

# PROFESSOR COMET REPORT

## JUNE 2011

### Current status of the predominant comets for 2011

Comets	Designation (IAU-MPC)	Orbital Status	Magnitude (Visual)	Trend	Observation (Lat.)	Constellations (Night Sky Location)	Visibility Period
McNaught	2011 C1	C	10	Fading	40°N - 50°S	Pegasus/Pisces	Early Morning
Garradd	2009 P1	C	10	Bright	40°N - 80°S	Aquarius	Best Morning
Schwassman Wachmann 1	29P	P	~13	Varies	55°N - 65°S	Leo/Sextans/Crater	Best Evening
Hill	2010 G2	C	13.5	Brightening	55°N - 30°N	Camelopardalis	All Night
McNaught	2009 F4	C	13.5	Brightening	25°S - 90°S	Chamaeleon	All Night
Van Ness (2011)	213P	P	14	Brightening	30°N - 70°S	Aquarius	Best Morning
Scheila	(596)	P	14	Fading	55°N - 30°S	Lynx/Leo	Best Evening
Elenin	2010 X1	C	14	Brightening	50°N - 50°S	Leo	Best Evening

The **red designation** is assigned to all comets that are of 10<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: **only for comets brighter than 11<sup>th</sup> magnitude**. The **orange designation** is for comets that are lost in the daytime glare or have poor elongation!

## *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. *(Note M1 values predicted by the Minor Planet Center can differ from actual visual reports obtain in the field!)*

M2: The nuclear magnitude of the Comet which is also the visual magnitude of the false nucleus.

"/min: The progression or motion across the sky as measured in arcseconds per minute.

P.A.: Position angle while undergoing motion in the celestial sky.

## 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.*

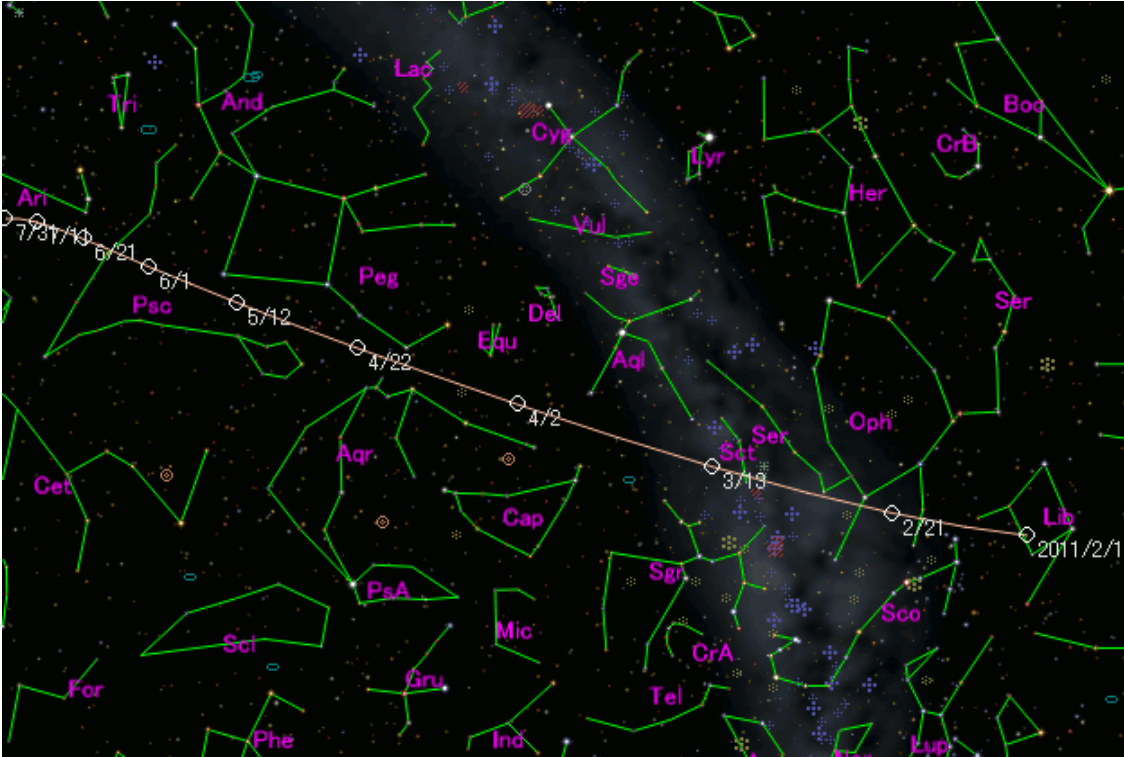
## A Synopsis of the Predominant Comets for spring 2011

