THE COMET HANDBOOK FOR 2010

彗 星 年 表

2010

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INDEX TO EPHEMERIDES

Comet 29P/Schwassmann-Wachnmann
Epoch 2004 July 14.0 TT = JDT 2453200.5
T 2004 July 10.82749 TT Sato
q 5.7235773 (2000.0) P Q
n 0.06726259 Peri. 48.95625 +0.99214596 -0.03564065
a 5.9880715 Node 312.71549 -0.02848459 +0.86898888
e 0.0441702 Incl. 9.39208 +0.12179911 +0.49354642
P 14.65
From 12105 observations 1902 Mar. 5-2009 Dec. 30, mean residual 0″.72.

Comet C/2009 O4 (Hill)
Epoch 2010 Jan. 4.0 TT = JDT 2455200.5
T 2010 Jan. 1.27948 TT Sato
q 2.5638150 (2000.0) P Q
z -0.0003749 Peri. 223.73142 +0.70847600 -0.69505890
+/-0.0000072 Node 172.93900 +0.12812019 +0.29707341
e 1.0009613 Incl. 95.83017 -0.69400791 -0.65470644
From 745 observations 2009 July 30-Dec. 12, mean residual 0″.52.

Comet 118P/Shoemaker-Levy
Epoch 2010 Jan. 4.0 TT = JDT 2455200.5
T 2010 Jan. 2.30643 TT Sato
q 1.9839212 (2000.0) P Q
n 0.15284610 Peri. 302.14381 -0.07330147 -0.99485664
a 3.4644408 Node 151.80688 +0.95760193 -0.08979242
e 0.4273474 Incl. 8.50936 +0.27861341 +0.04687836
P 6.45
From 1123 observations 1995 June 22-2009 Dec. 28, mean residual 0″.73. Non-gravitational parameters A1 = +0.23 +/- 0.02, A2 = -0.1810 +/- 0.0006.

Comet C/2009 T3 (LINEAR)
Epoch 2010 Jan. 4.0 TT = JDT 2455200.5
T 2010 Jan. 12.07075 TT Sato
q 2.2810733 (2000.0) P Q
z +0.0003392 Peri. 32.45254 +0.81835346 +0.35773198
+/-0.0000426 Node 60.09278 +0.35051199 -0.93091516
e 0.9992263 Incl. 148.74105 +0.45545468 +0.07365324
From 344 observations 2009 Oct. 14-2010 Jan. 9, mean residual 0″.54.

Comet 82P/Gehrels
Epoch 2010 Jan. 4.0 TT = JDT 2455200.5
T 2010 Jan. 12.08181 TT Sato
q 3.6333757 (2000.0) P Q
n 0.11703390 Peri. 226.26865 -0.27178076 -0.96221017
a 4.1393129 Node 239.50877 +0.88849999 -0.24412241
e 0.1222273 Incl. 1.12610 +0.36973368 -0.12064753
P 8.42
From 98 observations 1975 Oct. 27-2002 Mar. 8, mean residual 0″.71.

Comet P/2009 T2 (La Sagra)
Epoch 2010 Jan. 4.0 TT = JDT 2455200.5
T 2010 Jan. 12.84445 TT Sato
q 1.7547422 (2000.0) P Q
n 0.04707741 Peri. 215.47263 +0.35820643 -0.89166183
a 7.5961647 Node 215.98562 +0.92780165 +0.37307218
e 0.7689963 Incl. 28.10644 +0.10427014 -0.25642998
P 20.94
From 785 observations 2009 Sept. 18-2010 Jan. 12, mean residual 0″.43.

Comet 224P/LINEAR-NEAT
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Jan. 31.83441 TT Sato
q 1.9895940 (2000.0) P Q
n 0.15658702 Peri. 16.09316 +0.55509512 -0.81796712
a 3.4090410 Node 40.52851 +0.73523707 +0.39762167
e 0.4163772 Incl. 13.43609 +0.38896767 +0.41572443
P 6.29
From 93 observations 2003 Nov. 20-2009 Nov. 11, mean residual 0″.56.

Comet C/2009 K2 (Catalina)
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 7.52007 TT Sato

q	3.2461649	(2000.0)	P	Q
z	+0.0006506	Peri.	147.70119	+0.29553335	+0.57374220
	+/-0.0000049	Node	123.80559	-0.94715343	+0.07156500
e	0.9978880	Incl.	66.82124	+0.12474138	-0.81590339

From 588 observations 2009 May 18-Nov. 6, mean residual 0″.57.

Comet 203P/Korlevic
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 8.20880 TT Sato

q	3.1821340	(2000.0)	P	Q
n	0.09841071	Peri.	154.54571	+0.08469213	-0.99522090
a	4.6463059	Node	290.56476	+0.90508107	+0.09723969
e	0.3151260	Incl.	2.97583	+0.41671993	-0.00893268
P	10.02				

From 478 observations 1999 Nov. 3-2010 Jan. 3, mean residual 0″.69.

Comet C/2009 P2 (Boattini)
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 10.84238 TT Sato

q	6.5439079	(2000.0)	P	Q
z	-0.0002762	Peri.	76.08586	+0.92777924	-0.27915653
	+/-0.0000122	Node	60.39181	-0.33991198	-0.90600375
e	1.0018072	Incl.	163.45511	+0.15390103	-0.31816479

From 328 observations 2008 Oct. 1-2009 Dec. 19, mean residual 0″.63.

Comet 149P/Mueller
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 19.19767 TT Sato

q	2.6509188	(2000.0)	P	Q
n	0.10919573	Peri.	43.76439	-0.93571383	+0.21113300
a	4.3350982	Node	145.26569	-0.21179750	-0.97689596
e	0.3884986	Incl.	29.73487	+0.28210185	-0.03312297
P	9.03				

From 90 observations 1992 Apr. 29-2001 June 28, mean residual 0″.75.

Comet 157P/Tritton
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 20.52694 TT Sato

q	1.3601569	(2000.0)	P	Q
n	0.15655100	Peri.	148.74329	+0.01642765	-0.99384195
a	3.4095638	Node	300.10822	+0.88922918	+0.06463291
e	0.6010760	Incl.	7.27740	+0.45716692	-0.09000428
P	6.30				

From 705 observations 1978 Feb. 11-2010 Jan. 8, mean residual 0″.82. Non-gravitational parameters A1 = +0.78 +/- 0.05, A2 = -0.0005 +/- 0.0001.

Comet 126P/IRAS
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 22.66409 TT Sato

q	1.7134066	(2000.0)	P	Q
n	0.07343846	Peri.	356.73024	+0.99605676	+0.08417510
a	5.6474668	Node	357.76069	-0.05595250	+0.35086365
e	0.6966062	Incl.	45.83025	-0.06884948	+0.93263565
P	13.42				

From 260 observations 1983 June 30-2009 Dec. 7, mean residual 0″.85. Non-gravitational parameters A1 = +0.02 +/- 0.05, A2 = -0.0655 +/- 0.0001.

Comet 81P/Wild
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 22.70075 TT Sato
q 1.5980596 (2000.0) P Q
n 0.15351139 Peri. 41.79329 -0.99858476 -0.03598459
a 3.4544241 Node 136.09720 +0.01950426 -0.93282188
e 0.5373876 Incl. 3.23744 +0.04947797 -0.35853653
P 6.42
From 2227 observations 1995 Jan. 2-2009 Dec. 30, mean residual 0″.66. Non-gravitational parameters A1 = +0.09 +/- 0.04, A2 = -0.0103 +/- 0.0001.

Comet P/2004 R1 (McNaught)
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Feb. 25.22714 TT Sato
q 0.9857089 (2000.0) P Q
n 0.17982443 Peri. 0.69139 +0.44853732 +0.89046671
a 3.1086387 Node 295.96102 -0.82042147 +0.37616467
e 0.6829130 Incl. 4.89393 -0.35457423 +0.25606479
P 5.48
From 42 observations 2004 Sept. 2-Nov. 9, mean residual 0″.63.

Comet 65P/Gunn
Epoch 2010 Feb. 13.0 TT = JDT 2455240.5
T 2010 Mar. 2.13685 TT Sato
q 2.4403628 (2000.0) P Q
n 0.14517152 Peri. 196.63693 -0.09163568 +0.98159067
a 3.5854894 Node 68.35621 -0.89186104 -0.00604690
e 0.3193780 Incl. 10.38666 -0.44292977 -0.19090099
P 6.79
From 2548 observations 1982 Apr. 20-2009 Aug. 25, mean residual 0″.75. Non-gravitational parameters A1 = +1.95 +/- 0.02, A2 = +0.2745 +/- 0.0008.

Comet 219P/LINEAR
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 5.71627 TT Sato
q 2.3643320 (2000.0) P Q
n 0.14100549 Peri. 107.76021 +0.91747422 +0.36621610
a 3.6557686 Node 231.05135 -0.39620464 +0.87614643
e 0.3532599 Incl. 11.52088 +0.03553777 +0.31345366
P 6.99
From 298 observations 2002 June 5-2009 Dec. 26, mean residual 0″.71.

Comet 162P/Siding Spring
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 8.42267 TT Sato
q 1.2330702 (2000.0) P Q
n 0.18479703 Peri. 356.30646 +0.88277474 -0.40266350
a 3.0526198 Node 31.24009 +0.44210422 +0.53777761
e 0.5960617 Incl. 27.81677 +0.15891073 +0.74071408
P 5.33
From 1268 observations 1990 Mar. 23-2009 Nov. 10, mean residual 0″.40.

Comet C/2009 U3 (Hill)
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 20.25435 TT Sato
q 1.4144323 (2000.0) P Q
z +0.0059330 Peri. 77.70145 -0.32485932 -0.73793598
+/-0.0000182 Node 49.32223 +0.21071087 -0.66621306
e 0.9916082 Incl. 51.26005 +0.92199097 -0.10775273
From 363 observations 2009 Oct. 21-2010 Jan. 7, mean residual 0″.66.

Comet C/2009 O2 (Catalina)
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 24.40705 TT Sato
q 0.6953674 (2000.0) P Q
z +0.0036341 Peri. 133.40705 -0.61482384 -0.30747256
+/-0.0000087 Node 310.23083 +0.07370429 +0.89444104
e 0.9974730 Incl. 107.95714 +0.78521292 -0.32470888
From 189 observations 2009 July 27-2010 Jan. 25, mean residual 0″.66.

Comet P/2001 R6 (LINEAR-Skiff)
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 26.11570 TT Sato
q 2.1786377 (2000.0) P Q
n 0.11570246 Peri. 308.44875 +0.92933329 -0.24560270
a 4.1710076 Node 67.32364 +0.35513145 +0.79897923
e 0.4776711 Incl. 17.38642 -0.10110042 +0.54891848
P 8.52
From 100 observations 2001 Aug. 19-2002 Feb. 1, mean residual 0″.74.

Comet 94P/Russell
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 29.74688 TT Sato
q 2.2402723 (2000.0) P Q
n 0.14940066 Peri. 92.84355 -0.95460528 -0.27994822
a 3.5175021 Node 70.91561 +0.21207019 -0.87865788
e 0.3631070 Incl. 6.18229 +0.20917693 -0.38676780
P 6.60
From 318 observations 1984 Mar. 2-2009 Dec. 25, mean residual 0″.67. Non-gravitational parameters A1 = -0.05 +/- 0.02, A2 = +0.0024 +/- 0.0002.

Comet P/2009 Y2 (Kowalski)
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Mar. 30.68466 TT Sato
q 2.3392680 (2000.0) P Q
n 0.05944462 Peri. 171.95619 +0.25577018 -0.83085110
a 6.5022104 Node 262.12614 +0.85687695 +0.43154129
e 0.6402350 Incl. 29.92982 +0.44759748 -0.35136670
P 16.58
From 123 observations 2009 Dec. 20-2010 Jan. 24, mean residual 0″.55.

Comet P/2010 A3 (Hill)
Epoch 2010 Mar. 25.0 TT = JDT 2455280.5
T 2010 Apr. 3.68328 TT Sato
q 1.6218266 (2000.0) P Q
n 0.06614522 Peri. 41.28261 -0.25708896 -0.93746262
a 6.0553196 Node 64.82909 +0.80459186 -0.34214561
e 0.7321650 Incl. 15.02790 +0.53529171 +0.06403291
P 14.90
From 125 observations 2009 Oct. 14-2010 Jan. 25, mean residual 0″.51.

Comet P/2010 A5 (LINEAR)
T 2010 Apr. 19.4551 TT Sato
q 1.710380 (2000.0) P Q
n 0.0876039 Peri. 306.8393 -0.7069583 +0.7001811
a 5.020964 Node 277.8451 -0.6125996 -0.6767253
e 0.659352 Incl. 5.7809 -0.3534567 -0.2275729
P 11.3
From 104 observations 2010 Jan. 14-26, mean residual 0″.54.

Comet 30P/Reinmuth
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 Apr. 19.54750 TT Sato
q 1.8840753 (2000.0) P Q
n 0.13432185 Peri. 13.20645 -0.67951055 -0.72333971
a 3.7760547 Node 119.75453 +0.65963387 -0.67553126
e 0.5010466 Incl. 8.12224 +0.32116750 -0.14295862
P 7.34
From 1560 observations 1957 Sept. 20-2009 Dec. 28, mean residual 0″.75. Non-gravitational parameters A1 = +0.16 +/- 0.01, A2 = -0.0114 +/- 0.0001.

Comet C/2007 V053 (Spacewatch)
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 Apr. 26.49504 TT Sato
q 4.8426517 (2000.0) P Q
z +0.0000523 Peri. 75.02942 +0.08637710 -0.49858216
+/-0.0000016 Node 59.73681 -0.15558490 -0.86189218
e 0.9997465 Incl. 86.99028 +0.98403879 -0.09250786
From 251 observations 2007 Oct. 20-2009 Dec. 26, mean residual 0″.55.

Comet C/2009 K5 (McNaught)
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 Apr. 30.02391 TT Sato

q	1.4224039	(2000.0)	P	Q
z	-0.0005971	Peri.	66.17258	-0.29951016	+0.09770209
	+/-0.0000021	Node	257.85587	-0.67324823	+0.68320093
e	1.0008493	Incl.	103.87946	+0.67604030	+0.72366483

From 178 observations 2009 May 27-2010 Jan. 28, mean residual 0″.41.

Comet C/2009 W2 (Boattini)
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 May 1.80967 TT Sato

q	6.9071613	(2000.0)	P	Q
z	+0.0000924	Peri.	121.34070	+0.21417568	+0.97267394
	+/-0.0000841	Node	199.58436	+0.78050194	-0.11523907
e	0.9993621	Incl.	164.48992	+0.58732061	-0.20155735

From 81 observations 2008 Dec. 22-2010 Jan. 19, mean residual 0″.59.

Comet 104P/Kowal
Epoch 2010 May 4.0 TT = JDT 2455320.5
T 2010 May 4.65602 TT Sato

q	1.1796773	(2000.0)	P	Q
n	0.16743869	Peri.	200.55659	+0.24533082	-0.95823922
a	3.2601094	Node	235.51585	+0.91248540	+0.27943603
e	0.6381479	Incl.	10.26843	+0.32738843	-0.06077087
P	5.89				

From 416 observations 1991 Dec. 13-2004 Jan. 5, mean residual 0″.71. Non-gravitational parameters A1 = +0.31 +/- 0.04, A2 = -0.5111 +/- 0.0009.

Comet 141P/Machholz A
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 May 24.48935 TT Sato

q	0.7577865	(2000.0)	P	Q
n	0.18799695	Peri.	149.37040	+0.80298292	-0.56052201
a	3.0178814	Node	246.08557	+0.49201324	+0.81523526
e	0.7489012	Incl.	12.80246	+0.33636499	+0.14562471
P	5.24				

From 416 observations 1994 Oct. 2-2005 Apr. 13, mean residual 0″.83. Non-gravitational parameters A1 = -0.26 +/- 0.02, A2 = +0.0102 +/- 0.0001.

Comet 141P/Machholz D
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 May 29.79593 TT Sato

q	0.7578283	(2000.0)	P	Q
n	0.18771641	Peri.	149.33112	+0.80336867	-0.55996406
a	3.0208875	Node	246.08525	+0.49144759	+0.81557943
e	0.7491372	Incl.	12.80337	+0.33627079	+0.14584391
P	5.25				

From 121 observations 1994 Aug. 30-1999 Nov. 26, mean residual 0″.83. Non-gravitational parameters A1 = +2.15 +/- 0.19, A2 = +0.5923 +/- 0.0445.

Comet 142P/Ge-Wang
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 May 30.53444 TT Sato

q	2.4880617	(2000.0)	P	Q
n	0.08878328	Peri.	175.73200	+0.99097115	+0.13344909
a	4.9763997	Node	176.51860	-0.12845732	+0.97266479
e	0.5000278	Incl.	12.30632	-0.03840430	+0.19003827
P	11.10				

From 45 observations 1988 Oct. 11-1999 Oct. 21, mean residual 0″.79.

Comet D/1978 R1 (Haneda-Campos)
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 6.43922 TT Sato

q	1.2781902	(2000.0)	P	Q
n	0.15353625	Peri. 307.16511	+0.96892539	-0.23437698
a	3.4540511	Node 66.51138	+0.24534034	+0.86992988
e	0.6299446	Incl. 4.94541	+0.03149153	+0.43392331
P	6.42			

From 42 observations 1978 July 30-Nov. 22, mean residual 0″.95.

Comet 215P/NEAT
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 8.04150 TT Sato

q	3.2133813	(2000.0)	P	Q
n	0.12217676	Peri. 222.45307	+0.45162581	+0.86609635
a	4.0223233	Node 75.44083	-0.74758358	+0.49842576
e	0.2011131	Incl. 12.78997	-0.48698349	+0.03806402
P	8.07			

From 126 observations 1994 Sept. 11-2009 May 19, mean residual 0″.61.

Comet C/2009 U5 (Grauer)
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 June 22.21996 TT Sato

q	6.0944344	(2000.0)	P	Q
z	+0.0000887	Peri. 23.78959	-0.78522471	-0.49803643
	+/-0.0000157	Node 121.17201	+0.47636631	-0.86549513
e	0.9994596	Incl. 25.46959	+0.39559739	+0.05364601

From 92 observations 2009 Oct. 23-2010 Jan. 13, mean residual 0″.64.

Comet 43P/Wolf-Harrington
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 July 11.75139 TT Sato

q	1.3576232	(2000.0)	P	Q
n	0.16091422	Peri. 191.46926	+0.15734138	-0.95316179
a	3.3476479	Node 249.89581	+0.92642038	+0.23305955
e	0.5944546	Incl. 15.96648	+0.34203658	-0.19278446
P	6.13			

From 2102 observations 1996 Sept. 17-2010 Jan. 8, mean residual 0″.68. Non-gravitational parameters A1 = +0.26 +/- 0.01, A2 = -0.0141 +/- 0.0003.

Comet C/2009 R1 (McNaught)
Epoch 2010 June 13.0 TT = JDT 2455360.5
T 2010 July 2.69392 TT Sato

q	0.4050614	(2000.0)	P	Q
z	-0.0008132	Peri. 130.70107	-0.41494197	-0.69124149
	+/-0.0000171	Node 322.62073	+0.19333805	+0.56839718
e	1.0003294	Incl. 77.03628	+0.88906893	-0.44621727

From 120 observations 2009 July 20-Dec. 29, mean residual 0″.52.

Comet 10P/Tempel
Epoch 2010 July 23.0 TT = JDT 2455400.5
T 2010 July 4.90725 TT Sato

q	1.4226981	(2000.0)	P	Q
n	0.18337599	Peri. 195.66090	+0.68293993	+0.70686621
a	3.0683700	Node 117.82501	-0.64584293	+0.70212320
e	0.5363342	Incl. 12.02234	-0.34129160	+0.08580890
P	5.37			

From 1048 observations 1951 Feb. 3-2009 May. 1, mean residual 0″.79. Non-gravitational parameters A1 = +0.03 +/- 0.00, A2 = +0.0014 +/- 0.0000.

Comet C/2009 U1 (Garradd)
T 2010 July 9.1914 TT Sato

q	2.976849	(2000.0)	P	Q
		Peri. 6.3662	+0.3511562	-0.3696536
		Node 67.0468	+0.8125748	-0.3361689
e	1.0	Incl. 69.1037	+0.4652005	+0.8662255

From 6 observations 2009 Oct. 17-18, mean residual 0″.38.

Comet P/1999 U3 (LINEAR)
Epoch 2010 July 23.0 TT = JDT 2455400.5
T 2010 July 18.54218 TT Sato

q	1.9213616	(2000.0)	P	Q
n	0.08978668	Peri.	110.15732	+0.50737678	-0.81200035
a	4.9392549	Node	305.97440	+0.59545557	+0.57236330
e	0.6110017	Incl.	20.88373	+0.62289764	+0.11426149

P 10.98
From 199 observations 1999 Oct. 30-2000 Feb. 29, mean residual 0″.55.

Comet 2P/Encke
Epoch 2010 July 23.0 TT = JDT 2455400.5
T 2010 Aug. 6.50104 TT Sato

q	0.3358685	(2000.0)	P	Q
n	0.29906506	Peri.	186.54899	-0.94514276	-0.31466522
a	2.2145845	Node	334.56685	+0.30820409	-0.77005391
e	0.8483379	Incl.	11.78307	+0.10823776	-0.55497998

P 3.30
From 1475 observations 1993 July 22-2009 Nov. 11, mean residual 0″.61. 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. 14.51998 TT Sato

q	2.4200712	(2000.0)	P	Q
n	0.11657955	Peri.	37.84781	+0.89340281	-0.43713118
a	4.1500609	Node	346.82501	+0.21199820	+0.61365992
e	0.4168589	Incl.	27.05506	+0.39609113	+0.65752402

P 8.45
From 161 observations 2001 July 27-2009 Aug. 20, mean residual 0″.65.

Comet 227P/Catalina-LINEAR
Epoch 2010 Sept. 1.0 TT = JDT 2455440.5
T 2010 Sept. 3.69870 TT Sato

q	1.7948029	(2000.0)	P	Q
n	0.14491427	Peri.	90.13429	-0.76129855	-0.64255203
a	3.5897314	Node	49.88419	+0.54049052	-0.70290736
e	0.5000175	Incl.	6.52469	+0.35818224	-0.30503793

P 6.80
From 91 observations 1997 Jan. 15-2009 Oct. 23, mean residual 0″.70.

Comet C/2008 FK75 (Lemmon-Siding Spring)
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Sept. 29.26251 TT Sato

q	4.5108742	(2000.0)	P	Q
z	-0.0005689	Peri.	80.42092	+0.16378726	+0.82386236
	+/-0.0000011	Node	218.26827	-0.78064236	+0.44452974
e	1.0025661	Incl.	61.17571	+0.60313451	+0.35163067

From 719 observations 2008 Mar. 31-2010 Jan. 16, mean residual 0″.53.

Comet 31P/Schwassmann-Wachmann
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Sept. 29.48496 TT Sato

q	3.4243246	(2000.0)	P	Q
n	0.11280062	Peri.	17.93268	-0.66983346	-0.73898180
a	4.2422383	Node	114.18977	+0.67116374	-0.64424647
e	0.1928024	Incl.	4.54676	+0.31758836	-0.19711008

P 8.74
From 529 observations 1993 Sept. 20-2009 Dec. 21, mean residual 0″.87. Non-gravitational parameters A1 = +3.26 +/- 0.21, A2 = -4.0782 +/- 0.1510.

Comet P/2002 X2 (NEAT)
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Oct. 4.89656 TT Sato

q	2.1271209		(2000.0)	P	Q
n	0.12975628	Peri.	351.86656	+0.38184858	-0.83990107
a	3.8641188	Node	74.97863	+0.86884746	+0.18393571
e	0.4495198	Incl.	23.53674	+0.31511229	+0.51062104
P	7.60				

From 118 observations 2002 Oct. 5-2004 Mar. 16, mean residual 0″.74.

Comet C/2010 A4 (Siding Spring)
T 2010 Oct. 8.6157 TT Sato

q	2.743591		(2000.0)	P	Q
z	+0.003812	Peri.	271.5311	+0.0529052	+0.9720141
		Node	346.6756	+0.4934898	-0.2247136
e	0.989543	Incl.	96.7065	-0.8681411	-0.0685018

From 66 observations 2010 Jan. 12-25, mean residual 0″.66.

Comet 103P/Hartley
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Oct. 28.21930 TT Sato

q	1.0586857		(2000.0)	P	Q
n	0.15232021	Peri.	181.19913	+0.75555006	-0.63754709
a	3.4724103	Node	219.76032	+0.60297718	+0.76667164
e	0.6951150	Incl.	13.61843	+0.25605202	+0.07581757
P	6.47				

From 695 observations 1991 July 12-2008 June 4, mean residual 0″.74. Non-gravitational parameters A1 = +0.31 +/- 0.01, A2 = +0.0204 +/- 0.0002.

Comet P/2000 G1 (LINEAR)
Epoch 2010 Nov. 20.0 TT = JDT 2455520.5
T 2010 Nov. 13.95080 TT Sato

q	1.0001181		(2000.0)	P	Q
n	0.18446148	Peri.	343.29994	-0.99415207	-0.10236227
a	3.0563207	Node	190.99738	+0.10753785	-0.96750903
e	0.6727706	Incl.	10.39004	-0.00986286	-0.23118877
P	5.34				

From 136 observations 2000 Apr. 7-July 7, mean residual 0″.66.

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 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 C/2009 K3 (Beshore)
T 2011 Jan. 9.2385 TT Sato

q	3.909283		(2000.0)	P	Q
		Peri.	251.2861	-0.3212203	+0.9470045
		Node	0.0273	+0.9329836	+0.3165118
e	1.0	Incl.	146.6942	-0.1623550	-0.0547979

From 20 observations 2009 May 26-28, mean residual 0″.43.

Comet 9P/Tempel
Epoch 2010 Dec. 30.0 TT = JDT 2455560.5
T 2011 Jan. 12.36552 TT Sato

q	1.5103006	(2000.0)	P	Q
n	0.17850669	Peri.	178.92313	-0.37705592	+0.91038357
a	3.1239187	Node	68.90719	-0.85112255	-0.26803211
e	0.5165365	Incl.	10.52237	-0.36526598	-0.31521508
P	5.52				

From 4832 observations 1967 June 8-2009 Sept. 23, mean residual 0″.59. 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. 28.85176 TT Sato

q	2.5205916	(2000.0)	P	Q
z	+0.0025363	Peri.	127.38394	+0.65135796	+0.68699585
	+/-0.0001631	Node	160.27961	-0.28541629	-0.17152964
e	0.9936070	Incl.	107.31853	+0.70304363	-0.70612625

From 84 observations 2009 Dec. 17-2010 Jan. 25, mean residual 0″.46

Comet C/2010 B1 (Cardinal)
T 2011 Feb. 7.0619 TT Sato

q	2.931851	(2000.0)	P	Q
z	+0.000538	Peri.	211.7431	+0.0000447	+0.2409068
		Node	277.2793	+0.9913477	-0.1274066
e	0.998422	Incl.	101.9208	-0.1312618	-0.9621494

From 96 observations 2010 Jan. 19-26, mean residual 0″.34.

Comet P/2003 S2 (NEAT)
Epoch 2011 Mar. 20.0 TT = JDT 2455640.5
T 2011 Mar. 3.57291 TT Sato

q	2.4561212	(2000.0)	P	Q
n	0.13112165	Peri.	283.90313	+0.97096078	-0.19902751
a	3.8372472	Node	87.70143	+0.23617374	+0.88595117
e	0.3599263	Incl.	7.63486	-0.03817244	+0.41890163
P	7.52				

From 285 observations 2003 Aug. 1-2004 Feb. 18, mean residual 0″.61.

Comet P/2005 U1 (Read)
Epoch 2011 Mar. 20.0 TT = JDT 2455640.5
T 2011 Mar. 10.89546 TT Sato

q	2.3605818	(2000.0)	P	Q
n	0.17499373	Peri.	325.31934	+0.95640417	-0.29153197
a	3.1655880	Node	51.63979	+0.27269988	+0.87024172
e	0.2542991	Incl.	1.26608	+0.10452675	+0.39710005
P	5.63				

From 121 observations 2005 Oct. 23-2007 Jan. 27, mean residual 0″.54.

Comet P/2006 U1 (LINEAR)
Epoch 2011 Apr. 29.0 TT = JDT 2455680.5
T 2011 Apr. 15.95499 TT Sato

q	0.5108880	(2000.0)	P	Q
n	0.21297671	Peri.	64.22935	+0.56083257	+0.81805576
a	2.7770347	Node	240.47125	-0.80238551	+0.49909515
e	0.8160311	Incl.	8.42488	-0.20406939	+0.28581253
P	4.63				

From 357 observations 2006 Oct. 19-2007 Jan. 13, 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 16.61741 TT Sato
q 3.0328165 (2000.0) P Q
n 0.12204205 Peri. 42.46310 -0.98563811 -0.06496252
a 4.0252826 Node 133.09893 +0.02342203 -0.96671461
e 0.2465581 Incl. 12.32624 +0.16723914 -0.24747268
P 8.08
From 142 observations 2003 Feb. 1-2009 Dec. 16, mean residual 0″.66.

Comet 164P/Christensen
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 2.34215 TT Sato
q 1.6753328 (2000.0) P Q
n 0.14115532 Peri. 325.85018 +0.56283458 -0.77774014
a 3.6531812 Node 88.32700 +0.80704874 +0.44392213
e 0.5414044 Incl. 16.26067 +0.17857650 +0.44503193
P 6.98
From 262 observations 1998 Jan. 24-2005 June 18, mean residual 0″.69.

Comet C/2008 S3 (Boattini)
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 7.40970 TT Sato
q 8.0178406 (2000.0) P Q
z -0.0001240 Peri. 39.96490 +0.94225749 +0.23005387
+/-0.0000019 Node 54.94138 +0.17644323 -0.95869258
e 1.0009940 Incl. 162.70415 +0.28463770 -0.16728344
From 402 observations 2008 Sept. 29-2009 Dec. 19, mean residual 0″.60.

Comet 213P/Van Ness
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 16.23050 TT Sato
q 2.1225409 (2000.0) P Q
n 0.15575164 Peri. 3.33234 +0.71870817 +0.68291698
a 3.4212196 Node 312.67171 -0.64197595 +0.57954719
e 0.3795952 Incl. 10.23962 -0.26706824 +0.44469029
P 6.33
From 860 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 24.77577 TT Sato
q 2.0980618 (2000.0) P Q
n 0.14821846 Peri. 224.36551 +0.69123164 +0.71135176
a 3.5361813 Node 89.81416 -0.62258578 +0.67558952
e 0.4066871 Incl. 7.30733 -0.36685933 +0.19379748
P 6.65
From 194 observations 1991 Sept. 14-2006 Jan. 26, mean residual 0″.57.

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 30.93928 TT Sato
q 2.5764086 (2000.0) P Q
n 0.17232798 Peri. 35.58914 +0.92682114 -0.37550185
a 3.1981502 Node 346.46609 +0.34355822 +0.84900625
e 0.1944066 Incl. 0.23566 +0.15155961 +0.37173478
P 5.72
From 155 observations 1999 Aug. 17-2009 June 22, mean residual 0″.51.

Comet 123P/West-Hartley
Epoch 2011 July 18.0 TT = JDT 2455760.5
T 2011 July 4.47743 TT Sato

q	2.1288909	(2000.0)	P	Q
n	0.13000378	Peri. 102.82454	-0.83565764	-0.51444296
a	3.8592128	Node 46.59921	+0.34204519	-0.76152980
e	0.4483614	Incl. 15.35701	+0.42974574	-0.39423446
P	7.58			

From 991 observations 1995 Sept. 21-2004 July 20, mean residual 0".72.
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. 21.05805 TT Muraoka

q	2.5966564	(2000.0)	P	Q
n	0.09364080	Peri. 228.20965	+0.59924613	-0.80007913
a	4.8027794	Node 185.20824	+0.79490595	+0.59878314
e	0.4593430	Incl. 17.88835	+0.09501902	+0.03649845
P	10.53			

From 157 observations 1906-2000, mean residual 1".10. Nongravitational parameters A1 = +0.49 +/- 0.00, A2 = +0.0601 +/- 0.0002.

Comet 228P/LINEAR
Epoch 2011 Aug. 27.0 TT = JDT 2455800.5
T 2011 Aug. 23.84140 TT Sato

q	3.4304743	(2000.0)	P	Q
n	0.11577645	Peri. 114.79339	-0.82320178	-0.56328402
a	4.1692305	Node 31.06624	+0.45838475	-0.73325682
e	0.1771925	Incl. 7.91542	+0.33499590	-0.38084846
P	8.51			

From 145 observations 2001 Dec. 9-2009 Dec. 20, mean residual 0″.70.

Comet 45P/Honda-Mrkos-Pajdusakova
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Sept. 28.75315 TT Sato

q	0.5296449	(2000.0)	P	Q
n	0.18777903	Peri. 326.24482	+0.56842591	-0.81938582
a	3.0202159	Node 89.00803	+0.77028886	+0.49836006
e	0.8246334	Incl. 4.25327	+0.28904508	+0.28327394
P	5.25			

From 213 observations 1995 Oct. 21-2006 June 6, mean residual 0″.70. Non-gravitational parameters A1 = +0.26 +/- 0.00, A2 = -0.0505 +/- 0.0000.

Comet 48P/Johnson
Epoch 2011 Oct. 06.0 TT = JDT 2455840.5
T 2011 Sept. 29.30465 TT Sato

q	2.3011192	(2000.0)	P	Q
n	0.14197699	Peri. 207.95729	+0.80964845	+0.54808198
a	3.6390728	Node 117.27180	-0.48476672	+0.82613751
e	0.3676633	Incl. 13.66217	-0.33086344	+0.13077828
P	6.94			

From 618 observations 1963 Apr. 29-2005 Nov. 10, mean residual 0″.81. Non-gravitational parameters A1 = +0.57 +/- 0.01, A2 = -0.0188 +/- 0.0003.

Comet 115P/Maury
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 6.95623 TT Sato

q	2.0350537	(2000.0)	P	Q
n	0.11256295	Peri. 120.06287	+0.44984939	+0.89302350
a	4.2482077	Node 176.60274	-0.87326202	+0.44263703
e	0.5209618	Incl. 11.70614	-0.18721371	+0.08112638
P	8.76			

From 93 observations 1985 Aug. 17-2003 Oct. 23, mean residual 0″.78. Non-gravitational parameters A1 = +0.87 +/- 0.19, A2 = -0.0009 +/- 0.0103.

Comet 73P/Schwassmann-Wachmann C
Epoch 2011 Oct. 6.0 TT = JDT 2455840.5
T 2011 Oct. 16.75454 TT Sato

q	0.9427903	(2000.0)	P	Q
n	0.18384505	Peri. 198.86372	-0.02850746	+0.98228429
a	3.0631488	Node 69.84464	-0.88986559	+0.05946449
e	0.6922153	Incl. 11.37900	-0.45533127	-0.17771201
P	5.36			

From 2876 observations 1985 Aug. 17-2003 Oct. 23, mean residual 0″.72. Non-gravitational parameters A1 = +0.77 +/- 0.00, A2 = -0.0498 +/- 0.0001.

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 0.14656284 Peri. 332.78992 -0.05101144 -0.95692674
a 3.5627619 Node 118.87663 +0.96536503 -0.12056752
e 0.6003592 Incl. 19.05021 +0.25586754 +0.26411112
P 6.72
From 670 observations 1951 Feb. 4-2006 June 26, mean residual 0″.78. 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. 8.87332 TT Sato
q 1.0492659 (2000.0) P Q
n 0.18215014 Peri. 62.16369 -0.91173769 +0.39822986
a 3.0821212 Node 141.06707 -0.41011126 -0.86856072
e 0.6595637 Incl. 9.22430 -0.02330518 -0.29498347
P 5.41
From 464 observations 2000 Nov. 21-2006 Aug. 27, mean residual 0″.72. Non-gravitational parameters A1 = +3.85 +/- 0.12, A2 = -1.7413 +/- 0.1024.

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 Sep. 10-Nov. 16, mean residual 0″.60.

Comet C/2009 S3 (Lemmon)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 11.62347 TT Sato
q 6.4795627 (2000.0) P Q
z +0.0001829 Peri. 129.71417 +0.72013224 +0.31876729
+/-0.0011959 Node 225.14271 -0.09644446 +0.92558136
e 0.9988151 Incl. 60.38715 +0.68710117 -0.20417285
From 37 observations 2009 Sep. 24-Oct. 25, mean residual 0″.34.

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 71P/Clark
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 15.70125 TT Sato
q 1.5674760 (2000.0) P Q
n 0.17838960 Peri. 208.83808 -0.03285680 +0.98931116
a 3.1252855 Node 59.60474 -0.88248394 +0.03801366
e 0.4984535 Incl. 9.48028 -0.46919349 -0.14077783
P 5.53
From 383 observations 2001 Aug. 27-2006 Dec. 10, mean residual 0″.67. Non-gravitational parameters A1 = +0.53 +/- 0.10, A2 = -0.5291 +/- 0.0306.

Comet C/2009 P1 (Garradd)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 23.82013 TT Sato
q 1.5510032 (2000.0) P Q
z -0.0006384 Peri. 90.74335 -0.16662252 -0.82687633
+/-0.0000542 Node 325.99292 -0.58728449 +0.52080649
e 1.0009902 Incl. 106.18320 +0.79204410 +0.21221717
From 98 observations 2009 Aug. 13-Dec. 12, mean residual 0″.61.

Comet 36P/Whipple
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 29.58834 TT Sato
q 3.0878908 (2000.0) P Q
n 0.11541111 Peri. 201.59721 +0.91385785 -0.40597051
a 4.1780245 Node 182.39120 +0.39319895 +0.88925105
e 0.2609209 Incl. 9.93096 +0.10128383 +0.21076174
P 8.54
From 263 observations 1948 July 18-2004 Feb. 16, mean residual 0″.69. Non-gravitational parameters A1 = +0.38 +/- 0.06, A2 = -0.0461 +/- 0.0012.

Comet C/2009 F4 (McNaught)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 31.90396 TT Sato
q 5.4549293 (2000.0) P Q
z -0.0002983 Peri. 260.38323 +0.04744954 +0.61013543
+/-0.0000141 Node 53.58465 +0.16285576 +0.77644723
e 1.0016274 Incl. 79.35087 -0.98550827 +0.15768467
From 293 observations 2009 Mar. 19-Sept. 12, mean residual 0″.49.

Comet 131P/Mueller
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2012 Jan. 7.37643 TT Sato

q	2.4180696	(2000.0)	P	Q
n	0.13931115	Peri. 179.52462	+0.83149694	-0.5508438812
a	3.6853506	Node 214.21860	+0.50926472	+0.8076016177
e	0.3438699	Incl. 7.35588	+0.22195109	+0.2105959299
P	7.07			

From 253 observations 1990 Sept. 15-2004 Dec. 14, mean residual 0″.71. Non-gravitational parameters A1 = +0.48 +/- 0.52, A2 = -0.1215 +/- 0.0208.

Comet P/2006 T1 (Levy)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2012 Jan. 12.54701 TT Sato

q	1.0074188	(2000.0)	P	Q
n	0.18650464	Peri. 179.62127	-0.16297810	-0.93703811
a	3.0339584	Node 279.73947	+0.90438906	-0.01675680
e	0.6679523	Incl. 18.26316	+0.39435842	-0.34882488
P	5.28			

From 293 observations 2006 Oct. 2-Dec. 1, mean residual 0″.73.

Comet P/2000 Y3 (Scotti)
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Jan. 20.76196 TT Sato

q	3.9179034	(2000.0)	P	Q
n	0.09094267	Peri. 92.60266	+0.05640485	-0.99839992
a	4.8973100	Node 354.15933	+0.89964585	+0.05256711
e	0.1999887	Incl. 2.25899	+0.43296170	+0.02083976
P	10.84			

From 226 observations 2000 Nov. 29-2002 May 14, mean residual 0″.61.

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 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 P/1998 U4 (Spahr)
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 3.53332 TT Sato

q	3.9801475	(2000.0)	P	Q
n	0.07600720	Peri. 247.67000	+0.36937877	-0.92925068
a	5.5194975	Node 180.77301	+0.91815235	+0.36374211
e	0.2788931	Incl. 32.48189	-0.14337217	-0.06469042
P	12.97			

From 134 observations 1997 Oct. 29-2001 Apr. 15, mean residual 0″.68.

Comet C/2006 S3 (LONEOS)
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 16.33546 TT Sato

q	5.1310743	(2000.0)	P	Q
z	-0.0006787	Peri. 140.12955	-0.21558775	-0.96492213
	+/-0.0000017	Node 38.36896	-0.94613646	+0.24436857
e	1.0034826	Incl. 166.03259	-0.24155273	-0.09596506

From 732 observations 2006 Aug. 29-2010 Jan. 9, mean residual 0″.66.

Comet D/1892 T1 (Barnard)
Epoch 2012 July 12.0 TT = JDT 2456120.5
T 2012 June 4.367 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).
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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. 30.0 TT = JDT 2456200.5
T 2012 Sept. 27.47632 TT Sato

q	4.5764187	(2000.0)	P	Q
n	0.09607374	Peri. 232.84924	+0.97919978	-0.18018093
a	4.7213505	Node 137.30433	+0.20024680	+0.93228905
e	0.0306971	Incl. 7.90735	-0.03269568	+0.31364304
P	10.26			

From 295 observations 1979 July 24-2009 July 20, mean residual 0″.75.

Comet P/2004 F3 (NEAT)
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 28.73609 TT Sato

q	2.8797629	(2000.0)	P	Q
n	0.12191657	Peri. 176.18968	-0.25680610	+0.92800910
a	4.0280443	Node 78.78047	-0.89382735	-0.12183505
e	0.2850717	Incl. 15.97188	-0.36759120	-0.35207290
P	8.08			

From 1108 observations 2004 Jan. 29-2008 Jan. 26, mean residual 0″.54.

Comet P/2003 HT15 (LINEAR)
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Mar. 17.06021 TT Sato

q	2.6898666	(2000.0)	P	Q
n	0.09899910	Peri. 124.10266	-0.80878972	+0.36804270
a	4.6278779	Node 81.44735	-0.56138070	-0.71558127
e	0.4187689	Incl. 27.63622	+0.17524528	-0.59370702
P	9.96			

From 43 observations 2003 Jan. 27-July 10, mean residual 0″.66.
Comet P/1997 C1 (Gehrels)
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 8.67999 TT Sato

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

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

Comet P/2005 L1 (McNaught)
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Nov. 24.60834 TT Sato

q	3.1594089	(2000.0)	P	Q
n	0.12382543	Peri. 149.76714	+0.31257099	+0.94566323
a	3.9865403	Node 138.26341	-0.89623676	+0.32483970
e	0.2074810	Incl. 7.73138	-0.31473647	+0.01415028
P	7.96			

From 239 observations 2005 May 16-Sept. 15, mean residual 0″.50.

Comet 29P/Schwassmann-Wachnmann
Epoch 2019 Mar. 18.0 TT = JDT 2458560.5
T 2019 Mar. 7.74502 TT Sato

q	5.7668169	(2000.0)	P	Q
n	0.06662630	Peri. 47.77354	+0.99270175	-0.00955643
a	6.0261360	Node 312.39472	-0.05136254	+0.86841691
e	0.0430324	Incl. 9.36831	+0.10911061	+0.49574263
P	14.79			

From 12105 observations 1902 Mar. 5-2009 Dec. 30, mean residual 0″.72.
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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 = 2010 July 23.0 TT
T = 2004 July 15.06664 TT
Peri. = 49.20106 e = 0.0450608
Node = 312.63068 2000.0 a = 5.9906442 AU
Incl. = 9.39048 n = 0.06721927
q = 5.7207010 AU P = 14.66 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	09 50.45	+11 40.4	5.424	6.185	-0.32	+0.7	13.6	137.5
Jan. 14	09 47.26	+11 47.9	5.327	6.187	-0.39	+1.1	13.6	148.5
Jan. 24	09 43.32	+11 59.3	5.257	6.190	-0.45	+1.4	13.5	159.6
Feb. 3	09 38.85	+12 13.5	5.217	6.192	-0.47	+1.6	13.5	170.8
Feb. 13	09 34.14	+12 29.2	5.207	6.194	-0.46	+1.6	13.5	177.1
Feb. 23	09 29.49	+12 44.8	5.230	6.196	-0.43	+1.4	13.5	166.4
Mar. 5	09 25.21	+12 59.2	5.283	6.198	-0.36	+1.2	13.6	155.3
Mar. 15	09 21.57	+13 11.1	5.364	6.200	-0.28	+0.9	13.6	144.4
Mar. 25	09 18.76	+13 19.6	5.469	6.201	-0.18	+0.5	13.6	133.8
Apr. 4	09 16.93	+13 24.2	5.595	6.203	-0.08	0.0	13.7	123.5
Apr. 14	09 16.15	+13 24.6	5.737	6.205	+0.03	-0.4	13.7	113.5
Apr. 24	09 16.45	+13 20.4	5.890	6.207	+0.13	-0.9	13.8	103.8
May 4	09 17.77	+13 11.8	6.048	6.209	+0.23	-1.3	13.9	94.5
May 14	09 20.07	+12 58.8	6.209	6.211	+0.32	-1.7	13.9	85.4
May 24	09 23.26	+12 41.6	6.368	6.212	+0.40	-2.1	14.0	76.6
June 3	09 27.23	+12 20.3	6.522	6.214	+0.47	-2.5	14.0	68.1
June 13	09 31.90	+11 55.3	6.666	6.216	+0.53	-2.9	14.1	59.7
June 23	09 37.16	+11 26.6	6.798	6.218	+0.58	-3.2	14.1	51.6
July 3	09 42.91	+10 54.7	6.916	6.219	+0.62	-3.5	14.2	43.5
July 13	09 49.06	+10 19.7	7.018	6.221	+0.65	-3.8	14.2	35.7
July 23	09 55.53	+09 42.0	7.102	6.222	+0.67	-4.0	14.2	27.9
Aug. 2	10 02.23	+09 01.9	7.167	6.224	+0.69	-4.2	14.2	20.2
Aug. 12	10 09.09	+08 19.8	7.211	6.225	+0.69	-4.4	14.2	12.5
Aug. 22	10 16.02	+07 36.0	7.233	6.227	+0.69	-4.5	14.3	5.4
Sept. 1	10 22.95	+06 50.8	7.234	6.228	+0.69	-4.6	14.3	4.5
Sept.11	10 29.82	+06 04.8	7.213	6.230	+0.67	-4.6	14.2	11.6
Sept.21	10 36.54	+05 18.3	7.170	6.231	+0.65	-4.6	14.2	19.3
Oct. 1	10 43.04	+04 31.9	7.106	6.233	+0.62	-4.6	14.2	27.2
Oct. 11	10 49.24	+03 46.1	7.022	6.234	+0.58	-4.5	14.2	35.3
Oct. 21	10 55.06	+03 01.4	6.919	6.235	+0.53	-4.3	14.2	43.6
Oct. 31	11 00.41	+02 18.5	6.798	6.236	+0.48	-4.1	14.1	52.0
Nov. 10	11 05.20	+01 37.9	6.663	6.238	+0.41	-3.8	14.1	60.6
Nov. 20	11 09.32	+01 00.4	6.516	6.239	+0.34	-3.4	14.0	69.5
Nov. 30	11 12.70	+00 26.6	6.360	6.240	+0.25	-2.9	14.0	78.6
Dec. 10	11 15.24	-00 02.7	6.199	6.241	+0.16	-2.4	13.9	87.9
Dec. 20	11 16.85	-00 26.9	6.037	6.242	+0.06	-1.8	13.9	97.5
Dec. 30	11 17.48	-00 45.4	5.878	6.243	-0.04	-1.2	13.8	107.4
Jan. 9	11 17.08	-00 57.5	5.728	6.244	-0.14	-0.6	13.8	117.6
Jan. 19	11 15.67	-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	6.246	-0.32	+0.7	13.7	138.6
Feb. 8	11 10.09	-00 54.6	5.379	6.247	-0.39	+1.3	13.6	149.3
Feb. 18	11 06.23	-00 41.6	5.310	6.248	-0.43	+1.8	13.6	160.0
Feb. 28	11 01.95	-00 24.0	5.271	6.249	-0.44	+2.1	13.6	170.0
Mar. 10	10 57.51	-00 03.3	5.263	6.250	-0.43	+2.2	13.6	173.0
Mar. 20	10 53.20	+00 18.8	5.287	6.251	-0.39	+2.2	13.6	164.3
Mar. 30	10 49.31	+00 40.7	5.339	6.252	-0.33	+2.0	13.6	153.9

Comet C/2009 O4 (Hill)

Epoch = 2010 July 23.0 TT
T = 2010 Jan. 1.29841 TT
Peri. = 223.73927
Node = 172.93935 2000.0
Incl. = 95.83067
q = 2.5639343 AU
e = 1.0008026

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	23 00.31	-46 21.5	3.022	2.564	+1.16	-3.0	15.9	53.6
Jan. 14	23 11.87	-46 51.7	3.100	2.568	+1.36	-2.9	16.0	49.2
Jan. 24	23 25.42	-47 20.6	3.158	2.575	+1.54	-3.0	16.0	46.1
Feb. 3	23 40.86	-47 50.1	3.197	2.588	+1.73	-3.1	16.1	44.5
Feb. 13	23 58.17	-48 21.4	3.218	2.605	+1.92	-3.4	16.1	44.3
Feb. 23	00 17.38	-48 55.5	3.222	2.625	+2.12	-3.7	16.1	45.5
Mar. 5	00 38.56	-49 33.0	3.212	2.650	+2.33	-4.1	16.2	47.9
Mar. 15	01 01.84	-50 13.6	3.190	2.679	+2.55	-4.3	16.2	51.1
Mar. 25	01 27.37	-50 57.0	3.162	2.712	+2.79	-4.5	16.2	54.8
Apr. 4	01 55.26	-51 41.6	3.130	2.748	+3.04	-4.3	16.3	58.8
Apr. 14	02 25.62	-52 25.1	3.099	2.788	+3.28	-3.9	16.3	62.9
Apr. 24	02 58.39	-53 04.4	3.073	2.831	+3.49	-3.2	16.4	66.8
May 4	03 33.34	-53 36.0	3.057	2.877	+3.67	-2.0	16.4	70.3
May 14	04 09.99	-53 56.2	3.054	2.926	+3.76	-0.6	16.5	73.2
May 24	04 47.61	-54 02.7	3.067	2.977	+3.77	+0.8	16.6	75.4
June 3	05 25.29	-53 54.3	3.099	3.031	+3.68	+2.2	16.7	76.7
June 13	06 02.13	-53 32.3	3.149	3.087	+3.52	+3.2	16.8	77.2
June 23	06 37.34	-52 59.8	3.218	3.145	+3.30	+3.9	16.9	76.7
July 3	07 10.36	-52 20.8	3.304	3.205	+3.06	+4.1	17.1	75.5
July 13	07 40.92	-51 39.8	3.404	3.266	+2.80	+3.9	17.2	73.6
July 23	08 08.95	-51 00.8	3.515	3.329	+2.56	+3.4	17.4	71.2
Aug. 2	08 34.51	-50 27.0	3.634	3.394	+2.33	+2.6	17.5	68.4
Aug. 12	08 57.79	-50 00.6	3.757	3.460	+2.12	+1.8	17.7	65.4
Aug. 22	09 18.94	-49 43.0	3.880	3.527	+1.92	+0.8	17.8	62.4
Sept. 1	09 38.16	-49 34.6	4.000	3.595	+1.74	-0.1	18.0	59.6
Sept.11	09 55.60	-49 35.6	4.113	3.665	+1.58	-1.0	18.1	57.1
Sept.21	10 11.36	-49 45.8	4.218	3.735	+1.42	-1.9	18.2	55.0
Oct. 1	10 25.54	-50 04.4	4.312	3.806	+1.26	-2.6	18.4	53.7
Oct. 11	10 38.18	-50 30.8	4.392	3.877	+1.11	-3.3	18.5	53.2
Oct. 21	10 49.24	-51 04.1	4.458	3.949	+0.94	-3.9	18.6	53.6
Oct. 31	10 58.69	-51 43.0	4.509	4.022	+0.77	-4.3	18.7	55.0
Nov. 10	11 06.43	-52 26.4	4.543	4.096	+0.59	-4.6	18.8	57.4
Nov. 20	11 12.31	-53 12.6	4.562	4.169	+0.39	-4.7	18.9	60.8
Nov. 30	11 16.17	-54 00.0	4.566	4.244	+0.17	-4.6	19.0	65.0
Dec. 10	11 17.82	-54 46.2	4.557	4.318	-0.07	-4.2	19.0	69.9
Dec. 20	11 17.07	-55 28.4	4.536	4.393	-0.33	-3.5	19.1	75.4
Dec. 30	11 13.81	-56 03.2	4.507	4.468	-0.58	-2.3	19.2	81.4
Jan. 9	11 07.99	-56 26.6	4.473	4.543	-0.82	-0.8	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 49.65	-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 42.8	4.370	4.846	-1.15	+8.8	19.5	113.2
Feb. 28	10 14.80	-53 14.7	4.375	4.922	-1.03	+11.2	19.5	118.2
Mar. 10	10 04.54	-51 23.0	4.400	4.998	-0.85	+13.1	19.6	122.0
Mar. 20	09 56.05	-49 12.4	4.449	5.074	-0.64	+14.4	19.7	124.1
Mar. 30	09 49.61	-46 48.7	4.521	5.150	-0.43	+15.1	19.8	124.2

Comet 118P/Shoemaker-Levy

Epoch = 2010 July 23.0 TT
T = 2010 Jan. 2.31836 TT
Peri. = 302.14580 e = 0.4275097
Node = 151.80682 2000.0 a = 3.4653638 AU
Incl. = 8.50930 n = 0.15278504
q = 1.9838871 AU P = 6.45 years

m1 = 9.0 + 5 log(Delta) + 14.0 log(r(t-50))

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	05 47.08	+09 37.9	1.036	1.984	-0.42	+6.8	13.4	158.5
Jan. 14	05 42.89	+10 46.0	1.074	1.986	-0.13	+7.9	13.4	149.6
Jan. 24	05 41.59	+12 05.1	1.132	1.991	+0.21	+8.3	13.5	140.3
Feb. 3	05 43.65	+13 28.6	1.207	2.000	+0.54	+8.2	13.6	131.3
Feb. 13	05 49.06	+14 50.9	1.297	2.011	+0.85	+7.7	13.7	122.9
Feb. 23	05 57.60	+16 07.7	1.398	2.026	+1.13	+6.8	13.9	115.1
Mar. 5	06 08.87	+17 15.6	1.508	2.043	+1.35	+5.7	14.1	107.9
Mar. 15	06 22.41	+18 12.3	1.626	2.064	+1.54	+4.4	14.2	101.1
Mar. 25	06 37.81	+18 56.2	1.750	2.086	+1.68	+3.0	14.4	94.9
Apr. 4	06 54.63	+19 26.4	1.879	2.111	+1.79	+1.6	14.6	88.9
Apr. 14	07 12.53	+19 42.7	2.011	2.139	+1.87	+0.2	14.8	83.3
Apr. 24	07 31.19	+19 44.9	2.145	2.168	+1.91	-1.1	15.0	77.8
May 4	07 50.34	+19 33.6	2.280	2.200	+1.94	-2.4	15.2	72.6
May 14	08 09.75	+19 09.5	2.416	2.233	+1.95	-3.6	15.4	67.5
May 24	08 29.24	+18 33.5	2.550	2.268	+1.94	-4.7	15.6	62.5
June 3	08 48.67	+17 46.7	2.683	2.304	+1.93	-5.6	15.8	57.5
June 13	09 07.93	+16 50.3	2.814	2.342	+1.90	-6.5	16.0	52.7
June 23	09 26.95	+15 45.4	2.941	2.380	+1.87	-7.2	16.1	47.8
July 3	09 45.65	+14 33.4	3.063	2.420	+1.84	-7.8	16.3	42.9
July 13	10 04.03	+13 15.4	3.180	2.460	+1.80	-8.3	16.5	38.0
July 23	10 22.05	+11 52.6	3.290	2.502	+1.77	-8.6	16.7	33.1
Aug. 2	10 39.72	+10 26.2	3.393	2.543	+1.73	-8.9	16.8	28.1
Aug. 12	10 57.03	+08 57.3	3.487	2.586	+1.70	-9.0	17.0	23.1
Aug. 22	11 14.00	+07 26.9	3.572	2.629	+1.66	-9.1	17.1	18.0
Sept. 1	11 30.62	+05 55.9	3.646	2.672	+1.63	-9.1	17.3	12.8
Sept.11	11 46.91	+04 25.3	3.709	2.715	+1.60	-8.9	17.4	7.7
Sept.21	12 02.86	+02 56.0	3.760	2.759	+1.56	-8.7	17.6	3.4
Oct. 1	12 18.48	+01 29.0	3.798	2.802	+1.53	-8.4	17.7	5.1
Oct. 11	12 33.76	+00 04.8	3.823	2.846	+1.49	-8.0	17.8	10.3
Oct. 21	12 48.67	-01 15.4	3.833	2.890	+1.45	-7.6	17.9	16.1
Oct. 31	13 03.19	-02 31.1	3.829	2.933	+1.41	-7.0	18.0	22.1
Nov. 10	13 17.27	-03 41.5	3.811	2.977	+1.36	-6.4	18.1	28.4
Nov. 20	13 30.84	-04 45.7	3.778	3.020	+1.30	-5.7	18.2	34.9
Nov. 30	13 43.83	-05 43.2	3.730	3.063	+1.23	-5.0	18.2	41.6
Dec. 10	13 56.16	-06 33.3	3.669	3.106	+1.15	-4.2	18.3	48.5
Dec. 20	14 07.69	-07 15.2	3.596	3.149	+1.06	-3.3	18.3	55.7
Dec. 30	14 18.31	-07 48.5	3.511	3.191	+0.95	-2.4	18.4	63.2
Jan. 9	14 27.84	-08 12.6	3.417	3.233	+0.83	-1.4	18.4	71.0
Jan. 19	14 36.12	-08 27.1	3.315	3.275	+0.68	-0.5	18.4	79.1
Jan. 29	14 42.96	-08 31.6	3.208	3.316	+0.52	+0.6	18.4	87.6
Feb. 8	14 48.16	-08 25.9	3.100	3.357	+0.34	+1.6	18.4	96.5
Feb. 18	14 51.56	-08 10.0	2.993	3.397	+0.14	+2.6	18.4	105.7
Feb. 28	14 53.00	-07 44.3	2.893	3.437	-0.06	+3.5	18.4	115.4
Mar. 10	14 52.40	-07 09.5	2.804	3.477	-0.26	+4.2	18.5	125.6
Mar. 20	14 49.80	-06 27.1	2.731	3.516	-0.44	+4.8	18.5	136.1
Mar. 30	14 45.36	-05 39.2	2.677	3.555	-0.59	+5.0	18.5	146.8

Comet 82P/Gehrels

Epoch = 2010 July 23.0 TT
T = 2010 Jan. 12.03515 TT
Peri. = 226.27792 e = 0.1225173
Node = 239.49063 2000.0 a = 4.1406398 AU
Incl. = 1.12589 n = 0.11697765
q = 3.6333398 AU P = 8.43 years

m1 = 9.5 + 5 log(Delta) + 15.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	07 04.54	+21 30.7	2.651	3.633	−0.73	+0.9	20.0	178.0
Jan. 14	06 57.28	+21 39.9	2.661	3.633	−0.67	+0.8	20.0	169.7
Jan. 24	06 50.62	+21 47.9	2.702	3.634	−0.54	+0.6	20.1	158.0
Feb. 3	06 45.22	+21 54.3	2.771	3.634	−0.37	+0.5	20.1	146.6
Feb. 13	06 41.53	+21 58.9	2.863	3.635	−0.17	+0.3	20.2	135.6
Feb. 23	06 39.81	+22 01.7	2.976	3.636	+0.03	+0.1	20.3	125.1
Mar. 5	06 40.15	+22 02.8	3.103	3.637	+0.23	−0.1	20.4	115.1
Mar. 15	06 42.48	+22 02.1	3.242	3.639	+0.42	−0.3	20.5	105.7
Mar. 25	06 46.67	+21 59.2	3.387	3.640	+0.59	−0.5	20.6	96.7
Apr. 4	06 52.52	+21 53.7	3.534	3.643	+0.73	−0.8	20.7	88.2
Apr. 14	06 59.82	+21 45.3	3.681	3.645	+0.85	−1.2	20.8	80.1
Apr. 24	07 08.37	+21 33.5	3.825	3.648	+0.96	−1.6	20.8	72.3
May 4	07 17.96	+21 17.8	3.963	3.650	+1.05	−2.0	20.9	64.8
May 14	07 28.41	+20 58.0	4.094	3.654	+1.12	−2.4	21.0	57.6
May 24	07 39.57	+20 33.7	4.215	3.657	+1.17	−2.9	21.1	50.6
June 3	07 51.28	+20 04.9	4.324	3.661	+1.21	−3.3	21.1	43.8
June 13	08 03.41	+19 31.5	4.422	3.665	+1.24	−3.8	21.2	37.2
June 23	08 15.86	+18 53.5	4.507	3.669	+1.27	−4.2	21.2	30.6
July 3	08 28.51	+18 11.0	4.577	3.673	+1.28	−4.7	21.3	24.2
July 13	08 41.29	+17 24.2	4.633	3.678	+1.28	−5.1	21.3	17.8
July 23	08 54.12	+16 33.5	4.673	3.683	+1.28	−5.4	21.3	11.4
Aug. 2	09 06.91	+15 39.2	4.697	3.688	+1.27	−5.8	21.4	5.1
Aug. 12	09 19.62	+14 41.7	4.706	3.693	+1.26	−6.0	21.4	1.6
Aug. 22	09 32.17	+13 41.5	4.698	3.699	+1.23	−6.2	21.4	7.8
Sept. 1	09 44.51	+12 39.1	4.675	3.705	+1.21	−6.4	21.4	14.2
Sept.11	09 56.58	+11 35.2	4.635	3.711	+1.17	−6.5	21.4	20.8
Sept.21	10 08.31	+10 30.4	4.579	3.717	+1.13	−6.5	21.4	27.5
Oct. 1	10 19.64	+09 25.5	4.508	3.723	+1.09	−6.4	21.3	34.3
Oct. 11	10 30.50	+08 21.2	4.422	3.730	+1.03	−6.3	21.3	41.2
Oct. 21	10 40.79	+07 18.4	4.323	3.737	+0.97	−6.0	21.3	48.4
Oct. 31	10 50.44	+06 18.1	4.212	3.744	+0.89	−5.7	21.2	55.7
Nov. 10	10 59.34	+05 21.2	4.089	3.751	+0.80	−5.2	21.2	63.4
Nov. 20	11 07.35	+04 28.8	3.958	3.758	+0.70	−4.7	21.1	71.3
Nov. 30	11 14.34	+03 42.1	3.820	3.766	+0.58	−4.0	21.0	79.5
Dec. 10	11 20.18	+03 02.2	3.678	3.774	+0.45	−3.2	21.0	88.0
Dec. 20	11 24.68	+02 30.4	3.535	3.782	+0.30	−2.3	20.9	96.9
Dec. 30	11 27.72	+02 07.7	3.395	3.790	+0.14	−1.2	20.8	106.3
Jan. 9	11 29.15	+01 55.3	3.262	3.798	−0.03	−0.1	20.8	116.0
Jan. 19	11 28.90	+01 53.9	3.141	3.806	−0.19	+1.0	20.7	126.3
Jan. 29	11 26.97	+02 03.5	3.036	3.815	−0.35	+2.0	20.6	136.9
Feb. 8	11 23.46	+02 23.6	2.951	3.824	−0.48	+2.9	20.6	148.0
Feb. 18	11 18.65	+02 52.8	2.892	3.832	−0.57	+3.6	20.6	159.4
Feb. 28	11 12.94	+03 28.4	2.860	3.841	−0.61	+3.9	20.5	170.9
Mar. 10	11 06.83	+04 07.4	2.859	3.851	−0.59	+3.9	20.6	176.9
Mar. 20	11 00.89	+04 45.9	2.887	3.860	−0.52	+3.5	20.6	165.6
Mar. 30	10 55.67	+05 20.7	2.945	3.869	−0.41	+2.8	20.7	154.3

Comet C/2009 T3 (LINEAR)

Epoch = 2010 July 23.0 TT
T = 2010 Jan. 12.05516 TT
Peri. = 32.46389
Node = 60.11351 2000.0
Incl. = 148.74431
q = 2.2809416 AU
e = 0.9992810

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	00 04.73	+17 34.6	2.146	2.283	-1.04	-5.1	17.8	85.1
Jan. 14	23 54.30	+16 43.8	2.372	2.281	-0.64	-2.6	18.1	72.7
Jan. 24	23 47.86	+16 18.0	2.586	2.285	-0.37	-0.6	18.3	61.4
Feb. 3	23 44.13	+16 12.4	2.782	2.295	-0.19	+1.1	18.4	51.1
Feb. 13	23 42.26	+16 22.9	2.954	2.310	-0.07	+2.4	18.6	41.6
Feb. 23	23 41.60	+16 46.7	3.098	2.330	+0.01	+3.5	18.7	32.9
Mar. 5	23 41.66	+17 21.6	3.211	2.356	+0.04	+4.4	18.9	25.6
Mar. 15	23 42.08	+18 05.8	3.293	2.387	+0.04	+5.2	19.0	20.4
Mar. 25	23 42.51	+18 58.3	3.342	2.422	+0.01	+6.0	19.1	19.1
Apr. 4	23 42.65	+19 58.0	3.360	2.462	-0.04	+6.6	19.1	22.1
Apr. 14	23 42.21	+21 04.3	3.346	2.506	-0.14	+7.2	19.2	28.1
Apr. 24	23 40.84	+22 16.6	3.303	2.554	-0.27	+7.7	19.3	35.7
May 4	23 38.18	+23 34.0	3.234	2.605	-0.44	+8.2	19.3	44.1
May 14	23 33.80	+24 55.5	3.142	2.660	-0.66	+8.4	19.3	53.1
May 24	23 27.18	+26 19.5	3.032	2.718	-0.94	+8.4	19.4	62.6
June 3	23 17.73	+27 43.0	2.909	2.778	-1.29	+7.8	19.4	72.5
June 13	23 04.84	+29 01.5	2.782	2.841	-1.70	+6.6	19.4	82.9
June 23	22 47.87	+30 07.3	2.658	2.906	-2.13	+4.3	19.4	93.7
July 3	22 26.52	+30 49.9	2.547	2.974	-2.55	+0.6	19.4	104.8
July 13	22 01.00	+30 56.2	2.461	3.043	-2.86	-4.2	19.4	115.7
July 23	21 32.42	+30 13.7	2.409	3.113	-2.96	-9.7	19.4	125.7
Aug. 2	21 02.81	+28 36.5	2.401	3.185	-2.83	-14.7	19.5	133.4
Aug. 12	20 34.52	+26 09.5	2.444	3.258	-2.49	-18.2	19.7	136.9
Aug. 22	20 09.57	+23 08.0	2.537	3.332	-2.05	-19.6	19.8	135.2
Sept. 1	19 49.04	+19 51.6	2.677	3.408	-1.59	-19.4	20.1	129.3
Sept.11	19 33.13	+16 37.6	2.857	3.484	-1.16	-18.0	20.3	121.0
Sept.21	19 21.51	+13 37.5	3.068	3.561	-0.80	-16.0	20.5	111.5
Oct. 1	19 13.56	+10 57.1	3.299	3.638	-0.49	-13.9	20.8	101.8
Oct. 11	19 08.64	+08 38.1	3.544	3.717	-0.25	-11.8	21.0	92.1
Oct. 21	19 06.16	+06 40.1	3.793	3.795	-0.05	-9.9	21.3	82.6
Oct. 31	19 05.62	+05 01.6	4.040	3.874	+0.10	-8.1	21.5	73.4
Nov. 10	19 06.60	+03 40.5	4.280	3.954	+0.21	-6.5	21.7	64.4
Nov. 20	19 08.74	+02 35.2	4.507	4.033	+0.30	-5.2	21.9	55.7
Nov. 30	19 11.76	+01 43.6	4.717	4.113	+0.36	-3.9	22.1	47.4
Dec. 10	19 15.40	+01 04.4	4.906	4.193	+0.41	-2.8	22.3	39.5
Dec. 20	19 19.46	+00 36.2	5.072	4.273	+0.43	-1.9	22.4	32.3
Dec. 30	19 23.73	+00 17.6	5.213	4.354	+0.43	-1.0	22.6	26.3
Jan. 9	19 28.05	+00 07.7	5.327	4.434	+0.42	-0.2	22.7	22.4
Jan. 19	19 32.26	+00 05.5	5.413	4.515	+0.39	+0.4	22.8	21.8
Jan. 29	19 36.20	+00 09.9	5.471	4.595	+0.35	+1.0	22.9	24.7
Feb. 8	19 39.74	+00 20.2	5.502	4.676	+0.30	+1.5	23.0	30.2
Feb. 18	19 42.72	+00 35.5	5.506	4.756	+0.23	+1.9	23.1	37.2
Feb. 28	19 45.00	+00 54.8	5.485	4.837	+0.14	+2.2	23.1	45.0
Mar. 10	19 46.44	+01 17.2	5.443	4.917	+0.05	+2.5	23.2	53.5
Mar. 20	19 46.90	+01 41.8	5.382	4.997	-0.07	+2.6	23.2	62.3
Mar. 30	19 46.24	+02 07.4	5.306	5.077	-0.19	+2.5	23.3	71.4

Comet P/2009 T2 (La Sagra)

Epoch = 2010 July 23.0 TT
T = 2010 Jan. 12.85948 TT
Peri. = 215.48209 e = 0.7691278
Node = 215.98220 2000.0 a = 7.6006336 AU
Incl. = 28.10639 n = 0.04703589
q = 1.7547750 AU P = 20.95 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	02 19.39	-07 29.5	1.218	1.758	+1.59	-2.9	16.1	105.5
Jan. 14	02 35.32	-07 59.0	1.302	1.755	+1.78	+0.1	16.2	99.4
Jan. 24	02 53.11	-07 58.0	1.389	1.759	+1.93	+2.4	16.4	94.1
Feb. 3	03 12.42	-07 34.3	1.480	1.771	+2.05	+4.0	16.6	89.5
Feb. 13	03 32.94	-06 54.2	1.575	1.790	+2.15	+5.0	16.8	85.4
Feb. 23	03 54.44	-06 03.8	1.672	1.816	+2.22	+5.6	17.0	81.7
Mar. 5	04 16.68	-05 08.2	1.773	1.848	+2.28	+5.7	17.2	78.3
Mar. 15	04 39.45	-04 11.6	1.878	1.886	+2.31	+5.4	17.5	75.1
Mar. 25	05 02.57	-03 17.8	1.988	1.929	+2.33	+4.8	17.8	72.0
Apr. 4	05 25.85	-02 29.8	2.102	1.977	+2.33	+4.0	18.1	69.0
Apr. 14	05 49.12	-01 49.7	2.221	2.030	+2.31	+3.0	18.3	65.9
Apr. 24	06 12.25	-01 19.3	2.344	2.086	+2.28	+2.0	18.6	62.8
May 4	06 35.09	-00 59.6	2.472	2.146	+2.24	+0.9	18.9	59.6
May 14	06 57.52	-00 50.9	2.603	2.208	+2.19	-0.2	19.2	56.3
May 24	07 19.46	-00 53.4	2.737	2.273	+2.14	-1.3	19.5	52.8
June 3	07 40.82	-01 06.5	2.872	2.340	+2.07	-2.3	19.8	49.3
June 13	08 01.57	-01 29.7	3.008	2.409	+2.01	-3.2	20.1	45.6
June 23	08 21.67	-02 02.2	3.143	2.479	+1.94	-4.1	20.4	41.7
July 3	08 41.08	-02 43.0	3.276	2.551	+1.87	-4.8	20.7	37.8
July 13	08 59.82	-03 31.1	3.405	2.623	+1.81	-5.5	20.9	33.9
July 23	09 17.89	-04 25.6	3.529	2.696	+1.74	-6.0	21.2	29.9
Aug. 2	09 35.28	-05 25.5	3.645	2.770	+1.67	-6.4	21.4	26.1
Aug. 12	09 52.02	-06 30.0	3.754	2.845	+1.61	-6.8	21.7	22.6
Aug. 22	10 08.11	-07 38.0	3.852	2.919	+1.54	-7.1	21.9	19.6
Sept. 1	10 23.55	-08 48.8	3.940	2.994	+1.48	-7.3	22.1	17.7
Sept.11	10 38.36	-10 01.7	4.015	3.069	+1.42	-7.4	22.3	17.5
Sept.21	10 52.51	-11 15.7	4.076	3.144	+1.35	-7.5	22.5	19.1
Oct. 1	11 06.00	-12 30.3	4.123	3.219	+1.28	-7.4	22.7	22.4
Oct. 11	11 18.79	-13 44.7	4.155	3.294	+1.21	-7.3	22.9	26.8
Oct. 21	11 30.85	-14 58.1	4.170	3.369	+1.13	-7.2	23.0	32.1
Oct. 31	11 42.11	-16 10.0	4.170	3.444	+1.04	-7.0	23.2	38.1
Nov. 10	11 52.52	-17 19.5	4.155	3.518	+0.94	-6.6	23.3	44.5
Nov. 20	12 01.96	-18 25.9	4.124	3.592	+0.84	-6.2	23.4	51.4
Nov. 30	12 10.35	-19 28.2	4.079	3.666	+0.72	-5.7	23.5	58.7
Dec. 10	12 17.56	-20 25.7	4.022	3.739	+0.59	-5.1	23.6	66.4
Dec. 20	12 23.44	-21 17.1	3.955	3.812	+0.44	-4.4	23.7	74.5
Dec. 30	12 27.88	-22 01.2	3.880	3.885	+0.29	-3.5	23.8	83.0
Jan. 9	12 30.74	-22 36.5	3.801	3.957	+0.12	-2.5	23.9	91.9
Jan. 19	12 31.92	-23 01.5	3.722	4.029	-0.05	-1.3	23.9	101.1
Jan. 29	12 31.38	-23 14.5	3.647	4.101	-0.22	+0.1	24.0	110.8
Feb. 8	12 29.16	-23 13.8	3.581	4.172	-0.38	+1.6	24.1	120.7
Feb. 18	12 25.39	-22 58.0	3.530	4.242	-0.50	+3.1	24.2	130.9
Feb. 28	12 20.36	-22 26.8	3.498	4.313	-0.59	+4.6	24.2	141.0
Mar. 10	12 14.45	-21 40.6	3.490	4.382	-0.63	+5.9	24.3	150.6
Mar. 20	12 08.14	-20 41.2	3.509	4.452	-0.62	+6.9	24.5	158.7
Mar. 30	12 01.93	-19 31.9	3.559	4.520	-0.56	+7.5	24.6	162.3

