THE COMET HANDBOOK FOR 2011

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Calculated by Kenji Muraoka
and Hirohisa Sato

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～ Dedicated to Mr. Kenji Muraoka ～

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Comet 29P/Schwassmann-Wachnmann
Epoch 2004 July 14.0 TT = JDT 2453200.5
T 2004 July 10.83024 TT Sato
q 5.7235777 (2000.0) P Q
n 0.06726260 Peri. 48.95646 +0.99214583 -0.03564409
a 5.9880713 Node 312.71548 -0.02848159 +0.86898899
e 0.0441701 Incl. 9.39208 +0.12180085 +0.49354598
P 14.65
From 14375 observations 1902 Mar. 5-2011 Jan. 17, mean residual 0″.70.

Comet C/2005 L3 (McNaught)
Epoch 2008 Jan. 15.0 TT = JDT 2454480.5
T 2008 Jan. 16.00628 TT Sato
q 5.5932672 (2000.0) P Q
z +0.0000168 Peri. 47.09698 -0.30837306 -0.72516352
+/-0.0000002 Node 288.73911 -0.94495784 +0.30792663
e 0.9999061 Incl. 139.44875 +0.10936517 +0.61588884
From 4814 observations 2004 July 16-2011 Jan. 18, mean residual 0″.57.

Comet C/2009 O4 (Hill)
Epoch 2010 Jan. 4.0 TT = JDT 2455200.5
T 2010 Jan. 1.27955 TT Sato
q 2.5638144 (2000.0) P Q
z -0.0003745 Peri. 223.73145 +0.70847573 -0.69505916
+/-0.0000070 Node 172.93899 +0.12812047 +0.29707359
e 1.0009601 Incl. 95.83015 -0.69400813 -0.65470607
From 747 observations 2009 July 30-Dec. 14, mean residual 0″.52.

Comet 118P/Shoemaker-Levy
Epoch 2010 Jan. 4.0 TT = JDT 2455200.5
T 2010 Jan. 2.29718 TT Sato
q 1.9838969 (2000.0) P Q
n 0.15284996 Peri. 302.14032 -0.07323816 -0.99486132
a 3.4643825 Node 151.80672 +0.95760727 -0.08973147
e 0.4273447 Incl. 8.50929 +0.27861172 +0.04689572
P 6.45
From 1919 observations 1996 Aug. 24-2010 May 2, mean residual 0″.71. Non-gravitational parameters A1 = +1.96 +/- 0.04, A2 = -0.2085 +/- 0.0010.

Comet 203P/Korlevic
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 8.20747 TT Sato
q 3.1821332 (2000.0) P Q
n 0.09841072 Peri. 154.54534 +0.08469515 -0.99522065
a 4.6463056 Node 290.56496 +0.90508072 +0.09724239
e 0.3151262 Incl. 2.97583 +0.41672008 -0.00893129
P 10.02
From 620 observations 1999 Nov. 3-2011 Jan. 7, mean residual 0″.77.

Comet C/2009 P2 (Boattini)
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 10.85579 TT Sato
q 6.5439205 (2000.0) P Q
z -0.0002870 Peri. 76.08734 +0.92777313 -0.27917662
+/-0.0000016 Node 60.39205 -0.33993186 -0.90599598
e 1.0018779 Incl. 163.45513 +0.15389396 -0.31816930
From 449 observations 2008 Oct. 1-2010 Nov. 5, mean residual 0″.64.

Comet 81P/Wild
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 22.69809 TT Sato
q 1.5980779 (2000.0) P Q
n 0.15350485 Peri. 41.78806 -0.99858374 -0.03601847
a 3.4545222 Node 136.10049 +0.01953772 -0.93282091
e 0.5373956 Incl. 3.23721 +0.04948535 -0.35853565
P 6.42
From 3774 observations 2002 Sept. 5-2010 Sept. 20, mean residual 0″.60. Non-gravitational parameters A1 = +0.54 +/- 0.01, A2 = +0.3658 +/- 0.0039.

Comet 126P/IRAS
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 22.66177 TT

				Sato
q	1.7134078	(2000.0)	P	Q
n	0.07343947	Peri. 356.72939	+0.99605553	+0.08418965
a	5.6474149	Node 357.76069	-0.05595745	+0.35086022
e	0.6966032	Incl. 45.83041	-0.06886325	+0.93263562
P	13.42			

From 301 observations 1983 Jun. 30-2010 Oct. 26, mean residual 0″.93. Non-gravitational parameters A1 = +0.33 +/- 0.03, A2 = -0.0656 +/- 0.0001.

Comet 65P/Gunn
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Mar. 2.15275 TT

				Sato
q	2.4403832	(2000.0)	P	Q
n	0.14517134	Peri. 196.64021	-0.09159374	+0.98159449
a	3.5854922	Node 68.35540	-0.89185997	-0.00600796
e	0.3193729	Incl. 10.38676	-0.44294060	-0.19088260
P	6.79			

From 2596 observations 2000 Oct. 1-2010 Dec. 18, mean residual 0″.83. Non-gravitational parameters A1 = -1.18 +/- 0.06, A2 = -0.3093 +/- 0.0350.

Comet 219P/LINEAR
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 5.72079 TT

				Sato
q	2.3643305	(2000.0)	P	Q
n	0.14100551	Peri. 107.76151	+0.91748104	+0.36619946
a	3.6557683	Node 231.05110	-0.39618842	+0.87615384
e	0.3532603	Incl. 11.52085	+0.03554270	+0.31345238
P	6.99			

From 517 observations 2002 June 5-2011 Jan. 9, mean residual 0″.73.

Comet 162P/Siding Spring
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 8.42280 TT

				Sato
q	1.2330702	(2000.0)	P	Q
n	0.18479702	Peri. 356.30645	+0.88277483	-0.40266329
a	3.0526200	Node 31.24009	+0.44210410	+0.53777765
e	0.5960617	Incl. 27.81677	+0.15891057	+0.74071417
P	5.33			

From 1294 observations 1990 Mar. 23-2011 Jan. 16, mean residual 0″.41.

Comet P/2010 U1 (Boattini)
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 28.96041 TT

				Sato
q	4.9034900	(2000.0)	P	Q
n	0.05739305	Peri. 88.93425	+0.97333146	-0.18134701
a	6.6562530	Node 281.50300	+0.10729810	+0.90120536
e	0.2633258	Incl. 8.24324	+0.20276336	+0.39362694
P	17.17			

From 101 observations 2010 Oct. 1-2011 Jan. 5, mean residual 0″.55.

Comet C/2010 G3 (WISE)
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Apr. 11.02799 TT

				Sato
q	4.9076524	(2000.0)	P	Q
z	+0.0004167	Peri. 75.19214	-0.04239964	-0.72603823
	+/-0.0000061	Node 313.71636	-0.72681253	+0.49376964
e	0.9979548	Incl. 108.26718	+0.68552594	+0.47860217

From 193 observations 2010 Apr. 14-2011 Jan. 5, mean residual 0″.64.

Comet P/2010 H5 (Scotti)
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 Apr. 18.24235 TT

				Sato
q	6.0258171	(2000.0)	P	Q
n	0.05161646	Peri. 175.16748	-0.93822171	+0.33051539
a	7.1440406	Node 24.90017	-0.32507823	-0.74038566
e	0.1565254	Incl. 14.08545	-0.11859248	-0.58531073
P	19.09			

From 63 observations 2010 Mar. 18-July 4, mean residual 0″.33.

Comet C/2007 V053 (Spacewatch)
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 Apr. 26.49862 TT Sato
q 4.8426322 (2000.0) P Q
z +0.0000556 Peri. 75.02985 +0.08637372 -0.49858238
+/-0.0000007 Node 59.73683 -0.15559157 -0.86189125
e 0.9997308 Incl. 86.99031 +0.98403803 -0.09251532
From 449 observations 2007 Oct. 20-2011 Jan. 22, mean residual 0″.53.

Comet C/2009 K5 (McNaught)
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 Apr. 30.02337 TT Sato
q 1.4223949 (2000.0) P Q
z -0.0005903 Peri. 66.17301 -0.29950892 +0.09770476
+/-0.0000007 Node 257.85586 -0.67324332 +0.68320579
e 1.0008397 Incl. 103.87942 +0.67604574 +0.72365988
From 2260 observations 2009 May 27-2011 Jan. 24, mean residual 0″.57.

Comet C/2009 W2 (Boattini)
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 May 1.72644 TT Sato
q 6.9071369 (2000.0) P Q
z +0.0001396 Peri. 121.33327 +0.21405581 +0.97270053
+/-0.0000046 Node 199.58397 +0.78051632 -0.11514431
e 0.9990360 Incl. 164.49000 +0.58734520 -0.20148319
From 93 observations 2008 Dec. 22-2010 Nov. 8, mean residual 0″.60.

Comet C/2010 J2 (McNaught)
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 3.85037 TT Sato
q 3.3869625 (2000.0) P Q
z +0.0001159 Peri. 4.61326 +0.62919325 -0.48885975
+/-0.0000090 Node 311.79548 -0.73653011 -0.62333873
e 0.9996076 Incl. 125.85380 -0.24827252 +0.61029908
From 480 observations 2010 May 8-Oct. 4, mean residual 0″.58.

Comet 215P/NEAT
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 8.03850 TT Sato
q 3.2133779 (2000.0) P Q
n 0.12217682 Peri. 222.45276 +0.45162110 +0.86609885
a 4.0223220 Node 75.44082 -0.74758634 +0.49842161
e 0.2011137 Incl. 12.78996 -0.48698361 +0.03806151
P 8.07
From 160 observations 1994 Oct. 10-2010 Dec. 4, mean residual 0″.67.

Comet C/2009 U5 (Grauer)
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 22.41259 TT Sato
q 6.0943129 (2000.0) P Q
z +0.0000505 Peri. 23.80790 -0.78538631 -0.49777354
+/-0.0000027 Node 121.17248 +0.47608270 -0.86565343
e 0.9996923 Incl. 25.47053 +0.39561800 +0.05353169
From 159 observations 2009 Oct. 23-2010 Dec. 24, mean residual 0″.62.

Comet P/2010 R2 (La Sagra)
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 25.69718 TT Sato
q 2.6225866 (2000.0) P Q
n 0.18073793 Peri. 59.51192 +0.80898632 +0.46092436
a 3.0981553 Node 270.75930 -0.58075844 +0.72266837
e 0.1535006 Incl. 21.39816 +0.09088875 +0.51507201
P 5.45
From 368 observations 2010 Aug. 12-2011 Jan. 5, mean residual 0″.48.

Comet 43P/Wolf-Harrington
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 July 1.75628 TT Sato
q 1.3576247 (2000.0) P Q
n 0.16091458 Peri. 191.47027 +0.15732284 -0.95316444
a 3.3476429 Node 249.89591 +0.92642486 +0.23304203
e 0.5944537 Incl. 15.96656 +0.34203289 -0.19279254
P 6.13
From 1964 observations 2003 June 17-2010 Dec. 10, mean residual 0″.64. Non-gravitational parameters A1 = -0.00 +/- 0.01, A2 = -0.1161 +/- 0.0063.

Comet 10P/Tempel
Epoch 2010 July 23.0 TT = JDT 2455400.5
T 2010 July 4.90467 TT Sato
q 1.4226951 (2000.0) P Q
n 0.18337641 Peri. 195.66015 +0.68293769 +0.70686865
a 3.0683653 Node 117.82556 -0.64584611 +0.70212094
e 0.5363345 Incl. 12.02233 -0.34129007 +0.08580726
P 5.37
From 2318 observations 1999 Feb. 14-2011 Jan. 2, mean residual 0″.65. Non-gravitational parameters A1 = +0.06 +/- 0.00, A2 = -0.0002 +/- 0.0002.

Comet 241P/LINEAR
Epoch 2010 July 23.0 TT = JDT 2455400.5
T 2010 July 18.30189 TT Sato
q 1.9214139 (2000.0) P Q
n 0.08979245 Peri. 110.15750 +0.50738889 -0.81198419
a 4.9390433 Node 305.97286 +0.59543190 +0.57238618
e 0.6109745 Incl. 20.88514 +0.62291040 +0.11426165
P 10.98
From 343 observations 1999 Oct. 30-2011 Jan. 25, mean residual 0″.64.

Comet C/2010 F3 (Scotti)
Epoch 2010 July 23.0 TT = JDT 2455400.5
T 2010 Aug. 4.55198 TT Sato
q 5.4467279 (2000.0) P Q
z +0.0159199 Peri. 31.25765 -0.98792221 +0.15179225
+/-0.0000083 Node 157.41057 -0.15355545 -0.93217448
e 0.9132889 Incl. 4.64782 -0.02074698 -0.32864852
From 106 observations 2010 Mar. 20-2011 Jan. 4, mean residual 0″.44.

Comet 2P/Encke
Epoch 2010 July 23.0 TT = JDT 2455400.5
T 2010 Aug. 6.50110 TT Sato
q 0.3358684 (2000.0) P Q
n 0.29906515 Peri. 186.54894 -0.94514278 -0.31466517
a 2.2145841 Node 334.56691 +0.30820397 -0.77005380
e 0.8483379 Incl. 11.78308 +0.10823787 -0.55498017
P 3.30
From 1492 observations 1993 July 22-2010 Oct. 5, mean residual 0″.62. Non-gravitational parameters A1 = +0.01 +/- 0.00, A2 = -0.0007 +/- 0.0000.

Comet 223P/Skiff
Epoch 2010 Sept. 1.0 TT = JDT 2455440.5
T 2010 Aug. 14.51790 TT Sato
q 2.4200682 (2000.0) P Q
n 0.11657961 Peri. 37.84801 +0.89340408 -0.43712761
a 4.1500595 Node 346.82452 +0.21199249 +0.61366124
e 0.4168594 Incl. 27.05519 +0.39609133 +0.65752516
P 8.45
From 373 observations 2001 July 27-2011 Jan. 15, mean residual 0″.63..

Comet P/2010 J3 (McMillan)
Epoch 2010 Sept. 1.0 TT = JDT 2455440.5
T 2010 Aug. 23.48201 TT Sato
q 2.4550904 (2000.0) P Q
n 0.03659729 Peri. 157.31910 -0.09504079 +0.97093473
a 8.9846975 Node 106.66049 -0.94488870 -0.01854056
e 0.7267476 Incl. 13.25534 -0.31329313 -0.23862521
P 26.93
From 496 observations 2010 Feb. 3-Aug. 31, mean residual 0″.52.

Comet 227P/Catalina-LINEAR
Epoch 2010 Sept. 1.0 TT = JDT 2455440.5
T 2010 Sept. 3.69844 TT Sato
q 1.7948033 (2000.0) P Q
n 0.14491427 Peri. 90.13432 -0.76129807 -0.64255259
a 3.5897313 Node 49.88412 +0.54049093 -0.70290691
e 0.5000174 Incl. 6.52470 +0.35818263 -0.30503779
P 6.80
From 101 observations 1997 Jan. 15-2010 Jan. 17, mean residual 0″.69.

Comet C/2010 D3 (WISE)
Epoch 2010 Sept. 1.0 TT = JDT 2455440.5
T 2010 Sept. 3.92544 TT Sato
q 4.2476089 (2000.0) P Q
z +0.0001043 Peri. 304.64230 -0.33203167 -0.08032285
+/-0.0000244 Node 255.23668 -0.14099913 -0.98094714
e 0.9995572 Incl. 76.39213 -0.93267048 +0.17689251
From 54 observations 2010 Feb. 24-July 7, mean residual 0″.72.

Comet C/2008 FK75 (Lemmon-Siding Spring)
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Sept. 29.26633 TT Sato
q 4.5107973 (2000.0) P Q
z -0.0005603 Peri. 80.42205 +0.16380311 +0.82385805
+/-0.0000004 Node 218.26836 -0.78063240 +0.44454652
e 1.0025273 Incl. 61.17584 +0.60314309 +0.35161955
From 2535 observations 2008 Mar. 31-2011 Jan. 17, mean residual 0″.53.

Comet 31P/Schwassmann-Wachmann
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Sept. 29.48395 TT Sato
q 3.4243250 (2000.0) P Q
n 0.11280068 Peri. 17.93297 -0.66983407 -0.73898125
a 4.2422368 Node 114.18953 +0.67116309 -0.64424696
e 0.1928020 Incl. 4.54677 +0.31758846 -0.19711054
P 8.74
From 599 observations 1993 Sept. 20-2010 Dec. 4, mean residual 0″.86. Non-gravitational parameters A1 = +3.78 +/- 0.19, A2 = -4.6951 +/- 0.1446.

Comet 240P/NEAT
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Oct. 4.27566 TT Sato
q 2.1237510 (2000.0) P Q
n 0.12987891 Peri. 351.92720 +0.38104004 -0.84037384
a 3.8616861 Node 74.97447 +0.86900004 +0.18318647
e 0.4500457 Incl. 23.52233 +0.31566979 +0.51011227
P 7.59
From 858 observations 2002 Oct. 5-2011 Jan. 29, mean residual 0″.65.

Comet C/2010 A4 (Siding Spring)
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Oct. 8.76209 TT Sato
q 2.7379688 (2000.0) P Q
z +0.0035084 Peri. 271.69070 +0.05568831 +0.97190157
+/-0.0000022 Node 346.68572 +0.49321868 -0.22593937
e 0.9903942 Incl. 96.73023 -0.86812104 -0.06602071
From 121 observations 2010 Jan. 12-2011 Jan. 9, mean residual 0″.64.

Comet P/2010 WK (LINEAR)
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Oct. 19.74486 TT Sato
q 1.7651462 (2000.0) P Q
n 0.07181337 Peri. 40.84473 +0.61368300 -0.78855707
a 5.7323474 Node 11.48781 +0.66271700 +0.48716287
e 0.6920727 Incl. 11.47913 +0.42918453 +0.37529999
P 13.72
From 292 observations 2010 Aug. 10-2011 Jan. 29, mean residual 0″.46.

Comet P/2010 T1 (McNaught)
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Oct. 26.24754 TT Sato
q 3.2152691 (2000.0) P Q
n 0.09722169 Peri. 220.69588 +0.90879652 +0.06923098
a 4.6841119 Node 130.08257 -0.06798963 +0.99752951
e 0.3135798 Incl. 32.53185 -0.41166283 -0.01191458
P 10.14
From 46 observations 2010 Sept. 11-Nov. 20, mean residual 0″.41.

Comet 103P/Hartley
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Oct. 28.25948 TT Sato
q 1.0586782 (2000.0) P Q
n 0.15231939 Peri. 181.20122 +0.75553323 -0.63756799
a 3.4724228 Node 219.75976 +0.60299831 +0.76665459
e 0.6951183 Incl. 13.61822 +0.25605192 +0.07581423
P 6.47
From 4401 observations 1997 May 2-2011 Jan. 3, mean residual 0″.61. Non-gravitational parameters A1 = +0.22 +/- 0.00, A2 = +0.0282 +/- 0.0001.

Comet C/2010 FB87 (WISE-Garradd)
Epoch 2010 Nov. 20.0 TT = JDT 2455520.5
T 2010 Nov. 7.38097 TT Sato
q 2.8427481 (2000.0) P Q
z +0.0032855 Peri. 265.02077 -0.30182504 -0.02452307
+/-0.0000017 Node 89.89880 +0.29852710 +0.94696481
e 0.9906601 Incl. 107.62676 -0.90541881 +0.32040016
From 122 observations 2010 Mar. 28-2011 Jan. 24, mean residual 0″.47.

Comet C/2010 L3 (Catalina)
Epoch 2010 Nov. 20.0 TT = JDT 2455520.5
T 2010 Nov. 8.46241 TT Sato
q 9.8835963 (2000.0) P Q
z +0.0001049 Peri. 121.68314 -0.29706715 -0.73922085
+/-0.0000914 Node 38.27215 -0.76282623 -0.19699208
e 0.9989631 Incl. 102.63253 +0.57432330 -0.64400827
From 81 observations 2010 June 15-Aug. 22, mean residual 0″.53.

Comet P/2010 U2 (Hill)
Epoch 2010 Nov. 20.0 TT = JDT 2455520.5
T 2010 Nov. 9.26189 TT Sato
q 2.5527958 (2000.0) P Q
n 0.11149715 Peri. 44.22600 +0.74888384 -0.66254447
a 4.2752370 Node 357.15120 +0.49851494 +0.57754513
e 0.4028879 Incl. 16.86145 +0.43664156 +0.47694491
P 8.84
From 246 observations 2010 Oct. 1-2011 Jan. 24, mean residual 0″.56.

Comet P/2011 A1 (Larson)
Epoch 2010 Nov. 20.0 TT = JDT 2455520.5
T 2010 Nov. 14.40511 TT Sato
q 2.2140957 (2000.0) P Q
n 0.13679953 Peri. 44.90789 -0.46149191 -0.85924031
a 3.7303220 Node 73.75478 +0.73562869 -0.50971968
e 0.4064599 Incl. 13.29308 +0.49585849 -0.04349635
P 7.20
From 78 observations 2010 Dec. 11-2011 Jan. 26, mean residual 0″.59.

Comet 3D/Biela [Orbit 1]
Epoch 2010 Nov. 20.0 TT = JDT 2455520.5
T 2010 Dec. 10.00185 TT Muraoka
q 0.7970463 (2000.0) P Q
n 0.15109324 Peri. 266.80522 -0.29715829 -0.95348991
a 3.4911837 Node 200.69948 +0.92297536 -0.27328583
e 0.7716974 Incl. 8.21998 +0.24456787 -0.12716858
P 6.52
From 29 observations 1826-1852, mean residual 3″.25. Nongravitational parameters A1 = +0.32 +/- 0.13, A2 = -0.0926 +/- 0.0001.

Comet C/2009 UG89 (Lemmon)
Epoch 2010 Dec. 30.0 TT = JDT 2455560.5
T 2010 Dec. 16.26926 TT Sato
q 3.9311781 (2000.0) P Q
z -0.0020621 Peri. 60.65380 +0.02763230 -0.87612565
+/-0.0000016 Node 321.00842 -0.94852667 +0.12897726
e 1.0081066 Incl. 130.10043 +0.31548948 +0.46450911
From 417 observations 2009 Oct. 22-2010 Oct. 12, mean residual 0″.50.

Comet P/2011 A2 (Scotti)
T 2010 Dec. 21.9527 TT Sato
q 1.555436 (2000.0) P Q
n 0.1801880 Peri. 94.1490 -0.8534349 -0.5173067
a 3.104456 Node 54.7113 +0.4419447 -0.7829224
e 0.498967 Incl. 4.4676 +0.2762858 -0.3455811
P 5.47
From 50 observations 2011 Jan. 11-17, mean residual 0″.62.

Comet P/2004 HC18 (LINEAR)
Epoch 2010 Dec. 30.0 TT = JDT 2455560.5
T 2010 Dec. 29.59716 TT Sato
q 1.7140264 (2000.0) P Q
n 0.15107183 Peri. 30.98381 -0.36144433 +0.89727459
a 3.4915134 Node 219.48563 -0.91610778 -0.39234609
e 0.5090879 Incl. 23.49311 -0.17350658 +0.20239282
P 6.52
From 324 observations 2004 Apr. 17-Oct. 12, mean residual 0″.61.

Comet 247P/2002 VP94 (LINEAR)
Epoch 2010 Dec. 30.0 TT = JDT 2455560.5
T 2011 Jan. 4.14124 TT Sato
q 1.4843886 (2000.0) P Q
n 0.12491562 Peri. 47.32768 -0.18166760 -0.96450121
a 3.9633117 Node 54.12586 +0.81881807 -0.25630024
e 0.6254676 Incl. 13.68184 +0.54454921 +0.06362078
P 7.89
From 581 observations 2002 Nov. 5-2011 Jan. 26, mean residual 0″.42.

Comet 9P/Tempel
Epoch 2010 Dec. 30.0 TT = JDT 2455560.5
T 2011 Jan. 12.36560 TT Sato
q 1.5103005 (2000.0) P Q
n 0.17850664 Peri. 178.92328 -0.37705513 +0.91038392
a 3.1239193 Node 68.90709 -0.85112265 -0.26803132
e 0.5165366 Incl. 10.52237 -0.36526656 -0.31521473
P 5.52
From 4928 observations 1967 June 8-2010 Dec. 27, mean residual 0″.57. Non-gravitational parameters A1 = +0.02 +/- 0.00, A2 = +0.0017 +/- 0.0000.

Comet C/2009 Y1 (Catalina)
Epoch 2011 Feb. 8.0 TT = JDT 2455600.5
T 2011 Jan. 28.90086 TT Sato
q 2.5205089 (2000.0) P Q
z +0.0026431 Peri. 127.39109 +0.65143474 +0.68690402
+/-0.0000008 Node 160.27727 -0.28549044 -0.17149816
e 0.9933379 Incl. 107.31636 +0.70294238 -0.70622322
From 924 observations 2009 Dec. 17-2011 Jan. 27, mean residual 0″.46.

Comet C/2010 B1 (Cardinal)
Epoch 2011 Feb. 8.0 TT = JDT 2455600.5
T 2011 Feb. 7.07734 TT Sato
q 2.9414673 (2000.0) P Q
z +0.0003270 Peri. 211.52491 +0.00060371 +0.24113695
+/-0.0000006 Node 277.21359 +0.99184156 -0.12385810
e 0.9990381 Incl. 101.97626 -0.12747534 -0.96255501
From 1587 observations 2010 Jan. 19-2011 Jan. 28, mean residual 0″.48.

Comet 248P/2010 W1 (Gibbs)
Epoch 2011 Feb. 8.0 TT = JDT 2455600.5
T 2011 Feb. 8.73631 TT Sato
q 2.1469048 (2000.0) P Q
n 0.06753602 Peri. 209.91737 +0.53577489 -0.84277539
a 5.9718985 Node 207.78351 +0.79503285 +0.52415679
e 0.6404988 Incl. 6.37035 +0.28437305 +0.12243082
P 14.59
From 131 observations 1996 Sept. 14-2011 Jan. 29, mean residual 0″.59.

Comet 243P/NEAT
Epoch 2011 Mar. 20.0 TT = JDT 2455640.5
T 2011 Mar. 3.19384 TT Sato
q 2.4560245 (2000.0) P Q
n 0.13113825 Peri. 283.89114 +0.97099591 -0.19885952
a 3.8369233 Node 87.70348 +0.23601809 +0.88599457
e 0.3598974 Incl. 7.63454 -0.03824150 +0.41888962
P 7.52
From 297 observations 2003 Aug. 1-2010 Sept. 1, mean residual 0″.68.

Comet 238P/Read
Epoch 2011 Mar. 20.0 TT = JDT 2455640.5
T 2011 Mar. 10.67731 TT Sato
q 2.3604262 (2000.0) P Q
n 0.17500978 Peri. 325.30718 +0.95646667 -0.29132691
a 3.1653944 Node 51.63966 +0.27251302 +0.87030053
e 0.2543026 Incl. 1.26602 +0.10444220 +0.39712167
P 5.63
From 126 observations 2005 Oct. 23-2010 July 20, mean residual 0″.59.

Comet P/2006 U1 = 2011 A4 (LINEAR)
Epoch 2011 Apr. 29.0 TT = JDT 2455680.5
T 2011 Apr. 16.08059 TT Sato
q 0.5108791 (2000.0) P Q
n 0.21296095 Peri. 64.22891 +0.56082756 +0.81805853
a 2.7771717 Node 240.47139 -0.80238959 +0.49908999
e 0.8160434 Incl. 8.42514 -0.20406714 +0.28581361
P 4.63
From 365 observations 2006 Oct. 19-2011 Jan. 15, mean residual 0″.47.

Comet P/2004 T1 (LINEAR-NEAT)
Epoch 2011 Apr. 29.0 TT = JDT 2455680.5
T 2011 Apr. 24.86467 TT Sato
q 1.7077467 (2000.0) P Q
n 0.15233757 Peri. 336.40551 +0.87841520 -0.45381206
a 3.4721465 Node 51.43972 +0.46328393 +0.73170719
e 0.5081582 Incl. 11.04485 +0.11728064 +0.50858549
P 6.47
From 455 observations 2004 July 16-2005 Mar. 7, mean residual 0″.66.

Comet 231P/LINEAR-NEAT
Epoch 2011 Apr. 29.0 TT = JDT 2455680.5
T 2011 May 16.70015 TT Sato
q 3.0328653 (2000.0) P Q
n 0.12204056 Peri. 42.47227 -0.98564849 -0.06480057
a 4.0253155 Node 133.09915 +0.02326324 -0.96671920
e 0.2465522 Incl. 12.32643 +0.16720012 -0.24749723
P 8.08
From 152 observations 1950 Apr. 20-2010 Dec. 8, mean residual 0″.68.

Comet 164P/Christensen
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 2.34346 TT Sato
q 1.6753142 (2000.0) P Q
n 0.14115535 Peri. 325.84984 +0.56284089 -0.77773578
a 3.6531807 Node 88.32689 +0.80704495 +0.44392853
e 0.5414094 Incl. 16.26063 +0.17857371 +0.44503316
P 6.98
From 265 observations 1998 Jan. 24-2010 Oct. 11, mean residual 0″.70.

Comet C/2008 S3 (Boattini)
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 7.41373 TT Sato
q 8.0178199 (2000.0) P Q
z -0.0001249 Peri. 39.96530 +0.94225867 +0.23004752
+/-0.0000009 Node 54.94141 +0.17643679 -0.95869399
e 1.0010013 Incl. 162.70405 +0.28463777 -0.16728413
From 838 observations 2006 Dec. 27-2011 Jan. 24, mean residual 0″.60.

Comet 213P/Van Ness
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 16.23081 TT Sato
q 2.1225408 (2000.0) P Q
n 0.15575163 Peri. 3.33236 +0.71870850 +0.68291663
a 3.4212198 Node 312.67172 -0.64197566 +0.57954751
e 0.3795953 Incl. 10.23962 -0.26706804 +0.44469041
P 6.33
From 859 observations 2005 Aug. 4-2009 Apr. 21, mean residual 0″.58.

Comet 130P/McNaught-Hughes
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 24.77551 TT Sato
q 2.0980615 (2000.0) P Q
n 0.14821846 Peri. 224.36541 +0.69123061 +0.71135275
a 3.5361813 Node 89.81417 -0.62258673 +0.67558866
e 0.4066872 Incl. 7.30733 -0.36685966 +0.19379688
P 6.65
From 214 observations 1991 Sept. 14-2010 July 3, mean residual 0″.60.

Comet 62P/Tsuchinshan
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 June 30.39375 TT Sato
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. Non-gravitational parameters A1 = +0.55 +/- 0.01, A2 = -0.0066 +/- 0.0001.

Comet 176P/LINEAR
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 June 30.93929 TT Sato
q 2.5764086 (2000.0) P Q
n 0.17232798 Peri. 35.59248 +0.92682103 -0.37550214
a 3.1981501 Node 346.46277 +0.34355848 +0.84900630
e 0.1944066 Incl. 0.23564 +0.15155974 +0.37173438
P 5.72
From 161 observations 1999 Aug. 17-2010 Sept. 10, mean residual 0″.52.

Comet 123P/West-Hartley
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 July 4.48625 TT Sato
q 2.1288998 (2000.0) P Q
n 0.13000259 Peri. 102.82728 -0.83568063 -0.51440556
a 3.8592364 Node 46.59904 +0.34201052 -0.76154465
e 0.4483624 Incl. 15.35706 +0.42972863 -0.39425458
P 7.58
From 1158 observations 1989 Mar. 14-2010 Dec. 18, mean residual 0″.68. Non-gravitational parameters A1 = -1.00 +/- 0.04, A2 = +0.0073 +/- 0.0003.

Comet P/2010 T2 (PANSTARRS)
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 July 10.89330 TT Sato
q 3.7530746 (2000.0) P Q
n 0.07605109 Peri. 356.14096 +0.56250144 -0.81798041
a 5.5173742 Node 59.59066 +0.76225970 +0.45665429
e 0.3197716 Incl. 8.02613 +0.32023785 +0.34982124
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 18.03191 TT Muraoka
q 2.2722190 (2000.0) P Q
n 0.12892009 Peri. 343.46880 +0.00864694 -0.93180712
a 3.8808094 Node 104.88291 +0.95469116 -0.10025350
e 0.4144987 Incl. 22.05188 +0.29747272 +0.34883338
P 7.65
From 469 observations 1998 Jan. 25-2005 Apr. 24, mean residual 0".91.
Nongravitational parameters Y1 = +0.48 +/- 0.16, Y2 = +0.0619 +/- 0.0278.

Comet D/1952 B1 (Harrington-Wilson)
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 July 30.11079 TT Muraoka
q 1.2784691 (2000.0) P Q
n 0.17650475 Peri. 0.81689 -0.48844863 -0.84476952
a 3.1474955 Node 118.44762 +0.79917161 -0.53366523
e 0.5938139 Incl. 14.39532 +0.35034651 +0.03957106
P 5.58
From 7 observations 1952 Jan. 30-Feb. 25, mean residual 0".51.
dP = 3.63 days(1951 Orbit).

Comet 27P/Crommelin [Orbit 2]
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 Aug. 3.79926 TT Muraoka
q 0.7478702 (2000.0) P Q
n 0.03530090 Peri. 195.97902 +0.09146901 -0.88487095
a 9.2033421 Node 250.63852 +0.95843121 +0.20271805
e 0.9187393 Incl. 28.95670 +0.27026475 -0.41941481
P 27.92
From 237 observations 1873-1984, mean residual 1".52. Nongravitational
parameters A1 = +0.24 +/- 0.18, A2 = -0.0004 +/- 0.0001.

Comet 27P/Crommelin [Orbit 1]
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 Aug. 3.80820 TT Muraoka
q 0.7478719 (2000.0) P Q
n 0.03529425 Peri. 195.98065 +0.09145127 -0.88487453
a 9.2044981 Node 250.63807 +0.95843618 +0.20269667
e 0.9187493 Incl. 28.95655 +0.27025313 -0.41941761
P 27.93
From 244 observations 1873-1984, mean residual 1".57. Nongravitational
parameters A1 = -0.05 +/- 0.06, A2 = -0.0570 +/- 0.0010.

Comet 97P/Metcalf-Brewington
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Aug. 21.05077 TT Sato
q 2.5966690 (2000.0) P Q
n 0.09364105 Peri. 228.21075 +0.59922895 -0.80009208
a 4.8027710 Node 185.20833 +0.79491590 +0.59876467
e 0.4593394 Incl. 17.88649 +0.09504407 +0.03651756
P 10.53
From 121 observations 1991 Jan. 8-2000 Dec. 23, mean residual 0".77.

Comet 228P/LINEAR
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Aug. 23.83790 TT Sato
q 3.4304736 (2000.0) P Q
n 0.11577650 Peri. 114.79302 -0.82319844 -0.56328890
a 4.1692293 Node 31.06627 +0.45838915 -0.73325416
e 0.1771924 Incl. 7.91541 +0.33499808 -0.38084635
P 8.51
From 156 observations 2001 Dec. 9-2011 Jan. 8, mean residual 0".72.

Comet C/2010 G2 (Hill)
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Sept. 2.05256 TT Sato
q 1.9808281 (2000.0) P Q
z +0.0103841 Peri. 137.42467 +0.14258539 +0.42752927
+/-0.0000030 Node 246.78098 +0.41763518 +0.79169511
e 0.9794310 Incl. 103.74524 +0.89735738 -0.43639153
From 580 observations 2010 Apr. 10-2011 Jan. 14, mean residual 0".57.

Comet C/2010 X1 (Elenin)
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Sept. 10.29173 TT Sato
q 0.4806622 (2000.0) P Q
z -0.0015215 Peri. 343.81018 +0.60262678 +0.79779169
+/-0.0004738 Node 323.24190 -0.72856395 +0.54018791
e 1.0007313 Incl. 1.84041 -0.32563098 +0.26781605
From 176 observations 2010 Dec. 10-2011 Jan. 28, mean residual 0″.54.

Comet 45P/Honda-Mrkos-Pajdusakova
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Sept. 28.75283 TT Sato
q 0.5296436 (2000.0) P Q
n 0.18778049 Peri. 326.24474 +0.56843111 -0.81938222
a 3.0202002 Node 89.00774 +0.77028558 +0.49836486
e 0.8246330 Incl. 4.25326 +0.28904359 +0.28327591
P 5.25
From 217 observations 1995 Oct. 21-2006 June 6, mean residual 0″.80. Non-gravitational parameters A1 = +0.28 +/- 0.00, A2 = -0.0505 +/- 0.0000.

Comet 48P/Johnson
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Sept. 29.30430 TT Sato
q 2.3011188 (2000.0) P Q
n 0.14197700 Peri. 207.95720 +0.80964753 +0.54808330
a 3.6390726 Node 117.27180 -0.48476807 +0.82613673
e 0.3676634 Incl. 13.66218 -0.33086372 +0.13077765
P 6.94
From 623 observations 1949 Sept. 24-2010 July 9, mean residual 0″.70. Non-gravitational parameters A1 = +0.59 +/- 0.01, A2 = -0.0189 +/- 0.0003.

Comet 115P/Maury
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 6.95592 TT Sato
q 2.0350534 (2000.0) P Q
n 0.11256298 Peri. 120.06273 +0.44984765 +0.89302437
a 4.2482070 Node 176.60276 -0.87326285 +0.44263530
e 0.5209618 Incl. 11.70613 -0.18721400 +0.08112620
P 8.76
From 92 observations 1985 Aug. 17-2003 Oct. 23, mean residual 0″.76. Non-gravitational parameters A1 = +0.89 +/- 0.19, A2 = -0.0003 +/- 0.0101.

Comet 73P/Schwassmann-Wachmann C
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 16.89511 TT Sato
q 0.9427737 (2000.0) P Q
n 0.18379604 Peri. 198.86560 -0.02846444 +0.98228567
a 3.0636933 Node 69.84526 -0.88986416 +0.05950268
e 0.6922754 Incl. 11.37891 -0.45533675 -0.17769158
P 5.36
From 2841 observations 2000 Nov. 7-2010 Dec. 17, mean residual 0″.71. Non-gravitational parameters A1 = +0.70 +/- 0.00, A2 = +0.0263 +/- 0.0002.

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

Comet 73P/Schwassmann-Wachmann B
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 17.50653 TT Sato
q 0.9427332 (2000.0) P Q
n 0.18392827 Peri. 198.85131 -0.02878670 +0.98227409
a 3.0622248 Node 69.84088 -0.88987428 +0.05921971
e 0.6921411 Incl. 11.37995 -0.45529671 -0.17785003
P 5.36
From 1529 observations 2000 Nov. 19-2006 Sept. 27, mean residual 0″.98. Non-gravitational parameters A1 = +2.16 +/- 0.02, A2 = -0.4145 +/- 0.0140.

Comet 49P/Arend-Rigaux
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 19.07686 TT Sato
q 1.4238249 (2000.0) P Q
n 0.14656281 Peri. 332.78996 -0.05101197 -0.95692673
a 3.5627624 Node 118.87662 +0.96536494 -0.12056807
e 0.6003593 Incl. 19.05020 +0.25586775 +0.26411092
P 6.72
From 672 observations 1951 Feb. 8-2010 Aug. 30, mean residual 0″.75. Non-gravitational parameters A1 = +0.01 +/- 0.00, A2 = -0.0004 +/- 0.0000.

Comet 41P/Tuttle-Giacobini-Kresak
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 11.63705 TT Sato
q 1.0494359 (2000.0) P Q
n 0.18167305 Peri. 62.18696 -0.91159953 +0.39854248
a 3.0875147 Node 141.06343 -0.41041325 -0.86841862
e 0.6601034 Incl. 9.22487 -0.02339355 -0.29497964
P 5.43
From 417 observations 2000 Nov. 7-2006 Aug. 27, mean residual 0″.75.

Comet P/2004 H3 (Larsen)
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 23.20288 TT Sato
q 2.4502467 (2000.0) P Q
n 0.12771642 Peri. 346.48950 -0.87303237 +0.40045883
a 3.9051545 Node 220.94697 -0.39860334 -0.91475563
e 0.3725609 Incl. 25.12800 -0.28094458 +0.05343094
P 7.72
From 86 observations 2004 Apr. 22-June 13, mean residual 0″.61.

Comet 5D/Brorsen [Orbit 2]
Epoch 2011 Nov. 15.0 TT = JDT 2455880.5
T 2011 Nov. 26.44983 TT Muraoka
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 +/- 0.64, A2 = -0.4298 +/- 0.1181.

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

Comet 37P/Forbes
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 11.01857 TT Sato
q 1.5753107 (2000.0) P Q
n 0.15516827 Peri. 329.38868 +0.25341357 +0.96108160
a 3.4297892 Node 315.03122 -0.85301691 +0.16837311
e 0.5406975 Incl. 8.95579 -0.45622770 +0.21902660
P 6.35
From 541 observations 1980 Mar. 12-2006 Jan. 23, mean residual 0″.71. Non-gravitational parameters A1 = +0.51 +/- 0.00, A2 = -0.0369 +/- 0.0002.

Comet C/2009 S3 (Lemmon)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 11.34971 TT Sato
q 6.4739275 (2000.0) P Q
z -0.0002662 Peri. 129.77575 +0.72053254 +0.31812584
+/-0.0000140 Node 225.13146 -0.09559233 +0.92563791
e 1.0017232 Incl. 60.38453 +0.68680053 -0.20491559
From 68 observations 2009 Sept. 24-2010 Oct. 12, mean residual 0″.50.

Comet 71P/Clark
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 15.70110 TT Sato
q 1.5674761 (2000.0) P Q
n 0.17838945 Peri. 208.83829 -0.03285293 +0.98931128
a 3.1252872 Node 59.60475 -0.88248379 +0.03801712
e 0.4984538 Incl. 9.48028 -0.46919404 -0.14077602
P 5.53
From 385 observations 2001 Aug. 27-2006 Dec. 10, mean residual 0″.69. Non-gravitational parameters A1 = +0.50 +/- 0.10, A2 = -0.5305 +/- 0.0315.

Comet C/2011 A3 (Gibbs)
T 2011 Dec. 16.40441 TT Sato
q 2.3377987 (2000.0) P Q
z +0.0036176 Peri. 141.54748 -0.01365939 +0.93258799
Node 124.69778 -0.99110903 +0.03511748
e 0.9915428 Incl. 26.02096 -0.13234920 -0.35923028
From 65 observations 2011 Jan. 15-29, mean residual 0″.64.

Comet C/2009 P1 (Garradd)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 23.66589 TT Sato
q 1.5505227 (2000.0) P Q
z -0.0007044 Peri. 90.74631 -0.16659614 -0.82691354
+/-0.0000033 Node 325.99752 -0.58721087 +0.52077514
e 1.0010921 Incl. 106.17775 +0.79210423 +0.21214912
From 369 observations 2009 Aug. 13-2011 Jan. 8, mean residual 0″.56.

Comet 36P/Whipple
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 29.58848 TT Sato
q 3.0878918 (2000.0) P Q
n 0.11541111 Peri. 201.59722 +0.91385724 -0.40597188
a 4.1780245 Node 182.39127 +0.39320029 +0.88925060
e 0.2609206 Incl. 9.93099 +0.10128414 +0.21076100
P 8.54
From 272 observations 1948 July 18-2010 Sept. 16, mean residual 0″.71. Non-gravitational parameters A1 = +0.30 +/- 0.05, A2 = -0.0447 +/- 0.0011.

Comet C/2009 F4 (McNaught)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 31.90816 TT Sato
q 5.4545762 (2000.0) P Q
z -0.0002887 Peri. 260.38744 +0.04754203 +0.61014486
+/-0.0000017 Node 53.58431 +0.16287468 +0.77642555
e 1.0015749 Incl. 79.34726 -0.98550068 +0.15775492
From 420 observations 2009 Mar. 19-2010 Dec. 27, mean residual 0″.49.

Comet 131P/Mueller
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2012 Jan. 7.37657 TT Sato
q 2.4180696 (2000.0) P Q
n 0.13931114 Peri. 179.52464 +0.83149701 -0.55084376
a 3.6853507 Node 214.21857 +0.50926464 +0.80760180
e 0.3438699 Incl. 7.35590 +0.22195100 +0.21059554
P 7.07
From 253 observations 1990 Sept. 15-2004 Dec. 14, mean residual 0″.71. Non-gravitational parameters A1 = +0.49 +/- 0.52, A2 = -0.1200 +/- 0.0209.

Comet P/2006 T1 (Levy)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2012 Jan. 12.47251 TT Sato
q 1.0074179 (2000.0) P Q
n 0.18651166 Peri. 179.62108 -0.16297203 -0.93703923
a 3.0338823 Node 279.73930 +0.90438958 -0.01675140
e 0.6679443 Incl. 18.26314 +0.39435975 -0.34882211
P 5.28
From 294 observations 2006 Oct. 2-Dec. 1, mean residual 0″.73.

78P/Gehrels
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2012 Jan. 12.93676 TT Sato
q 2.0085712 (2000.0) P Q
n 0.13631173 Peri. 192.79722 +0.72777534 -0.68357469
a 3.7392161 Node 210.55855 +0.63843380 +0.70478298
e 0.4628363 Incl. 6.25520 +0.25049019 +0.18975404
P 7.23
From 2067 observations 1989 June 14-2006 Feb. 26, mean residual 0".57. Non-gravitational parameters A1 = +0.62 +/- 0.02, A2 = -0.0618 +/- 0.0050.

244P/Scotti
Epoch 2012 Jan. 14.0 TT = JDT 2455940.5
T 2012 Jan. 20.25510 TT Sato
q 3.9181923 (2000.0) P Q
n 0.09092976 Peri. 92.57965 +0.05676087 -0.99837975
a 4.8977735 Node 354.16191 +0.89962663 +0.05288717
e 0.2000054 Incl. 2.25905 +0.43295511 +0.02099572
P 10.84
From 331 observations 2000 Nov. 29-2011 Jan. 16, mean residual 0".65.

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

Comet 5D/Brorsen [Orbit 1]
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Feb. 5.24389 TT Muraoka
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 +/- 0.09, A2 = +0.1345 +/- 0.0002.

Comet D/1886 K1 (Brooks)
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Feb. 6.4301 TT Muraoka
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 R. J. Buckley orbit (1979).

Comet 21P/Giacobini-Zinner
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Feb. 11.78681 TT Sato
q 1.0304855 (2000.0) P Q
n 0.14939423 Peri. 172.60238 +0.98510183 -0.09938016
a 3.5176031 Node 195.39756 +0.11782724 +0.98450070
e 0.7070490 Incl. 31.91045 +0.12526422 -0.14450593
P 6.60
From 934 observations 1987 Mar. 31-2006 Mar. 26, mean residual 0".80. Non-gravitational parameters A1 = +0.24 +/- 0.00, A2 = -0.0740 +/- 0.0003.

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

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 +/- 0.09, A2 = +1.1833 +/- 0.0002, A3 = -2.31 +/- 0.04.

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

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.

Comet 242P/Spahr
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 3.59173 TT Sato

q	3.9799379	(2000.0)	P	Q
n	0.07601922	Peri. 247.68592	+0.36911874	-0.92935399
a	5.5189159	Node 180.77315	+0.91825177	+0.36348388
e	0.2788551	Incl. 32.48286	-0.14340516	-0.06465778
P	12.97			

From 153 observations 1997 Oct. 29-2010 Oct. 12, mean residual 0″.66.

Comet 163P/NEAT
Epoch 2012 Apr. 3.0 TT = JDT 2456020.5
T 2012 Apr. 12.71110 TT Sato

q	2.0566515	(2000.0)	P	Q
n	0.13503838	Peri. 349.63088	-0.03484795	-0.97594241
a	3.7626854	Node 102.11871	+0.93196435	-0.10949741
e	0.4534086	Incl. 12.71674	+0.36087127	+0.18853841
P	7.30			

From 296 observations 1990 Oct. 24-2005 Mar. 10, mean residual 0″.61.

Comet C/2006 S3 (LONEOS)
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 16.34642 TT Sato

q	5.1310158	(2000.0)	P	Q
z	-0.0006730	Peri. 140.13100	-0.21560718	-0.96491774
	+/-0.0000007	Node 38.36925	-0.94613112	+0.24438785
e	1.0034531	Incl. 166.03265	-0.24155629	-0.09596005

From 1778 observations 2006 Aug. 29-2011 Jan. 2, mean residual 0″.62.

Comet 171P/Spahr
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 30.14459 TT Sato

q	1.7646250	(2000.0)	P	Q
n	0.14724432	Peri. 347.07793	+0.00511427	-0.93060424
a	3.5517605	Node 101.71959	+0.94750844	-0.11249710
e	0.5031689	Incl. 21.94914	+0.31968984	+0.34831044
P	6.69			

From 295 observations 1998 Nov. 13-2006 Feb. 6, mean residual 0″.64. Non-gravitational parameters A1 = +1.11 +/- 0.07, A2 = -0.7498 +/- 0.0604.

Comet 60P/Tsuchinshan
Epoch 2012 June 02.0 TT = JDT 2456080.5
T 2012 May 13.52602 TT Sato

q	1.6181571	(2000.0)	P	Q
n	0.15015066	Peri. 216.38128	-0.55897260	-0.82679504
a	3.5057792	Node 267.68483	+0.77484998	-0.49381793
e	0.5384315	Incl. 3.61069	+0.29522389	-0.26935814
P	6.56			

From 286 observations 1971 Sept. 19-2006 Apr. 21, mean residual 0″.74. Non-gravitational parameters A1 = -0.00 +/- 0.02, A2 = +0.0003 +/- 0.0001.

Comet C/2010 R1 (LINEAR)
Epoch 2012 May 13.0 TT = JDT 2456060.5
T 2012 May 15.04702 TT Sato
q 5.6688070 (2000.0) P Q
z +0.0004781 Peri. 113.76838 -0.62297089 -0.77450459
+/-0.0005033 Node 343.71837 -0.78050340 +0.62479217
e 0.9972900 Incl. 156.94958 +0.05216998 +0.09888066
From 55 observations 2010 Sept. 4-Oct. 20, mean residual 0″.65.

Comet D/1892 T1 (Barnard)
Epoch 2012 July 12.0 TT = JDT 2456120.5
T 2012 June 25.8657 TT Muraoka
q 1.585354 (2000.0) P Q
n 0.1393322 Peri. 202.3244 +0.7386546 -0.6521745
a 3.684980 Node 201.4057 +0.6672265 +0.7433555
e 0.569780 Incl. 27.8438 +0.0959078 -0.1486301
P 7.07
From 40 observations 1892 Oct. 14-Dec. 8, mean residual 2″.75.
From D. K. Yeomans orbit (1975).

Comet 152P/Helin-Lawrence
Epoch 2012 July 12.0 TT = JDT 2456120.5
T 2012 July 9.21111 TT Sato
q 3.1164534 (2000.0) P Q
n 0.10327182 Peri. 163.80037 -0.24269856 +0.95486322
a 4.4993333 Node 91.91003 -0.90798659 -0.16143126
e 0.3073522 Incl. 9.86724 -0.34155199 -0.24935153
P 9.54
From 236 observations 1993 May 17-2004 Dec. 1, mean residual 0″.86.

Comet 158P/Kowal-LINEAR
Epoch 2012 Sept. 10.0 TT = JDT 2456180.5
T 2012 Sept. 26.89630 TT Sato
q 4.5764212 (2000.0) P Q
n 0.09607600 Peri. 232.78952 +0.97938594 -0.17916643
a 4.7212766 Node 137.30470 +0.19928078 +0.93249635
e 0.0306814 Incl. 7.90738 -0.03302058 +0.31360797
P 10.26
From 302 observations 1979 July 24-2010 July 20, mean residual 0″.76.

Comet 246P/NEAT
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 28.71146 TT Sato
q 2.8797622 (2000.0) P Q
n 0.12191750 Peri. 176.18922 -0.25681352 +0.92800709
a 4.0280237 Node 78.78046 -0.89382636 -0.12184226
e 0.2850682 Incl. 15.97188 -0.36758842 -0.35207570
P 8.08
From 1133 observations 2002 Jan. 6-2011 Jan. 29, mean residual 0″.54.

Comet C/2010 S1 (LINEAR)
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 May 20.31150 TT Sato
q 5.9002036 (2000.0) P Q
z -0.0003151 Peri. 118.61228 +0.53549090 -0.22393792
+/-0.0000081 Node 93.43092 -0.69556613 -0.66380905
e 1.0018591 Incl. 125.33619 +0.47899609 -0.71358906
From 601 observations 2010 Sept. 21-2011 Jan. 27, mean residual 0″.43.

C/2010 U3 (Boattini)
Epoch 2019 Feb. 6.0 TT = JDT 2458520.5
T 2019 Feb. 24.02615 TT Sato
q 8.4101479 (2000.0) P Q
z -0.0004345 Peri. 88.27051 -0.36028226 -0.74237375
+/-0.0020093 Node 43.01610 +0.06565159 -0.62421279
e 1.0036539 Incl. 55.89458 +0.93053026 -0.24339190
From 100 observations 2010 Oct. 31-Dec. 31, mean residual 0″.65.
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Remarks.

Non-gravitational parameters Y1 and Y2 indicate that the Yabushita style non-gravitational effect based on CO sublimation is taken into account (MN 283, 347).

Comet 29P/Schwassmann-Wachmann

Epoch = 2011 July 18.0 TT
T = 2004 July 25.62470 TT
Peri. = 50.04491 e = 0.0445570
Node = 312.60517 2000.0 a = 5.9946889 AU
Incl. = 9.38370 n = 0.06715125
q = 5.7275835 AU P = 14.68 years

m1 = 4.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	11 17.08	-00 57.5	5.728	6.245	-0.14	-0.6	13.8	117.6
Jan. 19	11 15.66	-01 03.1	5.592	6.246	-0.24	+0.1	13.7	128.0
Jan. 29	11 13.30	-01 02.0	5.474	6.247	-0.32	+0.7	13.7	138.6
Feb. 8	11 10.09	-00 54.6	5.379	6.248	-0.39	+1.3	13.6	149.3
Feb. 18	11 06.23	-00 41.6	5.311	6.249	-0.43	+1.8	13.6	160.0
Feb. 28	11 01.95	-00 24.0	5.272	6.249	-0.44	+2.1	13.6	170.0
Mar. 10	10 57.51	-00 03.3	5.264	6.250	-0.43	+2.2	13.6	173.0
Mar. 20	10 53.21	+00 18.8	5.287	6.251	-0.39	+2.2	13.6	164.3
Mar. 30	10 49.31	+00 40.7	5.340	6.252	-0.33	+2.0	13.6	153.9
Apr. 9	10 46.05	+01 00.7	5.420	6.253	-0.24	+1.7	13.6	143.4
Apr. 19	10 43.60	+01 17.4	5.524	6.254	-0.15	+1.2	13.7	133.1
Apr. 29	10 42.08	+01 29.9	5.648	6.254	-0.05	+0.7	13.7	123.0
May 9	10 41.54	+01 37.2	5.788	6.255	+0.05	+0.2	13.8	113.2
May 19	10 42.00	+01 39.1	5.938	6.256	+0.14	-0.4	13.8	103.8
May 29	10 43.41	+01 35.4	6.094	6.256	+0.23	-0.9	13.9	94.5
June 8	10 45.72	+01 26.0	6.252	6.257	+0.31	-1.5	14.0	85.6
June 18	10 48.86	+01 11.1	6.408	6.257	+0.39	-2.0	14.0	76.9
June 28	10 52.74	+00 51.1	6.559	6.258	+0.45	-2.5	14.1	68.5
July 8	10 57.27	+00 26.3	6.701	6.258	+0.51	-2.9	14.1	60.2
July 18	11 02.37	-00 03.0	6.832	6.259	+0.56	-3.3	14.1	52.1
July 28	11 07.93	-00 36.4	6.948	6.259	+0.60	-3.7	14.2	44.1
Aug. 7	11 13.90	-01 13.3	7.049	6.260	+0.63	-4.0	14.2	36.3
Aug. 17	11 20.18	-01 53.5	7.131	6.260	+0.65	-4.3	14.2	28.5
Aug. 27	11 26.71	-02 36.3	7.194	6.260	+0.67	-4.5	14.3	20.9
Sept. 6	11 33.40	-03 21.5	7.236	6.261	+0.68	-4.7	14.3	13.6
Sept.16	11 40.19	-04 08.5	7.257	6.261	+0.68	-4.8	14.3	7.3
Sept.26	11 47.00	-04 56.8	7.256	6.261	+0.68	-4.9	14.3	6.8
Oct. 6	11 53.77	-05 46.0	7.233	6.261	+0.66	-5.0	14.3	12.8
Oct. 16	12 00.40	-06 35.6	7.187	6.261	+0.64	-4.9	14.3	20.3
Oct. 26	12 06.84	-07 25.0	7.121	6.262	+0.61	-4.9	14.2	28.1
Nov. 5	12 12.99	-08 13.7	7.034	6.262	+0.58	-4.7	14.2	36.3
Nov. 15	12 18.76	-09 01.2	6.928	6.262	+0.53	-4.6	14.2	44.6
Nov. 25	12 24.07	-09 46.8	6.805	6.262	+0.47	-4.3	14.1	53.1
Dec. 5	12 28.80	-10 30.1	6.668	6.262	+0.41	-4.0	14.1	61.8
Dec. 15	12 32.86	-11 10.2	6.518	6.262	+0.33	-3.6	14.0	70.7
Dec. 25	12 36.16	-11 46.6	6.361	6.262	+0.24	-3.2	14.0	79.8
Jan. 4	12 38.59	-12 18.5	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 38.41	-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	6.260	-0.33	+0.7	13.7	139.2
Mar. 4	12 32.55	-13 21.8	5.385	6.260	-0.39	+1.3	13.6	149.6
Mar. 14	12 28.60	-13 08.5	5.318	6.260	-0.43	+1.9	13.6	159.7
Mar. 24	12 24.28	-12 49.5	5.280	6.259	-0.44	+2.3	13.6	168.3

Comet C/2005 L3 (McNaught)

Epoch = 2011 July 18.0 TT
T = 2008 Jan. 17.02371 TT
Peri. = 47.20415
Node = 288.80577 2000.0
Incl. = 139.42795
q = 5.5919071 AU
e = 1.0013509

m1 = 2.4 + 5 log(Delta) + 10.0 log(r(t-360))

0h TT 2011/12	R.A.(2000) h m	Decl. °'	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 9	11 52.58	+38 22.6	8.807	9.339	-0.45	+4.9	15.9	120.1
Jan. 19	11 48.06	+39 11.7	8.747	9.390	-0.55	+4.8	15.9	128.4
Jan. 29	11 42.56	+39 59.9	8.709	9.440	-0.64	+4.5	16.0	135.9
Feb. 8	11 36.20	+40 44.8	8.697	9.491	-0.71	+4.0	16.0	141.7
Feb. 18	11 29.14	+41 24.3	8.715	9.542	-0.75	+3.2	16.0	145.1
Feb. 28	11 21.64	+41 56.5	8.763	9.593	-0.77	+2.4	16.0	145.2
Mar. 10	11 13.95	+42 20.0	8.841	9.643	-0.76	+1.4	16.1	142.0
Mar. 20	11 06.37	+42 34.1	8.948	9.694	-0.72	+0.5	16.1	136.4
Mar. 30	10 59.17	+42 38.7	9.082	9.745	-0.66	-0.4	16.2	129.3
Apr. 9	10 52.59	+42 34.2	9.239	9.796	-0.58	-1.2	16.3	121.3
Apr. 19	10 46.81	+42 21.7	9.414	9.847	-0.49	-1.9	16.3	112.8
Apr. 29	10 41.95	+42 02.5	9.603	9.898	-0.39	-2.5	16.4	104.2
May 9	10 38.05	+41 37.7	9.802	9.949	-0.29	-2.9	16.5	95.5
May 19	10 35.14	+41 08.7	10.005	10.000	-0.20	-3.2	16.5	86.8
May 29	10 33.16	+40 36.9	10.207	10.051	-0.11	-3.4	16.6	78.3
June 8	10 32.06	+40 03.2	10.405	10.103	-0.03	-3.4	16.7	70.0
June 18	10 31.75	+39 28.8	10.593	10.154	+0.04	-3.4	16.7	61.9
June 28	10 32.13	+38 54.4	10.769	10.205	+0.10	-3.4	16.8	54.0
July 8	10 33.12	+38 20.6	10.929	10.256	+0.15	-3.2	16.9	46.5
July 18	10 34.61	+37 48.3	11.070	10.307	+0.19	-3.0	16.9	39.6
July 28	10 36.49	+37 17.8	11.190	10.359	+0.22	-2.8	17.0	33.5
Aug. 7	10 38.69	+36 49.8	11.288	10.410	+0.24	-2.5	17.0	28.8
Aug. 17	10 41.09	+36 24.6	11.361	10.461	+0.25	-2.2	17.0	26.1
Aug. 27	10 43.62	+36 02.6	11.410	10.513	+0.26	-1.8	17.1	26.2
Sept. 6	10 46.18	+35 44.4	11.433	10.564	+0.25	-1.4	17.1	29.1
Sept.16	10 48.69	+35 30.2	11.433	10.616	+0.24	-1.0	17.1	34.2
Sept.26	10 51.05	+35 20.5	11.409	10.667	+0.21	-0.5	17.2	40.6
Oct. 6	10 53.18	+35 15.5	11.363	10.719	+0.18	0.0	17.2	47.9
Oct. 16	10 54.98	+35 15.5	11.297	10.770	+0.14	+0.5	17.2	55.9
Oct. 26	10 56.37	+35 20.6	11.216	10.821	+0.09	+1.0	17.2	64.3
Nov. 5	10 57.26	+35 31.1	11.121	10.873	+0.03	+1.6	17.2	73.0
Nov. 15	10 57.55	+35 46.7	11.017	10.924	-0.04	+2.1	17.2	82.0
Nov. 25	10 57.19	+36 07.3	10.910	10.976	-0.11	+2.5	17.2	91.3
Dec. 5	10 56.08	+36 32.3	10.803	11.027	-0.19	+2.9	17.2	100.6
Dec. 15	10 54.19	+37 00.9	10.703	11.079	-0.27	+3.1	17.2	110.0
Dec. 25	10 51.48	+37 32.3	10.614	11.130	-0.35	+3.3	17.2	119.4
Jan. 4	10 47.97	+38 05.0	10.542	11.182	-0.43	+3.3	17.2	128.6
Jan. 14	10 43.70	+38 37.6	10.492	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	17.3	150.0
Feb. 13	10 27.42	+39 59.8	10.507	11.388	-0.60	+1.8	17.3	152.0
Feb. 23	10 21.41	+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	17.4	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	10.942	11.594	-0.47	-0.8	17.5	128.8

Comet C/2009 O4 (Hill)

Epoch = 2011 July 18.0 TT
T = 2010 Jan. 1.42862 TT
Peri. = 223.77683
Node = 172.94498 2000.0
Incl. = 95.82531
q = 2.5648716 AU
e = 1.0013149

m1 = 9.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	11 07.99	-56 26.6	4.473	4.543	-0.82	-0.7	19.2	87.8
Jan. 19	10 59.80	-56 34.1	4.438	4.619	-1.02	+1.3	19.3	94.4
Jan. 29	10 49.64	-56 21.5	4.406	4.694	-1.15	+3.6	19.3	101.0
Feb. 8	10 38.18	-55 45.1	4.382	4.770	-1.19	+6.2	19.4	107.4
Feb. 18	10 26.27	-54 42.7	4.370	4.846	-1.15	+8.8	19.5	113.2
Feb. 28	10 14.80	-53 14.6	4.375	4.922	-1.03	+11.2	19.5	118.2
Mar. 10	10 04.54	-51 22.9	4.400	4.998	-0.85	+13.1	19.6	122.0
Mar. 20	09 56.06	-49 12.3	4.449	5.074	-0.64	+14.4	19.7	124.1
Mar. 30	09 49.62	-46 48.6	4.522	5.150	-0.43	+15.1	19.8	124.2
Apr. 9	09 45.28	-44 18.0	4.620	5.226	-0.23	+15.1	19.9	122.5
Apr. 19	09 42.95	-41 46.7	4.742	5.302	-0.05	+14.7	20.0	119.0
Apr. 29	09 42.41	-39 19.9	4.886	5.378	+0.10	+13.8	20.2	114.2
May 9	09 43.44	-37 01.7	5.050	5.454	+0.24	+12.7	20.3	108.4
May 19	09 45.80	-34 55.0	5.230	5.530	+0.34	+11.4	20.4	102.0
May 29	09 49.24	-33 01.5	5.422	5.605	+0.43	+9.9	20.6	95.2
June 8	09 53.59	-31 22.1	5.621	5.681	+0.50	+8.5	20.7	88.2
June 18	09 58.63	-29 56.9	5.825	5.757	+0.56	+7.1	20.8	81.1
June 28	10 04.23	-28 45.5	6.029	5.832	+0.60	+5.8	21.0	74.1
July 8	10 10.25	-27 47.3	6.229	5.908	+0.63	+4.6	21.1	67.1
July 18	10 16.56	-27 01.5	6.423	5.983	+0.65	+3.5	21.2	60.2
July 28	10 23.06	-26 26.8	6.606	6.058	+0.66	+2.4	21.3	53.6
Aug. 7	10 29.67	-26 02.5	6.776	6.133	+0.66	+1.5	21.4	47.3
Aug. 17	10 36.28	-25 47.5	6.931	6.208	+0.66	+0.7	21.5	41.5
Aug. 27	10 42.84	-25 40.6	7.068	6.283	+0.64	0.0	21.6	36.4
Sept. 6	10 49.25	-25 41.1	7.185	6.358	+0.62	-0.7	21.7	32.5
Sept.16	10 55.44	-25 47.8	7.282	6.432	+0.59	-1.2	21.8	30.1
Sept.26	11 01.35	-25 59.9	7.357	6.506	+0.55	-1.7	21.9	29.9
Oct. 6	11 06.88	-26 16.4	7.410	6.581	+0.51	-2.0	21.9	31.8
Oct. 16	11 11.95	-26 36.5	7.440	6.655	+0.45	-2.3	22.0	35.6
Oct. 26	11 16.50	-26 59.1	7.448	6.729	+0.39	-2.4	22.0	40.9
Nov. 5	11 20.41	-27 23.3	7.436	6.803	+0.32	-2.5	22.1	47.3
Nov. 15	11 23.61	-27 47.9	7.404	6.876	+0.24	-2.4	22.1	54.4
Nov. 25	11 26.01	-28 12.0	7.356	6.950	+0.15	-2.2	22.2	62.1
Dec. 5	11 27.52	-28 34.2	7.293	7.023	+0.05	-1.9	22.2	70.3
Dec. 15	11 28.07	-28 53.2	7.220	7.096	-0.05	-1.4	22.2	78.8
Dec. 25	11 27.61	-29 07.6	7.141	7.169	-0.15	-0.8	22.2	87.7
Jan. 4	11 26.11	-29 15.8	7.060	7.242	-0.25	-0.1	22.2	96.7
Jan. 14	11 23.61	-29 16.5	6.983	7.315	-0.34	+0.8	22.3	105.9
Jan. 24	11 20.16	-29 08.3	6.915	7.387	-0.43	+1.8	22.3	115.2
Feb. 3	11 15.90	-28 50.1	6.860	7.459	-0.49	+2.9	22.3	124.3
Feb. 13	11 11.01	-28 21.2	6.825	7.532	-0.53	+3.9	22.3	132.9
Feb. 23	11 05.72	-27 41.8	6.812	7.604	-0.54	+4.9	22.4	140.7
Mar. 4	11 00.29	-26 52.4	6.827	7.675	-0.53	+5.8	22.4	146.7
Mar. 14	10 55.00	-25 54.5	6.871	7.747	-0.49	+6.5	22.5	149.8
Mar. 24	10 50.07	-24 50.0	6.946	7.819	-0.43	+6.9	22.5	149.2

Comet 118P/Shoemaker-Levy

Epoch = 2011 July 18.0 TT
T = 2010 Jan. 2.41268 TT
Peri. = 302.13876 e = 0.4278184
Node = 151.79759 2000.0 a = 3.4657777 AU
Incl. = 8.50829 n = 0.15275767
q = 1.9830543 AU P = 6.45 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	14 27.83	-08 12.5	3.416	3.233	+0.83	-1.4	19.9	71.0
Jan. 19	14 36.10	-08 27.0	3.315	3.275	+0.68	-0.5	19.9	79.1
Jan. 29	14 42.94	-08 31.5	3.208	3.316	+0.52	+0.6	19.9	87.6
Feb. 8	14 48.15	-08 25.8	3.100	3.357	+0.34	+1.6	19.9	96.5
Feb. 18	14 51.54	-08 09.9	2.993	3.397	+0.14	+2.6	19.9	105.7
Feb. 28	14 52.98	-07 44.2	2.894	3.437	-0.06	+3.5	20.0	115.4
Mar. 10	14 52.38	-07 09.4	2.804	3.477	-0.26	+4.2	20.0	125.6
Mar. 20	14 49.77	-06 27.0	2.731	3.516	-0.44	+4.8	20.0	136.1
Mar. 30	14 45.33	-05 39.2	2.677	3.555	-0.60	+5.0	20.0	146.8
Apr. 9	14 39.38	-04 48.8	2.648	3.593	-0.70	+4.9	20.0	157.4
Apr. 19	14 32.43	-03 59.5	2.647	3.631	-0.74	+4.5	20.1	166.5
Apr. 29	14 25.07	-03 15.0	2.675	3.668	-0.71	+3.7	20.2	169.0
May 9	14 17.92	-02 38.4	2.732	3.705	-0.64	+2.6	20.3	161.9
May 19	14 11.57	-02 12.4	2.817	3.741	-0.51	+1.4	20.4	152.0
May 29	14 06.43	-01 58.0	2.928	3.777	-0.36	+0.3	20.6	141.8
June 8	14 02.80	-01 55.4	3.060	3.812	-0.20	-0.9	20.7	131.7
June 18	14 00.79	-02 04.1	3.210	3.847	-0.04	-1.9	20.9	122.0
June 28	14 00.42	-02 22.7	3.373	3.881	+0.12	-2.7	21.1	112.7
July 8	14 01.60	-02 50.0	3.546	3.915	+0.26	-3.4	21.2	103.8
July 18	14 04.24	-03 24.3	3.724	3.948	+0.39	-4.0	21.4	95.2
July 28	14 08.16	-04 04.2	3.904	3.980	+0.51	-4.4	21.6	86.9
Aug. 7	14 13.25	-04 48.4	4.083	4.012	+0.61	-4.7	21.7	78.8
Aug. 17	14 19.34	-05 35.7	4.258	4.044	+0.70	-4.9	21.8	71.0
Aug. 27	14 26.32	-06 24.9	4.426	4.075	+0.77	-5.0	22.0	63.4
Sept. 6	14 34.07	-07 15.3	4.584	4.105	+0.84	-5.0	22.1	55.9
Sept.16	14 42.46	-08 05.7	4.732	4.135	+0.90	-5.0	22.2	48.5
Sept.26	14 51.42	-08 55.6	4.865	4.164	+0.94	-4.9	22.3	41.2
Oct. 6	15 00.84	-09 44.1	4.984	4.193	+0.98	-4.7	22.4	34.0
Oct. 16	15 10.63	-10 30.6	5.086	4.221	+1.01	-4.4	22.5	26.9
Oct. 26	15 20.72	-11 14.6	5.170	4.249	+1.03	-4.1	22.6	19.9
Nov. 5	15 31.02	-11 55.5	5.235	4.276	+1.04	-3.7	22.7	13.2
Nov. 15	15 41.44	-12 32.8	5.280	4.302	+1.05	-3.3	22.7	7.9
Nov. 25	15 51.90	-13 06.2	5.305	4.328	+1.04	-2.9	22.8	7.8
Dec. 5	16 02.29	-13 35.4	5.308	4.354	+1.02	-2.5	22.8	13.1
Dec. 15	16 12.53	-13 60.0	5.291	4.379	+1.00	-2.0	22.8	19.9
Dec. 25	16 22.51	-14 19.8	5.254	4.403	+0.96	-1.5	22.9	27.3
Jan. 4	16 32.12	-14 34.9	5.197	4.427	+0.91	-1.0	22.9	34.9
Jan. 14	16 41.24	-14 45.1	5.122	4.450	+0.85	-0.5	22.9	42.7
Jan. 24	16 49.75	-14 50.6	5.031	4.473	+0.78	-0.1	22.9	50.7
Feb. 3	16 57.50	-14 51.5	4.924	4.495	+0.69	+0.3	22.9	58.9
Feb. 13	17 04.37	-14 48.1	4.805	4.517	+0.58	+0.7	22.9	67.3
Feb. 23	17 10.22	-14 40.6	4.676	4.538	+0.47	+1.1	22.8	75.9
Mar. 4	17 14.89	-14 29.6	4.541	4.559	+0.34	+1.4	22.8	84.7
Mar. 14	17 18.27	-14 15.5	4.404	4.579	+0.20	+1.7	22.7	93.8
Mar. 24	17 20.23	-13 58.8	4.267	4.598	+0.04	+1.9	22.7	103.2

Comet 203P/Korlevic

Epoch = 2011 July 18.0 TT
T = 2010 Feb. 8.68040 TT
Peri. = 154.64209 e = 0.3158505
Node = 290.54660 2000.0 a = 4.6518090 AU
Incl. = 2.97423 n = 0.09823613
q = 3.1825328 AU P = 10.03 years

m1 = 4.2 + 5 log(Delta) + 20.0 log(r(t-90))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	10 34.76	+06 38.7	2.913	3.628	-0.28	+0.6	17.2	130.3
Jan. 19	10 31.96	+06 45.1	2.832	3.651	-0.44	+1.6	17.2	141.2
Jan. 29	10 27.61	+07 01.3	2.773	3.675	-0.56	+2.4	17.2	152.4
Feb. 8	10 22.05	+07 25.6	2.741	3.699	-0.62	+2.9	17.3	163.9
Feb. 18	10 15.80	+07 55.1	2.738	3.723	-0.63	+3.1	17.3	175.1
Feb. 28	10 09.47	+08 26.5	2.764	3.748	-0.58	+3.0	17.4	172.0
Mar. 10	10 03.65	+08 56.6	2.821	3.772	-0.48	+2.6	17.5	160.7
Mar. 20	09 58.85	+09 22.4	2.905	3.797	-0.34	+2.0	17.6	149.5
Mar. 30	09 55.46	+09 42.0	3.014	3.823	-0.18	+1.2	17.7	138.8
Apr. 9	09 53.67	+09 54.0	3.144	3.848	-0.01	+0.4	17.9	128.5
Apr. 19	09 53.56	+09 57.7	3.291	3.873	+0.15	-0.4	18.0	118.6
Apr. 29	09 55.07	+09 53.2	3.449	3.899	+0.30	-1.3	18.2	109.3
May 9	09 58.09	+09 40.7	3.616	3.925	+0.44	-2.0	18.4	100.4
May 19	10 02.46	+09 20.6	3.787	3.951	+0.55	-2.7	18.5	91.8
May 29	10 07.99	+08 53.5	3.959	3.977	+0.65	-3.4	18.7	83.7
June 8	10 14.53	+08 20.0	4.129	4.003	+0.74	-3.9	18.8	75.8
June 18	10 21.90	+07 40.6	4.295	4.030	+0.81	-4.5	19.0	68.2
June 28	10 29.97	+06 56.0	4.454	4.056	+0.86	-4.9	19.1	60.8
July 8	10 38.62	+06 06.7	4.603	4.083	+0.91	-5.3	19.2	53.6
July 18	10 47.71	+05 13.3	4.742	4.109	+0.95	-5.7	19.3	46.5
July 28	10 57.16	+04 16.4	4.869	4.136	+0.97	-6.0	19.5	39.5
Aug. 7	11 06.89	+03 16.4	4.981	4.162	+0.99	-6.2	19.6	32.6
Aug. 17	11 16.81	+02 14.1	5.078	4.189	+1.00	-6.4	19.7	25.7
Aug. 27	11 26.86	+01 09.8	5.159	4.215	+1.01	-6.6	19.8	18.8
Sept. 6	11 36.97	+00 04.2	5.223	4.242	+1.01	-6.6	19.8	12.0
Sept.16	11 47.09	-01 02.2	5.268	4.268	+1.01	-6.7	19.9	5.3
Sept.26	11 57.15	-02 08.9	5.296	4.295	+0.99	-6.6	20.0	3.2
Oct. 6	12 07.10	-03 15.3	5.304	4.321	+0.98	-6.5	20.0	9.6
Oct. 16	12 16.86	-04 20.8	5.293	4.348	+0.95	-6.4	20.1	16.7
Oct. 26	12 26.38	-05 24.8	5.264	4.374	+0.92	-6.2	20.1	24.0
Nov. 5	12 35.56	-06 26.9	5.216	4.400	+0.88	-5.9	20.2	31.4
Nov. 15	12 44.32	-07 26.3	5.150	4.426	+0.83	-5.6	20.2	39.1
Nov. 25	12 52.58	-08 22.4	5.068	4.453	+0.76	-5.2	20.2	46.9
Dec. 5	13 00.21	-09 14.7	4.971	4.479	+0.69	-4.8	20.2	54.9
Dec. 15	13 07.10	-10 02.5	4.862	4.504	+0.60	-4.3	20.2	63.2
Dec. 25	13 13.12	-10 45.1	4.741	4.530	+0.50	-3.7	20.2	71.7
Jan. 4	13 18.14	-11 21.8	4.613	4.556	+0.39	-3.0	20.2	80.5
Jan. 14	13 22.03	-11 52.1	4.481	4.582	+0.26	-2.3	20.2	89.7
Jan. 24	13 24.66	-12 15.1	4.348	4.607	+0.13	-1.5	20.2	99.1
Feb. 3	13 25.91	-12 30.2	4.219	4.633	-0.02	-0.7	20.2	108.8
Feb. 13	13 25.75	-12 37.1	4.099	4.658	-0.16	+0.2	20.2	118.9
Feb. 23	13 24.16	-12 35.2	3.992	4.683	-0.29	+1.1	20.2	129.4
Mar. 4	13 21.23	-12 24.6	3.904	4.708	-0.41	+1.9	20.2	140.1
Mar. 14	13 17.15	-12 05.9	3.838	4.733	-0.50	+2.6	20.2	151.1
Mar. 24	13 12.18	-11 40.1	3.798	4.757	-0.55	+3.1	20.2	162.1

Comet C/2009 P2 (Boattini)

Epoch = 2011 July 18.0 TT
T = 2010 Feb. 12.47148 TT
Peri. = 76.30166
Node = 60.46971 2000.0
Incl. = 163.45872
q = 6.5460023 AU
e = 1.0009236

