

PROFESSOR COMET REPORT

APRIL 2010

Current status of the predominant comets for 2010

Comets	Designation (IAU-MPC)	Orbital Status	Magnitude (Visual)	Trend	Observation (Lat.)	Visibility Period
McNaught	2009 K5	C	8.5	Steady	65° N - 25°S	All night
Wild 2	81P	P	9.5	Fading	65°N - 80°S	All night
McNaught	2009 R1	C	10.5	Bright	25°N - 50°S	Early Morning
Catalina	2009 O2	C	10.5	Fading	55°N - 30°S	Early Morning
Machholz	2010 F4	C	11.5	Fading	Elongation Status: Poor	N/A
Siding Spring	2007 Q3	C	11.5	Fading	65°N - 5°S	All night
Christensen	2006 W3	C	11.5	Fading	30°N - 85°S	Morning
Wolf - Harrington	43P	P	Possibly 12	Bright	Conjunction	N/A
N/A	2010 H2	C	Possibly 12	Possible signs of steady brightness	65°N - 55°S	All night
Schwassmann - Wachmann	29P	P	Possibly 13	Varies	65°N - 45°S	Evening
Tempel	10P	P	13	Bright	40°N - 70°S	Morning
Boattini	2010 G1	C	13.5	Fading	35°N - 5°S	Early Evening
Gunn	65P	P	13.5	Steady	40°N - 85°S	Morning
Shoemaker - Levy	118P	P	Possibly 13.5	Fading	60°N - 40°S	Evening
Hill	2009 U3	C	13.5	Fading	65°N - 25°S	All night
Reinmuth	30P	P	14	Fading	60°N - 30°S	Evening

The *red designation* is assigned to comets that are brighter than 12^h visual magnitude as the major comets and all those at 12^h or fainter are given the *blue designation* as the minor comets!

C/2009 K5 (McNaught)

Current reports have placed this comet at a visual magnitude 8.5 while maintaining a steady brightness and being visible throughout the entire April night! However, there has one observation report given indicating a maximum brightness of 7.9 visual magnitude on 17 April. This indicates that McNaught has become a much brighter comet in comparison to the predictions reported by the MPC earlier this year. Other reported observations have concluded that McNaught is at 1 magnitude brighter than what the IAU MPC ephemerides data is showing now. Therefore one could conclude that McNaught is the unexpected bright comet of spring 2010. McNaught is expected to remain in the magnitude range of 8 - 9 will into the month of May. The comet as of right now has a coma which has grown to size of 6 arcminutes across, but other observational report have shown a variation between 2 - 7 arcminutes sometimes depending on the Lunar phase. There is no information on a tail being formed by the comet and reported in any known observations so far, although recent observations indicate a possible 2nd nucleus within the coma!

Current the comet is well to the north of the 'Summer Triangle' approaching the northern boundary of the region of Cygnus (The Swan). McNaught as of 21 April 2010 has a current Earth distance of 1.2694 AU and a solar distance of 1.4274 AU with a solar elongation of 77°. This means that the comet is for the moment closer to Earth than the Sun while located in the region of space between Earth and Mars. From April 21 - 24 the comet will move across the region of space northward from being to within about 12 arcminutes of 31 Cygni to being within 3 arcminutes to the west of NGC 6946 **(FIREWORKS GALAXY)** which is an intermediate spiral galaxy! This will place the comet at the SW edge of the region of Cepheus during the early evening of April 21, 2010. Expect the comet to be moving away from Earth with a perigee of 1.264 AU achieved on 19 April while achieving a perihelion of 1.422 AU expected on 29 April 2010 at a solar elongation of 74.4°.

To look for the comet during the evening of April 24/25, watch for McNaught passing a corridor of space about half a degree wide between the fireworks galaxy and the open star cluster NGC 6939. Both objects are fainter than the comet at about 10th visual magnitude with the fireworks galaxy being slightly brighter than the open star cluster. McNaught will be closer to NGC 6939 grazing by it on its SE edge and grazing very closely to HD 196085 which is a F2 class star at magnitude 7.2. The comet maybe a bit of a

challenge to see during the last couple of weeks in April with the Moon approaching full phase during the morning of 28 April. During the late morning of 26 April the comet will fly between Eta (η) and Theta (θ) Cephei which is in the SW region of Cepheus.