*McNaught 2011/C1 is now beginning to fade and has dimmed to around visual magnitude 10.2 with the coma having an angular diameter between 3 - 3.5 arcminutes. The comet still maintains a DC of 3 - 4 which means the central brightening within the coma is slightly distinguishable from the rest of coma halo. None of the field observation reports in the last month have indicated a tail of any kind emanating from the comet, but any tail from McNaught C1 if it does exist may not be oriented for it to be seen from Earth. McNaught is continuing on its path thru the constellations of the late summer sky as it heads towards the morning dawn. It is a small comet and could easily fade out of any observable detection before the end of June, so this may be the last time the comet will be visible barring some unforeseen outburst. The comet is positioned well in the early morning hours just before sunrise and is travelling between the constellations of Pisces and Pegasus. The comet will maintain a path that roughly somewhat parallel with the ecliptic, so it will be just north of the planetary alignment of Uranus, Jupiter, Mars, Venus, and Mercury. This should last thru late May and well into the month of June. However, the path is taking a gradually progressive turn to the east southeast and will eventually cross the ecliptic into the southern celestial skies by late August/early September.*

*C/2009 P1 Garradd is more easily visible in the skies of the northern hemisphere just before dawn as it is moving in a more northerly direction thru the central region of Aquarius towards the Summer night sky! The comet has been reported from the latest field observations as having a visual magnitude just a bit brighter than 10.0. Garradd P1 right now has an angular diameter about 2 - 3 arcminutes making it a very small comet for visual observations, but the DC has been estimated between the values 5 & 6. Any comet with such moderately high DC numbers indicate a stronger, more defined central brightness, but with a more diffuse coma. None of the ephemeris data as reported and analyzed by the IAU MPC has indicated any reportable magnitude values for the false nucleus or its nuclear magnitude (M2). This comet will continue its northerly trip as it travels deeper into the northern night sky brightening to about 8<sup>h</sup> magnitude by early Oct 2011! A maximum brightness of visual magnitude 7.0 is expected during the period of 11 - 24 Feb 2012 with Garradd P1 fading to below 8<sup>h</sup> magnitude by 2 April 2012! During this period of maximum, predicted brightness the comet will be situated in the constellation of Hercules to NW of the Keystone!*

