

Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, July 13th 2019
7:00pm at the
Herrett Center for Arts & Science
College of Southern Idaho.
Public Star Party follows at the
Centennial Observatory

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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

MVAS President's Message

July 2019

Colleagues,

By the time you get this, many of you will be packing up your gear and getting ready to head to southeastern Cassia County for what is arguably the astronomical highlight of the year for us – the star party at the Castle Rocks State Park. For 12 years now, MVAS has come to Almo and shared its joy of some of the darkest skies in west, dark enough for the Milky Way to be almost irritating. It's here where many of us got to actually discover that one can observe a dark nebula in a nearby telescope instead of a book or online. Even the faintest Messier objects jump out in the average scope – such as M109 – and even small scopes can pull off nice surprises such as getting the Lagoon and Trifid Nebulae in the same field of view.

We'll be making a small change this year: Solar viewing will be at the Visitors' Center in Almo instead of at the Smoky Mountain Campground. Otherwise, drop by with a potluck dish for the dinner before the star party at the bunkhouse.

Everything starts Friday, July 5th. Expect some bigger than usual crowds, and if you haven't landed a space yet, you may have to be in the bunkhouse.

Hopefully, we recently just had a harbinger of things to come. Our sixth annual June star party at the Hagerman Fossil Beds National Monument on June 22 could indeed be classified as a success. There were clouds, but a very patient crowd stood in line to catch views of Jupiter and Saturn, and then those moments when the skies broke clear, they got to take in deep sky gems. If anyone deserved additional praise, this crowd did.

And Chris J. Anderson has been having success with his asteroid occultation work at the Centennial Observatory. In a four-day period at the end of June, Anderson pulled in three successful observations – and there may be more after I send this to press.








After the City of Rocks Star Party, be aware that we'll have another weekend of fun this month. The annual MVAS barbeque is Saturday, July 13th. Again, please bring a side dish or a dessert. We'll take care of everything else. Dinner starts at 7 p.m., with a board meeting at 5:45 p.m. prior.

Great views,

Rob Mayer

Calendar

July 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2 New Moon Lunation 1194 1% Visible ↓ Age: 29.19 Days 	3	4	5 City of Rocks Castle Rocks State Park Star Party 	6 City of Rocks Castle Rocks State Park Star Party 
7	8	9 First Quarter Moon Visible: 51% ↑ Age: 7.44 days 	10	11	12	13 MVAS Annual Picnic at 7:00pm at the Herrett Center Public Star Party Centennial Obs. 9:45p - 12:00a
14	15	16 Full Moon 100% Visible Age: 14.39 Days 	17	18	19	20 Annual Bogus Basin Star Party see page for details 
21	22	23	24	25 Last Quarter Visible 46% ↓ Age: 22.43 Days 	26	27
28	29	30	31			

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 Careful – Be Safe – Get Out There – Explore Your Universe

12th annual City of Rocks Star Party

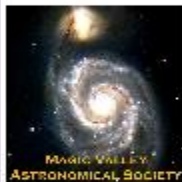
Explore the wonders of the universe in some of
America's darkest, clearest skies.



Castle Rocks State Park

Two miles north of Almo, ID (1 hr. S. of Burley)

Friday, Jul. 5th & Saturday, Jul. 6nd, 2019



• 2:00-6:00 p.m. — **Solar viewing** (safe views of the sun with filtered telescopes), City of Rocks Visitor Center, Almo

• 9:30 p.m.-midnight+ — **Star party** (telescope viewing), Lodge site, Castle Rocks State Park

Telescopes provided. Free admission—park day use fees apply.



