.3	82.2
Jan. 8	00 05.28	+03 32.2	2.829	2.743	+1.17	+9.0	20.4	75.0
Jan. 18	00 16.94	+05 02.1	2.949	2.738	+1.27	+9.5	20.4	68.0
Jan. 28	00 29.61	+06 36.9	3.064	2.734	+1.35	+9.8	20.4	61.4
Feb. 7	00 43.14	+08 15.4	3.174	2.731	+1.43	+10.1	20.4	55.0
Feb. 17	00 57.42	+09 56.5	3.276	2.729	+1.49	+10.2	20.5	48.8
Feb. 27	01 12.37	+11 38.9	3.371	2.729	+1.55	+10.3	20.5	42.9
Mar. 9	01 27.90	+13 21.6	3.457	2.731	+1.61	+10.2	20.5	37.1
Mar. 19	01 43.97	+15 03.6	3.533	2.733	+1.65	+10.0	20.5	31.4
Mar. 29	02 00.51	+16 43.8	3.600	2.737	+1.70	+9.7	20.5	25.9

Comet P/2004 F1 (NEAT)

Epoch = 2012 July 12.0 TT
T = 2013 Feb. 27.57891 TT
Peri. = 27.82797 e = 0.4565408
Node = 109.51100 2000.0 a = 4.4474170 AU
Incl. = 18.09409 n = 0.10508538
q = 2.4169897 AU P = 9.38 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	02 04.87	-07 08.1	3.359	3.705	-0.47	-2.9	.	7.3/ 18	102.9
Jan. 14	02 06.43	-05 58.4	3.460	3.663	-0.45	-2.9	.	9.1/ 32	94.0
Jan. 24	02 09.67	-04 41.8	3.563	3.621	-0.44	-3.0	.	10.9/ 41	85.5
Feb. 3	02 14.49	-03 20.2	3.664	3.580	-0.43	-3.0	.	12.6/ 48	77.3
Feb. 13	02 20.73	-01 55.3	3.761	3.538	-0.42	-3.1	.	14.3/ 52	69.5
Feb. 23	02 28.26	-00 28.4	3.850	3.496	-0.42	-3.1	23.0	15.7/ 56	61.9
Mar. 4	02 36.96	+00 59.3	3.931	3.454	-0.43	-3.2	22.9	17.0/ 59	54.7
Mar. 14	02 46.69	+02 26.6	4.000	3.412	-0.43	-3.3	22.9	18.1/ 62	47.8
Mar. 24	02 57.36	+03 52.7	4.058	3.370	-0.44	-3.3	22.8	19.1/ 64	41.1
Apr. 3	03 08.86	+05 16.8	4.102	3.329	-0.45	-3.4	22.7	20.0/ 66	34.7
Apr. 13	03 21.11	+06 38.0	4.133	3.287	-0.46	-3.4	22.6	20.8/ 68	28.5
Apr. 23	03 34.05	+07 55.9	4.150	3.246	-0.48	-3.5	22.5	21.4/ 70	22.8
May 3	03 47.60	+09 09.6	4.153	3.205	-0.49	-3.5	22.4	22.0/ 71	17.4
May 13	04 01.70	+10 18.8	4.141	3.164	-0.51	-3.5	22.3	22.4/ 73	12.9
May 23	04 16.30	+11 22.8	4.116	3.124	-0.54	-3.5	22.2	22.8/ 75	10.0
June 2	04 31.35	+12 21.3	4.077	3.084	-0.56	-3.5	22.0	23.2/ 76	10.1
June 12	04 46.78	+13 13.9	4.026	3.045	-0.59	-3.5	21.9	23.4/ 78	13.0
June 22	05 02.54	+14 00.2	3.961	3.005	-0.61	-3.5	21.7	23.6/ 80	17.2
July 2	05 18.57	+14 40.1	3.884	2.967	-0.65	-3.4	21.6	23.8/ 81	22.1
July 12	05 34.81	+15 13.4	3.797	2.929	-0.68	-3.3	21.4	23.8/ 83	27.2
July 22	05 51.19	+15 40.2	3.698	2.892	-0.71	-3.3	21.3	23.8/ 85	32.4
Aug. 1	06 07.63	+16 00.5	3.589	2.855	-0.75	-3.2	21.1	23.7/ 86	37.8
Aug. 11	06 24.05	+16 14.9	3.472	2.820	-0.79	-3.1	20.9	23.5/ 87	43.2
Aug. 21	06 40.36	+16 23.6	3.346	2.785	-0.84	-3.0	20.7	23.2/ 88	48.8
Aug. 31	06 56.47	+16 27.4	3.213	2.752	-0.88	-2.8	20.5	22.7/ 89	54.5
Sept. 10	07 12.27	+16 27.4	3.074	2.719	-0.94	-2.7	20.3	22.1/ 90	60.3
Sept. 20	07 27.64	+16 24.6	2.929	2.688	-0.99	-2.5	20.1	21.3/ 91	66.3
Sept. 30	07 42.44	+16 20.7	2.781	2.658	-1.05	-2.4	19.9	20.3/ 90	72.5
Oct. 10	07 56.53	+16 17.4	2.630	2.629	-1.12	-2.2	19.7	19.0/ 90	79.0
Oct. 20	08 09.74	+16 17.2	2.478	2.602	-1.20	-2.0	19.5	17.4/ 88	85.8
Oct. 30	08 21.84	+16 22.5	2.327	2.576	-1.28	-1.8	19.3	15.6/ 84	92.9
Nov. 9	08 32.64	+16 36.4	2.179	2.552	-1.38	-1.6	19.0	13.5/ 79	100.5
Nov. 19	08 41.84	+17 02.3	2.035	2.529	-1.49	-1.4	18.8	11.3/ 68	108.5
Nov. 29	08 49.16	+17 43.5	1.900	2.509	-1.62	-1.1	18.6	9.4/ 51	117.1
Dec. 9	08 54.30	+18 42.9	1.777	2.490	-1.75	-0.9	18.4	8.8/ 25	126.4
Dec. 19	08 56.99	+20 02.7	1.667	2.473	-1.90	-0.7	18.2	10.0/ 1	136.2
Dec. 29	08 57.07	+21 42.3	1.577	2.459	-2.05	-0.5	18.0	12.1/344	146.7
Jan. 8	08 54.61	+23 38.3	1.509	2.446	-2.19	-0.6	17.9	14.0/333	157.4
Jan. 18	08 49.96	+25 43.4	1.466	2.436	-2.30	-0.8	17.8	14.8/327	167.4
Jan. 28	08 43.94	+27 47.3	1.451	2.428	-2.37	-1.3	17.7	13.9/324	170.5
Feb. 7	08 37.63	+29 39.4	1.463	2.422	-2.38	-1.9	17.7	11.5/323	162.4
Feb. 17	08 32.27	+31 11.4	1.502	2.418	-2.34	-2.4	17.8	8.0/328	151.8
Feb. 27	08 28.94	+32 19.0	1.563	2.417	-2.25	-2.8	17.8	4.4/350	141.4
Mar. 9	08 28.32	+33 01.9	1.643	2.418	-2.14	-2.9	17.9	3.6/ 56	131.5
Mar. 19	08 30.70	+33 21.8	1.739	2.421	-2.01	-2.8	18.1	6.7/ 90	122.3
Mar. 29	08 36.03	+33 21.6	1.846	2.427	-1.88	-2.4	18.2	10.2/ 99	113.8

Comet 91P/Russell

Epoch = 2012 July 12.0 TT
T = 2013 Mar. 1.29242 TT
Peri. = 354.68237 e = 0.3289094
Node = 247.87256 2000.0 a = 3.8989698 AU
Incl. = 14.07540 n = 0.12802042
q = 2.6165620 AU P = 7.70 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	10 42.90	-09 47.9	2.964	3.502	-0.09	-4.6	20.5	115.6
Jan. 14	10 41.97	-10 34.3	2.814	3.472	-0.28	-3.3	20.4	124.9
Jan. 24	10 39.20	-11 07.3	2.680	3.442	-0.45	-1.7	20.2	134.5
Feb. 3	10 34.71	-11 24.2	2.566	3.411	-0.59	+0.1	20.0	143.9
Feb. 13	10 28.81	-11 23.4	2.475	3.381	-0.68	+1.9	19.9	152.5
Feb. 23	10 21.98	-11 04.3	2.410	3.351	-0.71	+3.6	19.8	158.7
Mar. 4	10 14.88	-10 28.3	2.373	3.321	-0.66	+4.9	19.7	159.7
Mar. 14	10 08.23	-09 38.8	2.364	3.291	-0.55	+5.8	19.6	154.8
Mar. 24	10 02.70	-08 40.8	2.381	3.261	-0.39	+6.1	19.6	146.7
Apr. 3	09 58.82	-07 39.8	2.423	3.231	-0.19	+5.9	19.6	137.5
Apr. 13	09 56.91	-06 41.0	2.484	3.202	+0.02	+5.2	19.6	128.1
Apr. 23	09 57.11	-05 48.6	2.562	3.173	+0.23	+4.3	19.6	119.0
May 3	09 59.41	-05 05.7	2.651	3.144	+0.43	+3.2	19.6	110.1
May 13	10 03.67	-04 34.1	2.749	3.115	+0.61	+1.9	19.6	101.7
May 23	10 09.73	-04 14.7	2.851	3.087	+0.77	+0.7	19.6	93.8
June 2	10 17.39	-04 07.7	2.955	3.059	+0.91	-0.5	19.6	86.2
June 12	10 26.44	-04 12.7	3.058	3.032	+1.03	-1.7	19.7	79.0
June 22	10 36.71	-04 29.2	3.158	3.005	+1.13	-2.7	19.7	72.1
July 2	10 48.04	-04 56.5	3.253	2.979	+1.22	-3.7	19.7	65.5
July 12	11 00.27	-05 33.6	3.341	2.953	+1.30	-4.6	19.7	59.2
July 22	11 13.30	-06 19.5	3.423	2.928	+1.37	-5.4	19.7	53.1
Aug. 1	11 27.04	-07 13.4	3.496	2.903	+1.44	-6.1	19.7	47.1
Aug. 11	11 41.39	-08 14.1	3.561	2.879	+1.49	-6.7	19.6	41.4
Aug. 21	11 56.31	-09 20.7	3.616	2.856	+1.54	-7.1	19.6	35.7
Aug. 31	12 11.76	-10 32.0	3.660	2.834	+1.59	-7.5	19.6	30.2
Sept.10	12 27.67	-11 47.0	3.695	2.812	+1.64	-7.8	19.6	24.8
Sept.20	12 44.05	-13 04.6	3.718	2.792	+1.68	-7.9	19.5	19.5
Sept.30	13 00.85	-14 23.6	3.730	2.772	+1.72	-7.9	19.5	14.4
Oct. 10	13 18.07	-15 42.9	3.732	2.753	+1.76	-7.8	19.5	9.9
Oct. 20	13 35.67	-17 01.3	3.722	2.735	+1.80	-7.6	19.4	6.7
Oct. 30	13 53.63	-18 17.6	3.701	2.719	+1.83	-7.3	19.4	7.4
Nov. 9	14 11.93	-19 30.6	3.668	2.703	+1.86	-6.9	19.3	11.1
Nov. 19	14 30.51	-20 39.1	3.625	2.689	+1.88	-6.3	19.2	16.0
Nov. 29	14 49.33	-21 42.0	3.571	2.676	+1.90	-5.6	19.2	21.2
Dec. 9	15 08.32	-22 38.2	3.507	2.664	+1.91	-4.9	19.1	26.7
Dec. 19	15 27.39	-23 26.8	3.433	2.653	+1.90	-4.0	19.0	32.2
Dec. 29	15 46.42	-24 06.7	3.350	2.644	+1.89	-3.1	19.0	37.9
Jan. 8	16 05.30	-24 37.4	3.257	2.636	+1.86	-2.1	18.9	43.7
Jan. 18	16 23.88	-24 58.3	3.157	2.629	+1.81	-1.1	18.8	49.7
Jan. 28	16 41.99	-25 09.1	3.050	2.624	+1.75	-0.1	18.7	55.7
Feb. 7	16 59.45	-25 09.6	2.936	2.620	+1.66	+1.0	18.6	61.9
Feb. 17	17 16.05	-25 00.1	2.817	2.618	+1.55	+1.9	18.5	68.3
Feb. 27	17 31.58	-24 40.8	2.695	2.617	+1.42	+2.9	18.4	74.8
Mar. 9	17 45.82	-24 12.3	2.570	2.617	+1.27	+3.7	18.3	81.6
Mar. 19	17 58.50	-23 35.3	2.445	2.619	+1.09	+4.5	18.2	88.7
Mar. 29	18 09.39	-22 50.6	2.320	2.622	+0.88	+5.1	18.1	96.1

Comet C/2011 L4 (PANSTARRS)

Epoch = 2012 July 12.0 TT
T = 2013 Mar. 10.17788 TT
Peri. = 333.64696
Node = 65.66575 2000.0
Incl. = 84.20530
q = 0.3015718 AU
e = 1.0000627

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	16 36.40	-21 40.6	6.803	5.994	+0.54	-2.2	16.5	32.2
Jan. 14	16 41.84	-22 02.5	6.602	5.896	+0.51	-2.1	16.4	41.1
Jan. 24	16 46.91	-22 23.7	6.381	5.798	+0.45	-2.1	16.3	50.1
Feb. 3	16 51.44	-22 44.3	6.142	5.700	+0.38	-2.0	16.1	59.2
Feb. 13	16 55.29	-23 04.4	5.888	5.600	+0.30	-2.0	15.9	68.4
Feb. 23	16 58.28	-23 24.3	5.624	5.499	+0.19	-2.0	15.8	77.7
Mar. 4	17 00.21	-23 44.1	5.353	5.398	+0.07	-2.0	15.6	87.3
Mar. 14	17 00.91	-24 03.8	5.080	5.296	-0.08	-2.0	15.4	97.1
Mar. 24	17 00.15	-24 23.6	4.810	5.193	-0.24	-2.0	15.2	107.2
Apr. 3	16 57.75	-24 43.3	4.548	5.089	-0.42	-1.9	15.0	117.6
Apr. 13	16 53.53	-25 02.4	4.300	4.983	-0.61	-1.8	14.7	128.3
Apr. 23	16 47.39	-25 20.1	4.070	4.877	-0.81	-1.5	14.5	139.4
May 3	16 39.30	-25 35.4	3.865	4.770	-0.99	-1.2	14.3	150.8
May 13	16 29.40	-25 47.0	3.688	4.662	-1.14	-0.7	14.1	162.4
May 23	16 17.99	-25 53.5	3.545	4.552	-1.24	-0.1	13.9	173.3
June 2	16 05.58	-25 54.1	3.436	4.441	-1.28	+0.5	13.8	171.2
June 12	15 52.82	-25 48.9	3.363	4.329	-1.24	+1.0	13.6	159.6
June 22	15 40.39	-25 38.8	3.323	4.215	-1.14	+1.3	13.5	147.5
July 2	15 28.99	-25 25.9	3.313	4.100	-0.99	+1.3	13.3	135.5
July 12	15 19.13	-25 13.0	3.328	3.984	-0.80	+1.0	13.2	123.8
July 22	15 11.16	-25 02.5	3.360	3.866	-0.59	+0.6	13.1	112.6
Aug. 1	15 05.28	-24 56.9	3.405	3.746	-0.38	-0.1	13.0	101.8
Aug. 11	15 01.50	-24 57.6	3.455	3.625	-0.17	-0.8	12.9	91.5
Aug. 21	14 59.78	-25 05.9	3.503	3.502	+0.02	-1.6	12.8	81.6
Aug. 31	14 60.00	-25 22.0	3.546	3.376	+0.20	-2.4	12.6	72.2
Sept. 10	15 02.01	-25 46.2	3.577	3.249	+0.37	-3.2	12.5	63.2
Sept. 20	15 05.70	-26 18.4	3.593	3.119	+0.52	-4.0	12.3	54.5
Sept. 30	15 10.94	-26 58.2	3.590	2.987	+0.67	-4.7	12.1	46.3
Oct. 10	15 17.63	-27 45.5	3.567	2.852	+0.81	-5.5	11.9	38.4
Oct. 20	15 25.74	-28 40.0	3.520	2.714	+0.95	-6.2	11.7	30.9
Oct. 30	15 35.22	-29 41.7	3.449	2.573	+1.09	-6.9	11.4	23.9
Nov. 9	15 46.12	-30 50.6	3.353	2.429	+1.24	-7.6	11.1	17.9
Nov. 19	15 58.54	-32 07.0	3.231	2.281	+1.41	-8.4	10.7	13.4
Nov. 29	16 12.64	-33 31.4	3.083	2.129	+1.61	-9.3	10.3	12.2
Dec. 9	16 28.77	-35 04.6	2.910	1.972	+1.87	-10.3	9.9	14.5
Dec. 19	16 47.46	-36 47.5	2.714	1.810	+2.21	-11.3	9.3	18.7
Dec. 29	17 09.57	-38 41.0	2.496	1.641	+2.71	-12.4	8.7	23.5
Jan. 8	17 36.63	-40 44.5	2.260	1.466	+3.46	-12.9	8.0	28.0
Jan. 18	18 11.22	-42 53.6	2.009	1.283	+4.65	-11.6	7.2	31.8
Jan. 28	18 57.69	-44 50.0	1.751	1.090	+6.49	-4.5	6.2	34.3
Feb. 7	20 02.62	-45 35.5	1.499	0.886	+8.77	+18.1	5.0	34.6
Feb. 17	21 30.31	-42 34.3	1.276	0.670	+9.73	+69.2	3.4	31.3
Feb. 27	23 07.62	-31 02.5	1.127	0.451	+7.04	137.0	1.4	23.5
Mar. 9	00 18.00	-08 12.5	1.105	0.304	+1.73	144.4	-0.4	15.5
Mar. 19	00 35.33	+15 51.9	1.170	0.404	-0.27	+99.9	1.0	19.4
Mar. 29	00 32.68	+32 30.6	1.251	0.618	-0.45	+74.6	3.0	29.2

Comet P/2003 HT15 = 2012 B2 (LINEAR)

Epoch = 2012 July 12.0 TT
T = 2013 Mar. 17.38089 TT
Peri. = 124.12043 e = 0.4184747
Node = 81.44887 2000.0 a = 4.6255049 AU
Incl. = 27.63665 n = 0.09907529
q = 2.6898481 AU P = 9.95 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	08 11.19	+40 37.3	2.893	3.814	-0.83	+7.7	21.2	156.2
Jan. 14	08 02.87	+41 53.9	2.842	3.777	-0.92	+6.3	21.1	159.0
Jan. 24	07 53.70	+42 57.4	2.821	3.740	-0.91	+4.7	21.0	155.7
Feb. 3	07 44.60	+43 44.1	2.828	3.703	-0.81	+2.9	21.0	148.3
Feb. 13	07 36.52	+44 12.9	2.862	3.666	-0.63	+1.2	20.9	139.2
Feb. 23	07 30.25	+44 24.9	2.917	3.630	-0.39	-0.2	20.9	129.7
Mar. 4	07 26.38	+44 22.6	2.991	3.593	-0.12	-1.3	20.9	120.2
Mar. 14	07 25.15	+44 09.2	3.078	3.557	+0.14	-2.2	20.9	110.9
Mar. 24	07 26.59	+43 47.5	3.174	3.521	+0.40	-2.8	20.9	102.1
Apr. 3	07 30.58	+43 19.6	3.274	3.485	+0.63	-3.3	21.0	93.7
Apr. 13	07 36.89	+42 47.0	3.374	3.449	+0.84	-3.7	21.0	85.8
Apr. 23	07 45.24	+42 10.2	3.473	3.413	+1.01	-4.1	21.0	78.3
May 3	07 55.37	+41 29.7	3.566	3.378	+1.16	-4.4	21.0	71.2
May 13	08 06.99	+40 45.5	3.653	3.343	+1.29	-4.8	21.0	64.4
May 23	08 19.88	+39 57.2	3.732	3.309	+1.39	-5.2	21.0	58.0
June 2	08 33.81	+39 04.7	3.801	3.275	+1.48	-5.7	20.9	52.0
June 12	08 48.60	+38 07.9	3.859	3.241	+1.55	-6.2	20.9	46.3
June 22	09 04.07	+37 06.3	3.907	3.208	+1.60	-6.6	20.9	40.9
July 2	09 20.10	+36 00.2	3.943	3.175	+1.64	-7.1	20.9	35.9
July 12	09 36.54	+34 49.4	3.968	3.143	+1.68	-7.5	20.8	31.3
July 22	09 53.32	+33 34.2	3.981	3.112	+1.70	-7.9	20.8	27.2
Aug. 1	10 10.33	+32 14.9	3.983	3.081	+1.72	-8.3	20.7	23.8
Aug. 11	10 27.51	+30 51.8	3.973	3.051	+1.73	-8.6	20.7	21.3
Aug. 21	10 44.81	+29 25.4	3.953	3.022	+1.74	-8.9	20.6	20.0
Aug. 31	11 02.18	+27 56.6	3.922	2.994	+1.74	-9.1	20.5	20.1
Sep. 10	11 19.58	+26 25.9	3.880	2.967	+1.74	-9.2	20.4	21.5
Sep. 20	11 36.99	+24 54.2	3.829	2.940	+1.74	-9.2	20.4	24.0
Sep. 30	11 54.36	+23 22.5	3.769	2.915	+1.73	-9.1	20.3	27.3
Oct. 10	12 11.68	+21 51.8	3.699	2.891	+1.72	-8.9	20.2	31.1
Oct. 20	12 28.91	+20 23.1	3.622	2.867	+1.71	-8.5	20.1	35.3
Oct. 30	12 46.00	+18 57.7	3.537	2.845	+1.69	-8.1	20.0	39.8
Nov. 9	13 02.93	+17 36.6	3.444	2.825	+1.67	-7.5	19.9	44.5
Nov. 19	13 19.62	+16 21.1	3.345	2.805	+1.64	-6.9	19.8	49.4
Nov. 29	13 35.99	+15 12.4	3.241	2.787	+1.60	-6.1	19.7	54.6
Dec. 9	13 51.97	+14 11.6	3.131	2.771	+1.55	-5.2	19.6	59.8
Dec. 19	14 07.44	+13 19.7	3.017	2.755	+1.48	-4.2	19.5	65.3
Dec. 29	14 22.24	+12 37.7	2.900	2.742	+1.40	-3.1	19.4	70.9
Jan. 8	14 36.24	+12 06.3	2.781	2.729	+1.30	-2.0	19.3	76.8
Jan. 18	14 49.21	+11 45.9	2.660	2.719	+1.17	-0.9	19.2	82.9
Jan. 28	15 00.94	+11 36.6	2.539	2.710	+1.02	+0.1	19.0	89.2
Feb. 7	15 11.19	+11 38.0	2.419	2.702	+0.85	+1.1	18.9	95.7
Feb. 17	15 19.66	+11 49.1	2.303	2.697	+0.64	+1.9	18.8	102.6
Feb. 27	15 26.07	+12 08.1	2.192	2.693	+0.41	+2.4	18.7	109.7
Mar. 9	15 30.14	+12 32.3	2.088	2.690	+0.15	+2.6	18.6	117.1
Mar. 19	15 31.65	+12 57.9	1.995	2.690	-0.12	+2.2	18.5	124.7
Mar. 29	15 30.47	+13 19.6	1.915	2.691	-0.38	+1.2	18.4	132.3

