

# Norfolk Astronomical Society



*<http://norfolkastronomical.org>*

September 2013

Monthly Sky Calendar  
Prepared Specifically For  
The Hampton Roads Area

## Upcoming Regular Meetings

<b>DATE</b>	Monday, Sept. 16, 2013
<b>TIME</b>	6 - 8 PM EDT
<b>WHERE</b>	Chesapeake Public Library, Major Hillard branch Conf. Room
<b>TOPIC</b>	Spacewatch Comet and Asteroid Hunting Project

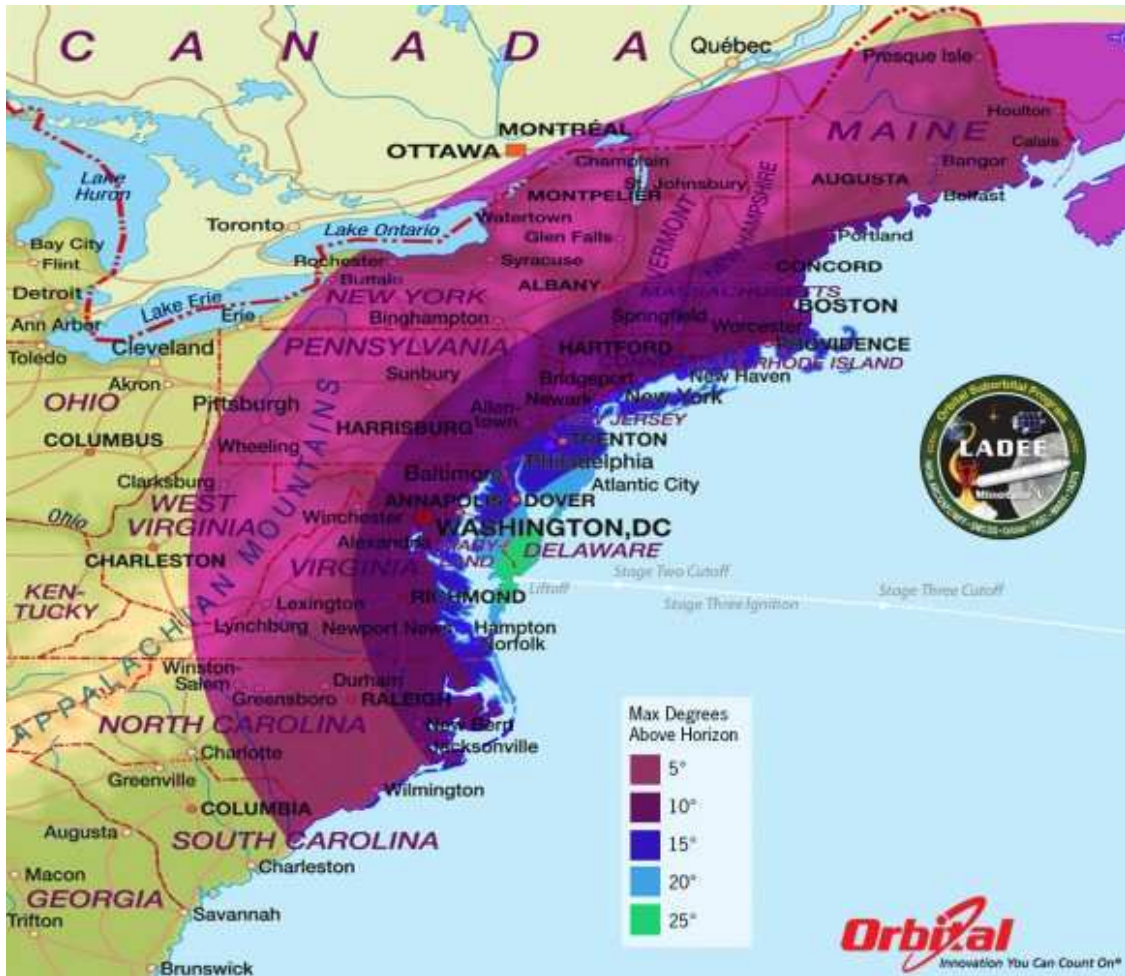
<b>DATE</b>	Monday, Oct. 21, 2013
<b>TIME</b>	6 - 8 PM EDT
<b>WHERE</b>	Chesapeake Public Library, Major Hillard branch Conf. Room
<b>TOPIC</b>	Prospects for Comet ISON

## Globular Cluster M4 in Scorpius

Photo By Glendon L. Howell



Glen took this image of the globular cluster Messier 4 in Scorpius on April 17, 2009 from dark rural Gates Co., NC. The image is a stack of 10 each 4 minute exposures sigma combined in AstroArt 4.0. Images were acquired by his Starlight-Xpress MX7c ccd camera shooting through a 8-inch f/6 Newtonian. Look for more of his work on his website "Glen's Universe" at <http://www.freewebs.com/howellgl>



### Next Wallops Launch:

Mission Name: *Lunar Atmosphere and Dust Environment Explorer*

Launch Vehicle: Minotaur V

Target Date: Sept. 6, 2013

Launch Window: 11:27 p.m. EDT

### NASA Prepares for First Virginia Coast Launch to the Moon

In an attempt to answer prevailing questions about our moon, NASA is making final preparations to launch a probe at 11:27 p.m. EDT Friday, Sept. 6, from NASA's Wallops Flight Facility on Wallops Island, Va.

