

Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, December 9th 2017
7:00pm at the
Herrett Center for Arts & Science
College of Southern Idaho.
Public Star Party Follows at the
Centennial Observatory

Club Officers

Tim Frazier, President
fraztimo@gmail.com

Robert Mayer, Vice President
mayerbrt@gmail.com

Gary Leavitt, Secretary
leavittg@cableone.net
208-731-7476

Jim Tubbs, Treasurer / ALCOR
jtubbs015@msn.com
208-404-2999

David Olsen, Newsletter Editor
editor@mvastro.org

Rick Widmer, Webmaster
rick@developersdesk.com

Magic Valley Astronomical Society is a
member of the Astronomical League



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

President's Message

Tim Frazier

As the nights lengthen and the crisp, clear skies of winter present the dilemma of good seeing but low temperatures, it is time for all of us to consider the past year's accomplishments. Hagerman's skies surprised us; Craters of the Moon revealed a brilliant Milky Way and our outreach programs provided literally hundreds with views and information about their universe. Many looked up for the first time and truly wondered about the night sky.

It is this last item that strikes me as the most important service we provide the community: awakening others to the beauty, wonder and importance of seeing the universe and our relationship to it. I remember a conversation with a woman during this year's Astronomy Day. We were looking at the sun through the solar scopes and I mentioned how our star was evolving and that other stars were being born or dying. "Oh," she said, "I never thought things changed." She was silent for a moment as this revelation took hold. That one moment changed the way she saw the universe.

This is a big reason why it is so important the MVAS continues doing its remarkable amount of public outreach. Aside from the "Oh wow" objects we show at our star parties, we are demonstrating the rewards of an intellectual pursuit. How understanding, even a little, of what surrounds us opens us up to our sense of place in this vast domain. The importance of this cannot be overstated as we are confronted by general anti-intellectualism and distrust of science. We stand as proof of the value of knowledge and how that enriches our lives. This must be passed on, particularly to young students in those "boring" science classes. Hopefully we can directly remedy some of this with our presentations targeting the science classes in the Twin Falls area that are planned for 2018.









So as we wind up this year and prepare for the sure-to-come surprise comets, supernovas, exoplanets and amazing images of the next, let's take a moment to appreciate what difference astronomy has made in our lives and commit to sharing it.

Happy holidays to all,

Tim

Calendars

December 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3 Full Moon Cold Moon  100% Visible	4	5	6	7	8	9 Holiday Party 2017 
10 Last Quarter Visible 49% ↓ 	11	12	13	14	15	16
17	18 New Moon Lunation 1175 1% Visible ↓ 	19	20	21 Winter Solstice 	22	23
24 Christmas Eve	25 Christmas 	26 First Quarter 52% Visible ↑ 	27	28	29	30
31 New Year's Eve 						

Snake River Skies is the Newsletter of the Magic Valley Astronomical Society and is published electronically once a month.
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 newsletter, unless otherwise noted, are in the public domain and are courtesy of NASA, Wikimedia, or from MVAS File Photos. Full
 Moon names follow the traditional Algonquin First Nation history.

Be Safe – Get Out There – Explore Your Universe

Celestial Calendar

All times, unless otherwise noted, are UT (subtract seven hours and, when appropriate, one calendar day for MST)

