

PROFESSOR COMET REPORT

SEPTEMBER 2010

Current status of the predominant comets for 2010

Comets	Designation (IAU- MPC)	Orbital Status	Magnitude (Visual)	Trend	Observation (Lat.)	Visibility Period
Hartley 2	103P	P	~8	Brightening	70°N - 30°S	All Night
Tempel 2	10P	P	8.5	Fading	50°N - 75°S	Morning
McNaught	2009 R1	C	~10	Fading	20°N - 75°S	Morning
McNaught	2009 K5	C	11	Fading	70°N - 5°S	Best Morning
Encke	2P	P	11.5	Fading	15°N - 75°S	Evening
Wolf Harrington	43P	P	~12	Fading	Poor Elongation	N/A
Gunn	65P	P	13	Fading	30°N - 75°S	Best Evening
Christensen	2006 W3	C	13	Fading	10°N - 75°S	Evening
Schwassman Wachmann	29P	P	~13	Varies	Poor Elongation	N/A
Garradd	2009 P1	C	13.5	Bright	20°N - 75°S	All Night
Wild 2	81P	P	13.5	Fading	30°N - 70°S	Evening
Vales	2010 H2	C	14	Possibly Fading	Equator to 40°S	Early Evening

The **red designation** is assigned to all comets that are of 10th visual magnitude or brighter and are classified as the **major comets**. All remaining comets that are possibility at 12th visual magnitude or fainter are given the **blue designation** and are classified as the minor comets! The **green designation** is assigned to comets to far south to be seen in the continental United States. The **orange designation** is for comets 12th visual magnitude or brighter lost in the daytime glare!

Ephemeris data terminology:

Date: Month and Year using the standard Gregorian calendar.

TT: Terrestrial Time (Day of the Month) as a substitute for the astronomical Julian date.

RA(2000): Right Ascension based on the Epoch J2000 (longitudinal coordinate for the celestial sky) measured in hours and minutes.

Decl.: Declination as measured in degrees and arcminutes.

Delta: The distance from Earth measured in AUs (1 AU = 1 Astronomical Unit = 92 955 807 mi = 149 597 871 km as the mean distance between the Earth and Sun).

R: The solar distance as measured in AUs.

Elong: Solar elongation which is the angle of separation between the observed object and the Sun as measured across the night sky as measured in degrees.

Phase: Phase angle between the Sun, the celestial object, and the observer on the surface of the Earth. Also known as the Sun - Object - Observer angle.

m1: The visual magnitude of the celestial object as observed on the surface of the Earth at sea level.

m2: The nuclear magnitude which is the visual magnitude of the false nucleus within the coma as seen by an observer here on Earth at sea level.

Degree of Condensation (DC)

All observations of comets are broken down into three factors: estimating magnitudes for light curves to predict future brightness, coma observations, and observations that concern with a comet's tail(s). For the coma there two characteristic features that are important when studying the coma: Degree of condensation and coma size in arcminutes. The classification system for determining the DC is based on a positive integer system from 0 to 9 as shown below.

