

Norfolk Astronomical Society



<http://norfolkastronomical.org>

April 2013

Monthly Sky Calendar
Prepared Specifically For
The Hampton Roads Area

Upcoming Regular Meetings

DATE	Monday, April 22, 2013
TIME	6 - 8 PM EST
WHERE	Chesapeake Public Library, Major Hillard branch Conf. Room
TOPIC	Astronomical Software demonstrations

DATE	Monday, May 20, 2013
TIME	6 - 8 PM EST
WHERE	Chesapeake Public Library, Major Hillard branch Conf. Room
TOPIC	The Planet Saturn

Comet C/2011 L4 PanSTARRS Meets The Moon

Photo By Glendon L. Howell



Glen took this image of Comet PanSTARRS and the crescent moon at 8:05 PM EDT on March 12, 2013, from a site near US17 and Ballahack Road in Chesapeake. The trees in the background lie along the Dismal Swamp Canal. The image was acquired by his Canon Digital Rebel XTi DSLR on a tripod, equipped with a Canon EFS 75-300mm zoom set to 190mm. Exposure was 6 seconds at f/5.6 at ISO 800. Look for more of Glen's images on his website "Glen's Universe" at <http://www.freewebs.com/howellgl>

A Night of Observing at Pettigrew State Park

By Kent Blackwell

Comet PanSTARRS was at its brightest on March 9, 2013. Unfortunately, it was also quite close to the setting sun so it could only be seen from a location with a good western horizon. I was considering various sites and at the last minute Robert Hitt and I decided to take our homemade teardrop trailer (nicknamed Gypsy Wagon) to Pettigrew State Park in North Carolina. The campground is located on Lake Phelps, about 95 miles south of Virginia Beach, VA. The campground's boat ramp provides an excellent western horizon.



Before setting up the telescope we walked over to Somerset Place, an antebellum plantation. It was an active plantation from 1786-1865 and encompasses 100,000 acres and was at one time a prosperous plantation of rice, wheat and corn. The plantation operated as a business investment for more than forty years. In 1829 it became the home to two generations of a planter family, Josiah Collins III, his wife Mary and their six sons. When the civil war ended in 1865 so did slavery. Left without unpaid labor, planters such as the Collins family could no longer maintain the plantation system that had characterized much of the antebellum south.

To get to Somerset Place just walk down Carriage Nature Trail from the campground. You'll be able to tour the Collins Family Home and many of the related domestic dependencies as well as reconstructed dwelling places where many of the slaves lived.



Before setting up my telescope at the boat ramp Bob and I enjoyed a nice, hot "Dee Diffrient" spaghetti diner. Thanks, Dee for providing the spaghetti.

After dinner I drove about 500 yards to the boat ramp area to set up my telescope. To my surprise four other amateur astronomers were already setting up telescope in the rather small area. All of them hauled their telescopes in trailers from the Philadelphia, PA area. Telescopes ranged in sizes from 10" to a 25" Obsession. Robert Werkman from Hershey, PA possessed one of the most beautiful telescopes I have ever seen, finished in a highly polished mahogany. He ordered the 22" f/3.5 Dobsonian custom made from an individual in Australia.

All eyes faced west as the sun sank below the horizon. I scanned the skies with 10x50 binoculars as well as with my 80mm f/8 TMB refractor but no luck. None of us were able to see **Comet PanSTARRS**. We had been promised a very bright comet some weeks before but comets are often compared to cats. They both have tails and both do exactly what they want. Astronomer Fred Whipple put it aptly, "If you want to bet on something stick to betting on horses". Instead of reaching naked eye visibility the comet barely reached 1st magnitude, difficult to see so close to the setting sun.

As darkness fell we all knew it was going to be a special night. The sky was beautiful soon after astronomical twilight. The view of mighty Orion reflecting in Lake Phelps was wonderful. The bright star Canopus was on the meridian and only 7-degrees above the southern horizon. Canopus is not usually seen from our northern latitude.

My Sky Quality Meter read 21.3, not bad for early in the evening. By 8:00 pm the reading had climbed to 21.4. Checking the meter at 10:00 pm the reading was 21.5, indicating a very dark sky indeed. By midnight it read 21.82, the darkest sky I have seen in a long time. That means we were seeing naked eye stars fainter than 7th magnitude.

Since the view of the southern horizon was so exceptional I decided to concentrate on southern deep sky objects. First was the large globular cluster **NGC 3201** in Vela, another object rarely seen from our latitude. The

exact date of its discovery is uncertain, perhaps by James Dunlop in 1826 and cataloged at the time as Dunlop 445. **NGC 3201** is a relatively nearby globular cluster at 16,300 light years from the sun. It was easily resolved in my telescope, despite only being a few degrees above the horizon.

I observed several open clusters in southern Puppis before turning my telescope high in the northern sky to explore some Ursa Major NGC galaxies hitherto unseen by me. I managed to view about two-dozen, concentrating on the faintest that could be seen in my 14" telescope. Josh Wright was also exploring faint galaxies with his 25" Obsession while Jim Werth was concentrating on planetary nebulae with his 22" telescope.

I quit about midnight but the others continued on. They had driven all the way from Pennsylvania several nights before and wanted to make the best of the glorious Pettigrew sky. The sky is darker than Coinjock, but, at least for me not as convenient. If you go to Pettigrew to camp I suggest you take every provision you might need because there are few, if any convenience stores nearby.

The rangers at Pettigrew State Park are very accommodating to amateur astronomers. They turned out the streetlight at the boat ramp as well as the light on the outside of the public restroom for me. The campground has been getting very good ratings by those coming to stargaze. The downside is the campsites themselves are, for the most part, located in areas of tall trees. The only place one can get a descent horizon in the boat ramp overlooking Lake Phelps, and space is at a minimum. Another problem is the wind. Being so unsheltered if it's a windy night observing from the ramp would be nearly impossible.

Although we didn't see **Comet PanSTARRS** it was a terrific Saturday night camping trip to Pettigrew State Park. We met four friendly amateur astronomers from Pennsylvania and we all enjoyed mesmerizing dark skies.