Comet 224P/LINEAR-NEAT

Epoch = 2010 July 23.0 TT
T = 2010 Jan. 31.86488 TT
Peri. = 16.10678 e = 0.4164469
Node = 40.52683 2000.0 a = 3.4095399 AU
Incl. = 13.43588 n = 0.15655264
q = 1.9896475 AU P = 6.30 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 55.20	+07 14.1	1.707	2.002	+1.32	+14.6	20.0	92.1
Jan. 14	01 08.44	+09 39.6	1.807	1.995	+1.51	+14.7	20.1	85.9
Jan. 24	01 23.52	+12 06.3	1.908	1.991	+1.67	+14.6	20.2	80.1
Feb. 3	01 40.20	+14 32.2	2.009	1.990	+1.81	+14.3	20.3	74.6
Feb. 13	01 58.31	+16 55.2	2.111	1.992	+1.94	+13.8	20.5	69.5
Feb. 23	02 17.73	+19 13.7	2.211	1.997	+2.06	+13.2	20.6	64.6
Mar. 5	02 38.32	+21 25.4	2.311	2.006	+2.17	+12.3	20.7	59.9
Mar. 15	02 60.00	+23 28.6	2.409	2.017	+2.27	+11.3	20.8	55.4
Mar. 25	03 22.66	+25 21.5	2.505	2.031	+2.35	+10.1	21.0	51.0
Apr. 4	03 46.18	+27 02.4	2.599	2.048	+2.43	+8.7	21.1	46.8
Apr. 14	04 10.43	+28 29.7	2.691	2.068	+2.49	+7.3	21.3	42.7
Apr. 24	04 35.29	+29 42.3	2.779	2.090	+2.53	+5.7	21.4	38.6
May 4	05 00.57	+30 39.3	2.865	2.114	+2.55	+4.1	21.6	34.6
May 14	05 26.10	+31 20.2	2.947	2.141	+2.56	+2.5	21.7	30.7
May 24	05 51.70	+31 44.9	3.025	2.170	+2.55	+0.9	21.9	26.9
June 3	06 17.16	+31 53.8	3.098	2.201	+2.52	−0.6	22.0	23.0
June 13	06 42.31	+31 47.3	3.166	2.233	+2.47	−2.1	22.2	19.3
June 23	07 07.00	+31 26.7	3.228	2.267	+2.41	−3.4	22.4	15.8
July 3	07 31.08	+30 53.2	3.284	2.302	+2.34	−4.5	22.5	12.6
July 13	07 54.46	+30 08.1	3.333	2.339	+2.26	−5.5	22.7	10.1
July 23	08 17.05	+29 13.3	3.373	2.376	+2.18	−6.3	22.8	9.3
Aug. 2	08 38.81	+28 10.2	3.406	2.415	+2.09	−7.0	23.0	10.5
Aug. 12	08 59.70	+27 00.6	3.429	2.455	+2.00	−7.4	23.1	13.4
Aug. 22	09 19.70	+25 46.2	3.443	2.495	+1.91	−7.8	23.2	17.2
Sept. 1	09 38.82	+24 28.6	3.446	2.536	+1.82	−7.9	23.4	21.7
Sept.11	09 57.07	+23 09.3	3.439	2.577	+1.73	−7.9	23.5	26.5
Sept.21	10 14.41	+21 50.1	3.420	2.619	+1.65	−7.8	23.6	31.6
Oct. 1	10 30.87	+20 32.2	3.390	2.661	+1.55	−7.5	23.7	37.1
Oct. 11	10 46.41	+19 17.3	3.349	2.703	+1.46	−7.0	23.8	42.8
Oct. 21	11 01.00	+18 06.9	3.296	2.746	+1.36	−6.5	23.9	48.9
Oct. 31	11 14.58	+17 02.2	3.233	2.788	+1.25	−5.7	23.9	55.2
Nov. 10	11 27.09	+16 04.8	3.159	2.831	+1.13	−4.9	24.0	61.9
Nov. 20	11 38.40	+15 16.2	3.076	2.874	+1.00	−3.9	24.1	69.0
Nov. 30	11 48.41	+14 37.5	2.986	2.916	+0.85	−2.7	24.1	76.4
Dec. 10	11 56.93	+14 10.4	2.891	2.959	+0.69	−1.5	24.1	84.2
Dec. 20	12 03.79	+13 55.7	2.792	3.001	+0.50	−0.1	24.2	92.5
Dec. 30	12 08.79	+13 54.3	2.694	3.043	+0.29	+1.2	24.2	101.3
Jan. 9	12 11.71	+14 06.5	2.599	3.085	+0.07	+2.5	24.2	110.6
Jan. 19	12 12.38	+14 31.7	2.512	3.127	−0.17	+3.6	24.3	120.3
Jan. 29	12 10.71	+15 08.1	2.438	3.168	−0.40	+4.5	24.3	130.5
Feb. 8	12 06.74	+15 52.6	2.382	3.209	−0.60	+4.8	24.3	141.0
Feb. 18	12 00.69	+16 40.5	2.348	3.250	−0.76	+4.6	24.4	151.3
Feb. 28	11 53.05	+17 26.4	2.340	3.290	−0.86	+3.8	24.5	160.4
Mar. 10	11 44.48	+18 04.7	2.361	3.330	−0.87	+2.6	24.6	165.0
Mar. 20	11 35.80	+18 30.6	2.411	3.369	−0.80	+1.1	24.7	161.3
Mar. 30	11 27.79	+18 41.5	2.490	3.408	−0.67	−0.5	24.9	152.7

Comet C/2009 K2 (Catalina)

Epoch = 2010 July 23.0 TT
T = 2010 Feb. 7.58378 TT
Peri. = 147.71525
Node = 123.80684 2000.0
Incl. = 66.81419
q = 3.2463070 AU
e = 0.9981472

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	18 51.89	+05 38.1	4.094	3.263	+1.41	-7.3	17.6	28.4
Jan. 14	19 05.97	+04 24.7	4.098	3.255	+1.38	-6.4	17.6	27.2
Jan. 24	19 19.79	+03 21.1	4.089	3.249	+1.35	-5.5	17.6	27.7
Feb. 3	19 33.24	+02 25.8	4.066	3.247	+1.30	-4.8	17.6	29.7
Feb. 13	19 46.25	+01 37.4	4.028	3.247	+1.25	-4.3	17.5	33.2
Feb. 23	19 58.72	+00 54.1	3.975	3.250	+1.19	-4.0	17.5	37.8
Mar. 5	20 10.58	+00 14.1	3.907	3.255	+1.11	-3.9	17.5	43.2
Mar. 15	20 21.71	-00 24.5	3.825	3.264	+1.03	-3.9	17.5	49.2
Mar. 25	20 32.03	-01 04.0	3.730	3.275	+0.94	-4.3	17.4	55.8
Apr. 4	20 41.42	-01 46.7	3.623	3.289	+0.83	-4.8	17.4	62.9
Apr. 14	20 49.77	-02 34.9	3.505	3.306	+0.72	-5.7	17.3	70.3
Apr. 24	20 56.92	-03 31.6	3.380	3.325	+0.58	-6.8	17.3	78.3
May 4	21 02.75	-04 39.5	3.251	3.346	+0.43	-8.2	17.2	86.6
May 14	21 07.09	-06 01.6	3.120	3.371	+0.27	-9.9	17.1	95.5
May 24	21 09.76	-07 40.7	2.993	3.397	+0.09	-11.8	17.1	104.9
June 3	21 10.63	-09 39.0	2.874	3.426	-0.11	-13.9	17.0	114.9
June 13	21 09.57	-11 57.8	2.768	3.457	-0.31	-15.9	17.0	125.4
June 23	21 06.52	-14 36.4	2.682	3.491	-0.50	-17.5	17.0	136.5
July 3	21 01.56	-17 31.7	2.622	3.526	-0.67	-18.6	17.0	148.1
July 13	20 54.91	-20 37.7	2.592	3.564	-0.79	-18.8	17.0	159.8
July 23	20 46.98	-23 46.0	2.597	3.603	-0.86	-18.1	17.0	170.4
Aug. 2	20 38.40	-26 47.2	2.639	3.644	-0.85	-16.6	17.1	170.8
Aug. 12	20 29.86	-29 33.2	2.716	3.687	-0.78	-14.5	17.2	160.6
Aug. 22	20 22.10	-31 58.2	2.826	3.732	-0.63	-12.2	17.4	149.3
Sept. 1	20 15.75	-34 00.1	2.965	3.778	-0.45	-9.9	17.5	138.2
Sept.11	20 11.25	-35 39.1	3.128	3.826	-0.24	-7.8	17.7	127.5
Sept.21	20 08.85	-36 57.5	3.309	3.875	-0.02	-6.1	17.9	117.3
Oct. 1	20 08.61	-37 58.2	3.504	3.925	+0.19	-4.6	18.1	107.6
Oct. 11	20 10.47	-38 44.2	3.706	3.977	+0.38	-3.4	18.2	98.4
Oct. 21	20 14.27	-39 18.2	3.912	4.029	+0.55	-2.4	18.4	89.6
Oct. 31	20 19.80	-39 42.6	4.117	4.083	+0.70	-1.6	18.6	81.1
Nov. 10	20 26.84	-39 59.0	4.317	4.138	+0.83	-1.0	18.7	73.0
Nov. 20	20 35.18	-40 09.0	4.511	4.194	+0.94	-0.5	18.9	65.3
Nov. 30	20 44.61	-40 13.9	4.693	4.251	+1.03	-0.1	19.0	57.8
Dec. 10	20 54.92	-40 14.8	4.864	4.309	+1.10	+0.2	19.2	50.8
Dec. 20	21 05.96	-40 12.5	5.019	4.367	+1.16	+0.4	19.3	44.1
Dec. 30	21 17.56	-40 08.1	5.158	4.426	+1.20	+0.6	19.4	38.1
Jan. 9	21 29.59	-40 02.5	5.280	4.486	+1.23	+0.6	19.5	32.9
Jan. 19	21 41.92	-39 56.5	5.384	4.547	+1.25	+0.5	19.6	28.9
Jan. 29	21 54.44	-39 51.0	5.468	4.608	+1.26	+0.4	19.7	26.5
Feb. 8	22 07.07	-39 47.1	5.534	4.670	+1.26	+0.1	19.8	26.3
Feb. 18	22 19.70	-39 45.7	5.581	4.732	+1.26	-0.2	19.9	28.1
Feb. 28	22 32.28	-39 47.7	5.610	4.795	+1.24	-0.7	20.0	31.6
Mar. 10	22 44.73	-39 54.3	5.622	4.859	+1.22	-1.2	20.0	36.4
Mar. 20	22 56.97	-40 06.4	5.619	4.922	+1.20	-1.9	20.1	41.9
Mar. 30	23 08.95	-40 24.9	5.601	4.986	+1.17	-2.6	20.1	47.9

Comet 203P/Korlevic

Epoch = 2010 July 23.0 TT
T = 2010 Feb. 8.26675 TT
Peri. = 154.55482 e = 0.3153421
Node = 290.56589 2000.0 a = 4.6477999 AU
Incl. = 2.97550 n = 0.09836327
q = 3.1821529 AU P = 10.02 years

m1 = 5.0 + 5 log(Delta) + 17.5 log(r(t-240))

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	04 22.54	+23 45.6	2.337	3.188	-0.24	-1.8	16.4	144.4
Jan. 14	04 20.13	+23 28.0	2.426	3.185	-0.01	-1.2	16.4	133.6
Jan. 24	04 20.02	+23 15.7	2.534	3.183	+0.22	-0.7	16.4	123.4
Feb. 3	04 22.21	+23 09.1	2.655	3.182	+0.44	-0.1	16.5	113.7
Feb. 13	04 26.58	+23 07.9	2.787	3.182	+0.64	+0.3	16.6	104.6
Feb. 23	04 32.94	+23 11.1	2.925	3.183	+0.81	+0.7	16.6	95.9
Mar. 5	04 41.08	+23 17.6	3.065	3.185	+0.97	+0.8	16.7	87.8
Mar. 15	04 50.76	+23 26.0	3.206	3.188	+1.10	+0.9	16.8	80.0
Mar. 25	05 01.78	+23 34.7	3.345	3.191	+1.21	+0.8	16.8	72.6
Apr. 4	05 13.91	+23 42.4	3.478	3.196	+1.31	+0.6	16.9	65.5
Apr. 14	05 26.99	+23 48.0	3.606	3.201	+1.39	+0.2	16.9	58.7
Apr. 24	05 40.85	+23 50.4	3.727	3.208	+1.45	-0.2	16.9	52.0
May 4	05 55.32	+23 48.7	3.838	3.215	+1.50	-0.6	17.0	45.6
May 14	06 10.28	+23 42.2	3.940	3.223	+1.53	-1.2	17.0	39.4
May 24	06 25.60	+23 30.5	4.030	3.232	+1.56	-1.7	17.0	33.3
June 3	06 41.15	+23 13.2	4.110	3.242	+1.57	-2.3	17.0	27.3
June 13	06 56.84	+22 50.1	4.177	3.252	+1.57	-2.9	17.0	21.3
June 23	07 12.58	+22 21.2	4.232	3.264	+1.57	-3.5	17.0	15.4
July 3	07 28.26	+21 46.6	4.274	3.276	+1.56	-4.0	17.0	9.6
July 13	07 43.81	+21 06.5	4.302	3.289	+1.53	-4.5	17.0	3.7
July 23	07 59.16	+20 21.3	4.317	3.302	+1.51	-5.0	17.0	2.2
Aug. 2	08 14.23	+19 31.4	4.319	3.317	+1.47	-5.4	17.0	8.1
Aug. 12	08 28.98	+18 37.3	4.306	3.332	+1.43	-5.8	17.0	14.1
Aug. 22	08 43.31	+17 39.6	4.279	3.348	+1.39	-6.0	17.0	20.1
Sept. 1	08 57.19	+16 39.2	4.239	3.364	+1.34	-6.3	16.9	26.3
Sept.11	09 10.54	+15 36.6	4.185	3.381	+1.28	-6.4	16.9	32.7
Sept.21	09 23.30	+14 32.9	4.118	3.399	+1.21	-6.4	16.9	39.1
Oct. 1	09 35.38	+13 28.8	4.039	3.417	+1.13	-6.3	16.8	45.8
Oct. 11	09 46.71	+12 25.4	3.948	3.436	+1.05	-6.2	16.8	52.7
Oct. 21	09 57.18	+11 23.7	3.846	3.456	+0.95	-5.9	16.7	59.9
Oct. 31	10 06.70	+10 24.9	3.735	3.475	+0.84	-5.5	16.7	67.3
Nov. 10	10 15.12	+09 30.2	3.617	3.496	+0.72	-4.9	16.6	75.1
Nov. 20	10 22.31	+08 40.9	3.494	3.517	+0.58	-4.3	16.5	83.2
Nov. 30	10 28.13	+07 58.2	3.369	3.538	+0.43	-3.5	16.5	91.7
Dec. 10	10 32.40	+07 23.6	3.244	3.560	+0.26	-2.5	16.4	100.7
Dec. 20	10 34.99	+06 58.2	3.123	3.582	+0.08	-1.5	16.3	110.1
Dec. 30	10 35.80	+06 43.0	3.012	3.605	-0.10	-0.4	16.3	120.0
Jan. 9	10 34.76	+06 38.7	2.913	3.628	-0.28	+0.6	16.2	130.3
Jan. 19	10 31.96	+06 45.1	2.832	3.651	-0.44	+1.6	16.2	141.2
Jan. 29	10 27.61	+07 01.3	2.773	3.675	-0.56	+2.4	16.2	152.4
Feb. 8	10 22.05	+07 25.6	2.741	3.699	-0.62	+2.9	16.2	163.9
Feb. 18	10 15.80	+07 55.1	2.737	3.723	-0.63	+3.1	16.2	175.1
Feb. 28	10 09.47	+08 26.5	2.764	3.747	-0.58	+3.0	16.2	172.0
Mar. 10	10 03.64	+08 56.6	2.821	3.772	-0.48	+2.6	16.3	160.7
Mar. 20	09 58.84	+09 22.5	2.905	3.797	-0.34	+2.0	16.4	149.5
Mar. 30	09 55.45	+09 42.1	3.014	3.822	-0.18	+1.2	16.5	138.8

Comet C/2009 P2 (Boattini)

Epoch = 2010 July 23.0 TT
T = 2010 Feb. 11.73416 TT
Peri. = 76.23415
Node = 60.46693 2000.0
Incl. = 163.45819
q = 6.5443745 AU
e = 1.0011111

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	22 26.19	+06 04.0	7.010	6.550	+0.07	-1.1	19.4	58.4
Jan. 14	22 26.92	+05 52.8	7.153	6.547	+0.13	-0.5	19.4	48.8
Jan. 24	22 28.23	+05 48.3	7.275	6.546	+0.17	+0.1	19.4	39.5
Feb. 3	22 29.95	+05 49.7	7.373	6.545	+0.20	+0.7	19.5	30.7
Feb. 13	22 31.96	+05 56.3	7.445	6.544	+0.22	+1.1	19.5	22.6
Feb. 23	22 34.12	+06 07.4	7.488	6.545	+0.22	+1.5	19.5	16.3
Mar. 5	22 36.30	+06 22.2	7.503	6.546	+0.21	+1.8	19.5	14.1
Mar. 15	22 38.39	+06 39.9	7.489	6.548	+0.19	+2.0	19.5	17.5
Mar. 25	22 40.26	+06 59.8	7.447	6.550	+0.15	+2.1	19.5	24.2
Apr. 4	22 41.79	+07 21.1	7.377	6.553	+0.11	+2.2	19.5	32.3
Apr. 14	22 42.85	+07 43.1	7.283	6.557	+0.05	+2.2	19.4	40.9
Apr. 24	22 43.33	+08 04.9	7.166	6.562	-0.02	+2.1	19.4	49.8
May 4	22 43.11	+08 25.6	7.029	6.567	-0.10	+1.9	19.4	59.0
May 14	22 42.07	+08 44.4	6.877	6.573	-0.20	+1.6	19.3	68.4
May 24	22 40.09	+08 60.0	6.715	6.580	-0.30	+1.1	19.3	78.0
June 3	22 37.07	+09 11.5	6.547	6.587	-0.41	+0.6	19.2	87.8
June 13	22 32.92	+09 17.6	6.378	6.595	-0.53	0.0	19.2	97.9
June 23	22 27.59	+09 17.2	6.216	6.604	-0.65	-0.8	19.1	108.2
July 3	22 21.08	+09 09.0	6.066	6.613	-0.76	-1.7	19.1	118.6
July 13	22 13.45	+08 52.2	5.934	6.623	-0.86	-2.6	19.0	129.1
July 23	22 04.83	+08 25.9	5.828	6.633	-0.94	-3.6	19.0	139.5
Aug. 2	21 55.43	+07 50.3	5.752	6.645	-0.99	-4.5	19.0	149.3
Aug. 12	21 45.55	+07 05.7	5.710	6.657	-1.00	-5.2	19.0	157.3
Aug. 22	21 35.53	+06 13.4	5.707	6.669	-0.98	-5.8	19.0	160.6
Sept. 1	21 25.74	+05 15.3	5.742	6.682	-0.92	-6.1	19.0	157.0
Sept.11	21 16.51	+04 13.9	5.814	6.696	-0.84	-6.2	19.0	148.9
Sept.21	21 08.16	+03 11.4	5.922	6.711	-0.73	-6.1	19.1	138.9
Oct. 1	21 00.87	+02 10.4	6.059	6.726	-0.61	-5.8	19.1	128.3
Oct. 11	20 54.80	+01 12.6	6.221	6.742	-0.48	-5.3	19.2	117.6
Oct. 21	20 49.99	+00 19.6	6.401	6.758	-0.36	-4.7	19.3	106.9
Oct. 31	20 46.41	-00 27.6	6.593	6.775	-0.24	-4.1	19.3	96.3
Nov. 10	20 44.02	-01 08.4	6.790	6.792	-0.13	-3.4	19.4	86.0
Nov. 20	20 42.69	-01 42.6	6.985	6.811	-0.04	-2.8	19.5	75.8
Nov. 30	20 42.32	-02 10.3	7.173	6.829	+0.04	-2.1	19.5	65.9
Dec. 10	20 42.75	-02 31.6	7.348	6.849	+0.11	-1.5	19.6	56.2
Dec. 20	20 43.87	-02 46.9	7.506	6.869	+0.16	-1.0	19.7	46.7
Dec. 30	20 45.51	-02 56.7	7.643	6.889	+0.20	-0.5	19.7	37.5
Jan. 9	20 47.55	-03 01.3	7.755	6.910	+0.23	0.0	19.7	28.8
Jan. 19	20 49.84	-03 01.4	7.841	6.932	+0.24	+0.4	19.8	21.0
Jan. 29	20 52.27	-02 57.5	7.899	6.954	+0.24	+0.7	19.8	15.3
Feb. 8	20 54.70	-02 50.1	7.927	6.976	+0.23	+1.0	19.8	14.4
Feb. 18	20 57.01	-02 39.9	7.927	7.000	+0.21	+1.2	19.8	18.9
Feb. 28	20 59.08	-02 27.6	7.898	7.023	+0.17	+1.4	19.8	26.2
Mar. 10	21 00.80	-02 13.7	7.842	7.048	+0.12	+1.5	19.8	34.6
Mar. 20	21 02.05	-01 59.0	7.762	7.072	+0.07	+1.5	19.8	43.5
Mar. 30	21 02.72	-01 44.2	7.659	7.098	0.00	+1.4	19.8	52.6

Comet 149P/Mueller

Epoch = 2010 July 23.0 TT
T = 2010 Feb. 19.13856 TT
Peri. = 43.75108 e = 0.3883362
Node = 145.26399 2000.0 a = 4.3338738 AU
Incl. = 29.73440 n = 0.10924201
q = 2.6508736 AU P = 9.02 years

m1 = 9.4 + 5 log(Delta) + 17.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	13 21.91	+08 32.2	2.517	2.668	+1.27	+6.1	18.9	87.9
Jan. 14	13 34.57	+09 33.4	2.387	2.662	+1.14	+8.2	18.7	95.1
Jan. 24	13 45.96	+10 55.5	2.263	2.656	+0.99	+10.3	18.6	102.5
Feb. 3	13 55.81	+12 38.8	2.149	2.653	+0.80	+12.4	18.5	110.0
Feb. 13	14 03.83	+14 42.5	2.046	2.651	+0.59	+14.1	18.4	117.5
Feb. 23	14 09.71	+17 03.5	1.958	2.651	+0.35	+15.3	18.3	124.9
Mar. 5	14 13.23	+19 36.0	1.888	2.652	+0.11	+15.6	18.2	131.6
Mar. 15	14 14.28	+22 12.0	1.838	2.656	-0.14	+14.9	18.1	137.3
Mar. 25	14 12.93	+24 41.1	1.809	2.660	-0.34	+13.1	18.1	141.2
Apr. 4	14 09.54	+26 51.9	1.803	2.667	-0.48	+10.3	18.1	142.5
Apr. 14	14 04.71	+28 34.7	1.818	2.674	-0.54	+6.8	18.2	141.2
Apr. 24	13 59.26	+29 42.6	1.855	2.684	-0.52	+3.0	18.2	137.6
May 4	13 54.10	+30 12.9	1.910	2.695	-0.41	-0.6	18.3	132.5
May 14	13 49.99	+30 06.9	1.981	2.707	-0.25	-3.8	18.5	126.5
May 24	13 47.52	+29 28.4	2.066	2.721	-0.05	-6.5	18.6	120.3
June 3	13 47.01	+28 23.2	2.163	2.736	+0.15	-8.6	18.7	114.0
June 13	13 48.53	+26 56.9	2.268	2.753	+0.35	-10.2	18.9	107.7
June 23	13 52.02	+25 14.9	2.381	2.771	+0.53	-11.3	19.0	101.6
July 3	13 57.33	+23 21.9	2.499	2.790	+0.69	-12.0	19.2	95.7
July 13	14 04.25	+21 21.5	2.621	2.811	+0.83	-12.4	19.3	90.0
July 23	14 12.59	+19 17.1	2.745	2.832	+0.96	-12.6	19.5	84.4
Aug. 2	14 22.15	+17 11.1	2.870	2.855	+1.06	-12.6	19.7	79.0
Aug. 12	14 32.77	+15 05.5	2.996	2.879	+1.15	-12.3	19.8	73.6
Aug. 22	14 44.30	+13 02.2	3.120	2.904	+1.23	-12.0	20.0	68.4
Sept. 1	14 56.61	+11 02.6	3.242	2.929	+1.30	-11.5	20.1	63.2
Sept.11	15 09.60	+09 07.9	3.362	2.956	+1.36	-10.9	20.3	58.1
Sept.21	15 23.16	+07 19.2	3.477	2.983	+1.40	-10.2	20.4	53.1
Oct. 1	15 37.21	+05 37.6	3.587	3.012	+1.45	-9.4	20.6	48.1
Oct. 11	15 51.68	+04 03.6	3.691	3.041	+1.48	-8.5	20.7	43.2
Oct. 21	16 06.47	+02 38.2	3.787	3.070	+1.50	-7.6	20.8	38.4
Oct. 31	16 21.51	+01 21.7	3.876	3.100	+1.52	-6.7	20.9	33.8
Nov. 10	16 36.73	+00 14.7	3.955	3.131	+1.53	-5.7	21.1	29.5
Nov. 20	16 52.04	-00 42.5	4.023	3.162	+1.53	-4.7	21.2	25.7
Nov. 30	17 07.36	-01 29.8	4.081	3.194	+1.52	-3.7	21.3	22.8
Dec. 10	17 22.60	-02 07.1	4.126	3.227	+1.51	-2.7	21.4	21.1
Dec. 20	17 37.67	-02 34.4	4.158	3.259	+1.48	-1.8	21.5	21.1
Dec. 30	17 52.49	-02 52.2	4.177	3.292	+1.45	-0.8	21.6	22.8
Jan. 9	18 06.95	-03 00.6	4.182	3.326	+1.40	0.0	21.6	25.9
Jan. 19	18 20.95	-03 00.2	4.173	3.359	+1.35	+0.9	21.7	30.2
Jan. 29	18 34.41	-02 51.6	4.150	3.393	+1.28	+1.6	21.8	35.2
Feb. 8	18 47.21	-02 35.7	4.113	3.427	+1.20	+2.2	21.8	40.8
Feb. 18	18 59.25	-02 13.2	4.063	3.461	+1.12	+2.8	21.9	46.7
Feb. 28	19 10.44	-01 45.2	4.001	3.496	+1.02	+3.2	21.9	53.0
Mar. 10	19 20.65	-01 12.7	3.927	3.530	+0.91	+3.6	22.0	59.6
Mar. 20	19 29.76	-00 37.1	3.843	3.565	+0.79	+3.7	22.0	66.5
Mar. 30	19 37.68	+00 00.4	3.750	3.600	+0.66	+3.8	22.0	73.7

Comet 157P/Tritton

Epoch = 2010 July 23.0 TT
T = 2010 Feb. 20.53142 TT
Peri. = 148.74588 e = 0.6011559
Node = 300.10710 2000.0 a = 3.4102076 AU
Incl. = 7.27706 n = 0.15650667
q = 1.3601412 AU P = 6.30 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 26.14	+12 18.4	1.126	1.463	+2.38	+9.0	15.7	87.6
Jan. 14	00 49.92	+13 48.9	1.151	1.425	+2.68	+10.1	15.6	83.4
Jan. 24	01 16.75	+15 30.0	1.177	1.396	+2.97	+10.6	15.5	79.9
Feb. 3	01 46.41	+17 15.6	1.205	1.375	+3.22	+10.3	15.5	77.0
Feb. 13	02 18.62	+18 58.6	1.235	1.363	+3.44	+9.3	15.5	74.7
Feb. 23	02 53.06	+20 31.6	1.271	1.360	+3.62	+7.6	15.5	72.8
Mar. 5	03 29.23	+21 47.5	1.313	1.368	+3.73	+5.3	15.6	71.2
Mar. 15	04 06.53	+22 40.2	1.365	1.384	+3.77	+2.6	15.8	69.8
Mar. 25	04 44.28	+23 05.8	1.425	1.409	+3.75	−0.3	16.0	68.5
Apr. 4	05 21.73	+23 02.8	1.497	1.443	+3.65	−3.1	16.3	67.2
Apr. 14	05 58.25	+22 32.0	1.579	1.484	+3.51	−5.6	16.6	65.8
Apr. 24	06 33.35	+21 36.2	1.672	1.530	+3.33	−7.7	16.9	64.2
May 4	07 06.69	+20 19.2	1.775	1.583	+3.14	−9.4	17.2	62.4
May 14	07 38.13	+18 45.3	1.887	1.640	+2.95	−10.7	17.6	60.2
May 24	08 07.65	+16 58.5	2.006	1.700	+2.77	−11.6	18.0	57.9
June 3	08 35.33	+15 02.4	2.132	1.763	+2.60	−12.2	18.3	55.2
June 13	09 01.30	+13 00.0	2.263	1.829	+2.44	−12.6	18.7	52.3
June 23	09 25.75	+10 53.6	2.398	1.896	+2.31	−12.8	19.1	49.1
July 3	09 48.81	+08 45.1	2.534	1.964	+2.19	−12.9	19.4	45.7
July 13	10 10.68	+06 35.9	2.671	2.034	+2.08	−12.9	19.8	42.1
July 23	10 31.50	+04 27.1	2.806	2.103	+1.99	−12.7	20.1	38.2
Aug. 2	10 51.40	+02 19.6	2.938	2.173	+1.91	−12.6	20.4	34.1
Aug. 12	11 10.50	+00 14.0	3.066	2.243	+1.84	−12.3	20.7	29.8
Aug. 22	11 28.91	−01 49.1	3.187	2.313	+1.78	−12.0	21.0	25.3
Sept. 1	11 46.69	−03 49.3	3.300	2.383	+1.72	−11.7	21.2	20.7
Sept.11	12 03.94	−05 46.2	3.405	2.452	+1.67	−11.3	21.5	15.9
Sept.21	12 20.69	−07 39.4	3.498	2.521	+1.63	−10.9	21.7	11.2
Oct. 1	12 36.97	−09 28.7	3.580	2.588	+1.59	−10.5	22.0	6.9
Oct. 11	12 52.83	−11 13.7	3.648	2.656	+1.54	−10.1	22.2	5.2
Oct. 21	13 08.24	−12 54.2	3.703	2.722	+1.50	−9.6	22.4	8.5
Oct. 31	13 23.21	−14 30.0	3.742	2.788	+1.45	−9.1	22.5	13.7
Nov. 10	13 37.71	−16 00.8	3.766	2.853	+1.40	−8.6	22.7	19.6
Nov. 20	13 51.68	−17 26.4	3.774	2.917	+1.34	−8.0	22.9	25.9
Nov. 30	14 05.06	−18 46.8	3.765	2.980	+1.27	−7.5	23.0	32.4
Dec. 10	14 17.77	−20 01.7	3.741	3.042	+1.19	−6.9	23.1	39.2
Dec. 20	14 29.69	−21 11.1	3.701	3.103	+1.10	−6.4	23.2	46.3
Dec. 30	14 40.69	−22 15.0	3.646	3.164	+0.99	−5.8	23.3	53.6
Jan. 9	14 50.62	−23 13.3	3.578	3.223	+0.87	−5.3	23.4	61.3
Jan. 19	14 59.28	−24 05.9	3.499	3.282	+0.72	−4.7	23.5	69.2
Jan. 29	15 06.51	−24 52.9	3.410	3.339	+0.56	−4.1	23.5	77.5
Feb. 8	15 12.07	−25 33.9	3.315	3.396	+0.37	−3.5	23.6	86.2
Feb. 18	15 15.76	−26 08.5	3.217	3.452	+0.16	−2.8	23.6	95.3
Feb. 28	15 17.40	−26 36.2	3.121	3.507	−0.06	−2.0	23.6	104.8
Mar. 10	15 16.85	−26 55.9	3.030	3.561	−0.28	−1.1	23.7	114.7
Mar. 20	15 14.07	−27 06.5	2.949	3.614	−0.49	0.0	23.7	125.0
Mar. 30	15 09.17	−27 06.7	2.884	3.666	−0.67	+1.1	23.8	135.7

Comet 126P/IRAS

Epoch = 2010 July 23.0 TT
T = 2010 Feb. 22.63986 TT
Peri. = 356.71845 e = 0.6963905
Node = 357.76096 2000.0 a = 5.6433068 AU
Incl. = 45.83142 n = 0.07351967
q = 1.7133617 AU P = 13.41 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	21 36.78	-30 27.6	2.495	1.797	+2.16	+28.8	14.8	36.1
Jan. 14	21 58.41	-25 39.7	2.529	1.767	+2.07	+29.1	14.7	31.5
Jan. 24	22 19.09	-20 48.2	2.563	1.744	+1.99	+29.3	14.7	27.0
Feb. 3	22 39.00	-15 55.1	2.596	1.727	+1.93	+29.4	14.6	22.4
Feb. 13	22 58.34	-11 01.5	2.628	1.717	+1.89	+29.3	14.6	18.0
Feb. 23	23 17.25	-06 08.7	2.658	1.713	+1.86	+29.1	14.6	13.7
Mar. 5	23 35.88	-01 17.6	2.686	1.717	+1.85	+28.9	14.7	9.9
Mar. 15	23 54.40	+03 31.1	2.710	1.728	+1.85	+28.6	14.7	7.1
Mar. 25	00 12.94	+08 16.7	2.732	1.745	+1.87	+28.2	14.8	6.7
Apr. 4	00 31.62	+12 58.4	2.750	1.769	+1.90	+27.7	14.9	8.9
Apr. 14	00 50.61	+17 35.5	2.766	1.799	+1.94	+27.2	15.0	12.4
Apr. 24	01 10.02	+22 07.1	2.779	1.835	+2.00	+26.5	15.2	16.2
May 4	01 30.01	+26 32.1	2.790	1.875	+2.07	+25.7	15.3	20.1
May 14	01 50.72	+30 49.6	2.799	1.921	+2.16	+24.8	15.5	24.1
May 24	02 12.30	+34 58.0	2.806	1.970	+2.26	+23.8	15.7	28.0
June 3	02 34.87	+38 56.0	2.812	2.023	+2.37	+22.6	15.8	31.9
June 13	02 58.61	+42 42.1	2.816	2.080	+2.50	+21.3	16.0	35.8
June 23	03 23.60	+46 14.9	2.820	2.139	+2.63	+19.8	16.2	39.7
July 3	03 49.95	+49 32.8	2.822	2.200	+2.78	+18.2	16.4	43.6
July 13	04 17.70	+52 34.7	2.823	2.263	+2.91	+16.5	16.6	47.5
July 23	04 46.80	+55 19.7	2.822	2.328	+3.03	+14.8	16.8	51.4
Aug. 2	05 17.11	+57 47.2	2.820	2.394	+3.13	+13.0	16.9	55.4
Aug. 12	05 48.40	+59 57.6	2.815	2.462	+3.19	+11.4	17.1	59.5
Aug. 22	06 20.26	+61 51.9	2.809	2.530	+3.20	+10.0	17.3	63.8
Sept. 1	06 52.21	+63 31.7	2.800	2.599	+3.15	+8.8	17.5	68.1
Sept.11	07 23.71	+64 59.8	2.789	2.668	+3.04	+8.0	17.6	72.7
Sept.21	07 54.15	+66 19.6	2.776	2.738	+2.88	+7.5	17.8	77.4
Oct. 1	08 22.98	+67 34.7	2.763	2.808	+2.67	+7.4	17.9	82.2
Oct. 11	08 49.65	+68 49.0	2.748	2.879	+2.39	+7.7	18.1	87.2
Oct. 21	09 13.57	+70 06.0	2.735	2.949	+2.06	+8.2	18.2	92.3
Oct. 31	09 34.15	+71 28.2	2.725	3.019	+1.64	+8.9	18.4	97.5
Nov. 10	09 50.54	+72 57.7	2.718	3.089	+1.10	+9.6	18.5	102.6
Nov. 20	10 01.52	+74 34.1	2.719	3.159	+0.38	+10.1	18.7	107.5
Nov. 30	10 05.33	+76 15.4	2.728	3.229	-0.61	+10.1	18.8	112.0
Dec. 10	09 59.21	+77 56.0	2.748	3.298	-1.95	+8.9	19.0	115.8
Dec. 20	09 39.67	+79 25.5	2.781	3.367	-3.53	+6.3	19.1	118.8
Dec. 30	09 04.41	+80 28.3	2.829	3.436	-4.73	+1.9	19.3	120.6
Jan. 9	08 17.12	+80 47.0	2.894	3.504	-4.69	-3.4	19.5	121.1
Jan. 19	07 30.18	+80 12.9	2.975	3.572	-3.51	-7.9	19.7	120.2
Jan. 29	06 55.03	+78 54.0	3.073	3.640	-2.08	-10.8	19.9	117.9
Feb. 8	06 34.27	+77 06.1	3.188	3.707	-0.91	-12.3	20.1	114.5
Feb. 18	06 25.16	+75 03.5	3.317	3.773	-0.11	-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 42.1	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

Comet 81P/Wild

Epoch = 2010 July 23.0 TT
T = 2010 Feb. 22.68769 TT
Peri. = 41.78801 e = 0.5372916
Node = 136.09619 2000.0 a = 3.4536701 AU
Incl. = 3.23743 n = 0.15356166
q = 1.5980421 AU P = 6.42 years

m1 = 7.8 + 5 log(Delta) + 15.0 log(r(t+20))

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	12 16.98	-00 46.0	1.205	1.672	+2.14	-10.4	11.4	99.2
Jan. 14	12 38.42	-02 29.9	1.106	1.646	+2.06	-9.1	11.1	103.7
Jan. 24	12 59.00	-04 00.9	1.017	1.625	+1.93	-7.5	10.9	108.6
Feb. 3	13 18.29	-05 15.9	0.936	1.610	+1.74	-5.6	10.7	113.8
Feb. 13	13 35.71	-06 11.7	0.864	1.601	+1.49	-3.4	10.6	119.5
Feb. 23	13 50.59	-06 45.9	0.802	1.598	+1.17	-1.2	10.4	125.9
Mar. 5	14 02.29	-06 58.2	0.751	1.601	+0.80	+0.8	10.3	133.0
Mar. 15	14 10.26	-06 49.8	0.711	1.611	+0.40	+2.5	10.3	141.0
Mar. 25	14 14.24	-06 24.8	0.685	1.626	+0.03	+3.4	10.3	149.9
Apr. 4	14 14.59	-05 50.6	0.674	1.647	-0.24	+3.5	10.4	159.3
Apr. 14	14 12.18	-05 16.0	0.679	1.674	-0.37	+2.5	10.6	168.4
Apr. 24	14 08.45	-04 50.8	0.704	1.705	-0.35	+0.8	10.8	172.1
May 4	14 04.99	-04 42.5	0.747	1.741	-0.20	-1.2	11.1	165.4
May 14	14 03.02	-04 54.5	0.809	1.781	+0.03	-3.2	11.4	156.4
May 24	14 03.34	-05 26.5	0.888	1.825	+0.29	-4.9	11.8	147.4
June 3	14 06.21	-06 15.8	0.983	1.871	+0.53	-6.2	12.2	139.0
June 13	14 11.52	-07 18.2	1.093	1.920	+0.75	-7.2	12.6	131.2
June 23	14 19.03	-08 30.1	1.216	1.972	+0.94	-7.8	13.0	123.9
July 3	14 28.41	-09 47.6	1.349	2.025	+1.09	-8.0	13.4	117.0
July 13	14 39.35	-11 07.9	1.493	2.080	+1.23	-8.1	13.8	110.5
July 23	14 51.60	-12 28.7	1.645	2.136	+1.33	-7.9	14.2	104.3
Aug. 2	15 04.91	-13 48.0	1.805	2.193	+1.42	-7.6	14.5	98.2
Aug. 12	15 19.11	-15 04.2	1.970	2.251	+1.49	-7.2	14.9	92.3
Aug. 22	15 34.06	-16 16.2	2.139	2.309	+1.55	-6.7	15.2	86.5
Sept. 1	15 49.61	-17 22.9	2.311	2.368	+1.61	-6.1	15.6	80.7
Sept.11	16 05.66	-18 23.6	2.485	2.427	+1.65	-5.4	15.9	75.0
Sept.21	16 22.13	-19 17.5	2.658	2.486	+1.68	-4.7	16.2	69.2
Oct. 1	16 38.91	-20 04.2	2.829	2.545	+1.70	-3.9	16.4	63.4
Oct. 11	16 55.94	-20 43.4	2.998	2.603	+1.72	-3.1	16.7	57.6
Oct. 21	17 13.14	-21 14.7	3.160	2.662	+1.73	-2.3	17.0	51.8
Oct. 31	17 30.42	-21 38.1	3.317	2.720	+1.73	-1.5	17.2	45.8
Nov. 10	17 47.71	-21 53.5	3.465	2.778	+1.72	-0.8	17.4	39.8
Nov. 20	18 04.94	-22 01.0	3.603	2.835	+1.71	0.0	17.6	33.8
Nov. 30	18 22.02	-22 00.8	3.730	2.892	+1.69	+0.7	17.8	27.6
Dec. 10	18 38.88	-21 53.3	3.843	2.948	+1.66	+1.4	18.0	21.4
Dec. 20	18 55.46	-21 39.0	3.943	3.004	+1.62	+2.1	18.2	15.1
Dec. 30	19 11.67	-21 18.3	4.028	3.059	+1.58	+2.6	18.3	8.7
Jan. 9	19 27.45	-20 51.8	4.096	3.114	+1.53	+3.1	18.5	2.4
Jan. 19	19 42.74	-20 20.4	4.148	3.168	+1.47	+3.6	18.6	4.5
Jan. 29	19 57.47	-19 44.8	4.182	3.221	+1.41	+3.9	18.7	11.1
Feb. 8	20 11.58	-19 05.8	4.198	3.274	+1.34	+4.1	18.8	17.8
Feb. 18	20 25.01	-18 24.4	4.198	3.325	+1.27	+4.3	18.9	24.7
Feb. 28	20 37.70	-17 41.5	4.179	3.377	+1.19	+4.3	19.0	31.7
Mar. 10	20 49.59	-16 58.2	4.145	3.427	+1.10	+4.3	19.1	38.8
Mar. 20	21 00.59	-16 15.4	4.094	3.477	+1.01	+4.1	19.2	46.0
Mar. 30	21 10.64	-15 34.1	4.029	3.526	+0.90	+3.9	19.2	53.4

Comet P/2004 R1 (McNaught)

Epoch = 2010 July 23.0 TT
T = 2010 Feb. 25.22200 TT
Peri. = 0.68782 e = 0.6829323
Node = 295.95371 2000.0 a = 3.1084764 AU
Incl. = 4.89382 n = 0.17983852
q = 0.9855975 AU P = 5.48 years

m1 = 18.5 + 5 log(Delta) + 12.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″ °	Elong. °
Jan. 4	17 07.54	-25 23.4	2.038	1.224	-2.44	+0.8	21.1	61.8/ 94	25.3
Jan. 14	17 53.16	-25 35.4	1.961	1.150	-2.64	-2.2	20.7	65.3/ 89	25.2
Jan. 24	18 41.20	-24 51.1	1.903	1.086	-2.77	-5.7	20.3	68.1/ 84	24.5
Feb. 3	19 30.28	-23 05.0	1.865	1.035	-2.79	-9.3	20.0	69.8/ 79	23.2
Feb. 13	20 18.92	-20 19.2	1.849	1.001	-2.71	-12.5	19.8	70.1/ 74	21.7
Feb. 23	21 05.82	-16 44.1	1.854	0.986	-2.55	-14.7	19.8	68.9/ 70	20.2
Mar. 5	21 50.14	-12 35.3	1.879	0.992	-2.35	-15.8	19.8	66.6/ 68	18.7
Mar. 15	22 31.53	-08 09.8	1.919	1.018	-2.14	-15.8	20.0	63.3/ 66	17.7
Mar. 25	23 09.99	-03 43.0	1.973	1.061	-1.94	-14.9	20.3	59.3/ 65	17.1
Apr. 4	23 45.69	+00 33.3	2.036	1.120	-1.75	-13.6	20.7	55.2/ 64	17.1
Apr. 14	00 18.95	+04 31.8	2.104	1.190	-1.58	-11.9	21.1	51.1/ 65	17.8
Apr. 24	00 50.01	+08 08.3	2.175	1.268	-1.43	-10.2	21.5	47.2/ 65	19.1
May 4	01 19.14	+11 21.4	2.245	1.352	-1.29	-8.6	21.9	43.5/ 66	20.9
May 14	01 46.55	+14 11.1	2.310	1.439	-1.17	-7.1	22.3	40.1/ 68	23.3
May 24	02 12.36	+16 38.5	2.370	1.529	-1.06	-5.7	22.7	37.0/ 69	26.3
June 3	02 36.70	+18 45.3	2.421	1.620	-0.97	-4.6	23.0	34.1/ 71	29.7
June 13	02 59.62	+20 33.1	2.463	1.711	-0.89	-3.6	23.4	31.4/ 72	33.5
June 23	03 21.13	+22 04.0	2.494	1.802	-0.81	-2.8	23.7	28.8/ 74	37.8
July 3	03 41.23	+23 19.9	2.512	1.892	-0.75	-2.1	24.0	26.3/ 75	42.5
July 13	03 59.88	+24 22.6	2.518	1.981	-0.69	-1.5	24.2	23.8/ 77	47.7
July 23	04 16.98	+25 13.9	2.511	2.069	-0.64	-1.0	24.4	21.3/ 78	53.2
Aug. 2	04 32.43	+25 55.5	2.492	2.156	-0.61	-0.6	24.7	18.7/ 79	59.2
Aug. 12	04 46.09	+26 29.2	2.460	2.241	-0.58	-0.3	24.8	15.9/ 79	65.6
Aug. 22	04 57.77	+26 56.4	2.417	2.325	-0.56	0.0	25.0	12.9/ 80	72.6
Sept. 1	05 07.26	+27 18.5	2.366	2.407	-0.55	+0.2	.	9.6/ 79	80.1
Sept.11	05 14.31	+27 36.8	2.307	2.487	-0.56	+0.4	.	5.9/ 75	88.2
Sept.21	05 18.64	+27 51.8	2.244	2.566	-0.57	+0.5	.	2.2/ 56	96.9
Oct. 1	05 20.01	+28 04.0	2.181	2.643	-0.60	+0.6	.	2.5/290	106.3
Oct. 11	05 18.20	+28 12.6	2.122	2.719	-0.65	+0.6	.	6.7/274	116.5
Oct. 21	05 13.15	+28 16.5	2.073	2.793	-0.70	+0.5	.	10.7/269	127.5
Oct. 31	05 05.06	+28 13.5	2.040	2.866	-0.76	+0.3	.	14.1/266	139.1
Nov. 10	04 54.46	+28 01.5	2.029	2.937	-0.82	0.0	.	16.3/263	151.3
Nov. 20	04 42.25	+27 39.5	2.045	3.006	-0.86	-0.4	.	17.1/260	163.7
Nov. 30	04 29.61	+27 08.0	2.091	3.074	-0.88	-0.8	.	16.4/257	174.2
Dec. 10	04 17.71	+26 29.9	2.170	3.141	-0.87	-1.2	.	14.2/254	168.4
Dec. 20	04 07.57	+25 49.6	2.280	3.206	-0.85	-1.4	.	11.2/250	156.5
Dec. 30	03 59.81	+25 11.3	2.418	3.270	-0.81	-1.6	.	7.7/245	144.7
Jan. 9	03 54.68	+24 38.5	2.580	3.332	-0.76	-1.6	.	4.3/234	133.4
Jan. 19	03 52.18	+24 13.2	2.761	3.394	-0.70	-1.6	.	1.7/184	122.6
Jan. 29	03 52.10	+23 55.9	2.956	3.453	-0.65	-1.5	.	3.0/109	112.4
Feb. 8	03 54.17	+23 46.2	3.161	3.512	-0.60	-1.4	.	5.4/ 93	102.7
Feb. 18	03 58.09	+23 43.3	3.371	3.569	-0.55	-1.2	.	7.5/ 88	93.5
Feb. 28	04 03.58	+23 45.9	3.581	3.625	-0.51	-1.1	.	9.3/ 86	84.6
Mar. 10	04 10.37	+23 52.5	3.789	3.680	-0.47	-0.9	.	10.8/ 85	76.2
Mar. 20	04 18.23	+24 02.0	3.990	3.734	-0.44	-0.8	.	12.0/ 84	68.0
Mar. 30	04 26.97	+24 13.2	4.183	3.786	-0.41	-0.6	.	13.0/ 84	60.1

Comet 65P/Gunn

Epoch = 2010 July 23.0 TT
T = 2010 Mar. 2.23430 TT
Peri. = 196.66765 e = 0.3195168
Node = 68.35332 2000.0 a = 3.5863579 AU
Incl. = 10.38613 n = 0.14511878
q = 2.4404565 AU P = 6.79 years

m1 = 6.8 + 5 log(Delta) + 12.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	17 07.76	-22 52.0	3.318	2.466	+2.09	-4.5	14.3	25.4
Jan. 14	17 28.62	-23 36.7	3.251	2.458	+2.09	-3.5	14.2	30.7
Jan. 24	17 49.48	-24 12.0	3.177	2.451	+2.07	-2.6	14.2	36.1
Feb. 3	18 10.19	-24 38.3	3.094	2.446	+2.04	-1.8	14.1	41.6
Feb. 13	18 30.64	-24 56.1	3.005	2.443	+2.00	-1.0	14.0	47.1
Feb. 23	18 50.66	-25 06.5	2.910	2.441	+1.94	-0.4	14.0	52.7
Mar. 5	19 10.10	-25 10.7	2.810	2.441	+1.87	+0.1	13.9	58.4
Mar. 15	19 28.82	-25 10.1	2.705	2.442	+1.78	+0.4	13.8	64.2
Mar. 25	19 46.66	-25 06.5	2.597	2.445	+1.68	+0.4	13.7	70.1
Apr. 4	20 03.45	-25 02.1	2.486	2.449	+1.56	+0.3	13.6	76.2
Apr. 14	20 19.03	-24 59.0	2.374	2.455	+1.42	-0.1	13.6	82.6
Apr. 24	20 33.19	-24 59.6	2.262	2.462	+1.25	-0.7	13.5	89.2
May 4	20 45.73	-25 06.4	2.151	2.471	+1.07	-1.5	13.4	96.1
May 14	20 56.42	-25 21.6	2.044	2.482	+0.86	-2.6	13.3	103.4
May 24	21 04.99	-25 47.6	1.942	2.494	+0.62	-3.8	13.2	111.2
June 3	21 11.20	-26 25.6	1.848	2.507	+0.36	-5.0	13.1	119.4
June 13	21 14.77	-27 16.0	1.765	2.521	+0.08	-6.2	13.1	128.1
June 23	21 15.53	-28 17.6	1.695	2.537	-0.20	-6.9	13.0	137.3
July 3	21 13.48	-29 26.7	1.643	2.554	-0.46	-7.1	13.0	146.7
July 13	21 08.84	-30 37.9	1.611	2.573	-0.67	-6.6	13.0	155.9
July 23	21 02.19	-31 43.7	1.603	2.592	-0.77	-5.3	13.0	163.3
Aug. 2	20 54.45	-32 36.9	1.619	2.613	-0.77	-3.6	13.1	165.2
Aug. 12	20 46.71	-33 12.5	1.660	2.634	-0.66	-1.5	13.2	159.8
Aug. 22	20 40.09	-33 27.9	1.725	2.657	-0.46	+0.4	13.3	151.3
Sept. 1	20 35.46	-33 24.0	1.812	2.680	-0.22	+2.1	13.4	142.0
Sept.11	20 33.30	-33 03.2	1.918	2.704	+0.05	+3.5	13.6	132.7
Sept.21	20 33.80	-32 28.7	2.040	2.729	+0.31	+4.5	13.8	123.8
Oct. 1	20 36.85	-31 43.4	2.175	2.755	+0.54	+5.4	14.0	115.2
Oct. 11	20 42.21	-30 49.5	2.320	2.781	+0.74	+6.1	14.2	107.0
Oct. 21	20 49.56	-29 48.7	2.472	2.808	+0.90	+6.7	14.4	99.1
Oct. 31	20 58.57	-28 41.9	2.629	2.835	+1.04	+7.2	14.6	91.6
Nov. 10	21 08.92	-27 30.0	2.788	2.863	+1.14	+7.7	14.7	84.3
Nov. 20	21 20.36	-26 13.5	2.946	2.892	+1.23	+8.1	14.9	77.2
Nov. 30	21 32.61	-24 52.8	3.103	2.921	+1.29	+8.5	15.1	70.2
Dec. 10	21 45.50	-23 28.2	3.255	2.950	+1.33	+8.8	15.2	63.5
Dec. 20	21 58.84	-22 00.4	3.402	2.979	+1.37	+9.1	15.4	56.8
Dec. 30	22 12.49	-20 29.8	3.541	3.009	+1.39	+9.3	15.5	50.3
Jan. 9	22 26.35	-18 56.9	3.671	3.039	+1.40	+9.5	15.7	43.8
Jan. 19	22 40.32	-17 22.3	3.791	3.069	+1.40	+9.6	15.8	37.5
Jan. 29	22 54.32	-15 46.7	3.899	3.100	+1.40	+9.6	15.9	31.2
Feb. 8	23 08.29	-14 10.5	3.995	3.130	+1.39	+9.6	16.0	25.1
Feb. 18	23 22.18	-12 34.6	4.077	3.161	+1.38	+9.5	16.1	19.1
Feb. 28	23 35.94	-10 59.6	4.145	3.191	+1.36	+9.4	16.2	13.6
Mar. 10	23 49.54	-09 26.0	4.199	3.222	+1.34	+9.1	16.3	9.1
Mar. 20	00 02.93	-07 54.6	4.236	3.252	+1.32	+8.9	16.3	7.7
Mar. 30	00 16.08	-06 26.0	4.259	3.283	+1.29	+8.5	16.4	10.7

Comet 219P/LINEAR

Epoch = 2010 July 23.0 TT
T = 2010 Mar. 5.53726 TT
Peri. = 107.72545 e = 0.3530642
Node = 231.03011 2000.0 a = 3.6543192 AU
Incl. = 11.52456 n = 0.14108939
q = 2.3641099 AU P = 6.99 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	20 37.72	-09 41.9	3.230	2.398	+1.98	+7.3	17.2	27.2
Jan. 14	20 57.52	-08 28.8	3.268	2.388	+1.99	+8.2	17.2	22.4
Jan. 24	21 17.38	-07 06.5	3.298	2.379	+1.99	+9.0	17.2	17.8
Feb. 3	21 37.24	-05 36.2	3.320	2.373	+1.98	+9.7	17.2	13.5
Feb. 13	21 57.03	-03 58.8	3.334	2.368	+1.97	+10.3	17.2	10.0
Feb. 23	22 16.72	-02 15.4	3.341	2.365	+1.95	+10.8	17.2	8.0
Mar. 5	22 36.26	-00 27.3	3.340	2.364	+1.94	+11.1	17.2	8.6
Mar. 15	22 55.64	+01 24.1	3.332	2.365	+1.92	+11.4	17.2	11.3
Mar. 25	23 14.84	+03 17.6	3.316	2.368	+1.90	+11.4	17.2	15.1
Apr. 4	23 33.83	+05 11.9	3.293	2.372	+1.88	+11.4	17.2	19.3
Apr. 14	23 52.63	+07 05.6	3.262	2.379	+1.86	+11.2	17.2	23.7
Apr. 24	00 11.19	+08 57.6	3.224	2.387	+1.83	+10.9	17.2	28.3
May 4	00 29.50	+10 46.5	3.180	2.397	+1.80	+10.5	17.2	32.9
May 14	00 47.54	+12 31.3	3.128	2.408	+1.77	+10.0	17.2	37.7
May 24	01 05.25	+14 10.9	3.069	2.422	+1.73	+9.3	17.2	42.6
June 3	01 22.57	+15 44.3	3.003	2.437	+1.69	+8.6	17.2	47.6
June 13	01 39.43	+17 10.6	2.931	2.453	+1.63	+7.8	17.2	52.8
June 23	01 55.72	+18 29.1	2.852	2.471	+1.56	+7.0	17.2	58.1
July 3	02 11.31	+19 39.0	2.768	2.491	+1.47	+6.1	17.2	63.7
July 13	02 26.06	+20 39.8	2.678	2.511	+1.37	+5.1	17.1	69.6
July 23	02 39.75	+21 30.8	2.584	2.534	+1.24	+4.1	17.1	75.8
Aug. 2	02 52.18	+22 11.7	2.486	2.557	+1.09	+3.0	17.1	82.3
Aug. 12	03 03.09	+22 41.9	2.386	2.581	+0.91	+1.9	17.1	89.3
Aug. 22	03 12.19	+23 01.1	2.286	2.607	+0.70	+0.8	17.0	96.8
Sept. 1	03 19.21	+23 08.6	2.188	2.633	+0.46	-0.5	17.0	104.8
Sept.11	03 23.84	+23 03.8	2.094	2.661	+0.20	-1.8	17.0	113.5
Sept.21	03 25.88	+22 46.1	2.009	2.689	-0.07	-3.1	17.0	122.8
Oct. 1	03 25.22	+22 14.8	1.936	2.718	-0.33	-4.5	16.9	132.9
Oct. 11	03 21.95	+21 29.8	1.879	2.748	-0.55	-5.8	17.0	143.7
Oct. 21	03 16.47	+20 32.2	1.843	2.778	-0.70	-6.8	17.0	155.1
Oct. 31	03 09.44	+19 24.6	1.833	2.809	-0.77	-7.3	17.0	166.9
Nov. 10	03 01.74	+18 11.4	1.850	2.840	-0.74	-7.3	17.1	178.7
Nov. 20	02 54.38	+16 58.6	1.897	2.872	-0.62	-6.7	17.3	168.8
Nov. 30	02 48.23	+15 52.0	1.972	2.905	-0.43	-5.6	17.4	156.9
Dec. 10	02 43.88	+14 56.4	2.072	2.937	-0.22	-4.2	17.6	145.5
Dec. 20	02 41.72	+14 14.8	2.196	2.970	+0.01	-2.7	17.8	134.6
Dec. 30	02 41.80	+13 47.8	2.338	3.004	+0.22	-1.3	18.0	124.3
Jan. 9	02 44.04	+13 34.8	2.494	3.037	+0.42	-0.1	18.2	114.5
Jan. 19	02 48.27	+13 34.2	2.660	3.071	+0.60	+1.0	18.4	105.3
Jan. 29	02 54.25	+13 43.9	2.833	3.105	+0.75	+1.8	18.6	96.6
Feb. 8	03 01.74	+14 01.7	3.009	3.138	+0.88	+2.4	18.8	88.3
Feb. 18	03 10.53	+14 25.3	3.184	3.172	+0.99	+2.8	19.0	80.4
Feb. 28	03 20.40	+14 52.8	3.357	3.206	+1.08	+3.0	19.2	72.8
Mar. 10	03 31.18	+15 22.5	3.525	3.240	+1.15	+3.0	19.4	65.4
Mar. 20	03 42.73	+15 52.8	3.686	3.274	+1.22	+3.0	19.6	58.3
Mar. 30	03 54.88	+16 22.4	3.838	3.308	+1.27	+2.8	19.7	51.4

Comet 162P/Siding Spring

Epoch = 2010 July 23.0 TT
T = 2010 Mar. 8.42550 TT
Peri. = 356.31036 e = 0.5960419
Node = 31.23944 2000.0 a = 3.0525415 AU
Incl. = 27.81675 n = 0.18480414
q = 1.2330990 AU P = 5.33 years

H = 14.0 , G = 0.15

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	V	Elong. °
Jan. 4	21 33.25	-30 29.1	2.123	1.438	+3.04	+26.3	17.5	35.3
Jan. 14	22 03.63	-26 06.4	2.105	1.384	+2.98	+29.0	17.4	32.7
Jan. 24	22 33.42	-21 16.1	2.090	1.336	+2.92	+31.4	17.3	30.3
Feb. 3	23 02.65	-16 02.2	2.079	1.295	+2.88	+33.2	17.2	28.1
Feb. 13	23 31.46	-10 30.1	2.074	1.264	+2.86	+34.4	17.1	26.1
Feb. 23	00 00.05	-04 45.9	2.076	1.244	+2.86	+34.9	17.0	24.4
Mar. 5	00 28.67	+01 03.2	2.085	1.234	+2.89	+34.7	17.0	22.9
Mar. 15	00 57.61	+06 49.8	2.103	1.236	+2.96	+33.7	17.0	21.8
Mar. 25	01 27.19	+12 26.3	2.129	1.249	+3.05	+31.9	17.0	20.9
Apr. 4	01 57.67	+17 45.3	2.163	1.273	+3.16	+29.5	17.1	20.3
Apr. 14	02 29.31	+22 40.1	2.205	1.307	+3.30	+26.4	17.1	19.9
Apr. 24	03 02.28	+27 04.6	2.254	1.350	+3.43	+22.9	17.2	19.6
May 4	03 36.58	+30 53.5	2.311	1.400	+3.55	+19.0	17.3	19.4
May 14	04 12.09	+34 03.3	2.374	1.457	+3.64	+14.8	17.5	19.1
May 24	04 48.46	+36 31.7	2.441	1.518	+3.67	+10.7	17.6	18.8
June 3	05 25.19	+38 18.4	2.512	1.583	+3.65	+6.7	17.7	18.4
June 13	06 01.66	+39 25.1	2.586	1.651	+3.56	+3.0	17.8	18.1
June 23	06 37.27	+39 55.2	2.661	1.721	+3.42	-0.2	18.0	17.8
July 3	07 11.47	+39 53.4	2.735	1.793	+3.24	-2.8	18.1	17.7
July 13	07 43.89	+39 25.0	2.807	1.865	+3.04	-4.9	18.2	17.8
July 23	08 14.32	+38 35.7	2.875	1.938	+2.84	-6.5	18.4	18.5
Aug. 2	08 42.67	+37 30.7	2.938	2.011	+2.63	-7.6	18.5	19.7
Aug. 12	09 09.00	+36 14.7	2.994	2.084	+2.44	-8.3	18.6	21.5
Aug. 22	09 33.41	+34 52.0	3.042	2.157	+2.26	-8.6	18.8	23.9
Sept. 1	09 56.03	+33 26.1	3.081	2.229	+2.10	-8.6	18.9	27.0
Sept.11	10 17.01	+31 59.8	3.109	2.300	+1.95	-8.4	19.0	30.6
Sept.21	10 36.47	+30 35.8	3.127	2.371	+1.80	-8.0	19.1	34.7
Oct. 1	10 54.51	+29 16.2	3.132	2.440	+1.67	-7.3	19.3	39.3
Oct. 11	11 11.23	+28 03.1	3.125	2.509	+1.54	-6.5	19.3	44.3
Oct. 21	11 26.64	+26 58.2	3.105	2.576	+1.41	-5.5	19.4	49.8
Oct. 31	11 40.76	+26 03.1	3.073	2.643	+1.28	-4.4	19.5	55.6
Nov. 10	11 53.56	+25 19.3	3.029	2.708	+1.14	-3.1	19.5	62.0
Nov. 20	12 04.95	+24 48.5	2.975	2.773	+0.99	-1.7	19.6	68.7
Nov. 30	12 14.84	+24 31.7	2.911	2.836	+0.82	-0.1	19.6	75.8
Dec. 10	12 23.04	+24 30.3	2.841	2.898	+0.63	+1.4	19.6	83.4
Dec. 20	12 29.37	+24 44.8	2.766	2.959	+0.42	+3.0	19.5	91.5
Dec. 30	12 33.59	+25 15.2	2.690	3.019	+0.19	+4.6	19.5	99.9
Jan. 9	12 35.47	+26 01.0	2.617	3.078	-0.07	+5.9	19.5	108.8
Jan. 19	12 34.76	+26 59.5	2.551	3.136	-0.34	+6.7	19.4	118.0
Jan. 29	12 31.34	+28 06.9	2.498	3.192	-0.61	+7.0	19.3	127.2
Feb. 8	12 25.21	+29 17.3	2.463	3.248	-0.86	+6.6	19.2	136.2
Feb. 18	12 16.62	+30 23.2	2.450	3.302	-1.05	+5.4	19.2	144.1
Feb. 28	12 06.15	+31 16.9	2.462	3.355	-1.15	+3.5	19.2	149.7
Mar. 10	11 54.60	+31 51.5	2.503	3.407	-1.16	+1.1	19.2	151.3
Mar. 20	11 42.98	+32 03.0	2.572	3.458	-1.07	-1.2	19.3	148.3
Mar. 30	11 32.26	+31 50.7	2.668	3.508	-0.91	-3.4	19.5	141.9

Comet C/2009 U3 (Hill)

Epoch = 2010 July 23.0 TT
T = 2010 Mar. 20.25414 TT
Peri. = 77.70192
Node = 49.32074 2000.0
Incl. = 51.26102
q = 1.4144217 AU
e = 0.9916248

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	01 09.12	+37 30.9	1.227	1.768	-1.10	+15.7	15.9	105.7
Jan. 14	00 58.10	+40 07.6	1.279	1.690	-0.57	+16.7	15.8	95.8
Jan. 24	00 52.36	+42 54.9	1.329	1.618	-0.10	+18.4	15.7	87.5
Feb. 3	00 51.40	+45 59.3	1.372	1.555	+0.35	+20.6	15.6	80.7
Feb. 13	00 54.91	+49 25.3	1.406	1.502	+0.81	+23.1	15.5	75.5
Feb. 23	01 03.01	+53 16.2	1.428	1.460	+1.35	+25.7	15.4	71.7
Mar. 5	01 16.48	+57 33.6	1.439	1.431	+2.10	+28.3	15.3	69.4
Mar. 15	01 37.49	+62 16.5	1.439	1.416	+3.35	+30.2	15.3	68.4
Mar. 25	02 10.98	+67 18.7	1.431	1.416	+5.71	+29.7	15.3	68.7
Apr. 4	03 08.10	+72 16.1	1.421	1.430	+10.15	+22.0	15.3	70.0
Apr. 14	04 49.62	+75 56.5	1.413	1.458	+14.26	-0.2	15.4	72.0
Apr. 24	07 12.24	+75 54.8	1.414	1.499	+11.45	-27.4	15.5	74.5
May 4	09 06.76	+71 20.7	1.431	1.552	+6.73	-42.7	15.7	76.9
May 14	10 14.06	+64 13.4	1.470	1.615	+4.12	-48.2	15.9	78.8
May 24	10 55.26	+56 11.0	1.535	1.686	+2.85	-48.6	16.2	80.0
June 3	11 23.73	+48 04.9	1.628	1.764	+2.19	-46.3	16.5	80.1
June 13	11 45.63	+40 22.0	1.748	1.848	+1.82	-42.5	16.9	79.1
June 23	12 03.86	+33 16.6	1.892	1.936	+1.60	-38.3	17.3	77.0
July 3	12 19.90	+26 53.6	2.055	2.028	+1.47	-34.1	17.6	74.1
July 13	12 34.58	+21 12.4	2.235	2.123	+1.38	-30.3	18.0	70.4
July 23	12 48.39	+16 09.6	2.427	2.220	+1.32	-26.9	18.4	66.2
Aug. 2	13 01.62	+11 40.8	2.625	2.318	+1.28	-24.0	18.7	61.4
Aug. 12	13 14.44	+07 41.2	2.828	2.418	+1.26	-21.5	19.1	56.3
Aug. 22	13 27.00	+04 06.7	3.030	2.519	+1.23	-19.3	19.4	51.0
Sept. 1	13 39.34	+00 53.6	3.229	2.620	+1.22	-17.5	19.7	45.3
Sept.11	13 51.54	-02 01.3	3.422	2.721	+1.21	-15.9	20.0	39.5
Sept.21	14 03.59	-04 40.5	3.607	2.823	+1.19	-14.5	20.3	33.4
Oct. 1	14 15.51	-07 06.0	3.780	2.924	+1.18	-13.4	20.5	27.1
Oct. 11	14 27.28	-09 19.5	3.939	3.026	+1.16	-12.3	20.8	20.7
Oct. 21	14 38.89	-11 22.6	4.083	3.127	+1.14	-11.4	21.0	14.1
Oct. 31	14 50.29	-13 16.3	4.210	3.228	+1.12	-10.5	21.2	7.4
Nov. 10	15 01.45	-15 01.7	4.318	3.329	+1.08	-9.8	21.4	2.0
Nov. 20	15 12.28	-16 39.6	4.407	3.429	+1.04	-9.1	21.6	7.3
Nov. 30	15 22.73	-18 11.0	4.475	3.529	+1.00	-8.5	21.7	14.5
Dec. 10	15 32.70	-19 36.4	4.522	3.628	+0.94	-8.0	21.9	22.0
Dec. 20	15 42.08	-20 56.7	4.548	3.727	+0.87	-7.6	22.0	29.8
Dec. 30	15 50.77	-22 12.6	4.555	3.825	+0.79	-7.2	22.1	37.7
Jan. 9	15 58.62	-23 24.6	4.542	3.923	+0.69	-6.9	22.2	45.9
Jan. 19	16 05.50	-24 33.4	4.513	4.020	+0.57	-6.6	22.3	54.4
Jan. 29	16 11.25	-25 39.7	4.468	4.116	+0.44	-6.4	22.4	63.0
Feb. 8	16 15.70	-26 43.8	4.411	4.212	+0.30	-6.2	22.5	72.0
Feb. 18	16 18.67	-27 46.1	4.346	4.308	+0.13	-6.0	22.5	81.3
Feb. 28	16 20.02	-28 46.5	4.276	4.403	-0.04	-5.8	22.6	90.8
Mar. 10	16 19.60	-29 44.7	4.207	4.497	-0.23	-5.5	22.6	100.6
Mar. 20	16 17.32	-30 40.0	4.143	4.591	-0.41	-5.1	22.7	110.8
Mar. 30	16 13.18	-31 31.1	4.090	4.685	-0.59	-4.5	22.8	121.1

Comet C/2009 O2 (Catalina)

Epoch = 2010 July 23.0 TT
T = 2010 Mar. 24.40601 TT
Peri. = 133.40511
Node = 310.23059 2000.0
Incl. = 107.95677
q = 0.6953518 AU
e = 0.9974460

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	19 21.28	-00 57.5	2.483	1.619	+0.94	+13.4	14.9	22.5
Jan. 14	19 30.72	+01 16.6	2.331	1.475	+1.09	+16.8	14.3	22.8
Jan. 24	19 41.57	+04 04.7	2.146	1.329	+1.28	+21.5	13.7	25.6
Feb. 3	19 54.41	+07 39.5	1.931	1.184	+1.62	+28.2	13.0	30.0
Feb. 13	20 10.60	+12 21.3	1.686	1.044	+2.28	+38.1	12.1	34.9
Feb. 23	20 33.36	+18 42.5	1.421	0.912	+3.77	+52.5	11.2	39.6
Mar. 5	21 11.05	+27 28.0	1.152	0.800	+7.54	+66.2	10.1	43.0
Mar. 15	22 26.44	+38 29.6	0.921	0.722	+14.64	+36.5	9.2	44.1
Mar. 25	00 52.85	+44 34.6	0.810	0.695	+14.35	-52.7	8.8	43.8
Apr. 4	03 16.34	+35 47.6	0.884	0.729	+7.27	-74.9	9.2	45.0
Apr. 14	04 29.01	+23 18.6	1.089	0.811	+3.65	-55.7	10.1	45.4
Apr. 24	05 05.46	+14 01.8	1.339	0.927	+2.22	-39.2	11.1	43.8
May 4	05 27.70	+07 29.9	1.588	1.060	+1.62	-29.2	12.1	41.0
May 14	05 43.85	+02 37.8	1.821	1.201	+1.32	-23.5	12.9	38.1
May 24	05 57.08	-01 16.8	2.032	1.346	+1.16	-20.2	13.6	35.7
June 3	06 08.72	-04 38.8	2.218	1.491	+1.07	-18.5	14.3	34.1
June 13	06 19.39	-07 43.3	2.380	1.636	+1.00	-17.7	14.8	33.7
June 23	06 29.36	-10 40.2	2.520	1.779	+0.94	-17.5	15.3	34.6
July 3	06 38.73	-13 35.6	2.637	1.920	+0.88	-17.9	15.7	36.6
July 13	06 47.50	-16 34.3	2.735	2.059	+0.81	-18.5	16.1	39.7
July 23	06 55.63	-19 39.5	2.816	2.195	+0.74	-19.4	16.5	43.6
Aug. 2	07 03.00	-22 53.2	2.881	2.329	+0.65	-20.4	16.8	48.1
Aug. 12	07 09.47	-26 17.0	2.934	2.462	+0.54	-21.5	17.0	53.0
Aug. 22	07 14.83	-29 51.6	2.977	2.591	+0.40	-22.5	17.3	58.2
Sept. 1	07 18.83	-33 36.4	3.014	2.719	+0.23	-23.4	17.5	63.6
Sept.11	07 21.12	-37 30.5	3.049	2.845	+0.01	-24.1	17.8	68.9
Sept.21	07 21.24	-41 31.0	3.084	2.969	-0.26	-24.3	18.0	74.1
Oct. 1	07 18.66	-45 33.8	3.123	3.091	-0.60	-23.9	18.2	79.0
Oct. 11	07 12.68	-49 33.2	3.169	3.212	-1.02	-22.8	18.4	83.4
Oct. 21	07 02.47	-53 21.1	3.226	3.331	-1.52	-20.7	18.6	87.3
Oct. 31	06 47.29	-56 48.0	3.295	3.448	-2.07	-17.5	18.8	90.4
Nov. 10	06 26.60	-59 42.6	3.379	3.564	-2.59	-13.1	19.0	92.6
Nov. 20	06 00.70	-61 53.5	3.477	3.679	-2.96	-7.9	19.2	93.9
Nov. 30	05 31.13	-63 12.5	3.590	3.792	-3.05	-2.4	19.4	94.2
Dec. 10	05 00.67	-63 36.6	3.717	3.903	-2.82	+2.6	19.6	93.5
Dec. 20	04 32.45	-63 10.5	3.857	4.014	-2.37	+6.6	19.8	92.0
Dec. 30	04 08.75	-62 04.6	4.006	4.123	-1.83	+9.3	20.0	89.9
Jan. 9	03 50.47	-60 31.1	4.164	4.232	-1.30	+10.9	20.2	87.2
Jan. 19	03 37.49	-58 41.6	4.327	4.339	-0.84	+11.6	20.4	84.1
Jan. 29	03 29.08	-56 45.3	4.493	4.445	-0.46	+11.7	20.5	80.9
Feb. 8	03 24.43	-54 48.7	4.658	4.550	-0.16	+11.2	20.7	77.6
Feb. 18	03 22.78	-52 56.5	4.821	4.653	+0.07	+10.5	20.9	74.4
Feb. 28	03 23.48	-51 11.8	4.980	4.757	+0.25	+9.5	21.1	71.3
Mar. 10	03 26.00	-49 36.7	5.132	4.859	+0.39	+8.4	21.2	68.6
Mar. 20	03 29.94	-48 12.6	5.276	4.960	+0.50	+7.2	21.4	66.3
Mar. 30	03 34.96	-47 00.3	5.410	5.060	+0.59	+6.0	21.5	64.5

Comet P/2001 R6 (LINEAR-Skiff)

Epoch = 2010 July 23.0 TT
T = 2010 Mar. 26.10050 TT
Peri. = 308.44758 e = 0.4774536
Node = 67.32038 2000.0 a = 4.1692655 AU
Incl. = 17.38778 n = 0.11577499
q = 2.1786347 AU P = 8.51 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/ °	Elong. °
Jan. 4	22 22.19	-24 52.4	2.836	2.273	-1.02	-5.3	19.7	30.6/ 63	46.5
Jan. 14	22 41.76	-22 26.9	2.890	2.252	-0.99	-5.9	19.7	31.5/ 62	41.6
Jan. 24	23 01.52	-19 55.0	2.940	2.233	-0.97	-6.5	19.6	32.3/ 62	37.0
Feb. 3	23 21.37	-17 17.9	2.984	2.217	-0.95	-7.0	19.6	32.9/ 61	32.5
Feb. 13	23 41.28	-14 36.6	3.025	2.204	-0.93	-7.5	19.6	33.4/ 61	28.1
Feb. 23	00 01.23	-11 52.8	3.060	2.193	-0.91	-7.8	19.6	33.7/ 61	23.9
Mar. 5	00 21.19	-09 07.8	3.091	2.185	-0.89	-8.1	19.6	33.9/ 61	19.9
Mar. 15	00 41.16	-06 23.0	3.118	2.180	-0.88	-8.3	19.6	34.0/ 62	16.1
Mar. 25	01 01.14	-03 39.9	3.140	2.179	-0.87	-8.5	19.6	34.0/ 62	12.7
Apr. 4	01 21.14	-00 59.9	3.158	2.180	-0.86	-8.5	19.6	33.8/ 63	9.9
Apr. 14	01 41.16	+01 35.7	3.172	2.184	-0.85	-8.5	19.6	33.6/ 63	8.3
Apr. 24	02 01.20	+04 05.8	3.180	2.191	-0.84	-8.4	19.7	33.2/ 64	8.7
May 4	02 21.25	+06 29.1	3.183	2.201	-0.84	-8.3	19.7	32.8/ 65	10.8
May 14	02 41.31	+08 44.9	3.181	2.214	-0.84	-8.1	19.8	32.2/ 66	13.9
May 24	03 01.34	+10 52.2	3.173	2.229	-0.84	-7.8	19.8	31.6/ 68	17.6
June 3	03 21.29	+12 50.5	3.160	2.247	-0.84	-7.6	19.9	30.9/ 69	21.6
June 13	03 41.15	+14 39.4	3.139	2.268	-0.84	-7.2	19.9	30.1/ 70	25.7
June 23	04 00.82	+16 18.7	3.112	2.291	-0.84	-6.9	20.0	29.2/ 71	30.1
July 3	04 20.23	+17 48.5	3.079	2.317	-0.84	-6.6	20.0	28.3/ 73	34.7
July 13	04 39.29	+19 09.0	3.037	2.344	-0.85	-6.2	20.1	27.2/ 74	39.5
July 23	04 57.88	+20 20.8	2.989	2.374	-0.85	-5.9	20.1	26.0/ 75	44.5
Aug. 2	05 15.88	+21 24.8	2.933	2.405	-0.86	-5.5	20.2	24.7/ 76	49.8
Aug. 12	05 33.16	+22 21.8	2.869	2.438	-0.86	-5.2	20.3	23.2/ 76	55.3
Aug. 22	05 49.54	+23 13.4	2.798	2.473	-0.87	-4.8	20.3	21.6/ 76	61.1
Sept. 1	06 04.86	+24 01.1	2.721	2.509	-0.88	-4.5	20.4	19.7/ 76	67.2
Sept.11	06 18.92	+24 46.6	2.638	2.547	-0.90	-4.2	20.4	17.6/ 74	73.7
Sept.21	06 31.48	+25 32.0	2.551	2.585	-0.92	-3.9	20.5	15.3/ 71	80.7
Oct. 1	06 42.30	+26 19.3	2.460	2.625	-0.95	-3.6	20.5	12.9/ 66	88.1
Oct. 11	06 51.10	+27 10.6	2.369	2.666	-0.99	-3.3	20.5	10.3/ 56	96.0
Oct. 21	06 57.58	+28 07.7	2.280	2.708	-1.03	-3.1	20.6	8.2/ 38	104.6
Oct. 31	07 01.45	+29 11.7	2.196	2.750	-1.09	-2.8	20.6	7.2/ 10	113.7
Nov. 10	07 02.42	+30 22.6	2.122	2.793	-1.15	-2.6	20.6	8.1/341	123.4
Nov. 20	07 00.36	+31 38.8	2.062	2.837	-1.22	-2.5	20.7	10.1/321	133.8
Nov. 30	06 55.31	+32 56.8	2.021	2.881	-1.29	-2.5	20.8	12.1/308	144.5
Dec. 10	06 47.64	+34 11.4	2.002	2.925	-1.35	-2.6	20.9	13.4/300	155.1
Dec. 20	06 38.11	+35 16.7	2.011	2.970	-1.38	-2.9	21.0	13.5/293	164.3
Dec. 30	06 27.82	+36 07.9	2.049	3.016	-1.39	-3.2	21.1	12.4/287	167.0
Jan. 9	06 17.95	+36 42.9	2.117	3.061	-1.37	-3.5	21.3	10.1/282	160.4
Jan. 19	06 09.65	+37 02.1	2.212	3.107	-1.32	-3.7	21.5	7.2/276	150.5
Jan. 29	06 03.68	+37 08.5	2.332	3.152	-1.25	-3.7	21.8	3.9/266	140.1
Feb. 8	06 00.42	+37 05.7	2.474	3.198	-1.17	-3.6	22.0	1.0/213	130.0
Feb. 18	05 59.96	+36 57.0	2.632	3.244	-1.09	-3.5	22.2	2.8/115	120.2
Feb. 28	06 02.11	+36 45.0	2.803	3.290	-1.01	-3.2	22.5	5.6/104	110.9
Mar. 10	06 06.59	+36 31.0	2.982	3.335	-0.94	-2.9	22.7	8.0/100	102.1
Mar. 20	06 13.10	+36 15.7	3.167	3.381	-0.88	-2.6	23.0	10.1/ 99	93.7
Mar. 30	06 21.29	+35 59.4	3.353	3.426	-0.82	-2.2	23.2	11.8/ 98	85.7

