Snake River Skies

The Newsletter of the Magic Valley Astronomical Society

www.mvastro.org

Membership Meeting

Saturday, November 10th 2018
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

November 2018

My time in Florida is coming to an end and, although the weather now is quite comfortable, I look forward to real fall weather and Idaho's skies. I am suffering from observing withdrawal and hope to get several nights in during the upcoming dark of the moon.

Speaking of the moon, the Observe the Moon night here was very well attended and it was a treat to view Luna through palm leaves. It was another evening of observing in shorts, sandals and short sleeves. This was quite a change from a couple of weeks ago when we were under a tornado warning and worried about spin off thunderstorms from a hurricane. That spate of bad weather did force cancelation of an observing night but there was no serious local damage.

A great motivator for all of us to get out under clear, fall skies was the recent discovery of a dwarf galaxy by Italian amateur Giuseppe Donatiello with his homemade telescope. Professional astronomers using the 3.58-meter and 10-meter telescopes in the Canary Islands confirmed his discovery. Donatiello's instrument is a 127-mm f/9 refractor, assembled from parts from different telescopes and an off-the-shelf, cooled 2-megapixel CCD camera. Dedication and good observing methods that made full use of his equipment proved to be as important as aperture and professional facilities. The message here is simply there is so much to be discovered and amateurs can make significant contributions.

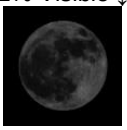
For my final comment in this month's message, I want to say how wonderful an experience it has been to be president of this group. It has expanded my appreciation of what astronomy encompasses. I have seen the universe through the varied perspectives of all of you, whether it is spectroscopy, sketching imaginary planets, splitting a close double star from a 4-inch reflector or looking at a wide field sky-scape. I look forward to many more viewing sessions with all of you and I'll see you at this month's meeting on the 10th.

Clear skies,

Tim

Calendar

November 2018

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1 Last Quarter Visible 41% ↓ Age: 23.01 Days 	2	3
4 	5	6 Election Day Go Vote! 	7 New Moon Lunation 1186 1% Visible ↓ 	8	9	10 MVAS Meeting at 7:00pm at the Herrett Center Faulkner Planetarium Public Star Centennial Obs.
11 Veterans Day Remembrance Day 	12 Veterans Day Observed 	13	14	15 First Quarter 49% Visible ↑ Age: 7.28 Days 	16	17
18	19	20	21	22 Thanksgiving Day 	23 Full Moon 100% Visible Beaver Moon  Black Friday	24
25	26	27	28	29	30	

Be Careful – 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)

11/1 The Curtiss Cross, an X-shaped illumination effect located between the craters Parry and Gambart, is predicted to be visible at 20:09
11/2 The Moon is 2.0 degrees north-northeast of the first-magnitude star Regulus (Alpha Leonis) **11/3** The equation of time is at a maximum (16.48 minutes) for 2018 at 9:00
11/5 Mercury is at its greatest latitude south of the ecliptic plane (-7.0 degrees) at 15:00
11/6 The Moon is 7.0 degrees north-northeast of the first-magnitude star Spica (Alpha Virginis) at 3:00; the Moon is 1.7 degrees south-southwest of the dwarf planet/asteroid 1 Ceres at 8:20; the Moon is 8.8 degrees north-northeast of Venus at 9:00; Mercury is at its greatest elongation east (23.0 degrees)
11/8 Asteroid 4 Vesta (magnitude +7.8) is 3.1 degrees south of Pluto (magnitude +14.3) at 1:49; the Moon is 3.7 degrees north-northeast of Jupiter at 19:00
11/9 Mercury (magnitude -1.0) is 1.8 degrees north of the first-magnitude star Antares (Alpha Scorpii) at 12:00; the Moon is 6.6 degrees north-northeast of Mercury at 14:00; the Moon is 8.4 degrees north-northeast of Antares at 15:00
11/11 The Moon is 1.4 degrees north of Saturn at 16:00
11/12 Mercury is at its greatest declination south (-24.8 degrees) at 13:00; the peak of the Northern Taurid meteor shower (5 to 10 per hour) is predicted to occur at 17:00; the Moon is 0.9 degree north of Pluto, with an occultation occurring in most of western Europe, the Azores, Iceland, southern Greenland, and northeastern North America, at 18:00
11/13 The Moon is at the descending node (longitude 299.2 degrees) at 14:07
11/14 Venus is stationary in right ascension, with direct (eastward) motion to resume, at 3:00; the Moon is at apogee, subtending 29' 33" from a distance of 404,339 kilometers (251,245 miles) at 15:56; Venus (magnitude -4.5) is 1.3 degrees east of Spica
11/15 The Lunar X (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 8:51; sunrise takes place at the isolated lunar mountain Mons Pico at 11:13; First Quarter Moon occurs at 14:54
11/16 Sunrise takes place at the isolated lunar mountain Mons Piton at 2:07; the waxing gibbous Moon is 1.0 degree south of Mars. Asteroid 3 Juno is closest to the Earth (1.063 a.u.) at 8:00; Venus is stationary in longitude at 11:00
11/17 Mercury is stationary in longitude at 1:00; Mercury is stationary in right ascension, with retrograde (westward) motion to begin, at 5:00; the Moon is 2.6 degrees south-southeast of Neptune at 8:00; asteroid 3 Juno (magnitude +7.4) is at opposition at 22:00
11/18 The peak of the Leonid meteor shower (15 to 20 per hour) is predicted to occur at 0:00
11/20 The Moon is 4.5 degrees south-southeast of Uranus at 23:00
11/22 Mercury (magnitude +2.0) is 4.0 degrees north-northeast of the first-magnitude star Antares (Alpha Scorpii) at 4:00; Venus is at the ascending node through the ecliptic plane at 20:00
11/23 The Moon is 8.4 degrees south-southeast of the bright open cluster M45 (the Pleiades or Subaru) in Taurus at 5:00; Full Moon, known as the Beaver or Frost Moon, occurs at 5:39; asteroid 3 Juno (magnitude +7.5) is at perihelion (1.9833 a.u. from the Sun) at 11:00; the Sun enters Scorpius (longitude 241.14 degrees on the ecliptic) at 12:00; the Moon is 1.7 degrees north of the first-magnitude star Aldebaran (Alpha Tauri) at 21:00
11/24 Jupiter is farthest from the Earth (6.347 a.u.) at 4:00; Mercury is at the ascending node through the ecliptic plane at 17:00; Neptune is stationary in longitude at 23:00 Grab a telescope and a high-power eyepiece and look to the northwestern limb of the Moon to see the crater Xenophanes. This is a good day to see the crater as the Moon is slightly and favorably tilted towards our point of view as a result of lunar libration. Xenophanes is a highly eroded and ancient crater formed by a meteor impact more than 3.5 billion years ago. From our point of view, it will appear elliptical and foreshortened, though it is more or less circular when seen from above.
11/25 Neptune is stationary in right ascension, with direct (eastward) motion to resume, at 6:00; the Moon is 3.1 degrees south of the bright open cluster M35 in Gemini at 11:00
11/26 Jupiter is in conjunction with the Sun at 7:00; the Moon is at perigee subtending 32' 35" from a distance of 366,620 kilometers (227,807 miles), at 12:12; the Moon is 10.7 degrees south of Castor (Alpha Geminorum) at 18:00; the Moon is 7.1 degrees south of Pollux (Beta Geminorum) at 23:00
11/27 The Moon is at the ascending node (longitude 118.0 degrees) at 5:17; Mercury is in inferior conjunction with the Sun (0.678 a.u. from the Earth and 0.91 degree north of the Sun) at 9:00; Mercury is 0.42 degree north-northeast of Jupiter at 21:00; the Moon is 0.45 degree south of the bright open cluster M44 (the Beehive Cluster or Praesepe) in Cancer at 22:00
11/29 Mercury is at perihelion (0.3075 a.u. from the Sun) at 9:00; the Moon is 2.3 degrees north-northeast of Regulus at 11:00
11/30 Venus is at its brightest (magnitude -4.7) at 2:00; the Sun enters Ophiuchus (longitude 248.03 degrees on the ecliptic) at 7:00