However, expect McNaught to be at least brighter than 11th magnitude through the month of May and then begin to fade during the first week of June. The comet will make a special pass grazing along the NW edge of NGC 7023 (Iris Nebula or Caldwell 4) during the late evening of April 29/30. McNaught will move to the NNE passing by Alphirk (β Cephei) and then staying along the western side of Cepheus and moving through ρ_1 Cephei the night of 10 May. By Mid May the comet will be moving through the northernmost region of Cepheus far from the main asterism of Cepheus ‘the House’ and will get to within 2.5° south of NGC 188 by late morning of 17 May. McNaught by that time should still be about 10th magnitude in brightness and moving away from both Earth and the Sun. Its solar distance will be by then 1.4449 AU while Earth distance will be close to 1.56 AU, greater than the average distance between Mars and the Sun.

MPC Ephemeris data for C/2009 K5 McNaught:

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
2010 04 04		19 42.17	+28 43.0	1.342	1.471	76.2	41.3	9.8
2010 04 09		19 51.07	+35 55.0	1.297	1.454	77.3	42.2	9.7
2010 04 14		20 01.23	+43 28.6	1.271	1.441	77.7	42.8	9.6
2010 04 19		20 13.30	+51 09.8	1.264	1.431	77.3	43.2	9.6
2010 04 24		20 28.44	+58 42.0	1.278	1.425	76.2	43.3	9.6
2010 04 29		20 48.87	+65 49.2	1.310	1.422	74.4	43.0	9.6
2010 05 04		21 19.19	+72 16.1	1.359	1.424	72.2	42.4	9.7
2010 05 09		22 10.09	+77 45.6	1.421	1.428	69.6	41.5	9.8
2010 05 14		23 45.33	+81 43.3	1.494	1.437	66.8	40.3	9.9
2010 05 19		02 17.04	+82 59.9	1.575	1.448	63.8	38.8	10.1
2010 05 24		04 24.73	+81 26.8	1.660	1.464	60.8	37.2	10.3
2010 05 29		05 34.20	+78 44.5	1.749	1.482	57.8	35.4	10.4
2010 06 03		06 12.76	+75 52.9	1.838	1.504	54.8	33.5	10.6
2010 06 08		06 37.02	+73 09.9	1.927	1.528	52.0	31.5	10.8
2010 06 13		06 53.97	+70 40.2	2.015	1.555	49.3	29.6	10.9
2010 06 18		07 06.75	+68 24.2	2.099	1.585	46.7	27.8	11.1

Reminder that the visual magnitudes reported by the IAU MPC are about a magnitude fainter than what recent observations reported by fellow amateur astronomers in comet community!

81P/Wild 2

Wild 2 is currently at visual magnitude 9.5 and it is located in eastern Virgo about 1.5° to the NW of iota Virginis heading westwards. It is fading from a maximum brightness of 9.0 magnitude and will be expected to reach 10th magnitude by 4 May. The comet will undergo retrograde motion during the period of May 2 - 15 and then will head south grazing just W of HD 122815 at visual magnitude 6.39 with a stellar classification of K0. During this period the Earth distance will increase from 0.747 AU to 0.934 AU and the solar distance increasing from 1.741 AU to 1.847 AU by 29 May. By then the comet will have turn completely around HD 122815 being about 2° of that star and moving eastwards in the direction towards northern Libra. Wild 2 will then move to the SE further approaching central Libra and by 24 July it will be located about 1° south of (ξ_1 or 13 Librae) around mid day. The comet will continue to fade towards 13th magnitude and the coma will decrease from its angular size of 5 arcminutes.