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	20 47.55	-03 01.3	7.755	6.910	+0.23	0.0	19.3	28.8
Jan. 19	20 49.84	-03 01.4	7.841	6.931	+0.24	+0.4	19.4	21.0
Jan. 29	20 52.27	-02 57.5	7.899	6.953	+0.24	+0.7	19.4	15.3
Feb. 8	20 54.70	-02 50.1	7.927	6.976	+0.23	+1.0	19.4	14.4
Feb. 18	20 57.01	-02 40.0	7.927	6.999	+0.21	+1.2	19.4	18.9
Feb. 28	20 59.08	-02 27.6	7.898	7.023	+0.17	+1.4	19.4	26.2
Mar. 10	21 00.80	-02 13.8	7.842	7.047	+0.12	+1.5	19.4	34.6
Mar. 20	21 02.05	-01 59.1	7.761	7.072	+0.07	+1.5	19.4	43.5
Mar. 30	21 02.72	-01 44.2	7.659	7.097	0.00	+1.4	19.4	52.6
Apr. 9	21 02.69	-01 30.0	7.538	7.123	-0.08	+1.3	19.4	62.0
Apr. 19	21 01.87	-01 17.2	7.402	7.149	-0.17	+1.1	19.4	71.6
Apr. 29	21 00.17	-01 06.7	7.258	7.176	-0.27	+0.8	19.3	81.3
May 9	20 57.50	-00 59.1	7.109	7.203	-0.37	+0.4	19.3	91.3
May 19	20 53.80	-00 55.5	6.961	7.230	-0.47	-0.1	19.3	101.4
May 29	20 49.06	-00 56.5	6.822	7.258	-0.58	-0.6	19.2	111.7
June 8	20 43.29	-01 02.8	6.695	7.287	-0.67	-1.2	19.2	122.2
June 18	20 36.57	-01 15.0	6.589	7.316	-0.76	-1.8	19.2	132.7
June 28	20 29.01	-01 33.1	6.508	7.345	-0.82	-2.4	19.2	143.0
July 8	20 20.82	-01 57.2	6.457	7.375	-0.86	-3.0	19.2	152.6
July 18	20 12.25	-02 26.8	6.440	7.405	-0.87	-3.4	19.2	160.3
July 28	20 03.56	-03 01.0	6.460	7.436	-0.85	-3.8	19.2	162.9
Aug. 7	19 55.07	-03 38.7	6.515	7.467	-0.80	-4.0	19.2	158.3
Aug. 17	19 47.04	-04 18.7	6.607	7.499	-0.73	-4.1	19.3	149.8
Aug. 27	19 39.72	-04 59.7	6.730	7.531	-0.64	-4.1	19.3	139.8
Sept. 6	19 33.30	-05 40.4	6.883	7.563	-0.54	-3.9	19.4	129.4
Sept.16	19 27.89	-06 19.8	7.059	7.595	-0.43	-3.7	19.4	118.9
Sept.26	19 23.55	-06 56.9	7.252	7.628	-0.33	-3.4	19.5	108.4
Oct. 6	19 20.30	-07 31.2	7.457	7.662	-0.22	-3.1	19.6	98.1
Oct. 16	19 18.09	-08 02.2	7.667	7.696	-0.12	-2.7	19.7	87.9
Oct. 26	19 16.85	-08 29.7	7.877	7.730	-0.04	-2.4	19.7	77.9
Nov. 5	19 16.50	-08 53.4	8.081	7.764	+0.04	-2.0	19.8	68.0
Nov. 15	19 16.92	-09 13.3	8.273	7.799	+0.11	-1.6	19.9	58.3
Nov. 25	19 18.00	-09 29.6	8.449	7.834	+0.16	-1.3	19.9	48.8
Dec. 5	19 19.62	-09 42.2	8.605	7.869	+0.20	-0.9	20.0	39.5
Dec. 15	19 21.66	-09 51.3	8.738	7.905	+0.23	-0.6	20.0	30.4
Dec. 25	19 23.99	-09 57.2	8.845	7.941	+0.25	-0.3	20.1	21.9
Jan. 4	19 26.51	-10 00.1	8.924	7.977	+0.26	0.0	20.1	14.8
Jan. 14	19 29.09	-10 00.2	8.975	8.014	+0.25	+0.2	20.1	11.7
Jan. 24	19 31.61	-09 58.0	8.996	8.051	+0.24	+0.4	20.2	15.4
Feb. 3	19 33.97	-09 53.8	8.988	8.088	+0.21	+0.6	20.2	22.8
Feb. 13	19 36.05	-09 47.9	8.952	8.126	+0.17	+0.7	20.2	31.4
Feb. 23	19 37.75	-09 40.8	8.891	8.164	+0.12	+0.8	20.2	40.4
Mar. 4	19 38.95	-09 33.0	8.807	8.202	+0.06	+0.8	20.2	49.8
Mar. 14	19 39.58	-09 25.0	8.703	8.240	-0.01	+0.8	20.2	59.3
Mar. 24	19 39.53	-09 17.3	8.584	8.279	-0.08	+0.7	20.2	69.0

Comet 81P/Wild

Epoch = 2011 July 18.0 TT
T = 2010 Feb. 22.58254 TT
Peri. = 41.75846 e = 0.5371250
Node = 136.09876 2000.0 a = 3.4523429 AU
Incl. = 3.23728 n = 0.15365022
q = 1.5980033 AU P = 6.41 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	19 27.44	-20 51.8	4.096	3.114	+1.53	+3.1	17.9	2.4
Jan. 19	19 42.73	-20 20.4	4.148	3.168	+1.47	+3.6	18.0	4.5
Jan. 29	19 57.45	-19 44.8	4.182	3.221	+1.41	+3.9	18.1	11.1
Feb. 8	20 11.57	-19 05.8	4.199	3.274	+1.34	+4.1	18.2	17.8
Feb. 18	20 25.00	-18 24.4	4.198	3.325	+1.27	+4.3	18.3	24.7
Feb. 28	20 37.69	-17 41.6	4.179	3.377	+1.19	+4.3	18.4	31.7
Mar. 10	20 49.57	-16 58.2	4.145	3.427	+1.10	+4.3	18.5	38.8
Mar. 20	21 00.58	-16 15.4	4.094	3.477	+1.01	+4.1	18.6	46.0
Mar. 30	21 10.63	-15 34.2	4.029	3.526	+0.90	+3.9	18.6	53.4
Apr. 9	21 19.64	-14 55.7	3.951	3.574	+0.79	+3.5	18.7	61.0
Apr. 19	21 27.51	-14 21.0	3.862	3.622	+0.66	+3.0	18.7	68.8
Apr. 29	21 34.15	-13 51.3	3.764	3.669	+0.53	+2.4	18.7	76.9
May 9	21 39.43	-13 27.7	3.660	3.715	+0.38	+1.6	18.8	85.2
May 19	21 43.22	-13 11.2	3.553	3.760	+0.22	+0.8	18.8	93.9
May 29	21 45.44	-13 02.9	3.447	3.805	+0.05	-0.1	18.8	103.0
June 8	21 45.96	-13 03.4	3.345	3.849	-0.12	-1.0	18.8	112.4
June 18	21 44.74	-13 13.0	3.253	3.892	-0.29	-1.9	18.8	122.3
June 28	21 41.79	-13 31.7	3.174	3.934	-0.46	-2.7	18.8	132.6
July 8	21 37.22	-13 58.7	3.114	3.976	-0.60	-3.3	18.9	143.4
July 18	21 31.26	-14 32.1	3.076	4.017	-0.70	-3.8	18.9	154.4
July 28	21 24.29	-15 09.8	3.065	4.058	-0.75	-3.9	19.0	165.8
Aug. 7	21 16.78	-15 49.0	3.084	4.097	-0.75	-3.8	19.0	177.3
Aug. 17	21 09.30	-16 26.8	3.133	4.136	-0.69	-3.4	19.1	171.2
Aug. 27	21 02.37	-17 00.8	3.211	4.174	-0.59	-2.8	19.2	159.8
Sept. 6	20 56.47	-17 29.2	3.318	4.212	-0.45	-2.2	19.4	148.7
Sept.16	20 51.96	-17 51.0	3.449	4.249	-0.29	-1.5	19.5	137.8
Sept.26	20 49.03	-18 05.7	3.602	4.285	-0.13	-0.8	19.7	127.3
Oct. 6	20 47.76	-18 13.4	3.771	4.320	+0.04	-0.1	19.8	117.2
Oct. 16	20 48.13	-18 14.3	3.952	4.355	+0.19	+0.5	20.0	107.4
Oct. 26	20 50.04	-18 08.8	4.141	4.389	+0.33	+1.1	20.1	97.9
Nov. 5	20 53.34	-17 57.5	4.332	4.423	+0.45	+1.7	20.3	88.7
Nov. 15	20 57.88	-17 40.6	4.523	4.455	+0.56	+2.2	20.4	79.8
Nov. 25	21 03.47	-17 18.7	4.710	4.487	+0.65	+2.7	20.5	71.1
Dec. 5	21 09.95	-16 52.1	4.888	4.519	+0.72	+3.1	20.7	62.5
Dec. 15	21 17.17	-16 21.3	5.055	4.550	+0.78	+3.5	20.8	54.2
Dec. 25	21 24.98	-15 46.6	5.208	4.580	+0.83	+3.8	20.9	46.0
Jan. 4	21 33.24	-15 08.6	5.346	4.609	+0.86	+4.1	21.0	37.9
Jan. 14	21 41.82	-14 27.6	5.465	4.638	+0.88	+4.3	21.1	29.9
Jan. 24	21 50.63	-13 44.2	5.564	4.666	+0.89	+4.5	21.2	22.0
Feb. 3	21 59.55	-12 58.8	5.643	4.694	+0.89	+4.7	21.2	14.1
Feb. 13	22 08.49	-12 12.1	5.700	4.720	+0.89	+4.8	21.3	6.3
Feb. 23	22 17.36	-11 24.5	5.735	4.747	+0.87	+4.8	21.3	1.7
Mar. 4	22 26.09	-10 36.8	5.748	4.772	+0.85	+4.7	21.4	9.3
Mar. 14	22 34.60	-09 49.4	5.739	4.797	+0.82	+4.6	21.4	17.1
Mar. 24	22 42.80	-09 03.1	5.708	4.821	+0.78	+4.5	21.4	24.8

Comet 126P/IRAS

Epoch = 2011 July 18.0 TT
T = 2010 Feb. 22.61929 TT
Peri. = 356.74513 e = 0.6962793
Node = 357.76495 2000.0 a = 5.6443350 AU
Incl. = 45.83040 n = 0.07349959
q = 1.7143014 AU P = 13.41 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	08 17.07	+80 47.1	2.894	3.504	-4.69	-3.4	19.5	121.1
Jan. 19	07 30.14	+80 12.9	2.975	3.572	-3.51	-7.9	19.7	120.2
Jan. 29	06 55.00	+78 54.0	3.073	3.640	-2.07	-10.8	19.9	117.9
Feb. 8	06 34.26	+77 06.1	3.188	3.707	-0.91	-12.3	20.1	114.5
Feb. 18	06 25.15	+75 03.5	3.317	3.773	-0.10	-12.8	20.3	110.2
Feb. 28	06 24.11	+72 55.4	3.459	3.839	+0.43	-12.8	20.5	105.2
Mar. 10	06 28.45	+70 47.2	3.612	3.905	+0.79	-12.5	20.7	99.8
Mar. 20	06 36.36	+68 42.0	3.773	3.970	+1.03	-12.1	20.9	94.1
Mar. 30	06 46.62	+66 41.4	3.940	4.035	+1.18	-11.6	21.1	88.2
Apr. 9	06 58.45	+64 45.7	4.111	4.099	+1.28	-11.0	21.3	82.3
Apr. 19	07 11.30	+62 55.3	4.283	4.162	+1.35	-10.5	21.4	76.4
Apr. 29	07 24.77	+61 09.9	4.453	4.225	+1.38	-10.1	21.6	70.5
May 9	07 38.61	+59 29.3	4.620	4.288	+1.40	-9.6	21.8	64.8
May 19	07 52.60	+57 53.1	4.781	4.350	+1.40	-9.2	22.0	59.2
May 29	08 06.61	+56 21.1	4.934	4.411	+1.39	-8.8	22.1	53.8
June 8	08 20.54	+54 53.2	5.078	4.472	+1.37	-8.4	22.3	48.6
June 18	08 34.28	+53 29.2	5.210	4.533	+1.35	-8.0	22.4	43.9
June 28	08 47.78	+52 09.0	5.330	4.593	+1.32	-7.6	22.6	39.6
July 8	09 01.00	+50 52.9	5.436	4.652	+1.29	-7.2	22.7	36.0
July 18	09 13.89	+49 41.0	5.528	4.711	+1.25	-6.8	22.8	33.3
July 28	09 26.41	+48 33.5	5.603	4.770	+1.21	-6.3	22.9	31.8
Aug. 7	09 38.53	+47 30.7	5.662	4.827	+1.17	-5.7	23.0	31.6
Aug. 17	09 50.21	+46 33.3	5.704	4.885	+1.12	-5.2	.	32.9
Aug. 27	10 01.42	+45 41.4	5.728	4.942	+1.07	-4.5	.	35.6
Sept. 6	10 12.12	+44 55.9	5.735	4.998	+1.01	-3.9	.	39.4
Sept.16	10 22.25	+44 17.4	5.726	5.054	+0.95	-3.1	.	44.2
Sept.26	10 31.75	+43 46.3	5.700	5.109	+0.88	-2.3	.	49.7
Oct. 6	10 40.55	+43 23.6	5.660	5.164	+0.80	-1.4	.	55.8
Oct. 16	10 48.56	+43 09.7	5.606	5.219	+0.71	-0.4	.	62.4
Oct. 26	10 55.69	+43 05.3	5.540	5.273	+0.61	+0.6	.	69.4
Nov. 5	11 01.80	+43 11.0	5.465	5.326	+0.50	+1.6	.	76.8
Nov. 15	11 06.75	+43 26.8	5.385	5.379	+0.37	+2.6	.	84.4
Nov. 25	11 10.40	+43 52.6	5.301	5.432	+0.22	+3.5	.	92.3
Dec. 5	11 12.57	+44 27.9	5.219	5.484	+0.05	+4.3	.	100.5
Dec. 15	11 13.11	+45 11.3	5.142	5.536	-0.12	+4.9	.	108.6
Dec. 25	11 11.88	+46 00.8	5.075	5.587	-0.31	+5.3	.	116.7
Jan. 4	11 08.77	+46 53.4	5.022	5.637	-0.50	+5.2	.	124.5
Jan. 14	11 03.81	+47 45.7	4.987	5.688	-0.67	+4.8	.	131.6
Jan. 24	10 57.10	+48 33.4	4.974	5.737	-0.82	+3.9	.	137.4
Feb. 3	10 48.93	+49 12.4	4.986	5.787	-0.92	+2.7	.	141.2
Feb. 13	10 39.76	+49 39.0	5.024	5.836	-0.96	+1.2	.	142.2
Feb. 23	10 30.15	+49 50.8	5.089	5.884	-0.94	-0.4	.	140.3
Mar. 4	10 20.74	+49 46.6	5.180	5.932	-0.86	-2.0	.	135.9
Mar. 14	10 12.11	+49 26.9	5.295	5.980	-0.74	-3.4	.	129.7
Mar. 24	10 04.70	+48 53.3	5.432	6.027	-0.59	-4.5	.	122.5

Comet 65P/Gunn

Epoch = 2011 July 18.0 TT
T = 2010 Mar. 3.88147 TT
Peri. = 197.23946 e = 0.3207171
Node = 68.21480 2000.0 a = 3.5980785 AU
Incl. = 10.39522 n = 0.14441028
q = 2.4441133 AU P = 6.83 years

m1 = 7.8 + 5 log(Delta) + 11.0 log(r(t+60))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	22 26.30	−18 57.5	3.671	3.039	+1.40	+9.5	16.2	43.8
Jan. 19	22 40.28	−17 22.8	3.791	3.069	+1.40	+9.6	16.3	37.5
Jan. 29	22 54.29	−15 47.1	3.899	3.099	+1.40	+9.6	16.4	31.2
Feb. 8	23 08.27	−14 10.9	3.995	3.130	+1.39	+9.6	16.5	25.1
Feb. 18	23 22.16	−12 34.9	4.077	3.160	+1.38	+9.5	16.6	19.1
Feb. 28	23 35.93	−10 59.8	4.145	3.191	+1.36	+9.4	16.7	13.6
Mar. 10	23 49.53	−09 26.1	4.198	3.222	+1.34	+9.1	16.8	9.1
Mar. 20	00 02.93	−07 54.7	4.236	3.252	+1.32	+8.9	16.8	7.7
Mar. 30	00 16.09	−06 25.9	4.259	3.283	+1.29	+8.5	16.9	10.7
Apr. 9	00 28.98	−05 00.6	4.266	3.314	+1.26	+8.1	16.9	15.8
Apr. 19	00 41.54	−03 39.2	4.257	3.344	+1.22	+7.7	17.0	21.6
Apr. 29	00 53.75	−02 22.3	4.233	3.375	+1.18	+7.2	17.0	27.7
May 9	01 05.55	−01 10.4	4.195	3.405	+1.13	+6.6	17.0	34.0
May 19	01 16.87	−00 04.1	4.142	3.435	+1.08	+6.0	17.0	40.4
May 29	01 27.65	+00 56.2	4.076	3.465	+1.01	+5.4	17.0	47.0
June 8	01 37.79	+01 50.0	3.997	3.495	+0.94	+4.7	17.0	53.8
June 18	01 47.20	+02 36.8	3.908	3.525	+0.86	+3.9	17.0	60.8
June 28	01 55.76	+03 16.3	3.808	3.555	+0.76	+3.2	17.0	68.0
July 8	02 03.34	+03 47.9	3.701	3.584	+0.64	+2.4	17.0	75.5
July 18	02 09.79	+04 11.5	3.588	3.613	+0.52	+1.5	16.9	83.3
July 28	02 14.96	+04 26.7	3.472	3.642	+0.37	+0.7	16.9	91.4
Aug. 7	02 18.67	+04 33.4	3.356	3.670	+0.21	−0.2	16.9	100.0
Aug. 17	02 20.77	+04 31.5	3.244	3.699	+0.04	−1.0	16.8	108.9
Aug. 27	02 21.15	+04 21.4	3.139	3.727	−0.14	−1.8	16.8	118.4
Sept. 6	02 19.73	+04 03.6	3.046	3.755	−0.32	−2.4	16.7	128.3
Sept. 16	02 16.54	+03 39.6	2.969	3.782	−0.48	−2.9	16.7	138.6
Sept. 26	02 11.72	+03 11.0	2.913	3.809	−0.61	−3.1	16.7	149.2
Oct. 6	02 05.60	+02 40.4	2.882	3.836	−0.70	−3.0	16.7	159.8
Oct. 16	01 58.62	+02 10.7	2.880	3.863	−0.73	−2.6	16.7	168.8
Oct. 26	01 51.33	+01 45.0	2.907	3.889	−0.70	−1.9	16.8	169.4
Nov. 5	01 44.34	+01 26.2	2.965	3.915	−0.62	−1.0	16.9	160.6
Nov. 15	01 38.19	+01 16.2	3.052	3.940	−0.49	0.0	16.9	150.0
Nov. 25	01 33.29	+01 16.3	3.165	3.965	−0.34	+1.1	17.1	139.2
Dec. 5	01 29.92	+01 26.8	3.300	3.990	−0.17	+2.0	17.2	128.6
Dec. 15	01 28.20	+01 47.3	3.453	4.015	−0.01	+2.9	17.3	118.4
Dec. 25	01 28.14	+02 16.7	3.618	4.039	+0.15	+3.7	17.4	108.4
Jan. 4	01 29.67	+02 54.1	3.792	4.063	+0.30	+4.4	17.5	98.9
Jan. 14	01 32.65	+03 38.0	3.970	4.086	+0.43	+4.9	17.7	89.7
Jan. 24	01 36.93	+04 27.2	4.148	4.109	+0.54	+5.3	17.8	80.9
Feb. 3	01 42.35	+05 20.6	4.322	4.132	+0.64	+5.6	17.9	72.4
Feb. 13	01 48.76	+06 17.0	4.489	4.154	+0.72	+5.8	18.0	64.1
Feb. 23	01 56.01	+07 15.5	4.647	4.176	+0.80	+6.0	18.1	56.0
Mar. 4	02 03.97	+08 15.1	4.792	4.197	+0.85	+6.0	18.2	48.2
Mar. 14	02 12.51	+09 15.2	4.924	4.218	+0.90	+6.0	18.3	40.6
Mar. 24	02 21.55	+10 14.8	5.039	4.239	+0.94	+5.9	18.3	33.1

Comet 219P/LINEAR

Epoch = 2011 July 18.0 TT
T = 2010 Mar. 5.13808 TT
Peri. = 107.62367 e = 0.3525426
Node = 231.02773 2000.0 a = 3.6503708 AU
Incl. = 11.52901 n = 0.14131836
q = 2.3634596 AU P = 6.97 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	02 44.04	+13 34.7	2.494	3.037	+0.42	-0.1	19.2	114.5
Jan. 19	02 48.27	+13 34.1	2.660	3.071	+0.60	+1.0	19.4	105.3
Jan. 29	02 54.24	+13 43.8	2.833	3.105	+0.75	+1.8	19.6	96.6
Feb. 8	03 01.73	+14 01.6	3.009	3.138	+0.88	+2.4	19.8	88.3
Feb. 18	03 10.51	+14 25.2	3.184	3.172	+0.99	+2.8	20.0	80.4
Feb. 28	03 20.38	+14 52.7	3.357	3.206	+1.08	+3.0	20.2	72.7
Mar. 10	03 31.16	+15 22.4	3.525	3.240	+1.15	+3.0	20.4	65.4
Mar. 20	03 42.71	+15 52.7	3.686	3.274	+1.22	+3.0	20.6	58.3
Mar. 30	03 54.86	+16 22.3	3.838	3.308	+1.27	+2.8	20.7	51.4
Apr. 9	04 07.52	+16 50.0	3.980	3.342	+1.30	+2.5	20.9	44.6
Apr. 19	04 20.57	+17 15.0	4.109	3.375	+1.33	+2.1	21.0	38.0
Apr. 29	04 33.90	+17 36.5	4.226	3.409	+1.35	+1.7	21.1	31.5
May 9	04 47.43	+17 53.9	4.328	3.442	+1.36	+1.3	21.2	25.2
May 19	05 01.07	+18 06.7	4.416	3.475	+1.37	+0.8	21.3	19.0
May 29	05 14.73	+18 14.5	4.488	3.508	+1.36	+0.3	21.4	13.0
June 8	05 28.35	+18 17.2	4.544	3.541	+1.35	-0.3	21.5	7.6
June 18	05 41.84	+18 14.5	4.584	3.573	+1.33	-0.8	21.6	5.2
June 28	05 55.11	+18 06.6	4.607	3.605	+1.30	-1.3	21.7	8.8
July 8	06 08.11	+17 53.5	4.613	3.637	+1.26	-1.8	21.7	14.5
July 18	06 20.73	+17 35.3	4.602	3.669	+1.22	-2.3	21.8	20.7
July 28	06 32.91	+17 12.4	4.575	3.701	+1.16	-2.7	21.8	27.2
Aug. 7	06 44.55	+16 45.0	4.531	3.732	+1.10	-3.1	21.9	33.8
Aug. 17	06 55.56	+16 13.6	4.473	3.762	+1.03	-3.5	21.9	40.6
Aug. 27	07 05.85	+15 38.6	4.399	3.793	+0.94	-3.8	21.9	47.7
Sept. 6	07 15.30	+15 00.7	4.312	3.823	+0.85	-4.0	21.9	54.9
Sept.16	07 23.79	+14 20.6	4.214	3.853	+0.74	-4.2	21.9	62.4
Sept.26	07 31.21	+13 39.0	4.105	3.883	+0.62	-4.2	21.9	70.3
Oct. 6	07 37.40	+12 56.8	3.988	3.912	+0.48	-4.2	21.9	78.4
Oct. 16	07 42.23	+12 15.0	3.867	3.941	+0.33	-4.0	21.9	86.9
Oct. 26	07 45.55	+11 34.6	3.744	3.969	+0.17	-3.8	21.8	95.8
Nov. 5	07 47.23	+10 56.8	3.623	3.997	-0.01	-3.4	21.8	105.1
Nov. 15	07 47.17	+10 22.9	3.508	4.025	-0.18	-2.9	21.8	114.8
Nov. 25	07 45.34	+09 54.0	3.405	4.052	-0.36	-2.3	21.8	125.0
Dec. 5	07 41.77	+09 31.4	3.318	4.079	-0.51	-1.6	21.8	135.4
Dec. 15	07 36.66	+09 15.9	3.252	4.106	-0.63	-0.8	21.8	146.1
Dec. 25	07 30.31	+09 08.0	3.212	4.132	-0.71	0.0	21.8	156.4
Jan. 4	07 23.19	+09 07.7	3.201	4.158	-0.73	+0.7	21.8	164.8
Jan. 14	07 15.85	+09 14.6	3.221	4.183	-0.70	+1.3	21.9	166.5
Jan. 24	07 08.87	+09 27.5	3.271	4.208	-0.61	+1.8	21.9	159.7
Feb. 3	07 02.76	+09 45.1	3.352	4.233	-0.48	+2.1	22.0	149.9
Feb. 13	06 57.95	+10 05.6	3.458	4.257	-0.33	+2.2	22.1	139.4
Feb. 23	06 54.69	+10 27.7	3.588	4.281	-0.16	+2.2	22.2	129.1
Mar. 4	06 53.11	+10 49.8	3.736	4.304	+0.01	+2.1	22.4	119.0
Mar. 14	06 53.20	+11 10.7	3.896	4.327	+0.17	+1.9	22.5	109.3
Mar. 24	06 54.88	+11 29.4	4.066	4.350	+0.31	+1.6	22.6	99.9

Comet 162P/Siding Spring

Epoch = 2011 July 18.0 TT
T = 2010 Mar. 8.46980 TT
Peri. = 356.35531 e = 0.5960530
Node = 31.23338 2000.0 a = 3.0541635 AU
Incl. = 27.81838 n = 0.18465694
q = 1.2337202 AU P = 5.34 years

H = 13.8 , G = 0.15

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 9	12 35.46	+26 01.0	2.617	3.078	-0.07	+5.9	19.3	108.8
Jan. 19	12 34.75	+26 59.5	2.551	3.136	-0.34	+6.7	19.2	118.0
Jan. 29	12 31.34	+28 06.9	2.498	3.192	-0.61	+7.0	19.1	127.2
Feb. 8	12 25.20	+29 17.3	2.463	3.248	-0.86	+6.6	19.0	136.2
Feb. 18	12 16.62	+30 23.2	2.450	3.302	-1.05	+5.4	19.0	144.1
Feb. 28	12 06.14	+31 16.8	2.462	3.355	-1.15	+3.5	19.0	149.7
Mar. 10	11 54.60	+31 51.5	2.503	3.407	-1.16	+1.1	19.0	151.3
Mar. 20	11 42.98	+32 02.9	2.572	3.458	-1.07	-1.2	19.1	148.3
Mar. 30	11 32.26	+31 50.6	2.668	3.508	-0.91	-3.4	19.3	141.9
Apr. 9	11 23.16	+31 16.5	2.789	3.557	-0.70	-5.2	19.5	133.9
Apr. 19	11 16.17	+30 24.3	2.931	3.605	-0.47	-6.6	19.7	125.2
Apr. 29	11 11.43	+29 18.6	3.090	3.652	-0.25	-7.5	19.9	116.5
May 9	11 08.90	+28 03.1	3.262	3.698	-0.05	-8.2	20.0	107.8
May 19	11 08.41	+26 41.2	3.443	3.743	+0.13	-8.6	20.2	99.3
May 29	11 09.70	+25 15.3	3.628	3.786	+0.28	-8.8	20.3	91.1
June 8	11 12.52	+23 47.1	3.815	3.829	+0.41	-8.9	20.5	83.2
June 18	11 16.63	+22 17.8	3.999	3.871	+0.52	-9.0	20.6	75.5
June 28	11 21.80	+20 48.3	4.179	3.912	+0.60	-8.9	20.7	67.9
July 8	11 27.85	+19 19.2	4.351	3.952	+0.68	-8.8	20.7	60.6
July 18	11 34.60	+17 50.8	4.513	3.991	+0.73	-8.7	20.8	53.4
July 28	11 41.93	+16 23.5	4.663	4.029	+0.78	-8.6	20.8	46.3
Aug. 7	11 49.70	+14 57.6	4.799	4.066	+0.81	-8.4	20.9	39.4
Aug. 17	11 57.83	+13 33.5	4.919	4.102	+0.84	-8.2	20.9	32.6
Aug. 27	12 06.21	+12 11.3	5.023	4.137	+0.86	-8.0	20.9	25.9
Sept. 6	12 14.77	+10 51.5	5.107	4.172	+0.87	-7.7	20.8	19.6
Sept.16	12 23.43	+09 34.2	5.173	4.205	+0.87	-7.4	20.8	14.2
Sept.26	12 32.13	+08 19.9	5.218	4.238	+0.87	-7.1	20.8	11.0
Oct. 6	12 40.79	+07 08.9	5.242	4.269	+0.85	-6.7	20.8	12.0
Oct. 16	12 49.33	+06 01.7	5.246	4.300	+0.84	-6.3	20.9	16.7
Oct. 26	12 57.68	+04 58.7	5.228	4.330	+0.81	-5.8	21.0	23.0
Nov. 5	13 05.76	+04 00.3	5.189	4.359	+0.77	-5.3	21.1	30.1
Nov. 15	13 13.47	+03 07.0	5.130	4.388	+0.72	-4.8	21.1	37.5
Nov. 25	13 20.71	+02 19.3	5.053	4.415	+0.66	-4.2	21.2	45.3
Dec. 5	13 27.35	+01 37.7	4.958	4.441	+0.59	-3.5	21.2	53.4
Dec. 15	13 33.28	+01 02.8	4.848	4.467	+0.51	-2.8	21.2	61.8
Dec. 25	13 38.36	+00 34.9	4.725	4.492	+0.41	-2.0	21.2	70.4
Jan. 4	13 42.43	+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 45.78	+00 11.7	4.050	4.604	-0.29	+1.8	20.8	118.5
Feb. 23	13 42.86	+00 29.5	3.935	4.624	-0.44	+2.3	20.7	129.2
Mar. 4	13 38.43	+00 52.9	3.840	4.643	-0.58	+2.7	20.6	140.0
Mar. 14	13 32.67	+01 20.0	3.767	4.662	-0.68	+2.9	20.5	151.0
Mar. 24	13 25.83	+01 48.6	3.723	4.679	-0.75	+2.7	20.4	161.5

Comet P/2010 U1 (Boattini)

Epoch = 2011 July 18.0 TT
T = 2010 Mar. 28.29507 TT
Peri. = 89.10197 e = 0.2590046
Node = 281.30967 2000.0 a = 6.6182188 AU
Incl. = 8.25417 n = 0.05788851
q = 4.9040697 AU P = 17.03 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 9	01 33.10	+17 59.9	4.769	5.031	+0.36	0.0	19.7	99.9
Jan. 19	01 36.74	+18 00.2	4.933	5.040	+0.47	+0.7	19.8	90.6
Jan. 29	01 41.48	+18 07.6	5.098	5.049	+0.57	+1.4	19.9	81.6
Feb. 8	01 47.20	+18 21.4	5.260	5.058	+0.66	+1.9	20.0	72.9
Feb. 18	01 53.79	+18 40.9	5.416	5.068	+0.73	+2.4	20.0	64.4
Feb. 28	02 01.13	+19 05.1	5.562	5.077	+0.80	+2.8	20.1	56.2
Mar. 10	02 09.11	+19 33.1	5.696	5.087	+0.85	+3.1	20.2	48.1
Mar. 20	02 17.63	+20 04.2	5.816	5.098	+0.90	+3.3	20.2	40.3
Mar. 30	02 26.58	+20 37.4	5.920	5.108	+0.93	+3.5	20.3	32.7
Apr. 9	02 35.90	+21 12.0	6.007	5.119	+0.96	+3.5	20.3	25.2
Apr. 19	02 45.48	+21 47.3	6.076	5.130	+0.98	+3.5	20.4	18.0
Apr. 29	02 55.26	+22 22.7	6.125	5.141	+0.99	+3.5	20.4	11.1
May 9	03 05.15	+22 57.7	6.156	5.153	+0.99	+3.4	20.4	5.9
May 19	03 15.07	+23 31.8	6.166	5.164	+0.99	+3.3	20.4	7.2
May 29	03 24.95	+24 04.6	6.157	5.176	+0.98	+3.1	20.5	13.2
June 8	03 34.71	+24 35.7	6.129	5.188	+0.95	+2.9	20.5	20.1
June 18	03 44.25	+25 05.0	6.083	5.200	+0.93	+2.7	20.5	27.3
June 28	03 53.51	+25 32.2	6.018	5.213	+0.89	+2.5	20.5	34.5
July 8	04 02.37	+25 57.2	5.937	5.226	+0.84	+2.3	20.4	41.9
July 18	04 10.73	+26 20.0	5.841	5.239	+0.78	+2.0	20.4	49.5
July 28	04 18.49	+26 40.4	5.732	5.252	+0.70	+1.8	20.4	57.2
Aug. 7	04 25.52	+26 58.6	5.610	5.265	+0.62	+1.6	20.4	65.1
Aug. 17	04 31.71	+27 14.6	5.480	5.278	+0.52	+1.4	20.3	73.3
Aug. 27	04 36.92	+27 28.2	5.343	5.292	+0.41	+1.1	20.3	81.7
Sept. 6	04 41.03	+27 39.6	5.202	5.306	+0.29	+0.9	20.3	90.4
Sept.16	04 43.91	+27 48.6	5.062	5.320	+0.16	+0.6	20.2	99.4
Sept.26	04 45.48	+27 55.0	4.926	5.334	+0.02	+0.4	20.2	108.8
Oct. 6	04 45.66	+27 58.6	4.798	5.348	-0.12	0.0	20.1	118.5
Oct. 16	04 44.44	+27 58.9	4.684	5.363	-0.25	-0.3	20.1	128.6
Oct. 26	04 41.90	+27 55.6	4.587	5.377	-0.37	-0.7	20.1	139.0
Nov. 5	04 38.17	+27 48.2	4.513	5.392	-0.46	-1.2	20.0	149.7
Nov. 15	04 33.53	+27 36.6	4.465	5.407	-0.52	-1.6	20.0	160.5
Nov. 25	04 28.31	+27 21.0	4.445	5.422	-0.54	-1.9	20.1	170.7
Dec. 5	04 22.91	+27 01.9	4.457	5.437	-0.52	-2.1	20.1	173.3
Dec. 15	04 17.75	+26 40.4	4.500	5.453	-0.45	-2.2	20.1	163.9
Dec. 25	04 13.21	+26 18.0	4.573	5.468	-0.36	-2.2	20.2	153.1
Jan. 4	04 09.62	+25 56.0	4.674	5.484	-0.24	-2.0	20.2	142.2
Jan. 14	04 07.21	+25 35.8	4.798	5.499	-0.11	-1.7	20.3	131.5
Jan. 24	04 06.09	+25 18.5	4.943	5.515	+0.02	-1.4	20.4	121.1
Feb. 3	04 06.32	+25 04.7	5.102	5.531	+0.15	-1.0	20.5	111.0
Feb. 13	04 07.87	+24 54.8	5.271	5.547	+0.28	-0.6	20.6	101.2
Feb. 23	04 10.66	+24 48.6	5.445	5.564	+0.39	-0.3	20.7	91.7
Mar. 4	04 14.60	+24 45.8	5.621	5.580	+0.50	0.0	20.7	82.6
Mar. 14	04 19.57	+24 46.0	5.794	5.596	+0.59	+0.2	20.8	73.7
Mar. 24	04 25.45	+24 48.5	5.960	5.613	+0.67	+0.4	20.9	65.1

Comet C/2010 G3 (WISE)

Epoch = 2011 July 18.0 TT
T = 2010 Apr. 11.18497 TT
Peri. = 75.21286
Node = 313.73371 2000.0
Incl. = 108.26197
q = 4.9077604 AU
e = 0.9987682

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	15 33.01	+50 47.8	5.277	5.339	-0.07	+10.5	18.5	88.3
Jan. 19	15 32.33	+52 32.8	5.220	5.369	-0.28	+11.7	18.5	93.4
Jan. 29	15 29.57	+54 29.8	5.170	5.400	-0.54	+12.5	18.5	98.3
Feb. 8	15 24.19	+56 35.1	5.129	5.432	-0.86	+12.8	18.5	102.7
Feb. 18	15 15.57	+58 43.5	5.103	5.465	-1.24	+12.5	18.5	106.4
Feb. 28	15 03.12	+60 48.1	5.095	5.499	-1.67	+11.3	18.5	109.1
Mar. 10	14 46.40	+62 40.8	5.106	5.533	-2.10	+9.2	18.6	110.5
Mar. 20	14 25.41	+64 12.8	5.138	5.568	-2.45	+6.3	18.6	110.7
Mar. 30	14 00.87	+65 16.1	5.193	5.604	-2.65	+2.9	18.7	109.4
Apr. 9	13 34.32	+65 45.0	5.269	5.640	-2.64	-0.7	18.7	106.8
Apr. 19	13 07.94	+65 38.0	5.365	5.678	-2.42	-4.0	18.8	103.1
Apr. 29	12 43.77	+64 58.2	5.478	5.716	-2.06	-6.6	18.9	98.6
May 9	12 23.21	+63 51.8	5.605	5.754	-1.64	-8.6	18.9	93.4
May 19	12 06.82	+62 26.1	5.744	5.793	-1.24	-9.8	19.0	87.8
May 29	11 54.46	+60 48.3	5.889	5.833	-0.88	-10.4	19.1	81.9
June 8	11 45.68	+59 03.9	6.037	5.873	-0.58	-10.6	19.2	75.9
June 18	11 39.92	+57 17.6	6.185	5.914	-0.33	-10.5	19.3	70.0
June 28	11 36.59	+55 32.4	6.329	5.956	-0.14	-10.2	19.4	64.1
July 8	11 35.20	+53 50.7	6.465	5.998	+0.01	-9.7	19.4	58.6
July 18	11 35.35	+52 13.9	6.591	6.041	+0.13	-9.1	19.5	53.4
July 28	11 36.68	+50 43.1	6.705	6.084	+0.22	-8.4	19.6	48.8
Aug. 7	11 38.92	+49 19.2	6.803	6.127	+0.29	-7.6	19.6	45.0
Aug. 17	11 41.83	+48 02.8	6.884	6.171	+0.34	-6.8	19.7	42.2
Aug. 27	11 45.21	+46 54.3	6.946	6.216	+0.37	-6.0	19.7	40.7
Sept. 6	11 48.89	+45 54.2	6.990	6.261	+0.38	-5.1	19.8	40.8
Sept.16	11 52.71	+45 03.0	7.013	6.306	+0.38	-4.2	19.8	42.3
Sept.26	11 56.53	+44 20.9	7.016	6.352	+0.37	-3.2	19.9	45.4
Oct. 6	12 00.20	+43 48.6	7.000	6.398	+0.34	-2.2	19.9	49.7
Oct. 16	12 03.58	+43 26.2	6.965	6.445	+0.30	-1.2	19.9	55.0
Oct. 26	12 06.54	+43 14.3	6.913	6.492	+0.24	-0.1	19.9	61.1
Nov. 5	12 08.90	+43 13.1	6.847	6.539	+0.16	+0.9	19.9	67.9
Nov. 15	12 10.49	+43 22.6	6.769	6.587	+0.07	+2.0	19.9	75.2
Nov. 25	12 11.16	+43 42.6	6.683	6.635	-0.05	+3.0	19.9	83.0
Dec. 5	12 10.69	+44 12.8	6.593	6.683	-0.18	+3.9	19.9	91.0
Dec. 15	12 08.90	+44 51.8	6.503	6.732	-0.33	+4.6	19.9	99.2
Dec. 25	12 05.63	+45 38.2	6.419	6.780	-0.49	+5.1	20.0	107.5
Jan. 4	12 00.71	+46 29.4	6.347	6.830	-0.67	+5.3	20.0	115.6
Jan. 14	11 54.06	+47 22.3	6.290	6.879	-0.84	+5.1	20.0	123.3
Jan. 24	11 45.69	+48 13.2	6.254	6.929	-0.99	+4.5	20.0	130.1
Feb. 3	11 35.74	+48 58.1	6.242	6.979	-1.12	+3.5	20.0	135.5
Feb. 13	11 24.52	+49 33.0	6.258	7.029	-1.20	+2.2	20.1	138.6
Feb. 23	11 12.49	+49 54.7	6.304	7.080	-1.23	+0.6	20.1	138.9
Mar. 4	11 00.20	+50 01.2	6.379	7.130	-1.19	-0.9	20.2	136.4
Mar. 14	10 48.27	+49 51.8	6.483	7.181	-1.10	-2.4	20.2	131.6
Mar. 24	10 37.22	+49 27.6	6.613	7.232	-0.97	-3.7	20.3	125.1

Comet P/2010 H5 (Scotti)

Epoch = 2011 July 18.0 TT
T = 2010 Apr. 14.10428 TT
Peri. = 174.87398 e = 0.1556544
Node = 24.90100 2000.0 a = 7.1353638 AU
Incl. = 14.08808 n = 0.05171064
q = 6.0247130 AU P = 19.06 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	14 53.47	-19 54.5	6.478	6.070	+0.49	-3.6	20.8	61.5
Jan. 19	14 58.42	-20 30.0	6.334	6.074	+0.41	-3.3	20.8	70.3
Jan. 29	15 02.55	-21 02.7	6.181	6.077	+0.32	-2.9	20.7	79.4
Feb. 8	15 05.75	-21 32.1	6.023	6.081	+0.22	-2.6	20.7	88.7
Feb. 18	15 07.92	-21 58.1	5.865	6.085	+0.11	-2.2	20.6	98.2
Feb. 28	15 08.98	-22 20.4	5.711	6.089	-0.01	-1.8	20.6	107.9
Mar. 10	15 08.89	-22 38.7	5.566	6.093	-0.12	-1.4	20.5	117.8
Mar. 20	15 07.65	-22 52.7	5.434	6.097	-0.23	-0.9	20.5	127.9
Mar. 30	15 05.32	-23 02.1	5.320	6.101	-0.33	-0.5	20.4	138.2
Apr. 9	15 02.02	-23 06.9	5.228	6.105	-0.41	0.0	20.4	148.6
Apr. 19	14 57.95	-23 07.0	5.162	6.110	-0.46	+0.4	20.4	158.9
Apr. 29	14 53.37	-23 02.9	5.124	6.114	-0.48	+0.8	20.3	168.7
May 9	14 48.57	-22 55.4	5.115	6.119	-0.47	+1.0	20.3	173.5
May 19	14 43.88	-22 45.4	5.136	6.124	-0.43	+1.1	20.4	166.3
May 29	14 39.58	-22 34.2	5.186	6.128	-0.36	+1.1	20.4	156.4
June 8	14 35.93	-22 23.3	5.263	6.133	-0.28	+0.9	20.4	146.3
June 18	14 33.14	-22 13.8	5.364	6.138	-0.18	+0.7	20.5	136.2
June 28	14 31.33	-22 07.1	5.486	6.144	-0.07	+0.3	20.5	126.4
July 8	14 30.59	-22 03.8	5.624	6.149	+0.04	-0.1	20.6	116.8
July 18	14 30.94	-22 04.6	5.774	6.154	+0.14	-0.5	20.6	107.4
July 28	14 32.36	-22 09.7	5.931	6.160	+0.24	-1.0	20.7	98.3
Aug. 7	14 34.80	-22 19.2	6.093	6.165	+0.34	-1.4	20.8	89.3
Aug. 17	14 38.20	-22 33.0	6.254	6.171	+0.43	-1.8	20.8	80.6
Aug. 27	14 42.47	-22 50.7	6.412	6.177	+0.51	-2.1	20.9	72.1
Sept. 6	14 47.55	-23 12.0	6.563	6.183	+0.58	-2.4	21.0	63.7
Sept.16	14 53.34	-23 36.3	6.703	6.189	+0.64	-2.7	21.0	55.5
Sept.26	14 59.75	-24 03.3	6.830	6.195	+0.70	-2.9	21.1	47.4
Oct. 6	15 06.71	-24 32.4	6.942	6.201	+0.74	-3.1	21.1	39.3
Oct. 16	15 14.13	-25 03.0	7.037	6.207	+0.78	-3.2	21.1	31.4
Oct. 26	15 21.93	-25 34.9	7.112	6.214	+0.81	-3.3	21.2	23.6
Nov. 5	15 30.02	-26 07.5	7.167	6.220	+0.83	-3.3	21.2	16.1
Nov. 15	15 38.31	-26 40.5	7.200	6.227	+0.84	-3.3	21.2	9.5
Nov. 25	15 46.71	-27 13.5	7.211	6.233	+0.84	-3.3	21.2	7.3
Dec. 5	15 55.15	-27 46.3	7.200	6.240	+0.84	-3.2	21.2	12.2
Dec. 15	16 03.50	-28 18.6	7.166	6.247	+0.82	-3.2	21.2	19.5
Dec. 25	16 11.68	-28 50.3	7.111	6.254	+0.79	-3.1	21.2	27.4
Jan. 4	16 19.58	-29 21.4	7.035	6.261	+0.75	-3.0	21.2	35.5
Jan. 14	16 27.07	-29 51.7	6.940	6.268	+0.70	-3.0	21.2	43.8
Jan. 24	16 34.06	-30 21.3	6.828	6.275	+0.63	-2.9	21.1	52.3
Feb. 3	16 40.41	-30 50.2	6.702	6.282	+0.56	-2.8	21.1	60.9
Feb. 13	16 46.00	-31 18.5	6.564	6.290	+0.47	-2.8	21.1	69.7
Feb. 23	16 50.71	-31 46.2	6.417	6.297	+0.37	-2.7	21.0	78.6
Mar. 4	16 54.42	-32 13.3	6.266	6.305	+0.26	-2.6	21.0	87.7
Mar. 14	16 57.04	-32 39.6	6.115	6.312	+0.14	-2.5	20.9	96.9
Mar. 24	16 58.47	-33 04.8	5.966	6.320	+0.02	-2.4	20.9	106.4

Comet C/2007 V053 (Spacewatch)

Epoch = 2011 July 18.0 TT
T = 2010 Apr. 26.71706 TT
Peri. = 75.05447
Node = 59.72113 2000.0
Incl. = 86.99400
q = 4.8430061 AU
e = 1.0003485

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	17 20.23	+43 09.4	5.479	5.239	+0.62	-0.6	17.7	70.8
Jan. 19	17 26.48	+43 02.9	5.473	5.268	+0.52	+0.7	17.7	72.9
Jan. 29	17 31.73	+43 09.7	5.459	5.299	+0.41	+1.9	17.7	75.5
Feb. 8	17 35.81	+43 28.5	5.438	5.330	+0.27	+2.9	17.7	78.5
Feb. 18	17 38.54	+43 57.5	5.411	5.363	+0.12	+3.7	17.8	82.0
Feb. 28	17 39.74	+44 34.8	5.379	5.396	-0.05	+4.3	17.8	85.7
Mar. 10	17 39.24	+45 17.9	5.345	5.430	-0.24	+4.6	17.8	89.6
Mar. 20	17 36.88	+46 03.6	5.311	5.465	-0.43	+4.5	17.8	93.6
Mar. 30	17 32.56	+46 48.5	5.279	5.500	-0.63	+4.0	17.8	97.6
Apr. 9	17 26.24	+47 28.6	5.252	5.536	-0.82	+3.1	17.8	101.3
Apr. 19	17 18.00	+47 59.4	5.233	5.573	-0.99	+1.8	17.9	104.7
Apr. 29	17 08.09	+48 17.0	5.224	5.611	-1.12	0.0	17.9	107.6
May 9	16 56.88	+48 17.4	5.229	5.649	-1.19	-1.9	17.9	109.7
May 19	16 44.94	+47 57.9	5.248	5.688	-1.21	-4.1	17.9	110.9
May 29	16 32.86	+47 17.2	5.283	5.728	-1.16	-6.2	18.0	111.2
June 8	16 21.28	+46 15.5	5.336	5.768	-1.06	-8.1	18.0	110.3
June 18	16 10.72	+44 54.4	5.406	5.809	-0.92	-9.7	18.1	108.5
June 28	16 01.57	+43 17.0	5.494	5.850	-0.75	-11.0	18.2	105.7
July 8	15 54.06	+41 26.7	5.597	5.892	-0.58	-11.9	18.2	102.0
July 18	15 48.26	+39 27.3	5.713	5.935	-0.41	-12.5	18.3	97.7
July 28	15 44.16	+37 22.6	5.842	5.978	-0.25	-12.7	18.4	92.8
Aug. 7	15 41.64	+35 15.6	5.980	6.022	-0.11	-12.6	18.5	87.5
Aug. 17	15 40.57	+33 09.3	6.124	6.066	+0.02	-12.3	18.6	81.9
Aug. 27	15 40.79	+31 05.9	6.272	6.110	+0.13	-11.9	18.6	76.2
Sept. 6	15 42.13	+29 07.1	6.420	6.155	+0.23	-11.3	18.7	70.4
Sept.16	15 44.42	+27 14.3	6.565	6.201	+0.31	-10.6	18.8	64.6
Sept.26	15 47.53	+25 28.5	6.704	6.247	+0.38	-9.8	18.9	59.0
Oct. 6	15 51.31	+23 50.5	6.834	6.293	+0.43	-9.0	19.0	53.7
Oct. 16	15 55.62	+22 20.8	6.953	6.340	+0.47	-8.1	19.0	48.8
Oct. 26	16 00.35	+20 59.6	7.058	6.387	+0.50	-7.2	19.1	44.5
Nov. 5	16 05.36	+19 47.3	7.147	6.435	+0.52	-6.3	19.2	41.2
Nov. 15	16 10.55	+18 44.0	7.220	6.483	+0.53	-5.4	19.2	39.2
Nov. 25	16 15.80	+17 49.7	7.273	6.531	+0.52	-4.5	19.3	38.6
Dec. 5	16 21.01	+17 04.4	7.307	6.579	+0.50	-3.7	19.3	39.7
Dec. 15	16 26.05	+16 27.8	7.322	6.628	+0.48	-2.8	19.3	42.4
Dec. 25	16 30.82	+15 59.9	7.317	6.677	+0.44	-2.0	19.4	46.5
Jan. 4	16 35.20	+15 40.2	7.293	6.727	+0.39	-1.2	19.4	51.6
Jan. 14	16 39.08	+15 28.4	7.252	6.777	+0.33	-0.5	19.4	57.6
Jan. 24	16 42.34	+15 23.9	7.196	6.827	+0.25	+0.2	19.4	64.3
Feb. 3	16 44.88	+15 25.9	7.127	6.877	+0.17	+0.8	19.4	71.4
Feb. 13	16 46.58	+15 33.7	7.049	6.928	+0.08	+1.2	19.4	79.0
Feb. 23	16 47.37	+15 46.1	6.964	6.979	-0.02	+1.6	19.5	86.8
Mar. 4	16 47.15	+16 01.7	6.877	7.030	-0.13	+1.7	19.5	94.8
Mar. 14	16 45.89	+16 19.2	6.793	7.081	-0.23	+1.8	19.5	102.9
Mar. 24	16 43.56	+16 36.7	6.715	7.132	-0.34	+1.6	19.5	111.0

Comet C/2009 K5 (McNaught)

Epoch = 2011 July 18.0 TT
T = 2010 Apr. 29.95800 TT
Peri. = 66.16983
Node = 257.85782 2000.0
Incl. = 103.87955
q = 1.4225970 AU
e = 1.0005514

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	04 26.66	+37 51.5	2.725	3.535	-1.04	-16.3	16.1	140.0
Jan. 19	04 16.30	+35 08.0	2.938	3.635	-0.64	-14.3	16.3	128.7
Jan. 29	04 09.94	+32 45.4	3.176	3.734	-0.31	-12.1	16.6	117.5
Feb. 8	04 06.82	+30 44.8	3.432	3.833	-0.06	-10.0	16.9	106.6
Feb. 18	04 06.25	+29 04.9	3.699	3.931	+0.14	-8.2	17.2	96.3
Feb. 28	04 07.66	+27 43.0	3.969	4.029	+0.30	-6.7	17.4	86.3
Mar. 10	04 10.63	+26 36.1	4.239	4.126	+0.42	-5.5	17.7	76.8
Mar. 20	04 14.78	+25 41.3	4.501	4.223	+0.51	-4.5	17.9	67.6
Mar. 30	04 19.85	+24 56.0	4.753	4.319	+0.58	-3.8	18.1	58.7
Apr. 9	04 25.60	+24 18.0	4.992	4.415	+0.62	-3.3	18.3	50.0
Apr. 19	04 31.84	+23 45.3	5.213	4.510	+0.66	-2.9	18.5	41.5
Apr. 29	04 38.42	+23 16.5	5.414	4.604	+0.68	-2.6	18.7	33.1
May 9	04 45.20	+22 50.3	5.595	4.699	+0.69	-2.5	18.9	24.9
May 19	04 52.06	+22 25.6	5.752	4.792	+0.68	-2.4	19.0	16.8
May 29	04 58.89	+22 01.6	5.884	4.885	+0.67	-2.4	19.1	8.7
June 8	05 05.58	+21 37.6	5.992	4.977	+0.65	-2.5	19.3	1.4
June 18	05 12.05	+21 13.1	6.074	5.069	+0.61	-2.5	19.4	7.7
June 28	05 18.18	+20 47.6	6.132	5.161	+0.57	-2.7	19.5	15.8
July 8	05 23.90	+20 20.9	6.164	5.252	+0.52	-2.8	19.6	24.0
July 18	05 29.09	+19 52.5	6.173	5.342	+0.46	-3.0	19.6	32.3
July 28	05 33.66	+19 22.5	6.160	5.432	+0.39	-3.2	19.7	40.8
Aug. 7	05 37.51	+18 50.5	6.126	5.522	+0.30	-3.4	19.8	49.5
Aug. 17	05 40.53	+18 16.5	6.075	5.611	+0.21	-3.6	19.8	58.4
Aug. 27	05 42.62	+17 40.5	6.009	5.699	+0.11	-3.8	19.9	67.5
Sept. 6	05 43.67	+17 02.4	5.932	5.787	-0.01	-4.0	19.9	76.9
Sept.16	05 43.60	+16 22.4	5.848	5.875	-0.13	-4.2	19.9	86.6
Sept.26	05 42.33	+15 40.6	5.763	5.962	-0.25	-4.3	20.0	96.6
Oct. 6	05 39.81	+14 57.3	5.681	6.049	-0.37	-4.5	20.0	107.0
Oct. 16	05 36.07	+14 12.7	5.609	6.135	-0.49	-4.5	20.0	117.6
Oct. 26	05 31.15	+13 27.5	5.554	6.221	-0.60	-4.5	20.1	128.5
Nov. 5	05 25.19	+12 42.4	5.520	6.307	-0.68	-4.4	20.1	139.5
Nov. 15	05 18.41	+11 58.3	5.513	6.392	-0.73	-4.2	20.2	150.5
Nov. 25	05 11.09	+11 16.2	5.537	6.477	-0.75	-3.9	20.2	160.6
Dec. 5	05 03.55	+10 37.2	5.596	6.561	-0.74	-3.5	20.3	167.4
Dec. 15	04 56.15	+10 02.3	5.690	6.645	-0.69	-3.0	20.4	164.9
Dec. 25	04 49.20	+09 32.3	5.818	6.728	-0.62	-2.5	20.5	155.9
Jan. 4	04 42.99	+09 07.6	5.980	6.812	-0.53	-1.9	20.6	145.4
Jan. 14	04 37.72	+08 48.5	6.169	6.894	-0.42	-1.4	20.7	134.5
Jan. 24	04 33.52	+08 34.6	6.382	6.977	-0.31	-0.9	20.9	123.8
Feb. 3	04 30.46	+08 25.5	6.613	7.059	-0.19	-0.5	21.0	113.2
Feb. 13	04 28.51	+08 20.6	6.856	7.141	-0.09	-0.2	21.1	102.9
Feb. 23	04 27.64	+08 19.0	7.105	7.222	+0.01	+0.1	21.2	92.8
Mar. 4	04 27.76	+08 19.9	7.356	7.303	+0.10	+0.3	21.4	83.1
Mar. 14	04 28.77	+08 22.5	7.602	7.384	+0.18	+0.4	21.5	73.6
Mar. 24	04 30.56	+08 26.0	7.840	7.464	+0.25	+0.4	21.6	64.4

Comet C/2009 W2 (Boattini)

Epoch = 2011 July 18.0 TT
T = 2010 May 1.72644 TT
Peri. = 121.33327
Node = 199.58397 2000.0
Incl. = 164.49000
q = 6.9071369 AU
e = 0.9990360

m1 = 9.6 + 5 log(Delta) + 7.5 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	03 03.47	+28 26.0	6.522	7.101	-0.57	-4.9	20.1	122.6
Jan. 19	02 57.78	+27 36.9	6.700	7.116	-0.43	-4.4	20.1	111.2
Jan. 29	02 53.50	+26 52.9	6.892	7.132	-0.30	-3.8	20.2	100.1
Feb. 8	02 50.55	+26 14.7	7.092	7.148	-0.18	-3.2	20.3	89.3
Feb. 18	02 48.79	+25 42.8	7.291	7.165	-0.07	-2.6	20.3	78.8
Feb. 28	02 48.08	+25 16.9	7.485	7.183	+0.02	-2.0	20.4	68.6
Mar. 10	02 48.27	+24 56.8	7.668	7.201	+0.09	-1.5	20.5	58.6
Mar. 20	02 49.22	+24 41.9	7.835	7.219	+0.15	-1.0	20.5	48.9
Mar. 30	02 50.76	+24 31.4	7.982	7.238	+0.20	-0.7	20.6	39.4
Apr. 9	02 52.77	+24 24.8	8.106	7.258	+0.23	-0.3	20.6	30.2
Apr. 19	02 55.12	+24 21.4	8.205	7.278	+0.26	-0.1	20.6	21.3
Apr. 29	02 57.67	+24 20.5	8.276	7.299	+0.26	+0.1	20.7	12.9
May 9	03 00.32	+24 21.5	8.320	7.320	+0.26	+0.2	20.7	7.2
May 19	03 02.94	+24 23.9	8.335	7.341	+0.25	+0.3	20.7	10.0
May 29	03 05.43	+24 26.9	8.322	7.363	+0.22	+0.3	20.7	17.7
June 8	03 07.68	+24 30.3	8.282	7.386	+0.19	+0.3	20.7	26.3
June 18	03 09.56	+24 33.3	8.217	7.409	+0.14	+0.2	20.7	35.1
June 28	03 10.98	+24 35.6	8.127	7.432	+0.08	+0.1	20.7	44.2
July 8	03 11.82	+24 36.6	8.017	7.456	+0.01	-0.1	20.7	53.4
July 18	03 11.96	+24 35.8	7.890	7.481	-0.07	-0.3	20.6	62.9
July 28	03 11.30	+24 32.6	7.748	7.506	-0.16	-0.6	20.6	72.5
Aug. 7	03 09.74	+24 26.3	7.598	7.531	-0.25	-1.0	20.6	82.4
Aug. 17	03 07.19	+24 16.3	7.444	7.557	-0.36	-1.4	20.5	92.5
Aug. 27	03 03.60	+24 01.9	7.293	7.583	-0.47	-2.0	20.5	102.9
Sept. 6	02 58.94	+23 42.4	7.149	7.609	-0.57	-2.5	20.5	113.6
Sept.16	02 53.23	+23 17.1	7.020	7.636	-0.67	-3.1	20.5	124.7
Sept.26	02 46.57	+22 45.6	6.911	7.664	-0.75	-3.8	20.4	135.9
Oct. 6	02 39.10	+22 07.9	6.830	7.692	-0.80	-4.4	20.4	147.4
Oct. 16	02 31.05	+21 24.4	6.781	7.720	-0.84	-4.9	20.4	159.0
Oct. 26	02 22.70	+20 35.9	6.767	7.748	-0.84	-5.2	20.4	169.9
Nov. 5	02 14.35	+19 43.7	6.792	7.777	-0.80	-5.4	20.4	172.8
Nov. 15	02 06.31	+18 49.8	6.856	7.807	-0.75	-5.4	20.5	162.8
Nov. 25	01 58.84	+17 56.0	6.957	7.836	-0.67	-5.2	20.5	151.2
Dec. 5	01 52.18	+17 04.4	7.091	7.867	-0.57	-4.8	20.6	139.5
Dec. 15	01 46.48	+16 16.5	7.254	7.897	-0.47	-4.3	20.6	127.9
Dec. 25	01 41.82	+15 33.6	7.440	7.928	-0.36	-3.7	20.7	116.5
Jan. 4	01 38.23	+14 56.6	7.643	7.959	-0.26	-3.1	20.8	105.3
Jan. 14	01 35.68	+14 25.8	7.855	7.990	-0.16	-2.5	20.8	94.4
Jan. 24	01 34.10	+14 01.2	8.070	8.022	-0.07	-1.9	20.9	83.7
Feb. 3	01 33.40	+13 42.6	8.282	8.054	+0.01	-1.3	21.0	73.3
Feb. 13	01 33.49	+13 29.3	8.485	8.087	+0.08	-0.8	21.1	63.1
Feb. 23	01 34.25	+13 20.9	8.674	8.120	+0.13	-0.4	21.1	53.2
Mar. 4	01 35.56	+13 16.6	8.845	8.153	+0.18	-0.1	21.2	43.4
Mar. 14	01 37.31	+13 15.7	8.993	8.186	+0.21	+0.2	21.2	33.8
Mar. 24	01 39.40	+13 17.5	9.118	8.220	+0.23	+0.4	21.3	24.4

Comet C/2010 J2 (McNaught)

Epoch = 2011 July 18.0 TT
T = 2010 June 3.97138 TT
Peri. = 4.64440
Node = 311.80270 2000.0
Incl. = 125.85488
q = 3.3874536 AU
e = 0.9995883

m1 = 9.2 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	18 36.43	+07 16.5	4.751	3.943	+0.39	+7.9	18.5	31.3
Jan. 19	18 40.30	+08 35.1	4.752	3.990	+0.34	+8.9	18.6	35.3
Jan. 29	18 43.73	+10 04.3	4.730	4.038	+0.28	+10.0	18.6	40.9
Feb. 8	18 46.54	+11 44.6	4.688	4.087	+0.20	+11.1	18.7	47.5
Feb. 18	18 48.50	+13 36.1	4.629	4.137	+0.09	+12.3	18.7	54.7
Feb. 28	18 49.41	+15 38.6	4.556	4.189	-0.04	+13.3	18.7	62.3
Mar. 10	18 49.03	+17 51.8	4.474	4.241	-0.19	+14.3	18.7	70.2
Mar. 20	18 47.10	+20 14.4	4.387	4.295	-0.37	+15.0	18.7	78.2
Mar. 30	18 43.39	+22 44.6	4.301	4.349	-0.58	+15.5	18.8	86.1
Apr. 9	18 37.62	+25 19.2	4.222	4.404	-0.80	+15.5	18.8	93.9
Apr. 19	18 29.61	+27 53.8	4.155	4.460	-1.04	+14.9	18.8	101.2
Apr. 29	18 19.24	+30 22.9	4.106	4.517	-1.27	+13.7	18.8	107.8
May 9	18 06.54	+32 39.5	4.079	4.575	-1.47	+11.7	18.9	113.4
May 19	17 51.80	+34 36.8	4.078	4.633	-1.63	+9.2	18.9	117.5
May 29	17 35.52	+36 08.6	4.106	4.692	-1.71	+6.2	19.0	119.7
June 8	17 18.46	+37 10.8	4.163	4.752	-1.69	+3.1	19.1	119.9
June 18	17 01.51	+37 42.0	4.249	4.812	-1.60	+0.2	19.2	118.1
June 28	16 45.52	+37 44.1	4.361	4.872	-1.43	-2.3	19.3	114.6
July 8	16 31.19	+37 21.1	4.495	4.933	-1.22	-4.2	19.4	109.8
July 18	16 18.95	+36 38.6	4.648	4.995	-1.00	-5.6	19.5	104.1
July 28	16 08.99	+35 42.5	4.815	5.057	-0.77	-6.5	19.7	98.0
Aug. 7	16 01.30	+34 38.0	4.991	5.119	-0.56	-6.8	19.8	91.5
Aug. 17	15 55.73	+33 29.7	5.172	5.182	-0.37	-6.8	19.9	85.0
Aug. 27	15 52.08	+32 21.3	5.352	5.245	-0.20	-6.6	20.0	78.5
Sept. 6	15 50.11	+31 15.5	5.528	5.308	-0.05	-6.1	20.2	72.2
Sept.16	15 49.58	+30 14.5	5.696	5.372	+0.07	-5.5	20.3	66.3
Sept.26	15 50.25	+29 19.8	5.853	5.436	+0.17	-4.7	20.4	60.8
Oct. 6	15 51.93	+28 32.7	5.997	5.500	+0.25	-3.8	20.5	56.0
Oct. 16	15 54.41	+27 54.2	6.124	5.564	+0.31	-2.9	20.6	51.9
Oct. 26	15 57.52	+27 25.0	6.233	5.629	+0.36	-1.9	20.7	48.9
Nov. 5	16 01.09	+27 05.8	6.323	5.694	+0.39	-0.9	20.8	47.0
Nov. 15	16 04.96	+26 57.2	6.393	5.758	+0.40	+0.2	20.8	46.6
Nov. 25	16 08.99	+26 59.4	6.443	5.824	+0.40	+1.4	20.9	47.6
Dec. 5	16 13.02	+27 13.1	6.473	5.889	+0.39	+2.5	21.0	50.0
Dec. 15	16 16.90	+27 38.4	6.485	5.954	+0.36	+3.7	21.0	53.6
Dec. 25	16 20.47	+28 15.4	6.480	6.020	+0.31	+4.9	21.1	58.2
Jan. 4	16 23.58	+29 04.2	6.460	6.085	+0.25	+6.0	21.1	63.5
Jan. 14	16 26.05	+30 04.3	6.428	6.151	+0.17	+7.1	21.1	69.4
Jan. 24	16 27.73	+31 15.3	6.387	6.217	+0.07	+8.1	21.2	75.7
Feb. 3	16 28.43	+32 36.1	6.341	6.283	-0.05	+8.9	21.2	82.1
Feb. 13	16 27.97	+34 05.1	6.294	6.348	-0.18	+9.5	21.2	88.7
Feb. 23	16 26.19	+35 40.5	6.251	6.414	-0.33	+9.9	21.3	95.1
Mar. 4	16 22.94	+37 19.4	6.214	6.480	-0.48	+9.9	21.3	101.2
Mar. 14	16 18.12	+38 58.5	6.190	6.546	-0.64	+9.6	21.3	106.8
Mar. 24	16 11.67	+40 34.4	6.180	6.612	-0.80	+8.8	21.4	111.6

Comet 215P/NEAT

Epoch = 2011 July 18.0 TT
T = 2010 June 10.61711 TT
Peri. = 223.00350 e = 0.2030677
Node = 75.33719 2000.0 a = 4.0344653 AU
Incl. = 12.79064 n = 0.12162563
q = 3.2151957 AU P = 8.10 years

m1 = 2.6 + 5 log(Delta) + 25.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	22 09.12	-22 33.1	4.043	3.340	+1.35	+8.4	18.7	39.2
Jan. 19	22 22.64	-21 09.4	4.135	3.351	+1.36	+8.5	18.8	32.8
Jan. 29	22 36.29	-19 44.0	4.214	3.363	+1.37	+8.7	18.9	26.6
Feb. 8	22 50.00	-18 17.3	4.280	3.375	+1.37	+8.7	19.0	20.7
Feb. 18	23 03.69	-16 50.1	4.330	3.387	+1.36	+8.7	19.0	15.3
Feb. 28	23 17.31	-15 23.1	4.366	3.400	+1.35	+8.6	19.1	11.2
Mar. 10	23 30.82	-13 56.9	4.387	3.413	+1.33	+8.5	19.1	10.0
Mar. 20	23 44.16	-12 32.4	4.393	3.427	+1.31	+8.2	19.2	12.4
Mar. 30	23 57.28	-11 10.0	4.383	3.441	+1.29	+7.9	19.2	17.0
Apr. 9	00 10.15	-09 50.6	4.359	3.455	+1.26	+7.6	19.3	22.5
Apr. 19	00 22.72	-08 34.9	4.320	3.470	+1.22	+7.1	19.3	28.4
Apr. 29	00 34.94	-07 23.5	4.267	3.484	+1.18	+6.6	19.3	34.5
May 9	00 46.75	-06 17.1	4.201	3.500	+1.13	+6.1	19.3	40.8
May 19	00 58.08	-05 16.4	4.123	3.515	+1.08	+5.4	19.3	47.2
May 29	01 08.86	-04 22.0	4.034	3.530	+1.01	+4.7	19.3	53.7
June 8	01 19.00	-03 34.6	3.934	3.546	+0.94	+4.0	19.3	60.5
June 18	01 28.38	-02 54.8	3.826	3.562	+0.85	+3.2	19.3	67.4
June 28	01 36.90	-02 23.0	3.711	3.578	+0.75	+2.3	19.3	74.6
July 8	01 44.41	-01 59.9	3.591	3.595	+0.63	+1.4	19.3	82.1
July 18	01 50.76	-01 45.8	3.468	3.611	+0.50	+0.5	19.2	89.8
July 28	01 55.79	-01 40.9	3.345	3.628	+0.35	-0.4	19.2	98.0
Aug. 7	01 59.34	-01 45.3	3.225	3.645	+0.19	-1.3	19.2	106.4
Aug. 17	02 01.25	-01 58.7	3.112	3.662	+0.02	-2.1	19.2	115.3
Aug. 27	02 01.42	-02 20.1	3.009	3.679	-0.16	-2.8	19.1	124.6
Sept. 6	01 59.80	-02 48.1	2.921	3.696	-0.33	-3.2	19.1	134.3
Sept.16	01 56.46	-03 20.4	2.851	3.714	-0.48	-3.4	19.1	144.2
Sept.26	01 51.61	-03 54.2	2.804	3.731	-0.60	-3.2	19.1	153.9
Oct. 6	01 45.60	-04 26.0	2.784	3.749	-0.67	-2.6	19.2	162.3
Oct. 16	01 38.94	-04 51.9	2.791	3.766	-0.67	-1.7	19.2	165.9
Oct. 26	01 32.20	-05 09.0	2.828	3.784	-0.62	-0.6	19.3	161.4
Nov. 5	01 25.97	-05 14.9	2.893	3.801	-0.52	+0.6	19.4	152.6
Nov. 15	01 20.74	-05 08.4	2.985	3.819	-0.38	+1.9	19.5	142.7
Nov. 25	01 16.90	-04 49.6	3.100	3.837	-0.22	+3.0	19.7	132.5
Dec. 5	01 14.65	-04 19.2	3.234	3.855	-0.06	+4.1	19.8	122.5
Dec. 15	01 14.08	-03 38.5	3.383	3.872	+0.11	+4.9	19.9	112.8
Dec. 25	01 15.14	-02 49.2	3.543	3.890	+0.26	+5.6	20.1	103.4
Jan. 4	01 17.76	-01 52.8	3.709	3.908	+0.40	+6.2	20.2	94.3
Jan. 14	01 21.77	-00 50.8	3.877	3.926	+0.53	+6.6	20.4	85.6
Jan. 24	01 27.02	+00 15.3	4.044	3.943	+0.63	+6.9	20.5	77.1
Feb. 3	01 33.37	+01 24.5	4.207	3.961	+0.73	+7.1	20.7	69.0
Feb. 13	01 40.65	+02 35.5	4.362	3.979	+0.81	+7.2	20.8	61.0
Feb. 23	01 48.72	+03 47.6	4.508	3.996	+0.88	+7.2	20.9	53.3
Mar. 4	01 57.48	+04 59.8	4.641	4.014	+0.93	+7.2	21.0	45.8
Mar. 14	02 06.78	+06 11.3	4.762	4.031	+0.98	+7.0	21.1	38.5
Mar. 24	02 16.55	+07 21.6	4.867	4.048	+1.01	+6.8	21.2	31.3

Comet C/2009 U5 (Grauer)

Epoch = 2011 July 18.0 TT
T = 2010 June 22.23070 TT
Peri. = 23.80306
Node = 121.15286 2000.0
Incl. = 25.46142
q = 6.0939286 AU
e = 1.0007012

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	11 48.26	+21 18.5	5.729	6.252	+0.09	+4.3	18.8	118.0
Jan. 19	11 49.19	+22 01.5	5.622	6.268	-0.01	+4.7	18.7	127.4
Jan. 29	11 49.10	+22 48.5	5.533	6.284	-0.11	+4.9	18.7	136.5
Feb. 8	11 48.05	+23 37.5	5.466	6.301	-0.19	+4.8	18.7	145.2
Feb. 18	11 46.17	+24 26.0	5.425	6.319	-0.25	+4.5	18.7	152.7
Feb. 28	11 43.65	+25 11.4	5.411	6.338	-0.29	+4.0	18.7	157.6
Mar. 10	11 40.73	+25 51.4	5.426	6.357	-0.30	+3.3	18.7	157.9
Mar. 20	11 37.69	+26 23.9	5.470	6.377	-0.29	+2.4	18.7	153.7
Mar. 30	11 34.79	+26 47.6	5.540	6.398	-0.25	+1.4	18.8	146.7
Apr. 9	11 32.29	+27 01.5	5.635	6.419	-0.19	+0.4	18.8	138.5
Apr. 19	11 30.42	+27 05.5	5.752	6.441	-0.11	-0.5	18.9	129.8
Apr. 29	11 29.31	+27 00.2	5.887	6.464	-0.02	-1.4	18.9	121.0
May 9	11 29.09	+26 46.1	6.037	6.487	+0.07	-2.2	19.0	112.2
May 19	11 29.79	+26 24.5	6.197	6.511	+0.16	-2.8	19.1	103.7
May 29	11 31.41	+25 56.2	6.364	6.535	+0.25	-3.4	19.1	95.3
June 8	11 33.93	+25 22.5	6.534	6.560	+0.33	-3.8	19.2	87.0
June 18	11 37.27	+24 44.4	6.703	6.586	+0.41	-4.2	19.3	79.0
June 28	11 41.38	+24 02.7	6.868	6.612	+0.48	-4.4	19.3	71.3
July 8	11 46.16	+23 18.5	7.027	6.639	+0.54	-4.6	19.4	63.7
July 18	11 51.54	+22 32.5	7.177	6.666	+0.59	-4.7	19.5	56.3
July 28	11 57.43	+21 45.5	7.315	6.694	+0.63	-4.7	19.5	49.1
Aug. 7	12 03.76	+20 58.0	7.440	6.723	+0.67	-4.7	19.6	42.2
Aug. 17	12 10.45	+20 10.9	7.549	6.752	+0.70	-4.6	19.6	35.6
Aug. 27	12 17.43	+19 24.6	7.641	6.781	+0.72	-4.5	19.7	29.6
Sept. 6	12 24.63	+18 39.7	7.716	6.811	+0.73	-4.3	19.7	24.4
Sept.16	12 31.98	+17 57.0	7.772	6.842	+0.74	-4.0	19.7	20.9
Sept.26	12 39.41	+17 16.9	7.808	6.873	+0.75	-3.7	19.7	19.7
Oct. 6	12 46.86	+16 40.1	7.825	6.904	+0.74	-3.3	19.8	21.5
Oct. 16	12 54.26	+16 07.0	7.821	6.936	+0.73	-2.9	19.8	25.7
Oct. 26	13 01.54	+15 38.4	7.799	6.968	+0.71	-2.4	19.8	31.3
Nov. 5	13 08.62	+15 14.7	7.758	7.001	+0.68	-1.8	19.8	37.9
Nov. 15	13 15.43	+14 56.4	7.699	7.035	+0.65	-1.2	19.8	45.0
Nov. 25	13 21.89	+14 44.0	7.625	7.068	+0.60	-0.6	19.8	52.6
Dec. 5	13 27.91	+14 38.0	7.537	7.103	+0.55	+0.1	19.8	60.4
Dec. 15	13 33.41	+14 38.6	7.438	7.137	+0.49	+0.7	19.8	68.6
Dec. 25	13 38.29	+14 45.9	7.331	7.172	+0.42	+1.4	19.7	76.9
Jan. 4	13 42.48	+14 59.9	7.219	7.208	+0.34	+2.0	19.7	85.4
Jan. 14	13 45.90	+15 20.3	7.106	7.244	+0.26	+2.6	19.7	94.1
Jan. 24	13 48.47	+15 46.6	6.997	7.280	+0.17	+3.1	19.7	102.9
Feb. 3	13 50.15	+16 17.9	6.894	7.316	+0.08	+3.5	19.7	111.7
Feb. 13	13 50.92	+16 53.0	6.804	7.353	-0.01	+3.7	19.7	120.4
Feb. 23	13 50.79	+17 30.5	6.729	7.391	-0.10	+3.8	19.7	129.0
Mar. 4	13 49.81	+18 08.5	6.673	7.428	-0.17	+3.7	19.7	137.0
Mar. 14	13 48.07	+18 45.0	6.639	7.466	-0.23	+3.3	19.7	144.0
Mar. 24	13 45.73	+19 18.2	6.631	7.505	-0.28	+2.8	19.7	149.2

Comet P/2010 R2 (La Sagra)

Epoch = 2011 July 18.0 TT
T = 2010 June 24.45572 TT
Peri. = 59.28544 e = 0.1537154
Node = 270.65763 2000.0 a = 3.0971191 AU
Incl. = 21.40703 n = 0.18082864
q = 2.6210442 AU P = 5.45 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	23 21.56	+16 51.6	2.898	2.742	+1.47	+3.0	19.5	71.1
Jan. 19	23 36.24	+17 21.3	3.026	2.754	+1.53	+3.9	19.6	64.7
Jan. 29	23 51.52	+18 00.4	3.148	2.765	+1.58	+4.7	19.7	58.6
Feb. 8	00 07.29	+18 47.4	3.265	2.778	+1.62	+5.3	19.8	52.5
Feb. 18	00 23.48	+19 40.7	3.374	2.790	+1.65	+5.8	19.9	46.7
Feb. 28	00 39.99	+20 38.5	3.475	2.803	+1.68	+6.1	20.0	40.9
Mar. 10	00 56.80	+21 39.6	3.567	2.816	+1.70	+6.3	20.1	35.3
Mar. 20	01 13.84	+22 42.5	3.649	2.830	+1.72	+6.3	20.2	29.9
Mar. 30	01 31.07	+23 45.8	3.719	2.844	+1.74	+6.3	20.3	24.8
Apr. 9	01 48.47	+24 48.4	3.779	2.858	+1.75	+6.1	20.3	19.9
Apr. 19	02 05.98	+25 49.3	3.826	2.872	+1.76	+5.8	20.4	15.7
Apr. 29	02 23.58	+26 47.5	3.861	2.886	+1.76	+5.5	20.4	12.6
May 9	02 41.21	+27 42.0	3.882	2.901	+1.76	+5.0	20.5	11.6
May 19	02 58.82	+28 32.2	3.891	2.915	+1.75	+4.5	20.5	13.1
May 29	03 16.36	+29 17.5	3.887	2.930	+1.74	+4.0	20.6	16.6
June 8	03 33.75	+29 57.4	3.869	2.945	+1.72	+3.4	20.6	21.1
June 18	03 50.92	+30 31.6	3.839	2.960	+1.69	+2.8	20.6	26.1
June 28	04 07.77	+30 59.7	3.795	2.975	+1.64	+2.2	20.6	31.4
July 8	04 24.21	+31 21.8	3.738	2.990	+1.59	+1.6	20.6	37.0
July 18	04 40.10	+31 37.8	3.669	3.005	+1.52	+1.0	20.6	42.9
July 28	04 55.34	+31 48.0	3.589	3.021	+1.44	+0.5	20.6	49.0
Aug. 7	05 09.76	+31 52.6	3.497	3.036	+1.34	0.0	20.6	55.3
Aug. 17	05 23.20	+31 52.2	3.395	3.051	+1.23	-0.5	20.5	61.9
Aug. 27	05 35.50	+31 47.0	3.284	3.066	+1.09	-0.9	20.5	68.7
Sept. 6	05 46.44	+31 37.8	3.166	3.081	+0.94	-1.3	20.4	76.0
Sept. 16	05 55.80	+31 25.1	3.043	3.096	+0.75	-1.6	20.4	83.6
Sept. 26	06 03.34	+31 09.4	2.916	3.111	+0.55	-1.8	20.3	91.7
Oct. 6	06 08.79	+30 51.0	2.790	3.126	+0.31	-2.1	20.3	100.2
Oct. 16	06 11.92	+30 29.9	2.666	3.141	+0.06	-2.4	20.2	109.4
Oct. 26	06 12.50	+30 05.9	2.550	3.156	-0.21	-2.8	20.1	119.1
Nov. 5	06 10.39	+29 38.1	2.446	3.170	-0.47	-3.3	20.1	129.5
Nov. 15	06 05.66	+29 05.2	2.359	3.185	-0.71	-3.9	20.0	140.5
Nov. 25	05 58.57	+28 26.1	2.293	3.199	-0.89	-4.6	20.0	152.1
Dec. 5	05 49.69	+27 39.9	2.254	3.213	-0.98	-5.3	20.0	164.0
Dec. 15	05 39.87	+26 46.9	2.245	3.227	-0.98	-5.8	20.0	175.4
Dec. 25	05 30.08	+25 48.8	2.267	3.241	-0.88	-6.0	20.0	170.3
Jan. 4	05 21.31	+24 49.0	2.320	3.255	-0.70	-5.8	20.1	158.3
Jan. 14	05 14.31	+23 50.9	2.402	3.268	-0.48	-5.3	20.2	146.5
Jan. 24	05 09.54	+22 57.6	2.509	3.281	-0.23	-4.7	20.3	135.2
Feb. 3	05 07.21	+22 11.0	2.635	3.294	+0.01	-3.9	20.5	124.4
Feb. 13	05 07.27	+21 31.9	2.777	3.307	+0.23	-3.2	20.6	114.2
Feb. 23	05 09.57	+20 59.9	2.929	3.319	+0.43	-2.6	20.7	104.6
Mar. 4	05 13.87	+20 33.8	3.086	3.332	+0.60	-2.2	20.9	95.5
Mar. 14	05 19.91	+20 12.3	3.246	3.344	+0.75	-1.9	21.0	87.0
Mar. 24	05 27.43	+19 53.8	3.404	3.355	+0.88	-1.7	21.1	78.8

