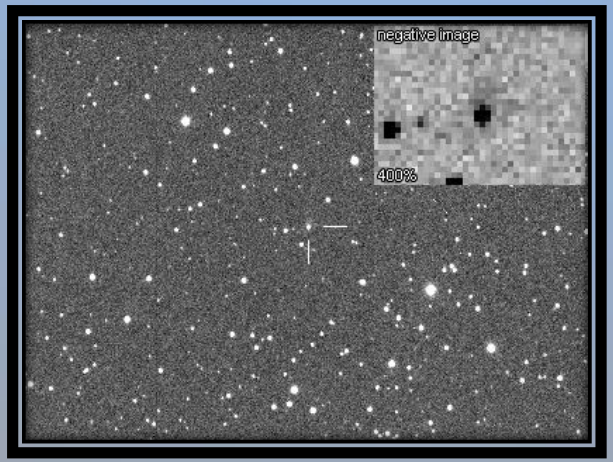
Professor Comet Update!
Summer Season 2014











Current Expectations for this Summer!

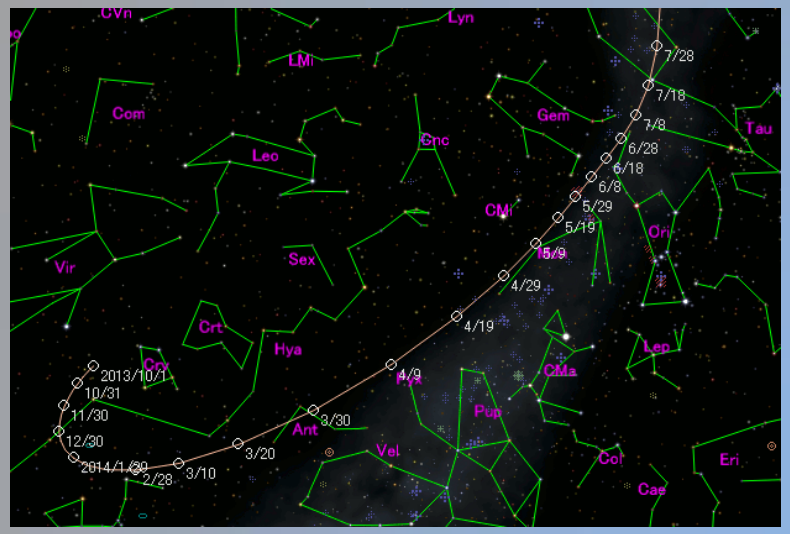


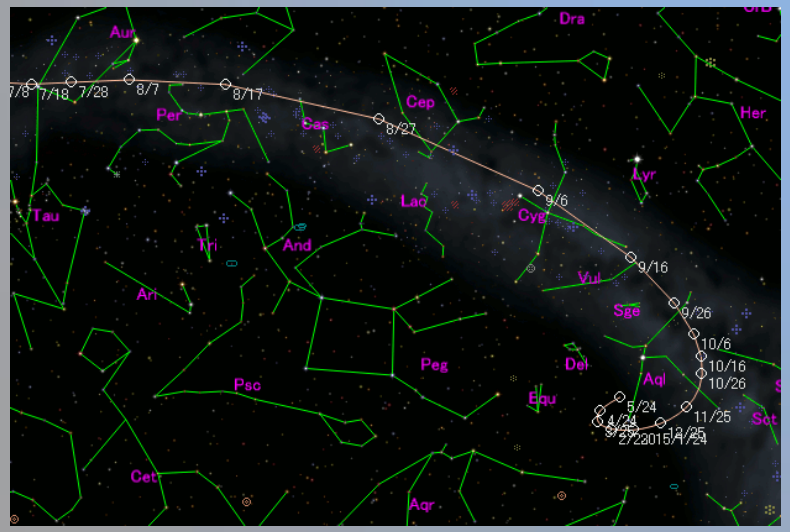
Date of Discovery: 13 March 2014
Visual Magnitude of Discovery: 14.7
Comet Discoverer: Cristovo Jacques
Facilities: SONEAR Observatory
Location: Oliveira, Brazil, South America
Peak Brightness/Date: 6.0/16 July
Observation Reported by William Souza

Type of Comet: Semi – Periodic/Extremely Parabolic
Eccentricity: 0.9991
Semi – Major Axis: 33.53 AU (39.24 AU for Pluto)
Perihelion Distance: 0.664 AU (0.718 AU for Venus)
Time of Perihelion Passage: 2 July 2014 @ 12:23:54.7 UTC
Maximum Visual Mag Predicted: 6.0
Aphelion Distance: 1542.08 AU
(Avg. Dist. for Sedna – 519 AU)
Perigee Distance: 0.564 AU (0.467 for Mercury @ Aphelion)
Time of Perigee Passage: 28 – 29 August 2014
Orbital Period: 7 825 194 Earth Years

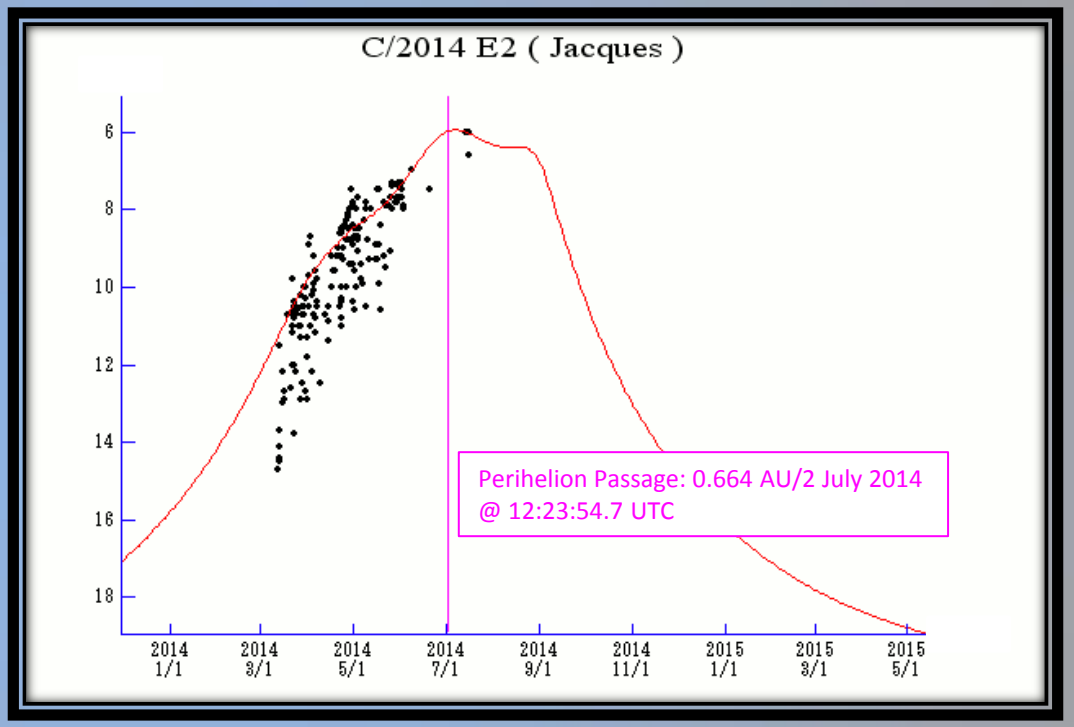
Last Report: m_1 = 7.0, Dia. = 2', DC = 7
Observer: Vyacheslav M. Ivanov
Location: Kamysin, Russian Federation
Date/Time: 23 July 2014 @ 23:02:24 UTC

Current Expectations for this Summer!