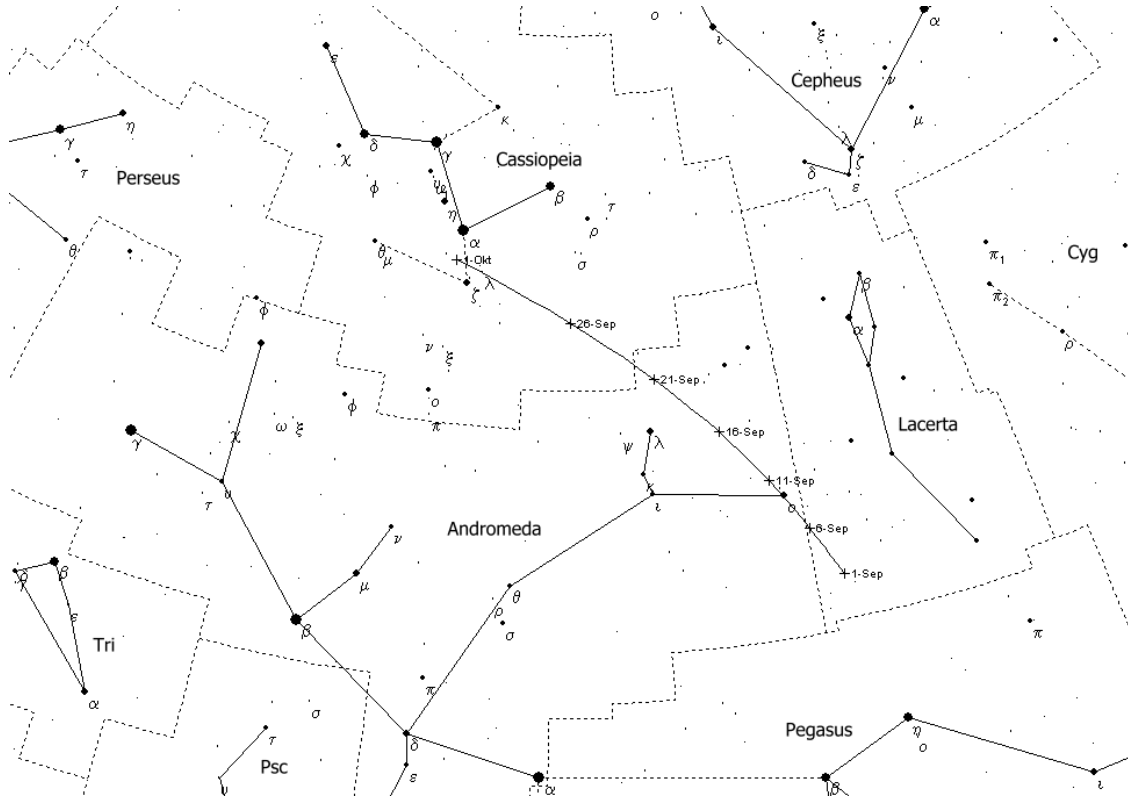
- 0 = Diffuse coma of uniform brightness*
- 1 = Diffuse coma with slight brightening towards center*
- 2 = Diffuse coma with definite brightening towards center*
- 3 = Centre of coma much brighter than edges, though still diffuse*
- 4 = Diffuse condensation at centre of coma*
- 5 = Condensation appears as a diffuse spot at centre of coma – described as moderately condensed.*
- 6 = Condensation appears as a bright diffuse spot at centre of coma*
- 7 = Condensation appears like a star that cannot be focused – described as strongly condensed*
- 8 = Coma virtually invisible*
- 9 = Stellar or disk like in appearance.*

A Synopsis of Comets for the coming Autumn 2010!

The month of September is passing us by with the coming of the Autumnal Equinox on 11:09 PM UTC on September 22 and with it onset of the fall season! There are not a lot of bright comets for us to observe out there as we progress towards the holiday season with most of the major comets now fading for the year or positioned too far south to be seen in the US. Therefore I have changed the comet report to include in detail only those comets which are of 10th visual magnitude or brighter. Even then those comets are only useful to observe when they can be seen between dawn and dusk or when they are not in solar conjunction. Right now there are only two comets that are in play for visual observations as we progress further into autumn; 103P/Hartley 2 and 10P/Tempel 2.

These two comets are right now brighter than 10th magnitude while comet Harley is expected to be the great comet for Fall 2010. Already 103P/Hartley 2 has yet to meet expectations has the latest observations reports place the comet just below visual magnitude 7.5, but the comet is still expected to brighten rapidly in the coming month. It is targeted from a maximum visual brightness of magnitude 4.4 during 21 October when it will be only 0.1209 AU or 11,231,610 miles from Earth! There are three other comets that are out in the night skies as seen from the northern hemisphere; 2009 K5/McNaught, 43P/Wolf - Harrington, and 29P/Schwassman - Wachmann. However, all three of these comets are now fainter with visual magnitudes 11 - 13 and the later two are showing poor elongation plus all three will continue to fade for what is left of 2010.

