



SNAKE RIVER SKIES



January 2010

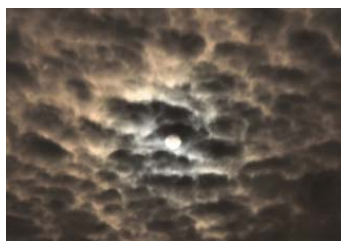
Monthly Events

Membership meeting for the Magic Valley Astronomical Society will not be held this month. In lieu of the meeting, the members are asked to help at the CSI Centennial Observatory. The Observatory will open for public stargazing at 6:15 pm. Our regular meetings resume in February.

Family Nights will be on the 5th at 6:15pm and the 19th at 6:30pm. Admission is \$1.50 and free for children 6 and under.

Bimonthly Astronomy Talk—“Apocalypse 2012: Fact and Fiction” will be on the 15th at 7:15 with telescope viewing from 8:15-Midnight.

Observing Calendar is on page 5.



The full Moon on January 1 2010. This combination made for very poor viewing. image credit: Wikimedia Commons

Message from the President

Well, the cold weather has hit us and clear nights are probably going to be rare for the time being. So when you see clear skies, take advantage of them because you won't know how long the skies will last. Bundle up, grab your dew shield or heater, and enjoy the glimpses of our bright winter sky.

The events schedule will soon be posted to the website (thanks Rick) and hopefully there will something everyone will take advantage of and come out and join fellow club members for a night of stargazing during 2010.

Jupiter will begin setting just after sunset and in the east you will find Mars. Small telescopes and binoculars will show Mars quite well.

Saturn begins to open up

and will once again show its rings to us.

Viewing of the winter constellations will continue with the most prominent being of course Orion and Taurus. Taurus proceeds Orion in the evening sky and easily recognizable by its giant **V**, the Pleiades star cluster and the orange star Aldebaran. Be sure to look for the Hyades Cluster that actually makes up the **V** shape of Taurus. The Hyades are the nearest open cluster to the Solar System (151 light years) and consists of 300-400 stars.

Directly overhead at the Zenith you will find Auriga. The brightest star is Capella which is easiest to pick out as Capella is the sixth brightest star in the night sky.

This past year the board

voted to suspend the January meeting (see note to the left) and the November meeting and hold elections in October. October falls within the final quarter of the year and within the purview of the society by-laws.

These changes were done as a means to hopefully alleviate some crowding on your year end calendars.

Finally, I would like to remind everyone to renew their dues from when you first joined. Usually most members renew from Nov-Jan. Dues are:
 \$20 per individual
 \$20 per family
 \$10 per student

Please contact treasurer Jim Tubbs for renewal.

Clear skies until next month—Terry Wofford, President MVAS.

Welcome to the Astronomical Society

Welcome to the club and hello. We hope you have a good time, enjoy the hobby, and bring good skies with you. We hold indoor meetings each month in the Rick Allen Room, Herrett Center at the College of Southern Idaho Campus in Twin Falls, ID, USA. Our meetings start at 7:00pm on the second Saturday of the month.

There will always be a very interesting program, class or presentation at these meetings, as well as good fellowship. There is always something new to learn. Following our meetings we have a star party at the Centennial Observatory also at the Herrett Center. Our star parties are free and you don't have to bring

your own telescope. Telescopes are also set up outside on the stargazer's deck. Star Parties are year round, so please dress accordingly as the Observatory is not heated, nor air conditioned. Wishing you dark skies and clear nights!

The MVAS Board.

British Columbia Astronomer's are trying to curb nighttime glare

Written by Douglas Quan



(Image: courtesy of Steven Whitehouse)

Editor's note: This article is one of the most recent that has been sent via a relative who lives in Canada and shares an equal passion about Astronomy as the Editor does.

Light pollution is a worldwide problem and not just a problem in the U.S.

Amateur astronomers are trying to persuade municipal officials in B.C.'s southern Interior to cut out nighttime glare from city lights and turn 1,700 hectares of mostly rural land into a dark-sky preserve.

If approved, the area -- nestled in the Nicola Valley between Merritt, Kamloops, Kelowna and Princeton -- would draw astronomy buffs from around the world and offer nighttime skies not unlike what Galileo would've seen in the 1600s, proponents say. "You're separating yourself from the doldrums of life, going out there and reconnecting with the universe from which we came," said Paul Greenhalgh, president of the Fraser Valley Astronomers Society. "For me, it's a purging."

