



The Monthly Newsletter of the Magic Valley Astronomical Society

August Highlights

Aug 13th - **Membership Meeting and Star Party**
7:00 pm Herrett Center.

Aug. 26th -28th **Idaho Star Party™** Bruneau Dunes State Park
<http://isp.boiseastro.org/>

Aug. 27th **Pomerelle Mountain Star Party** details to the right.

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Pomerelle Mountain Star Party

Dark skies are good, high altitude dark skies are even better! The Board of Directors once again cordially invites you, your family, friends and others you may wish to invite, to our annual Pomerelle Mountain Ski Resort Star Party on Saturday, the 27th of August 2011.

On top of the mountain you may experience some of southern Idaho's most pristine skies; an area where objects will seemingly jump right out at you.

The events will begin with a solar observing session and concurrently a pop bottle rocket construction and launching. There will be some smaller activities as well, which are similar to the events at the Herrett Center for Astronomy Day. Chris Anderson has agreed to do another talk. Then we will traverse the mountain via the chair lifts for mountain top night viewing. Schedule of events for Pomerelle:

- Water bottle rockets and safe solar observing from 3pm-6pm. At the lodge.
- Open for dinner 6pm-7pm
- Chris's talk: 7:30-8:30pm Idaho Summer Skies
- 8:30pm-12 am Chair lift rides to the telescopes at the top of the mountain.

Chris Anderson will present an open air observatory for guests who attend. For those who are participating you will need to bring a chair of some description. Chris will be setting up away from the telescopes and using a laser pointer he will point out various constellations and stars describing them and their associated lore and legends.

This will mean more telescopes will be needed on the mountain. Please join us for a truly unique experience.

Cost: \$8 for ages 12 and up. \$5 for ages 7-12. Free for ages 6 and under (must be accompanied by an adult). \$1 off advanced tickets on sale now.

MVAS Memberships



Welcome to the Magic Valley Astronomical Society

Welcome to the society and hello. We hope you have a good time, enjoy the hobby, & bring good skies with you.

We hold indoor meetings each month at the Herrett Center for Arts & Science College of Southern Idaho campus in Twin Falls, ID, USA . Our meetings start at 7:00 pm 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.

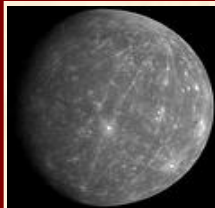
Following our meetings we have a star party (weather permitting) at the Centennial Observatory, also at the Herrett Center.

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 held year round, so please dress accordingly as the Observatory is not heated, nor air conditioned.

Wishing you dark skies and clear nights!

MVAS Board

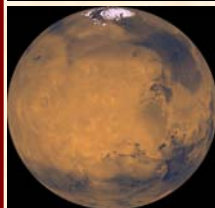
August Celestial Sky



Mercury will be in inferior conjunction on the 16th and thus will be invisible. Late in the month it will be possible to see very low on the eastern dawn morning glare.



Venus will be behind the Sun this month and impossible to see.



Mars will be low above the morning eastern horizon. It will be shining at magnitude 1.4. It will not be a good target, appearing small through a telescope and low on the horizon.



Jupiter will be a good target in the pre-dawn sky this month. It will be in southern Aries but it will be easy to find because it is the brightest object in that area of the sky.



Saturn will be sinking into the dusk this month. Early in the month and not too long after sunset will be the best time to observe it. This will be when it will still be fairly high.



Uranus will be roughly halfway between Neptune and Jupiter in Pisces near the celestial equator. Jupiter will be easy to spot. Uranus will be in the next constellation higher to the northeast.

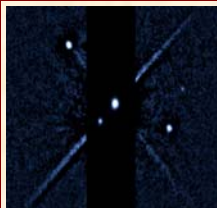


Neptune will reach opposition on the 22nd. This is when it is at its biggest and brightest. The best time to observe it would be in the hours around midnight when it will be in the south and highest in the sky. Neptune will be in Aquarius.