International Astronomy Day Saturday, April 20, 2013

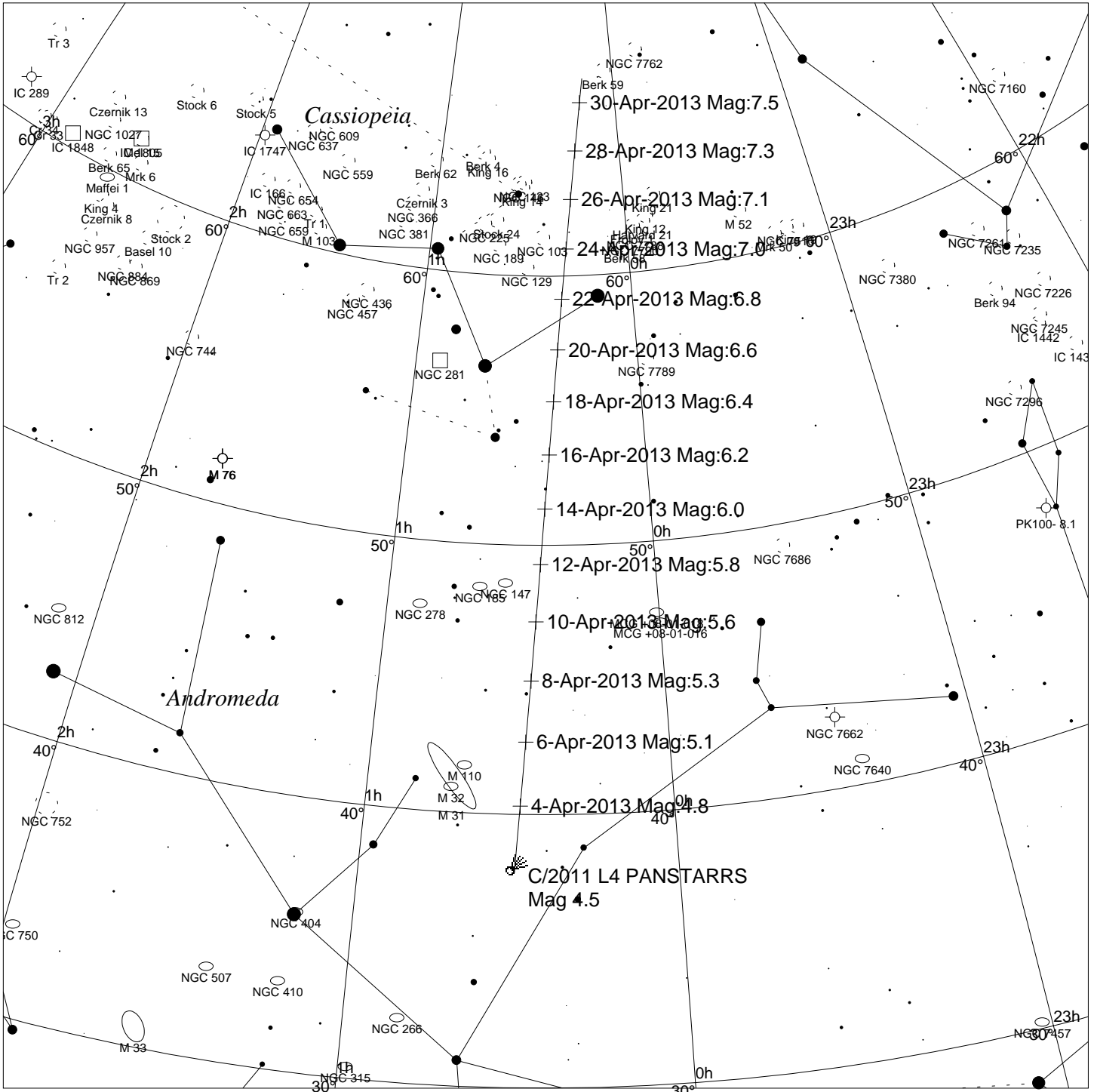
“Bringing Astronomy to the Public”

Telescopes Needed For Outreach At Triple-R-Ranch May 14

Members of the NAS have been invited to come and setup telescopes at Triple-R-Ranch in Chesapeake on Tuesday, May 14. John Gorman, who teaches 6th and 7th grade science at Norfolk Christian Schools has once again invited us to come and setup telescopes for his students.

A quick look ahead for sky events on that date shows the Moon will be visible as a thick waxing crescent, along with the planets Saturn and Jupiter. Other possible targets of the night might include the open cluster Praesepe (M44) in Cancer, the globular cluster M13 in Hercules, and the globular cluster M3 in Canes Venatici. Comet C/2011 L4 PanSTARRS at magnitude +8.4 might also be within reach, lying very near Gamma Cephei.

Comet C/2011 L4 PanSTARRS in April



STARS	SYMBOLS	
● <2	☄ Comet	⊕ Globular Cluster
● 2.5	☿ Asteroid	☉ Planetary Nebula
● 3	☾ Galaxy	☿ Quasar
● 3.5	☼ Open Cluster	○ Other Object
● 4	☐ Bright Nebula	

Comet continues to head north from Andromeda into Cassiopeia. Around April 4 it makes a close pass to M31.

Local Time: 20:00:00 1-Apr-2013 UTC: 00:00:00 2-Apr-2013 Sidereal Time: 07:36:53
 Location: 36° 49' 48" N 76° 16' 48" W RA: 0h25m00s Dec: +50° 00' Field: 40.0° Julian Day: 2456384.5000

Norfolk Astronomical Society Astronomical Calendar

March 2013							April 2013							May 2013						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
					1	2	1	2	3	4	5	6	5	6	7	8	9	10	11	
3	4	5	6	7	8	9	7	8	9	10	11	12	13	12	13	14	15	16	17	18
10	11	12	13	14	15	16	14	15	16	17	18	19	20	19	20	21	22	23	24	25
17	18	19	20	21	22	23	21	22	23	24	25	26	27	26	27	28	29	30	31	
24	25	26	27	28	29	30	28	29	30											
31																				

Calendar

	Start	End	Category	Description	
1 Apr 2013	12:22 AM	12:22 AM	Jupiter	Jupiter sets	
	12:29 AM	12:29 AM	Moon	Moonrise	
	1:11 AM	1:11 AM	Jup GRS	GRS Transit (CML=192)	
	5:25 AM	5:25 AM	Twilight	Astronomical Twilight begins	
	5:53 AM	5:53 AM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 33.6 Alt 31)	
	6:53 AM	6:53 AM	Sun	Sunrise	
	9:57 AM	9:57 AM	Jupiter	Jupiter rises	
	10:45 AM	10:45 AM	Moon	Moonset	
	11:06 AM	11:06 AM	Jup GRS	GRS Transit (CML=192)	
	7:29 PM	7:29 PM	Sun	Sunset	
	7:47 PM	7:47 PM	Sat Pass (HST)	CHES:HST Passes SW to E (Azm 164.6 Alt 17)	
	8:57 PM	8:57 PM	Twilight	Astronomical Twilight ends	
	9:02 PM	9:02 PM	Jup GRS	GRS Transit (CML=192)	
	9:27 PM	9:27 PM	Sat Pass (HST)	CHES:HST Passes SW to E (Azm 206.5 Alt 22)	
	2 Apr 2013	12:19 AM	12:19 AM	Jupiter	Jupiter sets
		1:27 AM	1:27 AM	Moon	Moonrise
		5:02 AM	5:02 AM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 28.9 Alt 19)
		5:23 AM	5:23 AM	Twilight	Astronomical Twilight begins
		6:31 AM	6:31 AM	Iridium Flare	CHES:Iridium 10 Flares at mag.-5.3 (Azm 021 Alt 39)
		6:39 AM	6:39 AM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 225.4 Alt 45)
6:51 AM		6:51 AM	Sun	Sunrise	
6:58 AM		6:58 AM	Jup GRS	GRS Transit (CML=192)	
8:33 AM		8:33 AM	Iridium Flare	CHES:Iridium 81 Flares at mag.-7.5 (Azm 066 Alt 61)	
9:53 AM		9:53 AM	Jupiter	Jupiter rises	
	11:47 AM	11:47 AM	Moon	Moonset	
	4:54 PM	4:54 PM	Jup GRS	GRS Transit (CML=192)	
	6:15 PM	6:15 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)	
	7:30 PM	7:30 PM	Sun	Sunset	
	7:43 PM	7:43 PM	Sat Pass (HST)	CHES:HST Passes SW to E (Azm 167.6 Alt 20)	
	8:58 PM	8:58 PM	Twilight	Astronomical Twilight ends	
	9:23 PM	9:23 PM	Sat Pass (HST)	CHES:HST Passes W to E (Azm 200.1 Alt 25)	
	10:00 PM	10:00 PM	Diary	Pluto 0.9S of Moon Occn	
	10:40 PM	10:40 PM	Jup Sats	I.Oc.D	
	11:03 PM	11:03 PM	Jup Sats	II.Tr.I	
3 Apr 2013	12:01 AM	12:01 AM	Jup Sats	III.Oc.D	
	12:16 AM	12:16 AM	Jupiter	Jupiter sets	
	1:00 AM	1:00 AM	Diary	LAST QUARTER	
	2:19 AM	2:19 AM	Moon	Moonrise	
	2:50 AM	2:50 AM	Jup GRS	GRS Transit (CML=192)	
	4:12 AM	4:12 AM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 31.1 Alt 13)	

