



# Snake River Skies

The Monthly Newsletter of the  
Magic Valley Astronomical Society  
May 2013



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

## Membership Meeting

Saturday, May 11<sup>th</sup>  
at the Herrett Center  
Join us at 7:00 pm  
President Rob Mayer will  
be the Speaker



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## President's Message

Colleagues,

Spring appears to be in the air. Flora and fauna are taking steps forward, the temperature's climbing, and the skies are starting to get clearer.

When Spring rolls around, chances to take the scopes out and meet the public start to pick up. Last month we had Astronomy Day and the Sidewalk Astronomy, and the first week of May will feature the Annual Herrett Center Camp-in.

We, too, as a club also hope to get going with the club-only star parties. Right now, we're trying to muster up enough courage to head out to Thorn Creek Ridge on Saturday, May 4. Keep checking the club's e-mail listserv to get final details. While there weren't many of us at the April Messier Marathon at the Jerome Gun Club, the viewing was surprisingly strong. Those of us who have been at Thorn Creek Ridge can tell you the viewing there will likely even be better.

Lastly, while Spring may mean renewal, this year it also means a passage. The Herschel Space Telescope project effectively came to an end at the end of April, and this month's club meeting on May 11 will feature a presentation on the scope. We hope to see you there.








Here's to clear observing ahead,

Rob Mayer

## In this Issue

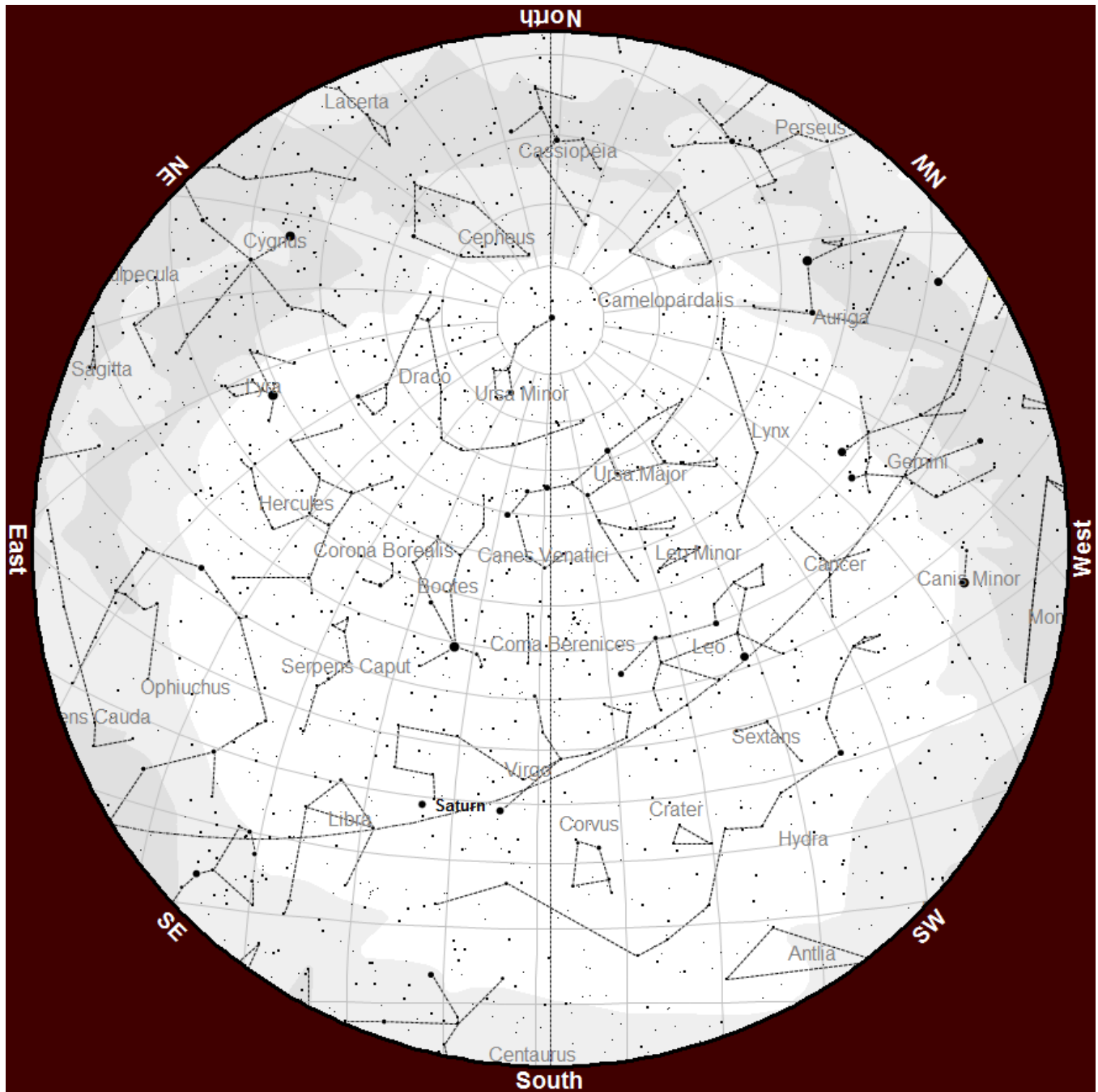
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## Calendar for May