The Sun, the Moon, & the Planets

The **Sun** is located in Libra on November 1 at 0:00 UT. It moves into Scorpius on November 23rd and Ophiuchus on November 30th.

The **Moon** is 22.7 days old, is 48.4% illuminated, subtends 31.8 arc minutes, and resides in Cancer on November 1st at 0:00 UT. November 2018's synodic month is 29 days 15 hours 18 minutes in length. The Moon reaches its greatest northern declination on November 26th (+21.5 degrees) and its greatest southern declination on November 12th (-21.4 degrees). Longitudinal libration is at a maximum of +5.3 degrees on November 8th and a minimum of -5.5 degrees on November 21st. Latitudinal libration is at a maximum of +6.6 degrees on November 21st and a minimum of -6.5 degrees on November 6th. New Moon occurs on November 7th. The Moon is at apogee (a distance of 63.40 Earth-radii) on November 14th and at perigee (a distance of 57.48 Earth-radii) on November 26. The waxing Moon occults Pluto on November 12th and Mars on November 16th. The 97%-illuminated waning gibbous Moon occults Xi1 Orionis (magnitude +4.4) on the evening and night of November 24 for observers in North America. Consult http://www.lunar-occ...ota/iotandx.htm for information on lunar occultations taking place this month.

Mercury is poorly positioned in the evening sky for northern observers this month. The speediest planet is at its greatest heliocentric latitude south on November 5th and is at greatest eastern elongation on November 6th. It is passes less than two degrees north of Antares on November 9th. Mercury is stationary on November 17th and is at the ascending node on November 24th. It's in inferior conjunction on November 27th and is at perihelion on November 30th.

Venus subtends almost 61 arc seconds and is illuminated just 1% on November 1st. By November 30th, its angular size has decreased to 41 arc seconds and its illumination has increased to 25%. Venus is stationary in right ascension on November 14th. It passes 1.3 degrees east of Spica on that date. The brightest planet becomes the morning star once again during the second half of November. By November 30th, Venus rises more than three hours before the Sun.

A gibbous **Mars** shrinks in apparent size from 11.9 to 9.3 arc seconds and dims from magnitude -0.6 to magnitude -0.1 this month. It sets around 1:00 a.m. local time in early November. Mars is positioned within one degree of the third-magnitude star Delta Capricorni from November 3rd to November 5th and passes 0.6 degree north of that star on November 5th. It enters Aquarius on November 11th. The First Quarter Moon passes one degree south of the Red Planet on the night of November 15th. Mars is positioned 2.5 degrees southwest of the fourth-magnitude star Lambda Aquarii on November 30th. The prominent Martian surface features Syrtis Major and the Hellas basin are well-positioned near the planet's central meridian during the first few evenings of the month.

Jupiter is just four degrees in altitude one half hour before sunset on November 1st. It vanishes into the glare of the Sun during the second week of November. The gas giant is farthest from the Earth on November 24th and is in conjunction with the Sun on November 26th.

Saturn lies low in the southwest and sets just two hours after the Sun by the end of the month. The Ringed Planet is located four degrees east of M8 (the Lagoon Nebula) and M20 (the Trifid Nebula) in early November. It lies 3.6 degrees south of the bright open cluster M25 and 1.5 degrees northwest of the bright globular cluster M22 on November 30th. The four-day-old waxing crescent Moon is about eight degrees from Saturn at dusk on November 10th. It passes 1.4 degrees north of Saturn on November 11th. Saturn's rings span 36 arc seconds and are inclined by 26.4 degrees this month. For information on the positions of Saturn's major satellites, browse http://www.skyandtel...atching-tools/

Uranus can be found in southwestern Aries some 2.4 degrees northeast of the fourth-magnitude star Omicron Piscium on November 1st and 1.6 degrees north-northeast of that star on November 30th. It passes just 14 arc minutes south of the sixth-magnitude star SAO 92659 on November 9th. The waxing gibbous Moon passes 4.5 degrees south-southeast of Uranus on November 20th. Browse http://www.bluewater...anus_2018_1.pdf for a finder chart.

