Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, September 8th 2015 7:00pm at the Herrett Center for Arts & Science College of Southern Idaho.

Public Star Party Follows at the Centennial Observatory Club Officers

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Magic Valley Astronomical Society is a member of the Astronomical League





M-51 imaged by Rick Widmer & Ken Thomason Herrett Telescope Shotwell Camera Colleagues,

For some, having one night "lightning"-ed out and having another plagued with a tinge of smoke from rangeland fires might suggest that the City of Rocks Star Party last month fell short of a success. However, in light of what we saw in the skies afterward suggests the star party was indeed a success.

President's Message

Even though nature's fireworks prohibited any formal night sky viewing Friday, on Saturday we had 60 show up to the evening star party, even though a wedding and reception was wrapping up at the adjacent lodge just as we were beginning. We even had a new member show up and help. At the solar viewing earlier in day, visitors took a while to show up, but when they did, we got both quantity and quality. After all was said and done, we distributed a few brochures and even picked up two new Facebook followers, who promptly shared the pictures of the event with their friends -- thanks to Gary Leavitt for sharing his pictures of the event with us on Facebook. And here's another promising note to think about: When I got back to work Monday, I had several people tell me they were going to come but the smoke scared them off. That sounds like the potential for an even bigger turnout next year. To do that, we're going to need to get the word out to additional publicity and news outlets sooner. In the next couple of weeks, we're going to be discussing next year's dates, and the sooner we get those settled, the sooner we can act. Your input is vital here. And if you need more incentive, let me tempt you with details of the barbecue. Since we didn't have to worry about inclement weather, Saturday was much better: Not only were their hamburgers, but there were bratwursts, chorizos, fish, fruit salad, and um, carrot cake and peach pie.

Of course, we have to also talk about what's immediately in front of us. In the month of September, three dates come to mind: First, on Friday and Saturday, Sept. 11 and 12th, there are several different options for you. Both the Idaho Star Party at Bruneau Dunes and the Craters of the Moon Fall Star Party are on Friday and Saturday, but if you'd like something a bit more low-key, MVAS members are headed over the Thorn Creek Ridge viewing area on Friday, Sept. 11th.

If you don't want to leave town, then on Saturday, Sept. 12, you can find regular MVAS activities at the Herrett Center: the board meeting at 5:30 p.m., the regular club presentation at 7 p.m., and the star party afterward. Remember, you can help up at the observatory, or you can join a couple of us down on the lawn in front of the Herrett Center. This month's club presentation is our Annual Show-And-Tell. What we're looking for is to simply hear from you and what you're doing. We're just asking for five to 10 minutes of your time: the more people who participate, the more enjoyable the evening. Please contact me at least one day ahead of time so I can get a general idea of who's all participating.

Lastly, on Friday, Sept. 18th, we're headed back out to Three Creek School for a star party for the students out there. While this is intended to be an outreach effort, members are welcome to stay after the students and families go home. Ask Tim Frazier about finding NGC 6207, that little galaxy next to M13. We look forward to seeing and hearing from you.

Clear Skies, Rob Mayer

Calendars for September

Event Calendar

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6 Moon is at greatest N declination +18.2° Last Quarter	7 Labor Day	8	9	10	11	12 General Membership Mtg. 19:00 Herrett Center Public Star party follows Centennial Observatory
13 New Moon Lunation 1147	14 Moon is at Apogee See page	15	16	17	18	19
20	21 Moon is at greatest S declination -18.1° First Quarter	22	23 Autumnal Equinox	24	25	26
27 Total Lunar Eclipse Full Moon Harvest Moon	28 Moon is at Perigee See page	29	30			

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September Celestial Calendar and Trivia

9/1 Neptune (magnitude +7.8, apparent size 2.4") is at opposition; Uranus is 1.1° north of the Moon.

9/4 Mercury is at its greatest eastern elongation (27°).

9/5 The Moon is 0.5° north of the first-magnitude star Aldebaran (Alpha Tauri) Venus is stationary.

9/6 Asteroid Metis (magnitude +8.8) is at opposition.

9/10 Venus is 3° south of the Moon; Mars is 5° north of the Moon.