Comet 94P/Russell

Epoch = 2010 July 23.0 TT
T = 2010 Mar. 29.71464 TT
Peri. = 92.83582 e = 0.3630804
Node = 70.91242 2000.0 a = 3.5172993 AU
Incl. = 6.18242 n = 0.14941358
q = 2.2402370 AU P = 6.60 years

m1 = 13.0 + 5 log(Delta) + 10.0 log(r(t-60))

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	10 38.44	+17 27.0	1.573	2.315	+0.24	+3.3	17.9	128.3
Jan. 14	10 40.84	+18 00.1	1.473	2.299	-0.05	+4.7	17.7	137.8
Jan. 24	10 40.36	+18 47.4	1.390	2.284	-0.32	+5.7	17.5	147.9
Feb. 3	10 37.12	+19 44.2	1.328	2.272	-0.55	+5.9	17.4	158.0
Feb. 13	10 31.59	+20 42.9	1.289	2.261	-0.69	+5.1	17.3	166.8
Feb. 23	10 24.72	+21 34.4	1.275	2.253	-0.70	+3.6	17.2	168.4
Mar. 5	10 17.75	+22 10.0	1.286	2.247	-0.58	+1.4	17.2	160.9
Mar. 15	10 11.95	+22 24.5	1.321	2.243	-0.36	-0.9	17.2	150.9
Mar. 25	10 08.33	+22 15.9	1.376	2.240	-0.09	-3.0	17.3	140.9
Apr. 4	10 07.48	+21 45.5	1.449	2.241	+0.20	-4.9	17.4	131.5
Apr. 14	10 09.51	+20 56.2	1.537	2.243	+0.48	-6.5	17.5	122.6
Apr. 24	10 14.29	+19 50.9	1.635	2.247	+0.72	-7.8	17.6	114.5
May 4	10 21.49	+18 32.5	1.742	2.253	+0.92	-8.9	17.7	107.0
May 14	10 30.71	+17 03.2	1.856	2.262	+1.09	-9.8	17.9	100.0
May 24	10 41.60	+15 24.9	1.974	2.272	+1.22	-10.6	18.0	93.5
June 3	10 53.81	+13 39.3	2.095	2.285	+1.33	-11.2	18.1	87.4
June 13	11 07.07	+11 47.5	2.218	2.299	+1.41	-11.7	18.2	81.5
June 23	11 21.16	+09 50.9	2.342	2.316	+1.47	-12.0	18.4	76.0
July 3	11 35.89	+07 50.7	2.465	2.334	+1.52	-12.3	18.5	70.6
July 13	11 51.14	+05 47.9	2.588	2.353	+1.57	-12.4	18.6	65.4
July 23	12 06.81	+03 43.5	2.709	2.374	+1.60	-12.5	18.7	60.2
Aug. 2	12 22.81	+01 38.6	2.827	2.397	+1.63	-12.5	18.8	55.2
Aug. 12	12 39.10	-00 25.9	2.942	2.421	+1.65	-12.3	19.0	50.2
Aug. 22	12 55.65	-02 29.1	3.052	2.447	+1.68	-12.1	19.1	45.2
Sept. 1	13 12.41	-04 30.0	3.157	2.474	+1.70	-11.8	19.2	40.2
Sept.11	13 29.39	-06 27.9	3.257	2.501	+1.72	-11.4	19.3	35.1
Sept.21	13 46.54	-08 21.8	3.349	2.530	+1.73	-10.9	19.4	30.0
Oct. 1	14 03.86	-10 11.0	3.433	2.560	+1.75	-10.4	19.5	24.9
Oct. 11	14 21.33	-11 54.9	3.509	2.591	+1.76	-9.8	19.6	19.7
Oct. 21	14 38.91	-13 32.8	3.575	2.622	+1.77	-9.1	19.7	14.4
Oct. 31	14 56.58	-15 04.0	3.631	2.655	+1.77	-8.4	19.7	9.0
Nov. 10	15 14.30	-16 28.1	3.675	2.687	+1.77	-7.7	19.8	3.6
Nov. 20	15 32.00	-17 44.7	3.707	2.721	+1.76	-6.9	19.9	2.7
Nov. 30	15 49.62	-18 53.5	3.727	2.755	+1.75	-6.1	19.9	8.2
Dec. 10	16 07.10	-19 54.3	3.734	2.789	+1.72	-5.3	20.0	14.1
Dec. 20	16 24.33	-20 47.2	3.727	2.824	+1.69	-4.5	20.0	20.1
Dec. 30	16 41.21	-21 32.2	3.707	2.859	+1.64	-3.8	20.1	26.3
Jan. 9	16 57.65	-22 09.7	3.673	2.894	+1.59	-3.1	20.1	32.6
Jan. 19	17 13.51	-22 40.2	3.626	2.929	+1.52	-2.4	20.1	39.1
Jan. 29	17 28.66	-23 04.4	3.567	2.965	+1.43	-1.9	20.2	45.8
Feb. 8	17 42.97	-23 23.1	3.495	3.000	+1.33	-1.4	20.2	52.6
Feb. 18	17 56.28	-23 37.3	3.413	3.036	+1.21	-1.1	20.2	59.7
Feb. 28	18 08.43	-23 48.1	3.321	3.072	+1.08	-0.9	20.2	67.0
Mar. 10	18 19.24	-23 56.7	3.222	3.108	+0.93	-0.8	20.2	74.5
Mar. 20	18 28.54	-24 04.4	3.117	3.143	+0.76	-0.8	20.1	82.4
Mar. 30	18 36.15	-24 12.5	3.008	3.179	+0.57	-1.0	20.1	90.6

Comet P/2009 Y2 (Kowalski)

Epoch = 2010 July 23.0 TT
T = 2010 Mar. 30.69908 TT
Peri. = 171.96129 e = 0.6403033
Node = 262.12570 2000.0 a = 6.5034900 AU
Incl. = 29.92891 n = 0.05942708
q = 2.3392839 AU P = 16.59 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 56.27	+28 44.0	2.087	2.462	+1.46	-8.7	18.9	100.3
Jan. 14	01 10.89	+27 17.0	2.173	2.435	+1.61	-7.0	18.9	93.2
Jan. 24	01 27.02	+26 07.3	2.266	2.412	+1.74	-5.5	18.9	86.3
Feb. 3	01 44.37	+25 12.7	2.362	2.392	+1.84	-4.2	18.9	79.7
Feb. 13	02 02.74	+24 30.5	2.461	2.375	+1.92	-3.3	19.0	73.4
Feb. 23	02 21.95	+23 57.8	2.560	2.361	+1.99	-2.6	19.0	67.3
Mar. 5	02 41.82	+23 31.6	2.658	2.351	+2.04	-2.2	19.1	61.4
Mar. 15	03 02.22	+23 09.2	2.755	2.344	+2.08	-2.1	19.1	55.7
Mar. 25	03 23.04	+22 48.1	2.848	2.340	+2.11	-2.2	19.2	50.3
Apr. 4	03 44.14	+22 26.0	2.938	2.340	+2.13	-2.5	19.3	45.0
Apr. 14	04 05.43	+22 00.9	3.023	2.343	+2.14	-3.0	19.3	39.8
Apr. 24	04 26.81	+21 31.2	3.104	2.349	+2.13	-3.6	19.4	34.8
May 4	04 48.15	+20 55.5	3.178	2.359	+2.12	-4.3	19.5	30.0
May 14	05 09.39	+20 12.8	3.247	2.373	+2.10	-5.0	19.6	25.3
May 24	05 30.43	+19 22.4	3.309	2.389	+2.07	-5.9	19.7	20.8
June 3	05 51.17	+18 23.8	3.365	2.409	+2.04	-6.7	19.8	16.5
June 13	06 11.55	+17 16.6	3.413	2.432	+1.99	-7.6	19.9	12.6
June 23	06 31.50	+16 00.8	3.454	2.458	+1.94	-8.4	19.9	9.6
July 3	06 50.94	+14 36.6	3.487	2.486	+1.89	-9.2	20.0	8.4
July 13	07 09.84	+13 04.2	3.513	2.517	+1.83	-10.0	20.1	9.8
July 23	07 28.13	+11 23.9	3.530	2.551	+1.76	-10.8	20.2	13.1
Aug. 2	07 45.78	+09 36.3	3.539	2.586	+1.70	-11.5	20.3	17.1
Aug. 12	08 02.74	+07 41.7	3.539	2.624	+1.62	-12.1	20.4	21.7
Aug. 22	08 18.98	+05 40.9	3.531	2.664	+1.55	-12.6	20.5	26.5
Sept. 1	08 34.45	+03 34.5	3.514	2.706	+1.47	-13.1	20.6	31.5
Sept.11	08 49.11	+01 23.0	3.488	2.749	+1.38	-13.6	20.7	36.8
Sept.21	09 02.90	-00 52.8	3.454	2.794	+1.28	-13.9	20.8	42.3
Oct. 1	09 15.74	-03 12.2	3.412	2.840	+1.18	-14.2	20.9	47.9
Oct. 11	09 27.57	-05 34.5	3.362	2.888	+1.07	-14.4	20.9	53.8
Oct. 21	09 38.28	-07 58.6	3.306	2.937	+0.95	-14.5	21.0	60.0
Oct. 31	09 47.75	-10 23.7	3.243	2.987	+0.81	-14.5	21.1	66.4
Nov. 10	09 55.84	-12 48.5	3.175	3.038	+0.65	-14.3	21.1	73.0
Nov. 20	10 02.38	-15 11.3	3.105	3.089	+0.48	-13.9	21.2	79.9
Nov. 30	10 07.22	-17 30.4	3.033	3.142	+0.30	-13.3	21.3	87.1
Dec. 10	10 10.18	-19 43.3	2.962	3.195	+0.09	-12.4	21.3	94.5
Dec. 20	10 11.11	-21 46.9	2.896	3.249	-0.12	-11.1	21.4	102.2
Dec. 30	10 09.93	-23 37.5	2.836	3.303	-0.33	-9.4	21.4	109.9
Jan. 9	10 06.67	-25 11.1	2.787	3.357	-0.51	-7.2	21.5	117.5
Jan. 19	10 01.53	-26 23.4	2.753	3.412	-0.66	-4.8	21.6	124.9
Jan. 29	09 54.89	-27 11.0	2.735	3.468	-0.76	-2.1	21.7	131.5
Feb. 8	09 47.33	-27 31.6	2.738	3.523	-0.78	+0.6	21.8	136.9
Feb. 18	09 39.56	-27 25.6	2.763	3.579	-0.72	+3.0	21.9	140.3
Feb. 28	09 32.32	-26 55.4	2.811	3.635	-0.61	+5.0	22.1	141.0
Mar. 10	09 26.23	-26 05.7	2.883	3.691	-0.45	+6.3	22.2	139.0
Mar. 20	09 21.76	-25 02.7	2.978	3.747	-0.26	+7.0	22.4	134.9
Mar. 30	09 19.13	-23 52.7	3.093	3.803	-0.07	+7.1	22.6	129.2

Comet P/2010 A3 (Hill)

Epoch = 2010 July 23.0 TT
T = 2010 Apr. 3.68466 TT
Peri. = 41.28473 e = 0.7322316
Node = 64.82702 2000.0 a = 6.0567860 AU
Incl. = 15.02776 n = 0.06612120
q = 1.6218159 AU P = 14.91 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 41.13	+07 11.7	1.440	1.913	+0.81	+15.4	18.1	102.7
Jan. 14	01 49.21	+09 45.5	1.488	1.858	+1.14	+16.4	18.1	95.3
Jan. 24	02 00.61	+12 29.2	1.537	1.806	+1.45	+17.0	18.0	88.7
Feb. 3	02 15.12	+15 19.3	1.587	1.760	+1.75	+17.3	18.0	82.8
Feb. 13	02 32.58	+18 12.5	1.636	1.719	+2.03	+17.2	17.9	77.6
Feb. 23	02 52.91	+21 04.7	1.685	1.685	+2.31	+16.7	17.9	72.9
Mar. 5	03 16.01	+23 51.5	1.733	1.658	+2.58	+15.6	17.9	68.9
Mar. 15	03 41.80	+26 27.7	1.782	1.638	+2.84	+14.0	17.9	65.3
Mar. 25	04 10.17	+28 47.7	1.832	1.626	+3.07	+11.8	17.9	62.1
Apr. 4	04 40.87	+30 46.0	1.886	1.622	+3.27	+9.1	18.0	59.3
Apr. 14	05 13.55	+32 17.0	1.943	1.626	+3.41	+6.0	18.1	56.8
Apr. 24	05 47.69	+33 16.6	2.005	1.639	+3.49	+2.6	18.2	54.4
May 4	06 22.61	+33 42.2	2.073	1.659	+3.50	−0.9	18.3	52.2
May 14	06 57.62	+33 33.1	2.147	1.687	+3.44	−4.2	18.4	50.1
May 24	07 32.01	+32 51.3	2.228	1.722	+3.32	−7.1	18.6	47.9
June 3	08 05.20	+31 40.1	2.315	1.763	+3.16	−9.6	18.8	45.7
June 13	08 36.83	+30 04.2	2.409	1.809	+2.99	−11.5	19.0	43.3
June 23	09 06.69	+28 08.8	2.508	1.861	+2.80	−13.0	19.2	40.8
July 3	09 34.71	+25 59.2	2.612	1.917	+2.63	−13.9	19.4	38.1
July 13	10 00.96	+23 39.8	2.719	1.977	+2.46	−14.5	19.6	35.2
July 23	10 25.57	+21 14.7	2.828	2.040	+2.31	−14.8	19.9	32.0
Aug. 2	10 48.69	+18 47.2	2.938	2.105	+2.18	−14.7	20.1	28.7
Aug. 12	11 10.49	+16 19.8	3.047	2.173	+2.06	−14.5	20.3	25.2
Aug. 22	11 31.12	+13 54.7	3.153	2.243	+1.96	−14.1	20.5	21.5
Sept. 1	11 50.72	+11 33.3	3.255	2.314	+1.87	−13.6	20.7	17.7
Sept.11	12 09.42	+09 16.9	3.351	2.387	+1.79	−13.0	20.9	14.0
Sept.21	12 27.31	+07 06.5	3.439	2.460	+1.72	−12.4	21.1	10.8
Oct. 1	12 44.47	+05 02.7	3.518	2.534	+1.65	−11.7	21.3	9.1
Oct. 11	13 00.95	+03 06.1	3.586	2.608	+1.58	−10.9	21.4	10.0
Oct. 21	13 16.78	+01 17.1	3.642	2.683	+1.52	−10.1	21.6	13.3
Oct. 31	13 31.97	−00 23.8	3.686	2.758	+1.45	−9.3	21.7	18.0
Nov. 10	13 46.52	−01 56.6	3.715	2.834	+1.39	−8.4	21.9	23.4
Nov. 20	14 00.38	−03 20.8	3.730	2.909	+1.31	−7.6	22.0	29.3
Nov. 30	14 13.51	−04 36.3	3.729	2.984	+1.23	−6.7	22.1	35.6
Dec. 10	14 25.84	−05 43.2	3.714	3.058	+1.14	−5.8	22.2	42.3
Dec. 20	14 37.27	−06 41.2	3.685	3.133	+1.04	−4.9	22.3	49.3
Dec. 30	14 47.68	−07 30.5	3.642	3.207	+0.93	−4.1	22.4	56.6
Jan. 9	14 56.94	−08 11.0	3.586	3.281	+0.80	−3.2	22.4	64.3
Jan. 19	15 04.90	−08 43.0	3.520	3.355	+0.65	−2.4	22.5	72.3
Jan. 29	15 11.40	−09 06.6	3.446	3.428	+0.49	−1.6	22.5	80.7
Feb. 8	15 16.28	−09 22.2	3.367	3.500	+0.31	−0.8	22.6	89.5
Feb. 18	15 19.37	−09 30.2	3.286	3.572	+0.12	−0.1	22.6	98.7
Feb. 28	15 20.57	−09 31.1	3.208	3.644	−0.08	+0.6	22.6	108.4
Mar. 10	15 19.79	−09 25.6	3.137	3.715	−0.27	+1.1	22.7	118.5
Mar. 20	15 17.06	−09 14.7	3.079	3.786	−0.45	+1.5	22.7	129.0
Mar. 30	15 12.54	−08 59.6	3.039	3.856	−0.60	+1.8	22.8	139.8

Comet P/2010 A5 (LINEAR)

T = 2010 Apr. 19.4551 TT
Peri. = 306.8393 e = 0.659352
Node = 277.8451 2000.0 a = 5.020963 AU
Incl. = 5.7809 n = 0.0876039
q = 1.710380 AU P = 11.3 years

m1 = 13.5 + 5 log(Delta) + 10.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	13 06.01	-13 26.3	1.902	2.033	+1.92	-14.3	18.0	83.1
Jan. 14	13 25.17	-15 49.4	1.754	1.981	+1.94	-14.1	17.7	88.0
Jan. 24	13 44.57	-18 10.1	1.612	1.932	+1.96	-13.6	17.4	92.9
Feb. 3	14 04.13	-20 26.5	1.479	1.886	+1.96	-13.0	17.1	97.9
Feb. 13	14 23.70	-22 36.4	1.354	1.845	+1.93	-12.1	16.8	102.9
Feb. 23	14 43.01	-24 37.1	1.238	1.809	+1.87	-10.9	16.5	108.0
Mar. 5	15 01.72	-26 26.0	1.133	1.777	+1.76	-9.4	16.3	113.4
Mar. 15	15 19.35	-28 00.3	1.039	1.752	+1.59	-7.7	16.0	119.0
Mar. 25	15 35.29	-29 17.0	0.955	1.732	+1.36	-5.6	15.8	125.0
Apr. 4	15 48.92	-30 13.4	0.884	1.718	+1.07	-3.3	15.6	131.5
Apr. 14	15 59.61	-30 46.8	0.825	1.711	+0.73	-0.8	15.4	138.7
Apr. 24	16 06.91	-30 55.0	0.779	1.711	+0.40	+1.8	15.3	146.6
May 4	16 10.88	-30 37.0	0.750	1.717	+0.12	+4.3	15.2	155.1
May 14	16 12.04	-29 53.9	0.736	1.730	-0.05	+6.4	15.2	163.9
May 24	16 11.51	-28 50.3	0.742	1.749	-0.08	+7.6	15.3	171.6
June 3	16 10.75	-27 34.4	0.766	1.775	+0.02	+7.8	15.4	171.0
June 13	16 10.98	-26 16.1	0.809	1.806	+0.22	+7.2	15.6	163.1
June 23	16 13.17	-25 04.1	0.872	1.842	+0.45	+6.0	15.9	154.3
July 3	16 17.71	-24 04.2	0.952	1.882	+0.69	+4.6	16.1	145.8
July 13	16 24.62	-23 18.2	1.049	1.927	+0.91	+3.3	16.5	137.8
July 23	16 33.72	-22 45.2	1.161	1.976	+1.10	+2.2	16.8	130.3
Aug. 2	16 44.69	-22 23.0	1.286	2.028	+1.25	+1.5	17.1	123.2
Aug. 12	16 57.21	-22 08.3	1.424	2.083	+1.38	+1.0	17.5	116.4
Aug. 22	17 11.00	-21 58.3	1.572	2.140	+1.48	+0.8	17.8	110.0
Sept. 1	17 25.77	-21 50.2	1.730	2.200	+1.55	+0.9	18.1	103.7
Sept.11	17 41.30	-21 41.7	1.895	2.261	+1.61	+1.1	18.4	97.6
Sept.21	17 57.42	-21 30.9	2.068	2.324	+1.65	+1.4	18.7	91.6
Oct. 1	18 13.92	-21 16.6	2.245	2.388	+1.68	+1.9	19.0	85.7
Oct. 11	18 30.70	-20 57.7	2.425	2.453	+1.69	+2.4	19.3	79.8
Oct. 21	18 47.63	-20 33.4	2.607	2.519	+1.70	+3.0	19.6	73.8
Oct. 31	19 04.58	-20 03.4	2.790	2.585	+1.69	+3.6	19.9	67.9
Nov. 10	19 21.49	-19 27.6	2.970	2.652	+1.68	+4.2	20.1	61.9
Nov. 20	19 38.28	-18 45.8	3.148	2.719	+1.66	+4.7	20.3	55.9
Nov. 30	19 54.85	-17 58.3	3.319	2.786	+1.63	+5.3	20.6	49.8
Dec. 10	20 11.17	-17 05.4	3.484	2.853	+1.60	+5.8	20.8	43.6
Dec. 20	20 27.18	-16 07.5	3.640	2.921	+1.56	+6.2	21.0	37.5
Dec. 30	20 42.83	-15 05.1	3.785	2.988	+1.53	+6.6	21.1	31.2
Jan. 9	20 58.09	-13 58.7	3.918	3.055	+1.48	+7.0	21.3	24.9
Jan. 19	21 12.92	-12 49.1	4.038	3.122	+1.44	+7.2	21.5	18.6
Jan. 29	21 27.29	-11 36.8	4.144	3.188	+1.39	+7.4	21.6	12.3
Feb. 8	21 41.17	-10 22.4	4.233	3.254	+1.34	+7.6	21.8	6.3
Feb. 18	21 54.52	-09 06.8	4.306	3.320	+1.28	+7.6	21.9	3.6
Feb. 28	22 07.33	-07 50.6	4.362	3.386	+1.22	+7.6	22.0	8.6
Mar. 10	22 19.57	-06 34.5	4.400	3.451	+1.16	+7.5	22.1	15.0
Mar. 20	22 31.18	-05 19.1	4.421	3.515	+1.10	+7.4	22.2	21.7
Mar. 30	22 42.13	-04 05.1	4.425	3.580	+1.03	+7.2	22.3	28.5

Comet 30P/Reinmuth

Epoch = 2010 July 23.0 TT
T = 2010 Apr. 19.54133 TT
Peri. = 13.20400 e = 0.5010714
Node = 119.75376 2000.0 a = 3.7762047 AU
Incl. = 8.12210 n = 0.13431384
q = 1.8840567 AU P = 7.34 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	04 54.85	+14 49.2	1.187	2.096	-0.44	+5.9	15.0	149.8
Jan. 14	04 50.43	+15 48.0	1.213	2.060	-0.09	+6.8	14.9	139.2
Jan. 24	04 49.49	+16 55.6	1.257	2.028	+0.29	+7.3	14.9	129.1
Feb. 3	04 52.39	+18 08.8	1.314	1.997	+0.67	+7.5	14.9	119.9
Feb. 13	04 59.07	+19 24.1	1.381	1.970	+1.03	+7.4	14.9	111.6
Feb. 23	05 09.33	+20 38.1	1.454	1.947	+1.35	+6.9	14.9	104.0
Mar. 5	05 22.79	+21 47.3	1.532	1.927	+1.63	+6.1	14.9	97.2
Mar. 15	05 39.06	+22 48.6	1.613	1.910	+1.87	+5.0	15.0	91.0
Mar. 25	05 57.75	+23 38.9	1.697	1.898	+2.07	+3.7	15.0	85.4
Apr. 4	06 18.44	+24 15.7	1.781	1.889	+2.23	+2.1	15.1	80.2
Apr. 14	06 40.72	+24 37.0	1.867	1.885	+2.35	+0.4	15.2	75.5
Apr. 24	07 04.23	+24 41.3	1.954	1.884	+2.43	-1.4	15.3	71.0
May 4	07 28.57	+24 27.7	2.042	1.888	+2.48	-3.2	15.4	66.8
May 14	07 53.41	+23 56.1	2.131	1.896	+2.50	-4.9	15.5	62.8
May 24	08 18.44	+23 07.1	2.221	1.909	+2.50	-6.5	15.6	59.0
June 3	08 43.39	+22 01.7	2.312	1.925	+2.47	-8.0	15.8	55.3
June 13	09 08.07	+20 41.6	2.403	1.944	+2.43	-9.3	16.0	51.7
June 23	09 32.33	+19 08.6	2.496	1.968	+2.37	-10.4	16.1	48.1
July 3	09 56.06	+17 24.8	2.588	1.994	+2.32	-11.2	16.3	44.5
July 13	10 19.21	+15 32.3	2.680	2.024	+2.26	-11.9	16.5	40.9
July 23	10 41.76	+13 33.3	2.772	2.057	+2.20	-12.3	16.7	37.2
Aug. 2	11 03.72	+11 29.9	2.862	2.092	+2.14	-12.6	16.9	33.5
Aug. 12	11 25.11	+09 23.8	2.951	2.130	+2.09	-12.7	17.1	29.6
Aug. 22	11 45.98	+07 16.9	3.036	2.169	+2.04	-12.6	17.3	25.7
Sept. 1	12 06.35	+05 10.7	3.117	2.211	+1.99	-12.4	17.5	21.7
Sept.11	12 26.28	+03 06.6	3.193	2.254	+1.95	-12.1	17.7	17.6
Sept.21	12 45.80	+01 05.9	3.264	2.299	+1.91	-11.6	17.9	13.5
Oct. 1	13 04.94	-00 50.4	3.327	2.345	+1.88	-11.1	18.1	9.5
Oct. 11	13 23.73	-02 41.2	3.382	2.393	+1.84	-10.4	18.3	6.4
Oct. 21	13 42.16	-04 25.6	3.429	2.441	+1.81	-9.7	18.5	6.1
Oct. 31	14 00.23	-06 03.0	3.465	2.490	+1.77	-9.0	18.6	9.3
Nov. 10	14 17.95	-07 32.7	3.490	2.540	+1.73	-8.1	18.8	13.9
Nov. 20	14 35.25	-08 54.1	3.504	2.590	+1.68	-7.3	19.0	19.1
Nov. 30	14 52.09	-10 07.0	3.505	2.640	+1.63	-6.4	19.1	24.6
Dec. 10	15 08.42	-11 11.0	3.494	2.691	+1.57	-5.5	19.2	30.4
Dec. 20	15 24.12	-12 05.9	3.470	2.742	+1.50	-4.6	19.4	36.5
Dec. 30	15 39.12	-12 51.8	3.433	2.793	+1.42	-3.7	19.5	42.9
Jan. 9	15 53.29	-13 28.8	3.384	2.845	+1.32	-2.8	19.6	49.5
Jan. 19	16 06.48	-13 57.1	3.323	2.896	+1.21	-2.0	19.7	56.3
Jan. 29	16 18.56	-14 17.2	3.252	2.947	+1.08	-1.2	19.8	63.5
Feb. 8	16 29.33	-14 29.6	3.171	2.998	+0.93	-0.5	19.9	71.0
Feb. 18	16 38.62	-14 34.9	3.083	3.049	+0.76	+0.1	19.9	78.8
Feb. 28	16 46.24	-14 33.9	2.991	3.099	+0.58	+0.6	20.0	86.9
Mar. 10	16 51.99	-14 27.4	2.896	3.150	+0.37	+1.1	20.0	95.5
Mar. 20	16 55.70	-14 16.4	2.803	3.200	+0.15	+1.4	20.1	104.5
Mar. 30	16 57.22	-14 01.9	2.714	3.250	-0.07	+1.7	20.1	113.9

Comet C/2007 V053 (Spacewatch)

Epoch = 2010 July 23.0 TT
T = 2010 Apr. 26.52243 TT
Peri. = 75.03311
Node = 59.73434 2000.0
Incl. = 86.98991
q = 4.8426676 AU
e = 0.9997723

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	22 24.98	+72 45.7	4.630	4.922	+0.06	-8.0	17.0	101.6
Jan. 14	22 25.56	+71 26.1	4.691	4.908	+0.32	-6.0	17.1	97.0
Jan. 24	22 28.73	+70 25.7	4.756	4.896	+0.48	-4.0	17.1	92.4
Feb. 3	22 33.57	+69 45.4	4.823	4.885	+0.59	-2.0	17.1	87.8
Feb. 13	22 39.52	+69 25.3	4.888	4.876	+0.66	0.0	17.1	83.5
Feb. 23	22 46.12	+69 25.0	4.949	4.867	+0.69	+1.9	17.1	79.5
Mar. 5	22 53.04	+69 43.9	5.004	4.860	+0.69	+3.7	17.2	76.0
Mar. 15	22 59.98	+70 21.0	5.052	4.854	+0.67	+5.4	17.2	73.0
Mar. 25	23 06.64	+71 15.4	5.090	4.849	+0.60	+7.1	17.2	70.5
Apr. 4	23 12.68	+72 26.0	5.120	4.846	+0.50	+8.6	17.2	68.6
Apr. 14	23 17.64	+73 51.5	5.141	4.844	+0.32	+9.9	17.2	67.3
Apr. 24	23 20.84	+75 30.9	5.153	4.843	+0.03	+11.2	17.2	66.6
May 4	23 21.11	+77 22.5	5.157	4.843	-0.48	+12.2	17.2	66.4
May 14	23 16.34	+79 24.3	5.154	4.845	-1.44	+12.8	17.2	66.7
May 24	23 01.95	+81 32.7	5.146	4.847	-3.46	+12.7	17.2	67.4
June 3	22 27.39	+83 39.5	5.134	4.852	-7.94	+10.4	17.2	68.3
June 13	21 07.98	+85 23.1	5.119	4.857	-14.03	+2.6	17.2	69.5
June 23	18 47.68	+85 48.6	5.104	4.863	-11.63	-8.5	17.2	70.7
July 3	16 51.35	+84 24.1	5.090	4.871	-5.50	-14.7	17.2	71.9
July 13	15 56.38	+81 57.6	5.078	4.880	-2.32	-17.2	17.2	73.1
July 23	15 33.19	+79 06.0	5.071	4.891	-0.88	-18.3	17.2	74.1
Aug. 2	15 24.36	+76 03.4	5.069	4.902	-0.16	-18.7	17.2	74.8
Aug. 12	15 22.78	+72 56.1	5.072	4.915	+0.25	-18.8	17.2	75.3
Aug. 22	15 25.29	+69 48.1	5.083	4.929	+0.50	-18.6	17.3	75.5
Sept. 1	15 30.27	+66 42.3	5.101	4.944	+0.66	-18.1	17.3	75.4
Sept.11	15 36.85	+63 41.2	5.125	4.960	+0.77	-17.4	17.3	75.0
Sept.21	15 44.51	+60 47.2	5.154	4.977	+0.84	-16.5	17.3	74.3
Oct. 1	15 52.90	+58 02.4	5.189	4.996	+0.89	-15.4	17.4	73.4
Oct. 11	16 01.79	+55 28.3	5.228	5.015	+0.92	-14.2	17.4	72.3
Oct. 21	16 10.99	+53 06.7	5.269	5.036	+0.94	-12.8	17.4	71.2
Oct. 31	16 20.35	+50 58.6	5.310	5.058	+0.94	-11.4	17.5	70.0
Nov. 10	16 29.75	+49 05.0	5.350	5.081	+0.93	-9.8	17.5	69.1
Nov. 20	16 39.06	+47 26.7	5.387	5.105	+0.91	-8.3	17.5	68.3
Nov. 30	16 48.17	+46 03.9	5.419	5.129	+0.88	-6.7	17.6	67.9
Dec. 10	16 56.97	+44 57.0	5.445	5.155	+0.84	-5.1	17.6	67.8
Dec. 20	17 05.33	+44 05.8	5.465	5.182	+0.78	-3.6	17.6	68.3
Dec. 30	17 13.12	+43 30.0	5.476	5.210	+0.71	-2.1	17.7	69.3
Jan. 9	17 20.23	+43 09.3	5.479	5.239	+0.63	-0.6	17.7	70.8
Jan. 19	17 26.48	+43 02.9	5.473	5.269	+0.53	+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	5.331	+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 39.75	+44 34.8	5.379	5.396	-0.05	+4.3	17.8	85.7
Mar. 10	17 39.25	+45 17.9	5.345	5.430	-0.24	+4.6	17.8	89.6
Mar. 20	17 36.89	+46 03.7	5.311	5.465	-0.43	+4.5	17.8	93.6
Mar. 30	17 32.58	+46 48.6	5.279	5.500	-0.63	+4.0	17.8	97.6

Comet C/2009 K5 (McNaught)

Epoch = 2010 July 23.0 TT
T = 2010 Apr. 30.02516 TT
Peri. = 66.17390
Node = 257.85643 2000.0
Incl. = 103.87934
q = 1.4224126 AU
e = 1.0008473

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	17 44.87	-26 35.7	3.064	2.144	+1.25	+15.1	12.9	17.0
Jan. 14	17 57.42	-24 04.4	2.906	2.048	+1.25	+17.4	12.6	24.2
Jan. 24	18 09.93	-21 10.5	2.726	1.956	+1.25	+20.4	12.3	31.5
Feb. 3	18 22.40	-17 46.1	2.529	1.867	+1.24	+24.6	11.9	38.9
Feb. 13	18 34.84	-13 40.3	2.317	1.782	+1.25	+30.2	11.5	46.2
Feb. 23	18 47.29	-08 38.1	2.096	1.703	+1.26	+37.9	11.1	53.4
Mar. 5	18 59.88	-02 19.2	1.875	1.631	+1.30	+48.3	10.7	60.4
Mar. 15	19 12.86	+05 43.4	1.665	1.567	+1.38	+61.5	10.3	66.8
Mar. 25	19 26.66	+15 58.6	1.481	1.514	+1.55	+76.4	9.9	72.3
Apr. 4	19 42.16	+28 42.8	1.342	1.471	+1.91	+88.6	9.5	76.2
Apr. 14	20 01.21	+43 28.4	1.271	1.441	+2.72	+91.3	9.3	77.7
Apr. 24	20 28.41	+58 41.8	1.278	1.425	+5.07	+81.4	9.3	76.2
May 4	21 19.13	+72 16.0	1.359	1.424	+14.61	+56.7	9.4	72.2
May 14	23 45.20	+81 43.3	1.494	1.437	+27.95	-1.6	9.6	66.8
May 24	04 24.72	+81 27.1	1.660	1.464	+10.81	-33.4	10.0	60.8
June 3	06 12.79	+75 53.1	1.838	1.504	+4.12	-31.3	10.3	54.8
June 13	06 53.99	+70 40.4	2.015	1.555	+2.30	-25.9	10.6	49.3
June 23	07 16.96	+66 21.3	2.179	1.617	+1.57	-21.2	11.0	44.4
July 3	07 32.65	+62 49.4	2.325	1.688	+1.19	-17.4	11.3	40.6
July 13	07 44.59	+59 55.7	2.449	1.765	+0.95	-14.2	11.6	38.1
July 23	07 54.11	+57 33.5	2.549	1.849	+0.77	-11.6	11.9	37.5
Aug. 2	08 01.77	+55 37.3	2.622	1.937	+0.60	-9.3	12.2	38.7
Aug. 12	08 07.80	+54 03.9	2.668	2.029	+0.43	-7.3	12.4	41.8
Aug. 22	08 12.14	+52 50.7	2.688	2.124	+0.25	-5.5	12.6	46.6
Sept. 1	08 14.61	+51 56.1	2.684	2.221	+0.03	-3.7	12.8	52.6
Sept.11	08 14.92	+51 19.0	2.656	2.319	-0.23	-2.1	13.0	59.8
Sept.21	08 12.57	+50 58.3	2.609	2.419	-0.56	-0.6	13.1	68.0
Oct. 1	08 06.99	+50 52.1	2.548	2.520	-0.96	+0.5	13.2	77.1
Oct. 11	07 57.44	+50 57.4	2.476	2.622	-1.43	+1.1	13.4	87.1
Oct. 21	07 43.11	+51 08.2	2.401	2.723	-1.97	+0.7	13.5	97.9
Oct. 31	07 23.44	+51 14.9	2.333	2.825	-2.50	-1.1	13.6	109.6
Nov. 10	06 58.40	+51 04.1	2.279	2.927	-2.93	-4.4	13.7	122.0
Nov. 20	06 29.12	+50 20.2	2.252	3.029	-3.11	-8.8	13.8	134.7
Nov. 30	05 58.05	+48 51.8	2.259	3.131	-2.98	-13.3	13.9	146.8
Dec. 10	05 28.28	+46 38.4	2.309	3.233	-2.58	-16.7	14.1	155.8
Dec. 20	05 02.44	+43 51.6	2.404	3.334	-2.06	-18.1	14.3	157.3
Dec. 30	04 41.86	+40 50.1	2.545	3.435	-1.52	-17.9	14.6	150.5
Jan. 9	04 26.65	+37 51.6	2.725	3.535	-1.04	-16.4	14.9	140.0
Jan. 19	04 16.29	+35 08.1	2.938	3.635	-0.64	-14.3	15.1	128.7
Jan. 29	04 09.93	+32 45.5	3.176	3.734	-0.31	-12.1	15.4	117.5
Feb. 8	04 06.81	+30 44.9	3.432	3.833	-0.06	-10.0	15.7	106.6
Feb. 18	04 06.24	+29 05.0	3.699	3.931	+0.14	-8.2	16.0	96.3
Feb. 28	04 07.66	+27 43.1	3.969	4.029	+0.30	-6.7	16.2	86.3
Mar. 10	04 10.62	+26 36.2	4.239	4.126	+0.42	-5.5	16.5	76.8
Mar. 20	04 14.78	+25 41.4	4.501	4.223	+0.51	-4.5	16.7	67.6
Mar. 30	04 19.84	+24 56.1	4.754	4.319	+0.58	-3.8	16.9	58.7

Comet C/2009 W2 (Boattini)

Epoch = 2010 July 23.0 TT
T = 2010 May 1.84326 TT
Peri. = 121.34515
Node = 199.58608 2000.0
Incl. = 164.48960
q = 6.9071715 AU
e = 0.9991115

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	05 28.40	+39 46.5	6.050	6.950	-1.20	-2.8	19.2	154.5
Jan. 14	05 16.39	+39 18.6	6.121	6.943	-1.07	-3.4	19.2	144.2
Jan. 24	05 05.69	+38 44.1	6.226	6.937	-0.91	-3.8	19.3	133.1
Feb. 3	04 56.56	+38 05.8	6.360	6.931	-0.74	-4.0	19.3	121.9
Feb. 13	04 49.13	+37 26.2	6.514	6.926	-0.57	-3.9	19.4	110.7
Feb. 23	04 43.39	+36 47.6	6.684	6.921	-0.41	-3.6	19.4	99.8
Mar. 5	04 39.24	+36 11.5	6.860	6.918	-0.27	-3.3	19.5	89.2
Mar. 15	04 36.55	+35 39.0	7.037	6.914	-0.14	-2.8	19.5	78.9
Mar. 25	04 35.14	+35 10.5	7.209	6.912	-0.03	-2.4	19.6	68.8
Apr. 4	04 34.82	+34 46.4	7.370	6.910	+0.06	-2.0	19.6	59.1
Apr. 14	04 35.41	+34 26.5	7.515	6.908	+0.13	-1.6	19.7	49.6
Apr. 24	04 36.74	+34 10.5	7.642	6.907	+0.19	-1.2	19.7	40.5
May 4	04 38.65	+33 58.2	7.745	6.907	+0.23	-0.9	19.7	31.6
May 14	04 40.98	+33 49.1	7.824	6.908	+0.26	-0.6	19.8	23.3
May 24	04 43.58	+33 42.9	7.877	6.909	+0.27	-0.4	19.8	15.9
June 3	04 46.32	+33 39.3	7.902	6.910	+0.27	-0.1	19.8	11.4
June 13	04 49.07	+33 37.9	7.899	6.913	+0.26	+0.1	19.8	13.0
June 23	04 51.69	+33 38.5	7.868	6.916	+0.24	+0.2	19.8	19.1
July 3	04 54.04	+33 40.8	7.810	6.919	+0.20	+0.4	19.8	27.0
July 13	04 56.00	+33 44.6	7.726	6.923	+0.14	+0.5	19.7	35.4
July 23	04 57.42	+33 49.6	7.619	6.928	+0.07	+0.6	19.7	44.2
Aug. 2	04 58.16	+33 55.6	7.491	6.933	-0.01	+0.7	19.7	53.3
Aug. 12	04 58.07	+34 02.2	7.346	6.939	-0.11	+0.7	19.6	62.7
Aug. 22	04 56.99	+34 09.0	7.186	6.946	-0.22	+0.6	19.6	72.3
Sept. 1	04 54.77	+34 15.5	7.018	6.953	-0.35	+0.5	19.5	82.2
Sept.11	04 51.29	+34 20.7	6.846	6.961	-0.49	+0.3	19.5	92.4
Sept.21	04 46.42	+34 23.8	6.676	6.969	-0.63	0.0	19.4	102.9
Oct. 1	04 40.10	+34 23.3	6.515	6.978	-0.77	-0.5	19.4	113.7
Oct. 11	04 32.36	+34 18.0	6.369	6.988	-0.91	-1.2	19.4	124.9
Oct. 21	04 23.27	+34 06.1	6.245	6.998	-1.02	-2.0	19.3	136.2
Oct. 31	04 13.08	+33 46.6	6.150	7.009	-1.10	-2.8	19.3	147.6
Nov. 10	04 02.10	+33 18.5	6.090	7.020	-1.13	-3.7	19.3	158.5
Nov. 20	03 50.76	+32 41.7	6.067	7.032	-1.12	-4.4	19.3	166.7
Nov. 30	03 39.53	+31 57.3	6.084	7.045	-1.07	-5.0	19.3	165.8
Dec. 10	03 28.85	+31 07.0	6.142	7.058	-0.97	-5.4	19.3	156.8
Dec. 20	03 19.11	+30 13.3	6.237	7.071	-0.85	-5.5	19.3	145.7
Dec. 30	03 10.60	+29 18.8	6.366	7.086	-0.71	-5.3	19.4	134.1
Jan. 9	03 03.46	+28 26.0	6.522	7.100	-0.57	-4.9	19.5	122.6
Jan. 19	02 57.77	+27 36.8	6.700	7.116	-0.43	-4.4	19.5	111.2
Jan. 29	02 53.49	+26 52.8	6.892	7.132	-0.30	-3.8	19.6	100.1
Feb. 8	02 50.54	+26 14.7	7.092	7.148	-0.18	-3.2	19.7	89.3
Feb. 18	02 48.78	+25 42.7	7.291	7.165	-0.07	-2.6	19.7	78.8
Feb. 28	02 48.07	+25 16.9	7.485	7.183	+0.02	-2.0	19.8	68.6
Mar. 10	02 48.27	+24 56.7	7.668	7.201	+0.09	-1.5	19.9	58.6
Mar. 20	02 49.21	+24 41.8	7.835	7.219	+0.15	-1.0	19.9	48.9
Mar. 30	02 50.75	+24 31.3	7.982	7.238	+0.20	-0.7	20.0	39.4

Comet 104P/Kowal

Epoch = 2010 July 23.0 TT
T = 2010 May 4.65562 TT
Peri. = 200.55672 e = 0.6381441
Node = 235.51504 2000.0 a = 3.2600574 AU
Incl. = 10.26836 n = 0.16744270
q = 1.1796708 AU P = 5.89 years

m1 = 12.0 + 5 log(Delta) + 17.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	21 52.51	-05 18.6	2.388	1.839	+2.09	+8.1	18.5	45.5
Jan. 14	22 13.39	-03 57.5	2.385	1.760	+2.24	+9.5	18.2	40.7
Jan. 24	22 35.76	-02 22.2	2.371	1.683	+2.39	+10.9	17.8	36.3
Feb. 3	22 59.62	-00 33.5	2.350	1.607	+2.54	+12.1	17.5	32.4
Feb. 13	23 25.05	+01 27.6	2.322	1.533	+2.71	+13.2	17.1	28.9
Feb. 23	23 52.13	+03 39.3	2.288	1.463	+2.88	+14.0	16.7	25.8
Mar. 5	00 20.97	+05 59.1	2.252	1.397	+3.07	+14.4	16.3	23.3
Mar. 15	00 51.72	+08 23.5	2.216	1.337	+3.28	+14.4	15.9	21.2
Mar. 25	01 24.49	+10 47.9	2.180	1.285	+3.48	+13.9	15.6	19.5
Apr. 4	01 59.31	+13 06.7	2.149	1.241	+3.69	+12.6	15.3	18.4
Apr. 14	02 36.16	+15 13.0	2.125	1.208	+3.87	+10.7	15.1	17.7
Apr. 24	03 14.85	+16 59.9	2.109	1.187	+4.01	+8.1	14.9	17.3
May 4	03 54.96	+18 20.5	2.104	1.180	+4.10	+4.9	14.9	17.3
May 14	04 35.93	+19 09.5	2.110	1.186	+4.11	+1.4	14.9	17.4
May 24	05 17.03	+19 23.9	2.130	1.205	+4.05	-2.0	15.1	17.6
June 3	05 57.50	+19 03.5	2.163	1.236	+3.92	-5.3	15.3	17.8
June 13	06 36.68	+18 11.0	2.208	1.278	+3.74	-8.0	15.6	17.7
June 23	07 14.05	+16 50.9	2.265	1.330	+3.52	-10.2	15.9	17.3
July 3	07 49.29	+15 08.9	2.332	1.389	+3.30	-11.8	16.3	16.6
July 13	08 22.29	+13 10.7	2.408	1.454	+3.08	-12.9	16.8	15.6
July 23	08 53.07	+11 01.5	2.489	1.524	+2.87	-13.6	17.2	14.1
Aug. 2	09 21.76	+08 45.9	2.574	1.597	+2.68	-13.9	17.6	12.3
Aug. 12	09 48.53	+06 27.2	2.660	1.673	+2.50	-13.9	18.0	10.3
Aug. 22	10 13.58	+04 08.2	2.745	1.750	+2.35	-13.7	18.4	8.2
Sept. 1	10 37.08	+01 50.9	2.827	1.828	+2.21	-13.4	18.8	6.6
Sept.11	10 59.22	-00 23.2	2.904	1.907	+2.09	-13.0	19.2	6.6
Sept.21	11 20.14	-02 33.2	2.973	1.986	+1.98	-12.5	19.6	8.6
Oct. 1	11 39.96	-04 38.1	3.033	2.065	+1.88	-11.9	19.9	12.0
Oct. 11	11 58.77	-06 37.4	3.083	2.143	+1.79	-11.3	20.2	16.3
Oct. 21	12 16.64	-08 30.5	3.121	2.221	+1.70	-10.7	20.5	21.0
Oct. 31	12 33.61	-10 17.2	3.146	2.298	+1.61	-10.0	20.8	26.2
Nov. 10	12 49.68	-11 57.2	3.157	2.374	+1.51	-9.3	21.1	31.8
Nov. 20	13 04.82	-13 29.9	3.154	2.449	+1.42	-8.5	21.3	37.7
Nov. 30	13 18.98	-14 55.3	3.137	2.523	+1.31	-7.8	21.5	44.0
Dec. 10	13 32.08	-16 13.1	3.106	2.596	+1.19	-7.0	21.7	50.7
Dec. 20	13 44.00	-17 22.8	3.061	2.667	+1.06	-6.1	21.9	57.7
Dec. 30	13 54.60	-18 24.3	3.003	2.738	+0.91	-5.3	22.0	65.1
Jan. 9	14 03.69	-19 17.0	2.935	2.807	+0.74	-4.4	22.2	72.9
Jan. 19	14 11.06	-20 00.6	2.859	2.876	+0.55	-3.4	22.3	81.1
Jan. 29	14 16.51	-20 34.2	2.776	2.943	+0.33	-2.3	22.4	89.8
Feb. 8	14 19.81	-20 57.2	2.692	3.009	+0.10	-1.1	22.5	99.1
Feb. 18	14 20.78	-21 08.2	2.609	3.074	-0.15	+0.2	22.6	108.8
Feb. 28	14 19.33	-21 06.3	2.534	3.137	-0.39	+1.6	22.7	119.1
Mar. 10	14 15.45	-20 50.2	2.470	3.200	-0.61	+3.1	22.8	130.0
Mar. 20	14 09.40	-20 19.3	2.424	3.261	-0.78	+4.5	22.9	141.3
Mar. 30	14 01.62	-19 34.3	2.401	3.321	-0.89	+5.7	23.0	152.9

Comet 141P/Machholz A

Epoch = 2010 July 23.0 TT
T = 2010 May 24.48956 TT
Peri. = 149.37124 e = 0.7488965
Node = 246.08543 2000.0 a = 3.0178454 AU
Incl. = 12.80243 n = 0.18800032
q = 0.7577915 AU P = 5.24 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	18 34.98	-18 48.2	3.052	2.079	+2.21	+4.4	21.0	6.7
Jan. 14	18 57.04	-18 04.7	2.936	1.979	+2.33	+6.0	20.6	11.0
Jan. 24	19 20.36	-17 05.0	2.809	1.878	+2.47	+7.8	20.1	15.3
Feb. 3	19 45.06	-15 46.7	2.674	1.774	+2.62	+10.0	19.7	19.3
Feb. 13	20 11.30	-14 07.0	2.532	1.667	+2.80	+12.4	19.1	22.8
Feb. 23	20 39.29	-12 03.2	2.389	1.558	+3.00	+15.1	18.6	25.8
Mar. 5	21 09.31	-09 32.2	2.247	1.448	+3.24	+18.1	18.0	28.0
Mar. 15	21 41.74	-06 31.5	2.110	1.336	+3.53	+21.2	17.3	29.4
Mar. 25	22 17.02	-02 59.7	1.984	1.225	+3.87	+24.1	16.6	29.9
Apr. 4	22 55.68	+01 01.7	1.874	1.115	+4.26	+26.5	15.9	29.2
Apr. 14	23 38.28	+05 26.6	1.786	1.009	+4.70	+27.5	15.1	27.5
Apr. 24	00 25.28	+10 01.4	1.725	0.913	+5.16	+26.3	14.4	24.7
May 4	01 16.84	+14 24.4	1.693	0.833	+5.56	+22.4	13.8	20.9
May 14	02 12.45	+18 08.7	1.692	0.779	+5.82	+16.0	13.3	16.6
May 24	03 10.62	+20 48.9	1.718	0.758	+5.83	+8.2	13.2	12.0
June 3	04 08.90	+22 10.6	1.767	0.775	+5.58	+0.5	13.4	7.8
June 13	05 04.68	+22 15.6	1.835	0.827	+5.13	-5.8	13.9	4.6
June 23	05 56.00	+21 17.7	1.917	0.904	+4.60	-10.2	14.6	3.1
July 3	06 42.00	+19 35.7	2.012	0.999	+4.07	-12.9	15.3	3.6
July 13	07 22.74	+17 26.2	2.114	1.104	+3.60	-14.4	16.1	4.6
July 23	07 58.71	+15 01.9	2.220	1.213	+3.19	-15.0	16.8	5.6
Aug. 2	08 30.56	+12 31.4	2.327	1.325	+2.84	-15.2	17.5	6.8
Aug. 12	08 58.98	+09 59.9	2.432	1.437	+2.55	-14.9	18.1	8.3
Aug. 22	09 24.50	+07 30.4	2.531	1.547	+2.31	-14.6	18.7	10.5
Sept. 1	09 47.60	+05 04.8	2.621	1.656	+2.11	-14.1	19.2	13.4
Sept.11	10 08.65	+02 43.9	2.702	1.763	+1.93	-13.6	19.7	16.9
Sept.21	10 27.93	+00 28.3	2.770	1.867	+1.77	-13.0	20.1	21.0
Oct. 1	10 45.63	-01 41.8	2.825	1.969	+1.63	-12.5	20.5	25.6
Oct. 11	11 01.90	-03 46.4	2.865	2.069	+1.49	-11.9	20.8	30.6
Oct. 21	11 16.81	-05 45.1	2.889	2.166	+1.36	-11.3	21.1	36.1
Oct. 31	11 30.41	-07 37.9	2.898	2.260	+1.23	-10.7	21.4	42.0
Nov. 10	11 42.69	-09 24.6	2.891	2.352	+1.09	-10.0	21.7	48.4
Nov. 20	11 53.56	-11 04.6	2.868	2.442	+0.94	-9.3	21.9	55.1
Nov. 30	12 02.94	-12 37.6	2.832	2.529	+0.77	-8.5	22.1	62.3
Dec. 10	12 10.68	-14 02.8	2.782	2.615	+0.59	-7.6	22.3	70.0
Dec. 20	12 16.59	-15 19.2	2.722	2.698	+0.39	-6.6	22.4	78.1
Dec. 30	12 20.48	-16 25.5	2.655	2.779	+0.17	-5.4	22.6	86.8
Jan. 9	12 22.14	-17 19.9	2.583	2.858	-0.08	-4.0	22.7	96.0
Jan. 19	12 21.38	-18 00.1	2.512	2.935	-0.33	-2.4	22.8	105.7
Jan. 29	12 18.13	-18 23.8	2.446	3.010	-0.57	-0.4	22.9	116.0
Feb. 8	12 12.43	-18 28.2	2.392	3.084	-0.79	+1.7	23.0	126.7
Feb. 18	12 04.57	-18 11.5	2.354	3.156	-0.95	+3.8	23.1	137.7
Feb. 28	11 55.10	-17 33.1	2.339	3.226	-1.03	+5.8	23.3	148.5
Mar. 10	11 44.77	-16 34.8	2.352	3.294	-1.03	+7.4	23.4	158.1
Mar. 20	11 34.48	-15 21.2	2.394	3.360	-0.94	+8.3	23.6	163.3
Mar. 30	11 25.06	-13 58.5	2.469	3.425	-0.79	+8.5	23.8	160.4

Comet 141P/Machholz D

Epoch = 2010 July 23.0 TT
T = 2010 May 29.79665 TT
Peri. = 149.33034 e = 0.7492149
Node = 246.08516 2000.0 a = 3.0217713 AU
Incl. = 12.80335 n = 0.18763406
q = 0.7578154 AU P = 5.25 years

m1 = 15.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	18 30.90	-19 00.3	3.102	2.131	+2.16	+4.1	22.6	7.4
Jan. 14	18 52.46	-18 19.7	2.985	2.033	+2.28	+5.6	22.2	12.0
Jan. 24	19 15.21	-17 23.7	2.856	1.932	+2.40	+7.4	21.8	16.5
Feb. 3	19 39.25	-16 09.9	2.718	1.830	+2.55	+9.4	21.3	20.7
Feb. 13	20 04.74	-14 35.9	2.574	1.724	+2.71	+11.7	20.8	24.4
Feb. 23	20 31.85	-12 38.7	2.427	1.617	+2.90	+14.3	20.3	27.6
Mar. 5	21 00.86	-10 15.5	2.280	1.507	+3.13	+17.2	19.7	30.1
Mar. 15	21 32.12	-07 23.4	2.138	1.396	+3.39	+20.3	19.0	31.9
Mar. 25	22 06.07	-04 00.5	2.004	1.284	+3.71	+23.4	18.3	32.7
Apr. 4	22 43.22	-00 06.9	1.886	1.173	+4.09	+26.0	17.6	32.5
Apr. 14	23 24.16	+04 13.2	1.787	1.064	+4.53	+27.6	16.9	31.2
Apr. 24	00 09.44	+08 48.9	1.714	0.963	+4.99	+27.2	16.1	28.7
May 4	00 59.36	+13 21.1	1.672	0.873	+5.44	+24.3	15.4	25.3
May 14	01 53.74	+17 23.7	1.660	0.804	+5.77	+18.5	14.9	21.1
May 24	02 51.45	+20 29.1	1.679	0.764	+5.89	+10.8	14.6	16.5
June 3	03 50.35	+22 17.6	1.722	0.761	+5.74	+2.7	14.6	12.1
June 13	04 47.71	+22 44.9	1.786	0.795	+5.34	-4.3	15.0	8.4
June 23	05 41.15	+22 02.1	1.865	0.860	+4.82	-9.4	15.6	5.8
July 3	06 29.37	+20 27.6	1.956	0.947	+4.28	-12.7	16.3	4.8
July 13	07 12.13	+18 20.2	2.056	1.047	+3.77	-14.6	17.1	5.2
July 23	07 49.82	+15 54.4	2.160	1.155	+3.33	-15.4	17.8	6.1
Aug. 2	08 23.10	+13 20.4	2.265	1.266	+2.96	-15.6	18.5	7.5
Aug. 12	08 52.65	+10 44.5	2.369	1.378	+2.64	-15.4	19.2	9.2
Aug. 22	09 19.10	+08 10.4	2.467	1.489	+2.38	-15.0	19.8	11.5
Sept. 1	09 42.94	+05 40.3	2.557	1.599	+2.17	-14.5	20.3	14.4
Sept.11	10 04.60	+03 15.1	2.637	1.707	+1.98	-14.0	20.8	17.9
Sept.21	10 24.36	+00 55.6	2.706	1.813	+1.81	-13.4	21.2	21.9
Oct. 1	10 42.45	-01 18.0	2.761	1.916	+1.66	-12.8	21.6	26.4
Oct. 11	10 59.04	-03 25.7	2.801	2.017	+1.52	-12.2	22.0	31.4
Oct. 21	11 14.21	-05 27.3	2.826	2.115	+1.38	-11.5	22.3	36.8
Oct. 31	11 28.02	-07 22.6	2.836	2.211	+1.24	-10.9	22.6	42.7
Nov. 10	11 40.44	-09 11.5	2.830	2.304	+1.10	-10.2	22.9	49.0
Nov. 20	11 51.43	-10 53.5	2.809	2.395	+0.94	-9.5	23.1	55.7
Nov. 30	12 00.88	-12 28.2	2.773	2.484	+0.78	-8.7	23.3	62.9
Dec. 10	12 08.64	-13 54.8	2.725	2.570	+0.59	-7.8	23.5	70.5
Dec. 20	12 14.54	-15 12.4	2.667	2.655	+0.38	-6.7	23.7	78.6
Dec. 30	12 18.37	-16 19.6	2.601	2.737	+0.15	-5.5	23.8	87.3
Jan. 9	12 19.92	-17 14.6	2.531	2.817	-0.09	-4.0	24.0	96.5
Jan. 19	12 19.01	-17 55.1	2.462	2.895	-0.34	-2.3	24.1	106.2
Jan. 29	12 15.56	-18 18.4	2.398	2.972	-0.59	-0.4	24.2	116.5
Feb. 8	12 09.64	-18 22.1	2.346	3.046	-0.81	+1.8	24.3	127.3
Feb. 18	12 01.55	-18 04.0	2.311	3.119	-0.97	+4.0	24.4	138.3
Feb. 28	11 51.88	-17 24.0	2.299	3.190	-1.05	+6.0	24.6	149.1
Mar. 10	11 41.41	-16 23.8	2.315	3.259	-1.04	+7.5	24.7	158.5
Mar. 20	11 31.05	-15 08.4	2.361	3.327	-0.94	+8.4	24.9	163.2
Mar. 30	11 21.64	-13 44.4	2.438	3.392	-0.78	+8.6	.	159.8

Comet 142P/Ge-Wang

Epoch = 2010 July 23.0 TT
T = 2010 May 30.47843 TT
Peri. = 175.71479 e = 0.4999389
Node = 176.51881 2000.0 a = 4.9754321 AU
Incl. = 12.30680 n = 0.08880918
q = 2.4880198 AU P = 11.10 years

m1 = 11.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	20 16.35	-12 52.7	3.620	2.725	+1.83	+4.2	20.9	21.1
Jan. 14	20 34.63	-12 10.9	3.630	2.696	+1.85	+5.1	20.9	15.6
Jan. 24	20 53.15	-11 20.0	3.629	2.668	+1.87	+5.9	20.8	10.6
Feb. 3	21 11.82	-10 20.8	3.619	2.642	+1.88	+6.7	20.7	6.5
Feb. 13	21 30.59	-09 14.0	3.599	2.618	+1.88	+7.4	20.6	5.6
Feb. 23	21 49.38	-08 00.5	3.569	2.595	+1.88	+7.9	20.6	8.8
Mar. 5	22 08.13	-06 41.3	3.530	2.575	+1.87	+8.4	20.5	13.3
Mar. 15	22 26.82	-05 17.7	3.483	2.556	+1.86	+8.7	20.4	18.1
Mar. 25	22 45.40	-03 50.7	3.427	2.540	+1.84	+8.9	20.3	23.1
Apr. 4	23 03.83	-02 21.7	3.365	2.526	+1.83	+9.0	20.3	28.0
Apr. 14	23 22.11	-00 52.1	3.295	2.514	+1.81	+8.9	20.2	33.0
Apr. 24	23 40.17	+00 36.8	3.219	2.504	+1.78	+8.7	20.1	38.0
May 4	23 58.00	+02 03.7	3.138	2.496	+1.76	+8.3	20.0	43.0
May 14	00 15.56	+03 27.0	3.051	2.491	+1.72	+7.8	20.0	48.0
May 24	00 32.77	+04 45.4	2.959	2.489	+1.68	+7.2	19.9	53.2
June 3	00 49.57	+05 57.6	2.864	2.488	+1.63	+6.4	19.8	58.5
June 13	01 05.87	+07 02.0	2.764	2.490	+1.57	+5.5	19.8	63.9
June 23	01 21.55	+07 57.4	2.662	2.495	+1.49	+4.5	19.7	69.5
July 3	01 36.47	+08 42.5	2.558	2.501	+1.40	+3.4	19.6	75.3
July 13	01 50.45	+09 16.0	2.452	2.510	+1.28	+2.1	19.5	81.4
July 23	02 03.28	+09 36.7	2.346	2.522	+1.15	+0.7	19.5	87.9
Aug. 2	02 14.74	+09 43.7	2.241	2.535	+0.98	-0.8	19.4	94.7
Aug. 12	02 24.55	+09 35.9	2.140	2.551	+0.79	-2.3	19.4	102.0
Aug. 22	02 32.44	+09 12.9	2.043	2.569	+0.57	-3.8	19.3	109.9
Sept. 1	02 38.17	+08 34.6	1.954	2.589	+0.33	-5.3	19.3	118.2
Sept.11	02 41.51	+07 41.6	1.876	2.611	+0.09	-6.6	19.2	127.2
Sept.21	02 42.37	+06 35.8	1.811	2.635	-0.15	-7.5	19.2	136.8
Oct. 1	02 40.85	+05 20.6	1.766	2.660	-0.36	-8.0	19.2	146.7
Oct. 11	02 37.25	+04 00.8	1.741	2.687	-0.51	-7.8	19.2	156.7
Oct. 21	02 32.16	+02 42.9	1.742	2.716	-0.58	-6.9	19.3	165.2
Oct. 31	02 26.38	+01 33.7	1.769	2.746	-0.56	-5.5	19.4	167.5
Nov. 10	02 20.76	+00 39.0	1.823	2.778	-0.47	-3.6	19.6	161.1
Nov. 20	02 16.09	+00 02.8	1.902	2.811	-0.31	-1.6	19.7	151.6
Nov. 30	02 12.98	-00 13.5	2.006	2.845	-0.12	+0.3	19.9	141.6
Dec. 10	02 11.75	-00 10.7	2.130	2.881	+0.08	+2.0	20.1	131.7
Dec. 20	02 12.55	+00 09.1	2.271	2.917	+0.28	+3.4	20.4	122.3
Dec. 30	02 15.31	+00 42.8	2.425	2.954	+0.46	+4.5	20.6	113.3
Jan. 9	02 19.91	+01 27.7	2.589	2.993	+0.62	+5.3	20.8	104.7
Jan. 19	02 26.14	+02 20.7	2.759	3.032	+0.76	+5.9	21.0	96.5
Jan. 29	02 33.79	+03 19.2	2.933	3.072	+0.89	+6.2	21.2	88.6
Feb. 8	02 42.66	+04 21.1	3.109	3.112	+0.99	+6.3	21.5	81.1
Feb. 18	02 52.56	+05 24.5	3.283	3.153	+1.08	+6.3	21.7	73.8
Feb. 28	03 03.33	+06 27.7	3.453	3.195	+1.15	+6.2	21.9	66.8
Mar. 10	03 14.82	+07 29.4	3.618	3.237	+1.21	+5.9	22.0	60.0
Mar. 20	03 26.91	+08 28.5	3.776	3.280	+1.26	+5.6	22.2	53.3
Mar. 30	03 39.46	+09 24.1	3.925	3.323	+1.29	+5.1	22.4	46.8

Comet D/1978 R1 (Haneda-Campos)

Epoch = 2010 July 23.0 TT
T = 2010 June 6.43718 TT
Peri. = 307.16389 e = 0.6299116
Node = 66.51101 2000.0 a = 3.4537325 AU
Incl. = 4.94546 n = 0.15355750
q = 1.2781864 AU P = 6.42 years

m1 = 12.5 + 5 log(Delta) + 10.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	18 55.55	-24 48.5	3.097	2.115	-0.96	-0.5	18.2	33.3/ 86	2.1
Jan. 14	19 19.84	-24 17.9	3.016	2.039	-1.04	-1.2	18.0	34.9/ 84	5.8
Jan. 24	19 45.09	-23 31.7	2.926	1.965	-1.12	-2.0	17.8	36.6/ 81	10.0
Feb. 3	20 11.24	-22 28.3	2.831	1.890	-1.20	-3.0	17.5	38.5/ 79	14.0
Feb. 13	20 38.25	-21 06.5	2.732	1.817	-1.28	-4.1	17.3	40.4/ 77	17.7
Feb. 23	21 06.06	-19 25.2	2.631	1.744	-1.37	-5.3	17.0	42.5/ 75	21.0
Mar. 5	21 34.65	-17 23.8	2.531	1.674	-1.45	-6.6	16.8	44.6/ 72	24.0
Mar. 15	22 03.99	-15 01.9	2.433	1.606	-1.53	-8.0	16.5	46.7/ 71	26.5
Mar. 25	22 34.07	-12 20.2	2.340	1.542	-1.60	-9.4	16.2	48.8/ 69	28.7
Apr. 4	23 04.88	-09 19.9	2.255	1.482	-1.67	-10.7	16.0	50.8/ 68	30.4
Apr. 14	23 36.43	-06 03.3	2.179	1.427	-1.74	-11.8	15.7	52.6/ 67	31.8
Apr. 24	00 08.71	-02 34.3	2.114	1.380	-1.79	-12.7	15.5	54.0/ 66	32.7
May 4	00 41.71	+01 02.2	2.060	1.340	-1.84	-13.2	15.3	55.0/ 66	33.4
May 14	01 15.41	+04 40.2	2.020	1.309	-1.88	-13.3	15.2	55.4/ 67	33.9
May 24	01 49.71	+08 12.6	1.992	1.288	-1.90	-12.9	15.1	55.1/ 68	34.3
June 3	02 24.49	+11 32.5	1.975	1.279	-1.91	-12.1	15.0	54.3/ 70	34.7
June 13	02 59.56	+14 33.5	1.969	1.281	-1.90	-10.8	15.0	53.0/ 72	35.2
June 23	03 34.62	+17 10.3	1.972	1.294	-1.86	-9.3	15.1	51.1/ 74	35.9
July 3	04 09.35	+19 19.5	1.981	1.317	-1.81	-7.7	15.2	49.0/ 77	36.9
July 13	04 43.39	+20 59.8	1.994	1.351	-1.74	-6.0	15.3	46.5/ 80	38.2
July 23	05 16.35	+22 11.5	2.009	1.394	-1.65	-4.5	15.5	43.9/ 83	40.0
Aug. 2	05 47.89	+22 56.8	2.023	1.444	-1.55	-3.1	15.6	41.2/ 85	42.3
Aug. 12	06 17.75	+23 18.9	2.035	1.500	-1.44	-1.8	15.8	38.5/ 88	45.0
Aug. 22	06 45.70	+23 21.7	2.042	1.561	-1.34	-0.8	16.0	35.7/ 91	48.2
Sept. 1	07 11.59	+23 09.4	2.042	1.627	-1.23	0.0	16.2	32.9/ 93	51.9
Sept.11	07 35.34	+22 46.3	2.036	1.696	-1.14	+0.6	16.3	30.0/ 95	56.1
Sept.21	07 56.86	+22 16.6	2.021	1.767	-1.06	+1.2	16.5	27.0/ 96	60.9
Oct. 1	08 16.10	+21 44.2	1.998	1.839	-0.99	+1.6	16.6	23.8/ 97	66.2
Oct. 11	08 32.98	+21 12.7	1.966	1.913	-0.94	+2.0	16.8	20.4/ 97	72.2
Oct. 21	08 47.39	+20 45.7	1.927	1.988	-0.91	+2.3	16.9	16.7/ 96	78.7
Oct. 31	08 59.20	+20 26.4	1.880	2.063	-0.89	+2.6	17.0	12.7/ 93	85.9
Nov. 10	09 08.20	+20 17.9	1.829	2.138	-0.89	+3.0	17.1	8.4/ 87	93.9
Nov. 20	09 14.15	+20 22.6	1.776	2.213	-0.92	+3.4	17.2	4.2/ 62	102.6
Nov. 30	09 16.83	+20 42.2	1.725	2.287	-0.96	+3.8	17.3	3.7/342	112.2
Dec. 10	09 16.03	+21 17.2	1.680	2.361	-1.02	+4.2	17.4	7.7/309	122.6
Dec. 20	09 11.72	+22 05.8	1.648	2.435	-1.10	+4.6	17.4	11.9/299	133.8
Dec. 30	09 04.18	+23 03.8	1.633	2.507	-1.19	+4.8	17.6	15.2/294	145.8
Jan. 9	08 54.03	+24 04.8	1.641	2.579	-1.27	+4.8	17.7	16.9/290	158.1
Jan. 19	08 42.38	+25 01.2	1.677	2.650	-1.32	+4.6	17.9	16.6/287	169.7
Jan. 29	08 30.56	+25 46.8	1.742	2.721	-1.33	+4.2	18.1	14.7/283	171.7
Feb. 8	08 19.88	+26 18.2	1.838	2.790	-1.31	+3.7	18.3	11.6/279	161.3
Feb. 18	08 11.35	+26 34.8	1.961	2.858	-1.25	+3.2	18.5	7.8/273	149.8
Feb. 28	08 05.51	+26 38.5	2.108	2.925	-1.17	+2.8	18.8	4.1/261	138.6
Mar. 10	08 02.51	+26 31.8	2.275	2.992	-1.08	+2.4	19.0	1.5/195	128.1
Mar. 20	08 02.22	+26 16.9	2.457	3.057	-0.99	+2.2	19.3	3.5/127	118.2
Mar. 30	08 04.31	+25 55.7	2.651	3.121	-0.90	+2.0	19.6	6.2/115	108.9

Comet 215P/NEAT

Epoch = 2010 July 23.0 TT
T = 2010 June 8.11181 TT
Peri. = 222.46822 e = 0.2012255
Node = 75.43860 2000.0 a = 4.0229009 AU
Incl. = 12.78951 n = 0.12215045
q = 3.2133907 AU P = 8.07 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	18 09.84	-25 45.5	4.239	3.281	+1.64	-1.2	18.6	11.4
Jan. 14	18 26.21	-25 57.8	4.195	3.273	+1.63	-0.7	18.6	17.9
Jan. 24	18 42.49	-26 04.9	4.136	3.265	+1.61	-0.2	18.5	24.4
Feb. 3	18 58.55	-26 07.4	4.064	3.258	+1.58	+0.2	18.5	30.9
Feb. 13	19 14.31	-26 05.8	3.978	3.251	+1.53	+0.5	18.4	37.5
Feb. 23	19 29.64	-26 01.0	3.880	3.245	+1.48	+0.7	18.3	44.2
Mar. 5	19 44.43	-25 54.2	3.772	3.239	+1.42	+0.8	18.2	50.9
Mar. 15	19 58.58	-25 46.5	3.654	3.234	+1.34	+0.7	18.2	57.7
Mar. 25	20 11.96	-25 39.3	3.528	3.230	+1.25	+0.5	18.1	64.7
Apr. 4	20 24.46	-25 33.9	3.396	3.226	+1.15	+0.2	18.0	71.8
Apr. 14	20 35.93	-25 32.0	3.259	3.222	+1.03	-0.3	17.9	79.0
Apr. 24	20 46.22	-25 35.2	3.120	3.219	+0.90	-1.0	17.8	86.5
May 4	20 55.18	-25 45.1	2.981	3.217	+0.74	-1.8	17.7	94.2
May 14	21 02.61	-26 03.3	2.845	3.215	+0.57	-2.8	17.6	102.3
May 24	21 08.32	-26 30.9	2.714	3.214	+0.38	-3.8	17.4	110.6
June 3	21 12.14	-27 08.5	2.592	3.213	+0.17	-4.8	17.3	119.4
June 13	21 13.88	-27 56.2	2.482	3.213	-0.04	-5.6	17.2	128.4
June 23	21 13.44	-28 52.6	2.388	3.214	-0.26	-6.2	17.2	137.8
July 3	21 10.85	-29 54.8	2.313	3.215	-0.46	-6.4	17.1	147.2
July 13	21 06.28	-30 58.8	2.260	3.217	-0.61	-6.1	17.1	156.3
July 23	21 00.15	-31 59.4	2.232	3.219	-0.70	-5.2	17.0	163.4
Aug. 2	20 53.11	-32 51.2	2.231	3.222	-0.72	-3.9	17.0	165.0
Aug. 12	20 45.94	-33 30.1	2.257	3.225	-0.65	-2.3	17.1	159.5
Aug. 22	20 39.49	-33 53.5	2.308	3.229	-0.50	-0.8	17.1	150.9
Sept. 1	20 34.48	-34 01.1	2.383	3.234	-0.31	+0.7	17.2	141.5
Sept.11	20 31.41	-33 54.0	2.478	3.239	-0.08	+2.0	17.3	132.0
Sept.21	20 30.59	-33 34.2	2.590	3.245	+0.14	+3.0	17.4	122.7
Oct. 1	20 32.04	-33 03.8	2.715	3.251	+0.36	+3.9	17.6	113.8
Oct. 11	20 35.66	-32 24.8	2.850	3.258	+0.56	+4.6	17.7	105.2
Oct. 21	20 41.27	-31 38.6	2.992	3.265	+0.73	+5.2	17.8	96.9
Oct. 31	20 48.62	-30 46.3	3.137	3.272	+0.88	+5.8	18.0	88.9
Nov. 10	20 57.44	-29 48.5	3.282	3.281	+1.01	+6.3	18.1	81.2
Nov. 20	21 07.50	-28 45.9	3.426	3.289	+1.11	+6.7	18.2	73.8
Nov. 30	21 18.56	-27 38.8	3.565	3.298	+1.19	+7.1	18.3	66.5
Dec. 10	21 30.42	-26 27.5	3.698	3.308	+1.25	+7.5	18.4	59.4
Dec. 20	21 42.91	-25 12.4	3.823	3.318	+1.29	+7.8	18.5	52.6
Dec. 30	21 55.86	-23 54.1	3.939	3.329	+1.33	+8.1	18.6	45.8
Jan. 9	22 09.15	-22 32.8	4.043	3.340	+1.35	+8.4	18.7	39.2
Jan. 19	22 22.66	-21 09.2	4.135	3.351	+1.36	+8.5	18.8	32.8
Jan. 29	22 36.30	-19 43.8	4.214	3.363	+1.37	+8.7	18.9	26.6
Feb. 8	22 50.01	-18 17.1	4.280	3.375	+1.37	+8.7	19.0	20.7
Feb. 18	23 03.70	-16 50.0	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 57.0	4.387	3.413	+1.33	+8.5	19.1	10.0
Mar. 20	23 44.15	-12 32.4	4.393	3.427	+1.31	+8.2	19.2	12.4
Mar. 30	23 57.27	-11 10.1	4.383	3.441	+1.29	+7.9	19.2	17.0

Comet C/2009 U5 (Grauer)

Epoch = 2010 July 23.0 TT
T = 2010 June 22.18480 TT
Peri. = 23.78700
Node = 121.17125 2000.0
Incl. = 25.46888
q = 6.0944312 AU
e = 0.9995162