Neptune attains its highest altitude about two hours after the end of astronomical twilight this month. The ice giant planet is positioned 2.1 degrees east of the fourth-magnitude star Lambda Aquarii and 0.3 degree south-southwest of the sixth-magnitude star 81 Aquarii on November 1st. The waxing gibbous Moon passes 2.6 degrees south-southeast of Neptune on November 17th. Neptune is at its second stationary point and resumes direct (eastward) motion on November 25th. On that date, Neptune is 0.1 degree closer to Lambda Aquarii. A finder chart is posted http://www.bluewater...tune_2018_1.pdf

Pluto lies too close to the horizon to be observed this month.

Asteroids

Asteroid **3 Juno** makes its closest approach to Earth, the closest one in the period of 1980 to 2060, on November 16th and shines at magnitude +7.4 when it reaches opposition on November 17th. It lies just to the east of 35 Eridani (magnitude +5.3) on November 5th and approximately one degree to the southeast of 32 Eridani (magnitude +4.5) on November 16th. A finder chart can be found on page 49 of the November 2018 issue of Sky & Telescope. Asteroid 12 Victoria (magnitude +10.7) is at opposition on November 22nd. For information on this year's bright asteroids and upcoming asteroid occultation events respectively, consult http://www.curtrenz.com/asteroids and http://asteroidoccultation.com/

Carbon Star

November carbon star: **R Leporis** (Hind's Crimson Star) Right Ascension: $04^h\ 59^m\ 36.3487^s$ Declination: −14° 48′ 22.518″

Comets

Comet 64P/Swift-Gehrels could peak at a brightness of about tenth magnitude as it passes southeastward through Andromeda during November. The periodic comet is located about one degree north of the second-magnitude star Beta Andromedae (Mirach) on November 14th. **Comet 46P/Wirtanen** heads northeastward through Fornax and southeastern Cetus in the latter part of November. It may brighten to binocular visibility at that time. A finder chart appears on page 50 of the November 2018 issue of Sky & Telescope. For additional information on comets visible this month, browse http://cometchasing.skyhound.com/ and http://www.aerith.ne.../future-n.html

Meteors

The peaks of the Southern and Northern Taurid meteor showers take place on November 5th and November 12th respectively. These streams form part of the complex associated with Comet 2P/Encke. Moonlight compromises the peaks of these two minor meteor showers. The Leonid meteor shower occurs on the night of November 17th/18th. Since the waxing gibbous Moon sets prior to 2:00 a.m. local time, there will be over three hours of uncompromised observing time for this year's Leonids. Leonid meteors are debris from the periodic comet 55P/Tempel-Tuttle. Due to their high speed (71 kilometers or 44 miles per second), the fastest of any meteor shower, the Leonids produce more fireballs than most showers.

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

The Deep Sky

Seventy deep-sky objects for November: M31, M32, M110, NGC 252, NGC 404, NGC 752 (Andromeda); NGC 680, NGC 691, NGC 697, NGC 772 (Aries); Cr 463, IC 1747, K14, M103, NGC 129, NGC 133, NGC 146, NGC 185, NGC 225, NGC 281, NGC 278, NGC 381, NGC 436, NGC 457, NGC 559, NGC 637, NGC 654, NGC 659, NGC 663, Tr 1 (Cassiopeia); NGC 40, NGC 188 (Cepheus); NGC 151, NGC 175, NGC 178, NGC 210, NGC 227, NGC 245, NGC 246, NGC 247, NGC 274, NGC 337, NGC 578, NGC 584, NGC 596, NGC 615, NGC 636, NGC 681, NGC 720, NGC 779 (Cetus); NGC 7814 (Pegasus); M76, St 4 (Perseus); M74, NGC 128, NGC 194, NGC 488, NGC 524 (Pisces); NGC 24, NGC 55, NGC 134, NGC 150, NGC 253, NGC 254, NGC 288, NGC 289, NGC 439, NGC 613 (Sculptor); M33, NGC 672 (Triangulum)

Top ten binocular deep-sky objects for November: M31, M33, M103, NGC 225, NGC 288, NGC 253, NGC 457, NGC 654, NGC 663, NGC 752

Top ten deep-sky objects for November: M31, M32, M33, M76, M103, M110, NGC 40, NGC 253, NGC 457, NGC 752

Challenge deep-sky object for November: IC 59 & IC 63 (Cassiopeia) see chart below.

The objects listed above are located between 0:00 and 2:00 hours of right ascension.

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

Copernicus observes a lunar eclipse on November 5, 1500. Wolfgang Schuler independently discovers Tycho's Supernova on November 6, 1572. Cornelius Gemma independently discovers Tycho's Supernova on November 9, 1572. Tycho Brahe observes Tycho's Supernova on November 11, 1572. Nicolas-Claude Fabri de Peiresc makes the first telescopic observations of M42 (the Orion Nebula) on November 26, 1610. Jan de Munck discovers Comet C/1743 X1 (the Great Comet of 1744) on November 29, 1743. Captain James Cook observes a transit of Mercury from New Zealand on November 9, 1769. William Herschel discovers the ring galaxy NGC 922 on November 17, 1784. E.E. Barnard discovers the emission nebula NGC 281 (the Pacman Nebula) on November 16, 1881. The first photograph of a meteor was taken on November 26, 1885. The minor planet/comet 2060 Chiron or 95P/Chiron was discovered by Charles Kowal on November 1, 1977.

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/

Two stars with exoplanetary systems, Upsilon Andromedae (magnitude +4.1) and 51 Andromedae (magnitude +5.5), can be seen this month without optical aid.