9/14 The Moon is at apogee, subtending 29' 20" from a distance of 406,464 kilometers (252,565 miles).

 $9\!/15$ Mercury is 5° south of the Moon; asteroid 1 Ceres is stationary.

9/17 Mercury is stationary.

9/19 Mercury is at its greatest heliocentric latitude south today; Saturn is 3° south of the Moon.

9/20 The Lunar X (the Purbach or Werner Cross), an X-shaped illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 7:56h.

9/24 Mars is 0.8° north of the first-magnitude star Regulus (Alpha Leonis); Pluto is stationary.

9/26 Neptune is 3° south of the Moon.

9/28 The Moon is at perigee, subtending 33' 50" from a distance of 356,877 kilometers (221,753 miles); a total lunar eclipse begins at 2:11 and ends at 3:23;

9/29 Uranus is 1.0 degree north of the Moon; asteroid 4 Vesta (magnitude +6.0) is at opposition. 9/30 Mercury is in inferior conjunction.

Karl Harding discovered asteroid 3 Juno on September 1, 1804. E. E. Barnard discovered Jupiter's fifth satellite, fourteenth-magnitude Amalthea, using the 36-inch refractor at the Lick Observatory on September 9, 1892. On September 19, 1848, William Bond discovered Saturn's fourteenth-magnitude satellite Hyperion, the first irregular moon to be discovered. Neptune was discovered by Johann Gottfried Galle on September 23, 1846, using Urbain Le Verrier's calculations of its position.

Information on Iridium flares and passes of the ISS, the Tiangong-1, the USAF's X-37B, the HST, and other satellites can be found at <u>http://www.heavens-above.com/</u>

The zodiacal light, or the false dawn, is visible about two hours before sunrise from a dark site during the latter part of Sept. Articles about zodiacal light appear at http://www.atoptics....ighsky/zod1.htm http://www.atoptics....ighsky/zod1.htm http://www.atoptics....ighsky/zod1.htm

The Moon is 17.4 days old, is illuminated 92.8%, and is located in Cetus on September 1st at 0:00 UT. A perigean Full Moon, a so-called super moon, occurs on the night of September 27th (September 28th UT). High tides occur on September 1st, 2nd, 3rd, 28th, 29th, and 30th. A total lunar eclipse occurs on the night of September 27th. See page for more information.

On September 22nd, the eclipsing variable star Algol (Beta Persei) shines at minimum brightness (magnitude +3.4) for approximately two hours on centered on 11:20 p.m. EDT.

Top ten binocular deep-sky objects for September: IC 1396, LDN 906, M2, M15, M29, M30, M39, NGC 6939, NGC 6871, NGC 7000

Top ten deep-sky objects for September: IC 1396, M2, M15, M30, NGC 6888, NGC 6946, NGC 6960, NGC 6992, NGC 7000, NGC 7009

Challenge deep-sky object for September: Abell 78 (Cygnus)



Abell 78

The objects listed above are located between 20:00 and 22:00 hours of right ascension.

The Planets



This month Mercury is located in the west, Saturn in the southwest, and Neptune in the southeast during the evening. At midnight, Uranus can be found in the southeast and Neptune in the south. Venus, Mars, and Jupiter are in the east and Uranus is in the southwest in the morning sky.

For observers at latitudes 42 & 43 degrees north at midmonth, Mercury is visible during evening twilight, Venus rises at 4:00 a.m. local time, Mars rises at 4:00 a.m. local time, Jupiter rises at 5:00 a.m. local time, and Saturn sets at 10:00 p.m. local time.

Mercury lies low in the west just after sunset this month. Southern hemisphere observers are favored for this month's evening apparition of the planet. Mercury reaches a greatest eastern elongation of 27 degrees on September 4th but will remain close to the horizon, setting approximately 50 minutes after the Sun, due to the angle of the ecliptic. The speediest planet is 5 degrees south of the Moon on September 15th and is stationary on September 17th. On September 19th, Mercury is at its greatest heliocentric latitude south. It is in inferior conjunction on September 30th.