The small car-sized Lunar Atmosphere and Dust Environment Explorer (LADEE) is a robotic mission that will orbit the moon to gather detailed information about the structure and composition of the thin lunar atmosphere and determine whether dust is being lofted into the lunar sky. A thorough understanding of these characteristics of our nearest celestial neighbor will help researchers understand other bodies in the solar system, such as large asteroids, Mercury, and the moons of outer planets.

"The moon's tenuous atmosphere may be more common in the solar system than we thought," said John Grunsfeld, NASA's associate administrator for science in Washington. "Further understanding of the moon's atmosphere may also help us better understand our diverse solar system and its evolution."

The mission has many firsts, including the first flight of the Minotaur V rocket, testing of a high-data-rate laser communication system, and the first launch beyond Earth orbit from the agency's Virginia Space Coast launch facility.

LADEE also is the first spacecraft designed, developed, built, integrated and tested at NASA's Ames Research Center in Moffett Field, Calif. The probe will launch on a U.S. Air Force Minotaur V rocket, an excess ballistic missile converted into a space launch vehicle and operated by Orbital Sciences Corp. of Dulles, Va.

LADEE was built using an Ames-developed Modular Common Spacecraft Bus architecture, a general purpose spacecraft design that allows NASA to develop, assemble and test multiple modules at the same time. The LADEE bus structure is made of a lightweight carbon composite with a mass of 547.2 pounds -- 844.4 pounds when fully fueled.

"This mission will put the common bus design to the test," said Ames Director S. Pete Worden. "This same common bus can be used on future missions to explore other destinations, including voyages to orbit and land on the moon, low-Earth orbit, and near-Earth objects."

Butler Hine, LADEE project manager at Ames, said the innovative common bus concept brings NASA a step closer to multi-use designs and assembly line production and away from custom design. "The LADEE mission demonstrates how it is possible to build a first class spacecraft at a reduced cost while using a more efficient manufacturing and assembly process," Hine said.

Approximately one month after launch, LADEE will begin its 40-day commissioning phase, the first 30 days of which the spacecraft will be performing activities high above the moon's surface. These activities include testing a high-data-rate laser communication system that will enable higher rates of satellite communications similar in capability to high-speed fiber optic networks on Earth.

After commissioning, LADEE will begin a 100-day science phase to collect data using three instruments to determine the composition of the thin lunar atmosphere and remotely sense lofted dust, measure variations in the chemical composition of the atmosphere, and collect and analyze samples of any lunar dust particles in the atmosphere. Using this set of instruments, scientists hope to address a long-standing question: Was lunar dust, electrically charged by sunlight, responsible for the pre-sunrise glow above the lunar horizon detected during several Apollo missions?

After launch, Ames will serve as a base for mission operations and real-time control of the probe. NASA's Goddard Space Flight Center in Greenbelt, Md., will catalogue and distribute data to a science team located across the country.

NASA's Science Mission Directorate in Washington funds the LADEE mission. Ames manages the overall mission. Goddard manages the science instruments and technology demonstration payload, the science operations center and provides overall mission support. Wallops is responsible for launch vehicle integration, launch services and operations. NASA's Marshall Space Flight Center in Huntsville, Ala., manages LADEE within the Lunar Quest Program Office.

For more information about the LADEE mission, visit: <http://www.nasa.gov/ladee>

## 2013 VAAS Annual Meeting and Star Gaze in October

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**From:** 36dwerth@comcast.net  
**Subject:** 2013 VAAS Annual Meeting and Star Gaze in October  
**Date:** Jul 17, 2013 10:02 AM

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On behalf of the **Northern Virginia Astronomy Club (NOVAC)** I am reaching out to our sister clubs in the area to let you know that we will be hosting the 2013 annual meeting of the **Virginia Association of Astronomical Societies (VAAS)** this fall. It will be held on Saturday October 5<sup>th</sup> at C. M. Crockett Park near Warrenton, VA and will coincide with our big fall public Star Gaze event there. This will be a free event for all members of the invited astronomy clubs.

The VAAS portion of the day will begin early at 8:30 AM. After a light breakfast for attendees, we will have several presentations in our large tent running up to a catered lunch around noon. During the daylight hours members can enjoy safe solar viewing and at night you can set up your equipment by your cars on the large observing field. VAAS attendees are welcome to stay for our afternoon to evening Star Gaze beginning at 3 PM when we will have more presentations and demonstrations.

This is just a preliminary note to confirm contact information for the member clubs to make sure we can reach you when the formal invitations are sent out next month. I would appreciate it if you would reply back to me so that I have an idea of what is working and what isn't. Please also let me know of any updated contact information about your club that you think would be useful.

As mentioned, I will be sending out invitations to all the clubs next month. That will provide links to our web site where you can register for the event. As mentioned, this is a free event but registration will help us get a better idea of the expected numbers when planning how to feed the masses!