Hosted by: Idaho Dept. of Parks & Recreation, Magic Valley Astronomical Society, and the College of Southern Idaho's Centennial Observatory

June Celestial Calendar by Dave Mitsky

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

7/1 The Moon is 1.6 degrees south-southeast of Venus at 23:00

7/2 Asteroid 18 Melpomene (magnitude +9.2) is at opposition at 1:00; New Moon (lunation 1194) occurs at 19:16; a total solar eclipse visible from the southern Pacific Ocean, northern Chile, and central Argentina reaches greatest eclipse at 19:22:53

7/3 The Moon is at the ascending node (longitude 107.6 degrees) at 7:00; the Moon is 6.1 degrees south of the first magnitude star Pollux (Beta Geminorum) at 18:00

7/4 The Moon is 0.1 degree north of Mars, with an occultation occurring in Micronesia, most of Asia, the Arabian Peninsula, and the eastern tip of Africa, at 6:00; the Moon is 3.3 degrees north-northeast of Mercury at 10:00; the Moon lies within the bright open cluster M44 (the Beehive or Praesepe) in Cancer at 15:00; the Earth is at aphelion (152,104,285 kilometers or 94,513,221 miles from the Sun) at 22:00

7/5 The Moon is at perigee, subtending 32' 51" at a distance of 363,726 kilometers (226,009 miles) at 5:00; Venus is at the ascending node through the ecliptic plane at 13:00

7/6 The Moon is 3.1 degrees north-northeast of the first-magnitude star Regulus (Alpha Leonis) at 5:00

7/7 Mercury is stationary at 4:00; Venus is at its northernmost declination (23.4 degrees) at 5:00; Mercury is at aphelion at 7:00; Mercury (magnitude +2.0) is 4.0 degrees south of Mars (magnitude +1.8) at 14:00

7/9 First Quarter Moon occurs at 10:55; the Lunar X, also known as the Werner or Purbach Cross, an X-shaped illumination effect involving various rims and ridges between the craters La Caille, Blanchinus, and Purbach, is predicted to begin at 15:58; Saturn (magnitude +0.1, apparent size 18.4") is at opposition at 17:00

7/10 The Moon is 7.3 degrees north-northeast of the first-magnitude star Spica (Alpha Virginis) at 0:00; the middle of the eclipse season (i.e., the Sun is at same ecliptic longitude as the Moon's ascending node, 107.5 degrees) occurs at 0:00

7/13 The Moon is 7.8 degrees north-northeast of the first-magnitude star Antares (Alpha Scorpii) at 11:00; the Moon is 2.3 degrees north-northeast of Jupiter at 21:00

7/14 Pluto is at opposition (magnitude +14.2, apparent size 0.1") at 15:00

7/16 The Moon is 0.2 degree south of Saturn, with an occultation occurring in central South America, Easter Island, southern Polynesia, and eastern Melanesia, at 7:00; the Moon is at the descending node (longitude 287.7 degrees) at 9:00; the Moon is 0.04 degree south of Pluto, with an occultation occurring in western Micronesia, northern and central Australia, southern Indonesia, Madagascar, and eastern Africa, at 17:00; the Moon is at the descending node (longitude 287.7 degrees) at 9:00; a partial lunar eclipse visible from South America, Europe, Africa, most of Asia, and Australia reaches greatest eclipse at 21:30:44; Full Moon, known as the Hay or Thunder Moon, occurs at 21:38

7/18 Mars is at its greatest heliocentric latitude north today

7/19 The dwarf planet/asteroid 1 Ceres is stationary at 17:00

7/20 The Moon is at apogee, subtending 29' 28" from a distance of 405,481 kilometers (251,954 miles) at 23:59

7/21 The Sun enters Cancer, at longitude 118.3 degrees on the ecliptic, at 7:00; the Moon is 4.0 degrees south of Neptune at 8:00; Mercury reaches inferior conjunction at 12:00

7/22 Venus is 6.0 degrees south of Pollux at 17:00

7/23 The Sun's ecliptic longitude is 120 degrees at 3:00

7/25 Last Quarter Moon occurs at 1:18; Mercury (magnitude +4.1) is 5.6 degrees south-southwest of Venus (magnitude -3.9) at 3:00; the Moon is 5.0 degrees south of Uranus at 7:00; the Curtiss Cross, an X-shaped illumination effect located between the craters Parry and Gambart, is predicted to be visible at 17:25

7/26 The equation of time, which yields the difference between mean solar time and apparent solar time, is at a minimum of -6.55 minutes, at 12:00