MPC Ephemeris data for 81P/Wild 2:

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 04 19		14 10.36	-05 01.6	0.689	1.689	171.6	5.0	9.6	17.7
2010 04 24		14 08.44	-04 50.8	0.704	1.705	172.1	4.6	9.7	17.8
2010 04 29		14 06.59	-04 44.2	0.723	1.723	169.5	6.1	9.8	18.0
2010 05 04		14 04.98	-04 42.5	0.747	1.741	165.4	8.4	10.0	18.2
2010 05 09		14 03.75	-04 45.9	0.775	1.761	160.9	10.8	10.1	18.4
2010 05 14		14 03.02	-04 54.4	0.809	1.781	156.3	13.2	10.3	18.6
2010 05 19		14 02.86	-05 08.1	0.846	1.802	151.8	15.4	10.5	18.8
2010 05 24		14 03.34	-05 26.5	0.888	1.825	147.4	17.4	10.7	19.0
2010 05 29		14 04.46	-05 49.2	0.934	1.847	143.1	19.2	10.8	19.2
2010 06 03		14 06.21	-06 15.8	0.983	1.871	139.0	20.8	11.0	19.3
2010 06 08		14 08.57	-06 45.6	1.036	1.895	135.0	22.2	11.2	19.5
2010 06 13		14 11.51	-07 18.2	1.093	1.920	131.2	23.5	11.4	19.7
2010 06 18		14 15.01	-07 53.2	1.153	1.946	127.5	24.5	11.6	19.9
2010 06 23		14 19.02	-08 30.1	1.216	1.972	123.9	25.3	11.8	20.1
2010 06 28		14 23.50	-09 08.3	1.281	1.998	120.4	26.0	12.0	20.2

The m2 column displays the nuclear magnitude which would be the visual brightness of the false nucleus of the comet. In spite of McNaught being just above a 10th magnitude object that difference in brightness between the overall comet and its nucleus is about 8 on the magnitude scale or a factor of 1626x.

C/2009 R1 (McNaught)

Here is another McNaught comet that is located in the western fish of the constellation Pisces at a solar distance of 1.5964 AU and an Earth distance 2.1983 AU as of 21 April with a solar elongation of 42°. Right now the comet is located between (β and γ Piscium) located near the planet Jupiter throughout late April as the comet moves NE towards theta Piscium. The comet is estimated to be about mid 10th magnitude and visible in the morning hours close to daybreak. It is heading towards the Sun reaching a perihelion of 0.405 AU by 3 July and it is estimated to reach a maximum brightness of visual magnitude 4.7 and by estimates a 3rd magnitude by mid summer. During the period span June 13 - 18 this McNaught comet will have reached a perigee of 1.139 AU with the Earth. It is in this period that the IAU MPC ephemeris data predicts a brightening comet from magnitude 6.4 to 5.7.

As the comet approaches perigee, perihelion, and then maximum brightness from 13 June thru the 1st week of July this McNaught will have moved out of Pisces moving NE towards Pegasus. From 11 - 17 May the comet will NE thru the SE region of the great square of Pegasus getting to within a few degrees of Algenib (Gamma Pegasi) during the morning of 14 May. The comet will graze by χ Pegasi during the mid afternoon of 17 May and then from 17 - 26 May will move NE thru the southern region of Andromeda. This McNaught will move thru a line halfway between Epsilon 'ε' and Zeta 'ζ' Andromedae during the early afternoon of 24 May. For the rest of May, R1 McNaught will move between the northern edge of Pisces and the southern boundary of Andromeda moving more east of NE direction.

R1 McNaught is then expected to move thru eastern Andromeda furthering its angular distance from Triangulum and will be about 4.35° to the east of Almach (γ Andromedae) by 7 June. The will then turn in a more easterly direction and heading ENE back into the Milky Way band and across Perseus during the period of 11 - 14 June. Afterwards during the early morning hours of 14 June as Perseus is visible in the morning sky, R1 McNaught will get to within half a degree to the SE of (δ Persei). By that date R1 McNaught is likely to reach a visual magnitude 6.1 while its solar distance decreases to 0.6107 AU less than the distance between Venus and Sun. Along with an Earth distance of 1.1352 AU and a solar elongation of 32°.

