

# PROFESSOR COMET REPORT

## LATE SUMMER 2010

### Current status of the predominant comets for 2010

Comets	Designation (IAU- MPC)	Orbital Status	Magnitude (Visual)	Trend	Observation (Lat.)	Visibility Period
McNaught	2009 R1	C	~9.5	Fading	30°S - 85°S	Early Morning
<b>Encke</b>	<b>2P</b>	<b>P</b>	<b>9.5</b>	<b>Fading</b>	<b>10°S - 80°S</b>	<b>Evening</b>
Tempel 2	10P	P	9.5	Fading	55°N - 85°S	Morning
Hartley 2	103P	P	11	Brightening	65°N - 35°S	All Night
McNaught	2009 K5	C	11	Fading	65°N - 5°N	Morning
Wolf Harrington	43P	P	~11.5	Fading	Poor Elongation	N/A
<b>Gunn</b>	<b>65P</b>	<b>P</b>	<b>12</b>	<b>Fading</b>	<b>30°N - 85°S</b>	<b>Best Evening</b>
<b>Wild 2</b>	<b>81P</b>	<b>P</b>	<b>13</b>	<b>Fading</b>	<b>30°N - 75°S</b>	<b>Evening</b>
Schwassman Wachmann	29P	P	~13	Varies	Conjunction	N/A
<b>Garradd</b>	<b>2009 P1</b>	<b>C</b>	<b>13.5</b>	<b>Bright</b>	<b>20°N - 85°S</b>	<b>Best Morning</b>
<b>Vales</b>	<b>2010 H2</b>	<b>C</b>	<b>14</b>	<b>Possibly Fading</b>	<b>15°N - 55°S</b>	<b>Early Evening</b>

The **red designation** is assigned to all comets that are of 12<sup>th</sup> visual magnitude or brighter and are classified as the **major comets**. All remaining comets that are possibility at 12<sup>th</sup> 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 12<sup>th</sup> 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.

## A Synopsis of the Mid - Summer Comets

*The month of August has come and with it the late summer season is arriving with the late summer constellations of Aquarius, Capricornus, and Pisces now appearing in the Eastern and Southeastern skies.* For the month there are only comets now visible in the northern hemisphere that is brighter than 12<sup>th</sup> magnitude: 10P/Tempel 2 and 43P/Wolf - Harrington. Previous comets that were the big highlights earlier in the year has long since faded out of telescopic observations or appear only in the Southern hemisphere. The big comet 2009R1 McNaught which was intend to reach a theoretical magnitude of 4.7 now has faded to 8<sup>th</sup> magnitude and can only be seen in the southern hemisphere. The common periodic comet 2P/Encke which comes around about every 3 years is the only other comet brighter than 8<sup>th</sup> magnitude. The latest report of visual observations had the comet fading from a peak brightness of 7.7 around Aug 17 to a present magnitude of 9.0 for late August. The coma for Encke is a mere 2 arcminutes in size and with a [degree of condensation](#) rated at 2 meaning that the coma is highly dispersed with no obvious central brightness to detect a false nucleus.

29P/Schwassmann - Wachmann 1 is currently undergoing conjunction with the Sun, so it is lost in the daytime glare and will not be visible again in the morning skies before dawn during the month of October. However, the IAU MPC is predicting a stellar magnitude of only 16 and that limits it to long - exposure, photographic astronomy for comet analysis. For other potential candidates to become big surprises for amateur Astronomers for the remainder of 2010, they only possible comet is 103P/Hartley 2. It is currently at a solar elongation of 134.1° with the value decreasing to 112.9° on the night of 9/10 November and then increasing again to 140° by the beginning of 2011. What could make comet Hartley 2 also great is the fact that it is getting brighter and will continue to brighten further well into Autumn. The MPC is predicting magnitudes of less than 5 starting 10 October with a peak magnitude of 4.4 during the nights of 21 - 24 October. It will not dim to values greater than 5<sup>th</sup> magnitude until after 5 November and values greater than 8<sup>th</sup> magnitude until after 13 December. Hartley 2 during this time will be visible in the constellations of the **'WINTER HEXAGON'** retrograding between Canis Major and Monoceros will into the spring 2011. The comet will obtain maximum brightness while moving between Auriga and Gemini during late October. Stay tune for future updates on 103P/ Hartley 2!

### 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.*

## 10P/Tempel 2

Tempel 2 was reported at the maximum brightness of 8.4 during mid August has now faded to a visual magnitude range of 9 - 10 and will continue to stay above 10<sup>th</sup> magnitude at least until late September. The long dust tail of comet Tempel 2 is still visible, but it is still a few degrees long, very thin and straight; almost pencil thin by some accounts. 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, but 'The Bull' will still be up the western skies a few hours after sunset. However long before then comet Tempel will have faded significantly to 14<sup>th</sup> magnitude as it begins its easterly progression through the length of Cetus towards the Winter Hexagon!