103P/Hartley 2



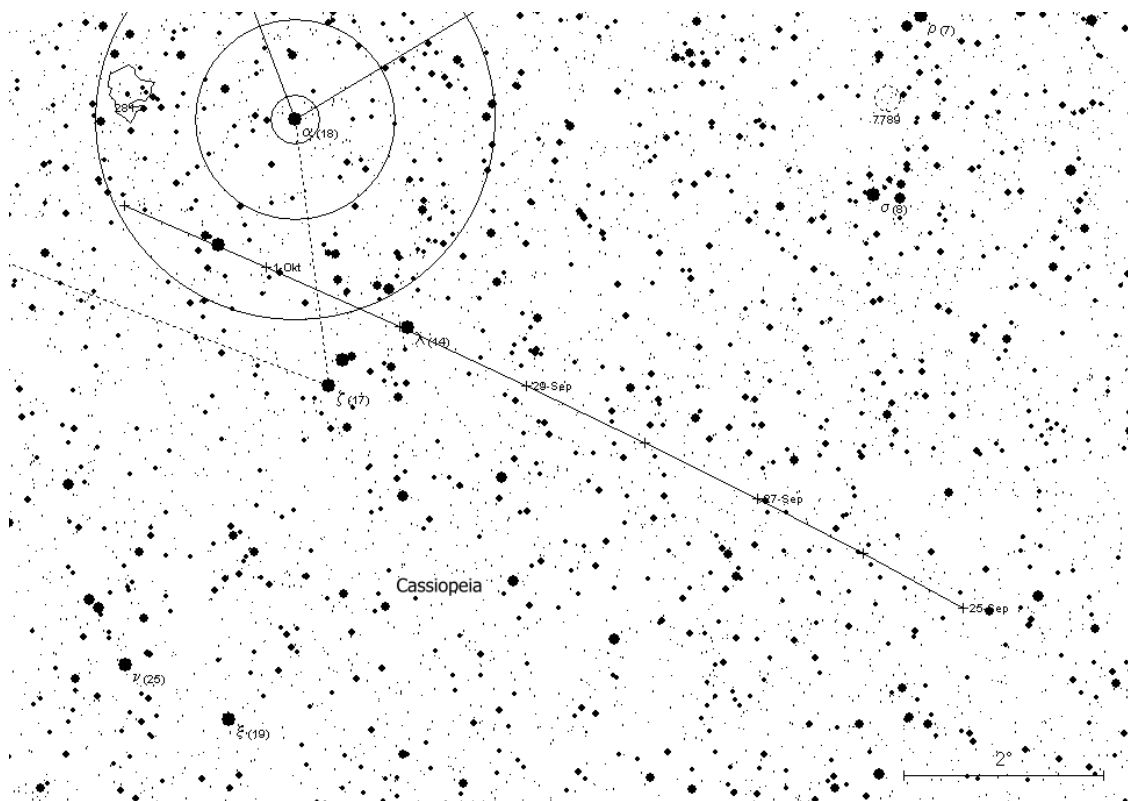
Courtesy of Winnie's Comet Pages, 2010.

Above is the current path of Hartley 2 as it moves in a northeasterly direction across southern region of Cassiopeia from 26 September thru Early October.