Moon Information

- 2 Moon at Perigee
- 6 First Quarter
- 8 Greatest S. Declination (-23.3°)
- 13 Full Moon - Sturgeon (Algonquian)
- 18 Moon at Apogee
- 21 Last Quarter
- 23 Greatest N. Declination (+23.3°)
- 29 New Moon
- 30 Moon at Perigee



Pluto reached opposition on June 28th so it is still in good position to see. Around midmonth it will be due south around 11:00 pm. It will be in Sagittarius in the thick of the Milky Way. Around the 7th, 8th and 9th Pluto will pass 0.1° south of the magnitude 6 star Y Sagittarii. It will serve as good locator star.



Vesta, the third largest asteroid, will become a naked eye object this month. The NASA probe, "Dawn," will be in orbit around this asteroid. Vesta will be shining at magnitude 5.6 on the 5th in southern Capricornus. The best time to look would be around midnight when it will be due south.



Comet C/2009 P1 (Garradd) will reach a maximum solar elongation of 149 degrees on August 8. It should be visible throughout the month.



New Website: <http://open.nasa.gov/>

is a collaborative platform for the open government community to share success stories and projects they are working on. The content is written by NASA employees and contractors across the agency. NASA will highlight

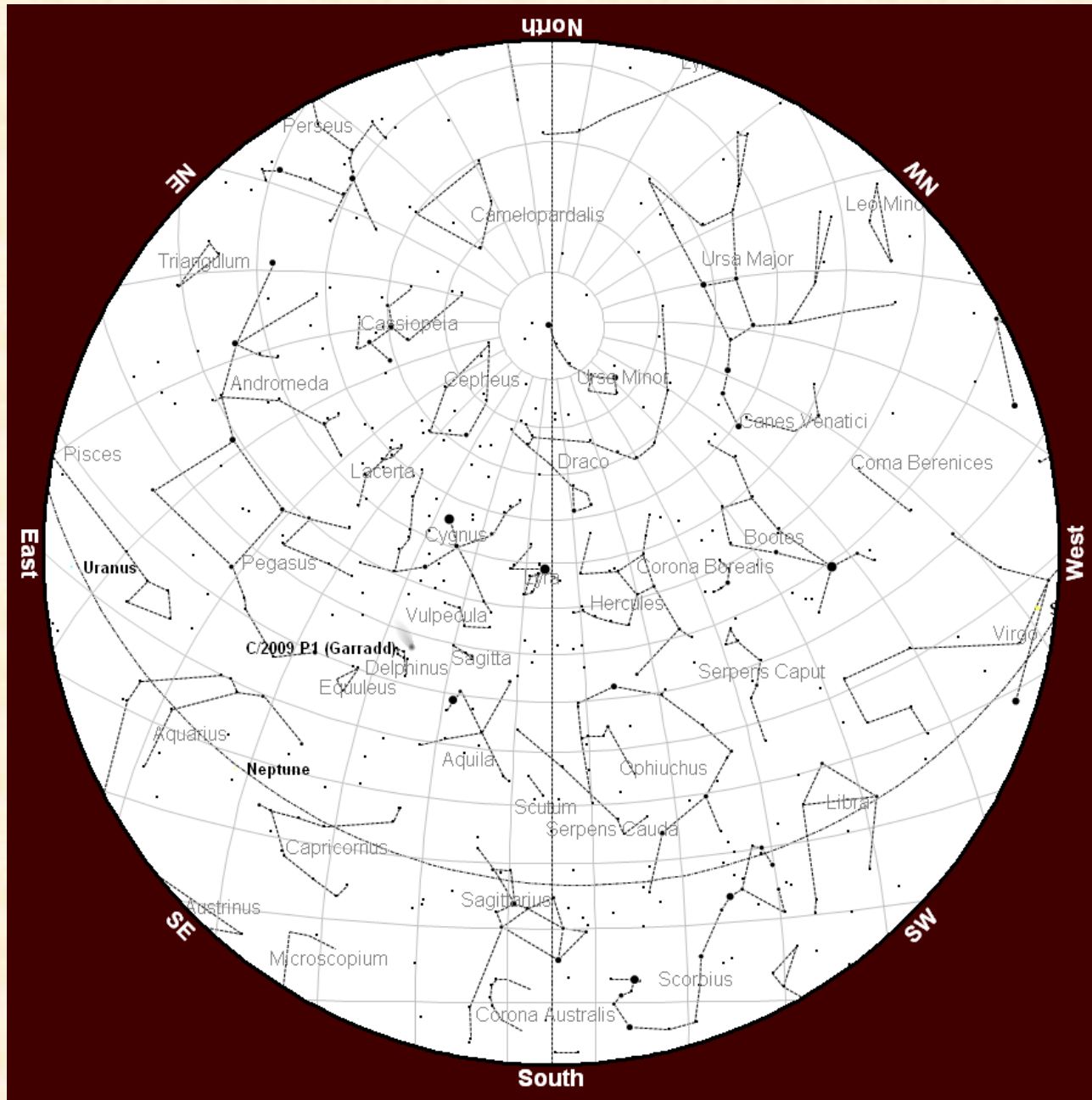
the ways that transparency, participation, and collaboration are being embraced by NASA policy, technology, and culture – and the amazing future that becomes possible because of that commitment.

