

Eugene Astronomical Society  
Annual Club Dues \$25  
President: Sam Pitts - 688-7330  
Secretary: Jerry Oltion - 343-4758  
Additional Board members:  
Jacob Strandlien, Tony Dandurand,  
John Loper.

[www.eugeneastro.org](http://www.eugeneastro.org)

EAS is a proud member of:

**The Astronomical League**  
The World's Largest Federation of Amateur Astronomers



## Next Meeting: Thursday, June 23rd

### The Versatile Schmidt-Cassegrain

by Sam Pitts

The Schmidt-Cassegrain has become one of the most popular telescope designs in history. At our June meeting, Sam Pitts will tell us how this design has opened the door to viewing, imaging, and science for the amateur. He will cover setup, alignment, and the various attributes and limitations inherent in the scope's design.

In addition to Sam's talk, Jacob Strandlien will present the astronomical news of the month. We also encourage people to bring any new gear or projects they would like to show the rest of the club. The meeting is at 7:00 on June 23rd at EWEB's Community Room, 500 E. 4th in Eugene.



### Next First Quarter Friday: June 10th

Our May star party was clouded out again. Five out of the last six have been clouded out; not a good run. Here's hoping June will be kinder to us.

First Quarter Fridays are laid-back opportunities to do some observing and promote astronomy at the same time. Mark your calendar and bring your scope to the College Hill Reservoir (24th and Lawrence in Eugene) and share the view with whoever shows up.

Here are the dates for First Quarter Fridays through December of 2011. Bill Murray has calculated the percentage of the disk that's lit on each night so we can consider in advance what other sights will be visible to show people. Since the star party seldom falls right on the first quarter, some of the phases are over 50% and some under. It looks like we've got more over than under this year. Luck of the draw (and in the case of October it was the only chance for a star party that month).

June 10 (73% lit)	August 5 (47% lit)	October 7 (86% lit)	December 2 (57% lit)
July 8 (60% lit)	September 2 (33% lit)	November 4 (74% lit)	December 30 (39.7% lit)

# May Meeting Report

At our April 28th meeting, Bernard Bopp gave us an excellent presentation on dark matter and dark energy. He outlined the discoveries leading to their eventual recognition as fundamental parts of our universe, and gave us the current theories on what they might be, and probably are not. He showed how several independent lines of inquiry point to the same conclusion: that dark matter and dark energy are not only real, but make up the majority of our universe. This is an exciting time in astronomy and astrophysics, and Bernard's talk was an exciting look into this mysterious new realm of inquiry.

After Bernard's talk, Jacob Strandlien gave us the astronomical news for May, including the sad news that the Spirit rover on Mars has stopped responding and is presumed dead. It had a great run of scientific discovery, though, and lasted years beyond its designed lifetime.

Also at the meeting, Jerry Oltion showed off the club's new (to us) 8" Celestron Schmidt-Cassegrain telescope. This scope was donated to the EAS by the Rose City Astronomers of Portland, and it's a classic. It mounts on an equatorial wedge and has tracking motors for both the R.A. and declination axes, so it would be good for guided astrophotography as well as visual observing. Tony Dandurand and Jerry outfitted it with a 50mm finder and a dew shield (in matching blue color) to complete the package. It's ready to be loaned out, and it went on its first loan that very night: to new member Colin Walters. Clear skies, Colin!



Our next meeting will be on Thursday, June 23rd, at 7:00 PM in the EWEB north building's Community Room. This is the first room in the semicircular building to the north of the fountain at EWEB's main campus on the east end of 4th Avenue.

**Meeting dates for 2011:** (All meetings are at 7:00 in the Community Room)

June 23

August 25

October 27

December 22

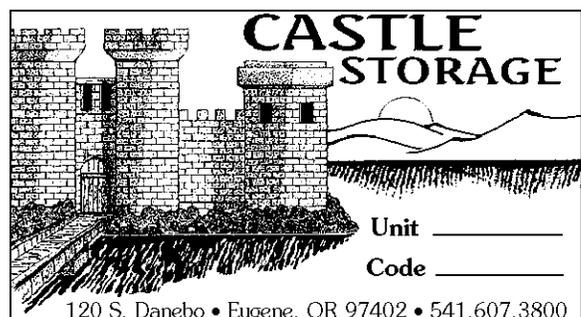
July 28

September 22

November 10

## Thank You Castle Storage

For the last four years, Castle Storage has generously provided EAS a place to store its telescopes and equipment. EAS would like to thank Castle Storage for their generosity and support for our group. Please give them a call if you need a storage space, and tell your friends. They are great people and offer secure and quality storage units.