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	09 07.73	+20 49.3	5.337	6.207	-0.25	+4.2	18.6	149.9
Jan. 14	09 05.22	+21 31.4	5.258	6.194	-0.31	+4.3	18.5	160.6
Jan. 24	09 02.15	+22 14.8	5.209	6.182	-0.34	+4.3	18.5	170.7
Feb. 3	08 58.77	+22 57.6	5.191	6.171	-0.34	+4.0	18.5	173.5
Feb. 13	08 55.40	+23 38.0	5.204	6.160	-0.31	+3.6	18.5	164.4
Feb. 23	08 52.34	+24 14.4	5.246	6.151	-0.25	+3.1	18.5	153.9
Mar. 5	08 49.86	+24 45.7	5.317	6.142	-0.17	+2.5	18.5	143.4
Mar. 15	08 48.19	+25 11.2	5.411	6.133	-0.07	+1.9	18.6	133.1
Mar. 25	08 47.50	+25 30.6	5.526	6.126	+0.04	+1.3	18.6	123.0
Apr. 4	08 47.89	+25 43.9	5.655	6.119	+0.15	+0.7	18.7	113.2
Apr. 14	08 49.37	+25 51.3	5.796	6.113	+0.26	+0.2	18.7	103.8
Apr. 24	08 51.95	+25 53.3	5.944	6.108	+0.36	-0.3	18.8	94.7
May 4	08 55.56	+25 50.4	6.094	6.104	+0.46	-0.8	18.8	85.8
May 14	09 00.13	+25 42.8	6.243	6.101	+0.54	-1.2	18.9	77.3
May 24	09 05.55	+25 31.2	6.387	6.098	+0.62	-1.5	18.9	69.0
June 3	09 11.73	+25 15.9	6.524	6.096	+0.68	-1.9	19.0	61.0
June 13	09 18.57	+24 57.3	6.650	6.095	+0.74	-2.1	19.0	53.1
June 23	09 25.96	+24 35.9	6.764	6.094	+0.79	-2.4	19.0	45.5
July 3	09 33.82	+24 12.2	6.863	6.095	+0.82	-2.6	19.1	38.1
July 13	09 42.04	+23 46.4	6.947	6.096	+0.85	-2.7	19.1	30.8
July 23	09 50.56	+23 19.0	7.013	6.098	+0.87	-2.8	19.1	23.9
Aug. 2	09 59.28	+22 50.7	7.061	6.101	+0.89	-2.9	19.1	17.5
Aug. 12	10 08.14	+22 21.8	7.091	6.105	+0.89	-2.9	19.1	12.3
Aug. 22	10 17.06	+21 52.9	7.101	6.109	+0.89	-2.8	19.2	10.5
Sept. 1	10 25.98	+21 24.6	7.092	6.114	+0.89	-2.7	19.2	13.4
Sept.11	10 34.83	+20 57.5	7.063	6.120	+0.87	-2.5	19.1	19.0
Sept.21	10 43.55	+20 32.3	7.016	6.127	+0.85	-2.3	19.1	25.8
Oct. 1	10 52.06	+20 09.8	6.950	6.135	+0.82	-1.9	19.1	33.0
Oct. 11	11 00.30	+19 50.6	6.868	6.143	+0.79	-1.5	19.1	40.5
Oct. 21	11 08.18	+19 35.5	6.769	6.152	+0.74	-1.0	19.1	48.3
Oct. 31	11 15.63	+19 25.3	6.658	6.162	+0.69	-0.5	19.0	56.3
Nov. 10	11 22.56	+19 20.7	6.534	6.173	+0.63	+0.2	19.0	64.5
Nov. 20	11 28.88	+19 22.4	6.402	6.184	+0.56	+0.9	19.0	72.9
Nov. 30	11 34.51	+19 31.0	6.264	6.196	+0.48	+1.6	18.9	81.6
Dec. 10	11 39.34	+19 47.0	6.124	6.209	+0.39	+2.3	18.9	90.4
Dec. 20	11 43.28	+20 10.4	5.985	6.223	+0.30	+3.1	18.8	99.5
Dec. 30	11 46.27	+20 41.1	5.852	6.237	+0.20	+3.7	18.8	108.7
Jan. 9	11 48.25	+21 18.5	5.730	6.252	+0.09	+4.3	18.8	118.0
Jan. 19	11 49.17	+22 01.5	5.622	6.268	-0.01	+4.7	18.7	127.4
Jan. 29	11 49.08	+22 48.5	5.533	6.285	-0.11	+4.9	18.7	136.6
Feb. 8	11 48.03	+23 37.5	5.466	6.302	-0.19	+4.8	18.7	145.2
Feb. 18	11 46.15	+24 26.0	5.425	6.320	-0.25	+4.5	18.7	152.7
Feb. 28	11 43.63	+25 11.4	5.412	6.338	-0.29	+4.0	18.7	157.6
Mar. 10	11 40.71	+25 51.5	5.426	6.358	-0.30	+3.3	18.7	157.9
Mar. 20	11 37.66	+26 24.0	5.470	6.378	-0.29	+2.4	18.7	153.7
Mar. 30	11 34.77	+26 47.6	5.540	6.398	-0.25	+1.4	18.8	146.7

Comet 43P/Wolf-Harrington

Epoch = 2010 July 23.0 TT
T = 2010 July 1.75173 TT
Peri. = 191.46955 e = 0.5944556
Node = 249.89578 2000.0 a = 3.3476557 AU
Incl. = 15.96647 n = 0.16091366
q = 1.3576229 AU P = 6.13 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	21 44.61	-00 09.8	2.843	2.278	+1.71	+6.0	16.2	46.3
Jan. 14	22 01.72	+00 50.0	2.858	2.209	+1.82	+7.2	16.0	40.8
Jan. 24	22 19.92	+02 01.8	2.862	2.139	+1.93	+8.3	15.8	35.5
Feb. 3	22 39.18	+03 24.7	2.856	2.070	+2.03	+9.3	15.6	30.6
Feb. 13	22 59.49	+04 57.8	2.840	2.001	+2.14	+10.2	15.4	26.1
Feb. 23	23 20.88	+06 40.0	2.815	1.932	+2.25	+11.0	15.1	21.9
Mar. 5	23 43.39	+08 29.7	2.782	1.865	+2.37	+11.5	14.9	18.0
Mar. 15	00 07.12	+10 25.2	2.743	1.799	+2.50	+11.9	14.6	14.6
Mar. 25	00 32.17	+12 24.1	2.699	1.734	+2.65	+12.0	14.3	11.6
Apr. 4	00 58.62	+14 23.7	2.653	1.672	+2.80	+11.7	14.1	9.1
Apr. 14	01 26.61	+16 20.5	2.604	1.614	+2.96	+11.0	13.8	7.1
Apr. 24	01 56.23	+18 10.5	2.556	1.559	+3.13	+9.9	13.5	5.9
May 4	02 27.49	+19 49.1	2.509	1.509	+3.29	+8.2	13.3	5.5
May 14	03 00.39	+21 11.5	2.466	1.464	+3.44	+6.1	13.0	5.8
May 24	03 34.78	+22 12.5	2.428	1.427	+3.56	+3.5	12.8	6.5
June 3	04 10.36	+22 47.5	2.395	1.396	+3.64	+0.5	12.7	7.5
June 13	04 46.76	+22 52.9	2.370	1.374	+3.67	-2.6	12.5	8.6
June 23	05 23.47	+22 26.5	2.352	1.361	+3.65	-5.8	12.5	9.8
July 3	05 59.95	+21 28.2	2.342	1.358	+3.58	-8.9	12.4	11.0
July 13	06 35.71	+19 59.5	2.339	1.364	+3.46	-11.6	12.5	12.4
July 23	07 10.30	+18 03.9	2.343	1.379	+3.31	-13.8	12.5	13.9
Aug. 2	07 43.43	+15 45.9	2.354	1.403	+3.15	-15.5	12.7	15.5
Aug. 12	08 14.95	+13 10.5	2.371	1.435	+2.98	-16.8	12.8	17.3
Aug. 22	08 44.76	+10 22.7	2.391	1.475	+2.81	-17.5	13.0	19.3
Sept. 1	09 12.89	+07 27.2	2.414	1.521	+2.65	-17.9	13.2	21.5
Sept.11	09 39.41	+04 28.0	2.437	1.572	+2.50	-18.0	13.5	24.1
Sept.21	10 04.40	+01 28.5	2.459	1.628	+2.36	-17.7	13.7	26.9
Oct. 1	10 27.96	-01 28.7	2.479	1.687	+2.22	-17.3	14.0	30.0
Oct. 11	10 50.18	-04 21.7	2.494	1.750	+2.09	-16.7	14.2	33.4
Oct. 21	11 11.11	-07 08.7	2.504	1.815	+1.97	-16.0	14.5	37.3
Oct. 31	11 30.80	-09 48.8	2.506	1.881	+1.85	-15.2	14.7	41.5
Nov. 10	11 49.28	-12 21.1	2.500	1.949	+1.72	-14.4	14.9	46.1
Nov. 20	12 06.49	-14 44.9	2.485	2.018	+1.59	-13.5	15.1	51.1
Nov. 30	12 22.39	-16 59.7	2.461	2.087	+1.45	-12.6	15.3	56.6
Dec. 10	12 36.86	-19 05.3	2.427	2.156	+1.29	-11.6	15.5	62.5
Dec. 20	12 49.74	-21 01.1	2.384	2.226	+1.11	-10.5	15.7	68.8
Dec. 30	13 00.86	-22 46.5	2.332	2.295	+0.91	-9.4	15.9	75.6
Jan. 9	13 09.95	-24 20.8	2.274	2.364	+0.68	-8.2	16.0	82.9
Jan. 19	13 16.74	-25 42.7	2.211	2.433	+0.42	-6.8	16.1	90.8
Jan. 29	13 20.96	-26 50.7	2.147	2.501	+0.14	-5.2	16.2	99.2
Feb. 8	13 22.37	-27 42.3	2.083	2.568	-0.15	-3.2	16.3	108.2
Feb. 18	13 20.82	-28 14.6	2.026	2.635	-0.44	-1.0	16.4	117.7
Feb. 28	13 16.40	-28 24.3	1.978	2.701	-0.70	+1.6	16.6	127.7
Mar. 10	13 09.43	-28 08.4	1.947	2.766	-0.88	+4.3	16.7	138.0
Mar. 20	13 00.61	-27 25.9	1.936	2.830	-0.97	+6.7	16.8	148.1
Mar. 30	12 50.91	-26 18.6	1.949	2.893	-0.95	+8.7	17.0	156.7

Comet C/2009 R1 (McNaught)

Epoch = 2010 July 23.0 TT
T = 2010 July 2.69395 TT
Peri. = 130.70123
Node = 322.62071 2000.0
Incl. = 77.03624
q = 0.4050608 AU
e = 1.0003307

m1 = 9.4 + 5 log(Delta) + 7.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	21 05.62	-22 29.4	3.970	3.150	+0.81	+8.8	16.1	29.4
Jan. 14	21 13.69	-21 01.2	3.915	3.021	+0.89	+9.4	16.0	21.4
Jan. 24	21 22.57	-19 27.4	3.836	2.889	+0.96	+10.0	15.8	13.8
Feb. 3	21 32.13	-17 47.1	3.732	2.755	+1.02	+10.8	15.6	6.5
Feb. 13	21 42.34	-15 58.9	3.604	2.618	+1.08	+11.8	15.3	2.6
Feb. 23	21 53.14	-14 01.1	3.452	2.478	+1.14	+12.9	15.0	8.5
Mar. 5	22 04.54	-11 51.6	3.278	2.335	+1.21	+14.4	14.7	15.2
Mar. 15	22 16.59	-09 27.5	3.083	2.189	+1.28	+16.3	14.4	21.6
Mar. 25	22 29.41	-06 44.8	2.868	2.038	+1.38	+18.7	14.0	27.7
Apr. 4	22 43.19	-03 37.7	2.637	1.883	+1.51	+22.0	13.6	33.3
Apr. 14	22 58.34	+00 02.2	2.393	1.724	+1.72	+26.5	13.1	38.4
Apr. 24	23 15.50	+04 27.2	2.140	1.559	+2.04	+32.8	12.5	42.7
May 4	23 35.91	+09 55.3	1.884	1.388	+2.60	+41.7	11.8	46.0
May 14	00 01.94	+16 52.6	1.635	1.211	+3.66	+53.5	11.1	47.6
May 24	00 38.54	+25 47.7	1.408	1.027	+5.83	+64.8	10.2	46.8
June 3	01 36.80	+36 36.1	1.230	0.838	+10.06	+58.4	9.3	42.5
June 13	03 17.44	+46 20.0	1.139	0.648	+13.93	+2.7	8.3	34.4
June 23	05 36.70	+46 47.1	1.171	0.480	+10.39	-69.5	7.4	24.1
July 3	07 20.57	+35 12.1	1.305	0.405	+5.11	-90.4	7.0	14.2
July 13	08 11.69	+20 08.0	1.454	0.489	+2.88	-77.7	7.9	10.3
July 23	08 40.50	+07 11.0	1.584	0.659	+2.16	-63.6	9.0	15.1
Aug. 2	09 02.09	-03 24.6	1.706	0.849	+1.88	-53.6	10.0	21.6
Aug. 12	09 20.93	-12 20.8	1.826	1.038	+1.76	-46.8	10.8	27.5
Aug. 22	09 38.50	-20 08.5	1.944	1.222	+1.69	-41.9	11.5	32.7
Sept. 1	09 55.40	-27 07.5	2.063	1.398	+1.65	-38.3	12.1	37.2
Sept.11	10 11.94	-33 30.4	2.180	1.569	+1.63	-35.5	12.6	41.1
Sept.21	10 28.29	-39 25.6	2.298	1.733	+1.63	-33.3	13.0	44.6
Oct. 1	10 44.55	-44 58.3	2.415	1.892	+1.63	-31.4	13.4	47.7
Oct. 11	11 00.82	-50 12.3	2.533	2.047	+1.63	-29.8	13.8	50.4
Oct. 21	11 17.16	-55 10.0	2.650	2.197	+1.65	-28.3	14.1	52.9
Oct. 31	11 33.66	-59 52.9	2.767	2.344	+1.68	-26.9	14.4	55.0
Nov. 10	11 50.43	-64 22.3	2.883	2.487	+1.71	-25.6	14.7	57.0
Nov. 20	12 07.58	-68 38.8	2.998	2.626	+1.78	-24.4	14.9	58.8
Nov. 30	12 25.36	-72 42.6	3.111	2.763	+1.88	-23.2	15.2	60.5
Dec. 10	12 44.21	-76 34.2	3.222	2.897	+2.08	-21.9	15.4	62.2
Dec. 20	13 05.04	-80 13.4	3.331	3.028	+2.57	-20.7	15.6	63.8
Dec. 30	13 30.74	-83 40.0	3.437	3.157	+4.41	-19.3	15.8	65.4
Jan. 9	14 14.88	-86 52.8	3.540	3.284	+32.74	-14.4	16.0	67.1
Jan. 19	19 42.26	-89 16.3	3.639	3.409	+31.49	+13.3	16.2	68.8
Jan. 29	00 57.20	-87 03.1	3.735	3.532	+4.42	+15.5	16.4	70.6
Feb. 8	01 41.39	-84 27.9	3.827	3.653	+2.66	+14.4	16.5	72.4
Feb. 18	02 08.01	-82 03.9	3.916	3.772	+2.22	+13.1	16.7	74.4
Feb. 28	02 30.23	-79 52.4	4.002	3.890	+2.06	+11.8	16.8	76.4
Mar. 10	02 50.86	-77 54.0	4.085	4.006	+1.99	+10.5	17.0	78.4
Mar. 20	03 10.81	-76 08.8	4.166	4.120	+1.96	+9.2	17.1	80.5
Mar. 30	03 30.45	-74 37.0	4.246	4.234	+1.96	+7.8	17.2	82.5

Comet 10P/Tempel

Epoch = 2010 July 23.0 TT
T = 2010 July 4.90725 TT
Peri. = 195.66090 e = 0.5363342
Node = 117.82501 2000.0 a = 3.0683700 AU
Incl. = 12.02234 n = 0.18337599
q = 1.4226981 AU P = 5.37 years

m1 = 7.6 + 5 log(Delta) + 27.5 log(r) (pre -T)
m1 = 9.6 + 5 log(Delta) + 15.0 log(r) (post-T)

0h TT	R.A.(2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2010/11	h m	° ′			m	′		°
Jan. 4	15 55.87	-10 54.4	2.830	2.245	+2.07	-5.3	19.5	45.0
Jan. 14	16 16.62	-11 47.3	2.683	2.182	+2.14	-4.4	19.1	49.8
Jan. 24	16 38.06	-12 31.2	2.533	2.120	+2.21	-3.4	18.6	54.6
Feb. 3	17 00.20	-13 05.5	2.381	2.058	+2.29	-2.4	18.1	59.1
Feb. 13	17 23.06	-13 29.3	2.229	1.996	+2.36	-1.3	17.6	63.5
Feb. 23	17 46.63	-13 42.1	2.079	1.935	+2.43	-0.2	17.1	67.8
Mar. 5	18 10.91	-13 43.7	1.932	1.875	+2.50	+1.0	16.5	71.7
Mar. 15	18 35.92	-13 33.8	1.789	1.816	+2.57	+2.1	16.0	75.5
Mar. 25	19 01.66	-13 12.8	1.652	1.760	+2.65	+3.1	15.4	79.0
Apr. 4	19 28.14	-12 41.5	1.521	1.705	+2.73	+4.1	14.9	82.3
Apr. 14	19 55.39	-12 00.9	1.399	1.654	+2.80	+4.8	14.3	85.3
Apr. 24	20 23.40	-11 12.8	1.285	1.606	+2.88	+5.3	13.8	88.1
May 4	20 52.19	-10 19.6	1.180	1.562	+2.95	+5.5	13.3	90.7
May 14	21 21.69	-09 24.4	1.085	1.523	+3.01	+5.3	12.8	93.1
May 24	21 51.79	-08 31.2	1.001	1.489	+3.05	+4.7	12.4	95.4
June 3	22 22.28	-07 44.3	0.926	1.462	+3.06	+3.5	12.0	97.6
June 13	22 52.84	-07 08.9	0.862	1.441	+3.01	+1.9	11.6	100.0
June 23	23 22.94	-06 50.2	0.807	1.428	+2.90	-0.2	11.4	102.5
July 3	23 51.97	-06 52.5	0.762	1.423	+2.72	-2.7	11.2	105.3
July 13	00 19.14	-07 19.8	0.725	1.425	+2.44	-5.4	11.2	108.7
July 23	00 43.59	-08 14.0	0.696	1.435	+2.09	-8.1	11.2	112.7
Aug. 2	01 04.50	-09 34.8	0.674	1.453	+1.65	-10.5	11.2	117.3
Aug. 12	01 21.02	-11 19.4	0.659	1.478	+1.15	-12.2	11.2	122.8
Aug. 22	01 32.49	-13 21.0	0.651	1.509	+0.61	-12.8	11.3	129.0
Sept. 1	01 38.61	-15 28.9	0.653	1.546	+0.08	-12.0	11.5	135.8
Sept.11	01 39.45	-17 29.0	0.666	1.588	-0.36	-9.5	11.7	142.7
Sept.21	01 35.82	-19 04.4	0.691	1.635	-0.66	-5.7	12.0	148.7
Oct. 1	01 29.21	-20 01.0	0.732	1.685	-0.77	-1.0	12.3	152.5
Oct. 11	01 21.47	-20 11.3	0.790	1.738	-0.70	+3.6	12.7	152.6
Oct. 21	01 14.46	-19 35.5	0.865	1.794	-0.50	+7.4	13.1	149.2
Oct. 31	01 09.47	-18 21.3	0.958	1.852	-0.23	+10.3	13.5	143.3
Nov. 10	01 07.14	-16 38.4	1.068	1.912	+0.05	+12.2	14.0	136.4
Nov. 20	01 07.64	-14 36.7	1.193	1.972	+0.31	+13.2	14.4	129.2
Nov. 30	01 10.74	-12 24.4	1.332	2.034	+0.54	+13.7	14.8	121.9
Dec. 10	01 16.10	-10 06.9	1.483	2.096	+0.73	+13.9	15.3	114.7
Dec. 20	01 23.38	-07 48.3	1.645	2.158	+0.88	+13.7	15.7	107.7
Dec. 30	01 32.21	-05 31.4	1.814	2.221	+1.01	+13.4	16.1	100.9
Jan. 9	01 42.32	-03 17.8	1.990	2.283	+1.12	+12.9	16.5	94.2
Jan. 19	01 53.47	-01 08.6	2.170	2.345	+1.20	+12.4	16.8	87.6
Jan. 29	02 05.46	+00 55.2	2.353	2.407	+1.27	+11.8	17.2	81.2
Feb. 8	02 18.14	+02 53.1	2.536	2.468	+1.32	+11.1	17.5	74.8
Feb. 18	02 31.38	+04 44.5	2.717	2.529	+1.37	+10.5	17.8	68.5
Feb. 28	02 45.07	+06 29.2	2.895	2.589	+1.41	+9.8	18.1	62.4
Mar. 10	02 59.14	+08 06.9	3.068	2.648	+1.44	+9.0	18.4	56.2
Mar. 20	03 13.49	+09 37.3	3.234	2.707	+1.46	+8.3	18.6	50.2
Mar. 30	03 28.06	+11 00.3	3.391	2.765	+1.47	+7.5	18.9	44.2

Comet C/2009 U1 (Garradd)

T = 2010 July 9.1914 TT
Peri. = 6.3662
Node = 67.0468 2000.0
Incl. = 69.1037
q = 2.976849 AU
e = 1.0

m1 = 11.0 + 5 log(Delta) + 10.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	02 56.92	-26 18.8	3.127	3.494	-0.47	+20.9	18.9	103.8
Jan. 14	02 52.17	-22 49.7	3.187	3.445	-0.23	+21.5	18.9	96.8
Jan. 24	02 49.83	-19 14.9	3.261	3.398	-0.02	+21.5	18.9	89.4
Feb. 3	02 49.67	-15 39.7	3.346	3.352	+0.18	+21.2	18.9	81.9
Feb. 13	02 51.45	-12 07.7	3.436	3.309	+0.35	+20.6	18.9	74.3
Feb. 23	02 54.93	-08 41.5	3.529	3.267	+0.49	+19.9	18.9	66.7
Mar. 5	02 59.87	-05 22.5	3.621	3.228	+0.62	+19.1	18.9	59.2
Mar. 15	03 06.06	-02 11.2	3.709	3.192	+0.73	+18.3	18.9	51.8
Mar. 25	03 13.34	+00 52.1	3.790	3.158	+0.82	+17.6	18.9	44.6
Apr. 4	03 21.53	+03 47.7	3.861	3.126	+0.90	+16.8	18.9	37.4
Apr. 14	03 30.53	+06 36.0	3.921	3.098	+0.97	+16.2	18.9	30.4
Apr. 24	03 40.21	+09 17.7	3.968	3.072	+1.03	+15.6	18.9	23.5
May 4	03 50.49	+11 53.3	4.000	3.049	+1.08	+15.0	18.9	16.8
May 14	04 01.29	+14 23.6	4.018	3.029	+1.13	+14.6	18.8	10.2
May 24	04 12.55	+16 49.5	4.020	3.012	+1.16	+14.2	18.8	4.6
June 3	04 24.20	+19 11.8	4.007	2.999	+1.20	+14.0	18.8	5.3
June 13	04 36.19	+21 31.5	3.978	2.988	+1.23	+13.8	18.8	11.2
June 23	04 48.46	+23 49.6	3.934	2.981	+1.25	+13.8	18.7	17.7
July 3	05 00.96	+26 07.3	3.874	2.977	+1.27	+13.9	18.7	24.3
July 13	05 13.65	+28 25.9	3.802	2.977	+1.28	+14.1	18.6	31.0
July 23	05 26.45	+30 46.8	3.717	2.980	+1.29	+14.5	18.6	37.8
Aug. 2	05 39.32	+33 11.8	3.621	2.986	+1.29	+15.1	18.5	44.7
Aug. 12	05 52.17	+35 42.5	3.516	2.996	+1.27	+15.9	18.5	51.7
Aug. 22	06 04.91	+38 21.2	3.404	3.009	+1.25	+16.9	18.4	58.9
Sept. 1	06 17.44	+41 09.7	3.288	3.025	+1.22	+18.1	18.4	66.1
Sept.11	06 29.61	+44 10.2	3.172	3.044	+1.16	+19.4	18.3	73.5
Sept.21	06 41.21	+47 24.6	3.058	3.066	+1.08	+21.0	18.3	81.0
Oct. 1	06 52.01	+50 54.1	2.950	3.091	+0.96	+22.5	18.3	88.5
Oct. 11	07 01.62	+54 39.2	2.853	3.119	+0.79	+23.9	18.2	96.0
Oct. 21	07 09.49	+58 38.5	2.771	3.150	+0.53	+25.0	18.2	103.1
Oct. 31	07 14.81	+62 48.4	2.707	3.183	+0.14	+25.5	18.2	109.8
Nov. 10	07 16.21	+67 02.9	2.665	3.219	-0.47	+25.0	18.2	115.6
Nov. 20	07 11.48	+71 12.5	2.648	3.258	-1.45	+23.2	18.2	120.1
Nov. 30	06 56.94	+75 04.4	2.658	3.298	-3.02	+19.7	18.3	122.9
Dec. 10	06 26.79	+78 21.6	2.693	3.341	-5.16	+14.1	18.4	123.7
Dec. 20	05 35.22	+80 42.5	2.752	3.386	-6.87	+6.6	18.5	122.7
Dec. 30	04 26.48	+81 48.1	2.834	3.433	-6.41	-0.6	18.6	120.1
Jan. 9	03 22.36	+81 42.6	2.933	3.482	-4.22	-4.6	18.8	116.3
Jan. 19	02 40.16	+80 57.0	3.048	3.533	-2.09	-5.5	18.9	111.7
Jan. 29	02 19.31	+80 01.5	3.174	3.585	-0.57	-4.9	19.1	106.8
Feb. 8	02 13.61	+79 12.9	3.308	3.638	+0.46	-3.5	19.2	101.7
Feb. 18	02 18.23	+78 37.9	3.446	3.693	+1.21	-2.0	19.4	96.7
Feb. 28	02 30.33	+78 17.8	3.586	3.750	+1.82	-0.7	19.5	91.8
Mar. 10	02 48.52	+78 11.3	3.726	3.807	+2.36	+0.4	19.7	87.1
Mar. 20	03 12.14	+78 15.7	3.863	3.866	+2.89	+1.2	19.8	82.8
Mar. 30	03 41.01	+78 27.2	3.997	3.926	+3.42	+1.4	19.9	78.7

Comet P/1999 U3 (LINEAR)

Epoch = 2010 July 23.0 TT
T = 2010 July 18.54218 TT
Peri. = 110.15732 e = 0.6110017
Node = 305.97440 2000.0 a = 4.9392545 AU
Incl. = 20.88373 n = 0.08978669
q = 1.9213616 AU P = 10.98 years

m1 = 9.0 + 5 log(Delta) + 25.0 log(r(t-30))

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/min °	Elong. °
Jan. 4	21 39.65	-03 26.5	3.255	2.631	-0.51	-6.7	22.8	23.9/ 66	43.6
Jan. 14	21 54.27	-01 50.3	3.281	2.575	-0.54	-6.8	22.6	25.5/ 66	37.7
Jan. 24	22 09.72	-00 04.7	3.296	2.519	-0.57	-7.0	22.3	26.9/ 65	32.2
Feb. 3	22 25.91	+01 50.2	3.300	2.464	-0.60	-7.2	22.1	28.2/ 64	27.1
Feb. 13	22 42.81	+03 54.0	3.293	2.410	-0.64	-7.4	21.9	29.4/ 63	22.5
Feb. 23	23 00.40	+06 06.2	3.276	2.358	-0.68	-7.6	21.6	30.6/ 63	18.5
Mar. 5	23 18.69	+08 26.1	3.250	2.308	-0.73	-7.8	21.3	31.7/ 62	15.3
Mar. 15	23 37.71	+10 52.7	3.216	2.259	-0.78	-7.9	21.1	32.8/ 62	13.2
Mar. 25	23 57.49	+13 24.9	3.175	2.213	-0.85	-7.9	20.8	33.7/ 62	12.6
Apr. 4	00 18.10	+16 01.1	3.130	2.169	-0.91	-7.9	20.6	34.7/ 62	13.3
Apr. 14	00 39.63	+18 39.8	3.080	2.127	-0.99	-7.8	20.3	35.5/ 62	15.1
Apr. 24	01 02.15	+21 18.8	3.027	2.089	-1.07	-7.6	20.0	36.2/ 63	17.4
May 4	01 25.75	+23 55.6	2.973	2.054	-1.15	-7.2	19.8	36.9/ 64	19.9
May 14	01 50.51	+26 27.4	2.918	2.022	-1.24	-6.6	19.5	37.4/ 66	22.6
May 24	02 16.50	+28 51.2	2.863	1.995	-1.34	-5.7	19.3	37.7/ 68	25.3
June 3	02 43.71	+31 03.4	2.809	1.971	-1.42	-4.7	19.1	38.0/ 70	27.9
June 13	03 12.11	+33 00.8	2.757	1.952	-1.51	-3.4	18.8	38.0/ 73	30.6
June 23	03 41.56	+34 40.1	2.706	1.937	-1.57	-2.0	18.7	37.8/ 76	33.2
July 3	04 11.81	+35 58.2	2.656	1.927	-1.62	-0.3	18.5	37.5/ 79	35.9
July 13	04 42.56	+36 53.2	2.607	1.922	-1.64	+1.4	18.3	36.9/ 83	38.7
July 23	05 13.37	+37 23.8	2.560	1.922	-1.63	+3.2	18.2	36.2/ 87	41.6
Aug. 2	05 43.77	+37 30.0	2.512	1.926	-1.60	+4.9	18.1	35.3/ 91	44.6
Aug. 12	06 13.33	+37 12.8	2.464	1.936	-1.54	+6.5	18.1	34.1/ 94	47.9
Aug. 22	06 41.60	+36 34.4	2.414	1.950	-1.46	+8.0	18.0	32.8/ 98	51.4
Sept. 1	07 08.25	+35 37.5	2.362	1.969	-1.37	+9.3	18.0	31.3/102	55.2
Sept.11	07 33.01	+34 25.5	2.307	1.992	-1.28	+10.5	18.0	29.5/105	59.4
Sept.21	07 55.67	+33 01.9	2.248	2.019	-1.20	+11.4	18.0	27.5/108	63.9
Oct. 1	08 16.09	+31 30.2	2.186	2.050	-1.12	+12.2	18.1	25.2/111	68.9
Oct. 11	08 34.16	+29 53.6	2.119	2.085	-1.05	+12.9	18.1	22.6/115	74.4
Oct. 21	08 49.72	+28 15.2	2.049	2.123	-1.00	+13.5	18.2	19.8/119	80.4
Oct. 31	09 02.65	+26 37.6	1.976	2.164	-0.97	+14.0	18.3	16.6/124	87.0
Nov. 10	09 12.76	+25 03.3	1.901	2.208	-0.96	+14.5	18.4	13.2/132	94.2
Nov. 20	09 19.85	+23 34.1	1.827	2.254	-0.97	+14.9	18.5	9.8/147	102.2
Nov. 30	09 23.70	+22 11.5	1.756	2.302	-1.00	+15.3	18.6	7.5/175	111.0
Dec. 10	09 24.14	+20 56.4	1.692	2.352	-1.06	+15.6	18.7	8.0/212	120.7
Dec. 20	09 21.11	+19 48.9	1.640	2.404	-1.13	+15.8	18.9	10.7/236	131.2
Dec. 30	09 14.84	+18 48.3	1.603	2.458	-1.21	+15.7	19.1	13.9/247	142.5
Jan. 9	09 05.88	+17 53.8	1.589	2.512	-1.29	+15.5	19.3	16.1/252	154.5
Jan. 19	08 55.20	+17 03.6	1.600	2.568	-1.34	+14.9	19.5	16.7/254	167.0
Jan. 29	08 44.04	+16 17.0	1.640	2.625	-1.36	+14.1	19.8	15.6/254	178.2
Feb. 8	08 33.68	+15 33.2	1.710	2.682	-1.34	+13.1	20.2	13.0/252	167.7
Feb. 18	08 25.15	+14 52.1	1.809	2.741	-1.29	+12.1	20.5	9.6/246	155.8
Feb. 28	08 19.09	+14 13.5	1.933	2.799	-1.21	+11.1	20.9	6.1/233	144.5
Mar. 10	08 15.73	+13 36.8	2.079	2.858	-1.12	+10.2	21.3	3.7/196	133.8
Mar. 20	08 15.01	+13 01.1	2.243	2.917	-1.03	+9.4	21.7	4.3/146	123.9
Mar. 30	08 16.66	+12 25.5	2.420	2.977	-0.94	+8.6	22.1	6.5/124	114.6

Comet 2P/Encke

Epoch = 2010 July 23.0 TT
T = 2010 Aug. 6.50104 TT
Peri. = 186.54899 e = 0.8483379
Node = 334.56685 2000.0 a = 2.2145845 AU
Incl. = 11.78307 n = 0.29906506
q = 0.3358685 AU P = 3.30 years

m1 = 13.8 + 5 log(Delta) + 12.0 log(r) (r<1.8 AU)
H = 14.4 , G = 0.15 (r>1.8 AU)

0h TT	R.A.(2000)	Decl.	Delta	r	Daily motion		Mag.	Elong.
2010/11	h m	° ′			m	′		°
Jan. 4	22 58.66	-00 57.8	3.175	2.853	+0.77	+4.3	20.1	62.3
Jan. 14	23 06.39	-00 14.4	3.239	2.780	+0.90	+5.3	20.1	54.2
Jan. 24	23 15.35	+00 38.6	3.286	2.704	+1.00	+6.2	20.0	46.5
Feb. 3	23 25.39	+01 40.4	3.315	2.625	+1.10	+7.0	19.9	39.1
Feb. 13	23 36.41	+02 50.5	3.325	2.543	+1.20	+7.8	19.8	32.0
Feb. 23	23 48.36	+04 08.4	3.314	2.457	+1.28	+8.5	19.6	25.3
Mar. 5	00 01.20	+05 33.6	3.283	2.367	+1.38	+9.2	19.4	19.0
Mar. 15	00 14.95	+07 05.8	3.231	2.274	+1.47	+9.9	19.2	13.1
Mar. 25	00 29.66	+08 44.9	3.159	2.176	+1.58	+10.6	18.9	8.0
Apr. 4	00 45.43	+10 30.5	3.068	2.074	+1.70	+11.2	18.7	5.2
Apr. 14	01 02.41	+12 22.8	2.959	1.967	+1.84	+11.9	18.6	7.1
Apr. 24	01 20.85	+14 21.5	2.832	1.855	+2.02	+12.5	18.5	10.9
May 4	01 41.08	+16 26.7	2.691	1.737	+2.25	+13.1	18.8	15.0
May 14	02 03.61	+18 37.8	2.538	1.613	+2.55	+13.6	18.3	18.6
May 24	02 29.11	+20 53.9	2.374	1.482	+2.95	+13.8	17.7	21.7
June 3	02 58.57	+23 12.2	2.204	1.343	+3.48	+13.5	17.1	24.0
June 13	03 33.42	+25 27.0	2.032	1.195	+4.21	+11.9	16.3	25.3
June 23	04 15.51	+27 25.7	1.863	1.037	+5.17	+7.8	15.3	25.1
July 3	05 07.17	+28 43.2	1.705	0.868	+6.34	-1.0	14.2	23.2
July 13	06 10.53	+28 33.6	1.569	0.689	+7.56	-16.9	12.8	18.7
July 23	07 26.13	+25 44.8	1.461	0.505	+8.53	-41.2	11.1	11.2
Aug. 2	08 51.45	+18 52.7	1.371	0.358	+8.57	-64.2	9.1	1.3
Aug. 12	10 17.17	+08 10.8	1.250	0.367	+7.75	-67.4	9.1	14.3
Aug. 22	11 34.63	-03 03.5	1.142	0.522	+7.37	-59.6	10.7	27.2
Sept. 1	12 48.36	-12 59.7	1.115	0.707	+7.04	-45.3	12.2	38.4
Sept.11	13 58.78	-20 33.0	1.169	0.885	+6.38	-29.0	13.5	47.3
Sept.21	15 02.62	-25 22.6	1.286	1.053	+5.51	-15.6	14.6	53.0
Oct. 1	15 57.75	-27 59.0	1.444	1.210	+4.66	-6.8	15.6	55.8
Oct. 11	16 44.31	-29 06.7	1.627	1.357	+3.93	-1.4	16.4	56.3
Oct. 21	17 23.63	-29 20.6	1.825	1.495	+3.37	+1.8	17.2	54.9
Oct. 31	17 57.29	-29 02.6	2.030	1.625	+2.94	+3.7	17.9	52.3
Nov. 10	18 26.64	-28 25.4	2.235	1.749	+2.61	+4.9	18.5	48.7
Nov. 20	18 52.70	-27 36.1	2.438	1.866	+2.35	+5.7	18.7	44.5
Nov. 30	19 16.21	-26 38.9	2.633	1.978	+2.15	+6.3	18.9	39.7
Dec. 10	19 37.72	-25 36.3	2.820	2.084	+1.99	+6.6	19.1	34.5
Dec. 20	19 57.59	-24 29.9	2.994	2.186	+1.85	+6.9	19.2	29.0
Dec. 30	20 16.10	-23 20.8	3.153	2.283	+1.73	+7.1	19.3	23.2
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	3.616	2.633	+1.37	+7.2	19.5	3.5
Feb. 18	21 33.27	-17 20.7	3.682	2.711	+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 58.14	-15 01.9	3.751	2.860	+1.12	+6.6	20.1	22.6
Mar. 20	22 09.33	-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

Comet 223P/Skiff

Epoch = 2010 July 23.0 TT
T = 2010 Aug. 14.53226 TT
Peri. = 37.85096 e = 0.4169906
Node = 346.82583 2000.0 a = 4.1509961 AU
Incl. = 27.05555 n = 0.11654015
q = 2.4200697 AU P = 8.46 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	21 19.92	-24 17.2	3.643	2.862	+1.49	+12.6	19.1	32.5
Jan. 14	21 34.79	-22 11.5	3.677	2.829	+1.51	+13.0	19.1	26.2
Jan. 24	21 49.86	-20 01.8	3.699	2.796	+1.52	+13.4	19.0	20.2
Feb. 3	22 05.03	-17 48.2	3.708	2.764	+1.52	+13.8	18.9	14.3
Feb. 13	22 20.27	-15 30.6	3.704	2.733	+1.53	+14.1	18.8	8.7
Feb. 23	22 35.53	-13 09.2	3.688	2.702	+1.52	+14.5	18.7	4.2
Mar. 5	22 50.76	-10 44.1	3.659	2.673	+1.52	+14.9	18.6	5.2
Mar. 15	23 05.95	-08 15.6	3.619	2.645	+1.51	+15.2	18.4	10.0
Mar. 25	23 21.08	-05 43.8	3.567	2.619	+1.51	+15.5	18.3	15.3
Apr. 4	23 36.13	-03 09.1	3.505	2.594	+1.50	+15.8	18.2	20.7
Apr. 14	23 51.10	-00 31.5	3.433	2.570	+1.49	+16.0	18.1	26.1
Apr. 24	00 05.98	+02 08.6	3.351	2.547	+1.48	+16.2	17.9	31.4
May 4	00 20.74	+04 51.0	3.262	2.527	+1.47	+16.5	17.8	36.7
May 14	00 35.39	+07 35.7	3.166	2.507	+1.45	+16.7	17.7	42.0
May 24	00 49.90	+10 22.5	3.064	2.490	+1.43	+16.9	17.6	47.3
June 3	01 04.22	+13 11.3	2.956	2.474	+1.41	+17.1	17.4	52.6
June 13	01 18.32	+16 02.1	2.845	2.461	+1.38	+17.3	17.3	57.9
June 23	01 32.12	+18 54.9	2.730	2.449	+1.34	+17.5	17.2	63.4
July 3	01 45.53	+21 49.8	2.614	2.439	+1.29	+17.7	17.0	68.9
July 13	01 58.43	+24 46.9	2.497	2.431	+1.22	+17.9	16.9	74.5
July 23	02 10.62	+27 46.1	2.380	2.425	+1.13	+18.1	16.8	80.3
Aug. 2	02 21.89	+30 47.5	2.266	2.422	+1.01	+18.3	16.7	86.2
Aug. 12	02 31.95	+33 51.0	2.156	2.420	+0.84	+18.5	16.5	92.4
Aug. 22	02 40.37	+36 55.6	2.050	2.421	+0.64	+18.4	16.4	98.8
Sept. 1	02 46.73	+40 00.0	1.952	2.423	+0.37	+18.1	16.3	105.3
Sept.11	02 50.42	+43 01.5	1.863	2.428	+0.04	+17.4	16.3	112.1
Sept.21	02 50.86	+45 55.4	1.786	2.435	-0.33	+16.0	16.2	118.9
Oct. 1	02 47.55	+48 35.1	1.722	2.444	-0.73	+13.7	16.1	125.5
Oct. 11	02 40.24	+50 51.8	1.674	2.454	-1.09	+10.4	16.1	131.7
Oct. 21	02 29.36	+52 35.7	1.645	2.467	-1.32	+6.4	16.1	136.8
Oct. 31	02 16.16	+53 39.4	1.636	2.482	-1.35	+2.1	16.2	140.3
Nov. 10	02 02.61	+53 59.9	1.647	2.498	-1.17	-1.8	16.2	141.4
Nov. 20	01 50.96	+53 41.6	1.679	2.517	-0.81	-4.7	16.3	139.9
Nov. 30	01 42.84	+52 54.3	1.730	2.537	-0.37	-6.4	16.5	136.3
Dec. 10	01 39.10	+51 50.1	1.801	2.558	+0.07	-7.0	16.6	131.1
Dec. 20	01 39.84	+50 40.2	1.887	2.581	+0.48	-6.7	16.8	125.1
Dec. 30	01 44.63	+49 32.9	1.988	2.606	+0.83	-6.0	17.0	118.6
Jan. 9	01 52.93	+48 33.1	2.101	2.632	+1.12	-5.0	17.2	112.0
Jan. 19	02 04.15	+47 43.2	2.223	2.659	+1.36	-4.0	17.4	105.4
Jan. 29	02 17.75	+47 03.4	2.354	2.687	+1.56	-3.1	17.6	98.9
Feb. 8	02 33.30	+46 32.9	2.489	2.717	+1.71	-2.3	17.9	92.5
Feb. 18	02 50.43	+46 09.9	2.629	2.748	+1.84	-1.7	18.1	86.3
Feb. 28	03 08.81	+45 52.5	2.770	2.779	+1.94	-1.4	18.3	80.2
Mar. 10	03 28.20	+45 38.5	2.912	2.812	+2.02	-1.2	18.5	74.3
Mar. 20	03 48.36	+45 26.1	3.053	2.845	+2.07	-1.3	18.7	68.6
Mar. 30	04 09.07	+45 13.4	3.192	2.879	+2.11	-1.5	18.9	63.0

Comet 227P/Catalina-LINEAR

Epoch = 2010 July 23.0 TT
T = 2010 Sept. 3.70322 TT
Peri. = 90.13572 e = 0.4999922
Node = 49.88496 2000.0 a = 3.5895417 AU
Incl. = 6.52471 n = 0.14492575
q = 1.7947990 AU P = 6.80 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 49.70	+11 19.0	2.247	2.692	+0.38	+4.0	21.6	106.1
Jan. 14	01 53.47	+11 58.5	2.332	2.639	+0.62	+5.1	21.6	97.0
Jan. 24	01 59.63	+12 49.2	2.417	2.587	+0.83	+6.0	21.5	88.6
Feb. 3	02 07.96	+13 49.4	2.501	2.535	+1.03	+6.8	21.4	80.7
Feb. 13	02 18.27	+14 57.2	2.580	2.483	+1.21	+7.4	21.4	73.3
Feb. 23	02 30.40	+16 10.8	2.654	2.431	+1.38	+7.8	21.3	66.3
Mar. 5	02 44.22	+17 28.3	2.719	2.381	+1.54	+8.0	21.2	59.8
Mar. 15	02 59.61	+18 47.9	2.776	2.330	+1.69	+8.0	21.1	53.7
Mar. 25	03 16.50	+20 07.6	2.824	2.281	+1.83	+7.8	21.0	48.0
Apr. 4	03 34.82	+21 25.4	2.864	2.233	+1.97	+7.4	20.9	42.6
Apr. 14	03 54.51	+22 39.3	2.894	2.186	+2.10	+6.8	20.8	37.5
Apr. 24	04 15.55	+23 47.2	2.915	2.140	+2.23	+6.0	20.7	32.7
May 4	04 37.85	+24 47.0	2.929	2.096	+2.35	+5.0	20.6	28.2
May 14	05 01.36	+25 36.7	2.936	2.054	+2.46	+3.7	20.4	24.0
May 24	05 26.00	+26 14.0	2.935	2.014	+2.56	+2.3	20.3	20.0
June 3	05 51.63	+26 37.0	2.930	1.976	+2.65	+0.7	20.2	16.2
June 13	06 18.13	+26 43.9	2.919	1.942	+2.72	−1.1	20.0	12.7
June 23	06 45.31	+26 33.3	2.905	1.910	+2.77	−2.9	19.9	9.5
July 3	07 12.96	+26 04.3	2.888	1.882	+2.79	−4.8	19.8	6.6
July 13	07 40.89	+25 16.2	2.869	1.857	+2.80	−6.7	19.7	4.5
July 23	08 08.87	+24 09.3	2.848	1.836	+2.78	−8.5	19.6	4.0
Aug. 2	08 36.71	+22 44.3	2.827	1.819	+2.75	−10.2	19.6	5.5
Aug. 12	09 04.26	+21 02.3	2.805	1.807	+2.71	−11.7	19.5	7.9
Aug. 22	09 31.36	+19 05.3	2.784	1.799	+2.66	−13.0	19.4	10.5
Sept. 1	09 57.93	+16 55.4	2.762	1.795	+2.60	−14.0	19.4	13.3
Sept.11	10 23.90	+14 35.0	2.741	1.796	+2.53	−14.8	19.4	16.2
Sept.21	10 49.25	+12 06.9	2.720	1.802	+2.47	−15.3	19.4	19.1
Oct. 1	11 13.95	+09 33.7	2.698	1.812	+2.41	−15.6	19.4	22.3
Oct. 11	11 38.02	+06 58.1	2.675	1.826	+2.34	−15.5	19.5	25.6
Oct. 21	12 01.45	+04 22.7	2.651	1.845	+2.28	−15.3	19.5	29.0
Oct. 31	12 24.25	+01 49.9	2.625	1.868	+2.22	−14.8	19.6	32.7
Nov. 10	12 46.44	−00 38.4	2.595	1.894	+2.15	−14.2	19.6	36.6
Nov. 20	13 07.97	−03 00.1	2.561	1.924	+2.08	−13.4	19.7	40.7
Nov. 30	13 28.81	−05 13.7	2.523	1.957	+2.01	−12.4	19.8	45.2
Dec. 10	13 48.90	−07 18.0	2.480	1.993	+1.92	−11.4	19.9	49.9
Dec. 20	14 08.14	−09 12.1	2.432	2.032	+1.83	−10.3	19.9	54.9
Dec. 30	14 26.41	−10 55.3	2.377	2.073	+1.71	−9.2	20.0	60.2
Jan. 9	14 43.54	−12 27.3	2.317	2.116	+1.58	−8.1	20.1	65.9
Jan. 19	14 59.35	−13 48.2	2.251	2.160	+1.43	−7.0	20.2	72.0
Jan. 29	15 13.60	−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 36.32	−16 47.8	2.029	2.303	+0.79	−4.1	20.4	93.0
Feb. 28	15 44.20	−17 28.8	1.953	2.353	+0.51	−3.3	20.4	101.1
Mar. 10	15 49.34	−18 01.4	1.878	2.404	+0.21	−2.5	20.5	109.8
Mar. 20	15 51.49	−18 26.2	1.810	2.455	−0.10	−1.7	20.5	119.2
Mar. 30	15 50.52	−18 43.4	1.753	2.507	−0.40	−1.0	20.6	129.3

Comet C/2008 FK75 (Lemmon-Siding Spring)

Epoch = 2010 July 23.0 TT
T = 2010 Sept. 29.22097 TT
Peri. = 80.41604
Node = 218.26606 2000.0
Incl. = 61.17523
q = 4.5108911 AU
e = 1.0026971

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	16 54.87	+10 13.1	5.650	5.000	+0.96	+6.3	16.1	44.7
Jan. 14	17 04.45	+11 16.0	5.533	4.966	+0.93	+7.4	16.1	50.6
Jan. 24	17 13.77	+12 30.3	5.405	4.933	+0.89	+8.6	16.0	56.7
Feb. 3	17 22.70	+13 56.1	5.271	4.902	+0.84	+9.7	15.9	62.9
Feb. 13	17 31.14	+15 33.5	5.133	4.871	+0.78	+10.9	15.8	69.2
Feb. 23	17 38.93	+17 22.3	4.993	4.842	+0.70	+11.9	15.7	75.5
Mar. 5	17 45.95	+19 21.7	4.855	4.813	+0.61	+12.9	15.7	81.7
Mar. 15	17 52.06	+21 30.8	4.722	4.786	+0.50	+13.7	15.6	87.7
Mar. 25	17 57.09	+23 47.7	4.595	4.760	+0.38	+14.3	15.5	93.4
Apr. 4	18 00.93	+26 10.2	4.478	4.735	+0.25	+14.5	15.4	98.8
Apr. 14	18 03.44	+28 35.6	4.373	4.711	+0.11	+14.5	15.3	103.7
Apr. 24	18 04.51	+31 00.3	4.281	4.689	-0.04	+14.0	15.3	107.9
May 4	18 04.09	+33 20.2	4.204	4.667	-0.19	+13.1	15.2	111.4
May 14	18 02.20	+35 31.3	4.144	4.647	-0.33	+11.8	15.2	114.0
May 24	17 58.91	+37 29.2	4.099	4.629	-0.44	+10.1	15.1	115.7
June 3	17 54.47	+39 09.9	4.071	4.611	-0.53	+8.1	15.1	116.3
June 13	17 49.18	+40 30.6	4.058	4.595	-0.57	+5.8	15.1	116.0
June 23	17 43.47	+41 28.9	4.059	4.581	-0.56	+3.6	15.1	114.9
July 3	17 37.84	+42 04.6	4.073	4.567	-0.51	+1.4	15.0	113.0
July 13	17 32.78	+42 18.1	4.099	4.555	-0.41	-0.7	15.0	110.5
July 23	17 28.73	+42 11.4	4.134	4.545	-0.27	-2.4	15.1	107.6
Aug. 2	17 26.04	+41 47.2	4.176	4.536	-0.11	-3.8	15.1	104.3
Aug. 12	17 24.94	+41 08.9	4.225	4.528	+0.06	-4.9	15.1	100.9
Aug. 22	17 25.57	+40 19.7	4.279	4.522	+0.24	-5.7	15.1	97.4
Sept. 1	17 27.96	+39 23.1	4.336	4.517	+0.41	-6.1	15.1	93.8
Sept.11	17 32.06	+38 22.2	4.396	4.513	+0.57	-6.2	15.2	90.2
Sept.21	17 37.79	+37 19.7	4.457	4.511	+0.72	-6.2	15.2	86.7
Oct. 1	17 45.04	+36 18.2	4.518	4.511	+0.86	-5.9	15.2	83.2
Oct. 11	17 53.66	+35 19.6	4.580	4.512	+0.99	-5.4	15.2	79.8
Oct. 21	18 03.52	+34 25.9	4.641	4.514	+1.10	-4.7	15.3	76.5
Oct. 31	18 14.48	+33 38.5	4.702	4.518	+1.19	-4.0	15.3	73.3
Nov. 10	18 26.40	+32 58.6	4.761	4.524	+1.27	-3.1	15.3	70.3
Nov. 20	18 39.13	+32 27.3	4.819	4.530	+1.34	-2.2	15.4	67.3
Nov. 30	18 52.54	+32 05.3	4.875	4.539	+1.40	-1.2	15.4	64.5
Dec. 10	19 06.50	+31 53.0	4.930	4.548	+1.44	-0.2	15.4	61.8
Dec. 20	19 20.87	+31 50.9	4.982	4.559	+1.47	+0.8	15.5	59.3
Dec. 30	19 35.54	+31 58.8	5.032	4.572	+1.49	+1.8	15.5	57.0
Jan. 9	19 50.39	+32 16.6	5.078	4.586	+1.49	+2.8	15.5	55.0
Jan. 19	20 05.31	+32 44.1	5.122	4.601	+1.49	+3.7	15.6	53.2
Jan. 29	20 20.18	+33 20.7	5.161	4.617	+1.47	+4.5	15.6	51.8
Feb. 8	20 34.91	+34 05.8	5.196	4.635	+1.45	+5.3	15.6	50.7
Feb. 18	20 49.41	+34 58.6	5.226	4.654	+1.42	+6.0	15.7	50.1
Feb. 28	21 03.59	+35 58.3	5.251	4.675	+1.38	+6.6	15.7	49.9
Mar. 10	21 17.36	+37 04.1	5.269	4.697	+1.33	+7.1	15.7	50.2
Mar. 20	21 30.64	+38 14.9	5.281	4.719	+1.27	+7.5	15.8	51.1
Mar. 30	21 43.35	+39 29.7	5.285	4.744	+1.21	+7.8	15.8	52.5

Comet 31P/Schwassmann-Wachmann

Epoch = 2010 July 23.0 TT
T = 2010 Sept. 29.58155 TT
Peri. = 17.94830 e = 0.1926742
Node = 114.19036 2000.0 a = 4.2415486 AU
Incl. = 4.54695 n = 0.11282813
q = 3.4243118 AU P = 8.74 years

m1 = 6.4 + 5 log(Delta) + 17.5 log(r(t-60))

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	05 27.50	+20 30.5	2.654	3.588	-0.57	+0.8	18.4	158.8
Jan. 14	05 21.84	+20 38.3	2.709	3.577	-0.40	+1.0	18.4	147.4
Jan. 24	05 17.85	+20 47.9	2.788	3.566	-0.20	+1.2	18.4	136.4
Feb. 3	05 15.84	+20 59.4	2.888	3.556	+0.01	+1.4	18.5	125.8
Feb. 13	05 15.93	+21 12.9	3.004	3.545	+0.22	+1.5	18.5	115.7
Feb. 23	05 18.10	+21 28.0	3.130	3.535	+0.41	+1.6	18.6	106.1
Mar. 5	05 22.25	+21 44.1	3.264	3.526	+0.59	+1.6	18.7	97.1
Mar. 15	05 28.18	+22 00.3	3.400	3.517	+0.75	+1.6	18.7	88.5
Mar. 25	05 35.73	+22 15.8	3.536	3.508	+0.90	+1.4	18.8	80.3
Apr. 4	05 44.68	+22 29.7	3.668	3.500	+1.02	+1.1	18.9	72.5
Apr. 14	05 54.85	+22 41.1	3.795	3.492	+1.12	+0.8	18.9	65.0
Apr. 24	06 06.05	+22 49.3	3.914	3.484	+1.21	+0.4	19.0	57.8
May 4	06 18.12	+22 53.6	4.024	3.477	+1.28	0.0	19.0	50.9
May 14	06 30.91	+22 53.4	4.123	3.470	+1.34	-0.5	19.0	44.2
May 24	06 44.29	+22 48.3	4.211	3.464	+1.38	-1.0	19.1	37.6
June 3	06 58.12	+22 38.0	4.285	3.458	+1.42	-1.6	19.1	31.2
June 13	07 12.31	+22 22.4	4.347	3.453	+1.44	-2.1	19.1	24.9
June 23	07 26.74	+22 01.4	4.395	3.448	+1.46	-2.6	19.1	18.7
July 3	07 41.31	+21 35.0	4.428	3.443	+1.46	-3.2	19.1	12.6
July 13	07 55.95	+21 03.5	4.447	3.439	+1.46	-3.6	19.1	6.5
July 23	08 10.58	+20 27.0	4.452	3.436	+1.45	-4.1	19.1	0.6
Aug. 2	08 25.11	+19 46.1	4.441	3.433	+1.44	-4.5	19.1	5.7
Aug. 12	08 39.49	+19 01.1	4.416	3.430	+1.42	-4.8	19.0	11.8
Aug. 22	08 53.65	+18 12.7	4.376	3.428	+1.39	-5.1	19.0	17.9
Sept. 1	09 07.52	+17 21.6	4.322	3.426	+1.35	-5.3	19.0	24.2
Sept.11	09 21.03	+16 28.4	4.254	3.425	+1.31	-5.4	18.9	30.5
Sept.21	09 34.13	+15 34.0	4.173	3.424	+1.26	-5.5	18.9	37.0
Oct. 1	09 46.73	+14 39.4	4.079	3.424	+1.20	-5.4	18.8	43.6
Oct. 11	09 58.75	+13 45.7	3.973	3.425	+1.14	-5.2	18.8	50.4
Oct. 21	10 10.10	+12 53.9	3.857	3.425	+1.06	-4.9	18.7	57.5
Oct. 31	10 20.68	+12 05.2	3.731	3.427	+0.97	-4.4	18.6	64.7
Nov. 10	10 30.36	+11 21.1	3.598	3.428	+0.86	-3.8	18.5	72.3
Nov. 20	10 39.00	+10 42.8	3.459	3.431	+0.75	-3.1	18.5	80.1
Nov. 30	10 46.45	+10 12.0	3.317	3.433	+0.61	-2.2	18.4	88.3
Dec. 10	10 52.54	+09 49.9	3.175	3.437	+0.45	-1.2	18.3	96.9
Dec. 20	10 57.08	+09 38.1	3.037	3.440	+0.28	-0.1	18.2	106.0
Dec. 30	10 59.92	+09 37.5	2.905	3.444	+0.10	+1.1	18.1	115.5
Jan. 9	11 00.92	+09 48.9	2.784	3.449	-0.09	+2.3	18.0	125.5
Jan. 19	11 00.03	+10 12.0	2.678	3.454	-0.27	+3.4	17.9	136.0
Jan. 29	10 57.31	+10 45.7	2.592	3.460	-0.43	+4.2	17.8	146.9
Feb. 8	10 52.98	+11 27.7	2.530	3.466	-0.55	+4.6	17.8	158.2
Feb. 18	10 47.46	+12 14.1	2.496	3.472	-0.62	+4.7	17.8	169.3
Feb. 28	10 41.30	+13 00.7	2.491	3.479	-0.62	+4.2	17.8	175.2
Mar. 10	10 35.14	+13 43.1	2.515	3.486	-0.55	+3.4	17.8	165.7
Mar. 20	10 29.67	+14 17.5	2.568	3.494	-0.43	+2.4	17.9	154.6
Mar. 30	10 25.39	+14 41.4	2.647	3.502	-0.27	+1.2	17.9	143.7

Comet P/2002 X2 (NEAT)

Epoch = 2010 July 23.0 TT
T = 2010 Oct. 4.88001 TT
Peri. = 351.85981 e = 0.4495672
Node = 74.97935 2000.0 a = 3.8644739 AU
Incl. = 23.53616 n = 0.12973839
q = 2.1271334 AU P = 7.60 years

m1 = 9.4 + 5 log(Delta) + 17.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	22 34.12	-30 10.4	3.481	2.923	-0.64	-2.9	20.3	21.9/ 59	48.5
Jan. 14	22 48.28	-28 14.1	3.525	2.879	-0.64	-3.3	20.2	23.1/ 60	42.6
Jan. 24	23 03.06	-26 14.1	3.558	2.836	-0.63	-3.7	20.1	24.1/ 60	37.1
Feb. 3	23 18.35	-24 10.8	3.580	2.793	-0.63	-4.2	20.0	25.1/ 61	32.0
Feb. 13	23 34.07	-22 04.6	3.591	2.750	-0.63	-4.6	19.9	25.9/ 61	27.2
Feb. 23	23 50.15	-19 56.1	3.591	2.708	-0.63	-5.0	19.7	26.7/ 61	23.0
Mar. 5	00 06.54	-17 45.8	3.580	2.667	-0.64	-5.5	19.6	27.3/ 62	19.6
Mar. 15	00 23.21	-15 34.1	3.559	2.626	-0.65	-5.9	19.5	27.9/ 62	17.2
Mar. 25	00 40.14	-13 22.0	3.528	2.585	-0.65	-6.3	19.4	28.4/ 63	16.2
Apr. 4	00 57.30	-11 09.9	3.487	2.546	-0.67	-6.7	19.2	28.9/ 63	16.7
Apr. 14	01 14.69	-08 58.5	3.438	2.508	-0.68	-7.1	19.1	29.2/ 64	18.5
Apr. 24	01 32.32	-06 48.6	3.381	2.470	-0.70	-7.5	18.9	29.5/ 65	21.2
May 4	01 50.15	-04 40.9	3.317	2.434	-0.71	-7.9	18.8	29.8/ 65	24.4
May 14	02 08.20	-02 36.1	3.246	2.399	-0.74	-8.2	18.6	29.9/ 66	27.9
May 24	02 26.45	-00 34.8	3.168	2.366	-0.76	-8.6	18.4	30.0/ 67	31.6
June 3	02 44.88	+01 22.4	3.085	2.334	-0.79	-8.9	18.3	30.1/ 68	35.5
June 13	03 03.49	+03 14.8	2.997	2.304	-0.82	-9.2	18.1	30.0/ 69	39.4
June 23	03 22.22	+05 02.0	2.904	2.276	-0.86	-9.5	18.0	29.9/ 70	43.4
July 3	03 41.03	+06 43.7	2.808	2.250	-0.90	-9.7	17.8	29.6/ 71	47.6
July 13	03 59.87	+08 19.7	2.707	2.226	-0.94	-10.0	17.6	29.3/ 72	51.8
July 23	04 18.66	+09 50.0	2.603	2.205	-0.99	-10.2	17.5	28.8/ 72	56.2
Aug. 2	04 37.31	+11 14.9	2.496	2.186	-1.04	-10.4	17.3	28.2/ 73	60.7
Aug. 12	04 55.71	+12 35.0	2.386	2.169	-1.11	-10.5	17.2	27.4/ 73	65.4
Aug. 22	05 13.70	+13 51.3	2.274	2.155	-1.17	-10.7	17.0	26.4/ 73	70.3
Sept. 1	05 31.13	+15 05.2	2.161	2.144	-1.25	-10.8	16.9	25.2/ 73	75.5
Sept.11	05 47.80	+16 18.5	2.047	2.135	-1.33	-10.8	16.7	23.7/ 71	81.0
Sept.21	06 03.46	+17 33.7	1.933	2.130	-1.43	-10.9	16.6	22.0/ 68	87.0
Oct. 1	06 17.85	+18 53.8	1.820	2.127	-1.54	-10.9	16.4	20.1/ 63	93.3
Oct. 11	06 30.62	+20 22.1	1.710	2.128	-1.67	-10.8	16.3	18.1/ 56	100.2
Oct. 21	06 41.37	+22 02.6	1.605	2.131	-1.82	-10.7	16.2	16.3/ 44	107.8
Oct. 31	06 49.68	+23 58.9	1.507	2.137	-1.99	-10.4	16.1	15.3/ 28	116.0
Nov. 10	06 55.03	+26 13.5	1.420	2.146	-2.18	-10.2	16.0	15.5/ 9	124.9
Nov. 20	06 56.95	+28 46.7	1.346	2.158	-2.39	-10.0	15.9	17.0/352	134.6
Nov. 30	06 55.14	+31 34.8	1.291	2.173	-2.61	-9.8	15.9	18.8/338	144.7
Dec. 10	06 49.58	+34 28.9	1.259	2.190	-2.80	-10.0	15.9	19.7/328	154.7
Dec. 20	06 40.90	+37 15.6	1.251	2.209	-2.95	-10.4	15.9	19.0/320	162.4
Dec. 30	06 30.39	+39 40.7	1.271	2.232	-3.01	-11.1	16.0	16.5/314	163.5
Jan. 9	06 19.87	+41 34.4	1.318	2.256	-2.96	-11.7	16.2	12.4/310	157.0
Jan. 19	06 11.26	+42 54.0	1.389	2.282	-2.83	-12.0	16.4	7.6/311	147.8
Jan. 29	06 05.94	+43 43.2	1.482	2.311	-2.65	-11.8	16.6	2.9/330	138.2
Feb. 8	06 04.60	+44 08.5	1.592	2.341	-2.45	-11.2	16.9	3.0/ 74	128.9
Feb. 18	06 07.32	+44 16.5	1.717	2.373	-2.25	-10.3	17.1	6.9/ 93	120.2
Feb. 28	06 13.71	+44 12.1	1.852	2.407	-2.07	-9.2	17.4	10.4/ 97	112.1
Mar. 10	06 23.25	+43 58.2	1.996	2.442	-1.91	-8.0	17.7	13.3/ 98	104.5
Mar. 20	06 35.37	+43 36.4	2.144	2.478	-1.77	-6.7	18.0	15.7/ 99	97.4
Mar. 30	06 49.50	+43 07.5	2.296	2.516	-1.64	-5.5	18.2	17.6/100	90.7

Comet C/2010 A4 (Siding Spring)

T = 2010 Oct. 8.6157 TT
Peri. = 271.5311
Node = 346.6756 2000.0
Incl. = 96.7065
q = 2.743591 AU
e = 0.989543

m1 = 10.5 + 5 log(Delta) + 10.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	11 09.78	-25 01.4	3.563	3.896	-0.90	-14.8	19.2	102.5
Jan. 14	11 00.74	-27 29.0	3.360	3.830	-1.24	-14.3	19.0	111.4
Jan. 24	10 48.37	-29 51.7	3.177	3.765	-1.59	-13.0	18.8	119.8
Feb. 3	10 32.50	-32 01.7	3.022	3.700	-1.92	-10.8	18.6	127.0
Feb. 13	10 13.32	-33 49.5	2.899	3.637	-2.17	-7.6	18.4	132.2
Feb. 23	09 51.61	-35 05.6	2.813	3.575	-2.29	-3.8	18.3	134.3
Mar. 5	09 28.73	-35 43.9	2.765	3.514	-2.24	0.0	18.2	132.7
Mar. 15	09 06.33	-35 44.2	2.752	3.454	-2.04	+3.2	18.1	128.0
Mar. 25	08 45.97	-35 12.3	2.772	3.396	-1.73	+5.4	18.0	121.1
Apr. 4	08 28.68	-34 18.8	2.817	3.339	-1.38	+6.4	18.0	113.1
Apr. 14	08 14.91	-33 14.8	2.881	3.284	-1.03	+6.4	18.0	104.8
Apr. 24	08 04.64	-32 10.4	2.957	3.231	-0.71	+5.7	17.9	96.6
May 4	07 57.55	-31 13.1	3.038	3.179	-0.43	+4.5	17.9	88.7
May 14	07 53.21	-30 28.0	3.117	3.130	-0.20	+2.9	17.9	81.4
May 24	07 51.17	-29 58.6	3.190	3.083	-0.02	+1.2	17.9	74.8
June 3	07 50.99	-29 46.7	3.252	3.039	+0.13	-0.7	17.9	68.9
June 13	07 52.32	-29 53.6	3.301	2.997	+0.25	-2.7	17.9	63.9
June 23	07 54.84	-30 20.3	3.335	2.958	+0.34	-4.7	17.8	59.8
July 3	07 58.27	-31 07.6	3.352	2.921	+0.41	-6.9	17.8	56.7
July 13	08 02.38	-32 16.3	3.352	2.888	+0.46	-9.1	17.7	54.8
July 23	08 06.95	-33 47.5	3.335	2.858	+0.48	-11.5	17.7	54.0
Aug. 2	08 11.76	-35 42.5	3.301	2.831	+0.49	-14.0	17.6	54.3
Aug. 12	08 16.61	-38 02.7	3.253	2.807	+0.46	-16.7	17.5	55.6
Aug. 22	08 21.24	-40 49.8	3.192	2.787	+0.41	-19.6	17.5	57.8
Sept. 1	08 25.34	-44 05.6	3.121	2.771	+0.32	-22.6	17.4	60.7
Sept.11	08 28.51	-47 51.5	3.045	2.758	+0.16	-25.7	17.3	64.1
Sept.21	08 30.07	-52 08.4	2.968	2.750	-0.11	-28.7	17.3	67.7
Oct. 1	08 28.99	-56 55.5	2.895	2.745	-0.57	-31.4	17.2	71.4
Oct. 11	08 23.31	-62 09.7	2.831	2.744	-1.42	-33.3	17.1	74.8
Oct. 21	08 09.07	-67 42.3	2.781	2.747	-3.18	-33.2	17.1	77.7
Oct. 31	07 37.30	-73 14.0	2.752	2.753	-7.03	-28.3	17.1	79.7
Nov. 10	06 27.04	-77 57.0	2.747	2.764	-13.10	-12.0	17.1	80.6
Nov. 20	04 16.03	-79 57.1	2.767	2.778	-12.67	+13.4	17.1	80.4
Nov. 30	02 09.35	-77 43.1	2.815	2.796	-6.58	+28.2	17.2	78.8
Dec. 10	01 03.54	-73 01.6	2.887	2.818	-2.96	+32.2	17.3	76.1
Dec. 20	00 33.90	-67 39.9	2.981	2.843	-1.32	+32.0	17.4	72.4
Dec. 30	00 20.74	-62 19.7	3.092	2.872	-0.50	+30.3	17.5	68.0
Jan. 9	00 15.71	-57 16.4	3.214	2.903	-0.06	+28.0	17.7	63.0
Jan. 19	00 15.11	-52 36.0	3.343	2.938	+0.20	+25.6	17.8	57.7
Jan. 29	00 17.08	-48 19.9	3.473	2.976	+0.36	+23.2	17.9	52.4
Feb. 8	00 20.64	-44 27.8	3.598	3.016	+0.45	+20.9	18.1	47.2
Feb. 18	00 25.18	-40 58.4	3.715	3.060	+0.51	+18.8	18.2	42.5
Feb. 28	00 30.29	-37 50.2	3.820	3.105	+0.54	+16.9	18.3	38.4
Mar. 10	00 35.71	-35 01.4	3.910	3.153	+0.55	+15.1	18.4	35.4
Mar. 20	00 41.23	-32 30.7	3.982	3.203	+0.54	+13.4	18.6	33.8
Mar. 30	00 46.66	-30 16.5	4.036	3.256	+0.52	+11.9	18.7	33.9

Comet 103P/Hartley

Epoch = 2010 July 23.0 TT
T = 2010 Oct. 28.21988 TT
Peri. = 181.19415 e = 0.6951095
Node = 219.76642 2000.0 a = 3.4722829 AU
Incl. = 13.61685 n = 0.15232859
q = 1.0586660 AU P = 6.47 years

m1 = 12.0 + 5 log(Delta) + 7.5 log(r) (post-T & r>2.2AU)
m1 = 8.7 + 5 log(Delta) + 20.0 log(r(t-30)) (else)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	18 12.42	-15 16.4	4.210	3.260	+1.40	+1.8	19.0	13.1
Jan. 14	18 26.40	-14 58.8	4.105	3.191	+1.42	+2.5	18.8	19.0
Jan. 24	18 40.60	-14 33.8	3.983	3.121	+1.43	+3.3	18.7	25.2
Feb. 3	18 54.93	-14 00.9	3.846	3.050	+1.44	+4.1	18.6	31.5
Feb. 13	19 09.35	-13 19.8	3.694	2.977	+1.44	+4.9	18.4	37.9
Feb. 23	19 23.77	-12 30.4	3.529	2.903	+1.44	+5.8	18.2	44.2
Mar. 5	19 38.14	-11 32.4	3.354	2.828	+1.43	+6.7	18.0	50.5
Mar. 15	19 52.39	-10 25.6	3.169	2.751	+1.41	+7.6	17.8	56.7
Mar. 25	20 06.48	-09 09.8	2.977	2.674	+1.39	+8.5	17.6	62.8
Apr. 4	20 20.34	-07 44.9	2.781	2.594	+1.36	+9.4	17.3	68.9
Apr. 14	20 33.93	-06 10.5	2.581	2.513	+1.33	+10.4	17.1	74.9
Apr. 24	20 47.19	-04 26.4	2.380	2.431	+1.29	+11.4	16.8	80.8
May 4	21 00.08	-02 32.2	2.180	2.348	+1.25	+12.5	16.5	86.7
May 14	21 12.54	-00 27.3	1.983	2.264	+1.20	+13.6	16.1	92.5
May 24	21 24.50	+01 48.8	1.790	2.178	+1.14	+14.8	17.7	98.1
June 3	21 35.91	+04 16.9	1.603	2.091	+1.08	+16.1	17.1	103.7
June 13	21 46.70	+06 57.9	1.425	2.003	+1.01	+17.5	16.6	109.2
June 23	21 56.76	+09 52.8	1.255	1.914	+0.93	+19.0	16.0	114.5
July 3	22 06.05	+13 02.6	1.096	1.825	+0.84	+20.6	15.3	119.4
July 13	22 14.48	+16 28.5	0.949	1.736	+0.76	+22.2	14.6	124.0
July 23	22 22.05	+20 10.8	0.814	1.647	+0.68	+24.0	13.9	128.1
Aug. 2	22 28.88	+24 10.5	0.691	1.559	+0.64	+25.7	13.1	131.2
Aug. 12	22 35.27	+28 27.4	0.580	1.473	+0.68	+27.4	12.3	133.3
Aug. 22	22 42.07	+33 01.8	0.481	1.390	+0.90	+29.5	11.4	134.1
Sept. 1	22 51.10	+37 56.5	0.393	1.312	+1.50	+32.0	10.5	133.5
Sept.11	23 06.10	+43 16.9	0.315	1.239	+3.00	+35.4	9.6	131.9
Sept.21	23 36.05	+49 10.7	0.245	1.176	+6.75	+35.6	8.5	129.8
Oct. 1	00 43.52	+55 06.4	0.184	1.124	+14.19	+2.0	7.4	127.8
Oct. 11	03 05.39	+55 26.9	0.139	1.085	+14.98	101.7	6.3	125.8
Oct. 21	05 35.15	+38 29.9	0.121	1.063	+7.48	141.4	5.5	121.1
Oct. 31	06 49.98	+14 56.4	0.140	1.059	+3.26	-95.5	7.9	114.9
Nov. 10	07 22.54	-00 58.3	0.181	1.073	+1.36	-54.5	8.5	112.8
Nov. 20	07 36.16	-10 03.4	0.230	1.105	+0.33	-30.5	9.1	114.9
Nov. 30	07 39.45	-15 08.1	0.282	1.151	-0.34	-15.0	9.7	119.4
Dec. 10	07 36.09	-17 37.8	0.335	1.210	-0.73	-3.4	10.2	125.4
Dec. 20	07 28.84	-18 11.6	0.391	1.279	-0.86	+5.6	10.8	132.0
Dec. 30	07 20.20	-17 15.7	0.453	1.355	-0.79	+12.2	11.3	138.1
Jan. 9	07 12.32	-15 13.5	0.525	1.436	-0.55	+16.3	11.8	142.5
Jan. 19	07 06.84	-12 30.9	0.609	1.521	-0.23	+17.9	12.3	144.3
Jan. 29	07 04.50	-09 32.4	0.708	1.608	+0.09	+17.6	12.8	143.0
Feb. 8	07 05.41	-06 36.0	0.823	1.696	+0.39	+16.2	13.3	139.2
Feb. 18	07 09.34	-03 54.0	0.953	1.786	+0.65	+14.1	13.8	133.8
Feb. 28	07 15.79	-01 32.6	1.097	1.875	+0.85	+11.9	14.2	127.7
Mar. 10	07 24.30	+00 26.1	1.256	1.964	+1.01	+9.6	14.7	121.2
Mar. 20	07 34.43	+02 01.8	1.426	2.052	+1.13	+7.4	15.1	114.6
Mar. 30	07 45.78	+03 16.0	1.607	2.139	+1.23	+5.5	15.5	108.1

Comet P/2000 G1 (LINEAR)

Epoch = 2010 July 23.0 TT
T = 2010 Nov. 13.95468 TT
Peri. = 343.30357 e = 0.6727232
Node = 190.99823 2000.0 a = 3.0558139 AU
Incl. = 10.39003 n = 0.18450737
q = 1.0000969 AU P = 5.34 years

m1 = 17.7 + 5 log(Delta) + 12.5 log(r(t-50))

