

August 2010 Astronomy Calendar by Dave Mitsky

Some information supplied and/or added by Tony Donnangelo

All times are Eastern Daylight Saving Time (-4 hrs. U.T.).

Events listed are based on a location of 40°N in the Eastern US and may not be visible in all areas.

Concerning moderate and minor meteor shower activity:

Do not have any high expectations. This general information is to account for why you might be seeing a few more than normal meteors during your observing session.

Lunar light rays may occur prior to or after the predicted time. Initial observations might have occurred after the ray's inception or continued after the observer's session. Rays may last a very short time or for many hours. Obtain further information; send reports (including non-occurrences and miss-calculations), photos, and observations of new rays to:

The Robinson Lunar Observatory: <http://www.lunar-occultations.com/rlo/rlondx.htm>.

8/1 Mars is 1.9° south of Saturn at 3:00 p.m.

8/1 Alpha Capricornids meteor shower (moderate activity) peaks 1/2. Duration is from 7/15 to 9/11. Observing and history:

http://meteorshowersonline.com/showers/alpha_capricornids.html

8/2 Venus is at the descending node today.

8/3 Last Quarter Moon occurs at 12:59 a.m.

8/3 The Curtiss Cross, an X-shaped illumination effect located between the craters Parry and Gambart, is predicted to occur at 3:23 p.m.

8/4 The Moon is 0.6° south of the bright open cluster M45 (the Pleiades) in Taurus at 1:00 p.m.

8/6 Southern Iota Aquarids meteor shower (moderate activity) peaks 6/7. Duration is from 7/1 to 9/18. Observing and history: http://meteorshowersonline.com/showers/iota_aquarids.html

8/6 Mercury is at greatest eastern elongation (27°) at 9:00 p.m.

8/6 The Moon is 0.05° south of the bright open cluster M35 in Gemini at 10:00 p.m.

8/8 Mercury is at aphelion at 4:00 a.m.

8/8 Upsilon Pegasids meteor shower (minor activity) peaks 8/9. Duration is from 7/25 to 8/19. Observing and history: http://meteorshowersonline.com/showers/upsilon_pegasids.html

8/8 Asteroid (1) Ceres is stationary at 10:00 p.m.

8/9 Venus is 3° south of Saturn at 9:00 p.m.

8/9 New Moon (lunation 1084) occurs at 11:08 p.m.

8/10 The Moon is at perigee, subtending 33'51" from a distance of 357,857 km (222,362 miles) and creating large tides, at 1:58 p.m.

8/11 August Eridanids meteor shower (minor activity) peaks 11/12. Duration is from the 2nd to 27th. Observing and history: http://meteorshowersonline.com/showers/august_eridanids.html

8/11 Mercury is 2° north of the Moon at 10:00 p.m.

8/12 Perseids meteor shower (major activity - zenithal rate of 60-100/hour) peaks at 8:12 p.m. Duration is from 7/23 to 8/22. Observing and history:

<http://meteorshowersonline.com/perseids.html>

8/13 Saturn is 8° north of the Moon at 3:00 a.m.

8/13 A double Galilean shadow transit begins at 6:12 a.m.

8/13 Venus is 5° north of the Moon at 8:00 a.m.

8/13 Mars is 6° north of the Moon at 1:00 p.m.

8/13 Alpha Ursa Majorids meteor shower (minor activity) peaks 13/14. Duration is from the 9th to 30th. Observing and history:

http://meteorshowersonline.com/showers/alpha_ursa_majorids.html

8/13 Northern Delta Aquarids meteor shower (moderate activity) peaks 13/14. Duration is from 7/16 to 9/10. Observing and history:

http://meteorshowersonline.com/showers/delta_aquarids.html

- 8/16 First Quarter Moon occurs at 2:14 p.m.
- 8/16 The Lunar X, also known as the Werner or Purbach Cross, an X-shaped illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 11:52 p.m.
- 8/17 The Moon is 1.9° north of the first-magnitude star Antares (Alpha Scorpius) at 7:00 p.m.
- 8/18 Kappa Cygnids meteor shower (moderate activity) peaks on the 18th. Duration is from 7/26 to 9/1. Observing and history: http://meteorshowersonline.com/showers/kappa_cygnids.html
- 8/20 Mercury is stationary at 12:00 a.m.
- 8/20 Venus is at greatest eastern elongation (46 degrees) at 12:00 a.m.
- 8/20 Neptune (magnitude 7.8, apparent size 2.3") is at opposition at 6:00 a.m.
- 8/20 A double Galilean shadow transit begins at 8:06 a.m.
- 8/23 Venus is 2° south of Mars at 5:00 p.m.
- 8/24 Neptune is 5° south of the Moon at 8:00 a.m.
- 8/24 Full Moon (known as the Fruit, Grain, Green Corn, or Sturgeon Moon), the smallest one of the year, occurs at 1:05 p.m.
- 8/25 The Moon is at apogee, subtending 29'40" from a distance of 406,389 km (252,518 miles), at 1:51 a.m.
- 8/25 Northern Iota Aquarids meteor shower (moderate activity) peaks 25/26. Duration is from 8/11 to 9/10. Observing and history: http://meteorshowersonline.com/showers/iota_aquarids.html
- 8/25 Gamma Leonids meteor shower (daylight activity) peaks on 25/26. Duration is from the 14th until September 12. Observing and history: http://meteorshowersonline.com/showers/gamma_leonids.html
- 8/27 Uranus is 6° south of the Moon at 3:00 a.m.
- 8/27 Jupiter is 7° south of the Moon at 8:00 a.m.
- 8/27 A double Galilean shadow transit begins at 11:50 a.m.
- 8/28 Mercury is at its greatest heliocentric latitude south today.

The Perseid meteor shower is not affected by moonlight this year.

The Moon is 20.2 days old and located in Pisces on August 1 at 0:00 UT. It's at its greatest northern declination on August 6 (+25.0 degrees) and its greatest southern declination on August 18 (-24.9 degrees). Longitudinal libration is at a maximum of +7.7 degrees on August 17 and a minimum of -7.3 degrees on August 4. Latitudinal libration is at a maximum of +6.8 degrees on August 13 and a minimum of -6.6 degrees on August 27. Large tides will occur from August 11 through August 13. Visit <http://www.astronomyblogs.com/member/saberscorpux/?xjMsgID=50821> for tips on spotting extreme crescent Moons.

The Sun is located in Cancer on August 1.