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S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
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Calendar

	Start	End	Category	Description
3 Apr 2013	4:30 AM	4:30 AM	Lunar Occult	Moon occults 6.3 mag. double star ZC2787(r)
	5:19 AM	5:19 AM	Lunar Occult	Moon occults 6.6 mag. double star ZC2794(r)
	5:22 AM	5:22 AM	Twilight	Astronomical Twilight begins
	5:32 AM	5:32 AM	Lunar Occult	Moon occults 7.0 mag. star SAO162239(r)
	5:48 AM	5:48 AM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 40.8 Alt 85)
	6:25 AM	6:25 AM	Iridium Flare	CHES:Iridium 13 Flares at mag.-7.2 (Azm 021 Alt 37)
	6:50 AM	6:50 AM	Sun	Sunrise
	9:50 AM	9:50 AM	Jupiter	Jupiter rises
	12:46 PM	12:46 PM	Jup GRS	GRS Transit (CML=192)
	12:52 PM	12:52 PM	Moon	Moonset
	7:31 PM	7:31 PM	Sun	Sunset
	7:38 PM	7:38 PM	Sat Pass (HST)	CHES:HST Passes SW to E (Azm 170.6 Alt 23)
	7:56 PM	7:56 PM	Jup Sats	I.Tr.I
	8:59 PM	8:59 PM	Twilight	Astronomical Twilight ends
9:03 PM	9:03 PM	Jup Sats	I.Sh.I	
9:19 PM	9:19 PM	Sat Pass (HST)	CHES:HST Passes W to SE (Azm 193.2 Alt 25)	
10:08 PM	10:08 PM	Jup Sats	I.Tr.E	
10:41 PM	10:41 PM	Jup GRS	GRS Transit (CML=192)	
11:15 PM	11:15 PM	Jup Sats	I.Sh.E	
4 Apr 2013	12:13 AM	12:13 AM	Jupiter	Jupiter sets
	3:05 AM	3:05 AM	Moon	Moonrise
	4:58 AM	4:58 AM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 36.8 Alt 43)
	5:20 AM	5:20 AM	Twilight	Astronomical Twilight begins
	6:19 AM	6:19 AM	C/2011L4	Comet Pan-STARRS passes 2 degrees west of M31
	6:19 AM	6:19 AM	Iridium Flare	CHES:Iridium 50 Flares at mag.-4.2 (Azm 021 Alt 35)
	6:49 AM	6:49 AM	Sun	Sunrise
	8:37 AM	8:37 AM	Jup GRS	GRS Transit (CML=192)
	9:47 AM	9:47 AM	Jupiter	Jupiter rises
	1:57 PM	1:57 PM	Moon	Moonset
	6:33 PM	6:33 PM	Jup GRS	GRS Transit (CML=192)
	7:32 PM	7:32 PM	Sun	Sunset
	8:06 PM	8:06 PM	Iridium Flare	CHES:Iridium 43 Flares at mag.-1.3 (Azm 147 Alt 65)
	8:28 PM	8:28 PM	Jup Sats	I.Ec.R
9:00 PM	9:00 PM	Twilight	Astronomical Twilight ends	
9:14 PM	9:14 PM	Sat Pass (HST)	CHES:HST Passes W to SE (Azm 186.9 Alt 24)	
10:32 PM	10:32 PM	Jup Sats	II.Ec.R	
5 Apr 2013	12:10 AM	12:10 AM	Jupiter	Jupiter sets
	3:45 AM	3:45 AM	Moon	Moonrise
	4:10 AM	4:10 AM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 84.6 Alt 13)
	4:29 AM	4:29 AM	Jup GRS	GRS Transit (CML=192)

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March 2013							April 2013							May 2013								
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S		
					1	2						5	6						1	2	3	4
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11		
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18		
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25		
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31			
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Calendar

	Start	End	Category	Description
5 Apr 2013	5:19 AM	5:19 AM	Twilight	Astronomical Twilight begins
	5:36 AM	5:36 AM	Lunar Occult	Moon occults 7.1 mag. double star SAO164080(r)
	5:44 AM	5:44 AM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (AzM 227.4 Alt 30)
	6:13 AM	6:13 AM	Iridium Flare	CHES:Iridium 53 Flares at mag.-5.1 (AzM 020 Alt 34)
	6:47 AM	6:47 AM	Sun	Sunrise
	9:44 AM	9:44 AM	Jupiter	Jupiter rises
	2:25 PM	2:25 PM	Jup GRS	GRS Transit (CML=192)
	3:00 PM	3:00 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	3:02 PM	3:02 PM	Moon	Moonset
	7:00 PM	7:00 PM	Meetings	NAS Observing Session (Gates Co., NC)
7:32 PM	7:32 PM	Sat Pass (HST)	CHES:HST Passes SW to E (AzM 120.8 Alt 10)	
7:33 PM	7:33 PM	Sun	Sunset	
8:00 PM	8:00 PM	Iridium Flare	CHES:Iridium 40 Flares at mag.-8.4 (AzM 147 Alt 65)	
8:46 PM	8:46 PM	Sat Pass (ISS)	CHES:ISS Passes S to NE (AzM 160.8 Alt 21)	
9:01 PM	9:01 PM	Twilight	Astronomical Twilight ends	
9:09 PM	9:09 PM	Sat Pass (HST)	CHES:HST Passes W to SE (AzM 190.2 Alt 22)	
6 Apr 2013	12:06 AM	12:06 AM	Jupiter	Jupiter sets
	12:21 AM	12:21 AM	Jup GRS	GRS Transit (CML=192)
	4:22 AM	4:22 AM	Moon	Moonrise
	4:55 AM	4:55 AM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (AzM 146.2 Alt 20)
	5:17 AM	5:17 AM	Twilight	Astronomical Twilight begins
	6:07 AM	6:07 AM	Iridium Flare	CHES:Iridium 54 Flares at mag.-6.7 (AzM 020 Alt 32)
	6:46 AM	6:46 AM	Sun	Sunrise
	9:40 AM	9:40 AM	Jupiter	Jupiter rises
	10:16 AM	10:16 AM	Jup GRS	GRS Transit (CML=192)
	4:06 PM	4:06 PM	Moon	Moonset
	6:00 PM	6:00 PM	Diary	Neptune 5.6S of Moon
	7:34 PM	7:34 PM	Sun	Sunset
	7:56 PM	7:56 PM	Sat Pass (ISS)	CHES:ISS Passes S to E (AzM 127.9 Alt 13)
8:12 PM	8:12 PM	Jup GRS	GRS Transit (CML=192)	
9:02 PM	9:02 PM	Twilight	Astronomical Twilight ends	
9:05 PM	9:05 PM	Sat Pass (HST)	CHES:HST Passes W to SE (AzM 193.0 Alt 19)	
9:14 PM	9:14 PM	Jup Sats	III.Sh.E	
9:32 PM	9:32 PM	Sat Pass (ISS)	CHES:ISS Passes SW to NE (AzM 276.8 Alt 43)	
7 Apr 2013	12:03 AM	12:03 AM	Jupiter	Jupiter sets
	1:00 AM	1:00 AM	Diary	Venus 0.6S of Mars
	4:57 AM	4:57 AM	Moon	Moonrise
	5:15 AM	5:15 AM	Twilight	Astronomical Twilight begins
	6:01 AM	6:01 AM	Iridium Flare	CHES:Iridium 83 Flares at mag.-1.7 (AzM 018 Alt 31)
	6:08 AM	6:08 AM	Jup GRS	GRS Transit (CML=192)