The famous eclipsing variable star Algol (Beta Persei) is at a minimum, decreasing in brightness from magnitude +2.1 to magnitude +3.4, on November 1st, 4th, 7th, 10th, 13th, 15th, 18th, 21st, 24th, 27th, and 30th. Algol is at minimum brightness for observers in North America for about two hours centered at 8:10 p.m. EST on November 12th and at 1:04 a.m. EST on November 30th. Consult http://stars.astro.i.../sow/Algol.html and http://www.solstatio...rs2/algol3.htm

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

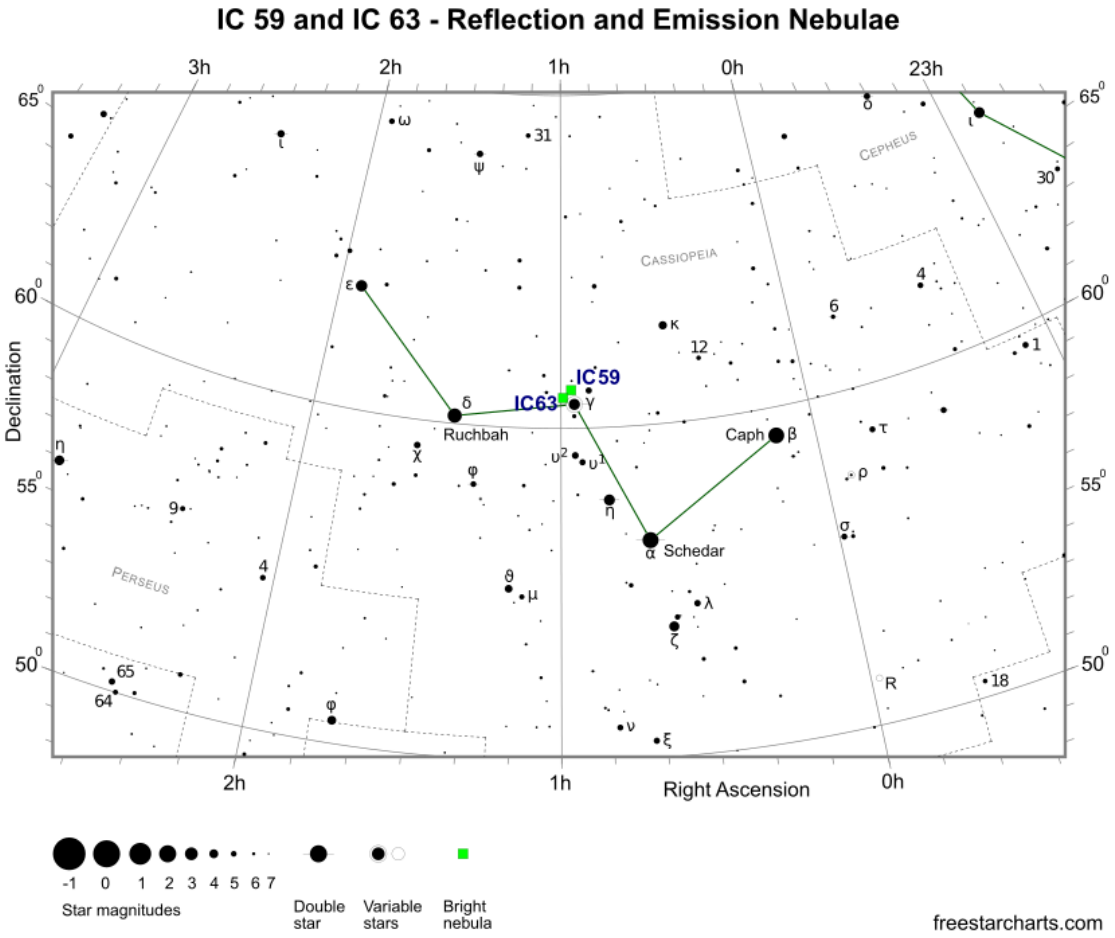
Data on current supernovae can be found at http://www.rochester...y.org/snimages/

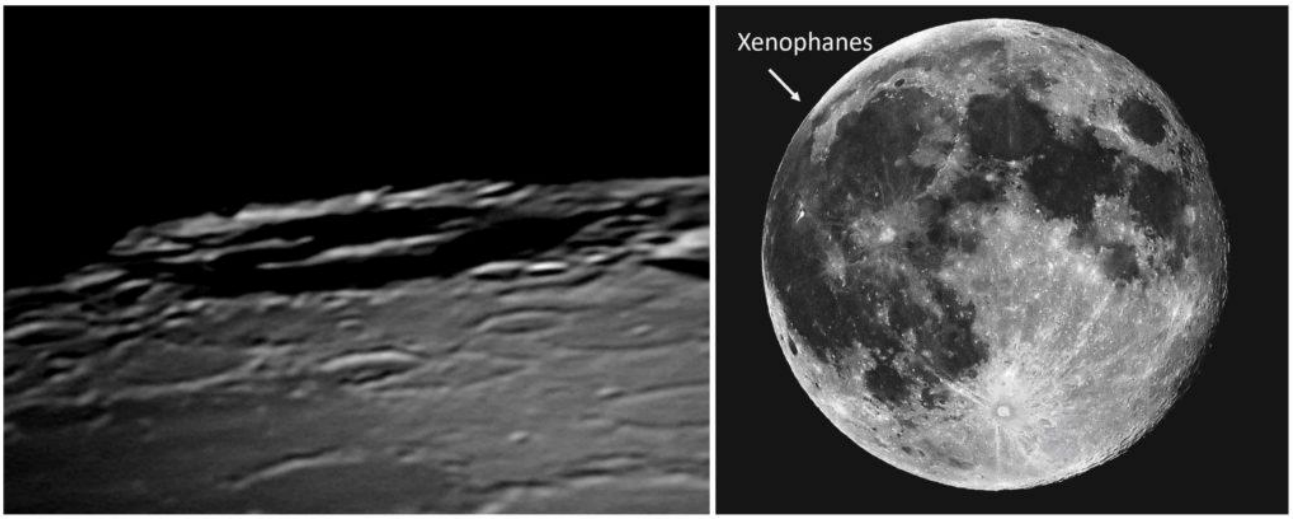
Finder charts for the Messier objects and other deep-sky objects are posted at https://freestarcharts.com/messier and https://freestarcharts.com/ngc-ic and http://www.cambridge...y-september.htm Observing some of the more prominent Messier galaxies can be found at http://www.cloudynig...ur-astronomers/

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://sao64.free.fr...ataloguesac.pdf respectively.