Brightness, apparent size, illumination, distance from the Earth in astronomical units, and location data for the planets and Pluto on August 1: Mercury (0.1 magnitude, 6.9", 57% illuminated, 0.98 a.u., Leo), Venus (-4.3 magnitude, 19.9", 58% illuminated, 0.84 a.u., Leo), Mars (1.5 magnitude, 4.7", 93% illuminated, 1.99 a.u., Virgo), Jupiter (-2.7 magnitude, 45.8", 99% illuminated, 4.31 a.u., Pisces), Saturn (1.1 magnitude, 16.4", 100% illuminated, 10.13 a.u., Virgo), Uranus (5.8 magnitude, 3.7", 100% illuminated, 19.43 a.u., Pisces), Neptune (7.8 magnitude, 2.4", 100% illuminated, 29.05 a.u., Aquarius), and Pluto (14.0 magnitude, 0.1", 100% illuminated, 31.06 a.u., Sagittarius).

Mercury, Venus, Mars, and Saturn are visible in the west this month. At midnight, Jupiter and Uranus can be found in the southeast and Neptune in the southwest. Jupiter and Uranus are in the southwest in the morning.

At midmonth, Mercury is visible during evening twilight, Venus sets at 10:00 p.m. EDT, Mars sets at 10:00 p.m. EDT, Jupiter rises at 10:00 p.m. EDT and transits the meridian at 4:00 p.m. EDT, and Saturn sets at 10:00 p.m. EDT for observers at latitude 40 degrees north.

Mercury is best seen during the first two weeks of August when it's very low in the west-southwest about 20 degrees to the southwest of Venus. Southern hemisphere observers are favored.

Venus reaches greatest eastern elongation on August 20. It increases in magnitude to -4.6 by the end of the month. Venus is three degrees south of Saturn on August 10 and two degrees south of Mars on August 23. During the first twelve days of the month, Venus, Mars, and Saturn fit within a binocular field of view. The three planets are most tightly grouped on August 7, when they all lie within a circle with a diameter of 4.8 degrees, thus forming a "planetary trio". Venus, Mars, and the first-magnitude star Spica form a triangle from August 29 into early September. Spica is one degree north of Venus on the evening of August 31.

Mars passes 1.9 degrees south of Saturn on August 1 and lies two degrees south of Venus on August 23. The Red Planet is less than 4.5 arc seconds in angular diameter by the end of the month.

During August, Jupiter shines brightly at magnitude -2.8 and spans 48 arc seconds. The distance between Jupiter and Uranus decreases from 3 to 1.8 degrees this month due to Jupiter's retrograde motion. On August 12, Europa is in eclipse from 12:37 a.m. EDT to 5:17 a.m. EDT. Europa is also eclipsed by Jupiter on August 19 beginning at 3:13 a.m. EDT. Click on http://skyandtelescope.com/observing/objects/planets/article_107_1.asp to determine transit times of the central meridian by the Great Red Spot. Data on the Galilean satellites is available at <http://skytonight.com/observing/objects/javascript/3307071.html>

Saturn is 1.9 degrees north of Mars on August 1 and three degrees north of Venus on August 10. The planet is less than 16 arc seconds in angular size by month's end.

Uranus is three degrees west of Jupiter on August 1. By the end of the month, it lies 1.8 degrees to the west of Jupiter. On August 25, Uranus passes 0.9 degree south of the point of the vernal equinox.

This month Neptune moves westward from Aquarius into Capricornus. The eighth planet is located two degrees from the fifth-magnitude star Mu Capricorni at the start of the month. By August 31, it's one degree from the star.

Finder charts for Uranus and Neptune are posted at http://media.skyandtelescope.com/documents/Uranus_Neptune_2010.pdf

The dwarf planet Pluto is located about 2.7 degrees north of the fourth-magnitude star Mu Sagittarii. A finder chart is available on page 60 of the July 2010 issue of *Sky & Telescope* and online at <http://www.skyandtelescope.com/skytel/beyondthepage/89002802.html>

Asteroid 1 Ceres decreases in brightness from magnitude 8.1 to magnitude 8.6 during August as it passes through southern Ophiuchus. Ceres is within three degrees of the third-magnitude star Theta Ophiuchi for the entire month. The eleventh-magnitude asteroid 16 Psyche will occult an eighth-magnitude star from the southern United States on the morning of August 21. For further information, see http://asteroidoccultation.com/2010_08/0821_16_21181_Summary.txt

Comet 10P/Tempel travels southeastward through Cetus this month. The eight-magnitude periodic comet is just north of the third-magnitude star Eta Ceti on the night of August 4. Browse <http://www.aerith.net/comet/future-n.html> for additional information on this and other visible comets.

A free star map for August can be downloaded at <http://www.skymaps.com/downloads.html>

For location (40°16'N 76°45'W) Hummelstown, PA, USA:
August 1 planet information (24 hr. clock):

	R.A.	DEC.	DIA."	MAG.	%ILL.	RISE	TRANSIT	SET
Mercury	10:28	+09°00'	6.9	+0.2	57.0	08:13	14:49	21:22
Venus	11:37	+02°34'	20.1	-4.2	58.0	09:45	15:58	22:09
Mars	12:06	-00°07'	4.7	+1.5	93.2	10:23	16:25	22:29
Jupiter	00:14	-00°01'	45.8	-2.7	99.3	22:32	04:34	10:38
Saturn	12:07	+01°41'	16.4	+1.1	99.8	10:24	16:25	22:41
Uranus	00:02	-00°35'	3.5	+5.8	100.0	22:22	04:23	10:24
Neptune	22:01	-12°41'	2.3	+7.8	100.0	21:03	02:21	07:42
Pluto	18:13	-18°25'	0.1	+14.0	100.0	17:40	22:34	03:36

September 1 planet information (24 hr. clock):

	R.A.	DEC.	DIA."	MAG.	%ILL.	RISE	TRANSIT	SET
Mercury	10:51	+02°40'	10.7	+4.2	1.9	07:04	13:06	19:28
Venus	13:24	-12°08'	28.6	-4.4	41.7	10:21	15:42	21:04
Mars	13:17	-08°06'	4.4	+1.5	95.0	10:10	15:35	21:11
Jupiter	00:06	-01°03'	49.1	-2.9	99.9	20:26	02:24	08:25
Saturn	12:19	+00°20'	15.9	+1.1	99.9	08:30	14:35	20:39
Uranus	23:59	-00°57'	3.6	+5.7	100.0	20:19	02:17	08:18
Neptune	21:57	-12°58'	2.3	+7.8	100.0	22:12	00:16	08:48
Pluto	18:15	-18°31'	0.1	+14.0	100.0	15:36	20:30	01:31

For location (40°16'N 76°45'W) Hummelstown, PA, USA:
August 1:

Astronomical twilight starts: 4:15 a.m.
Nautical twilight starts: 4:57 a.m.
Civil twilight starts: 5:34 a.m.
Sunrise: 6:05 a.m.
Sunset: 8:21 p.m.
Civil twilight ends: 8:52 p.m.
Nautical twilight ends: 9:29 p.m.
Astronomical twilight ends: 10:10 p.m.