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					1	2		1	2	3	4	5	6			1	2	3	4	
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
31																				

Calendar

	Start	End	Category	Description
7 <small>Apr 2013</small>	6:44 AM	6:44 AM	Sun	Sunrise
	9:37 AM	9:37 AM	Jupiter	Jupiter rises
	4:04 PM	4:04 PM	Jup GRS	GRS Transit (CML=192)
	5:08 PM	5:08 PM	Moon	Moonset
	7:35 PM	7:35 PM	Sun	Sunset
	8:42 PM	8:42 PM	Sat Pass (ISS)	CHES:ISS Passes SW to NE (Azm 139.1 Alt 75)
	9:00 PM	9:00 PM	Sat Pass (HST)	CHES:HST Passes W to SE (Azm 196.0 Alt 16)
	9:03 PM	9:03 PM	Twilight	Astronomical Twilight ends
	10:18 PM	10:18 PM	Sat Pass (ISS)	CHES:ISS Passes W to NE (Azm 309.8 Alt 13)
8 <small>Apr 2013</small>	12:00 AM	12:00 AM	Jupiter	Jupiter sets
	2:00 AM	2:00 AM	Jup GRS	GRS Transit (CML=192)
	5:14 AM	5:14 AM	Twilight	Astronomical Twilight begins
	5:30 AM	5:30 AM	Moon	Moonrise
	5:55 AM	5:55 AM	Iridium Flare	CHES:Iridium 56 Flares at mag. -6.7 (Azm 019 Alt 29)
	6:43 AM	6:43 AM	Sun	Sunrise
	9:34 AM	9:34 AM	Jupiter	Jupiter rises
	11:53 AM	11:53 AM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	11:56 AM	11:56 AM	Jup GRS	GRS Transit (CML=192)
	6:10 PM	6:10 PM	Moon	Moonset
	7:35 PM	7:35 PM	Sun	Sunset
	7:52 PM	7:52 PM	Sat Pass (ISS)	CHES:ISS Passes SW to NE (Azm 133.8 Alt 35)
	8:55 PM	8:55 PM	Sat Pass (HST)	CHES:HST Passes W to SE (Azm 198.8 Alt 14)
	9:04 PM	9:04 PM	Twilight	Astronomical Twilight ends
	9:28 PM	9:28 PM	Sat Pass (ISS)	CHES:ISS Passes W to NE (Azm 329.2 Alt 23)
	9:51 PM	9:51 PM	Jup GRS	GRS Transit (CML=192)
	11:57 PM	11:57 PM	Jupiter	Jupiter sets
9 <small>Apr 2013</small>	5:12 AM	5:12 AM	Twilight	Astronomical Twilight begins
	5:49 AM	5:49 AM	Iridium Flare	CHES:Iridium 84 Flares at mag. 0.7 (Azm 017 Alt 28)
	6:03 AM	6:03 AM	Moon	Moonrise
	6:42 AM	6:42 AM	Sun	Sunrise
	7:47 AM	7:47 AM	Jup GRS	GRS Transit (CML=192)
	9:00 AM	9:00 AM	Diary	Uranus 3.8S of Moon
	9:30 AM	9:30 AM	Jupiter	Jupiter rises
	5:43 PM	5:43 PM	Jup GRS	GRS Transit (CML=192)
	7:10 PM	7:10 PM	Moon	Moonset
	7:36 PM	7:36 PM	Sun	Sunset
	8:37 PM	8:37 PM	Sat Pass (ISS)	CHES:ISS Passes SW to NE (Azm 324.6 Alt 38)
	8:50 PM	8:50 PM	Sat Pass (HST)	CHES:HST Passes W to SE (Azm 201.6 Alt 11)
	9:05 PM	9:05 PM	Twilight	Astronomical Twilight ends
	11:54 PM	11:54 PM	Jupiter	Jupiter sets

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March 2013							April 2013							May 2013								
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S		
					1	2				1	2	3	4	5	6				1	2	3	4
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11		
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18		
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25		
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31			
31																						