Comet 43P/Wolf-Harrington

Epoch = 2011 July 18.0 TT
T = 2010 July 1.80807 TT
Peri. = 191.49506 e = 0.5946656
Node = 249.88216 2000.0 a = 3.3491767 AU
Incl. = 15.96842 n = 0.16080405
q = 1.3575366 AU P = 6.13 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	13 09.95	-24 20.8	2.274	2.364	+0.68	-8.2	15.6	82.9
Jan. 19	13 16.74	-25 42.7	2.211	2.433	+0.42	-6.8	15.7	90.8
Jan. 29	13 20.97	-26 50.7	2.146	2.501	+0.14	-5.2	15.8	99.2
Feb. 8	13 22.37	-27 42.3	2.083	2.568	-0.15	-3.2	15.9	108.2
Feb. 18	13 20.82	-28 14.6	2.026	2.635	-0.44	-1.0	16.0	117.7
Feb. 28	13 16.40	-28 24.3	1.978	2.701	-0.70	+1.6	16.2	127.7
Mar. 10	13 09.43	-28 08.4	1.947	2.766	-0.88	+4.3	16.3	138.0
Mar. 20	13 00.61	-27 25.8	1.936	2.830	-0.97	+6.7	16.4	148.1
Mar. 30	12 50.92	-26 18.5	1.949	2.894	-0.95	+8.7	16.6	156.7
Apr. 9	12 41.39	-24 51.7	1.990	2.956	-0.84	+9.8	16.8	161.3
Apr. 19	12 33.01	-23 13.5	2.060	3.018	-0.66	+10.1	17.0	158.7
Apr. 29	12 26.45	-21 32.9	2.157	3.078	-0.44	+9.5	17.2	151.3
May 9	12 22.07	-19 57.8	2.279	3.138	-0.21	+8.4	17.4	142.1
May 19	12 19.97	-18 34.1	2.424	3.197	0.00	+6.9	17.7	132.7
May 29	12 20.01	-17 25.0	2.586	3.255	+0.20	+5.3	18.0	123.3
June 8	12 22.01	-16 31.6	2.763	3.312	+0.37	+3.8	18.2	114.3
June 18	12 25.70	-15 53.9	2.949	3.368	+0.51	+2.3	18.5	105.6
June 28	12 30.81	-15 30.5	3.142	3.423	+0.63	+1.0	18.7	97.3
July 8	12 37.15	-15 20.1	3.339	3.477	+0.73	-0.1	18.9	89.2
July 18	12 44.49	-15 21.1	3.535	3.531	+0.82	-1.0	19.2	81.5
July 28	12 52.66	-15 31.5	3.729	3.583	+0.89	-1.9	19.4	73.9
Aug. 7	13 01.54	-15 50.1	3.917	3.634	+0.94	-2.5	19.6	66.5
Aug. 17	13 10.98	-16 15.3	4.098	3.685	+0.99	-3.0	19.8	59.3
Aug. 27	13 20.89	-16 45.8	4.269	3.734	+1.03	-3.5	19.9	52.1
Sept. 6	13 31.19	-17 20.4	4.428	3.783	+1.06	-3.8	20.1	45.0
Sept.16	13 41.80	-17 58.1	4.573	3.831	+1.08	-4.0	20.3	38.0
Sept.26	13 52.64	-18 37.9	4.703	3.878	+1.10	-4.1	20.4	31.0
Oct. 6	14 03.66	-19 18.9	4.816	3.924	+1.11	-4.2	20.5	24.0
Oct. 16	14 14.77	-20 00.5	4.911	3.969	+1.12	-4.1	20.6	17.1
Oct. 26	14 25.93	-20 41.9	4.987	4.014	+1.11	-4.1	20.7	10.6
Nov. 5	14 37.06	-21 22.5	5.042	4.057	+1.10	-3.9	20.8	5.9
Nov. 15	14 48.08	-22 01.7	5.077	4.100	+1.08	-3.7	20.9	8.1
Nov. 25	14 58.92	-22 39.1	5.091	4.142	+1.06	-3.5	21.0	14.4
Dec. 5	15 09.47	-23 14.3	5.083	4.183	+1.02	-3.3	21.1	21.6
Dec. 15	15 19.63	-23 46.8	5.055	4.223	+0.97	-3.0	21.1	29.2
Dec. 25	15 29.30	-24 16.5	5.007	4.263	+0.90	-2.7	21.1	37.0
Jan. 4	15 38.35	-24 43.2	4.940	4.301	+0.83	-2.3	21.2	45.0
Jan. 14	15 46.64	-25 06.6	4.856	4.339	+0.74	-2.0	21.2	53.2
Jan. 24	15 54.03	-25 26.6	4.758	4.376	+0.63	-1.7	21.2	61.6
Feb. 3	16 00.36	-25 43.1	4.647	4.412	+0.51	-1.3	21.2	70.3
Feb. 13	16 05.47	-25 56.0	4.526	4.448	+0.37	-0.9	21.2	79.2
Feb. 23	16 09.21	-26 05.1	4.400	4.483	+0.22	-0.5	21.2	88.4
Mar. 4	16 11.42	-26 10.0	4.272	4.517	+0.06	0.0	21.2	97.9
Mar. 14	16 11.99	-26 10.5	4.148	4.550	-0.11	+0.5	21.2	107.7
Mar. 24	16 10.85	-26 05.9	4.030	4.582	-0.28	+1.0	21.1	117.9

Comet 10P/Tempel

Epoch = 2011 July 18.0 TT
T = 2010 July 4.82677 TT
Peri. = 195.62027 e = 0.5362910
Node = 117.80408 2000.0 a = 3.0665225 AU
Incl. = 12.02350 n = 0.18354173
q = 1.4219741 AU P = 5.37 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	01 42.33	-03 17.6	1.990	2.283	+1.11	+12.9	15.5	94.2
Jan. 19	01 53.48	-01 08.5	2.170	2.345	+1.20	+12.4	15.8	87.6
Jan. 29	02 05.46	+00 55.3	2.353	2.407	+1.27	+11.8	16.2	81.2
Feb. 8	02 18.14	+02 53.1	2.536	2.468	+1.32	+11.1	16.5	74.8
Feb. 18	02 31.38	+04 44.6	2.717	2.529	+1.37	+10.5	16.8	68.5
Feb. 28	02 45.06	+06 29.2	2.895	2.589	+1.41	+9.8	17.1	62.4
Mar. 10	02 59.13	+08 06.9	3.068	2.648	+1.44	+9.0	17.4	56.2
Mar. 20	03 13.48	+09 37.3	3.234	2.707	+1.46	+8.3	17.6	50.2
Mar. 30	03 28.05	+11 00.3	3.392	2.765	+1.47	+7.5	17.9	44.2
Apr. 9	03 42.78	+12 15.7	3.540	2.822	+1.48	+6.8	18.1	38.2
Apr. 19	03 57.60	+13 23.4	3.676	2.878	+1.49	+6.0	18.3	32.3
Apr. 29	04 12.47	+14 23.6	3.800	2.933	+1.48	+5.3	18.5	26.4
May 9	04 27.31	+15 16.2	3.911	2.988	+1.48	+4.5	18.7	20.6
May 19	04 42.08	+16 01.3	4.007	3.041	+1.46	+3.8	18.9	14.9
May 29	04 56.70	+16 39.1	4.088	3.094	+1.44	+3.1	19.0	9.7
June 8	05 11.13	+17 09.9	4.153	3.146	+1.42	+2.4	19.2	6.0
June 18	05 25.29	+17 33.9	4.202	3.196	+1.38	+1.8	19.3	7.3
June 28	05 39.12	+17 51.5	4.233	3.246	+1.34	+1.2	19.4	12.1
July 8	05 52.55	+18 03.0	4.248	3.295	+1.29	+0.6	19.5	17.9
July 18	06 05.50	+18 09.2	4.245	3.343	+1.24	+0.1	19.6	24.1
July 28	06 17.89	+18 10.4	4.225	3.391	+1.17	-0.3	19.7	30.6
Aug. 7	06 29.64	+18 07.3	4.189	3.437	+1.10	-0.7	19.8	37.3
Aug. 17	06 40.63	+18 00.8	4.137	3.482	+1.01	-0.9	19.8	44.1
Aug. 27	06 50.78	+17 51.4	4.069	3.527	+0.92	-1.1	19.9	51.3
Sept. 6	06 59.96	+17 40.3	3.988	3.570	+0.81	-1.2	19.9	58.7
Sept.16	07 08.02	+17 28.2	3.895	3.613	+0.68	-1.2	19.9	66.5
Sept.26	07 14.84	+17 16.3	3.791	3.655	+0.54	-1.1	19.9	74.6
Oct. 6	07 20.25	+17 05.8	3.681	3.695	+0.38	-0.8	19.9	83.0
Oct. 16	07 24.06	+16 57.6	3.566	3.735	+0.21	-0.5	19.9	92.0
Oct. 26	07 26.14	+16 52.9	3.450	3.774	+0.02	0.0	19.9	101.4
Nov. 5	07 26.31	+16 52.7	3.339	3.813	-0.18	+0.5	19.9	111.3
Nov. 15	07 24.50	+16 57.7	3.237	3.850	-0.38	+1.1	19.9	121.7
Nov. 25	07 20.70	+17 08.4	3.149	3.886	-0.57	+1.6	19.9	132.7
Dec. 5	07 15.02	+17 24.4	3.081	3.922	-0.72	+2.1	19.9	144.1
Dec. 15	07 07.78	+17 45.0	3.038	3.957	-0.83	+2.4	20.0	155.9
Dec. 25	06 59.43	+18 09.0	3.024	3.991	-0.88	+2.6	20.0	167.6
Jan. 4	06 50.60	+18 34.9	3.043	4.024	-0.86	+2.6	20.1	175.6
Jan. 14	06 41.98	+19 01.1	3.094	4.056	-0.78	+2.6	20.2	166.3
Jan. 24	06 34.20	+19 26.6	3.176	4.087	-0.64	+2.4	20.3	154.6
Feb. 3	06 27.80	+19 50.7	3.288	4.118	-0.47	+2.2	20.4	143.0
Feb. 13	06 23.12	+20 13.0	3.423	4.148	-0.28	+2.0	20.5	131.8
Feb. 23	06 20.32	+20 33.4	3.579	4.177	-0.09	+1.8	20.7	121.1
Mar. 4	06 19.42	+20 51.8	3.748	4.205	+0.09	+1.6	20.8	110.9
Mar. 14	06 20.33	+21 08.1	3.927	4.232	+0.26	+1.4	21.0	101.1
Mar. 24	06 22.88	+21 22.2	4.110	4.259	+0.40	+1.2	21.1	91.7

Comet 241P/LINEAR

Epoch = 2011 July 18.0 TT
T = 2010 July 18.37298 TT
Peri. = 110.19219 e = 0.6111475
Node = 305.97029 2000.0 a = 4.9422434 AU
Incl. = 20.88129 n = 0.08970525
q = 1.9218037 AU P = 10.99 years

m1 = 10.0 + 5 log(Delta) + 20.0 log(r(t-80))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	09 06.16	+17 50.2	1.590	2.514	-1.07	-5.0	17.6	154.5
Jan. 19	08 55.49	+17 00.2	1.602	2.570	-1.11	-4.7	17.7	166.9
Jan. 29	08 44.35	+16 13.7	1.642	2.626	-1.04	-4.4	18.0	178.1
Feb. 8	08 33.98	+15 30.2	1.712	2.684	-0.85	-4.1	18.2	167.8
Feb. 18	08 25.44	+14 49.3	1.810	2.742	-0.61	-3.8	18.5	155.9
Feb. 28	08 19.37	+14 10.8	1.934	2.801	-0.34	-3.7	18.9	144.6
Mar. 10	08 15.99	+13 34.3	2.080	2.860	-0.07	-3.6	19.2	133.9
Mar. 20	08 15.24	+12 58.8	2.244	2.919	+0.16	-3.5	19.6	123.9
Mar. 30	08 16.87	+12 23.4	2.421	2.978	+0.37	-3.6	19.9	114.6
Apr. 9	08 20.56	+11 47.1	2.608	3.038	+0.54	-3.8	20.3	105.8
Apr. 19	08 25.98	+11 08.9	2.801	3.098	+0.68	-4.1	20.6	97.6
Apr. 29	08 32.78	+10 28.1	2.998	3.158	+0.79	-4.4	21.0	89.7
May 9	08 40.72	+09 44.2	3.195	3.217	+0.88	-4.7	21.3	82.2
May 19	08 49.53	+08 56.8	3.391	3.277	+0.95	-5.1	21.6	74.9
May 29	08 59.01	+08 05.7	3.582	3.336	+1.00	-5.5	21.9	67.9
June 8	09 09.01	+07 10.8	3.767	3.395	+1.04	-5.9	22.2	61.1
June 18	09 19.37	+06 12.1	3.944	3.454	+1.06	-6.2	22.5	54.5
June 28	09 29.98	+05 09.8	4.111	3.513	+1.08	-6.6	22.7	48.0
July 8	09 40.76	+04 03.9	4.268	3.572	+1.08	-6.9	23.0	41.6
July 18	09 51.60	+02 54.9	4.411	3.630	+1.08	-7.2	.	35.3
July 28	10 02.45	+01 42.8	4.541	3.688	+1.08	-7.5	.	29.1
Aug. 7	10 13.25	+00 28.1	4.656	3.745	+1.07	-7.7	.	23.1
Aug. 17	10 23.93	-00 49.0	4.755	3.802	+1.05	-7.9	.	17.6
Aug. 27	10 34.44	-02 08.2	4.837	3.859	+1.03	-8.1	.	12.9
Sept. 6	10 44.74	-03 29.0	4.902	3.915	+1.00	-8.2	.	10.6
Sept.16	10 54.77	-04 51.1	4.948	3.971	+0.97	-8.3	.	12.3
Sept.26	11 04.46	-06 14.1	4.976	4.027	+0.93	-8.4	.	16.9
Oct. 6	11 13.77	-07 37.6	4.985	4.082	+0.88	-8.4	.	22.8
Oct. 16	11 22.60	-09 01.1	4.976	4.136	+0.83	-8.3	.	29.4
Oct. 26	11 30.90	-10 24.3	4.949	4.191	+0.77	-8.2	.	36.5
Nov. 5	11 38.56	-11 46.5	4.904	4.244	+0.69	-8.1	.	43.8
Nov. 15	11 45.48	-13 07.3	4.845	4.298	+0.61	-7.9	.	51.4
Nov. 25	11 51.55	-14 25.8	4.771	4.351	+0.51	-7.6	.	59.3
Dec. 5	11 56.63	-15 41.5	4.685	4.403	+0.40	-7.2	.	67.5
Dec. 15	12 00.60	-16 53.3	4.590	4.455	+0.27	-6.7	.	76.0
Dec. 25	12 03.33	-18 00.2	4.489	4.507	+0.14	-6.1	.	84.8
Jan. 4	12 04.69	-19 01.0	4.386	4.558	-0.01	-5.3	.	93.8
Jan. 14	12 04.58	-19 54.1	4.284	4.608	-0.16	-4.4	.	103.1
Jan. 24	12 02.97	-20 38.1	4.189	4.659	-0.31	-3.3	.	112.7
Feb. 3	11 59.86	-21 11.1	4.106	4.708	-0.45	-2.1	.	122.4
Feb. 13	11 55.40	-21 31.8	4.039	4.758	-0.56	-0.7	.	132.1
Feb. 23	11 49.82	-21 39.0	3.992	4.806	-0.64	+0.6	.	141.6
Mar. 4	11 43.45	-21 32.6	3.970	4.855	-0.67	+1.9	.	150.0
Mar. 14	11 36.74	-21 13.4	3.976	4.903	-0.66	+3.0	.	156.3
Mar. 24	11 30.12	-20 43.1	4.011	4.950	-0.61	+3.8	.	158.0

Comet C/2010 F3 (Scotti)

Epoch = 2011 July 18.0 TT
T = 2010 Aug. 4.03119 TT
Peri. = 31.20665
Node = 157.40609 2000.0
Incl. = 4.64757
q = 5.4459999 AU
e = 0.9128480

m1 = 5.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	14 15.39	-10 03.1	5.761	5.558	+0.54	-1.8	20.2	73.2
Jan. 19	14 20.75	-10 21.3	5.622	5.572	+0.44	-1.3	20.1	82.1
Jan. 29	14 25.19	-10 33.9	5.481	5.588	+0.34	-0.7	20.1	91.1
Feb. 8	14 28.61	-10 40.8	5.341	5.604	+0.23	-0.1	20.1	100.4
Feb. 18	14 30.95	-10 41.8	5.206	5.621	+0.12	+0.4	20.0	109.9
Feb. 28	14 32.17	-10 37.4	5.081	5.638	+0.01	+1.0	20.0	119.7
Mar. 10	14 32.28	-10 27.7	4.971	5.657	-0.09	+1.4	20.0	129.7
Mar. 20	14 31.33	-10 13.6	4.878	5.676	-0.19	+1.8	20.0	139.9
Mar. 30	14 29.45	-09 55.8	4.808	5.696	-0.26	+2.0	19.9	150.2
Apr. 9	14 26.83	-09 35.7	4.763	5.717	-0.31	+2.1	19.9	160.6
Apr. 19	14 23.70	-09 14.5	4.745	5.738	-0.34	+2.1	20.0	170.5
Apr. 29	14 20.35	-08 53.9	4.757	5.760	-0.33	+1.9	20.0	174.6
May 9	14 17.05	-08 35.3	4.798	5.783	-0.30	+1.5	20.0	166.2
May 19	14 14.09	-08 20.1	4.868	5.807	-0.24	+1.1	20.1	156.1
May 29	14 11.70	-08 09.5	4.963	5.831	-0.16	+0.5	20.2	146.1
June 8	14 10.06	-08 04.1	5.082	5.856	-0.08	0.0	20.2	136.1
June 18	14 09.30	-08 04.4	5.221	5.882	+0.02	-0.6	20.3	126.5
June 28	14 09.48	-08 10.4	5.376	5.908	+0.12	-1.2	20.4	117.1
July 8	14 10.63	-08 22.0	5.544	5.936	+0.21	-1.7	20.5	107.9
July 18	14 12.74	-08 38.7	5.719	5.963	+0.30	-2.1	20.6	99.0
July 28	14 15.76	-08 60.0	5.900	5.991	+0.39	-2.5	20.7	90.3
Aug. 7	14 19.64	-09 25.2	6.081	6.020	+0.47	-2.9	20.8	81.8
Aug. 17	14 24.30	-09 53.7	6.260	6.050	+0.54	-3.1	20.9	73.5
Aug. 27	14 29.66	-10 24.8	6.433	6.080	+0.60	-3.3	21.0	65.3
Sept. 6	14 35.66	-10 57.8	6.598	6.110	+0.65	-3.4	21.1	57.2
Sept.16	14 42.20	-11 32.1	6.751	6.142	+0.70	-3.5	21.2	49.2
Sept.26	14 49.22	-12 07.1	6.891	6.173	+0.74	-3.5	21.2	41.3
Oct. 6	14 56.64	-12 42.1	7.016	6.206	+0.77	-3.5	21.3	33.4
Oct. 16	15 04.37	-13 16.6	7.123	6.238	+0.80	-3.4	21.4	25.6
Oct. 26	15 12.34	-13 50.1	7.211	6.272	+0.81	-3.2	21.5	17.8
Nov. 5	15 20.47	-14 22.2	7.279	6.306	+0.82	-3.0	21.5	10.2
Nov. 15	15 28.69	-14 52.4	7.326	6.340	+0.82	-2.8	21.6	4.2
Nov. 25	15 36.89	-15 20.4	7.352	6.375	+0.81	-2.5	21.6	7.7
Dec. 5	15 45.01	-15 45.8	7.356	6.410	+0.79	-2.3	21.6	15.2
Dec. 15	15 52.94	-16 08.4	7.338	6.446	+0.77	-2.0	21.7	23.3
Dec. 25	16 00.60	-16 28.1	7.300	6.482	+0.73	-1.7	21.7	31.5
Jan. 4	16 07.88	-16 44.8	7.243	6.518	+0.68	-1.3	21.7	39.8
Jan. 14	16 14.69	-16 58.2	7.168	6.555	+0.62	-1.0	21.7	48.3
Jan. 24	16 20.93	-17 08.6	7.077	6.593	+0.56	-0.7	21.7	57.0
Feb. 3	16 26.49	-17 15.9	6.973	6.630	+0.48	-0.4	21.7	65.8
Feb. 13	16 31.29	-17 20.2	6.860	6.668	+0.39	-0.2	21.7	74.7
Feb. 23	16 35.23	-17 21.8	6.740	6.707	+0.30	+0.1	21.7	83.9
Mar. 4	16 38.25	-17 20.8	6.618	6.746	+0.20	+0.3	21.7	93.2
Mar. 14	16 40.29	-17 17.6	6.498	6.785	+0.10	+0.5	21.7	102.7
Mar. 24	16 41.31	-17 12.3	6.383	6.825	0.00	+0.7	21.7	112.3

Comet 2P/Encke

Epoch = 2011 July 18.0 TT
T = 2010 Aug. 6.45140 TT
Peri. = 186.55084 e = 0.8481953
Node = 334.57168 2000.0 a = 2.2143637 AU
Incl. = 11.77920 n = 0.29910980
q = 0.3361508 AU P = 3.30 years

H = 14.4 , G = 0.15

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		V	Elong. °
Jan. 9	20 33.44	-22 09.8	3.297	2.376	+1.63	+7.2	19.4	17.2
Jan. 19	20 49.75	-20 57.7	3.423	2.465	+1.54	+7.3	19.4	11.2
Jan. 29	21 05.11	-19 45.0	3.530	2.551	+1.45	+7.3	19.4	5.3
Feb. 8	21 19.61	-18 32.5	3.617	2.633	+1.37	+7.2	19.5	3.5
Feb. 18	21 33.27	-17 20.7	3.682	2.712	+1.28	+7.0	19.7	9.2
Feb. 28	21 46.11	-16 10.3	3.727	2.787	+1.20	+6.8	19.9	15.8
Mar. 10	21 58.15	-15 01.8	3.751	2.860	+1.12	+6.6	20.1	22.6
Mar. 20	22 09.34	-13 56.2	3.754	2.930	+1.03	+6.2	20.2	29.6
Mar. 30	22 19.66	-12 53.9	3.737	2.997	+0.94	+5.8	20.4	36.8
Apr. 9	22 29.07	-11 55.8	3.700	3.062	+0.84	+5.3	20.4	44.1
Apr. 19	22 37.49	-11 02.8	3.645	3.124	+0.73	+4.7	20.5	51.7
Apr. 29	22 44.83	-10 15.6	3.575	3.183	+0.61	+4.0	20.5	59.4
May 9	22 50.97	-09 35.4	3.490	3.241	+0.48	+3.2	20.6	67.5
May 19	22 55.78	-09 03.0	3.394	3.296	+0.33	+2.3	20.6	75.8
May 29	22 59.12	-08 39.5	3.290	3.348	+0.17	+1.3	20.5	84.5
June 8	23 00.81	-08 26.1	3.181	3.399	-0.01	+0.2	20.5	93.6
June 18	23 00.67	-08 23.6	3.071	3.447	-0.21	-0.9	20.4	103.2
June 28	22 58.56	-08 32.7	2.965	3.494	-0.42	-2.1	20.3	113.3
July 8	22 54.37	-08 53.8	2.870	3.538	-0.63	-3.2	20.2	123.9
July 18	22 48.11	-09 26.3	2.789	3.581	-0.82	-4.2	20.1	135.0
July 28	22 39.94	-10 08.5	2.730	3.622	-0.98	-4.9	20.0	146.7
Aug. 7	22 30.17	-10 57.9	2.696	3.660	-1.08	-5.3	19.8	158.8
Aug. 17	22 19.39	-11 50.6	2.694	3.697	-1.11	-5.2	19.7	171.1
Aug. 27	22 08.28	-12 42.4	2.724	3.733	-1.07	-4.7	19.6	176.1
Sept. 6	21 57.59	-13 29.4	2.787	3.766	-0.96	-3.9	19.9	163.9
Sept.16	21 48.04	-14 08.6	2.882	3.798	-0.79	-3.0	20.1	151.8
Sept.26	21 40.12	-14 38.2	3.004	3.827	-0.60	-2.0	20.3	140.0
Oct. 6	21 34.16	-14 57.8	3.150	3.856	-0.39	-1.0	20.5	128.8
Oct. 16	21 30.28	-15 07.4	3.314	3.882	-0.18	-0.1	20.7	117.9
Oct. 26	21 28.44	-15 07.9	3.490	3.907	+0.01	+0.8	20.9	107.6
Nov. 5	21 28.50	-15 00.1	3.674	3.930	+0.18	+1.5	21.0	97.6
Nov. 15	21 30.26	-14 44.8	3.860	3.952	+0.32	+2.2	21.1	88.1
Nov. 25	21 33.49	-14 22.8	4.043	3.972	+0.45	+2.8	21.2	78.8
Dec. 5	21 38.00	-13 54.8	4.221	3.991	+0.56	+3.3	21.3	69.9
Dec. 15	21 43.55	-13 21.5	4.388	4.007	+0.64	+3.8	21.4	61.2
Dec. 25	21 49.97	-12 43.5	4.542	4.023	+0.71	+4.2	21.4	52.7
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 21.14	-09 34.3	4.979	4.069	+0.85	+5.4	21.3	20.2
Feb. 13	22 29.66	-08 40.3	5.035	4.077	+0.86	+5.6	21.3	12.4
Feb. 23	22 38.25	-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 55.31	-05 51.2	5.063	4.091	+0.83	+5.7	21.3	10.8
Mar. 24	23 03.61	-04 54.1	5.026	4.092	+0.80	+5.6	21.4	18.5

Comet 223P/Skiff

Epoch = 2011 July 18.0 TT
T = 2010 Aug. 14.50976 TT
Peri. = 37.85638 e = 0.4164498
Node = 346.82329 2000.0 a = 4.1476139 AU
Incl. = 27.05459 n = 0.11668273
q = 2.4203409 AU P = 8.45 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	01 52.92	+48 32.9	2.101	2.632	+1.12	-5.0	18.9	112.0
Jan. 19	02 04.14	+47 43.0	2.224	2.659	+1.36	-4.0	19.1	105.4
Jan. 29	02 17.74	+47 03.2	2.354	2.687	+1.55	-3.1	19.3	98.8
Feb. 8	02 33.29	+46 32.7	2.489	2.717	+1.71	-2.3	19.5	92.5
Feb. 18	02 50.41	+46 09.7	2.629	2.748	+1.84	-1.7	19.7	86.3
Feb. 28	03 08.79	+45 52.3	2.770	2.779	+1.94	-1.4	19.9	80.2
Mar. 10	03 28.17	+45 38.4	2.912	2.812	+2.02	-1.2	20.1	74.3
Mar. 20	03 48.33	+45 25.9	3.053	2.845	+2.07	-1.3	20.2	68.6
Mar. 30	04 09.05	+45 13.2	3.192	2.879	+2.11	-1.5	20.4	63.0
Apr. 9	04 30.16	+44 58.7	3.327	2.914	+2.13	-1.8	20.6	57.5
Apr. 19	04 51.48	+44 41.2	3.457	2.949	+2.14	-2.1	20.7	52.1
Apr. 29	05 12.85	+44 19.7	3.582	2.985	+2.13	-2.6	20.9	46.8
May 9	05 34.14	+43 53.7	3.699	3.021	+2.11	-3.1	21.0	41.7
May 19	05 55.21	+43 22.8	3.808	3.058	+2.07	-3.6	21.2	36.8
May 29	06 15.95	+42 46.8	3.908	3.095	+2.03	-4.1	21.3	32.0
June 8	06 36.26	+42 05.9	3.998	3.133	+1.98	-4.5	21.4	27.5
June 18	06 56.05	+41 20.5	4.077	3.171	+1.92	-5.0	21.6	23.5
June 28	07 15.26	+40 31.0	4.144	3.209	+1.86	-5.3	21.7	20.2
July 8	07 33.83	+39 37.9	4.198	3.247	+1.79	-5.6	21.8	18.0
July 18	07 51.71	+38 41.9	4.240	3.285	+1.72	-5.8	21.9	17.6
July 28	08 08.88	+37 43.9	4.268	3.324	+1.64	-5.9	22.0	19.0
Aug. 7	08 25.30	+36 44.6	4.281	3.362	+1.56	-6.0	22.1	22.0
Aug. 17	08 40.94	+35 44.9	4.280	3.401	+1.48	-5.9	22.1	26.2
Aug. 27	08 55.77	+34 45.8	4.264	3.440	+1.40	-5.8	22.2	31.2
Sept. 6	09 09.77	+33 48.3	4.234	3.478	+1.31	-5.5	22.3	36.7
Sept.16	09 22.86	+32 53.4	4.189	3.517	+1.22	-5.1	22.3	42.7
Sept.26	09 35.03	+32 02.1	4.131	3.556	+1.11	-4.7	22.3	49.1
Oct. 6	09 46.17	+31 15.5	4.059	3.594	+1.00	-4.1	22.4	55.8
Oct. 16	09 56.22	+30 34.8	3.976	3.633	+0.88	-3.4	22.4	62.9
Oct. 26	10 05.06	+30 00.9	3.883	3.671	+0.75	-2.6	22.4	70.4
Nov. 5	10 12.55	+29 35.0	3.781	3.709	+0.60	-1.7	22.4	78.3
Nov. 15	10 18.55	+29 17.9	3.674	3.747	+0.43	-0.8	22.4	86.6
Nov. 25	10 22.90	+29 10.2	3.565	3.785	+0.25	+0.2	22.4	95.2
Dec. 5	10 25.40	+29 12.1	3.457	3.822	+0.05	+1.1	22.4	104.4
Dec. 15	10 25.91	+29 23.0	3.355	3.860	-0.16	+1.9	22.4	113.9
Dec. 25	10 24.31	+29 41.6	3.263	3.897	-0.37	+2.4	22.4	123.8
Jan. 4	10 20.57	+30 05.5	3.187	3.934	-0.58	+2.6	22.4	134.0
Jan. 14	10 14.80	+30 31.2	3.131	3.971	-0.75	+2.3	22.5	144.1
Jan. 24	10 07.31	+30 54.6	3.101	4.007	-0.87	+1.7	22.5	153.7
Feb. 3	09 58.61	+31 11.4	3.099	4.043	-0.92	+0.7	22.6	160.9
Feb. 13	09 49.36	+31 18.0	3.127	4.079	-0.91	-0.6	22.6	162.3
Feb. 23	09 40.29	+31 12.3	3.186	4.115	-0.82	-1.9	22.7	156.9
Mar. 4	09 32.10	+30 53.8	3.275	4.150	-0.68	-3.0	22.8	148.1
Mar. 14	09 25.33	+30 23.5	3.390	4.185	-0.50	-4.0	23.0	138.3
Mar. 24	09 20.31	+29 43.3	3.528	4.220	-0.31	-4.8	.	128.3

Comet P/2010 J3 (McMillan)

Epoch = 2011 July 18.0 TT
T = 2010 Aug. 23.59791 TT
Peri. = 157.37506 e = 0.7268575
Node = 106.64992 2000.0 a = 8.9913195 AU
Incl. = 13.25307 n = 0.03655686
q = 2.4559115 AU P = 26.96 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	20 18.96	-23 05.8	3.712	2.768	+1.96	+4.2	18.9	13.9
Jan. 19	20 38.58	-22 23.6	3.778	2.810	+1.91	+4.9	19.0	8.7
Jan. 29	20 57.64	-21 34.9	3.835	2.854	+1.85	+5.4	19.2	4.7
Feb. 8	21 16.10	-20 41.3	3.880	2.900	+1.78	+5.7	19.3	5.8
Feb. 18	21 33.90	-19 44.2	3.913	2.948	+1.71	+5.9	19.4	10.6
Feb. 28	21 51.01	-18 45.0	3.935	2.997	+1.64	+6.0	19.5	16.2
Mar. 10	22 07.40	-17 45.1	3.945	3.047	+1.56	+5.9	19.6	22.1
Mar. 20	22 23.03	-16 45.9	3.942	3.099	+1.49	+5.7	19.7	28.1
Mar. 30	22 37.89	-15 48.7	3.927	3.152	+1.41	+5.4	19.8	34.2
Apr. 9	22 51.94	-14 54.8	3.900	3.206	+1.32	+4.9	19.9	40.6
Apr. 19	23 05.14	-14 05.5	3.862	3.261	+1.23	+4.4	20.0	47.0
Apr. 29	23 17.43	-13 21.8	3.813	3.317	+1.13	+3.7	20.1	53.6
May 9	23 28.77	-12 45.0	3.754	3.373	+1.03	+2.9	20.2	60.5
May 19	23 39.06	-12 16.2	3.687	3.430	+0.92	+2.0	20.3	67.5
May 29	23 48.23	-11 56.3	3.612	3.488	+0.79	+1.0	20.3	74.9
June 8	23 56.17	-11 46.3	3.533	3.546	+0.66	-0.1	20.4	82.5
June 18	00 02.77	-11 46.8	3.452	3.605	+0.52	-1.2	20.4	90.4
June 28	00 07.92	-11 58.5	3.370	3.664	+0.36	-2.3	20.5	98.7
July 8	00 11.51	-12 21.3	3.292	3.723	+0.19	-3.4	20.6	107.3
July 18	00 13.44	-12 54.9	3.222	3.783	+0.02	-4.3	20.6	116.3
July 28	00 13.68	-13 37.9	3.162	3.843	-0.14	-5.1	20.7	125.6
Aug. 7	00 12.24	-14 28.5	3.118	3.903	-0.30	-5.5	20.7	135.2
Aug. 17	00 09.25	-15 23.6	3.093	3.964	-0.43	-5.6	20.8	144.8
Aug. 27	00 04.95	-16 19.7	3.092	4.024	-0.53	-5.3	20.9	154.0
Sept. 6	23 59.68	-17 12.4	3.116	4.085	-0.58	-4.6	21.0	161.4
Sept.16	23 53.93	-17 58.0	3.169	4.145	-0.58	-3.5	21.2	164.1
Sept.26	23 48.17	-18 33.3	3.250	4.206	-0.53	-2.3	21.3	159.8
Oct. 6	23 42.90	-18 56.1	3.360	4.267	-0.44	-1.0	21.5	151.7
Oct. 16	23 38.52	-19 05.6	3.495	4.327	-0.32	+0.3	21.7	142.4
Oct. 26	23 35.32	-19 02.2	3.652	4.388	-0.18	+1.5	21.8	132.7
Nov. 5	23 33.49	-18 46.7	3.830	4.449	-0.04	+2.6	22.0	123.0
Nov. 15	23 33.07	-18 20.9	4.022	4.509	+0.10	+3.5	22.2	113.6
Nov. 25	23 34.04	-17 46.2	4.225	4.570	+0.23	+4.2	22.4	104.3
Dec. 5	23 36.30	-17 04.3	4.435	4.630	+0.34	+4.8	22.6	95.2
Dec. 15	23 39.73	-16 16.5	4.648	4.690	+0.45	+5.2	22.8	86.4
Dec. 25	23 44.19	-15 24.3	4.860	4.750	+0.53	+5.6	23.0	77.8
Jan. 4	23 49.54	-14 28.8	5.067	4.810	+0.61	+5.8	.	69.4
Jan. 14	23 55.62	-13 31.0	5.267	4.870	+0.67	+5.9	.	61.2
Jan. 24	00 02.32	-12 31.7	5.456	4.930	+0.72	+6.0	.	53.2
Feb. 3	00 09.50	-11 31.7	5.633	4.989	+0.76	+6.0	.	45.3
Feb. 13	00 17.06	-10 31.9	5.794	5.049	+0.78	+5.9	.	37.7
Feb. 23	00 24.89	-09 32.9	5.938	5.108	+0.80	+5.8	.	30.3
Mar. 4	00 32.92	-08 35.2	6.063	5.167	+0.81	+5.6	.	23.2
Mar. 14	00 41.03	-07 39.5	6.169	5.225	+0.81	+5.3	.	16.8
Mar. 24	00 49.18	-06 46.3	6.254	5.284	+0.81	+5.0	.	12.2

Comet 227P/Catalina-LINEAR

Epoch = 2011 July 18.0 TT
T = 2010 Sept. 3.67599 TT
Peri. = 90.11360 e = 0.5001623
Node = 49.88218 2000.0 a = 3.5900569 AU
Incl. = 6.52511 n = 0.14489456
q = 1.7944458 AU P = 6.80 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	14 43.54	-12 27.3	2.317	2.116	+1.58	-8.1	20.1	65.9
Jan. 19	14 59.34	-13 48.2	2.251	2.160	+1.42	-7.0	20.2	72.0
Jan. 29	15 13.59	-14 58.2	2.180	2.207	+1.24	-6.0	20.2	78.5
Feb. 8	15 26.02	-15 57.9	2.106	2.255	+1.03	-5.0	20.3	85.5
Feb. 18	15 36.31	-16 47.8	2.029	2.303	+0.79	-4.1	20.4	93.0
Feb. 28	15 44.19	-17 28.7	1.953	2.353	+0.51	-3.3	20.4	101.1
Mar. 10	15 49.32	-18 01.3	1.879	2.404	+0.21	-2.5	20.5	109.8
Mar. 20	15 51.47	-18 26.1	1.811	2.455	-0.10	-1.7	20.5	119.2
Mar. 30	15 50.50	-18 43.3	1.753	2.507	-0.40	-1.0	20.6	129.3
Apr. 9	15 46.47	-18 52.9	1.709	2.559	-0.67	-0.2	20.7	140.0
Apr. 19	15 39.78	-18 55.1	1.685	2.611	-0.86	+0.5	20.8	151.4
Apr. 29	15 31.13	-18 50.5	1.684	2.663	-0.96	+1.0	20.9	163.1
May 9	15 21.50	-18 40.6	1.709	2.716	-0.95	+1.3	21.1	175.1
May 19	15 12.01	-18 28.0	1.761	2.768	-0.84	+1.2	21.3	173.0
May 29	15 03.65	-18 15.9	1.841	2.821	-0.65	+0.8	21.5	161.5
June 8	14 57.14	-18 07.4	1.946	2.873	-0.42	+0.2	21.7	150.4
June 18	14 52.91	-18 05.0	2.074	2.925	-0.19	-0.5	22.0	139.8
June 28	14 51.04	-18 09.8	2.220	2.976	+0.04	-1.2	22.2	129.9
July 8	14 51.47	-18 22.1	2.382	3.027	+0.25	-1.9	22.5	120.5
July 18	14 54.01	-18 41.5	2.555	3.078	+0.44	-2.5	22.8	111.7
July 28	14 58.40	-19 06.9	2.736	3.129	+0.60	-3.0	23.0	103.2
Aug. 7	15 04.42	-19 37.3	2.923	3.179	+0.74	-3.4	.	95.2
Aug. 17	15 11.84	-20 11.5	3.112	3.229	+0.86	-3.7	.	87.4
Aug. 27	15 20.45	-20 48.3	3.301	3.278	+0.96	-3.8	.	79.9
Sept. 6	15 30.09	-21 26.5	3.487	3.327	+1.05	-3.9	.	72.6
Sept.16	15 40.59	-22 05.2	3.668	3.375	+1.12	-3.8	.	65.4
Sept.26	15 51.83	-22 43.4	3.842	3.423	+1.19	-3.7	.	58.3
Oct. 6	16 03.70	-23 20.4	4.006	3.470	+1.24	-3.5	.	51.3
Oct. 16	16 16.07	-23 55.4	4.160	3.516	+1.28	-3.2	.	44.3
Oct. 26	16 28.85	-24 27.8	4.301	3.562	+1.31	-2.9	.	37.4
Nov. 5	16 41.95	-24 57.2	4.428	3.608	+1.33	-2.6	.	30.4
Nov. 15	16 55.26	-25 23.3	4.539	3.653	+1.34	-2.2	.	23.5
Nov. 25	17 08.70	-25 45.6	4.633	3.697	+1.35	-1.9	.	16.5
Dec. 5	17 22.18	-26 04.2	4.709	3.741	+1.34	-1.5	.	9.6
Dec. 15	17 35.59	-26 18.9	4.766	3.784	+1.33	-1.1	.	3.6
Dec. 25	17 48.84	-26 30.0	4.803	3.826	+1.30	-0.8	.	6.0
Jan. 4	18 01.83	-26 37.5	4.821	3.868	+1.26	-0.4	.	12.8
Jan. 14	18 14.45	-26 41.9	4.819	3.910	+1.22	-0.2	.	20.1
Jan. 24	18 26.61	-26 43.6	4.798	3.950	+1.16	0.0	.	27.5
Feb. 3	18 38.18	-26 43.2	4.758	3.991	+1.09	+0.2	.	35.0
Feb. 13	18 49.07	-26 41.4	4.700	4.030	+1.01	+0.2	.	42.7
Feb. 23	18 59.15	-26 39.0	4.626	4.069	+0.92	+0.2	.	50.5
Mar. 4	19 08.30	-26 36.7	4.538	4.107	+0.81	+0.1	.	58.5
Mar. 14	19 16.40	-26 35.4	4.437	4.145	+0.69	-0.1	.	66.6
Mar. 24	19 23.32	-26 36.0	4.327	4.182	+0.56	-0.3	.	75.0

Comet C/2010 D3 (WISE)

Epoch = 2011 July 18.0 TT
T = 2010 Sept. 3.91246 TT
Peri. = 304.64084
Node = 255.22963 2000.0
Incl. = 76.40328
q = 4.2475200 AU
e = 0.9996636

m1 = 9.2 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	16 31.32	-51 39.0	5.036	4.377	+1.21	+2.2	19.1	43.6
Jan. 19	16 43.40	-51 17.2	4.976	4.398	+1.06	+2.1	19.1	49.3
Jan. 29	16 54.03	-50 55.9	4.900	4.420	+0.90	+2.1	19.1	55.7
Feb. 8	17 03.06	-50 35.1	4.808	4.444	+0.73	+2.1	19.1	62.7
Feb. 18	17 10.31	-50 14.3	4.704	4.469	+0.53	+2.1	19.1	70.3
Feb. 28	17 15.63	-49 53.1	4.590	4.495	+0.32	+2.3	19.0	78.3
Mar. 10	17 18.84	-49 30.6	4.469	4.522	+0.10	+2.5	19.0	86.7
Mar. 20	17 19.80	-49 05.4	4.346	4.551	-0.14	+3.0	19.0	95.6
Mar. 30	17 18.42	-48 35.7	4.224	4.581	-0.38	+3.6	18.9	104.8
Apr. 9	17 14.66	-47 59.3	4.109	4.613	-0.60	+4.6	18.9	114.3
Apr. 19	17 08.67	-47 13.3	4.007	4.645	-0.79	+5.8	18.9	124.1
Apr. 29	17 00.74	-46 15.2	3.922	4.679	-0.94	+7.2	18.9	134.1
May 9	16 51.32	-45 02.8	3.860	4.713	-1.03	+8.8	18.9	143.9
May 19	16 41.07	-43 35.3	3.826	4.749	-1.04	+10.2	18.9	152.9
May 29	16 30.68	-41 53.6	3.823	4.786	-0.98	+11.3	18.9	159.5
June 8	16 20.85	-40 00.4	3.854	4.824	-0.87	+12.0	19.0	160.7
June 18	16 12.14	-38 00.2	3.919	4.862	-0.72	+12.2	19.0	155.6
June 28	16 04.94	-35 57.8	4.017	4.902	-0.55	+12.0	19.1	147.2
July 8	15 59.47	-33 58.0	4.144	4.943	-0.37	+11.3	19.2	137.6
July 18	15 55.79	-32 04.6	4.297	4.984	-0.20	+10.4	19.3	127.7
July 28	15 53.84	-30 20.2	4.471	5.026	-0.03	+9.4	19.5	117.8
Aug. 7	15 53.50	-28 46.1	4.662	5.069	+0.11	+8.3	19.6	108.1
Aug. 17	15 54.61	-27 22.8	4.863	5.113	+0.24	+7.3	19.7	98.6
Aug. 27	15 57.01	-26 09.7	5.070	5.158	+0.35	+6.4	19.8	89.3
Sept. 6	16 00.52	-25 05.9	5.279	5.203	+0.45	+5.6	20.0	80.2
Sept.16	16 04.98	-24 10.4	5.484	5.249	+0.53	+4.9	20.1	71.3
Sept.26	16 10.25	-23 21.8	5.683	5.296	+0.59	+4.3	20.2	62.6
Oct. 6	16 16.20	-22 38.7	5.870	5.343	+0.65	+3.9	20.3	54.0
Oct. 16	16 22.68	-21 59.9	6.044	5.391	+0.69	+3.6	20.4	45.4
Oct. 26	16 29.58	-21 24.1	6.201	5.440	+0.72	+3.4	20.5	37.0
Nov. 5	16 36.80	-20 50.3	6.339	5.489	+0.74	+3.3	20.6	28.6
Nov. 15	16 44.21	-20 17.5	6.456	5.539	+0.75	+3.3	20.7	20.3
Nov. 25	16 51.72	-19 44.8	6.550	5.589	+0.75	+3.3	20.8	12.1
Dec. 5	16 59.23	-19 11.4	6.621	5.639	+0.74	+3.5	20.8	4.8
Dec. 15	17 06.62	-18 36.6	6.667	5.690	+0.72	+3.7	20.9	6.7
Dec. 25	17 13.79	-17 59.8	6.689	5.742	+0.69	+3.9	20.9	14.5
Jan. 4	17 20.65	-17 20.6	6.687	5.794	+0.64	+4.2	21.0	23.0
Jan. 14	17 27.07	-16 38.5	6.661	5.846	+0.59	+4.5	21.0	31.6
Jan. 24	17 32.96	-15 53.3	6.615	5.899	+0.52	+4.9	21.0	40.3
Feb. 3	17 38.21	-15 04.7	6.549	5.952	+0.45	+5.2	21.0	49.2
Feb. 13	17 42.70	-14 12.6	6.467	6.006	+0.37	+5.6	21.0	58.2
Feb. 23	17 46.36	-13 17.0	6.372	6.060	+0.27	+5.9	21.0	67.3
Mar. 4	17 49.06	-12 18.0	6.267	6.114	+0.17	+6.2	21.0	76.6
Mar. 14	17 50.73	-11 15.8	6.157	6.169	+0.06	+6.5	21.0	86.1
Mar. 24	17 51.32	-10 10.7	6.046	6.223	-0.06	+6.7	21.0	95.6

Comet C/2008 FK75 (Lemmon-Siding Spring)

Epoch = 2011 July 18.0 TT
T = 2010 Sept. 29.40200 TT
Peri. = 80.44424
Node = 218.26953 2000.0
Incl. = 61.17576
q = 4.5112018 AU
e = 1.0021799

m1 = 7.4 + 5 log(Delta) + 7.5 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	19 50.40	+32 16.7	5.078	4.586	+1.49	+2.8	15.9	55.0
Jan. 19	20 05.31	+32 44.2	5.122	4.601	+1.49	+3.7	15.9	53.2
Jan. 29	20 20.18	+33 20.8	5.161	4.617	+1.47	+4.5	15.9	51.8
Feb. 8	20 34.91	+34 05.9	5.196	4.635	+1.45	+5.3	16.0	50.7
Feb. 18	20 49.41	+34 58.7	5.226	4.654	+1.42	+6.0	16.0	50.1
Feb. 28	21 03.59	+35 58.4	5.251	4.675	+1.38	+6.6	16.0	49.9
Mar. 10	21 17.36	+37 04.1	5.269	4.696	+1.33	+7.1	16.0	50.2
Mar. 20	21 30.64	+38 14.9	5.280	4.719	+1.27	+7.5	16.1	51.1
Mar. 30	21 43.35	+39 29.8	5.285	4.743	+1.21	+7.8	16.1	52.5
Apr. 9	21 55.41	+40 47.9	5.282	4.769	+1.13	+8.0	16.1	54.4
Apr. 19	22 06.72	+42 08.1	5.271	4.795	+1.05	+8.1	16.1	56.8
Apr. 29	22 17.19	+43 29.4	5.252	4.823	+0.95	+8.1	16.1	59.7
May 9	22 26.71	+44 50.8	5.225	4.852	+0.85	+8.0	16.1	63.0
May 19	22 35.17	+46 11.1	5.191	4.881	+0.73	+7.8	16.1	66.8
May 29	22 42.45	+47 29.1	5.151	4.912	+0.60	+7.4	16.1	70.9
June 8	22 48.43	+48 43.5	5.104	4.944	+0.45	+6.9	16.1	75.3
June 18	22 52.97	+49 52.5	5.052	4.977	+0.30	+6.2	16.1	80.0
June 28	22 55.99	+50 54.7	4.996	5.011	+0.14	+5.3	16.1	85.0
July 8	22 57.39	+51 47.8	4.938	5.046	-0.02	+4.2	16.1	90.2
July 18	22 57.18	+52 29.6	4.881	5.082	-0.18	+2.8	16.1	95.6
July 28	22 55.42	+52 57.8	4.825	5.118	-0.31	+1.2	16.1	101.1
Aug. 7	22 52.29	+53 10.1	4.774	5.156	-0.42	-0.6	16.1	106.5
Aug. 17	22 48.12	+53 04.4	4.731	5.194	-0.48	-2.5	16.1	111.9
Aug. 27	22 43.30	+52 39.5	4.699	5.233	-0.50	-4.5	16.2	116.8
Sept. 6	22 38.33	+51 54.8	4.679	5.273	-0.46	-6.4	16.2	121.2
Sept. 16	22 33.73	+50 51.1	4.676	5.314	-0.38	-8.1	16.2	124.8
Sept. 26	22 29.91	+49 30.5	4.691	5.355	-0.27	-9.5	16.2	127.0
Oct. 6	22 27.24	+47 55.8	4.726	5.397	-0.13	-10.5	16.3	127.8
Oct. 16	22 25.93	+46 11.2	4.783	5.440	+0.01	-11.0	16.3	126.9
Oct. 26	22 26.07	+44 20.9	4.860	5.484	+0.16	-11.2	16.4	124.4
Nov. 5	22 27.66	+42 29.2	4.959	5.528	+0.30	-10.9	16.4	120.4
Nov. 15	22 30.61	+40 40.1	5.078	5.573	+0.42	-10.3	16.5	115.3
Nov. 25	22 34.80	+38 56.8	5.214	5.618	+0.53	-9.5	16.6	109.3
Dec. 5	22 40.09	+37 21.9	5.365	5.664	+0.62	-8.5	16.7	102.7
Dec. 15	22 46.31	+35 57.2	5.528	5.710	+0.70	-7.4	16.8	95.7
Dec. 25	22 53.32	+34 43.7	5.698	5.757	+0.77	-6.2	16.9	88.5
Jan. 4	23 00.97	+33 41.8	5.873	5.805	+0.82	-5.0	17.0	81.2
Jan. 14	23 09.12	+32 51.5	6.049	5.853	+0.85	-3.9	17.1	73.8
Jan. 24	23 17.67	+32 12.3	6.223	5.901	+0.88	-2.9	17.2	66.6
Feb. 3	23 26.49	+31 43.5	6.390	5.950	+0.90	-1.9	17.2	59.4
Feb. 13	23 35.50	+31 24.3	6.549	5.999	+0.91	-1.1	17.3	52.5
Feb. 23	23 44.60	+31 13.7	6.695	6.049	+0.91	-0.3	17.4	45.9
Mar. 4	23 53.72	+31 10.6	6.828	6.099	+0.91	+0.4	17.5	39.8
Mar. 14	00 02.78	+31 14.2	6.945	6.150	+0.89	+0.9	17.5	34.3
Mar. 24	00 11.71	+31 23.3	7.044	6.200	+0.87	+1.4	17.6	30.0

Comet 31P/Schwassmann-Wachmann

Epoch = 2011 July 18.0 TT
T = 2010 Sept. 29.50060 TT
Peri. = 17.93759 e = 0.1932409
Node = 114.18226 2000.0 a = 4.2443990 AU
Incl. = 4.54615 n = 0.11271450
q = 3.4242075 AU P = 8.74 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	11 00.92	+09 48.9	2.784	3.449	-0.09	+2.3	18.5	125.5
Jan. 19	11 00.03	+10 12.1	2.678	3.454	-0.27	+3.4	18.4	136.0
Jan. 29	10 57.31	+10 45.7	2.592	3.460	-0.43	+4.2	18.4	146.9
Feb. 8	10 52.99	+11 27.7	2.531	3.466	-0.55	+4.6	18.3	158.2
Feb. 18	10 47.46	+12 14.1	2.496	3.472	-0.62	+4.7	18.3	169.3
Feb. 28	10 41.30	+13 00.6	2.491	3.479	-0.62	+4.2	18.3	175.2
Mar. 10	10 35.15	+13 43.0	2.515	3.486	-0.55	+3.4	18.3	165.7
Mar. 20	10 29.67	+14 17.4	2.568	3.494	-0.43	+2.4	18.4	154.6
Mar. 30	10 25.40	+14 41.4	2.647	3.502	-0.27	+1.2	18.5	143.7
Apr. 9	10 22.70	+14 53.7	2.748	3.511	-0.09	0.0	18.6	133.2
Apr. 19	10 21.78	+14 54.1	2.867	3.519	+0.09	-1.1	18.7	123.3
Apr. 29	10 22.65	+14 43.3	3.000	3.529	+0.26	-2.1	18.8	113.8
May 9	10 25.24	+14 22.2	3.142	3.538	+0.42	-3.0	18.9	104.9
May 19	10 29.42	+13 51.8	3.291	3.548	+0.56	-3.9	19.0	96.4
May 29	10 34.98	+13 13.2	3.442	3.559	+0.68	-4.6	19.2	88.3
June 8	10 41.75	+12 27.3	3.593	3.570	+0.78	-5.2	19.3	80.5
June 18	10 49.55	+11 35.2	3.742	3.581	+0.87	-5.8	19.4	73.1
June 28	10 58.21	+10 37.6	3.885	3.592	+0.94	-6.2	19.5	65.9
July 8	11 07.59	+09 35.2	4.022	3.604	+1.00	-6.6	19.6	58.9
July 18	11 17.57	+08 28.9	4.150	3.616	+1.05	-7.0	19.7	52.1
July 28	11 28.04	+07 19.4	4.268	3.628	+1.09	-7.2	19.7	45.4
Aug. 7	11 38.91	+06 07.1	4.375	3.641	+1.12	-7.4	19.8	38.9
Aug. 17	11 50.10	+04 52.9	4.469	3.654	+1.14	-7.6	19.9	32.3
Aug. 27	12 01.55	+03 37.3	4.549	3.667	+1.16	-7.6	20.0	25.9
Sept. 6	12 13.20	+02 21.0	4.615	3.680	+1.18	-7.6	20.0	19.5
Sept.16	12 24.98	+01 04.6	4.666	3.694	+1.19	-7.6	20.1	13.1
Sept.26	12 36.85	-00 11.3	4.701	3.708	+1.19	-7.5	20.1	7.0
Oct. 6	12 48.76	-01 26.0	4.719	3.722	+1.19	-7.3	20.1	3.5
Oct. 16	13 00.66	-02 38.9	4.721	3.736	+1.18	-7.0	20.2	7.9
Oct. 26	13 12.48	-03 49.3	4.706	3.750	+1.17	-6.7	20.2	14.3
Nov. 5	13 24.17	-04 56.7	4.674	3.765	+1.15	-6.4	20.2	21.1
Nov. 15	13 35.64	-06 00.4	4.625	3.780	+1.12	-5.9	20.2	28.0
Nov. 25	13 46.83	-06 59.9	4.560	3.795	+1.08	-5.5	20.2	35.1
Dec. 5	13 57.64	-07 54.5	4.481	3.810	+1.03	-4.9	20.2	42.3
Dec. 15	14 07.94	-08 43.7	4.387	3.825	+0.97	-4.3	20.2	49.8
Dec. 25	14 17.64	-09 27.0	4.280	3.841	+0.89	-3.7	20.1	57.4
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 20.5	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	3.268	3.968	-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

Comet 240P/NEAT

Epoch = 2011 July 18.0 TT
T = 2010 Oct. 4.35617 TT
Peri. = 351.96140 e = 0.4501244
Node = 74.97060 2000.0 a = 3.8626835 AU
Incl. = 23.52140 n = 0.12982860
q = 2.1239954 AU P = 7.59 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	06 22.85	+41 47.2	1.316	2.255	-0.87	+8.0	15.8	157.2
Jan. 19	06 14.12	+43 07.3	1.386	2.281	-0.55	+4.9	16.0	148.1
Jan. 29	06 08.64	+43 56.5	1.478	2.310	-0.15	+2.5	16.2	138.5
Feb. 8	06 07.11	+44 21.3	1.588	2.341	+0.25	+0.7	16.5	129.3
Feb. 18	06 09.66	+44 28.4	1.712	2.373	+0.62	-0.6	16.7	120.6
Feb. 28	06 15.90	+44 22.8	1.847	2.407	+0.94	-1.5	17.0	112.5
Mar. 10	06 25.31	+44 07.6	1.991	2.442	+1.20	-2.3	17.3	104.9
Mar. 20	06 37.32	+43 44.4	2.139	2.479	+1.40	-3.0	17.5	97.8
Mar. 30	06 51.36	+43 14.1	2.291	2.516	+1.56	-3.7	17.8	91.1
Apr. 9	07 06.94	+42 36.8	2.445	2.555	+1.67	-4.4	18.1	84.7
Apr. 19	07 23.65	+41 52.6	2.598	2.595	+1.75	-5.1	18.3	78.7
Apr. 29	07 41.10	+41 01.6	2.751	2.635	+1.79	-5.8	18.6	72.8
May 9	07 59.03	+40 04.1	2.901	2.676	+1.82	-6.4	18.8	67.2
May 19	08 17.18	+39 00.3	3.047	2.718	+1.82	-7.0	19.0	61.8
May 29	08 35.38	+37 50.7	3.188	2.761	+1.81	-7.5	19.2	56.5
June 8	08 53.48	+36 35.9	3.324	2.804	+1.79	-7.9	19.4	51.3
June 18	09 11.38	+35 16.6	3.453	2.847	+1.76	-8.3	19.6	46.2
June 28	09 29.00	+33 53.6	3.575	2.890	+1.73	-8.6	19.8	41.3
July 8	09 46.30	+32 27.6	3.688	2.934	+1.69	-8.8	20.0	36.5
July 18	10 03.22	+30 59.5	3.792	2.978	+1.65	-8.9	20.2	31.9
July 28	10 19.77	+29 30.2	3.885	3.022	+1.62	-9.0	20.4	27.6
Aug. 7	10 35.94	+28 00.5	3.968	3.066	+1.58	-8.9	20.5	23.7
Aug. 17	10 51.70	+26 31.3	4.039	3.110	+1.54	-8.8	20.7	20.5
Aug. 27	11 07.06	+25 03.4	4.097	3.154	+1.50	-8.6	20.8	18.4
Sept. 6	11 22.03	+23 37.7	4.142	3.198	+1.46	-8.3	20.9	18.0
Sept.16	11 36.59	+22 15.1	4.174	3.242	+1.41	-7.9	21.0	19.3
Sept.26	11 50.73	+20 56.5	4.191	3.286	+1.37	-7.4	21.2	22.3
Oct. 6	12 04.43	+19 42.7	4.194	3.330	+1.32	-6.8	21.3	26.5
Oct. 16	12 17.66	+18 34.7	4.183	3.373	+1.27	-6.1	21.3	31.5
Oct. 26	12 30.39	+17 33.3	4.158	3.416	+1.22	-5.4	21.4	37.0
Nov. 5	12 42.55	+16 39.7	4.118	3.459	+1.15	-4.5	21.5	43.0
Nov. 15	12 54.08	+15 54.5	4.065	3.502	+1.08	-3.6	21.6	49.4
Nov. 25	13 04.90	+15 18.7	3.999	3.544	+1.00	-2.5	21.6	56.1
Dec. 5	13 14.88	+14 53.3	3.922	3.586	+0.90	-1.4	21.7	63.1
Dec. 15	13 23.92	+14 39.0	3.836	3.628	+0.79	-0.3	21.7	70.5
Dec. 25	13 31.86	+14 36.3	3.742	3.669	+0.67	+0.9	21.7	78.2
Jan. 4	13 38.55	+14 45.7	3.643	3.710	+0.53	+2.1	21.8	86.2
Jan. 14	13 43.80	+15 07.2	3.543	3.751	+0.37	+3.3	21.8	94.5
Jan. 24	13 47.47	+15 40.2	3.445	3.791	+0.19	+4.3	21.8	103.1
Feb. 3	13 49.37	+16 23.7	3.353	3.831	0.00	+5.2	21.8	111.9
Feb. 13	13 49.41	+17 15.4	3.271	3.871	-0.19	+5.7	21.9	120.8
Feb. 23	13 47.53	+18 12.4	3.203	3.910	-0.37	+5.8	21.9	129.7
Mar. 4	13 43.80	+19 10.6	3.154	3.949	-0.54	+5.5	21.9	138.2
Mar. 14	13 38.44	+20 05.1	3.128	3.987	-0.66	+4.6	22.0	145.5
Mar. 24	13 31.80	+20 51.2	3.126	4.025	-0.74	+3.3	22.1	150.6

Comet C/2010 A4 (Siding Spring)

Epoch = 2011 July 18.0 TT
T = 2010 Oct. 8.85405 TT
Peri. = 271.72056
Node = 346.69165 2000.0
Incl. = 96.72076
q = 2.7384678 AU
e = 0.9906619

m1 = 9.2 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	00 14.97	-57 06.5	3.211	2.898	-0.05	+28.1	16.4	62.9
Jan. 19	00 14.45	-52 25.9	3.340	2.933	+0.20	+25.6	16.5	57.6
Jan. 29	00 16.48	-48 09.7	3.470	2.971	+0.36	+23.2	16.6	52.3
Feb. 8	00 20.07	-44 17.6	3.595	3.011	+0.46	+20.9	16.8	47.1
Feb. 18	00 24.63	-40 48.2	3.713	3.055	+0.51	+18.8	16.9	42.3
Feb. 28	00 29.75	-37 40.0	3.818	3.101	+0.54	+16.9	17.0	38.2
Mar. 10	00 35.18	-34 51.2	3.908	3.149	+0.55	+15.1	17.1	35.2
Mar. 20	00 40.70	-32 20.3	3.980	3.199	+0.54	+13.4	17.2	33.6
Mar. 30	00 46.14	-30 06.0	4.034	3.251	+0.52	+11.9	17.3	33.7
Apr. 9	00 51.35	-28 07.3	4.067	3.306	+0.48	+10.4	17.4	35.7
Apr. 19	00 56.19	-26 23.1	4.079	3.362	+0.43	+9.0	17.5	39.2
Apr. 29	01 00.52	-24 52.8	4.071	3.419	+0.37	+7.7	17.6	44.0
May 9	01 04.20	-23 35.8	4.043	3.478	+0.28	+6.4	17.6	49.8
May 19	01 07.04	-22 31.9	3.995	3.539	+0.19	+5.1	17.7	56.5
May 29	01 08.90	-21 40.6	3.932	3.601	+0.07	+3.9	17.7	63.8
June 8	01 09.56	-21 01.7	3.854	3.664	-0.07	+2.7	17.8	71.7
June 18	01 08.81	-20 34.7	3.765	3.728	-0.24	+1.6	17.8	80.1
June 28	01 06.44	-20 19.2	3.670	3.793	-0.42	+0.5	17.8	89.1
July 8	01 02.21	-20 14.1	3.573	3.859	-0.63	-0.4	17.8	98.6
July 18	00 55.94	-20 17.9	3.480	3.925	-0.84	-1.0	17.8	108.6
July 28	00 47.49	-20 28.2	3.398	3.993	-1.06	-1.4	17.9	119.2
Aug. 7	00 36.87	-20 42.0	3.333	4.061	-1.26	-1.3	17.9	130.1
Aug. 17	00 24.27	-20 54.9	3.293	4.130	-1.42	-0.8	17.9	141.1
Aug. 27	00 10.12	-21 02.9	3.282	4.199	-1.51	+0.1	18.0	151.6
Sept. 6	23 55.06	-21 01.8	3.308	4.269	-1.52	+1.3	18.1	159.9
Sept.16	23 39.90	-20 48.8	3.372	4.339	-1.44	+2.6	18.2	162.0
Sept.26	23 25.47	-20 23.1	3.474	4.410	-1.30	+3.8	18.3	156.2
Oct. 6	23 12.47	-19 45.3	3.613	4.481	-1.11	+4.8	18.5	146.5
Oct. 16	23 01.37	-18 57.4	3.785	4.552	-0.90	+5.6	18.7	135.8
Oct. 26	22 52.42	-18 01.9	3.983	4.624	-0.68	+6.1	18.9	124.8
Nov. 5	22 45.65	-17 00.8	4.203	4.696	-0.47	+6.5	19.0	114.1
Nov. 15	22 40.96	-15 56.1	4.438	4.768	-0.28	+6.7	19.2	103.6
Nov. 25	22 38.13	-14 49.2	4.681	4.840	-0.12	+6.8	19.4	93.3
Dec. 5	22 36.94	-13 40.9	4.927	4.913	+0.02	+6.9	19.6	83.4
Dec. 15	22 37.13	-12 31.8	5.171	4.985	+0.13	+7.0	19.7	73.7
Dec. 25	22 38.48	-11 22.2	5.407	5.058	+0.23	+7.0	19.9	64.3
Jan. 4	22 40.77	-10 12.4	5.631	5.131	+0.30	+7.0	20.1	55.0
Jan. 14	22 43.79	-09 02.5	5.839	5.204	+0.36	+7.0	20.2	46.0
Jan. 24	22 47.37	-07 52.6	6.029	5.277	+0.40	+7.0	20.3	37.0
Feb. 3	22 51.36	-06 42.8	6.197	5.350	+0.42	+6.9	20.4	28.2
Feb. 13	22 55.61	-05 33.3	6.343	5.423	+0.44	+6.9	20.6	19.6
Feb. 23	22 59.99	-04 24.2	6.463	5.496	+0.44	+6.9	20.7	11.0
Mar. 4	23 04.39	-03 15.7	6.558	5.569	+0.43	+6.8	20.7	3.4
Mar. 14	23 08.68	-02 08.0	6.627	5.642	+0.41	+6.7	20.8	7.0
Mar. 24	23 12.78	-01 01.2	6.670	5.714	+0.38	+6.6	20.9	15.3

Comet P/2010 WK (LINEAR)

Epoch = 2011 July 18.0 TT
T = 2010 Oct. 19.77716 TT
Peri. = 40.86301 e = 0.6920594
Node = 11.48881 2000.0 a = 5.7328689 AU
Incl. = 11.47903 n = 0.07180357
q = 1.7653831 AU P = 13.73 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	05 03.00	+43 56.4	1.079	1.965	+0.38	-6.7	16.6	144.6
Jan. 19	05 06.77	+42 49.8	1.176	2.012	+0.72	-7.1	16.9	137.2
Jan. 29	05 13.95	+41 38.6	1.290	2.063	+1.01	-7.2	17.3	129.7
Feb. 8	05 24.03	+40 27.1	1.418	2.117	+1.24	-7.0	17.6	122.4
Feb. 18	05 36.44	+39 17.3	1.559	2.174	+1.41	-6.8	18.0	115.4
Feb. 28	05 50.58	+38 09.7	1.711	2.233	+1.54	-6.6	18.4	108.5
Mar. 10	06 05.98	+37 03.4	1.872	2.294	+1.63	-6.6	18.8	102.0
Mar. 20	06 22.26	+35 57.8	2.041	2.357	+1.68	-6.6	19.1	95.6
Mar. 30	06 39.08	+34 51.9	2.216	2.421	+1.71	-6.7	19.5	89.4
Apr. 9	06 56.20	+33 44.8	2.395	2.486	+1.72	-6.9	19.8	83.3
Apr. 19	07 13.43	+32 36.0	2.576	2.553	+1.72	-7.1	20.2	77.4
Apr. 29	07 30.60	+31 25.2	2.758	2.620	+1.70	-7.3	20.5	71.5
May 9	07 47.62	+30 12.1	2.940	2.687	+1.68	-7.5	20.8	65.7
May 19	08 04.39	+28 56.7	3.118	2.756	+1.65	-7.8	21.1	60.0
May 29	08 20.84	+27 39.1	3.293	2.824	+1.61	-8.0	21.4	54.3
June 8	08 36.94	+26 19.5	3.462	2.893	+1.57	-8.1	21.6	48.6
June 18	08 52.65	+24 58.2	3.624	2.962	+1.53	-8.3	21.9	42.9
June 28	09 07.96	+23 35.5	3.778	3.031	+1.49	-8.4	22.1	37.2
July 8	09 22.86	+22 11.8	3.921	3.099	+1.45	-8.4	22.3	31.4
July 18	09 37.32	+20 47.4	4.054	3.168	+1.40	-8.5	22.6	25.6
July 28	09 51.35	+19 22.9	4.173	3.237	+1.36	-8.4	22.8	19.9
Aug. 7	10 04.96	+17 58.7	4.279	3.305	+1.32	-8.3	22.9	14.1
Aug. 17	10 18.11	+16 35.2	4.370	3.373	+1.27	-8.2	.	8.8
Aug. 27	10 30.80	+15 12.9	4.445	3.441	+1.22	-8.1	.	5.5
Sept. 6	10 43.03	+13 52.4	4.504	3.508	+1.17	-7.8	.	7.9
Sept.16	10 54.76	+12 34.2	4.545	3.575	+1.12	-7.5	.	13.5
Sept.26	11 05.97	+11 18.8	4.569	3.642	+1.06	-7.2	.	19.9
Oct. 6	11 16.61	+10 06.8	4.575	3.708	+1.00	-6.8	.	26.6
Oct. 16	11 26.63	+08 58.9	4.564	3.774	+0.93	-6.3	.	33.6
Oct. 26	11 35.98	+07 55.7	4.535	3.840	+0.86	-5.8	.	41.0
Nov. 5	11 44.56	+06 57.8	4.490	3.905	+0.77	-5.2	.	48.5
Nov. 15	11 52.30	+06 06.1	4.430	3.969	+0.68	-4.5	.	56.4
Nov. 25	11 59.08	+05 21.2	4.357	4.033	+0.57	-3.7	.	64.6
Dec. 5	12 04.78	+04 43.8	4.272	4.097	+0.45	-2.9	.	73.2
Dec. 15	12 09.29	+04 14.7	4.180	4.160	+0.32	-2.0	.	82.1
Dec. 25	12 12.48	+03 54.4	4.084	4.223	+0.17	-1.1	.	91.3
Jan. 4	12 14.22	+03 43.4	3.987	4.285	+0.02	-0.2	.	101.0
Jan. 14	12 14.44	+03 41.9	3.894	4.347	-0.13	+0.8	.	111.1
Jan. 24	12 13.09	+03 49.6	3.811	4.408	-0.29	+1.6	.	121.6
Feb. 3	12 10.21	+04 05.9	3.743	4.469	-0.43	+2.3	.	132.5
Feb. 13	12 05.94	+04 29.4	3.696	4.529	-0.54	+2.9	.	143.7
Feb. 23	12 00.51	+04 58.1	3.673	4.589	-0.62	+3.1	.	155.1
Mar. 4	11 54.28	+05 29.5	3.678	4.648	-0.66	+3.1	.	166.4
Mar. 14	11 47.68	+06 00.8	3.715	4.707	-0.65	+2.9	.	175.6
Mar. 24	11 41.17	+06 29.4	3.783	4.765	-0.60	+2.3	.	168.8

Comet P/2010 T1 (McNaught)

Epoch = 2011 July 18.0 TT
T = 2010 Oct. 25.80552 TT
Peri. = 220.67745 e = 0.3133881
Node = 130.00504 2000.0 a = 4.6823066 AU
Incl. = 32.51106 n = 0.09727793
q = 3.2149274 AU P = 10.13 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m	m1	Elong. °
Jan. 9	23 41.69	-27 25.3	3.632	3.240	+1.24	+8.7	19.7	59.2
Jan. 19	23 54.13	-25 57.8	3.740	3.247	+1.30	+8.9	19.7	53.2
Jan. 29	00 07.15	-24 28.4	3.838	3.255	+1.35	+9.0	19.8	47.5
Feb. 8	00 20.64	-22 58.1	3.927	3.264	+1.39	+9.0	19.9	42.2
Feb. 18	00 34.50	-21 28.1	4.005	3.273	+1.41	+8.9	19.9	37.2
Feb. 28	00 48.65	-19 59.2	4.072	3.284	+1.44	+8.7	20.0	32.8
Mar. 10	01 03.02	-18 32.4	4.128	3.295	+1.45	+8.4	20.0	29.0
Mar. 20	01 17.55	-17 08.8	4.171	3.307	+1.46	+8.0	20.1	26.1
Mar. 30	01 32.17	-15 49.1	4.204	3.319	+1.47	+7.5	20.1	24.3
Apr. 9	01 46.86	-14 34.3	4.224	3.333	+1.47	+6.9	20.2	23.8
Apr. 19	02 01.54	-13 25.2	4.233	3.347	+1.46	+6.3	20.2	24.7
Apr. 29	02 16.17	-12 22.6	4.231	3.362	+1.45	+5.5	20.2	26.7
May 9	02 30.70	-11 27.1	4.217	3.377	+1.44	+4.8	20.3	29.6
May 19	02 45.06	-10 39.6	4.193	3.393	+1.41	+3.9	20.3	33.3
May 29	02 59.20	-10 00.5	4.159	3.410	+1.38	+3.0	20.3	37.4
June 8	03 13.05	-09 30.4	4.115	3.427	+1.35	+2.1	20.3	41.9
June 18	03 26.51	-09 09.8	4.061	3.445	+1.30	+1.1	20.3	46.8
June 28	03 39.52	-08 59.1	3.998	3.464	+1.24	+0.1	20.3	51.8
July 8	03 51.95	-08 58.5	3.928	3.483	+1.17	-1.0	20.3	57.2
July 18	04 03.69	-09 08.1	3.850	3.502	+1.09	-2.0	20.3	62.7
July 28	04 14.64	-09 28.0	3.766	3.522	+1.00	-3.0	20.3	68.5
Aug. 7	04 24.63	-09 57.9	3.677	3.543	+0.89	-3.9	20.3	74.4
Aug. 17	04 33.51	-10 37.4	3.585	3.564	+0.76	-4.8	20.3	80.7
Aug. 27	04 41.13	-11 25.6	3.491	3.585	+0.62	-5.6	20.2	87.1
Sept. 6	04 47.31	-12 21.4	3.397	3.607	+0.46	-6.2	20.2	93.8
Sept.16	04 51.87	-13 22.9	3.306	3.629	+0.28	-6.5	20.2	100.7
Sept.26	04 54.66	-14 27.9	3.220	3.652	+0.09	-6.5	20.2	107.7
Oct. 6	04 55.56	-15 33.3	3.142	3.675	-0.10	-6.2	20.2	114.7
Oct. 16	04 54.53	-16 35.0	3.076	3.698	-0.29	-5.4	20.2	121.7
Oct. 26	04 51.61	-17 28.8	3.024	3.721	-0.46	-4.1	20.2	128.2
Nov. 5	04 47.00	-18 09.8	2.990	3.745	-0.59	-2.4	20.2	133.8
Nov. 15	04 41.07	-18 33.6	2.976	3.769	-0.68	-0.3	20.2	138.0
Nov. 25	04 34.31	-18 36.9	2.985	3.794	-0.70	+1.9	20.3	139.9
Dec. 5	04 27.33	-18 17.8	3.017	3.818	-0.66	+4.1	20.3	139.2
Dec. 15	04 20.74	-17 36.8	3.073	3.843	-0.57	+6.1	20.4	136.1
Dec. 25	04 15.08	-16 35.8	3.152	3.868	-0.43	+7.7	20.5	130.9
Jan. 4	04 10.78	-15 18.4	3.252	3.893	-0.27	+9.0	20.6	124.5
Jan. 14	04 08.09	-13 48.7	3.369	3.919	-0.10	+9.8	20.7	117.3
Jan. 24	04 07.11	-12 10.9	3.501	3.944	+0.07	+10.2	20.9	109.7
Feb. 3	04 07.84	-10 28.8	3.645	3.970	+0.23	+10.3	21.0	102.0
Feb. 13	04 10.19	-08 45.7	3.797	3.995	+0.38	+10.2	21.1	94.4
Feb. 23	04 14.01	-07 03.9	3.954	4.021	+0.51	+9.8	21.3	86.8
Mar. 4	04 19.16	-05 25.5	4.111	4.047	+0.63	+9.4	21.4	79.4
Mar. 14	04 25.45	-03 52.0	4.268	4.073	+0.73	+8.8	21.5	72.1
Mar. 24	04 32.74	-02 24.1	4.420	4.099	+0.81	+8.1	21.6	65.0

Comet 103P/Hartley

Epoch = 2011 July 18.0 TT
T = 2010 Oct. 28.27479 TT
Peri. = 181.22918 e = 0.6948792
Node = 219.75309 2000.0 a = 3.4703108 AU
Incl. = 13.61937 n = 0.15245846
q = 1.0588640 AU P = 6.46 years

m1 = 10.4 + 5 log(Delta) + 17.5 log(r(t-30))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	07 12.01	-15 14.4	0.524	1.435	-0.54	+16.3	10.4	142.5
Jan. 19	07 06.58	-12 31.5	0.609	1.520	-0.23	+17.9	11.2	144.3
Jan. 29	07 04.28	-09 32.8	0.708	1.607	+0.09	+17.7	12.0	143.0
Feb. 8	07 05.23	-06 36.3	0.822	1.696	+0.40	+16.2	12.7	139.2
Feb. 18	07 09.20	-03 54.2	0.952	1.785	+0.65	+14.1	13.5	133.8
Feb. 28	07 15.68	-01 32.7	1.097	1.874	+0.85	+11.9	14.2	127.7
Mar. 10	07 24.21	+00 26.0	1.255	1.963	+1.02	+9.6	14.9	121.2
Mar. 20	07 34.36	+02 01.7	1.426	2.051	+1.14	+7.4	15.6	114.6
Mar. 30	07 45.72	+03 16.0	1.606	2.138	+1.23	+5.5	16.2	108.1
Apr. 9	07 58.00	+04 10.5	1.795	2.225	+1.29	+3.7	16.8	101.6
Apr. 19	08 10.93	+04 47.2	1.990	2.310	+1.34	+2.1	17.4	95.3
Apr. 29	08 24.29	+05 08.1	2.190	2.394	+1.36	+0.7	17.9	89.0
May 9	08 37.94	+05 15.0	2.391	2.476	+1.38	-0.5	18.4	82.8
May 19	08 51.74	+05 09.6	2.594	2.557	+1.39	-1.6	18.8	76.7
May 29	09 05.59	+04 53.4	2.795	2.637	+1.38	-2.6	19.3	70.6
June 8	09 19.43	+04 27.8	2.992	2.716	+1.38	-3.4	19.7	64.6
June 18	09 33.18	+03 54.1	3.185	2.793	+1.36	-4.1	20.1	58.6
June 28	09 46.80	+03 13.3	3.370	2.869	+1.35	-4.7	20.4	52.6
July 8	10 00.26	+02 26.4	3.547	2.943	+1.33	-5.2	20.7	46.6
July 18	10 13.53	+01 34.4	3.714	3.017	+1.31	-5.6	21.1	40.6
July 28	10 26.59	+00 38.1	3.870	3.088	+1.28	-6.0	21.3	34.6
Aug. 7	10 39.43	-00 21.7	4.012	3.159	+1.26	-6.3	21.6	28.6
Aug. 17	10 52.01	-01 24.2	4.139	3.228	+1.23	-6.5	21.9	22.6
Aug. 27	11 04.32	-02 28.8	4.251	3.296	+1.20	-6.6	22.1	16.8
Sept. 6	11 16.35	-03 34.8	4.345	3.363	+1.17	-6.7	22.3	11.4
Sept.16	11 28.06	-04 41.6	4.422	3.428	+1.14	-6.7	22.5	7.7
Sept.26	11 39.42	-05 48.6	4.480	3.493	+1.10	-6.7	22.7	8.8
Oct. 6	11 50.40	-06 55.2	4.519	3.556	+1.05	-6.6	22.9	13.7
Oct. 16	12 00.93	-08 00.7	4.539	3.618	+1.00	-6.4	23.0	20.0
Oct. 26	12 10.97	-09 04.6	4.539	3.679	+0.95	-6.2	.	26.8
Nov. 5	12 20.44	-10 06.2	4.519	3.739	+0.88	-5.9	.	34.0
Nov. 15	12 29.25	-11 04.9	4.481	3.797	+0.81	-5.5	.	41.5
Nov. 25	12 37.31	-11 59.9	4.425	3.855	+0.72	-5.1	.	49.3
Dec. 5	12 44.49	-12 50.6	4.354	3.911	+0.62	-4.5	.	57.4
Dec. 15	12 50.65	-13 36.0	4.268	3.967	+0.50	-3.9	.	65.8
Dec. 25	12 55.67	-14 15.4	4.171	4.021	+0.37	-3.2	.	74.5
Jan. 4	12 59.38	-14 47.8	4.067	4.075	+0.23	-2.4	.	83.5
Jan. 14	13 01.65	-15 12.0	3.958	4.127	+0.07	-1.5	.	93.0
Jan. 24	13 02.34	-15 27.0	3.849	4.178	-0.10	-0.5	.	102.8
Feb. 3	13 01.38	-15 31.6	3.745	4.229	-0.26	+0.7	.	113.0
Feb. 13	12 58.77	-15 24.8	3.652	4.278	-0.42	+1.9	.	123.6
Feb. 23	12 54.57	-15 06.1	3.575	4.327	-0.56	+3.1	.	134.5
Mar. 4	12 49.02	-14 35.4	3.520	4.375	-0.66	+4.2	.	145.7
Mar. 14	12 42.45	-13 53.7	3.490	4.421	-0.72	+5.1	.	156.9
Mar. 24	12 35.30	-13 03.0	3.490	4.467	-0.72	+5.7	.	167.1