September 1:

Astronomical twilight starts: 4:58 a.m.
Nautical twilight starts: 5:33 a.m.
Civil twilight starts: 6:06 a.m.
Sunrise: 6:34 a.m.
Sunset: 7:39 p.m.
Civil twilight ends: 8:06 p.m.
Nautical twilight ends: 8:40 p.m.
Astronomical twilight ends: 9:14 p.m.

Comet information for: July 11, 2010 (New Moon)

	Constellation	Rises	Transits	Sets
10P/Tempel 2	Cetus	11:48 p.m.	5:13 a.m.	10:38 a.m.
103P/Hartley 2	Pegasus	6:43 p.m.	2:29 a.m.	10:15 a.m.
81P/Wild 2	Libra	2:02 p.m.	7:12 p.m.	12:23 a.m.
C/2007 Q3 (Siding Springs)	Boötes	7:07 a.m.	6:59 p.m.	6:38 a.m.
C/2009 K5 (McNaught)	Lynx	circumpolar	12:02 p.m.	
65P/Gunn	Microscopium	8:56 p.m.	12:46 a.m.	4:35 a.m.
C/2008 FK75 (Lemmon-Siding Springs)	Hercules	12:05 p.m.	9:22 p.m.	6:39 a.m.

The objects listed below are located between 18:00 and 20:00 hours of right ascension.

Sixty binary and multiple stars for August:

5 Aquilae, Struve 2404, 11 Aquilae, Struve 2426, 15 Aquilae, Struve 2449, 23 Aquilae, Struve 2532, Pi Aquilae, 57 Aquilae (Aquila); Beta Cygni (Albireo), 16 Cygni, Delta Cygni, 17 Cygni (Cygnus); 41 & 40 Draconis, 39 Draconis, Struve 2348, Sigma Draconis, Struve 2573, Epsilon Draconis (Draco); 95 Herculis, 100 Herculis, Struve 2289, Struve 2411 (Hercules); Struve 2349, Struve 2372, Epsilon-1 & Epsilon-2 Lyrae (the Double-Double), Zeta-2 Lyrae, Beta Lyrae, Otto Struve 525, Struve 2470 & Struve 2474 (the Other Double-Double) (Lyra); 67 Ophiuchi, 69 Ophiuchi, 70 Ophiuchi, Struve 2276, 74 Ophiuchi (Ophiuchus); Mu Sagittarii, Eta Sagittarii, 21 Sagittarii, Zeta Sagittarii, H N 119, 52 Sagittarii, 54 Sagittarii (Sagittarius); Struve 2306, Delta Scuti, Struve 2373 (Scutum); Struve 2296, Struve 2303, 59 Serpentis, Theta Serpentis (Serpens Cauda); Struve 2445, Struve 2455, Struve 2457, 4 Vupeculae, Struve 2521, Struve 2523, Struve 2540, Struve 2586, Otto Struve 388, Struve 2599 (Vulpecula)

Challenge binary star for August: Alvan Clark 11 (ADS 11324) (Serpens Cauda)

Notable variable star for August: RT Cygni

Notable carbon star for August: V Aquilae

Eighty deep-sky objects for August:

B139, B142, B143, NGC 6709, NGC 6738, NGC 6741, NGC 6751, NGC 6755, NGC 6772, NGC 6778, NGC 6781, NGC 6804, PK64+5.1 (Aquila); NGC 6819, NGC 6826, NGC 6834, (Cygnus); NGC 6643, NGC 6742 (Draco); DoDz 9 (Hercules); M56, M57, NGC 6703, NGC 6791, Stel (Lyra); NGC 6572, NGC 6633 (Ophiuchus); H20, M71 (Sagitta); B86, B87, B90, B92, B93, M8, M17, M18, M20, M21, M22, M23, M24, M25, M28, M54, M55, M69, M70, M75, NGC 6520, NGC 6544, NGC 6546, NGC 6553, NGC 6565, NGC 6603, NGC 6818, NGC 6822 (Sagittarius); IC 4703, IC 4756, M16, NGC 6604 (Serpens Cauda); B100, B101, B103, B104, B110, B111, B113, Bas 1, IC 1295, M11, M26, NGC 6649, NGC 6712 (Scutum); Cr 399 (asterism), M27, NGC 6802, NGC 6823, NGC 6834, NGC 6940, St 1 (Vulpecula)

Top ten deep-sky objects for August:

M8, M11, M16, M17, M20, M22, M24, M27, M55, M57

Challenge deep-sky object for August: Abell 53 (Aquila)

Top ten binocular deep-sky objects for August:

Cr 399, IC 4765, M8, M11, M17, M22, M24, M25, M27, NGC 6633 (IC 4756 and NGC 6633 collectively are sometimes called the Binocular Double Cluster)

August 2010 Jupiter Events

Table created using The Planets 2.02. A FREE program available from <http://www.cpac.org.uk>

Jupiter events are calculated for an observer in Hummelstown, PA, USA.

40°16'N 76°45'W

Times are Eastern Daylight Saving Time (-4 hrs. U.T.).

Times may differ by a minute or two to those quoted in the Astronomical Almanac.

It's suggested that you start observing a few minutes before the event is scheduled. There may also be a slight deviation from my observing site.