Regards,

David Werth  
NOVAC  
VAAS & Star Gaze 2013 Coordinator  
[www.novac.com](http://www.novac.com)

# Norfolk Astronomical Society Astronomical Calendar

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

## Calendar

	Start	End	Category	Description
<b>1</b> Sep 2013	2:11 AM	2:11 AM	Jupiter	Jupiter rises
	2:44 AM	2:44 AM	Jup Sats	I.Ec.D
	3:03 AM	3:03 AM	Moon	Moonrise
	5:09 AM	5:09 AM	Twilight	Astronomical Twilight begins
	6:39 AM	6:39 AM	Sun	Sunrise
	4:39 PM	4:39 PM	Jupiter	Jupiter sets
	5:08 PM	5:08 PM	Moon	Moonset
	5:32 PM	5:32 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	7:35 PM	7:35 PM	Sun	Sunset
	9:06 PM	9:06 PM	Twilight	Astronomical Twilight ends
9:21 PM	9:21 PM	Iridium Flare	CHES:Iridium 20 Flares at mag. 0.1 (Azm 102 Alt 50)	
<b>2</b> Sep 2013	12:00 AM	12:00 AM	Public Holiday	Labor Day holiday
	2:08 AM	2:08 AM	Jupiter	Jupiter rises
	3:58 AM	3:58 AM	Moon	Moonrise
	4:48 AM	4:48 AM	Jup Sats	I.Ec.D
	5:10 AM	5:10 AM	Twilight	Astronomical Twilight begins
	6:39 AM	6:39 AM	Sun	Sunrise
	4:35 PM	4:35 PM	Jupiter	Jupiter sets
	4:40 PM	4:40 PM	Iridium Flare	CHES:Iridium 16 Flares at mag.-6.9 (Azm 257 Alt 59)
	5:44 PM	5:44 PM	Moon	Moonset
	7:33 PM	7:33 PM	Sun	Sunset
9:04 PM	9:04 PM	Twilight	Astronomical Twilight ends	
9:15 PM	9:15 PM	Iridium Flare	CHES:Iridium 3 Flares at mag.-8.2 (Azm 103 Alt 48)	
<b>3</b> Sep 2013	2:05 AM	2:05 AM	Jupiter	Jupiter rises
	3:13 AM	3:13 AM	Jup Sats	I.Tr.I
	4:21 AM	4:21 AM	Jup Sats	I.Sh.E
	4:54 AM	4:54 AM	Moon	Moonrise
	5:11 AM	5:11 AM	Twilight	Astronomical Twilight begins
	5:27 AM	5:27 AM	Jup Sats	I.Tr.E
	6:07 AM	6:07 AM	Iridium Flare	CHES:Iridium 40 Flares at mag.-3.3 (Azm 190 Alt 59)
	6:40 AM	6:40 AM	Sun	Sunrise
	4:32 PM	4:32 PM	Jupiter	Jupiter sets
	6:18 PM	6:18 PM	Moon	Moonset
7:32 PM	7:32 PM	Sun	Sunset	
9:03 PM	9:03 PM	Twilight	Astronomical Twilight ends	
9:09 PM	9:09 PM	Iridium Flare	CHES:Iridium 76 Flares at mag.-2.5 (Azm 105 Alt 48)	
<b>4</b> Sep 2013	2:02 AM	2:02 AM	Jupiter	Jupiter rises
	2:39 AM	2:39 AM	Jup Sats	I.Oc.R
	5:12 AM	5:12 AM	Twilight	Astronomical Twilight begins

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

## Calendar

	Start	End	Category	Description
<b>4</b> Sep 2013	5:52 AM	5:52 AM	Moon	Moonrise
	6:01 AM	6:01 AM	Iridium Flare	CHES:Iridium 77 Flares at mag. -5.1 (Azm 191 Alt 59)
	6:41 AM	6:41 AM	Sun	Sunrise
	7:00 AM	7:00 AM	Diary	Regulus 5.2N of Moon
	2:21 PM	2:21 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	4:29 PM	4:29 PM	Jupiter	Jupiter sets
	6:50 PM	6:50 PM	Moon	Moonset
	7:30 PM	7:30 PM	Sun	Sunset
9:01 PM	9:01 PM	Twilight	Astronomical Twilight ends	
9:03 PM	9:03 PM	Iridium Flare	CHES:Iridium 46 Flares at mag. 1.8 (Azm 106 Alt 46)	
<b>5</b> Sep 2013	1:58 AM	1:58 AM	Jupiter	Jupiter rises
	5:13 AM	5:13 AM	Twilight	Astronomical Twilight begins
	5:58 AM	5:58 AM	Iridium Flare	CHES:Iridium 98 Flares at mag. -1.9 (Azm 190 Alt 59)
	6:42 AM	6:42 AM	Sun	Sunrise
	6:50 AM	6:50 AM	Moon	Moonrise
	8:00 AM	8:00 AM	Diary	NEW MOON
	4:26 PM	4:26 PM	Jupiter	Jupiter sets
	7:22 PM	7:22 PM	Moon	Moonset
	7:29 PM	7:29 PM	Sun	Sunset
8:59 PM	8:59 PM	Twilight	Astronomical Twilight ends	
11:00 PM	11:00 PM	Diary	Venus 1.6N of Spica	
<b>6</b> Sep 2013	1:55 AM	1:55 AM	Jupiter	Jupiter rises
	5:14 AM	5:14 AM	Twilight	Astronomical Twilight begins
	6:00 AM	6:00 AM	Diary	Mercury 4.5N of Moon
	6:43 AM	6:43 AM	Sun	Sunrise
	7:49 AM	7:49 AM	Moon	Moonrise
	4:22 PM	4:22 PM	Jupiter	Jupiter sets
	6:15 PM	6:15 PM	Iridium Flare	CHES:Iridium 82 Flares at mag. -7.9 (Azm 320 Alt 66)
	7:00 PM	7:00 PM	Meetings	NAS Observing Session (Gates Co., NC)
	7:28 PM	7:28 PM	Sun	Sunset
	7:55 PM	7:55 PM	Moon	Moonset
8:58 PM	8:58 PM	Twilight	Astronomical Twilight ends	
9:00 PM	9:00 PM	Iridium Flare	CHES:Iridium 94 Flares at mag. 1.4 (Azm 114 Alt 56)	
11:37 PM	11:37 PM		LADEE launches from NASA Wallops to the Moon	
<b>7</b> Sep 2013	1:52 AM	1:52 AM	Jupiter	Jupiter rises
	5:15 AM	5:15 AM	Twilight	Astronomical Twilight begins
	6:43 AM	6:43 AM	Sun	Sunrise
	8:50 AM	8:50 AM	Moon	Moonrise
	9:17 AM	9:17 AM	Iridium Flare	CHES:Iridium 49 Flares at mag. -7.0 (Azm 095 Alt 59)