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2 Last Quarter Moon 	3	4
5	6	7	8	9	10 Astronomy Talk 8:45 – 9:45 	11 Monthly Membership Meeting Herrett Center 7:00pm
12 Mother's Day 	13	14	15	16	17	18 First Quarter Moon 
19	20	21	22 Spica .005° S of the Moon, occultation 	23	24	25 Full Moon Milk Moon 
26	27 	28	29	30	31	

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## Planisphere for May



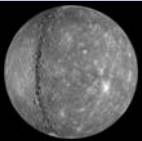





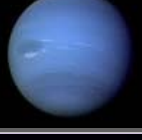




Planisphere should be used as a guide for the month of May, mid-month, end of astronomical twilight (22:45) Planisphere is provided as a courtesy from Chris Anderson, Coordinator, Centennial Observatory, Herrett Center for Arts & Science - College of Southern Idaho, Twin Falls, ID

## Trivia Time

The human brain's Cerebral Cortex alone contains about 125-trillion synapses, which would be the equivalent of 1500 Milky Way galaxies. However; the atom is 99.99% empty space making the universe mostly – nothing.




**Solar System Highlights**


	<b>Mercury</b> moves to May's evening sky, but will be hard to spot until late month. On May 25, the planet will set almost ninety minutes after the Sun and will be easily identified sitting $10^\circ$ above the western horizon, close to brilliant Venus. Through a telescope, on the 25th, Mercury shows a 6"-diameter disk that is 80-percent illuminated. By the 31st, the planet appears 6.5" across and 65-percent lit.
	<b>Venus</b> At the beginning of May, Venus spans 9.9" across and shows a disk 99-percent lit. By late in the month, the disk has grown to 10.3" and the phase has shrunk to 95-percent illumination. The planet shines at a stunning -4 magnitude, about ten times brighter than the brightest star Sirius, and by far the brightest celestial object after the Sun and Moon.
	<b>Mars</b> is too deep in the solar glare and cannot be observed until early June, when it will reappear in the morning sky.
	<b>Jupiter</b> lies in Taurus the Bull, just above Aldebaran, the brightest star in the constellation and one of the brightest in the nighttime sky. It glows brightly at magnitude -2 and is visible in the west as evening twilight fades.
	<b>Saturn</b> reached opposition last month, on the night of April 28. The planet glows low in the southeast as twilight fades, to the lower left of Spica and farther lower right of Arcturus. A small telescope will reveal Saturn's system of rings which span 42", surrounding a disk about 19" in diameter. The rings are tilted $18^\circ$ to our line of sight, the widest open they have been since the year 2006.
	<b>Uranus</b> lies on the border between Cetus and Pisces and is low in the morning sky, just $10^\circ$ above the eastern horizon by the onset of twilight. Some observers may be able to spot the planet with binoculars, although at magnitude +5.9 it will be a difficult object and will require very transparent skies.
	<b>Neptune</b> Seek out Neptune just before dawn, in central Aquarius, $1^\circ$ northwest of the 5th-magnitude star Sigma Aquarii. The distant world lies 2.8 billion miles from Earth and glows dimly at magnitude +7.9. A 4-inch diameter telescope is probably the minimum required to see the planet and resolve its disk, only 2.4" across.
	<b>Pluto</b> The dwarf planet Pluto lies in northern Sagittarius and is highest above the southern horizon just before dawn. Search for it under a dark, moonless sky.