Perseids: The full moon will wash out the peak of the Perseids meteor shower, which is set for August 13. But stray meteors from this shower should be visible for a week before and after the peak. Trace the trail of any meteor back to where it seemed to originate. If the constellation Perseus is there, it was probably a Perseids.

Images on this page are from various NASA Files



Planisphere for August Mid-Month



Did You Know?

20 Aug. 1975-21 May 1983 Viking 1 was launched from the Kennedy Space Center, on a trip to Mars. The probe landed on 20 Jul. 1976, on the Chryse Planitia (Golden Plains). Viking 2 was launched for Mars on 9 Nov. 1975 and landed on 3 Sep. 1976. The Viking project's primary mission ended on 15 Nov. 1976, 11 days before Mars' superior conjunction (its passage behind the Sun), although the Viking spacecraft continued to operate for six

years after first reaching Mars. Its last transmission reached Earth on 11 Nov. 1982. Controllers at NASA's Jet Propulsion Laboratory tried unsuccessfully for another six and one half months to regain contact with the lander, but finally closed down the overall mission on 21 May 1983.

Image: This picture was taken by the Viking Lander 1 on February 11, 1978 on Sol 556.
Credit: NASA Viking image archive.





New GOES-R to Give More Tornado Warning Time



by Dauna Coulter and Dr. Tony Phillips

So far this spring, more than 1,400 tornadoes have struck the U.S. Some of them have cut jaw-dropping trails of destruction across the countryside and, tragically, across inhabited communities, too. Hundreds of lives have been lost in the onslaught.

Throughout the season, the National Weather Service has routinely issued tornado alerts. In the case of the Alabama tornadoes of April 27th, forecasters warned of severe weather five full days before the twisters struck. Because they couldn't say precisely *where* the twisters would strike, however, many of their warnings went unheeded.

"If people get a hurricane warning, they often evacuate the area," notes NOAA's Steve Goodman. "But we react differently to tornado warnings."

Perhaps it's because tornadoes are smaller than hurricanes, and the odds of a direct hit seem so remote. Recent pictures from Tuscaloosa, Alabama, and Joplin, Missouri, however, show the perils of playing those odds. Goodman believes that more precise warnings could save lives.

To fine-tune tornado warnings, NOAA will soon launch the first in a series of next-generation weather satellites – GOES-R (Geostationary Operational Environmental Satellites-R series). The spacecraft is brimming with advanced sensors for measuring key ingredients of severe weather including winds, cloud growth, and lightning.

"GOES-R will be the first geostationary spacecraft to carry a lightning sensor," says Goodman, the GOES-R Program Senior Scientist. "Studies show that sudden changes in the total lightning activity correlate with storm intensity—and with tornadoes."