# Norfolk Astronomical Society Astronomical Calendar

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

## Calendar

	Start	End	Category	Description
<b>7</b> Sep 2013	11:10 AM	11:10 AM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	4:19 PM	4:19 PM	Jupiter	Jupiter sets
	6:09 PM	6:09 PM	Iridium Flare	CHES:Iridium 18 Flares at mag.-4.9 (Azm 318 Alt 67)
	7:26 PM	7:26 PM	Sun	Sunset
	8:29 PM	8:29 PM	Moon	Moonset
	8:54 PM	8:54 PM	Iridium Flare	CHES:Iridium 45 Flares at mag. 0.8 (Azm 117 Alt 56)
	8:56 PM	8:56 PM	Twilight	Astronomical Twilight ends
<b>8</b> Sep 2013	1:49 AM	1:49 AM	Jupiter	Jupiter rises
	4:11 AM	4:11 AM	Jup Sats	III.Oc.R
	5:16 AM	5:16 AM	Twilight	Astronomical Twilight begins
	5:18 AM	5:18 AM	Jup Sats	II.Ec.D
	5:46 AM	5:46 AM	Iridium Flare	CHES:Iridium 81 Flares at mag. 1.8 (Azm 208 Alt 53)
	6:44 AM	6:44 AM	Sun	Sunrise
	9:52 AM	9:52 AM	Moon	Moonrise
	11:00 AM	11:00 AM	Diary	Spica 0.7S of Moon Occn
	4:16 PM	4:16 PM	Jupiter	Jupiter sets
	5:00 PM	5:00 PM	Diary	Venus 0.5N of Moon Occn
	7:25 PM	7:25 PM	Sun	Sunset
	8:48 PM	8:48 PM	Iridium Flare	CHES:Iridium 20 Flares at mag.-1.9 (Azm 118 Alt 55)
	8:54 PM	8:54 PM	Twilight	Astronomical Twilight ends
9:06 PM	9:06 PM	Moon	Moonset	
<b>9</b> Sep 2013	1:46 AM	1:46 AM	Jupiter	Jupiter rises
	5:17 AM	5:17 AM	Twilight	Astronomical Twilight begins
	5:40 AM	5:40 AM	Iridium Flare	CHES:Iridium 43 Flares at mag.-2.7 (Azm 205 Alt 54)
	6:45 AM	6:45 AM	Sun	Sunrise
	10:55 AM	10:55 AM	Moon	Moonrise
	12:00 PM	12:00 PM	Diary	Saturn 2.4N of Moon
	4:12 PM	4:12 PM	Jupiter	Jupiter sets
	7:23 PM	7:23 PM	Sun	Sunset
	8:42 PM	8:42 PM	Iridium Flare	CHES:Iridium 3 Flares at mag.-1.6 (Azm 118 Alt 53)
	8:53 PM	8:53 PM	Twilight	Astronomical Twilight ends
9:47 PM	9:47 PM	Moon	Moonset	
<b>10</b> Sep 2013	1:43 AM	1:43 AM	Jupiter	Jupiter rises
	2:01 AM	2:01 AM	Jup Sats	II.Tr.I
	2:16 AM	2:16 AM	Jup Sats	II.Sh.E
	4:01 AM	4:01 AM	Jup Sats	I.Sh.I
	4:40 AM	4:40 AM	Jup Sats	II.Tr.E
	5:10 AM	5:10 AM	Jup Sats	I.Tr.I
	5:18 AM	5:18 AM	Twilight	Astronomical Twilight begins