As of Late September Harley 2 is now moving away from the NW region of the constellation of Andromeda is currently located in the SW region of Cassiopeia for the rest of the month. The comet has now brightened by some current reports to a visual magnitude of 7.9 and its' DC (degree of condensation) between 2 and 3 making it almost stellar - like. The coma has a compact stellar - like appearance, but the diameter has now been estimated at up to 16 arcminutes in size which is just over half a full Moon! Hartley 2 is now easily visible in binoculars and it is appearing as a hazy, nebulous object that is very has a bright, green color with a brighter center. A small, dust tail appears to be emanating from the coma with observation reports indicating an estimated length of 7.2 - 7.8 arcminutes at PA of 180° (due south). It is currently located about 3.3° to the ENE of open star cluster NGC 7686 which has a visual magnitude of 5.6 with a trumpler class III 2 p. The comet has a

current solar elongation of 130° with a solar distance of 1.1664 AU and a distance from Earth of 0.2338 AU a mere 21,720,020 miles away!

Hartley 2 will continue to progress towards the constellation of Cassiopeia during the last week of September and until the mid morning of 6 October. Expect the comet during the late morning of 30 Sept to fly past between the stars of Schedir (α Cassiopeiae) and Zeta Cassiopeiae. The comet will be about 2/3 of the distance from Schedir to ζ Cassiopeiae as shown in the sky chart below.

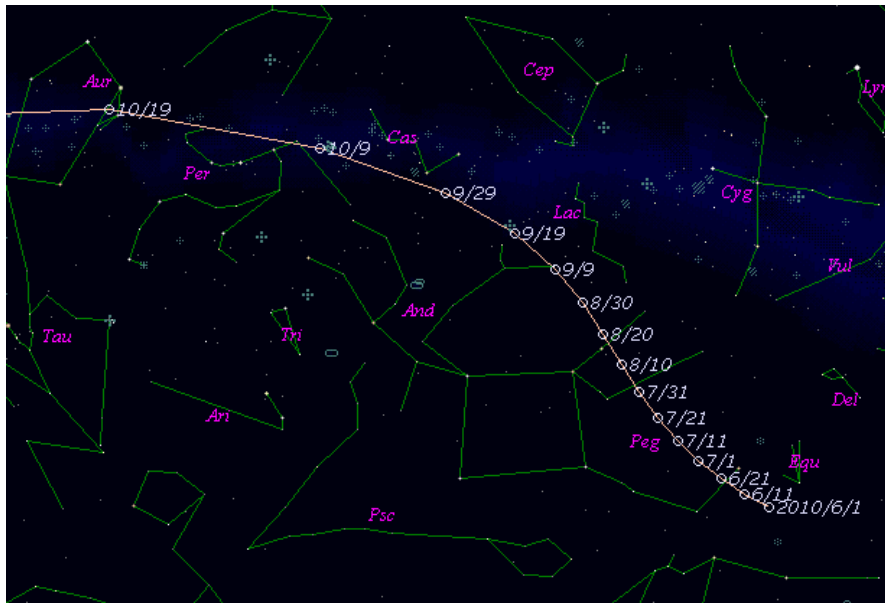


Courtesy of Winnie's Comet Pages, 2010.

Hartley 2 will be within about 1° south of NGC 281 (our beloved **PACMAN NEBULA**) on the night of October 1 at 11:04 PM CDT. The nebula will be impossible to see unless under dark skies with special filters, so look for the central open star cluster that lies within the nebula. On that night the comet is expected to brighten to at least magnitude 5.7 with its distance from Earth decreasing to 0.178 AU or 16,536,200 miles! The comet will then have crossed into the western region of Perseus and throughout the night of 7/8 October will graze just to the South of the Perseus (η & χ) double cluster. It is at this point the comet is expected to brighten up to 5th magnitude while

less than 1.1 AU from the Sun and 0.148 AU from Earth! Hartley 2 will be within 4 arcminutes to the north of Eta Persei around 1:54 am CDT the night of October 10. Eta Persei is a bright K3 bright, giant star of visual magnitude 3.76 with the comet already at 5th magnitude. Expect Hartley 2 to stay within the constellation of Perseus until the morning of 17 October when enters Auriga and officially begins its show inside the Winter Hexagon! There is one exception and that the comet's path will cross the SW region of Camelopardalis between the mornings of 12/13 October.