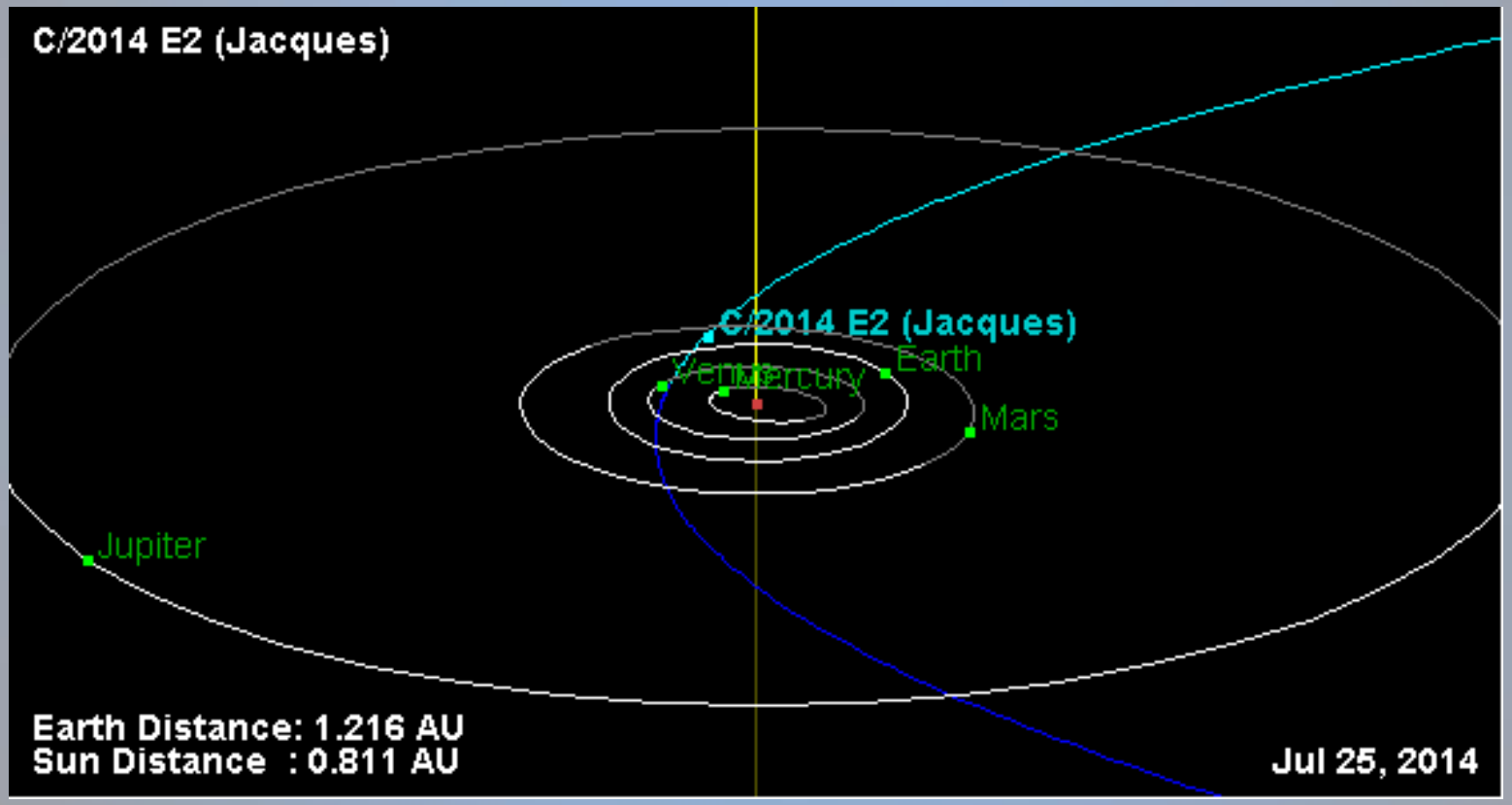
C/2014 E2 (Jacques)



$m_1 = 6.0 + 5 \log d + 15.0 \log r$ [,-63] (- 2014 Apr. 30)
$m_1 = 6.7 + 5 \log d + 10.0 \log r$ [-63, 63] (2014 Apr. 30 - 2014 Sept. 3)
$m_1 = 6.0 + 5 \log d + 15.0 \log r$ [63,] (2014 Sept. 3 -)

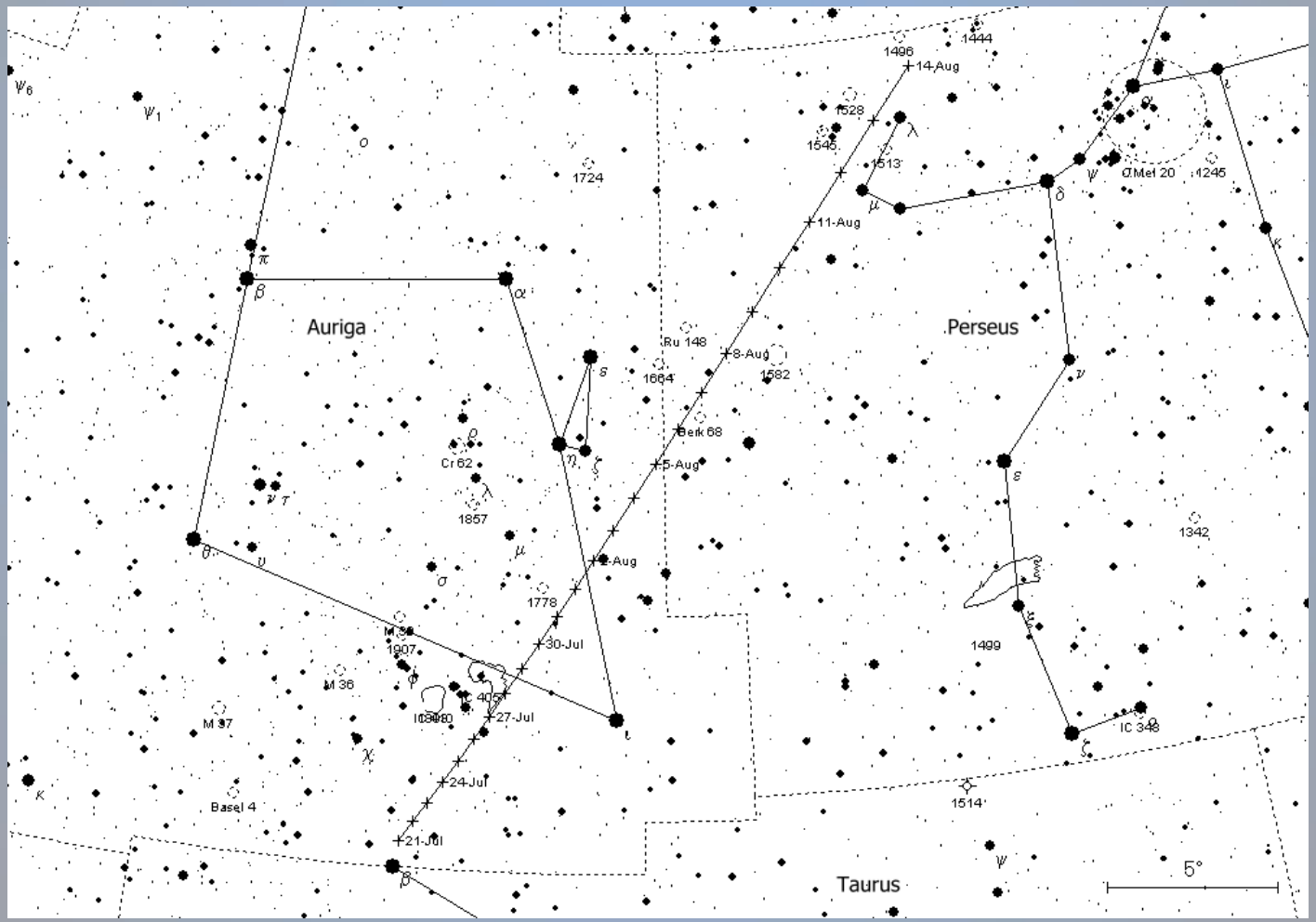
Current Expectations for this Summer!