- 12/1** Asteroid 349 Dembowska (magnitude +9.6) is at opposition at 13:00
- 12/2** The Moon is 9.0 degrees south-southeast of the bright open cluster M45 (the Pleiades or Subaru) in Taurus.
- 12/3** Mercury is stationary in right ascension at 8:00; Neptune is at eastern quadrature at 12:00; the Moon is 0.8 degree north of the first-magnitude star Aldebaran (Alpha Tauri), with an occultation taking place in northwestern North America, northern Greenland, and central and northern Asia, at 13:00;
- 12/4** The earliest end of evening twilight at 40 degrees north takes place today; the Moon is at perigee, subtending 33' 26" from a distance of 357,492 kilometers (222,135 miles), at 8:46
- 12/5** The Moon is 4.5 degrees south of the bright open cluster M35 in Gemini at 1:00; the Moon is at its northernmost declination for 2017 at 12:00
- 12/6** The Moon is 1.1 degrees north of the asteroid 8 Flora at 2:00; the Moon is 8.7 degrees south of the first-magnitude star Pollux (Beta Geminorum) at 11:00
- 12/7** Mercury is 1.2 degrees south-southwest of Saturn at 2:00; the Moon is 2.1 degrees south of the bright open cluster M44 (the Beehive Cluster or Praesepe) in Cancer at 9:00; the earliest sunset at latitude 40 degrees north occurs at 16:35; Mercury is at the ascending node through the ecliptic plane at 20:00
- 12/8** The Moon is at the ascending node (longitude 136.9 degrees) at 0:39; the Moon is 0.7 degree north-northeast of the first-magnitude star Regulus (Alpha Leonis).
- 12/9** Venus is 5.0 degrees north of the bright first-magnitude star Antares (Alpha Scorpii) at 11:00
- 12/12** The Curtiss Cross, an X-shaped clair-obscure illumination effect located between the craters Parry and Gambart, is predicted to be at a midpoint at 2:00; Mercury is at perihelion (0.3075 astronomical units from the Sun) at 12:00
- 12/13** Mercury is in inferior conjunction (1.72 degrees north of the Sun) at 2:00; the Moon is 6.8 degrees north-northeast of the first-magnitude star Spica at 2:00; the Moon is 4.0 degrees north of Mars at 16:00
- 12/14** The peak of the Geminid meteor shower (100 to 120 per hour) occurs at 7:00; the Moon is 4.0 degrees north of Jupiter at 14:00; the Moon is 0.2 degree south of asteroid 4 Vesta.
- 12/15** Mercury is 2.2 degrees north of Venus at 12:00
- 12/16** The Moon is 9.2 degrees north of Antares at 22:00
- 12/17** Asteroid 20 Massalia (magnitude +8.4) is at opposition at 8:00; the Moon is 1.7 degrees north of Mercury at 9:00; the Moon is 4.1 degrees north of Venus at 19:00
- 12/18** The Sun enters Sagittarius (ecliptic longitude 266.59 degrees) at 8:00; the Moon is 2.8 degrees north of Saturn.
- 12/19** The Moon is at apogee, subtending 29' 23" from a distance of 406,603 kilometers (252,651 miles), at 1:26; the Moon is at its southernmost declination for 2017 at 10:00
- 12/20** Venus is at the descending node through the ecliptic plane at 0:00; the Moon displays minimum libration for 2017.
- 12/21** Winter solstice in the northern hemisphere occurs at 16:28; Saturn is in conjunction with the Sun at 21:00; asteroid 1 Ceres is stationary in right ascension at 21:00
- 12/22** The Moon is at the descending node (longitude 315.7 degrees) at 10:08; the peak of the Ursid meteor shower (10 per hour) occurs at 15:00; Mercury is at its greatest latitude north of the ecliptic plane (7.0 degrees) at 17:00
- 12/23** Mercury is stationary in right ascension at 3:00
- 12/24** Mercury (magnitude +0.2) is 8.1 degrees north-northeast of Antares at 1:00; asteroid 2 Pallas is stationary at 6:00; the Moon is 1.4 degrees south-southeast of Neptune at 14:00
- 12/25** The equation of time equals 0 at 4:00; the Lunar X (the Purbach or Werner Cross), an X-shaped clair-obscure illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to occur at 14:50; Venus is 1.1 degrees south of Saturn at 17:00
- 12/27** The Moon displays maximum libration for 2017 at 19:00; the Moon is 4.3 degrees south-southeast of Uranus.
- 12/28** Venus is at its greatest southern declination (-23.7 degrees) for 2017 at 11:00
- 12/30** The Moon is 9.1 degrees south-southeast of M45 at 9:00
- 12/31** The Moon is 0.74 degree north-northwest of Aldebaran, with an occultation taking place in western Russia, most of Europe, Greenland, and most of North America, at 1:00

Tycho Brahe, Johannes Kepler, Isaac Newton, E. E. Barnard, and Arthur Eddington were born in December.

Giovanni Cassini discovered the Saturnian satellite Rhea on December 23, 1672. The bright galaxies M81 and M82 in Ursa Major were discovered by Johann Bode on December 31, 1774. Caroline Herschel discovered Comet 35P/Herschel-Rigoliet on December 21, 1788. The Jovian satellite Himalia was discovered by Charles Perrine on December 3, 1905. Audouin Dolfus discovered the Saturnian satellite Janus on December 15, 1966. The Saturnian satellite Epimetheus was discovered by Richard Walker on December 18, 1966.