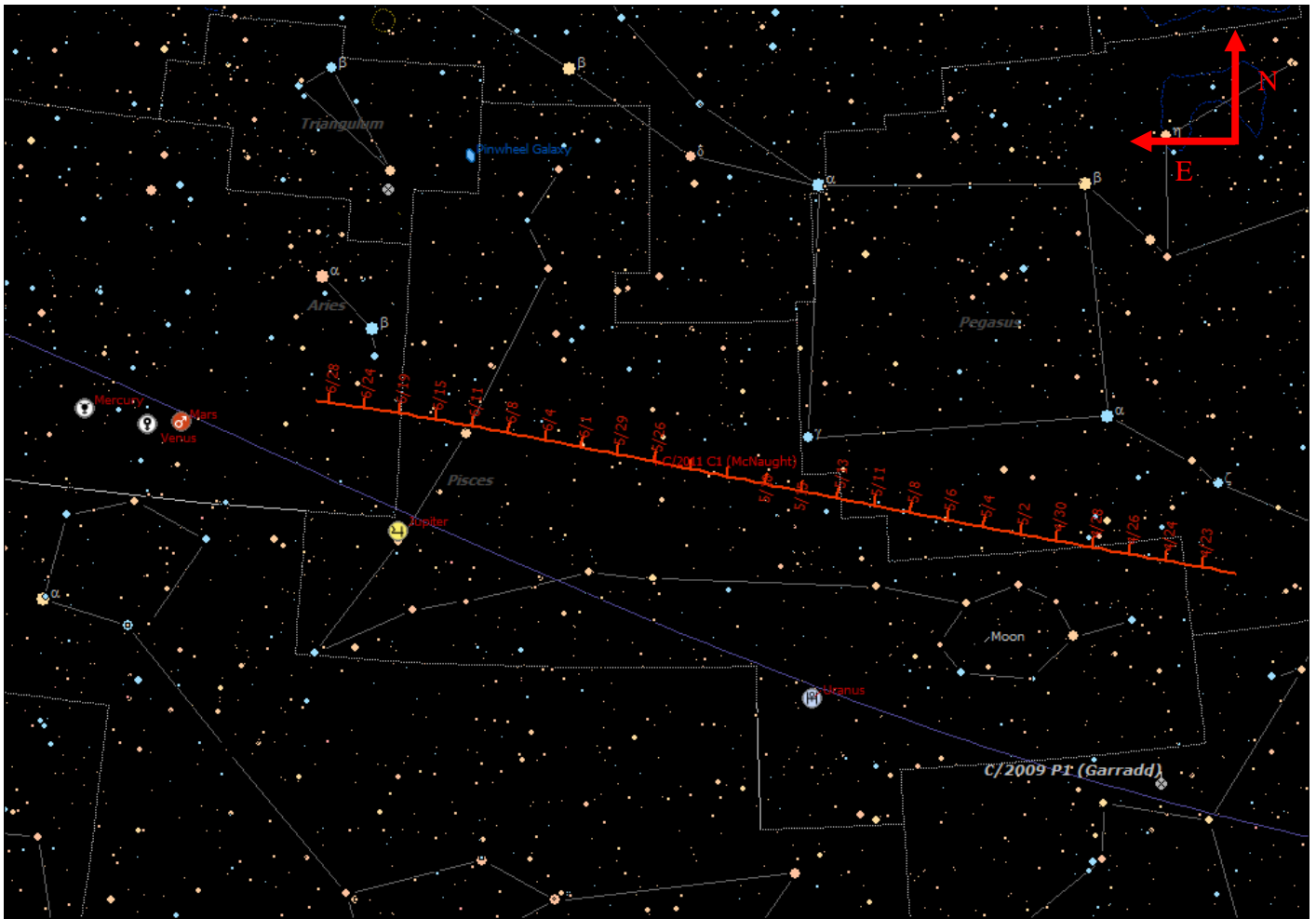
# C/2011 C1 McNaught

*Figure 1: McNaught C1 projected path through the summer sky!*



Courtesy of [www.aerith.net](http://www.aerith.net): Seiichi Yoshida's Comet Page!