An unfettered view of the stars and planets is just one of many benefits of curbing light pollution, advocates told ctvbc.ca. It also reduces the number of migratory birds that get disoriented from city lights and crash into buildings; cuts back on energy use; and results in a more restful sleep for humans.

Though reducing light pollution doesn't have the same urgency as reducing carbon emissions, there is evidence

municipal officials in North America are listening.

The City of Toronto recently passed mandatory building standards to reduce nighttime glare. And a city supervisor in San Francisco is set to begin hearings on a proposal to force downtown buildings to shut off their interior lights at night.

Some B.C. municipalities have light restrictions in place, but it's been more of a piecemeal approach, said Mark Eburne, chair of light pollution abatement for the Vancouver branch of the [Royal Astronomical Society of Canada](#). "Most cities have a noise bylaw, not many have a light pollution bylaw," he said.

This year, Eburne -- armed with a power-point presentation -- started traveling to municipal council meetings to educate officials on the topic. His key message: "Being green is also being dark at night."

Dark-sky preserve

Advocates of a dark-sky preserve in the Nicola Valley say astronomers from as far as Australia and Africa have visited the region's high plateaus. "This area that I speak of is pristine and it is our wish to keep it that way," Greenhalgh wrote in a recent letter to Harry Lali, the MLA who represents the region.

Advocates stress that they are not anti-development. They just want municipalities to make sure that all new developments and street lights be equipped with full cut-off light fixtures that direct light downward. The Royal Astronomical Society of Canada has laid out criteria for what constitutes a dark-sky preserve, but essentially there should be no artificial lighting and little or no sky glow visible from within the area.

The society has recognized nine dark-sky preserves across the country: four in Ontario; two in Alberta; two in New Brunswick; and one in Saskatchewan.

A representative for Lali said Lali doesn't yet have a stance on a dark-sky preserve in B.C.'s southern Interior. Susan Roline, the mayor of Merritt, said the idea is feasible, but all stakeholders will need to be consulted. She said the area is currently used for mining exploration, logging operations and ranching. Roline agreed though that shining lights up at the sky is "not a necessity."

Light pollution's other effects

Bird enthusiasts have also become major light pollution-reduction advocates.

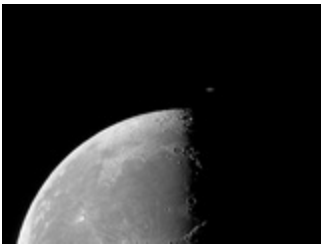
Turns out, migratory birds are often drawn to the bright lights emanating from downtown office buildings, monuments and broadcast towers, and confuse the lights with the moon and stars they use to navigate.

Birds will flutter in the light and drop from exhaustion, or crash into the structures, experts say. Some birds might survive the night but then get trapped in the urban centre during the day and get disoriented by reflections in glass structures. Hundreds can be killed in one night at one building, according to the Fatal Light Awareness Program, a Toronto-based charity whose volunteers help rescue birds that have fallen to the ground. "At a flick of the switch, the problem disappears," said Michael Measure, FLAP's executive director.

Continued on the next page

Amateur astronomers camp out under the stars during the eight-day Merritt Star Quest in B.C. (courtesy of Randy Giesbrecht)





A shot of the moon taken with an 8-inch Dobsonian telescope. (courtesy of Paul Greenhalgh)

There is also an emerging body of research that suggests strong correlations between light pollution and people's health.

Earlier this year, the American Medical Association adopted a resolution to support light pollution reduction efforts.

The association cited research that shows light pollution can disrupt the human circadian rhythm, suppress melatonin production, depress immune systems, and increase cancer rates.

The association also said streetlight glare can decrease nighttime visibility by constricting the pupils. "Many older citizens are significantly affected by glare as the eye ages, leading to unsafe driving conditions," the association said.

Cities respond

The message is resonating with some municipalities. The City of Toronto has adopted a bi-annual Lights Out! public awareness campaign and "bird-friendly" development guidelines.

Critics say lights like these are unnecessary



and should be replaced with cut-off lights that direct light downward. (courtesy International Dark Sky Association)

Beginning next year, new building construction will have to adhere to new regulations as part of the city's "Green Standard." There's a ban on up-lighting exterior light fixtures and a requirement that all exterior light fixtures be shielded to prevent glare or "light trespass" onto neighboring properties.

The rules apply to low-rise non-residential buildings, as well as mid-to high-rise residential and commercial buildings.