Hartley 2 is still planning to be the great comet of Autumn 2010 with an expected magnitude of 4.4 during the nights of 21 - 23 October. During this period the comet will fly through the heart of Auriga grazing within a few degrees of the open star clusters M36, M37, and M38. The comet will continue to be brighter than 7th magnitude right thru the end of November while to the East of Sirius and then dim to 10th magnitude by 6 Jan 2011. I will have a special report on the comet for early October!



Courtesy: <http://www.aerith.net/comet/catalog/0103P/2010.html>

IAU MPC Ephemeris data for 103P/Harley 2 (autumn 2010):

Date	TT	RA (2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 09 29		00 23 21.4	+53 57 07	0.1954	1.1333	128.3	44.0	6.0	15.9
2010 09 30		00 32 04.5	+54 30 17	0.1897	1.1285	128.1	44.3	5.9	15.9
2010 10 01		00 41 33.7	+55 01 31	0.1842	1.1239	127.9	44.7	5.8	15.8
2010 10 02		00 51 52.1	+55 30 15	0.1788	1.1194	127.7	45.0	5.7	15.7
2010 10 03		01 03 02.4	+55 55 49	0.1736	1.1150	127.5	45.4	5.6	15.7
2010 10 04		01 15 06.8	+56 17 23	0.1685	1.1108	127.4	45.7	5.5	15.6
2010 10 05		01 28 06.3	+56 34 04	0.1635	1.1067	127.2	46.0	5.4	15.5
2010 10 06		01 42 00.6	+56 44 50	0.1588	1.1028	127.0	46.4	5.4	15.5
2010 10 07		01 56 47.6	+56 48 35	0.1543	1.0990	126.8	46.7	5.3	15.4
2010 10 08		02 12 23.1	+56 44 09	0.1500	1.0954	126.6	47.1	5.2	15.4
2010 10 09		02 28 40.3	+56 30 20	0.1459	1.0920	126.4	47.4	5.1	15.3
2010 10 10		02 45 30.4	+56 06 03	0.1420	1.0887	126.2	47.8	5.0	15.2
2010 10 11		03 02 42.3	+55 30 16	0.1385	1.0855	125.9	48.1	4.9	15.2
2010 10 12		03 20 03.3	+54 42 12	0.1352	1.0826	125.7	48.5	4.8	15.1
2010 10 13		03 37 20.3	+53 41 20	0.1322	1.0798	125.4	48.9	4.8	15.1
2010 10 14		03 54 20.4	+52 27 27	0.1295	1.0771	125.0	49.3	4.7	15.1
2010 10 15		04 10 51.8	+51 00 41	0.1271	1.0747	124.6	49.8	4.6	15.0
2010 10 16		04 26 44.9	+49 21 35	0.1251	1.0724	124.2	50.3	4.6	15.0
2010 10 17		04 41 52.2	+47 30 59	0.1235	1.0702	123.7	50.8	4.5	15.0
2010 10 18		04 56 08.4	+45 30 03	0.1223	1.0683	123.2	51.3	4.5	15.0
2010 10 19		05 09 30.8	+43 20 09	0.1214	1.0665	122.6	51.9	4.5	15.0
2010 10 20		05 21 58.4	+41 02 54	0.1209	1.0649	122.0	52.4	4.5	15.0
2010 10 21		05 33 31.9	+38 39 56	0.1208	1.0635	121.4	53.0	4.4	15.0
2010 10 22		05 44 12.9	+36 12 59	0.1211	1.0623	120.7	53.7	4.4	15.0
2010 10 23		05 54 04.1	+33 43 43	0.1218	1.0612	120.0	54.3	4.4	15.0
2010 10 24		06 03 08.3	+31 13 42	0.1228	1.0604	119.3	54.9	4.5	15.1
2010 10 25		06 11 28.7	+28 44 22	0.1242	1.0597	118.7	55.4	4.5	15.1
2010 10 26		06 19 08.7	+26 16 58	0.1259	1.0592	118.0	56.0	4.5	15.2
2010 10 27		06 26 11.4	+23 52 34	0.1280	1.0588	117.3	56.5	4.5	15.2
2010 10 28		06 32 39.8	+21 32 02	0.1304	1.0587	116.7	57.0	4.6	15.3
2010 10 29		06 38 36.8	+19 16 02	0.1330	1.0587	116.1	57.4	4.6	15.3
2010 10 30		06 44 05.1	+17 05 04	0.1359	1.0590	115.6	57.8	4.7	15.4
2010 10 31		06 49 07.0	+14 59 27	0.1391	1.0594	115.1	58.1	4.7	15.4
2010 11 01		06 53 44.8	+12 59 24	0.1424	1.0600	114.6	58.4	4.8	15.5
2010 11 02		06 58 00.6	+11 04 58	0.1460	1.0607	114.2	58.6	4.8	15.6
2010 11 03		07 01 56.0	+09 16 10	0.1498	1.0617	113.9	58.7	4.9	15.6
2010 11 04		07 05 32.9	+07 32 55	0.1537	1.0628	113.6	58.8	5.0	15.7
2010 11 05		07 08 52.5	+05 55 03	0.1578	1.0641	113.4	58.8	5.0	15.7
2010 11 06		07 11 56.4	+04 22 26	0.1620	1.0656	113.2	58.8	5.1	15.8
2010 11 07		07 14 45.7	+02 54 49	0.1663	1.0673	113.1	58.7	5.2	15.9
2010 11 08		07 17 21.5	+01 32 01	0.1708	1.0692	113.0	58.6	5.2	15.9
2010 11 09		07 19 44.8	+00 13 47	0.1753	1.0712	112.9	58.4	5.3	16.0
2010 11 10		07 21 56.5	-01 00 06	0.1799	1.0734	112.9	58.2	5.4	16.0
2010 11 11		07 23 57.4	-02 09 52	0.1846	1.0758	113.0	57.9	5.5	16.1
2010 11 12		07 25 48.2	-03 15 46	0.1894	1.0783	113.1	57.6	5.5	16.1
2010 11 13		07 27 29.6	-04 17 59	0.1942	1.0810	113.2	57.3	5.6	16.2
2010 11 14		07 29 02.2	-05 16 44	0.1991	1.0839	113.3	56.9	5.7	16.2
2010 11 15		07 30 26.5	-06 12 13	0.2040	1.0870	113.5	56.6	5.8	16.3
2010 11 16		07 31 43.0	-07 04 36	0.2090	1.0902	113.8	56.1	5.9	16.3
2010 11 17		07 32 52.1	-07 54 05	0.2140	1.0935	114.0	55.7	5.9	16.4
2010 11 18		07 33 54.3	-08 40 49	0.2191	1.0971	114.3	55.2	6.0	16.4

