

Eugene Astronomical Society,  
Annual Club Dues \$25, Board Members:  
President: Sam Pitts - 688-7330  
Secretary: Jerry Olton  
Jacob Strandlien, Tommy Lighting Bolt  
& Fred Domineack

[www.eugeneastro.org](http://www.eugeneastro.org)  
EAS is a Proud Member of:  
**The Astronomical League**  
The World's Largest Federation of Amateur Astronomers

IO editor- sampitts@comcast.net 688-7330  
Io (*EYE-oh*) is nearest to Jupiter and fastest  
orbiting of the four Galilean moons

## **Monday- January 8<sup>th</sup> MEETING** **EUGENE ASTRONOMICAL SOCIETY** **At The Science Factory Planetarium**

EAS will host a Telescope Workshop at the Science Factory for its January 8<sup>th</sup> meeting. We encourage anyone with a new telescope (or old) to come and learn how to set it up and use it. Many qualified members will be present to offer assistance and answer any questions you may have about equipment or amateur astronomy. After the meeting we can meet at the North Bank Restaurant for a snack and conversation.

The meeting will begin at **7:00 PM** in the Planetarium. It is time to pay your Membership Dues. Special raffle for EAS Members for an 8" telescope, raffle will continue until 100 tickets are sold to EAS members. Tickets are \$ 5.00 each or 5 tickets for \$20.00 for a chance for club members to win an Orion 8" Dobsonian Telescope. Come on out and visit with fellow astronomers and discuss and plan future events and star parties.

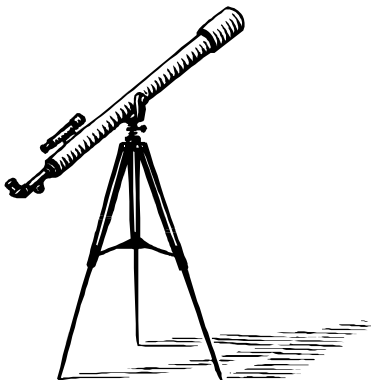
EAS & its members are dedicated to having fun while pursuing the hobby of Astronomy, so come on out and have some fun visiting with others who share a passion for the night skies.

Individuals who are new to the hobby or not sure about your equipment should show up early; EAS members will assist you in understanding your equipment better. If you are planning on purchasing a scope in the near future, please come to a meeting and learn more about astronomical equipment. EAS has knowledgeable members with first hand experience regarding all types of telescopes & mounts. They would be glad to assist you in making a good solid choice to maximize your viewing pleasure.

**The Science Factory is at 2300 Leo Harris Parkway, behind Autzen Stadium.**

Check EAS WEB site for up to the minute information  
[www.eugeneastro.org](http://www.eugeneastro.org)

## **Telescope/Equipment Workshop**



**January 8<sup>th</sup>**  
**7:00 PM**  
**At the Science Factory**



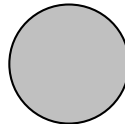
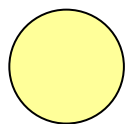
**Bring your equipment so we can help you understand how to use and enjoy it.**

IO –December 2007

www.eugeneastro.org



# Observing in January



January 3	January 11	January 18	January 25
Mercury Set 4:27 PM	Mercury Set 5:00 PM	Mercury Set 5:34 PM	Mercury Set 6:12 PM
Venus Set 6:02 PM	Venus Set 6:23 PM	Venus Set 6:42 PM	Venus Set 7:01 PM
Mars Rise 6:14 AM	Mars Rise 6:09 AM	Mars Rise 6:05 AM	Mars Rise 5:59 AM
Jupiter Rise 5:13 AM	Jupiter Rise 4:50 AM	Jupiter Rise 4:29 AM	Jupiter Rise 4:07 AM
Saturn Rise 8:05 PM	Saturn Rise 7:31 PM	Saturn Rise 7:01 PM	Saturn Rise 6:31 PM
Uranus Set 9:44 PM	Uranus Set 9:14 PM	Uranus Set 8:48 PM	Uranus Set 8:22 PM
Neptune Set 7:42 PM	Neptune Set 7:12 PM	Neptune Set 6:46 PM	Neptune Set 6:18 PM
Pluto Rise 6:12 AM	Pluto Rise 5:41 AM	Pluto Rise 5:15 AM	Pluto Rise 4:48 AM