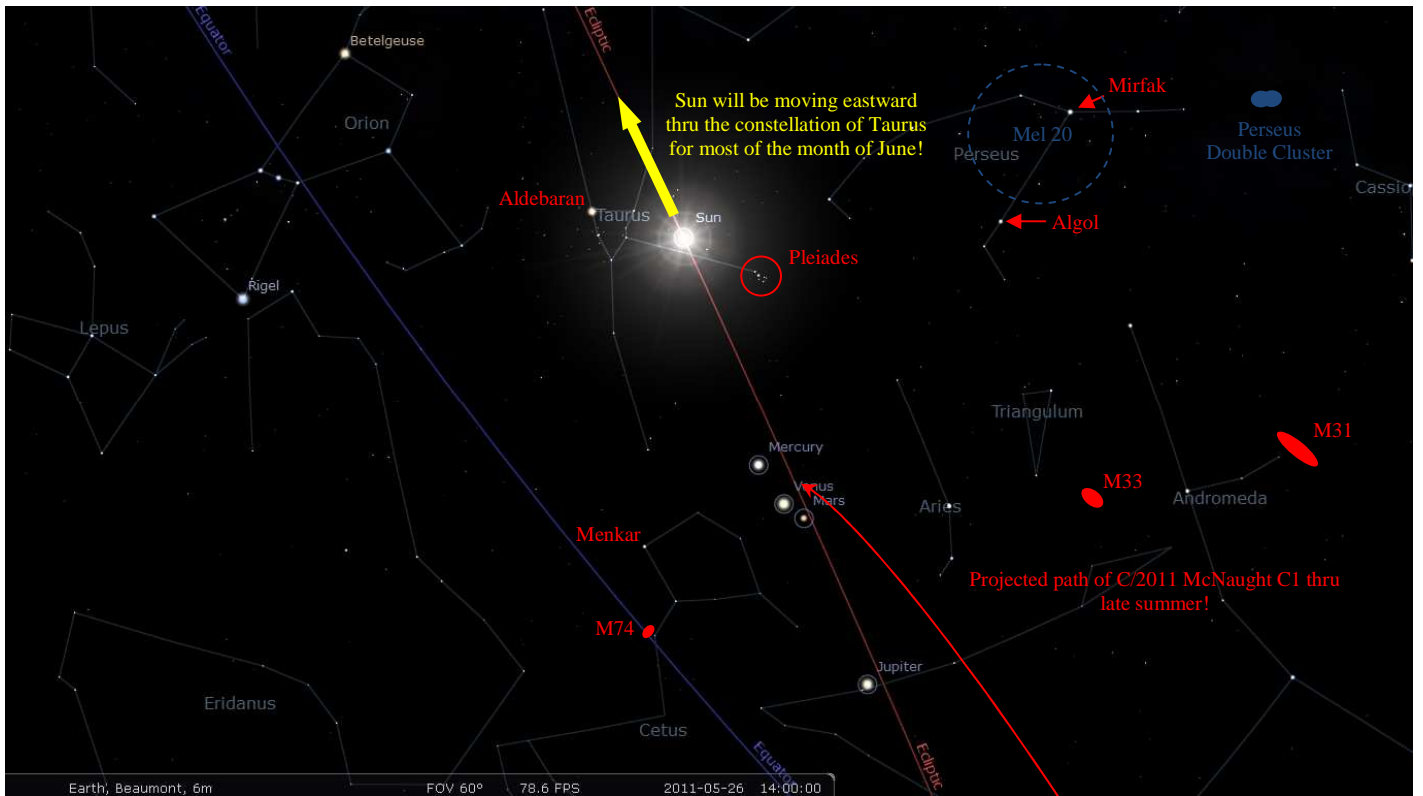
*Figure 2: McNaught C1 projected path 23 April - 28 June!*



**Note: Courtesy of Skytools 3 Professional 2011**

Currently the sun is located in the constellation of Taurus between the upper half of the Hyades and the Pleiades which in is figure is well to the NE. The comet is travelling in a semi - parallel path that is slowly progressing ESE to the ecliptic and will pass through the southern area of the constellation of Ares and cross the ecliptic by late Aug/early Sept. This crossing will be in the same general location of the late summer night sky where the present conjunction of the inner planets: Mercury, Venus, and Mars are presently located!

*Figure 3: Current positions of the Sun and Planets in relation to C/2011 C1 path!*



Courtesy of Stellarium 0.10.6v for 2011

The following image is a snapshot taken from Stellarium of the celestial sky on 26 May 2011 at 2:00 PM CDT. Note the prominent deep sky objects and names of the prominent stars that are displayed in this image with respect to the path of McNaught C1!