Comet C/2010 FB87 (WISE-Garradd)

Epoch = 2011 July 18.0 TT
T = 2010 Nov. 7.38140 TT
Peri. = 265.02506
Node = 89.90297 2000.0
Incl. = 107.62450
q = 2.8428317 AU
e = 0.9904736

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	08 16.06	-69 12.3	2.776	2.913	-5.18	+15.0	15.7	88.0
Jan. 19	07 24.22	-66 42.1	2.724	2.936	-4.03	+24.3	15.7	92.5
Jan. 29	06 43.96	-62 38.8	2.696	2.963	-2.76	+30.9	15.7	95.9
Feb. 8	06 16.33	-57 29.7	2.699	2.993	-1.74	+34.5	15.7	97.6
Feb. 18	05 58.96	-51 44.4	2.734	3.026	-1.00	+35.6	15.8	97.5
Feb. 28	05 48.99	-45 48.4	2.803	3.061	-0.47	+34.8	15.9	95.5
Mar. 10	05 44.25	-40 00.7	2.903	3.100	-0.11	+32.6	16.0	92.0
Mar. 20	05 43.18	-34 34.6	3.029	3.140	+0.15	+29.7	16.2	87.1
Mar. 30	05 44.69	-29 37.2	3.175	3.184	+0.34	+26.6	16.3	81.4
Apr. 9	05 48.08	-25 11.6	3.337	3.229	+0.47	+23.4	16.5	75.2
Apr. 19	05 52.81	-21 18.1	3.506	3.277	+0.57	+20.3	16.7	68.7
Apr. 29	05 58.49	-17 54.8	3.678	3.326	+0.64	+17.6	16.8	62.0
May 9	06 04.86	-14 59.3	3.847	3.378	+0.68	+15.1	17.0	55.4
May 19	06 11.68	-12 28.7	4.008	3.431	+0.71	+12.9	17.2	49.0
May 29	06 18.79	-10 20.1	4.159	3.486	+0.72	+10.9	17.3	42.9
June 8	06 26.03	-08 30.8	4.295	3.543	+0.72	+9.2	17.5	37.4
June 18	06 33.26	-06 58.6	4.413	3.600	+0.71	+7.8	17.6	32.7
June 28	06 40.39	-05 41.0	4.513	3.659	+0.69	+6.5	17.7	29.2
July 8	06 47.30	-04 36.4	4.591	3.720	+0.66	+5.4	17.8	27.6
July 18	06 53.88	-03 42.8	4.647	3.781	+0.61	+4.4	17.9	28.1
July 28	07 00.03	-02 58.6	4.681	3.844	+0.56	+3.6	18.0	30.8
Aug. 7	07 05.63	-02 22.5	4.691	3.907	+0.49	+3.0	18.1	35.2
Aug. 17	07 10.56	-01 52.9	4.679	3.971	+0.41	+2.4	18.1	41.0
Aug. 27	07 14.70	-01 28.4	4.646	4.037	+0.32	+2.1	18.2	47.7
Sept. 6	07 17.90	-01 07.6	4.593	4.102	+0.21	+1.9	18.2	55.2
Sept.16	07 20.01	-00 49.0	4.522	4.169	+0.09	+1.8	18.3	63.3
Sept.26	07 20.86	-00 31.1	4.437	4.236	-0.06	+1.9	18.3	72.0
Oct. 6	07 20.30	-00 12.1	4.342	4.304	-0.21	+2.2	18.3	81.2
Oct. 16	07 18.16	+00 09.8	4.241	4.372	-0.38	+2.7	18.3	90.9
Oct. 26	07 14.32	+00 36.4	4.139	4.440	-0.56	+3.3	18.4	101.2
Nov. 5	07 08.67	+01 09.5	4.044	4.509	-0.74	+4.1	18.4	111.9
Nov. 15	07 01.25	+01 50.7	3.963	4.579	-0.91	+5.0	18.4	123.1
Nov. 25	06 52.17	+02 41.0	3.903	4.649	-1.04	+6.0	18.4	134.5
Dec. 5	06 41.72	+03 40.8	3.871	4.719	-1.14	+6.8	18.5	145.8
Dec. 15	06 30.36	+04 49.3	3.872	4.789	-1.17	+7.5	18.5	156.1
Dec. 25	06 18.62	+06 04.7	3.912	4.859	-1.15	+8.0	18.6	162.6
Jan. 4	06 07.13	+07 24.8	3.992	4.930	-1.07	+8.2	18.7	160.6
Jan. 14	05 56.46	+08 46.8	4.110	5.001	-0.94	+8.1	18.9	152.2
Jan. 24	05 47.07	+10 08.2	4.265	5.072	-0.78	+7.9	19.0	141.5
Feb. 3	05 39.26	+11 27.3	4.450	5.143	-0.61	+7.5	19.2	130.4
Feb. 13	05 33.18	+12 42.7	4.660	5.215	-0.43	+7.1	19.3	119.3
Feb. 23	05 28.85	+13 53.8	4.888	5.286	-0.27	+6.6	19.5	108.5
Mar. 4	05 26.18	+15 00.3	5.128	5.357	-0.11	+6.2	19.6	98.0
Mar. 14	05 25.03	+16 02.2	5.373	5.429	+0.02	+5.8	19.8	87.9
Mar. 24	05 25.24	+16 59.8	5.618	5.501	+0.14	+5.3	20.0	78.1

Comet C/2010 L3 (Catalina)

Epoch = 2011 July 18.0 TT
T = 2010 Nov. 8.34301 TT
Peri. = 121.67494
Node = 38.26637 2000.0
Incl. = 102.63686
q = 9.8835152 AU
e = 0.9999882

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	16 42.64	+29 03.0	10.288	9.889	+0.21	+0.6	19.3	63.6
Jan. 19	16 44.74	+29 09.2	10.206	9.891	+0.16	+1.2	19.3	68.7
Jan. 29	16 46.33	+29 21.6	10.113	9.894	+0.10	+1.8	19.3	74.4
Feb. 8	16 47.29	+29 39.6	10.012	9.896	+0.03	+2.2	19.3	80.4
Feb. 18	16 47.56	+30 02.1	9.907	9.899	-0.05	+2.6	19.2	86.7
Feb. 28	16 47.04	+30 27.9	9.800	9.902	-0.14	+2.8	19.2	93.1
Mar. 10	16 45.69	+30 55.8	9.694	9.906	-0.22	+2.8	19.2	99.4
Mar. 20	16 43.47	+31 24.0	9.595	9.910	-0.31	+2.7	19.2	105.6
Mar. 30	16 40.39	+31 50.9	9.505	9.914	-0.39	+2.4	19.2	111.4
Apr. 9	16 36.47	+32 14.7	9.428	9.918	-0.47	+1.9	19.1	116.7
Apr. 19	16 31.79	+32 33.6	9.366	9.923	-0.53	+1.2	19.1	121.2
Apr. 29	16 26.48	+32 46.0	9.322	9.928	-0.58	+0.4	19.1	124.5
May 9	16 20.68	+32 50.5	9.299	9.933	-0.61	-0.4	19.1	126.6
May 19	16 14.60	+32 46.0	9.297	9.939	-0.62	-1.4	19.1	127.0
May 29	16 08.43	+32 32.1	9.317	9.945	-0.60	-2.3	19.1	125.9
June 8	16 02.39	+32 08.7	9.358	9.951	-0.57	-3.3	19.1	123.2
June 18	15 56.68	+31 36.1	9.420	9.958	-0.52	-4.1	19.2	119.3
June 28	15 51.45	+30 55.2	9.501	9.964	-0.46	-4.8	19.2	114.4
July 8	15 46.85	+30 07.1	9.598	9.971	-0.39	-5.4	19.2	108.7
July 18	15 42.97	+29 13.2	9.708	9.979	-0.31	-5.8	19.2	102.6
July 28	15 39.87	+28 14.9	9.829	9.986	-0.23	-6.1	19.3	96.0
Aug. 7	15 37.56	+27 13.6	9.957	9.994	-0.15	-6.3	19.3	89.2
Aug. 17	15 36.05	+26 10.7	10.087	10.003	-0.08	-6.3	19.3	82.3
Aug. 27	15 35.29	+25 07.4	10.217	10.011	0.00	-6.2	19.4	75.4
Sept. 6	15 35.24	+24 05.0	10.343	10.020	+0.06	-6.1	19.4	68.6
Sept.16	15 35.83	+23 04.3	10.462	10.029	+0.12	-5.8	19.4	62.0
Sept.26	15 37.00	+22 06.3	10.569	10.039	+0.17	-5.5	19.4	55.7
Oct. 6	15 38.66	+21 11.6	10.663	10.048	+0.21	-5.1	19.5	49.9
Oct. 16	15 40.74	+20 21.0	10.741	10.058	+0.24	-4.6	19.5	44.8
Oct. 26	15 43.14	+19 34.9	10.801	10.068	+0.26	-4.1	19.5	40.7
Nov. 5	15 45.79	+18 53.8	10.840	10.079	+0.28	-3.6	19.5	38.1
Nov. 15	15 48.59	+18 18.0	10.859	10.090	+0.29	-3.0	19.5	37.3
Nov. 25	15 51.45	+17 47.7	10.855	10.101	+0.28	-2.5	19.5	38.5
Dec. 5	15 54.27	+17 23.1	10.830	10.112	+0.27	-1.9	19.5	41.4
Dec. 15	15 56.97	+17 04.4	10.784	10.124	+0.25	-1.3	19.5	45.9
Dec. 25	15 59.46	+16 51.4	10.717	10.136	+0.22	-0.7	19.5	51.6
Jan. 4	16 01.62	+16 44.1	10.633	10.148	+0.18	-0.2	19.5	58.1
Jan. 14	16 03.39	+16 42.3	10.533	10.160	+0.13	+0.3	19.5	65.3
Jan. 24	16 04.67	+16 45.4	10.420	10.173	+0.07	+0.8	19.4	72.8
Feb. 3	16 05.37	+16 53.0	10.298	10.186	+0.01	+1.1	19.4	80.7
Feb. 13	16 05.43	+17 04.4	10.171	10.199	-0.06	+1.4	19.4	88.9
Feb. 23	16 04.80	+17 18.8	10.044	10.213	-0.14	+1.6	19.4	97.1
Mar. 4	16 03.42	+17 35.0	9.920	10.227	-0.21	+1.7	19.4	105.3
Mar. 14	16 01.31	+17 51.9	9.805	10.241	-0.28	+1.6	19.3	113.4
Mar. 24	15 58.46	+18 08.2	9.702	10.255	-0.35	+1.4	19.3	121.3

Comet P/2010 U2 (Hill)

Epoch = 2011 July 18.0 TT
T = 2010 Nov. 9.27154 TT
Peri. = 44.23496 e = 0.4025337
Node = 357.14962 2000.0 a = 4.2729431 AU
Incl. = 16.86126 n = 0.11158695
q = 2.5529395 AU P = 8.83 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	01 45.37	+30 13.6	2.130	2.586	+0.96	+1.5	18.6	106.4
Jan. 19	01 54.97	+30 28.4	2.259	2.598	+1.16	+2.3	18.8	98.8
Jan. 29	02 06.57	+30 51.6	2.392	2.611	+1.33	+3.0	18.9	91.6
Feb. 8	02 19.92	+31 21.5	2.527	2.626	+1.48	+3.5	19.1	84.7
Feb. 18	02 34.75	+31 56.4	2.663	2.643	+1.61	+3.8	19.3	78.1
Feb. 28	02 50.85	+32 34.3	2.797	2.661	+1.72	+3.9	19.4	71.8
Mar. 10	03 08.04	+33 13.2	2.929	2.680	+1.81	+3.8	19.6	65.8
Mar. 20	03 26.14	+33 51.3	3.058	2.701	+1.89	+3.6	19.7	60.0
Mar. 30	03 45.02	+34 27.0	3.182	2.723	+1.95	+3.2	19.8	54.3
Apr. 9	04 04.53	+34 58.8	3.300	2.747	+2.00	+2.7	20.0	48.8
Apr. 19	04 24.53	+35 25.5	3.412	2.771	+2.04	+2.1	20.1	43.5
Apr. 29	04 44.89	+35 46.0	3.517	2.797	+2.06	+1.4	20.2	38.3
May 9	05 05.48	+35 59.7	3.613	2.824	+2.07	+0.6	20.4	33.2
May 19	05 26.17	+36 06.0	3.701	2.851	+2.07	−0.1	20.5	28.3
May 29	05 46.83	+36 04.7	3.780	2.880	+2.05	−0.9	20.6	23.6
June 8	06 07.35	+35 55.7	3.848	2.910	+2.03	−1.6	20.7	19.3
June 18	06 27.60	+35 39.3	3.907	2.940	+1.99	−2.3	20.8	15.5
June 28	06 47.49	+35 15.8	3.954	2.971	+1.94	−3.0	20.9	12.9
July 8	07 06.93	+34 45.8	3.989	3.003	+1.89	−3.6	21.0	12.2
July 18	07 25.83	+34 10.1	4.013	3.036	+1.83	−4.1	21.1	13.9
July 28	07 44.12	+33 29.5	4.024	3.069	+1.76	−4.5	21.1	17.3
Aug. 7	08 01.74	+32 44.9	4.022	3.102	+1.69	−4.8	21.2	21.7
Aug. 17	08 18.63	+31 57.3	4.007	3.136	+1.61	−4.9	21.3	26.7
Aug. 27	08 34.75	+31 07.9	3.980	3.171	+1.53	−5.0	21.3	32.2
Sept. 6	08 50.03	+30 17.8	3.939	3.205	+1.44	−5.0	21.4	38.0
Sept.16	09 04.41	+29 28.3	3.887	3.241	+1.34	−4.8	21.4	44.1
Sept.26	09 17.83	+28 40.5	3.821	3.276	+1.24	−4.5	21.4	50.5
Oct. 6	09 30.22	+27 55.9	3.745	3.312	+1.12	−4.0	21.5	57.2
Oct. 16	09 41.47	+27 15.7	3.658	3.348	+1.00	−3.4	21.5	64.2
Oct. 26	09 51.48	+26 41.3	3.563	3.384	+0.86	−2.7	21.5	71.6
Nov. 5	10 00.10	+26 14.0	3.461	3.420	+0.71	−1.9	21.5	79.4
Nov. 15	10 07.20	+25 55.0	3.354	3.457	+0.54	−1.0	21.5	87.6
Nov. 25	10 12.59	+25 45.1	3.246	3.493	+0.35	0.0	21.5	96.2
Dec. 5	10 16.09	+25 45.0	3.139	3.530	+0.15	+1.0	21.5	105.3
Dec. 15	10 17.55	+25 54.5	3.039	3.566	−0.07	+1.8	21.5	114.8
Dec. 25	10 16.85	+26 12.8	2.950	3.603	−0.29	+2.5	21.5	124.8
Jan. 4	10 13.96	+26 37.8	2.876	3.639	−0.50	+2.8	21.5	135.1
Jan. 14	10 09.00	+27 06.2	2.822	3.676	−0.67	+2.8	21.5	145.6
Jan. 24	10 02.28	+27 34.3	2.793	3.712	−0.80	+2.3	21.6	155.7
Feb. 3	09 54.32	+27 57.5	2.792	3.749	−0.85	+1.4	21.6	163.8
Feb. 13	09 45.83	+28 11.9	2.821	3.785	−0.83	+0.3	21.7	165.5
Feb. 23	09 37.54	+28 15.2	2.881	3.821	−0.74	−0.9	21.8	159.1
Mar. 4	09 30.16	+28 06.3	2.969	3.857	−0.59	−2.0	22.0	149.7
Mar. 14	09 24.23	+27 45.9	3.083	3.893	−0.41	−3.1	22.1	139.6
Mar. 24	09 20.09	+27 15.4	3.219	3.929	−0.22	−3.9	22.3	129.5

Comet P/2011 A1 (Larson)

Epoch = 2011 July 18.0 TT
T = 2010 Nov. 14.44093 TT
Peri. = 44.92162 e = 0.4066928
Node = 73.74859 2000.0 a = 3.7317267 AU
Incl. = 13.29309 n = 0.13672229
q = 2.2140603 AU P = 7.21 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 9	11 05.24	+25 32.3	1.503	2.251	+0.24	+8.1	18.2	128.5
Jan. 19	11 07.61	+26 52.9	1.443	2.266	−0.09	+8.8	18.1	137.3
Jan. 29	11 06.71	+28 20.8	1.399	2.282	−0.40	+8.5	18.1	145.8
Feb. 8	11 02.74	+29 46.2	1.377	2.301	−0.63	+7.1	18.1	153.2
Feb. 18	10 56.44	+30 57.5	1.378	2.321	−0.75	+4.7	18.2	157.4
Feb. 28	10 48.94	+31 44.9	1.402	2.344	−0.74	+1.7	18.3	156.4
Mar. 10	10 41.55	+32 02.0	1.450	2.368	−0.60	−1.4	18.4	151.0
Mar. 20	10 35.55	+31 47.8	1.520	2.394	−0.38	−4.2	18.6	143.4
Mar. 30	10 31.77	+31 05.6	1.609	2.421	−0.12	−6.5	18.8	135.1
Apr. 9	10 30.60	+30 00.5	1.716	2.450	+0.15	−8.2	19.0	126.8
Apr. 19	10 32.08	+28 38.1	1.835	2.480	+0.39	−9.5	19.2	118.8
Apr. 29	10 35.95	+27 03.1	1.967	2.512	+0.59	−10.4	19.5	111.1
May 9	10 41.89	+25 19.2	2.106	2.544	+0.77	−11.0	19.7	103.8
May 19	10 49.54	+23 29.0	2.252	2.578	+0.90	−11.4	19.9	96.9
May 29	10 58.55	+21 34.7	2.402	2.612	+1.01	−11.7	20.2	90.3
June 8	11 08.66	+19 37.5	2.555	2.648	+1.10	−11.9	20.4	83.9
June 18	11 19.63	+17 38.7	2.709	2.684	+1.16	−12.0	20.6	77.7
June 28	11 31.25	+15 38.9	2.862	2.720	+1.21	−12.0	20.8	71.7
July 8	11 43.39	+13 38.9	3.013	2.758	+1.25	−11.9	21.0	65.8
July 18	11 55.94	+11 39.4	3.161	2.795	+1.29	−11.9	21.2	60.0
July 28	12 08.80	+09 40.9	3.304	2.834	+1.31	−11.7	21.4	54.3
Aug. 7	12 21.91	+07 43.9	3.441	2.872	+1.33	−11.5	21.6	48.6
Aug. 17	12 35.20	+05 48.9	3.570	2.911	+1.34	−11.3	21.7	42.9
Aug. 27	12 48.65	+03 56.4	3.691	2.950	+1.36	−11.0	21.9	37.2
Sept. 6	13 02.22	+02 06.9	3.802	2.990	+1.36	−10.6	22.0	31.5
Sept.16	13 15.86	+00 20.7	3.902	3.029	+1.37	−10.2	22.2	25.8
Sept.26	13 29.56	−01 21.6	3.991	3.069	+1.37	−9.8	22.3	20.2
Oct. 6	13 43.28	−02 59.7	4.066	3.108	+1.37	−9.3	22.4	14.6
Oct. 16	13 56.97	−04 33.1	4.127	3.148	+1.36	−8.8	22.5	9.6
Oct. 26	14 10.62	−06 01.4	4.173	3.188	+1.35	−8.3	22.7	6.7
Nov. 5	14 24.16	−07 24.3	4.204	3.227	+1.34	−7.7	22.8	8.8
Nov. 15	14 37.53	−08 41.5	4.219	3.267	+1.31	−7.1	22.8	13.9
Nov. 25	14 50.68	−09 52.7	4.217	3.306	+1.28	−6.5	22.9	19.9
Dec. 5	15 03.52	−10 57.6	4.199	3.345	+1.24	−5.9	23.0	26.4
Dec. 15	15 15.95	−11 56.3	4.165	3.384	+1.19	−5.2	23.0	33.2
Dec. 25	15 27.89	−12 48.5	4.115	3.423	+1.13	−4.6	.	40.2
Jan. 4	15 39.19	−13 34.3	4.051	3.461	+1.05	−4.0	.	47.4
Jan. 14	15 49.73	−14 13.9	3.972	3.500	+0.96	−3.4	.	54.9
Jan. 24	15 59.37	−14 47.5	3.882	3.538	+0.86	−2.8	.	62.6
Feb. 3	16 07.92	−15 15.4	3.781	3.576	+0.73	−2.3	.	70.6
Feb. 13	16 15.23	−15 37.9	3.672	3.613	+0.59	−1.8	.	78.8
Feb. 23	16 21.12	−15 55.6	3.558	3.650	+0.43	−1.3	.	87.4
Mar. 4	16 25.38	−16 09.0	3.442	3.687	+0.25	−1.0	.	96.4
Mar. 14	16 27.88	−16 18.5	3.329	3.723	+0.06	−0.6	.	105.7
Mar. 24	16 28.49	−16 24.7	3.222	3.760	−0.14	−0.3	.	115.5

Comet 3D/Biela [Orbit 1]

Epoch = 2011 July 18.0 TT
T = 2010 Dec. 10.01073 TT
Peri. = 266.81441 e = 0.7716709
Node = 200.68794 2000.0 a = 3.4902174 AU
Incl. = 8.22030 n = 0.15115599
q = 0.7969182 AU P = 6.52 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 9	14 45.19	-22 57.3	0.801	0.940	-0.28	-17.7	16.1	32.8/ 91	62.6
Jan. 19	15 08.95	-22 58.8	0.868	1.032	-0.39	-13.8	16.7	27.4/ 88	67.4
Jan. 29	15 28.76	-22 46.4	0.917	1.134	-0.46	-11.0	17.3	21.7/ 84	73.1
Feb. 8	15 44.28	-22 19.9	0.949	1.242	-0.54	-8.8	17.7	15.7/ 76	79.8
Feb. 18	15 55.18	-21 39.3	0.966	1.353	-0.64	-7.0	18.1	10.0/ 57	87.6
Feb. 28	16 01.20	-20 44.8	0.973	1.465	-0.78	-5.2	18.5	7.0/ 10	96.5
Mar. 10	16 02.05	-19 35.9	0.973	1.576	-0.96	-3.4	18.8	10.4/323	106.5
Mar. 20	15 57.65	-18 12.4	0.973	1.686	-1.18	-1.5	19.1	16.5/306	117.8
Mar. 30	15 48.37	-16 35.1	0.980	1.794	-1.42	+0.6	19.4	22.0/299	130.1
Apr. 9	15 35.10	-14 47.1	1.001	1.901	-1.64	+2.6	19.7	25.3/296	143.4
Apr. 19	15 19.48	-12 55.7	1.042	2.005	-1.80	+4.4	20.0	25.7/294	157.0
Apr. 29	15 03.49	-11 10.4	1.109	2.107	-1.86	+5.6	20.4	23.3/292	169.7
May 9	14 48.93	-09 40.6	1.203	2.207	-1.83	+6.1	20.7	18.8/291	171.9
May 19	14 37.11	-08 32.7	1.325	2.305	-1.72	+6.1	21.1	13.4/289	161.0
May 29	14 28.56	-07 48.4	1.471	2.400	-1.58	+5.7	21.5	8.1/286	149.6
June 8	14 23.31	-07 26.2	1.638	2.493	-1.42	+5.2	21.9	3.3/276	138.8
June 18	14 21.09	-07 23.0	1.823	2.585	-1.27	+4.6	22.3	1.3/155	128.9
June 28	14 21.46	-07 34.9	2.022	2.674	-1.13	+4.0	22.7	4.5/122	119.6
July 8	14 24.02	-07 58.5	2.231	2.762	-1.00	+3.5	.	7.2/117	110.9
July 18	14 28.38	-08 30.7	2.447	2.847	-0.89	+3.0	.	9.5/114	102.6
July 28	14 34.21	-09 09.0	2.668	2.931	-0.80	+2.6	.	11.3/112	94.6
Aug. 7	14 41.25	-09 51.6	2.891	3.013	-0.72	+2.2	.	12.7/111	87.0
Aug. 17	14 49.29	-10 36.6	3.112	3.093	-0.65	+1.9	.	13.8/110	79.6
Aug. 27	14 58.14	-11 22.7	3.329	3.171	-0.59	+1.6	.	14.7/108	72.3
Sept. 6	15 07.67	-12 08.8	3.541	3.248	-0.53	+1.3	.	15.4/107	65.1
Sept.16	15 17.75	-12 54.1	3.745	3.323	-0.49	+1.1	.	16.0/106	58.0
Sept.26	15 28.28	-13 37.6	3.939	3.397	-0.45	+0.9	.	16.4/105	50.9
Oct. 6	15 39.17	-14 18.8	4.120	3.469	-0.41	+0.7	.	16.6/104	43.9
Oct. 16	15 50.32	-14 57.0	4.287	3.540	-0.38	+0.6	.	16.8/102	36.8
Oct. 26	16 01.66	-15 31.8	4.438	3.609	-0.35	+0.4	.	16.8/101	29.8
Nov. 5	16 13.11	-16 02.8	4.572	3.677	-0.32	+0.3	.	16.7/100	22.8
Nov. 15	16 24.58	-16 29.7	4.686	3.744	-0.30	+0.2	.	16.6/ 98	15.8
Nov. 25	16 36.01	-16 52.2	4.780	3.809	-0.28	+0.1	.	16.3/ 97	9.2
Dec. 5	16 47.29	-17 10.2	4.854	3.873	-0.26	0.0	.	15.9/ 95	5.2
Dec. 15	16 58.33	-17 23.6	4.905	3.936	-0.25	0.0	.	15.4/ 94	8.9
Dec. 25	17 09.04	-17 32.5	4.935	3.997	-0.23	-0.1	.	14.7/ 92	15.8
Jan. 4	17 19.33	-17 36.8	4.943	4.058	-0.22	-0.1	.	13.9/ 90	23.2
Jan. 14	17 29.07	-17 36.9	4.930	4.117	-0.21	-0.2	.	13.0/ 89	30.9
Jan. 24	17 38.17	-17 32.9	4.896	4.175	-0.20	-0.2	.	11.9/ 87	38.8
Feb. 3	17 46.50	-17 25.2	4.843	4.232	-0.19	-0.2	.	10.7/ 84	46.9
Feb. 13	17 53.92	-17 14.2	4.774	4.288	-0.18	-0.2	.	9.3/ 82	55.2
Feb. 23	18 00.33	-17 00.3	4.689	4.342	-0.18	-0.2	.	7.7/ 78	63.7
Mar. 4	18 05.58	-16 44.2	4.593	4.396	-0.18	-0.2	.	6.0/ 73	72.4
Mar. 14	18 09.55	-16 26.4	4.487	4.449	-0.18	-0.2	.	4.1/ 63	81.4
Mar. 24	18 12.11	-16 07.5	4.377	4.500	-0.18	-0.2	.	2.5/ 38	90.6

Comet C/2009 UG89 (Lemmon)

Epoch = 2011 July 18.0 TT
T = 2010 Dec. 16.30509 TT
Peri. = 60.66235
Node = 321.01461 2000.0
Incl. = 130.10100
q = 3.9311987 AU
e = 1.0084473

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	18 08.10	+12 26.0	4.655	3.937	+0.29	+7.4	17.9	38.7
Jan. 19	18 10.97	+13 39.5	4.594	3.942	+0.23	+8.8	17.9	43.7
Jan. 29	18 13.27	+15 07.5	4.513	3.950	+0.15	+10.3	17.8	49.8
Feb. 8	18 14.77	+16 50.6	4.413	3.959	+0.04	+11.9	17.8	56.7
Feb. 18	18 15.16	+18 49.3	4.300	3.970	-0.10	+13.4	17.8	64.2
Feb. 28	18 14.16	+21 03.7	4.177	3.983	-0.28	+14.9	17.7	71.9
Mar. 10	18 11.40	+23 33.1	4.051	3.998	-0.49	+16.3	17.7	79.9
Mar. 20	18 06.47	+26 15.7	3.927	4.015	-0.75	+17.3	17.6	87.8
Mar. 30	17 58.97	+29 08.3	3.812	4.033	-1.05	+17.7	17.6	95.6
Apr. 9	17 48.46	+32 05.2	3.713	4.053	-1.38	+17.3	17.5	102.8
Apr. 19	17 34.63	+34 58.2	3.635	4.075	-1.72	+15.9	17.5	109.1
Apr. 29	17 17.39	+37 37.2	3.585	4.099	-2.04	+13.3	17.5	114.0
May 9	16 57.02	+39 50.6	3.567	4.124	-2.27	+9.8	17.5	117.0
May 19	16 34.35	+41 28.1	3.583	4.151	-2.37	+5.5	17.6	117.7
May 29	16 10.68	+42 23.5	3.634	4.179	-2.31	+1.2	17.6	116.1
June 8	15 47.56	+42 35.8	3.717	4.209	-2.12	-2.6	17.7	112.4
June 18	15 26.37	+42 09.5	3.828	4.241	-1.83	-5.7	17.8	107.2
June 28	15 08.06	+41 12.9	3.962	4.273	-1.50	-7.8	17.9	100.9
July 8	14 53.02	+39 55.1	4.114	4.307	-1.18	-9.0	18.0	94.1
July 18	14 41.24	+38 24.9	4.277	4.343	-0.88	-9.6	18.1	86.9
July 28	14 32.45	+36 49.0	4.446	4.380	-0.62	-9.6	18.3	79.7
Aug. 7	14 26.26	+35 12.5	4.614	4.418	-0.40	-9.3	18.4	72.6
Aug. 17	14 22.26	+33 39.2	4.778	4.457	-0.22	-8.8	18.5	65.7
Aug. 27	14 20.07	+32 11.4	4.932	4.497	-0.07	-8.1	18.6	59.1
Sept. 6	14 19.36	+30 50.8	5.073	4.538	+0.05	-7.2	18.7	53.0
Sept.16	14 19.81	+29 38.5	5.197	4.581	+0.14	-6.3	18.8	47.7
Sept.26	14 21.18	+28 35.4	5.303	4.624	+0.21	-5.3	18.9	43.3
Oct. 6	14 23.24	+27 42.2	5.387	4.669	+0.25	-4.3	18.9	40.3
Oct. 16	14 25.78	+26 59.4	5.449	4.714	+0.28	-3.2	19.0	38.8
Oct. 26	14 28.63	+26 27.6	5.488	4.761	+0.30	-2.0	19.1	39.3
Nov. 5	14 31.59	+26 07.4	5.504	4.808	+0.29	-0.8	19.1	41.6
Nov. 15	14 34.50	+25 59.4	5.497	4.856	+0.27	+0.5	19.2	45.6
Nov. 25	14 37.17	+26 04.0	5.468	4.905	+0.22	+1.8	19.2	50.8
Dec. 5	14 39.42	+26 22.0	5.419	4.954	+0.16	+3.2	19.2	57.1
Dec. 15	14 41.03	+26 53.6	5.353	5.004	+0.08	+4.5	19.2	64.2
Dec. 25	14 41.82	+27 39.0	5.274	5.055	-0.03	+5.9	19.2	71.9
Jan. 4	14 41.53	+28 38.3	5.185	5.107	-0.16	+7.2	19.3	80.0
Jan. 14	14 39.92	+29 50.5	5.092	5.159	-0.32	+8.4	19.3	88.4
Jan. 24	14 36.76	+31 14.4	5.000	5.212	-0.50	+9.3	19.3	96.9
Feb. 3	14 31.79	+32 47.6	4.916	5.265	-0.70	+9.9	19.3	105.5
Feb. 13	14 24.83	+34 26.2	4.844	5.319	-0.91	+10.0	19.3	113.8
Feb. 23	14 15.78	+36 05.8	4.792	5.374	-1.11	+9.4	19.3	121.4
Mar. 4	14 04.65	+37 40.2	4.764	5.428	-1.30	+8.3	19.3	127.8
Mar. 14	13 51.69	+39 03.5	4.765	5.484	-1.44	+6.6	19.4	132.3
Mar. 24	13 37.32	+40 09.8	4.798	5.540	-1.51	+4.5	19.4	134.2

Comet P/2011 A2 (Scotti)

T = 2010 Dec. 21.9527 TT
Peri. = 94.1490 e = 0.498967
Node = 54.7113 2000.0 a = 3.104455 AU
Incl. = 4.4676 n = 0.1801880
q = 1.555436 AU P = 5.47 years

m1 = 15.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	13 18.89	-02 25.3	1.234	1.565	+2.10	-11.7	19.2	89.1
Jan. 19	13 39.93	-04 22.5	1.175	1.579	+1.89	-10.2	19.1	93.6
Jan. 29	13 58.82	-06 04.6	1.118	1.599	+1.62	-8.5	19.1	98.7
Feb. 8	14 15.05	-07 30.1	1.065	1.623	+1.30	-6.9	19.1	104.6
Feb. 18	14 28.06	-08 38.6	1.015	1.653	+0.93	-5.2	19.1	111.2
Feb. 28	14 37.36	-09 30.4	0.970	1.687	+0.51	-3.6	19.1	118.8
Mar. 10	14 42.43	-10 06.1	0.931	1.725	+0.06	-2.1	19.2	127.4
Mar. 20	14 43.07	-10 27.3	0.903	1.767	-0.36	-0.9	19.3	137.0
Mar. 30	14 39.48	-10 35.9	0.887	1.811	-0.71	+0.1	19.4	147.7
Apr. 9	14 32.40	-10 35.1	0.888	1.859	-0.91	+0.6	19.6	159.1
Apr. 19	14 23.27	-10 29.3	0.910	1.908	-0.95	+0.6	19.8	170.8
Apr. 29	14 13.79	-10 23.8	0.954	1.959	-0.82	0.0	20.1	175.5
May 9	14 05.56	-10 23.7	1.020	2.012	-0.58	-0.9	20.4	164.8
May 19	13 59.72	-10 32.8	1.108	2.066	-0.29	-2.0	20.7	154.0
May 29	13 56.78	-10 52.7	1.216	2.120	0.00	-3.1	21.1	143.8
June 8	13 56.78	-11 23.4	1.341	2.176	+0.27	-4.0	21.5	134.4
June 18	13 59.52	-12 03.8	1.480	2.231	+0.51	-4.8	21.9	125.7
June 28	14 04.62	-12 52.1	1.631	2.288	+0.71	-5.4	22.3	117.6
July 8	14 11.72	-13 46.5	1.792	2.344	+0.88	-5.9	22.6	110.0
July 18	14 20.50	-14 45.2	1.960	2.400	+1.02	-6.1	23.0	102.8
July 28	14 30.65	-15 46.5	2.134	2.456	+1.13	-6.3	.	95.9
Aug. 7	14 41.96	-16 49.0	2.311	2.512	+1.23	-6.2	.	89.3
Aug. 17	14 54.23	-17 51.5	2.490	2.567	+1.31	-6.1	.	82.8
Aug. 27	15 07.31	-18 52.7	2.669	2.622	+1.38	-5.9	.	76.4
Sept. 6	15 21.07	-19 51.7	2.846	2.677	+1.43	-5.6	.	70.1
Sept.16	15 35.41	-20 47.7	3.020	2.731	+1.48	-5.2	.	63.9
Sept.26	15 50.23	-21 40.0	3.188	2.784	+1.52	-4.8	.	57.7
Oct. 6	16 05.46	-22 27.9	3.350	2.837	+1.55	-4.3	.	51.5
Oct. 16	16 21.00	-23 10.8	3.503	2.889	+1.58	-3.8	.	45.3
Oct. 26	16 36.78	-23 48.4	3.646	2.941	+1.60	-3.2	.	39.0
Nov. 5	16 52.74	-24 20.3	3.778	2.991	+1.60	-2.6	.	32.7
Nov. 15	17 08.78	-24 46.4	3.896	3.042	+1.61	-2.0	.	26.3
Nov. 25	17 24.83	-25 06.4	4.001	3.091	+1.60	-1.4	.	19.9
Dec. 5	17 40.81	-25 20.5	4.089	3.139	+1.58	-0.8	.	13.5
Dec. 15	17 56.63	-25 28.8	4.162	3.187	+1.56	-0.3	.	7.1
Dec. 25	18 12.20	-25 31.5	4.217	3.234	+1.52	+0.2	.	2.1
Jan. 4	18 27.44	-25 29.1	4.254	3.280	+1.48	+0.7	.	7.0
Jan. 14	18 42.25	-25 22.0	4.273	3.326	+1.43	+1.1	.	13.7
Jan. 24	18 56.56	-25 11.0	4.274	3.370	+1.37	+1.4	.	20.6
Feb. 3	19 10.26	-24 56.7	4.257	3.414	+1.30	+1.7	.	27.6
Feb. 13	19 23.27	-24 39.9	4.222	3.457	+1.22	+1.8	.	34.7
Feb. 23	19 35.49	-24 21.7	4.171	3.499	+1.13	+1.9	.	42.0
Mar. 4	19 46.81	-24 03.1	4.104	3.541	+1.03	+1.8	.	49.4
Mar. 14	19 57.15	-23 45.0	4.023	3.581	+0.92	+1.6	.	57.1
Mar. 24	20 06.37	-23 28.6	3.930	3.621	+0.80	+1.4	.	64.9

Comet P/2004 HC18 (LINEAR)

Epoch = 2011 July 18.0 TT
T = 2010 Dec. 29.61271 TT
Peri. = 30.99599 e = 0.5090332
Node = 219.48540 2000.0 a = 3.4914190 AU
Incl. = 23.49322 n = 0.15107796
q = 1.7141708 AU P = 6.52 years

m1 = 11.0 + 5 log(Delta) + 25.0 log(r(t-50))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	17 45.28	-14 16.1	2.573	1.717	-1.39	-5.9	19.2	42.4/ 80	23.6
Jan. 19	18 13.87	-12 59.3	2.544	1.725	-1.37	-6.3	19.0	42.0/ 78	26.9
Jan. 29	18 41.79	-11 24.0	2.516	1.738	-1.33	-6.6	18.9	41.4/ 75	30.2
Feb. 8	19 08.84	-09 32.1	2.490	1.755	-1.29	-6.7	18.8	40.6/ 72	33.6
Feb. 18	19 34.87	-07 25.8	2.465	1.777	-1.25	-6.7	18.8	39.6/ 70	37.0
Feb. 28	19 59.77	-05 07.8	2.440	1.804	-1.21	-6.5	18.8	38.4/ 68	40.4
Mar. 10	20 23.45	-02 40.7	2.416	1.834	-1.17	-6.2	18.8	36.9/ 66	43.9
Mar. 20	20 45.85	-00 07.4	2.390	1.868	-1.13	-5.7	18.9	35.3/ 64	47.5
Mar. 30	21 06.93	+02 29.5	2.363	1.905	-1.09	-5.2	19.0	33.5/ 62	51.3
Apr. 9	21 26.66	+05 07.9	2.334	1.945	-1.06	-4.5	19.1	31.5/ 60	55.2
Apr. 19	21 44.97	+07 45.4	2.302	1.988	-1.04	-3.8	19.2	29.4/ 58	59.4
Apr. 29	22 01.85	+10 20.2	2.266	2.033	-1.02	-3.1	19.4	27.1/ 56	63.8
May 9	22 17.19	+12 50.5	2.226	2.080	-1.02	-2.4	19.5	24.6/ 54	68.5
May 19	22 30.90	+15 14.6	2.182	2.128	-1.02	-1.6	19.7	22.0/ 51	73.5
May 29	22 42.87	+17 30.9	2.134	2.178	-1.03	-0.9	19.9	19.1/ 48	78.8
June 8	22 52.90	+19 37.5	2.083	2.230	-1.05	-0.3	20.1	16.0/ 44	84.6
June 18	23 00.81	+21 32.3	2.029	2.282	-1.08	+0.3	20.2	12.7/ 37	90.8
June 28	23 06.40	+23 12.8	1.974	2.335	-1.12	+0.7	20.4	9.3/ 27	97.4
July 8	23 09.46	+24 35.6	1.920	2.388	-1.18	+1.0	20.6	6.2/ 5	104.6
July 18	23 09.88	+25 36.9	1.870	2.442	-1.24	+1.1	20.8	4.6/320	112.2
July 28	23 07.65	+26 12.4	1.826	2.496	-1.30	+1.0	21.0	6.3/275	120.2
Aug. 7	23 02.99	+26 17.5	1.792	2.551	-1.36	+0.6	21.2	9.3/253	128.5
Aug. 17	22 56.40	+25 49.3	1.773	2.605	-1.41	+0.1	21.4	12.2/240	136.7
Aug. 27	22 48.66	+24 47.2	1.773	2.659	-1.43	-0.6	21.7	14.3/230	144.2
Sept. 6	22 40.70	+23 14.3	1.795	2.714	-1.42	-1.3	22.0	15.3/221	149.8
Sept.16	22 33.50	+21 17.9	1.841	2.768	-1.38	-2.0	22.3	15.3/212	151.7
Sept.26	22 27.83	+19 07.9	1.913	2.822	-1.32	-2.4	22.6	14.3/201	149.3
Oct. 6	22 24.19	+16 54.9	2.010	2.875	-1.23	-2.7	22.9	12.8/189	143.5
Oct. 16	22 22.82	+14 48.2	2.130	2.928	-1.15	-2.8	.	11.4/174	135.8
Oct. 26	22 23.67	+12 54.6	2.271	2.981	-1.06	-2.7	.	10.6/156	127.4
Nov. 5	22 26.60	+11 18.0	2.429	3.034	-0.97	-2.6	.	10.5/138	118.8
Nov. 15	22 31.36	+10 00.3	2.600	3.085	-0.89	-2.4	.	11.0/122	110.2
Nov. 25	22 37.67	+09 01.3	2.782	3.137	-0.82	-2.2	.	12.0/110	101.8
Dec. 5	22 45.29	+08 20.2	2.970	3.188	-0.75	-2.0	.	13.1/101	93.6
Dec. 15	22 53.98	+07 55.5	3.162	3.238	-0.70	-1.8	.	14.2/ 94	85.6
Dec. 25	23 03.51	+07 45.2	3.353	3.288	-0.64	-1.6	.	15.2/ 89	77.7
Jan. 4	23 13.73	+07 47.7	3.541	3.337	-0.60	-1.4	.	16.0/ 85	70.1
Jan. 14	23 24.47	+08 01.0	3.724	3.385	-0.56	-1.3	.	16.7/ 82	62.6
Jan. 24	23 35.61	+08 23.5	3.899	3.433	-0.52	-1.1	.	17.2/ 80	55.2
Feb. 3	23 47.04	+08 53.5	4.063	3.481	-0.49	-1.0	.	17.6/ 78	47.9
Feb. 13	23 58.67	+09 29.6	4.215	3.527	-0.47	-0.8	.	17.9/ 77	40.8
Feb. 23	00 10.43	+10 10.5	4.353	3.573	-0.44	-0.7	.	18.0/ 75	33.8
Mar. 4	00 22.24	+10 54.9	4.475	3.619	-0.42	-0.6	.	18.0/ 75	26.9
Mar. 14	00 34.05	+11 41.7	4.581	3.664	-0.40	-0.4	.	17.9/ 74	20.1
Mar. 24	00 45.80	+12 30.1	4.669	3.708	-0.38	-0.3	.	17.7/ 74	13.7

Comet 247P/2002 VP94 (LINEAR)

Epoch = 2011 July 18.0 TT
T = 2011 Jan. 4.15804 TT
Peri. = 47.33802 e = 0.6255830
Node = 54.12301 2000.0 a = 3.9645598 AU
Incl. = 13.68203 n = 0.12485663
q = 1.4843986 AU P = 7.89 years

m1 = 15.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 9	06 31.51	+52 34.3	0.556	1.485	+0.59	+7.7	16.7	148.3
Jan. 19	06 37.41	+53 50.9	0.586	1.494	+0.99	+0.7	16.9	142.9
Jan. 29	06 47.35	+53 57.5	0.628	1.510	+1.40	-5.3	17.1	137.7
Feb. 8	07 01.40	+53 04.5	0.682	1.534	+1.74	-10.0	17.4	132.8
Feb. 18	07 18.77	+51 24.5	0.747	1.565	+1.94	-13.5	17.7	128.3
Feb. 28	07 38.19	+49 09.6	0.824	1.603	+2.04	-16.0	18.1	123.9
Mar. 10	07 58.60	+46 29.8	0.911	1.647	+2.07	-17.6	18.4	119.7
Mar. 20	08 19.27	+43 34.2	1.010	1.696	+2.04	-18.4	18.9	115.4
Mar. 30	08 39.65	+40 29.9	1.120	1.749	+1.99	-18.8	19.3	111.2
Apr. 9	08 59.54	+37 21.9	1.241	1.806	+1.93	-18.8	19.7	106.8
Apr. 19	09 18.82	+34 14.2	1.372	1.865	+1.86	-18.5	20.1	102.4
Apr. 29	09 37.45	+31 09.2	1.512	1.928	+1.80	-18.1	20.6	97.8
May 9	09 55.47	+28 08.4	1.661	1.992	+1.75	-17.6	21.0	93.2
May 19	10 12.92	+25 12.8	1.818	2.058	+1.69	-17.0	21.4	88.6
May 29	10 29.84	+22 22.9	1.980	2.125	+1.65	-16.4	21.8	83.8
June 8	10 46.31	+19 38.6	2.148	2.193	+1.61	-15.8	22.2	79.0
June 18	11 02.37	+17 00.1	2.318	2.262	+1.57	-15.3	22.5	74.1
June 28	11 18.06	+14 27.3	2.491	2.331	+1.54	-14.7	22.9	69.1
July 8	11 33.45	+11 60.0	2.664	2.400	+1.51	-14.2	.	64.1
July 18	11 48.56	+09 38.1	2.835	2.469	+1.49	-13.7	.	58.9
July 28	12 03.43	+07 21.6	3.004	2.538	+1.47	-13.1	.	53.7
Aug. 7	12 18.10	+05 10.2	3.168	2.607	+1.45	-12.6	.	48.4
Aug. 17	12 32.58	+03 04.1	3.326	2.676	+1.43	-12.1	.	43.0
Aug. 27	12 46.90	+01 03.2	3.476	2.744	+1.42	-11.6	.	37.5
Sept. 6	13 01.07	-00 52.6	3.617	2.812	+1.40	-11.0	.	31.9
Sept.16	13 15.09	-02 43.0	3.747	2.879	+1.39	-10.5	.	26.1
Sept.26	13 28.97	-04 28.1	3.865	2.946	+1.37	-10.0	.	20.3
Oct. 6	13 42.70	-06 07.8	3.970	3.012	+1.35	-9.4	.	14.4
Oct. 16	13 56.24	-07 41.9	4.059	3.077	+1.33	-8.8	.	8.6
Oct. 26	14 09.59	-09 10.3	4.133	3.142	+1.31	-8.3	.	3.9
Nov. 5	14 22.69	-10 33.0	4.190	3.206	+1.28	-7.7	.	6.2
Nov. 15	14 35.49	-11 49.8	4.229	3.269	+1.25	-7.1	.	12.3
Nov. 25	14 47.94	-13 00.6	4.250	3.331	+1.20	-6.5	.	18.9
Dec. 5	14 59.96	-14 05.6	4.253	3.393	+1.15	-5.9	.	25.8
Dec. 15	15 11.44	-15 04.6	4.238	3.454	+1.09	-5.3	.	33.0
Dec. 25	15 22.30	-15 57.7	4.206	3.515	+1.01	-4.7	.	40.4
Jan. 4	15 32.39	-16 45.2	4.156	3.574	+0.92	-4.2	.	48.0
Jan. 14	15 41.59	-17 27.2	4.092	3.633	+0.82	-3.7	.	55.9
Jan. 24	15 49.75	-18 03.9	4.015	3.691	+0.69	-3.2	.	64.0
Feb. 3	15 56.69	-18 35.5	3.926	3.749	+0.56	-2.7	.	72.5
Feb. 13	16 02.25	-19 02.5	3.829	3.805	+0.40	-2.2	.	81.2
Feb. 23	16 06.26	-19 25.0	3.727	3.861	+0.23	-1.8	.	90.3
Mar. 4	16 08.56	-19 43.2	3.624	3.916	+0.05	-1.4	.	99.7
Mar. 14	16 09.02	-19 57.2	3.525	3.970	-0.14	-1.0	.	109.6
Mar. 24	16 07.57	-20 07.0	3.434	4.024	-0.33	-0.5	.	119.8

Comet 9P/Tempel

Epoch = 2011 July 18.0 TT
T = 2011 Jan. 12.37978 TT
Peri. = 178.93745 e = 0.5164991
Node = 68.90561 2000.0 a = 3.1239642 AU
Incl. = 10.52237 n = 0.17850279
q = 1.5104395 AU P = 5.52 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	17 26.30	-22 49.4	2.332	1.511	+3.41	-6.0	13.5	26.0
Jan. 19	18 00.36	-23 49.7	2.304	1.512	+3.41	-3.3	13.4	28.3
Jan. 29	18 34.45	-24 23.2	2.280	1.520	+3.37	-0.7	13.3	30.7
Feb. 8	19 08.14	-24 30.3	2.260	1.534	+3.29	+1.7	13.3	33.3
Feb. 18	19 41.01	-24 13.2	2.241	1.554	+3.17	+3.8	13.3	36.0
Feb. 28	20 12.71	-23 34.8	2.224	1.580	+3.03	+5.6	13.4	38.9
Mar. 10	20 42.97	-22 39.2	2.208	1.612	+2.86	+6.9	13.5	41.9
Mar. 20	21 11.61	-21 30.5	2.190	1.648	+2.69	+7.7	13.6	45.2
Mar. 30	21 38.53	-20 13.1	2.171	1.689	+2.52	+8.2	13.7	48.8
Apr. 9	22 03.69	-18 51.3	2.148	1.733	+2.34	+8.2	13.9	52.6
Apr. 19	22 27.07	-17 28.8	2.122	1.781	+2.16	+8.0	14.0	56.7
Apr. 29	22 48.68	-16 09.1	2.091	1.831	+1.98	+7.4	14.2	61.1
May 9	23 08.51	-14 55.2	2.055	1.883	+1.80	+6.5	14.3	65.9
May 19	23 26.52	-13 49.9	2.014	1.937	+1.62	+5.4	14.5	71.0
May 29	23 42.69	-12 55.5	1.968	1.993	+1.42	+4.1	14.7	76.5
June 8	23 56.89	-12 14.3	1.918	2.049	+1.21	+2.6	14.8	82.5
June 18	00 08.98	-11 48.0	1.863	2.107	+0.98	+1.0	15.0	89.0
June 28	00 18.79	-11 38.1	1.807	2.165	+0.73	-0.8	15.1	96.1
July 8	00 26.08	-11 45.9	1.751	2.224	+0.45	-2.6	15.3	103.7
July 18	00 30.61	-12 11.5	1.697	2.282	+0.16	-4.3	15.4	112.1
July 28	00 32.18	-12 54.2	1.649	2.341	-0.15	-5.7	15.6	121.1
Aug. 7	00 30.64	-13 51.4	1.612	2.400	-0.46	-6.7	15.7	130.7
Aug. 17	00 26.08	-14 58.2	1.589	2.458	-0.72	-6.9	15.9	140.7
Aug. 27	00 18.86	-16 07.7	1.586	2.516	-0.92	-6.4	16.1	150.7
Sept. 6	00 09.65	-17 11.5	1.605	2.574	-1.02	-5.0	16.3	159.4
Sept.16	23 59.50	-18 01.5	1.651	2.631	-1.00	-3.1	16.5	163.6
Sept.26	23 49.51	-18 32.1	1.723	2.687	-0.88	-0.9	16.8	159.9
Oct. 6	23 40.74	-18 40.6	1.822	2.743	-0.68	+1.3	17.1	151.7
Oct. 16	23 33.94	-18 27.8	1.944	2.798	-0.44	+3.1	17.4	142.0
Oct. 26	23 29.49	-17 56.5	2.088	2.853	-0.20	+4.7	17.7	132.3
Nov. 5	23 27.49	-17 09.9	2.248	2.907	+0.03	+5.8	18.0	122.7
Nov. 15	23 27.82	-16 11.5	2.423	2.960	+0.24	+6.7	18.3	113.5
Nov. 25	23 30.21	-15 04.1	2.607	3.012	+0.42	+7.4	18.6	104.7
Dec. 5	23 34.39	-13 50.0	2.797	3.064	+0.57	+7.9	18.9	96.2
Dec. 15	23 40.08	-12 31.0	2.990	3.115	+0.69	+8.3	19.2	88.0
Dec. 25	23 47.01	-11 08.5	3.183	3.165	+0.80	+8.5	19.4	80.0
Jan. 4	23 54.96	-09 43.4	3.373	3.214	+0.88	+8.7	19.7	72.3
Jan. 14	00 03.73	-08 16.9	3.558	3.262	+0.94	+8.7	19.9	64.8
Jan. 24	00 13.15	-06 49.5	3.735	3.310	+0.99	+8.7	20.1	57.4
Feb. 3	00 23.09	-05 22.1	3.902	3.357	+1.03	+8.7	20.3	50.2
Feb. 13	00 33.42	-03 55.2	4.056	3.403	+1.06	+8.6	20.5	43.1
Feb. 23	00 44.06	-02 29.4	4.198	3.448	+1.09	+8.4	20.7	36.1
Mar. 4	00 54.91	-01 05.3	4.324	3.492	+1.10	+8.2	20.9	29.2
Mar. 14	01 05.90	+00 16.6	4.433	3.535	+1.11	+7.9	21.0	22.5
Mar. 24	01 16.96	+01 35.9	4.526	3.578	+1.11	+7.6	21.2	15.9

Comet C/2009 Y1 (Catalina)

Epoch = 2011 July 18.0 TT
T = 2011 Jan. 28.90879 TT
Peri. = 127.39497
Node = 160.28094 2000.0
Incl. = 107.30726
q = 2.5205352 AU
e = 0.9934675

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	21 14.90	+34 53.0	2.813	2.530	+1.88	-19.9	14.3	63.4
Jan. 19	21 33.68	+31 33.7	2.929	2.523	+1.71	-16.9	14.4	56.5
Jan. 29	21 50.80	+28 44.9	3.045	2.521	+1.58	-14.2	14.4	49.6
Feb. 8	22 06.56	+26 23.2	3.155	2.523	+1.46	-11.9	14.5	42.8
Feb. 18	22 21.13	+24 24.7	3.254	2.530	+1.35	-10.0	14.6	36.5
Feb. 28	22 34.67	+22 45.2	3.338	2.541	+1.26	-8.4	14.7	31.0
Mar. 10	22 47.27	+21 20.9	3.403	2.557	+1.17	-7.3	14.7	26.9
Mar. 20	22 58.98	+20 08.2	3.447	2.578	+1.08	-6.5	14.8	24.9
Mar. 30	23 09.81	+19 03.6	3.468	2.602	+1.00	-5.9	14.9	25.5
Apr. 9	23 19.77	+18 04.1	3.466	2.631	+0.90	-5.8	14.9	28.6
Apr. 19	23 28.82	+17 06.6	3.440	2.663	+0.81	-5.9	14.9	33.7
Apr. 29	23 36.90	+16 08.0	3.390	2.700	+0.70	-6.3	15.0	40.1
May 9	23 43.91	+15 05.3	3.319	2.739	+0.58	-7.0	15.0	47.4
May 19	23 49.74	+13 55.2	3.229	2.782	+0.45	-8.1	15.0	55.4
May 29	23 54.23	+12 34.0	3.121	2.828	+0.29	-9.6	15.0	64.0
June 8	23 57.17	+10 57.6	3.001	2.877	+0.12	-11.6	15.0	73.3
June 18	23 58.35	+09 01.7	2.871	2.929	-0.08	-14.0	15.0	83.1
June 28	23 57.52	+06 41.5	2.740	2.983	-0.31	-16.9	14.9	93.7
July 8	23 54.40	+03 52.7	2.612	3.040	-0.56	-20.0	14.9	105.1
July 18	23 48.80	+00 32.3	2.498	3.098	-0.82	-23.2	14.9	117.2
July 28	23 40.59	-03 19.8	2.406	3.158	-1.08	-25.9	14.9	130.2
Aug. 7	23 29.84	-07 38.5	2.346	3.221	-1.29	-27.4	14.9	143.8
Aug. 17	23 16.91	-12 12.0	2.327	3.284	-1.44	-27.2	15.0	157.3
Aug. 27	23 02.48	-16 43.9	2.354	3.350	-1.50	-25.2	15.1	168.0
Sept. 6	22 47.51	-20 56.1	2.430	3.416	-1.44	-21.9	15.3	165.6
Sept.16	22 33.09	-24 34.8	2.552	3.484	-1.29	-17.9	15.5	154.0
Sept.26	22 20.18	-27 33.4	2.714	3.552	-1.07	-13.9	15.7	141.3
Oct. 6	22 09.49	-29 52.2	2.908	3.622	-0.81	-10.4	15.9	129.1
Oct. 16	22 01.40	-31 35.7	3.125	3.693	-0.54	-7.5	16.1	117.5
Oct. 26	21 55.95	-32 50.4	3.358	3.764	-0.29	-5.2	16.4	106.6
Nov. 5	21 53.03	-33 42.5	3.600	3.836	-0.07	-3.5	16.6	96.2
Nov. 15	21 52.37	-34 17.6	3.844	3.909	+0.13	-2.2	16.8	86.4
Nov. 25	21 53.69	-34 40.0	4.084	3.982	+0.30	-1.3	17.1	77.1
Dec. 5	21 56.68	-34 53.4	4.316	4.056	+0.44	-0.7	17.3	68.3
Dec. 15	22 01.05	-35 00.3	4.537	4.130	+0.55	-0.3	17.4	59.8
Dec. 25	22 06.56	-35 03.1	4.741	4.205	+0.64	0.0	17.6	51.8
Jan. 4	22 12.98	-35 03.5	4.927	4.280	+0.71	0.0	17.8	44.4
Jan. 14	22 20.11	-35 03.1	5.093	4.355	+0.77	0.0	17.9	37.6
Jan. 24	22 27.79	-35 03.2	5.236	4.430	+0.81	-0.2	18.1	31.8
Feb. 3	22 35.87	-35 05.1	5.357	4.506	+0.83	-0.5	18.2	27.6
Feb. 13	22 44.22	-35 10.1	5.453	4.582	+0.85	-0.9	18.3	25.5
Feb. 23	22 52.73	-35 19.1	5.526	4.658	+0.86	-1.4	18.4	26.1
Mar. 4	23 01.29	-35 33.5	5.575	4.734	+0.85	-2.1	18.5	29.1
Mar. 14	23 09.80	-35 54.3	5.603	4.810	+0.84	-2.8	18.6	34.0
Mar. 24	23 18.18	-36 22.7	5.609	4.886	+0.81	-3.7	18.6	39.9

Comet C/2010 B1 (Cardinal)

Epoch = 2011 July 18.0 TT
T = 2011 Feb. 7.10192 TT
Peri. = 211.53263
Node = 277.21341 2000.0
Incl. = 101.97620
q = 2.9415522 AU
e = 0.9989607

m1 = 7.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	05 37.16	-09 23.1	2.136	2.956	-1.97	-14.6	14.2	139.8
Jan. 19	05 17.41	-11 49.4	2.236	2.948	-1.63	-10.7	14.2	128.2
Jan. 29	05 01.13	-13 36.6	2.368	2.943	-1.25	-7.5	14.4	116.6
Feb. 8	04 48.66	-14 51.6	2.520	2.942	-0.88	-5.2	14.5	105.5
Feb. 18	04 39.90	-15 43.3	2.683	2.944	-0.55	-3.6	14.6	95.3
Feb. 28	04 34.45	-16 19.8	2.849	2.949	-0.26	-2.8	14.8	85.9
Mar. 10	04 31.84	-16 47.6	3.011	2.958	-0.02	-2.5	14.9	77.4
Mar. 20	04 31.62	-17 12.3	3.163	2.970	+0.17	-2.5	15.0	69.8
Mar. 30	04 33.35	-17 37.7	3.302	2.985	+0.34	-2.9	15.1	63.0
Apr. 9	04 36.71	-18 07.0	3.425	3.004	+0.47	-3.6	15.3	57.2
Apr. 19	04 41.38	-18 42.6	3.531	3.026	+0.57	-4.4	15.3	52.5
Apr. 29	04 47.13	-19 26.7	3.617	3.051	+0.66	-5.4	15.4	48.9
May 9	04 53.76	-20 21.1	3.685	3.078	+0.73	-6.6	15.5	46.5
May 19	05 01.10	-21 27.5	3.733	3.109	+0.79	-8.0	15.6	45.5
May 29	05 08.99	-22 47.4	3.764	3.142	+0.83	-9.5	15.7	45.8
June 8	05 17.33	-24 22.2	3.778	3.178	+0.86	-11.1	15.7	47.3
June 18	05 25.96	-26 13.5	3.777	3.217	+0.88	-12.9	15.8	49.8
June 28	05 34.80	-28 22.4	3.765	3.258	+0.89	-14.8	15.8	53.1
July 8	05 43.73	-30 50.0	3.743	3.301	+0.89	-16.7	15.9	57.0
July 18	05 52.61	-33 37.2	3.714	3.346	+0.87	-18.7	15.9	61.2
July 28	06 01.32	-36 44.3	3.684	3.393	+0.84	-20.7	15.9	65.6
Aug. 7	06 09.69	-40 11.0	3.654	3.442	+0.78	-22.5	16.0	70.0
Aug. 17	06 17.50	-43 56.3	3.629	3.493	+0.70	-24.2	16.0	74.3
Aug. 27	06 24.49	-47 58.1	3.613	3.545	+0.58	-25.5	16.1	78.1
Sept. 6	06 30.28	-52 13.4	3.608	3.599	+0.41	-26.4	16.1	81.5
Sept.16	06 34.33	-56 37.7	3.619	3.655	+0.15	-26.8	16.2	84.1
Sept.26	06 35.85	-61 05.6	3.646	3.712	-0.23	-26.5	16.3	85.9
Oct. 6	06 33.52	-65 30.8	3.691	3.770	-0.82	-25.5	16.4	86.8
Oct. 16	06 25.28	-69 45.4	3.754	3.829	-1.76	-23.4	16.5	86.7
Oct. 26	06 07.65	-73 39.6	3.834	3.889	-3.26	-20.0	16.6	85.8
Nov. 5	05 35.06	-76 59.9	3.929	3.951	-5.39	-14.6	16.7	84.0
Nov. 15	04 41.15	-79 25.6	4.036	4.013	-7.38	-6.7	16.9	81.6
Nov. 25	03 27.37	-80 32.2	4.152	4.076	-7.38	+2.0	17.0	78.8
Dec. 5	02 13.54	-80 11.9	4.273	4.140	-5.40	+8.3	17.1	75.6
Dec. 15	01 19.52	-78 49.0	4.397	4.205	-3.28	+11.3	17.3	72.4
Dec. 25	00 46.73	-76 56.4	4.519	4.270	-1.79	+12.1	17.4	69.2
Jan. 4	00 28.81	-74 55.6	4.637	4.336	-0.86	+11.8	17.5	66.3
Jan. 14	00 20.21	-72 57.9	4.748	4.402	-0.28	+10.9	17.6	63.7
Jan. 24	00 17.45	-71 08.7	4.850	4.469	+0.10	+9.8	17.7	61.8
Feb. 3	00 18.47	-69 31.2	4.939	4.537	+0.35	+8.4	17.8	60.6
Feb. 13	00 21.97	-68 06.9	5.016	4.605	+0.52	+7.0	17.9	60.1
Feb. 23	00 27.15	-66 56.7	5.080	4.673	+0.63	+5.5	18.0	60.5
Mar. 4	00 33.48	-66 01.5	5.129	4.742	+0.71	+4.0	18.1	61.8
Mar. 14	00 40.58	-65 21.6	5.165	4.811	+0.76	+2.4	18.2	63.9
Mar. 24	00 48.17	-64 57.6	5.188	4.880	+0.79	+0.8	18.3	66.7

Comet 248P/2010 W1 (Gibbs)

Epoch = 2011 July 18.0 TT
T = 2011 Feb. 8.74574 TT
Peri. = 209.92224 e = 0.6403642
Node = 207.78370 2000.0 a = 5.9698373 AU
Incl. = 6.37042 n = 0.06757100
q = 2.1469672 AU P = 14.59 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	01 10.91	+05 10.8	1.928	2.166	+1.52	+7.1	18.9	90.1
Jan. 19	01 26.10	+06 21.3	2.026	2.156	+1.66	+7.8	18.9	83.9
Jan. 29	01 42.71	+07 39.8	2.125	2.149	+1.79	+8.3	19.0	78.0
Feb. 8	02 00.58	+09 03.2	2.226	2.147	+1.89	+8.6	19.1	72.5
Feb. 18	02 19.50	+10 28.9	2.327	2.149	+1.98	+8.5	19.2	67.3
Feb. 28	02 39.32	+11 54.0	2.428	2.155	+2.06	+8.2	19.3	62.3
Mar. 10	02 59.91	+13 16.2	2.529	2.164	+2.12	+7.7	19.4	57.5
Mar. 20	03 21.13	+14 33.2	2.629	2.178	+2.17	+7.0	19.6	52.9
Mar. 30	03 42.85	+15 43.1	2.728	2.196	+2.21	+6.1	19.7	48.4
Apr. 9	04 04.96	+16 44.3	2.826	2.217	+2.24	+5.1	19.8	44.0
Apr. 19	04 27.32	+17 35.4	2.922	2.242	+2.25	+4.0	20.0	39.6
Apr. 29	04 49.81	+18 15.5	3.016	2.271	+2.25	+2.8	20.1	35.3
May 9	05 12.30	+18 43.9	3.107	2.302	+2.24	+1.7	20.3	31.1
May 19	05 34.66	+19 00.4	3.195	2.336	+2.21	+0.5	20.5	26.8
May 29	05 56.78	+19 05.0	3.278	2.374	+2.18	−0.7	20.6	22.5
June 8	06 18.55	+18 58.1	3.357	2.413	+2.13	−1.8	20.8	18.2
June 18	06 39.87	+18 40.1	3.429	2.455	+2.08	−2.8	20.9	13.9
June 28	07 00.66	+18 11.9	3.496	2.499	+2.02	−3.8	21.1	9.7
July 8	07 20.84	+17 34.2	3.554	2.545	+1.95	−4.6	21.2	6.0
July 18	07 40.36	+16 48.2	3.605	2.593	+1.88	−5.3	21.4	4.6
July 28	07 59.17	+15 54.9	3.647	2.643	+1.81	−6.0	21.5	7.4
Aug. 7	08 17.23	+14 55.3	3.678	2.694	+1.73	−6.5	21.7	11.8
Aug. 17	08 34.51	+13 50.7	3.699	2.746	+1.65	−6.9	21.8	16.8
Aug. 27	08 50.99	+12 42.0	3.709	2.799	+1.56	−7.1	22.0	22.1
Sept. 6	09 06.62	+11 30.6	3.707	2.853	+1.48	−7.3	22.1	27.7
Sept. 16	09 21.37	+10 17.5	3.694	2.908	+1.38	−7.4	22.2	33.5
Sept. 26	09 35.22	+09 03.9	3.668	2.964	+1.29	−7.3	22.3	39.5
Oct. 6	09 48.09	+07 50.8	3.629	3.020	+1.18	−7.1	22.4	45.9
Oct. 16	09 59.92	+06 39.6	3.580	3.077	+1.07	−6.8	22.5	52.6
Oct. 26	10 10.64	+05 31.3	3.519	3.135	+0.95	−6.4	22.6	59.6
Nov. 5	10 20.14	+04 27.2	3.448	3.192	+0.82	−5.8	22.6	66.9
Nov. 15	10 28.30	+03 28.8	3.369	3.250	+0.67	−5.1	22.7	74.7
Nov. 25	10 35.01	+02 37.4	3.283	3.309	+0.51	−4.3	22.8	82.8
Dec. 5	10 40.11	+01 54.4	3.195	3.367	+0.34	−3.3	22.8	91.5
Dec. 15	10 43.47	+01 21.3	3.106	3.426	+0.15	−2.2	22.9	100.6
Dec. 25	10 45.00	+00 59.4	3.020	3.485	−0.04	−0.9	22.9	110.2
Jan. 4	10 44.62	+00 50.1	2.944	3.543	−0.22	+0.4	23.0	120.3
Jan. 14	10 42.38	+00 53.8	2.880	3.602	−0.39	+1.7	23.0	130.9
Jan. 24	10 38.45	+01 10.5	2.835	3.661	−0.53	+2.9	.	142.0
Feb. 3	10 33.13	+01 39.2	2.813	3.719	−0.62	+3.8	.	153.2
Feb. 13	10 26.90	+02 17.5	2.818	3.778	−0.66	+4.5	.	164.3
Feb. 23	10 20.30	+03 02.4	2.852	3.836	−0.64	+4.8	.	172.8
Mar. 4	10 13.93	+03 49.9	2.918	3.894	−0.56	+4.6	.	168.3
Mar. 14	10 08.35	+04 36.3	3.013	3.952	−0.44	+4.2	.	157.9
Mar. 24	10 03.94	+05 18.4	3.136	4.010	−0.30	+3.5	.	147.0

Comet 243P/NEAT

Epoch = 2011 July 18.0 TT
T = 2011 Mar. 2.96431 TT
Peri. = 283.84566 e = 0.3596759
Node = 87.68130 2000.0 a = 3.8351891 AU
Incl. = 7.63661 n = 0.13122721
q = 2.4557640 AU P = 7.51 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	22 48.37	-14 25.2	2.994	2.480	+1.68	+11.4	18.9	50.1
Jan. 19	23 05.12	-12 31.1	3.076	2.472	+1.71	+11.8	18.9	44.5
Jan. 29	23 22.21	-10 32.6	3.152	2.465	+1.74	+12.2	18.9	39.0
Feb. 8	23 39.57	-08 30.7	3.220	2.460	+1.76	+12.4	19.0	33.7
Feb. 18	23 57.15	-06 26.6	3.280	2.457	+1.77	+12.5	19.0	28.5
Feb. 28	00 14.89	-04 21.3	3.333	2.456	+1.79	+12.5	19.0	23.4
Mar. 10	00 32.78	-02 15.9	3.378	2.456	+1.80	+12.4	19.0	18.5
Mar. 20	00 50.78	-00 11.6	3.414	2.458	+1.81	+12.2	19.1	13.7
Mar. 30	01 08.88	+01 50.6	3.442	2.462	+1.82	+11.9	19.1	9.3
Apr. 9	01 27.07	+03 49.6	3.462	2.468	+1.82	+11.5	19.1	5.7
Apr. 19	01 45.31	+05 44.4	3.473	2.475	+1.83	+11.0	19.2	5.2
Apr. 29	02 03.59	+07 34.2	3.476	2.484	+1.83	+10.4	19.2	8.2
May 9	02 21.89	+09 18.0	3.471	2.495	+1.83	+9.7	19.2	12.5
May 19	02 40.17	+10 55.2	3.457	2.507	+1.82	+9.0	19.3	17.0
May 29	02 58.38	+12 25.2	3.434	2.521	+1.81	+8.2	19.3	21.8
June 8	03 16.48	+13 47.3	3.402	2.536	+1.79	+7.4	19.3	26.6
June 18	03 34.38	+15 01.4	3.362	2.553	+1.76	+6.6	19.4	31.6
June 28	03 52.02	+16 07.1	3.314	2.571	+1.73	+5.7	19.4	36.7
July 8	04 09.29	+17 04.4	3.256	2.591	+1.68	+4.9	19.4	41.9
July 18	04 26.08	+17 53.5	3.191	2.612	+1.62	+4.1	19.5	47.3
July 28	04 42.28	+18 34.7	3.118	2.634	+1.54	+3.4	19.5	53.0
Aug. 7	04 57.73	+19 08.5	3.037	2.657	+1.45	+2.7	19.5	58.8
Aug. 17	05 12.26	+19 35.7	2.949	2.681	+1.34	+2.1	19.5	64.9
Aug. 27	05 25.71	+19 57.2	2.855	2.706	+1.21	+1.7	19.5	71.3
Sept. 6	05 37.86	+20 14.0	2.755	2.732	+1.06	+1.3	19.5	78.1
Sept.16	05 48.48	+20 27.5	2.653	2.759	+0.89	+1.2	19.5	85.3
Sept.26	05 57.35	+20 39.1	2.548	2.787	+0.68	+1.1	19.5	93.0
Oct. 6	06 04.17	+20 50.1	2.445	2.816	+0.45	+1.2	19.5	101.2
Oct. 16	06 08.72	+21 01.9	2.345	2.845	+0.20	+1.4	19.5	110.1
Oct. 26	06 10.77	+21 15.8	2.252	2.875	-0.06	+1.6	19.5	119.5
Nov. 5	06 10.15	+21 32.2	2.171	2.906	-0.33	+1.9	19.5	129.7
Nov. 15	06 06.90	+21 51.3	2.106	2.937	-0.57	+2.1	19.6	140.5
Nov. 25	06 01.24	+22 12.3	2.061	2.968	-0.75	+2.2	19.6	151.9
Dec. 5	05 53.70	+22 33.9	2.042	3.000	-0.86	+2.1	19.7	163.8
Dec. 15	05 45.09	+22 54.7	2.050	3.033	-0.87	+1.9	19.8	175.9
Dec. 25	05 36.38	+23 13.6	2.088	3.065	-0.78	+1.7	19.9	171.9
Jan. 4	05 28.54	+23 30.3	2.156	3.098	-0.62	+1.5	20.1	159.9
Jan. 14	05 22.37	+23 45.3	2.251	3.131	-0.40	+1.4	20.3	148.4
Jan. 24	05 18.37	+23 59.5	2.370	3.165	-0.16	+1.4	20.5	137.3
Feb. 3	05 16.78	+24 13.4	2.510	3.198	+0.08	+1.4	20.7	126.8
Feb. 13	05 17.58	+24 27.7	2.664	3.232	+0.30	+1.4	20.9	116.8
Feb. 23	05 20.63	+24 42.1	2.830	3.266	+0.51	+1.4	21.1	107.5
Mar. 4	05 25.70	+24 56.4	3.003	3.300	+0.68	+1.4	21.4	98.6
Mar. 14	05 32.53	+25 10.0	3.179	3.333	+0.83	+1.2	21.6	90.1
Mar. 24	05 40.85	+25 22.1	3.356	3.367	+0.96	+1.0	21.8	82.1

Comet 238P/Read

Epoch = 2011 July 18.0 TT
T = 2011 Mar. 10.41591 TT
Peri. = 325.22564 e = 0.2540510
Node = 51.64321 2000.0 a = 3.1640706 AU
Incl. = 1.26572 n = 0.17511963
q = 2.3602353 AU P = 5.63 years

m1 = 9.6 + 5 log(Delta) + 25.0 log(r(t-50))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	22 46.52	-08 41.3	2.868	2.385	+1.69	+10.7	21.6	51.6
Jan. 19	23 03.38	-06 53.9	2.954	2.377	+1.72	+11.2	21.6	45.9
Jan. 29	23 20.62	-05 01.6	3.033	2.371	+1.76	+11.6	21.6	40.4
Feb. 8	23 38.19	-03 05.3	3.105	2.366	+1.78	+11.9	21.6	35.1
Feb. 18	23 56.04	-01 06.2	3.168	2.363	+1.81	+12.1	21.6	29.8
Feb. 28	00 14.11	+00 54.5	3.224	2.361	+1.83	+12.1	21.6	24.7
Mar. 10	00 32.41	+02 55.7	3.271	2.360	+1.85	+12.1	21.6	19.7
Mar. 20	00 50.89	+04 56.2	3.310	2.361	+1.87	+11.9	21.6	14.8
Mar. 30	01 09.55	+06 54.9	3.340	2.363	+1.88	+11.6	21.6	9.9
Apr. 9	01 28.39	+08 50.7	3.362	2.366	+1.90	+11.2	21.6	5.1
Apr. 19	01 47.38	+10 42.5	3.375	2.371	+1.91	+10.7	21.6	0.5
Apr. 29	02 06.52	+12 29.3	3.379	2.377	+1.93	+10.1	21.6	4.4
May 9	02 25.78	+14 10.2	3.375	2.384	+1.94	+9.4	21.6	9.2
May 19	02 45.13	+15 44.3	3.362	2.392	+1.94	+8.7	21.6	13.9
May 29	03 04.54	+17 10.8	3.341	2.402	+1.94	+7.8	21.6	18.6
June 8	03 23.95	+18 29.1	3.311	2.413	+1.93	+7.0	21.6	23.4
June 18	03 43.29	+19 38.8	3.272	2.425	+1.92	+6.1	21.6	28.2
June 28	04 02.49	+20 39.6	3.225	2.438	+1.90	+5.2	21.6	33.2
July 8	04 21.45	+21 31.2	3.170	2.452	+1.86	+4.3	21.6	38.2
July 18	04 40.05	+22 13.8	3.106	2.468	+1.81	+3.4	21.6	43.3
July 28	04 58.18	+22 47.5	3.035	2.484	+1.75	+2.5	21.6	48.7
Aug. 7	05 15.69	+23 13.0	2.955	2.501	+1.67	+1.8	21.6	54.2
Aug. 17	05 32.41	+23 30.8	2.869	2.519	+1.58	+1.1	21.6	59.9
Aug. 27	05 48.18	+23 41.9	2.776	2.538	+1.46	+0.6	21.6	65.9
Sept. 6	06 02.80	+23 47.4	2.677	2.557	+1.32	+0.1	21.5	72.3
Sept.16	06 16.05	+23 48.7	2.574	2.578	+1.16	-0.1	21.5	79.0
Sept.26	06 27.69	+23 47.3	2.467	2.599	+0.98	-0.3	21.5	86.1
Oct. 6	06 37.46	+23 44.7	2.359	2.620	+0.76	-0.2	21.5	93.7
Oct. 16	06 45.06	+23 42.7	2.251	2.642	+0.52	0.0	21.5	101.8
Oct. 26	06 50.22	+23 42.7	2.148	2.665	+0.24	+0.3	21.5	110.6
Nov. 5	06 52.66	+23 45.9	2.051	2.688	-0.05	+0.7	21.4	120.0
Nov. 15	06 52.19	+23 52.8	1.966	2.711	-0.34	+1.0	21.4	130.2
Nov. 25	06 48.79	+24 03.2	1.896	2.735	-0.61	+1.2	21.4	141.0
Dec. 5	06 42.69	+24 15.7	1.847	2.760	-0.82	+1.3	21.5	152.6
Dec. 15	06 34.50	+24 28.2	1.823	2.784	-0.94	+1.0	21.5	164.6
Dec. 25	06 25.10	+24 38.6	1.826	2.809	-0.94	+0.7	21.6	176.7
Jan. 4	06 15.65	+24 45.6	1.859	2.834	-0.84	+0.3	21.8	170.6
Jan. 14	06 07.29	+24 48.7	1.921	2.859	-0.64	0.0	21.9	158.6
Jan. 24	06 00.86	+24 49.0	2.008	2.884	-0.39	-0.1	22.1	147.0
Feb. 3	05 56.95	+24 47.6	2.119	2.909	-0.12	-0.2	22.3	135.9
Feb. 13	05 55.74	+24 45.6	2.249	2.935	+0.14	-0.2	22.6	125.5
Feb. 23	05 57.16	+24 43.5	2.393	2.960	+0.39	-0.2	22.8	115.7
Mar. 4	06 01.01	+24 41.1	2.547	2.985	+0.60	-0.3	23.0	106.6
Mar. 14	06 06.99	+24 38.2	2.708	3.011	+0.78	-0.4	.	97.9
Mar. 24	06 14.78	+24 33.9	2.872	3.036	+0.93	-0.6	.	89.8

