THE COMET HANDBOOK FOR 2014

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INDEX TO EPHEMERIDES

Comet 95P/(2060) Chiron
Epoch 1996 Feb. 7.0 TT = JDT 2450120.5
T 1996 Feb. 14.74524 TT Sato
q 8.4539293 (2000.0) P Q
n 0.01942786 Peri. 339.55370 -0.98660435 +0.15200990
a 13.7041721 Node 209.38448 -0.12782247 -0.94583864
e 0.3831127 Incl. 6.92994 -0.10135720 -0.28684883
P 50.73
From 1174 observations 1941 Jan. 23-2013 Oct. 28, mean residual 0″.51.

Comet C/2005 L3 (McNaught)
Epoch 2008 Jan. 15.0 TT = JDT 2454480.5
T 2008 Jan. 16.00588 TT Sato
q 5.5932712 (2000.0) P Q
z +0.0000156 Peri. 47.09694 -0.30837260 -0.72516364
+/-0.0000001 Node 288.73910 -0.94495803 +0.30792605
e 0.9999128 Incl. 139.44875 +0.10936482 +0.61588899
From 5045 observations 2004 July 16-2014 Jan. 9, mean residual 0″.57.

Comet C/2008 FK75 (Lemmon-Siding Spring)
Epoch 2010 Oct. 11.0 TT = JDT 2455480.5
T 2010 Sept. 29.25377 TT Sato
q 4.5108797 (2000.0) P Q
z -0.0005710 Peri. 80.42005 +0.16377379 +0.82386199
+/-0.0000002 Node 218.26851 -0.78064606 +0.44452152
e 1.0025755 Incl. 61.17603 +0.60313338 +0.35164192
From 3490 observations 2008 Mar. 31-2013 Nov. 6, mean residual 0″.62.

Comet C/2008 S3 (Boattini)
Epoch 2011 June 8.0 TT = JDT 2455720.5
T 2011 June 7.39974 TT Sato
q 8.0178740 (2000.0) P Q
z -0.0001259 Peri. 39.96435 +0.94225480 +0.23006280
+/-0.0000005 Node 54.94140 +0.17645238 -0.95869123
e 1.0010092 Incl. 162.70401 +0.28464090 -0.16727893
From 1752 observations 2006 Dec. 27-2013 Oct. 9, mean residual 0″.65.

Comet C/2009 P1 (Garradd)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 23.67669 TT Sato
q 1.5505387 (2000.0) P Q
z -0.0006483 Peri. 90.74640 -0.16659326 -0.82691426
+/-0.0000004 Node 325.99761 -0.58720585 +0.52077477
e 1.0010051 Incl. 106.17734 +0.79210857 +0.21214724
From 8782 observations 2009 Aug. 13-2013 Nov. 1, mean residual 0″.47.
Nongravitational parameters A1 = +1.95, A2 = +0.2759.

Comet C/2009 F4 (McNaught)
Epoch 2011 Dec. 25.0 TT = JDT 2455920.5
T 2011 Dec. 31.89131 TT Sato
q 5.4548644 (2000.0) P Q
z -0.0002921 Peri. 260.38337 +0.04749520 +0.61014611
+/-0.0000004 Node 53.58442 +0.16282277 +0.77643867
e 1.0015931 Incl. 79.34755 -0.98551152 +0.15768553
From 1025 observations 2009 Mar. 19-2014 Jan. 12, mean residual 0″.61.

Comet 244P/Scotti
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Jan. 20.31279 TT Sato
q 3.9181923 (2000.0) P Q
n 0.09094258 Peri. 92.59121 +0.05661779 -0.99838787
a 4.8973132 Node 354.15856 +0.89963423 +0.05275923
e 0.1999302 Incl. 2.25905 +0.43295806 +0.02093159
P 10.84
From 1158 observations 2000 Nov. 29-2013 June 2, mean residual 0″.64.

Comet C/2012 Q1 (Kowalski)
Epoch 2012 Feb. 3.0 TT = JDT 2455960.5
T 2012 Feb. 9.17292 TT Sato
q 9.4822367 (2000.0) P Q
n 0.00734057 Peri. 139.22151 +0.79068066 +0.60975168
a 26.2210101 Node 184.44938 -0.55155238 +0.74844153
e 0.6383726 Incl. 45.16936 +0.26573309 -0.26084127
P 134.27
From 164 observations 2011 Apr. 13-2013 Oct. 6, mean residual 0″.56.

Comet P/2011 R3 (Novichonok-Gerke)
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 2.72459 TT Sato

q	3.5577553	(2000.0)	P	Q
n	0.09222134	Peri.	225.15100	+0.57010198	−0.81933640
a	4.8519364	Node	190.59782	+0.81558617	+0.57329380
e	0.2667350	Incl.	19.23646	+0.09900974	−0.00469848

P 10.69
From 384 observations 2011 Sept. 7-2014 Jan. 28, mean residual 0″.58.

Comet 242P/Spahr
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 3.58289 TT Sato

q	3.9799206	(2000.0)	P	Q
n	0.07601916	Peri.	247.68530	+0.36912795	−0.92935033
a	5.5189187	Node	180.77321	+0.91824834	+0.36349296
e	0.2788586	Incl.	32.48280	−0.14340342	−0.06465937

P 12.97
From 519 observations 1997 Oct. 29-2014 Jan. 4, mean residual 0″.66.

Comet C/2006 S3 (LONEOS)
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 Apr. 16.33114 TT Sato

q	5.1311487	(2000.0)	P	Q
z	−0.0006845	Peri.	140.13008	−0.21556722	−0.96492594
	+/−0.0000002	Node	38.37071	−0.94614002	+0.24435018
e	1.0035122	Incl.	166.03267	−0.24155710	−0.09597350

From 5174 observations 2006 Aug. 29-2014 Jan. 28, mean residual 0″.62.

Comet P/2011 U2 (Bressi)
Epoch 2012 Apr. 23.0 TT = JDT 2456040.5
T 2012 May 7.85610 TT Sato

q	4.8373408	(2000.0)	P	Q
n	0.07766254	Peri.	157.76712	+0.42581662	−0.88926298
a	5.4407860	Node	266.69297	+0.80293484	+0.45646792
e	0.1109114	Incl.	9.63007	+0.41710412	+0.02912693

P 12.69
From 133 observations 2011 Oct. 24-2014 Jan. 10, mean residual 0″.48.

Comet 281P/MOSS
Epoch 2012 June 2.0 TT = JDT 2456080.5
T 2012 May 14.03619 TT Sato

q	4.0137438	(2000.0)	P	Q
n	0.09216364	Peri.	26.63184	−0.40206512	−0.91190919
a	4.8539611	Node	87.17069	+0.82468994	−0.39970246
e	0.1730993	Incl.	4.72375	+0.39778153	−0.09305682

P 10.69
From 98 observations 2000 Nov. 17-2013 May 3, mean residual 0″.62.

Comet C/2010 R1 (LINEAR)
Epoch 2012 June 2.0 TT = JDT 2456080.5
T 2012 May 18.89648 TT Sato

q	5.6214205	(2000.0)	P	Q
z	−0.0006519	Peri.	114.49620	−0.63355728	−0.76579348
	+/−0.0000007	Node	343.64942	−0.77181041	+0.63550445
e	1.0036646	Incl.	156.93339	+0.05398024	+0.09846032

From 1438 observations 2010 Sept. 4-2014 Jan. 7, mean residual 0″.63.

Comet C/2011 O1 (LINEAR)
Epoch 2012 Aug. 21.0 TT = JDT 2456160.5
T 2012 Aug. 18.47107 TT Sato

q	3.8906524	(2000.0)	P	Q
z	+0.0008216	Peri.	232.38266	+0.18297552	+0.14503854
	+/−0.0000008	Node	89.81664	−0.25418333	+0.96240741
e	0.9968036	Incl.	76.49876	−0.94968984	−0.22964278

From 260 observations 2011 May 23-2014 Jan. 3, mean residual 0″.44.

Comet 158P/Kowal-LINEAR
Epoch 2012 Sept. 30.0 TT = JDT 2456200.5
T 2012 Sept. 27.48256 TT Sato
q 4.5764218 (2000.0) P Q
n 0.09607371 Peri. 232.84950 +0.97919820 -0.18018978
a 4.7213517 Node 137.30459 +0.20025506 +0.93228739
e 0.0306967 Incl. 7.90734 -0.03269245 +0.31364289
P 10.26
From 504 observations 1979 July 25-2014 Jan. 7, mean residual 0".71.

Comet C/2012 A2 (LINEAR)
Epoch 2012 Nov. 9.0 TT = JDT 2456240.5
T 2012 Nov. 5.09106 TT Sato
q 3.5374743 (2000.0) P Q
z +0.0010295 Peri. 101.66958 +0.08481518 +0.98342907
+/-0.0000003 Node 191.40403 +0.23708607 +0.13627224
e 0.9963582 Incl. 125.86863 +0.96777920 -0.11957063
From 2406 observations 2011 Apr. 2-2014 Jan. 4, mean residual 0".50.

Comet C/2012 J1 (Catalina)
Epoch 2012 Dec. 19.0 TT = JDT 2456280.5
T 2012 Dec. 7.24012 TT Sato
q 3.1587101 (2000.0) P Q
z -0.0004527 Peri. 147.27405 +0.84721852 -0.26315940
+/-0.0000002 Node 235.21724 +0.27903541 +0.95964408
e 1.0014299 Incl. 34.18597 +0.45206197 -0.09914825
From 4202 observations 2012 May 13-2014 Jan. 10, mean residual 0".36.

Comet C/2011 F1 (LINEAR)
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 8.00826 TT Sato
q 1.8191645 (2000.0) P Q
z +0.0000124 Peri. 192.54794 +0.03599911 +0.55369975
+/-0.0000019 Node 85.11503 -0.82949743 +0.48083714
e 0.9999775 Incl. 56.61280 -0.55734915 -0.67986193
From 4450 observations 2011 Mar. 17-2014 Jan. 11, mean residual 0".51.
Nongravitational parameters A1 = +4.58, A2 = -3.6824.

Comet 276P/Vorobjov
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 16.16867 TT Sato
q 3.9238106 (2000.0) P Q
n 0.07862464 Peri. 205.79205 +0.50627182 -0.85080326
a 5.3963106 Node 214.30732 +0.82813706 +0.52519489
e 0.2728716 Incl. 14.46545 +0.24057818 -0.01743982
P 12.54
From 148 observations 2000 Dec. 19-2013 Mar. 4, mean residual 0".45.

Comet 246P/NEAT
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Jan. 28.71056 TT Sato
q 2.8797627 (2000.0) P Q
n 0.12191754 Peri. 176.18919 -0.25681363 +0.92800750
a 4.0280229 Node 78.78049 -0.89382636 -0.12184307
e 0.2850679 Incl. 15.97178 -0.36758836 -0.35207434
P 8.08
From 2564 observations 2002 Jan. 6-2013 Nov. 11, mean residual 0".56.

Comet C/2012 C1 (McNaught)
Epoch 2013 Jan. 28.0 TT = JDT 2456320.5
T 2013 Feb. 4.54568 TT Sato
q 4.8379574 (2000.0) P Q
z +0.0007504 Peri. 279.89230 +0.18023558 +0.48587498
+/-0.0000012 Node 300.63819 +0.30426369 -0.85437791
e 0.9963698 Incl. 96.27779 -0.93538160 -0.18429293
From 210 observations 2012 Feb. 5-2013 Dec. 12, mean residual 0".41.

Comet C/2013 J3 (McNaught)
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Feb. 22.90477 TT Sato
q 3.9887373 (2000.0) P Q
z 0.0005067 Peri. 320.96249 -0.62075546 -0.71914924
+/-0.0000047 Node 200.75524 -0.28739217 -0.16180085
e 0.9979788 Incl. 118.22876 -0.72943019 +0.67575502
From 97 observations 2013 May 8-2014 Jan. 10, mean residual 0".44.

Comet C/2013 E2 (Iwamoto)
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Mar. 9.03695 TT Sato
q 1.4133392 (2000.0) P Q
z +0.0042345 Peri. 95.82545 +0.14122317 +0.98984758
+/-0.0000014 Node 182.47172 -0.98965228 +0.14074231
e 0.9940152 Incl. 21.85715 -0.02538466 +0.01983356
From 1110 observations 2013 Mar. 14-2014 Jan. 27, mean residual 0".52.

Comet C/2011 L4 (PANSTARRS)
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Mar. 10.16990 TT Sato
q 0.3015446 (2000.0) P Q
z -0.0001074 Peri. 333.65163 +0.41005805 +0.10048679
+/-0.0000002 Node 65.66590 +0.90783497 +0.05058138
e 1.0000324 Incl. 84.20825 -0.08768159 +0.99365181
From 4818 observations 2011 May 21-2014 Jan. 9, mean residual 0".51.

Comet C/2012 F6 (Lemmon)
Epoch 2013 Mar. 9.0 TT = JDT 2456360.5
T 2013 Mar. 24.51477 TT Sato
q 0.7312481 (2000.0) P Q
z 0.0020268 Peri. 304.98792 +0.46128441 +0.76193561
+/-0.0000002 Node 332.71477 -0.00393687 -0.51061758
e 0.9985179 Incl. 82.60802 -0.88724359 +0.39840158
From 2996 observations 2012 Jan. 22-2014 Jan. 27, mean residual 0".44.

Comet C/2012 X2 (PANSTARRS)
Epoch 2013 Apr. 18.0 TT = JDT 2456400.5
T 2013 Mar. 31.30804 TT Sato
q 4.7481904 (2000.0) P Q
n 0.01046696 Peri. 215.63043 -0.49669077 -0.66234204
a 20.6977080 Node 271.02310 +0.86769718 -0.36404978
e 0.7705934 Incl. 34.12379 +0.01999709 -0.65480591
P 94.16
From 145 observations 2012 Dec. 12-2014 Jan. 11, mean residual 0".48.

Comet C/2013 F2 (Catalina)
Epoch 2013 Apr. 18.0 TT = JDT 2456400.5
T 2013 Apr. 18.87991 TT Sato
q 6.2178326 (2000.0) P Q
z +0.0001099 Peri. 122.98011 -0.41632749 -0.87729367
+/-0.0000048 Node 344.27069 +0.19209721 +0.17184658
e 0.9993165 Incl. 61.75024 +0.88869009 -0.44813453
From 125 observations 2012 Dec. 28-2014 Jan. 12, mean residual 0".51.

Comet P/2014 A3 (PANSTARRS)
Epoch 2013 Apr. 18.0 TT = JDT 2456400.5
T 2013 Apr. 20.18114 TT Sato
q 3.5489867 (2000.0) P Q
n 0.09695324 Peri. 213.28813 +0.11495756 -0.97625392
a 4.6927545 Node 230.80867 +0.95527942 +0.15933842
e 0.2437306 Incl. 13.70396 +0.27244448 -0.14676363
P 10.17
From 33 observations 2014 Jan. 9-28, mean residual 0".29.

Comet C/2012 L2 (LINEAR)
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 May 9.32398 TT Sato
q 1.5086521 (2000.0) P Q
z +0.0017406 Peri. 205.77711 -0.14643643 -0.29114234
+/-0.0000056 Node 270.30112 +0.98903149 -0.06175131
e 0.9973740 Incl. 70.98249 -0.01931543 -0.95468472
From 2057 observations 2012 June 1-2013 Oct. 12, mean residual 0".50.
Nongravitational parameters A1 = -1.01, A2 = +0.2784.

Comet C/2010 S1 (LINEAR)
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 May 20.30291 TT Sato
q 5.8998766 (2000.0) P Q
z -0.0003235 Peri. 118.61509 +0.53547061 -0.22397061
+/-0.0000002 Node 93.43035 -0.69560531 -0.66377190
e 1.0019086 Incl. 125.33580 +0.47896187 -0.71361336
From 7057 observations 2010 Sept. 21-2013 Dec. 20, mean residual 0".49.

Comet C/2012 K6 (McNaught)
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 May 21.49636 TT Sato
q 3.3530807 (2000.0) P Q
z +0.0001573 Peri. 338.83325 -0.71568445 -0.62148096
+/-0.0000010 Node 206.89890 -0.49561700 +0.13042537
e 0.9994725 Incl. 135.21936 -0.49209711 +0.77249637
From 242 observations 2012 May 27-2014 Jan. 13, mean residual 0".39.

Comet 257P/Catalina
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 June 4.43602 TT Sato
q 2.1290400 (2000.0) P Q
n 0.13553694 Peri. 117.81373 +0.80037182 +0.57727276
a 3.7534526 Node 207.86733 -0.59469941 +0.79860402
e 0.4327782 Incl. 20.24477 +0.07574677 +0.17025799
P 7.27
From 1089 observations 2005 Apr. 17-2014 Jan. 4, mean residual 0".59.

Comet 277P/LINEAR
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 June 5.91350 TT Sato
q 1.9132028 (2000.0) P Q
n 0.12987766 Peri. 152.29254 +0.34439547 -0.89407810
a 3.8617107 Node 276.36163 +0.79924336 +0.43925735
e 0.5045712 Incl. 16.74777 +0.49254625 -0.08762036
P 7.59
From 171 observations 2005 Sept. 15-2013 Oct. 31, mean residual 0".65.

Comet C/2013 E1 (McNaught)
Epoch 2013 May 28.0 TT = JDT 2456440.5
T 2013 June 12.14167 TT Sato
q 7.7815795 (2000.0) P Q
z -0.0002983 Peri. 311.42679 -0.96221413 -0.07782240
+/-0.0000027 Node 134.02821 +0.09919629 +0.79225348
e 1.0023213 Incl. 158.72059 -0.25358245 +0.60520913
From 129 observations 2012 Apr. 2-2013 Dec. 27, mean residual 0".49.

Comet C/2012 S4 (PANSTARRS)
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 June 28.04491 TT Sato
q 4.3487154 (2000.0) P Q
z -0.0000150 Peri. 163.61854 +0.97262822 +0.21139104
+/-0.0000009 Node 173.10294 -0.04288061 -0.24478461
e 1.0000653 Incl. 126.54258 +0.22837598 -0.94625278
From 887 observations 2012 Sept. 28-2014 Jan. 1, mean residual 0".59.

Comet C/2013 B2 (Catalina)
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 1.54816 TT Sato
q 3.7341164 (2000.0) P Q
z -0.0006946 Peri. 156.44039 -0.67262142 -0.66559439
+/-0.0000032 Node 331.95699 +0.52097299 -0.11560432
e 1.0025938 Incl. 43.45722 +0.52551648 -0.73730574
From 112 observations 2013 Jan. 16-2014 Jan. 4, mean residual 0".47.

Comet 271P/van Houten-Lemmon
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 5.79766 TT Sato
q 4.2493662 (2000.0) P Q
n 0.05342788 Peri. 35.13347 +0.71126821 -0.70263982
a 6.9816395 Node 9.58413 +0.61451197 +0.60783645
e 0.3913512 Incl. 6.85422 +0.34128078 +0.36990829
P 18.45
From 83 observations 1960 Sept. 24-2013 Dec. 23, mean residual 0".49.

Comet 270P/Gehrels
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 7.95661 TT Sato
q 3.6015195 (2000.0) P Q
n 0.05485958 Peri. 210.93681 +0.23862649 -0.97046624
a 6.8596357 Node 225.28445 +0.90085273 +0.23482574
e 0.4749693 Incl. 2.85490 +0.36265928 +0.05524618
P 17.97
From 344 observations 1997 Feb. 2-2014 Jan. 9, mean residual 0".70.

Comet 178P/Hug-Bell
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 23.04581 TT Sato

q	1.9336872	(2000.0)	P	Q
n	0.14022830	Peri. 296.96054	+0.74415236	-0.64186198
a	3.6692639	Node 103.57525	+0.66028306	+0.66473718
e	0.4730041	Incl. 10.97541	+0.10130912	+0.38227958
P	7.03			

From 551 observations 1999 Oct. 10-2014 Jan. 13, mean residual 0″.65.
Nongravitational parameters A1 = +0.1821, A2 = -0.028024.

Comet P/2012 B1 (PANSTARRS)
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 23.11005 TT Sato

q	3.8251563	(2000.0)	P	Q
n	0.05958138	Peri. 162.17653	-0.94742247	+0.31023642
a	6.4922567	Node 36.19700	-0.30736516	-0.81421232
e	0.4108125	Incl. 7.62722	-0.08897935	-0.49072565
P	16.54			

From 985 observations 1997 June 1-2014 Jan. 9, mean residual 0″.50.

Comet 84P/Giclas
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 23.22146 TT Sato

q	1.8395252	(2000.0)	P	Q
n	0.14204729	Peri. 276.48030	+0.86835260	-0.48188225
a	3.6378720	Node 112.38323	+0.49021589	+0.79812964
e	0.4943403	Incl. 7.28645	+0.07518079	+0.36163320
P	6.94			

From 1097 observations 1978 Sept. 11-2014 Jan. 12, mean residual 0″.64.
Nongravitational parameters A1 = +0.04, A2 = -0.0035.

Comet C/2013 G6 (Lemmon)
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 25.23174 TT Sato

q	2.0484826	(2000.0)	P	Q
z	+0.0026108	Peri. 215.69384	-0.80804696	+0.09627881
	+/-0.0000024	Node 44.56731	-0.11695383	+0.94070222
e	0.9946518	Incl. 124.08414	-0.57739234	-0.32528406

From 211 observations 2013 Apr. 13-Dec. 23, mean residual 0″.49.

Comet C/2013 G6 (Lemmon)
Epoch 2013 July 7.0 TT = JDT 2456480.5
T 2013 July 25.23090 TT Sato

q	2.0484873	(2000.0)	P	Q
z	+0.0026049	Peri. 215.69348	-0.80804781	+0.09627348
	+/-0.0000020	Node 44.56731	-0.11695951	+0.94070168
e	0.9946638	Incl. 124.08418	-0.57739000	-0.32528721

From 215 observations 2013 Apr. 13-2014 Jan. 5, mean residual 0″.50.

Comet P/2013 R3 (Catalina-PANSTARRS)
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Aug. 5.12333 TT Sato

q	2.2035610	(2000.0)	P	Q
n	0.18659478	Peri. 8.22733	+0.98743540	+0.15795417
a	3.0329812	Node 342.68240	-0.14586178	+0.89967645
e	0.2734670	Incl. 0.89887	-0.06079200	+0.40698005
P	5.28			

From 312 observations 2013 Sept. 15-2014 Jan. 3, mean residual 0″.51.

Comet C/2012 V2 (LINEAR)
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Aug. 16.48309 TT Sato

q	1.4548929	(2000.0)	P	Q
z	+0.0016704	Peri. 217.30813	-0.12440000	-0.38817135
	+/-0.0000068	Node 262.16476	+0.97456645	-0.22068699
e	0.9975698	Incl. 67.18445	-0.18639975	-0.89477386

From 1044 observations 2012 Oct. 30-2014 Jan. 11, mean residual 0″.56.
Nongravitational parameters A1 = +4.03, A2 = +0.8711.

Comet C/2013 N4 (Borisov)
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Aug. 21.51449 TT Sato
q 1.2104032 (2000.0) P Q
z +0.0208218 Peri. 142.28108 -0.33193026 -0.86951613
+/-0.0000078 Node 322.61030 +0.65012858 +0.07005645
e 0.9747973 Incl. 37.03493 +0.68348748 -0.48891081
From 249 observations 2013 July 8-2014 Jan. 12, mean residual 0″.62.

Comet P/2013 J2 (McNaught)
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Aug. 22.99955 TT Sato
q 2.1478312 (2000.0) P Q
n 0.06312704 Peri. 37.88994 +0.82029699 +0.51342623
a 6.2468214 Node 289.39341 -0.56795220 +0.67931917
e 0.6561721 Incl. 15.49554 -0.06740290 +0.52432715
P 15.61
From 1527 observations 2013 May 8-2014 Jan. 18, mean residual 0″.43.

Comet C/2012 S3 (PANSTARRS)
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Aug. 31.12832 TT Sato
q 2.3080836 (2000.0) P Q
z -0.0003273 Peri. 183.75015 +0.49671572 -0.36617526
+/-0.0000011 Node 121.30556 -0.77041392 +0.23147990
e 1.0007555 Incl. 112.93148 -0.39966973 -0.90129503
From 689 observations 2012 Sept. 27-2013 Sept. 4, mean residual 0″.54.

Comet 266P/Christensen
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Aug. 31.63352 TT Sato
q 2.3280011 (2000.0) P Q
n 0.14841583 Peri. 98.01199 -0.22586694 -0.97414394
a 3.5330454 Node 5.05104 +0.86856827 -0.20382903
e 0.3410781 Incl. 3.42791 +0.44110462 -0.09745417
P 6.64
From 408 observations 2006 Oct. 27-2013 Dec. 29, mean residual 0″.77.

Comet 102P/Shoemaker
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Sept. 1.25152 TT Sato
q 1.9684315 (2000.0) P Q
n 0.13656588 Peri. 18.78666 +0.98828567 -0.00995069
a 3.7345754 Node 339.85742 -0.10696459 +0.66660139
e 0.4729169 Incl. 26.24724 +0.10885771 +0.74534795
P 7.22
From 352 observations 2000 Jan. 1-2013 Dec. 22, mean residual 0″.74.
Nongravitational parameters A1 = -0.57, A2 = -0.2609.

Comet 121P/Shoemaker-Holt
Epoch 2013 Sept. 25.0 TT = JDT 2456560.5
T 2013 Sept. 8.27634 TT Sato
q 3.7549513 (2000.0) P Q
n 0.09919629 Peri. 12.51694 -0.27481655 -0.89792392
a 4.6217427 Node 94.22533 +0.84976746 -0.39412566
e 0.1875464 Incl. 20.16664 +0.44985679 +0.19595305
P 9.94
From 509 observations 1989 Mar. 4-2013 Oct. 12, mean residual 0″.62.

Comet C/2013 O3 (McNaught)
Epoch 2013 Sept. 25.0 TT = JDT 2456560.5
T 2013 Sept. 9.97314 TT Sato
q 3.1802208 (2000.0) P Q
z +0.0011077 Peri. 337.96522 +0.19176835 -0.16047574
+/-0.0000400 Node 276.75103 -0.69007448 -0.72354438
e 0.9964772 Incl. 102.84067 -0.69786969 +0.67136508
From 84 observations 2013 July 24-Oct. 6, mean residual 0″.42.

Comet P/2014 A2 (Hill)
Epoch 2013 Nov. 4.0 TT = JDT 2456600.5
T 2013 Oct. 28.37013 TT Sato

q	2.0747819	(2000.0)	P	Q
n	0.06828836	Peri. 356.23967	-0.22912861	-0.88854551
a	5.9279553	Node 106.67298	+0.90354865	-0.34603845
e	0.6500004	Incl. 24.51427	+0.36207721	+0.30123788
P	14.43			

From 90 observations 2013 Nov. 9-2014 Jan. 29, mean residual 0″.70.

Comet C/2013 V3 (Nevski)
Epoch 2013 Nov. 4.0 TT = JDT 2456600.5
T 2013 Oct. 29.90728 TT Sato

q	1.3867032	(2000.0)	P	Q
n	0.02172866	Peri. 339.64466	+0.11163778	-0.84543256
a	12.7188356	Node 100.91836	+0.96940191	-0.02297649
e	0.8909725	Incl. 32.13479	+0.21862510	+0.53358773
P	45.36			

From 828 observations 2013 Nov. 7-2014 Jan. 26, mean residual 0″.65.

Comet C/2013 G8 (PANSTARRS)
Epoch 2013 Nov. 4.0 TT = JDT 2456600.5
T 2013 Nov. 14.99191 TT Sato

q	5.1412112	(2000.0)	P	Q
z	+0.0003220	Peri. 80.16977	+0.68105321	+0.60970200
	+/-0.0000037	Node 241.02195	-0.70678278	+0.69211125
e	0.9983444	Incl. 27.61521	+0.19137562	+0.38632304

From 123 observations 2013 Apr. 14-Oct. 2, mean residual 0″.47.

Comet P/2007 C1 (Christensen)
Epoch 2013 Nov. 4.0 TT = JDT 2456600.5
T 2013 Nov. 16.17898 TT Sato

q	2.1945303	(2000.0)	P	Q
n	0.14501089	Peri. 100.56851	-0.88710812	-0.44844609
a	3.5881366	Node 52.87584	+0.35146361	-0.80973392
e	0.3883928	Incl. 7.87535	+0.29918642	-0.37845354
P	6.80			

From 132 observations 2007 Feb. 9-Apr. 12, mean residual 0″.49.

Comet 2P/Encke
Epoch 2013 Nov. 4.0 TT = JDT 2456600.5
T 2013 Nov. 21.69468 TT Sato

q	0.3361276	(2000.0)	P	Q
n	0.29903878	Peri. 186.53533	-0.94510574	-0.31479057
a	2.2147143	Node 334.57342	+0.30828388	-0.77005283
e	0.8482298	Incl. 11.77901	+0.10833370	-0.55491038
P	3.30			

From 910 observations 2001 July 19-2013 Nov. 20, mean residual 0″.67.
Nongravitational parameters A1 = +0.05, A2 = -0.0059.

Comet C/2012 A1 (PANSTARRS)
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 2.21685 TT Sato

q	7.6025453	(2000.0)	P	Q
z	-0.0002174	Peri. 191.93471	-0.03047858	+0.52641076
	+/-0.0000019	Node 277.97147	+0.97306843	+0.20995370
e	1.0016530	Incl. 120.91011	+0.22849263	-0.82389997

From 254 observations 2012 Jan. 2-2013 Nov. 29, mean residual 0″.56.

Comet P/2013 G1 (Kowalski)
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 10.79993 TT Sato

q	3.3535789	(2000.0)	P	Q
n	0.05469747	Peri. 51.20420	+0.04453871	+0.99701158
a	6.8731823	Node 221.48327	-0.94357741	+0.02122962
e	0.5120777	Incl. 5.46805	-0.32814322	+0.07427799
P	18.02			

From 118 observations 2013 Apr. 2-Sept. 2, mean residual 0″.61.

Comet 280P/Larsen
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 10.97092 TT Sato
q 2.6359876 (2000.0) P Q
n 0.10238651 Peri. 104.58355 -0.54260401 +0.82597707
a 4.5252326 Node 131.50935 -0.82762169 -0.49460143
e 0.4174912 Incl. 11.77241 -0.14360788 -0.27042801
P 9.63
From 155 observations 2004 Apr. 19-2013 July 11, mean residual 0".61.

Comet 154P/Brewington
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 12.45425 TT Sato
q 1.6078391 (2000.0) P Q
n 0.09143574 Peri. 49.02053 +0.83297624 -0.54642320
a 4.8796881 Node 343.49109 +0.36925569 +0.66610117
e 0.6705037 Incl. 17.83200 +0.41206895 +0.50767205
P 10.78
From 2235 observations 1992 Sept. 26-2014 Jan. 18, mean residual 0".55.
Nongravitational parameters A1 = +3.83, A2 = +0.1779.

Comet 291P/NEAT
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 15.45329 TT Sato
q 2.5909219 (2000.0) P Q
n 0.10151481 Peri. 176.07052 +0.54265310 -0.83503471
a 4.5511006 Node 241.04296 +0.76778901 +0.53696055
e 0.4307043 Incl. 5.95651 +0.34062832 +0.11995998
P 9.71
From 566 observations 2003 July 29-2014 Jan. 7, mean residual 0".67.

Comet P/2013 O2 (PANSTARRS)
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 16.36491 TT
q 2.1460066 (2000.0) P Q
n 0.13172109 Peri. 213.73952 +0.48540016 -0.86773221
a 3.8255965 Node 207.67467 +0.84437678 +0.49698468
e 0.4390400 Incl. 13.30668 +0.22674773 +0.00685798
P 7.48
From 165 observations 2013 July 16-Dec. 27, mean residual 0".63.

Comet 87P/Bus
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 19.56198 TT Sato
q 2.1017598 (2000.0) P Q
n 0.15455191 Peri. 24.70883 -0.89409817 +0.44786851
a 3.4389021 Node 181.90017 -0.41808989 -0.83584507
e 0.3888282 Incl. 2.60078 -0.16059049 -0.31745365
P 6.38
From 236 observations 1993 Jan. 1-2013 Dec. 31, mean residual 0".75.
Nongravitational parameters A1 = +2.10, A2 = -0.2354.

Comet C/2013 R1 (Lovejoy)
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 22.73501 TT Sato
q 0.8118111 (2000.0) P Q
z +0.0020893 Peri. 67.16825 -0.25261749 -0.46478419
+/-0.0000099 Node 70.71026 +0.12868223 -0.88541658
e 0.9983039 Incl. 64.03971 +0.95897095 -0.00362393
From 2094 observations 2013 Sept. 7-2014 Jan. 14, mean residual 0".65.
Nongravitational parameters A1 = +1.28, A2 = +0.4784.

Comet C/2011 J2 (LINEAR)
Epoch 2013 Dec. 14.0 TT = JDT 2456640.5
T 2013 Dec. 25.29706 TT Sato
q 3.4434016 (2000.0) P Q
z -0.0001437 Peri. 85.29409 +0.07044236 +0.97005691
+/-0.0000004 Node 163.94726 +0.16358240 -0.24109620
e 1.0004949 Incl. 122.79888 +0.98401152 -0.02936348
From 2542 observations 2011 Mar. 10-2014 Jan. 12, mean residual 0".51.

Comet 286P/Christensen
Epoch 2014 Jan. 23.0 TT = JDT 2456680.5
T 2014 Jan. 6.12722 TT Sato

q	2.3760250	(2000.0)	P	Q
n	0.11773378	Peri. 24.86401	+0.60895745	+0.74058025
a	4.1228924	Node 283.95285	-0.76789470	+0.46066517
e	0.4236995	Incl. 17.02179	-0.19876759	+0.48921213
P	8.37			

From 119 observations 2005 June 3-2013 July 13, mean residual 0″.47.

Comet 293P/Spacewatch
Epoch 2014 Jan. 23.0 TT = JDT 2456680.5
T 2014 Jan. 10.28630 TT Sato

q	2.1117468	(2000.0)	P	Q
n	0.14197508	Peri. 41.15323	-0.48573621	-0.86036976
a	3.6391055	Node 78.43663	+0.75507368	-0.50195792
e	0.4197072	Incl. 9.06464	+0.44036812	-0.08832959
P	6.94			

From 134 observations 2006 Nov. 15-2014 Jan. 12, mean residual 0″.51.

Comet P/2007 R2 (Gibbs)
Epoch 2014 Jan. 23.0 TT = JDT 2456680.5
T 2014 Jan. 14.92485 TT Sato

q	1.4667478	(2000.0)	P	Q
n	0.15455764	Peri. 353.21058	+0.99939658	-0.03452625
a	3.4388170	Node 8.77071	+0.03292465	+0.90681766
e	0.5734732	Incl. 1.42702	+0.01106566	+0.42010673
P	6.38			

From 160 observations 2007 Sept. 10-Dec. 1, mean residual 0″.70.

Comet C/2013 H2 (Boattini)
Epoch 2014 Jan. 23.0 TT = JDT 2456680.5
T 2014 Jan. 22.96911 TT Sato

q	7.4991369	(2000.0)	P	Q
z	-0.0002701	Peri. 35.98299	-0.46418186	-0.42440789
	+/-0.0000954	Node 262.74687	-0.87736784	+0.34070896
e	1.0020258	Incl. 128.39835	+0.12149433	+0.83892512

From 116 observations 2013 Apr. 22-July 9, mean residual 0″.52.

Comet 292P/Li
Epoch 2014 Jan. 23.0 TT = JDT 2456680.5
T 2014 Feb. 4.82894 TT Sato

q	2.5223615	(2000.0)	P	Q
n	0.06508398	Peri. 319.05796	+0.57208484	-0.70908505
a	6.1209661	Node 91.86374	+0.81799154	+0.45644783
e	0.5879145	Incl. 24.35748	+0.06007306	+0.53745119
P	15.14			

From 370 observations 1998 Sept. 23-2014 Jan. 17, mean residual 0″.59.

Comet 107P/(4015) Wilson-Harrington
Epoch 2014 Jan. 23.0 TT = JDT 2456680.5
T 2014 Feb. 5.27340 TT Sato

q	0.9941034	(2000.0)	P	Q
n	0.22974645	Peri. 91.44372	+0.99829791	-0.03226392
a	2.6402001	Node 270.40689	+0.01030157	+0.91749063
e	0.6234742	Incl. 2.78477	+0.05740345	+0.39644669
P	4.29			

From 802 observations 1949 Nov. 21-2013 July 28, mean residual 0″.47.

Comet 129P/Shoemaker-Levy
Epoch 2014 Jan. 23.0 TT = JDT 2456680.5
T 2014 Feb. 11.56703 TT Sato

q	3.9137203	(2000.0)	P	Q
n	0.11089694	Peri. 309.49492	-0.70028729	-0.71384227
a	4.2906492	Node 184.96478	+0.67198199	-0.65673401
e	0.0878489	Incl. 3.43736	+0.24091061	-0.24316589
P	8.89			

From 472 observations 1997 Oct. 6-2013 Dec. 30, mean residual 0″.97.
Nongravitational parameters A1 = +2.17, A2 = -1.9668.

Comet P/2013 N3 (PANSTARRS)
Epoch 2014 Jan. 23.0 TT = JDT 2456680.5
T 2014 Feb. 11.78666 TT Sato

q	3.0288850	(2000.0)	P	Q
n	0.04869788	Peri. 323.95577	+0.94891930	+0.31530926
a	7.4267018	Node 17.67538	-0.27989541	+0.85804571
e	0.5921628	Incl. 2.17052	-0.14563902	+0.40538577
P	20.24			

From 44 observations 2013 July 4-Nov. 23, mean residual 0″.31.

Comet 169P/NEAT
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Feb. 15.27153 TT Sato

q	0.6078936	(2000.0)	P	Q
n	0.23428697	Peri. 218.07222	+0.82640852	-0.56291463
a	2.6059773	Node 176.11384	+0.55261718	+0.80632042
e	0.7667310	Incl. 11.29079	+0.10799634	+0.18158881
P	4.21			

From 1085 observations 1989 Mar. 7-2013 July 6, mean residual 0″.45.

Comet C/2013 P2 (PANSTARRS)
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Feb. 17.03152 TT Sato

q	2.8350929	(2000.0)	P	Q
z	0.0003525	Peri. 104.96731	-0.23821880	-0.97078366
+/-	0.0000168	Node 2.02990	-0.83591078	+0.18983109
e	0.9990007	Incl. 125.53243	+0.49447444	-0.14677618

From 135 observations 2013 July 26-Nov. 8, mean residual 0″.43.

Comet P/2013 TL117 (Lemmon)
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Feb. 18.21694 TT Sato

q	1.1176686	(2000.0)	P	Q
n	0.14401642	Peri. 112.20031	-0.43073259	-0.90242921
a	3.6046357	Node 3.35967	+0.75645588	-0.36678170
e	0.6899358	Incl. 9.36548	+0.49218283	-0.22603694
P	6.84			

From 327 observations 2013 Oct. 4-2014 Jan. 29, mean residual 0″.42.

Comet C/2012 X1 (LINEAR)
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Feb. 21.63035 TT Sato

q	1.5989229	(2000.0)	P	Q
z	0.0064520	Peri. 132.11231	-0.22403629	+0.73239276
+/-	0.0000014	Node 113.14607	-0.96331845	-0.26642445
e	0.9896837	Incl. 44.36723	+0.14773389	-0.62659305

From 1251 observations 2012 Dec. 8-2014 Jan. 14, mean residual 0″.51.

Comet 296P/Garradd
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Mar. 1.28611 TT Sato

q	1.8307106	(2000.0)	P	Q
n	0.15036217	Peri. 350.03018	-0.26416594	+0.86664091
a	3.5024908	Node 263.67686	-0.85297426	-0.41475938
e	0.4773118	Incl. 25.20458	-0.45016805	+0.27732325
P	6.55			

From 82 observations 2001 June 30-2014 Jan. 7, mean residual 0″.54.

Comet 294P/LINEAR
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Mar. 3.22969 TT Sato

q	1.2998968	(2000.0)	P	Q
n	0.17182106	Peri. 235.37425	-0.95976301	+0.16124985
a	3.2044373	Node 312.69066	-0.00065492	-0.81997815
e	0.5943448	Incl. 18.22665	-0.28081050	-0.54921246
P	5.74			

From 173 observations 2008 Jan. 13-2014 Jan. 13, mean residual 0″.55.

Comet 52P/Harrington-Abell
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Mar. 7.54123 TT Sato
q 1.7731268 (2000.0) P Q
n 0.12996749 Peri. 139.61402 -0.44973020 -0.89043152
a 3.8599311 Node 336.85288 +0.76685604 -0.34487438
e 0.5406325 Incl. 10.23057 +0.45790235 -0.29697369
P 7.58
From 680 observations 1983 Sept. 17-2014 Jan. 12, mean residual 0".63.
Nongravitational parameters A1 = +0.32, A2 = +0.0055.

Comet P/2013 W1 (PANSTARRS)
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Mar. 8.16798 TT Sato
q 1.4156181 (2000.0) P Q
n 0.15142482 Peri. 1.32164 -0.48746633 -0.87013205
a 3.4860852 Node 117.85705 +0.80033838 -0.47844446
e 0.5939233 Incl. 4.69945 +0.34904879 -0.11815716
P 6.51
From 87 observations 2013 Nov. 9-2014 Jan. 29, mean residual 0".65.

Comet 290P/Jager
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Mar. 12.47643 TT Sato
q 2.1562531 (2000.0) P Q
n 0.06483606 Peri. 180.72468 -0.56076052 -0.78185496
a 6.1365600 Node 303.42377 +0.76128808 -0.35747041
e 0.6486219 Incl. 19.05547 +0.32555812 -0.51080106
P 15.20
From 1833 observations 1998 Oct. 24-2014 Jan. 12, mean residual 0".64.

Comet C/2013 G7 (McNaught)
Epoch 2014 Mar. 4.0 TT = JDT 2456720.5
T 2014 Mar. 18.65978 TT Sato
q 4.6774794 (2000.0) P Q
z +0.0005391 Peri. 218.26030 -0.64197930 +0.25812811
+/-0.0000046 Node 48.39988 -0.20262610 +0.85102881
e 0.9974785 Incl. 105.10382 -0.73946281 -0.45729622
From 256 observations 2013 Apr. 13-Dec. 23, mean residual 0".59.

Comet 17P/Holmes
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Mar. 27.51247 TT Sato
q 2.0565825 (2000.0) P Q
n 0.14310793 Peri. 24.51471 +0.97593135 +0.12418592
a 3.6198751 Node 326.76480 -0.21060140 +0.75009449
e 0.4318637 Incl. 19.09160 +0.05661321 +0.64956610
P 6.89
From 3623 observations 2007 May 13-2013 Dec. 19, mean residual 0".56.

Comet 117P/Helin-Roman-Alu
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Mar. 27.15817 TT Sato
q 3.0563387 (2000.0) P Q
n 0.11888498 Peri. 222.68214 +0.19404888 +0.97240970
a 4.0962338 Node 58.89716 -0.85433685 +0.23238509
e 0.2538661 Incl. 8.69741 -0.48213440 -0.02040953
P 8.29
From 2732 observations 1993 Jan. 24-2013 Sept. 1, mean residual 0".70.
Nongravitational parameters A1 = +21.87, A2 = +4.0499.

Comet 119P/Parker-Hartley
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Apr. 2.60069 TT Sato
q 3.0264995 (2000.0) P Q
n 0.11139541 Peri. 181.30443 +0.41627989 -0.90557977
a 4.2778399 Node 244.10093 +0.83502609 +0.41621892
e 0.2925169 Incl. 5.19577 +0.35978116 +0.08177468
P 8.85
From 1264 observations 1989 Mar. 2-2014 Jan. 6, mean residual 0".64.
Nongravitational parameters A1 = +1.98, A2 = +0.9222.

Comet 124P/Mrkos
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Apr. 9.61344 TT (2000.0) P Q Sato

q	1.6453288			
n	0.16319128	Peri.	183.71034	-0.99747862 +0.07086661
a	3.3164345	Node	0.41467	-0.04377161 -0.57237611
e	0.5038862	Incl.	31.52902	-0.05586095 -0.81692320
P	6.04			

From 691 observations 1991 Mar. 15-2014 Jan. 12, mean residual 0″.60.

Comet P/2013 P5 (PANSTARRS)
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Apr. 15.94112 TT (2000.0) P Q Sato

q	1.9362813			
n	0.30441536	Peri.	144.27573	+0.44299208 -0.89244167
a	2.1885594	Node	279.29086	+0.80112059 +0.43684500
e	0.1152713	Incl.	4.96865	+0.40244729 +0.11275779
P	3.24			

From 97 observations 2013 Aug. 15-Nov. 7, mean residual 0″.32.

Comet 156P/Russell-LINEAR
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Apr. 16.56151 TT (2000.0) P Q Sato

q	1.5848652			
n	0.14466620	Peri.	357.80578	+0.79929618 -0.55796343
a	3.5938340	Node	38.98166	+0.55661109 +0.54741580
e	0.5590043	Incl.	20.77826	+0.22651647 +0.62370887
P	6.81			

From 82 observations 1986 Sept. 3-2013 Aug. 5, mean residual 0″.60.

Comet C/2013 V1 (Boattini)
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Apr. 21.23246 TT (2000.0) P Q Sato

q	1.6608157			
z	-0.0008401	Peri.	48.03558	-0.09911043 -0.48659751
	+/-0.0000043	Node	72.80993	+0.40157946 -0.81765276
e	1.0013952	Incl.	65.30882	+0.91044553 +0.30767977

From 998 observations 2013 Nov. 4-2014 Jan. 29, mean residual 0″.49.

Comet P/2001 Q11 (NEAT)
Epoch 2014 Apr. 13.0 TT = JDT 2456760.5
T 2014 Apr. 23.09208 TT (2000.0) P Q Sato

q	1.9543753			
n	0.15385122	Peri.	207.39515	+0.97530991 +0.10342768
a	3.4493353	Node	144.91931	-0.08108112 +0.98954865
e	0.4334052	Incl.	19.84675	-0.20541772 +0.10047978
P	6.41			

From 21 observations 2001 Aug. 18-Dec. 13, mean residual 0″.48.

Comet 191P/McNaught
Epoch 2014 May 23.0 TT = JDT 2456800.5
T 2014 May 6.21822 TT (2000.0) P Q Sato

q	2.0441815			
n	0.14870440	Peri.	274.47837	+0.92312509 -0.35564206
a	3.5284733	Node	106.40804	+0.38449803 +0.85269772
e	0.4206612	Incl.	8.76320	+0.00115380 +0.38265561
P	6.63			

From 490 observations 2000 Aug. 5-2013 Sept. 8, mean residual 0″.66.

Comet 209P/LINEAR
Epoch 2014 May 23.0 TT = JDT 2456800.5
T 2014 May 6.32392 TT (2000.0) P Q Sato

q	0.9694574			
n	0.19344640	Peri.	152.39308	-0.78895524 +0.52311629
a	2.9609355	Node	62.82453	-0.60908010 -0.59660411
e	0.6725841	Incl.	21.24339	-0.08106210 -0.60861555
P	5.09			

From 660 observations 2003 Dec. 3-2014 Jan. 10, mean residual 0″.49.

Comet 295P/LINEAR
Epoch 2014 May 23.0 TT = JDT 2456800.5
T 2014 May 14.71742 TT Sato

q	2.0485965	(2000.0)	P	Q
n	0.07985015	Peri. 73.40552	+0.16374317	−0.98533233
a	5.3409545	Node 7.66806	+0.71065841	+0.08403833
e	0.6164363	Incl. 21.10449	+0.68421692	+0.14851853
P	12.34			

From 65 observations 2002 Jan. 6-2013 Dec. 26, mean residual 0″.59.

Comet 134P/Kowal-Vavrova
Epoch 2014 May 23.0 TT = JDT 2456800.5
T 2014 May 21.49858 TT Sato

q	2.5713451	(2000.0)	P	Q
n	0.06336258	Peri. 18.58466	−0.75841813	+0.65114254
a	6.2313312	Node 202.12076	−0.60718762	−0.72178856
e	0.5873522	Incl. 4.34884	−0.23690743	−0.23459469
P	15.56			

From 123 observations 1983 May 8-2014 Jan. 13, mean residual 0″.62.
Nongravitational parameters A1 = −2.15, A2 = +0.1788.

Comet 132P/Helin-Roman-Alu
Epoch 2014 May 23.0 TT = JDT 2456800.5
T 2014 May 21.67162 TT Sato

q	1.9078063	(2000.0)	P	Q
n	0.11972933	Peri. 221.12777	+0.77155992	−0.63615021
a	4.0769527	Node 178.36949	+0.60682911	+0.73463138
e	0.5320509	Incl. 5.77727	+0.19092856	+0.23585938
P	8.23			

From 214 observations 1989 Oct. 30-2006 Jan. 22, mean residual 0″.66.
Nongravitational parameters A1 = +0.08, A2 = −0.0284.

Comet P/2005 JQ5 (Catalina)
Epoch 2014 May 23.0 TT = JDT 2456800.5
T 2014 May 29.91595 TT Sato

q	0.8259007	(2000.0)	P	Q
n	0.22285684	Peri. 222.73988	+0.74617630	+0.65839663
a	2.6943380	Node 95.80763	−0.58090959	+0.71629434
e	0.6934681	Incl. 5.69162	−0.32521529	+0.23116290
P	4.42			

From 575 observations 2005 May 6-Dec. 29, mean residual 0″.56.

Comet 4P/Faye
Epoch 2014 May 23.0 TT = JDT 2456800.5
T 2014 May 29.61529 TT Sato

q	1.6550374	(2000.0)	P	Q
n	0.13121009	Peri. 205.06676	+0.71692528	−0.69521362
a	3.8355227	Node 199.27494	+0.66320265	+0.70307942
e	0.5684976	Incl. 9.05014	+0.21489624	+0.14952374
P	7.51			

From 3513 observations 1992 Dec. 2-2014 Jan. 1, mean residual 0″.52.
Nongravitational parameters A1 = +0.21, A2 = −0.0563.

Comet 16P/Brooks
Epoch 2014 May 23.0 TT = JDT 2456800.5
T 2014 June 7.92519 TT Sato

q	1.4663665	(2000.0)	P	Q
n	0.16057171	Peri. 219.66399	+0.94506480	−0.32582819
a	3.3524067	Node 159.30626	+0.31559308	+0.88856486
e	0.5625929	Incl. 4.25843	+0.08516771	+0.32293726
P	6.14			

From 246 observations 1994 Dec. 6-2009 Mar. 3, mean residual 0″.90.
Nongravitational parameters A1 = +3.69, A2 = +2.7605.

Comet 181P/Shoemaker-Levy
Epoch 2014 May 23.0 TT = JDT 2456800.5
T 2014 June 10.34819 TT Sato

q	1.1235688	(2000.0)	P	Q
n	0.13103506	Peri. 333.78824	+0.96825506	−0.17494637
a	3.8389376	Node 37.68205	+0.24775026	+0.76651960
e	0.7073230	Incl. 16.98212	−0.03319570	+0.61793323
P	7.52			

From 39 observations 1991 Nov. 6-2007 Jan. 27, mean residual 1″.17.

Comet C/2013 Y2 (PANSTARRS)
Epoch 2014 July 2.0 TT = JDT 2456840.5
T 2014 June 13.64187 TT Sato
q 1.9194831 (2000.0) P Q
z +0.0048037 Peri. 308.82583 -0.88751600 +0.13951960
+/-0.0000454 Node 243.40128 -0.08337134 -0.98594980
e 0.9907794 Incl. 29.41456 -0.45317167 -0.09185463
From 145 observations 2013 Dec. 30-2014 Jan. 27, mean residual 0".34.

Comet 222P/LINEAR
Epoch 2014 July 2.0 TT = JDT 2456840.5
T 2014 July 4.54068 TT Sato
q 0.7842912 (2000.0) P Q
n 0.20355256 Peri. 345.44772 +0.99148823 +0.12972160
a 2.8621013 Node 7.12664 -0.10870725 +0.87177588
e 0.7259736 Incl. 5.13687 -0.07165064 +0.47241838
P 4.84
From 208 observations 2004 Dec. 7-2009 Dec. 17, mean residual 0".66.

Comet C/2012 U1 (PANSTARRS)
Epoch 2014 July 2.0 TT = JDT 2456840.5
T 2014 July 4.88225 TT Sato
q 5.2638228 (2000.0) P Q
z +0.0000760 Peri. 70.06864 +0.06736888 -0.92349946
+/-0.0000028 Node 26.98201 +0.25669374 -0.34971326
e 0.9996002 Incl. 56.33897 +0.96414198 +0.15763688
From 91 observations 2012 Oct. 17-2014 Jan. 1, mean residual 0".39.

Comet 75D/Kohoutek
Epoch 2014 July 2.0 TT = JDT 2456840.5
T 2014 July 10.44877 TT Sato
q 1.7849309 (2000.0) P Q
n 0.14774997 Peri. 175.61713 +0.08197723 -0.99129610
a 3.5436524 Node 269.65727 +0.91123396 +0.11641387
e 0.4963019 Incl. 5.91283 +0.40364885 -0.06148058
P 6.67
From 79 observations 1975-1988, mean residual 0".79. Nongravitational
parameters A1 = +3.99 A2 = +0.8702.
From Muraoka's orbit (CHB 2007).

Comet 72D/Denning-Fujikawa
Epoch 2014 July 2.0 TT = JDT 2456840.5
T 2014 July 11.41981 TT Sato
q 0.7841901 (2000.0) P Q
n 0.10923031 Peri. 337.84064 +0.96763863 -0.23421112
a 4.3341832 Node 36.11588 +0.24876163 +0.82292687
e 0.8190685 Incl. 9.16859 +0.04234545 +0.51762584
P 9.02
From 28 observations 1881-1978, mean residual 1".83. Nongravitational
parameters A1 = -0.03, A2 = +0.0238.
From Muraoka's orbit (CHB 2005).

Comet 106P/Schuster
Epoch 2014 July 2.0 TT = JDT 2456840.5
T 2014 July 20.14476 TT Sato
q 1.5460476 (2000.0) P Q
n 0.13540786 Peri. 355.91566 +0.68550250 -0.67775501
a 3.7558376 Node 50.54378 +0.67737111 +0.45976358
e 0.5883614 Incl. 20.14871 +0.26693576 +0.57381669
P 7.28
From 210 observations 1977 Sept. 6-2007 Jan. 27, mean residual 0".72.
Nongravitational parameters A1 = +0.10, A2 = +0.0073.

Comet P/2003 O3 (LINEAR)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 July 24.68951 TT Sato
q 1.2531829 (2000.0) P Q
n 0.17970935 Peri. 0.74771 +0.95213641 +0.30216744
a 3.1099657 Node 341.46184 -0.28119823 +0.80663900
e 0.5970428 Incl. 8.34877 -0.11984914 +0.50796492
P 5.48
From 254 observations 2003 July 30-Dec. 15, mean residual 0".61.

Comet C/2013 P4 (PANSTARRS)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 12.31124 TT

				Sato
q	5.9668116	(2000.0)	P	Q
n	0.01736760	Peri. 113.54751	+0.98182321	−0.17547043
a	14.7675854	Node 256.62116	+0.13540147	+0.91465264
e	0.5959521	Incl. 4.26443	+0.13300234	+0.36417122
P	56.75			

From 70 observations 2013 Aug. 15-Dec. 1, mean residual 0″.51.

Comet 210P/Christensen
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 17.22357 TT

				Sato
q	0.5313175	(2000.0)	P	Q
n	0.17447461	Peri. 345.82730	+0.17568071	−0.96833342
a	3.1718640	Node 93.82784	+0.91964443	+0.09713434
e	0.8324905	Incl. 10.24077	+0.35126971	+0.22998980
P	5.65			

From 435 observations 2003 May 26-2009 May 24, mean residual 0″.75.

Comet C/2012 K8 (Lemmon)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 19.35556 TT

				Sato
q	6.4629897	(2000.0)	P	Q
z	−0.0002832	Peri. 75.85125	−0.03131299	−0.70868827
	+/−0.0000019	Node 312.80737	−0.70286375	+0.51697862
e	1.0018302	Incl. 106.11179	+0.71063496	+0.48009796

From 330 observations 2012 May 30-2013 Dec. 2, mean residual 0″.52.

Comet C/2013 TW5 (Spacewatch)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 17.52707 TT

				Sato
q	5.8313854	(2000.0)	P	Q
z	+0.0023774	Peri. 190.35794	−0.84954015	−0.40585289
	+/−0.0000103	Node 319.70499	+0.51356671	−0.49032830
e	0.9861366	Incl. 31.40466	+0.12054366	−0.77127271

From 110 observations 2013 Oct. 3-2014 Jan. 24, mean residual 0″.41.

Comet P/2008 Q2 (Ory)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 24.54534 TT

				Sato
q	1.3817592	(2000.0)	P	Q
n	0.16882958	Peri. 329.72097	+0.86200741	−0.50516163
a	3.2421793	Node 60.67886	+0.47417282	+0.77438914
e	0.5738178	Incl. 2.75398	+0.17917408	+0.38096350
P	5.84			

From 1007 observations 2008 Aug. 27-2009 Mar. 24, mean residual 0″.48.

Comet 11P/Tempel-Swift-LINEAR [Orbit 1]
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 26.66680 TT

				Sato
q	1.5485758	(2000.0)	P	Q
n	0.15650286	Peri. 164.06538	+0.70653986	−0.67758040
a	3.4102629	Node 240.43778	+0.62094610	+0.73198024
e	0.5459072	Incl. 13.57565	+0.33945158	+0.07134238
P	6.30			

From 66 observations 1908 Sept. 30-2002 Feb. 7, mean residual 1″.39.
Nongravitational parameters A1 = +0.17, A2 = −0.0129.
From Muraoka's orbit (CHB 2008).

Comet P/2011 S1 (Gibbs)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 27.31285 TT

				Sato
q	6.8931557	(2000.0)	P	Q
n	0.03877896	Peri. 193.56169	+0.60950953	−0.79223474
a	8.6444742	Node 218.89590	+0.73165271	+0.57639016
e	0.2025940	Incl. 2.68041	+0.30525799	+0.20034596
P	25.42			

From 96 observations 2010 Sept. 29-2013 Nov. 25, mean residual 0″.50.

Comet 11P/Tempel-Swift-LINEAR [Orbit 2]
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 27.39927 TT Sato

q	1.5485763	(2000.0)	P	Q
n	0.15647805	Peri.	164.06669	+0.70655008	−0.67756869
a	3.4106234	Node	240.43566	+0.62093799	+0.73199167
e	0.5459551	Incl.	13.57618	+0.33944514	+0.07133635
P	6.30				

From 41 observations 2001 Aug. 1-2002 Feb. 7, mean residual 0″.61.

Comet C/2012 K1 (PANSTARRS)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 27.65064 TT Sato

q	1.0545123	(2000.0)	P	Q
z	−0.0002054	Peri.	203.10783	−0.47150471	+0.78072070
	+/−0.0000013	Node	317.73812	+0.87392457	+0.47592401
e	1.0002166	Incl.	142.42834	+0.11806419	−0.40493398

From 2229 observations 2012 May 14-2014 Jan. 14, mean residual 0″.50.

Comet 206P/Barnard-Boattini
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 27.90692 TT Sato

q	1.1456766	(2000.0)	P	Q
n	0.16898456	Peri.	181.56374	+0.90330636	−0.36721598
a	3.2401966	Node	204.07800	+0.39926181	+0.90875012
e	0.6464176	Incl.	32.93079	+0.15693192	−0.19830693
P	5.83				

From 295 observations 1892 Oct. 16-2009 Jan. 4, mean residual 1″.16.

Comet 289P/Blanpain
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 28.20915 TT Sato

q	0.9608592	(2000.0)	P	Q
n	0.18529438	Peri.	9.85120	+0.19525783	−0.97604954
a	3.0471551	Node	68.93842	+0.89268202	+0.13636317
e	0.6846701	Incl.	5.90000	+0.40619353	+0.16950629
P	5.32				

From 306 observations 2003 Oct. 25-2013 July 9, mean residual 0″.70.
Nongravitational parameters A1 = +0.05, A2 = +0.0072.

Comet P/2008 J2 (Beshore)
Epoch 2014 Aug. 11.0 TT = JDT 2456880.5
T 2014 Aug. 30.30685 TT Sato

q	2.3459197	(2000.0)	P	Q
n	0.15419074	Peri.	132.16222	−0.63264528	+0.75379736
a	3.4442699	Node	97.70649	−0.75285132	−0.54483498
e	0.3188920	Incl.	10.32554	−0.18158979	−0.36734778
P	6.39				

From 471 observations 2008 May 6-Aug. 3, mean residual 0″.53.

Comet 284P/McNaught
Epoch 2014 Sept. 20.0 TT = JDT 2456920.5
T 2014 Sept. 2.41530 TT Sato

q	2.2894717	(2000.0)	P	Q
n	0.13996705	Peri.	202.84958	+0.97008747	+0.21103269
a	3.6738282	Node	144.29332	−0.17858369	+0.95517154
e	0.3768158	Incl.	11.86319	−0.16443286	+0.20763558
P	7.04				

From 1081 observations 2006 Apr. 25-2013 June 8, mean residual 0″.58.
Nongravitational parameters A1 = +1.62, A2 = +4.8845.

Comet P/2001 BB50 (LINEAR-NEAT)
Epoch 2014 Sept. 20.0 TT = JDT 2456920.5
T 2014 Sept. 3.65430 TT Sato

q	2.3625839	(2000.0)	P	Q
n	0.07195452	Peri.	193.47947	−0.99610397	+0.08376430
a	5.7248483	Node	351.18564	−0.05448421	−0.83043730
e	0.5873106	Incl.	10.36731	−0.06934222	−0.55077893
P	13.70				

From 95 observations 2001 Jan. 21-June 18, mean residual 0″.54.

Comet 170P/Christensen
Epoch 2014 July 2.0 TT = JDT 2456840.5
T 2014 Sept. 18.18144 TT Sato

q	2.9206885	(2000.0)	P	Q
n	0.11448286	Peri.	225.83066	+0.98162440	−0.15865858
a	4.2005781	Node	142.91870	+0.18155088	+0.94759578
e	0.3046937	Incl.	10.12766	−0.05876059	+0.27728990
P	8.61				

From 123 observations 2005 June 17-2008 Feb. 27, mean residual 0″.64.

Comet C/2013 V5 (Oukaimeden)
Epoch 2014 Sept. 20.0 TT = JDT 2456920.5
T 2014 Sept. 28.23137 TT Sato

q	0.6258501	(2000.0)	P	Q
z	+0.0019330	Peri.	314.55555	+0.74304873	−0.52137392
	+/−0.0000467	Node	278.61578	−0.42747316	−0.85214448
e	0.9987902	Incl.	154.88924	−0.51492259	−0.04493361

From 335 observations 2013 Nov. 12-2014 Jan. 30, mean residual 0″.42.

Comet C/2013 V2 (Borisov)
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 14.37137 TT Sato

q	3.5080237	(2000.0)	P	Q
z	−0.0012374	Peri.	94.47043	−0.64066441	−0.61549136
	+/−0.0000092	Node	48.42843	+0.18243267	−0.70275107
e	1.0043408	Incl.	37.84939	+0.74583338	−0.35680712

From 571 observations 2013 Nov. 6-2014 Jan. 29, mean residual 0″.48.

Comet P/2003 U3 (NEAT)
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 15.92932 TT Sato

q	2.4876231	(2000.0)	P	Q
n	0.08638901	Peri.	356.98467	+0.96605097	+0.25710982
a	5.0679273	Node	348.02500	−0.23440846	+0.83113638
e	0.5091439	Incl.	7.00375	−0.10861951	+0.49305867
P	11.41				

From 118 observations 2003 Oct. 17-2004 Jan. 17, mean residual 0″.58.

Comet 32P/Comas Sola
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 17.60062 TT Sato

q	2.0011931	(2000.0)	P	Q
n	0.10291220	Peri.	53.33748	−0.35115251	−0.92477427
a	4.5098089	Node	57.84919	+0.79431248	−0.37710647
e	0.5562577	Incl.	9.96952	+0.49574146	−0.05082575
P	9.58				

From 1514 observations 1995 Aug. 1-2014 Jan. 18, mean residual 0″.69.
Nongravitational parameters A1 = −0.07, A2 = −0.1293.

Comet 108P/Ciffreo
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 18.41996 TT Sato

q	1.7088269	(2000.0)	P	Q
n	0.13625748	Peri.	358.07314	+0.61847180	−0.76430582
a	3.7402085	Node	53.67084	+0.72396077	+0.46386225
e	0.5431199	Incl.	13.09756	+0.30557066	+0.44796030
P	7.23				

From 171 observations 1985 Nov. 8-2008 Feb. 28, mean residual 0″.80.
Nongravitational parameters A1 = +0.08, A2 = −0.0592.

Comet 70P/Kojima
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 20.76785 TT Sato

q	2.0067845	(2000.0)	P	Q
n	0.13984430	Peri.	1.99068	−0.51877111	−0.84901304
a	3.6759778	Node	119.27263	+0.78277069	−0.51887056
e	0.4540814	Incl.	6.60044	+0.34372458	−0.09975071
P	7.05				

From 450 observations 1977 Nov. 12-2013 Oct. 30, mean residual 0″.67.
Nongravitationalparameters A1 = −0.03, A2 = −0.0173.

Comet C/2013 A1 (Siding Spring)
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 25.27741 TT Sato

q	1.3987748	(2000.0)	P	Q
z	-0.0012758	Peri.	2.40178	+0.49155877	-0.56156543
	+/-0.0000022	Node	300.97475	-0.81136696	-0.57294880
e	1.0017846	Incl.	129.07716	-0.31631257	+0.59697063

From 484 observations 2012 Oct. 4-2014 Jan. 12, mean residual 0".41.

Comet C/2013 U2 (Holvorcem)
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Oct. 26.00074 TT Sato

q	5.1158970	(2000.0)	P	Q
z	+0.0010713	Peri.	107.39956	-0.38170736	-0.92052744
	+/-0.0000241	Node	6.99828	+0.34181912	-0.22426272
e	0.9945196	Incl.	43.09301	+0.85875443	-0.31989915

From 145 observations 2013 Oct. 23-2014 Jan. 2, mean residual 0".38.

Comet 135P/Shoemaker-Levy
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Nov. 1.59557 TT Sato

q	2.6796897	(2000.0)	P	Q
n	0.13296647	Peri.	21.94766	-0.57398741	+0.81683042
a	3.8016718	Node	213.10341	-0.76612037	-0.56055230
e	0.2951286	Incl.	6.06199	-0.28913324	-0.13626879
P	7.41				

From 88 observations 1992 Mar. 30-1999 June 9, mean residual 0".81.

Comet 80P/Peters-Hartley
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Nov. 10.05931 TT Sato

q	1.6127288	(2000.0)	P	Q
n	0.12219723	Peri.	339.13507	-0.46793574	+0.73475571
a	4.0218741	Node	259.88907	-0.72360912	-0.63755785
e	0.5990106	Incl.	29.92315	-0.50737164	+0.23163341
P	8.07				

From 31 observations 1982 July 11-1998 Apr. 25, mean residual 0".79.
Nongravitational parameters A1 = +0.49, A2 = -0.0861.

Comet 269P/Jedicke
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Nov. 14.60953 TT Sato

q	4.0793188	(2000.0)	P	Q
n	0.04971065	Peri.	223.36871	-0.37175899	-0.92212647
a	7.3254861	Node	248.71757	+0.88004532	-0.31333383
e	0.4431334	Incl.	6.60228	+0.29549192	-0.22694643
P	19.83				

From 468 observations 1993 Oct. 12-2014 Jan. 7, mean residual 0".55.

Comet C/2013 G3 (PANSTARRS)
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Nov. 15.19717 TT Sato

q	3.8522037	(2000.0)	P	Q
z	-0.0001312	Peri.	76.49771	-0.00979580	+0.90462542
	+/-0.0000064	Node	208.12646	-0.78719261	+0.25579149
e	1.0005052	Incl.	64.66961	+0.61662942	+0.34091579

From 81 observations 2013 Apr. 10-2014 Jan. 28, mean residual 0".33.

Comet 40P/Vaisala
Epoch 2014 Oct. 30.0 TT = JDT 2456960.5
T 2014 Nov. 15.81207 TT Sato

q	1.8195611	(2000.0)	P	Q
n	0.08978233	Peri.	47.27230	-0.98918819	+0.02922706
a	4.9394146	Node	133.84014	-0.06667217	-0.96243923
e	0.6316241	Incl.	11.49276	+0.13061987	-0.26991946
P	10.98				

From 898 observations 1959 Nov. 11-2013 Dec. 30, mean residual 0".70.
Nongravitational parameters A1 = +0.03, A2 = -0.0230.

Comet P/2004 V1 (Skiff)
Epoch 2014 Dec. 9.0 TT = JDT 2457000.5
T 2014 Nov. 19.38299 TT Sato

q	1.4031030	(2000.0)	P	Q
n	0.09947722	Peri.	144.98972	+0.88091343	−0.43913127
a	4.6130372	Node	241.99352	+0.37565421	+0.87561458
e	0.6958397	Incl.	11.53230	+0.28788095	+0.20115376
P	9.91				

From 160 observations 2004 Oct. 7-2005 Feb. 28, mean residual 0″.77.

Comet C/2013 P3 (Palomar)
Epoch 2014 Dec. 9.0 TT = JDT 2457000.5
T 2014 Nov. 23.78214 TT Sato

q	8.6465513	(2000.0)	P	Q
z	−0.0001213	Peri.	177.18045	+0.99782031	+0.04589947
	+/−0.0000125	Node	177.27615	−0.05999640	+0.33183054
e	1.0010491	Incl.	93.90874	+0.02747845	−0.94222170

From 203 observations 2013 Aug. 8-Dec. 4, mean residual 0″.34.

Comet 193P/LINEAR-NEAT
Epoch 2014 Dec. 9.0 TT = JDT 2457000.5
T 2014 Nov. 24.76726 TT Sato

q	2.1662487	(2000.0)	P	Q
n	0.14571332	Peri.	8.45627	+0.95848952	+0.27430753
a	3.5765960	Node	335.19365	−0.27124779	+0.79312824
e	0.3943267	Incl.	10.68687	−0.08787764	+0.54378578
P	6.76				

From 251 observations 2001 Aug. 17-2009 Jan. 3, mean residual 0″.72.

Comet 11OP/Hartley
Epoch 2014 Dec. 9.0 TT = JDT 2457000.5
T 2014 Dec. 17.79129 TT Sato

q	2.4753544	(2000.0)	P	Q
n	0.14362382	Peri.	167.74997	−0.09942453	−0.97613568
a	3.6112017	Node	287.71458	+0.89497742	−0.00292611
e	0.3145344	Incl.	11.69340	+0.43489099	−0.21714184
P	6.86				

From 1217 observations 1988 Feb. 19-2013 Nov. 26, mean residual 0″.66.
Nongravitational parameters A1 = −0.04, A2 = −0.0711.

Comet P/2000 QJ46 (LINEAR) [Orbit 2]
Epoch 2014 Dec. 9.0 TT = JDT 2457000.5
T 2014 Dec. 25.43762 TT Sato

q	1.8889647	(2000.0)	P	Q
n	0.07047617	Peri.	222.16952	+0.93739218	−0.34708287
a	5.8046297	Node	158.08909	+0.33658988	+0.88159693
e	0.6745762	Incl.	4.42620	+0.08946031	+0.31987551
P	13.98				

From 25 observations 2000 Aug. 24-Nov. 19, mean residual 0″.56.

Comet 15P/Finlay
Epoch 2014 Dec. 9.0 TT = JDT 2457000.5
T 2014 Dec. 27.06883 TT Sato

q	0.9758966	(2000.0)	P	Q
n	0.15134059	Peri.	347.55437	+0.99936905	−0.02160210
a	3.4873787	Node	13.77716	+0.03281924	+0.86513054
e	0.7201633	Incl.	6.79896	−0.01357954	+0.50108133
P	6.51				

From 285 observations 1995 Oct. 26-2009 Mar. 20, mean residual 0″.79.
Nongravitational parameters A1 = +0.78, A2 = +0.1955.

Comet 287P/Christensen
Epoch 2014 Dec. 9.0 TT = JDT 2457000.5
T 2014 Dec. 28.44800 TT Sato

q	3.0540569	(2000.0)	P	Q
n	0.11536351	Peri.	189.08528	+0.84521292	+0.50178368
a	4.1791735	Node	139.05818	−0.47101125	+0.86202053
e	0.2692199	Incl.	16.30053	−0.25251441	+0.07165012
P	8.54				

From 134 observations 2006 Aug. 30-2013 June 4, mean residual 0″.71.

Comet C/2013 W2 (PANSTARRS)
Epoch 2015 Jan. 18.0 TT = JDT 2457040.5
T 2015 Jan. 4.18093 TT Sato
q 4.4487861 (2000.0) P Q
n 0.02931384 Peri. 307.00305 -0.59983424 -0.80012427
a 10.4172768 Node 179.85451 +0.75706889 -0.56763837
e 0.5729415 Incl. 4.56635 +0.25893161 -0.19387583
P 33.62
From 47 observations 2013 Nov. 27-2014 Jan. 9, mean residual 0″.46.

Comet 201P/LONEOS
Epoch 2015 Jan. 18.0 TT = JDT 2457040.5
T 2015 Jan. 14.61686 TT Sato
q 1.3391847 (2000.0) P Q
n 0.15324644 Peri. 25.05989 +0.49732158 -0.86468481
a 3.4584045 Node 35.23853 +0.77392235 +0.40536639
e 0.6127739 Incl. 7.03338 +0.39206561 +0.29664502
P 6.43
From 178 observations 2001 Aug. 9-2009 Mar. 25, mean residual 0″.81.

Comet C/2013 G9 (Tenagra)
Epoch 2015 Jan. 18.0 TT = JDT 2457040.5
T 2015 Jan. 14.67839 TT Sato
q 5.3381433 (2000.0) P Q
z -0.0001876 Peri. 204.93207 -0.94094881 -0.09735266
+/-0.0000134 Node 35.68643 -0.13099534 +0.98785649
e 1.0010015 Incl. 146.23130 -0.31217873 -0.12108680
From 133 observations 2013 Apr. 15-Sept. 6, mean residual 0″.38.

Comet P/2005 Q4 (LINEAR)
Epoch 2015 Feb. 27.0 TT = JDT 2457080.5
T 2015 Feb. 16.78448 TT Sato
q 1.7404188 (2000.0) P Q
n 0.10534727 Peri. 50.97488 +0.47135932 -0.87990933
a 4.4400431 Node 11.37081 +0.68593683 +0.32311566
e 0.6080176 Incl. 17.66655 +0.55435644 +0.34836166
P 9.36
From 199 observations 2005 Aug. 31-2006 May 1, mean residual 0″.59.

Comet 44P/Reinmuth
Epoch 2015 Mar. 19.0 TT = JDT 2457100.5
T 2015 Mar. 24.15108 TT Sato
q 2.1186296 (2000.0) P Q
n 0.13880667 Peri. 58.28141 +0.96046012 +0.26041073
a 3.6942745 Node 286.46585 -0.27729378 +0.86295969
e 0.4265100 Incl. 5.89549 -0.02499038 +0.43299749
P 7.10
From 732 observations 1987 Apr. 11-2010 Feb. 7, mean residual 0″.75.
Nongravitational parameters A1 = +0.17, A2 = +0.0523.
From CHB 2013.

Comet P/2008 WZ96 (LINEAR)
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Mar. 25.13849 TT Sato
q 1.6469603 (2000.0) P Q
n 0.16014462 Peri. 337.81993 +0.79760917 -0.59415904
a 3.3583644 Node 59.05056 +0.57000106 +0.68613870
e 0.5095945 Incl. 6.95824 +0.19727750 +0.41974840
P 6.15
From 130 observations 2008 Nov. 30-2009 Apr. 13, mean residual 0″.48.

Comet 86P/Wild
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 3.33812 TT Sato
q 2.2635426 (2000.0) P Q
n 0.14406822 Peri. 179.14272 -0.31591494 +0.91407334
a 3.6037715 Node 72.41001 -0.87207550 -0.17416960
e 0.3718962 Incl. 15.47226 -0.37374065 -0.36624430
P 6.84
From 72 observations 1987 Feb. 1-2008 June 3, mean residual 0″.72.
Nongravitational parameters A1 = -0.40, A2 = +0.0780.

Comet 88P/Howell
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 6.33336 TT Sato
q 1.3585959 (2000.0) P Q
n 0.17976214 Peri. 235.92012 +0.38255659 +0.92172207
a 3.1093568 Node 56.69759 -0.82052419 +0.37070348
e 0.5630621 Incl. 4.38250 -0.42472404 +0.11404976
P 5.48
From 1286 observations 2003 Jan. 31-2011 Feb. 6, mean residual 0″.63.
Nongravitational parameters A1 = +0.21, A2 = -0.2439.

Comet C/2012 F3 (PANSTARRS)
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 6.67626 TT Sato
q 3.4568743 (2000.0) P Q
z -0.0005204 Peri. 104.02293 -0.01877921 +0.99845789
+/-0.0000033 Node 164.61228 -0.97640438 -0.00707146
e 1.0018009 Incl. 11.35449 -0.21513211 -0.05506219
From 134 observations 2012 Jan. 19-2014 Jan. 12, mean residual 0″.49.

Comet P/2006 S6 (Hill)
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 18.89527 TT Sato
q 2.3837976 (2000.0) P Q
n 0.11637096 Peri. 31.40937 +0.76395858 -0.64428521
a 4.1550187 Node 8.96596 +0.53459746 +0.60111960
e 0.4262847 Incl. 13.18592 +0.36134864 +0.47281264
P 8.47
From 216 observations 2006 Aug. 29-2007 Jan. 17, mean residual 0″.60.

Comet 174P/(60558) Echeclus
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 22.53141 TT Sato
q 5.8170817 (2000.0) P Q
n 0.02822866 Peri. 162.93298 +0.91553751 +0.40213655
a 10.6825740 Node 173.33526 -0.37731940 +0.86619808
e 0.4554607 Incl. 4.34375 -0.13935976 +0.29662615
P 34.92
From 411 observations 2000 Feb. 5-2013 Sept. 10, mean residual 0″.49.

Comet 218P/LINEAR
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 23.22133 TT Sato
q 1.1714953 (2000.0) P Q
n 0.18094701 Peri. 59.81504 -0.56357683 +0.82605661
a 3.0957682 Node 175.87658 -0.77327523 -0.52610533
e 0.6215817 Incl. 2.71899 -0.29056252 -0.20209814
P 5.45
From 282 observations 2003 Apr. 29-2009 May 24, mean residual 0″.64.

Comet 113P/Spitaler
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 23.73992 TT Sato
q 2.1188403 (2000.0) P Q
n 0.13951772 Peri. 50.01746 +0.43298575 -0.90105386
a 3.6817118 Node 14.38677 +0.79331287 +0.36774776
e 0.4244959 Incl. 5.77601 +0.42799303 +0.22992068
P 7.06
From 346 observations 1986 Sept. 30-2009 Mar. 23, mean residual 0″.66.

Comet 268P/Bernardi
Epoch 2015 Apr. 8.0 TT = JDT 2457120.5
T 2015 Apr. 23.73992 TT Sato
q 2.1188403 (2000.0) P Q
n 0.13951772 Peri. 50.01746 +0.43298575 -0.90105386
a 3.6817118 Node 14.38677 +0.79331287 +0.36774776
e 0.4244959 Incl. 5.77601 +0.42799303 +0.22992068
P 7.06
From 58 observations 2004 Sept. 22-2012 Aug. 16, mean residual 0″.18.

Comet P/1997 T3 (Lagerkvist-Carsenty)
Epoch 2015 May 18.0 TT = JDT 2457160.5
T 2015 May 8.65799 TT Sato

q	4.2257712	(2000.0)	P	Q
n	0.05762553	Peri. 334.06275	+0.79520727	-0.60163339
a	6.6383390	Node 63.13033	+0.56997208	+0.69930596
e	0.3634294	Incl. 4.84768	+0.20682654	+0.38601612
P	17.10			

From 163 observations 1997 Oct. 5-1999 Feb. 13, mean residual 0".56.

Comet P/2007 S1 (Zhao)
Epoch 2015 May 8.0 TT = JDT 2457160.5
T 2015 May 10.33344 TT Sato

q	2.4942199	(2000.0)	P	Q
n	0.13308308	Peri. 245.77211	+0.88557429	-0.45996298
a	3.7994508	Node 141.52320	+0.45492753	+0.83071117
e	0.3435315	Incl. 5.97315	+0.09380360	+0.31361283
P	7.41			

From 70 observations 2007 Sept. 8-Oct. 16, mean residual 0".75.

Comet 19P/Borrelly
Epoch 2015 May 18.0 TT = JDT 2457160.5
T 2015 May 28.91841 TT Sato

q	1.3489524	(2000.0)	P	Q
n	0.14421982	Peri. 353.45919	+0.34591192	-0.80065644
a	3.6012457	Node 75.37706	+0.88212734	+0.09988141
e	0.6254206	Incl. 30.36806	+0.31968157	+0.59073935
P	6.83			

From 1856 observations 1994 June 12-2010 Feb. 11, mean residual 0".74.
Nongravitational parameters A1 = +0.40, A2 = +0.1315.

Comet P/2010 B2 (WISE)
Epoch 2015 June 27.0 TT = JDT 2457200.5
T 2015 June 13.44501 TT Sato

q	1.6119593	(2000.0)	P	Q
n	0.17996974	Peri. 155.95035	-0.91908030	-0.39406353
a	3.1069652	Node 0.85235	+0.33166811	-0.77669527
e	0.4811788	Incl. 8.93837	+0.21280900	-0.49138417
P	5.48			

From 48 observations 2010 Jan. 22-Apr. 7, mean residual 0".48.

Comet P/2012 F5 (Gibbs)
Epoch 2015 June 27.0 TT = JDT 2457200.5
T 2015 June 16.42100 TT Sato

q	2.8802660	(2000.0)	P	Q
n	0.18931553	Peri. 178.16858	+0.81882930	-0.56500661
a	3.0038522	Node 216.83608	+0.52449483	+0.80819310
e	0.0411426	Incl. 9.73940	+0.23328898	+0.16610670
P	5.21			

From 126 observations 2009 Sept. 17-2013 May 12, mean residual 0".76.

Comet 148P/Anderson-LINEAR
Epoch 2015 June 27.0 TT = JDT 2457200.5
T 2015 June 13.78622 TT Sato

q	1.6919984	(2000.0)	P	Q
n	0.13995060	Peri. 6.69827	-0.11263361	-0.99155930
a	3.6741160	Node 89.78277	+0.90863834	-0.12893723
e	0.5394815	Incl. 3.68193	+0.40210699	+0.01361431
P	7.04			

From 104 observations 1993 Nov. 7-2008 Mar. 23, mean residual 0".67.
Nongravitational parameters A1 = +0.07, A2 = -0.0031.

Comet 233P/La Sagra
Epoch 2015 June 27.0 TT = JDT 2457200.5
T 2015 June 25.44095 TT Sato

q	1.7865351	(2000.0)	P	Q
n	0.18669011	Peri. 27.24826	-0.20305816	-0.96077524
a	3.0319486	Node 74.96773	+0.85898414	-0.26738672
e	0.4107634	Incl. 11.27860	+0.47001451	+0.07358857
P	5.28			

From 58 observations 2005 Feb. 9-2010 Feb. 18, mean residual 0".66.

Comet 162P/Siding Spring
Epoch 2015 June 27.0 TT = JDT 2457200.5
T 2015 July 11.99114 TT Sato
q 1.2373503 (2000.0) P Q
n 0.18446983 Peri. 356.40945 +0.88228037 -0.40400461
a 3.0562285 Node 31.21293 +0.44266263 +0.53753835
e 0.5951382 Incl. 27.78633 +0.16009732 +0.74015728
P 5.34
From 1417 observations 1990 Mar. 23-2013 Apr. 12, mean residual 0″.41.

Comet P/2004 FY140 (LINEAR)
Epoch 2015 Aug. 6.0 TT = JDT 2457240.5
T 2015 July 24.84123 TT Sato
q 4.0592851 (2000.0) P Q
n 0.09108177 Peri. 241.96556 -0.87638332 +0.48118091
a 4.8923225 Node 326.78530 -0.42774739 -0.79715235
e 0.1702744 Incl. 2.13695 -0.22132429 -0.36470957
P 10.82
From 52 observations 2004 Mar. 27-July 12, mean residual 0″.42.

Comet 140P/Bowell-Skiff
Epoch 2015 Aug. 6.0 TT = JDT 2457240.5
T 2015 Aug. 8.63628 TT Sato
q 1.9877791 (2000.0) P Q
n 0.06011932 Peri. 172.94238 -0.91599252 -0.40074294
a 6.4534708 Node 343.39354 +0.36475559 -0.81208560
e 0.6919829 Incl. 3.82138 +0.16706604 -0.42417221
P 16.39
From 108 observations 1983 Mar. 17-1999 May 8, mean residual 0″.68.

Comet 67P/Churyumov-Gerasimenko
Epoch 2015 Aug. 6.0 TT = JDT 2457240.5
T 2015 Aug. 13.08474 TT Sato
q 1.2432624 (2000.0) P Q
n 0.15301582 Peri. 12.79580 +0.45633517 -0.88482066
a 3.4618786 Node 50.13582 +0.80520495 +0.36563630
e 0.6408706 Incl. 7.04023 +0.37868615 +0.28879490
P 6.44
From 2798 observations 1969 Nov. 20-2013 Oct. 5, mean residual 0″.67.
Nongravitational parameters A1 = +0.14, A2 = -0.0234.

Comet C/2012 LP26 (Palomar)
Epoch 2015 Aug. 6.0 TT = JDT 2457240.5
T 2015 Aug. 16.64919 TT Sato
q 6.5369164 (2000.0) P Q
z +0.0001493 Peri. 145.14879 +0.51107789 +0.83872779
+/-0.0000129 Node 153.98758 -0.85333980 +0.52132091
e 0.9990239 Incl. 25.37975 -0.10300770 -0.15735378
From 64 observations 2012 May 23-2013 Aug. 27, mean residual 0″.51.

Comet C/2013 C2 (Tenagra)
Epoch 2015 Sept. 15.0 TT = JDT 2457280.5
T 2015 Aug. 30.57860 TT Sato
q 9.1306747 (2000.0) P Q
n 0.01530729 Peri. 308.80494 -0.91029177 +0.24146515
a 16.0646213 Node 247.52480 -0.16390354 -0.95611001
e 0.4316284 Incl. 21.33918 -0.38013750 -0.16597660
P 64.39
From 106 observations 2013 Feb. 14-2014 Jan. 7, mean residual 0″.51.

Comet C/2014 A4 (SONEAR)
Epoch 2015 Sept. 15.0 TT = JDT 2457280.5
T 2015 Sept. 7.32513 TT Sato
q 4.1600292 (2000.0) P Q
z +0.0006993 Peri. 357.19669 +0.85454714 +0.30038021
+/-0.0010873 Node 29.74809 +0.49158537 -0.73105188
e 0.9970907 Incl. 121.36057 +0.16760967 +0.61264581
From 67 observations 2014 Jan. 12-27, mean residual 0″.40.

Comet 61P/Shajn-Schaldach
Epoch 2015 Sept. 15.0 TT = JDT 2457280.5
T 2015 Oct. 2.16932 TT Sato

q	2.1139085	(2000.0)	P	Q
n	0.13953398	Peri. 221.90890	+0.90576625	−0.42267454
a	3.6814258	Node 163.01926	+0.41128417	+0.85939557
e	0.4257908	Incl. 6.00579	+0.10214119	+0.28772466
P	7.06			

From 642 observations 1985 July 25-2010 May 10, mean residual 0″.73.
Nongravitational parameters A1 = +0.88, A2 = +0.3902.

Comet C/2013 V4 (Catalina)
Epoch 2015 Oct. 25.0 TT = JDT 2457320.5
T 2015 Oct. 7.59115 TT Sato

q	5.1847966	(2000.0)	P	Q
z	−0.0005177	Peri. 40.45612	+0.22773172	−0.60313538
	+/−0.0000319	Node 55.62302	+0.46385185	−0.62307006
e	1.0026841	Incl. 67.85149	+0.85614235	+0.49800744

From 221 observations 2013 Oct. 23-2014 Jan. 25, mean residual 0″.49.

Comet 22P/Kopff
Epoch 2015 Oct. 25.0 TT = JDT 2457320.5
T 2015 Oct. 25.07410 TT Sato

q	1.5582282	(2000.0)	P	Q
n	0.15411942	Peri. 162.89780	+0.23890704	+0.96845179
a	3.4453325	Node 120.87337	−0.90029602	+0.24826297
e	0.5477278	Incl. 4.73724	−0.36385505	+0.02160145
P	6.40			

From 2487 observations 1995 Nov. 28-2013 Jan. 17, mean residual 0″.67.
Nongravitational parameters A1 = +0.07, A2 = +0.0934.

Comet 10P/Tempel
Epoch 2015 Dec. 4.0 TT = JDT 2457360.5
T 2015 Nov. 14.25371 TT Sato

q	1.4176465	(2000.0)	P	Q
n	0.18374351	Peri. 195.54552	+0.68125780	+0.70845332
a	3.0642771	Node 117.80525	−0.64746203	+0.70062982
e	0.5373635	Incl. 12.02884	−0.34158561	+0.08492205
P	5.36			

From 2508 observations 1999 Feb. 14-2013 Dec. 12, mean residual 0″.63.
Nongravitational parameters A1 = +0.05, A2 = +0.0009.

Comet C/2013 US10 (Catalina)
Epoch 2015 Dec. 4.0 TT = JDT 2457360.5
T 2015 Nov. 15.67809 TT Sato

q	0.8227289	(2000.0)	P	Q
z	−0.0003859	Peri. 340.36226	−0.90565469	−0.42039403
	+/−0.0000810	Node 186.14129	−0.28576722	+0.50879947
e	1.0003175	Incl. 148.87235	−0.31325179	+0.75126025

From 140 observations 2013 Aug. 14-Dec. 17, mean residual 0″.46.

Comet 116P/Wild
Epoch 2016 Jan. 13.0 TT = JDT 2457400.5
T 2016 Jan. 11.48093 TT Sato

q	2.1871394	(2000.0)	P	Q
n	0.15146785	Peri. 173.33528	−0.96888551	+0.24648167
a	3.4854251	Node 20.97581	−0.22989217	−0.86245621
e	0.3724899	Incl. 3.60864	−0.09170857	−0.44205890
P	6.51			

From 1711 observations 2006 Sept. 24-2010 Aug. 3, mean residual 0″.53.
Nongravitational parameters A1 = −4.68, A2 = −4.7639.

Comet C/2013 X1 (PANSTARRS)
Epoch 2016 Apr. 2.0 TT = JDT 2457480.5
T 2016 Apr. 21.20827 TT Sato

q	1.3391676	(2000.0)	P	Q
z	−0.0032256	Peri. 163.96251	+0.83128272	−0.51196995
	+/−0.0017850	Node 131.10873	−0.53632759	−0.63646793
e	1.0043196	Incl. 163.30425	−0.14601972	−0.57688417

From 49 observations 2013 Nov. 29-Dec. 31, mean residual 0″.30.

Comet 53P/Van Biesbroeck
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 Apr. 29.93195 TT Sato
q 2.4271090 (2000.0) P Q
n 0.07826409 Peri. 134.19695 +0.22945068 +0.97150580
a 5.4128710 Node 148.92308 -0.92260947 +0.23653384
e 0.5516041 Incl. 6.60839 -0.31007120 +0.01510719
P 12.59
From 1162 observations 1954 Sept. 3-2005 Nov. 10, mean residual 0".69.
Nongravitational parameters A1 = +0.48, A2 = +0.3116.

Comet 77P/Longmore
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 May 13.64516 TT Sato
q 2.3377168 (2000.0) P Q
n 0.14328444 Peri. 196.72671 -0.85890402 +0.50118800
a 3.6169017 Node 14.80349 -0.40989791 -0.54944337
e 0.3536687 Incl. 24.34589 -0.30703027 -0.66852268
P 6.88
From 948 observations 1975 Oct. 4-2011 Sept. 27, mean residual 0".70.
Nongravitational parameters A1 = +0.21, A2 = +0.0542.

Comet C/2011 KP36 (Spacewatch)
Epoch 2016 May 12.0 TT = JDT 2457520.5
T 2016 May 26.90771 TT Sato
q 4.8833444 (2000.0) P Q
n 0.00414084 Peri. 180.59786 +0.99445346 +0.09830623
a 38.4069755 Node 173.40039 -0.09509787 +0.99227948
e 0.8728527 Incl. 18.98680 -0.04493017 +0.07561298
P 238.02
From 217 observations 2011 May 21-2013 Oct. 30, mean residual 0".53.

Comet 81P/Wild
Epoch 2016 July 31.0 TT = JDT 2457600.5
T 2016 July 20.31618 TT Sato
q 1.5921670 (2000.0) P Q
n 0.15386351 Peri. 41.69736 -0.99854199 -0.03715412
a 3.4491517 Node 136.12597 +0.02059931 -0.93281248
e 0.5383888 Incl. 3.23900 +0.04989558 -0.35844169
P 6.41
From 4056 observations 1989 Aug. 2-2012 Sept. 18, mean residual 0".65.
Nongravitational parameters A1 = -0.03, A2 = +0.0068.

Comet 2P/Encke
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Mar. 10.07283 TT Sato
q 0.3358946 (2000.0) P Q
n 0.29904659 Peri. 186.56183 -0.94517893 -0.31456078
a 2.2146757 Node 334.56067 +0.30811978 -0.77013819
e 0.8483324 Incl. 11.77828 +0.10816185 -0.55492223
P 3.30
From 910 observations 2001 July 19-2013 Nov. 20, mean residual 0".67.
Nongravitational parameters A1 = +0.05, A2 = -0.0059.

Comet 172P/Yeung
Epoch 2017 Mar. 28.0 TT = JDT 2457840.5
T 2017 Mar. 13.09561 TT Sato
q 3.3369187 (2000.0) P Q
n 0.11414346 Peri. 209.12686 -0.50453979 +0.85757252
a 4.2089009 Node 30.88974 -0.74961818 -0.37761190
e 0.2071757 Incl. 11.23724 -0.42838323 -0.34925437
P 8.63
From 361 observations 1993 Oct. 20-2013 Nov. 27, mean residual 0".55.

Comet 65P/Gunn
Epoch 2017 Oct. 14.0 TT = JDT 2458040.5
T 2017 Oct. 16.82953 TT Sato
q 2.9100709 (2000.0) P Q
n 0.12895746 Peri. 213.53891 +0.09061184 +0.98585886
a 3.8800596 Node 62.01995 -0.87503638 +0.14639951
e 0.2499932 Incl. 9.18518 -0.47550060 -0.08154439
P 7.64
From 2649 observations 2000 Oct. 1-2013 Dec. 25, mean residual 0".68.
Nongravitational parameters A1 = +0.24, A2 = -0.3622.

Comet 74P/Smirnova-Chernykh
Epoch 2018 Feb. 11.0 TT = JDT 2458160.5
T 2018 Jan. 26.70011 TT Sato
q 3.5364692 (2000.0) P Q
n 0.11627509 Peri. 87.13503 -0.95561736 -0.27210820
a 4.1573021 Node 77.05568 +0.20253924 -0.88515016
e 0.1493355 Incl. 6.65392 +0.21394700 -0.37744712
P 8.48
From 2565 observations 1975 Mar. 16-2013 Dec. 23, mean residual 0″.67.
Nongravitational parameters A1 = +15.98, A2 = +18.6124.

Comet C/2010 U3 (Boattini)
Epoch 2019 Mar. 18.0 TT = JDT 2458560.5
T 2019 Feb. 26.65488 TT Sato
q 8.4456881 (2000.0) P Q
z +0.0001987 Peri. 88.08597 -0.36203826 -0.74306032
+/-0.0000040 Node 43.06717 +0.07255849 -0.62443240
e 0.9983216 Incl. 55.51212 +0.92933501 -0.24071878
From 220 observations 2010 Oct. 31-2014 Jan. 3, mean residual 0″.68.

Comet 29P/Schwassmann-Wachmann
Epoch 2019 Mar. 18.0 TT = JDT 2458560.5
T 2019 Mar. 7.75028 TT Sato
q 5.7668179 (2000.0) P Q
n 0.06662631 Peri. 47.77398 +0.99270167 -0.00956402
a 6.0261353 Node 312.39471 -0.05135595 +0.86841727
e 0.0430321 Incl. 9.36832 +0.10911448 +0.49574184
P 14.79
From 18371 observations 1902 Mar. 5-2014 Jan. 14, mean residual 0″.68.

References

Comet 152P/Helin-Lawrence
Epoch 2012 July 12.0 TT = JDT 2456120.5
T 2012 July 9.22722 TT Sato
q 3.1164490 (2000.0) P Q
n 0.10327149 Peri. 163.79911 -0.24271517 +0.95485884
a 4.4993429 Node 91.91028 -0.90798413 -0.16144696
e 0.3073546 Incl. 9.86730 -0.34154672 -0.24935812
P 9.54
From 566 observations 1993 May 17-2014 Jan. 3, mean residual 0″.76.
Nongravitational parameters A1 = +16.27, A2 = +10.0109.

Comet C/2013 S1 (Catalina)
Epoch 2013 Aug. 16.0 TT = JDT 2456520.5
T 2013 Aug. 2.91627 TT Sato
q 2.8243841 (2000.0) P Q
z -0.0001992 Peri. 166.06386 +0.74328183 +0.11262511
+/-0.0001021 Node 221.53699 +0.47782148 +0.60051748
e 1.0005626 Incl. 83.96620 +0.46820803 -0.79164029
From 106 observations 2013 Sept. 28-Nov. 26, mean residual 0″.70.

Comet C/2013 U1 (Catalina)
Epoch 2013 Nov. 4.0 TT = JDT 2456600.5
T 2013 Nov. 18.74862 TT Sato
q 2.4188346 (2000.0) P Q
n 0.02390791 Peri. 143.14997 +0.96846001 +0.13327378
a 11.9336970 Node 211.25167 -0.14583878 +0.98827262
e 0.7973105 Incl. 23.94160 +0.20203033 +0.07453407
P 41.23
From 133 observations 2013 Oct. 22-Dec. 24, mean residual 0″.49.9.

Comet P/2000 QJ46 (LINEAR) [Orbit 1]
Epoch 2014 Dec. 9.0 TT = JDT 2457000.5
T 2014 Dec. 21.27903 TT Sato
q 1.8891010 (2000.0) P Q
n 0.07053418 Peri. 222.15576 +0.93747388 -0.34686219
a 5.8014468 Node 158.08936 +0.33638209 +0.88167604
e 0.6743741 Incl. 4.42615 +0.08938574 +0.31989684
P 13.97
From 25 observations 2000 Aug. 24-Nov. 19, mean residual 0″.66.
From CHB 2013.

Comet 95P/(2060) Chiron

Epoch = 2014 July 2.0 TT
T = 1996 Feb. 8.36806 TT
Peri. = 339.32347 e = 0.3816988
Node = 209.29971 2000.0 a = 13.6409255 AU
Incl. = 6.93571 n = 0.01956313
q = 8.4342006 AU P = 50.38 years

H = 5.8 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	22 38.17	-03 18.7	18.223	17.717	+0.17	+0.7	18.6	57.7
Jan. 13	22 39.86	-03 11.4	18.369	17.725	+0.19	+0.9	18.6	48.0
Jan. 23	22 41.77	-03 02.3	18.495	17.734	+0.21	+1.1	18.6	38.4
Feb. 2	22 43.87	-02 51.7	18.599	17.742	+0.22	+1.2	18.6	28.9
Feb. 12	22 46.09	-02 39.8	18.678	17.751	+0.23	+1.3	18.6	19.5
Feb. 22	22 48.41	-02 26.9	18.730	17.759	+0.23	+1.4	18.5	10.6
Mar. 4	22 50.75	-02 13.2	18.755	17.767	+0.23	+1.4	18.5	4.7
Mar. 14	22 53.09	-01 59.2	18.753	17.776	+0.23	+1.4	18.5	10.4
Mar. 24	22 55.35	-01 45.0	18.722	17.784	+0.22	+1.4	18.6	19.2
Apr. 3	22 57.52	-01 31.0	18.666	17.792	+0.20	+1.3	18.6	28.3
Apr. 13	22 59.52	-01 17.5	18.586	17.801	+0.18	+1.3	18.6	37.5
Apr. 23	23 01.34	-01 04.8	18.483	17.809	+0.16	+1.2	18.7	46.7
May 3	23 02.93	-00 53.2	18.362	17.817	+0.13	+1.0	18.7	55.9
May 13	23 04.25	-00 43.0	18.226	17.825	+0.10	+0.9	18.7	65.2
May 23	23 05.28	-00 34.3	18.077	17.833	+0.07	+0.7	18.7	74.5
June 2	23 06.00	-00 27.4	17.922	17.841	+0.04	+0.5	18.6	83.8
June 12	23 06.39	-00 22.5	17.763	17.849	+0.01	+0.3	18.6	93.2
June 22	23 06.45	-00 19.8	17.606	17.857	-0.03	+0.1	18.6	102.7
July 2	23 06.17	-00 19.2	17.455	17.865	-0.06	-0.2	18.6	112.3
July 12	23 05.57	-00 20.8	17.315	17.873	-0.09	-0.4	18.5	121.9
July 22	23 04.67	-00 24.5	17.190	17.881	-0.12	-0.6	18.5	131.6
Aug. 1	23 03.50	-00 30.3	17.084	17.889	-0.14	-0.8	18.5	141.4
Aug. 11	23 02.11	-00 37.9	17.002	17.897	-0.16	-0.9	18.4	151.2
Aug. 21	23 00.55	-00 47.0	16.945	17.904	-0.17	-1.0	18.4	161.0
Aug. 31	22 58.88	-00 57.4	16.916	17.912	-0.17	-1.1	18.3	170.3
Sept.10	22 57.18	-01 08.6	16.917	17.920	-0.17	-1.2	18.3	174.5
Sept.20	22 55.50	-01 20.2	16.948	17.928	-0.16	-1.2	18.3	166.8
Sept.30	22 53.91	-01 31.7	17.008	17.935	-0.14	-1.1	18.4	157.1
Oct. 10	22 52.50	-01 42.7	17.097	17.943	-0.12	-1.0	18.5	147.0
Oct. 20	22 51.30	-01 52.7	17.210	17.950	-0.09	-0.9	18.5	136.9
Oct. 30	22 50.38	-02 01.4	17.346	17.958	-0.06	-0.7	18.5	126.7
Nov. 9	22 49.78	-02 08.5	17.500	17.966	-0.03	-0.5	18.6	116.6
Nov. 19	22 49.51	-02 13.6	17.668	17.973	+0.01	-0.3	18.6	106.5
Nov. 29	22 49.60	-02 16.7	17.844	17.980	+0.04	-0.1	18.6	96.4
Dec. 9	22 50.04	-02 17.5	18.023	17.988	+0.08	+0.1	18.7	86.4
Dec. 19	22 50.82	-02 16.2	18.200	17.995	+0.11	+0.4	18.7	76.5
Dec. 29	22 51.93	-02 12.6	18.371	18.003	+0.14	+0.6	18.7	66.6
Jan. 8	22 53.33	-02 06.9	18.530	18.010	+0.17	+0.8	18.7	56.8
Jan. 18	22 55.00	-01 59.4	18.673	18.017	+0.19	+0.9	18.7	47.1
Jan. 28	22 56.88	-01 50.0	18.796	18.025	+0.21	+1.1	18.7	37.5
Feb. 7	22 58.94	-01 39.2	18.897	18.032	+0.22	+1.2	18.7	28.0
Feb. 17	23 01.13	-01 27.1	18.973	18.039	+0.23	+1.3	18.6	18.6
Feb. 27	23 03.39	-01 14.1	19.021	18.046	+0.23	+1.4	18.6	9.7
Mar. 9	23 05.69	-01 00.4	19.043	18.053	+0.23	+1.4	18.5	4.5
Mar. 19	23 07.97	-00 46.4	19.036	18.061	+0.22	+1.4	18.6	11.0
Mar. 29	23 10.18	-00 32.3	19.003	18.068	+0.21	+1.4	18.6	19.9

Comet C/2005 L3 (McNaught)

Epoch = 2014 July 2.0 TT
T = 2008 Jan. 14.13736 TT
Peri. = 47.04840
Node = 288.84471 2000.0
Incl. = 139.39796
q = 5.5812025 AU
e = 0.9988403

m1 = 2.8 + 5 log(Delta) + 10.0 log(r(t-400))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	09 28.81	+35 02.9	14.086	14.894	-0.36	+1.6	19.6	144.2
Jan. 13	09 25.24	+35 18.4	14.063	14.944	-0.39	+1.4	19.7	152.7
Jan. 23	09 21.39	+35 32.1	14.070	14.994	-0.40	+1.1	19.7	159.1
Feb. 2	09 17.38	+35 43.5	14.109	15.043	-0.40	+0.8	19.7	160.9
Feb. 12	09 13.34	+35 51.9	14.179	15.093	-0.39	+0.5	19.7	157.1
Feb. 22	09 09.41	+35 57.0	14.279	15.143	-0.37	+0.2	19.8	149.8
Mar. 4	09 05.71	+35 58.7	14.409	15.192	-0.34	-0.2	19.8	141.0
Mar. 14	09 02.36	+35 56.9	14.563	15.242	-0.29	-0.5	19.8	131.6
Mar. 24	08 59.44	+35 52.0	14.740	15.291	-0.24	-0.8	19.9	122.0
Apr. 3	08 57.02	+35 44.2	14.933	15.341	-0.19	-1.0	19.9	112.3
Apr. 13	08 55.13	+35 33.8	15.138	15.390	-0.13	-1.2	20.0	102.7
Apr. 23	08 53.79	+35 21.4	15.350	15.440	-0.08	-1.4	20.0	93.2
May 3	08 53.00	+35 07.3	15.565	15.489	-0.03	-1.5	20.1	83.8
May 13	08 52.73	+34 52.0	15.776	15.538	+0.02	-1.6	20.1	74.6
May 23	08 52.94	+34 35.9	15.980	15.588	+0.06	-1.7	20.1	65.5
June 2	08 53.59	+34 19.2	16.173	15.637	+0.10	-1.7	20.2	56.6
June 12	08 54.62	+34 02.5	16.350	15.686	+0.14	-1.7	20.2	47.9
June 22	08 55.98	+33 46.0	16.508	15.736	+0.16	-1.6	20.3	39.4
July 2	08 57.61	+33 29.9	16.645	15.785	+0.18	-1.5	20.3	31.3
July 12	08 59.44	+33 14.5	16.758	15.834	+0.20	-1.4	20.3	23.8
July 22	09 01.41	+33 00.0	16.847	15.883	+0.21	-1.3	20.4	17.9
Aug. 1	09 03.46	+32 46.8	16.909	15.932	+0.21	-1.2	20.4	15.3
Aug. 11	09 05.53	+32 35.0	16.944	15.981	+0.20	-1.0	20.4	17.6
Aug. 21	09 07.55	+32 24.7	16.954	16.030	+0.19	-0.8	20.4	23.4
Aug. 31	09 09.47	+32 16.3	16.937	16.079	+0.17	-0.6	20.4	30.9
Sept. 10	09 11.21	+32 09.9	16.897	16.128	+0.15	-0.4	20.4	39.1
Sept. 20	09 12.73	+32 05.7	16.834	16.177	+0.12	-0.2	20.5	47.8
Sept. 30	09 13.96	+32 03.7	16.753	16.226	+0.09	0.0	20.5	56.8
Oct. 10	09 14.86	+32 04.1	16.655	16.275	+0.05	+0.3	20.5	66.0
Oct. 20	09 15.36	+32 06.8	16.545	16.324	+0.01	+0.5	20.5	75.5
Oct. 30	09 15.44	+32 11.9	16.428	16.372	-0.04	+0.7	20.5	85.1
Nov. 9	09 15.05	+32 19.1	16.308	16.421	-0.09	+0.9	20.5	94.8
Nov. 19	09 14.17	+32 28.3	16.191	16.470	-0.14	+1.1	20.5	104.7
Nov. 29	09 12.79	+32 39.0	16.081	16.518	-0.19	+1.2	20.5	114.7
Dec. 9	09 10.93	+32 50.9	15.986	16.567	-0.23	+1.2	20.5	124.8
Dec. 19	09 08.61	+33 03.3	15.908	16.616	-0.27	+1.2	20.5	134.8
Dec. 29	09 05.89	+33 15.8	15.853	16.664	-0.31	+1.2	20.5	144.5
Jan. 8	09 02.83	+33 27.7	15.826	16.713	-0.33	+1.1	20.5	153.7
Jan. 18	08 59.54	+33 38.4	15.827	16.761	-0.34	+0.9	20.5	161.1
Jan. 28	08 56.10	+33 47.4	15.860	16.810	-0.35	+0.7	20.5	164.2
Feb. 7	08 52.64	+33 54.2	15.925	16.858	-0.34	+0.4	20.5	160.6
Feb. 17	08 49.27	+33 58.6	16.020	16.907	-0.32	+0.2	20.6	153.0
Feb. 27	08 46.09	+34 00.3	16.145	16.955	-0.29	-0.1	20.6	143.9
Mar. 9	08 43.21	+33 59.5	16.296	17.003	-0.25	-0.3	20.6	134.2
Mar. 19	08 40.69	+33 56.1	16.469	17.051	-0.21	-0.6	20.7	124.4
Mar. 29	08 38.60	+33 50.5	16.661	17.100	-0.16	-0.8	20.7	114.6

Comet C/2008 FK75 (Lemmon-Siding Spring)

Epoch = 2014 July 2.0 TT
T = 2010 Sept. 28.77431 TT
Peri. = 80.46439
Node = 218.26560 2000.0
Incl. = 61.20821
q = 4.5140309 AU
e = 1.0003116

m1 = 7.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	01 47.02	+15 44.9	9.485	9.835	+0.03	-2.1	19.3	108.1
Jan. 13	01 47.34	+15 24.3	9.709	9.892	+0.10	-1.6	19.4	97.9
Jan. 23	01 48.32	+15 08.2	9.937	9.949	+0.16	-1.2	19.5	87.8
Feb. 2	01 49.91	+14 56.5	10.165	10.006	+0.22	-0.8	19.5	78.0
Feb. 12	01 52.07	+14 48.8	10.386	10.063	+0.26	-0.4	19.6	68.3
Feb. 22	01 54.72	+14 44.8	10.597	10.120	+0.31	-0.1	19.7	58.8
Mar. 4	01 57.79	+14 43.9	10.794	10.177	+0.34	+0.2	19.7	49.5
Mar. 14	02 01.22	+14 45.5	10.972	10.234	+0.37	+0.4	19.8	40.3
Mar. 24	02 04.91	+14 49.2	11.131	10.291	+0.39	+0.5	19.8	31.2
Apr. 3	02 08.82	+14 54.5	11.266	10.347	+0.40	+0.6	19.9	22.2
Apr. 13	02 12.85	+15 00.7	11.377	10.404	+0.41	+0.7	19.9	13.4
Apr. 23	02 16.94	+15 07.5	11.463	10.461	+0.41	+0.7	19.9	4.7
May 3	02 21.03	+15 14.3	11.522	10.518	+0.40	+0.6	20.0	4.4
May 13	02 25.05	+15 20.7	11.556	10.574	+0.39	+0.6	20.0	13.1
May 23	02 28.92	+15 26.4	11.565	10.631	+0.37	+0.5	20.0	21.8
June 2	02 32.59	+15 30.9	11.549	10.688	+0.34	+0.3	20.0	30.5
June 12	02 35.98	+15 33.9	11.511	10.744	+0.31	+0.1	20.0	39.3
June 22	02 39.06	+15 35.2	11.453	10.801	+0.27	-0.1	20.0	48.1
July 2	02 41.74	+15 34.3	11.377	10.857	+0.22	-0.3	20.0	57.0
July 12	02 43.98	+15 31.1	11.287	10.914	+0.18	-0.6	20.0	66.1
July 22	02 45.73	+15 25.4	11.185	10.970	+0.12	-0.8	20.0	75.2
Aug. 1	02 46.95	+15 16.9	11.076	11.026	+0.06	-1.1	20.0	84.5
Aug. 11	02 47.60	+15 05.6	10.965	11.083	+0.01	-1.4	20.0	94.0
Aug. 21	02 47.66	+14 51.4	10.856	11.139	-0.05	-1.7	20.0	103.7
Aug. 31	02 47.14	+14 34.3	10.754	11.195	-0.11	-2.0	20.0	113.5
Sept.10	02 46.04	+14 14.4	10.663	11.251	-0.16	-2.2	20.0	123.6
Sept.20	02 44.41	+13 52.0	10.589	11.307	-0.21	-2.5	20.0	133.8
Sept.30	02 42.31	+13 27.4	10.536	11.363	-0.25	-2.6	20.0	144.2
Oct. 10	02 39.83	+13 01.1	10.509	11.419	-0.28	-2.7	20.0	154.7
Oct. 20	02 37.08	+12 33.8	10.510	11.475	-0.29	-2.8	20.1	165.2
Oct. 30	02 34.18	+12 06.0	10.541	11.531	-0.29	-2.7	20.1	175.3
Nov. 9	02 31.26	+11 38.7	10.605	11.587	-0.28	-2.6	20.1	172.3
Nov. 19	02 28.46	+11 12.6	10.700	11.643	-0.26	-2.4	20.1	161.8
Nov. 29	02 25.91	+10 48.3	10.826	11.699	-0.22	-2.2	20.2	151.0
Dec. 9	02 23.71	+10 26.6	10.980	11.755	-0.18	-1.9	20.2	140.3
Dec. 19	02 21.95	+10 07.7	11.158	11.810	-0.13	-1.6	20.3	129.7
Dec. 29	02 20.70	+09 52.2	11.356	11.866	-0.07	-1.2	20.3	119.1
Jan. 8	02 19.99	+09 40.1	11.569	11.921	-0.01	-0.9	20.4	108.7
Jan. 18	02 19.85	+09 31.3	11.792	11.977	+0.04	-0.6	20.4	98.5
Jan. 28	02 20.26	+09 25.8	12.019	12.032	+0.09	-0.3	20.5	88.4
Feb. 7	02 21.20	+09 23.2	12.246	12.088	+0.14	0.0	20.6	78.5
Feb. 17	02 22.63	+09 23.3	12.466	12.143	+0.19	+0.2	20.6	68.8
Feb. 27	02 24.50	+09 25.6	12.676	12.198	+0.23	+0.4	20.7	59.2
Mar. 9	02 26.77	+09 29.7	12.872	12.254	+0.26	+0.5	20.7	49.8
Mar. 19	02 29.36	+09 35.1	13.049	12.309	+0.29	+0.6	20.8	40.5
Mar. 29	02 32.23	+09 41.4	13.205	12.364	+0.31	+0.7	20.8	31.4

Comet C/2008 S3 (Boattini)

Epoch = 2014 July 2.0 TT
T = 2011 June 10.41827 TT
Peri. = 40.15632
Node = 54.97790 2000.0
Incl. = 162.70619
q = 8.0201809 AU
e = 1.0032897

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	21 12.79	+00 44.3	10.499	9.782	+0.18	-0.1	18.9	41.3
Jan. 13	21 14.55	+00 43.6	10.629	9.815	+0.20	+0.3	19.0	32.6
Jan. 23	21 16.53	+00 46.6	10.734	9.848	+0.21	+0.6	19.0	24.6
Feb. 2	21 18.63	+00 52.9	10.812	9.882	+0.21	+0.9	19.0	18.3
Feb. 12	21 20.75	+01 02.0	10.862	9.915	+0.20	+1.2	19.1	15.7
Feb. 22	21 22.79	+01 13.6	10.883	9.949	+0.19	+1.3	19.1	18.4
Mar. 4	21 24.68	+01 27.0	10.876	9.983	+0.16	+1.5	19.1	24.6
Mar. 14	21 26.33	+01 41.8	10.843	10.018	+0.13	+1.6	19.1	32.4
Mar. 24	21 27.66	+01 57.4	10.784	10.052	+0.09	+1.6	19.1	40.9
Apr. 3	21 28.59	+02 13.3	10.704	10.087	+0.05	+1.6	19.1	49.7
Apr. 13	21 29.05	+02 28.8	10.604	10.122	-0.01	+1.5	19.1	58.8
Apr. 23	21 28.98	+02 43.4	10.489	10.157	-0.07	+1.3	19.1	68.1
May 3	21 28.32	+02 56.4	10.363	10.192	-0.13	+1.1	19.0	77.4
May 13	21 27.02	+03 07.2	10.231	10.227	-0.19	+0.8	19.0	86.9
May 23	21 25.07	+03 15.2	10.098	10.263	-0.26	+0.5	19.0	96.5
June 2	21 22.46	+03 19.9	9.968	10.298	-0.33	+0.1	19.0	106.2
June 12	21 19.19	+03 20.7	9.848	10.334	-0.39	-0.3	19.0	116.0
June 22	21 15.31	+03 17.3	9.743	10.370	-0.44	-0.8	19.0	125.8
July 2	21 10.89	+03 09.4	9.658	10.406	-0.49	-1.3	19.0	135.4
July 12	21 06.03	+02 56.8	9.596	10.442	-0.52	-1.7	19.0	144.7
July 22	21 00.84	+02 39.7	9.562	10.479	-0.54	-2.1	19.0	153.1
Aug. 1	20 55.48	+02 18.5	9.559	10.515	-0.54	-2.5	19.0	159.3
Aug. 11	20 50.11	+01 53.7	9.589	10.552	-0.52	-2.8	19.0	161.0
Aug. 21	20 44.88	+01 26.0	9.650	10.589	-0.49	-3.0	19.0	157.0
Aug. 31	20 39.94	+00 56.3	9.744	10.626	-0.45	-3.1	19.0	149.5
Sept.10	20 35.45	+00 25.6	9.867	10.663	-0.40	-3.1	19.1	140.5
Sept.20	20 31.49	-00 05.3	10.016	10.700	-0.33	-3.0	19.1	130.8
Sept.30	20 28.15	-00 35.4	10.188	10.737	-0.27	-2.9	19.2	120.9
Oct. 10	20 25.49	-01 04.0	10.377	10.775	-0.20	-2.6	19.2	111.0
Oct. 20	20 23.51	-01 30.3	10.578	10.813	-0.13	-2.4	19.3	101.0
Oct. 30	20 22.22	-01 54.0	10.786	10.850	-0.06	-2.1	19.3	91.1
Nov. 9	20 21.59	-02 14.5	10.994	10.888	0.00	-1.7	19.4	81.3
Nov. 19	20 21.56	-02 31.6	11.198	10.926	+0.05	-1.4	19.4	71.6
Nov. 29	20 22.08	-02 45.3	11.393	10.964	+0.10	-1.0	19.5	62.0
Dec. 9	20 23.06	-02 55.5	11.573	11.002	+0.14	-0.7	19.5	52.6
Dec. 19	20 24.44	-03 02.1	11.735	11.041	+0.17	-0.3	19.6	43.4
Dec. 29	20 26.14	-03 05.4	11.875	11.079	+0.19	0.0	19.6	34.5
Jan. 8	20 28.05	-03 05.6	11.991	11.118	+0.21	+0.3	19.6	26.3
Jan. 18	20 30.10	-03 02.9	12.080	11.156	+0.21	+0.5	19.7	19.3
Jan. 28	20 32.20	-02 57.6	12.141	11.195	+0.21	+0.8	19.7	15.5
Feb. 7	20 34.27	-02 50.0	12.173	11.234	+0.20	+0.9	19.7	17.0
Feb. 17	20 36.22	-02 40.5	12.177	11.273	+0.18	+1.1	19.7	22.8
Feb. 27	20 37.98	-02 29.6	12.154	11.312	+0.15	+1.2	19.7	30.5
Mar. 9	20 39.46	-02 17.6	12.105	11.351	+0.11	+1.3	19.7	39.0
Mar. 19	20 40.60	-02 05.1	12.034	11.390	+0.07	+1.3	19.7	47.9
Mar. 29	20 41.33	-01 52.4	11.942	11.430	+0.03	+1.2	19.7	57.0

Comet C/2009 P1 (Garradd)

Epoch = 2014 July 2.0 TT
T = 2011 Dec. 23.21615 TT
Peri. = 90.72290
Node = 325.99613 2000.0
Incl. = 106.16780
q = 1.5513408 AU
e = 1.0002279

m1 = 3.4 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	08 36.87	-22 44.7	7.118	7.761	-0.65	-1.5	18.8	127.9
Jan. 13	08 30.37	-22 59.7	7.129	7.839	-0.67	-0.4	18.8	133.6
Jan. 23	08 23.66	-23 03.5	7.165	7.917	-0.66	+0.7	18.9	137.4
Feb. 2	08 17.04	-22 56.4	7.228	7.994	-0.63	+1.7	19.0	138.7
Feb. 12	08 10.76	-22 39.5	7.319	8.072	-0.57	+2.5	19.1	137.3
Feb. 22	08 05.06	-22 14.3	7.435	8.148	-0.49	+3.1	19.1	133.5
Mar. 4	08 00.13	-21 42.8	7.577	8.225	-0.40	+3.6	19.2	128.1
Mar. 14	07 56.09	-21 07.2	7.739	8.301	-0.31	+3.8	19.3	121.4
Mar. 24	07 53.01	-20 29.6	7.919	8.377	-0.21	+3.8	19.4	114.2
Apr. 3	07 50.90	-19 51.9	8.113	8.453	-0.12	+3.6	19.5	106.6
Apr. 13	07 49.73	-19 15.8	8.317	8.529	-0.03	+3.3	19.6	98.9
Apr. 23	07 49.44	-18 42.8	8.525	8.604	+0.05	+2.9	19.7	91.1
May 3	07 49.95	-18 13.9	8.734	8.679	+0.12	+2.4	19.8	83.6
May 13	07 51.18	-17 49.8	8.940	8.754	+0.18	+1.9	19.9	76.2
May 23	07 53.01	-17 31.2	9.140	8.828	+0.23	+1.3	20.0	69.0
June 2	07 55.35	-17 18.4	9.330	8.902	+0.28	+0.7	20.1	62.2
June 12	07 58.11	-17 11.5	9.507	8.976	+0.31	+0.1	20.2	55.9
June 22	08 01.18	-17 10.7	9.669	9.050	+0.33	-0.5	20.3	50.1
July 2	08 04.48	-17 15.8	9.814	9.123	+0.34	-1.1	20.4	45.0
July 12	08 07.92	-17 26.9	9.941	9.197	+0.35	-1.7	20.4	40.9
July 22	08 11.40	-17 43.6	10.048	9.270	+0.35	-2.2	20.5	38.1
Aug. 1	08 14.85	-18 05.7	10.134	9.343	+0.33	-2.7	20.6	36.9
Aug. 11	08 18.18	-18 33.0	10.200	9.415	+0.31	-3.2	20.6	37.4
Aug. 21	08 21.32	-19 05.0	10.245	9.488	+0.29	-3.6	20.7	39.6
Aug. 31	08 24.18	-19 41.4	10.270	9.560	+0.25	-4.0	20.7	43.2
Sept. 10	08 26.68	-20 21.6	10.277	9.632	+0.21	-4.3	20.8	48.0
Sept. 20	08 28.75	-21 05.0	10.266	9.703	+0.16	-4.6	20.8	53.6
Sept. 30	08 30.31	-21 51.0	10.239	9.775	+0.10	-4.8	20.8	59.9
Oct. 10	08 31.28	-22 38.8	10.200	9.846	+0.03	-4.9	20.9	66.6
Oct. 20	08 31.61	-23 27.5	10.151	9.917	-0.04	-4.8	20.9	73.7
Oct. 30	08 31.24	-24 15.9	10.095	9.988	-0.11	-4.7	20.9	81.0
Nov. 9	08 30.12	-25 02.9	10.036	10.059	-0.19	-4.4	20.9	88.5
Nov. 19	08 28.26	-25 47.3	9.979	10.129	-0.26	-4.0	21.0	96.0
Nov. 29	08 25.64	-26 27.6	9.926	10.200	-0.33	-3.5	21.0	103.4
Dec. 9	08 22.33	-27 02.6	9.883	10.270	-0.39	-2.8	21.0	110.5
Dec. 19	08 18.39	-27 31.0	9.853	10.340	-0.44	-2.1	21.0	117.2
Dec. 29	08 13.95	-27 51.8	9.840	10.409	-0.48	-1.2	21.1	123.1
Jan. 8	08 09.17	-28 04.1	9.846	10.479	-0.50	-0.4	21.1	127.9
Jan. 18	08 04.21	-28 07.8	9.875	10.548	-0.49	+0.5	21.2	131.2
Jan. 28	07 59.27	-28 02.8	9.926	10.617	-0.47	+1.3	21.2	132.5
Feb. 7	07 54.54	-27 49.7	10.002	10.686	-0.44	+2.0	21.3	131.9
Feb. 17	07 50.19	-27 29.5	10.101	10.755	-0.38	+2.6	21.3	129.3
Feb. 27	07 46.36	-27 03.6	10.222	10.823	-0.32	+3.0	21.4	125.2
Mar. 9	07 43.16	-26 33.3	10.363	10.892	-0.25	+3.3	21.4	119.9
Mar. 19	07 40.66	-26 00.4	10.521	10.960	-0.18	+3.4	21.5	113.8
Mar. 29	07 38.89	-25 26.3	10.692	11.028	-0.10	+3.4	21.6	107.2

Comet C/2009 F4 (McNaught)

Epoch = 2014 July 2.0 TT
T = 2011 Dec. 31.72124 TT
Peri. = 260.40304
Node = 53.57262 2000.0
Incl. = 79.36134
q = 5.4562863 AU
e = 0.9993925

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	03 10.23	-21 27.8	7.164	7.554	-0.30	+7.1	16.1	109.8
Jan. 13	03 07.28	-20 16.6	7.337	7.601	-0.19	+7.4	16.1	101.9
Jan. 23	03 05.35	-19 02.2	7.519	7.648	-0.09	+7.6	16.2	93.8
Feb. 2	03 04.41	-17 46.2	7.708	7.695	0.00	+7.6	16.3	85.6
Feb. 12	03 04.42	-16 30.0	7.897	7.743	+0.09	+7.5	16.4	77.5
Feb. 22	03 05.27	-15 15.1	8.083	7.790	+0.16	+7.3	16.5	69.4
Mar. 4	03 06.88	-14 02.2	8.262	7.838	+0.23	+7.0	16.5	61.5
Mar. 14	03 09.14	-12 52.4	8.430	7.886	+0.28	+6.6	16.6	53.9
Mar. 24	03 11.95	-11 46.0	8.584	7.934	+0.33	+6.2	16.7	46.7
Apr. 3	03 15.20	-10 43.7	8.722	7.982	+0.36	+5.8	16.7	40.0
Apr. 13	03 18.81	-09 45.8	8.842	8.031	+0.39	+5.3	16.8	34.0
Apr. 23	03 22.66	-08 52.5	8.941	8.079	+0.40	+4.8	16.8	29.3
May 3	03 26.68	-08 04.1	9.019	8.128	+0.41	+4.4	16.9	26.3
May 13	03 30.77	-07 20.5	9.075	8.177	+0.41	+3.9	16.9	25.8
May 23	03 34.84	-06 42.0	9.109	8.226	+0.40	+3.4	16.9	27.8
June 2	03 38.82	-06 08.5	9.120	8.276	+0.38	+2.9	17.0	31.8
June 12	03 42.61	-05 39.9	9.110	8.325	+0.35	+2.4	17.0	37.3
June 22	03 46.14	-05 16.3	9.079	8.375	+0.32	+1.9	17.0	43.7
July 2	03 49.33	-04 57.4	9.030	8.424	+0.28	+1.4	17.0	50.8
July 12	03 52.09	-04 43.2	8.964	8.474	+0.23	+1.0	17.0	58.3
July 22	03 54.35	-04 33.3	8.884	8.524	+0.17	+0.6	17.0	66.2
Aug. 1	03 56.04	-04 27.5	8.792	8.574	+0.10	+0.2	17.1	74.3
Aug. 11	03 57.07	-04 25.3	8.693	8.624	+0.03	-0.1	17.1	82.8
Aug. 21	03 57.40	-04 26.2	8.590	8.674	-0.04	-0.3	17.1	91.4
Aug. 31	03 56.97	-04 29.6	8.487	8.725	-0.12	-0.5	17.1	100.3
Sept. 10	03 55.77	-04 34.7	8.389	8.775	-0.20	-0.6	17.1	109.4
Sept. 20	03 53.77	-04 40.7	8.301	8.826	-0.28	-0.6	17.1	118.6
Sept. 30	03 51.02	-04 46.6	8.227	8.876	-0.34	-0.5	17.1	127.8
Oct. 10	03 47.58	-04 51.3	8.173	8.927	-0.40	-0.3	17.1	136.8
Oct. 20	03 43.55	-04 53.8	8.142	8.978	-0.45	+0.1	17.1	145.2
Oct. 30	03 39.07	-04 53.1	8.138	9.029	-0.48	+0.5	17.1	152.3
Nov. 9	03 34.31	-04 48.4	8.163	9.080	-0.48	+0.9	17.1	156.4
Nov. 19	03 29.47	-04 39.0	8.219	9.131	-0.47	+1.4	17.2	156.0
Nov. 29	03 24.73	-04 24.5	8.306	9.182	-0.44	+2.0	17.2	151.0
Dec. 9	03 20.29	-04 05.0	8.423	9.233	-0.40	+2.4	17.3	143.5
Dec. 19	03 16.31	-03 40.5	8.567	9.284	-0.34	+2.9	17.3	134.6
Dec. 29	03 12.92	-03 11.6	8.735	9.335	-0.27	+3.3	17.4	125.1
Jan. 8	03 10.22	-02 38.7	8.922	9.387	-0.20	+3.6	17.5	115.5
Jan. 18	03 08.26	-02 02.7	9.124	9.438	-0.12	+3.9	17.5	105.7
Jan. 28	03 07.05	-01 24.1	9.335	9.490	-0.05	+4.0	17.6	96.0
Feb. 7	03 06.58	-00 43.8	9.551	9.541	+0.02	+4.1	17.7	86.5
Feb. 17	03 06.82	-00 02.4	9.766	9.593	+0.09	+4.2	17.8	77.0
Feb. 27	03 07.71	+00 39.4	9.975	9.644	+0.15	+4.2	17.8	67.8
Mar. 9	03 09.18	+01 21.2	10.174	9.696	+0.20	+4.1	17.9	58.7
Mar. 19	03 11.16	+02 02.3	10.360	9.747	+0.24	+4.0	18.0	49.8
Mar. 29	03 13.57	+02 42.4	10.528	9.799	+0.28	+3.9	18.0	41.2

Comet P/2011 U2 (Bressi)

Epoch = 2014 July 2.0 TT
T = 2012 Jan. 20.58919 TT
Peri. = 147.90069 e = 0.0846294
Node = 266.32524 2000.0 a = 5.2485665 AU
Incl. = 9.73523 n = 0.08196775
q = 4.8043835 AU P = 12.02 years

m1 = -0.6 + 5 log(Delta) + 25.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	08 24.39	+12 17.5	4.131	5.045	-0.52	+0.4	20.1	156.0
Jan. 13	08 19.18	+12 21.7	4.090	5.051	-0.56	+0.8	20.0	166.4
Jan. 23	08 13.60	+12 29.7	4.079	5.057	-0.55	+1.1	20.1	172.8
Feb. 2	08 08.07	+12 40.3	4.100	5.063	-0.51	+1.2	20.1	166.4
Feb. 12	08 03.01	+12 52.4	4.151	5.069	-0.42	+1.2	20.1	156.1
Feb. 22	07 58.77	+13 04.7	4.230	5.075	-0.31	+1.1	20.2	145.3
Mar. 4	07 55.62	+13 16.1	4.335	5.081	-0.19	+1.0	20.2	134.7
Mar. 14	07 53.75	+13 25.8	4.459	5.087	-0.05	+0.7	20.3	124.4
Mar. 24	07 53.24	+13 32.9	4.600	5.094	+0.08	+0.4	20.4	114.4
Apr. 3	07 54.07	+13 37.1	4.752	5.100	+0.21	+0.1	20.5	104.8
Apr. 13	07 56.20	+13 37.8	4.910	5.106	+0.33	-0.3	20.6	95.5
Apr. 23	07 59.51	+13 34.7	5.071	5.112	+0.44	-0.7	20.6	86.6
May 3	08 03.90	+13 27.7	5.231	5.118	+0.53	-1.1	20.7	78.1
May 13	08 09.23	+13 16.5	5.386	5.125	+0.61	-1.5	20.8	69.8
May 23	08 15.36	+13 01.3	5.533	5.131	+0.68	-1.9	20.9	61.7
June 2	08 22.18	+12 41.9	5.669	5.137	+0.74	-2.4	20.9	53.9
June 12	08 29.55	+12 18.3	5.793	5.143	+0.78	-2.8	21.0	46.2
June 22	08 37.37	+11 50.8	5.902	5.150	+0.82	-3.1	21.0	38.8
July 2	08 45.55	+11 19.5	5.996	5.156	+0.84	-3.5	21.1	31.5
July 12	08 53.97	+10 44.4	6.072	5.162	+0.86	-3.8	21.1	24.3
July 22	09 02.56	+10 06.0	6.129	5.169	+0.87	-4.2	21.2	17.4
Aug. 1	09 11.24	+09 24.4	6.168	5.175	+0.87	-4.4	21.2	11.0
Aug. 11	09 19.92	+08 40.0	6.186	5.181	+0.86	-4.7	21.2	6.8
Aug. 21	09 28.52	+07 53.2	6.185	5.188	+0.85	-4.9	21.2	8.8
Aug. 31	09 36.99	+07 04.2	6.164	5.194	+0.82	-5.1	21.2	14.7
Sept.10	09 45.24	+06 13.7	6.123	5.200	+0.80	-5.2	21.2	21.7
Sept.20	09 53.20	+05 22.0	6.063	5.207	+0.76	-5.2	21.2	29.0
Sept.30	10 00.78	+04 29.8	5.984	5.213	+0.71	-5.2	21.2	36.5
Oct. 10	10 07.89	+03 37.6	5.888	5.220	+0.66	-5.2	21.2	44.2
Oct. 20	10 14.46	+02 46.0	5.777	5.226	+0.59	-5.0	21.2	52.2
Oct. 30	10 20.38	+01 55.9	5.652	5.232	+0.52	-4.8	21.1	60.4
Nov. 9	10 25.54	+01 08.1	5.515	5.239	+0.43	-4.5	21.1	68.8
Nov. 19	10 29.84	+00 23.3	5.370	5.245	+0.33	-4.1	21.0	77.5
Nov. 29	10 33.18	-00 17.4	5.219	5.251	+0.23	-3.6	21.0	86.5
Dec. 9	10 35.45	-00 53.2	5.067	5.258	+0.11	-3.0	20.9	95.7
Dec. 19	10 36.57	-01 22.9	4.918	5.264	-0.01	-2.3	20.9	105.3
Dec. 29	10 36.49	-01 45.6	4.776	5.270	-0.13	-1.5	20.8	115.2
Jan. 8	10 35.19	-02 00.5	4.647	5.277	-0.25	-0.6	20.8	125.3
Jan. 18	10 32.73	-02 07.0	4.534	5.283	-0.35	+0.2	20.8	135.7
Jan. 28	10 29.24	-02 04.8	4.443	5.289	-0.43	+1.0	20.7	146.2
Feb. 7	10 24.94	-01 54.3	4.377	5.296	-0.48	+1.8	20.7	156.4
Feb. 17	10 20.11	-01 36.4	4.340	5.302	-0.50	+2.4	20.7	165.3
Feb. 27	10 15.09	-01 12.5	4.334	5.308	-0.48	+2.8	20.7	168.6
Mar. 9	10 10.26	-00 44.7	4.358	5.314	-0.43	+3.0	20.7	162.8
Mar. 19	10 05.94	-00 15.1	4.412	5.321	-0.35	+2.9	20.8	153.4
Mar. 29	10 02.42	+00 14.0	4.493	5.327	-0.25	+2.7	20.8	143.3

Comet 244P/Scotti

Epoch = 2014 July 2.0 TT
T = 2012 Jan. 20.95408 TT
Peri. = 92.77237 e = 0.1984979
Node = 354.13194 2000.0 a = 4.8924086 AU
Incl. = 2.25915 n = 0.09107936
q = 3.9212758 AU P = 10.82 years

m1 = 1.4 + 5 log(Delta) + 22.5 log(r(t-140))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	12 23.45	-02 32.5	4.451	4.657	+0.20	-1.6	19.2	95.9
Jan. 13	12 25.43	-02 48.0	4.312	4.673	+0.06	-0.7	19.2	105.6
Jan. 23	12 26.07	-02 55.0	4.179	4.689	-0.07	+0.2	19.1	115.6
Feb. 2	12 25.34	-02 53.4	4.058	4.704	-0.21	+1.0	19.1	125.9
Feb. 12	12 23.26	-02 43.2	3.954	4.720	-0.33	+1.8	19.1	136.6
Feb. 22	12 19.97	-02 25.3	3.871	4.736	-0.43	+2.5	19.1	147.5
Mar. 4	12 15.67	-02 00.8	3.814	4.752	-0.50	+2.9	19.1	158.7
Mar. 14	12 10.68	-01 31.7	3.785	4.767	-0.53	+3.1	19.1	170.1
Mar. 24	12 05.38	-01 00.3	3.786	4.783	-0.52	+3.1	19.1	178.5
Apr. 3	12 00.16	-00 29.3	3.818	4.799	-0.47	+2.8	19.2	167.3
Apr. 13	11 55.43	-00 01.1	3.880	4.814	-0.39	+2.3	19.2	156.2
Apr. 23	11 51.51	+00 22.2	3.969	4.830	-0.29	+1.7	19.3	145.3
May 3	11 48.63	+00 38.9	4.082	4.845	-0.17	+0.9	19.4	134.8
May 13	11 46.95	+00 48.2	4.214	4.861	-0.04	+0.1	19.5	124.7
May 23	11 46.51	+00 49.7	4.362	4.877	+0.08	-0.6	19.6	115.0
June 2	11 47.31	+00 43.3	4.521	4.892	+0.20	-1.4	19.7	105.6
June 12	11 49.28	+00 29.4	4.686	4.907	+0.31	-2.1	19.9	96.6
June 22	11 52.34	+00 08.6	4.855	4.923	+0.40	-2.7	20.0	87.9
July 2	11 56.38	-00 18.6	5.022	4.938	+0.49	-3.3	20.1	79.4
July 12	12 01.30	-00 51.4	5.186	4.953	+0.57	-3.8	20.2	71.2
July 22	12 06.97	-01 29.1	5.342	4.969	+0.63	-4.2	20.3	63.3
Aug. 1	12 13.30	-02 11.1	5.489	4.984	+0.69	-4.6	20.4	55.4
Aug. 11	12 20.20	-02 56.7	5.624	4.999	+0.74	-4.8	20.4	47.7
Aug. 21	12 27.56	-03 45.1	5.745	5.014	+0.78	-5.1	20.5	40.1
Aug. 31	12 35.32	-04 35.9	5.850	5.029	+0.81	-5.3	20.6	32.6
Sept.10	12 43.39	-05 28.5	5.937	5.043	+0.83	-5.4	20.7	25.1
Sept.20	12 51.70	-06 22.1	6.006	5.058	+0.85	-5.4	20.7	17.6
Sept.30	13 00.19	-07 16.3	6.056	5.073	+0.86	-5.4	20.8	10.1
Oct. 10	13 08.77	-08 10.6	6.085	5.087	+0.86	-5.4	20.8	2.7
Oct. 20	13 17.37	-09 04.3	6.093	5.102	+0.86	-5.3	20.8	5.1
Oct. 30	13 25.93	-09 57.0	6.080	5.116	+0.84	-5.1	20.9	12.8
Nov. 9	13 34.35	-10 48.1	6.047	5.131	+0.82	-4.9	20.9	20.5
Nov. 19	13 42.56	-11 37.2	5.993	5.145	+0.79	-4.7	20.9	28.4
Nov. 29	13 50.47	-12 23.8	5.919	5.159	+0.75	-4.4	20.9	36.4
Dec. 9	13 57.95	-13 07.4	5.828	5.173	+0.70	-4.0	20.9	44.6
Dec. 19	14 04.92	-13 47.5	5.720	5.187	+0.63	-3.6	20.9	52.9
Dec. 29	14 11.25	-14 23.7	5.598	5.201	+0.56	-3.2	20.9	61.5
Jan. 8	14 16.81	-14 55.6	5.464	5.214	+0.47	-2.7	20.8	70.2
Jan. 18	14 21.49	-15 22.8	5.322	5.228	+0.37	-2.2	20.8	79.2
Jan. 28	14 25.15	-15 44.8	5.176	5.242	+0.25	-1.7	20.8	88.4
Feb. 7	14 27.67	-16 01.4	5.028	5.255	+0.13	-1.1	20.7	97.9
Feb. 17	14 28.97	-16 12.1	4.884	5.268	0.00	-0.5	20.7	107.7
Feb. 27	14 28.99	-16 16.7	4.748	5.281	-0.13	+0.2	20.7	117.7
Mar. 9	14 27.72	-16 15.1	4.625	5.294	-0.25	+0.8	20.6	128.0
Mar. 19	14 25.22	-16 07.3	4.520	5.307	-0.36	+1.4	20.6	138.6
Mar. 29	14 21.63	-15 53.6	4.437	5.320	-0.44	+1.9	20.6	149.4