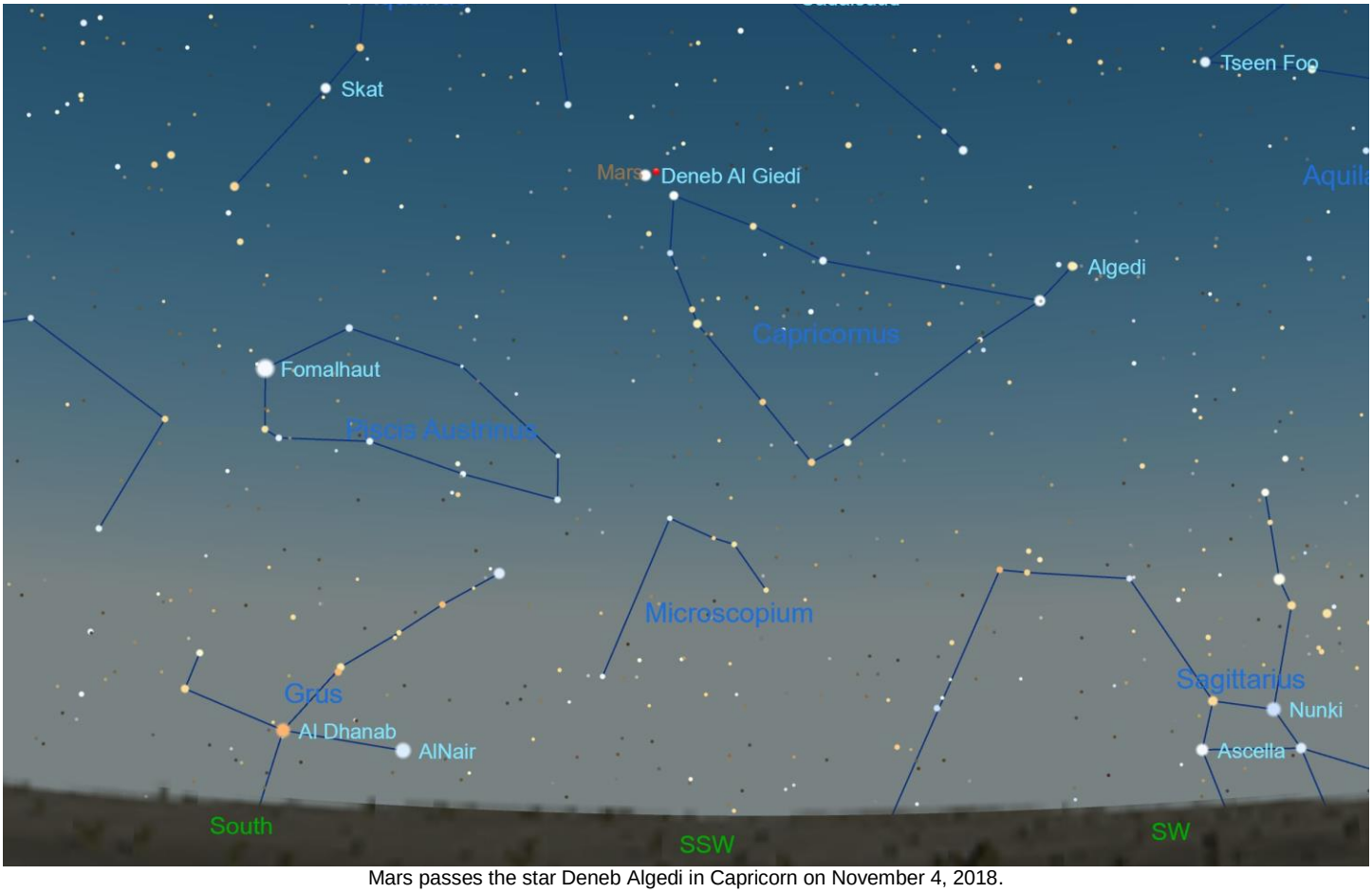
Stellarium and Cartes du Ciel are useful freeware planetarium programs http://stellarium.org/ and https://www.ap-i.net/skychart/en/start

Deep-sky object list generators http://www.virtualcolony.com/sac/ & 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