Comet P/2006 U1 = 2011 A4 (LINEAR)

Epoch = 2011 July 18.0 TT
T = 2011 Apr. 16.08048 TT
Peri. = 64.22620 e = 0.8160384
Node = 240.47031 2000.0 a = 2.7769192 AU
Incl. = 8.42563 n = 0.21299000
q = 0.5108465 AU P = 4.63 years

H = 16.3 , G = 0.15

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		V	Elong. °
Jan. 9	13 58.94	-19 56.2	1.702	1.711	+2.84	-15.1	20.0	73.7
Jan. 19	14 27.36	-22 26.7	1.492	1.588	+3.47	-15.5	19.7	76.8
Jan. 29	15 02.02	-25 01.6	1.292	1.460	+4.40	-14.8	19.3	78.5
Feb. 8	15 46.07	-27 29.2	1.108	1.327	+5.76	-10.9	18.9	78.4
Feb. 18	16 43.71	-29 17.9	0.951	1.189	+7.45	0.0	18.5	75.6
Feb. 28	17 58.22	-29 18.1	0.834	1.047	+8.76	+20.2	18.2	69.4
Mar. 10	19 25.82	-25 56.0	0.777	0.901	+8.73	+42.0	18.1	59.7
Mar. 20	20 53.10	-18 55.8	0.797	0.758	+7.62	+52.0	18.0	48.5
Mar. 30	22 09.29	-10 15.7	0.895	0.627	+6.55	+49.9	17.8	38.2
Apr. 9	23 14.84	-01 56.5	1.056	0.533	+5.98	+43.0	17.5	29.9
Apr. 19	00 14.68	+05 13.3	1.251	0.515	+5.55	+34.2	17.2	23.2
Apr. 29	01 10.18	+10 55.8	1.446	0.581	+4.98	+25.3	17.3	18.1
May 9	01 59.94	+15 08.7	1.625	0.700	+4.37	+17.8	17.6	15.0
May 19	02 43.66	+18 06.5	1.789	0.841	+3.84	+12.1	18.1	13.7
May 29	03 22.03	+20 07.4	1.939	0.986	+3.39	+7.9	18.5	13.9
June 8	03 55.89	+21 26.3	2.076	1.130	+3.01	+4.8	18.9	15.4
June 18	04 25.97	+22 14.2	2.197	1.270	+2.69	+2.5	19.3	18.0
June 28	04 52.85	+22 38.8	2.303	1.405	+2.41	+0.7	19.7	21.3
July 8	05 16.98	+22 46.0	2.392	1.535	+2.17	-0.6	20.0	25.3
July 18	05 38.65	+22 39.8	2.463	1.660	+1.95	-1.6	20.3	29.8
July 28	05 58.13	+22 23.4	2.516	1.780	+1.74	-2.4	20.5	34.9
Aug. 7	06 15.56	+21 59.3	2.550	1.896	+1.54	-3.0	20.7	40.4
Aug. 17	06 31.01	+21 29.6	2.567	2.008	+1.35	-3.4	20.9	46.4
Aug. 27	06 44.52	+20 56.0	2.566	2.115	+1.15	-3.6	21.0	52.9
Sept. 6	06 56.05	+20 20.1	2.548	2.219	+0.95	-3.7	21.2	59.8
Sept.16	07 05.52	+19 43.2	2.515	2.320	+0.73	-3.6	21.2	67.2
Sept.26	07 12.81	+19 06.8	2.469	2.417	+0.49	-3.5	21.3	75.2
Oct. 6	07 17.72	+18 32.2	2.413	2.511	+0.23	-3.2	21.3	83.8
Oct. 16	07 20.05	+18 00.5	2.351	2.602	-0.05	-2.8	21.3	93.1
Oct. 26	07 19.59	+17 33.0	2.286	2.690	-0.34	-2.3	21.3	103.0
Nov. 5	07 16.16	+17 10.4	2.224	2.776	-0.64	-1.7	21.2	113.7
Nov. 15	07 09.71	+16 53.0	2.172	2.859	-0.93	-1.2	21.1	125.2
Nov. 25	07 00.42	+16 40.9	2.137	2.939	-1.17	-0.7	21.1	137.3
Dec. 5	06 48.76	+16 33.5	2.124	3.018	-1.32	-0.4	21.0	149.9
Dec. 15	06 35.55	+16 29.8	2.140	3.094	-1.37	-0.1	20.8	162.6
Dec. 25	06 21.87	+16 28.9	2.189	3.167	-1.30	+0.2	20.8	172.7
Jan. 4	06 08.86	+16 30.5	2.273	3.239	-1.14	+0.4	21.0	167.3
Jan. 14	05 57.50	+16 34.3	2.389	3.309	-0.91	+0.6	21.3	155.4
Jan. 24	05 48.41	+16 40.5	2.535	3.377	-0.65	+0.8	21.6	143.4
Feb. 3	05 41.93	+16 48.9	2.705	3.442	-0.39	+1.0	21.9	131.9
Feb. 13	05 38.05	+16 59.3	2.894	3.506	-0.14	+1.2	22.1	121.0
Feb. 23	05 36.61	+17 11.2	3.098	3.569	+0.07	+1.3	22.4	110.7
Mar. 4	05 37.35	+17 24.0	3.309	3.629	+0.26	+1.3	22.6	100.9
Mar. 14	05 39.96	+17 36.8	3.525	3.688	+0.42	+1.2	22.7	91.6
Mar. 24	05 44.16	+17 48.9	3.740	3.745	+0.55	+1.1	22.9	82.7

Comet P/2004 T1 (LINEAR-NEAT)

Epoch = 2011 July 18.0 TT
T = 2011 Apr. 24.84562 TT
Peri. = 336.39611 e = 0.5080483
Node = 51.43960 2000.0 a = 3.4713150 AU
Incl. = 11.04526 n = 0.15239231
q = 1.7077193 AU P = 6.47 years

m1 = 10.2 + 5 log(Delta) + 20.0 log(r(t+60))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	21 41.16	-22 02.1	2.715	1.963	-1.05	-5.6	17.3	35.2/ 68	32.9
Jan. 19	22 04.23	-19 42.1	2.726	1.921	-1.06	-6.5	17.2	36.5/ 66	28.7
Jan. 29	22 27.58	-17 10.0	2.732	1.882	-1.07	-7.4	17.1	37.7/ 65	24.7
Feb. 8	22 51.16	-14 26.7	2.734	1.846	-1.08	-8.1	17.1	38.8/ 64	20.9
Feb. 18	23 14.93	-11 33.6	2.733	1.814	-1.09	-8.9	17.0	39.7/ 63	17.4
Feb. 28	23 38.88	-08 32.5	2.730	1.785	-1.10	-9.5	17.0	40.5/ 63	14.1
Mar. 10	00 03.04	-05 25.3	2.725	1.761	-1.12	-10.0	17.1	41.2/ 63	11.0
Mar. 20	00 27.41	-02 14.4	2.720	1.740	-1.13	-10.4	17.1	41.6/ 63	8.1
Mar. 30	00 52.05	+00 57.8	2.716	1.725	-1.15	-10.6	17.2	42.0/ 63	5.5
Apr. 9	01 16.99	+04 08.5	2.712	1.714	-1.16	-10.7	17.3	42.1/ 63	3.8
Apr. 19	01 42.25	+07 15.1	2.709	1.709	-1.18	-10.6	17.4	42.0/ 64	3.8
Apr. 29	02 07.87	+10 14.8	2.708	1.708	-1.20	-10.3	17.5	41.8/ 65	5.5
May 9	02 33.86	+13 05.0	2.707	1.713	-1.22	-9.9	17.7	41.4/ 67	7.9
May 19	03 00.19	+15 43.2	2.707	1.723	-1.23	-9.3	17.8	40.8/ 68	10.5
May 29	03 26.83	+18 07.2	2.708	1.737	-1.25	-8.5	18.0	40.2/ 70	13.3
June 8	03 53.70	+20 15.4	2.709	1.757	-1.26	-7.7	18.2	39.3/ 72	16.2
June 18	04 20.67	+22 06.5	2.708	1.781	-1.26	-6.8	18.4	38.4/ 75	19.2
June 28	04 47.63	+23 39.7	2.707	1.809	-1.25	-5.8	18.6	37.4/ 77	22.4
July 8	05 14.39	+24 55.0	2.702	1.841	-1.24	-4.8	18.8	36.2/ 79	25.8
July 18	05 40.77	+25 52.8	2.695	1.876	-1.22	-3.9	19.0	35.0/ 82	29.3
July 28	06 06.59	+26 34.0	2.683	1.914	-1.20	-2.9	19.2	33.7/ 84	33.1
Aug. 7	06 31.66	+27 00.3	2.666	1.956	-1.17	-2.1	19.4	32.3/ 86	37.1
Aug. 17	06 55.80	+27 13.6	2.644	2.000	-1.13	-1.2	19.5	30.8/ 88	41.4
Aug. 27	07 18.87	+27 16.1	2.615	2.045	-1.09	-0.5	19.7	29.1/ 90	45.9
Sept. 6	07 40.71	+27 10.4	2.579	2.093	-1.05	+0.2	19.9	27.4/ 91	50.8
Sept.16	08 01.20	+26 59.1	2.536	2.142	-1.01	+0.8	20.0	25.5/ 92	56.0
Sept.26	08 20.23	+26 45.1	2.486	2.193	-0.98	+1.4	20.2	23.4/ 92	61.5
Oct. 6	08 37.66	+26 31.3	2.429	2.245	-0.95	+1.9	20.3	21.1/ 92	67.5
Oct. 16	08 53.35	+26 20.5	2.365	2.297	-0.93	+2.4	20.4	18.6/ 91	73.8
Oct. 26	09 07.15	+26 15.6	2.296	2.350	-0.92	+2.9	20.6	15.7/ 88	80.7
Nov. 5	09 18.85	+26 19.5	2.223	2.404	-0.92	+3.4	20.7	12.7/ 83	88.1
Nov. 15	09 28.23	+26 34.6	2.149	2.458	-0.93	+3.9	20.8	9.5/ 72	96.0
Nov. 25	09 35.03	+27 02.9	2.075	2.512	-0.95	+4.5	20.8	6.7/ 51	104.6
Dec. 5	09 38.97	+27 45.3	2.006	2.567	-0.99	+5.0	20.9	5.7/ 11	113.8
Dec. 15	09 39.82	+28 41.2	1.945	2.621	-1.05	+5.5	21.0	7.4/335	123.6
Dec. 25	09 37.45	+29 47.9	1.898	2.676	-1.11	+5.9	21.1	10.1/316	133.9
Jan. 4	09 31.93	+31 00.0	1.869	2.730	-1.19	+6.1	21.2	12.6/304	144.4
Jan. 14	09 23.74	+32 10.0	1.864	2.784	-1.25	+6.0	21.4	14.0/296	154.5
Jan. 24	09 13.67	+33 09.9	1.885	2.838	-1.30	+5.7	21.5	14.1/288	162.1
Feb. 3	09 02.90	+33 52.7	1.934	2.891	-1.32	+5.2	21.7	12.9/281	162.9
Feb. 13	08 52.71	+34 14.9	2.012	2.944	-1.31	+4.6	22.0	10.6/272	156.5
Feb. 23	08 44.15	+34 16.7	2.117	2.997	-1.26	+4.0	22.2	7.8/259	147.1
Mar. 4	08 37.97	+34 00.7	2.246	3.049	-1.19	+3.4	22.5	5.3/236	137.2
Mar. 14	08 34.47	+33 30.9	2.394	3.100	-1.11	+3.0	22.7	4.1/195	127.4
Mar. 24	08 33.63	+32 51.0	2.558	3.151	-1.03	+2.7	23.0	5.1/157	118.0

Comet 231P/LINEAR-NEAT

Epoch = 2011 July 18.0 TT
T = 2011 May 16.70015 TT
Peri. = 42.47227 e = 0.2465522
Node = 133.09915 2000.0 a = 4.0253158 AU
Incl. = 12.32643 n = 0.12204055
q = 3.0328653 AU P = 8.08 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	11 08.89	+10 11.5	2.439	3.096	+0.08	+4.4	18.7	123.8
Jan. 19	11 09.69	+10 55.6	2.321	3.087	-0.12	+5.9	18.6	134.0
Jan. 29	11 08.44	+11 54.1	2.222	3.078	-0.32	+7.0	18.5	144.6
Feb. 8	11 05.27	+13 04.3	2.145	3.070	-0.48	+7.7	18.4	155.5
Feb. 18	11 00.52	+14 21.2	2.095	3.063	-0.58	+7.7	18.3	166.0
Feb. 28	10 54.74	+15 38.7	2.073	3.057	-0.61	+7.1	18.3	172.0
Mar. 10	10 48.65	+16 50.0	2.080	3.051	-0.56	+5.9	18.3	165.5
Mar. 20	10 43.06	+17 49.2	2.114	3.046	-0.44	+4.3	18.3	155.1
Mar. 30	10 38.65	+18 32.6	2.174	3.042	-0.27	+2.6	18.3	144.4
Apr. 9	10 35.95	+18 58.4	2.256	3.038	-0.07	+0.8	18.4	134.1
Apr. 19	10 35.24	+19 06.5	2.355	3.036	+0.14	-0.8	18.5	124.3
Apr. 29	10 36.60	+18 58.5	2.467	3.034	+0.34	-2.3	18.6	115.1
May 9	10 39.96	+18 35.9	2.589	3.033	+0.52	-3.5	18.7	106.4
May 19	10 45.14	+18 00.6	2.718	3.033	+0.68	-4.6	18.8	98.2
May 29	10 51.93	+17 14.6	2.849	3.033	+0.82	-5.5	18.9	90.5
June 8	11 00.11	+16 19.2	2.982	3.035	+0.94	-6.3	19.0	83.3
June 18	11 09.46	+15 16.0	3.113	3.037	+1.03	-7.0	19.1	76.3
June 28	11 19.80	+14 06.1	3.240	3.040	+1.12	-7.5	19.2	69.6
July 8	11 30.97	+12 50.7	3.363	3.044	+1.19	-8.0	19.3	63.2
July 18	11 42.82	+11 30.8	3.480	3.048	+1.24	-8.3	19.4	57.0
July 28	11 55.24	+10 07.3	3.589	3.053	+1.29	-8.6	19.4	51.0
Aug. 7	12 08.14	+08 41.1	3.691	3.059	+1.33	-8.8	19.5	45.0
Aug. 17	12 21.45	+07 13.1	3.783	3.066	+1.36	-8.9	19.6	39.3
Aug. 27	12 35.09	+05 44.2	3.865	3.074	+1.39	-8.9	19.7	33.6
Sept. 6	12 49.03	+04 15.2	3.936	3.082	+1.42	-8.8	19.7	28.0
Sept.16	13 03.20	+02 46.9	3.995	3.091	+1.44	-8.7	19.8	22.5
Sept.26	13 17.58	+01 20.2	4.043	3.100	+1.45	-8.4	19.8	17.3
Oct. 6	13 32.12	-00 04.1	4.078	3.111	+1.47	-8.1	19.8	12.7
Oct. 16	13 46.78	-01 25.2	4.101	3.122	+1.47	-7.7	19.9	9.5
Oct. 26	14 01.52	-02 42.4	4.110	3.133	+1.48	-7.2	19.9	9.5
Nov. 5	14 16.29	-03 54.8	4.105	3.145	+1.47	-6.7	19.9	12.8
Nov. 15	14 31.02	-05 01.8	4.087	3.158	+1.46	-6.1	19.9	17.7
Nov. 25	14 45.67	-06 02.6	4.055	3.172	+1.45	-5.4	20.0	23.2
Dec. 5	15 00.14	-06 56.7	4.009	3.186	+1.42	-4.7	20.0	29.2
Dec. 15	15 14.34	-07 43.4	3.951	3.200	+1.38	-3.9	20.0	35.4
Dec. 25	15 28.18	-08 22.5	3.880	3.215	+1.34	-3.1	20.0	41.9
Jan. 4	15 41.54	-08 53.5	3.797	3.231	+1.27	-2.3	19.9	48.5
Jan. 14	15 54.27	-09 16.3	3.704	3.247	+1.20	-1.5	19.9	55.3
Jan. 24	16 06.25	-09 30.9	3.601	3.263	+1.10	-0.6	19.9	62.4
Feb. 3	16 17.30	-09 37.3	3.490	3.280	+0.99	+0.1	19.9	69.7
Feb. 13	16 27.24	-09 35.8	3.373	3.298	+0.87	+0.9	19.8	77.2
Feb. 23	16 35.90	-09 27.0	3.252	3.315	+0.72	+1.6	19.8	85.0
Mar. 4	16 43.08	-09 11.4	3.130	3.333	+0.55	+2.1	19.7	93.1
Mar. 14	16 48.59	-08 50.1	3.010	3.352	+0.37	+2.6	19.7	101.5
Mar. 24	16 52.26	-08 24.2	2.894	3.371	+0.17	+2.9	19.6	110.2

Comet 164P/Christensen

Epoch = 2011 July 18.0 TT
T = 2011 June 2.34184 TT
Peri. = 325.84964 e = 0.5413529
Node = 88.32642 2000.0 a = 3.6527300 AU
Incl. = 16.26097 n = 0.14118148
q = 1.6753140 AU P = 6.98 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	22 18.20	-23 36.2	2.791	2.150	+2.00	+12.7	19.4	41.1
Jan. 19	22 38.22	-21 29.1	2.806	2.097	+2.07	+13.7	19.3	36.4
Jan. 29	22 58.88	-19 12.0	2.814	2.045	+2.12	+14.7	19.2	31.9
Feb. 8	23 20.11	-16 45.1	2.815	1.996	+2.18	+15.6	19.1	27.8
Feb. 18	23 41.88	-14 09.5	2.809	1.948	+2.23	+16.3	19.0	24.0
Feb. 28	00 04.15	-11 26.0	2.799	1.903	+2.28	+17.0	18.9	20.5
Mar. 10	00 26.93	-08 36.0	2.785	1.861	+2.33	+17.5	18.8	17.3
Mar. 20	00 50.23	-05 41.2	2.769	1.822	+2.38	+17.8	18.7	14.5
Mar. 30	01 14.06	-02 43.3	2.751	1.787	+2.44	+17.9	18.5	12.1
Apr. 9	01 38.48	+00 15.5	2.733	1.756	+2.50	+17.7	18.4	10.2
Apr. 19	02 03.48	+03 12.7	2.715	1.730	+2.56	+17.3	18.3	8.9
Apr. 29	02 29.10	+06 05.8	2.699	1.708	+2.62	+16.6	18.2	8.3
May 9	02 55.34	+08 52.0	2.684	1.692	+2.68	+15.7	18.1	8.4
May 19	03 22.19	+11 28.6	2.671	1.681	+2.74	+14.4	17.9	9.3
May 29	03 49.60	+13 53.0	2.661	1.676	+2.79	+13.0	17.8	10.7
June 8	04 17.50	+16 02.8	2.652	1.676	+2.83	+11.3	17.7	12.5
June 18	04 45.76	+17 56.1	2.646	1.682	+2.85	+9.5	17.6	14.6
June 28	05 14.24	+19 31.5	2.640	1.694	+2.85	+7.7	17.5	17.0
July 8	05 42.77	+20 48.1	2.635	1.711	+2.84	+5.8	17.4	19.6
July 18	06 11.12	+21 45.8	2.629	1.733	+2.80	+4.0	17.3	22.4
July 28	06 39.12	+22 25.4	2.623	1.760	+2.74	+2.3	17.3	25.4
Aug. 7	07 06.54	+22 47.9	2.614	1.792	+2.67	+0.7	17.2	28.7
Aug. 17	07 33.20	+22 55.3	2.602	1.827	+2.58	-0.6	17.2	32.3
Aug. 27	07 58.95	+22 49.7	2.586	1.866	+2.47	-1.6	17.1	36.1
Sept. 6	08 23.65	+22 33.8	2.565	1.909	+2.35	-2.3	17.1	40.2
Sept.16	08 47.19	+22 10.5	2.539	1.954	+2.23	-2.8	17.1	44.6
Sept.26	09 09.50	+21 42.5	2.507	2.002	+2.10	-3.0	17.1	49.3
Oct. 6	09 30.48	+21 13.0	2.468	2.052	+1.96	-2.8	17.1	54.3
Oct. 16	09 50.07	+20 44.9	2.422	2.104	+1.81	-2.4	17.1	59.7
Oct. 26	10 08.19	+20 21.3	2.370	2.157	+1.65	-1.6	17.1	65.5
Nov. 5	10 24.73	+20 05.1	2.312	2.212	+1.48	-0.6	17.1	71.7
Nov. 15	10 39.58	+19 59.4	2.248	2.267	+1.30	+0.7	17.1	78.4
Nov. 25	10 52.56	+20 06.7	2.181	2.323	+1.09	+2.3	17.1	85.6
Dec. 5	11 03.46	+20 29.8	2.112	2.380	+0.86	+4.1	17.1	93.3
Dec. 15	11 12.05	+21 10.5	2.043	2.438	+0.60	+5.9	17.2	101.5
Dec. 25	11 18.07	+22 09.7	1.978	2.496	+0.32	+7.7	17.2	110.3
Jan. 4	11 21.24	+23 26.9	1.921	2.554	+0.01	+9.2	17.2	119.6
Jan. 14	11 21.39	+24 59.2	1.876	2.611	-0.29	+10.2	17.3	129.2
Jan. 24	11 18.48	+26 40.9	1.847	2.669	-0.58	+10.3	17.4	139.0
Feb. 3	11 12.72	+28 23.7	1.840	2.727	-0.80	+9.4	17.5	148.1
Feb. 13	11 04.71	+29 57.5	1.858	2.785	-0.94	+7.6	17.6	155.1
Feb. 23	10 55.36	+31 13.2	1.902	2.842	-0.96	+5.1	17.8	157.6
Mar. 4	10 45.80	+32 04.1	1.974	2.899	-0.87	+2.4	17.9	154.2
Mar. 14	10 37.13	+32 27.8	2.072	2.955	-0.69	-0.2	18.1	147.0
Mar. 24	10 30.20	+32 25.8	2.193	3.012	-0.47	-2.4	18.4	138.3

Comet C/2008 S3 (Boattini)

Epoch = 2011 July 18.0 TT
T = 2011 June 7.69405 TT
Peri. = 39.98471
Node = 54.94369 2000.0
Incl. = 162.70482
q = 8.0178458 AU
e = 1.0009238

m1 = 6.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	00 53.19	+15 16.7	8.009	8.069	-0.17	-1.4	17.3	90.0
Jan. 19	00 51.45	+15 03.1	8.185	8.063	-0.09	-0.8	17.4	79.4
Jan. 29	00 50.55	+14 55.1	8.354	8.056	-0.02	-0.3	17.4	69.1
Feb. 8	00 50.39	+14 52.6	8.513	8.051	+0.05	+0.2	17.4	59.1
Feb. 18	00 50.87	+14 55.0	8.655	8.046	+0.10	+0.7	17.5	49.3
Feb. 28	00 51.86	+15 02.0	8.778	8.041	+0.14	+1.1	17.5	39.7
Mar. 10	00 53.26	+15 12.9	8.877	8.036	+0.17	+1.4	17.5	30.4
Mar. 20	00 54.95	+15 27.1	8.950	8.032	+0.19	+1.7	17.5	21.6
Mar. 30	00 56.82	+15 44.1	8.996	8.029	+0.19	+1.9	17.6	13.7
Apr. 9	00 58.77	+16 03.3	9.013	8.026	+0.19	+2.1	17.6	9.1
Apr. 19	01 00.68	+16 24.1	9.002	8.024	+0.18	+2.2	17.6	12.2
Apr. 29	01 02.47	+16 46.0	8.963	8.021	+0.16	+2.2	17.5	19.6
May 9	01 04.02	+17 08.4	8.896	8.020	+0.12	+2.2	17.5	28.1
May 19	01 05.24	+17 30.8	8.804	8.019	+0.08	+2.2	17.5	36.9
May 29	01 06.02	+17 52.5	8.690	8.018	+0.02	+2.1	17.5	45.9
June 8	01 06.25	+18 13.0	8.555	8.018	-0.04	+1.9	17.4	55.1
June 18	01 05.85	+18 31.6	8.403	8.018	-0.11	+1.6	17.4	64.5
June 28	01 04.71	+18 47.7	8.239	8.019	-0.20	+1.3	17.4	74.0
July 8	01 02.74	+19 00.5	8.068	8.020	-0.29	+0.9	17.3	83.7
July 18	00 59.87	+19 09.1	7.893	8.022	-0.38	+0.4	17.3	93.6
July 28	00 56.05	+19 12.7	7.722	8.024	-0.48	-0.2	17.2	103.7
Aug. 7	00 51.26	+19 10.5	7.559	8.026	-0.57	-0.9	17.2	114.1
Aug. 17	00 45.54	+19 01.8	7.411	8.029	-0.66	-1.6	17.1	124.6
Aug. 27	00 38.94	+18 45.9	7.284	8.033	-0.73	-2.3	17.1	135.2
Sept. 6	00 31.62	+18 22.6	7.183	8.037	-0.78	-3.1	17.1	145.7
Sept.16	00 23.78	+17 52.0	7.114	8.041	-0.81	-3.7	17.1	155.7
Sept.26	00 15.65	+17 14.8	7.079	8.046	-0.81	-4.3	17.0	163.6
Oct. 6	00 07.52	+16 32.2	7.081	8.051	-0.79	-4.6	17.0	165.1
Oct. 16	23 59.65	+15 45.9	7.120	8.057	-0.73	-4.8	17.1	158.7
Oct. 26	23 52.31	+14 57.8	7.195	8.063	-0.66	-4.8	17.1	149.0
Nov. 5	23 45.70	+14 10.0	7.302	8.070	-0.57	-4.6	17.1	138.3
Nov. 15	23 39.98	+13 24.4	7.438	8.077	-0.47	-4.2	17.2	127.3
Nov. 25	23 35.23	+12 42.5	7.597	8.084	-0.37	-3.7	17.2	116.4
Dec. 5	23 31.49	+12 05.8	7.772	8.092	-0.27	-3.1	17.3	105.5
Dec. 15	23 28.75	+11 34.8	7.957	8.101	-0.18	-2.5	17.3	94.9
Dec. 25	23 26.94	+11 10.2	8.146	8.110	-0.10	-1.8	17.4	84.4
Jan. 4	23 25.98	+10 51.9	8.332	8.119	-0.02	-1.2	17.4	74.2
Jan. 14	23 25.78	+10 40.0	8.509	8.129	+0.04	-0.6	17.5	64.2
Jan. 24	23 26.22	+10 34.0	8.673	8.139	+0.10	0.0	17.5	54.4
Feb. 3	23 27.19	+10 33.5	8.818	8.149	+0.14	+0.4	17.6	44.9
Feb. 13	23 28.58	+10 37.9	8.942	8.160	+0.17	+0.9	17.6	35.7
Feb. 23	23 30.27	+10 46.8	9.041	8.172	+0.19	+1.3	17.6	27.0
Mar. 4	23 32.15	+10 59.4	9.114	8.184	+0.20	+1.6	17.6	19.2
Mar. 14	23 34.12	+11 15.2	9.158	8.196	+0.20	+1.8	17.7	13.8
Mar. 24	23 36.07	+11 33.4	9.174	8.209	+0.18	+2.0	17.7	13.7

Comet 213P/Van Ness

Epoch = 2011 July 18.0 TT
T = 2011 June 16.24041 TT
Peri. = 3.33603 e = 0.3796203
Node = 312.67159 2000.0 a = 3.4213618 AU
Incl. = 10.23949 n = 0.15574194
q = 2.1225434 AU P = 6.33 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	17 58.23	-29 12.2	3.304	2.399	+2.32	+1.7	18.2	19.4
Jan. 19	18 21.38	-28 55.3	3.230	2.368	+2.32	+3.0	18.1	24.3
Jan. 29	18 44.55	-28 25.5	3.149	2.339	+2.31	+4.3	17.9	29.2
Feb. 8	19 07.61	-27 42.8	3.061	2.311	+2.28	+5.5	17.8	34.1
Feb. 18	19 30.39	-26 47.4	2.967	2.285	+2.24	+6.8	17.6	38.9
Feb. 28	19 52.77	-25 39.7	2.869	2.260	+2.19	+7.9	17.5	43.8
Mar. 10	20 14.63	-24 20.7	2.765	2.237	+2.12	+9.0	17.3	48.6
Mar. 20	20 35.84	-22 51.1	2.659	2.216	+2.05	+9.9	17.2	53.5
Mar. 30	20 56.34	-21 12.1	2.550	2.196	+1.97	+10.7	17.0	58.3
Apr. 9	21 16.00	-19 25.1	2.439	2.179	+1.87	+11.4	16.9	63.2
Apr. 19	21 34.75	-17 31.4	2.326	2.164	+1.78	+11.9	16.7	68.2
Apr. 29	21 52.50	-15 32.5	2.214	2.151	+1.66	+12.3	16.5	73.2
May 9	22 09.14	-13 29.9	2.101	2.141	+1.54	+12.5	16.4	78.4
May 19	22 24.55	-11 25.2	1.989	2.132	+1.40	+12.5	16.2	83.8
May 29	22 38.58	-09 20.0	1.879	2.127	+1.25	+12.4	16.1	89.5
June 8	22 51.03	-07 16.0	1.772	2.123	+1.07	+12.1	16.0	95.4
June 18	23 01.68	-05 15.2	1.668	2.123	+0.86	+11.6	15.8	101.7
June 28	23 10.27	-03 19.2	1.570	2.124	+0.62	+10.9	15.7	108.5
July 8	23 16.49	-01 30.5	1.478	2.128	+0.36	+9.9	15.6	115.9
July 18	23 20.07	+00 08.6	1.394	2.135	+0.07	+8.7	15.5	123.9
July 28	23 20.76	+01 35.3	1.322	2.144	-0.23	+7.1	15.4	132.6
Aug. 7	23 18.51	+02 46.8	1.264	2.155	-0.50	+5.4	15.3	142.0
Aug. 17	23 13.55	+03 40.6	1.223	2.169	-0.71	+3.5	15.3	151.8
Aug. 27	23 06.50	+04 15.3	1.203	2.185	-0.81	+1.6	15.3	161.5
Sept. 6	22 58.35	+04 31.7	1.205	2.203	-0.80	+0.1	15.4	168.8
Sept.16	22 50.37	+04 33.1	1.232	2.223	-0.66	-0.8	15.5	167.0
Sept.26	22 43.74	+04 25.0	1.282	2.245	-0.44	-1.1	15.7	158.5
Oct. 6	22 39.36	+04 13.7	1.354	2.268	-0.16	-0.9	15.9	148.7
Oct. 16	22 37.72	+04 05.1	1.446	2.294	+0.12	-0.2	16.1	139.0
Oct. 26	22 38.88	+04 03.3	1.555	2.321	+0.38	+0.8	16.4	129.8
Nov. 5	22 42.72	+04 11.1	1.679	2.349	+0.62	+1.9	16.6	121.0
Nov. 15	22 48.93	+04 29.8	1.813	2.379	+0.82	+3.0	16.9	112.8
Nov. 25	22 57.13	+04 59.5	1.957	2.410	+0.99	+4.0	17.1	105.0
Dec. 5	23 07.01	+05 39.9	2.107	2.442	+1.12	+5.0	17.4	97.6
Dec. 15	23 18.25	+06 30.1	2.262	2.474	+1.23	+5.9	17.7	90.5
Dec. 25	23 30.57	+07 28.8	2.418	2.508	+1.32	+6.6	17.9	83.7
Jan. 4	23 43.79	+08 35.0	2.576	2.543	+1.39	+7.2	18.1	77.1
Jan. 14	23 57.71	+09 47.3	2.732	2.578	+1.45	+7.7	18.4	70.6
Jan. 24	00 12.18	+11 04.5	2.885	2.614	+1.49	+8.1	18.6	64.3
Feb. 3	00 27.12	+12 25.3	3.034	2.651	+1.53	+8.3	18.8	58.2
Feb. 13	00 42.41	+13 48.6	3.177	2.687	+1.56	+8.5	19.0	52.2
Feb. 23	00 57.99	+15 13.1	3.314	2.725	+1.58	+8.5	19.2	46.2
Mar. 4	01 13.81	+16 37.8	3.442	2.762	+1.60	+8.4	19.4	40.4
Mar. 14	01 29.82	+18 01.8	3.561	2.800	+1.61	+8.2	19.6	34.6
Mar. 24	01 45.96	+19 24.2	3.669	2.838	+1.63	+8.0	19.8	29.0

Comet 130P/McNaught-Hughes

Epoch = 2011 July 18.0 TT
T = 2011 June 24.78395 TT
Peri. = 224.36884 e = 0.4067015
Node = 89.81397 2000.0 a = 3.5362675 AU
Incl. = 7.30731 n = 0.14821304
q = 2.0980622 AU P = 6.65 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	17 40.05	-22 06.0	3.303	2.428	+2.15	-2.0	20.1	22.9
Jan. 19	18 01.57	-22 26.0	3.217	2.394	+2.18	-1.0	19.9	28.0
Jan. 29	18 23.37	-22 35.6	3.123	2.361	+2.20	+0.1	19.7	33.2
Feb. 8	18 45.33	-22 34.7	3.022	2.329	+2.20	+1.1	19.6	38.3
Feb. 18	19 07.32	-22 23.5	2.917	2.299	+2.19	+2.1	19.4	43.3
Feb. 28	19 29.25	-22 02.6	2.806	2.271	+2.17	+3.0	19.2	48.3
Mar. 10	19 51.00	-21 32.6	2.693	2.244	+2.14	+3.8	19.1	53.2
Mar. 20	20 12.44	-20 54.8	2.577	2.220	+2.10	+4.5	18.9	58.2
Mar. 30	20 33.49	-20 10.2	2.459	2.197	+2.05	+5.0	18.7	63.1
Apr. 9	20 54.02	-19 20.7	2.341	2.176	+1.99	+5.3	18.5	68.1
Apr. 19	21 13.93	-18 28.0	2.222	2.158	+1.92	+5.4	18.3	73.2
Apr. 29	21 33.10	-17 34.1	2.105	2.141	+1.83	+5.3	18.1	78.3
May 9	21 51.40	-16 41.5	1.989	2.128	+1.73	+4.9	18.0	83.6
May 19	22 08.67	-15 52.7	1.876	2.116	+1.61	+4.3	17.8	89.0
May 29	22 24.76	-15 10.2	1.766	2.108	+1.47	+3.3	17.6	94.7
June 8	22 39.41	-14 37.0	1.661	2.102	+1.30	+2.1	17.4	100.8
June 18	22 52.40	-14 15.7	1.560	2.099	+1.10	+0.7	17.3	107.2
June 28	23 03.42	-14 09.0	1.467	2.098	+0.87	-1.0	17.1	114.1
July 8	23 12.13	-14 19.1	1.381	2.100	+0.61	-2.8	16.9	121.6
July 18	23 18.22	-14 46.9	1.306	2.105	+0.32	-4.5	16.8	129.7
July 28	23 21.44	-15 31.7	1.244	2.113	+0.02	-5.9	16.7	138.3
Aug. 7	23 21.64	-16 30.4	1.197	2.123	-0.26	-6.6	16.6	147.5
Aug. 17	23 19.06	-17 36.2	1.168	2.136	-0.48	-6.4	16.6	156.7
Aug. 27	23 14.27	-18 40.5	1.160	2.151	-0.61	-5.3	16.6	164.6
Sept. 6	23 08.21	-19 33.5	1.175	2.169	-0.61	-3.3	16.7	166.9
Sept.16	23 02.13	-20 06.9	1.213	2.189	-0.50	-1.0	16.8	161.2
Sept.26	22 57.15	-20 16.5	1.273	2.211	-0.30	+1.5	16.9	152.5
Oct. 6	22 54.17	-20 01.3	1.353	2.235	-0.05	+3.8	17.1	143.1
Oct. 16	22 53.67	-19 23.6	1.452	2.261	+0.21	+5.7	17.3	134.0
Oct. 26	22 55.72	-18 27.0	1.566	2.289	+0.45	+7.2	17.5	125.3
Nov. 5	23 00.19	-17 15.0	1.693	2.318	+0.66	+8.4	17.8	117.0
Nov. 15	23 06.80	-15 51.1	1.830	2.349	+0.84	+9.3	18.0	109.2
Nov. 25	23 15.20	-14 17.9	1.975	2.382	+0.99	+10.0	18.3	101.8
Dec. 5	23 25.08	-12 37.5	2.127	2.415	+1.11	+10.6	18.5	94.6
Dec. 15	23 36.16	-10 51.9	2.282	2.450	+1.20	+10.9	18.8	87.8
Dec. 25	23 48.19	-09 02.5	2.440	2.486	+1.28	+11.2	19.0	81.1
Jan. 4	00 00.98	-07 10.6	2.598	2.522	+1.34	+11.3	19.2	74.6
Jan. 14	00 14.36	-05 17.3	2.755	2.559	+1.38	+11.4	19.4	68.3
Jan. 24	00 28.20	-03 23.8	2.909	2.598	+1.42	+11.3	19.6	62.1
Feb. 3	00 42.43	-01 30.9	3.058	2.636	+1.45	+11.1	19.9	56.0
Feb. 13	00 56.93	+00 20.5	3.202	2.675	+1.47	+10.9	20.0	49.9
Feb. 23	01 11.66	+02 09.5	3.338	2.715	+1.49	+10.6	20.2	44.0
Mar. 4	01 26.57	+03 55.6	3.467	2.755	+1.50	+10.2	20.4	38.1
Mar. 14	01 41.59	+05 37.9	3.585	2.795	+1.51	+9.8	20.6	32.2
Mar. 24	01 56.70	+07 16.0	3.693	2.836	+1.52	+9.3	20.7	26.5

Comet 62P/Tsuchinshan

Epoch = 2011 July 18.0 TT
T = 2011 June 30.39375 TT
Peri. = 30.23302 e = 0.5974326
Node = 90.30834 2000.0 a = 3.4370315 AU
Incl. = 9.71285 n = 0.15467809
q = 1.3836367 AU P = 6.37 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	00 27.89	-06 08.7	2.273	2.246	+1.07	+11.4	21.4	75.9
Jan. 19	00 38.57	-04 14.5	2.327	2.177	+1.25	+12.3	21.0	69.0
Jan. 29	00 51.09	-02 11.5	2.372	2.108	+1.42	+13.1	20.6	62.6
Feb. 8	01 05.34	-00 00.8	2.409	2.039	+1.59	+13.7	20.2	56.6
Feb. 18	01 21.22	+02 16.5	2.437	1.971	+1.75	+14.2	19.7	51.0
Feb. 28	01 38.68	+04 38.9	2.455	1.904	+1.91	+14.6	19.2	45.9
Mar. 10	01 57.74	+07 05.2	2.465	1.838	+2.07	+14.8	18.7	41.2
Mar. 20	02 18.43	+09 33.6	2.467	1.774	+2.24	+14.8	18.2	36.9
Mar. 30	02 40.81	+12 02.1	2.462	1.712	+2.42	+14.6	17.7	32.9
Apr. 9	03 04.98	+14 28.2	2.452	1.654	+2.60	+14.1	17.1	29.4
Apr. 19	03 31.01	+16 48.8	2.437	1.598	+2.80	+13.1	16.6	26.2
Apr. 29	03 59.00	+19 00.2	2.419	1.548	+3.00	+11.8	16.0	23.4
May 9	04 28.99	+20 58.3	2.401	1.502	+3.19	+10.0	15.5	21.0
May 19	05 00.92	+22 38.3	2.383	1.463	+3.37	+7.7	15.0	18.9
May 29	05 34.66	+23 55.2	2.368	1.431	+3.53	+4.9	14.5	17.1
June 8	06 09.93	+24 44.6	2.358	1.407	+3.63	+1.8	14.0	15.6
June 18	06 46.27	+25 02.8	2.352	1.391	+3.69	-1.5	13.7	14.3
June 28	07 23.16	+24 47.6	2.354	1.384	+3.68	-4.9	13.4	13.3
July 8	08 00.01	+23 59.1	2.362	1.386	+3.62	-8.0	13.2	12.3
July 18	08 36.24	+22 39.3	2.379	1.398	+3.52	-10.7	13.0	11.4
July 28	09 11.39	+20 51.9	2.404	1.418	+3.38	-13.0	13.0	10.5
Aug. 7	09 45.16	+18 42.1	2.437	1.447	+3.22	-14.6	13.1	9.6
Aug. 17	10 17.35	+16 15.6	2.476	1.483	+3.06	-15.7	13.4	8.5
Aug. 27	10 47.93	+13 38.2	2.522	1.525	+2.90	-16.3	13.7	7.4
Sept. 6	11 16.95	+10 55.1	2.571	1.573	+2.75	-16.4	14.0	6.5
Sept.16	11 44.47	+08 10.8	2.623	1.627	+2.62	-16.2	14.5	6.0
Sept.26	12 10.66	+05 29.1	2.676	1.684	+2.50	-15.6	15.0	6.5
Oct. 6	12 35.62	+02 52.9	2.729	1.744	+2.38	-14.8	15.5	8.1
Oct. 16	12 59.46	+00 24.6	2.778	1.807	+2.28	-13.9	16.1	10.6
Oct. 26	13 22.31	-01 54.4	2.823	1.872	+2.19	-12.8	16.6	13.8
Nov. 5	13 44.22	-04 02.9	2.861	1.939	+2.10	-11.7	17.2	17.5
Nov. 15	14 05.24	-05 59.9	2.892	2.006	+2.02	-10.5	17.8	21.7
Nov. 25	14 25.39	-07 45.2	2.913	2.075	+1.93	-9.3	18.3	26.3
Dec. 5	14 44.66	-09 18.6	2.924	2.144	+1.83	-8.1	18.9	31.3
Dec. 15	15 03.01	-10 40.0	2.924	2.213	+1.74	-7.0	19.4	36.6
Dec. 25	15 20.38	-11 49.8	2.912	2.282	+1.63	-5.8	19.9	42.2
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 42.5	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 37.05	-15 16.0	2.610	2.689	+0.66	-0.7	22.3	83.8
Mar. 4	16 43.61	-15 22.9	2.533	2.754	+0.42	-0.2	22.7	92.2
Mar. 14	16 47.85	-15 24.6	2.454	2.819	+0.17	+0.2	23.0	101.1
Mar. 24	16 49.58	-15 22.1	2.378	2.883	-0.09	+0.6	.	110.5

Comet 176P/LINEAR

Epoch = 2011 July 18.0 TT
T = 2011 June 30.93929 TT
Peri. = 35.59248 e = 0.1944066
Node = 346.46277 2000.0 a = 3.1981501 AU
Incl. = 0.23564 n = 0.17232799
q = 2.5764086 AU P = 5.72 years

H = 15.1 , G = 0.15

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		V	Elong. °
Jan. 9	21 51.51	-13 00.5	3.412	2.698	+1.60	+8.7	20.7	37.4
Jan. 19	22 07.55	-11 33.9	3.475	2.685	+1.63	+9.2	20.6	31.4
Jan. 29	22 23.83	-10 01.7	3.528	2.673	+1.65	+9.7	20.6	25.5
Feb. 8	22 40.29	-08 24.5	3.569	2.661	+1.66	+10.1	20.5	19.7
Feb. 18	22 56.87	-06 43.2	3.598	2.650	+1.67	+10.5	20.4	14.1
Feb. 28	23 13.52	-04 58.6	3.615	2.640	+1.67	+10.7	20.3	8.5
Mar. 10	23 30.24	-03 11.5	3.621	2.630	+1.67	+10.9	20.2	3.0
Mar. 20	23 46.97	-01 22.9	3.616	2.621	+1.67	+10.9	20.1	2.4
Mar. 30	00 03.72	+00 26.4	3.599	2.613	+1.67	+10.9	20.3	7.8
Apr. 9	00 20.46	+02 15.6	3.571	2.606	+1.67	+10.8	20.4	13.1
Apr. 19	00 37.18	+04 03.6	3.533	2.599	+1.67	+10.6	20.4	18.3
Apr. 29	00 53.86	+05 49.6	3.485	2.593	+1.66	+10.3	20.5	23.5
May 9	01 10.48	+07 32.9	3.427	2.588	+1.65	+10.0	20.5	28.8
May 19	01 27.01	+09 12.5	3.360	2.584	+1.64	+9.5	20.5	34.0
May 29	01 43.42	+10 47.8	3.285	2.581	+1.62	+9.0	20.6	39.3
June 8	01 59.65	+12 18.0	3.201	2.579	+1.60	+8.4	20.6	44.6
June 18	02 15.64	+13 42.4	3.109	2.577	+1.57	+7.8	20.5	50.0
June 28	02 31.29	+15 00.6	3.011	2.576	+1.52	+7.1	20.5	55.6
July 8	02 46.51	+16 12.0	2.907	2.577	+1.46	+6.4	20.5	61.2
July 18	03 01.15	+17 16.2	2.797	2.578	+1.39	+5.7	20.4	67.1
July 28	03 15.06	+18 13.0	2.683	2.580	+1.30	+4.9	20.4	73.2
Aug. 7	03 28.03	+19 02.2	2.565	2.582	+1.18	+4.2	20.3	79.6
Aug. 17	03 39.82	+19 43.9	2.445	2.586	+1.04	+3.4	20.2	86.3
Aug. 27	03 50.17	+20 18.0	2.325	2.590	+0.86	+2.7	20.1	93.5
Sept. 6	03 58.76	+20 44.8	2.206	2.596	+0.65	+1.9	20.0	101.1
Sept.16	04 05.28	+21 04.3	2.091	2.602	+0.41	+1.2	19.8	109.2
Sept.26	04 09.40	+21 16.6	1.983	2.609	+0.14	+0.5	19.7	118.0
Oct. 6	04 10.83	+21 21.7	1.884	2.616	-0.14	-0.2	19.5	127.5
Oct. 16	04 09.46	+21 19.4	1.800	2.625	-0.41	-1.0	19.3	137.7
Oct. 26	04 05.34	+21 09.6	1.734	2.634	-0.65	-1.7	19.1	148.6
Nov. 5	03 58.86	+20 52.5	1.690	2.644	-0.81	-2.3	18.9	160.2
Nov. 15	03 50.80	+20 29.3	1.671	2.654	-0.86	-2.7	18.6	172.1
Nov. 25	03 42.19	+20 02.4	1.680	2.666	-0.80	-2.7	18.6	175.7
Dec. 5	03 34.15	+19 35.4	1.718	2.678	-0.64	-2.3	18.9	163.6
Dec. 15	03 27.71	+19 12.3	1.782	2.690	-0.42	-1.6	19.1	151.9
Dec. 25	03 23.52	+18 56.3	1.869	2.703	-0.16	-0.7	19.4	140.7
Jan. 4	03 21.95	+18 49.6	1.977	2.717	+0.11	+0.3	19.6	130.1
Jan. 14	03 23.03	+18 52.6	2.101	2.731	+0.36	+1.2	19.8	120.2
Jan. 24	03 26.62	+19 04.7	2.236	2.746	+0.59	+2.0	20.0	110.9
Feb. 3	03 32.50	+19 24.6	2.380	2.761	+0.79	+2.6	20.2	102.2
Feb. 13	03 40.37	+19 50.3	2.528	2.777	+0.96	+3.0	20.4	93.9
Feb. 23	03 49.97	+20 20.1	2.679	2.793	+1.11	+3.2	20.5	86.1
Mar. 4	04 01.05	+20 52.0	2.829	2.809	+1.23	+3.2	20.6	78.7
Mar. 14	04 13.37	+21 24.3	2.976	2.826	+1.34	+3.1	20.7	71.7
Mar. 24	04 26.74	+21 55.4	3.119	2.843	+1.42	+2.9	20.8	64.9

Comet 123P/West-Hartley

Epoch = 2011 July 18.0 TT
T = 2011 July 4.48625 TT
Peri. = 102.82728 e = 0.4483624
Node = 46.59904 2000.0 a = 3.8592364 AU
Incl. = 15.35706 n = 0.13000259
q = 2.1288998 AU P = 7.58 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	04 52.57	+38 36.9	1.650	2.518	-0.60	+0.2	16.9	144.8
Jan. 19	04 46.59	+38 38.5	1.690	2.480	-0.23	-0.5	16.8	134.4
Jan. 29	04 44.31	+38 33.2	1.747	2.444	+0.16	-0.8	16.7	124.5
Feb. 8	04 45.96	+38 25.1	1.817	2.409	+0.55	-0.8	16.6	115.2
Feb. 18	04 51.42	+38 17.1	1.896	2.375	+0.89	-0.7	16.6	106.6
Feb. 28	05 00.35	+38 09.8	1.980	2.343	+1.20	-0.7	16.5	98.7
Mar. 10	05 12.40	+38 02.5	2.066	2.313	+1.48	-0.9	16.5	91.4
Mar. 20	05 27.17	+37 53.8	2.152	2.285	+1.71	-1.2	16.4	84.6
Mar. 30	05 44.24	+37 41.3	2.237	2.258	+1.90	-1.8	16.3	78.4
Apr. 9	06 03.27	+37 22.9	2.319	2.234	+2.06	-2.7	16.3	72.6
Apr. 19	06 23.89	+36 56.3	2.399	2.212	+2.19	-3.7	16.2	67.2
Apr. 29	06 45.76	+36 19.6	2.475	2.192	+2.28	-4.8	16.2	62.1
May 9	07 08.57	+35 31.2	2.547	2.175	+2.34	-6.1	16.1	57.3
May 19	07 31.99	+34 30.1	2.616	2.160	+2.38	-7.4	16.0	52.8
May 29	07 55.76	+33 15.7	2.681	2.148	+2.39	-8.8	16.0	48.5
June 8	08 19.65	+31 48.0	2.743	2.139	+2.38	-10.1	15.9	44.4
June 18	08 43.43	+30 07.5	2.802	2.133	+2.35	-11.3	15.9	40.4
June 28	09 06.95	+28 14.8	2.859	2.130	+2.32	-12.4	15.9	36.5
July 8	09 30.11	+26 11.3	2.912	2.129	+2.27	-13.3	15.8	32.8
July 18	09 52.81	+23 58.4	2.962	2.132	+2.22	-14.1	15.8	29.0
July 28	10 15.03	+21 37.5	3.010	2.137	+2.17	-14.7	15.8	25.4
Aug. 7	10 36.75	+19 10.3	3.054	2.145	+2.12	-15.2	15.8	21.7
Aug. 17	10 57.97	+16 38.7	3.095	2.156	+2.07	-15.5	15.8	18.2
Aug. 27	11 18.72	+14 04.0	3.133	2.170	+2.03	-15.6	15.9	14.7
Sept. 6	11 39.03	+11 28.0	3.166	2.187	+1.99	-15.6	15.9	11.4
Sept.16	11 58.92	+08 52.2	3.194	2.206	+1.95	-15.4	15.9	8.8
Sept.26	12 18.44	+06 17.9	3.217	2.227	+1.92	-15.1	16.0	7.6
Oct. 6	12 37.61	+03 46.4	3.234	2.251	+1.88	-14.7	16.1	8.8
Oct. 16	12 56.44	+01 18.9	3.243	2.276	+1.85	-14.3	16.1	11.8
Oct. 26	13 14.96	-01 03.6	3.246	2.304	+1.82	-13.7	16.2	15.7
Nov. 5	13 33.16	-03 20.2	3.240	2.334	+1.78	-13.0	16.3	20.1
Nov. 15	13 51.01	-05 30.1	3.226	2.366	+1.75	-12.3	16.4	24.9
Nov. 25	14 08.49	-07 32.8	3.202	2.399	+1.70	-11.5	16.5	30.0
Dec. 5	14 25.53	-09 27.8	3.169	2.433	+1.65	-10.7	16.5	35.4
Dec. 15	14 42.06	-11 14.8	3.125	2.469	+1.59	-9.9	16.6	41.1
Dec. 25	14 58.00	-12 53.8	3.073	2.506	+1.52	-9.1	16.7	46.9
Jan. 4	15 13.20	-14 24.8	3.010	2.545	+1.43	-8.3	16.8	53.1
Jan. 14	15 27.53	-15 48.1	2.939	2.584	+1.33	-7.6	16.9	59.6
Jan. 24	15 40.81	-17 04.3	2.859	2.624	+1.20	-7.0	17.0	66.3
Feb. 3	15 52.83	-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 12.19	-20 16.9	2.585	2.748	+0.68	-5.5	17.2	88.8
Mar. 4	16 19.00	-21 11.9	2.489	2.791	+0.46	-5.2	17.3	97.1
Mar. 14	16 23.55	-22 03.6	2.395	2.834	+0.20	-4.9	17.3	105.9
Mar. 24	16 25.60	-22 52.4	2.307	2.877	-0.06	-4.6	17.4	115.2

Comet P/2010 T2 (PANSTARRS)

Epoch = 2011 July 18.0 TT
T = 2011 July 10.89330 TT
Peri. = 356.14096 e = 0.3197716
Node = 59.59066 2000.0 a = 5.5173742 AU
Incl. = 8.02613 n = 0.07605109
q = 3.7530746 AU P = 12.96 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. °′	Delta	r	Daily motion m	m1	Elong. °
Jan. 9	00 55.60	+01 19.2	3.820	3.862	+0.60	+5.9	19.9	85.1
Jan. 19	01 01.61	+02 18.5	3.956	3.851	+0.71	+6.4	20.0	76.7
Jan. 29	01 08.76	+03 22.8	4.088	3.840	+0.81	+6.8	20.0	68.6
Feb. 8	01 16.91	+04 31.1	4.213	3.830	+0.90	+7.1	20.1	60.8
Feb. 18	01 25.93	+05 42.4	4.329	3.820	+0.98	+7.3	20.1	53.2
Feb. 28	01 35.70	+06 55.7	4.434	3.811	+1.04	+7.4	20.2	45.9
Mar. 10	01 46.13	+08 10.1	4.527	3.803	+1.10	+7.5	20.2	38.7
Mar. 20	01 57.12	+09 24.9	4.606	3.795	+1.15	+7.4	20.2	31.7
Mar. 30	02 08.58	+10 39.3	4.670	3.788	+1.19	+7.3	20.2	24.9
Apr. 9	02 20.44	+11 52.7	4.720	3.782	+1.22	+7.2	20.2	18.2
Apr. 19	02 32.64	+13 04.2	4.754	3.776	+1.25	+6.9	20.2	11.7
Apr. 29	02 45.10	+14 13.6	4.772	3.771	+1.27	+6.7	20.2	5.3
May 9	02 57.77	+15 20.1	4.775	3.766	+1.28	+6.3	20.2	2.1
May 19	03 10.57	+16 23.4	4.762	3.762	+1.29	+6.0	20.2	7.9
May 29	03 23.44	+17 23.1	4.733	3.759	+1.29	+5.6	20.2	14.2
June 8	03 36.31	+18 19.0	4.690	3.757	+1.28	+5.2	20.2	20.6
June 18	03 49.10	+19 10.8	4.632	3.755	+1.26	+4.8	20.1	27.0
June 28	04 01.73	+19 58.4	4.560	3.754	+1.24	+4.3	20.1	33.5
July 8	04 14.10	+20 41.8	4.474	3.753	+1.20	+3.9	20.1	40.0
July 18	04 26.11	+21 21.1	4.377	3.753	+1.15	+3.5	20.0	46.7
July 28	04 37.64	+21 56.5	4.269	3.754	+1.09	+3.2	20.0	53.5
Aug. 7	04 48.56	+22 28.1	4.150	3.756	+1.02	+2.8	19.9	60.5
Aug. 17	04 58.72	+22 56.6	4.023	3.758	+0.93	+2.6	19.8	67.7
Aug. 27	05 07.98	+23 22.2	3.890	3.761	+0.82	+2.3	19.8	75.2
Sept. 6	05 16.13	+23 45.6	3.752	3.764	+0.69	+2.2	19.7	82.9
Sept.16	05 23.01	+24 07.3	3.613	3.768	+0.54	+2.1	19.6	91.1
Sept.26	05 28.40	+24 28.0	3.474	3.773	+0.37	+2.0	19.6	99.6
Oct. 6	05 32.12	+24 48.2	3.339	3.778	+0.19	+2.0	19.5	108.6
Oct. 16	05 34.01	+25 08.0	3.213	3.784	-0.01	+2.0	19.4	118.0
Oct. 26	05 33.95	+25 27.6	3.098	3.791	-0.20	+1.9	19.3	127.9
Nov. 5	05 31.93	+25 46.6	3.000	3.799	-0.39	+1.8	19.3	138.3
Nov. 15	05 28.08	+26 04.2	2.923	3.807	-0.54	+1.5	19.2	149.2
Nov. 25	05 22.69	+26 19.5	2.871	3.815	-0.64	+1.2	19.2	160.3
Dec. 5	05 16.25	+26 31.6	2.847	3.824	-0.68	+0.9	19.2	171.4
Dec. 15	05 09.41	+26 40.2	2.853	3.834	-0.66	+0.5	19.2	174.7
Dec. 25	05 02.83	+26 45.3	2.889	3.845	-0.56	+0.3	19.3	164.1
Jan. 4	04 57.19	+26 48.0	2.954	3.856	-0.42	+0.1	19.3	152.8
Jan. 14	04 52.99	+26 49.3	3.046	3.867	-0.24	+0.1	19.4	141.8
Jan. 24	04 50.55	+26 50.7	3.160	3.879	-0.05	+0.2	19.5	131.2
Feb. 3	04 50.07	+26 53.1	3.292	3.892	+0.15	+0.4	19.6	120.9
Feb. 13	04 51.53	+26 57.2	3.438	3.905	+0.33	+0.6	19.8	111.2
Feb. 23	04 54.86	+27 03.2	3.594	3.919	+0.50	+0.8	19.9	101.9
Mar. 4	04 59.89	+27 10.7	3.755	3.933	+0.66	+0.9	20.0	93.0
Mar. 14	05 06.45	+27 19.3	3.917	3.948	+0.79	+0.9	20.1	84.5
Mar. 24	05 14.35	+27 28.2	4.078	3.963	+0.91	+0.9	20.2	76.3

Comet 69P/Taylor

Epoch = 2011 July 18.0 TT
T = 2011 July 18.03191 TT
Peri. = 343.46880 e = 0.4144987
Node = 104.88291 2000.0 a = 3.8808095 AU
Incl. = 22.05188 n = 0.12892009
q = 2.2722190 AU P = 7.65 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	01 03.28	-16 33.4	2.623	2.642	+0.92	+14.1	20.4	80.3
Jan. 19	01 12.47	-14 11.9	2.708	2.609	+1.07	+14.5	20.3	73.7
Jan. 29	01 23.13	-11 47.2	2.790	2.577	+1.20	+14.7	20.3	67.4
Feb. 8	01 35.11	-09 20.5	2.867	2.545	+1.31	+14.7	20.2	61.3
Feb. 18	01 48.25	-06 53.5	2.939	2.515	+1.42	+14.6	20.2	55.5
Feb. 28	02 02.42	-04 27.3	3.006	2.486	+1.51	+14.4	20.1	49.9
Mar. 10	02 17.52	-02 03.1	3.065	2.459	+1.60	+14.1	20.1	44.6
Mar. 20	02 33.47	+00 18.0	3.119	2.433	+1.67	+13.7	20.0	39.4
Mar. 30	02 50.20	+02 34.9	3.165	2.408	+1.75	+13.2	19.9	34.4
Apr. 9	03 07.66	+04 46.6	3.204	2.386	+1.81	+12.6	19.8	29.6
Apr. 19	03 25.80	+06 52.2	3.236	2.365	+1.88	+11.8	19.8	25.0
Apr. 29	03 44.57	+08 50.5	3.262	2.346	+1.94	+11.0	19.7	20.6
May 9	04 03.93	+10 40.8	3.280	2.329	+1.99	+10.1	19.6	16.4
May 19	04 23.82	+12 22.2	3.291	2.314	+2.04	+9.2	19.5	12.6
May 29	04 44.20	+13 54.1	3.296	2.302	+2.08	+8.2	19.5	9.3
June 8	05 05.00	+15 15.7	3.293	2.291	+2.11	+7.1	19.4	7.5
June 18	05 26.13	+16 26.7	3.284	2.283	+2.14	+6.0	19.3	8.1
June 28	05 47.54	+17 26.9	3.268	2.277	+2.16	+4.9	19.3	10.6
July 8	06 09.13	+18 16.1	3.246	2.273	+2.17	+3.9	19.2	14.1
July 18	06 30.80	+18 54.7	3.216	2.272	+2.17	+2.8	19.1	18.1
July 28	06 52.46	+19 22.9	3.180	2.273	+2.15	+1.9	19.1	22.3
Aug. 7	07 14.01	+19 41.6	3.137	2.277	+2.13	+1.0	19.0	26.7
Aug. 17	07 35.33	+19 51.6	3.087	2.283	+2.10	+0.3	19.0	31.3
Aug. 27	07 56.36	+19 54.1	3.030	2.291	+2.06	-0.4	18.9	36.0
Sept. 6	08 16.97	+19 50.6	2.966	2.302	+2.01	-0.8	18.9	41.0
Sept.16	08 37.07	+19 42.7	2.896	2.314	+1.95	-1.0	18.9	46.1
Sept.26	08 56.58	+19 32.4	2.819	2.329	+1.88	-1.1	18.8	51.4
Oct. 6	09 15.39	+19 21.9	2.737	2.346	+1.80	-0.8	18.8	56.9
Oct. 16	09 33.40	+19 13.4	2.649	2.365	+1.71	-0.4	18.8	62.8
Oct. 26	09 50.48	+19 09.6	2.556	2.386	+1.60	+0.4	18.7	68.9
Nov. 5	10 06.51	+19 13.3	2.460	2.408	+1.48	+1.4	18.7	75.3
Nov. 15	10 21.31	+19 27.1	2.362	2.433	+1.34	+2.7	18.7	82.1
Nov. 25	10 34.71	+19 54.2	2.263	2.459	+1.17	+4.3	18.6	89.3
Dec. 5	10 46.46	+20 37.4	2.165	2.486	+0.98	+6.1	18.6	97.0
Dec. 15	10 56.31	+21 38.7	2.072	2.515	+0.76	+8.1	18.6	105.1
Dec. 25	11 03.96	+22 59.6	1.986	2.545	+0.51	+10.0	18.6	113.6
Jan. 4	11 09.10	+24 40.0	1.910	2.576	+0.24	+11.7	18.6	122.5
Jan. 14	11 11.50	+26 36.8	1.849	2.609	-0.05	+12.8	18.6	131.6
Jan. 24	11 11.03	+28 44.5	1.807	2.642	-0.33	+13.0	18.7	140.5
Feb. 3	11 07.78	+30 54.1	1.787	2.676	-0.56	+12.0	18.8	148.4
Feb. 13	11 02.19	+32 54.6	1.791	2.712	-0.72	+10.1	18.9	153.7
Feb. 23	10 55.02	+34 35.4	1.822	2.748	-0.77	+7.3	19.0	154.5
Mar. 4	10 47.33	+35 48.4	1.878	2.784	-0.71	+4.2	19.2	150.5
Mar. 14	10 40.24	+36 30.0	1.959	2.821	-0.56	+1.1	19.4	143.6
Mar. 24	10 34.65	+36 41.1	2.061	2.859	-0.35	-1.6	19.6	135.6

Comet D/1952 B1 (Harrington-Wilson)

Epoch = 2011 July 18.0 TT
T = 2011 July 30.11079 TT
Peri. = 0.81689 e = 0.5938139
Node = 118.44762 2000.0 a = 3.1474959 AU
Incl. = 14.39532 n = 0.17650471
q = 1.2784691 AU P = 5.58 years

m1 = 15.1 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″ / °	Elong. °
Jan. 9	23 49.06	-14 51.6	2.681	2.417	-0.59	-2.2	21.1	20.2/ 59	64.0
Jan. 19	00 00.88	-13 05.5	2.727	2.348	-0.61	-2.6	21.0	22.5/ 60	57.4
Jan. 29	00 14.11	-11 12.0	2.762	2.277	-0.62	-3.0	20.9	24.6/ 61	51.1
Feb. 8	00 28.66	-09 11.8	2.786	2.207	-0.65	-3.5	20.8	26.6/ 62	45.3
Feb. 18	00 44.44	-07 05.6	2.798	2.136	-0.68	-3.9	20.6	28.5/ 63	39.9
Feb. 28	01 01.41	-04 54.2	2.799	2.064	-0.72	-4.5	20.5	30.4/ 64	34.8
Mar. 10	01 19.58	-02 38.1	2.789	1.993	-0.77	-5.0	20.3	32.3/ 64	30.1
Mar. 20	01 38.97	-00 18.3	2.768	1.921	-0.83	-5.5	20.1	34.1/ 65	25.8
Mar. 30	01 59.64	+02 04.3	2.739	1.850	-0.90	-6.1	20.0	36.0/ 66	21.9
Apr. 9	02 21.67	+04 28.4	2.703	1.780	-0.97	-6.6	19.8	37.9/ 67	18.3
Apr. 19	02 45.16	+06 52.4	2.660	1.712	-1.06	-7.1	19.6	39.8/ 69	15.2
Apr. 29	03 10.22	+09 14.5	2.613	1.645	-1.16	-7.5	19.3	41.8/ 70	12.5
May 9	03 36.99	+11 32.0	2.564	1.581	-1.27	-7.7	19.1	43.8/ 72	10.2
May 19	04 05.55	+13 42.0	2.514	1.520	-1.39	-7.8	18.9	45.7/ 74	8.3
May 29	04 35.99	+15 40.9	2.465	1.464	-1.52	-7.7	18.7	47.6/ 76	6.8
June 8	05 08.31	+17 24.6	2.420	1.413	-1.65	-7.3	18.5	49.4/ 79	5.5
June 18	05 42.43	+18 48.7	2.379	1.369	-1.77	-6.5	18.3	50.9/ 82	4.6
June 28	06 18.15	+19 48.7	2.345	1.332	-1.88	-5.5	18.2	52.2/ 85	3.9
July 8	06 55.13	+20 20.9	2.318	1.304	-1.97	-4.2	18.1	53.1/ 88	3.5
July 18	07 32.89	+20 22.8	2.299	1.286	-2.02	-2.7	18.0	53.6/ 91	3.5
July 28	08 10.91	+19 53.6	2.290	1.279	-2.04	-1.0	18.0	53.7/ 95	3.9
Aug. 7	08 48.65	+18 54.5	2.290	1.282	-2.02	+0.5	18.0	53.3/ 98	4.7
Aug. 17	09 25.58	+17 28.5	2.299	1.295	-1.96	+2.0	18.0	52.5/101	5.8
Aug. 27	10 01.33	+15 40.4	2.316	1.319	-1.88	+3.2	18.1	51.4/103	7.1
Sept. 6	10 35.66	+13 35.7	2.340	1.352	-1.77	+4.1	18.3	49.8/105	8.7
Sept.16	11 08.41	+11 20.2	2.371	1.393	-1.66	+4.7	18.4	48.1/106	10.4
Sept.26	11 39.59	+08 59.4	2.405	1.442	-1.54	+5.1	18.6	46.2/107	12.3
Oct. 6	12 09.22	+06 38.3	2.442	1.496	-1.43	+5.2	18.8	44.2/108	14.5
Oct. 16	12 37.37	+04 21.0	2.480	1.555	-1.32	+5.2	19.0	42.2/108	17.0
Oct. 26	13 04.15	+02 10.6	2.517	1.617	-1.21	+5.0	19.2	40.1/107	19.9
Nov. 5	13 29.64	+00 09.8	2.550	1.683	-1.12	+4.8	19.4	38.0/107	23.1
Nov. 15	13 53.89	-01 39.7	2.578	1.751	-1.03	+4.5	19.6	35.9/106	26.6
Nov. 25	14 16.97	-03 16.6	2.600	1.820	-0.95	+4.2	19.8	33.8/104	30.6
Dec. 5	14 38.88	-04 40.2	2.614	1.891	-0.88	+3.9	20.0	31.7/103	34.9
Dec. 15	14 59.61	-05 50.0	2.618	1.962	-0.81	+3.7	20.1	29.6/101	39.5
Dec. 25	15 19.12	-06 46.1	2.613	2.034	-0.76	+3.5	20.3	27.4/ 99	44.6
Jan. 4	15 37.34	-07 28.6	2.598	2.105	-0.71	+3.4	20.4	25.2/ 97	50.0
Jan. 14	15 54.17	-07 58.0	2.571	2.177	-0.67	+3.3	20.5	22.8/ 94	55.8
Jan. 24	16 09.50	-08 14.8	2.535	2.247	-0.63	+3.3	20.6	20.3/ 92	62.0
Feb. 3	16 23.15	-08 19.8	2.488	2.318	-0.61	+3.4	20.7	17.6/ 88	68.6
Feb. 13	16 34.97	-08 14.0	2.433	2.388	-0.59	+3.5	20.8	14.6/ 84	75.6
Feb. 23	16 44.77	-07 58.5	2.371	2.457	-0.59	+3.6	20.9	11.5/ 78	83.0
Mar. 4	16 52.31	-07 34.6	2.305	2.525	-0.59	+3.9	20.9	8.2/ 68	91.0
Mar. 14	16 57.41	-07 04.0	2.237	2.592	-0.60	+4.1	21.0	5.1/ 46	99.4
Mar. 24	16 59.87	-06 28.3	2.170	2.658	-0.63	+4.4	21.0	3.9/353	108.4

Comet 27P/Crommelin [Orbit 2]

Epoch = 2011 July 18.0 TT
T = 2011 Aug. 3.79926 TT
Peri. = 195.97902 e = 0.9187393
Node = 250.63852 2000.0 a = 9.2033443 AU
Incl. = 28.95670 n = 0.03530088
q = 0.7478702 AU P = 27.92 years

m1 = 10.4 + 5 log(Delta) + 15.0 log(r(t-10)) (r<2.8AU)
H = 15.0 , G = 0.15 (r>2.8AU)

0h TT	R.A.(2000)	Decl.	Delta	r	Variation for T=+1 day		Mag.	Mot./PA	Elong.
2011/12	h m	° ′						″ °	°
Jan. 9	20 29.82	+02 53.0	3.888	3.081	-0.29	-1.5	21.0	19.6/ 79	30.5
Jan. 19	20 42.68	+03 30.2	3.826	2.973	-0.33	-1.6	20.9	21.0/ 76	26.0
Jan. 29	20 56.34	+04 19.0	3.747	2.863	-0.38	-1.7	20.7	22.4/ 74	22.6
Feb. 8	21 10.80	+05 19.7	3.651	2.751	-0.43	-1.9	20.1	23.9/ 72	20.8
Feb. 18	21 26.04	+06 32.5	3.539	2.637	-0.50	-2.1	19.7	25.4/ 70	20.7
Feb. 28	21 42.13	+07 57.5	3.413	2.522	-0.58	-2.3	19.4	27.0/ 69	22.0
Mar. 10	21 59.14	+09 35.0	3.274	2.404	-0.67	-2.6	19.0	28.8/ 67	24.4
Mar. 20	22 17.20	+11 25.1	3.124	2.285	-0.77	-2.9	18.6	30.8/ 66	27.2
Mar. 30	22 36.52	+13 27.9	2.966	2.163	-0.90	-3.2	18.1	33.1/ 65	30.3
Apr. 9	22 57.36	+15 43.4	2.802	2.039	-1.06	-3.5	17.7	35.8/ 65	33.2
Apr. 19	23 20.10	+18 10.8	2.634	1.913	-1.25	-3.7	17.1	38.9/ 65	35.9
Apr. 29	23 45.28	+20 48.9	2.465	1.785	-1.48	-3.7	16.6	42.6/ 66	38.1
May 9	00 13.57	+23 34.6	2.300	1.656	-1.77	-3.4	16.0	47.0/ 67	39.8
May 19	00 45.86	+26 22.4	2.141	1.524	-2.12	-2.6	15.3	52.1/ 70	40.7
May 29	01 23.21	+29 02.4	1.994	1.393	-2.52	-0.8	14.6	57.9/ 74	40.7
June 8	02 06.65	+31 18.2	1.861	1.261	-2.97	+2.4	13.9	64.3/ 79	39.8
June 18	02 56.82	+32 45.5	1.750	1.133	-3.39	+7.3	13.1	71.1/ 85	37.8
June 28	03 53.23	+32 54.3	1.664	1.010	-3.68	+14.1	12.3	77.4/ 93	34.7
July 8	04 53.73	+31 17.3	1.609	0.901	-3.74	+21.7	11.5	82.6/101	30.8
July 18	05 54.89	+27 43.5	1.586	0.813	-3.57	+28.4	10.7	85.7/108	26.4
July 28	06 53.60	+22 27.8	1.597	0.759	-3.27	+32.4	10.1	85.9/114	22.1
Aug. 7	07 48.05	+16 07.4	1.637	0.750	-2.92	+32.8	9.7	82.8/117	18.7
Aug. 17	08 37.62	+09 27.1	1.703	0.789	-2.58	+30.2	9.7	77.0/119	16.7
Aug. 27	09 22.39	+03 02.7	1.789	0.866	-2.26	+25.7	10.1	69.8/120	16.2
Sept. 6	10 02.70	-02 45.6	1.892	0.969	-1.96	+20.8	10.8	62.2/120	16.5
Sept.16	10 39.03	-07 51.0	2.006	1.087	-1.70	+16.2	11.7	55.2/119	17.2
Sept.26	11 11.91	-12 14.4	2.127	1.214	-1.47	+12.3	12.6	49.0/118	18.1
Oct. 6	11 41.80	-16 00.6	2.249	1.345	-1.27	+9.1	13.4	43.6/117	19.1
Oct. 16	12 09.10	-19 14.9	2.368	1.477	-1.10	+6.5	14.2	38.9/117	20.6
Oct. 26	12 34.14	-22 02.6	2.480	1.608	-0.95	+4.4	14.9	34.9/116	22.6
Nov. 5	12 57.17	-24 28.3	2.582	1.739	-0.83	+2.8	15.6	31.4/115	25.4
Nov. 15	13 18.37	-26 35.6	2.670	1.867	-0.72	+1.5	16.1	28.2/114	28.9
Nov. 25	13 37.85	-28 27.7	2.745	1.994	-0.63	+0.4	16.7	25.3/114	33.2
Dec. 5	13 55.66	-30 06.9	2.803	2.118	-0.55	-0.4	17.1	22.6/114	38.2
Dec. 15	14 11.78	-31 35.1	2.845	2.241	-0.48	-1.1	17.6	19.9/114	43.8
Dec. 25	14 26.18	-32 53.9	2.870	2.361	-0.42	-1.7	17.9	17.2/115	50.0
Jan. 4	14 38.72	-34 04.3	2.879	2.479	-0.38	-2.1	18.3	14.5/117	56.7
Jan. 14	14 49.27	-35 07.3	2.872	2.596	-0.34	-2.5	18.6	11.6/119	64.0
Jan. 24	14 57.64	-36 03.3	2.853	2.710	-0.32	-2.8	18.9	8.7/125	71.7
Feb. 3	15 03.59	-36 52.1	2.822	2.822	-0.31	-3.1	20.5	5.7/136	80.0
Feb. 13	15 06.93	-37 33.0	2.784	2.933	-0.31	-3.3	20.5	3.2/169	88.7
Feb. 23	15 07.45	-38 04.8	2.742	3.042	-0.32	-3.5	20.6	3.5/234	98.0
Mar. 4	15 05.05	-38 25.0	2.702	3.149	-0.35	-3.6	20.6	6.2/264	107.7
Mar. 14	14 59.79	-38 30.8	2.669	3.254	-0.39	-3.5	20.6	9.3/277	117.8
Mar. 24	14 51.95	-38 19.3	2.649	3.358	-0.44	-3.4	20.5	12.1/284	128.2

Comet 27P/Crommelin [Orbit 1]

Epoch = 2011 July 18.0 TT
T = 2011 Aug. 3.80820 TT
Peri. = 195.98065 e = 0.9187493
Node = 250.63807 2000.0 a = 9.2044979 AU
Incl. = 28.95655 n = 0.03529425
q = 0.7478719 AU P = 27.93 years

m1 = 10.4 + 5 log(Delta) + 15.0 log(r(t-10)) (r<2.8AU)
H = 15.0 , G = 0.15 (r>2.8AU)