Comet C/2012 Q1 (Kowalski)

Epoch = 2014 July 2.0 TT
T = 2012 Feb. 8.01057 TT
Peri. = 139.19755 e = 0.6359352
Node = 184.42727 2000.0 a = 26.0421738 AU
Incl. = 45.20905 n = 0.00741632
q = 9.4810388 AU P = 132.90 years

m1 = -0.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	23 13.27	+03 45.6	10.283	9.967	+0.32	-0.4	19.4	68.6
Jan. 13	23 16.46	+03 41.4	10.448	9.981	+0.36	0.0	19.5	59.2
Jan. 23	23 20.06	+03 41.1	10.599	9.995	+0.39	+0.3	19.5	50.0
Feb. 2	23 23.99	+03 44.5	10.733	10.008	+0.42	+0.7	19.6	40.9
Feb. 12	23 28.20	+03 51.1	10.847	10.022	+0.44	+0.9	19.6	31.9
Feb. 22	23 32.60	+04 00.2	10.939	10.037	+0.45	+1.1	19.6	23.1
Mar. 4	23 37.13	+04 11.4	11.007	10.051	+0.46	+1.3	19.6	14.6
Mar. 14	23 41.73	+04 24.2	11.051	10.066	+0.46	+1.4	19.7	7.3
Mar. 24	23 46.32	+04 37.9	11.069	10.080	+0.45	+1.4	19.7	7.1
Apr. 3	23 50.85	+04 52.1	11.061	10.095	+0.44	+1.4	19.7	14.2
Apr. 13	23 55.24	+05 06.1	11.030	10.110	+0.42	+1.3	19.7	22.4
Apr. 23	23 59.44	+05 19.5	10.974	10.125	+0.40	+1.2	19.7	30.9
May 3	00 03.39	+05 31.7	10.897	10.141	+0.36	+1.1	19.7	39.6
May 13	00 07.03	+05 42.2	10.801	10.156	+0.33	+0.8	19.7	48.3
May 23	00 10.30	+05 50.5	10.687	10.172	+0.29	+0.6	19.7	57.0
June 2	00 13.16	+05 56.2	10.559	10.187	+0.24	+0.3	19.6	65.9
June 12	00 15.56	+05 58.8	10.421	10.203	+0.19	-0.1	19.6	74.9
June 22	00 17.44	+05 57.9	10.276	10.219	+0.13	-0.5	19.6	84.0
July 2	00 18.79	+05 53.2	10.128	10.236	+0.08	-0.9	19.6	93.2
July 12	00 19.58	+05 44.5	9.982	10.252	+0.02	-1.3	19.6	102.6
July 22	00 19.79	+05 31.5	9.842	10.268	-0.04	-1.7	19.5	112.2
Aug. 1	00 19.43	+05 14.2	9.712	10.285	-0.09	-2.1	19.5	121.9
Aug. 11	00 18.55	+04 52.8	9.598	10.302	-0.14	-2.5	19.5	131.8
Aug. 21	00 17.17	+04 27.5	9.504	10.319	-0.18	-2.9	19.5	141.9
Aug. 31	00 15.39	+03 58.9	9.432	10.336	-0.21	-3.1	19.5	152.1
Sept.10	00 13.29	+03 27.7	9.388	10.353	-0.23	-3.3	19.5	162.5
Sept.20	00 11.00	+02 54.6	9.373	10.370	-0.24	-3.4	19.5	172.9
Sept.30	00 08.64	+02 20.8	9.388	10.388	-0.23	-3.4	19.5	176.1
Oct. 10	00 06.34	+01 47.2	9.435	10.405	-0.21	-3.2	19.5	165.7
Oct. 20	00 04.24	+01 15.0	9.511	10.423	-0.18	-3.0	19.6	155.1
Oct. 30	00 02.46	+00 45.0	9.616	10.441	-0.14	-2.7	19.6	144.6
Nov. 9	00 01.09	+00 18.1	9.746	10.459	-0.09	-2.3	19.6	134.1
Nov. 19	00 00.23	-00 05.1	9.897	10.477	-0.03	-1.9	19.7	123.7
Nov. 29	23 59.91	-00 24.1	10.065	10.495	+0.03	-1.5	19.7	113.3
Dec. 9	00 00.18	-00 38.8	10.245	10.514	+0.09	-1.0	19.8	103.2
Dec. 19	00 01.03	-00 49.0	10.433	10.532	+0.14	-0.6	19.8	93.1
Dec. 29	00 02.46	-00 54.9	10.621	10.551	+0.20	-0.2	19.9	83.2
Jan. 8	00 04.43	-00 56.9	10.807	10.570	+0.25	+0.2	19.9	73.5
Jan. 18	00 06.89	-00 55.1	10.985	10.589	+0.29	+0.5	20.0	63.9
Jan. 28	00 09.79	-00 50.2	11.150	10.608	+0.33	+0.8	20.0	54.4
Feb. 7	00 13.08	-00 42.5	11.300	10.627	+0.36	+1.0	20.1	45.1
Feb. 17	00 16.69	-00 32.7	11.431	10.646	+0.39	+1.1	20.1	35.9
Feb. 27	00 20.55	-00 21.2	11.540	10.665	+0.41	+1.3	20.1	26.8
Mar. 9	00 24.61	-00 08.6	11.625	10.685	+0.42	+1.3	20.2	17.9
Mar. 19	00 28.78	+00 04.5	11.686	10.704	+0.42	+1.3	20.2	9.2
Mar. 29	00 33.02	+00 17.7	11.721	10.724	+0.42	+1.3	20.2	3.0

Comet P/2011 R3 (Novichonok-Gerke)

Epoch = 2014 July 2.0 TT
T = 2012 Mar. 29.17572 TT
Peri. = 224.66172 e = 0.2633493
Node = 190.39414 2000.0 a = 4.8242151 AU
Incl. = 19.23357 n = 0.09301738
q = 3.5537614 AU P = 10.60 years

m1 = 4.2 + 5 log(Delta) + 20.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	10 11.90	-05 49.7	3.864	4.485	-0.25	+0.3	20.2	123.7
Jan. 13	10 09.35	-05 46.8	3.770	4.506	-0.37	+1.5	20.2	133.8
Jan. 23	10 05.62	-05 31.5	3.696	4.528	-0.47	+2.8	20.2	143.9
Feb. 2	10 00.96	-05 03.7	3.646	4.549	-0.52	+3.9	20.2	153.5
Feb. 12	09 55.76	-04 24.6	3.624	4.571	-0.53	+4.8	20.2	161.4
Feb. 22	09 50.42	-03 36.4	3.632	4.592	-0.50	+5.5	20.2	164.2
Mar. 4	09 45.40	-02 41.9	3.671	4.613	-0.43	+5.7	20.3	159.7
Mar. 14	09 41.09	-01 44.5	3.738	4.634	-0.33	+5.7	20.4	151.2
Mar. 24	09 37.81	-00 47.5	3.833	4.656	-0.20	+5.4	20.5	141.6
Apr. 3	09 35.77	+00 06.1	3.951	4.677	-0.07	+4.8	20.6	131.8
Apr. 13	09 35.06	+00 54.2	4.088	4.698	+0.07	+4.1	20.7	122.1
Apr. 23	09 35.71	+01 35.1	4.240	4.719	+0.20	+3.3	20.8	112.6
May 3	09 37.67	+02 08.1	4.403	4.740	+0.32	+2.5	20.9	103.4
May 13	09 40.83	+02 32.6	4.573	4.761	+0.42	+1.6	21.1	94.6
May 23	09 45.07	+02 48.8	4.744	4.782	+0.52	+0.8	21.2	86.0
June 2	09 50.26	+02 56.9	4.915	4.802	+0.60	0.0	21.3	77.7
June 12	09 56.28	+02 57.2	5.081	4.823	+0.67	-0.7	21.4	69.6
June 22	10 02.99	+02 50.4	5.240	4.844	+0.73	-1.3	21.5	61.8
July 2	10 10.28	+02 37.1	5.389	4.864	+0.78	-1.9	21.6	54.1
July 12	10 18.03	+02 17.9	5.526	4.885	+0.81	-2.4	21.7	46.6
July 22	10 26.16	+01 53.4	5.650	4.905	+0.84	-2.9	21.8	39.2
Aug. 1	10 34.57	+01 24.3	5.757	4.925	+0.86	-3.3	21.8	31.9
Aug. 11	10 43.19	+00 51.2	5.847	4.945	+0.87	-3.6	21.9	24.8
Aug. 21	10 51.94	+00 14.8	5.919	4.965	+0.88	-3.9	22.0	17.7
Aug. 31	11 00.75	-00 24.4	5.972	4.985	+0.88	-4.1	22.0	11.1
Sept.10	11 09.55	-01 05.6	6.005	5.005	+0.87	-4.3	22.1	6.3
Sept.20	11 18.27	-01 48.1	6.017	5.024	+0.86	-4.3	22.1	8.1
Sept.30	11 26.86	-02 31.4	6.008	5.044	+0.84	-4.3	22.1	14.3
Oct. 10	11 35.22	-03 14.7	5.979	5.063	+0.81	-4.3	22.2	21.5
Oct. 20	11 43.31	-03 57.3	5.930	5.082	+0.77	-4.1	22.2	29.0
Oct. 30	11 51.02	-04 38.4	5.862	5.102	+0.72	-3.9	22.2	36.8
Nov. 9	11 58.27	-05 17.3	5.775	5.120	+0.67	-3.6	22.2	44.8
Nov. 19	12 04.96	-05 53.2	5.673	5.139	+0.60	-3.2	22.2	53.0
Nov. 29	12 11.01	-06 25.2	5.555	5.158	+0.53	-2.7	22.2	61.5
Dec. 9	12 16.28	-06 52.4	5.426	5.177	+0.44	-2.2	22.2	70.2
Dec. 19	12 20.68	-07 13.9	5.289	5.195	+0.34	-1.5	22.1	79.2
Dec. 29	12 24.08	-07 28.9	5.146	5.213	+0.23	-0.8	22.1	88.5
Jan. 8	12 26.40	-07 36.5	5.002	5.231	+0.12	+0.1	22.1	98.1
Jan. 18	12 27.56	-07 35.8	4.862	5.249	-0.01	+0.9	22.0	108.0
Jan. 28	12 27.49	-07 26.3	4.730	5.267	-0.13	+1.9	22.0	118.2
Feb. 7	12 26.23	-07 07.8	4.612	5.285	-0.24	+2.7	22.0	128.7
Feb. 17	12 23.82	-06 40.3	4.512	5.302	-0.34	+3.6	22.0	139.5
Feb. 27	12 20.43	-06 04.6	4.435	5.319	-0.42	+4.3	22.0	150.6
Mar. 9	12 16.28	-05 22.1	4.385	5.337	-0.46	+4.7	22.0	161.7
Mar. 19	12 11.66	-04 34.7	4.365	5.354	-0.48	+5.0	22.0	172.7
Mar. 29	12 06.90	-03 44.9	4.376	5.370	-0.45	+5.0	22.0	174.6

Comet 242P/Spahr

Epoch = 2014 July 2.0 TT
T = 2012 Apr. 2.42592 TT
Peri. = 247.65378 e = 0.2765515
Node = 180.70081 2000.0 a = 5.5023425 AU
Incl. = 32.49679 n = 0.07636294
q = 3.9806614 AU P = 12.91 years

m1 = 2.6 + 5 log(Delta) + 20.0 log(r(t-30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	10 22.14	-11 09.8	4.263	4.812	-0.21	+0.8	19.3	118.7
Jan. 13	10 20.08	-11 02.1	4.160	4.833	-0.32	+2.1	19.3	128.4
Jan. 23	10 16.88	-10 41.2	4.075	4.854	-0.41	+3.4	19.3	138.2
Feb. 2	10 12.77	-10 07.0	4.013	4.875	-0.47	+4.7	19.3	147.7
Feb. 12	10 08.05	-09 20.0	3.978	4.896	-0.49	+5.8	19.3	155.9
Feb. 22	10 03.12	-08 22.1	3.972	4.916	-0.48	+6.6	19.3	160.8
Mar. 4	09 58.35	-07 16.0	3.996	4.937	-0.42	+7.1	19.4	159.7
Mar. 14	09 54.14	-06 05.0	4.050	4.958	-0.34	+7.2	19.4	153.4
Mar. 24	09 50.78	-04 52.7	4.132	4.979	-0.23	+7.0	19.5	144.7
Apr. 3	09 48.50	-03 42.5	4.240	5.001	-0.11	+6.5	19.6	135.3
Apr. 13	09 47.43	-02 37.0	4.370	5.022	+0.02	+5.9	19.7	125.7
Apr. 23	09 47.61	-01 38.5	4.517	5.043	+0.14	+5.0	19.8	116.2
May 3	09 49.02	-00 48.0	4.677	5.064	+0.26	+4.2	19.9	107.0
May 13	09 51.59	-00 06.4	4.846	5.085	+0.36	+3.3	20.0	98.0
May 23	09 55.21	+00 26.3	5.019	5.106	+0.46	+2.4	20.2	89.2
June 2	09 59.78	+00 50.1	5.192	5.127	+0.54	+1.5	20.3	80.7
June 12	10 05.16	+01 05.6	5.363	5.148	+0.61	+0.8	20.4	72.4
June 22	10 11.25	+01 13.2	5.527	5.169	+0.67	0.0	20.5	64.4
July 2	10 17.93	+01 13.7	5.682	5.190	+0.72	-0.6	20.6	56.5
July 12	10 25.09	+01 07.8	5.825	5.211	+0.76	-1.2	20.7	48.7
July 22	10 32.64	+00 56.1	5.955	5.232	+0.79	-1.7	20.7	41.1
Aug. 1	10 40.50	+00 39.4	6.069	5.253	+0.81	-2.1	20.8	33.6
Aug. 11	10 48.57	+00 18.5	6.165	5.274	+0.82	-2.4	20.9	26.2
Aug. 21	10 56.80	-00 06.0	6.243	5.295	+0.83	-2.7	21.0	18.9
Aug. 31	11 05.10	-00 33.3	6.300	5.316	+0.83	-2.9	21.0	11.8
Sept.10	11 13.40	-01 02.7	6.337	5.337	+0.82	-3.1	21.1	6.2
Sept.20	11 21.65	-01 33.5	6.353	5.358	+0.81	-3.1	21.1	7.2
Sept.30	11 29.77	-02 04.8	6.347	5.378	+0.79	-3.1	21.1	13.6
Oct. 10	11 37.68	-02 36.0	6.320	5.399	+0.76	-3.0	21.1	21.0
Oct. 20	11 45.32	-03 06.3	6.272	5.420	+0.73	-2.9	21.2	28.7
Oct. 30	11 52.60	-03 34.8	6.203	5.440	+0.68	-2.6	21.2	36.7
Nov. 9	11 59.44	-04 00.8	6.117	5.461	+0.63	-2.2	21.2	45.0
Nov. 19	12 05.74	-04 23.2	6.013	5.481	+0.57	-1.8	21.2	53.4
Nov. 29	12 11.40	-04 41.4	5.894	5.501	+0.49	-1.3	21.2	62.0
Dec. 9	12 16.33	-04 54.2	5.764	5.521	+0.41	-0.7	21.1	70.9
Dec. 19	12 20.41	-05 00.9	5.625	5.542	+0.31	0.0	21.1	80.1
Dec. 29	12 23.55	-05 00.6	5.481	5.562	+0.21	+0.8	21.1	89.6
Jan. 8	12 25.66	-04 52.5	5.337	5.582	+0.10	+1.7	21.1	99.3
Jan. 18	12 26.67	-04 36.0	5.198	5.602	-0.01	+2.5	21.1	109.4
Jan. 28	12 26.54	-04 10.7	5.067	5.622	-0.12	+3.4	21.0	119.8
Feb. 7	12 25.29	-03 36.8	4.952	5.641	-0.23	+4.2	21.0	130.4
Feb. 17	12 23.00	-02 54.8	4.856	5.661	-0.32	+4.9	21.0	141.3
Feb. 27	12 19.81	-02 05.8	4.784	5.680	-0.39	+5.4	21.0	152.5
Mar. 9	12 15.93	-01 11.7	4.740	5.700	-0.43	+5.7	21.0	163.7
Mar. 19	12 11.63	-00 14.6	4.727	5.719	-0.44	+5.7	21.0	175.0
Mar. 29	12 07.21	+00 42.8	4.746	5.739	-0.42	+5.5	21.1	173.5

Comet C/2006 S3 (LONEOS)

Epoch = 2014 July 2.0 TT
T = 2012 Apr. 15.38254 TT
Peri. = 140.02394
Node = 38.36506 2000.0
Incl. = 166.02682
q = 5.1283462 AU
e = 1.0025066

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	13 28.65	-14 31.0	7.075	6.912	-0.22	-0.5	15.5	76.5
Jan. 13	13 26.41	-14 36.0	6.939	6.959	-0.33	+0.1	15.5	87.1
Jan. 23	13 23.09	-14 35.4	6.802	7.007	-0.44	+0.7	15.5	98.0
Feb. 2	13 18.65	-14 28.6	6.670	7.055	-0.55	+1.4	15.5	109.2
Feb. 12	13 13.11	-14 14.9	6.550	7.103	-0.66	+2.1	15.5	120.5
Feb. 22	13 06.54	-13 54.2	6.450	7.151	-0.75	+2.8	15.5	132.1
Mar. 4	12 59.08	-13 26.4	6.376	7.200	-0.81	+3.4	15.5	143.8
Mar. 14	12 50.96	-12 52.1	6.332	7.249	-0.85	+4.0	15.5	155.5
Mar. 24	12 42.46	-12 12.4	6.324	7.298	-0.86	+4.4	15.5	166.6
Apr. 3	12 33.87	-11 28.9	6.354	7.347	-0.83	+4.6	15.5	172.8
Apr. 13	12 25.53	-10 43.3	6.422	7.396	-0.78	+4.6	15.6	165.4
Apr. 23	12 17.71	-09 57.8	6.527	7.446	-0.71	+4.4	15.6	154.4
May 3	12 10.65	-09 14.2	6.665	7.496	-0.61	+4.0	15.7	143.2
May 13	12 04.50	-08 34.2	6.832	7.546	-0.51	+3.5	15.8	132.0
May 23	11 59.36	-07 58.9	7.023	7.596	-0.41	+3.0	15.8	121.1
June 2	11 55.25	-07 29.3	7.232	7.647	-0.31	+2.4	15.9	110.5
June 12	11 52.17	-07 05.7	7.453	7.698	-0.21	+1.8	16.0	100.2
June 22	11 50.06	-06 48.1	7.679	7.748	-0.12	+1.2	16.1	90.1
July 2	11 48.83	-06 36.5	7.906	7.799	-0.04	+0.6	16.2	80.3
July 12	11 48.39	-06 30.6	8.128	7.851	+0.03	+0.1	16.3	70.7
July 22	11 48.65	-06 29.8	8.339	7.902	+0.08	-0.4	16.3	61.3
Aug. 1	11 49.49	-06 33.7	8.537	7.953	+0.13	-0.8	16.4	52.1
Aug. 11	11 50.82	-06 41.8	8.717	8.005	+0.17	-1.2	16.5	43.0
Aug. 21	11 52.53	-06 53.5	8.875	8.056	+0.20	-1.5	16.5	34.0
Aug. 31	11 54.53	-07 08.2	9.010	8.108	+0.22	-1.7	16.6	25.2
Sept.10	11 56.72	-07 25.4	9.119	8.160	+0.23	-1.9	16.6	16.8
Sept.20	11 59.01	-07 44.6	9.201	8.212	+0.23	-2.1	16.7	9.4
Sept.30	12 01.30	-08 05.1	9.255	8.264	+0.22	-2.1	16.7	7.9
Oct. 10	12 03.51	-08 26.4	9.281	8.317	+0.20	-2.2	16.7	14.3
Oct. 20	12 05.53	-08 47.9	9.279	8.369	+0.17	-2.1	16.8	22.7
Oct. 30	12 07.28	-09 09.2	9.249	8.422	+0.14	-2.0	16.8	31.8
Nov. 9	12 08.65	-09 29.4	9.195	8.474	+0.09	-1.9	16.8	41.1
Nov. 19	12 09.56	-09 48.0	9.118	8.527	+0.04	-1.6	16.8	50.7
Nov. 29	12 09.91	-10 04.4	9.022	8.579	-0.03	-1.3	16.8	60.5
Dec. 9	12 09.62	-10 17.8	8.911	8.632	-0.10	-1.0	16.8	70.5
Dec. 19	12 08.61	-10 27.7	8.789	8.685	-0.18	-0.6	16.8	80.7
Dec. 29	12 06.82	-10 33.3	8.663	8.738	-0.26	-0.1	16.7	91.2
Jan. 8	12 04.22	-10 34.0	8.537	8.791	-0.34	+0.5	16.7	101.8
Jan. 18	12 00.81	-10 29.3	8.419	8.844	-0.42	+1.0	16.7	112.6
Jan. 28	11 56.60	-10 19.0	8.315	8.897	-0.49	+1.6	16.7	123.6
Feb. 7	11 51.69	-10 02.8	8.230	8.951	-0.55	+2.2	16.7	134.6
Feb. 17	11 46.19	-09 40.9	8.171	9.004	-0.59	+2.7	16.7	145.7
Feb. 27	11 40.26	-09 13.9	8.141	9.057	-0.62	+3.1	16.7	156.4
Mar. 9	11 34.11	-08 42.7	8.145	9.110	-0.62	+3.4	16.8	165.7
Mar. 19	11 27.94	-08 08.3	8.184	9.164	-0.60	+3.6	16.8	169.2
Mar. 29	11 21.96	-07 32.0	8.259	9.217	-0.56	+3.7	16.8	162.8

Comet 281P/MOSS

Epoch = 2014 July 2.0 TT
T = 2012 May 16.40502 TT
Peri. = 26.96676 e = 0.1729635
Node = 87.17341 2000.0 a = 4.8567515 AU
Incl. = 4.72366 n = 0.09208423
q = 4.0167108 AU P = 10.70 years

H = 13.8 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	13 20.46	-03 29.4	4.508	4.486	+0.44	-1.7	21.1	82.5
Jan. 13	13 24.89	-03 46.5	4.365	4.499	+0.32	-0.9	21.0	91.5
Jan. 23	13 28.10	-03 55.5	4.223	4.513	+0.19	-0.1	20.9	100.8
Feb. 2	13 29.98	-03 56.4	4.086	4.526	+0.05	+0.7	20.9	110.5
Feb. 12	13 30.44	-03 48.9	3.958	4.539	-0.10	+1.5	20.8	120.5
Feb. 22	13 29.47	-03 33.7	3.844	4.553	-0.24	+2.2	20.6	130.8
Mar. 4	13 27.12	-03 11.6	3.749	4.566	-0.36	+2.8	20.5	141.5
Mar. 14	13 23.54	-02 44.0	3.676	4.580	-0.45	+3.1	20.4	152.3
Mar. 24	13 19.01	-02 12.9	3.630	4.593	-0.52	+3.2	20.3	163.0
Apr. 3	13 13.84	-01 40.8	3.613	4.607	-0.54	+3.1	20.1	172.6
Apr. 13	13 08.47	-01 10.2	3.627	4.620	-0.52	+2.6	20.1	171.4
Apr. 23	13 03.31	-00 43.8	3.670	4.634	-0.46	+2.0	20.3	161.5
May 3	12 58.74	-00 23.5	3.741	4.648	-0.37	+1.3	20.5	150.9
May 13	12 55.08	-00 10.8	3.837	4.661	-0.25	+0.4	20.6	140.5
May 23	12 52.53	-00 06.5	3.956	4.675	-0.13	-0.4	20.8	130.3
June 2	12 51.22	-00 10.8	4.092	4.689	0.00	-1.3	20.9	120.5
June 12	12 51.20	-00 23.5	4.241	4.702	+0.12	-2.0	21.0	111.1
June 22	12 52.42	-00 44.0	4.399	4.716	+0.24	-2.7	21.1	102.0
July 2	12 54.83	-01 11.4	4.563	4.730	+0.35	-3.4	21.2	93.2
July 12	12 58.34	-01 45.0	4.728	4.743	+0.45	-3.9	21.3	84.7
July 22	13 02.84	-02 23.7	4.891	4.757	+0.54	-4.3	21.4	76.5
Aug. 1	13 08.22	-03 06.9	5.049	4.771	+0.62	-4.7	21.4	68.5
Aug. 11	13 14.37	-03 53.6	5.199	4.785	+0.68	-4.9	21.5	60.6
Aug. 21	13 21.21	-04 43.1	5.340	4.798	+0.74	-5.2	21.5	52.9
Aug. 31	13 28.63	-05 34.6	5.468	4.812	+0.79	-5.3	21.5	45.3
Sept. 10	13 36.55	-06 27.4	5.581	4.825	+0.83	-5.4	21.5	37.8
Sept. 20	13 44.90	-07 21.0	5.679	4.839	+0.87	-5.4	21.5	30.4
Sept. 30	13 53.59	-08 14.6	5.759	4.852	+0.90	-5.3	21.4	23.0
Oct. 10	14 02.54	-09 07.7	5.820	4.866	+0.92	-5.2	21.4	15.6
Oct. 20	14 11.70	-09 59.7	5.863	4.879	+0.93	-5.0	21.3	8.4
Oct. 30	14 20.97	-10 50.1	5.884	4.893	+0.93	-4.8	21.2	3.0
Nov. 9	14 30.28	-11 38.5	5.885	4.906	+0.93	-4.6	21.3	7.9
Nov. 19	14 39.54	-12 24.3	5.866	4.919	+0.91	-4.3	21.4	15.3
Nov. 29	14 48.68	-13 07.2	5.826	4.933	+0.89	-4.0	21.5	22.9
Dec. 9	14 57.59	-13 46.7	5.767	4.946	+0.86	-3.6	21.5	30.8
Dec. 19	15 06.16	-14 22.6	5.688	4.959	+0.81	-3.2	21.6	38.7
Dec. 29	15 14.29	-14 54.7	5.593	4.972	+0.76	-2.8	21.6	46.9
Jan. 8	15 21.85	-15 22.6	5.482	4.985	+0.69	-2.4	21.6	55.1
Jan. 18	15 28.73	-15 46.2	5.357	4.998	+0.60	-1.9	21.6	63.6
Jan. 28	15 34.77	-16 05.5	5.222	5.011	+0.51	-1.5	21.6	72.3
Feb. 7	15 39.85	-16 20.3	5.080	5.024	+0.40	-1.0	21.5	81.2
Feb. 17	15 43.85	-16 30.7	4.934	5.037	+0.28	-0.6	21.5	90.3
Feb. 27	15 46.63	-16 36.7	4.788	5.049	+0.15	-0.2	21.4	99.7
Mar. 9	15 48.10	-16 38.4	4.646	5.062	+0.01	+0.2	21.3	109.3
Mar. 19	15 48.21	-16 36.0	4.513	5.074	-0.13	+0.6	21.2	119.3
Mar. 29	15 46.94	-16 29.7	4.394	5.087	-0.26	+1.0	21.1	129.5

Comet C/2010 R1 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2012 May 18.11073 TT
Peri. = 114.46551
Node = 343.67487 2000.0
Incl. = 156.91913
q = 5.6211775 AU
e = 1.0017836

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	12 18.79	+03 21.6	6.808	7.034	-0.42	+1.8	18.6	99.3
Jan. 13	12 14.64	+03 39.5	6.670	7.076	-0.52	+2.4	18.6	110.5
Jan. 23	12 09.39	+04 03.5	6.546	7.117	-0.63	+3.0	18.6	122.0
Feb. 2	12 03.09	+04 33.0	6.442	7.159	-0.72	+3.4	18.6	133.8
Feb. 12	11 55.85	+05 07.1	6.364	7.202	-0.80	+3.7	18.6	145.7
Feb. 22	11 47.87	+05 44.1	6.319	7.244	-0.85	+3.8	18.6	157.8
Mar. 4	11 39.39	+06 22.5	6.310	7.287	-0.87	+3.8	18.6	169.7
Mar. 14	11 30.73	+07 00.4	6.339	7.331	-0.85	+3.5	18.7	175.6
Mar. 24	11 22.19	+07 35.9	6.407	7.374	-0.81	+3.2	18.7	164.9
Apr. 3	11 14.08	+08 07.5	6.512	7.418	-0.74	+2.7	18.8	153.2
Apr. 13	11 06.66	+08 34.1	6.651	7.462	-0.65	+2.1	18.8	141.5
Apr. 23	11 00.11	+08 55.0	6.819	7.507	-0.56	+1.5	18.9	130.2
May 3	10 54.55	+09 09.9	7.010	7.551	-0.45	+0.9	19.0	119.1
May 13	10 50.05	+09 18.9	7.218	7.596	-0.35	+0.3	19.1	108.3
May 23	10 46.59	+09 22.4	7.436	7.641	-0.25	-0.2	19.2	97.9
June 2	10 44.13	+09 20.6	7.659	7.687	-0.15	-0.6	19.3	87.8
June 12	10 42.59	+09 14.3	7.882	7.733	-0.07	-1.0	19.4	77.9
June 22	10 41.87	+09 03.8	8.098	7.778	0.00	-1.4	19.5	68.2
July 2	10 41.88	+08 49.9	8.303	7.824	+0.06	-1.7	19.5	58.8
July 12	10 42.51	+08 32.9	8.493	7.871	+0.11	-1.9	19.6	49.5
July 22	10 43.65	+08 13.4	8.664	7.917	+0.15	-2.1	19.7	40.3
Aug. 1	10 45.20	+07 52.0	8.814	7.964	+0.19	-2.3	19.7	31.3
Aug. 11	10 47.05	+07 29.0	8.940	8.011	+0.21	-2.4	19.8	22.3
Aug. 21	10 49.11	+07 05.0	9.039	8.058	+0.22	-2.5	19.8	13.3
Aug. 31	10 51.28	+06 40.3	9.112	8.105	+0.22	-2.5	19.9	4.3
Sept.10	10 53.46	+06 15.6	9.156	8.153	+0.21	-2.4	19.9	4.8
Sept.20	10 55.57	+05 51.1	9.172	8.200	+0.19	-2.4	20.0	13.9
Sept.30	10 57.50	+05 27.6	9.160	8.248	+0.17	-2.2	20.0	23.1
Oct. 10	10 59.17	+05 05.3	9.122	8.296	+0.13	-2.0	20.0	32.4
Oct. 20	11 00.48	+04 44.9	9.059	8.344	+0.09	-1.8	20.0	41.9
Oct. 30	11 01.34	+04 26.8	8.974	8.392	+0.03	-1.5	20.0	51.5
Nov. 9	11 01.65	+04 11.7	8.871	8.441	-0.03	-1.2	20.0	61.4
Nov. 19	11 01.33	+04 00.0	8.752	8.489	-0.10	-0.8	20.0	71.4
Nov. 29	11 00.28	+03 52.2	8.624	8.538	-0.18	-0.3	20.0	81.7
Dec. 9	10 58.46	+03 48.8	8.491	8.587	-0.26	+0.1	20.0	92.2
Dec. 19	10 55.81	+03 50.1	8.360	8.636	-0.35	+0.6	20.0	103.0
Dec. 29	10 52.32	+03 56.2	8.237	8.685	-0.43	+1.1	20.0	114.0
Jan. 8	10 48.01	+04 07.2	8.129	8.734	-0.51	+1.6	20.0	125.3
Jan. 18	10 42.94	+04 22.7	8.041	8.783	-0.57	+2.0	20.0	136.7
Jan. 28	10 37.23	+04 42.3	7.980	8.832	-0.62	+2.3	20.0	148.2
Feb. 7	10 31.04	+05 05.2	7.950	8.882	-0.65	+2.5	20.0	159.8
Feb. 17	10 24.57	+05 30.3	7.954	8.931	-0.65	+2.6	20.0	170.9
Feb. 27	10 18.03	+05 56.6	7.995	8.981	-0.64	+2.6	20.0	174.3
Mar. 9	10 11.65	+06 22.8	8.072	9.031	-0.60	+2.5	20.1	164.1
Mar. 19	10 05.64	+06 47.9	8.184	9.081	-0.55	+2.3	20.1	152.8
Mar. 29	10 00.17	+07 10.8	8.327	9.131	-0.48	+2.0	20.2	141.6

Comet C/2011 O1 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2012 Aug. 18.26232 TT
Peri. = 232.37739
Node = 89.81597 2000.0
Incl. = 76.50145
q = 3.8912636 AU
e = 0.9954239

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	04 40.14	-41 45.0	5.339	5.726	-0.60	+10.8	18.4	108.4
Jan. 13	04 34.14	-39 57.4	5.448	5.784	-0.44	+11.7	18.5	105.1
Jan. 23	04 29.74	-38 00.3	5.572	5.842	-0.28	+12.3	18.6	101.1
Feb. 2	04 26.96	-35 57.7	5.708	5.900	-0.12	+12.5	18.7	96.4
Feb. 12	04 25.73	-33 52.9	5.854	5.958	+0.02	+12.4	18.8	91.2
Feb. 22	04 25.90	-31 49.2	6.008	6.017	+0.14	+12.0	18.9	85.8
Mar. 4	04 27.31	-29 48.9	6.167	6.076	+0.25	+11.5	19.0	80.1
Mar. 14	04 29.82	-27 54.0	6.327	6.135	+0.34	+10.8	19.1	74.4
Mar. 24	04 33.24	-26 05.9	6.486	6.194	+0.42	+10.0	19.2	68.7
Apr. 3	04 37.42	-24 25.6	6.641	6.254	+0.48	+9.2	19.3	63.2
Apr. 13	04 42.22	-22 53.9	6.789	6.313	+0.53	+8.3	19.4	57.9
Apr. 23	04 47.51	-21 31.0	6.928	6.373	+0.56	+7.4	19.4	53.0
May 3	04 53.15	-20 17.2	7.055	6.433	+0.59	+6.5	19.5	48.6
May 13	04 59.05	-19 12.6	7.170	6.493	+0.60	+5.6	19.6	44.9
May 23	05 05.09	-18 17.0	7.269	6.554	+0.61	+4.7	19.7	42.1
June 2	05 11.18	-17 30.4	7.353	6.614	+0.60	+3.8	19.7	40.4
June 12	05 17.21	-16 52.5	7.421	6.675	+0.59	+3.0	19.8	40.0
June 22	05 23.11	-16 22.9	7.470	6.735	+0.57	+2.2	19.9	40.9
July 2	05 28.78	-16 01.4	7.503	6.796	+0.54	+1.4	19.9	43.1
July 12	05 34.13	-15 47.5	7.518	6.857	+0.49	+0.7	19.9	46.4
July 22	05 39.08	-15 40.8	7.516	6.918	+0.45	0.0	20.0	50.7
Aug. 1	05 43.53	-15 40.8	7.499	6.979	+0.39	-0.6	20.0	55.8
Aug. 11	05 47.40	-15 46.8	7.467	7.040	+0.32	-1.1	20.0	61.5
Aug. 21	05 50.61	-15 58.1	7.423	7.101	+0.24	-1.6	20.1	67.7
Aug. 31	05 53.06	-16 13.8	7.368	7.162	+0.16	-1.9	20.1	74.4
Sept. 10	05 54.67	-16 33.0	7.306	7.224	+0.07	-2.1	20.1	81.4
Sept. 20	05 55.38	-16 54.3	7.239	7.285	-0.03	-2.2	20.1	88.6
Sept. 30	05 55.13	-17 16.5	7.171	7.346	-0.12	-2.1	20.1	96.1
Oct. 10	05 53.88	-17 38.0	7.107	7.408	-0.22	-1.9	20.2	103.7
Oct. 20	05 51.66	-17 56.9	7.049	7.469	-0.32	-1.5	20.2	111.3
Oct. 30	05 48.49	-18 11.6	7.003	7.530	-0.40	-0.9	20.2	118.7
Nov. 9	05 44.47	-18 20.2	6.972	7.592	-0.47	-0.1	20.2	125.6
Nov. 19	05 39.76	-18 21.1	6.961	7.653	-0.52	+0.8	20.3	131.6
Nov. 29	05 34.54	-18 13.1	6.972	7.715	-0.55	+1.8	20.3	136.2
Dec. 9	05 29.05	-17 55.4	7.008	7.776	-0.55	+2.8	20.3	138.8
Dec. 19	05 23.56	-17 27.7	7.071	7.838	-0.53	+3.7	20.4	138.8
Dec. 29	05 18.30	-16 50.6	7.160	7.899	-0.48	+4.6	20.5	136.2
Jan. 8	05 13.51	-16 04.9	7.275	7.960	-0.41	+5.3	20.5	131.5
Jan. 18	05 09.37	-15 12.2	7.413	8.022	-0.33	+5.8	20.6	125.3
Jan. 28	05 06.03	-14 14.1	7.573	8.083	-0.25	+6.2	20.7	118.1
Feb. 7	05 03.57	-13 12.5	7.750	8.145	-0.16	+6.4	20.8	110.3
Feb. 17	05 02.01	-12 08.9	7.940	8.206	-0.07	+6.4	20.8	102.2
Feb. 27	05 01.36	-11 05.0	8.139	8.267	+0.02	+6.3	20.9	94.0
Mar. 9	05 01.56	-10 02.1	8.343	8.329	+0.10	+6.1	21.0	85.8
Mar. 19	05 02.57	-09 01.4	8.547	8.390	+0.17	+5.8	21.1	77.6
Mar. 29	05 04.29	-08 03.6	8.747	8.451	+0.23	+5.4	21.2	69.6

Comet 158P/Kowal-LINEAR

Epoch = 2014 July 2.0 TT
T = 2012 Oct. 22.55013 TT
Peri. = 235.44469 e = 0.0310956
Node = 137.27818 2000.0 a = 4.7266315 AU
Incl. = 7.90726 n = 0.09591277
q = 4.5796541 AU P = 10.28 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	03 08.63	+08 15.9	3.994	4.619	-0.07	+1.7	18.5	124.2
Jan. 13	03 07.91	+08 33.1	4.131	4.621	+0.07	+2.4	18.6	114.1
Jan. 23	03 08.64	+08 56.8	4.279	4.623	+0.21	+2.9	18.7	104.4
Feb. 2	03 10.78	+09 25.8	4.434	4.625	+0.35	+3.3	18.7	95.0
Feb. 12	03 14.24	+09 59.1	4.591	4.627	+0.47	+3.6	18.8	85.9
Feb. 22	03 18.90	+10 35.5	4.746	4.628	+0.57	+3.9	18.9	77.2
Mar. 4	03 24.63	+11 14.1	4.897	4.630	+0.67	+4.0	19.0	68.7
Mar. 14	03 31.33	+11 53.8	5.039	4.632	+0.75	+4.0	19.0	60.6
Mar. 24	03 38.85	+12 33.8	5.171	4.634	+0.82	+3.9	19.1	52.6
Apr. 3	03 47.08	+13 13.2	5.290	4.636	+0.88	+3.8	19.1	44.9
Apr. 13	03 55.91	+13 51.3	5.394	4.638	+0.93	+3.6	19.2	37.4
Apr. 23	04 05.24	+14 27.5	5.482	4.640	+0.97	+3.4	19.2	30.1
May 3	04 14.98	+15 01.3	5.553	4.642	+1.00	+3.1	19.3	23.0
May 13	04 25.02	+15 32.2	5.606	4.644	+1.03	+2.8	19.3	16.2
May 23	04 35.28	+15 59.9	5.640	4.646	+1.04	+2.4	19.3	9.9
June 2	04 45.68	+16 24.1	5.656	4.648	+1.05	+2.1	19.3	6.0
June 12	04 56.14	+16 44.6	5.652	4.651	+1.04	+1.7	19.3	8.5
June 22	05 06.55	+17 01.3	5.630	4.653	+1.03	+1.3	19.3	14.4
July 2	05 16.86	+17 14.1	5.590	4.655	+1.01	+0.9	19.3	21.0
July 12	05 26.95	+17 23.1	5.531	4.657	+0.98	+0.5	19.3	27.9
July 22	05 36.73	+17 28.3	5.456	4.659	+0.94	+0.2	19.3	34.9
Aug. 1	05 46.12	+17 30.1	5.364	4.661	+0.89	-0.2	19.2	42.2
Aug. 11	05 55.00	+17 28.6	5.257	4.664	+0.83	-0.4	19.2	49.5
Aug. 21	06 03.25	+17 24.2	5.137	4.666	+0.75	-0.7	19.1	57.1
Aug. 31	06 10.77	+17 17.3	5.006	4.668	+0.66	-0.9	19.1	64.9
Sept.10	06 17.41	+17 08.5	4.866	4.671	+0.56	-1.0	19.0	72.9
Sept.20	06 23.05	+16 58.4	4.719	4.673	+0.45	-1.1	19.0	81.3
Sept.30	06 27.54	+16 47.7	4.568	4.675	+0.32	-1.1	18.9	89.9
Oct. 10	06 30.75	+16 37.0	4.417	4.678	+0.18	-1.0	18.8	98.9
Oct. 20	06 32.57	+16 27.1	4.270	4.680	+0.03	-0.8	18.8	108.3
Oct. 30	06 32.89	+16 18.7	4.132	4.682	-0.12	-0.6	18.7	118.1
Nov. 9	06 31.70	+16 12.5	4.006	4.685	-0.27	-0.4	18.6	128.3
Nov. 19	06 29.02	+16 08.9	3.898	4.687	-0.40	0.0	18.6	138.8
Nov. 29	06 24.99	+16 08.5	3.812	4.689	-0.51	+0.3	18.5	149.6
Dec. 9	06 19.87	+16 11.1	3.752	4.692	-0.58	+0.6	18.5	160.5
Dec. 19	06 14.03	+16 17.0	3.721	4.694	-0.61	+0.9	18.5	170.3
Dec. 29	06 07.91	+16 25.7	3.722	4.697	-0.59	+1.1	18.5	171.4
Jan. 8	06 02.02	+16 37.1	3.754	4.699	-0.52	+1.4	18.5	162.0
Jan. 18	05 56.80	+16 50.7	3.816	4.702	-0.42	+1.5	18.6	151.2
Jan. 28	05 52.64	+17 06.1	3.904	4.704	-0.28	+1.7	18.6	140.3
Feb. 7	05 49.82	+17 23.0	4.016	4.706	-0.13	+1.8	18.7	129.6
Feb. 17	05 48.49	+17 40.8	4.146	4.709	+0.02	+1.8	18.7	119.3
Feb. 27	05 48.70	+17 59.0	4.290	4.711	+0.17	+1.8	18.8	109.4
Mar. 9	05 50.43	+18 17.2	4.442	4.714	+0.31	+1.8	18.9	99.8
Mar. 19	05 53.57	+18 34.7	4.599	4.716	+0.45	+1.6	19.0	90.6
Mar. 29	05 58.03	+18 51.0	4.757	4.719	+0.56	+1.5	19.1	81.8

Comet C/2012 A2 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2012 Nov. 5.23834 TT
Peri. = 101.71334
Node = 191.41203 2000.0
Incl. = 125.87310
q = 3.5385339 AU
e = 0.9963387

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	00 10.23	+10 18.1	5.140	5.135	+0.15	-5.9	17.5	84.2
Jan. 13	00 11.72	+09 19.2	5.379	5.195	+0.24	-4.6	17.6	74.0
Jan. 23	00 14.16	+08 33.0	5.610	5.256	+0.32	-3.6	17.8	64.1
Feb. 2	00 17.37	+07 57.5	5.828	5.316	+0.38	-2.7	17.9	54.5
Feb. 12	00 21.18	+07 30.8	6.029	5.377	+0.43	-2.0	18.0	45.1
Feb. 22	00 25.45	+07 11.1	6.210	5.439	+0.46	-1.4	18.1	35.8
Mar. 4	00 30.05	+06 57.0	6.368	5.500	+0.48	-1.0	18.2	26.7
Mar. 14	00 34.85	+06 46.9	6.501	5.562	+0.49	-0.7	18.3	17.8
Mar. 24	00 39.74	+06 39.4	6.607	5.624	+0.49	-0.6	18.4	8.9
Apr. 3	00 44.62	+06 33.4	6.686	5.687	+0.48	-0.6	18.5	1.6
Apr. 13	00 49.39	+06 27.8	6.738	5.749	+0.46	-0.6	18.5	9.0
Apr. 23	00 53.96	+06 21.4	6.762	5.812	+0.43	-0.8	18.6	17.7
May 3	00 58.22	+06 13.2	6.760	5.875	+0.39	-1.1	18.6	26.5
May 13	01 02.10	+06 02.4	6.734	5.939	+0.34	-1.4	18.7	35.4
May 23	01 05.49	+05 48.0	6.685	6.002	+0.28	-1.9	18.7	44.3
June 2	01 08.30	+05 29.1	6.615	6.066	+0.21	-2.4	18.7	53.4
June 12	01 10.42	+05 04.9	6.529	6.129	+0.14	-3.0	18.7	62.6
June 22	01 11.78	+04 34.6	6.430	6.193	+0.05	-3.7	18.8	72.1
July 2	01 12.28	+03 57.5	6.322	6.257	-0.04	-4.4	18.8	81.7
July 12	01 11.83	+03 13.0	6.210	6.321	-0.15	-5.2	18.8	91.6
July 22	01 10.38	+02 20.9	6.100	6.385	-0.25	-6.0	18.8	101.8
Aug. 1	01 07.88	+01 21.0	5.996	6.449	-0.35	-6.7	18.8	112.2
Aug. 11	01 04.34	+00 13.9	5.906	6.513	-0.45	-7.3	18.8	123.0
Aug. 21	00 59.82	-00 59.6	5.836	6.578	-0.54	-7.8	18.8	133.9
Aug. 31	00 54.40	-02 18.0	5.790	6.642	-0.61	-8.1	18.8	145.0
Sept. 10	00 48.28	-03 39.2	5.774	6.706	-0.66	-8.2	18.9	156.0
Sept. 20	00 41.67	-05 00.7	5.791	6.771	-0.68	-7.9	18.9	166.1
Sept. 30	00 34.85	-06 19.9	5.845	6.835	-0.67	-7.4	19.0	170.7
Oct. 10	00 28.11	-07 34.2	5.935	6.900	-0.64	-6.7	19.1	163.8
Oct. 20	00 21.73	-08 41.6	6.060	6.964	-0.58	-5.9	19.1	153.3
Oct. 30	00 15.96	-09 40.3	6.217	7.029	-0.50	-4.9	19.2	142.2
Nov. 9	00 11.00	-10 29.5	6.402	7.093	-0.40	-4.0	19.3	131.1
Nov. 19	00 06.98	-11 09.2	6.610	7.158	-0.30	-3.0	19.4	120.1
Nov. 29	00 03.97	-11 39.6	6.835	7.222	-0.20	-2.2	19.6	109.4
Dec. 9	00 01.98	-12 01.4	7.070	7.286	-0.10	-1.4	19.7	98.8
Dec. 19	00 00.99	-12 15.7	7.310	7.351	-0.01	-0.8	19.8	88.5
Dec. 29	00 00.92	-12 23.6	7.549	7.415	+0.08	-0.3	19.9	78.5
Jan. 8	00 01.69	-12 26.1	7.781	7.480	+0.15	+0.2	20.0	68.7
Jan. 18	00 03.21	-12 24.4	8.002	7.544	+0.22	+0.5	20.1	59.1
Jan. 28	00 05.36	-12 19.5	8.207	7.608	+0.27	+0.7	20.2	49.8
Feb. 7	00 08.03	-12 12.6	8.393	7.673	+0.31	+0.8	20.3	40.8
Feb. 17	00 11.13	-12 04.4	8.556	7.737	+0.34	+0.8	20.3	32.1
Feb. 27	00 14.55	-11 56.0	8.696	7.801	+0.36	+0.8	20.4	23.9
Mar. 9	00 18.19	-11 48.2	8.809	7.865	+0.38	+0.7	20.5	17.0
Mar. 19	00 21.96	-11 41.7	8.896	7.929	+0.38	+0.4	20.5	13.1
Mar. 29	00 25.76	-11 37.2	8.955	7.993	+0.38	+0.2	20.6	14.7

Comet C/2012 J1 (Catalina)

Epoch = 2014 July 2.0 TT
T = 2012 Dec. 7.48006 TT
Peri. = 147.43270
Node = 235.11966 2000.0
Incl. = 34.10027
q = 3.1609398 AU
e = 1.0032201

m1 = 4.2 + 5 log(Delta) + 15.0 log(r(t-50))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	05 43.43	-02 13.3	3.939	4.813	-0.45	-1.1	17.0	149.6
Jan. 13	05 38.95	-02 24.0	4.062	4.878	-0.34	0.0	17.1	142.4
Jan. 23	05 35.51	-02 24.2	4.208	4.944	-0.22	+0.9	17.3	134.1
Feb. 2	05 33.30	-02 15.6	4.376	5.010	-0.09	+1.5	17.5	125.2
Feb. 12	05 32.41	-02 00.6	4.561	5.076	+0.04	+1.9	17.6	116.3
Feb. 22	05 32.83	-01 41.2	4.757	5.143	+0.17	+2.2	17.8	107.6
Mar. 4	05 34.51	-01 19.4	4.962	5.210	+0.28	+2.2	18.0	99.0
Mar. 14	05 37.35	-00 57.0	5.172	5.277	+0.39	+2.2	18.2	90.6
Mar. 24	05 41.23	-00 35.5	5.382	5.344	+0.48	+2.0	18.4	82.5
Apr. 3	05 46.03	-00 15.9	5.589	5.411	+0.56	+1.7	18.5	74.7
Apr. 13	05 51.59	+00 00.6	5.791	5.479	+0.62	+1.3	18.7	67.1
Apr. 23	05 57.81	+00 13.6	5.984	5.547	+0.67	+0.9	18.8	59.8
May 3	06 04.55	+00 22.3	6.166	5.615	+0.72	+0.4	19.0	52.8
May 13	06 11.71	+00 26.3	6.336	5.683	+0.75	-0.1	19.1	46.2
May 23	06 19.16	+00 25.4	6.491	5.751	+0.77	-0.6	19.3	39.9
June 2	06 26.83	+00 19.5	6.630	5.819	+0.78	-1.1	19.4	34.2
June 12	06 34.61	+00 08.3	6.752	5.888	+0.78	-1.6	19.5	29.3
June 22	06 42.40	-00 08.1	6.857	5.956	+0.77	-2.2	19.6	25.6
July 2	06 50.15	-00 29.6	6.942	6.025	+0.76	-2.7	19.7	23.6
July 12	06 57.74	-00 56.3	7.009	6.093	+0.74	-3.2	19.8	23.8
July 22	07 05.12	-01 27.8	7.057	6.162	+0.71	-3.6	19.9	26.2
Aug. 1	07 12.21	-02 04.1	7.086	6.230	+0.67	-4.1	20.0	30.3
Aug. 11	07 18.92	-02 44.7	7.097	6.299	+0.63	-4.5	20.1	35.5
Aug. 21	07 25.17	-03 29.5	7.090	6.367	+0.57	-4.8	20.2	41.4
Aug. 31	07 30.89	-04 17.9	7.068	6.436	+0.51	-5.2	20.2	48.0
Sept. 10	07 36.00	-05 09.4	7.030	6.505	+0.44	-5.4	20.3	55.0
Sept. 20	07 40.42	-06 03.5	6.980	6.573	+0.36	-5.6	20.3	62.3
Sept. 30	07 44.06	-06 59.4	6.920	6.642	+0.28	-5.7	20.4	69.8
Oct. 10	07 46.85	-07 56.1	6.852	6.710	+0.19	-5.7	20.4	77.7
Oct. 20	07 48.74	-08 52.8	6.779	6.779	+0.09	-5.5	20.5	85.7
Oct. 30	07 49.66	-09 48.1	6.706	6.847	-0.01	-5.3	20.5	94.0
Nov. 9	07 49.59	-10 40.7	6.636	6.915	-0.10	-4.8	20.6	102.3
Nov. 19	07 48.55	-11 29.2	6.574	6.984	-0.20	-4.3	20.6	110.6
Nov. 29	07 46.57	-12 11.9	6.522	7.052	-0.28	-3.6	20.7	118.9
Dec. 9	07 43.75	-12 47.5	6.487	7.120	-0.35	-2.7	20.7	126.7
Dec. 19	07 40.23	-13 14.7	6.471	7.188	-0.40	-1.8	20.8	133.9
Dec. 29	07 36.21	-13 32.5	6.477	7.256	-0.43	-0.8	20.9	139.8
Jan. 8	07 31.92	-13 40.4	6.508	7.324	-0.43	+0.2	20.9	143.7
Jan. 18	07 27.61	-13 38.6	6.566	7.392	-0.41	+1.1	21.0	144.9
Jan. 28	07 23.53	-13 27.7	6.650	7.460	-0.36	+1.9	21.1	143.0
Feb. 7	07 19.90	-13 09.0	6.760	7.528	-0.30	+2.5	21.2	138.6
Feb. 17	07 16.90	-12 43.9	6.893	7.596	-0.22	+3.0	21.3	132.5
Feb. 27	07 14.68	-12 14.4	7.048	7.663	-0.14	+3.2	21.4	125.3
Mar. 9	07 13.31	-11 42.1	7.221	7.731	-0.05	+3.3	21.5	117.6
Mar. 19	07 12.84	-11 08.9	7.407	7.798	+0.04	+3.3	21.6	109.6
Mar. 29	07 13.24	-10 36.2	7.605	7.865	+0.12	+3.1	21.8	101.5

Comet C/2011 F1 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2013 Jan. 7.91565 TT
Peri. = 192.51992
Node = 85.10969 2000.0
Incl. = 56.61522
q = 1.8187038 AU
e = 0.9994435

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	02 24.45	-42 00.7	4.340	4.454	+0.04	+14.2	17.5	90.2
Jan. 13	02 24.85	-39 38.3	4.521	4.542	+0.20	+14.0	17.6	85.0
Jan. 23	02 26.87	-37 18.1	4.705	4.630	+0.34	+13.6	17.8	79.6
Feb. 2	02 30.26	-35 02.2	4.891	4.718	+0.45	+13.0	18.0	74.2
Feb. 12	02 34.77	-32 52.3	5.076	4.806	+0.54	+12.2	18.1	68.7
Feb. 22	02 40.18	-30 49.9	5.257	4.893	+0.61	+11.4	18.3	63.3
Mar. 4	02 46.33	-28 55.5	5.432	4.980	+0.67	+10.6	18.4	58.1
Mar. 14	02 53.04	-27 10.0	5.598	5.067	+0.71	+9.6	18.6	53.3
Mar. 24	03 00.18	-25 33.6	5.755	5.153	+0.75	+8.7	18.7	48.8
Apr. 3	03 07.63	-24 06.7	5.900	5.239	+0.76	+7.7	18.8	44.9
Apr. 13	03 15.28	-22 49.3	6.031	5.325	+0.77	+6.8	19.0	41.7
Apr. 23	03 23.03	-21 41.5	6.148	5.410	+0.78	+5.8	19.1	39.5
May 3	03 30.79	-20 43.4	6.249	5.495	+0.77	+4.9	19.2	38.4
May 13	03 38.46	-19 54.8	6.335	5.580	+0.75	+3.9	19.3	38.5
May 23	03 45.98	-19 15.7	6.404	5.664	+0.73	+3.0	19.4	39.9
June 2	03 53.25	-18 46.0	6.457	5.748	+0.69	+2.0	19.4	42.4
June 12	04 00.19	-18 25.5	6.493	5.832	+0.65	+1.1	19.5	45.9
June 22	04 06.71	-18 14.1	6.514	5.915	+0.60	+0.3	19.6	50.2
July 2	04 12.74	-18 11.3	6.520	5.998	+0.54	-0.6	19.7	55.2
July 12	04 18.18	-18 16.9	6.513	6.081	+0.48	-1.3	19.7	60.7
July 22	04 22.94	-18 30.4	6.494	6.163	+0.40	-2.1	19.8	66.7
Aug. 1	04 26.93	-18 51.2	6.465	6.245	+0.31	-2.7	19.8	73.1
Aug. 11	04 30.06	-19 18.5	6.429	6.327	+0.22	-3.3	19.9	79.7
Aug. 21	04 32.24	-19 51.2	6.388	6.408	+0.12	-3.7	19.9	86.6
Aug. 31	04 33.39	-20 28.1	6.346	6.490	+0.01	-4.0	19.9	93.7
Sept. 10	04 33.45	-21 07.7	6.306	6.570	-0.11	-4.0	20.0	100.9
Sept. 20	04 32.40	-21 48.2	6.271	6.651	-0.22	-3.9	20.0	108.0
Sept. 30	04 30.22	-22 27.3	6.246	6.731	-0.32	-3.6	20.1	115.0
Oct. 10	04 26.99	-23 02.9	6.235	6.811	-0.42	-3.0	20.1	121.6
Oct. 20	04 22.81	-23 32.6	6.240	6.891	-0.50	-2.2	20.2	127.4
Oct. 30	04 17.85	-23 54.2	6.265	6.970	-0.55	-1.2	20.2	132.1
Nov. 9	04 12.35	-24 05.8	6.313	7.049	-0.58	0.0	20.3	135.1
Nov. 19	04 06.56	-24 06.3	6.384	7.128	-0.58	+1.1	20.4	135.9
Nov. 29	04 00.79	-23 55.0	6.480	7.206	-0.55	+2.3	20.4	134.5
Dec. 9	03 55.31	-23 32.2	6.601	7.284	-0.49	+3.4	20.5	131.0
Dec. 19	03 50.38	-22 58.6	6.743	7.362	-0.42	+4.3	20.6	125.8
Dec. 29	03 46.19	-22 15.8	6.907	7.440	-0.33	+5.0	20.7	119.5
Jan. 8	03 42.89	-21 25.5	7.087	7.517	-0.23	+5.6	20.8	112.4
Jan. 18	03 40.56	-20 29.6	7.282	7.594	-0.14	+6.0	20.9	104.9
Jan. 28	03 39.20	-19 29.9	7.486	7.671	-0.04	+6.2	21.0	97.1
Feb. 7	03 38.81	-18 28.4	7.696	7.747	+0.05	+6.2	21.1	89.3
Feb. 17	03 39.33	-17 26.4	7.908	7.824	+0.14	+6.1	21.2	81.6
Feb. 27	03 40.68	-16 25.4	8.117	7.900	+0.21	+5.9	21.3	73.9
Mar. 9	03 42.78	-15 26.4	8.320	7.975	+0.27	+5.6	21.4	66.4
Mar. 19	03 45.52	-14 30.4	8.515	8.051	+0.33	+5.2	21.5	59.2
Mar. 29	03 48.80	-13 38.0	8.697	8.126	+0.37	+4.8	21.6	52.4

Comet 276P/Vorobjov

Epoch = 2014 July 2.0 TT
T = 2013 Jan. 10.55627 TT
Peri. = 205.85910 e = 0.2760465
Node = 213.33595 2000.0 a = 5.4070919 AU
Incl. = 14.36123 n = 0.07838960
q = 3.9144831 AU P = 12.57 years

m1 = -1.0 + 5 log(Delta) + 30.0 log(r(t-90))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	07 12.74	+04 19.4	3.284	4.226	-0.59	+0.5	20.0	160.9
Jan. 13	07 06.87	+04 24.6	3.299	4.242	-0.55	+1.4	20.0	161.3
Jan. 23	07 01.35	+04 38.8	3.342	4.258	-0.47	+2.1	20.1	155.7
Feb. 2	06 56.65	+05 00.3	3.413	4.275	-0.35	+2.7	20.2	147.2
Feb. 12	06 53.14	+05 27.1	3.510	4.292	-0.21	+3.0	20.3	137.8
Feb. 22	06 51.07	+05 57.0	3.628	4.309	-0.05	+3.1	20.4	128.1
Mar. 4	06 50.56	+06 28.2	3.763	4.327	+0.11	+3.0	20.5	118.6
Mar. 14	06 51.62	+06 58.6	3.912	4.345	+0.26	+2.8	20.6	109.4
Mar. 24	06 54.18	+07 27.0	4.070	4.363	+0.39	+2.5	20.8	100.5
Apr. 3	06 58.12	+07 52.0	4.233	4.381	+0.52	+2.1	20.9	91.9
Apr. 13	07 03.32	+08 12.8	4.397	4.399	+0.63	+1.6	21.0	83.6
Apr. 23	07 09.59	+08 28.8	4.559	4.418	+0.72	+1.1	21.2	75.6
May 3	07 16.80	+08 39.5	4.716	4.437	+0.80	+0.5	21.3	67.9
May 13	07 24.79	+08 44.6	4.867	4.456	+0.86	-0.1	21.4	60.4
May 23	07 33.43	+08 44.0	5.007	4.475	+0.92	-0.6	21.5	53.2
June 2	07 42.58	+08 37.8	5.137	4.494	+0.96	-1.2	21.6	46.1
June 12	07 52.14	+08 25.8	5.253	4.514	+0.98	-1.7	21.7	39.3
June 22	08 01.98	+08 08.4	5.355	4.533	+1.00	-2.3	21.8	32.7
July 2	08 12.02	+07 45.6	5.442	4.553	+1.01	-2.8	21.9	26.3
July 12	08 22.17	+07 17.8	5.512	4.573	+1.02	-3.3	22.0	20.3
July 22	08 32.34	+06 45.3	5.566	4.593	+1.01	-3.7	22.1	15.2
Aug. 1	08 42.47	+06 08.4	5.601	4.613	+1.00	-4.1	22.2	12.0
Aug. 11	08 52.46	+05 27.5	5.619	4.634	+0.98	-4.4	22.2	12.3
Aug. 21	09 02.26	+04 43.2	5.618	4.654	+0.95	-4.7	22.3	16.0
Aug. 31	09 11.79	+03 55.8	5.599	4.675	+0.92	-5.0	22.3	21.5
Sept. 10	09 20.97	+03 05.9	5.562	4.695	+0.88	-5.2	22.4	27.8
Sept. 20	09 29.73	+02 14.3	5.508	4.716	+0.83	-5.3	22.4	34.6
Sept. 30	09 37.99	+01 21.4	5.437	4.737	+0.77	-5.3	22.4	41.7
Oct. 10	09 45.66	+00 28.0	5.351	4.758	+0.70	-5.3	22.4	49.1
Oct. 20	09 52.64	-00 25.0	5.251	4.779	+0.62	-5.2	22.5	56.8
Oct. 30	09 58.84	-01 16.8	5.139	4.800	+0.53	-5.0	22.5	64.7
Nov. 9	10 04.13	-02 06.3	5.018	4.821	+0.43	-4.6	22.5	72.9
Nov. 19	10 08.43	-02 52.5	4.889	4.842	+0.32	-4.2	22.5	81.4
Nov. 29	10 11.62	-03 34.2	4.757	4.863	+0.20	-3.6	22.5	90.3
Dec. 9	10 13.60	-04 10.0	4.625	4.884	+0.07	-2.9	22.5	99.4
Dec. 19	10 14.31	-04 38.8	4.497	4.905	-0.06	-2.0	22.5	108.9
Dec. 29	10 13.72	-04 59.0	4.379	4.926	-0.19	-1.1	22.5	118.7
Jan. 8	10 11.85	-05 09.6	4.274	4.948	-0.30	0.0	22.5	128.6
Jan. 18	10 08.83	-05 09.7	4.187	4.969	-0.40	+1.1	22.5	138.7
Jan. 28	10 04.83	-04 59.2	4.123	4.990	-0.47	+2.1	22.5	148.6
Feb. 7	10 00.16	-04 38.3	4.086	5.011	-0.50	+3.0	22.5	157.6
Feb. 17	09 55.16	-04 08.3	4.077	5.033	-0.49	+3.7	22.6	163.6
Feb. 27	09 50.21	-03 31.2	4.099	5.054	-0.45	+4.2	22.7	163.0
Mar. 9	09 45.70	-02 49.5	4.150	5.075	-0.38	+4.4	22.8	156.3
Mar. 19	09 41.94	-02 06.0	4.230	5.096	-0.28	+4.3	22.9	147.3
Mar. 29	09 39.19	-01 23.1	4.335	5.117	-0.16	+4.0	23.0	137.7

Comet 246P/NEAT

Epoch = 2014 July 2.0 TT
T = 2013 Jan. 28.32358 TT
Peri. = 176.09823 e = 0.2850127
Node = 78.77354 2000.0 a = 4.0263736 AU
Incl. = 15.97104 n = 0.12199245
q = 2.8788060 AU P = 8.08 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 3	21 22.64	-27 44.7	4.136	3.364	+1.47	+6.8	16.8	33.9
Jan. 13	21 37.33	-26 36.3	4.227	3.388	+1.46	+7.0	16.9	27.8
Jan. 23	21 51.96	-25 25.8	4.305	3.413	+1.45	+7.2	17.0	22.0
Feb. 2	22 06.49	-24 14.0	4.368	3.437	+1.43	+7.3	17.0	16.9
Feb. 12	22 20.83	-23 01.5	4.416	3.462	+1.41	+7.2	17.1	13.1
Feb. 22	22 34.94	-21 49.0	4.448	3.487	+1.38	+7.2	17.2	12.0
Mar. 4	22 48.77	-20 37.5	4.465	3.512	+1.35	+7.0	17.2	14.2
Mar. 14	23 02.27	-19 27.7	4.465	3.537	+1.31	+6.7	17.3	18.5
Mar. 24	23 15.39	-18 20.4	4.450	3.562	+1.27	+6.4	17.3	23.9
Apr. 3	23 28.11	-17 16.5	4.420	3.587	+1.23	+6.0	17.3	29.8
Apr. 13	23 40.36	-16 16.9	4.376	3.613	+1.17	+5.5	17.4	36.0
Apr. 23	23 52.09	-15 22.4	4.317	3.638	+1.12	+4.9	17.4	42.4
May 3	00 03.26	-14 33.7	4.246	3.664	+1.05	+4.2	17.4	48.9
May 13	00 13.77	-13 52.0	4.163	3.689	+0.98	+3.4	17.4	55.7
May 23	00 23.56	-13 17.8	4.070	3.714	+0.90	+2.6	17.4	62.6
June 2	00 32.53	-12 52.1	3.969	3.740	+0.80	+1.6	17.4	69.7
June 12	00 40.55	-12 35.6	3.860	3.765	+0.70	+0.7	17.4	77.1
June 22	00 47.53	-12 29.0	3.748	3.791	+0.58	-0.4	17.3	84.7
July 2	00 53.31	-12 32.7	3.633	3.816	+0.44	-1.4	17.3	92.5
July 12	00 57.74	-12 47.0	3.520	3.842	+0.30	-2.5	17.3	100.7
July 22	01 00.70	-13 11.7	3.411	3.867	+0.14	-3.4	17.3	109.2
Aug. 1	01 02.05	-13 46.0	3.310	3.892	-0.03	-4.3	17.3	118.0
Aug. 11	01 01.72	-14 28.5	3.222	3.917	-0.20	-4.8	17.2	127.1
Aug. 21	00 59.69	-15 16.9	3.149	3.942	-0.36	-5.1	17.2	136.2
Aug. 31	00 56.04	-16 07.8	3.096	3.967	-0.50	-4.9	17.2	145.1
Sept. 10	00 51.00	-16 57.1	3.067	3.991	-0.61	-4.4	17.3	153.1
Sept. 20	00 44.94	-17 40.7	3.065	4.016	-0.66	-3.4	17.3	158.5
Sept. 30	00 38.33	-18 14.5	3.090	4.040	-0.66	-2.1	17.3	158.9
Oct. 10	00 31.71	-18 35.3	3.144	4.065	-0.61	-0.6	17.4	154.0
Oct. 20	00 25.62	-18 41.4	3.224	4.089	-0.51	+0.9	17.5	146.1
Oct. 30	00 20.52	-18 32.4	3.329	4.113	-0.38	+2.3	17.6	137.1
Nov. 9	00 16.75	-18 09.1	3.456	4.137	-0.23	+3.6	17.7	127.7
Nov. 19	00 14.49	-17 33.2	3.600	4.160	-0.07	+4.7	17.9	118.2
Nov. 29	00 13.80	-16 46.6	3.758	4.183	+0.09	+5.5	18.0	109.0
Dec. 9	00 14.67	-15 51.2	3.924	4.207	+0.23	+6.2	18.1	99.9
Dec. 19	00 16.97	-14 49.0	4.096	4.230	+0.36	+6.7	18.3	91.0
Dec. 29	00 20.58	-13 41.6	4.269	4.252	+0.48	+7.1	18.4	82.4
Jan. 8	00 25.34	-12 30.4	4.439	4.275	+0.58	+7.4	18.5	74.1
Jan. 18	00 31.10	-11 16.6	4.603	4.297	+0.66	+7.5	18.6	66.0
Jan. 28	00 37.71	-10 01.2	4.759	4.320	+0.73	+7.6	18.7	58.1
Feb. 7	00 45.02	-08 45.1	4.904	4.341	+0.79	+7.6	18.8	50.3
Feb. 17	00 52.92	-07 29.1	5.035	4.363	+0.84	+7.5	18.9	42.8
Feb. 27	01 01.30	-06 13.9	5.152	4.385	+0.87	+7.4	19.0	35.6
Mar. 9	01 10.04	-05 00.1	5.252	4.406	+0.90	+7.2	19.1	28.6
Mar. 19	01 19.07	-03 48.2	5.335	4.427	+0.92	+6.9	19.1	21.9
Mar. 29	01 28.29	-02 38.8	5.398	4.447	+0.93	+6.6	19.2	16.0

Comet C/2012 C1 (McNaught)

Epoch = 2014 July 2.0 TT
T = 2013 Feb. 4.73362 TT
Peri. = 279.90567
Node = 300.63182 2000.0
Incl. = 96.28162
q = 4.8379621 AU
e = 0.9974976

m1 = 5.2 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	21 02.83	-52 58.6	6.208	5.476	+0.65	+9.2	18.4	38.8
Jan. 13	21 09.36	-51 27.0	6.291	5.512	+0.66	+8.4	18.5	34.8
Jan. 23	21 15.97	-50 03.4	6.354	5.549	+0.65	+7.6	18.5	32.5
Feb. 2	21 22.50	-48 47.7	6.396	5.586	+0.63	+6.8	18.6	32.1
Feb. 12	21 28.80	-47 40.0	6.416	5.624	+0.59	+6.0	18.6	33.9
Feb. 22	21 34.75	-46 40.1	6.415	5.663	+0.55	+5.2	18.6	37.5
Mar. 4	21 40.22	-45 48.3	6.392	5.702	+0.49	+4.4	18.7	42.6
Mar. 14	21 45.09	-45 04.6	6.349	5.742	+0.41	+3.5	18.7	48.7
Mar. 24	21 49.23	-44 29.2	6.288	5.782	+0.33	+2.7	18.7	55.6
Apr. 3	21 52.51	-44 02.1	6.210	5.824	+0.23	+1.9	18.7	62.9
Apr. 13	21 54.78	-43 43.3	6.118	5.865	+0.11	+1.1	18.7	70.8
Apr. 23	21 55.90	-43 32.6	6.017	5.908	-0.02	+0.3	18.7	79.0
May 3	21 55.73	-43 29.6	5.909	5.950	-0.16	-0.4	18.7	87.5
May 13	21 54.11	-43 33.5	5.799	5.994	-0.32	-1.0	18.7	96.2
May 23	21 50.93	-43 43.1	5.692	6.037	-0.49	-1.3	18.7	105.2
June 2	21 46.07	-43 56.5	5.593	6.082	-0.66	-1.5	18.7	114.4
June 12	21 39.51	-44 11.5	5.506	6.127	-0.82	-1.4	18.7	123.6
June 22	21 31.32	-44 25.4	5.438	6.172	-0.97	-1.0	18.8	132.6
July 2	21 21.65	-44 34.9	5.392	6.218	-1.08	-0.2	18.8	141.2
July 12	21 10.84	-44 37.1	5.374	6.264	-1.15	+0.8	18.8	148.5
July 22	20 59.32	-44 29.5	5.386	6.310	-1.17	+1.9	18.9	153.3
Aug. 1	20 47.63	-44 10.5	5.429	6.357	-1.13	+3.1	18.9	153.9
Aug. 11	20 36.33	-43 39.9	5.506	6.404	-1.04	+4.1	19.0	150.1
Aug. 21	20 25.91	-42 58.4	5.613	6.452	-0.91	+5.1	19.1	143.2
Aug. 31	20 16.79	-42 07.8	5.749	6.500	-0.76	+5.8	19.2	134.8
Sept. 10	20 09.21	-41 10.3	5.911	6.548	-0.59	+6.2	19.3	125.6
Sept. 20	20 03.29	-40 08.2	6.093	6.597	-0.43	+6.5	19.4	116.1
Sept. 30	19 59.03	-39 03.6	6.292	6.646	-0.27	+6.5	19.5	106.5
Oct. 10	19 56.36	-37 58.2	6.502	6.695	-0.12	+6.5	19.6	96.9
Oct. 20	19 55.15	-36 53.3	6.717	6.745	+0.01	+6.4	19.7	87.4
Oct. 30	19 55.23	-35 49.6	6.932	6.795	+0.12	+6.2	19.8	78.0
Nov. 9	19 56.43	-34 47.7	7.143	6.845	+0.21	+6.0	19.9	68.7
Nov. 19	19 58.58	-33 47.9	7.345	6.895	+0.29	+5.8	20.0	59.5
Nov. 29	20 01.51	-32 50.1	7.533	6.946	+0.35	+5.6	20.1	50.4
Dec. 9	20 05.06	-31 54.4	7.705	6.997	+0.40	+5.4	20.2	41.4
Dec. 19	20 09.08	-31 00.8	7.857	7.048	+0.43	+5.2	20.3	32.6
Dec. 29	20 13.43	-30 09.1	7.987	7.099	+0.45	+5.0	20.4	24.0
Jan. 8	20 17.97	-29 19.3	8.091	7.151	+0.46	+4.8	20.4	15.9
Jan. 18	20 22.59	-28 31.3	8.170	7.203	+0.46	+4.6	20.5	9.7
Jan. 28	20 27.17	-27 45.3	8.223	7.254	+0.44	+4.4	20.5	9.8
Feb. 7	20 31.58	-27 01.2	8.249	7.307	+0.42	+4.2	20.6	16.1
Feb. 17	20 35.74	-26 19.2	8.248	7.359	+0.38	+4.0	20.6	24.3
Feb. 27	20 39.54	-25 39.3	8.223	7.411	+0.33	+3.8	20.6	32.9
Mar. 9	20 42.87	-25 01.7	8.175	7.464	+0.28	+3.5	20.7	41.8
Mar. 19	20 45.66	-24 26.6	8.106	7.517	+0.21	+3.3	20.7	50.8
Mar. 29	20 47.79	-23 54.1	8.019	7.570	+0.14	+3.0	20.7	60.0

Comet C/2013 J3 (McNaught)

Epoch = 2014 July 2.0 TT
T = 2013 Feb. 22.78977 TT
Peri. = 320.95179
Node = 200.75558 2000.0
Incl. = 118.21292
q = 3.9887671 AU
e = 0.9974880

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	13 54.75	-03 16.5	4.958	4.793	+0.09	+8.2	19.1	74.6
Jan. 13	13 55.68	-01 54.7	4.824	4.839	-0.04	+9.5	19.1	85.0
Jan. 23	13 55.31	-00 20.1	4.689	4.885	-0.18	+10.8	19.0	95.7
Feb. 2	13 53.48	+01 27.7	4.559	4.933	-0.34	+12.0	19.0	106.6
Feb. 12	13 50.13	+03 28.0	4.443	4.981	-0.49	+13.1	19.0	117.8
Feb. 22	13 45.23	+05 39.1	4.348	5.030	-0.64	+13.9	19.0	129.0
Mar. 4	13 38.86	+07 58.0	4.279	5.079	-0.77	+14.2	19.0	140.1
Mar. 14	13 31.20	+10 19.9	4.244	5.130	-0.86	+14.0	19.0	150.1
Mar. 24	13 22.58	+12 39.7	4.246	5.181	-0.92	+13.2	19.1	157.5
Apr. 3	13 13.38	+14 51.5	4.286	5.232	-0.93	+11.9	19.1	159.0
Apr. 13	13 04.08	+16 50.4	4.366	5.284	-0.89	+10.3	19.2	153.8
Apr. 23	12 55.16	+18 33.0	4.482	5.337	-0.81	+8.5	19.3	145.0
May 3	12 47.01	+19 57.5	4.629	5.390	-0.70	+6.7	19.4	135.0
May 13	12 39.96	+21 04.0	4.803	5.443	-0.58	+5.0	19.6	124.8
May 23	12 34.20	+21 53.8	4.998	5.497	-0.44	+3.5	19.7	114.7
June 2	12 29.83	+22 28.9	5.206	5.552	-0.30	+2.3	19.8	104.8
June 12	12 26.85	+22 51.6	5.422	5.607	-0.17	+1.3	20.0	95.3
June 22	12 25.18	+23 04.4	5.640	5.662	-0.04	+0.5	20.1	86.1
July 2	12 24.75	+23 09.4	5.856	5.718	+0.07	-0.1	20.2	77.2
July 12	12 25.41	+23 08.8	6.065	5.774	+0.16	-0.5	20.3	68.7
July 22	12 27.04	+23 04.3	6.262	5.830	+0.25	-0.7	20.4	60.6
Aug. 1	12 29.52	+22 57.3	6.445	5.887	+0.32	-0.8	20.5	52.8
Aug. 11	12 32.71	+22 49.3	6.611	5.944	+0.38	-0.8	20.6	45.5
Aug. 21	12 36.49	+22 41.5	6.757	6.001	+0.43	-0.7	20.7	38.7
Aug. 31	12 40.76	+22 35.0	6.882	6.059	+0.46	-0.4	20.8	32.9
Sept. 10	12 45.41	+22 30.8	6.983	6.117	+0.49	-0.1	20.9	28.4
Sept. 20	12 50.34	+22 30.0	7.061	6.175	+0.51	+0.4	21.0	26.1
Sept. 30	12 55.46	+22 33.6	7.115	6.233	+0.52	+0.9	21.0	26.3
Oct. 10	13 00.66	+22 42.4	7.145	6.291	+0.52	+1.5	21.1	29.2
Oct. 20	13 05.84	+22 57.5	7.151	6.350	+0.51	+2.2	21.1	34.0
Oct. 30	13 10.92	+23 19.7	7.135	6.409	+0.49	+3.0	21.1	40.2
Nov. 9	13 15.78	+23 50.0	7.099	6.468	+0.45	+3.9	21.2	47.3
Nov. 19	13 20.32	+24 29.1	7.045	6.527	+0.41	+4.9	21.2	54.9
Nov. 29	13 24.42	+25 17.7	6.976	6.586	+0.35	+5.9	21.2	63.0
Dec. 9	13 27.94	+26 16.3	6.896	6.646	+0.28	+6.9	21.2	71.3
Dec. 19	13 30.77	+27 25.0	6.809	6.706	+0.20	+7.9	21.2	79.8
Dec. 29	13 32.77	+28 43.9	6.720	6.765	+0.10	+8.8	21.2	88.5
Jan. 8	13 33.79	+30 12.0	6.634	6.825	-0.01	+9.6	21.2	97.1
Jan. 18	13 33.73	+31 48.2	6.555	6.885	-0.13	+10.2	21.3	105.6
Jan. 28	13 32.46	+33 30.6	6.490	6.945	-0.25	+10.6	21.3	113.8
Feb. 7	13 29.91	+35 16.4	6.442	7.005	-0.38	+10.6	21.3	121.3
Feb. 17	13 26.07	+37 02.5	6.417	7.066	-0.51	+10.3	21.3	127.8
Feb. 27	13 20.97	+38 45.1	6.417	7.126	-0.62	+9.6	21.4	132.7
Mar. 9	13 14.75	+40 20.7	6.445	7.186	-0.71	+8.5	21.4	135.5
Mar. 19	13 07.63	+41 45.7	6.501	7.247	-0.77	+7.2	21.5	135.7
Mar. 29	12 59.91	+42 57.6	6.585	7.307	-0.79	+5.7	21.5	133.4

Comet C/2013 E2 (Iwamoto)

Epoch = 2014 July 2.0 TT
T = 2013 Mar. 8.99444 TT
Peri. = 95.80078
Node = 182.47489 2000.0
Incl. = 21.86105
q = 1.4129606 AU
e = 0.9937016

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	00 47.96	-04 04.1	3.905	3.978	+0.58	+3.5	17.2	87.1
Jan. 13	00 53.75	-03 29.1	4.154	4.075	+0.66	+4.0	17.4	78.6
Jan. 23	01 00.31	-02 49.4	4.399	4.172	+0.72	+4.3	17.6	70.3
Feb. 2	01 07.50	-02 06.7	4.637	4.268	+0.77	+4.5	17.8	62.2
Feb. 12	01 15.19	-01 22.0	4.865	4.363	+0.81	+4.5	18.0	54.3
Feb. 22	01 23.25	-00 36.6	5.080	4.458	+0.83	+4.5	18.2	46.5
Mar. 4	01 31.59	+00 08.6	5.281	4.553	+0.85	+4.4	18.4	39.0
Mar. 14	01 40.12	+00 52.8	5.464	4.646	+0.86	+4.3	18.6	31.5
Mar. 24	01 48.74	+01 35.3	5.630	4.740	+0.87	+4.0	18.7	24.4
Apr. 3	01 57.40	+02 15.5	5.776	4.832	+0.86	+3.7	18.8	17.6
Apr. 13	02 05.99	+02 52.7	5.901	4.924	+0.85	+3.4	19.0	12.0
Apr. 23	02 14.47	+03 26.6	6.005	5.016	+0.83	+3.0	19.1	9.5
May 3	02 22.76	+03 56.6	6.088	5.107	+0.80	+2.6	19.2	12.3
May 13	02 30.79	+04 22.3	6.149	5.198	+0.77	+2.1	19.3	18.1
May 23	02 38.48	+04 43.5	6.189	5.288	+0.73	+1.6	19.4	24.9
June 2	02 45.78	+04 59.8	6.208	5.378	+0.68	+1.1	19.5	32.2
June 12	02 52.59	+05 11.0	6.209	5.467	+0.62	+0.6	19.5	39.8
June 22	02 58.84	+05 16.8	6.191	5.555	+0.56	0.0	19.6	47.5
July 2	03 04.44	+05 17.1	6.157	5.644	+0.49	-0.5	19.7	55.5
July 12	03 09.32	+05 11.8	6.109	5.731	+0.41	-1.1	19.7	63.7
July 22	03 13.39	+05 00.8	6.050	5.819	+0.32	-1.7	19.8	72.1
Aug. 1	03 16.55	+04 44.3	5.983	5.905	+0.22	-2.2	19.8	80.7
Aug. 11	03 18.75	+04 22.4	5.912	5.992	+0.12	-2.7	19.8	89.6
Aug. 21	03 19.91	+03 55.5	5.840	6.078	+0.01	-3.1	19.9	98.8
Aug. 31	03 20.00	+03 24.0	5.773	6.163	-0.10	-3.5	19.9	108.2
Sept. 10	03 19.01	+02 49.0	5.714	6.248	-0.20	-3.8	19.9	117.9
Sept. 20	03 16.98	+02 11.2	5.669	6.333	-0.30	-3.9	20.0	127.7
Sept. 30	03 13.99	+01 32.2	5.643	6.417	-0.38	-3.9	20.0	137.5
Oct. 10	03 10.17	+00 53.4	5.639	6.501	-0.44	-3.7	20.1	147.2
Oct. 20	03 05.74	+00 16.5	5.663	6.585	-0.48	-3.3	20.2	156.0
Oct. 30	03 00.93	-00 16.8	5.715	6.668	-0.49	-2.8	20.2	162.2
Nov. 9	02 56.01	-00 45.1	5.799	6.750	-0.48	-2.2	20.3	162.5
Nov. 19	02 51.25	-01 07.3	5.913	6.833	-0.44	-1.5	20.4	156.8
Nov. 29	02 46.90	-01 22.4	6.058	6.915	-0.37	-0.8	20.5	148.1
Dec. 9	02 43.17	-01 30.4	6.229	6.996	-0.29	-0.1	20.6	138.4
Dec. 19	02 40.22	-01 31.3	6.424	7.077	-0.21	+0.6	20.7	128.4
Dec. 29	02 38.16	-01 25.5	6.638	7.158	-0.11	+1.2	20.9	118.4
Jan. 8	02 37.02	-01 14.0	6.866	7.239	-0.02	+1.6	21.0	108.5
Jan. 18	02 36.80	-00 57.5	7.103	7.319	+0.07	+2.0	21.1	98.8
Jan. 28	02 37.47	-00 37.0	7.345	7.399	+0.15	+2.4	21.2	89.3
Feb. 7	02 38.97	-00 13.5	7.587	7.478	+0.22	+2.6	21.3	80.0
Feb. 17	02 41.22	+00 12.1	7.824	7.557	+0.29	+2.7	21.5	70.9
Feb. 27	02 44.13	+00 39.0	8.051	7.636	+0.35	+2.7	21.6	62.0
Mar. 9	02 47.61	+01 06.4	8.266	7.715	+0.40	+2.7	21.7	53.3
Mar. 19	02 51.56	+01 33.6	8.466	7.793	+0.43	+2.6	21.8	44.9
Mar. 29	02 55.90	+01 59.9	8.647	7.871	+0.46	+2.5	21.8	36.8

Comet C/2011 L4 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 Mar. 10.14361 TT
Peri. = 333.67086
Node = 65.69472 2000.0
Incl. = 84.18833
q = 0.3019591 AU
e = 1.0000345

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	16 58.66	+26 03.0	5.108	4.635	+0.67	+3.0	15.6	56.3
Jan. 13	17 05.31	+26 33.3	5.149	4.744	+0.58	+4.2	15.7	60.6
Jan. 23	17 11.08	+27 15.3	5.177	4.851	+0.48	+5.3	15.8	65.4
Feb. 2	17 15.84	+28 08.0	5.195	4.958	+0.36	+6.2	15.9	70.7
Feb. 12	17 19.45	+29 10.1	5.204	5.063	+0.23	+7.0	16.0	76.4
Feb. 22	17 21.77	+30 19.8	5.207	5.167	+0.09	+7.5	16.1	82.3
Mar. 4	17 22.69	+31 35.1	5.208	5.271	−0.06	+7.8	16.2	88.2
Mar. 14	17 22.08	+32 53.4	5.209	5.373	−0.22	+7.8	16.3	94.1
Mar. 24	17 19.88	+34 11.6	5.215	5.475	−0.38	+7.5	16.4	99.9
Apr. 3	17 16.08	+35 26.6	5.227	5.575	−0.54	+6.8	16.5	105.3
Apr. 13	17 10.72	+36 34.7	5.251	5.675	−0.68	+5.8	16.5	110.2
Apr. 23	17 03.97	+37 32.3	5.287	5.774	−0.79	+4.4	16.6	114.3
May 3	16 56.06	+38 16.3	5.340	5.872	−0.87	+2.8	16.7	117.4
May 13	16 47.35	+38 44.2	5.410	5.970	−0.91	+1.0	16.8	119.3
May 23	16 38.27	+38 54.5	5.498	6.066	−0.90	−0.8	16.9	119.9
June 2	16 29.24	+38 46.9	5.606	6.162	−0.85	−2.5	17.0	119.1
June 12	16 20.71	+38 22.2	5.731	6.258	−0.77	−4.0	17.2	117.0
June 22	16 13.02	+37 42.3	5.874	6.352	−0.66	−5.3	17.3	113.8
July 2	16 06.42	+36 49.5	6.032	6.446	−0.53	−6.3	17.4	109.7
July 12	16 01.09	+35 46.8	6.204	6.539	−0.40	−7.0	17.5	104.9
July 22	15 57.07	+34 37.0	6.386	6.632	−0.27	−7.4	17.6	99.6
Aug. 1	15 54.38	+33 22.7	6.576	6.724	−0.14	−7.6	17.8	94.0
Aug. 11	15 52.94	+32 06.5	6.771	6.815	−0.03	−7.6	17.9	88.2
Aug. 21	15 52.67	+30 50.4	6.968	6.906	+0.08	−7.4	18.0	82.3
Aug. 31	15 53.46	+29 36.1	7.164	6.996	+0.17	−7.1	18.1	76.4
Sept. 10	15 55.18	+28 25.1	7.356	7.086	+0.25	−6.7	18.2	70.6
Sept. 20	15 57.71	+27 18.6	7.541	7.175	+0.32	−6.1	18.3	65.0
Sept. 30	16 00.93	+26 17.4	7.717	7.264	+0.38	−5.5	18.4	59.8
Oct. 10	16 04.73	+25 22.5	7.880	7.352	+0.43	−4.8	18.5	54.9
Oct. 20	16 08.99	+24 34.2	8.031	7.440	+0.46	−4.1	18.6	50.7
Oct. 30	16 13.61	+23 53.3	8.165	7.527	+0.49	−3.3	18.7	47.3
Nov. 9	16 18.47	+23 19.9	8.283	7.613	+0.50	−2.5	18.8	44.9
Nov. 19	16 23.47	+22 54.5	8.383	7.700	+0.50	−1.7	18.9	43.8
Nov. 29	16 28.51	+22 37.1	8.464	7.785	+0.50	−0.9	19.0	44.1
Dec. 9	16 33.49	+22 28.0	8.526	7.871	+0.48	−0.1	19.0	45.8
Dec. 19	16 38.29	+22 27.0	8.570	7.955	+0.45	+0.7	19.1	48.7
Dec. 29	16 42.83	+22 34.1	8.597	8.040	+0.42	+1.5	19.1	52.8
Jan. 8	16 46.99	+22 49.0	8.607	8.124	+0.37	+2.2	19.2	57.7
Jan. 18	16 50.69	+23 11.2	8.603	8.207	+0.31	+2.9	19.2	63.2
Jan. 28	16 53.80	+23 40.3	8.587	8.290	+0.25	+3.5	19.3	69.3
Feb. 7	16 56.26	+24 15.4	8.562	8.373	+0.17	+4.0	19.3	75.7
Feb. 17	16 57.96	+24 55.5	8.530	8.456	+0.09	+4.4	19.3	82.4
Feb. 27	16 58.84	+25 39.6	8.495	8.538	0.00	+4.7	19.4	89.1
Mar. 9	16 58.85	+26 26.1	8.462	8.619	−0.09	+4.7	19.4	95.8
Mar. 19	16 57.95	+27 13.5	8.432	8.700	−0.18	+4.6	19.4	102.4
Mar. 29	16 56.13	+27 60.0	8.410	8.781	−0.27	+4.4	19.5	108.7

Comet C/2012 F6 (Lemmon)

Epoch = 2014 July 2.0 TT
T = 2013 Mar. 24.50978 TT
Peri. = 304.96538
Node = 332.72927 2000.0
Incl. = 82.61241
q = 0.7308251 AU
e = 0.9984054

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	19 55.88	+48 58.2	4.322	4.146	+1.16	+3.5	14.8	73.2
Jan. 13	20 07.47	+49 33.1	4.463	4.253	+1.15	+5.0	14.9	71.4
Jan. 23	20 18.97	+50 22.8	4.598	4.360	+1.13	+6.3	15.1	69.9
Feb. 2	20 30.26	+51 26.3	4.728	4.465	+1.10	+7.6	15.3	68.7
Feb. 12	20 41.22	+52 42.3	4.850	4.570	+1.05	+8.7	15.4	67.8
Feb. 22	20 51.73	+54 09.6	4.967	4.673	+0.99	+9.7	15.6	67.2
Mar. 4	21 01.67	+55 46.9	5.078	4.776	+0.92	+10.6	15.7	66.9
Mar. 14	21 10.88	+57 32.9	5.183	4.878	+0.83	+11.3	15.9	66.8
Mar. 24	21 19.18	+59 26.2	5.282	4.979	+0.72	+11.9	16.0	67.0
Apr. 3	21 26.37	+61 25.4	5.376	5.079	+0.58	+12.4	16.1	67.5
Apr. 13	21 32.17	+63 29.0	5.466	5.178	+0.41	+12.6	16.2	68.2
Apr. 23	21 36.23	+65 35.2	5.551	5.276	+0.19	+12.7	16.3	69.1
May 3	21 38.09	+67 42.2	5.632	5.374	-0.10	+12.6	16.5	70.1
May 13	21 37.12	+69 47.7	5.710	5.470	-0.46	+12.1	16.6	71.3
May 23	21 32.52	+71 49.1	5.786	5.567	-0.92	+11.4	16.7	72.5
June 2	21 23.28	+73 43.0	5.859	5.662	-1.50	+10.2	16.8	73.9
June 12	21 08.25	+75 25.0	5.930	5.757	-2.17	+8.5	16.9	75.3
June 22	20 46.50	+76 49.7	6.001	5.851	-2.86	+6.1	17.0	76.7
July 2	20 17.93	+77 51.1	6.070	5.944	-3.36	+3.2	17.1	78.1
July 12	19 44.33	+78 23.5	6.138	6.037	-3.49	+0.1	17.1	79.5
July 22	19 09.47	+78 24.6	6.207	6.129	-3.17	-2.8	17.2	80.9
Aug. 1	18 37.76	+77 56.3	6.276	6.221	-2.55	-5.2	17.3	82.2
Aug. 11	18 12.24	+77 04.3	6.346	6.312	-1.85	-6.8	17.4	83.5
Aug. 21	17 53.79	+75 56.0	6.416	6.402	-1.19	-7.8	17.5	84.7
Aug. 31	17 41.84	+74 37.8	6.488	6.492	-0.65	-8.3	17.6	85.8
Sept. 10	17 35.32	+73 15.3	6.561	6.581	-0.23	-8.3	17.7	86.7
Sept. 20	17 33.07	+71 52.4	6.636	6.670	+0.11	-8.0	17.8	87.6
Sept. 30	17 34.15	+70 32.2	6.713	6.758	+0.37	-7.5	17.8	88.3
Oct. 10	17 37.81	+69 16.9	6.792	6.846	+0.56	-6.9	17.9	88.9
Oct. 20	17 43.46	+68 08.2	6.873	6.933	+0.72	-6.1	18.0	89.3
Oct. 30	17 50.66	+67 07.6	6.956	7.020	+0.84	-5.1	18.1	89.6
Nov. 9	17 59.05	+66 16.2	7.042	7.106	+0.93	-4.2	18.2	89.7
Nov. 19	18 08.35	+65 34.5	7.130	7.192	+1.00	-3.1	18.2	89.7
Nov. 29	18 18.33	+65 03.4	7.220	7.278	+1.04	-2.0	18.3	89.5
Dec. 9	18 28.78	+64 43.0	7.312	7.363	+1.07	-0.9	18.4	89.1
Dec. 19	18 39.52	+64 33.5	7.406	7.447	+1.09	+0.2	18.5	88.6
Dec. 29	18 50.41	+64 35.0	7.502	7.531	+1.09	+1.2	18.5	87.9
Jan. 8	19 01.28	+64 47.3	7.600	7.615	+1.07	+2.3	18.6	87.2
Jan. 18	19 11.99	+65 09.8	7.699	7.698	+1.04	+3.2	18.7	86.3
Jan. 28	19 22.40	+65 42.3	7.798	7.781	+0.99	+4.2	18.8	85.4
Feb. 7	19 32.34	+66 23.9	7.899	7.863	+0.93	+5.0	18.8	84.4
Feb. 17	19 41.67	+67 13.9	7.999	7.945	+0.85	+5.8	18.9	83.3
Feb. 27	19 50.20	+68 11.4	8.099	8.027	+0.75	+6.4	19.0	82.3
Mar. 9	19 57.72	+69 15.3	8.199	8.108	+0.63	+6.9	19.1	81.3
Mar. 19	20 03.99	+70 24.5	8.298	8.189	+0.47	+7.3	19.1	80.3
Mar. 29	20 08.71	+71 37.9	8.395	8.270	+0.28	+7.6	19.2	79.4

Comet C/2012 X2 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 Mar. 31.63838 TT
Peri. = 215.68152 e = 0.7697265
Node = 271.02377 2000.0 a = 20.6242142 AU
Incl. = 34.12403 n = 0.01052296
q = 4.7492100 AU P = 93.66 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	10 18.32	-27 07.8	4.701	5.117	-0.21	-6.7	18.4	109.7
Jan. 13	10 16.20	-28 14.8	4.619	5.142	-0.33	-5.4	18.3	117.1
Jan. 23	10 12.93	-29 08.6	4.551	5.169	-0.42	-3.9	18.3	124.2
Feb. 2	10 08.73	-29 47.4	4.501	5.195	-0.48	-2.2	18.3	130.5
Feb. 12	10 03.92	-30 09.8	4.471	5.223	-0.50	-0.6	18.3	135.6
Feb. 22	09 58.88	-30 15.7	4.464	5.251	-0.49	+1.0	18.3	139.0
Mar. 4	09 54.00	-30 06.0	4.480	5.280	-0.43	+2.3	18.4	140.2
Mar. 14	09 49.69	-29 42.6	4.520	5.310	-0.34	+3.4	18.4	139.0
Mar. 24	09 46.27	-29 08.5	4.582	5.340	-0.23	+4.1	18.5	135.6
Apr. 3	09 43.96	-28 27.1	4.665	5.371	-0.10	+4.5	18.5	130.7
Apr. 13	09 42.92	-27 42.0	4.768	5.402	+0.03	+4.6	18.6	124.7
Apr. 23	09 43.19	-26 56.3	4.887	5.434	+0.16	+4.3	18.7	118.1
May 3	09 44.74	-26 12.8	5.021	5.466	+0.28	+3.9	18.8	111.2
May 13	09 47.51	-25 33.9	5.164	5.499	+0.39	+3.3	18.9	104.1
May 23	09 51.38	-25 01.2	5.315	5.533	+0.49	+2.5	18.9	97.1
June 2	09 56.24	-24 35.7	5.471	5.567	+0.57	+1.8	19.0	90.1
June 12	10 01.97	-24 18.2	5.629	5.601	+0.65	+0.9	19.1	83.2
June 22	10 08.43	-24 08.9	5.786	5.636	+0.71	+0.1	19.2	76.5
July 2	10 15.53	-24 07.8	5.939	5.671	+0.76	-0.7	19.3	69.9
July 12	10 23.14	-24 15.0	6.087	5.707	+0.80	-1.5	19.4	63.5
July 22	10 31.17	-24 29.9	6.227	5.743	+0.84	-2.2	19.5	57.4
Aug. 1	10 39.53	-24 52.2	6.358	5.780	+0.86	-2.9	19.5	51.4
Aug. 11	10 48.14	-25 21.4	6.477	5.817	+0.88	-3.6	19.6	45.8
Aug. 21	10 56.92	-25 57.1	6.584	5.855	+0.89	-4.2	19.7	40.7
Aug. 31	11 05.80	-26 38.7	6.677	5.892	+0.89	-4.7	19.7	36.2
Sept.10	11 14.70	-27 25.6	6.755	5.931	+0.89	-5.2	19.8	32.6
Sept.20	11 23.57	-28 17.3	6.816	5.969	+0.88	-5.6	19.9	30.2
Sept.30	11 32.33	-29 13.4	6.861	6.008	+0.86	-6.0	19.9	29.3
Oct. 10	11 40.90	-30 13.1	6.889	6.047	+0.83	-6.3	19.9	30.2
Oct. 20	11 49.23	-31 15.9	6.900	6.087	+0.80	-6.5	20.0	32.8
Oct. 30	11 57.21	-32 21.2	6.894	6.127	+0.76	-6.7	20.0	36.7
Nov. 9	12 04.77	-33 28.4	6.871	6.167	+0.70	-6.8	20.0	41.7
Nov. 19	12 11.80	-34 36.9	6.832	6.207	+0.64	-6.9	20.1	47.5
Nov. 29	12 18.21	-35 45.8	6.779	6.248	+0.57	-6.9	20.1	53.8
Dec. 9	12 23.88	-36 54.5	6.713	6.289	+0.48	-6.7	20.1	60.6
Dec. 19	12 28.70	-38 01.9	6.637	6.330	+0.39	-6.5	20.1	67.7
Dec. 29	12 32.56	-39 07.1	6.552	6.371	+0.28	-6.2	20.1	75.2
Jan. 8	12 35.34	-40 08.8	6.462	6.413	+0.16	-5.7	20.1	82.8
Jan. 18	12 36.97	-41 05.7	6.369	6.455	+0.04	-5.1	20.1	90.6
Jan. 28	12 37.37	-41 56.2	6.278	6.497	-0.08	-4.3	20.1	98.5
Feb. 7	12 36.56	-42 38.7	6.192	6.540	-0.20	-3.3	20.1	106.4
Feb. 17	12 34.57	-43 11.8	6.114	6.582	-0.30	-2.2	20.1	114.3
Feb. 27	12 31.54	-43 33.8	6.049	6.625	-0.39	-1.0	20.1	121.8
Mar. 9	12 27.69	-43 43.6	6.000	6.668	-0.44	+0.3	20.2	128.8
Mar. 19	12 23.29	-43 40.7	5.971	6.711	-0.46	+1.5	20.2	134.9
Mar. 29	12 18.66	-43 25.2	5.963	6.754	-0.45	+2.7	20.2	139.6

Comet P/2014 A3 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 Apr. 15.28803 TT
Peri. = 212.72291 e = 0.2412459
Node = 230.58559 2000.0 a = 4.6726676 AU
Incl. = 13.67492 n = 0.09757909
q = 3.5454057 AU P = 10.10 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	08 40.55	+00 32.5	2.875	3.729	-0.55	-0.7	20.1	145.7
Jan. 13	08 35.05	+00 25.9	2.830	3.743	-0.62	+0.6	20.1	154.6
Jan. 23	08 28.86	+00 32.3	2.813	3.757	-0.63	+1.8	20.1	160.9
Feb. 2	08 22.57	+00 50.6	2.824	3.771	-0.58	+2.8	20.1	161.3
Feb. 12	08 16.77	+01 18.5	2.864	3.785	-0.48	+3.4	20.2	155.6
Feb. 22	08 12.00	+01 52.9	2.931	3.800	-0.34	+3.8	20.2	147.1
Mar. 4	08 08.64	+02 30.7	3.023	3.815	-0.17	+3.8	20.3	137.7
Mar. 14	08 06.95	+03 08.6	3.136	3.830	+0.01	+3.6	20.4	128.1
Mar. 24	08 07.00	+03 44.2	3.266	3.846	+0.18	+3.1	20.5	118.8
Apr. 3	08 08.77	+04 15.3	3.408	3.862	+0.34	+2.5	20.7	109.7
Apr. 13	08 12.15	+04 40.7	3.560	3.878	+0.48	+1.9	20.8	101.0
Apr. 23	08 16.98	+04 59.3	3.716	3.895	+0.61	+1.1	20.9	92.7
May 3	08 23.08	+05 10.6	3.874	3.912	+0.72	+0.4	21.0	84.7
May 13	08 30.28	+05 14.5	4.031	3.929	+0.81	-0.4	21.1	77.0
May 23	08 38.39	+05 10.9	4.184	3.946	+0.89	-1.1	21.3	69.6
June 2	08 47.27	+04 59.9	4.331	3.963	+0.95	-1.8	21.4	62.4
June 12	08 56.77	+04 41.8	4.469	3.981	+1.00	-2.5	21.5	55.4
June 22	09 06.75	+04 17.0	4.598	3.999	+1.04	-3.1	21.5	48.6
July 2	09 17.12	+03 45.9	4.715	4.017	+1.06	-3.7	21.6	42.0
July 12	09 27.76	+03 08.8	4.820	4.035	+1.08	-4.3	21.7	35.5
July 22	09 38.58	+02 26.2	4.911	4.054	+1.09	-4.7	21.8	29.2
Aug. 1	09 49.53	+01 38.8	4.987	4.072	+1.10	-5.2	21.8	23.1
Aug. 11	10 00.51	+00 46.9	5.047	4.091	+1.10	-5.6	21.9	17.4
Aug. 21	10 11.47	-00 08.9	5.091	4.110	+1.09	-5.9	21.9	12.8
Aug. 31	10 22.35	-01 08.0	5.117	4.129	+1.07	-6.2	22.0	10.5
Sept.10	10 33.07	-02 09.8	5.127	4.148	+1.05	-6.4	22.0	12.2
Sept.20	10 43.60	-03 13.8	5.119	4.167	+1.03	-6.5	22.0	16.7
Sept.30	10 53.85	-04 19.3	5.094	4.186	+0.99	-6.6	22.1	22.6
Oct. 10	11 03.76	-05 25.6	5.051	4.206	+0.95	-6.6	22.1	29.0
Oct. 20	11 13.26	-06 32.1	4.992	4.225	+0.90	-6.6	22.1	35.9
Oct. 30	11 22.26	-07 38.0	4.917	4.245	+0.84	-6.5	22.1	43.0
Nov. 9	11 30.66	-08 42.6	4.827	4.264	+0.77	-6.2	22.1	50.4
Nov. 19	11 38.37	-09 45.0	4.724	4.284	+0.69	-5.9	22.0	58.1
Nov. 29	11 45.26	-10 44.3	4.609	4.304	+0.59	-5.5	22.0	66.0
Dec. 9	11 51.21	-11 39.4	4.485	4.323	+0.49	-5.0	22.0	74.3
Dec. 19	11 56.09	-12 29.3	4.355	4.343	+0.37	-4.3	22.0	82.8
Dec. 29	11 59.76	-13 12.8	4.222	4.363	+0.23	-3.6	21.9	91.6
Jan. 8	12 02.11	-13 48.5	4.090	4.383	+0.09	-2.7	21.9	100.8
Jan. 18	12 03.04	-14 15.0	3.963	4.402	-0.05	-1.6	21.8	110.3
Jan. 28	12 02.51	-14 31.0	3.844	4.422	-0.20	-0.4	21.8	120.2
Feb. 7	12 00.54	-14 35.3	3.740	4.442	-0.33	+0.8	21.8	130.3
Feb. 17	11 57.27	-14 27.1	3.655	4.462	-0.43	+2.1	21.8	140.5
Feb. 27	11 52.93	-14 06.4	3.592	4.482	-0.51	+3.2	21.7	150.7
Mar. 9	11 47.86	-13 34.1	3.556	4.501	-0.54	+4.2	21.8	160.0
Mar. 19	11 42.47	-12 51.9	3.548	4.521	-0.53	+4.9	21.8	166.1
Mar. 29	11 37.22	-12 02.8	3.571	4.541	-0.47	+5.3	21.8	164.4

Comet C/2013 F2 (Catalina)

Epoch = 2014 July 2.0 TT
T = 2013 Apr. 19.53785 TT
Peri. = 123.04568
Node = 344.27042 2000.0
Incl. = 61.75282
q = 6.2191680 AU
e = 0.9988383

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	11 24.67	+40 06.3	5.904	6.468	-0.38	+1.4	18.8	121.1
Jan. 13	11 20.86	+40 20.1	5.817	6.487	-0.52	+1.2	18.7	129.4
Jan. 23	11 15.70	+40 32.5	5.750	6.506	-0.63	+0.8	18.7	137.1
Feb. 2	11 09.36	+40 40.7	5.707	6.527	-0.72	+0.1	18.7	143.6
Feb. 12	11 02.11	+40 41.8	5.691	6.548	-0.78	-0.8	18.7	147.9
Feb. 22	10 54.35	+40 33.6	5.703	6.569	-0.79	-1.9	18.8	148.9
Mar. 4	10 46.47	+40 14.6	5.744	6.592	-0.76	-3.0	18.8	146.3
Mar. 14	10 38.91	+39 44.2	5.813	6.614	-0.69	-4.1	18.8	140.9
Mar. 24	10 32.05	+39 03.0	5.909	6.638	-0.59	-5.1	18.9	133.7
Apr. 3	10 26.17	+38 12.0	6.029	6.662	-0.47	-5.9	18.9	125.7
Apr. 13	10 21.48	+37 12.9	6.169	6.686	-0.34	-6.5	19.0	117.1
Apr. 23	10 18.06	+36 07.5	6.325	6.711	-0.22	-7.0	19.1	108.5
May 3	10 15.90	+34 57.4	6.493	6.737	-0.09	-7.3	19.1	99.7
May 13	10 14.98	+33 44.3	6.668	6.763	+0.02	-7.5	19.2	91.1
May 23	10 15.18	+32 29.2	6.846	6.790	+0.12	-7.6	19.3	82.6
June 2	10 16.38	+31 13.2	7.023	6.818	+0.21	-7.6	19.4	74.2
June 12	10 18.47	+29 57.1	7.195	6.845	+0.28	-7.6	19.4	66.0
June 22	10 21.31	+28 41.3	7.360	6.874	+0.35	-7.5	19.5	57.9
July 2	10 24.78	+27 26.4	7.513	6.903	+0.40	-7.4	19.6	49.9
July 12	10 28.77	+26 12.6	7.652	6.932	+0.44	-7.2	19.6	42.2
July 22	10 33.16	+25 00.1	7.775	6.962	+0.47	-7.1	19.7	34.5
Aug. 1	10 37.85	+23 49.2	7.879	6.992	+0.49	-6.9	19.7	27.2
Aug. 11	10 42.76	+22 40.2	7.964	7.023	+0.50	-6.7	19.8	20.4
Aug. 21	10 47.79	+21 33.1	8.028	7.054	+0.51	-6.5	19.8	14.8
Aug. 31	10 52.86	+20 28.1	8.069	7.086	+0.50	-6.3	19.8	12.3
Sept.10	10 57.88	+19 25.6	8.087	7.118	+0.49	-6.0	19.9	14.7
Sept.20	11 02.78	+18 25.7	8.083	7.151	+0.47	-5.7	19.9	20.4
Sept.30	11 07.47	+17 28.8	8.057	7.184	+0.44	-5.4	19.9	27.6
Oct. 10	11 11.86	+16 35.0	8.008	7.217	+0.40	-5.0	19.9	35.4
Oct. 20	11 15.88	+15 44.7	7.939	7.251	+0.36	-4.6	19.9	43.6
Oct. 30	11 19.44	+14 58.2	7.852	7.285	+0.30	-4.2	19.9	52.2
Nov. 9	11 22.44	+14 15.8	7.749	7.320	+0.24	-3.8	19.9	61.0
Nov. 19	11 24.80	+13 37.7	7.633	7.355	+0.16	-3.4	19.9	70.1
Nov. 29	11 26.43	+13 04.2	7.507	7.390	+0.08	-2.9	19.9	79.5
Dec. 9	11 27.25	+12 35.3	7.376	7.426	0.00	-2.4	19.8	89.1
Dec. 19	11 27.20	+12 11.2	7.244	7.462	-0.10	-2.0	19.8	99.0
Dec. 29	11 26.23	+11 51.7	7.117	7.499	-0.19	-1.5	19.8	109.2
Jan. 8	11 24.33	+11 36.4	7.000	7.536	-0.28	-1.1	19.8	119.7
Jan. 18	11 21.53	+11 24.9	6.899	7.573	-0.36	-0.8	19.8	130.3
Jan. 28	11 17.90	+11 16.5	6.818	7.610	-0.43	-0.6	19.8	141.2
Feb. 7	11 13.56	+11 10.3	6.762	7.648	-0.49	-0.5	19.8	152.2
Feb. 17	11 08.70	+11 05.3	6.736	7.686	-0.52	-0.5	19.8	163.1
Feb. 27	11 03.52	+11 00.4	6.741	7.725	-0.53	-0.6	19.8	173.3
Mar. 9	10 58.26	+10 54.6	6.778	7.764	-0.51	-0.8	19.9	172.6
Mar. 19	10 53.16	+10 46.9	6.848	7.803	-0.47	-1.0	19.9	162.3
Mar. 29	10 48.45	+10 36.8	6.950	7.842	-0.41	-1.3	20.0	151.6

Comet C/2012 L2 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2013 May 9.34222 TT
Peri. = 205.79958
Node = 270.30432 2000.0
Incl. = 70.97986
q = 1.5092069 AU
e = 0.9974501

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	16 14.44	-65 48.6	3.913	3.365	+2.36	-3.1	17.0	49.9
Jan. 13	16 38.08	-66 19.3	3.964	3.463	+2.12	-3.0	17.2	53.0
Jan. 23	16 59.30	-66 49.0	4.000	3.560	+1.86	-3.1	17.3	56.9
Feb. 2	17 17.90	-67 19.7	4.023	3.658	+1.57	-3.3	17.5	61.6
Feb. 12	17 33.61	-67 53.0	4.032	3.755	+1.25	-3.7	17.6	66.8
Feb. 22	17 46.14	-68 30.0	4.031	3.852	+0.90	-4.1	17.7	72.6
Mar. 4	17 55.12	-69 11.4	4.020	3.948	+0.49	-4.5	17.8	78.7
Mar. 14	18 00.01	-69 56.7	4.002	4.044	+0.02	-4.8	17.9	85.3
Mar. 24	18 00.24	-70 44.3	3.981	4.139	-0.51	-4.7	18.0	92.1
Apr. 3	17 55.16	-71 31.2	3.961	4.234	-1.09	-4.1	18.1	99.0
Apr. 13	17 44.23	-72 12.4	3.944	4.328	-1.68	-2.9	18.1	105.9
Apr. 23	17 27.44	-72 41.2	3.936	4.422	-2.18	-0.9	18.2	112.7
May 3	17 05.67	-72 50.0	3.941	4.516	-2.47	+1.8	18.3	119.0
May 13	16 41.02	-72 32.1	3.961	4.608	-2.46	+4.8	18.4	124.4
May 23	16 16.40	-71 44.6	4.001	4.701	-2.19	+7.6	18.5	128.7
June 2	15 54.46	-70 29.1	4.064	4.793	-1.76	+9.8	18.7	131.2
June 12	15 36.90	-68 51.0	4.150	4.884	-1.27	+11.3	18.8	131.7
June 22	15 24.15	-66 58.1	4.260	4.975	-0.82	+12.0	18.9	130.1
July 2	15 15.91	-64 57.9	4.394	5.066	-0.44	+12.1	19.1	126.6
July 12	15 11.56	-62 56.9	4.549	5.156	-0.12	+11.7	19.2	121.7
July 22	15 10.36	-60 59.9	4.724	5.246	+0.13	+11.0	19.4	115.7
Aug. 1	15 11.70	-59 10.3	4.916	5.335	+0.34	+10.0	19.5	109.1
Aug. 11	15 15.06	-57 30.1	5.121	5.423	+0.49	+9.0	19.7	102.0
Aug. 21	15 20.00	-56 00.4	5.335	5.512	+0.62	+7.9	19.8	94.7
Aug. 31	15 26.21	-54 41.3	5.555	5.600	+0.72	+6.9	20.0	87.3
Sept. 10	15 33.42	-53 32.6	5.777	5.687	+0.80	+5.9	20.2	79.9
Sept. 20	15 41.41	-52 33.7	5.997	5.774	+0.86	+5.0	20.3	72.5
Sept. 30	15 50.02	-51 43.7	6.211	5.860	+0.91	+4.2	20.4	65.1
Oct. 10	15 59.09	-51 01.8	6.417	5.946	+0.94	+3.5	20.6	57.9
Oct. 20	16 08.50	-50 27.0	6.612	6.032	+0.96	+2.8	20.7	50.8
Oct. 30	16 18.14	-49 58.7	6.792	6.117	+0.97	+2.3	20.8	44.1
Nov. 9	16 27.89	-49 36.1	6.955	6.202	+0.98	+1.8	20.9	37.8
Nov. 19	16 37.64	-49 18.4	7.099	6.287	+0.97	+1.3	21.0	32.4
Nov. 29	16 47.31	-49 05.3	7.222	6.371	+0.95	+0.9	21.1	28.3
Dec. 9	16 56.77	-48 56.1	7.324	6.455	+0.92	+0.6	21.2	26.2
Dec. 19	17 05.93	-48 50.5	7.403	6.538	+0.87	+0.2	21.3	26.6
Dec. 29	17 14.67	-48 48.4	7.458	6.621	+0.82	-0.1	21.4	29.6
Jan. 8	17 22.88	-48 49.5	7.491	6.704	+0.76	-0.4	21.4	34.5
Jan. 18	17 30.46	-48 53.6	7.502	6.786	+0.68	-0.7	21.5	40.6
Jan. 28	17 37.26	-49 00.7	7.492	6.868	+0.59	-1.0	21.5	47.7
Feb. 7	17 43.17	-49 10.6	7.464	6.949	+0.49	-1.3	21.6	55.2
Feb. 17	17 48.06	-49 23.2	7.420	7.030	+0.37	-1.5	21.6	63.2
Feb. 27	17 51.80	-49 38.1	7.362	7.111	+0.25	-1.7	21.7	71.5
Mar. 9	17 54.27	-49 54.9	7.296	7.192	+0.11	-1.8	21.7	80.1
Mar. 19	17 55.37	-50 13.1	7.224	7.272	-0.04	-1.8	21.7	88.8
Mar. 29	17 55.01	-50 31.5	7.151	7.352	-0.19	-1.8	21.7	97.7

Comet C/2010 S1 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2013 May 20.23592 TT
Peri. = 118.60507
Node = 93.43270 2000.0
Incl. = 125.33290
q = 5.8995589 AU
e = 1.0028274

m1 = 2.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	19 33.88	+06 03.3	6.942	6.115	+0.40	-3.1	14.5	30.6
Jan. 13	19 37.91	+05 32.4	6.993	6.134	+0.40	-2.4	14.5	27.1
Jan. 23	19 41.90	+05 08.4	7.020	6.154	+0.38	-1.8	14.5	26.4
Feb. 2	19 45.72	+04 50.7	7.020	6.174	+0.35	-1.2	14.5	28.7
Feb. 12	19 49.23	+04 38.3	6.995	6.195	+0.31	-0.8	14.5	33.4
Feb. 22	19 52.33	+04 30.3	6.946	6.217	+0.26	-0.5	14.5	39.7
Mar. 4	19 54.88	+04 25.7	6.874	6.239	+0.19	-0.2	14.5	47.0
Mar. 14	19 56.78	+04 23.5	6.781	6.262	+0.11	-0.1	14.5	54.9
Mar. 24	19 57.90	+04 22.7	6.670	6.286	+0.02	-0.1	14.5	63.3
Apr. 3	19 58.14	+04 22.1	6.546	6.311	-0.08	-0.2	14.5	72.1
Apr. 13	19 57.38	+04 20.4	6.411	6.336	-0.18	-0.4	14.5	81.2
Apr. 23	19 55.54	+04 16.3	6.272	6.361	-0.30	-0.8	14.4	90.5
May 3	19 52.56	+04 08.4	6.133	6.388	-0.42	-1.3	14.4	100.1
May 13	19 48.39	+03 55.5	6.000	6.415	-0.53	-1.9	14.4	109.9
May 23	19 43.06	+03 36.3	5.879	6.442	-0.64	-2.7	14.3	119.8
June 2	19 36.64	+03 09.6	5.775	6.470	-0.74	-3.5	14.3	129.7
June 12	19 29.26	+02 34.8	5.695	6.499	-0.81	-4.3	14.3	139.3
June 22	19 21.16	+01 51.6	5.643	6.528	-0.86	-5.1	14.3	148.1
July 2	19 12.59	+01 00.3	5.624	6.558	-0.87	-5.9	14.3	154.9
July 12	19 03.88	+00 01.7	5.639	6.589	-0.85	-6.4	14.3	157.4
July 22	18 55.37	-01 02.6	5.689	6.620	-0.80	-6.8	14.4	154.4
Aug. 1	18 47.36	-02 11.0	5.774	6.651	-0.72	-7.1	14.4	147.3
Aug. 11	18 40.13	-03 21.5	5.892	6.683	-0.62	-7.1	14.5	138.4
Aug. 21	18 33.89	-04 32.4	6.037	6.716	-0.51	-7.0	14.6	128.7
Aug. 31	18 28.75	-05 42.2	6.207	6.749	-0.40	-6.7	14.7	118.6
Sept. 10	18 24.80	-06 49.6	6.394	6.782	-0.28	-6.4	14.7	108.6
Sept. 20	18 22.01	-07 53.7	6.594	6.816	-0.16	-6.0	14.8	98.6
Sept. 30	18 20.37	-08 53.9	6.800	6.851	-0.06	-5.6	14.9	88.7
Oct. 10	18 19.79	-09 50.0	7.007	6.886	+0.04	-5.2	15.0	78.9
Oct. 20	18 20.17	-10 41.8	7.210	6.921	+0.12	-4.7	15.1	69.3
Oct. 30	18 21.41	-11 29.2	7.403	6.957	+0.20	-4.3	15.2	59.8
Nov. 9	18 23.38	-12 12.4	7.582	6.993	+0.26	-3.9	15.2	50.4
Nov. 19	18 25.95	-12 51.6	7.743	7.030	+0.31	-3.5	15.3	41.2
Nov. 29	18 29.02	-13 26.9	7.883	7.067	+0.34	-3.2	15.4	32.1
Dec. 9	18 32.45	-13 58.7	7.999	7.104	+0.37	-2.9	15.4	23.2
Dec. 19	18 36.12	-14 27.4	8.089	7.142	+0.38	-2.6	15.5	14.8
Dec. 29	18 39.91	-14 53.2	8.151	7.180	+0.38	-2.3	15.5	8.7
Jan. 8	18 43.71	-15 16.6	8.185	7.219	+0.37	-2.1	15.5	10.1
Jan. 18	18 47.39	-15 38.1	8.190	7.258	+0.35	-2.0	15.6	17.4
Jan. 28	18 50.85	-15 58.1	8.169	7.297	+0.31	-1.9	15.6	26.1
Feb. 7	18 53.95	-16 17.2	8.121	7.337	+0.26	-1.9	15.6	35.2
Feb. 17	18 56.60	-16 35.9	8.049	7.377	+0.21	-1.9	15.6	44.5
Feb. 27	18 58.67	-16 54.7	7.956	7.417	+0.14	-2.0	15.6	54.0
Mar. 9	19 00.06	-17 14.3	7.845	7.458	+0.06	-2.1	15.6	63.6
Mar. 19	19 00.67	-17 35.2	7.722	7.499	-0.03	-2.3	15.6	73.4
Mar. 29	19 00.40	-17 57.7	7.589	7.540	-0.12	-2.5	15.6	83.4

Comet C/2012 K6 (McNaught)

Epoch = 2014 July 2.0 TT
T = 2013 May 21.44770 TT
Peri. = 338.83248
Node = 206.89832 2000.0
Incl. = 135.21439
q = 3.3533687 AU
e = 0.9989359

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	13 52.08	+06 31.6	4.018	3.954	-0.09	+13.1	16.2	79.2
Jan. 13	13 51.22	+08 42.7	3.880	4.002	-0.27	+15.1	16.2	90.0
Jan. 23	13 48.55	+11 13.6	3.747	4.052	-0.47	+17.0	16.1	101.0
Feb. 2	13 43.81	+14 03.4	3.627	4.103	-0.70	+18.6	16.1	112.2
Feb. 12	13 36.81	+17 09.3	3.529	4.154	-0.93	+19.6	16.1	123.4
Feb. 22	13 27.46	+20 25.1	3.461	4.207	-1.16	+19.7	16.1	133.9
Mar. 4	13 15.86	+23 42.3	3.430	4.261	-1.35	+18.8	16.2	142.7
Mar. 14	13 02.35	+26 50.2	3.440	4.316	-1.48	+16.8	16.2	148.0
Mar. 24	12 47.56	+29 38.4	3.495	4.372	-1.53	+14.1	16.3	147.9
Apr. 3	12 32.30	+31 59.2	3.591	4.428	-1.48	+10.9	16.4	142.7
Apr. 13	12 17.47	+33 48.4	3.726	4.486	-1.36	+7.8	16.6	134.5
Apr. 23	12 03.88	+35 06.6	3.892	4.544	-1.18	+5.0	16.7	125.0
May 3	11 52.12	+35 56.9	4.083	4.602	-0.96	+2.8	16.9	115.1
May 13	11 42.50	+36 24.5	4.292	4.662	-0.74	+1.0	17.0	105.3
May 23	11 35.12	+36 34.6	4.511	4.722	-0.52	-0.3	17.2	95.8
June 2	11 29.88	+36 31.9	4.733	4.782	-0.33	-1.1	17.4	86.6
June 12	11 26.60	+36 20.6	4.954	4.843	-0.16	-1.7	17.5	77.8
June 22	11 25.05	+36 03.7	5.168	4.905	-0.01	-2.0	17.7	69.4
July 2	11 24.97	+35 43.8	5.371	4.966	+0.12	-2.1	17.8	61.4
July 12	11 26.15	+35 22.9	5.560	5.029	+0.22	-2.0	17.9	53.9
July 22	11 28.35	+35 02.5	5.731	5.092	+0.31	-1.9	18.1	46.9
Aug. 1	11 31.41	+34 43.8	5.882	5.155	+0.37	-1.6	18.2	40.7
Aug. 11	11 35.13	+34 28.1	6.011	5.218	+0.42	-1.2	18.3	35.4
Aug. 21	11 39.38	+34 16.3	6.117	5.282	+0.46	-0.7	18.4	31.6
Aug. 31	11 44.01	+34 09.4	6.199	5.346	+0.49	-0.1	18.4	29.8
Sept.10	11 48.89	+34 08.4	6.257	5.410	+0.50	+0.6	18.5	30.2
Sept.20	11 53.91	+34 14.2	6.290	5.475	+0.50	+1.4	18.6	33.0
Sept.30	11 58.95	+34 27.8	6.300	5.540	+0.49	+2.2	18.6	37.5
Oct. 10	12 03.88	+34 50.3	6.288	5.605	+0.47	+3.2	18.7	43.4
Oct. 20	12 08.59	+35 22.5	6.256	5.670	+0.43	+4.3	18.7	50.2
Oct. 30	12 12.92	+36 05.6	6.206	5.735	+0.38	+5.5	18.7	57.6
Nov. 9	12 16.74	+37 00.3	6.142	5.801	+0.31	+6.7	18.8	65.4
Nov. 19	12 19.87	+38 07.3	6.068	5.866	+0.23	+8.0	18.8	73.6
Nov. 29	12 22.13	+39 26.9	5.987	5.932	+0.12	+9.2	18.8	82.1
Dec. 9	12 23.31	+40 58.9	5.905	5.998	-0.01	+10.3	18.8	90.7
Dec. 19	12 23.19	+42 42.3	5.828	6.064	-0.17	+11.3	18.9	99.2
Dec. 29	12 21.51	+44 35.4	5.760	6.130	-0.35	+12.0	18.9	107.6
Jan. 8	12 18.05	+46 35.3	5.709	6.196	-0.54	+12.3	18.9	115.5
Jan. 18	12 12.61	+48 38.1	5.677	6.262	-0.76	+12.1	18.9	122.6
Jan. 28	12 05.04	+50 39.0	5.671	6.328	-0.97	+11.3	19.0	128.3
Feb. 7	11 55.35	+52 32.3	5.692	6.395	-1.16	+10.1	19.0	132.0
Feb. 17	11 43.73	+54 12.8	5.743	6.461	-1.31	+8.3	19.1	133.3
Feb. 27	11 30.61	+55 35.8	5.824	6.527	-1.40	+6.2	19.2	131.9
Mar. 9	11 16.63	+56 38.3	5.934	6.594	-1.41	+4.1	19.3	128.2
Mar. 19	11 02.58	+57 19.2	6.070	6.660	-1.33	+2.0	19.4	122.7
Mar. 29	10 49.26	+57 39.3	6.228	6.726	-1.19	+0.2	19.4	116.1

Comet 257P/Catalina

Epoch = 2014 July 2.0 TT
T = 2013 June 4.45474 TT
Peri. = 117.84109 e = 0.4325663
Node = 207.86285 2000.0 a = 3.7529341 AU
Incl. = 20.24347 n = 0.13556503
q = 2.1295413 AU P = 7.27 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	00 50.38	+02 34.1	2.450	2.644	+1.14	+2.5	18.8	90.3
Jan. 13	01 01.75	+02 58.8	2.623	2.684	+1.22	+3.5	19.0	82.9
Jan. 23	01 13.90	+03 33.4	2.795	2.725	+1.28	+4.2	19.2	75.7
Feb. 2	01 26.70	+04 15.1	2.965	2.766	+1.33	+4.7	19.4	68.8
Feb. 12	01 40.03	+05 01.9	3.130	2.807	+1.37	+5.0	19.6	62.1
Feb. 22	01 53.77	+05 51.5	3.289	2.849	+1.41	+5.1	19.7	55.6
Mar. 4	02 07.85	+06 42.3	3.440	2.892	+1.43	+5.1	19.9	49.2
Mar. 14	02 22.19	+07 32.9	3.581	2.934	+1.45	+4.9	20.0	43.0
Mar. 24	02 36.71	+08 21.8	3.713	2.976	+1.47	+4.6	20.2	36.9
Apr. 3	02 51.37	+09 08.1	3.832	3.019	+1.47	+4.3	20.3	30.9
Apr. 13	03 06.11	+09 50.8	3.940	3.061	+1.47	+3.8	20.4	25.1
Apr. 23	03 20.85	+10 29.0	4.033	3.104	+1.47	+3.3	20.5	19.5
May 3	03 35.57	+11 02.1	4.113	3.147	+1.46	+2.7	20.6	14.4
May 13	03 50.19	+11 29.5	4.178	3.189	+1.45	+2.1	20.7	10.3
May 23	04 04.66	+11 50.8	4.228	3.231	+1.43	+1.5	20.8	8.8
June 2	04 18.92	+12 05.6	4.263	3.274	+1.40	+0.8	20.9	11.1
June 12	04 32.89	+12 13.6	4.282	3.316	+1.36	+0.1	21.0	15.6
June 22	04 46.51	+12 14.7	4.286	3.357	+1.32	−0.6	21.0	21.0
July 2	04 59.71	+12 08.8	4.275	3.399	+1.27	−1.3	21.1	26.8
July 12	05 12.38	+11 55.9	4.248	3.440	+1.21	−2.0	21.1	33.0
July 22	05 24.46	+11 36.1	4.207	3.481	+1.14	−2.7	21.1	39.3
Aug. 1	05 35.83	+11 09.4	4.153	3.522	+1.06	−3.3	21.2	45.8
Aug. 11	05 46.40	+10 36.2	4.085	3.562	+0.96	−3.9	21.2	52.6
Aug. 21	05 56.03	+09 56.8	4.006	3.602	+0.86	−4.5	21.2	59.6
Aug. 31	06 04.61	+09 11.6	3.917	3.642	+0.74	−5.0	21.2	66.9
Sept.10	06 11.99	+08 21.2	3.820	3.681	+0.60	−5.5	21.2	74.5
Sept.20	06 18.04	+07 26.3	3.717	3.720	+0.45	−5.9	21.2	82.4
Sept.30	06 22.58	+06 27.7	3.611	3.759	+0.29	−6.1	21.1	90.7
Oct. 10	06 25.48	+05 26.9	3.506	3.797	+0.11	−6.2	21.1	99.3
Oct. 20	06 26.63	+04 25.1	3.404	3.834	−0.07	−6.1	21.1	108.2
Oct. 30	06 25.94	+03 24.4	3.312	3.872	−0.25	−5.7	21.1	117.5
Nov. 9	06 23.41	+02 27.0	3.232	3.909	−0.42	−5.2	21.1	127.0
Nov. 19	06 19.16	+01 35.3	3.170	3.945	−0.57	−4.3	21.1	136.4
Nov. 29	06 13.43	+00 52.1	3.131	3.981	−0.68	−3.2	21.1	145.3
Dec. 9	06 06.63	+00 19.7	3.117	4.017	−0.74	−2.0	21.1	152.6
Dec. 19	05 59.26	−00 00.1	3.131	4.052	−0.74	−0.7	21.2	156.4
Dec. 29	05 51.91	−00 06.7	3.175	4.087	−0.68	+0.6	21.2	154.8
Jan. 8	05 45.16	−00 00.3	3.248	4.121	−0.57	+1.8	21.3	148.8
Jan. 18	05 39.47	+00 17.4	3.348	4.155	−0.43	+2.7	21.4	140.6
Jan. 28	05 35.20	+00 44.4	3.471	4.188	−0.26	+3.4	21.5	131.4
Feb. 7	05 32.55	+01 18.2	3.614	4.221	−0.10	+3.8	21.6	122.1
Feb. 17	05 31.58	+01 56.3	3.772	4.254	+0.07	+4.0	21.8	112.8
Feb. 27	05 32.26	+02 36.4	3.941	4.286	+0.22	+4.0	21.9	103.8
Mar. 9	05 34.47	+03 16.6	4.116	4.317	+0.36	+3.9	22.0	95.0
Mar. 19	05 38.07	+03 55.3	4.293	4.348	+0.48	+3.6	22.1	86.6
Mar. 29	05 42.91	+04 31.4	4.469	4.379	+0.59	+3.2	22.3	78.4

Comet 277P/LINEAR

Epoch = 2014 July 2.0 TT
T = 2013 June 5.71945 TT
Peri. = 152.21310 e = 0.5043674
Node = 276.35792 2000.0 a = 3.8586524 AU
Incl. = 16.74767 n = 0.13003211
q = 1.9124739 AU P = 7.58 years

m1 = 12.4 + 5 log(Delta) + 15.0 log(r(t-60))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	10 39.15	-09 18.5	2.005	2.593	-0.28	-7.8	19.4	116.1
Jan. 13	10 36.34	-10 36.9	1.947	2.643	-0.53	-5.7	19.4	125.5
Jan. 23	10 31.03	-11 34.1	1.904	2.693	-0.74	-3.3	19.5	135.2
Feb. 2	10 23.66	-12 07.0	1.881	2.744	-0.87	-0.7	19.6	144.5
Feb. 12	10 14.97	-12 14.2	1.882	2.795	-0.91	+1.7	19.7	152.6
Feb. 22	10 05.90	-11 57.6	1.908	2.846	-0.85	+3.6	19.9	157.4
Mar. 4	09 57.42	-11 21.4	1.961	2.897	-0.70	+4.9	20.1	156.6
Mar. 14	09 50.40	-10 32.1	2.040	2.948	-0.50	+5.5	20.3	150.8
Mar. 24	09 45.38	-09 36.9	2.145	3.000	-0.28	+5.5	20.5	142.8
Apr. 3	09 42.62	-08 42.2	2.270	3.050	-0.05	+4.9	20.8	134.0
Apr. 13	09 42.16	-07 53.0	2.414	3.101	+0.17	+4.1	21.0	125.1
Apr. 23	09 43.82	-07 12.4	2.573	3.152	+0.36	+3.0	21.3	116.4
May 3	09 47.37	-06 42.2	2.742	3.202	+0.52	+1.9	21.5	108.1
May 13	09 52.56	-06 23.2	2.919	3.252	+0.65	+0.8	21.8	100.1
May 23	09 59.09	-06 15.4	3.100	3.301	+0.77	-0.3	22.0	92.4
June 2	10 06.74	-06 18.2	3.282	3.351	+0.86	-1.3	22.2	85.1
June 12	10 15.30	-06 31.1	3.464	3.400	+0.93	-2.2	22.5	77.9
June 22	10 24.58	-06 53.1	3.643	3.448	+0.99	-3.0	22.7	71.0
July 2	10 34.44	-07 23.5	3.816	3.496	+1.03	-3.8	22.9	64.2
July 12	10 44.74	-08 01.3	3.983	3.544	+1.06	-4.4	23.1	57.6
July 22	10 55.37	-08 45.8	4.140	3.591	+1.09	-5.0	23.3	51.2
Aug. 1	11 06.26	-09 36.0	4.287	3.638	+1.11	-5.5	23.4	44.8
Aug. 11	11 17.33	-10 31.3	4.422	3.684	+1.12	-6.0	.	38.6
Aug. 21	11 28.51	-11 30.9	4.544	3.730	+1.12	-6.3	.	32.5
Aug. 31	11 39.75	-12 34.1	4.651	3.775	+1.12	-6.6	.	26.6
Sept.10	11 50.99	-13 40.3	4.742	3.820	+1.12	-6.9	.	21.1
Sept.20	12 02.18	-14 48.8	4.817	3.865	+1.11	-7.0	.	16.5
Sept.30	12 13.27	-15 59.1	4.875	3.908	+1.09	-7.2	.	13.6
Oct. 10	12 24.20	-17 10.7	4.914	3.952	+1.07	-7.2	.	13.9
Oct. 20	12 34.92	-18 22.9	4.935	3.995	+1.04	-7.2	.	17.3
Oct. 30	12 45.36	-19 35.3	4.937	4.037	+1.01	-7.2	.	22.5
Nov. 9	12 55.43	-20 47.3	4.920	4.079	+0.96	-7.1	.	28.6
Nov. 19	13 05.05	-21 58.5	4.886	4.120	+0.91	-7.0	.	35.4
Nov. 29	13 14.12	-23 08.3	4.834	4.161	+0.84	-6.8	.	42.5
Dec. 9	13 22.51	-24 16.3	4.766	4.201	+0.76	-6.6	.	50.0
Dec. 19	13 30.11	-25 22.0	4.684	4.241	+0.66	-6.3	.	57.7
Dec. 29	13 36.75	-26 24.7	4.589	4.280	+0.55	-5.9	.	65.8
Jan. 8	13 42.29	-27 23.6	4.484	4.318	+0.43	-5.4	.	74.1
Jan. 18	13 46.55	-28 18.1	4.371	4.356	+0.28	-4.9	.	82.7
Jan. 28	13 49.37	-29 07.0	4.256	4.394	+0.12	-4.2	.	91.6
Feb. 7	13 50.62	-29 49.1	4.140	4.431	-0.04	-3.4	.	100.7
Feb. 17	13 50.20	-30 23.0	4.030	4.468	-0.21	-2.4	.	110.2
Feb. 27	13 48.07	-30 46.8	3.928	4.503	-0.38	-1.2	.	119.8
Mar. 9	13 44.31	-30 59.0	3.841	4.539	-0.52	+0.1	.	129.6
Mar. 19	13 39.13	-30 58.1	3.773	4.574	-0.63	+1.5	.	139.3
Mar. 29	13 32.85	-30 43.4	3.728	4.608	-0.69	+2.8	.	148.5