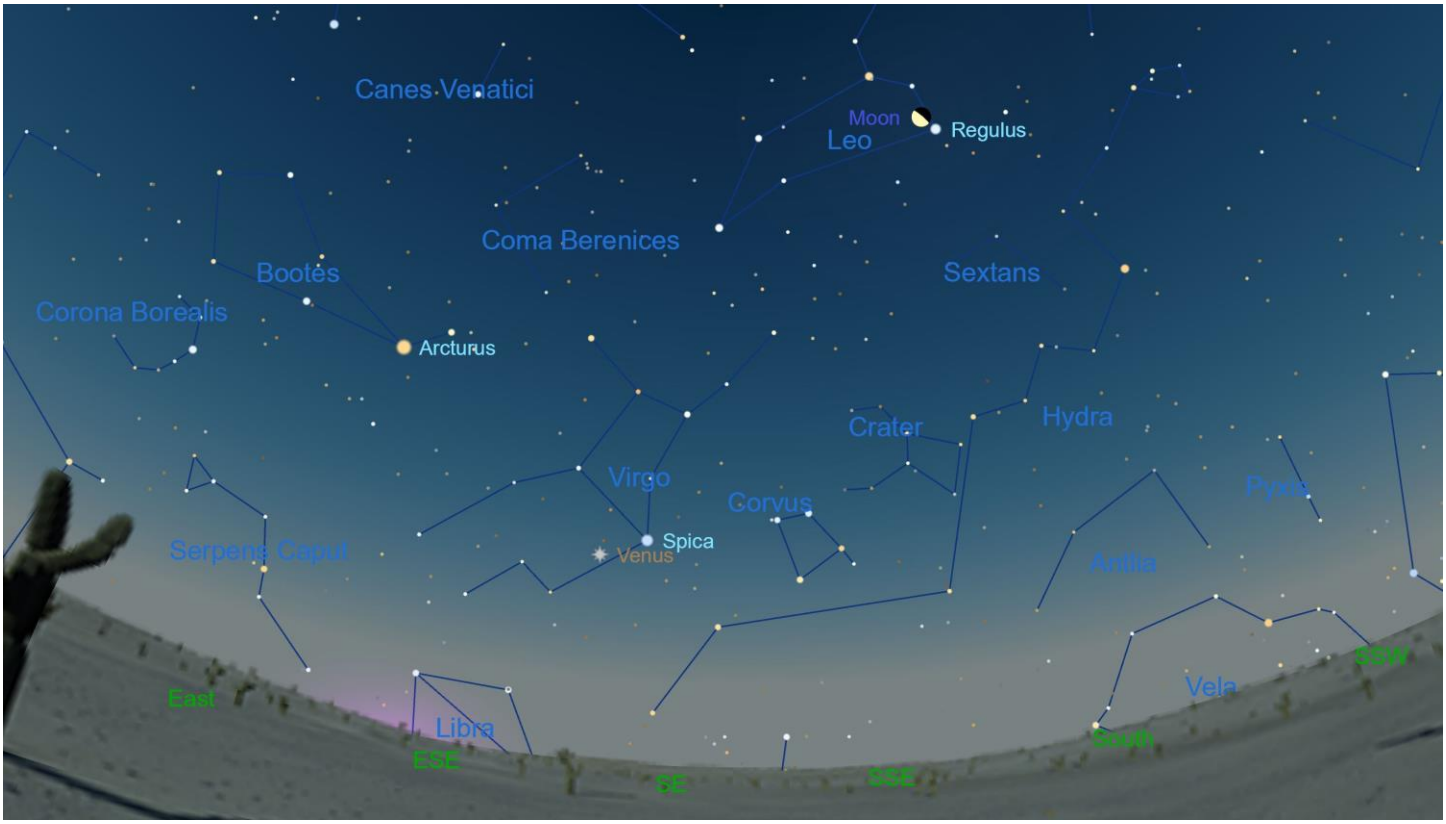




The crater Xenophanes (left) as it appears in a telescope at very high magnification.
The image at right shows the approximate location of the crater. See November 24th entry above for description.



Mars passes the star Deneb Algedi in Capricorn on November 4, 2018.



A wide angle view of the morning sky on November 29, 2018.
The Moon is near the star Regulus, while brilliant Venus lies near the bright star Spica in the eastern sky before sunrise.

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.gov to find local clubs, events, and more!

November's Dance of the Planets

By Jane Houston Jones and David Prosper

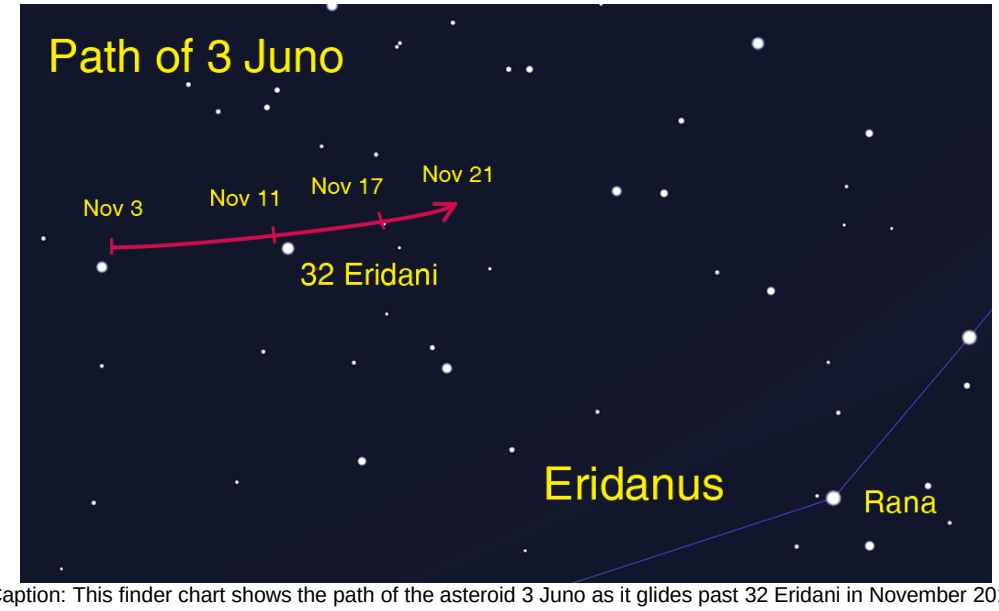
November's crisp autumn skies bring great views of our planetary neighbors. The Moon pairs up with Saturn and Mars in the evenings, and mornings feature eye-catching arrangements with dazzling Venus. Stargazers wanting a challenge can observe a notable opposition by asteroid 3 Juno on the 17th and watch for a few bright Leonid meteors.

Red **Mars** gleams high in the southern sky after sunset. **Saturn** sits westward in the constellation Sagittarius. A young crescent Moon passes near Saturn on the 10th and 11th. On the 15th a first quarter Moon skims by Mars, coming within 1 degree of the planet. The red planet receives a new visitor on November 26th, when NASA's InSight mission lands and begins its investigation of the planet's interior. News briefings and commentary will be streamed live at: bit.ly/landsafe

Two bright planets hang low over the western horizon after sunset as November begins: **Jupiter** and **Mercury**. They may be hard to see, but binoculars and an unobstructed western horizon will help determined observers spot them right after sunset. Both disappear into the Sun's glare by mid-month.

Early risers are treated to brilliant **Venus** sparkling in the eastern sky before dawn, easily outshining everything except the Sun and Moon. On November 6th, find a location with clear view of the eastern horizon to spot Venus next to a thin crescent Moon, making a triangle with the bright star Spica. The following mornings watch Venus move up towards Spica, coming within two degrees of the star by the second full week of November. Venus will be up three hours before sunrise by month's end – a huge change in just weeks! Telescopic observers are treated to a large, 61" wide, yet razor-thin crescent at November's beginning, shrinking to 41" across by the end of the month as its crescent waxes.