The late evening of 16 June the comet will be just to the south of (μ or μ Persei) and then head east towards the boundary between Perseus and Auriga on 19 June. From here on out the comet will be lost in the daytime glare as its solar elongation gets smaller and it becomes a daytime comet. During the period in which it goes from perihelion to maximum brightness spanning 21 June thru 12 July the comet will have a solar elongation decreasing from 28° to just 10°. During this period the comet will have moved across the northern edge of the 'Winter Circle' of Auriga and then occult Castor, pass close to Pullox moving SE and then head south between Cancer and Gemini crossing the ecliptic during sunset on 12 July. After that the comet will head into the Southern celestial hemisphere.

MPC Ephemeris data for C/2009 R1 McNaught:

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
2010 04 19		23 06.67	+02 08.7	2.267	1.641	40.7	23.5	11.9
2010 04 24		23 15.57	+04 27.8	2.140	1.558	42.7	26.0	11.6
2010 04 29		23 25.26	+07 02.6	2.012	1.473	44.5	28.6	11.2
2010 05 04		23 35.99	+09 56.1	1.884	1.387	46.0	31.5	10.8
2010 05 09		23 48.09	+13 11.8	1.758	1.300	47.0	34.6	10.4
2010 05 14		00 02.04	+16 53.6	1.635	1.210	47.6	38.0	9.9
2010 05 19		00 18.56	+21 05.1	1.517	1.119	47.5	41.8	9.4
2010 05 24		00 38.69	+25 48.9	1.408	1.026	46.7	45.9	8.9
2010 05 29		01 04.06	+31 03.2	1.311	0.932	45.1	50.3	8.3
2010 06 03		01 37.04	+36 37.2	1.230	0.837	42.5	54.9	7.7
2010 06 08		02 20.73	+42 01.6	1.171	0.742	38.8	59.1	7.0
2010 06 13		03 17.79	+46 19.9	1.139	0.647	34.4	62.3	6.4
2010 06 18		04 26.49	+48 14.0	1.139	0.558	29.3	63.0	5.7
2010 06 23		05 37.00	+46 44.8	1.171	0.480	24.0	59.6	5.2
2010 06 28		06 36.84	+42 00.7	1.231	0.424	18.8	50.7	4.7
2010 07 03		07 20.69	+35 08.7	1.305	0.405	14.2	37.9	4.7
2010 07 08		07 50.73	+27 30.3	1.382	0.430	10.9	26.7	5.0
2010 07 13		08 11.73	+20 04.7	1.454	0.489	10.3	21.9	5.7
2010 07 18		08 27.57	+13 16.4	1.521	0.570	12.2	22.1	6.5
2010 07 23		08 40.53	+07 08.3	1.584	0.660	15.2	23.8	7.2
2010 07 28		08 51.84	+01 35.8	1.646	0.754	18.4	25.2	7.9

It is unfortunate that this comet will be at its prime while it is lost in the daytime glare during the entire summer of 2010 since it could have been the great comet of 2010!

C/2009 O2 (Catalina)

Catalina is fading fast from a visual magnitude 9.0 back in late March to a now reported 10.7 magnitude as of late April and it is disintegrating as the 1 arcminute size coma is become very diffuse with no central brightening. The comet is now located in between central Taurus and the NW region of Orion at a present solar distance of 0.8981 AU and an Earth distance of 1.2802 AU. Solar elongation of C/2009 O2 was 44° as of 21 April with comet fading towards 11th magnitude. Catalina heads SE deeper into Orion as the constellation is getting lost in the sunset glare for rest of April and into May as it passes to the east of Bellatrix ‘the amazon star’ and moves to the east of Orion’s belt as it takes a more southerly path. The comet will move thru Canis Major from Sirius to Wezen for most of August and then it will be located in central Puppis by mid - September but will have faded to 18th magnitude.