Calendar

	Start	End	Category	Description
10 Apr 2013	3:39 AM	3:39 AM	Jup GRS	GRS Transit (CML=192)
	5:10 AM	5:10 AM	Twilight	Astronomical Twilight begins
	5:43 AM	5:43 AM	Iridium Flare	CHES:Iridium 12 Flares at mag. 1.2 (Azm 017 Alt 26)
	6:00 AM	6:00 AM	Diary	NEW MOON
	6:36 AM	6:36 AM	Moon	Moonrise
	6:40 AM	6:40 AM	Sun	Sunrise
	9:27 AM	9:27 AM	Jupiter	Jupiter rises
	10:00 AM	10:00 AM	Diary	Mars 2.6S of Moon
	1:00 PM	1:00 PM	Diary	Venus 3.0S of Moon
	1:35 PM	1:35 PM	Jup GRS	GRS Transit (CML=192)
	7:37 PM	7:37 PM	Sun	Sunset
	7:47 PM	7:47 PM	Sat Pass (ISS)	CHES:ISS Passes SW to NE (Azm 318.5 Alt 74)
	8:09 PM	8:09 PM	Moon	Moonset
	9:06 PM	9:06 PM	Twilight	Astronomical Twilight ends
9:24 PM	9:24 PM	Sat Pass (ISS)	CHES:ISS Passes W to NE (Azm 337.3 Alt 13)	
9:56 PM	9:56 PM	Jup Sats	I.Tr.I	
10:59 PM	10:59 PM	Jup Sats	I.Sh.I	
11:31 PM	11:31 PM	Jup GRS	GRS Transit (CML=192)	
11:51 PM	11:51 PM	Jupiter	Jupiter sets	
11 Apr 2013	5:09 AM	5:09 AM	Twilight	Astronomical Twilight begins
	6:39 AM	6:39 AM	Sun	Sunrise
	7:12 AM	7:12 AM	Moon	Moonrise
	8:42 AM	8:42 AM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	9:24 AM	9:24 AM	Jupiter	Jupiter rises
	9:27 AM	9:27 AM	Jup GRS	GRS Transit (CML=192)
	5:48 PM	5:48 PM	Iridium Flare	CHES:Iridium 86 Flares at mag.-6.7 (Azm 239 Alt 50)
	7:22 PM	7:22 PM	Jup GRS	GRS Transit (CML=192)
	7:38 PM	7:38 PM	Sun	Sunset
	8:32 PM	8:32 PM	Jup Sats	II.Oc.D
	8:33 PM	8:33 PM	Sat Pass (ISS)	CHES:ISS Passes W to NE (Azm 331.9 Alt 18)
9:07 PM	9:07 PM	Twilight	Astronomical Twilight ends	
9:07 PM	9:07 PM	Moon	Moonset	
10:23 PM	10:23 PM	Jup Sats	I.Ec.R	
11:48 PM	11:48 PM	Jupiter	Jupiter sets	
12 Apr 2013	5:07 AM	5:07 AM	Twilight	Astronomical Twilight begins
	5:18 AM	5:18 AM	Jup GRS	GRS Transit (CML=192)
	5:31 AM	5:31 AM	Iridium Flare	CHES:Iridium 90 Flares at mag. 1.7 (Azm 017 Alt 23)
	6:37 AM	6:37 AM	Sun	Sunrise
	7:50 AM	7:50 AM	Moon	Moonrise
	9:21 AM	9:21 AM	Jupiter	Jupiter rises

Norfolk Astronomical Society Astronomical Calendar

March 2013							April 2013							May 2013						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
					1	2						12	13							
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
31																				

Calendar

	Start	End	Category	Description
12 Apr 2013	3:14 PM	3:14 PM	Jup GRS	GRS Transit (CML=192)
	4:00 PM	4:00 PM	Diary	Pluto stationary
	7:39 PM	7:39 PM	Sun	Sunset
	7:42 PM	7:42 PM	Sat Pass (ISS)	CHES:ISS Passes W to NE (Azm 326.9 Alt 28)
	9:08 PM	9:08 PM	Twilight	Astronomical Twilight ends
	9:30 PM	9:30 PM	Iridium Flare	CHES:Iridium 66 Flares at mag. 1.7 (Azm 358 Alt 13)
	10:04 PM	10:04 PM	Moon	Moonset
	11:45 PM	11:45 PM	Jupiter	Jupiter sets
13 Apr 2013	1:10 AM	1:10 AM	Jup GRS	GRS Transit (CML=192)
	5:05 AM	5:05 AM	Twilight	Astronomical Twilight begins
	5:17 AM	5:17 AM	Iridium Flare	CHES:Iridium 84 Flares at mag.-3.0 (Azm 019 Alt 16)
	6:36 AM	6:36 AM	Sun	Sunrise
	8:30 AM	8:30 AM	Moon	Moonrise
	9:17 AM	9:17 AM	Jupiter	Jupiter rises
	11:06 AM	11:06 AM	Jup GRS	GRS Transit (CML=192)
	7:40 PM	7:40 PM	Sun	Sunset
	8:29 PM	8:29 PM	Sat Pass (ISS)	CHES:ISS Passes W to NE (Azm 340.0 Alt 11)
	9:01 PM	9:01 PM	Jup GRS	GRS Transit (CML=192)
	9:09 PM	9:09 PM	Twilight	Astronomical Twilight ends
	9:09 PM	9:09 PM	Jup Sats	III.Tr.E
	9:24 PM	9:24 PM	Iridium Flare	CHES:Iridium 21 Flares at mag. 1.6 (Azm 358 Alt 15)
	10:46 PM	10:46 PM	Jup Sats	III.Sh.I
10:57 PM	10:57 PM	Moon	Moonset	
11:42 PM	11:42 PM	Jupiter	Jupiter sets	
14 Apr 2013	5:04 AM	5:04 AM	Twilight	Astronomical Twilight begins
	5:11 AM	5:11 AM	Iridium Flare	CHES:Iridium 12 Flares at mag.-3.0 (Azm 018 Alt 15)
	5:31 AM	5:31 AM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	6:05 AM	6:05 AM	C/2011L4	Comet Pan-STARRS at naked-eye threshold (CBAT)
	6:35 AM	6:35 AM	Sun	Sunrise
	6:58 AM	6:58 AM	Jup GRS	GRS Transit (CML=192)
	7:00 AM	7:00 AM	Diary	Aldebaran 3.5S of Moon
	9:14 AM	9:14 AM	Jupiter	Jupiter rises
	9:15 AM	9:15 AM	Moon	Moonrise
	4:00 PM	4:00 PM	Diary	Jupiter 2.0N of Moon
	4:53 PM	4:53 PM	Jup GRS	GRS Transit (CML=192)
	5:37 PM	5:37 PM	Iridium Flare	CHES:Iridium 16 Flares at mag.-6.5 (Azm 244 Alt 48)
	7:40 PM	7:40 PM	Sat Pass (ISS)	CHES:ISS Passes W to NE (Azm 14.2 Alt 9)
	7:41 PM	7:41 PM	Sun	Sunset
	9:11 PM	9:11 PM	Twilight	Astronomical Twilight ends
10:17 PM	10:17 PM	Lunar Occult	Moon occults 6.6 mag. double star 760(D)	

Norfolk Astronomical Society Astronomical Calendar

March 2013							April 2013							May 2013						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
					1	2			1	2	3	4	5	6			1	2	3	4
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
31																				