# The Struggle for Better Lighting

## by Jerry Oltion

Eugene is one of many cities to adopt a lighting ordinance that regulates what can and can't be done with photons within its jurisdiction. The code is long and complicated, but at its heart lies this basic premise (from Eugene Code 9.6725): "All lighting fixtures subject to a lighting permit shall be cutoff and additional shielding shall be required, as necessary, to direct the light within the boundaries of the development site. Fixtures for exterior illumination of signs, including signs attached to a building, shall be top-mounted as well as shielded to aim the light downward onto the sign only." That means you shouldn't be able to see the bulb or any glowing part of the light from outside the property owned by the person shining the light. All you should see is the lit property, and none of the light illuminating the property should be aimed upward.

Existing lights that were installed before the ordinance took effect (2001) were grandfathered in, but when those lights are replaced, they must be replaced with fixtures that meet the requirements.

In theory. I went to Jerry's Home Improvement to see what I could find to replace my own carriage-style porch light, and found a glaring catch-22: I couldn't find a single light fixture that complied with the city ordinance. Every one of them had a visible light source, either a bare, glaring bulb or a translucent diffuser that still glowed white to all sides.

I haven't yet been to Home Depot or Lowes, but I suspect I'll find the same story there.

So what's a person to do?



The selection of porch lights at Jerry's



A carriage-style light with an aluminum foil shield

Shield your own. A piece of aluminum foil can do wonders in a carriage lamp. Put it inside the glass (double-stick tape is great for that) with the lower edge just high enough to let the bulb illuminate the ground, but not the eyes of anyone beyond your property boundary. If you're reasonably careful to install it squarely, it'll even look nice by day.

Flood lights are a little bit harder, but not that much so. Get some aluminum flashing and make a semi-cylinder that you can pipe-clamp over the fixture. Put the flashing on top like a baseball cap's bill, then adjust the fixture's angle so the light hits the ground out to your property boundary, but no farther. You may be happy to note that the flashing actually increases the amount of light hitting the ground. That's because it's not going upward and outward into your neighbors' eyes anymore.

If you want to get fancy you can curve the front edge and paint the outside of the flashing to match the rest of the light fixture.

What about street lights? The city has to comply with its own ordinance, and they have managed to find a source of full-cutoff lamps that do an admirable job of lighting streets without lighting drivers' (and astronomers') eyes. When an old lamp dies, the city will replace it with a full-cutoff one. In theory, at least. They're more likely to do that (rather than just replace the socket or wiring or whatever went bad and pretend nothing ever happened) if you call and request a full-cutoff replacement. For that matter, you can request one before the old light dies, and your light will be put on the list of replacements that the city will attend to as finances permit. In the meantime, they will sometimes shield an existing light if you plead with them enough. (We were able to get the city and EWEB to shield the lights near the College Hill Reservoir because we do a public service there with our star parties.)



Good (full cutoff) versus bad street lights. With a well-designed light you can't even see the light source.

How about your neighbor's light? That's a trickier subject. Neighbors generally aren't too keen on criticism of their way of doing things. So don't criticize! Instead, invite them over to look through your telescope some evening, and after they've had a good look at a few things, tell them, "Hey, this would look ten times better if we switched off your porch light." *We*, not *you*. After you show them the difference, *then* ask if you can shield their light for them so you don't have to bother them to turn it off every time you go out in your driveway with a telescope. (The implication here is that you *will* bother them to turn it off now that they know how much trouble its glare causes.) With luck and a six-pack of beer, you might even turn your neighbor into another dark-sky crusader to help spread the word up and down your block.

If you want to take your activism farther afield, a good place to start is with the International Dark-Sky Association. Visit their web site at [www.darksky.org](http://www.darksky.org), join their organization, and help change attitudes about outdoor lighting worldwide.