IAU MPC Ephemeris data for C/2011 McNaught C1 (May/June 2011):

Date	UT	R.A. (J2000)	Decl.	Delta	r	El.	Ph.	M1	*M2	Sky Motion
	h m s									"/min P.A.
2011 05 24	000000	00 40 08.6	+13 37 57	1.463	1.094	48.3	43.8	16.7		1.85 078.1
2011 05 25	000000	00 43 06.4	+13 46 57	1.472	1.104	48.5	43.4	16.8		1.83 078.3
2011 05 26	000000	00 46 01.9	+13 55 41	1.481	1.114	48.8	43.1	16.8		1.80 078.5
2011 05 27	000000	00 48 55.1	+14 04 10	1.490	1.125	49.0	42.8	16.9		1.77 078.7
2011 05 28	000000	00 51 45.9	+14 12 22	1.498	1.136	49.2	42.5	16.9		1.75 078.9
2011 05 29	000000	00 54 34.3	+14 20 19	1.507	1.146	49.5	42.2	17.0		1.72 079.1
2011 05 30	000000	00 57 20.5	+14 28 01	1.515	1.157	49.8	42.0	17.0		1.69 079.3
2011 05 31	000000	01 00 04.4	+14 35 27	1.524	1.168	50.0	41.7	17.1		1.67 079.5
2011 06 01	000000	01 02 46.0	+14 42 39	1.532	1.179	50.3	41.4	17.1		1.64 079.7
2011 06 02	000000	01 05 25.4	+14 49 37	1.540	1.191	50.6	41.2	17.2		1.62 079.9
2011 06 03	000000	01 08 02.5	+14 56 20	1.548	1.202	50.9	40.9	17.2		1.59 080.1
2011 06 04	000000	01 10 37.5	+15 02 50	1.555	1.214	51.2	40.7	17.3		1.57 080.3
2011 06 05	000000	01 13 10.2	+15 09 05	1.563	1.225	51.6	40.4	17.4		1.55 080.5
2011 06 06	000000	01 15 40.8	+15 15 07	1.570	1.237	51.9	40.2	17.4		1.52 080.7
2011 06 07	000000	01 18 09.3	+15 20 55	1.578	1.248	52.3	40.0	17.5		1.50 080.9
2011 06 08	000000	01 20 35.6	+15 26 30	1.585	1.260	52.6	39.8	17.5		1.48 081.1
2011 06 09	000000	01 22 59.8	+15 31 52	1.592	1.272	53.0	39.6	17.6		1.45 081.3
2011 06 10	000000	01 25 21.9	+15 37 01	1.598	1.284	53.4	39.4	17.6		1.43 081.6
2011 06 11	000000	01 27 42.0	+15 41 57	1.605	1.296	53.7	39.2	17.7		1.41 081.8
2011 06 12	000000	01 29 59.9	+15 46 41	1.612	1.308	54.1	39.0	17.7		1.39 082.0
2011 06 13	000000	01 32 15.9	+15 51 12	1.618	1.320	54.5	38.8	17.8		1.36 082.2
2011 06 14	000000	01 34 29.8	+15 55 32	1.624	1.332	55.0	38.6	17.8		1.34 082.5
2011 06 15	000000	01 36 41.7	+15 59 39	1.630	1.345	55.4	38.4	17.8		1.32 082.7
2011 06 16	000000	01 38 51.7	+16 03 35	1.636	1.357	55.8	38.3	17.9		1.30 083.0
2011 06 17	000000	01 40 59.7	+16 07 19	1.642	1.369	56.3	38.1	17.9		1.28 083.2
2011 06 18	000000	01 43 05.7	+16 10 51	1.648	1.382	56.7	37.9	18.0		1.26 083.5
2011 06 19	000000	01 45 09.7	+16 14 12	1.653	1.394	57.2	37.8	18.0		1.24 083.7
2011 06 20	000000	01 47 11.8	+16 17 22	1.658	1.407	57.6	37.6	18.1		1.22 084.0
2011 06 21	000000	01 49 12.0	+16 20 21	1.663	1.419	58.1	37.4	18.1		1.20 084.2
2011 06 22	000000	01 51 10.3	+16 23 08	1.668	1.432	58.6	37.3	18.2		1.18 084.5
2011 06 23	000000	01 53 06.6	+16 25 45	1.673	1.444	59.1	37.1	18.2		1.16 084.8