0h TT	R.A.(2000)	Decl.	Delta	r	Variation for T=+1 day		Mag.	Mot./PA	Elong.
2011/12	h m	° ′						″ °	°
Jan. 9	20 29.82	+02 53.0	3.888	3.081	-0.29	-1.5	21.0	19.6/ 79	30.5
Jan. 19	20 42.68	+03 30.2	3.826	2.973	-0.33	-1.6	20.9	21.0/ 76	26.0
Jan. 29	20 56.34	+04 19.0	3.747	2.863	-0.38	-1.7	20.7	22.4/ 74	22.6
Feb. 8	21 10.80	+05 19.7	3.651	2.751	-0.43	-1.9	20.1	23.9/ 72	20.8
Feb. 18	21 26.04	+06 32.5	3.539	2.638	-0.50	-2.1	19.7	25.4/ 70	20.7
Feb. 28	21 42.13	+07 57.5	3.413	2.522	-0.58	-2.3	19.4	27.0/ 69	22.0
Mar. 10	21 59.14	+09 35.0	3.274	2.405	-0.67	-2.6	19.0	28.8/ 67	24.4
Mar. 20	22 17.20	+11 25.1	3.124	2.285	-0.77	-2.9	18.6	30.8/ 66	27.2
Mar. 30	22 36.51	+13 27.9	2.966	2.163	-0.90	-3.2	18.1	33.1/ 65	30.3
Apr. 9	22 57.35	+15 43.3	2.802	2.039	-1.06	-3.5	17.7	35.8/ 65	33.2
Apr. 19	23 20.10	+18 10.8	2.634	1.913	-1.25	-3.7	17.1	38.9/ 65	35.9
Apr. 29	23 45.27	+20 48.8	2.466	1.786	-1.48	-3.7	16.6	42.6/ 66	38.1
May 9	00 13.56	+23 34.6	2.300	1.656	-1.77	-3.4	16.0	47.0/ 67	39.8
May 19	00 45.85	+26 22.4	2.141	1.525	-2.12	-2.6	15.3	52.1/ 70	40.7
May 29	01 23.19	+29 02.4	1.994	1.393	-2.52	-0.8	14.6	57.9/ 74	40.7
June 8	02 06.63	+31 18.2	1.861	1.261	-2.97	+2.4	13.9	64.3/ 79	39.8
June 18	02 56.79	+32 45.5	1.750	1.133	-3.39	+7.3	13.1	71.1/ 85	37.8
June 28	03 53.20	+32 54.4	1.664	1.010	-3.68	+14.1	12.3	77.4/ 93	34.7
July 8	04 53.69	+31 17.4	1.609	0.901	-3.74	+21.7	11.5	82.6/101	30.8
July 18	05 54.86	+27 43.7	1.586	0.813	-3.57	+28.4	10.7	85.7/108	26.4
July 28	06 53.58	+22 28.0	1.597	0.759	-3.27	+32.4	10.1	85.9/114	22.1
Aug. 7	07 48.03	+16 07.7	1.637	0.750	-2.92	+32.8	9.7	82.8/117	18.7
Aug. 17	08 37.60	+09 27.4	1.702	0.789	-2.58	+30.2	9.7	77.0/119	16.7
Aug. 27	09 22.37	+03 02.9	1.789	0.866	-2.26	+25.7	10.1	69.8/120	16.2
Sept. 6	10 02.69	-02 45.5	1.892	0.969	-1.96	+20.8	10.8	62.3/120	16.5
Sept.16	10 39.02	-07 50.8	2.006	1.087	-1.70	+16.2	11.7	55.2/119	17.2
Sept.26	11 11.90	-12 14.3	2.127	1.214	-1.47	+12.3	12.6	49.0/118	18.1
Oct. 6	11 41.79	-16 00.5	2.249	1.345	-1.27	+9.1	13.4	43.6/117	19.1
Oct. 16	12 09.09	-19 14.8	2.368	1.477	-1.10	+6.5	14.2	38.9/117	20.6
Oct. 26	12 34.14	-22 02.5	2.480	1.608	-0.95	+4.4	14.9	34.9/116	22.6
Nov. 5	12 57.17	-24 28.3	2.581	1.738	-0.83	+2.8	15.6	31.4/115	25.4
Nov. 15	13 18.36	-26 35.6	2.670	1.867	-0.72	+1.5	16.1	28.2/115	28.9
Nov. 25	13 37.85	-28 27.7	2.745	1.994	-0.63	+0.4	16.7	25.3/114	33.2
Dec. 5	13 55.66	-30 06.9	2.803	2.118	-0.55	-0.4	17.1	22.6/114	38.2
Dec. 15	14 11.78	-31 35.1	2.845	2.241	-0.48	-1.1	17.6	19.9/114	43.8
Dec. 25	14 26.18	-32 53.9	2.870	2.361	-0.42	-1.7	17.9	17.2/115	50.0
Jan. 4	14 38.72	-34 04.3	2.879	2.479	-0.38	-2.1	18.3	14.5/117	56.7
Jan. 14	14 49.27	-35 07.3	2.872	2.596	-0.34	-2.5	18.6	11.6/119	64.0
Jan. 24	14 57.64	-36 03.3	2.852	2.710	-0.32	-2.8	18.9	8.7/125	71.7
Feb. 3	15 03.59	-36 52.1	2.822	2.822	-0.31	-3.1	20.5	5.7/136	80.0
Feb. 13	15 06.93	-37 33.0	2.784	2.933	-0.31	-3.3	20.5	3.2/169	88.7
Feb. 23	15 07.45	-38 04.8	2.742	3.042	-0.32	-3.5	20.6	3.5/234	98.0
Mar. 4	15 05.05	-38 25.0	2.702	3.149	-0.35	-3.6	20.6	6.2/264	107.7
Mar. 14	14 59.79	-38 30.8	2.669	3.254	-0.39	-3.5	20.6	9.3/277	117.8
Mar. 24	14 51.95	-38 19.3	2.649	3.358	-0.44	-3.4	20.5	12.1/284	128.2

Comet 97P/Metcalf-Brewington

Epoch = 2011 July 18.0 TT
T = 2011 Aug. 20.76508 TT
Peri. = 228.21995 e = 0.4595054
Node = 185.20933 2000.0 a = 4.8041544 AU
Incl. = 17.88663 n = 0.09360060
q = 2.5966195 AU P = 10.53 years

m1 = 7.2 + 5 log(Delta) + 20.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	22 48.54	-05 01.8	3.515	3.033	+1.33	+4.2	19.6	53.4
Jan. 19	23 01.82	-04 19.4	3.590	3.000	+1.40	+5.0	19.5	46.6
Jan. 29	23 15.79	-03 29.4	3.654	2.967	+1.46	+5.6	19.5	39.9
Feb. 8	23 30.36	-02 33.0	3.707	2.935	+1.51	+6.2	19.4	33.5
Feb. 18	23 45.45	-01 31.4	3.747	2.904	+1.55	+6.6	19.3	27.2
Feb. 28	00 00.98	-00 25.6	3.776	2.874	+1.59	+6.9	19.3	21.2
Mar. 10	00 16.92	+00 43.0	3.791	2.846	+1.63	+7.0	19.2	15.3
Mar. 20	00 33.22	+01 53.5	3.795	2.818	+1.66	+7.1	19.1	9.6
Mar. 30	00 49.83	+03 04.4	3.787	2.792	+1.69	+7.0	19.0	4.4
Apr. 9	01 06.75	+04 14.8	3.767	2.767	+1.72	+6.8	18.9	3.1
Apr. 19	01 23.93	+05 23.2	3.735	2.744	+1.74	+6.5	18.8	7.7
Apr. 29	01 41.35	+06 28.7	3.694	2.722	+1.76	+6.1	18.7	12.9
May 9	01 58.99	+07 30.1	3.643	2.702	+1.78	+5.6	18.6	18.1
May 19	02 16.79	+08 26.0	3.582	2.683	+1.79	+5.0	18.5	23.3
May 29	02 34.72	+09 15.6	3.513	2.666	+1.80	+4.2	18.4	28.4
June 8	02 52.73	+09 57.6	3.437	2.651	+1.80	+3.3	18.3	33.5
June 18	03 10.73	+10 31.0	3.353	2.637	+1.79	+2.4	18.2	38.7
June 28	03 28.66	+10 55.1	3.263	2.626	+1.77	+1.4	18.2	43.8
July 8	03 46.41	+11 08.8	3.167	2.616	+1.74	+0.3	18.1	49.0
July 18	04 03.85	+11 11.5	3.067	2.608	+1.70	-0.9	18.0	54.3
July 28	04 20.86	+11 02.8	2.962	2.602	+1.64	-2.1	17.9	59.7
Aug. 7	04 37.28	+10 42.1	2.854	2.599	+1.56	-3.3	17.8	65.3
Aug. 17	04 52.92	+10 09.5	2.744	2.597	+1.47	-4.5	17.7	71.0
Aug. 27	05 07.60	+09 25.0	2.632	2.597	+1.35	-5.6	17.6	76.9
Sept. 6	05 21.08	+08 28.9	2.520	2.599	+1.21	-6.7	17.5	83.1
Sept.16	05 33.15	+07 22.2	2.409	2.604	+1.04	-7.6	17.4	89.6
Sept.26	05 43.55	+06 05.8	2.300	2.610	+0.85	-8.4	17.3	96.4
Oct. 6	05 52.01	+04 41.6	2.196	2.618	+0.63	-9.0	17.3	103.6
Oct. 16	05 58.29	+03 12.1	2.099	2.628	+0.39	-9.2	17.2	111.1
Oct. 26	06 02.17	+01 40.3	2.011	2.640	+0.13	-9.0	17.1	119.0
Nov. 5	06 03.52	+00 10.7	1.935	2.654	-0.12	-8.2	17.1	127.2
Nov. 15	06 02.36	-01 11.6	1.874	2.670	-0.35	-6.9	17.1	135.3
Nov. 25	05 58.91	-02 20.9	1.832	2.687	-0.53	-5.1	17.1	143.0
Dec. 5	05 53.63	-03 11.5	1.812	2.706	-0.63	-2.8	17.1	149.3
Dec. 15	05 47.29	-03 39.1	1.815	2.727	-0.65	-0.2	17.2	152.7
Dec. 25	05 40.76	-03 41.6	1.843	2.749	-0.58	+2.2	17.3	151.9
Jan. 4	05 34.93	-03 19.7	1.895	2.773	-0.44	+4.3	17.4	147.2
Jan. 14	05 30.58	-02 36.9	1.970	2.798	-0.24	+5.9	17.6	140.3
Jan. 24	05 28.19	-01 38.2	2.066	2.825	-0.02	+6.9	17.8	132.4
Feb. 3	05 28.03	-00 28.8	2.179	2.853	+0.21	+7.5	18.0	124.2
Feb. 13	05 30.12	+00 46.0	2.308	2.882	+0.42	+7.6	18.2	116.1
Feb. 23	05 34.34	+02 02.0	2.448	2.912	+0.62	+7.4	18.4	108.1
Mar. 4	05 40.50	+03 15.9	2.596	2.943	+0.79	+6.9	18.6	100.5
Mar. 14	05 48.35	+04 25.2	2.750	2.975	+0.93	+6.3	18.9	93.1
Mar. 24	05 57.65	+05 28.0	2.908	3.008	+1.05	+5.5	19.1	86.0

Comet 228P/LINEAR

Epoch = 2011 July 18.0 TT
T = 2011 Aug. 23.84537 TT
Peri. = 114.79436 e = 0.1771217
Node = 31.06610 2000.0 a = 4.1688707 AU
Incl. = 7.91542 n = 0.11579144
q = 3.4304732 AU P = 8.51 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	07 26.69	+32 44.2	2.569	3.540	-0.80	+1.5	18.9	169.3
Jan. 19	07 18.68	+32 59.6	2.574	3.531	-0.74	+0.5	18.9	164.2
Jan. 29	07 11.31	+33 04.8	2.608	3.522	-0.60	-0.5	18.9	154.4
Feb. 8	07 05.33	+33 00.3	2.669	3.514	-0.40	-1.3	18.9	143.8
Feb. 18	07 01.32	+32 47.4	2.753	3.506	-0.18	-1.9	19.0	133.4
Feb. 28	06 59.54	+32 28.0	2.855	3.498	+0.06	-2.4	19.0	123.3
Mar. 10	07 00.10	+32 03.9	2.972	3.491	+0.28	-2.8	19.1	113.6
Mar. 20	07 02.90	+31 36.4	3.099	3.484	+0.48	-3.0	19.2	104.5
Mar. 30	07 07.75	+31 06.2	3.232	3.478	+0.67	-3.3	19.3	95.8
Apr. 9	07 14.42	+30 33.6	3.368	3.471	+0.82	-3.5	19.3	87.5
Apr. 19	07 22.66	+29 58.5	3.503	3.466	+0.96	-3.8	19.4	79.6
Apr. 29	07 32.22	+29 20.6	3.635	3.461	+1.07	-4.1	19.5	72.1
May 9	07 42.88	+28 39.7	3.761	3.456	+1.16	-4.4	19.6	64.9
May 19	07 54.43	+27 55.6	3.880	3.451	+1.23	-4.8	19.6	58.0
May 29	08 06.68	+27 07.8	3.990	3.447	+1.28	-5.2	19.7	51.2
June 8	08 19.51	+26 16.2	4.090	3.444	+1.32	-5.5	19.7	44.7
June 18	08 32.74	+25 20.8	4.179	3.440	+1.35	-5.9	19.8	38.4
June 28	08 46.28	+24 21.6	4.256	3.438	+1.37	-6.3	19.8	32.1
July 8	09 00.03	+23 18.6	4.320	3.435	+1.39	-6.6	19.8	26.1
July 18	09 13.89	+22 12.2	4.370	3.433	+1.39	-7.0	19.8	20.1
July 28	09 27.79	+21 02.6	4.407	3.432	+1.39	-7.2	19.9	14.4
Aug. 7	09 41.68	+19 50.1	4.429	3.431	+1.38	-7.5	19.9	9.1
Aug. 17	09 55.47	+18 35.3	4.437	3.431	+1.37	-7.7	19.9	5.7
Aug. 27	10 09.15	+17 18.7	4.430	3.430	+1.35	-7.8	19.9	7.5
Sept. 6	10 22.64	+16 00.7	4.408	3.431	+1.33	-7.9	19.9	12.5
Sept.16	10 35.91	+14 42.2	4.372	3.432	+1.30	-7.9	19.8	18.3
Sept.26	10 48.90	+13 23.7	4.321	3.433	+1.27	-7.8	19.8	24.5
Oct. 6	11 01.57	+12 06.0	4.255	3.435	+1.23	-7.6	19.8	30.8
Oct. 16	11 13.84	+10 49.9	4.176	3.437	+1.18	-7.4	19.7	37.3
Oct. 26	11 25.66	+09 36.2	4.085	3.439	+1.13	-7.0	19.7	44.0
Nov. 5	11 36.94	+08 26.0	3.981	3.442	+1.06	-6.6	19.7	50.9
Nov. 15	11 47.59	+07 20.0	3.866	3.446	+0.99	-6.1	19.6	58.0
Nov. 25	11 57.49	+06 19.3	3.742	3.450	+0.90	-5.4	19.5	65.4
Dec. 5	12 06.51	+05 24.9	3.610	3.454	+0.80	-4.7	19.5	73.1
Dec. 15	12 14.50	+04 37.8	3.472	3.459	+0.68	-3.9	19.4	81.0
Dec. 25	12 21.29	+03 59.0	3.332	3.464	+0.54	-3.0	19.3	89.4
Jan. 4	12 26.70	+03 29.5	3.192	3.469	+0.39	-2.0	19.2	98.1
Jan. 14	12 30.55	+03 09.9	3.055	3.475	+0.21	-0.9	19.1	107.2
Jan. 24	12 32.68	+03 00.7	2.926	3.482	+0.03	+0.1	19.1	116.7
Feb. 3	12 32.94	+03 02.1	2.808	3.488	-0.16	+1.1	19.0	126.8
Feb. 13	12 31.32	+03 13.3	2.706	3.495	-0.34	+2.0	18.9	137.2
Feb. 23	12 27.90	+03 32.8	2.624	3.503	-0.50	+2.5	18.9	148.1
Mar. 4	12 22.93	+03 58.2	2.566	3.511	-0.61	+2.8	18.8	159.1
Mar. 14	12 16.85	+04 26.3	2.536	3.519	-0.66	+2.7	18.8	169.8
Mar. 24	12 10.22	+04 53.2	2.535	3.528	-0.65	+2.2	18.8	173.6

Comet C/2010 G2 (Hill)

Epoch = 2011 July 18.0 TT
T = 2011 Sept. 2.04995 TT
Peri. = 137.42334 e = 0.9794152
Node = 246.78111 2000.0 a = 96.2279740 AU
Incl. = 103.74513 n = 0.00104412
q = 1.9808336 AU P = 943.96 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	16 49.94	+25 20.3	3.727	3.340	+1.11	+14.8	14.5	59.7
Jan. 19	17 01.08	+27 48.8	3.545	3.257	+1.14	+18.0	14.3	65.2
Jan. 29	17 12.50	+30 48.3	3.364	3.174	+1.17	+21.4	14.0	70.5
Feb. 8	17 24.18	+34 22.1	3.186	3.092	+1.19	+25.0	13.8	75.6
Feb. 18	17 36.07	+38 32.2	3.018	3.010	+1.21	+28.7	13.6	80.1
Feb. 28	17 48.20	+43 19.6	2.865	2.930	+1.24	+32.3	13.4	83.9
Mar. 10	18 00.59	+48 42.8	2.733	2.851	+1.27	+35.4	13.1	86.5
Mar. 20	18 13.33	+54 37.2	2.626	2.773	+1.33	+37.8	12.9	87.8
Mar. 30	18 26.65	+60 54.9	2.546	2.696	+1.44	+39.0	12.7	87.6
Apr. 9	18 41.07	+67 25.0	2.496	2.622	+1.69	+39.0	12.6	85.9
Apr. 19	18 57.95	+73 54.8	2.473	2.550	+2.41	+37.7	12.4	82.8
Apr. 29	19 22.02	+80 11.7	2.475	2.480	+6.19	+34.9	12.3	78.5
May 9	20 23.90	+86 00.4	2.496	2.413	+48.84	+10.0	12.2	73.5
May 19	04 32.31	+87 40.2	2.530	2.349	+11.68	-28.0	12.1	68.1
May 29	06 29.07	+82 60.0	2.571	2.289	+2.80	-26.8	12.0	62.6
June 8	06 57.02	+78 31.9	2.611	2.233	+1.61	-24.1	12.0	57.3
June 18	07 13.10	+74 30.5	2.646	2.181	+1.19	-21.6	11.9	52.5
June 28	07 25.01	+70 54.8	2.669	2.134	+0.97	-19.2	11.8	48.4
July 8	07 34.68	+67 42.8	2.678	2.093	+0.80	-17.1	11.7	45.4
July 18	07 42.68	+64 51.9	2.668	2.057	+0.66	-15.2	11.7	43.7
July 28	07 49.23	+62 19.6	2.637	2.028	+0.51	-13.6	11.6	43.7
Aug. 7	07 54.30	+60 04.0	2.584	2.006	+0.34	-12.1	11.5	45.3
Aug. 17	07 57.69	+58 03.0	2.508	1.990	+0.14	-10.8	11.4	48.7
Aug. 27	07 59.12	+56 14.9	2.409	1.982	-0.10	-9.7	11.3	53.5
Sept. 6	07 58.07	+54 37.7	2.288	1.981	-0.42	-8.9	11.2	59.8
Sept.16	07 53.83	+53 08.8	2.147	1.988	-0.84	-8.5	11.0	67.3
Sept.26	07 45.44	+51 44.0	1.990	2.002	-1.39	-8.8	10.9	76.1
Oct. 6	07 31.54	+50 15.9	1.823	2.023	-2.09	-10.6	10.8	86.4
Oct. 16	07 10.59	+48 30.0	1.654	2.050	-2.93	-14.8	10.6	98.3
Oct. 26	06 41.28	+46 01.6	1.494	2.085	-3.76	-22.8	10.5	112.3
Nov. 5	06 03.67	+42 13.9	1.359	2.125	-4.29	-34.1	10.3	128.7
Nov. 15	05 20.82	+36 32.8	1.270	2.170	-4.24	-45.0	10.3	147.6
Nov. 25	04 38.45	+29 03.3	1.246	2.221	-3.64	-49.2	10.3	167.9
Dec. 5	04 02.10	+20 51.2	1.299	2.276	-2.78	-44.9	10.5	170.3
Dec. 15	03 34.32	+13 22.1	1.423	2.336	-1.94	-35.9	10.9	151.5
Dec. 25	03 14.89	+07 23.1	1.603	2.399	-1.25	-26.6	11.2	134.7
Jan. 4	03 02.40	+02 57.4	1.820	2.465	-0.71	-19.0	11.6	120.2
Jan. 14	02 55.26	-00 12.4	2.059	2.535	-0.31	-13.4	12.0	107.5
Jan. 24	02 52.13	-02 26.3	2.308	2.606	-0.01	-9.5	12.4	96.3
Feb. 3	02 52.04	-04 00.8	2.560	2.680	+0.22	-6.8	12.7	86.1
Feb. 13	02 54.22	-05 08.5	2.807	2.756	+0.39	-5.0	13.0	76.9
Feb. 23	02 58.14	-05 58.2	3.045	2.834	+0.52	-3.8	13.3	68.4
Mar. 4	03 03.38	-06 36.5	3.271	2.913	+0.63	-3.2	13.6	60.5
Mar. 14	03 09.64	-07 08.3	3.480	2.993	+0.70	-2.9	13.9	53.2
Mar. 24	03 16.68	-07 37.0	3.672	3.074	+0.76	-2.9	14.1	46.6

Comet C/2010 X1 (Elenin)

Epoch = 2011 July 18.0 TT
T = 2011 Sept. 10.29156 TT
Peri. = 343.80917
Node = 323.24276 2000.0
Incl. = 1.84041
q = 0.4806615 AU
e = 1.0007387

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

0h TT 2011/12	R.A.(2000) h m	Decl. °′	Delta	r	Daily motion m	m	m1	Elong. °
Jan. 9	12 07.56	-01 45.8	3.495	3.880	+0.05	-0.7	18.6	105.8
Jan. 19	12 08.04	-01 53.1	3.229	3.763	-0.13	+0.4	18.3	115.8
Jan. 29	12 06.70	-01 49.2	2.974	3.645	-0.34	+1.7	18.0	126.3
Feb. 8	12 03.28	-01 32.2	2.736	3.525	-0.57	+3.2	17.7	137.3
Feb. 18	11 57.58	-01 00.6	2.519	3.404	-0.80	+4.7	17.3	149.0
Feb. 28	11 49.53	-00 13.8	2.327	3.280	-1.03	+6.1	17.0	161.2
Mar. 10	11 39.27	+00 47.5	2.166	3.155	-1.20	+7.3	16.7	173.8
Mar. 20	11 27.27	+02 00.4	2.037	3.028	-1.30	+8.0	16.4	172.7
Mar. 30	11 14.28	+03 20.1	1.942	2.898	-1.30	+8.0	16.1	159.3
Apr. 9	11 01.30	+04 39.8	1.879	2.766	-1.19	+7.3	15.8	146.0
Apr. 19	10 49.42	+05 52.7	1.842	2.632	-0.99	+6.1	15.5	133.0
Apr. 29	10 39.53	+06 53.5	1.826	2.495	-0.73	+4.5	15.3	120.6
May 9	10 32.28	+07 38.3	1.824	2.355	-0.43	+2.7	15.0	109.0
May 19	10 28.00	+08 05.7	1.828	2.211	-0.12	+1.0	14.8	98.2
May 29	10 26.76	+08 15.3	1.830	2.065	+0.18	-0.8	14.5	88.2
June 8	10 28.51	+08 07.5	1.826	1.914	+0.46	-2.5	14.1	79.1
June 18	10 33.12	+07 42.6	1.810	1.760	+0.73	-4.2	13.7	70.8
June 28	10 40.45	+07 00.9	1.778	1.601	+1.00	-5.9	13.3	63.2
July 8	10 50.44	+06 02.0	1.727	1.438	+1.27	-7.7	12.8	56.3
July 18	11 03.10	+04 45.4	1.653	1.270	+1.54	-9.6	12.1	50.2
July 28	11 18.54	+03 09.7	1.553	1.098	+1.84	-11.6	11.4	44.8
Aug. 7	11 36.97	+01 13.7	1.424	0.922	+2.15	-13.5	10.4	40.2
Aug. 17	11 58.48	-01 01.7	1.261	0.749	+2.37	-14.5	9.3	36.5
Aug. 27	12 22.17	-03 26.4	1.059	0.593	+2.05	-10.9	7.9	33.2
Sept. 6	12 42.67	-05 15.6	0.818	0.492	+0.18	+4.2	6.5	29.0
Sept.16	12 44.45	-04 33.8	0.575	0.501	-3.30	+31.9	5.8	19.4
Sept.26	12 11.50	+00 44.9	0.390	0.613	-7.36	+63.7	5.8	1.8
Oct. 6	10 57.95	+11 21.5	0.281	0.773	-11.60	+76.0	6.1	31.2
Oct. 16	09 02.00	+24 01.5	0.245	0.947	-13.04	+38.0	6.7	71.3
Oct. 26	06 51.63	+30 21.5	0.276	1.122	-9.67	-4.2	7.7	110.7
Nov. 5	05 14.96	+29 39.6	0.361	1.294	-5.76	-16.1	8.9	141.4
Nov. 15	04 17.36	+26 58.6	0.485	1.461	-3.29	-14.5	10.1	163.9
Nov. 25	03 44.46	+24 33.5	0.638	1.624	-1.83	-10.5	11.1	174.6
Dec. 5	03 26.13	+22 48.9	0.818	1.782	-0.93	-6.8	12.1	162.2
Dec. 15	03 16.80	+21 40.9	1.020	1.936	-0.35	-4.0	12.9	149.9
Dec. 25	03 13.30	+21 01.2	1.242	2.085	+0.05	-1.9	13.7	138.8
Jan. 4	03 13.83	+20 42.5	1.481	2.232	+0.34	-0.4	14.3	128.7
Jan. 14	03 17.21	+20 38.8	1.733	2.374	+0.54	+0.7	14.9	119.3
Jan. 24	03 22.65	+20 45.7	1.996	2.514	+0.70	+1.4	15.5	110.4
Feb. 3	03 29.66	+20 59.9	2.266	2.651	+0.82	+1.9	16.0	101.9
Feb. 13	03 37.83	+21 18.9	2.541	2.785	+0.91	+2.2	16.5	93.7
Feb. 23	03 46.89	+21 40.8	2.818	2.916	+0.97	+2.3	16.9	85.7
Mar. 4	03 56.63	+22 04.0	3.093	3.045	+1.02	+2.3	17.3	78.0
Mar. 14	04 06.88	+22 27.5	3.365	3.172	+1.06	+2.3	17.6	70.4
Mar. 24	04 17.49	+22 50.2	3.629	3.297	+1.09	+2.1	18.0	62.9

Comet 45P/Honda-Mrkos-Pajdusakova

Epoch = 2011 July 18.0 TT
T = 2011 Sept. 28.75394 TT
Peri. = 326.16944 e = 0.8246557
Node = 89.08394 2000.0 a = 3.0206450 AU
Incl. = 4.25747 n = 0.18773902
q = 0.5296529 AU P = 5.25 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	18 05.59	-23 16.3	4.222	3.294	+1.34	+0.1	.	16.9
Jan. 19	18 18.98	-23 15.4	4.092	3.219	+1.36	+0.5	.	24.0
Jan. 29	18 32.56	-23 10.4	3.943	3.141	+1.37	+0.9	.	31.1
Feb. 8	18 46.25	-23 01.1	3.777	3.062	+1.37	+1.3	.	38.1
Feb. 18	18 59.96	-22 47.7	3.595	2.980	+1.37	+1.7	.	45.0
Feb. 28	19 13.64	-22 30.3	3.400	2.896	+1.36	+2.1	.	51.9
Mar. 10	19 27.23	-22 09.3	3.193	2.810	+1.34	+2.4	.	58.8
Mar. 20	19 40.66	-21 45.0	2.977	2.721	+1.32	+2.7	.	65.6
Mar. 30	19 53.88	-21 18.1	2.753	2.630	+1.29	+2.9	.	72.4
Apr. 9	20 06.82	-20 49.2	2.525	2.536	+1.26	+3.0	23.0	79.2
Apr. 19	20 19.41	-20 19.2	2.293	2.439	+1.22	+3.0	22.5	86.0
Apr. 29	20 31.63	-19 49.1	2.062	2.339	+1.17	+2.9	22.0	92.9
May 9	20 43.37	-19 20.2	1.832	2.236	+1.12	+2.6	21.4	99.8
May 19	20 54.59	-18 54.4	1.605	2.130	+1.06	+2.1	20.8	106.8
May 29	21 05.21	-18 33.7	1.385	2.020	+0.99	+1.2	20.1	113.8
June 8	21 15.14	-18 21.5	1.172	1.906	+0.92	-0.1	19.3	121.1
June 18	21 24.33	-18 22.2	0.969	1.789	+0.84	-2.1	18.4	128.5
June 28	21 32.76	-18 43.0	0.777	1.667	+0.77	-5.4	17.4	136.2
July 8	21 40.50	-19 37.4	0.597	1.540	+0.76	-11.6	16.3	144.1
July 18	21 48.09	-21 33.3	0.429	1.409	+0.95	-26.0	14.9	151.9
July 28	21 57.62	-25 53.2	0.273	1.273	+2.52	-80.3	13.2	158.1
Aug. 7	22 22.84	-39 16.3	0.133	1.133	+57.56	-65.0	10.8	151.8
Aug. 17	07 58.43	-50 06.5	0.065	0.990	+8.17	275.5	8.3	67.8
Aug. 27	09 20.15	-04 11.3	0.178	0.846	+1.44	+53.9	9.4	20.9
Sept. 6	09 34.53	+04 48.1	0.330	0.709	+1.44	+19.8	9.5	20.6
Sept.16	09 48.97	+08 06.4	0.508	0.595	+2.28	+4.4	9.0	26.4
Sept.26	10 11.73	+08 50.5	0.717	0.533	+3.13	-7.0	8.6	30.8
Oct. 6	10 43.07	+07 40.9	0.938	0.552	+3.40	-13.5	8.9	32.9
Oct. 16	11 17.04	+05 26.2	1.140	0.642	+3.17	-15.2	10.1	34.1
Oct. 26	11 48.70	+02 54.2	1.309	0.769	+2.79	-14.4	11.7	35.8
Nov. 5	12 16.61	+00 30.0	1.445	0.910	+2.43	-12.8	13.3	38.5
Nov. 15	12 40.90	-01 37.7	1.553	1.054	+2.11	-10.9	14.6	42.1
Nov. 25	13 02.02	-03 26.9	1.635	1.197	+1.83	-9.0	15.8	46.6
Dec. 5	13 20.29	-04 57.4	1.693	1.335	+1.56	-7.2	16.7	52.0
Dec. 15	13 35.92	-06 09.7	1.728	1.468	+1.31	-5.5	17.6	58.1
Dec. 25	13 48.98	-07 04.3	1.744	1.597	+1.04	-3.7	18.3	64.9
Jan. 4	13 59.37	-07 41.4	1.741	1.722	+0.76	-1.9	18.9	72.4
Jan. 14	14 06.96	-08 00.8	1.724	1.842	+0.45	-0.1	19.4	80.7
Jan. 24	14 11.51	-08 02.3	1.696	1.958	+0.12	+1.7	19.8	89.8
Feb. 3	14 12.73	-07 45.2	1.661	2.070	-0.23	+3.6	20.2	99.7
Feb. 13	14 10.41	-07 09.4	1.626	2.178	-0.59	+5.4	20.6	110.5
Feb. 23	14 04.47	-06 15.3	1.596	2.283	-0.94	+7.0	20.9	122.2
Mar. 4	13 55.09	-05 04.8	1.580	2.384	-1.22	+8.2	21.2	134.7
Mar. 14	13 42.91	-03 42.6	1.584	2.483	-1.40	+8.7	21.6	147.8
Mar. 24	13 28.94	-02 15.6	1.615	2.578	-1.44	+8.3	21.9	161.0

Comet 48P/Johnson

Epoch = 2011 July 18.0 TT
T = 2011 Sept. 29.28368 TT
Peri. = 207.95018 e = 0.3676413
Node = 117.27194 2000.0 a = 3.6389678 AU
Incl. = 13.66223 n = 0.14198313
q = 2.3011331 AU P = 6.94 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	17 22.59	-15 31.3	3.691	2.863	+1.70	-2.2	19.7	28.3
Jan. 19	17 39.57	-15 53.5	3.589	2.829	+1.70	-1.5	19.5	34.1
Jan. 29	17 56.56	-16 08.2	3.477	2.795	+1.69	-0.7	19.3	40.0
Feb. 8	18 13.45	-16 15.7	3.356	2.762	+1.67	-0.1	19.1	45.9
Feb. 18	18 30.13	-16 16.5	3.226	2.729	+1.64	+0.5	18.9	51.9
Feb. 28	18 46.50	-16 11.2	3.089	2.697	+1.59	+1.0	18.7	57.9
Mar. 10	19 02.44	-16 00.7	2.947	2.666	+1.54	+1.4	18.5	64.0
Mar. 20	19 17.81	-15 46.4	2.800	2.635	+1.47	+1.7	18.3	70.2
Mar. 30	19 32.49	-15 29.5	2.651	2.605	+1.38	+1.8	18.0	76.5
Apr. 9	19 46.33	-15 11.8	2.500	2.576	+1.28	+1.6	17.8	83.0
Apr. 19	19 59.16	-14 55.5	2.349	2.548	+1.16	+1.3	17.5	89.6
Apr. 29	20 10.80	-14 42.7	2.200	2.521	+1.02	+0.6	17.3	96.5
May 9	20 21.05	-14 36.3	2.055	2.496	+0.86	-0.3	17.0	103.7
May 19	20 29.66	-14 39.3	1.916	2.471	+0.67	-1.5	16.7	111.4
May 29	20 36.39	-14 54.5	1.785	2.448	+0.46	-3.1	16.5	119.5
June 8	20 40.97	-15 25.3	1.665	2.426	+0.22	-4.9	16.2	128.1
June 18	20 43.19	-16 13.8	1.558	2.406	-0.02	-6.7	15.9	137.4
June 28	20 42.95	-17 21.1	1.468	2.387	-0.27	-8.5	15.7	147.3
July 8	20 40.29	-18 46.0	1.398	2.370	-0.47	-9.8	15.5	157.8
July 18	20 35.61	-20 23.9	1.350	2.355	-0.60	-10.4	15.3	168.7
July 28	20 29.62	-22 07.9	1.327	2.342	-0.63	-10.1	15.2	177.0
Aug. 7	20 23.31	-23 49.1	1.329	2.330	-0.54	-9.0	15.1	167.7
Aug. 17	20 17.88	-25 19.4	1.355	2.320	-0.36	-7.4	15.0	156.7
Aug. 27	20 14.32	-26 33.2	1.404	2.312	-0.09	-5.4	15.0	146.1
Sept. 6	20 13.38	-27 27.6	1.472	2.307	+0.20	-3.5	15.0	136.0
Sept.16	20 15.42	-28 02.4	1.556	2.303	+0.50	-1.6	15.0	126.7
Sept.26	20 20.44	-28 18.6	1.653	2.301	+0.78	+0.1	15.1	118.1
Oct. 6	20 28.23	-28 17.3	1.759	2.302	+1.02	+1.7	15.1	110.0
Oct. 16	20 38.47	-28 00.2	1.873	2.304	+1.23	+3.2	15.2	102.5
Oct. 26	20 50.74	-27 28.4	1.991	2.308	+1.39	+4.6	15.3	95.4
Nov. 5	21 04.69	-26 42.8	2.113	2.315	+1.52	+5.8	15.3	88.8
Nov. 15	21 19.93	-25 44.8	2.237	2.323	+1.62	+6.9	15.4	82.4
Nov. 25	21 36.14	-24 35.3	2.361	2.334	+1.69	+8.0	15.5	76.3
Dec. 5	21 53.09	-23 15.4	2.484	2.346	+1.74	+8.9	15.6	70.4
Dec. 15	22 10.52	-21 46.4	2.606	2.360	+1.78	+9.7	15.6	64.7
Dec. 25	22 28.28	-20 09.5	2.725	2.376	+1.79	+10.4	15.7	59.2
Jan. 4	22 46.23	-18 26.0	2.840	2.394	+1.80	+10.9	15.8	53.8
Jan. 14	23 04.25	-16 37.3	2.950	2.413	+1.80	+11.3	15.9	48.4
Jan. 24	23 22.29	-14 44.8	3.056	2.434	+1.80	+11.5	16.0	43.2
Feb. 3	23 40.28	-12 49.8	3.155	2.456	+1.79	+11.6	16.1	38.1
Feb. 13	23 58.18	-10 53.7	3.248	2.479	+1.78	+11.6	16.2	33.0
Feb. 23	00 15.98	-08 57.7	3.333	2.504	+1.77	+11.5	16.3	28.1
Mar. 4	00 33.66	-07 02.9	3.410	2.530	+1.75	+11.2	16.3	23.3
Mar. 14	00 51.19	-05 10.6	3.479	2.558	+1.74	+10.9	16.4	18.8
Mar. 24	01 08.57	-03 21.7	3.538	2.586	+1.72	+10.5	16.5	14.7

Comet 115P/Maury

Epoch = 2011 July 18.0 TT
T = 2011 Oct. 6.94859 TT
Peri. = 120.05929 e = 0.5210253
Node = 176.60354 2000.0 a = 4.2487832 AU
Incl. = 11.70610 n = 0.11254008
q = 2.0350598 AU P = 8.76 years

m1 = 12.0 + 5 log(Delta) + 12.5 log(r(t-30))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	15 06.40	-11 21.3	3.326	2.977	+1.37	-2.3	20.8	61.0
Jan. 19	15 20.09	-11 44.0	3.152	2.926	+1.33	-1.3	20.6	67.8
Jan. 29	15 33.41	-11 57.4	2.974	2.875	+1.28	-0.3	20.4	74.7
Feb. 8	15 46.19	-12 00.7	2.793	2.825	+1.20	+0.8	20.2	81.7
Feb. 18	15 58.21	-11 53.2	2.612	2.775	+1.11	+1.9	19.9	88.9
Feb. 28	16 09.28	-11 34.3	2.434	2.726	+0.99	+3.1	19.7	96.3
Mar. 10	16 19.14	-11 03.4	2.260	2.677	+0.84	+4.3	19.4	103.8
Mar. 20	16 27.50	-10 20.7	2.093	2.629	+0.66	+5.4	19.1	111.6
Mar. 30	16 34.08	-09 26.3	1.936	2.581	+0.45	+6.5	18.9	119.7
Apr. 9	16 38.59	-08 21.3	1.791	2.535	+0.22	+7.4	18.6	128.1
Apr. 19	16 40.80	-07 07.5	1.662	2.489	-0.02	+7.9	18.3	136.6
Apr. 29	16 40.58	-05 48.3	1.549	2.445	-0.26	+8.0	18.1	145.2
May 9	16 37.98	-04 28.3	1.457	2.401	-0.46	+7.4	17.9	153.2
May 19	16 33.36	-03 14.0	1.387	2.360	-0.60	+6.2	17.7	159.2
May 29	16 27.38	-02 12.3	1.339	2.320	-0.64	+4.2	17.5	160.6
June 8	16 20.96	-01 29.9	1.315	2.282	-0.58	+1.8	17.4	156.5
June 18	16 15.18	-01 11.5	1.312	2.246	-0.42	-0.7	17.3	149.1
June 28	16 11.00	-01 18.6	1.329	2.212	-0.18	-3.2	17.2	140.7
July 8	16 09.18	-01 50.2	1.363	2.180	+0.10	-5.2	17.2	132.2
July 18	16 10.17	-02 42.5	1.410	2.151	+0.39	-6.9	17.1	124.1
July 28	16 14.10	-03 51.1	1.468	2.125	+0.69	-8.0	17.1	116.5
Aug. 7	16 20.96	-05 11.1	1.535	2.102	+0.96	-8.7	17.2	109.4
Aug. 17	16 30.58	-06 37.7	1.608	2.082	+1.21	-8.9	17.2	102.9
Aug. 27	16 42.71	-08 06.7	1.686	2.066	+1.44	-8.8	17.2	96.8
Sept. 6	16 57.11	-09 34.2	1.768	2.053	+1.64	-8.3	17.3	91.1
Sept.16	17 13.53	-10 56.7	1.854	2.043	+1.82	-7.5	17.3	85.8
Sept.26	17 31.69	-12 11.4	1.942	2.037	+1.97	-6.4	17.4	80.7
Oct. 6	17 51.36	-13 15.6	2.034	2.035	+2.09	-5.2	17.4	75.9
Oct. 16	18 12.27	-14 07.2	2.127	2.037	+2.19	-3.7	17.5	71.2
Oct. 26	18 34.17	-14 44.7	2.222	2.042	+2.27	-2.2	17.6	66.6
Nov. 5	18 56.82	-15 07.0	2.319	2.051	+2.31	-0.7	17.7	62.0
Nov. 15	19 19.97	-15 13.5	2.417	2.063	+2.34	+0.9	17.8	57.6
Nov. 25	19 43.39	-15 04.3	2.516	2.079	+2.35	+2.4	17.9	53.1
Dec. 5	20 06.88	-14 39.8	2.615	2.098	+2.34	+3.9	18.0	48.6
Dec. 15	20 30.27	-14 01.2	2.713	2.121	+2.31	+5.2	18.1	44.1
Dec. 25	20 53.40	-13 09.5	2.810	2.146	+2.28	+6.3	18.2	39.6
Jan. 4	21 16.16	-12 06.5	2.905	2.175	+2.23	+7.3	18.3	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 33.1	3.085	2.239	+2.13	+8.7	18.6	25.7
Feb. 3	22 21.52	-08 06.4	3.168	2.275	+2.07	+9.1	18.7	20.9
Feb. 13	22 42.21	-06 35.3	3.244	2.312	+2.01	+9.4	18.8	16.1
Feb. 23	23 02.35	-05 01.6	3.314	2.352	+1.96	+9.5	19.0	11.2
Mar. 4	23 21.93	-03 26.6	3.377	2.393	+1.90	+9.5	19.1	6.3
Mar. 14	23 40.96	-01 52.1	3.430	2.436	+1.85	+9.3	19.2	1.3
Mar. 24	23 59.47	-00 19.0	3.474	2.480	+1.80	+9.0	19.3	3.8

Comet 73P/Schwassmann-Wachmann C

Epoch = 2011 July 18.0 TT
T = 2011 Oct. 16.89511 TT
Peri. = 198.86560 e = 0.6922754
Node = 69.84526 2000.0 a = 3.0636933 AU
Incl. = 11.37891 n = 0.18379604
q = 0.9427737 AU P = 5.36 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 9	10 07.81	+26 30.6	2.281	3.111	-0.64	+8.2	20.2	141.5
Jan. 19	10 01.43	+27 53.0	2.140	3.043	-0.92	+8.8	19.9	151.9
Jan. 29	09 52.27	+29 20.6	2.026	2.974	-1.15	+8.4	19.6	160.8
Feb. 8	09 40.76	+30 45.0	1.942	2.903	-1.30	+7.2	19.4	164.0
Feb. 18	09 27.79	+31 56.8	1.889	2.831	-1.32	+5.2	19.2	158.3
Feb. 28	09 14.64	+32 48.6	1.866	2.757	-1.20	+2.8	19.0	148.2
Mar. 10	09 02.67	+33 16.3	1.868	2.681	-0.96	+0.4	18.8	137.1
Mar. 20	08 53.12	+33 20.0	1.891	2.604	-0.64	-1.7	18.6	126.0
Mar. 30	08 46.74	+33 02.8	1.929	2.525	-0.29	-3.4	18.5	115.5
Apr. 9	08 43.86	+32 28.6	1.977	2.444	+0.06	-4.8	18.3	105.6
Apr. 19	08 44.48	+31 41.0	2.028	2.362	+0.39	-5.9	18.1	96.5
Apr. 29	08 48.34	+30 42.5	2.079	2.278	+0.68	-6.8	18.0	88.0
May 9	08 55.13	+29 34.2	2.124	2.192	+0.94	-7.8	17.7	80.2
May 19	09 04.50	+28 16.7	2.163	2.105	+1.16	-8.7	17.5	73.1
May 29	09 16.15	+26 49.6	2.192	2.015	+1.37	-9.8	17.3	66.5
June 8	09 29.82	+25 11.8	2.210	1.925	+1.55	-10.9	17.0	60.5
June 18	09 45.29	+23 22.4	2.216	1.833	+1.71	-12.3	16.7	55.0
June 28	10 02.43	+21 19.8	2.210	1.740	+1.87	-13.7	16.3	49.9
July 8	10 21.15	+19 02.5	2.192	1.646	+2.03	-15.4	15.9	45.4
July 18	10 41.41	+16 28.6	2.162	1.551	+2.18	-17.2	15.5	41.3
July 28	11 03.25	+13 36.5	2.121	1.458	+2.35	-19.2	15.1	37.8
Aug. 7	11 26.76	+10 24.2	2.070	1.365	+2.53	-21.4	14.6	34.7
Aug. 17	11 52.10	+06 50.4	2.011	1.275	+2.74	-23.6	14.1	32.3
Aug. 27	12 19.51	+02 53.9	1.946	1.190	+2.98	-25.9	13.6	30.4
Sept. 6	12 49.35	-01 24.9	1.878	1.112	+3.27	-27.9	13.1	29.2
Sept.16	13 22.04	-06 03.5	1.808	1.044	+3.61	-29.3	12.6	28.7
Sept.26	13 58.12	-10 56.2	1.742	0.991	+4.00	-29.6	12.1	28.9
Oct. 6	14 38.16	-15 52.2	1.683	0.956	+4.45	-28.2	11.8	29.9
Oct. 16	15 22.62	-20 34.3	1.636	0.943	+4.90	-24.6	11.7	31.5
Oct. 26	16 11.64	-24 40.4	1.605	0.952	+5.29	-18.6	11.7	33.6
Nov. 5	17 04.57	-27 46.3	1.595	0.983	+5.51	-10.7	11.9	36.0
Nov. 15	17 59.69	-29 32.9	1.610	1.034	+5.48	-2.0	12.2	38.3
Nov. 25	18 54.49	-29 53.1	1.649	1.099	+5.19	+5.9	12.7	40.2
Dec. 5	19 46.42	-28 54.5	1.714	1.175	+4.74	+11.9	13.2	41.6
Dec. 15	20 33.77	-26 55.2	1.802	1.259	+4.22	+15.9	13.8	42.2
Dec. 25	21 15.97	-24 16.0	1.908	1.348	+3.73	+18.1	14.4	42.0
Jan. 4	21 53.27	-21 15.2	2.030	1.441	+3.30	+18.9	14.9	41.0
Jan. 14	22 26.28	-18 06.3	2.164	1.534	+2.95	+18.9	15.5	39.3
Jan. 24	22 55.75	-14 57.7	2.305	1.629	+2.66	+18.3	16.0	36.9
Feb. 3	23 22.37	-11 54.7	2.450	1.723	+2.43	+17.4	16.5	34.0
Feb. 13	23 46.68	-09 00.3	2.595	1.816	+2.25	+16.5	17.0	30.6
Feb. 23	00 09.15	-06 15.7	2.739	1.908	+2.10	+15.4	17.4	26.8
Mar. 4	00 30.13	-03 41.6	2.877	1.999	+1.97	+14.3	17.8	22.7
Mar. 14	00 49.88	-01 18.2	3.009	2.088	+1.87	+13.3	18.2	18.3
Mar. 24	01 08.61	+00 54.9	3.131	2.176	+1.78	+12.3	18.5	13.9

Comet P/1996 R2 (Lagerkvist)

Epoch = 2011 July 18.0 TT
T = 2011 Oct. 17.16832 TT
Peri. = 334.02206 e = 0.3103172
Node = 40.19355 2000.0 a = 3.7870305 AU
Incl. = 2.60401 n = 0.13373832
q = 2.6118498 AU P = 7.37 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	20 20.67	-21 33.3	3.999	3.056	-0.61	-2.0	22.5	23.6/ 77	14.3
Jan. 19	20 36.99	-20 35.8	4.000	3.029	-0.61	-2.2	22.4	24.0/ 75	8.2
Jan. 29	20 53.40	-19 32.2	3.987	3.003	-0.62	-2.5	22.4	24.3/ 74	2.6
Feb. 8	21 09.83	-18 23.0	3.960	2.978	-0.63	-2.8	22.3	24.5/ 73	4.7
Feb. 18	21 26.20	-17 08.7	3.919	2.953	-0.63	-3.1	22.2	24.7/ 72	10.5
Feb. 28	21 42.46	-15 49.9	3.865	2.928	-0.64	-3.3	22.1	24.7/ 71	16.4
Mar. 10	21 58.55	-14 27.2	3.799	2.904	-0.65	-3.6	22.0	24.7/ 70	22.3
Mar. 20	22 14.43	-13 01.5	3.721	2.881	-0.66	-3.9	21.9	24.5/ 69	28.1
Mar. 30	22 30.05	-11 33.5	3.632	2.859	-0.67	-4.1	21.8	24.3/ 69	33.9
Apr. 9	22 45.39	-10 04.0	3.534	2.837	-0.69	-4.4	21.7	23.9/ 68	39.7
Apr. 19	23 00.38	-08 34.0	3.427	2.815	-0.71	-4.7	21.5	23.5/ 68	45.5
Apr. 29	23 15.00	-07 04.4	3.311	2.795	-0.73	-4.9	21.4	22.9/ 68	51.3
May 9	23 29.18	-05 36.1	3.189	2.776	-0.75	-5.2	21.3	22.2/ 67	57.2
May 19	23 42.84	-04 10.3	3.062	2.757	-0.78	-5.5	21.1	21.3/ 67	63.2
May 29	23 55.93	-02 47.7	2.930	2.739	-0.81	-5.8	21.0	20.1/ 67	69.2
June 8	00 08.32	-01 29.7	2.795	2.723	-0.85	-6.1	20.8	18.8/ 67	75.4
June 18	00 19.89	-00 17.2	2.657	2.707	-0.89	-6.4	20.7	17.2/ 68	81.8
June 28	00 30.50	+00 48.5	2.520	2.692	-0.94	-6.8	20.5	15.3/ 68	88.5
July 8	00 39.93	+01 46.2	2.383	2.679	-1.00	-7.2	20.4	13.0/ 68	95.5
July 18	00 47.97	+02 34.8	2.250	2.667	-1.06	-7.6	20.2	10.4/ 68	102.9
July 28	00 54.40	+03 13.0	2.121	2.655	-1.13	-8.1	20.1	7.3/ 69	110.7
Aug. 7	00 58.92	+03 39.6	2.000	2.645	-1.21	-8.6	19.9	3.9/ 68	119.0
Aug. 17	01 01.33	+03 53.7	1.890	2.637	-1.29	-9.1	19.8	0.2/ 54	127.9
Aug. 27	01 01.45	+03 55.0	1.794	2.629	-1.38	-9.7	19.6	3.5/251	137.5
Sept. 6	00 59.25	+03 43.8	1.715	2.623	-1.45	-10.2	19.5	6.8/251	147.8
Sept.16	00 54.97	+03 21.9	1.656	2.618	-1.52	-10.7	19.4	9.3/252	158.6
Sept.26	00 49.08	+02 52.5	1.622	2.615	-1.56	-11.0	19.4	10.6/252	169.8
Oct. 6	00 42.34	+02 20.1	1.613	2.613	-1.57	-11.1	19.3	10.4/253	177.4
Oct. 16	00 35.71	+01 50.5	1.631	2.612	-1.54	-10.9	19.4	8.7/256	166.7
Oct. 26	00 30.07	+01 28.6	1.675	2.612	-1.49	-10.6	19.4	5.9/260	155.4
Nov. 5	00 26.18	+01 18.6	1.743	2.614	-1.42	-10.1	19.5	2.6/279	144.4
Nov. 15	00 24.49	+01 22.7	1.831	2.617	-1.33	-9.5	19.6	2.1/ 29	134.1
Nov. 25	00 25.18	+01 41.3	1.936	2.622	-1.25	-9.0	19.8	5.6/ 54	124.3
Dec. 5	00 28.21	+02 14.0	2.054	2.628	-1.17	-8.4	19.9	9.0/ 60	115.0
Dec. 15	00 33.42	+02 59.5	2.182	2.635	-1.09	-7.9	20.1	12.1/ 62	106.4
Dec. 25	00 40.55	+03 55.9	2.317	2.643	-1.03	-7.4	20.2	14.8/ 64	98.2
Jan. 4	00 49.39	+05 01.5	2.456	2.653	-0.97	-6.9	20.4	17.0/ 64	90.5
Jan. 14	00 59.67	+06 14.4	2.596	2.664	-0.93	-6.5	20.5	18.9/ 65	83.1
Jan. 24	01 11.18	+07 32.9	2.737	2.676	-0.89	-6.1	20.7	20.4/ 66	76.1
Feb. 3	01 23.76	+08 55.4	2.874	2.689	-0.85	-5.8	20.8	21.6/ 67	69.3
Feb. 13	01 37.22	+10 20.3	3.008	2.703	-0.82	-5.4	21.0	22.6/ 67	62.8
Feb. 23	01 51.45	+11 46.2	3.137	2.719	-0.80	-5.0	21.1	23.4/ 68	56.5
Mar. 4	02 06.34	+13 11.8	3.260	2.735	-0.78	-4.7	21.2	24.0/ 69	50.3
Mar. 14	02 21.79	+14 35.8	3.375	2.753	-0.76	-4.4	21.3	24.5/ 70	44.3
Mar. 24	02 37.73	+15 57.1	3.482	2.771	-0.74	-4.0	21.5	24.8/ 71	38.5

Comet 73P/Schwassmann-Wachmann B

Epoch = 2011 July 18.0 TT
T = 2011 Oct. 17.50597 TT
Peri. = 198.85387 e = 0.6922488
Node = 69.84149 2000.0 a = 3.0631739 AU
Incl. = 11.37982 n = 0.18384279
q = 0.9426954 AU P = 5.36 years

m1 = 12.5 + 5 log(Delta) + 17.5 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	10 07.16	+26 33.3	2.284	3.115	-0.64	+8.2	22.9	141.6
Jan. 19	10 00.73	+27 55.7	2.144	3.048	-0.92	+8.7	22.6	152.0
Jan. 29	09 51.53	+29 23.1	2.030	2.978	-1.15	+8.4	22.3	160.9
Feb. 8	09 40.00	+30 47.1	1.947	2.908	-1.30	+7.1	22.1	164.0
Feb. 18	09 27.03	+31 58.4	1.894	2.835	-1.31	+5.1	21.8	158.2
Feb. 28	09 13.90	+32 49.8	1.871	2.762	-1.19	+2.7	21.6	148.1
Mar. 10	09 01.98	+33 17.0	1.874	2.686	-0.95	+0.3	21.4	136.9
Mar. 20	08 52.48	+33 20.4	1.897	2.609	-0.63	-1.7	21.2	125.9
Mar. 30	08 46.15	+33 03.1	1.936	2.530	-0.28	-3.4	21.0	115.4
Apr. 9	08 43.32	+32 28.8	1.984	2.449	+0.07	-4.8	20.8	105.5
Apr. 19	08 43.98	+31 41.3	2.035	2.367	+0.39	-5.8	20.6	96.3
Apr. 29	08 47.86	+30 42.9	2.086	2.283	+0.68	-6.8	20.4	87.9
May 9	08 54.67	+29 34.9	2.132	2.197	+0.94	-7.7	20.1	80.1
May 19	09 04.05	+28 17.7	2.171	2.110	+1.16	-8.7	19.9	73.0
May 29	09 15.69	+26 50.9	2.200	2.021	+1.37	-9.7	19.6	66.4
June 8	09 29.35	+25 13.6	2.219	1.930	+1.55	-10.9	19.2	60.4
June 18	09 44.81	+23 24.7	2.225	1.838	+1.71	-12.2	18.9	54.8
June 28	10 01.92	+21 22.7	2.219	1.745	+1.87	-13.7	18.5	49.8
July 8	10 20.62	+19 06.0	2.201	1.651	+2.02	-15.3	18.0	45.3
July 18	10 40.84	+16 32.9	2.171	1.557	+2.18	-17.1	17.5	41.2
July 28	11 02.63	+13 41.6	2.130	1.463	+2.35	-19.1	17.0	37.6
Aug. 7	11 26.09	+10 30.3	2.079	1.371	+2.53	-21.3	16.5	34.6
Aug. 17	11 51.35	+06 57.6	2.020	1.281	+2.73	-23.5	15.9	32.1
Aug. 27	12 18.69	+03 02.4	1.955	1.195	+2.97	-25.8	15.3	30.2
Sept. 6	12 48.43	-01 15.2	1.887	1.116	+3.26	-27.7	14.7	28.9
Sept.16	13 21.00	-05 52.6	1.818	1.048	+3.59	-29.2	14.2	28.4
Sept.26	13 56.93	-10 44.3	1.751	0.994	+3.99	-29.5	13.7	28.6
Oct. 6	14 36.79	-15 39.7	1.692	0.958	+4.43	-28.2	13.3	29.5
Oct. 16	15 21.05	-20 22.1	1.644	0.943	+4.88	-24.7	13.1	31.1
Oct. 26	16 09.87	-24 29.5	1.612	0.951	+5.28	-18.8	13.2	33.2
Nov. 5	17 02.63	-27 37.8	1.601	0.981	+5.50	-11.0	13.4	35.5
Nov. 15	17 57.66	-29 27.5	1.614	1.030	+5.48	-2.4	13.8	37.8
Nov. 25	18 52.48	-29 51.1	1.653	1.095	+5.21	+5.6	14.3	39.8
Dec. 5	19 44.54	-28 55.5	1.716	1.170	+4.75	+11.7	14.9	41.1
Dec. 15	20 32.08	-26 58.4	1.803	1.254	+4.24	+15.8	15.5	41.8
Dec. 25	21 14.49	-24 20.6	1.908	1.343	+3.75	+18.0	16.1	41.6
Jan. 4	21 51.99	-21 20.5	2.029	1.435	+3.32	+18.9	16.8	40.7
Jan. 14	22 25.17	-18 11.8	2.162	1.529	+2.96	+18.9	17.4	39.0
Jan. 24	22 54.80	-15 03.2	2.302	1.623	+2.67	+18.3	18.0	36.7
Feb. 3	23 21.54	-11 60.0	2.447	1.717	+2.44	+17.5	18.6	33.8
Feb. 13	23 45.96	-09 05.2	2.592	1.810	+2.26	+16.5	19.1	30.4
Feb. 23	00 08.52	-06 20.3	2.735	1.902	+2.11	+15.4	19.6	26.6
Mar. 4	00 29.57	-03 45.8	2.873	1.993	+1.98	+14.4	20.0	22.5
Mar. 14	00 49.38	-01 22.0	3.004	2.083	+1.88	+13.3	20.5	18.2
Mar. 24	01 08.16	+00 51.4	3.126	2.171	+1.79	+12.3	20.9	13.8

Comet 49P/Arend-Rigaux

Epoch = 2011 July 18.0 TT
T = 2011 Oct. 19.07269 TT
Peri. = 332.78466 e = 0.6004578
Node = 118.88059 2000.0 a = 3.5636266 AU
Incl. = 19.04969 n = 0.14650950
q = 1.4238193 AU P = 6.73 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	22 02.88	-22 12.7	3.713	2.997	+1.35	+6.6	20.2	37.8
Jan. 19	22 16.41	-21 06.3	3.729	2.934	+1.43	+7.2	20.1	31.4
Jan. 29	22 30.67	-19 54.7	3.730	2.870	+1.49	+7.6	20.0	25.3
Feb. 8	22 45.58	-18 38.3	3.715	2.806	+1.55	+8.1	19.9	19.7
Feb. 18	23 01.07	-17 17.4	3.684	2.740	+1.60	+8.5	19.8	14.9
Feb. 28	23 17.12	-15 52.4	3.638	2.674	+1.66	+8.9	19.7	11.5
Mar. 10	23 33.70	-14 23.8	3.577	2.608	+1.71	+9.2	19.5	10.6
Mar. 20	23 50.80	-12 52.1	3.503	2.541	+1.76	+9.4	19.4	12.5
Mar. 30	00 08.44	-11 17.8	3.418	2.473	+1.82	+9.6	19.2	15.9
Apr. 9	00 26.65	-09 41.4	3.321	2.405	+1.88	+9.8	19.1	20.0
Apr. 19	00 45.45	-08 03.6	3.216	2.337	+1.95	+9.9	18.9	24.2
Apr. 29	01 04.90	-06 25.1	3.103	2.268	+2.02	+9.9	18.7	28.4
May 9	01 25.07	-04 46.5	2.984	2.200	+2.09	+9.8	18.5	32.4
May 19	01 46.01	-03 08.8	2.861	2.132	+2.18	+9.6	18.2	36.3
May 29	02 07.81	-01 32.8	2.736	2.064	+2.27	+9.3	18.0	39.9
June 8	02 30.55	+00 00.5	2.609	1.997	+2.37	+8.9	17.8	43.4
June 18	02 54.28	+01 29.9	2.484	1.931	+2.48	+8.4	17.5	46.5
June 28	03 19.08	+02 54.1	2.361	1.867	+2.59	+7.8	17.3	49.4
July 8	03 45.00	+04 11.9	2.241	1.804	+2.70	+7.0	17.0	52.1
July 18	04 12.04	+05 21.9	2.127	1.744	+2.82	+6.1	16.7	54.4
July 28	04 40.21	+06 22.7	2.018	1.686	+2.92	+5.0	16.5	56.5
Aug. 7	05 09.45	+07 13.0	1.917	1.633	+3.02	+3.9	16.2	58.4
Aug. 17	05 39.63	+07 52.1	1.823	1.584	+3.10	+2.7	16.0	60.1
Aug. 27	06 10.61	+08 19.4	1.737	1.540	+3.16	+1.6	15.7	61.6
Sept. 6	06 42.19	+08 34.9	1.659	1.502	+3.19	+0.5	15.5	63.1
Sept.16	07 14.10	+08 39.6	1.589	1.471	+3.20	-0.5	15.3	64.6
Sept.26	07 46.10	+08 34.9	1.525	1.447	+3.18	-1.2	15.1	66.1
Oct. 6	08 17.88	+08 23.2	1.467	1.431	+3.13	-1.6	14.9	67.9
Oct. 16	08 49.15	+08 07.5	1.415	1.424	+3.05	-1.6	14.8	69.9
Oct. 26	09 19.66	+07 51.3	1.367	1.426	+2.94	-1.2	14.6	72.4
Nov. 5	09 49.09	+07 38.9	1.321	1.436	+2.81	-0.4	14.5	75.3
Nov. 15	10 17.18	+07 34.7	1.278	1.455	+2.65	+0.9	14.5	78.7
Nov. 25	10 43.63	+07 43.2	1.237	1.482	+2.45	+2.6	14.4	82.7
Dec. 5	11 08.11	+08 09.3	1.197	1.516	+2.22	+4.8	14.4	87.4
Dec. 15	11 30.28	+08 57.4	1.158	1.556	+1.95	+7.4	14.4	92.8
Dec. 25	11 49.76	+10 11.6	1.120	1.602	+1.63	+10.3	14.5	99.0
Jan. 4	12 06.08	+11 54.7	1.086	1.653	+1.27	+13.3	14.5	105.9
Jan. 14	12 18.78	+14 07.5	1.057	1.708	+0.86	+16.0	14.6	113.6
Jan. 24	12 27.43	+16 47.6	1.036	1.766	+0.42	+18.0	14.7	121.9
Feb. 3	12 31.64	+19 47.7	1.026	1.828	-0.02	+18.7	14.8	130.7
Feb. 13	12 31.39	+22 54.5	1.030	1.891	-0.43	+17.7	14.9	139.2
Feb. 23	12 27.05	+25 51.1	1.053	1.956	-0.75	+14.8	15.1	146.5
Mar. 4	12 19.60	+28 18.9	1.097	2.023	-0.91	+10.5	15.4	151.1
Mar. 14	12 10.54	+30 03.9	1.162	2.090	-0.90	+5.7	15.6	151.3
Mar. 24	12 01.52	+31 00.5	1.250	2.158	-0.75	+1.0	15.9	147.4

Comet 41P/Tuttle-Giacobini-Kresak

Epoch = 2011 July 18.0 TT
T = 2011 Nov. 11.64071 TT
Peri. = 62.18960 e = 0.6600578
Node = 141.06364 2000.0 a = 3.0870836 AU
Incl. = 9.22503 n = 0.18171111
q = 1.0494300 AU P = 5.42 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	03 42.57	+08 15.6	2.529	3.210	-0.40	+2.2	.	126.3
Jan. 19	03 38.56	+08 37.6	2.596	3.148	-0.16	+3.2	.	115.5
Jan. 29	03 36.95	+09 09.3	2.673	3.084	+0.08	+4.0	.	105.3
Feb. 8	03 37.72	+09 49.1	2.756	3.018	+0.31	+4.6	.	95.7
Feb. 18	03 40.77	+10 35.4	2.840	2.952	+0.52	+5.1	.	86.6
Feb. 28	03 45.92	+11 26.4	2.920	2.884	+0.71	+5.4	.	78.1
Mar. 10	03 53.02	+12 20.6	2.994	2.814	+0.89	+5.6	.	70.0
Mar. 20	04 01.89	+13 16.3	3.058	2.743	+1.05	+5.6	.	62.4
Mar. 30	04 12.39	+14 12.3	3.110	2.671	+1.20	+5.5	.	55.3
Apr. 9	04 24.40	+15 07.3	3.150	2.597	+1.34	+5.3	.	48.5
Apr. 19	04 37.82	+15 59.8	3.175	2.521	+1.48	+4.9	.	42.1
Apr. 29	04 52.58	+16 48.8	3.187	2.445	+1.61	+4.4	.	36.0
May 9	05 08.63	+17 33.0	3.183	2.367	+1.73	+3.8	.	30.2
May 19	05 25.93	+18 11.2	3.165	2.287	+1.85	+3.1	.	24.8
May 29	05 44.48	+18 42.1	3.134	2.206	+1.98	+2.2	.	19.7
June 8	06 04.26	+19 04.4	3.089	2.124	+2.10	+1.2	.	14.9
June 18	06 25.29	+19 16.7	3.031	2.041	+2.23	+0.1	21.8	10.5
June 28	06 47.58	+19 17.6	2.963	1.956	+2.36	-1.2	21.2	6.5
July 8	07 11.17	+19 05.4	2.885	1.871	+2.49	-2.7	20.7	3.6
July 18	07 36.09	+18 38.5	2.798	1.785	+2.63	-4.3	20.1	3.6
July 28	08 02.38	+17 55.0	2.706	1.699	+2.77	-6.2	19.5	6.0
Aug. 7	08 30.10	+16 53.3	2.609	1.614	+2.92	-8.2	18.9	8.6
Aug. 17	08 59.29	+15 31.6	2.511	1.529	+3.07	-10.3	18.2	10.9
Aug. 27	09 30.02	+13 48.3	2.413	1.446	+3.23	-12.6	17.5	12.9
Sept. 6	10 02.36	+11 42.3	2.319	1.366	+3.40	-14.9	16.8	14.4
Sept.16	10 36.34	+09 13.4	2.231	1.290	+3.57	-17.1	16.1	15.4
Sept.26	11 12.02	+06 22.6	2.153	1.221	+3.74	-19.0	15.4	16.0
Oct. 6	11 49.37	+03 12.7	2.087	1.160	+3.90	-20.4	14.8	16.1
Oct. 16	12 28.35	-00 11.0	2.036	1.110	+4.05	-21.0	14.3	15.8
Oct. 26	13 08.81	-03 41.0	2.001	1.074	+4.17	-20.7	13.9	15.2
Nov. 5	13 50.49	-07 07.7	1.985	1.053	+4.25	-19.3	13.7	14.4
Nov. 15	14 32.98	-10 20.3	1.986	1.050	+4.28	-16.9	13.6	13.6
Nov. 25	15 15.77	-13 09.1	2.004	1.065	+4.25	-13.7	13.8	13.0
Dec. 5	15 58.22	-15 26.4	2.036	1.096	+4.15	-10.1	14.1	12.7
Dec. 15	16 39.68	-17 07.8	2.081	1.142	+3.99	-6.5	14.6	12.7
Dec. 25	17 19.56	-18 12.9	2.136	1.199	+3.78	-3.1	15.2	13.2
Jan. 4	17 57.38	-18 44.0	2.196	1.266	+3.54	-0.1	15.9	14.3
Jan. 14	18 32.82	-18 45.4	2.259	1.340	+3.29	+2.3	16.5	15.9
Jan. 24	19 05.76	-18 22.5	2.321	1.419	+3.04	+4.2	17.2	18.1
Feb. 3	19 36.18	-17 40.7	2.381	1.501	+2.80	+5.6	17.9	20.8
Feb. 13	20 04.14	-16 44.8	2.434	1.585	+2.57	+6.5	18.5	24.1
Feb. 23	20 29.81	-15 39.4	2.480	1.671	+2.35	+7.1	19.1	27.9
Mar. 4	20 53.31	-14 28.1	2.516	1.757	+2.15	+7.4	19.7	32.1
Mar. 14	21 14.80	-13 14.0	2.542	1.843	+1.96	+7.4	20.3	36.7
Mar. 24	21 34.40	-11 59.8	2.556	1.928	+1.78	+7.2	20.8	41.6

Comet P/2004 H3 (Larsen)

Epoch = 2011 July 18.0 TT
T = 2011 Nov. 23.25161 TT
Peri. = 346.50332 e = 0.3725042
Node = 220.94765 2000.0 a = 3.9047159 AU
Incl. = 25.12755 n = 0.12773794
q = 2.4501928 AU P = 7.72 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	08 36.11	-17 04.0	2.368	3.154	-1.01	+4.4	21.6	10.2/253	136.4
Jan. 19	08 29.31	-17 33.2	2.290	3.120	-1.03	+4.8	21.4	10.8/269	141.4
Jan. 29	08 21.73	-17 35.3	2.235	3.086	-1.05	+5.1	21.3	11.1/283	143.9
Feb. 8	08 14.15	-17 09.7	2.204	3.052	-1.04	+5.4	21.2	10.9/298	143.3
Feb. 18	08 07.44	-16 18.6	2.196	3.019	-1.02	+5.5	21.1	10.3/314	139.7
Feb. 28	08 02.29	-15 07.3	2.211	2.986	-0.99	+5.5	21.0	9.6/332	134.1
Mar. 10	07 59.25	-13 42.2	2.245	2.953	-0.95	+5.3	21.0	9.2/354	127.2
Mar. 20	07 58.61	-12 10.4	2.295	2.921	-0.91	+5.0	21.0	9.6/ 16	119.8
Mar. 30	08 00.44	-10 38.2	2.359	2.889	-0.88	+4.6	20.9	10.7/ 36	112.3
Apr. 9	08 04.65	-09 10.7	2.432	2.858	-0.85	+4.2	20.9	12.4/ 50	104.9
Apr. 19	08 11.07	-07 51.7	2.513	2.828	-0.83	+3.8	20.9	14.2/ 62	97.7
Apr. 29	08 19.47	-06 43.6	2.598	2.798	-0.81	+3.4	20.9	16.1/ 70	90.7
May 9	08 29.61	-05 47.9	2.684	2.769	-0.80	+3.0	20.9	17.9/ 76	84.1
May 19	08 41.26	-05 05.5	2.771	2.741	-0.79	+2.7	20.9	19.5/ 82	77.7
May 29	08 54.19	-04 36.5	2.856	2.714	-0.78	+2.5	20.9	21.0/ 86	71.7
June 8	09 08.21	-04 20.8	2.939	2.687	-0.78	+2.2	20.9	22.4/ 89	65.8
June 18	09 23.16	-04 17.8	3.017	2.662	-0.79	+2.0	20.8	23.5/ 92	60.2
June 28	09 38.88	-04 27.0	3.091	2.638	-0.79	+1.9	20.8	24.6/ 95	54.7
July 8	09 55.26	-04 47.4	3.159	2.615	-0.79	+1.7	20.8	25.5/ 97	49.4
July 18	10 12.18	-05 18.1	3.222	2.593	-0.80	+1.6	20.8	26.2/ 99	44.3
July 28	10 29.56	-05 58.0	3.278	2.573	-0.81	+1.4	20.8	26.9/101	39.2
Aug. 7	10 47.34	-06 46.0	3.327	2.554	-0.81	+1.3	20.7	27.5/102	34.3
Aug. 17	11 05.45	-07 40.9	3.369	2.536	-0.82	+1.2	20.7	28.0/103	29.4
Aug. 27	11 23.87	-08 41.4	3.403	2.520	-0.83	+1.0	20.7	28.4/104	24.7
Sept. 6	11 42.57	-09 46.2	3.429	2.505	-0.84	+0.8	20.7	28.7/104	20.0
Sept.16	12 01.50	-10 53.9	3.446	2.492	-0.85	+0.6	20.6	29.0/104	15.5
Sept.26	12 20.67	-12 03.1	3.456	2.481	-0.86	+0.4	20.6	29.2/104	11.5
Oct. 6	12 40.04	-13 12.4	3.456	2.471	-0.87	+0.2	20.6	29.3/104	8.5
Oct. 16	12 59.60	-14 20.4	3.447	2.464	-0.88	-0.1	20.5	29.3/103	7.9
Oct. 26	13 19.33	-15 25.5	3.429	2.458	-0.89	-0.4	20.5	29.3/103	10.3
Nov. 5	13 39.18	-16 26.4	3.402	2.453	-0.90	-0.7	20.5	29.1/102	14.3
Nov. 15	13 59.12	-17 21.5	3.365	2.451	-0.91	-1.1	20.4	28.9/100	19.0
Nov. 25	14 19.10	-18 09.6	3.319	2.450	-0.92	-1.5	20.4	28.6/ 99	24.0
Dec. 5	14 39.02	-18 49.2	3.263	2.451	-0.93	-1.9	20.4	28.2/ 97	29.3
Dec. 15	14 58.80	-19 19.1	3.199	2.455	-0.93	-2.3	20.3	27.7/ 95	34.7
Dec. 25	15 18.33	-19 38.3	3.126	2.459	-0.94	-2.7	20.3	27.0/ 92	40.3
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 30.89	-18 49.4	2.757	2.497	-0.97	-4.4	20.2	23.0/ 79	64.5
Feb. 13	16 46.73	-18 03.1	2.652	2.510	-0.98	-4.7	20.1	21.6/ 74	71.0
Feb. 23	17 01.23	-17 02.7	2.542	2.525	-0.99	-5.0	20.1	20.0/ 69	77.8
Mar. 4	17 14.14	-15 48.4	2.432	2.542	-1.01	-5.3	20.0	18.3/ 62	84.8
Mar. 14	17 25.25	-14 20.7	2.322	2.560	-1.04	-5.5	20.0	16.6/ 53	92.1
Mar. 24	17 34.30	-12 40.3	2.216	2.580	-1.07	-5.6	19.9	14.9/ 42	99.8

Comet 5D/Brorsen [Orbit 2]

Epoch = 2011 July 18.0 TT
T = 2011 Nov. 26.44538 TT
Peri. = 22.85403 e = 0.8273648
Node = 93.74457 2000.0 a = 3.1623657 AU
Incl. = 15.84397 n = 0.17526127
q = 0.5459357 AU P = 5.62 years

m1 = 9.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	21 26.73	-25 30.6	4.559	3.733	-0.20	-0.4	18.6	14.9/ 70	29.3
Jan. 19	21 37.00	-24 38.3	4.558	3.666	-0.22	-0.5	18.5	15.7/ 70	22.3
Jan. 29	21 47.80	-23 43.9	4.535	3.598	-0.23	-0.7	18.4	16.5/ 71	15.9
Feb. 8	21 59.05	-22 47.5	4.490	3.528	-0.25	-0.9	18.3	17.1/ 71	11.1
Feb. 18	22 10.65	-21 49.7	4.424	3.456	-0.27	-1.1	18.2	17.6/ 71	10.1
Feb. 28	22 22.55	-20 50.6	4.337	3.382	-0.29	-1.3	18.1	18.1/ 71	13.4
Mar. 10	22 34.70	-19 50.8	4.230	3.307	-0.31	-1.5	17.9	18.5/ 72	18.9
Mar. 20	22 47.04	-18 50.7	4.104	3.229	-0.34	-1.7	17.8	18.8/ 72	25.0
Mar. 30	22 59.54	-17 50.9	3.960	3.150	-0.38	-2.0	17.6	19.0/ 72	31.3
Apr. 9	23 12.20	-16 52.0	3.800	3.068	-0.41	-2.3	17.4	19.3/ 73	37.6
Apr. 19	23 24.97	-15 54.6	3.625	2.985	-0.46	-2.7	17.1	19.4/ 74	44.0
Apr. 29	23 37.86	-14 59.4	3.437	2.899	-0.51	-3.1	16.9	19.6/ 75	50.3
May 9	23 50.87	-14 07.4	3.239	2.811	-0.57	-3.6	16.6	19.7/ 76	56.5
May 19	00 03.99	-13 19.5	3.031	2.721	-0.63	-4.1	16.4	19.8/ 78	62.7
May 29	00 17.24	-12 36.7	2.816	2.628	-0.72	-4.8	16.0	20.0/ 80	68.9
June 8	00 30.64	-12 00.6	2.597	2.532	-0.82	-5.5	15.7	20.1/ 82	75.0
June 18	00 44.21	-11 32.5	2.374	2.434	-0.94	-6.4	15.3	20.4/ 85	81.1
June 28	00 58.00	-11 14.5	2.151	2.332	-1.09	-7.4	14.9	20.7/ 89	87.1
July 8	01 12.06	-11 09.0	1.929	2.228	-1.28	-8.7	14.5	21.2/ 93	93.0
July 18	01 26.48	-11 18.9	1.710	2.120	-1.52	-10.2	14.0	22.1/ 98	98.9
July 28	01 41.41	-11 48.3	1.497	2.009	-1.84	-12.2	13.5	23.6/104	104.5
Aug. 7	01 57.09	-12 42.6	1.291	1.894	-2.26	-14.6	12.9	26.0/110	109.8
Aug. 17	02 13.93	-14 08.8	1.095	1.775	-2.84	-17.7	12.3	30.1/116	114.7
Aug. 27	02 32.73	-16 17.8	0.909	1.652	-3.68	-21.7	11.6	36.9/121	118.6
Sept. 6	02 54.97	-19 25.6	0.737	1.524	-4.94	-27.3	10.8	48.7/125	121.0
Sept.16	03 24.01	-23 56.3	0.580	1.393	-6.98	-35.5	9.9	70.2/126	120.5
Sept.26	04 07.84	-30 25.0	0.442	1.257	-10.55	-50.6	8.8	110.1/123	115.2
Oct. 6	05 27.36	-38 51.8	0.333	1.117	-16.59	-92.5	7.7	171.6/112	101.8
Oct. 16	07 58.69	-43 32.0	0.274	0.975	-17.91	206.7	6.7	198.8/ 86	77.4
Oct. 26	10 42.21	-33 31.7	0.296	0.834	-4.08	240.4	6.2	148.0/ 62	49.6
Nov. 5	12 14.53	-19 49.4	0.397	0.702	+1.14	149.8	6.1	93.8/ 59	34.5
Nov. 15	13 09.19	-11 21.5	0.555	0.596	+1.15	-76.9	6.1	68.2/ 73	32.0
Nov. 25	13 53.06	-07 50.3	0.753	0.547	+0.14	-32.3	6.4	61.8/ 89	33.3
Dec. 5	14 34.62	-07 36.3	0.965	0.575	-0.60	-8.3	7.1	58.1/ 98	34.3
Dec. 15	15 13.47	-08 51.2	1.160	0.667	-0.80	+1.6	8.2	52.0/101	35.1
Dec. 25	15 48.10	-10 22.6	1.325	0.794	-0.72	+4.8	9.2	45.2/101	36.6
Jan. 4	16 18.32	-11 41.8	1.461	0.933	-0.59	+5.5	10.1	38.9/100	39.1
Jan. 14	16 44.57	-12 42.5	1.570	1.076	-0.46	+5.6	10.9	33.5/ 98	42.6
Jan. 24	17 07.31	-13 25.4	1.653	1.216	-0.35	+5.4	11.5	28.6/ 96	46.9
Feb. 3	17 26.86	-13 53.3	1.713	1.354	-0.27	+5.3	12.1	24.2/ 94	52.1
Feb. 13	17 43.44	-14 09.6	1.751	1.487	-0.22	+5.2	12.5	19.9/ 93	58.0
Feb. 23	17 57.13	-14 17.3	1.769	1.615	-0.18	+5.2	12.9	15.6/ 91	64.7
Mar. 4	18 07.89	-14 19.2	1.769	1.739	-0.17	+5.2	13.2	11.2/ 90	72.0
Mar. 14	18 15.60	-14 18.1	1.754	1.859	-0.17	+5.3	13.5	6.5/ 88	79.9
Mar. 24	18 20.10	-14 16.2	1.729	1.975	-0.20	+5.4	13.7	1.5/ 88	88.7

Comet P/2004 R3 (LINEAR-NEAT)