And remember: the best way to change people's minds is to show them what they're missing when they can't see the night sky. You might think you're preaching to the choir at a star party, but chances are, the person you're talking to has a poorly designed porch light. In fact, chances are good that *you* have a poorly designed porch light. Go shield it today.



Can you say "Bad lighting?" What were they thinking?

## Observing Highlight: the Stargate

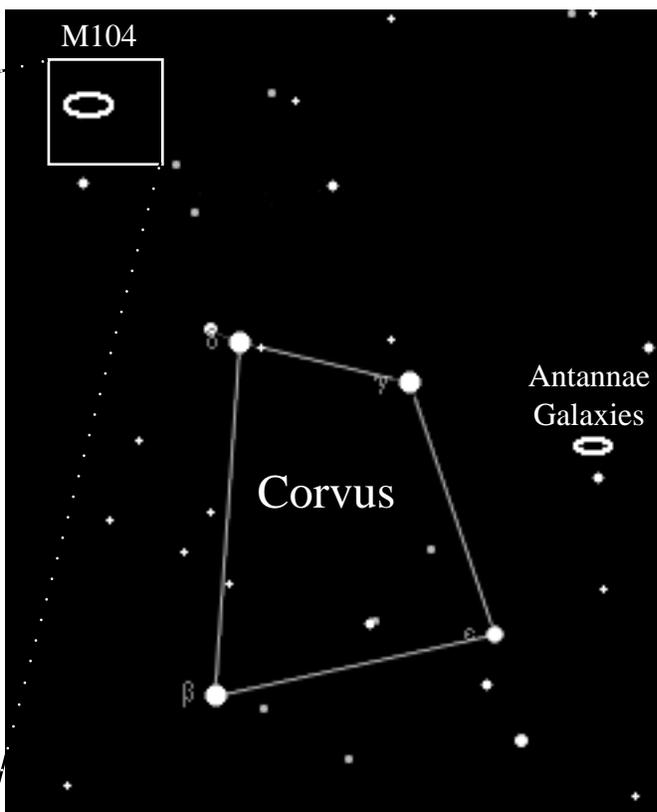
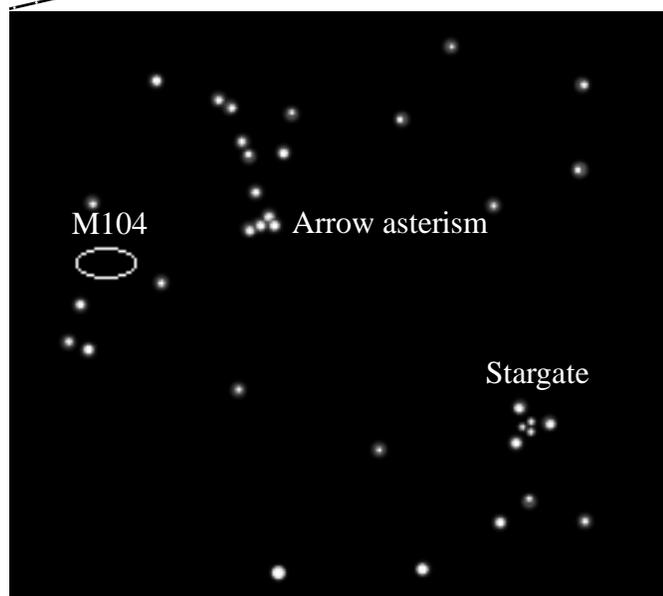
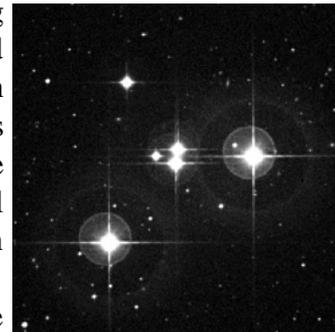
Not far from the Sombrero Galaxy (M104) in Corvus lies an interesting asterism popularly called the “Stargate.” It’s a triangle within a triangle, and was so named by John Wagoner, former president and founder of The American Association of Amateur Astronomers (AAAA), who noticed it over 30 years ago while working on his Messier Certificate. It reminded him of the stargate used by Buck Rogers to enter hyperspace, so that’s what he called it. Phil Harrington immortalized it in the May 1998 issue of *Sky and Telescope* in an article called “My Favorite Asterisms.”