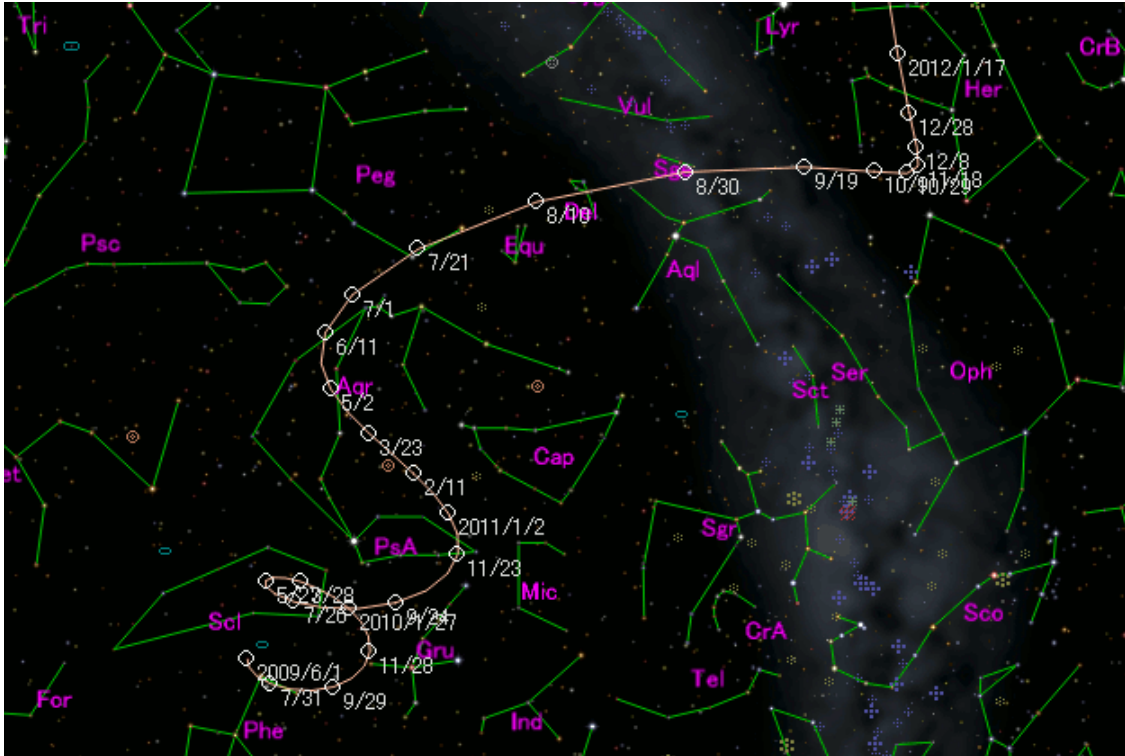
*All ephemeris data above is calculated for the SE Texas region at 00:00 CST which is -5 hrs behind UTC?*

\*M2 values are not shown if values are fainter than 19<sup>th</sup> magnitude!

The ephemeris data for 2011 McNaught C1 shows the predicted visual magnitude values (M1) are not correlating with actual values measured by recent field observation reports. Remember that IAU MPC data on cometary bodies when it comes to prediction of magnitude values both for visual (M1) and nuclear magnitude (brightness of the false nucleus: M2) are only estimations based on previously gathered data.