All times: U.S. Pacific Daylight Time (May-October) = UT - 7 hours. Pacific Standard Time (Nov.-April) = UT-8

Date	Moonrise	Moonsset	Sunrise	Sunset	Twilight	Twilight
1/1/2007	14:41	06:25	07:48	16:45	06:03	18:29
1/2/2007	15:41	07:31	07:48	16:45	06:03	18:30
1/3/2007	16:49	08:22	07:48	16:46	06:03	18:31
1/4/2007	18:02	09:03	07:48	16:47	06:03	18:31
1/5/2007	19:13	09:34	07:47	16:48	06:03	18:32
1/6/2007	20:21	09:57	07:47	16:49	06:03	18:33
1/7/2007	21:27	10:17	07:47	16:51	06:03	18:34
1/8/2007	22:30	10:34	07:47	16:52	06:03	18:35
1/9/2007	23:33	10:51	07:47	16:53	06:03	18:36
1/10/2007	-----	11:07	07:46	16:54	06:03	18:37
1/11/2007	00:35	11:25	07:46	16:55	06:03	18:38
1/12/2007	01:40	11:45	07:46	16:56	06:02	18:39
1/13/2007	02:46	12:09	07:45	16:57	06:02	18:40
1/14/2007	03:54	12:39	07:45	16:59	06:02	18:41
1/15/2007	05:03	13:20	07:44	17:00	06:02	18:42
1/16/2007	06:07	14:12	07:44	17:01	06:01	18:43
1/17/2007	07:04	15:17	07:43	17:02	06:01	18:44
1/18/2007	07:51	16:31	07:43	17:04	06:01	18:45
1/19/2007	08:27	17:51	07:42	17:05	06:00	18:46
1/20/2007	08:57	19:12	07:41	17:06	06:00	18:48
1/21/2007	09:22	20:31	07:41	17:08	05:59	18:49
1/22/2007	09:43	21:49	07:40	17:09	05:59	18:50
1/23/2007	10:03	23:06	07:39	17:10	05:58	18:51
1/24/2007	10:24	-----	07:38	17:12	05:57	18:52
1/25/2007	10:48	00:23	07:37	17:13	05:57	18:53
1/26/2007	11:16	01:42	07:36	17:14	05:56	18:54
1/27/2007	11:51	03:00	07:35	17:16	05:55	18:56
1/28/2007	12:34	04:14	07:35	17:17	05:54	18:57
1/29/2007	13:30	05:22	07:34	17:18	05:54	18:58
1/30/2007	14:34	06:17	07:32	17:20	05:53	18:59
1/31/2007	15:45	07:00	07:31	17:21	05:52	19:00

All times are for Eugene, Oregon Latitude 44° 3' 8" Longitude 123° 5' 8" for listed Date