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/ °	Elong. °
Jan. 4	01 20.69	+03 05.2	3.021	3.279	-0.36	-0.6	.	4.5/ 65	96.4
Jan. 14	01 23.39	+03 24.4	3.115	3.217	-0.35	-0.6	.	7.4/ 66	87.0
Jan. 24	01 27.92	+03 54.2	3.207	3.154	-0.34	-0.6	.	10.0/ 67	78.1
Feb. 3	01 34.10	+04 32.9	3.291	3.089	-0.34	-0.6	.	12.4/ 68	69.6
Feb. 13	01 41.77	+05 19.0	3.365	3.023	-0.35	-0.7	.	14.5/ 69	61.6
Feb. 23	01 50.80	+06 11.0	3.427	2.956	-0.36	-0.7	.	16.3/ 70	54.0
Mar. 5	02 01.07	+07 07.6	3.475	2.886	-0.38	-0.8	.	18.0/ 70	46.7
Mar. 15	02 12.48	+08 07.5	3.507	2.816	-0.40	-0.9	.	19.5/ 71	39.8
Mar. 25	02 24.96	+09 09.4	3.523	2.744	-0.42	-1.0	.	20.9/ 72	33.2
Apr. 4	02 38.46	+10 12.2	3.523	2.670	-0.45	-1.1	.	22.3/ 73	26.9
Apr. 14	02 52.95	+11 14.9	3.506	2.595	-0.49	-1.1	.	23.5/ 75	21.0
Apr. 24	03 08.43	+12 16.2	3.473	2.518	-0.53	-1.2	.	24.8/ 76	15.4
May 4	03 24.89	+13 15.0	3.425	2.440	-0.58	-1.2	.	26.1/ 77	10.4
May 14	03 42.37	+14 10.2	3.361	2.360	-0.64	-1.3	.	27.4/ 79	6.5
May 24	04 00.91	+15 00.5	3.284	2.278	-0.70	-1.2	.	28.7/ 81	5.7
June 3	04 20.54	+15 44.5	3.194	2.196	-0.78	-1.2	.	30.2/ 82	8.4
June 13	04 41.36	+16 20.7	3.093	2.111	-0.86	-1.0	.	31.8/ 84	12.2
June 23	05 03.42	+16 47.5	2.983	2.025	-0.96	-0.8	24.9	33.6/ 87	16.0
July 3	05 26.81	+17 02.9	2.864	1.938	-1.07	-0.5	24.6	35.6/ 89	19.8
July 13	05 51.65	+17 05.0	2.741	1.850	-1.19	-0.1	24.4	37.9/ 91	23.2
July 23	06 18.02	+16 51.2	2.613	1.761	-1.32	+0.5	24.1	40.4/ 94	26.3
Aug. 2	06 46.03	+16 19.1	2.485	1.672	-1.47	+1.2	23.7	43.3/ 96	29.1
Aug. 12	07 15.78	+15 26.0	2.357	1.583	-1.62	+2.2	23.4	46.4/ 98	31.4
Aug. 22	07 47.36	+14 09.2	2.235	1.494	-1.79	+3.3	23.0	49.9/101	33.1
Sept. 1	08 20.83	+12 26.4	2.119	1.407	-1.96	+4.5	22.7	53.7/103	34.4
Sept.11	08 56.26	+10 16.2	2.014	1.323	-2.12	+5.8	22.3	57.5/105	35.0
Sept.21	09 33.62	+07 38.6	1.922	1.243	-2.28	+7.1	21.9	61.3/107	35.1
Oct. 1	10 12.85	+04 36.1	1.847	1.170	-2.42	+8.2	21.5	64.6/108	34.6
Oct. 11	10 53.82	+01 14.0	1.791	1.106	-2.53	+8.8	21.1	67.1/108	33.5
Oct. 21	11 36.28	-02 19.0	1.755	1.055	-2.61	+8.9	20.8	68.6/108	32.1
Oct. 31	12 19.88	-05 51.9	1.740	1.019	-2.64	+8.3	20.4	68.8/108	30.6
Nov. 10	13 04.17	-09 12.7	1.744	1.002	-2.61	+7.1	20.1	67.7/106	29.1
Nov. 20	13 48.52	-12 10.1	1.764	1.004	-2.53	+5.5	19.8	65.5/104	27.9
Nov. 30	14 32.29	-14 35.9	1.799	1.025	-2.40	+3.7	19.5	62.4/102	27.1
Dec. 10	15 14.79	-16 25.6	1.844	1.064	-2.23	+1.9	19.3	58.7/ 99	27.0
Dec. 20	15 55.40	-17 38.2	1.895	1.118	-2.03	+0.4	19.2	54.7/ 95	27.5
Dec. 30	16 33.67	-18 16.1	1.948	1.184	-1.81	-0.9	19.2	50.7/ 92	28.7
Jan. 9	17 09.30	-18 23.3	2.002	1.259	-1.61	-1.7	19.2	46.8/ 89	30.6
Jan. 19	17 42.13	-18 04.7	2.052	1.340	-1.41	-2.3	19.4	43.1/ 86	33.0
Jan. 29	18 12.17	-17 25.6	2.097	1.425	-1.24	-2.6	19.6	39.6/ 83	36.1
Feb. 8	18 39.47	-16 30.4	2.134	1.512	-1.09	-2.7	20.0	36.2/ 80	39.7
Feb. 18	19 04.13	-15 23.5	2.162	1.601	-0.96	-2.6	20.3	33.0/ 78	43.7
Feb. 28	19 26.27	-14 08.4	2.179	1.690	-0.85	-2.4	20.6	29.9/ 75	48.3
Mar. 10	19 46.00	-12 48.0	2.186	1.780	-0.76	-2.2	21.0	26.8/ 72	53.3
Mar. 20	20 03.37	-11 25.1	2.180	1.868	-0.70	-1.9	21.3	23.7/ 70	58.7
Mar. 30	20 18.44	-10 01.7	2.164	1.956	-0.65	-1.6	21.6	20.6/ 67	64.6

Comet 3D/Biela [Orbit 1]

Epoch = 2010 July 23.0 TT
T = 2010 Dec. 9.98988 TT
Peri. = 266.78795 e = 0.7718412
Node = 200.70388 2000.0 a = 3.4935846 AU
Incl. = 8.21963 n = 0.15093751
q = 0.7970920 AU P = 6.53 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	21 06.19	-10 39.7	4.533	3.745	-0.23	-0.6	.	15.1/ 77	32.9
Jan. 14	21 16.17	-10 04.7	4.543	3.678	-0.24	-0.7	.	16.1/ 75	25.3
Jan. 24	21 26.69	-09 23.7	4.533	3.610	-0.26	-0.8	.	16.9/ 74	18.1
Feb. 3	21 37.64	-08 37.2	4.503	3.541	-0.27	-0.9	.	17.6/ 73	11.2
Feb. 13	21 48.95	-07 45.2	4.451	3.470	-0.29	-1.0	.	18.2/ 72	5.8
Feb. 23	22 00.56	-06 48.3	4.379	3.398	-0.32	-1.1	.	18.7/ 71	6.6
Mar. 5	22 12.41	-05 46.9	4.287	3.324	-0.34	-1.3	.	19.1/ 70	12.2
Mar. 15	22 24.44	-04 41.2	4.176	3.249	-0.37	-1.5	.	19.5/ 69	18.6
Mar. 25	22 36.63	-03 31.7	4.047	3.172	-0.41	-1.7	24.9	19.8/ 69	25.1
Apr. 4	22 48.94	-02 18.9	3.901	3.094	-0.44	-1.9	24.8	20.1/ 68	31.6
Apr. 14	23 01.35	-01 03.0	3.740	3.013	-0.49	-2.1	24.6	20.3/ 67	38.0
Apr. 24	23 13.84	+00 15.4	3.566	2.932	-0.54	-2.4	24.3	20.5/ 67	44.3
May 4	23 26.41	+01 35.8	3.380	2.848	-0.60	-2.7	24.1	20.6/ 66	50.5
May 14	23 39.04	+02 58.1	3.184	2.762	-0.67	-3.0	23.8	20.8/ 66	56.7
May 24	23 51.74	+04 21.5	2.980	2.675	-0.75	-3.4	23.5	20.9/ 66	62.9
June 3	00 04.51	+05 45.8	2.770	2.585	-0.85	-3.8	23.2	20.9/ 66	68.9
June 13	00 17.36	+07 10.4	2.556	2.494	-0.96	-4.3	22.9	21.0/ 66	75.0
June 23	00 30.29	+08 34.8	2.340	2.401	-1.10	-4.9	22.5	21.1/ 66	81.0
July 3	00 43.35	+09 58.5	2.123	2.305	-1.28	-5.6	22.2	21.1/ 67	87.0
July 13	00 56.55	+11 20.9	1.907	2.207	-1.50	-6.4	21.7	21.2/ 67	93.0
July 23	01 09.95	+12 40.9	1.695	2.107	-1.77	-7.3	21.3	21.4/ 69	98.9
Aug. 2	01 23.65	+13 57.9	1.488	2.005	-2.12	-8.4	20.8	21.8/ 70	104.9
Aug. 12	01 37.79	+15 10.5	1.288	1.901	-2.58	-9.8	20.2	22.4/ 72	110.8
Aug. 22	01 52.61	+16 16.9	1.096	1.795	-3.20	-11.5	19.6	23.7/ 75	116.7
Sept. 1	02 08.61	+17 14.7	0.914	1.686	-4.05	-13.6	19.0	26.2/ 79	122.4
Sept.11	02 26.63	+17 59.7	0.744	1.576	-5.27	-16.2	18.2	31.1/ 85	127.8
Sept.21	02 48.40	+18 24.3	0.586	1.465	-7.10	-19.3	17.4	41.6/ 90	132.5
Oct. 1	03 17.61	+18 12.6	0.442	1.353	-10.01	-22.0	16.4	64.9/ 96	135.7
Oct. 11	04 02.54	+16 40.9	0.315	1.242	-14.91	-21.1	15.3	120.3/102	135.4
Oct. 21	05 22.63	+11 35.6	0.214	1.134	-22.51	-8.1	14.1	221.9/108	125.8
Oct. 31	07 42.29	-01 12.9	0.167	1.032	-23.96	-25.9	13.1	230.2/111	98.8
Nov. 10	10 08.49	-14 06.3	0.202	0.940	-8.65	105.0	13.2	132.1/106	69.7
Nov. 20	11 38.07	-19 08.7	0.289	0.865	-0.75	-93.2	13.6	77.4/100	56.9
Nov. 30	12 32.53	-20 53.8	0.395	0.815	+0.76	-66.0	14.0	56.5/ 97	53.4
Dec. 10	13 12.78	-21 44.0	0.507	0.797	+0.62	-45.9	14.4	47.7/ 96	53.7
Dec. 20	13 47.01	-22 17.8	0.617	0.815	+0.21	-32.3	15.0	42.6/ 95	55.7
Dec. 30	14 17.71	-22 42.6	0.717	0.865	-0.10	-23.5	15.5	37.9/ 94	58.7
Jan. 9	14 45.11	-22 57.1	0.801	0.940	-0.28	-17.7	16.1	32.8/ 91	62.6
Jan. 19	15 08.86	-22 58.6	0.868	1.032	-0.39	-13.8	16.7	27.4/ 88	67.4
Jan. 29	15 28.66	-22 46.3	0.917	1.134	-0.46	-11.0	17.3	21.6/ 84	73.1
Feb. 8	15 44.17	-22 19.8	0.949	1.242	-0.54	-8.8	17.7	15.7/ 76	79.9
Feb. 18	15 55.06	-21 39.3	0.966	1.353	-0.64	-7.0	18.1	10.0/ 57	87.6
Feb. 28	16 01.07	-20 44.9	0.973	1.465	-0.78	-5.2	18.5	7.0/ 10	96.5
Mar. 10	16 01.90	-19 36.0	0.973	1.576	-0.96	-3.4	18.8	10.4/323	106.6
Mar. 20	15 57.48	-18 12.4	0.973	1.686	-1.19	-1.5	19.1	16.5/306	117.8
Mar. 30	15 48.19	-16 35.0	0.980	1.795	-1.43	+0.6	19.4	22.0/299	130.2

Comet P/2004 HC18 (LINEAR)

Epoch = 2010 July 23.0 TT
T = 2010 Dec. 29.59233 TT
Peri. = 30.98289 e = 0.5092206
Node = 219.48674 2000.0 a = 3.4924078 AU
Incl. = 23.49181 n = 0.15101380
q = 1.7140017 AU P = 6.53 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 4	09 26.54	-16 40.1	2.604	3.284	-0.82	+3.3	.	8.7/239	126.4
Jan. 14	09 21.38	-17 25.0	2.471	3.235	-0.86	+3.7	.	10.2/257	134.2
Jan. 24	09 14.45	-17 47.8	2.359	3.184	-0.89	+4.1	.	11.7/271	140.9
Feb. 3	09 06.27	-17 44.9	2.270	3.133	-0.91	+4.5	.	12.9/283	145.6
Feb. 13	08 57.52	-17 14.4	2.206	3.082	-0.91	+4.7	.	13.4/295	147.1
Feb. 23	08 49.08	-16 17.6	2.168	3.030	-0.89	+4.9	.	13.1/307	144.7
Mar. 5	08 41.82	-14 58.8	2.154	2.978	-0.86	+4.9	.	12.3/320	139.4
Mar. 15	08 36.41	-13 24.7	2.163	2.925	-0.82	+4.7	.	11.1/336	132.2
Mar. 25	08 33.35	-11 42.7	2.191	2.871	-0.79	+4.3	.	10.3/356	124.1
Apr. 4	08 32.87	-10 00.2	2.234	2.818	-0.75	+3.9	25.0	10.2/ 18	115.9
Apr. 14	08 34.98	-08 22.8	2.289	2.764	-0.73	+3.4	24.8	11.1/ 38	107.7
Apr. 24	08 39.56	-06 55.0	2.351	2.710	-0.71	+2.9	24.7	12.7/ 54	99.8
May 4	08 46.42	-05 39.5	2.417	2.656	-0.70	+2.5	24.6	14.7/ 65	92.3
May 14	08 55.33	-04 37.9	2.484	2.601	-0.70	+2.1	24.4	16.7/ 74	85.1
May 24	09 06.07	-03 51.0	2.551	2.547	-0.70	+1.8	24.3	18.7/ 80	78.3
June 3	09 18.40	-03 18.9	2.613	2.492	-0.72	+1.5	24.1	20.7/ 85	71.9
June 13	09 32.16	-03 01.2	2.672	2.438	-0.73	+1.2	24.0	22.5/ 89	65.8
June 23	09 47.17	-02 57.6	2.724	2.384	-0.76	+1.1	23.8	24.2/ 92	60.0
July 3	10 03.30	-03 07.1	2.770	2.331	-0.78	+0.9	23.6	25.8/ 95	54.5
July 13	10 20.45	-03 28.9	2.809	2.278	-0.81	+0.8	23.4	27.3/ 97	49.2
July 23	10 38.52	-04 02.0	2.840	2.226	-0.85	+0.7	23.2	28.7/ 99	44.1
Aug. 2	10 57.46	-04 45.2	2.864	2.175	-0.88	+0.6	23.0	30.0/100	39.2
Aug. 12	11 17.24	-05 37.2	2.881	2.125	-0.92	+0.5	22.7	31.3/101	34.5
Aug. 22	11 37.82	-06 36.6	2.890	2.076	-0.96	+0.4	22.5	32.5/102	29.9
Sept. 1	11 59.21	-07 41.8	2.893	2.029	-1.01	+0.3	22.2	33.7/102	25.5
Sept.11	12 21.41	-08 51.1	2.889	1.985	-1.05	+0.1	22.0	34.8/102	21.2
Sept.21	12 44.43	-10 02.6	2.880	1.942	-1.10	-0.1	21.7	35.9/102	17.1
Oct. 1	13 08.29	-11 14.0	2.865	1.902	-1.15	-0.4	21.5	36.9/101	13.0
Oct. 11	13 33.01	-12 23.2	2.845	1.865	-1.20	-0.7	21.2	37.9/100	9.0
Oct. 21	13 58.58	-13 27.6	2.821	1.831	-1.25	-1.1	20.9	38.9/ 99	5.1
Oct. 31	14 25.00	-14 24.7	2.794	1.801	-1.29	-1.6	20.7	39.8/ 98	1.3
Nov. 10	14 52.23	-15 11.7	2.764	1.775	-1.33	-2.1	20.4	40.5/ 96	2.5
Nov. 20	15 20.17	-15 46.0	2.733	1.753	-1.37	-2.7	20.2	41.2/ 94	6.2
Nov. 30	15 48.72	-16 05.2	2.700	1.736	-1.39	-3.4	19.9	41.8/ 91	9.8
Dec. 10	16 17.72	-16 07.2	2.667	1.724	-1.41	-4.1	19.7	42.2/ 89	13.3
Dec. 20	16 46.97	-15 50.2	2.635	1.716	-1.41	-4.7	19.5	42.5/ 86	16.8
Dec. 30	17 16.23	-15 13.3	2.603	1.714	-1.41	-5.4	19.3	42.5/ 83	20.2
Jan. 9	17 45.29	-14 16.2	2.573	1.717	-1.39	-5.9	19.1	42.4/ 80	23.6
Jan. 19	18 13.88	-12 59.4	2.543	1.725	-1.37	-6.3	19.0	42.0/ 78	26.9
Jan. 29	18 41.80	-11 24.1	2.516	1.737	-1.33	-6.6	18.9	41.5/ 75	30.2
Feb. 8	19 08.86	-09 32.1	2.490	1.755	-1.29	-6.7	18.8	40.6/ 72	33.6
Feb. 18	19 34.89	-07 25.8	2.465	1.777	-1.25	-6.7	18.8	39.6/ 70	36.9
Feb. 28	19 59.79	-05 07.8	2.440	1.804	-1.21	-6.5	18.8	38.4/ 68	40.4
Mar. 10	20 23.47	-02 40.7	2.416	1.834	-1.17	-6.2	18.8	36.9/ 66	43.9
Mar. 20	20 45.86	-00 07.5	2.390	1.868	-1.13	-5.7	18.9	35.3/ 64	47.5
Mar. 30	21 06.95	+02 29.5	2.363	1.905	-1.09	-5.2	19.0	33.5/ 62	51.3

Comet C/2009 K3 (Beshore)

T = 2011 Jan. 9.2385 TT
Peri. = 251.2861
Node = 0.0273 2000.0
Incl. = 146.6942
q = 3.909283 AU
e = 1.0

m1 = 10.4 + 5 log(Delta) + 7.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	11 39.28	-07 28.0	4.673	5.017	-0.78	-1.6	19.0	104.9
Jan. 14	11 31.50	-07 44.2	4.448	4.967	-0.99	-0.7	18.9	116.6
Jan. 24	11 21.63	-07 50.9	4.242	4.917	-1.19	+0.5	18.7	128.6
Feb. 3	11 09.69	-07 46.3	4.064	4.867	-1.38	+1.7	18.6	140.7
Feb. 13	10 55.90	-07 29.4	3.920	4.819	-1.52	+2.9	18.5	152.7
Feb. 23	10 40.70	-07 00.1	3.818	4.771	-1.59	+4.0	18.4	162.5
Mar. 5	10 24.78	-06 19.6	3.761	4.724	-1.59	+4.9	18.3	164.4
Mar. 15	10 08.89	-05 30.7	3.750	4.678	-1.51	+5.4	18.3	156.3
Mar. 25	09 53.84	-04 37.0	3.784	4.633	-1.36	+5.4	18.3	144.6
Apr. 4	09 40.25	-03 42.8	3.855	4.589	-1.17	+5.1	18.3	132.3
Apr. 14	09 28.53	-02 51.7	3.958	4.546	-0.97	+4.5	18.3	120.2
Apr. 24	09 18.88	-02 06.3	4.084	4.503	-0.76	+3.8	18.4	108.4
May 4	09 11.29	-01 28.6	4.224	4.462	-0.56	+2.9	18.4	97.1
May 14	09 05.64	-00 59.3	4.370	4.422	-0.39	+2.0	18.4	86.4
May 24	09 01.74	-00 38.8	4.515	4.383	-0.24	+1.2	18.5	76.1
June 3	08 59.33	-00 27.0	4.652	4.346	-0.11	+0.3	18.5	66.4
June 13	08 58.19	-00 23.6	4.777	4.310	-0.01	-0.5	18.6	57.1
June 23	08 58.08	-00 28.4	4.884	4.274	+0.07	-1.2	18.6	48.2
July 3	08 58.79	-00 40.8	4.971	4.241	+0.13	-2.0	18.6	39.8
July 13	09 00.12	-01 00.5	5.035	4.208	+0.18	-2.7	18.6	32.1
July 23	09 01.89	-01 27.2	5.074	4.178	+0.20	-3.3	18.6	25.3
Aug. 2	09 03.92	-02 00.6	5.085	4.148	+0.21	-4.0	18.6	20.3
Aug. 12	09 06.03	-02 40.6	5.069	4.120	+0.20	-4.6	18.5	18.5
Aug. 22	09 08.07	-03 27.0	5.025	4.094	+0.18	-5.3	18.5	20.6
Sept. 1	09 09.84	-04 19.6	4.954	4.069	+0.13	-5.9	18.4	25.8
Sept.11	09 11.18	-05 18.4	4.856	4.046	+0.07	-6.5	18.4	32.7
Sept.21	09 11.86	-06 23.3	4.734	4.025	-0.02	-7.1	18.3	40.6
Oct. 1	09 11.64	-07 34.1	4.590	4.005	-0.14	-7.7	18.2	49.0
Oct. 11	09 10.27	-08 50.6	4.426	3.987	-0.29	-8.2	18.1	57.9
Oct. 21	09 07.42	-10 12.3	4.248	3.971	-0.47	-8.6	18.0	67.3
Oct. 31	09 02.74	-11 38.3	4.061	3.957	-0.69	-8.9	17.9	77.0
Nov. 10	08 55.84	-13 07.1	3.869	3.944	-0.95	-8.9	17.8	87.0
Nov. 20	08 46.31	-14 35.9	3.682	3.934	-1.25	-8.5	17.7	97.4
Nov. 30	08 33.82	-16 00.8	3.507	3.925	-1.57	-7.5	17.6	107.9
Dec. 10	08 18.14	-17 16.0	3.354	3.918	-1.88	-5.8	17.5	118.3
Dec. 20	07 59.38	-18 14.1	3.232	3.913	-2.13	-3.4	17.4	127.8
Dec. 30	07 38.10	-18 47.8	3.150	3.910	-2.28	-0.3	17.3	135.3
Jan. 9	07 15.34	-18 51.0	3.114	3.909	-2.28	+2.9	17.3	138.9
Jan. 19	06 52.51	-18 22.0	3.127	3.910	-2.15	+5.8	17.3	137.6
Jan. 29	06 31.03	-17 24.5	3.188	3.913	-1.90	+7.9	17.4	131.7
Feb. 8	06 12.01	-16 05.5	3.291	3.918	-1.59	+9.1	17.4	123.1
Feb. 18	05 56.06	-14 34.1	3.429	3.925	-1.27	+9.6	17.5	113.2
Feb. 28	05 43.34	-12 58.2	3.592	3.933	-0.97	+9.4	17.6	102.9
Mar. 10	05 33.67	-11 23.9	3.771	3.944	-0.70	+8.9	17.8	92.7
Mar. 20	05 26.71	-09 55.3	3.957	3.956	-0.47	+8.1	17.9	82.7
Mar. 30	05 22.06	-08 34.6	4.142	3.970	-0.27	+7.2	18.0	73.2

Comet 9P/Tempel

Epoch = 2010 July 23.0 TT
T = 2011 Jan. 12.36274 TT
Peri. = 178.92180 e = 0.5166395
Node = 68.91075 2000.0 a = 3.1244760 AU
Incl. = 10.52201 n = 0.17845893
q = 1.5102482 AU P = 5.52 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	08 57.76	+29 14.2	2.392	3.295	-0.81	+6.4	19.6	152.4
Jan. 14	08 49.63	+30 18.1	2.296	3.247	-0.99	+6.0	19.4	162.3
Jan. 24	08 39.75	+31 18.0	2.230	3.199	-1.08	+5.0	19.2	167.5
Feb. 3	08 28.99	+32 08.0	2.195	3.149	-1.06	+3.6	19.1	162.5
Feb. 13	08 18.41	+32 43.5	2.190	3.099	-0.93	+1.9	18.9	152.4
Feb. 23	08 09.10	+33 02.5	2.212	3.048	-0.71	+0.3	18.8	141.4
Mar. 5	08 01.97	+33 05.5	2.256	2.996	-0.44	-1.1	18.8	130.5
Mar. 15	07 57.55	+32 54.9	2.317	2.943	-0.15	-2.2	18.7	120.0
Mar. 25	07 56.09	+32 33.1	2.391	2.890	+0.15	-3.0	18.6	110.1
Apr. 4	07 57.56	+32 02.6	2.471	2.836	+0.42	-3.8	18.6	100.9
Apr. 14	08 01.73	+31 25.0	2.555	2.781	+0.66	-4.4	18.5	92.3
Apr. 24	08 08.36	+30 41.0	2.637	2.725	+0.88	-5.0	18.4	84.2
May 4	08 17.12	+29 51.2	2.715	2.669	+1.06	-5.6	18.3	76.6
May 14	08 27.73	+28 55.3	2.788	2.612	+1.22	-6.2	18.2	69.6
May 24	08 39.93	+27 52.8	2.852	2.555	+1.36	-6.9	18.1	62.9
June 3	08 53.48	+26 43.6	2.907	2.497	+1.47	-7.7	18.0	56.6
June 13	09 08.19	+25 26.8	2.952	2.439	+1.57	-8.5	17.9	50.7
June 23	09 23.90	+24 02.1	2.986	2.381	+1.66	-9.3	17.7	45.1
July 3	09 40.48	+22 29.2	3.010	2.322	+1.73	-10.2	17.6	39.8
July 13	09 57.82	+20 47.7	3.023	2.263	+1.80	-11.0	17.4	34.8
July 23	10 15.85	+18 57.2	3.025	2.205	+1.87	-11.9	17.2	30.0
Aug. 2	10 34.52	+16 57.9	3.018	2.146	+1.93	-12.8	17.0	25.5
Aug. 12	10 53.81	+14 49.6	3.001	2.088	+1.99	-13.7	16.8	21.2
Aug. 22	11 13.70	+12 32.6	2.975	2.031	+2.05	-14.5	16.6	17.2
Sept. 1	11 34.22	+10 07.2	2.942	1.975	+2.12	-15.3	16.3	13.5
Sept.11	11 55.40	+07 33.8	2.902	1.920	+2.19	-16.1	16.1	10.2
Sept.21	12 17.30	+04 53.2	2.857	1.866	+2.27	-16.7	15.9	7.5
Oct. 1	12 39.98	+02 06.6	2.807	1.814	+2.36	-17.1	15.6	5.9
Oct. 11	13 03.53	-00 44.9	2.755	1.765	+2.45	-17.4	15.3	6.1
Oct. 21	13 28.04	-03 39.3	2.700	1.718	+2.56	-17.5	15.1	7.6
Oct. 31	13 53.61	-06 34.6	2.645	1.675	+2.67	-17.3	14.8	9.8
Nov. 10	14 20.34	-09 28.0	2.591	1.636	+2.80	-16.8	14.6	12.1
Nov. 20	14 48.31	-12 16.3	2.539	1.601	+2.93	-16.0	14.3	14.5
Nov. 30	15 17.56	-14 55.9	2.489	1.571	+3.06	-14.7	14.1	16.8
Dec. 10	15 48.11	-17 23.0	2.443	1.547	+3.18	-13.0	13.9	19.1
Dec. 20	16 19.87	-19 33.3	2.401	1.528	+3.28	-11.0	13.7	21.4
Dec. 30	16 52.69	-21 23.2	2.364	1.516	+3.36	-8.6	13.6	23.7
Jan. 9	17 26.31	-22 49.4	2.332	1.511	+3.41	-6.0	13.5	26.0
Jan. 19	18 00.37	-23 49.7	2.304	1.512	+3.41	-3.3	13.4	28.3
Jan. 29	18 34.46	-24 23.1	2.280	1.519	+3.37	-0.7	13.3	30.7
Feb. 8	19 08.16	-24 30.3	2.260	1.534	+3.29	+1.7	13.3	33.3
Feb. 18	19 41.03	-24 13.1	2.241	1.554	+3.17	+3.8	13.3	36.0
Feb. 28	20 12.73	-23 34.8	2.224	1.580	+3.03	+5.6	13.4	38.9
Mar. 10	20 42.99	-22 39.1	2.208	1.612	+2.86	+6.9	13.5	41.9
Mar. 20	21 11.63	-21 30.4	2.190	1.648	+2.69	+7.7	13.6	45.2
Mar. 30	21 38.55	-20 13.0	2.171	1.689	+2.52	+8.2	13.7	48.8

Comet C/2009 Y1 (Catalina)

Epoch = 2010 July 23.0 TT
T = 2011 Jan. 28.82156 TT
Peri. = 127.37338
Node = 160.27956 2000.0
Incl. = 107.31889
q = 2.5207183 AU
e = 0.9935505

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	12 15.75	+49 11.2	4.172	4.656	+0.04	+18.7	19.0	113.8
Jan. 14	12 16.15	+52 17.9	4.012	4.580	-0.22	+19.9	18.8	119.7
Jan. 24	12 13.91	+55 37.3	3.879	4.505	-0.57	+20.5	18.7	124.0
Feb. 3	12 08.25	+59 02.3	3.775	4.429	-1.00	+20.1	18.5	126.2
Feb. 13	11 58.28	+62 23.4	3.703	4.354	-1.52	+18.6	18.4	125.7
Feb. 23	11 43.09	+65 29.3	3.660	4.278	-2.09	+15.9	18.3	122.9
Mar. 5	11 22.22	+68 08.3	3.646	4.203	-2.61	+12.2	18.2	118.0
Mar. 15	10 56.14	+70 10.6	3.655	4.129	-2.93	+8.0	18.2	111.8
Mar. 25	10 26.88	+71 30.4	3.684	4.055	-2.91	+3.9	18.1	104.8
Apr. 4	09 57.80	+72 09.0	3.725	3.981	-2.55	+0.4	18.1	97.5
Apr. 14	09 32.28	+72 13.2	3.774	3.908	-1.98	-2.0	18.0	90.1
Apr. 24	09 12.51	+71 53.6	3.825	3.835	-1.34	-3.3	18.0	83.0
May 4	08 59.07	+71 20.7	3.872	3.763	-0.75	-3.8	17.9	76.3
May 14	08 51.57	+70 42.3	3.912	3.691	-0.24	-3.8	17.8	70.0
May 24	08 49.20	+70 04.4	3.941	3.621	+0.19	-3.4	17.8	64.4
June 3	08 51.12	+69 30.7	3.955	3.551	+0.55	-2.7	17.7	59.6
June 13	08 56.67	+69 03.2	3.953	3.482	+0.87	-2.0	17.6	55.6
June 23	09 05.36	+68 43.7	3.934	3.415	+1.15	-1.1	17.5	52.7
July 3	09 16.87	+68 32.8	3.895	3.348	+1.42	-0.2	17.4	50.9
July 13	09 31.10	+68 31.3	3.838	3.283	+1.70	+0.8	17.3	50.3
July 23	09 48.12	+68 39.5	3.762	3.219	+2.01	+1.8	17.2	50.9
Aug. 2	10 08.19	+68 57.7	3.669	3.157	+2.36	+2.8	17.0	52.6
Aug. 12	10 31.83	+69 25.5	3.560	3.097	+2.80	+3.6	16.9	55.3
Aug. 22	10 59.88	+70 01.9	3.437	3.038	+3.36	+4.2	16.7	58.8
Sept. 1	11 33.49	+70 44.3	3.304	2.982	+4.07	+4.3	16.5	62.9
Sept.11	12 14.23	+71 27.2	3.164	2.928	+4.94	+3.3	16.4	67.4
Sept.21	13 03.62	+72 00.5	3.023	2.876	+5.86	+0.8	16.2	72.0
Oct. 1	14 02.20	+72 08.1	2.886	2.828	+6.56	-3.9	16.0	76.7
Oct. 11	15 07.84	+71 29.1	2.758	2.781	+6.71	-10.4	15.8	80.9
Oct. 21	16 14.94	+69 45.4	2.648	2.739	+6.22	-17.5	15.7	84.5
Oct. 31	17 17.12	+66 50.1	2.561	2.699	+5.36	-23.8	15.6	87.0
Nov. 10	18 10.75	+62 51.7	2.504	2.663	+4.47	-28.3	15.4	88.1
Nov. 20	18 55.47	+58 08.9	2.481	2.630	+3.72	-30.5	15.4	87.5
Nov. 30	19 32.63	+53 04.0	2.492	2.602	+3.13	-30.6	15.3	85.2
Dec. 10	20 03.90	+47 58.1	2.536	2.577	+2.68	-29.0	15.3	81.2
Dec. 20	20 30.71	+43 08.2	2.609	2.557	+2.34	-26.4	15.4	76.1
Dec. 30	20 54.13	+38 44.6	2.704	2.541	+2.08	-23.2	15.4	70.0
Jan. 9	21 14.95	+34 52.7	2.813	2.530	+1.88	-19.9	15.5	63.4
Jan. 19	21 33.72	+31 33.4	2.929	2.523	+1.71	-16.9	15.6	56.5
Jan. 29	21 50.84	+28 44.6	3.045	2.521	+1.58	-14.2	15.6	49.6
Feb. 8	22 06.59	+26 22.9	3.156	2.523	+1.46	-11.8	15.7	42.8
Feb. 18	22 21.16	+24 24.4	3.255	2.530	+1.35	-9.9	15.8	36.5
Feb. 28	22 34.70	+22 44.9	3.338	2.542	+1.26	-8.4	15.9	31.0
Mar. 10	22 47.29	+21 20.7	3.403	2.558	+1.17	-7.3	15.9	26.9
Mar. 20	22 58.99	+20 08.0	3.447	2.578	+1.08	-6.5	16.0	24.9
Mar. 30	23 09.82	+19 03.4	3.469	2.603	+1.00	-5.9	16.1	25.5

Comet C/2010 B1 (Cardinal)

T = 2011 Feb. 7.0619 TT
Peri. = 211.7431
Node = 277.2793 2000.0
Incl. = 101.9208
q = 2.931851 AU
e = 0.998422

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	09 17.05	+73 23.6	4.151	4.795	-4.14	+2.5	17.4	126.0
Jan. 14	08 35.65	+73 49.1	4.068	4.726	-4.41	-2.7	17.3	127.0
Jan. 24	07 51.52	+73 22.2	4.013	4.658	-3.98	-8.1	17.2	125.8
Feb. 3	07 11.70	+72 01.3	3.988	4.589	-3.11	-12.4	17.1	122.2
Feb. 13	06 40.62	+69 57.0	3.990	4.521	-2.16	-15.2	17.1	116.8
Feb. 23	06 19.00	+67 24.8	4.017	4.454	-1.36	-16.6	17.0	110.0
Mar. 5	06 05.42	+64 38.9	4.065	4.387	-0.74	-16.9	17.0	102.4
Mar. 15	05 57.99	+61 49.8	4.129	4.320	-0.29	-16.6	16.9	94.3
Mar. 25	05 55.14	+59 04.1	4.205	4.254	+0.05	-15.8	16.9	86.0
Apr. 4	05 55.61	+56 25.9	4.286	4.189	+0.29	-14.9	16.9	77.7
Apr. 14	05 58.51	+53 56.7	4.368	4.124	+0.47	-14.0	16.9	69.4
Apr. 24	06 03.20	+51 37.1	4.446	4.060	+0.60	-13.0	16.8	61.3
May 4	06 09.19	+49 26.8	4.516	3.997	+0.69	-12.2	16.8	53.3
May 14	06 16.12	+47 24.7	4.575	3.934	+0.76	-11.5	16.8	45.6
May 24	06 23.72	+45 29.8	4.619	3.873	+0.80	-10.9	16.7	38.1
June 3	06 31.77	+43 40.9	4.646	3.813	+0.83	-10.4	16.6	31.1
June 13	06 40.09	+41 56.7	4.653	3.753	+0.84	-10.1	16.6	24.5
June 23	06 48.53	+40 16.1	4.641	3.695	+0.84	-9.8	16.5	19.1
July 3	06 56.94	+38 38.0	4.606	3.639	+0.83	-9.7	16.4	15.8
July 13	07 05.22	+37 01.4	4.550	3.583	+0.80	-9.6	16.3	15.9
July 23	07 13.23	+35 25.3	4.471	3.529	+0.76	-9.7	16.2	19.5
Aug. 2	07 20.85	+33 48.8	4.369	3.477	+0.71	-9.8	16.1	25.1
Aug. 12	07 27.96	+32 10.7	4.246	3.426	+0.64	-10.0	16.0	31.8
Aug. 22	07 34.38	+30 30.3	4.101	3.377	+0.56	-10.4	15.8	39.1
Sept. 1	07 39.97	+28 46.2	3.938	3.330	+0.46	-10.9	15.7	46.8
Sept.11	07 44.52	+26 57.2	3.758	3.285	+0.33	-11.5	15.5	55.0
Sept.21	07 47.79	+25 01.7	3.562	3.242	+0.17	-12.4	15.4	63.5
Oct. 1	07 49.49	+22 57.8	3.356	3.201	-0.02	-13.5	15.2	72.5
Oct. 11	07 49.28	+20 43.0	3.144	3.163	-0.25	-14.8	15.0	82.0
Oct. 21	07 46.74	+18 14.6	2.929	3.128	-0.53	-16.5	14.8	92.1
Oct. 31	07 41.41	+15 29.3	2.720	3.094	-0.86	-18.5	14.6	102.7
Nov. 10	07 32.83	+12 24.0	2.524	3.064	-1.23	-20.7	14.4	114.0
Nov. 20	07 20.58	+08 56.9	2.351	3.037	-1.61	-22.8	14.2	125.8
Nov. 30	07 04.51	+05 09.3	2.210	3.012	-1.96	-24.1	14.0	137.6
Dec. 10	06 44.91	+01 08.5	2.112	2.991	-2.22	-24.0	13.9	147.7
Dec. 20	06 22.74	-02 51.6	2.065	2.973	-2.32	-22.2	13.8	152.6
Dec. 30	05 59.57	-06 33.2	2.071	2.958	-2.23	-18.8	13.8	149.0
Jan. 9	05 37.23	-09 40.8	2.128	2.946	-1.99	-14.6	13.8	139.5
Jan. 19	05 17.38	-12 07.3	2.228	2.938	-1.64	-10.7	13.9	128.0
Jan. 29	05 01.01	-13 54.3	2.359	2.933	-1.25	-7.5	14.0	116.4
Feb. 8	04 48.48	-15 08.8	2.512	2.932	-0.88	-5.1	14.2	105.4
Feb. 18	04 39.68	-15 59.9	2.675	2.934	-0.55	-3.6	14.3	95.2
Feb. 28	04 34.20	-16 35.8	2.841	2.939	-0.26	-2.7	14.4	85.8
Mar. 10	04 31.57	-17 03.2	3.002	2.948	-0.02	-2.4	14.6	77.3
Mar. 20	04 31.34	-17 27.4	3.154	2.960	+0.17	-2.5	14.7	69.7
Mar. 30	04 33.08	-17 52.5	3.293	2.976	+0.34	-2.9	14.8	63.0

Comet P/2003 S2 (NEAT)

Epoch = 2010 July 23.0 TT
T = 2011 Mar. 3.99127 TT
Peri. = 283.97879 e = 0.3593955
Node = 87.74599 2000.0 a = 3.8333409 AU
Incl. = 7.63587 n = 0.13132213
q = 2.4556554 AU P = 7.51 years

m1 = 8.5 + 5 log(Delta) + 20.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	18 28.74	-23 59.8	4.466	3.491	-0.51	+0.6	22.6	20.4/ 90	6.8
Jan. 14	18 43.64	-23 56.5	4.406	3.458	-0.53	+0.4	22.5	20.5/ 88	13.6
Jan. 24	18 58.59	-23 48.3	4.330	3.424	-0.55	+0.2	22.4	20.5/ 87	20.4
Feb. 3	19 13.48	-23 35.5	4.237	3.390	-0.57	0.0	22.2	20.4/ 86	27.1
Feb. 13	19 28.22	-23 18.6	4.131	3.356	-0.59	-0.3	22.1	20.1/ 85	33.9
Feb. 23	19 42.72	-22 58.2	4.011	3.323	-0.62	-0.5	21.9	19.7/ 84	40.6
Mar. 5	19 56.88	-22 34.9	3.878	3.289	-0.64	-0.7	21.8	19.2/ 83	47.4
Mar. 15	20 10.61	-22 09.6	3.736	3.255	-0.67	-1.0	21.6	18.5/ 82	54.2
Mar. 25	20 23.81	-21 43.3	3.584	3.221	-0.70	-1.3	21.4	17.7/ 82	61.0
Apr. 4	20 36.36	-21 17.1	3.425	3.188	-0.74	-1.6	21.2	16.7/ 82	68.0
Apr. 14	20 48.16	-20 52.5	3.261	3.154	-0.78	-1.9	21.0	15.5/ 82	75.0
Apr. 24	20 59.06	-20 30.7	3.093	3.121	-0.82	-2.2	20.8	14.0/ 83	82.2
May 4	21 08.93	-20 13.5	2.925	3.088	-0.87	-2.5	20.6	12.3/ 85	89.6
May 14	21 17.60	-20 02.4	2.758	3.055	-0.93	-2.9	20.4	10.2/ 89	97.3
May 24	21 24.87	-19 59.3	2.594	3.022	-1.00	-3.3	20.2	8.0/ 95	105.2
June 3	21 30.54	-20 05.7	2.437	2.990	-1.07	-3.6	19.9	5.7/108	113.6
June 13	21 34.39	-20 23.1	2.289	2.958	-1.15	-4.0	19.7	3.9/139	122.3
June 23	21 36.21	-20 52.3	2.153	2.927	-1.23	-4.4	19.5	4.1/187	131.5
July 3	21 35.86	-21 33.0	2.034	2.896	-1.32	-4.6	19.3	6.2/215	141.1
July 13	21 33.30	-22 23.9	1.934	2.866	-1.41	-4.8	19.1	8.6/228	151.1
July 23	21 28.68	-23 21.4	1.856	2.836	-1.48	-4.8	18.9	10.4/235	161.1
Aug. 2	21 22.44	-24 20.7	1.803	2.807	-1.54	-4.6	18.7	11.2/240	169.6
Aug. 12	21 15.25	-25 15.8	1.776	2.779	-1.57	-4.2	18.6	10.8/245	169.5
Aug. 22	21 08.02	-26 01.1	1.775	2.751	-1.57	-3.8	18.5	9.0/249	160.8
Sept. 1	21 01.74	-26 32.5	1.800	2.724	-1.53	-3.4	18.5	6.3/255	150.5
Sept.11	20 57.21	-26 48.1	1.846	2.698	-1.48	-3.0	18.5	2.9/271	140.2
Sept.21	20 55.05	-26 47.8	1.912	2.673	-1.41	-2.7	18.4	1.6/ 23	130.3
Oct. 1	20 55.53	-26 32.6	1.992	2.649	-1.33	-2.6	18.5	5.1/ 56	120.9
Oct. 11	20 58.69	-26 04.1	2.084	2.627	-1.26	-2.6	18.5	8.7/ 63	112.0
Oct. 21	21 04.39	-25 23.6	2.184	2.605	-1.20	-2.7	18.5	12.0/ 65	103.6
Oct. 31	21 12.35	-24 32.4	2.289	2.585	-1.13	-2.8	18.5	14.9/ 66	95.8
Nov. 10	21 22.29	-23 31.1	2.396	2.565	-1.08	-3.1	18.6	17.5/ 67	88.3
Nov. 20	21 33.90	-22 20.4	2.504	2.548	-1.03	-3.3	18.6	19.8/ 67	81.2
Nov. 30	21 46.88	-21 01.0	2.610	2.531	-0.99	-3.6	18.6	21.7/ 67	74.5
Dec. 10	22 01.00	-19 33.2	2.713	2.516	-0.96	-3.9	18.7	23.4/ 67	68.0
Dec. 20	22 16.03	-17 57.8	2.813	2.503	-0.93	-4.2	18.7	24.8/ 66	61.8
Dec. 30	22 31.76	-16 15.4	2.907	2.491	-0.90	-4.4	18.7	26.0/ 66	55.8
Jan. 9	22 48.07	-14 26.8	2.996	2.481	-0.87	-4.6	18.8	27.0/ 65	50.0
Jan. 19	23 04.82	-12 32.8	3.078	2.473	-0.85	-4.9	18.8	27.8/ 65	44.4
Jan. 29	23 21.91	-10 34.4	3.153	2.466	-0.83	-5.0	18.8	28.4/ 65	38.9
Feb. 8	23 39.28	-08 32.6	3.221	2.461	-0.82	-5.2	18.9	28.9/ 65	33.6
Feb. 18	23 56.86	-06 28.5	3.281	2.457	-0.80	-5.3	18.9	29.3/ 65	28.4
Feb. 28	00 14.60	-04 23.3	3.334	2.456	-0.79	-5.4	18.9	29.6/ 65	23.3
Mar. 10	00 32.50	-02 17.9	3.378	2.456	-0.78	-5.4	18.9	29.7/ 65	18.4
Mar. 20	00 50.50	-00 13.7	3.414	2.458	-0.78	-5.4	19.0	29.8/ 66	13.7
Mar. 30	01 08.60	+01 48.5	3.442	2.462	-0.77	-5.4	19.0	29.7/ 66	9.2

Comet P/2005 U1 (Read)

Epoch = 2010 July 23.0 TT
T = 2011 Mar. 11.45996 TT
Peri. = 325.50225 e = 0.2539602
Node = 51.62558 2000.0 a = 3.1633823 AU
Incl. = 1.26629 n = 0.17517679
q = 2.3600091 AU P = 5.63 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	18 21.45	-23 58.8	4.134	3.165	-0.57	-0.2	23.6	22.3/ 88	8.5
Jan. 14	18 37.69	-23 48.9	4.081	3.141	-0.59	-0.4	23.5	22.3/ 87	15.0
Jan. 24	18 53.90	-23 32.9	4.011	3.116	-0.60	-0.7	23.4	22.2/ 85	21.4
Feb. 3	19 09.98	-23 11.1	3.928	3.091	-0.62	-0.9	23.3	22.1/ 84	27.9
Feb. 13	19 25.84	-22 43.8	3.830	3.066	-0.64	-1.2	23.2	21.8/ 82	34.3
Feb. 23	19 41.38	-22 11.7	3.720	3.041	-0.66	-1.5	23.1	21.4/ 81	40.8
Mar. 5	19 56.50	-21 35.3	3.599	3.015	-0.68	-1.8	23.0	20.8/ 80	47.3
Mar. 15	20 11.11	-20 55.4	3.468	2.990	-0.71	-2.1	22.8	20.1/ 78	53.8
Mar. 25	20 25.10	-20 13.1	3.328	2.965	-0.74	-2.4	22.7	19.2/ 77	60.4
Apr. 4	20 38.37	-19 29.4	3.181	2.939	-0.77	-2.8	22.5	18.2/ 77	67.0
Apr. 14	20 50.81	-18 45.4	3.029	2.914	-0.80	-3.1	22.4	16.9/ 76	73.8
Apr. 24	21 02.28	-18 02.7	2.873	2.888	-0.84	-3.5	22.2	15.3/ 75	80.8
May 4	21 12.63	-17 22.7	2.716	2.863	-0.89	-3.9	22.0	13.5/ 75	88.0
May 14	21 21.70	-16 46.8	2.559	2.838	-0.95	-4.4	21.8	11.3/ 75	95.4
May 24	21 29.27	-16 17.0	2.405	2.813	-1.01	-4.8	21.6	8.8/ 76	103.1
June 3	21 35.15	-15 54.9	2.255	2.788	-1.08	-5.3	21.4	5.8/ 78	111.3
June 13	21 39.09	-15 42.2	2.114	2.764	-1.16	-5.8	21.2	2.6/ 86	119.9
June 23	21 40.86	-15 40.3	1.984	2.740	-1.25	-6.3	21.1	1.2/219	129.0
July 3	21 40.32	-15 49.8	1.868	2.716	-1.34	-6.7	20.9	4.7/244	138.7
July 13	21 37.40	-16 10.6	1.769	2.692	-1.43	-7.0	20.7	8.0/248	149.0
July 23	21 32.26	-16 41.0	1.692	2.669	-1.51	-7.2	20.5	10.5/250	159.8
Aug. 2	21 25.37	-17 17.4	1.639	2.646	-1.57	-7.3	20.4	12.0/251	171.0
Aug. 12	21 17.44	-17 55.6	1.612	2.624	-1.60	-7.1	20.3	11.9/253	176.5
Aug. 22	21 09.46	-18 30.2	1.611	2.602	-1.60	-6.8	20.3	10.3/254	165.5
Sept. 1	21 02.47	-18 57.3	1.635	2.581	-1.56	-6.3	20.2	7.5/257	154.2
Sept.11	20 57.35	-19 13.9	1.682	2.561	-1.49	-5.9	20.3	3.8/262	143.3
Sept.21	20 54.70	-19 18.8	1.749	2.541	-1.41	-5.5	20.3	0.7/ 13	132.9
Oct. 1	20 54.82	-19 11.8	1.831	2.522	-1.33	-5.2	20.3	4.5/ 66	123.2
Oct. 11	20 57.69	-18 53.2	1.925	2.504	-1.25	-5.0	20.4	8.3/ 69	114.1
Oct. 21	21 03.17	-18 23.5	2.028	2.487	-1.18	-4.9	20.5	11.8/ 70	105.5
Oct. 31	21 10.96	-17 43.3	2.136	2.470	-1.11	-4.8	20.5	14.9/ 71	97.5
Nov. 10	21 20.76	-16 53.0	2.246	2.455	-1.06	-4.8	20.6	17.6/ 70	90.0
Nov. 20	21 32.27	-15 52.8	2.358	2.441	-1.01	-4.9	20.7	19.9/ 70	82.9
Nov. 30	21 45.18	-14 43.3	2.468	2.427	-0.97	-4.9	20.7	21.9/ 69	76.1
Dec. 10	21 59.25	-13 24.8	2.575	2.415	-0.93	-5.0	20.8	23.6/ 69	69.6
Dec. 20	22 14.25	-11 58.0	2.678	2.404	-0.90	-5.1	20.9	25.0/ 68	63.4
Dec. 30	22 30.01	-10 23.6	2.777	2.394	-0.88	-5.2	20.9	26.2/ 68	57.3
Jan. 9	22 46.37	-08 42.2	2.869	2.385	-0.86	-5.3	21.0	27.2/ 67	51.5
Jan. 19	23 03.23	-06 54.9	2.955	2.378	-0.84	-5.4	21.0	28.1/ 67	45.9
Jan. 29	23 20.47	-05 02.6	3.034	2.372	-0.82	-5.4	21.0	28.7/ 66	40.4
Feb. 8	23 38.04	-03 06.3	3.106	2.367	-0.81	-5.4	21.1	29.3/ 66	35.0
Feb. 18	23 55.88	-01 07.3	3.169	2.363	-0.80	-5.4	21.1	29.7/ 66	29.8
Feb. 28	00 13.96	+00 53.4	3.224	2.361	-0.80	-5.4	21.1	30.0/ 66	24.7
Mar. 10	00 32.25	+02 54.6	3.271	2.360	-0.79	-5.3	21.2	30.2/ 66	19.6
Mar. 20	00 50.73	+04 55.2	3.310	2.360	-0.79	-5.2	21.2	30.3/ 67	14.7
Mar. 30	01 09.40	+06 54.0	3.340	2.362	-0.79	-5.1	21.2	30.3/ 67	9.8

Comet P/2006 U1 (LINEAR)

Epoch = 2010 July 23.0 TT
T = 2011 Apr. 15.93668 TT
Peri. = 64.21384 e = 0.8160842
Node = 240.48945 2000.0 a = 2.7772470 AU
Incl. = 8.42437 n = 0.21295229
q = 0.5107796 AU P = 4.63 years

H = 16.3 , G = 0.15

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		V	Mot./PA ', °	Elong. °
Jan. 4	09 53.46	+02 11.8	3.606	4.335	-0.26	+1.5	22.9	8.9/277	132.8
Jan. 14	09 47.58	+02 21.8	3.460	4.295	-0.27	+1.6	22.7	11.2/281	144.0
Jan. 24	09 40.22	+02 42.8	3.341	4.254	-0.27	+1.6	22.5	13.1/284	155.1
Feb. 3	09 31.73	+03 14.1	3.251	4.211	-0.27	+1.6	22.3	14.2/286	165.1
Feb. 13	09 22.60	+03 54.0	3.195	4.168	-0.26	+1.6	22.2	14.5/289	168.9
Feb. 23	09 13.43	+04 40.0	3.172	4.123	-0.25	+1.6	22.3	13.7/291	161.7
Mar. 5	09 04.86	+05 28.8	3.181	4.076	-0.24	+1.5	22.4	12.1/294	151.0
Mar. 15	08 57.40	+06 17.4	3.219	4.029	-0.22	+1.4	22.5	9.9/297	139.6
Mar. 25	08 51.49	+07 02.8	3.282	3.980	-0.20	+1.2	22.6	7.3/303	128.5
Apr. 4	08 47.38	+07 42.9	3.363	3.929	-0.19	+1.1	22.7	4.7/315	117.7
Apr. 14	08 45.16	+08 16.3	3.457	3.877	-0.18	+1.0	22.7	2.6/349	107.4
Apr. 24	08 44.80	+08 42.1	3.559	3.824	-0.17	+0.9	22.8	2.7/ 50	97.6
May 4	08 46.21	+08 59.9	3.662	3.768	-0.16	+0.9	22.9	4.6/ 78	88.2
May 14	08 49.24	+09 09.6	3.764	3.712	-0.16	+0.8	22.9	6.6/ 88	79.3
May 24	08 53.71	+09 11.3	3.858	3.654	-0.16	+0.8	22.9	8.5/ 94	70.9
June 3	08 59.46	+09 05.2	3.943	3.594	-0.16	+0.8	22.9	10.3/ 98	62.7
June 13	09 06.33	+08 51.5	4.016	3.532	-0.17	+0.8	22.8	11.8/100	54.9
June 23	09 14.18	+08 30.4	4.074	3.469	-0.18	+0.8	22.8	13.2/102	47.4
July 3	09 22.86	+08 02.2	4.116	3.404	-0.19	+0.8	22.7	14.4/104	40.2
July 13	09 32.29	+07 27.0	4.140	3.337	-0.20	+0.9	22.6	15.6/105	33.2
July 23	09 42.37	+06 45.2	4.146	3.268	-0.22	+1.0	22.5	16.6/107	26.4
Aug. 2	09 53.01	+05 56.9	4.132	3.197	-0.24	+1.1	22.4	17.5/108	19.9
Aug. 12	10 04.16	+05 02.3	4.099	3.124	-0.26	+1.2	22.2	18.4/109	13.8
Aug. 22	10 15.77	+04 01.7	4.046	3.049	-0.28	+1.3	22.0	19.2/110	8.5
Sept. 1	10 27.80	+02 55.2	3.973	2.972	-0.31	+1.5	21.9	20.0/111	6.3
Sept.11	10 40.23	+01 42.9	3.881	2.892	-0.34	+1.7	21.9	20.7/112	9.4
Sept.21	10 53.06	+00 25.1	3.770	2.810	-0.38	+1.9	21.9	21.5/113	14.7
Oct. 1	11 06.27	-00 58.1	3.641	2.725	-0.42	+2.1	21.8	22.3/113	20.5
Oct. 11	11 19.90	-02 26.7	3.495	2.638	-0.48	+2.4	21.8	23.1/114	26.4
Oct. 21	11 33.97	-04 00.5	3.334	2.548	-0.54	+2.7	21.7	23.9/115	32.3
Oct. 31	11 48.55	-05 39.5	3.159	2.455	-0.61	+3.1	21.6	24.9/115	38.1
Nov. 10	12 03.71	-07 23.8	2.971	2.360	-0.70	+3.5	21.4	26.0/115	43.9
Nov. 20	12 19.57	-09 13.5	2.773	2.260	-0.81	+4.0	21.3	27.3/115	49.6
Nov. 30	12 36.30	-11 09.0	2.566	2.158	-0.95	+4.5	21.1	28.9/115	55.0
Dec. 10	12 54.17	-13 10.5	2.353	2.052	-1.13	+5.1	20.9	30.9/115	60.3
Dec. 20	13 13.53	-15 18.6	2.136	1.942	-1.35	+5.8	20.6	33.6/114	65.3
Dec. 30	13 34.94	-17 34.0	1.918	1.828	-1.65	+6.5	20.3	37.4/113	69.8
Jan. 9	13 59.24	-19 57.3	1.702	1.709	-2.04	+7.2	20.0	42.6/112	73.7
Jan. 19	14 27.73	-22 27.8	1.492	1.586	-2.57	+7.5	19.7	50.2/110	76.7
Jan. 29	15 02.50	-25 02.6	1.292	1.458	-3.30	+7.1	19.3	61.2/106	78.4
Feb. 8	15 46.68	-27 29.9	1.108	1.325	-4.27	+4.6	18.9	77.0/101	78.2
Feb. 18	16 44.48	-29 17.7	0.951	1.187	-5.41	-2.2	18.5	97.5/ 94	75.4
Feb. 28	17 59.12	-29 16.0	0.835	1.045	-6.28	-15.3	18.2	118.0/ 85	69.2
Mar. 10	19 26.69	-25 51.7	0.779	0.899	-6.09	-30.7	18.1	127.8/ 75	59.5
Mar. 20	20 53.80	-18 50.6	0.799	0.755	-4.86	-37.3	18.0	121.9/ 67	48.3
Mar. 30	22 09.84	-10 11.0	0.898	0.625	-3.69	-33.3	17.8	109.6/ 64	38.0

Comet P/2004 T1 (LINEAR-NEAT)

Epoch = 2010 July 23.0 TT
T = 2011 Apr. 24.95563 TT
Peri. = 336.43875 e = 0.5079474
Node = 51.44904 2000.0 a = 3.4702081 AU
Incl. = 11.04425 n = 0.15246523
q = 1.7075249 AU P = 6.46 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″ °	Elong. °
Jan. 4	17 28.43	-27 14.8	4.714	3.810	-0.41	+1.1	24.6	17.4/ 97	20.8
Jan. 14	17 41.43	-27 34.3	4.608	3.768	-0.43	+1.0	24.4	17.3/ 96	28.0
Jan. 24	17 54.36	-27 51.4	4.486	3.725	-0.45	+0.9	24.2	16.9/ 96	35.2
Feb. 3	18 07.10	-28 06.2	4.347	3.682	-0.48	+0.8	24.0	16.5/ 95	42.5
Feb. 13	18 19.55	-28 19.3	4.194	3.637	-0.51	+0.6	23.8	15.9/ 95	49.9
Feb. 23	18 31.57	-28 31.3	4.029	3.593	-0.55	+0.5	23.6	15.1/ 95	57.3
Mar. 5	18 43.02	-28 42.8	3.853	3.547	-0.59	+0.3	23.4	14.2/ 96	64.8
Mar. 15	18 53.77	-28 54.9	3.670	3.501	-0.63	+0.2	23.2	13.0/ 97	72.4
Mar. 25	19 03.63	-29 08.7	3.481	3.454	-0.68	0.0	22.9	11.6/ 99	80.2
Apr. 4	19 12.42	-29 25.3	3.289	3.407	-0.73	-0.2	22.6	10.0/102	88.2
Apr. 14	19 19.93	-29 46.1	3.097	3.359	-0.79	-0.4	22.4	8.2/109	96.3
Apr. 24	19 25.92	-30 12.3	2.907	3.310	-0.86	-0.5	22.1	6.4/121	104.8
May 4	19 30.14	-30 45.0	2.724	3.261	-0.93	-0.7	21.8	4.9/145	113.5
May 14	19 32.29	-31 25.0	2.551	3.211	-1.01	-0.7	21.5	4.7/183	122.6
May 24	19 32.10	-32 12.3	2.391	3.160	-1.09	-0.7	21.2	6.3/213	132.1
June 3	19 29.38	-33 05.6	2.248	3.109	-1.18	-0.6	20.9	8.8/229	141.8
June 13	19 24.03	-34 02.3	2.126	3.058	-1.26	-0.3	20.6	11.2/239	151.7
June 23	19 16.22	-34 58.1	2.027	3.006	-1.33	+0.1	20.3	12.9/247	160.8
July 3	19 06.44	-35 47.9	1.955	2.953	-1.37	+0.7	20.1	13.8/253	166.5
July 13	18 55.54	-36 26.5	1.910	2.900	-1.38	+1.3	19.8	13.3/259	163.8
July 23	18 44.68	-36 50.4	1.892	2.847	-1.35	+2.0	19.6	11.6/265	155.3
Aug. 2	18 35.07	-36 58.7	1.899	2.793	-1.30	+2.4	19.4	8.8/273	145.2
Aug. 12	18 27.73	-36 53.3	1.928	2.740	-1.24	+2.7	19.3	5.5/287	135.0
Aug. 22	18 23.38	-36 37.2	1.974	2.685	-1.17	+2.8	19.1	2.6/332	125.0
Sept. 1	18 22.35	-36 13.9	2.033	2.631	-1.11	+2.7	19.0	4.0/ 45	115.6
Sept.11	18 24.67	-35 45.8	2.100	2.577	-1.05	+2.5	18.9	7.4/ 65	106.7
Sept.21	18 30.19	-35 14.4	2.173	2.522	-1.02	+2.1	18.7	10.9/ 72	98.3
Oct. 1	18 38.62	-34 40.1	2.247	2.468	-0.99	+1.7	18.6	14.2/ 75	90.5
Oct. 11	18 49.68	-34 02.2	2.320	2.414	-0.98	+1.1	18.5	17.2/ 77	83.2
Oct. 21	19 03.05	-33 19.5	2.389	2.360	-0.97	+0.6	18.3	20.0/ 77	76.3
Oct. 31	19 18.42	-32 30.7	2.454	2.307	-0.97	-0.1	18.2	22.5/ 77	69.7
Nov. 10	19 35.53	-31 34.2	2.513	2.254	-0.98	-0.7	18.1	24.8/ 76	63.6
Nov. 20	19 54.10	-30 28.4	2.565	2.202	-0.99	-1.5	17.9	26.8/ 75	57.8
Nov. 30	20 13.88	-29 11.9	2.609	2.151	-1.00	-2.2	17.8	28.8/ 73	52.2
Dec. 10	20 34.67	-27 43.7	2.646	2.102	-1.02	-3.1	17.6	30.6/ 72	47.0
Dec. 20	20 56.26	-26 02.9	2.676	2.054	-1.03	-3.9	17.5	32.2/ 71	42.0
Dec. 30	21 18.47	-24 09.1	2.699	2.008	-1.04	-4.8	17.4	33.8/ 69	37.3
Jan. 9	21 41.17	-22 02.0	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	1.922	-1.06	-6.5	17.2	36.5/ 66	28.7
Jan. 29	22 27.58	-17 10.1	2.732	1.883	-1.07	-7.4	17.1	37.7/ 65	24.7
Feb. 8	22 51.15	-14 26.8	2.734	1.847	-1.08	-8.1	17.1	38.8/ 64	20.9
Feb. 18	23 14.92	-11 33.7	2.733	1.814	-1.09	-8.9	17.0	39.7/ 63	17.4
Feb. 28	23 38.87	-08 32.6	2.730	1.785	-1.10	-9.5	17.0	40.5/ 63	14.1
Mar. 10	00 03.02	-05 25.5	2.725	1.761	-1.12	-10.0	17.1	41.2/ 63	11.0
Mar. 20	00 27.40	-02 14.6	2.720	1.740	-1.13	-10.4	17.1	41.6/ 63	8.1
Mar. 30	00 52.03	+00 57.6	2.716	1.725	-1.14	-10.6	17.2	42.0/ 63	5.5

Comet 231P/LINEAR-NEAT

Epoch = 2010 July 23.0 TT
T = 2011 May 16.96132 TT
Peri. = 42.53131 e = 0.2462965
Node = 133.10075 2000.0 a = 4.0234235 AU
Incl. = 12.32815 n = 0.12212665
q = 3.0324684 AU P = 8.07 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	05 28.78	+11 28.7	2.838	3.757	-0.59	+2.6	20.3	155.9
Jan. 14	05 22.89	+11 55.0	2.883	3.735	-0.44	+3.2	20.3	145.5
Jan. 24	05 18.47	+12 26.8	2.952	3.714	-0.26	+3.6	20.3	134.9
Feb. 3	05 15.85	+13 02.9	3.042	3.692	-0.07	+3.9	20.3	124.6
Feb. 13	05 15.18	+13 42.1	3.148	3.670	+0.13	+4.1	20.4	114.6
Feb. 23	05 16.48	+14 22.9	3.264	3.649	+0.32	+4.1	20.4	105.0
Mar. 5	05 19.69	+15 04.1	3.387	3.627	+0.50	+4.0	20.4	96.0
Mar. 15	05 24.66	+15 44.6	3.513	3.606	+0.66	+3.9	20.5	87.3
Mar. 25	05 31.23	+16 23.2	3.638	3.584	+0.80	+3.6	20.5	79.0
Apr. 4	05 39.24	+16 59.1	3.758	3.563	+0.93	+3.2	20.6	71.2
Apr. 14	05 48.49	+17 31.4	3.872	3.542	+1.04	+2.8	20.6	63.6
Apr. 24	05 58.85	+17 59.5	3.978	3.521	+1.13	+2.3	20.6	56.3
May 4	06 10.15	+18 22.8	4.073	3.500	+1.21	+1.8	20.6	49.3
May 14	06 22.25	+18 40.7	4.157	3.480	+1.28	+1.2	20.6	42.5
May 24	06 35.03	+18 53.1	4.228	3.460	+1.33	+0.6	20.6	35.9
June 3	06 48.36	+18 59.5	4.286	3.440	+1.38	0.0	20.6	29.5
June 13	07 02.15	+18 59.8	4.330	3.420	+1.41	-0.6	20.6	23.2
June 23	07 16.29	+18 54.1	4.359	3.400	+1.44	-1.2	20.6	17.1
July 3	07 30.69	+18 42.3	4.373	3.381	+1.46	-1.8	20.5	11.0
July 13	07 45.28	+18 24.6	4.373	3.362	+1.47	-2.3	20.5	5.3
July 23	07 59.97	+18 01.4	4.357	3.343	+1.47	-2.9	20.5	2.9
Aug. 2	08 14.68	+17 32.8	4.327	3.325	+1.47	-3.3	20.4	7.9
Aug. 12	08 29.36	+16 59.5	4.283	3.307	+1.46	-3.8	20.4	13.7
Aug. 22	08 43.92	+16 21.9	4.224	3.289	+1.44	-4.1	20.3	19.7
Sept. 1	08 58.31	+15 40.8	4.151	3.272	+1.42	-4.4	20.2	25.8
Sept.11	09 12.47	+14 56.9	4.065	3.256	+1.38	-4.6	20.1	32.0
Sept.21	09 26.32	+14 11.2	3.966	3.239	+1.35	-4.7	20.0	38.3
Oct. 1	09 39.79	+13 24.7	3.856	3.223	+1.30	-4.6	20.0	44.8
Oct. 11	09 52.81	+12 38.4	3.735	3.208	+1.25	-4.5	19.9	51.4
Oct. 21	10 05.27	+11 53.7	3.604	3.193	+1.18	-4.2	19.7	58.2
Oct. 31	10 17.09	+11 12.1	3.465	3.179	+1.10	-3.7	19.6	65.2
Nov. 10	10 28.13	+10 35.0	3.319	3.165	+1.01	-3.1	19.5	72.5
Nov. 20	10 38.26	+10 04.3	3.169	3.152	+0.91	-2.3	19.4	80.1
Nov. 30	10 47.32	+09 41.8	3.016	3.140	+0.78	-1.2	19.3	87.9
Dec. 10	10 55.12	+09 29.4	2.864	3.128	+0.63	0.0	19.1	96.2
Dec. 20	11 01.45	+09 29.2	2.714	3.116	+0.47	+1.4	19.0	104.9
Dec. 30	11 06.12	+09 42.7	2.571	3.106	+0.28	+2.9	18.8	114.1
Jan. 9	11 08.92	+10 11.4	2.439	3.096	+0.08	+4.4	18.7	123.8
Jan. 19	11 09.72	+10 55.5	2.321	3.086	-0.12	+5.9	18.6	134.0
Jan. 29	11 08.48	+11 54.0	2.222	3.078	-0.32	+7.0	18.5	144.6
Feb. 8	11 05.31	+13 04.2	2.145	3.070	-0.48	+7.7	18.4	155.5
Feb. 18	11 00.55	+14 21.1	2.095	3.063	-0.58	+7.7	18.3	166.0
Feb. 28	10 54.77	+15 38.6	2.072	3.056	-0.61	+7.1	18.3	172.0
Mar. 10	10 48.68	+16 50.0	2.079	3.051	-0.56	+5.9	18.3	165.5
Mar. 20	10 43.09	+17 49.2	2.114	3.046	-0.44	+4.3	18.3	155.1
Mar. 30	10 38.68	+18 32.6	2.174	3.042	-0.27	+2.6	18.3	144.4

Comet 164P/Christensen

Epoch = 2010 July 23.0 TT
T = 2011 June 2.44048 TT
Peri. = 325.88434 e = 0.5414038
Node = 88.35622 2000.0 a = 3.6516046 AU
Incl. = 16.26266 n = 0.14124675
q = 1.6746120 AU P = 6.98 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	18 49.95	-25 50.2	5.074	4.093	+1.22	+0.3	21.7	3.6
Jan. 14	19 02.11	-25 47.2	5.015	4.050	+1.22	+0.5	21.6	10.1
Jan. 24	19 14.34	-25 41.7	4.936	4.007	+1.22	+0.8	21.5	17.3
Feb. 3	19 26.55	-25 34.1	4.837	3.963	+1.21	+0.9	21.4	24.7
Feb. 13	19 38.65	-25 24.9	4.720	3.918	+1.19	+1.0	21.3	32.0
Feb. 23	19 50.54	-25 14.6	4.586	3.873	+1.16	+1.1	21.1	39.4
Mar. 5	20 02.11	-25 04.0	4.436	3.827	+1.12	+1.0	21.0	46.8
Mar. 15	20 13.28	-24 54.0	4.273	3.780	+1.06	+0.8	20.8	54.3
Mar. 25	20 23.93	-24 45.7	4.099	3.733	+1.00	+0.6	20.6	61.8
Apr. 4	20 33.94	-24 40.2	3.915	3.685	+0.93	+0.1	20.5	69.4
Apr. 14	20 43.19	-24 38.8	3.725	3.636	+0.83	-0.4	20.3	77.2
Apr. 24	20 51.53	-24 43.0	3.530	3.587	+0.73	-1.1	20.1	85.1
May 4	20 58.79	-24 54.4	3.334	3.537	+0.60	-2.0	19.8	93.2
May 14	21 04.80	-25 14.5	3.140	3.487	+0.45	-3.0	19.6	101.6
May 24	21 09.34	-25 45.0	2.951	3.436	+0.28	-4.2	19.4	110.2
June 3	21 12.17	-26 26.8	2.771	3.384	+0.09	-5.4	19.2	119.2
June 13	21 13.06	-27 20.8	2.603	3.331	-0.13	-6.6	18.9	128.5
June 23	21 11.79	-28 26.6	2.451	3.278	-0.35	-7.6	18.7	138.1
July 3	21 08.25	-29 42.3	2.318	3.225	-0.58	-8.2	18.5	147.8
July 13	21 02.42	-31 04.1	2.209	3.171	-0.78	-8.2	18.2	157.1
July 23	20 54.58	-32 26.6	2.127	3.116	-0.93	-7.6	18.0	164.0
Aug. 2	20 45.27	-33 42.9	2.072	3.061	-0.99	-6.4	17.9	164.2
Aug. 12	20 35.36	-34 46.9	2.044	3.005	-0.95	-4.7	17.7	157.3
Aug. 22	20 25.89	-35 33.8	2.044	2.949	-0.80	-2.8	17.6	147.7
Sept. 1	20 17.91	-36 01.7	2.066	2.892	-0.57	-1.0	17.5	137.5
Sept.11	20 12.25	-36 11.2	2.108	2.835	-0.28	+0.7	17.4	127.5
Sept.21	20 09.47	-36 04.6	2.164	2.778	+0.03	+2.0	17.3	117.8
Oct. 1	20 09.76	-35 44.4	2.230	2.720	+0.33	+3.1	17.3	108.6
Oct. 11	20 13.10	-35 13.0	2.303	2.662	+0.62	+4.1	17.2	99.9
Oct. 21	20 19.31	-34 32.0	2.377	2.604	+0.88	+5.0	17.1	91.7
Oct. 31	20 28.09	-33 42.2	2.451	2.546	+1.11	+5.8	17.0	84.0
Nov. 10	20 39.16	-32 43.8	2.521	2.489	+1.30	+6.7	16.9	76.7
Nov. 20	20 52.21	-31 36.7	2.586	2.431	+1.47	+7.6	16.8	69.9
Nov. 30	21 06.94	-30 20.5	2.644	2.373	+1.62	+8.6	16.7	63.5
Dec. 10	21 23.12	-28 54.7	2.694	2.316	+1.74	+9.6	16.6	57.4
Dec. 20	21 40.51	-27 18.9	2.735	2.260	+1.84	+10.6	16.5	51.6
Dec. 30	21 58.92	-25 32.8	2.767	2.205	+1.93	+11.7	16.4	46.2
Jan. 9	22 18.20	-23 36.2	2.791	2.150	+2.00	+12.7	16.2	41.1
Jan. 19	22 38.21	-21 29.2	2.806	2.097	+2.07	+13.7	16.1	36.4
Jan. 29	22 58.87	-19 12.0	2.814	2.045	+2.12	+14.7	15.9	31.9
Feb. 8	23 20.10	-16 45.3	2.815	1.996	+2.18	+15.6	15.7	27.8
Feb. 18	23 41.87	-14 09.6	2.809	1.948	+2.23	+16.3	15.6	24.0
Feb. 28	00 04.13	-11 26.2	2.799	1.903	+2.28	+17.0	15.4	20.5
Mar. 10	00 26.92	-08 36.2	2.785	1.861	+2.33	+17.5	15.3	17.3
Mar. 20	00 50.21	-05 41.4	2.769	1.822	+2.38	+17.8	15.1	14.5
Mar. 30	01 14.05	-02 43.5	2.751	1.787	+2.44	+17.9	15.0	12.1

Comet C/2008 S3 (Boattini)

Epoch = 2010 July 23.0 TT
T = 2011 June 5.63961 TT
Peri. = 39.84341
Node = 54.93002 2000.0
Incl. = 162.69929
q = 8.0189787 AU
e = 1.0005998

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	02 26.15	+17 38.1	8.123	8.607	-0.41	-1.3	18.0	116.5
Jan. 14	02 22.09	+17 24.7	8.272	8.585	-0.31	-0.9	18.0	105.4
Jan. 24	02 18.98	+17 15.3	8.432	8.564	-0.22	-0.5	18.0	94.4
Feb. 3	02 16.79	+17 10.1	8.594	8.543	-0.13	-0.1	18.1	83.8
Feb. 13	02 15.46	+17 08.9	8.753	8.523	-0.05	+0.3	18.1	73.4
Feb. 23	02 14.91	+17 11.7	8.903	8.503	+0.01	+0.6	18.1	63.2
Mar. 5	02 15.04	+17 18.0	9.039	8.483	+0.07	+1.0	18.1	53.2
Mar. 15	02 15.76	+17 27.6	9.157	8.464	+0.12	+1.2	18.2	43.5
Mar. 25	02 16.95	+17 39.9	9.254	8.445	+0.16	+1.5	18.2	34.0
Apr. 4	02 18.50	+17 54.5	9.325	8.426	+0.18	+1.6	18.2	24.6
Apr. 14	02 20.33	+18 11.0	9.370	8.408	+0.20	+1.8	18.2	15.5
Apr. 24	02 22.32	+18 28.8	9.387	8.390	+0.20	+1.9	18.2	7.1
May 4	02 24.36	+18 47.6	9.376	8.373	+0.20	+1.9	18.2	5.4
May 14	02 26.37	+19 07.0	9.336	8.356	+0.19	+2.0	18.2	13.2
May 24	02 28.23	+19 26.6	9.269	8.339	+0.16	+1.9	18.1	22.1
June 3	02 29.85	+19 45.9	9.175	8.323	+0.13	+1.9	18.1	31.1
June 13	02 31.12	+20 04.7	9.057	8.307	+0.08	+1.8	18.1	40.2
June 23	02 31.94	+20 22.3	8.917	8.291	+0.03	+1.6	18.0	49.4
July 3	02 32.20	+20 38.6	8.758	8.276	-0.04	+1.4	18.0	58.7
July 13	02 31.81	+20 52.9	8.584	8.261	-0.12	+1.2	17.9	68.2
July 23	02 30.65	+21 04.8	8.399	8.247	-0.20	+0.9	17.9	77.9
Aug. 2	02 28.63	+21 13.8	8.209	8.233	-0.29	+0.5	17.8	87.8
Aug. 12	02 25.69	+21 19.2	8.017	8.220	-0.39	+0.1	17.8	98.0
Aug. 22	02 21.75	+21 20.3	7.831	8.207	-0.49	-0.4	17.7	108.4
Sept. 1	02 16.82	+21 16.6	7.657	8.194	-0.59	-0.9	17.7	119.0
Sept.11	02 10.91	+21 07.5	7.499	8.182	-0.68	-1.5	17.6	129.9
Sept.21	02 04.12	+20 52.5	7.365	8.170	-0.75	-2.1	17.6	141.0
Oct. 1	01 56.60	+20 31.6	7.260	8.159	-0.80	-2.7	17.5	152.2
Oct. 11	01 48.55	+20 04.9	7.188	8.148	-0.83	-3.2	17.5	163.0
Oct. 21	01 40.24	+19 33.3	7.152	8.137	-0.83	-3.5	17.5	171.0
Oct. 31	01 31.96	+18 57.9	7.155	8.127	-0.80	-3.8	17.5	167.5
Nov. 10	01 23.99	+18 20.2	7.195	8.117	-0.74	-3.8	17.5	157.2
Nov. 20	01 16.58	+17 42.0	7.271	8.108	-0.66	-3.7	17.5	145.9
Nov. 30	01 09.96	+17 05.1	7.378	8.100	-0.57	-3.4	17.6	134.4
Dec. 10	01 04.25	+16 31.0	7.512	8.091	-0.47	-3.0	17.6	123.0
Dec. 20	00 59.55	+16 01.0	7.666	8.083	-0.37	-2.5	17.6	111.8
Dec. 30	00 55.88	+15 36.0	7.834	8.076	-0.27	-1.9	17.7	100.8
Jan. 9	00 53.20	+15 16.6	8.009	8.069	-0.17	-1.4	17.7	90.0
Jan. 19	00 51.45	+15 03.0	8.185	8.062	-0.09	-0.8	17.8	79.4
Jan. 29	00 50.55	+14 55.1	8.354	8.056	-0.02	-0.3	17.8	69.1
Feb. 8	00 50.40	+14 52.6	8.513	8.051	+0.05	+0.2	17.8	59.1
Feb. 18	00 50.87	+14 55.0	8.655	8.046	+0.10	+0.7	17.9	49.3
Feb. 28	00 51.87	+15 02.0	8.778	8.041	+0.14	+1.1	17.9	39.7
Mar. 10	00 53.26	+15 12.9	8.877	8.037	+0.17	+1.4	17.9	30.4
Mar. 20	00 54.95	+15 27.1	8.950	8.033	+0.19	+1.7	17.9	21.6
Mar. 30	00 56.82	+15 44.1	8.996	8.030	+0.19	+1.9	18.0	13.7