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

## Calendar

	Start	End	Category	Description
<b>10</b> Sep 2013	5:34 AM	5:34 AM	Iridium Flare	CHES:Iridium 40 Flares at mag.-3.8 (Azm 205 Alt 54)
	6:14 AM	6:14 AM	Jup Sats	I.Sh.E
	6:46 AM	6:46 AM	Sun	Sunrise
	7:59 AM	7:59 AM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	11:59 AM	11:59 AM	Moon	Moonrise
	4:09 PM	4:09 PM	Jupiter	Jupiter sets
	7:22 PM	7:22 PM	Sun	Sunset
	8:36 PM	8:36 PM	Iridium Flare	CHES:Iridium 76 Flares at mag. 0.1 (Azm 120 Alt 53)
	8:51 PM	8:51 PM	Twilight	Astronomical Twilight ends
	10:33 PM	10:33 PM	Moon	Moonsset
<b>11</b> Sep 2013	1:39 AM	1:39 AM	Jupiter	Jupiter rises
	4:37 AM	4:37 AM	Jup Sats	I.Oc.R
	5:19 AM	5:19 AM	Twilight	Astronomical Twilight begins
	5:28 AM	5:28 AM	Iridium Flare	CHES:Iridium 77 Flares at mag.-0.3 (Azm 205 Alt 54)
	6:47 AM	6:47 AM	Sun	Sunrise
	1:02 PM	1:02 PM	Moon	Moonrise
	4:06 PM	4:06 PM	Jupiter	Jupiter sets
	7:20 PM	7:20 PM	Sun	Sunset
	8:49 PM	8:49 PM	Twilight	Astronomical Twilight ends
	11:25 PM	11:25 PM	Moon	Moonsset
<b>12</b> Sep 2013	1:36 AM	1:36 AM	Jupiter	Jupiter rises
	1:53 AM	1:53 AM	Jup Sats	I.Tr.E
	5:20 AM	5:20 AM	Twilight	Astronomical Twilight begins
	6:47 AM	6:47 AM	Sun	Sunrise
	1:00 PM	1:00 PM	Diary	FIRST QUARTER
	2:02 PM	2:02 PM	Moon	Moonrise
	4:02 PM	4:02 PM	Jupiter	Jupiter sets
	7:19 PM	7:19 PM	Sun	Sunset
	8:48 PM	8:48 PM	Twilight	Astronomical Twilight ends
<b>13</b> Sep 2013	12:22 AM	12:22 AM	Moon	Moonsset
	1:33 AM	1:33 AM	Jupiter	Jupiter rises
	4:48 AM	4:48 AM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	5:19 AM	5:19 AM	Iridium Flare	CHES:Iridium 17 Flares at mag.-5.2 (Azm 214 Alt 50)
	5:21 AM	5:21 AM	Twilight	Astronomical Twilight begins
	5:22 AM	5:22 AM	Iridium Flare	CHES:Iridium 98 Flares at mag.-7.9 (Azm 211 Alt 51)
	6:48 AM	6:48 AM	Sun	Sunrise
	2:58 PM	2:58 PM	Moon	Moonrise
	3:59 PM	3:59 PM	Jupiter	Jupiter sets
	7:17 PM	7:17 PM	Sun	Sunset

# Norfolk Astronomical Society Astronomical Calendar

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

## Calendar

	Start	End	Category	Description
<b>13</b> Sep 2013	8:27 PM	8:27 PM	Iridium Flare	CHES:Iridium 94 Flares at mag. 0.9 (Azm 134 Alt 59)
	8:46 PM	8:46 PM	Twilight	Astronomical Twilight ends
	9:00 PM	9:00 PM	Diary	Pluto 1.4S of Moon
<b>14</b> Sep 2013	1:25 AM	1:25 AM	Moon	Moonset
	1:30 AM	1:30 AM	Jupiter	Jupiter rises
	5:19 AM	5:19 AM	Iridium Flare	CHES:Iridium 80 Flares at mag. 0.2 (Azm 217 Alt 47)
	5:22 AM	5:22 AM	Twilight	Astronomical Twilight begins
	6:49 AM	6:49 AM	Sun	Sunrise
	3:49 PM	3:49 PM	Moon	Moonrise
	3:56 PM	3:56 PM	Jupiter	Jupiter sets
	6:36 PM	6:36 PM	Iridium Flare	CHES:Iridium 62 Flares at mag.-4.5 (Azm 207 Alt 59)
	7:16 PM	7:16 PM	Sun	Sunset
<b>15</b> Sep 2013	8:21 PM	8:21 PM	Iridium Flare	CHES:Iridium 45 Flares at mag. 0.2 (Azm 137 Alt 59)
	8:44 PM	8:44 PM	Twilight	Astronomical Twilight ends
	1:26 AM	1:26 AM	Jupiter	Jupiter rises
	2:31 AM	2:31 AM	Moon	Moonset
	3:24 AM	3:24 AM	Jup Sats	III.Ec.R
	5:13 AM	5:13 AM	Iridium Flare	CHES:Iridium 81 Flares at mag.-2.3 (Azm 217 Alt 47)
	5:19 AM	5:19 AM	Jup Sats	III.Oc.D
	5:23 AM	5:23 AM	Twilight	Astronomical Twilight begins
	6:36 AM	6:36 AM	Iridium Flare	CHES:Iridium 67 Flares at mag.-7.5 (Azm 020 Alt 44)
	6:50 AM	6:50 AM	Sun	Sunrise
	2:00 PM	2:00 PM	Diary	Moon at perigee
3:52 PM	3:52 PM	Jupiter	Jupiter sets	
4:35 PM	4:35 PM	Moon	Moonrise	
7:14 PM	7:14 PM	Sun	Sunset	
8:15 PM	8:15 PM	Iridium Flare	CHES:Iridium 20 Flares at mag.-3.7 (Azm 137 Alt 58)	
8:43 PM	8:43 PM	Twilight	Astronomical Twilight ends	
<b>16</b> Sep 2013	1:23 AM	1:23 AM	Jupiter	Jupiter rises
	1:37 AM	1:37 AM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	3:39 AM	3:39 AM	Moon	Moonset
	5:07 AM	5:07 AM	Iridium Flare	CHES:Iridium 43 Flares at mag.-1.1 (Azm 216 Alt 48)
	5:23 AM	5:23 AM	Twilight	Astronomical Twilight begins
	6:51 AM	6:51 AM	Sun	Sunrise
	8:32 AM	8:32 AM	Iridium Flare	CHES:Iridium 25 Flares at mag.-7.7 (Azm 068 Alt 65)
	3:49 PM	3:49 PM	Jupiter	Jupiter sets
	5:17 PM	5:17 PM	Moon	Moonrise
6:00 PM	6:00 PM	Meetings	NAS Regular Meeting at Chesapeake Public Library Major Hillard branch	
7:13 PM	7:13 PM	Sun	Sunset	