## Events

### January 2007

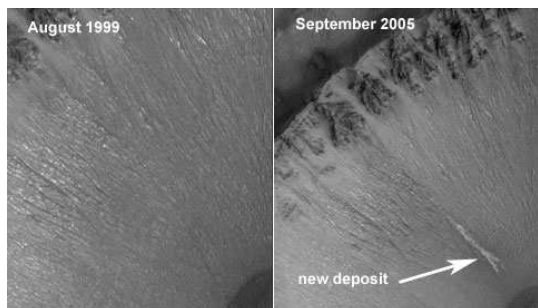
2	Asteroid 2006 UQ17 Near-Earth Flyby (0.029 AU); Asteroid 2006 YD12 Near-Earth Flyby (0.092 AU)
3	Earth At Perihelion (0.983 AU From Sun) <i>Earth is closest to the Sun</i> ; Quadrantids Meteor Shower Peak
4	Asteroid 2001 YE4 Near-Earth Flyby (0.033 AU); Wilhelm Beer's 210th Birthday (1797) <sup>1</sup>
6	Deep Impact Near-Mars Flyby (0.033 AU)
8	Stephen Hawking's 65th Birthday (1942) <sup>2</sup> ; EAS Meeting-Telescope Workshop
9	Asteroid 2006 XP4 Near-Earth Flyby (0.074 AU)
10	Asteroid 2006 QQ56 Near-Earth Flyby (0.052 AU); Meeting: Neutrino Mass Measurements and their Implications (NUMMI '07), Durham, United Kingdom
11	220th Anniversary (1787), William Herschell's Discovery of Uranus Moons Titania and Oberon
13	Cassini, Titan Flyby
15	Comet C/2006 P1 (McNaught) Closest Approach To Earth (0.818 AU)
19	5th Anniversary (2002), Discovery of SAU 090 Meteorite (Mars Meteorite); Johann Bode's 260th Birthday (1747) <sup>3</sup>
22	Comet P/2006 HR30 (Siding Spring) Closest Approach To Earth (0.749 AU)
26	45th Anniversary (1962), Ranger 3 Launch
27	40th Anniversary (1967), Apollo 1 Fire (Gus Grissom, Edward White & Roger Chaffee)- <b>SEE PAGE #4</b>
29	Cassini, Titan Flyby
30	Genesis 2 Dnepr 1 Launch - <b>See Page #4</b>
31	Asteroid 2006 CJ Near-Earth Flyby (0.026 AU)

**AU**=Astronomical Unit (92,955,800 miles)

<sup>1</sup> Beer's fame derives from his hobby, astronomy. He built a private observatory with a 9.5 cm refractor in Tiergarten, Berlin. Together with Johann Heinrich Mädler he produced the first exact map of the Moon (entitled *Mappa Selenographica*) in 1834-1836, and in 1837 published a description of the Moon (*Der Mond nach seinen kosmischen und individuellen Verhältnissen*). Both remained the best descriptions of the Moon for many decades. In 1830, Beer and Mädler created the first globe of the planet Mars. In 1839 they made a map of Mars and calculated its rotation period to be 24 h 37 min 22.7 s, only 0.1 seconds different from the actual period as it is known today.

<sup>2</sup> Stephen Hawking has worked on the basic laws which govern the universe. With Roger Penrose he showed that Einstein's General Theory of Relativity implied space and time would have a beginning in the Big Bang and an end in black holes. These results indicated it was necessary to unify General Relativity with Quantum Theory, the other great scientific development of the first half of the 20th Century. One consequence of such a unification that he discovered was that black holes should not be completely black, but should emit radiation and eventually evaporate and disappear. Another conjecture is that the universe has no edge or boundary in imaginary time. This would imply that the way the universe began was completely determined by the laws of science

<sup>3</sup> In 1774, Bode started to look for nebulae and star clusters in the sky, and observed 20 of them in 1774-5. Among them are three original discoveries, M81 and M82 which he both discovered on December 31, 1774, and M53, discovered on February 3, 1775, as well as a newly cataloged asterism.



## Liquid Water on Mars

NASA Images Suggest Water Still Flows in Brief Spurts on Mars; December 06, 2006. NASA photographs have revealed bright new deposits seen in two gullies on Mars that suggest water carried sediment through them sometime during the past seven years.

"These observations give the strongest evidence to date that water still flows occasionally on the surface of Mars," said Dr. Michael Meyer, lead scientist for NASA's Mars Exploration Program, Washington.