	<b>Asteroid</b> In early May, the large main-belt asteroid 6 Hebe lies within $2^\circ$ of Marfik, and tracks westwards with each passing night. Glowing at about 10th-magnitude, Hebe looks like an ordinary field star. Although too faint for small telescopes to pull in under city lights it is well within their reach from a dark sky when the Moon is out of the way.
	<b>Comets</b> C/2011 L4 PanSTARRS, the comet is circumpolar for observers located at mid-northern latitudes. It never sets and can be viewed all night, in the constellation Cepheus the King. PanSTARRS glows at 7th magnitude and appears as a bright, round fuzz ball roughly 5' across, with little hint of a tail. The comet's orbit is bringing it by the Sun for the first time; in the coming months it will fly back out again, never to return.
	<b>Meteors</b> The Eta Aquarids may not be as spectacular as the Perseids in August or the Leonids of winter, but it is fun to think that these meteors are in fact particles of the most famous comets of all - Halley's Comet! The shower gets its name from the area of the sky from which the meteors appear to radiate at the date of the maximum - in this case, a star designated by the Greek letter Eta in the constellation Aquarius the Water Bearer. The peak occurs around May 5 <sup>th</sup> .

**Idaho Skies for May**

**Idaho Skies is a column for beginning amateur astronomers and those interested in astronomy. Suggestions about the column are gladly accepted by the columnist at [streetastro@gmail.com](mailto:streetastro@gmail.com). Check the Idaho Skies Twitter page for notices and images at [www.twitter.com/IdahoSkies](http://www.twitter.com/IdahoSkies).**

This month look for the stars, Mizar and Alcor. Mizar is the star that forms the bend in the handle of the Big Dipper. Look carefully at this star and you'll probably notice that it has a fainter companion star very close to it. The name of the companion star is Alcor and it is located at an angle directed away from the direction handle bend. Use a pair of binoculars if you're not certain that you can see the fainter Alcor. To me, the distance between the two stars is close to the angle that  $1/8^{\text{th}}$  of an inch spans when viewed at arm's distance. It may be hard to believe, but that gives Mizar and Alcor an angular separation close to  $1/2$  the diameter of the moon. When you look at Mizar with even slight optical aid, get ready for another surprise; Mizar is a double star. In 1650, Mizar was the first double star that astronomers discovered. Mizar is over twice as massive as our sun and Alcor is over 50% heavier than our sun. The pair is located between 78 and 81 light years from the earth (the distance is uncertain). Therefore, if you were born between 1935 and 1932, Mizar and Alcor are your birthday stars this year. The actual distance between Mizar and Alcor may be anywhere between  $1/4$  to over three light years. Therefore, it's possible that these two stars are not actually in orbit around each other. However, if they are in orbit around each other, then their orbital period may be in the hundreds of thousands of years.

What we call The Big Dipper is not a true constellation; it is a part of the constellation of Ursa Major or the Big Bear. The constellation of the Big Bear passes high over the north during May evenings. This means that during May evenings, the Dipper is upside down and pouring its contents on the Earth below.