Comet C/2013 E1 (McNaught)

Epoch = 2014 July 2.0 TT
T = 2013 June 12.70913 TT
Peri. = 311.47353
Node = 134.03506 2000.0
Incl. = 158.71784
q = 7.7823579 AU
e = 1.0010673

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m	m1	Elong. °
Jan. 3	11 20.01	-09 34.1	7.536	7.884	-0.45	+2.3	18.8	107.2
Jan. 13	11 15.52	-09 10.8	7.380	7.894	-0.54	+3.1	18.7	118.3
Jan. 23	11 10.12	-08 39.8	7.242	7.904	-0.62	+3.9	18.7	129.5
Feb. 2	11 03.92	-08 00.9	7.127	7.915	-0.68	+4.6	18.6	140.7
Feb. 12	10 57.08	-07 14.6	7.043	7.926	-0.73	+5.3	18.6	151.7
Feb. 22	10 49.82	-06 21.8	6.993	7.938	-0.74	+5.8	18.6	161.7
Mar. 4	10 42.39	-05 23.8	6.980	7.951	-0.73	+6.1	18.6	167.4
Mar. 14	10 35.07	-04 22.5	7.005	7.963	-0.70	+6.3	18.6	163.5
Mar. 24	10 28.11	-03 20.0	7.068	7.977	-0.64	+6.2	18.7	154.1
Apr. 3	10 21.72	-02 18.3	7.165	7.990	-0.56	+5.9	18.7	143.5
Apr. 13	10 16.10	-01 19.1	7.292	8.004	-0.48	+5.5	18.7	132.6
Apr. 23	10 11.34	-00 24.1	7.445	8.019	-0.38	+5.0	18.8	121.7
May 3	10 07.50	+00 25.9	7.617	8.034	-0.29	+4.4	18.9	111.1
May 13	10 04.61	+01 10.1	7.802	8.049	-0.20	+3.8	18.9	100.6
May 23	10 02.62	+01 48.3	7.993	8.065	-0.11	+3.2	19.0	90.5
June 2	10 01.47	+02 20.5	8.186	8.082	-0.04	+2.6	19.0	80.5
June 12	10 01.10	+02 46.8	8.375	8.098	+0.03	+2.1	19.1	70.8
June 22	10 01.40	+03 07.7	8.554	8.115	+0.09	+1.6	19.2	61.3
July 2	10 02.29	+03 23.6	8.719	8.133	+0.14	+1.1	19.2	52.0
July 12	10 03.67	+03 35.0	8.866	8.151	+0.18	+0.7	19.3	42.9
July 22	10 05.44	+03 42.4	8.993	8.169	+0.21	+0.4	19.3	33.9
Aug. 1	10 07.51	+03 46.4	9.096	8.188	+0.23	+0.1	19.3	25.0
Aug. 11	10 09.78	+03 47.6	9.174	8.207	+0.24	-0.1	19.4	16.5
Aug. 21	10 12.16	+03 46.7	9.224	8.226	+0.24	-0.3	19.4	9.1
Aug. 31	10 14.56	+03 44.1	9.247	8.246	+0.23	-0.4	19.4	7.4
Sept.10	10 16.88	+03 40.5	9.241	8.267	+0.22	-0.4	19.4	13.9
Sept.20	10 19.05	+03 36.7	9.207	8.287	+0.19	-0.4	19.4	22.4
Sept.30	10 20.96	+03 33.1	9.147	8.308	+0.16	-0.3	19.4	31.4
Oct. 10	10 22.52	+03 30.6	9.062	8.330	+0.11	-0.1	19.4	40.7
Oct. 20	10 23.63	+03 29.8	8.954	8.352	+0.06	+0.2	19.4	50.2
Oct. 30	10 24.20	+03 31.5	8.827	8.374	-0.01	+0.5	19.4	59.9
Nov. 9	10 24.14	+03 36.5	8.685	8.396	-0.08	+0.9	19.3	69.9
Nov. 19	10 23.37	+03 45.3	8.531	8.419	-0.16	+1.3	19.3	80.2
Nov. 29	10 21.79	+03 58.7	8.373	8.443	-0.24	+1.9	19.3	90.7
Dec. 9	10 19.37	+04 17.2	8.216	8.466	-0.33	+2.4	19.3	101.4
Dec. 19	10 16.07	+04 41.2	8.065	8.490	-0.42	+3.0	19.2	112.5
Dec. 29	10 11.89	+05 10.9	7.929	8.514	-0.50	+3.5	19.2	123.7
Jan. 8	10 06.90	+05 46.0	7.813	8.539	-0.57	+4.0	19.2	135.2
Jan. 18	10 01.18	+06 26.1	7.723	8.564	-0.63	+4.4	19.2	146.9
Jan. 28	09 54.89	+07 10.2	7.665	8.589	-0.67	+4.7	19.2	158.5
Feb. 7	09 48.24	+07 57.2	7.642	8.615	-0.68	+4.8	19.2	169.8
Feb. 17	09 41.45	+08 45.7	7.657	8.641	-0.67	+4.8	19.2	174.3
Feb. 27	09 34.76	+09 34.1	7.710	8.667	-0.64	+4.7	19.2	164.3
Mar. 9	09 28.40	+10 21.1	7.798	8.694	-0.58	+4.4	19.3	152.9
Mar. 19	09 22.57	+11 05.4	7.920	8.720	-0.51	+4.1	19.3	141.5
Mar. 29	09 17.44	+11 46.0	8.070	8.748	-0.43	+3.6	19.4	130.2

Comet C/2012 S4 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 June 28.08779 TT
Peri. = 163.62327
Node = 173.10539 2000.0
Incl. = 126.55198
q = 4.3486371 AU
e = 1.0004571

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	22 44.49	-16 57.5	5.121	4.617	+0.33	-2.8	18.2	54.3
Jan. 13	22 47.83	-17 25.1	5.289	4.645	+0.41	-2.3	18.3	44.9
Jan. 23	22 51.92	-17 47.7	5.434	4.674	+0.47	-1.9	18.4	36.0
Feb. 2	22 56.58	-18 07.2	5.556	4.704	+0.51	-1.8	18.4	27.5
Feb. 12	23 01.68	-18 25.1	5.652	4.735	+0.54	-1.8	18.5	19.8
Feb. 22	23 07.06	-18 43.2	5.721	4.768	+0.56	-2.0	18.6	14.1
Mar. 4	23 12.62	-19 02.7	5.763	4.801	+0.56	-2.3	18.6	12.9
Mar. 14	23 18.23	-19 25.2	5.777	4.836	+0.55	-2.7	18.7	17.2
Mar. 24	23 23.77	-19 52.2	5.765	4.872	+0.54	-3.3	18.7	24.1
Apr. 3	23 29.14	-20 25.0	5.727	4.908	+0.51	-4.0	18.7	32.0
Apr. 13	23 34.22	-21 05.0	5.667	4.946	+0.47	-4.9	18.7	40.4
Apr. 23	23 38.89	-21 53.8	5.587	4.984	+0.41	-5.9	18.7	49.0
May 3	23 43.03	-22 52.7	5.489	5.024	+0.35	-7.0	18.7	57.8
May 13	23 46.49	-24 03.0	5.377	5.064	+0.26	-8.3	18.7	66.7
May 23	23 49.13	-25 25.9	5.257	5.105	+0.17	-9.6	18.7	75.9
June 2	23 50.78	-27 02.3	5.132	5.147	+0.05	-11.0	18.7	85.2
June 12	23 51.26	-28 52.6	5.009	5.190	-0.09	-12.4	18.7	94.6
June 22	23 50.36	-30 56.3	4.893	5.233	-0.25	-13.6	18.6	104.0
July 2	23 47.89	-33 12.1	4.790	5.277	-0.42	-14.5	18.6	113.4
July 12	23 43.66	-35 37.2	4.706	5.322	-0.61	-15.0	18.6	122.5
July 22	23 37.54	-38 07.6	4.646	5.367	-0.81	-15.0	18.6	131.0
Aug. 1	23 29.45	-40 37.7	4.616	5.413	-1.00	-14.4	18.7	138.0
Aug. 11	23 19.47	-43 01.2	4.619	5.460	-1.16	-13.1	18.7	142.7
Aug. 21	23 07.89	-45 11.7	4.657	5.507	-1.27	-11.2	18.7	144.0
Aug. 31	22 55.14	-47 03.7	4.729	5.555	-1.32	-9.0	18.8	141.5
Sept. 10	22 41.92	-48 33.5	4.834	5.603	-1.30	-6.6	18.9	136.1
Sept. 20	22 28.93	-49 39.9	4.969	5.652	-1.20	-4.4	19.0	128.8
Sept. 30	22 16.92	-50 23.8	5.129	5.702	-1.05	-2.4	19.1	120.4
Oct. 10	22 06.46	-50 48.0	5.308	5.752	-0.85	-0.8	19.2	111.6
Oct. 20	21 57.93	-50 56.3	5.501	5.802	-0.64	+0.4	19.3	102.7
Oct. 30	21 51.49	-50 52.3	5.703	5.853	-0.43	+1.2	19.5	93.8
Nov. 9	21 47.16	-50 39.9	5.906	5.904	-0.24	+1.8	19.6	85.1
Nov. 19	21 44.79	-50 22.0	6.107	5.955	-0.06	+2.1	19.7	76.6
Nov. 29	21 44.21	-50 01.2	6.301	6.007	+0.10	+2.2	19.8	68.4
Dec. 9	21 45.19	-49 39.6	6.482	6.060	+0.23	+2.1	19.9	60.6
Dec. 19	21 47.50	-49 18.7	6.649	6.113	+0.34	+1.9	20.0	53.4
Dec. 29	21 50.92	-48 59.8	6.797	6.166	+0.43	+1.6	20.1	46.8
Jan. 8	21 55.24	-48 44.0	6.924	6.219	+0.50	+1.2	20.1	41.3
Jan. 18	22 00.27	-48 32.1	7.029	6.273	+0.56	+0.7	20.2	37.1
Jan. 28	22 05.85	-48 25.1	7.111	6.327	+0.60	+0.1	20.3	34.7
Feb. 7	22 11.80	-48 23.7	7.169	6.381	+0.62	-0.5	20.3	34.5
Feb. 17	22 18.00	-48 28.7	7.203	6.435	+0.63	-1.2	20.4	36.4
Feb. 27	22 24.31	-48 40.8	7.215	6.490	+0.63	-2.0	20.4	40.2
Mar. 9	22 30.60	-49 00.9	7.206	6.545	+0.61	-2.9	20.4	45.2
Mar. 19	22 36.74	-49 29.5	7.177	6.600	+0.59	-3.8	20.5	51.2
Mar. 29	22 42.61	-50 07.5	7.132	6.656	+0.55	-4.8	20.5	57.9

Comet C/2013 B2 (Catalina)

Epoch = 2014 July 2.0 TT
T = 2013 July 1.58942 TT
Peri. = 156.45817
Node = 331.95653 2000.0
Incl. = 43.46388
q = 3.7345623 AU
e = 1.0018528

m1 = 7.0 + 5 log(Delta) + 15.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	11 20.50	-04 16.3	3.643	4.078	-0.23	-8.8	19.0	109.5
Jan. 13	11 18.20	-05 44.4	3.541	4.114	-0.40	-8.0	19.0	119.4
Jan. 23	11 14.23	-07 04.6	3.455	4.151	-0.55	-7.1	19.0	129.5
Feb. 2	11 08.73	-08 15.5	3.390	4.190	-0.68	-6.0	19.0	139.7
Feb. 12	11 01.97	-09 15.8	3.350	4.230	-0.76	-4.9	19.0	149.4
Feb. 22	10 54.38	-10 04.8	3.339	4.271	-0.79	-3.8	19.1	157.8
Mar. 4	10 46.46	-10 42.3	3.358	4.313	-0.77	-2.7	19.2	162.4
Mar. 14	10 38.78	-11 09.4	3.408	4.357	-0.69	-1.9	19.2	160.3
Mar. 24	10 31.85	-11 28.0	3.488	4.401	-0.58	-1.3	19.4	153.3
Apr. 3	10 26.06	-11 40.7	3.596	4.447	-0.44	-0.9	19.5	144.4
Apr. 13	10 21.70	-11 50.2	3.728	4.494	-0.28	-0.9	19.6	135.0
Apr. 23	10 18.90	-11 59.0	3.881	4.542	-0.12	-1.0	19.8	125.7
May 3	10 17.66	-12 09.4	4.049	4.590	+0.03	-1.4	20.0	116.6
May 13	10 17.93	-12 23.1	4.230	4.640	+0.16	-1.8	20.1	107.8
May 23	10 19.56	-12 41.2	4.418	4.690	+0.29	-2.3	20.3	99.4
June 2	10 22.42	-13 04.7	4.610	4.741	+0.39	-2.9	20.5	91.2
June 12	10 26.36	-13 33.8	4.802	4.793	+0.48	-3.5	20.6	83.4
June 22	10 31.21	-14 08.9	4.992	4.846	+0.56	-4.1	20.8	75.9
July 2	10 36.83	-14 49.9	5.177	4.899	+0.63	-4.7	20.9	68.6
July 12	10 43.10	-15 36.7	5.355	4.953	+0.68	-5.2	21.1	61.6
July 22	10 49.88	-16 29.0	5.523	5.008	+0.72	-5.8	21.2	54.9
Aug. 1	10 57.09	-17 26.7	5.679	5.063	+0.75	-6.3	21.3	48.4
Aug. 11	11 04.62	-18 29.4	5.823	5.118	+0.78	-6.7	21.5	42.3
Aug. 21	11 12.38	-19 36.8	5.952	5.175	+0.79	-7.2	21.6	36.6
Aug. 31	11 20.29	-20 48.5	6.065	5.231	+0.80	-7.6	21.7	31.6
Sept.10	11 28.28	-22 04.4	6.161	5.288	+0.80	-7.9	21.8	27.5
Sept.20	11 36.27	-23 23.8	6.241	5.346	+0.79	-8.3	21.9	24.9
Sept.30	11 44.18	-24 46.7	6.302	5.404	+0.78	-8.6	22.0	24.2
Oct. 10	11 51.93	-26 12.5	6.346	5.463	+0.75	-8.8	22.1	25.6
Oct. 20	11 59.44	-27 41.0	6.371	5.521	+0.72	-9.1	22.2	29.0
Oct. 30	12 06.62	-29 11.7	6.379	5.580	+0.68	-9.2	22.2	33.7
Nov. 9	12 13.37	-30 44.1	6.371	5.640	+0.62	-9.4	22.3	39.4
Nov. 19	12 19.59	-32 17.9	6.346	5.700	+0.56	-9.5	22.4	45.7
Nov. 29	12 25.15	-33 52.4	6.307	5.760	+0.48	-9.5	22.4	52.5
Dec. 9	12 29.93	-35 26.9	6.256	5.820	+0.39	-9.4	22.5	59.6
Dec. 19	12 33.79	-37 00.6	6.195	5.881	+0.28	-9.2	22.5	67.0
Dec. 29	12 36.59	-38 32.5	6.126	5.941	+0.16	-8.9	22.5	74.6
Jan. 8	12 38.19	-40 01.3	6.054	6.002	+0.03	-8.4	22.6	82.4
Jan. 18	12 38.50	-41 25.5	5.980	6.064	-0.11	-7.8	22.6	90.2
Jan. 28	12 37.40	-42 43.4	5.908	6.125	-0.25	-7.0	22.7	98.1
Feb. 7	12 34.90	-43 53.0	5.844	6.187	-0.39	-5.9	22.7	105.9
Feb. 17	12 31.02	-44 52.3	5.789	6.248	-0.51	-4.7	22.7	113.4
Feb. 27	12 25.93	-45 39.4	5.749	6.310	-0.60	-3.3	22.8	120.6
Mar. 9	12 19.88	-46 12.7	5.725	6.372	-0.67	-1.9	22.9	127.0
Mar. 19	12 13.23	-46 31.5	5.721	6.434	-0.68	-0.4	22.9	132.4
Mar. 29	12 06.38	-46 35.7	5.739	6.497	-0.66	+0.9	23.0	136.2

Comet 270P/Gehrels

Epoch = 2014 July 2.0 TT
T = 2013 July 4.29380 TT
Peri. = 210.93794 e = 0.4763391
Node = 224.59992 2000.0 a = 6.8618516 AU
Incl. = 2.84027 n = 0.05483301
q = 3.5932834 AU P = 17.97 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 3	07 16.64	+18 51.2	2.790	3.768	-0.60	+0.8	18.5	173.3
Jan. 13	07 10.62	+18 59.4	2.808	3.787	-0.56	+0.9	18.5	173.2
Jan. 23	07 05.01	+19 08.5	2.857	3.807	-0.46	+0.9	18.6	162.3
Feb. 2	07 00.37	+19 17.5	2.934	3.827	-0.32	+0.8	18.7	151.2
Feb. 12	06 57.16	+19 25.7	3.036	3.848	-0.15	+0.7	18.8	140.4
Feb. 22	06 55.63	+19 32.6	3.160	3.870	+0.03	+0.5	18.9	130.0
Mar. 4	06 55.89	+19 37.8	3.301	3.893	+0.20	+0.3	19.0	120.0
Mar. 14	06 57.93	+19 40.9	3.456	3.916	+0.37	+0.1	19.2	110.5
Mar. 24	07 01.64	+19 41.4	3.620	3.940	+0.52	-0.2	19.3	101.4
Apr. 3	07 06.84	+19 39.0	3.789	3.965	+0.65	-0.6	19.5	92.8
Apr. 13	07 13.38	+19 33.3	3.960	3.990	+0.77	-0.9	19.6	84.5
Apr. 23	07 21.04	+19 23.9	4.130	4.016	+0.86	-1.3	19.7	76.5
May 3	07 29.65	+19 10.7	4.296	4.043	+0.94	-1.7	19.9	68.9
May 13	07 39.03	+18 53.3	4.456	4.070	+1.00	-2.2	20.0	61.4
May 23	07 49.04	+18 31.7	4.607	4.098	+1.05	-2.6	20.1	54.2
June 2	07 59.53	+18 05.8	4.748	4.126	+1.08	-3.0	20.2	47.1
June 12	08 10.37	+17 35.8	4.878	4.155	+1.11	-3.4	20.3	40.2
June 22	08 21.47	+17 01.8	4.995	4.184	+1.12	-3.8	20.4	33.4
July 2	08 32.71	+16 23.9	5.098	4.214	+1.13	-4.1	20.5	26.6
July 12	08 44.02	+15 42.6	5.185	4.244	+1.13	-4.5	20.6	19.9
July 22	08 55.31	+14 58.0	5.257	4.274	+1.12	-4.7	20.7	13.3
Aug. 1	09 06.52	+14 10.5	5.311	4.305	+1.11	-5.0	20.7	6.8
Aug. 11	09 17.57	+13 20.8	5.349	4.336	+1.08	-5.2	20.8	2.3
Aug. 21	09 28.40	+12 29.1	5.369	4.368	+1.06	-5.3	20.9	7.6
Aug. 31	09 38.96	+11 36.1	5.371	4.400	+1.02	-5.4	20.9	14.3
Sept. 10	09 49.17	+10 42.4	5.355	4.432	+0.98	-5.4	20.9	21.3
Sept. 20	09 58.96	+09 48.6	5.322	4.465	+0.93	-5.3	21.0	28.4
Sept. 30	10 08.28	+08 55.3	5.272	4.497	+0.88	-5.2	21.0	35.8
Oct. 10	10 17.03	+08 03.4	5.206	4.531	+0.81	-5.0	21.0	43.3
Oct. 20	10 25.14	+07 13.6	5.125	4.564	+0.74	-4.7	21.0	51.0
Oct. 30	10 32.51	+06 26.7	5.030	4.597	+0.65	-4.3	21.0	58.9
Nov. 9	10 39.04	+05 43.6	4.925	4.631	+0.56	-3.8	21.0	67.2
Nov. 19	10 44.63	+05 05.3	4.810	4.665	+0.45	-3.3	21.0	75.7
Nov. 29	10 49.16	+04 32.7	4.689	4.699	+0.34	-2.6	21.0	84.5
Dec. 9	10 52.54	+04 06.8	4.566	4.734	+0.21	-1.9	21.0	93.7
Dec. 19	10 54.66	+03 48.3	4.445	4.768	+0.08	-1.0	21.0	103.3
Dec. 29	10 55.46	+03 37.9	4.330	4.803	-0.05	-0.2	21.0	113.2
Jan. 8	10 54.92	+03 36.2	4.225	4.838	-0.18	+0.7	21.0	123.5
Jan. 18	10 53.08	+03 43.0	4.136	4.872	-0.30	+1.5	21.0	134.1
Jan. 28	10 50.06	+03 58.0	4.068	4.907	-0.40	+2.2	21.0	145.0
Feb. 7	10 46.08	+04 20.1	4.024	4.943	-0.47	+2.7	21.0	156.2
Feb. 17	10 41.42	+04 47.5	4.009	4.978	-0.50	+3.1	21.1	167.3
Feb. 27	10 36.45	+05 18.1	4.024	5.013	-0.49	+3.1	21.1	176.7
Mar. 9	10 31.57	+05 49.6	4.070	5.048	-0.44	+3.0	21.2	169.0
Mar. 19	10 27.12	+06 19.7	4.147	5.084	-0.37	+2.7	21.3	158.1
Mar. 29	10 23.44	+06 46.2	4.251	5.119	-0.27	+2.1	21.4	147.3

Comet 271P/van Houten-Lemmon

Epoch = 2014 July 2.0 TT
T = 2013 July 7.34514 TT
Peri. = 35.39655 e = 0.3931898
Node = 9.51291 2000.0 a = 7.0052305 AU
Incl. = 6.84989 n = 0.05315822
q = 4.2508453 AU P = 18.54 years

m1 = 2.6 + 5 log(Delta) + 22.5 log(r(t-60))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	03 41.38	+26 56.2	3.586	4.352	-0.12	-1.2	19.6	136.5
Jan. 13	03 40.15	+26 44.2	3.711	4.364	+0.05	-0.8	19.7	126.1
Jan. 23	03 40.60	+26 36.0	3.852	4.376	+0.21	-0.4	19.8	116.1
Feb. 2	03 42.72	+26 32.4	4.005	4.388	+0.37	+0.1	19.9	106.5
Feb. 12	03 46.42	+26 33.4	4.166	4.401	+0.51	+0.5	20.0	97.3
Feb. 22	03 51.57	+26 38.7	4.331	4.415	+0.64	+0.9	20.1	88.4
Mar. 4	03 58.01	+26 47.6	4.495	4.429	+0.76	+1.2	20.2	79.8
Mar. 14	04 05.60	+26 59.4	4.656	4.443	+0.86	+1.4	20.3	71.6
Mar. 24	04 14.17	+27 13.3	4.811	4.458	+0.94	+1.5	20.4	63.6
Apr. 3	04 23.60	+27 28.4	4.957	4.474	+1.01	+1.6	20.5	55.9
Apr. 13	04 33.75	+27 44.0	5.093	4.490	+1.07	+1.5	20.6	48.4
Apr. 23	04 44.48	+27 59.2	5.216	4.506	+1.12	+1.4	20.7	41.1
May 3	04 55.70	+28 13.6	5.325	4.523	+1.16	+1.3	20.8	33.9
May 13	05 07.30	+28 26.5	5.418	4.541	+1.19	+1.1	20.8	26.9
May 23	05 19.16	+28 37.5	5.496	4.558	+1.20	+0.9	20.9	20.1
June 2	05 31.21	+28 46.4	5.556	4.577	+1.21	+0.7	21.0	13.6
June 12	05 43.34	+28 53.0	5.599	4.595	+1.21	+0.4	21.0	7.8
June 22	05 55.46	+28 57.1	5.625	4.614	+1.20	+0.2	21.1	5.7
July 2	06 07.50	+28 58.8	5.632	4.634	+1.19	-0.1	21.1	9.9
July 12	06 19.36	+28 58.3	5.622	4.654	+1.16	-0.3	21.1	16.1
July 22	06 30.95	+28 55.7	5.594	4.674	+1.12	-0.4	21.2	22.8
Aug. 1	06 42.19	+28 51.4	5.549	4.694	+1.08	-0.6	21.2	29.7
Aug. 11	06 52.97	+28 45.8	5.487	4.715	+1.02	-0.6	21.2	36.8
Aug. 21	07 03.21	+28 39.4	5.411	4.737	+0.96	-0.7	21.2	44.1
Aug. 31	07 12.80	+28 32.9	5.320	4.758	+0.88	-0.6	21.2	51.6
Sept. 10	07 21.62	+28 26.8	5.216	4.780	+0.79	-0.5	21.2	59.3
Sept. 20	07 29.57	+28 21.9	5.102	4.802	+0.69	-0.3	21.2	67.2
Sept. 30	07 36.51	+28 18.9	4.979	4.825	+0.58	0.0	21.2	75.4
Oct. 10	07 42.32	+28 18.4	4.850	4.848	+0.46	+0.3	21.2	83.9
Oct. 20	07 46.88	+28 21.1	4.720	4.871	+0.32	+0.6	21.2	92.8
Oct. 30	07 50.04	+28 27.3	4.590	4.894	+0.17	+1.0	21.2	102.0
Nov. 9	07 51.73	+28 37.3	4.466	4.918	+0.01	+1.3	21.1	111.6
Nov. 19	07 51.86	+28 50.7	4.352	4.942	-0.14	+1.6	21.1	121.5
Nov. 29	07 50.42	+29 07.0	4.253	4.966	-0.29	+1.8	21.1	131.8
Dec. 9	07 47.51	+29 24.9	4.173	4.990	-0.42	+1.8	21.1	142.4
Dec. 19	07 43.31	+29 43.0	4.118	5.015	-0.52	+1.7	21.1	153.1
Dec. 29	07 38.11	+29 59.5	4.089	5.040	-0.58	+1.3	21.2	163.4
Jan. 8	07 32.33	+30 12.8	4.091	5.065	-0.59	+0.9	21.2	171.2
Jan. 18	07 26.44	+30 21.6	4.123	5.090	-0.55	+0.4	21.3	168.0
Jan. 28	07 20.90	+30 25.2	4.186	5.115	-0.47	-0.2	21.4	158.5
Feb. 7	07 16.17	+30 23.6	4.278	5.141	-0.36	-0.6	21.5	147.9
Feb. 17	07 12.58	+30 17.1	4.396	5.166	-0.22	-1.1	21.6	137.4
Feb. 27	07 10.34	+30 06.6	4.535	5.192	-0.08	-1.4	21.7	127.0
Mar. 9	07 09.56	+29 52.8	4.692	5.218	+0.07	-1.6	21.8	117.0
Mar. 19	07 10.24	+29 36.4	4.861	5.244	+0.21	-1.8	21.9	107.3
Mar. 29	07 12.34	+29 18.1	5.038	5.271	+0.34	-2.0	22.1	98.0

Comet 178P/Hug-Bell

Epoch = 2014 July 2.0 TT
T = 2013 July 22.99591 TT
Peri. = 296.88947 e = 0.4736596
Node = 103.57041 2000.0 a = 3.6707752 AU
Incl. = 10.97420 n = 0.14014170
q = 1.9320773 AU P = 7.03 years

m1 = 13.2 + 5 log(Delta) + 12.5 log(r(t-60))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	07 06.49	+22 43.4	1.369	2.352	-0.91	+7.0	18.0	177.0
Jan. 13	06 57.43	+23 53.8	1.420	2.396	-0.77	+6.0	18.1	170.5
Jan. 23	06 49.77	+24 54.1	1.498	2.441	-0.53	+4.9	18.3	158.5
Feb. 2	06 44.50	+25 42.9	1.601	2.486	-0.23	+3.7	18.6	147.1
Feb. 12	06 42.15	+26 20.2	1.725	2.532	+0.06	+2.7	18.8	136.4
Feb. 22	06 42.80	+26 47.4	1.866	2.579	+0.34	+1.8	19.1	126.4
Mar. 4	06 46.24	+27 05.7	2.022	2.627	+0.59	+1.0	19.4	117.1
Mar. 14	06 52.16	+27 16.1	2.188	2.674	+0.80	+0.3	19.6	108.4
Mar. 24	07 00.14	+27 19.3	2.362	2.722	+0.97	-0.4	19.9	100.3
Apr. 3	07 09.83	+27 15.5	2.540	2.770	+1.10	-1.0	20.2	92.5
Apr. 13	07 20.87	+27 05.2	2.719	2.819	+1.21	-1.7	20.4	85.2
Apr. 23	07 32.96	+26 48.5	2.899	2.867	+1.29	-2.3	20.7	78.2
May 3	07 45.84	+26 25.5	3.076	2.915	+1.35	-2.9	20.9	71.4
May 13	07 59.30	+25 56.6	3.249	2.963	+1.39	-3.5	21.1	64.8
May 23	08 13.15	+25 22.1	3.415	3.011	+1.41	-4.0	21.3	58.4
June 2	08 27.26	+24 42.2	3.575	3.059	+1.42	-4.5	21.5	52.1
June 12	08 41.51	+23 57.5	3.726	3.107	+1.43	-4.9	21.7	46.0
June 22	08 55.78	+23 08.5	3.866	3.154	+1.42	-5.3	21.9	39.9
July 2	09 10.00	+22 15.6	3.995	3.201	+1.41	-5.6	22.0	33.9
July 12	09 24.12	+21 19.5	4.112	3.248	+1.39	-5.9	22.2	27.9
July 22	09 38.07	+20 20.8	4.215	3.295	+1.37	-6.1	22.3	22.0
Aug. 1	09 51.82	+19 20.0	4.304	3.341	+1.35	-6.2	22.4	16.2
Aug. 11	10 05.32	+18 18.0	4.377	3.386	+1.32	-6.3	22.6	10.7
Aug. 21	10 18.53	+17 15.3	4.434	3.432	+1.29	-6.3	22.7	6.8
Aug. 31	10 31.44	+16 12.7	4.475	3.476	+1.26	-6.2	22.8	7.5
Sept.10	10 44.00	+15 11.0	4.499	3.521	+1.22	-6.0	22.9	12.2
Sept.20	10 56.16	+14 11.0	4.505	3.565	+1.17	-5.8	22.9	18.2
Sept.30	11 07.90	+13 13.3	4.494	3.608	+1.13	-5.4	23.0	24.7
Oct. 10	11 19.16	+12 19.1	4.466	3.651	+1.07	-5.0	.	31.4
Oct. 20	11 29.87	+11 29.1	4.422	3.694	+1.01	-4.5	.	38.4
Oct. 30	11 39.97	+10 44.2	4.361	3.736	+0.94	-3.9	.	45.7
Nov. 9	11 49.35	+10 05.6	4.286	3.777	+0.86	-3.1	.	53.2
Nov. 19	11 57.94	+09 34.1	4.198	3.818	+0.77	-2.3	.	61.0
Nov. 29	12 05.60	+09 10.9	4.098	3.859	+0.66	-1.4	.	69.1
Dec. 9	12 12.20	+08 56.9	3.990	3.899	+0.54	-0.4	.	77.6
Dec. 19	12 17.60	+08 53.0	3.876	3.938	+0.40	+0.7	.	86.4
Dec. 29	12 21.65	+09 00.0	3.760	3.977	+0.25	+1.8	.	95.5
Jan. 8	12 24.20	+09 18.2	3.646	4.015	+0.09	+2.9	.	105.1
Jan. 18	12 25.13	+09 47.4	3.539	4.053	-0.08	+4.0	.	115.0
Jan. 28	12 24.37	+10 27.0	3.443	4.091	-0.24	+4.8	.	125.2
Feb. 7	12 21.93	+11 15.1	3.363	4.127	-0.40	+5.4	.	135.7
Feb. 17	12 17.91	+12 09.2	3.305	4.164	-0.54	+5.6	.	146.3
Feb. 27	12 12.56	+13 05.7	3.273	4.199	-0.63	+5.5	.	156.4
Mar. 9	12 06.27	+14 00.4	3.270	4.234	-0.68	+4.9	.	164.4
Mar. 19	11 59.50	+14 49.3	3.297	4.269	-0.67	+4.0	.	165.9
Mar. 29	11 52.79	+15 29.0	3.354	4.303	-0.61	+2.8	.	159.4

Comet P/2012 B1 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 July 23.25115 TT
Peri. = 162.19547 e = 0.4114396
Node = 36.19449 2000.0 a = 6.4992585 AU
Incl. = 7.62514 n = 0.05948512
q = 3.8252062 AU P = 16.57 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	15 26.44	-19 38.4	4.521	3.934	+1.06	-4.9	17.2	48.1
Jan. 13	15 37.05	-20 27.5	4.417	3.947	+0.99	-4.5	17.2	55.7
Jan. 23	15 46.93	-21 12.4	4.302	3.961	+0.90	-4.1	17.1	63.5
Feb. 2	15 55.93	-21 53.2	4.178	3.976	+0.79	-3.7	17.1	71.4
Feb. 12	16 03.87	-22 30.1	4.049	3.991	+0.67	-3.3	17.1	79.6
Feb. 22	16 10.58	-23 03.4	3.916	4.007	+0.53	-3.0	17.0	88.1
Mar. 4	16 15.89	-23 33.2	3.783	4.024	+0.37	-2.6	17.0	96.9
Mar. 14	16 19.63	-23 59.7	3.654	4.041	+0.21	-2.3	16.9	105.9
Mar. 24	16 21.69	-24 22.8	3.531	4.059	+0.03	-2.0	16.9	115.3
Apr. 3	16 21.98	-24 42.5	3.420	4.078	-0.15	-1.6	16.8	125.1
Apr. 13	16 20.52	-24 58.3	3.324	4.097	-0.31	-1.2	16.8	135.1
Apr. 23	16 17.43	-25 09.9	3.248	4.116	-0.45	-0.7	16.8	145.5
May 3	16 12.95	-25 16.9	3.195	4.136	-0.55	-0.2	16.8	156.1
May 13	16 07.48	-25 19.3	3.168	4.157	-0.60	+0.2	16.8	166.6
May 23	16 01.50	-25 17.4	3.169	4.178	-0.60	+0.5	16.8	175.1
June 2	15 55.54	-25 11.9	3.198	4.200	-0.54	+0.7	16.9	169.7
June 12	15 50.15	-25 04.5	3.256	4.222	-0.44	+0.8	16.9	159.5
June 22	15 45.74	-24 56.6	3.340	4.245	-0.31	+0.7	17.0	149.1
July 2	15 42.64	-24 50.0	3.448	4.268	-0.16	+0.4	17.1	139.0
July 12	15 41.05	-24 45.8	3.577	4.291	0.00	+0.1	17.3	129.1
July 22	15 41.03	-24 45.1	3.721	4.315	+0.16	-0.3	17.4	119.6
Aug. 1	15 42.59	-24 48.4	3.879	4.340	+0.31	-0.7	17.5	110.5
Aug. 11	15 45.66	-24 55.6	4.045	4.364	+0.45	-1.1	17.6	101.7
Aug. 21	15 50.11	-25 06.4	4.217	4.389	+0.57	-1.4	17.8	93.1
Aug. 31	15 55.84	-25 20.5	4.390	4.415	+0.69	-1.7	17.9	84.8
Sept.10	16 02.71	-25 37.0	4.562	4.440	+0.79	-1.8	18.0	76.7
Sept.20	16 10.58	-25 55.4	4.730	4.467	+0.88	-2.0	18.1	68.8
Sept.30	16 19.35	-26 15.0	4.891	4.493	+0.95	-2.0	18.2	61.1
Oct. 10	16 28.88	-26 34.9	5.043	4.520	+1.02	-2.0	18.3	53.4
Oct. 20	16 39.07	-26 54.6	5.184	4.547	+1.07	-1.9	18.4	45.8
Oct. 30	16 49.80	-27 13.4	5.311	4.574	+1.12	-1.7	18.5	38.4
Nov. 9	17 00.96	-27 30.9	5.423	4.601	+1.15	-1.6	18.6	30.9
Nov. 19	17 12.45	-27 46.6	5.518	4.629	+1.17	-1.4	18.7	23.6
Nov. 29	17 24.18	-28 00.2	5.596	4.657	+1.19	-1.1	18.8	16.3
Dec. 9	17 36.04	-28 11.6	5.654	4.685	+1.19	-0.9	18.8	9.4
Dec. 19	17 47.91	-28 20.6	5.693	4.714	+1.18	-0.7	18.9	5.0
Dec. 29	17 59.71	-28 27.3	5.712	4.742	+1.16	-0.4	18.9	8.6
Jan. 8	18 11.32	-28 31.7	5.711	4.771	+1.13	-0.3	19.0	15.5
Jan. 18	18 22.63	-28 34.3	5.691	4.800	+1.09	-0.1	19.0	22.9
Jan. 28	18 33.55	-28 35.3	5.651	4.829	+1.04	0.0	19.0	30.6
Feb. 7	18 43.96	-28 35.1	5.593	4.858	+0.98	+0.1	19.0	38.3
Feb. 17	18 53.75	-28 34.5	5.519	4.888	+0.91	+0.1	19.0	46.2
Feb. 27	19 02.81	-28 33.9	5.430	4.917	+0.82	0.0	19.0	54.2
Mar. 9	19 11.03	-28 34.0	5.328	4.947	+0.73	-0.1	19.0	62.4
Mar. 19	19 18.30	-28 35.5	5.215	4.977	+0.62	-0.4	19.0	70.8
Mar. 29	19 24.49	-28 39.0	5.095	5.006	+0.50	-0.6	19.0	79.3

Comet 84P/Giclas

Epoch = 2014 July 2.0 TT
T = 2013 July 23.30567 TT
Peri. = 276.44959 e = 0.4951622
Node = 112.38078 2000.0 a = 3.6410572 AU
Incl. = 7.28701 n = 0.14186094
q = 1.8381433 AU P = 6.95 years

m1 = 12.4 + 5 log(Delta) + 12.5 log(r(t-100))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	06 07.86	+19 55.2	1.335	2.308	-0.73	+4.6	16.6	169.0
Jan. 13	06 00.54	+20 40.8	1.417	2.356	-0.47	+4.2	16.8	157.4
Jan. 23	05 55.81	+21 22.9	1.523	2.405	-0.18	+3.8	17.0	146.3
Feb. 2	05 54.05	+22 00.7	1.650	2.454	+0.12	+3.3	17.3	135.7
Feb. 12	05 55.29	+22 34.2	1.794	2.504	+0.40	+2.9	17.6	125.9
Feb. 22	05 59.29	+23 03.1	1.952	2.555	+0.64	+2.4	17.9	116.8
Mar. 4	06 05.67	+23 27.1	2.121	2.606	+0.84	+1.9	18.1	108.2
Mar. 14	06 14.08	+23 45.8	2.296	2.657	+1.00	+1.3	18.4	100.1
Mar. 24	06 24.13	+23 58.9	2.476	2.708	+1.14	+0.7	18.7	92.4
Apr. 3	06 35.49	+24 06.0	2.659	2.760	+1.24	+0.1	19.0	85.1
Apr. 13	06 47.88	+24 07.0	2.841	2.811	+1.32	-0.5	19.2	78.1
Apr. 23	07 01.05	+24 01.6	3.021	2.862	+1.37	-1.2	19.5	71.4
May 3	07 14.80	+23 49.9	3.197	2.914	+1.41	-1.8	19.7	64.8
May 13	07 28.95	+23 31.9	3.367	2.964	+1.44	-2.4	19.9	58.4
May 23	07 43.34	+23 07.9	3.530	3.015	+1.45	-3.0	20.1	52.1
June 2	07 57.87	+22 38.2	3.684	3.066	+1.46	-3.5	20.3	45.8
June 12	08 12.43	+22 03.2	3.829	3.116	+1.45	-4.0	20.5	39.7
June 22	08 26.93	+21 23.3	3.961	3.165	+1.44	-4.4	20.7	33.6
July 2	08 41.31	+20 39.0	4.082	3.215	+1.42	-4.8	20.9	27.5
July 12	08 55.50	+19 51.0	4.188	3.264	+1.40	-5.1	21.0	21.5
July 22	09 09.46	+18 59.7	4.281	3.312	+1.37	-5.4	21.2	15.4
Aug. 1	09 23.14	+18 05.8	4.357	3.360	+1.34	-5.6	21.3	9.4
Aug. 11	09 36.50	+17 10.0	4.418	3.408	+1.30	-5.7	21.4	3.9
Aug. 21	09 49.51	+16 13.1	4.462	3.455	+1.26	-5.7	21.5	4.6
Aug. 31	10 02.13	+15 15.6	4.489	3.501	+1.22	-5.7	21.7	10.5
Sept.10	10 14.31	+14 18.4	4.498	3.547	+1.17	-5.6	21.7	17.0
Sept.20	10 26.02	+13 22.3	4.490	3.593	+1.12	-5.4	21.8	23.6
Sept.30	10 37.19	+12 28.1	4.465	3.638	+1.06	-5.1	21.9	30.5
Oct. 10	10 47.78	+11 36.8	4.422	3.682	+0.99	-4.8	22.0	37.6
Oct. 20	10 57.70	+10 49.3	4.364	3.726	+0.92	-4.3	22.0	45.0
Oct. 30	11 06.87	+10 06.5	4.290	3.769	+0.83	-3.7	22.1	52.5
Nov. 9	11 15.19	+09 29.6	4.203	3.812	+0.74	-3.0	22.1	60.4
Nov. 19	11 22.56	+08 59.5	4.104	3.854	+0.63	-2.2	22.1	68.6
Nov. 29	11 28.83	+08 37.5	3.996	3.896	+0.50	-1.3	22.1	77.1
Dec. 9	11 33.87	+08 24.5	3.882	3.937	+0.37	-0.3	22.1	86.0
Dec. 19	11 37.53	+08 21.5	3.765	3.977	+0.21	+0.8	22.2	95.2
Dec. 29	11 39.68	+08 29.2	3.650	4.017	+0.05	+1.9	22.2	104.9
Jan. 8	11 40.19	+08 47.9	3.541	4.056	-0.12	+2.9	22.2	115.0
Jan. 18	11 39.03	+09 17.3	3.444	4.095	-0.28	+3.9	22.2	125.6
Jan. 28	11 36.19	+09 56.3	3.363	4.133	-0.44	+4.6	22.2	136.5
Feb. 7	11 31.82	+10 42.8	3.304	4.171	-0.56	+5.1	22.2	147.7
Feb. 17	11 26.19	+11 33.9	3.271	4.208	-0.65	+5.2	22.2	158.9
Feb. 27	11 19.68	+12 25.8	3.268	4.244	-0.69	+4.9	22.3	169.1
Mar. 9	11 12.81	+13 14.8	3.296	4.280	-0.67	+4.3	22.4	171.5
Mar. 19	11 06.09	+13 57.4	3.355	4.315	-0.61	+3.4	22.5	162.6
Mar. 29	11 00.03	+14 31.1	3.444	4.350	-0.50	+2.3	22.6	151.9

Comet C/2013 G6 (Lemmon)

Epoch = 2014 July 2.0 TT
T = 2013 July 25.22699 TT
Peri. = 215.70886
Node = 44.57662 2000.0
Incl. = 124.08040
q = 2.0487908 AU
e = 0.9944876

m1 = 9.0 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	07 43.14	-53 54.8	2.397	2.781	-4.50	+11.2	16.5	102.5
Jan. 13	06 58.14	-52 03.0	2.426	2.856	-3.79	+19.9	16.6	105.9
Jan. 23	06 20.25	-48 43.6	2.495	2.933	-2.87	+25.3	16.8	106.7
Feb. 2	05 51.56	-44 30.7	2.604	3.012	-2.01	+27.2	17.1	104.9
Feb. 12	05 31.43	-39 58.3	2.748	3.091	-1.33	+26.8	17.3	101.0
Feb. 22	05 18.15	-35 30.8	2.920	3.172	-0.81	+24.9	17.6	95.5
Mar. 4	05 10.02	-31 21.9	3.113	3.253	-0.43	+22.4	17.9	89.1
Mar. 14	05 05.72	-27 38.1	3.320	3.335	-0.15	+19.7	18.1	82.3
Mar. 24	05 04.21	-24 21.2	3.532	3.418	+0.06	+17.1	18.4	75.3
Apr. 3	05 04.77	-21 30.2	3.745	3.501	+0.21	+14.7	18.7	68.3
Apr. 13	05 06.84	-19 03.5	3.953	3.585	+0.32	+12.5	18.9	61.5
Apr. 23	05 10.00	-16 58.8	4.151	3.669	+0.39	+10.5	19.1	55.0
May 3	05 13.95	-15 13.9	4.336	3.753	+0.45	+8.7	19.4	49.0
May 13	05 18.43	-13 47.0	4.505	3.837	+0.48	+7.1	19.6	43.6
May 23	05 23.23	-12 36.1	4.654	3.922	+0.50	+5.6	19.8	39.2
June 2	05 28.20	-11 39.8	4.783	4.006	+0.50	+4.3	19.9	35.9
June 12	05 33.16	-10 56.9	4.891	4.091	+0.48	+3.1	20.1	34.2
June 22	05 37.98	-10 26.3	4.975	4.176	+0.46	+1.9	20.2	34.4
July 2	05 42.54	-10 07.0	5.036	4.260	+0.41	+0.9	20.4	36.3
July 12	05 46.68	-09 58.3	5.075	4.345	+0.36	-0.1	20.5	39.9
July 22	05 50.28	-09 59.2	5.092	4.429	+0.29	-1.0	20.6	44.8
Aug. 1	05 53.21	-10 09.2	5.088	4.513	+0.21	-1.8	20.7	50.7
Aug. 11	05 55.31	-10 27.5	5.065	4.598	+0.11	-2.6	20.8	57.3
Aug. 21	05 56.46	-10 53.1	5.025	4.682	0.00	-3.2	20.9	64.6
Aug. 31	05 56.48	-11 25.1	4.973	4.765	-0.13	-3.7	21.0	72.4
Sept. 10	05 55.23	-12 02.1	4.910	4.849	-0.27	-4.1	21.0	80.6
Sept. 20	05 52.57	-12 42.7	4.843	4.933	-0.42	-4.2	21.1	89.2
Sept. 30	05 48.39	-13 24.8	4.776	5.016	-0.58	-4.1	21.1	98.1
Oct. 10	05 42.63	-14 06.0	4.715	5.099	-0.73	-3.7	21.2	107.1
Oct. 20	05 35.30	-14 43.3	4.666	5.182	-0.88	-3.0	21.3	116.1
Oct. 30	05 26.52	-15 13.8	4.635	5.264	-1.00	-2.0	21.3	124.7
Nov. 9	05 16.54	-15 34.1	4.627	5.347	-1.08	-0.8	21.4	132.5
Nov. 19	05 05.71	-15 41.9	4.648	5.429	-1.12	+0.7	21.5	138.6
Nov. 29	04 54.50	-15 35.2	4.700	5.511	-1.11	+2.1	21.6	142.0
Dec. 9	04 43.42	-15 13.7	4.785	5.592	-1.05	+3.5	21.7	141.7
Dec. 19	04 32.96	-14 38.3	4.904	5.674	-0.94	+4.8	21.9	138.0
Dec. 29	04 23.52	-13 50.6	5.054	5.755	-0.81	+5.7	22.0	131.6
Jan. 8	04 15.40	-12 53.4	5.231	5.835	-0.66	+6.4	22.2	123.8
Jan. 18	04 08.76	-11 49.6	5.432	5.916	-0.51	+6.8	22.3	115.0
Jan. 28	04 03.64	-10 41.7	5.650	5.996	-0.36	+7.0	22.5	106.0
Feb. 7	04 00.02	-09 32.1	5.880	6.076	-0.22	+6.9	22.6	96.8
Feb. 17	03 57.77	-08 22.8	6.116	6.156	-0.10	+6.8	22.8	87.7
Feb. 27	03 56.78	-07 15.3	6.352	6.235	+0.01	+6.5	23.0	78.8
Mar. 9	03 56.88	-06 10.5	6.585	6.315	+0.10	+6.1	.	70.0
Mar. 19	03 57.92	-05 09.4	6.809	6.394	+0.18	+5.7	.	61.5
Mar. 29	03 59.75	-04 12.5	7.020	6.472	+0.25	+5.2	.	53.3

Comet P/2013 R3 (Catalina-PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 Aug. 5.34618 TT
Peri. = 8.31297 e = 0.2734925
Node = 342.67628 2000.0 a = 3.0339030 AU
Incl. = 0.89886 n = 0.18650975
q = 2.2041533 AU P = 5.28 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	00 54.65	+06 45.9	2.116	2.377	+1.18	+7.2	18.9	92.9
Jan. 13	01 06.45	+07 57.5	2.260	2.399	+1.30	+7.7	19.1	85.8
Jan. 23	01 19.42	+09 14.6	2.406	2.421	+1.39	+8.1	19.3	79.1
Feb. 2	01 33.36	+10 35.3	2.550	2.444	+1.48	+8.3	19.5	72.6
Feb. 12	01 48.13	+11 57.9	2.692	2.468	+1.55	+8.3	19.6	66.4
Feb. 22	02 03.59	+13 20.8	2.830	2.493	+1.61	+8.2	19.8	60.3
Mar. 4	02 19.64	+14 42.6	2.963	2.518	+1.66	+7.9	20.0	54.4
Mar. 14	02 36.20	+16 01.9	3.090	2.544	+1.70	+7.6	20.1	48.6
Mar. 24	02 53.18	+17 17.7	3.209	2.570	+1.73	+7.1	20.3	42.9
Apr. 3	03 10.51	+18 28.9	3.320	2.597	+1.76	+6.6	20.4	37.3
Apr. 13	03 28.14	+19 34.6	3.422	2.624	+1.78	+6.0	20.6	31.8
Apr. 23	03 45.99	+20 34.1	3.514	2.651	+1.80	+5.3	20.7	26.3
May 3	04 04.00	+21 26.9	3.596	2.678	+1.81	+4.6	20.8	20.9
May 13	04 22.11	+22 12.4	3.666	2.706	+1.81	+3.8	20.9	15.5
May 23	04 40.24	+22 50.3	3.725	2.734	+1.81	+3.0	21.0	10.1
June 2	04 58.33	+23 20.5	3.772	2.762	+1.80	+2.2	21.1	4.7
June 12	05 16.29	+23 42.9	3.805	2.790	+1.78	+1.5	21.2	1.0
June 22	05 34.06	+23 57.5	3.826	2.818	+1.75	+0.7	21.3	6.3
July 2	05 51.55	+24 04.8	3.834	2.846	+1.71	0.0	21.3	11.8
July 12	06 08.67	+24 04.9	3.828	2.874	+1.67	−0.7	21.4	17.4
July 22	06 25.36	+23 58.3	3.809	2.902	+1.62	−1.3	21.4	23.2
Aug. 1	06 41.53	+23 45.8	3.776	2.930	+1.55	−1.8	21.5	29.0
Aug. 11	06 57.08	+23 28.1	3.730	2.958	+1.48	−2.2	21.5	35.0
Aug. 21	07 11.92	+23 05.9	3.671	2.985	+1.40	−2.6	21.5	41.2
Aug. 31	07 25.96	+22 40.2	3.600	3.012	+1.31	−2.8	21.6	47.6
Sept. 10	07 39.09	+22 12.2	3.517	3.040	+1.21	−2.9	21.6	54.2
Sept. 20	07 51.19	+21 43.0	3.423	3.066	+1.09	−2.9	21.6	61.1
Sept. 30	08 02.12	+21 13.9	3.320	3.093	+0.96	−2.8	21.6	68.3
Oct. 10	08 11.73	+20 46.4	3.209	3.119	+0.81	−2.5	21.5	75.9
Oct. 20	08 19.85	+20 21.7	3.093	3.145	+0.64	−2.0	21.5	83.8
Oct. 30	08 26.28	+20 01.5	2.973	3.171	+0.45	−1.4	21.5	92.2
Nov. 9	08 30.82	+19 47.2	2.853	3.196	+0.25	−0.7	21.4	101.2
Nov. 19	08 33.28	+19 39.9	2.737	3.221	+0.02	+0.1	21.4	110.6
Nov. 29	08 33.46	+19 40.7	2.629	3.246	−0.22	+0.9	21.4	120.7
Dec. 9	08 31.30	+19 49.6	2.534	3.270	−0.45	+1.6	21.3	131.4
Dec. 19	08 26.85	+20 06.1	2.457	3.294	−0.65	+2.2	21.3	142.6
Dec. 29	08 20.33	+20 28.5	2.403	3.317	−0.81	+2.6	21.3	154.4
Jan. 8	08 12.25	+20 54.0	2.376	3.340	−0.89	+2.6	21.3	166.5
Jan. 18	08 03.34	+21 19.7	2.379	3.363	−0.89	+2.3	21.4	178.5
Jan. 28	07 54.44	+21 42.9	2.413	3.385	−0.80	+1.9	21.5	168.9
Feb. 7	07 46.41	+22 01.4	2.478	3.407	−0.65	+1.3	21.6	156.9
Feb. 17	07 39.93	+22 14.4	2.570	3.428	−0.45	+0.7	21.7	145.2
Feb. 27	07 35.47	+22 21.6	2.685	3.449	−0.22	+0.2	21.8	134.1
Mar. 9	07 33.22	+22 23.5	2.820	3.469	0.00	−0.3	22.0	123.6
Mar. 19	07 33.19	+22 20.5	2.969	3.489	+0.21	−0.8	22.1	113.6
Mar. 29	07 35.26	+22 13.0	3.128	3.508	+0.39	−1.2	22.3	104.2

Comet C/2012 V2 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2013 Aug. 16.49091 TT
Peri. = 217.31625
Node = 262.16716 2000.0
Incl. = 67.18179
q = 1.4551355 AU
e = 0.9977123

m1 = 6.0 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	15 17.03	-65 36.8	2.806	2.379	+3.01	-5.5	12.9	54.8
Jan. 13	15 47.13	-66 32.3	2.861	2.478	+2.65	-4.5	13.2	57.6
Jan. 23	16 13.65	-67 17.4	2.903	2.577	+2.25	-4.0	13.5	61.2
Feb. 2	16 36.14	-67 57.2	2.931	2.677	+1.80	-3.8	13.7	65.5
Feb. 12	16 54.13	-68 35.2	2.946	2.778	+1.31	-3.9	13.9	70.5
Feb. 22	17 07.21	-69 14.0	2.950	2.878	+0.76	-4.1	14.1	76.1
Mar. 4	17 14.82	-69 54.6	2.945	2.979	+0.14	-4.1	14.3	82.3
Mar. 14	17 16.22	-70 35.7	2.933	3.079	-0.55	-3.8	14.4	89.0
Mar. 24	17 10.74	-71 13.7	2.918	3.180	-1.29	-2.8	14.6	96.0
Apr. 3	16 57.88	-71 42.1	2.903	3.280	-1.99	-0.9	14.8	103.2
Apr. 13	16 38.01	-71 51.3	2.895	3.380	-2.50	+2.0	14.9	110.5
Apr. 23	16 13.03	-71 31.0	2.898	3.479	-2.68	+5.7	15.1	117.6
May 3	15 46.20	-70 33.6	2.916	3.578	-2.49	+9.6	15.2	124.0
May 13	15 21.27	-68 57.5	2.953	3.677	-2.04	+12.9	15.4	129.3
May 23	15 00.84	-66 48.5	3.014	3.775	-1.50	+15.2	15.6	132.8
June 2	14 45.84	-64 16.6	3.100	3.873	-0.98	+16.4	15.8	133.9
June 12	14 36.08	-61 32.9	3.213	3.970	-0.53	+16.5	16.0	132.5
June 22	14 30.75	-58 47.8	3.351	4.067	-0.18	+15.9	16.2	128.9
July 2	14 28.98	-56 08.9	3.513	4.163	+0.10	+14.7	16.5	123.7
July 12	14 30.01	-53 41.6	3.696	4.259	+0.32	+13.3	16.7	117.3
July 22	14 33.20	-51 28.9	3.897	4.354	+0.49	+11.7	16.9	110.2
Aug. 1	14 38.08	-49 32.0	4.112	4.449	+0.62	+10.1	17.2	102.8
Aug. 11	14 44.26	-47 51.0	4.337	4.543	+0.72	+8.6	17.4	95.2
Aug. 21	14 51.47	-46 25.0	4.568	4.636	+0.80	+7.2	17.6	87.5
Aug. 31	14 59.48	-45 12.6	4.802	4.729	+0.86	+6.0	17.8	79.9
Sept. 10	15 08.11	-44 12.6	5.034	4.822	+0.91	+4.9	18.0	72.2
Sept. 20	15 17.22	-43 23.3	5.261	4.914	+0.95	+4.0	18.2	64.6
Sept. 30	15 26.70	-42 43.2	5.479	5.006	+0.97	+3.2	18.4	57.1
Oct. 10	15 36.43	-42 11.0	5.687	5.097	+0.99	+2.6	18.6	49.6
Oct. 20	15 46.32	-41 45.5	5.880	5.187	+1.00	+2.0	18.8	42.4
Oct. 30	15 56.29	-41 25.5	6.056	5.277	+0.99	+1.5	18.9	35.4
Nov. 9	16 06.23	-41 10.1	6.214	5.367	+0.98	+1.2	19.1	28.8
Nov. 19	16 16.06	-40 58.6	6.350	5.456	+0.96	+0.8	19.2	23.3
Nov. 29	16 25.69	-40 50.2	6.465	5.545	+0.93	+0.6	19.4	19.5
Dec. 9	16 35.02	-40 44.5	6.556	5.633	+0.89	+0.3	19.5	18.8
Dec. 19	16 43.96	-40 41.0	6.624	5.721	+0.84	+0.2	19.6	21.6
Dec. 29	16 52.41	-40 39.5	6.668	5.808	+0.78	0.0	19.7	26.9
Jan. 8	17 00.24	-40 39.7	6.689	5.895	+0.71	-0.2	19.8	33.6
Jan. 18	17 07.36	-40 41.4	6.687	5.982	+0.63	-0.3	19.8	41.2
Jan. 28	17 13.64	-40 44.5	6.665	6.068	+0.53	-0.4	19.9	49.2
Feb. 7	17 18.96	-40 48.9	6.625	6.153	+0.42	-0.5	20.0	57.6
Feb. 17	17 23.20	-40 54.2	6.570	6.239	+0.30	-0.6	20.0	66.3
Feb. 27	17 26.25	-41 00.3	6.502	6.324	+0.18	-0.6	20.1	75.3
Mar. 9	17 28.00	-41 06.7	6.427	6.408	+0.04	-0.6	20.1	84.5
Mar. 19	17 28.39	-41 12.8	6.348	6.492	-0.10	-0.5	20.2	93.9
Mar. 29	17 27.34	-41 17.6	6.270	6.576	-0.25	-0.3	20.2	103.5

Comet C/2013 N4 (Borisov)

Epoch = 2014 July 2.0 TT
T = 2013 Aug. 21.50286 TT
Peri. = 142.28976
Node = 322.60717 2000.0
Incl. = 37.03489
q = 1.2106409 AU
e = 0.9747138

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	13 18.54	-36 20.1	2.376	2.272	+0.65	-20.9	15.0	71.9
Jan. 13	13 25.03	-39 49.4	2.370	2.380	+0.37	-19.7	15.2	78.6
Jan. 23	13 28.73	-43 06.1	2.362	2.489	+0.04	-18.2	15.4	85.6
Feb. 2	13 29.18	-46 07.7	2.355	2.597	-0.33	-16.2	15.6	92.8
Feb. 12	13 25.93	-48 50.2	2.351	2.705	-0.72	-13.8	15.8	100.1
Feb. 22	13 18.74	-51 08.0	2.353	2.812	-1.10	-10.7	15.9	107.4
Mar. 4	13 07.73	-52 54.6	2.366	2.919	-1.41	-6.9	16.1	114.4
Mar. 14	12 53.62	-54 03.8	2.392	3.025	-1.58	-2.8	16.3	120.9
Mar. 24	12 37.81	-54 32.1	2.434	3.131	-1.58	+1.2	16.5	126.4
Apr. 3	12 22.01	-54 20.1	2.496	3.236	-1.41	+4.7	16.7	130.5
Apr. 13	12 07.93	-53 33.1	2.577	3.340	-1.12	+7.3	16.9	132.7
Apr. 23	11 56.71	-52 20.4	2.680	3.443	-0.79	+8.8	17.1	132.8
May 3	11 48.85	-50 52.2	2.803	3.546	-0.45	+9.4	17.3	130.9
May 13	11 44.38	-49 18.1	2.945	3.647	-0.14	+9.2	17.6	127.3
May 23	11 42.96	-47 45.9	3.106	3.748	+0.12	+8.5	17.8	122.5
June 2	11 44.15	-46 20.8	3.282	3.849	+0.34	+7.4	18.0	116.9
June 12	11 47.52	-45 06.6	3.471	3.948	+0.51	+6.2	18.3	110.9
June 22	11 52.64	-44 04.8	3.670	4.047	+0.65	+4.9	18.5	104.6
July 2	11 59.17	-43 16.2	3.877	4.145	+0.77	+3.6	18.7	98.1
July 12	12 06.85	-42 40.5	4.089	4.242	+0.86	+2.3	18.9	91.7
July 22	12 15.43	-42 17.2	4.303	4.339	+0.93	+1.2	19.1	85.2
Aug. 1	12 24.73	-42 05.3	4.518	4.435	+0.99	+0.1	19.3	78.9
Aug. 11	12 34.61	-42 03.9	4.729	4.530	+1.03	-0.8	19.5	72.6
Aug. 21	12 44.95	-42 11.8	4.936	4.625	+1.07	-1.6	19.7	66.4
Aug. 31	12 55.65	-42 28.1	5.135	4.718	+1.10	-2.4	19.9	60.4
Sept. 10	13 06.62	-42 51.7	5.325	4.812	+1.12	-3.0	20.1	54.5
Sept. 20	13 17.79	-43 21.8	5.505	4.904	+1.13	-3.6	20.2	49.0
Sept. 30	13 29.10	-43 57.4	5.671	4.996	+1.14	-4.1	20.4	43.8
Oct. 10	13 40.47	-44 38.0	5.822	5.087	+1.14	-4.5	20.5	39.2
Oct. 20	13 51.84	-45 22.8	5.958	5.178	+1.13	-4.8	20.6	35.4
Oct. 30	14 03.13	-46 11.2	6.077	5.268	+1.11	-5.2	20.7	32.7
Nov. 9	14 14.27	-47 02.7	6.177	5.358	+1.09	-5.4	20.8	31.5
Nov. 19	14 25.18	-47 56.9	6.259	5.447	+1.06	-5.7	20.9	32.0
Nov. 29	14 35.74	-48 53.5	6.322	5.535	+1.01	-5.9	21.0	34.3
Dec. 9	14 45.85	-49 52.1	6.367	5.623	+0.95	-6.0	21.1	37.9
Dec. 19	14 55.38	-50 52.3	6.393	5.710	+0.88	-6.2	21.2	42.8
Dec. 29	15 04.18	-51 54.0	6.402	5.797	+0.79	-6.3	21.3	48.4
Jan. 8	15 12.10	-52 56.8	6.396	5.883	+0.69	-6.4	21.3	54.8
Jan. 18	15 18.95	-54 00.3	6.375	5.969	+0.56	-6.4	21.4	61.5
Jan. 28	15 24.54	-55 04.1	6.343	6.054	+0.41	-6.3	21.4	68.6
Feb. 7	15 28.66	-56 07.3	6.302	6.139	+0.24	-6.2	21.5	76.0
Feb. 17	15 31.10	-57 09.0	6.256	6.223	+0.06	-5.9	21.5	83.6
Feb. 27	15 31.68	-58 08.0	6.207	6.307	-0.14	-5.4	21.6	91.3
Mar. 9	15 30.24	-59 02.5	6.160	6.390	-0.35	-4.8	21.6	98.9
Mar. 19	15 26.73	-59 50.5	6.119	6.473	-0.56	-3.9	21.6	106.5
Mar. 29	15 21.18	-60 29.8	6.087	6.556	-0.74	-2.8	21.7	113.9

Comet P/2013 J2 (McNaught)

Epoch = 2014 July 2.0 TT
T = 2013 Aug. 22.98730 TT
Peri. = 37.89279 e = 0.6559326
Node = 289.39314 2000.0 a = 6.2429082 AU
Incl. = 15.49569 n = 0.06318641
q = 2.1479812 AU P = 15.60 years

m1 = 8.0 + 5 log(Delta) + 20.0 log(r(t-40))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	23 10.42	+10 36.5	2.616	2.480	+1.70	+7.5	17.4	71.2
Jan. 13	23 27.41	+11 51.9	2.768	2.526	+1.72	+8.0	17.7	65.6
Jan. 23	23 44.59	+13 11.4	2.919	2.573	+1.73	+8.2	17.9	60.1
Feb. 2	00 01.90	+14 33.9	3.068	2.623	+1.74	+8.4	18.2	54.6
Feb. 12	00 19.26	+15 58.2	3.214	2.674	+1.74	+8.5	18.4	49.1
Feb. 22	00 36.64	+17 23.1	3.354	2.726	+1.74	+8.5	18.7	43.7
Mar. 4	00 54.00	+18 47.6	3.489	2.780	+1.73	+8.3	18.9	38.3
Mar. 14	01 11.31	+20 10.9	3.616	2.834	+1.72	+8.1	19.2	32.9
Mar. 24	01 28.53	+21 32.1	3.735	2.890	+1.71	+7.8	19.4	27.7
Apr. 3	01 45.65	+22 50.3	3.844	2.946	+1.70	+7.5	19.6	22.6
Apr. 13	02 02.62	+24 05.1	3.943	3.003	+1.68	+7.1	19.9	17.8
Apr. 23	02 19.40	+25 15.8	4.029	3.061	+1.66	+6.6	20.1	13.6
May 3	02 35.98	+26 22.1	4.103	3.119	+1.63	+6.2	20.3	10.9
May 13	02 52.29	+27 23.8	4.164	3.178	+1.60	+5.7	20.5	10.9
May 23	03 08.28	+28 20.5	4.211	3.237	+1.56	+5.2	20.7	13.8
June 2	03 23.89	+29 12.2	4.244	3.296	+1.52	+4.7	20.9	18.2
June 12	03 39.05	+29 59.0	4.262	3.356	+1.46	+4.2	21.0	23.5
June 22	03 53.67	+30 41.0	4.266	3.415	+1.40	+3.7	21.2	29.2
July 2	04 07.68	+31 18.4	4.255	3.475	+1.33	+3.3	21.3	35.3
July 12	04 20.94	+31 51.6	4.229	3.535	+1.24	+2.9	21.5	41.6
July 22	04 33.37	+32 20.9	4.190	3.595	+1.15	+2.6	21.6	48.3
Aug. 1	04 44.83	+32 46.8	4.138	3.654	+1.03	+2.3	21.8	55.1
Aug. 11	04 55.17	+33 09.7	4.075	3.714	+0.91	+2.1	21.9	62.3
Aug. 21	05 04.24	+33 30.3	4.001	3.774	+0.76	+1.9	22.0	69.8
Aug. 31	05 11.87	+33 48.8	3.919	3.833	+0.60	+1.7	22.1	77.7
Sept. 10	05 17.89	+34 05.5	3.832	3.893	+0.42	+1.5	22.2	86.0
Sept. 20	05 22.12	+34 20.7	3.742	3.952	+0.23	+1.3	22.3	94.6
Sept. 30	05 24.41	+34 33.9	3.653	4.011	+0.02	+1.1	22.3	103.7
Oct. 10	05 24.63	+34 44.7	3.570	4.070	-0.19	+0.7	22.4	113.3
Oct. 20	05 22.75	+34 52.0	3.497	4.128	-0.39	+0.2	22.5	123.3
Oct. 30	05 18.84	+34 54.4	3.439	4.187	-0.57	-0.4	22.6	133.7
Nov. 9	05 13.13	+34 50.2	3.401	4.245	-0.71	-1.2	22.7	144.3
Nov. 19	05 06.04	+34 38.2	3.387	4.303	-0.79	-2.0	22.8	154.9
Nov. 29	04 58.10	+34 17.8	3.402	4.360	-0.81	-2.8	23.0	164.4
Dec. 9	04 50.01	+33 49.3	3.448	4.418	-0.76	-3.5	.	168.6
Dec. 19	04 42.40	+33 14.4	3.525	4.475	-0.66	-3.9	.	162.9
Dec. 29	04 35.85	+32 35.5	3.632	4.531	-0.51	-4.0	.	153.1
Jan. 8	04 30.77	+31 55.3	3.767	4.588	-0.34	-3.9	.	142.6
Jan. 18	04 27.38	+31 16.3	3.927	4.644	-0.16	-3.6	.	132.0
Jan. 28	04 25.76	+30 40.6	4.107	4.699	+0.01	-3.1	.	121.7
Feb. 7	04 25.89	+30 09.2	4.301	4.755	+0.17	-2.6	.	111.7
Feb. 17	04 27.62	+29 42.8	4.507	4.810	+0.32	-2.2	.	102.0
Feb. 27	04 30.82	+29 21.3	4.717	4.865	+0.45	-1.7	.	92.6
Mar. 9	04 35.29	+29 04.2	4.929	4.919	+0.56	-1.3	.	83.6
Mar. 19	04 40.86	+28 51.0	5.139	4.973	+0.65	-1.0	.	74.9
Mar. 29	04 47.35	+28 40.9	5.342	5.027	+0.73	-0.8	.	66.4

Comet C/2012 S3 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 Aug. 31.08254 TT
Peri. = 183.73483
Node = 121.30674 2000.0
Incl. = 112.93323
q = 2.3078545 AU
e = 1.0005399

m1 = 11.8 + 5 log(Delta) + 7.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	18 54.98	-55 17.0	3.475	2.697	+1.40	-12.2	17.7	32.4
Jan. 13	19 09.01	-57 18.5	3.487	2.754	+1.53	-13.2	17.8	36.1
Jan. 23	19 24.30	-59 30.1	3.480	2.815	+1.68	-14.3	17.9	41.2
Feb. 2	19 41.08	-61 53.5	3.456	2.877	+1.86	-15.7	17.9	47.1
Feb. 12	19 59.71	-64 30.2	3.419	2.942	+2.12	-17.1	18.0	53.6
Feb. 22	20 20.93	-67 21.2	3.373	3.009	+2.52	-18.5	18.0	60.3
Mar. 4	20 46.09	-70 26.2	3.323	3.077	+3.17	-19.7	18.1	67.2
Mar. 14	21 17.79	-73 43.3	3.275	3.148	+4.38	-20.2	18.1	73.9
Mar. 24	22 01.59	-77 05.5	3.233	3.219	+6.82	-19.0	18.2	80.3
Apr. 3	23 09.84	-80 15.4	3.203	3.292	+11.43	-13.3	18.2	86.2
Apr. 13	01 04.17	-82 28.2	3.189	3.366	+15.10	+0.1	18.3	91.4
Apr. 23	03 35.18	-82 27.7	3.197	3.441	+11.58	+13.8	18.3	95.4
May 3	05 31.02	-80 09.7	3.228	3.516	+6.89	+20.1	18.4	98.2
May 13	06 39.87	-76 48.6	3.283	3.593	+4.36	+21.6	18.5	99.6
May 23	07 23.50	-73 12.7	3.363	3.670	+3.11	+20.9	18.7	99.6
June 2	07 54.59	-69 43.2	3.466	3.747	+2.43	+19.3	18.8	98.2
June 12	08 18.84	-66 30.7	3.588	3.826	+2.01	+17.1	18.9	95.7
June 22	08 38.97	-63 40.1	3.727	3.904	+1.74	+14.6	19.1	92.4
July 2	08 56.41	-61 13.9	3.878	3.983	+1.55	+12.1	19.2	88.5
July 12	09 11.93	-59 12.4	4.037	4.062	+1.41	+9.7	19.4	84.2
July 22	09 26.00	-57 34.9	4.199	4.142	+1.29	+7.5	19.5	79.8
Aug. 1	09 38.91	-56 20.2	4.362	4.221	+1.19	+5.4	19.7	75.4
Aug. 11	09 50.80	-55 26.7	4.521	4.301	+1.10	+3.4	19.8	71.1
Aug. 21	10 01.79	-54 52.3	4.674	4.381	+1.01	+1.7	20.0	67.2
Aug. 31	10 11.91	-54 35.6	4.817	4.461	+0.92	+0.1	20.1	63.6
Sept. 10	10 21.15	-54 34.7	4.949	4.541	+0.83	-1.3	20.2	60.6
Sept. 20	10 29.49	-54 47.9	5.068	4.621	+0.73	-2.6	20.3	58.4
Sept. 30	10 36.84	-55 13.8	5.173	4.701	+0.62	-3.7	20.4	56.9
Oct. 10	10 43.08	-55 50.8	5.261	4.781	+0.50	-4.7	20.5	56.4
Oct. 20	10 48.08	-56 37.3	5.334	4.861	+0.35	-5.4	20.6	56.8
Oct. 30	10 51.62	-57 31.8	5.392	4.941	+0.19	-6.1	20.7	58.2
Nov. 9	10 53.47	-58 32.3	5.434	5.021	-0.01	-6.4	20.7	60.5
Nov. 19	10 53.36	-59 36.7	5.462	5.101	-0.24	-6.6	20.8	63.7
Nov. 29	10 50.94	-60 42.5	5.477	5.181	-0.50	-6.4	20.9	67.5
Dec. 9	10 45.92	-61 46.3	5.482	5.260	-0.79	-5.8	20.9	71.9
Dec. 19	10 38.02	-62 44.5	5.480	5.340	-1.09	-4.8	21.0	76.7
Dec. 29	10 27.11	-63 32.3	5.472	5.419	-1.38	-3.3	21.0	81.7
Jan. 8	10 13.35	-64 04.8	5.464	5.498	-1.61	-1.2	21.0	86.9
Jan. 18	09 57.27	-64 17.2	5.457	5.577	-1.75	+1.2	21.1	91.9
Jan. 28	09 39.78	-64 05.4	5.456	5.656	-1.76	+3.8	21.1	96.7
Feb. 7	09 22.13	-63 27.3	5.464	5.735	-1.66	+6.4	21.2	101.0
Feb. 17	09 05.56	-62 23.2	5.485	5.813	-1.45	+8.8	21.2	104.6
Feb. 27	08 51.07	-60 55.6	5.520	5.891	-1.18	+10.7	21.3	107.3
Mar. 9	08 39.25	-59 09.0	5.573	5.970	-0.90	+12.0	21.3	109.0
Mar. 19	08 30.29	-57 08.8	5.643	6.048	-0.62	+12.8	21.4	109.4
Mar. 29	08 24.11	-55 00.5	5.732	6.125	-0.37	+13.1	21.5	108.7

Comet 266P/Christensen

Epoch = 2014 July 2.0 TT
T = 2013 Aug. 31.35590 TT
Peri. = 97.95717 e = 0.3405340
Node = 5.02538 2000.0 a = 3.5297697 AU
Incl. = 3.42887 n = 0.14862249
q = 2.3277631 AU P = 6.63 years

m1 = 11.0 + 5 log(Delta) + 15.0 log(r(t-40))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	10 57.28	+10 09.4	1.813	2.464	+0.09	-0.6	18.0	120.6
Jan. 13	10 58.19	+10 03.8	1.731	2.485	-0.19	+0.9	17.9	130.5
Jan. 23	10 56.34	+10 12.9	1.664	2.508	-0.44	+2.2	17.9	141.2
Feb. 2	10 51.89	+10 34.6	1.617	2.532	-0.65	+3.0	17.9	152.4
Feb. 12	10 45.37	+11 05.1	1.593	2.556	-0.77	+3.4	17.9	164.1
Feb. 22	10 37.62	+11 38.7	1.595	2.582	-0.80	+3.1	17.9	175.5
Mar. 4	10 29.67	+12 09.6	1.625	2.609	-0.71	+2.3	18.0	171.1
Mar. 14	10 22.59	+12 32.6	1.682	2.636	-0.54	+1.2	18.2	159.6
Mar. 24	10 17.23	+12 44.5	1.763	2.664	-0.32	-0.1	18.3	148.4
Apr. 3	10 14.07	+12 43.9	1.867	2.693	-0.07	-1.3	18.5	137.9
Apr. 13	10 13.33	+12 30.7	1.989	2.723	+0.16	-2.5	18.7	128.0
Apr. 23	10 14.93	+12 05.9	2.125	2.753	+0.37	-3.5	19.0	118.7
May 3	10 18.65	+11 30.5	2.273	2.784	+0.56	-4.5	19.2	110.0
May 13	10 24.23	+10 45.7	2.428	2.815	+0.71	-5.3	19.4	101.9
May 23	10 31.36	+09 52.9	2.587	2.847	+0.84	-6.0	19.6	94.2
June 2	10 39.77	+08 52.9	2.749	2.879	+0.95	-6.6	19.8	86.9
June 12	10 49.23	+07 46.7	2.911	2.911	+1.03	-7.1	20.0	79.9
June 22	10 59.51	+06 35.3	3.072	2.944	+1.10	-7.6	20.2	73.2
July 2	11 10.48	+05 19.3	3.229	2.977	+1.15	-8.0	20.4	66.7
July 12	11 21.98	+03 59.6	3.381	3.009	+1.19	-8.3	20.5	60.3
July 22	11 33.90	+02 36.9	3.526	3.042	+1.23	-8.5	20.7	54.0
Aug. 1	11 46.17	+01 11.8	3.663	3.076	+1.25	-8.7	20.9	47.9
Aug. 11	11 58.69	-00 14.9	3.791	3.109	+1.27	-8.8	21.0	41.7
Aug. 21	12 11.43	-01 42.8	3.908	3.142	+1.29	-8.8	21.1	35.6
Aug. 31	12 24.32	-03 11.1	4.014	3.175	+1.30	-8.8	21.3	29.5
Sept.10	12 37.33	-04 39.3	4.107	3.208	+1.31	-8.7	21.4	23.4
Sept.20	12 50.42	-06 06.7	4.187	3.241	+1.31	-8.6	21.5	17.2
Sept.30	13 03.55	-07 32.9	4.252	3.274	+1.31	-8.4	21.6	11.0
Oct. 10	13 16.67	-08 57.3	4.301	3.307	+1.31	-8.2	21.7	4.7
Oct. 20	13 29.75	-10 19.4	4.335	3.339	+1.30	-7.9	21.8	1.9
Oct. 30	13 42.74	-11 38.6	4.352	3.372	+1.28	-7.6	21.9	8.3
Nov. 9	13 55.57	-12 54.5	4.352	3.404	+1.26	-7.2	21.9	14.9
Nov. 19	14 08.19	-14 06.6	4.335	3.436	+1.23	-6.8	22.0	21.7
Nov. 29	14 20.50	-15 14.7	4.302	3.468	+1.19	-6.4	22.0	28.6
Dec. 9	14 32.43	-16 18.2	4.252	3.500	+1.14	-5.9	22.1	35.7
Dec. 19	14 43.85	-17 17.1	4.187	3.531	+1.08	-5.4	22.1	43.0
Dec. 29	14 54.66	-18 11.0	4.107	3.562	+1.00	-4.9	22.1	50.4
Jan. 8	15 04.69	-18 59.7	4.014	3.593	+0.91	-4.4	22.1	58.1
Jan. 18	15 13.81	-19 43.3	3.910	3.623	+0.80	-3.8	22.1	66.0
Jan. 28	15 21.83	-20 21.5	3.796	3.653	+0.67	-3.3	22.1	74.2
Feb. 7	15 28.56	-20 54.4	3.676	3.683	+0.53	-2.7	22.1	82.7
Feb. 17	15 33.82	-21 21.8	3.553	3.712	+0.36	-2.2	22.1	91.5
Feb. 27	15 37.41	-21 43.7	3.430	3.742	+0.18	-1.6	22.1	100.7
Mar. 9	15 39.18	-21 59.8	3.311	3.770	-0.02	-1.0	22.0	110.2
Mar. 19	15 39.02	-22 09.7	3.200	3.799	-0.21	-0.3	22.0	120.2
Mar. 29	15 36.89	-22 13.1	3.102	3.827	-0.40	+0.3	22.0	130.5

Comet 102P/Shoemaker

Epoch = 2014 July 2.0 TT
T = 2013 Sept. 1.35926 TT
Peri. = 18.84663 e = 0.4729881
Node = 339.84525 2000.0 a = 3.7360409 AU
Incl. = 26.24831 n = 0.13648554
q = 1.9689380 AU P = 7.22 years

m1 = 15.2 + 5 log(Delta) + 7.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 3	00 12.12	+32 23.9	1.921	2.217	+1.67	+4.5	19.2	93.9
Jan. 13	00 28.85	+33 09.2	2.056	2.254	+1.81	+5.1	19.4	88.4
Jan. 23	00 46.91	+34 00.3	2.193	2.293	+1.92	+5.5	19.6	83.0
Feb. 2	01 06.08	+34 55.5	2.333	2.333	+2.01	+5.7	19.8	77.8
Feb. 12	01 26.18	+35 53.0	2.473	2.375	+2.09	+5.8	20.0	72.7
Feb. 22	01 47.04	+36 50.8	2.613	2.417	+2.15	+5.6	20.2	67.7
Mar. 4	02 08.57	+37 47.2	2.752	2.461	+2.21	+5.3	20.3	62.8
Mar. 14	02 30.63	+38 40.6	2.889	2.506	+2.25	+4.9	20.5	57.9
Mar. 24	02 53.10	+39 29.7	3.022	2.551	+2.28	+4.3	20.7	53.1
Apr. 3	03 15.89	+40 13.0	3.152	2.597	+2.30	+3.7	20.8	48.3
Apr. 13	03 38.88	+40 49.8	3.277	2.644	+2.31	+2.9	20.9	43.7
Apr. 23	04 01.95	+41 19.3	3.395	2.691	+2.30	+2.2	21.1	39.1
May 3	04 24.98	+41 40.9	3.507	2.738	+2.29	+1.4	21.2	34.7
May 13	04 47.84	+41 54.5	3.610	2.786	+2.26	+0.6	21.3	30.4
May 23	05 10.42	+41 60.0	3.704	2.833	+2.22	-0.2	21.4	26.4
June 2	05 32.62	+41 57.7	3.789	2.881	+2.17	-1.0	21.5	22.8
June 12	05 54.31	+41 48.0	3.862	2.929	+2.11	-1.6	21.6	20.0
June 22	06 15.40	+41 31.6	3.924	2.977	+2.04	-2.2	21.7	18.3
July 2	06 35.81	+41 09.2	3.974	3.024	+1.97	-2.7	21.8	18.1
July 12	06 55.47	+40 41.7	4.010	3.072	+1.88	-3.2	21.9	19.6
July 22	07 14.32	+40 10.1	4.033	3.119	+1.80	-3.5	21.9	22.5
Aug. 1	07 32.31	+39 35.5	4.043	3.166	+1.71	-3.6	22.0	26.4
Aug. 11	07 49.37	+38 59.0	4.038	3.213	+1.61	-3.7	22.0	31.1
Aug. 21	08 05.47	+38 21.8	4.019	3.260	+1.51	-3.7	22.1	36.4
Aug. 31	08 20.56	+37 45.1	3.986	3.306	+1.40	-3.5	22.1	42.1
Sept.10	08 34.57	+37 10.3	3.939	3.352	+1.29	-3.2	22.1	48.2
Sept.20	08 47.44	+36 38.6	3.879	3.398	+1.16	-2.7	22.1	54.6
Sept.30	08 59.08	+36 11.5	3.807	3.443	+1.03	-2.1	22.1	61.5
Oct. 10	09 09.36	+35 50.0	3.725	3.488	+0.88	-1.4	22.1	68.7
Oct. 20	09 18.18	+35 35.6	3.633	3.532	+0.72	-0.6	22.1	76.3
Oct. 30	09 25.37	+35 29.3	3.536	3.576	+0.54	+0.3	22.1	84.3
Nov. 9	09 30.73	+35 31.9	3.435	3.620	+0.33	+1.2	22.1	92.7
Nov. 19	09 34.08	+35 43.7	3.334	3.663	+0.11	+2.1	22.0	101.6
Nov. 29	09 35.20	+36 04.4	3.238	3.705	-0.13	+2.8	22.0	110.8
Dec. 9	09 33.94	+36 32.4	3.150	3.748	-0.37	+3.3	22.0	120.5
Dec. 19	09 30.21	+37 05.1	3.077	3.789	-0.61	+3.4	22.0	130.4
Dec. 29	09 24.08	+37 38.7	3.022	3.831	-0.82	+3.0	22.0	140.3
Jan. 8	09 15.84	+38 08.3	2.991	3.871	-0.98	+2.1	22.0	149.6
Jan. 18	09 06.04	+38 28.9	2.988	3.912	-1.06	+0.8	22.0	156.9
Jan. 28	08 55.43	+38 36.5	3.014	3.951	-1.05	-0.8	22.1	159.5
Feb. 7	08 44.94	+38 28.8	3.071	3.991	-0.95	-2.3	22.1	155.8
Feb. 17	08 35.39	+38 05.9	3.157	4.029	-0.79	-3.6	22.2	148.0
Feb. 27	08 27.48	+37 29.6	3.271	4.068	-0.59	-4.7	22.3	138.7
Mar. 9	08 21.61	+36 43.0	3.407	4.105	-0.37	-5.4	22.5	129.0
Mar. 19	08 17.94	+35 49.0	3.562	4.143	-0.15	-5.9	22.6	119.4
Mar. 29	08 16.44	+34 50.4	3.732	4.179	+0.05	-6.1	22.7	109.9

Comet 121P/Shoemaker-Holt

Epoch = 2014 July 2.0 TT
T = 2013 Sept. 4.64907 TT
Peri. = 12.02556 e = 0.1847745
Node = 94.20092 2000.0 a = 4.6044155 AU
Incl. = 20.15501 n = 0.09975676
q = 3.7536369 AU P = 9.88 years

m1 = 7.0 + 5 log(Delta) + 17.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	09 02.25	+30 19.7	2.895	3.781	-0.53	+7.2	19.4	150.4
Jan. 13	08 56.95	+31 31.7	2.849	3.786	-0.65	+6.7	19.4	159.6
Jan. 23	08 50.48	+32 39.0	2.831	3.791	-0.70	+5.8	19.4	165.2
Feb. 2	08 43.48	+33 37.0	2.844	3.797	-0.68	+4.5	19.4	162.9
Feb. 12	08 36.69	+34 22.4	2.886	3.803	-0.59	+3.1	19.5	154.8
Feb. 22	08 30.81	+34 53.4	2.955	3.809	-0.44	+1.7	19.5	145.1
Mar. 4	08 26.42	+35 10.3	3.049	3.815	-0.25	+0.4	19.6	135.0
Mar. 14	08 23.91	+35 14.2	3.162	3.822	-0.05	-0.7	19.7	125.2
Mar. 24	08 23.42	+35 07.0	3.290	3.829	+0.15	-1.6	19.8	115.7
Apr. 3	08 24.96	+34 50.6	3.430	3.837	+0.35	-2.4	19.9	106.6
Apr. 13	08 28.41	+34 26.8	3.576	3.845	+0.52	-3.0	20.0	97.9
Apr. 23	08 33.59	+33 56.8	3.726	3.853	+0.67	-3.5	20.1	89.6
May 3	08 40.27	+33 21.6	3.876	3.861	+0.80	-4.0	20.2	81.7
May 13	08 48.24	+32 41.9	4.022	3.870	+0.90	-4.4	20.3	74.1
May 23	08 57.27	+31 58.3	4.164	3.879	+0.99	-4.7	20.4	66.8
June 2	09 07.18	+31 11.1	4.298	3.888	+1.06	-5.0	20.5	59.8
June 12	09 17.80	+30 20.7	4.423	3.898	+1.12	-5.3	20.6	53.0
June 22	09 28.98	+29 27.5	4.538	3.908	+1.16	-5.6	20.6	46.5
July 2	09 40.58	+28 31.8	4.640	3.918	+1.19	-5.8	20.7	40.1
July 12	09 52.51	+27 34.0	4.729	3.928	+1.21	-5.9	20.8	34.0
July 22	10 04.66	+26 34.5	4.805	3.939	+1.23	-6.1	20.8	28.2
Aug. 1	10 16.96	+25 33.9	4.866	3.950	+1.24	-6.1	20.9	22.8
Aug. 11	10 29.33	+24 32.6	4.911	3.961	+1.24	-6.1	20.9	18.2
Aug. 21	10 41.72	+23 31.3	4.941	3.973	+1.23	-6.1	21.0	15.1
Aug. 31	10 54.06	+22 30.6	4.954	3.984	+1.22	-5.9	21.0	14.4
Sept.10	11 06.31	+21 31.2	4.952	3.996	+1.21	-5.7	21.0	16.5
Sept.20	11 18.42	+20 33.8	4.933	4.008	+1.19	-5.4	21.0	20.6
Sept.30	11 30.32	+19 39.3	4.898	4.020	+1.16	-5.1	21.0	25.9
Oct. 10	11 41.96	+18 48.6	4.847	4.033	+1.13	-4.6	21.0	31.8
Oct. 20	11 53.29	+18 02.5	4.781	4.045	+1.09	-4.0	21.0	38.2
Oct. 30	12 04.22	+17 22.0	4.701	4.058	+1.05	-3.4	21.0	44.9
Nov. 9	12 14.67	+16 48.1	4.608	4.071	+0.99	-2.6	21.0	51.9
Nov. 19	12 24.56	+16 21.8	4.503	4.084	+0.92	-1.8	21.0	59.1
Nov. 29	12 33.77	+16 04.2	4.388	4.097	+0.84	-0.8	20.9	66.6
Dec. 9	12 42.17	+15 56.0	4.266	4.111	+0.75	+0.2	20.9	74.4
Dec. 19	12 49.63	+15 58.2	4.138	4.124	+0.64	+1.3	20.9	82.4
Dec. 29	12 56.00	+16 11.2	4.008	4.138	+0.51	+2.4	20.8	90.7
Jan. 8	13 01.13	+16 35.5	3.880	4.152	+0.37	+3.5	20.8	99.2
Jan. 18	13 04.85	+17 10.5	3.756	4.166	+0.22	+4.5	20.7	108.0
Jan. 28	13 07.02	+17 55.6	3.641	4.180	+0.05	+5.3	20.7	116.9
Feb. 7	13 07.56	+18 48.6	3.540	4.194	-0.11	+5.8	20.6	125.9
Feb. 17	13 06.44	+19 47.1	3.455	4.209	-0.27	+6.0	20.6	134.7
Feb. 27	13 03.71	+20 47.2	3.391	4.223	-0.41	+5.7	20.6	142.9
Mar. 9	12 59.59	+21 44.5	3.351	4.237	-0.52	+5.0	20.6	149.6
Mar. 19	12 54.38	+22 34.5	3.338	4.252	-0.59	+3.9	20.6	153.5
Mar. 29	12 48.53	+23 13.1	3.352	4.267	-0.60	+2.4	20.7	153.3

Comet P/2014 A2 (Hill)

Epoch = 2014 July 2.0 TT
T = 2013 Oct. 28.28662 TT
Peri. = 356.21049 e = 0.6496022
Node = 106.67273 2000.0 a = 5.9207024 AU
Incl. = 24.51441 n = 0.06841388
q = 2.0746011 AU P = 14.41 years

m1 = 13.6 + 5 log(Delta) + 15.0 log(r(t-80))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	10 21.19	+26 35.6	1.377	2.171	+0.33	+18.1	19.1	133.0
Jan. 13	10 24.49	+29 36.7	1.343	2.200	+0.01	+18.6	19.0	141.7
Jan. 23	10 24.63	+32 42.4	1.330	2.233	-0.27	+17.5	19.0	149.2
Feb. 2	10 21.90	+35 37.2	1.341	2.269	-0.48	+14.8	19.0	154.1
Feb. 12	10 17.14	+38 05.4	1.378	2.308	-0.56	+11.0	19.1	154.5
Feb. 22	10 11.57	+39 55.9	1.439	2.350	-0.51	+6.8	19.2	150.4
Mar. 4	10 06.49	+41 04.0	1.522	2.394	-0.34	+2.7	19.4	143.7
Mar. 14	10 03.06	+41 31.3	1.625	2.441	-0.11	-0.8	19.6	136.1
Mar. 24	10 01.95	+41 23.5	1.745	2.489	+0.14	-3.6	19.9	128.3
Apr. 3	10 03.38	+40 47.4	1.879	2.539	+0.39	-5.8	20.1	120.7
Apr. 13	10 07.27	+39 49.7	2.025	2.591	+0.60	-7.4	20.4	113.4
Apr. 23	10 13.30	+38 36.1	2.179	2.644	+0.78	-8.6	20.6	106.4
May 3	10 21.11	+37 10.5	2.340	2.699	+0.92	-9.4	20.9	99.7
May 13	10 30.35	+35 36.5	2.506	2.754	+1.03	-10.0	21.2	93.2
May 23	10 40.67	+33 56.4	2.675	2.811	+1.11	-10.4	21.4	87.1
June 2	10 51.80	+32 12.0	2.845	2.868	+1.17	-10.7	21.7	81.1
June 12	11 03.55	+30 24.9	3.015	2.926	+1.22	-10.9	21.9	75.2
June 22	11 15.73	+28 36.3	3.184	2.985	+1.25	-10.9	22.2	69.5
July 2	11 28.21	+26 47.1	3.350	3.044	+1.27	-10.9	22.4	63.9
July 12	11 40.90	+24 58.4	3.512	3.103	+1.28	-10.8	22.7	58.4
July 22	11 53.71	+23 10.7	3.669	3.163	+1.29	-10.6	22.9	53.0
Aug. 1	12 06.60	+21 25.0	3.818	3.223	+1.29	-10.3	.	47.7
Aug. 11	12 19.52	+19 41.7	3.960	3.283	+1.29	-10.0	.	42.4
Aug. 21	12 32.42	+18 01.6	4.092	3.343	+1.29	-9.6	.	37.3
Aug. 31	12 45.29	+16 25.2	4.213	3.404	+1.28	-9.2	.	32.4
Sept.10	12 58.09	+14 53.2	4.323	3.464	+1.27	-8.7	.	27.8
Sept.20	13 10.79	+13 26.0	4.420	3.525	+1.26	-8.2	.	23.8
Sept.30	13 23.37	+12 04.3	4.504	3.585	+1.24	-7.6	.	20.8
Oct. 10	13 35.79	+10 48.6	4.572	3.645	+1.22	-6.9	.	19.4
Oct. 20	13 48.00	+09 39.4	4.625	3.705	+1.20	-6.2	.	20.0
Oct. 30	13 59.96	+08 37.3	4.663	3.765	+1.17	-5.5	.	22.6
Nov. 9	14 11.61	+07 42.8	4.684	3.825	+1.13	-4.6	.	26.7
Nov. 19	14 22.89	+06 56.3	4.688	3.884	+1.08	-3.8	.	31.9
Nov. 29	14 33.72	+06 18.3	4.677	3.943	+1.03	-2.9	.	37.8
Dec. 9	14 44.00	+05 49.3	4.650	4.002	+0.96	-2.0	.	44.2
Dec. 19	14 53.64	+05 29.5	4.608	4.061	+0.89	-1.0	.	51.0
Dec. 29	15 02.52	+05 19.2	4.552	4.120	+0.80	-0.1	.	58.2
Jan. 8	15 10.53	+05 18.4	4.486	4.178	+0.70	+0.9	.	65.7
Jan. 18	15 17.52	+05 27.1	4.409	4.236	+0.58	+1.8	.	73.5
Jan. 28	15 23.37	+05 45.0	4.326	4.293	+0.46	+2.7	.	81.5
Feb. 7	15 27.94	+06 11.5	4.240	4.350	+0.32	+3.4	.	89.9
Feb. 17	15 31.10	+06 45.7	4.153	4.407	+0.17	+4.1	.	98.4
Feb. 27	15 32.75	+07 26.3	4.070	4.464	+0.01	+4.5	.	107.2
Mar. 9	15 32.84	+08 11.3	3.996	4.520	-0.15	+4.7	.	116.0
Mar. 19	15 31.37	+08 58.4	3.934	4.576	-0.30	+4.6	.	124.9
Mar. 29	15 28.40	+09 44.9	3.888	4.631	-0.43	+4.3	.	133.4

Comet C/2013 O3 (McNaught)

Epoch = 2014 July 2.0 TT
T = 2013 Sept. 9.91080 TT
Peri. = 337.94872
Node = 276.75018 2000.0
Incl. = 102.83938
q = 3.1799496 AU
e = 0.9964762

m1 = 11.2 + 5 log(Delta) + 10.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	18 30.16	-19 21.9	4.341	3.366	+0.75	+10.8	19.7	6.5
Jan. 13	18 37.68	-17 34.0	4.341	3.398	+0.70	+11.1	19.7	14.6
Jan. 23	18 44.69	-15 42.5	4.317	3.432	+0.64	+11.6	19.7	23.0
Feb. 2	18 51.08	-13 46.4	4.271	3.469	+0.56	+12.2	19.8	31.5
Feb. 12	18 56.66	-11 44.4	4.204	3.508	+0.46	+12.9	19.8	40.2
Feb. 22	19 01.30	-09 35.4	4.119	3.548	+0.35	+13.7	19.8	48.9
Mar. 4	19 04.82	-07 18.5	4.020	3.591	+0.22	+14.6	19.8	57.8
Mar. 14	19 07.03	-04 52.9	3.910	3.635	+0.07	+15.5	19.8	66.8
Mar. 24	19 07.72	-02 18.3	3.793	3.681	-0.10	+16.4	19.8	76.0
Apr. 3	19 06.70	+00 25.4	3.676	3.728	-0.29	+17.2	19.7	85.2
Apr. 13	19 03.76	+03 17.2	3.563	3.777	-0.50	+17.8	19.7	94.6
Apr. 23	18 58.73	+06 15.0	3.460	3.828	-0.72	+18.0	19.7	103.8
May 3	18 51.49	+09 15.5	3.375	3.879	-0.94	+17.8	19.7	112.9
May 13	18 42.07	+12 13.3	3.312	3.932	-1.14	+16.9	19.7	121.2
May 23	18 30.64	+15 01.9	3.278	3.986	-1.31	+15.2	19.8	128.4
June 2	18 17.58	+17 34.3	3.276	4.042	-1.41	+12.9	19.8	133.5
June 12	18 03.50	+19 43.7	3.308	4.098	-1.44	+10.2	19.9	135.9
June 22	17 49.14	+21 25.9	3.373	4.155	-1.39	+7.3	20.0	135.0
July 2	17 35.27	+22 39.3	3.471	4.213	-1.27	+4.6	20.1	131.4
July 12	17 22.61	+23 25.2	3.597	4.272	-1.09	+2.2	20.3	125.8
July 22	17 11.66	+23 47.5	3.747	4.332	-0.89	+0.3	20.4	119.0
Aug. 1	17 02.72	+23 50.9	3.915	4.392	-0.68	-1.0	20.6	111.7
Aug. 11	16 55.91	+23 40.6	4.096	4.454	-0.47	-1.9	20.7	104.2
Aug. 21	16 51.17	+23 21.4	4.284	4.515	-0.28	-2.4	20.9	96.7
Aug. 31	16 48.37	+22 57.2	4.476	4.578	-0.11	-2.6	21.1	89.4
Sept. 10	16 47.32	+22 31.6	4.667	4.641	+0.05	-2.4	21.2	82.3
Sept. 20	16 47.80	+22 07.1	4.853	4.704	+0.18	-2.1	21.4	75.6
Sept. 30	16 49.63	+21 45.8	5.031	4.768	+0.30	-1.6	21.5	69.2
Oct. 10	16 52.59	+21 29.6	5.197	4.833	+0.39	-1.0	21.6	63.4
Oct. 20	16 56.50	+21 19.6	5.350	4.897	+0.47	-0.3	21.7	58.1
Oct. 30	17 01.19	+21 17.0	5.488	4.962	+0.53	+0.6	21.9	53.5
Nov. 9	17 06.50	+21 22.9	5.609	5.028	+0.58	+1.5	22.0	49.8
Nov. 19	17 12.28	+21 37.9	5.713	5.094	+0.61	+2.5	22.1	47.2
Nov. 29	17 18.40	+22 02.8	5.798	5.160	+0.63	+3.5	22.1	45.8
Dec. 9	17 24.70	+22 38.1	5.866	5.226	+0.64	+4.6	22.2	45.7
Dec. 19	17 31.06	+23 24.3	5.915	5.293	+0.63	+5.7	22.3	46.9
Dec. 29	17 37.33	+24 21.6	5.948	5.359	+0.61	+6.9	22.4	49.3
Jan. 8	17 43.38	+25 30.2	5.966	5.426	+0.57	+8.0	22.4	52.7
Jan. 18	17 49.08	+26 50.1	5.970	5.493	+0.52	+9.1	22.5	56.8
Jan. 28	17 54.26	+28 21.1	5.963	5.561	+0.45	+10.1	22.5	61.5
Feb. 7	17 58.77	+30 02.5	5.947	5.628	+0.37	+11.1	22.6	66.6
Feb. 17	18 02.46	+31 53.5	5.925	5.696	+0.27	+11.9	22.6	71.9
Feb. 27	18 05.16	+33 52.9	5.900	5.763	+0.15	+12.6	22.7	77.2
Mar. 9	18 06.68	+35 58.9	5.876	5.831	+0.02	+13.0	22.7	82.5
Mar. 19	18 06.86	+38 09.3	5.855	5.899	-0.13	+13.2	22.7	87.6
Mar. 29	18 05.53	+40 21.3	5.841	5.967	-0.30	+13.0	22.8	92.4

Comet C/2013 V3 (Nevski)

Epoch = 2014 July 2.0 TT
T = 2013 Oct. 29.88135 TT
Peri. = 339.62932 e = 0.8907794
Node = 100.91751 2000.0 a = 12.6949412 AU
Incl. = 32.13453 n = 0.02179004
q = 1.3865491 AU P = 45.23 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	11 09.96	+35 24.4	0.881	1.643	+1.01	+33.3	13.5	123.6
Jan. 13	11 20.05	+40 57.5	0.914	1.717	+0.43	+29.6	13.9	129.5
Jan. 23	11 24.37	+45 53.1	0.966	1.796	-0.15	+24.0	14.4	134.0
Feb. 2	11 22.90	+49 53.6	1.037	1.879	-0.63	+17.3	14.9	136.5
Feb. 12	11 16.59	+52 46.6	1.126	1.965	-0.92	+10.2	15.4	136.7
Feb. 22	11 07.42	+54 28.8	1.232	2.054	-0.97	+3.6	15.9	134.9
Mar. 4	10 57.73	+55 05.2	1.355	2.145	-0.80	-1.9	16.5	131.5
Mar. 14	10 49.69	+54 46.2	1.492	2.237	-0.52	-6.1	17.0	127.2
Mar. 24	10 44.53	+53 45.4	1.642	2.330	-0.19	-9.1	17.5	122.1
Apr. 3	10 42.58	+52 14.9	1.803	2.424	+0.11	-11.0	18.0	116.8
Apr. 13	10 43.69	+50 24.7	1.976	2.519	+0.37	-12.2	18.5	111.2
Apr. 23	10 47.34	+48 22.6	2.156	2.613	+0.57	-12.9	19.0	105.6
May 3	10 53.02	+46 13.7	2.344	2.708	+0.73	-13.2	19.4	100.0
May 13	11 00.27	+44 01.6	2.538	2.802	+0.84	-13.3	19.9	94.4
May 23	11 08.69	+41 48.9	2.735	2.897	+0.93	-13.2	20.3	88.8
June 2	11 17.97	+39 37.1	2.936	2.990	+0.99	-13.0	20.7	83.2
June 12	11 27.91	+37 27.6	3.136	3.084	+1.04	-12.6	21.0	77.7
June 22	11 38.29	+35 21.1	3.336	3.177	+1.07	-12.3	21.4	72.2
July 2	11 49.00	+33 18.3	3.534	3.270	+1.09	-11.9	21.7	66.8
July 12	11 59.95	+31 19.7	3.728	3.361	+1.11	-11.4	22.1	61.4
July 22	12 11.04	+29 25.7	3.916	3.453	+1.12	-10.9	22.4	56.1
Aug. 1	12 22.22	+27 36.6	4.096	3.544	+1.12	-10.4	22.7	50.8
Aug. 11	12 33.45	+25 52.9	4.268	3.634	+1.12	-9.8	23.0	45.7
Aug. 21	12 44.68	+24 14.8	4.430	3.723	+1.12	-9.2	.	40.8
Aug. 31	12 55.88	+22 42.6	4.580	3.812	+1.11	-8.6	.	36.2
Sept.10	13 07.01	+21 16.9	4.716	3.901	+1.10	-7.9	.	32.2
Sept.20	13 18.04	+19 57.8	4.839	3.988	+1.09	-7.2	.	28.8
Sept.30	13 28.93	+18 45.8	4.946	4.075	+1.07	-6.4	.	26.7
Oct. 10	13 39.63	+17 41.3	5.036	4.162	+1.05	-5.7	.	26.0
Oct. 20	13 50.11	+16 44.8	5.110	4.248	+1.02	-4.8	.	27.1
Oct. 30	14 00.30	+15 56.6	5.166	4.333	+0.98	-3.9	.	29.8
Nov. 9	14 10.14	+15 17.2	5.205	4.417	+0.94	-3.0	.	33.9
Nov. 19	14 19.57	+14 47.0	5.226	4.501	+0.89	-2.1	.	39.0
Nov. 29	14 28.49	+14 26.3	5.231	4.584	+0.83	-1.1	.	44.8
Dec. 9	14 36.81	+14 15.5	5.219	4.667	+0.76	-0.1	.	51.3
Dec. 19	14 44.44	+14 14.7	5.194	4.749	+0.68	+0.9	.	58.2
Dec. 29	14 51.26	+14 24.1	5.155	4.831	+0.59	+1.9	.	65.5
Jan. 8	14 57.16	+14 43.5	5.107	4.912	+0.49	+2.9	.	73.1
Jan. 18	15 02.02	+15 12.4	5.052	4.992	+0.37	+3.8	.	80.9
Jan. 28	15 05.71	+15 50.2	4.992	5.072	+0.24	+4.6	.	89.0
Feb. 7	15 08.14	+16 35.8	4.933	5.151	+0.11	+5.2	.	97.2
Feb. 17	15 09.23	+17 27.5	4.878	5.230	-0.03	+5.6	.	105.5
Feb. 27	15 08.91	+18 23.2	4.831	5.308	-0.17	+5.7	.	113.8
Mar. 9	15 07.20	+19 20.4	4.796	5.386	-0.30	+5.6	.	121.8
Mar. 19	15 04.16	+20 16.0	4.778	5.463	-0.42	+5.1	.	129.2
Mar. 29	14 59.95	+21 06.9	4.780	5.539	-0.52	+4.3	.	135.7

Comet C/2013 G8 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 Nov. 14.86624 TT
Peri. = 80.16382
Node = 241.01285 2000.0
Incl. = 27.61543
q = 5.1410871 AU
e = 0.9978972

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	20 56.62	+07 54.5	5.829	5.155	+0.99	+2.9	19.1	43.0
Jan. 13	21 06.48	+08 23.7	5.911	5.161	+1.00	+3.6	19.2	37.1
Jan. 23	21 16.52	+08 59.7	5.978	5.168	+1.02	+4.2	19.2	31.8
Feb. 2	21 26.67	+09 42.1	6.031	5.176	+1.02	+4.8	19.2	27.4
Feb. 12	21 36.84	+10 30.5	6.068	5.185	+1.01	+5.4	19.3	24.4
Feb. 22	21 46.95	+11 24.2	6.089	5.196	+1.00	+5.8	19.3	23.3
Mar. 4	21 56.91	+12 22.7	6.095	5.207	+0.97	+6.3	19.3	24.3
Mar. 14	22 06.66	+13 25.2	6.084	5.220	+0.95	+6.6	19.3	27.2
Mar. 24	22 16.12	+14 31.1	6.058	5.233	+0.91	+6.9	19.3	31.4
Apr. 3	22 25.23	+15 39.8	6.017	5.248	+0.87	+7.1	19.3	36.5
Apr. 13	22 33.90	+16 50.4	5.963	5.263	+0.82	+7.2	19.3	42.2
Apr. 23	22 42.07	+18 02.2	5.895	5.280	+0.76	+7.2	19.3	48.3
May 3	22 49.65	+19 14.6	5.816	5.298	+0.69	+7.2	19.3	54.7
May 13	22 56.57	+20 26.5	5.726	5.316	+0.62	+7.1	19.2	61.3
May 23	23 02.74	+21 37.2	5.629	5.336	+0.53	+6.8	19.2	68.2
June 2	23 08.09	+22 45.6	5.525	5.356	+0.44	+6.5	19.2	75.2
June 12	23 12.52	+23 50.7	5.417	5.378	+0.34	+6.1	19.2	82.4
June 22	23 15.97	+24 51.2	5.307	5.400	+0.24	+5.5	19.1	89.8
July 2	23 18.36	+25 45.8	5.199	5.424	+0.13	+4.7	19.1	97.4
July 12	23 19.67	+26 33.1	5.094	5.448	+0.02	+3.8	19.1	105.1
July 22	23 19.89	+27 11.5	4.997	5.473	−0.08	+2.8	19.1	112.9
Aug. 1	23 19.05	+27 39.6	4.911	5.499	−0.18	+1.6	19.1	120.7
Aug. 11	23 17.28	+27 56.0	4.839	5.526	−0.25	+0.4	19.0	128.4
Aug. 21	23 14.73	+27 59.8	4.784	5.554	−0.31	−0.9	19.0	135.8
Aug. 31	23 11.64	+27 50.5	4.749	5.582	−0.33	−2.2	19.1	142.3
Sept. 10	23 08.30	+27 28.5	4.737	5.612	−0.33	−3.4	19.1	147.4
Sept. 20	23 05.02	+26 55.0	4.750	5.642	−0.29	−4.3	19.1	149.9
Sept. 30	23 02.09	+26 11.8	4.788	5.673	−0.23	−5.0	19.1	149.3
Oct. 10	22 59.80	+25 21.6	4.853	5.704	−0.14	−5.4	19.2	145.5
Oct. 20	22 58.36	+24 27.5	4.942	5.737	−0.04	−5.5	19.3	139.6
Oct. 30	22 57.93	+23 32.4	5.054	5.770	+0.06	−5.3	19.3	132.3
Nov. 9	22 58.57	+22 39.2	5.187	5.803	+0.17	−4.9	19.4	124.3
Nov. 19	23 00.31	+21 50.3	5.337	5.838	+0.28	−4.3	19.5	115.9
Nov. 29	23 03.11	+21 07.5	5.501	5.873	+0.38	−3.5	19.6	107.4
Dec. 9	23 06.92	+20 32.0	5.675	5.909	+0.47	−2.7	19.7	98.9
Dec. 19	23 11.63	+20 04.5	5.855	5.945	+0.55	−1.9	19.8	90.4
Dec. 29	23 17.15	+19 45.5	6.038	5.982	+0.62	−1.1	19.9	82.1
Jan. 8	23 23.37	+19 34.7	6.219	6.019	+0.68	−0.3	20.0	73.8
Jan. 18	23 30.17	+19 31.9	6.395	6.057	+0.73	+0.5	20.1	65.7
Jan. 28	23 37.47	+19 36.5	6.563	6.096	+0.77	+1.1	20.1	57.8
Feb. 7	23 45.15	+19 47.8	6.721	6.135	+0.80	+1.7	20.2	50.1
Feb. 17	23 53.13	+20 05.3	6.865	6.175	+0.82	+2.3	20.3	42.7
Feb. 27	00 01.32	+20 28.0	6.994	6.215	+0.83	+2.7	20.4	35.6
Mar. 9	00 09.63	+20 55.2	7.106	6.256	+0.84	+3.1	20.4	28.9
Mar. 19	00 18.00	+21 26.2	7.200	6.297	+0.84	+3.4	20.5	23.2
Mar. 29	00 26.36	+22 00.2	7.275	6.339	+0.83	+3.6	20.5	18.9

Comet P/2007 C1 (Christensen)

Epoch = 2014 July 2.0 TT
T = 2013 Nov. 16.23059 TT
Peri. = 100.58911 e = 0.3883326
Node = 52.87529 2000.0 a = 3.5880161 AU
Incl. = 7.87520 n = 0.14501819
q = 2.1946725 AU P = 6.80 years

m1 = 13.0 + 5 log(Delta) + 17.5 log(r(t-30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	13 14.10	+00 14.5	2.073	2.222	-1.11	+9.8	20.6	20.2/109	85.4
Jan. 13	13 26.83	-00 52.0	1.970	2.234	-1.16	+10.3	20.5	17.3/108	92.1
Jan. 23	13 37.78	-01 46.8	1.868	2.248	-1.21	+10.8	20.4	13.9/108	99.3
Feb. 2	13 46.63	-02 29.0	1.770	2.265	-1.27	+11.3	20.3	10.0/107	107.1
Feb. 12	13 53.02	-02 58.5	1.678	2.283	-1.35	+12.0	20.2	5.7/107	115.4
Feb. 22	13 56.67	-03 15.5	1.595	2.304	-1.43	+12.6	20.2	1.1/117	124.4
Mar. 4	13 57.34	-03 20.7	1.524	2.326	-1.52	+13.3	20.1	3.5/277	134.1
Mar. 14	13 55.03	-03 16.3	1.469	2.350	-1.61	+13.9	20.1	7.5/278	144.4
Mar. 24	13 50.06	-03 05.3	1.433	2.375	-1.69	+14.3	20.1	10.6/277	155.3
Apr. 3	13 43.04	-02 52.0	1.420	2.402	-1.73	+14.5	20.2	12.1/275	166.0
Apr. 13	13 34.97	-02 41.1	1.432	2.430	-1.74	+14.4	20.3	12.0/272	173.3
Apr. 23	13 27.00	-02 37.3	1.470	2.460	-1.70	+14.0	20.4	10.3/266	167.0
May 3	13 20.13	-02 43.9	1.533	2.491	-1.63	+13.4	20.6	7.7/256	156.7
May 13	13 15.16	-03 02.7	1.619	2.522	-1.53	+12.6	20.8	5.1/232	146.3
May 23	13 12.49	-03 33.9	1.725	2.555	-1.43	+11.7	21.0	4.3/185	136.3
June 2	13 12.22	-04 16.5	1.849	2.589	-1.32	+10.8	21.3	6.1/150	127.0
June 12	13 14.26	-05 09.2	1.985	2.623	-1.21	+10.0	21.5	8.7/135	118.3
June 22	13 18.39	-06 10.0	2.132	2.658	-1.12	+9.2	21.8	11.1/127	110.1
July 2	13 24.34	-07 17.3	2.287	2.694	-1.04	+8.5	22.0	13.3/123	102.3
July 12	13 31.89	-08 29.6	2.447	2.730	-0.96	+7.8	22.3	15.2/120	95.0
July 22	13 40.76	-09 45.4	2.610	2.767	-0.90	+7.2	22.5	16.7/118	88.0
Aug. 1	13 50.79	-11 03.4	2.775	2.804	-0.84	+6.6	22.7	18.0/116	81.2
Aug. 11	14 01.81	-12 22.5	2.938	2.842	-0.79	+6.1	23.0	19.0/115	74.6
Aug. 21	14 13.65	-13 41.7	3.099	2.880	-0.75	+5.6	.	19.9/114	68.1
Aug. 31	14 26.23	-15 00.1	3.256	2.917	-0.72	+5.1	.	20.6/112	61.8
Sept.10	14 39.43	-16 16.7	3.407	2.956	-0.69	+4.7	.	21.1/111	55.5
Sept.20	14 53.17	-17 30.9	3.551	2.994	-0.66	+4.3	.	21.5/110	49.3
Sept.30	15 07.38	-18 42.0	3.686	3.032	-0.63	+3.9	.	21.8/109	43.1
Oct. 10	15 21.98	-19 49.4	3.811	3.070	-0.61	+3.5	.	21.9/107	36.8
Oct. 20	15 36.92	-20 52.5	3.924	3.108	-0.59	+3.2	.	22.0/106	30.6
Oct. 30	15 52.12	-21 50.8	4.025	3.147	-0.57	+2.9	.	22.0/105	24.3
Nov. 9	16 07.50	-22 44.0	4.112	3.185	-0.56	+2.6	.	21.9/103	18.0
Nov. 19	16 23.00	-23 31.8	4.185	3.223	-0.54	+2.3	.	21.7/102	11.7
Nov. 29	16 38.53	-24 14.0	4.241	3.261	-0.53	+2.0	.	21.4/101	5.4
Dec. 9	16 54.01	-24 50.6	4.282	3.298	-0.52	+1.8	.	21.1/ 99	2.7
Dec. 19	17 09.34	-25 21.6	4.305	3.336	-0.51	+1.5	.	20.6/ 98	8.6
Dec. 29	17 24.43	-25 47.2	4.312	3.373	-0.50	+1.3	.	20.0/ 97	15.2
Jan. 8	17 39.16	-26 07.9	4.301	3.410	-0.49	+1.1	.	19.3/ 96	22.0
Jan. 18	17 53.44	-26 23.9	4.274	3.446	-0.48	+0.9	.	18.4/ 95	29.0
Jan. 28	18 07.15	-26 36.1	4.231	3.483	-0.48	+0.7	.	17.5/ 94	36.0
Feb. 7	18 20.16	-26 45.1	4.171	3.519	-0.47	+0.6	.	16.3/ 93	43.3
Feb. 17	18 32.36	-26 51.8	4.098	3.555	-0.47	+0.4	.	15.1/ 93	50.6
Feb. 27	18 43.60	-26 57.2	4.012	3.590	-0.47	+0.3	.	13.6/ 93	58.2
Mar. 9	18 53.76	-27 02.3	3.914	3.625	-0.47	+0.1	.	11.9/ 93	66.0
Mar. 19	19 02.68	-27 08.2	3.808	3.660	-0.48	0.0	.	10.1/ 95	74.0
Mar. 29	19 10.20	-27 16.0	3.695	3.694	-0.48	-0.1	.	8.0/ 98	82.2

Comet 2P/Encke

Epoch = 2014 July 2.0 TT
T = 2013 Nov. 21.70076 TT
Peri. = 186.53961 e = 0.8482583
Node = 334.57073 2000.0 a = 2.2150114 AU
Incl. = 11.77969 n = 0.29897861
q = 0.3361096 AU P = 3.30 years

H = 14.4 , G = 0.15 (r>2.0 AU)
m1 = 13.4 + 5 log(Delta) + 12.5 log(r) (r<2.0 AU)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	Mag.	Elong. °
Jan. 3	18 46.39	-27 59.8	1.975	1.000	+3.64	+5.8	14.9	5.4
Jan. 13	19 22.84	-27 01.3	2.133	1.160	+3.09	+7.7	15.9	6.4
Jan. 23	19 53.75	-25 44.3	2.275	1.310	+2.66	+8.6	16.7	8.6
Feb. 2	20 20.40	-24 18.4	2.400	1.451	+2.33	+8.9	17.3	12.1
Feb. 12	20 43.67	-22 49.5	2.507	1.584	+2.05	+8.9	17.9	16.3
Feb. 22	21 04.21	-21 20.8	2.594	1.710	+1.83	+8.6	18.4	21.3
Mar. 4	21 22.47	-19 54.4	2.660	1.829	+1.63	+8.2	18.8	26.7
Mar. 14	21 38.76	-18 31.9	2.706	1.942	+1.45	+7.7	19.2	32.5
Mar. 24	21 53.27	-17 14.5	2.732	2.050	+1.29	+7.1	19.1	38.7
Apr. 3	22 06.13	-16 03.3	2.737	2.154	+1.12	+6.4	19.2	45.2
Apr. 13	22 17.38	-14 59.3	2.724	2.252	+0.96	+5.6	19.4	52.1
Apr. 23	22 27.01	-14 03.4	2.694	2.346	+0.80	+4.6	19.5	59.3
May 3	22 34.97	-13 17.0	2.648	2.437	+0.62	+3.6	19.5	67.0
May 13	22 41.13	-12 41.0	2.589	2.524	+0.42	+2.4	19.6	75.0
May 23	22 45.34	-12 16.8	2.520	2.607	+0.21	+1.1	19.6	83.5
June 2	22 47.42	-12 05.6	2.444	2.687	-0.03	-0.3	19.6	92.5
June 12	22 47.12	-12 08.6	2.365	2.763	-0.28	-1.8	19.5	102.2
June 22	22 44.28	-12 26.1	2.289	2.837	-0.55	-3.2	19.4	112.4
July 2	22 38.74	-12 58.2	2.222	2.908	-0.82	-4.5	19.4	123.4
July 12	22 30.51	-13 43.3	2.169	2.976	-1.07	-5.5	19.2	135.0
July 22	22 19.86	-14 38.2	2.137	3.041	-1.26	-6.0	19.1	147.2
Aug. 1	22 07.30	-15 38.2	2.131	3.104	-1.36	-5.9	19.0	159.9
Aug. 11	21 53.70	-16 37.3	2.157	3.165	-1.36	-5.3	18.8	172.3
Aug. 21	21 40.10	-17 30.1	2.216	3.223	-1.26	-4.3	18.9	173.0
Aug. 31	21 27.51	-18 12.6	2.308	3.278	-1.07	-3.0	19.3	160.9
Sept.10	21 16.77	-18 42.9	2.430	3.332	-0.84	-1.8	19.5	148.7
Sept.20	21 08.39	-19 00.9	2.578	3.383	-0.58	-0.7	19.8	137.1
Sept.30	21 02.57	-19 07.7	2.747	3.432	-0.33	+0.3	20.1	125.9
Oct. 10	20 59.29	-19 04.8	2.933	3.480	-0.10	+1.1	20.3	115.4
Oct. 20	20 58.34	-18 53.7	3.128	3.525	+0.11	+1.8	20.5	105.3
Oct. 30	20 59.46	-18 35.6	3.330	3.568	+0.29	+2.4	20.6	95.7
Nov. 9	21 02.35	-18 11.4	3.532	3.609	+0.44	+2.9	20.8	86.5
Nov. 19	21 06.74	-17 42.0	3.732	3.649	+0.56	+3.4	20.9	77.5
Nov. 29	21 12.35	-17 07.7	3.925	3.686	+0.66	+3.8	21.0	68.9
Dec. 9	21 18.97	-16 29.2	4.108	3.722	+0.74	+4.2	21.1	60.4
Dec. 19	21 26.38	-15 46.9	4.278	3.756	+0.80	+4.6	21.2	52.2
Dec. 29	21 34.40	-15 01.1	4.432	3.788	+0.85	+4.9	21.2	44.1
Jan. 8	21 42.88	-14 12.3	4.569	3.819	+0.88	+5.1	21.2	36.1
Jan. 18	21 51.69	-13 20.8	4.686	3.847	+0.90	+5.4	21.2	28.2
Jan. 28	22 00.70	-12 27.2	4.782	3.874	+0.91	+5.5	21.2	20.4
Feb. 7	22 09.81	-11 31.9	4.856	3.900	+0.91	+5.7	21.1	12.6
Feb. 17	22 18.92	-10 35.4	4.907	3.924	+0.90	+5.7	21.0	5.0
Feb. 27	22 27.95	-09 38.2	4.935	3.946	+0.89	+5.7	21.0	2.7
Mar. 9	22 36.80	-08 40.9	4.939	3.967	+0.86	+5.7	21.1	10.3
Mar. 19	22 45.40	-07 44.1	4.920	3.986	+0.83	+5.6	21.3	18.0
Mar. 29	22 53.68	-06 48.2	4.879	4.003	+0.79	+5.4	21.3	25.7

Comet C/2012 A1 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 Dec. 3.08455 TT
Peri. = 191.99328
Node = 277.97082 2000.0
Incl. = 120.90834
q = 7.6029705 AU
e = 1.0010291

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	05 55.61	+09 41.9	6.670	7.605	-0.73	-3.3	18.3	160.9
Jan. 13	05 48.30	+09 09.4	6.732	7.607	-0.67	-2.9	18.3	151.0
Jan. 23	05 41.62	+08 40.6	6.827	7.610	-0.58	-2.5	18.4	140.2
Feb. 2	05 35.78	+08 15.7	6.951	7.612	-0.49	-2.1	18.4	129.3
Feb. 12	05 30.90	+07 54.4	7.097	7.616	-0.38	-1.8	18.5	118.4
Feb. 22	05 27.07	+07 36.5	7.260	7.620	-0.28	-1.5	18.5	107.7
Mar. 4	05 24.30	+07 21.1	7.433	7.624	-0.17	-1.3	18.6	97.4
Mar. 14	05 22.56	+07 07.9	7.611	7.629	-0.08	-1.2	18.6	87.3
Mar. 24	05 21.78	+06 55.9	7.787	7.634	+0.01	-1.1	18.7	77.6
Apr. 3	05 21.87	+06 44.4	7.956	7.640	+0.09	-1.2	18.7	68.1
Apr. 13	05 22.74	+06 32.9	8.114	7.647	+0.15	-1.2	18.8	59.0
Apr. 23	05 24.27	+06 20.6	8.256	7.654	+0.21	-1.4	18.8	50.3
May 3	05 26.36	+06 07.0	8.381	7.661	+0.25	-1.6	18.8	42.0
May 13	05 28.89	+05 51.4	8.484	7.669	+0.29	-1.8	18.9	34.2
May 23	05 31.77	+05 33.5	8.564	7.677	+0.31	-2.1	18.9	27.2
June 2	05 34.88	+05 12.7	8.619	7.686	+0.33	-2.4	18.9	21.7
June 12	05 38.14	+04 48.8	8.650	7.696	+0.33	-2.7	18.9	18.8
June 22	05 41.42	+04 21.3	8.655	7.705	+0.32	-3.1	18.9	19.7
July 2	05 44.66	+03 50.1	8.635	7.716	+0.31	-3.5	18.9	23.8
July 12	05 47.73	+03 14.7	8.591	7.727	+0.28	-4.0	18.9	30.0
July 22	05 50.55	+02 35.1	8.524	7.738	+0.25	-4.4	18.9	37.1
Aug. 1	05 53.02	+01 51.2	8.436	7.750	+0.20	-4.8	18.9	44.9
Aug. 11	05 55.03	+01 02.7	8.329	7.762	+0.15	-5.3	18.9	53.0
Aug. 21	05 56.50	+00 09.9	8.208	7.775	+0.08	-5.7	18.9	61.4
Aug. 31	05 57.31	-00 47.2	8.074	7.788	+0.01	-6.1	18.8	70.1
Sept. 10	05 57.38	-01 48.2	7.932	7.802	-0.08	-6.5	18.8	78.9
Sept. 20	05 56.62	-02 52.7	7.787	7.816	-0.17	-6.7	18.8	87.9
Sept. 30	05 54.95	-03 60.0	7.644	7.830	-0.26	-6.9	18.7	97.1
Oct. 10	05 52.32	-05 09.0	7.507	7.845	-0.36	-7.0	18.7	106.3
Oct. 20	05 48.71	-06 18.5	7.383	7.861	-0.46	-6.8	18.7	115.4
Oct. 30	05 44.14	-07 26.9	7.276	7.877	-0.54	-6.6	18.6	124.2
Nov. 9	05 38.69	-08 32.5	7.192	7.893	-0.62	-6.1	18.6	132.4
Nov. 19	05 32.49	-09 33.4	7.134	7.910	-0.68	-5.4	18.6	139.3
Nov. 29	05 25.73	-10 27.8	7.107	7.927	-0.71	-4.6	18.6	144.1
Dec. 9	05 18.64	-11 14.2	7.112	7.945	-0.71	-3.7	18.6	145.8
Dec. 19	05 11.49	-11 51.5	7.148	7.963	-0.69	-2.8	18.6	143.7
Dec. 29	05 04.55	-12 19.3	7.217	7.982	-0.65	-1.8	18.7	138.7
Jan. 8	04 58.08	-12 37.8	7.313	8.001	-0.58	-1.0	18.7	131.6
Jan. 18	04 52.28	-12 47.6	7.435	8.020	-0.50	-0.2	18.7	123.5
Jan. 28	04 47.33	-12 49.9	7.577	8.040	-0.40	+0.4	18.8	114.8
Feb. 7	04 43.31	-12 46.2	7.735	8.060	-0.30	+0.8	18.8	105.9
Feb. 17	04 40.26	-12 38.0	7.902	8.081	-0.21	+1.1	18.9	96.9
Feb. 27	04 38.20	-12 26.9	8.073	8.102	-0.11	+1.2	18.9	88.2
Mar. 9	04 37.07	-12 14.5	8.243	8.123	-0.03	+1.3	19.0	79.6
Mar. 19	04 36.80	-12 01.9	8.407	8.145	+0.05	+1.1	19.1	71.4
Mar. 29	04 37.31	-11 50.4	8.562	8.167	+0.12	+0.9	19.1	63.6

Comet P/2013 G1 (Kowalski)

Epoch = 2014 July 2.0 TT
T = 2013 Dec. 10.71862 TT
Peri. = 51.19497 e = 0.5121529
Node = 221.47560 2000.0 a = 6.8740236 AU
Incl. = 5.46778 n = 0.05468743
q = 3.3534725 AU P = 18.02 years

m1 = 8.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	18 35.27	-19 41.2	4.335	3.357	+1.61	+2.3	19.5	5.3
Jan. 13	18 51.39	-19 18.3	4.321	3.361	+1.59	+2.9	19.5	11.0
Jan. 23	19 07.27	-18 49.0	4.294	3.366	+1.55	+3.6	19.5	17.2
Feb. 2	19 22.81	-18 13.4	4.253	3.372	+1.51	+4.1	19.5	23.5
Feb. 12	19 37.89	-17 32.4	4.200	3.380	+1.45	+4.6	19.5	29.9
Feb. 22	19 52.44	-16 46.6	4.134	3.389	+1.39	+5.0	19.4	36.4
Mar. 4	20 06.36	-15 56.7	4.057	3.400	+1.32	+5.3	19.4	43.0
Mar. 14	20 19.54	-15 03.8	3.970	3.411	+1.24	+5.5	19.4	49.6
Mar. 24	20 31.89	-14 08.9	3.873	3.424	+1.14	+5.6	19.4	56.4
Apr. 3	20 43.32	-13 13.1	3.768	3.438	+1.04	+5.6	19.3	63.4
Apr. 13	20 53.72	-12 17.4	3.657	3.453	+0.93	+5.4	19.3	70.5
Apr. 23	21 02.99	-11 23.3	3.540	3.470	+0.80	+5.1	19.2	77.8
May 3	21 11.01	-10 31.9	3.421	3.487	+0.66	+4.7	19.2	85.3
May 13	21 17.64	-09 44.6	3.302	3.506	+0.52	+4.2	19.2	93.2
May 23	21 22.79	-09 02.8	3.184	3.526	+0.35	+3.5	19.1	101.3
June 2	21 26.34	-08 27.8	3.071	3.546	+0.19	+2.7	19.1	109.9
June 12	21 28.21	-08 00.9	2.967	3.568	+0.02	+1.8	19.0	118.8
June 22	21 28.38	-07 43.1	2.874	3.591	-0.15	+0.8	19.0	128.1
July 2	21 26.89	-07 35.2	2.797	3.615	-0.30	-0.2	19.0	137.7
July 12	21 23.91	-07 37.2	2.739	3.639	-0.42	-1.1	19.0	147.7
July 22	21 19.72	-07 48.6	2.704	3.665	-0.50	-1.9	19.0	157.9
Aug. 1	21 14.71	-08 08.0	2.694	3.691	-0.53	-2.5	19.1	167.5
Aug. 11	21 09.41	-08 33.4	2.711	3.718	-0.51	-2.9	19.1	172.5
Aug. 21	21 04.34	-09 02.1	2.756	3.746	-0.43	-2.9	19.2	166.1
Aug. 31	21 00.01	-09 31.5	2.829	3.775	-0.32	-2.8	19.3	156.3
Sept. 10	20 56.83	-09 59.1	2.926	3.804	-0.17	-2.4	19.4	146.1
Sept. 20	20 55.08	-10 22.9	3.047	3.834	-0.02	-1.8	19.6	136.1
Sept. 30	20 54.91	-10 41.3	3.187	3.865	+0.14	-1.2	19.7	126.3
Oct. 10	20 56.36	-10 53.4	3.342	3.896	+0.30	-0.5	19.9	116.8
Oct. 20	20 59.35	-10 58.5	3.509	3.928	+0.44	+0.2	20.0	107.7
Oct. 30	21 03.78	-10 56.5	3.685	3.961	+0.57	+0.9	20.2	98.8
Nov. 9	21 09.49	-10 47.3	3.865	3.994	+0.68	+1.6	20.4	90.2
Nov. 19	21 16.31	-10 31.1	4.046	4.027	+0.78	+2.3	20.5	81.9
Nov. 29	21 24.08	-10 08.2	4.225	4.061	+0.86	+2.9	20.7	73.8
Dec. 9	21 32.64	-09 38.9	4.399	4.095	+0.92	+3.5	20.8	65.8
Dec. 19	21 41.83	-09 03.6	4.566	4.130	+0.97	+4.1	20.9	58.0
Dec. 29	21 51.52	-08 23.0	4.724	4.166	+1.01	+4.5	21.1	50.3
Jan. 8	22 01.59	-07 37.5	4.869	4.201	+1.03	+5.0	21.2	42.8
Jan. 18	22 11.92	-06 47.7	5.001	4.237	+1.05	+5.3	21.3	35.3
Jan. 28	22 22.42	-05 54.3	5.118	4.273	+1.06	+5.6	21.4	28.0
Feb. 7	22 32.99	-04 58.0	5.218	4.310	+1.06	+5.9	21.5	20.7
Feb. 17	22 43.55	-03 59.3	5.301	4.347	+1.05	+6.0	21.6	13.6
Feb. 27	22 54.04	-02 58.9	5.365	4.384	+1.03	+6.1	21.7	6.9
Mar. 9	23 04.39	-01 57.6	5.411	4.421	+1.01	+6.2	21.7	3.9
Mar. 19	23 14.52	-00 55.9	5.438	4.459	+0.99	+6.1	21.8	9.4
Mar. 29	23 24.38	+00 05.5	5.446	4.497	+0.95	+6.0	21.9	16.3

Comet 280P/Larsen

Epoch = 2014 July 2.0 TT
T = 2013 Dec. 10.96404 TT
Peri. = 104.58161 e = 0.4176895
Node = 131.50737 2000.0 a = 4.5267023 AU
Incl. = 11.77270 n = 0.10233664
q = 2.6359463 AU P = 9.63 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	16 52.16	-14 03.9	3.446	2.641	+1.86	-2.8	17.8	30.0
Jan. 13	17 10.79	-14 31.4	3.385	2.646	+1.83	-1.8	17.8	35.4
Jan. 23	17 29.05	-14 49.5	3.316	2.652	+1.78	-0.9	17.8	41.0
Feb. 2	17 46.84	-14 58.5	3.239	2.661	+1.71	-0.1	17.7	46.7
Feb. 12	18 03.97	-14 59.1	3.154	2.671	+1.64	+0.7	17.7	52.5
Feb. 22	18 20.33	-14 52.2	3.063	2.683	+1.54	+1.3	17.7	58.5
Mar. 4	18 35.75	-14 39.2	2.966	2.696	+1.43	+1.8	17.6	64.7
Mar. 14	18 50.06	-14 21.3	2.865	2.711	+1.30	+2.1	17.6	71.1
Mar. 24	19 03.10	-14 00.1	2.759	2.727	+1.16	+2.3	17.5	77.7
Apr. 3	19 14.70	-13 37.6	2.651	2.745	+1.00	+2.2	17.5	84.7
Apr. 13	19 24.66	-13 15.6	2.543	2.765	+0.82	+1.9	17.5	92.0
Apr. 23	19 32.82	-12 56.4	2.435	2.785	+0.62	+1.4	17.4	99.6
May 3	19 38.97	-12 42.1	2.332	2.808	+0.40	+0.7	17.4	107.7
May 13	19 42.95	-12 34.9	2.235	2.831	+0.17	-0.2	17.3	116.3
May 23	19 44.65	-12 36.7	2.147	2.855	-0.06	-1.2	17.3	125.4
June 2	19 44.04	-12 49.1	2.073	2.881	-0.28	-2.4	17.3	135.0
June 12	19 41.24	-13 12.8	2.016	2.907	-0.47	-3.5	17.3	145.1
June 22	19 36.57	-13 47.4	1.980	2.935	-0.61	-4.4	17.3	155.5
July 2	19 30.52	-14 31.3	1.967	2.964	-0.67	-5.1	17.3	165.9
July 12	19 23.81	-15 21.9	1.981	2.993	-0.66	-5.4	17.4	173.3
July 22	19 17.23	-16 15.8	2.022	3.023	-0.57	-5.4	17.5	168.1
Aug. 1	19 11.53	-17 09.8	2.089	3.054	-0.42	-5.1	17.7	158.0
Aug. 11	19 07.35	-18 01.1	2.182	3.086	-0.23	-4.7	17.8	147.7
Aug. 21	19 05.06	-18 47.7	2.296	3.119	-0.02	-4.1	18.0	137.6
Aug. 31	19 04.86	-19 28.5	2.429	3.152	+0.19	-3.4	18.2	127.9
Sept.10	19 06.78	-20 02.8	2.578	3.185	+0.39	-2.7	18.4	118.6
Sept.20	19 10.69	-20 30.2	2.738	3.219	+0.57	-2.0	18.6	109.8
Sept.30	19 16.42	-20 50.5	2.906	3.254	+0.73	-1.3	18.8	101.3
Oct. 10	19 23.75	-21 03.8	3.080	3.289	+0.87	-0.6	19.0	93.1
Oct. 20	19 32.44	-21 10.0	3.257	3.324	+0.99	+0.1	19.2	85.2
Oct. 30	19 42.30	-21 09.2	3.432	3.360	+1.08	+0.8	19.4	77.5
Nov. 9	19 53.10	-21 01.5	3.605	3.396	+1.16	+1.4	19.5	69.9
Nov. 19	20 04.66	-20 47.3	3.773	3.432	+1.22	+2.1	19.7	62.6
Nov. 29	20 16.82	-20 26.6	3.933	3.468	+1.26	+2.7	19.9	55.3
Dec. 9	20 29.41	-19 59.9	4.084	3.505	+1.29	+3.2	20.0	48.2
Dec. 19	20 42.30	-19 27.7	4.224	3.542	+1.31	+3.7	20.2	41.1
Dec. 29	20 55.38	-18 50.5	4.351	3.578	+1.32	+4.2	20.3	34.0
Jan. 8	21 08.54	-18 08.8	4.463	3.615	+1.31	+4.5	20.4	27.1
Jan. 18	21 21.68	-17 23.3	4.561	3.653	+1.31	+4.9	20.5	20.1
Jan. 28	21 34.74	-16 34.7	4.641	3.690	+1.29	+5.1	20.6	13.2
Feb. 7	21 47.62	-15 43.8	4.705	3.727	+1.27	+5.2	20.7	6.5
Feb. 17	22 00.27	-14 51.3	4.751	3.764	+1.24	+5.3	20.8	2.6
Feb. 27	22 12.63	-13 58.2	4.779	3.801	+1.20	+5.3	20.9	8.2
Mar. 9	22 24.63	-13 05.1	4.788	3.838	+1.16	+5.2	21.0	15.0
Mar. 19	22 36.24	-12 12.9	4.780	3.875	+1.11	+5.0	21.0	22.0
Mar. 29	22 47.37	-11 22.6	4.755	3.912	+1.06	+4.8	21.1	29.0