Comet 197P/LINEAR

Epoch = 2012 July 12.0 TT
T = 2013 Mar. 24.86608 TT
Peri. = 188.74827 e = 0.6296644
Node = 66.39039 2000.0 a = 2.8661633 AU
Incl. = 25.54258 n = 0.20312000
q = 1.0614423 AU P = 4.85 years

m1 = 17.8 + 5 log(Delta) + 7.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 4	07 02.66	+43 43.9	2.871	3.806	-1.30	+3.6	159.0
Jan. 14	06 49.69	+44 19.6	2.850	3.764	-1.26	+1.7	154.9
Jan. 24	06 37.13	+44 36.6	2.859	3.721	-1.10	-0.1	146.7
Feb. 3	06 26.11	+44 36.1	2.895	3.677	-0.87	-1.4	136.9
Feb. 13	06 17.45	+44 21.6	2.954	3.632	-0.58	-2.4	126.7
Feb. 23	06 11.64	+43 57.5	3.031	3.586	-0.28	-3.0	116.7
Mar. 4	06 08.83	+43 27.9	3.120	3.538	+0.01	-3.2	106.9
Mar. 14	06 08.94	+42 56.0	3.216	3.490	+0.28	-3.2	97.6
Mar. 24	06 11.74	+42 24.0	3.313	3.440	+0.52	-3.1	88.8
Apr. 3	06 16.96	+41 52.8	3.409	3.388	+0.73	-3.0	80.4
Apr. 13	06 24.29	+41 22.7	3.499	3.336	+0.92	-2.9	72.4
Apr. 23	06 33.47	+40 53.3	3.580	3.282	+1.08	-2.9	64.9
May 3	06 44.25	+40 24.1	3.651	3.227	+1.22	-3.0	57.7
May 13	06 56.41	+39 54.4	3.709	3.171	+1.34	-3.1	51.0
May 23	07 09.78	+39 23.1	3.753	3.113	+1.44	-3.3	44.6
June 2	07 24.18	+38 49.7	3.782	3.054	+1.53	-3.6	38.5
June 12	07 39.47	+38 13.2	3.795	2.994	+1.61	-4.0	32.9
June 22	07 55.54	+37 33.0	3.793	2.932	+1.68	-4.4	27.8
July 2	08 12.30	+36 48.5	3.774	2.869	+1.74	-4.9	23.3
July 12	08 29.66	+35 59.2	3.740	2.804	+1.79	-5.5	19.7
July 22	08 47.55	+35 04.5	3.691	2.738	+1.84	-6.0	17.4
Aug. 1	09 05.92	+34 04.3	3.627	2.671	+1.88	-6.6	16.7
Aug. 11	09 24.73	+32 58.1	3.549	2.602	+1.92	-7.2	17.7
Aug. 21	09 43.97	+31 45.8	3.457	2.531	+1.96	-7.9	20.1
Aug. 31	10 03.62	+30 27.2	3.354	2.459	+2.01	-8.5	23.2
Sept.10	10 23.68	+29 02.1	3.240	2.386	+2.05	-9.2	26.9
Sept.20	10 44.19	+27 30.4	3.116	2.311	+2.10	-9.8	23.0 30.8
Sept.30	11 05.18	+25 52.2	2.984	2.235	+2.15	-10.5	22.8 34.7
Oct. 10	11 26.69	+24 07.0	2.846	2.157	+2.21	-11.2	22.6 38.6
Oct. 20	11 48.82	+22 14.8	2.702	2.078	+2.28	-11.9	22.3 42.4
Oct. 30	12 11.62	+20 15.5	2.555	1.999	+2.36	-12.7	22.1 46.1
Nov. 9	12 35.21	+18 08.4	2.407	1.918	+2.45	-13.5	21.8 49.5
Nov. 19	12 59.73	+15 53.3	2.259	1.836	+2.56	-14.4	21.5 52.6
Nov. 29	13 25.29	+13 29.4	2.114	1.754	+2.68	-15.3	21.3 55.4
Dec. 9	13 52.08	+10 56.0	1.972	1.671	+2.82	-16.4	20.9 57.9
Dec. 19	14 20.27	+08 12.2	1.837	1.589	+2.98	-17.5	20.6 59.8
Dec. 29	14 50.08	+05 17.1	1.710	1.509	+3.17	-18.7	20.3 61.3
Jan. 8	15 21.74	+02 09.9	1.592	1.430	+3.38	-19.9	20.0 62.2
Jan. 18	15 55.52	-01 09.2	1.486	1.354	+3.61	-21.0	19.6 62.6
Jan. 28	16 31.66	-04 39.1	1.394	1.282	+3.88	-21.7	19.3 62.5
Feb. 7	17 10.46	-08 16.3	1.316	1.217	+4.16	-21.7	19.0 61.9
Feb. 17	17 52.07	-11 53.6	1.255	1.161	+4.44	-20.7	18.8 60.9
Feb. 27	18 36.47	-15 20.6	1.212	1.115	+4.68	-18.3	18.6 59.8
Mar. 9	19 23.32	-18 23.3	1.187	1.082	+4.84	-14.4	18.4 58.7
Mar. 19	20 11.73	-20 47.6	1.180	1.064	+4.86	-9.6	18.4 57.8
Mar. 29	21 00.35	-22 23.6	1.190	1.063	+4.73	-4.5	18.4 57.3

Comet 63P/Wild

Epoch = 2012 July 12.0 TT
T = 2013 Apr. 10.85136 TT
Peri. = 168.93847 e = 0.6510087
Node = 358.03607 2000.0 a = 5.5903296 AU
Incl. = 19.78091 n = 0.07456722
q = 1.9509764 AU P = 13.22 years

m1 = 7.8 + 5 log(Delta) + 20.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	02 04.24	+32 28.1	3.791	4.312	+0.01	-2.9	.	115.9
Jan. 14	02 04.32	+31 59.2	3.874	4.254	+0.20	-2.1	.	106.2
Jan. 24	02 06.28	+31 38.2	3.964	4.196	+0.37	-1.2	.	96.9
Feb. 3	02 10.02	+31 25.9	4.056	4.138	+0.54	-0.3	.	87.8
Feb. 13	02 15.39	+31 22.6	4.147	4.079	+0.69	+0.5	.	79.2
Feb. 23	02 22.25	+31 27.8	4.233	4.020	+0.82	+1.3	23.0	70.9
Mar. 4	02 30.46	+31 40.8	4.310	3.960	+0.94	+2.0	22.9	63.0
Mar. 14	02 39.88	+32 00.7	4.377	3.900	+1.05	+2.6	22.8	55.4
Mar. 24	02 50.41	+32 26.4	4.431	3.840	+1.16	+3.0	22.7	48.2
Apr. 3	03 01.96	+32 56.9	4.471	3.779	+1.25	+3.4	22.6	41.4
Apr. 13	03 14.44	+33 30.9	4.496	3.718	+1.34	+3.7	22.5	34.9
Apr. 23	03 27.80	+34 07.4	4.505	3.657	+1.42	+3.8	22.3	28.9
May 3	03 41.97	+34 45.5	4.498	3.596	+1.49	+3.8	22.2	23.4
May 13	03 56.91	+35 23.9	4.475	3.534	+1.57	+3.8	22.0	18.9
May 23	04 12.58	+36 01.9	4.436	3.472	+1.64	+3.7	21.8	15.7
June 2	04 28.93	+36 38.5	4.381	3.410	+1.70	+3.4	21.7	14.7
June 12	04 45.93	+37 12.8	4.312	3.348	+1.76	+3.1	21.5	16.1
June 22	05 03.53	+37 44.2	4.228	3.286	+1.81	+2.8	21.3	19.2
July 2	05 21.67	+38 11.8	4.131	3.223	+1.86	+2.3	21.0	23.4
July 12	05 40.31	+38 35.1	4.021	3.161	+1.91	+1.9	20.8	28.1
July 22	05 59.39	+38 53.7	3.900	3.098	+1.94	+1.3	20.6	33.0
Aug. 1	06 18.83	+39 07.0	3.769	3.036	+1.97	+0.8	20.3	38.1
Aug. 11	06 38.55	+39 14.9	3.629	2.974	+1.99	+0.2	20.1	43.3
Aug. 21	06 58.46	+39 17.3	3.481	2.912	+2.00	-0.3	19.8	48.6
Aug. 31	07 18.45	+39 14.2	3.326	2.851	+2.00	-0.8	19.5	54.0
Sept.10	07 38.42	+39 06.0	3.165	2.790	+1.98	-1.3	19.2	59.4
Sept.20	07 58.25	+38 53.2	3.001	2.730	+1.95	-1.7	18.9	64.8
Sept.30	08 17.80	+38 36.6	2.834	2.670	+1.91	-2.0	18.6	70.4
Oct. 10	08 36.93	+38 17.0	2.666	2.612	+1.85	-2.1	18.3	76.1
Oct. 20	08 55.47	+37 55.7	2.497	2.554	+1.78	-2.2	17.9	81.8
Oct. 30	09 13.23	+37 34.1	2.330	2.497	+1.68	-2.0	17.6	87.8
Nov. 9	09 30.00	+37 13.6	2.166	2.442	+1.55	-1.8	17.2	93.9
Nov. 19	09 45.50	+36 56.1	2.007	2.389	+1.39	-1.3	16.9	100.2
Nov. 29	09 59.40	+36 42.9	1.853	2.337	+1.19	-0.8	16.5	106.7
Dec. 9	10 11.34	+36 35.2	1.707	2.287	+0.95	-0.2	16.1	113.6
Dec. 19	10 20.82	+36 33.6	1.571	2.240	+0.65	+0.3	15.8	120.7
Dec. 29	10 27.31	+36 37.0	1.446	2.195	+0.30	+0.5	15.4	128.2
Jan. 8	10 30.32	+36 42.3	1.335	2.153	-0.09	+0.1	15.1	136.0
Jan. 18	10 29.41	+36 43.6	1.239	2.114	-0.49	-1.2	14.8	143.7
Jan. 28	10 24.55	+36 31.3	1.162	2.079	-0.82	-3.7	14.5	151.0
Feb. 7	10 16.30	+35 54.5	1.106	2.047	-1.03	-7.2	14.2	156.2
Feb. 17	10 05.96	+34 42.7	1.072	2.020	-1.05	-11.2	14.1	157.3
Feb. 27	09 55.46	+32 51.1	1.061	1.997	-0.88	-14.8	13.9	153.5
Mar. 9	09 46.71	+30 22.8	1.073	1.978	-0.56	-17.6	13.9	146.5
Mar. 19	09 41.10	+27 26.6	1.105	1.964	-0.18	-19.3	13.9	138.4
Mar. 29	09 39.27	+24 13.9	1.156	1.955	+0.19	-20.0	13.9	130.1

Comet 76P/West-Kohoutek-Ikemura

Epoch = 2012 July 12.0 TT
T = 2013 May 7.77683 TT
Peri. = 0.07044 e = 0.5388155
Node = 84.12355 2000.0 a = 3.4700821 AU
Incl. = 30.48285 n = 0.15247352
q = 1.6003481 AU P = 6.46 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	20 31.72	-36 49.5	4.810	3.940	+1.33	+3.6	.	25.0
Jan. 14	20 45.01	-36 13.3	4.803	3.897	+1.36	+3.7	.	20.5
Jan. 24	20 58.65	-35 36.2	4.778	3.854	+1.39	+3.8	.	18.1
Feb. 3	21 12.55	-34 58.6	4.733	3.810	+1.41	+3.8	.	18.3
Feb. 13	21 26.62	-34 20.9	4.670	3.765	+1.42	+3.7	.	21.0
Feb. 23	21 40.79	-33 43.6	4.589	3.719	+1.42	+3.6	.	25.4
Mar. 4	21 55.00	-33 07.5	4.491	3.673	+1.42	+3.4	.	30.6
Mar. 14	22 09.19	-32 33.4	4.378	3.626	+1.41	+3.1	.	36.4
Mar. 24	22 23.31	-32 02.1	4.251	3.578	+1.40	+2.7	.	42.4
Apr. 3	22 37.31	-31 34.8	4.111	3.529	+1.38	+2.2	.	48.5
Apr. 13	22 51.14	-31 12.4	3.961	3.480	+1.36	+1.6	.	54.8
Apr. 23	23 04.75	-30 56.5	3.802	3.430	+1.33	+0.8	.	61.1
May 3	23 18.07	-30 48.3	3.636	3.379	+1.30	-0.1	.	67.4
May 13	23 31.05	-30 49.2	3.465	3.328	+1.25	-1.2	.	73.8
May 23	23 43.60	-31 01.0	3.291	3.276	+1.20	-2.4	.	80.3
June 2	23 55.59	-31 25.4	3.118	3.223	+1.13	-3.8	.	86.7
June 12	00 06.91	-32 03.7	2.945	3.170	+1.05	-5.4	.	93.3
June 22	00 17.38	-32 57.9	2.778	3.116	+0.94	-7.1	23.0	99.8
July 2	00 26.77	-34 08.8	2.616	3.061	+0.80	-8.8	22.8	106.3
July 12	00 34.80	-35 37.1	2.464	3.006	+0.63	-10.5	22.5	112.6
July 22	00 41.14	-37 22.4	2.323	2.950	+0.42	-12.0	22.3	118.8
Aug. 1	00 45.38	-39 22.3	2.196	2.893	+0.17	-13.0	22.0	124.4
Aug. 11	00 47.09	-41 32.7	2.085	2.836	-0.13	-13.4	21.8	129.1
Aug. 21	00 45.83	-43 46.7	1.992	2.779	-0.45	-12.8	21.6	132.6
Aug. 31	00 41.32	-45 54.2	1.918	2.721	-0.77	-10.9	21.3	134.3
Sept. 10	00 33.61	-47 43.7	1.863	2.662	-1.04	-7.9	21.1	133.9
Sept. 20	00 23.22	-49 03.0	1.827	2.604	-1.19	-3.9	20.9	131.5
Sept. 30	00 11.31	-49 41.8	1.809	2.545	-1.18	+0.7	20.8	127.4
Oct. 10	23 59.49	-49 35.0	1.806	2.486	-1.01	+5.3	20.6	122.1
Oct. 20	23 49.36	-48 42.2	1.817	2.427	-0.71	+9.5	20.5	116.2
Oct. 30	23 42.21	-47 07.7	1.839	2.368	-0.36	+12.9	20.3	109.9
Nov. 9	23 38.65	-44 58.3	1.868	2.309	+0.01	+15.8	20.2	103.5
Nov. 19	23 38.77	-42 20.8	1.902	2.251	+0.36	+18.0	20.1	97.2
Nov. 29	23 42.33	-39 21.2	1.940	2.193	+0.66	+19.7	20.0	91.1
Dec. 9	23 48.90	-36 04.3	1.979	2.136	+0.91	+21.1	19.8	85.2
Dec. 19	23 58.03	-32 33.5	2.019	2.080	+1.13	+22.2	19.7	79.6
Dec. 29	00 09.32	-28 51.4	2.058	2.025	+1.31	+23.1	19.6	74.2
Jan. 8	00 22.41	-25 00.0	2.095	1.971	+1.46	+23.9	19.4	69.1
Jan. 18	00 37.05	-21 01.0	2.131	1.920	+1.60	+24.5	19.3	64.2
Jan. 28	00 53.02	-16 56.0	2.166	1.871	+1.72	+24.9	19.2	59.6
Feb. 7	01 10.17	-12 46.5	2.199	1.825	+1.83	+25.2	19.0	55.1
Feb. 17	01 28.43	-08 34.4	2.232	1.781	+1.93	+25.3	18.9	50.9
Feb. 27	01 47.74	-04 21.7	2.263	1.742	+2.03	+25.1	18.8	46.8
Mar. 9	02 08.09	-00 10.4	2.294	1.706	+2.14	+24.8	18.7	42.9
Mar. 19	02 29.51	+03 57.1	2.325	1.675	+2.25	+24.1	18.6	39.1
Mar. 29	02 52.02	+07 58.2	2.356	1.648	+2.37	+23.2	18.5	35.5

Comet 114P/Wiseman-Skiff

Epoch = 2012 July 12.0 TT
T = 2013 May 13.94309 TT
Peri. = 172.85771 e = 0.5553702
Node = 271.05540 2000.0 a = 3.5421528 AU
Incl. = 18.28343 n = 0.14784381
q = 1.5749467 AU P = 6.67 years

m1 = 11.0 + 5 log(Delta) + 20.0 log(r(t-20))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	20 11.96	-10 39.4	4.920	4.024	+1.05	+4.2	.	21.9
Jan. 14	20 22.45	-09 57.5	4.920	3.980	+1.07	+4.8	.	15.5
Jan. 24	20 33.19	-09 09.8	4.899	3.936	+1.09	+5.3	.	10.6
Feb. 3	20 44.08	-08 16.6	4.859	3.891	+1.09	+5.9	.	9.7
Feb. 13	20 55.02	-07 18.0	4.798	3.845	+1.09	+6.4	.	13.5
Feb. 23	21 05.95	-06 14.1	4.718	3.798	+1.08	+6.9	.	19.2
Mar. 4	21 16.78	-05 05.3	4.620	3.751	+1.06	+7.3	.	25.6
Mar. 14	21 27.42	-03 51.8	4.505	3.703	+1.04	+7.8	.	32.3
Mar. 24	21 37.82	-02 34.0	4.374	3.654	+1.01	+8.2	.	39.0
Apr. 3	21 47.88	-01 12.2	4.229	3.605	+0.96	+8.5	.	45.8
Apr. 13	21 57.52	+00 13.2	4.072	3.555	+0.91	+8.9	.	52.7
Apr. 23	22 06.66	+01 41.8	3.903	3.504	+0.85	+9.1	.	59.6
May 3	22 15.18	+03 13.1	3.727	3.452	+0.78	+9.4	.	66.6
May 13	22 22.97	+04 46.7	3.543	3.400	+0.69	+9.5	.	73.6
May 23	22 29.90	+06 21.8	3.355	3.346	+0.59	+9.6	.	80.8
June 2	22 35.80	+07 57.7	3.166	3.293	+0.47	+9.6	.	88.1
June 12	22 40.50	+09 33.5	2.977	3.238	+0.33	+9.4	.	95.6
June 22	22 43.77	+11 07.7	2.791	3.183	+0.16	+9.1	.	103.3
July 2	22 45.38	+12 38.5	2.612	3.127	-0.02	+8.5	.	111.2
July 12	22 45.13	+14 03.7	2.442	3.070	-0.23	+7.6	23.0	119.4
July 22	22 42.81	+15 20.0	2.284	3.013	-0.45	+6.3	22.7	127.6
Aug. 1	22 38.31	+16 23.4	2.142	2.955	-0.66	+4.6	22.4	135.8
Aug. 11	22 31.72	+17 09.6	2.019	2.897	-0.84	+2.5	22.1	143.5
Aug. 21	22 23.33	+17 34.3	1.918	2.838	-0.96	0.0	21.8	149.8
Aug. 31	22 13.78	+17 34.4	1.841	2.779	-0.98	-2.5	21.6	153.1
Sept. 10	22 03.95	+17 09.4	1.789	2.719	-0.91	-4.7	21.3	151.9
Sept. 20	21 54.86	+16 21.9	1.762	2.659	-0.73	-6.4	21.1	146.7
Sept. 30	21 47.51	+15 18.1	1.758	2.598	-0.49	-7.2	20.9	139.0
Oct. 10	21 42.64	+14 05.7	1.773	2.537	-0.19	-7.3	20.7	130.4
Oct. 20	21 40.69	+12 52.6	1.805	2.476	+0.12	-6.7	20.6	121.6
Oct. 30	21 41.85	+11 45.9	1.849	2.415	+0.42	-5.5	20.4	112.9
Nov. 9	21 46.03	+10 50.5	1.900	2.354	+0.70	-4.1	20.3	104.6
Nov. 19	21 53.06	+10 09.8	1.956	2.294	+0.96	-2.4	20.1	96.8
Nov. 29	22 02.70	+09 45.8	2.013	2.233	+1.20	-0.7	20.0	89.4
Dec. 9	22 14.68	+09 38.9	2.069	2.173	+1.41	+1.0	19.8	82.6
Dec. 19	22 28.79	+09 49.1	2.122	2.114	+1.60	+2.7	19.6	76.1
Dec. 29	22 44.79	+10 15.8	2.171	2.057	+1.77	+4.2	19.4	70.1
Jan. 8	23 02.53	+10 57.5	2.215	2.000	+1.94	+5.5	19.2	64.5
Jan. 18	23 21.89	+11 52.9	2.253	1.945	+2.09	+6.7	19.0	59.3
Jan. 28	23 42.75	+12 59.8	2.287	1.892	+2.23	+7.6	18.8	54.5
Feb. 7	00 05.05	+14 16.1	2.315	1.842	+2.37	+8.3	18.6	49.9
Feb. 17	00 28.78	+15 39.0	2.339	1.794	+2.51	+8.6	18.4	45.7
Feb. 27	00 53.87	+17 05.4	2.359	1.750	+2.64	+8.7	18.2	41.8
Mar. 9	01 20.32	+18 31.9	2.377	1.710	+2.78	+8.3	18.0	38.1
Mar. 19	01 48.10	+19 54.9	2.393	1.674	+2.90	+7.6	17.8	34.7
Mar. 29	02 17.12	+21 10.4	2.409	1.643	+3.02	+6.4	17.6	31.5