The Sun, the Moon, & the Planets



The Sun is located in Ophiuchus, a non-traditional constellation of the zodiac, on December 1st. Sol enters Sagittarius on December 18th. Winter solstice for the northern hemisphere occurs when the Sun is farthest south for the year on December 21st. It is the shortest "day" of the year (9 hours and 20 minutes) at latitude 40 degrees north.

The Moon is 12.5 days old, is illuminated 90.0%, subtends 32.9 arc minutes, and is located in Cetus on December 1st at 0:00 UT. Large tides will take place following Full Moon on December 3rd. Due to the position of the ecliptic, the Moon reaches its highest point in the sky for the year in December. It attains its greatest northern declination (+19.5 degrees) for the month on December 5th and its greatest southern declination (-19.6 degrees) on December 19th. Longitudinal libration is at a maximum of +7.4 degrees on December 11th and a minimum of -7.9 degrees on December 27th. Latitudinal libration is at a maximum of +6.6 degrees on December 2nd and +6.7 degrees on December 29th and a minimum of -6.7 degrees on December 15th. New Moon occurs on December 18th. From certain parts of the world, the Moon occults Aldebaran on December 3rd, Regulus on December 8th, Vesta on December 14th, and Aldebaran once again on December 31st. Consult <http://www.lunar-occultations.com/iota/iotandx.htm> for more on these events.

During the evening, Mercury and Saturn can be found in the southwest, Uranus in the southeast, and Neptune in the south. Uranus is in the west at midnight. In the morning, Mercury, Venus, Mars, and Jupiter are located in the southeast.

During the first week of December, **Mercury** can be found very low in the southwestern sky. By the end of the month, it will be visible in the southeast at dawn. The speediest planet is stationary and begins retrograde (westward) motion on December 3rd. It is at the ascending node on December 7th, enters Ophiuchus on December 8th, reaches perihelion on December 12th, is in inferior conjunction on December 13th, and is at its greatest heliocentric latitude north on December 22nd.

Venus can be seen in the southeast during bright morning twilight in early December and then disappears into the glare of the Sun. The brightest planet is at descending node on December 19th.

Mars is four degrees south of the Moon on December 13th. It departs Virgo and enters Libra on December 21st. Mars and Jupiter are situated approximately 1.5 degrees to either side of the third-magnitude binary star Alpha Librae (Zubenelgenubi) on the morning of December 31st. The Red Planet grows to 4.8 arc seconds in apparent size and brightens to magnitude +1.5 by the end of the month.

Jupiter rises at approximately 4:30 a.m. local time on December 1st. It increases in apparent size from 31.4 arc seconds to 33.0 arc seconds this month. The gas giant lies 4.0 degrees south of the waning crescent Moon on December 14th. Jupiter passes less than one degree north of Zubenelgenubi on December 20th.

Saturn lies about five degrees above the southwestern horizon just after sunset on December 1st. Mercury and Saturn are situated within three degrees of each other on that date. The Ringed Planet is in conjunction with the Sun on December 21st and will reappear in the morning sky in January.

Uranus sets after midnight local time. During December, Uranus (magnitude +5.8) is positioned one degree northwest of a trapezoid-shaped asterism consisting of sixth and seventh-magnitude stars which is located half-way between Omicron Piscium (magnitude +4.3) and Mu Piscium (magnitude +4.8). Uranus is 4.3 degrees north-northwest of the Moon on December 27th. Browse <http://bluewaterastronomy.info/resources/uranus-finder-chart-2017.png> for a finder chart.

Neptune sets by midnight local time in early December. During the first half of the month, it's positioned 0.6 degree south of the fourth-magnitude star Lambda Aquarii. By month's end, Neptune has moved to a location 0.5 degree southeast of Lambda Aquarii. The ice giant is at eastern quadrature on December 3rd. The Moon passes 1.4 degrees south-southeast of Neptune on December 24th. A finder chart is posted at <http://bluewaterastronomy.info/resources/neptune-finder-chart-2017.png>. Additional online finder charts for Uranus and Neptune can be found at <http://www.nakedeyeplanets.com/uranus.htm> and <http://www.nakedeyeplanets.com/neptune.htm>

The dwarf planet **Pluto** will not be visible again until next year. For more on the planets and how to locate them, see <http://www.nakedeyeplanets.com/>

Current information on solar system celestial bodies is posted at <http://www.curtrenz.com/astronomy.htm> and <http://nineplanets.org/>

Asteroids



Asteroid **7 Iris** dims from magnitude +7.7 to magnitude +8.5 as it glides southeastward through Aries this month. It lies less than one degree southeast of the sixth-magnitude star 4 Arietis on December 1st. Asteroid 349 Dembowska (magnitude +9.6) is at opposition in Taurus on December 1st. Asteroid **20 Massalia** (magnitude +8.4) is at opposition, the fourth brightest asteroidal opposition of 2017, in Taurus on December 17th. For information on this year's bright asteroids and upcoming asteroid occultation events, consult <http://www.curtrenz.com/asteroids.html> and <http://asteroidoccultation.com/> respectively.