7/27 Mercury is at its greatest heliocentric latitude south today; the Moon is 7.9 degrees south-southeast of the bright open cluster M45 (the Pleiades or Subaru) in Taurus at 8:00

7/28 The Moon is 2.3 degrees north of the first-magnitude star Aldebaran (Alpha Tauri) at 1:00

7/30 The Southern Delta Aquarid meteor shower (15 to 20 per hour) peaks; the Moon is at the ascending node (longitude 107.6 degrees) at 17:00

7/31 The Moon is 4.5 degrees north of Mercury at 4:00; the Moon is 6.1 degrees south of Pollux at 4:00; Mercury is stationary at 19:00; the Moon is 0.7 degree northeast of Venus at 22:00

Friedrich Bessel (1784-1846) was born this month.

The Sun, the Moon, & the Planets



The Moon is 27.4 days old, is illuminated 5.0%, subtends 31.3 arc minutes, and is located in Taurus on July 1st at 0:00 UT. The Moon is at its greatest northern declination of +22.4 degrees on July 3rd and +22.3 on July 30th and its greatest southern declination of -22.4 degrees on July 16th. Longitudinal libration is at a maximum of +6.0 degrees on July 12th and a minimum of -6.9 degrees on July 27th. Latitudinal libration is at a maximum of +6.8 degrees on July 24th and a minimum of -6.8 degrees on July 9th. New Moon takes place on July 2nd. The Moon is at perigee on July 5th (distance 57.03 Earth-radii) and at apogee on July 27th (distance 63.58 Earth-radii). The Moon forms a triangle with Jupiter and Antares on the night of July 12th and lies almost halfway between Jupiter and Saturn on July 14th. A partial lunar eclipse, the 22nd of Saros 139, takes place on July 16th, with greatest eclipse occurring at 21:30:44 UT. Approximately 65% of the Moon will be covered by the Earth's shadow. The eclipse is not visible from North America. The Moon occults Mars and Saturn from various parts of the world on July 4th and July 16th respectively. See <http://www.lunar-occ...ota/iotandx.htm> for information on lunar occultations taking place in July. Visit <http://saberdoesthes...does-the-stars/> for tips on spotting extreme crescent Moons. Click on <https://www.calendar...endar/2019/july> for a lunar phase calendar for this month. The times and dates for the lunar crater light rays predicted to occur in July are available at <http://www.lunar-occ.../rays/rays.htm>

The Sun is located in Gemini on July 1st. The Earth is farthest from the Sun on July 4th, when it is 3.3% more distant than it was at perihelion and 1.7% farther than its average distance. A total solar eclipse visible from the southern Pacific Ocean, northern Chile, and central Argentina occurs on July 2nd. This will be the 58th eclipse of Saros 127. Greatest eclipse takes place in the southern Pacific Ocean at 19:22:53 UT and lasts for 4 minutes and 33 seconds. A partial solar eclipse can be seen from most of South America and a small portion of Central America. Consult <https://eclipse.gsfc...E2019Jul02T.GIF> for further information. The Sun enters Cancer on July 21st.

Brightness, apparent size, illumination, distance from the Earth in astronomical units, and location data for the planets and Pluto on July 1st: Mercury (+1.0 magnitude, 9.4", 27% illuminated, 0.72 a.u., Cancer), Venus (-3.9 magnitude, 9.9", 98% illuminated, 1.68 a.u., Taurus), Mars (+1.8 magnitude, 3.7", 99% illuminated, 2.56 a.u., Cancer), Jupiter (-2.6 magnitude, 45.5", 100% illuminated, 4.34 a.u., Ophiuchus), Saturn (+0.1 magnitude, 18.4", 100% illuminated, 9.05 a.u., Sagittarius), Uranus (+5.8 magnitude, 3.5", 100% illuminated, 20.05 a.u. on July 16th, Aries), Neptune (+7.8 magnitude, 2.3", 100% illuminated, 29.35 a.u. on July 16th, Aquarius), and Pluto (+14.2 magnitude, 0.1", 100% illuminated, 32.82 a.u. on July 16th, Sagittarius).