Comet C/2010 S1 (LINEAR)

Epoch = 2012 July 12.0 TT
T = 2013 May 20.34215 TT
Peri. = 118.61797
Node = 93.43528 2000.0
Incl. = 125.33510
q = 5.8999131 AU
e = 1.0008797

m1 = 2.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	22 55.04	+52 46.6	6.767	6.865	+0.08	-7.4	14.9	91.6
Jan. 14	22 55.87	+51 32.4	6.851	6.831	+0.19	-6.2	14.9	84.7
Jan. 24	22 57.75	+50 30.4	6.935	6.797	+0.27	-4.9	14.9	77.9
Feb. 3	23 00.42	+49 41.3	7.013	6.763	+0.32	-3.6	14.9	71.3
Feb. 13	23 03.66	+49 05.1	7.083	6.730	+0.36	-2.4	14.9	65.2
Feb. 23	23 07.27	+48 41.4	7.141	6.697	+0.38	-1.2	14.9	59.7
Mar. 4	23 11.07	+48 29.8	7.184	6.665	+0.38	0.0	14.9	55.0
Mar. 14	23 14.89	+48 29.4	7.210	6.633	+0.37	+1.0	14.9	51.2
Mar. 24	23 18.57	+48 39.5	7.218	6.602	+0.34	+2.0	14.9	48.7
Apr. 3	23 21.94	+48 59.3	7.206	6.571	+0.29	+2.9	14.9	47.5
Apr. 13	23 24.86	+49 27.9	7.175	6.541	+0.23	+3.6	14.8	47.7
Apr. 23	23 27.14	+50 04.3	7.124	6.512	+0.15	+4.3	14.8	49.2
May 3	23 28.61	+50 47.4	7.054	6.483	+0.05	+4.9	14.8	52.0
May 13	23 29.06	+51 36.2	6.967	6.455	-0.08	+5.3	14.7	55.9
May 23	23 28.28	+52 29.2	6.865	6.427	-0.23	+5.6	14.7	60.5
June 2	23 26.01	+53 24.7	6.750	6.400	-0.40	+5.6	14.6	65.7
June 12	23 22.02	+54 20.7	6.624	6.373	-0.60	+5.4	14.5	71.4
June 22	23 16.06	+55 14.8	6.492	6.347	-0.81	+4.9	14.5	77.3
July 2	23 07.92	+56 03.6	6.356	6.322	-1.04	+4.0	14.4	83.5
July 12	22 57.49	+56 43.5	6.220	6.297	-1.27	+2.7	14.4	89.7
July 22	22 44.81	+57 10.3	6.089	6.273	-1.46	+0.9	14.3	95.8
Aug. 1	22 30.16	+57 19.4	5.966	6.250	-1.61	-1.3	14.2	101.6
Aug. 11	22 14.10	+57 06.8	5.857	6.227	-1.67	-3.7	14.2	106.9
Aug. 21	21 57.40	+56 29.7	5.764	6.205	-1.64	-6.3	14.1	111.4
Aug. 31	21 40.98	+55 26.9	5.692	6.184	-1.53	-8.7	14.1	114.8
Sept. 10	21 25.73	+53 59.7	5.642	6.163	-1.34	-10.9	14.1	116.9
Sept. 20	21 12.30	+52 11.2	5.617	6.143	-1.12	-12.5	14.0	117.3
Sept. 30	21 01.13	+50 06.2	5.618	6.124	-0.88	-13.6	14.0	116.0
Oct. 10	20 52.34	+47 50.7	5.643	6.105	-0.64	-14.0	14.0	113.2
Oct. 20	20 45.90	+45 30.3	5.691	6.088	-0.43	-14.0	14.0	109.0
Oct. 30	20 41.62	+43 10.5	5.759	6.071	-0.24	-13.5	14.0	103.7
Nov. 9	20 39.25	+40 55.8	5.843	6.055	-0.07	-12.6	14.1	97.6
Nov. 19	20 38.51	+38 49.7	5.939	6.039	+0.06	-11.5	14.1	91.1
Nov. 29	20 39.14	+36 54.8	6.042	6.025	+0.17	-10.2	14.1	84.3
Dec. 9	20 40.87	+35 12.8	6.147	6.011	+0.26	-8.8	14.1	77.5
Dec. 19	20 43.48	+33 44.4	6.250	5.998	+0.33	-7.4	14.2	70.7
Dec. 29	20 46.75	+32 30.1	6.346	5.985	+0.37	-6.1	14.2	64.3
Jan. 8	20 50.50	+31 29.6	6.432	5.974	+0.40	-4.7	14.2	58.3
Jan. 18	20 54.55	+30 42.5	6.504	5.963	+0.42	-3.5	14.2	52.9
Jan. 28	20 58.73	+30 08.0	6.559	5.953	+0.42	-2.3	14.2	48.6
Feb. 7	21 02.90	+29 45.2	6.596	5.944	+0.40	-1.2	14.2	45.4
Feb. 17	21 06.91	+29 33.2	6.611	5.936	+0.37	-0.2	14.2	43.7
Feb. 27	21 10.63	+29 31.1	6.606	5.929	+0.33	+0.7	14.2	43.6
Mar. 9	21 13.92	+29 37.6	6.579	5.922	+0.27	+1.4	14.2	45.2
Mar. 19	21 16.65	+29 51.7	6.532	5.916	+0.20	+2.0	14.2	48.3
Mar. 29	21 18.66	+30 12.1	6.464	5.912	+0.12	+2.5	14.2	52.6

Comet 175P/Hergenrother

Epoch = 2012 July 12.0 TT
T = 2013 May 23.39163 TT
Peri. = 55.88613 e = 0.4324010
Node = 123.60303 2000.0 a = 3.4303307 AU
Incl. = 6.07569 n = 0.15513153
q = 1.9470523 AU P = 6.35 years

m1 = 8.8 + 5 log(Delta) + 22.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	02 37.06	+08 17.9	3.210	3.754	-0.03	+1.9	.	116.5
Jan. 14	02 36.73	+08 37.1	3.318	3.717	+0.15	+2.8	.	106.4
Jan. 24	02 38.25	+09 04.8	3.432	3.681	+0.33	+3.5	.	96.8
Feb. 3	02 41.52	+09 39.9	3.549	3.644	+0.49	+4.1	.	87.6
Feb. 13	02 46.39	+10 21.0	3.663	3.606	+0.63	+4.6	.	78.9
Feb. 23	02 52.73	+11 06.7	3.773	3.568	+0.77	+4.9	.	70.6
Mar. 4	03 00.38	+11 55.8	3.874	3.529	+0.88	+5.1	.	62.6
Mar. 14	03 09.21	+12 47.0	3.965	3.490	+0.99	+5.2	.	54.9
Mar. 24	03 19.08	+13 39.2	4.044	3.450	+1.08	+5.2	.	47.6
Apr. 3	03 29.90	+14 31.3	4.108	3.410	+1.16	+5.1	.	40.5
Apr. 13	03 41.55	+15 22.5	4.158	3.369	+1.24	+4.9	.	33.6
Apr. 23	03 53.95	+16 11.7	4.193	3.328	+1.31	+4.7	.	27.0
May 3	04 07.04	+16 58.3	4.211	3.287	+1.37	+4.3	.	20.6
May 13	04 20.72	+17 41.4	4.214	3.245	+1.42	+3.9	.	14.4
May 23	04 34.95	+18 20.5	4.200	3.203	+1.47	+3.4	.	8.5
June 2	04 49.66	+18 54.8	4.171	3.160	+1.51	+2.9	.	3.9
June 12	05 04.78	+19 24.0	4.126	3.117	+1.55	+2.3	23.0	5.5
June 22	05 20.27	+19 47.5	4.066	3.074	+1.58	+1.7	22.8	10.7
July 2	05 36.05	+20 04.9	3.992	3.030	+1.60	+1.1	22.6	16.3
July 12	05 52.07	+20 16.1	3.904	2.986	+1.62	+0.5	22.4	22.0
July 22	06 08.27	+20 20.7	3.804	2.942	+1.63	-0.2	22.2	27.6
Aug. 1	06 24.55	+20 18.8	3.691	2.898	+1.63	-0.8	22.0	33.3
Aug. 11	06 40.87	+20 10.4	3.568	2.853	+1.63	-1.5	21.8	39.1
Aug. 21	06 57.14	+19 55.6	3.434	2.809	+1.61	-2.1	21.6	44.8
Aug. 31	07 13.27	+19 34.9	3.292	2.764	+1.59	-2.6	21.3	50.6
Sept.10	07 29.17	+19 08.6	3.142	2.720	+1.56	-3.1	21.1	56.5
Sept.20	07 44.76	+18 37.6	2.985	2.675	+1.51	-3.5	20.8	62.5
Sept.30	07 59.90	+18 02.7	2.824	2.631	+1.46	-3.8	20.5	68.7
Oct. 10	08 14.49	+17 25.1	2.659	2.587	+1.39	-3.9	20.2	75.0
Oct. 20	08 28.38	+16 46.2	2.492	2.543	+1.30	-3.8	19.9	81.5
Oct. 30	08 41.38	+16 07.8	2.324	2.500	+1.19	-3.6	19.6	88.3
Nov. 9	08 53.33	+15 31.9	2.158	2.458	+1.06	-3.1	19.3	95.4
Nov. 19	09 03.96	+15 01.1	1.995	2.416	+0.90	-2.3	18.9	102.9
Nov. 29	09 13.00	+14 38.3	1.838	2.374	+0.71	-1.2	18.6	110.8
Dec. 9	09 20.15	+14 26.4	1.690	2.334	+0.49	+0.2	18.2	119.2
Dec. 19	09 25.04	+14 28.9	1.552	2.295	+0.23	+2.0	17.9	128.3
Dec. 29	09 27.37	+14 48.4	1.428	2.257	-0.04	+3.8	17.5	138.0
Jan. 8	09 26.93	+15 26.7	1.322	2.220	-0.32	+5.6	17.2	148.5
Jan. 18	09 23.72	+16 23.1	1.236	2.185	-0.55	+7.0	16.9	159.7
Jan. 28	09 18.18	+17 33.6	1.173	2.152	-0.70	+7.7	16.6	171.3
Feb. 7	09 11.18	+18 50.9	1.136	2.120	-0.72	+7.5	16.4	175.6
Feb. 17	09 04.02	+20 05.6	1.123	2.091	-0.58	+6.3	16.3	164.0
Feb. 27	08 58.21	+21 08.8	1.135	2.064	-0.33	+4.6	16.2	152.4
Mar. 9	08 54.93	+21 54.7	1.167	2.039	0.00	+2.6	16.1	141.4
Mar. 19	08 54.97	+22 20.2	1.215	2.017	+0.36	+0.5	16.1	131.4
Mar. 29	08 58.61	+22 25.1	1.277	1.998	+0.70	-1.5	16.1	122.3

Comet P/2005 JY126 (Catalina)

Epoch = 2012 July 12.0 TT
T = 2013 June 4.38266 TT
Peri. = 117.80180 e = 0.4330430
Node = 207.87360 2000.0 a = 3.7550283 AU
Incl. = 20.24588 n = 0.13545163
q = 2.1289396 AU P = 7.28 years

m1 = 10.8 + 5 log(Delta) + 12.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 4	14 25.55	-15 08.1	4.223	3.891	-0.47	0.0	21.3	12.3/ 99	63.9
Jan. 14	14 33.94	-15 26.1	4.042	3.854	-0.50	-0.1	21.2	11.0/ 96	72.0
Jan. 24	14 41.48	-15 36.8	3.855	3.817	-0.53	-0.1	21.0	9.4/ 92	80.4
Feb. 3	14 47.97	-15 39.2	3.664	3.779	-0.56	-0.2	20.8	7.6/ 85	89.1
Feb. 13	14 53.23	-15 32.6	3.472	3.740	-0.60	-0.2	20.7	5.8/ 73	98.0
Feb. 23	14 57.05	-15 16.0	3.284	3.701	-0.64	-0.3	20.5	4.2/ 49	107.3
Mar. 4	14 59.22	-14 48.6	3.104	3.662	-0.68	-0.3	20.3	3.9/ 8	117.0
Mar. 14	14 59.62	-14 09.7	2.936	3.623	-0.72	-0.3	20.1	5.5/337	127.0
Mar. 24	14 58.13	-13 19.2	2.784	3.583	-0.76	-0.4	20.0	7.8/322	137.5
Apr. 3	14 54.81	-12 17.7	2.653	3.543	-0.79	-0.4	19.8	10.2/314	148.3
Apr. 13	14 49.84	-11 06.5	2.546	3.502	-0.82	-0.4	19.6	12.1/310	159.3
Apr. 23	14 43.58	-09 48.7	2.467	3.461	-0.83	-0.5	19.5	13.1/308	169.8
May 3	14 36.57	-08 28.3	2.418	3.420	-0.84	-0.6	19.4	13.1/306	172.7
May 13	14 29.48	-07 10.2	2.398	3.378	-0.83	-0.7	19.3	12.0/306	163.3
May 23	14 22.95	-05 59.3	2.407	3.337	-0.81	-0.8	19.2	10.0/307	152.3
June 2	14 17.57	-04 59.7	2.441	3.295	-0.78	-1.0	19.2	7.3/309	141.4
June 12	14 13.80	-04 14.0	2.497	3.253	-0.75	-1.1	19.2	4.2/317	130.8
June 22	14 11.88	-03 43.4	2.569	3.210	-0.72	-1.2	19.2	1.6/ 4	120.8
July 2	14 11.95	-03 27.7	2.653	3.168	-0.69	-1.2	19.2	3.0/ 86	111.3
July 12	14 13.98	-03 25.8	2.745	3.126	-0.66	-1.2	19.2	6.0/100	102.4
July 22	14 17.90	-03 36.1	2.841	3.083	-0.64	-1.2	19.2	8.8/104	94.0
Aug. 1	14 23.59	-03 56.6	2.938	3.040	-0.63	-1.2	19.2	11.3/105	86.0
Aug. 11	14 30.90	-04 25.5	3.031	2.998	-0.62	-1.1	19.2	13.6/105	78.4
Aug. 21	14 39.72	-05 01.0	3.121	2.955	-0.61	-1.1	19.2	15.7/105	71.3
Aug. 31	14 49.90	-05 41.1	3.203	2.913	-0.61	-1.0	19.1	17.6/104	64.4
Sept.10	15 01.34	-06 24.2	3.277	2.870	-0.62	-1.0	19.1	19.3/104	57.8
Sept.20	15 13.95	-07 08.7	3.341	2.828	-0.62	-0.9	19.1	20.8/102	51.5
Sept.30	15 27.64	-07 53.0	3.395	2.786	-0.64	-0.9	19.0	22.2/101	45.5
Oct. 10	15 42.34	-08 35.6	3.439	2.745	-0.65	-0.9	19.0	23.5/100	39.7
Oct. 20	15 57.98	-09 15.0	3.470	2.704	-0.67	-0.9	18.9	24.7/ 98	34.1
Oct. 30	16 14.49	-09 49.9	3.490	2.664	-0.69	-1.0	18.8	25.7/ 97	28.8
Nov. 9	16 31.81	-10 18.9	3.499	2.624	-0.71	-1.0	18.8	26.7/ 95	23.8
Nov. 19	16 49.89	-10 40.6	3.496	2.585	-0.73	-1.1	18.7	27.7/ 93	19.4
Nov. 29	17 08.63	-10 53.9	3.482	2.546	-0.76	-1.3	18.6	28.5/ 91	15.6
Dec. 9	17 27.98	-10 57.5	3.458	2.509	-0.79	-1.4	18.5	29.3/ 89	13.2
Dec. 19	17 47.85	-10 50.5	3.423	2.472	-0.82	-1.6	18.4	30.0/ 87	12.6
Dec. 29	18 08.15	-10 32.1	3.380	2.437	-0.85	-1.8	18.3	30.6/ 85	14.0
Jan. 8	18 28.77	-10 01.8	3.328	2.403	-0.88	-2.0	18.2	31.2/ 83	16.8
Jan. 18	18 49.65	-09 19.0	3.268	2.370	-0.91	-2.2	18.1	31.6/ 80	20.3
Jan. 28	19 10.65	-08 23.7	3.202	2.339	-0.94	-2.4	17.9	32.0/ 78	24.2
Feb. 7	19 31.70	-07 16.0	3.130	2.310	-0.97	-2.7	17.8	32.3/ 76	28.3
Feb. 17	19 52.72	-05 56.5	3.053	2.282	-1.00	-2.8	17.7	32.5/ 74	32.4
Feb. 27	20 13.60	-04 25.8	2.973	2.256	-1.03	-3.0	17.6	32.6/ 72	36.6
Mar. 9	20 34.30	-02 44.9	2.889	2.232	-1.06	-3.1	17.5	32.5/ 70	40.7
Mar. 19	20 54.73	-00 55.1	2.803	2.211	-1.09	-3.2	17.3	32.4/ 69	44.8
Mar. 29	21 14.84	+01 02.3	2.715	2.192	-1.12	-3.2	17.2	32.1/ 67	48.9

Comet P/1997 C1 (Gehrels)

Epoch = 2012 July 12.0 TT
T = 2013 July 10.01652 TT
Peri. = 211.12259 e = 0.4717029
Node = 225.31087 2000.0 a = 6.8149933 AU
Incl. = 2.85810 n = 0.05539951
q = 3.6003412 AU P = 17.79 years

m1 = -3.2 + 5 log(Delta) + 30.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	23 11.57	-03 04.3	5.167	4.832	-0.31	-1.8	20.9	10.6/ 70	64.8
Jan. 14	23 18.19	-02 27.7	5.271	4.797	-0.31	-1.8	20.8	11.8/ 69	56.4
Jan. 24	23 25.54	-01 45.6	5.362	4.763	-0.31	-1.8	20.8	12.9/ 69	48.2
Feb. 3	23 33.53	-00 58.7	5.439	4.729	-0.31	-1.8	20.7	13.7/ 68	40.2
Feb. 13	23 42.04	-00 07.7	5.499	4.695	-0.31	-1.8	20.7	14.5/ 68	32.4
Feb. 23	23 51.00	+00 46.7	5.542	4.661	-0.31	-1.8	20.6	15.1/ 68	24.7
Mar. 4	00 00.31	+01 43.9	5.566	4.627	-0.32	-1.9	20.5	15.5/ 68	17.2
Mar. 14	00 09.89	+02 43.1	5.571	4.594	-0.33	-1.9	20.4	15.9/ 67	9.8
Mar. 24	00 19.69	+03 43.9	5.556	4.561	-0.33	-1.9	20.3	16.1/ 67	2.8
Apr. 3	00 29.63	+04 45.5	5.523	4.528	-0.34	-1.9	20.2	16.2/ 67	5.0
Apr. 13	00 39.65	+05 47.4	5.471	4.495	-0.35	-2.0	20.1	16.2/ 68	12.0
Apr. 23	00 49.68	+06 48.9	5.401	4.463	-0.36	-2.0	19.9	16.0/ 68	19.0
May 3	00 59.67	+07 49.4	5.314	4.430	-0.38	-2.0	19.8	15.8/ 68	26.1
May 13	01 09.55	+08 48.5	5.210	4.398	-0.39	-2.1	19.7	15.4/ 68	33.1
May 23	01 19.24	+09 45.5	5.092	4.367	-0.41	-2.1	19.5	14.9/ 68	40.2
June 2	01 28.67	+10 39.9	4.959	4.336	-0.42	-2.2	19.4	14.3/ 69	47.3
June 12	01 37.75	+11 31.2	4.815	4.305	-0.44	-2.2	19.2	13.5/ 69	54.4
June 22	01 46.39	+12 18.9	4.661	4.274	-0.46	-2.2	19.1	12.6/ 70	61.7
July 2	01 54.47	+13 02.4	4.498	4.244	-0.49	-2.3	18.9	11.5/ 70	69.2
July 12	02 01.86	+13 41.2	4.329	4.214	-0.51	-2.3	18.7	10.1/ 70	76.8
July 22	02 08.44	+14 14.8	4.156	4.185	-0.54	-2.4	18.5	8.6/ 71	84.6
Aug. 1	02 14.05	+14 42.5	3.982	4.156	-0.57	-2.5	18.4	6.8/ 72	92.7
Aug. 11	02 18.54	+15 03.8	3.809	4.128	-0.60	-2.5	18.2	4.9/ 73	101.2
Aug. 21	02 21.74	+15 18.2	3.642	4.100	-0.63	-2.6	18.0	2.7/ 75	110.0
Aug. 31	02 23.53	+15 25.1	3.484	4.072	-0.66	-2.7	17.8	0.4/104	119.2
Sept.10	02 23.82	+15 24.1	3.337	4.045	-0.69	-2.9	17.6	2.0/243	128.8
Sept.20	02 22.57	+15 14.9	3.208	4.019	-0.72	-3.0	17.5	4.3/246	138.9
Sept.30	02 19.86	+14 57.8	3.099	3.993	-0.75	-3.2	17.3	6.2/247	149.4
Oct. 10	02 15.91	+14 33.4	3.014	3.968	-0.76	-3.3	17.2	7.7/247	160.3
Oct. 20	02 11.05	+14 03.3	2.956	3.944	-0.77	-3.4	17.0	8.4/247	171.5
Oct. 30	02 05.76	+13 29.8	2.928	3.920	-0.77	-3.5	16.9	8.3/246	177.1
Nov. 9	02 00.57	+12 55.7	2.929	3.897	-0.77	-3.5	16.9	7.4/245	165.7
Nov. 19	01 56.00	+12 24.2	2.959	3.874	-0.75	-3.5	16.8	5.7/243	154.4
Nov. 29	01 52.52	+11 58.3	3.016	3.853	-0.73	-3.4	16.8	3.5/239	143.4
Dec. 9	01 50.47	+11 40.1	3.095	3.832	-0.70	-3.3	16.8	1.1/215	132.7
Dec. 19	01 50.04	+11 31.2	3.193	3.811	-0.68	-3.2	16.8	1.9/ 87	122.3
Dec. 29	01 51.32	+11 32.1	3.306	3.792	-0.65	-3.0	16.8	4.5/ 76	112.5
Jan. 8	01 54.28	+11 42.5	3.429	3.773	-0.63	-2.9	16.8	7.0/ 74	103.0
Jan. 18	01 58.84	+12 02.0	3.557	3.756	-0.61	-2.8	16.8	9.3/ 73	94.0
Jan. 28	02 04.88	+12 29.3	3.688	3.739	-0.60	-2.6	16.8	11.3/ 72	85.3
Feb. 7	02 12.26	+13 03.2	3.817	3.723	-0.58	-2.5	16.8	13.1/ 72	77.1
Feb. 17	02 20.83	+13 42.5	3.943	3.708	-0.57	-2.4	16.9	14.7/ 73	69.2
Feb. 27	02 30.46	+14 25.8	4.062	3.694	-0.57	-2.3	16.9	16.0/ 73	61.5
Mar. 9	02 41.02	+15 11.8	4.172	3.680	-0.56	-2.1	16.9	17.1/ 74	54.2
Mar. 19	02 52.41	+15 59.3	4.273	3.668	-0.56	-2.0	16.9	18.1/ 74	47.1
Mar. 29	03 04.52	+16 47.1	4.363	3.657	-0.56	-1.9	16.9	18.8/ 75	40.2