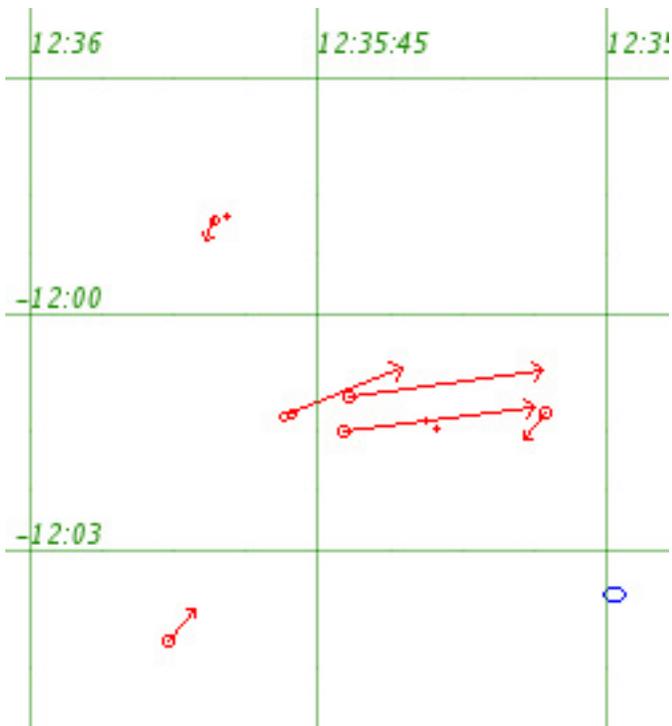
The stars that make up the Stargate range from magnitude 6.6 to 11.5. The dimmest, the star at the apex of the narrow inner triangle, is a long period variable and is currently dimming. This makes the Stargate somewhat lopsided at the moment, but it’s still possible to see all six stars even in a modest telescope. Keep an eye on it over the years and watch it fade and brighten.

The stars range from 285 to 486 light-years away. Only one of the inner stars’ distance has been measured accurately, but a map of their proper motions (next page) shows them moving through space together, so it’s likely that they form a true triple. The outer stars don’t share that motion, so are probably just foreground and/or background stars.

How do you find the Stargate? Go diagonally through Corvus to the northeast until you reach the Sombrero Galaxy, then move one degree to four-o’clock. (If your scope reverses the image, go toward ten o’clock in your eyepiece view.) You may hit the Stargate first, or a distinctive arrow asterism that points right to the Sombrero. The arrow is also called the “Jaws” for its resemblance to a shark with its mouth open. Once you’ve found M104, the arrow, or the Stargate, the others are easy to find within a low-power eyepiece field of each other.

For go-toers, the RA is 12h 35' 45" and the Dec is  $-12^{\circ} 01' 30''$ . While you’re in the neighborhood, visit the Antennae Galaxies on the other side of Corvus.





This SIMBAD map shows the Stargate stars' proper motion in the sky, suggesting that the inner triangle is actually a triple system, while the outer stars are unrelated.