un	1 Aug 2010	00:13	Io : Transit Ends
Sun	1 Aug 2010	02:26	GRS: Crosses Central Meridian
Sun	1 Aug 2010	06:08	Viewing Suspended - Sun Rises
Sun	1 Aug 2010	22:36	Viewing Resumed - Jupiter Rises
Mon	2 Aug 2010	06:09	Viewing Suspended - Sun Rises
Mon	2 Aug 2010	22:32	Viewing Resumed - Jupiter Rises
Tue	3 Aug 2010	03:52	Eur: Shadow Transit Begins S
Tue	3 Aug 2010	04:04	GRS: Crosses Central Meridian
Tue	3 Aug 2010	06:06	Eur: Transit Begins ST
Tue	3 Aug 2010	06:09	Viewing Suspended - Sun Rises
Tue	3 Aug 2010	22:28	Viewing Resumed - Jupiter Rises
Tue	3 Aug 2010	23:55	GRS: Crosses Central Meridian
Wed	4 Aug 2010	04:59	Cal: Disappears into Eclipse
Wed	4 Aug 2010	06:10	Viewing Suspended - Sun Rises
Wed	4 Aug 2010	22:24	Viewing Resumed - Jupiter Rises
Thu	5 Aug 2010	02:55	Eur: Reappears from Occultation
Thu	5 Aug 2010	05:42	GRS: Crosses Central Meridian
Thu	5 Aug 2010	06:11	Viewing Suspended - Sun Rises
Thu	5 Aug 2010	22:20	Viewing Resumed - Jupiter Rises
Thu	5 Aug 2010	23:46	Gan: Shadow Transit Begins S
Fri	6 Aug 2010	01:33	GRS: Crosses Central Meridian
Fri	6 Aug 2010	02:58	Gan: Shadow Transit Ends
Fri	6 Aug 2010	04:14	Gan: Transit Begins T
Fri	6 Aug 2010	04:16	Io : Shadow Transit Begins ST
Fri	6 Aug 2010	05:20	Io : Transit Begins STT
Fri	6 Aug 2010	06:12	Viewing Suspended - Sun Rises
Fri	6 Aug 2010	22:16	Viewing Resumed - Jupiter Rises
Sat	7 Aug 2010	01:37	Io : Disappears into Eclipse
Sat	7 Aug 2010	04:53	Io : Reappears from Occultation
Sat	7 Aug 2010	06:13	Viewing Suspended - Sun Rises
Sat	7 Aug 2010	22:12	Viewing Resumed - Jupiter Rises
Sat	7 Aug 2010	22:45	Io : Shadow Transit Begins S
Sat	7 Aug 2010	23:47	Io : Transit Begins ST
Sun	8 Aug 2010	01:00	Io : Shadow Transit Ends T
Sun	8 Aug 2010	02:01	Io : Transit Ends
Sun	8 Aug 2010	03:11	GRS: Crosses Central Meridian
Sun	8 Aug 2010	06:14	Viewing Suspended - Sun Rises
Sun	8 Aug 2010	22:08	Viewing Resumed - Jupiter Rises
Sun	8 Aug 2010	23:03	GRS: Crosses Central Meridian
Sun	8 Aug 2010	23:20	Io : Reappears from Occultation
Mon	9 Aug 2010	06:15	Viewing Suspended - Sun Rises
Mon	9 Aug 2010	22:04	Viewing Resumed - Jupiter Rises
Tue	10 Aug 2010	04:49	GRS: Crosses Central Meridian
Tue	10 Aug 2010	06:16	Viewing Suspended - Sun Rises
Tue	10 Aug 2010	22:00	Viewing Resumed - Jupiter Rises

Wed 11 Aug 2010 00:41	GRS: Crosses Central Meridian
Wed 11 Aug 2010 06:17	Viewing Suspended - Sun Rises
Wed 11 Aug 2010 21:56	Viewing Resumed - Jupiter Rises
Thu 12 Aug 2010 00:37	Eur: Disappears into Eclipse
Thu 12 Aug 2010 05:17	Eur: Reappears from Occultation
Thu 12 Aug 2010 06:18	Viewing Suspended - Sun Rises
Thu 12 Aug 2010 21:52	Viewing Resumed - Jupiter Rises
Fri 13 Aug 2010 02:19	GRS: Crosses Central Meridian
Fri 13 Aug 2010 03:47	Gan: Shadow Transit Begins S
Fri 13 Aug 2010 06:11	Io : Shadow Transit Begins SS
Fri 13 Aug 2010 06:19	Viewing Suspended - Sun Rises
Fri 13 Aug 2010 21:48	Viewing Resumed - Jupiter Rises
Fri 13 Aug 2010 22:10	GRS: Crosses Central Meridian
Fri 13 Aug 2010 22:32	Eur: Shadow Transit Ends T
Sat 14 Aug 2010 00:18	Eur: Transit Ends
Sat 14 Aug 2010 03:31	Io : Disappears into Eclipse
Sat 14 Aug 2010 06:20	Viewing Suspended - Sun Rises
Sat 14 Aug 2010 21:44	Viewing Resumed - Jupiter Rises
Sun 15 Aug 2010 00:39	Io : Shadow Transit Begins S
Sun 15 Aug 2010 01:34	Io : Transit Begins ST
Sun 15 Aug 2010 02:55	Io : Shadow Transit Ends T
Sun 15 Aug 2010 03:47	Io : Transit Ends
Sun 15 Aug 2010 03:57	GRS: Crosses Central Meridian
Sun 15 Aug 2010 06:21	Viewing Suspended - Sun Rises
Sun 15 Aug 2010 21:40	Viewing Resumed - Jupiter Rises
Sun 15 Aug 2010 22:00	Io : Disappears into Eclipse
Sun 15 Aug 2010 23:48	GRS: Crosses Central Meridian
Mon 16 Aug 2010 01:06	Io : Reappears from Occultation
Mon 16 Aug 2010 06:22	Viewing Suspended - Sun Rises
Mon 16 Aug 2010 21:36	Viewing Resumed - Jupiter Rises
Mon 16 Aug 2010 22:14	Io : Transit Ends
Tue 17 Aug 2010 00:08	Gan: Reappears from Occultation
Tue 17 Aug 2010 05:35	GRS: Crosses Central Meridian
Tue 17 Aug 2010 06:23	Viewing Suspended - Sun Rises
Tue 17 Aug 2010 21:32	Viewing Resumed - Jupiter Rises
Wed 18 Aug 2010 01:26	GRS: Crosses Central Meridian
Wed 18 Aug 2010 06:24	Viewing Suspended - Sun Rises
Wed 18 Aug 2010 21:28	Viewing Resumed - Jupiter Rises
Thu 19 Aug 2010 03:14	Eur: Disappears into Eclipse
Thu 19 Aug 2010 06:24	Viewing Suspended - Sun Rises
Thu 19 Aug 2010 21:24	Viewing Resumed - Jupiter Rises
Fri 20 Aug 2010 03:04	GRS: Crosses Central Meridian
Fri 20 Aug 2010 06:25	Viewing Suspended - Sun Rises
Fri 20 Aug 2010 21:19	Viewing Resumed - Jupiter Rises
Fri 20 Aug 2010 22:20	Eur: Shadow Transit Begins S
Fri 20 Aug 2010 22:55	GRS: Crosses Central Meridian
Fri 20 Aug 2010 23:19	Cal: Disappears into Eclipse S
Fri 20 Aug 2010 23:55	Eur: Transit Begins ST
Sat 21 Aug 2010 01:07	Eur: Shadow Transit Ends T
Sat 21 Aug 2010 01:14	Cal: Reappears from Eclipse T
Sat 21 Aug 2010 02:36	Eur: Transit Ends
Sat 21 Aug 2010 05:25	Io : Disappears into Eclipse
Sat 21 Aug 2010 06:26	Viewing Suspended - Sun Rises
Sat 21 Aug 2010 21:15	Viewing Resumed - Jupiter Rises
Sun 22 Aug 2010 02:34	Io : Shadow Transit Begins S
Sun 22 Aug 2010 03:20	Io : Transit Begins ST
Sun 22 Aug 2010 04:42	GRS: Crosses Central Meridian