Note: The green designation shows the stellar magnitudes for the comet that indicates future visual magnitude values greater than 5.0! Also during the period of 15 - 23 October when the comet is approaching maximum brightness the nuclear magnitude for the false nucleus will be 15.0. This is possible to observe with direct vision during dark skies with little humidity using moderate - size (10" - 18") telescopes during the cool autumn months. The pink designation shows when the comet is expected to reach a maximum brightness of 4.4!

10P/Tempel 2

Tempel 2 was now faded to a brightness of 8.5 as of 20 September and will continue to fade to a predicted visual magnitude 11 by 20 October with the diffuse coma having a size of 10 arcminutes and a DC of 3. The comet is currently undergoing retrograde motion in the western & central regions of Cetus which will continue until mid December and then take off to the east towards Taurus! It not will reach the constellation of Taurus until the expected date of 28 March 2011, but ‘The Bull’ will still be up the western skies a few hours after sunset. However comet Tempel will have faded significantly to 14th magnitude as it begins its easterly progression through the length of Cetus towards the Winter Hexagon. Comet 10P will eventually head NW and then due north in the SW region of Cetus throughout the rest of October and early November! The comet will not be near any predominant objects during that period with nothing expect galaxies at magnitudes of mid – 13th or fainter and unremarkable stars of about 6.5 or fainter!