Comet 154P/Brewington

Epoch = 2014 July 2.0 TT
T = 2013 Dec. 12.48013 TT
Peri. = 49.03628 e = 0.6708513
Node = 343.47724 2000.0 a = 4.8845346 AU
Incl. = 17.83436 n = 0.09129969
q = 1.6077382 AU P = 10.80 years

m1 = 6.0 + 5 log(Delta) + 30.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	23 51.76	+19 10.7	1.401	1.625	+2.55	+17.0	13.1	84.0
Jan. 13	00 17.24	+22 00.3	1.483	1.645	+2.70	+16.1	13.3	80.9
Jan. 23	00 44.21	+24 40.8	1.571	1.672	+2.83	+14.8	13.7	78.0
Feb. 2	01 12.46	+27 08.8	1.667	1.705	+2.93	+13.3	14.1	75.2
Feb. 12	01 41.74	+29 21.5	1.769	1.744	+3.00	+11.5	14.5	72.3
Feb. 22	02 11.73	+31 16.1	1.880	1.788	+3.04	+9.5	14.9	69.3
Mar. 4	02 42.17	+32 51.0	1.997	1.837	+3.06	+7.4	15.4	66.2
Mar. 14	03 12.76	+34 05.3	2.121	1.890	+3.04	+5.3	15.9	63.0
Mar. 24	03 43.16	+34 58.8	2.250	1.947	+3.00	+3.3	16.4	59.6
Apr. 3	04 13.11	+35 32.0	2.385	2.006	+2.93	+1.4	17.0	56.1
Apr. 13	04 42.37	+35 46.2	2.522	2.068	+2.83	-0.3	17.5	52.4
Apr. 23	05 10.71	+35 43.0	2.661	2.132	+2.73	-1.9	18.0	48.5
May 3	05 38.00	+35 24.1	2.801	2.198	+2.61	-3.3	18.5	44.5
May 13	06 04.14	+34 51.5	2.939	2.265	+2.49	-4.4	19.0	40.3
May 23	06 29.06	+34 07.2	3.075	2.333	+2.37	-5.4	19.5	36.0
June 2	06 52.77	+33 12.9	3.207	2.402	+2.25	-6.2	19.9	31.5
June 12	07 15.27	+32 10.4	3.333	2.472	+2.13	-6.9	20.4	27.0
June 22	07 36.59	+31 01.3	3.451	2.542	+2.02	-7.4	20.8	22.4
July 2	07 56.78	+29 46.9	3.561	2.612	+1.91	-7.8	21.3	17.8
July 12	08 15.90	+28 28.6	3.661	2.682	+1.81	-8.1	21.7	13.4
July 22	08 33.99	+27 07.4	3.749	2.753	+1.71	-8.3	22.1	9.6
Aug. 1	08 51.10	+25 44.5	3.825	2.823	+1.62	-8.4	22.4	7.8
Aug. 11	09 07.28	+24 20.8	3.887	2.893	+1.53	-8.4	22.8	9.6
Aug. 21	09 22.54	+22 57.1	3.935	2.963	+1.44	-8.3	.	13.8
Aug. 31	09 36.93	+21 34.3	3.968	3.032	+1.35	-8.1	.	19.1
Sept.10	09 50.44	+20 13.3	3.985	3.102	+1.26	-7.8	.	25.0
Sept.20	10 03.06	+18 54.9	3.987	3.170	+1.17	-7.5	.	31.2
Sept.30	10 14.77	+17 39.8	3.972	3.239	+1.08	-7.1	.	37.8
Oct. 10	10 25.52	+16 28.9	3.942	3.307	+0.97	-6.6	.	44.7
Oct. 20	10 35.27	+15 23.0	3.897	3.374	+0.87	-6.0	.	51.9
Oct. 30	10 43.92	+14 23.1	3.838	3.441	+0.75	-5.3	.	59.4
Nov. 9	10 51.37	+13 30.0	3.767	3.507	+0.61	-4.5	.	67.4
Nov. 19	10 57.51	+12 44.7	3.686	3.573	+0.47	-3.7	.	75.7
Nov. 29	11 02.19	+12 08.0	3.598	3.638	+0.31	-2.7	.	84.5
Dec. 9	11 05.28	+11 40.6	3.506	3.702	+0.14	-1.7	.	93.7
Dec. 19	11 06.65	+11 23.2	3.414	3.766	-0.05	-0.7	.	103.4
Dec. 29	11 06.18	+11 15.9	3.328	3.830	-0.23	+0.3	.	113.6
Jan. 8	11 03.84	+11 18.5	3.253	3.892	-0.41	+1.1	.	124.3
Jan. 18	10 59.70	+11 29.9	3.193	3.955	-0.58	+1.8	.	135.5
Jan. 28	10 53.92	+11 48.4	3.154	4.016	-0.71	+2.3	.	147.0
Feb. 7	10 46.86	+12 11.4	3.142	4.077	-0.79	+2.5	.	158.8
Feb. 17	10 39.01	+12 36.0	3.160	4.137	-0.81	+2.3	.	170.4
Feb. 27	10 30.92	+12 59.2	3.209	4.197	-0.77	+1.9	.	175.3
Mar. 9	10 23.21	+13 18.1	3.291	4.256	-0.68	+1.3	.	164.6
Mar. 19	10 16.38	+13 31.1	3.403	4.315	-0.56	+0.6	.	153.1
Mar. 29	10 10.82	+13 36.8	3.543	4.373	-0.41	-0.2	.	142.0

Comet 291P/NEAT

Epoch = 2014 July 2.0 TT
T = 2013 Dec. 15.53471 TT
Peri. = 176.10060 e = 0.4314740
Node = 241.02511 2000.0 a = 4.5570850 AU
Incl. = 5.95359 n = 0.10131491
q = 2.5908213 AU P = 9.73 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	02 43.94	+15 41.0	1.946	2.594	+0.53	+0.1	16.7	121.1
Jan. 13	02 49.22	+15 42.3	2.064	2.599	+0.75	+1.3	16.9	112.1
Jan. 23	02 56.68	+15 55.2	2.190	2.605	+0.94	+2.2	17.0	103.7
Feb. 2	03 06.09	+16 17.4	2.323	2.613	+1.11	+2.9	17.2	95.8
Feb. 12	03 17.19	+16 46.5	2.459	2.623	+1.25	+3.3	17.3	88.4
Feb. 22	03 29.74	+17 19.9	2.596	2.635	+1.38	+3.5	17.5	81.3
Mar. 4	03 43.51	+17 55.3	2.733	2.648	+1.48	+3.5	17.6	74.6
Mar. 14	03 58.33	+18 30.7	2.868	2.663	+1.57	+3.4	17.8	68.2
Mar. 24	04 14.01	+19 04.3	3.000	2.680	+1.64	+3.0	17.9	62.0
Apr. 3	04 30.39	+19 34.4	3.127	2.699	+1.69	+2.5	18.1	56.0
Apr. 13	04 47.34	+19 59.7	3.249	2.719	+1.74	+2.0	18.2	50.2
Apr. 23	05 04.71	+20 19.3	3.364	2.740	+1.77	+1.3	18.4	44.5
May 3	05 22.41	+20 32.2	3.473	2.763	+1.79	+0.6	18.5	39.0
May 13	05 40.29	+20 37.9	3.573	2.787	+1.80	-0.2	18.7	33.5
May 23	05 58.26	+20 36.0	3.664	2.812	+1.80	-1.0	18.8	28.1
June 2	06 16.23	+20 26.3	3.746	2.839	+1.79	-1.7	18.9	22.8
June 12	06 34.08	+20 08.9	3.819	2.866	+1.77	-2.5	19.1	17.5
June 22	06 51.75	+19 43.9	3.880	2.895	+1.74	-3.2	19.2	12.3
July 2	07 09.15	+19 11.5	3.931	2.925	+1.71	-3.9	19.3	7.2
July 12	07 26.21	+18 32.2	3.969	2.956	+1.67	-4.6	19.4	3.5
July 22	07 42.86	+17 46.7	3.996	2.987	+1.62	-5.1	19.5	5.7
Aug. 1	07 59.06	+16 55.3	4.011	3.019	+1.57	-5.6	19.6	10.7
Aug. 11	08 14.72	+15 59.0	4.013	3.052	+1.51	-6.1	19.7	16.2
Aug. 21	08 29.82	+14 58.3	4.001	3.086	+1.45	-6.4	19.8	21.9
Aug. 31	08 44.29	+13 54.2	3.977	3.121	+1.38	-6.7	19.9	27.9
Sept.10	08 58.06	+12 47.6	3.940	3.156	+1.30	-6.8	20.0	34.0
Sept.20	09 11.09	+11 39.3	3.890	3.191	+1.22	-6.9	20.0	40.3
Sept.30	09 23.30	+10 30.3	3.828	3.227	+1.13	-6.9	20.1	46.9
Oct. 10	09 34.60	+09 21.7	3.754	3.263	+1.03	-6.7	20.1	53.7
Oct. 20	09 44.90	+08 14.5	3.670	3.300	+0.92	-6.4	20.2	60.8
Oct. 30	09 54.09	+07 10.1	3.576	3.337	+0.79	-6.0	20.2	68.2
Nov. 9	10 02.04	+06 09.6	3.475	3.374	+0.66	-5.5	20.3	76.0
Nov. 19	10 08.62	+05 14.4	3.368	3.412	+0.50	-4.8	20.3	84.1
Nov. 29	10 13.66	+04 26.0	3.259	3.450	+0.34	-4.0	20.3	92.7
Dec. 9	10 17.03	+03 45.9	3.151	3.488	+0.16	-3.0	20.3	101.8
Dec. 19	10 18.61	+03 15.4	3.047	3.526	-0.03	-1.9	20.4	111.3
Dec. 29	10 18.31	+02 56.1	2.953	3.565	-0.21	-0.7	20.4	121.3
Jan. 8	10 16.16	+02 48.7	2.872	3.603	-0.39	+0.5	20.4	131.8
Jan. 18	10 12.30	+02 53.6	2.810	3.641	-0.53	+1.7	20.5	142.7
Jan. 28	10 07.00	+03 10.3	2.771	3.680	-0.63	+2.7	20.5	153.8
Feb. 7	10 00.72	+03 37.0	2.759	3.719	-0.67	+3.4	20.6	164.5
Feb. 17	09 54.04	+04 11.2	2.776	3.757	-0.65	+3.8	20.7	171.8
Feb. 27	09 47.56	+04 49.4	2.825	3.796	-0.57	+3.9	20.8	166.9
Mar. 9	09 41.86	+05 28.2	2.902	3.834	-0.45	+3.6	21.0	156.7
Mar. 19	09 37.38	+06 04.4	3.007	3.872	-0.30	+3.1	21.2	146.0
Mar. 29	09 34.42	+06 35.4	3.136	3.911	-0.13	+2.4	21.3	135.5

Comet P/2013 O2 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2013 Dec. 16.34796 TT
Peri. = 213.75383 e = 0.4394130
Node = 207.64469 2000.0 a = 3.8276915 AU
Incl. = 13.30511 n = 0.13161297
q = 2.1457541 AU P = 7.49 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	03 01.48	+04 02.4	1.472	2.150	+0.68	+2.4	18.8	120.9
Jan. 13	03 08.26	+04 26.8	1.576	2.156	+0.92	+4.0	19.0	112.8
Jan. 23	03 17.42	+05 06.7	1.688	2.166	+1.12	+5.1	19.2	105.2
Feb. 2	03 28.64	+05 57.4	1.805	2.177	+1.30	+5.7	19.4	98.3
Feb. 12	03 41.65	+06 54.6	1.927	2.192	+1.45	+6.0	19.5	91.7
Feb. 22	03 56.14	+07 54.4	2.052	2.209	+1.57	+5.9	19.7	85.6
Mar. 4	04 11.89	+08 53.7	2.179	2.228	+1.68	+5.6	19.9	79.8
Mar. 14	04 28.68	+09 49.9	2.306	2.250	+1.76	+5.1	20.1	74.2
Mar. 24	04 46.29	+10 40.7	2.433	2.274	+1.83	+4.4	20.3	68.9
Apr. 3	05 04.56	+11 24.6	2.560	2.299	+1.88	+3.6	20.5	63.7
Apr. 13	05 23.34	+12 00.2	2.684	2.327	+1.91	+2.6	20.6	58.7
Apr. 23	05 42.46	+12 26.5	2.806	2.357	+1.93	+1.6	20.8	53.8
May 3	06 01.80	+12 43.0	2.924	2.388	+1.94	+0.6	21.0	49.0
May 13	06 21.23	+12 49.2	3.039	2.421	+1.94	−0.4	21.2	44.3
May 23	06 40.64	+12 45.3	3.148	2.455	+1.93	−1.4	21.3	39.6
June 2	06 59.94	+12 31.2	3.252	2.490	+1.91	−2.4	21.5	35.0
June 12	07 19.04	+12 07.5	3.350	2.527	+1.88	−3.3	21.7	30.4
June 22	07 37.86	+11 34.6	3.441	2.564	+1.85	−4.1	21.8	25.8
July 2	07 56.34	+10 53.1	3.524	2.603	+1.81	−4.9	22.0	21.3
July 12	08 14.43	+10 03.9	3.598	2.642	+1.77	−5.6	22.1	17.0
July 22	08 32.09	+09 07.6	3.662	2.682	+1.72	−6.2	22.2	13.1
Aug. 1	08 49.28	+08 05.2	3.716	2.723	+1.67	−6.8	22.4	10.1
Aug. 11	09 05.97	+06 57.4	3.759	2.764	+1.62	−7.2	22.5	9.3
Aug. 21	09 22.14	+05 45.3	3.791	2.806	+1.56	−7.6	22.6	11.3
Aug. 31	09 37.77	+04 29.6	3.810	2.848	+1.50	−7.8	22.7	15.1
Sept. 10	09 52.81	+03 11.3	3.817	2.890	+1.44	−8.0	22.8	19.9
Sept. 20	10 07.25	+01 51.3	3.810	2.933	+1.38	−8.1	22.9	25.2
Sept. 30	10 21.05	+00 30.4	3.790	2.976	+1.31	−8.1	23.0	30.9
Oct. 10	10 34.15	−00 50.3	3.757	3.019	+1.23	−8.0	.	36.9
Oct. 20	10 46.49	−02 09.9	3.710	3.062	+1.15	−7.8	.	43.2
Oct. 30	10 58.01	−03 27.5	3.651	3.105	+1.06	−7.4	.	49.9
Nov. 9	11 08.61	−04 41.9	3.579	3.148	+0.96	−7.0	.	56.8
Nov. 19	11 18.17	−05 52.1	3.497	3.190	+0.84	−6.5	.	64.0
Nov. 29	11 26.57	−06 56.8	3.405	3.233	+0.71	−5.8	.	71.7
Dec. 9	11 33.65	−07 54.6	3.306	3.276	+0.56	−5.0	.	79.6
Dec. 19	11 39.26	−08 44.1	3.203	3.319	+0.40	−4.0	.	88.1
Dec. 29	11 43.22	−09 23.7	3.097	3.361	+0.22	−2.8	.	96.9
Jan. 8	11 45.40	−09 51.5	2.994	3.403	+0.03	−1.4	.	106.3
Jan. 18	11 45.69	−10 05.9	2.897	3.445	−0.16	+0.1	.	116.1
Jan. 28	11 44.05	−10 05.2	2.812	3.487	−0.34	+1.7	.	126.4
Feb. 7	11 40.60	−09 48.6	2.742	3.528	−0.50	+3.3	.	137.0
Feb. 17	11 35.60	−09 15.9	2.693	3.569	−0.61	+4.7	.	147.9
Feb. 27	11 29.45	−08 28.6	2.670	3.610	−0.67	+5.9	.	158.6
Mar. 9	11 22.74	−07 29.5	2.675	3.650	−0.67	+6.6	.	167.6
Mar. 19	11 16.07	−06 23.0	2.710	3.691	−0.60	+6.9	.	168.5
Mar. 29	11 10.05	−05 14.1	2.775	3.730	−0.49	+6.6	.	160.3

Comet 87P/Bus

Epoch = 2014 July 2.0 TT
T = 2013 Dec. 19.58425 TT
Peri. = 24.71909 e = 0.3890061
Node = 181.89632 2000.0 a = 3.4399203 AU
Incl. = 2.60066 n = 0.15448329
q = 2.1017703 AU P = 6.38 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	15 23.03	-17 28.1	2.607	2.104	+2.17	-6.6	18.3	49.5
Jan. 13	15 44.71	-18 33.7	2.525	2.110	+2.13	-5.3	18.3	54.4
Jan. 23	16 05.98	-19 26.9	2.440	2.117	+2.07	-4.1	18.2	59.5
Feb. 2	16 26.64	-20 07.7	2.352	2.127	+1.98	-2.9	18.1	64.7
Feb. 12	16 46.43	-20 36.2	2.262	2.140	+1.87	-1.7	18.0	70.2
Feb. 22	17 05.11	-20 53.2	2.170	2.155	+1.73	-0.7	18.0	75.9
Mar. 4	17 22.41	-20 59.8	2.077	2.172	+1.56	+0.2	17.9	81.9
Mar. 14	17 38.01	-20 57.5	1.983	2.191	+1.36	+0.9	17.8	88.3
Mar. 24	17 51.63	-20 48.1	1.890	2.212	+1.13	+1.5	17.8	95.0
Apr. 3	18 02.95	-20 33.6	1.799	2.236	+0.87	+1.8	17.7	102.3
Apr. 13	18 11.63	-20 16.1	1.712	2.261	+0.58	+1.8	17.7	110.0
Apr. 23	18 17.43	-19 57.7	1.631	2.287	+0.27	+1.7	17.6	118.4
May 3	18 20.09	-19 40.3	1.560	2.316	-0.05	+1.5	17.6	127.5
May 13	18 19.55	-19 25.4	1.502	2.346	-0.35	+1.2	17.6	137.2
May 23	18 16.01	-19 13.9	1.459	2.377	-0.61	+0.8	17.6	147.6
June 2	18 09.91	-19 06.2	1.437	2.409	-0.78	+0.4	17.7	158.4
June 12	18 02.12	-19 02.2	1.437	2.442	-0.84	0.0	17.7	169.3
June 22	17 53.74	-19 01.8	1.462	2.477	-0.79	-0.3	17.9	175.2
July 2	17 45.89	-19 04.8	1.513	2.512	-0.63	-0.6	18.0	166.1
July 12	17 39.59	-19 11.1	1.588	2.548	-0.41	-1.0	18.2	155.4
July 22	17 35.49	-19 20.6	1.685	2.584	-0.16	-1.2	18.4	145.1
Aug. 1	17 33.92	-19 33.0	1.802	2.622	+0.10	-1.5	18.7	135.2
Aug. 11	17 34.94	-19 47.5	1.935	2.659	+0.34	-1.6	18.9	125.9
Aug. 21	17 38.39	-20 03.1	2.081	2.697	+0.56	-1.6	19.2	117.2
Aug. 31	17 44.03	-20 18.7	2.237	2.736	+0.76	-1.4	19.4	108.9
Sept. 10	17 51.59	-20 33.0	2.400	2.775	+0.92	-1.2	19.7	101.0
Sept. 20	18 00.78	-20 44.9	2.569	2.813	+1.06	-0.8	19.9	93.4
Sept. 30	18 11.35	-20 53.4	2.740	2.852	+1.17	-0.4	20.1	86.1
Oct. 10	18 23.07	-20 57.5	2.911	2.892	+1.26	+0.1	20.4	79.0
Oct. 20	18 35.70	-20 56.7	3.081	2.931	+1.34	+0.6	20.6	72.0
Oct. 30	18 49.07	-20 50.2	3.246	2.970	+1.39	+1.2	20.8	65.2
Nov. 9	19 03.02	-20 37.8	3.406	3.009	+1.44	+1.9	21.0	58.5
Nov. 19	19 17.37	-20 19.3	3.559	3.048	+1.46	+2.5	21.2	51.8
Nov. 29	19 32.01	-19 54.6	3.703	3.087	+1.48	+3.1	21.3	45.1
Dec. 9	19 46.81	-19 23.8	3.836	3.126	+1.48	+3.7	21.5	38.5
Dec. 19	20 01.66	-18 47.2	3.956	3.164	+1.48	+4.2	21.6	31.9
Dec. 29	20 16.47	-18 05.1	4.064	3.202	+1.47	+4.7	21.8	25.3
Jan. 8	20 31.15	-17 18.0	4.156	3.240	+1.45	+5.2	21.9	18.7
Jan. 18	20 45.62	-16 26.4	4.233	3.278	+1.42	+5.5	22.0	12.1
Jan. 28	20 59.83	-15 31.0	4.294	3.315	+1.39	+5.9	22.1	5.6
Feb. 7	21 13.69	-14 32.4	4.338	3.353	+1.35	+6.1	22.2	1.9
Feb. 17	21 27.17	-13 31.4	4.365	3.389	+1.30	+6.3	22.3	8.1
Feb. 27	21 40.20	-12 28.8	4.374	3.426	+1.25	+6.3	22.4	14.7
Mar. 9	21 52.73	-11 25.4	4.366	3.462	+1.20	+6.3	22.5	21.5
Mar. 19	22 04.71	-10 21.9	4.342	3.497	+1.14	+6.3	22.5	28.3
Mar. 29	22 16.08	-09 19.3	4.300	3.533	+1.07	+6.1	22.6	35.3

Comet C/2013 R1 (Lovejoy)

Epoch = 2014 July 2.0 TT
T = 2013 Dec. 22.73746 TT
Peri. = 67.17034
Node = 70.71080 2000.0
Incl. = 64.03719
q = 0.8118433 AU
e = 0.9984227

m1 = 7.4 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	17 32.15	+19 16.4	1.117	0.840	+1.64	-27.0	6.7	46.6
Jan. 13	17 48.56	+14 46.7	1.274	0.906	+1.32	-23.1	7.4	45.1
Jan. 23	18 01.74	+10 55.6	1.398	1.000	+1.09	-19.8	8.1	45.7
Feb. 2	18 12.62	+07 37.3	1.490	1.114	+0.88	-17.2	8.9	48.4
Feb. 12	18 21.40	+04 45.1	1.550	1.238	+0.66	-15.3	9.5	53.0
Feb. 22	18 28.00	+02 11.6	1.582	1.369	+0.42	-14.2	10.1	59.1
Mar. 4	18 32.17	-00 10.0	1.590	1.502	+0.13	-13.7	10.6	66.6
Mar. 14	18 33.51	-02 26.8	1.579	1.637	-0.19	-13.8	11.1	75.2
Mar. 24	18 31.59	-04 45.1	1.553	1.772	-0.57	-14.5	11.5	85.0
Apr. 3	18 25.89	-07 10.0	1.521	1.906	-0.99	-15.5	11.8	96.0
Apr. 13	18 15.96	-09 45.3	1.489	2.038	-1.44	-16.5	12.1	108.2
Apr. 23	18 01.60	-12 30.8	1.468	2.170	-1.85	-17.1	12.4	121.5
May 3	17 43.08	-15 21.4	1.466	2.299	-2.17	-16.6	12.8	135.8
May 13	17 21.42	-18 07.1	1.495	2.427	-2.30	-14.9	13.1	150.8
May 23	16 58.39	-20 36.1	1.560	2.554	-2.23	-12.4	13.5	165.9
June 2	16 36.09	-22 39.9	1.664	2.678	-1.97	-9.7	13.9	179.2
June 12	16 16.38	-24 16.8	1.807	2.801	-1.60	-7.4	14.3	165.4
June 22	16 00.36	-25 30.7	1.984	2.923	-1.20	-5.7	14.7	152.4
July 2	15 48.37	-26 27.8	2.189	3.043	-0.81	-4.7	15.1	140.4
July 12	15 40.26	-27 14.4	2.418	3.161	-0.47	-4.1	15.6	129.3
July 22	15 35.57	-27 55.1	2.663	3.278	-0.18	-3.8	16.0	119.0
Aug. 1	15 33.78	-28 33.0	2.921	3.394	+0.06	-3.7	16.4	109.3
Aug. 11	15 34.40	-29 09.9	3.186	3.508	+0.26	-3.7	16.7	100.1
Aug. 21	15 36.99	-29 46.8	3.454	3.621	+0.42	-3.7	17.1	91.3
Aug. 31	15 41.20	-30 24.1	3.722	3.733	+0.55	-3.8	17.4	82.8
Sept. 10	15 46.72	-31 01.9	3.986	3.843	+0.66	-3.8	17.7	74.6
Sept. 20	15 53.31	-31 40.2	4.242	3.953	+0.75	-3.9	18.0	66.6
Sept. 30	16 00.77	-32 18.8	4.489	4.061	+0.82	-3.9	18.3	58.8
Oct. 10	16 08.92	-32 57.5	4.723	4.168	+0.87	-3.9	18.5	51.1
Oct. 20	16 17.62	-33 36.2	4.942	4.274	+0.91	-3.9	18.8	43.5
Oct. 30	16 26.73	-34 14.8	5.143	4.379	+0.94	-3.8	19.0	36.1
Nov. 9	16 36.13	-34 53.1	5.325	4.484	+0.96	-3.8	19.2	28.9
Nov. 19	16 45.70	-35 31.2	5.486	4.587	+0.96	-3.8	19.4	22.3
Nov. 29	16 55.34	-36 09.1	5.625	4.689	+0.96	-3.8	19.5	16.8
Dec. 9	17 04.91	-36 47.0	5.740	4.791	+0.94	-3.8	19.7	14.0
Dec. 19	17 14.32	-37 25.1	5.832	4.891	+0.91	-3.9	19.8	15.6
Dec. 29	17 23.45	-38 03.7	5.900	4.991	+0.87	-3.9	20.0	20.6
Jan. 8	17 32.17	-38 43.0	5.944	5.090	+0.82	-4.1	20.1	27.3
Jan. 18	17 40.35	-39 23.6	5.966	5.188	+0.75	-4.2	20.2	34.8
Jan. 28	17 47.86	-40 05.9	5.966	5.285	+0.67	-4.4	20.3	42.7
Feb. 7	17 54.56	-40 50.3	5.948	5.382	+0.57	-4.7	20.4	51.0
Feb. 17	18 00.30	-41 37.1	5.913	5.478	+0.46	-5.0	20.5	59.5
Feb. 27	18 04.92	-42 26.6	5.864	5.573	+0.33	-5.2	20.6	68.2
Mar. 9	18 08.26	-43 18.9	5.806	5.668	+0.19	-5.5	20.6	77.1
Mar. 19	18 10.17	-44 13.8	5.742	5.762	+0.03	-5.7	20.7	86.2
Mar. 29	18 10.49	-45 10.7	5.677	5.855	-0.14	-5.8	20.8	95.4

Comet C/2011 J2 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2013 Dec. 25.35147 TT
Peri. = 85.30616
Node = 163.94756 2000.0
Incl. = 122.79906
q = 3.4435011 AU
e = 1.0005305

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	21 53.77	+77 35.4	3.074	3.444	+4.19	-27.1	13.7	103.9
Jan. 13	22 35.70	+73 04.3	3.152	3.448	+2.73	-25.2	13.7	99.1
Jan. 23	23 03.01	+68 52.2	3.257	3.454	+2.06	-22.3	13.8	93.2
Feb. 2	23 23.61	+65 09.2	3.381	3.462	+1.69	-19.0	13.9	86.4
Feb. 12	23 40.54	+61 58.8	3.517	3.473	+1.46	-15.9	14.0	79.4
Feb. 22	23 55.17	+59 20.1	3.657	3.486	+1.31	-12.9	14.1	72.3
Mar. 4	00 08.24	+57 11.0	3.796	3.502	+1.19	-10.2	14.2	65.4
Mar. 14	00 20.09	+55 28.6	3.928	3.520	+1.08	-7.9	14.3	58.9
Mar. 24	00 30.92	+54 09.3	4.048	3.540	+0.99	-5.9	14.4	53.1
Apr. 3	00 40.85	+53 10.2	4.152	3.562	+0.90	-4.2	14.4	48.1
Apr. 13	00 49.89	+52 28.5	4.237	3.587	+0.81	-2.7	14.5	44.2
Apr. 23	00 58.01	+52 01.5	4.302	3.614	+0.72	-1.4	14.6	41.7
May 3	01 05.17	+51 47.1	4.345	3.642	+0.61	-0.4	14.6	40.8
May 13	01 11.25	+51 43.5	4.365	3.673	+0.49	+0.5	14.6	41.7
May 23	01 16.10	+51 48.6	4.362	3.706	+0.34	+1.2	14.7	44.3
June 2	01 19.54	+52 01.0	4.337	3.740	+0.18	+1.8	14.7	48.3
June 12	01 21.34	+52 18.7	4.292	3.777	-0.01	+2.1	14.7	53.5
June 22	01 21.22	+52 39.7	4.227	3.815	-0.23	+2.2	14.7	59.6
July 2	01 18.88	+53 01.6	4.146	3.854	-0.49	+1.9	14.7	66.5
July 12	01 13.97	+53 21.0	4.053	3.896	-0.77	+1.3	14.7	73.9
July 22	01 06.23	+53 33.9	3.950	3.938	-1.08	+0.1	14.6	81.9
Aug. 1	00 55.45	+53 34.7	3.845	3.983	-1.38	-1.8	14.6	90.4
Aug. 11	00 41.70	+53 16.8	3.741	4.028	-1.63	-4.4	14.6	99.1
Aug. 21	00 25.40	+52 33.1	3.647	4.075	-1.81	-7.6	14.6	108.0
Aug. 31	00 07.34	+51 17.1	3.569	4.123	-1.86	-11.2	14.6	116.8
Sept. 10	23 48.74	+49 24.6	3.514	4.172	-1.79	-14.9	14.6	124.9
Sept. 20	23 30.87	+46 55.8	3.488	4.222	-1.60	-18.0	14.6	131.6
Sept. 30	23 14.85	+43 55.8	3.497	4.274	-1.34	-20.2	14.6	135.9
Oct. 10	23 01.42	+40 33.9	3.544	4.326	-1.05	-21.2	14.7	136.7
Oct. 20	22 50.89	+37 01.7	3.630	4.380	-0.76	-21.1	14.8	133.9
Oct. 30	22 43.24	+33 30.5	3.752	4.434	-0.50	-20.1	14.9	128.0
Nov. 9	22 38.25	+30 10.0	3.907	4.489	-0.27	-18.3	15.1	120.3
Nov. 19	22 35.56	+27 06.5	4.089	4.545	-0.07	-16.3	15.2	111.5
Nov. 29	22 34.84	+24 23.7	4.291	4.601	+0.09	-14.1	15.3	102.2
Dec. 9	22 35.75	+22 03.0	4.506	4.658	+0.22	-11.9	15.5	92.8
Dec. 19	22 37.97	+20 04.0	4.728	4.716	+0.33	-9.9	15.6	83.4
Dec. 29	22 41.24	+18 25.3	4.950	4.775	+0.41	-8.0	15.8	74.1
Jan. 8	22 45.32	+17 04.9	5.168	4.834	+0.47	-6.4	15.9	64.9
Jan. 18	22 50.02	+16 00.8	5.375	4.893	+0.51	-5.0	16.0	56.0
Jan. 28	22 55.17	+15 10.7	5.568	4.954	+0.54	-3.8	16.1	47.3
Feb. 7	23 00.61	+14 32.6	5.743	5.014	+0.56	-2.8	16.2	39.0
Feb. 17	23 06.21	+14 04.6	5.896	5.075	+0.57	-2.0	16.3	31.0
Feb. 27	23 11.87	+13 44.8	6.026	5.137	+0.56	-1.3	16.4	23.9
Mar. 9	23 17.45	+13 31.6	6.131	5.198	+0.54	-0.8	16.5	18.3
Mar. 19	23 22.88	+13 23.6	6.210	5.261	+0.52	-0.4	16.6	16.0
Mar. 29	23 28.04	+13 19.3	6.263	5.323	+0.48	-0.2	16.6	18.1

Comet 286P/Christensen

Epoch = 2014 July 2.0 TT
T = 2014 Jan. 6.08830 TT
Peri. = 24.85331 e = 0.4236219
Node = 283.95165 2000.0 a = 4.1222467 AU
Incl. = 17.02150 n = 0.11776144
q = 2.3759727 AU P = 8.37 years

H = 15.6 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	20 03.27	-15 24.8	3.291	2.376	+2.02	+10.1	20.6	18.0
Jan. 13	20 23.45	-13 44.1	3.322	2.377	+1.99	+10.9	20.5	13.5
Jan. 23	20 43.37	-11 55.0	3.344	2.379	+1.96	+11.7	20.5	9.5
Feb. 2	21 03.00	-09 58.0	3.359	2.384	+1.93	+12.4	20.4	7.0
Feb. 12	21 22.28	-07 54.1	3.366	2.391	+1.89	+13.0	20.4	7.6
Feb. 22	21 41.17	-05 44.1	3.365	2.400	+1.85	+13.5	20.5	10.7
Mar. 4	21 59.65	-03 29.1	3.357	2.411	+1.80	+13.9	20.6	14.8
Mar. 14	22 17.70	-01 10.2	3.340	2.425	+1.76	+14.2	20.7	19.3
Mar. 24	22 35.29	+01 11.6	3.317	2.440	+1.71	+14.4	20.8	24.0
Apr. 3	22 52.43	+03 35.4	3.286	2.457	+1.66	+14.5	20.8	28.8
Apr. 13	23 09.08	+05 60.0	3.248	2.476	+1.61	+14.4	20.9	33.6
Apr. 23	23 25.22	+08 24.5	3.203	2.497	+1.56	+14.4	20.9	38.6
May 3	23 40.83	+10 48.0	3.151	2.520	+1.50	+14.2	21.0	43.7
May 13	23 55.84	+13 09.7	3.093	2.544	+1.44	+13.9	21.0	48.8
May 23	00 10.20	+15 28.8	3.028	2.569	+1.36	+13.6	21.0	54.1
June 2	00 23.82	+17 44.6	2.958	2.596	+1.28	+13.2	21.0	59.6
June 12	00 36.59	+19 56.3	2.882	2.625	+1.18	+12.7	21.0	65.3
June 22	00 48.38	+22 03.3	2.802	2.654	+1.06	+12.2	21.0	71.2
July 2	00 59.01	+24 04.8	2.718	2.685	+0.93	+11.5	21.0	77.4
July 12	01 08.28	+25 59.9	2.631	2.717	+0.77	+10.8	20.9	83.8
July 22	01 15.95	+27 47.6	2.544	2.750	+0.58	+9.9	20.9	90.6
Aug. 1	01 21.76	+29 26.5	2.457	2.784	+0.37	+8.8	20.8	97.8
Aug. 11	01 25.44	+30 54.5	2.373	2.818	+0.13	+7.5	20.7	105.4
Aug. 21	01 26.78	+32 09.3	2.295	2.853	-0.11	+5.8	20.6	113.5
Aug. 31	01 25.64	+33 07.6	2.226	2.889	-0.36	+3.8	20.6	121.8
Sept. 10	01 22.06	+33 45.9	2.170	2.926	-0.57	+1.5	20.5	130.5
Sept. 20	01 16.36	+34 00.9	2.130	2.963	-0.73	-1.1	20.4	139.1
Sept. 30	01 09.09	+33 50.4	2.110	3.001	-0.80	-3.6	20.3	147.0
Oct. 10	01 01.13	+33 14.6	2.113	3.039	-0.77	-5.8	20.2	153.2
Oct. 20	00 53.41	+32 16.9	2.142	3.077	-0.66	-7.4	20.2	155.6
Oct. 30	00 46.82	+31 03.3	2.197	3.116	-0.48	-8.1	20.4	153.1
Nov. 9	00 42.03	+29 41.8	2.278	3.154	-0.26	-8.2	20.5	146.9
Nov. 19	00 39.41	+28 20.1	2.383	3.194	-0.03	-7.6	20.7	138.8
Nov. 29	00 39.06	+27 04.6	2.509	3.233	+0.19	-6.5	20.9	130.0
Dec. 9	00 40.91	+25 59.9	2.653	3.272	+0.39	-5.2	21.1	121.1
Dec. 19	00 44.76	+25 08.4	2.811	3.312	+0.56	-3.8	21.3	112.3
Dec. 29	00 50.38	+24 30.8	2.980	3.351	+0.71	-2.4	21.5	103.7
Jan. 8	00 57.52	+24 07.0	3.155	3.391	+0.84	-1.1	21.6	95.3
Jan. 18	01 05.92	+23 55.7	3.334	3.431	+0.95	0.0	21.8	87.3
Jan. 28	01 15.41	+23 55.6	3.514	3.470	+1.04	+0.9	21.9	79.4
Feb. 7	01 25.77	+24 05.1	3.691	3.510	+1.11	+1.7	22.0	71.8
Feb. 17	01 36.87	+24 22.4	3.863	3.549	+1.17	+2.4	22.1	64.4
Feb. 27	01 48.56	+24 46.1	4.028	3.589	+1.22	+2.8	22.2	57.2
Mar. 9	02 00.74	+25 14.6	4.183	3.628	+1.26	+3.2	22.2	50.1
Mar. 19	02 13.31	+25 46.6	4.328	3.667	+1.29	+3.4	22.3	43.2
Mar. 29	02 26.18	+26 20.8	4.460	3.706	+1.31	+3.6	22.3	36.5

Comet 293P/Spacewatch

Epoch = 2014 July 2.0 TT
T = 2014 Jan. 10.21882 TT
Peri. = 41.13567 e = 0.4194064
Node = 78.43143 2000.0 a = 3.6370818 AU
Incl. = 9.06435 n = 0.14209359
q = 2.1116664 AU P = 6.94 years

m1 = 4.6 + 5 log(Delta) + 40.0 log(r(t-30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	08 54.36	+27 49.3	1.192	2.112	-0.39	+8.8	18.1	152.3
Jan. 13	08 50.41	+29 17.4	1.155	2.112	-0.61	+8.2	18.0	161.8
Jan. 23	08 44.34	+30 39.3	1.142	2.114	-0.69	+6.5	17.9	167.6
Feb. 2	08 37.43	+31 44.7	1.153	2.119	-0.61	+4.2	17.9	164.2
Feb. 12	08 31.29	+32 26.3	1.189	2.127	-0.40	+1.6	18.0	155.5
Feb. 22	08 27.30	+32 41.9	1.245	2.137	-0.10	-0.9	18.1	145.8
Mar. 4	08 26.28	+32 33.4	1.321	2.150	+0.23	-2.9	18.2	136.3
Mar. 14	08 28.56	+32 04.3	1.412	2.165	+0.54	-4.6	18.5	127.4
Mar. 24	08 33.98	+31 18.7	1.517	2.183	+0.82	-5.9	18.7	119.1
Apr. 3	08 42.13	+30 19.6	1.631	2.203	+1.04	-7.0	19.0	111.5
Apr. 13	08 52.55	+29 09.4	1.753	2.226	+1.22	-8.0	19.2	104.4
Apr. 23	09 04.72	+27 49.9	1.882	2.250	+1.35	-8.8	19.5	97.8
May 3	09 18.22	+26 22.2	2.015	2.277	+1.45	-9.5	19.8	91.5
May 13	09 32.70	+24 47.5	2.151	2.305	+1.51	-10.1	20.2	85.6
May 23	09 47.84	+23 06.6	2.289	2.335	+1.56	-10.6	20.5	79.9
June 2	10 03.42	+21 20.5	2.428	2.366	+1.59	-11.0	20.8	74.4
June 12	10 19.28	+19 30.1	2.567	2.399	+1.60	-11.4	21.2	69.1
June 22	10 35.28	+17 36.3	2.704	2.433	+1.61	-11.6	21.5	63.8
July 2	10 51.34	+15 39.8	2.840	2.468	+1.61	-11.8	21.8	58.6
July 12	11 07.39	+13 41.7	2.972	2.505	+1.60	-11.9	22.2	53.5
July 22	11 23.40	+11 42.6	3.100	2.542	+1.59	-11.9	22.5	48.4
Aug. 1	11 39.33	+09 43.4	3.222	2.580	+1.58	-11.9	22.8	43.3
Aug. 11	11 55.18	+07 44.8	3.339	2.619	+1.57	-11.7	.	38.2
Aug. 21	12 10.93	+05 47.4	3.448	2.658	+1.57	-11.5	.	33.1
Aug. 31	12 26.59	+03 52.1	3.549	2.698	+1.56	-11.3	.	27.9
Sept.10	12 42.14	+01 59.3	3.640	2.739	+1.54	-10.9	.	22.6
Sept.20	12 57.58	+00 09.8	3.722	2.779	+1.53	-10.6	.	17.4
Sept.30	13 12.92	-01 35.9	3.791	2.820	+1.52	-10.1	.	12.2
Oct. 10	13 28.12	-03 17.2	3.849	2.862	+1.51	-9.6	.	7.6
Oct. 20	13 43.17	-04 53.6	3.893	2.903	+1.49	-9.1	.	5.4
Oct. 30	13 58.05	-06 24.6	3.924	2.945	+1.47	-8.5	.	8.4
Nov. 9	14 12.70	-07 49.9	3.940	2.987	+1.44	-7.9	.	13.7
Nov. 19	14 27.08	-09 08.9	3.941	3.028	+1.40	-7.3	.	19.6
Nov. 29	14 41.12	-10 21.4	3.928	3.070	+1.36	-6.6	.	25.8
Dec. 9	14 54.74	-11 27.2	3.899	3.111	+1.31	-5.9	.	32.3
Dec. 19	15 07.85	-12 26.0	3.856	3.153	+1.25	-5.2	.	39.0
Dec. 29	15 20.33	-13 17.8	3.798	3.194	+1.17	-4.5	.	46.0
Jan. 8	15 32.05	-14 02.5	3.727	3.235	+1.08	-3.8	.	53.2
Jan. 18	15 42.87	-14 40.4	3.645	3.276	+0.97	-3.1	.	60.6
Jan. 28	15 52.62	-15 11.7	3.552	3.317	+0.85	-2.5	.	68.3
Feb. 7	16 01.11	-15 36.5	3.450	3.357	+0.71	-1.9	.	76.4
Feb. 17	16 08.17	-15 55.4	3.343	3.397	+0.54	-1.3	.	84.7
Feb. 27	16 13.60	-16 08.8	3.233	3.437	+0.36	-0.8	.	93.4
Mar. 9	16 17.21	-16 17.1	3.124	3.477	+0.16	-0.4	.	102.5
Mar. 19	16 18.86	-16 20.8	3.019	3.516	-0.04	0.0	.	112.1
Mar. 29	16 18.42	-16 20.4	2.923	3.555	-0.25	+0.4	.	122.0

Comet P/2007 R2 (Gibbs)

Epoch = 2014 July 2.0 TT
T = 2014 Jan. 14.94459 TT
Peri. = 353.22647 e = 0.5735468
Node = 8.76731 2000.0 a = 3.4396393 AU
Incl. = 1.42697 n = 0.15450222
q = 1.4668452 AU P = 6.38 years

m1 = 17.2 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	21 53.96	-13 03.3	2.015	1.472	-1.66	-9.4	20.8	48.1/ 69	43.8
Jan. 13	22 24.43	-10 06.8	2.048	1.467	-1.66	-10.3	20.8	48.8/ 68	41.7
Jan. 23	22 54.77	-06 57.8	2.087	1.469	-1.65	-10.9	20.9	49.1/ 67	39.6
Feb. 2	23 24.87	-03 40.8	2.132	1.480	-1.63	-11.2	21.0	49.0/ 66	37.6
Feb. 12	23 54.68	-00 20.8	2.184	1.497	-1.61	-11.2	21.1	48.4/ 66	35.7
Feb. 22	00 24.16	+02 57.4	2.244	1.522	-1.58	-11.0	21.2	47.6/ 66	33.6
Mar. 4	00 53.32	+06 09.3	2.310	1.554	-1.55	-10.4	21.4	46.5/ 67	31.5
Mar. 14	01 22.15	+09 11.0	2.382	1.591	-1.51	-9.6	21.6	45.2/ 68	29.3
Mar. 24	01 50.63	+11 59.5	2.460	1.634	-1.47	-8.7	21.8	43.8/ 69	26.9
Apr. 3	02 18.77	+14 32.3	2.541	1.681	-1.42	-7.7	22.0	42.3/ 70	24.3
Apr. 13	02 46.53	+16 47.9	2.625	1.732	-1.37	-6.6	22.3	40.7/ 72	21.5
Apr. 23	03 13.85	+18 45.2	2.711	1.787	-1.32	-5.5	22.5	39.2/ 74	18.5
May 3	03 40.69	+20 24.1	2.796	1.844	-1.26	-4.5	22.8	37.7/ 76	15.4
May 13	04 06.98	+21 44.7	2.880	1.903	-1.20	-3.5	23.0	36.2/ 79	12.0
May 23	04 32.63	+22 47.5	2.960	1.964	-1.14	-2.6	.	34.7/ 81	8.4
June 2	04 57.59	+23 33.6	3.036	2.027	-1.08	-1.8	.	33.3/ 84	4.6
June 12	05 21.76	+24 04.0	3.105	2.090	-1.01	-1.1	.	31.9/ 86	1.0
June 22	05 45.08	+24 20.2	3.167	2.154	-0.95	-0.5	.	30.6/ 88	3.8
July 2	06 07.49	+24 23.6	3.221	2.219	-0.89	0.0	.	29.3/ 90	8.2
July 12	06 28.94	+24 15.7	3.264	2.284	-0.83	+0.5	.	28.0/ 93	12.8
July 22	06 49.39	+23 58.2	3.296	2.349	-0.77	+0.8	.	26.8/ 95	17.7
Aug. 1	07 08.81	+23 32.5	3.317	2.414	-0.72	+1.1	.	25.5/ 96	22.8
Aug. 11	07 27.14	+23 00.2	3.326	2.478	-0.68	+1.4	.	24.1/ 98	28.1
Aug. 21	07 44.36	+22 23.0	3.322	2.543	-0.63	+1.6	.	22.7/100	33.7
Aug. 31	08 00.44	+21 42.2	3.304	2.607	-0.60	+1.7	.	21.2/101	39.6
Sept. 10	08 15.32	+20 59.5	3.274	2.670	-0.56	+1.8	.	19.6/102	45.7
Sept. 20	08 28.95	+20 16.3	3.231	2.733	-0.54	+1.9	.	17.8/103	52.2
Sept. 30	08 41.24	+19 34.2	3.176	2.795	-0.52	+2.0	.	15.9/104	59.0
Oct. 10	08 52.10	+18 54.9	3.109	2.856	-0.50	+2.1	.	13.7/104	66.2
Oct. 20	09 01.40	+18 19.8	3.033	2.917	-0.49	+2.2	.	11.2/105	73.8
Oct. 30	09 09.00	+17 50.7	2.950	2.977	-0.49	+2.3	.	8.5/105	81.9
Nov. 9	09 14.72	+17 29.0	2.862	3.037	-0.50	+2.4	.	5.4/103	90.5
Nov. 19	09 18.41	+17 16.3	2.772	3.095	-0.51	+2.5	.	2.1/ 97	99.7
Nov. 29	09 19.86	+17 13.5	2.684	3.153	-0.53	+2.6	.	1.5/302	109.4
Dec. 9	09 18.97	+17 21.4	2.605	3.210	-0.55	+2.8	.	5.0/291	119.8
Dec. 19	09 15.70	+17 39.6	2.537	3.266	-0.59	+2.9	.	8.4/289	130.8
Dec. 29	09 10.17	+18 06.9	2.488	3.322	-0.62	+3.0	.	11.1/288	142.4
Jan. 8	09 02.72	+18 40.6	2.463	3.376	-0.66	+3.0	.	13.0/287	154.4
Jan. 18	08 53.91	+19 17.2	2.465	3.430	-0.68	+3.0	.	13.8/285	166.7
Jan. 28	08 44.50	+19 53.1	2.499	3.483	-0.70	+2.9	.	13.3/284	178.1
Feb. 7	08 35.34	+20 24.7	2.564	3.535	-0.71	+2.7	.	11.7/283	168.2
Feb. 17	08 27.19	+20 49.9	2.660	3.586	-0.70	+2.5	.	9.3/281	156.2
Feb. 27	08 20.65	+21 07.6	2.784	3.637	-0.68	+2.3	.	6.5/279	144.6
Mar. 9	08 16.09	+21 17.6	2.932	3.687	-0.65	+2.2	.	3.5/275	133.5
Mar. 19	08 13.62	+21 20.5	3.099	3.735	-0.61	+2.0	.	0.7/239	123.0
Mar. 29	08 13.20	+21 16.9	3.280	3.783	-0.57	+1.9	.	2.3/114	113.0

Comet C/2013 H2 (Boattini)

Epoch = 2014 July 2.0 TT
T = 2014 Jan. 22.87810 TT
Peri. = 35.97669
Node = 262.74540 2000.0
Incl. = 128.39702
q = 7.4991141 AU
e = 1.0014067

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	16 27.93	+02 39.6	8.180	7.500	+0.25	+4.3	18.3	43.7
Jan. 13	16 30.44	+03 22.7	8.064	7.499	+0.20	+5.0	18.3	52.0
Jan. 23	16 32.43	+04 12.3	7.931	7.499	+0.14	+5.6	18.2	60.7
Feb. 2	16 33.80	+05 08.7	7.785	7.499	+0.06	+6.3	18.2	69.6
Feb. 12	16 34.41	+06 11.8	7.631	7.500	-0.02	+6.9	18.2	78.7
Feb. 22	16 34.17	+07 21.2	7.473	7.501	-0.12	+7.5	18.1	87.9
Mar. 4	16 32.98	+08 36.1	7.316	7.503	-0.22	+8.0	18.1	97.1
Mar. 14	16 30.78	+09 55.7	7.167	7.506	-0.33	+8.3	18.0	106.2
Mar. 24	16 27.51	+11 18.3	7.031	7.509	-0.43	+8.4	18.0	115.1
Apr. 3	16 23.19	+12 42.3	6.913	7.512	-0.53	+8.3	18.0	123.6
Apr. 13	16 17.85	+14 05.4	6.817	7.516	-0.62	+8.0	17.9	131.2
Apr. 23	16 11.63	+15 25.0	6.749	7.520	-0.70	+7.4	17.9	137.5
May 3	16 04.68	+16 39.0	6.710	7.525	-0.74	+6.6	17.9	141.6
May 13	15 57.23	+17 44.8	6.702	7.531	-0.77	+5.6	17.9	142.7
May 23	15 49.54	+18 40.8	6.725	7.537	-0.76	+4.5	17.9	140.8
June 2	15 41.91	+19 25.7	6.779	7.544	-0.73	+3.4	17.9	136.2
June 12	15 34.59	+19 59.3	6.860	7.551	-0.68	+2.2	18.0	129.8
June 22	15 27.84	+20 21.8	6.965	7.558	-0.60	+1.2	18.0	122.4
July 2	15 21.84	+20 34.1	7.090	7.566	-0.51	+0.3	18.0	114.4
July 12	15 16.73	+20 37.5	7.229	7.575	-0.41	-0.4	18.1	106.1
July 22	15 12.60	+20 33.6	7.379	7.584	-0.31	-1.0	18.1	97.8
Aug. 1	15 09.47	+20 24.1	7.534	7.594	-0.21	-1.3	18.2	89.5
Aug. 11	15 07.33	+20 10.6	7.689	7.604	-0.12	-1.6	18.2	81.4
Aug. 21	15 06.14	+19 54.7	7.840	7.614	-0.03	-1.7	18.3	73.5
Aug. 31	15 05.83	+19 37.8	7.982	7.625	+0.05	-1.6	18.3	65.9
Sept.10	15 06.32	+19 21.3	8.112	7.637	+0.12	-1.5	18.4	58.6
Sept.20	15 07.52	+19 06.4	8.227	7.649	+0.18	-1.2	18.4	51.9
Sept.30	15 09.34	+18 54.1	8.324	7.662	+0.23	-0.9	18.4	46.0
Oct. 10	15 11.68	+18 45.4	8.400	7.675	+0.27	-0.4	18.5	41.0
Oct. 20	15 14.43	+18 41.1	8.455	7.688	+0.31	+0.1	18.5	37.4
Oct. 30	15 17.49	+18 42.3	8.487	7.702	+0.33	+0.7	18.5	35.7
Nov. 9	15 20.76	+18 49.5	8.495	7.717	+0.34	+1.4	18.5	36.1
Nov. 19	15 24.13	+19 03.6	8.480	7.732	+0.34	+2.2	18.5	38.5
Nov. 29	15 27.49	+19 25.2	8.443	7.747	+0.32	+3.0	18.5	42.7
Dec. 9	15 30.73	+19 54.8	8.386	7.763	+0.30	+3.8	18.5	48.1
Dec. 19	15 33.72	+20 32.9	8.309	7.779	+0.26	+4.7	18.5	54.5
Dec. 29	15 36.34	+21 19.7	8.217	7.796	+0.21	+5.6	18.5	61.5
Jan. 8	15 38.48	+22 15.5	8.113	7.813	+0.15	+6.4	18.5	68.9
Jan. 18	15 39.99	+23 19.9	8.000	7.831	+0.08	+7.3	18.5	76.6
Jan. 28	15 40.75	+24 32.7	7.882	7.849	-0.01	+8.0	18.4	84.5
Feb. 7	15 40.64	+25 52.9	7.766	7.868	-0.11	+8.6	18.4	92.3
Feb. 17	15 39.54	+27 19.3	7.654	7.887	-0.22	+9.1	18.4	100.0
Feb. 27	15 37.37	+28 50.0	7.553	7.906	-0.33	+9.3	18.4	107.4
Mar. 9	15 34.05	+30 22.9	7.467	7.926	-0.45	+9.2	18.4	114.2
Mar. 19	15 29.58	+31 55.3	7.399	7.946	-0.56	+8.9	18.3	120.2
Mar. 29	15 23.98	+33 24.3	7.354	7.967	-0.66	+8.2	18.3	124.9

Comet 292P/Li

Epoch = 2014 July 2.0 TT
T = 2014 Feb. 4.87880 TT
Peri. = 319.06905 e = 0.5883356
Node = 91.86452 2000.0 a = 6.1273049 AU
Incl. = 24.35546 n = 0.06498301
q = 2.5223933 AU P = 15.17 years

m1 = 5.4 + 5 log(Delta) + 22.5 log(r(t-60))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	01 44.34	-12 14.2	2.228	2.537	+0.73	+17.5	16.6	96.6
Jan. 13	01 51.68	-09 19.5	2.332	2.530	+0.91	+17.5	16.6	89.9
Jan. 23	02 00.78	-06 24.4	2.441	2.525	+1.06	+17.3	16.7	83.4
Feb. 2	02 11.41	-03 31.1	2.553	2.523	+1.20	+16.9	16.7	77.1
Feb. 12	02 23.39	-00 41.8	2.667	2.523	+1.31	+16.4	16.7	70.9
Feb. 22	02 36.53	+02 02.1	2.780	2.526	+1.41	+15.7	16.8	65.0
Mar. 4	02 50.67	+04 39.3	2.893	2.532	+1.50	+15.0	16.8	59.2
Mar. 14	03 05.70	+07 08.9	3.003	2.541	+1.58	+14.1	16.9	53.5
Mar. 24	03 21.50	+09 30.0	3.109	2.552	+1.65	+13.2	16.9	48.0
Apr. 3	03 37.97	+11 42.0	3.212	2.566	+1.71	+12.2	17.0	42.6
Apr. 13	03 55.02	+13 44.2	3.309	2.583	+1.75	+11.2	17.0	37.2
Apr. 23	04 12.56	+15 36.3	3.400	2.602	+1.80	+10.2	17.1	31.9
May 3	04 30.53	+17 17.9	3.484	2.623	+1.83	+9.1	17.2	26.7
May 13	04 48.81	+18 48.9	3.561	2.647	+1.85	+8.0	17.3	21.5
May 23	05 07.34	+20 09.3	3.629	2.672	+1.87	+7.0	17.4	16.3
June 2	05 26.03	+21 19.2	3.688	2.700	+1.88	+6.0	17.4	11.0
June 12	05 44.78	+22 18.9	3.738	2.730	+1.87	+5.0	17.5	5.8
June 22	06 03.51	+23 08.7	3.778	2.761	+1.86	+4.1	17.6	0.6
July 2	06 22.13	+23 49.4	3.806	2.795	+1.84	+3.2	17.7	4.8
July 12	06 40.54	+24 21.7	3.824	2.830	+1.81	+2.5	17.8	10.2
July 22	06 58.66	+24 46.3	3.831	2.866	+1.77	+1.8	17.9	15.8
Aug. 1	07 16.40	+25 04.5	3.825	2.904	+1.73	+1.3	18.0	21.4
Aug. 11	07 33.67	+25 17.3	3.808	2.943	+1.67	+0.9	18.1	27.2
Aug. 21	07 50.39	+25 26.1	3.779	2.984	+1.61	+0.6	18.2	33.1
Aug. 31	08 06.47	+25 32.3	3.739	3.026	+1.53	+0.5	18.3	39.3
Sept.10	08 21.81	+25 37.5	3.687	3.068	+1.45	+0.6	18.4	45.6
Sept.20	08 36.34	+25 43.4	3.625	3.112	+1.36	+0.8	18.5	52.2
Sept.30	08 49.95	+25 51.7	3.553	3.156	+1.26	+1.3	18.6	59.0
Oct. 10	09 02.50	+26 04.4	3.472	3.202	+1.14	+1.9	18.7	66.2
Oct. 20	09 13.89	+26 23.3	3.384	3.248	+1.01	+2.7	18.7	73.7
Oct. 30	09 23.95	+26 50.2	3.291	3.295	+0.86	+3.7	18.8	81.5
Nov. 9	09 32.51	+27 27.0	3.196	3.342	+0.69	+4.8	18.9	89.7
Nov. 19	09 39.39	+28 14.9	3.102	3.390	+0.50	+6.0	19.0	98.3
Nov. 29	09 44.39	+29 14.7	3.012	3.438	+0.29	+7.2	19.0	107.4
Dec. 9	09 47.32	+30 26.3	2.931	3.487	+0.07	+8.2	19.1	116.7
Dec. 19	09 48.05	+31 48.0	2.862	3.536	-0.15	+8.9	19.2	126.4
Dec. 29	09 46.50	+33 16.8	2.812	3.585	-0.37	+9.1	19.3	136.1
Jan. 8	09 42.78	+34 47.9	2.783	3.635	-0.56	+8.7	19.4	145.4
Jan. 18	09 37.17	+36 15.3	2.779	3.685	-0.70	+7.8	19.5	153.3
Jan. 28	09 30.19	+37 32.9	2.804	3.735	-0.76	+6.2	19.7	157.9
Feb. 7	09 22.55	+38 35.3	2.858	3.785	-0.75	+4.4	19.9	156.9
Feb. 17	09 15.05	+39 19.4	2.940	3.836	-0.66	+2.5	20.1	151.2
Feb. 27	09 08.46	+39 44.4	3.049	3.886	-0.51	+0.7	20.3	143.0
Mar. 9	09 03.37	+39 51.4	3.181	3.937	-0.32	-0.8	20.5	134.0
Mar. 19	09 00.14	+39 42.9	3.333	3.987	-0.12	-2.1	20.8	124.9
Mar. 29	08 58.92	+39 21.9	3.501	4.038	+0.08	-3.1	21.0	115.9

Comet 107P/(4015) Wilson-Harrington

Epoch = 2014 July 2.0 TT
T = 2014 Feb. 5.28366 TT
Peri. = 91.45312 e = 0.6235448
Node = 270.40575 2000.0 a = 2.6407936 AU
Incl. = 2.78458 n = 0.22966900
q = 0.9941405 AU P = 4.29 years

H = 15.8 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	20 21.35	-18 13.1	1.949	1.090	+4.09	+16.5	18.4	21.0
Jan. 13	21 02.25	-15 27.9	1.899	1.043	+4.19	+20.4	18.3	21.0
Jan. 23	21 44.11	-12 04.2	1.859	1.010	+4.24	+23.6	18.2	21.6
Feb. 2	22 26.52	-08 08.0	1.831	0.995	+4.25	+25.8	18.2	22.6
Feb. 12	23 09.05	-03 49.5	1.818	0.998	+4.23	+26.8	18.2	23.8
Feb. 22	23 51.38	+00 38.2	1.823	1.020	+4.19	+26.3	18.3	25.2
Mar. 4	00 33.23	+05 01.4	1.848	1.058	+4.11	+24.6	18.4	26.5
Mar. 14	01 14.35	+09 07.4	1.892	1.109	+4.01	+21.9	18.5	27.5
Mar. 24	01 54.48	+12 46.4	1.954	1.172	+3.89	+18.6	18.7	28.0
Apr. 3	02 33.42	+15 52.5	2.032	1.243	+3.75	+15.1	18.9	28.1
Apr. 13	03 10.94	+18 23.3	2.124	1.320	+3.59	+11.6	19.1	27.5
Apr. 23	03 46.86	+20 19.0	2.226	1.400	+3.42	+8.3	19.2	26.5
May 3	04 21.07	+21 42.1	2.336	1.483	+3.24	+5.4	19.4	24.8
May 13	04 53.48	+22 36.0	2.450	1.567	+3.06	+2.8	19.5	22.7
May 23	05 24.07	+23 04.3	2.565	1.651	+2.88	+0.7	19.7	20.1
June 2	05 52.88	+23 10.8	2.678	1.735	+2.71	-1.2	19.8	17.2
June 12	06 19.95	+22 59.2	2.789	1.819	+2.54	-2.7	19.9	13.8
June 22	06 45.37	+22 32.4	2.893	1.901	+2.39	-3.9	19.9	10.2
July 2	07 09.24	+21 53.2	2.990	1.983	+2.24	-4.9	20.0	6.2
July 12	07 31.65	+21 03.9	3.078	2.062	+2.10	-5.7	20.0	2.0
July 22	07 52.69	+20 06.7	3.155	2.141	+1.98	-6.3	20.1	2.7
Aug. 1	08 12.46	+19 03.3	3.220	2.218	+1.86	-6.8	20.4	7.5
Aug. 11	08 31.01	+17 55.3	3.272	2.293	+1.74	-7.1	20.6	12.5
Aug. 21	08 48.43	+16 43.9	3.310	2.366	+1.63	-7.3	20.8	17.8
Aug. 31	09 04.75	+15 30.6	3.332	2.438	+1.52	-7.4	21.0	23.3
Sept.10	09 20.00	+14 16.3	3.340	2.508	+1.42	-7.4	21.1	29.1
Sept.20	09 34.18	+13 02.4	3.332	2.577	+1.31	-7.3	21.2	35.2
Sept.30	09 47.28	+11 49.7	3.308	2.643	+1.20	-7.0	21.3	41.6
Oct. 10	09 59.25	+10 39.6	3.269	2.708	+1.08	-6.7	21.4	48.2
Oct. 20	10 10.05	+09 33.0	3.216	2.772	+0.95	-6.2	21.5	55.3
Oct. 30	10 19.57	+08 31.3	3.149	2.834	+0.81	-5.6	21.5	62.7
Nov. 9	10 27.68	+07 35.8	3.071	2.894	+0.66	-4.8	21.5	70.5
Nov. 19	10 34.25	+06 47.8	2.983	2.953	+0.48	-3.9	21.5	78.7
Nov. 29	10 39.09	+06 08.8	2.888	3.010	+0.29	-2.8	21.5	87.5
Dec. 9	10 42.01	+05 40.5	2.790	3.066	+0.08	-1.6	21.4	96.7
Dec. 19	10 42.83	+05 24.1	2.693	3.120	-0.14	-0.3	21.3	106.6
Dec. 29	10 41.40	+05 21.2	2.602	3.173	-0.37	+1.1	21.3	117.1
Jan. 8	10 37.67	+05 32.2	2.522	3.224	-0.59	+2.5	21.1	128.2
Jan. 18	10 31.73	+05 57.1	2.460	3.274	-0.79	+3.7	21.0	139.9
Jan. 28	10 23.88	+06 34.3	2.420	3.322	-0.92	+4.7	20.9	152.0
Feb. 7	10 14.65	+07 20.9	2.409	3.369	-0.99	+5.2	20.7	164.4
Feb. 17	10 04.79	+08 12.6	2.429	3.415	-0.97	+5.2	20.6	175.8
Feb. 27	09 55.10	+09 04.9	2.481	3.459	-0.87	+4.8	20.8	169.4
Mar. 9	09 46.39	+09 53.3	2.565	3.502	-0.72	+4.1	21.1	157.4
Mar. 19	09 39.24	+10 34.6	2.678	3.544	-0.52	+3.2	21.3	145.6
Mar. 29	09 34.03	+11 06.9	2.815	3.585	-0.31	+2.2	21.5	134.3

Comet 129P/Shoemaker-Levy

Epoch = 2014 July 2.0 TT
T = 2014 Feb. 10.66027 TT
Peri. = 309.43032 e = 0.0865028
Node = 184.91336 2000.0 a = 4.2842602 AU
Incl. = 3.44061 n = 0.11114510
q = 3.9136597 AU P = 8.87 years

m1 = 9.6 + 5 log(Delta) + 12.5 log(r(t-30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	09 15.72	+12 06.1	3.072	3.915	-0.46	+1.9	19.4	144.5
Jan. 13	09 11.11	+12 25.2	2.996	3.914	-0.57	+2.6	19.4	155.8
Jan. 23	09 05.42	+12 50.8	2.948	3.914	-0.63	+3.0	19.4	167.2
Feb. 2	08 59.12	+13 20.8	2.930	3.914	-0.63	+3.2	19.3	176.4
Feb. 12	08 52.81	+13 52.4	2.942	3.914	-0.57	+3.1	19.4	168.2
Feb. 22	08 47.07	+14 23.1	2.984	3.914	-0.47	+2.7	19.4	156.9
Mar. 4	08 42.40	+14 50.5	3.054	3.914	-0.32	+2.3	19.4	145.8
Mar. 14	08 39.20	+15 13.1	3.148	3.914	-0.15	+1.7	19.5	135.0
Mar. 24	08 37.67	+15 29.7	3.261	3.915	+0.02	+1.0	19.6	124.7
Apr. 3	08 37.89	+15 39.8	3.390	3.916	+0.19	+0.3	19.7	114.8
Apr. 13	08 39.83	+15 43.1	3.529	3.917	+0.35	-0.3	19.7	105.4
Apr. 23	08 43.37	+15 39.7	3.675	3.918	+0.50	-1.0	19.8	96.5
May 3	08 48.34	+15 29.7	3.823	3.919	+0.62	-1.6	19.9	88.0
May 13	08 54.59	+15 13.2	3.971	3.921	+0.73	-2.3	20.0	79.8
May 23	09 01.91	+14 50.7	4.115	3.922	+0.82	-2.8	20.1	72.0
June 2	09 10.16	+14 22.2	4.253	3.924	+0.90	-3.4	20.2	64.5
June 12	09 19.17	+13 48.2	4.383	3.926	+0.96	-3.9	20.2	57.1
June 22	09 28.81	+13 09.0	4.503	3.928	+1.01	-4.4	20.3	50.0
July 2	09 38.95	+12 24.9	4.611	3.930	+1.05	-4.9	20.3	43.1
July 12	09 49.49	+11 36.4	4.706	3.933	+1.08	-5.3	20.4	36.2
July 22	10 00.33	+10 43.8	4.787	3.935	+1.11	-5.6	20.4	29.5
Aug. 1	10 11.40	+09 47.6	4.854	3.938	+1.12	-5.9	20.5	22.8
Aug. 11	10 22.61	+08 48.3	4.904	3.941	+1.13	-6.2	20.5	16.2
Aug. 21	10 33.90	+07 46.5	4.938	3.944	+1.13	-6.4	20.5	9.6
Aug. 31	10 45.22	+06 42.5	4.955	3.947	+1.13	-6.5	20.5	3.1
Sept.10	10 56.49	+05 37.1	4.954	3.950	+1.12	-6.6	20.5	4.0
Sept.20	11 07.68	+04 30.8	4.937	3.954	+1.10	-6.7	20.5	10.6
Sept.30	11 18.72	+03 24.3	4.902	3.957	+1.08	-6.6	20.5	17.4
Oct. 10	11 29.54	+02 18.2	4.849	3.961	+1.05	-6.5	20.5	24.3
Oct. 20	11 40.08	+01 13.3	4.781	3.965	+1.02	-6.3	20.5	31.4
Oct. 30	11 50.27	+00 10.2	4.696	3.969	+0.97	-6.0	20.4	38.6
Nov. 9	12 00.01	-00 50.1	4.597	3.973	+0.92	-5.7	20.4	46.0
Nov. 19	12 09.21	-01 46.9	4.484	3.977	+0.86	-5.2	20.3	53.5
Nov. 29	12 17.77	-02 39.3	4.359	3.982	+0.78	-4.7	20.3	61.3
Dec. 9	12 25.55	-03 26.4	4.225	3.986	+0.69	-4.1	20.2	69.4
Dec. 19	12 32.42	-04 07.2	4.083	3.991	+0.58	-3.4	20.1	77.7
Dec. 29	12 38.23	-04 40.8	3.936	3.996	+0.46	-2.5	20.1	86.3
Jan. 8	12 42.82	-05 06.1	3.788	4.000	+0.32	-1.6	20.0	95.3
Jan. 18	12 46.04	-05 22.4	3.642	4.005	+0.17	-0.6	19.9	104.7
Jan. 28	12 47.77	-05 28.7	3.502	4.011	+0.02	+0.4	19.8	114.4
Feb. 7	12 47.93	-05 24.7	3.374	4.016	-0.14	+1.5	19.8	124.5
Feb. 17	12 46.50	-05 10.2	3.261	4.021	-0.29	+2.4	19.7	135.1
Feb. 27	12 43.57	-04 45.7	3.168	4.027	-0.42	+3.3	19.6	146.0
Mar. 9	12 39.36	-04 12.7	3.099	4.032	-0.51	+3.9	19.6	157.2
Mar. 19	12 34.21	-03 33.3	3.057	4.038	-0.56	+4.3	19.6	168.6
Mar. 29	12 28.58	-02 50.6	3.045	4.043	-0.56	+4.3	19.6	179.8

Comet P/2013 N3 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 Feb. 11.75953 TT
Peri. = 323.95125 e = 0.5919918
Node = 17.67418 2000.0 a = 7.4235611 AU
Incl. = 2.17063 n = 0.04872879
q = 3.0288738 AU P = 20.23 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 3	21 34.10	-15 46.5	3.753	3.044	+1.55	+8.3	19.3	38.4
Jan. 13	21 49.58	-14 23.9	3.824	3.037	+1.57	+8.8	19.4	32.2
Jan. 23	22 05.25	-12 56.1	3.885	3.033	+1.58	+9.2	19.4	26.1
Feb. 2	22 21.03	-11 23.8	3.936	3.030	+1.58	+9.6	19.4	20.1
Feb. 12	22 36.83	-09 47.7	3.976	3.029	+1.58	+9.9	19.4	14.2
Feb. 22	22 52.61	-08 08.7	4.005	3.030	+1.57	+10.1	19.4	8.3
Mar. 4	23 08.31	-06 27.6	4.023	3.033	+1.56	+10.2	19.5	2.6
Mar. 14	23 23.88	-04 45.2	4.029	3.038	+1.54	+10.3	19.5	3.4
Mar. 24	23 39.29	-03 02.4	4.025	3.044	+1.52	+10.2	19.5	9.1
Apr. 3	23 54.51	-01 20.1	4.009	3.053	+1.50	+10.1	19.5	14.8
Apr. 13	00 09.49	+00 20.9	3.982	3.063	+1.47	+9.9	19.5	20.5
Apr. 23	00 24.19	+01 59.8	3.945	3.075	+1.44	+9.6	19.5	26.2
May 3	00 38.58	+03 35.8	3.897	3.089	+1.40	+9.2	19.5	32.0
May 13	00 52.60	+05 08.2	3.840	3.105	+1.36	+8.8	19.5	37.9
May 23	01 06.18	+06 36.3	3.773	3.122	+1.31	+8.3	19.5	43.8
June 2	01 19.25	+07 59.5	3.697	3.142	+1.25	+7.8	19.5	49.9
June 12	01 31.73	+09 17.2	3.614	3.162	+1.18	+7.2	19.5	56.1
June 22	01 43.50	+10 28.9	3.523	3.184	+1.09	+6.5	19.5	62.5
July 2	01 54.45	+11 34.1	3.425	3.208	+1.00	+5.8	19.5	69.2
July 12	02 04.42	+12 32.4	3.323	3.233	+0.88	+5.1	19.5	76.1
July 22	02 13.27	+13 23.4	3.218	3.260	+0.75	+4.3	19.5	83.3
Aug. 1	02 20.80	+14 06.8	3.111	3.288	+0.60	+3.5	19.5	90.9
Aug. 11	02 26.84	+14 42.1	3.005	3.317	+0.44	+2.7	19.5	98.9
Aug. 21	02 31.21	+15 09.1	2.903	3.347	+0.25	+1.8	19.5	107.4
Aug. 31	02 33.75	+15 27.3	2.807	3.379	+0.06	+0.9	19.5	116.4
Sept. 10	02 34.36	+15 36.7	2.723	3.412	-0.13	+0.1	19.5	125.9
Sept. 20	02 33.06	+15 37.3	2.652	3.445	-0.31	-0.8	19.5	135.9
Sept. 30	02 29.98	+15 29.2	2.601	3.480	-0.46	-1.6	19.6	146.4
Oct. 10	02 25.43	+15 13.7	2.573	3.516	-0.56	-2.1	19.6	157.4
Oct. 20	02 19.87	+14 52.3	2.570	3.552	-0.60	-2.5	19.7	168.7
Oct. 30	02 13.91	+14 27.6	2.596	3.590	-0.57	-2.5	19.8	179.0
Nov. 9	02 08.18	+14 02.5	2.652	3.628	-0.49	-2.2	19.9	168.3
Nov. 19	02 03.25	+13 40.2	2.736	3.667	-0.37	-1.7	20.1	157.0
Nov. 29	01 59.58	+13 23.3	2.847	3.706	-0.21	-0.9	20.2	146.0
Dec. 9	01 57.48	+13 13.9	2.981	3.746	-0.04	-0.1	20.4	135.3
Dec. 19	01 57.05	+13 12.7	3.135	3.787	+0.13	+0.7	20.6	125.1
Dec. 29	01 58.32	+13 20.2	3.305	3.829	+0.29	+1.6	20.8	115.2
Jan. 8	02 01.19	+13 35.9	3.486	3.871	+0.43	+2.3	21.0	105.8
Jan. 18	02 05.52	+13 58.9	3.674	3.913	+0.56	+2.9	21.2	96.7
Jan. 28	02 11.16	+14 28.3	3.866	3.956	+0.68	+3.4	21.4	88.0
Feb. 7	02 17.94	+15 02.7	4.058	3.999	+0.78	+3.8	21.6	79.6
Feb. 17	02 25.70	+15 41.2	4.247	4.043	+0.86	+4.1	21.8	71.4
Feb. 27	02 34.30	+16 22.4	4.431	4.087	+0.93	+4.3	21.9	63.5
Mar. 9	02 43.60	+17 05.5	4.606	4.131	+0.99	+4.4	22.1	55.9
Mar. 19	02 53.47	+17 49.3	4.771	4.176	+1.03	+4.4	22.3	48.3
Mar. 29	03 03.81	+18 33.2	4.923	4.221	+1.07	+4.3	22.4	41.0

Comet 169P/NEAT

Epoch = 2014 July 2.0 TT
T = 2014 Feb. 15.27317 TT
Peri. = 218.06917 e = 0.7667529
Node = 176.11082 2000.0 a = 2.6058875 AU
Incl. = 11.29179 n = 0.23429908
q = 0.6078157 AU P = 4.21 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	19 51.89	-16 43.9	1.904	0.987	+4.18	+6.4	17.8	15.0
Jan. 13	20 33.67	-15 40.0	1.779	0.863	+4.71	+10.6	17.3	14.6
Jan. 23	21 20.75	-13 53.9	1.649	0.749	+5.27	+15.6	16.9	15.6
Feb. 2	22 13.44	-11 18.0	1.516	0.659	+5.79	+20.8	16.4	18.4
Feb. 12	23 11.34	-07 49.7	1.385	0.611	+6.18	+25.5	16.0	22.9
Feb. 22	00 13.18	-03 34.9	1.264	0.621	+6.45	+28.6	15.9	28.9
Mar. 4	01 17.63	+01 11.5	1.172	0.686	+6.58	+29.2	15.9	35.8
Mar. 14	02 23.46	+06 03.4	1.126	0.787	+6.51	+26.1	16.1	43.0
Mar. 24	03 28.59	+10 24.7	1.131	0.905	+6.16	+20.0	16.5	49.9
Apr. 3	04 30.17	+13 44.2	1.188	1.031	+5.56	+12.7	16.8	55.4
Apr. 13	05 25.75	+15 51.5	1.288	1.158	+4.86	+6.4	17.3	59.2
Apr. 23	06 14.33	+16 55.1	1.421	1.284	+4.19	+1.6	17.7	61.1
May 3	06 56.25	+17 11.0	1.577	1.407	+3.62	-1.7	18.1	61.3
May 13	07 32.43	+16 54.0	1.749	1.526	+3.15	-3.9	18.5	60.3
May 23	08 03.96	+16 14.9	1.931	1.641	+2.79	-5.4	18.9	58.2
June 2	08 31.81	+15 21.0	2.119	1.753	+2.49	-6.4	19.2	55.3
June 12	08 56.76	+14 17.2	2.308	1.861	+2.26	-7.0	19.6	51.8
June 22	09 19.40	+13 06.8	2.496	1.965	+2.08	-7.5	19.9	47.9
July 2	09 40.21	+11 51.9	2.681	2.066	+1.93	-7.8	20.1	43.6
July 12	09 59.54	+10 34.0	2.858	2.164	+1.81	-8.0	20.4	38.9
July 22	10 17.64	+09 14.3	3.028	2.258	+1.71	-8.1	20.6	34.0
Aug. 1	10 34.74	+07 53.6	3.187	2.350	+1.62	-8.1	20.8	28.9
Aug. 11	10 50.96	+06 32.8	3.333	2.438	+1.55	-8.0	20.9	23.5
Aug. 21	11 06.44	+05 12.4	3.466	2.524	+1.48	-7.9	21.1	18.0
Aug. 31	11 21.27	+03 53.0	3.584	2.607	+1.42	-7.8	21.3	12.3
Sept. 10	11 35.50	+02 35.2	3.686	2.687	+1.37	-7.6	21.4	6.3
Sept. 20	11 49.17	+01 19.6	3.769	2.765	+1.31	-7.3	21.5	0.3
Sept. 30	12 02.30	+00 06.6	3.835	2.841	+1.26	-7.0	21.6	6.1
Oct. 10	12 14.90	-01 03.0	3.880	2.914	+1.20	-6.6	21.7	12.6
Oct. 20	12 26.94	-02 08.9	3.907	2.985	+1.15	-6.1	21.7	19.3
Oct. 30	12 38.40	-03 10.3	3.913	3.054	+1.08	-5.6	21.8	26.2
Nov. 9	12 49.21	-04 06.6	3.900	3.121	+1.01	-5.1	21.8	33.4
Nov. 19	12 59.31	-04 57.2	3.868	3.186	+0.93	-4.4	21.9	40.8
Nov. 29	13 08.59	-05 41.3	3.817	3.249	+0.84	-3.7	21.9	48.5
Dec. 9	13 16.94	-06 18.1	3.750	3.310	+0.73	-2.9	21.9	56.5
Dec. 19	13 24.23	-06 46.9	3.668	3.369	+0.60	-2.0	21.9	64.8
Dec. 29	13 30.28	-07 06.8	3.574	3.427	+0.46	-1.0	21.8	73.5
Jan. 8	13 34.91	-07 16.8	3.471	3.483	+0.30	+0.1	21.8	82.5
Jan. 18	13 37.96	-07 16.2	3.363	3.537	+0.13	+1.2	21.8	92.0
Jan. 28	13 39.23	-07 04.1	3.254	3.589	-0.06	+2.4	21.7	101.9
Feb. 7	13 38.59	-06 40.0	3.149	3.640	-0.26	+3.6	21.7	112.4
Feb. 17	13 35.96	-06 03.8	3.054	3.689	-0.46	+4.8	21.7	123.3
Feb. 27	13 31.35	-05 16.0	2.974	3.737	-0.64	+5.8	21.6	134.6
Mar. 9	13 24.97	-04 18.3	2.916	3.783	-0.78	+6.5	21.6	146.4
Mar. 19	13 17.16	-03 13.5	2.885	3.828	-0.87	+6.8	21.6	158.4
Mar. 29	13 08.43	-02 05.2	2.884	3.871	-0.90	+6.7	21.6	170.0

Comet C/2013 P2 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 Feb. 17.03423 TT
Peri. = 104.96957
Node = 2.03140 2000.0
Incl. = 125.53159
q = 2.8351115 AU
e = 0.9988981

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	18 11.80	+18 08.2	3.523	2.872	+0.19	+2.5	18.9	42.3
Jan. 13	18 13.73	+18 33.7	3.467	2.858	+0.13	+4.5	18.9	45.0
Jan. 23	18 15.06	+19 18.6	3.386	2.847	+0.04	+6.5	18.8	49.5
Feb. 2	18 15.42	+20 23.9	3.283	2.839	-0.11	+8.7	18.7	55.2
Feb. 12	18 14.36	+21 50.4	3.161	2.836	-0.30	+10.8	18.6	62.0
Feb. 22	18 11.36	+23 38.9	3.024	2.836	-0.56	+13.1	18.5	69.6
Mar. 4	18 05.74	+25 49.7	2.878	2.839	-0.91	+15.2	18.4	77.8
Mar. 14	17 56.64	+28 21.5	2.729	2.847	-1.36	+16.8	18.3	86.5
Mar. 24	17 43.05	+31 09.9	2.586	2.857	-1.92	+17.6	18.2	95.4
Apr. 3	17 23.83	+34 05.5	2.458	2.872	-2.58	+16.5	18.1	104.2
Apr. 13	16 58.05	+36 50.7	2.357	2.890	-3.24	+12.9	18.1	112.3
Apr. 23	16 25.69	+39 00.1	2.293	2.911	-3.73	+6.6	18.0	118.6
May 3	15 48.40	+40 06.5	2.274	2.936	-3.86	-1.4	18.1	122.1
May 13	15 09.78	+39 52.7	2.304	2.964	-3.58	-9.1	18.1	121.8
May 23	14 34.00	+38 21.8	2.384	2.995	-3.01	-14.8	18.3	117.9
June 2	14 03.93	+35 54.0	2.508	3.029	-2.34	-17.9	18.4	111.4
June 12	13 40.51	+32 54.8	2.667	3.065	-1.73	-18.9	18.6	103.4
June 22	13 23.23	+29 45.4	2.853	3.105	-1.22	-18.7	18.8	94.6
July 2	13 11.06	+26 38.5	3.055	3.147	-0.81	-17.7	19.0	85.7
July 12	13 02.92	+23 41.2	3.266	3.191	-0.50	-16.5	19.2	76.8
July 22	12 57.87	+20 56.0	3.478	3.238	-0.27	-15.3	19.4	68.0
Aug. 1	12 55.19	+18 23.3	3.685	3.286	-0.09	-14.1	19.6	59.4
Aug. 11	12 54.31	+16 02.5	3.881	3.337	+0.05	-13.0	19.8	50.9
Aug. 21	12 54.76	+13 52.6	4.063	3.389	+0.15	-12.0	19.9	42.7
Aug. 31	12 56.24	+11 52.4	4.227	3.444	+0.22	-11.1	20.1	34.6
Sept. 10	12 58.43	+10 01.0	4.369	3.499	+0.27	-10.4	20.2	26.8
Sept. 20	13 01.13	+08 17.4	4.488	3.557	+0.30	-9.6	20.4	19.5
Sept. 30	13 04.14	+06 41.0	4.581	3.616	+0.31	-9.0	20.5	13.6
Oct. 10	13 07.27	+05 11.3	4.648	3.676	+0.31	-8.3	20.6	11.8
Oct. 20	13 10.35	+03 47.8	4.687	3.737	+0.29	-7.7	20.7	15.5
Oct. 30	13 13.23	+02 30.3	4.699	3.799	+0.25	-7.2	20.8	22.4
Nov. 9	13 15.73	+01 18.8	4.684	3.862	+0.19	-6.6	20.8	30.5
Nov. 19	13 17.66	+00 13.0	4.643	3.927	+0.12	-6.0	20.9	39.2
Nov. 29	13 18.84	-00 46.7	4.579	3.992	+0.02	-5.4	20.9	48.4
Dec. 9	13 19.06	-01 40.4	4.494	4.058	-0.10	-4.7	20.9	57.9
Dec. 19	13 18.09	-02 27.6	4.392	4.124	-0.24	-4.0	21.0	67.9
Dec. 29	13 15.72	-03 07.9	4.278	4.192	-0.40	-3.3	21.0	78.3
Jan. 8	13 11.70	-03 40.9	4.158	4.259	-0.58	-2.5	21.0	89.2
Jan. 18	13 05.86	-04 06.0	4.038	4.328	-0.78	-1.7	21.0	100.6
Jan. 28	12 58.05	-04 22.7	3.925	4.397	-0.98	-0.8	21.0	112.5
Feb. 7	12 48.27	-04 30.5	3.829	4.466	-1.16	+0.1	21.0	124.8
Feb. 17	12 36.65	-04 29.5	3.757	4.536	-1.31	+0.9	21.0	137.6
Feb. 27	12 23.53	-04 20.1	3.717	4.606	-1.41	+1.6	21.1	150.7
Mar. 9	12 09.47	-04 03.8	3.714	4.676	-1.43	+2.1	21.1	163.9
Mar. 19	11 55.13	-03 42.6	3.754	4.747	-1.39	+2.4	21.2	175.4
Mar. 29	11 41.23	-03 19.1	3.836	4.818	-1.28	+2.3	21.3	168.2

Comet P/2013 TL117 (Lemmon)

Epoch = 2014 July 2.0 TT
T = 2014 Feb. 18.21356 TT
Peri. = 112.19904 e = 0.6898761
Node = 3.35906 2000.0 a = 3.6039467 AU
Incl. = 9.36565 n = 0.14405772
q = 1.1176700 AU P = 6.84 years

m1 = 17.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m	m1	Elong. °
Jan. 3	00 43.96	+21 33.5	0.714	1.275	+1.77	+13.1	17.7	96.1
Jan. 13	01 01.66	+23 44.9	0.703	1.218	+2.40	+15.4	17.5	90.9
Jan. 23	01 25.68	+26 19.0	0.687	1.172	+3.10	+16.7	17.3	87.2
Feb. 2	01 56.69	+29 06.4	0.667	1.139	+3.90	+16.5	17.1	84.8
Feb. 12	02 35.68	+31 51.0	0.647	1.121	+4.76	+13.6	16.9	83.9
Feb. 22	03 23.32	+34 07.2	0.629	1.119	+5.59	+7.3	16.9	84.3
Mar. 4	04 19.21	+35 20.3	0.621	1.133	+6.12	-2.3	16.9	86.0
Mar. 14	05 20.43	+34 57.6	0.627	1.163	+6.13	-13.0	17.0	88.6
Mar. 24	06 21.74	+32 47.2	0.652	1.206	+5.64	-21.8	17.3	91.5
Apr. 3	07 18.15	+29 09.6	0.699	1.260	+4.91	-26.5	17.6	94.1
Apr. 13	08 07.20	+24 44.8	0.769	1.324	+4.16	-27.5	18.0	95.9
Apr. 23	08 48.82	+20 09.5	0.860	1.395	+3.54	-26.3	18.5	96.6
May 3	09 24.20	+15 46.2	0.970	1.472	+3.06	-24.2	19.0	96.2
May 13	09 54.76	+11 44.4	1.097	1.553	+2.69	-21.8	19.5	94.8
May 23	10 21.69	+08 06.0	1.239	1.636	+2.42	-19.7	20.0	92.7
June 2	10 45.92	+04 49.0	1.392	1.721	+2.22	-17.9	20.5	89.9
June 12	11 08.15	+01 50.5	1.556	1.806	+2.07	-16.3	20.9	86.6
June 22	11 28.86	-00 52.5	1.727	1.893	+1.96	-15.0	21.4	82.9
July 2	11 48.45	-03 22.7	1.906	1.979	+1.87	-13.9	21.8	78.9
July 12	12 07.16	-05 42.1	2.088	2.065	+1.80	-13.0	22.1	74.6
July 22	12 25.21	-07 52.2	2.273	2.150	+1.75	-12.2	22.5	70.0
Aug. 1	12 42.75	-09 54.4	2.460	2.235	+1.71	-11.5	22.8	65.3
Aug. 11	12 59.89	-11 49.4	2.645	2.318	+1.68	-10.9	.	60.4
Aug. 21	13 16.73	-13 37.9	2.828	2.401	+1.66	-10.2	.	55.3
Aug. 31	13 33.33	-15 20.4	3.006	2.483	+1.64	-9.7	.	50.1
Sept.10	13 49.74	-16 57.0	3.179	2.563	+1.63	-9.1	.	44.7
Sept.20	14 05.99	-18 28.0	3.343	2.642	+1.61	-8.5	.	39.2
Sept.30	14 22.11	-19 53.5	3.498	2.720	+1.60	-8.0	.	33.6
Oct. 10	14 38.10	-21 13.4	3.641	2.797	+1.58	-7.4	.	27.8
Oct. 20	14 53.95	-22 27.9	3.772	2.873	+1.57	-6.9	.	22.0
Oct. 30	15 09.64	-23 37.0	3.888	2.947	+1.55	-6.4	.	16.2
Nov. 9	15 25.14	-24 40.7	3.988	3.020	+1.53	-5.8	.	10.6
Nov. 19	15 40.40	-25 39.0	4.072	3.092	+1.50	-5.3	.	6.4
Nov. 29	15 55.38	-26 32.2	4.139	3.163	+1.46	-4.8	.	7.4
Dec. 9	16 09.99	-27 20.4	4.186	3.232	+1.42	-4.4	.	12.6
Dec. 19	16 24.15	-28 03.9	4.215	3.301	+1.36	-3.9	.	19.0
Dec. 29	16 37.78	-28 43.1	4.226	3.368	+1.30	-3.5	.	25.8
Jan. 8	16 50.75	-29 18.5	4.217	3.434	+1.22	-3.2	.	32.9
Jan. 18	17 02.96	-29 50.5	4.191	3.499	+1.13	-2.9	.	40.3
Jan. 28	17 14.27	-30 19.9	4.147	3.562	+1.03	-2.7	.	47.9
Feb. 7	17 24.53	-30 47.3	4.088	3.625	+0.91	-2.6	.	55.7
Feb. 17	17 33.60	-31 13.5	4.016	3.687	+0.77	-2.6	.	63.7
Feb. 27	17 41.28	-31 39.1	3.932	3.747	+0.61	-2.6	.	72.1
Mar. 9	17 47.41	-32 04.8	3.839	3.807	+0.44	-2.6	.	80.7
Mar. 19	17 51.81	-32 31.1	3.742	3.865	+0.25	-2.7	.	89.6
Mar. 29	17 54.29	-32 58.0	3.643	3.923	+0.04	-2.7	.	98.9

Comet C/2012 X1 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2014 Feb. 21.62998 TT
Peri. = 132.11130
Node = 113.14616 2000.0
Incl. = 44.36708
q = 1.5989052 AU
e = 0.9897270

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	16 34.85	+10 42.1	2.233	1.733	+3.04	-11.9	12.5	47.8
Jan. 13	17 05.25	+08 43.2	2.177	1.686	+3.00	-11.5	12.4	48.0
Jan. 23	17 35.27	+06 48.0	2.130	1.648	+2.94	-11.0	12.2	48.3
Feb. 2	18 04.65	+04 57.6	2.090	1.621	+2.85	-10.5	12.1	48.8
Feb. 12	18 33.15	+03 12.3	2.056	1.604	+2.75	-10.1	12.0	49.7
Feb. 22	19 00.60	+01 31.4	2.024	1.599	+2.63	-9.7	12.0	51.0
Mar. 4	19 26.88	-00 06.1	1.993	1.605	+2.50	-9.6	12.0	53.0
Mar. 14	19 51.88	-01 42.0	1.960	1.622	+2.37	-9.7	12.0	55.7
Mar. 24	20 15.55	-03 19.0	1.924	1.651	+2.23	-10.1	12.0	59.1
Apr. 3	20 37.83	-04 60.0	1.885	1.689	+2.08	-10.8	12.1	63.2
Apr. 13	20 58.62	-06 48.5	1.841	1.736	+1.92	-12.0	12.1	68.0
Apr. 23	21 17.86	-08 48.3	1.795	1.792	+1.76	-13.5	12.2	73.6
May 3	21 35.42	-11 03.6	1.746	1.854	+1.57	-15.5	12.3	79.8
May 13	21 51.13	-13 38.4	1.696	1.923	+1.37	-17.8	12.4	86.7
May 23	22 04.79	-16 36.3	1.649	1.997	+1.13	-20.3	12.5	94.2
June 2	22 16.14	-19 59.6	1.607	2.076	+0.87	-22.9	12.6	102.4
June 12	22 24.86	-23 48.1	1.575	2.158	+0.58	-25.0	12.7	111.0
June 22	22 30.63	-27 58.2	1.556	2.243	+0.25	-26.3	12.9	119.9
July 2	22 33.13	-32 21.7	1.555	2.331	-0.10	-26.4	13.0	128.8
July 12	22 32.15	-36 45.4	1.576	2.421	-0.44	-24.8	13.2	136.9
July 22	22 27.77	-40 53.5	1.622	2.512	-0.74	-21.7	13.5	143.3
Aug. 1	22 20.40	-44 30.4	1.695	2.604	-0.94	-17.4	13.7	146.8
Aug. 11	22 10.98	-47 24.2	1.794	2.698	-1.02	-12.6	14.0	146.4
Aug. 21	22 00.82	-49 29.8	1.918	2.792	-0.95	-7.9	14.3	142.8
Aug. 31	21 51.33	-50 48.3	2.065	2.887	-0.76	-3.7	14.6	137.0
Sept. 10	21 43.72	-51 25.6	2.231	2.982	-0.50	-0.4	14.9	130.2
Sept. 20	21 38.70	-51 29.9	2.414	3.077	-0.21	+2.1	15.2	122.9
Sept. 30	21 36.55	-51 09.0	2.609	3.173	+0.06	+3.9	15.5	115.5
Oct. 10	21 37.20	-50 29.9	2.815	3.268	+0.31	+5.2	15.8	108.2
Oct. 20	21 40.31	-49 37.9	3.028	3.363	+0.52	+6.1	16.1	101.0
Oct. 30	21 45.53	-48 36.9	3.246	3.459	+0.70	+6.7	16.3	93.9
Nov. 9	21 52.49	-47 29.9	3.465	3.554	+0.83	+7.1	16.6	87.0
Nov. 19	22 00.80	-46 19.0	3.684	3.648	+0.94	+7.3	16.9	80.2
Nov. 29	22 10.19	-45 05.5	3.899	3.743	+1.02	+7.5	17.1	73.6
Dec. 9	22 20.39	-43 50.9	4.110	3.837	+1.08	+7.5	17.3	67.2
Dec. 19	22 31.20	-42 36.1	4.313	3.931	+1.12	+7.4	17.5	61.0
Dec. 29	22 42.44	-41 21.9	4.507	4.024	+1.15	+7.3	17.7	55.0
Jan. 8	22 53.96	-40 09.3	4.690	4.117	+1.17	+7.0	17.9	49.3
Jan. 18	23 05.66	-38 58.8	4.861	4.210	+1.18	+6.8	18.1	44.1
Jan. 28	23 17.44	-37 51.2	5.017	4.302	+1.18	+6.4	18.2	39.4
Feb. 7	23 29.22	-36 47.3	5.159	4.394	+1.17	+6.0	18.4	35.6
Feb. 17	23 40.93	-35 47.7	5.285	4.486	+1.16	+5.4	18.5	32.8
Feb. 27	23 52.52	-34 53.2	5.394	4.577	+1.14	+4.9	18.7	31.3
Mar. 9	00 03.91	-34 04.5	5.486	4.667	+1.12	+4.2	18.8	31.4
Mar. 19	00 15.08	-33 22.1	5.562	4.758	+1.09	+3.5	18.9	33.0
Mar. 29	00 25.96	-32 46.9	5.621	4.847	+1.05	+2.8	19.0	35.9

Comet 296P/Garradd

Epoch = 2014 July 2.0 TT
T = 2014 Mar. 1.28260 TT
Peri. = 350.02844 e = 0.4773513
Node = 263.67648 2000.0 a = 3.5027237 AU
Incl. = 25.20402 n = 0.15034717
q = 1.8306940 AU P = 6.56 years

m1 = 11.2 + 5 log(Delta) + 17.5 log(r(t-30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	16 13.56	-32 09.9	2.596	1.898	+2.94	+0.1	18.5	36.5
Jan. 13	16 42.98	-32 08.7	2.521	1.877	+2.93	+2.6	18.3	40.0
Jan. 23	17 12.24	-31 42.9	2.443	1.860	+2.88	+5.1	18.1	43.7
Feb. 2	17 40.99	-30 52.0	2.364	1.846	+2.79	+7.6	17.9	47.4
Feb. 12	18 08.88	-29 36.1	2.285	1.837	+2.67	+10.0	17.8	51.3
Feb. 22	18 35.60	-27 56.1	2.204	1.832	+2.53	+12.3	17.6	55.3
Mar. 4	19 00.90	-25 53.4	2.123	1.831	+2.37	+14.3	17.5	59.5
Mar. 14	19 24.56	-23 29.9	2.041	1.834	+2.19	+16.2	17.4	63.8
Mar. 24	19 46.43	-20 47.7	1.960	1.842	+2.00	+17.9	17.3	68.3
Apr. 3	20 06.38	-17 49.0	1.879	1.853	+1.79	+19.3	17.2	73.0
Apr. 13	20 24.28	-14 36.1	1.799	1.868	+1.57	+20.5	17.1	78.0
Apr. 23	20 40.03	-11 11.4	1.722	1.888	+1.34	+21.4	17.0	83.2
May 3	20 53.48	-07 37.4	1.646	1.911	+1.10	+22.1	17.0	88.7
May 13	21 04.44	-03 56.8	1.575	1.937	+0.83	+22.4	16.9	94.5
May 23	21 12.74	-00 13.1	1.508	1.966	+0.54	+22.3	16.9	100.7
June 2	21 18.13	+03 29.6	1.448	1.998	+0.23	+21.6	16.9	107.2
June 12	21 20.40	+07 05.6	1.397	2.033	-0.10	+20.2	16.9	114.0
June 22	21 19.44	+10 28.1	1.356	2.070	-0.42	+18.0	17.0	120.9
July 2	21 15.27	+13 28.4	1.328	2.110	-0.70	+14.9	17.1	127.8
July 12	21 08.27	+15 57.3	1.315	2.151	-0.91	+11.0	17.2	134.2
July 22	20 59.19	+17 46.8	1.319	2.194	-1.01	+6.5	17.3	139.5
Aug. 1	20 49.10	+18 52.0	1.342	2.238	-0.98	+2.1	17.5	143.0
Aug. 11	20 39.32	+19 13.4	1.386	2.283	-0.83	-1.7	17.7	143.8
Aug. 21	20 31.04	+18 56.6	1.448	2.330	-0.59	-4.6	18.0	141.9
Aug. 31	20 25.12	+18 10.9	1.530	2.377	-0.31	-6.4	18.2	137.9
Sept.10	20 22.02	+17 07.1	1.629	2.426	-0.02	-7.2	18.5	132.4
Sept.20	20 21.82	+15 55.1	1.744	2.474	+0.25	-7.2	18.8	126.3
Sept.30	20 24.35	+14 42.6	1.872	2.523	+0.50	-6.7	19.1	119.7
Oct. 10	20 29.33	+13 35.7	2.012	2.573	+0.70	-5.8	19.5	113.0
Oct. 20	20 36.37	+12 38.2	2.162	2.623	+0.88	-4.6	19.8	106.4
Oct. 30	20 45.16	+11 52.2	2.318	2.673	+1.02	-3.3	20.1	99.8
Nov. 9	20 55.36	+11 19.2	2.480	2.722	+1.13	-2.0	20.4	93.2
Nov. 19	21 06.68	+10 59.4	2.646	2.772	+1.22	-0.7	20.6	86.8
Nov. 29	21 18.90	+10 52.5	2.813	2.822	+1.29	+0.6	20.9	80.4
Dec. 9	21 31.79	+10 58.2	2.980	2.872	+1.34	+1.7	21.2	74.2
Dec. 19	21 45.19	+11 15.4	3.144	2.921	+1.38	+2.8	21.4	68.0
Dec. 29	21 58.95	+11 43.4	3.305	2.970	+1.40	+3.8	21.7	61.9
Jan. 8	22 12.96	+12 21.2	3.460	3.019	+1.41	+4.6	21.9	55.8
Jan. 18	22 27.10	+13 07.5	3.608	3.068	+1.42	+5.4	22.1	49.9
Jan. 28	22 41.32	+14 01.3	3.746	3.116	+1.42	+6.0	22.3	44.1
Feb. 7	22 55.53	+15 01.7	3.875	3.164	+1.42	+6.6	22.5	38.5
Feb. 17	23 09.68	+16 07.5	3.992	3.211	+1.40	+7.0	22.7	33.2
Feb. 27	23 23.73	+17 17.7	4.096	3.258	+1.39	+7.4	22.9	28.3
Mar. 9	23 37.63	+18 31.5	4.187	3.304	+1.37	+7.6	.	23.9
Mar. 19	23 51.34	+19 48.0	4.263	3.350	+1.35	+7.8	.	20.7
Mar. 29	00 04.83	+21 06.4	4.325	3.396	+1.32	+8.0	.	18.9

Comet 294P/LINEAR

Epoch = 2014 July 2.0 TT
T = 2014 Mar. 3.23513 TT
Peri. = 235.38026 e = 0.5943458
Node = 312.68932 2000.0 a = 3.2045037 AU
Incl. = 18.22675 n = 0.17181572
q = 1.2999204 AU P = 5.74 years

m1 = 17.4 + 5 log(Delta) + 12.5 log(r(t+140))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	12 05.00	-05 34.9	0.945	1.465	+2.35	-40.3	19.8	98.9
Jan. 13	12 28.53	-12 17.8	0.851	1.418	+2.47	-44.5	19.8	101.0
Jan. 23	12 53.24	-19 43.2	0.774	1.376	+2.63	-47.6	19.8	102.4
Feb. 2	13 19.54	-27 38.8	0.715	1.343	+2.83	-48.3	19.8	103.2
Feb. 12	13 47.89	-35 41.6	0.673	1.319	+3.09	-46.1	19.9	103.6
Feb. 22	14 18.76	-43 23.0	0.647	1.304	+3.34	-41.2	20.0	103.7
Mar. 4	14 52.18	-50 14.7	0.634	1.300	+3.53	-34.1	20.2	104.0
Mar. 14	15 27.47	-55 55.3	0.630	1.306	+3.54	-26.1	20.3	104.8
Mar. 24	16 02.82	-60 16.6	0.632	1.322	+3.21	-18.5	20.5	106.4
Apr. 3	16 34.93	-63 21.4	0.636	1.348	+2.50	-11.7	20.7	108.9
Apr. 13	16 59.88	-65 18.6	0.642	1.382	+1.46	-6.0	20.9	112.5
Apr. 23	17 14.49	-66 18.2	0.649	1.424	+0.28	-0.5	21.1	117.2
May 3	17 17.29	-66 23.4	0.658	1.473	-0.73	+5.4	21.3	122.9
May 13	17 10.00	-65 29.3	0.673	1.528	-1.29	+11.8	21.5	129.3
May 23	16 57.10	-63 31.1	0.695	1.587	-1.33	+17.9	21.7	135.8
June 2	16 43.75	-60 31.8	0.729	1.649	-0.99	+22.4	21.9	141.6
June 12	16 33.86	-56 47.8	0.779	1.714	-0.51	+24.4	22.2	145.3
June 22	16 28.81	-52 43.9	0.847	1.782	-0.04	+24.1	22.5	145.8
July 2	16 28.41	-48 43.1	0.934	1.851	+0.35	+22.1	22.9	143.1
July 12	16 31.95	-45 01.8	1.040	1.921	+0.66	+19.4	.	138.1
July 22	16 38.51	-41 48.0	1.164	1.991	+0.89	+16.5	.	131.9
Aug. 1	16 47.39	-39 02.9	1.304	2.062	+1.06	+13.8	.	125.1
Aug. 11	16 58.04	-36 44.5	1.458	2.133	+1.20	+11.6	.	118.2
Aug. 21	17 10.00	-34 48.5	1.624	2.204	+1.30	+9.8	.	111.4
Aug. 31	17 22.97	-33 10.4	1.800	2.275	+1.37	+8.4	.	104.6
Sept.10	17 36.71	-31 46.1	1.984	2.345	+1.43	+7.4	.	97.9
Sept.20	17 51.01	-30 31.8	2.173	2.414	+1.47	+6.7	.	91.3
Sept.30	18 05.74	-29 24.5	2.365	2.482	+1.50	+6.3	.	84.7
Oct. 10	18 20.78	-28 21.5	2.559	2.550	+1.52	+6.1	.	78.2
Oct. 20	18 35.99	-27 21.0	2.752	2.617	+1.53	+6.0	.	71.7
Oct. 30	18 51.32	-26 21.4	2.943	2.683	+1.53	+6.0	.	65.3
Nov. 9	19 06.66	-25 21.4	3.128	2.748	+1.53	+6.1	.	58.8
Nov. 19	19 21.94	-24 20.2	3.306	2.813	+1.52	+6.3	.	52.3
Nov. 29	19 37.11	-23 17.3	3.476	2.876	+1.50	+6.5	.	45.8
Dec. 9	19 52.10	-22 12.3	3.635	2.938	+1.47	+6.7	.	39.2
Dec. 19	20 06.84	-21 04.9	3.781	2.999	+1.45	+7.0	.	32.6
Dec. 29	20 21.31	-19 55.2	3.913	3.059	+1.41	+7.2	.	26.0
Jan. 8	20 35.43	-18 43.3	4.029	3.118	+1.37	+7.4	.	19.3
Jan. 18	20 49.17	-17 29.4	4.129	3.177	+1.33	+7.6	.	12.6
Jan. 28	21 02.49	-16 13.8	4.212	3.234	+1.29	+7.7	.	5.9
Feb. 7	21 15.35	-14 56.9	4.275	3.290	+1.23	+7.8	.	1.4
Feb. 17	21 27.69	-13 39.2	4.320	3.345	+1.18	+7.8	.	8.0
Feb. 27	21 39.49	-12 21.0	4.346	3.399	+1.12	+7.8	.	14.9
Mar. 9	21 50.68	-11 03.0	4.353	3.452	+1.05	+7.7	.	21.9
Mar. 19	22 01.23	-09 45.7	4.341	3.504	+0.98	+7.6	.	29.0
Mar. 29	22 11.07	-08 29.6	4.312	3.555	+0.91	+7.4	.	36.2

Comet 52P/Harrington-Abell

Epoch = 2014 July 2.0 TT
T = 2014 Mar. 7.50975 TT
Peri. = 139.60040 e = 0.5404785
Node = 336.85121 2000.0 a = 3.8585067 AU
Incl. = 10.23147 n = 0.13003947
q = 1.7730668 AU P = 7.58 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	04 05.30	+39 34.1	1.003	1.871	+0.17	-8.0	15.6	140.8
Jan. 13	04 07.02	+38 14.6	1.033	1.844	+0.66	-8.0	15.5	132.2
Jan. 23	04 13.65	+36 54.7	1.076	1.820	+1.11	-7.6	15.5	124.0
Feb. 2	04 24.79	+35 38.9	1.130	1.801	+1.51	-7.1	15.5	116.5
Feb. 12	04 39.86	+34 28.0	1.193	1.787	+1.82	-6.8	15.5	109.7
Feb. 22	04 58.11	+33 20.5	1.263	1.778	+2.07	-6.7	15.5	103.6
Mar. 4	05 18.85	+32 13.2	1.339	1.773	+2.26	-7.0	15.6	98.0
Mar. 14	05 41.47	+31 03.1	1.421	1.774	+2.39	-7.6	15.7	92.8
Mar. 24	06 05.36	+29 47.5	1.508	1.780	+2.47	-8.3	15.9	88.1
Apr. 3	06 30.02	+28 24.3	1.600	1.791	+2.50	-9.2	16.0	83.7
Apr. 13	06 55.04	+26 52.2	1.696	1.806	+2.50	-10.1	16.2	79.5
Apr. 23	07 20.05	+25 11.0	1.797	1.827	+2.47	-11.0	16.4	75.5
May 3	07 44.78	+23 20.7	1.903	1.851	+2.43	-11.9	16.6	71.6
May 13	08 09.06	+21 22.1	2.012	1.880	+2.37	-12.6	16.9	67.8
May 23	08 32.72	+19 16.5	2.124	1.913	+2.30	-13.2	17.1	64.1
June 2	08 55.73	+17 04.8	2.240	1.949	+2.23	-13.6	17.4	60.3
June 12	09 18.05	+14 48.6	2.358	1.988	+2.16	-14.0	17.7	56.6
June 22	09 39.67	+12 29.0	2.477	2.030	+2.10	-14.2	17.9	52.7
July 2	10 00.62	+10 07.2	2.597	2.074	+2.03	-14.3	18.2	48.9
July 12	10 20.95	+07 44.4	2.716	2.121	+1.97	-14.3	18.5	44.9
July 22	10 40.70	+05 21.4	2.834	2.169	+1.92	-14.2	18.8	40.8
Aug. 1	10 59.93	+02 59.3	2.950	2.220	+1.88	-14.1	19.1	36.6
Aug. 11	11 18.69	+00 38.6	3.062	2.271	+1.83	-13.8	19.4	32.4
Aug. 21	11 37.02	-01 39.8	3.169	2.324	+1.80	-13.6	19.6	27.9
Aug. 31	11 54.98	-03 55.5	3.270	2.377	+1.76	-13.2	19.9	23.4
Sept.10	12 12.59	-06 07.8	3.363	2.432	+1.73	-12.9	20.2	18.8
Sept.20	12 29.90	-08 16.4	3.449	2.487	+1.70	-12.4	20.4	14.1
Sept.30	12 46.92	-10 20.8	3.525	2.542	+1.67	-12.0	20.6	9.6
Oct. 10	13 03.66	-12 20.6	3.590	2.598	+1.65	-11.5	20.9	5.9
Oct. 20	13 20.13	-14 15.5	3.643	2.654	+1.62	-11.0	21.1	5.9
Oct. 30	13 36.31	-16 05.3	3.684	2.711	+1.59	-10.4	21.3	9.9
Nov. 9	13 52.16	-17 49.6	3.711	2.767	+1.55	-9.9	21.5	15.1
Nov. 19	14 07.66	-19 28.3	3.725	2.823	+1.51	-9.3	21.7	20.9
Nov. 29	14 22.73	-21 01.4	3.724	2.879	+1.46	-8.7	21.9	26.9
Dec. 9	14 37.29	-22 28.7	3.708	2.935	+1.40	-8.2	22.0	33.3
Dec. 19	14 51.25	-23 50.4	3.679	2.991	+1.32	-7.6	22.2	39.9
Dec. 29	15 04.49	-25 06.5	3.635	3.046	+1.24	-7.1	22.3	46.7
Jan. 8	15 16.85	-26 17.3	3.579	3.101	+1.13	-6.6	22.4	53.8
Jan. 18	15 28.18	-27 23.1	3.510	3.156	+1.01	-6.1	22.6	61.2
Jan. 28	15 38.27	-28 24.2	3.432	3.210	+0.87	-5.7	22.7	68.8
Feb. 7	15 46.94	-29 20.9	3.345	3.264	+0.70	-5.2	22.8	76.8
Feb. 17	15 53.94	-30 13.3	3.252	3.317	+0.51	-4.8	22.8	85.1
Feb. 27	15 59.05	-31 01.4	3.157	3.370	+0.30	-4.3	22.9	93.8
Mar. 9	16 02.05	-31 44.9	3.062	3.423	+0.07	-3.8	23.0	102.9
Mar. 19	16 02.76	-32 23.0	2.972	3.475	-0.17	-3.1	.	112.3
Mar. 29	16 01.07	-32 54.4	2.892	3.526	-0.40	-2.3	.	122.2

Comet P/2013 W1 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 Mar. 8.15660 TT
Peri. = 1.31399 e = 0.5938161
Node = 117.85740 2000.0 a = 3.4851029 AU
Incl. = 4.69951 n = 0.15148885
q = 1.4155927 AU P = 6.51 years

m1 = 16.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	02 48.99	+09 57.3	0.837	1.581	+0.76	+9.9	19.0	120.3
Jan. 13	02 56.60	+11 36.1	0.862	1.536	+1.24	+11.7	18.9	112.5
Jan. 23	03 09.03	+13 33.1	0.891	1.497	+1.70	+12.9	18.8	105.9
Feb. 2	03 26.00	+15 41.7	0.923	1.465	+2.12	+13.3	18.7	100.3
Feb. 12	03 47.23	+17 54.5	0.958	1.441	+2.51	+12.9	18.7	95.6
Feb. 22	04 12.29	+20 03.2	0.995	1.424	+2.85	+11.6	18.7	91.7
Mar. 4	04 40.78	+21 59.6	1.037	1.416	+3.14	+9.6	18.7	88.6
Mar. 14	05 12.18	+23 35.3	1.083	1.417	+3.36	+6.8	18.8	85.9
Mar. 24	05 45.76	+24 43.3	1.136	1.427	+3.50	+3.5	19.0	83.7
Apr. 3	06 20.74	+25 18.4	1.196	1.444	+3.55	0.0	19.2	81.7
Apr. 13	06 56.23	+25 18.5	1.265	1.470	+3.51	-3.4	19.4	79.9
Apr. 23	07 31.36	+24 44.3	1.344	1.503	+3.41	-6.5	19.7	78.1
May 3	08 05.47	+23 39.1	1.432	1.543	+3.26	-9.1	20.0	76.3
May 13	08 38.09	+22 07.9	1.530	1.589	+3.08	-11.1	20.3	74.3
May 23	09 08.92	+20 16.5	1.638	1.639	+2.90	-12.6	20.7	72.1
June 2	09 37.92	+18 10.2	1.754	1.693	+2.72	-13.6	21.1	69.6
June 12	10 05.15	+15 54.2	1.878	1.751	+2.56	-14.2	21.4	67.0
June 22	10 30.74	+13 32.5	2.009	1.812	+2.41	-14.4	21.8	64.1
July 2	10 54.87	+11 08.3	2.145	1.875	+2.29	-14.4	22.2	60.9
July 12	11 17.74	+08 44.2	2.285	1.940	+2.18	-14.2	22.5	57.6
July 22	11 39.50	+06 22.1	2.428	2.006	+2.08	-13.9	22.9	53.9
Aug. 1	12 00.35	+04 03.3	2.572	2.073	+2.01	-13.4	.	50.1
Aug. 11	12 20.42	+01 48.8	2.716	2.140	+1.94	-12.9	.	46.0
Aug. 21	12 39.82	-00 20.5	2.858	2.208	+1.89	-12.4	.	41.7
Aug. 31	12 58.69	-02 24.2	2.996	2.276	+1.84	-11.7	.	37.3
Sept.10	13 17.08	-04 21.6	3.129	2.344	+1.80	-11.1	.	32.6
Sept.20	13 35.07	-06 12.4	3.255	2.412	+1.76	-10.4	.	27.7
Sept.30	13 52.72	-07 56.4	3.373	2.479	+1.73	-9.7	.	22.7
Oct. 10	14 10.04	-09 33.2	3.481	2.546	+1.70	-8.9	.	17.5
Oct. 20	14 27.06	-11 02.7	3.578	2.612	+1.67	-8.2	.	12.2
Oct. 30	14 43.77	-12 24.6	3.662	2.678	+1.64	-7.4	.	6.9
Nov. 9	15 00.17	-13 38.8	3.732	2.744	+1.60	-6.7	.	3.3
Nov. 19	15 16.21	-14 45.4	3.788	2.808	+1.56	-5.9	.	6.6
Nov. 29	15 31.85	-15 44.1	3.828	2.872	+1.52	-5.1	.	12.4
Dec. 9	15 47.03	-16 35.2	3.851	2.935	+1.46	-4.4	.	18.6
Dec. 19	16 01.68	-17 18.7	3.859	2.997	+1.40	-3.6	.	25.1
Dec. 29	16 15.69	-17 54.9	3.849	3.059	+1.33	-2.9	.	31.9
Jan. 8	16 28.97	-18 24.1	3.823	3.119	+1.24	-2.3	.	38.9
Jan. 18	16 41.40	-18 46.8	3.782	3.179	+1.14	-1.7	.	46.0
Jan. 28	16 52.84	-19 03.4	3.726	3.238	+1.03	-1.1	.	53.5
Feb. 7	17 03.14	-19 14.6	3.656	3.296	+0.90	-0.6	.	61.2
Feb. 17	17 12.16	-19 21.1	3.576	3.353	+0.76	-0.2	.	69.1
Feb. 27	17 19.72	-19 23.5	3.486	3.409	+0.59	+0.1	.	77.4
Mar. 9	17 25.65	-19 22.6	3.390	3.465	+0.41	+0.3	.	86.0
Mar. 19	17 29.78	-19 19.2	3.290	3.519	+0.22	+0.5	.	95.0
Mar. 29	17 31.95	-19 13.8	3.192	3.573	+0.01	+0.7	.	104.4

Comet 290P/Jager

Epoch = 2014 July 2.0 TT
T = 2014 Mar. 12.43274 TT
Peri. = 180.70829 e = 0.6483397
Node = 303.42414 2000.0 a = 6.1314666 AU
Incl. = 19.05613 n = 0.06491686
q = 2.1561934 AU P = 15.18 years

m1 = 5.6 + 5 log(Delta) + 20.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	06 29.47	+37 42.3	1.287	2.250	-0.82	-12.0	13.2	164.3
Jan. 13	06 21.25	+35 42.3	1.282	2.225	-0.59	-13.6	13.1	158.2
Jan. 23	06 15.32	+33 26.2	1.301	2.204	-0.27	-14.2	13.0	149.0
Feb. 2	06 12.63	+31 03.9	1.343	2.186	+0.09	-14.0	13.0	139.3
Feb. 12	06 13.57	+28 44.2	1.404	2.173	+0.44	-13.2	13.1	129.8
Feb. 22	06 18.01	+26 32.3	1.482	2.163	+0.76	-12.2	13.2	120.9
Mar. 4	06 25.57	+24 30.3	1.572	2.158	+1.02	-11.3	13.3	112.7
Mar. 14	06 35.79	+22 37.4	1.672	2.156	+1.24	-10.6	13.4	105.1
Mar. 24	06 48.16	+20 51.8	1.779	2.159	+1.41	-10.1	13.5	98.2
Apr. 3	07 02.23	+19 11.1	1.891	2.166	+1.54	-9.8	13.7	91.7
Apr. 13	07 17.64	+17 32.9	2.008	2.177	+1.64	-9.8	13.9	85.8
Apr. 23	07 34.02	+15 55.2	2.127	2.191	+1.71	-9.9	14.1	80.1
May 3	07 51.11	+14 16.2	2.248	2.210	+1.76	-10.1	14.2	74.8
May 13	08 08.68	+12 35.0	2.370	2.232	+1.79	-10.4	14.4	69.8
May 23	08 26.55	+10 50.7	2.492	2.258	+1.80	-10.8	14.7	65.0
June 2	08 44.58	+09 02.9	2.614	2.287	+1.81	-11.1	14.9	60.3
June 12	09 02.64	+07 11.6	2.735	2.320	+1.80	-11.5	15.1	55.7
June 22	09 20.65	+05 16.8	2.854	2.355	+1.79	-11.8	15.3	51.2
July 2	09 38.56	+03 18.9	2.971	2.393	+1.78	-12.1	15.5	46.8
July 12	09 56.32	+01 18.3	3.085	2.433	+1.76	-12.3	15.8	42.4
July 22	10 13.88	-00 44.5	3.195	2.476	+1.74	-12.4	16.0	38.1
Aug. 1	10 31.25	-02 49.0	3.300	2.521	+1.72	-12.6	16.2	33.8
Aug. 11	10 48.40	-04 54.5	3.401	2.567	+1.69	-12.6	16.4	29.5
Aug. 21	11 05.33	-07 00.6	3.495	2.616	+1.67	-12.6	16.7	25.3
Aug. 31	11 22.04	-09 06.6	3.582	2.666	+1.65	-12.5	16.9	21.3
Sept.10	11 38.53	-11 12.0	3.660	2.717	+1.63	-12.4	17.1	17.6
Sept.20	11 54.79	-13 16.3	3.730	2.770	+1.60	-12.3	17.3	14.7
Sept.30	12 10.81	-15 18.9	3.790	2.824	+1.58	-12.0	17.5	13.1
Oct. 10	12 26.57	-17 19.4	3.839	2.878	+1.55	-11.8	17.7	13.7
Oct. 20	12 42.06	-19 17.3	3.877	2.934	+1.52	-11.5	17.9	16.2
Oct. 30	12 57.23	-21 12.4	3.903	2.990	+1.48	-11.2	18.1	20.2
Nov. 9	13 12.04	-23 04.2	3.916	3.047	+1.44	-10.8	18.2	25.1
Nov. 19	13 26.44	-24 52.5	3.916	3.105	+1.39	-10.5	18.4	30.5
Nov. 29	13 40.32	-26 37.0	3.903	3.162	+1.33	-10.1	18.6	36.3
Dec. 9	13 53.59	-28 17.6	3.877	3.221	+1.26	-9.7	18.7	42.6
Dec. 19	14 06.14	-29 54.1	3.838	3.279	+1.17	-9.2	18.8	49.1
Dec. 29	14 17.82	-31 26.5	3.788	3.338	+1.06	-8.8	19.0	55.9
Jan. 8	14 28.44	-32 54.7	3.727	3.397	+0.94	-8.4	19.1	63.1
Jan. 18	14 37.82	-34 18.4	3.658	3.456	+0.79	-7.9	19.2	70.5
Jan. 28	14 45.74	-35 37.5	3.581	3.515	+0.62	-7.4	19.3	78.2
Feb. 7	14 51.97	-36 51.5	3.500	3.574	+0.43	-6.8	19.4	86.3
Feb. 17	14 56.30	-37 59.5	3.418	3.633	+0.22	-6.1	19.5	94.6
Feb. 27	14 58.50	-39 00.3	3.338	3.693	0.00	-5.2	19.6	103.2
Mar. 9	14 58.45	-39 52.1	3.263	3.752	-0.23	-4.1	19.7	112.1
Mar. 19	14 56.12	-40 32.8	3.198	3.810	-0.45	-2.7	19.7	121.2
Mar. 29	14 51.62	-40 59.7	3.148	3.869	-0.63	-1.1	19.8	130.3

Comet C/2013 G7 (McNaught)

Epoch = 2014 July 2.0 TT
T = 2014 Mar. 18.68428 TT
Peri. = 218.26330
Node = 48.39757 2000.0
Incl. = 105.10147
q = 4.6774959 AU
e = 0.9973476

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	14 41.32	-41 13.2	5.206	4.715	+0.09	-12.5	18.0	55.3
Jan. 13	14 42.27	-43 17.8	5.056	4.706	-0.07	-13.1	18.0	63.8
Jan. 23	14 41.55	-45 28.4	4.899	4.698	-0.29	-13.5	17.9	72.5
Feb. 2	14 38.69	-47 43.8	4.739	4.691	-0.56	-13.8	17.8	81.2
Feb. 12	14 33.11	-50 01.9	4.581	4.686	-0.89	-13.7	17.7	90.0
Feb. 22	14 24.19	-52 19.3	4.431	4.682	-1.29	-13.1	17.7	98.6
Mar. 4	14 11.30	-54 30.2	4.295	4.679	-1.73	-11.7	17.6	106.8
Mar. 14	13 53.98	-56 26.9	4.178	4.678	-2.17	-9.3	17.5	114.4
Mar. 24	13 32.23	-58 00.1	4.085	4.678	-2.54	-6.0	17.5	121.0
Apr. 3	13 06.82	-59 00.6	4.021	4.679	-2.73	-2.1	17.4	126.0
Apr. 13	12 39.48	-59 21.6	3.988	4.682	-2.70	+1.9	17.4	128.8
Apr. 23	12 12.50	-59 02.5	3.987	4.686	-2.45	+5.4	17.4	129.1
May 3	11 48.05	-58 08.6	4.017	4.691	-2.05	+7.9	17.5	126.9
May 13	11 27.51	-56 49.9	4.075	4.698	-1.62	+9.2	17.5	122.7
May 23	11 11.34	-55 18.0	4.158	4.706	-1.20	+9.5	17.5	117.1
June 2	10 59.36	-53 43.1	4.261	4.716	-0.83	+9.0	17.6	110.7
June 12	10 51.04	-52 13.4	4.379	4.726	-0.53	+7.9	17.7	103.9
June 22	10 45.74	-50 54.2	4.507	4.738	-0.29	+6.5	17.7	97.0
July 2	10 42.87	-49 49.0	4.639	4.751	-0.10	+4.9	17.8	90.1
July 12	10 41.92	-48 59.6	4.772	4.766	+0.05	+3.3	17.9	83.6
July 22	10 42.44	-48 26.7	4.901	4.782	+0.17	+1.6	17.9	77.3
Aug. 1	10 44.10	-48 10.4	5.022	4.799	+0.25	0.0	18.0	71.6
Aug. 11	10 46.57	-48 10.4	5.134	4.817	+0.30	-1.5	18.1	66.3
Aug. 21	10 49.60	-48 25.8	5.233	4.837	+0.34	-3.0	18.1	61.7
Aug. 31	10 52.98	-48 56.3	5.318	4.857	+0.35	-4.5	18.2	57.9
Sept.10	10 56.48	-49 40.9	5.388	4.879	+0.34	-5.8	18.2	54.9
Sept.20	10 59.88	-50 39.0	5.441	4.902	+0.31	-7.1	18.3	52.9
Sept.30	11 02.99	-51 49.8	5.478	4.926	+0.25	-8.3	18.3	52.1
Oct. 10	11 05.53	-53 12.6	5.499	4.951	+0.17	-9.4	18.3	52.3
Oct. 20	11 07.23	-54 46.4	5.504	4.977	+0.05	-10.4	18.3	53.6
Oct. 30	11 07.74	-56 30.1	5.495	5.004	-0.11	-11.2	18.3	55.8
Nov. 9	11 06.61	-58 22.2	5.473	5.033	-0.33	-11.9	18.4	58.9
Nov. 19	11 03.30	-60 20.8	5.441	5.062	-0.62	-12.2	18.4	62.6
Nov. 29	10 57.09	-62 22.9	5.401	5.092	-1.00	-12.2	18.4	66.7
Dec. 9	10 47.13	-64 24.6	5.356	5.123	-1.47	-11.6	18.4	71.1
Dec. 19	10 32.44	-66 20.1	5.310	5.155	-2.03	-10.2	18.4	75.7
Dec. 29	10 12.10	-68 01.7	5.266	5.188	-2.64	-7.8	18.4	80.1
Jan. 8	09 45.73	-69 19.8	5.226	5.222	-3.16	-4.4	18.4	84.4
Jan. 18	09 14.13	-70 04.1	5.195	5.257	-3.43	-0.2	18.4	88.2
Jan. 28	08 39.78	-70 06.4	5.175	5.293	-3.34	+4.2	18.4	91.5
Feb. 7	08 06.34	-69 24.1	5.168	5.329	-2.93	+8.3	18.4	94.1
Feb. 17	07 37.05	-68 01.5	5.176	5.366	-2.34	+11.4	18.4	95.8
Feb. 27	07 13.66	-66 07.2	5.201	5.404	-1.73	+13.5	18.5	96.6
Mar. 9	06 56.34	-63 52.1	5.242	5.443	-1.20	+14.6	18.5	96.4
Mar. 19	06 44.37	-61 25.8	5.298	5.482	-0.76	+14.9	18.6	95.5
Mar. 29	06 36.79	-58 56.4	5.367	5.522	-0.41	+14.6	18.6	93.7

Comet 17P/Holmes

Epoch = 2014 July 2.0 TT
T = 2014 Mar. 27.51323 TT
Peri. = 24.51520 e = 0.4318273
Node = 326.76497 2000.0 a = 3.6196563 AU
Incl. = 19.09165 n = 0.14312090
q = 2.0565899 AU P = 6.89 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	20 43.58	-20 02.7	3.001	2.158	+2.10	+14.0	15.6	25.7
Jan. 13	21 04.58	-17 43.1	3.025	2.136	+2.09	+14.9	15.5	20.9
Jan. 23	21 25.48	-15 14.5	3.043	2.116	+2.08	+15.7	15.5	16.2
Feb. 2	21 46.26	-12 37.5	3.055	2.099	+2.06	+16.5	15.5	11.7
Feb. 12	22 06.88	-09 53.0	3.060	2.085	+2.05	+17.1	15.4	7.4
Feb. 22	22 27.34	-07 01.9	3.059	2.073	+2.03	+17.7	15.4	3.8
Mar. 4	22 47.66	-04 05.4	3.054	2.065	+2.02	+18.1	15.3	3.6
Mar. 14	23 07.84	-01 04.7	3.043	2.059	+2.01	+18.4	15.3	6.9
Mar. 24	23 27.93	+01 59.0	3.027	2.057	+2.00	+18.5	15.3	10.9
Apr. 3	23 47.95	+05 04.3	3.007	2.057	+2.00	+18.6	15.3	14.9
Apr. 13	00 07.94	+08 09.9	2.983	2.061	+2.00	+18.5	15.3	18.9
Apr. 23	00 27.93	+11 14.4	2.956	2.067	+2.00	+18.2	15.3	22.9
May 3	00 47.96	+14 16.6	2.924	2.077	+2.01	+17.8	15.3	26.9
May 13	01 08.03	+17 15.1	2.889	2.089	+2.01	+17.4	15.3	31.0
May 23	01 28.16	+20 08.6	2.851	2.104	+2.02	+16.8	15.3	35.0
June 2	01 48.35	+22 56.3	2.808	2.121	+2.02	+16.1	15.3	39.2
June 12	02 08.56	+25 36.9	2.763	2.142	+2.02	+15.3	15.4	43.4
June 22	02 28.74	+28 09.7	2.713	2.164	+2.01	+14.5	15.4	47.7
July 2	02 48.81	+30 34.3	2.660	2.189	+1.98	+13.6	15.4	52.2
July 12	03 08.64	+32 50.1	2.602	2.216	+1.94	+12.7	15.5	56.8
July 22	03 28.09	+34 57.2	2.541	2.245	+1.88	+11.9	15.5	61.7
Aug. 1	03 46.93	+36 55.9	2.476	2.276	+1.80	+11.1	15.5	66.8
Aug. 11	04 04.91	+38 46.6	2.408	2.309	+1.68	+10.4	15.6	72.2
Aug. 21	04 21.73	+40 30.2	2.337	2.343	+1.53	+9.8	15.6	77.9
Aug. 31	04 37.02	+42 07.9	2.263	2.378	+1.33	+9.3	15.6	83.9
Sept. 10	04 50.34	+43 40.4	2.188	2.415	+1.09	+8.8	15.6	90.4
Sept. 20	05 01.24	+45 08.7	2.114	2.453	+0.79	+8.4	15.7	97.3
Sept. 30	05 09.15	+46 32.9	2.042	2.492	+0.44	+7.9	15.7	104.7
Oct. 10	05 13.55	+47 51.8	1.975	2.532	+0.04	+7.1	15.7	112.5
Oct. 20	05 13.98	+49 02.9	1.916	2.572	-0.38	+5.8	15.8	120.8
Oct. 30	05 10.18	+50 01.3	1.869	2.613	-0.78	+3.9	15.8	129.2
Nov. 9	05 02.37	+50 40.3	1.838	2.655	-1.10	+1.3	15.9	137.6
Nov. 19	04 51.36	+50 53.3	1.826	2.697	-1.27	-1.8	16.0	145.1
Nov. 29	04 38.64	+50 35.7	1.837	2.739	-1.25	-4.8	16.1	150.5
Dec. 9	04 26.09	+49 47.7	1.873	2.782	-1.07	-7.3	16.2	152.1
Dec. 19	04 15.39	+48 34.9	1.935	2.825	-0.77	-8.9	16.4	149.1
Dec. 29	04 07.71	+47 06.2	2.022	2.868	-0.42	-9.5	16.6	142.9
Jan. 8	04 03.55	+45 31.5	2.132	2.911	-0.07	-9.3	16.8	135.0
Jan. 18	04 02.84	+43 58.7	2.261	2.955	+0.24	-8.6	17.0	126.5
Jan. 28	04 05.28	+42 32.8	2.408	2.998	+0.51	-7.6	17.3	117.9
Feb. 7	04 10.43	+41 16.6	2.567	3.041	+0.74	-6.6	17.5	109.5
Feb. 17	04 17.81	+40 10.6	2.735	3.084	+0.92	-5.7	17.7	101.3
Feb. 27	04 27.04	+39 14.1	2.910	3.127	+1.07	-4.8	17.9	93.3
Mar. 9	04 37.74	+38 25.7	3.087	3.170	+1.19	-4.2	18.2	85.7
Mar. 19	04 49.61	+37 43.8	3.264	3.213	+1.28	-3.7	18.4	78.2
Mar. 29	05 02.41	+37 06.7	3.439	3.255	+1.35	-3.4	18.6	71.0

Comet 117P/Helin-Roman-Alu

Epoch = 2014 July 2.0 TT
T = 2014 Mar. 27.11620 TT
Peri. = 222.67522 e = 0.2538799
Node = 58.89530 2000.0 a = 4.0962829 AU
Incl. = 8.69720 n = 0.11888284
q = 3.0563190 AU P = 8.29 years

m1 = 4.8 + 5 log(Delta) + 15.0 log(r(t-160))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	17 53.73	-26 17.9	4.029	3.084	+1.76	-1.3	15.6	14.0
Jan. 13	18 11.36	-26 31.3	3.982	3.078	+1.75	-0.7	15.5	20.2
Jan. 23	18 28.85	-26 38.4	3.922	3.072	+1.73	-0.1	15.4	26.4
Feb. 2	18 46.12	-26 39.6	3.850	3.068	+1.69	+0.4	15.4	32.7
Feb. 12	19 03.02	-26 35.6	3.766	3.064	+1.64	+0.8	15.3	39.1
Feb. 22	19 19.44	-26 27.3	3.672	3.061	+1.58	+1.2	15.2	45.5
Mar. 4	19 35.28	-26 15.7	3.568	3.058	+1.51	+1.4	15.1	52.0
Mar. 14	19 50.39	-26 02.0	3.455	3.057	+1.43	+1.4	15.0	58.6
Mar. 24	20 04.66	-25 47.6	3.336	3.056	+1.33	+1.4	14.9	65.3
Apr. 3	20 17.97	-25 33.9	3.211	3.057	+1.22	+1.1	14.8	72.2
Apr. 13	20 30.16	-25 22.5	3.082	3.057	+1.09	+0.7	14.7	79.2
Apr. 23	20 41.09	-25 15.2	2.951	3.059	+0.95	+0.2	14.6	86.5
May 3	20 50.58	-25 13.5	2.820	3.062	+0.79	-0.5	14.5	94.1
May 13	20 58.44	-25 19.0	2.691	3.065	+0.61	-1.4	14.3	102.0
May 23	21 04.50	-25 32.9	2.568	3.069	+0.40	-2.3	14.2	110.3
June 2	21 08.54	-25 56.2	2.453	3.074	+0.19	-3.3	14.1	118.9
June 12	21 10.41	-26 28.8	2.349	3.080	-0.04	-4.1	14.0	128.0
June 22	21 10.02	-27 09.6	2.260	3.086	-0.26	-4.7	13.9	137.5
July 2	21 07.40	-27 56.3	2.190	3.094	-0.46	-4.9	13.8	147.2
July 12	21 02.77	-28 45.2	2.141	3.101	-0.62	-4.6	13.8	156.8
July 22	20 56.58	-29 31.4	2.117	3.110	-0.71	-3.9	13.7	165.0
Aug. 1	20 49.50	-30 10.3	2.120	3.120	-0.71	-2.8	13.7	167.9
Aug. 11	20 42.37	-30 38.0	2.149	3.130	-0.63	-1.4	13.7	162.3
Aug. 21	20 36.02	-30 52.3	2.204	3.140	-0.49	-0.1	13.8	153.2
Aug. 31	20 31.16	-30 52.9	2.283	3.152	-0.29	+1.2	13.9	143.5
Sept.10	20 28.28	-30 40.7	2.382	3.164	-0.07	+2.3	14.0	133.8
Sept.20	20 27.62	-30 17.7	2.499	3.176	+0.16	+3.2	14.1	124.4
Sept.30	20 29.21	-29 45.5	2.630	3.190	+0.37	+4.0	14.2	115.3
Oct. 10	20 32.94	-29 05.7	2.772	3.204	+0.56	+4.6	14.3	106.6
Oct. 20	20 38.58	-28 19.5	2.920	3.218	+0.73	+5.2	14.4	98.3
Oct. 30	20 45.90	-27 27.8	3.073	3.233	+0.87	+5.7	14.5	90.2
Nov. 9	20 54.64	-26 31.0	3.226	3.249	+0.99	+6.1	14.7	82.5
Nov. 19	21 04.56	-25 29.6	3.379	3.265	+1.09	+6.6	14.8	74.9
Nov. 29	21 15.43	-24 23.7	3.527	3.281	+1.16	+7.0	14.9	67.6
Dec. 9	21 27.06	-23 13.9	3.670	3.298	+1.22	+7.4	15.0	60.5
Dec. 19	21 39.27	-22 00.2	3.806	3.315	+1.26	+7.7	15.1	53.4
Dec. 29	21 51.92	-20 43.2	3.932	3.333	+1.30	+8.0	15.2	46.6
Jan. 8	22 04.87	-19 23.3	4.047	3.351	+1.31	+8.2	15.2	39.8
Jan. 18	22 18.02	-18 00.9	4.150	3.370	+1.33	+8.4	15.3	33.2
Jan. 28	22 31.28	-16 36.5	4.240	3.389	+1.33	+8.6	15.4	26.6
Feb. 7	22 44.57	-15 10.9	4.316	3.408	+1.33	+8.6	15.5	20.3
Feb. 17	22 57.82	-13 44.5	4.377	3.428	+1.32	+8.6	15.5	14.2
Feb. 27	23 10.98	-12 18.0	4.423	3.448	+1.30	+8.6	15.6	8.9
Mar. 9	23 23.99	-10 52.1	4.453	3.468	+1.28	+8.5	15.6	6.4
Mar. 19	23 36.81	-09 27.3	4.467	3.488	+1.26	+8.3	15.6	9.4
Mar. 29	23 49.39	-08 04.5	4.465	3.509	+1.23	+8.0	15.7	14.8