Calendar

	Start	End	Category	Description
14 <small>Apr 2013</small>	11:39 PM	11:39 PM	Jupiter	Jupiter sets
	11:47 PM	11:47 PM	Moon	Moonset
15 <small>Apr 2013</small>	2:49 AM	2:49 AM	Jup GRS	GRS Transit (CML=192)
	5:02 AM	5:02 AM	Twilight	Astronomical Twilight begins
	5:05 AM	5:05 AM	Iridium Flare	CHES:Iridium 86 Flares at mag. 1.8 (Azm 017 Alt 14)
	5:05 AM	5:05 AM	Iridium Flare	CHES:Iridium 90 Flares at mag. 0.1 (Azm 018 Alt 14)
	6:33 AM	6:33 AM	Sun	Sunrise
	9:11 AM	9:11 AM	Jupiter	Jupiter rises
	10:02 AM	10:02 AM	Moon	Moonrise
	12:45 PM	12:45 PM	Jup GRS	GRS Transit (CML=192)
	6:00 PM	6:00 PM	Diary	Moon at apogee
	7:42 PM	7:42 PM	Sun	Sunset
	9:11 PM	9:11 PM	Iridium Flare	CHES:Iridium 64 Flares at mag. 1.2 (Azm 357 Alt 19)
	9:12 PM	9:12 PM	Twilight	Astronomical Twilight ends
	10:41 PM	10:41 PM	Jup GRS	GRS Transit (CML=192)
11:36 PM	11:36 PM	Jupiter	Jupiter sets	
16 <small>Apr 2013</small>	12:34 AM	12:34 AM	Moon	Moonset
	5:01 AM	5:01 AM	Twilight	Astronomical Twilight begins
	6:02 AM	6:02 AM	C/2011L4	Comet Pan-STARRS becomes circumpolar.
	6:32 AM	6:32 AM	Sun	Sunrise
	8:37 AM	8:37 AM	Jup GRS	GRS Transit (CML=192)
	9:08 AM	9:08 AM	Jupiter	Jupiter rises
	10:53 AM	10:53 AM	Moon	Moonrise
	5:27 PM	5:27 PM	Iridium Flare	CHES:Iridium 84 Flares at mag.-4.6 (Azm 249 Alt 45)
	6:32 PM	6:32 PM	Jup GRS	GRS Transit (CML=192)
	7:42 PM	7:42 PM	Sun	Sunset
	9:05 PM	9:05 PM	Iridium Flare	CHES:Iridium 67 Flares at mag. 1.2 (Azm 357 Alt 21)
	9:13 PM	9:13 PM	Twilight	Astronomical Twilight ends
	10:47 PM	10:47 PM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 342.0 Alt 8)
	10:53 PM	10:53 PM	Lunar Occult	Moon occults 6.4 mag. double star ZC1040(d)
11:33 PM	11:33 PM	Jupiter	Jupiter sets	
17 <small>Apr 2013</small>	1:17 AM	1:17 AM	Moon	Moonset
	2:20 AM	2:20 AM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	4:29 AM	4:29 AM	Jup GRS	GRS Transit (CML=192)
	4:59 AM	4:59 AM	Twilight	Astronomical Twilight begins
	6:31 AM	6:31 AM	Sun	Sunrise
	9:05 AM	9:05 AM	Jupiter	Jupiter rises
	11:46 AM	11:46 AM	Moon	Moonrise
	2:24 PM	2:24 PM	Jup GRS	GRS Transit (CML=192)

Norfolk Astronomical Society Astronomical Calendar

March 2013							April 2013							May 2013							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
					1	2			1	2	3	4	5	6			1	2	3	4	
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11	
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18	
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25	
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31		
31																					

Calendar

	Start	End	Category	Description
17 Apr 2013	7:43 PM	7:43 PM	Sun	Sunset
	8:59 PM	8:59 PM	Iridium Flare	CHES:Iridium 72 Flares at mag. 1.6 (Azm 357 Alt 23)
	9:00 PM	9:00 PM	Diary	Mars at conjunction
	9:14 PM	9:14 PM	Twilight	Astronomical Twilight ends
	9:58 PM	9:58 PM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 15.4 Alt 10)
	11:30 PM	11:30 PM	Jupiter	Jupiter sets
18 Apr 2013	12:20 AM	12:20 AM	Jup GRS	GRS Transit (CML=192)
	1:56 AM	1:56 AM	Moon	Moonset
	4:57 AM	4:57 AM	Twilight	Astronomical Twilight begins
	6:29 AM	6:29 AM	Sun	Sunrise
	6:57 AM	6:57 AM	Iridium Flare	CHES:Iridium 38 Flares at mag.-7.3 (Azm 035 Alt 43)
	9:00 AM	9:00 AM	Diary	FIRST QUARTER
	9:01 AM	9:01 AM	Jupiter	Jupiter rises
	10:16 AM	10:16 AM	Jup GRS	GRS Transit (CML=192)
	12:41 PM	12:41 PM	Moon	Moonrise
	7:00 PM	7:00 PM	Iridium Flare	CHES:Iridium 43 Flares at mag.-5.5 (Azm 202 Alt 70)
	7:01 PM	7:01 PM	Iridium Flare	CHES:Iridium 98 Flares at mag.-8.0 (Azm 199 Alt 71)
	7:44 PM	7:44 PM	Sun	Sunset
	8:12 PM	8:12 PM	Jup GRS	GRS Transit (CML=192)
	9:09 PM	9:09 PM	Jup Sats	I.Oc.D
9:15 PM	9:15 PM	Twilight	Astronomical Twilight ends	
10:42 PM	10:42 PM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 333.1 Alt 11)	
11:27 PM	11:27 PM	Jupiter	Jupiter sets	
19 Apr 2013	2:32 AM	2:32 AM	Moon	Moonset
	4:56 AM	4:56 AM	Twilight	Astronomical Twilight begins
	6:08 AM	6:08 AM	Jup GRS	GRS Transit (CML=192)
	6:28 AM	6:28 AM	Sun	Sunrise
	8:58 AM	8:58 AM	Jupiter	Jupiter rises
	1:38 PM	1:38 PM	Moon	Moonrise
	4:03 PM	4:03 PM	Jup GRS	GRS Transit (CML=192)
	7:45 PM	7:45 PM	Sun	Sunset
	8:39 PM	8:39 PM	Jup Sats	I.Tr.E
	9:16 PM	9:16 PM	Twilight	Astronomical Twilight ends
	9:36 PM	9:36 PM	Jup Sats	I.Sh.E
9:53 PM	9:53 PM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 13.8 Alt 17)	
11:00 PM	11:00 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)	
11:24 PM	11:24 PM	Jupiter	Jupiter sets	
20 Apr 2013	12:00 AM	12:00 AM	Event	International Astronomy Day
	2:00 AM	2:00 AM	Jup GRS	GRS Transit (CML=192)

Norfolk Astronomical Society Astronomical Calendar

March 2013							April 2013							May 2013							
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	
					1	2			1	2	3	4	5	6			1	2	3	4	
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11	
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18	
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25	
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31		
31																					