MPC Ephemeris data for C/2009 O2 Catalina:

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
2010 04 19		04 49.90	+18 14.9	1.212	0.866	44.8	54.8	10.8
2010 04 24		05 05.47	+14 01.7	1.339	0.927	43.8	48.6	11.3
2010 04 29		05 17.67	+10 29.8	1.465	0.992	42.5	43.3	11.8
2010 05 04		05 27.70	+07 29.9	1.588	1.060	41.0	38.6	12.3
2010 05 09		05 36.27	+04 54.5	1.708	1.130	39.5	34.7	12.7
2010 05 14		05 43.85	+02 37.8	1.822	1.201	38.1	31.3	13.1
2010 05 19		05 50.72	+00 35.2	1.930	1.273	36.8	28.4	13.5
2010 05 24		05 57.08	-01 16.8	2.032	1.346	35.7	26.0	13.8
2010 05 29		06 03.05	-03 00.8	2.128	1.419	34.8	24.0	14.2
2010 06 03		06 08.72	-04 38.8	2.218	1.491	34.1	22.4	14.5
2010 06 08		06 14.15	-06 12.6	2.302	1.564	33.8	21.2	14.8
2010 06 13		06 19.39	-07 43.4	2.380	1.636	33.7	20.2	15.0
2010 06 18		06 24.46	-09 12.3	2.453	1.708	34.0	19.4	15.3
2010 06 23		06 29.36	-10 40.2	2.520	1.779	34.6	18.9	15.5
2010 06 28		06 34.12	-12 07.8	2.581	1.850	35.5	18.6	15.7
2010 07 03		06 38.72	-13 35.7	2.637	1.920	36.6	18.4	15.9

C/2010 F4 (Machholz)

This recently discovered comet was first reported at mid 10th magnitude, but now it is fading to 12th magnitude in visual brightness. It is visible only for a week and it is extremely low in the sky before dawn. In terms of its orbital elements not much is known since it has not been observed for very long and suffers from poor elongation! I have found some ephemeris data for F4 Machholz and it indicates a comet fading to 15th visual magnitude before the end of May. As to where it is located in the constellation of Aries and will move thru the winter constellations southward passing to the south of Rigel by 30 June and reaching southern Puppis by late September. By then the comet will have likely faded below 20th magnitude in the absence of any future surprises.

MPC Ephemeris data for C/2010 F4 Machholz (In case you are interested):

Date	UT h m s	R.A. (J2000)	Decl.	Delta	r	El.	Ph.	m1	Sky Motion "/min	P.A.
2010 04 21	000000	02 23 11.8	+22 53 22	1.633	0.694	13.2	19.3	13.0	2.96	119.6
2010 04 22	000000	02 27 35.8	+22 18 20	1.651	0.704	12.5	18.0	13.1	2.90	120.2
2010 04 23	000000	02 31 51.5	+21 43 24	1.668	0.714	11.8	16.7	13.2	2.84	120.8
2010 04 24	000000	02 35 59.3	+21 08 37	1.685	0.725	11.2	15.6	13.2	2.78	121.4
2010 04 25	000000	02 39 59.7	+20 34 02	1.702	0.737	10.5	14.5	13.3	2.72	121.9
2010 04 26	000000	02 43 53.2	+19 59 41	1.719	0.749	9.9	13.4	13.4	2.67	122.3
2010 04 27	000000	02 47 40.0	+19 25 36	1.736	0.761	9.4	12.5	13.5	2.61	122.8
2010 04 28	000000	02 51 20.6	+18 51 47	1.752	0.773	8.9	11.6	13.6	2.56	123.2
2010 04 29	000000	02 54 55.3	+18 18 17	1.768	0.786	8.4	10.7	13.7	2.51	123.5
2010 04 30	000000	02 58 24.4	+17 45 06	1.784	0.799	7.9	10.0	13.8	2.47	123.9
2010 05 01	000000	03 01 48.4	+17 12 15	1.800	0.812	7.5	9.4	13.9	2.42	124.2
2010 05 02	000000	03 05 07.4	+16 39 44	1.815	0.825	7.2	8.8	14.0	2.38	124.5
2010 05 03	000000	03 08 21.7	+16 07 34	1.831	0.839	7.0	8.4	14.1	2.34	124.7
2010 05 04	000000	03 11 31.6	+15 35 45	1.846	0.853	6.8	8.0	14.1	2.30	125.0
2010 05 05	000000	03 14 37.3	+15 04 16	1.861	0.867	6.7	7.8	14.2	2.26	125.2
2010 05 06	000000	03 17 39.1	+14 33 09	1.875	0.881	6.7	7.6	14.3	2.23	125.4
2010 05 07	000000	03 20 37.1	+14 02 23	1.890	0.896	6.7	7.6	14.4	2.19	125.6
2010 05 08	000000	03 23 31.6	+13 31 57	1.904	0.910	6.9	7.6	14.5	2.16	125.8
2010 05 09	000000	03 26 22.7	+13 01 51	1.918	0.925	7.1	7.7	14.6	2.12	125.9
2010 05 10	000000	03 29 10.6	+12 32 05	1.932	0.939	7.4	7.9	14.7	2.09	126.1
2010 05 11	000000	03 31 55.5	+12 02 39	1.945	0.954	7.7	8.2	14.7	2.06	126.2

