IO - March 2011

Issue 2011-03

Eugene Astronomical Society

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

EAS is a proud member of:

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

www.eugeneastro.org

Next Meeting: Thursday, March 24th

The American Astronomical Society Conference

by Rick Kang

The American Astronomical Society (AAS) is the worldwide professional society of astrophysicists, aerospace engineers, and astroeducators. AAS holds two annual meetings: the main meeting is typically in January at rotating locations around the USA, but often in Boston, San Diego, or Seattle since there are concentrations of researchers at those locations. Several thousand people attend. There is admission for the public, and this year there was a special admission category for "local educators" so that teachers near the conference could attend.

The 2011 Winter meeting was in Seattle. This was the fifth AAS conference Rick has attended, and at our March 24th meeting he will report to us what he learned there.

Rick writes: "The AAS conference runs for five days and is very intensive: There are several major talks given each day in huge ballrooms at the meeting facility. There are many breakout sessions with oral presentations by panels of experts, plus hundreds of poster papers displayed each day. There is also a huge display area populated by major aerospace and technical organizations like NASA, JPL, many specific missions, and institutions. It's an overwhelming "candy store" of astrophysics. There's no way one person can see anywhere near all of it, and by the end, I'm exhausted. I went to Seattle early to attend a workshop for educators the weekend prior to the actual conference, then attended 41 talks and viewed hundreds of poster papers plus numerous displays.

"I'll present a summary of information from the events and displays I attended, including a great talk about Saturn by Dr. Carolyn Porco, one of the Cassini project managers; a talk by Dr. Geoff Marcy about Exoplanets, and several talks about the Kepler mission that's searching for Earth-like exoplanets orbiting Sun-like stars.

"I'll also bring the newly issued DVD from NASA, titled *Journey to the Stars*, which has some great graphics about star formation. If someone can bring a device that can show DVDs (my old computers don't seem to want to read the disk), we can show this."

In addition to Rick'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 March 24th at EWEB's Community Room, 500 E. 4th in Eugene.

February Meeting Report

Our February 24th meeting was cancelled due to bad weather. Of course the weather cleared up within minutes of issuing the cancellation, but you can't un-cancel a meeting once it's cancelled, so there we were.

Bernard Bopp was set to tell us about dark matter and dark energy. He has graciously agreed to reschedule his talk for our May 26th meeting.

Our next meeting will be on Thursday, March 24th, 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)

March 24	June 23	September 22	December 22
April 28	July 28	October 27	
May 26	August 25	November 10	

Next First Quarter Friday: March 11th

Our February star party was a small, impromptu, affair. How can a scheduled star party be impromptu? Well, the weather looked so bad that nobody went to it. Nobody with scopes, that is. Jerry and Kathy Oltion went over to post a "Star Party Cancelled" sign at the site, only to find half a dozen people there looking at the Moon through the gaps in the clouds. Jerry and Kathy had the club's trackball telescope in the car, so they set it up and had a star party after all.

People were able to see some decent detail on the Moon and Jupiter (the southern band is coming back, but doing it slowly). They also split Rigel, Castor, Eta Cassiopeia and Mizar. Saw the Orion Nebula, but not much nebulosity visible through the skyglow and the clouds. The Moon was really the show for the night, but it was a good enough show to satisfy the maybe 10 people who came to view it.

There were several kids, all of whom were really impressed. More future astronomers!

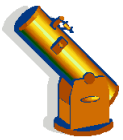
First Quarter Fridays are laid-back opportunities to do some observing and promote astronomy at the same time. Mark your calendar and bring your scope to the College Hill Reservoir (24th and Lawrence in Eugene) and share the view with whoever shows up.

Here are the dates for First Quarter Fridays through December of 2011:

March 11	June 10	September 2	December 2
April 8	July 8	October 7	December 30
May 13	August 5	November 4	

Thank You Castle Storage

For the last three 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.