During September, Venus shrinks in apparent size from 52 to 33 arc seconds but grows in illumination from 9 to 34%. Venus is stationary on September 5th and is three degrees south of the Moon on September 10th. On September 21st, Venus attains maximum brightness (magnitude -4.8), as the planet reaches its greatest illuminated extent. The brightest planet exits Cancer and enters Leo on September 24th.

Mars departs Cancer and enters Leo on September 4th. The Red Planet is five degrees north of the Moon on September 10th. Mars passes than a degree north of the first-magnitude star Regulus on September 24th.

Jupiter reappears in the morning sky by the middle of September. It increases slightly in apparent diameter to 31.4 arc seconds and rises two hours before the Sun by month's end. Browse <u>http://www.skyandtel...watching-tools/</u> to determine transit times of the central meridian by the Great Red Spot. Data on the Galilean satellites is available at http://d366w3m5tf081...phenTab2015.pdf and http://www.shallowsky.com/jupiter/

Saturn sets about 10:00 p.m. local daylight time this month. Its rings span 37 arc seconds and are tilted 24.3 degrees with respect to the Earth. The distance between Saturn and Graffias (Beta Scorpii) decreases from four to two degrees this month. The Ringed Planet is 3 degrees south of the Moon on September 19th. Eighth-magnitude Titan, Saturn's largest satellite, is due north of Saturn on September 7th and September 23rd and is due south on September 15th.

Uranus is located 0.5 degree due south of the fifth-magnitude star Zeta Piscium at the start of September. By the end of the month, the gap widens to 1.2 degrees and Uranus lies to the southwest of the star. For further information on Saturn's satellites, browse http://www.skyandtel...watching-tools/

Neptune (magnitude +7.8, apparent size 2.4") reaches opposition at midnight on the night of August 31st for American observers and is well-positioned for observation in September. The eighth planet lies approximately halfway between the fourth-magnitude star Lambda Aquarii and the fifth-magnitude star Sigma Aquarii. It passes 3.6 arc minutes due north of a seventh-magnitude star on September 4th.

Finder charts for Uranus and Neptune can be found on page 49 of the September issue of Sky & Telescope and online at http://www.nakedeyep....com/uranus.htm and http://www.nakedeyep....com/neptune.htm and at http://www.nakedeyep....com/neptune.htm and http://www.nakedeyep...com/neptune.htm and http://www.nakedeyep...com/neptune.htm and http://www.nakedeyep.

Finder charts for Pluto are available online at http://www.bluewater...luto 2015 1.pdf

For more on the planets and how to locate them, see http://www.nakedeyeplanets.com/





Asteroid Metis (magnitude +8.8) is at opposition in Aquarius on the night of September 5th. Asteroid 4 Vesta (magnitude +6.0) is at opposition in Cetus on the night of September 28th. Asteroids 22 Kaliope, 13 Egeria, and 45 Eugenia all shine at eleventh-magnitude as they reach opposition on September 8th, September 13th, and September 16th respectively.

Noteworthy asteroid occultations occur this month on September 1st (849 Ara), September 3rd (112 Iphigenia), and September 23rd (51 Nemausa) for observers living in various parts of North America. Data on these and other asteroid occultations taking place this month is available at http://www.asteroido.../2015_09_si.htm



he periodic comet 67P/Churyumov-Gerasimenko, the target of the Rosetta mission, may be bright enough to observe in the morning sky this month. It passes one degree south of the sixth-magnitude star Lambda Cancri on September 10th. On the mornings of September 16th and September 17th, the comet passes about two degrees north of the bright open cluster M44 (the Beehive). It's located 0.4 degree north of the fifth-magnitude star Gamma Cancri on September 17th. Another periodic comet, 141P/Machholz, comes within one degree of 67P/Churyumov-Gerasimenko on the morning of September 1st but bright moonlight will make observing the event very difficult. The remarkable C/2014 Q2 (Lovejoy) is still a potential target as it moves through Boötes. For further information on comets visible in September, browse http://cometchasing.skyhound.com/ and http://www.aerith.ne...t/future-n.html



The minor meteor shower known as the Epsilon Perseids, which has a maximum hourly rate of just 5 per hour, peaks on the evening of September 9th. The radiant is located near the second-magnitude star Algol (Beta Persei) at 03h15m, +40 degrees.