Orbit of C/2014 E2 (Jacques)



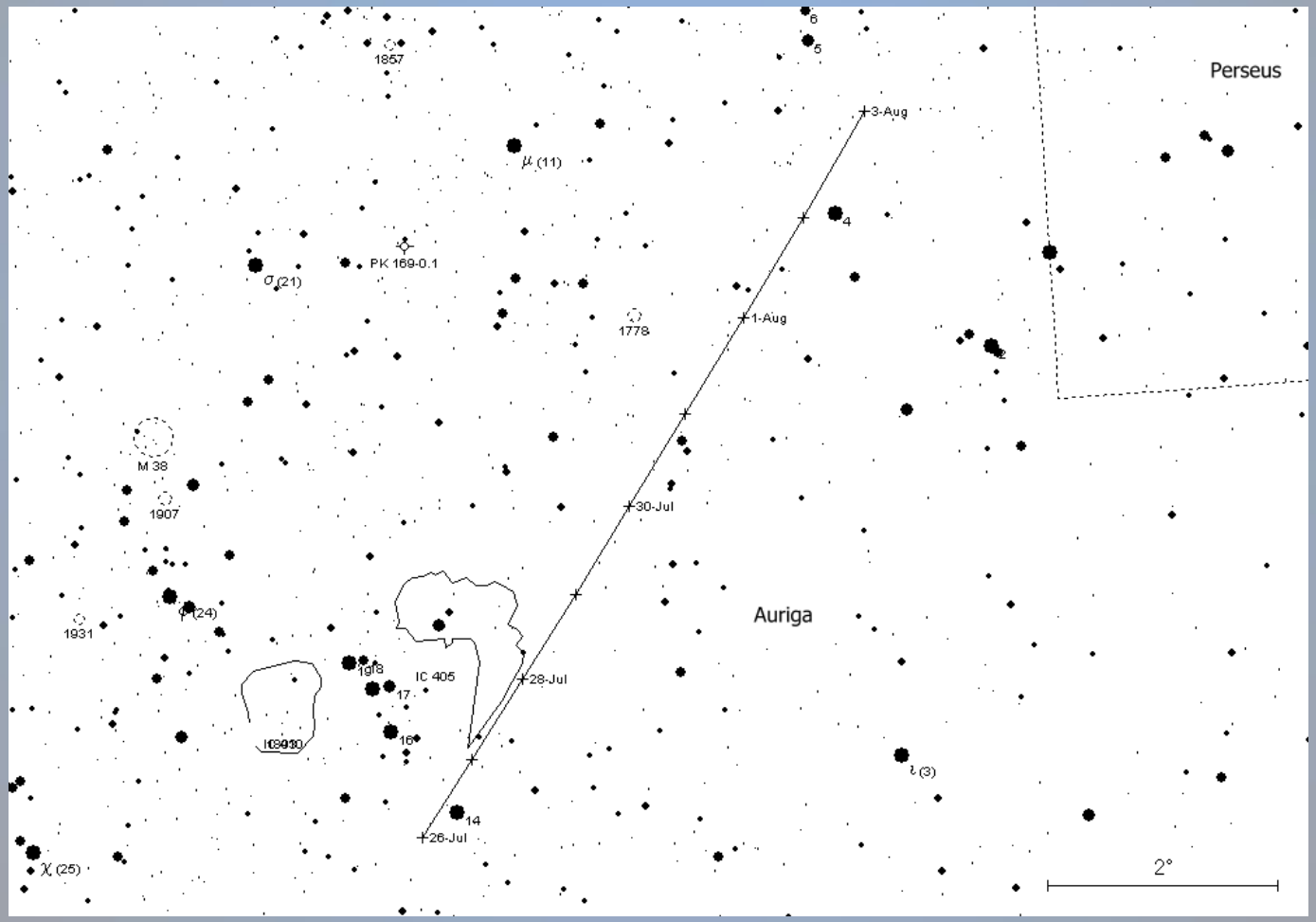
Current Expectations for this Summer!

Orbit of C/2014 E2 (Jacques) – Expected Path: (21 July – 14 Aug) 2014.



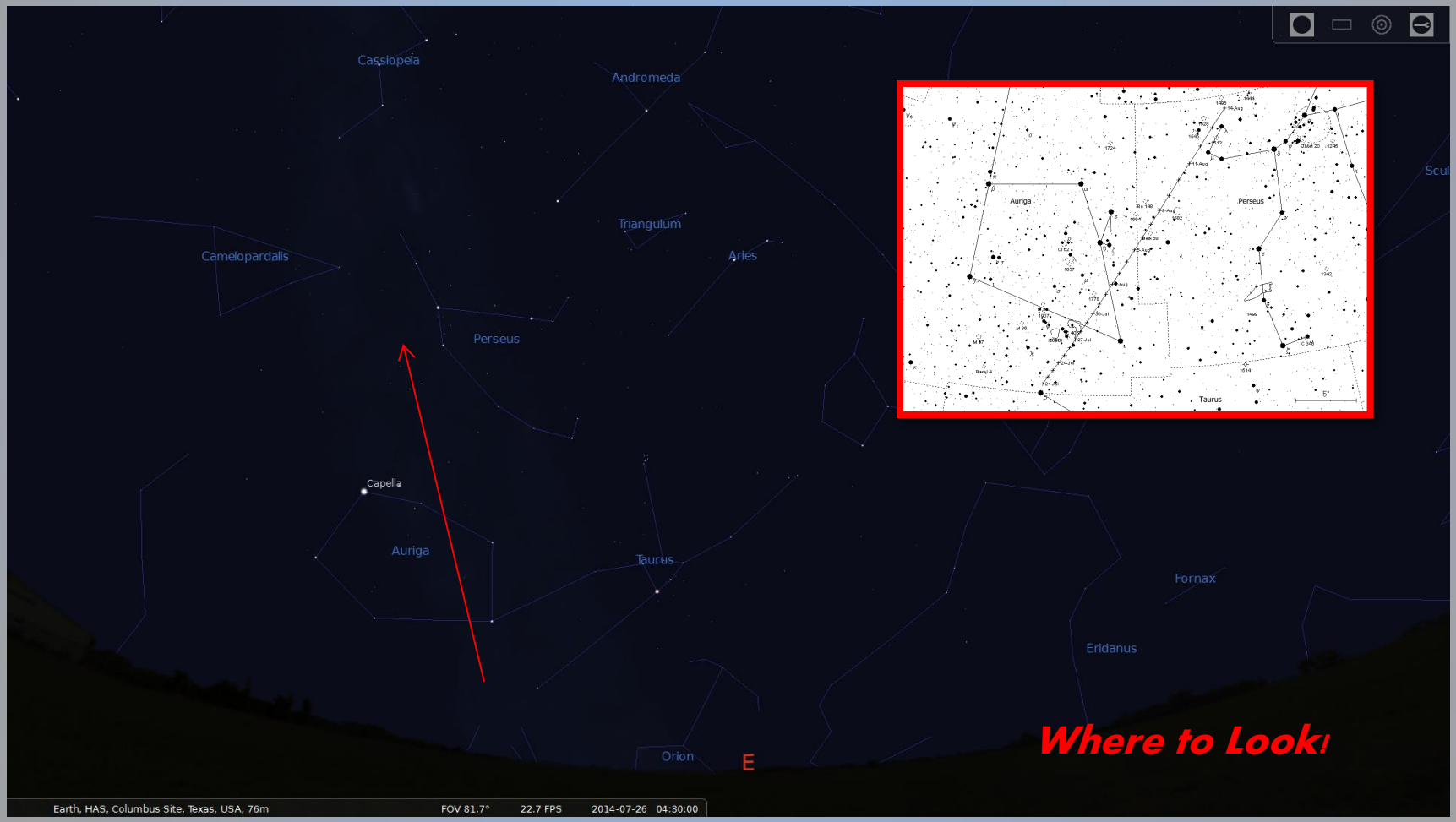
Current Expectations for this Summer!