Mercury is located in the west, Mars in the northwest, Jupiter in the south, and Saturn in the southeast during the evening. At midnight, Jupiter is in the southwest, Saturn is in the south, and Neptune is in the east. In the morning, Venus can be found in the northeast, Saturn in the southwest, Uranus in the east, and Neptune in the south. Mercury can be seen with difficulty low in west-northwest the evening sky in early July. A thin crescent Moon passes within three degrees of Mercury on July 4th. Mercury passes four degrees south of Mars on July 7th and less than six degrees south of Venus on July 25th. The speediest planet reaches inferior conjunction on July 21st.

Venus disappears into the glare of the Sun early in the month. It lies very low in the east-northeast at dawn on July 1st.

Mars is occulted by a thin crescent Moon from some parts of the world on July 4th. Mars is at its greatest heliocentric latitude north on July 18th. By the end of the month, Mars subtends just 3.5 arc seconds.

Jupiter drops in brightness by two tenths of a magnitude and in apparent size by more than two arc seconds this month. The gas giant subtends 44.4 arc seconds at its equator and 41.6 arc seconds at its poles at mid-month. It culminates shortly before 11:30 p.m. local time at the beginning of the month and just after 9:00 p.m. local time as July ends. The waxing gibbous Moon passes two degrees to the north of Jupiter on the night of July 13th. Favorable EDT transits by Io and its shadow take place on the nights of July 4th, July 11th, July 18th, and July 27th. Io reappears from eclipse approximately 14 arc seconds from the eastern limb at approximately 11:48 p.m. EDT on July 12th. Europa transits the planet at a favorable EDT time on July 23rd. EDT transits by Ganymede occur on July 24th and July 31st. Information on Great Red Spot transit times and Galilean satellite events is available on pages 50 and 51 of the July 2019 issue of Sky & Telescope and online at <http://www.skyandtel...watching-tools/> and <https://www.projectp....com/event.htm>

When **Saturn** reaches opposition on July 9th, it is located to the east of the Teapot asterism in Sagittarius. At that time, the Ringed Planet shines at magnitude +0.1, subtends 18.4 arc seconds at its equator and 16.9 arc seconds at its poles, has a declination of -22 degrees, and is 75 light minutes from the Earth. Saturn's rings span 41.8 arc seconds at opposition and are tilted greater than 24 degrees with respect to the Earth. The average number of days between successive oppositions is 378. Saturn passes 1.1 degrees south of the third-magnitude star Pi Sagittarii on July 20th and

0.7 degree southeast of the fourth-magnitude star Omicron Sagittarii on July 31st. The gas giant attains a maximum altitude of approximately 28 degrees during July. Saturn is occulted by a nearly Full Moon from some parts of the world on July 16th. The faint satellite Enceladus shines at twelfth magnitude and is 16 arc seconds to the east of the edge of Saturn's A ring on July 9th. Iapetus shines at tenth magnitude and is positioned 8.4 arc minutes west of Saturn on the same night. Eight-magnitude Titan and tenth-magnitude Tethys are also west of the planet, while tenth-magnitude Rhea and Dione lie to the north. For further data on Saturn's satellites, browse <http://www.skyandtel...watching-tools/>

Uranus can be found in southern Aries approximately ten degrees southeast of the second-magnitude star Hamal (Alpha Arietis) and 2.3 degrees south of the sixth-magnitude star 19 Arietis. A waning crescent Moon passes five degrees south of Uranus on July 25th. Visit http://www.bluewater...anus_2019_1.pdf and <http://www.nakedeyep...com/uranus.htm> for finder charts.

Neptune is located in eastern Aquarius. The eighth planet is situated just east of the fourth-magnitude star Phi Aquarii at the start of the month. By the end of July, Neptune lies 0.9 degree from that star. A waning gibbous Moon passes four degrees south of Neptune on July 21st. Browse http://www.bluewater...tune_2019_1.pdf and <http://www.nakedeyep...com/neptune.htm> for finder charts.