**May 1 – 7**

The moon is last quarter on the 2<sup>nd</sup>. The first and third quarter moons are excellent astronomical objects for binoculars and small telescopes. However, most people have not spent much time with the third quarter moon. This hemisphere of the moon, the western hemisphere, is covered in more extensive Maria than the eastern hemisphere. The Maria of the western hemisphere are marked with three exceptionally bright craters, Copernicus, Kepler, and Aristarchus. These three really stand out in binoculars.

May 4<sup>th</sup> is Space Day, a celebration of humanity's exploration of outer space. Check out the Space Day website to see if anything is happening near you. <http://www.spaceday.org/>

Our next meteor shower reaches its peak on the 5<sup>th</sup>. This meteor shower will be visible for at least a week before and after its peak, which is good because the moon is going to interfere in 2013. The moon's light is not the only strike against this shower. It's radiant, or where in the sky that the meteors appear to radiate from is close to the horizon in the Northern hemisphere. The shower really is much better south of the equator. On the positive side, the parent of the Eta Aquarids is comet Halley. The Eta Aquarids is one of two showers that originate from this comet. So if you observe a meteor from this shower, you're watching dust from comet Halley vaporizing dozens of miles overhead. In dark skies and no moon, you can expect to see around ten swift meteors per hour from this shower. The meteors will originate in the low east after 3:00 AM and a sizable portion of them are expected to leave trains.

**May 8 – 14**

The moon is new on the 9<sup>th</sup>. At new moon, the moon's orbit orbital path carries the moon it's closest to the sun. Since the moon's orbit tips five degrees relative to Earth's equator, the moon often passes over or below the sun at new. If there were no tilt in the moon's orbit relative to Earth's equator, then every new moon would result in a solar eclipse. Fortunately, this May the moon will indeed pass in front of the sun. The solar eclipse however will only be visible in Australia.

The moon will be 24 hours old on the evening of the 10<sup>th</sup>. It will be tough to see, however, this is an opportunity to search for a very young moon. Use binoculars and look just left of Venus, very low in the northwestern sky right after sunset. If you can find the moon, it will be just a sliver of itself and will not even span half a circle.

The moon will be higher and therefore easier to see crescent on the 12<sup>th</sup>. Look for the moon just below Jupiter. Do you want to learn to identify the constellation of Gemini? The celestial twins stand on top of the moon on the 13<sup>th</sup>. Look for Gemini as two parallel columns of stars stretching to the upper right of the moon.

Okay, a show of hands; who was around in 1974? Umm, that many. Then you'll no doubt remember that on May 14th, 1974, the United States launched its first space station, Skylab. Among many their many other experiments, all three astronaut crews visiting Skylab performed solar observations from above Earth's atmosphere.

Astronauts made observations using the telescopes mounted inside a structure called the Apollo Telescope Mount (ATM). ATM housed telescopes inside a lunar lander descent stage and received powered from four windmill-looking solar panels. The ATM attached to the space station with a truss; there was no way for astronauts to enter into the ATM directly from the habitable volume of Skylab. As this was the mid 70's, its solar observations were recorded on film. This necessitated a space-walking astronaut to swap out the film rolls on a regular basis. The ATM made solar observations in x-rays, ultraviolet, hydrogen-alpha, and radio. Because the Space Shuttle was several years later than NASA planned, the empty Skylab was not rescued and refurbished before reentering the atmosphere in July 1979.

### May 15 – 21

The oldest star cluster easily visible to our eye (through binoculars) is M-67 in Cancer the Crab. Stars in this cluster are around 4 billion years old, or a little younger than our solar system. At a distance of 2,700 light years away, the light from these 500 stars left in the year 700 BC, or between the peaks of the Minoan and Greek civilizations. On the evening of the 16<sup>th</sup>, the moon is your guide to this cluster. Use binoculars and search for a hazy spot to the right of the moon (or west of the moon). The cluster spans an angle close to the moon's size. Some of the cluster's stars will be visible through your binoculars and many more through a small telescope.