Orbit of C/2014 E2 (Jacques) – Expected Path: (26 July – 3 Aug) 2014.



Current Expectations for this Summer!

Searching for Comet C/2014 E2 (Jacques)



Current Expectations for this Summer!

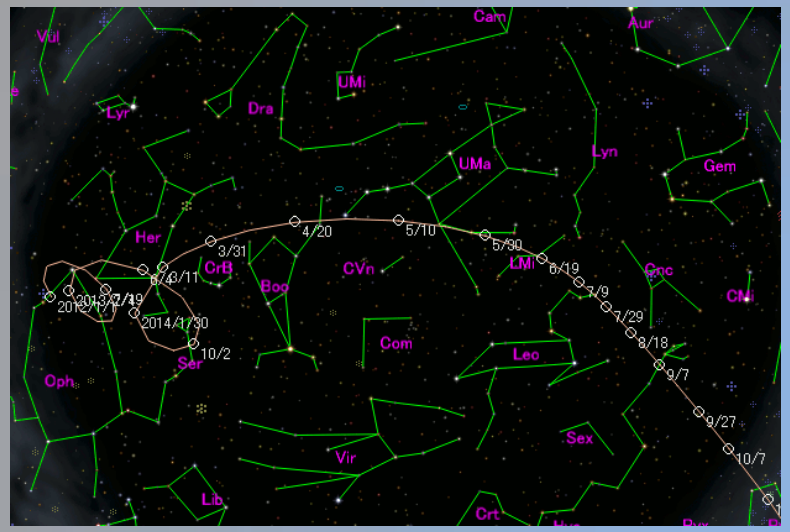


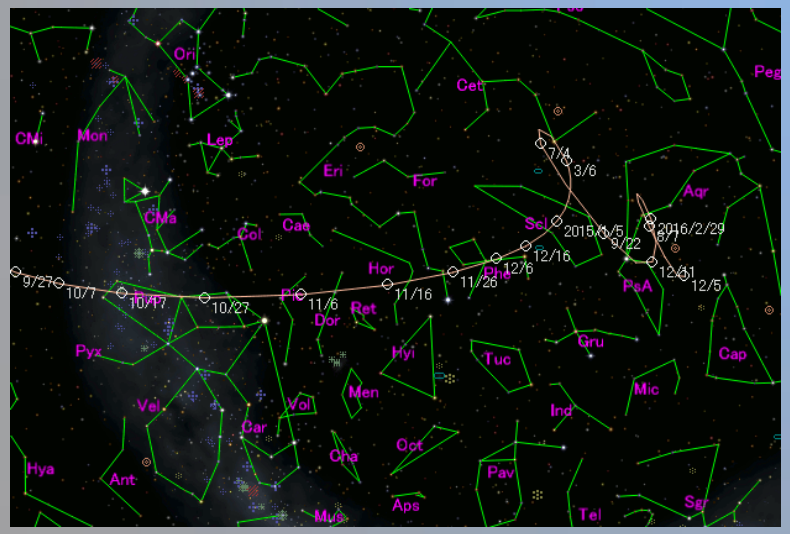
Date of Discovery: 19 May 2012
Visual Magnitude of Discovery: 19.7
Comet Discoverer: N/A
Facilities: PanSTARRS 1 Telescope
Location: Summit of Haleakala, Maui, Hawaii, USA
Peak Brightness/Date: 7.0/2 – 3 July
Last Observation: Mag. 7.9/3 July by Marek Biely

Type of Comet: Semi Hyperbolic/Non Periodic
Eccentricity: 1.00199
Semi – Major Axis: 23.818 AU (39.24 AU for Pluto)
Perihelion Distance: 1.055 AU (0.718 AU for Venus)
Time of Perihelion Passage: 27 August 2014 @ 15:47:11.9 UTC
Maximum Visual Mag Predicted: 6.0 – 7.0 (Early Autumn, 2014)
Aphelion Distance: Not Applicable
Perigee Distance: 1.472 AU (Avg. Dist. @ 1.524 AU for Mars)
Time of Perigee Passage: 3 – 5 May 2014
Orbital Period: Not Applicable
Not Observable: Between Mid – July to Mid - September

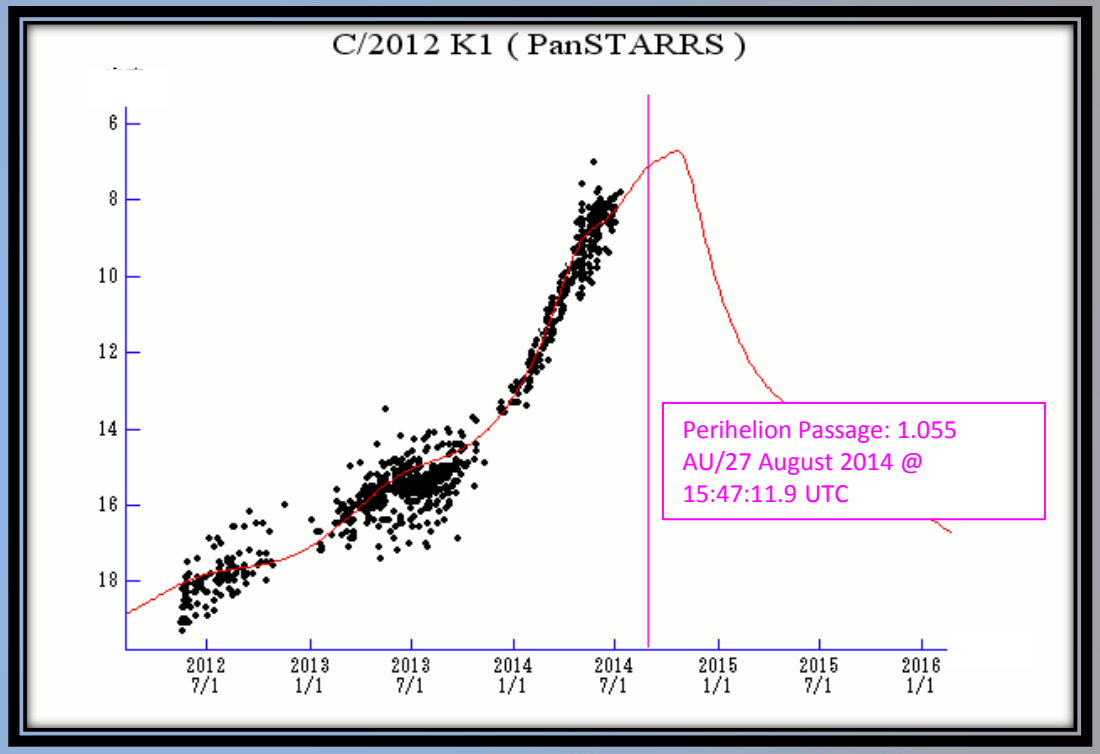
Last Report: m_1 = 7.9, Dia. = 4.5', DC = 5
Observer: Marek Biely,
Location: Brno, Czech Republic
Date/Time: 3 July 2014 @ 20:38:24 UTC