Sun 22 Aug 2010 04:49	Io : Shadow Transit Ends	T
Sun 22 Aug 2010 05:33	Io : Transit Ends	
Sun 22 Aug 2010 06:27	Viewing Suspended - Sun Rises	
Sun 22 Aug 2010 21:11	Viewing Resumed - Jupiter Rises	
Sun 22 Aug 2010 23:54	Io : Disappears into Eclipse	
Mon 23 Aug 2010 00:33	GRS: Crosses Central Meridian	
Mon 23 Aug 2010 02:51	Io : Reappears from Occultation	
Mon 23 Aug 2010 06:28	Viewing Suspended - Sun Rises	
Mon 23 Aug 2010 21:07	Viewing Resumed - Jupiter Rises	
Mon 23 Aug 2010 21:44	Gan: Disappears into Eclipse	S
Mon 23 Aug 2010 21:46	Io : Transit Begins	ST
Mon 23 Aug 2010 23:18	Io : Shadow Transit Ends	T
Mon 23 Aug 2010 23:59	Io : Transit Ends	
Tue 24 Aug 2010 03:32	Gan: Reappears from Occultation	
Tue 24 Aug 2010 06:20	GRS: Crosses Central Meridian	
Tue 24 Aug 2010 06:29	Viewing Suspended - Sun Rises	
Tue 24 Aug 2010 21:03	Viewing Resumed - Jupiter Rises	
Tue 24 Aug 2010 21:17	Io : Reappears from Occultation	
Wed 25 Aug 2010 02:11	GRS: Crosses Central Meridian	
Wed 25 Aug 2010 06:30	Viewing Suspended - Sun Rises	
Wed 25 Aug 2010 20:59	Viewing Resumed - Jupiter Rises	
Wed 25 Aug 2010 22:02	GRS: Crosses Central Meridian	
Thu 26 Aug 2010 05:51	Eur: Disappears into Eclipse	
Thu 26 Aug 2010 06:31	Viewing Suspended - Sun Rises	
Thu 26 Aug 2010 20:55	Viewing Resumed - Jupiter Rises	
Fri 27 Aug 2010 03:49	GRS: Crosses Central Meridian	
Fri 27 Aug 2010 06:32	Viewing Suspended - Sun Rises	
Fri 27 Aug 2010 20:50	Viewing Resumed - Jupiter Rises	
Fri 27 Aug 2010 23:40	GRS: Crosses Central Meridian	
Sat 28 Aug 2010 00:56	Eur: Shadow Transit Begins	S
Sat 28 Aug 2010 02:12	Eur: Transit Begins	ST
Sat 28 Aug 2010 03:43	Eur: Shadow Transit Ends	T
Sat 28 Aug 2010 04:53	Eur: Transit Ends	
Sat 28 Aug 2010 06:33	Viewing Suspended - Sun Rises	
Sat 28 Aug 2010 20:46	Viewing Resumed - Jupiter Rises	
Sun 29 Aug 2010 04:28	Io : Shadow Transit Begins	S
Sun 29 Aug 2010 05:05	Io : Transit Begins	ST
Sun 29 Aug 2010 05:27	GRS: Crosses Central Meridian	
Sun 29 Aug 2010 06:34	Viewing Suspended - Sun Rises	
Sun 29 Aug 2010 20:42	Viewing Resumed - Jupiter Rises	
Sun 29 Aug 2010 23:05	Eur: Reappears from Occultation	
Mon 30 Aug 2010 01:18	GRS: Crosses Central Meridian	
Mon 30 Aug 2010 01:48	Io : Disappears into Eclipse	
Mon 30 Aug 2010 04:36	Io : Reappears from Occultation	
Mon 30 Aug 2010 06:35	Viewing Suspended - Sun Rises	
Mon 30 Aug 2010 20:38	Viewing Resumed - Jupiter Rises	
Mon 30 Aug 2010 21:09	GRS: Crosses Central Meridian	
Mon 30 Aug 2010 22:57	Io : Shadow Transit Begins	S
Mon 30 Aug 2010 23:31	Io : Transit Begins	ST
Tue 31 Aug 2010 01:12	Io : Shadow Transit Ends	T
Tue 31 Aug 2010 01:44	Io : Transit Ends	
Tue 31 Aug 2010 01:45	Gan: Disappears into Eclipse	
Tue 31 Aug 2010 06:36	Viewing Suspended - Sun Rises	
Tue 31 Aug 2010 20:34	Viewing Resumed - Jupiter Rises	
Tue 31 Aug 2010 23:02	Io : Reappears from Occultation	

August 2010 Comets

81P/Wild

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 08 01		15 03.54	-13 40.2	1.788	2.187	98.8	27.3	13.4	21.2
2010 08 02		15 04.91	-13 48.0	1.805	2.193	98.2	27.3	13.4	21.2
2010 08 03		15 06.30	-13 55.8	1.821	2.199	97.6	27.2	13.4	21.2
2010 08 04		15 07.69	-14 03.5	1.837	2.205	97.0	27.2	13.5	21.3
2010 08 05		15 09.09	-14 11.2	1.853	2.210	96.4	27.1	13.5	21.3
2010 08 06		15 10.49	-14 18.9	1.870	2.216	95.8	27.1	13.5	21.3
2010 08 07		15 11.91	-14 26.5	1.886	2.222	95.2	27.0	13.6	21.3
2010 08 08		15 13.34	-14 34.2	1.903	2.228	94.6	27.0	13.6	21.3
2010 08 09		15 14.77	-14 41.7	1.920	2.233	94.1	26.9	13.7	21.4
2010 08 10		15 16.21	-14 49.3	1.936	2.239	93.5	26.9	13.7	21.4
2010 08 11		15 17.66	-14 56.8	1.953	2.245	92.9	26.8	13.7	21.4
2010 08 12		15 19.11	-15 04.2	1.970	2.251	92.3	26.7	13.8	21.4
2010 08 13		15 20.58	-15 11.6	1.986	2.257	91.7	26.7	13.8	21.5
2010 08 14		15 22.05	-15 19.0	2.003	2.262	91.1	26.6	13.8	21.5
2010 08 15		15 23.53	-15 26.3	2.020	2.268	90.5	26.5	13.9	21.5
2010 08 16		15 25.01	-15 33.6	2.037	2.274	90.0	26.4	13.9	21.5
2010 08 17		15 26.50	-15 40.8	2.054	2.280	89.4	26.4	13.9	21.5
2010 08 18		15 28.00	-15 48.0	2.071	2.286	88.8	26.3	14.0	21.6
2010 08 19		15 29.51	-15 55.1	2.088	2.292	88.2	26.2	14.0	21.6
2010 08 20		15 31.02	-16 02.2	2.105	2.297	87.6	26.1	14.0	21.6
2010 08 21		15 32.53	-16 09.2	2.122	2.303	87.1	26.0	14.1	21.6
2010 08 22		15 34.06	-16 16.2	2.139	2.309	86.5	25.9	14.1	21.6
2010 08 23		15 35.59	-16 23.1	2.156	2.315	85.9	25.8	14.1	21.7
2010 08 24		15 37.12	-16 30.0	2.173	2.321	85.3	25.7	14.2	21.7
2010 08 25		15 38.67	-16 36.8	2.190	2.327	84.7	25.6	14.2	21.7
2010 08 26		15 40.21	-16 43.6	2.207	2.333	84.2	25.5	14.2	21.7
2010 08 27		15 41.76	-16 50.3	2.225	2.338	83.6	25.4	14.3	21.7
2010 08 28		15 43.32	-16 56.9	2.242	2.344	83.0	25.3	14.3	21.8
2010 08 29		15 44.89	-17 03.5	2.259	2.350	82.4	25.2	14.3	21.8
2010 08 30		15 46.45	-17 10.0	2.276	2.356	81.9	25.1	14.4	21.8
2010 08 31		15 48.03	-17 16.5	2.294	2.362	81.3	25.0	14.4	21.8