Liquid water, as opposed to the water ice and water vapor known to exist at Mars, is considered necessary for life. The new findings heighten intrigue about the potential for microbial life on Mars. The Mars Orbiter Camera on NASA's Mars Global Surveyor provided the new evidence of the deposits in images taken in 2004 and 2005.

In Memory of the Brave souls who go where no one has gone before  
January 27, 1967



Edward Higgins White, Virgil I "Gus" Grissom, & Roger B. Chaffee

<http://space.about.com/gi/dynamic/offsite.htm?zi=1/XJ&sdn=space&zu=http%3A%2F%2Fwww2.jpl.nasa.gov%2Fcalendar%2F>



## Genesis Pathfinder



Genesis 1

Genesis Pathfinder is a technology demonstration for the inflatable Nautilus space station structure as a prototype for a space hotel by Bigelow Aerospace.

Once in Earth orbit, the one-third scale hardware is to produce important data regarding multiple features of a full-scale spacecraft. The first Genesis will be pressurized with nitrogen, but later units will use an oxygen/nitrogen mixture. Genesis includes also windows and an airlock simulator with key seal interfaces. Genesis is 10 ft x 8 ft in size when inflated.

The Genesis spacecraft is fitted with several cameras monitoring the inside and outside of the spacecraft. Inside are free floating photos and personal objects provided by commercial customers to be monitored by the cameras. A NASA experiment, the GeneBox Microlaboratory, is also onboard to test new technologies, which will be used in GeneSat biological nanosatellites.

The space firm is keen on spurring private ownership and use of space stations by making habitable space modules affordable for corporate communities. Under several agreements with NASA, Bigelow is drawing upon NASA's TransHab inflatable structures program, although the private company is pioneering its own design.

Bigelow Aerospace confirmed that the Genesis Pathfinder module would be lofted by the Falcon-9 booster, provided by Space Exploration Technologies Corporation (SpaceX). Bigelow Aerospace has executed a launch agreement with SpaceX. No details regarding price or conditions of sale are available. But following delays of the Falcon development, both Genesis spacecraft will be orbited by Dnepr-1 launch vehicles.

The two Genesis spacecraft are designed to last for several years in orbit. Following the two Genesis spacecraft will be the Sundancer spacecraft in 2009, which is 45% in size of the full Nautilus and will test life support systems, propulsion and can support a crew of three.