The moon is first quarter on the 17<sup>th</sup>. If the skies are clear, you should take a few minutes to observe the moon. It's an easy target to locate and has a lot of terrain features to show at this phase. The heart of Leo the Lion is the star Regulus. It's the yellowish-orange star above the first quarter moon on the night of the 17<sup>th</sup>. Regulus is a large star. It has a diameter five times greater than the sun's and spins much faster to boot. Regulus rotates once in 16 hours versus 24 days for our sun. Because of its girth and rotational speed, the surface of Regulus at its equator travels at nearly 70,000 miles per hour. That high speed creates a bulge at its equator, which makes Regulus 33% wider across the equator than across the poles.

May 20<sup>th</sup> is the 25<sup>th</sup> anniversary of the launch of Pioneer Venus 1. This was the orbital half of 1978's unmanned expedition to Venus. Pioneer Venus 1 was a cylindrical spacecraft five feet tall and eight feet wide. After entering orbit, Pioneer Venus 1 spent a decade exploring Earth's evil twin. During its lifespan, the spacecraft measured the planet's cloud layers, the amount of infrared and ultraviolet radiation emitted and reflected by the planet and its clouds, sampled some of the atoms in the highest layers of the atmosphere, characterized the ionosphere of Venus, and mapped the planet's surface in radar. In 1992, its fuel tank running dry, NASA stopped raising the altitude of the spacecraft and allowed it to enter the Venusian atmosphere. Reentry took place in August of that year.

Because of its radar system, Pioneer Venus 1 gave us the first peek of the planet below her impenetrable cloud layer.

Spica is the bright star to left of moon on the evening of the 21<sup>st</sup>. The separation between them is 3½ degrees; therefore, they will both fit in your binoculars at the same time. Even though they appear close together, their distance apart in three dimensions is immense. It takes light only 1½ seconds to travel the distance between us and the moon. Spica on the other hand requires a trip of 263 years.

### May 22 – 31

On the 22<sup>nd</sup>, the moon is your guide to Saturn. The ringed planet will appear to the upper left of the moon late that evening. The moon is a spectacular binocular and telescope object, but Saturn requires a telescope. Even a small telescope at low power is enough to show her ring system and largest satellite, Titan. In a telescope that inverts images, Titan will appear above Saturn.

The moon is full on the 24<sup>th</sup>. The full moon in May is called the Flower Moon. Since the moon passed between the sun and Earth two weeks ago, the moon passes through Earth's shadow this full moon. This is not unusual; often there is an eclipse two weeks before or after an eclipse. Rarely, there is an eclipse one month later or one month before. The lunar eclipse tonight is unfortunately a weak penumbral eclipse; the moon just clips the edge of Earth's shadow. There is no reason to try to observe this eclipse. In another five months, we'll get another opportunity to see a weak lunar eclipse.

Five years ago on the 25th, a Phoenix landed on Mars. Engineers constructed the Phoenix lander from test parts of a previous ill-fated Mars mission. NASA targeted the original lander, the Mars Polar Lander, for a landing in the Martian polar region. The reentry and descent went well and the lander fired its rockets in preparation for landing.

Unfortunately, a design error caused the lander to interpret the shock of its landing legs snapping open as a sign that it had touched down. The lander then promptly shut off its engines and proceeded to fall some forty feet to the surface. Ouch.

The mission of Phoenix was to explore the role and history of water on the Martian surface. Its landing site was also located in the arctic regions of Mars, where water would accumulate as ice. Indeed, its cameras showed that its landing engines blew loose dust off of a layer of ice buried just beneath the Martian soil. Water drops were apparently seen clinging to the landing legs before eventually sublimating away. Soil removed in a trench also observed ice that sublimated away in the thin Martian air. No one expected to see drops of liquid water on Mars as its atmospheric pressure is far too low for water to exist in the liquid phase. One reason to believe that water might be able to exist for a short time as a liquid is that the Martian soil contained perchlorate salt. Perchlorate salt can act as antifreeze and make liquid water a little more stable in extreme conditions. Signs gathered by the lander indicated that Mars once had a wetter climate. Variation in the Martian orbit and tilt of the planet may return some of those conditions in the future.