Finder charts for Uranus and Neptune are also available at https://www.skyandte...WEB_UrNep19.pdf

The dwarf planet **Pluto** is at opposition in eastern Sagittarius on July 14th. It's occulted by a nearly Full Moon from some parts of the world on July 16th. Finder charts can be found at <http://www.bluewater...9/Pluto2019.jpg> and on page 48 and 49 of the July 2019 issue of Sky & Telescope and on page 243 of the RASC Observer's Handbook 2019

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

A podcast on the planets this month can be heard at <https://www.skyandte...cast-july-2019/>

Asteroids



The dwarf planet/asteroid 1 Ceres shines at eighth magnitude as it journeys southwestward through Libra. It lies within three degrees of the second-magnitude binary star Beta Scorpii for the entire month. Asteroids brighter than magnitude +11.0 reaching opposition this month include 18 Melpomene (magnitude +9.2) in Scutum on July 2nd and 45 Eugenia (magnitude +10.8) in Capricornus on July 26th. Information on asteroid occultations taking place this month is available at http://www.asteroido.../2019_07_si.htm

Carbon Star



carbon star for July: WZ Cassiopeia (WZ Cas) Right Ascension: 00^h 01^m 15.85670^s Declination: +60° 21' 19.0235"

Comets



The periodic comet 168P/Hergenrother heads northeastward through the vicinity of Pisces, Cetus, and Aries during July. It may shine at only twelfth magnitude. See <http://cometchasing.skyhound.com/> and <http://www.aerith.ne...t/future-n.html> for additional information on comets visible this month.

Meteors



Delta Aquarid meteor shower peaks in late July (around the 28th), at which time the slender crescent is waning toward new moon. Delta Aquarids will still be flying when the Perseids peak in August.

Orbiting Earth



Information on Iridium flares and passes of the ISS, the Tiangong-2, the USAF's X-37B, the HST, and other satellites can be found at <http://www.heavens-above.com/>. Satellite information with ISS Live HD streaming <https://www.n2yo.com>

Information on the celestial events transpiring each week can be found at <http://astronomy.com/skythisweek> and <http://www.skyandtel...ky-at-a-glance/>

The Deep Sky



Sixty-five deep-sky objects for July: NGC 6140, NGC 6236, NGC 6340, NGC 6395, NGC 6412, NGC 6503, NGC 6543 (Draco); IC 4593, M13, M92, NGC 6106, NGC 6166, NGC 6173, NGC 6181, NGC 6207, NGC 6210, NGC 6229, NGC 6482 (Hercules); B61, B62, B63, B64, B72, IC 4634, IC 4665, LDN 42, LDN 1773, M9, M10, M12, M14, M19, M62, M107, NGC 6284, NGC 6287, NGC 6293, NGC 6304, NGC 6309, NGC 6356, NGC 6366, NGC 6369, NGC 6384, NGC 6401, Tr 26 (Ophiuchus); NGC 6440, NGC 6445 (Sagittarius); B50, B55, B56, Cr 316, M4, M6, M7, M80, NGC 6144, NGC 6153, NGC 6192, NGC 6231, NGC 6242, NGC 6302, NGC 6337, NGC 6451 (Scorpius); NGC 6217, NGC 6324 (Ursa Minor)

Top ten binocular deep-sky objects for July: IC 4665, LDN 1773, M4, M6, M7, M10, M12, M13, M92, NGC 6231

Top ten deep-sky objects for July: M4, M6, M7, M10, M12, M13, M92, NGC 6210, NGC 6231, NGC 6543

Challenge deep-sky object for July: NGC 6380 (Scorpius)

The objects listed above are located between 16:00 and 18:00 hours of right ascension.

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

Various events taking place within our solar system are discussed at <http://www.bluewater...ed-4/index.html>

Information on the celestial events transpiring each week can be found at <http://astronomy.com/skythisweek> and <http://www.skyandtel...ky-at-a-glance/>

Free star charts for the month can be downloaded at <http://www.skymaps.com/downloads.html> and <https://www.telescop...thly-Star-Chart>

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

Finder charts for the Messier objects and other deep-sky objects are posted at <https://freestarcharts.com/messier> and <https://freestarcharts.com/ngc-ic> and <http://www.cambridge...y-september.htm>

Telrad finder charts for the Messier Catalog and the SAC's 110 Best of the NGC are posted at <http://www.astro-tom...charts/map1.pdf> and <http://www.saguaroas...k110BestNGC.pdf> respectively.