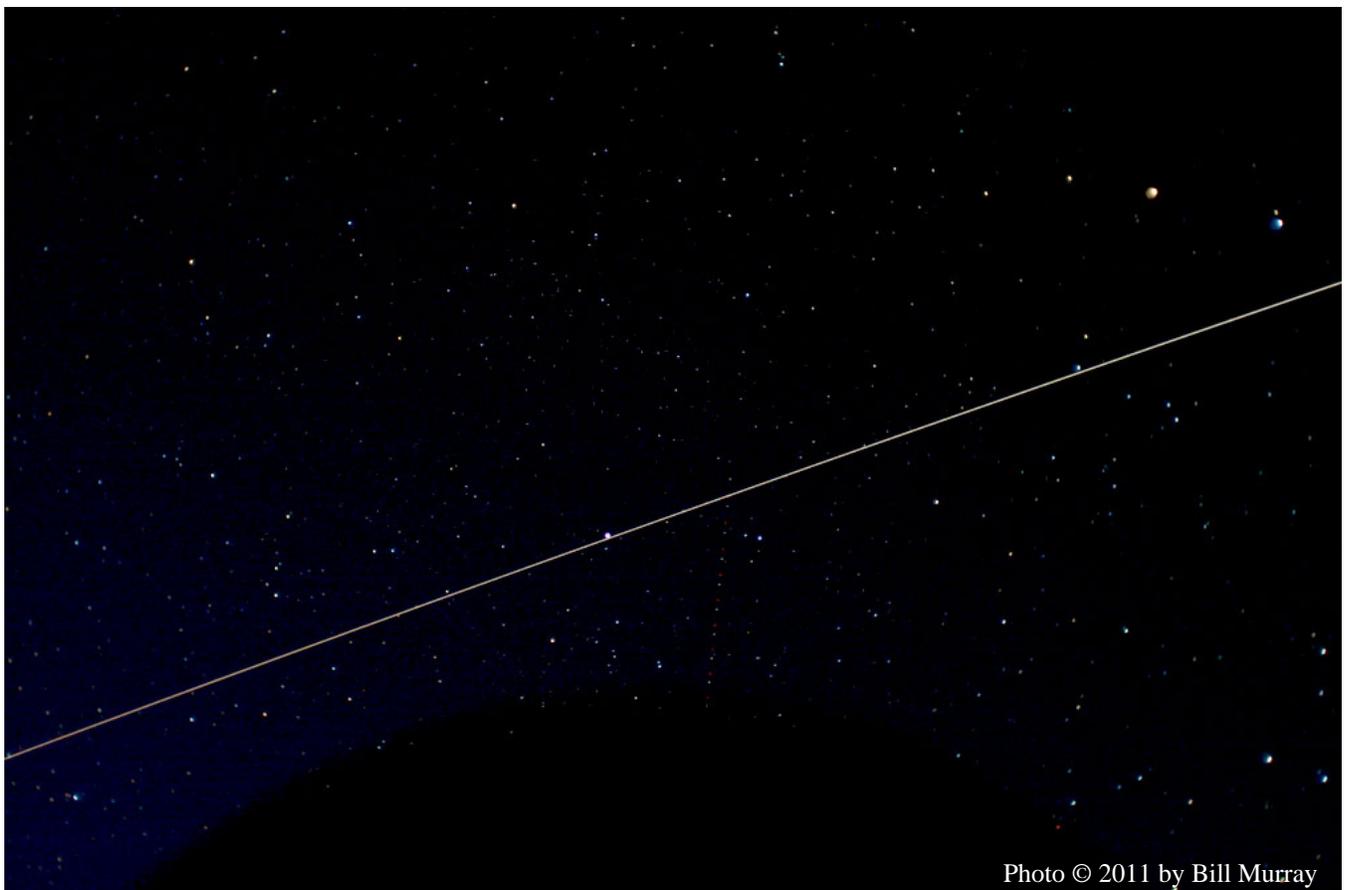


## The ISS in Ursa Minor

by Bill Murray

On the night of April 30, Bill Murray captured the ISS passing through Ursa Minor as seen from our Eagle's Rest observing site. It grazed Polaris and flew on down the handle through the bowl of the Little Dipper. Bill also captured an airplane heading north past Polaris, blinking alternately red and white.

This was a piggyback shot with the camera mounted on Bill's Meade LX90. He was using a 28mm lens at f/2.8, ISO 800, and he held the shutter open for 75 seconds as the ISS crossed the sky. This image has been saved at high resolution so you can zoom into it.



# Hubble Views the Star That Changed the Universe

Courtesy NASA, ESA, and the Hubble Heritage Team (STScI/AURA)

Though the universe is filled with billions upon billions of stars, the discovery of a single variable star in 1923 altered the course of modern astronomy. And, at least one famous astronomer of the time lamented that the discovery had shattered his world view.

The star goes by the inauspicious name of Hubble variable number one, or V1, and resides in the outer regions of the neighboring Andromeda galaxy, or M31. But in the early 1900s, most astronomers considered the Milky Way a single “island universe” of stars, with nothing observable beyond its boundaries. Andromeda was cataloged as just one of many faint, fuzzy patches of light astronomers called “spiral nebulae.”

Were these spiral nebulae part of the Milky Way or were they independent island universes lying outside our galaxy? Astronomers didn't know for sure until Edwin Hubble found a star in Andromeda that brightened and faded in a predictable pattern, like a lighthouse beacon, and identified it as V1, a Cepheid variable. This special type of star had already been proven to be a reliable distance marker within our galaxy.