Carbon Star

Notable carbon star for September: LW Cygni - Sky Position: RA 12h 26.0m, Dec -39° 57' Sky Chart below.



Planisphere for September



Be Safe - Get Out There - Explore Your Universe

Lunar Eclipse

The Total Lunar Eclipse of Sunday, September 27th, 2015

This is the second of two total lunar eclipses visible from southern Idaho this year, and the fourth of a so-called "tetrad" (four total lunar eclipses in succession without a partial intervening). NOTE: The observatory will be open at 7:00pm.



Adapted from a <u>diagram by NASA</u>. Note that, although the moon's orbital motion will cause it to move to the lower left relative to Earth's shadow, it (and the shadow) will be moving to the upper *right* (from the eastern horizon) due to Earth's rotation. Thus, for observers in the U.S., the moon will be moving higher in the sky relative to the local horizon throughout the eclipse.

Eclipse timeline (all times listed are in Mountain Daylight Time (UT-6 hrs.), and rise/set/twilight times are given for Twin Falls, Idaho, USA):

- 6:12 PM First penumbral contact (P1). The left edge of the moon begins to enter Earth's penumbral (partial) shadow, which occurs while the moon is still below the eastern horizon for the Western U.S. (including Idaho).
- 7:00 PM <u>Centennial Observatory</u> opens for telescope viewing, weather permitting. Please dress warmly!
- 7:07 PM First umbral contact (U1). The moon begins to enter Earth' umbral (full) shadow; this phase, too, occurs with the moon below the horizon for Western U.S. observers (including Idaho).
- 7:22 PM **Moonrise.** The moon rises slightly north of due east, with a small, dark "bite" missing from its left edge. The dark bite will continue to grow until the start of totality (U2).
- 8:11 PM Total phase begins (U2) (second umbral contact). The moon is completely immersed in Earth's umbra, appearing dark red-orange or orange-brown, depending on global atmospheric conditions. (e.g. A major volcanic eruption could render the eclipsed moon nearly invisible!)
- 8:48 PM Greatest eclipse. The moon reaches its maximum excursion into the umbral shadow, appearing at
 its darkest for this eclipse. For this particular eclipse, the moon just skirts the center of Earth's full (umbral)
 shadow, so its lower right edge may appear subtly brighter than the upper left, which is deepest into the shadow.
- 9:03 PM End of astronomical twilight. The last bit of twilight glow will be gone from the western sky.
- 9:23 PM Total phase ends (U3) (third umbral contact). The moon begins to emerge from Earth's umbra, with
 a growing, bright sliver appearing at the lower left edge of the lunar disk.
- 10:27 PM Last umbral contact (U4). The moon exits Earth's umbral shadow, still noticeably darker at the upper right due to the partial (penumbral) shadow cast on it. This subtle darkening slowly disappears until the eclipse ends.
- 11:00 PM **Observatory closes.** Although the eclipse is still in progress, to the eye the moon will appear completely normal (i.e. the penumbral shadowing by this point is too subtle to notice).
- 11:22 PM Last penumbral contact (P4) (official end of the eclipse). The moon emerges from the penumbral shadow, an effect far too subtle to detect visually.

NASA's Space Place

Solar Wind Creates—and Whips—a Magnetic Tail around Earth By Ethan Siegel

As Earth spins on its axis, our planets interior spins as well. Deep inside our world, Earth's metal-rich core produces a magnetic field that spans the entire globe, with the magnetic poles offset only slightly from our rotational axis. If you fly up to great distances, well above Earth's surface, you'll find that this magnetic web, called the magnetosphere, is no longer spherical. It not only bends away from the direction of the sun at high altitudes, but it exhibits some very strange features, all thanks to the effects of our parent star.

The sun isn't just the primary source of light and heat for our world; it also emits an intense stream of charged particles, the solar wind, and has its own intense magnetic field that extends much farther into space than our own planet's does. The solar wind travels fast, making the 150 million km (93 million mile) journey to our world in around three days, and is greatly affected by Earth. Under normal circumstances, our world's magnetic field acts like a shield for these particles, bending them out of the way of our planet and protecting plant and animal life from this harmful radiation.