While the comet is still visible it can be located in central Cetus. To find it look for three stars stretching from the ESE to the WNW starting at the famous Sun - like Star Tau Ceti at a visual magnitude of 3.5. Then head westerly and look for 50 Ceti and 46 Ceti; both have visual magnitudes 5.42 and 4.9 respectfully. 50 Ceti is a special **K class orange giant** while 46 Ceti is a slightly less brilliant typical **K class orange giant**! Look halfway between Tau and 46 Ceti and then go a little over a degree to north and about 0.5 - 0.6 seconds of RA to the West starting from 50 Ceti. The comet forms an obtuse triangle pattern with Tau and 46 Ceti. Now and through the end of August the comet will be just over 0.65 AU from Earth with a solar distance just under 1.55 AU with a solar elongation increasing to 136°. For the time being it is closer to Earth than Venus is at perihelion, but is gradually moving away from both the Earth and the Sun as it retrogrades in Cetus.

It will cross a line between Tau and 50 Ceti during mid morning of 1 September heading due south towards and then eventually WSW where the comet can be found between 1.65° - 2° to the north of 48 Ceti. This occurs during the evenings of 28 Sept thru 2 Oct; 48 Ceti is a 5<sup>th</sup> magnitude A type, main sequence star in the southern area of Cetus. Expect the comet to 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 - 13<sup>th</sup> 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 08 22		01 32 29.1	-13 21 01	0.6513	1.5090	129.0	31.4	8.5	15.8
2010 08 23		01 33 20.5	-13 33 43	0.6511	1.5125	129.7	31.0	8.6	15.8
2010 08 24		01 34 08.5	-13 46 29	0.6509	1.5160	130.4	30.5	8.6	15.8
2010 08 25		01 34 53.4	-13 59 17	0.6508	1.5196	131.0	30.1	8.6	15.8
2010 08 26		01 35 35.0	-14 12 07	0.6509	1.5232	131.7	29.7	8.6	15.8
2010 08 27		01 36 13.3	-14 24 57	0.6510	1.5269	132.4	29.3	8.7	15.8
2010 08 28		01 36 48.4	-14 37 48	0.6512	1.5306	133.1	28.8	8.7	15.8
2010 08 29		01 37 20.2	-14 50 38	0.6515	1.5344	133.7	28.4	8.7	15.8
2010 08 30		01 37 48.8	-15 03 26	0.6519	1.5382	134.4	28.0	8.7	15.7
2010 08 31		01 38 14.2	-15 16 11	0.6525	1.5421	135.1	27.5	8.8	15.7
2010 09 01		01 38 36.3	-15 28 54	0.6531	1.5461	135.8	27.1	8.8	15.7
2010 09 02		01 38 55.3	-15 41 31	0.6538	1.5501	136.5	26.6	8.8	15.7
2010 09 03		01 39 11.0	-15 54 03	0.6547	1.5541	137.2	26.2	8.9	15.7
2010 09 04		01 39 23.6	-16 06 29	0.6556	1.5582	137.9	25.7	8.9	15.7
2010 09 05		01 39 33.1	-16 18 47	0.6567	1.5623	138.6	25.3	8.9	15.7
2010 09 06		01 39 39.5	-16 30 57	0.6579	1.5665	139.3	24.8	9.0	15.7
2010 09 07		01 39 42.8	-16 42 57	0.6592	1.5708	139.9	24.4	9.0	15.7
2010 09 08		01 39 43.2	-16 54 47	0.6606	1.5751	140.6	23.9	9.0	15.7
2010 09 09		01 39 40.6	-17 06 24	0.6622	1.5794	141.3	23.5	9.1	15.7
2010 09 10		01 39 35.1	-17 17 49	0.6638	1.5838	142.0	23.1	9.1	15.7
2010 09 11		01 39 26.9	-17 28 59	0.6656	1.5882	142.7	22.6	9.1	15.7
2010 09 12		01 39 15.9	-17 39 54	0.6676	1.5927	143.3	22.2	9.2	15.7
2010 09 13		01 39 02.3	-17 50 34	0.6697	1.5972	144.0	21.8	9.2	15.7
2010 09 14		01 38 46.1	-18 00 56	0.6719	1.6018	144.6	21.3	9.3	15.7
2010 09 15		01 38 27.5	-18 11 00	0.6742	1.6063	145.2	20.9	9.3	15.7
2010 09 16		01 38 06.4	-18 20 45	0.6767	1.6110	145.9	20.5	9.3	15.7
2010 09 17		01 37 43.1	-18 30 10	0.6794	1.6157	146.5	20.1	9.4	15.7
2010 09 18		01 37 17.6	-18 39 15	0.6822	1.6204	147.0	19.7	9.4	15.7
2010 09 19		01 36 50.0	-18 47 59	0.6851	1.6251	147.6	19.3	9.5	15.7
2010 09 20		01 36 20.4	-18 56 20	0.6882	1.6299	148.2	19.0	9.5	15.7
2010 09 21		01 35 48.9	-19 04 18	0.6914	1.6348	148.7	18.6	9.5	15.7
2010 09 22		01 35 15.6	-19 11 53	0.6948	1.6397	149.2	18.3	9.6	15.7