Comets



C/2016 R2 (PanSTARRS) may reach eleventh magnitude as it travels northwestward through Orion. This Oort cloud comet lies within one degree of the fourth-magnitude star Pi2 Orionis as it crosses the orbital plane of the Earth on December 12th and December 13th. On December 15th and December 16th, it passes about two degrees southwest of the open cluster NGC 1662. Visit <http://cometchasing.skyhound.com/> and <http://www.aerith.net/comet/future-n.html> for information on comets that are potentially visible this month.

Meteors



The peak of Geminid meteor shower occurs on the morning of December 14th and is not adversely affected by moonlight from a slim waning crescent Moon. The Geminids, which are associated with the Palladian asteroid, or possible cometary nucleus, 3200 Phaethon, have become the most reliable meteor shower of the year. Geminid meteors appear to originate from a radiant that's just northwest of Castor (Alpha Geminorum). That radiant lies almost at the zenith at 2:00 a.m. local time. Geminid meteors travel at a relatively slow speed of 35 kilometers per second (22 miles per second). The Ursids, a normally minor meteor shower, peak on the morning of December 22nd. The radiant is located close to Kochab (Beta Ursa Minoris), some 15 degrees from the north celestial pole. See <http://earthsky.org/astronomy-essentials/earthskys-meteor-shower-guide#geminids> and <https://www.imo.net/resources/calendar/>

Carbon Star



Notable carbon star for December: U Camelopardalis Right Ascension: 03^h 41^m 48.17393^s Declination: +62° 38' 54.3906"

ISS



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 <http://www.heavens-above.com/>

A wealth of information on the celestial bodies comprising the solar system is posted at <http://www.curtrenz.com/astronomy.html> and <http://nineplanets.org/>

The Deep Sky



The famous eclipsing variable star Algol (Beta Persei) is at a minimum, decreasing in magnitude from +2.1 to +3.4, on December 1st, 3rd, 6th, 9th, 12th, 15th, 18th, 21st, 24th, 26th, and 29th. On December 17th (December 18th UT) and December 20th (December 21st UT), Algol is at minimum brightness for approximately two hours and is well-placed for observers in North America. Consult page 49 of the December 2017 issue of *Sky & Telescope* for the times of the eclipses. For more on Algol, see <http://stars.astro.illinois.edu/sow/Algol.html> and <http://www.solstation.com/stars2/algol3.htm>

One hundred deep-sky objects for December: NGC 891 (Andromeda); IC 342, K6, St23, Tom 5 (Camelopardalis); Be65, IC 1848, K4, Mel15, NGC 896, NGC 1027, St2, Tr3 (Cassiopeia); M77, NGC 788, NGC 835, NGC 864, NGC 908, NGC 936, NGC 955, NGC 958, NGC 1015, NGC 1016, NGC 1022, NGC 1042, NGC 1052, NGC 1055, NGC 1087, NGC 1094 (Cetus); IC 2006, NGC 1084, NGC 1140, NGC 1187, NGC 1199, NGC 1209, NGC 1232, NGC 1291, NGC 1300, NGC 1309, NGC 1332, NGC 1337, NGC 1353, NGC 1357, NGC 1395, NGC 1400, NGC 1407, NGC 1421, NGC 1426, NGC 1440, NGC 1452, NGC 1453, NGC 1461 (Eridanus); NGC 1079, NGC 1097, NGC 1201, NGC 1292, NGC 1316 (Fornax I Galaxy Cluster), NGC 1317, NGC 1326, NGC 1344, NGC 1350, NGC 1360, NGC 1365, NGC 1371, NGC 1374, NGC 1379, NGC 1380, NGC 1381, NGC 1387, NGC 1398, NGC 1404, NGC 1406, NGC 1425 (Fornax); Bas10, Cz8, IC 351, IC 2003, K5, Mel 20, M34, NGC 869, NGC 884, NGC 957, NGC 1023, NGC 1058, NGC 1161, NGC 1245, NGC 1275 (Perseus I Galaxy Cluster), NGC 1333, NGC 1342, NGC 1444, Tr2 (Perseus); M45 (Taurus); NGC 777, NGC 784, NGC 890, NGC 925, NGC 949, NGC 959, NGC 978A/B (Triangulum)