Comet P/2012 B1 (PANSTARRS)

Epoch = 2012 July 12.0 TT
T = 2013 July 22.11338 TT
Peri. = 162.15720 e = 0.4109327
Node = 36.15067 2000.0 a = 6.4911132 AU
Incl. = 7.62713 n = 0.05959712
q = 3.8237025 AU P = 16.54 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. °′	Delta	r	Daily motion m		m1	Elong. °
Jan. 4	08 56.59	+27 00.9	3.968	4.860	-0.48	+2.8	19.3	152.4
Jan. 14	08 51.79	+27 28.8	3.884	4.831	-0.56	+2.6	19.2	162.5
Jan. 24	08 46.17	+27 54.8	3.830	4.802	-0.60	+2.2	19.1	169.9
Feb. 3	08 40.18	+28 16.4	3.807	4.773	-0.58	+1.5	19.1	167.3
Feb. 13	08 34.35	+28 31.8	3.814	4.744	-0.52	+0.8	19.0	158.2
Feb. 23	08 29.13	+28 40.0	3.849	4.716	-0.42	0.0	19.0	147.7
Mar. 4	08 24.97	+28 40.4	3.911	4.687	-0.28	-0.7	19.0	137.2
Mar. 14	08 22.17	+28 33.5	3.993	4.659	-0.13	-1.4	19.0	127.0
Mar. 24	08 20.91	+28 19.9	4.093	4.631	+0.04	-2.0	19.0	117.0
Apr. 3	08 21.27	+28 00.4	4.205	4.603	+0.19	-2.5	19.1	107.4
Apr. 13	08 23.20	+27 35.8	4.324	4.576	+0.34	-2.9	19.1	98.2
Apr. 23	08 26.62	+27 06.6	4.447	4.549	+0.48	-3.3	19.1	89.4
May 3	08 31.41	+26 33.4	4.570	4.522	+0.60	-3.7	19.1	80.9
May 13	08 37.40	+25 56.4	4.690	4.495	+0.70	-4.0	19.1	72.7
May 23	08 44.44	+25 16.0	4.803	4.468	+0.80	-4.4	19.2	64.9
June 2	08 52.39	+24 32.1	4.907	4.442	+0.87	-4.7	19.2	57.3
June 12	09 01.11	+23 45.1	5.001	4.417	+0.94	-5.0	19.2	49.9
June 22	09 10.46	+22 54.9	5.083	4.391	+0.99	-5.3	19.2	42.8
July 2	09 20.33	+22 01.7	5.150	4.366	+1.03	-5.6	19.2	35.8
July 12	09 30.62	+21 05.7	5.203	4.341	+1.06	-5.9	19.1	28.9
July 22	09 41.23	+20 07.2	5.240	4.317	+1.09	-6.1	19.1	22.2
Aug. 1	09 52.09	+19 06.3	5.261	4.293	+1.10	-6.3	19.1	15.8
Aug. 11	10 03.11	+18 03.4	5.265	4.269	+1.11	-6.5	19.1	9.8
Aug. 21	10 14.24	+16 58.8	5.251	4.246	+1.12	-6.6	19.0	5.8
Aug. 31	10 25.40	+15 53.0	5.221	4.224	+1.11	-6.7	19.0	7.9
Sept.10	10 36.53	+14 46.4	5.174	4.201	+1.10	-6.7	18.9	13.5
Sept.20	10 47.57	+13 39.6	5.110	4.180	+1.09	-6.6	18.9	19.9
Sept.30	10 58.46	+12 33.3	5.029	4.158	+1.07	-6.5	18.8	26.6
Oct. 10	11 09.13	+11 27.9	4.934	4.138	+1.04	-6.4	18.7	33.5
Oct. 20	11 19.51	+10 24.2	4.823	4.117	+1.00	-6.1	18.6	40.5
Oct. 30	11 29.51	+09 23.1	4.699	4.098	+0.95	-5.8	18.5	47.8
Nov. 9	11 39.05	+08 25.3	4.563	4.079	+0.90	-5.4	18.5	55.2
Nov. 19	11 48.03	+07 31.6	4.416	4.060	+0.83	-4.9	18.4	62.8
Nov. 29	11 56.31	+06 43.1	4.261	4.042	+0.75	-4.3	18.2	70.6
Dec. 9	12 03.77	+06 00.5	4.100	4.025	+0.65	-3.6	18.1	78.7
Dec. 19	12 10.27	+05 24.7	3.935	4.008	+0.54	-2.8	18.0	87.1
Dec. 29	12 15.65	+04 56.7	3.770	3.992	+0.41	-2.0	17.9	95.8
Jan. 8	12 19.76	+04 37.1	3.608	3.976	+0.27	-1.1	17.8	104.9
Jan. 18	12 22.44	+04 26.4	3.453	3.962	+0.11	-0.2	17.7	114.3
Jan. 28	12 23.59	+04 24.7	3.310	3.948	-0.04	+0.7	17.5	124.1
Feb. 7	12 23.14	+04 31.6	3.181	3.934	-0.20	+1.5	17.4	134.3
Feb. 17	12 21.13	+04 46.1	3.072	3.921	-0.34	+2.0	17.3	144.8
Feb. 27	12 17.70	+05 06.3	2.987	3.910	-0.45	+2.3	17.3	155.5
Mar. 9	12 13.15	+05 29.8	2.927	3.898	-0.53	+2.4	17.2	166.1
Mar. 19	12 07.89	+05 53.3	2.897	3.888	-0.55	+2.0	17.2	173.7
Mar. 29	12 02.42	+06 13.8	2.895	3.878	-0.51	+1.4	17.1	168.2

Comet 98P/Takamizawa

Epoch = 2012 July 12.0 TT
T = 2013 Aug. 5.42229 TT
Peri. = 157.92370 e = 0.5605452
Node = 114.74774 2000.0 a = 3.8070926 AU
Incl. = 10.54455 n = 0.13268258
q = 1.6730451 AU P = 7.43 years

m1 = 10.0 + 5 log(Delta) + 20.0 log(r(t-30))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	09 47.87	+18 01.8	3.655	4.449	-0.45	+4.1	.	139.5
Jan. 14	09 43.39	+18 43.3	3.524	4.409	-0.59	+4.7	.	150.8
Jan. 24	09 37.53	+19 29.8	3.420	4.367	-0.69	+4.9	.	162.2
Feb. 3	09 30.63	+20 18.5	3.346	4.325	-0.75	+4.7	.	172.7
Feb. 13	09 23.16	+21 05.8	3.305	4.283	-0.75	+4.3	.	171.2
Feb. 23	09 15.68	+21 48.7	3.295	4.240	-0.69	+3.6	.	160.3
Mar. 4	09 08.79	+22 24.5	3.316	4.196	-0.58	+2.7	.	148.9
Mar. 14	09 03.00	+22 51.7	3.363	4.152	-0.43	+1.8	.	137.6
Mar. 24	08 58.70	+23 09.6	3.432	4.107	-0.26	+0.9	.	126.7
Apr. 3	08 56.13	+23 18.3	3.518	4.061	-0.07	0.0	.	116.3
Apr. 13	08 55.40	+23 18.4	3.615	4.015	+0.11	-0.8	.	106.4
Apr. 23	08 56.47	+23 10.7	3.719	3.968	+0.28	-1.5	.	96.9
May 3	08 59.26	+22 55.8	3.825	3.920	+0.44	-2.1	.	87.9
May 13	09 03.62	+22 34.6	3.929	3.872	+0.58	-2.7	.	79.4
May 23	09 09.38	+22 07.3	4.027	3.823	+0.70	-3.3	.	71.2
June 2	09 16.40	+21 34.5	4.118	3.773	+0.81	-3.8	.	63.4
June 12	09 24.49	+20 56.5	4.197	3.723	+0.90	-4.3	.	55.8
June 22	09 33.52	+20 13.6	4.265	3.672	+0.98	-4.8	.	48.6
July 2	09 43.36	+19 26.0	4.318	3.621	+1.05	-5.2	.	41.6
July 12	09 53.90	+18 34.0	4.357	3.569	+1.11	-5.6	.	34.8
July 22	10 05.04	+17 37.8	4.379	3.516	+1.17	-6.0	.	28.2
Aug. 1	10 16.69	+16 37.6	4.385	3.463	+1.21	-6.4	.	21.8
Aug. 11	10 28.80	+15 33.9	4.374	3.409	+1.25	-6.7	.	15.6
Aug. 21	10 41.29	+14 26.9	4.346	3.354	+1.28	-7.0	.	10.0
Aug. 31	10 54.13	+13 17.1	4.301	3.299	+1.31	-7.2	.	6.1
Sept.10	11 07.27	+12 04.8	4.240	3.244	+1.34	-7.4	.	7.3
Sept.20	11 20.68	+10 50.7	4.162	3.187	+1.36	-7.5	.	12.2
Sept.30	11 34.33	+09 35.2	4.069	3.131	+1.39	-7.6	.	17.9
Oct. 10	11 48.20	+08 18.9	3.961	3.073	+1.41	-7.6	.	23.8
Oct. 20	12 02.26	+07 02.6	3.839	3.016	+1.42	-7.6	23.0	29.8
Oct. 30	12 16.49	+05 47.1	3.704	2.957	+1.44	-7.4	22.8	35.9
Nov. 9	12 30.86	+04 33.2	3.558	2.899	+1.45	-7.1	22.5	42.0
Nov. 19	12 45.35	+03 21.8	3.401	2.840	+1.46	-6.8	22.2	48.2
Nov. 29	12 59.91	+02 13.9	3.236	2.781	+1.46	-6.3	22.0	54.5
Dec. 9	13 14.50	+01 10.5	3.063	2.721	+1.46	-5.8	21.7	60.8
Dec. 19	13 29.06	+00 13.0	2.886	2.662	+1.44	-5.1	21.4	67.1
Dec. 29	13 43.51	-00 37.6	2.705	2.602	+1.42	-4.2	21.0	73.5
Jan. 8	13 57.76	-01 20.0	2.522	2.542	+1.39	-3.3	20.7	80.0
Jan. 18	14 11.66	-01 52.7	2.339	2.483	+1.34	-2.2	20.3	86.6
Jan. 28	14 25.06	-02 14.6	2.159	2.424	+1.27	-1.0	20.0	93.3
Feb. 7	14 37.78	-02 24.5	1.983	2.365	+1.18	+0.3	19.6	100.1
Feb. 17	14 49.54	-02 21.1	1.813	2.306	+1.05	+1.7	19.2	107.1
Feb. 27	15 00.07	-02 04.0	1.652	2.249	+0.90	+3.1	18.8	114.4
Mar. 9	15 09.02	-01 32.8	1.500	2.192	+0.70	+4.5	18.4	121.8
Mar. 19	15 16.00	-00 48.3	1.361	2.137	+0.46	+5.6	17.9	129.5
Mar. 29	15 20.65	+00 07.2	1.236	2.083	+0.20	+6.2	17.5	137.3

Comet P/2006 U5 (Christensen)

Epoch = 2012 July 12.0 TT
T = 2013 Sept. 1.17378 TT
Peri. = 98.13566 e = 0.3406381
Node = 5.09887 2000.0 a = 3.5289180 AU
Incl. = 3.42957 n = 0.14867629
q = 2.3268341 AU P = 6.63 years

m1 = 11.6 + 5 log(Delta) + 12.5 log(r(t-50))

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	21 57.72	-13 55.4	4.562	3.913	-0.34	-2.1	22.5	15.4/ 68	43.9
Jan. 14	22 07.50	-12 57.3	4.635	3.886	-0.34	-2.2	22.5	16.3/ 68	36.3
Jan. 24	22 17.77	-11 55.3	4.692	3.859	-0.34	-2.2	22.5	17.0/ 68	28.8
Feb. 3	22 28.44	-10 49.7	4.731	3.831	-0.34	-2.3	22.5	17.6/ 67	21.5
Feb. 13	22 39.40	-09 41.0	4.752	3.803	-0.34	-2.4	22.4	18.0/ 67	14.3
Feb. 23	22 50.57	-08 29.7	4.754	3.775	-0.35	-2.5	22.4	18.3/ 67	7.2
Mar. 4	23 01.89	-07 16.4	4.737	3.746	-0.36	-2.6	22.3	18.5/ 66	1.0
Mar. 14	23 13.27	-06 01.4	4.702	3.717	-0.36	-2.7	22.3	18.7/ 66	6.8
Mar. 24	23 24.68	-04 45.5	4.649	3.687	-0.37	-2.8	22.2	18.6/ 66	13.6
Apr. 3	23 36.04	-03 29.1	4.578	3.658	-0.38	-2.9	22.2	18.5/ 66	20.4
Apr. 13	23 47.31	-02 12.8	4.491	3.628	-0.40	-3.0	22.1	18.3/ 66	27.1
Apr. 23	23 58.43	-00 57.2	4.389	3.597	-0.41	-3.1	22.0	18.0/ 66	33.8
May 3	00 09.33	+00 17.1	4.272	3.567	-0.43	-3.2	21.9	17.5/ 66	40.5
May 13	00 19.95	+01 29.5	4.142	3.536	-0.45	-3.4	21.8	16.9/ 66	47.3
May 23	00 30.21	+02 39.4	4.000	3.504	-0.47	-3.5	21.7	16.1/ 66	54.1
June 2	00 40.03	+03 46.1	3.849	3.473	-0.50	-3.7	21.5	15.2/ 66	61.0
June 12	00 49.31	+04 49.1	3.689	3.441	-0.52	-3.9	21.4	14.1/ 65	68.1
June 22	00 57.92	+05 47.5	3.523	3.409	-0.56	-4.0	21.2	12.8/ 65	75.2
July 2	01 05.70	+06 40.6	3.353	3.377	-0.59	-4.3	21.1	11.2/ 65	82.7
July 12	01 12.51	+07 27.7	3.180	3.344	-0.63	-4.5	20.9	9.3/ 64	90.3
July 22	01 18.15	+08 07.8	3.008	3.312	-0.68	-4.7	20.7	7.1/ 63	98.3
Aug. 1	01 22.39	+08 40.0	2.840	3.279	-0.73	-5.0	20.6	4.6/ 59	106.7
Aug. 11	01 25.04	+09 03.3	2.678	3.246	-0.78	-5.4	20.4	1.8/ 42	115.5
Aug. 21	01 25.86	+09 16.8	2.525	3.213	-0.83	-5.7	20.2	1.7/279	124.9
Aug. 31	01 24.72	+09 19.5	2.387	3.180	-0.89	-6.1	20.0	4.7/260	134.8
Sept.10	01 21.57	+09 11.2	2.267	3.147	-0.94	-6.5	19.9	7.7/256	145.2
Sept.20	01 16.50	+08 51.9	2.168	3.114	-0.98	-6.9	19.7	10.2/254	156.3
Sept.30	01 09.89	+08 23.3	2.094	3.080	-1.00	-7.1	19.6	11.8/253	167.7
Oct. 10	01 02.30	+07 48.0	2.049	3.047	-1.01	-7.3	19.5	12.2/252	178.8
Oct. 20	00 54.49	+07 10.0	2.032	3.014	-1.00	-7.4	19.4	11.3/252	168.4
Oct. 30	00 47.32	+06 34.3	2.044	2.981	-0.97	-7.3	19.4	9.1/252	156.6
Nov. 9	00 41.52	+06 05.5	2.081	2.948	-0.93	-7.1	19.4	6.0/253	145.1
Nov. 19	00 37.65	+05 47.4	2.141	2.916	-0.89	-6.8	19.4	2.4/258	134.0
Nov. 29	00 36.06	+05 42.2	2.219	2.884	-0.84	-6.5	19.4	1.4/ 52	123.5
Dec. 9	00 36.81	+05 51.0	2.310	2.851	-0.80	-6.2	19.4	5.1/ 64	113.6
Dec. 19	00 39.87	+06 13.5	2.411	2.820	-0.77	-6.0	19.4	8.5/ 65	104.3
Dec. 29	00 45.09	+06 48.9	2.516	2.788	-0.74	-5.7	19.5	11.6/ 66	95.5
Jan. 8	00 52.25	+07 35.9	2.623	2.758	-0.72	-5.5	19.5	14.4/ 67	87.3
Jan. 18	01 01.16	+08 33.0	2.729	2.727	-0.71	-5.3	19.5	16.8/ 67	79.5
Jan. 28	01 11.63	+09 38.5	2.831	2.697	-0.70	-5.1	19.5	18.9/ 67	72.1
Feb. 7	01 23.46	+10 50.7	2.928	2.668	-0.70	-5.0	19.6	20.7/ 68	65.2
Feb. 17	01 36.55	+12 08.3	3.018	2.640	-0.70	-4.8	19.6	22.3/ 68	58.5
Feb. 27	01 50.74	+13 29.4	3.100	2.612	-0.71	-4.6	19.6	23.6/ 69	52.2
Mar. 9	02 05.95	+14 52.6	3.173	2.585	-0.73	-4.5	19.6	24.8/ 70	46.1
Mar. 19	02 22.11	+16 16.4	3.237	2.559	-0.74	-4.3	19.5	25.8/ 71	40.3
Mar. 29	02 39.14	+17 39.2	3.291	2.535	-0.76	-4.1	19.5	26.7/ 72	34.7