Observing in March

New 1st Q Full Last Q

March 4	March 12	March 19	March 26
Mercury Set: 6:37 PM	Mercury Set: 7:27 PM	Mercury Set: 9:00 PM	Mercury Set: 9:08 PM
Venus Rise: 4:58 AM	Venus Rise: 4:57 AM	Venus Rise: 5:54 AM	Venus Rise: 5:49 AM
Mars Rise: 6:38 AM	Mars Rise: 6:20 AM	Mars Rise: 7:07 AM	Mars Rise: 6:49 AM
Jupiter Set: 8:09 PM	Jupiter Set: 7:47 PM	Jupiter Set: 8:28 PM	Jupiter Set: 8:09 PM
Saturn Rise: 8:37 PM	Saturn Rise: 8:03 PM	Saturn Rise: 8:33 PM	Saturn Rise: 8:02 PM
Uranus Set: 7:22 PM	Uranus Set: 6:53 PM	Uranus Behind Sun	Uranus Rise: 7:00 AM
Neptune Rise: 6:15 AM	Neptune Rise: 5:44 AM	Neptune Rise: 6:17 AM	Neptune Rise: 5:50 AM
Pluto Rise: 3:08 AM	Pluto Rise: 2:37 AM	Pluto Rise: 3:10 AM	Pluto Rise: 2:43 AM

All times: Pacific Standard Time (Nov 7, 2010-March 12, 2011) = UT -8 hours or U.S. Pacific Daylight Time (March 13-November 5, 2011) = UT -7 hours.

Daylight savings time begins March 13

Date	Moonrise	Moonset	Sunrise	Sunset	Twilight Begin	Twilight End
3/1/2011	05:06	15:17	06:50	18:01	05:14	19:37
3/2/2011	05:33	16:20	06:48	18:02	05:12	19:38
3/3/2011	05:57	17:22	06:46	18:03	05:10	19:39
3/4/2011	06:19	18:23	06:44	18:04	05:09	19:40
3/5/2011	06:40	19:23	06:43	18:06	05:07	19:42
3/6/2011	07:01	20:23	06:41	18:07	05:05	19:43
3/7/2011	07:24	21:24	06:39	18:08	05:03	19:44
3/8/2011	07:50	22:26	06:37	18:10	05:02	19:46
3/9/2011	08:19	23:28	06:36	18:11	05:00	19:47
3/10/2011	08:53		06:34	18:12	04:58	19:48
3/11/2011	09:35	00:28	06:32	18:13	04:56	19:50
3/12/2011	10:25	01:26	06:30	18:15	04:54	19:51
3/13/2011	12:23	03:18	07:29	19:16	05:52	20:52
3/14/2011	13:30	04:05	07:27	19:17	05:51	20:54
3/15/2011	14:42	04:45	07:25	19:18	05:49	20:55
3/16/2011	15:59	05:21	07:23	19:20	05:47	20:56
3/17/2011	17:17	05:52	07:21	19:21	05:45	20:58
3/18/2011	18:37	06:21	07:20	19:22	05:43	20:59
3/19/2011	19:57	06:50	07:18	19:23	05:41	21:01
3/20/2011	21:18	07:20	07:16	19:25	05:39	21:02
3/21/2011	22:37	07:53	07:14	19:26	05:37	21:03
3/22/2011	23:53	08:30	07:12	19:27	05:35	21:05
3/23/2011		09:14	07:10	19:28	05:33	21:06
3/24/2011	01:03	10:05	07:09	19:30	05:31	21:08
3/25/2011	02:03	11:02	07:07	19:31	05:29	21:09
3/26/2011	02:54	12:03	07:05	19:32	05:27	21:10
3/27/2011	03:35	13:07	07:03	19:33	05:25	21:12
3/28/2011	04:08	14:11	07:01	19:34	05:23	21:13
3/29/2011	04:37	15:14	06:59	19:36	05:21	21:15
3/30/2011	05:01	16:15	06:58	19:37	05:18	21:16
3/31/2011	05:24	17:16	06:56	19:38	05:16	21:18