# Norfolk Astronomical Society Astronomical Calendar

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

## Calendar

	Start	End	Category	Description
<b>16</b> Sep 2013	8:09 PM	8:09 PM	Iridium Flare	CHES:Iridium 3 Flares at mag.-0.1 (Azm 135 Alt 56)
	8:41 PM	8:41 PM	Twilight	Astronomical Twilight ends
<b>17</b> Sep 2013	1:20 AM	1:20 AM	Jupiter	Jupiter rises
	2:17 AM	2:17 AM	Jup Sats	II.Sh.I
	4:44 AM	4:44 AM	Jup Sats	II.Tr.I
	4:47 AM	4:47 AM	Moon	Moonset
	4:53 AM	4:53 AM	Jup Sats	II.Sh.E
	5:00 AM	5:00 AM	Iridium Flare	CHES:Iridium 40 Flares at mag. 1.3 (Azm 215 Alt 48)
	5:24 AM	5:24 AM	Twilight	Astronomical Twilight begins
	5:27 AM	5:27 AM	Jup Sats	IV.Oc.D
	5:55 AM	5:55 AM	Jup Sats	I.Sh.I
	6:51 AM	6:51 AM	Sun	Sunrise
	3:46 PM	3:46 PM	Jupiter	Jupiter sets
	4:00 PM	4:00 PM	Diary	Neptune 5.3S of Moon
	5:56 PM	5:56 PM	Moon	Moonrise
7:11 PM	7:11 PM	Sun	Sunset	
8:03 PM	8:03 PM	Iridium Flare	CHES:Iridium 76 Flares at mag. 1.1 (Azm 137 Alt 56)	
8:40 PM	8:40 PM	Twilight	Astronomical Twilight ends	
<b>18</b> Sep 2013	1:17 AM	1:17 AM	Jupiter	Jupiter rises
	2:58 AM	2:58 AM	Lunar Occult	Moon occults 5.0 mag. double star ZC3320(D) kappa Aqr [Situla]
	3:04 AM	3:04 AM	Jup Sats	I.Ec.D
	5:25 AM	5:25 AM	Twilight	Astronomical Twilight begins
	5:54 AM	5:54 AM	Moon	Moonset
	6:18 AM	6:18 AM	Iridium Flare	CHES:Iridium 65 Flares at mag. 1.4 (Azm 019 Alt 38)
	6:35 AM	6:35 AM	Jup Sats	I.Oc.R
	6:52 AM	6:52 AM	Sun	Sunrise
	3:42 PM	3:42 PM	Jupiter	Jupiter sets
	5:00 PM	5:00 PM	Diary	Venus 3.5S of Saturn
	6:32 PM	6:32 PM	Moon	Moonrise
7:10 PM	7:10 PM	Sun	Sunset	
8:38 PM	8:38 PM	Twilight	Astronomical Twilight ends	
10:26 PM	10:26 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)	
<b>19</b> Sep 2013	1:13 AM	1:13 AM	Jupiter	Jupiter rises
	1:35 AM	1:35 AM	Jup Sats	I.Tr.I
	2:13 AM	2:13 AM	Jup Sats	II.Oc.R
	2:36 AM	2:36 AM	Jup Sats	I.Sh.E
	3:49 AM	3:49 AM	Jup Sats	I.Tr.E
	5:26 AM	5:26 AM	Twilight	Astronomical Twilight begins
	6:53 AM	6:53 AM	Sun	Sunrise