The lightning mapper will detect and map not only cloud-to-ground lightning, but also bolts within and between clouds. The kind of cloud-to-ground lightning we see from our front yards accounts for only 15-20 percent of total lightning. To get a clear idea of a storm's intensity, meteorologists need to know about *all* the lightning—a view GOES-R can provide.

All by itself, the lightning mapper will provide 7 minutes more lead time in tornado warnings, according to Goodman. GOES-R's state-of-the-art instruments will also improve long-range forecasts.

"The satellite's Advanced Baseline Imager (ABI), for instance, will provide a much clearer picture of clouds," says NOAA research meteorologist Tim Schmit. Compared to lesser instruments already in orbit, ABI can better detect super-cold "overshooting tops," evidence of enormous energy and upward velocity that correlate with subsequent severe weather.

"Accurate advanced notice of high-risk tornadic conditions can cue officials to close schools and businesses even before tornadoes are actually detected," says Schmit.

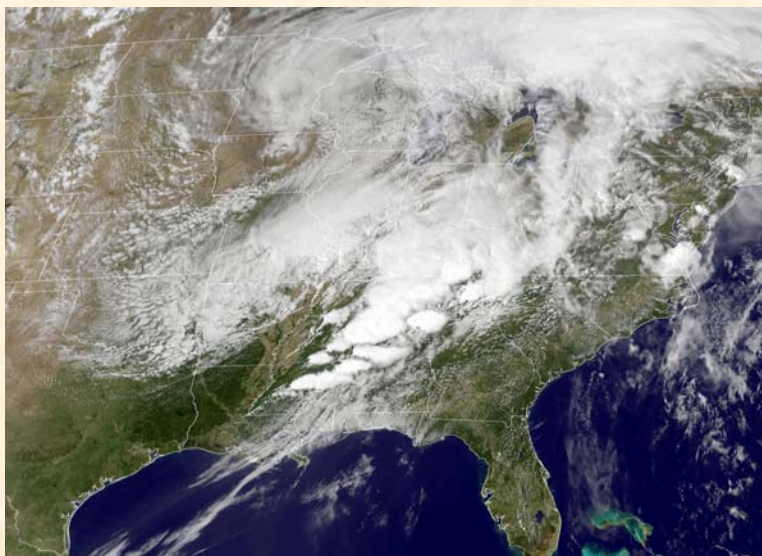
Forecasters doubt tornadoes can ever be predicted with 100% accuracy. The twisters are just too capricious. GOES-R, however, is a step in the right direction.

Find out more about GOES-R's unprecedented capabilities at <http://www.goes-r.gov>.

Young people can learn more about tornadoes and all kinds of other weather at <http://scijinks.gov>.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration. Image: This GOES image shows the storms that spurred the intense April 27 tornado outbreak in the southern U.S. Animation showing the development of weather can be seen at

<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=50347>.



Juno Ready to Launch to Jupiter

The Juno spacecraft will soon be on its way to Jupiter on a mission to look deep beneath the planet's swirling curtain of clouds to find out what lies beneath. The answer might confirm theories about how the solar system formed, or it may change everything we thought we knew.

"The special thing about Juno is we're really looking at one of the first steps, the earliest time in our solar system's history," said Scott Bolton, the principal investigator for the Juno mission. "Right after the sun formed, what happened that allowed the planets to form and why are the planets a slightly different composition than the sun?"

Starting the 4-ton spacecraft on its five-year journey to the largest planet in the solar system is the job of a United Launch Alliance Atlas V equipped with five solid-fueled boosters. Even with that much power, Juno will still require a flyby of Earth to get up enough energy to swing out to Jupiter.

With three 34-foot-long solar arrays and a high-gain antenna in the middle, the spacecraft is reminiscent of a windmill. It even spins slowly as it goes through its mission. Those arrays will be the sole power source for Juno as it conducts its mission, a first for a spacecraft headed beyond the asteroid belt between Mars and Jupiter.

The Atlas V has proven a reliable option for NASA's Launch Services Program, or LSP, the organization that oversees NASA launches and chooses the best launchers for different spacecraft.