Calendar

	Start	End	Category	Description
20 Apr 2013	3:06 AM	3:06 AM	Moon	Moonset
	4:54 AM	4:54 AM	Twilight	Astronomical Twilight begins
	5:00 AM	5:00 AM	Diary	Mercury 1.8S of Uranus
	6:27 AM	6:27 AM	Sun	Sunrise
	8:55 AM	8:55 AM	Jupiter	Jupiter rises
	11:55 AM	11:55 AM	Jup GRS	GRS Transit (CML=192)
	2:36 PM	2:36 PM	Moon	Moonrise
	7:46 PM	7:46 PM	Sun	Sunset
	8:23 PM	8:23 PM	Jup Sats	II.Tr.E
	9:00 PM	9:00 PM	Diary	Regulus 5.6N of Moon
	9:02 PM	9:02 PM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 22.4 Alt 12)
	9:18 PM	9:18 PM	Twilight	Astronomical Twilight ends
	9:51 PM	9:51 PM	Jup GRS	GRS Transit (CML=192)
21 Apr 2013	10:14 PM	10:14 PM	Jup Sats	II.Sh.E
	10:37 PM	10:37 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 315.9 Alt 14)
	11:01 PM	11:01 PM	Jup Sats	III.Tr.I
	11:21 PM	11:21 PM	Jupiter	Jupiter sets
	1:06 AM	1:06 AM	Lunar Occult	Moon occults 6.2 mag. double star ZC1482(d)
	3:39 AM	3:39 AM	Moon	Moonset
	4:53 AM	4:53 AM	Twilight	Astronomical Twilight begins
	5:55 AM	5:55 AM	C/2011L4	Comet Pan-STARRS passes over galaxy IC10
	6:25 AM	6:25 AM	Sun	Sunrise
	7:47 AM	7:47 AM	Jup GRS	GRS Transit (CML=192)
	8:52 AM	8:52 AM	Jupiter	Jupiter rises
	3:36 PM	3:36 PM	Moon	Moonrise
	5:43 PM	5:43 PM	Jup GRS	GRS Transit (CML=192)
7:47 PM	7:47 PM	Sun	Sunset	
8:43 PM	8:43 PM	Iridium Flare	CHES:Iridium 70 Flares at mag. 1.3 (Azm 350 Alt 27)	
9:19 PM	9:19 PM	Twilight	Astronomical Twilight ends	
9:48 PM	9:48 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 6.6 Alt 33)	
9:48 PM	9:48 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 6.3 Alt 32)	
11:18 PM	11:18 PM	Jupiter	Jupiter sets	
22 Apr 2013	2:04 AM	2:04 AM	Meteor Shower	Lyrids meteor peak (zhr=15)
	3:39 AM	3:39 AM	Jup GRS	GRS Transit (CML=192)
	4:12 AM	4:12 AM	Moon	Moonset
	4:51 AM	4:51 AM	Twilight	Astronomical Twilight begins
	6:24 AM	6:24 AM	Sun	Sunrise
	8:49 AM	8:49 AM	Jupiter	Jupiter rises
	1:34 PM	1:34 PM	Jup GRS	GRS Transit (CML=192)
	4:39 PM	4:39 PM	Moon	Moonrise

Norfolk Astronomical Society Astronomical Calendar

March 2013							April 2013							May 2013						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
					1	2			1	2	3	4	5	6			1	2	3	4
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
31																				

Calendar

	Start	End	Category	Description
22 Apr 2013	6:00 PM	6:00 PM	Meetings	NAS Regular Meeting at Chesapeake Public Library Major Hillard branch
	7:48 PM	7:48 PM	Sun	Sunset
	7:58 PM	7:58 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	8:31 PM	8:31 PM	Iridium Flare	CHES:Iridium 14 Flares at mag.-1.9 (Azm 352 Alt 32)
	8:37 PM	8:37 PM	Iridium Flare	CHES:Iridium 64 Flares at mag. 1.6 (Azm 349 Alt 29)
	8:58 PM	8:58 PM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 30.5 Alt 22)
	9:20 PM	9:20 PM	Twilight	Astronomical Twilight ends
	10:32 PM	10:32 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 289.8 Alt 14)
	11:15 PM	11:15 PM	Jupiter	Jupiter sets
	11:30 PM	11:30 PM	Jup GRS	GRS Transit (CML=192)
23 Apr 2013	4:46 AM	4:46 AM	Moon	Moonset
	4:50 AM	4:50 AM	Twilight	Astronomical Twilight begins
	5:08 AM	5:08 AM	Meteor Shower	pi-Puppids meteor peak (zhr=10)
	6:23 AM	6:23 AM	Sun	Sunrise
	8:46 AM	8:46 AM	Jupiter	Jupiter rises
	9:26 AM	9:26 AM	Jup GRS	GRS Transit (CML=192)
	5:43 PM	5:43 PM	Moon	Moonrise
	7:22 PM	7:22 PM	Jup GRS	GRS Transit (CML=192)
	7:48 PM	7:48 PM	Sun	Sunset
	8:07 PM	8:07 PM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 25.1 Alt 15)
	8:31 PM	8:31 PM	Iridium Flare	CHES:Iridium 67 Flares at mag. 0.9 (Azm 349 Alt 30)
	9:21 PM	9:21 PM	Twilight	Astronomical Twilight ends
	9:43 PM	9:43 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 285.6 Alt 65)
	9:43 PM	9:43 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 285.6 Alt 66)
	11:12 PM	11:12 PM	Jupiter	Jupiter sets
24 Apr 2013	12:16 AM	12:16 AM	Lunar Occult	Moon occults 4.7 mag. double star ZC1815(D) chi Vir
	4:48 AM	4:48 AM	Twilight	Astronomical Twilight begins
	5:18 AM	5:18 AM	Jup GRS	GRS Transit (CML=192)
	5:22 AM	5:22 AM	Moon	Moonset
	6:22 AM	6:22 AM	Sun	Sunrise
	8:42 AM	8:42 AM	Jupiter	Jupiter rises
	3:14 PM	3:14 PM	Jup GRS	GRS Transit (CML=192)
	6:50 PM	6:50 PM	Moon	Moonrise
	7:49 PM	7:49 PM	Sun	Sunset
	8:23 PM	8:23 PM	Iridium Flare	CHES:Iridium 14 Flares at mag. 0.4 (Azm 347 Alt 33)
	8:24 PM	8:24 PM	Iridium Flare	CHES:Iridium 72 Flares at mag.-0.3 (Azm 348 Alt 32)
	8:53 PM	8:53 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 37.2 Alt 51)
	9:00 PM	9:00 PM	Diary	Spica 0.1S of Moon Occn
	9:22 PM	9:22 PM	Twilight	Astronomical Twilight ends
	10:27 PM	10:27 PM	Sat Pass (ISS)	CHES:ISS Passes W to S (Azm 263.2 Alt 10)

Norfolk Astronomical Society Astronomical Calendar

March 2013							April 2013							May 2013						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2		1	2	3	4	5	6		1	2	3	4			
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
31																				