C/2007 Q3 (Siding Springs)

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 08 01		14 54.15	+50 53.8	4.007	3.917	77.6	14.7	13.4	
2010 08 02		14 54.97	+50 41.0	4.019	3.925	77.4	14.6	13.5	
2010 08 03		14 55.80	+50 28.3	4.032	3.933	77.2	14.6	13.5	
2010 08 04		14 56.64	+50 15.6	4.044	3.941	76.9	14.5	13.5	
2010 08 05		14 57.50	+50 02.9	4.057	3.949	76.7	14.5	13.5	
2010 08 06		14 58.36	+49 50.2	4.069	3.957	76.5	14.4	13.5	
2010 08 07		14 59.23	+49 37.5	4.082	3.965	76.2	14.4	13.5	
2010 08 08		15 00.12	+49 24.8	4.094	3.973	76.0	14.3	13.6	
2010 08 09		15 01.02	+49 12.1	4.107	3.981	75.8	14.3	13.6	
2010 08 10		15 01.92	+48 59.5	4.119	3.989	75.6	14.2	13.6	
2010 08 11		15 02.84	+48 46.8	4.132	3.997	75.3	14.2	13.6	
2010 08 12		15 03.76	+48 34.2	4.144	4.005	75.1	14.2	13.6	
2010 08 13		15 04.70	+48 21.6	4.156	4.013	74.9	14.1	13.6	
2010 08 14		15 05.64	+48 09.1	4.169	4.021	74.6	14.1	13.6	
2010 08 15		15 06.60	+47 56.6	4.181	4.029	74.4	14.0	13.7	

2010 08 16	15 07.56	+47 44.1	4.194	4.037	74.2	14.0	13.7
2010 08 17	15 08.53	+47 31.6	4.206	4.045	74.0	13.9	13.7
2010 08 18	15 09.51	+47 19.1	4.219	4.053	73.7	13.9	13.7
2010 08 19	15 10.50	+47 06.7	4.231	4.061	73.5	13.8	13.7
2010 08 20	15 11.50	+46 54.4	4.243	4.069	73.3	13.8	13.7
2010 08 21	15 12.50	+46 42.1	4.256	4.078	73.1	13.7	13.7
2010 08 22	15 13.51	+46 29.8	4.268	4.086	72.8	13.7	13.8
2010 08 23	15 14.53	+46 17.5	4.280	4.094	72.6	13.6	13.8
2010 08 24	15 15.56	+46 05.3	4.293	4.102	72.4	13.6	13.8
2010 08 25	15 16.59	+45 53.1	4.305	4.110	72.2	13.5	13.8
2010 08 26	15 17.64	+45 41.0	4.318	4.118	71.9	13.5	13.8
2010 08 27	15 18.68	+45 28.9	4.330	4.126	71.7	13.4	13.8
2010 08 28	15 19.74	+45 16.9	4.342	4.134	71.5	13.4	13.9
2010 08 29	15 20.80	+45 04.9	4.354	4.142	71.3	13.4	13.9
2010 08 30	15 21.87	+44 53.0	4.367	4.150	71.0	13.3	13.9
2010 08 31	15 22.95	+44 41.1	4.379	4.158	70.8	13.3	13.9

C/2008FK75 (Lemmon-Siding Springs)

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 08 01		17 26.24	+41 50.3	4.172	4.537	104.7	12.5	14.7	
2010 08 02		17 26.04	+41 47.2	4.176	4.536	104.3	12.5	14.7	
2010 08 03		17 25.85	+41 43.9	4.181	4.535	104.0	12.5	14.7	
2010 08 04		17 25.69	+41 40.5	4.186	4.534	103.7	12.6	14.7	
2010 08 05		17 25.53	+41 37.0	4.191	4.533	103.3	12.6	14.7	
2010 08 06		17 25.40	+41 33.4	4.195	4.532	103.0	12.6	14.7	
2010 08 07		17 25.28	+41 29.6	4.200	4.532	102.6	12.6	14.7	
2010 08 08		17 25.18	+41 25.6	4.205	4.531	102.3	12.6	14.7	
2010 08 09		17 25.09	+41 21.6	4.210	4.530	102.0	12.6	14.7	
2010 08 10		17 25.03	+41 17.5	4.215	4.529	101.6	12.7	14.7	
2010 08 11		17 24.97	+41 13.2	4.220	4.529	101.3	12.7	14.7	
2010 08 12		17 24.94	+41 08.8	4.225	4.528	100.9	12.7	14.7	
2010 08 13		17 24.93	+41 04.3	4.231	4.527	100.6	12.7	14.7	
2010 08 14		17 24.93	+40 59.7	4.236	4.527	100.2	12.7	14.7	
2010 08 15		17 24.95	+40 55.0	4.241	4.526	99.9	12.7	14.7	
2010 08 16		17 24.98	+40 50.2	4.246	4.525	99.5	12.8	14.7	
2010 08 17		17 25.04	+40 45.3	4.252	4.525	99.2	12.8	14.7	
2010 08 18		17 25.11	+40 40.4	4.257	4.524	98.8	12.8	14.7	
2010 08 19		17 25.20	+40 35.3	4.263	4.523	98.4	12.8	14.7	
2010 08 20		17 25.31	+40 30.1	4.268	4.523	98.1	12.8	14.7	
2010 08 21		17 25.43	+40 24.9	4.274	4.522	97.7	12.8	14.7	
2010 08 22		17 25.58	+40 19.6	4.279	4.522	97.4	12.8	14.7	
2010 08 23		17 25.74	+40 14.2	4.285	4.521	97.0	12.8	14.7	
2010 08 24		17 25.91	+40 08.8	4.290	4.521	96.7	12.8	14.7	
2010 08 25		17 26.11	+40 03.3	4.296	4.520	96.3	12.8	14.7	
2010 08 26		17 26.32	+39 57.7	4.302	4.520	95.9	12.9	14.7	
2010 08 27		17 26.55	+39 52.1	4.307	4.519	95.6	12.9	14.7	
2010 08 28		17 26.80	+39 46.4	4.313	4.519	95.2	12.9	14.7	
2010 08 29		17 27.06	+39 40.6	4.319	4.518	94.9	12.9	14.7	
2010 08 30		17 27.35	+39 34.8	4.325	4.518	94.5	12.9	14.7	
2010 08 31		17 27.64	+39 29.0	4.331	4.517	94.1	12.9	14.7	