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

Items of Interest This Month

Mercury visible in evening from mid-month onward
3/1 Venus and Moon close at dawn
3/11 First Quarter Friday Star Party
3/12 Good chance to spot Enceladus
3/14-3/16 Mercury within 2° of Jupiter
3/20 Vernal equinox at 4:21 PM local time
3/20 Moon near Spica
3/21-4/5 Another good chance to see the zodiacal light in the west
3/22 Mercury at greatest eastern elongation

For Current Occultation Information

Visit Derek C. Breit's web site

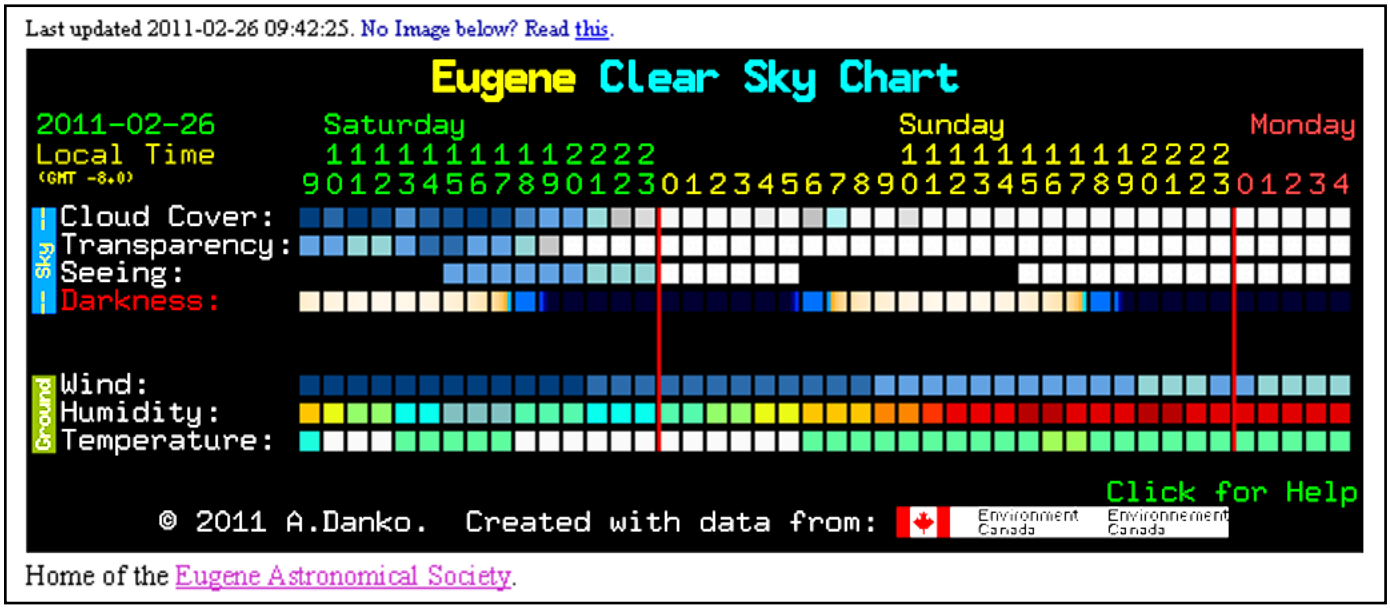
"BREIT IDEAS Observatory"

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.

Behind the Scenes at the Clear Sky Chart

Most of us have used the Clear Sky Chart to help guess whether the weather is likely to cooperate with an observing session or not. We've grown used to its rows of colored squares, each one representing one hour's prediction for cloud cover, transparency, seeing, darkness, wind, humidity, and temperature. We love to joke about how infallible it is (not), and even though it's no more perfect than the meteorological models it's based on, we've come to depend on it as a primary source for data when we need to decide if a particular night is worth going out with a scope or not.



So how does it work?

The Clear Sky Chart presents the forecast for local conditions in hourly segments. Each column on the chart represents one hour in the day, with a red line drawn at midnight. Each row represents one parameter of interest. The color of the block in each row tells you that parameter's conditions for that hour.