Comet 119P/Parker-Hartley

Epoch = 2014 July 2.0 TT
T = 2014 Apr. 2.65385 TT
Peri. = 181.31652 e = 0.2927990
Node = 244.09892 2000.0 a = 4.2795663 AU
Incl. = 5.19499 n = 0.11132801
q = 3.0265136 AU P = 8.85 years

m1 = 9.6 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	01 43.66	+12 40.9	2.639	3.064	+0.58	+1.4	17.8	106.3
Jan. 13	01 49.50	+12 54.9	2.768	3.056	+0.75	+2.4	17.9	97.5
Jan. 23	01 57.04	+13 19.0	2.900	3.049	+0.91	+3.3	18.0	89.2
Feb. 2	02 06.11	+13 51.7	3.033	3.043	+1.04	+3.9	18.1	81.3
Feb. 12	02 16.51	+14 31.0	3.163	3.038	+1.16	+4.4	18.1	73.7
Feb. 22	02 28.06	+15 15.2	3.289	3.034	+1.26	+4.7	18.2	66.5
Mar. 4	02 40.64	+16 02.6	3.409	3.031	+1.35	+4.9	18.3	59.6
Mar. 14	02 54.10	+16 51.4	3.522	3.028	+1.42	+4.9	18.3	52.9
Mar. 24	03 08.32	+17 40.3	3.626	3.027	+1.49	+4.8	18.4	46.5
Apr. 3	03 23.20	+18 28.0	3.720	3.027	+1.55	+4.5	18.5	40.2
Apr. 13	03 38.66	+19 13.1	3.805	3.027	+1.59	+4.1	18.5	34.1
Apr. 23	03 54.58	+19 54.6	3.878	3.028	+1.63	+3.7	18.6	28.1
May 3	04 10.91	+20 31.5	3.939	3.031	+1.66	+3.2	18.6	22.3
May 13	04 27.54	+21 03.2	3.989	3.034	+1.69	+2.6	18.6	16.5
May 23	04 44.40	+21 28.9	4.027	3.038	+1.70	+1.9	18.7	10.9
June 2	05 01.40	+21 48.0	4.052	3.044	+1.71	+1.2	18.7	5.3
June 12	05 18.46	+22 00.4	4.065	3.050	+1.70	+0.5	18.7	1.2
June 22	05 35.48	+22 05.6	4.065	3.057	+1.69	−0.2	18.7	6.1
July 2	05 52.40	+22 03.7	4.053	3.065	+1.67	−0.9	18.7	11.7
July 12	06 09.10	+21 54.6	4.029	3.073	+1.64	−1.6	18.7	17.4
July 22	06 25.50	+21 38.7	3.992	3.083	+1.60	−2.2	18.7	23.1
Aug. 1	06 41.51	+21 16.3	3.943	3.093	+1.55	−2.8	18.7	28.9
Aug. 11	06 57.03	+20 47.8	3.883	3.105	+1.49	−3.4	18.7	34.8
Aug. 21	07 11.96	+20 13.9	3.811	3.117	+1.42	−3.9	18.7	40.9
Aug. 31	07 26.21	+19 35.3	3.728	3.130	+1.34	−4.2	18.7	47.1
Sept. 10	07 39.66	+18 52.9	3.635	3.143	+1.25	−4.5	18.6	53.5
Sept. 20	07 52.19	+18 07.7	3.534	3.157	+1.15	−4.7	18.6	60.2
Sept. 30	08 03.68	+17 20.7	3.424	3.173	+1.03	−4.7	18.5	67.2
Oct. 10	08 13.97	+16 33.2	3.307	3.188	+0.90	−4.7	18.5	74.4
Oct. 20	08 22.93	+15 46.5	3.187	3.205	+0.74	−4.4	18.4	82.1
Oct. 30	08 30.37	+15 02.1	3.063	3.222	+0.57	−4.1	18.4	90.1
Nov. 9	08 36.10	+14 21.5	2.940	3.239	+0.39	−3.5	18.3	98.6
Nov. 19	08 39.97	+13 46.1	2.820	3.258	+0.18	−2.9	18.3	107.5
Nov. 29	08 41.81	+13 17.6	2.708	3.276	−0.03	−2.1	18.2	117.0
Dec. 9	08 41.53	+12 57.1	2.607	3.296	−0.24	−1.2	18.2	127.1
Dec. 19	08 39.15	+12 45.4	2.521	3.315	−0.43	−0.3	18.1	137.7
Dec. 29	08 34.84	+12 42.9	2.456	3.336	−0.59	+0.6	18.1	148.7
Jan. 8	08 28.97	+12 48.8	2.416	3.357	−0.69	+1.3	18.1	159.9
Jan. 18	08 22.10	+13 01.8	2.404	3.378	−0.72	+1.8	18.1	170.4
Jan. 28	08 14.94	+13 19.7	2.421	3.399	−0.67	+2.0	18.2	172.2
Feb. 7	08 08.24	+13 40.1	2.468	3.421	−0.56	+2.1	18.2	162.4
Feb. 17	08 02.67	+14 00.8	2.543	3.444	−0.40	+1.9	18.3	151.4
Feb. 27	07 58.71	+14 19.7	2.644	3.466	−0.20	+1.6	18.5	140.6
Mar. 9	07 56.66	+14 35.4	2.766	3.489	−0.01	+1.1	18.6	130.2
Mar. 19	07 56.59	+14 46.9	2.905	3.513	+0.19	+0.6	18.7	120.2
Mar. 29	07 58.47	+14 53.3	3.057	3.536	+0.37	+0.1	18.9	110.8

Comet 124P/Mrkos

Epoch = 2014 July 2.0 TT
T = 2014 Apr. 9.61884 TT
Peri. = 183.71374 e = 0.5038778
Node = 0.41445 2000.0 a = 3.3164013 AU
Incl. = 31.52889 n = 0.16319373
q = 1.6453403 AU P = 6.04 years

m1 = 16.2 + 5 log(Delta) + 5.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	12 22.17	+34 04.5	1.310	1.875	+0.87	-6.5	18.2	108.8
Jan. 13	12 30.89	+32 59.5	1.186	1.833	+0.46	-6.8	17.9	115.0
Jan. 23	12 35.53	+31 51.4	1.069	1.795	-0.04	-7.8	17.6	121.9
Feb. 2	12 35.15	+30 33.2	0.960	1.761	-0.63	-10.1	17.3	129.7
Feb. 12	12 28.83	+28 51.7	0.862	1.730	-1.27	-14.3	17.1	138.5
Feb. 22	12 16.14	+26 28.9	0.781	1.703	-1.85	-20.4	16.8	148.2
Mar. 4	11 57.63	+23 05.3	0.720	1.682	-2.21	-27.5	16.6	158.1
Mar. 14	11 35.57	+18 30.6	0.686	1.665	-2.20	-33.3	16.5	164.2
Mar. 24	11 13.54	+12 57.7	0.681	1.653	-1.86	-35.6	16.5	159.8
Apr. 3	10 54.94	+07 01.5	0.706	1.647	-1.30	-34.3	16.5	149.4
Apr. 13	10 41.92	+01 18.1	0.756	1.646	-0.70	-30.9	16.7	138.3
Apr. 23	10 34.91	-03 51.1	0.827	1.650	-0.15	-27.1	16.9	128.3
May 3	10 33.43	-08 21.8	0.912	1.660	+0.32	-23.7	17.1	119.6
May 13	10 36.65	-12 19.0	1.008	1.676	+0.70	-21.1	17.3	112.2
May 23	10 43.69	-15 50.0	1.111	1.696	+1.02	-19.1	17.6	105.9
June 2	10 53.85	-19 01.5	1.219	1.721	+1.27	-17.7	17.8	100.4
June 12	11 06.59	-21 59.0	1.330	1.750	+1.49	-16.7	18.0	95.6
June 22	11 21.48	-24 45.8	1.443	1.784	+1.68	-15.8	18.3	91.3
July 2	11 38.25	-27 24.2	1.559	1.821	+1.84	-15.1	18.5	87.3
July 12	11 56.68	-29 55.5	1.676	1.861	+1.99	-14.4	18.7	83.6
July 22	12 16.60	-32 19.9	1.795	1.904	+2.13	-13.7	18.9	80.1
Aug. 1	12 37.93	-34 37.1	1.915	1.949	+2.26	-12.9	19.1	76.6
Aug. 11	13 00.57	-36 46.6	2.037	1.997	+2.39	-12.0	19.2	73.3
Aug. 21	13 24.43	-38 47.0	2.160	2.046	+2.50	-11.0	19.4	69.9
Aug. 31	13 49.45	-40 37.3	2.284	2.097	+2.61	-9.9	19.6	66.5
Sept.10	14 15.53	-42 16.2	2.409	2.149	+2.70	-8.6	19.8	63.0
Sept.20	14 42.54	-43 42.3	2.535	2.202	+2.78	-7.2	19.9	59.5
Sept.30	15 10.34	-44 54.5	2.660	2.256	+2.84	-5.8	20.1	55.8
Oct. 10	15 38.72	-45 52.1	2.785	2.310	+2.87	-4.2	20.2	52.1
Oct. 20	16 07.44	-46 34.3	2.907	2.365	+2.88	-2.7	20.4	48.3
Oct. 30	16 36.27	-47 01.1	3.027	2.420	+2.87	-1.2	20.5	44.4
Nov. 9	17 04.94	-47 12.8	3.143	2.475	+2.82	+0.3	20.7	40.5
Nov. 19	17 33.17	-47 10.0	3.254	2.530	+2.76	+1.6	20.8	36.6
Nov. 29	18 00.76	-46 53.7	3.358	2.585	+2.67	+2.8	20.9	32.8
Dec. 9	18 27.49	-46 25.4	3.454	2.640	+2.57	+3.9	21.0	29.3
Dec. 19	18 53.22	-45 46.6	3.542	2.694	+2.46	+4.8	21.1	26.2
Dec. 29	19 17.84	-44 59.1	3.619	2.748	+2.34	+5.5	21.2	23.8
Jan. 8	19 41.27	-44 04.6	3.686	2.802	+2.22	+6.0	21.3	22.4
Jan. 18	20 03.50	-43 04.9	3.740	2.856	+2.10	+6.3	21.3	22.4
Jan. 28	20 24.50	-42 01.8	3.782	2.908	+1.98	+6.5	21.4	23.9
Feb. 7	20 44.29	-40 57.0	3.810	2.961	+1.86	+6.5	21.5	26.6
Feb. 17	21 02.89	-39 52.0	3.824	3.013	+1.74	+6.3	21.5	30.3
Feb. 27	21 20.31	-38 48.6	3.824	3.064	+1.62	+6.0	21.5	34.9
Mar. 9	21 36.56	-37 48.1	3.809	3.115	+1.51	+5.6	21.6	40.0
Mar. 19	21 51.65	-36 52.0	3.781	3.165	+1.39	+5.0	21.6	45.5
Mar. 29	22 05.57	-36 01.7	3.740	3.214	+1.27	+4.3	21.6	51.4

Comet P/2013 P5 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 Apr. 15.95458 TT
Peri. = 144.27936 e = 0.1154004
Node = 279.29146 2000.0 a = 2.1888744 AU
Incl. = 4.96848 n = 0.30434966
q = 1.9362774 AU P = 3.24 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 3	23 37.64	+02 42.6	2.020	1.982	+1.74	+9.2	20.3	73.7
Jan. 13	23 55.08	+04 14.8	2.117	1.974	+1.83	+9.9	20.4	68.1
Jan. 23	00 13.42	+05 54.0	2.211	1.967	+1.91	+10.4	20.5	62.8
Feb. 2	00 32.55	+07 38.3	2.301	1.960	+1.99	+10.8	20.5	57.7
Feb. 12	00 52.40	+09 25.8	2.386	1.954	+2.05	+10.9	20.6	52.8
Feb. 22	01 12.92	+11 14.5	2.465	1.949	+2.12	+10.8	20.6	48.1
Mar. 4	01 34.07	+13 02.7	2.540	1.945	+2.18	+10.6	20.7	43.5
Mar. 14	01 55.84	+14 48.2	2.609	1.941	+2.24	+10.1	20.7	39.1
Mar. 24	02 18.19	+16 29.3	2.672	1.939	+2.29	+9.5	20.8	34.8
Apr. 3	02 41.12	+18 04.2	2.730	1.937	+2.35	+8.7	20.8	30.6
Apr. 13	03 04.58	+19 31.0	2.781	1.936	+2.40	+7.7	20.8	26.5
Apr. 23	03 28.54	+20 48.2	2.827	1.937	+2.44	+6.6	20.9	22.5
May 3	03 52.95	+21 54.3	2.867	1.938	+2.48	+5.4	20.9	18.5
May 13	04 17.73	+22 47.9	2.900	1.940	+2.51	+4.0	20.9	14.6
May 23	04 42.78	+23 28.0	2.928	1.942	+2.52	+2.6	21.0	10.8
June 2	05 08.02	+23 53.8	2.949	1.946	+2.53	+1.1	21.0	7.0
June 12	05 33.32	+24 04.6	2.964	1.951	+2.52	-0.4	21.0	3.2
June 22	05 58.54	+24 00.3	2.972	1.956	+2.50	-1.9	21.1	0.9
July 2	06 23.58	+23 41.0	2.975	1.963	+2.47	-3.4	21.1	4.5
July 12	06 48.30	+23 07.1	2.970	1.970	+2.43	-4.8	21.1	8.3
July 22	07 12.60	+22 19.1	2.959	1.977	+2.38	-6.1	21.1	12.2
Aug. 1	07 36.41	+21 18.0	2.941	1.986	+2.32	-7.3	21.2	16.1
Aug. 11	07 59.61	+20 04.8	2.916	1.995	+2.26	-8.4	21.2	20.2
Aug. 21	08 22.18	+18 40.9	2.883	2.005	+2.19	-9.3	21.2	24.3
Aug. 31	08 44.07	+17 07.4	2.844	2.015	+2.12	-10.2	21.2	28.5
Sept. 10	09 05.23	+15 25.8	2.797	2.026	+2.04	-10.8	21.2	32.8
Sept. 20	09 25.67	+13 37.5	2.743	2.037	+1.97	-11.4	21.2	37.3
Sept. 30	09 45.34	+11 43.9	2.681	2.049	+1.89	-11.7	21.2	42.0
Oct. 10	10 04.23	+09 46.6	2.612	2.061	+1.81	-12.0	21.2	46.8
Oct. 20	10 22.31	+07 47.0	2.536	2.073	+1.72	-12.1	21.2	51.8
Oct. 30	10 39.54	+05 46.4	2.452	2.086	+1.63	-12.0	21.1	57.1
Nov. 9	10 55.85	+03 46.5	2.363	2.099	+1.53	-11.8	21.1	62.6
Nov. 19	11 11.17	+01 48.6	2.267	2.112	+1.42	-11.4	21.1	68.3
Nov. 29	11 25.35	-00 05.6	2.166	2.126	+1.29	-10.9	21.0	74.4
Dec. 9	11 38.23	-01 54.6	2.061	2.139	+1.14	-10.2	20.9	80.9
Dec. 19	11 49.61	-03 36.8	1.954	2.153	+0.96	-9.3	20.9	87.7
Dec. 29	11 59.21	-05 10.1	1.845	2.166	+0.75	-8.2	20.8	95.1
Jan. 8	12 06.71	-06 32.4	1.737	2.180	+0.51	-6.9	20.7	103.0
Jan. 18	12 11.76	-07 41.3	1.633	2.193	+0.22	-5.3	20.6	111.5
Jan. 28	12 13.98	-08 33.9	1.535	2.206	-0.09	-3.3	20.5	120.7
Feb. 7	12 13.11	-09 07.1	1.447	2.220	-0.41	-1.1	20.5	130.6
Feb. 17	12 09.06	-09 18.2	1.374	2.233	-0.70	+1.3	20.4	141.3
Feb. 27	12 02.07	-09 05.2	1.320	2.245	-0.92	+3.6	20.3	152.6
Mar. 9	11 52.88	-08 29.2	1.288	2.258	-1.02	+5.5	20.3	163.8
Mar. 19	11 42.65	-07 34.4	1.282	2.270	-0.99	+6.6	20.4	171.2
Mar. 29	11 32.76	-06 28.8	1.302	2.283	-0.82	+6.7	20.4	165.7

Comet 156P/Russell-LINEAR

Epoch = 2014 July 2.0 TT
T = 2014 Apr. 16.56764 TT
Peri. = 357.80979 e = 0.5590644
Node = 38.98091 2000.0 a = 3.5943476 AU
Incl. = 20.77773 n = 0.14463519
q = 1.5848758 AU P = 6.81 years

H = 15.2 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	21 55.16	-26 40.6	2.514	1.889	+2.27	+18.7	19.6	41.2
Jan. 13	22 17.84	-23 33.8	2.526	1.839	+2.29	+20.0	19.5	37.0
Jan. 23	22 40.75	-20 14.3	2.535	1.792	+2.31	+21.1	19.4	33.1
Feb. 2	23 03.86	-16 43.0	2.541	1.749	+2.33	+22.2	19.3	29.3
Feb. 12	23 27.17	-13 01.4	2.544	1.710	+2.35	+23.0	19.2	25.7
Feb. 22	23 50.67	-09 11.3	2.547	1.675	+2.38	+23.6	19.1	22.3
Mar. 4	00 14.45	-05 14.9	2.550	1.646	+2.41	+24.0	19.0	19.1
Mar. 14	00 38.56	-01 14.7	2.554	1.621	+2.45	+24.1	18.9	16.0
Mar. 24	01 03.07	+02 46.3	2.558	1.603	+2.50	+23.9	18.8	13.0
Apr. 3	01 28.11	+06 45.2	2.565	1.591	+2.56	+23.3	18.7	10.2
Apr. 13	01 53.76	+10 38.4	2.574	1.585	+2.63	+22.4	18.7	7.5
Apr. 23	02 20.09	+14 22.7	2.585	1.586	+2.71	+21.2	18.6	5.0
May 3	02 47.20	+17 54.7	2.599	1.594	+2.79	+19.6	18.5	3.0
May 13	03 15.10	+21 10.9	2.616	1.608	+2.87	+17.8	18.5	3.0
May 23	03 43.79	+24 08.5	2.634	1.628	+2.94	+15.6	18.7	4.9
June 2	04 13.21	+26 44.9	2.654	1.653	+3.00	+13.3	18.8	7.4
June 12	04 43.20	+28 58.1	2.675	1.685	+3.04	+10.9	18.9	10.1
June 22	05 13.56	+30 46.9	2.696	1.721	+3.05	+8.4	19.1	12.9
July 2	05 44.04	+32 11.0	2.717	1.761	+3.03	+6.0	19.2	15.9
July 12	06 14.32	+33 11.0	2.736	1.805	+2.98	+3.7	19.3	19.0
July 22	06 44.10	+33 48.2	2.753	1.853	+2.90	+1.7	19.5	22.3
Aug. 1	07 13.11	+34 05.0	2.766	1.903	+2.80	-0.1	19.6	25.7
Aug. 11	07 41.07	+34 04.1	2.775	1.956	+2.67	-1.5	19.7	29.4
Aug. 21	08 07.80	+33 48.7	2.778	2.011	+2.54	-2.6	19.8	33.3
Aug. 31	08 33.17	+33 22.3	2.776	2.068	+2.39	-3.4	19.9	37.5
Sept.10	08 57.07	+32 48.3	2.766	2.126	+2.24	-3.8	20.0	41.9
Sept.20	09 19.46	+32 10.0	2.748	2.185	+2.08	-3.9	20.1	46.7
Sept.30	09 40.31	+31 30.7	2.723	2.245	+1.93	-3.7	20.1	51.7
Oct. 10	09 59.56	+30 53.5	2.689	2.305	+1.76	-3.2	20.2	57.1
Oct. 20	10 17.21	+30 21.4	2.647	2.366	+1.60	-2.4	20.2	62.9
Oct. 30	10 33.18	+29 57.1	2.598	2.427	+1.42	-1.4	20.3	69.1
Nov. 9	10 47.38	+29 43.1	2.541	2.488	+1.23	-0.1	20.3	75.6
Nov. 19	10 59.68	+29 41.9	2.480	2.549	+1.02	+1.3	20.3	82.6
Nov. 29	11 09.91	+29 55.3	2.414	2.610	+0.79	+2.9	20.3	90.1
Dec. 9	11 17.83	+30 24.5	2.348	2.671	+0.54	+4.5	20.2	98.1
Dec. 19	11 23.20	+31 10.0	2.284	2.731	+0.25	+6.1	20.2	106.5
Dec. 29	11 25.74	+32 10.7	2.227	2.792	-0.05	+7.2	20.1	115.3
Jan. 8	11 25.23	+33 23.1	2.179	2.851	-0.37	+7.9	20.1	124.3
Jan. 18	11 21.56	+34 42.1	2.147	2.910	-0.67	+7.8	20.0	133.3
Jan. 28	11 14.86	+35 59.8	2.133	2.969	-0.93	+6.7	19.9	141.6
Feb. 7	11 05.61	+37 07.0	2.144	3.027	-1.10	+4.8	19.9	148.3
Feb. 17	10 54.65	+37 55.5	2.180	3.085	-1.15	+2.4	19.9	151.6
Feb. 27	10 43.11	+38 19.2	2.243	3.141	-1.09	-0.3	20.0	150.3
Mar. 9	10 32.21	+38 16.2	2.333	3.198	-0.93	-2.8	20.2	145.1
Mar. 19	10 22.93	+37 48.3	2.447	3.253	-0.70	-4.9	20.4	137.7
Mar. 29	10 15.91	+36 59.6	2.583	3.308	-0.45	-6.4	20.6	129.4

Comet C/2013 V1 (Boattini)

Epoch = 2014 July 2.0 TT
T = 2014 Apr. 21.23167 TT
Peri. = 48.03583
Node = 72.80892 2000.0
Incl. = 65.30838
q = 1.6608183 AU
e = 1.0013269

m1 = 10.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	03 10.41	+03 29.7	1.482	2.177	-1.40	+30.4	14.6	122.7
Jan. 13	02 56.45	+08 34.1	1.529	2.099	-0.98	+30.0	14.5	111.5
Jan. 23	02 46.66	+13 34.1	1.596	2.024	-0.57	+28.9	14.5	100.7
Feb. 2	02 41.00	+18 23.5	1.676	1.954	-0.18	+27.7	14.4	90.7
Feb. 12	02 39.15	+23 00.9	1.762	1.889	+0.16	+26.7	14.4	81.6
Feb. 22	02 40.75	+27 28.2	1.847	1.831	+0.48	+26.0	14.4	73.5
Mar. 4	02 45.51	+31 48.0	1.927	1.780	+0.78	+25.5	14.3	66.4
Mar. 14	02 53.27	+36 03.2	1.999	1.737	+1.08	+25.3	14.3	60.3
Mar. 24	03 04.03	+40 16.1	2.061	1.703	+1.40	+25.2	14.3	55.3
Apr. 3	03 18.07	+44 28.2	2.112	1.679	+1.78	+25.2	14.3	51.3
Apr. 13	03 35.89	+48 40.0	2.151	1.664	+2.25	+25.0	14.3	48.4
Apr. 23	03 58.42	+52 49.7	2.180	1.661	+2.87	+24.3	14.3	46.7
May 3	04 27.17	+56 53.0	2.201	1.668	+3.71	+22.8	14.3	46.1
May 13	05 04.24	+60 40.8	2.215	1.686	+4.79	+19.6	14.4	46.4
May 23	05 52.18	+63 56.6	2.227	1.714	+6.06	+13.8	14.5	47.5
June 2	06 52.75	+66 14.9	2.240	1.751	+7.09	+5.1	14.6	49.0
June 12	08 03.60	+67 05.6	2.258	1.797	+7.28	-5.7	14.7	50.8
June 22	09 16.42	+66 09.0	2.284	1.851	+6.53	-15.7	14.9	52.5
July 2	10 21.73	+63 31.7	2.323	1.912	+5.36	-23.1	15.0	54.0
July 12	11 15.29	+59 40.7	2.377	1.978	+4.27	-27.5	15.2	55.0
July 22	11 57.95	+55 05.9	2.447	2.050	+3.44	-29.4	15.5	55.5
Aug. 1	12 32.30	+50 11.5	2.533	2.126	+2.84	-29.7	15.7	55.3
Aug. 11	13 00.72	+45 14.8	2.635	2.206	+2.42	-28.8	15.9	54.5
Aug. 21	13 24.95	+40 26.8	2.751	2.289	+2.13	-27.2	16.2	53.0
Aug. 31	13 46.22	+35 54.7	2.878	2.374	+1.91	-25.2	16.5	50.9
Sept. 10	14 05.33	+31 42.5	3.012	2.462	+1.75	-23.1	16.7	48.4
Sept. 20	14 22.83	+27 52.0	3.152	2.551	+1.63	-20.8	17.0	45.5
Sept. 30	14 39.11	+24 23.6	3.293	2.642	+1.53	-18.6	17.2	42.5
Oct. 10	14 54.39	+21 17.2	3.431	2.734	+1.45	-16.5	17.4	39.4
Oct. 20	15 08.86	+18 31.7	3.565	2.826	+1.38	-14.6	17.7	36.5
Oct. 30	15 22.61	+16 06.2	3.690	2.920	+1.31	-12.7	17.9	34.0
Nov. 9	15 35.69	+13 59.4	3.804	3.013	+1.24	-10.9	18.1	32.3
Nov. 19	15 48.13	+12 10.1	3.905	3.108	+1.18	-9.3	18.3	31.6
Nov. 29	15 59.92	+10 37.2	3.992	3.202	+1.11	-7.8	18.5	32.3
Dec. 9	16 11.02	+09 19.5	4.061	3.296	+1.04	-6.4	18.6	34.4
Dec. 19	16 21.38	+08 16.0	4.114	3.391	+0.95	-5.0	18.8	37.8
Dec. 29	16 30.93	+07 25.6	4.148	3.485	+0.86	-3.8	18.9	42.3
Jan. 8	16 39.56	+06 47.3	4.165	3.579	+0.76	-2.7	19.0	47.8
Jan. 18	16 47.19	+06 20.1	4.165	3.674	+0.65	-1.7	19.1	54.0
Jan. 28	16 53.69	+06 02.8	4.148	3.768	+0.52	-0.9	19.2	60.8
Feb. 7	16 58.93	+05 54.3	4.118	3.861	+0.39	-0.1	19.3	68.2
Feb. 17	17 02.79	+05 53.3	4.076	3.955	+0.23	+0.5	19.4	76.0
Feb. 27	17 05.14	+05 58.2	4.025	4.048	+0.07	+0.9	19.5	84.3
Mar. 9	17 05.85	+06 07.4	3.970	4.141	-0.10	+1.1	19.6	92.9
Mar. 19	17 04.86	+06 18.8	3.915	4.233	-0.27	+1.2	19.6	101.8
Mar. 29	17 02.12	+06 30.4	3.865	4.325	-0.44	+0.9	19.7	111.1

Comet P/2001 Q11 (NEAT)

Epoch = 2014 July 2.0 TT
T = 2014 Apr. 23.09267 TT
Peri. = 207.39545 e = 0.4333675
Node = 144.91948 2000.0 a = 3.4491124 AU
Incl. = 19.84682 n = 0.15386614
q = 1.9543792 AU P = 6.41 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	20 06.72	-16 06.1	3.051	2.141	-1.00	+1.9	20.8	33.3/ 87	18.5
Jan. 13	20 29.75	-15 43.7	3.054	2.111	-1.03	+1.5	20.7	34.0/ 85	13.7
Jan. 23	20 53.14	-15 08.8	3.049	2.083	-1.06	+1.1	20.6	34.6/ 83	9.1
Feb. 2	21 16.79	-14 22.1	3.038	2.057	-1.08	+0.7	20.5	35.2/ 81	4.5
Feb. 12	21 40.61	-13 24.6	3.021	2.034	-1.10	+0.2	20.4	35.6/ 80	0.5
Feb. 22	22 04.54	-12 17.7	2.998	2.013	-1.12	-0.2	20.3	36.0/ 79	4.3
Mar. 4	22 28.52	-11 02.8	2.971	1.996	-1.14	-0.6	20.3	36.3/ 78	8.5
Mar. 14	22 52.49	-09 41.6	2.939	1.981	-1.15	-1.0	20.2	36.5/ 77	12.6
Mar. 24	23 16.44	-08 15.8	2.904	1.969	-1.16	-1.3	20.1	36.6/ 76	16.6
Apr. 3	23 40.34	-06 47.4	2.865	1.961	-1.17	-1.6	20.1	36.6/ 76	20.6
Apr. 13	00 04.16	-05 18.3	2.824	1.956	-1.18	-1.9	20.0	36.5/ 76	24.5
Apr. 23	00 27.88	-03 50.6	2.780	1.954	-1.18	-2.1	20.0	36.3/ 77	28.4
May 3	00 51.47	-02 26.2	2.734	1.956	-1.18	-2.3	20.0	36.0/ 77	32.2
May 13	01 14.89	-01 07.1	2.686	1.961	-1.18	-2.4	19.9	35.5/ 78	36.0
May 23	01 38.10	+00 05.0	2.637	1.969	-1.17	-2.5	19.9	35.0/ 80	39.8
June 2	02 01.02	+01 08.3	2.586	1.981	-1.17	-2.6	19.9	34.2/ 81	43.7
June 12	02 23.56	+02 01.2	2.534	1.995	-1.16	-2.6	19.9	33.3/ 83	47.6
June 22	02 45.63	+02 42.5	2.479	2.013	-1.15	-2.7	19.9	32.3/ 85	51.6
July 2	03 07.08	+03 11.2	2.423	2.033	-1.13	-2.8	19.9	31.0/ 87	55.8
July 12	03 27.78	+03 26.5	2.365	2.057	-1.12	-2.9	20.0	29.6/ 90	60.1
July 22	03 47.56	+03 28.0	2.305	2.082	-1.11	-3.0	20.0	28.0/ 92	64.6
Aug. 1	04 06.23	+03 15.6	2.242	2.110	-1.10	-3.3	20.0	26.1/ 96	69.4
Aug. 11	04 23.58	+02 49.4	2.177	2.141	-1.09	-3.5	20.0	24.0/ 99	74.4
Aug. 21	04 39.40	+02 10.2	2.111	2.173	-1.09	-3.9	20.1	21.7/104	79.8
Aug. 31	04 53.44	+01 18.7	2.043	2.207	-1.09	-4.3	20.1	19.0/109	85.5
Sept.10	05 05.43	+00 16.6	1.975	2.243	-1.11	-4.8	20.1	16.2/116	91.7
Sept.20	05 15.12	-00 54.2	1.907	2.280	-1.13	-5.3	20.2	13.1/126	98.3
Sept.30	05 22.20	-02 11.1	1.842	2.318	-1.17	-5.9	20.2	10.1/141	105.3
Oct. 10	05 26.44	-03 30.3	1.783	2.358	-1.22	-6.4	20.2	7.9/167	112.9
Oct. 20	05 27.66	-04 47.2	1.731	2.399	-1.28	-6.9	20.3	7.4/202	120.8
Oct. 30	05 25.81	-05 55.9	1.690	2.440	-1.34	-7.2	20.4	8.8/232	129.0
Nov. 9	05 21.13	-06 49.8	1.664	2.482	-1.40	-7.3	20.4	11.0/253	136.9
Nov. 19	05 14.10	-07 22.6	1.657	2.525	-1.45	-7.2	20.5	12.7/267	144.0
Nov. 29	05 05.55	-07 29.0	1.673	2.568	-1.47	-6.9	20.7	13.6/279	148.9
Dec. 9	04 56.56	-07 07.0	1.712	2.612	-1.46	-6.4	20.8	13.4/291	150.1
Dec. 19	04 48.18	-06 18.0	1.776	2.656	-1.42	-5.9	21.0	12.5/305	147.1
Dec. 29	04 41.33	-05 06.2	1.863	2.700	-1.35	-5.3	21.2	11.3/321	141.1
Jan. 8	04 36.63	-03 37.9	1.973	2.745	-1.27	-4.8	21.5	10.4/341	133.5
Jan. 18	04 34.33	-01 59.4	2.102	2.789	-1.18	-4.3	21.7	10.3/ 1	125.3
Jan. 28	04 34.47	-00 16.2	2.248	2.834	-1.10	-3.9	21.9	11.0/ 20	117.0
Feb. 7	04 36.91	+01 27.3	2.405	2.878	-1.01	-3.5	22.2	12.1/ 34	108.8
Feb. 17	04 41.41	+03 07.7	2.572	2.923	-0.94	-3.2	22.4	13.4/ 45	100.8
Feb. 27	04 47.71	+04 43.1	2.744	2.967	-0.87	-2.9	22.7	14.7/ 53	93.1
Mar. 9	04 55.54	+06 11.7	2.920	3.011	-0.81	-2.7	22.9	15.8/ 59	85.6
Mar. 19	05 04.65	+07 32.8	3.096	3.055	-0.75	-2.4	.	16.8/ 64	78.4
Mar. 29	05 14.84	+08 45.7	3.270	3.099	-0.71	-2.2	.	17.6/ 68	71.3

Comet 191P/McNaught

Epoch = 2014 July 2.0 TT
T = 2014 May 6.22408 TT
Peri. = 274.48078 e = 0.4206636
Node = 106.40800 2000.0 a = 3.5284995 AU
Incl. = 8.76320 n = 0.14870274
q = 2.0441882 AU P = 6.63 years

m1 = 10.0 + 5 log(Delta) + 17.5 log(r(t-60))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	21 32.12	-19 50.1	2.958	2.251	+2.04	+9.3	19.2	36.9
Jan. 13	21 52.55	-18 16.8	2.994	2.221	+2.08	+10.3	19.1	31.9
Jan. 23	22 13.30	-16 34.0	3.023	2.193	+2.10	+11.2	19.0	27.1
Feb. 2	22 34.31	-14 42.4	3.045	2.167	+2.12	+11.9	18.9	22.5
Feb. 12	22 55.50	-12 43.3	3.059	2.143	+2.13	+12.5	18.8	18.1
Feb. 22	23 16.84	-10 37.8	3.068	2.121	+2.15	+13.1	18.7	14.0
Mar. 4	23 38.31	-08 27.3	3.071	2.102	+2.16	+13.4	18.6	10.2
Mar. 14	23 59.88	-06 13.3	3.068	2.086	+2.17	+13.6	18.5	7.2
Mar. 24	00 21.56	-03 57.4	3.061	2.072	+2.18	+13.6	18.4	5.8
Apr. 3	00 43.34	-01 41.1	3.050	2.061	+2.19	+13.5	18.3	6.9
Apr. 13	01 05.22	+00 33.7	3.034	2.052	+2.20	+13.2	18.2	9.6
Apr. 23	01 27.21	+02 45.5	3.015	2.047	+2.21	+12.7	18.1	12.8
May 3	01 49.31	+04 52.6	2.992	2.044	+2.22	+12.1	18.0	16.3
May 13	02 11.48	+06 53.6	2.966	2.045	+2.22	+11.3	17.9	19.8
May 23	02 33.70	+08 46.9	2.937	2.048	+2.22	+10.4	17.9	23.5
June 2	02 55.95	+10 31.4	2.904	2.055	+2.22	+9.5	17.8	27.2
June 12	03 18.13	+12 06.0	2.868	2.064	+2.21	+8.4	17.8	30.9
June 22	03 40.20	+13 29.7	2.828	2.076	+2.18	+7.2	17.7	34.8
July 2	04 02.04	+14 42.2	2.784	2.091	+2.15	+6.1	17.7	38.8
July 12	04 23.53	+15 43.0	2.735	2.109	+2.10	+4.9	17.6	43.0
July 22	04 44.56	+16 32.3	2.682	2.129	+2.04	+3.8	17.6	47.3
Aug. 1	05 04.97	+17 10.5	2.623	2.151	+1.96	+2.8	17.6	51.9
Aug. 11	05 24.60	+17 38.2	2.560	2.176	+1.87	+1.8	17.5	56.7
Aug. 21	05 43.28	+17 56.5	2.492	2.203	+1.75	+1.0	17.5	61.8
Aug. 31	06 00.83	+18 06.8	2.418	2.231	+1.62	+0.4	17.5	67.2
Sept.10	06 17.03	+18 10.8	2.340	2.262	+1.47	-0.1	17.5	73.0
Sept.20	06 31.68	+18 10.3	2.258	2.294	+1.28	-0.3	17.5	79.3
Sept.30	06 44.53	+18 07.4	2.173	2.327	+1.08	-0.3	17.5	86.0
Oct. 10	06 55.31	+18 04.7	2.086	2.362	+0.84	0.0	17.5	93.2
Oct. 20	07 03.76	+18 04.5	1.999	2.399	+0.58	+0.5	17.5	101.1
Oct. 30	07 09.57	+18 09.3	1.915	2.436	+0.29	+1.2	17.5	109.7
Nov. 9	07 12.48	+18 21.3	1.837	2.474	-0.01	+2.1	17.5	119.0
Nov. 19	07 12.33	+18 41.9	1.770	2.513	-0.32	+3.0	17.5	129.1
Nov. 29	07 09.10	+19 11.6	1.717	2.553	-0.60	+3.8	17.6	140.0
Dec. 9	07 03.08	+19 49.3	1.684	2.593	-0.82	+4.3	17.7	151.7
Dec. 19	06 54.90	+20 32.3	1.675	2.634	-0.94	+4.5	17.8	163.8
Dec. 29	06 45.54	+21 17.3	1.694	2.676	-0.93	+4.3	17.9	176.0
Jan. 8	06 36.21	+22 00.6	1.742	2.718	-0.82	+3.9	18.1	171.2
Jan. 18	06 28.04	+22 39.9	1.818	2.760	-0.61	+3.4	18.3	159.1
Jan. 28	06 21.90	+23 14.0	1.921	2.802	-0.36	+2.9	18.5	147.5
Feb. 7	06 18.33	+23 42.8	2.046	2.844	-0.09	+2.4	18.8	136.5
Feb. 17	06 17.46	+24 06.7	2.191	2.887	+0.17	+1.9	19.1	126.2
Feb. 27	06 19.20	+24 26.1	2.350	2.929	+0.41	+1.5	19.3	116.5
Mar. 9	06 23.32	+24 41.3	2.519	2.971	+0.62	+1.1	19.6	107.4
Mar. 19	06 29.49	+24 52.2	2.696	3.014	+0.79	+0.6	19.9	98.8
Mar. 29	06 37.41	+24 58.6	2.876	3.056	+0.93	+0.2	20.1	90.7

Comet 209P/LINEAR

Epoch = 2014 July 2.0 TT
T = 2014 May 6.33600 TT
Peri. = 152.41070 e = 0.6728143
Node = 62.82200 2000.0 a = 2.9631753 AU
Incl. = 21.23759 n = 0.19322710
q = 0.9695086 AU P = 5.10 years

m1 = 17.8 + 5 log(Delta) + 5.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	09 23.01	+50 04.8	0.972	1.839	-0.15	+29.3	19.1	140.2
Jan. 13	09 21.47	+54 57.9	0.869	1.749	-0.84	+30.9	18.7	141.3
Jan. 23	09 13.08	+60 06.9	0.788	1.658	-1.76	+29.3	18.4	138.3
Feb. 2	08 55.44	+65 00.0	0.727	1.567	-2.79	+24.0	18.1	131.9
Feb. 12	08 27.54	+68 59.7	0.680	1.477	-3.50	+16.0	17.8	123.6
Feb. 22	07 52.56	+71 39.8	0.644	1.388	-3.33	+7.8	17.6	114.7
Mar. 4	07 19.29	+72 57.9	0.611	1.301	-2.18	+1.9	17.3	106.2
Mar. 14	06 57.46	+73 17.0	0.575	1.219	-0.65	-1.2	17.0	98.5
Mar. 24	06 50.96	+73 05.0	0.532	1.144	+0.82	-2.9	16.7	91.7
Apr. 3	06 59.16	+72 36.2	0.479	1.078	+2.05	-4.6	16.4	86.0
Apr. 13	07 19.62	+71 50.3	0.415	1.025	+2.95	-8.0	15.9	81.2
Apr. 23	07 49.15	+70 30.0	0.340	0.988	+3.64	-16.1	15.4	77.3
May 3	08 25.50	+67 49.5	0.256	0.971	+4.29	-37.7	14.8	74.3
May 13	09 08.39	+61 32.6	0.167	0.974	+5.41	130.1	13.9	72.8
May 23	10 02.46	+39 51.6	0.083	0.998	+8.05	475.3	12.4	77.9
June 2	11 23.01	-39 21.0	0.066	1.041	+12.06	188.3	12.0	112.1
June 12	13 23.58	-70 44.1	0.145	1.099	+11.93	-26.7	13.8	121.8
June 22	15 22.85	-75 10.7	0.239	1.168	+7.53	+5.4	15.0	124.4
July 2	16 38.13	-74 16.8	0.337	1.246	+4.41	+13.9	15.9	126.2
July 12	17 22.27	-71 58.3	0.440	1.330	+2.93	+16.8	16.6	127.2
July 22	17 51.60	-69 10.7	0.549	1.417	+2.27	+18.0	17.3	127.2
Aug. 1	18 14.35	-66 11.0	0.666	1.507	+1.99	+18.3	17.8	126.2
Aug. 11	18 34.21	-63 08.2	0.791	1.597	+1.84	+18.1	18.3	124.1
Aug. 21	18 52.63	-60 07.5	0.925	1.688	+1.77	+17.6	18.8	121.2
Aug. 31	19 10.34	-57 11.2	1.070	1.779	+1.74	+17.0	19.2	117.6
Sept. 10	19 27.69	-54 21.1	1.225	1.868	+1.71	+16.3	19.6	113.3
Sept. 20	19 44.75	-51 37.8	1.388	1.957	+1.68	+15.7	20.0	108.7
Sept. 30	20 01.59	-49 00.8	1.561	2.044	+1.66	+15.1	20.3	103.7
Oct. 10	20 18.24	-46 30.0	1.741	2.130	+1.64	+14.5	20.6	98.4
Oct. 20	20 34.66	-44 04.8	1.927	2.214	+1.62	+14.0	20.9	92.9
Oct. 30	20 50.87	-41 44.4	2.117	2.296	+1.60	+13.6	21.2	87.3
Nov. 9	21 06.85	-39 28.4	2.310	2.377	+1.57	+13.2	21.5	81.6
Nov. 19	21 22.57	-37 16.4	2.504	2.457	+1.55	+12.9	21.7	75.8
Nov. 29	21 38.06	-35 07.9	2.698	2.534	+1.52	+12.5	22.0	69.9
Dec. 9	21 53.29	-33 02.7	2.888	2.610	+1.50	+12.2	22.2	64.0
Dec. 19	22 08.25	-31 00.8	3.073	2.685	+1.47	+11.9	22.4	58.0
Dec. 29	22 22.95	-29 02.1	3.251	2.757	+1.44	+11.5	22.6	52.0
Jan. 8	22 37.37	-27 06.7	3.421	2.828	+1.41	+11.2	22.7	46.0
Jan. 18	22 51.51	-25 14.6	3.580	2.898	+1.39	+10.8	22.9	40.1
Jan. 28	23 05.37	-23 26.3	3.727	2.966	+1.36	+10.4	23.0	34.3
Feb. 7	23 18.93	-21 41.8	3.860	3.032	+1.33	+10.0	.	28.7
Feb. 17	23 32.20	-20 01.6	3.978	3.097	+1.30	+9.6	.	23.5
Feb. 27	23 45.16	-18 25.9	4.080	3.160	+1.26	+9.1	.	19.0
Mar. 9	23 57.79	-16 55.2	4.165	3.222	+1.23	+8.5	.	16.0
Mar. 19	00 10.08	-15 29.8	4.233	3.283	+1.19	+8.0	.	15.3
Mar. 29	00 22.00	-14 10.1	4.282	3.342	+1.15	+7.3	.	17.3

Comet 295P/LINEAR

Epoch = 2014 July 2.0 TT
T = 2014 May 14.71563 TT
Peri. = 73.40716 e = 0.6165159
Node = 7.66514 2000.0 a = 5.3420515 AU
Incl. = 21.10442 n = 0.07982556
q = 2.0485918 AU P = 12.35 years

m1 = 13.6 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	00 03.55	+09 23.0	2.305	2.382	+1.06	+10.9	20.1	82.3
Jan. 13	00 14.12	+11 12.4	2.384	2.338	+1.24	+11.8	20.1	75.4
Jan. 23	00 26.50	+13 10.1	2.458	2.296	+1.41	+12.5	20.1	68.9
Feb. 2	00 40.57	+15 14.9	2.528	2.257	+1.56	+13.1	20.0	62.9
Feb. 12	00 56.21	+17 25.6	2.591	2.220	+1.71	+13.5	20.0	57.4
Feb. 22	01 13.36	+19 40.3	2.649	2.186	+1.86	+13.7	20.0	52.2
Mar. 4	01 31.98	+21 57.4	2.701	2.156	+2.01	+13.7	19.9	47.4
Mar. 14	01 52.07	+24 14.8	2.747	2.129	+2.15	+13.5	19.9	42.9
Mar. 24	02 13.62	+26 30.0	2.788	2.106	+2.30	+13.0	19.9	38.8
Apr. 3	02 36.65	+28 40.4	2.825	2.086	+2.45	+12.3	19.8	34.9
Apr. 13	03 01.17	+30 43.2	2.859	2.070	+2.60	+11.2	19.8	31.4
Apr. 23	03 27.12	+32 35.4	2.890	2.059	+2.73	+9.8	19.8	28.2
May 3	03 54.44	+34 13.7	2.918	2.052	+2.85	+8.2	19.8	25.2
May 13	04 22.98	+35 35.5	2.945	2.049	+2.95	+6.2	19.8	22.5
May 23	04 52.51	+36 38.0	2.971	2.050	+3.02	+4.1	19.9	20.1
June 2	05 22.74	+37 19.3	2.997	2.056	+3.06	+1.9	19.9	17.9
June 12	05 53.30	+37 38.2	3.021	2.066	+3.05	-0.4	19.9	16.2
June 22	06 23.78	+37 34.5	3.045	2.080	+3.00	-2.6	20.0	14.9
July 2	06 53.82	+37 08.9	3.069	2.098	+2.92	-4.6	20.1	14.3
July 12	07 23.06	+36 23.0	3.090	2.120	+2.82	-6.4	20.1	14.4
July 22	07 51.23	+35 19.1	3.110	2.146	+2.69	-7.9	20.2	15.2
Aug. 1	08 18.14	+33 59.9	3.127	2.176	+2.55	-9.2	20.3	16.9
Aug. 11	08 43.67	+32 28.4	3.140	2.208	+2.41	-10.1	20.4	19.2
Aug. 21	09 07.77	+30 47.4	3.149	2.244	+2.27	-10.8	20.5	22.0
Aug. 31	09 30.45	+28 59.8	3.153	2.282	+2.13	-11.2	20.6	25.4
Sept.10	09 51.72	+27 08.2	3.150	2.323	+1.99	-11.3	20.7	29.2
Sept.20	10 11.64	+25 15.0	3.140	2.366	+1.86	-11.3	20.8	33.4
Sept.30	10 30.25	+23 22.4	3.121	2.412	+1.73	-11.0	20.9	38.0
Oct. 10	10 47.55	+21 32.2	3.094	2.459	+1.60	-10.6	20.9	43.0
Oct. 20	11 03.59	+19 46.2	3.058	2.508	+1.47	-10.0	21.0	48.3
Oct. 30	11 18.34	+18 05.9	3.012	2.559	+1.34	-9.3	21.1	54.0
Nov. 9	11 31.75	+16 32.6	2.958	2.611	+1.20	-8.5	21.2	60.2
Nov. 19	11 43.77	+15 07.7	2.894	2.664	+1.05	-7.5	21.2	66.7
Nov. 29	11 54.28	+13 52.4	2.823	2.718	+0.89	-6.5	21.3	73.8
Dec. 9	12 03.13	+12 47.5	2.746	2.773	+0.70	-5.4	21.3	81.3
Dec. 19	12 10.18	+11 54.0	2.664	2.828	+0.50	-4.2	21.4	89.3
Dec. 29	12 15.21	+11 12.4	2.581	2.884	+0.28	-2.9	21.4	97.8
Jan. 8	12 18.04	+10 43.0	2.500	2.941	+0.05	-1.8	21.4	107.0
Jan. 18	12 18.52	+10 25.5	2.425	2.999	-0.20	-0.7	21.5	116.7
Jan. 28	12 16.56	+10 18.8	2.360	3.056	-0.43	+0.2	21.5	127.0
Feb. 7	12 12.22	+10 20.8	2.311	3.114	-0.65	+0.8	21.6	137.9
Feb. 17	12 05.77	+10 28.7	2.283	3.172	-0.81	+1.0	21.7	149.1
Feb. 27	11 57.68	+10 38.5	2.281	3.230	-0.90	+0.8	21.8	160.3
Mar. 9	11 48.69	+10 46.3	2.307	3.288	-0.91	+0.2	21.9	169.8
Mar. 19	11 39.58	+10 48.5	2.363	3.347	-0.84	-0.6	22.0	169.6
Mar. 29	11 31.15	+10 42.7	2.449	3.405	-0.71	-1.5	22.2	160.1

Comet 134P/Kowal-Vavrova

Epoch = 2014 July 2.0 TT
T = 2014 May 21.50147 TT
Peri. = 18.58569 e = 0.5873825
Node = 202.12054 2000.0 a = 6.2317912 AU
Incl. = 4.34881 n = 0.06335556
q = 2.5713461 AU P = 15.56 years

m1 = 4.8 + 5 log(Delta) + 20.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	13 17.85	-09 53.1	2.793	2.806	+1.17	-6.2	16.0	80.6
Jan. 13	13 29.58	-10 54.8	2.634	2.775	+1.08	-5.3	15.8	87.8
Jan. 23	13 40.34	-11 47.9	2.477	2.746	+0.95	-4.3	15.5	95.2
Feb. 2	13 49.87	-12 31.2	2.324	2.719	+0.80	-3.2	15.3	102.9
Feb. 12	13 57.91	-13 03.2	2.178	2.694	+0.63	-2.0	15.1	111.0
Feb. 22	14 04.21	-13 23.0	2.041	2.671	+0.43	-0.6	14.9	119.5
Mar. 4	14 08.49	-13 29.5	1.916	2.650	+0.21	+0.7	14.7	128.6
Mar. 14	14 10.60	-13 22.1	1.807	2.632	-0.01	+2.1	14.5	138.1
Mar. 24	14 10.53	-13 01.0	1.715	2.616	-0.21	+3.3	14.3	148.2
Apr. 3	14 08.45	-12 27.5	1.645	2.602	-0.36	+4.3	14.2	158.8
Apr. 13	14 04.83	-11 44.6	1.598	2.591	-0.45	+4.8	14.1	169.6
Apr. 23	14 00.37	-10 56.8	1.577	2.582	-0.45	+4.7	14.0	178.6
May 3	13 55.89	-10 09.6	1.581	2.576	-0.36	+4.1	14.0	168.1
May 13	13 52.25	-09 29.0	1.610	2.572	-0.21	+3.0	14.0	157.4
May 23	13 50.12	-08 59.3	1.662	2.571	-0.02	+1.6	14.1	147.1
June 2	13 49.93	-08 43.6	1.734	2.573	+0.20	+0.1	14.2	137.4
June 12	13 51.89	-08 43.0	1.822	2.577	+0.41	-1.4	14.3	128.3
June 22	13 56.01	-08 56.8	1.925	2.584	+0.61	-2.7	14.5	119.8
July 2	14 02.16	-09 23.5	2.038	2.594	+0.80	-3.8	14.6	111.8
July 12	14 10.16	-10 01.2	2.160	2.606	+0.96	-4.6	14.8	104.4
July 22	14 19.80	-10 47.5	2.289	2.620	+1.11	-5.3	15.0	97.3
Aug. 1	14 30.88	-11 40.1	2.423	2.637	+1.23	-5.7	15.1	90.6
Aug. 11	14 43.22	-12 37.0	2.559	2.656	+1.34	-5.9	15.3	84.2
Aug. 21	14 56.63	-13 36.1	2.698	2.678	+1.44	-5.9	15.5	78.0
Aug. 31	15 10.98	-14 35.5	2.837	2.701	+1.52	-5.8	15.7	72.0
Sept. 10	15 26.14	-15 33.6	2.974	2.727	+1.58	-5.5	15.9	66.1
Sept. 20	15 41.98	-16 29.1	3.110	2.755	+1.64	-5.1	16.1	60.3
Sept. 30	15 58.42	-17 20.5	3.243	2.784	+1.69	-4.6	16.2	54.6
Oct. 10	16 15.32	-18 06.7	3.371	2.816	+1.73	-4.0	16.4	48.8
Oct. 20	16 32.61	-18 46.9	3.493	2.849	+1.76	-3.3	16.6	43.1
Oct. 30	16 50.18	-19 20.3	3.609	2.883	+1.78	-2.6	16.8	37.4
Nov. 9	17 07.94	-19 46.2	3.717	2.919	+1.78	-1.8	17.0	31.6
Nov. 19	17 25.78	-20 04.3	3.815	2.957	+1.78	-1.0	17.1	25.8
Nov. 29	17 43.61	-20 14.5	3.904	2.996	+1.77	-0.2	17.3	19.9
Dec. 9	18 01.32	-20 16.5	3.982	3.035	+1.75	+0.6	17.4	14.1
Dec. 19	18 18.81	-20 10.7	4.047	3.076	+1.72	+1.3	17.6	8.3
Dec. 29	18 36.01	-19 57.3	4.099	3.119	+1.68	+2.1	17.7	3.6
Jan. 8	18 52.79	-19 36.7	4.138	3.162	+1.63	+2.7	17.9	5.7
Jan. 18	19 09.09	-19 09.7	4.163	3.205	+1.57	+3.3	18.0	11.5
Jan. 28	19 24.82	-18 36.9	4.174	3.250	+1.51	+3.8	18.1	17.7
Feb. 7	19 39.89	-17 59.2	4.170	3.295	+1.43	+4.2	18.3	24.2
Feb. 17	19 54.22	-17 17.4	4.152	3.341	+1.35	+4.5	18.4	30.7
Feb. 27	20 07.75	-16 32.7	4.120	3.388	+1.26	+4.7	18.5	37.5
Mar. 9	20 20.39	-15 45.9	4.075	3.435	+1.17	+4.8	18.6	44.3
Mar. 19	20 32.06	-14 58.3	4.017	3.483	+1.06	+4.7	18.7	51.4
Mar. 29	20 42.69	-14 10.9	3.947	3.531	+0.95	+4.6	18.7	58.6

Comet 132P/Helin-Roman-Alu

Epoch = 2014 July 2.0 TT
T = 2014 May 21.67603 TT
Peri. = 221.13023 e = 0.5320769
Node = 178.36899 2000.0 a = 4.0771873 AU
Incl. = 5.77723 n = 0.11971900
q = 1.9078101 AU P = 8.23 years

m1 = 10.6 + 5 log(Delta) + 20.0 log(r(t-20))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 3	21 48.90	-11 53.8	2.882	2.266	+1.90	+8.4	20.4	43.1
Jan. 13	22 07.90	-10 30.0	2.916	2.222	+1.97	+9.4	20.2	37.7
Jan. 23	22 27.58	-08 56.2	2.943	2.179	+2.03	+10.3	20.0	32.6
Feb. 2	22 47.87	-07 13.3	2.962	2.139	+2.08	+11.1	19.9	27.8
Feb. 12	23 08.71	-05 22.2	2.974	2.102	+2.13	+11.8	19.7	23.1
Feb. 22	23 30.05	-03 24.3	2.979	2.067	+2.18	+12.3	19.6	18.7
Mar. 4	23 51.87	-01 20.9	2.980	2.035	+2.23	+12.7	19.4	14.5
Mar. 14	00 14.17	+00 46.2	2.975	2.006	+2.28	+12.9	19.3	10.4
Mar. 24	00 36.92	+02 55.3	2.967	1.980	+2.32	+12.9	19.1	6.6
Apr. 3	01 00.16	+05 04.4	2.956	1.958	+2.37	+12.7	19.0	3.1
Apr. 13	01 23.85	+07 11.3	2.942	1.940	+2.41	+12.3	18.9	1.7
Apr. 23	01 48.00	+09 14.0	2.926	1.925	+2.46	+11.6	18.8	4.6
May 3	02 12.58	+11 10.3	2.909	1.915	+2.50	+10.8	18.7	7.8
May 13	02 37.56	+12 58.0	2.891	1.909	+2.53	+9.7	18.6	11.1
May 23	03 02.87	+14 35.2	2.872	1.908	+2.56	+8.5	18.5	14.4
June 2	03 28.42	+16 00.1	2.852	1.911	+2.57	+7.1	18.5	17.7
June 12	03 54.09	+17 11.3	2.831	1.918	+2.57	+5.6	18.5	21.0
June 22	04 19.75	+18 07.6	2.809	1.929	+2.55	+4.1	18.5	24.3
July 2	04 45.25	+18 48.6	2.785	1.944	+2.51	+2.5	18.5	27.8
July 12	05 10.38	+19 13.8	2.759	1.963	+2.46	+1.0	18.5	31.3
July 22	05 35.00	+19 23.8	2.731	1.986	+2.39	-0.5	18.6	35.0
Aug. 1	05 58.91	+19 19.3	2.699	2.013	+2.30	-1.8	18.6	38.9
Aug. 11	06 21.94	+19 01.4	2.663	2.043	+2.20	-3.0	18.7	43.0
Aug. 21	06 43.94	+18 31.6	2.622	2.076	+2.08	-4.0	18.8	47.4
Aug. 31	07 04.77	+17 51.8	2.577	2.111	+1.95	-4.8	18.9	52.0
Sept.10	07 24.27	+17 03.7	2.526	2.150	+1.81	-5.4	19.0	57.0
Sept.20	07 42.34	+16 09.6	2.469	2.190	+1.65	-5.8	19.1	62.3
Sept.30	07 58.82	+15 11.7	2.407	2.233	+1.48	-5.9	19.2	68.0
Oct. 10	08 13.58	+14 12.3	2.339	2.277	+1.29	-5.9	19.3	74.1
Oct. 20	08 26.45	+13 13.7	2.267	2.323	+1.08	-5.5	19.4	80.7
Oct. 30	08 37.26	+12 18.5	2.191	2.371	+0.85	-4.9	19.5	87.8
Nov. 9	08 45.80	+11 29.2	2.114	2.420	+0.61	-4.1	19.5	95.5
Nov. 19	08 51.88	+10 48.3	2.038	2.469	+0.34	-3.0	19.6	103.9
Nov. 29	08 55.27	+10 18.5	1.966	2.520	+0.06	-1.7	19.7	113.0
Dec. 9	08 55.87	+10 01.9	1.901	2.572	-0.22	-0.2	19.8	122.8
Dec. 19	08 53.67	+10 00.0	1.849	2.624	-0.48	+1.3	20.0	133.3
Dec. 29	08 48.87	+10 13.4	1.814	2.676	-0.69	+2.7	20.1	144.5
Jan. 8	08 41.98	+10 40.8	1.801	2.729	-0.82	+3.9	20.3	156.0
Jan. 18	08 33.77	+11 19.3	1.814	2.782	-0.86	+4.5	20.4	167.2
Jan. 28	08 25.21	+12 04.7	1.856	2.836	-0.79	+4.8	20.7	172.8
Feb. 7	08 17.33	+12 52.3	1.927	2.889	-0.64	+4.6	20.9	164.5
Feb. 17	08 10.94	+13 38.0	2.025	2.943	-0.43	+4.1	21.2	153.4
Feb. 27	08 06.62	+14 18.5	2.149	2.996	-0.20	+3.4	21.5	142.5
Mar. 9	08 04.60	+14 52.1	2.294	3.049	+0.03	+2.6	21.8	132.0
Mar. 19	08 04.89	+15 17.8	2.457	3.103	+0.24	+1.7	22.1	122.1
Mar. 29	08 07.32	+15 35.2	2.632	3.156	+0.43	+0.9	22.4	112.8

Comet 4P/Faye

Epoch = 2014 July 2.0 TT
T = 2014 May 29.61759 TT
Peri. = 205.06829 e = 0.5685248
Node = 199.27467 2000.0 a = 3.8357692 AU
Incl. = 9.05008 n = 0.13119744
q = 1.6550393 AU P = 7.51 years

m1 = 8.2 + 5 log(Delta) + 15.0 log(r(t-15))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	21 19.48	-10 33.7	2.877	2.173	+2.01	+7.1	15.8	36.9
Jan. 13	21 39.54	-09 22.4	2.888	2.117	+2.09	+8.3	15.6	31.8
Jan. 23	22 00.40	-07 59.5	2.890	2.062	+2.16	+9.4	15.5	26.9
Feb. 2	22 22.02	-06 25.5	2.885	2.009	+2.23	+10.4	15.3	22.4
Feb. 12	22 44.34	-04 41.4	2.872	1.958	+2.30	+11.3	15.1	18.0
Feb. 22	23 07.34	-02 48.2	2.854	1.909	+2.37	+12.1	14.9	14.0
Mar. 4	23 31.03	-00 47.5	2.832	1.864	+2.44	+12.7	14.8	10.1
Mar. 14	23 55.40	+01 19.1	2.806	1.822	+2.51	+13.0	14.6	6.6
Mar. 24	00 20.48	+03 29.3	2.778	1.783	+2.58	+13.2	14.4	3.2
Apr. 3	00 46.29	+05 40.9	2.749	1.749	+2.65	+13.0	14.2	0.7
Apr. 13	01 12.83	+07 51.1	2.720	1.720	+2.73	+12.6	14.1	3.0
Apr. 23	01 40.10	+09 57.0	2.693	1.695	+2.80	+11.9	13.9	5.8
May 3	02 08.08	+11 55.5	2.667	1.677	+2.86	+10.8	13.8	8.4
May 13	02 36.71	+13 43.6	2.644	1.664	+2.92	+9.5	13.7	11.0
May 23	03 05.87	+15 18.4	2.624	1.656	+2.96	+7.9	13.6	13.4
June 2	03 35.44	+16 37.2	2.607	1.655	+2.98	+6.1	13.6	15.9
June 12	04 05.19	+17 38.0	2.593	1.661	+2.97	+4.1	13.6	18.3
June 22	04 34.91	+18 19.4	2.582	1.672	+2.94	+2.1	13.6	20.8
July 2	05 04.34	+18 40.7	2.573	1.689	+2.89	+0.1	13.6	23.4
July 12	05 33.23	+18 42.1	2.564	1.711	+2.81	-1.8	13.6	26.1
July 22	06 01.34	+18 24.6	2.556	1.739	+2.71	-3.5	13.7	29.0
Aug. 1	06 28.45	+17 49.6	2.547	1.772	+2.59	-5.0	13.8	32.1
Aug. 11	06 54.38	+16 59.1	2.536	1.809	+2.46	-6.4	13.9	35.4
Aug. 21	07 19.00	+15 55.4	2.523	1.850	+2.32	-7.4	14.0	39.0
Aug. 31	07 42.22	+14 41.0	2.504	1.894	+2.17	-8.3	14.1	42.9
Sept.10	08 03.94	+13 18.4	2.481	1.942	+2.02	-8.9	14.3	47.1
Sept.20	08 24.11	+11 49.9	2.452	1.992	+1.86	-9.2	14.4	51.7
Sept.30	08 42.69	+10 17.9	2.417	2.044	+1.69	-9.3	14.5	56.6
Oct. 10	08 59.59	+08 44.7	2.374	2.098	+1.52	-9.2	14.7	61.9
Oct. 20	09 14.76	+07 12.5	2.325	2.154	+1.33	-8.9	14.8	67.7
Oct. 30	09 28.07	+05 43.5	2.269	2.212	+1.13	-8.4	14.9	74.0
Nov. 9	09 39.40	+04 20.0	2.208	2.270	+0.92	-7.6	15.0	80.7
Nov. 19	09 48.59	+03 04.2	2.142	2.329	+0.68	-6.5	15.1	88.1
Nov. 29	09 55.44	+01 58.7	2.074	2.389	+0.43	-5.3	15.2	96.1
Dec. 9	09 59.75	+01 06.1	2.006	2.449	+0.16	-3.7	15.3	104.7
Dec. 19	10 01.39	+00 29.2	1.942	2.509	-0.11	-1.9	15.4	114.1
Dec. 29	10 00.25	+00 10.5	1.886	2.570	-0.38	+0.1	15.5	124.1
Jan. 8	09 56.45	+00 11.9	1.844	2.631	-0.61	+2.2	15.6	134.8
Jan. 18	09 50.32	+00 34.0	1.819	2.691	-0.78	+4.1	15.7	145.9
Jan. 28	09 42.48	+01 15.3	1.818	2.752	-0.87	+5.7	15.9	157.0
Feb. 7	09 33.82	+02 11.9	1.844	2.812	-0.85	+6.6	16.1	166.3
Feb. 17	09 25.32	+03 18.0	1.899	2.872	-0.74	+6.9	16.3	167.6
Feb. 27	09 17.88	+04 27.2	1.983	2.932	-0.57	+6.6	16.5	159.6
Mar. 9	09 12.20	+05 33.4	2.094	2.991	-0.36	+5.9	16.7	149.3
Mar. 19	09 08.65	+06 32.2	2.229	3.050	-0.13	+4.9	17.0	138.8
Mar. 29	09 07.34	+07 20.8	2.384	3.108	+0.09	+3.7	17.3	128.7

Comet P/2005 JQ5 (Catalina)

Epoch = 2014 July 2.0 TT
T = 2014 May 29.91744 TT
Peri. = 222.74367 e = 0.6935025
Node = 95.80641 2000.0 a = 2.6946602 AU
Incl. = 5.69156 n = 0.22281687
q = 0.8259066 AU P = 4.42 years

m1 = 17.2 + 5 log(Delta) + 10.0 log(r(t-15))

0h TT 2014/15	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ' / °	Elong. °
Jan. 3	14 55.49	-11 50.0	2.412	2.059	-1.15	+6.2	22.5	32.3/105	57.5
Jan. 13	15 16.82	-13 12.6	2.222	1.968	-1.33	+6.7	22.2	34.4/104	62.3
Jan. 23	15 39.80	-14 30.9	2.032	1.875	-1.55	+7.1	21.8	37.0/102	66.7
Feb. 2	16 04.84	-15 43.3	1.844	1.780	-1.83	+7.4	21.4	40.3/100	70.7
Feb. 12	16 32.45	-16 47.9	1.662	1.683	-2.16	+7.5	20.9	44.6/ 98	74.0
Feb. 22	17 03.36	-17 41.5	1.487	1.585	-2.57	+7.2	20.4	50.2/ 96	76.7
Mar. 4	17 38.49	-18 18.8	1.324	1.485	-3.05	+6.2	19.9	57.4/ 93	78.3
Mar. 14	18 18.85	-18 31.5	1.177	1.384	-3.59	+4.3	19.4	66.4/ 90	78.7
Mar. 24	19 05.46	-18 06.9	1.052	1.283	-4.12	+1.0	18.9	76.6/ 86	77.5
Apr. 3	19 58.73	-16 48.3	0.953	1.185	-4.52	-3.6	18.3	86.4/ 82	74.6
Apr. 13	20 57.68	-14 21.5	0.888	1.090	-4.63	-8.7	17.9	93.2/ 78	70.1
Apr. 23	21 59.64	-10 45.2	0.862	1.002	-4.35	-12.6	17.4	94.6/ 75	64.3
May 3	23 00.90	-06 20.0	0.876	0.926	-3.79	-14.1	17.1	90.6/ 73	58.3
May 13	23 58.44	-01 38.9	0.926	0.867	-3.14	-13.6	16.9	83.4/ 71	53.0
May 23	00 51.09	+02 50.4	1.004	0.833	-2.59	-12.3	16.7	75.4/ 71	48.8
June 2	01 38.91	+06 52.0	1.099	0.827	-2.18	-10.9	16.7	67.8/ 71	45.9
June 12	02 22.44	+10 19.2	1.201	0.851	-1.87	-9.6	16.8	60.8/ 73	44.2
June 22	03 02.18	+13 09.7	1.303	0.901	-1.62	-8.1	17.0	54.4/ 75	43.6
July 2	03 38.44	+15 24.5	1.396	0.971	-1.41	-6.8	17.3	48.5/ 77	44.0
July 12	04 11.40	+17 06.4	1.480	1.055	-1.22	-5.6	17.8	43.3/ 79	45.5
July 22	04 41.26	+18 20.0	1.550	1.147	-1.07	-4.6	18.2	38.5/ 81	47.7
Aug. 1	05 08.15	+19 10.2	1.605	1.245	-0.93	-3.8	18.6	34.1/ 84	50.9
Aug. 11	05 32.18	+19 41.6	1.646	1.345	-0.83	-3.2	19.1	30.0/ 86	54.7
Aug. 21	05 53.43	+19 58.8	1.672	1.446	-0.74	-2.8	19.4	26.1/ 88	59.3
Aug. 31	06 11.92	+20 05.8	1.682	1.546	-0.68	-2.5	19.8	22.1/ 89	64.6
Sept.10	06 27.58	+20 06.4	1.679	1.646	-0.64	-2.2	20.1	18.0/ 90	70.6
Sept.20	06 40.34	+20 03.9	1.663	1.743	-0.62	-2.1	20.3	13.6/ 91	77.3
Sept.30	06 49.99	+20 01.4	1.635	1.839	-0.63	-1.9	20.6	8.9/ 90	84.8
Oct. 10	06 56.28	+20 01.6	1.600	1.933	-0.66	-1.8	20.8	3.8/ 82	93.2
Oct. 20	06 58.93	+20 07.0	1.560	2.024	-0.71	-1.7	20.9	2.2/303	102.5
Oct. 30	06 57.63	+20 18.9	1.520	2.113	-0.79	-1.5	21.1	7.8/284	112.8
Nov. 9	06 52.21	+20 37.8	1.487	2.200	-0.90	-1.5	21.2	13.4/281	124.1
Nov. 19	06 42.81	+21 02.3	1.465	2.285	-1.01	-1.4	21.4	18.1/279	136.3
Nov. 29	06 29.99	+21 29.4	1.464	2.367	-1.13	-1.5	21.5	21.1/278	149.4
Dec. 9	06 14.93	+21 55.2	1.489	2.448	-1.22	-1.7	21.7	21.9/276	163.1
Dec. 19	05 59.25	+22 16.5	1.543	2.526	-1.27	-2.0	22.0	20.4/275	176.7
Dec. 29	05 44.62	+22 32.1	1.629	2.602	-1.26	-2.2	22.2	16.9/274	169.4
Jan. 8	05 32.41	+22 43.0	1.746	2.676	-1.22	-2.3	22.5	12.5/274	156.5
Jan. 18	05 23.37	+22 51.6	1.889	2.748	-1.14	-2.4	22.8	7.8/276	144.2
Jan. 28	05 17.73	+22 59.6	2.056	2.819	-1.05	-2.3	.	3.4/285	132.8
Feb. 7	05 15.35	+23 08.5	2.240	2.887	-0.96	-2.1	.	1.2/ 34	122.1
Feb. 17	05 15.84	+23 18.5	2.437	2.954	-0.87	-1.9	.	4.2/ 75	112.1
Feb. 27	05 18.81	+23 29.5	2.642	3.018	-0.79	-1.7	.	7.0/ 80	102.7
Mar. 9	05 23.84	+23 40.9	2.851	3.081	-0.72	-1.4	.	9.3/ 83	93.8
Mar. 19	05 30.54	+23 52.0	3.062	3.143	-0.65	-1.2	.	11.1/ 84	85.4
Mar. 29	05 38.62	+24 01.9	3.269	3.202	-0.60	-1.0	.	12.6/ 86	77.3

Comet 16P/Brooks

Epoch = 2014 July 2.0 TT
T = 2014 June 7.92130 TT
Peri. = 219.66110 e = 0.5626109
Node = 159.30626 2000.0 a = 3.3525429 AU
Incl. = 4.25843 n = 0.16056193
q = 1.4663657 AU P = 6.14 years

m1 = 11.2 + 5 log(Delta) + 15.0 log(r(t-40))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 3	19 34.73	-19 38.7	3.091	2.130	+2.29	+4.9	19.3	10.1
Jan. 13	19 57.68	-18 49.6	3.043	2.066	+2.37	+6.3	19.1	5.5
Jan. 23	20 21.34	-17 46.3	2.988	2.004	+2.43	+7.8	18.9	1.8
Feb. 2	20 45.65	-16 28.2	2.925	1.943	+2.49	+9.3	18.6	3.8
Feb. 12	21 10.56	-14 55.3	2.857	1.883	+2.55	+10.8	18.4	7.5
Feb. 22	21 36.04	-13 07.6	2.786	1.825	+2.60	+12.2	18.2	11.1
Mar. 4	22 02.06	-11 05.8	2.712	1.769	+2.66	+13.5	17.9	14.5
Mar. 14	22 28.63	-08 50.7	2.638	1.716	+2.71	+14.7	17.6	17.5
Mar. 24	22 55.74	-06 23.7	2.565	1.667	+2.77	+15.7	17.4	20.3
Apr. 3	23 23.44	-03 46.8	2.495	1.621	+2.83	+16.4	17.1	22.8
Apr. 13	23 51.73	-01 02.5	2.430	1.580	+2.89	+16.9	16.8	25.1
Apr. 23	00 20.65	+01 46.0	2.370	1.545	+2.96	+16.9	16.6	27.1
May 3	00 50.22	+04 35.3	2.316	1.515	+3.02	+16.6	16.4	29.0
May 13	01 20.40	+07 21.0	2.269	1.492	+3.08	+15.8	16.1	30.7
May 23	01 51.17	+09 59.1	2.230	1.476	+3.13	+14.6	15.9	32.3
June 2	02 22.42	+12 25.1	2.197	1.468	+3.16	+13.0	15.7	33.8
June 12	02 53.99	+14 35.2	2.171	1.467	+3.17	+11.1	15.6	35.4
June 22	03 25.67	+16 26.1	2.150	1.474	+3.15	+8.9	15.5	37.2
July 2	03 57.20	+17 55.5	2.134	1.489	+3.11	+6.7	15.4	39.0
July 12	04 28.28	+19 02.1	2.120	1.510	+3.03	+4.4	15.3	41.1
July 22	04 58.60	+19 46.0	2.108	1.539	+2.93	+2.2	15.3	43.5
Aug. 1	05 27.86	+20 08.2	2.096	1.573	+2.79	+0.2	15.3	46.1
Aug. 11	05 55.79	+20 10.5	2.082	1.613	+2.64	-1.5	15.4	49.1
Aug. 21	06 22.16	+19 55.6	2.066	1.658	+2.46	-2.9	15.5	52.5
Aug. 31	06 46.78	+19 26.4	2.045	1.707	+2.27	-4.0	15.6	56.4
Sept. 10	07 09.49	+18 46.2	2.018	1.759	+2.07	-4.8	15.7	60.6
Sept. 20	07 30.17	+17 58.2	1.986	1.814	+1.85	-5.3	15.8	65.4
Sept. 30	07 48.70	+17 05.7	1.948	1.872	+1.62	-5.4	15.9	70.7
Oct. 10	08 04.93	+16 11.9	1.903	1.932	+1.38	-5.2	16.1	76.5
Oct. 20	08 18.73	+15 20.0	1.852	1.993	+1.12	-4.7	16.2	83.0
Oct. 30	08 29.90	+14 33.1	1.797	2.055	+0.83	-3.9	16.4	90.1
Nov. 9	08 38.21	+13 54.3	1.740	2.118	+0.52	-2.8	16.5	98.0
Nov. 19	08 43.45	+13 26.4	1.682	2.181	+0.19	-1.4	16.6	106.6
Nov. 29	08 45.38	+13 12.2	1.628	2.245	-0.15	+0.1	16.7	116.2
Dec. 9	08 43.91	+13 13.4	1.582	2.309	-0.48	+1.7	16.9	126.6
Dec. 19	08 39.12	+13 30.4	1.549	2.373	-0.77	+3.2	17.0	137.9
Dec. 29	08 31.41	+14 02.0	1.535	2.436	-0.98	+4.2	17.2	149.9
Jan. 8	08 21.63	+14 44.5	1.545	2.500	-1.07	+4.8	17.4	162.4
Jan. 18	08 10.92	+15 32.9	1.582	2.563	-1.03	+4.9	17.6	174.0
Jan. 28	08 00.57	+16 21.8	1.649	2.625	-0.88	+4.5	17.9	170.4
Feb. 7	07 51.76	+17 06.9	1.745	2.687	-0.65	+3.8	18.2	158.7
Feb. 17	07 45.27	+17 45.4	1.866	2.749	-0.38	+3.1	18.5	147.1
Feb. 27	07 41.47	+18 16.0	2.011	2.810	-0.11	+2.3	18.8	136.1
Mar. 9	07 40.40	+18 38.5	2.174	2.870	+0.15	+1.5	19.2	125.8
Mar. 19	07 41.85	+18 53.2	2.351	2.929	+0.37	+0.7	19.5	116.1
Mar. 29	07 45.53	+19 00.3	2.538	2.988	+0.56	0.0	19.8	107.1

Comet 181P/Shoemaker-Levy

Epoch = 2014 July 2.0 TT
T = 2014 June 10.34927 TT
Peri. = 333.78952 e = 0.7073127
Node = 37.68194 2000.0 a = 3.8388054 AU
Incl. = 16.98217 n = 0.13104182
q = 1.1235696 AU P = 7.52 years

m1 = 14.6 + 5 log(Delta) + 22.5 log(r(t-10))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	18 16.17	-32 47.0	3.160	2.213	+2.53	-0.3	.	12.9
Jan. 13	18 41.45	-32 49.5	3.049	2.126	+2.66	+1.2	.	16.7
Jan. 23	19 08.10	-32 37.2	2.929	2.039	+2.80	+3.0	.	20.7
Feb. 2	19 36.11	-32 07.2	2.804	1.951	+2.93	+5.0	.	24.5
Feb. 12	20 05.40	-31 16.9	2.675	1.863	+3.05	+7.4	.	28.1
Feb. 22	20 35.92	-30 03.1	2.546	1.775	+3.17	+10.0	22.7	31.2
Mar. 4	21 07.58	-28 22.7	2.418	1.689	+3.26	+13.0	22.1	33.9
Mar. 14	21 40.22	-26 13.0	2.295	1.603	+3.35	+16.1	21.5	36.1
Mar. 24	22 13.72	-23 31.5	2.180	1.520	+3.42	+19.4	20.9	37.8
Apr. 3	22 47.94	-20 17.0	2.075	1.440	+3.48	+22.7	20.3	38.9
Apr. 13	23 22.69	-16 29.9	1.984	1.365	+3.52	+25.7	19.7	39.4
Apr. 23	23 57.88	-12 12.6	1.908	1.297	+3.55	+28.2	19.0	39.3
May 3	00 33.41	-07 30.4	1.849	1.237	+3.58	+29.9	18.5	38.8
May 13	01 09.20	-02 31.2	1.809	1.188	+3.61	+30.6	18.0	38.0
May 23	01 45.27	+02 34.9	1.786	1.151	+3.63	+30.2	17.5	37.0
June 2	02 21.60	+07 36.5	1.779	1.129	+3.66	+28.6	17.2	36.0
June 12	02 58.17	+12 22.2	1.787	1.124	+3.67	+26.0	17.0	35.3
June 22	03 34.90	+16 42.1	1.807	1.135	+3.67	+22.7	17.0	35.0
July 2	04 11.63	+20 28.8	1.835	1.161	+3.64	+18.9	17.2	35.1
July 12	04 48.03	+23 37.8	1.868	1.202	+3.57	+15.0	17.4	35.9
July 22	05 23.74	+26 08.2	1.905	1.256	+3.46	+11.3	17.8	37.2
Aug. 1	05 58.34	+28 01.6	1.941	1.319	+3.31	+8.1	18.3	39.1
Aug. 11	06 31.40	+29 22.2	1.974	1.389	+3.12	+5.3	18.8	41.6
Aug. 21	07 02.62	+30 15.3	2.003	1.466	+2.91	+3.2	19.3	44.6
Aug. 31	07 31.73	+30 47.0	2.025	1.547	+2.68	+1.7	19.9	48.2
Sept.10	07 58.58	+31 03.6	2.040	1.631	+2.45	+0.7	20.4	52.2
Sept.20	08 23.10	+31 10.7	2.046	1.717	+2.21	+0.3	20.9	56.8
Sept.30	08 45.22	+31 14.1	2.043	1.804	+1.97	+0.5	21.4	62.0
Oct. 10	09 04.90	+31 18.7	2.031	1.892	+1.72	+1.0	21.9	67.7
Oct. 20	09 22.10	+31 29.0	2.009	1.980	+1.46	+2.0	22.3	73.9
Oct. 30	09 36.70	+31 49.0	1.980	2.067	+1.18	+3.3	22.8	80.7
Nov. 9	09 48.53	+32 22.1	1.945	2.154	+0.89	+4.9	.	88.2
Nov. 19	09 57.38	+33 10.8	1.907	2.241	+0.56	+6.6	.	96.2
Nov. 29	10 02.94	+34 16.4	1.868	2.326	+0.19	+8.2	.	104.9
Dec. 9	10 04.89	+35 37.9	1.834	2.411	-0.19	+9.4	.	114.2
Dec. 19	10 02.96	+37 11.9	1.808	2.494	-0.59	+9.9	.	123.9
Dec. 29	09 57.02	+38 51.3	1.797	2.577	-0.97	+9.5	.	133.7
Jan. 8	09 47.34	+40 26.0	1.806	2.658	-1.27	+7.9	.	143.1
Jan. 18	09 34.68	+41 44.7	1.838	2.738	-1.43	+5.3	.	150.6
Jan. 28	09 20.38	+42 37.8	1.898	2.817	-1.43	+2.2	.	154.3
Feb. 7	09 06.11	+43 00.2	1.985	2.895	-1.27	-0.7	.	152.4
Feb. 17	08 53.42	+42 53.0	2.100	2.972	-1.00	-3.2	.	146.2
Feb. 27	08 43.41	+42 21.0	2.239	3.047	-0.68	-5.0	.	137.9
Mar. 9	08 36.61	+41 31.2	2.400	3.122	-0.36	-6.1	.	129.0
Mar. 19	08 33.01	+40 29.8	2.578	3.195	-0.07	-6.8	.	120.0
Mar. 29	08 32.36	+39 21.7	2.769	3.266	+0.19	-7.1	.	111.3

Comet C/2013 Y2 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 June 13.64187 TT
Peri. = 308.82583
Node = 243.40128 2000.0
Incl. = 29.41456
q = 1.9194831 AU
e = 0.9907794

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	08 29.19	-19 32.4	1.966	2.720	-0.54	-13.0	17.4	131.6
Jan. 13	08 23.77	-21 42.4	1.850	2.642	-0.70	-10.6	17.2	135.3
Jan. 23	08 16.76	-23 28.6	1.756	2.565	-0.78	-7.5	16.9	137.0
Feb. 2	08 08.92	-24 44.0	1.682	2.490	-0.76	-4.0	16.7	136.4
Feb. 12	08 01.29	-25 24.2	1.627	2.418	-0.63	-0.5	16.5	133.8
Feb. 22	07 55.04	-25 29.4	1.591	2.349	-0.39	+2.6	16.3	129.7
Mar. 4	07 51.17	-25 03.1	1.569	2.283	-0.07	+5.1	16.2	124.7
Mar. 14	07 50.48	-24 12.2	1.559	2.221	+0.29	+6.8	16.0	119.3
Mar. 24	07 53.40	-23 04.7	1.559	2.164	+0.67	+7.7	15.9	113.9
Apr. 3	08 00.05	-21 47.9	1.566	2.111	+1.03	+7.9	15.8	108.7
Apr. 13	08 10.38	-20 28.6	1.580	2.063	+1.38	+7.7	15.7	103.8
Apr. 23	08 24.13	-19 12.1	1.600	2.022	+1.69	+7.0	15.7	99.3
May 3	08 41.01	-18 02.0	1.625	1.987	+1.96	+6.1	15.6	95.1
May 13	09 00.66	-17 01.3	1.656	1.959	+2.20	+5.0	15.6	91.3
May 23	09 22.63	-16 11.5	1.694	1.938	+2.39	+3.8	15.6	87.7
June 2	09 46.53	-15 33.3	1.741	1.925	+2.54	+2.6	15.6	84.3
June 12	10 11.89	-15 07.1	1.796	1.920	+2.64	+1.5	15.7	81.0
June 22	10 38.24	-14 52.1	1.862	1.922	+2.70	+0.5	15.8	77.7
July 2	11 05.20	-14 47.3	1.939	1.933	+2.72	-0.4	15.9	74.5
July 12	11 32.38	-14 51.3	2.026	1.951	+2.71	-1.1	16.0	71.2
July 22	11 59.45	-15 02.3	2.124	1.977	+2.68	-1.6	16.2	67.7
Aug. 1	12 26.21	-15 18.6	2.232	2.010	+2.63	-2.0	16.4	64.2
Aug. 11	12 52.47	-15 38.4	2.348	2.049	+2.56	-2.1	16.6	60.5
Aug. 21	13 18.11	-15 59.9	2.472	2.094	+2.50	-2.2	16.8	56.7
Aug. 31	13 43.09	-16 21.6	2.602	2.146	+2.43	-2.0	17.0	52.7
Sept. 10	14 07.37	-16 42.0	2.736	2.202	+2.36	-1.8	17.2	48.5
Sept. 20	14 30.94	-16 59.9	2.873	2.262	+2.29	-1.4	17.4	44.1
Sept. 30	14 53.83	-17 14.1	3.010	2.327	+2.22	-1.0	17.7	39.5
Oct. 10	15 16.03	-17 23.8	3.145	2.395	+2.15	-0.4	17.9	34.8
Oct. 20	15 37.56	-17 28.2	3.278	2.466	+2.09	+0.2	18.1	30.0
Oct. 30	15 58.42	-17 26.6	3.405	2.540	+2.02	+0.8	18.3	25.0
Nov. 9	16 18.59	-17 18.5	3.525	2.616	+1.95	+1.5	18.5	19.9
Nov. 19	16 38.08	-17 03.7	3.637	2.694	+1.88	+2.2	18.7	14.9
Nov. 29	16 56.85	-16 41.9	3.739	2.774	+1.80	+2.9	18.9	10.2
Dec. 9	17 14.88	-16 13.1	3.830	2.855	+1.73	+3.6	19.1	7.2
Dec. 19	17 32.14	-15 37.1	3.907	2.938	+1.64	+4.3	19.2	8.4
Dec. 29	17 48.57	-14 54.3	3.972	3.021	+1.56	+4.9	19.4	12.9
Jan. 8	18 04.13	-14 04.9	4.022	3.106	+1.46	+5.6	19.5	18.6
Jan. 18	18 18.77	-13 09.2	4.057	3.191	+1.37	+6.2	19.7	24.8
Jan. 28	18 32.43	-12 07.5	4.078	3.276	+1.26	+6.7	19.8	31.3
Feb. 7	18 45.04	-11 00.5	4.084	3.363	+1.15	+7.2	19.9	38.0
Feb. 17	18 56.54	-09 48.7	4.076	3.449	+1.03	+7.6	20.0	45.0
Feb. 27	19 06.84	-08 32.8	4.055	3.536	+0.90	+7.9	20.1	52.2
Mar. 9	19 15.88	-07 13.5	4.023	3.623	+0.77	+8.2	20.2	59.6
Mar. 19	19 23.58	-05 51.5	3.981	3.710	+0.63	+8.4	20.3	67.2
Mar. 29	19 29.83	-04 28.0	3.931	3.797	+0.47	+8.4	20.4	75.0

Comet 222P/LINEAR

Epoch = 2014 July 2.0 TT
T = 2014 July 4.54068 TT
Peri. = 345.44772 e = 0.7259736
Node = 7.12664 2000.0 a = 2.8621009 AU
Incl. = 5.13687 n = 0.20355261
q = 0.7842912 AU P = 4.84 years

H = 18.6 , G = 0.15 (pre-T & r>0.9AU)
m1 = 24.0 + 5 log(Delta) + 75.0 log(r) (pre-T & r<0.9AU)
m1 = 18.0 + 5 log(Delta) + 12.5 log(r) (post-T)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	Mag.	Elong. °
Jan. 3	15 51.84	-22 43.9	3.068	2.424	+1.87	-6.3	.	41.7
Jan. 13	16 10.59	-23 46.7	2.887	2.337	+1.97	-5.8	.	47.5
Jan. 23	16 30.32	-24 44.7	2.698	2.249	+2.08	-5.3	.	53.0
Feb. 2	16 51.15	-25 37.3	2.504	2.158	+2.21	-4.6	.	58.4
Feb. 12	17 13.27	-26 23.0	2.306	2.064	+2.37	-3.7	.	63.5
Feb. 22	17 36.94	-27 00.5	2.107	1.969	+2.55	-2.7	22.9	68.3
Mar. 4	18 02.48	-27 27.5	1.910	1.871	+2.79	-1.3	22.7	72.6
Mar. 14	18 30.36	-27 40.8	1.716	1.770	+3.08	+0.5	22.4	76.4
Mar. 24	19 01.18	-27 35.4	1.530	1.668	+3.45	+3.2	22.1	79.5
Apr. 3	19 35.72	-27 03.4	1.354	1.563	+3.91	+7.1	21.8	81.7
Apr. 13	20 14.87	-25 52.6	1.192	1.457	+4.46	+12.7	21.5	82.7
Apr. 23	20 59.52	-23 45.3	1.049	1.350	+5.06	+20.6	21.1	82.1
May 3	21 50.12	-20 19.3	0.932	1.243	+5.60	+30.3	20.9	79.6
May 13	22 46.13	-15 16.5	0.848	1.137	+5.95	+39.6	20.6	74.9
May 23	23 45.65	-08 40.0	0.803	1.036	+6.01	+45.0	20.5	68.5
June 2	00 45.74	-01 09.9	0.804	0.944	+5.81	+44.2	20.5	61.3
June 12	01 43.84	+06 12.0	0.847	0.867	+5.49	+38.4	19.0	54.6
June 22	02 38.78	+12 36.2	0.925	0.811	+5.18	+30.4	17.0	49.1
July 2	03 30.55	+17 40.5	1.026	0.785	+4.88	+22.2	16.2	45.2
July 12	04 19.34	+21 22.5	1.140	0.794	+4.57	+14.7	17.0	42.7
July 22	05 05.01	+23 49.1	1.255	0.835	+4.21	+8.3	17.5	41.5
Aug. 1	05 47.11	+25 12.1	1.363	0.902	+3.81	+3.4	18.1	41.4
Aug. 11	06 25.22	+25 45.6	1.461	0.988	+3.41	-0.2	18.8	42.4
Aug. 21	06 59.27	+25 43.6	1.545	1.085	+3.01	-2.6	19.4	44.4
Aug. 31	07 29.39	+25 18.0	1.614	1.189	+2.64	-4.0	20.0	47.3
Sept.10	07 55.84	+24 38.2	1.667	1.295	+2.31	-4.7	20.5	51.0
Sept.20	08 18.91	+23 51.6	1.703	1.402	+1.99	-4.8	21.0	55.4
Sept.30	08 38.82	+23 03.9	1.724	1.509	+1.69	-4.4	21.4	60.5
Oct. 10	08 55.72	+22 19.6	1.730	1.614	+1.40	-3.7	21.8	66.4
Oct. 20	09 09.67	+21 42.6	1.721	1.718	+1.10	-2.6	22.1	73.0
Oct. 30	09 20.62	+21 16.1	1.700	1.820	+0.78	-1.3	22.4	80.4
Nov. 9	09 28.42	+21 03.2	1.669	1.919	+0.44	+0.3	22.7	88.5
Nov. 19	09 32.85	+21 06.2	1.631	2.016	+0.08	+2.0	22.9	97.6
Nov. 29	09 33.61	+21 26.6	1.592	2.110	-0.31	+3.8	.	107.6
Dec. 9	09 30.46	+22 04.2	1.555	2.203	-0.71	+5.2	.	118.5
Dec. 19	09 23.33	+22 56.7	1.529	2.292	-1.09	+6.2	.	130.4
Dec. 29	09 12.46	+23 58.4	1.520	2.380	-1.38	+6.3	.	143.0
Jan. 8	08 58.66	+25 01.0	1.534	2.465	-1.54	+5.5	.	156.0
Jan. 18	08 43.27	+25 55.7	1.577	2.548	-1.53	+4.0	.	168.3
Jan. 28	08 27.94	+26 35.6	1.651	2.629	-1.37	+2.3	.	171.4
Feb. 7	08 14.28	+26 58.2	1.757	2.708	-1.09	+0.7	.	160.8
Feb. 17	08 03.38	+27 04.8	1.891	2.785	-0.76	-0.6	.	148.9
Feb. 27	07 55.75	+26 58.6	2.050	2.859	-0.43	-1.5	.	137.5
Mar. 9	07 51.45	+26 43.3	2.229	2.932	-0.13	-2.2	.	126.7
Mar. 19	07 50.17	+26 21.6	2.423	3.004	+0.14	-2.6	.	116.6
Mar. 29	07 51.52	+25 55.4	2.627	3.073	+0.35	-3.0	.	107.1

Comet C/2012 U1 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 July 4.88225 TT
Peri. = 70.06864
Node = 26.98201 2000.0
Incl. = 56.33897
q = 5.2638228 AU
e = 0.9996002

m1 = 7.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	01 40.97	+58 40.6	4.942	5.439	-0.14	-2.3	18.2	115.5
Jan. 13	01 39.57	+58 17.3	5.027	5.420	+0.10	-1.9	18.2	108.5
Jan. 23	01 40.61	+57 58.4	5.121	5.403	+0.33	-1.2	18.3	101.5
Feb. 2	01 43.92	+57 46.4	5.220	5.387	+0.54	-0.4	18.3	94.5
Feb. 12	01 49.29	+57 42.5	5.321	5.371	+0.72	+0.5	18.3	87.6
Feb. 22	01 56.50	+57 47.3	5.421	5.357	+0.89	+1.4	18.4	81.1
Mar. 4	02 05.39	+58 01.0	5.517	5.344	+1.04	+2.2	18.4	74.8
Mar. 14	02 15.83	+58 23.2	5.607	5.331	+1.19	+3.0	18.4	69.0
Mar. 24	02 27.68	+58 53.1	5.689	5.320	+1.32	+3.7	18.4	63.5
Apr. 3	02 40.91	+59 30.1	5.763	5.310	+1.45	+4.3	18.5	58.5
Apr. 13	02 55.44	+60 13.1	5.826	5.300	+1.58	+4.8	18.5	54.1
Apr. 23	03 11.26	+61 00.9	5.878	5.292	+1.71	+5.2	18.5	50.3
May 3	03 28.37	+61 52.6	5.918	5.285	+1.84	+5.4	18.5	47.2
May 13	03 46.79	+62 46.9	5.947	5.279	+1.97	+5.6	18.5	44.8
May 23	04 06.53	+63 42.6	5.965	5.274	+2.11	+5.6	18.5	43.3
June 2	04 27.63	+64 38.5	5.972	5.270	+2.25	+5.5	18.5	42.6
June 12	04 50.09	+65 33.6	5.967	5.267	+2.38	+5.3	18.5	42.7
June 22	05 13.91	+66 26.6	5.953	5.265	+2.52	+5.0	18.5	43.7
July 2	05 39.06	+67 16.4	5.929	5.264	+2.64	+4.6	18.5	45.3
July 12	06 05.44	+68 02.2	5.896	5.264	+2.75	+4.1	18.5	47.6
July 22	06 32.93	+68 43.1	5.855	5.265	+2.84	+3.6	18.5	50.4
Aug. 1	07 01.34	+69 18.6	5.807	5.268	+2.90	+3.0	18.4	53.6
Aug. 11	07 30.37	+69 48.5	5.753	5.271	+2.94	+2.4	18.4	57.1
Aug. 21	07 59.76	+70 12.9	5.694	5.276	+2.94	+1.9	18.4	60.9
Aug. 31	08 29.16	+70 32.3	5.630	5.281	+2.91	+1.5	18.4	64.9
Sept. 10	08 58.23	+70 47.6	5.564	5.288	+2.84	+1.2	18.4	69.0
Sept. 20	09 26.66	+70 59.8	5.495	5.295	+2.75	+1.1	18.3	73.3
Sept. 30	09 54.17	+71 10.4	5.426	5.304	+2.63	+1.1	18.3	77.7
Oct. 10	10 20.51	+71 21.0	5.358	5.314	+2.50	+1.2	18.3	82.1
Oct. 20	10 45.47	+71 33.0	5.291	5.325	+2.34	+1.5	18.3	86.5
Oct. 30	11 08.88	+71 48.2	5.228	5.336	+2.16	+1.9	18.3	90.9
Nov. 9	11 30.51	+72 07.6	5.169	5.349	+1.97	+2.5	18.2	95.1
Nov. 19	11 50.20	+72 32.4	5.116	5.363	+1.75	+3.1	18.2	99.2
Nov. 29	12 07.66	+73 03.3	5.070	5.378	+1.49	+3.7	18.2	103.0
Dec. 9	12 22.55	+73 40.4	5.032	5.393	+1.19	+4.3	18.2	106.4
Dec. 19	12 34.44	+74 23.4	5.004	5.410	+0.83	+4.8	18.2	109.3
Dec. 29	12 42.72	+75 11.1	4.987	5.428	+0.40	+5.0	18.2	111.7
Jan. 8	12 46.70	+76 01.3	4.982	5.446	-0.11	+5.0	18.2	113.3
Jan. 18	12 45.55	+76 51.1	4.989	5.466	-0.71	+4.5	18.3	114.2
Jan. 28	12 38.49	+77 36.1	5.008	5.486	-1.33	+3.5	18.3	114.3
Feb. 7	12 25.24	+78 10.8	5.040	5.508	-1.88	+1.9	18.3	113.5
Feb. 17	12 06.45	+78 29.4	5.084	5.530	-2.23	-0.3	18.4	111.9
Feb. 27	11 44.14	+78 26.7	5.141	5.553	-2.26	-2.7	18.4	109.7
Mar. 9	11 21.49	+77 59.7	5.209	5.577	-2.00	-5.1	18.4	106.8
Mar. 19	11 01.50	+77 08.9	5.287	5.602	-1.55	-7.2	18.5	103.4
Mar. 29	10 46.04	+75 57.3	5.375	5.628	-1.04	-8.8	18.6	99.6

Comet 75D/Kohoutek

Epoch = 2014 July 2.0 TT
T = 2014 July 10.44877 TT
Peri. = 175.61713 e = 0.4963019
Node = 269.65727 2000.0 a = 3.5436522 AU
Incl. = 5.91283 n = 0.14774998
q = 1.7849309 AU P = 6.67 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot.′/PA ′ / °	Elong. °
Jan. 3	23 02.68	-00 23.9	2.655	2.400	-0.71	-4.7	20.7	22.6/ 71	64.4
Jan. 13	23 16.96	+00 48.8	2.717	2.350	-0.73	-4.7	20.6	24.6/ 70	58.1
Jan. 23	23 32.43	+02 11.4	2.771	2.300	-0.75	-4.7	20.4	26.4/ 70	52.0
Feb. 2	23 48.99	+03 42.6	2.817	2.251	-0.78	-4.8	20.3	28.1/ 69	46.3
Feb. 12	00 06.57	+05 21.4	2.853	2.203	-0.81	-4.8	20.1	29.6/ 69	40.8
Feb. 22	00 25.13	+07 06.2	2.881	2.157	-0.85	-4.9	20.0	31.0/ 69	35.7
Mar. 4	00 44.64	+08 55.6	2.901	2.112	-0.89	-4.9	19.8	32.3/ 69	30.8
Mar. 14	01 05.11	+10 47.7	2.913	2.068	-0.94	-4.9	19.6	33.4/ 70	26.2
Mar. 24	01 26.53	+12 40.8	2.918	2.027	-0.99	-4.8	19.5	34.5/ 70	21.9
Apr. 3	01 48.94	+14 32.9	2.917	1.988	-1.04	-4.6	19.3	35.5/ 71	17.8
Apr. 13	02 12.34	+16 21.6	2.910	1.952	-1.10	-4.3	19.1	36.4/ 73	13.9
Apr. 23	02 36.74	+18 04.5	2.899	1.918	-1.16	-3.9	19.0	37.3/ 74	10.2
May 3	03 02.15	+19 39.2	2.885	1.888	-1.21	-3.5	18.8	38.0/ 76	6.8
May 13	03 28.52	+21 03.1	2.868	1.861	-1.27	-2.8	18.7	38.6/ 78	3.7
May 23	03 55.77	+22 13.5	2.849	1.838	-1.32	-2.1	18.6	39.2/ 81	1.8
June 2	04 23.79	+23 08.2	2.830	1.819	-1.36	-1.3	18.5	39.6/ 83	3.6
June 12	04 52.41	+23 45.1	2.809	1.803	-1.39	-0.3	18.4	39.8/ 86	6.3
June 22	05 21.42	+24 02.5	2.789	1.793	-1.41	+0.7	18.3	39.9/ 89	9.2
July 2	05 50.58	+23 59.7	2.768	1.787	-1.42	+1.7	18.3	39.9/ 92	12.0
July 12	06 19.62	+23 36.2	2.748	1.785	-1.40	+2.7	18.2	39.8/ 95	14.9
July 22	06 48.29	+22 52.6	2.728	1.788	-1.38	+3.6	18.2	39.4/ 98	17.8
Aug. 1	07 16.37	+21 50.1	2.708	1.796	-1.34	+4.5	18.2	39.0/101	20.8
Aug. 11	07 43.64	+20 30.3	2.687	1.808	-1.30	+5.2	18.3	38.4/103	23.9
Aug. 21	08 09.97	+18 55.5	2.665	1.824	-1.25	+5.8	18.3	37.6/106	27.2
Aug. 31	08 35.25	+17 08.0	2.641	1.844	-1.20	+6.3	18.4	36.7/108	30.6
Sept.10	08 59.39	+15 10.5	2.615	1.869	-1.15	+6.6	18.5	35.7/110	34.1
Sept.20	09 22.36	+13 05.5	2.585	1.897	-1.10	+6.8	18.6	34.5/112	38.0
Sept.30	09 44.14	+10 55.4	2.552	1.928	-1.05	+6.9	18.7	33.2/113	42.0
Oct. 10	10 04.70	+08 42.8	2.514	1.963	-1.01	+6.9	18.9	31.7/115	46.4
Oct. 20	10 24.03	+06 29.6	2.471	2.000	-0.97	+6.9	19.0	30.0/116	51.0
Oct. 30	10 42.09	+04 18.0	2.422	2.040	-0.94	+6.8	19.1	28.1/117	56.0
Nov. 9	10 58.83	+02 09.8	2.367	2.081	-0.92	+6.6	19.2	26.1/118	61.3
Nov. 19	11 14.16	+00 06.7	2.307	2.125	-0.90	+6.4	19.4	23.7/119	67.0
Nov. 29	11 27.97	-01 49.5	2.240	2.171	-0.90	+6.3	19.5	21.1/121	73.2
Dec. 9	11 40.09	-03 37.2	2.169	2.218	-0.90	+6.1	19.6	18.2/123	79.8
Dec. 19	11 50.33	-05 14.7	2.095	2.266	-0.92	+6.0	19.7	14.8/125	86.9
Dec. 29	11 58.45	-06 40.2	2.018	2.315	-0.94	+5.9	19.8	11.2/130	94.6
Jan. 8	12 04.20	-07 51.7	1.942	2.365	-0.98	+5.9	19.9	7.3/140	103.0
Jan. 18	12 07.35	-08 47.2	1.869	2.416	-1.03	+6.0	20.0	3.7/172	112.0
Jan. 28	12 07.71	-09 24.3	1.804	2.467	-1.08	+6.2	20.1	4.0/245	121.7
Feb. 7	12 05.26	-09 41.2	1.750	2.519	-1.15	+6.5	20.2	7.4/273	132.0
Feb. 17	12 00.24	-09 36.7	1.713	2.571	-1.21	+6.9	20.4	10.8/283	143.0
Feb. 27	11 53.13	-09 11.4	1.696	2.623	-1.25	+7.2	20.5	13.1/289	154.2
Mar. 9	11 44.79	-08 28.3	1.705	2.675	-1.28	+7.5	20.7	13.9/293	164.8
Mar. 19	11 36.22	-07 32.8	1.741	2.728	-1.27	+7.7	20.9	13.1/298	170.7
Mar. 29	11 28.40	-06 31.9	1.805	2.780	-1.24	+7.7	21.2	11.0/302	164.6

Comet 72D/Denning-Fujikawa

Epoch = 2014 July 2.0 TT
T = 2014 July 11.41981 TT
Peri. = 337.84064 e = 0.8190685
Node = 36.11588 2000.0 a = 4.3341823 AU
Incl. = 9.16859 n = 0.10923035
q = 0.7841901 AU P = 9.02 years

m1 = 17.4 + 5 log(Delta) + 19.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	17 04.80	-26 37.2	3.538	2.679	-0.64	+1.5	.	24.7/ 99	24.9
Jan. 13	17 23.12	-27 09.5	3.374	2.581	-0.73	+1.4	.	25.8/ 97	31.0
Jan. 23	17 42.37	-27 36.2	3.198	2.481	-0.84	+1.1	.	27.0/ 95	36.8
Feb. 2	18 02.64	-27 56.4	3.011	2.379	-0.96	+0.7	.	28.3/ 94	42.5
Feb. 12	18 24.01	-28 08.9	2.817	2.275	-1.09	+0.1	.	29.9/ 92	47.9
Feb. 22	18 46.63	-28 12.3	2.616	2.169	-1.26	-0.6	.	31.9/ 90	53.0
Mar. 4	19 10.71	-28 04.9	2.413	2.061	-1.45	-1.7	.	34.2/ 88	57.7
Mar. 14	19 36.49	-27 44.2	2.209	1.951	-1.67	-3.1	.	37.3/ 86	62.0
Mar. 24	20 04.35	-27 06.6	2.009	1.838	-1.92	-5.1	.	41.2/ 83	65.7
Apr. 3	20 34.72	-26 07.1	1.814	1.724	-2.21	-7.7	.	46.1/ 81	68.7
Apr. 13	21 08.12	-24 38.6	1.629	1.608	-2.53	-11.2	22.4	52.5/ 78	70.8
Apr. 23	21 45.17	-22 31.0	1.458	1.490	-2.86	-15.8	21.5	60.5/ 75	71.8
May 3	22 26.41	-19 31.7	1.307	1.372	-3.18	-21.4	20.6	69.8/ 71	71.4
May 13	23 12.16	-15 27.7	1.182	1.255	-3.44	-27.7	19.6	79.8/ 68	69.3
May 23	00 02.24	-10 11.4	1.091	1.141	-3.57	-33.2	18.7	88.2/ 65	65.6
June 2	00 55.77	-03 51.6	1.040	1.032	-3.54	-36.3	17.7	92.8/ 64	60.3
June 12	01 51.26	+03 00.8	1.033	0.934	-3.37	-35.6	16.9	92.4/ 64	54.3
June 22	02 47.18	+09 40.6	1.069	0.854	-3.13	-31.4	16.2	87.8/ 65	48.3
July 2	03 42.35	+15 27.0	1.141	0.801	-2.90	-25.4	15.9	81.1/ 69	43.1
July 12	04 35.95	+19 56.0	1.239	0.784	-2.70	-18.8	15.9	73.8/ 73	39.2
July 22	05 27.14	+23 00.3	1.350	0.806	-2.47	-12.7	16.3	66.3/ 78	36.5
Aug. 1	06 14.88	+24 45.9	1.464	0.862	-2.20	-7.5	17.0	59.1/ 84	35.1
Aug. 11	06 58.26	+25 27.4	1.574	0.944	-1.89	-3.7	17.9	52.4/ 88	35.0
Aug. 21	07 36.94	+25 22.4	1.676	1.044	-1.58	-1.1	18.9	46.4/ 93	36.0
Aug. 31	08 11.01	+24 47.1	1.766	1.153	-1.31	+0.6	19.8	41.1/ 96	38.0
Sept.10	08 40.84	+23 54.2	1.844	1.268	-1.08	+1.6	20.7	36.4/ 98	41.0
Sept.20	09 06.92	+22 53.1	1.907	1.386	-0.88	+2.1	21.5	32.2/100	44.7
Sept.30	09 29.67	+21 50.7	1.955	1.504	-0.73	+2.5	22.2	28.2/101	49.1
Oct. 10	09 49.41	+20 52.0	1.987	1.621	-0.61	+2.7	22.9	24.4/101	54.3
Oct. 20	10 06.41	+20 00.6	2.004	1.737	-0.52	+2.8	.	20.7/101	60.1
Oct. 30	10 20.79	+19 19.9	2.006	1.851	-0.45	+3.0	.	16.9/ 99	66.6
Nov. 9	10 32.57	+18 52.4	1.995	1.963	-0.40	+3.2	.	13.0/ 95	73.7
Nov. 19	10 41.70	+18 40.4	1.973	2.073	-0.37	+3.5	.	9.0/ 86	81.6
Nov. 29	10 48.04	+18 45.8	1.942	2.181	-0.37	+3.8	.	5.3/ 63	90.2
Dec. 9	10 51.38	+19 09.9	1.907	2.287	-0.38	+4.3	.	4.3/ 3	99.6
Dec. 19	10 51.52	+19 52.9	1.872	2.391	-0.42	+4.8	.	7.5/323	109.8
Dec. 29	10 48.29	+20 53.1	1.843	2.493	-0.47	+5.3	.	11.7/309	120.7
Jan. 8	10 41.73	+22 06.5	1.827	2.592	-0.55	+5.8	.	15.5/301	132.3
Jan. 18	10 32.13	+23 26.3	1.830	2.690	-0.63	+6.2	.	18.1/296	144.2
Jan. 28	10 20.19	+24 43.9	1.858	2.786	-0.72	+6.4	.	19.1/291	155.8
Feb. 7	10 07.02	+25 50.2	1.915	2.879	-0.79	+6.2	.	18.3/286	165.0
Feb. 17	09 53.88	+26 38.9	2.005	2.971	-0.83	+5.9	.	16.2/281	165.5
Feb. 27	09 41.99	+27 07.3	2.125	3.062	-0.84	+5.3	.	13.0/274	157.2
Mar. 9	09 32.25	+27 15.9	2.273	3.150	-0.82	+4.8	.	9.6/266	146.7
Mar. 19	09 25.10	+27 08.0	2.446	3.237	-0.79	+4.2	.	6.3/251	136.0
Mar. 29	09 20.66	+26 47.0	2.639	3.323	-0.73	+3.7	.	4.0/220	125.7

Comet 106P/Schuster

Epoch = 2014 July 2.0 TT
T = 2014 July 20.14476 TT
Peri. = 355.91566 e = 0.5883614
Node = 50.54378 2000.0 a = 3.7558373 AU
Incl. = 20.14871 n = 0.13540787
q = 1.5460476 AU P = 7.28 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	20 51.21	-33 08.1	3.289	2.462	+2.04	+9.7	20.8	27.8
Jan. 13	21 11.65	-31 31.6	3.269	2.397	+2.09	+10.7	20.6	23.3
Jan. 23	21 32.53	-29 45.0	3.239	2.333	+2.12	+11.7	20.3	19.4
Feb. 2	21 53.77	-27 48.1	3.198	2.269	+2.15	+12.7	20.0	16.3
Feb. 12	22 15.32	-25 40.7	3.148	2.205	+2.18	+13.8	19.8	14.3
Feb. 22	22 37.11	-23 22.7	3.091	2.142	+2.20	+14.8	19.5	13.6
Mar. 4	22 59.16	-20 54.4	3.027	2.080	+2.23	+15.8	19.2	14.3
Mar. 14	23 21.44	-18 16.2	2.957	2.019	+2.25	+16.8	18.9	15.9
Mar. 24	23 43.98	-15 28.5	2.884	1.960	+2.28	+17.7	18.5	18.0
Apr. 3	00 06.82	-12 32.0	2.808	1.903	+2.32	+18.4	18.2	20.4
Apr. 13	00 30.00	-09 27.7	2.731	1.848	+2.36	+19.1	17.9	22.8
Apr. 23	00 53.59	-06 16.6	2.654	1.796	+2.41	+19.6	17.6	25.1
May 3	01 17.65	-03 00.3	2.579	1.747	+2.46	+20.0	17.3	27.4
May 13	01 42.26	+00 19.7	2.506	1.702	+2.52	+20.1	17.0	29.6
May 23	02 07.50	+03 41.1	2.436	1.662	+2.60	+20.1	16.7	31.7
June 2	02 33.45	+07 01.7	2.370	1.627	+2.67	+19.7	16.5	33.7
June 12	03 00.16	+10 18.8	2.309	1.598	+2.75	+19.1	16.3	35.7
June 22	03 27.70	+13 29.4	2.252	1.575	+2.84	+18.1	16.1	37.7
July 2	03 56.07	+16 30.4	2.199	1.558	+2.92	+16.8	16.0	39.7
July 12	04 25.23	+19 18.8	2.151	1.548	+2.99	+15.3	15.9	41.8
July 22	04 55.11	+21 51.9	2.107	1.546	+3.04	+13.5	15.8	44.0
Aug. 1	05 25.56	+24 07.3	2.067	1.551	+3.08	+11.6	15.8	46.4
Aug. 11	05 56.33	+26 03.5	2.029	1.563	+3.08	+9.6	15.8	48.9
Aug. 21	06 27.15	+27 39.8	1.994	1.582	+3.05	+7.7	15.9	51.8
Aug. 31	06 57.69	+28 57.0	1.960	1.608	+2.99	+6.0	16.0	54.9
Sept.10	07 27.56	+29 56.6	1.926	1.639	+2.89	+4.5	16.1	58.3
Sept.20	07 56.45	+30 41.6	1.892	1.676	+2.75	+3.4	16.3	62.1
Sept.30	08 23.99	+31 15.6	1.857	1.718	+2.59	+2.7	16.4	66.2
Oct. 10	08 49.89	+31 43.1	1.820	1.765	+2.40	+2.6	16.6	70.8
Oct. 20	09 13.90	+32 08.6	1.782	1.815	+2.19	+2.9	16.8	75.8
Oct. 30	09 35.75	+32 37.3	1.741	1.868	+1.94	+3.6	17.0	81.2
Nov. 9	09 55.19	+33 13.7	1.699	1.924	+1.68	+4.8	17.2	87.2
Nov. 19	10 11.96	+34 02.1	1.656	1.982	+1.37	+6.4	17.4	93.7
Nov. 29	10 25.71	+35 05.8	1.614	2.042	+1.04	+8.1	17.6	100.7
Dec. 9	10 36.06	+36 26.4	1.575	2.103	+0.66	+9.7	17.8	108.2
Dec. 19	10 42.61	+38 03.5	1.542	2.165	+0.23	+11.0	18.1	116.2
Dec. 29	10 44.92	+39 53.4	1.519	2.229	-0.22	+11.5	18.3	124.5
Jan. 8	10 42.75	+41 48.0	1.509	2.292	-0.66	+10.8	18.5	132.6
Jan. 18	10 36.17	+43 36.0	1.517	2.357	-1.03	+8.8	18.8	139.9
Jan. 28	10 25.83	+45 03.9	1.545	2.421	-1.27	+5.6	19.0	145.4
Feb. 7	10 13.11	+45 60.0	1.596	2.486	-1.33	+1.8	19.3	147.6
Feb. 17	09 59.83	+46 18.0	1.671	2.550	-1.20	-2.0	19.6	145.9
Feb. 27	09 47.85	+45 58.1	1.769	2.615	-0.93	-5.2	20.0	141.1
Mar. 9	09 38.54	+45 06.6	1.888	2.679	-0.60	-7.5	20.3	134.5
Mar. 19	09 32.52	+43 51.6	2.026	2.742	-0.27	-9.1	20.7	127.0
Mar. 29	09 29.85	+42 20.9	2.180	2.806	+0.04	-10.0	21.1	119.2

Comet P/2003 O3 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2014 July 24.68930 TT
Peri. = 0.74751 e = 0.5970704
Node = 341.46187 2000.0 a = 3.1101790 AU
Incl. = 8.34870 n = 0.17969086
q = 1.2531832 AU P = 5.49 years

m1 = 19.0 + 5 log(Delta) + 7.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	16 22.42	-27 45.0	3.167	2.420	-0.92	+2.0	.	28.5/102	34.4
Jan. 13	16 43.62	-28 38.1	3.021	2.350	-1.02	+1.6	.	29.4/100	39.7
Jan. 23	17 05.75	-29 23.2	2.868	2.279	-1.13	+1.0	.	30.3/ 98	44.9
Feb. 2	17 28.83	-29 58.9	2.709	2.208	-1.25	+0.3	.	31.3/ 96	50.0
Feb. 12	17 52.86	-30 23.7	2.546	2.136	-1.38	-0.6	.	32.4/ 94	54.8
Feb. 22	18 17.88	-30 36.0	2.382	2.064	-1.53	-1.7	.	33.6/ 91	59.5
Mar. 4	18 43.91	-30 33.9	2.218	1.991	-1.68	-3.1	23.0	35.0/ 89	63.9
Mar. 14	19 10.91	-30 15.3	2.056	1.919	-1.84	-4.9	22.7	36.6/ 86	68.0
Mar. 24	19 38.92	-29 37.9	1.898	1.846	-2.01	-7.0	22.4	38.4/ 83	71.7
Apr. 3	20 07.92	-28 39.0	1.746	1.775	-2.18	-9.6	22.1	40.5/ 80	75.1
Apr. 13	20 37.87	-27 15.7	1.601	1.705	-2.34	-12.6	21.8	42.9/ 77	78.1
Apr. 23	21 08.73	-25 24.9	1.465	1.636	-2.50	-16.0	21.4	45.6/ 74	80.6
May 3	21 40.45	-23 03.6	1.340	1.570	-2.63	-19.8	21.1	48.5/ 70	82.6
May 13	22 12.90	-20 09.0	1.228	1.508	-2.74	-23.7	20.8	51.5/ 67	84.1
May 23	22 45.99	-16 39.5	1.128	1.449	-2.83	-27.6	20.5	54.4/ 65	85.0
June 2	23 19.54	-12 35.8	1.043	1.396	-2.88	-30.9	20.2	56.9/ 62	85.5
June 12	23 53.33	-08 01.2	0.972	1.350	-2.91	-33.4	19.9	58.7/ 60	85.5
June 22	00 27.19	-03 02.6	0.916	1.311	-2.91	-34.4	19.7	59.3/ 58	85.3
July 2	01 00.85	+02 09.4	0.873	1.282	-2.89	-33.9	19.5	58.6/ 57	85.0
July 12	01 34.00	+07 22.6	0.843	1.262	-2.87	-31.8	19.4	56.6/ 57	84.9
July 22	02 06.38	+12 24.5	0.824	1.254	-2.84	-28.3	19.3	53.2/ 57	85.2
Aug. 1	02 37.55	+17 05.0	0.811	1.256	-2.83	-23.9	19.3	48.8/ 58	86.1
Aug. 11	03 07.04	+21 17.2	0.804	1.270	-2.83	-19.1	19.3	43.6/ 58	87.8
Aug. 21	03 34.30	+24 58.8	0.800	1.294	-2.85	-14.4	19.4	37.8/ 58	90.4
Aug. 31	03 58.63	+28 10.5	0.795	1.328	-2.90	-9.9	19.4	31.5/ 57	94.0
Sept.10	04 19.25	+30 55.3	0.790	1.370	-3.00	-5.9	19.5	24.9/ 54	98.6
Sept.20	04 35.37	+33 17.6	0.785	1.420	-3.15	-2.5	19.6	18.1/ 46	104.4
Sept.30	04 46.08	+35 20.4	0.778	1.476	-3.38	+0.1	19.7	11.8/ 28	111.4
Oct. 10	04 50.65	+37 04.4	0.774	1.536	-3.67	+1.7	19.8	8.5/344	119.6
Oct. 20	04 48.68	+38 26.6	0.775	1.600	-4.01	+2.0	20.0	11.0/299	128.9
Oct. 30	04 40.43	+39 19.5	0.785	1.668	-4.30	+0.8	20.1	15.1/277	139.1
Nov. 9	04 27.45	+39 34.7	0.809	1.737	-4.46	-1.7	20.3	17.7/263	149.6
Nov. 19	04 12.33	+39 09.1	0.851	1.808	-4.41	-4.7	20.6	17.8/251	158.7
Nov. 29	03 58.03	+38 08.3	0.915	1.880	-4.14	-7.3	20.9	15.6/239	162.7
Dec. 9	03 46.91	+36 46.6	1.001	1.952	-3.74	-8.9	21.2	12.0/224	158.6
Dec. 19	03 40.05	+35 19.5	1.110	2.025	-3.29	-9.3	21.5	8.6/201	150.3
Dec. 29	03 37.59	+33 58.8	1.240	2.097	-2.86	-8.8	21.9	7.0/165	140.9
Jan. 8	03 39.07	+32 51.0	1.387	2.169	-2.48	-7.9	22.2	8.0/131	131.7
Jan. 18	03 43.81	+31 57.8	1.550	2.241	-2.15	-6.9	22.6	10.2/112	122.8
Jan. 28	03 51.20	+31 18.2	1.724	2.312	-1.89	-5.7	22.9	12.5/102	114.4
Feb. 7	04 00.69	+30 50.2	1.908	2.382	-1.66	-4.7	.	14.5/ 97	106.4
Feb. 17	04 11.80	+30 30.9	2.099	2.452	-1.48	-3.8	.	16.1/ 94	98.7
Feb. 27	04 24.19	+30 17.8	2.294	2.520	-1.32	-2.9	.	17.4/ 92	91.4
Mar. 9	04 37.56	+30 08.7	2.491	2.588	-1.19	-2.2	.	18.3/ 91	84.3
Mar. 19	04 51.67	+30 01.5	2.688	2.655	-1.07	-1.6	.	19.1/ 91	77.4
Mar. 29	05 06.35	+29 54.5	2.882	2.720	-0.97	-1.1	.	19.6/ 91	70.7

Comet C/2014 A5 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 2.60861 TT
Peri. = 180.99746
Node = 310.36666 2000.0
Incl. = 31.61400
q = 4.8018465 AU
e = 0.9518809

m1 = 6.6 + 5 log(Delta) + 15.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	07 36.04	+38 04.2	4.120	5.066	-0.64	-2.8	20.2	162.3
Jan. 13	07 29.65	+37 35.7	4.090	5.042	-0.63	-3.7	20.2	163.9
Jan. 23	07 23.39	+36 58.7	4.090	5.019	-0.56	-4.5	20.2	158.6
Feb. 2	07 17.75	+36 13.8	4.120	4.998	-0.46	-5.2	20.2	150.1
Feb. 12	07 13.19	+35 22.2	4.177	4.977	-0.32	-5.7	20.2	140.4
Feb. 22	07 10.03	+34 25.7	4.258	4.958	-0.16	-6.0	20.2	130.5
Mar. 4	07 08.42	+33 26.0	4.359	4.940	0.00	-6.1	20.2	120.7
Mar. 14	07 08.45	+32 24.6	4.476	4.922	+0.16	-6.2	20.2	111.1
Mar. 24	07 10.06	+31 22.6	4.603	4.906	+0.31	-6.2	20.3	101.9
Apr. 3	07 13.14	+30 20.6	4.738	4.891	+0.44	-6.2	20.3	92.9
Apr. 13	07 17.55	+29 19.0	4.875	4.877	+0.56	-6.1	20.4	84.2
Apr. 23	07 23.13	+28 17.6	5.012	4.864	+0.66	-6.1	20.4	75.8
May 3	07 29.72	+27 16.3	5.144	4.853	+0.74	-6.2	20.4	67.7
May 13	07 37.16	+26 14.7	5.270	4.842	+0.81	-6.2	20.5	59.9
May 23	07 45.29	+25 12.5	5.387	4.833	+0.87	-6.3	20.5	52.2
June 2	07 53.98	+24 09.3	5.492	4.825	+0.91	-6.5	20.6	44.7
June 12	08 03.12	+23 04.8	5.585	4.818	+0.95	-6.6	20.6	37.4
June 22	08 12.57	+21 58.7	5.663	4.812	+0.97	-6.8	20.6	30.2
July 2	08 22.26	+20 50.8	5.726	4.808	+0.98	-7.0	20.6	23.1
July 12	08 32.08	+19 40.9	5.773	4.805	+0.99	-7.2	20.6	16.1
July 22	08 41.94	+18 29.1	5.803	4.803	+0.98	-7.4	20.6	9.1
Aug. 1	08 51.78	+17 15.3	5.816	4.802	+0.97	-7.6	20.6	2.1
Aug. 11	09 01.51	+15 59.6	5.811	4.802	+0.95	-7.8	20.6	5.0
Aug. 21	09 11.06	+14 42.0	5.789	4.804	+0.93	-7.9	20.6	12.0
Aug. 31	09 20.36	+13 22.8	5.749	4.807	+0.90	-8.1	20.6	19.1
Sept. 10	09 29.33	+12 02.2	5.693	4.811	+0.86	-8.2	20.6	26.3
Sept. 20	09 37.90	+10 40.5	5.620	4.816	+0.81	-8.3	20.6	33.7
Sept. 30	09 45.98	+09 17.9	5.532	4.823	+0.75	-8.3	20.6	41.1
Oct. 10	09 53.49	+07 55.0	5.430	4.830	+0.68	-8.3	20.5	48.8
Oct. 20	10 00.34	+06 32.1	5.315	4.839	+0.61	-8.2	20.5	56.6
Oct. 30	10 06.41	+05 09.7	5.190	4.849	+0.52	-8.1	20.5	64.7
Nov. 9	10 11.60	+03 48.5	5.058	4.860	+0.42	-7.9	20.4	73.0
Nov. 19	10 15.81	+02 29.2	4.920	4.873	+0.31	-7.7	20.4	81.5
Nov. 29	10 18.91	+01 12.4	4.780	4.886	+0.19	-7.3	20.3	90.3
Dec. 9	10 20.81	-00 00.7	4.642	4.901	+0.06	-6.9	20.3	99.4
Dec. 19	10 21.44	-01 09.4	4.510	4.917	-0.07	-6.3	20.2	108.8
Dec. 29	10 20.74	-02 12.5	4.389	4.934	-0.20	-5.6	20.2	118.5
Jan. 8	10 18.76	-03 08.8	4.282	4.952	-0.32	-4.9	20.2	128.3
Jan. 18	10 15.57	-03 57.5	4.195	4.971	-0.42	-4.0	20.2	138.1
Jan. 28	10 11.36	-04 37.7	4.131	4.991	-0.49	-3.1	20.2	147.8
Feb. 7	10 06.42	-05 09.0	4.093	5.012	-0.53	-2.3	20.2	156.4
Feb. 17	10 01.09	-05 31.6	4.085	5.035	-0.53	-1.5	20.2	162.2
Feb. 27	09 55.76	-05 46.2	4.106	5.058	-0.49	-0.8	20.2	162.2
Mar. 9	09 50.83	-05 54.3	4.157	5.082	-0.42	-0.3	20.3	156.3
Mar. 19	09 46.62	-05 57.7	4.236	5.107	-0.32	-0.1	20.4	147.9
Mar. 29	09 43.40	-05 58.5	4.340	5.133	-0.20	0.0	20.4	138.7

Comet C/2013 P4 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 12.30869 TT
Peri. = 113.54592 e = 0.5960611
Node = 256.62259 2000.0 a = 14.7715702 AU
Incl. = 4.26439 n = 0.01736057
q = 5.9668118 AU P = 56.77 years

m1 = 6.6 + 5 log(Delta) + 10.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	22 52.60	-02 51.6	6.500	6.086	+0.60	+3.1	18.5	61.1
Jan. 13	22 58.57	-02 20.1	6.624	6.076	+0.65	+3.6	18.5	52.5
Jan. 23	23 05.07	-01 44.3	6.734	6.066	+0.69	+4.0	18.6	44.1
Feb. 2	23 12.00	-01 04.7	6.828	6.056	+0.73	+4.3	18.6	35.9
Feb. 12	23 19.28	-00 21.8	6.904	6.047	+0.75	+4.6	18.6	27.7
Feb. 22	23 26.81	+00 23.7	6.960	6.039	+0.77	+4.8	18.6	19.8
Mar. 4	23 34.53	+01 11.4	6.997	6.031	+0.78	+4.9	18.6	12.0
Mar. 14	23 42.35	+02 00.6	7.013	6.023	+0.78	+5.0	18.6	5.1
Mar. 24	23 50.20	+02 50.8	7.007	6.016	+0.78	+5.1	18.6	5.5
Apr. 3	23 58.01	+03 41.5	6.982	6.009	+0.77	+5.1	18.6	12.5
Apr. 13	00 05.70	+04 32.0	6.935	6.003	+0.75	+5.0	18.6	20.0
Apr. 23	00 13.21	+05 21.9	6.870	5.997	+0.73	+4.9	18.6	27.6
May 3	00 20.47	+06 10.6	6.786	5.992	+0.69	+4.7	18.5	35.3
May 13	00 27.40	+06 57.6	6.686	5.987	+0.65	+4.5	18.5	43.1
May 23	00 33.93	+07 42.4	6.570	5.983	+0.61	+4.2	18.5	50.9
June 2	00 39.98	+08 24.4	6.441	5.979	+0.55	+3.9	18.4	58.8
June 12	00 45.47	+09 03.2	6.302	5.976	+0.48	+3.5	18.4	66.8
June 22	00 50.31	+09 38.1	6.154	5.973	+0.41	+3.1	18.3	75.0
July 2	00 54.42	+10 08.7	6.001	5.971	+0.33	+2.6	18.3	83.4
July 12	00 57.72	+10 34.5	5.846	5.969	+0.24	+2.0	18.2	92.0
July 22	01 00.13	+10 54.9	5.693	5.968	+0.15	+1.5	18.1	100.9
Aug. 1	01 01.60	+11 09.4	5.544	5.967	+0.05	+0.8	18.1	110.0
Aug. 11	01 02.09	+11 17.8	5.404	5.967	-0.05	+0.2	18.0	119.3
Aug. 21	01 01.61	+11 19.7	5.278	5.967	-0.14	-0.5	18.0	129.0
Aug. 31	01 00.20	+11 15.1	5.170	5.968	-0.22	-1.1	17.9	138.9
Sept.10	00 57.97	+11 04.3	5.082	5.969	-0.29	-1.6	17.9	149.1
Sept.20	00 55.08	+10 48.0	5.020	5.971	-0.33	-2.1	17.9	159.4
Sept.30	00 51.74	+10 27.2	4.985	5.973	-0.35	-2.4	17.8	169.6
Oct. 10	00 48.22	+10 03.3	4.979	5.975	-0.34	-2.5	17.8	175.3
Oct. 20	00 44.80	+09 38.2	5.004	5.978	-0.31	-2.5	17.9	167.0
Oct. 30	00 41.75	+09 13.5	5.058	5.982	-0.24	-2.2	17.9	156.5
Nov. 9	00 39.30	+08 51.3	5.140	5.986	-0.16	-1.8	17.9	146.0
Nov. 19	00 37.66	+08 33.0	5.246	5.991	-0.07	-1.3	18.0	135.5
Nov. 29	00 36.94	+08 19.8	5.373	5.996	+0.03	-0.7	18.0	125.2
Dec. 9	00 37.24	+08 12.7	5.517	6.002	+0.13	-0.1	18.1	115.1
Dec. 19	00 38.56	+08 11.9	5.673	6.008	+0.23	+0.6	18.2	105.3
Dec. 29	00 40.88	+08 17.7	5.837	6.014	+0.33	+1.2	18.2	95.7
Jan. 8	00 44.16	+08 29.7	6.004	6.021	+0.41	+1.8	18.3	86.3
Jan. 18	00 48.31	+08 47.7	6.170	6.029	+0.49	+2.3	18.4	77.2
Jan. 28	00 53.25	+09 10.9	6.331	6.037	+0.56	+2.8	18.4	68.3
Feb. 7	00 58.88	+09 38.9	6.483	6.045	+0.62	+3.2	18.5	59.7
Feb. 17	01 05.11	+10 10.9	6.624	6.054	+0.67	+3.5	18.5	51.2
Feb. 27	01 11.85	+10 46.1	6.751	6.063	+0.72	+3.8	18.6	42.9
Mar. 9	01 19.01	+11 23.9	6.862	6.073	+0.75	+4.0	18.6	34.7
Mar. 19	01 26.51	+12 03.7	6.956	6.083	+0.78	+4.1	18.7	26.8
Mar. 29	01 34.27	+12 44.7	7.030	6.094	+0.79	+4.2	18.7	18.9

Comet 210P/Christensen

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 17.22360 TT
Peri. = 345.82689 e = 0.8324825
Node = 93.82795 2000.0 a = 3.1717301 AU
Incl. = 10.24077 n = 0.17448566
q = 0.5313203 AU P = 5.65 years

m1 = 14.6 + 5 log(Delta) + 10.0 log(r(t-10))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 3	19 35.40	-24 27.1	4.004	3.039	+1.42	+2.8	22.6	9.7
Jan. 13	19 49.62	-23 59.4	3.935	2.954	+1.48	+3.3	22.4	3.7
Jan. 23	20 04.41	-23 26.5	3.845	2.867	+1.53	+3.8	22.2	5.3
Feb. 2	20 19.73	-22 48.0	3.736	2.777	+1.58	+4.4	22.0	11.4
Feb. 12	20 35.54	-22 03.9	3.609	2.685	+1.63	+5.0	21.8	17.6
Feb. 22	20 51.84	-21 13.8	3.464	2.590	+1.68	+5.6	21.6	23.8
Mar. 4	21 08.66	-20 17.6	3.304	2.493	+1.74	+6.3	21.3	29.8
Mar. 14	21 26.03	-19 15.0	3.131	2.392	+1.80	+6.9	21.0	35.5
Mar. 24	21 44.06	-18 05.5	2.945	2.289	+1.88	+7.7	20.7	41.0
Apr. 3	22 02.89	-16 48.6	2.751	2.182	+1.98	+8.5	20.4	46.2
Apr. 13	22 22.69	-15 23.4	2.549	2.072	+2.11	+9.5	20.0	51.1
Apr. 23	22 43.77	-13 48.5	2.343	1.959	+2.28	+10.7	19.6	55.5
May 3	23 06.52	-12 01.9	2.136	1.841	+2.50	+12.1	19.2	59.4
May 13	23 31.49	-10 00.6	1.930	1.719	+2.80	+14.0	18.7	62.7
May 23	23 59.48	-07 40.5	1.730	1.593	+3.21	+16.5	18.1	65.0
June 2	00 31.58	-04 55.8	1.541	1.462	+3.77	+19.6	17.6	66.1
June 12	01 09.24	-01 39.7	1.368	1.327	+4.50	+23.3	16.9	65.7
June 22	01 54.28	+02 13.4	1.221	1.187	+5.42	+26.8	16.3	63.3
July 2	02 48.45	+06 41.0	1.111	1.044	+6.40	+28.0	15.6	58.6
July 12	03 52.44	+11 21.5	1.051	0.899	+7.20	+24.7	14.9	51.5
July 22	05 04.47	+15 28.6	1.053	0.758	+7.58	+16.3	14.3	42.9
Aug. 1	06 20.22	+18 11.1	1.119	0.632	+7.51	+4.9	13.6	34.0
Aug. 11	07 35.34	+19 00.1	1.240	0.548	+7.11	-6.8	13.1	25.7
Aug. 21	08 46.43	+17 52.1	1.391	0.537	+6.33	-16.0	12.7	18.5
Aug. 31	09 49.69	+15 12.3	1.546	0.606	+5.34	-20.5	12.8	13.0
Sept.10	10 43.12	+11 47.8	1.696	0.725	+4.46	-21.1	13.6	9.8
Sept.20	11 27.68	+08 16.4	1.843	0.864	+3.76	-19.9	14.5	8.6
Sept.30	12 05.27	+04 57.3	1.986	1.008	+3.23	-17.9	15.5	8.9
Oct. 10	12 37.60	+01 57.9	2.122	1.152	+2.83	-15.8	16.3	10.2
Oct. 20	13 05.94	-00 40.4	2.248	1.293	+2.53	-13.8	17.0	12.3
Oct. 30	13 31.20	-02 58.1	2.363	1.429	+2.28	-11.9	17.6	15.3
Nov. 9	13 53.98	-04 56.9	2.463	1.561	+2.07	-10.1	18.1	19.1
Nov. 19	14 14.70	-06 38.3	2.548	1.688	+1.89	-8.5	18.6	23.5
Nov. 29	14 33.65	-08 03.7	2.615	1.811	+1.73	-7.1	19.0	28.6
Dec. 9	14 50.95	-09 14.5	2.664	1.930	+1.58	-5.7	19.3	34.1
Dec. 19	15 06.71	-10 11.7	2.695	2.044	+1.42	-4.5	19.6	40.2
Dec. 29	15 20.93	-10 56.4	2.708	2.155	+1.26	-3.3	19.9	46.7
Jan. 8	15 33.55	-11 29.2	2.703	2.263	+1.09	-2.2	20.1	53.6
Jan. 18	15 44.48	-11 51.0	2.681	2.367	+0.91	-1.1	20.3	61.0
Jan. 28	15 53.57	-12 02.4	2.645	2.468	+0.71	-0.2	20.5	68.9
Feb. 7	16 00.64	-12 04.0	2.597	2.566	+0.49	+0.8	20.6	77.3
Feb. 17	16 05.52	-11 56.3	2.539	2.662	+0.24	+1.6	20.7	86.1
Feb. 27	16 07.96	-11 40.0	2.476	2.754	-0.02	+2.4	20.8	95.5
Mar. 9	16 07.81	-11 15.8	2.413	2.845	-0.29	+3.1	20.9	105.5
Mar. 19	16 04.94	-10 44.4	2.355	2.932	-0.56	+3.7	21.0	116.1
Mar. 29	15 59.37	-10 07.2	2.307	3.018	-0.80	+4.1	21.1	127.2

Comet C/2012 K8 (Lemmon)

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 19.35367 TT
Peri. = 75.85097
Node = 312.80668 2000.0
Incl. = 106.11160
q = 6.4629898 AU
e = 1.0019520

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	18 54.27	+24 44.5	7.268	6.645	+0.41	+4.4	17.7	47.6
Jan. 13	18 58.38	+25 28.9	7.247	6.629	+0.40	+5.5	17.7	48.0
Jan. 23	19 02.42	+26 23.9	7.209	6.615	+0.38	+6.5	17.7	49.7
Feb. 2	19 06.23	+27 29.2	7.155	6.601	+0.35	+7.6	17.7	52.5
Feb. 12	19 09.68	+28 44.9	7.085	6.587	+0.29	+8.6	17.6	56.2
Feb. 22	19 12.62	+30 10.5	7.003	6.575	+0.23	+9.5	17.6	60.6
Mar. 4	19 14.89	+31 45.4	6.912	6.563	+0.14	+10.3	17.6	65.5
Mar. 14	19 16.31	+33 28.8	6.813	6.551	+0.04	+11.1	17.5	70.7
Mar. 24	19 16.71	+35 19.5	6.710	6.541	-0.08	+11.6	17.5	76.0
Apr. 3	19 15.91	+37 15.9	6.607	6.530	-0.22	+12.0	17.4	81.3
Apr. 13	19 13.71	+39 15.8	6.506	6.521	-0.38	+12.1	17.4	86.4
Apr. 23	19 09.94	+41 16.8	6.412	6.512	-0.55	+11.9	17.4	91.3
May 3	19 04.43	+43 15.8	6.327	6.505	-0.73	+11.3	17.3	95.7
May 13	18 57.09	+45 08.9	6.254	6.497	-0.92	+10.4	17.3	99.5
May 23	18 47.90	+46 52.5	6.195	6.491	-1.09	+9.0	17.3	102.5
June 2	18 36.96	+48 22.5	6.153	6.485	-1.24	+7.3	17.3	104.7
June 12	18 24.54	+49 35.3	6.128	6.480	-1.35	+5.3	17.3	105.9
June 22	18 11.08	+50 28.3	6.120	6.475	-1.39	+3.2	17.2	106.1
July 2	17 57.14	+50 59.8	6.129	6.471	-1.37	+1.0	17.2	105.2
July 12	17 43.39	+51 09.9	6.154	6.468	-1.29	-1.0	17.3	103.5
July 22	17 30.44	+51 00.3	6.194	6.466	-1.16	-2.7	17.3	101.0
Aug. 1	17 18.81	+50 33.5	6.246	6.464	-1.00	-4.0	17.3	97.9
Aug. 11	17 08.84	+49 53.3	6.307	6.463	-0.81	-5.0	17.3	94.3
Aug. 21	17 00.73	+49 03.5	6.375	6.463	-0.62	-5.6	17.3	90.5
Aug. 31	16 54.51	+48 08.0	6.446	6.463	-0.44	-5.8	17.4	86.5
Sept.10	16 50.12	+47 10.4	6.519	6.465	-0.27	-5.7	17.4	82.5
Sept.20	16 47.42	+46 13.7	6.589	6.467	-0.12	-5.3	17.4	78.6
Sept.30	16 46.25	+45 20.7	6.655	6.469	+0.02	-4.7	17.4	75.0
Oct. 10	16 46.40	+44 33.5	6.714	6.472	+0.13	-3.9	17.4	71.8
Oct. 20	16 47.69	+43 54.1	6.765	6.476	+0.23	-3.0	17.5	69.1
Oct. 30	16 49.95	+43 23.8	6.804	6.481	+0.30	-2.0	17.5	67.0
Nov. 9	16 52.97	+43 04.1	6.833	6.487	+0.36	-0.8	17.5	65.6
Nov. 19	16 56.60	+42 55.8	6.849	6.493	+0.41	+0.4	17.5	65.0
Nov. 29	17 00.66	+42 59.9	6.853	6.499	+0.43	+1.7	17.5	65.1
Dec. 9	17 04.99	+43 16.9	6.844	6.507	+0.44	+3.0	17.5	66.0
Dec. 19	17 09.40	+43 47.3	6.825	6.515	+0.43	+4.4	17.5	67.7
Dec. 29	17 13.73	+44 31.3	6.795	6.524	+0.41	+5.8	17.5	70.0
Jan. 8	17 17.79	+45 29.0	6.756	6.534	+0.36	+7.1	17.5	72.8
Jan. 18	17 21.39	+46 40.1	6.711	6.544	+0.29	+8.4	17.5	76.0
Jan. 28	17 24.28	+48 03.9	6.663	6.555	+0.20	+9.5	17.5	79.5
Feb. 7	17 26.24	+49 39.3	6.613	6.566	+0.07	+10.6	17.5	83.0
Feb. 17	17 26.98	+51 25.0	6.564	6.579	-0.08	+11.4	17.5	86.5
Feb. 27	17 26.18	+53 18.8	6.520	6.592	-0.27	+11.9	17.5	89.8
Mar. 9	17 23.49	+55 17.9	6.482	6.605	-0.50	+12.1	17.5	92.8
Mar. 19	17 18.54	+57 19.0	6.454	6.619	-0.76	+11.9	17.5	95.2
Mar. 29	17 10.92	+59 18.0	6.437	6.634	-1.06	+11.2	17.5	97.1