Current Expectations for this Summer!





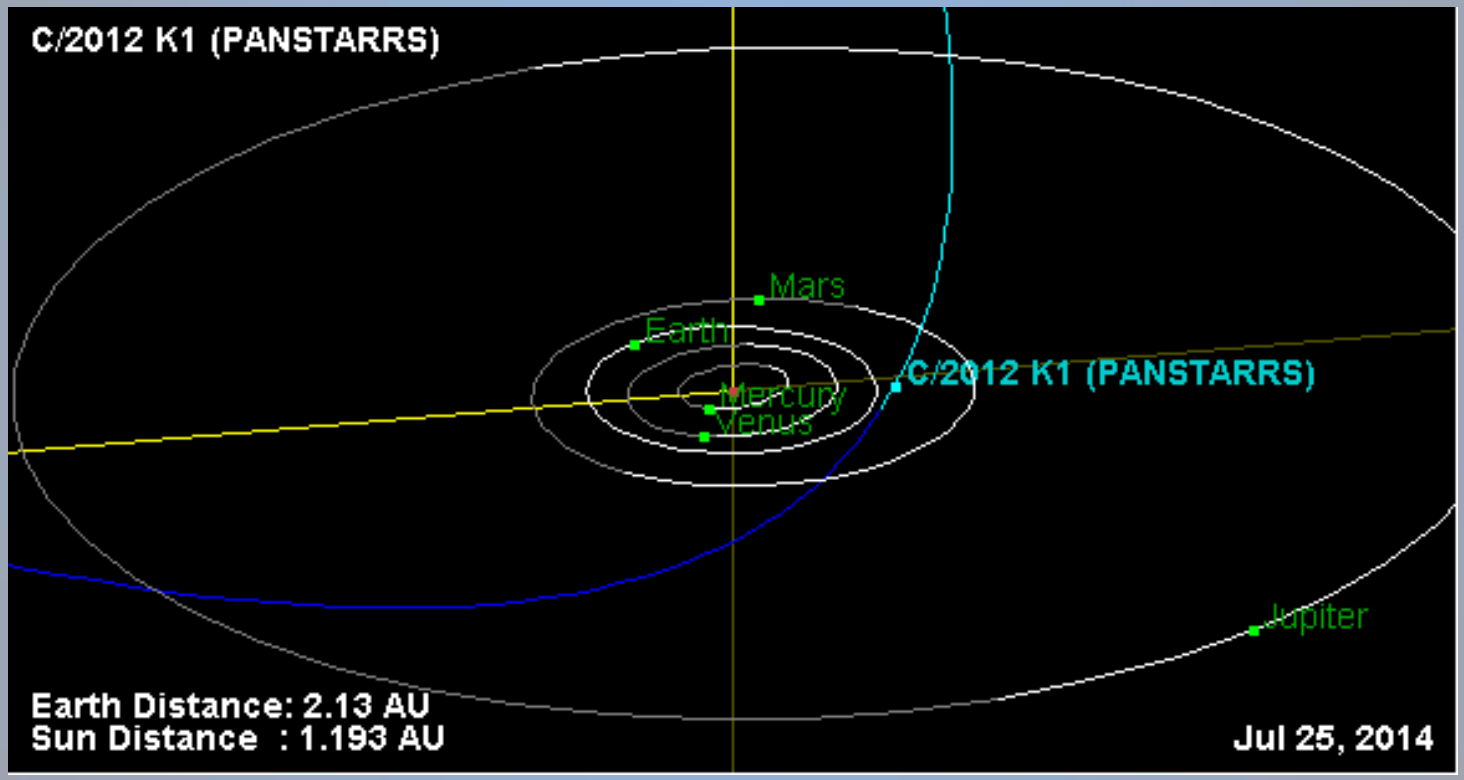
C/2012 K1 (PanSTARRS)



$m_1 = 5.5 + 5 \log d + 8.5 \log r$

Current Expectations for this Summer!

Orbit of C/2012 K1 (PanSTARRS)



Current Expectations for the rest of 2014!

(Prediction for future Comets – July/August)

Month	Evening			Midnight			Morning		
	Comet	Mag	h	Comet	Mag	h	Comet	Mag	h
2014 Jul	**C/2013 UQ4 (Catalina)**	**7**	**70**	**C/2013 UQ4 (Catalina)**	**7**	**63**	**C/2014 E2 (Jacques)**	**6**	**30**
	C/2012 K1 (PanSTARRS)	**8**	**17**	C/2012 X1 (LINEAR)	9	11	**C/2013 UQ4 (Catalina)**	**7**	**73**
	C/2013 R1 (Lovejoy)	**12**	**29**	**C/2013 R1 (Lovejoy)**	**12**	**17**	**C/2012 X1 (LINEAR)**	**9**	**22**
	117P/Helin- Roman- Alu 1	13	8	**117P/Helin- Roman- Alu 1**	**13**	**26**	C/2013 A1 (Siding Spring)	10	3
	29P/Schwassmann- Wachmann 1	**13**	**26**	29P/Schwassmann - Wachmann 1	13	12	C/2013 V5 (Oukaimeden)	11	8
							210P/Christensen	**11**	**15**
							4P/Faye	12	6
							117P/Helin- Roman- Alu 1	**13**	**27**
2014 Aug	**C/2014 E2 (Jacques)**	**6**	**49**	**C/2014 E2 (Jacques)**	**6**	**65**	**C/2014 E2 (Jacques)**	**6**	**62**
	C/2013 UQ4 (Catalina)	**10**	**47**	C/2012 X1 (LINEAR)	10	10	**C/2013 V5 (Oukaimeden)**	**7**	**20**
	117P/Helin- Roman- Alu 1	**13**	**24**	C/2013 UQ4 (Catalina)	10	8	C/2013 A1 (Siding Spring)	9	4
	29P/Schwassmann- Wachmann 1	**13**	**20**	**117P/Helin- Roman- Alu 1**	**13**	**25**	C/2012 X1 (LINEAR)	10	6
							210P/Christensen	10	7
							4P/Faye	**12**	**19**
							117P/Helin- Roman- Alu 1	13	8
							32P/Comas Sola	**13**	**26**

Current Expectations for the rest of 2014!