Meanwhile, the City of San Francisco is set to begin hearings on a proposal to deal with interior lights of buildings in their downtown core. The proposal would require downtown office buildings to either turn off their lights at night or adopt automatic lighting controls.

"If anyone visits our downtown skyline, you'll see thousands of lights turned on. It represents a huge waste of energy," said Supervisor David Chiu, who is sponsoring the motion. "We all learned as kids -- every four-year-old knows -- they have to turn off the lights."

BC Hydro offers an incentive program to municipalities to get rid of inefficient streetlights that shine light in all directions and replace them with full cut-off streetlights that direct light downward. That's what the City of Calgary did, and it now saves \$1.7 million in electrical costs, according to BC Hydro.

With the exception of decorative lighting, all new City of Vancouver street lights are required to be full cut-off fixtures.



The Northern Lights as seen from Abbotsford, B.C. (courtesy of Paul Greenhalgh)

Greenhalgh and others said while these are positive steps, they want municipalities to adopt comprehensive light pollution-reduction plans that address everything from the lighting of billboards to the lighting of residential and commercial developments to so-called vanity or decorative lighting, such as rooftop lights.

"You can't stop progress, but you can manipulate it so that it works to the benefit of all those concerned," he said.

Douglas Quan is a freelance writer based in Vancouver, B.C. This article was written on Mon Dec. 28, 2009 for CATV,CA in B.C.

The Olympic Rings shine across Coal Harbour as seen from Stanley Park (looking south) in Vancouver, BC, CA. The city of Vancouver is one of the most beautiful and sadly one of the most light polluted cities in the Pacific Northwest. The winter games begin in February 2010. Source, Unknown.



January has a Birthday Star

Editor's Note: This article is based upon an actual star name and NOT for any astrology star lore and beliefs.



The birthstone for January is the Garnet and the Garnet star or Mu Cephei (μ Cephei), would therefore be the star for January. Mu Cephei is a red supergiant star in the constellation Cepheus.

It is one of the largest and most luminous stars known in the Milky Way. It appears garnet red due to its spectral class of M2Ia. The deep red color of Mu Cephei was noted by William Herschel, who described it as "a very fine deep garnet color, such as the periodical star α Ceti," and it is thus commonly known as Herschel's "Garnet Star".¹ Giuseppe Piazzi called it Garnet Sidus in his catalogue.

An alternative name, *Erakis*, used in Antonín Bečvářs star catalogue is probably due to confusion with Mu Draconis, which was previously called *al-Rāqis* in Arabic.

A very luminous red supergiant, Mu Cephei is one of the largest and brightest stars visible to the naked eye and in the entire Galaxy. It is best seen from the Northern hemisphere from August to January.

The star is approximately 1,650 times larger than our sun's solar radius, and were it placed in the Sun's position, its radius would reach between the orbits of Jupiter and Saturn. Mu Cephei could fit almost 4.5 billion suns into its volume. Only five known stars (VY Canis Majoris, KW Sagittarii, KY Cygni, V354 Cephei and VV Cephei) are believed to be larger than it.

It is so large that it could fit 6.4 quadrillion Earths in it. If Earth were a golf ball (about 1.7 in/4.3 cm), Mu Cephei would be greater than the length of two Golden Gate Bridges laid end-to-end (about 3.4 mi./5.5 km).

Mu Cephei is a variable star and the prototype of the class of the Mu Cephei variables. Its apparent brightness varies without recognizable pattern between magnitude +3.62 and +5 in a period of 2 to 2.5 years. Mu Cephei is 38,000 times brighter than the Sun, with an absolute visible magnitude of $M_v = -7.0$. Combining its absolute visible brightness, its infrared radiation and its interstellar extinction gives a luminosity of around 350,000 solar luminosities, making it one of the most luminous stars known. Its distance is not very well known. Parallax measurements or distance estimates in the scientific literature give values between 390 and 1,600 parsecs (1,300 and 5,200 ly).

Mu Cephei is now in the dying stage of stars. It has begun to fuse helium into carbon, whereas a main sequence star fuses hydrogen into helium. The helium-carbon cycle shows that Mu Cephei is in the last phase of its life and is possibly about to explode as a supernova (in astronomical terms; at least some millions of years). When a star becomes a supernova it is destroyed, leaving behind a vast gaseous cloud which, for a star as massive as Mu Cephei, may leave a black hole remnant.