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

## Calendar

	Start	End	Category	Description
<b>19</b> Sep 2013	7:00 AM	7:00 AM	Moon	Moonset
	8:00 AM	8:00 AM	Diary	FULL MOON
	3:39 PM	3:39 PM	Jupiter	Jupiter sets
	7:08 PM	7:08 PM	Sun	Sunset
	7:08 PM	7:08 PM	Moon	Moonrise
	8:36 PM	8:36 PM	Twilight	Astronomical Twilight ends
<b>20</b> Sep 2013	1:10 AM	1:10 AM	Jupiter	Jupiter rises
	2:00 AM	2:00 AM	Diary	Pluto stationary
	5:27 AM	5:27 AM	Twilight	Astronomical Twilight begins
	6:54 AM	6:54 AM	Sun	Sunrise
	8:04 AM	8:04 AM	Moon	Moonset
	9:00 AM	9:00 AM	Diary	Uranus 3.1S of Moon
	3:35 PM	3:35 PM	Jupiter	Jupiter sets
	7:07 PM	7:07 PM	Sun	Sunset
	7:44 PM	7:44 PM	Moon	Moonrise
	7:54 PM	7:54 PM	Iridium Flare	CHES:Iridium 94 Flares at mag. 0.8 (Azm 156 Alt 60)
8:35 PM	8:35 PM	Twilight	Astronomical Twilight ends	
<b>21</b> Sep 2013	1:07 AM	1:07 AM	Jupiter	Jupiter rises
	5:28 AM	5:28 AM	Twilight	Astronomical Twilight begins
	6:54 AM	6:54 AM	Sun	Sunrise
	9:07 AM	9:07 AM	Moon	Moonset
	3:32 PM	3:32 PM	Jupiter	Jupiter sets
	7:05 PM	7:05 PM	Sun	Sunset
	7:15 PM	7:15 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	7:48 PM	7:48 PM	Iridium Flare	CHES:Iridium 45 Flares at mag.-0.2 (Azm 158 Alt 59)
	7:49 PM	7:49 PM	Iridium Flare	CHES:Iridium 26 Flares at mag. 1.4 (Azm 161 Alt 60)
	8:21 PM	8:21 PM	Moon	Moonrise
8:33 PM	8:33 PM	Twilight	Astronomical Twilight ends	
<b>22</b> Sep 2013	1:04 AM	1:04 AM	Jupiter	Jupiter rises
	4:25 AM	4:25 AM	Jup Sats	III.Ec.D
	5:29 AM	5:29 AM	Twilight	Astronomical Twilight begins
	6:55 AM	6:55 AM	Sun	Sunrise
	10:07 AM	10:07 AM	Moon	Moonset
	3:29 PM	3:29 PM	Jupiter	Jupiter sets
	5:00 PM	5:00 PM	Diary	Equinox
	7:04 PM	7:04 PM	Sun	Sunset
	7:42 PM	7:42 PM	Iridium Flare	CHES:Iridium 20 Flares at mag.-6.5 (Azm 158 Alt 58)
	8:31 PM	8:31 PM	Twilight	Astronomical Twilight ends
8:59 PM	8:59 PM	Moon	Moonrise	

# Norfolk Astronomical Society Astronomical Calendar

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

## Calendar

	Start	End	Category	Description
<b>22</b> Sep 2013	10:19 PM	10:19 PM	Lunar Occult	Moon occults 5.5 mag. star 422(r) sigma Ari
<b>23</b> Sep 2013	1:00 AM	1:00 AM	Jupiter	Jupiter rises
	5:30 AM	5:30 AM	Twilight	Astronomical Twilight begins
	5:57 AM	5:57 AM	Iridium Flare	CHES:Iridium 72 Flares at mag. 1.5 (Azm 008 Alt 34)
	5:58 AM	5:58 AM	Iridium Flare	CHES:Iridium 74 Flares at mag. 0.9 (Azm 009 Alt 35)
	6:11 AM	6:11 AM	Lunar Occult	Moon occults 6.4 mag. star 450(r)
	6:56 AM	6:56 AM	Sun	Sunrise
	11:06 AM	11:06 AM	Moon	Moonset
	3:25 PM	3:25 PM	Jupiter	Jupiter sets
	7:02 PM	7:02 PM	Sun	Sunset
	7:36 PM	7:36 PM	Iridium Flare	CHES:Iridium 3 Flares at mag. 0.8 (Azm 154 Alt 57)
	8:30 PM	8:30 PM	Twilight	Astronomical Twilight ends
	9:41 PM	9:41 PM	Moon	Moonrise
<b>24</b> Sep 2013	12:57 AM	12:57 AM	Jupiter	Jupiter rises
	4:53 AM	4:53 AM	Jup Sats	II.Sh.I
	5:31 AM	5:31 AM	Twilight	Astronomical Twilight begins
	5:51 AM	5:51 AM	Iridium Flare	CHES:Iridium 62 Flares at mag.-0.1 (Azm 009 Alt 32)
	6:57 AM	6:57 AM	Sun	Sunrise
	12:01 PM	12:01 PM	Moon	Moonset
	3:22 PM	3:22 PM	Jupiter	Jupiter sets
	4:00 PM	4:00 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	7:01 PM	7:01 PM	Sun	Sunset
	7:30 PM	7:30 PM	Iridium Flare	CHES:Iridium 76 Flares at mag. 1.8 (Azm 156 Alt 56)
	8:28 PM	8:28 PM	Twilight	Astronomical Twilight ends
	10:00 PM	10:00 PM	Diary	Mercury 0.7N of Spica
	10:25 PM	10:25 PM	Moon	Moonrise
<b>25</b> Sep 2013	12:00 AM	12:00 AM	Diary	Aldebaran 2.7S of Moon
	12:54 AM	12:54 AM	Jupiter	Jupiter rises
	4:58 AM	4:58 AM	Jup Sats	I.Ec.D
	5:03 AM	5:03 AM	Jup Sats	IV.Sh.I
	5:32 AM	5:32 AM	Twilight	Astronomical Twilight begins
	5:45 AM	5:45 AM	Iridium Flare	CHES:Iridium 65 Flares at mag.-1.5 (Azm 009 Alt 30)
	6:58 AM	6:58 AM	Sun	Sunrise
	7:47 AM	7:47 AM	Iridium Flare	CHES:Iridium 11 Flares at mag.-7.7 (Azm 037 Alt 63)
	12:53 PM	12:53 PM	Moon	Moonset
	3:18 PM	3:18 PM	Jupiter	Jupiter sets
	6:59 PM	6:59 PM	Sun	Sunset
	8:27 PM	8:27 PM	Twilight	Astronomical Twilight ends
	11:12 PM	11:12 PM	Moon	Moonrise