(Prediction for future Comets – September/October)

Month	Evening			Midnight			Morning		
	Comet	Mag	h	Comet	Mag	h	Comet	Mag	h
2014 Sep	**C/2014 E2 (Jacques)**	**6**	**88**	**C/2014 E2 (Jacques)**	**6**	**72**	**C/2013 V5 (Oukaimeden)**	**5**	**18**
	C/2013 A1 (Siding Spring)	8	9	C/2012 X1 (LINEAR)	10	4	**C/2012 K1 (PanSTARRS)**	**6**	**22**
	C/2012 X1 (LINEAR)	11	4	**117P/Helin- Roman-Alu 1**	**13**	**17**	**C/2014 E2 (Jacques)**	**6**	**29**
	C/2013 UQ4 (Catalina)	**13**	**24**				**32P/Comas Sola**	**13**	**40**
	117P/Helin- Roman- Alu 1	**13**	**25**				**4P/Faye**	**13**	**34**
	29P/Schwassmann-Wachmann 1	13	13						
2014 Oct	C/2013 V5 (Oukaimeden)	7	1	C/2014 E2 (Jacques)	10	12	**C/2012 K1 (PanSTARRS)**	**6**	**26**
	C/2013 A1 (Siding Spring)	**8**	**17**	C/2013 US10 (Catalina)	13	9	**32P/Comas Sola**	**12**	**53**
	C/2014 E2 (Jacques)	**10**	**64**						
	C/2012 X1 (LINEAR)	11	6						
	C/2013 US10 (Catalina)	**13**	**30**						

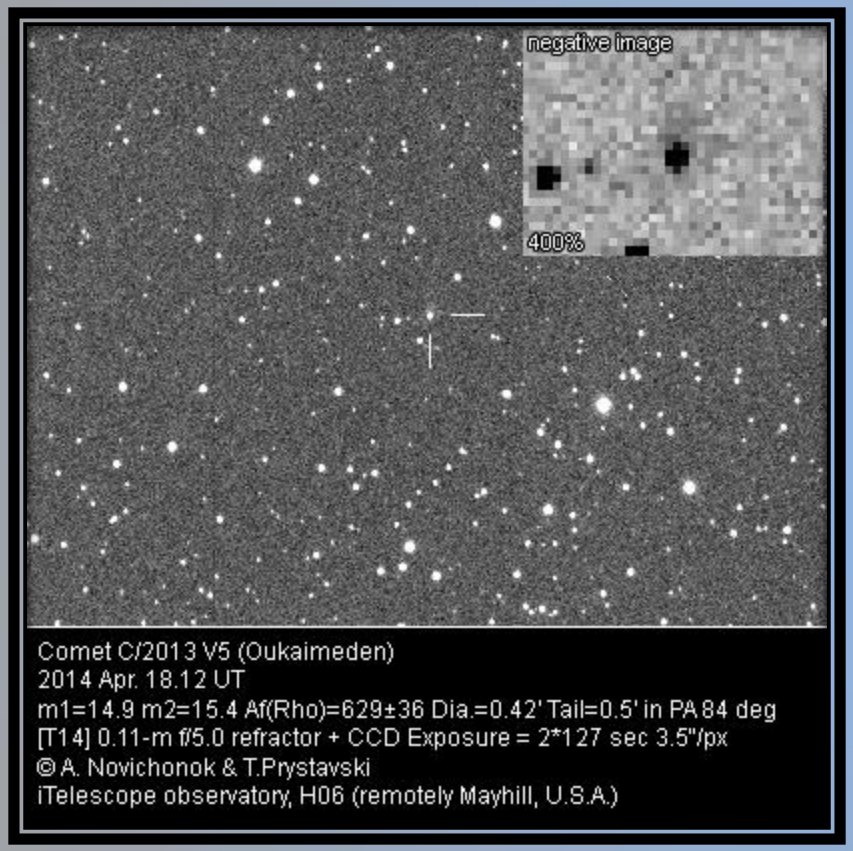
Current Expectations for the rest of 2014!

(Prediction for future Comets – November/December)

Month	Evening			Midnight			Morning		
	Comet	Mag	h	Comet	Mag	h	Comet	Mag	h
2014 Nov	C/2012 K1 (PanSTARRS)	7	6	C/2012 K1 (PanSTARRS)	7	1	C/2012 K1 (PanSTARRS)	6	6
	C/2013 A1 (Siding Spring)	**9**	**16**	32P/Comas Sola	12	4	**32P/Comas Sola**	**12**	**67**
	C/2012 X1 (LINEAR)	12	9	**(596) Scheila**	**13**	**76**	88P/Howell	13	2
	15P/Finlay	12	12	C/2013 US10 (Catalina)	13	7	**(596) Scheila**	**13**	**34**
	C/2014 E2 (Jacques)	**13**	**46**						
	(596) Scheila	**13**	**15**						
	C/2013 US10 (Catalina)	**13**	**30**						
2014 Dec	**C/2012 K1 (PanSTARRS)**	**8**	**20**	**32P/Comas Sola**	**12**	**21**	C/2013 A1 (Siding Spring)	10	4
	15P/Finlay	**10**	**21**	**(596) Scheila**	**13**	**76**	**C/2013 V5 (Oukaimeden)**	**12**	**24**
	C/2013 A1 (Siding Spring)	10	5				88P/Howell	12	9
	C/2012 X1 (LINEAR)	13	10				**32P/Comas Sola**	**12**	**72**
	C/2013 US10 (Catalina)	**13**	**29**				7P/Pons- Winnecke	12	4
	(596) Scheila	**13**	**30**				**(596) Scheila**	**13**	**17**

Current Expectations for the rest of 2014!

(Best Hope for 2014 – C/2013 V5 Oukaimeden)