Comet 121P/Shoemaker-Holt

Epoch = 2012 July 12.0 TT
T = 2013 Sept. 21.53175 TT
Peri. = 14.38930 e = 0.1900237
Node = 94.38506 2000.0 a = 4.6215813 AU
Incl. = 20.05992 n = 0.09920149
q = 3.7433713 AU P = 9.94 years

m1 = 7.0 + 5 log(Delta) + 17.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 17.69	-12 33.5	4.244	4.358	+0.32	+7.3	21.3	90.1
Jan. 14	01 20.91	-11 20.2	4.376	4.343	+0.45	+7.7	21.4	81.6
Jan. 24	01 25.37	-10 03.1	4.504	4.327	+0.56	+8.0	21.4	73.4
Feb. 3	01 30.93	-08 43.4	4.627	4.312	+0.65	+8.1	21.4	65.5
Feb. 13	01 37.46	-07 22.4	4.742	4.297	+0.74	+8.1	21.5	57.8
Feb. 23	01 44.85	-06 01.0	4.845	4.282	+0.81	+8.1	21.5	50.3
Mar. 4	01 52.96	-04 40.1	4.936	4.267	+0.87	+8.0	21.5	43.1
Mar. 14	02 01.70	-03 20.5	5.013	4.252	+0.93	+7.8	21.5	36.2
Mar. 24	02 10.96	-02 02.8	5.074	4.237	+0.97	+7.5	21.5	29.6
Apr. 3	02 20.66	-00 47.6	5.119	4.222	+1.01	+7.2	21.5	23.5
Apr. 13	02 30.72	+00 24.5	5.148	4.207	+1.03	+6.9	21.5	18.2
Apr. 23	02 41.06	+01 33.2	5.159	4.192	+1.05	+6.5	21.5	14.4
May 3	02 51.61	+02 37.9	5.152	4.178	+1.07	+6.0	21.4	13.3
May 13	03 02.29	+03 38.3	5.129	4.163	+1.07	+5.6	21.4	15.4
May 23	03 13.03	+04 34.1	5.088	4.149	+1.07	+5.1	21.3	19.7
June 2	03 23.76	+05 25.0	5.031	4.135	+1.06	+4.6	21.3	25.0
June 12	03 34.39	+06 10.8	4.958	4.121	+1.05	+4.0	21.2	31.0
June 22	03 44.86	+06 51.3	4.870	4.107	+1.02	+3.5	21.2	37.2
July 2	03 55.06	+07 26.3	4.768	4.093	+0.98	+3.0	21.1	43.7
July 12	04 04.89	+07 56.0	4.653	4.079	+0.94	+2.4	21.0	50.3
July 22	04 14.24	+08 20.1	4.526	4.066	+0.87	+1.9	20.9	57.2
Aug. 1	04 22.99	+08 39.0	4.388	4.053	+0.80	+1.4	20.8	64.3
Aug. 11	04 31.00	+08 52.7	4.243	4.039	+0.71	+0.9	20.7	71.6
Aug. 21	04 38.12	+09 01.7	4.091	4.027	+0.61	+0.5	20.6	79.2
Aug. 31	04 44.17	+09 06.5	3.936	4.014	+0.48	+0.1	20.5	87.1
Sept.10	04 49.00	+09 07.5	3.779	4.001	+0.34	-0.2	20.4	95.4
Sept.20	04 52.43	+09 05.7	3.625	3.989	+0.19	-0.4	20.3	104.0
Sept.30	04 54.29	+09 02.0	3.476	3.977	+0.02	-0.4	20.2	113.1
Oct. 10	04 54.47	+08 57.5	3.338	3.965	-0.16	-0.4	20.1	122.5
Oct. 20	04 52.88	+08 53.7	3.213	3.953	-0.33	-0.2	20.0	132.4
Oct. 30	04 49.56	+08 52.1	3.107	3.942	-0.49	+0.2	19.9	142.5
Nov. 9	04 44.70	+08 54.0	3.024	3.931	-0.61	+0.7	19.8	152.7
Nov. 19	04 38.60	+09 01.1	2.968	3.920	-0.69	+1.3	19.7	162.1
Nov. 29	04 31.75	+09 14.4	2.940	3.909	-0.70	+2.0	19.7	167.5
Dec. 9	04 24.72	+09 34.7	2.943	3.899	-0.66	+2.8	19.7	163.8
Dec. 19	04 18.13	+10 02.2	2.977	3.889	-0.56	+3.5	19.7	154.7
Dec. 29	04 12.54	+10 36.8	3.037	3.879	-0.42	+4.1	19.7	144.3
Jan. 8	04 08.37	+11 17.6	3.123	3.869	-0.25	+4.6	19.8	133.8
Jan. 18	04 05.90	+12 03.9	3.229	3.860	-0.06	+5.0	19.8	123.5
Jan. 28	04 05.27	+12 54.4	3.350	3.851	+0.12	+5.4	19.9	113.6
Feb. 7	04 06.47	+13 47.9	3.483	3.843	+0.30	+5.6	19.9	104.0
Feb. 17	04 09.44	+14 43.5	3.622	3.834	+0.46	+5.6	20.0	94.8
Feb. 27	04 14.06	+15 39.9	3.764	3.826	+0.61	+5.6	20.1	86.1
Mar. 9	04 20.15	+16 36.2	3.905	3.819	+0.74	+5.5	20.1	77.7
Mar. 19	04 27.57	+17 31.5	4.042	3.811	+0.86	+5.4	20.2	69.7
Mar. 29	04 36.17	+18 25.0	4.171	3.805	+0.96	+5.1	20.3	61.9

Comet 2P/Encke

Epoch = 2012 July 12.0 TT
T = 2013 Nov. 21.77210 TT
Peri. = 186.54268 e = 0.8481416
Node = 334.57180 2000.0 a = 2.2142805 AU
Incl. = 11.77709 n = 0.29912665
q = 0.3362571 AU P = 3.29 years

H = 14.4 , G = 0.15

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 4	21 57.09	-12 01.2	4.680	4.037	+0.77	+4.6	21.4	44.4
Jan. 14	22 04.74	-11 15.2	4.800	4.049	+0.81	+4.9	21.4	36.2
Jan. 24	22 12.80	-10 26.1	4.901	4.060	+0.83	+5.2	21.4	28.2
Feb. 3	22 21.15	-09 34.2	4.979	4.069	+0.85	+5.4	21.3	20.2
Feb. 13	22 29.66	-08 40.3	5.035	4.076	+0.86	+5.6	21.3	12.4
Feb. 23	22 38.26	-07 44.8	5.068	4.083	+0.86	+5.7	21.1	4.7
Mar. 4	22 46.84	-06 48.2	5.077	4.087	+0.85	+5.7	21.1	3.2
Mar. 14	22 55.32	-05 51.1	5.063	4.090	+0.83	+5.7	21.3	10.8
Mar. 24	23 03.62	-04 54.1	5.025	4.092	+0.80	+5.6	21.4	18.5
Apr. 3	23 11.65	-03 57.8	4.966	4.092	+0.77	+5.5	21.4	26.2
Apr. 13	23 19.32	-03 02.7	4.885	4.091	+0.72	+5.3	21.5	33.9
Apr. 23	23 26.56	-02 09.5	4.785	4.088	+0.67	+5.1	21.5	41.6
May 3	23 33.25	-01 19.0	4.666	4.084	+0.60	+4.7	21.5	49.5
May 13	23 39.30	-00 31.7	4.532	4.078	+0.53	+4.3	21.5	57.4
May 23	23 44.57	+00 11.5	4.383	4.070	+0.44	+3.8	21.4	65.6
June 2	23 48.93	+00 49.7	4.224	4.062	+0.33	+3.2	21.4	73.9
June 12	23 52.23	+01 22.1	4.057	4.051	+0.21	+2.5	21.3	82.5
June 22	23 54.31	+01 47.5	3.884	4.039	+0.07	+1.7	21.2	91.4
July 2	23 54.98	+02 04.9	3.712	4.026	-0.09	+0.8	21.1	100.7
July 12	23 54.08	+02 13.2	3.543	4.011	-0.26	-0.2	21.0	110.3
July 22	23 51.47	+02 11.1	3.382	3.994	-0.44	-1.3	20.8	120.5
Aug. 1	23 47.06	+01 57.9	3.235	3.976	-0.62	-2.5	20.6	131.1
Aug. 11	23 40.85	+01 33.1	3.106	3.956	-0.79	-3.6	20.5	142.2
Aug. 21	23 32.99	+00 57.0	3.002	3.935	-0.92	-4.6	20.3	153.8
Aug. 31	23 23.80	+00 11.2	2.927	3.912	-1.00	-5.3	20.0	165.6
Sept. 10	23 13.80	-00 41.7	2.883	3.888	-1.02	-5.6	19.8	175.8
Sept. 20	23 03.59	-01 38.1	2.873	3.862	-0.97	-5.6	19.9	168.4
Sept. 30	22 53.89	-02 33.8	2.895	3.834	-0.86	-5.1	20.1	156.4
Oct. 10	22 45.30	-03 24.7	2.948	3.804	-0.70	-4.3	20.2	144.3
Oct. 20	22 38.30	-04 07.8	3.027	3.773	-0.51	-3.3	20.4	132.6
Oct. 30	22 33.20	-04 40.8	3.127	3.740	-0.31	-2.2	20.5	121.3
Nov. 9	22 30.11	-05 02.9	3.241	3.705	-0.11	-1.1	20.6	110.5
Nov. 19	22 29.01	-05 13.6	3.364	3.669	+0.08	0.0	20.7	100.1
Nov. 29	22 29.79	-05 13.4	3.490	3.630	+0.25	+1.1	20.8	90.2
Dec. 9	22 32.27	-05 02.7	3.615	3.590	+0.40	+2.0	20.8	80.7
Dec. 19	22 36.27	-04 42.4	3.733	3.548	+0.53	+2.9	20.9	71.6
Dec. 29	22 41.58	-04 13.2	3.841	3.504	+0.64	+3.7	20.9	62.9
Jan. 8	22 48.03	-03 35.9	3.936	3.458	+0.74	+4.5	20.8	54.4
Jan. 18	22 55.45	-02 51.3	4.015	3.410	+0.82	+5.1	20.8	46.3
Jan. 28	23 03.69	-02 00.0	4.076	3.360	+0.89	+5.7	20.7	38.4
Feb. 7	23 12.62	-01 02.8	4.117	3.308	+0.95	+6.3	20.7	30.7
Feb. 17	23 22.16	-00 00.2	4.137	3.253	+1.00	+6.7	20.6	23.3
Feb. 27	23 32.19	+01 07.3	4.136	3.196	+1.05	+7.2	20.4	16.1
Mar. 9	23 42.65	+02 19.0	4.113	3.137	+1.08	+7.6	20.3	9.4
Mar. 19	23 53.50	+03 34.6	4.068	3.076	+1.12	+7.9	20.1	4.2
Mar. 29	00 04.67	+04 53.6	4.001	3.012	+1.15	+8.2	20.1	6.6

Comet P/2005 L1 (McNaught)

Epoch = 2012 July 12.0 TT
T = 2013 Nov. 25.21347 TT
Peri. = 149.87354 e = 0.2076563
Node = 138.28407 2000.0 a = 3.9860608 AU
Incl. = 7.73092 n = 0.12384777
q = 3.1583302 AU P = 7.96 years

m1 = 5.0 + 5 log(Delta) + 20.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	12 54.88	-00 14.4	3.971	4.093	-0.46	+2.3	20.2	6.5/ 95	90.1
Jan. 14	12 59.20	-00 19.7	3.800	4.075	-0.48	+2.4	20.1	4.5/ 84	99.2
Jan. 24	13 02.17	-00 15.0	3.634	4.058	-0.51	+2.5	20.0	2.7/ 56	108.7
Feb. 3	13 03.66	+00 00.0	3.476	4.040	-0.53	+2.6	19.8	2.5/357	118.5
Feb. 13	13 03.59	+00 25.3	3.331	4.023	-0.56	+2.8	19.7	4.3/324	128.7
Feb. 23	13 01.91	+01 00.3	3.203	4.005	-0.58	+2.9	19.6	6.4/312	139.2
Mar. 4	12 58.71	+01 43.3	3.098	3.987	-0.60	+3.0	19.5	8.3/306	150.0
Mar. 14	12 54.22	+02 31.7	3.018	3.969	-0.62	+3.0	19.4	9.6/302	160.6
Mar. 24	12 48.75	+03 22.4	2.966	3.951	-0.63	+3.1	19.3	10.2/299	169.9
Apr. 3	12 42.79	+04 11.3	2.944	3.933	-0.63	+3.0	19.2	9.9/296	170.3
Apr. 13	12 36.85	+04 54.7	2.952	3.915	-0.63	+3.0	19.2	8.8/293	161.4
Apr. 23	12 31.46	+05 29.4	2.988	3.897	-0.61	+2.9	19.2	7.0/290	150.9
May 3	12 27.06	+05 53.1	3.049	3.879	-0.60	+2.7	19.2	4.7/284	140.4
May 13	12 23.97	+06 04.6	3.131	3.860	-0.58	+2.6	19.2	2.4/268	130.1
May 23	12 22.39	+06 03.7	3.230	3.842	-0.55	+2.5	19.2	1.3/179	120.3
June 2	12 22.40	+05 51.0	3.343	3.824	-0.53	+2.4	19.3	3.3/135	110.9
June 12	12 23.97	+05 27.6	3.463	3.806	-0.51	+2.3	19.3	5.6/126	102.0
June 22	12 27.03	+04 54.6	3.588	3.787	-0.49	+2.3	19.3	7.8/122	93.4
July 2	12 31.46	+04 13.2	3.715	3.769	-0.48	+2.3	19.4	9.8/120	85.2
July 12	12 37.13	+03 24.7	3.839	3.751	-0.46	+2.2	19.4	11.5/118	77.4
July 22	12 43.91	+02 30.3	3.959	3.733	-0.45	+2.2	19.4	13.1/117	69.8
Aug. 1	12 51.68	+01 31.0	4.072	3.714	-0.45	+2.2	19.4	14.4/116	62.5
Aug. 11	13 00.33	+00 27.8	4.177	3.696	-0.44	+2.2	19.5	15.6/115	55.4
Aug. 21	13 09.75	-00 38.4	4.270	3.678	-0.44	+2.2	19.5	16.6/114	48.5
Aug. 31	13 19.87	-01 46.6	4.352	3.660	-0.43	+2.2	19.5	17.5/113	41.7
Sept.10	13 30.59	-02 56.2	4.421	3.642	-0.43	+2.2	19.5	18.3/113	35.0
Sept.20	13 41.87	-04 06.2	4.476	3.625	-0.44	+2.2	19.4	18.9/112	28.4
Sept.30	13 53.62	-05 15.9	4.516	3.607	-0.44	+2.2	19.4	19.4/111	22.0
Oct. 10	14 05.79	-06 24.6	4.540	3.590	-0.44	+2.2	19.4	19.8/110	15.8
Oct. 20	14 18.33	-07 31.5	4.549	3.572	-0.45	+2.2	19.3	20.1/109	10.0
Oct. 30	14 31.18	-08 35.9	4.541	3.555	-0.46	+2.1	19.3	20.3/108	6.1
Nov. 9	14 44.28	-09 37.1	4.516	3.538	-0.47	+2.1	19.2	20.4/107	7.9
Nov. 19	14 57.56	-10 34.5	4.476	3.521	-0.48	+2.1	19.2	20.4/105	13.3
Nov. 29	15 10.96	-11 27.4	4.419	3.504	-0.49	+2.1	19.1	20.3/104	19.5
Dec. 9	15 24.38	-12 15.2	4.347	3.488	-0.51	+2.0	19.0	20.0/103	26.0
Dec. 19	15 37.75	-12 57.6	4.260	3.472	-0.52	+2.0	19.0	19.6/101	32.6
Dec. 29	15 50.96	-13 33.9	4.159	3.456	-0.54	+1.9	18.9	19.1/ 99	39.4
Jan. 8	16 03.90	-14 04.1	4.045	3.440	-0.56	+1.9	18.8	18.4/ 98	46.3
Jan. 18	16 16.45	-14 27.8	3.919	3.425	-0.58	+1.8	18.7	17.5/ 96	53.4
Jan. 28	16 28.45	-14 45.0	3.784	3.409	-0.61	+1.8	18.5	16.4/ 94	60.5
Feb. 7	16 39.75	-14 55.8	3.641	3.395	-0.64	+1.8	18.4	15.1/ 92	67.9
Feb. 17	16 50.19	-15 00.4	3.491	3.380	-0.66	+1.7	18.3	13.6/ 90	75.4
Feb. 27	16 59.57	-14 59.2	3.337	3.366	-0.70	+1.7	18.2	11.8/ 87	83.1
Mar. 9	17 07.71	-14 52.8	3.182	3.352	-0.73	+1.7	18.0	9.7/ 84	91.1
Mar. 19	17 14.39	-14 41.8	3.028	3.338	-0.77	+1.7	17.9	7.4/ 79	99.4
Mar. 29	17 19.41	-14 27.2	2.878	3.325	-0.82	+1.8	17.7	4.9/ 70	108.0

Comet C/2012 A1 (PANSTARRS)

T = 2013 Nov. 29.35596 TT
Peri. = 191.81850
Node = 277.95240 2000.0
Incl. = 120.92953
q = 7.5985659 AU
e = 1.0079249

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	08 25.24	+48 52.0	7.879	8.732	-0.99	+0.3	19.1	148.5
Jan. 14	08 15.36	+48 55.4	7.825	8.703	-1.02	-0.6	19.1	151.6
Jan. 24	08 05.19	+48 49.5	7.804	8.673	-1.00	-1.6	19.1	150.4
Feb. 3	07 55.17	+48 33.8	7.816	8.644	-0.94	-2.5	19.1	145.3
Feb. 13	07 45.73	+48 08.5	7.858	8.615	-0.85	-3.4	19.1	137.8
Feb. 23	07 37.22	+47 34.8	7.929	8.587	-0.73	-4.1	19.1	129.1
Mar. 4	07 29.90	+46 54.3	8.024	8.559	-0.60	-4.6	19.1	119.7
Mar. 14	07 23.91	+46 08.7	8.138	8.531	-0.46	-4.9	19.1	110.1
Mar. 24	07 19.31	+45 19.9	8.265	8.504	-0.32	-5.0	19.2	100.5
Apr. 3	07 16.07	+44 29.4	8.400	8.476	-0.20	-5.1	19.2	91.0
Apr. 13	07 14.10	+43 38.6	8.538	8.450	-0.08	-5.0	19.2	81.6
Apr. 23	07 13.29	+42 48.4	8.673	8.423	+0.02	-4.9	19.2	72.4
May 3	07 13.50	+41 59.6	8.801	8.397	+0.11	-4.7	19.3	63.3
May 13	07 14.58	+41 12.4	8.917	8.371	+0.18	-4.5	19.3	54.6
May 23	07 16.39	+40 27.4	9.017	8.346	+0.24	-4.3	19.3	46.0
June 2	07 18.79	+39 44.4	9.099	8.321	+0.29	-4.1	19.3	37.8
June 12	07 21.65	+39 03.8	9.160	8.296	+0.32	-3.8	19.3	29.9
June 22	07 24.85	+38 25.3	9.198	8.271	+0.34	-3.6	19.3	22.9
July 2	07 28.26	+37 49.2	9.212	8.247	+0.35	-3.4	19.3	17.4
July 12	07 31.77	+37 15.2	9.200	8.224	+0.35	-3.2	19.3	15.3
July 22	07 35.27	+36 43.5	9.162	8.200	+0.34	-2.9	19.3	17.8
Aug. 1	07 38.64	+36 14.1	9.098	8.177	+0.31	-2.7	19.2	23.5
Aug. 11	07 41.79	+35 47.0	9.010	8.155	+0.28	-2.5	19.2	30.7
Aug. 21	07 44.60	+35 22.3	8.898	8.133	+0.24	-2.2	19.2	38.7
Aug. 31	07 46.95	+34 60.0	8.764	8.111	+0.18	-2.0	19.1	47.1
Sept.10	07 48.73	+34 40.2	8.611	8.090	+0.11	-1.7	19.1	55.9
Sept.20	07 49.82	+34 23.0	8.442	8.069	+0.03	-1.5	19.0	65.0
Sept.30	07 50.10	+34 08.3	8.260	8.048	-0.06	-1.2	19.0	74.4
Oct. 10	07 49.46	+33 55.9	8.070	8.028	-0.17	-1.0	18.9	84.1
Oct. 20	07 47.78	+33 45.5	7.876	8.008	-0.28	-0.9	18.9	94.0
Oct. 30	07 44.98	+33 36.7	7.685	7.989	-0.40	-0.8	18.8	104.3
Nov. 9	07 41.00	+33 28.7	7.502	7.970	-0.52	-0.8	18.7	114.9
Nov. 19	07 35.82	+33 20.8	7.333	7.952	-0.63	-0.9	18.7	125.8
Nov. 29	07 29.50	+33 11.6	7.185	7.934	-0.73	-1.2	18.6	136.8
Dec. 9	07 22.17	+33 00.0	7.063	7.916	-0.81	-1.5	18.6	148.0
Dec. 19	07 14.02	+32 45.0	6.973	7.899	-0.87	-1.9	18.5	159.0
Dec. 29	07 05.36	+32 25.6	6.917	7.882	-0.88	-2.4	18.5	168.3
Jan. 8	06 56.52	+32 01.3	6.897	7.866	-0.87	-2.9	18.5	169.3
Jan. 18	06 47.85	+31 32.3	6.916	7.850	-0.81	-3.3	18.5	160.5
Jan. 28	06 39.71	+30 59.0	6.969	7.835	-0.73	-3.7	18.5	149.6
Feb. 7	06 32.38	+30 22.4	7.055	7.820	-0.63	-3.9	18.5	138.3
Feb. 17	06 26.07	+29 43.6	7.169	7.805	-0.52	-4.0	18.6	127.1
Feb. 27	06 20.92	+29 03.7	7.305	7.791	-0.40	-4.0	18.6	116.1
Mar. 9	06 16.96	+28 23.8	7.457	7.778	-0.28	-3.9	18.6	105.3
Mar. 19	06 14.19	+27 44.5	7.618	7.765	-0.16	-3.8	18.7	94.8
Mar. 29	06 12.55	+27 06.3	7.783	7.752	-0.06	-3.7	18.7	84.5