"It's flown 28 times, pretty challenging missions, pretty challenging payloads," said Omar Baez, launch director for Juno. "It's got a heritage that goes back to the Atlas I in some of the components and in the upper stage, so it's an evolution of a family in its current configuration and shape and form. I'd say it's pretty robust."

The spacecraft is to lift off at 11:34 a.m. on Aug. 5 from Space Launch Complex 41 at Cape Canaveral Air Force Station in Florida. The mission faces a limited launch window to get off Earth before Jupiter's orbit took it out of alignment.

"Juno only has a 22-day launch window, or else we're down for another 13 months until our next opportunity," said John Calvert, mission manager for Juno. "So it's those kinds of challenges with making sure you do all the little things necessary to maximize the opportunities you get for those 22 days."

After arriving at Jupiter in August 2016, the spacecraft will spend about a year surveying Jupiter and its moons to draw a detailed picture of its magnetic field and find out whether there is a solid core beneath its multi-colored clouds.

The research is building on what previous missions found about Jupiter, particularly the data Galileo gathered during a mission that ended in 2003. It may even provide clues about what to look for in planets outside the solar system.

"If we could start to understand the role that Jupiter played and how the planet formed and how that eventually governed the creation of the other planets and the Earth and maybe even life itself," Bolton said, "then we know a little bit about how to look for other Earth-like planets, maybe orbiting other stars and how common those might be and the roles that those giant planets that we see orbiting the other stars play."

With Juno on its way, the LSP team is looking at the moon as it prepares the GRAIL mission for launch in September. Following that, the next mission beyond Earth also is being prepared at Kennedy as teams ready the roving Mars Science Laboratory "Curiosity" for liftoff in late November.

"Really, all these missions that LSP is involved in, that NASA's involved in, they're all precursors to the bigger picture of getting humans out beyond Earth orbit, to Mars, to an asteroid," Calvert said.

Article by: **Steven Sicheloff NASA's John F. Kennedy Space Center**



NASA's Juno spacecraft passes in front of Jupiter in this artist's depiction. Juno, the second mission in NASA's New Frontiers program, will improve our understanding of the solar system by advancing studies of the origin and evolution of Jupiter. Image credit: NASA/JPL-Caltech

Castle Rocks / City of Rocks Star Party - Reviewed

CASTLE ROCKS STATE PARK – By Club Member and Publicity Officer Rob Mayer.

The public got a good show both nights at the City of Rocks Star Party July 22 and 23rd. Early reports are that club members got even more.

Early reports were that almost 140 visitors dropped by and took a look into club members' telescopes over the two nights, with more than 65 each night. Many people were waiting for the scopes even prior to sunset, and many kept coming back to the same scopes to look at all objects. Views started off with Saturn, with visitors expressed excitement at learning about the great Andromeda Galaxy – one even noted M32 in the background – and even double stars. The Friday rush didn't even appear to cool off until 11:30 p.m.

More than 10 members brought out their telescopes, including the Centennial Observatory's 18" diameter JMI. Chris Anderson again bagged dark nebulae in Sagittarius and stumbled again upon small galaxy NGC 3077 as he was looking for M81 and M82 – and that was just among the handful of objects he pulled in.

After 11:30 p.m. Friday, Anderson, Hoggatt, Gary Leavitt, and others started looking for lesser-known objects. Among the objects found were the three Messier objects along the bottom of the big Dipper – M97 (Owl Nebula), 108 and 109. M97 was clearly the best of the three, with 108 difficult to pick up and the spiral 109 quite faint. Even Rob Mayer's 4" f/10 Newtonian picked up M97, although it was quite dim.

Conditions the first night were okay, but the reports suggested the second day was much better. In fact, Rob Mayer easily observed the bands on Jupiter at 10 a.m. using a 4" Tasco without motor drive or go-to capability and Jim Hoggatt experimented with his camera by taking 15-second exposures with what he called a "point-and-shoot" cameras, pulling off wide-field shots of Cassiopeia and Sagittarius that one can spot not only stars, but M8 and M31. The jury's still out on M51.