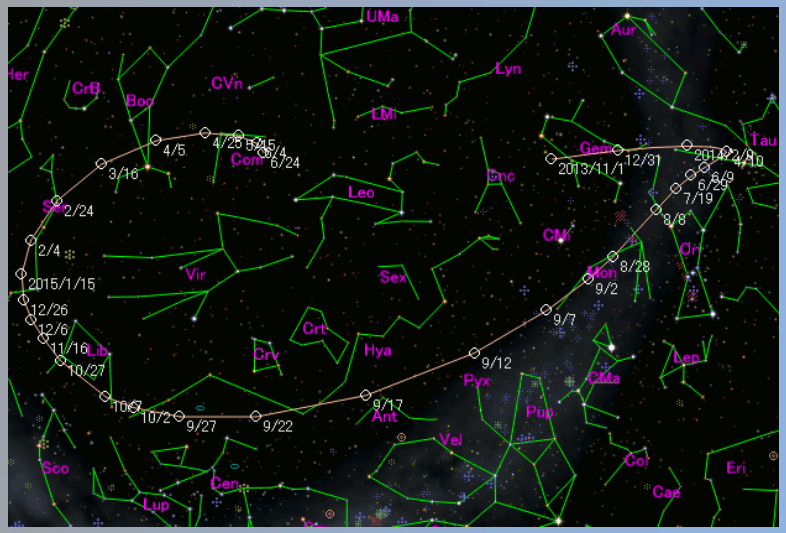


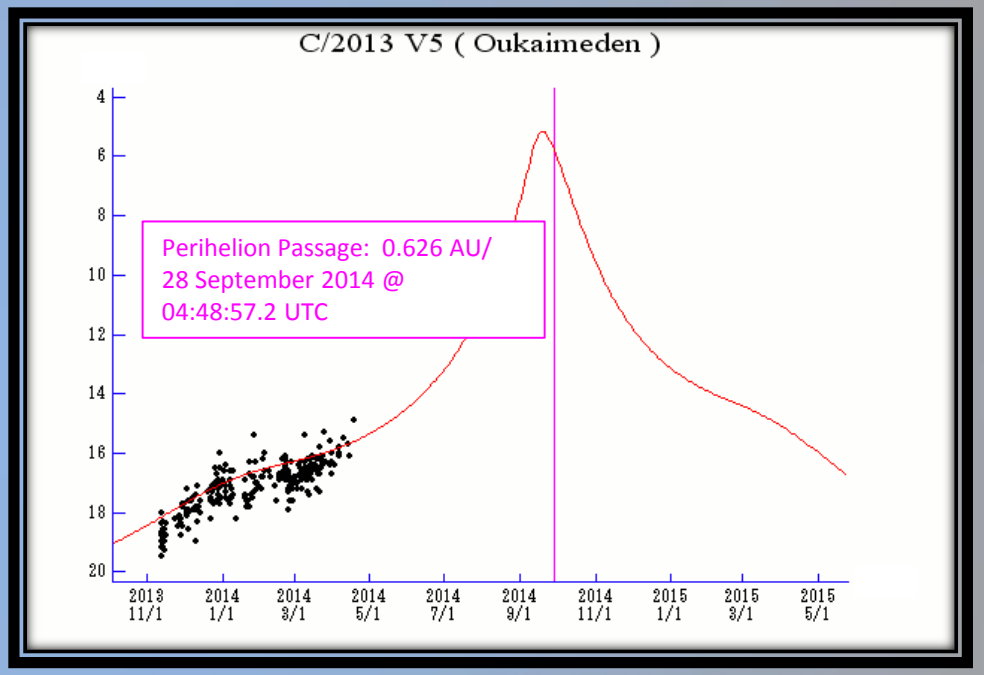
Date of Discovery: 12 November 2013
Visual Magnitude of Discovery: 19.4
Comet Discoverer: Michael Ory
Facilities: Oukaimeden Observatory
Location: Atlas Mountains near Marrakech, Morocco, Africa
Peak Brightness/Date: 5.0/September 2014 predicted!
Last Observation: Mag. 14.9/18 April by Taras Prystavski

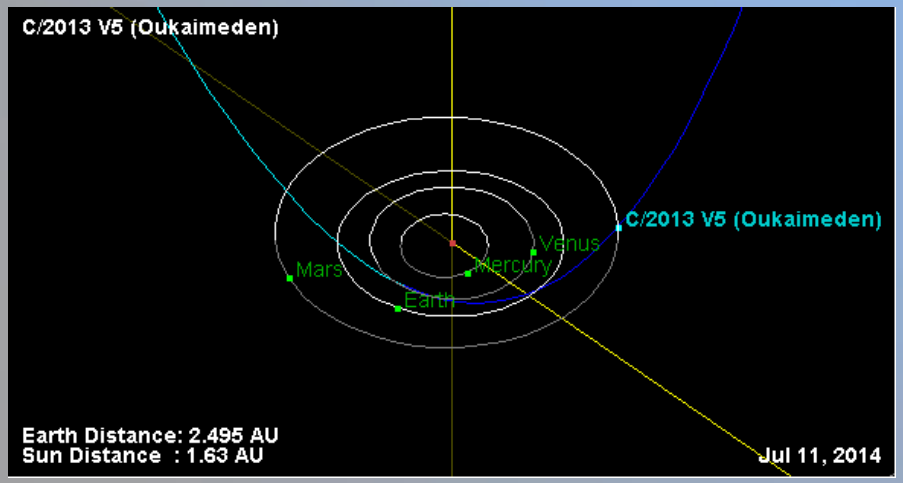
Type of Comet: Long Term Periodic/Extremely Elliptical
Eccentricity: 0.9989
Semi – Major Axis: 573.07 AU (Avg. Dist. for Sedna – 519 AU)
Perihelion Distance: 0.626 AU (0.718 AU for Venus)
Time of Perihelion Passage: 28 Sep 2014 @ 04:48:57.2 UTC
Maximum Visual Mag Predicted: 5.0 (September, 2014)
Aphelion Distance: 1145.5 AU (Avg. Dist. for Sedna – 519 AU)
Perigee Distance: 0.475 AU (0.467 AU – Aphelion for Mercury)
Time of Perigee Passage: 16 September 2014
Orbital Period: 5 010 894.2 Earth Years

Current Expectations for the rest of 2014!

(Best Hope for 2014 – C/2013 V5 Oukaimeden)



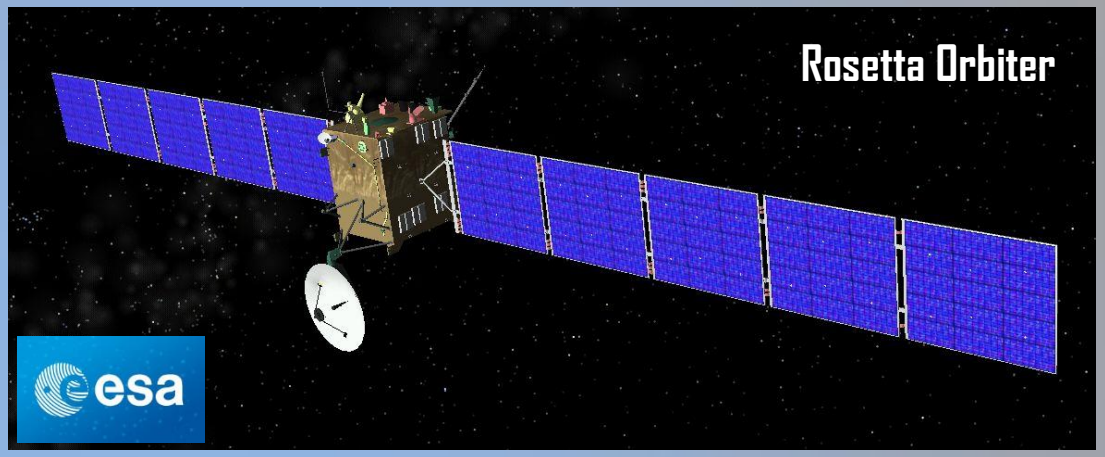




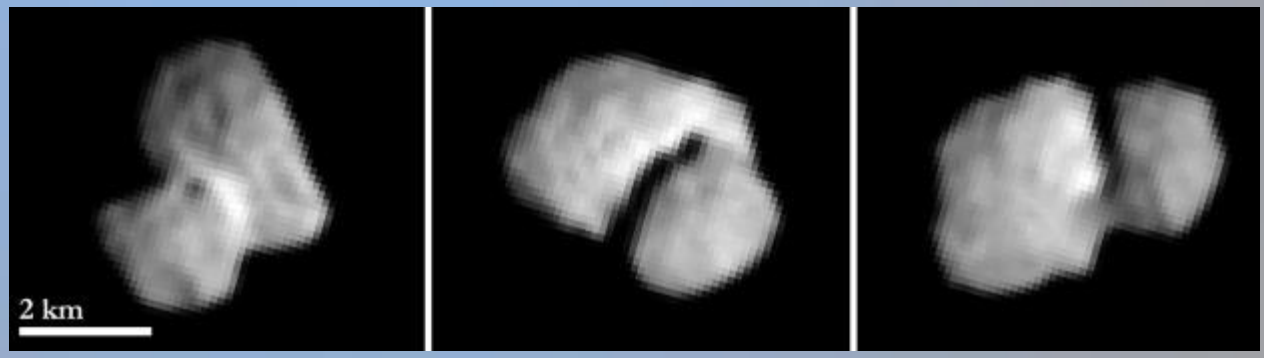
Rosetta/Philae this Year!