P/2010 H2 (Vales)

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 08 01		08 20.07	+13 35.2	2.256	1.256	7.3	5.9	16.7	20.2
2010 08 02		08 23.22	+13 19.6	2.266	1.267	7.4	6.0	16.9	20.3
2010 08 03		08 26.33	+13 04.0	2.277	1.278	7.6	6.0	17.0	20.3
2010 08 04		08 29.40	+12 48.4	2.287	1.289	7.7	6.1	17.1	20.3
2010 08 05		08 32.44	+12 32.8	2.298	1.300	7.9	6.2	17.2	20.4
2010 08 06		08 35.44	+12 17.2	2.308	1.312	8.1	6.2	17.3	20.4
2010 08 07		08 38.41	+12 01.6	2.318	1.323	8.3	6.3	17.5	20.4
2010 08 08		08 41.35	+11 46.0	2.329	1.334	8.4	6.4	17.6	20.5
2010 08 09		08 44.25	+11 30.4	2.339	1.345	8.6	6.5	17.7	20.5
2010 08 10		08 47.12	+11 14.9	2.349	1.356	8.8	6.6	17.8	20.5
2010 08 11		08 49.95	+10 59.3	2.359	1.368	9.0	6.7	17.9	20.5
2010 08 12		08 52.76	+10 43.8	2.370	1.379	9.2	6.7	18.1	20.6
2010 08 13		08 55.53	+10 28.2	2.380	1.390	9.4	6.8	18.2	20.6
2010 08 14		08 58.28	+10 12.7	2.390	1.401	9.6	6.9	18.3	20.6
2010 08 15		09 00.99	+09 57.2	2.400	1.412	9.8	7.0	18.4	20.7
2010 08 16		09 03.67	+09 41.8	2.410	1.423	10.0	7.1	18.5	20.7
2010 08 17		09 06.33	+09 26.4	2.419	1.434	10.3	7.2	18.6	20.7
2010 08 18		09 08.95	+09 11.0	2.429	1.446	10.5	7.3	18.7	20.8
2010 08 19		09 11.55	+08 55.6	2.439	1.457	10.7	7.4	18.8	20.8
2010 08 20		09 14.13	+08 40.3	2.449	1.468	11.0	7.5	18.9	20.8
2010 08 21		09 16.67	+08 25.0	2.458	1.479	11.2	7.7	19.1	20.9
2010 08 22		09 19.19	+08 09.8	2.468	1.490	11.5	7.8	19.2	20.9
2010 08 23		09 21.68	+07 54.5	2.477	1.501	11.7	7.9	19.3	20.9
2010 08 24		09 24.15	+07 39.4	2.486	1.512	12.0	8.0	19.4	20.9
2010 08 25		09 26.59	+07 24.3	2.496	1.523	12.3	8.1	19.5	21.0
2010 08 26		09 29.01	+07 09.2	2.505	1.534	12.6	8.2	19.6	21.0
2010 08 27		09 31.40	+06 54.2	2.514	1.545	12.9	8.4	19.7	21.0
2010 08 28		09 33.77	+06 39.2	2.523	1.556	13.1	8.5	19.8	21.1
2010 08 29		09 36.12	+06 24.2	2.532	1.567	13.4	8.6	19.9	21.1
2010 08 30		09 38.44	+06 09.3	2.541	1.578	13.7	8.7	20.0	21.1
2010 08 31		09 40.74	+05 54.5	2.549	1.589	14.1	8.9	20.1	21.1

C/2009 K5 (McNaught)

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 08 01		08 01.06	+55 47.7	2.616	1.928	38.5	19.1	12.4	
2010 08 02		08 01.75	+55 37.2	2.622	1.937	38.7	19.1	12.5	
2010 08 03		08 02.43	+55 26.9	2.627	1.946	39.0	19.1	12.5	
2010 08 04		08 03.09	+55 16.8	2.633	1.955	39.2	19.2	12.5	
2010 08 05		08 03.73	+55 06.9	2.638	1.964	39.5	19.2	12.5	
2010 08 06		08 04.36	+54 57.2	2.643	1.973	39.8	19.2	12.6	
2010 08 07		08 04.97	+54 47.8	2.648	1.983	40.1	19.2	12.6	
2010 08 08		08 05.56	+54 38.5	2.653	1.992	40.4	19.3	12.6	
2010 08 09		08 06.14	+54 29.5	2.657	2.001	40.7	19.3	12.6	
2010 08 10		08 06.70	+54 20.7	2.661	2.010	41.1	19.4	12.7	
2010 08 11		08 07.25	+54 12.1	2.665	2.020	41.4	19.4	12.7	
2010 08 12		08 07.78	+54 03.7	2.668	2.029	41.8	19.5	12.7	
2010 08 13		08 08.29	+53 55.5	2.671	2.038	42.2	19.5	12.7	
2010 08 14		08 08.79	+53 47.5	2.674	2.048	42.7	19.6	12.7	
2010 08 15		08 09.26	+53 39.7	2.677	2.057	43.1	19.7	12.8	
2010 08 16		08 09.72	+53 32.1	2.679	2.066	43.5	19.7	12.8	
2010 08 17		08 10.17	+53 24.7	2.681	2.076	44.0	19.8	12.8	

2010 08 18	08 10.59	+53 17.5	2.683	2.085	44.5	19.9	12.8
2010 08 19	08 11.00	+53 10.5	2.685	2.095	45.0	20.0	12.9
2010 08 20	08 11.39	+53 03.6	2.686	2.104	45.5	20.1	12.9
2010 08 21	08 11.76	+52 57.0	2.687	2.114	46.0	20.1	12.9
2010 08 22	08 12.12	+52 50.5	2.688	2.124	46.6	20.2	12.9
2010 08 23	08 12.45	+52 44.3	2.689	2.133	47.1	20.3	12.9
2010 08 24	08 12.77	+52 38.2	2.689	2.143	47.7	20.4	13.0
2010 08 25	08 13.06	+52 32.3	2.689	2.153	48.2	20.5	13.0
2010 08 26	08 13.34	+52 26.6	2.689	2.162	48.8	20.6	13.0
2010 08 27	08 13.60	+52 21.0	2.689	2.172	49.4	20.7	13.0
2010 08 28	08 13.84	+52 15.6	2.688	2.182	50.0	20.8	13.0
2010 08 29	08 14.06	+52 10.5	2.687	2.191	50.7	20.9	13.1
2010 08 30	08 14.26	+52 05.4	2.686	2.201	51.3	21.0	13.1
2010 08 31	08 14.43	+52 00.6	2.685	2.211	52.0	21.1	13.1