IAU MPC Ephemeris data for 10P/Tempel 2:

Date	TT	RA(2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 09 24		01 34 04.1	-19 25 50	0.7020	1.6495	150.1	17.6	9.7	15.7
2010 09 25		01 33 26.0	-19 32 10	0.7058	1.6545	150.6	17.3	9.7	15.7
2010 09 26		01 32 46.6	-19 38 05	0.7098	1.6595	151.0	17.0	9.8	15.8
2010 09 27		01 32 05.9	-19 43 33	0.7140	1.6646	151.3	16.8	9.8	15.8
2010 09 28		01 31 24.1	-19 48 35	0.7183	1.6696	151.7	16.5	9.8	15.8
2010 09 29		01 30 41.2	-19 53 09	0.7228	1.6748	152.0	16.3	9.9	15.8
2010 09 30		01 29 57.4	-19 57 16	0.7275	1.6799	152.3	16.1	9.9	15.8
2010 10 01		01 29 12.8	-20 00 55	0.7323	1.6851	152.5	15.9	10.0	15.8
2010 10 02		01 28 27.5	-20 04 06	0.7373	1.6903	152.7	15.8	10.0	15.8
2010 10 03		01 27 41.6	-20 06 49	0.7425	1.6955	152.8	15.6	10.1	15.9
2010 10 04		01 26 55.3	-20 09 03	0.7478	1.7008	153.0	15.5	10.1	15.9
2010 10 05		01 26 08.6	-20 10 48	0.7533	1.7061	153.0	15.4	10.2	15.9
2010 10 06		01 25 21.7	-20 12 05	0.7590	1.7114	153.1	15.3	10.2	15.9
2010 10 07		01 24 34.7	-20 12 53	0.7649	1.7168	153.1	15.3	10.3	15.9
2010 10 08		01 23 47.8	-20 13 11	0.7709	1.7222	153.0	15.3	10.3	16.0
2010 10 09		01 23 01.0	-20 13 01	0.7771	1.7276	152.9	15.3	10.4	16.0
2010 10 10		01 22 14.4	-20 12 23	0.7835	1.7330	152.8	15.3	10.4	16.0
2010 10 11		01 21 28.2	-20 11 16	0.7901	1.7385	152.6	15.3	10.5	16.0
2010 10 12		01 20 42.5	-20 09 40	0.7968	1.7440	152.4	15.4	10.5	16.1
2010 10 13		01 19 57.3	-20 07 37	0.8037	1.7495	152.2	15.4	10.6	16.1
2010 10 14		01 19 12.8	-20 05 07	0.8108	1.7550	151.9	15.5	10.7	16.1
2010 10 15		01 18 29.1	-20 02 09	0.8181	1.7606	151.6	15.6	10.7	16.1
2010 10 16		01 17 46.3	-19 58 45	0.8256	1.7662	151.3	15.7	10.8	16.2
2010 10 17		01 17 04.3	-19 54 56	0.8332	1.7718	150.9	15.9	10.8	16.2
2010 10 18		01 16 23.4	-19 50 40	0.8410	1.7774	150.5	16.0	10.9	16.2
2010 10 19		01 15 43.5	-19 46 00	0.8490	1.7831	150.1	16.2	10.9	16.3
2010 10 20		01 15 04.7	-19 40 55	0.8572	1.7887	149.6	16.3	11.0	16.3
2010 10 21		01 14 27.2	-19 35 27	0.8655	1.7944	149.2	16.5	11.0	16.3

Caution: Magnitude estimations are predictions made by the IAU Minor planet center and are only predictions. Actual magnitude estimations by current observational reports might show changes in the brightness of comets that differ from MPC preditctions!