Comet 87P/Bus

Epoch = 2012 July 12.0 TT
T = 2013 Dec. 19.02007 TT
Peri. = 24.37685 e = 0.3887453
Node = 181.96876 2000.0 a = 3.4452638 AU
Incl. = 2.60029 n = 0.15412403
q = 2.1059337 AU P = 6.39 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	03 21.33	+15 40.1	3.577	4.266	-0.22	-0.4	.	129.1
Jan. 14	03 19.10	+15 35.9	3.686	4.243	-0.05	+0.3	.	118.4
Jan. 24	03 18.59	+15 38.7	3.808	4.219	+0.12	+0.9	.	108.1
Feb. 3	03 19.79	+15 48.1	3.938	4.195	+0.28	+1.5	.	98.3
Feb. 13	03 22.58	+16 03.3	4.070	4.170	+0.43	+2.0	.	88.9
Feb. 23	03 26.84	+16 23.5	4.202	4.145	+0.56	+2.4	.	79.9
Mar. 4	03 32.45	+16 47.7	4.329	4.119	+0.68	+2.7	.	71.3
Mar. 14	03 39.24	+17 14.7	4.448	4.093	+0.78	+2.9	.	63.0
Mar. 24	03 47.07	+17 43.6	4.556	4.066	+0.88	+3.0	.	55.0
Apr. 3	03 55.83	+18 13.3	4.651	4.039	+0.96	+3.0	.	47.2
Apr. 13	04 05.39	+18 43.0	4.731	4.011	+1.03	+2.9	.	39.7
Apr. 23	04 15.64	+19 11.8	4.795	3.983	+1.08	+2.7	.	32.4
May 3	04 26.49	+19 39.1	4.841	3.954	+1.13	+2.5	.	25.3
May 13	04 37.83	+20 04.1	4.870	3.925	+1.18	+2.2	.	18.4
May 23	04 49.59	+20 26.3	4.881	3.895	+1.21	+1.9	.	11.6
June 2	05 01.67	+20 45.3	4.874	3.865	+1.23	+1.5	.	5.1
June 12	05 14.01	+21 00.6	4.848	3.834	+1.25	+1.1	.	2.8
June 22	05 26.52	+21 12.0	4.804	3.803	+1.26	+0.7	.	8.8
July 2	05 39.13	+21 19.2	4.742	3.771	+1.26	+0.3	.	15.3
July 12	05 51.74	+21 22.2	4.663	3.739	+1.25	-0.1	.	21.9
July 22	06 04.28	+21 20.9	4.567	3.706	+1.24	-0.5	.	28.5
Aug. 1	06 16.65	+21 15.4	4.456	3.673	+1.21	-1.0	.	35.2
Aug. 11	06 28.76	+21 05.9	4.330	3.639	+1.17	-1.3	.	41.9
Aug. 21	06 40.50	+20 52.7	4.191	3.605	+1.13	-1.7	23.0	48.8
Aug. 31	06 51.75	+20 36.2	4.040	3.571	+1.06	-1.9	22.9	55.7
Sept. 10	07 02.40	+20 16.9	3.879	3.536	+0.99	-2.1	22.8	62.9
Sept. 20	07 12.28	+19 55.6	3.709	3.501	+0.90	-2.3	22.6	70.3
Sept. 30	07 21.24	+19 33.1	3.533	3.465	+0.79	-2.3	22.4	78.0
Oct. 10	07 29.09	+19 10.3	3.353	3.429	+0.65	-2.2	22.3	85.9
Oct. 20	07 35.62	+18 48.5	3.171	3.393	+0.50	-2.0	22.1	94.2
Oct. 30	07 40.60	+18 28.7	2.991	3.356	+0.32	-1.6	21.9	103.0
Nov. 9	07 43.80	+18 12.4	2.816	3.319	+0.12	-1.2	21.7	112.2
Nov. 19	07 44.97	+18 00.7	2.650	3.282	-0.10	-0.6	21.5	121.9
Nov. 29	07 43.95	+17 54.7	2.498	3.244	-0.33	0.0	21.3	132.2
Dec. 9	07 40.64	+17 55.0	2.364	3.206	-0.55	+0.7	21.1	143.1
Dec. 19	07 35.11	+18 01.7	2.252	3.168	-0.74	+1.2	20.9	154.5
Dec. 29	07 27.72	+18 14.0	2.166	3.130	-0.87	+1.6	20.7	166.2
Jan. 8	07 19.07	+18 30.4	2.109	3.091	-0.91	+1.9	20.6	176.2
Jan. 18	07 09.99	+18 49.1	2.083	3.052	-0.85	+1.9	20.5	168.1
Jan. 28	07 01.48	+19 08.3	2.086	3.013	-0.71	+1.8	20.4	156.2
Feb. 7	06 54.43	+19 26.6	2.115	2.974	-0.49	+1.7	20.4	144.5
Feb. 17	06 49.52	+19 43.2	2.168	2.935	-0.23	+1.4	20.3	133.3
Feb. 27	06 47.18	+19 57.5	2.239	2.896	+0.04	+1.2	20.3	122.7
Mar. 9	06 47.53	+20 09.1	2.322	2.857	+0.30	+0.8	20.3	112.7
Mar. 19	06 50.54	+20 17.5	2.414	2.818	+0.55	+0.4	20.3	103.5
Mar. 29	06 56.01	+20 21.9	2.511	2.779	+0.77	0.0	20.3	94.8

Comet C/2011 J2 (LINEAR)

Epoch = 2012 July 12.0 TT
T = 2013 Dec. 25.24621 TT
Peri. = 85.25426
Node = 163.94370 2000.0
Incl. = 122.80255
q = 3.4447456 AU
e = 1.0003785

m1 = 7.4 + 5 log(Delta) + 7.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	11 32.67	−02 40.8	6.659	7.025	−0.26	+3.9	17.9	108.0
Jan. 14	11 30.11	−02 01.7	6.429	6.959	−0.36	+4.8	17.8	119.0
Jan. 24	11 26.49	−01 13.2	6.216	6.894	−0.46	+5.8	17.7	130.3
Feb. 3	11 21.84	−00 15.5	6.026	6.828	−0.56	+6.6	17.6	141.9
Feb. 13	11 16.27	+00 50.9	5.864	6.762	−0.63	+7.4	17.5	153.7
Feb. 23	11 09.94	+02 04.7	5.734	6.697	−0.68	+7.9	17.4	165.6
Mar. 4	11 03.11	+03 23.9	5.641	6.631	−0.70	+8.2	17.3	176.9
Mar. 14	10 56.06	+04 45.9	5.585	6.566	−0.70	+8.2	17.3	169.6
Mar. 24	10 49.10	+06 08.2	5.567	6.500	−0.66	+8.0	17.2	157.7
Apr. 3	10 42.55	+07 27.8	5.583	6.435	−0.59	+7.5	17.2	145.8
Apr. 13	10 36.66	+08 42.6	5.630	6.370	−0.50	+6.8	17.2	134.2
Apr. 23	10 31.65	+09 50.9	5.702	6.304	−0.40	+6.1	17.2	122.8
May 3	10 27.67	+10 51.6	5.794	6.239	−0.29	+5.3	17.2	111.8
May 13	10 24.78	+11 44.3	5.898	6.174	−0.18	+4.5	17.2	101.2
May 23	10 23.01	+12 29.1	6.009	6.109	−0.07	+3.7	17.2	90.9
June 2	10 22.32	+13 06.3	6.121	6.044	+0.03	+3.0	17.2	80.9
June 12	10 22.64	+13 36.7	6.227	5.979	+0.13	+2.4	17.2	71.3
June 22	10 23.91	+14 01.1	6.325	5.914	+0.21	+1.9	17.2	61.9
July 2	10 26.01	+14 20.2	6.409	5.850	+0.28	+1.5	17.2	52.8
July 12	10 28.86	+14 35.1	6.475	5.785	+0.35	+1.1	17.2	43.9
July 22	10 32.35	+14 46.6	6.522	5.721	+0.40	+0.9	17.2	35.2
Aug. 1	10 36.38	+14 55.6	6.545	5.657	+0.45	+0.7	17.1	26.7
Aug. 11	10 40.86	+15 03.0	6.545	5.593	+0.48	+0.7	17.1	18.6
Aug. 21	10 45.70	+15 09.8	6.518	5.529	+0.51	+0.7	17.0	11.2
Aug. 31	10 50.79	+15 17.1	6.466	5.466	+0.53	+0.9	17.0	7.4
Sept.10	10 56.06	+15 25.8	6.386	5.403	+0.53	+1.1	16.9	11.4
Sept.20	11 01.41	+15 37.2	6.281	5.340	+0.53	+1.5	16.8	18.8
Sept.30	11 06.73	+15 52.6	6.150	5.277	+0.52	+2.1	16.8	27.1
Oct. 10	11 11.94	+16 13.2	5.994	5.215	+0.50	+2.8	16.7	35.6
Oct. 20	11 16.90	+16 40.8	5.817	5.153	+0.46	+3.6	16.6	44.4
Oct. 30	11 21.51	+17 17.1	5.620	5.092	+0.41	+4.7	16.5	53.5
Nov. 9	11 25.60	+18 03.9	5.407	5.031	+0.34	+6.0	16.3	62.7
Nov. 19	11 29.02	+19 03.5	5.181	4.970	+0.25	+7.4	16.2	72.2
Nov. 29	11 31.57	+20 17.9	4.948	4.910	+0.15	+9.1	16.1	82.0
Dec. 9	11 33.03	+21 49.2	4.713	4.850	+0.01	+11.0	15.9	92.1
Dec. 19	11 33.14	+23 39.4	4.482	4.791	−0.15	+13.0	15.8	102.4
Dec. 29	11 31.60	+25 49.6	4.262	4.732	−0.35	+15.0	15.6	112.9
Jan. 8	11 28.13	+28 19.4	4.059	4.674	−0.57	+16.8	15.5	123.5
Jan. 18	11 22.40	+31 07.0	3.883	4.617	−0.82	+18.0	15.3	133.6
Jan. 28	11 14.16	+34 07.2	3.738	4.560	−1.09	+18.5	15.2	142.6
Feb. 7	11 03.30	+37 12.5	3.631	4.504	−1.34	+18.0	15.1	148.8
Feb. 17	10 49.90	+40 12.9	3.566	4.449	−1.55	+16.5	15.0	149.9
Feb. 27	10 34.43	+42 57.6	3.543	4.394	−1.68	+14.0	15.0	145.4
Mar. 9	10 17.66	+45 17.9	3.559	4.341	−1.70	+11.1	14.9	137.3
Mar. 19	10 00.65	+47 08.5	3.610	4.288	−1.61	+8.0	14.9	127.4
Mar. 29	09 44.57	+48 29.0	3.690	4.237	−1.42	+5.3	14.9	116.9

Comet 129P/Shoemaker-Levy

Epoch = 2012 July 12.0 TT
T = 2014 Jan. 26.63595 TT
Peri. = 306.51671 e = 0.1037515
Node = 186.89033 2000.0 a = 4.3355646 AU
Incl. = 3.46053 n = 0.10917811
q = 3.8857433 AU P = 9.03 years

m1 = 8.6 + 5 log(Delta) + 15.0 log(r(t-30))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 40.83	+08 18.7	3.985	4.322	+0.27	+1.7	21.2	103.5
Jan. 14	01 43.54	+08 35.2	4.130	4.313	+0.41	+2.4	21.2	94.1
Jan. 24	01 47.59	+08 59.3	4.277	4.304	+0.53	+3.0	21.3	85.0
Feb. 3	01 52.87	+09 29.7	4.423	4.296	+0.64	+3.6	21.4	76.2
Feb. 13	01 59.22	+10 05.4	4.562	4.287	+0.73	+4.0	21.4	67.8
Feb. 23	02 06.53	+10 45.2	4.693	4.279	+0.81	+4.3	21.5	59.6
Mar. 4	02 14.67	+11 28.2	4.813	4.270	+0.89	+4.5	21.5	51.7
Mar. 14	02 23.54	+12 13.2	4.920	4.261	+0.95	+4.6	21.5	44.0
Mar. 24	02 33.02	+12 59.4	5.013	4.253	+1.00	+4.6	21.6	36.5
Apr. 3	02 43.02	+13 45.9	5.089	4.244	+1.04	+4.6	21.6	29.2
Apr. 13	02 53.46	+14 31.9	5.148	4.236	+1.08	+4.5	21.6	22.0
Apr. 23	03 04.25	+15 16.8	5.190	4.227	+1.11	+4.3	21.6	15.0
May 3	03 15.32	+15 59.8	5.214	4.219	+1.13	+4.1	21.6	8.2
May 13	03 26.59	+16 40.5	5.220	4.210	+1.14	+3.8	21.6	2.3
May 23	03 37.99	+17 18.4	5.207	4.202	+1.15	+3.5	21.6	6.2
June 2	03 49.45	+17 53.0	5.176	4.193	+1.14	+3.1	21.5	12.8
June 12	04 00.87	+18 24.1	5.128	4.185	+1.13	+2.7	21.5	19.5
June 22	04 12.19	+18 51.4	5.063	4.176	+1.11	+2.3	21.5	26.3
July 2	04 23.31	+19 14.7	4.982	4.168	+1.08	+1.9	21.4	33.2
July 12	04 34.13	+19 34.0	4.885	4.160	+1.04	+1.5	21.4	40.1
July 22	04 44.56	+19 49.2	4.775	4.152	+0.99	+1.1	21.3	47.2
Aug. 1	04 54.47	+20 00.3	4.651	4.144	+0.93	+0.7	21.2	54.4
Aug. 11	05 03.74	+20 07.6	4.517	4.135	+0.85	+0.4	21.2	61.8
Aug. 21	05 12.23	+20 11.2	4.373	4.127	+0.75	0.0	21.1	69.4
Aug. 31	05 19.78	+20 11.4	4.222	4.120	+0.65	-0.3	21.0	77.3
Sept. 10	05 26.23	+20 08.7	4.067	4.112	+0.52	-0.5	20.9	85.5
Sept. 20	05 31.41	+20 03.5	3.910	4.104	+0.37	-0.7	20.8	94.0
Sept. 30	05 35.14	+19 56.1	3.755	4.096	+0.21	-0.9	20.7	102.9
Oct. 10	05 37.28	+19 47.1	3.605	4.088	+0.04	-1.0	20.6	112.2
Oct. 20	05 37.69	+19 36.9	3.465	4.081	-0.14	-1.1	20.5	122.0
Oct. 30	05 36.32	+19 26.0	3.339	4.073	-0.31	-1.1	20.4	132.3
Nov. 9	05 33.22	+19 14.6	3.231	4.066	-0.47	-1.1	20.3	143.0
Nov. 19	05 28.56	+19 03.1	3.147	4.059	-0.59	-1.1	20.3	154.0
Nov. 29	05 22.69	+18 51.9	3.090	4.052	-0.66	-1.0	20.2	165.2
Dec. 9	05 16.08	+18 41.5	3.062	4.045	-0.68	-0.9	20.2	175.0
Dec. 19	05 09.31	+18 32.6	3.066	4.038	-0.63	-0.7	20.2	169.7
Dec. 29	05 03.00	+18 25.9	3.100	4.031	-0.53	-0.4	20.2	158.5
Jan. 8	04 57.69	+18 22.2	3.162	4.024	-0.39	0.0	20.2	147.3
Jan. 18	04 53.80	+18 22.1	3.249	4.017	-0.22	+0.4	20.3	136.2
Jan. 28	04 51.61	+18 25.8	3.357	4.011	-0.04	+0.7	20.3	125.6
Feb. 7	04 51.23	+18 33.2	3.481	4.005	+0.14	+1.1	20.4	115.4
Feb. 17	04 52.66	+18 44.0	3.616	3.998	+0.32	+1.3	20.5	105.7
Feb. 27	04 55.82	+18 57.3	3.758	3.992	+0.48	+1.5	20.5	96.4
Mar. 9	05 00.57	+19 12.4	3.903	3.986	+0.62	+1.6	20.6	87.6
Mar. 19	05 06.77	+19 28.3	4.047	3.981	+0.75	+1.6	20.7	79.1
Mar. 29	05 14.23	+19 44.1	4.187	3.975	+0.86	+1.5	20.7	71.0

Comet P/1998 U3 (Jager)

Epoch = 2012 July 12.0 TT
T = 2014 Mar. 14.81284 TT
Peri. = 180.80590 e = 0.6479285
Node = 303.44755 2000.0 a = 6.1219857 AU
Incl. = 19.05350 n = 0.06506772
q = 2.1553767 AU P = 15.15 years

m1 = 3.4 + 5 log(Delta) + 22.5 log(r(t+60))

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	22 41.31	+06 35.5	6.461	6.069	-0.13	-1.5	.	7.5/ 76	62.4
Jan. 14	22 46.20	+06 53.1	6.551	6.023	-0.13	-1.5	.	8.5/ 74	53.8
Jan. 24	22 51.69	+07 17.0	6.626	5.977	-0.14	-1.5	.	9.4/ 71	45.5
Feb. 3	22 57.69	+07 46.7	6.683	5.931	-0.14	-1.5	.	10.1/ 70	37.5
Feb. 13	23 04.09	+08 21.9	6.720	5.884	-0.14	-1.5	.	10.7/ 68	29.8
Feb. 23	23 10.81	+09 02.1	6.737	5.837	-0.15	-1.5	.	11.2/ 66	22.7
Mar. 4	23 17.76	+09 46.7	6.732	5.790	-0.15	-1.5	.	11.5/ 65	16.8
Mar. 14	23 24.86	+10 35.3	6.705	5.742	-0.16	-1.6	.	11.8/ 64	13.4
Mar. 24	23 32.03	+11 27.3	6.655	5.694	-0.17	-1.6	.	11.9/ 62	14.3
Apr. 3	23 39.19	+12 22.2	6.584	5.646	-0.18	-1.6	.	11.8/ 61	18.8
Apr. 13	23 46.26	+13 19.6	6.491	5.597	-0.19	-1.7	.	11.7/ 59	24.9
Apr. 23	23 53.17	+14 18.9	6.379	5.548	-0.20	-1.7	.	11.4/ 58	31.7
May 3	23 59.83	+15 19.7	6.247	5.499	-0.21	-1.8	.	11.0/ 56	38.9
May 13	00 06.15	+16 21.4	6.099	5.449	-0.22	-1.9	.	10.5/ 53	46.2
May 23	00 12.06	+17 23.7	5.936	5.399	-0.23	-1.9	.	9.9/ 51	53.7
June 2	00 17.44	+18 25.8	5.760	5.349	-0.25	-2.0	23.0	9.1/ 47	61.4
June 12	00 22.19	+19 27.3	5.574	5.298	-0.26	-2.1	22.8	8.2/ 43	69.1
June 22	00 26.19	+20 27.5	5.380	5.247	-0.28	-2.2	22.6	7.3/ 37	77.1
July 2	00 29.32	+21 25.4	5.181	5.196	-0.29	-2.3	22.5	6.2/ 28	85.2
July 12	00 31.45	+22 20.3	4.981	5.144	-0.31	-2.4	22.3	5.3/ 15	93.5
July 22	00 32.45	+23 10.9	4.783	5.092	-0.33	-2.6	22.1	4.5/356	102.0
Aug. 1	00 32.22	+23 55.9	4.591	5.039	-0.35	-2.7	21.9	4.3/331	110.6
Aug. 11	00 30.67	+24 33.8	4.408	4.986	-0.36	-2.9	21.7	4.9/307	119.5
Aug. 21	00 27.79	+25 02.8	4.240	4.933	-0.37	-3.1	21.5	5.9/288	128.5
Aug. 31	00 23.63	+25 21.1	4.089	4.880	-0.38	-3.3	21.3	7.2/275	137.4
Sept. 10	00 18.35	+25 27.3	3.959	4.826	-0.39	-3.5	21.1	8.3/266	145.8
Sept. 20	00 12.22	+25 20.4	3.855	4.772	-0.39	-3.6	20.9	9.2/258	153.0
Sept. 30	00 05.64	+25 00.5	3.778	4.717	-0.38	-3.7	20.7	9.5/251	157.3
Oct. 10	23 59.06	+24 28.7	3.729	4.662	-0.37	-3.8	20.6	9.3/244	156.6
Oct. 20	23 52.95	+23 47.4	3.709	4.607	-0.36	-3.8	20.4	8.6/237	151.3
Oct. 30	23 47.77	+23 00.0	3.716	4.552	-0.34	-3.8	20.3	7.3/228	143.3
Nov. 9	23 43.85	+22 10.4	3.748	4.496	-0.33	-3.7	20.2	5.9/215	134.3
Nov. 19	23 41.45	+21 22.4	3.801	4.440	-0.32	-3.6	20.1	4.4/194	124.8
Nov. 29	23 40.68	+20 39.5	3.870	4.383	-0.31	-3.4	20.0	3.7/161	115.3
Dec. 9	23 41.57	+20 04.2	3.952	4.327	-0.30	-3.3	19.9	4.4/126	105.9
Dec. 19	23 44.06	+19 38.2	4.041	4.270	-0.29	-3.1	19.8	5.9/105	96.8
Dec. 29	23 48.05	+19 22.8	4.132	4.212	-0.29	-3.0	19.7	7.6/ 93	87.9
Jan. 8	23 53.43	+19 18.1	4.223	4.155	-0.30	-2.9	19.6	9.4/ 86	79.3
Jan. 18	00 00.05	+19 24.0	4.309	4.097	-0.30	-2.8	19.5	11.1/ 81	71.1
Jan. 28	00 07.80	+19 40.2	4.387	4.039	-0.31	-2.7	19.4	12.6/ 78	63.2
Feb. 7	00 16.54	+20 05.8	4.455	3.981	-0.32	-2.6	19.2	14.0/ 75	55.6
Feb. 17	00 26.19	+20 40.2	4.510	3.923	-0.33	-2.6	19.1	15.2/ 73	48.3
Feb. 27	00 36.63	+21 22.3	4.552	3.864	-0.35	-2.5	19.0	16.3/ 72	41.3
Mar. 9	00 47.79	+22 11.2	4.579	3.805	-0.37	-2.5	18.8	17.3/ 71	34.7
Mar. 19	00 59.61	+23 06.1	4.590	3.746	-0.39	-2.4	18.6	18.1/ 70	28.6
Mar. 29	01 12.04	+24 05.8	4.585	3.687	-0.42	-2.4	18.5	18.8/ 70	23.1