Phoenix completed its five month long, solar-powered mission as winter was approaching. The extremely frigid temperatures did in its electronics and the spacecraft stopped communicating with Earth. A few years ago, Phoenix was observed from orbit. A high resolution camera onboard the Mars Reconnaissance Orbiter showed what looked like the lander with its solar arrays broken off. This matches the prediction that the lander would be buried in carbon dioxide snow and that the weight of that snow would break them off.

The heart of Scorpius is below the nearly full moon on the night of the 25<sup>th</sup> and morning of the 26<sup>th</sup>. The star is Antares and it is among the largest stars in our galaxy. There are two reasons that it is so large. First, it has a lot of mass. More importantly, the star has nearly exhausted its supply fusible elements. In an effort to prevent its core from collapsing, the star is fusing elements heavier than hydrogen. In order to begin fusing elements like helium and oxygen, Antares' core temperature had to grow hotter. That higher temperature warmed up its outer atmosphere, which gives the atoms in the atmosphere the energy they need to expand outward against gravity. Because the atoms expanded apart, the temperature of the outer layer of Antares cooled, turning it from blazingly hot blue-white to a cool red. Antares is a red super giant that will most likely end its life in a supernova explosion. In stellar years, its demise won't be long from now.

While you're looking at Antares and Scorpius, use your binoculars to observe Ptolemy's cluster (M-7) just left of the scorpion's stinger. M-7 is a scattered cluster of stars that is faintly visible to the naked eye in dark skies. We call M-7 Ptolemy's Cluster because astronomer Claudius Ptolemy wrote that a nebula appeared next to the stinger of Scorpius in 130 AD.

Venus appears one degree from Jupiter after sunset on the 28<sup>th</sup>. And Mercury is just above them. You'll want to use binoculars and search for them just as it is getting dark. Be prepared to view them around 10 PM. Venus will be the most visible star a few degrees above the west-northwest horizon. You'll need a low and clear northwest horizon to see these three planets.

The moon is at last quarter on the 31<sup>st</sup>. That's a Friday night, so you have a better chance of having free time to go moon watching without worrying about work tomorrow morning.

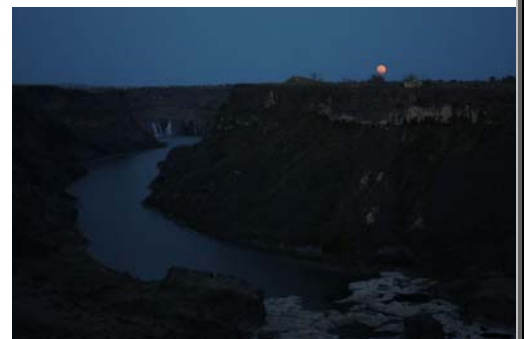
### This Month's Sources

This column is a compilation of other peoples' notes. I would like to acknowledge the following sources this month.

Apollo Telescope mount, [http://en.wikipedia.org/wiki/Apollo\\_Telescope\\_Mount](http://en.wikipedia.org/wiki/Apollo_Telescope_Mount)  
 Egg-Shaped Regulus is Spinning Fast, <http://www.universetoday.com/10213/egg-shaped-regulus-is-spinning-fast/>  
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 Stellar Rotation, [http://en.wikipedia.org/wiki/Stellar\\_rotation](http://en.wikipedia.org/wiki/Stellar_rotation)

Dark Skies and Bright Stars,  
 Your Interstellar Guide

Image: Idaho Skies; the Full Moon rises above the Snake River Canyon – Twin Falls, Idaho, USA  
 Pillar Falls (foreground) and Shoshone Falls (back) © 2012 by Gary Leavitt, MVAS.