65P/Gunn

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 08 01		20 55.24	-32 32.3	1.616	2.611	165.4	5.6	12.3	17.6
2010 08 02		20 54.45	-32 36.9	1.619	2.613	165.2	5.7	12.3	17.6
2010 08 03		20 53.65	-32 41.3	1.622	2.615	164.9	5.8	12.3	17.6
2010 08 04		20 52.86	-32 45.6	1.625	2.617	164.6	5.9	12.3	17.6
2010 08 05		20 52.07	-32 49.6	1.628	2.619	164.2	6.1	12.3	17.6
2010 08 06		20 51.29	-32 53.5	1.632	2.621	163.7	6.2	12.3	17.6
2010 08 07		20 50.50	-32 57.2	1.636	2.623	163.2	6.4	12.4	17.7
2010 08 08		20 49.73	-33 00.6	1.640	2.625	162.6	6.6	12.4	17.7
2010 08 09		20 48.96	-33 03.9	1.645	2.628	162.0	6.9	12.4	17.7
2010 08 10		20 48.20	-33 07.0	1.649	2.630	161.3	7.1	12.4	17.7
2010 08 11		20 47.45	-33 09.8	1.654	2.632	160.6	7.4	12.4	17.7
2010 08 12		20 46.71	-33 12.5	1.660	2.634	159.8	7.6	12.4	17.7
2010 08 13		20 45.98	-33 15.0	1.665	2.636	159.1	7.9	12.4	17.8
2010 08 14		20 45.26	-33 17.2	1.671	2.639	158.3	8.2	12.4	17.8
2010 08 15		20 44.56	-33 19.3	1.677	2.641	157.4	8.5	12.4	17.8
2010 08 16		20 43.87	-33 21.1	1.683	2.643	156.6	8.8	12.5	17.8
2010 08 17		20 43.20	-33 22.7	1.689	2.645	155.7	9.0	12.5	17.9
2010 08 18		20 42.54	-33 24.2	1.696	2.648	154.9	9.3	12.5	17.9
2010 08 19		20 41.90	-33 25.4	1.703	2.650	154.0	9.6	12.5	17.9
2010 08 20		20 41.28	-33 26.4	1.710	2.652	153.1	9.9	12.5	17.9
2010 08 21		20 40.68	-33 27.3	1.717	2.654	152.2	10.2	12.5	18.0
2010 08 22		20 40.09	-33 27.9	1.725	2.657	151.3	10.5	12.5	18.0
2010 08 23		20 39.53	-33 28.4	1.732	2.659	150.4	10.8	12.6	18.0
2010 08 24		20 38.99	-33 28.6	1.740	2.661	149.5	11.1	12.6	18.0
2010 08 25		20 38.47	-33 28.7	1.749	2.664	148.5	11.4	12.6	18.0
2010 08 26		20 37.97	-33 28.5	1.757	2.666	147.6	11.7	12.6	18.1
2010 08 27		20 37.49	-33 28.2	1.766	2.668	146.7	12.0	12.6	18.1
2010 08 28		20 37.04	-33 27.7	1.774	2.671	145.7	12.3	12.6	18.1
2010 08 29		20 36.61	-33 27.1	1.783	2.673	144.8	12.6	12.7	18.1
2010 08 30		20 36.20	-33 26.2	1.793	2.675	143.9	12.9	12.7	18.2
2010 08 31		20 35.82	-33 25.2	1.802	2.678	142.9	13.1	12.7	18.2

10P/Tempel 2

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1	m2
2010 08 01		01 02.59	-09 25.5	0.675	1.451	116.8	38.6	8.2	16.0
2010 08 02		01 04.50	-09 34.8	0.674	1.453	117.3	38.3	8.2	16.0

2010 08 03	01 06.36	-09 44.2	0.672	1.455	117.9	38.1	8.2	16.0
2010 08 04	01 08.18	-09 53.9	0.670	1.457	118.4	37.8	8.2	16.0
2010 08 05	01 09.95	-10 03.8	0.668	1.460	118.9	37.5	8.2	16.0
2010 08 06	01 11.68	-10 14.0	0.667	1.462	119.4	37.2	8.2	15.9
2010 08 07	01 13.35	-10 24.4	0.665	1.465	120.0	36.9	8.3	15.9
2010 08 08	01 14.99	-10 35.0	0.664	1.467	120.5	36.5	8.3	15.9
2010 08 09	01 16.57	-10 45.8	0.662	1.470	121.1	36.2	8.3	15.9
2010 08 10	01 18.10	-10 56.8	0.661	1.472	121.7	35.9	8.3	15.9
2010 08 11	01 19.58	-11 08.0	0.660	1.475	122.2	35.5	8.3	15.9
2010 08 12	01 21.02	-11 19.4	0.659	1.478	122.8	35.2	8.3	15.9
2010 08 13	01 22.40	-11 30.9	0.657	1.481	123.4	34.8	8.4	15.9
2010 08 14	01 23.73	-11 42.6	0.656	1.484	124.0	34.5	8.4	15.9
2010 08 15	01 25.01	-11 54.5	0.655	1.487	124.6	34.1	8.4	15.9
2010 08 16	01 26.23	-12 06.5	0.655	1.490	125.2	33.7	8.4	15.9
2010 08 17	01 27.41	-12 18.7	0.654	1.493	125.8	33.4	8.4	15.8
2010 08 18	01 28.53	-12 30.9	0.653	1.496	126.5	33.0	8.4	15.8
2010 08 19	01 29.60	-12 43.3	0.653	1.499	127.1	32.6	8.5	15.8
2010 08 20	01 30.61	-12 55.8	0.652	1.502	127.7	32.2	8.5	15.8
2010 08 21	01 31.58	-13 08.4	0.652	1.506	128.4	31.8	8.5	15.8
2010 08 22	01 32.49	-13 21.0	0.651	1.509	129.0	31.4	8.5	15.8
2010 08 23	01 33.34	-13 33.7	0.651	1.512	129.7	31.0	8.6	15.8
2010 08 24	01 34.14	-13 46.5	0.651	1.516	130.4	30.5	8.6	15.8
2010 08 25	01 34.89	-13 59.3	0.651	1.520	131.0	30.1	8.6	15.8
2010 08 26	01 35.58	-14 12.1	0.651	1.523	131.7	29.7	8.6	15.8
2010 08 27	01 36.22	-14 25.0	0.651	1.527	132.4	29.3	8.7	15.8
2010 08 28	01 36.81	-14 37.8	0.651	1.531	133.1	28.8	8.7	15.8
2010 08 29	01 37.34	-14 50.6	0.652	1.534	133.7	28.4	8.7	15.8
2010 08 30	01 37.81	-15 03.4	0.652	1.538	134.4	28.0	8.7	15.7
2010 08 31	01 38.24	-15 16.2	0.652	1.542	135.1	27.5	8.8	15.7