## How to use Small to Medium Telescopes

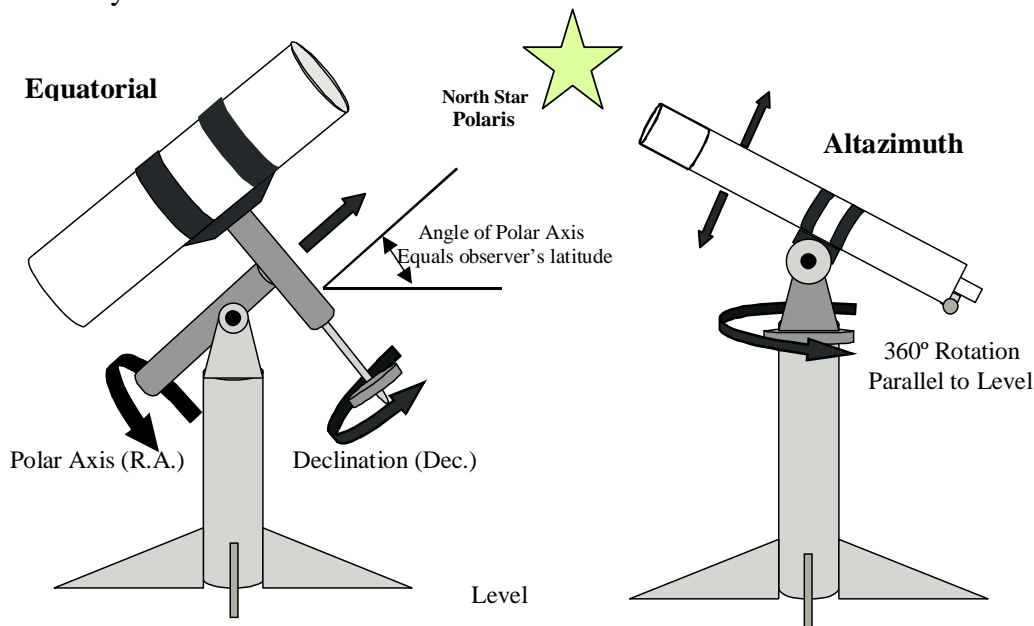
From “Basic Astronomy”: By Sam Pitts©

### Casual Observing with a Telescope

**Altazimuth Mounts** move in two degrees of motion (just like a camera tripod), one vertically (altitude) and the other horizontally (in azimuth). Good for quick set up with a small 2-4” refractor. Use low power (magnification under 150x) eyepieces. Non-motorized mounts will not track objects. The telescope has to be moved continually to keep objects in view. Dobsonian Telescopes use a similar mount at the base. They are much easier to use, allowing the use of large aperture reflectors.

**Equatorial Mounts** nullify the effects of Earth’s rotation. The mount moves in two different degrees of motion, each axis at right angles to each other. One axis is pointed to the Pole (Polar Axis) and turns 360 degrees (24 hours) in Right Ascension around that axis. Right Ascension is divided into increments of Hours, Minutes, and Seconds, to coincide with the day rotation of the Earth. The angle of the Polar axis of the Mount will correspond with the local latitude of the observer. The 0 Point (hour) is at the Vernal Equinox, where the ecliptic (Sun) crosses the celestial equator each Spring. The Hours always increase going East.

The other axis is at a right angle (90 degrees) from the Polar axis and is called the Declination axis. Declination is divided into Degrees; each degree is divided into 60 Minutes of arc, and each Arc Minute into 60 seconds of arc. Be careful not to confuse RA (Right Ascension) with Declination. (4minutes = 1 Degree). The polar axis, right ascension, when equipped with a motor that makes one complete 360-degree revolution in 24 hours will compensate for the earth’s rotation. This compensation will keep an object centered in your eyepiece. The slow motion control knob, on the RA axis, will track an object manually for a short time. All you have to do is slowly turn the knob.



**Magnification** is the focal length of the telescope divided by the focal length of the eyepiece. These measurements are usually expressed in millimeters.

$$\frac{2000\text{mm (focal length f/10 x 200mm objective)}}{20\text{mm (focal length of eyepiece)}} = 100\text{x}$$

Lower magnification usually shows an object better than high. Low magnification translates into crisper viewing with more detail and contrast than going to a higher power. Seeing conditions also play a major role, in the use of medium & high powered eyepieces.

**Field of View:** the area of sky visible through your eyepiece. This will vary from telescope to telescope based on its focal length and the focal length and type of eyepiece used. Faster telescopes will have a wider field of view than one with a longer focal length using the same eyepiece. The longer the focal length of an eyepiece will result in less magnification and a wider field of view. The apparent field of view will also vary according to the type and manufacture of the eyepiece.

Plossls & Orthoscopes have apparent fields of view of 45-55 degrees. Wide-angle Erfles & Konigs have 55-70 degree fields. Naglers and Ultra-Wide (Meade) have 80-84 degree fields. How to find the actual field of view in degrees? Take the magnification of the eyepiece (20mm Plossl 100x 50 degrees) and divide the apparent field of view, 50 degrees, by the magnification. In this case the field of view is 0.5-degree. The Moon is 1/2 of a degree when full.

**Why do some objects look better than others?** One of the basic issues is brightness. Generally speaking, the brighter the object the better you can see it. Brightness is measured in magnitudes, stars/objects with a lower number being brighter than one with a higher one. A magnitude 1 star is 2 1/2 (2.512) times brighter than a Magnitude 2 star.