The weekend offered good opportunities for lesser experienced as well. 19-year-old Zach Mayer, who has little experience on telescopes, landed M6, M8 and 20 in the same field of view, and the double cluster in Perseus Friday. Yes, he had a little encouragement, but he did most of the work on his own, really only needing help on M8/20. The next night, he hijacked control of his grandmother's 8" Celestron and ran the remote control like a pro.

"Grandma" Mayer, Ruth, a member of the Boise Astronomical Society since January, probably had more success than Zach. She reported finding more than 20 Messier objects over the two days – with the help of a go-to scope – and NGC 7009, the Saturn Nebula. (Chris Anderson picked up

NGC 7009 later with the JMI as well, as did others.) Ruth Mayer had spent Wednesday two nights earlier at the Gooding City of Rocks and had picked up another twenty, so she had a productive week by finding more than 40. Clearly the so-called in-experienced Mayers found more than the so-called experienced one. The retiree now has another hobby to challenge her Orchid Society duties, as a discussion with Jim Tubbs about his M51 astrophotography/photometry work has "grandma" talking about CCD. Even Grandpa Stan Mayer, who was just hanging around, reported having a good time getting to know members, and even tried to help Tom Gilbertson with the spot scope on his refractor. Jay Naegele, Terry Wofford, and David Olsen were also out operating scopes.

While spotting objects were clearly the main focus, the star party also helped others out. One unidentified family brought their newly purchased 4" Celestron go-to scope, and Jim Tubbs and Ruth Mayer helped them out. We have to think that family might be back, for they seemed both grateful and excited when they left.

Both days featured solar sessions at Smoky Mountain Campground to the south, and potluck dinners for club members. To see what else members spotted, check out the club Facebook page: <http://www.facebook.com/pages/Magic-Valley-Astronomical-Society/123862814352394>

Image: Set-up at Castle Rocks main viewing site, the Ranch House site (Ranch House in the background looking north) CSI Centennial Observatory 18" JMI in the foreground with Zack Mayer assisting Chris Anderson in setting up the scope. Photo Credit © 7/2011 by Rob Mayer



Research at the South Pole

Marco Tortonese, South Pole research associate: Most of the big science at the South Pole Station -- the South Pole Telescope, the IceCube Neutrino Observatory, and the various other telescopes -- goes on year-round.

Those instruments study cosmic background radiation outside of the visible spectrum, or search for extraterrestrial neutrinos that reveal themselves in the darkness of the deep ice sheet below us, and are not affected by whether the sun is shining over our heads or not. Their reason for being at the South Pole is to take advantage of the extreme dry and stable atmosphere here -- the driest in the world, in fact -- or to take advantage of the massive amount of ice that can be used as a naturally occurring particle detector.

Other research at the South Pole, on the other hand, takes advantage of the darkness of the winter sky, and our proximity to one of the geomagnetic poles of the earth. That research studies the auroras, the ionosphere, the mesosphere, and the geomagnetic storms in what we generally call space weather. Space weather refers to the disturbances in the balance of charges in the ionosphere, as solar flares, also known as coronal mass ejections, approach the Earth. The ionosphere is a layer of the atmosphere about 60 miles above the surface of the Earth, which is rich in charged particles. It also allows us to do radio communication over long distances by reflecting the radio waves back to earth. When a sun flare interacts with the ionosphere, radio wave communications are disrupted, air traffic needs to be rerouted, satellite communications are in jeopardy, GPS readings lose accuracy -- and spectacular auroras show up around the polar regions.