The star helped Hubble show that Andromeda was beyond our galaxy and settled the debate over the status of the spiral nebulae. The

universe became a much bigger place after Hubble's discovery, much to the dismay of astronomer Harlow Shapley, who believed the fuzzy nebulae were part of our Milky Way.

Nearly 90 years later, V1 is in the spotlight again. Astronomers pointed Edwin Hubble's namesake, NASA's Hubble Space Telescope, at the star once again, in a symbolic tribute to the legendary astronomer's milestone observation.

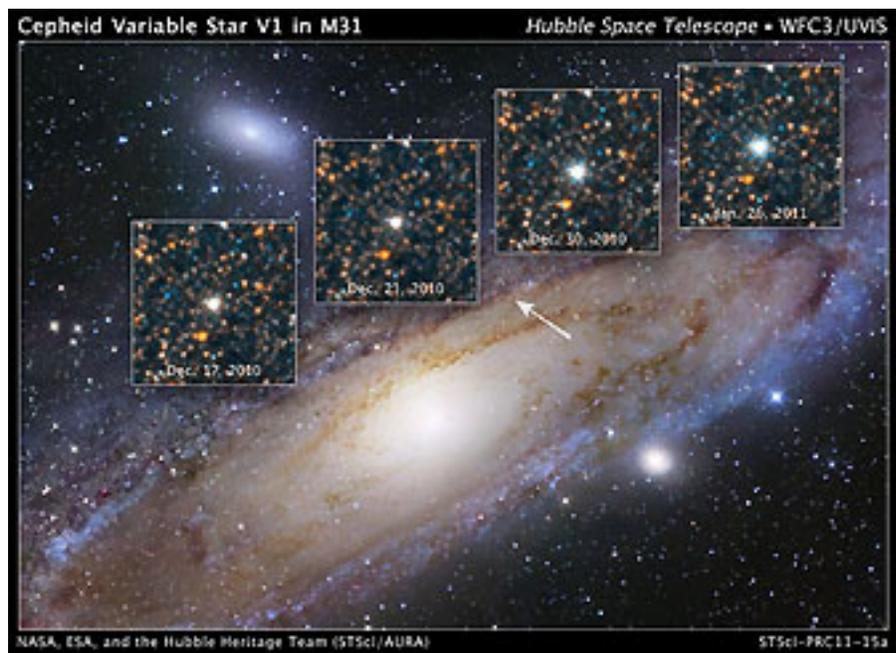
Astronomers with the Space Telescope Science Institute's Hubble Heritage Project partnered with the American Association of Variable Star Observers (AAVSO) to study the star. AAVSO observers followed V1 for six months, producing a plot, or light curve, of the rhythmic rise and fall of the star's light. Based on this light curve, the Hubble Heritage team scheduled telescope time to capture images of the star.

“V1 is the most important star in the history of cosmology,” says astronomer Dave Soderblom of the Space Telescope Science Institute (STScI) in Baltimore, Md., who proposed the V1 observations.

“It's a landmark discovery that proved the universe is bigger and chock full of galaxies. I thought it would be nice for the Hubble telescope to look at this special star discovered by Hubble, the man.”

Hubble Heritage team member Max Mutchler of the STScI says that this observation is more than just a ceremonial nod to a famous astronomer. “This observation is a reminder that Cepheids are still relevant today,” he explains. “Astronomers are using them to measure distances to galaxies much farther away than Andromeda. They are the first rung on the cosmic distance ladder.”