### **Easy subjects for Photography**

There are no easy subjects; lots of things can go wrong. Start with a camera, single lens reflex (SLR) and a tripod. Use a fast film of 800-3200 asa and a 50-85mm F/1.2-1.4 lens. You have to experiment but should be able to take 15-20 second exposures of the night sky with varied results. Longer exposure times will cause star trails. Mount the camera on top of a telescope with a good mount and clock drive and you are ready for longer exposures. Start out with wide-angle deep sky or star trails. The next step is guided deep sky photos. These steps will help you go to prime focus lunar, planetary and deep sky photography.

### **Good Books on Astronomy:**

**The Backyard Astronomer's Guide** by Terence Dickinson & Alan Dyer

**Night Watch** by Terence Dickinson

**Field Guide to the Night Sky** National Audubon Society

**The Universe from Your Backyard** by David J. Eicher

**The Guide to Amateur Astronomy** by Jack Newton & Philip Teece

**Turn Left at Orion** by Guy Consolmagno & Dan M. Davis

### **Observing Aids:**

**Sky & Telescope Magazine**

**Astronomy Magazine**

**The Messier Album** by John Mallas & Evered Kremer

**Sky Catalogue 2000.0** by Alan Hirshfeld & Roger W. Sinnott

**The Deep Sky Field Guide** by Cragin, Lucyk and Rappaport

Join a local astronomical group like Eugene Astronomical Society 541-688-7330

Eugene Astronomical Society Web Page: [www.eugeneastro.org](http://www.eugeneastro.org)

Questions: Sam Pitts 688-7330



<http://pmo-sun.uoregon.edu/>

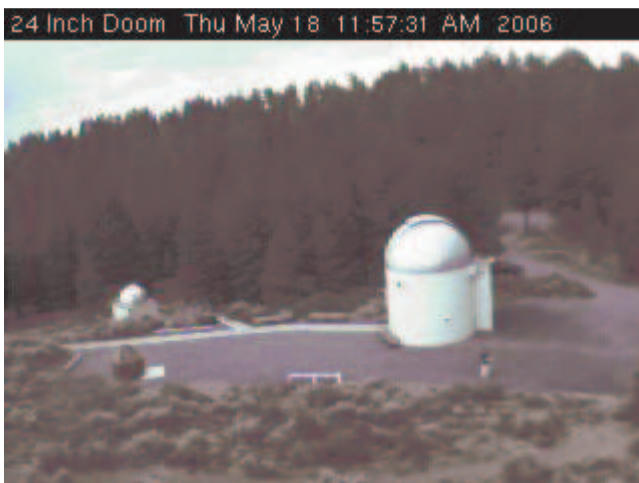
## Latest News & Updates

The Friends of Pine Mountain Board meets Saturday, January 13th, at high noon, at the University of Oregon, in Eugene. All interested astronomers are welcome to attend, even if you're not a Director nor even a FOPMO member. Meeting will be at usual location, fourth floor of Willamette Hall, 1371 E. 13th Ave., in ITS Conference Room way in back toward left, after you arrive at fourth floor, at SE corner of building. Bring a sack lunch. Local folks are encouraged to bring beverages/snacks to share with the out of towners.

Hear about what's going on at PMO including status of the Education Center and the new automated telescope on loan from PSU. There will be election of officers. Long-time President Mary Hill wants a major party for her "retirement" at conclusion of meeting. Please submit agenda items in advance to Mary at [visions@pacifier.com](mailto:visions@pacifier.com). Watch for parking regulation signage on campus. Access to Willamette Hall may be restricted on Saturdays but campus security is aware of our meeting and should be able to let you in to access the ITS Conference Room. More details in online PMO OBSERVER at FOPMO website.