One of the objectives of the space weather research at the South Pole is to measure the density of charged particles in the ionosphere and the variations in the magnetic field of the Earth, and to correlate those observations to the intensity and the movement of auroras. The research performed at the South Pole is further correlated to similar observations performed in regions closer to the North Pole, which we call our conjugate region, and to direct observations of solar flares. Three research associates, Sue O'Reilly, Nicholas Strehl, and I are at the South Pole this winter to operate the space weather instruments. We make sure that the computers that acquire the data and transfer them to scientists around the world operate properly, ensuring that they store and back up some of the data that cannot be transmitted over the Internet connection. We also perform periodic calibrations of the instruments, and we ensure that the cameras pointed at the sky remain free of snow and frost to provide the clearest possible images of even the faintest lights. For that reason, every day of the year, we don our extreme cold weather (ECW) gear and climb on the roof to inspect the cameras and clear them of any snow accumulation -- whether it is minus 90 degrees Fahrenheit or whether it is blowing a 20-knot wind. Sue and I are responsible for six of them on the roof of the main station,

while Nick monitors two of them on the roof of the Martin A. Pomerantz Observatory (MAPO).

Our cameras are very specialized and complex scientific pieces of equipment. We call them all-sky cameras because they look at the entire sky with a field of view of 180 degrees. Each looks at a particular emission wavelength from the sky, investigating a different celestial phenomenon. They use filters to select specific frequencies of the visible spectrum and use thermoelectric coolers to reduce the noise in their CCD detectors. Some of them even use image intensifiers, which make them so sensitive that even the light from the moon can blind them, so we need to turn them off when the moon reaches a certain elevation in the sky. The cameras look at the sky through thick hemispherical glass domes located over corresponding holes on the roof of the building. These domes, each a couple of feet in diameter, protect the cameras, their electronics, and their mechanical components from the elements. Unfortunately, the inside of the domes can easily be coated by a layer of frost, as the warm air from the laboratory reaches the cold surface of the domes. Therefore, working closely with the scientists responsible for the instruments, we develop special skills and strategies to identify and mitigate the early formation of frost. These involve the use of dehumidifiers, heaters, fans and special high-purity gases strategically circulated around the domes.

Attempts are being made to automate the process of snow removal and frost prevention, so that eventually these all-sky cameras could be deployed to remote stations on the continent. Nick is responsible for monitoring the performance of two of these experimental cameras on the roof of the MAPO building. Being at the South Pole in the winter and experiencing the polar night sky, along with its auroras and stars, while contributing to the progress of science, is a rare privilege that we welcome despite the challenges of the polar winter.

Image: Center of the Milky Way Galaxy with an aurora in the foreground at the South Pole. Credit: Daniel Luong-Van / Antarctic Photo Library



Magic Valley Astronomical Society
P.O. Box 445
Kimberly, ID, USA 83341
<http://www.mvastro.org/>

Membership Information

Snake River Skies is the Newsletter of the Magic Valley Astronomical Society and is published electronically once a month. Snake River Skies is copyrighted, except where noted and credit is via permission of the respective author. Snake River Skies. © 2011 by the Magic Valley Astronomical Society.

Images on the front page: 1. Centennial Observatory courtesy of Chris Anderson, Observatory Manager. The Centennial Observatory is located at the Herrett Center for Arts and Science, College of Southern Idaho, Twin Falls, ID, USA. Chris Anderson also provides the Planispheres usually on page 3. 2. Shoshone Falls is a major attraction to the Magic Valley and a prominent landmark on the Snake River. Falls image is used under "public domain;" unknown photographer. 3. M-51 on the front page was imaged with the Shotwell Camera and the Herrett Telescope at the Centennial Observatory by club members Rick Widmer & Ken Thomason. 4. Star explorers image is an open source photo, photographer unknown.

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 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.

About the Magic Valley Astronomical Society

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.



A moon just past full as seen from Earth's northern hemisphere. Credit NASA

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 two telescopes for loan and would gladly accept others. Contact Rick Widmer, Secretary for more information.

Elected Board

Terry Wofford, President
terrywofford@hotmail.com

David Olsen, VP / Newsletter Ed.
editor@mvastro.org

Jim Tubbs, Treasurer
jtubbs015@msn.com

Rick Widmer, Secretary / Webmaster
[rick@developersdesk.com](mailto:rwick@developersdesk.com)