# *Astronomy Program*

*&  
stargazing with telescopes*

**Saturday May 4<sup>th</sup>, 2013**

**at**

**7:30P.M. (PDT)**

**at the**

**Lehman Caves Visitor Center**

**Join Great Basin's Dark Rangers at the Lehman Caves Visitor Center for a night full of viewing stars, planets, galaxies and constellations.**

**NO WHITE LIGHTS, CELL PHONES, OR PHOTOGRAPHY**

**Please park in the visitor center lower parking lot and meet at the upper parking lot.**





## Exploring the Water World

By Diane K. Fisher



In some ways, we know more about Mars, Venus and the Moon than we know about Earth. That's because 70% of our solar system's watery blue planet is hidden under its ocean. The ocean contains about 98% of all the water on Earth. In total volume, it makes up more than 99% of the space inhabited by living creatures on the planet.

As dominant a feature as it is, the ocean—at least below a few tens of meters deep—is an alien world most of us seldom contemplate. But perhaps we should.

The ocean stores heat like a “fly wheel” for climate. Its huge capacity as a heat and water reservoir moderates the climate of Earth. Within this Earth system, both the physical and biological processes of the ocean play a key role in the water cycle, the carbon cycle, and climate variability.

This great reservoir continuously exchanges heat, moisture, and carbon with the atmosphere, driving our weather patterns and influencing the slow, subtle changes in our climate.

The study of Earth and its ocean is a big part of NASA's mission. Before satellites, the information we had about the ocean was pretty much “hit or miss,” with the only data collectors being ships, buoys, and instruments set adrift on the waves.

Now ocean-observing satellites measure surface topography, currents, waves, and winds. They monitor the health of phytoplankton, which live in the surface layer of the ocean and supply half the oxygen in the atmosphere. Satellites monitor the extent of Arctic sea ice so we can compare this important parameter with that of past years. Satellites also measure rainfall, the amount of sunlight reaching the sea, the temperature of the ocean's surface, and even its salinity! Using remote sensing data and computer models, scientists can now investigate how the oceans affect the evolution of weather, hurricanes, and climate. In just a few months, one satellite can collect more information about the ocean than all the ships and buoys in the world have collected over the past 100 years!

NASA's Earth Science Division has launched many missions to planet Earth. These satellites and other studies all help us understand how the atmosphere, the ocean, the land and life—including humans—all interact together.

Find out more about NASA's ocean studies at <http://science.nasa.gov/earth-science/oceanography>. Kids will have fun exploring our planet at The Space Place, <http://spaceplace.nasa.gov/earth>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Caption: This image from September 2012 shows that the Arctic sea is the smallest recorded since record keeping began in 1979. This image is from NASA's Scientific Visualization Studio at Goddard Space Flight Center.



## Observatory and Planetarium Events

Event	Place	Date	Time	Admission
Bimonthly Astronomy Talk: "The Bighorn Medicine Wheel: A Native American Sky Calendar?"	Rick Allen Room	Friday, May 10 <sup>th</sup> , 2013	8:45 to 9:45 PM	\$2.50 adults \$1.50 students (incl. CSI) Free - children 6 & under
Astronomy Talk Night Telescope Viewing	Centennial Observatory	Friday, May 10 <sup>th</sup> , 2013	9:45 to 11:45 PM	\$1.50 per person Free - children 6 & under Free to all with paid astronomy talk or planetarium admission
Monthly Free Star Party	Centennial Observatory	Saturday, May 11 <sup>th</sup> , 2013	9:15 PM to midnight	FREE
Summer Solar Session #1	Centennial Observatory	Wednesday, May 29 <sup>th</sup> , 2013	1:30 to 3:30 PM	FREE

### Faulkner Planetarium Schedule Beginning May 2<sup>nd</sup>, 2013

Day	Time	Show
Tuesday	7:00	The Planets
Friday	7:00	The Planets
	8:15	Pink Floyd – The Wall
Saturday	2:00	Lifestyles of the Stars/Live Sky Tour
	4:00	Blown Away: The Wild World of Weather
	7:00	The Planets
	8:15	Altrageous Rock!



## Bruneau Dunes Observatory

The observatory is now open on Friday and Saturday nights only, weather permitting. Solar viewing (through a specially adapted telescope) begins one hour before sunset. After the sun sets there is an audio visual orientation presentation followed by sky viewing until 11:30 pm. For presentation times, call 208-366-7919, or check the kiosk when you arrive at the park. The cost for the program is \$3 per person. Children under 6 are admitted free.