Comet 17P/Holmes

Epoch = 2012 July 12.0 TT
T = 2014 Mar. 27.33725 TT
Peri. = 24.49057 e = 0.4323031
Node = 326.79318 2000.0 a = 3.6213752 AU
Incl. = 19.09025 n = 0.14301901
q = 2.0558435 AU P = 6.89 years

m1 = 9.8 + 5 log(Delta) + 12.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	13 34.60	-25 43.3	4.920	4.711	+0.43	-6.4	21.7	72.1
Jan. 14	13 38.86	-26 46.9	4.748	4.689	+0.31	-6.1	21.6	80.6
Jan. 24	13 41.94	-27 47.5	4.572	4.667	+0.17	-5.7	21.5	89.4
Feb. 3	13 43.65	-28 44.1	4.396	4.644	+0.02	-5.1	21.4	98.5
Feb. 13	13 43.84	-29 35.2	4.224	4.621	-0.14	-4.4	21.2	107.7
Feb. 23	13 42.41	-30 19.2	4.061	4.597	-0.31	-3.5	21.1	117.1
Mar. 4	13 39.29	-30 54.1	3.911	4.573	-0.47	-2.4	21.0	126.6
Mar. 14	13 34.57	-31 18.1	3.779	4.548	-0.61	-1.1	20.9	136.1
Mar. 24	13 28.44	-31 29.2	3.669	4.522	-0.72	+0.3	20.8	145.1
Apr. 3	13 21.26	-31 26.2	3.584	4.497	-0.77	+1.7	20.7	152.8
Apr. 13	13 13.51	-31 09.0	3.526	4.470	-0.78	+3.0	20.7	157.7
Apr. 23	13 05.74	-30 38.9	3.498	4.443	-0.72	+4.0	20.6	157.5
May 3	12 58.55	-29 58.6	3.498	4.416	-0.61	+4.7	20.6	152.4
May 13	12 52.40	-29 11.8	3.525	4.388	-0.47	+4.9	20.6	144.7
May 23	12 47.67	-28 22.5	3.576	4.360	-0.31	+4.8	20.6	135.8
June 2	12 44.57	-27 34.9	3.648	4.331	-0.14	+4.3	20.6	126.7
June 12	12 43.20	-26 52.1	3.737	4.302	+0.03	+3.6	20.6	117.5
June 22	12 43.52	-26 16.6	3.838	4.272	+0.20	+2.7	20.6	108.6
July 2	12 45.48	-25 50.0	3.946	4.241	+0.35	+1.7	20.6	99.9
July 12	12 48.93	-25 33.0	4.059	4.210	+0.48	+0.7	20.6	91.5
July 22	12 53.76	-25 25.8	4.172	4.179	+0.61	-0.2	20.7	83.4
Aug. 1	12 59.83	-25 28.2	4.282	4.147	+0.72	-1.1	20.7	75.5
Aug. 11	13 07.00	-25 39.5	4.386	4.115	+0.82	-2.0	20.7	68.0
Aug. 21	13 15.16	-25 59.1	4.482	4.082	+0.91	-2.7	20.7	60.6
Aug. 31	13 24.23	-26 26.2	4.568	4.048	+0.99	-3.4	20.7	53.4
Sept.10	13 34.09	-26 59.9	4.640	4.015	+1.06	-3.9	20.7	46.5
Sept.20	13 44.69	-27 39.2	4.699	3.980	+1.13	-4.4	20.7	39.8
Sept.30	13 55.95	-28 23.4	4.743	3.945	+1.19	-4.8	20.6	33.4
Oct. 10	14 07.81	-29 11.6	4.770	3.910	+1.24	-5.1	20.6	27.3
Oct. 20	14 20.23	-30 02.8	4.781	3.874	+1.29	-5.4	20.5	21.9
Oct. 30	14 33.14	-30 56.5	4.773	3.838	+1.34	-5.5	20.5	17.5
Nov. 9	14 46.50	-31 51.8	4.748	3.801	+1.38	-5.6	20.4	15.2
Nov. 19	15 00.26	-32 48.0	4.705	3.764	+1.41	-5.7	20.4	15.8
Nov. 29	15 14.34	-33 44.6	4.644	3.726	+1.44	-5.6	20.3	19.1
Dec. 9	15 28.69	-34 40.9	4.567	3.688	+1.45	-5.6	20.2	23.9
Dec. 19	15 43.23	-35 36.6	4.472	3.650	+1.46	-5.5	20.1	29.6
Dec. 29	15 57.88	-36 31.3	4.362	3.611	+1.47	-5.3	20.0	35.8
Jan. 8	16 12.53	-37 24.8	4.238	3.571	+1.45	-5.2	19.8	42.2
Jan. 18	16 27.07	-38 17.0	4.100	3.531	+1.43	-5.1	19.7	48.8
Jan. 28	16 41.36	-39 08.0	3.951	3.491	+1.39	-5.0	19.6	55.6
Feb. 7	16 55.26	-39 58.0	3.793	3.451	+1.33	-4.9	19.4	62.5
Feb. 17	17 08.57	-40 47.4	3.626	3.410	+1.25	-4.9	19.3	69.6
Feb. 27	17 21.11	-41 36.6	3.455	3.368	+1.15	-5.0	19.1	76.8
Mar. 9	17 32.63	-42 26.3	3.279	3.327	+1.02	-5.1	18.9	84.1
Mar. 19	17 42.85	-43 17.1	3.103	3.285	+0.86	-5.2	18.7	91.6
Mar. 29	17 51.47	-44 09.3	2.929	3.243	+0.67	-5.4	18.5	99.3

Comet 117P/Helin-Roman-Alu

Epoch = 2012 July 12.0 TT
T = 2014 Mar. 27.94585 TT
Peri. = 222.86504 e = 0.2537917
Node = 58.89785 2000.0 a = 4.0931906 AU
Incl. = 8.69913 n = 0.11901758
q = 3.0543728 AU P = 8.28 years

m1 = 3.6 + 5 log(Delta) + 17.5 log(r(t-180))

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	11 38.84	+12 45.7	3.988	4.457	+0.03	+1.9	18.5	112.5
Jan. 14	11 39.17	+13 04.7	3.832	4.438	-0.12	+2.8	18.3	122.5
Jan. 24	11 37.97	+13 32.4	3.691	4.419	-0.27	+3.5	18.2	132.8
Feb. 3	11 35.25	+14 07.3	3.570	4.400	-0.41	+4.0	18.1	143.4
Feb. 13	11 31.14	+14 47.0	3.473	4.381	-0.53	+4.2	18.1	153.9
Feb. 23	11 25.89	+15 28.5	3.404	4.362	-0.60	+4.0	18.0	163.6
Mar. 4	11 19.85	+16 08.3	3.364	4.342	-0.63	+3.5	17.9	169.1
Mar. 14	11 13.50	+16 42.9	3.355	4.322	-0.62	+2.7	17.9	164.7
Mar. 24	11 07.35	+17 09.4	3.376	4.302	-0.55	+1.6	17.9	155.3
Apr. 3	11 01.89	+17 25.7	3.424	4.282	-0.44	+0.5	17.9	145.0
Apr. 13	10 57.51	+17 30.8	3.496	4.261	-0.30	-0.6	17.9	134.7
Apr. 23	10 54.48	+17 24.8	3.589	4.241	-0.15	-1.7	17.9	124.6
May 3	10 52.97	+17 08.0	3.696	4.220	0.00	-2.6	18.0	114.8
May 13	10 53.00	+16 41.6	3.815	4.199	+0.15	-3.5	18.0	105.5
May 23	10 54.53	+16 06.7	3.940	4.178	+0.29	-4.2	18.1	96.6
June 2	10 57.48	+15 24.2	4.067	4.157	+0.42	-4.9	18.1	88.0
June 12	11 01.69	+14 35.2	4.194	4.136	+0.54	-5.5	18.1	79.8
June 22	11 07.05	+13 40.6	4.316	4.115	+0.64	-5.9	18.2	71.8
July 2	11 13.40	+12 41.2	4.432	4.093	+0.72	-6.4	18.2	64.2
July 12	11 20.63	+11 37.5	4.539	4.071	+0.80	-6.7	18.2	56.8
July 22	11 28.60	+10 30.3	4.635	4.050	+0.86	-7.0	18.2	49.5
Aug. 1	11 37.23	+09 20.1	4.718	4.028	+0.92	-7.3	18.2	42.5
Aug. 11	11 46.40	+08 07.4	4.787	4.006	+0.96	-7.5	18.2	35.5
Aug. 21	11 56.04	+06 52.8	4.841	3.984	+1.00	-7.6	18.2	28.7
Aug. 31	12 06.08	+05 36.7	4.879	3.962	+1.04	-7.7	18.2	22.1
Sept. 10	12 16.45	+04 19.7	4.901	3.940	+1.06	-7.7	18.2	15.6
Sept. 20	12 27.09	+03 02.3	4.905	3.918	+1.09	-7.7	18.1	9.5
Sept. 30	12 37.95	+01 45.0	4.891	3.895	+1.10	-7.7	18.1	5.5
Oct. 10	12 48.95	+00 28.4	4.860	3.873	+1.11	-7.5	18.1	7.9
Oct. 20	13 00.07	-00 47.0	4.811	3.851	+1.11	-7.4	18.0	13.7
Oct. 30	13 11.21	-02 00.6	4.745	3.828	+1.11	-7.1	17.9	20.2
Nov. 9	13 22.32	-03 11.8	4.662	3.806	+1.10	-6.8	17.8	27.0
Nov. 19	13 33.34	-04 20.0	4.562	3.784	+1.08	-6.5	17.8	34.0
Nov. 29	13 44.16	-05 24.7	4.448	3.762	+1.05	-6.1	17.7	41.1
Dec. 9	13 54.69	-06 25.2	4.320	3.739	+1.01	-5.6	17.6	48.4
Dec. 19	14 04.83	-07 21.1	4.179	3.717	+0.96	-5.1	17.5	55.8
Dec. 29	14 14.43	-08 11.8	4.028	3.695	+0.89	-4.5	17.3	63.4
Jan. 8	14 23.35	-08 56.9	3.869	3.673	+0.81	-3.9	17.2	71.3
Jan. 18	14 31.43	-09 35.9	3.703	3.651	+0.70	-3.3	17.1	79.3
Jan. 28	14 38.48	-10 08.5	3.534	3.629	+0.58	-2.6	16.9	87.6
Feb. 7	14 44.30	-10 34.4	3.365	3.607	+0.44	-1.9	16.8	96.2
Feb. 17	14 48.68	-10 53.5	3.198	3.586	+0.27	-1.2	16.6	105.2
Feb. 27	14 51.43	-11 05.6	3.038	3.564	+0.10	-0.5	16.5	114.5
Mar. 9	14 52.39	-11 10.8	2.888	3.543	-0.10	+0.1	16.3	124.2
Mar. 19	14 51.44	-11 09.5	2.753	3.522	-0.28	+0.7	16.2	134.4
Mar. 29	14 48.60	-11 02.4	2.637	3.501	-0.46	+1.2	16.0	144.9

Comet 119P/Parker-Hartley

Epoch = 2012 July 12.0 TT
T = 2014 Apr. 2.19269 TT
Peri. = 181.19444 e = 0.2921218
Node = 244.10071 2000.0 a = 4.2777605 AU
Incl. = 5.19605 n = 0.11139851
q = 3.0281334 AU P = 8.85 years

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

0h TT 2012/13	R.A.(2000) h m	Decl. °,	Delta	r	Daily motion m	',	m1	Elong. °
Jan. 4	20 01.42	-16 45.1	5.582	4.648	+1.01	+3.2	22.0	16.6
Jan. 14	20 11.57	-16 13.3	5.595	4.627	+1.03	+3.5	22.0	9.2
Jan. 24	20 21.82	-15 38.0	5.587	4.605	+1.03	+3.9	21.9	3.8
Feb. 3	20 32.08	-14 59.4	5.558	4.583	+1.02	+4.2	21.9	7.7
Feb. 13	20 42.24	-14 17.8	5.508	4.561	+1.00	+4.4	21.8	14.8
Feb. 23	20 52.24	-13 33.8	5.439	4.539	+0.97	+4.6	21.8	22.2
Mar. 4	21 01.97	-12 47.9	5.351	4.516	+0.94	+4.7	21.7	29.7
Mar. 14	21 11.35	-12 00.5	5.245	4.494	+0.89	+4.8	21.6	37.2
Mar. 24	21 20.29	-11 12.3	5.123	4.471	+0.84	+4.8	21.5	44.8
Apr. 3	21 28.70	-10 24.0	4.986	4.448	+0.78	+4.8	21.4	52.4
Apr. 13	21 36.49	-09 36.4	4.837	4.424	+0.71	+4.6	21.3	60.1
Apr. 23	21 43.57	-08 50.2	4.678	4.401	+0.62	+4.4	21.2	68.0
May 3	21 49.80	-08 06.3	4.511	4.377	+0.53	+4.1	21.1	76.0
May 13	21 55.10	-07 25.7	4.339	4.354	+0.42	+3.6	21.0	84.2
May 23	21 59.34	-06 49.2	4.165	4.330	+0.31	+3.1	20.8	92.6
June 2	22 02.39	-06 18.1	3.992	4.306	+0.18	+2.5	20.7	101.2
June 12	22 04.16	-05 53.2	3.824	4.282	+0.04	+1.8	20.6	110.2
June 22	22 04.54	-05 35.6	3.664	4.257	-0.11	+0.9	20.4	119.5
July 2	22 03.48	-05 26.2	3.517	4.233	-0.25	+0.1	20.3	129.1
July 12	22 01.00	-05 25.5	3.387	4.208	-0.38	-0.8	20.2	139.1
July 22	21 57.18	-05 33.7	3.277	4.183	-0.49	-1.7	20.1	149.3
Aug. 1	21 52.24	-05 50.3	3.192	4.159	-0.57	-2.4	20.0	159.7
Aug. 11	21 46.50	-06 14.1	3.133	4.134	-0.61	-2.9	19.9	169.4
Aug. 21	21 40.38	-06 43.3	3.103	4.109	-0.60	-3.2	19.8	172.5
Aug. 31	21 34.39	-07 15.4	3.103	4.084	-0.54	-3.2	19.8	164.2
Sept. 10	21 29.00	-07 47.9	3.131	4.058	-0.43	-3.0	19.7	153.7
Sept. 20	21 24.66	-08 18.3	3.185	4.033	-0.30	-2.6	19.7	143.1
Sept. 30	21 21.70	-08 44.3	3.261	4.008	-0.14	-2.0	19.7	132.7
Oct. 10	21 20.32	-09 04.4	3.356	3.982	+0.03	-1.3	19.7	122.5
Oct. 20	21 20.61	-09 17.4	3.465	3.957	+0.20	-0.5	19.8	112.7
Oct. 30	21 22.59	-09 22.7	3.584	3.932	+0.36	+0.3	19.8	103.2
Nov. 9	21 26.15	-09 20.0	3.709	3.906	+0.50	+1.1	19.8	94.1
Nov. 19	21 31.18	-09 09.1	3.835	3.881	+0.63	+1.9	19.8	85.3
Nov. 29	21 37.52	-08 50.2	3.959	3.856	+0.75	+2.7	19.8	76.8
Dec. 9	21 45.02	-08 23.6	4.078	3.830	+0.85	+3.4	19.9	68.6
Dec. 19	21 53.53	-07 49.5	4.190	3.805	+0.94	+4.1	19.9	60.6
Dec. 29	22 02.89	-07 08.4	4.291	3.780	+1.01	+4.8	19.9	52.9
Jan. 8	22 12.96	-06 20.8	4.380	3.754	+1.07	+5.4	19.9	45.4
Jan. 18	22 23.64	-05 27.1	4.455	3.729	+1.12	+5.9	19.8	38.0
Jan. 28	22 34.79	-04 28.1	4.515	3.704	+1.15	+6.4	19.8	30.9
Feb. 7	22 46.34	-03 24.1	4.560	3.679	+1.19	+6.8	19.8	23.9
Feb. 17	22 58.19	-02 15.9	4.588	3.655	+1.21	+7.2	19.8	17.1
Feb. 27	23 10.27	-01 04.2	4.599	3.630	+1.22	+7.5	19.7	10.5
Mar. 9	23 22.52	+00 10.5	4.594	3.606	+1.24	+7.7	19.7	4.9
Mar. 19	23 34.88	+01 27.4	4.572	3.582	+1.24	+7.8	19.6	5.2
Mar. 29	23 47.29	+02 45.9	4.533	3.558	+1.24	+7.9	19.5	10.8

Comet P/2011 S1 (Gibbs)

Epoch = 2012 July 12.0 TT
T = 2014 Aug. 27.41287 TT
Peri. = 190.79852 e = 0.1444469
Node = 218.17664 2000.0 a = 8.3592166 AU
Incl. = 2.71438 n = 0.04078080
q = 7.1517537 AU P = 24.17 years

m1 = 2.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	23 22.51	-02 11.5	7.828	7.510	+0.39	+2.2	20.4	67.7
Jan. 14	23 26.40	-01 49.7	7.969	7.503	+0.44	+2.6	20.4	58.5
Jan. 24	23 30.84	-01 24.1	8.097	7.496	+0.49	+2.9	20.5	49.6
Feb. 3	23 35.73	-00 55.1	8.209	7.490	+0.53	+3.2	20.5	40.7
Feb. 13	23 41.00	-00 23.4	8.302	7.483	+0.56	+3.4	20.5	32.0
Feb. 23	23 46.55	+00 10.6	8.374	7.476	+0.58	+3.6	20.5	23.4
Mar. 4	23 52.32	+00 46.3	8.423	7.470	+0.59	+3.7	20.5	15.0
Mar. 14	23 58.22	+01 23.2	8.450	7.463	+0.60	+3.8	20.5	6.7
Mar. 24	00 04.18	+02 00.7	8.453	7.457	+0.59	+3.8	20.5	2.3
Apr. 3	00 10.12	+02 38.3	8.433	7.451	+0.59	+3.7	20.5	10.2
Apr. 13	00 15.98	+03 15.6	8.389	7.444	+0.57	+3.6	20.5	18.4
Apr. 23	00 21.68	+03 51.9	8.323	7.438	+0.55	+3.5	20.5	26.6
May 3	00 27.15	+04 26.9	8.237	7.432	+0.52	+3.3	20.4	34.8
May 13	00 32.33	+05 00.1	8.131	7.426	+0.48	+3.1	20.4	43.1
May 23	00 37.13	+05 30.9	8.009	7.420	+0.44	+2.8	20.4	51.4
June 2	00 41.49	+05 58.9	7.871	7.413	+0.38	+2.5	20.3	59.8
June 12	00 45.34	+06 23.6	7.722	7.407	+0.33	+2.1	20.3	68.4
June 22	00 48.60	+06 44.7	7.563	7.402	+0.26	+1.7	20.2	77.0
July 2	00 51.21	+07 01.7	7.399	7.396	+0.19	+1.2	20.2	85.8
July 12	00 53.10	+07 14.2	7.234	7.390	+0.11	+0.8	20.1	94.9
July 22	00 54.23	+07 21.9	7.071	7.384	+0.03	+0.3	20.1	104.1
Aug. 1	00 54.55	+07 24.5	6.914	7.378	-0.05	-0.3	20.0	113.6
Aug. 11	00 54.08	+07 22.0	6.768	7.373	-0.13	-0.8	20.0	123.3
Aug. 21	00 52.81	+07 14.3	6.638	7.367	-0.20	-1.2	19.9	133.2
Aug. 31	00 50.83	+07 01.8	6.527	7.362	-0.26	-1.7	19.9	143.4
Sept.10	00 48.22	+06 45.1	6.439	7.356	-0.31	-2.0	19.8	153.8
Sept.20	00 45.14	+06 24.9	6.379	7.351	-0.34	-2.3	19.8	164.3
Sept.30	00 41.77	+06 02.3	6.347	7.345	-0.35	-2.4	19.8	174.9
Oct. 10	00 38.31	+05 38.6	6.346	7.340	-0.33	-2.3	19.8	173.9
Oct. 20	00 34.98	+05 15.2	6.376	7.335	-0.30	-2.2	19.8	163.2
Oct. 30	00 32.00	+04 53.5	6.435	7.330	-0.25	-1.9	19.8	152.5
Nov. 9	00 29.54	+04 34.9	6.521	7.325	-0.18	-1.5	19.8	141.8
Nov. 19	00 27.75	+04 20.3	6.631	7.320	-0.10	-1.0	19.9	131.2
Nov. 29	00 26.74	+04 10.6	6.760	7.315	-0.02	-0.4	19.9	120.8
Dec. 9	00 26.57	+04 06.3	6.905	7.310	+0.07	+0.1	20.0	110.6
Dec. 19	00 27.26	+04 07.5	7.060	7.305	+0.15	+0.7	20.0	100.6
Dec. 29	00 28.79	+04 14.2	7.220	7.300	+0.23	+1.2	20.0	90.8
Jan. 8	00 31.13	+04 26.2	7.381	7.295	+0.31	+1.7	20.1	81.2
Jan. 18	00 34.22	+04 43.1	7.537	7.291	+0.38	+2.1	20.1	71.8
Jan. 28	00 37.98	+05 04.4	7.686	7.286	+0.44	+2.5	20.2	62.7
Feb. 7	00 42.33	+05 29.6	7.822	7.282	+0.49	+2.8	20.2	53.7
Feb. 17	00 47.20	+05 58.1	7.944	7.277	+0.53	+3.1	20.2	44.9
Feb. 27	00 52.49	+06 29.2	8.048	7.273	+0.56	+3.3	20.3	36.2
Mar. 9	00 58.14	+07 02.5	8.133	7.269	+0.59	+3.5	20.3	27.7
Mar. 19	01 04.05	+07 37.3	8.197	7.265	+0.61	+3.6	20.3	19.3
Mar. 29	01 10.16	+08 13.0	8.238	7.260	+0.62	+3.6	20.3	11.0

Comet P/1996 A1 (Jedicke)