For more images and information, visit: <http://hubblesite.org/newscenter/archive/releases/2011/15>





# Observing in June

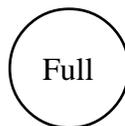


New

1st Q



Full



Last Q



June 1	June 8	June 15	June 23
Mercury Rise: 4:56 AM	Mercury Rise: 5:10 AM	Mercury Behind Sun	Mercury Set: 10:00 PM
Venus Rise: 4:36 AM	Venus Rise: 4:33 AM	Venus Rise: 4:31 AM	Venus Rise: 4:34 AM
Mars Rise: 4:19 AM	Mars Rise: 4:05 AM	Mars Rise: 3:52 AM	Mars Rise: 3:38 AM
Jupiter Rise: 3:42 AM	Jupiter Rise: 3:17 AM	Jupiter Rise: 2:53 AM	Jupiter Rise: 2:25 AM
Saturn Set: 3:13 AM	Saturn Set: 2:46 AM	Saturn Set: 2:18 AM	Saturn Set: 1:46 AM
Uranus Rise: 2:43 AM	Uranus Rise: 2:16 AM	Uranus Rise: 1:49 AM	Uranus Rise: 1:18 AM
Neptune Rise: 1:30 AM	Neptune Rise: 1:02 AM	Neptune Rise: 12:35 AM	Neptune Rise: 12:03 AM
Pluto Rise: 10:13 PM	Pluto Rise: 9:45 PM	Pluto Rise: 9:17 PM	Pluto Rise: 8:45 PM

All times: Pacific Standard Time (Nov 6, 2011-March 10, 2012) = UT -8 hours or U.S. Pacific Daylight Time (March 13-November 5, 2011) = UT -7 hours.

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
6/1/2011	05:15	21:03	05:33	20:48	03:15	23:07
6/2/2011	06:06	21:55	05:32	20:49	03:14	23:08
6/3/2011	07:05	22:40	05:32	20:50	03:13	23:10
6/4/2011	08:10	23:19	05:31	20:51	03:12	23:11
6/5/2011	09:19	23:53	05:31	20:52	03:10	23:12
6/6/2011	10:30		05:30	20:52	03:10	23:14
6/7/2011	11:42	00:23	05:30	20:53	03:09	23:15
6/8/2011	12:54	00:50	05:30	20:54	03:08	23:16
6/9/2011	14:08	01:17	05:29	20:54	03:07	23:17
6/10/2011	15:22	01:44	05:29	20:55	03:06	23:18
6/11/2011	16:38	02:14	05:29	20:55	03:06	23:19
6/12/2011	17:54	02:48	05:29	20:56	03:05	23:20
6/13/2011	19:06	03:29	05:29	20:56	03:05	23:21
6/14/2011	20:12	04:17	05:29	20:57	03:04	23:22
6/15/2011	21:09	05:14	05:29	20:57	03:04	23:22
6/16/2011	21:56	06:18	05:29	20:58	03:04	23:23
6/17/2011	22:34	07:25	05:29	20:58	03:03	23:23
6/18/2011	23:06	08:33	05:29	20:58	03:03	23:24
6/19/2011	23:32	09:40	05:29	20:59	03:03	23:24
6/20/2011	23:56	10:44	05:29	20:59	03:03	23:25
6/21/2011		11:46	05:29	20:59	03:04	23:25
6/22/2011	00:19	12:47	05:30	20:59	03:04	23:25
6/23/2011	00:41	13:48	05:30	20:59	03:04	23:25
6/24/2011	01:03	14:48	05:30	20:59	03:05	23:25
6/25/2011	01:28	15:50	05:31	21:00	03:05	23:25
6/26/2011	01:56	16:51	05:31	21:00	03:06	23:25
6/27/2011	02:29	17:53	05:31	21:00	03:06	23:24
6/28/2011	03:09	18:52	05:32	21:00	03:07	23:24
6/29/2011	03:57	19:47	05:32	20:59	03:08	23:24
6/30/2011	04:53	20:36	05:33	20:59	03:08	23:23

## Items of Interest This Month

6/6 - 6/12 Saturn very close to Gamma Virginis  
(Porrima, a nice double)

**6/10 First Quarter Friday Star Party**

6/21 Summer solstice, 10:16 AM PDT

6/27 Boötid meteor shower peaks

Last week of June: Mercury visible low in the west after sunset



## For Current Occultation Information

Visit Derek C. Breit's web site

**"BREIT IDEAS Observatory"**

<http://www.poyntsource.com/New/Regions/EAS.htm>

Go to Regional Events and click on the Eugene, Oregon section. This will take you to a current list of Lunar & asteroid events for the Eugene area. Breit continues to update and add to his site weekly if not daily. This is a site to place in your favorites list and visit often.

All times are for Eugene, Oregon, Latitude 44° 3' Longitude 123° 06' for listed date