Information pertaining to observing some of the more prominent Messier galaxies can be found at <http://www.cloudynig...ur-astronomers/>

Stellarium and Cartes du Ciel are two excellent freeware planetarium programs that are available at <http://stellarium.org/> and <https://www.ap-i.net/skychart/en/start>

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

Freeware sky atlases can be downloaded at <http://www.deepskywa...-atlas-full.pdf> and <http://astro.mxd120....ee-star-atlases>

The multiple star 36 Ophiuchi consists of three orange dwarf stars. For more on this interesting system, see <https://stardate.org...orange-triplets> and <http://www.solstatio...rs/36ophiu3.htm>

The light from Supernova SN 1054 was first noted by Chinese astronomers on July 4, 1054. The first lunar map was drawn by Thomas Harriot on July 26, 1609. Charles Messier discovered the globular cluster M28 in Sagittarius on July 27, 1764. Comet D/1770 L1 (Lexell) passed closer to the Earth than any comet in recorded history on July 1, 1770. Charles Messier discovered the globular cluster M54 in Sagittarius on July 24, 1778. Caroline Herschel discovered the open cluster NGC 6866 in Cygnus on July 23, 1783. The globular cluster NGC 6569 in Sagittarius was discovered by William Herschel on July 13, 1784. Karl Ludwig Hencke discovered asteroid 6 Hebe on July 1, 1847. The first photograph of a star, namely Vega, was taken on July 17, 1850. The first photograph of a total solar eclipse was taken on July 28, 1851. Henri-Alexandre Deslandres invented the spectroheliograph on July 24, 1853. Sinope, one of Jupiter's many satellites was discovered by Seth Nicholson on July 21, 1914. Karl Jansky announced the detection of radio radiation from the center of the Milky Way on July 8, 1933. Seth Nicholson discovered Neptune's satellite Lysithea on July 6, 1938. The Mariner 4 probe took the first close-up image of another planet, namely Mars, on July 14, 1965. The Apollo 11 lunar module landed on the Moon on July 20, 1969. Neptune's satellites Despinea and Galatea are discovered using images from the Voyager 2 probe on July 27, 1989. Fragments of Comet D/1993 F2 (Shoemaker-Levy) impacted Jupiter on July 16, 1994. Prospero, one of the satellites of Uranus, is discovered by Matthew Holman on July 18, 1999. Pluto's satellite Styx is discovered using images from the New Horizon probe on July 11, 2012.



The waxing gibbous Moon, Jupiter, and Saturn in the southern reaches of the ecliptic on July 13-14, 2019.



This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.org to find local clubs, events, and more!

Observe the Moon and Beyond: Apollo 11 at 50

By David Prosper

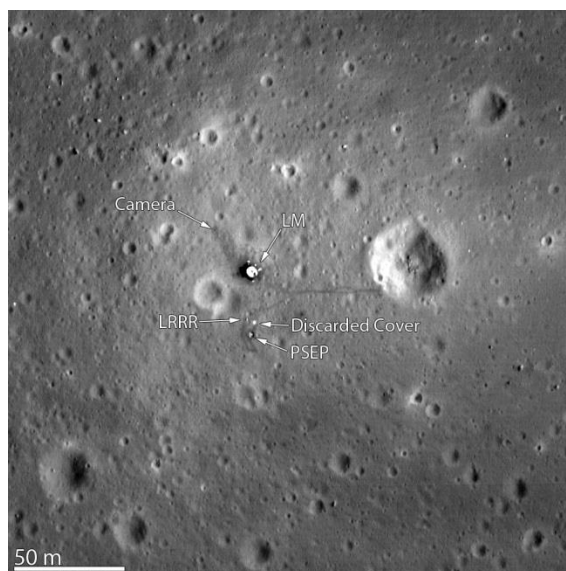
Saturn is at opposition this month, beckoning to future explorers with its beautiful rings and varied, mysterious moons. The **Moon** prominently passes Saturn mid-month, just in time for the 50th anniversary of **Apollo 11**!