Top ten binocular deep-sky objects for December: M34, M45, Mel15, Mel20, NGC 869, NGC 884, NGC 1027, NGC 1232, St2, St23

Top ten deep-sky objects for December: M34, M45, M77, NGC 869, NGC 884, NGC 891, NGC 1023, NGC 1232, NGC 1332, NGC 1360

Challenge deep-sky object for December: vdB14 (Camelopardalis)

The objects listed above are located between 2:00 and 4:00 hours of right ascension.

A wealth of information on solar system celestial bodies is posted at <http://www.curtrenz.com/astronomy.html> and <http://nineplanets.org/>

Free star maps for this month can be downloaded at <http://www.skymaps.com/downloads.html> and <http://www.telescope.com/content.jsp?pageName=Monthly-Star-Chart>

Data on current supernovae can be found at <http://www.rochesterastronomy.org/snimages/>

Information on observing some of the more prominent Messier galaxies is available at <http://www.cloudynights.com/topic/358295-how-to-locate-some-of-the-major-messier-galaxies-and-helpful-advice-for-novice-amateur-astronomers/>

Finder charts for the Messier objects and other deep-sky objects are posted at <https://freestarcharts.com/messier> and <https://freestarcharts.com/ngc-7023> and http://www.cambridge.org/features/turnleft/seasonal_skies_october-december.htm

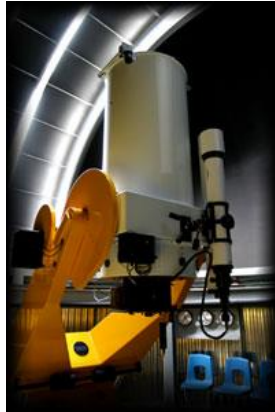
Telrad finder charts for the Messier Catalog and the SAC's 110 Best of the NGC are posted at http://www.astro-tom.com/messier/messier_finder_charts/map1.pdf and <http://www.saguaroastro.org/content/db/Book110BestNGC.pdf> respectively.

Deep-sky object list generators can be found at <https://dso-browser.com/> and <http://www.virtualcolony.com/sac/> and <http://tonightssky.com/MainPage.php>

Freeware sky atlases can be downloaded at <http://www.deepskywatch.com/index.html> (Click on Sky Atlas) and <https://www.uv.es/jrtorres/triatlas.html>

Centennial Observatory and Faulkner Planetarium

Event	Place	Date	Time	Admission
Monthly Free Star Party	Centennial Observatory	Saturday, December 9 th , 2017	6:15 PM to midnight	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, December 12 th , 2017	6:15 to 9:00 PM	\$1.50 or free with Faulkner Planetarium admission
Telescope Tuesday	Centennial Observatory	Tuesday, December 26 th , 2017	6:15 to 9:00 PM	\$1.50 or free with Faulkner Planetarium admission

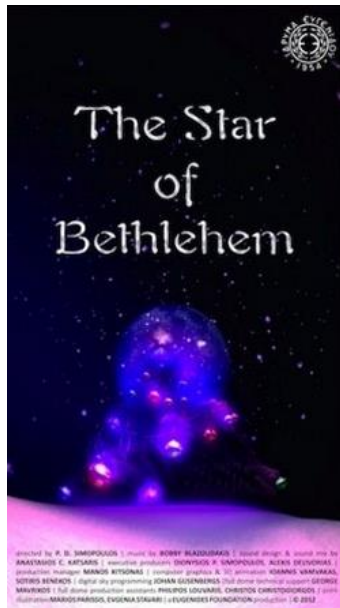


CSI Centennial Observatory / Faulkner Planetarium Herrett Center

Faulkner Planetarium / Show Times

<http://herrett.csi.edu/astronomy/planetarium/showtimes.asp>

[Now Showing](#)



About the Magic Valley Astronomical Society

Magic Valley Astronomical Society
550 Sparks St.
Twin Falls, ID

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, and \$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.