But for every action, there's an equal and opposite reaction: as our magnetosphere bends the solar wind's ions, these particles also distort our magnetosphere, creating a long magnetotail that not only flattens and narrows, but whips backand-forth in the onrushing solar wind. The particles are so diffuse that collisions between them practically never occur, but the electromagnetic interactions create waves in Earth's magnetosphere, which grow in magnitude and then transfer energy to other particles. The charged particles travel within the magnetic field toward both poles, and when they hit the ionosphere region of Earth's upper atmosphere, they collide with ions of oxygen and nitrogen causing aurora. Missions such as the European Space Agency and NASA Cluster mission have just led to the first accurate model and understanding of equatorial magnetosonic waves, one such example of the interactions that cause Earth's magnetotail to whip around in the wind like so.

The shape of Earth's magnetic field not only affects aurorae, but can also impact satellite electronics. Understanding its shape and how the magnetosphere interacts with the solar wind can also lead to more accurate predictions of energetic electrons in near-Earth space that can disrupt our technological infrastructure. As our knowledge increases, we may someday be able to reach one of the holy grails of connecting heliophysics to Earth: forecasting and accurately predicting space weather and its effects. Thanks to the Cluster Inner Magnetosphere Campaign, Van Allen Probes, Mars Odyssey Thermal Emission Imaging System, Magnetospheric Multiscale, and Heliophysics System Observatory missions, we're closer to this than ever before.

Kids can learn about how solar wind defines the edges of our solar system at NASA Space Place. <u>http://spaceplace.nasa.gov/interstellar</u>



Image credit: ESA / C. T. Russell (L), of Earth's magnetic tail and its cause: the solar wind; Southwest Research Institute / IBEX Science Team (R), of the first image of the plasma sheet and plasmasphere created around Earth by the solar wind.



Observatories

Bruneau Dunes Observatory – Bruneau, ID



You're invited to star gaze at the Bruneau Dunes Observatory! See the night sky as you've never seen it before. Observatory tours and solar viewing (through a specially adapted telescope) begin one hour before sunset, and are free of cost. Following that, visitors can view short orientation program and then have the chance to survey the heavens through the observatory's collection of telescopes. There is a viewing fee of \$3 per person (children 5 and under are free of cost) for this. The observatory is open to the public from early September through mid-October on Friday and Saturday nights only, weather permitting. For presentation times, call 208-366-7919, or check the kiosk when you arrive at the park.

See our video: https://www.youtube.com/watch?v=v_TnnWx75k0#t=226

Centennial Observatory at the Herrett Center College of Southern Idaho – Twin Falls, ID www.herrett.csi.edu

Event	Place	Date	Time	Admission
Summer Solar Session #15	Centennial Observatory	Wednesday, September 2 nd	1:30 to 3:30 PM	FREE
Bimonthly <u>Astronomy Talk</u> : "Introducing Lyra, the Lyre"	Faulkner Planetarium	Thursday, September 10 th	8:00 to 9:00 PM	Adults: \$2.50 Children (7-17) & CSI students: \$1.50 Ages 0-6: FREE
Astronomy Talk Night Telescope Viewing	Centennial Observatory	Thursday, September 10 th	9:00 to 11:00 PM	\$1.50 or free with Astronomy Talk admission
Monthly Free Star Party	Centennial Observatory	Saturday, September 12 th	8:45 PM to 12:00 AM	FREE
International Observe the Moon Night	Centennial Observatory	Saturday, September 19 th	7:30 to 9:30 PM	FREE
Total Lunar Eclipse	Centennial Observatory	Sunday, September 27 th , 2015	7:00 to 11:00 PM	FREE

About the Magic Valley Astronomical Society

Magic Valley Astronomical Society P.O. Box 445 Kimberly, ID, USA 83341

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

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

Membership Benefits:

Lending Telescopes: The society currently has three telescopes for loan and would gladly accept others please contact President Robert Mayer, for more information on these and other benefits.



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.