## Deep Sky Highlight

The **Heart Nebula, IC 1805, Sh2-190**, lies some 7500 light years away from Earth and is located in the Perseus Arm of the Galaxy in the constellation Cassiopeia. This is an emission nebula showing glowing gas and darker dust lanes. The nebula is formed by plasma of ionized hydrogen and free electrons. The very brightest part of this nebula (the knot at the right) is separately classified as NGC 896, because it was the first part of this nebula to be discovered. The nebula's intense red output and its configuration are driven by the radiation emanating from a small group of stars near the nebula's center. This open cluster of stars known as Melotte 15 contains a few bright stars nearly 50 times the mass of our Sun, and many more dim stars that are only a fraction of our Sun's mass. The cluster used to contain a microquasar that was expelled millions of years ago. Right Ascension 02<sup>h</sup> 32<sup>m</sup> 35.57<sup>s</sup> Declination +61° 29' 2.3"





## Membership Information



The Magic Valley Astronomical Society (MVAS) was founded in 1976. The Society is a non-profit [501(c) 3] educational and scientific organization dedicated to bringing together people with an interest in astronomy.

In partnership with the Centennial Observatory, Herrett Center, College of Southern Idaho - Twin Falls; we hold regularly scheduled monthly meetings and observation sessions, at which we share information on current astronomical events, tools and techniques for observation, astrophotography, astronomical computer software, and other topics concerning general astronomy. Members enthusiastically share their telescopes and knowledge of the night sky with all who are interested. In addition to our monthly public star parties we hold members only star parties at various locations throughout the Magic Valley.

MVAS promotes the education of astronomy and the exploration of the night sky along with safe solar observing through our public outreach programs. We provide two types of outreach; public star parties and events open to anyone interested in astronomy, and outreach programs for individual groups and organizations (e.g. schools, churches, scout troops, company events, etc.), setting up at your location. All of our outreach programs are provided by MVAS volunteers at no cost. However, MVAS will gladly accept donations. Donations enable us to continue and improve our public outreach programs.

Membership is not just about personal benefits. Your membership dues support the work that the Magic Valley Astronomical Society does in the community to promote the enjoyment and science of astronomy.

Speakers, public star parties, classes and support for astronomy in schoolrooms, and outreach programs just to name a few of the programs that your membership dues support.



Annual Membership dues will be  
\$20.00 for individuals, families,  
\$10.00 for students.

Contact Treasurer Jim Tubbs for dues information via e-mail: [jtubbs015@msn.com](mailto:jtubbs015@msn.com) or home telephone: 736-1989 or mail directly to the treasurer at his home address. 550 Sparks Twin Falls, ID 83301

Donations to our club are always welcome and are even tax deductible. Please contact a board member for details.

M-51 viewed in this newsletter was imaged with the Shotwell Camera and the Herrett Telescope at the Centennial Observatory by club members Rick Widmer & Ken Thomason. Unless otherwise stated all photos appear in the public domain and are courtesy of NASA.

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"Telescopes are an individual thing and not practical for public use. However, everyone should have the experience of a good look at the moon for at least 5 minutes in their life time. It is a dimension and feeling that is unexplainable. Pictures or TV can't give this feeling, awareness, or experience of true dimension. A person will not forget seeing our closest neighbor, the moon. Norman Herrett in a letter to Dr. J. L. Taylor, president of the College of Southern Idaho, Twin Falls, ID, USA circa 1980.

### Membership Benefits

Sky and Telescope group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of \$32.95.

Astronomy Magazine group rates. Subscriptions to this excellent periodical are available through the MVAS at a reduced price of \$34.00

Receive 10% discounts on other selected Astronomy Publications.

For periodical info. and subscriptions Contact Jim Tubbs, Treasurer

Lending Library: Contact, the current board for information.

Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others. Contact Rick Widmer, Webmaster for more information.