Emissions from the star suggest the presence of a wide ring of dust and water with outer radius four times that of the star (i.e 2,600 Solar radii) and inner boundary twice the radius of the star (1,300 Solar radii). If replaced to our Sun, such disk would practically span between 5.5 Astronomical Units (within Jupiter's orbital zone) and 11 Astronomical Units (beyond Saturn's orbit).

Finding the Garnet Star is very easy once you locate the Northern Circum-

polar Constellation of Cepheus, which was named for the King of Aethopia in Greek mythology and is considered to represent a king. Cepheus is sort of a house-shaped constellation, and μ (Mu) Cephei is located halfway between the two stars at the bottom of the house, or the front porch.

The Garnet Star is located on the map below. The red dot below and to the left of Alderamin (outside the Constellations diagram, the yellow lines, is the Garnet Star. Visible to the naked eye in dark sky conditions (outside the city of Twin Falls, Burley, or Jerome) you may not realize its actual redness until viewed through a telescope or binoculars.

Usually at a public star party CSI Herrett Center Centennial Observatory manager Chris Anderson or any telescope operator will be glad to show you the Garnet Star, or any other red (Carbon) stars.

This article was taken from Wikipedia and modified for the newsletter. Wikipedia Gnu general use license has been applied.

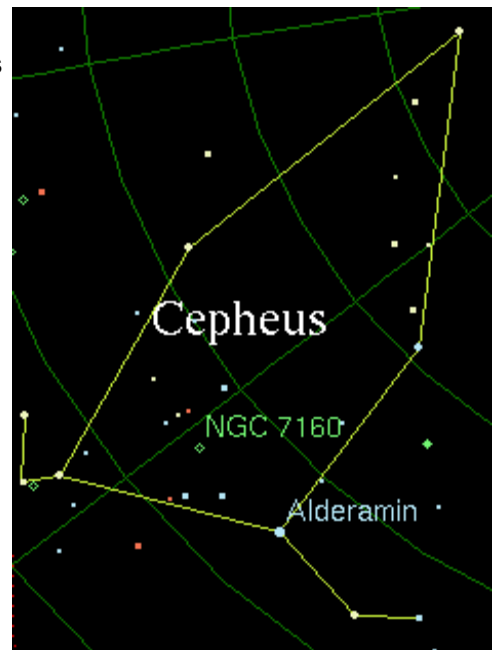
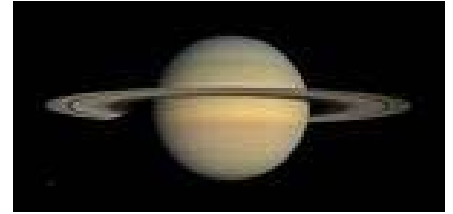


Image: astronomy.net and XEPHem Software © 1994-2010 John Huggins All Rights Reserved.

Credit for the main image of Mu Cephei (Garnet Star) unknown. Common use license is used.

SKY CALENDAR FOR JANUARY 2010



Saturn NASA/ESA Hubble image

- 1 **Moon near Pollux** (morning sky) at 16h UT.
- 1 **Moon at perigee** (closest to Earth) at 21h UT (358,682 km; 33.3').
- 2 **Moon near Beehive cluster (M44)** (morning sky) at 16h UT.
- 3 **Earth at Perihelion** (closest to Sun) at 0h UT.
- 3 **Moon near Mars** (morning sky) at 6h UT. Mag. -0.8.
- 3 **Quadrantid Meteor Shower** peaks at 19h UT. Produces up to 100 meteors per hour. Radiant is in Boötes. Bright moonlight this year makes viewing very unfavorable.
- 4 **Moon near Regulus** (morning sky) at 2h UT.
- 4 **Mercury at inferior conjunction** with the Sun at 19h UT. Mercury passes into the morning sky.
- 6 **Moon near Saturn** (morning sky) at 13h UT. Mag. +0.9.
- 7 **Last Quarter Moon** at 10:39 UT.
- 8 **Moon near Spica** (morning sky) at 0h UT.
- 11 **Moon near Antares** (morning sky) at 14h UT.
- 11 **Venus at superior conjunction** with the Sun at 20h UT. Passes into the evening sky (not visible).
- 15 **Annular Solar Eclipse** from 5:14 to 8:59 UT, mid-eclipse at 7:06 UT. Eclipse visible along a 300-km wide path from central Africa to east Asia.
- 15 **New Moon** at 7:11 UT. Start of lunation 1077.
- 17 **Moon at apogee** (farthest from Earth) at 2h UT (distance 406,435 km; angular size 29.4').
- 18 **Moon near Jupiter** (evening sky) at 4h UT. Mag. -2.1.
- 23 **First Quarter Moon** at 10:53 UT.
- 25 **Moon near the Pleiades** (evening sky) at 11h UT.
- 27 **Mercury at greatest elongation**, 25° west from Sun (morning sky) at 5h UT. Mag. -0.1.
- 27 **Mars nearest to Earth** at 19:02 UT (61.7 million miles). Diameter 14.1 arcseconds, Mag. -1.3.
- 29 **Mars at opposition** at 20h UT. Mag. -1.3. Visible all night.
- 30 **Full Moon** at 6:18 UT.
- 31 **Moon will be at perigee** (closest to Earth) at 9h UT (356,593 km; 33.5').