Epoch = 2012 July 12.0 TT
T = 2014 Nov. 18.23368 TT
Peri. = 223.63667 e = 0.4378385
Node = 248.76800 2000.0 a = 7.2535736 AU
Incl. = 6.61661 n = 0.05045173
q = 4.0776798 AU P = 19.54 years

m1 = 4.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	23 51.19	+05 10.7	6.708	6.562	-0.19	-1.1	20.8	5.7/ 76	77.3
Jan. 14	23 54.89	+05 24.3	6.835	6.532	-0.19	-1.0	20.8	6.9/ 74	68.1
Jan. 24	23 59.31	+05 43.4	6.953	6.501	-0.18	-1.0	20.8	7.9/ 72	59.1
Feb. 3	00 04.36	+06 07.4	7.057	6.471	-0.19	-1.0	20.8	8.8/ 71	50.3
Feb. 13	00 09.95	+06 35.8	7.145	6.441	-0.19	-1.0	20.8	9.5/ 70	41.7
Feb. 23	00 15.98	+07 08.1	7.215	6.410	-0.19	-1.0	20.8	10.2/ 69	33.2
Mar. 4	00 22.38	+07 43.5	7.265	6.380	-0.19	-1.0	20.8	10.6/ 69	25.0
Mar. 14	00 29.06	+08 21.5	7.293	6.349	-0.19	-1.0	20.8	11.0/ 69	17.0
Mar. 24	00 35.95	+09 01.4	7.300	6.318	-0.20	-1.0	20.7	11.2/ 68	9.5
Apr. 3	00 42.97	+09 42.8	7.284	6.288	-0.20	-1.0	20.7	11.3/ 68	4.7
Apr. 13	00 50.04	+10 25.0	7.245	6.257	-0.20	-1.0	20.6	11.2/ 68	9.0
Apr. 23	00 57.09	+11 07.5	7.185	6.226	-0.21	-1.0	20.6	11.1/ 67	16.3
May 3	01 04.05	+11 49.7	7.103	6.195	-0.22	-1.0	20.5	10.8/ 67	23.9
May 13	01 10.85	+12 31.3	7.001	6.164	-0.22	-1.1	20.5	10.4/ 67	31.7
May 23	01 17.40	+13 11.6	6.881	6.134	-0.23	-1.1	20.4	9.9/ 67	39.5
June 2	01 23.63	+13 50.3	6.743	6.103	-0.24	-1.1	20.3	9.2/ 67	47.4
June 12	01 29.45	+14 26.7	6.591	6.072	-0.25	-1.1	20.2	8.4/ 66	55.4
June 22	01 34.76	+15 00.6	6.425	6.041	-0.26	-1.1	20.2	7.5/ 66	63.5
July 2	01 39.48	+15 31.2	6.250	6.009	-0.27	-1.1	20.1	6.4/ 65	71.7
July 12	01 43.50	+15 58.2	6.067	5.978	-0.28	-1.2	20.0	5.2/ 64	80.2
July 22	01 46.73	+16 21.0	5.881	5.947	-0.29	-1.2	19.9	3.8/ 62	88.8
Aug. 1	01 49.05	+16 39.0	5.694	5.916	-0.30	-1.2	19.8	2.3/ 57	97.7
Aug. 11	01 50.40	+16 51.8	5.511	5.885	-0.31	-1.3	19.7	0.8/ 32	106.9
Aug. 21	01 50.71	+16 58.7	5.335	5.854	-0.32	-1.3	19.5	1.1/273	116.3
Aug. 31	01 49.94	+16 59.2	5.171	5.823	-0.33	-1.4	19.4	2.7/257	126.1
Sept.10	01 48.11	+16 53.2	5.024	5.792	-0.34	-1.4	19.3	4.2/252	136.1
Sept.20	01 45.31	+16 40.3	4.897	5.761	-0.35	-1.5	19.3	5.6/250	146.5
Sept.30	01 41.68	+16 21.1	4.795	5.730	-0.36	-1.5	19.2	6.6/248	157.0
Oct. 10	01 37.45	+15 56.2	4.720	5.699	-0.36	-1.6	19.1	7.2/246	167.3
Oct. 20	01 32.91	+15 26.9	4.675	5.668	-0.36	-1.6	19.1	7.3/244	174.6
Oct. 30	01 28.37	+14 54.9	4.662	5.637	-0.35	-1.6	19.0	6.9/242	168.0
Nov. 9	01 24.18	+14 22.4	4.678	5.606	-0.35	-1.6	19.0	6.0/239	157.4
Nov. 19	01 20.62	+13 51.4	4.723	5.575	-0.34	-1.6	19.0	4.8/235	146.6
Nov. 29	01 17.95	+13 24.0	4.794	5.544	-0.33	-1.5	19.0	3.2/227	135.8
Dec. 9	01 16.35	+13 01.7	4.885	5.513	-0.32	-1.5	19.0	1.7/202	125.3
Dec. 19	01 15.91	+12 45.9	4.994	5.482	-0.31	-1.4	19.0	1.4/128	114.9
Dec. 29	01 16.69	+12 37.1	5.115	5.452	-0.31	-1.4	19.0	2.9/ 93	104.9
Jan. 8	01 18.64	+12 35.5	5.243	5.421	-0.30	-1.3	19.0	4.6/ 83	95.2
Jan. 18	01 21.73	+12 41.1	5.373	5.391	-0.29	-1.3	19.0	6.2/ 78	85.8
Jan. 28	01 25.88	+12 53.4	5.502	5.360	-0.29	-1.3	19.0	7.7/ 76	76.6
Feb. 7	01 30.98	+13 11.8	5.624	5.330	-0.29	-1.2	19.1	9.0/ 75	67.8
Feb. 17	01 36.95	+13 35.5	5.738	5.300	-0.29	-1.2	19.1	10.2/ 74	59.2
Feb. 27	01 43.68	+14 03.7	5.839	5.269	-0.29	-1.1	19.1	11.2/ 73	50.8
Mar. 9	01 51.07	+14 35.6	5.926	5.239	-0.29	-1.1	19.1	12.1/ 73	42.7
Mar. 19	01 59.03	+15 10.5	5.997	5.210	-0.29	-1.1	19.0	12.8/ 73	34.7
Mar. 29	02 07.48	+15 47.4	6.050	5.180	-0.30	-1.1	19.0	13.3/ 73	27.0

Comet 174P/(60558) Echeclus

Epoch = 2012 July 12.0 TT
T = 2015 Apr. 22.55666 TT
Peri. = 162.92356 e = 0.4569094
Node = 173.38515 2000.0 a = 10.7081599 AU
Incl. = 4.34147 n = 0.02812754
q = 5.8155010 AU P = 35.04 years

H = 9.4 , G = 0.15

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 4	17 08.70	-19 02.1	8.811	7.933	+0.60	-0.5	18.9	25.3
Jan. 14	17 14.70	-19 06.9	8.703	7.906	+0.57	-0.3	19.0	34.0
Jan. 24	17 20.40	-19 09.8	8.574	7.880	+0.53	-0.1	19.0	42.7
Feb. 3	17 25.71	-19 11.0	8.427	7.853	+0.48	0.0	19.0	51.6
Feb. 13	17 30.52	-19 10.7	8.264	7.826	+0.42	+0.2	18.9	60.6
Feb. 23	17 34.74	-19 08.8	8.089	7.800	+0.35	+0.3	18.9	69.6
Mar. 4	17 38.29	-19 05.7	7.904	7.773	+0.28	+0.4	18.9	78.8
Mar. 14	17 41.08	-19 01.5	7.715	7.747	+0.20	+0.5	18.8	88.1
Mar. 24	17 43.06	-18 56.5	7.525	7.720	+0.11	+0.6	18.8	97.6
Apr. 3	17 44.16	-18 50.9	7.339	7.694	+0.02	+0.6	18.7	107.2
Apr. 13	17 44.38	-18 45.0	7.162	7.668	-0.07	+0.6	18.6	116.9
Apr. 23	17 43.69	-18 39.0	6.997	7.642	-0.15	+0.6	18.5	126.8
May 3	17 42.15	-18 33.1	6.849	7.615	-0.23	+0.6	18.4	136.8
May 13	17 39.84	-18 27.4	6.722	7.589	-0.30	+0.5	18.3	146.9
May 23	17 36.89	-18 22.2	6.620	7.563	-0.34	+0.5	18.2	157.1
June 2	17 33.44	-18 17.7	6.545	7.537	-0.37	+0.4	18.1	167.0
June 12	17 29.71	-18 13.9	6.499	7.511	-0.38	+0.3	18.0	174.8
June 22	17 25.92	-18 11.1	6.483	7.485	-0.36	+0.2	18.0	169.8
July 2	17 22.28	-18 09.5	6.496	7.459	-0.33	0.0	18.1	160.0
July 12	17 19.02	-18 09.2	6.536	7.434	-0.27	-0.1	18.2	150.0
July 22	17 16.31	-18 10.4	6.602	7.408	-0.20	-0.3	18.3	139.9
Aug. 1	17 14.32	-18 13.2	6.689	7.382	-0.12	-0.4	18.3	130.0
Aug. 11	17 13.15	-18 17.4	6.795	7.357	-0.03	-0.6	18.4	120.2
Aug. 21	17 12.88	-18 23.1	6.915	7.331	+0.07	-0.7	18.5	110.6
Aug. 31	17 13.54	-18 30.0	7.044	7.306	+0.16	-0.8	18.5	101.1
Sept.10	17 15.12	-18 37.9	7.179	7.281	+0.25	-0.9	18.6	91.8
Sept.20	17 17.61	-18 46.6	7.315	7.256	+0.33	-0.9	18.6	82.7
Sept.30	17 20.95	-18 55.6	7.447	7.231	+0.41	-0.9	18.6	73.7
Oct. 10	17 25.08	-19 04.7	7.573	7.206	+0.49	-0.9	18.6	64.9
Oct. 20	17 29.94	-19 13.3	7.688	7.181	+0.55	-0.8	18.6	56.2
Oct. 30	17 35.44	-19 21.3	7.789	7.156	+0.61	-0.7	18.6	47.5
Nov. 9	17 41.49	-19 28.1	7.874	7.131	+0.65	-0.6	18.6	39.0
Nov. 19	17 48.02	-19 33.6	7.941	7.107	+0.69	-0.4	18.5	30.5
Nov. 29	17 54.92	-19 37.5	7.986	7.082	+0.72	-0.2	18.5	22.1
Dec. 9	18 02.11	-19 39.6	8.010	7.058	+0.74	0.0	18.4	13.9
Dec. 19	18 09.50	-19 39.7	8.011	7.034	+0.75	+0.2	18.3	6.2
Dec. 29	18 16.97	-19 37.8	7.989	7.010	+0.75	+0.4	18.3	5.1
Jan. 8	18 24.45	-19 33.9	7.943	6.986	+0.74	+0.6	18.3	12.5
Jan. 18	18 31.84	-19 28.1	7.874	6.962	+0.72	+0.8	18.4	20.7
Jan. 28	18 39.03	-19 20.4	7.783	6.938	+0.69	+0.9	18.4	29.0
Feb. 7	18 45.94	-19 11.2	7.671	6.915	+0.65	+1.1	18.4	37.5
Feb. 17	18 52.46	-19 00.7	7.541	6.891	+0.60	+1.1	18.4	46.0
Feb. 27	18 58.50	-18 49.2	7.394	6.868	+0.55	+1.2	18.4	54.6
Mar. 9	19 03.97	-18 37.2	7.233	6.845	+0.48	+1.2	18.4	63.3
Mar. 19	19 08.77	-18 25.1	7.062	6.822	+0.40	+1.2	18.4	72.1
Mar. 29	19 12.82	-18 13.2	6.883	6.799	+0.32	+1.1	18.3	81.0

Comet C/2010 U3 (Boattini)

Epoch = 2012 July 12.0 TT
T = 2019 Feb. 25.99281 TT
Peri. = 87.91377
Node = 43.03116 2000.0
Incl. = 55.42110
q = 8.4663250 AU
e = 1.0013984

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

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 4	02 29.46	+14 03.1	16.099	16.565	-0.08	+0.5	18.8	116.7
Jan. 14	02 28.71	+14 07.6	16.219	16.523	-0.03	+0.6	18.8	106.4
Jan. 24	02 28.36	+14 14.1	16.347	16.481	+0.01	+0.8	18.8	96.1
Feb. 3	02 28.43	+14 22.5	16.478	16.439	+0.05	+1.0	18.8	86.0
Feb. 13	02 28.91	+14 32.8	16.607	16.397	+0.09	+1.2	18.8	76.1
Feb. 23	02 29.78	+14 44.7	16.729	16.355	+0.12	+1.4	18.8	66.2
Mar. 4	02 31.00	+14 58.3	16.839	16.314	+0.15	+1.5	18.8	56.5
Mar. 14	02 32.55	+15 13.3	16.934	16.272	+0.18	+1.6	18.8	47.0
Mar. 24	02 34.38	+15 29.5	17.009	16.230	+0.21	+1.7	18.8	37.5
Apr. 3	02 36.43	+15 46.7	17.062	16.188	+0.22	+1.8	18.8	28.2
Apr. 13	02 38.67	+16 04.6	17.091	16.146	+0.24	+1.8	18.8	19.0
Apr. 23	02 41.04	+16 23.0	17.094	16.105	+0.24	+1.9	18.8	9.9
May 3	02 43.48	+16 41.7	17.071	16.063	+0.25	+1.9	18.8	1.1
May 13	02 45.94	+17 00.5	17.020	16.021	+0.24	+1.9	18.8	8.3
May 23	02 48.37	+17 19.2	16.943	15.979	+0.23	+1.8	18.8	17.2
June 2	02 50.72	+17 37.6	16.841	15.937	+0.22	+1.8	18.7	26.2
June 12	02 52.93	+17 55.4	16.715	15.896	+0.20	+1.7	18.7	35.2
June 22	02 54.96	+18 12.6	16.567	15.854	+0.18	+1.6	18.7	44.2
July 2	02 56.74	+18 28.9	16.400	15.812	+0.15	+1.5	18.7	53.2
July 12	02 58.24	+18 44.3	16.216	15.770	+0.12	+1.4	18.6	62.4
July 22	02 59.42	+18 58.5	16.021	15.729	+0.08	+1.3	18.6	71.6
Aug. 1	03 00.22	+19 11.4	15.816	15.687	+0.04	+1.2	18.6	80.9
Aug. 11	03 00.63	+19 23.0	15.607	15.645	0.00	+1.0	18.5	90.3
Aug. 21	03 00.61	+19 33.1	15.399	15.604	-0.05	+0.9	18.5	99.9
Aug. 31	03 00.15	+19 41.6	15.195	15.562	-0.09	+0.7	18.4	109.6
Sept. 10	02 59.26	+19 48.5	15.001	15.520	-0.13	+0.5	18.4	119.4
Sept. 20	02 57.95	+19 53.7	14.822	15.479	-0.17	+0.4	18.4	129.4
Sept. 30	02 56.25	+19 57.2	14.661	15.437	-0.20	+0.2	18.3	139.5
Oct. 10	02 54.21	+19 59.2	14.524	15.395	-0.23	+0.1	18.3	149.8
Oct. 20	02 51.91	+19 59.8	14.414	15.354	-0.25	-0.1	18.3	160.1
Oct. 30	02 49.42	+19 59.2	14.332	15.312	-0.26	-0.2	18.3	170.2
Nov. 9	02 46.84	+19 57.7	14.282	15.270	-0.26	-0.2	18.3	176.0
Nov. 19	02 44.27	+19 55.6	14.263	15.229	-0.25	-0.2	18.2	167.3
Nov. 29	02 41.81	+19 53.5	14.275	15.187	-0.22	-0.2	18.2	156.9
Dec. 9	02 39.57	+19 51.6	14.316	15.146	-0.19	-0.1	18.2	146.3
Dec. 19	02 37.62	+19 50.5	14.384	15.104	-0.16	0.0	18.2	135.7
Dec. 29	02 36.04	+19 50.5	14.474	15.063	-0.12	+0.1	18.2	125.2
Jan. 8	02 34.89	+19 52.0	14.581	15.021	-0.07	+0.3	18.2	114.8
Jan. 18	02 34.19	+19 55.2	14.702	14.980	-0.02	+0.5	18.3	104.5
Jan. 28	02 33.97	+20 00.4	14.830	14.938	+0.03	+0.7	18.3	94.4
Feb. 7	02 34.22	+20 07.6	14.961	14.897	+0.07	+0.9	18.3	84.4
Feb. 17	02 34.94	+20 16.9	15.089	14.855	+0.11	+1.1	18.3	74.5
Feb. 27	02 36.08	+20 28.2	15.208	14.814	+0.15	+1.3	18.3	64.8
Mar. 9	02 37.62	+20 41.4	15.316	14.772	+0.19	+1.5	18.3	55.2
Mar. 19	02 39.51	+20 56.4	15.407	14.731	+0.22	+1.7	18.3	45.8
Mar. 29	02 41.70	+21 13.0	15.479	14.690	+0.24	+1.8	18.3	36.6

Comet 29P/Schwassmann-Wachmann

Epoch = 2012 July 12.0 TT
T = 2019 Apr. 10.99595 TT
Peri. = 50.58872 e = 0.0436847
Node = 312.55273 2000.0 a = 5.9996282 AU
Incl. = 9.37731 n = 0.06706834
q = 5.7375362 AU P = 14.70 years

m1 = 4.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2012/13	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	12 38.59	-12 18.4	6.199	6.262	+0.15	-2.7	13.9	89.1
Jan. 14	12 40.08	-12 45.2	6.036	6.261	+0.05	-2.1	13.9	98.7
Jan. 24	12 40.55	-13 06.1	5.878	6.261	-0.06	-1.4	13.8	108.6
Feb. 3	12 39.99	-13 20.6	5.729	6.261	-0.16	-0.8	13.8	118.6
Feb. 13	12 38.42	-13 28.1	5.594	6.261	-0.25	0.0	13.7	128.8
Feb. 23	12 35.89	-13 28.5	5.478	6.261	-0.33	+0.7	13.7	139.2
Mar. 4	12 32.56	-13 21.8	5.385	6.260	-0.39	+1.3	13.6	149.6
Mar. 14	12 28.61	-13 08.5	5.318	6.260	-0.43	+1.9	13.6	159.7
Mar. 24	12 24.29	-12 49.5	5.280	6.260	-0.44	+2.3	13.6	168.3
Apr. 3	12 19.89	-12 26.3	5.273	6.259	-0.42	+2.6	13.6	169.8
Apr. 13	12 15.68	-12 00.6	5.296	6.259	-0.38	+2.6	13.6	162.4
Apr. 23	12 11.92	-11 34.3	5.348	6.259	-0.31	+2.5	13.6	152.7
May 3	12 08.84	-11 09.1	5.426	6.258	-0.22	+2.2	13.6	142.7
May 13	12 06.59	-10 46.9	5.528	6.258	-0.13	+1.8	13.7	132.7
May 23	12 05.27	-10 28.8	5.650	6.257	-0.03	+1.3	13.7	122.8
June 2	12 04.95	-10 15.9	5.786	6.256	+0.07	+0.7	13.8	113.2
June 12	12 05.60	-10 08.8	5.933	6.256	+0.16	+0.1	13.8	103.9
June 22	12 07.21	-10 07.8	6.087	6.255	+0.25	-0.5	13.9	94.8
July 2	12 09.72	-10 12.9	6.243	6.254	+0.33	-1.1	13.9	86.0
July 12	12 13.04	-10 23.8	6.396	6.254	+0.41	-1.7	14.0	77.4
July 22	12 17.11	-10 40.4	6.545	6.253	+0.47	-2.2	14.1	69.0
Aug. 1	12 21.84	-11 02.3	6.685	6.252	+0.53	-2.7	14.1	60.7
Aug. 11	12 27.15	-11 28.8	6.814	6.251	+0.58	-3.1	14.1	52.6
Aug. 21	12 32.97	-11 59.6	6.929	6.251	+0.62	-3.5	14.2	44.7
Aug. 31	12 39.20	-12 34.1	7.028	6.250	+0.66	-3.8	14.2	36.8
Sept. 10	12 45.78	-13 11.8	7.109	6.249	+0.69	-4.0	14.2	29.1
Sept. 20	12 52.64	-13 52.2	7.171	6.248	+0.71	-4.3	14.2	21.6
Sept. 30	12 59.69	-14 34.8	7.212	6.247	+0.72	-4.4	14.3	14.4
Oct. 10	13 06.88	-15 18.9	7.231	6.246	+0.72	-4.5	14.3	8.7
Oct. 20	13 14.12	-16 04.3	7.228	6.245	+0.72	-4.6	14.3	8.4
Oct. 30	13 21.33	-16 50.3	7.203	6.244	+0.71	-4.6	14.3	14.0
Nov. 9	13 28.44	-17 36.4	7.156	6.243	+0.69	-4.6	14.2	21.2
Nov. 19	13 35.36	-18 22.3	7.087	6.242	+0.66	-4.5	14.2	29.1
Nov. 29	13 41.99	-19 07.4	6.998	6.241	+0.63	-4.4	14.2	37.2
Dec. 9	13 48.24	-19 51.2	6.890	6.239	+0.58	-4.2	14.2	45.5
Dec. 19	13 54.00	-20 33.3	6.765	6.238	+0.52	-4.0	14.1	54.0
Dec. 29	13 59.16	-21 13.3	6.626	6.237	+0.45	-3.7	14.1	62.7
Jan. 8	14 03.61	-21 50.5	6.476	6.236	+0.36	-3.4	14.0	71.6
Jan. 18	14 07.24	-22 24.5	6.318	6.234	+0.27	-3.0	14.0	80.7
Jan. 28	14 09.93	-22 54.7	6.155	6.233	+0.17	-2.6	13.9	90.0
Feb. 7	14 11.60	-23 20.6	5.993	6.232	+0.06	-2.1	13.8	99.5
Feb. 17	14 12.19	-23 41.4	5.836	6.230	-0.05	-1.5	13.8	109.2
Feb. 27	14 11.65	-23 56.5	5.687	6.229	-0.16	-0.9	13.7	119.1
Mar. 9	14 10.02	-24 05.4	5.553	6.228	-0.27	-0.2	13.7	129.1
Mar. 19	14 07.37	-24 07.6	5.438	6.226	-0.35	+0.5	13.6	139.3
Mar. 29	14 03.85	-24 02.9	5.345	6.225	-0.42	+1.1	13.6	149.4

彗星年表　２０１２

編集委員会

門　田　健　一
○佐　藤　裕　久
下　元　繁　男
関　　勉
中　村　彰　正

（五十音順・敬称略）
○印は編集長

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