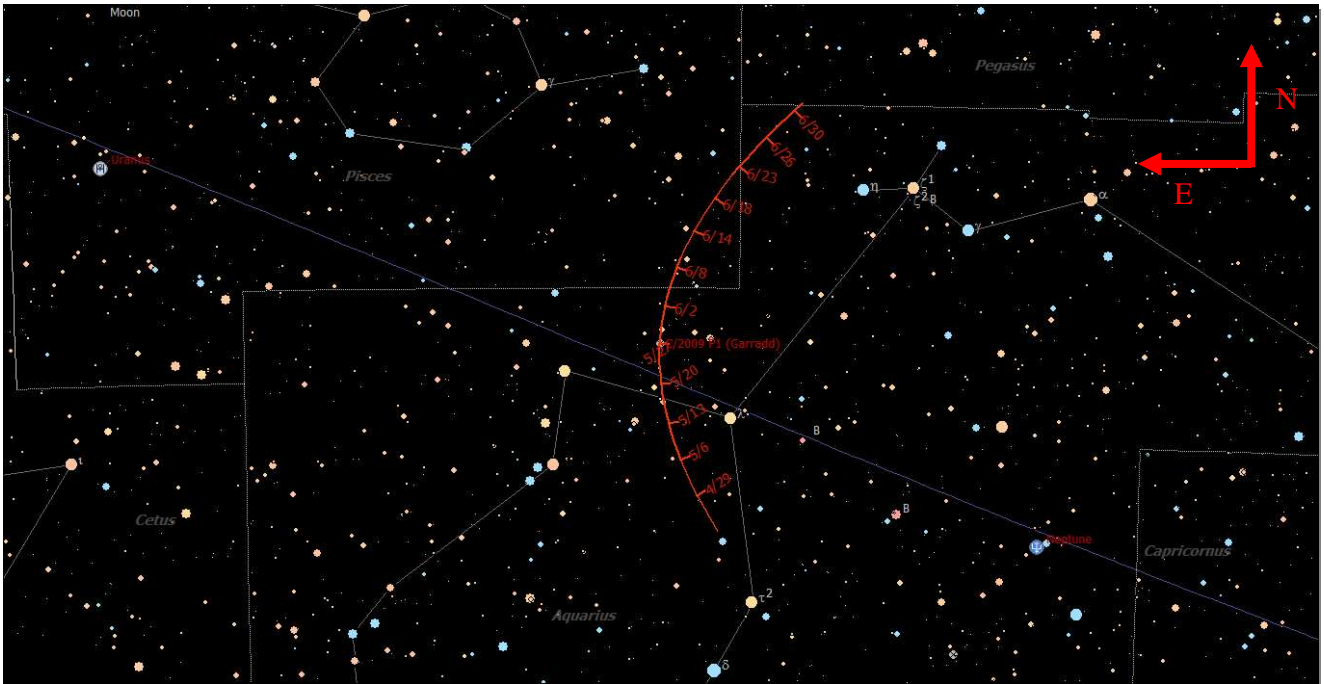
## C/2009 P1 Garradd

*Figure 4: Garradd P1 projected path through the summer sky!*



Courtesy of [www.aerith.net](http://www.aerith.net): Seiichi Yoshida's Comet Page!

Figure 5: Garradd P1 projected path 29 April - 30 June!



Note: Courtesy of Skytools 3 Professional 2011

Note that Garradd P1 is moving in a northerly direction for most of late May, but as early June comes along the comet will be making a turn to the NNW by the first week (2 - 8 June) crossing over the boundary between Aquarius and the SW region of Pisces. Garradd P1 will then make a NW turn towards the SE region of Pegasus and will cross into the constellation region of Pegasus on the night of June 30/July 1! Also look at the positions of planets Uranus and Neptune, these planets are now visible in the early morning sky before the break of dawn. The blue line stretching across the sky from the SW to the NE is the ecliptic which Garradd P1 crossed during the morning night sky of May 21.

IAU MPC Ephemeris data for C/2009 P1 Garradd (May/June 2011):