Comet 213P/Van Ness

Epoch = 2010 July 23.0 TT
T = 2011 June 16.10595 TT
Peri. = 3.27955 e = 0.3797023
Node = 312.67858 2000.0 a = 3.4223940 AU
Incl. = 10.23917 n = 0.15567149
q = 2.1229031 AU P = 6.33 years

m1 = 5.8 + 5 log(Delta) + 17.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	13 25.19	-18 09.9	3.818	3.723	+0.60	-6.4	18.7	77.1
Jan. 14	13 31.22	-19 14.3	3.637	3.691	+0.48	-6.0	18.5	85.4
Jan. 24	13 35.98	-20 14.1	3.455	3.659	+0.33	-5.4	18.4	94.0
Feb. 3	13 39.27	-21 08.2	3.275	3.626	+0.16	-4.7	18.2	103.0
Feb. 13	13 40.87	-21 55.5	3.101	3.593	-0.03	-3.9	18.0	112.3
Feb. 23	13 40.58	-22 34.0	2.936	3.560	-0.23	-2.8	17.8	121.9
Mar. 5	13 38.29	-23 02.1	2.786	3.526	-0.43	-1.5	17.6	131.8
Mar. 15	13 34.02	-23 17.6	2.654	3.491	-0.61	-0.1	17.4	142.0
Mar. 25	13 27.94	-23 18.7	2.544	3.457	-0.75	+1.4	17.3	152.0
Apr. 4	13 20.48	-23 04.7	2.460	3.421	-0.82	+2.9	17.1	161.1
Apr. 14	13 12.24	-22 36.0	2.404	3.386	-0.82	+4.1	17.0	166.1
Apr. 24	13 03.99	-21 55.2	2.377	3.350	-0.75	+4.9	16.9	162.7
May 4	12 56.50	-21 06.6	2.377	3.314	-0.61	+5.1	16.8	154.2
May 14	12 50.41	-20 15.2	2.404	3.277	-0.42	+4.9	16.7	144.2
May 24	12 46.20	-19 26.3	2.453	3.241	-0.21	+4.2	16.7	134.1
June 3	12 44.11	-18 44.4	2.520	3.204	+0.01	+3.2	16.7	124.3
June 13	12 44.21	-18 12.5	2.601	3.166	+0.22	+2.0	16.6	115.0
June 23	12 46.45	-17 52.3	2.691	3.129	+0.42	+0.8	16.6	106.1
July 3	12 50.68	-17 44.4	2.787	3.091	+0.61	-0.4	16.6	97.6
July 13	12 56.73	-17 48.6	2.886	3.053	+0.77	-1.6	16.6	89.6
July 23	13 04.45	-18 04.2	2.983	3.015	+0.92	-2.6	16.6	82.0
Aug. 2	13 13.67	-18 29.9	3.078	2.977	+1.06	-3.5	16.5	74.8
Aug. 12	13 24.24	-19 04.6	3.167	2.939	+1.18	-4.2	16.5	67.9
Aug. 22	13 36.06	-19 46.8	3.249	2.901	+1.30	-4.8	16.5	61.2
Sept. 1	13 49.02	-20 35.1	3.323	2.863	+1.40	-5.3	16.4	54.8
Sept.11	14 03.05	-21 28.1	3.388	2.825	+1.51	-5.6	16.3	48.6
Sept.21	14 18.11	-22 24.3	3.442	2.787	+1.60	-5.8	16.3	42.6
Oct. 1	14 34.13	-23 22.3	3.486	2.749	+1.70	-5.8	16.2	36.7
Oct. 11	14 51.09	-24 20.5	3.518	2.712	+1.79	-5.7	16.1	31.0
Oct. 21	15 08.95	-25 17.4	3.539	2.674	+1.87	-5.4	16.0	25.4
Oct. 31	15 27.68	-26 11.6	3.548	2.638	+1.96	-5.0	15.9	20.1
Nov. 10	15 47.23	-27 01.5	3.546	2.601	+2.03	-4.4	15.8	14.9
Nov. 20	16 07.57	-27 45.6	3.532	2.566	+2.11	-3.7	15.7	10.3
Nov. 30	16 28.62	-28 22.5	3.507	2.531	+2.17	-2.8	15.6	6.9
Dec. 10	16 50.32	-28 50.8	3.471	2.496	+2.22	-1.8	15.5	7.0
Dec. 20	17 12.56	-29 09.2	3.425	2.463	+2.27	-0.7	15.3	10.3
Dec. 30	17 35.24	-29 16.6	3.369	2.430	+2.30	+0.4	15.2	14.7
Jan. 9	17 58.23	-29 12.2	3.303	2.399	+2.32	+1.7	15.0	19.4
Jan. 19	18 21.38	-28 55.3	3.230	2.368	+2.32	+3.0	14.9	24.3
Jan. 29	18 44.56	-28 25.5	3.149	2.339	+2.31	+4.3	14.7	29.2
Feb. 8	19 07.62	-27 42.8	3.061	2.311	+2.28	+5.5	14.6	34.1
Feb. 18	19 30.40	-26 47.4	2.967	2.285	+2.24	+6.8	14.4	38.9
Feb. 28	19 52.78	-25 39.7	2.869	2.260	+2.19	+7.9	14.3	43.8
Mar. 10	20 14.64	-24 20.6	2.765	2.237	+2.12	+9.0	14.1	48.6
Mar. 20	20 35.85	-22 51.1	2.659	2.216	+2.05	+9.9	14.0	53.5
Mar. 30	20 56.34	-21 12.1	2.550	2.197	+1.97	+10.7	13.8	58.3

Comet 130P/McNaught-Hughes

Epoch = 2010 July 23.0 TT
T = 2011 June 24.65545 TT
Peri. = 224.31739 e = 0.4068371
Node = 89.81798 2000.0 a = 3.5376816 AU
Incl. = 7.30651 n = 0.14812418
q = 2.0984215 AU P = 6.65 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	13 39.80	-02 45.2	3.902	3.844	+0.62	-1.9	23.3	79.3
Jan. 14	13 45.97	-03 04.1	3.717	3.810	+0.50	-1.0	23.1	87.9
Jan. 24	13 50.97	-03 14.2	3.531	3.776	+0.36	-0.1	23.0	96.7
Feb. 3	13 54.61	-03 15.0	3.348	3.741	+0.21	+0.9	22.8	105.9
Feb. 13	13 56.70	-03 06.1	3.172	3.706	+0.04	+1.9	22.6	115.5
Feb. 23	13 57.05	-02 47.4	3.007	3.671	-0.15	+2.8	22.4	125.4
Mar. 5	13 55.58	-02 19.5	2.858	3.635	-0.33	+3.6	22.3	135.7
Mar. 15	13 52.26	-01 43.6	2.728	3.598	-0.50	+4.2	22.1	146.3
Mar. 25	13 47.24	-01 01.9	2.623	3.562	-0.64	+4.4	22.0	156.9
Apr. 4	13 40.84	-00 17.7	2.544	3.524	-0.73	+4.3	21.8	166.6
Apr. 14	13 33.54	+00 25.3	2.494	3.487	-0.76	+3.7	21.7	170.2
Apr. 24	13 25.97	+01 02.8	2.474	3.449	-0.72	+2.8	21.6	163.1
May 4	13 18.81	+01 31.0	2.482	3.411	-0.62	+1.6	21.6	152.9
May 14	13 12.65	+01 47.2	2.516	3.372	-0.47	+0.3	21.5	142.2
May 24	13 07.98	+01 49.9	2.572	3.333	-0.29	-1.1	21.5	131.8
June 3	13 05.10	+01 38.9	2.644	3.294	-0.10	-2.4	21.5	121.8
June 13	13 04.15	+01 14.6	2.730	3.254	+0.10	-3.6	21.5	112.3
June 23	13 05.14	+00 38.3	2.824	3.215	+0.28	-4.7	21.5	103.3
July 3	13 07.98	-00 08.6	2.923	3.175	+0.46	-5.6	21.5	94.8
July 13	13 12.56	-01 04.7	3.022	3.134	+0.62	-6.4	21.5	86.8
July 23	13 18.74	-02 08.6	3.120	3.094	+0.76	-7.0	21.5	79.1
Aug. 2	13 26.35	-03 19.0	3.214	3.053	+0.89	-7.6	21.5	71.8
Aug. 12	13 35.29	-04 34.6	3.302	3.013	+1.01	-8.0	21.4	64.8
Aug. 22	13 45.43	-05 54.3	3.381	2.972	+1.12	-8.3	21.4	58.0
Sept. 1	13 56.67	-07 17.1	3.451	2.931	+1.23	-8.5	21.4	51.5
Sept.11	14 08.95	-08 41.9	3.511	2.891	+1.32	-8.6	21.3	45.2
Sept.21	14 22.18	-10 07.7	3.559	2.850	+1.41	-8.6	21.3	39.0
Oct. 1	14 36.33	-11 33.4	3.596	2.810	+1.50	-8.5	21.2	33.0
Oct. 11	14 51.36	-12 58.2	3.621	2.769	+1.59	-8.3	21.1	27.1
Oct. 21	15 07.22	-14 20.9	3.633	2.729	+1.67	-8.0	21.0	21.3
Oct. 31	15 23.89	-15 40.6	3.633	2.689	+1.75	-7.6	20.9	15.6
Nov. 10	15 41.34	-16 56.1	3.620	2.650	+1.82	-7.0	20.8	10.0
Nov. 20	15 59.53	-18 06.4	3.595	2.611	+1.89	-6.4	20.7	4.7
Nov. 30	16 18.44	-19 10.5	3.558	2.573	+1.96	-5.7	20.6	2.6
Dec. 10	16 38.00	-20 07.4	3.510	2.535	+2.02	-4.9	20.5	7.1
Dec. 20	16 58.17	-20 56.1	3.451	2.499	+2.07	-4.0	20.3	12.4
Dec. 30	17 18.88	-21 35.9	3.382	2.463	+2.12	-3.0	20.2	17.6
Jan. 9	17 40.05	-22 06.0	3.303	2.427	+2.15	-2.0	20.1	22.9
Jan. 19	18 01.58	-22 26.0	3.217	2.394	+2.18	-1.0	19.9	28.0
Jan. 29	18 23.38	-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 07.33	-22 23.5	2.917	2.299	+2.19	+2.1	19.4	43.3
Feb. 28	19 29.26	-22 02.6	2.806	2.271	+2.17	+3.0	19.2	48.3
Mar. 10	19 51.01	-21 32.6	2.693	2.244	+2.14	+3.8	19.1	53.2
Mar. 20	20 12.45	-20 54.7	2.577	2.220	+2.10	+4.5	18.9	58.2
Mar. 30	20 33.50	-20 10.2	2.459	2.197	+2.05	+5.0	18.7	63.1

Comet 62P/Tsuchinshan

Epoch = 2010 July 23.0 TT
T = 2011 June 30.17428 TT
Peri. = 30.02757 e = 0.5980846
Node = 90.42947 2000.0 a = 3.4438470 AU
Incl. = 9.71024 n = 0.15421915
q = 1.3841351 AU P = 6.39 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	22 06.50	-19 49.5	4.961	4.306	+0.84	+5.3	.	43.8
Jan. 14	22 14.87	-18 56.7	5.022	4.265	+0.89	+5.5	.	35.9
Jan. 24	22 23.82	-18 01.3	5.064	4.224	+0.94	+5.8	.	28.3
Feb. 3	22 33.21	-17 03.7	5.087	4.182	+0.98	+5.9	.	21.0
Feb. 13	22 42.98	-16 04.5	5.089	4.138	+1.00	+6.0	.	14.2
Feb. 23	22 53.01	-15 04.0	5.070	4.095	+1.02	+6.1	.	8.7
Mar. 5	23 03.24	-14 03.0	5.030	4.050	+1.04	+6.1	.	7.8
Mar. 15	23 13.60	-13 01.8	4.970	4.005	+1.04	+6.1	.	12.4
Mar. 25	23 24.01	-12 01.1	4.890	3.958	+1.04	+6.0	.	18.6
Apr. 4	23 34.41	-11 01.6	4.792	3.911	+1.03	+5.8	.	25.3
Apr. 14	23 44.75	-10 03.7	4.675	3.863	+1.02	+5.5	.	32.2
Apr. 24	23 54.96	-09 08.3	4.542	3.814	+1.00	+5.2	.	39.1
May 4	00 04.96	-08 16.1	4.394	3.765	+0.97	+4.8	.	46.0
May 14	00 14.71	-07 27.8	4.233	3.714	+0.94	+4.3	.	53.0
May 24	00 24.10	-06 44.4	4.060	3.663	+0.89	+3.8	.	60.1
June 3	00 33.04	-06 06.6	3.878	3.610	+0.84	+3.1	.	67.3
June 13	00 41.43	-05 35.5	3.688	3.557	+0.77	+2.3	.	74.7
June 23	00 49.13	-05 12.2	3.494	3.503	+0.68	+1.4	.	82.2
July 3	00 55.98	-04 57.7	3.297	3.448	+0.58	+0.4	.	89.9
July 13	01 01.80	-04 53.3	3.099	3.393	+0.46	-0.7	.	97.9
July 23	01 06.36	-05 00.0	2.906	3.336	+0.31	-1.9	.	106.3
Aug. 2	01 09.45	-05 18.9	2.718	3.278	+0.14	-3.2	.	115.0
Aug. 12	01 10.80	-05 50.5	2.540	3.220	-0.06	-4.4	.	124.1
Aug. 22	01 10.18	-06 35.0	2.376	3.160	-0.28	-5.6	.	133.6
Sept. 1	01 07.41	-07 31.1	2.230	3.100	-0.50	-6.5	.	143.5
Sept.11	01 02.44	-08 36.3	2.106	3.039	-0.70	-7.0	.	153.3
Sept.21	00 55.42	-09 45.8	2.006	2.977	-0.86	-6.8	.	161.9
Oct. 1	00 46.81	-10 53.4	1.934	2.914	-0.95	-5.8	24.7	165.3
Oct. 11	00 37.31	-11 51.9	1.891	2.850	-0.94	-4.2	24.3	160.1
Oct. 21	00 27.87	-12 34.3	1.875	2.786	-0.84	-2.2	24.0	150.5
Oct. 31	00 19.47	-12 56.0	1.885	2.720	-0.65	+0.1	23.7	139.9
Nov. 10	00 12.92	-12 54.9	1.915	2.654	-0.41	+2.4	23.4	129.1
Nov. 20	00 08.82	-12 31.1	1.962	2.587	-0.14	+4.4	23.1	118.8
Nov. 30	00 07.43	-11 46.6	2.019	2.520	+0.14	+6.3	22.8	109.0
Dec. 10	00 08.80	-10 43.8	2.083	2.452	+0.40	+7.9	22.4	99.9
Dec. 20	00 12.81	-09 25.2	2.149	2.384	+0.64	+9.2	22.1	91.3
Dec. 30	00 19.25	-07 53.0	2.213	2.315	+0.87	+10.4	21.8	83.3
Jan. 9	00 27.91	-06 09.0	2.272	2.246	+1.07	+11.4	21.4	75.9
Jan. 19	00 38.61	-04 14.8	2.326	2.176	+1.25	+12.3	21.0	69.0
Jan. 29	00 51.13	-02 11.7	2.371	2.107	+1.43	+13.1	20.6	62.6
Feb. 8	01 05.39	-00 00.9	2.408	2.039	+1.59	+13.7	20.2	56.6
Feb. 18	01 21.28	+02 16.3	2.436	1.971	+1.75	+14.2	19.7	51.0
Feb. 28	01 38.75	+04 38.8	2.454	1.903	+1.91	+14.6	19.2	45.9
Mar. 10	01 57.82	+07 05.2	2.464	1.838	+2.07	+14.8	18.7	41.2
Mar. 20	02 18.53	+09 33.6	2.466	1.773	+2.24	+14.9	18.2	36.9
Mar. 30	02 40.92	+12 02.2	2.461	1.712	+2.42	+14.6	17.7	33.0

Comet 176P/LINEAR

Epoch = 2010 July 23.0 TT
T = 2011 July 2.30444 TT
Peri. = 35.85992 e = 0.1936213
Node = 346.54081 2000.0 a = 3.1938061 AU
Incl. = 0.23771 n = 0.17267969
q = 2.5754172 AU P = 5.71 years

H = 15.1 , G = 0.15

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	V	Elong. °
Jan. 4	18 03.49	-23 37.1	4.304	3.351	+1.52	+0.4	21.2	12.6
Jan. 14	18 18.66	-23 33.1	4.246	3.334	+1.50	+0.9	21.3	19.3
Jan. 24	18 33.70	-23 23.8	4.173	3.316	+1.48	+1.4	21.3	26.0
Feb. 3	18 48.49	-23 09.4	4.084	3.299	+1.44	+1.9	21.4	32.8
Feb. 13	19 02.94	-22 50.4	3.981	3.281	+1.40	+2.3	21.4	39.6
Feb. 23	19 16.93	-22 27.2	3.865	3.263	+1.34	+2.6	21.4	46.4
Mar. 5	19 30.34	-22 00.7	3.738	3.244	+1.27	+2.9	21.3	53.3
Mar. 15	19 43.07	-21 31.7	3.601	3.226	+1.19	+3.1	21.3	60.3
Mar. 25	19 54.98	-21 01.2	3.455	3.208	+1.10	+3.1	21.2	67.4
Apr. 4	20 05.94	-20 30.2	3.304	3.189	+0.99	+3.0	21.1	74.7
Apr. 14	20 15.80	-19 60.0	3.148	3.170	+0.86	+2.8	21.0	82.1
Apr. 24	20 24.40	-19 32.0	2.989	3.151	+0.72	+2.5	20.9	89.8
May 4	20 31.55	-19 07.4	2.832	3.133	+0.55	+2.0	20.8	97.8
May 14	20 37.06	-18 47.9	2.677	3.114	+0.37	+1.3	20.6	106.2
May 24	20 40.72	-18 34.6	2.529	3.095	+0.16	+0.6	20.5	114.9
June 3	20 42.36	-18 28.9	2.390	3.076	-0.05	-0.2	20.3	124.1
June 13	20 41.82	-18 31.3	2.265	3.057	-0.28	-1.1	20.1	133.8
June 23	20 39.06	-18 42.0	2.156	3.038	-0.49	-1.8	19.9	144.0
July 3	20 34.19	-19 00.0	2.068	3.019	-0.66	-2.4	19.7	154.7
July 13	20 27.55	-19 23.5	2.004	3.000	-0.78	-2.6	19.4	165.9
July 23	20 19.72	-19 49.8	1.966	2.981	-0.82	-2.6	19.1	177.3
Aug. 2	20 11.49	-20 15.6	1.955	2.962	-0.77	-2.3	19.2	171.1
Aug. 12	20 03.75	-20 38.2	1.972	2.944	-0.64	-1.7	19.4	159.7
Aug. 22	19 57.35	-20 55.5	2.014	2.925	-0.44	-1.1	19.6	148.6
Sept. 1	19 52.94	-21 06.5	2.079	2.907	-0.21	-0.4	19.8	137.9
Sept.11	19 50.88	-21 10.9	2.162	2.889	+0.05	+0.2	19.9	127.7
Sept.21	19 51.36	-21 08.5	2.259	2.871	+0.30	+0.9	20.1	118.1
Oct. 1	19 54.31	-20 59.5	2.367	2.854	+0.53	+1.6	20.2	109.0
Oct. 11	19 59.57	-20 43.9	2.481	2.836	+0.73	+2.2	20.3	100.4
Oct. 21	20 06.91	-20 21.5	2.600	2.819	+0.91	+2.9	20.4	92.2
Oct. 31	20 16.06	-19 52.2	2.719	2.803	+1.07	+3.7	20.5	84.4
Nov. 10	20 26.77	-19 15.6	2.837	2.787	+1.20	+4.4	20.6	77.0
Nov. 20	20 38.79	-18 31.5	2.951	2.771	+1.31	+5.2	20.6	69.9
Nov. 30	20 51.88	-17 40.0	3.059	2.755	+1.40	+5.9	20.7	63.0
Dec. 10	21 05.87	-16 40.9	3.161	2.740	+1.47	+6.6	20.7	56.3
Dec. 20	21 20.58	-15 34.4	3.254	2.726	+1.53	+7.4	20.7	49.9
Dec. 30	21 35.83	-14 20.8	3.338	2.712	+1.57	+8.0	20.7	43.6
Jan. 9	21 51.54	-13 00.4	3.412	2.698	+1.60	+8.7	20.7	37.4
Jan. 19	22 07.57	-11 33.8	3.476	2.685	+1.63	+9.2	20.6	31.4
Jan. 29	22 23.84	-10 01.6	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 56.86	-06 43.2	3.598	2.650	+1.67	+10.5	20.4	14.1
Feb. 28	23 13.52	-04 58.7	3.615	2.640	+1.67	+10.7	20.3	8.5
Mar. 10	23 30.23	-03 11.6	3.621	2.630	+1.67	+10.9	20.2	3.0
Mar. 20	23 46.96	-01 23.0	3.616	2.621	+1.67	+10.9	20.1	2.4
Mar. 30	00 03.70	+00 26.3	3.599	2.613	+1.67	+10.9	20.3	7.8

Comet 123P/West-Hartley

Epoch = 2010 July 23.0 TT
T = 2011 July 4.49485 TT
Peri. = 102.81692 e = 0.4480748
Node = 46.60017 2000.0 a = 3.8577353 AU
Incl. = 15.35681 n = 0.13007848
q = 2.1291813 AU P = 7.58 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	00 58.24	+00 32.1	3.931	4.056	+0.32	+5.1	23.1	90.2
Jan. 14	01 01.46	+01 22.6	4.051	4.019	+0.46	+5.7	23.1	81.2
Jan. 24	01 06.03	+02 19.5	4.166	3.981	+0.58	+6.2	23.0	72.4
Feb. 3	01 11.79	+03 21.6	4.274	3.943	+0.68	+6.6	23.0	64.0
Feb. 13	01 18.62	+04 28.0	4.372	3.905	+0.78	+7.0	23.0	55.9
Feb. 23	01 26.40	+05 37.8	4.457	3.866	+0.86	+7.2	22.9	48.0
Mar. 5	01 35.00	+06 50.2	4.527	3.826	+0.93	+7.4	22.9	40.4
Mar. 15	01 44.33	+08 04.5	4.581	3.786	+1.00	+7.5	22.8	33.0
Mar. 25	01 54.30	+09 19.9	4.618	3.746	+1.05	+7.6	22.7	25.9
Apr. 4	02 04.84	+10 35.9	4.638	3.706	+1.10	+7.6	22.6	18.9
Apr. 14	02 15.87	+11 51.9	4.640	3.665	+1.15	+7.5	22.5	12.0
Apr. 24	02 27.34	+13 07.3	4.624	3.624	+1.18	+7.4	22.4	5.4
May 4	02 39.19	+14 21.7	4.590	3.582	+1.22	+7.3	22.3	1.8
May 14	02 51.38	+15 34.7	4.538	3.540	+1.25	+7.1	22.2	7.9
May 24	03 03.84	+16 45.9	4.470	3.498	+1.27	+6.9	22.1	14.3
June 3	03 16.53	+17 54.9	4.386	3.456	+1.29	+6.7	21.9	20.7
June 13	03 29.40	+19 01.5	4.286	3.413	+1.30	+6.4	21.7	27.0
June 23	03 42.39	+20 05.6	4.172	3.370	+1.30	+6.1	21.6	33.4
July 3	03 55.42	+21 07.1	4.045	3.327	+1.30	+5.9	21.4	39.7
July 13	04 08.44	+22 05.9	3.906	3.283	+1.29	+5.6	21.2	46.1
July 23	04 21.34	+23 02.2	3.756	3.240	+1.27	+5.4	21.0	52.5
Aug. 2	04 34.03	+23 56.2	3.597	3.196	+1.23	+5.2	20.8	59.1
Aug. 12	04 46.37	+24 48.4	3.430	3.152	+1.18	+5.1	20.5	65.8
Aug. 22	04 58.22	+25 39.3	3.257	3.108	+1.12	+5.0	20.3	72.6
Sept. 1	05 09.41	+26 29.8	3.080	3.064	+1.03	+5.1	20.1	79.7
Sept.11	05 19.71	+27 20.7	2.901	3.021	+0.92	+5.3	19.8	87.0
Sept.21	05 28.87	+28 13.2	2.722	2.977	+0.77	+5.5	19.5	94.6
Oct. 1	05 36.61	+29 08.7	2.547	2.933	+0.60	+6.0	19.2	102.6
Oct. 11	05 42.57	+30 08.2	2.376	2.889	+0.38	+6.5	19.0	111.1
Oct. 21	05 46.37	+31 12.7	2.215	2.846	+0.13	+7.0	18.7	120.0
Oct. 31	05 47.62	+32 22.4	2.066	2.803	-0.16	+7.4	18.4	129.4
Nov. 10	05 45.97	+33 36.3	1.934	2.761	-0.47	+7.5	18.1	139.2
Nov. 20	05 41.26	+34 51.4	1.822	2.719	-0.76	+7.2	17.8	149.3
Nov. 30	05 33.62	+36 03.1	1.733	2.677	-1.00	+6.2	17.6	158.8
Dec. 10	05 23.64	+37 05.4	1.671	2.636	-1.12	+4.8	17.3	165.3
Dec. 20	05 12.47	+37 52.9	1.638	2.596	-1.09	+3.0	17.1	163.4
Dec. 30	05 01.62	+38 23.1	1.631	2.556	-0.90	+1.4	17.0	155.0
Jan. 9	04 52.58	+38 36.8	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 33.1	1.747	2.444	+0.16	-0.8	16.7	124.5
Feb. 8	04 45.96	+38 25.1	1.818	2.409	+0.55	-0.8	16.6	115.2
Feb. 18	04 51.42	+38 17.1	1.896	2.376	+0.89	-0.7	16.6	106.6
Feb. 28	05 00.36	+38 09.8	1.980	2.344	+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 53.7	2.152	2.285	+1.71	-1.2	16.4	84.6
Mar. 30	05 44.23	+37 41.3	2.237	2.258	+1.90	-1.8	16.3	78.4

Comet 69P/Taylor

Epoch = 2010 July 23.0 TT
T = 2011 July 17.71119 TT
Peri. = 343.31438 e = 0.4153673
Node = 104.96359 2000.0 a = 3.8870077 AU
Incl. = 22.05184 n = 0.12861185
q = 2.2724719 AU P = 7.66 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	21 40.13	-27 21.5	4.791	4.047	+1.10	+5.1	.	36.8
Jan. 14	21 51.08	-26 30.2	4.834	4.012	+1.14	+5.3	.	29.9
Jan. 24	22 02.50	-25 36.8	4.860	3.977	+1.18	+5.5	.	23.5
Feb. 3	22 14.28	-24 41.9	4.867	3.941	+1.21	+5.6	.	18.0
Feb. 13	22 26.33	-23 46.0	4.855	3.905	+1.23	+5.6	25.0	14.1
Feb. 23	22 38.59	-22 49.7	4.825	3.869	+1.24	+5.6	24.9	13.3
Mar. 5	22 50.96	-21 53.6	4.777	3.832	+1.24	+5.5	24.8	15.9
Mar. 15	23 03.41	-20 58.4	4.711	3.795	+1.25	+5.4	24.7	20.5
Mar. 25	23 15.87	-20 04.8	4.628	3.758	+1.24	+5.1	24.6	26.1
Apr. 4	23 28.28	-19 13.8	4.529	3.721	+1.23	+4.8	24.4	32.1
Apr. 14	23 40.60	-18 26.0	4.417	3.683	+1.22	+4.4	24.3	38.3
Apr. 24	23 52.77	-17 42.5	4.291	3.645	+1.20	+3.8	24.1	44.7
May 4	00 04.73	-17 04.2	4.153	3.606	+1.17	+3.2	24.0	51.1
May 14	00 16.42	-16 32.1	4.006	3.568	+1.13	+2.5	23.8	57.6
May 24	00 27.76	-16 07.5	3.850	3.529	+1.09	+1.6	23.7	64.2
June 3	00 38.67	-15 51.4	3.688	3.490	+1.04	+0.6	23.5	70.9
June 13	00 49.05	-15 45.0	3.522	3.451	+0.97	-0.5	23.3	77.7
June 23	00 58.75	-15 49.7	3.353	3.411	+0.89	-1.7	23.1	84.6
July 3	01 07.64	-16 06.4	3.185	3.372	+0.79	-3.0	22.9	91.7
July 13	01 15.54	-16 36.4	3.019	3.332	+0.67	-4.4	22.7	98.9
July 23	01 22.23	-17 20.1	2.858	3.292	+0.53	-5.8	22.4	106.4
Aug. 2	01 27.49	-18 17.8	2.706	3.253	+0.36	-7.1	22.2	114.0
Aug. 12	01 31.07	-19 28.8	2.563	3.213	+0.17	-8.2	22.0	121.6
Aug. 22	01 32.74	-20 51.1	2.435	3.173	-0.04	-9.0	21.8	129.2
Sept. 1	01 32.31	-22 21.0	2.324	3.133	-0.26	-9.2	21.6	136.4
Sept.11	01 29.70	-23 53.0	2.233	3.093	-0.47	-8.7	21.4	142.5
Sept.21	01 25.03	-25 19.8	2.164	3.054	-0.64	-7.3	21.2	146.8
Oct. 1	01 18.64	-26 33.1	2.118	3.014	-0.75	-5.2	21.1	148.0
Oct. 11	01 11.16	-27 25.1	2.097	2.975	-0.77	-2.5	20.9	145.7
Oct. 21	01 03.42	-27 49.6	2.099	2.936	-0.71	+0.6	20.8	140.6
Oct. 31	00 56.32	-27 44.0	2.122	2.898	-0.57	+3.6	20.7	133.7
Nov. 10	00 50.65	-27 08.4	2.164	2.859	-0.36	+6.3	20.7	125.9
Nov. 20	00 47.02	-26 05.7	2.221	2.822	-0.13	+8.5	20.6	117.9
Nov. 30	00 45.71	-24 40.2	2.290	2.784	+0.11	+10.4	20.6	109.9
Dec. 10	00 46.81	-22 56.4	2.368	2.748	+0.34	+11.8	20.5	102.0
Dec. 20	00 50.24	-20 58.4	2.451	2.712	+0.56	+12.8	20.5	94.5
Dec. 30	00 55.81	-18 49.9	2.537	2.677	+0.75	+13.6	20.4	87.3
Jan. 9	01 03.30	-16 33.8	2.623	2.642	+0.92	+14.1	20.4	80.3
Jan. 19	01 12.49	-14 12.4	2.708	2.609	+1.07	+14.5	20.3	73.7
Jan. 29	01 23.16	-11 47.6	2.789	2.576	+1.20	+14.7	20.3	67.4
Feb. 8	01 35.15	-09 21.0	2.867	2.545	+1.31	+14.7	20.2	61.3
Feb. 18	01 48.29	-06 53.9	2.939	2.515	+1.42	+14.6	20.2	55.5
Feb. 28	02 02.46	-04 27.8	3.005	2.486	+1.51	+14.4	20.1	49.9
Mar. 10	02 17.57	-02 03.5	3.065	2.458	+1.60	+14.1	20.1	44.6
Mar. 20	02 33.52	+00 17.5	3.118	2.433	+1.67	+13.7	20.0	39.4
Mar. 30	02 50.26	+02 34.5	3.164	2.408	+1.75	+13.2	19.9	34.5

Comet D/1952 B1 (Harrington-Wilson)

Epoch = 2010 July 23.0 TT
T = 2011 July 29.85410 TT
Peri. = 0.65982 e = 0.5946126
Node = 118.57518 2000.0 a = 3.1517201 AU
Incl. = 14.41342 n = 0.17614999
q = 1.2776676 AU P = 5.60 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	21 31.93	-20 44.0	5.058	4.298	-0.25	-0.3	25.0	13.6/ 72	35.7
Jan. 14	21 41.10	-20 02.2	5.108	4.264	-0.25	-0.4	24.9	14.3/ 72	27.9
Jan. 24	21 50.71	-19 17.9	5.138	4.229	-0.26	-0.4	24.9	14.8/ 72	20.4
Feb. 3	22 00.66	-18 31.6	5.147	4.194	-0.26	-0.5	24.9	15.3/ 72	13.3
Feb. 13	22 10.84	-17 43.7	5.134	4.157	-0.27	-0.6	24.8	15.6/ 72	7.4
Feb. 23	22 21.17	-16 54.8	5.100	4.120	-0.28	-0.7	24.8	15.8/ 72	6.9
Mar. 5	22 31.58	-16 05.6	5.045	4.082	-0.29	-0.8	24.7	15.8/ 72	12.3
Mar. 15	22 41.99	-15 16.5	4.970	4.043	-0.30	-0.9	24.6	15.7/ 73	19.0
Mar. 25	22 52.33	-14 28.4	4.874	4.003	-0.31	-1.0	24.6	15.6/ 73	26.0
Apr. 4	23 02.54	-13 42.0	4.761	3.962	-0.32	-1.1	24.5	15.3/ 74	33.2
Apr. 14	23 12.55	-12 58.1	4.630	3.920	-0.34	-1.3	24.4	14.8/ 74	40.3
Apr. 24	23 22.28	-12 17.6	4.484	3.877	-0.35	-1.4	24.2	14.2/ 76	47.5
May 4	23 31.66	-11 41.4	4.325	3.833	-0.37	-1.5	24.1	13.5/ 77	54.8
May 14	23 40.61	-11 10.6	4.153	3.789	-0.40	-1.7	24.0	12.6/ 79	62.2
May 24	23 49.01	-10 46.3	3.973	3.743	-0.42	-1.8	23.8	11.5/ 82	69.7
June 3	23 56.76	-10 29.6	3.785	3.697	-0.45	-2.0	23.7	10.3/ 86	77.3
June 13	00 03.71	-10 22.0	3.592	3.649	-0.48	-2.2	23.5	8.9/ 92	85.1
June 23	00 09.72	-10 24.9	3.398	3.601	-0.52	-2.4	23.3	7.3/102	93.2
July 3	00 14.59	-10 39.4	3.205	3.551	-0.56	-2.6	23.1	5.9/118	101.6
July 13	00 18.13	-11 07.0	3.017	3.501	-0.60	-2.7	22.9	5.1/145	110.2
July 23	00 20.09	-11 48.7	2.837	3.449	-0.65	-2.9	22.7	5.6/177	119.3
Aug. 2	00 20.29	-12 44.7	2.670	3.397	-0.70	-3.0	22.5	7.4/200	128.6
Aug. 12	00 18.51	-13 54.4	2.518	3.343	-0.74	-3.1	22.3	9.8/214	138.3
Aug. 22	00 14.66	-15 15.5	2.388	3.289	-0.79	-3.1	22.2	12.2/223	147.9
Sept. 1	00 08.81	-16 43.9	2.281	3.233	-0.83	-3.0	22.0	14.1/230	156.8
Sept.11	00 01.19	-18 13.6	2.202	3.177	-0.85	-2.7	21.8	15.0/236	162.6
Sept.21	23 52.37	-19 37.0	2.151	3.119	-0.86	-2.4	21.7	14.8/241	161.3
Oct. 1	23 43.09	-20 46.9	2.130	3.060	-0.84	-2.0	21.6	13.4/247	153.8
Oct. 11	23 34.25	-21 37.4	2.135	3.000	-0.82	-1.6	21.5	10.9/255	144.0
Oct. 21	23 26.72	-22 05.3	2.164	2.940	-0.78	-1.2	21.5	7.7/266	133.6
Oct. 31	23 21.16	-22 10.0	2.211	2.878	-0.73	-1.0	21.4	4.7/291	123.2
Nov. 10	23 18.00	-21 53.0	2.272	2.815	-0.69	-0.9	21.4	3.7/347	113.3
Nov. 20	23 17.42	-21 16.8	2.342	2.751	-0.65	-0.9	21.3	5.9/ 28	103.8
Nov. 30	23 19.39	-20 24.3	2.416	2.686	-0.62	-1.0	21.3	9.1/ 43	94.9
Dec. 10	23 23.74	-19 17.7	2.490	2.620	-0.60	-1.2	21.3	12.2/ 50	86.4
Dec. 20	23 30.29	-17 59.1	2.560	2.553	-0.59	-1.5	21.2	15.1/ 54	78.5
Dec. 30	23 38.80	-16 30.3	2.625	2.485	-0.59	-1.8	21.1	17.8/ 57	71.0
Jan. 9	23 49.05	-14 52.2	2.680	2.416	-0.59	-2.1	21.1	20.2/ 59	64.0
Jan. 19	00 00.87	-13 06.1	2.726	2.347	-0.61	-2.5	21.0	22.5/ 60	57.4
Jan. 29	00 14.11	-11 12.6	2.762	2.277	-0.63	-3.0	20.9	24.6/ 61	51.1
Feb. 8	00 28.66	-09 12.4	2.785	2.206	-0.65	-3.4	20.8	26.6/ 62	45.3
Feb. 18	00 44.45	-07 06.3	2.797	2.135	-0.68	-3.9	20.6	28.5/ 63	39.9
Feb. 28	01 01.43	-04 54.8	2.798	2.063	-0.73	-4.5	20.5	30.4/ 64	34.8
Mar. 10	01 19.61	-02 38.7	2.787	1.991	-0.77	-5.0	20.3	32.3/ 64	30.1
Mar. 20	01 39.02	-00 18.8	2.767	1.920	-0.83	-5.5	20.1	34.1/ 65	25.8
Mar. 30	01 59.70	+02 03.8	2.738	1.849	-0.90	-6.1	20.0	36.0/ 66	21.9

Comet 27P/Crommelin [Orbit 2]

Epoch = 2010 July 23.0 TT
T = 2011 Aug. 3.83217 TT
Peri. = 195.98881 e = 0.9185946
Node = 250.65856 2000.0 a = 9.1828941 AU
Incl. = 28.95942 n = 0.03541887
q = 0.7475368 AU P = 27.83 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.
2010/11	h m ° ′						′/ °	°
Jan. 4	19 30.62 -02 59.6	7.182	6.276	-0.09	-0.6	23.6	9.8/ 80	21.3
Jan. 14	19 37.04 -02 42.5	7.127	6.204	-0.09	-0.6	23.5	10.0/ 77	18.7
Jan. 24	19 43.56 -02 20.2	7.049	6.131	-0.10	-0.7	23.5	10.1/ 74	19.7
Feb. 3	19 50.07 -01 52.9	6.947	6.058	-0.11	-0.7	23.5	10.1/ 71	23.7
Feb. 13	19 56.49 -01 20.6	6.823	5.984	-0.12	-0.7	23.5	10.0/ 68	29.6
Feb. 23	20 02.70 -00 43.6	6.678	5.910	-0.13	-0.8	23.4	9.8/ 65	36.3
Mar. 5	20 08.60 -00 02.3	6.513	5.835	-0.14	-0.9	23.4	9.4/ 61	43.6
Mar. 15	20 14.09 +00 43.1	6.330	5.759	-0.15	-0.9	23.4	8.9/ 57	51.2
Mar. 25	20 19.06 +01 32.1	6.132	5.683	-0.16	-1.0	23.3	8.3/ 51	59.0
Apr. 4	20 23.40 +02 24.1	5.922	5.606	-0.17	-1.1	23.2	7.7/ 45	66.9
Apr. 14	20 26.99 +03 18.6	5.703	5.528	-0.18	-1.2	23.1	6.9/ 36	75.0
Apr. 24	20 29.71 +04 14.8	5.478	5.450	-0.19	-1.3	23.0	6.3/ 24	83.1
May 4	20 31.43 +05 11.9	5.250	5.371	-0.21	-1.5	22.9	5.7/ 9	91.4
May 14	20 32.05 +06 08.6	5.023	5.291	-0.22	-1.6	22.8	5.6/351	99.8
May 24	20 31.44 +07 03.7	4.802	5.210	-0.23	-1.8	22.7	5.9/331	108.3
June 3	20 29.54 +07 55.5	4.590	5.128	-0.24	-2.0	22.5	6.7/314	116.8
June 13	20 26.28 +08 42.2	4.392	5.046	-0.24	-2.2	22.4	7.9/300	125.2
June 23	20 21.69 +09 21.6	4.211	4.963	-0.25	-2.3	22.2	9.1/289	133.3
July 3	20 15.86 +09 51.6	4.050	4.879	-0.25	-2.5	22.0	10.3/281	140.6
July 13	20 08.99 +10 10.3	3.914	4.794	-0.24	-2.7	21.9	11.3/273	146.4
July 23	20 01.38 +10 16.0	3.805	4.708	-0.23	-2.8	21.8	11.8/266	149.5
Aug. 2	19 53.43 +10 08.1	3.723	4.622	-0.21	-2.9	21.7	11.8/260	149.0
Aug. 12	19 45.59 +09 46.8	3.668	4.534	-0.20	-2.9	21.6	11.2/253	144.8
Aug. 22	19 38.35 +09 13.5	3.640	4.445	-0.18	-2.9	21.6	10.2/245	138.2
Sept. 1	19 32.11 +08 30.5	3.635	4.356	-0.16	-2.8	21.7	8.8/236	130.3
Sept.11	19 27.23 +07 40.7	3.650	4.265	-0.14	-2.6	21.7	7.2/223	121.6
Sept.21	19 23.94 +06 47.3	3.681	4.173	-0.13	-2.5	21.7	5.9/203	112.7
Oct. 1	19 22.37 +05 53.2	3.723	4.081	-0.12	-2.3	21.7	5.2/177	103.9
Oct. 11	19 22.55 +05 01.1	3.771	3.986	-0.12	-2.1	21.7	5.6/149	95.1
Oct. 21	19 24.48 +04 13.4	3.821	3.891	-0.12	-2.0	21.7	6.8/128	86.6
Oct. 31	19 28.04 +03 31.6	3.869	3.795	-0.12	-1.8	21.7	8.4/114	78.3
Nov. 10	19 33.16 +02 57.3	3.910	3.697	-0.13	-1.7	21.6	10.1/105	70.4
Nov. 20	19 39.70 +02 31.5	3.942	3.598	-0.15	-1.6	21.6	11.9/ 98	62.7
Nov. 30	19 47.55 +02 15.0	3.963	3.498	-0.17	-1.5	21.5	13.6/ 93	55.4
Dec. 10	19 56.59 +02 08.5	3.969	3.396	-0.19	-1.5	21.4	15.2/ 88	48.4
Dec. 20	20 06.71 +02 12.4	3.959	3.292	-0.22	-1.4	21.3	16.7/ 85	41.9
Dec. 30	20 17.81 +02 27.1	3.932	3.188	-0.25	-1.5	21.2	18.2/ 82	35.9
Jan. 9	20 29.83 +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 42.12 +07 57.5	3.413	2.522	-0.58	-2.3	19.4	27.0/ 69	22.0
Mar. 10	21 59.13 +09 35.0	3.274	2.405	-0.67	-2.6	19.0	28.8/ 67	24.4
Mar. 20	22 17.19 +11 25.1	3.124	2.285	-0.77	-2.9	18.6	30.8/ 66	27.2
Mar. 30	22 36.50 +13 27.9	2.966	2.163	-0.90	-3.2	18.1	33.1/ 65	30.3

Comet 27P/Crommelin [Orbit 1]

Epoch = 2010 July 23.0 TT
T = 2011 Aug. 3.84136 TT
Peri. = 195.99019 e = 0.9185941
Node = 250.65811 2000.0 a = 9.1828988 AU
Incl. = 28.95927 n = 0.03541884
q = 0.7475426 AU P = 27.83 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 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		Mag.	Mot./PA ″/ °	Elong. °
Jan. 4	19 30.62	-02 59.6	7.182	6.276	-0.09	-0.6	23.6	9.8/ 80	21.3
Jan. 14	19 37.04	-02 42.5	7.127	6.204	-0.09	-0.6	23.5	10.0/ 77	18.7
Jan. 24	19 43.56	-02 20.2	7.049	6.131	-0.10	-0.7	23.5	10.1/ 74	19.7
Feb. 3	19 50.08	-01 52.8	6.948	6.058	-0.11	-0.7	23.5	10.1/ 71	23.7
Feb. 13	19 56.49	-01 20.6	6.823	5.984	-0.12	-0.7	23.5	10.0/ 68	29.6
Feb. 23	20 02.70	-00 43.6	6.678	5.910	-0.13	-0.8	23.4	9.8/ 65	36.3
Mar. 5	20 08.60	-00 02.3	6.513	5.835	-0.14	-0.9	23.4	9.4/ 61	43.6
Mar. 15	20 14.10	+00 43.1	6.330	5.759	-0.15	-0.9	23.4	8.9/ 57	51.2
Mar. 25	20 19.07	+01 32.1	6.132	5.683	-0.16	-1.0	23.3	8.3/ 51	59.0
Apr. 4	20 23.40	+02 24.1	5.922	5.606	-0.17	-1.1	23.2	7.7/ 45	66.9
Apr. 14	20 26.99	+03 18.6	5.703	5.528	-0.18	-1.2	23.1	6.9/ 36	75.0
Apr. 24	20 29.71	+04 14.9	5.478	5.450	-0.19	-1.3	23.0	6.3/ 24	83.1
May 4	20 31.43	+05 11.9	5.250	5.371	-0.21	-1.5	22.9	5.7/ 9	91.4
May 14	20 32.05	+06 08.6	5.023	5.291	-0.22	-1.6	22.8	5.6/351	99.8
May 24	20 31.44	+07 03.7	4.802	5.210	-0.23	-1.8	22.7	5.9/331	108.3
June 3	20 29.54	+07 55.5	4.590	5.129	-0.24	-2.0	22.5	6.7/314	116.8
June 13	20 26.28	+08 42.2	4.392	5.046	-0.24	-2.2	22.4	7.9/300	125.2
June 23	20 21.69	+09 21.6	4.211	4.963	-0.25	-2.3	22.2	9.1/289	133.3
July 3	20 15.86	+09 51.7	4.050	4.879	-0.25	-2.5	22.0	10.3/281	140.6
July 13	20 08.99	+10 10.3	3.914	4.794	-0.24	-2.7	21.9	11.2/273	146.4
July 23	20 01.38	+10 16.0	3.805	4.708	-0.23	-2.8	21.8	11.8/266	149.5
Aug. 2	19 53.43	+10 08.1	3.723	4.622	-0.21	-2.9	21.7	11.8/260	149.0
Aug. 12	19 45.60	+09 46.8	3.668	4.534	-0.20	-2.9	21.6	11.2/253	144.8
Aug. 22	19 38.35	+09 13.5	3.640	4.446	-0.18	-2.9	21.6	10.2/245	138.2
Sept. 1	19 32.12	+08 30.5	3.635	4.356	-0.16	-2.8	21.7	8.8/236	130.3
Sept.11	19 27.23	+07 40.7	3.650	4.265	-0.14	-2.6	21.7	7.2/223	121.6
Sept.21	19 23.94	+06 47.3	3.681	4.173	-0.13	-2.5	21.7	5.9/203	112.7
Oct. 1	19 22.37	+05 53.2	3.723	4.081	-0.12	-2.3	21.7	5.2/177	103.9
Oct. 11	19 22.56	+05 01.2	3.771	3.987	-0.12	-2.1	21.7	5.6/149	95.1
Oct. 21	19 24.48	+04 13.4	3.821	3.891	-0.12	-2.0	21.7	6.8/128	86.6
Oct. 31	19 28.05	+03 31.6	3.869	3.795	-0.12	-1.8	21.7	8.4/114	78.3
Nov. 10	19 33.16	+02 57.3	3.910	3.697	-0.13	-1.7	21.6	10.1/105	70.4
Nov. 20	19 39.71	+02 31.5	3.943	3.598	-0.15	-1.6	21.6	11.9/ 98	62.7
Nov. 30	19 47.55	+02 15.0	3.963	3.498	-0.17	-1.5	21.5	13.6/ 93	55.4
Dec. 10	19 56.59	+02 08.5	3.969	3.396	-0.19	-1.5	21.4	15.2/ 88	48.4
Dec. 20	20 06.71	+02 12.4	3.959	3.292	-0.22	-1.4	21.3	16.7/ 85	41.9
Dec. 30	20 17.81	+02 27.1	3.932	3.188	-0.25	-1.5	21.2	18.2/ 82	35.9
Jan. 9	20 29.83	+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 10.79	+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 42.12	+07 57.5	3.413	2.522	-0.58	-2.3	19.4	27.0/ 69	22.0
Mar. 10	21 59.13	+09 35.0	3.274	2.405	-0.67	-2.6	19.0	28.8/ 67	24.4
Mar. 20	22 17.18	+11 25.1	3.125	2.285	-0.77	-2.9	18.6	30.8/ 66	27.2
Mar. 30	22 36.49	+13 27.9	2.966	2.164	-0.90	-3.2	18.1	33.1/ 65	30.3

Comet 97P/Metcalf-Brewington

Epoch = 2010 July 23.0 TT
T = 2011 Aug. 21.97877 TT
Peri. = 228.50307 e = 0.4598236
Node = 185.22218 2000.0 a = 4.7992981 AU
Incl. = 17.88594 n = 0.09374271
q = 2.5924675 AU P = 10.51 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	20 01.83	-07 13.9	5.385	4.487	+1.03	+1.9	23.9	21.8
Jan. 14	20 12.15	-06 54.4	5.384	4.448	+1.05	+2.5	23.8	16.2
Jan. 24	20 22.65	-06 29.2	5.364	4.410	+1.06	+3.1	23.7	12.8
Feb. 3	20 33.24	-05 58.6	5.324	4.371	+1.06	+3.6	23.6	13.3
Feb. 13	20 43.84	-05 23.0	5.265	4.332	+1.05	+4.0	23.5	17.2
Feb. 23	20 54.35	-04 42.8	5.187	4.293	+1.03	+4.4	23.4	22.8
Mar. 5	21 04.69	-03 58.8	5.092	4.253	+1.01	+4.7	23.3	29.2
Mar. 15	21 14.79	-03 11.4	4.979	4.214	+0.98	+5.0	23.2	35.9
Mar. 25	21 24.55	-02 21.4	4.850	4.174	+0.93	+5.2	23.0	42.8
Apr. 4	21 33.89	-01 29.5	4.708	4.134	+0.88	+5.3	22.9	49.8
Apr. 14	21 42.73	-00 36.6	4.554	4.094	+0.82	+5.3	22.7	57.0
Apr. 24	21 50.97	+00 16.5	4.389	4.054	+0.75	+5.2	22.6	64.2
May 4	21 58.50	+01 08.7	4.216	4.014	+0.67	+5.0	22.4	71.6
May 14	22 05.22	+01 58.9	4.037	3.973	+0.58	+4.7	22.2	79.2
May 24	22 10.99	+02 45.8	3.855	3.933	+0.47	+4.2	22.0	87.0
June 3	22 15.69	+03 28.0	3.672	3.892	+0.35	+3.6	21.8	94.9
June 13	22 19.18	+04 03.9	3.491	3.852	+0.21	+2.8	21.6	103.2
June 23	22 21.33	+04 31.5	3.315	3.811	+0.07	+1.8	21.4	111.8
July 3	22 22.04	+04 49.1	3.149	3.770	-0.08	+0.5	21.2	120.7
July 13	22 21.22	+04 54.6	2.995	3.730	-0.23	-0.8	21.0	129.9
July 23	22 18.88	+04 46.1	2.858	3.689	-0.37	-2.4	20.8	139.4
Aug. 2	22 15.14	+04 22.4	2.741	3.649	-0.49	-3.9	20.6	149.0
Aug. 12	22 10.25	+03 43.1	2.647	3.608	-0.57	-5.4	20.5	158.2
Aug. 22	22 04.59	+02 49.2	2.580	3.568	-0.59	-6.6	20.3	165.2
Sept. 1	21 58.70	+01 43.3	2.541	3.527	-0.56	-7.4	20.2	165.6
Sept.11	21 53.15	+00 29.2	2.530	3.487	-0.46	-7.7	20.1	158.7
Sept.21	21 48.51	-00 48.3	2.547	3.448	-0.32	-7.6	20.0	149.2
Oct. 1	21 45.28	-02 04.1	2.588	3.408	-0.15	-7.0	19.9	139.1
Oct. 11	21 43.77	-03 14.0	2.650	3.369	+0.04	-6.1	19.9	129.0
Oct. 21	21 44.20	-04 14.5	2.730	3.330	+0.24	-4.9	19.8	119.1
Oct. 31	21 46.60	-05 03.7	2.822	3.291	+0.43	-3.7	19.8	109.6
Nov. 10	21 50.91	-05 40.3	2.922	3.253	+0.61	-2.3	19.8	100.5
Nov. 20	21 57.02	-06 03.8	3.028	3.215	+0.77	-1.1	19.7	91.8
Nov. 30	22 04.74	-06 14.4	3.134	3.178	+0.92	+0.2	19.7	83.5
Dec. 10	22 13.91	-06 12.7	3.239	3.141	+1.04	+1.3	19.7	75.5
Dec. 20	22 24.34	-05 59.4	3.339	3.105	+1.15	+2.4	19.7	67.9
Dec. 30	22 35.86	-05 35.4	3.432	3.070	+1.25	+3.4	19.6	60.5
Jan. 9	22 48.32	-05 01.7	3.517	3.035	+1.33	+4.2	19.6	53.4
Jan. 19	23 01.59	-04 19.4	3.592	3.001	+1.40	+5.0	19.5	46.5
Jan. 29	23 15.55	-03 29.5	3.656	2.968	+1.46	+5.6	19.5	39.9
Feb. 8	23 30.12	-02 33.1	3.708	2.936	+1.51	+6.2	19.4	33.4
Feb. 18	23 45.19	-01 31.5	3.749	2.905	+1.55	+6.6	19.3	27.2
Feb. 28	00 00.72	-00 25.8	3.776	2.875	+1.59	+6.9	19.3	21.1
Mar. 10	00 16.66	+00 42.9	3.792	2.846	+1.63	+7.0	19.2	15.2
Mar. 20	00 32.95	+01 53.3	3.795	2.818	+1.66	+7.1	19.1	9.6
Mar. 30	00 49.56	+03 04.2	3.786	2.792	+1.69	+7.0	19.0	4.3

Comet 228P/LINEAR

Epoch = 2010 July 23.0 TT
T = 2011 Aug. 24.31978 TT
Peri. = 114.86297 e = 0.1765916
Node = 31.06868 2000.0 a = 4.1660000 AU
Incl. = 7.91559 n = 0.11591114
q = 3.4303194 AU P = 8.50 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	02 42.20	+19 55.7	3.435	4.028	+0.02	+0.2	20.0	120.8
Jan. 14	02 42.40	+19 57.7	3.558	4.013	+0.20	+0.9	20.0	110.7
Jan. 24	02 44.38	+20 06.9	3.691	3.998	+0.36	+1.6	20.1	101.0
Feb. 3	02 48.02	+20 22.8	3.828	3.983	+0.52	+2.2	20.1	91.8
Feb. 13	02 53.19	+20 44.8	3.965	3.967	+0.65	+2.7	20.2	83.0
Feb. 23	02 59.74	+21 12.0	4.100	3.952	+0.78	+3.1	20.2	74.5
Mar. 5	03 07.51	+21 43.4	4.229	3.937	+0.89	+3.5	20.3	66.4
Mar. 15	03 16.36	+22 17.9	4.349	3.923	+0.98	+3.7	20.3	58.5
Mar. 25	03 26.17	+22 54.6	4.458	3.908	+1.06	+3.8	20.3	51.0
Apr. 4	03 36.80	+23 32.4	4.555	3.893	+1.14	+3.8	20.3	43.7
Apr. 14	03 48.15	+24 10.4	4.637	3.878	+1.20	+3.7	20.4	36.6
Apr. 24	04 00.13	+24 47.8	4.705	3.863	+1.25	+3.6	20.4	29.6
May 4	04 12.64	+25 23.9	4.757	3.849	+1.30	+3.4	20.4	22.9
May 14	04 25.60	+25 58.0	4.793	3.834	+1.33	+3.2	20.4	16.4
May 24	04 38.92	+26 29.6	4.812	3.820	+1.36	+2.9	20.3	10.2
June 3	04 52.52	+26 58.2	4.815	3.806	+1.38	+2.5	20.3	5.2
June 13	05 06.32	+27 23.7	4.800	3.792	+1.39	+2.2	20.3	5.8
June 23	05 20.25	+27 45.6	4.770	3.778	+1.40	+1.8	20.3	11.1
July 3	05 34.21	+28 04.0	4.723	3.764	+1.39	+1.5	20.2	17.2
July 13	05 48.13	+28 18.9	4.660	3.750	+1.38	+1.1	20.2	23.5
July 23	06 01.90	+28 30.4	4.583	3.736	+1.35	+0.8	20.1	29.9
Aug. 2	06 15.43	+28 38.7	4.491	3.723	+1.32	+0.6	20.0	36.4
Aug. 12	06 28.63	+28 44.4	4.385	3.710	+1.27	+0.4	20.0	43.0
Aug. 22	06 41.36	+28 48.0	4.268	3.697	+1.22	+0.2	19.9	49.8
Sept. 1	06 53.52	+28 50.2	4.139	3.684	+1.14	+0.2	19.8	56.8
Sept.11	07 04.97	+28 51.8	4.001	3.671	+1.06	+0.2	19.7	63.9
Sept.21	07 15.54	+28 53.8	3.855	3.659	+0.95	+0.3	19.6	71.3
Oct. 1	07 25.08	+28 57.2	3.703	3.647	+0.83	+0.6	19.5	79.0
Oct. 11	07 33.41	+29 03.3	3.548	3.635	+0.69	+1.0	19.4	87.0
Oct. 21	07 40.30	+29 13.0	3.392	3.623	+0.53	+1.4	19.2	95.4
Oct. 31	07 45.56	+29 27.4	3.238	3.612	+0.34	+2.0	19.1	104.1
Nov. 10	07 48.95	+29 47.2	3.091	3.601	+0.13	+2.5	19.0	113.4
Nov. 20	07 50.29	+30 12.4	2.954	3.590	-0.08	+3.0	18.9	123.0
Nov. 30	07 49.44	+30 42.4	2.832	3.579	-0.31	+3.3	18.8	133.1
Dec. 10	07 46.37	+31 15.6	2.728	3.569	-0.51	+3.4	18.7	143.6
Dec. 20	07 41.26	+31 49.2	2.647	3.559	-0.68	+3.1	18.6	154.2
Dec. 30	07 34.50	+32 19.9	2.594	3.549	-0.78	+2.4	18.5	164.0
Jan. 9	07 26.69	+32 44.2	2.569	3.540	-0.80	+1.5	18.5	169.3
Jan. 19	07 18.68	+32 59.6	2.574	3.531	-0.74	+0.5	18.5	164.2
Jan. 29	07 11.31	+33 04.9	2.608	3.522	-0.60	-0.5	18.5	154.4
Feb. 8	07 05.33	+33 00.3	2.669	3.514	-0.40	-1.3	18.5	143.8
Feb. 18	07 01.31	+32 47.4	2.753	3.506	-0.18	-1.9	18.6	133.4
Feb. 28	06 59.53	+32 28.0	2.855	3.498	+0.06	-2.4	18.6	123.3
Mar. 10	07 00.09	+32 04.0	2.973	3.491	+0.28	-2.8	18.7	113.6
Mar. 20	07 02.89	+31 36.5	3.100	3.484	+0.48	-3.0	18.8	104.5
Mar. 30	07 07.74	+31 06.3	3.233	3.478	+0.67	-3.3	18.9	95.8

Comet 45P/Honda-Mrkos-Pajdusakova

Epoch = 2010 July 23.0 TT
T = 2011 Sept. 28.80779 TT
Peri. = 326.15289 e = 0.8244976
Node = 89.08592 2000.0 a = 3.0207546 AU
Incl. = 4.25629 n = 0.18772880
q = 0.5301497 AU P = 5.25 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	16 43.08	-20 49.6	5.888	5.074	+0.75	-1.3	.	31.3
Jan. 14	16 50.55	-21 02.7	5.763	5.046	+0.70	-1.1	.	39.8
Jan. 24	16 57.56	-21 13.6	5.618	5.017	+0.64	-0.9	.	48.3
Feb. 3	17 03.96	-21 22.2	5.456	4.987	+0.57	-0.6	.	56.9
Feb. 13	17 09.62	-21 28.6	5.280	4.957	+0.48	-0.4	.	65.7
Feb. 23	17 14.37	-21 33.1	5.092	4.925	+0.37	-0.3	.	74.7
Mar. 5	17 18.05	-21 35.8	4.897	4.892	+0.24	-0.1	.	83.9
Mar. 15	17 20.50	-21 36.8	4.698	4.858	+0.10	0.0	.	93.3
Mar. 25	17 21.54	-21 36.3	4.500	4.824	-0.05	+0.2	.	103.0
Apr. 4	17 21.04	-21 34.4	4.308	4.788	-0.21	+0.3	.	113.0
Apr. 14	17 18.89	-21 31.0	4.125	4.751	-0.38	+0.5	.	123.3
Apr. 24	17 15.04	-21 26.0	3.959	4.713	-0.55	+0.7	.	134.0
May 4	17 09.55	-21 19.1	3.813	4.674	-0.70	+0.9	.	145.0
May 14	17 02.57	-21 10.0	3.691	4.634	-0.82	+1.1	.	156.3
May 24	16 54.40	-20 58.8	3.599	4.593	-0.89	+1.3	.	167.8
June 3	16 45.49	-20 45.5	3.537	4.551	-0.91	+1.5	.	178.4
June 13	16 36.34	-20 30.8	3.508	4.508	-0.88	+1.5	.	168.6
June 23	16 27.54	-20 15.7	3.510	4.463	-0.80	+1.4	.	157.0
July 3	16 19.58	-20 01.6	3.541	4.418	-0.67	+1.2	.	145.6
July 13	16 12.90	-19 49.8	3.598	4.371	-0.51	+0.8	.	134.5
July 23	16 07.78	-19 41.6	3.675	4.323	-0.34	+0.4	.	123.8
Aug. 2	16 04.38	-19 37.6	3.767	4.274	-0.16	-0.1	.	113.4
Aug. 12	16 02.75	-19 38.3	3.870	4.223	+0.01	-0.5	.	103.5
Aug. 22	16 02.86	-19 43.6	3.979	4.172	+0.18	-1.0	.	93.9
Sept. 1	16 04.63	-19 53.4	4.087	4.118	+0.33	-1.4	.	84.7
Sept.11	16 07.93	-20 06.9	4.192	4.064	+0.47	-1.7	.	75.8
Sept.21	16 12.65	-20 23.5	4.289	4.008	+0.60	-1.9	.	67.2
Oct. 1	16 18.65	-20 42.5	4.375	3.951	+0.72	-2.0	.	58.8
Oct. 11	16 25.81	-21 03.0	4.448	3.893	+0.82	-2.1	.	50.7
Oct. 21	16 34.02	-21 24.2	4.504	3.832	+0.91	-2.1	.	42.7
Oct. 31	16 43.16	-21 45.3	4.542	3.771	+1.00	-2.0	.	34.9
Nov. 10	16 53.15	-22 05.6	4.561	3.708	+1.07	-1.9	.	27.2
Nov. 20	17 03.87	-22 24.4	4.559	3.643	+1.14	-1.7	.	19.7
Nov. 30	17 15.24	-22 41.0	4.535	3.577	+1.19	-1.4	.	12.2
Dec. 10	17 27.18	-22 55.0	4.489	3.509	+1.24	-1.1	.	4.8
Dec. 20	17 39.61	-23 05.8	4.422	3.439	+1.28	-0.7	.	2.5
Dec. 30	17 52.43	-23 13.0	4.332	3.367	+1.32	-0.3	.	9.8
Jan. 9	18 05.59	-23 16.3	4.222	3.294	+1.34	+0.1	.	16.9
Jan. 19	18 18.99	-23 15.4	4.092	3.219	+1.36	+0.5	.	24.0
Jan. 29	18 32.57	-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	25.0	45.0
Feb. 28	19 13.65	-22 30.3	3.400	2.896	+1.36	+2.1	24.6	51.9
Mar. 10	19 27.24	-22 09.2	3.193	2.810	+1.34	+2.4	24.3	58.8
Mar. 20	19 40.67	-21 45.0	2.977	2.721	+1.32	+2.7	23.9	65.6
Mar. 30	19 53.89	-21 18.1	2.753	2.630	+1.29	+2.9	23.5	72.4

Comet 48P/Johnson

Epoch = 2010 July 23.0 TT
T = 2011 Sept. 29.08387 TT
Peri. = 207.87574 e = 0.3678060
Node = 117.28030 2000.0 a = 3.6409621 AU
Incl. = 13.66063 n = 0.14186649
q = 2.3017942 AU P = 6.95 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	14 08.72	+00 42.5	4.251	4.092	+0.67	-0.4	22.9	74.0
Jan. 14	14 15.45	+00 38.9	4.075	4.064	+0.57	+0.6	22.8	82.4
Jan. 24	14 21.15	+00 44.6	3.897	4.035	+0.45	+1.5	22.6	91.0
Feb. 3	14 25.66	+01 00.1	3.719	4.006	+0.31	+2.5	22.5	99.8
Feb. 13	14 28.79	+01 25.2	3.546	3.977	+0.16	+3.5	22.3	108.9
Feb. 23	14 30.37	+01 59.8	3.381	3.948	-0.01	+4.3	22.1	118.3
Mar. 5	14 30.28	+02 42.6	3.230	3.918	-0.18	+4.9	22.0	127.9
Mar. 15	14 28.47	+03 32.0	3.095	3.887	-0.35	+5.3	21.8	137.6
Mar. 25	14 24.97	+04 25.4	2.982	3.857	-0.50	+5.4	21.7	147.0
Apr. 4	14 19.98	+05 19.1	2.894	3.825	-0.62	+5.0	21.5	155.4
Apr. 14	14 13.82	+06 09.1	2.832	3.794	-0.69	+4.2	21.4	160.9
Apr. 24	14 06.97	+06 51.2	2.800	3.762	-0.70	+3.0	21.3	160.4
May 4	14 00.00	+07 21.6	2.795	3.730	-0.65	+1.6	21.3	154.4
May 14	13 53.48	+07 38.0	2.817	3.698	-0.56	+0.1	21.2	145.9
May 24	13 47.93	+07 38.9	2.863	3.665	-0.42	-1.4	21.2	136.5
June 3	13 43.74	+07 24.6	2.929	3.632	-0.26	-2.8	21.2	127.1
June 13	13 41.17	+06 56.2	3.011	3.598	-0.08	-4.1	21.1	117.8
June 23	13 40.33	+06 15.2	3.105	3.565	+0.09	-5.1	21.1	108.8
July 3	13 41.23	+05 23.7	3.206	3.531	+0.26	-6.0	21.1	100.2
July 13	13 43.80	+04 23.6	3.311	3.497	+0.41	-6.7	21.1	92.0
July 23	13 47.94	+03 16.5	3.416	3.462	+0.56	-7.2	21.1	84.1
Aug. 2	13 53.52	+02 04.1	3.519	3.428	+0.69	-7.6	21.1	76.5
Aug. 12	14 00.42	+00 47.7	3.618	3.393	+0.81	-7.9	21.1	69.2
Aug. 22	14 08.53	-00 31.4	3.709	3.358	+0.92	-8.1	21.0	62.1
Sept. 1	14 17.71	-01 52.3	3.792	3.322	+1.02	-8.2	21.0	55.3
Sept.11	14 27.89	-03 13.8	3.865	3.287	+1.11	-8.1	20.9	48.6
Sept.21	14 38.98	-04 35.2	3.926	3.252	+1.19	-8.0	20.9	42.1
Oct. 1	14 50.90	-05 55.4	3.975	3.216	+1.27	-7.8	20.8	35.8
Oct. 11	15 03.58	-07 13.8	4.010	3.180	+1.34	-7.6	20.7	29.6
Oct. 21	15 16.98	-08 29.4	4.031	3.145	+1.40	-7.2	20.7	23.6
Oct. 31	15 31.02	-09 41.4	4.039	3.109	+1.46	-6.8	20.6	17.9
Nov. 10	15 45.66	-10 49.3	4.031	3.073	+1.52	-6.3	20.5	12.8
Nov. 20	16 00.85	-11 52.1	4.009	3.038	+1.57	-5.7	20.4	9.1
Nov. 30	16 16.50	-12 49.4	3.973	3.002	+1.61	-5.1	20.2	8.9
Dec. 10	16 32.58	-13 40.3	3.923	2.967	+1.64	-4.4	20.1	12.2
Dec. 20	16 49.01	-14 24.6	3.858	2.932	+1.67	-3.7	20.0	17.1
Dec. 30	17 05.70	-15 01.7	3.781	2.897	+1.69	-3.0	19.8	22.6
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	3.478	2.795	+1.69	-0.7	19.3	40.0
Feb. 8	18 13.46	-16 15.7	3.356	2.762	+1.67	-0.1	19.1	45.9
Feb. 18	18 30.14	-16 16.4	3.226	2.729	+1.64	+0.5	18.9	51.9
Feb. 28	18 46.51	-16 11.1	3.089	2.697	+1.59	+1.0	18.7	57.9
Mar. 10	19 02.45	-16 00.7	2.947	2.666	+1.54	+1.4	18.5	64.0
Mar. 20	19 17.82	-15 46.3	2.800	2.635	+1.47	+1.7	18.3	70.2
Mar. 30	19 32.50	-15 29.4	2.651	2.605	+1.38	+1.8	18.0	76.5

Comet 115P/Maury

Epoch = 2010 July 23.0 TT
T = 2011 Oct. 6.83034 TT
Peri. = 120.03036 e = 0.5213723
Node = 176.60482 2000.0 a = 4.2520299 AU
Incl. = 11.70614 n = 0.11241121
q = 2.0351394 AU P = 8.77 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	11 48.59	-01 17.3	4.329	4.688	+0.06	+0.2	23.7	105.5
Jan. 14	11 49.19	-01 15.0	4.139	4.649	-0.08	+1.2	23.6	115.5
Jan. 24	11 48.39	-01 02.8	3.962	4.609	-0.22	+2.3	23.4	126.0
Feb. 3	11 46.20	-00 40.1	3.801	4.569	-0.35	+3.3	23.3	136.8
Feb. 13	11 42.66	-00 07.3	3.662	4.529	-0.47	+4.2	23.2	147.9
Feb. 23	11 37.95	+00 34.8	3.549	4.488	-0.56	+4.9	23.0	159.3
Mar. 5	11 32.35	+01 24.0	3.465	4.447	-0.61	+5.4	22.9	170.9
Mar. 15	11 26.26	+02 17.7	3.412	4.406	-0.61	+5.5	22.9	176.9
Mar. 25	11 20.13	+03 12.5	3.391	4.363	-0.57	+5.2	22.8	165.5
Apr. 4	11 14.44	+04 04.9	3.400	4.321	-0.48	+4.7	22.8	153.9
Apr. 14	11 09.61	+04 51.8	3.437	4.278	-0.36	+3.9	22.7	142.7
Apr. 24	11 05.97	+05 30.8	3.497	4.234	-0.22	+3.0	22.7	131.9
May 4	11 03.75	+06 00.4	3.575	4.191	-0.07	+1.9	22.7	121.4
May 14	11 03.04	+06 19.7	3.668	4.146	+0.08	+0.9	22.7	111.5
May 24	11 03.87	+06 28.6	3.770	4.101	+0.23	-0.1	22.7	102.0
June 3	11 06.17	+06 27.5	3.876	4.056	+0.37	-1.1	22.7	92.9
June 13	11 09.85	+06 17.0	3.983	4.011	+0.50	-1.9	22.7	84.3
June 23	11 14.81	+05 57.8	4.086	3.965	+0.61	-2.7	22.7	76.0
July 3	11 20.89	+05 30.6	4.184	3.918	+0.71	-3.4	22.7	68.0
July 13	11 28.00	+04 56.3	4.272	3.871	+0.80	-4.1	22.7	60.3
July 23	11 36.02	+04 15.6	4.350	3.824	+0.88	-4.6	22.7	52.9
Aug. 2	11 44.84	+03 29.4	4.415	3.776	+0.95	-5.1	22.6	45.7
Aug. 12	11 54.38	+02 38.2	4.466	3.728	+1.02	-5.5	22.6	38.6
Aug. 22	12 04.56	+01 43.0	4.501	3.680	+1.07	-5.9	22.5	31.8
Sept. 1	12 15.31	+00 44.3	4.521	3.631	+1.13	-6.1	22.5	25.0
Sept.11	12 26.58	-00 17.2	4.524	3.582	+1.17	-6.3	22.4	18.3
Sept.21	12 38.32	-01 20.6	4.510	3.533	+1.22	-6.5	22.3	11.8
Oct. 1	12 50.48	-02 25.3	4.478	3.483	+1.26	-6.5	22.3	5.7
Oct. 11	13 03.03	-03 30.5	4.429	3.433	+1.29	-6.5	22.2	3.3
Oct. 21	13 15.93	-04 35.5	4.364	3.383	+1.32	-6.4	22.1	8.7
Oct. 31	13 29.14	-05 39.3	4.282	3.333	+1.35	-6.2	21.9	15.0
Nov. 10	13 42.63	-06 41.3	4.184	3.282	+1.37	-5.9	21.8	21.4
Nov. 20	13 56.36	-07 40.4	4.071	3.231	+1.39	-5.5	21.7	27.9
Nov. 30	14 10.26	-08 35.8	3.945	3.180	+1.40	-5.1	21.5	34.4
Dec. 10	14 24.30	-09 26.5	3.805	3.130	+1.41	-4.5	21.4	41.0
Dec. 20	14 38.39	-10 11.6	3.655	3.079	+1.41	-3.9	21.2	47.6
Dec. 30	14 52.45	-10 50.2	3.495	3.028	+1.39	-3.1	21.0	54.3
Jan. 9	15 06.40	-11 21.3	3.326	2.977	+1.37	-2.3	20.8	61.0
Jan. 19	15 20.10	-11 44.0	3.152	2.926	+1.33	-1.3	20.6	67.8
Jan. 29	15 33.42	-11 57.5	2.974	2.875	+1.28	-0.3	20.4	74.7
Feb. 8	15 46.20	-12 00.8	2.793	2.825	+1.20	+0.8	20.2	81.7
Feb. 18	15 58.22	-11 53.2	2.612	2.775	+1.11	+1.9	19.9	88.9
Feb. 28	16 09.30	-11 34.3	2.434	2.726	+0.99	+3.1	19.7	96.3
Mar. 10	16 19.16	-11 03.5	2.260	2.677	+0.84	+4.3	19.4	103.8
Mar. 20	16 27.52	-10 20.8	2.093	2.629	+0.66	+5.4	19.1	111.6
Mar. 30	16 34.11	-09 26.4	1.936	2.581	+0.45	+6.5	18.9	119.7

Comet 73P/Schwassmann-Wachmann C

Epoch = 2010 July 23.0 TT
T = 2011 Oct. 16.70449 TT
Peri. = 198.87423 e = 0.6924321
Node = 69.86120 2000.0 a = 3.0629159 AU
Incl. = 11.38053 n = 0.18386602
q = 0.9420546 AU P = 5.36 years