Comet C/2013 TW5 (Spacewatch)

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 17.38054 TT
Peri. = 190.34446
Node = 319.70424 2000.0
Incl. = 31.40173
q = 5.8314173 AU
e = 0.9866556

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	09 18.42	+22 56.8	5.200	6.046	-0.39	-1.2	18.6	146.7
Jan. 13	09 14.54	+22 45.2	5.108	6.028	-0.46	-1.2	18.5	157.5
Jan. 23	09 09.98	+22 33.0	5.045	6.011	-0.49	-1.4	18.5	167.9
Feb. 2	09 05.03	+22 19.2	5.012	5.994	-0.50	-1.6	18.5	174.6
Feb. 12	09 00.05	+22 02.7	5.011	5.978	-0.47	-2.0	18.5	167.2
Feb. 22	08 55.38	+21 43.1	5.041	5.963	-0.41	-2.3	18.5	156.7
Mar. 4	08 51.32	+21 19.8	5.100	5.949	-0.32	-2.7	18.5	146.1
Mar. 14	08 48.14	+20 53.0	5.184	5.935	-0.21	-3.0	18.5	135.6
Mar. 24	08 46.00	+20 22.6	5.290	5.922	-0.10	-3.4	18.5	125.3
Apr. 3	08 45.00	+19 49.1	5.413	5.911	+0.02	-3.7	18.6	115.4
Apr. 13	08 45.17	+19 12.5	5.548	5.899	+0.13	-3.9	18.6	105.8
Apr. 23	08 46.48	+18 33.2	5.691	5.889	+0.24	-4.2	18.7	96.5
May 3	08 48.87	+17 51.2	5.838	5.880	+0.34	-4.5	18.7	87.5
May 13	08 52.24	+17 06.7	5.984	5.871	+0.42	-4.7	18.8	78.8
May 23	08 56.48	+16 19.7	6.126	5.863	+0.50	-4.9	18.8	70.3
June 2	09 01.48	+15 30.2	6.262	5.856	+0.57	-5.2	18.9	62.1
June 12	09 07.14	+14 38.3	6.387	5.850	+0.62	-5.4	18.9	54.1
June 22	09 13.33	+13 43.9	6.501	5.845	+0.66	-5.7	18.9	46.3
July 2	09 19.98	+12 47.1	6.601	5.841	+0.70	-5.9	19.0	38.6
July 12	09 26.97	+11 47.9	6.684	5.837	+0.72	-6.1	19.0	31.1
July 22	09 34.21	+10 46.4	6.751	5.834	+0.74	-6.4	19.0	23.6
Aug. 1	09 41.64	+09 42.7	6.799	5.833	+0.75	-6.6	19.0	16.4
Aug. 11	09 49.17	+08 37.0	6.829	5.832	+0.75	-6.8	19.0	9.5
Aug. 21	09 56.71	+07 29.4	6.839	5.831	+0.75	-6.9	19.0	4.8
Aug. 31	10 04.21	+06 20.1	6.829	5.832	+0.74	-7.1	19.0	8.3
Sept.10	10 11.58	+05 09.4	6.800	5.834	+0.72	-7.2	19.0	15.1
Sept.20	10 18.75	+03 57.5	6.752	5.836	+0.69	-7.3	19.0	22.5
Sept.30	10 25.65	+02 44.8	6.685	5.840	+0.65	-7.3	19.0	30.1
Oct. 10	10 32.18	+01 31.5	6.600	5.844	+0.61	-7.3	19.0	37.9
Oct. 20	10 38.27	+00 18.2	6.499	5.849	+0.56	-7.3	18.9	45.8
Oct. 30	10 43.83	-00 54.7	6.384	5.855	+0.49	-7.2	18.9	53.9
Nov. 9	10 48.76	-02 06.7	6.256	5.861	+0.42	-7.1	18.9	62.3
Nov. 19	10 52.97	-03 17.3	6.119	5.869	+0.34	-6.8	18.8	70.8
Nov. 29	10 56.35	-04 25.7	5.975	5.877	+0.25	-6.5	18.8	79.6
Dec. 9	10 58.82	-05 31.1	5.828	5.886	+0.15	-6.2	18.7	88.6
Dec. 19	11 00.29	-06 32.9	5.682	5.896	+0.04	-5.7	18.7	97.8
Dec. 29	11 00.70	-07 30.1	5.541	5.907	-0.07	-5.2	18.6	107.2
Jan. 8	11 00.03	-08 21.6	5.410	5.919	-0.17	-4.5	18.6	116.8
Jan. 18	10 58.30	-09 06.7	5.293	5.932	-0.27	-3.8	18.6	126.5
Jan. 28	10 55.59	-09 44.5	5.194	5.945	-0.35	-3.0	18.5	136.2
Feb. 7	10 52.05	-10 14.4	5.119	5.959	-0.42	-2.2	18.5	145.7
Feb. 17	10 47.89	-10 36.3	5.069	5.974	-0.45	-1.4	18.5	154.2
Feb. 27	10 43.38	-10 50.4	5.047	5.989	-0.46	-0.7	18.5	160.5
Mar. 9	10 38.82	-10 57.5	5.055	6.006	-0.43	-0.1	18.5	161.8
Mar. 19	10 34.51	-10 58.9	5.092	6.023	-0.38	+0.3	18.5	157.4
Mar. 29	10 30.73	-10 56.1	5.158	6.041	-0.30	+0.5	18.6	149.8

Comet P/2008 Q2 (Ory)

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 24.54318 TT
Peri. = 329.71919 e = 0.5738353
Node = 60.67910 2000.0 a = 3.2423246 AU
Incl. = 2.75397 n = 0.16881823
q = 1.3817643 AU P = 5.84 years

m1 = 13.2 + 5 log(Delta) + 25.0 log(r(t-25))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	18 56.88	-24 09.3	3.601	2.618	-0.67	-0.6	.	26.4/ 85	1.5
Jan. 13	19 16.01	-23 42.1	3.532	2.554	-0.71	-1.0	.	27.3/ 83	5.4
Jan. 23	19 35.65	-23 05.5	3.449	2.489	-0.76	-1.5	.	28.2/ 81	10.9
Feb. 2	19 55.76	-22 19.0	3.353	2.423	-0.81	-2.0	.	29.1/ 80	16.3
Feb. 12	20 16.26	-21 22.2	3.247	2.357	-0.86	-2.5	.	30.0/ 78	21.6
Feb. 22	20 37.14	-20 14.9	3.131	2.291	-0.92	-3.2	.	31.0/ 76	26.7
Mar. 4	20 58.38	-18 56.7	3.008	2.224	-0.98	-3.9	.	32.0/ 75	31.5
Mar. 14	21 19.98	-17 27.6	2.878	2.157	-1.05	-4.7	.	33.1/ 73	36.2
Mar. 24	21 41.96	-15 47.5	2.744	2.090	-1.12	-5.5	.	34.3/ 72	40.6
Apr. 3	22 04.35	-13 56.4	2.607	2.024	-1.19	-6.4	.	35.6/ 71	44.8
Apr. 13	22 27.22	-11 54.4	2.469	1.958	-1.28	-7.4	.	37.0/ 70	48.7
Apr. 23	22 50.63	-09 41.7	2.332	1.892	-1.37	-8.5	22.9	38.5/ 69	52.3
May 3	23 14.70	-07 18.5	2.198	1.828	-1.46	-9.6	22.4	40.0/ 68	55.6
May 13	23 39.52	-04 45.7	2.068	1.766	-1.57	-10.6	21.9	41.8/ 67	58.6
May 23	00 05.23	-02 04.0	1.944	1.706	-1.69	-11.7	21.4	43.5/ 67	61.3
June 2	00 31.96	+00 44.9	1.827	1.649	-1.81	-12.6	20.9	45.2/ 67	63.6
June 12	00 59.82	+03 38.9	1.719	1.595	-1.94	-13.4	20.4	46.9/ 68	65.6
June 22	01 28.94	+06 35.1	1.620	1.545	-2.07	-13.8	19.9	48.4/ 68	67.3
July 2	01 59.36	+09 29.4	1.531	1.501	-2.20	-13.9	19.4	49.6/ 70	68.8
July 12	02 31.04	+12 17.2	1.454	1.462	-2.32	-13.6	18.9	50.4/ 71	70.1
July 22	03 03.90	+14 53.1	1.386	1.430	-2.43	-12.8	18.5	50.6/ 73	71.2
Aug. 1	03 37.64	+17 11.7	1.329	1.406	-2.51	-11.5	18.1	50.1/ 75	72.3
Aug. 11	04 11.85	+19 08.3	1.281	1.390	-2.55	-9.8	17.7	49.0/ 78	73.5
Aug. 21	04 46.01	+20 39.9	1.240	1.382	-2.57	-7.8	17.5	47.2/ 81	75.0
Aug. 31	05 19.47	+21 45.3	1.206	1.384	-2.55	-5.7	17.2	44.8/ 83	76.7
Sept.10	05 51.55	+22 25.5	1.175	1.394	-2.50	-3.7	17.1	41.7/ 86	79.0
Sept.20	06 21.65	+22 43.9	1.147	1.412	-2.44	-1.8	17.0	38.1/ 88	81.8
Sept.30	06 49.18	+22 45.3	1.120	1.439	-2.37	0.0	17.0	33.9/ 90	85.2
Oct. 10	07 13.63	+22 35.7	1.092	1.473	-2.32	+1.5	17.1	29.1/ 92	89.5
Oct. 20	07 34.60	+22 21.4	1.063	1.513	-2.30	+2.9	17.2	23.7/ 92	94.5
Oct. 30	07 51.65	+22 08.9	1.034	1.559	-2.31	+4.2	17.3	17.7/ 91	100.6
Nov. 9	08 04.38	+22 03.9	1.004	1.610	-2.37	+5.4	17.6	11.2/ 86	107.7
Nov. 19	08 12.43	+22 11.0	0.976	1.665	-2.48	+6.6	17.8	4.7/ 62	115.9
Nov. 29	08 15.44	+22 33.1	0.952	1.723	-2.64	+7.6	18.1	4.7/322	125.4
Dec. 9	08 13.37	+23 09.8	0.938	1.784	-2.83	+8.3	18.4	10.4/297	136.1
Dec. 19	08 06.63	+23 56.9	0.938	1.847	-3.01	+8.5	18.8	15.0/290	147.9
Dec. 29	07 56.30	+24 46.8	0.956	1.911	-3.13	+8.0	19.2	17.0/286	160.3
Jan. 8	07 44.23	+25 30.5	0.998	1.977	-3.15	+7.1	19.7	16.2/282	172.5
Jan. 18	07 32.50	+26 02.0	1.064	2.043	-3.05	+5.8	20.2	13.0/278	172.1
Jan. 28	07 22.90	+26 19.1	1.155	2.110	-2.85	+4.6	20.7	8.5/273	160.6
Feb. 7	07 16.58	+26 23.4	1.270	2.176	-2.59	+3.7	21.3	3.7/262	149.2
Feb. 17	07 13.84	+26 17.9	1.405	2.243	-2.32	+3.1	21.9	1.6/143	138.6
Feb. 27	07 14.55	+26 05.1	1.557	2.310	-2.06	+2.7	22.4	5.4/110	128.8
Mar. 9	07 18.28	+25 46.8	1.723	2.376	-1.82	+2.6	23.0	8.7/105	119.6
Mar. 19	07 24.48	+25 23.8	1.900	2.442	-1.61	+2.5	.	11.5/103	111.1
Mar. 29	07 32.68	+24 56.4	2.085	2.508	-1.43	+2.5	.	13.6/103	103.1

Comet 11P/Tempel-Swift-LINEAR [Orbit 1]

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 26.66382 TT
Peri. = 164.06338 e = 0.5459146
Node = 240.43789 2000.0 a = 3.4103332 AU
Incl. = 13.57561 n = 0.15649802
q = 1.5485825 AU P = 6.30 years

m1 = 14.8 + 5 log(Delta) + 15.0 log(r(t-30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	19 54.15	-11 38.2	3.548	2.632	+1.72	+5.5	.	18.3
Jan. 13	20 11.36	-10 43.2	3.518	2.572	+1.77	+6.5	.	13.6
Jan. 23	20 29.08	-09 38.0	3.475	2.512	+1.82	+7.6	.	10.2
Feb. 2	20 47.27	-08 22.3	3.419	2.451	+1.86	+8.6	.	9.2
Feb. 12	21 05.88	-06 56.4	3.352	2.391	+1.90	+9.6	.	11.1
Feb. 22	21 24.89	-05 20.1	3.274	2.330	+1.94	+10.6	.	14.6
Mar. 4	21 44.31	-03 33.9	3.188	2.270	+1.98	+11.6	.	18.6
Mar. 14	22 04.14	-01 38.2	3.093	2.209	+2.03	+12.5	22.9	22.7
Mar. 24	22 24.42	+00 26.6	2.993	2.150	+2.08	+13.3	22.7	26.7
Apr. 3	22 45.21	+02 39.5	2.888	2.091	+2.14	+14.0	22.4	30.6
Apr. 13	23 06.57	+04 59.6	2.780	2.033	+2.20	+14.6	22.2	34.4
Apr. 23	23 28.60	+07 25.7	2.670	1.976	+2.28	+15.0	21.9	37.9
May 3	23 51.40	+09 56.1	2.560	1.921	+2.37	+15.3	21.6	41.3
May 13	00 15.09	+12 28.8	2.450	1.868	+2.47	+15.2	21.4	44.4
May 23	00 39.80	+15 01.3	2.344	1.817	+2.59	+14.9	21.1	47.3
June 2	01 05.66	+17 30.6	2.240	1.769	+2.71	+14.2	20.8	50.1
June 12	01 32.75	+19 53.0	2.141	1.725	+2.84	+13.1	20.5	52.6
June 22	02 01.15	+22 04.5	2.047	1.684	+2.97	+11.6	20.2	55.0
July 2	02 30.85	+24 00.5	1.958	1.648	+3.09	+9.6	20.0	57.3
July 12	03 01.73	+25 36.3	1.875	1.616	+3.18	+7.1	19.7	59.5
July 22	03 33.58	+26 47.3	1.798	1.591	+3.24	+4.3	19.5	61.7
Aug. 1	04 06.00	+27 29.9	1.726	1.571	+3.25	+1.1	19.2	63.9
Aug. 11	04 38.50	+27 41.2	1.659	1.557	+3.20	-2.1	19.0	66.2
Aug. 21	05 10.52	+27 20.3	1.597	1.550	+3.09	-5.2	18.8	68.7
Aug. 31	05 41.43	+26 27.8	1.538	1.549	+2.92	-8.2	18.7	71.5
Sept.10	06 10.67	+25 06.0	1.482	1.555	+2.71	-10.7	18.5	74.6
Sept.20	06 37.76	+23 18.6	1.429	1.568	+2.45	-12.9	18.4	78.1
Sept.30	07 02.29	+21 09.9	1.378	1.587	+2.16	-14.5	18.3	82.1
Oct. 10	07 23.92	+18 44.9	1.327	1.613	+1.85	-15.6	18.3	86.6
Oct. 20	07 42.40	+16 08.6	1.278	1.643	+1.50	-16.2	18.3	91.7
Oct. 30	07 57.44	+13 26.1	1.230	1.679	+1.13	-16.4	18.3	97.5
Nov. 9	08 08.77	+10 42.5	1.184	1.719	+0.74	-15.9	18.3	104.1
Nov. 19	08 16.15	+08 03.2	1.142	1.763	+0.32	-14.9	18.3	111.5
Nov. 29	08 19.34	+05 34.1	1.106	1.810	-0.10	-13.2	18.4	119.7
Dec. 9	08 18.33	+03 22.1	1.079	1.861	-0.49	-10.8	18.5	128.7
Dec. 19	08 13.41	+01 34.2	1.065	1.914	-0.81	-7.7	18.6	138.1
Dec. 29	08 05.32	+00 17.0	1.067	1.969	-1.00	-4.3	18.8	147.5
Jan. 8	07 55.35	-00 25.5	1.090	2.025	-1.03	-0.8	19.0	155.1
Jan. 18	07 45.09	-00 33.8	1.136	2.083	-0.90	+2.1	19.3	158.5
Jan. 28	07 36.07	-00 13.0	1.205	2.142	-0.66	+4.1	19.6	155.7
Feb. 7	07 29.45	+00 28.3	1.298	2.201	-0.37	+5.3	20.0	148.7
Feb. 17	07 25.79	+01 21.2	1.411	2.261	-0.06	+5.6	20.3	140.3
Feb. 27	07 25.23	+02 17.7	1.543	2.322	+0.23	+5.4	20.7	131.6
Mar. 9	07 27.54	+03 11.7	1.690	2.383	+0.48	+4.8	21.1	123.2
Mar. 19	07 32.34	+03 59.6	1.849	2.443	+0.69	+3.9	21.5	115.1
Mar. 29	07 39.25	+04 38.8	2.018	2.504	+0.86	+2.9	21.8	107.3

Comet P/2011 S1 (Gibbs)

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 27.05108 TT
Peri. = 193.54654 e = 0.2026617
Node = 218.89547 2000.0 a = 8.6452229 AU
Incl. = 2.68031 n = 0.03877393
q = 6.8931673 AU P = 25.42 years

m1 = 3.2 + 5 log(Delta) + 15.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	01 54.08	+11 43.3	6.556	6.928	+0.10	+0.4	19.9	108.3
Jan. 13	01 55.11	+11 47.1	6.713	6.925	+0.19	+0.9	19.9	98.4
Jan. 23	01 57.05	+11 55.9	6.874	6.922	+0.28	+1.3	20.0	88.7
Feb. 2	01 59.85	+12 09.3	7.035	6.920	+0.36	+1.8	20.0	79.3
Feb. 12	02 03.45	+12 27.0	7.191	6.917	+0.43	+2.1	20.1	70.1
Feb. 22	02 07.76	+12 48.2	7.339	6.915	+0.49	+2.4	20.1	61.1
Mar. 4	02 12.70	+13 12.4	7.474	6.913	+0.55	+2.7	20.2	52.3
Mar. 14	02 18.19	+13 38.9	7.595	6.911	+0.59	+2.8	20.2	43.7
Mar. 24	02 24.13	+14 07.2	7.698	6.908	+0.63	+2.9	20.2	35.3
Apr. 3	02 30.45	+14 36.6	7.783	6.907	+0.66	+3.0	20.2	27.0
Apr. 13	02 37.07	+15 06.6	7.846	6.905	+0.68	+3.0	20.3	18.8
Apr. 23	02 43.89	+15 36.7	7.888	6.903	+0.70	+3.0	20.3	10.8
May 3	02 50.86	+16 06.4	7.908	6.902	+0.70	+2.9	20.3	2.8
May 13	02 57.89	+16 35.3	7.906	6.900	+0.70	+2.8	20.3	5.1
May 23	03 04.90	+17 03.1	7.882	6.899	+0.69	+2.6	20.3	13.0
June 2	03 11.82	+17 29.3	7.836	6.898	+0.67	+2.4	20.3	20.9
June 12	03 18.57	+17 53.8	7.769	6.897	+0.65	+2.2	20.2	28.8
June 22	03 25.07	+18 16.3	7.683	6.896	+0.62	+2.0	20.2	36.8
July 2	03 31.23	+18 36.5	7.579	6.895	+0.57	+1.8	20.2	44.8
July 12	03 36.97	+18 54.4	7.459	6.895	+0.52	+1.5	20.1	53.0
July 22	03 42.20	+19 09.7	7.325	6.894	+0.46	+1.3	20.1	61.2
Aug. 1	03 46.82	+19 22.3	7.180	6.894	+0.39	+1.0	20.1	69.7
Aug. 11	03 50.74	+19 32.2	7.027	6.893	+0.31	+0.7	20.0	78.3
Aug. 21	03 53.88	+19 39.3	6.868	6.893	+0.23	+0.4	20.0	87.2
Aug. 31	03 56.15	+19 43.4	6.709	6.893	+0.13	+0.1	19.9	96.3
Sept.10	03 57.49	+19 44.7	6.553	6.893	+0.04	−0.2	19.9	105.7
Sept.20	03 57.85	+19 42.9	6.404	6.894	−0.06	−0.5	19.8	115.3
Sept.30	03 57.22	+19 38.3	6.267	6.894	−0.16	−0.7	19.8	125.3
Oct. 10	03 55.64	+19 30.8	6.146	6.894	−0.24	−1.0	19.7	135.5
Oct. 20	03 53.19	+19 20.8	6.047	6.895	−0.32	−1.2	19.7	146.0
Oct. 30	03 50.01	+19 08.5	5.972	6.896	−0.37	−1.4	19.7	156.8
Nov. 9	03 46.31	+18 54.5	5.926	6.897	−0.40	−1.5	19.6	167.7
Nov. 19	03 42.31	+18 39.5	5.910	6.898	−0.40	−1.5	19.6	178.4
Nov. 29	03 38.30	+18 24.4	5.925	6.899	−0.38	−1.4	19.6	170.1
Dec. 9	03 34.54	+18 10.1	5.971	6.900	−0.33	−1.2	19.7	159.1
Dec. 19	03 31.27	+17 57.7	6.046	6.901	−0.26	−1.0	19.7	148.1
Dec. 29	03 28.71	+17 47.8	6.148	6.903	−0.17	−0.7	19.7	137.3
Jan. 8	03 27.02	+17 41.2	6.272	6.904	−0.07	−0.3	19.8	126.7
Jan. 18	03 26.27	+17 38.2	6.413	6.906	+0.03	+0.1	19.8	116.3
Jan. 28	03 26.53	+17 39.0	6.568	6.908	+0.13	+0.5	19.9	106.2
Feb. 7	03 27.78	+17 43.6	6.731	6.910	+0.22	+0.8	19.9	96.4
Feb. 17	03 29.99	+17 51.5	6.897	6.912	+0.31	+1.1	20.0	86.8
Feb. 27	03 33.10	+18 02.5	7.061	6.914	+0.39	+1.4	20.0	77.5
Mar. 9	03 37.03	+18 16.0	7.220	6.917	+0.47	+1.6	20.1	68.4
Mar. 19	03 41.69	+18 31.5	7.370	6.919	+0.53	+1.7	20.1	59.6
Mar. 29	03 46.99	+18 48.5	7.507	6.922	+0.59	+1.8	20.2	51.0

Comet 11P/Tempel-Swift-LINEAR [Orbit 2]

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 27.39628 TT
Peri. = 164.06468 e = 0.5459628
Node = 240.43577 2000.0 a = 3.4106963 AU
Incl. = 13.57614 n = 0.15647303
q = 1.5485830 AU P = 6.30 years

m1 = 14.8 + 5 log(Delta) + 15.0 log(r(t-30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 3	19 53.72	-11 40.0	3.553	2.637	+1.72	+5.5	.	18.2
Jan. 13	20 10.90	-10 45.2	3.523	2.577	+1.77	+6.5	.	13.5
Jan. 23	20 28.60	-09 40.2	3.480	2.517	+1.82	+7.5	.	10.1
Feb. 2	20 46.75	-08 24.8	3.424	2.456	+1.86	+8.6	.	9.2
Feb. 12	21 05.33	-06 59.0	3.356	2.395	+1.90	+9.6	.	11.2
Feb. 22	21 24.31	-05 23.0	3.278	2.335	+1.94	+10.6	.	14.7
Mar. 4	21 43.69	-03 37.1	3.191	2.274	+1.98	+11.6	.	18.7
Mar. 14	22 03.48	-01 41.5	3.096	2.214	+2.02	+12.4	22.9	22.8
Mar. 24	22 23.71	+00 22.9	2.995	2.154	+2.07	+13.3	22.7	26.9
Apr. 3	22 44.45	+02 35.7	2.890	2.095	+2.13	+14.0	22.5	30.8
Apr. 13	23 05.75	+04 55.6	2.781	2.037	+2.20	+14.6	22.2	34.6
Apr. 23	23 27.71	+07 21.5	2.671	1.980	+2.27	+15.0	21.9	38.2
May 3	23 50.45	+09 51.9	2.560	1.925	+2.36	+15.3	21.7	41.5
May 13	00 14.06	+12 24.6	2.450	1.872	+2.46	+15.3	21.4	44.7
May 23	00 38.69	+14 57.3	2.343	1.821	+2.58	+15.0	21.1	47.6
June 2	01 04.46	+17 26.9	2.239	1.773	+2.70	+14.3	20.8	50.3
June 12	01 31.46	+19 49.9	2.139	1.728	+2.83	+13.2	20.5	52.9
June 22	01 59.77	+22 02.1	2.044	1.687	+2.96	+11.7	20.3	55.3
July 2	02 29.39	+23 59.1	1.954	1.650	+3.08	+9.7	20.0	57.6
July 12	03 00.19	+25 36.0	1.870	1.619	+3.18	+7.2	19.7	59.8
July 22	03 31.98	+26 48.4	1.792	1.592	+3.24	+4.4	19.5	62.0
Aug. 1	04 04.37	+27 32.4	1.720	1.572	+3.25	+1.3	19.2	64.2
Aug. 11	04 36.86	+27 45.2	1.652	1.558	+3.20	-2.0	19.0	66.6
Aug. 21	05 08.90	+27 25.7	1.589	1.550	+3.09	-5.1	18.8	69.1
Aug. 31	05 39.84	+26 34.5	1.530	1.549	+2.93	-8.1	18.7	71.9
Sept.10	06 09.13	+25 13.7	1.474	1.555	+2.71	-10.7	18.5	75.0
Sept.20	06 36.28	+23 27.0	1.421	1.567	+2.46	-12.8	18.4	78.4
Sept.30	07 00.85	+21 18.8	1.369	1.586	+2.17	-14.5	18.3	82.4
Oct. 10	07 22.52	+18 54.0	1.318	1.611	+1.85	-15.6	18.3	86.9
Oct. 20	07 41.02	+16 17.6	1.269	1.641	+1.50	-16.3	18.2	92.0
Oct. 30	07 56.05	+13 34.9	1.221	1.676	+1.13	-16.4	18.2	97.9
Nov. 9	08 07.35	+10 50.9	1.175	1.716	+0.73	-16.0	18.3	104.5
Nov. 19	08 14.67	+08 11.1	1.134	1.760	+0.31	-15.0	18.3	111.9
Nov. 29	08 17.78	+05 41.5	1.098	1.807	-0.11	-13.2	18.4	120.1
Dec. 9	08 16.68	+03 29.1	1.071	1.857	-0.50	-10.8	18.5	129.1
Dec. 19	08 11.66	+01 40.8	1.058	1.910	-0.82	-7.7	18.6	138.6
Dec. 29	08 03.48	+00 23.5	1.061	1.964	-1.00	-4.3	18.8	147.8
Jan. 8	07 53.49	-00 19.0	1.085	2.021	-1.02	-0.8	19.0	155.4
Jan. 18	07 43.26	-00 27.4	1.131	2.079	-0.89	+2.1	19.3	158.6
Jan. 28	07 34.32	-00 06.6	1.202	2.137	-0.65	+4.1	19.6	155.5
Feb. 7	07 27.82	+00 34.5	1.295	2.197	-0.35	+5.3	19.9	148.4
Feb. 17	07 24.31	+01 27.1	1.409	2.257	-0.04	+5.6	20.3	140.0
Feb. 27	07 23.89	+02 23.2	1.541	2.318	+0.24	+5.4	20.7	131.3
Mar. 9	07 26.33	+03 16.9	1.689	2.378	+0.49	+4.7	21.1	122.9
Mar. 19	07 31.26	+04 04.3	1.848	2.439	+0.70	+3.9	21.4	114.8
Mar. 29	07 38.28	+04 43.2	2.017	2.499	+0.87	+2.9	21.8	107.1

Comet C/2012 K1 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 27.65157 TT
Peri. = 203.10901
Node = 317.73817 2000.0
Incl. = 142.42826
q = 1.0545052 AU
e = 1.0002027

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	16 21.48	+10 46.0	4.007	3.460	+0.51	+4.3	13.1	50.2
Jan. 13	16 26.57	+11 29.1	3.778	3.351	+0.45	+6.3	12.8	57.3
Jan. 23	16 31.03	+12 31.7	3.534	3.240	+0.35	+8.6	12.6	64.8
Feb. 2	16 34.53	+13 57.3	3.276	3.129	+0.21	+11.3	12.3	72.7
Feb. 12	16 36.65	+15 50.2	3.010	3.016	+0.02	+14.6	12.0	80.9
Feb. 22	16 36.82	+18 15.9	2.740	2.902	-0.26	+18.5	11.7	89.3
Mar. 4	16 34.20	+21 21.0	2.473	2.788	-0.66	+23.1	11.3	97.9
Mar. 14	16 27.56	+25 12.5	2.217	2.673	-1.25	+28.3	10.9	106.4
Mar. 24	16 15.04	+29 55.1	1.980	2.556	-2.13	+33.0	10.5	114.2
Apr. 3	15 53.79	+35 25.2	1.775	2.439	-3.39	+35.2	10.2	120.5
Apr. 13	15 19.90	+41 16.8	1.615	2.322	-5.01	+31.0	9.8	123.3
Apr. 23	14 29.80	+46 26.5	1.512	2.203	-6.45	+17.4	9.5	120.9
May 3	13 25.26	+49 20.6	1.472	2.085	-6.68	-1.9	9.2	113.1
May 13	12 18.45	+49 01.5	1.494	1.967	-5.53	-17.6	9.1	101.8
May 23	11 23.19	+46 05.0	1.563	1.849	-3.96	-25.2	9.0	89.1
June 2	10 43.62	+41 52.6	1.664	1.732	-2.68	-26.8	8.9	76.3
June 12	10 16.81	+37 24.6	1.779	1.618	-1.82	-25.7	8.8	64.1
June 22	09 58.63	+33 07.9	1.893	1.507	-1.27	-23.8	8.7	52.4
July 2	09 45.96	+29 09.5	1.995	1.402	-0.93	-22.2	8.6	41.3
July 12	09 36.65	+25 27.9	2.073	1.304	-0.73	-21.0	8.4	30.5
July 22	09 29.31	+21 57.9	2.122	1.216	-0.63	-20.5	8.3	19.9
Aug. 1	09 22.99	+18 32.8	2.134	1.144	-0.60	-20.7	8.1	9.3
Aug. 11	09 17.04	+15 05.4	2.104	1.091	-0.61	-21.9	7.9	1.2
Aug. 21	09 10.98	+11 26.7	2.030	1.060	-0.66	-24.1	7.7	11.9
Aug. 31	09 04.40	+07 25.4	1.912	1.056	-0.77	-28.0	7.6	22.7
Sept. 10	08 56.73	+02 45.8	1.756	1.078	-0.97	-34.1	7.5	33.9
Sept. 20	08 47.02	-02 55.7	1.571	1.124	-1.37	-43.9	7.4	45.5
Sept. 30	08 33.36	-10 14.5	1.371	1.190	-2.15	-58.4	7.3	57.8
Oct. 10	08 11.86	-19 58.9	1.178	1.273	-3.76	-76.5	7.1	71.1
Oct. 20	07 34.24	-32 43.7	1.024	1.368	-7.10	-84.6	7.1	85.2
Oct. 30	06 23.24	-46 49.5	0.954	1.471	-11.96	-53.4	7.2	98.2
Nov. 9	04 23.68	-55 43.8	0.999	1.581	-12.03	+5.5	7.5	105.2
Nov. 19	02 23.35	-54 49.2	1.154	1.694	-7.09	+33.7	8.0	104.2
Nov. 29	01 12.50	-49 12.6	1.383	1.810	-3.55	+34.6	8.6	98.2
Dec. 9	00 37.00	-43 26.9	1.653	1.927	-1.77	+29.0	9.2	90.2
Dec. 19	00 19.25	-38 36.9	1.941	2.046	-0.85	+23.6	9.8	81.7
Dec. 29	00 10.74	-34 41.1	2.233	2.164	-0.33	+19.3	10.3	73.2
Jan. 8	00 07.43	-31 28.2	2.520	2.282	-0.02	+16.1	10.7	64.8
Jan. 18	00 07.28	-28 47.5	2.796	2.400	+0.19	+13.6	11.1	56.6
Jan. 28	00 09.13	-26 31.8	3.056	2.517	+0.32	+11.6	11.4	48.7
Feb. 7	00 12.29	-24 35.7	3.295	2.634	+0.40	+10.0	11.7	41.2
Feb. 17	00 16.29	-22 55.8	3.511	2.750	+0.45	+8.6	12.0	34.1
Feb. 27	00 20.84	-21 29.7	3.702	2.864	+0.48	+7.4	12.3	27.9
Mar. 9	00 25.66	-20 15.8	3.866	2.978	+0.49	+6.3	12.5	23.0
Mar. 19	00 30.58	-19 13.2	4.002	3.091	+0.49	+5.2	12.7	20.6
Mar. 29	00 35.45	-18 21.3	4.111	3.203	+0.46	+4.1	12.9	21.5

Comet 206P/Barnard-Boattini

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 27.90571 TT
Peri. = 181.56236 e = 0.6464308
Node = 204.07825 2000.0 a = 3.2403312 AU
Incl. = 32.93058 n = 0.16897404
q = 1.1456813 AU P = 5.83 years

m1 = 19.6 + 5 log(Delta) + 10.0 log(r(t-10))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	17 54.13	-01 47.3	3.587	2.732	+1.69	+3.0	.	25.5
Jan. 13	18 11.01	-01 17.4	3.476	2.661	+1.74	+4.3	.	29.2
Jan. 23	18 28.36	-00 34.8	3.354	2.588	+1.78	+5.6	.	33.3
Feb. 2	18 46.18	+00 21.5	3.223	2.514	+1.82	+7.1	.	37.5
Feb. 12	19 04.43	+01 32.0	3.084	2.438	+1.87	+8.5	.	41.8
Feb. 22	19 23.11	+02 57.2	2.939	2.362	+1.91	+10.0	.	46.0
Mar. 4	19 42.24	+04 37.6	2.790	2.285	+1.96	+11.6	.	50.1
Mar. 14	20 01.85	+06 33.4	2.640	2.206	+2.01	+13.1	.	53.9
Mar. 24	20 21.99	+08 44.4	2.489	2.127	+2.08	+14.6	.	57.5
Apr. 3	20 42.78	+11 10.3	2.339	2.047	+2.16	+16.0	.	60.8
Apr. 13	21 04.35	+13 50.2	2.192	1.966	+2.25	+17.2	.	63.7
Apr. 23	21 26.89	+16 42.7	2.050	1.885	+2.38	+18.3	.	66.3
May 3	21 50.69	+19 45.6	1.913	1.804	+2.54	+19.0	.	68.4
May 13	22 16.05	+22 55.3	1.782	1.724	+2.74	+19.2	.	70.1
May 23	22 43.45	+26 07.1	1.659	1.644	+2.99	+18.7	.	71.3
June 2	23 13.38	+29 14.5	1.544	1.566	+3.30	+17.4	22.7	72.2
June 12	23 46.43	+32 08.2	1.437	1.491	+3.67	+14.8	22.3	72.6
June 22	00 23.17	+34 36.3	1.338	1.419	+4.08	+10.8	22.0	72.7
July 2	01 03.92	+36 24.1	1.247	1.352	+4.46	+5.0	21.6	72.5
July 12	01 48.55	+37 13.6	1.166	1.291	+4.76	-2.6	21.2	72.2
July 22	02 36.18	+36 47.3	1.095	1.239	+4.89	-11.6	20.9	71.8
Aug. 1	03 25.05	+34 51.3	1.034	1.197	+4.80	-21.1	20.6	71.5
Aug. 11	04 13.01	+31 19.9	0.986	1.166	+4.52	-30.0	20.3	71.3
Aug. 21	04 58.19	+26 20.3	0.952	1.149	+4.11	-36.9	20.2	71.6
Aug. 31	05 39.29	+20 10.9	0.933	1.146	+3.65	-41.3	20.1	72.2
Sept.10	06 15.81	+13 18.0	0.928	1.158	+3.19	-42.9	20.0	73.4
Sept.20	06 47.76	+06 08.9	0.937	1.184	+2.75	-42.3	20.1	75.0
Sept.30	07 15.28	-00 53.6	0.956	1.222	+2.33	-40.0	20.2	77.2
Oct. 10	07 38.54	-07 33.9	0.982	1.270	+1.92	-37.0	20.4	79.8
Oct. 20	07 57.70	-13 43.4	1.012	1.328	+1.50	-33.5	20.7	82.8
Oct. 30	08 12.70	-19 18.5	1.043	1.393	+1.07	-29.8	20.9	86.3
Nov. 9	08 23.43	-24 16.8	1.074	1.463	+0.63	-26.0	21.2	90.2
Nov. 19	08 29.72	-28 36.9	1.102	1.537	+0.16	-21.8	21.5	94.5
Nov. 29	08 31.34	-32 15.2	1.129	1.614	-0.30	-17.1	21.7	99.2
Dec. 9	08 28.31	-35 05.8	1.156	1.693	-0.73	-11.6	22.0	104.2
Dec. 19	08 20.98	-37 02.1	1.184	1.773	-1.07	-5.4	22.3	109.4
Dec. 29	08 10.27	-37 56.4	1.217	1.854	-1.25	+1.2	22.5	114.5
Jan. 8	07 57.77	-37 44.8	1.256	1.935	-1.24	+7.5	22.8	119.1
Jan. 18	07 45.34	-36 29.7	1.306	2.016	-1.07	+13.0	23.0	122.7
Jan. 28	07 34.68	-34 19.8	1.369	2.096	-0.77	+17.0	.	125.1
Feb. 7	07 26.99	-31 30.2	1.448	2.176	-0.43	+19.3	.	125.7
Feb. 17	07 22.69	-28 17.5	1.543	2.255	-0.09	+20.0	.	124.4
Feb. 27	07 21.78	-24 57.2	1.656	2.332	+0.21	+19.5	.	121.6
Mar. 9	07 23.91	-21 42.2	1.784	2.409	+0.47	+18.1	.	117.5
Mar. 19	07 28.60	-18 40.7	1.928	2.485	+0.68	+16.3	.	112.5
Mar. 29	07 35.39	-15 58.0	2.084	2.559	+0.85	+14.1	.	106.9

Comet 289P/Blanpain

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 28.20900 TT
Peri. = 9.85057 e = 0.6846537
Node = 68.93843 2000.0 a = 3.0470140 AU
Incl. = 5.90000 n = 0.18530724
q = 0.9608646 AU P = 5.32 years

m1 = 6.8 + 5 log(Delta) + 15.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	20 27.30	-23 12.1	3.680	2.789	+1.55	+5.6	16.3	21.5
Jan. 13	20 42.84	-22 15.7	3.651	2.715	+1.61	+6.3	16.1	15.2
Jan. 23	20 58.99	-21 12.2	3.606	2.639	+1.67	+7.1	15.9	9.3
Feb. 2	21 15.71	-20 01.3	3.543	2.562	+1.72	+7.8	15.7	4.6
Feb. 12	21 32.96	-18 42.9	3.464	2.483	+1.78	+8.6	15.4	5.3
Feb. 22	21 50.72	-17 16.7	3.371	2.402	+1.83	+9.4	15.1	9.9
Mar. 4	22 09.03	-15 42.4	3.264	2.320	+1.89	+10.3	14.9	15.0
Mar. 14	22 27.90	-13 59.8	3.145	2.236	+1.95	+11.1	14.5	20.0
Mar. 24	22 47.40	-12 08.7	3.015	2.151	+2.02	+12.0	14.2	24.7
Apr. 3	23 07.64	-10 08.6	2.878	2.064	+2.11	+12.9	13.8	29.2
Apr. 13	23 28.74	-07 59.3	2.734	1.975	+2.21	+13.9	13.4	33.4
Apr. 23	23 50.88	-05 40.2	2.586	1.885	+2.34	+14.9	13.0	37.1
May 3	00 14.29	-03 10.8	2.437	1.794	+2.50	+16.0	12.5	40.5
May 13	00 39.24	-00 31.0	2.289	1.702	+2.69	+17.0	12.1	43.3
May 23	01 06.09	+02 19.2	2.145	1.610	+2.92	+18.0	11.6	45.6
June 2	01 35.26	+05 19.2	2.008	1.517	+3.19	+18.8	11.0	47.3
June 12	02 07.21	+08 26.7	1.882	1.426	+3.52	+19.1	10.5	48.4
June 22	02 42.45	+11 37.7	1.769	1.336	+3.90	+18.7	9.9	48.6
July 2	03 21.43	+14 44.8	1.673	1.250	+4.30	+17.2	9.4	48.1
July 12	04 04.39	+17 37.1	1.598	1.170	+4.68	+14.3	8.8	46.9
July 22	04 51.20	+20 00.2	1.545	1.098	+4.99	+9.9	8.4	45.1
Aug. 1	05 41.10	+21 38.9	1.517	1.038	+5.16	+4.2	7.9	42.9
Aug. 11	06 32.67	+22 21.2	1.513	0.993	+5.14	-1.9	7.7	40.5
Aug. 21	07 24.10	+22 02.3	1.531	0.967	+4.95	-7.6	7.5	38.3
Aug. 31	08 13.61	+20 46.2	1.566	0.962	+4.63	-12.2	7.5	36.4
Sept. 10	08 59.88	+18 44.5	1.614	0.979	+4.24	-15.3	7.7	35.0
Sept. 20	09 42.25	+16 11.7	1.671	1.015	+3.84	-17.0	8.0	34.4
Sept. 30	10 20.62	+13 22.0	1.731	1.069	+3.46	-17.5	8.4	34.5
Oct. 10	10 55.20	+10 27.4	1.791	1.137	+3.12	-17.1	8.9	35.5
Oct. 20	11 26.38	+07 36.1	1.847	1.214	+2.82	-16.2	9.4	37.2
Oct. 30	11 54.58	+04 53.8	1.897	1.297	+2.56	-15.0	9.9	39.6
Nov. 9	12 20.13	+02 24.0	1.938	1.386	+2.32	-13.5	10.4	42.8
Nov. 19	12 43.33	+00 08.6	1.969	1.476	+2.10	-12.0	10.8	46.6
Nov. 29	13 04.37	-01 51.3	1.988	1.568	+1.90	-10.4	11.2	51.1
Dec. 9	13 23.34	-03 35.3	1.994	1.661	+1.69	-8.8	11.6	56.1
Dec. 19	13 40.27	-05 03.4	1.988	1.753	+1.48	-7.2	12.0	61.8
Dec. 29	13 55.11	-06 15.4	1.970	1.845	+1.26	-5.6	12.3	68.1
Jan. 8	14 07.72	-07 11.5	1.941	1.935	+1.02	-4.0	12.5	75.0
Jan. 18	14 17.94	-07 51.7	1.902	2.025	+0.76	-2.4	12.8	82.5
Jan. 28	14 25.50	-08 16.1	1.856	2.112	+0.47	-0.9	13.0	90.7
Feb. 7	14 30.16	-08 24.8	1.806	2.199	+0.15	+0.7	13.2	99.7
Feb. 17	14 31.67	-08 17.8	1.756	2.283	-0.18	+2.2	13.4	109.4
Feb. 27	14 29.85	-07 55.8	1.711	2.366	-0.51	+3.6	13.6	119.9
Mar. 9	14 24.73	-07 20.0	1.676	2.447	-0.81	+4.7	13.8	131.2
Mar. 19	14 16.62	-06 32.8	1.659	2.527	-1.04	+5.4	13.9	143.2
Mar. 29	14 06.18	-05 38.5	1.663	2.605	-1.17	+5.6	14.1	155.5

Comet P/2008 J2 (Beshore)

Epoch = 2014 July 2.0 TT
T = 2014 Aug. 30.30731 TT
Peri. = 132.16217 e = 0.3188650
Node = 97.70657 2000.0 a = 3.4441346 AU
Incl. = 10.32553 n = 0.15419983
q = 2.3459206 AU P = 6.39 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 3	12 28.50	+08 30.2	2.424	2.755	-0.99	+6.2	20.6	11.8/ 89	99.0
Jan. 13	12 36.45	+08 32.4	2.269	2.726	-1.07	+6.8	20.4	9.4/ 79	107.2
Jan. 23	12 42.71	+08 49.8	2.121	2.698	-1.15	+7.4	20.2	7.1/ 62	115.8
Feb. 2	12 46.96	+09 23.0	1.984	2.671	-1.25	+8.1	20.0	5.7/ 31	124.7
Feb. 12	12 48.94	+10 11.4	1.861	2.644	-1.34	+8.7	19.7	6.2/354	134.0
Feb. 22	12 48.49	+11 12.8	1.756	2.618	-1.44	+9.2	19.5	8.2/329	143.6
Mar. 4	12 45.60	+12 22.5	1.671	2.593	-1.54	+9.6	19.4	10.2/314	152.8
Mar. 14	12 40.55	+13 33.6	1.610	2.569	-1.61	+9.8	19.2	11.5/304	160.5
Mar. 24	12 33.95	+14 37.6	1.575	2.545	-1.66	+9.6	19.1	11.6/295	163.2
Apr. 3	12 26.67	+15 26.1	1.565	2.523	-1.66	+9.3	19.0	10.3/285	158.8
Apr. 13	12 19.75	+15 52.4	1.579	2.501	-1.64	+8.8	19.0	8.1/271	150.5
Apr. 23	12 14.16	+15 53.4	1.616	2.481	-1.58	+8.3	18.9	5.7/245	141.2
May 3	12 10.58	+15 29.1	1.671	2.462	-1.50	+7.8	19.0	5.0/199	131.9
May 13	12 09.44	+14 41.6	1.742	2.444	-1.41	+7.4	19.0	7.0/163	123.0
May 23	12 10.81	+13 34.6	1.825	2.428	-1.33	+7.1	19.0	10.0/146	114.6
June 2	12 14.61	+12 11.4	1.915	2.412	-1.25	+7.0	19.1	13.1/137	106.8
June 12	12 20.63	+10 35.2	2.012	2.399	-1.17	+6.9	19.2	15.9/132	99.5
June 22	12 28.59	+08 49.0	2.113	2.386	-1.11	+6.8	19.2	18.4/128	92.7
July 2	12 38.27	+06 54.9	2.215	2.376	-1.06	+6.8	19.3	20.5/126	86.2
July 12	12 49.43	+04 55.0	2.318	2.367	-1.02	+6.8	19.4	22.4/124	80.2
July 22	13 01.86	+02 51.1	2.420	2.359	-0.98	+6.7	19.4	23.9/122	74.4
Aug. 1	13 15.41	+00 44.5	2.521	2.353	-0.95	+6.7	19.5	25.3/120	68.8
Aug. 11	13 29.96	-01 23.2	2.619	2.349	-0.93	+6.6	19.6	26.4/119	63.5
Aug. 21	13 45.39	-03 30.7	2.715	2.347	-0.91	+6.5	19.7	27.4/118	58.3
Aug. 31	14 01.63	-05 36.7	2.807	2.346	-0.90	+6.3	19.7	28.2/116	53.2
Sept.10	14 18.62	-07 39.8	2.895	2.347	-0.89	+6.2	19.8	28.8/115	48.2
Sept.20	14 36.30	-09 39.0	2.978	2.350	-0.88	+5.9	19.9	29.3/113	43.3
Sept.30	14 54.63	-11 32.9	3.056	2.354	-0.88	+5.7	19.9	29.7/112	38.4
Oct. 10	15 13.56	-13 20.3	3.128	2.360	-0.88	+5.4	20.0	30.0/110	33.5
Oct. 20	15 33.03	-15 00.3	3.194	2.368	-0.88	+5.1	20.1	30.2/108	28.5
Oct. 30	15 53.01	-16 31.6	3.254	2.377	-0.88	+4.7	20.1	30.3/106	23.6
Nov. 9	16 13.40	-17 53.5	3.305	2.388	-0.88	+4.3	20.2	30.4/104	18.7
Nov. 19	16 34.15	-19 05.2	3.349	2.400	-0.88	+3.9	20.3	30.3/102	13.7
Nov. 29	16 55.16	-20 06.1	3.385	2.414	-0.87	+3.5	20.3	30.2/100	8.7
Dec. 9	17 16.33	-20 55.8	3.412	2.430	-0.87	+3.1	20.4	29.9/ 98	3.8
Dec. 19	17 37.55	-21 34.2	3.429	2.446	-0.87	+2.6	20.5	29.6/ 96	2.7
Dec. 29	17 58.72	-22 01.4	3.436	2.464	-0.86	+2.2	20.5	29.2/ 94	7.4
Jan. 8	18 19.69	-22 17.8	3.434	2.484	-0.85	+1.8	20.6	28.7/ 92	12.6
Jan. 18	18 40.36	-22 23.9	3.421	2.504	-0.85	+1.4	20.6	28.1/ 90	18.0
Jan. 28	19 00.62	-22 20.7	3.398	2.526	-0.84	+1.0	20.7	27.4/ 89	23.5
Feb. 7	19 20.33	-22 09.2	3.364	2.548	-0.83	+0.6	20.7	26.6/ 87	29.1
Feb. 17	19 39.41	-21 50.7	3.320	2.572	-0.82	+0.3	20.8	25.7/ 85	34.8
Feb. 27	19 57.76	-21 26.6	3.266	2.596	-0.81	0.0	20.8	24.6/ 84	40.6
Mar. 9	20 15.26	-20 58.5	3.203	2.622	-0.80	-0.3	20.9	23.5/ 83	46.6
Mar. 19	20 31.86	-20 28.1	3.131	2.648	-0.79	-0.6	20.9	22.1/ 83	52.7
Mar. 29	20 47.44	-19 57.2	3.050	2.675	-0.79	-0.9	20.9	20.6/ 82	58.9

Comet 284P/McNaught

Epoch = 2014 July 2.0 TT
T = 2014 Sept. 2.42407 TT
Peri. = 202.85291 e = 0.3768568
Node = 144.29305 2000.0 a = 3.6740634 AU
Incl. = 11.86297 n = 0.13995361
q = 2.2894676 AU P = 7.04 years

m1 = 4.8 + 5 log(Delta) + 25.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	18 36.54	-16 43.1	3.768	2.796	+1.81	+0.6	18.8	7.3
Jan. 13	18 54.69	-16 36.6	3.720	2.762	+1.83	+1.5	18.7	11.2
Jan. 23	19 13.01	-16 21.5	3.659	2.728	+1.84	+2.4	18.5	16.2
Feb. 2	19 31.43	-15 57.8	3.587	2.695	+1.84	+3.2	18.3	21.6
Feb. 12	19 49.85	-15 26.0	3.504	2.663	+1.84	+3.9	18.2	27.0
Feb. 22	20 08.20	-14 46.7	3.412	2.631	+1.82	+4.6	18.0	32.4
Mar. 4	20 26.41	-14 00.6	3.311	2.601	+1.80	+5.2	17.8	37.9
Mar. 14	20 44.41	-13 08.7	3.201	2.571	+1.77	+5.7	17.6	43.4
Mar. 24	21 02.13	-12 11.9	3.085	2.542	+1.74	+6.0	17.4	48.8
Apr. 3	21 19.52	-11 11.6	2.963	2.515	+1.70	+6.3	17.2	54.3
Apr. 13	21 36.51	-10 09.1	2.837	2.488	+1.65	+6.3	17.0	59.8
Apr. 23	21 53.04	-09 05.9	2.707	2.463	+1.60	+6.2	16.7	65.3
May 3	22 09.03	-08 03.7	2.574	2.439	+1.54	+5.9	16.5	71.0
May 13	22 24.40	-07 04.5	2.440	2.417	+1.47	+5.4	16.3	76.7
May 23	22 39.05	-06 10.1	2.306	2.396	+1.38	+4.7	16.1	82.6
June 2	22 52.85	-05 23.0	2.172	2.377	+1.28	+3.7	15.9	88.7
June 12	23 05.63	-04 45.5	2.041	2.360	+1.16	+2.5	15.7	95.1
June 22	23 17.23	-04 20.4	1.914	2.344	+1.02	+1.0	15.5	101.9
July 2	23 27.38	-04 10.6	1.792	2.330	+0.85	-0.8	15.3	109.0
July 12	23 35.83	-04 18.7	1.677	2.318	+0.65	-2.8	15.1	116.6
July 22	23 42.33	-04 47.1	1.572	2.308	+0.43	-5.0	14.9	124.8
Aug. 1	23 46.59	-05 37.6	1.479	2.301	+0.19	-7.2	14.7	133.7
Aug. 11	23 48.45	-06 49.8	1.402	2.295	-0.05	-9.1	14.6	143.1
Aug. 21	23 47.92	-08 20.9	1.343	2.291	-0.27	-10.4	14.4	153.0
Aug. 31	23 45.24	-10 04.6	1.305	2.290	-0.42	-10.7	14.4	162.9
Sept. 10	23 41.02	-11 51.2	1.291	2.290	-0.49	-9.9	14.4	170.2
Sept. 20	23 36.14	-13 29.8	1.302	2.293	-0.45	-8.0	14.4	167.4
Sept. 30	23 31.60	-14 50.0	1.337	2.298	-0.32	-5.5	14.5	158.3
Oct. 10	23 28.38	-15 45.2	1.395	2.304	-0.12	-2.7	14.6	148.2
Oct. 20	23 27.15	-16 12.6	1.473	2.313	+0.11	0.0	14.7	138.3
Oct. 30	23 28.25	-16 12.9	1.568	2.324	+0.35	+2.4	14.9	129.0
Nov. 9	23 31.78	-15 48.7	1.676	2.337	+0.58	+4.5	15.1	120.2
Nov. 19	23 37.56	-15 03.9	1.796	2.352	+0.78	+6.2	15.4	112.0
Nov. 29	23 45.35	-14 01.9	1.924	2.368	+0.95	+7.6	15.6	104.2
Dec. 9	23 54.87	-12 46.1	2.058	2.387	+1.09	+8.7	15.8	96.9
Dec. 19	00 05.81	-11 19.6	2.197	2.407	+1.21	+9.5	16.0	90.0
Dec. 29	00 17.94	-09 44.9	2.337	2.428	+1.31	+10.1	16.3	83.3
Jan. 8	00 31.03	-08 04.2	2.478	2.451	+1.39	+10.5	16.5	77.0
Jan. 18	00 44.89	-06 19.7	2.619	2.476	+1.45	+10.7	16.7	70.8
Jan. 28	00 59.40	-04 32.9	2.757	2.502	+1.50	+10.7	17.0	64.8
Feb. 7	01 14.41	-02 45.6	2.892	2.529	+1.54	+10.7	17.2	58.9
Feb. 17	01 29.85	-00 59.1	3.023	2.557	+1.58	+10.4	17.4	53.2
Feb. 27	01 45.63	+00 45.4	3.147	2.586	+1.61	+10.1	17.6	47.6
Mar. 9	02 01.68	+02 26.5	3.266	2.616	+1.63	+9.7	17.8	42.2
Mar. 19	02 17.96	+04 03.4	3.377	2.647	+1.65	+9.2	18.0	36.8
Mar. 29	02 34.41	+05 35.2	3.479	2.679	+1.66	+8.6	18.2	31.5

Comet P/2001 BB50 (LINEAR-NEAT)

Epoch = 2014 July 2.0 TT
T = 2014 Sept. 3.64156 TT
Peri. = 193.47550 e = 0.5874126
Node = 351.18558 2000.0 a = 5.7262781 AU
Incl. = 10.36700 n = 0.07192757
q = 2.3625902 AU P = 13.70 years

m1 = 10.4 + 5 log(Delta) + 15.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ″/°	Elong. °
Jan. 3	08 33.33	+31 22.0	2.166	3.092	-1.30	+6.1	19.4	9.3/284	156.3
Jan. 13	08 26.23	+31 43.7	2.083	3.044	-1.36	+6.0	19.2	10.8/278	165.1
Jan. 23	08 17.83	+31 56.7	2.028	2.996	-1.39	+5.7	19.1	11.1/271	167.6
Feb. 2	08 09.09	+31 57.4	2.001	2.950	-1.39	+5.4	19.0	10.3/263	160.9
Feb. 12	08 01.11	+31 43.5	2.001	2.904	-1.37	+5.1	18.9	8.5/251	150.9
Feb. 22	07 54.87	+31 15.6	2.026	2.859	-1.32	+4.8	18.8	6.3/231	140.5
Mar. 4	07 51.07	+30 35.6	2.072	2.816	-1.26	+4.6	18.7	5.1/194	130.2
Mar. 14	07 50.09	+29 45.8	2.134	2.773	-1.20	+4.6	18.7	6.2/156	120.4
Mar. 24	07 51.99	+28 48.8	2.208	2.732	-1.14	+4.6	18.7	8.8/136	111.2
Apr. 3	07 56.61	+27 45.7	2.290	2.692	-1.09	+4.8	18.7	11.7/125	102.7
Apr. 13	08 03.70	+26 37.4	2.377	2.655	-1.04	+5.0	18.6	14.4/120	94.7
Apr. 23	08 12.92	+25 24.0	2.466	2.618	-1.00	+5.2	18.6	17.0/117	87.3
May 3	08 23.97	+24 05.2	2.555	2.584	-0.96	+5.5	18.6	19.3/115	80.3
May 13	08 36.55	+22 40.6	2.642	2.552	-0.94	+5.8	18.6	21.3/115	73.8
May 23	08 50.36	+21 09.7	2.726	2.521	-0.91	+6.1	18.6	23.0/114	67.6
June 2	09 05.20	+19 32.2	2.806	2.493	-0.89	+6.4	18.6	24.6/114	61.8
June 12	09 20.85	+17 47.9	2.882	2.468	-0.87	+6.7	18.6	25.9/115	56.3
June 22	09 37.15	+15 56.7	2.952	2.445	-0.86	+7.0	18.6	27.1/115	51.1
July 2	09 53.96	+13 58.8	3.018	2.424	-0.84	+7.3	18.6	28.1/116	46.0
July 12	10 11.18	+11 54.5	3.078	2.407	-0.83	+7.5	18.6	28.9/116	41.1
July 22	10 28.72	+09 44.4	3.133	2.392	-0.82	+7.7	18.6	29.7/117	36.4
Aug. 1	10 46.53	+07 29.1	3.183	2.380	-0.82	+7.9	18.6	30.3/117	31.7
Aug. 11	11 04.55	+05 09.4	3.227	2.371	-0.81	+8.0	18.6	30.8/118	27.2
Aug. 21	11 22.76	+02 46.1	3.266	2.365	-0.81	+8.1	18.6	31.2/118	22.7
Aug. 31	11 41.14	+00 20.3	3.300	2.363	-0.81	+8.1	18.6	31.5/118	18.3
Sept.10	11 59.67	-02 07.0	3.328	2.363	-0.80	+8.0	18.6	31.6/118	13.9
Sept.20	12 18.36	-04 34.6	3.351	2.367	-0.81	+7.9	18.6	31.7/118	9.6
Sept.30	12 37.20	-07 01.5	3.368	2.373	-0.81	+7.8	18.7	31.7/118	5.5
Oct. 10	12 56.18	-09 26.5	3.380	2.383	-0.81	+7.6	18.7	31.6/117	3.2
Oct. 20	13 15.29	-11 48.4	3.385	2.396	-0.82	+7.3	18.7	31.3/117	5.7
Oct. 30	13 34.54	-14 06.1	3.383	2.411	-0.83	+7.0	18.8	31.0/116	10.0
Nov. 9	13 53.87	-16 18.6	3.375	2.430	-0.83	+6.6	18.8	30.5/115	14.7
Nov. 19	14 13.27	-18 24.9	3.359	2.451	-0.84	+6.2	18.9	29.9/114	19.6
Nov. 29	14 32.67	-20 24.2	3.336	2.474	-0.85	+5.8	18.9	29.2/113	24.7
Dec. 9	14 51.99	-22 15.8	3.306	2.501	-0.86	+5.3	19.0	28.4/112	29.9
Dec. 19	15 11.15	-23 59.3	3.267	2.529	-0.87	+4.9	19.0	27.4/111	35.3
Dec. 29	15 30.03	-25 34.5	3.221	2.560	-0.88	+4.3	19.1	26.3/110	40.9
Jan. 8	15 48.47	-27 01.2	3.167	2.593	-0.89	+3.8	19.1	25.0/109	46.7
Jan. 18	16 06.33	-28 19.8	3.105	2.628	-0.89	+3.3	19.2	23.5/109	52.7
Jan. 28	16 23.40	-29 30.9	3.036	2.665	-0.90	+2.8	19.2	21.8/108	58.9
Feb. 7	16 39.48	-30 35.1	2.961	2.703	-0.91	+2.3	19.2	20.0/108	65.4
Feb. 17	16 54.36	-31 33.5	2.880	2.743	-0.93	+1.8	19.3	17.9/108	72.1
Feb. 27	17 07.77	-32 27.1	2.795	2.784	-0.94	+1.3	19.3	15.5/110	79.2
Mar. 9	17 19.45	-33 17.2	2.708	2.827	-0.96	+0.9	19.3	13.0/112	86.5
Mar. 19	17 29.13	-34 04.7	2.620	2.871	-0.99	+0.5	19.4	10.2/117	94.3
Mar. 29	17 36.53	-34 50.6	2.534	2.916	-1.02	+0.2	19.4	7.4/127	102.4

Comet 170P/Christensen

Epoch = 2014 July 2.0 TT
T = 2014 Sept. 18.18973 TT
Peri. = 225.83149 e = 0.3045923
Node = 142.91943 2000.0 a = 4.1999627 AU
Incl. = 10.12783 n = 0.11450802
q = 2.9206864 AU P = 8.61 years

m1 = 9.4 + 5 log(Delta) + 15.0 log(r(t-180))

0h TT 2014/15	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m	'	m1	Elong. °
Jan. 3	20 37.39	-17 19.8	4.100	3.235	+1.50	+4.2	21.0	25.0
Jan. 13	20 52.40	-16 38.0	4.131	3.213	+1.52	+4.8	20.9	18.4
Jan. 23	21 07.62	-15 50.1	4.149	3.192	+1.54	+5.3	20.9	12.0
Feb. 2	21 22.98	-14 56.7	4.151	3.172	+1.54	+5.8	20.8	5.6
Feb. 12	21 38.39	-13 58.5	4.139	3.152	+1.54	+6.2	20.8	0.7
Feb. 22	21 53.79	-12 56.1	4.112	3.133	+1.53	+6.6	20.7	6.9
Mar. 4	22 09.13	-11 50.3	4.072	3.114	+1.52	+6.8	20.7	13.1
Mar. 14	22 24.34	-10 42.0	4.018	3.096	+1.50	+7.0	20.6	19.2
Mar. 24	22 39.39	-09 32.1	3.951	3.079	+1.48	+7.1	20.5	25.3
Apr. 3	22 54.23	-08 21.6	3.872	3.063	+1.46	+7.0	20.4	31.3
Apr. 13	23 08.81	-07 11.4	3.782	3.047	+1.43	+6.9	20.3	37.4
Apr. 23	23 23.09	-06 02.7	3.682	3.032	+1.39	+6.6	20.2	43.5
May 3	23 37.01	-04 56.4	3.573	3.018	+1.35	+6.3	20.1	49.6
May 13	23 50.52	-03 53.7	3.455	3.005	+1.30	+5.8	20.0	55.7
May 23	00 03.54	-02 55.7	3.331	2.993	+1.24	+5.2	19.8	62.0
June 2	00 15.98	-02 03.8	3.201	2.981	+1.18	+4.5	19.7	68.4
June 12	00 27.73	-01 19.1	3.068	2.971	+1.09	+3.6	19.6	75.0
June 22	00 38.67	-00 42.8	2.931	2.961	+1.00	+2.6	19.4	81.7
July 2	00 48.64	-00 16.5	2.794	2.953	+0.88	+1.5	19.3	88.8
July 12	00 57.46	-00 01.3	2.657	2.945	+0.75	+0.3	19.1	96.2
July 22	01 04.94	+00 01.6	2.524	2.938	+0.59	-1.1	19.0	103.9
Aug. 1	01 10.84	-00 08.9	2.397	2.933	+0.41	-2.5	18.8	112.0
Aug. 11	01 14.97	-00 33.5	2.279	2.928	+0.22	-3.8	18.7	120.7
Aug. 21	01 17.15	-01 11.9	2.172	2.925	+0.01	-5.1	18.5	129.8
Aug. 31	01 17.27	-02 03.1	2.081	2.922	-0.19	-6.1	18.4	139.4
Sept.10	01 15.38	-03 04.3	2.010	2.921	-0.37	-6.7	18.3	149.2
Sept.20	01 11.70	-04 11.4	1.961	2.921	-0.50	-6.7	18.2	158.9
Sept.30	01 06.68	-05 18.7	1.937	2.921	-0.57	-6.1	18.1	166.7
Oct. 10	01 00.98	-06 19.7	1.941	2.923	-0.56	-4.9	18.1	167.2
Oct. 20	00 55.35	-07 08.4	1.971	2.926	-0.48	-3.2	18.1	159.8
Oct. 30	00 50.52	-07 40.5	2.028	2.930	-0.34	-1.3	18.1	150.0
Nov. 9	00 47.13	-07 53.8	2.107	2.935	-0.16	+0.6	18.2	139.9
Nov. 19	00 45.54	-07 48.1	2.206	2.941	+0.04	+2.3	18.3	130.0
Nov. 29	00 45.96	-07 24.7	2.322	2.948	+0.24	+3.9	18.3	120.5
Dec. 9	00 48.38	-06 45.9	2.450	2.956	+0.43	+5.2	18.4	111.4
Dec. 19	00 52.69	-05 54.2	2.587	2.965	+0.60	+6.2	18.5	102.8
Dec. 29	00 58.73	-04 51.9	2.730	2.974	+0.76	+7.0	18.6	94.6
Jan. 8	01 06.29	-03 41.4	2.875	2.985	+0.89	+7.7	18.7	86.7
Jan. 18	01 15.16	-02 24.9	3.021	2.997	+1.00	+8.1	18.8	79.2
Jan. 28	01 25.18	-01 04.0	3.164	3.010	+1.10	+8.4	18.9	72.0
Feb. 7	01 36.15	+00 19.5	3.304	3.023	+1.18	+8.5	19.0	65.0
Feb. 17	01 47.95	+01 44.3	3.438	3.037	+1.25	+8.5	19.1	58.3
Feb. 27	02 00.45	+03 09.0	3.564	3.053	+1.31	+8.4	19.1	51.8
Mar. 9	02 13.54	+04 32.5	3.682	3.068	+1.36	+8.1	19.2	45.4
Mar. 19	02 27.12	+05 53.8	3.791	3.085	+1.40	+7.8	19.3	39.3
Mar. 29	02 41.11	+07 12.0	3.889	3.103	+1.43	+7.4	19.3	33.2

Comet C/2013 V5 (Oukaimeden)

Epoch = 2014 July 2.0 TT
T = 2014 Sept. 28.23167 TT
Peri. = 314.55432
Node = 278.61579 2000.0
Incl. = 154.88940
q = 0.6258688 AU
e = 0.9987801

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	06 27.89	+22 49.0	3.060	4.039	-1.81	-1.5	17.3	174.1
Jan. 13	06 09.76	+22 34.1	2.990	3.927	-1.78	-2.3	17.1	159.7
Jan. 23	05 52.00	+22 11.3	2.963	3.814	-1.64	-2.9	17.0	145.4
Feb. 2	05 35.65	+21 42.7	2.973	3.700	-1.41	-3.2	16.8	131.5
Feb. 12	05 21.52	+21 11.0	3.013	3.584	-1.15	-3.2	16.7	118.0
Feb. 22	05 10.02	+20 39.3	3.073	3.467	-0.87	-3.0	16.6	105.2
Mar. 4	05 01.27	+20 09.7	3.145	3.348	-0.61	-2.6	16.5	93.1
Mar. 14	04 55.18	+19 43.5	3.219	3.228	-0.37	-2.2	16.4	81.6
Mar. 24	04 51.48	+19 21.0	3.287	3.105	-0.16	-1.9	16.3	70.8
Apr. 3	04 49.89	+19 02.0	3.344	2.981	+0.02	-1.6	16.2	60.5
Apr. 13	04 50.12	+18 45.7	3.382	2.855	+0.18	-1.5	16.0	50.8
Apr. 23	04 51.89	+18 31.0	3.399	2.727	+0.31	-1.4	15.8	41.4
May 3	04 54.95	+18 17.0	3.390	2.597	+0.42	-1.5	15.6	32.5
May 13	04 59.11	+18 02.5	3.354	2.465	+0.51	-1.6	15.3	23.9
May 23	05 04.17	+17 46.2	3.287	2.330	+0.58	-1.9	15.1	15.9
June 2	05 10.02	+17 26.8	3.189	2.192	+0.65	-2.4	14.7	8.7
June 12	05 16.53	+17 02.7	3.059	2.052	+0.71	-3.1	14.4	6.1
June 22	05 23.64	+16 32.2	2.896	1.910	+0.77	-3.9	13.9	11.2
July 2	05 31.34	+15 52.8	2.700	1.764	+0.83	-5.2	13.4	18.3
July 12	05 39.65	+15 01.0	2.471	1.616	+0.91	-7.0	12.8	25.7
July 22	05 48.80	+13 51.4	2.209	1.465	+1.05	-9.7	12.2	33.0
Aug. 1	05 59.26	+12 14.9	1.915	1.312	+1.29	-14.1	11.4	40.0
Aug. 11	06 12.16	+09 53.9	1.592	1.159	+1.84	-22.4	10.4	46.6
Aug. 21	06 30.55	+06 09.5	1.242	1.007	+3.30	-41.1	9.3	51.8
Aug. 31	07 03.53	-00 41.5	0.881	0.863	+8.21	-88.7	7.9	53.8
Sept. 10	08 25.67	-15 28.6	0.566	0.738	+21.00	104.5	6.2	46.1
Sept. 20	11 55.66	-32 53.7	0.508	0.651	+15.15	+30.0	5.5	34.2
Sept. 30	14 27.18	-27 53.7	0.790	0.627	+4.67	+38.1	6.3	38.8
Oct. 10	15 13.85	-21 32.6	1.157	0.675	+1.70	+24.8	7.4	35.6
Oct. 20	15 30.85	-17 24.3	1.494	0.779	+0.85	+17.1	8.6	28.4
Oct. 30	15 39.37	-14 33.2	1.777	0.912	+0.58	+12.9	9.6	20.3
Nov. 9	15 45.15	-12 24.3	2.003	1.060	+0.47	+10.6	10.6	12.8
Nov. 19	15 49.88	-10 37.8	2.177	1.212	+0.41	+9.6	11.3	9.3
Nov. 29	15 54.02	-09 01.8	2.304	1.366	+0.35	+9.4	12.0	13.7
Dec. 9	15 57.56	-07 28.3	2.389	1.518	+0.28	+9.7	12.5	21.7
Dec. 19	16 00.35	-05 51.3	2.434	1.668	+0.18	+10.5	13.0	30.9
Dec. 29	16 02.14	-04 05.9	2.446	1.815	+0.04	+11.8	13.3	40.6
Jan. 8	16 02.57	-02 07.8	2.429	1.960	-0.13	+13.5	13.6	50.7
Jan. 18	16 01.26	+00 06.8	2.389	2.102	-0.35	+15.5	13.9	61.3
Jan. 28	15 57.73	+02 41.3	2.332	2.241	-0.63	+17.7	14.1	72.4
Feb. 7	15 51.46	+05 37.9	2.267	2.377	-0.95	+19.9	14.3	84.1
Feb. 17	15 41.93	+08 56.6	2.204	2.511	-1.33	+21.7	14.5	96.2
Feb. 27	15 28.67	+12 33.5	2.154	2.643	-1.72	+22.5	14.7	108.7
Mar. 9	15 11.51	+16 18.8	2.127	2.773	-2.08	+21.8	14.9	121.0
Mar. 19	14 50.72	+19 56.7	2.134	2.900	-2.34	+19.2	15.1	132.4
Mar. 29	14 27.28	+23 08.6	2.184	3.025	-2.45	+15.0	15.3	140.9

Comet C/2013 V2 (Borisov)

Epoch = 2014 July 2.0 TT
T = 2014 Oct. 14.34830 TT
Peri. = 94.45317
Node = 48.44440 2000.0
Incl. = 37.85039
q = 3.5080435 AU
e = 1.0045107

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	04 53.05	+53 24.9	3.530	4.346	-0.77	+0.8	16.3	141.9
Jan. 13	04 45.31	+53 33.3	3.549	4.295	-0.56	-0.3	16.3	134.4
Jan. 23	04 39.72	+53 30.7	3.589	4.245	-0.30	-1.0	16.3	126.2
Feb. 2	04 36.76	+53 20.8	3.647	4.197	-0.01	-1.3	16.2	117.7
Feb. 12	04 36.62	+53 07.4	3.717	4.149	+0.27	-1.4	16.2	109.3
Feb. 22	04 39.31	+52 53.2	3.795	4.102	+0.54	-1.3	16.2	101.1
Mar. 4	04 44.69	+52 40.2	3.878	4.057	+0.79	-1.1	16.2	93.3
Mar. 14	04 52.60	+52 29.3	3.962	4.013	+1.02	-0.9	16.2	85.8
Mar. 24	05 02.80	+52 20.6	4.045	3.971	+1.23	-0.7	16.2	78.7
Apr. 3	05 15.08	+52 13.5	4.124	3.930	+1.42	-0.6	16.2	71.9
Apr. 13	05 29.23	+52 07.4	4.196	3.890	+1.58	-0.6	16.2	65.6
Apr. 23	05 45.04	+52 01.0	4.262	3.852	+1.73	-0.8	16.2	59.6
May 3	06 02.32	+51 52.9	4.320	3.816	+1.86	-1.1	16.2	54.0
May 13	06 20.87	+51 42.1	4.368	3.781	+1.96	-1.5	16.2	48.9
May 23	06 40.49	+51 27.1	4.407	3.749	+2.05	-2.0	16.2	44.2
June 2	07 00.98	+51 07.1	4.437	3.718	+2.12	-2.6	16.1	40.0
June 12	07 22.15	+50 41.1	4.457	3.689	+2.16	-3.3	16.1	36.3
June 22	07 43.78	+50 08.4	4.468	3.662	+2.19	-4.0	16.1	33.3
July 2	08 05.70	+49 28.7	4.470	3.636	+2.20	-4.7	16.1	31.0
July 12	08 27.72	+48 42.0	4.463	3.613	+2.19	-5.4	16.0	29.5
July 22	08 49.66	+47 48.5	4.448	3.593	+2.17	-6.0	16.0	28.9
Aug. 1	09 11.40	+46 48.6	4.425	3.574	+2.14	-6.5	16.0	29.2
Aug. 11	09 32.80	+45 43.1	4.395	3.558	+2.10	-7.0	15.9	30.4
Aug. 21	09 53.76	+44 32.9	4.357	3.544	+2.05	-7.4	15.9	32.3
Aug. 31	10 14.21	+43 19.3	4.313	3.532	+1.99	-7.6	15.9	34.8
Sept.10	10 34.08	+42 03.5	4.262	3.522	+1.92	-7.7	15.8	37.9
Sept.20	10 53.32	+40 46.8	4.205	3.515	+1.86	-7.6	15.8	41.4
Sept.30	11 11.89	+39 30.9	4.143	3.511	+1.78	-7.4	15.7	45.3
Oct. 10	11 29.73	+38 17.2	4.074	3.508	+1.71	-7.0	15.7	49.5
Oct. 20	11 46.81	+37 07.3	4.001	3.508	+1.63	-6.4	15.7	54.0
Oct. 30	12 03.07	+36 02.9	3.922	3.511	+1.54	-5.8	15.6	58.7
Nov. 9	12 18.44	+35 05.3	3.840	3.516	+1.44	-4.9	15.6	63.8
Nov. 19	12 32.84	+34 15.9	3.753	3.523	+1.33	-4.0	15.5	69.1
Nov. 29	12 46.16	+33 36.0	3.663	3.533	+1.21	-2.9	15.5	74.7
Dec. 9	12 58.27	+33 06.5	3.571	3.545	+1.08	-1.8	15.5	80.5
Dec. 19	13 09.04	+32 48.2	3.479	3.560	+0.92	-0.7	15.4	86.7
Dec. 29	13 18.27	+32 41.3	3.387	3.576	+0.75	+0.4	15.4	93.0
Jan. 8	13 25.78	+32 45.3	3.298	3.595	+0.56	+1.4	15.3	99.6
Jan. 18	13 31.39	+32 59.3	3.213	3.616	+0.35	+2.2	15.3	106.4
Jan. 28	13 34.88	+33 21.1	3.137	3.640	+0.13	+2.6	15.3	113.2
Feb. 7	13 36.13	+33 47.6	3.070	3.665	-0.10	+2.7	15.3	120.1
Feb. 17	13 35.09	+34 14.7	3.017	3.692	-0.33	+2.3	15.3	126.6
Feb. 27	13 31.80	+34 37.4	2.980	3.721	-0.53	+1.3	15.3	132.5
Mar. 9	13 26.55	+34 50.1	2.962	3.753	-0.68	-0.2	15.3	137.3
Mar. 19	13 19.77	+34 47.8	2.965	3.786	-0.77	-2.1	15.3	140.4
Mar. 29	13 12.06	+34 26.5	2.992	3.821	-0.79	-4.2	15.4	141.1

Comet P/2003 U3 (NEAT)

Epoch = 2014 July 2.0 TT
T = 2014 Oct. 15.93889 TT
Peri. = 356.98745 e = 0.5092446
Node = 348.02575 2000.0 a = 5.0689388 AU
Incl. = 7.00350 n = 0.08636315
q = 2.4876091 AU P = 11.41 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	18 21.50	-28 34.7	4.227	3.260	-0.64	-0.7	21.0	22.7/ 88	9.2
Jan. 13	18 38.69	-28 21.2	4.158	3.217	-0.66	-1.0	20.9	22.9/ 86	14.9
Jan. 23	18 55.98	-28 01.4	4.074	3.175	-0.69	-1.4	20.8	23.1/ 85	20.9
Feb. 2	19 13.28	-27 35.5	3.978	3.133	-0.71	-1.8	20.6	23.1/ 83	27.1
Feb. 12	19 30.48	-27 03.5	3.869	3.091	-0.73	-2.2	20.5	23.1/ 82	33.2
Feb. 22	19 47.49	-26 25.9	3.750	3.051	-0.76	-2.6	20.3	22.9/ 80	39.4
Mar. 4	20 04.22	-25 43.1	3.621	3.011	-0.79	-3.1	20.2	22.7/ 79	45.5
Mar. 14	20 20.56	-24 55.7	3.483	2.972	-0.82	-3.6	20.0	22.3/ 78	51.7
Mar. 24	20 36.42	-24 04.5	3.339	2.933	-0.85	-4.1	19.8	21.7/ 76	57.9
Apr. 3	20 51.72	-23 10.4	3.189	2.896	-0.88	-4.7	19.6	21.0/ 75	64.1
Apr. 13	21 06.34	-22 14.5	3.036	2.860	-0.92	-5.3	19.5	20.1/ 74	70.4
Apr. 23	21 20.18	-21 17.8	2.880	2.825	-0.96	-5.9	19.3	19.0/ 73	76.8
May 3	21 33.10	-20 21.6	2.723	2.791	-1.00	-6.6	19.1	17.6/ 73	83.3
May 13	21 44.97	-19 27.3	2.567	2.758	-1.06	-7.3	18.9	15.9/ 72	90.0
May 23	21 55.62	-18 36.2	2.413	2.727	-1.12	-8.0	18.6	13.9/ 71	96.9
June 2	22 04.85	-17 49.8	2.264	2.698	-1.19	-8.8	18.4	11.6/ 70	104.2
June 12	22 12.44	-17 09.5	2.121	2.669	-1.26	-9.6	18.2	8.9/ 68	111.8
June 22	22 18.18	-16 36.6	1.987	2.643	-1.35	-10.5	18.0	5.8/ 65	119.8
July 2	22 21.82	-16 11.9	1.864	2.618	-1.45	-11.3	17.8	2.5/ 51	128.3
July 12	22 23.17	-15 55.9	1.755	2.596	-1.55	-12.1	17.6	1.6/300	137.3
July 22	22 22.19	-15 47.9	1.663	2.575	-1.65	-12.8	17.5	4.7/272	147.0
Aug. 1	22 18.96	-15 46.2	1.591	2.556	-1.74	-13.3	17.3	7.3/269	157.1
Aug. 11	22 13.89	-15 47.8	1.541	2.540	-1.81	-13.6	17.2	9.0/269	167.5
Aug. 21	22 07.65	-15 49.0	1.515	2.525	-1.85	-13.6	17.1	9.4/272	175.9
Aug. 31	22 01.15	-15 45.7	1.515	2.513	-1.85	-13.3	17.1	8.4/277	169.0
Sept.10	21 55.40	-15 34.7	1.539	2.503	-1.80	-12.9	17.1	6.3/289	158.4
Sept.20	21 51.25	-15 13.9	1.587	2.496	-1.73	-12.3	17.2	4.2/318	148.0
Sept.30	21 49.32	-14 42.7	1.655	2.491	-1.64	-11.8	17.2	4.3/ 12	138.0
Oct. 10	21 49.91	-14 01.0	1.741	2.488	-1.54	-11.2	17.3	6.9/ 41	128.5
Oct. 20	21 53.02	-13 09.5	1.840	2.488	-1.43	-10.7	17.5	10.1/ 53	119.6
Oct. 30	21 58.52	-12 08.6	1.952	2.490	-1.34	-10.2	17.6	13.2/ 58	111.2
Nov. 9	22 06.13	-10 59.2	2.072	2.495	-1.25	-9.8	17.7	15.9/ 61	103.4
Nov. 19	22 15.55	-09 41.9	2.198	2.502	-1.17	-9.4	17.9	18.3/ 63	95.9
Nov. 29	22 26.49	-08 17.2	2.329	2.511	-1.10	-9.1	18.0	20.3/ 63	88.8
Dec. 9	22 38.67	-06 45.8	2.462	2.523	-1.03	-8.8	18.2	21.9/ 64	82.1
Dec. 19	22 51.85	-05 08.6	2.596	2.537	-0.98	-8.4	18.3	23.3/ 64	75.6
Dec. 29	23 05.84	-03 26.2	2.730	2.553	-0.93	-8.1	18.5	24.4/ 64	69.3
Jan. 8	23 20.46	-01 39.6	2.861	2.571	-0.89	-7.8	18.6	25.2/ 64	63.1
Jan. 18	23 35.58	+00 10.3	2.990	2.592	-0.85	-7.5	18.8	25.8/ 64	57.2
Jan. 28	23 51.10	+02 02.5	3.114	2.614	-0.82	-7.2	18.9	26.3/ 64	51.3
Feb. 7	00 06.93	+03 56.1	3.233	2.638	-0.79	-6.9	19.1	26.6/ 64	45.6
Feb. 17	00 22.99	+05 50.1	3.346	2.664	-0.76	-6.6	19.2	26.7/ 65	39.9
Feb. 27	00 39.25	+07 43.5	3.451	2.692	-0.74	-6.2	19.3	26.8/ 65	34.3
Mar. 9	00 55.64	+09 35.5	3.549	2.721	-0.72	-5.9	19.5	26.7/ 65	28.8
Mar. 19	01 12.14	+11 25.2	3.638	2.752	-0.70	-5.6	19.6	26.5/ 66	23.4
Mar. 29	01 28.72	+13 11.8	3.717	2.785	-0.69	-5.2	19.7	26.3/ 66	18.0

Comet 32P/Comas Sola

Epoch = 2014 July 2.0 TT
T = 2014 Oct. 17.62787 TT
Peri. = 53.34378 e = 0.5560612
Node = 57.85352 2000.0 a = 4.5077556 AU
Incl. = 9.97050 n = 0.10298252
q = 2.0011676 AU P = 9.57 years

m1 = 9.0 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	00 22.23	-04 02.4	3.102	3.108	+0.69	+7.8	17.6	81.2
Jan. 13	00 29.12	-02 44.3	3.190	3.054	+0.84	+8.5	17.6	73.2
Jan. 23	00 37.47	-01 19.1	3.271	3.000	+0.97	+9.1	17.5	65.5
Feb. 2	00 47.14	+00 12.2	3.344	2.946	+1.09	+9.6	17.5	58.2
Feb. 12	00 58.01	+01 48.5	3.407	2.892	+1.19	+10.0	17.4	51.2
Feb. 22	01 09.95	+03 28.8	3.458	2.838	+1.29	+10.3	17.4	44.5
Mar. 4	01 22.89	+05 12.2	3.498	2.785	+1.39	+10.6	17.3	38.1
Mar. 14	01 36.76	+06 58.0	3.525	2.732	+1.48	+10.7	17.2	31.9
Mar. 24	01 51.51	+08 45.0	3.540	2.680	+1.56	+10.7	17.1	26.1
Apr. 3	02 07.12	+10 32.4	3.543	2.629	+1.64	+10.7	17.0	20.4
Apr. 13	02 23.57	+12 19.2	3.534	2.578	+1.73	+10.5	16.9	15.0
Apr. 23	02 40.85	+14 04.5	3.513	2.528	+1.81	+10.3	16.8	9.7
May 3	02 58.97	+15 47.2	3.483	2.479	+1.90	+9.9	16.6	4.7
May 13	03 17.93	+17 26.1	3.442	2.432	+1.98	+9.4	16.5	0.8
May 23	03 37.73	+19 00.2	3.393	2.386	+2.07	+8.8	16.4	5.0
June 2	03 58.39	+20 28.2	3.336	2.341	+2.15	+8.1	16.2	9.5
June 12	04 19.88	+21 48.8	3.271	2.299	+2.23	+7.2	16.1	13.9
June 22	04 42.20	+23 00.7	3.201	2.258	+2.31	+6.2	15.9	18.2
July 2	05 05.30	+24 02.8	3.126	2.219	+2.38	+5.1	15.8	22.4
July 12	05 29.12	+24 53.8	3.046	2.183	+2.44	+3.9	15.7	26.4
July 22	05 53.57	+25 32.8	2.963	2.150	+2.50	+2.6	15.5	30.5
Aug. 1	06 18.54	+25 58.8	2.878	2.119	+2.53	+1.3	15.4	34.4
Aug. 11	06 43.88	+26 11.4	2.790	2.092	+2.56	-0.1	15.2	38.3
Aug. 21	07 09.44	+26 10.3	2.702	2.068	+2.56	-1.4	15.1	42.2
Aug. 31	07 35.05	+25 55.9	2.612	2.047	+2.55	-2.7	15.0	46.2
Sept. 10	08 00.50	+25 28.9	2.522	2.030	+2.51	-3.8	14.9	50.1
Sept. 20	08 25.62	+24 50.5	2.433	2.017	+2.46	-4.8	14.7	54.2
Sept. 30	08 50.23	+24 02.4	2.343	2.008	+2.39	-5.6	14.6	58.4
Oct. 10	09 14.13	+23 06.8	2.254	2.002	+2.30	-6.1	14.5	62.7
Oct. 20	09 37.18	+22 06.0	2.165	2.001	+2.20	-6.3	14.4	67.2
Oct. 30	09 59.18	+21 03.1	2.077	2.004	+2.08	-6.2	14.4	71.9
Nov. 9	10 19.96	+20 01.0	1.989	2.011	+1.94	-5.8	14.3	76.9
Nov. 19	10 39.35	+19 02.8	1.903	2.022	+1.78	-5.1	14.2	82.3
Nov. 29	10 57.10	+18 12.0	1.817	2.038	+1.59	-4.1	14.2	88.0
Dec. 9	11 12.98	+17 31.3	1.734	2.056	+1.37	-2.8	14.1	94.2
Dec. 19	11 26.72	+17 03.8	1.653	2.079	+1.12	-1.2	14.1	101.0
Dec. 29	11 37.97	+16 51.8	1.577	2.104	+0.84	+0.5	14.0	108.3
Jan. 8	11 46.41	+16 56.4	1.508	2.133	+0.53	+2.1	14.0	116.2
Jan. 18	11 51.72	+17 17.7	1.447	2.165	+0.19	+3.6	14.0	124.9
Jan. 28	11 53.66	+17 53.5	1.398	2.200	-0.14	+4.5	14.0	134.1
Feb. 7	11 52.25	+18 38.7	1.365	2.237	-0.44	+4.7	14.0	143.7
Feb. 17	11 47.83	+19 26.1	1.352	2.277	-0.67	+4.1	14.1	153.1
Feb. 27	11 41.13	+20 06.7	1.360	2.319	-0.78	+2.5	14.2	160.9
Mar. 9	11 33.29	+20 32.1	1.393	2.362	-0.77	+0.5	14.4	163.7
Mar. 19	11 25.54	+20 37.1	1.451	2.407	-0.65	-1.7	14.6	159.2
Mar. 29	11 19.02	+20 19.7	1.533	2.454	-0.45	-3.8	14.8	151.0

Comet 108P/Ciffreo

Epoch = 2014 July 2.0 TT
T = 2014 Oct. 18.40890 TT
Peri. = 358.06673 e = 0.5431587
Node = 53.67141 2000.0 a = 3.7405810 AU
Incl. = 13.09740 n = 0.13623713
q = 1.7088519 AU P = 7.23 years

m1 = 11.4 + 5 log(Delta) + 17.5 log(r(t-30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 3	20 28.41	-29 06.8	3.873	2.986	+1.66	+6.2	22.2
Jan. 13	20 45.01	-28 04.6	3.858	2.929	+1.70	+6.8	22.9 16.7
Jan. 23	21 02.01	-26 56.5	3.827	2.873	+1.73	+7.4	22.8 12.2
Feb. 2	21 19.33	-25 42.4	3.782	2.816	+1.76	+8.0	22.6 9.7
Feb. 12	21 36.91	-24 22.3	3.723	2.758	+1.78	+8.6	22.4 10.6
Feb. 22	21 54.69	-22 56.5	3.650	2.701	+1.80	+9.1	22.2 14.0
Mar. 4	22 12.64	-21 25.2	3.566	2.643	+1.81	+9.6	22.0 18.4
Mar. 14	22 30.73	-19 48.7	3.470	2.586	+1.82	+10.1	21.8 23.2
Mar. 24	22 48.96	-18 07.5	3.365	2.528	+1.84	+10.6	21.6 28.0
Apr. 3	23 07.32	-16 21.9	3.251	2.471	+1.85	+10.9	21.3 32.8
Apr. 13	23 25.80	-14 32.6	3.130	2.414	+1.86	+11.3	21.1 37.6
Apr. 23	23 44.44	-12 39.8	3.004	2.358	+1.88	+11.6	20.8 42.2
May 3	00 03.25	-10 44.3	2.873	2.302	+1.90	+11.8	20.6 46.7
May 13	00 22.25	-08 46.6	2.739	2.247	+1.92	+11.9	20.3 51.1
May 23	00 41.45	-06 47.2	2.603	2.193	+1.94	+12.0	20.0 55.4
June 2	01 00.89	-04 46.9	2.466	2.140	+1.97	+12.1	19.7 59.6
June 12	01 20.56	-02 46.2	2.330	2.089	+1.99	+12.1	19.4 63.7
June 22	01 40.49	-00 45.7	2.195	2.040	+2.02	+12.0	19.1 67.7
July 2	02 00.66	+01 14.0	2.063	1.992	+2.04	+11.8	18.8 71.7
July 12	02 21.03	+03 12.2	1.933	1.947	+2.05	+11.6	18.4 75.6
July 22	02 41.57	+05 08.7	1.808	1.905	+2.06	+11.4	18.1 79.5
Aug. 1	03 02.18	+07 03.1	1.686	1.866	+2.05	+11.2	17.8 83.4
Aug. 11	03 22.73	+08 55.4	1.570	1.831	+2.03	+11.1	17.4 87.5
Aug. 21	03 43.06	+10 46.0	1.458	1.799	+1.99	+11.0	17.1 91.7
Aug. 31	04 02.91	+12 35.7	1.353	1.771	+1.91	+11.0	16.8 96.1
Sept. 10	04 21.97	+14 25.9	1.253	1.749	+1.79	+11.3	16.5 100.8
Sept. 20	04 39.88	+16 18.8	1.160	1.731	+1.62	+11.8	16.2 106.0
Sept. 30	04 56.10	+18 17.0	1.074	1.718	+1.40	+12.7	15.9 111.7
Oct. 10	05 10.08	+20 23.6	0.996	1.711	+1.11	+13.8	15.6 118.1
Oct. 20	05 21.16	+22 41.7	0.928	1.709	+0.74	+15.1	15.4 125.3
Oct. 30	05 28.60	+25 12.6	0.871	1.713	+0.33	+16.2	15.2 133.4
Nov. 9	05 31.86	+27 54.5	0.828	1.722	-0.12	+16.6	15.1 142.3
Nov. 19	05 30.70	+30 40.7	0.801	1.736	-0.52	+15.8	15.0 151.8
Nov. 29	05 25.55	+33 19.0	0.793	1.755	-0.77	+13.6	15.0 161.0
Dec. 9	05 17.84	+35 35.2	0.807	1.780	-0.82	+10.4	15.1 166.7
Dec. 19	05 09.63	+37 18.9	0.842	1.808	-0.64	+6.8	15.2 164.0
Dec. 29	05 03.18	+38 27.4	0.899	1.841	-0.30	+3.8	15.4 156.0
Jan. 8	05 00.18	+39 05.7	0.976	1.878	+0.11	+1.6	15.7 146.9
Jan. 18	05 01.30	+39 21.7	1.070	1.918	+0.52	+0.1	16.1 138.0
Jan. 28	05 06.55	+39 22.6	1.180	1.961	+0.89	-0.9	16.4 129.7
Feb. 7	05 15.46	+39 13.7	1.303	2.007	+1.19	-1.6	16.8 121.9
Feb. 17	05 27.35	+38 57.6	1.437	2.055	+1.43	-2.2	17.1 114.6
Feb. 27	05 41.61	+38 35.3	1.580	2.105	+1.60	-2.8	17.5 107.8
Mar. 9	05 57.63	+38 07.4	1.731	2.157	+1.73	-3.4	17.9 101.3
Mar. 19	06 14.90	+37 33.5	1.888	2.210	+1.81	-4.0	18.3 95.0
Mar. 29	06 33.03	+36 53.4	2.049	2.264	+1.86	-4.6	18.6 89.0

Comet 70P/Kojima

Epoch = 2014 July 2.0 TT
T = 2014 Oct. 20.81941 TT
Peri. = 2.01111 e = 0.4539079
Node = 119.27257 2000.0 a = 3.6747018 AU
Incl. = 6.60049 n = 0.13991714
q = 2.0067256 AU P = 7.04 years

m1 = 10.6 + 5 log(Delta) + 15.0 log(r(t-60))

0h TT 2014/15	R.A.(2000) h m	Decl. ° '	Delta	r	Daily motion m '		m1	Elong. °
Jan. 3	00 49.29	-02 13.8	2.809	2.946	+0.67	+6.5	20.5	88.1
Jan. 13	00 55.97	-01 09.2	2.905	2.900	+0.83	+7.3	20.4	80.0
Jan. 23	01 04.26	+00 03.6	2.996	2.854	+0.98	+8.0	20.4	72.2
Feb. 2	01 14.02	+01 23.2	3.081	2.809	+1.11	+8.5	20.4	64.9
Feb. 12	01 25.10	+02 48.1	3.158	2.763	+1.23	+8.9	20.3	57.9
Feb. 22	01 37.36	+04 17.0	3.225	2.718	+1.34	+9.2	20.3	51.2
Mar. 4	01 50.72	+05 48.5	3.282	2.673	+1.44	+9.3	20.2	44.9
Mar. 14	02 05.09	+07 21.6	3.328	2.629	+1.53	+9.3	20.1	38.8
Mar. 24	02 20.39	+08 54.8	3.362	2.584	+1.62	+9.2	20.1	33.0
Apr. 3	02 36.60	+10 27.2	3.386	2.541	+1.71	+9.0	20.0	27.5
Apr. 13	02 53.67	+11 57.5	3.398	2.498	+1.79	+8.7	19.9	22.2
Apr. 23	03 11.57	+13 24.4	3.399	2.456	+1.87	+8.2	19.8	17.1
May 3	03 30.30	+14 46.7	3.390	2.415	+1.95	+7.7	19.7	12.3
May 13	03 49.81	+16 03.3	3.372	2.375	+2.03	+7.0	19.5	7.9
May 23	04 10.08	+17 12.9	3.344	2.336	+2.10	+6.1	19.4	4.3
June 2	04 31.08	+18 14.3	3.308	2.298	+2.17	+5.2	19.3	4.3
June 12	04 52.77	+19 06.3	3.265	2.262	+2.23	+4.2	19.1	7.5
June 22	05 15.08	+19 47.9	3.215	2.228	+2.29	+3.0	19.0	11.4
July 2	05 37.94	+20 18.1	3.159	2.196	+2.33	+1.8	18.8	15.3
July 12	06 01.27	+20 36.2	3.098	2.165	+2.37	+0.5	18.7	19.3
July 22	06 24.96	+20 41.5	3.033	2.137	+2.39	-0.8	18.5	23.2
Aug. 1	06 48.90	+20 33.7	2.963	2.111	+2.41	-2.1	18.4	27.1
Aug. 11	07 12.96	+20 12.9	2.889	2.088	+2.41	-3.4	18.2	31.0
Aug. 21	07 37.02	+19 39.4	2.813	2.067	+2.39	-4.6	18.1	35.0
Aug. 31	08 00.95	+18 53.9	2.734	2.049	+2.37	-5.7	17.9	38.9
Sept. 10	08 24.63	+17 57.4	2.653	2.034	+2.33	-6.6	17.8	42.9
Sept. 20	08 47.94	+16 51.2	2.570	2.022	+2.28	-7.4	17.6	47.0
Sept. 30	09 10.79	+15 37.1	2.485	2.014	+2.23	-8.0	17.4	51.1
Oct. 10	09 33.05	+14 17.0	2.399	2.009	+2.16	-8.4	17.3	55.5
Oct. 20	09 54.64	+12 53.1	2.311	2.007	+2.08	-8.5	17.1	60.0
Oct. 30	10 15.45	+11 27.7	2.221	2.008	+1.99	-8.4	17.0	64.7
Nov. 9	10 35.36	+10 03.6	2.131	2.013	+1.89	-8.0	16.9	69.6
Nov. 19	10 54.25	+08 43.3	2.040	2.021	+1.77	-7.4	16.7	74.9
Nov. 29	11 11.95	+07 29.6	1.948	2.032	+1.63	-6.4	16.6	80.4
Dec. 9	11 28.26	+06 25.5	1.856	2.046	+1.47	-5.2	16.5	86.4
Dec. 19	11 42.98	+05 33.7	1.765	2.064	+1.28	-3.7	16.4	92.9
Dec. 29	11 55.79	+04 57.1	1.676	2.084	+1.06	-1.9	16.3	99.9
Jan. 8	12 06.40	+04 38.1	1.591	2.107	+0.81	+0.1	16.2	107.5
Jan. 18	12 14.47	+04 38.8	1.512	2.132	+0.52	+2.1	16.1	115.7
Jan. 28	12 19.67	+05 00.2	1.442	2.160	+0.21	+4.2	16.0	124.7
Feb. 7	12 21.82	+05 41.8	1.383	2.190	-0.09	+5.9	16.0	134.5
Feb. 17	12 20.88	+06 40.6	1.341	2.223	-0.37	+7.0	16.0	144.8
Feb. 27	12 17.15	+07 50.8	1.318	2.257	-0.58	+7.3	16.0	155.5
Mar. 9	12 11.33	+09 03.8	1.318	2.292	-0.69	+6.6	16.1	165.5
Mar. 19	12 04.43	+10 10.2	1.343	2.330	-0.68	+5.1	16.2	170.2
Mar. 29	11 57.60	+11 01.5	1.393	2.368	-0.57	+3.1	16.3	163.9

Comet C/2013 A1 (Siding Spring)

Epoch = 2014 July 2.0 TT
T = 2014 Oct. 25.31745 TT
Peri. = 2.43564
Node = 300.97737 2000.0
Incl. = 129.02747
q = 1.3987241 AU
e = 1.0008550

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	03 25.89	-38 47.2	3.636	3.952	-1.45	+5.7	15.1	101.5
Jan. 13	03 11.42	-37 49.7	3.659	3.853	-1.19	+7.7	15.0	93.9
Jan. 23	02 59.57	-36 33.2	3.691	3.754	-0.91	+8.9	14.9	86.0
Feb. 2	02 50.42	-35 04.4	3.726	3.654	-0.66	+9.5	14.9	78.2
Feb. 12	02 43.86	-33 29.6	3.758	3.554	-0.42	+9.6	14.8	70.5
Feb. 22	02 39.61	-31 53.4	3.783	3.453	-0.22	+9.4	14.7	63.3
Mar. 4	02 37.38	-30 19.7	3.794	3.351	-0.05	+8.9	14.6	56.5
Mar. 14	02 36.87	-28 51.0	3.790	3.250	+0.09	+8.1	14.5	50.5
Mar. 24	02 37.79	-27 29.6	3.766	3.148	+0.21	+7.3	14.4	45.4
Apr. 3	02 39.88	-26 16.8	3.721	3.045	+0.30	+6.3	14.3	41.5
Apr. 13	02 42.92	-25 14.2	3.652	2.943	+0.38	+5.1	14.1	39.1
Apr. 23	02 46.71	-24 23.1	3.558	2.840	+0.44	+3.8	14.0	38.4
May 3	02 51.08	-23 44.8	3.440	2.737	+0.48	+2.4	13.8	39.4
May 13	02 55.86	-23 21.2	3.297	2.634	+0.50	+0.7	13.5	42.0
May 23	03 00.89	-23 14.4	3.130	2.531	+0.51	-1.3	13.3	45.9
June 2	03 06.01	-23 27.7	2.939	2.429	+0.50	-3.8	13.0	50.8
June 12	03 11.03	-24 05.2	2.727	2.328	+0.47	-6.8	12.7	56.6
June 22	03 15.73	-25 13.2	2.496	2.228	+0.40	-10.8	12.4	63.1
July 2	03 19.77	-27 01.0	2.248	2.129	+0.29	-16.2	12.0	70.1
July 12	03 22.64	-29 42.8	1.989	2.033	+0.08	-23.8	11.6	77.7
July 22	03 23.44	-33 41.1	1.725	1.939	-0.32	-35.1	11.1	85.9
Aug. 1	03 20.28	-39 32.1	1.464	1.848	-1.19	-51.7	10.6	94.7
Aug. 11	03 08.40	-48 08.7	1.222	1.762	-3.67	-73.2	10.1	103.7
Aug. 21	02 31.71	-60 20.5	1.024	1.682	-14.07	-77.6	9.5	111.4
Aug. 31	00 11.00	-73 16.0	0.907	1.609	-26.89	+26.2	9.1	114.0
Sept. 10	19 42.09	-68 54.3	0.906	1.544	-8.72	+92.5	9.0	107.5
Sept. 20	18 14.89	-53 29.7	1.015	1.489	-2.55	+76.9	9.1	95.0
Sept. 30	17 49.39	-40 40.9	1.197	1.446	-0.91	+55.5	9.4	81.7
Oct. 10	17 40.33	-31 26.0	1.412	1.416	-0.28	+40.4	9.7	69.6
Oct. 20	17 37.54	-24 42.3	1.633	1.401	+0.02	+30.7	10.0	58.6
Oct. 30	17 37.77	-19 34.9	1.843	1.400	+0.19	+24.7	10.2	48.6
Nov. 9	17 39.62	-15 27.7	2.033	1.415	+0.28	+21.0	10.5	39.4
Nov. 19	17 42.44	-11 57.4	2.195	1.444	+0.34	+18.9	10.7	31.2
Nov. 29	17 45.86	-08 48.8	2.326	1.486	+0.37	+17.8	10.9	24.5
Dec. 9	17 49.61	-05 50.8	2.424	1.540	+0.39	+17.6	11.1	20.5
Dec. 19	17 53.47	-02 55.2	2.488	1.604	+0.38	+18.0	11.3	20.6
Dec. 29	17 57.22	+00 05.0	2.520	1.677	+0.34	+19.1	11.5	24.7
Jan. 8	18 00.63	+03 16.0	2.521	1.757	+0.28	+20.8	11.6	31.3
Jan. 18	18 03.42	+06 43.6	2.496	1.843	+0.18	+23.0	11.8	39.2
Jan. 28	18 05.23	+10 33.5	2.450	1.933	+0.04	+25.7	11.9	47.9
Feb. 7	18 05.61	+14 50.8	2.389	2.026	-0.16	+28.9	12.0	56.9
Feb. 17	18 04.01	+19 39.5	2.319	2.123	-0.44	+32.2	12.1	66.2
Feb. 27	17 59.63	+25 01.3	2.250	2.221	-0.82	+35.2	12.2	75.6
Mar. 9	17 51.44	+30 53.1	2.191	2.321	-1.33	+37.1	12.2	84.8
Mar. 19	17 38.09	+37 04.2	2.152	2.423	-2.02	+36.9	12.3	93.3
Mar. 29	17 17.92	+43 13.7	2.143	2.525	-2.85	+33.6	12.5	100.6

Comet C/2013 U2 (Holvorcem)

Epoch = 2014 July 2.0 TT
T = 2014 Oct. 25.86558 TT
Peri. = 107.37619
Node = 7.00725 2000.0
Incl. = 43.09179
q = 5.1159843 AU
e = 0.9942377

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	03 10.62	+67 36.5	4.972	5.580	-0.28	-4.1	18.1	123.8
Jan. 13	03 07.86	+66 55.8	5.012	5.550	+0.03	-4.4	18.1	118.6
Jan. 23	03 08.21	+66 12.0	5.067	5.522	+0.33	-4.4	18.1	112.7
Feb. 2	03 11.52	+65 28.1	5.134	5.494	+0.60	-4.2	18.2	106.4
Feb. 12	03 17.57	+64 46.5	5.209	5.468	+0.85	-3.8	18.2	100.0
Feb. 22	03 26.04	+64 08.5	5.290	5.442	+1.06	-3.4	18.2	93.5
Mar. 4	03 36.65	+63 34.8	5.375	5.417	+1.25	-2.9	18.2	87.1
Mar. 14	03 49.15	+63 05.5	5.460	5.393	+1.41	-2.5	18.2	80.9
Mar. 24	04 03.28	+62 40.1	5.544	5.370	+1.56	-2.2	18.2	74.8
Apr. 3	04 18.83	+62 17.9	5.624	5.347	+1.68	-2.0	18.2	69.0
Apr. 13	04 35.61	+61 58.1	5.699	5.326	+1.78	-1.8	18.2	63.4
Apr. 23	04 53.42	+61 39.7	5.767	5.305	+1.87	-1.8	18.3	58.2
May 3	05 12.10	+61 21.7	5.827	5.286	+1.94	-1.8	18.3	53.3
May 13	05 31.46	+61 03.2	5.878	5.268	+1.99	-2.0	18.3	48.8
May 23	05 51.32	+60 43.4	5.919	5.250	+2.02	-2.2	18.3	44.9
June 2	06 11.53	+60 21.8	5.949	5.234	+2.04	-2.4	18.3	41.6
June 12	06 31.91	+59 58.0	5.969	5.218	+2.04	-2.6	18.3	39.0
June 22	06 52.29	+59 31.7	5.977	5.204	+2.03	-2.9	18.2	37.2
July 2	07 12.55	+59 02.9	5.974	5.191	+2.00	-3.1	18.2	36.4
July 12	07 32.52	+58 31.8	5.960	5.179	+1.96	-3.3	18.2	36.5
July 22	07 52.10	+57 58.8	5.934	5.167	+1.91	-3.4	18.2	37.7
Aug. 1	08 11.18	+57 24.5	5.897	5.157	+1.85	-3.5	18.2	39.7
Aug. 11	08 29.65	+56 49.7	5.849	5.148	+1.78	-3.5	18.2	42.6
Aug. 21	08 47.45	+56 15.0	5.790	5.140	+1.71	-3.3	18.1	46.1
Aug. 31	09 04.51	+55 41.6	5.720	5.134	+1.62	-3.1	18.1	50.2
Sept. 10	09 20.74	+55 10.4	5.642	5.128	+1.54	-2.8	18.1	54.8
Sept. 20	09 36.09	+54 42.5	5.554	5.123	+1.44	-2.3	18.0	59.8
Sept. 30	09 50.49	+54 19.1	5.459	5.120	+1.33	-1.8	18.0	65.2
Oct. 10	10 03.83	+54 01.1	5.357	5.117	+1.22	-1.2	17.9	70.9
Oct. 20	10 16.04	+53 49.5	5.251	5.116	+1.10	-0.4	17.9	76.8
Oct. 30	10 27.00	+53 45.3	5.141	5.116	+0.96	+0.4	17.8	83.0
Nov. 9	10 36.55	+53 48.9	5.030	5.117	+0.80	+1.2	17.8	89.4
Nov. 19	10 44.54	+54 00.6	4.920	5.119	+0.62	+2.0	17.8	96.0
Nov. 29	10 50.79	+54 20.2	4.814	5.123	+0.43	+2.6	17.7	102.7
Dec. 9	10 55.09	+54 46.7	4.715	5.127	+0.22	+3.2	17.7	109.4
Dec. 19	10 57.26	+55 18.4	4.626	5.132	-0.01	+3.4	17.6	115.9
Dec. 29	10 57.12	+55 52.8	4.549	5.139	-0.25	+3.3	17.6	122.1
Jan. 8	10 54.62	+56 26.3	4.488	5.147	-0.48	+2.8	17.6	127.6
Jan. 18	10 49.82	+56 54.7	4.445	5.156	-0.68	+1.9	17.6	132.0
Jan. 28	10 42.98	+57 13.5	4.423	5.165	-0.83	+0.5	17.6	134.9
Feb. 7	10 34.64	+57 18.6	4.422	5.176	-0.92	-1.2	17.6	136.0
Feb. 17	10 25.48	+57 06.8	4.444	5.188	-0.92	-3.0	17.6	134.9
Feb. 27	10 16.31	+56 36.6	4.489	5.202	-0.84	-4.8	17.6	131.8
Mar. 9	10 07.93	+55 48.2	4.555	5.216	-0.70	-6.5	17.7	127.2
Mar. 19	10 00.93	+54 43.3	4.641	5.231	-0.52	-7.9	17.7	121.5
Mar. 29	09 55.72	+53 24.4	4.745	5.247	-0.33	-9.0	17.8	115.1

Comet 135P/Shoemaker-Levy

Epoch = 2014 July 2.0 TT
T = 2014 Nov. 1.59608 TT
Peri. = 21.94675 e = 0.2950204
Node = 213.10379 2000.0 a = 3.8010989 AU
Incl. = 6.06224 n = 0.13299653
q = 2.6796972 AU P = 7.41 years

m1 = 4.2 + 5 log(Delta) + 25.0 log(r(t-60))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	12 07.51	-06 09.5	2.847	3.140	+0.50	-3.9	19.4	98.1
Jan. 13	12 12.48	-06 48.1	2.684	3.115	+0.33	-2.7	19.2	106.9
Jan. 23	12 15.76	-07 15.1	2.528	3.090	+0.14	-1.4	19.0	116.1
Feb. 2	12 17.15	-07 28.8	2.383	3.066	-0.06	+0.1	18.8	125.8
Feb. 12	12 16.52	-07 27.5	2.253	3.041	-0.26	+1.7	18.6	136.0
Feb. 22	12 13.92	-07 10.3	2.142	3.018	-0.44	+3.3	18.4	146.7
Mar. 4	12 09.52	-06 37.3	2.053	2.995	-0.57	+4.7	18.2	157.7
Mar. 14	12 03.78	-05 50.4	1.991	2.972	-0.64	+5.7	18.0	168.8
Mar. 24	11 57.35	-04 53.5	1.955	2.950	-0.64	+6.2	17.9	174.9
Apr. 3	11 51.00	-03 51.8	1.949	2.928	-0.55	+6.0	17.8	165.8
Apr. 13	11 45.51	-02 51.6	1.969	2.907	-0.40	+5.3	17.7	154.7
Apr. 23	11 41.54	-01 58.6	2.014	2.887	-0.20	+4.2	17.7	143.8
May 3	11 39.50	-01 16.9	2.080	2.868	+0.01	+2.8	17.7	133.4
May 13	11 39.62	-00 49.3	2.162	2.849	+0.23	+1.3	17.7	123.6
May 23	11 41.89	-00 36.6	2.258	2.831	+0.43	-0.2	17.7	114.5
June 2	11 46.22	-00 38.9	2.362	2.814	+0.62	-1.6	17.7	105.9
June 12	11 52.43	-00 55.1	2.472	2.798	+0.79	-2.9	17.8	97.8
June 22	12 00.30	-01 24.1	2.585	2.782	+0.93	-4.0	17.8	90.3
July 2	12 09.64	-02 04.3	2.698	2.768	+1.06	-5.0	17.8	83.2
July 12	12 20.26	-02 54.2	2.810	2.755	+1.17	-5.8	17.8	76.4
July 22	12 31.99	-03 52.3	2.919	2.742	+1.27	-6.5	17.8	69.9
Aug. 1	12 44.70	-04 57.1	3.024	2.731	+1.36	-7.0	17.8	63.7
Aug. 11	12 58.28	-06 07.3	3.124	2.721	+1.43	-7.4	17.8	57.7
Aug. 21	13 12.63	-07 21.4	3.217	2.711	+1.51	-7.7	17.8	51.9
Aug. 31	13 27.69	-08 38.1	3.303	2.703	+1.57	-7.8	17.8	46.1
Sept.10	13 43.38	-09 56.1	3.381	2.696	+1.63	-7.8	17.8	40.5
Sept.20	13 59.65	-11 14.1	3.451	2.691	+1.68	-7.7	17.8	35.0
Sept.30	14 16.48	-12 30.8	3.512	2.686	+1.73	-7.4	17.8	29.5
Oct. 10	14 33.80	-13 45.2	3.563	2.683	+1.78	-7.1	17.8	24.1
Oct. 20	14 51.57	-14 55.8	3.605	2.681	+1.82	-6.6	17.8	18.7
Oct. 30	15 09.75	-16 01.8	3.637	2.680	+1.85	-6.0	17.8	13.2
Nov. 9	15 28.28	-17 01.9	3.658	2.680	+1.88	-5.3	17.8	7.9
Nov. 19	15 47.10	-17 55.1	3.668	2.682	+1.90	-4.6	17.8	2.9
Nov. 29	16 06.13	-18 40.8	3.668	2.684	+1.91	-3.7	17.8	4.0
Dec. 9	16 25.27	-19 18.0	3.656	2.688	+1.92	-2.8	17.7	9.2
Dec. 19	16 44.45	-19 46.3	3.633	2.693	+1.91	-1.9	17.7	14.7
Dec. 29	17 03.54	-20 05.3	3.599	2.700	+1.89	-1.0	17.7	20.4
Jan. 8	17 22.43	-20 14.8	3.555	2.707	+1.86	0.0	17.7	26.1
Jan. 18	17 41.00	-20 15.0	3.500	2.716	+1.81	+0.9	17.6	31.9
Jan. 28	17 59.11	-20 06.0	3.435	2.725	+1.75	+1.8	17.6	37.9
Feb. 7	18 16.63	-19 48.4	3.360	2.736	+1.68	+2.6	17.6	43.9
Feb. 17	18 33.43	-19 22.9	3.277	2.748	+1.59	+3.3	17.5	50.0
Feb. 27	18 49.37	-18 50.3	3.185	2.761	+1.49	+3.8	17.5	56.3
Mar. 9	19 04.30	-18 11.9	3.087	2.775	+1.38	+4.3	17.5	62.7
Mar. 19	19 18.09	-17 28.7	2.982	2.790	+1.25	+4.6	17.4	69.3
Mar. 29	19 30.58	-16 42.2	2.872	2.805	+1.10	+4.8	17.4	76.1

Comet 80P/Peters-Hartley

Epoch = 2014 July 2.0 TT
T = 2014 Nov. 10.05621 TT
Peri. = 339.13224 e = 0.5989905
Node = 259.88959 2000.0 a = 4.0217322 AU
Incl. = 29.92317 n = 0.12220370
q = 1.6127528 AU P = 8.07 years

m1 = 9.0 + 5 log(Delta) + 25.0 log(r(t-20))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	08 40.06	-13 02.3	2.433	3.211	-0.81	-7.6	.	135.6
Jan. 13	08 31.96	-14 18.2	2.319	3.150	-0.96	-5.5	.	141.7
Jan. 23	08 22.35	-15 13.4	2.229	3.089	-1.04	-3.1	.	145.2
Feb. 2	08 11.94	-15 44.1	2.165	3.027	-1.03	-0.5	.	145.1
Feb. 12	08 01.68	-15 49.0	2.128	2.964	-0.91	+1.9	22.9	141.4
Feb. 22	07 52.54	-15 30.2	2.114	2.901	-0.72	+3.8	22.6	135.2
Mar. 4	07 45.31	-14 52.1	2.122	2.838	-0.47	+5.1	22.4	127.7
Mar. 14	07 40.58	-14 00.9	2.145	2.775	-0.19	+5.8	22.2	119.6
Mar. 24	07 38.64	-13 03.3	2.181	2.711	+0.09	+5.8	22.0	111.5
Apr. 3	07 39.53	-12 04.8	2.225	2.647	+0.36	+5.4	21.8	103.7
Apr. 13	07 43.18	-11 10.4	2.273	2.583	+0.62	+4.7	21.6	96.3
Apr. 23	07 49.38	-10 23.4	2.321	2.518	+0.85	+3.7	21.4	89.3
May 3	07 57.93	-09 46.4	2.368	2.454	+1.07	+2.5	21.2	82.8
May 13	08 08.61	-09 21.1	2.411	2.391	+1.26	+1.3	20.9	76.7
May 23	08 21.21	-09 08.5	2.448	2.327	+1.44	-0.1	20.7	71.1
June 2	08 35.58	-09 09.3	2.480	2.264	+1.60	-1.4	20.4	65.9
June 12	08 51.56	-09 23.8	2.505	2.202	+1.75	-2.8	20.2	61.1
June 22	09 09.04	-09 51.8	2.524	2.142	+1.89	-4.1	19.9	56.7
July 2	09 27.94	-10 33.2	2.538	2.082	+2.03	-5.4	19.6	52.5
July 12	09 48.19	-11 27.2	2.545	2.024	+2.16	-6.6	19.3	48.7
July 22	10 09.75	-12 32.7	2.549	1.968	+2.29	-7.6	19.0	45.1
Aug. 1	10 32.61	-13 48.4	2.549	1.914	+2.41	-8.4	18.7	41.7
Aug. 11	10 56.75	-15 12.4	2.546	1.864	+2.54	-9.0	18.4	38.5
Aug. 21	11 22.16	-16 42.3	2.543	1.816	+2.67	-9.3	18.1	35.5
Aug. 31	11 48.85	-18 15.3	2.539	1.772	+2.79	-9.3	17.8	32.5
Sept.10	12 16.78	-19 48.1	2.536	1.733	+2.91	-8.9	17.5	29.5
Sept.20	12 45.93	-21 17.0	2.535	1.698	+3.03	-8.1	17.2	26.6
Sept.30	13 16.22	-22 38.0	2.537	1.669	+3.13	-6.9	17.0	23.7
Oct. 10	13 47.50	-23 47.3	2.541	1.645	+3.21	-5.4	16.8	20.7
Oct. 20	14 19.59	-24 40.9	2.549	1.628	+3.27	-3.5	16.6	17.6
Oct. 30	14 52.24	-25 15.8	2.560	1.617	+3.29	-1.4	16.4	14.5
Nov. 9	15 25.15	-25 29.4	2.573	1.613	+3.28	+0.9	16.3	11.2
Nov. 19	15 57.98	-25 20.1	2.589	1.615	+3.24	+3.3	16.3	7.8
Nov. 29	16 30.40	-24 47.4	2.607	1.625	+3.17	+5.6	16.3	4.4
Dec. 9	17 02.09	-23 51.4	2.626	1.641	+3.07	+7.8	16.3	1.1
Dec. 19	17 32.80	-22 33.5	2.645	1.663	+2.95	+9.8	16.4	3.1
Dec. 29	18 02.33	-20 55.3	2.663	1.691	+2.82	+11.6	16.5	6.9
Jan. 8	18 30.50	-18 59.0	2.681	1.725	+2.68	+13.2	16.7	10.8
Jan. 18	18 57.27	-16 47.1	2.697	1.763	+2.53	+14.5	16.9	14.8
Jan. 28	19 22.58	-14 21.8	2.709	1.806	+2.38	+15.6	17.1	18.9
Feb. 7	19 46.43	-11 45.6	2.719	1.853	+2.24	+16.5	17.3	23.1
Feb. 17	20 08.85	-09 00.6	2.725	1.903	+2.10	+17.2	17.6	27.5
Feb. 27	20 29.86	-06 08.8	2.726	1.956	+1.96	+17.7	17.9	31.9
Mar. 9	20 49.50	-03 12.1	2.722	2.012	+1.83	+18.0	18.2	36.4
Mar. 19	21 07.79	-00 11.9	2.714	2.069	+1.70	+18.2	18.5	41.1
Mar. 29	21 24.76	+02 50.4	2.699	2.129	+1.56	+18.3	18.7	45.9

Comet 269P/Jedicke

Epoch = 2014 July 2.0 TT
T = 2014 Nov. 14.99768 TT
Peri. = 223.37818 e = 0.4415924
Node = 248.75871 2000.0 a = 7.3050075 AU
Incl. = 6.60942 n = 0.04991983
q = 4.0791717 AU P = 19.74 years

m1 = 1.4 + 5 log(Delta) + 20.0 log(r(t-130))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	03 55.02	+20 15.6	3.657	4.442	-0.18	-1.6	17.8	138.6
Jan. 13	03 53.17	+20 00.1	3.748	4.421	-0.03	-1.0	17.8	127.9
Jan. 23	03 52.90	+19 49.8	3.857	4.400	+0.13	-0.5	17.8	117.6
Feb. 2	03 54.23	+19 45.0	3.978	4.380	+0.29	0.0	17.8	107.7
Feb. 12	03 57.14	+19 45.5	4.108	4.361	+0.44	+0.5	17.8	98.3
Feb. 22	04 01.54	+19 50.6	4.241	4.342	+0.58	+0.9	17.8	89.2
Mar. 4	04 07.30	+19 59.4	4.375	4.323	+0.70	+1.2	17.9	80.5
Mar. 14	04 14.30	+20 11.0	4.504	4.306	+0.81	+1.3	17.9	72.2
Mar. 24	04 22.40	+20 24.3	4.628	4.288	+0.91	+1.4	17.9	64.1
Apr. 3	04 31.46	+20 38.4	4.743	4.272	+0.99	+1.4	17.9	56.4
Apr. 13	04 41.35	+20 52.3	4.847	4.256	+1.06	+1.3	17.9	48.9
Apr. 23	04 51.96	+21 05.2	4.939	4.240	+1.12	+1.1	17.9	41.6
May 3	05 03.18	+21 16.2	5.017	4.225	+1.17	+0.8	17.9	34.5
May 13	05 14.89	+21 24.6	5.081	4.211	+1.21	+0.5	17.9	27.6
May 23	05 26.99	+21 30.0	5.129	4.198	+1.24	+0.2	17.9	20.8
June 2	05 39.41	+21 31.8	5.161	4.185	+1.26	-0.2	17.8	14.1
June 12	05 52.03	+21 29.7	5.177	4.173	+1.27	-0.6	17.8	7.6
June 22	06 04.78	+21 23.4	5.177	4.161	+1.28	-1.1	17.8	2.2
July 2	06 17.56	+21 12.8	5.160	4.151	+1.27	-1.5	17.7	6.2
July 12	06 30.29	+20 57.8	5.127	4.141	+1.26	-1.9	17.7	12.5
July 22	06 42.88	+20 38.5	5.078	4.131	+1.24	-2.3	17.6	19.1
Aug. 1	06 55.26	+20 15.1	5.014	4.123	+1.21	-2.7	17.5	25.7
Aug. 11	07 07.31	+19 47.8	4.935	4.115	+1.16	-3.1	17.5	32.3
Aug. 21	07 18.96	+19 17.0	4.843	4.108	+1.11	-3.4	17.4	39.2
Aug. 31	07 30.10	+18 43.1	4.737	4.102	+1.05	-3.6	17.3	46.1
Sept.10	07 40.63	+18 06.8	4.619	4.096	+0.98	-3.8	17.2	53.2
Sept.20	07 50.44	+17 28.6	4.491	4.091	+0.90	-3.9	17.1	60.5
Sept.30	07 59.41	+16 49.4	4.354	4.087	+0.80	-3.9	17.1	68.1
Oct. 10	08 07.41	+16 10.0	4.211	4.084	+0.69	-3.9	17.0	75.9
Oct. 20	08 14.30	+15 31.5	4.063	4.082	+0.56	-3.7	16.9	84.0
Oct. 30	08 19.93	+14 54.7	3.914	4.080	+0.42	-3.4	16.7	92.5
Nov. 9	08 24.18	+14 20.9	3.767	4.079	+0.27	-3.0	16.6	101.4
Nov. 19	08 26.91	+13 51.1	3.625	4.079	+0.11	-2.5	16.5	110.6
Nov. 29	08 28.04	+13 26.3	3.492	4.080	-0.05	-1.9	16.4	120.3
Dec. 9	08 27.53	+13 07.5	3.374	4.081	-0.21	-1.2	16.3	130.4
Dec. 19	08 25.43	+12 55.1	3.273	4.084	-0.35	-0.6	16.3	140.8
Dec. 29	08 21.91	+12 49.3	3.195	4.087	-0.46	0.0	16.2	151.6
Jan. 8	08 17.28	+12 49.7	3.143	4.091	-0.53	+0.6	16.1	162.3
Jan. 18	08 11.97	+12 55.6	3.120	4.095	-0.55	+1.0	16.1	171.5
Jan. 28	08 06.49	+13 05.5	3.126	4.101	-0.51	+1.2	16.1	170.4
Feb. 7	08 01.39	+13 18.0	3.163	4.107	-0.42	+1.3	16.1	160.7
Feb. 17	07 57.15	+13 31.5	3.228	4.114	-0.30	+1.3	16.2	150.1
Feb. 27	07 54.16	+13 44.4	3.318	4.121	-0.15	+1.1	16.2	139.5
Mar. 9	07 52.66	+13 55.5	3.429	4.130	+0.01	+0.8	16.3	129.3
Mar. 19	07 52.77	+14 03.9	3.558	4.139	+0.17	+0.5	16.4	119.4
Mar. 29	07 54.50	+14 08.7	3.700	4.149	+0.33	+0.1	16.5	110.0

Comet C/2013 G3 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2014 Nov. 15.19685 TT
Peri. = 76.49602
Node = 208.13000 2000.0
Incl. = 64.67126
q = 3.8522049 AU
e = 1.0004620

m1 = 10.8 + 5 log(Delta) + 7.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	15 32.75	+02 23.4	5.210	4.716	+0.84	+6.3	19.4	55.0
Jan. 13	15 41.19	+03 26.4	5.034	4.668	+0.79	+7.6	19.3	62.9
Jan. 23	15 49.13	+04 42.2	4.851	4.622	+0.73	+9.0	19.2	70.8
Feb. 2	15 56.44	+06 11.8	4.665	4.576	+0.65	+10.4	19.1	78.7
Feb. 12	16 02.96	+07 55.7	4.480	4.531	+0.56	+11.8	19.0	86.7
Feb. 22	16 08.53	+09 54.0	4.299	4.487	+0.45	+13.2	18.9	94.6
Mar. 4	16 12.99	+12 06.5	4.127	4.445	+0.32	+14.5	18.7	102.3
Mar. 14	16 16.18	+14 31.6	3.967	4.403	+0.18	+15.5	18.6	109.7
Mar. 24	16 17.97	+17 07.1	3.825	4.363	+0.03	+16.2	18.5	116.6
Apr. 3	16 18.23	+19 49.3	3.702	4.323	−0.13	+16.4	18.4	122.6
Apr. 13	16 16.93	+22 33.5	3.603	4.285	−0.28	+16.0	18.3	127.3
Apr. 23	16 14.10	+25 13.9	3.527	4.249	−0.42	+15.0	18.2	130.4
May 3	16 09.90	+27 44.3	3.477	4.213	−0.53	+13.4	18.2	131.5
May 13	16 04.59	+29 58.7	3.452	4.179	−0.60	+11.4	18.1	130.5
May 23	15 58.60	+31 52.4	3.450	4.147	−0.62	+9.0	18.1	127.6
June 2	15 52.41	+33 22.1	3.469	4.116	−0.59	+6.5	18.1	123.4
June 12	15 46.55	+34 26.7	3.505	4.086	−0.50	+4.0	18.1	118.3
June 22	15 41.52	+35 07.1	3.556	4.058	−0.38	+1.8	18.1	112.7
July 2	15 37.74	+35 25.3	3.617	4.032	−0.22	−0.1	18.1	106.9
July 12	15 35.50	+35 24.5	3.685	4.007	−0.05	−1.6	18.2	101.1
July 22	15 34.99	+35 08.4	3.757	3.984	+0.13	−2.8	18.2	95.5
Aug. 1	15 36.27	+34 40.3	3.830	3.963	+0.31	−3.7	18.2	90.0
Aug. 11	15 39.34	+34 03.8	3.902	3.943	+0.48	−4.2	18.2	84.9
Aug. 21	15 44.13	+33 21.7	3.970	3.925	+0.64	−4.5	18.2	80.1
Aug. 31	15 50.55	+32 36.5	4.035	3.910	+0.79	−4.6	18.3	75.7
Sept. 10	15 58.49	+31 50.7	4.093	3.896	+0.93	−4.5	18.3	71.7
Sept. 20	16 07.83	+31 06.0	4.146	3.884	+1.06	−4.2	18.3	68.0
Sept. 30	16 18.47	+30 24.2	4.193	3.873	+1.18	−3.7	18.3	64.8
Oct. 10	16 30.30	+29 46.9	4.233	3.865	+1.29	−3.2	18.3	62.0
Oct. 20	16 43.19	+29 15.2	4.266	3.859	+1.39	−2.5	18.3	59.6
Oct. 30	16 57.06	+28 50.3	4.295	3.855	+1.47	−1.7	18.4	57.6
Nov. 9	17 11.79	+28 33.4	4.318	3.853	+1.55	−0.8	18.4	56.0
Nov. 19	17 27.26	+28 25.2	4.337	3.852	+1.61	+0.1	18.4	54.8
Nov. 29	17 43.39	+28 26.4	4.352	3.854	+1.67	+1.1	18.4	53.9
Dec. 9	18 00.04	+28 37.5	4.365	3.858	+1.71	+2.1	18.4	53.3
Dec. 19	18 17.10	+28 58.7	4.376	3.864	+1.74	+3.2	18.4	52.9
Dec. 29	18 34.46	+29 30.2	4.386	3.871	+1.75	+4.2	18.4	52.8
Jan. 8	18 51.97	+30 11.8	4.395	3.881	+1.76	+5.1	18.4	52.8
Jan. 18	19 09.53	+31 03.0	4.404	3.892	+1.75	+6.0	18.4	53.0
Jan. 28	19 27.00	+32 03.3	4.413	3.906	+1.73	+6.9	18.5	53.4
Feb. 7	19 44.27	+33 11.8	4.421	3.921	+1.70	+7.6	18.5	53.9
Feb. 17	20 01.23	+34 27.7	4.429	3.939	+1.65	+8.2	18.5	54.5
Feb. 27	20 17.76	+35 50.0	4.435	3.958	+1.60	+8.7	18.5	55.4
Mar. 9	20 33.74	+37 17.4	4.441	3.979	+1.53	+9.2	18.5	56.4
Mar. 19	20 49.08	+38 49.0	4.443	4.001	+1.46	+9.5	18.6	57.7
Mar. 29	21 03.68	+40 23.6	4.443	4.025	+1.37	+9.6	18.6	59.3

Comet 40P/Vaisala

Epoch = 2014 July 2.0 TT
T = 2014 Nov. 15.80772 TT
Peri. = 47.27422 e = 0.6318450
Node = 133.84008 2000.0 a = 4.9421950 AU
Incl. = 11.49227 n = 0.08970657
q = 1.8194938 AU P = 10.99 years

m1 = 9.8 + 5 log(Delta) + 17.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	04 50.48	+09 54.1	2.492	3.365	-0.63	+2.4	21.0	147.9
Jan. 13	04 44.14	+10 18.2	2.515	3.303	-0.45	+3.3	20.9	137.0
Jan. 23	04 39.68	+10 50.8	2.559	3.241	-0.23	+4.0	20.8	126.4
Feb. 2	04 37.41	+11 30.8	2.619	3.178	+0.01	+4.6	20.7	116.1
Feb. 12	04 37.50	+12 16.6	2.690	3.115	+0.24	+5.0	20.6	106.3
Feb. 22	04 39.92	+13 06.6	2.768	3.052	+0.47	+5.3	20.5	97.1
Mar. 4	04 44.59	+13 59.2	2.848	2.989	+0.68	+5.3	20.4	88.4
Mar. 14	04 51.38	+14 52.7	2.926	2.926	+0.87	+5.3	20.3	80.2
Mar. 24	05 00.11	+15 45.6	2.999	2.863	+1.05	+5.1	20.2	72.6
Apr. 3	05 10.62	+16 36.5	3.067	2.800	+1.21	+4.8	20.1	65.3
Apr. 13	05 22.77	+17 24.1	3.125	2.738	+1.36	+4.3	19.9	58.5
Apr. 23	05 36.41	+18 07.1	3.174	2.675	+1.50	+3.7	19.8	52.0
May 3	05 51.42	+18 44.2	3.213	2.613	+1.63	+3.0	19.6	45.9
May 13	06 07.69	+19 14.4	3.242	2.552	+1.74	+2.2	19.5	40.0
May 23	06 25.11	+19 36.6	3.259	2.492	+1.85	+1.3	19.3	34.5
June 2	06 43.60	+19 49.8	3.266	2.432	+1.95	+0.3	19.1	29.2
June 12	07 03.05	+19 53.0	3.263	2.373	+2.03	-0.7	18.9	24.2
June 22	07 23.39	+19 45.5	3.250	2.316	+2.11	-1.9	18.7	19.4
July 2	07 44.52	+19 26.6	3.229	2.261	+2.18	-3.1	18.5	14.8
July 12	08 06.36	+18 55.7	3.199	2.207	+2.25	-4.3	18.3	10.4
July 22	08 28.83	+18 12.6	3.162	2.155	+2.30	-5.6	18.1	6.2
Aug. 1	08 51.87	+17 17.1	3.120	2.106	+2.35	-6.8	17.9	2.1
Aug. 11	09 15.38	+16 09.3	3.072	2.059	+2.39	-8.0	17.7	1.8
Aug. 21	09 39.31	+14 49.7	3.020	2.016	+2.43	-9.1	17.5	5.5
Aug. 31	10 03.62	+13 18.9	2.966	1.976	+2.46	-10.1	17.3	9.2
Sept.10	10 28.23	+11 38.0	2.909	1.939	+2.49	-11.0	17.2	12.7
Sept.20	10 53.12	+09 48.3	2.852	1.907	+2.51	-11.7	17.0	16.1
Sept.30	11 18.25	+07 51.4	2.794	1.880	+2.53	-12.2	16.8	19.5
Oct. 10	11 43.59	+05 49.5	2.737	1.857	+2.55	-12.5	16.7	22.8
Oct. 20	12 09.10	+03 44.7	2.682	1.840	+2.56	-12.5	16.6	26.1
Oct. 30	12 34.75	+01 39.5	2.627	1.827	+2.57	-12.3	16.5	29.3
Nov. 9	13 00.46	-00 23.4	2.575	1.821	+2.57	-11.8	16.4	32.7
Nov. 19	13 26.19	-02 21.3	2.524	1.820	+2.56	-11.0	16.4	36.0
Nov. 29	13 51.84	-04 11.7	2.474	1.824	+2.54	-10.0	16.3	39.5
Dec. 9	14 17.28	-05 52.1	2.426	1.835	+2.51	-8.9	16.3	43.1
Dec. 19	14 42.38	-07 20.7	2.379	1.850	+2.46	-7.5	16.4	46.8
Dec. 29	15 06.96	-08 35.6	2.331	1.871	+2.39	-6.0	16.4	50.8
Jan. 8	15 30.81	-09 36.0	2.283	1.897	+2.29	-4.5	16.5	54.9
Jan. 18	15 53.74	-10 21.4	2.233	1.927	+2.18	-3.0	16.5	59.3
Jan. 28	16 15.51	-10 51.9	2.182	1.962	+2.04	-1.6	16.6	64.0
Feb. 7	16 35.86	-11 08.2	2.128	2.001	+1.87	-0.3	16.7	69.1
Feb. 17	16 54.58	-11 11.5	2.072	2.043	+1.68	+0.8	16.8	74.5
Feb. 27	17 11.39	-11 03.4	2.014	2.088	+1.47	+1.7	16.9	80.3
Mar. 9	17 26.05	-10 46.0	1.954	2.137	+1.23	+2.4	17.0	86.5
Mar. 19	17 38.31	-10 21.7	1.893	2.188	+0.96	+2.9	17.1	93.2
Mar. 29	17 47.92	-09 52.9	1.832	2.241	+0.68	+3.0	17.2	100.5

Comet P/2004 V1 (Skiff)

Epoch = 2014 July 2.0 TT
T = 2014 Nov. 19.37704 TT
Peri. = 144.98330 e = 0.6958971
Node = 241.99650 2000.0 a = 4.6139494 AU
Incl. = 11.53223 n = 0.09944772
q = 1.4031154 AU P = 9.91 years

m1 = 12.8 + 5 log(Delta) + 25.0 log(r(t-40))