Date	UT			R.A. (J2000)			Decl.	Delta	r	El.	Ph.	M1	*M2	Sky Motion	
	h	m	s	°	'	"								"/min	P.A.
2011 05 24	00	00	00	23 01 54.0	-05 48 46	3.172	3.122	78.0	18.5	11.5	0.47	001.8			
2011 05 25	00	00	00	23 01 54.9	-05 37 31	3.145	3.113	78.9	18.6	11.4	0.47	000.4			
2011 05 26	00	00	00	23 01 54.6	-05 26 11	3.119	3.103	79.7	18.7	11.4	0.47	359.0			
2011 05 27	00	00	00	23 01 53.3	-05 14 46	3.092	3.093	80.6	18.9	11.4	0.48	357.6			
2011 05 28	00	00	00	23 01 50.7	-05 03 17	3.065	3.083	81.5	19.0	11.3	0.48	356.1			
2011 05 29	00	00	00	23 01 47.0	-04 51 42	3.038	3.073	82.4	19.1	11.3	0.49	354.7			
2011 05 30	00	00	00	23 01 42.1	-04 40 02	3.011	3.064	83.3	19.2	11.3	0.49	353.2			
2011 05 31	00	00	00	23 01 35.8	-04 28 17	2.984	3.054	84.2	19.3	11.2	0.50	351.7			
2011 06 01	00	00	00	23 01 28.3	-04 16 26	2.957	3.044	85.2	19.4	11.2	0.50	350.2			
2011 06 02	00	00	00	23 01 19.4	-04 04 30	2.930	3.034	86.1	19.5	11.2	0.51	348.7			
2011 06 03	00	00	00	23 01 09.1	-03 52 28	2.903	3.025	87.0	19.6	11.1	0.52	347.2			
2011 06 04	00	00	00	23 00 57.5	-03 40 19	2.876	3.015	87.9	19.6	11.1	0.52	345.8			
2011 06 05	00	00	00	23 00 44.3	-03 28 05	2.849	3.005	88.8	19.7	11.1	0.53	344.3			
2011 06 06	00	00	00	23 00 29.7	-03 15 45	2.822	2.995	89.8	19.8	11.0	0.54	342.8			
2011 06 07	00	00	00	23 00 13.5	-03 03 18	2.795	2.985	90.7	19.9	11.0	0.55	341.3			
2011 06 08	00	00	00	22 59 55.8	-02 50 44	2.768	2.976	91.7	19.9	10.9	0.56	339.8			
2011 06 09	00	00	00	22 59 36.4	-02 38 04	2.741	2.966	92.6	20.0	10.9	0.57	338.4			
2011 06 10	00	00	00	22 59 15.3	-02 25 17	2.714	2.956	93.6	20.0	10.9	0.58	337.0			
2011 06 11	00	00	00	22 58 52.6	-02 12 22	2.687	2.946	94.5	20.1	10.8	0.59	335.5			
2011 06 12	00	00	00	22 58 28.1	-01 59 20	2.660	2.937	95.5	20.1	10.8	0.61	334.1			
2011 06 13	00	00	00	22 58 01.8	-01 46 10	2.633	2.927	96.5	20.2	10.8	0.62	332.8			
2011 06 14	00	00	00	22 57 33.6	-01 32 53	2.607	2.917	97.4	20.2	10.7	0.63	331.4			
2011 06 15	00	00	00	22 57 03.5	-01 19 27	2.580	2.907	98.4	20.2	10.7	0.65	330.1			
2011 06 16	00	00	00	22 56 31.5	-01 05 53	2.553	2.898	99.4	20.2	10.7	0.66	328.8			
2011 06 17	00	00	00	22 55 57.5	-00 52 11	2.527	2.888	100.4	20.2	10.6	0.68	327.5			
2011 06 18	00	00	00	22 55 21.4	-00 38 20	2.500	2.878	101.4	20.2	10.6	0.70	326.3			
2011 06 19	00	00	00	22 54 43.1	-00 24 20	2.474	2.868	102.4	20.2	10.5	0.72	325.1			
2011 06 20	00	00	00	22 54 02.7	-00 10 11	2.447	2.859	103.4	20.2	10.5	0.73	323.9			
2011 06 21	00	00	00	22 53 20.0	+00 04 07	2.421	2.849	104.4	20.2	10.5	0.75	322.7			
2011 06 22	00	00	00	22 52 35.0	+00 18 34	2.395	2.839	105.4	20.2	10.4	0.77	321.5			
2011 06 23	00	00	00	22 51 47.6	+00 33 11	2.369	2.829	106.4	20.2	10.4	0.79	320.4			

*All ephemeris data above is calculated for the SE Texas region at 00:00 CST which is -5 hrs behind UTC?*

\*M2 values are not shown if values are fainter than 19<sup>th</sup> magnitude!