The charts are automatically generated using a program developed by a self-described "software weenie" and amateur astronomer named Atilla Danko from Canada. For data his software uses charts created by the Canadian Meteorological Center. The CMC generates these charts twice a day specifically for astronomers. The problem is, it creates 763 forecast maps. As Danko says, "It can be a chore to find the one you want." So Danko wrote scripts that extract the data we're interested in for each location that subscribes to his service. What these scripts do is look at the pixel on the master map that corresponds to the location we're interested in (in our case, latitude 44.0520 and longitude -123.08600, the College Hill Reservoir), and blow that pixel up into a square big enough for us to see its color clearly.

That's it! That wonderful blue block that tells us the sky is going to be clear is just one pixel on a CMC map writ large. Same with the other parameters on the chart. Clicking on any of the squares brings up the CMC master map it came from, so you can see the cloud patterns or humidity patterns or whatever for a wide area around us.

How often is the chart updated? Twice a day, typically between 8:00 and 10:00 (both a.m and p.m.) Pacific time. There are currently 4127 locations subscribing to Danko's service, so it takes about two hours to generate charts for them all. They're only done twice a day because that's how often the CMC updates their charts, although on occasion they will do more frequent updates, and when that happens the Clear Sky Chart software updates its charts more often as well.

So who gets updated first? Subscribers are ranked according to how often they use the page and whether or not they pay a $20 sponsorship fee. A generous EAS member sponsors the Eagle's Rest site in EAS's name, so it is ranked at 237, while Eugene itself is currently unsponsored and is ranked 482. The difference in update time is typically a whopping 11 minutes, so sponsorship isn't necessarily vital, but it's good to support such a useful service anyway.

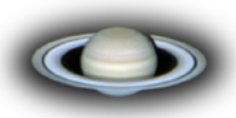
How does the sampling order affect accuracy? Nary a whit. The CMC charts are released at once, so Clear Sky Chart #4127 is generated from data that was calculated at the same time as the data that went into chart #1. The only advantage to being high on the list is for the evening forecast, when a chart might be generated at 8:00 rather than 10:00 — in time to provide up-to-date data to help you decide *go* or *no-go* for a trip to Eagle's Rest in the summertime.

Accuracy in weather prediction is still somewhat of an oxymoron, but the Canadian Meteorological Center and the Clear Sky Charts based on its maps do remarkably well. We've often had ground fog in Eugene when the CSC says Eagle's Rest should be clear, and lo, when we drive up to the Rest we find it clear. Sometimes we get faked out and find it cloudy up there, too, but the Chart is right more often than it's wrong. And it beats the local newspaper forecast all to thunder. (So to speak.)

Where can you find the Clear Sky Chart? Here are the links:

Eugene: http://cleardarksky.com/c/EugeneORkey.html?1

Eagle's Rest: http://cleardarksky.com/c/ElgsRstORkey.html?1



Rinnan's Run Featured in *Sky & Telescope*

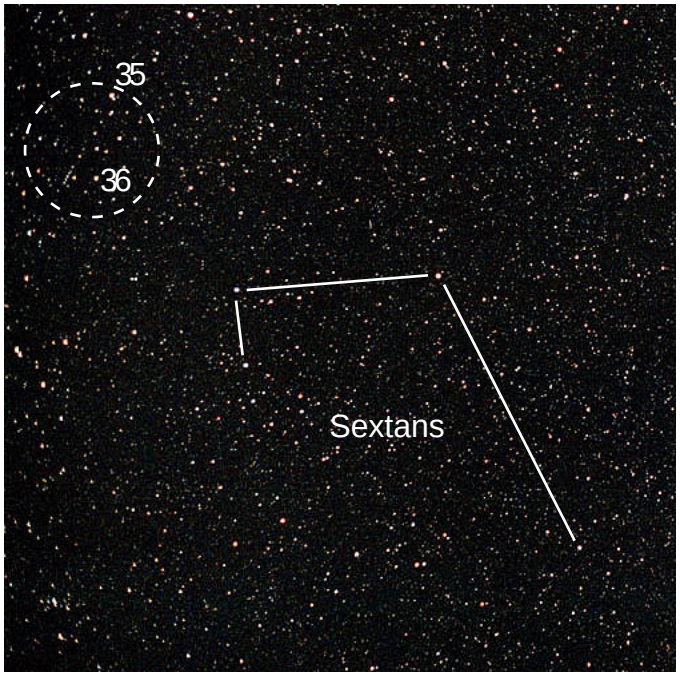
On April 19, 2009, EAS member Dan Rinnan found a pleasing cascade of stars while scanning with binoculars in northern Sextans, below the belly of Leo. We began calling it "Rinnan's Run," and we wrote to *Sky & Telescope* columnist Sue French to see if she had heard of this asterism before.