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

## Calendar

	Start	End	Category	Description
<b>26</b> Sep 2013	12:50 AM	12:50 AM	Jupiter	Jupiter rises
	2:16 AM	2:16 AM	Jup Sats	I.Sh.I
	2:41 AM	2:41 AM	Jup Sats	III.Tr.E
	3:31 AM	3:31 AM	Jup Sats	I.Tr.I
	4:30 AM	4:30 AM	Jup Sats	I.Sh.E
	4:51 AM	4:51 AM	Jup Sats	II.Oc.R
	5:32 AM	5:32 AM	Twilight	Astronomical Twilight begins
	5:39 AM	5:39 AM	Iridium Flare	CHES:Iridium 68 Flares at mag.-6.9 (Azm 009 Alt 28)
	5:45 AM	5:45 AM	Jup Sats	I.Tr.E
	6:58 AM	6:58 AM	Sun	Sunrise
	1:41 PM	1:41 PM	Moon	Moonset
	3:15 PM	3:15 PM	Jupiter	Jupiter sets
	6:58 PM	6:58 PM	Sun	Sunset
	8:25 PM	8:25 PM	Twilight	Astronomical Twilight ends
<b>27</b> Sep 2013	12:02 AM	12:02 AM	Moon	Moonrise
	12:47 AM	12:47 AM	Jupiter	Jupiter rises
	1:00 AM	1:00 AM	Diary	LAST QUARTER
	3:00 AM	3:00 AM	Jup Sats	I.Oc.R
	3:21 AM	3:21 AM	Lunar Occult	Moon occults 6.8 mag. double star 985(r)
	5:33 AM	5:33 AM	Twilight	Astronomical Twilight begins
	5:33 AM	5:33 AM	Iridium Flare	CHES:Iridium 75 Flares at mag.-1.3 (Azm 009 Alt 26)
	6:59 AM	6:59 AM	Sun	Sunrise
	12:53 PM	12:53 PM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	2:00 PM	2:00 PM	Diary	Moon at apogee
	2:24 PM	2:24 PM	Moon	Moonset
	3:11 PM	3:11 PM	Jupiter	Jupiter sets
	6:56 PM	6:56 PM	Sun	Sunset
	8:23 PM	8:23 PM	Twilight	Astronomical Twilight ends
<b>28</b> Sep 2013	12:44 AM	12:44 AM	Jupiter	Jupiter rises
	12:54 AM	12:54 AM	Moon	Moonrise
	5:00 AM	5:00 AM	Diary	Jupiter 4.8N of Moon
	5:27 AM	5:27 AM	Iridium Flare	CHES:Iridium 63 Flares at mag. 0.1 (Azm 009 Alt 24)
	5:34 AM	5:34 AM	Twilight	Astronomical Twilight begins
	7:00 AM	7:00 AM	Sun	Sunrise
	3:04 PM	3:04 PM	Moon	Moonset
	3:08 PM	3:08 PM	Jupiter	Jupiter sets
	6:55 PM	6:55 PM	Sun	Sunset
	8:22 PM	8:22 PM	Twilight	Astronomical Twilight ends

# Norfolk Astronomical Society Astronomical Calendar

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

## Calendar

	Start	End	Category	Description
<b>29</b> Sep 2013	12:40 AM	12:40 AM	Jupiter	Jupiter rises
	1:48 AM	1:48 AM	Moon	Moonrise
	5:22 AM	5:22 AM	Iridium Flare	CHES:Iridium 66 Flares at mag.-1.7 (Azm 008 Alt 22)
	5:35 AM	5:35 AM	Twilight	Astronomical Twilight begins
	7:01 AM	7:01 AM	Sun	Sunrise
	3:04 PM	3:04 PM	Jupiter	Jupiter sets
	3:41 PM	3:41 PM	Moon	Moonsset
	6:53 PM	6:53 PM	Sun	Sunset
	7:08 PM	7:08 PM	Iridium Flare	CHES:Iridium 20 Flares at mag.-5.3 (Azm 177 Alt 56)
	8:20 PM	8:20 PM	Twilight	Astronomical Twilight ends
<b>30</b> Sep 2013	12:37 AM	12:37 AM	Jupiter	Jupiter rises
	2:43 AM	2:43 AM	Moon	Moonrise
	5:16 AM	5:16 AM	Iridium Flare	CHES:Iridium 21 Flares at mag. 0.4 (Azm 008 Alt 19)
	5:23 AM	5:23 AM	Lunar Occult	Moon occults 5.4 mag. double star ZC1332(R) 60 Cnc
	5:36 AM	5:36 AM	Twilight	Astronomical Twilight begins
	7:02 AM	7:02 AM	Sun	Sunrise
	9:42 AM	9:42 AM	Algol Minima	Algol at mag. +3.4 minimum (+/-5 hours)
	3:01 PM	3:01 PM	Jupiter	Jupiter sets
	4:16 PM	4:16 PM	Moon	Moonsset
	5:26 PM	5:26 PM	Iridium Flare	CHES:Iridium 21 Flares at mag.-6.0 (Azm 232 Alt 38)
	6:52 PM	6:52 PM	Sun	Sunset
	8:19 PM	8:19 PM	Twilight	Astronomical Twilight ends