Saturn is in opposition on July 9, rising in the east as the Sun sets in the west. It is visible all night, hovering right above the teapot of Sagittarius. Saturn is not nearly as bright as Jupiter, nearby and close to Scorpius, but both giant planets are easily the brightest objects in their constellations, making them easy to identify. A full **Moon** scrapes by the ringed planet late in the evening of the 15th through the early morning of the 16th. Some observers in South America will even see the Moon occult, or pass in front of, Saturn. Observe how fast the Moon moves in relation to Saturn throughout the night by recording their positions every half hour or so via sketches or photos.

While observing the Saturn-Moon celestial dance the early morning of the 16th, you can also contemplate the 50th anniversary of the launch of the **Apollo 11** mission! On June 16, 1969, Apollo 11 blasted off from Cape Canaveral in Florida on a journey of almost a quarter million miles to our nearest celestial neighbor, a mission made possible by the tremendous power of the Saturn V rocket – still the most powerful rocket ever launched. Just a few days later, on July 20, 1969 at 10:56 pm EDT, Neil Armstrong and Buzz Aldrin set foot on the lunar surface and became the first people in history to walk on another world. The astronauts set up equipment including a solar wind sampler, laser ranging retroreflector, and seismometer, and gathered up almost 22 kilograms (48 pounds) of precious lunar rocks and soil samples. After spending less than a day on the Moon's surface, the duo blasted off and returned to the orbiting Columbia Command Module, piloted by Michael Collins. Just a few days later, on July 24, all three astronauts splashed down safely in the Pacific Ocean. You can follow the timeline of the Apollo 11 mission in greater detail at bit.ly/TimelineApollo11 and dig deep into mission history and science on **NASA's Apollo History Site**: bit.ly/ApolloNASA.

Have you ever wanted to see the flag on the Moon left behind by the Apollo astronauts? While no telescope on Earth is powerful enough to see any items left behind the landing sites, you can discover how much you **can** observe with the **Flag on the Moon** handout: bit.ly/MoonFlag

You can catch up on all of NASA's current and future missions at nasa.gov



Caption: Earth-based telescopes can't see any equipment left behind at the Apollo 11 landing site, but the cameras onboard NASA's Lunar Reconnaissance Orbiter (LRO) can. This is Tranquility Base as seen from the LRO, just 24 kilometers (15 miles) above the Moon's surface, with helpful labels added by the imaging team. Image Credit: NASA Goddard/Arizona State University. See more landing sites at: bit.ly/ApolloLRO

The Moon

Copernicus

This crater (left) is easy to spot. It formed about 800 million years ago, and is 57 miles (92 km) wide. Note central peaks and terraced walls, caused by impact.

Aristarchus

Young crater. So bright that Sir William Herschel thought it was an active volcano.

Kepler

Small version of Copernicus

Grimaldi

Lava-filled crater is one of the darkest spots you can see on the Moon. It's 145 miles wide (233 km).

Mare Humorum

The Sea of Moisture is about 220 miles (350 km) across. You can spot it with the naked eye. With a telescope, you might notice two craters along its edge.

Tycho

Young crater best seen during a full Moon. Rays of bright material are ejecta blasted out of the crust when a large asteroid struck about 109 million years ago.