0h TT 2014/15	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ' / °	Elong. °
Jan. 3	18 10.39	-19 10.9	4.431	3.469	-0.43	-1.0	.	19.7/ 85	10.7
Jan. 13	18 24.24	-18 53.4	4.326	3.400	-0.46	-1.2	.	20.1/ 84	17.3
Jan. 23	18 38.27	-18 29.4	4.204	3.329	-0.49	-1.4	.	20.4/ 82	24.0
Feb. 2	18 52.42	-17 58.7	4.066	3.258	-0.53	-1.6	.	20.6/ 80	30.7
Feb. 12	19 06.58	-17 20.9	3.914	3.186	-0.57	-1.9	.	20.7/ 78	37.4
Feb. 22	19 20.70	-16 36.1	3.749	3.114	-0.61	-2.2	.	20.8/ 76	44.0
Mar. 4	19 34.69	-15 44.0	3.573	3.040	-0.66	-2.5	.	20.8/ 74	50.5
Mar. 14	19 48.46	-14 44.6	3.387	2.966	-0.72	-2.9	.	20.7/ 72	57.0
Mar. 24	20 01.95	-13 37.9	3.195	2.891	-0.78	-3.4	.	20.5/ 69	63.5
Apr. 3	20 15.07	-12 24.0	2.997	2.816	-0.85	-3.9	.	20.3/ 67	70.0
Apr. 13	20 27.72	-11 02.9	2.797	2.740	-0.93	-4.5	.	19.9/ 64	76.4
Apr. 23	20 39.82	-09 34.6	2.595	2.664	-1.03	-5.1	.	19.4/ 61	82.8
May 3	20 51.26	-07 59.4	2.394	2.587	-1.13	-5.9	.	18.8/ 57	89.3
May 13	21 01.89	-06 17.3	2.197	2.509	-1.26	-6.7	.	18.1/ 53	95.8
May 23	21 11.58	-04 28.7	2.004	2.432	-1.41	-7.7	.	17.2/ 48	102.4
June 2	21 20.13	-02 33.8	1.818	2.354	-1.59	-8.9	.	16.1/ 42	109.1
June 12	21 27.31	-00 33.4	1.641	2.277	-1.79	-10.2	.	15.0/ 34	115.9
June 22	21 32.88	+01 31.5	1.475	2.200	-2.04	-11.8	.	13.9/ 23	122.9
July 2	21 36.51	+03 38.9	1.322	2.123	-2.32	-13.7	.	12.9/ 10	130.0
July 12	21 37.95	+05 45.6	1.182	2.047	-2.64	-16.1	22.5	12.3/353	137.0
July 22	21 36.96	+07 47.3	1.059	1.972	-2.99	-18.9	21.9	12.1/335	143.8
Aug. 1	21 33.47	+09 37.1	0.952	1.899	-3.35	-22.2	21.3	12.2/317	149.6
Aug. 11	21 27.83	+11 06.6	0.864	1.828	-3.68	-26.1	20.7	12.0/301	153.4
Aug. 21	21 20.83	+12 07.6	0.794	1.759	-3.93	-30.1	20.1	10.6/284	153.8
Aug. 31	21 13.81	+12 33.3	0.741	1.694	-4.08	-33.8	19.5	7.8/262	150.4
Sept.10	21 08.56	+12 22.7	0.704	1.633	-4.12	-36.6	19.0	5.0/212	144.6
Sept.20	21 06.76	+11 40.6	0.681	1.577	-4.07	-38.1	18.5	7.8/145	137.9
Sept.30	21 09.76	+10 36.4	0.669	1.528	-3.99	-38.0	18.1	14.7/120	131.1
Oct. 10	21 18.35	+09 22.0	0.667	1.485	-3.92	-36.6	17.6	22.4/109	125.0
Oct. 20	21 32.63	+08 08.4	0.672	1.450	-3.90	-34.1	17.3	30.0/102	119.6
Oct. 30	21 52.34	+07 04.7	0.684	1.425	-3.92	-30.9	16.9	36.8/ 97	115.0
Nov. 9	22 16.84	+06 18.1	0.705	1.409	-3.98	-27.4	16.6	42.3/ 93	111.3
Nov. 19	22 45.14	+05 52.6	0.734	1.403	-4.04	-23.8	16.4	46.3/ 90	108.2
Nov. 29	23 16.17	+05 50.0	0.774	1.408	-4.06	-20.3	16.3	48.7/ 87	105.5
Dec. 9	23 48.78	+06 09.5	0.827	1.423	-4.03	-17.0	16.2	49.5/ 85	103.2
Dec. 19	00 21.89	+06 47.9	0.892	1.448	-3.92	-13.9	16.3	49.1/ 83	100.9
Dec. 29	00 54.71	+07 40.8	0.971	1.482	-3.74	-11.1	16.4	47.8/ 82	98.6
Jan. 8	01 26.65	+08 43.3	1.064	1.524	-3.51	-8.5	16.6	46.0/ 81	96.1
Jan. 18	01 57.40	+09 50.5	1.171	1.573	-3.25	-6.3	17.0	44.0/ 80	93.4
Jan. 28	02 26.88	+10 58.2	1.289	1.629	-2.98	-4.4	17.4	41.9/ 80	90.5
Feb. 7	02 55.08	+12 03.2	1.420	1.689	-2.71	-2.7	17.8	40.0/ 81	87.2
Feb. 17	03 22.06	+13 02.9	1.560	1.754	-2.46	-1.3	18.3	38.1/ 81	83.8
Feb. 27	03 47.96	+13 55.4	1.710	1.822	-2.22	-0.2	18.9	36.5/ 82	80.1
Mar. 9	04 12.86	+14 39.4	1.866	1.893	-2.00	+0.7	19.5	34.9/ 84	76.2
Mar. 19	04 36.84	+15 14.2	2.029	1.966	-1.80	+1.5	20.0	33.6/ 85	72.1
Mar. 29	04 59.99	+15 39.3	2.196	2.041	-1.62	+2.0	20.6	32.3/ 87	67.9

Comet C/2013 P3 (Palomar)

Epoch = 2014 July 2.0 TT
T = 2014 Nov. 23.97310 TT
Peri. = 177.19091
Node = 177.27703 2000.0
Incl. = 93.90120
q = 8.6465099 AU
e = 1.0009613

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	23 00.18	+15 00.9	9.120	8.852	+0.30	-3.5	18.9	71.2
Jan. 13	23 03.21	+14 25.9	9.259	8.840	+0.35	-2.9	18.9	62.0
Jan. 23	23 06.70	+13 57.3	9.386	8.828	+0.39	-2.3	18.9	53.0
Feb. 2	23 10.56	+13 34.6	9.497	8.817	+0.42	-1.7	18.9	44.2
Feb. 12	23 14.71	+13 17.4	9.589	8.805	+0.44	-1.3	19.0	35.7
Feb. 22	23 19.07	+13 04.9	9.659	8.795	+0.45	-0.8	19.0	27.6
Mar. 4	23 23.55	+12 56.4	9.705	8.784	+0.45	-0.5	19.0	20.6
Mar. 14	23 28.07	+12 51.3	9.727	8.774	+0.45	-0.3	19.0	15.7
Mar. 24	23 32.57	+12 48.7	9.723	8.764	+0.44	-0.1	19.0	15.0
Apr. 3	23 36.96	+12 47.8	9.694	8.755	+0.42	0.0	19.0	19.1
Apr. 13	23 41.16	+12 48.1	9.639	8.746	+0.40	0.0	18.9	25.6
Apr. 23	23 45.12	+12 48.5	9.561	8.737	+0.36	0.0	18.9	33.3
May 3	23 48.76	+12 48.5	9.460	8.729	+0.32	-0.1	18.9	41.4
May 13	23 52.00	+12 47.2	9.339	8.721	+0.28	-0.3	18.9	49.8
May 23	23 54.79	+12 43.8	9.201	8.714	+0.23	-0.6	18.8	58.5
June 2	23 57.06	+12 37.6	9.048	8.707	+0.17	-1.0	18.8	67.3
June 12	23 58.74	+12 27.8	8.884	8.700	+0.10	-1.4	18.7	76.3
June 22	23 59.78	+12 13.6	8.714	8.694	+0.04	-1.9	18.7	85.5
July 2	00 00.15	+11 54.4	8.541	8.688	-0.03	-2.5	18.6	94.9
July 12	23 59.81	+11 29.5	8.371	8.683	-0.11	-3.1	18.6	104.6
July 22	23 58.76	+10 58.4	8.208	8.677	-0.18	-3.8	18.6	114.4
Aug. 1	23 57.01	+10 20.8	8.058	8.673	-0.24	-4.4	18.5	124.4
Aug. 11	23 54.61	+09 36.6	7.926	8.668	-0.30	-5.1	18.5	134.7
Aug. 21	23 51.64	+08 46.0	7.815	8.664	-0.34	-5.6	18.4	145.1
Aug. 31	23 48.21	+07 49.6	7.732	8.661	-0.37	-6.1	18.4	155.5
Sept. 10	23 44.48	+06 48.6	7.679	8.658	-0.39	-6.4	18.4	165.6
Sept. 20	23 40.60	+05 44.1	7.658	8.655	-0.38	-6.6	18.4	172.7
Sept. 30	23 36.76	+04 37.9	7.670	8.653	-0.36	-6.6	18.4	168.0
Oct. 10	23 33.14	+03 31.6	7.716	8.651	-0.32	-6.5	18.4	158.1
Oct. 20	23 29.91	+02 27.1	7.794	8.649	-0.27	-6.1	18.4	147.4
Oct. 30	23 27.21	+01 25.9	7.900	8.648	-0.21	-5.7	18.5	136.6
Nov. 9	23 25.15	+00 29.3	8.030	8.647	-0.14	-5.1	18.5	125.8
Nov. 19	23 23.79	-00 21.9	8.180	8.647	-0.06	-4.5	18.5	115.1
Nov. 29	23 23.19	-01 06.9	8.345	8.647	+0.01	-3.9	18.6	104.6
Dec. 9	23 23.34	-01 45.7	8.518	8.647	+0.09	-3.3	18.6	94.3
Dec. 19	23 24.21	-02 18.2	8.693	8.648	+0.16	-2.7	18.7	84.1
Dec. 29	23 25.78	-02 44.8	8.867	8.649	+0.22	-2.1	18.7	74.1
Jan. 8	23 27.97	-03 05.9	9.032	8.651	+0.27	-1.6	18.7	64.3
Jan. 18	23 30.71	-03 22.3	9.185	8.652	+0.32	-1.2	18.8	54.6
Jan. 28	23 33.93	-03 34.5	9.322	8.655	+0.36	-0.9	18.8	45.1
Feb. 7	23 37.56	-03 43.3	9.439	8.658	+0.39	-0.6	18.8	35.7
Feb. 17	23 41.49	-03 49.5	9.534	8.661	+0.42	-0.4	18.9	26.5
Feb. 27	23 45.67	-03 53.8	9.604	8.664	+0.43	-0.3	18.9	17.4
Mar. 9	23 50.00	-03 57.2	9.648	8.668	+0.44	-0.3	18.9	8.7
Mar. 19	23 54.41	-04 00.2	9.666	8.673	+0.44	-0.4	18.9	3.2
Mar. 29	23 58.82	-04 03.8	9.658	8.677	+0.43	-0.5	18.9	10.3

Comet 193P/LINEAR-NEAT

Epoch = 2014 July 2.0 TT
T = 2014 Nov. 24.78156 TT
Peri. = 8.46173 e = 0.3944047
Node = 335.19442 2000.0 a = 3.5770008 AU
Incl. = 10.68653 n = 0.14568858
q = 2.1662149 AU P = 6.77 years

m1 = 9.8 + 5 log(Delta) + 20.0 log(r(t-50))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	17 10.23	-31 13.6	3.928	3.060	+1.79	-2.1	23.0	24.4
Jan. 13	17 28.14	-31 34.4	3.827	3.021	+1.80	-1.5	22.9	30.4
Jan. 23	17 46.13	-31 49.4	3.714	2.982	+1.80	-0.9	22.7	36.5
Feb. 2	18 04.11	-31 58.5	3.590	2.943	+1.78	-0.3	22.5	42.7
Feb. 12	18 21.94	-32 01.9	3.456	2.904	+1.76	+0.2	22.3	48.9
Feb. 22	18 39.50	-31 59.9	3.314	2.865	+1.72	+0.7	22.1	55.1
Mar. 4	18 56.66	-31 52.9	3.164	2.826	+1.66	+1.1	21.9	61.4
Mar. 14	19 13.27	-31 41.8	3.009	2.788	+1.59	+1.4	21.7	67.7
Mar. 24	19 29.19	-31 27.4	2.850	2.750	+1.51	+1.7	21.4	74.1
Apr. 3	19 44.25	-31 10.8	2.689	2.713	+1.40	+1.8	21.2	80.7
Apr. 13	19 58.25	-30 53.2	2.527	2.675	+1.28	+1.7	21.0	87.4
Apr. 23	20 11.02	-30 36.1	2.366	2.639	+1.13	+1.5	20.7	94.2
May 3	20 22.29	-30 20.8	2.209	2.603	+0.95	+1.2	20.4	101.4
May 13	20 31.81	-30 08.8	2.057	2.567	+0.75	+0.8	20.2	108.8
May 23	20 39.28	-30 01.1	1.912	2.533	+0.51	+0.3	19.9	116.6
June 2	20 44.36	-29 58.5	1.777	2.499	+0.24	-0.2	19.6	124.9
June 12	20 46.74	-30 00.9	1.654	2.467	-0.05	-0.6	19.3	133.6
June 22	20 46.20	-30 06.7	1.547	2.435	-0.35	-0.6	19.1	142.8
July 2	20 42.65	-30 13.1	1.457	2.405	-0.63	-0.2	18.8	152.4
July 12	20 36.38	-30 15.3	1.389	2.376	-0.83	+0.7	18.6	161.8
July 22	20 28.09	-30 08.1	1.343	2.348	-0.92	+2.1	18.4	168.9
Aug. 1	20 18.90	-29 46.8	1.322	2.322	-0.87	+3.7	18.2	167.1
Aug. 11	20 10.22	-29 09.4	1.325	2.298	-0.69	+5.3	18.1	158.5
Aug. 21	20 03.35	-28 16.7	1.350	2.275	-0.41	+6.5	18.1	148.6
Aug. 31	19 59.23	-27 11.8	1.395	2.254	-0.08	+7.4	18.0	138.7
Sept. 10	19 58.40	-25 58.2	1.458	2.236	+0.25	+7.9	18.0	129.3
Sept. 20	20 00.89	-24 38.8	1.534	2.219	+0.56	+8.4	18.0	120.5
Sept. 30	20 06.49	-23 15.1	1.621	2.204	+0.84	+8.7	18.1	112.2
Oct. 10	20 14.87	-21 47.8	1.715	2.192	+1.07	+9.1	18.1	104.6
Oct. 20	20 25.58	-20 16.7	1.816	2.182	+1.27	+9.6	18.2	97.5
Oct. 30	20 38.23	-18 41.0	1.920	2.174	+1.42	+10.1	18.2	90.8
Nov. 9	20 52.45	-17 00.3	2.027	2.169	+1.54	+10.6	18.3	84.5
Nov. 19	21 07.90	-15 14.0	2.135	2.167	+1.64	+11.2	18.3	78.5
Nov. 29	21 24.32	-13 21.7	2.243	2.166	+1.72	+11.8	18.4	72.8
Dec. 9	21 41.47	-11 23.6	2.350	2.169	+1.77	+12.4	18.4	67.2
Dec. 19	21 59.17	-09 19.8	2.456	2.173	+1.81	+12.9	18.5	61.9
Dec. 29	22 17.28	-07 10.8	2.560	2.181	+1.84	+13.3	18.6	56.7
Jan. 8	22 35.68	-04 57.4	2.661	2.190	+1.86	+13.7	18.6	51.6
Jan. 18	22 54.28	-02 40.5	2.759	2.202	+1.88	+14.0	18.7	46.6
Jan. 28	23 13.03	-00 20.8	2.852	2.216	+1.89	+14.1	18.8	41.7
Feb. 7	23 31.89	+02 00.4	2.941	2.233	+1.89	+14.2	18.9	36.9
Feb. 17	23 50.82	+04 22.0	3.025	2.251	+1.90	+14.1	19.0	32.2
Feb. 27	00 09.81	+06 43.1	3.103	2.272	+1.90	+13.9	19.1	27.5
Mar. 9	00 28.86	+09 02.3	3.175	2.294	+1.91	+13.7	19.2	22.9
Mar. 19	00 47.95	+11 18.9	3.241	2.318	+1.91	+13.3	19.3	18.5
Mar. 29	01 07.10	+13 31.6	3.299	2.344	+1.92	+12.8	19.4	14.1

Comet 110P/Hartley

Epoch = 2014 July 2.0 TT
T = 2014 Dec. 17.80244 TT
Peri. = 167.75199 e = 0.3143060
Node = 287.71349 2000.0 a = 3.6100495 AU
Incl. = 11.69378 n = 0.14369258
q = 2.4753893 AU P = 6.86 years

m1 = 5.6 + 5 log(Delta) + 22.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	23 17.67	+07 24.1	3.336	3.160	+1.02	+4.1	19.5	71.3
Jan. 13	23 27.91	+08 04.7	3.437	3.131	+1.12	+5.0	19.4	63.8
Jan. 23	23 39.14	+08 54.4	3.530	3.101	+1.21	+5.8	19.4	56.7
Feb. 2	23 51.25	+09 52.3	3.613	3.071	+1.29	+6.5	19.4	49.8
Feb. 12	00 04.13	+10 57.3	3.685	3.042	+1.36	+7.1	19.3	43.2
Feb. 22	00 17.68	+12 08.1	3.745	3.013	+1.42	+7.6	19.2	36.9
Mar. 4	00 31.85	+13 23.9	3.793	2.984	+1.47	+7.9	19.2	30.8
Mar. 14	00 46.58	+14 43.4	3.827	2.956	+1.52	+8.2	19.1	24.9
Mar. 24	01 01.82	+16 05.5	3.849	2.927	+1.57	+8.4	19.0	19.4
Apr. 3	01 17.54	+17 29.2	3.857	2.900	+1.62	+8.4	18.9	14.4
Apr. 13	01 33.73	+18 53.3	3.853	2.872	+1.66	+8.4	18.8	10.3
Apr. 23	01 50.34	+20 16.9	3.836	2.845	+1.70	+8.2	18.7	8.4
May 3	02 07.38	+21 39.0	3.807	2.819	+1.74	+7.9	18.6	9.7
May 13	02 24.82	+22 58.4	3.766	2.793	+1.78	+7.6	18.5	13.3
May 23	02 42.62	+24 14.3	3.714	2.768	+1.82	+7.1	18.4	17.8
June 2	03 00.78	+25 25.7	3.652	2.743	+1.84	+6.6	18.3	22.6
June 12	03 19.22	+26 31.6	3.579	2.719	+1.87	+6.0	18.1	27.5
June 22	03 37.91	+27 31.4	3.497	2.696	+1.89	+5.3	18.0	32.5
July 2	03 56.77	+28 24.3	3.407	2.674	+1.89	+4.5	17.9	37.6
July 12	04 15.70	+29 09.7	3.308	2.653	+1.89	+3.7	17.7	42.8
July 22	04 34.61	+29 47.1	3.202	2.633	+1.88	+2.9	17.6	48.0
Aug. 1	04 53.37	+30 16.2	3.089	2.613	+1.84	+2.1	17.4	53.3
Aug. 11	05 11.80	+30 37.0	2.971	2.595	+1.80	+1.3	17.3	58.8
Aug. 21	05 29.76	+30 49.6	2.847	2.578	+1.73	+0.5	17.1	64.5
Aug. 31	05 47.03	+30 54.2	2.719	2.562	+1.63	-0.3	17.0	70.3
Sept.10	06 03.37	+30 51.6	2.588	2.547	+1.52	-0.9	16.8	76.4
Sept.20	06 18.57	+30 42.5	2.456	2.534	+1.37	-1.5	16.6	82.8
Sept.30	06 32.32	+30 27.9	2.322	2.522	+1.20	-1.9	16.5	89.6
Oct. 10	06 44.30	+30 08.9	2.190	2.511	+0.99	-2.2	16.3	96.7
Oct. 20	06 54.20	+29 46.7	2.060	2.501	+0.74	-2.4	16.1	104.4
Oct. 30	07 01.64	+29 22.3	1.936	2.493	+0.46	-2.6	16.0	112.6
Nov. 9	07 06.28	+28 56.3	1.821	2.487	+0.15	-2.7	15.8	121.5
Nov. 19	07 07.82	+28 28.8	1.717	2.482	-0.17	-3.0	15.7	131.2
Nov. 29	07 06.13	+27 59.2	1.628	2.478	-0.48	-3.3	15.5	141.5
Dec. 9	07 01.37	+27 26.0	1.560	2.476	-0.73	-3.8	15.4	152.6
Dec. 19	06 54.09	+26 47.7	1.514	2.475	-0.88	-4.4	15.4	164.2
Dec. 29	06 45.25	+26 03.3	1.495	2.476	-0.91	-5.0	15.3	175.6
Jan. 8	06 36.20	+25 13.3	1.503	2.479	-0.80	-5.3	15.4	170.8
Jan. 18	06 28.24	+24 20.1	1.539	2.483	-0.58	-5.3	15.4	159.1
Jan. 28	06 22.45	+23 26.8	1.600	2.488	-0.30	-5.0	15.5	147.6
Feb. 7	06 19.49	+22 36.3	1.683	2.495	+0.01	-4.6	15.7	136.8
Feb. 17	06 19.54	+21 50.2	1.784	2.503	+0.30	-4.2	15.8	126.7
Feb. 27	06 22.54	+21 08.7	1.899	2.513	+0.57	-3.8	16.0	117.4
Mar. 9	06 28.20	+20 30.9	2.024	2.524	+0.79	-3.6	16.2	108.7
Mar. 19	06 36.13	+19 55.2	2.157	2.537	+0.99	-3.5	16.4	100.6
Mar. 29	06 46.00	+19 19.9	2.294	2.551	+1.14	-3.6	16.6	93.1

Comet P/2000 QJ46 (LINEAR) [Orbit 2]

Epoch = 2014 July 2.0 TT
T = 2014 Dec. 25.42905 TT
Peri. = 222.16704 e = 0.6746923
Node = 158.08939 2000.0 a = 5.8066962 AU
Incl. = 4.42598 n = 0.07043855
q = 1.8889630 AU P = 13.99 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	18 36.22	-20 07.1	4.700	3.721	-0.43	-0.1	.	19.1/ 87	4.9
Jan. 13	18 49.73	-19 55.2	4.617	3.657	-0.46	-0.2	.	19.4/ 86	11.2
Jan. 23	19 03.42	-19 38.1	4.516	3.593	-0.48	-0.4	.	19.7/ 84	18.0
Feb. 2	19 17.24	-19 15.7	4.399	3.529	-0.51	-0.6	.	19.8/ 83	24.8
Feb. 12	19 31.07	-18 48.2	4.266	3.464	-0.55	-0.8	.	19.9/ 81	31.6
Feb. 22	19 44.86	-18 15.9	4.119	3.399	-0.58	-1.0	.	19.8/ 80	38.3
Mar. 4	19 58.51	-17 38.9	3.960	3.334	-0.62	-1.2	.	19.7/ 78	45.1
Mar. 14	20 11.94	-16 57.9	3.790	3.269	-0.66	-1.5	22.9	19.4/ 77	51.8
Mar. 24	20 25.08	-16 13.4	3.611	3.204	-0.71	-1.8	22.6	19.0/ 76	58.5
Apr. 3	20 37.85	-15 26.1	3.425	3.139	-0.76	-2.2	22.4	18.5/ 75	65.2
Apr. 13	20 50.13	-14 36.8	3.233	3.073	-0.82	-2.5	22.1	17.8/ 74	71.9
Apr. 23	21 01.85	-13 46.4	3.039	3.008	-0.89	-2.9	21.8	16.9/ 73	78.7
May 3	21 12.88	-12 56.3	2.844	2.943	-0.96	-3.4	21.5	15.7/ 72	85.6
May 13	21 23.10	-12 07.5	2.649	2.878	-1.05	-3.8	21.2	14.3/ 72	92.6
May 23	21 32.36	-11 21.8	2.458	2.814	-1.14	-4.4	20.8	12.6/ 71	99.9
June 2	21 40.46	-10 40.8	2.272	2.750	-1.25	-5.0	20.5	10.5/ 71	107.4
June 12	21 47.22	-10 06.6	2.093	2.687	-1.38	-5.6	20.1	8.1/ 72	115.1
June 22	21 52.42	-09 41.3	1.925	2.624	-1.51	-6.3	19.8	5.2/ 75	123.3
July 2	21 55.80	-09 27.5	1.768	2.563	-1.67	-7.0	19.4	2.0/ 89	132.0
July 12	21 57.17	-09 27.2	1.627	2.502	-1.83	-7.8	19.0	1.8/216	141.2
July 22	21 56.43	-09 42.0	1.504	2.443	-1.99	-8.5	18.7	5.2/234	151.0
Aug. 1	21 53.61	-10 12.5	1.401	2.385	-2.15	-9.0	18.3	8.1/236	161.3
Aug. 11	21 49.06	-10 57.1	1.320	2.329	-2.28	-9.4	18.0	9.9/236	172.1
Aug. 21	21 43.43	-11 51.9	1.264	2.274	-2.37	-9.4	17.8	10.3/235	176.1
Aug. 31	21 37.68	-12 50.8	1.231	2.222	-2.41	-9.1	17.5	8.8/231	165.1
Sept.10	21 32.97	-13 46.6	1.222	2.173	-2.39	-8.6	17.3	6.0/220	154.1
Sept.20	21 30.33	-14 32.7	1.233	2.126	-2.33	-8.0	17.2	3.2/175	143.5
Sept.30	21 30.54	-15 04.1	1.262	2.083	-2.25	-7.5	17.1	5.2/105	133.6
Oct. 10	21 34.02	-15 17.6	1.305	2.043	-2.15	-7.0	17.0	9.8/ 87	124.4
Oct. 20	21 40.79	-15 11.8	1.358	2.007	-2.06	-6.8	17.0	14.6/ 80	116.1
Oct. 30	21 50.69	-14 46.2	1.420	1.975	-1.98	-6.7	16.9	19.0/ 77	108.5
Nov. 9	22 03.38	-14 01.1	1.489	1.948	-1.90	-6.8	16.9	22.8/ 74	101.7
Nov. 19	22 18.41	-12 57.3	1.562	1.926	-1.84	-7.0	16.9	26.2/ 72	95.4
Nov. 29	22 35.40	-11 36.0	1.639	1.908	-1.78	-7.2	17.0	29.0/ 71	89.7
Dec. 9	22 53.96	-09 58.9	1.720	1.897	-1.73	-7.5	17.0	31.3/ 70	84.4
Dec. 19	23 13.74	-08 08.0	1.804	1.890	-1.68	-7.7	17.1	33.2/ 69	79.4
Dec. 29	23 34.46	-06 05.7	1.892	1.889	-1.63	-7.8	17.2	34.6/ 68	74.8
Jan. 8	23 55.89	-03 54.7	1.982	1.894	-1.59	-7.9	17.3	35.6/ 68	70.4
Jan. 18	00 17.83	-01 37.9	2.076	1.904	-1.54	-7.9	17.5	36.3/ 67	66.1
Jan. 28	00 40.16	+00 42.1	2.174	1.920	-1.50	-7.7	17.6	36.7/ 67	62.0
Feb. 7	01 02.76	+03 02.4	2.274	1.941	-1.45	-7.4	17.8	36.8/ 68	58.0
Feb. 17	01 25.55	+05 20.2	2.377	1.967	-1.41	-7.1	18.0	36.7/ 68	54.1
Feb. 27	01 48.47	+07 33.2	2.482	1.997	-1.37	-6.6	18.2	36.3/ 69	50.1
Mar. 9	02 11.45	+09 39.3	2.589	2.032	-1.32	-6.0	18.5	35.9/ 70	46.2
Mar. 19	02 34.43	+11 36.7	2.697	2.071	-1.27	-5.4	18.7	35.3/ 72	42.2
Mar. 29	02 57.39	+13 23.9	2.806	2.113	-1.23	-4.8	18.9	34.6/ 73	38.2

Comet 15P/Finlay

Epoch = 2014 July 2.0 TT
T = 2014 Dec. 27.06823 TT
Peri. = 347.55575 e = 0.7202108
Node = 13.78103 2000.0 a = 3.4876954 AU
Incl. = 6.79907 n = 0.15131997
q = 0.9758195 AU P = 6.51 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 3	15 19.92	-21 13.3	4.285	3.719	+0.99	-4.6	49.3
Jan. 13	15 29.83	-21 59.1	4.097	3.656	+0.95	-4.4	57.0
Jan. 23	15 39.29	-22 42.7	3.898	3.592	+0.88	-4.1	64.9
Feb. 2	15 48.11	-23 23.8	3.689	3.527	+0.80	-3.9	22.8 72.9
Feb. 12	15 56.08	-24 02.5	3.474	3.461	+0.69	-3.6	22.6 81.1
Feb. 22	16 03.00	-24 38.9	3.255	3.394	+0.56	-3.4	22.3 89.5
Mar. 4	16 08.58	-25 13.1	3.036	3.325	+0.39	-3.2	22.0 98.2
Mar. 14	16 12.51	-25 44.9	2.820	3.255	+0.20	-2.9	21.7 107.2
Mar. 24	16 14.47	-26 14.2	2.610	3.183	-0.04	-2.6	21.4 116.5
Apr. 3	16 14.11	-26 40.2	2.412	3.110	-0.30	-2.2	21.1 126.4
Apr. 13	16 11.10	-27 01.9	2.228	3.036	-0.58	-1.5	20.8 136.7
Apr. 23	16 05.25	-27 17.4	2.063	2.961	-0.87	-0.7	20.4 147.4
May 3	15 56.54	-27 24.0	1.922	2.883	-1.12	+0.5	20.1 158.5
May 13	15 45.32	-27 19.2	1.806	2.805	-1.29	+1.8	19.8 169.0
May 23	15 32.37	-27 01.1	1.720	2.725	-1.35	+3.1	19.5 171.2
June 2	15 18.82	-26 30.4	1.662	2.643	-1.28	+4.0	19.2 161.3
June 12	15 06.05	-25 50.3	1.632	2.560	-1.08	+4.3	19.0 149.5
June 22	14 55.25	-25 06.9	1.626	2.475	-0.79	+4.0	18.8 137.8
July 2	14 47.35	-24 26.5	1.640	2.389	-0.45	+3.2	18.5 126.5
July 12	14 42.84	-23 54.8	1.666	2.301	-0.10	+1.9	18.3 116.0
July 22	14 41.86	-23 35.4	1.701	2.211	+0.25	+0.6	18.1 106.2
Aug. 1	14 44.37	-23 29.9	1.738	2.121	+0.58	-0.8	17.9 97.3
Aug. 11	14 50.19	-23 38.2	1.773	2.028	+0.90	-2.1	17.7 89.1
Aug. 21	14 59.16	-23 59.0	1.803	1.935	+1.20	-3.1	17.4 81.6
Aug. 31	15 11.14	-24 30.4	1.826	1.840	+1.49	-3.9	17.1 74.8
Sept. 10	15 26.08	-25 09.7	1.839	1.745	+1.79	-4.4	16.8 68.6
Sept. 20	15 43.94	-25 53.7	1.842	1.650	+2.09	-4.5	16.4 63.0
Sept. 30	16 04.83	-26 38.6	1.833	1.554	+2.40	-4.1	16.0 58.0
Oct. 10	16 28.85	-27 19.6	1.812	1.460	+2.73	-3.1	15.6 53.6
Oct. 20	16 56.14	-27 50.9	1.780	1.368	+3.07	-1.5	15.1 49.7
Oct. 30	17 26.85	-28 05.4	1.739	1.279	+3.42	+1.1	14.6 46.6
Nov. 9	18 01.02	-27 54.6	1.689	1.196	+3.75	+4.6	14.1 44.1
Nov. 19	18 38.52	-27 08.6	1.632	1.122	+4.05	+9.1	13.6 42.4
Nov. 29	19 19.05	-25 37.4	1.573	1.059	+4.29	+14.5	13.2 41.4
Dec. 9	20 01.96	-23 12.6	1.515	1.011	+4.45	+20.3	12.8 41.3
Dec. 19	20 46.47	-19 49.3	1.463	0.983	+4.53	+26.0	12.5 41.9
Dec. 29	21 31.75	-15 29.1	1.421	0.976	+4.53	+30.7	12.4 43.3
Jan. 8	22 17.02	-10 21.6	1.397	0.992	+4.47	+33.8	12.5 45.2
Jan. 18	23 01.75	-04 43.9	1.394	1.028	+4.38	+34.6	12.7 47.4
Jan. 28	23 45.58	+01 02.5	1.417	1.081	+4.26	+33.3	13.1 49.6
Feb. 7	00 28.20	+06 35.7	1.465	1.149	+4.12	+30.2	13.5 51.5
Feb. 17	01 09.43	+11 38.2	1.540	1.227	+3.97	+26.1	14.1 52.8
Feb. 27	01 49.08	+15 59.4	1.637	1.312	+3.79	+21.6	14.6 53.3
Mar. 9	02 27.00	+19 35.3	1.754	1.403	+3.61	+17.2	15.2 53.0
Mar. 19	03 03.10	+22 27.0	1.887	1.496	+3.42	+13.1	15.8 52.0
Mar. 29	03 37.35	+24 38.3	2.031	1.591	+3.24	+9.6	16.4 50.3

Comet 287P/Christensen

Epoch = 2014 July 2.0 TT
T = 2014 Dec. 28.53661 TT
Peri. = 189.10402 e = 0.2692705
Node = 139.05872 2000.0 a = 4.1793490 AU
Incl. = 16.29999 n = 0.11535625
q = 3.0539736 AU P = 8.54 years

m1 = 9.6 + 5 log(Delta) + 17.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	17 44.39	-12 25.1	4.429	3.517	+1.40	-0.8	22.4	19.5
Jan. 13	17 58.35	-12 33.4	4.360	3.495	+1.38	-0.2	22.3	25.3
Jan. 23	18 12.17	-12 35.1	4.276	3.474	+1.36	+0.5	22.2	31.4
Feb. 2	18 25.76	-12 30.4	4.178	3.453	+1.32	+1.1	22.1	37.8
Feb. 12	18 39.01	-12 19.9	4.068	3.432	+1.28	+1.6	22.0	44.4
Feb. 22	18 51.79	-12 04.0	3.946	3.412	+1.22	+2.0	21.9	51.0
Mar. 4	19 03.99	-11 43.6	3.814	3.392	+1.15	+2.4	21.8	57.8
Mar. 14	19 15.48	-11 19.6	3.673	3.372	+1.07	+2.7	21.7	64.8
Mar. 24	19 26.13	-10 53.1	3.526	3.352	+0.97	+2.8	21.5	71.9
Apr. 3	19 35.80	-10 25.3	3.374	3.334	+0.85	+2.8	21.4	79.2
Apr. 13	19 44.33	-09 57.7	3.219	3.315	+0.72	+2.6	21.2	86.7
Apr. 23	19 51.58	-09 31.8	3.063	3.297	+0.58	+2.2	21.1	94.4
May 3	19 57.36	-09 09.6	2.910	3.279	+0.41	+1.7	20.9	102.5
May 13	20 01.51	-08 53.0	2.762	3.262	+0.24	+0.9	20.8	110.9
May 23	20 03.89	-08 44.0	2.623	3.246	+0.05	-0.1	20.6	119.7
June 2	20 04.39	-08 44.8	2.495	3.230	-0.14	-1.2	20.5	128.9
June 12	20 02.97	-08 57.0	2.383	3.214	-0.32	-2.5	20.4	138.5
June 22	19 59.73	-09 21.9	2.289	3.199	-0.48	-3.8	20.2	148.4
July 2	19 54.92	-09 59.8	2.218	3.185	-0.59	-5.0	20.1	158.4
July 12	19 48.99	-10 49.6	2.172	3.172	-0.64	-5.9	20.1	167.3
July 22	19 42.55	-11 49.0	2.153	3.159	-0.63	-6.6	20.0	170.0
Aug. 1	19 36.28	-12 54.8	2.162	3.146	-0.54	-6.8	20.0	163.0
Aug. 11	19 30.91	-14 03.0	2.197	3.135	-0.39	-6.7	20.0	153.1
Aug. 21	19 27.02	-15 10.3	2.257	3.124	-0.20	-6.3	20.0	142.9
Aug. 31	19 25.04	-16 13.5	2.338	3.114	+0.02	-5.7	20.1	132.9
Sept.10	19 25.22	-17 10.5	2.436	3.104	+0.24	-4.9	20.1	123.2
Sept.20	19 27.59	-17 59.9	2.548	3.096	+0.45	-4.1	20.2	114.0
Sept.30	19 32.09	-18 40.8	2.670	3.088	+0.65	-3.2	20.3	105.2
Oct. 10	19 38.58	-19 12.6	2.799	3.081	+0.83	-2.3	20.4	96.8
Oct. 20	19 46.85	-19 35.1	2.931	3.074	+0.98	-1.3	20.5	88.7
Oct. 30	19 56.68	-19 48.3	3.063	3.069	+1.12	-0.4	20.6	81.0
Nov. 9	20 07.86	-19 52.1	3.194	3.064	+1.23	+0.5	20.6	73.6
Nov. 19	20 20.16	-19 46.7	3.320	3.061	+1.32	+1.4	20.7	66.3
Nov. 29	20 33.41	-19 32.3	3.441	3.058	+1.40	+2.3	20.8	59.3
Dec. 9	20 47.40	-19 09.4	3.554	3.056	+1.46	+3.1	20.8	52.5
Dec. 19	21 01.99	-18 38.3	3.658	3.054	+1.50	+3.9	20.9	45.8
Dec. 29	21 17.03	-17 59.6	3.752	3.054	+1.54	+4.6	21.0	39.2
Jan. 8	21 32.39	-17 14.1	3.834	3.054	+1.56	+5.2	21.0	32.8
Jan. 18	21 47.96	-16 22.4	3.905	3.056	+1.57	+5.7	21.0	26.5
Jan. 28	22 03.67	-15 25.4	3.962	3.058	+1.57	+6.1	21.1	20.3
Feb. 7	22 19.41	-14 24.1	4.007	3.061	+1.57	+6.5	21.1	14.3
Feb. 17	22 35.14	-13 19.4	4.038	3.065	+1.57	+6.7	21.1	8.7
Feb. 27	22 50.80	-12 12.2	4.055	3.069	+1.55	+6.9	21.2	4.8
Mar. 9	23 06.33	-11 03.7	4.059	3.075	+1.54	+6.9	21.2	6.7
Mar. 19	23 21.71	-09 54.7	4.049	3.081	+1.52	+6.8	21.2	11.8
Mar. 29	23 36.88	-08 46.4	4.026	3.088	+1.49	+6.7	21.2	17.5

Comet C/2013 W2 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2015 Jan. 6.81311 TT
Peri. = 306.78596 e = 0.5660337
Node = 180.39842 2000.0 a = 10.2484619 AU
Incl. = 4.54364 n = 0.03004111
q = 4.4474871 AU P = 32.81 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	05 07.57	+17 22.1	4.066	4.972	−0.37	0.0	19.9	154.6
Jan. 13	05 03.90	+17 22.3	4.120	4.947	−0.26	+0.3	19.9	143.7
Jan. 23	05 01.34	+17 25.6	4.197	4.921	−0.12	+0.6	19.9	133.0
Feb. 2	05 00.09	+17 32.0	4.294	4.896	+0.02	+0.9	19.9	122.7
Feb. 12	05 00.28	+17 41.3	4.406	4.872	+0.16	+1.2	19.9	112.7
Feb. 22	05 01.91	+17 53.1	4.529	4.848	+0.30	+1.4	20.0	103.0
Mar. 4	05 04.95	+18 06.6	4.658	4.825	+0.44	+1.5	20.0	93.7
Mar. 14	05 09.33	+18 21.3	4.789	4.802	+0.56	+1.5	20.0	84.8
Mar. 24	05 14.94	+18 36.3	4.918	4.780	+0.67	+1.5	20.1	76.3
Apr. 3	05 21.64	+18 51.1	5.042	4.759	+0.77	+1.4	20.1	68.0
Apr. 13	05 29.34	+19 04.7	5.159	4.738	+0.85	+1.2	20.1	60.0
Apr. 23	05 37.88	+19 16.7	5.265	4.718	+0.93	+1.0	20.1	52.3
May 3	05 47.16	+19 26.4	5.359	4.698	+0.99	+0.7	20.1	44.8
May 13	05 57.07	+19 33.3	5.440	4.679	+1.04	+0.4	20.1	37.5
May 23	06 07.49	+19 37.0	5.506	4.661	+1.08	0.0	20.1	30.4
June 2	06 18.32	+19 37.2	5.557	4.643	+1.11	−0.4	20.1	23.4
June 12	06 29.47	+19 33.6	5.590	4.626	+1.14	−0.7	20.1	16.6
June 22	06 40.84	+19 26.1	5.608	4.610	+1.15	−1.1	20.1	10.0
July 2	06 52.35	+19 14.7	5.608	4.595	+1.16	−1.5	20.1	4.4
July 12	07 03.91	+18 59.4	5.590	4.580	+1.15	−1.9	20.0	5.6
July 22	07 15.44	+18 40.3	5.556	4.566	+1.14	−2.3	20.0	11.6
Aug. 1	07 26.85	+18 17.6	5.505	4.552	+1.12	−2.6	20.0	18.2
Aug. 11	07 38.06	+17 51.6	5.438	4.540	+1.09	−2.9	19.9	25.0
Aug. 21	07 48.99	+17 22.8	5.355	4.528	+1.06	−3.1	19.9	31.9
Aug. 31	07 59.55	+16 51.6	5.257	4.517	+1.01	−3.3	19.8	38.9
Sept. 10	08 09.64	+16 18.6	5.146	4.507	+0.95	−3.4	19.8	46.1
Sept. 20	08 19.17	+15 44.5	5.022	4.497	+0.89	−3.4	19.7	53.5
Sept. 30	08 28.04	+15 10.0	4.887	4.489	+0.81	−3.4	19.6	61.0
Oct. 10	08 36.14	+14 36.0	4.744	4.481	+0.72	−3.3	19.6	68.8
Oct. 20	08 43.34	+14 03.5	4.594	4.474	+0.62	−3.0	19.5	76.9
Oct. 30	08 49.53	+13 33.5	4.439	4.467	+0.50	−2.6	19.4	85.2
Nov. 9	08 54.57	+13 07.1	4.284	4.462	+0.38	−2.2	19.3	93.9
Nov. 19	08 58.35	+12 45.2	4.130	4.458	+0.24	−1.6	19.2	103.0
Nov. 29	09 00.77	+12 29.1	3.984	4.454	+0.10	−1.0	19.1	112.4
Dec. 9	09 01.75	+12 19.4	3.847	4.451	−0.05	−0.3	19.1	122.2
Dec. 19	09 01.29	+12 16.8	3.725	4.449	−0.18	+0.5	19.0	132.4
Dec. 29	08 59.45	+12 21.5	3.623	4.448	−0.30	+1.2	18.9	143.0
Jan. 8	08 56.41	+12 33.0	3.544	4.447	−0.40	+1.7	18.9	153.8
Jan. 18	08 52.43	+12 50.4	3.491	4.448	−0.45	+2.2	18.8	164.7
Jan. 28	08 47.90	+13 12.2	3.468	4.449	−0.46	+2.4	18.8	174.5
Feb. 7	08 43.27	+13 36.5	3.475	4.452	−0.43	+2.5	18.8	170.8
Feb. 17	08 38.99	+14 01.3	3.512	4.455	−0.35	+2.3	18.9	160.2
Feb. 27	08 35.49	+14 24.7	3.577	4.459	−0.24	+2.0	18.9	149.4
Mar. 9	08 33.09	+14 45.0	3.668	4.463	−0.11	+1.6	19.0	138.9
Mar. 19	08 32.02	+15 01.3	3.779	4.469	+0.04	+1.1	19.0	128.6
Mar. 29	08 32.39	+15 12.5	3.908	4.475	+0.18	+0.6	19.1	118.8

Comet C/2013 G9 (Tenagra)

Epoch = 2014 July 2.0 TT
T = 2015 Jan. 14.53007 TT
Peri. = 204.91727
Node = 35.68751 2000.0
Incl. = 146.23438
q = 5.3382494 AU
e = 1.0013412

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	15 36.34	-11 58.7	6.629	6.017	+0.08	-2.1	18.3	48.1
Jan. 13	15 37.17	-12 19.6	6.449	5.984	0.00	-1.8	18.2	57.8
Jan. 23	15 37.13	-12 37.4	6.252	5.951	-0.11	-1.5	18.1	67.8
Feb. 2	15 36.03	-12 51.9	6.043	5.920	-0.23	-1.1	18.0	78.1
Feb. 12	15 33.70	-13 03.0	5.828	5.889	-0.37	-0.7	17.9	88.7
Feb. 22	15 29.97	-13 10.3	5.612	5.858	-0.53	-0.3	17.8	99.6
Mar. 4	15 24.67	-13 13.6	5.402	5.829	-0.69	+0.1	17.7	110.8
Mar. 14	15 17.73	-13 12.6	5.205	5.800	-0.86	+0.6	17.6	122.5
Mar. 24	15 09.13	-13 07.0	5.030	5.772	-1.02	+1.0	17.5	134.4
Apr. 3	14 58.97	-12 56.8	4.882	5.744	-1.15	+1.5	17.4	146.7
Apr. 13	14 47.50	-12 42.2	4.769	5.718	-1.24	+1.8	17.4	159.2
Apr. 23	14 35.08	-12 23.9	4.695	5.692	-1.29	+2.1	17.3	171.8
May 3	14 22.19	-12 02.9	4.663	5.667	-1.28	+2.2	17.3	174.6
May 13	14 09.38	-11 41.0	4.673	5.643	-1.22	+2.1	17.3	162.1
May 23	13 57.17	-11 19.8	4.723	5.619	-1.12	+1.8	17.3	149.6
June 2	13 45.99	-11 01.3	4.809	5.597	-0.98	+1.4	17.3	137.3
June 12	13 36.15	-10 47.1	4.925	5.575	-0.83	+0.9	17.3	125.4
June 22	13 27.81	-10 38.2	5.064	5.554	-0.68	+0.3	17.4	113.9
July 2	13 21.03	-10 35.3	5.219	5.534	-0.53	-0.3	17.4	102.8
July 12	13 15.78	-10 38.6	5.384	5.515	-0.38	-0.9	17.5	92.1
July 22	13 11.93	-10 48.0	5.550	5.497	-0.26	-1.5	17.5	81.8
Aug. 1	13 09.36	-11 03.3	5.713	5.480	-0.14	-2.1	17.6	71.7
Aug. 11	13 07.92	-11 24.1	5.866	5.464	-0.05	-2.6	17.6	62.0
Aug. 21	13 07.44	-11 49.8	6.005	5.448	+0.03	-3.0	17.7	52.5
Aug. 31	13 07.76	-12 20.0	6.126	5.434	+0.10	-3.4	17.7	43.2
Sept. 10	13 08.73	-12 54.1	6.225	5.421	+0.15	-3.8	17.7	34.1
Sept. 20	13 10.20	-13 31.7	6.300	5.408	+0.18	-4.1	17.7	25.2
Sept. 30	13 12.03	-14 12.3	6.349	5.397	+0.20	-4.3	17.7	16.6
Oct. 10	13 14.07	-14 55.5	6.370	5.386	+0.21	-4.5	17.7	9.1
Oct. 20	13 16.19	-15 40.8	6.363	5.377	+0.21	-4.7	17.7	7.6
Oct. 30	13 18.24	-16 28.0	6.326	5.369	+0.18	-4.8	17.7	14.2
Nov. 9	13 20.07	-17 16.4	6.261	5.361	+0.14	-4.9	17.7	22.8
Nov. 19	13 21.50	-18 05.9	6.169	5.355	+0.09	-5.0	17.6	31.9
Nov. 29	13 22.37	-18 55.8	6.051	5.350	+0.01	-5.0	17.6	41.3
Dec. 9	13 22.48	-19 45.6	5.911	5.345	-0.08	-4.9	17.5	50.9
Dec. 19	13 21.63	-20 34.7	5.753	5.342	-0.20	-4.7	17.5	60.8
Dec. 29	13 19.60	-21 22.2	5.579	5.340	-0.34	-4.5	17.4	71.0
Jan. 8	13 16.16	-22 06.9	5.396	5.338	-0.51	-4.0	17.3	81.4
Jan. 18	13 11.11	-22 47.3	5.211	5.338	-0.69	-3.4	17.3	92.1
Jan. 28	13 04.26	-23 21.5	5.028	5.339	-0.88	-2.6	17.2	103.1
Feb. 7	12 55.49	-23 47.3	4.858	5.341	-1.07	-1.5	17.1	114.4
Feb. 17	12 44.84	-24 02.0	4.706	5.344	-1.24	-0.1	17.0	125.8
Feb. 27	12 32.44	-24 03.2	4.581	5.348	-1.38	+1.4	17.0	137.0
Mar. 9	12 18.68	-23 48.9	4.489	5.353	-1.46	+3.0	16.9	147.5
Mar. 19	12 04.10	-23 18.5	4.436	5.359	-1.47	+4.5	16.9	155.7
Mar. 29	11 49.36	-22 33.1	4.426	5.366	-1.42	+5.7	16.9	158.3

Comet 201P/LONEOS

Epoch = 2014 July 2.0 TT
T = 2015 Jan. 14.60519 TT
Peri. = 25.04909 e = 0.6128207
Node = 35.24123 2000.0 a = 3.4589659 AU
Incl. = 7.03316 n = 0.15320913
q = 1.3392400 AU P = 6.43 years

m1 = 12.8 + 5 log(Delta) + 17.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	19 23.47	-27 26.6	4.532	3.562	+1.39	+2.9	8.2
Jan. 13	19 37.33	-26 57.9	4.484	3.506	+1.41	+3.2	5.4
Jan. 23	19 51.42	-26 25.5	4.417	3.450	+1.42	+3.6	9.5
Feb. 2	20 05.66	-25 49.3	4.331	3.392	+1.43	+4.0	15.7
Feb. 12	20 19.98	-25 09.5	4.227	3.334	+1.43	+4.3	22.2
Feb. 22	20 34.29	-24 26.5	4.107	3.275	+1.43	+4.6	28.8
Mar. 4	20 48.54	-23 40.7	3.971	3.215	+1.41	+4.8	35.4
Mar. 14	21 02.66	-22 52.4	3.822	3.154	+1.39	+5.0	42.0
Mar. 24	21 16.60	-22 02.4	3.661	3.092	+1.37	+5.1	48.5
Apr. 3	21 30.29	-21 11.2	3.488	3.029	+1.34	+5.1	55.1
Apr. 13	21 43.67	-20 19.8	3.308	2.965	+1.30	+5.1	61.6
Apr. 23	21 56.68	-19 28.9	3.120	2.900	+1.26	+4.9	68.2
May 3	22 09.26	-18 39.7	2.928	2.835	+1.20	+4.6	74.7
May 13	22 21.30	-17 53.2	2.732	2.768	+1.14	+4.2	22.7 81.4
May 23	22 32.71	-17 10.7	2.536	2.701	+1.06	+3.7	22.4 88.2
June 2	22 43.34	-16 33.7	2.341	2.633	+0.97	+3.0	22.0 95.1
June 12	22 53.04	-16 04.0	2.149	2.564	+0.86	+2.1	21.6 102.2
June 22	23 01.59	-15 43.2	1.962	2.494	+0.71	+1.0	21.2 109.6
July 2	23 08.71	-15 33.3	1.782	2.424	+0.54	-0.3	20.8 117.3
July 12	23 14.07	-15 36.3	1.612	2.353	+0.32	-1.7	20.3 125.5
July 22	23 17.29	-15 53.7	1.455	2.281	+0.06	-3.3	19.9 134.1
Aug. 1	23 17.94	-16 26.2	1.312	2.210	-0.23	-4.6	19.4 143.2
Aug. 11	23 15.64	-17 12.5	1.186	2.138	-0.54	-5.6	18.9 152.7
Aug. 21	23 10.21	-18 08.7	1.081	2.067	-0.84	-5.8	18.5 162.0
Aug. 31	23 01.81	-19 07.0	0.997	1.995	-1.05	-4.9	18.0 168.0
Sept. 10	22 51.29	-19 55.8	0.935	1.924	-1.12	-2.8	17.6 164.3
Sept. 20	22 40.12	-20 23.4	0.896	1.855	-1.00	+0.3	17.3 154.7
Sept. 30	22 30.16	-20 20.1	0.877	1.786	-0.69	+3.8	16.9 143.9
Oct. 10	22 23.23	-19 42.0	0.874	1.720	-0.27	+7.2	16.6 133.3
Oct. 20	22 20.49	-18 29.9	0.883	1.656	+0.20	+10.3	16.4 123.6
Oct. 30	22 22.51	-16 46.7	0.899	1.596	+0.67	+13.1	16.1 114.9
Nov. 9	22 29.24	-14 35.6	0.920	1.539	+1.11	+15.6	15.9 107.3
Nov. 19	22 40.31	-11 59.4	0.944	1.488	+1.50	+18.0	15.7 100.7
Nov. 29	22 55.28	-08 59.8	0.968	1.443	+1.84	+20.1	15.5 95.2
Dec. 9	23 13.70	-05 38.7	0.992	1.405	+2.14	+22.0	15.4 90.5
Dec. 19	23 35.13	-01 58.8	1.017	1.374	+2.42	+23.5	15.3 86.7
Dec. 29	23 59.32	+01 56.5	1.044	1.353	+2.67	+24.5	15.2 83.7
Jan. 8	00 25.99	+06 01.6	1.075	1.341	+2.90	+24.8	15.2 81.2
Jan. 18	00 54.97	+10 09.7	1.111	1.340	+3.11	+24.3	15.3 79.3
Jan. 28	01 26.09	+14 12.4	1.154	1.348	+3.30	+22.8	15.4 77.7
Feb. 7	01 59.13	+18 00.8	1.206	1.366	+3.46	+20.5	15.6 76.4
Feb. 17	02 33.77	+21 25.9	1.268	1.394	+3.59	+17.5	15.8 75.2
Feb. 27	03 09.64	+24 20.4	1.342	1.430	+3.65	+13.9	16.2 73.9
Mar. 9	03 46.17	+26 39.3	1.427	1.473	+3.66	+10.1	16.5 72.5
Mar. 19	04 22.77	+28 20.0	1.523	1.522	+3.61	+6.3	16.9 70.9
Mar. 29	04 58.86	+29 23.2	1.630	1.577	+3.50	+2.8	17.3 69.0

Comet P/2005 Q4 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2015 Feb. 16.75866 TT
Peri. = 50.96130 e = 0.6081111
Node = 11.37188 2000.0 a = 4.4413376 AU
Incl. = 17.66548 n = 0.10530122
q = 1.7405109 AU P = 9.36 years

m1 = 13.5 + 5 log(Delta) + 15.0 log(r(t-60))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	20 29.91	-32 21.7	4.723	3.839	-0.37	-2.1	.	17.5/ 71	23.3
Jan. 13	20 42.79	-31 21.0	4.709	3.783	-0.38	-2.3	.	18.1/ 70	17.6
Jan. 23	20 55.95	-30 18.1	4.676	3.726	-0.39	-2.5	.	18.6/ 70	13.5
Feb. 2	21 09.32	-29 12.9	4.625	3.669	-0.40	-2.8	.	19.0/ 70	12.4
Feb. 12	21 22.81	-28 05.7	4.556	3.611	-0.41	-3.1	.	19.3/ 70	14.9
Feb. 22	21 36.34	-26 56.7	4.469	3.553	-0.42	-3.4	.	19.5/ 70	19.5
Mar. 4	21 49.85	-25 46.2	4.366	3.494	-0.44	-3.7	.	19.6/ 69	25.1
Mar. 14	22 03.27	-24 34.5	4.248	3.434	-0.45	-4.1	.	19.6/ 69	31.0
Mar. 24	22 16.57	-23 22.3	4.115	3.375	-0.47	-4.5	.	19.5/ 69	37.2
Apr. 3	22 29.67	-22 09.8	3.969	3.314	-0.50	-4.9	.	19.3/ 69	43.4
Apr. 13	22 42.53	-20 57.7	3.811	3.254	-0.52	-5.3	.	19.0/ 69	49.7
Apr. 23	22 55.10	-19 46.7	3.644	3.193	-0.55	-5.8	.	18.6/ 69	56.0
May 3	23 07.31	-18 37.2	3.469	3.131	-0.58	-6.4	.	18.1/ 69	62.4
May 13	23 19.07	-17 30.1	3.287	3.070	-0.62	-7.0	.	17.4/ 69	68.8
May 23	23 30.32	-16 26.1	3.100	3.008	-0.66	-7.6	.	16.5/ 69	75.3
June 2	23 40.93	-15 25.9	2.910	2.945	-0.71	-8.4	.	15.3/ 69	82.0
June 12	23 50.77	-14 30.4	2.720	2.883	-0.77	-9.2	.	13.9/ 69	88.8
June 22	23 59.68	-13 40.3	2.531	2.820	-0.84	-10.1	.	12.1/ 69	95.8
July 2	00 07.43	-12 56.4	2.344	2.758	-0.92	-11.2	22.8	10.0/ 68	103.1
July 12	00 13.78	-12 19.4	2.163	2.695	-1.01	-12.3	22.5	7.4/ 66	110.7
July 22	00 18.41	-11 49.6	1.990	2.633	-1.11	-13.6	22.2	4.4/ 59	118.7
Aug. 1	00 20.98	-11 27.1	1.827	2.571	-1.23	-14.9	21.8	1.6/ 8	127.2
Aug. 11	00 21.13	-11 11.1	1.677	2.509	-1.36	-16.3	21.5	3.9/287	136.3
Aug. 21	00 18.56	-10 59.7	1.544	2.448	-1.49	-17.8	21.2	8.1/277	145.9
Aug. 31	00 13.10	-10 49.8	1.430	2.388	-1.61	-19.1	20.9	12.1/276	156.0
Sept.10	00 04.93	-10 36.4	1.339	2.328	-1.71	-20.2	20.6	15.3/278	165.9
Sept.20	23 54.65	-10 13.8	1.273	2.270	-1.77	-21.1	20.3	17.1/282	170.9
Sept.30	23 43.37	-09 36.3	1.233	2.213	-1.77	-21.6	20.1	17.0/289	164.1
Oct. 10	23 32.55	-08 39.9	1.218	2.158	-1.71	-21.8	19.9	15.3/300	153.4
Oct. 20	23 23.59	-07 23.7	1.226	2.104	-1.62	-21.8	19.8	13.0/317	142.3
Oct. 30	23 17.59	-05 48.7	1.253	2.053	-1.50	-21.7	19.7	11.7/342	131.7
Nov. 9	23 15.18	-03 57.2	1.296	2.004	-1.38	-21.5	19.6	12.7/ 9	121.9
Nov. 19	23 16.45	-01 51.8	1.349	1.958	-1.28	-21.3	19.5	15.5/ 28	112.9
Nov. 29	23 21.29	+00 25.6	1.410	1.915	-1.21	-21.1	19.4	19.1/ 39	104.8
Dec. 9	23 29.37	+02 53.4	1.474	1.877	-1.15	-20.8	19.4	22.7/ 46	97.5
Dec. 19	23 40.35	+05 30.4	1.542	1.842	-1.13	-20.5	19.3	26.1/ 51	90.9
Dec. 29	23 53.91	+08 15.1	1.610	1.812	-1.12	-20.2	19.2	29.0/ 54	85.0
Jan. 8	00 09.79	+11 06.2	1.678	1.787	-1.13	-19.8	19.2	31.6/ 56	79.7
Jan. 18	00 27.77	+14 01.5	1.746	1.767	-1.17	-19.3	19.1	33.9/ 58	74.9
Jan. 28	00 47.73	+16 58.9	1.815	1.752	-1.22	-18.7	19.0	35.7/ 60	70.5
Feb. 7	01 09.55	+19 55.4	1.883	1.743	-1.28	-18.0	19.0	37.2/ 61	66.5
Feb. 17	01 33.16	+22 47.8	1.952	1.741	-1.35	-17.0	18.9	38.4/ 63	62.9
Feb. 27	01 58.51	+25 32.4	2.023	1.744	-1.43	-15.8	18.9	39.2/ 66	59.5
Mar. 9	02 25.51	+28 05.4	2.096	1.753	-1.51	-14.4	18.9	39.8/ 68	56.3
Mar. 19	02 54.03	+30 22.9	2.171	1.767	-1.59	-12.8	18.9	40.0/ 71	53.3
Mar. 29	03 23.90	+32 21.2	2.250	1.788	-1.66	-10.9	18.9	40.0/ 74	50.4

Comet 44P/Reinmuth

Epoch = 2014 July 2.0 TT
T = 2015 Mar. 24.17877 TT
Peri. = 58.33661 e = 0.4267621
Node = 286.47413 2000.0 a = 3.6933369 AU
Incl. = 5.89537 n = 0.13885953
q = 2.1171607 AU P = 7.10 years

m1 = 12.4 + 5 log(Delta) + 7.5 log(r(t-60))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	16 01.15	-24 40.0	4.295	3.589	+1.28	-3.4	19.9	39.3
Jan. 13	16 13.93	-25 14.4	4.154	3.550	+1.25	-3.1	19.8	46.5
Jan. 23	16 26.41	-25 45.0	4.000	3.510	+1.20	-2.7	19.7	53.8
Feb. 2	16 38.44	-26 11.8	3.836	3.470	+1.14	-2.3	19.6	61.2
Feb. 12	16 49.86	-26 34.9	3.662	3.430	+1.06	-2.0	19.5	68.7
Feb. 22	17 00.50	-26 54.5	3.483	3.389	+0.96	-1.6	19.3	76.4
Mar. 4	17 10.14	-27 10.8	3.299	3.348	+0.84	-1.3	19.2	84.2
Mar. 14	17 18.57	-27 24.2	3.114	3.307	+0.70	-1.1	19.0	92.3
Mar. 24	17 25.54	-27 35.1	2.930	3.265	+0.52	-0.9	18.8	100.7
Apr. 3	17 30.78	-27 43.6	2.751	3.224	+0.33	-0.6	18.6	109.4
Apr. 13	17 34.05	-27 49.9	2.580	3.182	+0.11	-0.4	18.5	118.5
Apr. 23	17 35.10	-27 53.7	2.420	3.140	-0.13	-0.1	18.3	127.9
May 3	17 33.76	-27 54.5	2.275	3.098	-0.38	+0.3	18.1	137.9
May 13	17 30.00	-27 51.1	2.149	3.055	-0.60	+0.9	18.0	148.3
May 23	17 24.02	-27 42.2	2.046	3.013	-0.78	+1.6	17.8	159.1
June 2	17 16.24	-27 26.5	1.967	2.971	-0.88	+2.3	17.7	169.9
June 12	17 07.43	-27 03.5	1.916	2.929	-0.89	+2.9	17.6	175.2
June 22	16 58.53	-26 34.1	1.892	2.887	-0.80	+3.4	17.5	165.4
July 2	16 50.51	-26 00.5	1.894	2.845	-0.62	+3.5	17.5	154.3
July 12	16 44.26	-25 25.9	1.921	2.803	-0.39	+3.2	17.5	143.4
July 22	16 40.37	-24 53.5	1.967	2.762	-0.12	+2.8	17.5	133.0
Aug. 1	16 39.18	-24 25.7	2.030	2.721	+0.16	+2.2	17.5	123.1
Aug. 11	16 40.77	-24 03.9	2.105	2.680	+0.43	+1.6	17.5	113.9
Aug. 21	16 45.06	-23 48.2	2.187	2.640	+0.68	+1.1	17.6	105.2
Aug. 31	16 51.88	-23 37.6	2.275	2.601	+0.91	+0.7	17.6	97.1
Sept. 10	17 01.02	-23 30.8	2.365	2.562	+1.12	+0.5	17.6	89.5
Sept. 20	17 12.25	-23 25.9	2.454	2.524	+1.31	+0.5	17.7	82.3
Sept. 30	17 25.35	-23 21.0	2.541	2.487	+1.48	+0.7	17.7	75.5
Oct. 10	17 40.12	-23 14.0	2.624	2.451	+1.62	+1.1	17.7	69.0
Oct. 20	17 56.34	-23 02.9	2.703	2.416	+1.75	+1.7	17.7	62.8
Oct. 30	18 13.84	-22 46.1	2.775	2.383	+1.86	+2.4	17.7	56.9
Nov. 9	18 32.44	-22 21.7	2.841	2.351	+1.95	+3.3	17.7	51.2
Nov. 19	18 51.95	-21 48.4	2.900	2.320	+2.03	+4.3	17.7	45.7
Nov. 29	19 12.23	-21 05.0	2.952	2.291	+2.09	+5.4	17.7	40.4
Dec. 9	19 33.10	-20 10.9	2.996	2.264	+2.13	+6.6	17.7	35.2
Dec. 19	19 54.40	-19 05.3	3.034	2.238	+2.16	+7.7	17.7	30.2
Dec. 29	20 16.02	-17 48.2	3.064	2.215	+2.18	+8.9	17.7	25.3
Jan. 8	20 37.81	-16 19.7	3.088	2.194	+2.19	+9.9	17.6	20.6
Jan. 18	20 59.68	-14 40.2	3.105	2.176	+2.19	+11.0	17.6	15.9
Jan. 28	21 21.54	-12 50.5	3.115	2.159	+2.18	+11.9	17.6	11.5
Feb. 7	21 43.31	-10 51.7	3.120	2.146	+2.16	+12.7	17.5	7.3
Feb. 17	22 04.96	-08 44.7	3.119	2.134	+2.15	+13.4	17.5	3.7
Feb. 27	22 26.45	-06 31.1	3.113	2.126	+2.13	+13.9	17.5	3.6
Mar. 9	22 47.76	-04 12.3	3.102	2.120	+2.11	+14.3	17.4	6.9
Mar. 19	23 08.89	-01 49.7	3.087	2.118	+2.09	+14.5	17.4	10.8
Mar. 29	23 29.84	+00 35.0	3.067	2.117	+2.08	+14.5	17.3	14.9

Comet P/2008 WZ96 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2015 Mar. 25.11427 TT
Peri. = 337.80603 e = 0.5097428
Node = 59.05654 2000.0 a = 3.3593497 AU
Incl. = 6.95815 n = 0.16007416
q = 1.6469454 AU P = 6.16 years

m1 = 14.4 + 5 log(Delta) + 10.0 log(r(t-30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	18 03.37	-26 05.3	4.618	3.662	-0.42	+0.5	.	18.5/ 92	11.9
Jan. 13	18 17.09	-26 08.9	4.535	3.618	-0.44	+0.4	.	18.5/ 91	18.9
Jan. 23	18 30.83	-26 09.0	4.433	3.574	-0.46	+0.2	.	18.4/ 90	25.9
Feb. 2	18 44.51	-26 05.8	4.314	3.529	-0.49	0.0	.	18.2/ 89	33.0
Feb. 12	18 58.02	-25 59.6	4.180	3.483	-0.52	-0.2	.	17.9/ 88	40.1
Feb. 22	19 11.26	-25 50.8	4.032	3.437	-0.55	-0.4	23.0	17.4/ 87	47.2
Mar. 4	19 24.13	-25 40.1	3.871	3.390	-0.58	-0.6	22.8	16.8/ 87	54.3
Mar. 14	19 36.49	-25 28.4	3.700	3.342	-0.62	-0.8	22.7	16.0/ 86	61.5
Mar. 24	19 48.24	-25 16.6	3.521	3.293	-0.66	-1.1	22.5	15.0/ 86	68.8
Apr. 3	19 59.24	-25 05.8	3.335	3.244	-0.71	-1.4	22.3	13.7/ 87	76.2
Apr. 13	20 09.33	-24 57.4	3.145	3.195	-0.76	-1.7	22.1	12.3/ 88	83.7
Apr. 23	20 18.35	-24 52.7	2.954	3.144	-0.82	-2.0	21.9	10.5/ 91	91.4
May 3	20 26.08	-24 53.4	2.764	3.093	-0.89	-2.3	21.7	8.5/ 95	99.4
May 13	20 32.30	-25 01.0	2.578	3.041	-0.97	-2.7	21.5	6.3/105	107.7
May 23	20 36.76	-25 17.1	2.399	2.989	-1.06	-3.0	21.3	4.2/129	116.3
June 2	20 39.16	-25 43.0	2.231	2.937	-1.15	-3.3	21.0	3.6/178	125.4
June 12	20 39.24	-26 19.1	2.076	2.883	-1.26	-3.5	20.8	5.6/216	134.9
June 22	20 36.78	-27 05.0	1.938	2.829	-1.36	-3.6	20.6	8.6/232	144.8
July 2	20 31.68	-27 58.3	1.820	2.775	-1.47	-3.5	20.4	11.4/240	155.0
July 12	20 24.14	-28 55.0	1.726	2.721	-1.55	-3.2	20.2	13.5/246	164.8
July 22	20 14.67	-29 49.2	1.659	2.666	-1.61	-2.7	20.0	14.3/251	170.3
Aug. 1	20 04.20	-30 34.8	1.618	2.610	-1.63	-2.1	19.9	13.6/256	164.7
Aug. 11	19 53.97	-31 06.7	1.603	2.555	-1.60	-1.4	19.8	11.3/261	154.5
Aug. 21	19 45.22	-31 22.7	1.611	2.499	-1.54	-0.8	19.7	7.9/269	143.7
Aug. 31	19 39.03	-31 23.0	1.640	2.444	-1.47	-0.4	19.6	4.0/289	133.1
Sept.10	19 36.08	-31 09.6	1.684	2.388	-1.39	-0.3	19.6	2.6/ 16	123.1
Sept.20	19 36.64	-30 44.8	1.739	2.333	-1.31	-0.3	19.6	6.3/ 57	113.8
Sept.30	19 40.68	-30 10.4	1.802	2.278	-1.25	-0.6	19.6	10.4/ 66	105.1
Oct. 10	19 47.99	-29 27.2	1.868	2.224	-1.20	-0.9	19.5	14.4/ 69	97.1
Oct. 20	19 58.20	-28 35.4	1.935	2.170	-1.16	-1.4	19.5	18.0/ 71	89.6
Oct. 30	20 10.99	-27 34.3	2.000	2.117	-1.14	-2.0	19.5	21.3/ 71	82.7
Nov. 9	20 25.99	-26 23.1	2.063	2.065	-1.13	-2.6	19.4	24.2/ 71	76.3
Nov. 19	20 42.84	-25 00.6	2.121	2.015	-1.12	-3.3	19.4	26.9/ 70	70.3
Nov. 29	21 01.28	-23 25.9	2.174	1.967	-1.12	-4.1	19.3	29.4/ 69	64.7
Dec. 9	21 21.02	-21 38.3	2.223	1.920	-1.13	-4.9	19.3	31.6/ 68	59.5
Dec. 19	21 41.83	-19 37.4	2.266	1.876	-1.14	-5.7	19.2	33.7/ 67	54.6
Dec. 29	22 03.53	-17 23.2	2.304	1.835	-1.15	-6.5	19.1	35.5/ 66	50.1
Jan. 8	22 25.96	-14 56.1	2.338	1.796	-1.16	-7.3	19.1	37.2/ 65	45.8
Jan. 18	22 49.00	-12 17.1	2.368	1.762	-1.17	-8.1	19.0	38.7/ 65	41.8
Jan. 28	23 12.60	-09 27.3	2.396	1.731	-1.19	-8.7	18.9	40.0/ 64	38.1
Feb. 7	23 36.67	-06 28.8	2.422	1.704	-1.20	-9.3	18.9	41.1/ 63	34.6
Feb. 17	00 01.21	-03 23.6	2.447	1.683	-1.22	-9.8	18.8	42.0/ 63	31.3
Feb. 27	00 26.21	-00 14.2	2.471	1.666	-1.24	-10.1	18.7	42.7/ 63	28.2
Mar. 9	00 51.68	+02 56.2	2.497	1.654	-1.26	-10.3	18.7	43.2/ 64	25.3
Mar. 19	01 17.65	+06 04.7	2.524	1.648	-1.28	-10.2	18.7	43.4/ 65	22.4
Mar. 29	01 44.12	+09 08.0	2.552	1.647	-1.31	-10.0	18.7	43.4/ 66	19.7

Comet 86P/Wild

Epoch = 2014 July 2.0 TT
T = 2015 Apr. 3.30610 TT
Peri. = 179.12605 e = 0.3717729
Node = 72.41173 2000.0 a = 3.6033808 AU
Incl. = 15.47240 n = 0.14409165
q = 2.2637415 AU P = 6.84 years

m1 = 9.8 + 5 log(Delta) + 20.0 log(r(t-90))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	10 57.15	+26 12.3	2.873	3.530	-0.06	+6.3	.	125.0
Jan. 13	10 56.59	+27 15.6	2.735	3.496	-0.27	+7.1	.	134.6
Jan. 23	10 53.87	+28 27.0	2.617	3.461	-0.49	+7.5	.	143.9
Feb. 2	10 49.02	+29 41.7	2.523	3.426	-0.67	+7.2	.	152.3
Feb. 12	10 42.32	+30 53.2	2.456	3.391	-0.80	+6.2	.	157.9
Feb. 22	10 34.33	+31 54.7	2.417	3.355	-0.85	+4.5	23.0	158.2
Mar. 4	10 25.80	+32 40.1	2.406	3.320	-0.82	+2.5	22.9	152.9
Mar. 14	10 17.64	+33 05.3	2.422	3.284	-0.70	+0.4	22.8	144.7
Mar. 24	10 10.69	+33 09.0	2.462	3.248	-0.51	-1.7	22.8	135.4
Apr. 3	10 05.58	+32 52.2	2.521	3.212	-0.28	-3.5	22.8	126.0
Apr. 13	10 02.73	+32 17.3	2.596	3.176	-0.05	-5.0	22.7	116.7
Apr. 23	10 02.26	+31 27.4	2.681	3.140	+0.18	-6.2	22.7	107.9
May 3	10 04.11	+30 25.3	2.774	3.103	+0.40	-7.2	22.7	99.5
May 13	10 08.11	+29 13.3	2.870	3.067	+0.59	-8.0	22.7	91.5
May 23	10 14.02	+27 53.1	2.966	3.031	+0.76	-8.7	22.7	83.9
June 2	10 21.59	+26 26.1	3.060	2.995	+0.90	-9.3	22.7	76.8
June 12	10 30.58	+24 53.2	3.149	2.959	+1.02	-9.8	22.6	69.9
June 22	10 40.78	+23 15.0	3.233	2.923	+1.12	-10.3	22.6	63.4
July 2	10 52.01	+21 32.0	3.309	2.887	+1.21	-10.7	22.5	57.2
July 12	11 04.11	+19 44.6	3.377	2.852	+1.28	-11.1	22.5	51.2
July 22	11 16.95	+17 53.3	3.435	2.817	+1.35	-11.5	22.4	45.4
Aug. 1	11 30.44	+15 58.4	3.484	2.782	+1.41	-11.8	22.3	39.8
Aug. 11	11 44.49	+14 00.4	3.523	2.748	+1.46	-12.1	22.3	34.4
Aug. 21	11 59.06	+11 59.6	3.552	2.714	+1.50	-12.3	22.2	29.2
Aug. 31	12 14.09	+09 56.7	3.570	2.681	+1.55	-12.4	22.1	24.2
Sept.10	12 29.55	+07 52.3	3.577	2.648	+1.59	-12.5	22.0	19.4
Sept.20	12 45.43	+05 46.8	3.574	2.616	+1.63	-12.6	21.9	15.0
Sept.30	13 01.70	+03 41.1	3.560	2.586	+1.67	-12.5	21.8	11.3
Oct. 10	13 18.36	+01 35.8	3.536	2.555	+1.70	-12.4	21.6	9.2
Oct. 20	13 35.41	-00 28.2	3.502	2.526	+1.74	-12.2	21.5	9.7
Oct. 30	13 52.83	-02 30.2	3.459	2.498	+1.78	-11.9	21.4	12.5
Nov. 9	14 10.61	-04 29.3	3.406	2.471	+1.81	-11.5	21.2	16.4
Nov. 19	14 28.74	-06 24.6	3.344	2.446	+1.85	-11.1	21.1	20.9
Nov. 29	14 47.21	-08 15.4	3.273	2.422	+1.87	-10.5	20.9	25.6
Dec. 9	15 05.96	-10 00.8	3.195	2.399	+1.90	-9.9	20.8	30.5
Dec. 19	15 24.96	-11 40.1	3.109	2.377	+1.92	-9.3	20.6	35.5
Dec. 29	15 44.14	-13 12.8	3.016	2.358	+1.93	-8.6	20.4	40.6
Jan. 8	16 03.44	-14 38.4	2.917	2.339	+1.93	-7.8	20.3	45.7
Jan. 18	16 22.75	-15 56.8	2.813	2.323	+1.92	-7.1	20.1	51.0
Jan. 28	16 41.95	-17 08.0	2.704	2.309	+1.90	-6.4	19.9	56.4
Feb. 7	17 00.91	-18 12.4	2.591	2.296	+1.86	-5.8	19.7	61.8
Feb. 17	17 19.48	-19 10.6	2.475	2.286	+1.80	-5.3	19.5	67.4
Feb. 27	17 37.48	-20 03.8	2.357	2.277	+1.72	-5.0	19.3	73.2
Mar. 9	17 54.70	-20 53.4	2.238	2.271	+1.62	-4.8	19.1	79.1
Mar. 19	18 10.93	-21 41.3	2.119	2.266	+1.50	-4.9	19.0	85.3
Mar. 29	18 25.90	-22 29.9	2.001	2.264	+1.34	-5.2	18.8	91.8

Comet 88P/Howell

Epoch = 2014 July 2.0 TT
T = 2015 Apr. 6.34710 TT
Peri. = 235.91663 e = 0.5629498
Node = 56.70015 2000.0 a = 3.1088671 AU
Incl. = 4.38248 n = 0.17980461
q = 1.3587310 AU P = 5.48 years

m1 = 6.8 + 5 log(Delta) + 22.5 log(r(t-50))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	11 13.39	+10 33.5	3.222	3.772	-0.10	+2.0	22.8	117.0
Jan. 13	11 12.44	+10 53.9	3.048	3.730	-0.29	+3.2	22.6	127.5
Jan. 23	11 09.56	+11 25.7	2.892	3.686	-0.48	+4.2	22.4	138.4
Feb. 2	11 04.75	+12 07.8	2.757	3.642	-0.66	+5.0	22.2	149.8
Feb. 12	10 58.17	+12 57.6	2.648	3.597	-0.80	+5.4	22.0	161.3
Feb. 22	10 50.19	+13 51.4	2.569	3.551	-0.88	+5.3	21.8	171.9
Mar. 4	10 41.38	+14 44.4	2.521	3.504	-0.89	+4.7	21.7	170.9
Mar. 14	10 32.48	+15 31.9	2.505	3.456	-0.82	+3.8	21.5	160.0
Mar. 24	10 24.24	+16 09.7	2.518	3.407	-0.69	+2.6	21.4	148.4
Apr. 3	10 17.34	+16 35.4	2.557	3.357	-0.51	+1.2	21.3	137.0
Apr. 13	10 12.29	+16 47.6	2.616	3.306	-0.29	-0.1	21.3	126.0
Apr. 23	10 09.34	+16 46.6	2.690	3.255	-0.08	-1.3	21.2	115.7
May 3	10 08.59	+16 33.2	2.775	3.202	+0.14	-2.5	21.1	105.9
May 13	10 09.98	+16 08.4	2.866	3.148	+0.34	-3.5	21.1	96.7
May 23	10 13.35	+15 33.3	2.957	3.093	+0.52	-4.4	21.0	88.1
June 2	10 18.53	+14 48.8	3.046	3.038	+0.68	-5.3	20.9	79.9
June 12	10 25.32	+13 55.8	3.130	2.981	+0.82	-6.1	20.8	72.2
June 22	10 33.51	+12 54.9	3.205	2.924	+0.94	-6.8	20.7	64.9
July 2	10 42.95	+11 46.5	3.271	2.865	+1.05	-7.5	20.6	58.0
July 12	10 53.50	+10 31.2	3.326	2.806	+1.15	-8.2	20.4	51.3
July 22	11 05.03	+09 09.3	3.369	2.745	+1.24	-8.8	20.3	45.0
Aug. 1	11 17.46	+07 41.1	3.398	2.684	+1.33	-9.4	20.1	38.8
Aug. 11	11 30.72	+06 06.9	3.414	2.622	+1.40	-10.0	19.9	32.9
Aug. 21	11 44.76	+04 27.2	3.417	2.559	+1.48	-10.5	19.8	27.2
Aug. 31	11 59.57	+02 42.2	3.406	2.495	+1.56	-11.0	19.5	21.6
Sept.10	12 15.13	+00 52.3	3.381	2.431	+1.63	-11.4	19.3	16.3
Sept.20	12 31.47	-01 01.9	3.343	2.366	+1.72	-11.8	19.1	11.1
Sept.30	12 48.63	-02 59.9	3.293	2.300	+1.80	-12.1	18.8	6.1
Oct. 10	13 06.64	-05 01.2	3.232	2.234	+1.90	-12.4	18.5	2.1
Oct. 20	13 25.59	-07 04.8	3.160	2.168	+2.00	-12.5	18.2	4.3
Oct. 30	13 45.57	-09 10.0	3.078	2.101	+2.11	-12.5	17.9	8.6
Nov. 9	14 06.68	-11 15.4	2.988	2.035	+2.24	-12.4	17.6	13.0
Nov. 19	14 29.04	-13 19.6	2.891	1.969	+2.38	-12.1	17.2	17.2
Nov. 29	14 52.80	-15 20.9	2.790	1.903	+2.53	-11.6	16.9	21.2
Dec. 9	15 18.07	-17 17.1	2.684	1.839	+2.69	-10.8	16.5	24.9
Dec. 19	15 45.02	-19 05.4	2.578	1.776	+2.87	-9.7	16.1	28.5
Dec. 29	16 13.75	-20 42.7	2.471	1.714	+3.06	-8.2	15.7	31.7
Jan. 8	16 44.31	-22 05.2	2.367	1.656	+3.24	-6.4	15.3	34.6
Jan. 18	17 16.73	-23 08.8	2.267	1.600	+3.41	-4.0	14.9	37.3
Jan. 28	17 50.86	-23 49.1	2.173	1.548	+3.56	-1.3	14.4	39.6
Feb. 7	18 26.47	-24 02.1	2.087	1.500	+3.67	+1.8	14.0	41.6
Feb. 17	19 03.18	-23 44.5	2.009	1.458	+3.73	+5.0	13.6	43.4
Feb. 27	19 40.47	-22 54.6	1.941	1.423	+3.73	+8.2	13.2	44.9
Mar. 9	20 17.79	-21 32.7	1.884	1.394	+3.68	+11.2	12.8	46.1
Mar. 19	20 54.59	-19 41.1	1.837	1.374	+3.58	+13.7	12.4	47.3
Mar. 29	21 30.39	-17 24.4	1.800	1.362	+3.44	+15.6	12.0	48.5

Comet C/2012 F3 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2015 Apr. 6.74659 TT
Peri. = 104.02801
Node = 164.61979 2000.0
Incl. = 11.35494
q = 3.4567237 AU
e = 1.0013581

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	13 44.23	-04 39.0	5.472	5.329	+0.54	-1.0	16.8	76.5
Jan. 13	13 49.58	-04 48.9	5.254	5.267	+0.45	-0.3	16.6	85.4
Jan. 23	13 54.13	-04 52.0	5.036	5.205	+0.36	+0.4	16.5	94.4
Feb. 2	13 57.72	-04 47.8	4.820	5.143	+0.25	+1.2	16.3	103.7
Feb. 12	14 00.26	-04 36.2	4.612	5.082	+0.14	+1.9	16.2	113.2
Feb. 22	14 01.67	-04 17.2	4.414	5.021	+0.02	+2.6	16.0	122.9
Mar. 4	14 01.87	-03 51.0	4.232	4.961	-0.10	+3.2	15.9	132.9
Mar. 14	14 00.90	-03 18.6	4.070	4.901	-0.21	+3.7	15.8	143.0
Mar. 24	13 58.82	-02 41.3	3.931	4.841	-0.30	+4.0	15.6	153.1
Apr. 3	13 55.81	-02 00.9	3.819	4.782	-0.37	+4.1	15.5	162.7
Apr. 13	13 52.12	-01 19.8	3.734	4.724	-0.40	+3.9	15.4	169.8
Apr. 23	13 48.07	-00 40.8	3.679	4.666	-0.40	+3.4	15.3	167.9
May 3	13 44.03	-00 06.3	3.652	4.609	-0.36	+2.7	15.2	159.4
May 13	13 40.39	+00 21.2	3.653	4.553	-0.29	+1.9	15.2	149.6
May 23	13 37.47	+00 39.9	3.678	4.497	-0.19	+0.9	15.2	139.6
June 2	13 35.54	+00 48.9	3.724	4.443	-0.07	-0.1	15.1	129.9
June 12	13 34.82	+00 47.7	3.787	4.389	+0.06	-1.1	15.1	120.4
June 22	13 35.40	+00 36.5	3.863	4.335	+0.19	-2.1	15.1	111.2
July 2	13 37.34	+00 15.9	3.948	4.283	+0.33	-2.9	15.1	102.4
July 12	13 40.62	-00 13.3	4.039	4.232	+0.46	-3.7	15.1	93.9
July 22	13 45.20	-00 50.0	4.131	4.182	+0.58	-4.3	15.1	85.8
Aug. 1	13 51.02	-01 33.0	4.223	4.133	+0.70	-4.8	15.1	78.0
Aug. 11	13 57.99	-02 21.3	4.311	4.085	+0.80	-5.2	15.1	70.5
Aug. 21	14 06.02	-03 13.8	4.393	4.039	+0.90	-5.6	15.1	63.2
Aug. 31	14 15.05	-04 09.4	4.468	3.993	+0.99	-5.8	15.1	56.1
Sept. 10	14 24.98	-05 07.1	4.533	3.949	+1.08	-5.9	15.0	49.2
Sept. 20	14 35.75	-06 05.8	4.588	3.907	+1.15	-5.9	15.0	42.5
Sept. 30	14 47.30	-07 04.6	4.632	3.866	+1.22	-5.8	15.0	35.9
Oct. 10	14 59.54	-08 02.4	4.663	3.826	+1.29	-5.6	15.0	29.6
Oct. 20	15 12.41	-08 58.4	4.682	3.788	+1.35	-5.3	14.9	23.4
Oct. 30	15 25.87	-09 51.7	4.687	3.752	+1.40	-5.0	14.9	17.5
Nov. 9	15 39.82	-10 41.3	4.679	3.718	+1.44	-4.5	14.9	12.4
Nov. 19	15 54.21	-11 26.5	4.658	3.685	+1.47	-4.0	14.8	9.0
Nov. 29	16 08.96	-12 06.5	4.624	3.655	+1.50	-3.4	14.8	9.6
Dec. 9	16 23.98	-12 40.6	4.576	3.626	+1.52	-2.8	14.7	13.5
Dec. 19	16 39.18	-13 08.2	4.517	3.599	+1.53	-2.1	14.6	18.9
Dec. 29	16 54.47	-13 28.9	4.445	3.575	+1.53	-1.3	14.6	24.7
Jan. 8	17 09.74	-13 42.4	4.361	3.553	+1.51	-0.6	14.5	30.8
Jan. 18	17 24.87	-13 48.5	4.268	3.533	+1.49	+0.1	14.4	37.0
Jan. 28	17 39.74	-13 47.3	4.165	3.515	+1.45	+0.8	14.4	43.4
Feb. 7	17 54.22	-13 39.0	4.054	3.499	+1.40	+1.5	14.3	49.8
Feb. 17	18 08.19	-13 23.9	3.935	3.486	+1.33	+2.1	14.2	56.4
Feb. 27	18 21.49	-13 02.8	3.811	3.475	+1.25	+2.6	14.1	63.0
Mar. 9	18 33.99	-12 36.4	3.682	3.467	+1.16	+3.1	14.0	69.8
Mar. 19	18 45.55	-12 05.8	3.551	3.461	+1.05	+3.4	13.9	76.8
Mar. 29	18 56.01	-11 32.0	3.418	3.458	+0.92	+3.5	13.9	83.9

Comet P/2006 S6 (Hill)

Epoch = 2014 July 2.0 TT
T = 2015 Apr. 18.83262 TT
Peri. = 31.39187 e = 0.4265323
Node = 8.96796 2000.0 a = 4.1569070 AU
Incl. = 13.18452 n = 0.11629167
q = 2.3838519 AU P = 8.48 years

m1 = 10.6 + 5 log(Delta) + 17.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	19 48.54	-31 21.2	4.752	3.810	-0.44	-1.5	.	18.5/ 77	14.9
Jan. 13	20 02.54	-30 37.2	4.734	3.772	-0.45	-1.8	.	18.9/ 77	10.7
Jan. 23	20 16.65	-29 50.4	4.697	3.733	-0.46	-2.0	.	19.1/ 76	10.3
Feb. 2	20 30.80	-29 00.9	4.643	3.694	-0.46	-2.3	.	19.3/ 75	13.9
Feb. 12	20 44.88	-28 09.1	4.571	3.655	-0.47	-2.5	.	19.3/ 75	19.4
Feb. 22	20 58.82	-27 15.3	4.483	3.615	-0.48	-2.8	.	19.2/ 74	25.5
Mar. 4	21 12.55	-26 20.0	4.379	3.576	-0.49	-3.1	.	19.0/ 74	31.9
Mar. 14	21 25.98	-25 23.8	4.261	3.536	-0.51	-3.4	.	18.7/ 73	38.4
Mar. 24	21 39.06	-24 27.4	4.130	3.497	-0.52	-3.7	.	18.2/ 73	44.9
Apr. 3	21 51.71	-23 31.6	3.988	3.457	-0.54	-4.1	23.0	17.6/ 73	51.6
Apr. 13	22 03.85	-22 37.1	3.836	3.417	-0.56	-4.5	22.9	16.9/ 73	58.3
Apr. 23	22 15.39	-21 44.9	3.675	3.377	-0.58	-4.9	22.7	15.9/ 73	65.1
May 3	22 26.25	-20 56.0	3.508	3.337	-0.61	-5.3	22.5	14.8/ 73	72.0
May 13	22 36.30	-20 11.5	3.337	3.298	-0.64	-5.8	22.3	13.4/ 73	79.1
May 23	22 45.42	-19 32.2	3.163	3.258	-0.67	-6.2	22.1	11.8/ 74	86.3
June 2	22 53.44	-18 59.5	2.989	3.219	-0.71	-6.8	21.9	9.9/ 76	93.8
June 12	23 00.18	-18 34.4	2.817	3.179	-0.76	-7.3	21.6	7.7/ 78	101.5
June 22	23 05.46	-18 17.6	2.650	3.140	-0.81	-7.9	21.4	5.1/ 82	109.6
July 2	23 09.02	-18 10.1	2.490	3.101	-0.87	-8.5	21.2	2.3/ 94	118.1
July 12	23 10.64	-18 11.8	2.342	3.063	-0.93	-9.1	21.0	1.2/214	126.9
July 22	23 10.16	-18 22.1	2.208	3.024	-1.00	-9.7	20.7	4.2/246	136.3
Aug. 1	23 07.44	-18 39.4	2.091	2.986	-1.06	-10.2	20.5	7.2/253	145.9
Aug. 11	23 02.56	-19 00.4	1.995	2.949	-1.12	-10.5	20.3	9.8/258	155.7
Aug. 21	22 55.82	-19 21.0	1.924	2.912	-1.17	-10.7	20.1	11.5/262	164.7
Aug. 31	22 47.77	-19 36.0	1.879	2.876	-1.20	-10.7	20.0	12.0/268	168.9
Sept.10	22 39.25	-19 40.4	1.861	2.840	-1.20	-10.5	19.9	11.4/274	163.4
Sept.20	22 31.21	-19 30.8	1.869	2.805	-1.17	-10.2	19.8	9.8/285	153.8
Sept.30	22 24.54	-19 05.5	1.902	2.771	-1.13	-9.9	19.7	7.7/302	143.5
Oct. 10	22 19.94	-18 24.5	1.955	2.738	-1.08	-9.6	19.7	6.3/331	133.3
Oct. 20	22 17.80	-17 29.3	2.026	2.706	-1.02	-9.3	19.7	6.8/ 5	123.4
Oct. 30	22 18.25	-16 21.6	2.111	2.675	-0.96	-9.1	19.7	8.9/ 29	114.1
Nov. 9	22 21.21	-15 03.0	2.204	2.644	-0.90	-8.9	19.7	11.7/ 41	105.3
Nov. 19	22 26.49	-13 35.2	2.304	2.616	-0.86	-8.7	19.7	14.4/ 48	97.0
Nov. 29	22 33.83	-11 59.0	2.407	2.588	-0.82	-8.7	19.7	17.0/ 53	89.2
Dec. 9	22 42.95	-10 15.3	2.510	2.562	-0.79	-8.6	19.7	19.2/ 55	81.7
Dec. 19	22 53.59	-08 24.9	2.612	2.537	-0.76	-8.5	19.8	21.3/ 57	74.7
Dec. 29	23 05.55	-06 28.2	2.711	2.514	-0.74	-8.5	19.8	23.0/ 58	68.0
Jan. 8	23 18.60	-04 26.0	2.805	2.492	-0.73	-8.5	19.8	24.5/ 59	61.6
Jan. 18	23 32.60	-02 18.9	2.894	2.473	-0.72	-8.5	19.8	25.8/ 59	55.5
Jan. 28	23 47.43	-00 07.6	2.976	2.455	-0.72	-8.4	19.8	26.9/ 60	49.6
Feb. 7	00 02.97	+02 07.0	3.051	2.438	-0.72	-8.4	19.8	27.8/ 60	43.9
Feb. 17	00 19.14	+04 24.0	3.120	2.424	-0.72	-8.3	19.8	28.6/ 61	38.4
Feb. 27	00 35.91	+06 42.5	3.180	2.412	-0.73	-8.2	19.8	29.2/ 61	33.1
Mar. 9	00 53.23	+09 01.4	3.233	2.402	-0.74	-8.0	19.8	29.7/ 62	28.0
Mar. 19	01 11.06	+11 19.6	3.278	2.394	-0.75	-7.9	19.8	30.1/ 63	23.1
Mar. 29	01 29.40	+13 36.1	3.315	2.389	-0.77	-7.7	19.8	30.4/ 63	18.3

Comet 174P/(60558) Echeclus

Epoch = 2014 July 2.0 TT
T = 2015 Apr. 22.94293 TT
Peri. = 162.96230 e = 0.4557298
Node = 173.34254 2000.0 a = 10.6873564 AU
Incl. = 4.34282 n = 0.02820971
q = 5.8168096 AU P = 34.94 years

H = 9.4 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	19 49.02	-17 55.4	7.189	6.239	+0.83	+2.0	17.9	13.9
Jan. 13	19 57.34	-17 35.0	7.199	6.222	+0.84	+2.3	17.8	6.2
Jan. 23	20 05.70	-17 12.3	7.187	6.206	+0.83	+2.5	17.8	4.1
Feb. 2	20 14.02	-16 47.5	7.153	6.190	+0.82	+2.6	17.9	11.3
Feb. 12	20 22.22	-16 21.1	7.098	6.174	+0.80	+2.8	17.9	19.2
Feb. 22	20 30.19	-15 53.4	7.021	6.159	+0.77	+2.8	18.0	27.3
Mar. 4	20 37.85	-15 25.0	6.925	6.144	+0.73	+2.9	18.0	35.4
Mar. 14	20 45.12	-14 56.2	6.811	6.129	+0.68	+2.8	18.0	43.5
Mar. 24	20 51.91	-14 27.9	6.681	6.114	+0.62	+2.7	18.0	51.8
Apr. 3	20 58.15	-14 00.4	6.537	6.100	+0.56	+2.6	18.0	60.1
Apr. 13	21 03.73	-13 34.6	6.382	6.086	+0.49	+2.4	17.9	68.4
Apr. 23	21 08.59	-13 11.0	6.220	6.072	+0.41	+2.1	17.9	77.0
May 3	21 12.64	-12 50.4	6.052	6.059	+0.32	+1.7	17.9	85.6
May 13	21 15.82	-12 33.3	5.883	6.046	+0.22	+1.3	17.8	94.5
May 23	21 18.05	-12 20.3	5.716	6.033	+0.12	+0.8	17.7	103.5
June 2	21 19.29	-12 12.0	5.556	6.021	+0.02	+0.3	17.6	112.7
June 12	21 19.52	-12 08.6	5.406	6.009	-0.08	-0.2	17.5	122.2
June 22	21 18.76	-12 10.5	5.270	5.997	-0.17	-0.7	17.4	131.9
July 2	21 17.06	-12 17.3	5.153	5.986	-0.25	-1.2	17.3	141.9
July 12	21 14.53	-12 28.9	5.058	5.975	-0.32	-1.5	17.2	152.0
July 22	21 11.33	-12 44.3	4.989	5.964	-0.36	-1.8	17.1	162.2
Aug. 1	21 07.69	-13 02.8	4.946	5.954	-0.38	-2.0	16.9	172.3
Aug. 11	21 03.86	-13 23.1	4.933	5.944	-0.37	-2.1	16.9	175.2
Aug. 21	21 00.13	-13 43.8	4.949	5.934	-0.34	-2.0	17.0	165.5
Aug. 31	20 56.77	-14 03.8	4.994	5.925	-0.27	-1.8	17.1	155.1
Sept.10	20 54.05	-14 21.8	5.065	5.916	-0.19	-1.5	17.2	144.8
Sept.20	20 52.15	-14 36.9	5.159	5.908	-0.09	-1.1	17.3	134.6
Sept.30	20 51.23	-14 48.4	5.274	5.900	+0.02	-0.7	17.4	124.5
Oct. 10	20 51.38	-14 55.6	5.404	5.892	+0.12	-0.3	17.5	114.7
Oct. 20	20 52.63	-14 58.3	5.546	5.884	+0.23	+0.2	17.6	105.1
Oct. 30	20 54.97	-14 56.3	5.695	5.877	+0.34	+0.7	17.7	95.7
Nov. 9	20 58.34	-14 49.6	5.848	5.871	+0.43	+1.1	17.7	86.5
Nov. 19	21 02.67	-14 38.1	5.999	5.864	+0.52	+1.6	17.8	77.5
Nov. 29	21 07.86	-14 22.1	6.145	5.858	+0.60	+2.1	17.8	68.7
Dec. 9	21 13.81	-14 01.5	6.283	5.853	+0.66	+2.5	17.8	60.0
Dec. 19	21 20.41	-13 36.9	6.410	5.848	+0.71	+2.9	17.8	51.5
Dec. 29	21 27.56	-13 08.2	6.522	5.843	+0.76	+3.2	17.8	43.1
Jan. 8	21 35.14	-12 36.0	6.619	5.839	+0.79	+3.5	17.8	34.9
Jan. 18	21 43.06	-12 00.7	6.697	5.835	+0.82	+3.8	17.7	26.7
Jan. 28	21 51.22	-11 22.5	6.756	5.831	+0.83	+4.0	17.7	18.6
Feb. 7	21 59.53	-10 42.0	6.794	5.828	+0.84	+4.2	17.6	10.7
Feb. 17	22 07.90	-09 59.7	6.812	5.825	+0.84	+4.4	17.5	3.0
Feb. 27	22 16.25	-09 16.1	6.808	5.823	+0.83	+4.4	17.5	5.4
Mar. 9	22 24.51	-08 31.7	6.783	5.821	+0.81	+4.5	17.6	13.2
Mar. 19	22 32.60	-07 47.2	6.738	5.819	+0.78	+4.4	17.7	21.0
Mar. 29	22 40.44	-07 03.1	6.673	5.818	+0.75	+4.3	17.8	28.8

Comet 218P/LINEAR

Epoch = 2014 July 2.0 TT
T = 2015 Apr. 23.13143 TT
Peri. = 59.75761 e = 0.6219971
Node = 175.92881 2000.0 a = 3.0978979 AU
Incl. = 2.71723 n = 0.18076045
q = 1.1710144 AU P = 5.45 years

m1 = 14.4 + 5 log(Delta) + 17.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	05 33.95	+19 44.6	3.044	3.988	-0.83	-0.2	.	161.2
Jan. 13	05 25.67	+19 42.6	3.068	3.945	-0.69	0.0	.	149.2
Jan. 23	05 18.78	+19 42.1	3.119	3.902	-0.51	+0.2	.	137.5
Feb. 2	05 13.68	+19 43.9	3.193	3.858	-0.31	+0.4	.	126.2
Feb. 12	05 10.61	+19 48.3	3.284	3.812	-0.10	+0.7	.	115.3
Feb. 22	05 09.64	+19 55.4	3.386	3.766	+0.11	+0.9	.	105.1
Mar. 4	05 10.71	+20 04.8	3.494	3.718	+0.30	+1.1	.	95.3
Mar. 14	05 13.71	+20 16.2	3.602	3.670	+0.47	+1.2	.	86.0
Mar. 24	05 18.45	+20 28.5	3.708	3.620	+0.63	+1.3	.	77.2
Apr. 3	05 24.78	+20 41.2	3.807	3.570	+0.77	+1.2	.	68.8
Apr. 13	05 32.51	+20 53.2	3.896	3.518	+0.90	+1.1	.	60.8
Apr. 23	05 41.48	+21 03.8	3.974	3.465	+1.01	+0.8	.	53.1
May 3	05 51.55	+21 12.0	4.037	3.411	+1.10	+0.5	.	45.8
May 13	06 02.59	+21 17.2	4.085	3.356	+1.19	+0.1	.	38.7
May 23	06 14.46	+21 18.7	4.117	3.300	+1.26	-0.3	.	31.8
June 2	06 27.08	+21 15.8	4.132	3.243	+1.33	-0.8	.	25.2
June 12	06 40.34	+21 08.0	4.129	3.184	+1.38	-1.3	.	18.7
June 22	06 54.17	+20 54.8	4.109	3.125	+1.43	-1.9	.	12.5
July 2	07 08.50	+20 35.9	4.072	3.064	+1.48	-2.5	.	6.4
July 12	07 23.25	+20 10.9	4.018	3.002	+1.51	-3.1	.	1.9
July 22	07 38.38	+19 39.5	3.947	2.938	+1.55	-3.8	.	6.1
Aug. 1	07 53.83	+19 01.5	3.860	2.874	+1.57	-4.5	.	11.8
Aug. 11	08 09.56	+18 16.8	3.758	2.808	+1.60	-5.2	.	17.6
Aug. 21	08 25.53	+17 25.3	3.642	2.741	+1.62	-5.8	.	23.3
Aug. 31	08 41.74	+16 26.9	3.512	2.673	+1.64	-6.5	.	28.9
Sept.10	08 58.13	+15 21.7	3.371	2.604	+1.66	-7.2	.	34.5
Sept.20	09 14.73	+14 09.7	3.219	2.533	+1.68	-7.9	.	40.0
Sept.30	09 31.52	+12 51.0	3.057	2.462	+1.70	-8.5	.	45.5
Oct. 10	09 48.50	+11 25.8	2.888	2.389	+1.72	-9.2	.	51.0
Oct. 20	10 05.71	+09 54.3	2.713	2.315	+1.75	-9.8	22.9	56.4
Oct. 30	10 23.18	+08 16.5	2.533	2.240	+1.78	-10.4	22.5	61.7
Nov. 9	10 40.95	+06 32.9	2.350	2.165	+1.82	-10.9	22.1	67.0
Nov. 19	10 59.12	+04 43.5	2.166	2.088	+1.86	-11.5	21.7	72.2
Nov. 29	11 17.77	+02 48.6	1.983	2.011	+1.93	-12.0	21.2	77.3
Dec. 9	11 37.04	+00 48.5	1.803	1.934	+2.01	-12.5	20.7	82.2
Dec. 19	11 57.12	-01 16.6	1.627	1.856	+2.11	-13.0	20.2	86.9
Dec. 29	12 18.24	-03 26.3	1.458	1.778	+2.25	-13.4	19.6	91.4
Jan. 8	12 40.73	-05 40.4	1.297	1.702	+2.43	-13.8	19.0	95.6
Jan. 18	13 05.04	-07 58.2	1.145	1.626	+2.67	-14.0	18.4	99.3
Jan. 28	13 31.72	-10 18.3	1.006	1.552	+2.98	-14.0	17.8	102.5
Feb. 7	14 01.49	-12 38.5	0.880	1.482	+3.37	-13.6	17.1	105.0
Feb. 17	14 35.22	-14 54.3	0.768	1.414	+3.85	-12.3	16.5	106.6
Feb. 27	15 13.70	-16 57.4	0.673	1.352	+4.37	-9.8	15.8	107.3
Mar. 9	15 57.44	-18 35.1	0.596	1.297	+4.86	-5.6	15.3	106.8
Mar. 19	16 46.02	-19 30.9	0.538	1.250	+5.15	+0.1	14.7	105.3
Mar. 29	17 37.48	-19 30.2	0.498	1.212	+5.12	+6.1	14.4	103.1

Comet 113P/Spitaler

Epoch = 2014 July 2.0 TT
T = 2015 Apr. 23.66647 TT
Peri. = 49.99100 e = 0.4246566
Node = 14.38779 2000.0 a = 3.6830331 AU
Incl. = 5.77551 n = 0.13944265
q = 2.1190088 AU P = 7.07 years

m1 = 12.8 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 3	20 26.61	-23 32.2	4.599	3.701	+1.27	+5.1	21.4
Jan. 13	20 39.34	-22 41.7	4.607	3.663	+1.30	+5.4	14.4
Jan. 23	20 52.31	-21 47.5	4.597	3.625	+1.31	+5.8	7.9
Feb. 2	21 05.44	-20 49.7	4.568	3.586	+1.32	+6.1	23.0 4.0
Feb. 12	21 18.64	-19 48.7	4.521	3.547	+1.32	+6.4	22.9 8.1
Feb. 22	21 31.84	-18 44.8	4.457	3.507	+1.31	+6.6	22.9 14.4
Mar. 4	21 44.98	-17 38.5	4.375	3.467	+1.30	+6.8	22.8 20.9
Mar. 14	21 57.98	-16 30.3	4.278	3.427	+1.28	+7.0	22.6 27.5
Mar. 24	22 10.80	-15 20.7	4.166	3.386	+1.26	+7.0	22.5 34.1
Apr. 3	22 23.37	-14 10.4	4.040	3.346	+1.23	+7.0	22.4 40.7
Apr. 13	22 35.64	-13 00.1	3.902	3.305	+1.19	+7.0	22.2 47.3
Apr. 23	22 47.54	-11 50.4	3.753	3.263	+1.15	+6.8	22.1 53.9
May 3	22 59.00	-10 42.2	3.596	3.222	+1.09	+6.6	21.9 60.5
May 13	23 09.93	-09 36.3	3.431	3.180	+1.03	+6.3	21.8 67.3
May 23	23 20.24	-08 33.7	3.260	3.138	+0.96	+5.8	21.6 74.1
June 2	23 29.82	-07 35.3	3.086	3.096	+0.87	+5.3	21.4 81.2
June 12	23 38.51	-06 42.2	2.910	3.054	+0.77	+4.7	21.2 88.4
June 22	23 46.16	-05 55.6	2.734	3.012	+0.64	+3.9	21.0 95.8
July 2	23 52.56	-05 16.7	2.561	2.970	+0.49	+3.0	20.8 103.6
July 12	23 57.49	-04 46.6	2.394	2.928	+0.32	+2.0	20.5 111.8
July 22	00 00.71	-04 26.6	2.235	2.886	+0.13	+0.9	20.3 120.5
Aug. 1	00 01.98	-04 17.6	2.088	2.845	-0.09	-0.2	20.1 129.6
Aug. 11	00 01.10	-04 20.0	1.955	2.803	-0.31	-1.3	19.9 139.4
Aug. 21	23 58.00	-04 33.3	1.841	2.762	-0.52	-2.3	19.6 149.7
Aug. 31	23 52.78	-04 56.0	1.748	2.721	-0.69	-2.9	19.4 160.6
Sept. 10	23 45.83	-05 24.6	1.680	2.681	-0.80	-3.0	19.3 171.6
Sept. 20	23 37.85	-05 54.6	1.639	2.641	-0.81	-2.6	19.1 174.7
Sept. 30	23 29.75	-06 20.5	1.625	2.602	-0.72	-1.7	19.0 163.8
Oct. 10	23 22.56	-06 37.0	1.636	2.563	-0.54	-0.3	19.0 152.3
Oct. 20	23 17.14	-06 40.5	1.671	2.525	-0.30	+1.2	18.9 141.2
Oct. 30	23 14.11	-06 28.7	1.725	2.488	-0.03	+2.8	18.9 130.6
Nov. 9	23 13.79	-06 01.0	1.794	2.453	+0.24	+4.3	18.9 120.7
Nov. 19	23 16.21	-05 17.8	1.874	2.418	+0.50	+5.8	19.0 111.5
Nov. 29	23 21.24	-04 20.1	1.961	2.385	+0.74	+7.1	19.0 102.9
Dec. 9	23 28.65	-03 09.2	2.053	2.352	+0.95	+8.3	19.0 94.9
Dec. 19	23 38.15	-01 46.4	2.146	2.322	+1.14	+9.3	19.0 87.5
Dec. 29	23 49.50	-00 13.2	2.239	2.293	+1.30	+10.2	19.1 80.5
Jan. 8	00 02.46	+01 29.0	2.330	2.266	+1.44	+11.0	19.1 74.0
Jan. 18	00 16.81	+03 18.8	2.418	2.241	+1.56	+11.6	19.1 67.8
Jan. 28	00 32.41	+05 14.6	2.502	2.218	+1.67	+12.0	19.1 62.0
Feb. 7	00 49.12	+07 14.9	2.582	2.197	+1.77	+12.3	19.1 56.5
Feb. 17	01 06.84	+09 18.0	2.656	2.178	+1.87	+12.4	19.1 51.2
Feb. 27	01 25.51	+11 22.2	2.726	2.162	+1.95	+12.4	19.2 46.2
Mar. 9	01 45.06	+13 25.8	2.790	2.148	+2.04	+12.1	19.2 41.4
Mar. 19	02 05.44	+15 26.8	2.850	2.137	+2.12	+11.7	19.2 36.7
Mar. 29	02 26.63	+17 23.5	2.904	2.128	+2.19	+11.0	19.2 32.3

Comet 268P/Bernardi

Epoch = 2014 July 2.0 TT
T = 2015 Apr. 27.51853 TT
Peri. = 0.46879 e = 0.4696295
Node = 127.65484 2000.0 a = 4.5628352 AU
Incl. = 16.10139 n = 0.10112345
q = 2.4199932 AU P = 9.75 years

m1 = 14.2 + 5 log(Delta) + 10.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	01 00.27	-10 56.6	3.911	3.987	+0.40	+6.0	.	87.3
Jan. 13	01 04.28	-09 56.2	4.017	3.945	+0.53	+6.6	.	78.8
Jan. 23	01 09.61	-08 50.1	4.119	3.903	+0.65	+7.0	.	70.6
Feb. 2	01 16.14	-07 39.8	4.213	3.861	+0.76	+7.3	.	62.7
Feb. 12	01 23.75	-06 26.3	4.296	3.819	+0.86	+7.5	.	55.1
Feb. 22	01 32.30	-05 10.9	4.368	3.776	+0.94	+7.6	.	47.8
Mar. 4	01 41.70	-03 54.5	4.427	3.734	+1.01	+7.7	.	40.9
Mar. 14	01 51.84	-02 38.0	4.470	3.691	+1.08	+7.6	.	34.2
Mar. 24	02 02.63	-01 22.1	4.499	3.648	+1.14	+7.4	.	28.0
Apr. 3	02 14.01	-00 07.6	4.512	3.606	+1.19	+7.2	23.0	22.2
Apr. 13	02 25.90	+01 04.6	4.508	3.563	+1.23	+6.9	23.0	17.2
Apr. 23	02 38.24	+02 14.1	4.489	3.520	+1.27	+6.6	22.9	13.6
May 3	02 50.99	+03 20.1	4.454	3.477	+1.31	+6.2	22.9	12.5
May 13	03 04.08	+04 22.1	4.404	3.434	+1.34	+5.7	22.8	14.3
May 23	03 17.46	+05 19.5	4.340	3.392	+1.36	+5.2	22.7	18.1
June 2	03 31.09	+06 11.8	4.261	3.349	+1.38	+4.7	22.6	22.8
June 12	03 44.90	+06 58.4	4.169	3.307	+1.39	+4.1	22.5	28.0
June 22	03 58.83	+07 38.9	4.065	3.265	+1.40	+3.4	22.4	33.4
July 2	04 12.82	+08 13.0	3.950	3.223	+1.40	+2.7	22.3	38.9
July 12	04 26.79	+08 40.3	3.824	3.181	+1.39	+2.0	22.1	44.6
July 22	04 40.65	+09 00.7	3.689	3.140	+1.37	+1.3	22.0	50.3
Aug. 1	04 54.31	+09 13.9	3.546	3.099	+1.33	+0.6	21.9	56.2
Aug. 11	05 07.64	+09 19.9	3.396	3.058	+1.29	-0.1	21.7	62.2
Aug. 21	05 20.52	+09 19.0	3.241	3.018	+1.23	-0.8	21.6	68.4
Aug. 31	05 32.79	+09 11.5	3.081	2.979	+1.15	-1.4	21.4	74.7
Sept.10	05 44.27	+08 57.9	2.919	2.940	+1.05	-1.9	21.2	81.3
Sept.20	05 54.78	+08 39.0	2.756	2.902	+0.93	-2.3	21.0	88.2
Sept.30	06 04.07	+08 16.1	2.593	2.865	+0.78	-2.5	20.8	95.3
Oct. 10	06 11.91	+07 50.8	2.434	2.829	+0.61	-2.6	20.6	102.9
Oct. 20	06 18.03	+07 25.0	2.280	2.794	+0.41	-2.4	20.5	110.8
Oct. 30	06 22.13	+07 01.4	2.135	2.759	+0.19	-1.8	20.3	119.2
Nov. 9	06 23.99	+06 43.1	2.001	2.726	-0.05	-0.9	20.1	128.1
Nov. 19	06 23.46	+06 33.6	1.882	2.694	-0.30	+0.3	19.9	137.4
Nov. 29	06 20.50	+06 36.7	1.781	2.663	-0.51	+1.9	19.7	147.0
Dec. 9	06 15.40	+06 55.7	1.703	2.634	-0.67	+3.7	19.6	156.2
Dec. 19	06 08.70	+07 32.6	1.649	2.606	-0.74	+5.5	19.4	163.2
Dec. 29	06 01.25	+08 27.7	1.622	2.580	-0.71	+7.1	19.4	163.6
Jan. 8	05 54.14	+09 38.9	1.622	2.556	-0.58	+8.3	19.3	157.0
Jan. 18	05 48.36	+11 02.3	1.647	2.533	-0.36	+9.1	19.3	147.5
Jan. 28	05 44.77	+12 33.1	1.696	2.512	-0.09	+9.4	19.3	137.5
Feb. 7	05 43.89	+14 06.7	1.764	2.493	+0.20	+9.2	19.4	127.8
Feb. 17	05 45.93	+15 39.1	1.847	2.476	+0.49	+8.8	19.5	118.5
Feb. 27	05 50.87	+17 07.0	1.943	2.461	+0.77	+8.1	19.6	109.8
Mar. 9	05 58.53	+18 28.2	2.046	2.449	+1.01	+7.3	19.6	101.7
Mar. 19	06 08.61	+19 40.7	2.155	2.438	+1.22	+6.3	19.7	94.2
Mar. 29	06 20.85	+20 43.2	2.267	2.430	+1.41	+5.1	19.8	87.1

Comet P/1997 T3 (Lagerkvist-Carsenty)

Epoch = 2014 July 2.0 TT
T = 2015 May 8.46546 TT
Peri. = 334.03374 e = 0.3640057
Node = 63.13779 2000.0 a = 6.6445078 AU
Incl. = 4.84705 n = 0.05754530
q = 4.2258691 AU P = 17.13 years

m1 = 5.2 + 5 log(Delta) + 17.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	22 13.05	-15 37.4	5.465	4.854	-0.33	-1.8	20.9	13.0/ 67	47.4
Jan. 13	22 21.30	-14 45.5	5.551	4.832	-0.33	-1.8	20.9	13.8/ 67	39.4
Jan. 23	22 30.03	-13 50.6	5.620	4.810	-0.32	-1.9	20.9	14.5/ 67	31.6
Feb. 2	22 39.14	-12 53.1	5.672	4.788	-0.32	-2.0	20.9	15.0/ 67	24.0
Feb. 12	22 48.54	-11 53.7	5.705	4.767	-0.32	-2.0	20.9	15.4/ 67	16.5
Feb. 22	22 58.13	-10 52.8	5.719	4.745	-0.32	-2.1	20.8	15.6/ 67	9.4
Mar. 4	23 07.85	-09 51.0	5.713	4.725	-0.32	-2.1	20.8	15.7/ 67	4.1
Mar. 14	23 17.61	-08 48.8	5.688	4.704	-0.33	-2.2	20.7	15.7/ 67	7.4
Mar. 24	23 27.34	-07 46.8	5.644	4.684	-0.33	-2.3	20.7	15.6/ 67	14.2
Apr. 3	23 36.98	-06 45.5	5.581	4.664	-0.34	-2.3	20.6	15.3/ 67	21.3
Apr. 13	23 46.46	-05 45.7	5.501	4.644	-0.34	-2.4	20.6	15.0/ 67	28.4
Apr. 23	23 55.71	-04 47.7	5.404	4.625	-0.35	-2.5	20.5	14.5/ 68	35.7
May 3	00 04.66	-03 52.4	5.292	4.606	-0.36	-2.6	20.4	13.8/ 68	42.9
May 13	00 13.22	-03 00.2	5.167	4.587	-0.37	-2.7	20.3	13.1/ 68	50.3
May 23	00 21.33	-02 11.9	5.029	4.569	-0.38	-2.8	20.3	12.2/ 69	57.7
June 2	00 28.89	-01 28.0	4.881	4.551	-0.39	-2.8	20.2	11.1/ 69	65.2
June 12	00 35.79	-00 49.2	4.726	4.533	-0.40	-3.0	20.1	9.8/ 70	72.9
June 22	00 41.94	-00 16.1	4.565	4.516	-0.42	-3.1	20.0	8.3/ 71	80.8
July 2	00 47.21	+00 10.6	4.401	4.499	-0.44	-3.2	19.8	6.7/ 73	88.9
July 12	00 51.47	+00 30.4	4.238	4.483	-0.45	-3.3	19.7	4.9/ 75	97.3
July 22	00 54.63	+00 42.8	4.078	4.467	-0.47	-3.5	19.6	2.9/ 81	106.0
Aug. 1	00 56.55	+00 47.4	3.925	4.451	-0.49	-3.6	19.5	1.0/109	115.1
Aug. 11	00 57.17	+00 44.3	3.783	4.436	-0.51	-3.7	19.4	1.5/225	124.5
Aug. 21	00 56.46	+00 33.7	3.656	4.422	-0.53	-3.9	19.3	3.5/240	134.3
Aug. 31	00 54.43	+00 16.3	3.547	4.407	-0.55	-4.0	19.2	5.3/245	144.4
Sept.10	00 51.24	-00 06.6	3.462	4.394	-0.56	-4.1	19.1	6.7/247	154.8
Sept.20	00 47.10	-00 33.0	3.402	4.381	-0.57	-4.2	19.1	7.6/249	165.2
Sept.30	00 42.34	-01 00.4	3.370	4.368	-0.58	-4.2	19.0	7.9/251	174.2
Oct. 10	00 37.39	-01 26.3	3.368	4.356	-0.58	-4.2	19.0	7.4/253	170.2
Oct. 20	00 32.66	-01 47.8	3.395	4.344	-0.57	-4.1	19.0	6.3/256	159.9
Oct. 30	00 28.58	-02 02.8	3.450	4.333	-0.56	-4.0	19.0	4.7/262	149.1
Nov. 9	00 25.50	-02 09.5	3.530	4.322	-0.54	-3.9	19.1	2.8/275	138.5
Nov. 19	00 23.67	-02 07.0	3.631	4.312	-0.53	-3.8	19.1	1.4/331	128.1
Nov. 29	00 23.22	-01 54.9	3.750	4.302	-0.51	-3.7	19.2	2.6/ 35	118.0
Dec. 9	00 24.22	-01 33.5	3.881	4.293	-0.49	-3.6	19.2	4.7/ 50	108.3
Dec. 19	00 26.62	-01 03.3	4.021	4.285	-0.47	-3.5	19.3	6.8/ 56	98.9
Dec. 29	00 30.36	-00 25.3	4.165	4.277	-0.46	-3.4	19.3	8.7/ 59	89.8
Jan. 8	00 35.33	+00 19.7	4.309	4.269	-0.44	-3.3	19.4	10.4/ 61	81.1
Jan. 18	00 41.38	+01 10.6	4.451	4.262	-0.43	-3.2	19.5	11.9/ 62	72.7
Jan. 28	00 48.41	+02 06.6	4.587	4.256	-0.42	-3.1	19.5	13.2/ 63	64.5
Feb. 7	00 56.28	+03 06.5	4.714	4.250	-0.41	-3.0	19.6	14.3/ 64	56.5
Feb. 17	01 04.88	+04 09.6	4.830	4.245	-0.41	-3.0	19.6	15.3/ 65	48.8
Feb. 27	01 14.11	+05 14.9	4.934	4.241	-0.40	-2.9	19.6	16.0/ 65	41.3
Mar. 9	01 23.86	+06 21.6	5.024	4.237	-0.40	-2.8	19.7	16.6/ 66	33.9
Mar. 19	01 34.04	+07 29.0	5.099	4.234	-0.40	-2.8	19.7	17.0/ 67	26.7
Mar. 29	01 44.59	+08 36.3	5.157	4.231	-0.40	-2.7	19.7	17.4/ 67	19.7

Comet P/2007 S1 (Zhao)

Epoch = 2014 July 2.0 TT
T = 2015 May 10.28513 TT
Peri. = 245.76457 e = 0.3438253
Node = 141.52260 2000.0 a = 3.8011001 AU
Incl. = 5.97282 n = 0.13299647
q = 2.4941857 AU P = 7.41 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Variation for T=+1 day		m1	Mot./PA ′/°	Elong. °
Jan. 3	18 51.31	-19 53.7	4.671	3.690	-0.45	0.0	.	19.2/ 86	3.0
Jan. 13	19 04.91	-19 39.5	4.630	3.658	-0.46	-0.2	.	19.4/ 85	7.8
Jan. 23	19 18.55	-19 20.4	4.572	3.627	-0.47	-0.3	.	19.4/ 83	14.5
Feb. 2	19 32.14	-18 56.4	4.496	3.595	-0.49	-0.4	.	19.3/ 82	21.3
Feb. 12	19 45.57	-18 28.1	4.403	3.564	-0.50	-0.6	.	19.1/ 81	28.1
Feb. 22	19 58.77	-17 55.9	4.296	3.532	-0.52	-0.8	.	18.7/ 80	35.0
Mar. 4	20 11.65	-17 20.4	4.174	3.500	-0.54	-0.9	.	18.3/ 78	41.9
Mar. 14	20 24.10	-16 42.3	4.040	3.468	-0.56	-1.1	22.9	17.6/ 77	48.9
Mar. 24	20 36.03	-16 02.6	3.894	3.435	-0.59	-1.3	22.8	16.8/ 76	55.8
Apr. 3	20 47.36	-15 22.1	3.740	3.403	-0.61	-1.5	22.6	15.9/ 76	62.9
Apr. 13	20 57.95	-14 41.9	3.578	3.371	-0.64	-1.7	22.5	14.7/ 75	70.1
Apr. 23	21 07.70	-14 03.2	3.410	3.338	-0.68	-1.9	22.3	13.3/ 75	77.4
May 3	21 16.48	-13 27.4	3.239	3.306	-0.72	-2.1	22.1	11.6/ 74	84.9
May 13	21 24.13	-12 56.0	3.068	3.274	-0.76	-2.4	22.0	9.7/ 75	92.7
May 23	21 30.50	-12 30.4	2.898	3.242	-0.81	-2.6	21.8	7.4/ 76	100.7
June 2	21 35.39	-12 12.3	2.732	3.210	-0.86	-2.9	21.6	4.8/ 79	109.0
June 12	21 38.63	-12 03.4	2.574	3.178	-0.92	-3.1	21.4	2.1/ 95	117.8
June 22	21 40.06	-12 05.1	2.427	3.146	-0.99	-3.4	21.2	1.5/209	127.0
July 2	21 39.54	-12 18.6	2.295	3.114	-1.05	-3.6	21.0	4.4/235	136.8
July 12	21 37.06	-12 44.0	2.180	3.083	-1.11	-3.8	20.8	7.3/240	147.0
July 22	21 32.75	-13 20.6	2.087	3.052	-1.17	-3.9	20.7	9.6/242	157.7
Aug. 1	21 26.92	-14 06.3	2.019	3.021	-1.21	-3.9	20.5	11.1/242	168.9
Aug. 11	21 20.14	-14 57.4	1.977	2.991	-1.23	-3.7	20.4	11.4/243	179.4
Aug. 21	21 13.13	-15 49.6	1.963	2.960	-1.24	-3.5	20.3	10.5/242	168.2
Aug. 31	21 06.71	-16 38.3	1.976	2.931	-1.22	-3.2	20.3	8.3/240	156.9
Sept.10	21 01.66	-17 19.8	2.013	2.902	-1.18	-3.0	20.3	5.5/234	145.8
Sept.20	20 58.55	-17 51.4	2.072	2.873	-1.14	-2.7	20.3	2.3/210	135.2
Sept.30	20 57.74	-18 11.7	2.148	2.845	-1.09	-2.5	20.3	2.5/110	125.1
Oct. 10	20 59.37	-18 20.2	2.238	2.818	-1.04	-2.3	20.3	5.7/ 87	115.6
Oct. 20	21 03.38	-18 17.1	2.338	2.791	-0.99	-2.3	20.3	9.0/ 81	106.6
Oct. 30	21 09.61	-18 02.4	2.444	2.766	-0.95	-2.3	20.4	12.0/ 78	98.2
Nov. 9	21 17.85	-17 36.7	2.553	2.741	-0.91	-2.3	20.4	14.7/ 76	90.1
Nov. 19	21 27.82	-17 00.3	2.662	2.716	-0.88	-2.4	20.4	17.1/ 75	82.5
Nov. 29	21 39.29	-16 13.8	2.769	2.693	-0.85	-2.6	20.5	19.2/ 73	75.3
Dec. 9	21 52.02	-15 17.7	2.872	2.671	-0.83	-2.7	20.5	21.0/ 72	68.4
Dec. 19	22 05.79	-14 12.6	2.971	2.650	-0.82	-2.9	20.5	22.6/ 71	61.7
Dec. 29	22 20.43	-12 58.9	3.063	2.630	-0.80	-3.1	20.5	23.9/ 71	55.3
Jan. 8	22 35.77	-11 37.7	3.147	2.611	-0.79	-3.2	20.5	25.0/ 70	49.1
Jan. 18	22 51.69	-10 09.6	3.223	2.593	-0.78	-3.4	20.5	26.0/ 69	43.1
Jan. 28	23 08.09	-08 35.5	3.290	2.577	-0.78	-3.6	20.6	26.8/ 69	37.3
Feb. 7	23 24.87	-06 56.5	3.349	2.562	-0.77	-3.7	20.6	27.5/ 68	31.7
Feb. 17	23 41.97	-05 13.6	3.398	2.548	-0.77	-3.8	20.5	28.1/ 68	26.2
Feb. 27	23 59.35	-03 27.9	3.437	2.536	-0.77	-3.9	20.5	28.5/ 68	20.8
Mar. 9	00 16.95	-01 40.5	3.467	2.526	-0.77	-4.0	20.5	28.8/ 68	15.7
Mar. 19	00 34.76	+00 07.5	3.488	2.516	-0.77	-4.0	20.5	29.0/ 68	10.7
Mar. 29	00 52.75	+01 55.0	3.499	2.509	-0.77	-4.0	20.5	29.2/ 69	6.2

Comet 19P/Borrelly

Epoch = 2014 July 2.0 TT
T = 2015 May 28.89220 TT
Peri. = 353.44004 e = 0.6255454
Node = 75.38387 2000.0 a = 3.6027019 AU
Incl. = 30.36885 n = 0.14413239
q = 1.3490483 AU P = 6.84 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	19 04.75	-35 21.6	5.244	4.291	+1.24	+0.2	20.5	12.7
Jan. 13	19 17.14	-35 19.7	5.190	4.245	+1.26	+0.2	20.4	14.5
Jan. 23	19 29.69	-35 17.6	5.115	4.198	+1.26	+0.2	20.3	19.2
Feb. 2	19 42.32	-35 15.9	5.020	4.151	+1.26	+0.1	20.2	25.4
Feb. 12	19 54.93	-35 15.0	4.905	4.103	+1.25	-0.1	20.0	32.1
Feb. 22	20 07.42	-35 15.6	4.774	4.054	+1.23	-0.3	19.9	39.1
Mar. 4	20 19.71	-35 18.6	4.626	4.004	+1.20	-0.6	19.8	46.2
Mar. 14	20 31.69	-35 25.1	4.464	3.953	+1.16	-1.1	19.6	53.5
Mar. 24	20 43.27	-35 36.1	4.290	3.902	+1.11	-1.7	19.4	60.8
Apr. 3	20 54.36	-35 53.2	4.107	3.850	+1.05	-2.5	19.2	68.2
Apr. 13	21 04.81	-36 17.8	3.918	3.797	+0.97	-3.4	19.1	75.7
Apr. 23	21 14.50	-36 51.5	3.724	3.743	+0.88	-4.4	18.9	83.3
May 3	21 23.27	-37 35.9	3.529	3.688	+0.76	-5.7	18.6	91.0
May 13	21 30.91	-38 32.7	3.336	3.632	+0.63	-7.1	18.4	98.9
May 23	21 37.20	-39 43.3	3.149	3.575	+0.46	-8.5	18.2	106.8
June 2	21 41.84	-41 08.5	2.970	3.518	+0.27	-10.0	18.0	114.8
June 12	21 44.50	-42 48.3	2.804	3.459	+0.03	-11.3	17.7	122.6
June 22	21 44.81	-44 41.2	2.654	3.400	-0.24	-12.2	17.5	130.2
July 2	21 42.36	-46 43.6	2.522	3.339	-0.55	-12.6	17.3	137.1
July 12	21 36.86	-48 49.4	2.413	3.278	-0.87	-12.1	17.0	142.5
July 22	21 28.20	-50 50.2	2.328	3.216	-1.16	-10.6	16.8	145.4
Aug. 1	21 16.65	-52 36.1	2.268	3.153	-1.36	-8.1	16.7	144.9
Aug. 11	21 03.07	-53 57.6	2.233	3.089	-1.42	-5.1	16.5	141.3
Aug. 21	20 48.85	-54 48.1	2.220	3.024	-1.32	-1.7	16.3	135.3
Aug. 31	20 35.68	-55 05.5	2.229	2.959	-1.05	+1.3	16.2	127.9
Sept.10	20 25.14	-54 52.3	2.253	2.892	-0.69	+3.8	16.1	120.0
Sept.20	20 18.25	-54 13.8	2.291	2.825	-0.28	+5.8	16.0	112.0
Sept.30	20 15.50	-53 16.0	2.336	2.756	+0.14	+7.2	15.8	104.0
Oct. 10	20 16.86	-52 04.2	2.386	2.687	+0.51	+8.2	15.7	96.4
Oct. 20	20 21.99	-50 42.1	2.437	2.617	+0.85	+9.1	15.6	89.1
Oct. 30	20 30.46	-49 11.6	2.486	2.547	+1.13	+9.8	15.5	82.1
Nov. 9	20 41.79	-47 33.6	2.530	2.476	+1.37	+10.6	15.3	75.5
Nov. 19	20 55.51	-45 47.9	2.569	2.404	+1.57	+11.4	15.2	69.3
Nov. 29	21 11.22	-43 53.7	2.599	2.332	+1.73	+12.4	15.0	63.5
Dec. 9	21 28.55	-41 50.2	2.621	2.259	+1.87	+13.4	14.8	58.0
Dec. 19	21 47.22	-39 36.1	2.635	2.187	+1.98	+14.6	14.6	52.9
Dec. 29	22 06.97	-37 10.5	2.639	2.114	+2.06	+15.8	14.4	48.1
Jan. 8	22 27.60	-34 32.5	2.635	2.042	+2.14	+17.1	14.2	43.8
Jan. 18	22 48.95	-31 41.3	2.624	1.970	+2.20	+18.5	13.9	39.7
Jan. 28	23 10.92	-28 36.3	2.606	1.899	+2.25	+19.9	13.7	36.0
Feb. 7	23 33.43	-25 17.6	2.582	1.829	+2.30	+21.3	13.4	32.5
Feb. 17	23 56.44	-21 45.1	2.554	1.761	+2.35	+22.6	13.1	29.4
Feb. 27	00 19.96	-17 59.4	2.524	1.696	+2.40	+23.8	12.9	26.5
Mar. 9	00 43.99	-14 01.6	2.493	1.633	+2.46	+24.8	12.6	23.7
Mar. 19	01 08.61	-09 53.3	2.462	1.574	+2.53	+25.7	12.3	21.1
Mar. 29	01 33.89	-05 36.6	2.434	1.520	+2.60	+26.2	12.1	18.5

Comet P/2010 B2 (WISE)

Epoch = 2014 July 2.0 TT
T = 2015 June 13.51193 TT
Peri. = 155.97087 e = 0.4810098
Node = 0.85765 2000.0 a = 3.1058849 AU
Incl. = 8.93803 n = 0.18006365
q = 1.6119238 AU P = 5.47 years

H = 17.0 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	23 58.66	+02 13.9	3.906	3.829	+0.56	+4.0	.	78.3
Jan. 13	00 04.21	+02 54.3	4.024	3.795	+0.67	+4.8	.	69.6
Jan. 23	00 10.88	+03 42.0	4.133	3.760	+0.77	+5.4	.	61.3
Feb. 2	00 18.54	+04 36.0	4.230	3.725	+0.85	+6.0	.	53.3
Feb. 12	00 27.05	+05 35.5	4.313	3.689	+0.92	+6.4	.	45.5
Feb. 22	00 36.30	+06 39.7	4.381	3.652	+0.99	+6.8	.	37.9
Mar. 4	00 46.20	+07 47.7	4.433	3.615	+1.05	+7.1	.	30.6
Mar. 14	00 56.66	+08 58.9	4.466	3.577	+1.09	+7.4	.	23.5
Mar. 24	01 07.60	+10 12.5	4.481	3.537	+1.14	+7.5	.	16.6
Apr. 3	01 18.97	+11 27.8	4.478	3.498	+1.17	+7.6	.	10.0
Apr. 13	01 30.71	+12 44.2	4.456	3.457	+1.21	+7.7	.	4.2
Apr. 23	01 42.77	+14 01.3	4.416	3.416	+1.24	+7.7	.	4.8
May 3	01 55.13	+15 18.3	4.359	3.373	+1.26	+7.7	.	10.7
May 13	02 07.73	+16 34.9	4.284	3.331	+1.28	+7.6	.	16.9
May 23	02 20.53	+17 50.6	4.194	3.287	+1.30	+7.4	.	23.1
June 2	02 33.51	+19 05.1	4.088	3.242	+1.31	+7.3	.	29.4
June 12	02 46.59	+20 17.9	3.968	3.197	+1.32	+7.1	.	35.6
June 22	02 59.75	+21 28.8	3.835	3.151	+1.32	+6.9	.	41.8
July 2	03 12.91	+22 37.5	3.690	3.105	+1.31	+6.6	.	48.1
July 12	03 25.99	+23 44.0	3.535	3.057	+1.29	+6.4	23.0	54.4
July 22	03 38.91	+24 48.2	3.371	3.009	+1.26	+6.2	22.9	60.8
Aug. 1	03 51.54	+25 50.2	3.200	2.961	+1.22	+6.0	22.8	67.3
Aug. 11	04 03.74	+26 50.1	3.023	2.911	+1.16	+5.8	22.7	74.0
Aug. 21	04 15.34	+27 48.3	2.842	2.861	+1.08	+5.7	22.6	80.8
Aug. 31	04 26.12	+28 45.2	2.660	2.811	+0.97	+5.6	22.4	87.9
Sept. 10	04 35.79	+29 41.4	2.478	2.760	+0.83	+5.6	22.2	95.3
Sept. 20	04 44.06	+30 37.5	2.298	2.708	+0.64	+5.7	22.0	103.1
Sept. 30	04 50.49	+31 34.0	2.124	2.656	+0.42	+5.7	21.8	111.2
Oct. 10	04 54.66	+32 31.1	1.958	2.603	+0.14	+5.7	21.5	119.8
Oct. 20	04 56.08	+33 28.2	1.803	2.550	-0.18	+5.5	21.2	129.0
Oct. 30	04 54.27	+34 23.6	1.664	2.497	-0.53	+5.0	20.9	138.7
Nov. 9	04 48.96	+35 13.4	1.543	2.444	-0.87	+3.9	20.6	148.7
Nov. 19	04 40.22	+35 52.5	1.444	2.390	-1.15	+2.2	20.3	158.3
Nov. 29	04 28.73	+36 14.5	1.370	2.337	-1.28	+0.1	20.0	165.0
Dec. 9	04 15.88	+36 15.0	1.322	2.283	-1.24	-2.1	19.9	163.2
Dec. 19	04 03.52	+35 54.1	1.301	2.230	-1.00	-3.7	20.0	154.6
Dec. 29	03 53.51	+35 16.8	1.304	2.177	-0.63	-4.5	20.1	144.0
Jan. 8	03 47.25	+34 31.8	1.326	2.125	-0.19	-4.4	20.2	133.4
Jan. 18	03 45.39	+33 47.4	1.364	2.074	+0.27	-3.8	20.4	123.3
Jan. 28	03 48.08	+33 09.3	1.413	2.024	+0.70	-2.9	20.5	114.0
Feb. 7	03 55.08	+32 40.2	1.468	1.975	+1.09	-2.1	20.6	105.5
Feb. 17	04 05.98	+32 19.5	1.526	1.927	+1.44	-1.4	20.7	97.8
Feb. 27	04 20.38	+32 05.1	1.586	1.882	+1.75	-1.2	20.7	90.9
Mar. 9	04 37.86	+31 53.3	1.644	1.839	+2.02	-1.3	20.8	84.6
Mar. 19	04 58.02	+31 40.2	1.700	1.798	+2.25	-1.9	20.8	79.0
Mar. 29	05 20.52	+31 21.5	1.753	1.760	+2.45	-2.8	20.8	73.9