C/2007 Q3 (Siding Spring)

Siding Spring is fading now and it is currently reported at visual magnitude 11.5 and it is located in the western region of Draco, but very low to the northern horizon. It is now out in the major Asteroid belt and its distance from Earth is nearly twice the mean distance between Mars and the Sun. It is still technically possible to observe it since it has a solar elongation of 103° as 21 April and can be seen at altitude greater than 30° between 8 pm and 8 am CDT as Draco orbits about the NCP. This comet is already in the middle of its retrograde motion which began in late February and will finish it by mid June. Siding Spring will then head SE and then east moving north of Boötes during late summer and early Fall 2010! Then the comet will head eastwards into the keystone of Hercules passing south of Messier 13 by late October and not leaving Hercules until Jan 2011 as it painfully fades from 13th to 15th magnitude!

MPC Ephemeris data for C/2007 Q3 Siding Spring:

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
2010 04 19		15 11.15	+63 11.1	2.713	3.113	104.0	18.2	11.6
2010 04 24		15 06.79	+63 37.5	2.771	3.150	102.8	18.1	11.7
2010 04 29		15 02.19	+63 54.3	2.830	3.186	101.4	18.0	11.8
2010 05 04		14 57.50	+64 01.8	2.890	3.223	100.1	17.9	11.9
2010 05 09		14 52.91	+64 00.3	2.951	3.261	98.7	17.8	12.0
2010 05 14		14 48.59	+63 50.5	3.013	3.298	97.4	17.7	12.1
2010 05 19		14 44.66	+63 32.8	3.075	3.336	96.0	17.6	12.2
2010 05 24		14 41.26	+63 08.1	3.137	3.374	94.7	17.4	12.3
2010 05 29		14 38.45	+62 37.0	3.200	3.413	93.4	17.2	12.4
2010 06 03		14 36.27	+62 00.2	3.263	3.451	92.0	17.1	12.4
2010 06 08		14 34.75	+61 18.4	3.326	3.490	90.7	16.9	12.5
2010 06 13		14 33.88	+60 32.2	3.389	3.529	89.4	16.7	12.6
2010 06 18		14 33.66	+59 42.2	3.453	3.568	88.2	16.5	12.7
2010 06 23		14 34.07	+58 49.0	3.516	3.607	86.9	16.3	12.8
2010 06 28		14 35.05	+57 53.2	3.579	3.646	85.7	16.1	12.9
2010 07 03		14 36.58	+56 55.1	3.642	3.686	84.5	15.9	13.0
2010 07 08		14 38.61	+55 55.1	3.705	3.725	83.3	15.7	13.1
2010 07 13		14 41.10	+54 53.8	3.768	3.765	82.1	15.5	13.1
2010 07 18		14 44.02	+53 51.4	3.831	3.805	80.9	15.3	13.2
2010 07 23		14 47.33	+52 48.2	3.894	3.845	79.7	15.1	13.3
2010 07 28		14 50.99	+51 44.7	3.957	3.885	78.5	14.8	13.4
2010 08 02		14 54.97	+50 41.0	4.019	3.925	77.4	14.6	13.5

Note of Importance:

29P/Schwassmann – Wachmann 1 is undergoing frequent outbursts and is currently reaching brightness a less than 12th magnitude during April and possibly May. Although this comet is hardly brighter than 12th magnitude it can be seen moving along the southern region of Leo heading eastwards and will under retrograde motion between SE region of Leo and Sextans from early summer thru early Feb 2011!