Epoch = 2011 July 18.0 TT
T = 2011 Nov. 28.68352 TT
Peri. = 5.53860 e = 0.4428382
Node = 318.72806 2000.0 a = 3.8273611 AU
Incl. = 7.97442 n = 0.13163001
q = 2.1324594 AU P = 7.49 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	16 05.43	-27 34.3	3.764	3.131	-0.70	+1.4	22.8	20.9/104	43.9
Jan. 19	16 20.80	-28 21.1	3.618	3.088	-0.75	+1.2	22.6	20.5/103	50.5
Jan. 29	16 36.03	-29 03.8	3.463	3.044	-0.81	+1.0	22.4	19.9/102	57.2
Feb. 8	16 50.97	-29 42.2	3.300	3.001	-0.87	+0.7	22.3	19.1/101	64.0
Feb. 18	17 05.46	-30 16.6	3.131	2.957	-0.94	+0.3	22.0	18.2/101	70.8
Feb. 28	17 19.34	-30 47.3	2.958	2.914	-1.01	0.0	21.8	17.0/100	77.8
Mar. 10	17 32.39	-31 14.9	2.784	2.871	-1.09	-0.4	21.6	15.5/100	84.9
Mar. 20	17 44.35	-31 39.8	2.609	2.829	-1.18	-0.8	21.4	13.8/100	92.2
Mar. 30	17 54.99	-32 03.0	2.438	2.786	-1.28	-1.3	21.1	11.6/102	99.7
Apr. 9	18 03.99	-32 25.0	2.270	2.744	-1.40	-1.7	20.9	9.1/104	107.6
Apr. 19	18 11.00	-32 46.4	2.111	2.703	-1.53	-2.2	20.6	6.3/110	115.7
Apr. 29	18 15.72	-33 07.4	1.961	2.662	-1.67	-2.5	20.3	3.3/128	124.3
May 9	18 17.79	-33 27.5	1.824	2.621	-1.82	-2.8	20.1	2.0/209	133.3
May 19	18 17.01	-33 45.0	1.703	2.582	-1.97	-2.9	19.8	4.7/255	142.7
May 29	18 13.35	-33 57.2	1.601	2.543	-2.11	-2.8	19.6	7.8/267	152.4
June 8	18 07.08	-34 00.8	1.521	2.505	-2.23	-2.4	19.4	10.2/274	161.9
June 18	17 58.95	-33 52.0	1.464	2.469	-2.31	-1.9	19.2	11.4/281	169.0
June 28	17 50.04	-33 28.9	1.431	2.433	-2.32	-1.3	19.1	11.1/289	167.2
July 8	17 41.70	-32 51.9	1.424	2.399	-2.28	-0.8	19.0	9.5/300	158.6
July 18	17 35.20	-32 04.3	1.439	2.366	-2.20	-0.4	18.9	7.2/318	148.7
July 28	17 31.46	-31 10.8	1.474	2.335	-2.09	-0.4	18.9	5.5/354	138.8
Aug. 7	17 31.00	-30 15.9	1.526	2.306	-1.96	-0.6	18.9	6.5/ 36	129.3
Aug. 17	17 33.94	-29 22.8	1.591	2.278	-1.85	-0.9	18.9	9.5/ 59	120.5
Aug. 27	17 40.11	-28 32.7	1.666	2.253	-1.74	-1.4	18.9	13.0/ 69	112.3
Sept. 6	17 49.26	-27 45.4	1.750	2.229	-1.65	-2.0	18.9	16.3/ 74	104.7
Sept.16	18 01.00	-26 59.5	1.838	2.208	-1.57	-2.6	19.0	19.3/ 77	97.6
Sept.26	18 14.96	-26 13.3	1.930	2.190	-1.50	-3.2	19.0	22.0/ 78	91.0
Oct. 6	18 30.82	-25 24.5	2.024	2.173	-1.44	-3.8	19.1	24.2/ 78	84.7
Oct. 16	18 48.21	-24 31.1	2.118	2.160	-1.38	-4.4	19.1	26.2/ 78	78.8
Oct. 26	19 06.83	-23 31.5	2.213	2.149	-1.33	-4.9	19.2	27.9/ 77	73.2
Nov. 5	19 26.42	-22 24.1	2.307	2.141	-1.28	-5.5	19.3	29.3/ 76	67.8
Nov. 15	19 46.71	-21 08.0	2.400	2.135	-1.23	-6.0	19.3	30.4/ 75	62.7
Nov. 25	20 07.48	-19 42.7	2.492	2.133	-1.19	-6.4	19.4	31.4/ 73	57.6
Dec. 5	20 28.55	-18 07.9	2.581	2.133	-1.14	-6.8	19.5	32.1/ 72	52.7
Dec. 15	20 49.75	-16 23.9	2.668	2.136	-1.10	-7.1	19.6	32.7/ 71	47.9
Dec. 25	21 10.96	-14 31.4	2.752	2.142	-1.06	-7.3	19.7	33.1/ 69	43.2
Jan. 4	21 32.07	-12 31.0	2.832	2.151	-1.02	-7.5	19.8	33.3/ 68	38.5
Jan. 14	21 53.00	-10 24.0	2.909	2.163	-0.98	-7.6	19.8	33.4/ 67	33.9
Jan. 24	22 13.71	-08 11.4	2.982	2.177	-0.94	-7.7	19.9	33.4/ 66	29.3
Feb. 3	22 34.16	-05 54.5	3.050	2.194	-0.91	-7.6	20.0	33.2/ 65	24.7
Feb. 13	22 54.34	-03 34.8	3.113	2.214	-0.88	-7.5	20.1	33.0/ 65	20.2
Feb. 23	23 14.24	-01 13.4	3.171	2.235	-0.86	-7.4	20.2	32.7/ 64	15.8
Mar. 4	23 33.88	+01 08.4	3.223	2.259	-0.83	-7.2	20.4	32.3/ 64	11.4
Mar. 14	23 53.24	+03 29.2	3.268	2.285	-0.81	-6.9	20.5	31.8/ 64	7.3
Mar. 24	00 12.35	+05 48.0	3.306	2.313	-0.80	-6.7	20.6	31.2/ 64	4.4

Comet 37P/Forbes

Epoch = 2011 July 18.0 TT
T = 2011 Dec. 11.01331 TT
Peri. = 329.38383 e = 0.5408225
Node = 315.03506 2000.0 a = 3.4306849 AU
Incl. = 8.95560 n = 0.15510751
q = 1.5752932 AU P = 6.35 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	12 09.78	-07 01.9	2.831	3.200	+0.25	-5.1	20.8	103.1
Jan. 19	12 12.26	-07 53.1	2.639	3.147	+0.06	-4.2	20.6	112.3
Jan. 29	12 12.81	-08 35.5	2.456	3.092	-0.16	-3.1	20.3	122.0
Feb. 8	12 11.20	-09 06.8	2.286	3.037	-0.39	-1.8	20.0	132.1
Feb. 18	12 07.30	-09 25.2	2.135	2.981	-0.61	-0.4	19.8	142.6
Feb. 28	12 01.16	-09 28.8	2.005	2.925	-0.81	+1.2	19.5	153.5
Mar. 10	11 53.07	-09 16.9	1.900	2.868	-0.94	+2.7	19.3	163.9
Mar. 20	11 43.66	-08 50.3	1.824	2.810	-0.98	+3.8	19.0	170.2
Mar. 30	11 33.82	-08 12.0	1.776	2.752	-0.93	+4.5	18.8	164.7
Apr. 9	11 24.57	-07 27.0	1.757	2.694	-0.77	+4.5	18.7	154.2
Apr. 19	11 16.88	-06 41.7	1.763	2.635	-0.54	+4.0	18.5	143.0
Apr. 29	11 11.45	-06 02.0	1.789	2.576	-0.27	+2.9	18.4	132.2
May 9	11 08.72	-05 32.8	1.832	2.516	+0.01	+1.6	18.3	121.9
May 19	11 08.83	-05 17.1	1.886	2.456	+0.29	+0.1	18.2	112.4
May 29	11 11.70	-05 16.6	1.946	2.397	+0.55	-1.5	18.1	103.6
June 8	11 17.16	-05 31.8	2.010	2.337	+0.78	-3.1	18.0	95.5
June 18	11 24.98	-06 02.3	2.073	2.278	+1.00	-4.5	17.9	88.1
June 28	11 34.95	-06 47.4	2.133	2.219	+1.19	-5.9	17.8	81.2
July 8	11 46.87	-07 46.2	2.189	2.160	+1.37	-7.1	17.7	74.9
July 18	12 00.59	-08 57.3	2.240	2.102	+1.54	-8.2	17.6	69.0
July 28	12 15.98	-10 19.4	2.284	2.046	+1.70	-9.2	17.5	63.6
Aug. 7	12 33.00	-11 51.1	2.322	1.990	+1.86	-9.9	17.3	58.6
Aug. 17	12 51.58	-13 30.5	2.353	1.937	+2.02	-10.5	17.2	53.9
Aug. 27	13 11.74	-15 15.8	2.378	1.885	+2.18	-10.9	17.0	49.5
Sept. 6	13 33.51	-17 04.7	2.397	1.836	+2.34	-11.0	16.9	45.4
Sept.16	13 56.92	-18 54.3	2.412	1.789	+2.51	-10.7	16.7	41.6
Sept.26	14 22.03	-20 41.6	2.423	1.746	+2.68	-10.1	16.6	38.0
Oct. 6	14 48.86	-22 22.9	2.431	1.707	+2.85	-9.1	16.4	34.7
Oct. 16	15 17.39	-23 54.3	2.438	1.672	+3.02	-7.7	16.3	31.6
Oct. 26	15 47.57	-25 11.3	2.444	1.641	+3.17	-5.8	16.2	28.6
Nov. 5	16 19.24	-26 09.8	2.450	1.616	+3.29	-3.6	16.1	25.8
Nov. 15	16 52.13	-26 45.7	2.459	1.597	+3.38	-1.0	16.0	23.1
Nov. 25	17 25.89	-26 55.8	2.470	1.584	+3.42	+1.8	16.0	20.5
Dec. 5	18 00.08	-26 38.0	2.484	1.576	+3.41	+4.6	15.9	18.0
Dec. 15	18 34.22	-25 51.7	2.503	1.576	+3.36	+7.4	16.0	15.4
Dec. 25	19 07.86	-24 37.8	2.525	1.582	+3.28	+9.9	16.0	12.9
Jan. 4	19 40.61	-22 58.5	2.551	1.594	+3.16	+12.1	16.1	10.3
Jan. 14	20 12.18	-20 57.2	2.581	1.612	+3.02	+13.9	16.2	7.6
Jan. 24	20 42.40	-18 37.9	2.614	1.636	+2.88	+15.3	16.3	4.9
Feb. 3	21 11.19	-16 04.7	2.650	1.665	+2.73	+16.3	16.4	2.0
Feb. 13	21 38.54	-13 21.7	2.686	1.699	+2.60	+16.9	16.6	1.2
Feb. 23	22 04.51	-10 32.5	2.723	1.738	+2.47	+17.2	16.8	4.3
Mar. 4	22 29.19	-07 40.4	2.758	1.780	+2.35	+17.2	17.0	7.7
Mar. 14	22 52.65	-04 48.3	2.791	1.826	+2.24	+17.0	17.2	11.2
Mar. 24	23 15.02	-01 58.3	2.820	1.875	+2.14	+16.6	17.3	14.9

Comet C/2009 S3 (Lemmon)

Epoch = 2011 July 18.0 TT
T = 2011 Dec. 11.03057 TT
Peri. = 129.74880
Node = 225.13118 2000.0
Incl. = 60.38470
q = 6.4740693 AU
e = 1.0017172

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

0h TT 2011/12	R.A.(2000) h m	Decl. °′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	20 41.00	+37 57.8	7.245	6.858	+1.00	+0.1	19.2	63.2
Jan. 19	20 50.98	+37 58.6	7.282	6.836	+1.02	+1.0	19.2	59.6
Jan. 29	21 01.14	+38 08.2	7.311	6.815	+1.02	+1.8	19.2	56.4
Feb. 8	21 11.38	+38 26.2	7.331	6.795	+1.02	+2.6	19.2	53.7
Feb. 18	21 21.61	+38 52.3	7.343	6.775	+1.01	+3.3	19.2	51.7
Feb. 28	21 31.75	+39 25.7	7.344	6.755	+1.00	+4.0	19.2	50.4
Mar. 10	21 41.72	+40 05.9	7.334	6.736	+0.97	+4.6	19.1	49.8
Mar. 20	21 51.43	+40 52.2	7.314	6.718	+0.94	+5.2	19.1	50.0
Mar. 30	22 00.81	+41 43.8	7.283	6.701	+0.90	+5.6	19.1	51.1
Apr. 9	22 09.77	+42 39.9	7.241	6.684	+0.85	+6.0	19.1	52.8
Apr. 19	22 18.23	+43 39.6	7.188	6.667	+0.79	+6.2	19.1	55.3
Apr. 29	22 26.12	+44 42.0	7.125	6.652	+0.72	+6.4	19.0	58.3
May 9	22 33.32	+45 46.3	7.052	6.636	+0.64	+6.5	19.0	61.9
May 19	22 39.75	+46 51.2	6.970	6.622	+0.56	+6.5	19.0	65.9
May 29	22 45.31	+47 55.8	6.881	6.608	+0.46	+6.3	18.9	70.3
June 8	22 49.90	+48 58.7	6.785	6.595	+0.35	+6.0	18.9	75.0
June 18	22 53.41	+49 58.7	6.684	6.582	+0.24	+5.5	18.9	79.9
June 28	22 55.78	+50 54.1	6.580	6.571	+0.12	+4.9	18.8	85.0
July 8	22 56.93	+51 43.4	6.474	6.559	-0.01	+4.1	18.8	90.3
July 18	22 56.86	+52 24.6	6.369	6.549	-0.13	+3.1	18.7	95.7
July 28	22 55.59	+52 56.0	6.267	6.539	-0.23	+2.0	18.7	101.1
Aug. 7	22 53.24	+53 15.5	6.171	6.530	-0.32	+0.6	18.7	106.4
Aug. 17	22 50.03	+53 21.5	6.082	6.521	-0.38	-0.9	18.6	111.5
Aug. 27	22 46.22	+53 12.7	6.004	6.514	-0.41	-2.4	18.6	116.2
Sept. 6	22 42.16	+52 48.4	5.938	6.507	-0.39	-4.0	18.6	120.4
Sept.16	22 38.24	+52 08.5	5.888	6.500	-0.34	-5.4	18.5	123.7
Sept.26	22 34.84	+51 14.0	5.855	6.494	-0.26	-6.7	18.5	126.0
Oct. 6	22 32.27	+50 06.7	5.841	6.489	-0.15	-7.8	18.5	126.8
Oct. 16	22 30.77	+48 49.0	5.846	6.485	-0.03	-8.5	18.5	126.2
Oct. 26	22 30.51	+47 23.9	5.872	6.482	+0.10	-8.9	18.5	124.1
Nov. 5	22 31.54	+45 54.6	5.917	6.479	+0.23	-9.0	18.5	120.6
Nov. 15	22 33.87	+44 24.5	5.982	6.476	+0.35	-8.8	18.6	116.0
Nov. 25	22 37.42	+42 56.4	6.063	6.475	+0.47	-8.3	18.6	110.5
Dec. 5	22 42.10	+41 32.9	6.159	6.474	+0.57	-7.7	18.6	104.3
Dec. 15	22 47.78	+40 16.1	6.268	6.474	+0.66	-6.9	18.7	97.7
Dec. 25	22 54.34	+39 07.3	6.385	6.475	+0.73	-6.0	18.7	90.9
Jan. 4	23 01.65	+38 07.6	6.507	6.476	+0.79	-5.0	18.8	83.9
Jan. 14	23 09.58	+37 17.3	6.632	6.478	+0.84	-4.1	18.8	76.8
Jan. 24	23 18.02	+36 36.7	6.755	6.481	+0.88	-3.1	18.8	69.7
Feb. 3	23 26.85	+36 05.4	6.875	6.484	+0.91	-2.2	18.9	62.8
Feb. 13	23 35.98	+35 42.9	6.987	6.488	+0.93	-1.4	18.9	56.1
Feb. 23	23 45.32	+35 28.6	7.089	6.493	+0.95	-0.7	18.9	49.7
Mar. 4	23 54.78	+35 21.8	7.179	6.499	+0.95	0.0	19.0	43.8
Mar. 14	00 04.28	+35 21.7	7.255	6.505	+0.95	+0.6	19.0	38.4
Mar. 24	00 13.76	+35 27.2	7.314	6.512	+0.94	+1.1	19.0	34.0

Comet 71P/Clark

Epoch = 2011 July 18.0 TT
T = 2011 Dec. 15.70100 TT
Peri. = 208.84029 e = 0.4985849
Node = 59.60520 2000.0 a = 3.1260268 AU
Incl. = 9.48004 n = 0.17832615
q = 1.5674370 AU P = 5.53 years

m1 = 9.5 + 5 log(Delta) + 17.5 log(r(t-40))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	11 22.59	+17 05.1	2.463	3.108	-0.02	+4.3	20.5	122.8
Jan. 19	11 22.35	+17 48.4	2.304	3.058	-0.26	+5.6	20.3	132.8
Jan. 29	11 19.71	+18 44.6	2.162	3.009	-0.51	+6.6	20.0	143.1
Feb. 8	11 14.60	+19 50.5	2.043	2.958	-0.74	+7.0	19.8	153.4
Feb. 18	11 07.21	+21 00.4	1.950	2.907	-0.91	+6.7	19.6	162.3
Feb. 28	10 58.06	+22 07.0	1.885	2.855	-1.01	+5.5	19.4	165.6
Mar. 10	10 47.99	+23 02.2	1.849	2.802	-0.99	+3.7	19.2	159.9
Mar. 20	10 38.10	+23 39.5	1.841	2.749	-0.86	+1.6	19.1	150.1
Mar. 30	10 29.45	+23 55.1	1.857	2.695	-0.65	-0.7	19.0	139.4
Apr. 9	10 22.93	+23 48.2	1.894	2.641	-0.38	-2.8	18.9	128.9
Apr. 19	10 19.09	+23 20.5	1.946	2.586	-0.10	-4.6	18.8	119.0
Apr. 29	10 18.11	+22 34.7	2.008	2.531	+0.19	-6.1	18.7	109.6
May 9	10 19.97	+21 33.3	2.077	2.475	+0.45	-7.5	18.6	100.9
May 19	10 24.44	+20 18.8	2.148	2.419	+0.68	-8.6	18.5	92.8
May 29	10 31.25	+18 52.7	2.218	2.363	+0.89	-9.7	18.5	85.4
June 8	10 40.13	+17 16.2	2.285	2.307	+1.07	-10.6	18.4	78.5
June 18	10 50.81	+15 30.1	2.348	2.252	+1.22	-11.5	18.2	72.0
June 28	11 03.06	+13 34.9	2.404	2.196	+1.36	-12.4	18.1	66.0
July 8	11 16.71	+11 31.0	2.453	2.141	+1.49	-13.2	18.0	60.4
July 18	11 31.60	+09 18.9	2.494	2.086	+1.61	-14.0	17.8	55.1
July 28	11 47.66	+06 58.9	2.528	2.033	+1.72	-14.7	17.7	50.1
Aug. 7	12 04.82	+04 31.5	2.555	1.980	+1.82	-15.4	17.5	45.5
Aug. 17	12 23.05	+01 57.5	2.574	1.929	+1.93	-16.0	17.3	41.1
Aug. 27	12 42.35	-00 42.2	2.587	1.880	+2.04	-16.4	17.2	36.9
Sept. 6	13 02.78	-03 26.6	2.594	1.832	+2.16	-16.7	17.0	33.0
Sept.16	13 24.37	-06 14.0	2.595	1.787	+2.28	-16.9	16.8	29.3
Sept.26	13 47.20	-09 02.7	2.593	1.745	+2.42	-16.8	16.6	25.8
Oct. 6	14 11.37	-11 50.2	2.588	1.707	+2.56	-16.4	16.4	22.5
Oct. 16	14 36.94	-14 33.8	2.580	1.672	+2.71	-15.6	16.2	19.3
Oct. 26	15 04.00	-17 10.2	2.572	1.642	+2.86	-14.5	16.0	16.4
Nov. 5	15 32.60	-19 35.6	2.563	1.616	+3.01	-13.0	15.8	13.6
Nov. 15	16 02.71	-21 46.0	2.556	1.595	+3.15	-11.1	15.6	10.9
Nov. 25	16 34.24	-23 37.4	2.550	1.580	+3.28	-8.8	15.4	8.4
Dec. 5	17 07.02	-25 05.7	2.547	1.571	+3.37	-6.2	15.3	6.1
Dec. 15	17 40.71	-26 07.7	2.547	1.567	+3.42	-3.4	15.2	4.2
Dec. 25	18 14.96	-26 41.4	2.551	1.570	+3.43	-0.4	15.1	3.4
Jan. 4	18 49.29	-26 45.9	2.558	1.579	+3.39	+2.4	15.0	4.2
Jan. 14	19 23.23	-26 22.0	2.567	1.593	+3.32	+5.0	15.0	6.1
Jan. 24	19 56.39	-25 31.6	2.580	1.613	+3.20	+7.3	15.0	8.5
Feb. 3	20 28.39	-24 18.1	2.594	1.638	+3.06	+9.3	15.0	11.1
Feb. 13	20 59.02	-22 45.5	2.609	1.668	+2.91	+10.8	15.1	13.9
Feb. 23	21 28.14	-20 57.9	2.624	1.702	+2.76	+11.8	15.1	16.9
Mar. 4	21 55.71	-18 59.7	2.638	1.740	+2.60	+12.5	15.2	20.0
Mar. 14	22 21.75	-16 54.8	2.650	1.781	+2.46	+12.8	15.4	23.4
Mar. 24	22 46.31	-14 46.6	2.658	1.826	+2.32	+12.8	15.5	26.9

Comet C/2011 A3 (Gibbs)

T = 2011 Dec. 16.40441 TT
Peri. = 141.54748
Node = 124.69778 2000.0
Incl. = 26.02096
q = 2.3377987 AU
e = 0.9915428

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	13 23.81	+15 42.0	4.066	4.262	+0.61	+4.0	18.1	94.8
Jan. 19	13 29.88	+16 22.4	3.851	4.183	+0.50	+5.3	17.9	103.0
Jan. 29	13 34.88	+17 15.4	3.645	4.105	+0.37	+6.5	17.6	111.2
Feb. 8	13 38.60	+18 20.6	3.450	4.027	+0.23	+7.6	17.4	119.4
Feb. 18	13 40.89	+19 36.6	3.270	3.949	+0.07	+8.4	17.1	127.4
Feb. 28	13 41.61	+21 00.9	3.108	3.871	−0.09	+8.9	16.9	134.9
Mar. 10	13 40.69	+22 29.9	2.968	3.794	−0.25	+8.8	16.6	141.3
Mar. 20	13 38.17	+23 58.2	2.851	3.717	−0.39	+8.2	16.4	145.8
Mar. 30	13 34.25	+25 19.9	2.759	3.641	−0.50	+6.9	16.2	147.5
Apr. 9	13 29.26	+26 28.6	2.692	3.566	−0.55	+5.0	16.0	145.9
Apr. 19	13 23.74	+27 18.6	2.649	3.491	−0.55	+2.8	15.9	141.4
Apr. 29	13 18.27	+27 46.1	2.628	3.417	−0.48	+0.3	15.7	135.1
May 9	13 13.49	+27 48.9	2.627	3.344	−0.35	−2.2	15.6	127.9
May 19	13 09.95	+27 27.1	2.641	3.272	−0.19	−4.5	15.4	120.4
May 29	13 08.05	+26 42.3	2.668	3.201	0.00	−6.5	15.3	112.8
June 8	13 08.04	+25 37.0	2.704	3.131	+0.20	−8.3	15.2	105.4
June 18	13 10.03	+24 14.3	2.747	3.063	+0.40	−9.7	15.1	98.3
June 28	13 14.00	+22 37.0	2.792	2.997	+0.59	−10.9	15.0	91.5
July 8	13 19.87	+20 47.5	2.840	2.932	+0.77	−11.9	14.9	85.0
July 18	13 27.53	+18 48.4	2.886	2.869	+0.93	−12.7	14.8	78.9
July 28	13 36.84	+16 41.5	2.931	2.809	+1.08	−13.3	14.7	73.1
Aug. 7	13 47.68	+14 28.4	2.974	2.751	+1.22	−13.8	14.6	67.5
Aug. 17	13 59.93	+12 10.9	3.014	2.696	+1.35	−14.1	14.5	62.3
Aug. 27	14 13.47	+09 50.1	3.051	2.644	+1.48	−14.2	14.4	57.2
Sept. 6	14 28.25	+07 27.7	3.084	2.595	+1.59	−14.3	14.3	52.4
Sept.16	14 44.15	+05 05.2	3.115	2.549	+1.70	−14.1	14.2	47.7
Sept.26	15 01.13	+02 44.0	3.142	2.507	+1.80	−13.8	14.1	43.2
Oct. 6	15 19.13	+00 25.7	3.168	2.470	+1.89	−13.4	14.0	38.8
Oct. 16	15 38.07	−01 47.9	3.191	2.436	+1.98	−12.7	13.9	34.6
Oct. 26	15 57.89	−03 55.3	3.212	2.407	+2.06	−11.9	13.9	30.4
Nov. 5	16 18.52	−05 54.7	3.231	2.383	+2.13	−11.0	13.8	26.3
Nov. 15	16 39.86	−07 44.7	3.249	2.364	+2.20	−9.9	13.8	22.4
Nov. 25	17 01.81	−09 23.9	3.265	2.350	+2.24	−8.7	13.7	18.6
Dec. 5	17 24.25	−10 51.0	3.279	2.341	+2.28	−7.4	13.7	15.0
Dec. 15	17 47.04	−12 05.5	3.291	2.338	+2.30	−6.1	13.7	12.1
Dec. 25	18 10.03	−13 06.7	3.301	2.340	+2.30	−4.8	13.7	10.3
Jan. 4	18 33.06	−13 54.8	3.307	2.347	+2.29	−3.5	13.8	10.4
Jan. 14	18 55.98	−14 30.1	3.310	2.360	+2.27	−2.3	13.8	12.5
Jan. 24	19 18.63	−14 53.5	3.309	2.377	+2.22	−1.3	13.8	15.8
Feb. 3	19 40.87	−15 06.1	3.303	2.400	+2.17	−0.3	13.9	19.9
Feb. 13	20 02.55	−15 09.5	3.292	2.428	+2.10	+0.4	14.0	24.4
Feb. 23	20 23.59	−15 05.4	3.275	2.460	+2.03	+1.0	14.0	29.3
Mar. 4	20 43.86	−14 55.7	3.251	2.496	+1.94	+1.3	14.1	34.4
Mar. 14	21 03.27	−14 42.6	3.221	2.537	+1.85	+1.5	14.2	39.7
Mar. 24	21 21.77	−14 28.0	3.184	2.581	+1.75	+1.4	14.3	45.3

Comet C/2009 P1 (Garradd)

Epoch = 2011 July 18.0 TT
T = 2011 Dec. 23.66540 TT
Peri. = 90.74348
Node = 325.99715 2000.0
Incl. = 106.17807
q = 1.5505740 AU
e = 1.0010212

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	22 01.53	-26 33.2	5.162	4.418	+0.40	+8.6	13.6	37.1
Jan. 19	22 05.54	-25 07.6	5.161	4.325	+0.46	+8.6	13.5	28.8
Jan. 29	22 10.18	-23 41.7	5.136	4.231	+0.51	+8.6	13.4	20.9
Feb. 8	22 15.30	-22 15.3	5.087	4.136	+0.54	+8.7	13.3	13.9
Feb. 18	22 20.75	-20 48.5	5.012	4.041	+0.56	+8.7	13.2	9.8
Feb. 28	22 26.39	-19 21.1	4.911	3.946	+0.57	+8.8	13.0	11.7
Mar. 10	22 32.10	-17 52.9	4.784	3.850	+0.56	+8.9	12.9	17.7
Mar. 20	22 37.74	-16 23.8	4.633	3.754	+0.54	+9.0	12.7	25.0
Mar. 30	22 43.19	-14 53.4	4.458	3.658	+0.51	+9.2	12.5	32.7
Apr. 9	22 48.29	-13 21.4	4.262	3.561	+0.46	+9.4	12.3	40.5
Apr. 19	22 52.88	-11 47.3	4.046	3.464	+0.39	+9.7	12.0	48.6
Apr. 29	22 56.79	-10 10.3	3.812	3.366	+0.30	+10.1	11.8	56.7
May 9	22 59.78	-08 29.6	3.564	3.269	+0.18	+10.6	11.5	65.0
May 19	23 01.57	-06 44.0	3.305	3.171	+0.02	+11.2	11.2	73.6
May 29	23 01.78	-04 51.7	3.038	3.073	-0.19	+12.1	10.9	82.4
June 8	22 59.93	-02 50.7	2.768	2.976	-0.46	+13.2	10.5	91.7
June 18	22 55.36	-00 38.3	2.500	2.878	-0.82	+14.7	10.2	101.4
June 28	22 47.21	+01 48.8	2.240	2.781	-1.29	+16.5	9.8	111.6
July 8	22 34.34	+04 33.6	1.997	2.684	-1.89	+18.4	9.4	122.5
July 18	22 15.45	+07 37.3	1.780	2.588	-2.62	+19.8	9.0	133.6
July 28	21 49.30	+10 55.5	1.600	2.492	-3.38	+19.7	8.6	143.7
Aug. 7	21 15.45	+14 12.7	1.471	2.398	-3.99	+16.9	8.2	149.1
Aug. 17	20 35.56	+17 01.9	1.402	2.306	-4.18	+11.5	8.0	145.0
Aug. 27	19 53.73	+18 56.6	1.395	2.215	-3.87	+5.3	7.8	133.4
Sept. 6	19 15.08	+19 49.2	1.443	2.127	-3.20	+0.6	7.7	119.3
Sept. 16	18 43.07	+19 54.9	1.530	2.041	-2.45	-1.9	7.6	105.4
Sept. 26	18 18.59	+19 36.0	1.639	1.960	-1.77	-2.5	7.6	92.6
Oct. 6	18 00.90	+19 10.8	1.755	1.883	-1.23	-2.0	7.6	81.2
Oct. 16	17 48.62	+18 51.2	1.866	1.811	-0.82	-0.8	7.5	71.2
Oct. 26	17 40.45	+18 43.0	1.964	1.746	-0.51	+0.7	7.5	62.6
Nov. 5	17 35.31	+18 50.3	2.041	1.688	-0.30	+2.5	7.4	55.4
Nov. 15	17 32.33	+19 15.5	2.092	1.639	-0.15	+4.5	7.3	49.8
Nov. 25	17 30.85	+20 00.9	2.115	1.600	-0.05	+6.9	7.3	46.2
Dec. 5	17 30.34	+21 09.7	2.107	1.572	0.00	+9.6	7.2	44.9
Dec. 15	17 30.32	+22 46.0	2.068	1.555	0.00	+12.9	7.1	46.0
Dec. 25	17 30.34	+24 55.4	2.000	1.551	-0.05	+17.1	7.0	49.4
Jan. 4	17 29.86	+27 46.6	1.904	1.558	-0.17	+22.4	6.9	54.7
Jan. 14	17 28.11	+31 30.7	1.787	1.578	-0.42	+29.2	6.8	61.6
Jan. 24	17 23.91	+36 22.9	1.656	1.610	-0.89	+37.8	6.8	69.9
Feb. 3	17 14.99	+42 40.6	1.521	1.651	-1.84	+47.4	6.7	79.3
Feb. 13	16 56.60	+50 35.0	1.398	1.703	-3.92	+55.1	6.6	89.4
Feb. 23	16 17.38	+59 46.2	1.306	1.763	-8.76	+50.3	6.6	99.4
Mar. 4	14 49.82	+68 08.7	1.266	1.830	-15.10	+13.4	6.7	107.6
Mar. 14	12 18.78	+70 22.3	1.294	1.903	-11.77	-34.5	7.0	111.8
Mar. 24	10 21.07	+64 37.3	1.394	1.981	-5.42	-49.5	7.3	110.8

Comet 36P/Whipple

Epoch = 2011 July 18.0 TT
T = 2011 Dec. 30.17481 TT
Peri. = 201.70709 e = 0.2598824
Node = 182.39501 2000.0 a = 4.1718130 AU
Incl. = 9.93527 n = 0.11566896
q = 3.0876323 AU P = 8.52 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	20 51.40	-11 52.2	4.391	3.519	+1.34	+4.3	20.7	24.4
Jan. 19	21 04.77	-11 09.2	4.423	3.498	+1.36	+4.9	20.7	17.7
Jan. 29	21 18.32	-10 20.5	4.438	3.478	+1.37	+5.4	20.7	11.4
Feb. 8	21 31.98	-09 26.6	4.437	3.458	+1.37	+5.8	20.6	6.1
Feb. 18	21 45.66	-08 28.3	4.420	3.438	+1.36	+6.2	20.6	5.6
Feb. 28	21 59.31	-07 26.0	4.388	3.419	+1.36	+6.5	20.5	10.6
Mar. 10	22 12.86	-06 20.7	4.339	3.400	+1.34	+6.8	20.4	16.6
Mar. 20	22 26.26	-05 13.1	4.276	3.381	+1.32	+6.9	20.3	22.9
Mar. 30	22 39.45	-04 03.9	4.199	3.363	+1.29	+7.0	20.3	29.2
Apr. 9	22 52.38	-02 54.0	4.109	3.345	+1.26	+7.0	20.2	35.5
Apr. 19	23 04.99	-01 44.4	4.006	3.328	+1.22	+6.8	20.1	41.9
Apr. 29	23 17.22	-00 36.0	3.893	3.311	+1.18	+6.6	19.9	48.4
May 9	23 29.00	+00 30.3	3.770	3.294	+1.13	+6.3	19.8	54.9
May 19	23 40.25	+01 33.5	3.638	3.278	+1.06	+5.9	19.7	61.5
May 29	23 50.89	+02 32.5	3.499	3.263	+0.99	+5.4	19.6	68.3
June 8	00 00.80	+03 26.1	3.355	3.248	+0.90	+4.7	19.5	75.2
June 18	00 09.84	+04 13.1	3.207	3.233	+0.80	+3.9	19.3	82.4
June 28	00 17.89	+04 52.2	3.058	3.219	+0.69	+3.0	19.2	89.8
July 8	00 24.75	+05 22.0	2.910	3.206	+0.55	+1.9	19.0	97.6
July 18	00 30.27	+05 41.1	2.765	3.193	+0.40	+0.7	18.9	105.7
July 28	00 34.25	+05 48.0	2.626	3.181	+0.23	-0.7	18.7	114.3
Aug. 7	00 36.52	+05 41.3	2.497	3.170	+0.05	-2.1	18.6	123.4
Aug. 17	00 36.99	+05 20.2	2.381	3.159	-0.14	-3.6	18.5	133.0
Aug. 27	00 35.64	+04 44.5	2.282	3.149	-0.31	-4.9	18.4	143.2
Sept. 6	00 32.57	+03 55.2	2.203	3.140	-0.44	-6.0	18.3	153.9
Sept.16	00 28.13	+02 54.8	2.149	3.132	-0.53	-6.7	18.2	165.0
Sept.26	00 22.80	+01 47.3	2.122	3.124	-0.56	-6.9	18.1	176.4
Oct. 6	00 17.22	+00 38.4	2.123	3.117	-0.51	-6.5	18.1	171.9
Oct. 16	00 12.10	-00 26.3	2.153	3.110	-0.41	-5.5	18.1	160.4
Oct. 26	00 08.04	-01 21.4	2.209	3.105	-0.25	-4.2	18.2	149.2
Nov. 5	00 05.55	-02 03.3	2.288	3.100	-0.06	-2.6	18.2	138.3
Nov. 15	00 04.92	-02 29.7	2.387	3.096	+0.13	-1.1	18.3	128.0
Nov. 25	00 06.23	-02 40.2	2.502	3.093	+0.32	+0.5	18.4	118.1
Dec. 5	00 09.47	-02 35.3	2.629	3.090	+0.50	+1.9	18.5	108.8
Dec. 15	00 14.50	-02 16.5	2.763	3.089	+0.66	+3.1	18.6	99.9
Dec. 25	00 21.15	-01 45.3	2.901	3.088	+0.81	+4.2	18.7	91.5
Jan. 4	00 29.23	-01 03.6	3.041	3.088	+0.93	+5.0	18.8	83.5
Jan. 14	00 38.55	-00 13.1	3.179	3.089	+1.04	+5.8	18.9	75.8
Jan. 24	00 48.93	+00 44.4	3.314	3.090	+1.13	+6.3	19.0	68.4
Feb. 3	01 00.23	+01 47.3	3.443	3.093	+1.21	+6.7	19.1	61.3
Feb. 13	01 12.30	+02 54.2	3.565	3.096	+1.27	+6.9	19.2	54.4
Feb. 23	01 25.03	+04 03.6	3.677	3.100	+1.33	+7.1	19.3	47.7
Mar. 4	01 38.33	+05 14.3	3.780	3.104	+1.38	+7.1	19.3	41.3
Mar. 14	01 52.10	+06 25.1	3.872	3.110	+1.42	+7.0	19.4	35.0
Mar. 24	02 06.28	+07 34.8	3.952	3.116	+1.45	+6.8	19.5	28.8

Comet C/2009 F4 (McNaught)

Epoch = 2011 July 18.0 TT
T = 2011 Dec. 31.84432 TT
Peri. = 260.38234
Node = 53.58154 2000.0
Incl. = 79.34628
q = 5.4545918 AU
e = 1.0020631

m1 = 3.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	15 59.67	-60 05.8	6.612	6.046	+0.89	-10.2	14.9	51.3
Jan. 19	16 08.59	-61 48.2	6.490	6.015	+0.84	-10.9	14.9	57.3
Jan. 29	16 17.03	-63 36.9	6.359	5.985	+0.77	-11.5	14.8	63.5
Feb. 8	16 24.72	-65 32.0	6.221	5.956	+0.66	-12.1	14.7	70.0
Feb. 18	16 31.29	-67 33.0	6.081	5.927	+0.50	-12.6	14.6	76.4
Feb. 28	16 36.26	-69 39.4	5.942	5.899	+0.26	-13.1	14.6	82.8
Mar. 10	16 38.87	-71 50.2	5.806	5.872	-0.08	-13.3	14.5	89.0
Mar. 20	16 38.03	-74 03.5	5.677	5.846	-0.60	-13.3	14.4	94.8
Mar. 30	16 32.04	-76 16.6	5.559	5.820	-1.39	-12.8	14.4	100.2
Apr. 9	16 18.16	-78 24.8	5.454	5.795	-2.58	-11.6	14.3	105.0
Apr. 19	15 52.34	-80 20.6	5.364	5.771	-4.26	-9.2	14.3	109.1
Apr. 29	15 09.77	-81 52.4	5.291	5.748	-6.02	-5.2	14.2	112.2
May 9	14 09.55	-82 44.3	5.236	5.725	-6.66	-0.1	14.2	114.2
May 19	13 02.90	-82 45.4	5.200	5.703	-5.56	+4.4	14.1	115.1
May 29	12 07.32	-82 01.5	5.181	5.683	-3.73	+7.1	14.1	114.9
June 8	11 30.00	-80 50.7	5.180	5.663	-2.19	+8.1	14.1	113.6
June 18	11 08.06	-79 30.2	5.193	5.643	-1.14	+7.9	14.1	111.4
June 28	10 56.67	-78 11.0	5.220	5.625	-0.44	+7.1	14.1	108.4
July 8	10 52.27	-76 59.6	5.258	5.608	+0.02	+6.0	14.1	105.0
July 18	10 52.50	-76 00.1	5.304	5.591	+0.34	+4.6	14.1	101.2
July 28	10 55.91	-75 14.5	5.356	5.575	+0.57	+3.0	14.1	97.2
Aug. 7	11 01.60	-74 44.1	5.412	5.561	+0.74	+1.5	14.1	93.2
Aug. 17	11 08.98	-74 29.6	5.469	5.547	+0.87	-0.1	14.1	89.2
Aug. 27	11 17.68	-74 30.8	5.525	5.534	+0.98	-1.7	14.1	85.3
Sept. 6	11 27.47	-74 47.8	5.578	5.522	+1.07	-3.2	14.2	81.6
Sept.16	11 38.20	-75 20.1	5.627	5.511	+1.17	-4.7	14.2	78.3
Sept.26	11 49.87	-76 07.0	5.671	5.501	+1.26	-6.1	14.2	75.2
Oct. 6	12 02.51	-77 08.0	5.709	5.492	+1.38	-7.4	14.2	72.5
Oct. 16	12 16.28	-78 22.3	5.740	5.484	+1.54	-8.7	14.2	70.3
Oct. 26	12 31.64	-79 49.0	5.764	5.477	+1.78	-9.8	14.2	68.4
Nov. 5	12 49.42	-81 27.2	5.782	5.471	+2.22	-10.8	14.2	67.0
Nov. 15	13 11.61	-83 15.4	5.792	5.466	+3.23	-11.6	14.2	66.0
Nov. 25	13 43.90	-85 11.8	5.797	5.461	+6.49	-11.9	14.2	65.5
Dec. 5	14 48.76	-87 10.8	5.797	5.458	+22.71	-8.3	14.2	65.3
Dec. 15	18 35.87	-88 33.4	5.792	5.456	+26.47	+7.4	14.2	65.4
Dec. 25	23 00.58	-87 19.5	5.784	5.455	+7.49	+13.7	14.2	65.8
Jan. 4	00 15.48	-85 02.7	5.773	5.455	+3.52	+14.9	14.2	66.4
Jan. 14	00 50.70	-82 34.0	5.762	5.455	+2.39	+15.3	14.2	67.1
Jan. 24	01 14.61	-80 00.5	5.750	5.457	+1.93	+15.5	14.2	68.0
Feb. 3	01 33.90	-77 25.3	5.738	5.460	+1.69	+15.5	14.2	68.8
Feb. 13	01 50.83	-74 50.4	5.729	5.464	+1.56	+15.3	14.2	69.6
Feb. 23	02 06.38	-72 17.6	5.721	5.469	+1.47	+14.9	14.2	70.4
Mar. 4	02 21.05	-69 48.6	5.715	5.474	+1.40	+14.4	14.2	71.1
Mar. 14	02 35.07	-67 25.0	5.711	5.481	+1.35	+13.7	14.2	71.7
Mar. 24	02 48.57	-65 08.3	5.710	5.489	+1.31	+12.8	14.2	72.3

Comet 131P/Mueller

Epoch = 2011 July 18.0 TT
T = 2012 Jan. 7.61544 TT
Peri. = 179.59072 e = 0.3433952
Node = 214.22126 2000.0 a = 3.6823077 AU
Incl. = 7.35535 n = 0.13948386
q = 2.4178209 AU P = 7.07 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	20 07.12	-14 25.1	4.178	3.231	+1.48	+4.6	22.4	13.8
Jan. 19	20 21.90	-13 39.4	4.169	3.199	+1.49	+5.2	22.3	8.3
Jan. 29	20 36.84	-12 47.0	4.145	3.166	+1.50	+5.9	22.2	5.6
Feb. 8	20 51.85	-11 48.3	4.105	3.133	+1.50	+6.5	22.1	8.6
Feb. 18	21 06.86	-10 43.7	4.050	3.101	+1.50	+7.0	22.0	14.0
Feb. 28	21 21.81	-09 33.8	3.981	3.068	+1.48	+7.5	21.9	19.8
Mar. 10	21 36.65	-08 19.0	3.899	3.036	+1.47	+7.9	21.8	25.8
Mar. 20	21 51.31	-07 00.1	3.805	3.004	+1.44	+8.2	21.7	31.7
Mar. 30	22 05.76	-05 37.8	3.699	2.972	+1.42	+8.5	21.5	37.7
Apr. 9	22 19.95	-04 12.8	3.583	2.941	+1.39	+8.7	21.4	43.7
Apr. 19	22 33.81	-02 46.0	3.458	2.910	+1.35	+8.8	21.2	49.7
Apr. 29	22 47.30	-01 18.2	3.325	2.879	+1.31	+8.8	21.0	55.7
May 9	23 00.36	+00 09.5	3.185	2.849	+1.25	+8.7	20.9	61.7
May 19	23 12.90	+01 36.2	3.040	2.819	+1.19	+8.5	20.7	67.9
May 29	23 24.84	+03 00.9	2.892	2.790	+1.12	+8.1	20.5	74.1
June 8	23 36.07	+04 22.1	2.741	2.762	+1.04	+7.7	20.3	80.6
June 18	23 46.43	+05 38.6	2.589	2.734	+0.93	+7.0	20.1	87.2
June 28	23 55.78	+06 49.0	2.438	2.707	+0.81	+6.2	19.9	94.0
July 8	00 03.90	+07 51.3	2.290	2.681	+0.67	+5.2	19.7	101.3
July 18	00 10.57	+08 43.6	2.147	2.655	+0.50	+4.0	19.5	108.8
July 28	00 15.55	+09 23.7	2.011	2.631	+0.30	+2.5	19.3	116.9
Aug. 7	00 18.59	+09 49.1	1.884	2.608	+0.09	+0.8	19.1	125.5
Aug. 17	00 19.53	+09 57.5	1.771	2.585	-0.12	-1.1	18.9	134.7
Aug. 27	00 18.28	+09 46.7	1.673	2.564	-0.33	-3.1	18.7	144.5
Sept. 6	00 14.99	+09 15.8	1.595	2.544	-0.49	-5.0	18.5	154.8
Sept.16	00 10.07	+08 25.8	1.540	2.525	-0.59	-6.5	18.4	165.3
Sept.26	00 04.22	+07 20.6	1.509	2.508	-0.59	-7.4	18.3	173.5
Oct. 6	23 58.34	+06 06.6	1.504	2.492	-0.49	-7.5	18.2	168.3
Oct. 16	23 53.41	+04 51.9	1.525	2.477	-0.32	-6.7	18.2	157.7
Oct. 26	23 50.20	+03 44.6	1.570	2.464	-0.09	-5.4	18.2	146.9
Nov. 5	23 49.26	+02 51.1	1.636	2.453	+0.16	-3.6	18.3	136.5
Nov. 15	23 50.84	+02 15.1	1.720	2.443	+0.41	-1.7	18.4	126.6
Nov. 25	23 54.90	+01 58.1	1.817	2.434	+0.64	+0.2	18.5	117.4
Dec. 5	00 01.31	+01 59.9	1.924	2.428	+0.85	+1.9	18.6	108.8
Dec. 15	00 09.81	+02 19.0	2.039	2.423	+1.03	+3.4	18.7	100.7
Dec. 25	00 20.11	+02 53.2	2.158	2.419	+1.19	+4.7	18.8	93.1
Jan. 4	00 31.97	+03 40.5	2.280	2.418	+1.32	+5.8	18.9	85.9
Jan. 14	00 45.15	+04 38.3	2.402	2.418	+1.43	+6.6	19.0	79.2
Jan. 24	00 59.44	+05 44.3	2.523	2.420	+1.52	+7.2	19.1	72.7
Feb. 3	01 14.68	+06 56.6	2.642	2.424	+1.60	+7.6	19.2	66.5
Feb. 13	01 30.72	+08 12.8	2.758	2.429	+1.67	+7.8	19.3	60.5
Feb. 23	01 47.46	+09 31.0	2.869	2.436	+1.73	+7.9	19.5	54.8
Mar. 4	02 04.79	+10 49.6	2.975	2.445	+1.78	+7.7	19.6	49.2
Mar. 14	02 22.64	+12 06.8	3.075	2.456	+1.83	+7.4	19.7	43.8
Mar. 24	02 40.92	+13 21.0	3.169	2.467	+1.87	+7.0	19.8	38.5

Comet P/2006 T1 (Levy)

Epoch = 2011 July 18.0 TT
T = 2012 Jan. 12.47787 TT
Peri. = 179.62341 e = 0.6679295
Node = 279.75109 2000.0 a = 3.0332610 AU
Incl. = 18.26307 n = 0.18656896
q = 1.0072565 AU P = 5.28 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″ °	Elong. °
Jan. 9	20 38.54	-09 27.7	4.463	3.578	-0.25	-2.2	.	17.1/ 73	23.0
Jan. 19	20 49.59	-08 37.8	4.456	3.524	-0.27	-2.3	.	17.8/ 72	16.5
Jan. 29	21 00.98	-07 41.5	4.429	3.468	-0.28	-2.4	.	18.4/ 70	11.2
Feb. 8	21 12.62	-06 38.8	4.382	3.411	-0.30	-2.5	.	18.9/ 69	9.1
Feb. 18	21 24.43	-05 29.9	4.315	3.353	-0.32	-2.6	.	19.3/ 67	11.6
Feb. 28	21 36.35	-04 14.9	4.229	3.293	-0.34	-2.8	.	19.7/ 66	16.8
Mar. 10	21 48.33	-02 53.9	4.125	3.232	-0.36	-3.0	.	19.9/ 64	22.7
Mar. 20	22 00.30	-01 27.2	4.005	3.170	-0.39	-3.2	.	20.1/ 63	28.9
Mar. 30	22 12.23	+00 05.1	3.869	3.106	-0.42	-3.5	.	20.3/ 61	35.2
Apr. 9	22 24.07	+01 42.9	3.719	3.041	-0.46	-3.7	.	20.3/ 59	41.4
Apr. 19	22 35.76	+03 26.1	3.557	2.975	-0.50	-4.0	.	20.4/ 58	47.7
Apr. 29	22 47.28	+05 14.8	3.385	2.907	-0.55	-4.4	.	20.3/ 56	53.9
May 9	22 58.56	+07 08.8	3.203	2.837	-0.61	-4.8	.	20.2/ 54	60.0
May 19	23 09.56	+09 08.3	3.015	2.766	-0.68	-5.2	.	20.1/ 51	66.2
May 29	23 20.21	+11 13.5	2.822	2.694	-0.76	-5.7	.	19.9/ 49	72.3
June 8	23 30.42	+13 24.7	2.626	2.620	-0.86	-6.3	22.8	19.6/ 45	78.5
June 18	23 40.08	+15 42.0	2.429	2.544	-0.97	-6.9	22.4	19.3/ 42	84.7
June 28	23 49.06	+18 06.1	2.233	2.467	-1.11	-7.7	22.0	19.0/ 37	90.9
July 8	23 57.16	+20 37.1	2.040	2.389	-1.27	-8.6	21.6	18.6/ 31	97.1
July 18	00 04.14	+23 15.6	1.852	2.308	-1.48	-9.8	21.2	18.2/ 24	103.3
July 28	00 09.67	+26 01.6	1.670	2.227	-1.72	-11.2	20.7	18.0/ 15	109.6
Aug. 7	00 13.30	+28 54.7	1.498	2.144	-2.02	-13.0	20.2	17.9/ 5	115.8
Aug. 17	00 14.49	+31 53.4	1.336	2.059	-2.38	-15.5	19.7	18.3/352	121.9
Aug. 27	00 12.54	+34 54.4	1.187	1.973	-2.80	-18.9	19.2	19.0/339	127.6
Sept. 6	00 06.68	+37 50.8	1.052	1.886	-3.27	-23.5	18.6	20.1/324	132.6
Sept.16	23 56.28	+40 31.9	0.932	1.798	-3.72	-29.8	18.1	21.4/309	136.2
Sept.26	23 41.16	+42 42.2	0.829	1.710	-4.06	-38.0	17.5	22.2/293	137.8
Oct. 6	23 22.23	+44 03.5	0.741	1.621	-4.14	-47.7	16.9	21.9/277	136.8
Oct. 16	23 01.91	+44 22.1	0.668	1.533	-3.86	-57.8	16.3	20.3/258	133.1
Oct. 26	22 43.58	+43 34.8	0.606	1.446	-3.25	-66.6	15.7	17.6/235	127.6
Nov. 5	22 30.62	+41 51.7	0.553	1.361	-2.48	-73.0	15.1	15.3/204	121.0
Nov. 15	22 25.20	+39 31.2	0.504	1.281	-1.75	-76.4	14.5	16.8/167	114.2
Nov. 25	22 28.28	+36 47.5	0.455	1.205	-1.18	-76.7	13.9	23.5/140	107.6
Dec. 5	22 40.50	+33 45.6	0.405	1.138	-0.88	-73.7	13.3	35.2/126	101.6
Dec. 15	23 02.58	+30 13.0	0.352	1.082	-0.99	-65.3	12.6	52.9/120	96.5
Dec. 25	23 36.26	+25 29.6	0.297	1.040	-1.79	-46.0	12.0	80.0/120	92.5
Jan. 4	00 24.77	+18 19.5	0.245	1.014	-3.82	-2.7	11.4	118.5/123	90.2
Jan. 14	01 31.38	+07 02.1	0.207	1.007	-7.60	+81.8	11.0	152.5/125	90.7
Jan. 24	02 54.33	-07 43.8	0.196	1.020	-12.35	179.3	11.0	146.4/123	95.0
Feb. 3	04 20.75	-20 19.4	0.219	1.051	-15.20	204.0	11.4	109.6/115	101.4
Feb. 13	05 35.00	-27 05.0	0.269	1.098	-14.73	167.4	12.2	77.2/104	107.3
Feb. 23	06 32.52	-29 21.8	0.335	1.158	-12.51	126.2	13.0	58.0/ 92	112.1
Mar. 4	07 16.88	-29 14.3	0.412	1.228	-10.10	+95.8	13.8	47.5/ 83	115.7
Mar. 14	07 52.46	-27 57.5	0.497	1.305	-8.06	+74.6	14.6	41.4/ 77	118.2
Mar. 24	08 22.43	-26 10.9	0.592	1.387	-6.47	+59.2	15.4	37.6/ 74	119.4

Comet 78P/Gehrels

Epoch = 2011 July 18.0 TT
T = 2012 Jan. 13.04121 TT
Peri. = 192.83710 e = 0.4625701
Node = 210.56006 2000.0 a = 3.7369471 AU
Incl. = 6.25496 n = 0.13643590
q = 2.0083471 AU P = 7.22 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	19 50.13	-16 06.3	4.287	3.321	+1.44	+4.0	19.1	9.6
Jan. 19	20 04.50	-15 26.7	4.255	3.276	+1.46	+4.6	19.0	5.1
Jan. 29	20 19.05	-14 40.6	4.206	3.231	+1.47	+5.2	18.9	6.9
Feb. 8	20 33.72	-13 48.3	4.141	3.185	+1.47	+5.8	18.7	12.4
Feb. 18	20 48.43	-12 50.1	4.061	3.139	+1.47	+6.4	18.6	18.4
Feb. 28	21 03.12	-11 46.3	3.966	3.093	+1.46	+6.9	18.4	24.6
Mar. 10	21 17.74	-10 37.3	3.858	3.047	+1.45	+7.4	18.2	30.7
Mar. 20	21 32.22	-09 23.8	3.737	3.000	+1.43	+7.8	18.0	36.8
Mar. 30	21 46.53	-08 06.2	3.606	2.954	+1.41	+8.1	17.8	42.9
Apr. 9	22 00.61	-06 45.3	3.465	2.908	+1.38	+8.3	17.6	49.0
Apr. 19	22 14.40	-05 21.9	3.316	2.861	+1.35	+8.5	17.4	55.0
Apr. 29	22 27.87	-03 56.6	3.160	2.815	+1.31	+8.6	17.2	61.1
May 9	22 40.94	-02 30.3	2.999	2.769	+1.26	+8.6	16.9	67.2
May 19	22 53.54	-01 04.2	2.834	2.723	+1.21	+8.5	16.7	73.3
May 29	23 05.59	+00 20.9	2.668	2.677	+1.14	+8.3	16.4	79.6
June 8	23 16.97	+01 43.5	2.501	2.632	+1.06	+7.9	16.1	86.0
June 18	23 27.55	+03 02.3	2.335	2.587	+0.96	+7.3	15.8	92.5
June 28	23 37.15	+04 15.8	2.172	2.543	+0.84	+6.6	15.5	99.3
July 8	23 45.56	+05 21.7	2.014	2.500	+0.70	+5.6	15.2	106.4
July 18	23 52.55	+06 18.0	1.863	2.457	+0.53	+4.4	14.9	113.9
July 28	23 57.85	+07 02.1	1.720	2.416	+0.33	+2.9	14.6	121.9
Aug. 7	00 01.17	+07 30.7	1.589	2.375	+0.11	+1.0	14.3	130.4
Aug. 17	00 02.31	+07 41.2	1.471	2.336	-0.11	-1.1	13.9	139.5
Aug. 27	00 01.16	+07 30.6	1.371	2.298	-0.33	-3.3	13.6	149.3
Sept. 6	23 57.87	+06 57.7	1.290	2.262	-0.49	-5.4	13.4	159.6
Sept.16	23 52.94	+06 03.9	1.231	2.227	-0.58	-7.0	13.1	169.7
Sept.26	23 47.18	+04 53.7	1.196	2.195	-0.55	-7.8	12.9	173.3
Oct. 6	23 41.71	+03 35.3	1.185	2.164	-0.41	-7.6	12.7	164.2
Oct. 16	23 37.66	+02 18.9	1.197	2.136	-0.18	-6.5	12.6	153.3
Oct. 26	23 35.90	+01 13.6	1.231	2.110	+0.11	-4.7	12.5	142.8
Nov. 5	23 37.01	+00 26.7	1.282	2.087	+0.41	-2.5	12.5	132.8
Nov. 15	23 41.16	+00 01.7	1.347	2.066	+0.70	-0.2	12.5	123.6
Nov. 25	23 48.21	-00 00.6	1.424	2.048	+0.97	+2.0	12.5	115.1
Dec. 5	23 57.92	+00 19.0	1.510	2.034	+1.20	+3.9	12.5	107.3
Dec. 15	00 09.94	+00 58.1	1.601	2.023	+1.40	+5.6	12.5	100.2
Dec. 25	00 23.91	+01 54.1	1.698	2.014	+1.56	+7.0	12.5	93.6
Jan. 4	00 39.55	+03 03.9	1.797	2.010	+1.70	+8.1	12.6	87.4
Jan. 14	00 56.56	+04 24.5	1.899	2.008	+1.82	+8.8	12.6	81.7
Jan. 24	01 14.73	+05 52.8	2.002	2.010	+1.91	+9.3	12.7	76.3
Feb. 3	01 33.86	+07 26.1	2.106	2.016	+1.99	+9.5	12.7	71.1
Feb. 13	01 53.81	+09 01.3	2.211	2.024	+2.06	+9.5	12.8	66.2
Feb. 23	02 14.45	+10 36.0	2.316	2.036	+2.12	+9.2	12.9	61.4
Mar. 4	02 35.67	+12 07.9	2.419	2.052	+2.17	+8.7	13.0	56.8
Mar. 14	02 57.37	+13 34.7	2.522	2.070	+2.21	+8.0	13.1	52.3
Mar. 24	03 19.46	+14 54.6	2.624	2.091	+2.24	+7.1	13.2	47.9

Comet 244P/Scotti

Epoch = 2011 July 18.0 TT
T = 2012 Jan. 19.32574 TT
Peri. = 92.41326 e = 0.2008797
Node = 354.20369 2000.0 a = 4.9034861 AU
Incl. = 2.25940 n = 0.09077090
q = 3.9184753 AU P = 10.86 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	01 22.33	+10 23.2	3.971	4.168	+0.45	+2.5	18.9	94.7
Jan. 19	01 26.82	+10 48.1	4.113	4.156	+0.57	+3.2	19.0	85.7
Jan. 29	01 32.55	+11 20.1	4.253	4.144	+0.68	+3.8	19.0	77.0
Feb. 8	01 39.40	+11 58.1	4.388	4.133	+0.78	+4.3	19.1	68.7
Feb. 18	01 47.23	+12 41.1	4.515	4.121	+0.87	+4.7	19.1	60.6
Feb. 28	01 55.91	+13 27.9	4.633	4.110	+0.94	+5.0	19.1	52.8
Mar. 10	02 05.35	+14 17.7	4.738	4.099	+1.01	+5.2	19.2	45.2
Mar. 20	02 15.43	+15 09.4	4.829	4.089	+1.06	+5.3	19.2	37.8
Mar. 30	02 26.06	+16 02.2	4.905	4.078	+1.11	+5.3	19.2	30.6
Apr. 9	02 37.17	+16 55.2	4.966	4.068	+1.15	+5.2	19.2	23.6
Apr. 19	02 48.66	+17 47.7	5.010	4.058	+1.18	+5.1	19.2	16.7
Apr. 29	03 00.47	+18 39.0	5.037	4.049	+1.21	+5.0	19.2	9.9
May 9	03 12.53	+19 28.6	5.047	4.040	+1.22	+4.7	19.2	3.5
May 19	03 24.76	+20 15.9	5.039	4.031	+1.23	+4.5	19.1	3.9
May 29	03 37.10	+21 00.4	5.015	4.022	+1.24	+4.2	19.1	10.3
June 8	03 49.48	+21 41.9	4.974	4.014	+1.23	+3.8	19.0	16.9
June 18	04 01.80	+22 20.1	4.917	4.006	+1.22	+3.5	19.0	23.5
June 28	04 14.00	+22 54.7	4.844	3.998	+1.20	+3.1	18.9	30.2
July 8	04 25.98	+23 25.7	4.757	3.991	+1.16	+2.7	18.9	36.9
July 18	04 37.62	+23 53.1	4.656	3.984	+1.12	+2.4	18.8	43.7
July 28	04 48.83	+24 16.9	4.542	3.977	+1.06	+2.0	18.7	50.7
Aug. 7	04 59.48	+24 37.4	4.418	3.970	+0.99	+1.7	18.7	57.8
Aug. 17	05 09.42	+24 54.8	4.283	3.964	+0.91	+1.5	18.6	65.1
Aug. 27	05 18.51	+25 09.6	4.141	3.959	+0.81	+1.2	18.5	72.6
Sept. 6	05 26.56	+25 22.0	3.993	3.954	+0.69	+1.1	18.4	80.5
Sept.16	05 33.41	+25 32.7	3.842	3.949	+0.55	+0.9	18.3	88.6
Sept.26	05 38.88	+25 41.9	3.691	3.944	+0.39	+0.8	18.2	97.2
Oct. 6	05 42.75	+25 50.2	3.544	3.940	+0.21	+0.8	18.0	106.1
Oct. 16	05 44.87	+25 57.7	3.403	3.936	+0.03	+0.7	17.9	115.5
Oct. 26	05 45.13	+26 04.5	3.273	3.933	-0.17	+0.6	17.8	125.4
Nov. 5	05 43.47	+26 10.2	3.158	3.929	-0.35	+0.4	17.7	135.7
Nov. 15	05 39.98	+26 14.3	3.064	3.927	-0.51	+0.2	17.7	146.5
Nov. 25	05 34.90	+26 16.0	2.993	3.924	-0.62	-0.1	17.6	157.6
Dec. 5	05 28.66	+26 14.8	2.951	3.922	-0.68	-0.5	17.5	168.9
Dec. 15	05 21.84	+26 10.2	2.938	3.921	-0.67	-0.8	17.5	176.8
Dec. 25	05 15.09	+26 02.7	2.955	3.920	-0.60	-1.0	17.5	166.9
Jan. 4	05 09.08	+25 53.1	3.003	3.919	-0.47	-1.0	17.5	155.5
Jan. 14	05 04.36	+25 42.8	3.077	3.919	-0.31	-1.0	17.6	144.3
Jan. 24	05 01.29	+25 33.2	3.175	3.919	-0.12	-0.8	17.6	133.5
Feb. 3	05 00.11	+25 25.3	3.293	3.919	+0.08	-0.6	17.7	123.1
Feb. 13	05 00.87	+25 19.8	3.425	3.920	+0.26	-0.3	17.8	113.1
Feb. 23	05 03.51	+25 16.8	3.568	3.921	+0.44	-0.1	17.8	103.6
Mar. 4	05 07.90	+25 16.0	3.717	3.922	+0.60	+0.1	17.9	94.6
Mar. 14	05 13.87	+25 16.8	3.867	3.924	+0.74	+0.2	18.0	85.9
Mar. 24	05 21.24	+25 18.6	4.017	3.927	+0.86	+0.2	18.1	77.7

Comet 5D/Brorsen [Orbit 3]

Epoch = 2011 July 18.0 TT
T = 2012 Jan. 21.13790 TT
Peri. = 19.89383 e = 0.8296735
Node = 96.61846 2000.0 a = 3.1559596 AU
Incl. = 19.99329 n = 0.17579516
q = 0.5375435 AU P = 5.61 years

m1 = 9.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	21 14.70	-27 47.1	4.938	4.084	-0.18	-0.1	19.2	13.8/ 72	26.8
Jan. 19	21 24.53	-27 02.0	4.936	4.025	-0.19	-0.2	19.1	14.5/ 72	20.0
Jan. 29	21 34.79	-26 15.8	4.912	3.965	-0.21	-0.4	19.0	15.1/ 72	14.3
Feb. 8	21 45.39	-25 28.8	4.866	3.904	-0.22	-0.5	19.0	15.5/ 73	11.4
Feb. 18	21 56.24	-24 41.6	4.797	3.841	-0.23	-0.6	18.8	15.8/ 73	12.9
Feb. 28	22 07.26	-23 54.5	4.707	3.776	-0.25	-0.8	18.7	16.0/ 74	17.7
Mar. 10	22 18.40	-23 08.3	4.597	3.710	-0.27	-0.9	18.6	16.1/ 74	23.8
Mar. 20	22 29.56	-22 23.4	4.466	3.642	-0.29	-1.1	18.5	16.1/ 75	30.4
Mar. 30	22 40.72	-21 40.8	4.318	3.573	-0.32	-1.3	18.3	16.0/ 76	37.1
Apr. 9	22 51.80	-21 01.2	4.153	3.502	-0.34	-1.5	18.1	15.8/ 77	44.0
Apr. 19	23 02.76	-20 25.7	3.974	3.430	-0.38	-1.8	17.9	15.5/ 79	50.9
Apr. 29	23 13.52	-19 55.4	3.781	3.355	-0.41	-2.0	17.7	15.0/ 81	57.8
May 9	23 24.04	-19 31.6	3.578	3.279	-0.45	-2.3	17.5	14.5/ 84	64.8
May 19	23 34.22	-19 15.9	3.367	3.201	-0.50	-2.6	17.3	13.8/ 88	71.9
May 29	23 43.98	-19 09.9	3.150	3.120	-0.56	-3.0	17.0	13.1/ 93	79.1
June 8	23 53.19	-19 16.0	2.929	3.038	-0.62	-3.4	16.8	12.2/100	86.3
June 18	00 01.70	-19 36.4	2.707	2.954	-0.70	-3.8	16.5	11.4/110	93.8
June 28	00 09.32	-20 14.0	2.488	2.867	-0.79	-4.2	16.2	10.8/123	101.4
July 8	00 15.79	-21 12.2	2.273	2.778	-0.90	-4.6	15.8	10.7/140	109.2
July 18	00 20.76	-22 34.1	2.066	2.686	-1.03	-5.0	15.5	11.7/159	117.1
July 28	00 23.80	-24 23.3	1.870	2.592	-1.18	-5.2	15.1	13.9/177	125.2
Aug. 7	00 24.31	-26 42.0	1.690	2.495	-1.35	-5.2	14.7	17.2/192	133.1
Aug. 17	00 21.61	-29 30.3	1.527	2.395	-1.54	-4.7	14.3	21.2/204	140.3
Aug. 27	00 14.88	-32 43.9	1.387	2.292	-1.74	-3.5	13.9	25.1/214	145.5
Sept. 6	00 03.38	-36 11.0	1.272	2.186	-1.92	-1.3	13.5	28.1/223	146.8
Sept.16	23 46.81	-39 31.7	1.182	2.077	-2.02	+1.9	13.1	29.2/233	143.3
Sept.26	23 25.76	-42 20.8	1.118	1.964	-1.97	+5.8	12.8	28.1/244	135.6
Oct. 6	23 02.24	-44 14.6	1.075	1.847	-1.74	+9.8	12.4	24.9/257	125.8
Oct. 16	22 39.34	-45 01.8	1.048	1.726	-1.34	+12.9	12.1	20.6/273	115.1
Oct. 26	22 20.04	-44 45.1	1.030	1.601	-0.86	+14.8	11.7	16.4/294	104.5
Nov. 5	22 06.24	-43 36.2	1.013	1.471	-0.37	+15.5	11.3	13.8/320	94.4
Nov. 15	21 58.33	-41 48.6	0.990	1.337	+0.09	+15.4	10.8	14.1/347	85.0
Nov. 25	21 55.61	-39 31.3	0.955	1.198	+0.56	+14.8	10.3	16.5/ 5	76.2
Dec. 5	21 56.75	-36 47.3	0.903	1.056	+1.11	+13.8	9.6	19.7/ 10	67.9
Dec. 15	21 59.54	-33 33.7	0.828	0.913	+1.95	+12.2	8.8	23.5/ 2	59.7
Dec. 25	22 00.11	-29 38.6	0.728	0.772	+3.47	+9.3	7.8	33.1/336	51.0
Jan. 4	21 50.23	-24 35.5	0.608	0.646	+6.63	+2.3	6.6	66.5/308	39.8
Jan. 14	21 13.63	-17 31.3	0.496	0.559	+12.46	-14.4	5.5	113.4/296	22.5
Jan. 24	20 04.95	-08 39.9	0.461	0.541	+15.89	-21.7	5.2	92.3/292	11.5
Feb. 3	19 07.91	-02 42.8	0.531	0.602	+11.03	+6.2	6.0	38.5/289	31.7
Feb. 13	18 43.61	-00 38.2	0.638	0.715	+6.17	+23.3	7.2	11.0/288	46.3
Feb. 23	18 36.64	-00 03.8	0.734	0.852	+3.61	+27.6	8.2	2.5/301	56.9
Mar. 4	18 35.22	+00 08.8	0.805	0.995	+2.27	+27.9	9.1	2.0/300	66.3
Mar. 14	18 34.04	+00 18.8	0.852	1.138	+1.47	+27.4	9.8	5.4/282	75.7
Mar. 24	18 30.54	+00 29.5	0.879	1.278	+0.90	+26.9	10.4	11.0/274	85.6

Comet 5D/Brorsen [Orbit 1]

Epoch = 2011 July 18.0 TT
T = 2012 Feb. 5.24231 TT
Peri. = 19.37312 e = 0.8326579
Node = 96.79823 2000.0 a = 3.1576689 AU
Incl. = 19.88984 n = 0.17565244
q = 0.5284110 AU P = 5.61 years

m1 = 9.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	21 09.76	-27 44.0	5.044	4.179	-0.18	-0.1	19.3	13.6/ 72	25.7
Jan. 19	21 19.43	-27 01.2	5.041	4.122	-0.19	-0.2	19.3	14.2/ 73	18.9
Jan. 29	21 29.51	-26 17.4	5.016	4.064	-0.20	-0.3	19.2	14.7/ 73	13.3
Feb. 8	21 39.90	-25 33.1	4.969	4.005	-0.21	-0.4	19.1	15.1/ 73	10.9
Feb. 18	21 50.50	-24 48.6	4.899	3.944	-0.22	-0.5	19.0	15.3/ 74	13.3
Feb. 28	22 01.24	-24 04.4	4.808	3.882	-0.24	-0.7	18.9	15.5/ 74	18.6
Mar. 10	22 12.05	-23 21.2	4.695	3.818	-0.26	-0.8	18.8	15.5/ 75	25.0
Mar. 20	22 22.85	-22 39.7	4.563	3.753	-0.28	-1.0	18.6	15.4/ 76	31.7
Mar. 30	22 33.58	-22 00.6	4.413	3.686	-0.30	-1.2	18.5	15.2/ 77	38.6
Apr. 9	22 44.19	-21 24.9	4.246	3.617	-0.33	-1.4	18.3	14.9/ 78	45.6
Apr. 19	22 54.60	-20 53.5	4.064	3.547	-0.36	-1.6	18.1	14.5/ 80	52.7
Apr. 29	23 04.74	-20 27.7	3.870	3.475	-0.39	-1.8	17.9	13.9/ 83	59.9
May 9	23 14.54	-20 08.9	3.665	3.402	-0.43	-2.0	17.7	13.2/ 86	67.1
May 19	23 23.88	-19 58.6	3.453	3.326	-0.47	-2.3	17.5	12.4/ 90	74.4
May 29	23 32.67	-19 58.6	3.235	3.249	-0.52	-2.6	17.3	11.5/ 97	81.8
June 8	23 40.75	-20 11.0	3.014	3.170	-0.58	-2.9	17.0	10.5/105	89.4
June 18	23 47.93	-20 38.3	2.793	3.088	-0.65	-3.2	16.7	9.6/118	97.2
June 28	23 54.00	-21 23.0	2.575	3.005	-0.73	-3.5	16.4	9.2/136	105.1
July 8	23 58.63	-22 28.2	2.363	2.919	-0.82	-3.8	16.1	9.6/156	113.4
July 18	00 01.44	-23 56.2	2.161	2.831	-0.93	-4.0	15.8	11.3/176	121.8
July 28	00 01.97	-25 49.3	1.973	2.741	-1.05	-4.0	15.5	14.2/193	130.3
Aug. 7	23 59.64	-28 07.5	1.802	2.648	-1.17	-3.8	15.1	17.7/205	138.5
Aug. 17	23 53.85	-30 47.7	1.652	2.552	-1.31	-3.1	14.8	21.4/215	145.5
Aug. 27	23 44.05	-33 41.8	1.527	2.453	-1.42	-1.8	14.4	24.4/224	149.8
Sept. 6	23 30.04	-36 35.0	1.429	2.352	-1.49	+0.1	14.1	26.0/233	149.2
Sept.16	23 12.33	-39 08.1	1.358	2.247	-1.48	+2.5	13.8	25.6/242	143.5
Sept.26	22 52.34	-41 01.9	1.313	2.139	-1.36	+4.9	13.5	23.2/253	134.6
Oct. 6	22 32.41	-42 03.9	1.289	2.028	-1.15	+7.0	13.2	19.3/266	124.3
Oct. 16	22 15.03	-42 12.6	1.280	1.913	-0.89	+8.3	13.0	15.0/283	113.7
Oct. 26	22 02.03	-41 34.9	1.279	1.793	-0.62	+8.8	12.7	11.5/310	103.4
Nov. 5	21 54.29	-40 20.8	1.280	1.670	-0.39	+8.7	12.4	10.5/344	93.8
Nov. 15	21 51.83	-38 39.7	1.275	1.542	-0.20	+8.2	12.0	12.6/ 13	84.9
Nov. 25	21 54.14	-36 36.6	1.259	1.409	-0.04	+7.3	11.6	16.4/ 29	76.7
Dec. 5	22 00.61	-34 13.2	1.227	1.272	+0.10	+6.2	11.1	20.7/ 37	69.2
Dec. 15	22 10.45	-31 27.4	1.176	1.131	+0.26	+4.7	10.5	25.2/ 40	62.4
Dec. 25	22 22.79	-28 12.9	1.101	0.986	+0.51	+2.7	9.7	29.6/ 39	56.1
Jan. 4	22 36.34	-24 19.2	0.999	0.841	+0.96	-0.3	8.8	33.5/ 30	50.2
Jan. 14	22 48.30	-19 28.7	0.868	0.703	+1.97	-4.9	7.8	37.8/ 8	44.1
Jan. 24	22 51.87	-13 14.6	0.712	0.590	+4.37	-12.1	6.6	56.5/328	36.4
Feb. 3	22 31.77	-05 14.4	0.559	0.531	+9.50	-19.3	5.6	99.1/300	24.5
Feb. 13	21 34.73	+03 08.1	0.471	0.554	+14.85	-5.1	5.4	103.0/287	17.0
Feb. 23	20 28.53	+07 57.6	0.478	0.648	+13.26	+33.3	6.1	65.9/278	33.6
Mar. 4	19 44.39	+09 15.7	0.529	0.778	+8.67	+52.4	7.1	39.4/271	51.1
Mar. 14	19 17.77	+09 21.9	0.580	0.921	+5.35	+55.3	8.1	29.4/269	65.6
Mar. 24	18 57.88	+09 15.2	0.619	1.066	+3.24	+53.7	8.8	29.1/268	78.7

Comet D/1886 K1 (Brooks)

Epoch = 2011 July 18.0 TT
T = 2012 Feb. 6.45774 TT
Peri. = 208.62847 e = 0.4691819
Node = 39.18826 2000.0 a = 3.5521584 AU
Incl. = 10.93193 n = 0.14721959
q = 1.8855499 AU P = 6.69 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	10 09.96	+26 45.2	2.577	3.398	-0.83	+4.7	22.4	8.6/311	141.0
Jan. 19	10 05.08	+27 40.7	2.458	3.353	-0.88	+4.8	22.2	10.8/302	151.1
Jan. 29	09 58.09	+28 37.4	2.365	3.308	-0.92	+4.7	22.1	12.4/295	160.0
Feb. 8	09 49.47	+29 29.3	2.301	3.262	-0.94	+4.4	21.9	13.0/289	164.6
Feb. 18	09 39.97	+30 10.2	2.266	3.216	-0.95	+4.1	21.8	12.5/282	160.9
Feb. 28	09 30.55	+30 35.4	2.260	3.170	-0.94	+3.8	21.8	10.8/274	152.1
Mar. 10	09 22.16	+30 42.4	2.281	3.123	-0.91	+3.5	21.7	8.5/263	141.9
Mar. 20	09 15.63	+30 31.5	2.324	3.075	-0.87	+3.2	21.7	6.0/244	131.5
Mar. 30	09 11.48	+30 04.4	2.384	3.028	-0.83	+3.0	21.7	4.5/206	121.5
Apr. 9	09 09.94	+29 23.5	2.458	2.980	-0.78	+3.0	21.7	5.4/165	111.9
Apr. 19	09 11.02	+28 31.5	2.540	2.932	-0.74	+3.0	21.7	7.7/143	102.9
Apr. 29	09 14.52	+27 30.3	2.626	2.884	-0.71	+3.1	21.7	10.3/132	94.4
May 9	09 20.23	+26 21.1	2.713	2.835	-0.68	+3.3	21.7	12.8/126	86.5
May 19	09 27.86	+25 04.9	2.798	2.787	-0.66	+3.5	21.7	15.1/123	79.0
May 29	09 37.15	+23 42.1	2.878	2.739	-0.65	+3.7	21.7	17.3/121	71.9
June 8	09 47.85	+22 12.8	2.953	2.690	-0.64	+4.0	21.6	19.2/119	65.2
June 18	09 59.75	+20 37.2	3.019	2.642	-0.63	+4.3	21.6	20.9/119	58.9
June 28	10 12.67	+18 55.3	3.078	2.594	-0.63	+4.6	21.6	22.5/118	52.9
July 8	10 26.49	+17 07.1	3.127	2.546	-0.63	+4.9	21.5	23.9/118	47.1
July 18	10 41.06	+15 12.7	3.166	2.498	-0.64	+5.3	21.5	25.2/118	41.6
July 28	10 56.32	+13 12.3	3.196	2.452	-0.65	+5.6	21.4	26.5/118	36.2
Aug. 7	11 12.21	+11 06.0	3.216	2.405	-0.66	+6.0	21.3	27.7/118	31.1
Aug. 17	11 28.67	+08 54.2	3.226	2.360	-0.68	+6.3	21.3	28.8/118	26.1
Aug. 27	11 45.69	+06 37.3	3.227	2.315	-0.69	+6.7	21.2	29.8/118	21.3
Sept. 6	12 03.27	+04 15.7	3.219	2.272	-0.72	+7.0	21.1	30.8/118	16.7
Sept.16	12 21.41	+01 50.3	3.203	2.230	-0.74	+7.3	21.0	31.8/118	12.2
Sept.26	12 40.14	-00 38.4	3.178	2.189	-0.77	+7.6	20.9	32.7/118	7.8
Oct. 6	12 59.49	-03 09.2	3.146	2.150	-0.81	+7.9	20.8	33.6/117	4.0
Oct. 16	13 19.50	-05 41.2	3.108	2.112	-0.85	+8.1	20.7	34.4/117	3.0
Oct. 26	13 40.22	-08 13.1	3.063	2.077	-0.89	+8.3	20.6	35.1/116	6.2
Nov. 5	14 01.69	-10 43.5	3.013	2.044	-0.94	+8.3	20.5	35.8/115	10.1
Nov. 15	14 23.95	-13 10.7	2.959	2.014	-1.00	+8.3	20.4	36.5/114	14.1
Nov. 25	14 47.06	-15 33.0	2.901	1.986	-1.06	+8.2	20.3	37.0/112	18.1
Dec. 5	15 11.02	-17 48.5	2.839	1.962	-1.12	+7.9	20.2	37.4/111	22.1
Dec. 15	15 35.83	-19 55.2	2.775	1.940	-1.19	+7.6	20.1	37.8/109	26.1
Dec. 25	16 01.47	-21 51.3	2.710	1.922	-1.25	+7.0	20.0	37.9/107	30.0
Jan. 4	16 27.86	-23 34.6	2.643	1.907	-1.32	+6.3	19.9	38.0/105	33.9
Jan. 14	16 54.88	-25 03.8	2.575	1.896	-1.38	+5.5	19.8	37.9/103	37.8
Jan. 24	17 22.37	-26 17.3	2.506	1.889	-1.43	+4.6	19.8	37.6/100	41.8
Feb. 3	17 50.11	-27 14.6	2.437	1.886	-1.48	+3.5	19.7	37.1/ 98	45.7
Feb. 13	18 17.85	-27 55.4	2.368	1.886	-1.51	+2.3	19.6	36.4/ 96	49.7
Feb. 23	18 45.33	-28 20.3	2.299	1.891	-1.53	+1.1	19.6	35.5/ 93	53.8
Mar. 4	19 12.25	-28 30.5	2.229	1.899	-1.54	-0.1	19.5	34.4/ 91	57.9
Mar. 14	19 38.34	-28 28.1	2.160	1.911	-1.53	-1.4	19.5	33.0/ 89	62.2
Mar. 24	20 03.36	-28 15.4	2.090	1.927	-1.52	-2.6	19.4	31.4/ 88	66.7