She hadn't. The southern part of it had been noted before by two other observers who incorporated it into other asterisms, but the entire run was a new discovery.

This year, in the April 2011 issue of *Sky & Telescope*, French made it official. She dedicated an entire paragraph of her "Deep-Sky Wonders" column to Rinnan's Run, and included it on her star chart. Dan's name is now immortalized in print, and the article doesn't say "apprehended" anywhere!

Rinnan's Run is a remarkably straight line of about a dozen mag 8-9 stars (up to 16 if you go fainter) stretching northwest-southeast between 35 and 36 Sextans. 35 is at the northern end with 36 a little to the west of the bottom end of the chain. The center of the chain is at about RA 10h 45m and Dec +3 degrees 30'. It stretches for 3 degrees, so this is definitely a binocular or wide-field telescope object.

Go have a look next time you're out!



Rinnan's Run in northeast Sextans. Zoom in for a closer look

Thank Goodness the Sun is Single

By Trudy E. Bell

It's a good thing the Sun is single. According to new research, Sun-like stars in close double-star systems "can be okay for a few billion years — but then they go bad," says Jeremy Drake of the Harvard-Smithsonian Astrophysical Observatory in Cambridge, Mass.

How bad? According to data from NASA's Spitzer Space Telescope, close binary stars can destroy their planets along with any life. Drake and four colleagues reported the results in the September 10, 2010, issue of *The Astrophysical Journal Letters*.

Our Sun, about 864,000 miles across, rotates on its axis once in 24.5 days. "Three billion years ago, roughly when bacteria evolved on Earth, the Sun rotated in only 5 days," explains Drake. Its rotation rate has been gradually slowing because the solar wind gets tangled up in the solar magnetic field, and acts as a brake.

But some sun-like stars occur in close pairs only a few million miles apart. That's only about five times the diameter of each star — so close the stars are gravitationally distorted. They are actually elongated toward each other. They also interact tidally, keeping just one face toward the other, as the Moon does toward Earth.

Such a close binary is "a built-in time bomb," Drake declares. The continuous loss of mass from the two stars via solar wind carries away some of the double-star system's angular momentum, causing the two stars to spiral inward toward each other, orbiting faster and faster as the distance shrinks. When each star's rotation period on its axis is the same as its orbital period around the other, the pair effectively rotates as a single body in just 3 or 4 days.

Then, watch out! Such fast spinning intensifies the magnetic dynamo inside each star. The stars "generate bigger, stronger 'star spots' 5 to 10 percent the size of the star—so big they can be detected from Earth," Drake says. "The stars also interact magnetically very violently, shooting out monster flares."

Worst of all, the decreasing distance between the two stars "changes the gravitational resonances of the planetary system," Drake continued, destabilizing the orbits of any planets circling the pair. Planets may be so strongly perturbed they are sent into collision paths. As they repeatedly slam into each other, they shatter into red-hot asteroid-sized bodies, killing any life. In as short as a century, the repeated collisions pulverize the planets into a ring of warm dust.

The infrared glow from this pulverized debris is what Spitzer has seen in some self-destructing star systems. Drake and his colleagues now want to examine a much bigger sample of binaries to see just how bad double star systems really are.

They're already sure of one thing: "We're glad the Sun is single!"

Planetary collisions such as shown in this artist's rendering could be quite common in binary star systems where the stars are very close.

Used with permission of NASA's The Space Place