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

0h TT	R.A.(2000)	Decl.	Delta	r	Daily motion		m1	Elong.
2010/11	h m	° ′			m	′		°
Jan. 4	07 07.16	+30 46.1	3.789	4.764	-0.90	+1.8	24.1	171.7
Jan. 14	06 58.12	+31 04.5	3.776	4.738	-0.87	+1.2	24.0	166.3
Jan. 24	06 49.42	+31 16.2	3.796	4.710	-0.78	+0.5	24.0	155.5
Feb. 3	06 41.66	+31 21.2	3.847	4.682	-0.64	-0.1	24.0	144.2
Feb. 13	06 35.30	+31 20.5	3.923	4.653	-0.46	-0.5	24.0	133.0
Feb. 23	06 30.66	+31 15.2	4.020	4.623	-0.28	-0.8	24.0	122.1
Mar. 5	06 27.88	+31 06.9	4.132	4.592	-0.09	-1.0	24.0	111.6
Mar. 15	06 26.99	+30 56.6	4.255	4.560	+0.09	-1.1	24.0	101.6
Mar. 25	06 27.91	+30 45.1	4.382	4.527	+0.26	-1.2	24.0	91.9
Apr. 4	06 30.50	+30 33.1	4.509	4.493	+0.41	-1.3	24.1	82.7
Apr. 14	06 34.60	+30 20.5	4.632	4.458	+0.54	-1.3	24.1	73.8
Apr. 24	06 40.04	+30 07.4	4.747	4.423	+0.66	-1.4	24.1	65.3
May 4	06 46.63	+29 53.7	4.850	4.386	+0.76	-1.5	24.1	57.1
May 14	06 54.23	+29 39.0	4.940	4.348	+0.84	-1.6	24.0	49.2
May 24	07 02.68	+29 23.1	5.015	4.310	+0.92	-1.7	24.0	41.6
June 3	07 11.83	+29 05.9	5.072	4.270	+0.97	-1.9	24.0	34.1
June 13	07 21.58	+28 46.9	5.110	4.229	+1.02	-2.1	23.9	26.9
June 23	07 31.80	+28 26.3	5.128	4.188	+1.06	-2.2	23.9	20.0
July 3	07 42.40	+28 03.8	5.127	4.145	+1.09	-2.4	23.8	13.4
July 13	07 53.29	+27 39.5	5.105	4.101	+1.11	-2.6	23.7	8.1
July 23	08 04.38	+27 13.5	5.062	4.056	+1.12	-2.8	23.6	7.1
Aug. 2	08 15.59	+26 45.9	4.999	4.010	+1.13	-2.9	23.5	11.6
Aug. 12	08 26.84	+26 17.2	4.916	3.963	+1.12	-3.0	23.4	17.7
Aug. 22	08 38.06	+25 47.6	4.814	3.915	+1.11	-3.0	23.3	24.4
Sept. 1	08 49.17	+25 17.7	4.693	3.866	+1.09	-3.0	23.2	31.3
Sept.11	09 00.10	+24 48.2	4.554	3.815	+1.07	-2.8	23.0	38.3
Sept.21	09 10.75	+24 19.7	4.399	3.763	+1.03	-2.6	22.9	45.4
Oct. 1	09 21.03	+23 53.3	4.230	3.711	+0.98	-2.3	22.7	52.8
Oct. 11	09 30.85	+23 30.0	4.047	3.656	+0.92	-1.9	22.5	60.3
Oct. 21	09 40.06	+23 11.1	3.854	3.601	+0.85	-1.3	22.3	68.0
Oct. 31	09 48.54	+22 58.0	3.653	3.544	+0.76	-0.6	22.1	75.9
Nov. 10	09 56.09	+22 52.4	3.445	3.487	+0.64	+0.4	21.8	84.2
Nov. 20	10 02.52	+22 56.1	3.235	3.427	+0.51	+1.5	21.6	92.7
Nov. 30	10 07.58	+23 11.0	3.026	3.367	+0.34	+2.8	21.3	101.6
Dec. 10	10 10.98	+23 38.9	2.822	3.305	+0.14	+4.2	21.0	111.0
Dec. 20	10 12.39	+24 21.2	2.626	3.241	-0.09	+5.7	20.8	120.7
Dec. 30	10 11.48	+25 18.6	2.444	3.176	-0.36	+7.2	20.5	130.9
Jan. 9	10 07.93	+26 30.1	2.280	3.110	-0.64	+8.3	20.2	141.4
Jan. 19	10 01.55	+27 52.7	2.139	3.042	-0.92	+8.8	19.9	151.8
Jan. 29	09 52.40	+29 20.3	2.025	2.973	-1.15	+8.4	19.6	160.8
Feb. 8	09 40.88	+30 44.8	1.941	2.902	-1.30	+7.2	19.4	164.0
Feb. 18	09 27.91	+31 56.7	1.888	2.830	-1.32	+5.2	19.2	158.3
Feb. 28	09 14.75	+32 48.6	1.864	2.756	-1.20	+2.8	19.0	148.2
Mar. 10	09 02.77	+33 16.4	1.866	2.680	-0.96	+0.4	18.8	137.1
Mar. 20	08 53.21	+33 20.2	1.890	2.603	-0.64	-1.7	18.6	126.0
Mar. 30	08 46.81	+33 03.0	1.928	2.524	-0.29	-3.4	18.5	115.5

Comet P/1996 R2 (Lagerkvist)

Epoch = 2010 July 23.0 TT
T = 2011 Oct. 17.40262 TT
Peri. = 334.06381 e = 0.3097099
Node = 40.19179 2000.0 a = 3.7839643 AU
Incl. = 2.60405 n = 0.13390091
q = 2.6120331 AU P = 7.36 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		Mag.	Mot./PA ″/ °	Elong. °
Jan. 4	17 10.67	-24 07.3	4.949	4.076	-0.40	+0.7	.	16.5/ 96	24.6
Jan. 14	17 22.65	-24 22.6	4.851	4.051	-0.42	+0.6	.	16.0/ 95	32.1
Jan. 24	17 34.36	-24 34.8	4.735	4.026	-0.43	+0.5	25.0	15.5/ 94	39.6
Feb. 3	17 45.68	-24 44.0	4.605	4.001	-0.45	+0.3	24.9	14.7/ 93	47.2
Feb. 13	17 56.49	-24 50.6	4.461	3.975	-0.47	+0.2	24.7	13.8/ 92	54.8
Feb. 23	18 06.64	-24 55.0	4.305	3.949	-0.49	+0.1	24.6	12.7/ 92	62.6
Mar. 5	18 15.96	-24 57.8	4.140	3.923	-0.52	0.0	24.5	11.4/ 91	70.5
Mar. 15	18 24.32	-24 59.7	3.968	3.897	-0.55	-0.1	24.3	9.8/ 91	78.6
Mar. 25	18 31.53	-25 01.4	3.793	3.870	-0.58	-0.2	24.2	8.0/ 92	87.0
Apr. 4	18 37.40	-25 03.7	3.616	3.843	-0.61	-0.3	24.0	5.9/ 94	95.5
Apr. 14	18 41.77	-25 07.3	3.442	3.816	-0.64	-0.4	23.9	3.7/ 99	104.3
Apr. 24	18 44.43	-25 12.8	3.274	3.789	-0.68	-0.5	23.7	1.4/125	113.5
May 4	18 45.25	-25 20.5	3.116	3.761	-0.72	-0.5	23.5	1.8/237	123.0
May 14	18 44.12	-25 30.3	2.971	3.734	-0.76	-0.5	23.4	4.4/254	133.0
May 24	18 41.02	-25 41.9	2.845	3.706	-0.80	-0.5	23.2	6.8/259	143.3
June 3	18 36.08	-25 54.2	2.740	3.678	-0.83	-0.4	23.1	8.8/262	153.9
June 13	18 29.60	-26 06.0	2.660	3.650	-0.85	-0.3	23.0	10.2/264	164.8
June 23	18 22.05	-26 15.7	2.608	3.622	-0.86	-0.1	22.9	10.7/266	175.3
July 3	18 14.08	-26 22.4	2.584	3.593	-0.86	+0.1	22.8	10.3/268	171.8
July 13	18 06.40	-26 25.5	2.589	3.565	-0.85	+0.3	22.7	9.0/270	160.8
July 23	17 59.72	-26 25.3	2.620	3.536	-0.83	+0.4	22.7	6.9/272	149.9
Aug. 2	17 54.59	-26 22.5	2.676	3.507	-0.80	+0.5	22.7	4.3/275	139.2
Aug. 12	17 51.40	-26 18.3	2.751	3.479	-0.77	+0.6	22.7	1.5/289	129.0
Aug. 22	17 50.36	-26 13.5	2.842	3.450	-0.73	+0.6	22.7	1.6/ 73	119.1
Sept. 1	17 51.52	-26 08.7	2.945	3.421	-0.70	+0.5	22.7	4.5/ 84	109.8
Sept.11	17 54.82	-26 04.0	3.056	3.392	-0.68	+0.4	22.7	7.2/ 86	100.8
Sept.21	18 00.12	-25 59.2	3.171	3.364	-0.66	+0.3	22.7	9.6/ 87	92.3
Oct. 1	18 07.25	-25 53.6	3.286	3.335	-0.64	+0.2	22.7	11.9/ 87	84.1
Oct. 11	18 16.02	-25 46.6	3.399	3.306	-0.63	0.0	22.7	13.9/ 87	76.2
Oct. 21	18 26.26	-25 37.3	3.507	3.278	-0.62	-0.1	22.7	15.6/ 86	68.6
Oct. 31	18 37.76	-25 24.8	3.608	3.249	-0.61	-0.3	22.7	17.2/ 85	61.2
Nov. 10	18 50.36	-25 08.3	3.700	3.221	-0.60	-0.5	22.7	18.5/ 84	54.1
Nov. 20	19 03.90	-24 47.1	3.782	3.193	-0.60	-0.8	22.7	19.7/ 83	47.1
Nov. 30	19 18.22	-24 20.5	3.852	3.165	-0.60	-1.0	22.7	20.8/ 82	40.3
Dec. 10	19 33.19	-23 48.1	3.909	3.137	-0.60	-1.2	22.6	21.6/ 81	33.6
Dec. 20	19 48.67	-23 09.6	3.953	3.110	-0.60	-1.5	22.6	22.4/ 79	27.1
Dec. 30	20 04.53	-22 24.6	3.983	3.083	-0.61	-1.7	22.6	23.0/ 78	20.7
Jan. 9	20 20.68	-21 33.3	3.999	3.056	-0.61	-2.0	22.5	23.6/ 77	14.3
Jan. 19	20 37.00	-20 35.7	4.000	3.029	-0.61	-2.2	22.4	24.0/ 75	8.2
Jan. 29	20 53.41	-19 32.2	3.987	3.003	-0.62	-2.5	22.4	24.3/ 74	2.7
Feb. 8	21 09.84	-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	2.905	-0.65	-3.6	22.0	24.7/ 70	22.3
Mar. 20	22 14.42	-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	3.633	2.859	-0.67	-4.1	21.8	24.3/ 69	33.9

Comet 73P/Schwassmann-Wachmann B

Epoch = 2010 July 23.0 TT
T = 2011 Oct. 17.45400 TT
Peri. = 198.86219 e = 0.6924338
Node = 69.85746 2000.0 a = 3.0626923 AU
Incl. = 11.38149 n = 0.18388616
q = 0.9419805 AU P = 5.36 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	07 06.81	+30 46.0	3.791	4.766	-0.90	+1.8	.	171.8
Jan. 14	06 57.77	+31 04.2	3.778	4.739	-0.87	+1.2	.	166.2
Jan. 24	06 49.08	+31 15.8	3.799	4.712	-0.77	+0.5	.	155.5
Feb. 3	06 41.33	+31 20.8	3.849	4.684	-0.64	-0.1	.	144.2
Feb. 13	06 34.98	+31 20.0	3.925	4.655	-0.46	-0.5	.	133.0
Feb. 23	06 30.35	+31 14.7	4.023	4.625	-0.28	-0.8	.	122.1
Mar. 5	06 27.59	+31 06.4	4.135	4.594	-0.09	-1.0	.	111.6
Mar. 15	06 26.70	+30 56.1	4.258	4.562	+0.09	-1.1	.	101.5
Mar. 25	06 27.64	+30 44.6	4.385	4.529	+0.26	-1.2	.	91.9
Apr. 4	06 30.24	+30 32.6	4.513	4.495	+0.41	-1.3	.	82.6
Apr. 14	06 34.34	+30 20.1	4.636	4.461	+0.54	-1.3	.	73.8
Apr. 24	06 39.79	+30 07.1	4.750	4.425	+0.66	-1.4	.	65.3
May 4	06 46.39	+29 53.4	4.854	4.389	+0.76	-1.5	.	57.1
May 14	06 53.98	+29 38.8	4.944	4.351	+0.84	-1.6	.	49.2
May 24	07 02.43	+29 23.0	5.018	4.312	+0.92	-1.7	.	41.5
June 3	07 11.58	+29 05.8	5.075	4.273	+0.97	-1.9	.	34.1
June 13	07 21.32	+28 47.0	5.113	4.232	+1.02	-2.1	.	26.9
June 23	07 31.55	+28 26.4	5.132	4.191	+1.06	-2.2	.	19.9
July 3	07 42.14	+28 04.0	5.130	4.148	+1.09	-2.4	.	13.4
July 13	07 53.03	+27 39.8	5.108	4.104	+1.11	-2.6	.	8.1
July 23	08 04.11	+27 13.9	5.066	4.060	+1.12	-2.7	.	7.1
Aug. 2	08 15.31	+26 46.4	5.003	4.014	+1.12	-2.9	.	11.6
Aug. 12	08 26.55	+26 17.8	4.919	3.967	+1.12	-2.9	.	17.8
Aug. 22	08 37.76	+25 48.4	4.817	3.919	+1.11	-3.0	.	24.5
Sept. 1	08 48.86	+25 18.6	4.696	3.869	+1.09	-2.9	.	31.3
Sept.11	08 59.77	+24 49.2	4.557	3.819	+1.06	-2.8	.	38.4
Sept.21	09 10.40	+24 20.9	4.402	3.767	+1.03	-2.6	.	45.5
Oct. 1	09 20.67	+23 54.6	4.233	3.715	+0.98	-2.3	.	52.8
Oct. 11	09 30.46	+23 31.5	4.050	3.661	+0.92	-1.9	.	60.4
Oct. 21	09 39.65	+23 12.8	3.857	3.605	+0.84	-1.3	.	68.1
Oct. 31	09 48.10	+22 59.9	3.655	3.549	+0.75	-0.5	24.9	76.0
Nov. 10	09 55.62	+22 54.5	3.448	3.491	+0.64	+0.4	24.7	84.3
Nov. 20	10 02.01	+22 58.5	3.238	3.432	+0.50	+1.5	24.4	92.8
Nov. 30	10 07.03	+23 13.6	3.029	3.371	+0.34	+2.8	24.1	101.8
Dec. 10	10 10.38	+23 41.7	2.825	3.309	+0.14	+4.3	23.9	111.1
Dec. 20	10 11.74	+24 24.2	2.629	3.246	-0.10	+5.7	23.5	120.9
Dec. 30	10 10.77	+25 21.7	2.448	3.181	-0.36	+7.2	23.2	131.1
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 39.99	+30 47.1	1.947	2.908	-1.30	+7.1	22.1	164.0
Feb. 18	09 27.02	+31 58.5	1.894	2.835	-1.31	+5.1	21.8	158.2
Feb. 28	09 13.89	+32 49.9	1.871	2.761	-1.19	+2.7	21.6	148.1
Mar. 10	09 01.96	+33 17.1	1.874	2.686	-0.95	+0.3	21.4	136.9
Mar. 20	08 52.46	+33 20.5	1.897	2.609	-0.63	-1.7	21.2	125.9
Mar. 30	08 46.12	+33 03.2	1.936	2.530	-0.28	-3.4	21.0	115.3

Comet 49P/Arend-Rigaux

Epoch = 2010 July 23.0 TT
T = 2011 Oct. 19.09413 TT
Peri. = 332.84263 e = 0.6007087
Node = 118.93093 2000.0 a = 3.5602016 AU
Incl. = 19.06872 n = 0.14672097
q = 1.4215575 AU P = 6.72 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	20 01.76	-21 10.2	5.708	4.764	+0.95	+1.8	23.0	14.8
Jan. 14	20 11.25	-20 52.5	5.705	4.730	+0.97	+2.0	23.0	6.9
Jan. 24	20 20.91	-20 32.6	5.679	4.695	+0.97	+2.2	23.0	1.5
Feb. 3	20 30.62	-20 10.7	5.631	4.660	+0.97	+2.3	22.9	9.0
Feb. 13	20 40.31	-19 47.5	5.560	4.624	+0.96	+2.4	22.8	16.8
Feb. 23	20 49.88	-19 23.3	5.468	4.587	+0.93	+2.4	22.8	24.6
Mar. 5	20 59.23	-18 59.0	5.355	4.549	+0.90	+2.4	22.7	32.4
Mar. 15	21 08.28	-18 35.3	5.224	4.511	+0.86	+2.2	22.6	40.2
Mar. 25	21 16.92	-18 12.9	5.076	4.472	+0.81	+2.0	22.5	48.1
Apr. 4	21 25.07	-17 52.9	4.913	4.432	+0.75	+1.7	22.4	56.0
Apr. 14	21 32.61	-17 36.1	4.737	4.391	+0.68	+1.2	22.3	64.0
Apr. 24	21 39.44	-17 23.7	4.551	4.350	+0.60	+0.7	22.2	72.2
May 4	21 45.43	-17 16.8	4.358	4.308	+0.50	0.0	22.0	80.5
May 14	21 50.44	-17 16.7	4.161	4.265	+0.39	-0.8	21.9	89.0
May 24	21 54.33	-17 24.5	3.963	4.222	+0.26	-1.7	21.7	97.8
June 3	21 56.94	-17 41.4	3.769	4.177	+0.12	-2.7	21.6	106.9
June 13	21 58.11	-18 08.3	3.581	4.132	-0.04	-3.7	21.4	116.3
June 23	21 57.70	-18 45.7	3.405	4.086	-0.21	-4.8	21.3	126.0
July 3	21 55.60	-19 33.5	3.245	4.040	-0.38	-5.7	21.1	136.1
July 13	21 51.77	-20 30.7	3.104	3.992	-0.55	-6.4	21.0	146.6
July 23	21 46.30	-21 35.1	2.988	3.944	-0.69	-6.8	20.8	157.1
Aug. 2	21 39.43	-22 43.3	2.900	3.895	-0.79	-6.8	20.7	166.9
Aug. 12	21 31.53	-23 51.2	2.841	3.845	-0.83	-6.3	20.6	171.2
Aug. 22	21 23.20	-24 54.4	2.812	3.795	-0.81	-5.5	20.6	163.9
Sept. 1	21 15.09	-25 48.9	2.813	3.743	-0.72	-4.3	20.5	153.4
Sept.11	21 07.86	-26 32.1	2.841	3.691	-0.58	-3.1	20.5	142.5
Sept.21	21 02.10	-27 02.7	2.892	3.638	-0.39	-1.8	20.4	131.6
Oct. 1	20 58.22	-27 20.8	2.962	3.584	-0.18	-0.6	20.4	121.1
Oct. 11	20 56.45	-27 27.1	3.045	3.529	+0.04	+0.4	20.4	111.1
Oct. 21	20 56.87	-27 22.8	3.136	3.473	+0.25	+1.4	20.4	101.4
Oct. 31	20 59.41	-27 09.2	3.231	3.417	+0.45	+2.2	20.4	92.2
Nov. 10	21 03.96	-26 47.2	3.326	3.359	+0.64	+3.0	20.4	83.4
Nov. 20	21 10.33	-26 17.7	3.416	3.301	+0.80	+3.6	20.4	75.0
Nov. 30	21 18.31	-25 41.2	3.499	3.242	+0.94	+4.3	20.4	66.9
Dec. 10	21 27.74	-24 58.1	3.572	3.182	+1.07	+4.9	20.4	59.2
Dec. 20	21 38.41	-24 08.8	3.633	3.121	+1.18	+5.5	20.3	51.8
Dec. 30	21 50.17	-23 13.6	3.680	3.060	+1.27	+6.1	20.3	44.6
Jan. 9	22 02.87	-22 12.7	3.713	2.997	+1.35	+6.6	20.2	37.8
Jan. 19	22 16.40	-21 06.3	3.729	2.934	+1.43	+7.2	20.1	31.4
Jan. 29	22 30.65	-19 54.8	3.730	2.870	+1.49	+7.6	20.0	25.3
Feb. 8	22 45.56	-18 38.4	3.715	2.806	+1.55	+8.1	19.9	19.7
Feb. 18	23 01.05	-17 17.6	3.684	2.740	+1.60	+8.5	19.8	14.9
Feb. 28	23 17.09	-15 52.7	3.638	2.674	+1.66	+8.9	19.7	11.5
Mar. 10	23 33.67	-14 24.1	3.577	2.608	+1.71	+9.2	19.5	10.6
Mar. 20	23 50.77	-12 52.5	3.503	2.540	+1.76	+9.4	19.4	12.5
Mar. 30	00 08.41	-11 18.2	3.418	2.473	+1.82	+9.6	19.2	15.9

Comet 41P/Tuttle-Giacobini-Kresak

Epoch = 2010 July 23.0 TT
T = 2011 Nov. 8.96629 TT
Peri. = 62.16276 e = 0.6595886
Node = 141.07238 2000.0 a = 3.0835417 AU
Incl. = 9.22420 n = 0.18202428
q = 1.0496727 AU P = 5.41 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	01 57.21	+01 35.1	4.403	4.741	+0.02	+2.2	.	104.2
Jan. 14	01 57.37	+01 56.9	4.538	4.716	+0.15	+2.9	.	94.4
Jan. 24	01 58.90	+02 25.4	4.676	4.691	+0.28	+3.4	.	84.8
Feb. 3	02 01.70	+02 59.5	4.810	4.664	+0.39	+3.9	.	75.7
Feb. 13	02 05.64	+03 38.1	4.936	4.637	+0.50	+4.2	.	66.8
Feb. 23	02 10.60	+04 20.1	5.053	4.609	+0.59	+4.4	.	58.2
Mar. 5	02 16.46	+05 04.4	5.155	4.580	+0.66	+4.6	.	49.9
Mar. 15	02 23.09	+05 50.1	5.241	4.550	+0.73	+4.6	.	41.9
Mar. 25	02 30.40	+06 36.4	5.310	4.519	+0.79	+4.6	.	34.1
Apr. 4	02 38.27	+07 22.5	5.359	4.487	+0.83	+4.5	.	26.6
Apr. 14	02 46.61	+08 07.7	5.388	4.455	+0.87	+4.4	.	19.4
Apr. 24	02 55.34	+08 51.5	5.396	4.421	+0.90	+4.2	.	12.9
May 4	03 04.38	+09 33.2	5.383	4.387	+0.93	+3.9	.	8.1
May 14	03 13.64	+10 12.4	5.348	4.352	+0.94	+3.6	.	8.6
May 24	03 23.06	+10 48.6	5.293	4.315	+0.95	+3.3	.	13.6
June 3	03 32.54	+11 21.3	5.217	4.278	+0.95	+2.9	.	20.0
June 13	03 42.02	+11 50.2	5.122	4.240	+0.94	+2.5	.	26.8
June 23	03 51.41	+12 14.9	5.008	4.201	+0.92	+2.0	.	33.8
July 3	04 00.60	+12 35.2	4.876	4.161	+0.89	+1.6	.	40.8
July 13	04 09.50	+12 50.8	4.729	4.119	+0.85	+1.1	.	48.1
July 23	04 17.99	+13 01.4	4.567	4.077	+0.80	+0.6	.	55.4
Aug. 2	04 25.95	+13 07.0	4.394	4.034	+0.73	0.0	.	62.9
Aug. 12	04 33.22	+13 07.3	4.210	3.990	+0.64	−0.5	.	70.7
Aug. 22	04 39.64	+13 02.3	4.018	3.945	+0.54	−1.0	.	78.6
Sept. 1	04 45.02	+12 52.1	3.821	3.899	+0.41	−1.5	.	86.9
Sept.11	04 49.15	+12 36.6	3.622	3.851	+0.27	−2.0	.	95.5
Sept.21	04 51.80	+12 16.1	3.426	3.803	+0.10	−2.5	.	104.5
Oct. 1	04 52.76	+11 51.0	3.235	3.753	−0.10	−2.9	.	113.9
Oct. 11	04 51.81	+11 21.8	3.054	3.702	−0.30	−3.2	.	123.7
Oct. 21	04 48.79	+10 49.3	2.888	3.651	−0.51	−3.4	.	134.0
Oct. 31	04 43.68	+10 14.9	2.741	3.598	−0.71	−3.5	.	144.7
Nov. 10	04 36.57	+09 40.2	2.619	3.543	−0.88	−3.3	.	155.3
Nov. 20	04 27.82	+09 07.6	2.526	3.488	−0.98	−2.8	.	164.5
Nov. 30	04 18.00	+08 39.6	2.463	3.431	−1.01	−2.1	.	167.0
Dec. 10	04 07.88	+08 18.9	2.432	3.374	−0.96	−1.1	.	159.8
Dec. 20	03 58.30	+08 07.7	2.432	3.314	−0.83	0.0	.	149.1
Dec. 30	03 50.04	+08 07.4	2.458	3.254	−0.64	+1.1	.	137.7
Jan. 9	03 43.68	+08 18.6	2.507	3.192	−0.41	+2.2	.	126.6
Jan. 19	03 39.60	+08 40.7	2.573	3.129	−0.17	+3.2	.	115.8
Jan. 29	03 37.93	+09 12.5	2.650	3.065	+0.07	+4.0	.	105.6
Feb. 8	03 38.66	+09 52.6	2.732	2.999	+0.30	+4.6	.	95.9
Feb. 18	03 41.70	+10 39.0	2.815	2.932	+0.52	+5.1	.	86.9
Feb. 28	03 46.86	+11 30.3	2.895	2.864	+0.71	+5.4	.	78.3
Mar. 10	03 53.98	+12 24.7	2.968	2.794	+0.89	+5.6	.	70.3
Mar. 20	04 02.89	+13 20.7	3.032	2.723	+1.06	+5.6	24.9	62.7
Mar. 30	04 13.45	+14 16.9	3.084	2.650	+1.21	+5.5	24.6	55.5

Comet P/2004 H3 (Larsen)

Epoch = 2010 July 23.0 TT
T = 2011 Nov. 23.48181 TT
Peri. = 346.56850 e = 0.3723442
Node = 220.95675 2000.0 a = 3.9023301 AU
Incl. = 25.12796 n = 0.12785511
q = 2.4493201 AU P = 7.71 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		Mag.	Mot./PA ″ °	Elong. °
Jan. 4	04 42.02	+03 00.9	3.545	4.358	-0.43	+2.0	24.9	7.0/267	141.6
Jan. 14	04 37.38	+02 57.2	3.615	4.330	-0.42	+1.9	24.9	4.8/277	131.6
Jan. 24	04 34.20	+03 02.9	3.704	4.302	-0.40	+1.9	24.9	2.7/300	121.6
Feb. 3	04 32.63	+03 16.5	3.809	4.274	-0.39	+1.8	24.9	2.0/ 3	111.8
Feb. 13	04 32.70	+03 36.3	3.923	4.245	-0.37	+1.8	25.0	3.5/ 46	102.3
Feb. 23	04 34.38	+04 00.6	4.043	4.216	-0.36	+1.7	25.0	5.5/ 61	93.2
Mar. 5	04 37.59	+04 27.6	4.163	4.187	-0.35	+1.6	25.0	7.4/ 68	84.5
Mar. 15	04 42.20	+04 55.8	4.280	4.157	-0.35	+1.6	25.0	9.2/ 72	76.2
Mar. 25	04 48.07	+05 23.8	4.392	4.127	-0.34	+1.5	25.0	10.8/ 76	68.2
Apr. 4	04 55.06	+05 50.4	4.494	4.096	-0.34	+1.5	25.0	12.1/ 78	60.6
Apr. 14	05 03.04	+06 14.5	4.585	4.065	-0.34	+1.4	25.0	13.3/ 81	53.3
Apr. 24	05 11.88	+06 35.1	4.663	4.034	-0.34	+1.4	24.9	14.4/ 83	46.3
May 4	05 21.46	+06 51.6	4.726	4.003	-0.34	+1.4	24.9	15.3/ 85	39.7
May 14	05 31.68	+07 03.2	4.775	3.971	-0.35	+1.4	24.9	16.0/ 88	33.5
May 24	05 42.42	+07 09.3	4.807	3.939	-0.35	+1.4	24.8	16.6/ 90	27.8
June 3	05 53.60	+07 09.4	4.822	3.907	-0.36	+1.4	24.8	17.2/ 92	22.8
June 13	06 05.12	+07 03.2	4.821	3.874	-0.37	+1.4	24.7	17.6/ 94	18.9
June 23	06 16.91	+06 50.2	4.803	3.842	-0.38	+1.5	24.6	17.9/ 96	16.8
July 3	06 28.86	+06 30.2	4.769	3.809	-0.39	+1.5	24.6	18.2/ 98	17.1
July 13	06 40.92	+06 03.0	4.718	3.775	-0.40	+1.6	24.5	18.3/101	19.5
July 23	06 53.00	+05 28.3	4.652	3.742	-0.41	+1.6	24.4	18.4/103	23.5
Aug. 2	07 05.00	+04 46.2	4.570	3.708	-0.43	+1.7	24.3	18.4/106	28.3
Aug. 12	07 16.87	+03 56.6	4.475	3.674	-0.44	+1.8	24.1	18.3/108	33.7
Aug. 22	07 28.50	+02 59.5	4.366	3.640	-0.46	+1.9	24.0	18.1/111	39.3
Sept. 1	07 39.80	+01 55.0	4.244	3.606	-0.48	+2.0	23.9	17.8/114	45.3
Sept.11	07 50.69	+00 43.3	4.112	3.571	-0.50	+2.1	23.7	17.4/117	51.4
Sept.21	08 01.03	-00 35.2	3.970	3.537	-0.53	+2.2	23.6	16.8/120	57.7
Oct. 1	08 10.72	-02 00.2	3.820	3.502	-0.55	+2.3	23.4	16.1/124	64.2
Oct. 11	08 19.63	-03 31.2	3.663	3.467	-0.59	+2.4	23.3	15.3/129	70.9
Oct. 21	08 27.58	-05 07.2	3.503	3.433	-0.62	+2.5	23.1	14.3/135	77.8
Oct. 31	08 34.41	-06 47.3	3.340	3.398	-0.66	+2.6	22.9	13.2/141	84.8
Nov. 10	08 39.94	-08 30.1	3.177	3.363	-0.70	+2.8	22.7	11.9/150	92.1
Nov. 20	08 43.95	-10 13.4	3.017	3.328	-0.75	+2.9	22.5	10.7/162	99.6
Nov. 30	08 46.26	-11 54.9	2.863	3.293	-0.80	+3.1	22.3	9.6/176	107.2
Dec. 10	08 46.68	-13 31.2	2.718	3.258	-0.86	+3.4	22.1	9.0/195	115.0
Dec. 20	08 45.09	-14 58.1	2.585	3.223	-0.91	+3.7	22.0	8.9/215	122.6
Dec. 30	08 41.52	-16 10.7	2.467	3.189	-0.96	+4.0	21.8	9.4/235	129.9
Jan. 9	08 36.12	-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 35.4	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 07.43	-16 18.6	2.196	3.019	-1.02	+5.5	21.1	10.3/314	139.7
Feb. 28	08 02.28	-15 07.3	2.211	2.986	-0.99	+5.5	21.0	9.6/332	134.1
Mar. 10	07 59.24	-13 42.2	2.245	2.953	-0.95	+5.3	21.0	9.2/354	127.2
Mar. 20	07 58.60	-12 10.4	2.295	2.921	-0.91	+5.0	21.0	9.6/ 16	119.8
Mar. 30	08 00.42	-10 38.3	2.359	2.889	-0.88	+4.6	20.9	10.7/ 35	112.3

Comet 5D/Brorsen [Orbit 2]

Epoch = 2010 July 23.0 TT
T = 2011 Nov. 26.44312 TT
Peri. = 22.84782 e = 0.8275772
Node = 93.80676 2000.0 a = 3.1594253 AU
Incl. = 15.85811 n = 0.17550599
q = 0.5447570 AU P = 5.62 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		Mag.	Mot./PA ″/ °	Elong. °
Jan. 4	20 26.61	-26 44.8	6.265	5.355	-0.12	0.0	20.9	10.9/ 77	20.5
Jan. 14	20 34.48	-26 18.7	6.283	5.329	-0.13	0.0	20.9	11.2/ 77	13.0
Jan. 24	20 42.55	-25 52.4	6.276	5.302	-0.13	-0.1	20.8	11.3/ 77	7.8
Feb. 3	20 50.69	-25 26.0	6.244	5.274	-0.13	-0.1	20.8	11.3/ 77	9.4
Feb. 13	20 58.82	-25 00.1	6.188	5.246	-0.14	-0.2	20.8	11.2/ 78	15.9
Feb. 23	21 06.83	-24 35.3	6.109	5.216	-0.14	-0.2	20.7	10.9/ 78	23.4
Mar. 5	21 14.62	-24 12.0	6.007	5.186	-0.15	-0.3	20.6	10.5/ 79	31.3
Mar. 15	21 22.09	-23 51.0	5.884	5.154	-0.15	-0.3	20.6	9.9/ 80	39.4
Mar. 25	21 29.14	-23 33.0	5.742	5.122	-0.16	-0.4	20.5	9.1/ 81	47.5
Apr. 4	21 35.67	-23 18.8	5.584	5.089	-0.17	-0.4	20.4	8.2/ 84	55.8
Apr. 14	21 41.57	-23 09.2	5.411	5.055	-0.18	-0.4	20.3	7.1/ 87	64.2
Apr. 24	21 46.71	-23 05.2	5.227	5.020	-0.19	-0.5	20.2	5.9/ 92	72.7
May 4	21 50.97	-23 07.5	5.035	4.984	-0.20	-0.5	20.1	4.6/102	81.4
May 14	21 54.22	-23 17.1	4.838	4.947	-0.21	-0.6	20.0	3.4/122	90.3
May 24	21 56.30	-23 34.5	4.642	4.909	-0.22	-0.6	19.8	2.8/158	99.4
June 3	21 57.07	-24 00.4	4.449	4.871	-0.23	-0.6	19.7	3.6/195	108.8
June 13	21 56.40	-24 34.7	4.264	4.831	-0.25	-0.6	19.6	5.2/216	118.4
June 23	21 54.15	-25 17.1	4.093	4.790	-0.26	-0.6	19.5	7.2/227	128.3
July 3	21 50.28	-26 06.4	3.939	4.748	-0.27	-0.6	19.3	9.1/233	138.5
July 13	21 44.79	-27 00.5	3.808	4.705	-0.27	-0.5	19.2	10.8/238	148.6
July 23	21 37.83	-27 56.6	3.703	4.662	-0.28	-0.4	19.1	12.1/243	158.2
Aug. 2	21 29.66	-28 51.1	3.627	4.617	-0.28	-0.3	19.0	12.7/247	165.4
Aug. 12	21 20.72	-29 40.4	3.583	4.571	-0.27	-0.1	19.0	12.6/251	165.4
Aug. 22	21 11.54	-30 21.3	3.570	4.523	-0.26	0.0	18.9	11.8/255	158.0
Sept. 1	21 02.72	-30 51.5	3.586	4.475	-0.25	+0.1	18.9	10.3/259	148.1
Sept.11	20 54.83	-31 10.2	3.629	4.426	-0.23	+0.2	18.9	8.3/265	137.6
Sept.21	20 48.35	-31 17.3	3.696	4.375	-0.22	+0.3	18.8	6.1/273	127.1
Oct. 1	20 43.60	-31 14.2	3.779	4.323	-0.20	+0.3	18.8	3.9/288	116.7
Oct. 11	20 40.73	-31 02.1	3.876	4.270	-0.19	+0.3	18.8	2.3/328	106.6
Oct. 21	20 39.81	-30 42.7	3.980	4.216	-0.18	+0.3	18.8	2.8/ 26	96.9
Oct. 31	20 40.75	-30 17.2	4.085	4.160	-0.18	+0.2	18.8	4.6/ 49	87.4
Nov. 10	20 43.44	-29 46.7	4.189	4.104	-0.17	+0.2	18.8	6.6/ 58	78.3
Nov. 20	20 47.71	-29 12.1	4.285	4.045	-0.17	+0.1	18.8	8.4/ 63	69.4
Nov. 30	20 53.38	-28 33.9	4.371	3.986	-0.17	0.0	18.8	10.0/ 66	60.9
Dec. 10	21 00.28	-27 52.3	4.444	3.925	-0.18	-0.1	18.8	11.5/ 68	52.6
Dec. 20	21 08.24	-27 07.8	4.501	3.863	-0.19	-0.2	18.7	12.8/ 69	44.6
Dec. 30	21 17.10	-26 20.5	4.540	3.799	-0.19	-0.3	18.7	13.9/ 70	36.8
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 59.04	-22 47.6	4.490	3.528	-0.25	-0.9	18.3	17.1/ 71	11.1
Feb. 18	22 10.64	-21 49.8	4.424	3.456	-0.27	-1.0	18.2	17.6/ 71	10.1
Feb. 28	22 22.54	-20 50.8	4.338	3.382	-0.29	-1.3	18.1	18.1/ 71	13.5
Mar. 10	22 34.68	-19 51.0	4.231	3.307	-0.31	-1.5	17.9	18.5/ 72	18.9
Mar. 20	22 47.01	-18 51.0	4.104	3.229	-0.34	-1.7	17.8	18.8/ 72	25.0
Mar. 30	22 59.52	-17 51.2	3.961	3.150	-0.38	-2.0	17.6	19.0/ 72	31.3

Comet P/2004 R3 (LINEAR-NEAT)

Epoch = 2010 July 23.0 TT
T = 2011 Nov. 28.70979 TT
Peri. = 5.46118 e = 0.4430512
Node = 318.74534 2000.0 a = 3.8300501 AU
Incl. = 7.97430 n = 0.13149141
q = 2.1331418 AU P = 7.50 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		Mag.	Mot./PA ″ °	Elong. °
Jan. 4	13 05.04	-13 25.6	4.538	4.530	-0.33	+2.4	.	6.3/129	83.3
Jan. 14	13 08.43	-14 05.5	4.350	4.499	-0.35	+2.5	.	4.6/138	92.4
Jan. 24	13 10.55	-14 39.2	4.162	4.469	-0.37	+2.6	.	2.9/158	101.8
Feb. 3	13 11.27	-15 05.7	3.980	4.438	-0.39	+2.8	.	2.1/212	111.6
Feb. 13	13 10.49	-15 24.0	3.807	4.406	-0.41	+2.9	.	3.5/255	121.6
Feb. 23	13 08.14	-15 32.9	3.650	4.374	-0.43	+3.1	24.9	5.6/271	132.0
Mar. 5	13 04.30	-15 31.7	3.511	4.341	-0.44	+3.2	24.8	7.6/279	142.6
Mar. 15	12 59.12	-15 20.0	3.396	4.308	-0.45	+3.4	24.7	9.3/283	153.4
Mar. 25	12 52.91	-14 58.2	3.309	4.275	-0.46	+3.5	24.6	10.3/287	163.7
Apr. 4	12 46.10	-14 27.8	3.251	4.241	-0.46	+3.6	24.5	10.7/290	171.0
Apr. 14	12 39.18	-13 50.9	3.223	4.207	-0.45	+3.6	24.4	10.3/293	167.2
Apr. 24	12 32.70	-13 10.7	3.225	4.172	-0.44	+3.6	24.3	9.1/296	157.4
May 4	12 27.11	-12 30.8	3.256	4.137	-0.42	+3.6	24.3	7.3/300	146.8
May 14	12 22.78	-11 54.2	3.310	4.101	-0.41	+3.5	24.3	5.1/306	136.3
May 24	12 19.95	-11 23.9	3.385	4.065	-0.39	+3.4	24.3	2.8/321	126.1
June 3	12 18.74	-11 01.7	3.476	4.028	-0.38	+3.2	24.3	1.4/ 25	116.2
June 13	12 19.14	-10 48.8	3.578	3.991	-0.36	+3.1	24.3	2.9/ 84	106.8
June 23	12 21.12	-10 45.8	3.686	3.954	-0.35	+3.0	24.3	5.1/ 98	97.8
July 3	12 24.56	-10 52.4	3.797	3.916	-0.34	+2.9	24.3	7.2/103	89.1
July 13	12 29.35	-11 08.4	3.907	3.878	-0.34	+2.8	24.3	9.2/106	80.9
July 23	12 35.36	-11 33.0	4.013	3.839	-0.34	+2.7	24.3	10.9/107	72.9
Aug. 2	12 42.47	-12 05.6	4.112	3.800	-0.34	+2.6	24.3	12.5/109	65.2
Aug. 12	12 50.58	-12 45.2	4.202	3.761	-0.34	+2.6	24.2	13.9/109	57.8
Aug. 22	12 59.57	-13 31.0	4.280	3.721	-0.35	+2.5	24.2	15.2/110	50.6
Sept. 1	13 09.38	-14 22.1	4.346	3.681	-0.36	+2.5	24.2	16.3/110	43.5
Sept.11	13 19.92	-15 17.8	4.398	3.640	-0.37	+2.5	24.1	17.2/111	36.7
Sept.21	13 31.13	-16 17.2	4.434	3.599	-0.38	+2.4	24.1	18.1/111	29.9
Oct. 1	13 42.96	-17 19.4	4.455	3.558	-0.40	+2.4	24.0	18.8/110	23.3
Oct. 11	13 55.37	-18 23.7	4.459	3.516	-0.41	+2.4	23.9	19.5/110	17.0
Oct. 21	14 08.30	-19 29.2	4.447	3.475	-0.43	+2.3	23.9	20.0/110	11.0
Oct. 31	14 21.72	-20 35.3	4.417	3.433	-0.46	+2.3	23.8	20.5/109	6.7
Nov. 10	14 35.59	-21 41.1	4.370	3.390	-0.48	+2.2	23.7	20.8/109	7.3
Nov. 20	14 49.86	-22 46.0	4.307	3.348	-0.51	+2.1	23.5	21.1/108	12.2
Nov. 30	15 04.49	-23 49.2	4.227	3.305	-0.54	+2.0	23.4	21.3/107	18.2
Dec. 10	15 19.41	-24 50.2	4.132	3.262	-0.58	+1.9	23.3	21.4/107	24.5
Dec. 20	15 34.57	-25 48.3	4.023	3.219	-0.61	+1.8	23.1	21.3/106	30.9
Dec. 30	15 49.89	-26 43.0	3.900	3.175	-0.66	+1.6	23.0	21.2/105	37.4
Jan. 9	16 05.29	-27 34.0	3.764	3.132	-0.70	+1.4	22.8	20.9/104	44.0
Jan. 19	16 20.65	-28 20.9	3.618	3.088	-0.75	+1.2	22.6	20.5/103	50.6
Jan. 29	16 35.87	-29 03.6	3.463	3.045	-0.81	+1.0	22.5	19.9/102	57.3
Feb. 8	16 50.80	-29 42.1	3.300	3.002	-0.87	+0.7	22.3	19.1/101	64.0
Feb. 18	17 05.29	-30 16.6	3.131	2.958	-0.94	+0.3	22.0	18.2/101	70.9
Feb. 28	17 19.15	-30 47.4	2.958	2.915	-1.01	0.0	21.8	17.0/100	77.8
Mar. 10	17 32.18	-31 15.0	2.784	2.872	-1.09	-0.4	21.6	15.5/100	85.0
Mar. 20	17 44.14	-31 40.0	2.609	2.829	-1.18	-0.8	21.4	13.7/100	92.3
Mar. 30	17 54.76	-32 03.2	2.438	2.787	-1.28	-1.3	21.1	11.6/102	99.8

Comet C/2009 S3 (Lemmon)

Epoch = 2010 July 23.0 TT
T = 2011 Dec. 10.70362 TT
Peri. = 129.63914
Node = 225.13432 2000.0
Incl. = 60.38848
q = 6.4810340 AU
e = 0.9990246

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	18 56.61	+30 16.9	8.543	7.990	+0.75	+2.3	20.4	53.0
Jan. 14	19 04.12	+30 39.8	8.509	7.953	+0.75	+3.1	20.4	52.8
Jan. 24	19 11.63	+31 11.0	8.463	7.916	+0.74	+3.9	20.4	53.4
Feb. 3	19 19.03	+31 50.2	8.406	7.879	+0.72	+4.7	20.3	54.8
Feb. 13	19 26.25	+32 37.1	8.339	7.843	+0.69	+5.4	20.3	56.9
Feb. 23	19 33.17	+33 31.2	8.262	7.807	+0.65	+6.1	20.3	59.5
Mar. 5	19 39.69	+34 31.9	8.177	7.771	+0.60	+6.7	20.2	62.6
Mar. 15	19 45.74	+35 38.4	8.084	7.736	+0.55	+7.1	20.2	66.2
Mar. 25	19 51.21	+36 49.9	7.986	7.701	+0.48	+7.5	20.2	69.9
Apr. 4	19 55.99	+38 05.1	7.883	7.666	+0.40	+7.8	20.1	73.9
Apr. 14	20 00.01	+39 23.0	7.777	7.632	+0.32	+7.9	20.1	78.0
Apr. 24	20 03.17	+40 42.2	7.669	7.598	+0.22	+7.9	20.0	82.2
May 4	20 05.39	+42 01.1	7.562	7.564	+0.12	+7.7	20.0	86.3
May 14	20 06.61	+43 18.0	7.457	7.531	+0.02	+7.3	19.9	90.3
May 24	20 06.78	+44 31.1	7.355	7.498	−0.09	+6.7	19.9	94.3
June 3	20 05.90	+45 38.4	7.257	7.466	−0.19	+6.0	19.9	98.0
June 13	20 04.01	+46 38.1	7.166	7.433	−0.28	+5.0	19.8	101.4
June 23	20 01.19	+47 28.2	7.082	7.402	−0.36	+3.9	19.8	104.5
July 3	19 57.62	+48 07.0	7.006	7.370	−0.41	+2.6	19.7	107.2
July 13	19 53.49	+48 33.3	6.940	7.340	−0.44	+1.3	19.7	109.3
July 23	19 49.09	+48 46.1	6.884	7.309	−0.44	−0.1	19.7	110.9
Aug. 2	19 44.73	+48 45.1	6.839	7.279	−0.40	−1.4	19.6	111.9
Aug. 12	19 40.70	+48 30.7	6.805	7.249	−0.34	−2.7	19.6	112.2
Aug. 22	19 37.33	+48 03.7	6.783	7.220	−0.25	−3.8	19.6	111.8
Sept. 1	19 34.84	+47 25.8	6.771	7.191	−0.14	−4.7	19.6	110.8
Sept.11	19 33.43	+46 38.8	6.771	7.163	−0.02	−5.4	19.6	109.0
Sept.21	19 33.23	+45 45.0	6.781	7.135	+0.11	−5.8	19.6	106.7
Oct. 1	19 34.28	+44 46.7	6.801	7.108	+0.23	−6.0	19.6	103.9
Oct. 11	19 36.59	+43 46.3	6.830	7.081	+0.35	−6.0	19.5	100.6
Oct. 21	19 40.14	+42 46.1	6.866	7.055	+0.47	−5.8	19.5	96.9
Oct. 31	19 44.82	+41 48.0	6.908	7.029	+0.57	−5.4	19.5	92.9
Nov. 10	19 50.57	+40 53.8	6.956	7.004	+0.67	−4.9	19.6	88.7
Nov. 20	19 57.26	+40 05.2	7.006	6.979	+0.75	−4.2	19.6	84.4
Nov. 30	20 04.78	+39 23.3	7.058	6.955	+0.82	−3.4	19.6	80.0
Dec. 10	20 13.02	+38 49.0	7.110	6.931	+0.88	−2.6	19.6	75.6
Dec. 20	20 21.86	+38 23.2	7.160	6.907	+0.93	−1.7	19.6	71.3
Dec. 30	20 31.18	+38 06.1	7.208	6.885	+0.97	−0.8	19.6	67.1
Jan. 9	20 40.88	+37 57.9	7.250	6.863	+1.00	+0.1	19.6	63.2
Jan. 19	20 50.85	+37 58.8	7.286	6.841	+1.01	+1.0	19.6	59.6
Jan. 29	21 01.00	+38 08.4	7.315	6.820	+1.02	+1.8	19.6	56.4
Feb. 8	21 11.23	+38 26.5	7.336	6.799	+1.02	+2.6	19.6	53.7
Feb. 18	21 21.45	+38 52.6	7.347	6.780	+1.01	+3.3	19.6	51.7
Feb. 28	21 31.58	+39 26.0	7.349	6.760	+1.00	+4.0	19.6	50.4
Mar. 10	21 41.54	+40 06.3	7.339	6.742	+0.97	+4.6	19.5	49.8
Mar. 20	21 51.24	+40 52.6	7.319	6.723	+0.94	+5.2	19.5	50.1
Mar. 30	22 00.61	+41 44.2	7.288	6.706	+0.90	+5.6	19.5	51.1

Comet 37P/Forbes

Epoch = 2010 July 23.0 TT
T = 2011 Dec. 10.92672 TT
Peri. = 329.38276 e = 0.5410766
Node = 315.04801 2000.0 a = 3.4310570 AU
Incl. = 8.95857 n = 0.15508228
q = 1.5745924 AU P = 6.36 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	09 24.56	+15 55.4	3.844	4.682	−0.57	+1.9	24.0	144.9
Jan. 14	09 18.84	+16 14.3	3.736	4.655	−0.68	+2.2	23.9	156.5
Jan. 24	09 12.04	+16 36.7	3.658	4.627	−0.74	+2.4	23.8	168.3
Feb. 3	09 04.60	+17 00.4	3.612	4.598	−0.76	+2.3	23.7	179.6
Feb. 13	08 57.01	+17 23.4	3.599	4.568	−0.72	+2.0	23.7	167.7
Feb. 23	08 49.80	+17 43.5	3.617	4.538	−0.63	+1.6	23.6	155.9
Mar. 5	08 43.48	+17 59.3	3.664	4.507	−0.51	+1.1	23.6	144.3
Mar. 15	08 38.41	+18 10.0	3.737	4.476	−0.35	+0.5	23.6	133.1
Mar. 25	08 34.88	+18 15.0	3.830	4.444	−0.19	−0.1	23.6	122.4
Apr. 4	08 33.00	+18 14.3	3.937	4.411	−0.02	−0.6	23.6	112.0
Apr. 14	08 32.78	+18 08.0	4.054	4.377	+0.14	−1.2	23.7	102.2
Apr. 24	08 34.16	+17 56.4	4.177	4.343	+0.29	−1.7	23.7	92.8
May 4	08 37.02	+17 39.7	4.299	4.308	+0.42	−2.2	23.7	83.8
May 14	08 41.21	+17 18.1	4.418	4.273	+0.54	−2.6	23.7	75.2
May 24	08 46.59	+16 51.6	4.530	4.236	+0.64	−3.1	23.7	66.9
June 3	08 52.98	+16 20.5	4.632	4.199	+0.73	−3.6	23.7	58.9
June 13	09 00.25	+15 44.8	4.722	4.161	+0.80	−4.0	23.7	51.2
June 23	09 08.26	+15 04.6	4.797	4.123	+0.86	−4.4	23.6	43.7
July 3	09 16.90	+14 20.2	4.857	4.084	+0.92	−4.9	23.6	36.4
July 13	09 26.06	+13 31.5	4.900	4.044	+0.96	−5.3	23.6	29.2
July 23	09 35.64	+12 38.8	4.925	4.003	+0.99	−5.7	23.5	22.2
Aug. 2	09 45.55	+11 42.3	4.932	3.962	+1.02	−6.0	23.4	15.3
Aug. 12	09 55.73	+10 42.1	4.919	3.920	+1.04	−6.4	23.4	8.5
Aug. 22	10 06.10	+09 38.5	4.888	3.877	+1.05	−6.7	23.3	2.4
Sept. 1	10 16.60	+08 31.9	4.837	3.834	+1.06	−6.9	23.2	5.7
Sept.11	10 27.16	+07 22.5	4.767	3.789	+1.06	−7.2	23.1	12.4
Sept.21	10 37.72	+06 10.8	4.678	3.744	+1.05	−7.4	23.0	19.2
Oct. 1	10 48.23	+04 57.0	4.571	3.699	+1.04	−7.5	22.8	26.1
Oct. 11	10 58.61	+03 41.7	4.448	3.652	+1.02	−7.6	22.7	33.1
Oct. 21	11 08.79	+02 25.4	4.308	3.605	+0.99	−7.7	22.5	40.1
Oct. 31	11 18.69	+01 08.6	4.154	3.557	+0.95	−7.7	22.4	47.3
Nov. 10	11 28.23	−00 08.1	3.987	3.508	+0.90	−7.6	22.2	54.6
Nov. 20	11 37.27	−01 24.0	3.809	3.459	+0.84	−7.4	22.0	62.1
Nov. 30	11 45.71	−02 38.4	3.621	3.408	+0.77	−7.2	21.8	69.8
Dec. 10	11 53.37	−03 50.4	3.427	3.357	+0.67	−6.9	21.6	77.7
Dec. 20	12 00.08	−04 59.1	3.228	3.306	+0.56	−6.4	21.3	85.8
Dec. 30	12 05.63	−06 03.3	3.029	3.253	+0.41	−5.9	21.1	94.3
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 53.2	2.639	3.146	+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 06.9	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 28.9	2.005	2.925	−0.81	+1.2	19.5	153.5
Mar. 10	11 53.07	−09 17.0	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 12.1	1.776	2.752	−0.93	+4.5	18.8	164.7

Comet 71P/Clark

Epoch = 2010 July 23.0 TT
T = 2011 Dec. 15.64726 TT
Peri. = 208.85841 e = 0.4988114
Node = 59.61893 2000.0 a = 3.1255018 AU
Incl. = 9.48015 n = 0.17837108
q = 1.5664659 AU P = 5.53 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	07 39.18	+30 58.7	3.416	4.382	-0.88	+2.7	23.5	167.7
Jan. 14	07 30.38	+31 25.5	3.390	4.361	-0.88	+1.9	23.5	169.6
Jan. 24	07 21.58	+31 44.8	3.396	4.339	-0.81	+1.1	23.5	161.2
Feb. 3	07 13.44	+31 55.8	3.433	4.317	-0.69	+0.3	23.4	150.4
Feb. 13	07 06.56	+31 58.9	3.497	4.294	-0.52	-0.4	23.4	139.3
Feb. 23	07 01.37	+31 55.1	3.584	4.270	-0.32	-0.9	23.5	128.4
Mar. 5	06 58.12	+31 45.9	3.690	4.246	-0.12	-1.3	23.5	117.9
Mar. 15	06 56.88	+31 32.8	3.808	4.221	+0.07	-1.6	23.5	107.9
Mar. 25	06 57.63	+31 16.8	3.934	4.195	+0.26	-1.8	23.5	98.2
Apr. 4	07 00.21	+30 58.7	4.063	4.168	+0.42	-2.0	23.6	89.0
Apr. 14	07 04.46	+30 38.9	4.191	4.140	+0.57	-2.1	23.6	80.2
Apr. 24	07 10.19	+30 17.6	4.313	4.112	+0.70	-2.3	23.6	71.8
May 4	07 17.19	+29 54.7	4.428	4.083	+0.81	-2.5	23.6	63.8
May 14	07 25.30	+29 29.9	4.532	4.054	+0.90	-2.7	23.6	56.0
May 24	07 34.33	+29 03.2	4.623	4.023	+0.98	-2.9	23.6	48.5
June 3	07 44.14	+28 34.2	4.699	3.992	+1.05	-3.1	23.6	41.2
June 13	07 54.59	+28 02.9	4.759	3.960	+1.10	-3.4	23.6	34.1
June 23	08 05.57	+27 29.0	4.803	3.927	+1.14	-3.6	23.5	27.3
July 3	08 16.96	+26 52.6	4.828	3.894	+1.17	-3.9	23.5	20.7
July 13	08 28.67	+26 13.6	4.836	3.860	+1.19	-4.1	23.4	14.5
July 23	08 40.61	+25 32.2	4.824	3.824	+1.21	-4.4	23.4	9.2
Aug. 2	08 52.71	+24 48.5	4.794	3.789	+1.22	-4.6	23.3	7.0
Aug. 12	09 04.90	+24 02.9	4.745	3.752	+1.22	-4.7	23.2	10.2
Aug. 22	09 17.10	+23 15.6	4.678	3.715	+1.22	-4.8	23.1	15.8
Sept. 1	09 29.26	+22 27.2	4.593	3.676	+1.21	-4.9	23.0	22.0
Sept.11	09 41.32	+21 38.2	4.491	3.637	+1.19	-4.9	22.9	28.5
Sept.21	09 53.20	+20 49.3	4.372	3.598	+1.16	-4.8	22.8	35.1
Oct. 1	10 04.83	+20 01.1	4.238	3.557	+1.13	-4.6	22.6	42.0
Oct. 11	10 16.15	+19 14.7	4.090	3.516	+1.09	-4.4	22.5	48.9
Oct. 21	10 27.06	+18 31.0	3.930	3.473	+1.04	-4.0	22.3	56.1
Oct. 31	10 37.46	+17 51.3	3.759	3.430	+0.98	-3.5	22.1	63.4
Nov. 10	10 47.24	+17 16.7	3.578	3.387	+0.90	-2.8	21.9	70.9
Nov. 20	10 56.23	+16 48.8	3.392	3.342	+0.81	-2.0	21.7	78.7
Nov. 30	11 04.29	+16 29.1	3.202	3.297	+0.69	-1.0	21.5	86.8
Dec. 10	11 11.21	+16 19.4	3.010	3.251	+0.55	+0.2	21.3	95.2
Dec. 20	11 16.74	+16 21.3	2.821	3.204	+0.39	+1.5	21.0	104.0
Dec. 30	11 20.63	+16 36.1	2.637	3.156	+0.20	+2.9	20.8	113.1
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	3.008	-0.51	+6.6	20.0	143.1
Feb. 8	11 14.59	+19 50.6	2.043	2.958	-0.74	+7.0	19.8	153.4
Feb. 18	11 07.20	+21 00.5	1.950	2.907	-0.92	+6.7	19.6	162.3
Feb. 28	10 58.05	+22 07.1	1.885	2.855	-1.01	+5.5	19.4	165.6
Mar. 10	10 47.98	+23 02.4	1.849	2.802	-0.99	+3.7	19.2	159.9
Mar. 20	10 38.08	+23 39.6	1.840	2.749	-0.86	+1.6	19.1	150.1
Mar. 30	10 29.44	+23 55.2	1.857	2.695	-0.65	-0.7	19.0	139.4

Comet C/2009 P1 (Garradd)

Epoch = 2010 July 23.0 TT
T = 2011 Dec. 23.97140 TT
Peri. = 90.75643
Node = 325.97611 2000.0
Incl. = 106.23035
q = 1.5510283 AU
e = 1.0003768

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	23 06.52	-40 06.3	8.111	7.584	+0.19	+6.0	17.1	54.6
Jan. 14	23 08.40	-39 06.2	8.137	7.505	+0.26	+5.9	17.1	47.3
Jan. 24	23 11.03	-38 07.2	8.145	7.426	+0.32	+5.7	17.1	40.7
Feb. 3	23 14.26	-37 10.1	8.132	7.346	+0.37	+5.4	17.0	35.0
Feb. 13	23 17.97	-36 15.7	8.097	7.266	+0.41	+5.1	17.0	30.8
Feb. 23	23 22.05	-35 24.6	8.039	7.186	+0.43	+4.7	16.9	28.6
Mar. 5	23 26.37	-34 37.4	7.957	7.105	+0.45	+4.3	16.9	29.0
Mar. 15	23 30.84	-33 54.6	7.852	7.025	+0.45	+3.8	16.8	31.6
Mar. 25	23 35.33	-33 16.8	7.724	6.943	+0.44	+3.2	16.8	36.1
Apr. 4	23 39.73	-32 44.7	7.574	6.862	+0.42	+2.6	16.7	41.9
Apr. 14	23 43.96	-32 18.7	7.404	6.780	+0.39	+1.9	16.6	48.4
Apr. 24	23 47.87	-31 59.4	7.216	6.697	+0.35	+1.2	16.5	55.5
May 4	23 51.37	-31 47.3	7.012	6.615	+0.30	+0.4	16.4	63.0
May 14	23 54.32	-31 43.0	6.795	6.532	+0.23	-0.4	16.3	70.7
May 24	23 56.58	-31 46.9	6.569	6.449	+0.14	-1.2	16.2	78.8
June 3	23 58.02	-31 59.3	6.337	6.365	+0.04	-2.1	16.0	87.0
June 13	23 58.46	-32 20.4	6.103	6.281	-0.07	-2.9	15.9	95.4
June 23	23 57.73	-32 49.9	5.871	6.196	-0.21	-3.7	15.8	104.0
July 3	23 55.66	-33 27.1	5.646	6.111	-0.36	-4.4	15.7	112.7
July 13	23 52.09	-34 11.0	5.433	6.026	-0.52	-4.8	15.5	121.5
July 23	23 46.88	-34 59.5	5.236	5.940	-0.69	-5.0	15.4	130.0
Aug. 2	23 39.97	-35 49.7	5.061	5.854	-0.86	-4.9	15.3	138.0
Aug. 12	23 31.35	-36 38.3	4.910	5.768	-1.02	-4.3	15.2	144.8
Aug. 22	23 21.20	-37 20.9	4.789	5.681	-1.14	-3.3	15.1	149.2
Sept. 1	23 09.84	-37 53.5	4.698	5.594	-1.21	-1.9	15.0	149.8
Sept.11	22 57.74	-38 12.2	4.640	5.506	-1.22	-0.2	14.9	146.3
Sept.21	22 45.50	-38 14.7	4.613	5.418	-1.17	+1.5	14.8	139.7
Oct. 1	22 33.76	-38 00.0	4.616	5.329	-1.07	+3.1	14.8	131.2
Oct. 11	22 23.08	-37 28.9	4.644	5.240	-0.92	+4.6	14.7	121.9
Oct. 21	22 13.91	-36 43.1	4.692	5.151	-0.74	+5.8	14.7	112.2
Oct. 31	22 06.51	-35 45.5	4.756	5.061	-0.55	+6.7	14.7	102.3
Nov. 10	22 00.99	-34 38.6	4.829	4.971	-0.37	+7.4	14.6	92.4
Nov. 20	21 57.34	-33 25.1	4.906	4.880	-0.19	+7.8	14.6	82.7
Nov. 30	21 55.42	-32 07.0	4.980	4.789	-0.03	+8.1	14.6	73.2
Dec. 10	21 55.08	-30 45.8	5.048	4.697	+0.10	+8.3	14.6	63.8
Dec. 20	21 56.12	-29 22.8	5.103	4.605	+0.22	+8.4	14.5	54.7
Dec. 30	21 58.33	-27 58.6	5.143	4.513	+0.32	+8.5	14.5	45.8
Jan. 9	22 01.54	-26 33.5	5.163	4.419	+0.40	+8.5	14.4	37.1
Jan. 19	22 05.55	-25 08.1	5.162	4.326	+0.46	+8.6	14.3	28.8
Jan. 29	22 10.18	-23 42.2	5.138	4.232	+0.51	+8.6	14.3	20.9
Feb. 8	22 15.30	-22 15.9	5.088	4.138	+0.54	+8.7	14.2	13.9
Feb. 18	22 20.75	-20 49.1	5.013	4.043	+0.56	+8.7	14.1	9.8
Feb. 28	22 26.39	-19 21.8	4.912	3.948	+0.57	+8.8	13.9	11.7
Mar. 10	22 32.09	-17 53.7	4.786	3.852	+0.56	+8.9	13.8	17.8
Mar. 20	22 37.73	-16 24.7	4.635	3.756	+0.54	+9.0	13.6	25.0
Mar. 30	22 43.17	-14 54.4	4.460	3.660	+0.51	+9.2	13.5	32.7

Comet 36P/Whipple

Epoch = 2010 July 23.0 TT
T = 2011 Dec. 31.00573 TT
Peri. = 201.84766 e = 0.2589532
Node = 182.39441 2000.0 a = 4.1660030 AU
Incl. = 9.93580 n = 0.11591101
q = 3.0872031 AU P = 8.50 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	18 13.11	-15 16.5	5.284	4.331	+1.12	+0.9	22.9	13.0
Jan. 14	18 24.36	-15 07.9	5.226	4.311	+1.11	+1.3	22.9	19.4
Jan. 24	18 35.45	-14 54.6	5.150	4.290	+1.08	+1.8	22.8	26.3
Feb. 3	18 46.28	-14 36.7	5.055	4.268	+1.05	+2.2	22.7	33.5
Feb. 13	18 56.74	-14 14.6	4.944	4.247	+1.00	+2.6	22.6	40.9
Feb. 23	19 06.73	-13 48.7	4.818	4.226	+0.94	+2.9	22.5	48.3
Mar. 5	19 16.11	-13 19.5	4.679	4.204	+0.87	+3.2	22.4	55.9
Mar. 15	19 24.79	-12 47.7	4.529	4.183	+0.78	+3.4	22.3	63.6
Mar. 25	19 32.62	-12 13.9	4.369	4.161	+0.69	+3.5	22.2	71.4
Apr. 4	19 39.48	-11 39.2	4.204	4.139	+0.58	+3.5	22.1	79.4
Apr. 14	19 45.25	-11 04.4	4.035	4.117	+0.45	+3.4	21.9	87.6
Apr. 24	19 49.78	-10 30.6	3.865	4.095	+0.32	+3.2	21.8	96.0
May 4	19 52.94	-09 59.0	3.698	4.072	+0.17	+2.8	21.6	104.7
May 14	19 54.62	-09 30.9	3.537	4.050	+0.01	+2.3	21.5	113.7
May 24	19 54.73	-09 07.5	3.387	4.028	-0.15	+1.7	21.4	122.9
June 3	19 53.25	-08 50.2	3.251	4.005	-0.30	+1.0	21.2	132.4
June 13	19 50.22	-08 40.0	3.132	3.983	-0.44	+0.2	21.1	142.1
June 23	19 45.80	-08 37.8	3.035	3.960	-0.55	-0.6	21.0	151.8
July 3	19 40.27	-08 43.9	2.963	3.938	-0.62	-1.4	20.9	160.9
July 13	19 34.04	-08 58.3	2.918	3.915	-0.64	-2.2	20.8	167.0
July 23	19 27.62	-09 20.0	2.901	3.893	-0.61	-2.8	20.7	165.4
Aug. 2	19 21.54	-09 47.6	2.912	3.870	-0.52	-3.2	20.7	157.6
Aug. 12	19 16.31	-10 19.4	2.950	3.848	-0.39	-3.4	20.7	148.1
Aug. 22	19 12.38	-10 53.5	3.011	3.825	-0.23	-3.4	20.6	138.2
Sept. 1	19 10.04	-11 28.0	3.093	3.802	-0.06	-3.3	20.7	128.3
Sept.11	19 09.45	-12 01.2	3.192	3.780	+0.12	-3.1	20.7	118.7
Sept.21	19 10.68	-12 31.8	3.302	3.758	+0.30	-2.7	20.7	109.4
Oct. 1	19 13.69	-12 58.6	3.421	3.735	+0.47	-2.2	20.7	100.5
Oct. 11	19 18.38	-13 20.7	3.544	3.713	+0.62	-1.7	20.7	91.8
Oct. 21	19 24.63	-13 37.3	3.669	3.691	+0.76	-1.1	20.8	83.5
Oct. 31	19 32.25	-13 47.9	3.791	3.669	+0.89	-0.4	20.8	75.4
Nov. 10	19 41.10	-13 52.0	3.908	3.647	+0.99	+0.3	20.8	67.6
Nov. 20	19 51.02	-13 49.3	4.017	3.625	+1.08	+1.0	20.8	60.0
Nov. 30	20 01.84	-13 39.7	4.117	3.603	+1.16	+1.7	20.8	52.5
Dec. 10	20 13.42	-13 23.1	4.206	3.582	+1.22	+2.4	20.8	45.3
Dec. 20	20 25.62	-12 59.5	4.282	3.561	+1.27	+3.0	20.8	38.1
Dec. 30	20 38.32	-12 29.1	4.344	3.540	+1.31	+3.7	20.8	31.2
Jan. 9	20 51.41	-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	+1.35	+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 28.2	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	4.340	3.400	+1.34	+6.8	20.4	16.6
Mar. 20	22 26.25	-05 13.1	4.276	3.381	+1.32	+6.9	20.3	22.9
Mar. 30	22 39.44	-04 03.9	4.199	3.363	+1.29	+7.0	20.3	29.2

Comet C/2009 F4 (McNaught)

Epoch = 2010 July 23.0 TT
T = 2011 Dec. 31.61453 TT
Peri. = 260.36156
Node = 53.57144 2000.0
Incl. = 79.33877
q = 5.4553176 AU
e = 1.0029131

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	15 44.73	-35 34.3	8.210	7.530	+0.40	-5.8	16.3	43.6
Jan. 14	15 48.73	-36 32.0	8.043	7.483	+0.34	-6.0	16.3	52.3
Jan. 24	15 52.14	-37 31.8	7.861	7.437	+0.27	-6.2	16.2	61.2
Feb. 3	15 54.79	-38 33.6	7.666	7.391	+0.17	-6.4	16.1	70.2
Feb. 13	15 56.54	-39 37.2	7.464	7.345	+0.07	-6.5	16.0	79.3
Feb. 23	15 57.22	-40 42.1	7.258	7.300	-0.05	-6.6	15.9	88.5
Mar. 5	15 56.68	-41 47.8	7.054	7.254	-0.19	-6.5	15.8	97.8
Mar. 15	15 54.79	-42 53.2	6.856	7.209	-0.34	-6.4	15.8	107.0
Mar. 25	15 51.44	-43 57.2	6.668	7.165	-0.49	-6.1	15.7	116.2
Apr. 4	15 46.58	-44 58.1	6.497	7.121	-0.63	-5.6	15.6	125.2
Apr. 14	15 40.25	-45 54.0	6.346	7.077	-0.77	-4.9	15.5	133.7
Apr. 24	15 32.57	-46 43.0	6.219	7.033	-0.88	-4.0	15.4	141.4
May 4	15 23.81	-47 23.2	6.119	6.989	-0.95	-3.0	15.4	147.4
May 14	15 14.32	-47 53.3	6.048	6.946	-0.98	-2.0	15.3	150.6
May 24	15 04.55	-48 12.9	6.007	6.904	-0.96	-0.9	15.3	150.1
June 3	14 54.99	-48 22.3	5.995	6.861	-0.89	-0.1	15.3	146.2
June 13	14 46.08	-48 23.0	6.011	6.820	-0.79	+0.6	15.2	139.9
June 23	14 38.23	-48 17.0	6.051	6.778	-0.65	+1.0	15.2	132.4
July 3	14 31.70	-48 06.9	6.113	6.737	-0.50	+1.2	15.2	124.2
July 13	14 26.67	-47 55.3	6.192	6.696	-0.35	+1.1	15.2	115.7
July 23	14 23.20	-47 44.6	6.284	6.656	-0.19	+0.8	15.2	107.2
Aug. 2	14 21.27	-47 36.9	6.384	6.616	-0.04	+0.3	15.2	98.8
Aug. 12	14 20.82	-47 33.6	6.488	6.576	+0.09	-0.2	15.2	90.6
Aug. 22	14 21.75	-47 36.1	6.592	6.537	+0.22	-0.9	15.2	82.5
Sept. 1	14 23.96	-47 45.1	6.691	6.499	+0.34	-1.6	15.3	74.8
Sept.11	14 27.31	-48 00.9	6.782	6.461	+0.44	-2.3	15.3	67.3
Sept.21	14 31.71	-48 23.9	6.863	6.423	+0.53	-3.0	15.3	60.2
Oct. 1	14 37.02	-48 54.1	6.930	6.386	+0.61	-3.7	15.3	53.5
Oct. 11	14 43.16	-49 31.4	6.982	6.350	+0.69	-4.4	15.2	47.5
Oct. 21	14 50.01	-50 15.7	7.016	6.314	+0.75	-5.1	15.2	42.2
Oct. 31	14 57.50	-51 06.8	7.032	6.278	+0.80	-5.8	15.2	37.9
Nov. 10	15 05.53	-52 04.6	7.028	6.243	+0.85	-6.4	15.2	35.1
Nov. 20	15 14.00	-53 08.9	7.004	6.209	+0.88	-7.1	15.2	34.0
Nov. 30	15 22.83	-54 19.6	6.961	6.175	+0.91	-7.7	15.1	34.7
Dec. 10	15 31.93	-55 36.7	6.899	6.142	+0.92	-8.3	15.1	37.1
Dec. 20	15 41.18	-57 00.0	6.819	6.109	+0.93	-9.0	15.0	40.9
Dec. 30	15 50.47	-58 29.7	6.723	6.077	+0.92	-9.6	15.0	45.8
Jan. 9	15 59.66	-60 05.7	6.612	6.046	+0.89	-10.2	14.9	51.3
Jan. 19	16 08.57	-61 48.1	6.490	6.016	+0.84	-10.9	14.9	57.3
Jan. 29	16 17.01	-63 36.9	6.359	5.986	+0.77	-11.5	14.8	63.5
Feb. 8	16 24.70	-65 31.9	6.222	5.956	+0.66	-12.1	14.7	70.0
Feb. 18	16 31.27	-67 33.0	6.081	5.928	+0.50	-12.6	14.6	76.4
Feb. 28	16 36.24	-69 39.4	5.942	5.900	+0.26	-13.1	14.6	82.8
Mar. 10	16 38.85	-71 50.1	5.806	5.873	-0.08	-13.3	14.5	89.0
Mar. 20	16 38.01	-74 03.5	5.678	5.846	-0.60	-13.3	14.4	94.8
Mar. 30	16 32.02	-76 16.5	5.559	5.820	-1.39	-12.8	14.4	100.2

Comet 131P/Mueller

Epoch = 2010 July 23.0 TT
T = 2012 Jan. 7.87666 TT
Peri. = 179.63331 e = 0.3429375
Node = 214.22535 2000.0 a = 3.6799298 AU
Incl. = 7.35506 n = 0.13961908
q = 2.4179438 AU P = 7.06 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 4	17 28.85	-19 01.6	5.205	4.302	+1.10	+0.1	.	21.2
Jan. 14	17 39.80	-19 01.1	5.117	4.279	+1.07	+0.5	25.0	28.6
Jan. 24	17 50.49	-18 56.4	5.010	4.256	+1.03	+0.9	24.9	36.2
Feb. 3	18 00.78	-18 47.8	4.887	4.232	+0.98	+1.2	24.8	43.9
Feb. 13	18 10.57	-18 35.3	4.748	4.208	+0.91	+1.6	24.7	51.7
Feb. 23	18 19.72	-18 19.3	4.597	4.183	+0.84	+1.9	24.6	59.6
Mar. 5	18 28.08	-18 00.4	4.435	4.158	+0.74	+2.1	24.5	67.6
Mar. 15	18 35.52	-17 38.9	4.264	4.133	+0.64	+2.3	24.3	75.7
Mar. 25	18 41.88	-17 15.5	4.088	4.107	+0.51	+2.5	24.2	84.1
Apr. 4	18 47.00	-16 51.0	3.911	4.081	+0.37	+2.5	24.0	92.7
Apr. 14	18 50.74	-16 26.0	3.734	4.055	+0.22	+2.5	23.9	101.5
Apr. 24	18 52.94	-16 01.5	3.562	4.028	+0.05	+2.3	23.7	110.6
May 4	18 53.48	-15 38.2	3.399	4.001	-0.12	+2.1	23.6	120.1
May 14	18 52.29	-15 17.0	3.249	3.973	-0.29	+1.8	23.4	129.8
May 24	18 49.36	-14 58.6	3.116	3.945	-0.45	+1.5	23.3	139.9
June 3	18 44.81	-14 43.7	3.004	3.917	-0.59	+1.1	23.2	150.2
June 13	18 38.88	-14 32.7	2.917	3.888	-0.69	+0.7	23.0	160.3
June 23	18 31.97	-14 26.0	2.857	3.859	-0.74	+0.2	22.9	169.1
July 3	18 24.59	-14 23.6	2.825	3.830	-0.73	-0.2	22.9	169.9
July 13	18 17.34	-14 25.5	2.823	3.801	-0.65	-0.6	22.8	161.6
July 23	18 10.79	-14 31.4	2.847	3.771	-0.53	-0.9	22.8	151.4
Aug. 2	18 05.47	-14 40.9	2.897	3.741	-0.37	-1.2	22.7	141.0
Aug. 12	18 01.73	-14 53.3	2.968	3.711	-0.19	-1.5	22.7	130.8
Aug. 22	17 59.84	-15 08.1	3.056	3.680	0.00	-1.6	22.7	120.9
Sept. 1	17 59.86	-15 24.2	3.157	3.649	+0.19	-1.7	22.7	111.4
Sept.11	18 01.81	-15 40.8	3.267	3.618	+0.38	-1.6	22.7	102.3
Sept.21	18 05.59	-15 56.8	3.381	3.587	+0.55	-1.5	22.8	93.6
Oct. 1	18 11.09	-16 11.5	3.497	3.555	+0.71	-1.2	22.8	85.2
Oct. 11	18 18.14	-16 23.6	3.610	3.523	+0.85	-0.9	22.8	77.1
Oct. 21	18 26.61	-16 32.5	3.718	3.491	+0.97	-0.5	22.8	69.2
Oct. 31	18 36.31	-16 37.2	3.819	3.459	+1.08	0.0	22.7	61.6
Nov. 10	18 47.10	-16 37.0	3.910	3.427	+1.17	+0.6	22.7	54.3
Nov. 20	18 58.84	-16 31.2	3.989	3.394	+1.25	+1.2	22.7	47.1
Nov. 30	19 11.38	-16 19.4	4.056	3.362	+1.32	+1.8	22.7	40.1
Dec. 10	19 24.60	-16 01.1	4.109	3.329	+1.38	+2.5	22.6	33.2
Dec. 20	19 38.37	-15 36.0	4.147	3.297	+1.42	+3.2	22.6	26.5
Dec. 30	19 52.58	-15 04.1	4.170	3.264	+1.45	+3.9	22.5	20.0
Jan. 9	20 07.13	-14 25.1	4.178	3.231	+1.48	+4.6	22.4	13.8
Jan. 19	20 21.91	-13 39.4	4.169	3.198	+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	+1.49	+7.0	22.0	14.0
Feb. 28	21 21.81	-09 33.8	3.982	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 05.75	-05 37.8	3.699	2.973	+1.42	+8.5	21.5	37.7