Calendar

	Start	End	Category	Description
24 <small>Apr 2013</small>	11:09 PM	11:09 PM	Jupiter	Jupiter sets
25 <small>Apr 2013</small>	1:10 AM	1:10 AM	Jup GRS	GRS Transit (CML=192)
	4:46 AM	4:46 AM	Twilight	Astronomical Twilight begins
	6:02 AM	6:02 AM	Moon	Moonset
	6:21 AM	6:21 AM	Sun	Sunrise
	8:39 AM	8:39 AM	Jupiter	Jupiter rises
	11:05 AM	11:05 AM	Jup GRS	GRS Transit (CML=192)
	4:00 PM	4:00 PM	Diary	FULL MOON Eclipse
	4:47 PM	4:47 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	6:26 PM	6:26 PM	Iridium Flare	CHES:Iridium 43 Flares at mag.-7.6 (Azm 228 Alt 66)
	7:50 PM	7:50 PM	Sun	Sunset
	7:59 PM	7:59 PM	Moon	Moonrise
	8:02 PM	8:02 PM	Sat Pass (ISS)	CHES:ISS Passes NW to E (Azm 32.9 Alt 28)
	9:00 PM	9:00 PM	Diary	Saturn 3.4N of Moon
	9:01 PM	9:01 PM	Jup GRS	GRS Transit (CML=192)
	9:23 PM	9:23 PM	Twilight	Astronomical Twilight ends
	9:38 PM	9:38 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 228.6 Alt 25)
	11:06 PM	11:06 PM	Jupiter	Jupiter sets
26 <small>Apr 2013</small>	4:45 AM	4:45 AM	Twilight	Astronomical Twilight begins
	6:19 AM	6:19 AM	Sun	Sunrise
	6:47 AM	6:47 AM	Moon	Moonset
	6:57 AM	6:57 AM	Jup GRS	GRS Transit (CML=192)
	8:36 AM	8:36 AM	Jupiter	Jupiter rises
	4:53 PM	4:53 PM	Jup GRS	GRS Transit (CML=192)
	7:51 PM	7:51 PM	Sun	Sunset
	8:12 PM	8:12 PM	Iridium Flare	CHES:Iridium 65 Flares at mag.-7.2 (Azm 347 Alt 36)
	8:27 PM	8:27 PM	Jup Sats	I.Tr.I
	8:48 PM	8:48 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azm 224.1 Alt 52)
	9:09 PM	9:09 PM	Moon	Moonrise
	9:19 PM	9:19 PM	Jup Sats	I.Sh.I
	9:25 PM	9:25 PM	Twilight	Astronomical Twilight ends
	10:40 PM	10:40 PM	Jup Sats	I.Tr.E
	11:03 PM	11:03 PM	Jupiter	Jupiter sets
27 <small>Apr 2013</small>	2:49 AM	2:49 AM	Jup GRS	GRS Transit (CML=192)
	3:24 AM	3:24 AM	Lunar Occult	Moon occults 5.5 mag. double star ZC2233(R) 41 Lib
	4:43 AM	4:43 AM	Twilight	Astronomical Twilight begins
	4:59 AM	4:59 AM	Lunar Occult	Moon occults 4.8 mag. double star ZC2241(R) kappa Lib
	6:18 AM	6:18 AM	Sun	Sunrise
	7:38 AM	7:38 AM	Moon	Moonset

Norfolk Astronomical Society Astronomical Calendar

March 2013							April 2013							May 2013						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2		1	2	3	4	5	6		1	2	3	4			
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
31																				

Calendar

	Start	End	Category	Description
27 Apr 2013	8:33 AM	8:33 AM	Jupiter	Jupiter rises
	12:45 PM	12:45 PM	Jup GRS	GRS Transit (CML=192)
	4:00 PM	4:00 PM	Diary	Moon at perigee
	7:52 PM	7:52 PM	Sun	Sunset
	7:57 PM	7:57 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azim 39.1 Alt 74)
	8:42 PM	8:42 PM	Jup Sats	II.Tr.I
	8:42 PM	8:42 PM	Jup Sats	IEc.R
	9:26 PM	9:26 PM	Twilight	Astronomical Twilight ends
	10:16 PM	10:16 PM	Moon	Moonrise
	10:21 PM	10:21 PM	Jup Sats	II.Sh.I
	10:40 PM	10:40 PM	Jup GRS	GRS Transit (CML=192)
11:00 PM	11:00 PM	Jupiter	Jupiter sets	
28 Apr 2013	4:00 AM	4:00 AM	Diary	Saturn at opposition
	4:42 AM	4:42 AM	Twilight	Astronomical Twilight begins
	5:51 AM	5:51 AM	Sat Pass (HST)	CHES:HST Passes SW to E (Azim 160.1 Alt 12)
	6:17 AM	6:17 AM	Sun	Sunrise
	8:30 AM	8:30 AM	Jupiter	Jupiter rises
	8:35 AM	8:35 AM	Moon	Moonset
	8:36 AM	8:36 AM	Jup GRS	GRS Transit (CML=192)
	1:36 PM	1:36 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	6:32 PM	6:32 PM	Jup GRS	GRS Transit (CML=192)
	7:53 PM	7:53 PM	Sun	Sunset
	8:42 PM	8:42 PM	Sat Pass (ISS)	CHES:ISS Passes NW to S (Azim 230.4 Alt 18)
9:27 PM	9:27 PM	Twilight	Astronomical Twilight ends	
10:57 PM	10:57 PM	Jupiter	Jupiter sets	
11:18 PM	11:18 PM	Moon	Moonrise	
29 Apr 2013	4:28 AM	4:28 AM	Jup GRS	GRS Transit (CML=192)
	4:40 AM	4:40 AM	Twilight	Astronomical Twilight begins
	5:46 AM	5:46 AM	Sat Pass (HST)	CHES:HST Passes SW to E (Azim 163.0 Alt 15)
	6:16 AM	6:16 AM	Sun	Sunrise
	8:27 AM	8:27 AM	Jupiter	Jupiter rises
	9:37 AM	9:37 AM	Moon	Moonset
	2:24 PM	2:24 PM	Jup GRS	GRS Transit (CML=192)
	7:53 PM	7:53 PM	Sat Pass (ISS)	CHES:ISS Passes NW to SE (Azim 174.9 Alt 22)
	7:54 PM	7:54 PM	Sun	Sunset
	9:28 PM	9:28 PM	Twilight	Astronomical Twilight ends
10:54 PM	10:54 PM	Jupiter	Jupiter sets	
30 Apr 2013	12:14 AM	12:14 AM	Moon	Moonrise
	12:20 AM	12:20 AM	Jup GRS	GRS Transit (CML=192)

Norfolk Astronomical Society Astronomical Calendar

March 2013							April 2013							May 2013						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
				1	2		1	2	3	4	5	6		1	2	3	4			
3	4	5	6	7	8	9	7	8	9	10	11	12	13	5	6	7	8	9	10	11
10	11	12	13	14	15	16	14	15	16	17	18	19	20	12	13	14	15	16	17	18
17	18	19	20	21	22	23	21	22	23	24	25	26	27	19	20	21	22	23	24	25
24	25	26	27	28	29	30	28	29	30					26	27	28	29	30	31	
31																				

Calendar

	Start	End	Category	Description
30 <small>Apr 2013</small>	2:04 AM	2:04 AM	Lunar Occult	Moon occults 6.3 mag. star ZC2724(r)
	4:00 AM	4:00 AM	Diary	Pluto 1.0S of Moon Occn
	4:39 AM	4:39 AM	Twilight	Astronomical Twilight begins
	5:41 AM	5:41 AM	Sat Pass (HST)	CHES:HST Passes SW to E (AzM 165.8 Alt 18)
	6:15 AM	6:15 AM	Sun	Sunrise
	8:23 AM	8:23 AM	Jupiter	Jupiter rises
	10:16 AM	10:16 AM	Jup GRS	GRS Transit (CML=192)
	10:43 AM	10:43 AM	Moon	Moonset
	7:54 PM	7:54 PM	Sun	Sunset
	8:11 PM	8:11 PM	Jup GRS	GRS Transit (CML=192)
	9:30 PM	9:30 PM	Twilight	Astronomical Twilight ends
	10:51 PM	10:51 PM	Jupiter	Jupiter sets