To join or renew your membership in Friends and to donate to our programs, please fill out and mail the form above and send along with your check to the address as printed (College of Arts & Sciences Development Office, 1245 University of Oregon, Eugene, OR 97403); not either of the P.O. boxes used in prior requests. Please make your check out to the UO Foundation and note on your check's memo area, "For Friends of Pine Mtn." We are unable to include a return envelope at this time.

You can specify by writing a note that your donation is applied to specific Friends' programs: We have a new **Jim Girard Memorial Education Fund** specifically for outreach efforts, our **Education Center Fund** to support construction of our new building at PMO where we'll conduct summer programs and classes year-round, and our regular **Friends of PMO Fund** that is used to support all facets of our operation (this is the default account if none is specified). We suggest \$35 as an initial annual membership donation. We welcome major amounts towards our Education Center project.



If you have not had the opportunity to visit Pine Mountain Observatory I highly suggest that you do so in the upcoming year. PMO is situated 30 miles South East of Bend, at over 6,000' and supports magnitude 6+ skies. Designated amateur areas allow you to setup your own telescopes to share with the many visitors during the summer months. This is a really great place to share the night skies. For additional information regarding FOPMO please contact EAS member Rick Kang.

Sam

## Astronomy Clubs in Oregon

Name: Central Oregon Astronomical Society  
Address: Central Oregon Environmental Center, 16 NW  
Kansas, Bend, OR 97701 USA  
Contact: Jerry Niehuser  
Phone: 503-382-5621  
Email: jniehuser@kmx.com  
URL: [Website](#)  
Members: 45 members

Name: Eugene Astronomical Society  
Address: P.O. Box 7264, Eugene, OR 97401 USA  
Contact: Sam Pitts  
Phone: 541-688-7330  
Email: sampitts@comcast.net  
URL: [Website](#)  
Members:

Name: Mt. Hood Observatory Assn.  
Address: 29404 SE Dodge Park Blvd, Gresham, OR 97080  
USA  
Contact: Robert Duke  
Phone: 503-663-9630  
Email:  
URL: [Website](#)  
Members:

Name: Night Sky 45 Astronomy Club  
Address: 4000 Lancaster Drive NE | P.O. Box 14007 | Salem,  
Oregon 97309  
Contact: David Kasnick  
Phone:  
Email: nsdave@nightsky45.com  
URL: [Website](#)  
Members: 60

Name: NightSky 45 Astronomy  
Address: 13566 Parrish Gap Rd. SE, Jefferson, OR 97352  
USA  
Contact: Steve Durham  
Phone: 541-327-2839  
Email: nightsky45@juno  
URL: [Website](#)  
Members:

Name: Northwest Astronomy Group  
Address: 55371 McDonald Rd., Vernonia, OR 97064 USA  
Contact: Sandy Mikalow  
Phone: 503-429-2430  
Email: sandym@teleport.com  
URL: [Website](#)  
Members: 60 members

Name: Rockford Amateur Astronomers, Inc.  
Address: ALCOR, 6804 Alvina Rd., Rockford, IL 61101 USA  
Contact: Barry Beaman  
Phone: 815-962-6540  
Email:  
URL:  
Members: 52 members

Name: Rose City Astronomers  
Address: Oregon Museum of Science and Industry, 1945 SE  
Water Ave., Portland, OR 97214-3354 USA  
Contact: Dale Fenske  
Phone: 503-255-2016  
Email: fenske@uofport.edu  
URL: [Website](#)  
Members: 330 members

Name: Southern Oregon Skywatchers  
Address: P.O. Box 4092, Medford, OR 97502  
Contact: Mike Quilty, President  
Phone: 541-664-7907  
Email: michaelquilty7907@msn.com  
URL: [Website](#)  
Members: 75 members

Name: Umpqua Amateur Astronomers  
Address: 3150 W. Military Ave., Roseburg, OR 97470 USA  
Contact: Paul Morgan  
Phone: 503-673-1081  
Email: pmorgan@users.wizards.net  
URL:  
Members: 18 members