Observers looking for a challenge can hunt asteroid **3 Juno**, so named because it was the third asteroid discovered. Juno travels through the constellation Eridanus and rises in the east after sunset. On November 17th, Juno is at opposition and shines at magnitude 7.4, its brightest showing since 1983! Look for Juno near the 4.7 magnitude double star 32 Eridani in the nights leading up to opposition. It is bright enough to spot through binoculars, but still appears as a star-like point of light. If you aren't sure if you have identified Juno, try sketching or photographing its star field, then return to the same area over the next several days to spot its movement. The **Leonids** are expected to peak on the night of the 17th through the morning of the 18th. This meteor shower has brought "meteor storms" as recently as 2002, but a storm is not expected this year. All but the brightest meteors will be drowned out by a waxing gibbous Moon. Stay warm and enjoy this month's dance of the planets! You can catch up on all of NASA's current and future missions at nasa.gov



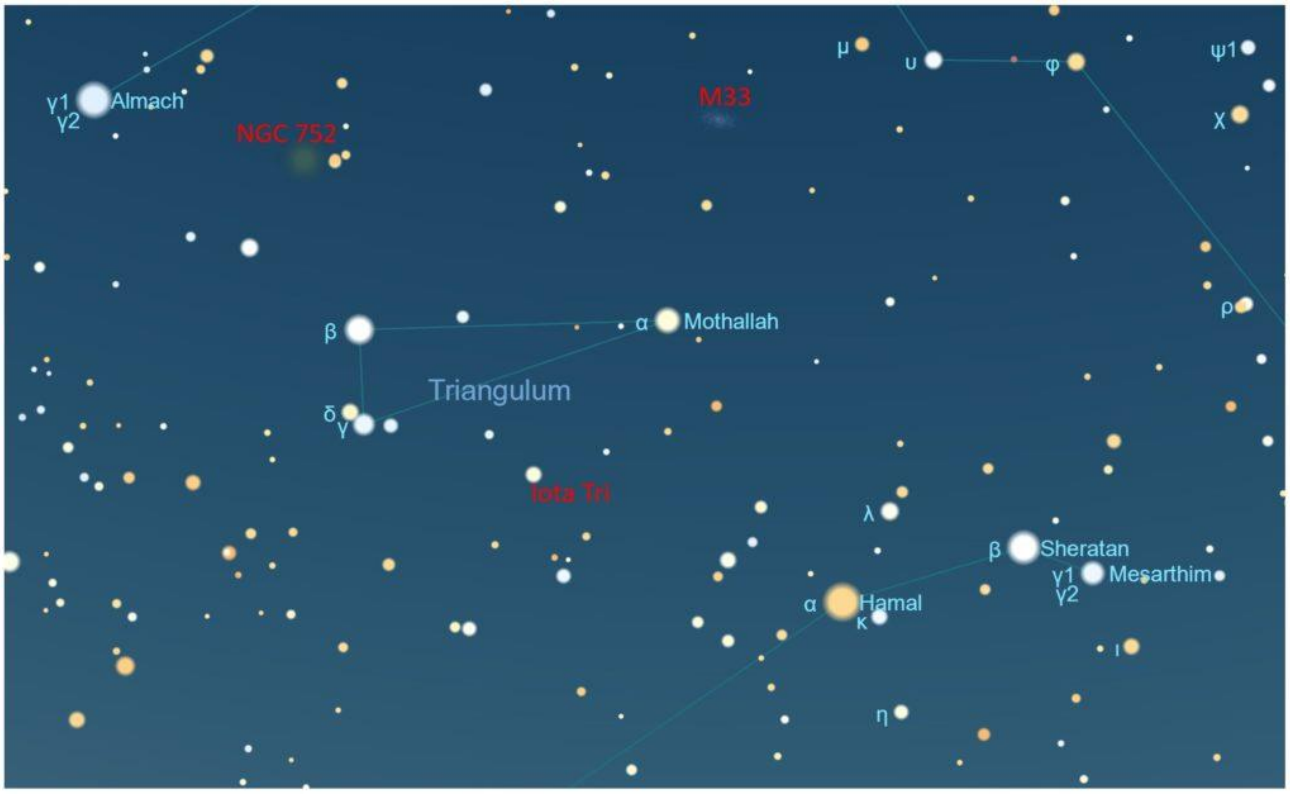
Caption: This finder chart shows the path of the asteroid 3 Juno as it glides past 32 Eridani in November 2018. The asteroid's position is highlighted for selected dates, including its opposition on the 17th.
Image created in Stellarium for NASA Night Sky Network.

A Trek through Triangulum

By Brian Ventrudo

The small constellation Triangulum wedged between Andromeda and Aries. Take any three stars and they'll form some kind of triangle. But there is only one constellation Triangulum. It's a small but ancient star group surrounded by the larger constellations Andromeda to the north and west, Pisces to the southwest, Aries to the south, and Perseus to the northeast. While modest, Triangulum hosts many fine sights for stargazers on a northern autumn (or southern spring) evening. Look for it about 10º due south of the star Almaak (γ Andromedae) and just northeast of Aries.

The name of the constellation comes, unsurprisingly, from the Latin for "triangle". The stars β (beta) and γ (gamma) Trianguli, magnitudes 3.0 and 4.0 respectively, form the base of the little triangle, while α (alpha) Trianguli, at the apex, is a star of magnitude 3.4. The shape of this little constellation caused ancient Greek stargazers to link it to the Nile Delta, while Roman stargazers linked the constellation to the island of Trinacria (now called Sicily) which has a somewhat triangular shape. Beta Trianguli is a spectroscopic binary star about 127 light years away. Alpha (α) Trianguli, also called *Mothallah*, which is Arabic for triangle, also has a close companion detectable only with careful spectroscopic measurement. Gamma Trianguli is a more rewarding sight for backyard observers. This whitish-color main sequence star makes an excellent sight in binoculars with its apparent companions δ (delta) Trianguli and 7 Trianguli. The stars are not physically associated, but they sure look pretty together.