Image of the Milky Way stretching from Mt. Lassen, CA, USA to Mt. Shasta, CA, USA NASA/APOD Photo



SNAKE RIVER SKIES



Snake River Skies is the Newsletter of the Magic Valley Astronomical Society and is published once a month for both members and non-members and is available via the club website:

<http://www.mvastro.org/members/index.php> and following the link for newsletters.

Snake River Skies is copyrighted, except where noted and credit is via permission of the respective author. Images used are normally public domain unless otherwise noted and credit for use is given.

Snake River Skies © 2010 by the Magic Valley Astronomical Society.

Facts about Mars

1. Mars has the biggest mountain in the solar system. Olympus Mons is 15.5 miles high and 372 miles across and is actually a dormant volcano.
2. Mars is named after the Roman god of war because its red color reminded early observers of blood.
3. Compared to the other planets in the solar system, Mars is quite small.
4. Mars has some of the wildest weather in the solar system. It has tremendous wind storms, dust storms and small tornadoes (dust devils).
5. There has been a search for life on Mars, and also a search for water. After years of studying every crack on the planet's surface for evidence of water, scientists have finally found it. The Phoenix mission found that there are huge deposits of ice underneath the planet's surface.
6. The people who studied Mars most closely were the ancient Mayans. The Mayans were the first to figure out Mars' orbit. In the Dresden Codex, they created a Mars calendar that is accurate to the day.



Image of Mars in 2001 as seen from the Hubble Space Telescope Credit: NASA

Window Opens into Moon's Past Volcanism

ScienceDaily (Jan. 1, 2010) — Lava tubes, underground cave-like channels through which lava once flowed, are commonly found on Earth. Scientists have debated whether these tubes could form on the Moon as well, but no studies have yet conclusively identified features that indicate the presence of lunar lava tubes.

Using images from the SELENE (also known as Kaguya) spacecraft's high-resolution cameras, Haruyama et al. have identified a vertical hole that they believe is a skylight in an intact lava tube. The hole is located in the Marius Hills region, a volcanic area on the Moon's nearside.

The authors find that the nearly circular hole is about 65 meters (213 feet) in diameter and about 80-88 m (262-289 ft) deep. They consider possible formation mechanisms and

conclude that the skylight most likely formed when part of the lava tube roof collapsed. The authors believe that the discovery could have implications for studies of lunar volcanism.

In addition, because lava tubes are sheltered from the harsh environment on the Moon's surface, such tubes could one day be useful for lunar bases.

The research is published in *Geophysical Research Letters*.

Authors include Junichi Haruyama, Tomokatsu Morota, Yasuhiro Yokota, and Makiko Ohtake: ISAS, JAXA, Sagami-hara, Japan; Kazuyuki Hioki and Seiichi Hara: NTT DATA CCS Corporation, Tokyo, Japan; Motomaro Shirao: Tokyo, Japan; Harald Hiesinger and Carolyn H. van der Bogert: Institut für Planetologie, Westfälische Wilhelms-Universität, Münster, Germany; Hideaki Miyamoto: University Museum, University of Tokyo, Tokyo, Japan; Akira Iwasaki: Research Center for Advanced Science and Technology, University of Tokyo, Tokyo,

Japan; Tsuneo Matsunaga: Center for Global Environmental Research, NIES, Tsukuba, Japan; Shunsuke Nakanotani: Mitsubishi Space Software Co., Ltd., Tsukuba, Japan; and Carle M. Pieters: Department of Geological Sciences, Brown University, Providence, Rhode Island, USA.

Surface of the Moon Kaguya/JAX photo.