(The exciting mission to Comet 67P/Churyumov - Gerasimenko)





Launched: 2 March 2004/Ariane 5G+ V-158
Between 2005 – 2009
(4 Gravity Assist Flybys – 3 Earth/1 Mars)
Flew by two Asteriods: 2867 Steins
(5 September 2008)
21 Lutetia
(10 July 2010)
Rendezvous with 67P's orbit: 22 May 2014
Orbital Insertion and Global Mapping of Comet 67P: 3 – 6 August 2014
Average Orbital Diameter: 25 km
Philae Lander Landing: 10 November 2014
Mission continues: 13 August 2015 at perihelion
Mission Ends: December 2015

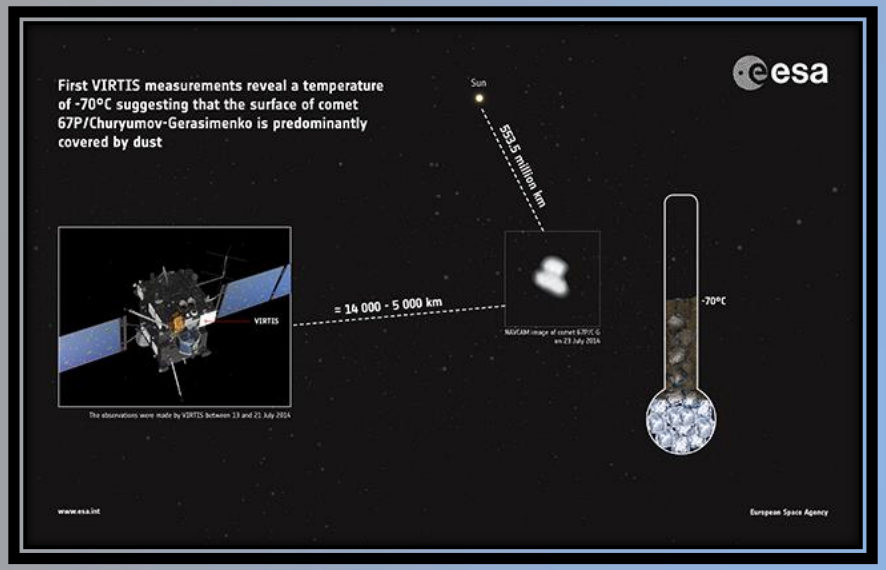


Nucleus of 67P/Churyumov – Gerasimenko
Date: 24 July 2014
Rosetta OSIRIS narrow angle camera
Distance: ~5500 km at 100m/pixel

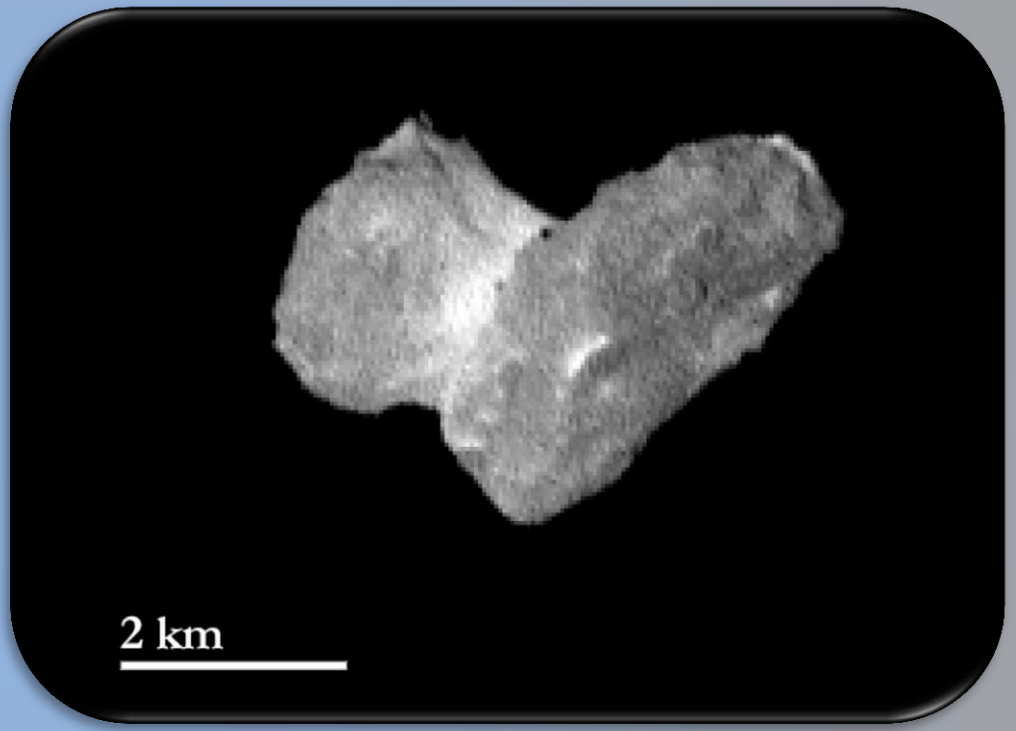
Orbiting 'Jupiter' Comet: Aphelion – 5.68 AU/Perihelion – 1.2429 AU/Mean Distance – 3.46 AU/Eccentricity – 0.64/Orbital Period – 6.45 year/(3.5x4) km/Orbital Inclination: 7.04°

Rosetta/Philae this Year!

(The exciting mission to Comet 67P/Churyumov - Gerasimenko)



VIRTIS Instrument
(Visible & InfraRed Thermal Imaging Spectrometer)
Initial Readings for Surface Temp: -70°C (203 K or -94°F)
Dates: 13 – 21 July 2014



Date: 29 July 2014
Distance/Resolution: 1950 km @ 37m/pixel
Instrument: OSIRIS Narrow Angle Camera
Developer: Max Plank Institute for Solar System Research
(Formerly the Max Planck Institute for Aeronomy in Katlenburg – Lindau)
Location: Göttingen, Germany



Various substances/chemicals/elements to look for common in comets:

Organic: C, C2, C3, CH, CN, CO CO2, CS, HCN, CN3CN, HCO, H2CO
Inorganic: H, NH, NH2, O, OH, S, S2, NH3, NH4
Metals: Na, K, Ca, V, Mn, Fe, Co, Ni, Cu
Ions: C+, CH+, CO+, CO2+, N2+, O+, OH+, H2O+, H3O+, S+, S2+, H2S+, CS2+
Dust: Silicates, Organic Compounds

H3O+ is Hydronium, a type of oxonium ion (extensively used in alkylating agents (example: Chemotherapy Drugs to prevent DNA mutations!)

Rosetta/Philae this Year!

(Comet 67P/Churyumov – Gerasimenko's Orbital Diagram)