A close-up of Triangulum showing the main stars and the star cluster NGC 752 and galaxy M33 (the Triangulum Galaxy). For observers with a telescope, iota (ι) Trianguli is a fine double star with a yellow and blue component separated by a little less than 4″ (arc-seconds). It makes for good viewing at 100x or more in nearly any scope. Each component is itself a tightly-spaced and unresolvable double star, which means ι Tri is a four-star system. The pair is cataloged in some star maps as 6 Trianguli.

The open star cluster NGC 752 as it appears at low magnification through a telescope. Credit: Roberto Mura / Wikipedia Commons. And there is NGC 752, a lovely star cluster often overlooked for more famous deep sky sights in this part of sky. The cluster is easily visible to the unaided eye in clear and dark sky a little less than halfway between the 3rd-magnitude beta (β) Trianguli and 4th-magnitude upsilon (υ) Andromedae.

NGC 752 is a somewhat sprawling cluster, ideal for 3-inch to 4-inch telescopes at low magnification. Use an eyepiece with a wide field of view, at least 1º. At 50x, the cluster reveals 70-90 faint stars spread over 40′ (arc-minutes). Many stars within the cluster are yellow and orange, which implies the bright blue and white stars have long ago run out of fuel. And indeed NGC 752 is more than 2 billion years old, a very great age for an open star cluster. The cluster lacks a well-defined central region or outer boundaries. This is another common feature of older clusters, as many of its constituent stars have been stripped away by gravitational interaction with other stars and molecular clouds.
Near the center of NGC 752, look for an orange 7th magnitude star in a tight triangle with two fainter stars. The orange star is likely not related to the cluster. Less than half a degree southwest of the cluster, look for a pair of 6th-magnitude stars with orange and gold hues.

The most famous sight in Triangulum is the small spiral galaxy Messier 33, the second-closest spiral galaxy after the much larger and brighter Andromeda Galaxy, Messier 31. Often called the Triangulum Galaxy, in photographs M33 is lovely as a lotus-blossom and rich with new blue stars and pink nebulae along its spiral arms.
It is a challenging object for visual observers, however, but still worthy of careful inspection in a small telescope in dark skies. M33 is listed as magnitude 5.7, so you may think it's bright enough to see easily in a telescope. It is not. Its brightness is spread over an area four times larger than the full moon, so M33 has a low surface brightness and is notoriously hard to find in light-polluted or moonlit sky. Some observers use M33 as a sky test: if you can see M33 with your naked eye, you have extremely dark and clear sky (and pretty good vision, too).

Image of the Triangulum Galaxy (Messier 33) by Terry Hancock and Ron Brecher. The emission nebula NGC604 is at upper left.

The galaxy is 2.7 million light years away. That makes it is the farthest object visible without optical aid for most observers. To find M33, sweep the region about 4.5º west-northwest of 3rd-magnitude alpha (α) Trianglulum. Use low power and a wide field of view. Moving your scope or tapping on its side may help you see this faint galaxy. Stay with low magnification to take it all in. You may see some structure and mottling in the spiral arms with a 4-inch to 6-inch telescope. Higher magnification with an 8-inch to 12-inch telescope seems to dim the view somewhat, but often brings out more structure in the arms, especially the tiny knots of nebulosity of star-forming regions.

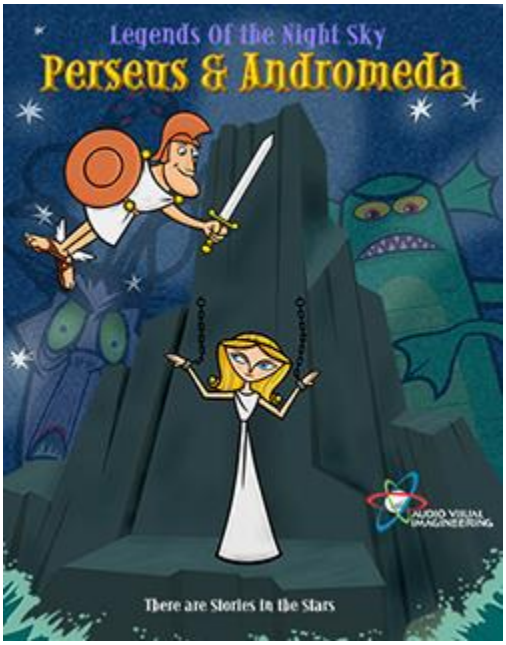
The spiral arms of M33 are festooned with the pink glow of star-forming nebulae. The largest such region, NGC 604, is visible in a 6-inch or larger telescope under good conditions. NGC 604 is visible as a tiny star-like region about 12′ northeast of the nucleus of M33. A 10th-magnitude foreground star is just 1′ to the southeast of the nebula. The star and the nebula look at first like a double star, but you will notice one of the stars will not come to a focus… that's the nebula. Try a nebula filter to improve the contrast of this extremely distant region of ionized gas and newly formed stars.
NGC 604 is visible with a small telescope from such a great distance because it is amazingly large – about 100x the size of the Orion Nebula – and it is illuminated by more than 200 massive stars at its center. It's not an easy object to see, but it's well worth the effort.

Observatories and Planetarium

CSI Centennial Observatory / Faulkner Planetarium Herrett Center

Event	Place	Date	Time	Admission
Monthly Free Star Party	Centennial Observatory	Saturday, November 10th, 2018	6:00 PM to midnight	FREE
Telescope Tuesday	Centennial Observatory	Tuesday, November 13th, 2018	6:00 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission
Telescope Tuesday	Centennial Observatory	Tuesday, November 27th, 2018	6:00 to 9:00 PM	$1.50 or free with Faulkner Planetarium admission

College of Southern Idaho Campus Twin Falls, ID
Faulkner Planetarium / Show Times
http://herrett.csi.edu/astronomy/planetarium/showtimes.asp



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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.