Comet 21P/Giacobini-Zinner

Epoch = 2011 July 18.0 TT
T = 2012 Feb. 11.78132 TT
Peri. = 172.59192 e = 0.7070620
Node = 195.39842 2000.0 a = 3.5181625 AU
Incl. = 31.91065 n = 0.14935860
q = 1.0306033 AU P = 6.60 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	15 43.05	-05 13.2	4.414	3.930	+0.89	+1.8	21.7	54.8
Jan. 19	15 51.99	-04 55.5	4.226	3.872	+0.84	+2.8	21.5	62.6
Jan. 29	16 00.36	-04 27.7	4.027	3.813	+0.76	+3.9	21.3	70.5
Feb. 8	16 07.98	-03 48.9	3.822	3.753	+0.67	+5.1	21.1	78.5
Feb. 18	16 14.67	-02 58.3	3.614	3.692	+0.55	+6.3	20.9	86.7
Feb. 28	16 20.22	-01 55.4	3.405	3.630	+0.42	+7.6	20.7	95.1
Mar. 10	16 24.39	-00 39.5	3.199	3.566	+0.26	+8.9	20.4	103.6
Mar. 20	16 26.95	+00 49.2	3.001	3.502	+0.07	+10.1	20.2	112.2
Mar. 30	16 27.68	+02 30.1	2.815	3.436	-0.13	+11.1	19.9	120.9
Apr. 9	16 26.35	+04 21.5	2.644	3.369	-0.35	+11.9	19.6	129.4
Apr. 19	16 22.85	+06 20.4	2.492	3.301	-0.57	+12.2	19.4	137.3
Apr. 29	16 17.18	+08 22.0	2.363	3.231	-0.77	+11.8	19.1	143.8
May 9	16 09.50	+10 19.8	2.260	3.160	-0.92	+10.7	18.9	147.8
May 19	16 00.26	+12 06.4	2.184	3.088	-1.01	+8.8	18.6	147.9
May 29	15 50.12	+13 34.4	2.135	3.015	-1.02	+6.4	18.4	144.1
June 8	15 39.90	+14 38.1	2.111	2.940	-0.94	+3.6	18.2	137.5
June 18	15 30.49	+15 14.4	2.109	2.864	-0.78	+0.9	18.1	129.5
June 28	15 22.64	+15 23.5	2.124	2.786	-0.57	-1.6	17.9	120.9
July 8	15 16.93	+15 07.6	2.153	2.707	-0.32	-3.7	17.8	112.3
July 18	15 13.69	+14 30.6	2.189	2.627	-0.06	-5.4	17.6	104.0
July 28	15 13.05	+13 36.8	2.229	2.545	+0.20	-6.7	17.4	96.1
Aug. 7	15 15.01	+12 30.0	2.269	2.462	+0.45	-7.6	17.2	88.6
Aug. 17	15 19.48	+11 13.8	2.305	2.377	+0.69	-8.3	17.1	81.6
Aug. 27	15 26.33	+09 51.1	2.334	2.292	+0.91	-8.7	16.8	75.0
Sept. 6	15 35.47	+08 24.1	2.356	2.204	+1.13	-8.9	16.6	68.9
Sept.16	15 46.81	+06 55.0	2.367	2.116	+1.35	-9.0	16.4	63.3
Sept.26	16 00.27	+05 25.1	2.368	2.026	+1.56	-8.9	16.1	58.1
Oct. 6	16 15.86	+03 56.1	2.358	1.936	+1.77	-8.7	15.8	53.4
Oct. 16	16 33.57	+02 29.4	2.337	1.844	+1.99	-8.3	15.4	49.1
Oct. 26	16 53.48	+01 06.3	2.306	1.753	+2.22	-7.8	15.1	45.2
Nov. 5	17 15.67	-00 11.6	2.265	1.661	+2.46	-7.1	14.7	41.7
Nov. 15	17 40.24	-01 22.8	2.217	1.570	+2.71	-6.3	14.3	38.6
Nov. 25	18 07.32	-02 25.8	2.163	1.481	+2.97	-5.3	13.8	35.9
Dec. 5	18 37.03	-03 18.7	2.106	1.394	+3.24	-4.1	13.4	33.4
Dec. 15	19 09.42	-04 00.0	2.048	1.311	+3.51	-2.8	12.9	31.3
Dec. 25	19 44.51	-04 28.2	1.993	1.234	+3.77	-1.4	12.5	29.3
Jan. 4	20 22.19	-04 42.1	1.944	1.165	+4.00	+0.1	12.0	27.6
Jan. 14	21 02.19	-04 41.6	1.902	1.108	+4.19	+1.5	11.7	26.1
Jan. 24	21 44.08	-04 27.0	1.872	1.065	+4.32	+2.7	11.4	25.0
Feb. 3	22 27.29	-03 59.5	1.855	1.038	+4.38	+3.8	11.2	24.2
Feb. 13	23 11.12	-03 21.2	1.851	1.031	+4.38	+4.7	11.1	24.0
Feb. 23	23 54.89	-02 34.5	1.862	1.043	+4.31	+5.2	11.2	24.3
Mar. 4	00 37.97	-01 42.1	1.888	1.074	+4.19	+5.5	11.4	24.9
Mar. 14	01 19.84	-00 47.2	1.928	1.121	+4.03	+5.4	11.8	25.8
Mar. 24	02 00.16	+00 07.2	1.982	1.181	+3.85	+5.0	12.2	26.8

Comet 198P/ODAS

Epoch = 2011 July 18.0 TT
T = 2012 Feb. 15.98958 TT
Peri. = 69.00955 e = 0.4449174
Node = 358.62349 2000.0 a = 3.5959430 AU
Incl. = 1.34322 n = 0.14453894
q = 1.9960452 AU P = 6.82 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	20 53.72	-18 12.7	4.304	3.417	+1.32	+5.7	.	22.6
Jan. 19	21 06.90	-17 15.5	4.312	3.375	+1.35	+6.2	.	15.7
Jan. 29	21 20.37	-16 13.5	4.302	3.332	+1.37	+6.7	.	8.9
Feb. 8	21 34.07	-15 06.7	4.274	3.289	+1.38	+7.1	.	2.3
Feb. 18	21 47.91	-13 55.7	4.230	3.245	+1.39	+7.5	.	4.4
Feb. 28	22 01.84	-12 40.7	4.169	3.202	+1.40	+7.8	.	10.8
Mar. 10	22 15.81	-11 22.2	4.093	3.157	+1.40	+8.1	.	17.2
Mar. 20	22 29.77	-10 00.8	4.001	3.113	+1.39	+8.4	.	23.5
Mar. 30	22 43.68	-08 36.9	3.896	3.069	+1.38	+8.6	.	29.7
Apr. 9	22 57.51	-07 11.2	3.779	3.024	+1.37	+8.7	.	35.8
Apr. 19	23 11.21	-05 44.3	3.650	2.979	+1.35	+8.7	.	41.9
Apr. 29	23 24.75	-04 16.8	3.511	2.934	+1.33	+8.7	.	48.0
May 9	23 38.09	-02 49.5	3.364	2.889	+1.31	+8.7	.	54.0
May 19	23 51.17	-01 23.0	3.209	2.844	+1.28	+8.5	.	60.1
May 29	00 03.95	+00 02.0	3.049	2.799	+1.24	+8.3	.	66.2
June 8	00 16.33	+01 24.5	2.885	2.754	+1.19	+7.9	23.0	72.4
June 18	00 28.23	+02 43.7	2.718	2.709	+1.13	+7.5	22.8	78.7
June 28	00 39.52	+03 58.8	2.550	2.665	+1.05	+7.0	22.6	85.2
July 8	00 50.04	+05 08.6	2.383	2.621	+0.96	+6.3	22.3	91.9
July 18	00 59.60	+06 12.0	2.218	2.577	+0.84	+5.6	22.1	98.8
July 28	01 07.97	+07 07.8	2.057	2.534	+0.69	+4.7	21.8	106.1
Aug. 7	01 14.86	+07 54.7	1.903	2.491	+0.51	+3.6	21.5	113.8
Aug. 17	01 19.96	+08 31.1	1.758	2.450	+0.30	+2.5	21.2	121.9
Aug. 27	01 22.95	+08 55.6	1.624	2.409	+0.06	+1.1	20.9	130.7
Sept. 6	01 23.54	+09 06.8	1.505	2.369	-0.19	-0.3	20.6	140.2
Sept.16	01 21.60	+09 03.9	1.402	2.330	-0.44	-1.7	20.4	150.4
Sept.26	01 17.24	+08 47.2	1.320	2.293	-0.63	-2.8	20.1	161.3
Oct. 6	01 10.94	+08 18.8	1.261	2.257	-0.73	-3.5	19.9	172.7
Oct. 16	01 03.63	+07 43.3	1.227	2.222	-0.72	-3.6	19.7	175.4
Oct. 26	00 56.47	+07 07.2	1.218	2.190	-0.58	-2.9	19.5	163.7
Nov. 5	00 50.69	+06 38.0	1.232	2.159	-0.34	-1.6	19.4	152.2
Nov. 15	00 47.32	+06 22.0	1.267	2.131	-0.04	+0.1	19.4	141.3
Nov. 25	00 46.92	+06 23.1	1.320	2.105	+0.28	+2.0	19.3	131.1
Dec. 5	00 49.73	+06 43.0	1.386	2.081	+0.59	+3.8	19.3	121.7
Dec. 15	00 55.65	+07 21.2	1.463	2.060	+0.88	+5.5	19.3	113.2
Dec. 25	01 04.41	+08 15.8	1.548	2.042	+1.13	+6.9	19.3	105.3
Jan. 4	01 15.74	+09 24.4	1.637	2.026	+1.35	+8.0	19.3	98.2
Jan. 14	01 29.29	+10 43.9	1.730	2.014	+1.55	+8.8	19.3	91.6
Jan. 24	01 44.76	+12 11.5	1.826	2.005	+1.72	+9.3	19.3	85.5
Feb. 3	02 01.92	+13 44.1	1.923	1.999	+1.86	+9.5	19.3	79.8
Feb. 13	02 20.55	+15 18.6	2.020	1.996	+1.99	+9.4	19.3	74.4
Feb. 23	02 40.45	+16 52.3	2.118	1.997	+2.10	+9.0	19.3	69.3
Mar. 4	03 01.47	+18 22.4	2.216	2.001	+2.20	+8.4	19.3	64.5
Mar. 14	03 23.45	+19 46.5	2.313	2.008	+2.28	+7.6	19.3	59.9
Mar. 24	03 46.25	+21 02.3	2.409	2.018	+2.35	+6.6	19.3	55.5

Comet 3D/Biela [Orbit 2]

Epoch = 2011 July 18.0 TT
T = 2012 Feb. 27.03201 TT
Peri. = 274.27905 e = 0.7711740
Node = 193.96782 2000.0 a = 3.5142067 AU
Incl. = 7.93699 n = 0.14961086
q = 0.8041420 AU P = 6.59 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA °	Elong. °
Jan. 9	20 58.36	-11 34.1	5.063	4.201	-0.20	-0.5	.	14.0/ 77	26.0
Jan. 19	21 07.62	-11 01.0	5.066	4.144	-0.21	-0.6	.	14.7/ 75	18.4
Jan. 29	21 17.23	-10 23.2	5.046	4.085	-0.22	-0.6	.	15.2/ 74	11.2
Feb. 8	21 27.12	-09 41.1	5.005	4.025	-0.23	-0.7	.	15.6/ 73	5.6
Feb. 18	21 37.19	-08 54.9	4.942	3.963	-0.24	-0.8	.	15.9/ 72	7.2
Feb. 28	21 47.35	-08 05.2	4.857	3.901	-0.26	-0.9	.	16.1/ 71	13.5
Mar. 10	21 57.55	-07 12.4	4.751	3.837	-0.28	-1.0	.	16.1/ 70	20.5
Mar. 20	22 07.70	-06 17.0	4.626	3.772	-0.30	-1.1	.	16.0/ 69	27.6
Mar. 30	22 17.74	-05 19.5	4.482	3.706	-0.32	-1.3	.	15.9/ 68	34.7
Apr. 9	22 27.60	-04 20.6	4.322	3.638	-0.35	-1.4	.	15.6/ 67	41.9
Apr. 19	22 37.20	-03 20.8	4.146	3.569	-0.38	-1.6	.	15.1/ 67	49.0
Apr. 29	22 46.48	-02 20.7	3.958	3.499	-0.41	-1.8	.	14.5/ 66	56.2
May 9	22 55.34	-01 21.3	3.758	3.427	-0.45	-2.0	.	13.8/ 65	63.4
May 19	23 03.67	-00 23.2	3.549	3.354	-0.49	-2.2	.	12.8/ 64	70.7
May 29	23 11.37	+00 32.6	3.333	3.279	-0.54	-2.5	.	11.6/ 63	78.2
June 8	23 18.27	+01 24.8	3.113	3.203	-0.60	-2.8	.	10.1/ 62	85.8
June 18	23 24.21	+02 12.3	2.891	3.125	-0.66	-3.1	.	8.2/ 60	93.6
June 28	23 28.98	+02 53.3	2.671	3.045	-0.73	-3.5	.	5.9/ 57	101.7
July 8	23 32.30	+03 25.9	2.454	2.964	-0.82	-3.9	.	3.2/ 47	110.3
July 18	23 33.88	+03 47.7	2.245	2.881	-0.91	-4.4	.	1.1/318	119.2
July 28	23 33.40	+03 55.7	2.046	2.796	-1.00	-5.0	22.9	4.4/258	128.7
Aug. 7	23 30.49	+03 46.6	1.862	2.709	-1.10	-5.5	22.6	8.8/251	138.9
Aug. 17	23 24.93	+03 17.1	1.696	2.620	-1.19	-6.1	22.2	13.6/247	149.7
Aug. 27	23 16.59	+02 24.3	1.552	2.530	-1.27	-6.5	21.9	18.0/245	161.1
Sept. 6	23 05.71	+01 07.3	1.435	2.437	-1.31	-6.7	21.6	21.4/243	171.9
Sept.16	22 53.02	-00 30.9	1.346	2.343	-1.30	-6.5	21.2	23.0/241	169.7
Sept.26	22 39.67	-02 23.4	1.286	2.246	-1.24	-5.8	21.0	22.1/238	157.5
Oct. 6	22 27.16	-04 19.8	1.254	2.147	-1.14	-4.7	20.7	18.8/234	144.4
Oct. 16	22 16.93	-06 08.7	1.243	2.046	-1.01	-3.4	20.5	13.8/228	131.6
Oct. 26	22 10.05	-07 41.7	1.248	1.943	-0.88	-2.1	20.3	8.3/211	119.6
Nov. 5	22 07.15	-08 53.2	1.263	1.837	-0.77	-0.9	20.0	5.1/159	108.6
Nov. 15	22 08.41	-09 41.1	1.280	1.730	-0.70	+0.1	19.8	8.2/107	98.5
Nov. 25	22 13.71	-10 05.5	1.294	1.621	-0.65	+0.9	19.6	13.5/ 91	89.5
Dec. 5	22 22.87	-10 06.8	1.300	1.511	-0.64	+1.6	19.3	19.0/ 84	81.5
Dec. 15	22 35.63	-09 45.9	1.294	1.399	-0.67	+2.1	18.9	24.3/ 80	74.4
Dec. 25	22 51.83	-09 03.4	1.275	1.289	-0.72	+2.5	18.5	29.7/ 78	68.2
Jan. 4	23 11.39	-07 59.5	1.239	1.180	-0.80	+2.8	18.1	35.2/ 76	62.9
Jan. 14	23 34.32	-06 34.7	1.187	1.076	-0.91	+3.2	17.6	40.9/ 75	58.5
Jan. 24	00 00.77	-04 49.0	1.117	0.980	-1.05	+3.6	17.1	47.0/ 75	55.2
Feb. 3	00 30.99	-02 43.0	1.030	0.898	-1.21	+4.1	16.5	53.5/ 74	52.9
Feb. 13	01 05.36	-00 17.5	0.929	0.838	-1.39	+4.8	16.0	61.1/ 74	51.7
Feb. 23	01 44.58	+02 27.5	0.820	0.807	-1.63	+5.5	15.5	70.7/ 74	52.0
Mar. 4	02 30.14	+05 33.7	0.709	0.810	-2.05	+5.4	15.2	84.0/ 75	53.9
Mar. 14	03 24.86	+09 02.1	0.610	0.847	-2.92	+3.8	15.1	102.1/ 76	58.0
Mar. 24	04 32.59	+12 40.7	0.535	0.912	-4.50	+1.4	15.1	119.9/ 79	65.2

Comet 242P/Spahr

Epoch = 2011 July 18.0 TT
T = 2012 Apr. 2.44299 TT
Peri. = 247.46467 e = 0.2818435
Node = 180.87389 2000.0 a = 5.5421742 AU
Incl. = 32.53446 n = 0.07554119
q = 3.9801484 AU P = 13.05 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 9	23 54.64	-05 32.2	4.713	4.447	+0.70	+1.8	19.3	68.4
Jan. 19	00 01.67	-05 13.7	4.837	4.428	+0.78	+2.4	19.3	60.0
Jan. 29	00 09.49	-04 49.4	4.950	4.411	+0.85	+2.9	19.3	51.9
Feb. 8	00 17.99	-04 20.4	5.049	4.393	+0.91	+3.3	19.4	44.0
Feb. 18	00 27.07	-03 47.9	5.132	4.375	+0.96	+3.5	19.4	36.3
Feb. 28	00 36.63	-03 12.9	5.198	4.358	+1.00	+3.6	19.4	28.9
Mar. 10	00 46.59	-02 36.5	5.247	4.341	+1.03	+3.7	19.4	21.9
Mar. 20	00 56.87	-01 59.7	5.277	4.324	+1.05	+3.6	19.4	15.3
Mar. 30	01 07.40	-01 23.4	5.288	4.308	+1.07	+3.5	19.3	10.0
Apr. 9	01 18.11	-00 48.6	5.280	4.292	+1.08	+3.2	19.3	8.4
Apr. 19	01 28.93	-00 16.1	5.254	4.276	+1.09	+2.9	19.3	11.9
Apr. 29	01 39.82	+00 13.2	5.209	4.261	+1.09	+2.5	19.2	17.7
May 9	01 50.69	+00 38.4	5.147	4.246	+1.08	+2.0	19.2	24.1
May 19	02 01.49	+00 58.7	5.069	4.231	+1.07	+1.5	19.1	30.7
May 29	02 12.14	+01 13.2	4.976	4.216	+1.04	+0.8	19.1	37.4
June 8	02 22.58	+01 21.2	4.868	4.202	+1.01	+0.1	19.0	44.3
June 18	02 32.70	+01 21.8	4.749	4.188	+0.97	-0.8	18.9	51.2
June 28	02 42.42	+01 14.3	4.618	4.175	+0.92	-1.6	18.8	58.3
July 8	02 51.62	+00 57.9	4.479	4.162	+0.86	-2.6	18.7	65.5
July 18	03 00.20	+00 31.9	4.334	4.149	+0.78	-3.6	18.7	72.9
July 28	03 08.01	-00 04.2	4.184	4.137	+0.69	-4.7	18.6	80.4
Aug. 7	03 14.92	-00 51.0	4.032	4.125	+0.58	-5.7	18.5	88.1
Aug. 17	03 20.76	-01 48.5	3.883	4.114	+0.46	-6.8	18.4	96.0
Aug. 27	03 25.39	-02 56.5	3.737	4.103	+0.33	-7.8	18.3	104.1
Sept. 6	03 28.66	-04 14.4	3.600	4.092	+0.18	-8.6	18.2	112.4
Sept.16	03 30.44	-05 40.6	3.475	4.082	+0.02	-9.2	18.1	120.7
Sept.26	03 30.67	-07 12.8	3.366	4.072	-0.13	-9.5	18.0	129.0
Oct. 6	03 29.32	-08 47.8	3.276	4.063	-0.28	-9.3	17.9	136.8
Oct. 16	03 26.52	-10 21.1	3.208	4.054	-0.40	-8.7	17.8	143.6
Oct. 26	03 22.48	-11 48.1	3.165	4.046	-0.49	-7.6	17.8	148.4
Nov. 5	03 17.57	-13 03.7	3.149	4.038	-0.53	-6.0	17.8	149.9
Nov. 15	03 12.25	-14 03.8	3.160	4.031	-0.52	-4.2	17.8	147.6
Nov. 25	03 07.02	-14 45.6	3.197	4.024	-0.46	-2.2	17.8	142.3
Dec. 5	03 02.40	-15 07.6	3.258	4.017	-0.36	-0.3	17.8	135.2
Dec. 15	02 58.80	-15 10.5	3.339	4.011	-0.23	+1.5	17.9	127.2
Dec. 25	02 56.55	-14 55.9	3.438	4.006	-0.07	+3.0	17.9	118.8
Jan. 4	02 55.81	-14 26.4	3.550	4.001	+0.09	+4.1	18.0	110.5
Jan. 14	02 56.68	-13 44.9	3.671	3.997	+0.24	+5.0	18.0	102.2
Jan. 24	02 59.11	-12 54.5	3.798	3.993	+0.39	+5.7	18.1	94.2
Feb. 3	03 03.03	-11 57.7	3.927	3.989	+0.53	+6.1	18.2	86.5
Feb. 13	03 08.33	-10 57.2	4.055	3.987	+0.65	+6.2	18.2	79.0
Feb. 23	03 14.87	-09 54.8	4.179	3.984	+0.76	+6.2	18.3	71.9
Mar. 4	03 22.52	-08 52.4	4.297	3.982	+0.86	+6.1	18.4	65.1
Mar. 14	03 31.13	-07 51.5	4.408	3.981	+0.95	+5.8	18.4	58.6
Mar. 24	03 40.58	-06 53.4	4.509	3.980	+1.02	+5.4	18.5	52.4

Comet 163P/NEAT

Epoch = 2011 July 18.0 TT
T = 2012 Apr. 12.78943 TT
Peri. = 349.63817 e = 0.4539169
Node = 102.16843 2000.0 a = 3.7645137 AU
Incl. = 12.71294 n = 0.13494002
q = 2.0557373 AU P = 7.30 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	22 06.70	-20 50.6	4.419	3.706	+1.10	+6.3	.	38.9
Jan. 19	22 17.74	-19 47.6	4.464	3.665	+1.16	+6.6	.	31.8
Jan. 29	22 29.29	-18 41.5	4.492	3.624	+1.20	+6.9	.	25.0
Feb. 8	22 41.27	-17 32.7	4.503	3.582	+1.23	+7.1	.	18.5
Feb. 18	22 53.58	-16 21.8	4.496	3.539	+1.26	+7.3	.	12.9
Feb. 28	23 06.16	-15 09.3	4.471	3.497	+1.28	+7.4	.	9.1
Mar. 10	23 18.95	-13 55.7	4.429	3.454	+1.29	+7.4	.	9.5
Mar. 20	23 31.90	-12 41.6	4.370	3.411	+1.31	+7.4	.	13.6
Mar. 30	23 44.95	-11 27.7	4.295	3.367	+1.31	+7.3	.	19.0
Apr. 9	23 58.08	-10 14.7	4.205	3.323	+1.32	+7.1	.	24.9
Apr. 19	00 11.24	-09 03.2	4.100	3.279	+1.31	+6.9	.	30.8
Apr. 29	00 24.39	-07 54.0	3.983	3.234	+1.31	+6.6	.	36.9
May 9	00 37.49	-06 47.8	3.854	3.190	+1.30	+6.2	.	42.9
May 19	00 50.49	-05 45.5	3.714	3.145	+1.29	+5.8	.	49.0
May 29	01 03.36	-04 47.8	3.566	3.100	+1.27	+5.2	.	55.1
June 8	01 16.01	-03 55.7	3.409	3.055	+1.24	+4.6	.	61.3
June 18	01 28.36	-03 10.1	3.247	3.010	+1.20	+3.8	.	67.6
June 28	01 40.33	-02 31.8	3.081	2.965	+1.15	+3.0	22.9	73.9
July 8	01 51.79	-02 02.0	2.912	2.919	+1.08	+2.0	22.6	80.4
July 18	02 02.58	-01 41.5	2.741	2.874	+1.00	+1.0	22.4	87.1
July 28	02 12.54	-01 31.3	2.572	2.830	+0.89	-0.1	22.1	93.9
Aug. 7	02 21.42	-01 32.3	2.406	2.785	+0.76	-1.3	21.8	101.1
Aug. 17	02 28.98	-01 45.0	2.244	2.740	+0.59	-2.5	21.5	108.6
Aug. 27	02 34.92	-02 09.8	2.091	2.696	+0.40	-3.6	21.2	116.4
Sept. 6	02 38.92	-02 46.1	1.947	2.653	+0.18	-4.6	20.9	124.6
Sept.16	02 40.70	-03 32.4	1.817	2.610	-0.07	-5.4	20.6	133.1
Sept.26	02 40.03	-04 25.9	1.703	2.567	-0.32	-5.6	20.3	141.8
Oct. 6	02 36.83	-05 21.8	1.608	2.525	-0.55	-5.1	20.1	150.3
Oct. 16	02 31.35	-06 13.2	1.535	2.485	-0.72	-3.9	19.8	157.2
Oct. 26	02 24.13	-06 52.6	1.487	2.445	-0.81	-1.9	19.6	160.0
Nov. 5	02 16.07	-07 12.0	1.463	2.406	-0.78	+0.6	19.5	156.7
Nov. 15	02 08.30	-07 06.0	1.464	2.368	-0.64	+3.4	19.3	149.2
Nov. 25	02 01.90	-06 32.4	1.486	2.332	-0.42	+6.0	19.2	140.2
Dec. 5	01 57.75	-05 32.0	1.528	2.298	-0.14	+8.3	19.1	130.9
Dec. 15	01 56.36	-04 08.6	1.586	2.265	+0.15	+10.2	19.1	121.8
Dec. 25	01 57.90	-02 26.3	1.655	2.233	+0.44	+11.7	19.1	113.2
Jan. 4	02 02.34	-00 29.8	1.733	2.204	+0.71	+12.7	19.1	105.1
Jan. 14	02 09.49	+01 36.9	1.817	2.177	+0.96	+13.3	19.1	97.6
Jan. 24	02 19.08	+03 50.1	1.905	2.153	+1.18	+13.7	19.1	90.6
Feb. 3	02 30.88	+06 07.0	1.994	2.131	+1.38	+13.8	19.1	84.0
Feb. 13	02 44.64	+08 24.5	2.084	2.111	+1.55	+13.6	19.1	77.9
Feb. 23	03 00.16	+10 40.4	2.173	2.095	+1.71	+13.2	19.1	72.2
Mar. 4	03 17.28	+12 52.4	2.261	2.081	+1.85	+12.6	19.1	66.8
Mar. 14	03 35.82	+14 58.2	2.347	2.070	+1.98	+11.8	19.2	61.7
Mar. 24	03 55.65	+16 55.8	2.431	2.062	+2.10	+10.8	19.2	56.8

Comet C/2006 S3 (LONEOS)

Epoch = 2011 July 18.0 TT
T = 2012 Apr. 16.52684 TT
Peri. = 140.15020
Node = 38.36990 2000.0
Incl. = 166.03267
q = 5.1308625 AU
e = 1.0027255

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

0h TT 2011/12	R.A.(2000) h m	Decl. °′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	20 15.43	-07 20.9	7.105	6.191	+0.26	+0.4	15.6	20.2
Jan. 19	20 18.05	-07 16.7	7.102	6.151	+0.27	+0.8	15.6	13.8
Jan. 29	20 20.75	-07 09.0	7.069	6.111	+0.26	+1.1	15.5	12.3
Feb. 8	20 23.39	-06 58.3	7.008	6.072	+0.24	+1.3	15.5	17.1
Feb. 18	20 25.83	-06 45.2	6.917	6.033	+0.21	+1.5	15.5	24.7
Feb. 28	20 27.92	-06 30.0	6.798	5.995	+0.16	+1.7	15.4	33.3
Mar. 10	20 29.53	-06 13.5	6.655	5.958	+0.10	+1.7	15.3	42.3
Mar. 20	20 30.51	-05 56.3	6.489	5.921	+0.02	+1.7	15.3	51.5
Mar. 30	20 30.69	-05 39.0	6.303	5.884	-0.08	+1.7	15.2	61.0
Apr. 9	20 29.92	-05 22.3	6.103	5.849	-0.19	+1.5	15.1	70.7
Apr. 19	20 28.03	-05 07.3	5.892	5.814	-0.32	+1.3	15.0	80.6
Apr. 29	20 24.86	-04 54.7	5.677	5.780	-0.46	+0.9	14.9	90.8
May 9	20 20.26	-04 45.5	5.462	5.746	-0.62	+0.5	14.8	101.3
May 19	20 14.11	-04 40.6	5.256	5.713	-0.78	0.0	14.7	112.0
May 29	20 06.34	-04 41.1	5.065	5.681	-0.94	-0.7	14.6	123.0
June 8	19 56.95	-04 47.7	4.895	5.649	-1.09	-1.3	14.5	134.2
June 18	19 46.06	-05 00.9	4.754	5.619	-1.21	-2.0	14.4	145.3
June 28	19 33.93	-05 20.9	4.647	5.589	-1.30	-2.6	14.3	155.6
July 8	19 20.93	-05 47.4	4.580	5.560	-1.34	-3.2	14.3	162.9
July 18	19 07.57	-06 19.4	4.555	5.531	-1.32	-3.6	14.3	162.3
July 28	18 54.37	-06 55.7	4.571	5.504	-1.25	-3.9	14.3	154.4
Aug. 7	18 41.88	-07 34.9	4.627	5.477	-1.13	-4.0	14.3	143.7
Aug. 17	18 30.53	-08 15.3	4.718	5.452	-0.99	-4.1	14.3	132.3
Aug. 27	18 20.64	-08 55.9	4.838	5.427	-0.83	-4.0	14.3	120.9
Sept. 6	18 12.38	-09 35.5	4.980	5.403	-0.66	-3.8	14.4	109.6
Sept.16	18 05.80	-10 13.4	5.137	5.380	-0.49	-3.6	14.4	98.6
Sept.26	18 00.85	-10 49.1	5.301	5.358	-0.34	-3.3	14.5	87.9
Oct. 6	17 57.43	-11 22.3	5.464	5.336	-0.20	-3.0	14.5	77.4
Oct. 16	17 55.38	-11 52.7	5.622	5.316	-0.08	-2.8	14.6	67.2
Oct. 26	17 54.54	-12 20.3	5.768	5.297	+0.02	-2.5	14.6	57.3
Nov. 5	17 54.72	-12 44.9	5.897	5.279	+0.10	-2.2	14.7	47.6
Nov. 15	17 55.75	-13 06.4	6.005	5.262	+0.17	-1.8	14.7	38.1
Nov. 25	17 57.44	-13 24.9	6.088	5.245	+0.22	-1.5	14.7	28.8
Dec. 5	17 59.63	-13 40.3	6.145	5.230	+0.25	-1.2	14.7	20.0
Dec. 15	18 02.13	-13 52.7	6.173	5.216	+0.27	-0.9	14.7	12.5
Dec. 25	18 04.80	-14 02.2	6.170	5.203	+0.27	-0.7	14.7	9.5
Jan. 4	18 07.45	-14 08.8	6.138	5.191	+0.25	-0.4	14.7	14.4
Jan. 14	18 09.91	-14 12.8	6.075	5.180	+0.21	-0.2	14.7	22.5
Jan. 24	18 12.02	-14 14.3	5.984	5.170	+0.16	+0.1	14.6	31.5
Feb. 3	18 13.59	-14 13.6	5.866	5.161	+0.08	+0.3	14.6	40.9
Feb. 13	18 14.41	-14 10.9	5.724	5.154	-0.01	+0.4	14.5	50.6
Feb. 23	18 14.31	-14 06.4	5.561	5.147	-0.13	+0.6	14.5	60.5
Mar. 4	18 13.05	-14 00.6	5.383	5.142	-0.26	+0.7	14.4	70.7
Mar. 14	18 10.43	-13 53.6	5.195	5.137	-0.42	+0.8	14.3	81.2
Mar. 24	18 06.23	-13 45.7	5.001	5.134	-0.60	+0.9	14.2	92.0

Comet 171P/Spahr

Epoch = 2011 July 18.0 TT
T = 2012 Apr. 30.22772 TT
Peri. = 347.10439 e = 0.5032943
Node = 101.74872 2000.0 a = 3.5513330 AU
Incl. = 21.94731 n = 0.14727091
q = 1.7639672 AU P = 6.69 years

m1 = 10.8 + 5 log(Delta) + 20.0 log(r(t+20))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	21 15.64	-27 41.2	4.675	3.824	+1.21	+4.6	.	27.0
Jan. 19	21 27.75	-26 54.7	4.687	3.782	+1.25	+4.9	.	20.6
Jan. 29	21 40.24	-26 06.1	4.680	3.739	+1.28	+5.0	.	15.3
Feb. 8	21 53.02	-25 15.8	4.654	3.695	+1.30	+5.1	.	12.1
Feb. 18	22 06.01	-24 24.4	4.609	3.651	+1.31	+5.2	.	12.5
Feb. 28	22 19.14	-23 32.3	4.546	3.606	+1.32	+5.2	.	16.2
Mar. 10	22 32.36	-22 40.2	4.465	3.560	+1.32	+5.1	.	21.5
Mar. 20	22 45.60	-21 49.0	4.368	3.514	+1.32	+5.0	.	27.4
Mar. 30	22 58.83	-20 59.3	4.256	3.467	+1.32	+4.7	.	33.5
Apr. 9	23 12.00	-20 12.0	4.129	3.420	+1.31	+4.4	.	39.8
Apr. 19	23 25.06	-19 28.2	3.990	3.372	+1.29	+3.9	.	46.1
Apr. 29	23 37.97	-18 48.9	3.840	3.324	+1.27	+3.4	.	52.4
May 9	23 50.67	-18 15.2	3.681	3.275	+1.24	+2.7	.	58.8
May 19	00 03.10	-17 48.5	3.515	3.225	+1.21	+1.9	.	65.3
May 29	00 15.20	-17 30.0	3.343	3.175	+1.17	+0.9	.	71.8
June 8	00 26.86	-17 21.2	3.167	3.125	+1.11	-0.3	22.9	78.4
June 18	00 37.97	-17 23.8	2.990	3.074	+1.04	-1.5	22.6	85.0
June 28	00 48.40	-17 39.3	2.814	3.023	+0.96	-3.0	22.4	91.9
July 8	00 57.96	-18 09.4	2.640	2.971	+0.85	-4.6	22.1	98.8
July 18	01 06.45	-18 55.3	2.472	2.919	+0.72	-6.3	21.8	105.9
July 28	01 13.60	-19 58.2	2.312	2.866	+0.55	-8.0	21.4	113.1
Aug. 7	01 19.10	-21 18.2	2.162	2.814	+0.35	-9.6	21.1	120.3
Aug. 17	01 22.64	-22 54.0	2.025	2.761	+0.12	-10.9	20.8	127.5
Aug. 27	01 23.89	-24 42.6	1.904	2.708	-0.13	-11.6	20.5	134.3
Sept. 6	01 22.57	-26 38.2	1.801	2.654	-0.40	-11.4	20.2	140.1
Sept.16	01 18.62	-28 31.9	1.719	2.601	-0.64	-10.1	19.9	144.1
Sept.26	01 12.22	-30 13.0	1.659	2.548	-0.83	-7.6	19.7	145.4
Oct. 6	01 03.97	-31 29.3	1.620	2.495	-0.91	-4.2	19.4	143.4
Oct. 16	00 54.89	-32 11.1	1.603	2.443	-0.87	-0.1	19.2	138.7
Oct. 26	00 46.19	-32 12.5	1.606	2.391	-0.71	+4.0	19.0	132.3
Nov. 5	00 39.07	-31 32.5	1.625	2.339	-0.46	+7.8	18.9	125.0
Nov. 15	00 34.45	-30 14.5	1.658	2.288	-0.16	+11.0	18.7	117.4
Nov. 25	00 32.81	-28 24.4	1.700	2.238	+0.15	+13.6	18.6	109.9
Dec. 5	00 34.30	-26 08.1	1.750	2.189	+0.45	+15.6	18.4	102.7
Dec. 15	00 38.78	-23 31.7	1.805	2.142	+0.72	+17.2	18.3	95.8
Dec. 25	00 45.97	-20 39.7	1.862	2.096	+0.96	+18.4	18.2	89.3
Jan. 4	00 55.59	-17 35.8	1.920	2.051	+1.17	+19.3	18.1	83.2
Jan. 14	01 07.33	-14 23.3	1.978	2.009	+1.36	+19.9	18.0	77.5
Jan. 24	01 20.93	-11 04.5	2.036	1.969	+1.53	+20.3	17.9	72.1
Feb. 3	01 36.20	-07 41.6	2.091	1.932	+1.68	+20.5	17.8	67.0
Feb. 13	01 52.96	-04 17.0	2.146	1.898	+1.81	+20.4	17.8	62.2
Feb. 23	02 11.10	-00 52.6	2.199	1.867	+1.94	+20.2	17.7	57.7
Mar. 4	02 30.54	+02 29.3	2.250	1.840	+2.07	+19.7	17.7	53.4
Mar. 14	02 51.21	+05 46.2	2.301	1.816	+2.19	+19.0	17.6	49.3
Mar. 24	03 13.08	+08 55.9	2.351	1.797	+2.30	+18.0	17.6	45.4

Comet 60P/Tsuchinshan

Epoch = 2011 July 18.0 TT
T = 2012 May 13.40583 TT
Peri. = 216.29698 e = 0.5391813
Node = 267.76732 2000.0 a = 3.5097859 AU
Incl. = 3.60723 n = 0.14989362
q = 1.6173751 AU P = 6.58 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	22 39.40	-05 05.9	4.492	3.953	+0.85	+4.7	.	51.3
Jan. 19	22 47.89	-04 19.4	4.566	3.910	+0.92	+5.2	.	43.4
Jan. 29	22 57.05	-03 27.2	4.623	3.866	+0.97	+5.7	.	35.7
Feb. 8	23 06.77	-02 30.0	4.662	3.822	+1.02	+6.2	.	28.2
Feb. 18	23 16.96	-01 28.3	4.683	3.776	+1.06	+6.6	.	20.9
Feb. 28	23 27.54	-00 22.7	4.685	3.731	+1.09	+6.9	.	13.8
Mar. 10	23 38.44	+00 46.1	4.667	3.684	+1.11	+7.1	.	7.0
Mar. 20	23 49.59	+01 57.5	4.631	3.637	+1.14	+7.4	.	2.9
Mar. 30	00 00.94	+03 11.0	4.575	3.589	+1.15	+7.5	.	7.8
Apr. 9	00 12.45	+04 26.1	4.502	3.540	+1.16	+7.6	.	14.3
Apr. 19	00 24.06	+05 42.0	4.410	3.490	+1.17	+7.6	.	20.9
Apr. 29	00 35.74	+06 58.4	4.303	3.440	+1.17	+7.6	.	27.4
May 9	00 47.44	+08 14.6	4.180	3.389	+1.17	+7.6	.	33.9
May 19	00 59.11	+09 30.1	4.044	3.338	+1.16	+7.4	.	40.4
May 29	01 10.70	+10 44.5	3.895	3.286	+1.15	+7.3	.	46.8
June 8	01 22.15	+11 57.0	3.734	3.233	+1.12	+7.0	.	53.4
June 18	01 33.38	+13 07.3	3.565	3.179	+1.09	+6.7	.	59.9
June 28	01 44.31	+14 14.7	3.387	3.125	+1.05	+6.4	.	66.6
July 8	01 54.82	+15 18.8	3.204	3.071	+0.99	+6.0	.	73.3
July 18	02 04.76	+16 18.8	3.016	3.015	+0.92	+5.5	.	80.3
July 28	02 13.98	+17 14.2	2.826	2.959	+0.83	+5.0	.	87.4
Aug. 7	02 22.25	+18 04.3	2.636	2.903	+0.71	+4.4	.	94.8
Aug. 17	02 29.33	+18 48.2	2.449	2.846	+0.56	+3.7	.	102.6
Aug. 27	02 34.92	+19 24.9	2.266	2.789	+0.37	+2.8	.	110.7
Sept. 6	02 38.66	+19 53.1	2.091	2.731	+0.16	+1.8	22.9	119.4
Sept.16	02 40.24	+20 11.2	1.927	2.673	-0.09	+0.6	22.5	128.6
Sept.26	02 39.34	+20 17.3	1.777	2.614	-0.36	-0.8	22.2	138.5
Oct. 6	02 35.77	+20 09.3	1.646	2.555	-0.61	-2.4	21.8	149.0
Oct. 16	02 29.62	+19 45.6	1.536	2.497	-0.83	-4.0	21.5	160.2
Oct. 26	02 21.35	+19 05.7	1.450	2.438	-0.95	-5.4	21.2	171.3
Nov. 5	02 11.85	+18 11.8	1.392	2.379	-0.95	-6.2	20.9	173.1
Nov. 15	02 02.39	+17 09.4	1.360	2.321	-0.81	-6.3	20.6	161.8
Nov. 25	01 54.29	+16 06.2	1.354	2.263	-0.56	-5.5	20.4	149.8
Dec. 5	01 48.70	+15 10.8	1.371	2.205	-0.24	-4.1	20.2	138.2
Dec. 15	01 46.32	+14 30.1	1.404	2.149	+0.11	-2.2	20.1	127.3
Dec. 25	01 47.46	+14 07.7	1.451	2.093	+0.47	-0.3	19.9	117.3
Jan. 4	01 52.13	+14 05.2	1.506	2.039	+0.80	+1.6	19.8	108.2
Jan. 14	02 00.13	+14 21.3	1.564	1.986	+1.11	+3.2	19.6	99.9
Jan. 24	02 11.18	+14 53.7	1.625	1.935	+1.39	+4.6	19.5	92.4
Feb. 3	02 25.05	+15 39.3	1.685	1.886	+1.64	+5.5	19.3	85.7
Feb. 13	02 41.45	+16 34.5	1.742	1.841	+1.87	+6.1	19.2	79.6
Feb. 23	03 00.20	+17 35.5	1.797	1.798	+2.09	+6.3	19.0	74.1
Mar. 4	03 21.13	+18 38.6	1.848	1.758	+2.29	+6.1	18.8	69.1
Mar. 14	03 44.05	+19 39.7	1.897	1.723	+2.48	+5.5	18.7	64.6
Mar. 24	04 08.81	+20 34.9	1.943	1.692	+2.64	+4.5	18.5	60.5

Comet C/2010 R1 (LINEAR)

Epoch = 2011 July 18.0 TT
T = 2012 May 15.34995 TT
Peri. = 113.78387
Node = 343.70331 2000.0
Incl. = 156.95058
q = 5.6684537 AU
e = 0.9968057

m1 = 8.2 + 5 log(Delta) + 7.5 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	18 32.64	-04 31.5	7.571	6.662	+0.25	+1.4	18.8	20.9
Jan. 19	18 35.18	-04 17.1	7.491	6.626	+0.23	+1.9	18.7	26.6
Jan. 29	18 37.44	-03 58.2	7.383	6.590	+0.19	+2.3	18.7	34.0
Feb. 8	18 39.31	-03 35.0	7.251	6.555	+0.13	+2.7	18.6	42.3
Feb. 18	18 40.62	-03 07.7	7.096	6.520	+0.06	+3.1	18.6	51.0
Feb. 28	18 41.24	-02 36.5	6.922	6.486	-0.02	+3.5	18.5	60.1
Mar. 10	18 41.01	-02 01.8	6.734	6.453	-0.12	+3.8	18.4	69.5
Mar. 20	18 39.79	-01 24.0	6.534	6.419	-0.23	+4.0	18.3	79.0
Mar. 30	18 37.45	-00 43.7	6.330	6.387	-0.36	+4.2	18.2	88.8
Apr. 9	18 33.84	-00 01.8	6.126	6.355	-0.50	+4.3	18.2	98.7
Apr. 19	18 28.88	+00 40.8	5.930	6.324	-0.64	+4.2	18.1	108.7
Apr. 29	18 22.51	+01 22.8	5.746	6.293	-0.78	+4.0	18.0	118.8
May 9	18 14.74	+02 02.8	5.582	6.263	-0.91	+3.6	17.9	128.7
May 19	18 05.67	+02 39.0	5.443	6.233	-1.02	+3.1	17.8	138.1
May 29	17 55.48	+03 09.8	5.336	6.204	-1.10	+2.4	17.8	146.3
June 8	17 44.46	+03 33.5	5.263	6.176	-1.15	+1.5	17.7	151.7
June 18	17 33.01	+03 48.8	5.228	6.148	-1.15	+0.6	17.7	152.7
June 28	17 21.52	+03 55.1	5.230	6.121	-1.11	-0.3	17.7	148.6
July 8	17 10.44	+03 52.4	5.269	6.095	-1.03	-1.1	17.7	141.2
July 18	17 00.15	+03 41.2	5.340	6.069	-0.92	-1.8	17.7	132.1
July 28	16 50.92	+03 22.7	5.440	6.044	-0.79	-2.4	17.7	122.3
Aug. 7	16 42.98	+02 58.3	5.562	6.020	-0.66	-2.9	17.8	112.2
Aug. 17	16 36.41	+02 29.6	5.700	5.996	-0.52	-3.2	17.8	102.2
Aug. 27	16 31.22	+01 58.0	5.848	5.973	-0.38	-3.3	17.9	92.2
Sept. 6	16 27.38	+01 25.0	5.999	5.951	-0.26	-3.3	17.9	82.5
Sept.16	16 24.79	+00 51.8	6.147	5.930	-0.15	-3.2	17.9	72.9
Sept.26	16 23.32	+00 19.3	6.286	5.909	-0.05	-3.1	18.0	63.6
Oct. 6	16 22.86	-00 11.5	6.412	5.890	+0.04	-2.8	18.0	54.6
Oct. 16	16 23.25	-00 40.0	6.521	5.871	+0.11	-2.5	18.0	45.9
Oct. 26	16 24.34	-01 05.4	6.609	5.852	+0.17	-2.2	18.1	37.6
Nov. 5	16 26.01	-01 27.2	6.673	5.835	+0.21	-1.8	18.1	30.0
Nov. 15	16 28.09	-01 45.0	6.711	5.818	+0.24	-1.3	18.1	23.7
Nov. 25	16 30.44	-01 58.2	6.721	5.803	+0.25	-0.8	18.1	20.0
Dec. 5	16 32.93	-02 06.5	6.702	5.788	+0.25	-0.3	18.0	20.3
Dec. 15	16 35.40	-02 09.4	6.655	5.774	+0.23	+0.3	18.0	24.5
Dec. 25	16 37.69	-02 06.8	6.580	5.761	+0.20	+0.9	18.0	31.1
Jan. 4	16 39.66	-01 58.1	6.478	5.748	+0.15	+1.5	18.0	39.0
Jan. 14	16 41.12	-01 43.1	6.353	5.737	+0.08	+2.1	17.9	47.7
Jan. 24	16 41.93	-01 21.7	6.206	5.726	0.00	+2.8	17.8	56.8
Feb. 3	16 41.88	-00 53.7	6.042	5.716	-0.11	+3.5	17.8	66.2
Feb. 13	16 40.80	-00 19.1	5.866	5.707	-0.23	+4.1	17.7	76.0
Feb. 23	16 38.51	+00 22.1	5.682	5.699	-0.37	+4.7	17.6	86.0
Mar. 4	16 34.84	+01 09.3	5.497	5.692	-0.52	+5.3	17.6	96.3
Mar. 14	16 29.64	+02 01.8	5.318	5.686	-0.68	+5.7	17.5	106.8
Mar. 24	16 22.82	+02 58.5	5.152	5.681	-0.85	+5.9	17.4	117.5

Comet D/1892 T1 (Barnard)

Epoch = 2011 July 18.0 TT
T = 2012 June 25.8940 TT
Peri. = 202.2784 e = 0.570624
Node = 201.4433 2000.0 a = 3.678608 AU
Incl. = 27.8732 n = 0.1396944
q = 1.579505 AU P = 7.06 years

m1 = 16.5 + 5 log(Delta) + 10.0 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 9	17 55.49	-02 40.1	5.100	4.258	-0.30	-0.5	.	15.6/ 82	28.1
Jan. 19	18 05.82	-02 17.8	4.998	4.215	-0.31	-0.6	.	15.5/ 79	33.7
Jan. 29	18 15.97	-01 47.6	4.880	4.171	-0.33	-0.6	.	15.3/ 75	39.8
Feb. 8	18 25.83	-01 09.3	4.747	4.127	-0.34	-0.6	.	14.9/ 72	46.3
Feb. 18	18 35.26	-00 22.9	4.600	4.082	-0.36	-0.7	.	14.4/ 68	53.0
Feb. 28	18 44.15	+00 31.3	4.441	4.036	-0.38	-0.8	.	13.8/ 63	59.9
Mar. 10	18 52.38	+01 33.1	4.273	3.990	-0.41	-0.8	.	13.1/ 58	66.9
Mar. 20	18 59.78	+02 42.1	4.099	3.943	-0.43	-0.9	.	12.3/ 52	74.1
Mar. 30	19 06.22	+03 57.8	3.919	3.895	-0.46	-1.0	.	11.4/ 44	81.3
Apr. 9	19 11.54	+05 19.3	3.738	3.847	-0.49	-1.1	.	10.5/ 35	88.7
Apr. 19	19 15.56	+06 45.3	3.558	3.798	-0.52	-1.2	.	9.7/ 23	96.1
Apr. 29	19 18.11	+08 14.5	3.382	3.748	-0.56	-1.3	.	9.1/ 9	103.5
May 9	19 19.04	+09 44.5	3.214	3.697	-0.60	-1.5	.	8.9/352	111.0
May 19	19 18.21	+11 12.5	3.056	3.646	-0.63	-1.7	.	9.1/335	118.3
May 29	19 15.54	+12 35.1	2.912	3.594	-0.67	-2.0	.	9.8/318	125.3
June 8	19 11.05	+13 48.1	2.784	3.541	-0.70	-2.2	.	10.7/304	131.7
June 18	19 04.90	+14 46.8	2.676	3.488	-0.72	-2.5	.	11.5/291	137.0
June 28	18 57.42	+15 26.9	2.588	3.434	-0.73	-2.8	.	12.1/279	140.5
July 8	18 49.12	+15 44.6	2.524	3.379	-0.73	-3.1	.	12.2/267	141.5
July 18	18 40.65	+15 38.0	2.483	3.324	-0.72	-3.3	.	11.9/255	139.7
July 28	18 32.71	+15 07.4	2.463	3.268	-0.70	-3.4	.	11.1/242	135.6
Aug. 7	18 25.96	+14 14.9	2.465	3.211	-0.67	-3.4	.	10.1/226	129.9
Aug. 17	18 20.97	+13 04.8	2.484	3.153	-0.64	-3.3	.	9.3/207	123.1
Aug. 27	18 18.06	+11 41.9	2.518	3.095	-0.62	-3.1	.	9.1/186	115.8
Sept. 6	18 17.45	+10 11.2	2.564	3.036	-0.59	-2.8	.	9.7/165	108.4
Sept.16	18 19.19	+08 37.6	2.617	2.977	-0.57	-2.4	.	11.0/147	101.0
Sept.26	18 23.20	+07 04.8	2.676	2.917	-0.56	-2.1	.	12.8/134	93.7
Oct. 6	18 29.38	+05 36.2	2.736	2.857	-0.56	-1.7	.	14.7/124	86.6
Oct. 16	18 37.58	+04 14.3	2.796	2.796	-0.56	-1.3	.	16.7/116	79.7
Oct. 26	18 47.63	+03 00.8	2.852	2.735	-0.57	-1.0	.	18.7/110	73.1
Nov. 5	18 59.38	+01 57.3	2.904	2.673	-0.59	-0.7	.	20.6/105	66.8
Nov. 15	19 12.65	+01 04.9	2.950	2.611	-0.61	-0.5	23.0	22.4/100	60.6
Nov. 25	19 27.32	+00 24.2	2.988	2.549	-0.64	-0.3	22.9	24.1/ 97	54.7
Dec. 5	19 43.26	-00 04.0	3.018	2.487	-0.67	-0.1	22.9	25.6/ 93	49.1
Dec. 15	20 00.33	-00 19.5	3.039	2.424	-0.70	0.0	22.8	27.1/ 91	43.6
Dec. 25	20 18.42	-00 22.3	3.052	2.362	-0.74	+0.1	22.7	28.6/ 88	38.4
Jan. 4	20 37.46	-00 12.4	3.055	2.300	-0.79	+0.2	22.5	29.9/ 86	33.5
Jan. 14	20 57.33	+00 09.8	3.050	2.239	-0.83	+0.2	22.4	31.2/ 84	28.8
Jan. 24	21 18.00	+00 43.7	3.036	2.178	-0.88	+0.2	22.3	32.4/ 82	24.4
Feb. 3	21 39.40	+01 28.5	3.014	2.118	-0.94	+0.3	22.2	33.6/ 81	20.3
Feb. 13	22 01.49	+02 23.0	2.985	2.059	-0.99	+0.3	22.0	34.7/ 79	16.7
Feb. 23	22 24.28	+03 26.1	2.949	2.002	-1.05	+0.4	21.9	35.8/ 79	13.6
Mar. 4	22 47.74	+04 36.2	2.908	1.946	-1.11	+0.5	21.7	36.9/ 78	11.4
Mar. 14	23 11.89	+05 51.3	2.862	1.893	-1.17	+0.6	21.6	37.9/ 78	10.4
Mar. 24	23 36.77	+07 09.6	2.812	1.842	-1.24	+0.8	21.4	38.9/ 78	10.7

Comet 152P/Helin-Lawrence

Epoch = 2011 July 18.0 TT
T = 2012 July 9.42545 TT
Peri. = 163.84046 e = 0.3075448
Node = 91.92075 2000.0 a = 4.4998673 AU
Incl. = 9.86604 n = 0.10325344
q = 3.1159565 AU P = 9.55 years

m1 = 5.6 + 5 log(Delta) + 17.5 log(r(t-250))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	12 06.87	+10 47.6	3.654	4.105	+0.16	+2.2	20.2	110.6
Jan. 19	12 08.43	+11 09.8	3.493	4.079	0.00	+3.2	20.1	120.3
Jan. 29	12 08.42	+11 42.1	3.345	4.052	-0.16	+4.1	20.0	130.3
Feb. 8	12 06.77	+12 23.0	3.215	4.026	-0.32	+4.7	19.8	140.6
Feb. 18	12 03.58	+13 10.2	3.108	4.000	-0.45	+5.0	19.7	150.8
Feb. 28	11 59.03	+14 00.4	3.028	3.974	-0.56	+4.9	19.6	160.2
Mar. 10	11 53.46	+14 49.5	2.975	3.948	-0.61	+4.4	19.5	166.6
Mar. 20	11 47.37	+15 33.0	2.952	3.922	-0.61	+3.4	19.5	164.8
Mar. 30	11 41.29	+16 07.4	2.959	3.896	-0.55	+2.2	19.5	156.7
Apr. 9	11 35.77	+16 29.8	2.992	3.870	-0.45	+0.9	19.4	146.9
Apr. 19	11 31.29	+16 38.6	3.050	3.844	-0.31	-0.5	19.4	136.8
Apr. 29	11 28.20	+16 33.6	3.128	3.818	-0.15	-1.8	19.4	126.9
May 9	11 26.70	+16 15.5	3.222	3.793	+0.02	-3.0	19.5	117.4
May 19	11 26.86	+15 45.5	3.327	3.768	+0.18	-4.0	19.5	108.2
May 29	11 28.66	+15 05.1	3.440	3.742	+0.33	-5.0	19.5	99.5
June 8	11 32.00	+14 15.6	3.556	3.717	+0.48	-5.7	19.6	91.1
June 18	11 36.75	+13 18.3	3.673	3.693	+0.60	-6.4	19.6	83.2
June 28	11 42.75	+12 14.5	3.788	3.668	+0.71	-6.9	19.6	75.5
July 8	11 49.89	+11 05.1	3.897	3.644	+0.81	-7.4	19.6	68.2
July 18	11 58.00	+09 51.0	4.000	3.620	+0.90	-7.8	19.6	61.1
July 28	12 06.98	+08 33.2	4.095	3.596	+0.97	-8.1	19.6	54.2
Aug. 7	12 16.71	+07 12.1	4.179	3.572	+1.04	-8.3	19.6	47.5
Aug. 17	12 27.11	+05 48.7	4.251	3.549	+1.10	-8.5	19.6	41.0
Aug. 27	12 38.08	+04 23.6	4.312	3.526	+1.15	-8.6	19.6	34.6
Sept. 6	12 49.57	+02 57.2	4.359	3.504	+1.19	-8.7	19.6	28.3
Sept.16	13 01.51	+01 30.5	4.392	3.482	+1.23	-8.7	19.5	22.2
Sept.26	13 13.86	+00 03.9	4.412	3.460	+1.27	-8.6	19.5	16.3
Oct. 6	13 26.55	-01 21.8	4.416	3.439	+1.30	-8.4	19.5	10.9
Oct. 16	13 39.55	-02 46.0	4.405	3.418	+1.33	-8.2	19.4	7.3
Oct. 26	13 52.80	-04 08.1	4.379	3.398	+1.35	-7.9	19.3	8.2
Nov. 5	14 06.25	-05 27.3	4.339	3.379	+1.36	-7.6	19.3	12.7
Nov. 15	14 19.86	-06 43.0	4.283	3.359	+1.37	-7.2	19.2	18.4
Nov. 25	14 33.55	-07 54.7	4.214	3.341	+1.37	-6.7	19.1	24.5
Dec. 5	14 47.25	-09 01.7	4.130	3.323	+1.36	-6.2	19.0	30.8
Dec. 15	15 00.87	-10 03.6	4.034	3.305	+1.35	-5.6	18.9	37.3
Dec. 25	15 14.33	-10 59.8	3.925	3.288	+1.32	-5.0	18.8	43.9
Jan. 4	15 27.51	-11 50.0	3.806	3.272	+1.28	-4.4	18.7	50.7
Jan. 14	15 40.28	-12 34.0	3.677	3.257	+1.22	-3.8	18.6	57.5
Jan. 24	15 52.50	-13 11.7	3.540	3.242	+1.15	-3.1	18.4	64.6
Feb. 3	16 03.99	-13 43.1	3.396	3.228	+1.06	-2.5	18.3	71.8
Feb. 13	16 14.59	-14 08.6	3.248	3.215	+0.95	-2.0	18.1	79.3
Feb. 23	16 24.08	-14 28.4	3.098	3.202	+0.82	-1.5	18.0	87.0
Mar. 4	16 32.24	-14 43.1	2.948	3.190	+0.66	-1.0	17.8	95.0
Mar. 14	16 38.86	-14 53.5	2.800	3.179	+0.48	-0.7	17.7	103.3
Mar. 24	16 43.70	-15 00.4	2.658	3.169	+0.29	-0.4	17.5	112.0

Comet 158P/Kowal-LINEAR

Epoch = 2011 July 18.0 TT
T = 2012 Sept. 18.60590 TT
Peri. = 231.92946 e = 0.0301934
Node = 137.30914 2000.0 a = 4.7198301 AU
Incl. = 7.90825 n = 0.09612017
q = 4.5773224 AU P = 10.25 years

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	20 22.52	-18 10.5	5.591	4.651	+1.06	+3.0	19.4	15.5
Jan. 19	20 33.09	-17 40.6	5.621	4.649	+1.06	+3.3	19.4	7.9
Jan. 29	20 43.68	-17 07.9	5.631	4.646	+1.05	+3.5	19.4	1.0
Feb. 8	20 54.21	-16 32.9	5.621	4.644	+1.04	+3.7	19.4	7.4
Feb. 18	21 04.59	-15 55.9	5.590	4.642	+1.01	+3.8	19.4	14.9
Feb. 28	21 14.73	-15 17.8	5.540	4.640	+0.98	+3.9	19.4	22.5
Mar. 10	21 24.56	-14 39.1	5.471	4.638	+0.94	+3.9	19.4	30.0
Mar. 20	21 33.98	-14 00.6	5.385	4.636	+0.89	+3.8	19.3	37.6
Mar. 30	21 42.93	-13 23.0	5.282	4.634	+0.84	+3.6	19.3	45.3
Apr. 9	21 51.32	-12 47.1	5.165	4.632	+0.77	+3.3	19.2	53.0
Apr. 19	21 59.05	-12 13.9	5.036	4.631	+0.70	+3.0	19.2	60.8
Apr. 29	22 06.04	-11 44.1	4.896	4.629	+0.61	+2.5	19.1	68.8
May 9	22 12.19	-11 18.8	4.749	4.627	+0.52	+2.0	19.0	77.0
May 19	22 17.39	-10 58.9	4.597	4.625	+0.42	+1.4	19.0	85.3
May 29	22 21.55	-10 45.2	4.443	4.623	+0.30	+0.7	18.9	93.9
June 8	22 24.56	-10 38.5	4.290	4.621	+0.18	-0.1	18.8	102.7
June 18	22 26.33	-10 39.6	4.144	4.620	+0.05	-0.9	18.7	111.9
June 28	22 26.81	-10 48.9	4.006	4.618	-0.09	-1.7	18.7	121.4
July 8	22 25.95	-11 06.4	3.883	4.616	-0.21	-2.5	18.6	131.2
July 18	22 23.82	-11 31.6	3.777	4.615	-0.33	-3.2	18.5	141.4
July 28	22 20.51	-12 03.5	3.693	4.613	-0.43	-3.7	18.5	151.8
Aug. 7	22 16.22	-12 40.4	3.634	4.611	-0.49	-4.0	18.4	162.6
Aug. 17	22 11.28	-13 20.1	3.603	4.610	-0.52	-4.0	18.4	173.3
Aug. 27	22 06.05	-13 59.9	3.601	4.608	-0.51	-3.7	18.4	174.9
Sept. 6	22 00.93	-14 37.4	3.629	4.607	-0.46	-3.3	18.4	164.1
Sept.16	21 56.36	-15 10.0	3.685	4.605	-0.37	-2.6	18.5	153.2
Sept.26	21 52.68	-15 36.3	3.767	4.604	-0.25	-1.9	18.5	142.5
Oct. 6	21 50.17	-15 54.9	3.873	4.602	-0.12	-1.0	18.6	132.0
Oct. 16	21 49.00	-16 05.4	3.996	4.601	+0.02	-0.2	18.6	121.8
Oct. 26	21 49.24	-16 07.7	4.134	4.600	+0.17	+0.6	18.7	112.0
Nov. 5	21 50.89	-16 02.0	4.283	4.598	+0.30	+1.3	18.8	102.4
Nov. 15	21 53.89	-15 48.9	4.436	4.597	+0.42	+2.0	18.9	93.1
Nov. 25	21 58.13	-15 28.7	4.591	4.596	+0.54	+2.7	18.9	84.1
Dec. 5	22 03.49	-15 02.2	4.744	4.595	+0.63	+3.2	19.0	75.3
Dec. 15	22 09.82	-14 29.9	4.891	4.594	+0.72	+3.7	19.1	66.8
Dec. 25	22 16.99	-13 52.4	5.029	4.592	+0.79	+4.2	19.1	58.5
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 51.51	-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 10.76	-08 53.2	5.549	4.586	+0.98	+5.6	19.3	12.1
Mar. 4	23 20.57	-07 56.9	5.572	4.586	+0.98	+5.6	19.3	5.4
Mar. 14	23 30.40	-07 00.5	5.575	4.585	+0.98	+5.6	19.3	4.7
Mar. 24	23 40.19	-06 04.6	5.558	4.584	+0.97	+5.5	19.3	11.1

Comet 246P/NEAT

Epoch = 2011 July 18.0 TT
T = 2013 Jan. 29.24722 TT
Peri. = 176.31606 e = 0.2850525
Node = 78.79332 2000.0 a = 4.0257819 AU
Incl. = 15.97100 n = 0.12201935
q = 2.8782227 AU P = 8.08 years

m1 = 3.0 + 5 log(Delta) + 20.0 log(r(t-150))

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	09 45.28	+30 32.2	3.514	4.366	-0.51	+5.8	19.1	146.3
Jan. 19	09 40.17	+31 29.8	3.431	4.345	-0.64	+5.4	19.0	155.4
Jan. 29	09 33.80	+32 24.2	3.376	4.323	-0.71	+4.7	18.9	161.8
Feb. 8	09 26.66	+33 11.4	3.352	4.301	-0.73	+3.6	18.9	162.0
Feb. 18	09 19.34	+33 47.7	3.358	4.278	-0.69	+2.3	18.9	155.9
Feb. 28	09 12.48	+34 11.2	3.392	4.256	-0.58	+1.0	18.8	146.9
Mar. 10	09 06.66	+34 21.0	3.452	4.233	-0.43	-0.3	18.9	137.1
Mar. 20	09 02.34	+34 18.0	3.533	4.210	-0.26	-1.4	18.9	127.2
Mar. 30	08 59.78	+34 03.5	3.631	4.187	-0.07	-2.4	18.9	117.5
Apr. 9	08 59.09	+33 39.4	3.741	4.164	+0.12	-3.2	18.9	108.2
Apr. 19	09 00.27	+33 07.3	3.860	4.140	+0.29	-3.8	18.9	99.2
Apr. 29	09 03.18	+32 28.9	3.982	4.116	+0.45	-4.4	19.0	90.5
May 9	09 07.69	+31 45.1	4.104	4.092	+0.59	-4.8	19.0	82.3
May 19	09 13.59	+30 56.9	4.222	4.068	+0.71	-5.2	19.0	74.4
May 29	09 20.70	+30 04.9	4.335	4.044	+0.82	-5.5	19.0	66.8
June 8	09 28.85	+29 09.5	4.439	4.020	+0.90	-5.8	19.0	59.5
June 18	09 37.87	+28 11.1	4.533	3.995	+0.97	-6.1	19.0	52.4
June 28	09 47.62	+27 10.0	4.615	3.971	+1.03	-6.4	19.0	45.6
July 8	09 57.97	+26 06.4	4.684	3.946	+1.08	-6.6	19.0	39.0
July 18	10 08.80	+25 00.7	4.738	3.921	+1.12	-6.8	19.0	32.7
July 28	10 20.03	+23 53.1	4.777	3.896	+1.15	-6.9	19.0	26.6
Aug. 7	10 31.57	+22 44.0	4.800	3.871	+1.18	-7.0	18.9	21.0
Aug. 17	10 43.35	+21 33.8	4.807	3.845	+1.20	-7.1	18.9	16.2
Aug. 27	10 55.31	+20 23.0	4.798	3.820	+1.21	-7.1	18.8	13.1
Sept. 6	11 07.39	+19 12.0	4.772	3.795	+1.21	-7.0	18.8	12.7
Sept.16	11 19.53	+18 01.5	4.729	3.769	+1.22	-6.9	18.7	15.5
Sept.26	11 31.69	+16 52.1	4.670	3.744	+1.21	-6.8	18.6	20.0
Oct. 6	11 43.81	+15 44.4	4.595	3.718	+1.20	-6.5	18.6	25.5
Oct. 16	11 55.83	+14 39.4	4.505	3.693	+1.19	-6.2	18.5	31.6
Oct. 26	12 07.70	+13 37.6	4.401	3.667	+1.16	-5.7	18.4	37.9
Nov. 5	12 19.35	+12 40.2	4.283	3.642	+1.13	-5.2	18.2	44.4
Nov. 15	12 30.69	+11 47.9	4.153	3.616	+1.09	-4.6	18.1	51.2
Nov. 25	12 41.63	+11 01.9	4.012	3.591	+1.04	-3.9	18.0	58.2
Dec. 5	12 52.06	+10 23.1	3.862	3.566	+0.98	-3.1	17.9	65.4
Dec. 15	13 01.85	+09 52.6	3.704	3.540	+0.90	-2.1	17.7	72.8
Dec. 25	13 10.86	+09 31.3	3.542	3.515	+0.80	-1.1	17.6	80.5
Jan. 4	13 18.89	+09 20.3	3.377	3.490	+0.69	0.0	17.4	88.4
Jan. 14	13 25.77	+09 20.2	3.213	3.466	+0.55	+1.1	17.2	96.6
Jan. 24	13 31.27	+09 31.6	3.051	3.441	+0.39	+2.3	17.1	105.0
Feb. 3	13 35.19	+09 54.2	2.897	3.416	+0.21	+3.3	16.9	113.8
Feb. 13	13 37.31	+10 27.4	2.754	3.392	+0.02	+4.2	16.7	122.8
Feb. 23	13 37.49	+11 09.6	2.624	3.368	-0.18	+4.8	16.6	132.0
Mar. 4	13 35.65	+11 57.6	2.513	3.344	-0.38	+5.0	16.4	141.2
Mar. 14	13 31.88	+12 47.4	2.424	3.321	-0.54	+4.6	16.3	149.7
Mar. 24	13 26.44	+13 33.8	2.359	3.297	-0.66	+3.7	16.2	156.5

Comet C/2010 S1 (LINEAR)

Epoch = 2011 July 18.0 TT
T = 2013 May 20.24289 TT
Peri. = 118.58991
Node = 93.44129 2000.0
Incl. = 125.33673
q = 5.9018638 AU
e = 1.0000047

m1 = 5.6 + 5 log(Delta) + 7.5 log(r)

0h TT 2011/12	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 9	01 38.86	+57 38.1	7.935	8.342	-0.44	-5.4	17.0	111.2
Jan. 19	01 34.43	+56 44.2	8.014	8.296	-0.27	-5.0	17.0	103.4
Jan. 29	01 31.71	+55 54.6	8.101	8.251	-0.12	-4.3	17.0	95.3
Feb. 8	01 30.49	+55 11.4	8.193	8.206	+0.01	-3.6	17.0	87.3
Feb. 18	01 30.58	+54 35.7	8.284	8.161	+0.12	-2.7	17.0	79.4
Feb. 28	01 31.73	+54 08.4	8.370	8.116	+0.20	-1.9	17.0	71.8
Mar. 10	01 33.77	+53 49.8	8.447	8.072	+0.27	-1.0	17.0	64.6
Mar. 20	01 36.50	+53 39.9	8.510	8.027	+0.33	-0.1	17.0	58.0
Mar. 30	01 39.75	+53 38.7	8.559	7.983	+0.36	+0.7	17.0	52.0
Apr. 9	01 43.38	+53 45.7	8.589	7.939	+0.38	+1.5	17.0	47.0
Apr. 19	01 47.21	+54 00.7	8.599	7.896	+0.39	+2.3	17.0	43.1
Apr. 29	01 51.11	+54 23.3	8.589	7.852	+0.38	+3.0	17.0	40.6
May 9	01 54.93	+54 52.9	8.557	7.809	+0.36	+3.6	17.0	39.8
May 19	01 58.51	+55 29.1	8.505	7.766	+0.32	+4.2	16.9	40.7
May 29	02 01.70	+56 11.5	8.431	7.724	+0.26	+4.8	16.9	43.2
June 8	02 04.32	+56 59.6	8.338	7.681	+0.18	+5.3	16.8	46.9
June 18	02 06.15	+57 52.8	8.228	7.639	+0.08	+5.8	16.8	51.7
June 28	02 06.98	+58 50.4	8.101	7.597	-0.05	+6.1	16.7	57.2
July 8	02 06.52	+59 51.6	7.960	7.556	-0.20	+6.4	16.7	63.2
July 18	02 04.48	+60 55.2	7.809	7.515	-0.40	+6.4	16.6	69.6
July 28	02 00.53	+61 59.6	7.650	7.474	-0.62	+6.3	16.6	76.2
Aug. 7	01 54.29	+63 02.7	7.488	7.433	-0.89	+5.9	16.5	83.0
Aug. 17	01 45.44	+64 01.8	7.325	7.393	-1.17	+5.2	16.4	89.9
Aug. 27	01 33.74	+64 53.4	7.167	7.353	-1.46	+4.0	16.4	96.6
Sept. 6	01 19.12	+65 33.3	7.017	7.313	-1.72	+2.4	16.3	103.2
Sept.16	01 01.90	+65 57.2	6.879	7.274	-1.91	+0.4	16.3	109.3
Sept.26	00 42.78	+66 00.9	6.758	7.235	-1.99	-1.9	16.2	114.7
Oct. 6	00 22.85	+65 41.6	6.658	7.196	-1.94	-4.3	16.1	119.0
Oct. 16	00 03.42	+64 58.8	6.579	7.158	-1.78	-6.5	16.1	122.0
Oct. 26	23 45.65	+63 54.1	6.526	7.120	-1.53	-8.3	16.1	123.2
Nov. 5	23 30.39	+62 31.4	6.498	7.082	-1.23	-9.6	16.0	122.7
Nov. 15	23 18.05	+60 55.9	6.495	7.045	-0.94	-10.3	16.0	120.3
Nov. 25	23 08.65	+59 13.2	6.515	7.008	-0.66	-10.4	16.0	116.3
Dec. 5	23 02.01	+57 28.7	6.556	6.972	-0.42	-10.2	16.0	111.1
Dec. 15	22 57.77	+55 47.1	6.615	6.936	-0.22	-9.5	16.0	105.1
Dec. 25	22 55.57	+54 12.2	6.687	6.901	-0.05	-8.6	16.0	98.5
Jan. 4	22 55.05	+52 46.6	6.767	6.866	+0.08	-7.4	16.0	91.6
Jan. 14	22 55.88	+51 32.4	6.851	6.831	+0.19	-6.2	16.0	84.7
Jan. 24	22 57.75	+50 30.4	6.935	6.797	+0.27	-4.9	16.0	77.9
Feb. 3	23 00.43	+49 41.4	7.014	6.763	+0.32	-3.6	16.1	71.3
Feb. 13	23 03.67	+49 05.1	7.084	6.730	+0.36	-2.4	16.1	65.2
Feb. 23	23 07.28	+48 41.4	7.142	6.698	+0.38	-1.2	16.1	59.7
Mar. 4	23 11.08	+48 29.8	7.185	6.665	+0.38	0.0	16.1	55.0
Mar. 14	23 14.90	+48 29.4	7.211	6.634	+0.37	+1.0	16.1	51.2
Mar. 24	23 18.57	+48 39.5	7.219	6.603	+0.34	+2.0	16.0	48.7

Comet C/2010 U3 (Boattini)

Epoch = 2011 July 18.0 TT
T = 2019 Feb. 23.52421 TT
Peri. = 88.08447
Node = 42.97886 2000.0
Incl. = 55.80161
q = 8.4332575 AU
e = 1.0064847

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

0h TT 2011/12	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 9	02 24.34	+09 19.0	17.764	18.101	-0.05	+0.7	19.3	108.6
Jan. 19	02 23.88	+09 26.1	17.890	18.059	-0.01	+0.9	19.3	98.4
Jan. 29	02 23.80	+09 34.9	18.020	18.017	+0.03	+1.1	19.3	88.3
Feb. 8	02 24.08	+09 45.6	18.150	17.975	+0.06	+1.2	19.3	78.3
Feb. 18	02 24.73	+09 57.7	18.273	17.933	+0.10	+1.4	19.3	68.4
Feb. 28	02 25.70	+10 11.3	18.386	17.891	+0.13	+1.5	19.3	58.6
Mar. 10	02 26.98	+10 26.0	18.484	17.849	+0.15	+1.6	19.3	49.0
Mar. 20	02 28.52	+10 41.7	18.563	17.807	+0.18	+1.6	19.3	39.5
Mar. 30	02 30.28	+10 58.0	18.621	17.765	+0.19	+1.7	19.3	30.2
Apr. 9	02 32.22	+11 14.9	18.654	17.723	+0.21	+1.7	19.3	20.9
Apr. 19	02 34.29	+11 31.9	18.662	17.681	+0.22	+1.7	19.3	11.9
Apr. 29	02 36.44	+11 48.9	18.643	17.639	+0.22	+1.7	19.3	4.0
May 9	02 38.62	+12 05.7	18.597	17.597	+0.22	+1.6	19.3	7.5
May 19	02 40.79	+12 22.0	18.524	17.555	+0.21	+1.6	19.3	16.2
May 29	02 42.89	+12 37.8	18.425	17.512	+0.20	+1.5	19.3	25.1
June 8	02 44.88	+12 52.7	18.302	17.470	+0.18	+1.4	19.2	34.1
June 18	02 46.70	+13 06.7	18.156	17.428	+0.16	+1.3	19.2	43.1
June 28	02 48.33	+13 19.5	17.991	17.386	+0.14	+1.2	19.2	52.2
July 8	02 49.70	+13 31.2	17.809	17.344	+0.11	+1.0	19.1	61.3
July 18	02 50.79	+13 41.5	17.614	17.302	+0.08	+0.9	19.1	70.5
July 28	02 51.56	+13 50.4	17.410	17.260	+0.04	+0.7	19.1	79.9
Aug. 7	02 51.97	+13 57.8	17.201	17.218	0.00	+0.6	19.0	89.3
Aug. 17	02 52.02	+14 03.7	16.991	17.176	-0.03	+0.4	19.0	98.8
Aug. 27	02 51.69	+14 08.1	16.786	17.134	-0.07	+0.3	19.0	108.5
Sept. 6	02 50.97	+14 11.0	16.590	17.092	-0.11	+0.2	18.9	118.3
Sept.16	02 49.88	+14 12.6	16.408	17.050	-0.14	0.0	18.9	128.3
Sept.26	02 48.44	+14 12.8	16.245	17.007	-0.17	-0.1	18.9	138.4
Oct. 6	02 46.70	+14 11.9	16.104	16.965	-0.20	-0.2	18.9	148.6
Oct. 16	02 44.72	+14 10.1	15.989	16.923	-0.22	-0.2	18.8	158.9
Oct. 26	02 42.55	+14 07.7	15.903	16.881	-0.23	-0.3	18.8	169.3
Nov. 5	02 40.29	+14 05.0	15.848	16.839	-0.23	-0.3	18.8	178.6
Nov. 15	02 38.01	+14 02.4	15.824	16.797	-0.22	-0.2	18.8	169.3
Nov. 25	02 35.81	+14 00.2	15.831	16.755	-0.20	-0.1	18.8	158.8
Dec. 5	02 33.76	+13 58.8	15.867	16.713	-0.18	0.0	18.8	148.2
Dec. 15	02 31.96	+13 58.5	15.930	16.671	-0.15	+0.1	18.8	137.6
Dec. 25	02 30.45	+13 59.6	16.017	16.629	-0.12	+0.3	18.8	127.1
Jan. 4	02 29.30	+14 02.4	16.122	16.587	-0.08	+0.5	18.8	116.7
Jan. 14	02 28.54	+14 07.0	16.241	16.545	-0.03	+0.6	18.8	106.3
Jan. 24	02 28.19	+14 13.5	16.369	16.502	+0.01	+0.8	18.8	96.1
Feb. 3	02 28.26	+14 21.9	16.500	16.460	+0.05	+1.0	18.8	86.0
Feb. 13	02 28.73	+14 32.1	16.629	16.418	+0.09	+1.2	18.8	76.0
Feb. 23	02 29.60	+14 44.1	16.750	16.376	+0.12	+1.4	18.8	66.2
Mar. 4	02 30.82	+14 57.7	16.860	16.334	+0.15	+1.5	18.8	56.5
Mar. 14	02 32.36	+15 12.6	16.955	16.292	+0.18	+1.6	18.8	46.9
Mar. 24	02 34.18	+15 28.8	17.030	16.250	+0.21	+1.7	18.8	37.5

彗星年表　２０１１

編集委員会

門　田　健　一

○佐　藤　裕　久

下　元　繁　男

関　　勉

中　村　彰　正

村　岡　健　治

（五十音順・敬称略）

○印は編集長

村岡健治氏は 2010 年 12 月８日、くも膜下出血のため死去いたしました。享年 55 歳。

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