Comet P/2006 T1 (Levy)

Epoch = 2010 July 23.0 TT
T = 2012 Jan. 12.61802 TT
Peri. = 179.65362 e = 0.6679812
Node = 279.77373 2000.0 a = 3.0311088 AU
Incl. = 18.27138 n = 0.18676771
q = 1.0063851 AU P = 5.28 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ / °	Elong. °
Jan. 4	19 21.55	-19 10.8	5.834	4.858	-0.17	-1.2	.	12.9/ 78	6.5
Jan. 14	19 30.45	-18 44.1	5.821	4.840	-0.17	-1.2	.	12.9/ 77	3.7
Jan. 24	19 39.31	-18 14.6	5.785	4.821	-0.17	-1.3	.	12.8/ 76	10.7
Feb. 3	19 48.03	-17 42.8	5.725	4.801	-0.18	-1.3	.	12.6/ 75	18.5
Feb. 13	19 56.52	-17 08.8	5.644	4.780	-0.18	-1.4	.	12.2/ 73	26.5
Feb. 23	20 04.65	-16 32.9	5.541	4.759	-0.19	-1.4	.	11.7/ 72	34.5
Mar. 5	20 12.32	-15 55.6	5.419	4.736	-0.19	-1.5	.	11.0/ 70	42.6
Mar. 15	20 19.44	-15 17.3	5.280	4.713	-0.20	-1.6	.	10.1/ 68	50.7
Mar. 25	20 25.87	-14 38.7	5.125	4.689	-0.21	-1.7	.	9.0/ 65	59.0
Apr. 4	20 31.49	-14 00.3	4.957	4.664	-0.21	-1.8	.	7.8/ 61	67.4
Apr. 14	20 36.20	-13 22.8	4.780	4.639	-0.22	-1.9	.	6.4/ 56	75.9
Apr. 24	20 39.84	-12 47.0	4.596	4.612	-0.23	-2.0	.	4.9/ 47	84.6
May 4	20 42.30	-12 13.5	4.410	4.584	-0.25	-2.1	.	3.4/ 29	93.6
May 14	20 43.42	-11 43.3	4.224	4.556	-0.26	-2.2	.	2.7/350	102.8
May 24	20 43.10	-11 17.1	4.044	4.527	-0.27	-2.3	.	3.5/308	112.3
June 3	20 41.24	-10 55.6	3.874	4.496	-0.28	-2.4	.	5.3/287	122.1
June 13	20 37.80	-10 39.6	3.719	4.465	-0.30	-2.5	.	7.4/278	132.2
June 23	20 32.81	-10 29.6	3.582	4.433	-0.31	-2.6	.	9.4/272	142.7
July 3	20 26.44	-10 25.6	3.469	4.400	-0.31	-2.7	.	11.1/269	153.2
July 13	20 18.93	-10 27.5	3.382	4.366	-0.32	-2.7	.	12.2/266	163.3
July 23	20 10.69	-10 34.6	3.326	4.331	-0.31	-2.7	.	12.5/265	170.4
Aug. 2	20 02.22	-10 45.9	3.300	4.295	-0.31	-2.7	.	12.1/263	166.9
Aug. 12	19 54.06	-11 00.3	3.306	4.258	-0.30	-2.7	.	10.9/261	157.3
Aug. 22	19 46.74	-11 16.3	3.339	4.220	-0.29	-2.6	.	9.1/260	146.6
Sept. 1	19 40.67	-11 32.5	3.398	4.182	-0.27	-2.5	.	6.8/257	135.8
Sept.11	19 36.17	-11 47.9	3.478	4.142	-0.26	-2.4	.	4.2/252	125.3
Sept.21	19 33.43	-12 01.3	3.574	4.101	-0.25	-2.3	.	1.7/232	115.0
Oct. 1	19 32.49	-12 11.9	3.681	4.059	-0.24	-2.2	.	1.4/120	105.1
Oct. 11	19 33.32	-12 19.0	3.794	4.016	-0.23	-2.2	.	3.7/ 95	95.6
Oct. 21	19 35.84	-12 22.0	3.908	3.972	-0.22	-2.1	.	5.9/ 88	86.4
Oct. 31	19 39.89	-12 20.3	4.019	3.927	-0.22	-2.0	.	8.0/ 85	77.5
Nov. 10	19 45.33	-12 13.5	4.124	3.880	-0.22	-2.0	.	9.9/ 83	69.0
Nov. 20	19 51.99	-12 01.1	4.219	3.833	-0.22	-2.0	.	11.5/ 81	60.7
Nov. 30	19 59.72	-11 43.0	4.301	3.785	-0.22	-2.0	.	13.0/ 79	52.6
Dec. 10	20 08.38	-11 18.8	4.368	3.735	-0.23	-2.0	.	14.2/ 78	44.8
Dec. 20	20 17.82	-10 48.2	4.419	3.684	-0.23	-2.0	.	15.3/ 76	37.2
Dec. 30	20 27.90	-10 11.3	4.451	3.632	-0.24	-2.1	.	16.3/ 75	29.9
Jan. 9	20 38.52	-09 27.9	4.464	3.579	-0.25	-2.2	.	17.1/ 73	23.0
Jan. 19	20 49.57	-08 38.0	4.457	3.524	-0.27	-2.3	.	17.8/ 72	16.5
Jan. 29	21 00.96	-07 41.7	4.430	3.469	-0.28	-2.4	.	18.4/ 70	11.2
Feb. 8	21 12.59	-06 39.0	4.382	3.412	-0.30	-2.5	.	18.9/ 69	9.1
Feb. 18	21 24.40	-05 30.1	4.315	3.354	-0.32	-2.6	.	19.3/ 67	11.6
Feb. 28	21 36.32	-04 15.1	4.230	3.294	-0.34	-2.8	.	19.7/ 66	16.8
Mar. 10	21 48.30	-02 54.2	4.126	3.233	-0.36	-3.0	.	19.9/ 64	22.7
Mar. 20	22 00.26	-01 27.5	4.006	3.171	-0.39	-3.2	24.9	20.1/ 63	28.9
Mar. 30	22 12.18	+00 04.8	3.870	3.107	-0.42	-3.5	24.7	20.3/ 61	35.2

Comet P/2000 Y3 (Scotti)

Epoch = 2010 July 23.0 TT
T = 2012 Jan. 13.17431 TT
Peri. = 91.42484 e = 0.2034503
Node = 354.31523 2000.0 a = 4.9265419 AU
Incl. = 2.26428 n = 0.09013445
q = 3.9242355 AU P = 10.93 years

m1 = 0.2 + 5 log(Delta) + 25.0 log(r(t-180))

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	23 06.04	-05 42.6	5.100	4.719	-0.31	-2.1	21.2	11.2/ 66	62.0
Jan. 14	23 12.89	-04 57.3	5.218	4.703	-0.30	-2.1	21.2	12.3/ 66	53.7
Jan. 24	23 20.41	-04 07.5	5.323	4.686	-0.30	-2.1	21.2	13.2/ 66	45.5
Feb. 3	23 28.49	-03 13.9	5.412	4.670	-0.30	-2.1	21.2	14.0/ 66	37.6
Feb. 13	23 37.01	-02 17.0	5.485	4.654	-0.29	-2.1	21.2	14.6/ 66	29.8
Feb. 23	23 45.90	-01 17.5	5.540	4.638	-0.29	-2.1	21.2	15.0/ 66	22.1
Mar. 5	23 55.06	-00 16.0	5.575	4.622	-0.30	-2.1	21.2	15.4/ 66	14.6
Mar. 15	00 04.41	+00 46.8	5.591	4.606	-0.30	-2.1	21.2	15.6/ 66	7.2
Mar. 25	00 13.89	+01 50.5	5.587	4.590	-0.30	-2.2	21.1	15.6/ 66	0.4
Apr. 4	00 23.41	+02 54.2	5.564	4.574	-0.31	-2.2	21.1	15.6/ 66	7.5
Apr. 14	00 32.92	+03 57.7	5.522	4.558	-0.31	-2.2	21.0	15.4/ 66	14.7
Apr. 24	00 42.35	+05 00.2	5.460	4.543	-0.32	-2.2	21.0	15.1/ 66	21.9
May 4	00 51.63	+06 01.2	5.381	4.527	-0.33	-2.3	20.9	14.7/ 66	29.1
May 14	01 00.68	+07 00.3	5.286	4.511	-0.33	-2.3	20.8	14.2/ 66	36.3
May 24	01 09.43	+07 56.9	5.175	4.496	-0.34	-2.3	20.8	13.5/ 66	43.6
June 3	01 17.79	+08 50.5	5.050	4.480	-0.36	-2.4	20.7	12.7/ 67	50.9
June 13	01 25.68	+09 40.7	4.913	4.465	-0.37	-2.4	20.6	11.7/ 67	58.4
June 23	01 32.97	+10 26.9	4.765	4.449	-0.38	-2.4	20.5	10.6/ 67	66.0
July 3	01 39.56	+11 08.6	4.610	4.434	-0.40	-2.5	20.4	9.2/ 66	73.7
July 13	01 45.32	+11 45.3	4.449	4.419	-0.42	-2.6	20.2	7.7/ 66	81.7
July 23	01 50.11	+12 16.4	4.285	4.403	-0.44	-2.6	20.1	6.0/ 65	90.0
Aug. 2	01 53.80	+12 41.5	4.121	4.389	-0.46	-2.7	20.0	4.0/ 63	98.5
Aug. 12	01 56.24	+12 59.9	3.961	4.374	-0.48	-2.8	19.9	1.9/ 55	107.5
Aug. 22	01 57.32	+13 11.1	3.809	4.359	-0.50	-3.0	19.8	0.6/305	116.8
Sept. 1	01 56.96	+13 14.7	3.668	4.344	-0.52	-3.1	19.6	2.7/261	126.5
Sept.11	01 55.15	+13 10.5	3.543	4.330	-0.54	-3.2	19.5	4.8/256	136.6
Sept.21	01 51.97	+12 58.6	3.437	4.315	-0.55	-3.3	19.4	6.7/254	147.1
Oct. 1	01 47.60	+12 39.6	3.356	4.301	-0.57	-3.5	19.3	8.1/252	158.0
Oct. 11	01 42.36	+12 14.8	3.302	4.287	-0.57	-3.6	19.3	8.8/251	169.2
Oct. 21	01 36.68	+11 46.2	3.278	4.273	-0.57	-3.6	19.2	8.8/250	178.3
Oct. 31	01 31.03	+11 16.4	3.284	4.260	-0.57	-3.6	19.2	8.1/250	167.8
Nov. 10	01 25.89	+10 48.1	3.320	4.246	-0.56	-3.6	19.2	6.6/249	156.5
Nov. 20	01 21.69	+10 24.1	3.383	4.233	-0.54	-3.6	19.2	4.7/248	145.3
Nov. 30	01 18.76	+10 06.6	3.470	4.220	-0.52	-3.5	19.2	2.4/246	134.5
Dec. 10	01 17.30	+09 57.2	3.577	4.207	-0.50	-3.3	19.2	0.2/112	123.9
Dec. 20	01 17.39	+09 56.6	3.700	4.194	-0.48	-3.2	19.2	2.6/ 71	113.8
Dec. 30	01 19.03	+10 05.0	3.833	4.181	-0.47	-3.1	19.3	4.9/ 70	104.0
Jan. 9	01 22.16	+10 22.1	3.973	4.169	-0.45	-3.0	19.3	7.1/ 69	94.6
Jan. 19	01 26.66	+10 47.1	4.114	4.157	-0.44	-2.9	19.4	9.0/ 69	85.6
Jan. 29	01 32.41	+11 19.2	4.254	4.145	-0.43	-2.7	19.4	10.8/ 69	77.0
Feb. 8	01 39.26	+11 57.3	4.389	4.134	-0.42	-2.6	19.4	12.3/ 69	68.6
Feb. 18	01 47.10	+12 40.3	4.517	4.122	-0.41	-2.5	19.5	13.5/ 69	60.6
Feb. 28	01 55.80	+13 27.3	4.634	4.111	-0.41	-2.4	19.5	14.6/ 70	52.8
Mar. 10	02 05.24	+14 17.1	4.739	4.100	-0.41	-2.4	19.5	15.5/ 70	45.2
Mar. 20	02 15.33	+15 08.9	4.830	4.090	-0.41	-2.3	19.5	16.2/ 71	37.8
Mar. 30	02 25.96	+16 01.7	4.907	4.079	-0.41	-2.2	19.5	16.8/ 71	30.6

Comet 5D/Brorsen [Orbit 3]

Epoch = 2010 July 23.0 TT
T = 2012 Jan. 21.19178 TT
Peri. = 19.89818 e = 0.8297981
Node = 96.65699 2000.0 a = 3.1534424 AU
Incl. = 20.00717 n = 0.17600569
q = 0.5367219 AU P = 5.60 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 4	20 18.10	-27 50.3	6.408	5.486	-0.12	+0.1	21.0	10.7/ 78	18.8
Jan. 14	20 25.93	-27 27.4	6.424	5.465	-0.12	+0.1	21.0	10.9/ 78	11.8
Jan. 24	20 33.93	-27 04.4	6.416	5.443	-0.12	+0.1	21.0	11.0/ 79	8.1
Feb. 3	20 41.96	-26 41.8	6.382	5.420	-0.13	0.0	21.0	10.9/ 79	11.4
Feb. 13	20 49.95	-26 19.9	6.325	5.396	-0.13	0.0	20.9	10.7/ 79	18.2
Feb. 23	20 57.77	-25 59.4	6.244	5.371	-0.14	0.0	20.9	10.4/ 80	25.9
Mar. 5	21 05.33	-25 40.8	6.140	5.346	-0.14	-0.1	20.8	9.9/ 81	33.9
Mar. 15	21 12.54	-25 24.8	6.016	5.319	-0.15	-0.1	20.8	9.2/ 83	42.0
Mar. 25	21 19.28	-25 12.3	5.874	5.292	-0.15	-0.2	20.7	8.4/ 85	50.3
Apr. 4	21 25.45	-25 03.8	5.715	5.264	-0.16	-0.2	20.6	7.5/ 88	58.6
Apr. 14	21 30.94	-25 00.3	5.543	5.235	-0.17	-0.2	20.5	6.4/ 92	67.1
Apr. 24	21 35.62	-25 02.7	5.361	5.206	-0.18	-0.3	20.4	5.2/100	75.8
May 4	21 39.37	-25 11.6	5.172	5.175	-0.19	-0.3	20.3	4.0/114	84.6
May 14	21 42.04	-25 27.8	4.980	5.143	-0.20	-0.3	20.2	3.1/141	93.6
May 24	21 43.50	-25 51.8	4.790	5.111	-0.21	-0.3	20.1	3.2/177	102.8
June 3	21 43.62	-26 23.7	4.605	5.078	-0.22	-0.3	20.0	4.4/204	112.3
June 13	21 42.27	-27 03.5	4.430	5.043	-0.23	-0.3	19.9	6.1/220	122.1
June 23	21 39.35	-27 50.1	4.271	5.008	-0.24	-0.3	19.7	7.9/229	132.0
July 3	21 34.87	-28 41.9	4.131	4.972	-0.24	-0.2	19.6	9.6/235	142.0
July 13	21 28.87	-29 36.6	4.015	4.935	-0.25	-0.1	19.6	11.0/240	151.8
July 23	21 21.54	-30 31.1	3.927	4.897	-0.25	0.0	19.5	11.8/244	160.5
Aug. 2	21 13.23	-31 21.9	3.869	4.857	-0.25	+0.1	19.4	12.1/248	165.3
Aug. 12	21 04.37	-32 05.8	3.842	4.817	-0.24	+0.2	19.4	11.7/252	162.3
Aug. 22	20 55.51	-32 40.3	3.846	4.776	-0.23	+0.3	19.3	10.7/257	154.1
Sept. 1	20 47.22	-33 03.9	3.879	4.734	-0.22	+0.4	19.3	9.2/262	144.2
Sept.11	20 39.99	-33 16.3	3.937	4.691	-0.21	+0.5	19.3	7.2/268	133.9
Sept.21	20 34.24	-33 18.3	4.016	4.647	-0.20	+0.5	19.3	5.1/278	123.5
Oct. 1	20 30.19	-33 11.1	4.111	4.601	-0.18	+0.5	19.3	3.2/298	113.4
Oct. 11	20 27.98	-32 56.3	4.218	4.555	-0.17	+0.5	19.3	2.1/347	103.5
Oct. 21	20 27.60	-32 35.3	4.330	4.507	-0.17	+0.5	19.3	3.1/ 34	93.8
Oct. 31	20 28.97	-32 09.5	4.443	4.459	-0.16	+0.4	19.3	4.8/ 52	84.5
Nov. 10	20 31.96	-31 39.8	4.552	4.409	-0.16	+0.4	19.3	6.6/ 60	75.5
Nov. 20	20 36.41	-31 06.8	4.653	4.358	-0.16	+0.3	19.3	8.2/ 65	66.7
Nov. 30	20 42.15	-30 31.1	4.743	4.306	-0.16	+0.2	19.3	9.7/ 67	58.2
Dec. 10	20 49.00	-29 53.0	4.819	4.252	-0.16	+0.2	19.3	11.0/ 69	49.9
Dec. 20	20 56.81	-29 12.9	4.878	4.197	-0.17	+0.1	19.3	12.1/ 70	41.9
Dec. 30	21 05.42	-28 30.8	4.918	4.141	-0.18	0.0	19.2	13.0/ 71	34.1
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 34.78	-26 15.8	4.912	3.965	-0.21	-0.4	19.0	15.1/ 72	14.3
Feb. 8	21 45.39	-25 28.9	4.866	3.904	-0.22	-0.5	19.0	15.5/ 73	11.4
Feb. 18	21 56.23	-24 41.7	4.797	3.841	-0.23	-0.6	18.8	15.8/ 73	12.9
Feb. 28	22 07.25	-23 54.6	4.708	3.776	-0.25	-0.8	18.7	16.0/ 74	17.7
Mar. 10	22 18.38	-23 08.4	4.597	3.710	-0.27	-0.9	18.6	16.1/ 74	23.8
Mar. 20	22 29.55	-22 23.6	4.467	3.643	-0.29	-1.1	18.5	16.1/ 75	30.4
Mar. 30	22 40.70	-21 40.9	4.318	3.574	-0.32	-1.3	18.3	16.0/ 76	37.1

Comet 5D/Brorsen [Orbit 1]

Epoch = 2010 July 23.0 TT
T = 2012 Feb. 5.31145 TT
Peri. = 19.37939 e = 0.8327607
Node = 96.83084 2000.0 a = 3.1553020 AU
Incl. = 19.90224 n = 0.17585012
q = 0.5276904 AU P = 5.60 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ / °	Elong. °
Jan. 4	20 14.72	-27 41.1	6.455	5.528	-0.12	+0.1	21.1	10.6/ 78	18.0
Jan. 14	20 22.51	-27 19.1	6.470	5.508	-0.12	+0.1	21.1	10.8/ 79	11.0
Jan. 24	20 30.44	-26 57.0	6.461	5.487	-0.12	+0.1	21.0	10.9/ 79	7.8
Feb. 3	20 38.40	-26 35.2	6.426	5.465	-0.13	0.0	21.0	10.8/ 79	11.7
Feb. 13	20 46.29	-26 14.2	6.368	5.443	-0.13	0.0	21.0	10.6/ 80	18.8
Feb. 23	20 54.01	-25 54.6	6.286	5.419	-0.13	0.0	20.9	10.2/ 80	26.6
Mar. 5	21 01.46	-25 36.9	6.181	5.395	-0.14	-0.1	20.9	9.7/ 81	34.6
Mar. 15	21 08.53	-25 21.7	6.057	5.370	-0.14	-0.1	20.8	9.0/ 83	42.8
Mar. 25	21 15.12	-25 09.9	5.913	5.344	-0.15	-0.1	20.7	8.2/ 85	51.1
Apr. 4	21 21.12	-25 02.2	5.754	5.317	-0.16	-0.2	20.7	7.2/ 88	59.5
Apr. 14	21 26.42	-24 59.4	5.582	5.289	-0.16	-0.2	20.6	6.1/ 93	68.1
Apr. 24	21 30.90	-25 02.3	5.399	5.261	-0.17	-0.2	20.5	4.9/101	76.8
May 4	21 34.42	-25 11.7	5.211	5.232	-0.18	-0.3	20.4	3.7/117	85.6
May 14	21 36.85	-25 28.1	5.020	5.201	-0.19	-0.3	20.3	2.9/146	94.7
May 24	21 38.06	-25 52.2	4.831	5.170	-0.20	-0.3	20.2	3.2/184	104.0
June 3	21 37.91	-26 24.0	4.648	5.138	-0.21	-0.3	20.0	4.5/209	113.6
June 13	21 36.29	-27 03.2	4.475	5.105	-0.22	-0.3	19.9	6.2/222	123.4
June 23	21 33.13	-27 48.9	4.319	5.071	-0.23	-0.2	19.8	8.0/231	133.4
July 3	21 28.43	-28 39.3	4.183	5.036	-0.23	-0.2	19.7	9.7/236	143.4
July 13	21 22.26	-29 32.1	4.072	5.001	-0.24	-0.1	19.6	11.0/241	153.3
July 23	21 14.83	-30 24.3	3.988	4.964	-0.24	0.0	19.6	11.8/245	161.9
Aug. 2	21 06.51	-31 12.5	3.935	4.926	-0.24	+0.1	19.5	12.0/249	166.0
Aug. 12	20 57.73	-31 53.9	3.914	4.888	-0.23	+0.2	19.5	11.5/253	162.0
Aug. 22	20 49.04	-32 26.0	3.923	4.848	-0.22	+0.3	19.4	10.4/257	153.4
Sept. 1	20 40.99	-32 47.6	3.960	4.807	-0.21	+0.4	19.4	8.8/262	143.3
Sept.11	20 34.04	-32 58.6	4.023	4.766	-0.20	+0.5	19.4	6.9/269	132.9
Sept.21	20 28.56	-32 59.8	4.106	4.723	-0.19	+0.5	19.4	4.8/279	122.6
Oct. 1	20 24.79	-32 52.5	4.205	4.679	-0.18	+0.5	19.4	2.9/300	112.4
Oct. 11	20 22.82	-32 38.1	4.314	4.634	-0.17	+0.5	19.4	2.0/354	102.5
Oct. 21	20 22.64	-32 18.0	4.429	4.588	-0.16	+0.5	19.4	3.1/ 38	92.9
Oct. 31	20 24.16	-31 53.3	4.544	4.541	-0.16	+0.4	19.5	4.9/ 55	83.6
Nov. 10	20 27.25	-31 25.0	4.655	4.493	-0.15	+0.4	19.5	6.6/ 62	74.5
Nov. 20	20 31.76	-30 53.6	4.758	4.444	-0.15	+0.3	19.5	8.2/ 66	65.7
Nov. 30	20 37.50	-30 19.7	4.849	4.393	-0.15	+0.2	19.5	9.6/ 68	57.2
Dec. 10	20 44.33	-29 43.5	4.925	4.342	-0.16	+0.2	19.4	10.8/ 70	48.9
Dec. 20	20 52.08	-29 05.4	4.984	4.289	-0.16	+0.1	19.4	11.9/ 71	40.9
Dec. 30	21 00.60	-28 25.5	5.024	4.235	-0.17	0.0	19.4	12.8/ 72	33.1
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	4.123	-0.19	-0.2	19.3	14.2/ 73	18.9
Jan. 29	21 29.50	-26 17.5	5.016	4.064	-0.20	-0.3	19.2	14.7/ 73	13.3
Feb. 8	21 39.89	-25 33.1	4.969	4.005	-0.21	-0.4	19.1	15.1/ 73	10.9
Feb. 18	21 50.49	-24 48.6	4.899	3.944	-0.22	-0.5	19.0	15.3/ 74	13.3
Feb. 28	22 01.23	-24 04.5	4.808	3.882	-0.24	-0.7	18.9	15.5/ 74	18.6
Mar. 10	22 12.03	-23 21.3	4.695	3.818	-0.26	-0.8	18.8	15.5/ 75	25.0
Mar. 20	22 22.83	-22 39.8	4.563	3.753	-0.28	-1.0	18.6	15.4/ 76	31.7
Mar. 30	22 33.57	-22 00.7	4.413	3.686	-0.30	-1.2	18.5	15.2/ 77	38.6

Comet D/1886 K1 (Brooks)

Epoch = 2010 July 23.0 TT
T = 2012 Feb. 6.4721 TT
Peri. = 208.6755 e = 0.469334
Node = 39.1966 2000.0 a = 3.550706 AU
Incl. = 10.9319 n = 0.1473099
q = 1.884239 AU P = 6.69 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′ / °	Elong. °
Jan. 4	06 26.07	+35 02.7	3.714	4.673	-0.46	-0.4	24.5	10.2/272	165.9
Jan. 14	06 17.80	+35 06.0	3.727	4.649	-0.45	-0.6	24.5	9.1/268	157.1
Jan. 24	06 10.40	+35 01.8	3.771	4.624	-0.43	-0.7	24.5	7.5/262	146.6
Feb. 3	06 04.39	+34 51.5	3.840	4.599	-0.42	-0.7	24.5	5.5/255	135.8
Feb. 13	06 00.10	+34 36.8	3.932	4.573	-0.40	-0.7	24.6	3.4/240	125.2
Feb. 23	05 57.72	+34 19.6	4.040	4.546	-0.38	-0.7	24.6	1.9/197	114.9
Mar. 5	05 57.27	+34 01.3	4.159	4.519	-0.37	-0.7	24.6	2.5/136	105.0
Mar. 15	05 58.69	+33 43.0	4.286	4.491	-0.36	-0.7	24.7	4.3/114	95.5
Mar. 25	06 01.86	+33 25.2	4.414	4.463	-0.35	-0.6	24.7	6.2/106	86.4
Apr. 4	06 06.59	+33 08.1	4.540	4.434	-0.34	-0.5	24.8	7.9/102	77.6
Apr. 14	06 12.71	+32 51.6	4.660	4.405	-0.33	-0.4	24.8	9.4/ 99	69.2
Apr. 24	06 20.05	+32 35.4	4.771	4.375	-0.33	-0.3	24.8	10.7/ 98	61.1
May 4	06 28.42	+32 19.0	4.871	4.344	-0.33	-0.2	24.8	11.9/ 98	53.3
May 14	06 37.69	+32 02.1	4.957	4.313	-0.33	-0.1	24.8	12.9/ 97	45.8
May 24	06 47.71	+31 44.1	5.027	4.282	-0.33	0.0	24.8	13.7/ 97	38.5
June 3	06 58.34	+31 24.9	5.082	4.249	-0.33	+0.1	24.8	14.4/ 98	31.5
June 13	07 09.48	+31 04.1	5.118	4.217	-0.34	+0.2	24.8	15.0/ 98	24.7
June 23	07 21.01	+30 41.4	5.136	4.183	-0.34	+0.4	24.8	15.5/ 98	18.2
July 3	07 32.84	+30 16.8	5.136	4.149	-0.35	+0.5	24.7	15.9/ 99	12.5
July 13	07 44.88	+29 50.3	5.117	4.115	-0.35	+0.7	24.7	16.1/ 99	8.8
July 23	07 57.05	+29 21.9	5.078	4.080	-0.36	+0.8	24.6	16.3/100	9.5
Aug. 2	08 09.26	+28 51.9	5.021	4.044	-0.37	+1.0	24.6	16.3/100	14.1
Aug. 12	08 21.44	+28 20.4	4.946	4.008	-0.38	+1.1	24.5	16.3/101	19.9
Aug. 22	08 33.51	+27 48.1	4.852	3.971	-0.39	+1.3	24.4	16.1/101	26.3
Sept. 1	08 45.39	+27 15.3	4.742	3.934	-0.40	+1.5	24.3	15.9/101	32.9
Sept.11	08 57.02	+26 42.7	4.616	3.896	-0.42	+1.7	24.2	15.5/101	39.8
Sept.21	09 08.28	+26 11.1	4.475	3.857	-0.43	+1.9	24.1	14.9/101	46.7
Oct. 1	09 19.11	+25 41.4	4.321	3.818	-0.45	+2.1	24.0	14.2/100	53.9
Oct. 11	09 29.39	+25 14.6	4.156	3.779	-0.47	+2.4	23.9	13.2/ 99	61.3
Oct. 21	09 38.99	+24 51.9	3.980	3.738	-0.50	+2.6	23.7	12.1/ 98	68.9
Oct. 31	09 47.78	+24 34.6	3.798	3.698	-0.53	+2.9	23.6	10.7/ 95	76.7
Nov. 10	09 55.59	+24 24.0	3.610	3.657	-0.56	+3.2	23.4	9.1/ 91	84.8
Nov. 20	10 02.23	+24 21.7	3.421	3.615	-0.59	+3.5	23.3	7.2/ 84	93.3
Nov. 30	10 07.49	+24 28.8	3.234	3.572	-0.63	+3.8	23.1	5.3/ 70	102.1
Dec. 10	10 11.13	+24 46.7	3.051	3.530	-0.68	+4.1	22.9	3.8/ 39	111.3
Dec. 20	10 12.89	+25 15.7	2.878	3.486	-0.73	+4.3	22.7	4.0/354	120.8
Dec. 30	10 12.56	+25 55.7	2.719	3.442	-0.78	+4.6	22.5	6.1/325	130.8
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 37.5	2.365	3.308	-0.92	+4.7	22.1	12.4/295	160.0
Feb. 8	09 49.46	+29 29.4	2.301	3.262	-0.94	+4.4	21.9	13.0/289	164.6
Feb. 18	09 39.96	+30 10.3	2.266	3.216	-0.95	+4.1	21.8	12.5/282	160.9
Feb. 28	09 30.54	+30 35.4	2.260	3.170	-0.94	+3.8	21.8	10.9/274	152.1
Mar. 10	09 22.15	+30 42.5	2.281	3.123	-0.91	+3.5	21.7	8.5/263	141.9
Mar. 20	09 15.62	+30 31.6	2.323	3.075	-0.87	+3.2	21.7	6.0/244	131.5
Mar. 30	09 11.46	+30 04.5	2.384	3.028	-0.83	+3.0	21.7	4.5/206	121.5

Comet P/1998 U4 (Spahr)

Epoch = 2010 July 23.0 TT
T = 2012 Apr. 11.42916 TT
Peri. = 250.56853 e = 0.3141710
Node = 181.12493 2000.0 a = 5.6460529 AU
Incl. = 32.15178 n = 0.07346605
q = 3.8722268 AU P = 13.42 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 4	21 52.09	+00 08.1	5.898	5.293	-0.27	+0.7	20.9	11.5/ 87	48.1
Jan. 14	21 59.75	+00 14.0	5.984	5.269	-0.27	+0.7	20.9	12.2/ 84	40.0
Jan. 24	22 07.82	+00 26.0	6.052	5.245	-0.27	+0.6	20.9	12.7/ 82	32.2
Feb. 3	22 16.21	+00 43.5	6.101	5.221	-0.27	+0.6	20.9	13.1/ 80	24.6
Feb. 13	22 24.83	+01 05.8	6.130	5.197	-0.27	+0.6	20.9	13.4/ 79	17.6
Feb. 23	22 33.58	+01 32.1	6.138	5.173	-0.28	+0.6	20.8	13.5/ 77	11.8
Mar. 5	22 42.38	+02 01.6	6.125	5.149	-0.28	+0.6	20.8	13.6/ 76	9.6
Mar. 15	22 51.17	+02 33.6	6.090	5.125	-0.29	+0.6	20.8	13.5/ 75	12.8
Mar. 25	22 59.87	+03 07.3	6.035	5.101	-0.29	+0.6	20.7	13.2/ 75	18.8
Apr. 4	23 08.40	+03 41.9	5.960	5.077	-0.30	+0.6	20.7	12.9/ 74	25.7
Apr. 14	23 16.70	+04 16.5	5.865	5.053	-0.31	+0.6	20.6	12.4/ 74	33.0
Apr. 24	23 24.68	+04 50.3	5.753	5.030	-0.31	+0.7	20.5	11.8/ 74	40.4
May 4	23 32.27	+05 22.4	5.624	5.006	-0.32	+0.7	20.4	11.0/ 74	48.0
May 14	23 39.39	+05 52.0	5.481	4.982	-0.34	+0.7	20.4	10.1/ 75	55.7
May 24	23 45.94	+06 18.1	5.326	4.958	-0.35	+0.7	20.3	9.1/ 76	63.5
June 3	23 51.84	+06 39.7	5.160	4.934	-0.36	+0.8	20.2	7.8/ 78	71.5
June 13	23 56.99	+06 55.7	4.988	4.910	-0.38	+0.8	20.1	6.4/ 82	79.8
June 23	00 01.27	+07 05.2	4.812	4.886	-0.39	+0.8	19.9	4.9/ 88	88.2
July 3	00 04.58	+07 06.9	4.634	4.863	-0.41	+0.9	19.8	3.4/102	96.9
July 13	00 06.83	+06 59.8	4.460	4.839	-0.43	+0.9	19.7	2.4/136	105.9
July 23	00 07.93	+06 42.8	4.293	4.815	-0.44	+0.9	19.6	2.8/183	115.3
Aug. 2	00 07.84	+06 15.1	4.137	4.792	-0.46	+1.0	19.5	4.3/206	125.0
Aug. 12	00 06.55	+05 36.2	3.996	4.768	-0.48	+1.0	19.4	6.2/216	135.1
Aug. 22	00 04.11	+04 46.3	3.876	4.745	-0.49	+1.0	19.3	7.9/220	145.6
Sept. 1	00 00.70	+03 46.4	3.779	4.722	-0.50	+1.1	19.2	9.2/223	156.4
Sept.11	23 56.53	+02 38.2	3.711	4.699	-0.51	+1.1	19.1	10.1/223	167.5
Sept.21	23 51.93	+01 24.5	3.672	4.676	-0.51	+1.2	19.1	10.3/223	177.7
Oct. 1	23 47.28	+00 08.8	3.665	4.653	-0.51	+1.2	19.0	9.8/221	169.5
Oct. 11	23 42.96	-01 05.3	3.688	4.630	-0.50	+1.3	19.0	8.8/218	158.2
Oct. 21	23 39.36	-02 14.2	3.740	4.607	-0.49	+1.3	19.0	7.2/213	147.0
Oct. 31	23 36.75	-03 15.0	3.818	4.585	-0.48	+1.3	19.0	5.5/202	136.1
Nov. 10	23 35.36	-04 05.6	3.917	4.562	-0.47	+1.4	19.1	3.9/181	125.4
Nov. 20	23 35.31	-04 45.1	4.033	4.540	-0.45	+1.4	19.1	3.4/145	115.0
Nov. 30	23 36.62	-05 13.1	4.160	4.518	-0.44	+1.3	19.1	4.3/113	105.0
Dec. 10	23 39.27	-05 29.9	4.295	4.496	-0.42	+1.3	19.2	5.9/ 96	95.4
Dec. 20	23 43.20	-05 36.2	4.432	4.475	-0.41	+1.3	19.2	7.6/ 88	86.1
Dec. 30	23 48.28	-05 33.2	4.568	4.453	-0.40	+1.2	19.2	9.2/ 83	77.1
Jan. 9	23 54.40	-05 21.8	4.698	4.432	-0.40	+1.2	19.3	10.7/ 80	68.4
Jan. 19	00 01.45	-05 03.4	4.819	4.411	-0.39	+1.1	19.3	12.0/ 78	60.0
Jan. 29	00 09.30	-04 39.1	4.929	4.390	-0.39	+1.1	19.3	13.1/ 77	51.9
Feb. 8	00 17.84	-04 10.0	5.025	4.370	-0.38	+1.0	19.3	14.0/ 77	44.0
Feb. 18	00 26.96	-03 37.3	5.105	4.349	-0.38	+1.0	19.3	14.8/ 76	36.4
Feb. 28	00 36.58	-03 02.0	5.169	4.329	-0.38	+0.9	19.3	15.5/ 76	29.0
Mar. 10	00 46.61	-02 25.3	5.215	4.310	-0.38	+0.9	19.3	16.0/ 77	21.9
Mar. 20	00 56.97	-01 48.1	5.242	4.290	-0.39	+0.9	19.3	16.3/ 77	15.3
Mar. 30	01 07.59	-01 11.3	5.251	4.271	-0.39	+0.9	19.3	16.6/ 78	10.0

Comet C/2006 S3 (LONEOS)

Epoch = 2010 July 23.0 TT
T = 2012 Apr. 16.57770 TT
Peri. = 140.13672
Node = 38.37204 2000.0
Incl. = 166.03241
q = 5.1321603 AU
e = 1.0017994

m1 = 5.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	21 39.70	-01 27.0	8.602	7.932	+0.17	+0.2	16.4	44.6
Jan. 14	21 41.44	-01 25.3	8.663	7.881	+0.21	+0.6	16.4	35.3
Jan. 24	21 43.54	-01 19.4	8.699	7.830	+0.23	+1.0	16.4	26.5
Feb. 3	21 45.88	-01 09.8	8.708	7.779	+0.25	+1.3	16.4	18.4
Feb. 13	21 48.36	-00 57.0	8.689	7.728	+0.25	+1.6	16.4	12.6
Feb. 23	21 50.87	-00 41.5	8.641	7.677	+0.24	+1.8	16.3	12.4
Mar. 5	21 53.30	-00 23.8	8.564	7.627	+0.22	+1.9	16.3	18.0
Mar. 15	21 55.54	-00 04.5	8.459	7.576	+0.20	+2.0	16.2	25.8
Mar. 25	21 57.49	+00 15.9	8.328	7.526	+0.16	+2.1	16.2	34.4
Apr. 4	21 59.05	+00 36.6	8.173	7.476	+0.10	+2.1	16.1	43.3
Apr. 14	22 00.09	+00 57.1	7.996	7.427	+0.04	+2.0	16.0	52.4
Apr. 24	22 00.52	+01 16.7	7.801	7.377	-0.03	+1.8	16.0	61.7
May 4	22 00.21	+01 34.5	7.592	7.328	-0.11	+1.5	15.9	71.1
May 14	21 59.07	+01 49.8	7.373	7.278	-0.21	+1.2	15.8	80.7
May 24	21 56.99	+02 01.7	7.150	7.230	-0.31	+0.8	15.7	90.5
June 3	21 53.89	+02 09.3	6.927	7.181	-0.42	+0.2	15.6	100.5
June 13	21 49.70	+02 11.7	6.711	7.132	-0.53	-0.4	15.5	110.7
June 23	21 44.39	+02 08.1	6.507	7.084	-0.64	-1.0	15.4	121.0
July 3	21 37.99	+01 57.7	6.321	7.036	-0.74	-1.8	15.4	131.5
July 13	21 30.56	+01 40.0	6.160	6.989	-0.83	-2.5	15.3	142.0
July 23	21 22.26	+01 14.9	6.028	6.941	-0.89	-3.2	15.2	152.0
Aug. 2	21 13.32	+00 42.8	5.930	6.894	-0.93	-3.8	15.2	160.4
Aug. 12	21 04.01	+00 04.3	5.868	6.848	-0.93	-4.3	15.1	163.9
Aug. 22	20 54.67	-00 39.2	5.844	6.801	-0.90	-4.7	15.1	159.6
Sept. 1	20 45.63	-01 25.9	5.857	6.755	-0.84	-4.8	15.1	150.7
Sept.11	20 37.21	-02 14.2	5.904	6.709	-0.75	-4.8	15.1	140.3
Sept.21	20 29.67	-03 02.2	5.981	6.664	-0.65	-4.6	15.1	129.5
Oct. 1	20 23.19	-03 48.4	6.082	6.619	-0.53	-4.3	15.1	118.5
Oct. 11	20 17.87	-04 31.3	6.202	6.574	-0.41	-3.9	15.1	107.6
Oct. 21	20 13.78	-05 10.1	6.334	6.530	-0.29	-3.4	15.1	96.9
Oct. 31	20 10.87	-05 44.2	6.471	6.486	-0.18	-2.9	15.1	86.5
Nov. 10	20 09.09	-06 13.2	6.607	6.443	-0.08	-2.4	15.2	76.2
Nov. 20	20 08.33	-06 36.9	6.736	6.400	+0.01	-1.8	15.2	66.1
Nov. 30	20 08.48	-06 55.4	6.851	6.357	+0.09	-1.3	15.2	56.3
Dec. 10	20 09.40	-07 08.8	6.950	6.315	+0.16	-0.9	15.2	46.7
Dec. 20	20 10.96	-07 17.3	7.027	6.273	+0.21	-0.4	15.2	37.3
Dec. 30	20 13.01	-07 21.2	7.079	6.232	+0.24	0.0	15.2	28.4
Jan. 9	20 15.42	-07 20.9	7.105	6.191	+0.26	+0.4	15.2	20.2
Jan. 19	20 18.05	-07 16.7	7.102	6.151	+0.27	+0.8	15.2	13.8
Jan. 29	20 20.74	-07 09.0	7.070	6.111	+0.26	+1.1	15.1	12.3
Feb. 8	20 23.39	-06 58.3	7.008	6.072	+0.24	+1.3	15.1	17.1
Feb. 18	20 25.82	-06 45.2	6.917	6.033	+0.21	+1.5	15.1	24.7
Feb. 28	20 27.92	-06 30.0	6.799	5.995	+0.16	+1.7	15.0	33.3
Mar. 10	20 29.53	-06 13.5	6.655	5.958	+0.10	+1.7	14.9	42.3
Mar. 20	20 30.50	-05 56.2	6.489	5.921	+0.02	+1.7	14.9	51.5
Mar. 30	20 30.69	-05 38.9	6.304	5.885	-0.08	+1.7	14.8	61.0

Comet 152P/Helin-Lawrence

Epoch = 2010 July 23.0 TT
T = 2012 July 9.56841 TT
Peri. = 163.89110 e = 0.3078214
Node = 91.94342 2000.0 a = 4.4989155 AU
Incl. = 9.86723 n = 0.10328621
q = 3.1140530 AU P = 9.54 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	09 15.57	+23 23.5	4.136	5.000	-0.48	+3.7	21.6	148.4
Jan. 14	09 10.80	+24 00.5	4.047	4.979	-0.57	+3.7	21.5	159.3
Jan. 24	09 05.13	+24 37.8	3.988	4.958	-0.62	+3.5	21.4	169.1
Feb. 3	08 58.96	+25 12.7	3.960	4.936	-0.62	+3.0	21.4	171.3
Feb. 13	08 52.74	+25 43.0	3.963	4.915	-0.58	+2.4	21.4	162.6
Feb. 23	08 46.96	+26 06.9	3.997	4.893	-0.49	+1.7	21.4	152.0
Mar. 5	08 42.05	+26 23.4	4.058	4.871	-0.37	+0.9	21.4	141.1
Mar. 15	08 38.34	+26 32.4	4.143	4.848	-0.23	+0.2	21.4	130.5
Mar. 25	08 36.04	+26 34.0	4.246	4.826	-0.08	-0.5	21.4	120.2
Apr. 4	08 35.28	+26 28.9	4.363	4.803	+0.08	-1.1	21.5	110.3
Apr. 14	08 36.05	+26 17.7	4.490	4.780	+0.22	-1.6	21.5	100.8
Apr. 24	08 38.29	+26 01.3	4.620	4.757	+0.36	-2.1	21.6	91.7
May 4	08 41.88	+25 40.1	4.752	4.734	+0.48	-2.5	21.6	82.9
May 14	08 46.70	+25 14.6	4.879	4.710	+0.59	-2.9	21.6	74.5
May 24	08 52.61	+24 45.3	5.001	4.687	+0.68	-3.3	21.6	66.3
June 3	08 59.44	+24 12.4	5.113	4.663	+0.76	-3.6	21.7	58.5
June 13	09 07.07	+23 36.2	5.213	4.639	+0.83	-3.9	21.7	50.8
June 23	09 15.38	+22 57.0	5.300	4.615	+0.89	-4.2	21.7	43.4
July 3	09 24.24	+22 15.0	5.372	4.590	+0.93	-4.5	21.7	36.1
July 13	09 33.55	+21 30.4	5.427	4.566	+0.97	-4.7	21.7	29.1
July 23	09 43.22	+20 43.6	5.465	4.541	+0.99	-4.9	21.7	22.2
Aug. 2	09 53.16	+19 55.0	5.485	4.516	+1.01	-5.0	21.7	15.6
Aug. 12	10 03.30	+19 04.7	5.487	4.491	+1.03	-5.1	21.6	9.8
Aug. 22	10 13.56	+18 13.4	5.469	4.466	+1.03	-5.2	21.6	6.8
Sept. 1	10 23.88	+17 21.5	5.433	4.441	+1.03	-5.2	21.5	9.7
Sept.11	10 34.18	+16 29.6	5.377	4.416	+1.02	-5.1	21.5	15.6
Sept.21	10 44.41	+15 38.1	5.303	4.390	+1.01	-5.0	21.4	22.2
Oct. 1	10 54.50	+14 47.9	5.212	4.365	+0.99	-4.8	21.4	29.2
Oct. 11	11 04.37	+13 59.7	5.103	4.339	+0.96	-4.5	21.3	36.3
Oct. 21	11 13.94	+13 14.3	4.979	4.313	+0.92	-4.2	21.2	43.6
Oct. 31	11 23.13	+12 32.5	4.840	4.288	+0.87	-3.7	21.1	51.2
Nov. 10	11 31.85	+11 55.4	4.688	4.262	+0.81	-3.1	21.0	58.9
Nov. 20	11 39.97	+11 24.0	4.526	4.236	+0.74	-2.5	20.9	66.8
Nov. 30	11 47.38	+10 59.2	4.356	4.210	+0.66	-1.7	20.8	75.0
Dec. 10	11 53.93	+10 42.3	4.180	4.183	+0.55	-0.8	20.6	83.4
Dec. 20	11 59.46	+10 34.2	4.002	4.157	+0.44	+0.2	20.5	92.2
Dec. 30	12 03.84	+10 35.7	3.826	4.131	+0.30	+1.2	20.4	101.2
Jan. 9	12 06.88	+10 47.5	3.654	4.105	+0.16	+2.2	20.2	110.6
Jan. 19	12 08.44	+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 06.78	+12 23.0	3.215	4.026	-0.32	+4.7	19.8	140.6
Feb. 18	12 03.58	+13 10.3	3.108	4.000	-0.45	+5.0	19.7	150.8
Feb. 28	11 59.03	+14 00.4	3.027	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 33.1	2.952	3.922	-0.61	+3.4	19.5	164.7
Mar. 30	11 41.29	+16 07.5	2.958	3.896	-0.55	+2.2	19.5	156.7

Comet 158P/Kowal-LINEAR

Epoch = 2010 July 23.0 TT
T = 2012 Sept. 15.06822 TT
Peri. = 231.53736 e = 0.0297204
Node = 137.30910 2000.0 a = 4.7194768 AU
Incl. = 7.90842 n = 0.09613096
q = 4.5792121 AU P = 10.25 years

m1 = 5.7 + 5 log(Delta) + 15.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 4	18 13.29	-18 38.4	5.696	4.735	+1.06	+0.2	19.6	11.3
Jan. 14	18 23.86	-18 36.2	5.655	4.733	+1.03	+0.6	19.6	18.5
Jan. 24	18 34.21	-18 30.6	5.595	4.730	+1.00	+0.9	19.6	26.0
Feb. 3	18 44.22	-18 21.9	5.517	4.728	+0.96	+1.1	19.5	33.7
Feb. 13	18 53.80	-18 10.5	5.421	4.726	+0.90	+1.4	19.5	41.4
Feb. 23	19 02.83	-17 57.0	5.309	4.723	+0.84	+1.5	19.4	49.3
Mar. 5	19 11.20	-17 41.9	5.183	4.721	+0.76	+1.6	19.4	57.3
Mar. 15	19 18.79	-17 25.9	5.045	4.719	+0.67	+1.6	19.3	65.4
Mar. 25	19 25.48	-17 09.9	4.898	4.716	+0.57	+1.5	19.3	73.7
Apr. 4	19 31.17	-16 54.6	4.745	4.714	+0.46	+1.4	19.2	82.2
Apr. 14	19 35.73	-16 40.9	4.589	4.712	+0.33	+1.1	19.1	90.8
Apr. 24	19 39.04	-16 29.6	4.433	4.709	+0.20	+0.8	19.0	99.8
May 4	19 41.03	-16 21.5	4.282	4.707	+0.06	+0.4	18.9	109.0
May 14	19 41.63	-16 17.2	4.139	4.705	-0.08	0.0	18.9	118.4
May 24	19 40.79	-16 17.5	4.008	4.702	-0.22	-0.5	18.8	128.2
June 3	19 38.58	-16 22.3	3.894	4.700	-0.35	-0.9	18.7	138.3
June 13	19 35.08	-16 31.8	3.801	4.698	-0.46	-1.4	18.7	148.6
June 23	19 30.53	-16 45.5	3.732	4.695	-0.53	-1.7	18.6	159.0
July 3	19 25.22	-17 02.7	3.690	4.693	-0.57	-2.0	18.6	169.3
July 13	19 19.52	-17 22.5	3.677	4.691	-0.56	-2.1	18.6	175.0
July 23	19 13.88	-17 43.7	3.693	4.688	-0.52	-2.2	18.6	166.9
Aug. 2	19 08.71	-18 05.3	3.738	4.686	-0.43	-2.1	18.6	156.5
Aug. 12	19 04.39	-18 26.5	3.809	4.684	-0.32	-2.0	18.7	146.0
Aug. 22	19 01.22	-18 46.4	3.904	4.681	-0.18	-1.8	18.7	135.7
Sept. 1	18 59.42	-19 04.6	4.018	4.679	-0.03	-1.6	18.8	125.6
Sept.11	18 59.07	-19 20.5	4.149	4.677	+0.11	-1.3	18.8	115.9
Sept.21	19 00.22	-19 33.9	4.291	4.675	+0.26	-1.1	18.9	106.4
Oct. 1	19 02.81	-19 44.5	4.440	4.672	+0.40	-0.7	19.0	97.2
Oct. 11	19 06.76	-19 51.9	4.592	4.670	+0.52	-0.4	19.1	88.3
Oct. 21	19 11.96	-19 56.0	4.744	4.668	+0.63	0.0	19.1	79.6
Oct. 31	19 18.28	-19 56.5	4.892	4.666	+0.73	+0.3	19.2	71.1
Nov. 10	19 25.57	-19 53.2	5.033	4.663	+0.81	+0.7	19.2	62.8
Nov. 20	19 33.71	-19 45.9	5.163	4.661	+0.88	+1.1	19.3	54.6
Nov. 30	19 42.56	-19 34.7	5.282	4.659	+0.94	+1.5	19.3	46.6
Dec. 10	19 51.98	-19 19.4	5.385	4.657	+0.99	+1.9	19.4	38.7
Dec. 20	20 01.86	-19 00.2	5.472	4.655	+1.02	+2.3	19.4	30.9
Dec. 30	20 12.07	-18 37.1	5.541	4.653	+1.04	+2.7	19.4	23.1
Jan. 9	20 22.52	-18 10.5	5.591	4.651	+1.06	+3.0	19.5	15.5
Jan. 19	20 33.08	-17 40.6	5.621	4.649	+1.06	+3.3	19.5	7.9
Jan. 29	20 43.68	-17 08.0	5.631	4.647	+1.05	+3.5	19.5	1.0
Feb. 8	20 54.21	-16 32.9	5.621	4.644	+1.04	+3.7	19.5	7.4
Feb. 18	21 04.59	-15 56.0	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 24.55	-14 39.1	5.471	4.639	+0.94	+3.9	19.4	30.0
Mar. 20	21 33.98	-14 00.6	5.385	4.637	+0.89	+3.8	19.3	37.6
Mar. 30	21 42.93	-13 23.0	5.283	4.635	+0.84	+3.6	19.3	45.3

Comet P/2004 F3 (NEAT)

Epoch = 2010 July 23.0 TT
T = 2013 Jan. 29.39832 TT
Peri. = 176.40432 e = 0.2853860
Node = 78.81108 2000.0 a = 4.0236540 AU
Incl. = 15.97458 n = 0.12211616
q = 2.8753595 AU P = 8.07 years

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

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/min °	Elong. °
Jan. 4	06 42.65	+30 28.5	4.002	4.976	−0.43	−1.1	20.2	9.4/282	171.6
Jan. 14	06 35.54	+30 46.5	4.018	4.965	−0.43	−1.2	20.2	8.5/279	162.5
Jan. 24	06 29.03	+30 59.2	4.066	4.954	−0.42	−1.3	20.2	7.0/277	151.6
Feb. 3	06 23.59	+31 07.0	4.141	4.942	−0.41	−1.3	20.2	5.2/274	140.5
Feb. 13	06 19.53	+31 10.6	4.240	4.930	−0.40	−1.3	20.3	3.1/271	129.7
Feb. 23	06 17.08	+31 11.0	4.357	4.917	−0.38	−1.3	20.3	1.0/259	119.3
Mar. 5	06 16.31	+31 09.1	4.489	4.905	−0.37	−1.3	20.3	1.2/106	109.2
Mar. 15	06 17.21	+31 05.8	4.629	4.892	−0.36	−1.2	20.4	3.2/ 98	99.5
Mar. 25	06 19.69	+31 01.4	4.773	4.878	−0.35	−1.2	20.5	5.1/ 96	90.2
Apr. 4	06 23.62	+30 56.3	4.916	4.865	−0.34	−1.1	20.5	6.8/ 95	81.2
Apr. 14	06 28.85	+30 50.5	5.055	4.851	−0.33	−1.0	20.5	8.2/ 94	72.6
Apr. 24	06 35.22	+30 43.8	5.187	4.836	−0.32	−0.9	20.6	9.5/ 94	64.3
May 4	06 42.58	+30 36.2	5.308	4.822	−0.32	−0.8	20.6	10.6/ 94	56.3
May 14	06 50.79	+30 27.4	5.417	4.807	−0.32	−0.7	20.6	11.6/ 94	48.5
May 24	06 59.70	+30 17.2	5.511	4.792	−0.32	−0.6	20.7	12.4/ 95	40.9
June 3	07 09.19	+30 05.5	5.588	4.777	−0.31	−0.5	20.7	13.0/ 95	33.6
June 13	07 19.15	+29 52.2	5.648	4.761	−0.31	−0.4	20.7	13.5/ 96	26.5
June 23	07 29.46	+29 37.3	5.689	4.745	−0.32	−0.3	20.7	13.9/ 96	19.7
July 3	07 40.04	+29 20.9	5.711	4.729	−0.32	−0.2	20.7	14.2/ 97	13.4
July 13	07 50.78	+29 03.0	5.714	4.712	−0.32	−0.1	20.6	14.3/ 97	8.8
July 23	08 01.61	+28 44.0	5.697	4.695	−0.32	0.0	20.6	14.4/ 97	8.7
Aug. 2	08 12.43	+28 24.0	5.660	4.678	−0.33	+0.1	20.6	14.3/ 98	13.3
Aug. 12	08 23.18	+28 03.6	5.604	4.661	−0.33	+0.2	20.5	14.2/ 98	19.5
Aug. 22	08 33.76	+27 43.3	5.529	4.643	−0.34	+0.3	20.5	13.9/ 98	26.2
Sept. 1	08 44.10	+27 23.6	5.436	4.625	−0.35	+0.4	20.4	13.5/ 97	33.3
Sept.11	08 54.11	+27 05.3	5.325	4.607	−0.35	+0.5	20.3	12.9/ 97	40.5
Sept.21	09 03.69	+26 49.3	5.200	4.588	−0.36	+0.6	20.3	12.2/ 96	47.9
Oct. 1	09 12.75	+26 36.3	5.060	4.569	−0.37	+0.7	20.2	11.3/ 94	55.6
Oct. 11	09 21.18	+26 27.5	4.908	4.550	−0.39	+0.9	20.1	10.3/ 92	63.5
Oct. 21	09 28.85	+26 23.9	4.746	4.531	−0.40	+1.0	20.0	9.1/ 88	71.6
Oct. 31	09 35.63	+26 26.6	4.577	4.511	−0.42	+1.1	19.9	7.8/ 82	79.9
Nov. 10	09 41.36	+26 36.7	4.405	4.491	−0.43	+1.2	19.8	6.3/ 73	88.6
Nov. 20	09 45.89	+26 55.0	4.232	4.471	−0.45	+1.3	19.7	5.0/ 57	97.6
Nov. 30	09 49.04	+27 22.3	4.063	4.451	−0.48	+1.4	19.5	4.2/ 30	106.9
Dec. 10	09 50.66	+27 58.7	3.902	4.430	−0.50	+1.5	19.4	4.5/359	116.5
Dec. 20	09 50.60	+28 43.7	3.754	4.409	−0.53	+1.6	19.3	5.7/336	126.4
Dec. 30	09 48.80	+29 35.7	3.623	4.388	−0.55	+1.6	19.2	7.3/321	136.4
Jan. 9	09 45.27	+30 32.3	3.514	4.366	−0.58	+1.5	19.1	8.7/312	146.3
Jan. 19	09 40.16	+31 29.8	3.431	4.345	−0.60	+1.5	19.0	9.8/304	155.4
Jan. 29	09 33.79	+32 24.3	3.376	4.323	−0.61	+1.3	18.9	10.2/298	161.8
Feb. 8	09 26.64	+33 11.5	3.352	4.301	−0.62	+1.2	18.9	9.9/292	162.0
Feb. 18	09 19.32	+33 47.8	3.358	4.278	−0.62	+1.0	18.9	8.8/286	155.8
Feb. 28	09 12.46	+34 11.2	3.392	4.256	−0.61	+0.8	18.8	7.3/278	146.9
Mar. 10	09 06.64	+34 21.1	3.452	4.233	−0.59	+0.7	18.9	5.4/267	137.1
Mar. 20	09 02.32	+34 18.0	3.533	4.210	−0.57	+0.6	18.9	3.5/246	127.2
Mar. 30	08 59.75	+34 03.6	3.631	4.187	−0.55	+0.5	18.9	2.6/200	117.5

Comet P/2003 HT15 (LINEAR)

Epoch = 2010 July 23.0 TT
T = 2013 Mar. 17.71022 TT
Peri. = 124.19666 e = 0.4179382
Node = 81.44968 2000.0 a = 4.6204016 AU
Incl. = 27.64284 n = 0.09923948
q = 2.6893593 AU P = 9.93 years

m1 = 9.4 + 5 log(Delta) + 17.5 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	03 29.21	+05 51.7	5.303	5.947	-0.18	-2.2	.	4.5/305	127.0
Jan. 14	03 26.71	+06 17.7	5.420	5.928	-0.18	-2.2	.	3.7/327	116.7
Jan. 24	03 25.38	+06 48.5	5.551	5.909	-0.17	-2.1	.	3.5/356	106.6
Feb. 3	03 25.23	+07 23.4	5.690	5.889	-0.17	-2.1	.	4.1/ 21	96.8
Feb. 13	03 26.22	+08 01.4	5.833	5.869	-0.16	-2.0	.	5.1/ 37	87.3
Feb. 23	03 28.31	+08 41.8	5.974	5.849	-0.16	-2.0	.	6.2/ 47	78.0
Mar. 5	03 31.40	+09 23.8	6.110	5.828	-0.16	-2.0	.	7.3/ 54	69.0
Mar. 15	03 35.40	+10 06.6	6.236	5.807	-0.16	-1.9	.	8.3/ 59	60.2
Mar. 25	03 40.20	+10 49.8	6.351	5.786	-0.16	-1.9	.	9.2/ 62	51.7
Apr. 4	03 45.69	+11 32.6	6.449	5.765	-0.16	-1.9	.	9.9/ 65	43.5
Apr. 14	03 51.79	+12 14.5	6.531	5.743	-0.16	-1.9	.	10.5/ 67	35.4
Apr. 24	03 58.39	+12 55.2	6.594	5.721	-0.16	-1.9	.	10.9/ 69	27.5
May 4	04 05.39	+13 34.3	6.636	5.699	-0.16	-1.9	.	11.3/ 71	20.0
May 14	04 12.72	+14 11.4	6.657	5.676	-0.17	-1.8	.	11.5/ 72	12.8
May 24	04 20.27	+14 46.4	6.656	5.653	-0.17	-1.8	.	11.6/ 73	7.3
June 3	04 27.96	+15 19.0	6.633	5.630	-0.17	-1.8	.	11.6/ 75	7.8
June 13	04 35.71	+15 49.1	6.588	5.606	-0.18	-1.8	.	11.5/ 76	13.6
June 23	04 43.43	+16 16.7	6.522	5.582	-0.19	-1.8	.	11.2/ 77	20.6
July 3	04 51.02	+16 41.8	6.436	5.558	-0.19	-1.8	.	10.8/ 78	28.0
July 13	04 58.41	+17 04.4	6.329	5.534	-0.20	-1.9	.	10.3/ 78	35.5
July 23	05 05.47	+17 24.7	6.205	5.509	-0.21	-1.9	.	9.7/ 79	43.2
Aug. 2	05 12.11	+17 42.8	6.064	5.484	-0.22	-1.9	.	8.9/ 79	51.1
Aug. 12	05 18.21	+17 59.1	5.908	5.459	-0.23	-1.9	.	7.9/ 79	59.2
Aug. 22	05 23.65	+18 13.7	5.740	5.433	-0.24	-2.0	.	6.8/ 78	67.4
Sept. 1	05 28.30	+18 27.1	5.563	5.407	-0.25	-2.0	.	5.4/ 76	75.9
Sept.11	05 32.03	+18 39.7	5.380	5.381	-0.26	-2.1	.	4.0/ 72	84.7
Sept.21	05 34.68	+18 51.9	5.194	5.354	-0.27	-2.1	.	2.4/ 59	93.8
Oct. 1	05 36.14	+19 04.1	5.009	5.327	-0.28	-2.2	.	1.3/ 9	103.2
Oct. 11	05 36.28	+19 16.7	4.830	5.300	-0.29	-2.3	.	2.2/307	113.0
Oct. 21	05 35.01	+19 30.1	4.662	5.273	-0.31	-2.4	.	4.1/291	123.2
Oct. 31	05 32.32	+19 44.3	4.509	5.245	-0.31	-2.5	.	5.9/285	133.7
Nov. 10	05 28.25	+19 59.3	4.377	5.217	-0.32	-2.6	.	7.6/282	144.7
Nov. 20	05 22.94	+20 15.1	4.271	5.189	-0.33	-2.7	.	9.0/281	155.9
Nov. 30	05 16.67	+20 31.3	4.193	5.160	-0.33	-2.8	25.0	9.8/280	167.4
Dec. 10	05 09.80	+20 47.8	4.147	5.131	-0.33	-2.9	24.9	10.0/280	177.8
Dec. 20	05 02.79	+21 04.3	4.133	5.102	-0.32	-3.0	24.9	9.5/280	168.7
Dec. 30	04 56.10	+21 21.0	4.152	5.072	-0.31	-3.0	24.8	8.5/282	157.1
Jan. 9	04 50.17	+21 38.1	4.201	5.043	-0.30	-3.0	24.8	6.9/285	145.6
Jan. 19	04 45.37	+21 56.0	4.275	5.013	-0.29	-3.0	24.8	5.1/292	134.3
Jan. 29	04 41.95	+22 15.1	4.371	4.982	-0.28	-3.0	24.8	3.3/308	123.4
Feb. 8	04 40.06	+22 35.7	4.484	4.952	-0.27	-3.0	24.8	2.3/349	112.9
Feb. 18	04 39.74	+22 57.9	4.607	4.921	-0.26	-2.9	24.8	2.9/ 35	102.8
Feb. 28	04 40.96	+23 21.8	4.736	4.890	-0.25	-2.8	24.8	4.5/ 55	93.0
Mar. 10	04 43.65	+23 47.1	4.866	4.858	-0.25	-2.8	24.8	6.1/ 64	83.7
Mar. 20	04 47.69	+24 13.6	4.993	4.827	-0.25	-2.7	24.9	7.7/ 69	74.7
Mar. 30	04 52.94	+24 40.7	5.113	4.795	-0.25	-2.6	24.9	9.1/ 72	66.0

Comet P/1997 C1 (Gehrels)

Epoch = 2010 July 23.0 TT
T = 2013 July 12.53139 TT
Peri. = 211.33568 e = 0.4694599
Node = 225.37962 2000.0 a = 6.7810026 AU
Incl. = 2.85667 n = 0.05581658
q = 3.5975938 AU P = 17.66 years

m1 = 3.6 + 5 log(Delta) + 20.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ', °	Elong. °
Jan. 4	20 40.07	-15 44.3	8.123	7.244	-0.15	-0.6	.	9.2/ 76	25.0
Jan. 14	20 46.21	-15 21.6	8.154	7.216	-0.15	-0.6	.	9.5/ 75	16.4
Jan. 24	20 52.53	-14 56.8	8.160	7.187	-0.15	-0.6	.	9.7/ 74	8.0
Feb. 3	20 58.93	-14 30.3	8.142	7.157	-0.15	-0.7	.	9.7/ 74	2.7
Feb. 13	21 05.33	-14 02.5	8.099	7.128	-0.16	-0.7	.	9.6/ 73	9.7
Feb. 23	21 11.64	-13 33.8	8.033	7.099	-0.16	-0.7	.	9.4/ 72	18.1
Mar. 5	21 17.77	-13 04.6	7.943	7.069	-0.16	-0.7	.	9.1/ 71	26.5
Mar. 15	21 23.65	-12 35.4	7.832	7.040	-0.17	-0.8	25.0	8.6/ 71	34.9
Mar. 25	21 29.19	-12 06.6	7.701	7.010	-0.17	-0.8	24.9	8.0/ 70	43.4
Apr. 4	21 34.30	-11 39.0	7.552	6.980	-0.18	-0.9	24.9	7.3/ 69	51.9
Apr. 14	21 38.92	-11 12.9	7.388	6.950	-0.18	-0.9	24.8	6.4/ 68	60.5
Apr. 24	21 42.94	-10 48.9	7.212	6.919	-0.19	-0.9	24.7	5.4/ 67	69.2
May 4	21 46.31	-10 27.8	7.027	6.889	-0.19	-1.0	24.6	4.3/ 65	78.0
May 14	21 48.95	-10 09.9	6.836	6.858	-0.20	-1.0	24.5	3.0/ 63	87.0
May 24	21 50.78	-09 55.9	6.645	6.828	-0.20	-1.0	24.4	1.7/ 56	96.1
June 3	21 51.74	-09 46.3	6.456	6.797	-0.21	-1.1	24.3	0.5/ 12	105.4
June 13	21 51.81	-09 41.4	6.275	6.766	-0.22	-1.1	24.2	1.3/270	114.9
June 23	21 50.97	-09 41.5	6.105	6.734	-0.22	-1.2	24.1	2.6/259	124.6
July 3	21 49.22	-09 46.5	5.950	6.703	-0.23	-1.2	24.0	3.9/255	134.6
July 13	21 46.64	-09 56.5	5.816	6.672	-0.23	-1.2	23.9	5.1/254	144.7
July 23	21 43.34	-10 10.8	5.705	6.640	-0.24	-1.2	23.8	6.0/253	155.0
Aug. 2	21 39.47	-10 28.7	5.621	6.608	-0.24	-1.2	23.8	6.6/252	165.4
Aug. 12	21 35.23	-10 49.2	5.566	6.577	-0.24	-1.2	23.7	6.8/251	175.1
Aug. 22	21 30.88	-11 11.1	5.541	6.545	-0.24	-1.2	23.6	6.6/250	172.0
Sept. 1	21 26.67	-11 33.1	5.546	6.513	-0.24	-1.1	23.6	6.0/249	161.7
Sept.11	21 22.85	-11 54.0	5.580	6.480	-0.23	-1.1	23.6	5.0/248	151.1
Sept.21	21 19.66	-12 12.6	5.640	6.448	-0.23	-1.1	23.5	3.8/246	140.6
Oct. 1	21 17.28	-12 27.9	5.723	6.415	-0.22	-1.0	23.5	2.4/241	130.2
Oct. 11	21 15.84	-12 39.4	5.825	6.383	-0.22	-1.0	23.5	0.9/221	120.0
Oct. 21	21 15.43	-12 46.4	5.941	6.350	-0.21	-1.0	23.5	1.0/104	110.0
Oct. 31	21 16.07	-12 48.6	6.066	6.317	-0.21	-1.0	23.5	2.5/ 84	100.2
Nov. 10	21 17.74	-12 46.0	6.196	6.284	-0.21	-0.9	23.5	4.0/ 79	90.6
Nov. 20	21 20.41	-12 38.5	6.326	6.251	-0.20	-0.9	23.5	5.4/ 77	81.2
Nov. 30	21 24.00	-12 26.3	6.452	6.218	-0.20	-0.9	23.5	6.7/ 75	72.0
Dec. 10	21 28.42	-12 09.3	6.570	6.184	-0.20	-0.9	23.5	7.9/ 74	62.9
Dec. 20	21 33.57	-11 48.0	6.676	6.151	-0.20	-1.0	23.5	8.9/ 73	54.1
Dec. 30	21 39.35	-11 22.6	6.768	6.117	-0.20	-1.0	23.5	9.7/ 73	45.4
Jan. 9	21 45.66	-10 53.3	6.842	6.084	-0.20	-1.0	23.5	10.5/ 72	36.8
Jan. 19	21 52.40	-10 20.5	6.897	6.050	-0.20	-1.0	23.4	11.0/ 71	28.4
Jan. 29	21 59.46	-09 44.7	6.931	6.016	-0.20	-1.0	23.4	11.5/ 71	20.1
Feb. 8	22 06.77	-09 06.3	6.944	5.982	-0.20	-1.1	23.3	11.8/ 70	12.0
Feb. 18	22 14.23	-08 25.7	6.933	5.948	-0.21	-1.1	23.3	11.9/ 69	4.3
Feb. 28	22 21.75	-07 43.3	6.900	5.914	-0.21	-1.2	23.2	12.0/ 69	5.0
Mar. 10	22 29.26	-06 59.8	6.844	5.880	-0.22	-1.2	23.2	11.9/ 68	12.7
Mar. 20	22 36.67	-06 15.6	6.767	5.845	-0.22	-1.2	23.1	11.7/ 68	20.6
Mar. 30	22 43.91	-05 31.4	6.669	5.811	-0.23	-1.3	23.0	11.3/ 67	28.5

Comet P/2005 L1 (McNaught)

Epoch = 2010 July 23.0 TT
T = 2013 Nov. 25.05640 TT
Peri. = 150.05185 e = 0.2085687
Node = 138.30068 2000.0 a = 3.9822192 AU
Incl. = 7.73544 n = 0.12402703
q = 3.1516529 AU P = 7.95 years

m1 = 5.0 + 5 log(Delta) + 20.0 log(r)

0h TT 2010/11	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 4	07 36.40	+17 04.6	3.842	4.812	-0.44	+0.3	21.6	9.4/283	169.4
Jan. 14	07 29.99	+17 26.1	3.830	4.811	-0.44	+0.2	21.6	9.3/284	175.2
Jan. 24	07 23.65	+17 48.7	3.850	4.809	-0.44	+0.2	21.6	8.5/285	165.6
Feb. 3	07 17.87	+18 11.1	3.901	4.808	-0.43	+0.1	21.6	7.2/287	154.3
Feb. 13	07 13.04	+18 32.4	3.980	4.806	-0.42	+0.1	21.6	5.4/291	143.1
Feb. 23	07 09.47	+18 51.9	4.083	4.804	-0.41	0.0	21.7	3.4/300	132.2
Mar. 5	07 07.37	+19 09.0	4.206	4.802	-0.39	0.0	21.7	1.7/330	121.7
Mar. 15	07 06.79	+19 23.5	4.344	4.799	-0.38	0.0	21.8	1.8/ 49	111.6
Mar. 25	07 07.73	+19 35.1	4.492	4.797	-0.37	0.0	21.9	3.5/ 76	101.8
Apr. 4	07 10.11	+19 43.6	4.644	4.794	-0.36	0.0	21.9	5.3/ 84	92.5
Apr. 14	07 13.81	+19 48.9	4.798	4.790	-0.34	0.0	22.0	6.9/ 88	83.5
Apr. 24	07 18.71	+19 50.8	4.949	4.787	-0.33	0.0	22.1	8.4/ 91	74.9
May 4	07 24.64	+19 49.4	5.093	4.783	-0.33	+0.1	22.1	9.6/ 93	66.6
May 14	07 31.46	+19 44.4	5.228	4.779	-0.32	+0.1	22.2	10.7/ 94	58.5
May 24	07 39.05	+19 35.8	5.351	4.774	-0.31	+0.2	22.2	11.7/ 96	50.7
June 3	07 47.25	+19 23.6	5.461	4.770	-0.31	+0.2	22.3	12.4/ 97	43.0
June 13	07 55.96	+19 07.9	5.554	4.765	-0.30	+0.3	22.3	13.1/ 98	35.5
June 23	08 05.07	+18 48.7	5.631	4.760	-0.30	+0.3	22.3	13.5/ 99	28.2
July 3	08 14.47	+18 26.3	5.690	4.754	-0.30	+0.4	22.3	13.9/100	20.9
July 13	08 24.08	+18 00.8	5.730	4.748	-0.29	+0.4	22.3	14.2/101	13.7
July 23	08 33.80	+17 32.5	5.750	4.742	-0.29	+0.5	22.3	14.3/102	6.6
Aug. 2	08 43.56	+17 01.7	5.751	4.736	-0.29	+0.5	22.3	14.3/103	1.3
Aug. 12	08 53.27	+16 28.8	5.731	4.730	-0.29	+0.6	22.3	14.2/104	8.0
Aug. 22	09 02.87	+15 54.3	5.692	4.723	-0.30	+0.7	22.3	14.0/104	15.2
Sept. 1	09 12.26	+15 18.6	5.633	4.716	-0.30	+0.7	22.2	13.7/105	22.5
Sept.11	09 21.39	+14 42.4	5.555	4.709	-0.30	+0.8	22.2	13.2/106	29.9
Sept.21	09 30.15	+14 06.4	5.459	4.701	-0.31	+0.8	22.1	12.6/106	37.4
Oct. 1	09 38.47	+13 31.2	5.346	4.694	-0.31	+0.9	22.1	11.8/106	45.1
Oct. 11	09 46.25	+12 57.6	5.218	4.686	-0.32	+1.0	22.0	10.9/106	53.0
Oct. 21	09 53.37	+12 26.7	5.076	4.677	-0.33	+1.0	21.9	9.7/106	61.1
Oct. 31	09 59.75	+11 59.3	4.924	4.669	-0.34	+1.1	21.8	8.4/106	69.5
Nov. 10	10 05.23	+11 36.4	4.763	4.660	-0.35	+1.1	21.8	6.8/105	78.1
Nov. 20	10 09.70	+11 19.2	4.596	4.651	-0.36	+1.2	21.7	5.0/102	87.0
Nov. 30	10 13.03	+11 08.7	4.429	4.642	-0.37	+1.3	21.6	3.0/ 95	96.3
Dec. 10	10 15.09	+11 05.8	4.263	4.632	-0.39	+1.3	21.5	1.1/ 61	106.0
Dec. 20	10 15.76	+11 11.3	4.106	4.623	-0.41	+1.4	21.4	1.8/322	116.0
Dec. 30	10 15.00	+11 25.5	3.960	4.613	-0.42	+1.5	21.3	4.0/305	126.5
Jan. 9	10 12.78	+11 48.4	3.831	4.602	-0.44	+1.5	21.2	6.1/300	137.3
Jan. 19	10 09.20	+12 19.1	3.724	4.592	-0.45	+1.5	21.1	7.9/298	148.5
Jan. 29	10 04.46	+12 56.0	3.644	4.581	-0.46	+1.5	21.0	9.1/297	159.9
Feb. 8	09 58.87	+13 36.8	3.592	4.570	-0.47	+1.5	21.0	9.7/296	171.5
Feb. 18	09 52.85	+14 18.9	3.573	4.559	-0.48	+1.5	20.9	9.6/295	176.4
Feb. 28	09 46.88	+14 59.2	3.584	4.548	-0.47	+1.4	20.9	8.7/295	164.9
Mar. 10	09 41.41	+15 35.4	3.626	4.536	-0.47	+1.3	20.9	7.2/295	153.5
Mar. 20	09 36.88	+16 05.3	3.695	4.524	-0.46	+1.2	20.9	5.3/295	142.3
Mar. 30	09 33.57	+16 27.8	3.787	4.512	-0.44	+1.2	21.0	3.1/298	131.6

彗 星 年 表　２０１０

編集委員会

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（五十音順・敬称略）
○印は編集長

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