Comet 148P/Anderson-LINEAR

Epoch = 2014 July 2.0 TT
T = 2015 June 13.74380 TT
Peri. = 6.66916 e = 0.5395214
Node = 89.78581 2000.0 a = 3.6751252 AU
Incl. = 3.68190 n = 0.13989296
q = 1.6923165 AU P = 7.05 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 3	21 14.63	-18 34.4	4.933	4.145	+0.99	+4.6	.	33.2
Jan. 13	21 24.56	-17 48.4	4.969	4.103	+1.03	+5.0	.	25.5
Jan. 23	21 34.90	-16 58.9	4.986	4.061	+1.07	+5.3	.	18.0
Feb. 2	21 45.56	-16 06.2	4.982	4.017	+1.09	+5.5	.	10.6
Feb. 12	21 56.44	-15 10.8	4.958	3.974	+1.10	+5.8	.	3.9
Feb. 22	22 07.47	-14 13.2	4.914	3.929	+1.11	+6.0	.	4.9
Mar. 4	22 18.58	-13 13.6	4.849	3.884	+1.11	+6.1	.	11.7
Mar. 14	22 29.69	-12 12.9	4.766	3.838	+1.10	+6.1	.	18.7
Mar. 24	22 40.73	-11 11.4	4.665	3.791	+1.09	+6.2	.	25.7
Apr. 3	22 51.66	-10 09.8	4.546	3.744	+1.07	+6.1	.	32.7
Apr. 13	23 02.40	-09 08.7	4.412	3.696	+1.05	+6.0	.	39.7
Apr. 23	23 12.89	-08 08.9	4.264	3.648	+1.02	+5.8	.	46.6
May 3	23 23.06	-07 11.1	4.103	3.599	+0.98	+5.5	.	53.7
May 13	23 32.82	-06 16.2	3.932	3.549	+0.93	+5.1	.	60.7
May 23	23 42.10	-05 25.0	3.752	3.499	+0.87	+4.7	.	67.9
June 2	23 50.78	-04 38.4	3.565	3.448	+0.79	+4.1	.	75.2
June 12	23 58.73	-03 57.7	3.373	3.396	+0.71	+3.4	.	82.7
June 22	00 05.81	-03 23.8	3.180	3.344	+0.60	+2.6	.	90.3
July 2	00 11.83	-02 58.1	2.987	3.291	+0.48	+1.6	22.8	98.3
July 12	00 16.60	-02 41.9	2.797	3.238	+0.33	+0.5	22.6	106.6
July 22	00 19.90	-02 36.5	2.614	3.184	+0.16	-0.7	22.3	115.3
Aug. 1	00 21.48	-02 43.2	2.441	3.130	-0.03	-1.9	22.0	124.5
Aug. 11	00 21.14	-03 02.7	2.281	3.075	-0.24	-3.2	21.7	134.2
Aug. 21	00 18.75	-03 35.1	2.138	3.019	-0.45	-4.4	21.4	144.5
Aug. 31	00 14.25	-04 19.4	2.017	2.964	-0.64	-5.3	21.2	155.2
Sept.10	00 07.87	-05 12.8	1.919	2.907	-0.78	-5.8	20.9	166.1
Sept.20	00 00.07	-06 10.8	1.849	2.851	-0.85	-5.7	20.7	174.3
Sept.30	23 51.55	-07 07.4	1.808	2.794	-0.83	-4.9	20.5	167.3
Oct. 10	23 43.27	-07 56.0	1.794	2.737	-0.71	-3.5	20.3	156.0
Oct. 20	23 36.13	-08 31.4	1.806	2.679	-0.52	-1.8	20.2	144.5
Oct. 30	23 30.91	-08 49.7	1.839	2.622	-0.28	+0.1	20.0	133.3
Nov. 9	23 28.16	-08 49.1	1.889	2.564	-0.01	+1.9	19.9	122.8
Nov. 19	23 28.09	-08 30.0	1.951	2.507	+0.26	+3.7	19.8	112.9
Nov. 29	23 30.74	-07 53.0	2.021	2.450	+0.52	+5.3	19.7	103.7
Dec. 9	23 35.96	-06 59.8	2.095	2.393	+0.76	+6.8	19.6	95.1
Dec. 19	23 43.54	-05 52.0	2.169	2.336	+0.97	+8.1	19.5	87.1
Dec. 29	23 53.26	-04 31.0	2.241	2.280	+1.16	+9.3	19.4	79.7
Jan. 8	00 04.89	-02 58.3	2.308	2.225	+1.33	+10.3	19.3	72.8
Jan. 18	00 18.23	-01 15.5	2.370	2.171	+1.49	+11.2	19.2	66.4
Jan. 28	00 33.14	+00 36.3	2.425	2.119	+1.63	+11.9	19.0	60.4
Feb. 7	00 49.49	+02 35.4	2.473	2.067	+1.77	+12.5	18.9	54.8
Feb. 17	01 07.20	+04 40.3	2.514	2.018	+1.90	+12.9	18.7	49.5
Feb. 27	01 26.23	+06 49.3	2.548	1.971	+2.03	+13.1	18.6	44.7
Mar. 9	01 46.53	+09 00.6	2.576	1.926	+2.16	+13.1	18.4	40.1
Mar. 19	02 08.11	+11 12.0	2.598	1.884	+2.29	+12.9	18.3	35.9
Mar. 29	02 30.99	+13 21.2	2.615	1.845	+2.42	+12.4	18.1	31.9

Comet P/2012 F5 (Gibbs)

Epoch = 2014 July 2.0 TT
T = 2015 June 15.72347 TT
Peri. = 178.02277 e = 0.0414638
Node = 216.84432 2000.0 a = 3.0048974 AU
Incl. = 9.73761 n = 0.18921676
q = 2.8803029 AU P = 5.21 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′	m1	Elong. °
Jan. 3	19 14.42	-15 13.3	3.999	3.032	+1.60	+3.6	21.8	9.1
Jan. 13	19 30.40	-14 37.2	4.001	3.028	+1.59	+4.3	21.8	7.1
Jan. 23	19 46.27	-13 53.9	3.989	3.024	+1.57	+5.0	21.8	9.8
Feb. 2	20 01.96	-13 03.8	3.962	3.019	+1.54	+5.6	21.8	14.8
Feb. 12	20 17.38	-12 07.3	3.920	3.015	+1.51	+6.2	21.8	20.5
Feb. 22	20 32.44	-11 05.1	3.865	3.011	+1.47	+6.7	21.7	26.4
Mar. 4	20 47.10	-09 57.9	3.796	3.007	+1.42	+7.1	21.7	32.5
Mar. 14	21 01.27	-08 46.5	3.715	3.003	+1.36	+7.5	21.6	38.6
Mar. 24	21 14.88	-07 31.6	3.622	2.999	+1.30	+7.7	21.5	44.8
Apr. 3	21 27.86	-06 14.3	3.519	2.995	+1.23	+7.9	21.5	51.2
Apr. 13	21 40.13	-04 55.4	3.406	2.991	+1.15	+7.9	21.4	57.6
Apr. 23	21 51.59	-03 36.1	3.286	2.987	+1.06	+7.9	21.3	64.1
May 3	22 02.16	-02 17.4	3.159	2.983	+0.95	+7.7	21.2	70.8
May 13	22 11.69	-01 00.6	3.026	2.979	+0.84	+7.4	21.1	77.6
May 23	22 20.07	+00 12.9	2.891	2.974	+0.71	+6.9	21.0	84.8
June 2	22 27.13	+01 21.6	2.754	2.970	+0.56	+6.2	20.9	92.1
June 12	22 32.69	+02 23.7	2.619	2.966	+0.39	+5.4	20.8	99.9
June 22	22 36.58	+03 17.3	2.487	2.963	+0.20	+4.3	20.7	108.0
July 2	22 38.61	+03 60.0	2.361	2.959	0.00	+2.9	20.5	116.5
July 12	22 38.65	+04 29.4	2.246	2.955	-0.20	+1.4	20.4	125.5
July 22	22 36.66	+04 43.4	2.144	2.951	-0.40	-0.4	20.3	135.0
Aug. 1	22 32.70	+04 39.8	2.059	2.947	-0.56	-2.2	20.2	144.8
Aug. 11	22 27.08	+04 17.9	1.996	2.944	-0.68	-3.9	20.1	154.5
Aug. 21	22 20.30	+03 38.6	1.957	2.940	-0.72	-5.4	20.1	163.3
Aug. 31	22 13.06	+02 44.4	1.944	2.936	-0.69	-6.4	20.1	167.1
Sept. 10	22 06.16	+01 40.5	1.958	2.933	-0.58	-6.8	20.1	162.2
Sept. 20	22 00.36	+00 32.6	1.999	2.929	-0.41	-6.6	20.1	153.0
Sept. 30	21 56.28	-00 33.3	2.064	2.926	-0.20	-5.9	20.2	142.9
Oct. 10	21 54.30	-01 32.1	2.150	2.923	+0.03	-4.8	20.2	132.9
Oct. 20	21 54.56	-02 20.3	2.254	2.920	+0.25	-3.5	20.3	123.1
Oct. 30	21 57.05	-02 55.8	2.371	2.917	+0.46	-2.2	20.4	113.8
Nov. 9	22 01.62	-03 17.6	2.498	2.914	+0.64	-0.8	20.6	104.8
Nov. 19	22 08.05	-03 25.7	2.631	2.911	+0.81	+0.5	20.7	96.4
Nov. 29	22 16.12	-03 20.6	2.766	2.908	+0.95	+1.7	20.8	88.2
Dec. 9	22 25.58	-03 03.1	2.902	2.906	+1.06	+2.9	20.9	80.5
Dec. 19	22 36.21	-02 34.4	3.034	2.903	+1.16	+3.9	21.0	73.0
Dec. 29	22 47.82	-01 55.4	3.162	2.901	+1.24	+4.8	21.0	65.8
Jan. 8	23 00.23	-01 07.3	3.284	2.898	+1.31	+5.6	21.1	58.8
Jan. 18	23 13.30	-00 11.4	3.397	2.896	+1.36	+6.3	21.2	52.0
Jan. 28	23 26.93	+00 51.2	3.500	2.894	+1.41	+6.8	21.2	45.4
Feb. 7	23 41.00	+01 59.3	3.593	2.892	+1.44	+7.2	21.3	38.9
Feb. 17	23 55.43	+03 11.8	3.673	2.891	+1.47	+7.6	21.3	32.6
Feb. 27	00 10.17	+04 27.6	3.742	2.889	+1.50	+7.8	21.4	26.4
Mar. 9	00 25.15	+05 45.5	3.797	2.887	+1.52	+7.9	21.4	20.4
Mar. 19	00 40.33	+07 04.6	3.840	2.886	+1.54	+7.9	21.4	14.4
Mar. 29	00 55.69	+08 23.9	3.868	2.885	+1.55	+7.8	21.4	8.6

Comet 233P/La Sagra

Epoch = 2014 July 2.0 TT
T = 2015 June 25.38727 TT
Peri. = 27.21240 e = 0.4107488
Node = 74.97220 2000.0 a = 3.0324736 AU
Incl. = 11.27833 n = 0.18664164
q = 1.7868887 AU P = 5.28 years

H = 16.6 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	21 16.50	-24 48.9	4.458	3.669	+1.19	+5.8	.	32.6
Jan. 13	21 28.37	-23 50.8	4.501	3.640	+1.22	+6.1	.	25.7
Jan. 23	21 40.58	-22 50.1	4.526	3.610	+1.25	+6.3	.	19.1
Feb. 2	21 53.07	-21 46.9	4.532	3.579	+1.27	+6.5	23.0	13.1
Feb. 12	22 05.73	-20 41.9	4.520	3.548	+1.28	+6.7	22.9	9.0
Feb. 22	22 18.49	-19 35.3	4.489	3.516	+1.28	+6.8	22.9	9.2
Mar. 4	22 31.30	-18 27.8	4.440	3.483	+1.28	+6.8	22.9	13.5
Mar. 14	22 44.09	-17 20.0	4.374	3.450	+1.27	+6.8	22.9	19.2
Mar. 24	22 56.80	-16 12.4	4.291	3.416	+1.26	+6.7	23.0	25.3
Apr. 3	23 09.39	-15 05.8	4.192	3.382	+1.24	+6.5	23.0	31.7
Apr. 13	23 21.81	-14 00.9	4.078	3.346	+1.22	+6.2	22.9	38.0
Apr. 23	23 34.01	-12 58.5	3.952	3.311	+1.19	+5.9	22.9	44.5
May 3	23 45.93	-11 59.4	3.813	3.274	+1.16	+5.5	22.9	51.0
May 13	23 57.49	-11 04.6	3.665	3.237	+1.11	+5.0	22.8	57.6
May 23	00 08.64	-10 14.9	3.507	3.199	+1.06	+4.3	22.7	64.2
June 2	00 19.27	-09 31.6	3.342	3.161	+1.00	+3.6	22.6	71.0
June 12	00 29.27	-08 55.6	3.173	3.122	+0.92	+2.8	22.5	77.9
June 22	00 38.51	-08 28.1	3.000	3.082	+0.83	+1.8	22.4	85.0
July 2	00 46.81	-08 10.4	2.826	3.042	+0.72	+0.7	22.3	92.3
July 12	00 53.98	-08 03.7	2.654	3.001	+0.58	-0.5	22.1	99.9
July 22	00 59.78	-08 09.0	2.485	2.960	+0.42	-1.8	21.9	107.9
Aug. 1	01 03.95	-08 27.5	2.324	2.918	+0.22	-3.2	21.7	116.2
Aug. 11	01 06.19	-08 59.2	2.172	2.876	+0.01	-4.5	21.5	125.0
Aug. 21	01 06.27	-09 43.7	2.034	2.833	-0.23	-5.5	21.2	134.1
Aug. 31	01 03.95	-10 39.1	1.913	2.790	-0.47	-6.2	21.0	143.6
Sept. 10	00 59.23	-11 41.2	1.812	2.747	-0.69	-6.3	20.7	152.8
Sept. 20	00 52.31	-12 44.1	1.736	2.703	-0.86	-5.6	20.5	160.4
Sept. 30	00 43.72	-13 40.2	1.685	2.659	-0.94	-4.1	20.3	163.0
Oct. 10	00 34.35	-14 21.4	1.661	2.615	-0.91	-2.0	20.4	158.2
Oct. 20	00 25.27	-14 41.5	1.663	2.570	-0.78	+0.5	20.5	149.4
Oct. 30	00 17.52	-14 36.7	1.688	2.526	-0.56	+3.0	20.6	139.3
Nov. 9	00 11.95	-14 06.9	1.733	2.481	-0.29	+5.3	20.7	129.2
Nov. 19	00 09.05	-13 14.0	1.793	2.437	0.00	+7.3	20.8	119.5
Nov. 29	00 09.00	-12 01.0	1.864	2.393	+0.28	+9.0	20.9	110.3
Dec. 9	00 11.76	-10 31.2	1.943	2.349	+0.53	+10.3	21.0	101.6
Dec. 19	00 17.10	-08 47.8	2.024	2.305	+0.77	+11.5	21.1	93.6
Dec. 29	00 24.78	-06 53.1	2.107	2.262	+0.98	+12.4	21.2	86.0
Jan. 8	00 34.54	-04 49.2	2.187	2.220	+1.16	+13.1	21.2	79.0
Jan. 18	00 46.13	-02 37.9	2.264	2.178	+1.32	+13.7	21.2	72.4
Jan. 28	00 59.38	-00 20.6	2.336	2.137	+1.47	+14.2	21.2	66.2
Feb. 7	01 14.10	+02 01.0	2.403	2.098	+1.61	+14.5	21.2	60.3
Feb. 17	01 30.18	+04 25.7	2.464	2.060	+1.74	+14.6	21.2	54.9
Feb. 27	01 47.56	+06 51.8	2.518	2.023	+1.86	+14.6	21.2	49.7
Mar. 9	02 06.16	+09 17.8	2.566	1.989	+1.98	+14.4	21.2	44.8
Mar. 19	02 25.96	+11 41.9	2.608	1.956	+2.10	+14.0	21.1	40.2
Mar. 29	02 46.97	+14 02.3	2.644	1.926	+2.22	+13.5	21.1	35.9

Comet 162P/Siding Spring

Epoch = 2014 July 2.0 TT
T = 2015 July 11.97679 TT
Peri. = 356.41120 e = 0.5952311
Node = 31.22342 2000.0 a = 3.0562447 AU
Incl. = 27.78860 n = 0.18446836
q = 1.2370728 AU P = 5.34 years

H = 13.4 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	15 47.92	-29 24.1	4.879	4.199	+0.92	-5.8	20.6	41.9
Jan. 13	15 57.15	-30 21.8	4.732	4.165	+0.87	-5.8	20.5	49.8
Jan. 23	16 05.86	-31 19.9	4.571	4.131	+0.80	-5.9	20.5	57.8
Feb. 2	16 13.87	-32 18.7	4.397	4.095	+0.71	-6.0	20.4	65.9
Feb. 12	16 20.97	-33 18.6	4.214	4.059	+0.60	-6.1	20.3	74.3
Feb. 22	16 26.94	-34 19.8	4.025	4.022	+0.46	-6.3	20.2	82.8
Mar. 4	16 31.53	-35 22.8	3.833	3.984	+0.29	-6.5	20.1	91.5
Mar. 14	16 34.44	-36 27.4	3.642	3.945	+0.10	-6.6	20.0	100.4
Mar. 24	16 35.41	-37 33.3	3.456	3.904	-0.13	-6.6	19.8	109.6
Apr. 3	16 34.11	-38 39.4	3.279	3.863	-0.38	-6.4	19.7	118.9
Apr. 13	16 30.33	-39 43.6	3.117	3.821	-0.64	-5.9	19.5	128.4
Apr. 23	16 23.93	-40 43.0	2.972	3.778	-0.90	-5.1	19.3	137.9
May 3	16 14.97	-41 33.7	2.850	3.734	-1.11	-3.8	19.1	146.8
May 13	16 03.84	-42 11.3	2.754	3.689	-1.26	-2.1	18.9	154.2
May 23	15 51.22	-42 32.3	2.685	3.643	-1.31	-0.3	18.8	157.9
June 2	15 38.10	-42 34.8	2.646	3.596	-1.25	+1.5	18.8	156.0
June 12	15 25.57	-42 19.9	2.636	3.548	-1.09	+2.9	18.8	149.5
June 22	15 14.64	-41 51.4	2.652	3.499	-0.86	+3.7	18.9	140.9
July 2	15 06.04	-41 14.5	2.690	3.449	-0.59	+3.9	19.0	131.5
July 12	15 00.19	-40 35.2	2.747	3.398	-0.30	+3.7	19.1	122.1
July 22	14 57.20	-39 58.4	2.818	3.346	-0.02	+3.1	19.1	112.8
Aug. 1	14 57.01	-39 27.5	2.897	3.292	+0.24	+2.3	19.2	103.9
Aug. 11	14 59.45	-39 04.8	2.981	3.238	+0.48	+1.4	19.3	95.4
Aug. 21	15 04.29	-38 51.2	3.066	3.182	+0.70	+0.5	19.3	87.2
Aug. 31	15 11.34	-38 46.7	3.148	3.126	+0.91	-0.4	19.3	79.5
Sept. 10	15 20.40	-38 50.6	3.224	3.068	+1.09	-1.1	19.3	72.1
Sept. 20	15 31.30	-39 01.8	3.292	3.009	+1.26	-1.7	19.3	65.0
Sept. 30	15 43.93	-39 18.9	3.350	2.949	+1.43	-2.2	19.3	58.3
Oct. 10	15 58.18	-39 40.5	3.396	2.888	+1.58	-2.4	19.2	51.8
Oct. 20	16 13.98	-40 04.7	3.429	2.825	+1.73	-2.5	19.2	45.7
Oct. 30	16 31.29	-40 30.0	3.449	2.762	+1.87	-2.4	19.1	40.0
Nov. 9	16 50.03	-40 54.4	3.454	2.698	+2.02	-2.2	19.0	34.6
Nov. 19	17 10.19	-41 16.0	3.445	2.632	+2.15	-1.7	18.9	29.7
Nov. 29	17 31.71	-41 32.9	3.421	2.565	+2.28	-1.0	18.7	25.4
Dec. 9	17 54.52	-41 43.2	3.384	2.498	+2.40	-0.1	18.6	21.9
Dec. 19	18 18.57	-41 44.6	3.334	2.429	+2.52	+0.9	18.5	19.6
Dec. 29	18 43.76	-41 35.4	3.271	2.359	+2.62	+2.2	18.4	18.5
Jan. 8	19 09.96	-41 13.3	3.197	2.289	+2.71	+3.7	18.3	18.9
Jan. 18	19 37.04	-40 36.6	3.113	2.217	+2.78	+5.3	18.2	20.4
Jan. 28	20 04.83	-39 43.4	3.021	2.146	+2.83	+7.1	18.1	22.6
Feb. 7	20 33.17	-38 32.0	2.922	2.073	+2.87	+9.1	18.0	25.2
Feb. 17	21 01.89	-37 01.1	2.818	2.000	+2.89	+11.2	17.9	28.0
Feb. 27	21 30.83	-35 09.5	2.712	1.927	+2.90	+13.3	17.8	30.7
Mar. 9	21 59.84	-32 56.3	2.604	1.855	+2.90	+15.5	17.7	33.2
Mar. 19	22 28.83	-30 20.9	2.497	1.783	+2.89	+17.8	17.6	35.5
Mar. 29	22 57.71	-27 23.0	2.392	1.711	+2.87	+20.0	17.5	37.5

Comet P/2004 FY140 (LINEAR)

Epoch = 2014 July 2.0 TT
T = 2015 July 22.59429 TT
Peri. = 241.67225 e = 0.1709010
Node = 326.78924 2000.0 a = 4.8974533 AU
Incl. = 2.13704 n = 0.09093868
q = 4.0604736 AU P = 10.84 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° '	Delta	r	Variation for T=+1 day		m1	Mot./PA ' / °	Elong. °
Jan. 3	10 04.30	+12 10.9	3.744	4.478	-0.49	+3.0	20.6	4.4/287	133.5
Jan. 13	10 01.44	+12 23.9	3.629	4.465	-0.51	+3.1	20.5	6.3/288	144.4
Jan. 23	09 57.32	+12 43.1	3.538	4.453	-0.52	+3.1	20.5	7.9/288	155.7
Feb. 2	09 52.21	+13 07.1	3.474	4.441	-0.53	+3.1	20.4	8.7/288	167.1
Feb. 12	09 46.50	+13 33.4	3.441	4.428	-0.54	+3.1	20.4	8.9/287	178.7
Feb. 22	09 40.67	+13 59.7	3.439	4.416	-0.54	+3.0	20.4	8.3/287	169.7
Mar. 4	09 35.20	+14 23.5	3.468	4.404	-0.53	+3.0	20.4	7.0/286	158.3
Mar. 14	09 30.55	+14 42.9	3.524	4.392	-0.52	+2.9	20.4	5.2/285	147.1
Mar. 24	09 27.07	+14 56.5	3.605	4.381	-0.51	+2.7	20.4	3.1/283	136.3
Apr. 3	09 24.98	+15 03.4	3.707	4.369	-0.49	+2.6	20.5	0.8/269	125.9
Apr. 13	09 24.41	+15 03.3	3.825	4.357	-0.48	+2.6	20.5	1.5/117	115.9
Apr. 23	09 25.36	+14 56.3	3.954	4.346	-0.46	+2.5	20.6	3.8/112	106.4
May 3	09 27.77	+14 42.4	4.090	4.335	-0.44	+2.4	20.6	5.8/110	97.3
May 13	09 31.54	+14 22.1	4.229	4.324	-0.43	+2.4	20.7	7.7/110	88.6
May 23	09 36.51	+13 55.6	4.367	4.313	-0.41	+2.3	20.7	9.4/110	80.3
June 2	09 42.55	+13 23.3	4.502	4.302	-0.40	+2.3	20.8	10.9/110	72.2
June 12	09 49.52	+12 45.7	4.631	4.292	-0.39	+2.3	20.8	12.1/110	64.5
June 22	09 57.27	+12 03.0	4.750	4.281	-0.38	+2.3	20.9	13.2/111	56.9
July 2	10 05.68	+11 15.7	4.859	4.271	-0.37	+2.3	20.9	14.2/111	49.6
July 12	10 14.64	+10 24.2	4.956	4.261	-0.37	+2.3	20.9	15.0/112	42.4
July 22	10 24.04	+09 28.8	5.039	4.251	-0.36	+2.3	20.9	15.6/112	35.4
Aug. 1	10 33.81	+08 29.9	5.107	4.242	-0.36	+2.4	21.0	16.2/112	28.4
Aug. 11	10 43.86	+07 28.0	5.159	4.232	-0.36	+2.4	21.0	16.6/113	21.5
Aug. 21	10 54.11	+06 23.6	5.194	4.223	-0.36	+2.4	21.0	16.9/113	14.7
Aug. 31	11 04.51	+05 17.1	5.212	4.214	-0.36	+2.4	21.0	17.1/113	7.9
Sept.10	11 14.99	+04 09.0	5.212	4.205	-0.36	+2.5	20.9	17.2/114	1.2
Sept.20	11 25.49	+02 59.8	5.195	4.197	-0.36	+2.5	20.9	17.2/114	5.9
Sept.30	11 35.95	+01 50.1	5.159	4.188	-0.36	+2.5	20.9	17.0/114	12.8
Oct. 10	11 46.30	+00 40.4	5.106	4.180	-0.37	+2.6	20.9	16.8/114	19.8
Oct. 20	11 56.48	-00 28.6	5.036	4.172	-0.37	+2.6	20.8	16.4/114	26.9
Oct. 30	12 06.41	-01 36.2	4.949	4.165	-0.38	+2.7	20.8	15.8/115	34.2
Nov. 9	12 16.02	-02 41.9	4.846	4.157	-0.39	+2.7	20.7	15.1/115	41.6
Nov. 19	12 25.21	-03 44.9	4.729	4.150	-0.40	+2.8	20.6	14.3/115	49.1
Nov. 29	12 33.87	-04 44.5	4.600	4.143	-0.41	+2.8	20.6	13.2/115	56.8
Dec. 9	12 41.88	-05 39.9	4.459	4.136	-0.42	+2.9	20.5	11.9/115	64.8
Dec. 19	12 49.11	-06 30.4	4.310	4.130	-0.44	+3.0	20.4	10.4/116	73.0
Dec. 29	12 55.43	-07 15.1	4.154	4.124	-0.46	+3.0	20.3	8.7/116	81.4
Jan. 8	13 00.66	-07 53.2	3.996	4.118	-0.48	+3.1	20.2	6.7/117	90.2
Jan. 18	13 04.67	-08 23.9	3.838	4.112	-0.50	+3.3	20.1	4.5/120	99.2
Jan. 28	13 07.30	-08 46.3	3.685	4.107	-0.52	+3.4	20.0	2.2/129	108.7
Feb. 7	13 08.45	-08 59.9	3.539	4.102	-0.54	+3.5	19.9	0.7/235	118.4
Feb. 17	13 08.04	-09 04.2	3.407	4.097	-0.57	+3.7	19.8	2.9/280	128.6
Feb. 27	13 06.09	-08 58.9	3.292	4.093	-0.59	+3.8	19.8	5.2/286	139.2
Mar. 9	13 02.74	-08 44.5	3.198	4.088	-0.61	+4.0	19.7	7.0/288	150.0
Mar. 19	12 58.24	-08 22.2	3.130	4.084	-0.62	+4.1	19.6	8.3/290	161.1
Mar. 29	12 52.96	-07 53.8	3.090	4.081	-0.63	+4.2	19.6	8.9/291	172.3

Comet 140P/Bowell-Skiff

Epoch = 2014 July 2.0 TT
T = 2015 Aug. 8.75447 TT
Peri. = 172.97564 e = 0.6915719
Node = 343.39737 2000.0 a = 6.4442102 AU
Incl. = 3.82131 n = 0.06024896
q = 1.9875755 AU P = 16.36 years

m1 = 9.6 + 5 log(Delta) + 17.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	01 29.82	+12 53.7	4.827	5.142	+0.12	+0.2	.	103.2
Jan. 13	01 31.04	+12 55.9	4.933	5.085	+0.25	+0.9	.	93.3
Jan. 23	01 33.51	+13 05.3	5.039	5.029	+0.37	+1.6	.	83.8
Feb. 2	01 37.17	+13 21.7	5.143	4.971	+0.47	+2.3	.	74.5
Feb. 12	01 41.91	+13 44.4	5.238	4.914	+0.57	+2.8	.	65.6
Feb. 22	01 47.63	+14 12.7	5.323	4.856	+0.66	+3.3	.	57.0
Mar. 4	01 54.23	+14 45.7	5.394	4.798	+0.74	+3.7	.	48.7
Mar. 14	02 01.61	+15 22.7	5.450	4.739	+0.81	+4.0	.	40.6
Mar. 24	02 09.67	+16 02.9	5.487	4.680	+0.87	+4.3	.	32.7
Apr. 3	02 18.35	+16 45.4	5.507	4.620	+0.92	+4.4	.	25.1
Apr. 13	02 27.54	+17 29.7	5.506	4.561	+0.97	+4.5	.	17.6
Apr. 23	02 37.19	+18 15.0	5.486	4.500	+1.00	+4.6	.	10.4
May 3	02 47.24	+19 00.7	5.445	4.440	+1.04	+4.6	.	4.0
May 13	02 57.61	+19 46.3	5.384	4.379	+1.06	+4.5	.	5.1
May 23	03 08.24	+20 31.2	5.304	4.318	+1.08	+4.4	.	11.6
June 2	03 19.08	+21 15.0	5.206	4.256	+1.10	+4.2	.	18.5
June 12	03 30.04	+21 57.3	5.089	4.194	+1.10	+4.0	.	25.3
June 22	03 41.08	+22 37.7	4.956	4.132	+1.10	+3.8	.	32.2
July 2	03 52.10	+23 16.1	4.807	4.069	+1.09	+3.6	.	39.1
July 12	04 03.03	+23 52.1	4.644	4.006	+1.07	+3.4	.	46.1
July 22	04 13.76	+24 25.7	4.469	3.943	+1.04	+3.1	.	53.1
Aug. 1	04 24.18	+24 56.8	4.283	3.879	+1.00	+2.9	.	60.2
Aug. 11	04 34.16	+25 25.3	4.088	3.816	+0.94	+2.6	23.7	67.4
Aug. 21	04 43.55	+25 51.5	3.886	3.751	+0.86	+2.4	23.5	74.9
Aug. 31	04 52.17	+26 15.5	3.680	3.687	+0.76	+2.2	22.3	82.5
Sept. 10	04 59.81	+26 37.5	3.472	3.623	+0.64	+2.0	22.1	90.5
Sept. 20	05 06.25	+26 57.7	3.264	3.558	+0.50	+1.9	21.8	98.7
Sept. 30	05 11.22	+27 16.5	3.061	3.493	+0.32	+1.7	21.5	107.4
Oct. 10	05 14.46	+27 33.8	2.865	3.429	+0.12	+1.6	21.3	116.4
Oct. 20	05 15.70	+27 49.4	2.681	3.364	−0.10	+1.3	21.0	126.0
Oct. 30	05 14.71	+28 02.9	2.511	3.299	−0.33	+1.0	20.7	136.1
Nov. 9	05 11.40	+28 13.0	2.360	3.234	−0.56	+0.5	20.4	146.7
Nov. 19	05 05.84	+28 18.3	2.233	3.169	−0.75	−0.1	20.1	157.7
Nov. 29	04 58.38	+28 17.2	2.132	3.105	−0.87	−0.9	19.9	168.6
Dec. 9	04 49.72	+28 08.6	2.059	3.040	−0.89	−1.6	19.6	174.0
Dec. 19	04 40.78	+27 52.7	2.016	2.977	−0.82	−2.1	19.4	164.7
Dec. 29	04 32.61	+27 31.2	2.002	2.913	−0.64	−2.4	19.2	153.1
Jan. 8	04 26.18	+27 07.3	2.013	2.850	−0.40	−2.3	19.1	141.7
Jan. 18	04 22.20	+26 44.3	2.045	2.788	−0.11	−1.9	18.9	130.7
Jan. 28	04 21.09	+26 25.2	2.094	2.726	+0.19	−1.3	18.8	120.3
Feb. 7	04 23.00	+26 11.8	2.154	2.666	+0.48	−0.7	18.7	110.6
Feb. 17	04 27.85	+26 04.4	2.222	2.606	+0.76	−0.2	18.6	101.5
Feb. 27	04 35.49	+26 02.3	2.293	2.548	+1.02	+0.2	18.5	93.2
Mar. 9	04 45.69	+26 04.0	2.365	2.491	+1.25	+0.4	18.4	85.5
Mar. 19	04 58.21	+26 07.6	2.434	2.436	+1.46	+0.3	18.3	78.3
Mar. 29	05 12.84	+26 10.7	2.500	2.383	+1.65	0.0	18.2	71.7

Comet 67P/Churyumov-Gerasimenko

Epoch = 2014 July 2.0 TT
T = 2015 Aug. 13.04371 TT
Peri. = 12.77695 e = 0.6410330
Node = 50.14881 2000.0 a = 3.4631548 AU
Incl. = 7.04055 n = 0.15293124
q = 1.2431583 AU P = 6.44 years

m1 = 10.2 + 5 log(Delta) + 12.5 log(r(t-50))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	18 18.01	-27 17.2	5.581	4.613	+1.05	+0.2	22.4	9.2
Jan. 13	18 28.52	-27 15.7	5.508	4.575	+1.04	+0.3	22.4	16.6
Jan. 23	18 38.94	-27 12.7	5.414	4.535	+1.02	+0.4	22.3	24.3
Feb. 2	18 49.17	-27 08.4	5.299	4.495	+0.99	+0.5	22.2	32.1
Feb. 12	18 59.10	-27 03.4	5.165	4.455	+0.95	+0.5	22.1	40.0
Feb. 22	19 08.61	-26 58.0	5.014	4.413	+0.90	+0.5	22.0	47.9
Mar. 4	19 17.58	-26 52.8	4.847	4.371	+0.83	+0.4	21.9	56.0
Mar. 14	19 25.86	-26 48.6	4.668	4.327	+0.75	+0.3	21.8	64.1
Mar. 24	19 33.33	-26 46.1	4.479	4.283	+0.65	0.0	21.6	72.4
Apr. 3	19 39.81	-26 46.2	4.282	4.238	+0.53	-0.4	21.5	80.8
Apr. 13	19 45.15	-26 49.7	4.081	4.192	+0.40	-0.8	21.3	89.4
Apr. 23	19 49.17	-26 57.6	3.880	4.146	+0.25	-1.3	21.2	98.3
May 3	19 51.67	-27 10.5	3.682	4.098	+0.08	-1.8	21.0	107.4
May 13	19 52.46	-27 28.9	3.491	4.050	-0.11	-2.4	20.8	116.9
May 23	19 51.39	-27 52.7	3.312	4.000	-0.31	-2.9	20.6	126.7
June 2	19 48.31	-28 21.6	3.148	3.950	-0.51	-3.2	20.5	136.9
June 12	19 43.20	-28 53.9	3.005	3.899	-0.70	-3.4	20.3	147.4
June 22	19 36.20	-29 27.5	2.886	3.847	-0.86	-3.2	20.2	158.0
July 2	19 27.59	-29 59.6	2.794	3.794	-0.97	-2.8	20.0	167.9
July 12	19 17.93	-30 27.2	2.732	3.740	-1.00	-2.0	19.9	171.5
July 22	19 07.91	-30 47.6	2.699	3.685	-0.96	-1.2	19.8	163.6
Aug. 1	18 58.33	-30 59.7	2.696	3.629	-0.84	-0.4	19.7	152.9
Aug. 11	18 49.97	-31 03.2	2.719	3.572	-0.65	+0.4	19.7	142.0
Aug. 21	18 43.42	-30 59.3	2.764	3.514	-0.43	+1.0	19.6	131.2
Aug. 31	18 39.10	-30 49.6	2.828	3.456	-0.19	+1.4	19.6	120.8
Sept. 10	18 37.21	-30 35.8	2.904	3.396	+0.06	+1.7	19.6	110.9
Sept. 20	18 37.76	-30 19.2	2.988	3.335	+0.29	+1.9	19.6	101.4
Sept. 30	18 40.67	-30 00.6	3.076	3.273	+0.51	+2.0	19.6	92.3
Oct. 10	18 45.78	-29 40.2	3.163	3.210	+0.71	+2.2	19.5	83.6
Oct. 20	18 52.89	-29 17.9	3.246	3.146	+0.89	+2.5	19.5	75.4
Oct. 30	19 01.80	-28 52.9	3.322	3.081	+1.05	+2.8	19.4	67.4
Nov. 9	19 12.32	-28 24.8	3.389	3.015	+1.19	+3.2	19.4	59.8
Nov. 19	19 24.25	-27 52.7	3.443	2.947	+1.32	+3.7	19.3	52.5
Nov. 29	19 37.44	-27 15.7	3.484	2.879	+1.43	+4.3	19.2	45.4
Dec. 9	19 51.73	-26 33.1	3.511	2.810	+1.53	+4.9	19.1	38.6
Dec. 19	20 06.99	-25 44.0	3.523	2.740	+1.61	+5.6	19.0	32.1
Dec. 29	20 23.10	-24 47.8	3.520	2.668	+1.69	+6.4	18.9	25.7
Jan. 8	20 39.95	-23 44.0	3.500	2.596	+1.75	+7.2	18.8	19.7
Jan. 18	20 57.47	-22 31.9	3.466	2.523	+1.81	+8.1	18.6	14.0
Jan. 28	21 15.59	-21 11.2	3.417	2.449	+1.87	+9.0	18.5	8.9
Feb. 7	21 34.27	-19 41.5	3.354	2.374	+1.92	+9.9	18.3	5.3
Feb. 17	21 53.48	-18 02.6	3.278	2.298	+1.97	+10.8	18.1	6.0
Feb. 27	22 13.23	-16 14.1	3.191	2.222	+2.03	+11.8	17.9	9.7
Mar. 9	22 33.52	-14 15.9	3.095	2.145	+2.09	+12.8	17.7	14.0
Mar. 19	22 54.42	-12 07.9	2.990	2.068	+2.16	+13.8	17.4	18.2
Mar. 29	23 15.99	-09 50.0	2.879	1.991	+2.23	+14.8	17.2	22.2

Comet C/2012 LP26 (Palomar)

Epoch = 2014 July 2.0 TT
T = 2015 Aug. 17.06574 TT
Peri. = 145.17452
Node = 153.99613 2000.0
Incl. = 25.37742
q = 6.5363433 AU
e = 0.9984092

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	17 19.91	-00 43.3	8.440	7.621	+0.65	+0.1	19.1	31.8
Jan. 13	17 26.44	-00 42.0	8.338	7.588	+0.63	+0.6	19.0	38.1
Jan. 23	17 32.72	-00 36.0	8.218	7.555	+0.59	+1.0	19.0	45.1
Feb. 2	17 38.66	-00 25.7	8.082	7.523	+0.55	+1.5	18.9	52.5
Feb. 12	17 44.16	-00 11.1	7.932	7.491	+0.50	+1.8	18.8	60.2
Feb. 22	17 49.13	+00 07.2	7.771	7.460	+0.44	+2.2	18.8	68.1
Mar. 4	17 53.50	+00 28.8	7.602	7.429	+0.37	+2.4	18.7	76.2
Mar. 14	17 57.18	+00 52.9	7.428	7.398	+0.29	+2.6	18.6	84.4
Mar. 24	18 00.10	+01 19.0	7.252	7.368	+0.21	+2.7	18.6	92.8
Apr. 3	18 02.21	+01 46.0	7.078	7.338	+0.13	+2.7	18.5	101.2
Apr. 13	18 03.47	+02 12.9	6.911	7.308	+0.04	+2.6	18.4	109.6
Apr. 23	18 03.87	+02 38.6	6.753	7.279	-0.04	+2.3	18.4	118.0
May 3	18 03.42	+03 01.9	6.609	7.251	-0.12	+2.0	18.3	126.3
May 13	18 02.19	+03 21.6	6.482	7.223	-0.19	+1.5	18.2	134.2
May 23	18 00.26	+03 36.5	6.375	7.195	-0.25	+0.9	18.2	141.5
June 2	17 57.78	+03 45.5	6.290	7.168	-0.29	+0.2	18.1	147.7
June 12	17 54.90	+03 47.9	6.230	7.141	-0.31	-0.5	18.1	151.8
June 22	17 51.84	+03 43.1	6.196	7.115	-0.30	-1.2	18.1	152.7
July 2	17 48.79	+03 31.1	6.188	7.089	-0.28	-1.9	18.1	150.3
July 12	17 45.97	+03 11.9	6.205	7.064	-0.24	-2.6	18.1	145.2
July 22	17 43.59	+02 46.3	6.246	7.039	-0.18	-3.1	18.1	138.5
Aug. 1	17 41.81	+02 15.2	6.309	7.015	-0.10	-3.6	18.1	130.8
Aug. 11	17 40.76	+01 39.5	6.391	6.991	-0.02	-3.9	18.1	122.7
Aug. 21	17 40.55	+01 00.6	6.489	6.968	+0.07	-4.1	18.1	114.4
Aug. 31	17 41.22	+00 19.6	6.599	6.945	+0.16	-4.2	18.1	106.0
Sept. 10	17 42.81	-00 22.3	6.717	6.923	+0.25	-4.2	18.1	97.6
Sept. 20	17 45.30	-01 04.0	6.840	6.902	+0.34	-4.1	18.2	89.3
Sept. 30	17 48.66	-01 44.5	6.965	6.881	+0.42	-3.9	18.2	81.1
Oct. 10	17 52.85	-02 23.1	7.086	6.860	+0.49	-3.6	18.2	72.9
Oct. 20	17 57.79	-02 58.8	7.203	6.840	+0.56	-3.2	18.2	64.9
Oct. 30	18 03.42	-03 31.3	7.311	6.821	+0.62	-2.9	18.3	57.0
Nov. 9	18 09.66	-03 59.9	7.407	6.802	+0.68	-2.4	18.3	49.3
Nov. 19	18 16.41	-04 24.2	7.489	6.784	+0.72	-2.0	18.3	41.8
Nov. 29	18 23.60	-04 44.1	7.555	6.767	+0.75	-1.5	18.3	34.6
Dec. 9	18 31.12	-04 59.4	7.604	6.750	+0.78	-1.1	18.3	27.9
Dec. 19	18 38.89	-05 09.9	7.634	6.733	+0.79	-0.6	18.3	22.3
Dec. 29	18 46.82	-05 15.6	7.643	6.718	+0.80	-0.1	18.3	18.4
Jan. 8	18 54.81	-05 16.8	7.633	6.703	+0.80	+0.3	18.3	17.7
Jan. 18	19 02.77	-05 13.6	7.601	6.688	+0.78	+0.7	18.3	20.4
Jan. 28	19 10.61	-05 06.2	7.550	6.674	+0.76	+1.1	18.2	25.5
Feb. 7	19 18.24	-04 55.0	7.479	6.661	+0.73	+1.4	18.2	31.8
Feb. 17	19 25.57	-04 40.6	7.389	6.648	+0.69	+1.7	18.2	38.8
Feb. 27	19 32.51	-04 23.3	7.282	6.637	+0.65	+1.9	18.1	46.3
Mar. 9	19 38.98	-04 03.9	7.161	6.625	+0.59	+2.1	18.1	53.9
Mar. 19	19 44.89	-03 43.0	7.026	6.615	+0.53	+2.2	18.0	61.8
Mar. 29	19 50.16	-03 21.3	6.882	6.605	+0.46	+2.2	18.0	69.9

Comet C/2013 C2 (Tenagra)

Epoch = 2014 July 2.0 TT
T = 2015 Aug. 28.03284 TT
Peri. = 308.70884 e = 0.4305824
Node = 247.50654 2000.0 a = 16.0364760 AU
Incl. = 21.34295 n = 0.01534761
q = 9.1314517 AU P = 64.22 years

m1 = 3.4 + 5 log(Delta) + 10.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	11 18.05	-18 49.2	9.128	9.401	-0.04	-1.9	17.9	103.2
Jan. 13	11 17.68	-19 08.5	8.973	9.393	-0.10	-1.4	17.9	112.5
Jan. 23	11 16.66	-19 22.3	8.829	9.384	-0.16	-0.8	17.9	121.8
Feb. 2	11 15.04	-19 30.0	8.700	9.376	-0.21	-0.1	17.8	130.9
Feb. 12	11 12.92	-19 31.3	8.593	9.367	-0.25	+0.5	17.8	139.7
Feb. 22	11 10.44	-19 26.1	8.508	9.359	-0.27	+1.1	17.8	147.7
Mar. 4	11 07.72	-19 14.7	8.450	9.351	-0.28	+1.7	17.7	154.0
Mar. 14	11 04.95	-18 57.6	8.420	9.343	-0.27	+2.2	17.7	157.1
Mar. 24	11 02.29	-18 35.9	8.418	9.336	-0.24	+2.5	17.7	155.7
Apr. 3	10 59.90	-18 10.6	8.444	9.328	-0.20	+2.7	17.7	150.6
Apr. 13	10 57.92	-17 43.3	8.497	9.321	-0.15	+2.8	17.7	143.4
Apr. 23	10 56.47	-17 15.1	8.574	9.313	-0.09	+2.8	17.8	135.1
May 3	10 55.61	-16 47.6	8.672	9.306	-0.02	+2.6	17.8	126.4
May 13	10 55.42	-16 21.8	8.788	9.299	+0.05	+2.3	17.8	117.6
May 23	10 55.90	-15 58.9	8.917	9.292	+0.11	+1.9	17.8	108.8
June 2	10 57.05	-15 39.6	9.056	9.285	+0.18	+1.5	17.9	100.0
June 12	10 58.84	-15 24.5	9.199	9.279	+0.24	+1.0	17.9	91.3
June 22	11 01.24	-15 14.0	9.344	9.272	+0.30	+0.6	17.9	82.8
July 2	11 04.20	-15 08.4	9.487	9.266	+0.35	+0.1	18.0	74.4
July 12	11 07.66	-15 07.6	9.623	9.260	+0.39	-0.4	18.0	66.2
July 22	11 11.56	-15 11.7	9.750	9.254	+0.43	-0.9	18.0	58.1
Aug. 1	11 15.84	-15 20.3	9.864	9.248	+0.46	-1.3	18.0	50.3
Aug. 11	11 20.44	-15 33.4	9.963	9.242	+0.48	-1.7	18.0	42.6
Aug. 21	11 25.29	-15 50.6	10.044	9.236	+0.50	-2.1	18.1	35.2
Aug. 31	11 30.33	-16 11.6	10.106	9.231	+0.52	-2.4	18.1	28.4
Sept.10	11 35.49	-16 36.0	10.148	9.225	+0.52	-2.7	18.1	22.5
Sept.20	11 40.71	-17 03.3	10.168	9.220	+0.52	-3.0	18.1	18.4
Sept.30	11 45.94	-17 33.3	10.165	9.215	+0.51	-3.2	18.1	17.6
Oct. 10	11 51.08	-18 05.3	10.139	9.210	+0.50	-3.4	18.1	20.5
Oct. 20	11 56.09	-18 39.0	10.090	9.205	+0.48	-3.5	18.1	26.0
Oct. 30	12 00.89	-19 13.8	10.020	9.201	+0.45	-3.5	18.0	32.8
Nov. 9	12 05.41	-19 49.1	9.929	9.196	+0.42	-3.5	18.0	40.4
Nov. 19	12 09.57	-20 24.4	9.819	9.192	+0.37	-3.5	18.0	48.4
Nov. 29	12 13.30	-20 59.2	9.691	9.188	+0.32	-3.3	18.0	56.8
Dec. 9	12 16.52	-21 32.7	9.550	9.184	+0.27	-3.2	17.9	65.4
Dec. 19	12 19.17	-22 04.2	9.398	9.180	+0.20	-2.9	17.9	74.2
Dec. 29	12 21.19	-22 33.1	9.239	9.176	+0.13	-2.5	17.9	83.3
Jan. 8	12 22.52	-22 58.5	9.078	9.172	+0.06	-2.1	17.8	92.4
Jan. 18	12 23.14	-23 19.8	8.917	9.169	-0.01	-1.6	17.8	101.8
Jan. 28	12 23.04	-23 36.1	8.763	9.166	-0.08	-1.1	17.7	111.2
Feb. 7	12 22.25	-23 47.0	8.620	9.163	-0.14	-0.5	17.7	120.7
Feb. 17	12 20.81	-23 51.8	8.492	9.160	-0.20	+0.2	17.7	130.1
Feb. 27	12 18.83	-23 50.2	8.384	9.157	-0.24	+0.8	17.6	139.3
Mar. 9	12 16.41	-23 42.3	8.298	9.154	-0.27	+1.4	17.6	147.9
Mar. 19	12 13.73	-23 28.4	8.239	9.151	-0.28	+1.9	17.6	155.1
Mar. 29	12 10.94	-23 08.9	8.208	9.149	-0.27	+2.4	17.6	159.5

Comet C/2014 A4 (SONEAR)

Epoch = 2014 July 2.0 TT
T = 2015 Sept. 7.35304 TT
Peri. = 357.19595
Node = 29.75314 2000.0
Incl. = 121.35375
q = 4.1603561 AU
e = 0.9965313

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	06 02.22	-40 14.5	5.954	6.443	-1.20	+4.3	17.6	115.8
Jan. 13	05 50.24	-39 31.4	5.922	6.386	-1.11	+6.2	17.5	114.0
Jan. 23	05 39.10	-38 29.3	5.913	6.329	-0.99	+7.8	17.5	110.8
Feb. 2	05 29.21	-37 11.2	5.923	6.273	-0.84	+9.0	17.4	106.4
Feb. 12	05 20.85	-35 40.8	5.951	6.217	-0.67	+9.9	17.4	101.1
Feb. 22	05 14.12	-34 02.2	5.993	6.161	-0.51	+10.3	17.4	95.1
Mar. 4	05 09.05	-32 19.3	6.045	6.105	-0.35	+10.4	17.4	88.8
Mar. 14	05 05.55	-30 35.6	6.102	6.050	-0.21	+10.2	17.3	82.3
Mar. 24	05 03.48	-28 54.0	6.161	5.995	-0.08	+9.7	17.3	75.8
Apr. 3	05 02.69	-27 16.9	6.217	5.940	+0.03	+9.1	17.3	69.5
Apr. 13	05 03.00	-25 45.9	6.266	5.886	+0.12	+8.4	17.3	63.4
Apr. 23	05 04.24	-24 22.3	6.306	5.832	+0.20	+7.5	17.3	57.8
May 3	05 06.24	-23 07.0	6.333	5.778	+0.26	+6.6	17.2	52.7
May 13	05 08.85	-22 00.8	6.344	5.725	+0.31	+5.7	17.2	48.5
May 23	05 11.90	-21 03.8	6.339	5.672	+0.34	+4.7	17.1	45.3
June 2	05 15.26	-20 16.4	6.314	5.620	+0.35	+3.8	17.1	43.3
June 12	05 18.79	-19 38.7	6.271	5.568	+0.36	+2.8	17.0	42.8
June 22	05 22.35	-19 10.8	6.207	5.516	+0.35	+1.8	17.0	43.7
July 2	05 25.81	-18 52.7	6.123	5.465	+0.32	+0.8	16.9	46.0
July 12	05 29.02	-18 44.4	6.019	5.415	+0.28	-0.1	16.8	49.5
July 22	05 31.83	-18 45.7	5.897	5.365	+0.23	-1.1	16.7	54.1
Aug. 1	05 34.08	-18 56.6	5.758	5.316	+0.15	-2.0	16.7	59.5
Aug. 11	05 35.58	-19 16.8	5.604	5.267	+0.06	-2.9	16.6	65.6
Aug. 21	05 36.17	-19 45.9	5.437	5.219	-0.06	-3.7	16.5	72.3
Aug. 31	05 35.60	-20 23.1	5.261	5.171	-0.19	-4.4	16.3	79.4
Sept. 10	05 33.66	-21 07.4	5.079	5.124	-0.35	-5.0	16.2	86.9
Sept. 20	05 30.11	-21 57.1	4.897	5.078	-0.54	-5.3	16.1	94.7
Sept. 30	05 24.72	-22 50.1	4.718	5.033	-0.74	-5.3	16.0	102.6
Oct. 10	05 17.28	-23 42.9	4.549	4.988	-0.96	-4.9	15.9	110.5
Oct. 20	05 07.70	-24 31.4	4.396	4.944	-1.17	-3.9	15.8	118.1
Oct. 30	04 55.97	-25 10.6	4.264	4.901	-1.36	-2.4	15.7	125.0
Nov. 9	04 42.34	-25 34.7	4.159	4.859	-1.51	-0.4	15.6	130.3
Nov. 19	04 27.25	-25 38.9	4.085	4.817	-1.59	+2.0	15.5	133.3
Nov. 29	04 11.39	-25 19.1	4.047	4.777	-1.58	+4.5	15.4	133.3
Dec. 9	03 55.56	-24 34.2	4.044	4.738	-1.50	+6.9	15.4	130.0
Dec. 19	03 40.57	-23 25.5	4.076	4.699	-1.35	+8.9	15.4	124.1
Dec. 29	03 27.06	-21 56.5	4.139	4.662	-1.16	+10.4	15.4	116.5
Jan. 8	03 15.50	-20 12.4	4.228	4.625	-0.94	+11.4	15.4	107.8
Jan. 18	03 06.05	-18 18.4	4.338	4.590	-0.73	+11.9	15.4	98.6
Jan. 28	02 58.75	-16 19.1	4.461	4.556	-0.53	+12.1	15.4	89.3
Feb. 7	02 53.46	-14 18.5	4.591	4.523	-0.35	+11.9	15.5	79.9
Feb. 17	02 49.97	-12 19.1	4.722	4.491	-0.19	+11.6	15.5	70.6
Feb. 27	02 48.06	-10 22.8	4.847	4.461	-0.06	+11.2	15.5	61.6
Mar. 9	02 47.48	-08 30.8	4.962	4.432	+0.05	+10.7	15.5	52.8
Mar. 19	02 48.01	-06 43.6	5.062	4.404	+0.14	+10.2	15.6	44.2
Mar. 29	02 49.43	-05 01.6	5.144	4.377	+0.21	+9.7	15.6	36.1

Comet 61P/Shajn-Schaldach

Epoch = 2014 July 2.0 TT
T = 2015 Oct. 2.15611 TT
Peri. = 221.91754 e = 0.4260078
Node = 163.02639 2000.0 a = 3.6820286 AU
Incl. = 6.00512 n = 0.13949972
q = 2.1134557 AU P = 7.07 years

m1 = 11.8 + 5 log(Delta) + 10.0 log(r(t+30))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	17 06.55	-17 51.8	5.125	4.259	+1.07	-0.9	21.5	25.5
Jan. 13	17 17.30	-18 00.3	5.018	4.228	+1.05	-0.4	21.5	33.0
Jan. 23	17 27.77	-18 04.6	4.894	4.197	+1.01	0.0	21.4	40.7
Feb. 2	17 37.85	-18 04.8	4.754	4.165	+0.96	+0.4	21.3	48.4
Feb. 12	17 47.40	-18 01.1	4.600	4.132	+0.89	+0.7	21.2	56.2
Feb. 22	17 56.29	-17 53.7	4.434	4.100	+0.81	+1.1	21.1	64.1
Mar. 4	18 04.36	-17 43.2	4.259	4.066	+0.71	+1.3	20.9	72.2
Mar. 14	18 11.46	-17 30.0	4.077	4.033	+0.60	+1.5	20.8	80.4
Mar. 24	18 17.43	-17 14.8	3.891	3.998	+0.47	+1.7	20.7	88.9
Apr. 3	18 22.08	-16 58.2	3.705	3.964	+0.32	+1.7	20.5	97.6
Apr. 13	18 25.25	-16 41.1	3.523	3.929	+0.15	+1.7	20.4	106.6
Apr. 23	18 26.78	-16 24.3	3.347	3.893	-0.02	+1.6	20.2	115.9
May 3	18 26.54	-16 08.6	3.183	3.857	-0.21	+1.4	20.0	125.6
May 13	18 24.47	-15 54.8	3.033	3.820	-0.39	+1.1	19.9	135.6
May 23	18 20.60	-15 43.7	2.903	3.784	-0.55	+0.8	19.8	145.8
June 2	18 15.09	-15 35.7	2.796	3.746	-0.68	+0.4	19.6	156.3
June 12	18 08.27	-15 31.3	2.714	3.709	-0.76	+0.1	19.5	166.3
June 22	18 00.63	-15 30.7	2.661	3.670	-0.79	-0.3	19.4	172.1
July 2	17 52.76	-15 34.2	2.637	3.632	-0.74	-0.7	19.4	166.0
July 12	17 45.34	-15 41.6	2.641	3.593	-0.64	-1.1	19.3	155.9
July 22	17 38.96	-15 53.0	2.671	3.554	-0.48	-1.5	19.3	145.3
Aug. 1	17 34.12	-16 07.9	2.724	3.514	-0.30	-1.8	19.3	134.8
Aug. 11	17 31.17	-16 26.1	2.796	3.474	-0.09	-2.1	19.3	124.7
Aug. 21	17 30.25	-16 46.8	2.882	3.434	+0.12	-2.3	19.3	115.0
Aug. 31	17 31.43	-17 09.3	2.978	3.393	+0.32	-2.3	19.3	105.7
Sept. 10	17 34.66	-17 32.7	3.079	3.353	+0.51	-2.3	19.3	96.9
Sept. 20	17 39.80	-17 55.9	3.183	3.311	+0.69	-2.2	19.3	88.4
Sept. 30	17 46.74	-18 18.0	3.286	3.270	+0.86	-2.0	19.4	80.3
Oct. 10	17 55.31	-18 37.8	3.384	3.228	+1.00	-1.7	19.4	72.5
Oct. 20	18 05.34	-18 54.4	3.476	3.187	+1.13	-1.2	19.4	65.0
Oct. 30	18 16.69	-19 06.7	3.560	3.145	+1.25	-0.7	19.4	57.8
Nov. 9	18 29.20	-19 13.9	3.633	3.103	+1.35	-0.1	19.3	50.7
Nov. 19	18 42.73	-19 15.1	3.695	3.060	+1.44	+0.5	19.3	43.9
Nov. 29	18 57.16	-19 09.7	3.745	3.018	+1.52	+1.3	19.3	37.2
Dec. 9	19 12.36	-18 57.2	3.781	2.976	+1.58	+2.0	19.2	30.7
Dec. 19	19 28.20	-18 37.0	3.803	2.934	+1.64	+2.8	19.2	24.3
Dec. 29	19 44.58	-18 08.9	3.811	2.892	+1.68	+3.6	19.1	18.1
Jan. 8	20 01.39	-17 32.7	3.804	2.850	+1.72	+4.4	19.1	12.0
Jan. 18	20 18.55	-16 48.4	3.784	2.808	+1.74	+5.2	19.0	6.3
Jan. 28	20 35.97	-15 56.2	3.750	2.767	+1.76	+6.0	18.9	2.6
Feb. 7	20 53.58	-14 56.4	3.703	2.726	+1.77	+6.7	18.8	6.5
Feb. 17	21 11.31	-13 49.3	3.644	2.685	+1.78	+7.4	18.7	11.9
Feb. 27	21 29.12	-12 35.4	3.573	2.645	+1.78	+8.0	18.6	17.4
Mar. 9	21 46.96	-11 15.6	3.492	2.605	+1.78	+8.5	18.5	22.8
Mar. 19	22 04.80	-09 50.4	3.401	2.566	+1.78	+9.0	18.4	28.2
Mar. 29	22 22.62	-08 20.7	3.301	2.528	+1.78	+9.3	18.2	33.4

Comet C/2013 V4 (Catalina)

Epoch = 2014 July 2.0 TT
T = 2015 Oct. 7.34288 TT
Peri. = 40.42513
Node = 55.61981 2000.0
Incl. = 67.84039
q = 5.1855278 AU
e = 1.0027778

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	02 55.62	-04 58.4	6.528	7.010	-0.26	+5.7	17.5	115.6
Jan. 13	02 53.01	-04 01.7	6.628	6.963	-0.16	+6.1	17.5	106.0
Jan. 23	02 51.39	-03 00.8	6.737	6.917	-0.06	+6.4	17.5	96.4
Feb. 2	02 50.78	-01 56.7	6.852	6.870	+0.04	+6.6	17.5	86.9
Feb. 12	02 51.15	-00 50.3	6.968	6.824	+0.13	+6.8	17.6	77.6
Feb. 22	02 52.42	+00 17.3	7.078	6.779	+0.21	+6.8	17.6	68.5
Mar. 4	02 54.54	+01 25.7	7.181	6.734	+0.29	+6.8	17.6	59.6
Mar. 14	02 57.41	+02 34.0	7.271	6.689	+0.35	+6.8	17.6	50.9
Mar. 24	03 00.94	+03 41.7	7.346	6.644	+0.41	+6.7	17.6	42.4
Apr. 3	03 05.03	+04 48.6	7.403	6.600	+0.46	+6.6	17.5	34.2
Apr. 13	03 09.60	+05 54.3	7.441	6.557	+0.49	+6.4	17.5	26.3
Apr. 23	03 14.55	+06 58.5	7.457	6.513	+0.52	+6.3	17.5	18.8
May 3	03 19.79	+08 01.1	7.451	6.470	+0.54	+6.1	17.5	12.4
May 13	03 25.24	+09 01.9	7.423	6.428	+0.56	+5.9	17.4	9.4
May 23	03 30.80	+10 00.9	7.371	6.386	+0.56	+5.7	17.4	12.3
June 2	03 36.39	+10 58.1	7.297	6.344	+0.55	+5.5	17.3	18.6
June 12	03 41.92	+11 53.5	7.201	6.303	+0.54	+5.4	17.3	25.8
June 22	03 47.29	+12 47.3	7.085	6.263	+0.51	+5.2	17.2	33.5
July 2	03 52.41	+13 39.6	6.949	6.222	+0.48	+5.1	17.1	41.4
July 12	03 57.16	+14 30.5	6.795	6.183	+0.43	+5.0	17.1	49.5
July 22	04 01.44	+15 20.4	6.626	6.144	+0.37	+4.9	17.0	57.7
Aug. 1	04 05.13	+16 09.4	6.445	6.105	+0.30	+4.8	16.9	66.2
Aug. 11	04 08.10	+16 57.9	6.253	6.067	+0.21	+4.8	16.8	74.8
Aug. 21	04 10.21	+17 46.2	6.055	6.030	+0.11	+4.8	16.7	83.8
Aug. 31	04 11.33	+18 34.5	5.855	5.993	0.00	+4.9	16.6	93.0
Sept. 10	04 11.32	+19 23.1	5.656	5.957	-0.13	+4.9	16.5	102.5
Sept. 20	04 10.07	+20 12.0	5.465	5.921	-0.26	+4.9	16.4	112.4
Sept. 30	04 07.48	+21 01.1	5.285	5.886	-0.40	+4.9	16.3	122.7
Oct. 10	04 03.52	+21 50.2	5.122	5.852	-0.53	+4.8	16.2	133.3
Oct. 20	03 58.24	+22 38.6	4.981	5.818	-0.65	+4.7	16.1	144.2
Oct. 30	03 51.74	+23 25.7	4.868	5.785	-0.75	+4.5	16.1	155.3
Nov. 9	03 44.29	+24 10.6	4.786	5.753	-0.81	+4.2	16.0	166.3
Nov. 19	03 36.22	+24 52.5	4.737	5.721	-0.83	+3.9	16.0	174.5
Nov. 29	03 27.95	+25 31.3	4.723	5.691	-0.80	+3.6	15.9	167.7
Dec. 9	03 19.94	+26 06.9	4.743	5.661	-0.73	+3.3	15.9	156.6
Dec. 19	03 12.62	+26 40.1	4.795	5.631	-0.63	+3.2	15.9	145.2
Dec. 29	03 06.33	+27 11.9	4.875	5.603	-0.50	+3.2	15.9	134.0
Jan. 8	03 01.35	+27 43.5	4.978	5.575	-0.35	+3.3	15.9	123.0
Jan. 18	02 57.82	+28 16.1	5.098	5.548	-0.20	+3.5	16.0	112.4
Jan. 28	02 55.79	+28 50.8	5.230	5.522	-0.05	+3.8	16.0	102.2
Feb. 7	02 55.25	+29 28.5	5.369	5.497	+0.09	+4.1	16.1	92.3
Feb. 17	02 56.12	+30 09.6	5.508	5.473	+0.22	+4.5	16.1	82.8
Feb. 27	02 58.29	+30 54.5	5.644	5.449	+0.34	+4.9	16.1	73.7
Mar. 9	03 01.66	+31 43.2	5.772	5.427	+0.44	+5.2	16.2	65.0
Mar. 19	03 06.08	+32 35.7	5.889	5.405	+0.54	+5.6	16.2	56.6
Mar. 29	03 11.45	+33 31.8	5.992	5.385	+0.62	+6.0	16.2	48.7

Comet 22P/Kopff

Epoch = 2014 July 2.0 TT
T = 2015 Oct. 25.05188 TT
Peri. = 162.78451 e = 0.5474675
Node = 120.87442 2000.0 a = 3.4488517 AU
Incl. = 4.73719 n = 0.15388358
q = 1.5607175 AU P = 6.40 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m ′		m1	Elong. °
Jan. 3	09 38.53	+15 28.0	3.776	4.578	-0.49	+3.1	21.0	140.5
Jan. 13	09 33.62	+15 58.9	3.655	4.547	-0.62	+3.6	20.9	151.9
Jan. 23	09 27.46	+16 35.0	3.562	4.515	-0.70	+3.9	20.8	163.7
Feb. 2	09 20.42	+17 13.7	3.500	4.483	-0.74	+3.9	20.7	175.4
Feb. 12	09 12.98	+17 52.4	3.470	4.450	-0.73	+3.6	20.6	172.1
Feb. 22	09 05.67	+18 28.3	3.472	4.416	-0.66	+3.1	20.6	160.3
Mar. 4	08 59.04	+18 59.2	3.505	4.382	-0.55	+2.4	20.5	148.6
Mar. 14	08 53.54	+19 23.7	3.564	4.347	-0.40	+1.7	20.5	137.2
Mar. 24	08 49.50	+19 41.0	3.645	4.311	-0.24	+1.0	20.5	126.3
Apr. 3	08 47.11	+19 51.0	3.743	4.275	-0.07	+0.3	20.5	115.8
Apr. 13	08 46.44	+19 53.8	3.852	4.237	+0.10	-0.4	20.5	105.9
Apr. 23	08 47.46	+19 49.8	3.968	4.200	+0.26	-1.0	20.5	96.3
May 3	08 50.06	+19 39.5	4.086	4.161	+0.40	-1.6	20.5	87.3
May 13	08 54.10	+19 23.2	4.201	4.122	+0.53	-2.2	20.5	78.6
May 23	08 59.43	+19 01.4	4.311	4.082	+0.65	-2.7	20.5	70.3
June 2	09 05.89	+18 34.3	4.412	4.041	+0.74	-3.2	20.5	62.3
June 12	09 13.33	+18 02.3	4.502	4.000	+0.83	-3.7	20.5	54.5
June 22	09 21.61	+17 25.5	4.579	3.957	+0.90	-4.1	20.5	47.1
July 2	09 30.60	+16 44.2	4.641	3.914	+0.96	-4.6	20.4	39.8
July 12	09 40.20	+15 58.6	4.687	3.871	+1.01	-5.0	20.4	32.7
July 22	09 50.31	+15 09.1	4.716	3.826	+1.05	-5.3	20.3	25.7
Aug. 1	10 00.84	+14 15.8	4.727	3.781	+1.09	-5.7	20.2	18.9
Aug. 11	10 11.71	+13 19.1	4.720	3.735	+1.12	-6.0	20.2	12.2
Aug. 21	10 22.86	+12 19.4	4.694	3.689	+1.14	-6.2	20.1	5.7
Aug. 31	10 34.25	+11 17.0	4.650	3.641	+1.15	-6.5	20.0	2.5
Sept.10	10 45.79	+10 12.4	4.587	3.593	+1.17	-6.6	19.8	8.3
Sept.20	10 57.46	+09 06.1	4.506	3.544	+1.17	-6.7	19.7	14.8
Sept.30	11 09.19	+07 58.6	4.407	3.494	+1.18	-6.8	19.6	21.5
Oct. 10	11 20.95	+06 50.6	4.292	3.444	+1.17	-6.8	19.4	28.2
Oct. 20	11 32.67	+05 42.6	4.161	3.393	+1.16	-6.7	19.3	34.9
Oct. 30	11 44.31	+04 35.5	4.016	3.341	+1.15	-6.5	19.1	41.8
Nov. 9	11 55.78	+03 30.1	3.857	3.288	+1.12	-6.3	18.9	48.7
Nov. 19	12 07.03	+02 27.2	3.686	3.235	+1.09	-5.9	18.7	55.8
Nov. 29	12 17.94	+01 27.9	3.505	3.181	+1.05	-5.5	18.5	63.0
Dec. 9	12 28.42	+00 33.2	3.317	3.126	+0.99	-4.9	18.2	70.3
Dec. 19	12 38.33	-00 15.5	3.122	3.071	+0.92	-4.2	18.0	77.9
Dec. 29	12 47.50	-00 57.0	2.925	3.015	+0.82	-3.3	17.7	85.7
Jan. 8	12 55.73	-01 29.9	2.726	2.958	+0.71	-2.3	17.4	93.7
Jan. 18	13 02.80	-01 52.5	2.530	2.900	+0.56	-1.1	17.2	102.1
Jan. 28	13 08.43	-02 03.2	2.338	2.842	+0.39	+0.3	16.8	110.9
Feb. 7	13 12.32	-02 00.5	2.156	2.784	+0.19	+1.8	16.5	120.1
Feb. 17	13 14.18	-01 42.9	1.985	2.725	-0.05	+3.3	16.2	129.8
Feb. 27	13 13.71	-01 09.6	1.829	2.665	-0.29	+4.9	15.9	140.0
Mar. 9	13 10.77	-00 21.1	1.694	2.605	-0.54	+6.2	15.6	150.7
Mar. 19	13 05.39	+00 40.6	1.581	2.545	-0.75	+7.0	15.3	161.7
Mar. 29	12 57.92	+01 50.8	1.494	2.485	-0.88	+7.2	15.0	171.2

Comet 10P/Tempel

Epoch = 2014 July 2.0 TT
T = 2015 Nov. 14.35718 TT
Peri. = 195.52760 e = 0.5370473
Node = 117.80872 2000.0 a = 3.0640687 AU
Incl. = 12.02921 n = 0.18376226
q = 1.4185189 AU P = 5.36 years

H = 13.6 , G = 0.15 (r>2.0AU)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	11 17.07	+13 21.8	3.848	4.385	-0.12	+3.7	20.4	117.1
Jan. 13	11 15.86	+13 58.9	3.692	4.362	-0.28	+4.7	20.3	127.7
Jan. 23	11 13.03	+14 45.6	3.553	4.339	-0.44	+5.4	20.1	138.5
Feb. 2	11 08.60	+15 40.0	3.437	4.315	-0.58	+5.9	20.0	149.5
Feb. 12	11 02.79	+16 39.2	3.349	4.291	-0.69	+6.0	19.8	160.2
Feb. 22	10 55.91	+17 39.3	3.291	4.265	-0.75	+5.7	19.6	168.7
Mar. 4	10 48.43	+18 36.1	3.264	4.239	-0.75	+5.0	19.6	167.8
Mar. 14	10 40.92	+19 25.7	3.270	4.212	-0.70	+3.9	19.7	158.7
Mar. 24	10 33.95	+20 05.1	3.305	4.184	-0.60	+2.7	19.8	148.0
Apr. 3	10 27.99	+20 32.5	3.366	4.155	-0.45	+1.5	20.0	137.2
Apr. 13	10 23.44	+20 47.5	3.449	4.125	-0.29	+0.3	20.1	126.6
Apr. 23	10 20.52	+20 50.4	3.548	4.095	-0.12	-0.8	20.2	116.4
May 3	10 19.32	+20 42.3	3.659	4.064	+0.05	-1.8	20.3	106.6
May 13	10 19.81	+20 24.4	3.777	4.032	+0.21	-2.6	20.3	97.3
May 23	10 21.89	+19 57.9	3.897	3.999	+0.35	-3.4	20.4	88.4
June 2	10 25.44	+19 24.1	4.015	3.965	+0.49	-4.0	20.4	79.9
June 12	10 30.30	+18 43.8	4.128	3.931	+0.60	-4.6	20.5	71.8
June 22	10 36.30	+17 58.0	4.233	3.895	+0.70	-5.1	20.5	63.9
July 2	10 43.31	+17 07.4	4.328	3.859	+0.79	-5.5	20.5	56.4
July 12	10 51.19	+16 12.5	4.410	3.822	+0.86	-5.8	20.4	49.1
July 22	10 59.81	+15 14.0	4.478	3.784	+0.93	-6.2	20.4	42.0
Aug. 1	11 09.08	+14 12.4	4.530	3.745	+0.98	-6.4	20.4	35.1
Aug. 11	11 18.90	+13 08.1	4.566	3.705	+1.03	-6.6	20.3	28.4
Aug. 21	11 29.19	+12 01.7	4.584	3.665	+1.07	-6.8	20.2	21.9
Aug. 31	11 39.90	+10 53.6	4.584	3.623	+1.11	-6.9	20.1	15.8
Sept.10	11 50.96	+09 44.5	4.566	3.581	+1.14	-7.0	20.0	10.6
Sept.20	12 02.32	+08 34.9	4.529	3.537	+1.16	-7.0	19.9	8.1
Sept.30	12 13.93	+07 25.3	4.474	3.493	+1.18	-6.9	19.9	10.3
Oct. 10	12 25.75	+06 16.5	4.401	3.448	+1.20	-6.7	19.9	15.4
Oct. 20	12 37.74	+05 09.0	4.310	3.402	+1.21	-6.5	19.9	21.4
Oct. 30	12 49.85	+04 03.7	4.202	3.355	+1.22	-6.2	19.9	27.7
Nov. 9	13 02.02	+03 01.3	4.079	3.307	+1.22	-5.9	19.9	34.2
Nov. 19	13 14.20	+02 02.7	3.941	3.258	+1.21	-5.4	19.8	40.9
Nov. 29	13 26.33	+01 08.9	3.789	3.209	+1.20	-4.8	19.8	47.7
Dec. 9	13 38.32	+00 20.7	3.625	3.158	+1.18	-4.2	19.7	54.6
Dec. 19	13 50.08	-00 20.9	3.451	3.106	+1.14	-3.4	19.6	61.6
Dec. 29	14 01.49	-00 54.6	3.269	3.054	+1.09	-2.5	19.5	68.8
Jan. 8	14 12.42	-01 19.4	3.081	3.000	+1.03	-1.5	19.4	76.1
Jan. 18	14 22.69	-01 34.3	2.889	2.946	+0.94	-0.4	19.2	83.6
Jan. 28	14 32.11	-01 37.9	2.696	2.891	+0.83	+0.9	19.1	91.3
Feb. 7	14 40.44	-01 29.2	2.504	2.835	+0.70	+2.2	18.9	99.2
Feb. 17	14 47.40	-01 07.3	2.317	2.778	+0.53	+3.6	18.6	107.4
Feb. 27	14 52.67	-00 31.4	2.137	2.720	+0.33	+5.0	18.4	116.0
Mar. 9	14 55.92	+00 18.6	1.968	2.662	+0.09	+6.3	18.1	124.8
Mar. 19	14 56.83	+01 21.9	1.812	2.602	-0.17	+7.4	17.8	133.8
Mar. 29	14 55.10	+02 36.2	1.674	2.542	-0.45	+8.1	17.5	142.9

Comet C/2013 US10 (Catalina)

Epoch = 2014 July 2.0 TT
T = 2015 Nov. 15.62562 TT
Peri. = 340.35205
Node = 186.12713 2000.0
Incl. = 148.86025
q = 0.8224348 AU
e = 1.0004235

m1 = 4.8 + 5 log(Delta) + 10.0 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	23 14.53	-14 31.8	8.202	7.787	+0.15	+1.4	18.3	61.9
Jan. 13	23 16.07	-14 17.8	8.267	7.704	+0.22	+1.7	18.3	52.3
Jan. 23	23 18.24	-14 01.2	8.313	7.621	+0.27	+1.9	18.2	42.9
Feb. 2	23 20.95	-13 42.6	8.337	7.538	+0.32	+2.0	18.2	33.8
Feb. 12	23 24.12	-13 22.7	8.337	7.454	+0.35	+2.1	18.1	25.0
Feb. 22	23 27.65	-13 02.2	8.311	7.370	+0.38	+2.0	18.1	16.7
Mar. 4	23 31.45	-12 41.8	8.258	7.285	+0.40	+2.0	18.0	10.3
Mar. 14	23 35.42	-12 22.1	8.178	7.200	+0.41	+1.8	17.9	9.6
Mar. 24	23 39.48	-12 03.8	8.070	7.114	+0.41	+1.6	17.9	15.5
Apr. 3	23 43.54	-11 47.7	7.935	7.028	+0.40	+1.3	17.8	23.3
Apr. 13	23 47.49	-11 34.5	7.775	6.941	+0.38	+1.0	17.7	31.6
Apr. 23	23 51.26	-11 24.8	7.592	6.854	+0.35	+0.5	17.6	40.1
May 3	23 54.73	-11 19.5	7.388	6.767	+0.31	0.0	17.4	48.8
May 13	23 57.81	-11 19.5	7.165	6.679	+0.26	-0.6	17.3	57.6
May 23	00 00.39	-11 25.3	6.928	6.590	+0.20	-1.3	17.2	66.5
June 2	00 02.35	-11 38.1	6.678	6.501	+0.12	-2.0	17.1	75.6
June 12	00 03.56	-11 58.4	6.422	6.412	+0.03	-2.9	16.9	84.9
June 22	00 03.90	-12 27.1	6.163	6.322	-0.07	-3.8	16.8	94.4
July 2	00 03.23	-13 04.8	5.905	6.231	-0.18	-4.7	16.6	104.1
July 12	00 01.42	-13 51.9	5.655	6.140	-0.31	-5.6	16.4	114.0
July 22	23 58.36	-14 48.2	5.418	6.048	-0.44	-6.5	16.3	124.2
Aug. 1	23 53.94	-15 53.3	5.199	5.956	-0.58	-7.2	16.1	134.6
Aug. 11	23 48.15	-17 05.6	5.004	5.863	-0.71	-7.7	16.0	144.9
Aug. 21	23 41.03	-18 23.1	4.838	5.769	-0.83	-8.0	15.8	154.8
Aug. 31	23 32.71	-19 42.7	4.704	5.675	-0.93	-7.8	15.7	162.5
Sept. 10	23 23.46	-21 00.9	4.606	5.580	-0.98	-7.3	15.6	163.9
Sept. 20	23 13.64	-22 13.8	4.544	5.485	-0.99	-6.4	15.5	157.4
Sept. 30	23 03.70	-23 18.0	4.517	5.389	-0.96	-5.3	15.4	147.5
Oct. 10	22 54.13	-24 11.1	4.522	5.292	-0.88	-4.1	15.3	136.6
Oct. 20	22 45.36	-24 51.8	4.554	5.194	-0.76	-2.8	15.2	125.3
Oct. 30	22 37.78	-25 19.8	4.608	5.096	-0.61	-1.6	15.2	114.2
Nov. 9	22 31.63	-25 36.0	4.676	4.996	-0.46	-0.6	15.1	103.2
Nov. 19	22 27.04	-25 41.8	4.753	4.897	-0.30	+0.3	15.1	92.5
Nov. 29	22 24.05	-25 38.6	4.831	4.796	-0.14	+1.0	15.0	82.1
Dec. 9	22 22.61	-25 28.4	4.903	4.694	0.00	+1.6	15.0	72.1
Dec. 19	22 22.61	-25 12.4	4.965	4.592	+0.13	+2.0	14.9	62.3
Dec. 29	22 23.91	-24 52.3	5.012	4.488	+0.25	+2.3	14.8	52.9
Jan. 8	22 26.37	-24 29.1	5.039	4.384	+0.35	+2.5	14.7	43.9
Jan. 18	22 29.82	-24 04.1	5.044	4.279	+0.43	+2.6	14.6	35.2
Jan. 28	22 34.14	-23 38.1	5.024	4.172	+0.50	+2.6	14.5	27.2
Feb. 7	22 39.16	-23 12.2	4.977	4.065	+0.56	+2.5	14.4	20.1
Feb. 17	22 44.76	-22 47.3	4.903	3.957	+0.61	+2.3	14.2	15.0
Feb. 27	22 50.84	-22 24.4	4.800	3.847	+0.64	+2.0	14.1	14.1
Mar. 9	22 57.27	-22 04.6	4.669	3.737	+0.67	+1.5	13.9	17.8
Mar. 19	23 03.96	-21 49.2	4.511	3.625	+0.69	+1.0	13.7	24.0
Mar. 29	23 10.81	-21 39.5	4.327	3.512	+0.69	+0.2	13.4	31.2

Comet 116P/Wild

Epoch = 2014 July 2.0 TT
T = 2016 Jan. 11.99831 TT
Peri. = 173.49411 e = 0.3725931
Node = 21.02691 2000.0 a = 3.4818978 AU
Incl. = 3.60823 n = 0.15169807
q = 2.1845667 AU P = 6.50 years

m1 = 6.8 + 5 log(Delta) + 17.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	02 21.95	+16 15.7	3.768	4.294	0.00	-0.1	20.8	116.2
Jan. 13	02 21.98	+16 14.6	3.895	4.272	+0.17	+0.7	20.8	106.0
Jan. 23	02 23.63	+16 21.3	4.028	4.250	+0.32	+1.4	20.8	96.3
Feb. 2	02 26.81	+16 35.3	4.164	4.227	+0.46	+2.1	20.9	86.9
Feb. 12	02 31.38	+16 55.8	4.298	4.203	+0.58	+2.6	20.9	77.9
Feb. 22	02 37.20	+17 22.0	4.426	4.179	+0.69	+3.1	20.9	69.3
Mar. 4	02 44.13	+17 52.7	4.545	4.155	+0.79	+3.4	20.9	61.0
Mar. 14	02 52.04	+18 26.9	4.652	4.130	+0.88	+3.7	20.9	52.9
Mar. 24	03 00.80	+19 03.8	4.746	4.105	+0.95	+3.8	20.9	45.2
Apr. 3	03 10.31	+19 42.2	4.825	4.079	+1.02	+3.9	20.9	37.6
Apr. 13	03 20.47	+20 21.4	4.887	4.053	+1.07	+3.9	20.9	30.3
Apr. 23	03 31.19	+21 00.7	4.931	4.026	+1.12	+3.9	20.9	23.1
May 3	03 42.38	+21 39.2	4.957	3.999	+1.16	+3.7	20.8	16.1
May 13	03 53.97	+22 16.4	4.965	3.971	+1.19	+3.5	20.8	9.3
May 23	04 05.87	+22 51.8	4.954	3.943	+1.22	+3.3	20.7	3.0
June 2	04 18.03	+23 24.9	4.924	3.915	+1.23	+3.0	20.6	4.9
June 12	04 30.35	+23 55.3	4.876	3.886	+1.24	+2.7	20.6	11.4
June 22	04 42.77	+24 22.8	4.810	3.856	+1.24	+2.4	20.5	18.0
July 2	04 55.22	+24 47.2	4.727	3.826	+1.24	+2.1	20.4	24.6
July 12	05 07.59	+25 08.4	4.627	3.796	+1.22	+1.8	20.3	31.3
July 22	05 19.80	+25 26.5	4.512	3.765	+1.19	+1.5	20.1	38.1
Aug. 1	05 31.74	+25 41.4	4.383	3.734	+1.16	+1.2	20.0	44.9
Aug. 11	05 43.30	+25 53.6	4.241	3.702	+1.11	+1.0	19.9	51.9
Aug. 21	05 54.36	+26 03.3	4.088	3.670	+1.04	+0.8	19.7	59.0
Aug. 31	06 04.77	+26 11.1	3.924	3.638	+0.96	+0.6	19.6	66.3
Sept. 10	06 14.35	+26 17.6	3.753	3.605	+0.86	+0.6	19.4	73.8
Sept. 20	06 22.93	+26 23.5	3.577	3.572	+0.74	+0.6	19.2	81.6
Sept. 30	06 30.30	+26 29.6	3.397	3.538	+0.59	+0.7	19.1	89.8
Oct. 10	06 36.20	+26 36.7	3.218	3.504	+0.42	+0.9	18.9	98.3
Oct. 20	06 40.42	+26 45.7	3.041	3.470	+0.22	+1.1	18.7	107.3
Oct. 30	06 42.66	+26 57.1	2.872	3.435	+0.01	+1.4	18.5	116.7
Nov. 9	06 42.71	+27 11.1	2.714	3.400	-0.23	+1.6	18.3	126.7
Nov. 19	06 40.42	+27 27.4	2.572	3.365	-0.47	+1.7	18.1	137.2
Nov. 29	06 35.73	+27 44.6	2.450	3.329	-0.68	+1.6	17.9	148.3
Dec. 9	06 28.89	+28 01.0	2.352	3.294	-0.85	+1.3	17.7	159.7
Dec. 19	06 20.34	+28 14.3	2.282	3.257	-0.95	+0.8	17.6	170.9
Dec. 29	06 10.87	+28 22.3	2.243	3.221	-0.94	+0.2	17.4	173.3
Jan. 8	06 01.46	+28 24.0	2.233	3.185	-0.84	-0.4	17.3	162.5
Jan. 18	05 53.08	+28 19.8	2.253	3.148	-0.65	-0.9	17.3	150.8
Jan. 28	05 46.57	+28 11.1	2.298	3.111	-0.41	-1.1	17.2	139.3
Feb. 7	05 42.50	+27 60.0	2.364	3.074	-0.14	-1.2	17.2	128.3
Feb. 17	05 41.12	+27 48.2	2.446	3.037	+0.13	-1.1	17.2	117.9
Feb. 27	05 42.46	+27 36.9	2.540	3.000	+0.39	-1.0	17.2	108.2
Mar. 9	05 46.41	+27 26.5	2.640	2.963	+0.63	-1.0	17.2	99.1
Mar. 19	05 52.71	+27 16.5	2.743	2.927	+0.84	-1.0	17.2	90.5
Mar. 29	06 01.15	+27 06.2	2.845	2.890	+1.03	-1.2	17.1	82.5

Comet C/2013 X1 (PANSTARRS)

Epoch = 2014 July 2.0 TT
T = 2016 Apr. 21.50030 TT
Peri. = 163.94709
Node = 131.10320 2000.0
Incl. = 163.30323
q = 1.3407470 AU
e = 1.0038479

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	06 54.30	+32 20.6	7.708	8.679	-0.72	+1.1	19.4	170.5
Jan. 13	06 47.06	+32 31.5	7.651	8.603	-0.71	+0.7	19.4	164.4
Jan. 23	06 39.94	+32 38.6	7.629	8.526	-0.67	+0.3	19.3	154.1
Feb. 2	06 33.22	+32 41.8	7.639	8.449	-0.61	0.0	19.3	143.2
Feb. 12	06 27.17	+32 41.5	7.677	8.371	-0.52	-0.3	19.3	132.1
Feb. 22	06 21.97	+32 38.3	7.739	8.293	-0.42	-0.5	19.2	121.1
Mar. 4	06 17.75	+32 32.9	7.817	8.215	-0.31	-0.7	19.2	110.4
Mar. 14	06 14.60	+32 26.2	7.908	8.137	-0.21	-0.7	19.2	99.9
Mar. 24	06 12.53	+32 18.7	8.003	8.058	-0.10	-0.8	19.2	89.6
Apr. 3	06 11.50	+32 11.1	8.099	7.980	0.00	-0.7	19.2	79.6
Apr. 13	06 11.45	+32 03.7	8.189	7.900	+0.09	-0.7	19.1	69.9
Apr. 23	06 12.30	+31 56.9	8.268	7.821	+0.17	-0.6	19.1	60.4
May 3	06 13.96	+31 50.7	8.333	7.741	+0.24	-0.5	19.1	51.2
May 13	06 16.32	+31 45.5	8.379	7.661	+0.29	-0.4	19.1	42.2
May 23	06 19.26	+31 41.1	8.404	7.580	+0.34	-0.3	19.0	33.5
June 2	06 22.69	+31 37.7	8.406	7.499	+0.38	-0.2	19.0	25.0
June 12	06 26.50	+31 35.2	8.383	7.418	+0.41	-0.1	18.9	17.0
June 22	06 30.58	+31 33.8	8.334	7.337	+0.43	0.0	18.9	10.4
July 2	06 34.84	+31 33.4	8.258	7.255	+0.43	+0.1	18.8	8.7
July 12	06 39.15	+31 34.3	8.156	7.173	+0.43	+0.2	18.7	13.8
July 22	06 43.42	+31 36.6	8.027	7.090	+0.41	+0.4	18.6	21.3
Aug. 1	06 47.53	+31 40.5	7.873	7.007	+0.38	+0.6	18.5	29.5
Aug. 11	06 51.37	+31 46.2	7.695	6.924	+0.34	+0.8	18.4	37.9
Aug. 21	06 54.80	+31 54.2	7.495	6.840	+0.29	+1.1	18.3	46.6
Aug. 31	06 57.68	+32 04.7	7.276	6.756	+0.22	+1.3	18.2	55.5
Sept. 10	06 59.87	+32 18.1	7.041	6.671	+0.13	+1.7	18.1	64.6
Sept. 20	07 01.20	+32 34.8	6.793	6.587	+0.03	+2.0	17.9	74.0
Sept. 30	07 01.48	+32 55.1	6.536	6.501	-0.10	+2.4	17.8	83.6
Oct. 10	07 00.53	+33 19.1	6.276	6.416	-0.24	+2.8	17.7	93.5
Oct. 20	06 58.14	+33 46.6	6.018	6.329	-0.40	+3.1	17.5	103.8
Oct. 30	06 54.12	+34 17.2	5.767	6.243	-0.58	+3.3	17.4	114.4
Nov. 9	06 48.33	+34 49.7	5.530	6.156	-0.77	+3.3	17.2	125.3
Nov. 19	06 40.67	+35 22.5	5.314	6.068	-0.95	+3.1	17.1	136.5
Nov. 29	06 31.16	+35 53.4	5.124	5.981	-1.12	+2.6	16.9	147.7
Dec. 9	06 19.99	+36 19.6	4.966	5.892	-1.25	+1.9	16.8	158.3
Dec. 19	06 07.50	+36 38.5	4.844	5.804	-1.33	+0.9	16.7	166.0
Dec. 29	05 54.23	+36 47.9	4.761	5.714	-1.34	-0.1	16.6	164.4
Jan. 8	05 40.85	+36 46.8	4.717	5.625	-1.28	-1.1	16.5	155.2
Jan. 18	05 28.03	+36 35.9	4.710	5.534	-1.17	-1.9	16.4	143.8
Jan. 28	05 16.38	+36 16.7	4.735	5.444	-1.00	-2.5	16.3	132.1
Feb. 7	05 06.34	+35 52.0	4.786	5.352	-0.82	-2.7	16.3	120.3
Feb. 17	04 58.17	+35 24.7	4.857	5.261	-0.62	-2.7	16.2	108.9
Feb. 27	04 51.95	+34 57.2	4.941	5.168	-0.43	-2.6	16.2	97.7
Mar. 9	04 47.64	+34 31.7	5.029	5.076	-0.25	-2.2	16.2	87.0
Mar. 19	04 45.11	+34 09.3	5.116	4.982	-0.09	-1.8	16.1	76.7
Mar. 29	04 44.18	+33 51.0	5.196	4.888	+0.05	-1.4	16.1	66.8

Comet 53P/Van Biesbroeck

Epoch = 2014 July 2.0 TT
T = 2016 Apr. 29.96346 TT
Peri. = 134.11824 e = 0.5511118
Node = 148.91823 2000.0 a = 5.4132909 AU
Incl. = 6.60717 n = 0.07825499
q = 2.4299624 AU P = 12.59 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	10 53.67	+07 40.5	5.249	5.811	-0.15	+1.5	21.3	120.5
Jan. 13	10 52.14	+07 55.7	5.078	5.773	-0.26	+2.2	21.2	131.2
Jan. 23	10 49.51	+08 17.8	4.926	5.735	-0.36	+2.8	21.1	142.1
Feb. 2	10 45.88	+08 45.9	4.799	5.696	-0.44	+3.3	21.0	153.3
Feb. 12	10 41.44	+09 18.6	4.700	5.658	-0.50	+3.6	20.9	164.6
Feb. 22	10 36.45	+09 54.2	4.632	5.619	-0.52	+3.6	20.9	175.9
Mar. 4	10 31.21	+10 30.5	4.595	5.579	-0.51	+3.5	20.8	172.4
Mar. 14	10 26.08	+11 05.3	4.590	5.540	-0.47	+3.1	20.8	161.0
Mar. 24	10 21.40	+11 36.7	4.615	5.500	-0.39	+2.6	20.8	149.8
Apr. 3	10 17.45	+12 03.0	4.667	5.460	-0.30	+2.0	20.8	138.9
Apr. 13	10 14.49	+12 23.0	4.741	5.419	-0.18	+1.3	20.7	128.3
Apr. 23	10 12.66	+12 36.2	4.832	5.378	-0.06	+0.6	20.8	118.0
May 3	10 12.02	+12 42.3	4.937	5.337	+0.06	-0.1	20.8	108.1
May 13	10 12.61	+12 41.3	5.050	5.296	+0.18	-0.8	20.8	98.6
May 23	10 14.37	+12 33.6	5.166	5.254	+0.29	-1.4	20.8	89.4
June 2	10 17.24	+12 19.6	5.282	5.212	+0.39	-2.0	20.8	80.5
June 12	10 21.13	+11 59.6	5.393	5.169	+0.48	-2.5	20.8	72.0
June 22	10 25.93	+11 34.1	5.496	5.127	+0.56	-3.0	20.8	63.7
July 2	10 31.54	+11 03.7	5.588	5.084	+0.63	-3.5	20.8	55.6
July 12	10 37.87	+10 28.9	5.668	5.040	+0.69	-3.9	20.8	47.7
July 22	10 44.80	+09 50.0	5.732	4.997	+0.75	-4.2	20.8	40.0
Aug. 1	10 52.27	+09 07.6	5.779	4.953	+0.79	-4.5	20.7	32.5
Aug. 11	11 00.18	+08 22.1	5.809	4.909	+0.83	-4.8	20.7	25.0
Aug. 21	11 08.46	+07 34.1	5.819	4.864	+0.86	-5.0	20.7	17.6
Aug. 31	11 17.03	+06 43.9	5.809	4.820	+0.88	-5.2	20.6	10.3
Sept.10	11 25.84	+05 52.2	5.780	4.775	+0.90	-5.3	20.5	3.5
Sept.20	11 34.80	+04 59.5	5.729	4.729	+0.91	-5.3	20.5	5.0
Sept.30	11 43.87	+04 06.3	5.659	4.684	+0.91	-5.3	20.4	12.1
Oct. 10	11 52.97	+03 13.2	5.568	4.638	+0.91	-5.2	20.3	19.4
Oct. 20	12 02.03	+02 21.0	5.458	4.592	+0.89	-5.1	20.2	26.9
Oct. 30	12 10.97	+01 30.2	5.330	4.546	+0.87	-4.9	20.1	34.4
Nov. 9	12 19.72	+00 41.7	5.185	4.499	+0.85	-4.6	20.0	42.1
Nov. 19	12 28.19	-00 03.8	5.024	4.452	+0.81	-4.2	19.9	49.9
Nov. 29	12 36.26	-00 45.4	4.850	4.405	+0.76	-3.7	19.8	57.9
Dec. 9	12 43.83	-01 22.3	4.664	4.358	+0.69	-3.1	19.6	66.0
Dec. 19	12 50.76	-01 53.5	4.470	4.311	+0.61	-2.5	19.5	74.4
Dec. 29	12 56.91	-02 18.0	4.270	4.263	+0.52	-1.7	19.3	83.0
Jan. 8	13 02.12	-02 35.0	4.067	4.215	+0.41	-0.8	19.2	91.9
Jan. 18	13 06.22	-02 43.5	3.866	4.167	+0.28	+0.1	19.0	101.0
Jan. 28	13 09.05	-02 42.5	3.669	4.119	+0.14	+1.1	18.8	110.5
Feb. 7	13 10.46	-02 31.7	3.483	4.071	-0.01	+2.1	18.6	120.3
Feb. 17	13 10.35	-02 10.6	3.309	4.022	-0.17	+3.1	18.5	130.6
Feb. 27	13 08.65	-01 39.6	3.154	3.974	-0.32	+4.0	18.3	141.1
Mar. 9	13 05.44	-00 59.8	3.021	3.925	-0.45	+4.7	18.1	151.9
Mar. 19	13 00.89	-00 13.3	2.914	3.876	-0.55	+5.0	18.0	162.8
Mar. 29	12 55.35	+00 36.9	2.836	3.828	-0.61	+5.0	17.9	172.4

Comet 77P/Longmore

Epoch = 2014 July 2.0 TT
T = 2016 May 14.29515 TT
Peri. = 196.91203 e = 0.3541086
Node = 14.87368 2000.0 a = 3.6138069 AU
Incl. = 24.33630 n = 0.14346853
q = 2.3341268 AU P = 6.87 years

m1 = 7.4 + 5 log(Delta) + 17.5 log(r(t-50))

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	02 37.56	+36 54.2	3.935	4.556	-0.15	-3.1	22.0	123.8
Jan. 13	02 36.06	+36 23.2	4.048	4.539	+0.04	-2.5	22.1	114.1
Jan. 23	02 36.50	+35 57.8	4.172	4.521	+0.23	-1.8	22.1	104.6
Feb. 2	02 38.77	+35 39.4	4.302	4.503	+0.39	-1.1	22.1	95.4
Feb. 12	02 42.72	+35 28.5	4.435	4.484	+0.54	-0.3	22.2	86.5
Feb. 22	02 48.15	+35 25.2	4.565	4.465	+0.68	+0.4	22.2	78.0
Mar. 4	02 54.92	+35 29.0	4.690	4.445	+0.79	+1.0	22.3	69.7
Mar. 14	03 02.85	+35 39.2	4.807	4.425	+0.90	+1.6	22.3	61.9
Mar. 24	03 11.80	+35 55.0	4.912	4.405	+0.99	+2.0	22.3	54.3
Apr. 3	03 21.66	+36 15.5	5.004	4.384	+1.06	+2.4	22.3	47.0
Apr. 13	03 32.29	+36 39.7	5.081	4.363	+1.13	+2.7	22.3	40.2
Apr. 23	03 43.60	+37 06.9	5.142	4.341	+1.19	+2.9	22.3	33.7
May 3	03 55.51	+37 36.2	5.185	4.319	+1.24	+3.1	22.3	27.7
May 13	04 07.92	+38 07.0	5.211	4.296	+1.28	+3.2	22.3	22.6
May 23	04 20.75	+38 38.7	5.219	4.273	+1.32	+3.2	22.2	18.8
June 2	04 33.94	+39 10.8	5.209	4.250	+1.35	+3.2	22.2	17.1
June 12	04 47.39	+39 43.0	5.180	4.226	+1.36	+3.2	22.1	18.0
June 22	05 01.04	+40 14.9	5.134	4.202	+1.38	+3.2	22.1	21.1
July 2	05 14.81	+40 46.5	5.071	4.177	+1.38	+3.1	22.0	25.6
July 12	05 28.60	+41 17.9	4.991	4.152	+1.37	+3.1	21.9	31.0
July 22	05 42.32	+41 49.2	4.895	4.126	+1.36	+3.1	21.8	36.8
Aug. 1	05 55.88	+42 20.7	4.785	4.100	+1.33	+3.2	21.8	42.9
Aug. 11	06 09.15	+42 52.8	4.661	4.074	+1.29	+3.3	21.7	49.3
Aug. 21	06 22.02	+43 26.3	4.526	4.047	+1.23	+3.6	21.5	56.0
Aug. 31	06 34.33	+44 01.8	4.380	4.020	+1.16	+3.9	21.4	62.8
Sept.10	06 45.92	+44 40.3	4.226	3.993	+1.07	+4.2	21.3	69.9
Sept.20	06 56.60	+45 22.8	4.066	3.965	+0.95	+4.7	21.2	77.1
Sept.30	07 06.15	+46 10.2	3.902	3.937	+0.81	+5.3	21.0	84.6
Oct. 10	07 14.29	+47 03.3	3.737	3.908	+0.64	+6.0	20.9	92.4
Oct. 20	07 20.74	+48 02.9	3.574	3.879	+0.44	+6.6	20.7	100.3
Oct. 30	07 25.13	+49 08.8	3.417	3.850	+0.20	+7.1	20.6	108.5
Nov. 9	07 27.09	+50 20.2	3.269	3.820	-0.08	+7.5	20.4	116.8
Nov. 19	07 26.27	+51 35.0	3.135	3.790	-0.39	+7.4	20.3	125.1
Nov. 29	07 22.35	+52 49.3	3.017	3.759	-0.71	+6.8	20.2	133.0
Dec. 9	07 15.25	+53 57.7	2.920	3.729	-1.00	+5.6	20.0	140.0
Dec. 19	07 05.22	+54 53.5	2.846	3.697	-1.22	+3.7	19.9	145.2
Dec. 29	06 52.99	+55 30.3	2.799	3.666	-1.32	+1.3	19.8	147.5
Jan. 8	06 39.81	+55 43.3	2.777	3.634	-1.27	-1.2	19.7	146.0
Jan. 18	06 27.15	+55 31.4	2.782	3.602	-1.07	-3.5	19.7	141.3
Jan. 28	06 16.40	+54 56.6	2.811	3.570	-0.78	-5.3	19.6	134.4
Feb. 7	06 08.59	+54 04.0	2.860	3.537	-0.44	-6.4	19.6	126.5
Feb. 17	06 04.18	+52 59.7	2.927	3.505	-0.09	-7.1	19.6	118.2
Feb. 27	06 03.26	+51 48.8	3.008	3.472	+0.23	-7.3	19.6	109.9
Mar. 9	06 05.59	+50 35.6	3.098	3.438	+0.52	-7.3	19.6	101.6
Mar. 19	06 10.80	+49 22.5	3.193	3.405	+0.77	-7.2	19.6	93.7
Mar. 29	06 18.51	+48 10.7	3.290	3.371	+0.98	-7.0	19.6	86.0

Comet C/2011 KP36 (Spacewatch)

Epoch = 2014 July 2.0 TT
T = 2016 May 27.23876 TT
Peri. = 180.63706 e = 0.8729565
Node = 173.41494 2000.0 a = 38.4258848 AU
Incl. = 18.98292 n = 0.00413779
q = 4.8817589 AU P = 238.20 years

m1 = 6.6 + 5 log(Delta) + 7.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	18 28.54	-06 48.1	8.675	7.741	+0.64	+0.6	18.0	17.2
Jan. 13	18 34.96	-06 42.4	8.602	7.693	+0.63	+0.9	17.9	21.1
Jan. 23	18 41.29	-06 33.0	8.506	7.644	+0.62	+1.3	17.9	27.2
Feb. 2	18 47.45	-06 20.2	8.389	7.596	+0.59	+1.6	17.8	34.4
Feb. 12	18 53.35	-06 04.2	8.252	7.548	+0.55	+1.9	17.8	42.0
Feb. 22	18 58.90	-05 45.4	8.097	7.499	+0.51	+2.1	17.7	50.0
Mar. 4	19 04.01	-05 24.0	7.928	7.451	+0.46	+2.3	17.6	58.1
Mar. 14	19 08.59	-05 00.6	7.745	7.404	+0.40	+2.5	17.6	66.4
Mar. 24	19 12.55	-04 35.8	7.553	7.356	+0.33	+2.6	17.5	74.8
Apr. 3	19 15.84	-04 10.2	7.355	7.308	+0.25	+2.6	17.4	83.4
Apr. 13	19 18.36	-03 44.5	7.155	7.261	+0.17	+2.5	17.3	92.1
Apr. 23	19 20.07	-03 19.6	6.957	7.213	+0.09	+2.3	17.2	100.8
May 3	19 20.94	-02 56.2	6.763	7.166	0.00	+2.1	17.2	109.7
May 13	19 20.93	-02 35.2	6.580	7.119	-0.09	+1.8	17.1	118.6
May 23	19 20.07	-02 17.6	6.410	7.072	-0.17	+1.3	17.0	127.5
June 2	19 18.40	-02 04.2	6.257	7.025	-0.24	+0.8	16.9	136.3
June 12	19 16.01	-01 55.8	6.125	6.979	-0.30	+0.3	16.9	144.8
June 22	19 13.05	-01 53.1	6.016	6.933	-0.34	-0.3	16.8	152.3
July 2	19 09.68	-01 56.3	5.934	6.886	-0.36	-0.9	16.8	157.9
July 12	19 06.11	-02 05.6	5.879	6.841	-0.35	-1.5	16.7	159.6
July 22	19 02.57	-02 20.6	5.851	6.795	-0.33	-2.0	16.7	156.5
Aug. 1	18 59.29	-02 40.9	5.850	6.749	-0.28	-2.5	16.7	150.1
Aug. 11	18 56.49	-03 05.7	5.875	6.704	-0.21	-2.8	16.6	142.1
Aug. 21	18 54.36	-03 33.8	5.923	6.659	-0.13	-3.0	16.6	133.4
Aug. 31	18 53.04	-04 04.2	5.991	6.614	-0.04	-3.1	16.6	124.4
Sept.10	18 52.65	-04 35.7	6.075	6.570	+0.06	-3.1	16.6	115.4
Sept.20	18 53.24	-05 07.1	6.172	6.526	+0.16	-3.0	16.7	106.3
Sept.30	18 54.84	-05 37.5	6.276	6.482	+0.26	-2.8	16.7	97.4
Oct. 10	18 57.44	-06 05.9	6.385	6.438	+0.36	-2.6	16.7	88.6
Oct. 20	19 01.00	-06 31.5	6.494	6.395	+0.45	-2.2	16.7	79.9
Oct. 30	19 05.45	-06 53.8	6.599	6.351	+0.53	-1.8	16.7	71.3
Nov. 9	19 10.73	-07 12.2	6.697	6.309	+0.60	-1.4	16.7	62.9
Nov. 19	19 16.75	-07 26.3	6.785	6.266	+0.67	-1.0	16.7	54.7
Nov. 29	19 23.41	-07 35.9	6.860	6.224	+0.72	-0.5	16.7	46.6
Dec. 9	19 30.63	-07 40.6	6.920	6.183	+0.77	0.0	16.7	38.8
Dec. 19	19 38.30	-07 40.6	6.962	6.141	+0.80	+0.5	16.7	31.2
Dec. 29	19 46.34	-07 35.8	6.985	6.100	+0.83	+1.0	16.7	24.0
Jan. 8	19 54.64	-07 26.3	6.989	6.060	+0.85	+1.4	16.7	17.8
Jan. 18	20 03.11	-07 12.3	6.972	6.020	+0.86	+1.8	16.7	13.6
Jan. 28	20 11.67	-06 54.1	6.934	5.980	+0.85	+2.2	16.6	13.4
Feb. 7	20 20.21	-06 32.0	6.875	5.941	+0.84	+2.6	16.6	17.3
Feb. 17	20 28.66	-06 06.5	6.796	5.902	+0.83	+2.8	16.5	23.3
Feb. 27	20 36.92	-05 38.0	6.698	5.863	+0.80	+3.1	16.5	30.2
Mar. 9	20 44.91	-05 07.2	6.582	5.825	+0.76	+3.3	16.4	37.5
Mar. 19	20 52.56	-04 34.6	6.449	5.788	+0.72	+3.4	16.4	45.0
Mar. 29	20 59.77	-04 01.0	6.302	5.751	+0.67	+3.4	16.3	52.6

Comet 81P/Wild

Epoch = 2014 July 2.0 TT
T = 2016 July 20.49879 TT
Peri. = 41.68139 e = 0.5379084
Node = 136.12122 2000.0 a = 3.4489015 AU
Incl. = 3.23899 n = 0.15388025
q = 1.5937084 AU P = 6.41 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	00 05.65	-02 13.3	5.252	5.140	+0.38	+2.8	21.8	78.1
Jan. 13	00 09.45	-01 44.8	5.396	5.126	+0.47	+3.4	21.9	69.0
Jan. 23	00 14.13	-01 11.0	5.530	5.111	+0.55	+3.8	21.9	60.1
Feb. 2	00 19.58	-00 32.7	5.651	5.096	+0.61	+4.2	21.9	51.5
Feb. 12	00 25.70	+00 09.2	5.757	5.080	+0.67	+4.5	22.0	43.0
Feb. 22	00 32.36	+00 54.0	5.845	5.064	+0.71	+4.7	22.0	34.8
Mar. 4	00 39.47	+01 41.0	5.913	5.047	+0.75	+4.8	22.0	26.7
Mar. 14	00 46.95	+02 29.3	5.960	5.029	+0.77	+4.9	22.0	18.8
Mar. 24	00 54.69	+03 18.4	5.986	5.011	+0.79	+4.9	22.0	11.0
Apr. 3	01 02.62	+04 07.7	5.989	4.992	+0.80	+4.9	21.9	3.8
Apr. 13	01 10.66	+04 56.5	5.970	4.973	+0.81	+4.8	21.9	5.2
Apr. 23	01 18.74	+05 44.3	5.930	4.953	+0.80	+4.6	21.9	12.5
May 3	01 26.77	+06 30.5	5.868	4.932	+0.79	+4.4	21.8	20.0
May 13	01 34.68	+07 14.5	5.785	4.911	+0.77	+4.1	21.7	27.5
May 23	01 42.39	+07 56.0	5.683	4.889	+0.74	+3.8	21.7	35.1
June 2	01 49.82	+08 34.4	5.563	4.867	+0.70	+3.5	21.6	42.7
June 12	01 56.86	+09 09.3	5.427	4.844	+0.66	+3.1	21.5	50.4
June 22	02 03.42	+09 40.1	5.276	4.820	+0.60	+2.6	21.4	58.3
July 2	02 09.38	+10 06.3	5.113	4.795	+0.52	+2.1	21.3	66.3
July 12	02 14.62	+10 27.6	4.941	4.770	+0.44	+1.6	21.2	74.5
July 22	02 19.00	+10 43.3	4.762	4.745	+0.34	+1.0	21.1	82.9
Aug. 1	02 22.38	+10 53.1	4.580	4.719	+0.22	+0.3	21.0	91.6
Aug. 11	02 24.62	+10 56.4	4.398	4.692	+0.10	-0.4	20.8	100.6
Aug. 21	02 25.59	+10 52.8	4.220	4.664	-0.04	-1.1	20.7	110.0
Aug. 31	02 25.16	+10 42.1	4.051	4.636	-0.19	-1.8	20.6	119.8
Sept.10	02 23.27	+10 24.2	3.895	4.607	-0.33	-2.5	20.5	130.0
Sept.20	02 19.92	+09 59.3	3.757	4.578	-0.47	-3.1	20.3	140.6
Sept.30	02 15.21	+09 28.1	3.642	4.548	-0.58	-3.6	20.2	151.6
Oct. 10	02 09.37	+08 52.0	3.553	4.517	-0.66	-3.9	20.1	162.8
Oct. 20	02 02.73	+08 13.0	3.495	4.485	-0.70	-3.9	20.0	173.5
Oct. 30	01 55.74	+07 33.5	3.467	4.453	-0.68	-3.7	20.0	172.2
Nov. 9	01 48.89	+06 56.6	3.472	4.421	-0.62	-3.2	19.9	161.1
Nov. 19	01 42.67	+06 24.7	3.506	4.387	-0.52	-2.4	19.9	149.5
Nov. 29	01 37.49	+06 00.3	3.568	4.353	-0.38	-1.5	19.9	138.2
Dec. 9	01 33.67	+05 44.9	3.652	4.318	-0.23	-0.6	19.9	127.1
Dec. 19	01 31.37	+05 39.2	3.754	4.283	-0.07	+0.4	19.9	116.4
Dec. 29	01 30.68	+05 43.3	3.867	4.247	+0.09	+1.3	19.9	106.1
Jan. 8	01 31.57	+05 56.8	3.988	4.210	+0.24	+2.2	19.9	96.2
Jan. 18	01 33.97	+06 18.8	4.111	4.172	+0.38	+2.9	19.9	86.7
Jan. 28	01 37.76	+06 48.3	4.231	4.134	+0.51	+3.6	19.9	77.6
Feb. 7	01 42.82	+07 24.2	4.345	4.095	+0.62	+4.1	19.9	68.9
Feb. 17	01 49.01	+08 05.3	4.450	4.055	+0.72	+4.5	19.9	60.5
Feb. 27	01 56.20	+08 50.8	4.543	4.015	+0.81	+4.9	19.9	52.3
Mar. 9	02 04.28	+09 39.4	4.621	3.974	+0.89	+5.1	19.8	44.5
Mar. 19	02 13.14	+10 30.2	4.683	3.932	+0.95	+5.2	19.8	36.9
Mar. 29	02 22.69	+11 22.5	4.727	3.889	+1.01	+5.3	19.7	29.5

Comet 172P/Yeung

Epoch = 2014 July 2.0 TT
T = 2017 Mar. 12.62444 TT
Peri. = 208.73006 e = 0.2162891
Node = 32.31639 2000.0 a = 4.2083566 AU
Incl. = 11.16938 n = 0.11416560
q = 3.2981349 AU P = 8.63 years

H = 14.0 , G = 0.15

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	V	Elong. °
Jan. 3	05 59.99	+35 30.9	3.966	4.914	-0.69	-0.3	20.8	162.8
Jan. 13	05 53.14	+35 27.5	4.005	4.904	-0.58	-0.9	20.9	153.4
Jan. 23	05 47.34	+35 18.2	4.072	4.894	-0.44	-1.4	21.0	143.0
Feb. 2	05 42.96	+35 04.6	4.163	4.883	-0.27	-1.6	21.1	132.5
Feb. 12	05 40.26	+34 48.5	4.275	4.873	-0.09	-1.7	21.2	122.1
Feb. 22	05 39.32	+34 31.2	4.402	4.862	+0.08	-1.7	21.3	112.1
Mar. 4	05 40.12	+34 14.0	4.539	4.851	+0.25	-1.6	21.4	102.5
Mar. 14	05 42.59	+33 57.6	4.682	4.840	+0.40	-1.5	21.5	93.1
Mar. 24	05 46.59	+33 42.3	4.826	4.828	+0.54	-1.4	21.6	84.2
Apr. 3	05 51.95	+33 28.0	4.967	4.816	+0.66	-1.3	21.6	75.6
Apr. 13	05 58.52	+33 14.5	5.102	4.804	+0.76	-1.3	21.6	67.2
Apr. 23	06 06.13	+33 01.6	5.228	4.792	+0.85	-1.3	21.7	59.2
May 3	06 14.62	+32 48.8	5.343	4.780	+0.92	-1.3	21.7	51.4
May 13	06 23.86	+32 35.8	5.444	4.768	+0.98	-1.4	21.7	43.9
May 23	06 33.71	+32 22.0	5.529	4.755	+1.03	-1.5	21.6	36.6
June 2	06 44.05	+32 07.4	5.598	4.742	+1.07	-1.6	21.6	29.5
June 12	06 54.77	+31 51.5	5.649	4.729	+1.10	-1.7	21.5	22.7
June 22	07 05.77	+31 34.4	5.682	4.715	+1.12	-1.8	21.5	16.4
July 2	07 16.95	+31 15.9	5.695	4.702	+1.13	-2.0	21.4	11.1
July 12	07 28.22	+30 56.2	5.690	4.688	+1.13	-2.1	21.4	9.0
July 22	07 39.49	+30 35.3	5.665	4.674	+1.12	-2.2	21.4	11.6
Aug. 1	07 50.68	+30 13.5	5.621	4.660	+1.10	-2.2	21.4	17.1
Aug. 11	08 01.71	+29 51.3	5.558	4.646	+1.08	-2.2	21.5	23.4
Aug. 21	08 12.49	+29 28.9	5.478	4.631	+1.04	-2.2	21.5	30.2
Aug. 31	08 22.93	+29 07.1	5.380	4.616	+1.00	-2.1	21.5	37.2
Sept. 10	08 32.95	+28 46.4	5.266	4.602	+0.95	-1.9	21.5	44.5
Sept. 20	08 42.44	+28 27.7	5.137	4.587	+0.89	-1.6	21.5	51.9
Sept. 30	08 51.29	+28 11.7	4.996	4.571	+0.81	-1.2	21.5	59.6
Oct. 10	08 59.39	+27 59.4	4.843	4.556	+0.72	-0.8	21.4	67.5
Oct. 20	09 06.61	+27 51.8	4.683	4.540	+0.62	-0.2	21.4	75.7
Oct. 30	09 12.80	+27 49.7	4.516	4.525	+0.50	+0.4	21.3	84.2
Nov. 9	09 17.81	+27 54.0	4.348	4.509	+0.37	+1.1	21.2	93.0
Nov. 19	09 21.47	+28 05.4	4.181	4.493	+0.21	+1.9	21.1	102.1
Nov. 29	09 23.61	+28 24.2	4.019	4.476	+0.05	+2.6	21.0	111.6
Dec. 9	09 24.12	+28 50.2	3.867	4.460	-0.12	+3.2	20.9	121.4
Dec. 19	09 22.89	+29 22.6	3.730	4.444	-0.30	+3.7	20.7	131.5
Dec. 29	09 19.91	+29 59.4	3.613	4.427	-0.46	+3.9	20.6	141.7
Jan. 8	09 15.30	+30 38.1	3.519	4.410	-0.60	+3.7	20.4	151.8
Jan. 18	09 09.31	+31 15.3	3.452	4.393	-0.69	+3.2	20.3	160.8
Jan. 28	09 02.38	+31 47.6	3.415	4.376	-0.73	+2.4	20.2	165.7
Feb. 7	08 55.08	+32 11.9	3.409	4.359	-0.71	+1.4	20.2	162.4
Feb. 17	08 48.00	+32 26.0	3.432	4.342	-0.62	+0.3	20.3	153.9
Feb. 27	08 41.76	+32 29.0	3.483	4.324	-0.49	-0.8	20.4	144.0
Mar. 9	08 36.84	+32 21.4	3.559	4.307	-0.33	-1.7	20.6	133.9
Mar. 19	08 33.55	+32 04.1	3.654	4.289	-0.15	-2.5	20.7	123.8
Mar. 29	08 32.08	+31 38.7	3.765	4.271	+0.04	-3.2	20.8	114.1

Comet 65P/Gunn

Epoch = 2014 July 2.0 TT
T = 2017 Sept. 29.34981 TT
Peri. = 210.41499 e = 0.2656610
Node = 65.15068 2000.0 a = 3.8672646 AU
Incl. = 9.34582 n = 0.12959798
q = 2.8398832 AU P = 7.61 years

m1 = 7.0 + 5 log(Delta) + 12.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	06 26.20	+29 31.2	3.920	4.894	-0.70	+0.8	18.6	170.9
Jan. 13	06 19.21	+29 39.5	3.954	4.893	-0.62	+0.4	18.6	160.7
Jan. 23	06 12.99	+29 43.5	4.018	4.892	-0.50	0.0	18.6	149.5
Feb. 2	06 07.96	+29 43.7	4.108	4.890	-0.35	-0.3	18.7	138.5
Feb. 12	06 04.41	+29 41.1	4.221	4.888	-0.19	-0.4	18.7	127.7
Feb. 22	06 02.50	+29 36.8	4.352	4.886	-0.02	-0.5	18.8	117.3
Mar. 4	06 02.27	+29 31.4	4.496	4.883	+0.14	-0.6	18.9	107.3
Mar. 14	06 03.66	+29 25.5	4.648	4.880	+0.29	-0.6	18.9	97.6
Mar. 24	06 06.56	+29 19.5	4.802	4.877	+0.43	-0.6	19.0	88.4
Apr. 3	06 10.83	+29 13.3	4.956	4.874	+0.55	-0.7	19.1	79.5
Apr. 13	06 16.33	+29 06.8	5.105	4.870	+0.66	-0.7	19.1	70.9
Apr. 23	06 22.88	+28 59.8	5.245	4.865	+0.75	-0.8	19.2	62.6
May 3	06 30.34	+28 51.9	5.375	4.861	+0.82	-0.9	19.2	54.6
May 13	06 38.57	+28 43.0	5.492	4.856	+0.89	-1.0	19.3	46.8
May 23	06 47.42	+28 32.8	5.593	4.851	+0.94	-1.2	19.3	39.2
June 2	06 56.79	+28 21.1	5.678	4.845	+0.98	-1.3	19.3	31.8
June 12	07 06.54	+28 07.8	5.745	4.839	+1.00	-1.5	19.4	24.5
June 22	07 16.59	+27 52.7	5.793	4.833	+1.02	-1.7	19.4	17.5
July 2	07 26.83	+27 36.1	5.821	4.827	+1.03	-1.8	19.4	10.9
July 12	07 37.16	+27 17.8	5.830	4.820	+1.04	-2.0	19.4	6.1
July 22	07 47.51	+26 58.3	5.818	4.813	+1.03	-2.1	19.4	7.6
Aug. 1	07 57.80	+26 37.6	5.786	4.805	+1.01	-2.1	19.3	13.6
Aug. 11	08 07.93	+26 16.3	5.735	4.798	+0.99	-2.2	19.3	20.4
Aug. 21	08 17.82	+25 54.8	5.664	4.789	+0.96	-2.1	19.3	27.5
Aug. 31	08 27.39	+25 33.6	5.575	4.781	+0.92	-2.0	19.2	34.9
Sept.10	08 36.54	+25 13.4	5.468	4.772	+0.86	-1.9	19.2	42.4
Sept.20	08 45.18	+24 54.9	5.346	4.763	+0.80	-1.6	19.1	50.0
Sept.30	08 53.20	+24 38.9	5.209	4.754	+0.73	-1.3	19.0	57.9
Oct. 10	09 00.49	+24 26.4	5.061	4.744	+0.64	-0.8	19.0	66.1
Oct. 20	09 06.92	+24 18.2	4.903	4.734	+0.54	-0.3	18.9	74.4
Oct. 30	09 12.35	+24 15.2	4.738	4.724	+0.43	+0.3	18.8	83.1
Nov. 9	09 16.64	+24 18.4	4.571	4.713	+0.30	+1.0	18.7	92.1
Nov. 19	09 19.64	+24 28.4	4.404	4.702	+0.16	+1.7	18.6	101.5
Nov. 29	09 21.20	+24 45.7	4.243	4.691	0.00	+2.4	18.5	111.2
Dec. 9	09 21.21	+25 10.2	4.091	4.679	-0.16	+3.1	18.4	121.3
Dec. 19	09 19.62	+25 41.2	3.955	4.667	-0.32	+3.6	18.3	131.7
Dec. 29	09 16.41	+26 17.4	3.838	4.655	-0.47	+3.9	18.3	142.3
Jan. 8	09 11.73	+26 56.6	3.745	4.642	-0.59	+3.9	18.2	153.0
Jan. 18	09 05.82	+27 35.9	3.680	4.630	-0.67	+3.6	18.1	163.0
Jan. 28	08 59.09	+28 12.3	3.645	4.616	-0.70	+3.1	18.1	169.2
Feb. 7	08 52.05	+28 43.0	3.642	4.603	-0.68	+2.3	18.1	165.3
Feb. 17	08 45.25	+29 05.9	3.670	4.589	-0.60	+1.4	18.1	155.8
Feb. 27	08 39.23	+29 19.8	3.726	4.575	-0.48	+0.5	18.1	145.3
Mar. 9	08 34.41	+29 24.6	3.807	4.561	-0.33	-0.4	18.1	134.7
Mar. 19	08 31.10	+29 20.8	3.909	4.546	-0.16	-1.1	18.2	124.4
Mar. 29	08 29.46	+29 09.6	4.027	4.531	+0.01	-1.8	18.2	114.4

Comet 74P/Smirnova-Chernykh

Epoch = 2014 July 2.0 TT
T = 2018 Jan. 24.11317 TT
Peri. = 86.59006 e = 0.1486525
Node = 77.07126 2000.0 a = 4.1620556 AU
Incl. = 6.65105 n = 0.11607595
q = 3.5433556 AU P = 8.49 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	′	m1	Elong. °
Jan. 3	22 54.03	-13 34.6	5.232	4.776	+0.70	+5.2	19.4	57.5
Jan. 13	23 01.02	-12 42.3	5.358	4.775	+0.76	+5.5	19.4	49.3
Jan. 23	23 08.59	-11 47.2	5.469	4.773	+0.80	+5.7	19.5	41.2
Feb. 2	23 16.63	-10 49.9	5.564	4.771	+0.84	+5.9	19.5	33.4
Feb. 12	23 25.05	-09 51.0	5.640	4.769	+0.87	+6.0	19.5	25.7
Feb. 22	23 33.73	-08 51.1	5.697	4.767	+0.89	+6.0	19.6	18.2
Mar. 4	23 42.60	-07 50.8	5.734	4.765	+0.90	+6.0	19.6	11.2
Mar. 14	23 51.58	-06 50.6	5.750	4.762	+0.90	+5.9	19.6	5.9
Mar. 24	00 00.59	-05 51.3	5.746	4.760	+0.90	+5.8	19.6	7.6
Apr. 3	00 09.56	-04 53.3	5.721	4.757	+0.89	+5.6	19.5	13.8
Apr. 13	00 18.41	-03 57.2	5.677	4.754	+0.87	+5.4	19.5	20.8
Apr. 23	00 27.08	-03 03.6	5.614	4.750	+0.84	+5.1	19.5	28.1
May 3	00 35.50	-02 13.0	5.532	4.747	+0.81	+4.7	19.5	35.4
May 13	00 43.58	-01 26.0	5.434	4.743	+0.77	+4.3	19.4	42.8
May 23	00 51.24	-00 43.2	5.321	4.739	+0.72	+3.8	19.4	50.3
June 2	00 58.40	-00 05.1	5.194	4.735	+0.66	+3.3	19.3	58.0
June 12	01 04.95	+00 27.6	5.056	4.731	+0.58	+2.7	19.2	65.8
June 22	01 10.80	+00 54.6	4.909	4.726	+0.50	+2.1	19.2	73.7
July 2	01 15.82	+01 15.1	4.756	4.722	+0.41	+1.4	19.1	81.9
July 12	01 19.89	+01 28.8	4.599	4.717	+0.30	+0.6	19.0	90.4
July 22	01 22.90	+01 35.2	4.443	4.712	+0.18	-0.1	18.9	99.1
Aug. 1	01 24.73	+01 34.1	4.290	4.707	+0.06	-0.9	18.9	108.2
Aug. 11	01 25.29	+01 25.3	4.145	4.701	-0.08	-1.6	18.8	117.6
Aug. 21	01 24.52	+01 09.2	4.012	4.696	-0.21	-2.3	18.7	127.4
Aug. 31	01 22.41	+00 46.4	3.896	4.690	-0.34	-2.8	18.6	137.5
Sept.10	01 19.06	+00 18.0	3.801	4.684	-0.44	-3.2	18.6	147.9
Sept.20	01 14.64	-00 14.0	3.730	4.678	-0.52	-3.4	18.5	158.3
Sept.30	01 09.41	-00 47.6	3.687	4.672	-0.57	-3.2	18.5	168.2
Oct. 10	01 03.74	-01 20.1	3.674	4.666	-0.57	-2.9	18.5	172.2
Oct. 20	00 58.06	-01 48.7	3.692	4.659	-0.53	-2.2	18.5	164.5
Oct. 30	00 52.77	-02 11.2	3.739	4.652	-0.45	-1.4	18.5	154.0
Nov. 9	00 48.28	-02 25.7	3.814	4.645	-0.34	-0.5	18.5	143.3
Nov. 19	00 44.85	-02 31.1	3.912	4.638	-0.21	+0.4	18.6	132.6
Nov. 29	00 42.70	-02 27.0	4.030	4.631	-0.08	+1.4	18.6	122.1
Dec. 9	00 41.94	-02 13.5	4.163	4.624	+0.06	+2.2	18.7	112.0
Dec. 19	00 42.55	-01 51.2	4.307	4.616	+0.20	+3.0	18.7	102.2
Dec. 29	00 44.51	-01 20.9	4.456	4.608	+0.32	+3.7	18.8	92.7
Jan. 8	00 47.73	-00 43.7	4.606	4.600	+0.43	+4.3	18.9	83.6
Jan. 18	00 52.07	-00 00.5	4.753	4.592	+0.54	+4.8	18.9	74.7
Jan. 28	00 57.44	+00 47.7	4.894	4.584	+0.63	+5.2	19.0	66.1
Feb. 7	01 03.69	+01 39.8	5.025	4.576	+0.70	+5.5	19.0	57.8
Feb. 17	01 10.71	+02 35.0	5.144	4.567	+0.77	+5.7	19.1	49.7
Feb. 27	01 18.39	+03 32.5	5.249	4.558	+0.82	+5.9	19.1	41.8
Mar. 9	01 26.62	+04 31.3	5.338	4.549	+0.87	+6.0	19.1	34.1
Mar. 19	01 35.31	+05 30.9	5.409	4.540	+0.91	+6.0	19.1	26.5
Mar. 29	01 44.38	+06 30.5	5.462	4.531	+0.94	+5.9	19.1	19.2

Comet C/2010 U3 (Boattini)

Epoch = 2014 July 2.0 TT
T = 2019 Feb. 23.80380 TT
Peri. = 87.96374
Node = 43.04045 2000.0
Incl. = 55.46547
q = 8.4530634 AU
e = 1.0033428

m1 = 4.4 + 5 log(Delta) + 7.5 log(r)

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m		m1	Elong. °
Jan. 3	02 43.24	+27 01.5	12.968	13.538	-0.12	-0.1	18.5	123.7
Jan. 13	02 42.06	+27 00.5	13.076	13.498	-0.06	+0.1	18.5	113.5
Jan. 23	02 41.42	+27 01.3	13.196	13.457	-0.01	+0.3	18.5	103.3
Feb. 2	02 41.35	+27 04.0	13.323	13.417	+0.05	+0.5	18.5	93.4
Feb. 12	02 41.84	+27 09.0	13.451	13.376	+0.10	+0.7	18.5	83.5
Feb. 22	02 42.85	+27 16.4	13.576	13.336	+0.15	+1.0	18.5	73.9
Mar. 4	02 44.37	+27 26.2	13.693	13.295	+0.20	+1.2	18.5	64.4
Mar. 14	02 46.33	+27 38.5	13.798	13.255	+0.24	+1.5	18.5	55.2
Mar. 24	02 48.68	+27 53.0	13.886	13.215	+0.27	+1.7	18.5	46.1
Apr. 3	02 51.37	+28 09.7	13.956	13.175	+0.30	+1.9	18.5	37.3
Apr. 13	02 54.33	+28 28.4	14.004	13.134	+0.32	+2.1	18.5	28.8
Apr. 23	02 57.50	+28 49.0	14.028	13.094	+0.33	+2.2	18.5	21.0
May 3	03 00.82	+29 11.1	14.027	13.054	+0.34	+2.4	18.5	14.5
May 13	03 04.21	+29 34.6	14.002	13.014	+0.34	+2.5	18.5	11.8
May 23	03 07.62	+29 59.3	13.950	12.974	+0.34	+2.6	18.5	14.8
June 2	03 10.98	+30 25.0	13.874	12.934	+0.32	+2.7	18.4	21.3
June 12	03 14.23	+30 51.5	13.774	12.894	+0.31	+2.7	18.4	28.9
June 22	03 17.28	+31 18.7	13.651	12.855	+0.28	+2.8	18.4	37.1
July 2	03 20.08	+31 46.3	13.508	12.815	+0.25	+2.8	18.4	45.4
July 12	03 22.57	+32 14.0	13.346	12.775	+0.21	+2.8	18.3	54.0
July 22	03 24.66	+32 41.9	13.170	12.735	+0.16	+2.8	18.3	62.7
Aug. 1	03 26.31	+33 09.4	12.981	12.696	+0.11	+2.7	18.2	71.5
Aug. 11	03 27.45	+33 36.5	12.785	12.656	+0.06	+2.6	18.2	80.4
Aug. 21	03 28.03	+34 02.8	12.585	12.617	0.00	+2.5	18.2	89.5
Aug. 31	03 28.00	+34 27.9	12.384	12.577	-0.07	+2.4	18.1	98.7
Sept. 10	03 27.35	+34 51.4	12.189	12.538	-0.13	+2.2	18.1	108.1
Sept. 20	03 26.07	+35 13.0	12.003	12.499	-0.19	+1.9	18.0	117.5
Sept. 30	03 24.17	+35 32.1	11.832	12.460	-0.25	+1.6	18.0	126.9
Oct. 10	03 21.69	+35 48.4	11.679	12.420	-0.30	+1.3	17.9	136.3
Oct. 20	03 18.73	+36 01.4	11.548	12.381	-0.34	+1.0	17.9	145.4
Oct. 30	03 15.38	+36 11.0	11.444	12.342	-0.36	+0.6	17.9	153.8
Nov. 9	03 11.78	+36 17.1	11.367	12.304	-0.37	+0.3	17.9	160.1
Nov. 19	03 08.08	+36 19.8	11.321	12.265	-0.36	0.0	17.8	161.9
Nov. 29	03 04.45	+36 19.4	11.305	12.226	-0.34	-0.3	17.8	158.0
Dec. 9	03 01.04	+36 16.6	11.319	12.187	-0.30	-0.5	17.8	150.6
Dec. 19	02 58.01	+36 11.9	11.361	12.149	-0.25	-0.6	17.8	141.7
Dec. 29	02 55.48	+36 06.3	11.427	12.110	-0.19	-0.6	17.8	132.2
Jan. 8	02 53.54	+36 00.7	11.515	12.072	-0.13	-0.5	17.8	122.5
Jan. 18	02 52.26	+35 55.7	11.619	12.033	-0.06	-0.4	17.8	112.7
Jan. 28	02 51.68	+35 52.2	11.735	11.995	+0.01	-0.1	17.8	103.0
Feb. 7	02 51.80	+35 50.8	11.857	11.957	+0.08	+0.1	17.9	93.4
Feb. 17	02 52.60	+35 51.8	11.982	11.919	+0.14	+0.4	17.9	84.0
Feb. 27	02 54.04	+35 55.7	12.103	11.881	+0.20	+0.7	17.9	74.7
Mar. 9	02 56.08	+36 02.7	12.216	11.843	+0.26	+1.0	17.9	65.7
Mar. 19	02 58.66	+36 12.7	12.318	11.805	+0.30	+1.3	17.9	57.0
Mar. 29	03 01.71	+36 25.7	12.405	11.767	+0.34	+1.6	17.9	48.5

Comet 29P/Schwassmann-Wachmann

Epoch = 2014 July 2.0 TT
T = 2019 Apr. 12.66993 TT
Peri. = 50.42084 e = 0.0420393
Node = 312.42909 2000.0 a = 6.0082695 AU
Incl. = 9.37531 n = 0.06692370
q = 5.7556861 AU P = 14.73 years

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

0h TT 2014/15	R.A.(2000) h m	Decl. ° ′	Delta	r	Daily motion m	m1	Elong. °
Jan. 3	15 30.31	-27 39.6	6.817	6.173	+0.66	-3.0	14.1	45.9
Jan. 13	15 36.92	-28 10.0	6.692	6.171	+0.60	-2.9	14.1	54.4
Jan. 23	15 42.88	-28 38.8	6.552	6.169	+0.52	-2.7	14.0	63.0
Feb. 2	15 48.07	-29 05.9	6.402	6.166	+0.43	-2.5	14.0	71.9
Feb. 12	15 52.37	-29 31.0	6.243	6.164	+0.33	-2.3	13.9	80.9
Feb. 22	15 55.66	-29 53.8	6.081	6.162	+0.22	-2.0	13.8	90.1
Mar. 4	15 57.83	-30 14.0	5.919	6.160	+0.10	-1.7	13.8	99.4
Mar. 14	15 58.82	-30 31.2	5.761	6.157	-0.02	-1.4	13.7	109.0
Mar. 24	15 58.58	-30 44.8	5.613	6.155	-0.15	-0.9	13.7	118.8
Apr. 3	15 57.11	-30 54.2	5.478	6.153	-0.26	-0.5	13.6	128.7
Apr. 13	15 54.50	-30 58.8	5.361	6.150	-0.36	+0.1	13.6	138.7
Apr. 23	15 50.89	-30 58.1	5.267	6.148	-0.44	+0.6	13.5	148.7
May 3	15 46.50	-30 51.9	5.197	6.145	-0.49	+1.2	13.5	158.3
May 13	15 41.61	-30 40.3	5.156	6.143	-0.51	+1.7	13.5	166.5
May 23	15 36.55	-30 23.7	5.144	6.140	-0.49	+2.1	13.5	169.0
June 2	15 31.66	-30 03.2	5.161	6.138	-0.44	+2.3	13.5	163.0
June 12	15 27.24	-29 40.0	5.207	6.136	-0.37	+2.4	13.5	154.0
June 22	15 23.58	-29 15.8	5.279	6.133	-0.27	+2.4	13.5	144.3
July 2	15 20.86	-28 52.1	5.374	6.130	-0.16	+2.2	13.6	134.5
July 12	15 19.23	-28 30.3	5.490	6.128	-0.05	+1.9	13.6	124.9
July 22	15 18.75	-28 11.4	5.621	6.125	+0.07	+1.5	13.7	115.4
Aug. 1	15 19.43	-27 56.2	5.764	6.123	+0.18	+1.1	13.7	106.0
Aug. 11	15 21.24	-27 45.1	5.915	6.120	+0.29	+0.7	13.8	96.9
Aug. 21	15 24.14	-27 38.3	6.068	6.118	+0.39	+0.3	13.8	88.0
Aug. 31	15 28.04	-27 35.5	6.221	6.115	+0.48	-0.1	13.9	79.3
Sept. 10	15 32.87	-27 36.6	6.370	6.112	+0.57	-0.4	13.9	70.8
Sept. 20	15 38.52	-27 41.1	6.511	6.110	+0.64	-0.7	14.0	62.4
Sept. 30	15 44.91	-27 48.5	6.641	6.107	+0.70	-1.0	14.0	54.1
Oct. 10	15 51.95	-27 58.3	6.757	6.104	+0.76	-1.2	14.0	45.9
Oct. 20	15 59.55	-28 09.9	6.858	6.102	+0.81	-1.3	14.1	37.8
Oct. 30	16 07.61	-28 22.8	6.940	6.099	+0.84	-1.4	14.1	29.9
Nov. 9	16 16.04	-28 36.6	7.003	6.096	+0.87	-1.4	14.1	22.0
Nov. 19	16 24.74	-28 50.8	7.045	6.094	+0.89	-1.4	14.1	14.6
Nov. 29	16 33.64	-29 04.9	7.065	6.091	+0.90	-1.4	14.1	8.4
Dec. 9	16 42.62	-29 18.8	7.062	6.088	+0.90	-1.3	14.1	7.8
Dec. 19	16 51.59	-29 32.1	7.037	6.085	+0.89	-1.3	14.1	13.6
Dec. 29	17 00.44	-29 44.8	6.990	6.082	+0.86	-1.2	14.1	21.1
Jan. 8	17 09.07	-29 56.6	6.921	6.080	+0.83	-1.1	14.1	29.0
Jan. 18	17 17.37	-30 07.7	6.831	6.077	+0.79	-1.0	14.1	37.2
Jan. 28	17 25.22	-30 18.0	6.723	6.074	+0.73	-1.0	14.0	45.5
Feb. 7	17 32.51	-30 27.8	6.599	6.071	+0.66	-0.9	14.0	54.0
Feb. 17	17 39.11	-30 37.1	6.460	6.068	+0.58	-0.9	13.9	62.6
Feb. 27	17 44.90	-30 46.1	6.310	6.066	+0.49	-0.9	13.9	71.3
Mar. 9	17 49.77	-30 55.0	6.153	6.063	+0.38	-0.9	13.8	80.2
Mar. 19	17 53.61	-31 03.9	5.991	6.060	+0.27	-0.9	13.8	89.2
Mar. 29	17 56.31	-31 12.8	5.829	6.057	+0.15	-0.9	13.7	98.5

彗星年表　２０１４

編集委員会

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○印は編集長

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