Mare Serenitatis

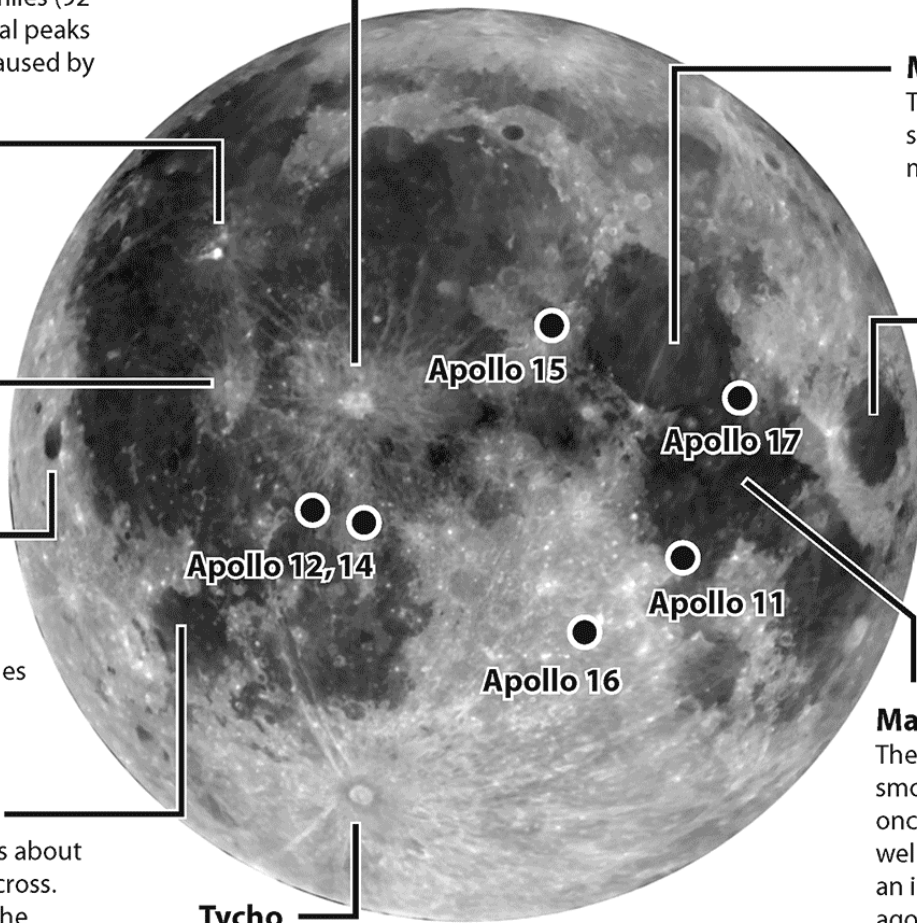
The Sea of Serenity is solid lava, some 380 miles (610 km) across.

Mare Crisium

The Sea of Crisis is about 340 miles wide (550 km) and visible to the naked eye.

Mare Tranquillitatis

The Sea of Tranquility is a smooth plain filled with once-molten lava that welled up from below after an impact billions of years ago. The first humans to walk on the Moon, Apollo 11 astronauts, landed near the edge.



SOURCES: NASA; ADVANCED SKYWATCHING; CAMBRIDGE ATLAS OF ASTRONOMY; DK VISUAL ENCYCLOPEDIA

Photos: James Scala. Layout and text for Moon map used with permission: Robert Roy Britt/SPACE.com.

Caption: Observe the larger details on the Moon with help from this map, which also pinpoints the Apollo landing site. Full handout available at bit.ly/MoonHandout

Observatory and Planetarium



CSI Centennial Observatory / Faulkner Planetarium Herrett Center

Event	Place	Date	Time	Admission
Summer Solar Session #6	Centennial Observatory	Wednesday, July 3 rd , 2019	1:30 to 3:30 PM	FREE
<u>City of Rocks Star Party</u> (12 th annual)	Castle Rocks State Park, Almo, ID	Friday, July 5 th - Saturday, July 6 th , 2019	2:00 PM to 12:00 AM	FREE
Summer Solar Session #7	Centennial Observatory	Wednesday, July 10 th , 2019	1:30 to 3:30 PM	FREE
Monthly Free Star Party	Centennial Observatory	Saturday, July 13 th , 2019	9:45 PM to midnight	FREE
Summer Solar Session #8	Centennial Observatory	Wednesday, July 17 th , 2019	1:30 to 3:30 PM	FREE
Summer Solar Session #9	Centennial Observatory	Wednesday, July 24 th , 2019	1:30 to 3:30 PM	FREE
Summer Solar Session #10	Centennial Observatory	Wednesday, July 31 st , 2019	1:30 to 3:30 PM	FREE

College of Southern Idaho Campus Twin Falls, ID 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.