Snake River Skies

The Monthly Newsletter of the Magic Valley Astronomical Society. November 2024

Membership Meeting
Nov. 9th at the Herrett Center
CSI main campus at 7:00pm

Centennial Observatory
See Inside for Details

Faulkner Planetarium
See Inside for Details

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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

Message from the Club Vice President

Happy November and Thanksgiving. First and foremost this month is our annual elections. As usual, our meeting is set for Saturday the 9th at 7pm at the Herrett Center Library. Please consider any nominations you might have for president and/or board members for 2025.

Our scheduled speaker will be Rick Hull, our secretary. He will be discussing Observing Planetary Nebulae. I want to say thank you to everyone who shared their Comet pictures. Have a great month, Another great time for observing and imaging our beautiful Idaho skies. I will bring the 2025 calendar so we can start putting together the 2025 programs.

Cheers and best to you, Jay Hartwell, MVAS Vice President:

Visit our Website
www.mvastro.org

Moon Phases for November 2024

Twin Falls, Idaho, United States

No.	Su	Mo	Tu	We	Th	Fr	Sa
44						1  New Moon 06:48 am	2  2% Waxing Crescent
45	3  6% Waxing Crescent	4  11% Waxing Crescent	5  18% Waxing Crescent	6  27% Waxing Crescent	7  37% Waxing Crescent	8  First Quarter 10:56 pm	9  59% Waxing Gibbous
46	10  70% Waxing Gibbous	11  80% Waxing Gibbous	12  88% Waxing Gibbous	13  95% Waxing Gibbous	14  99% Waxing Gibbous	15  Full Moon 02:29 pm	16  97% Waning Gibbous
47	17  93% Waning Gibbous	18  86% Waning Gibbous	19  78% Waning Gibbous	20  69% Waning Gibbous	21  59% Waning Gibbous	22  Last Quarter 06:29 pm	23  40% Waning Crescent
48	24  31% Waning Crescent	25  22% Waning Crescent	26  15% Waning Crescent	27  9% Waning Crescent	28  4% Waning Crescent	29  1% Waning Crescent	30  New Moon 11:22 pm

https://www.mooninfo.org/moon-calendar/november-2024.html | Moon Names: The Old Farmer's Almanac, November 2024

November's full Beaver Supermoon reaches peak illumination on Friday, November 15, 2024. This is our fourth and final Supermoon of the year! Why the "Beaver" Moon? This is the time of year when beavers begin to take shelter in their lodges, having laid up sufficient food stores for the long winter ahead. During the fur trade in North America, it was also the season to trap beavers for their thick, winter-ready pelts.

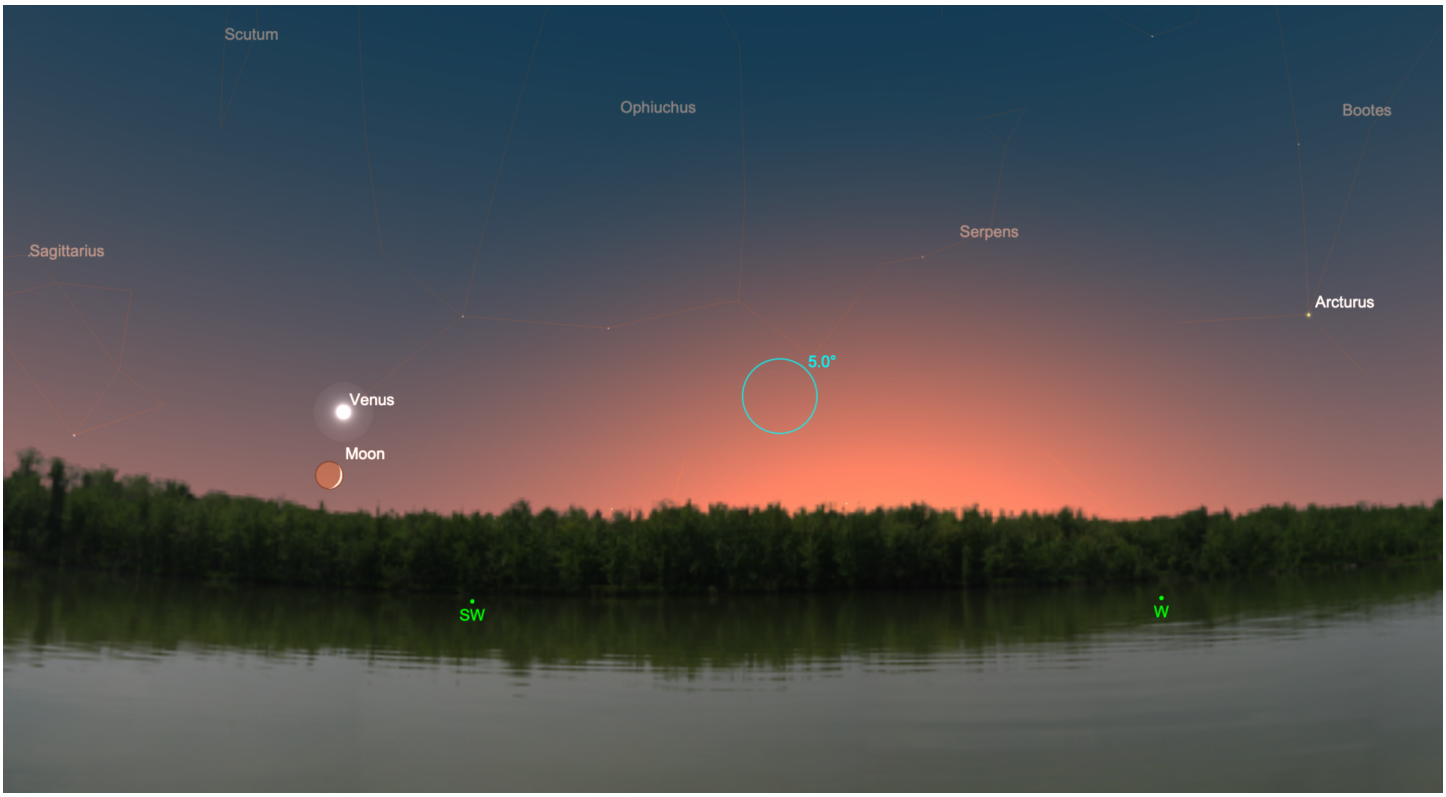
The Sky This Month – November 2024

Comet C/2023 A3 (Tsuchinshan–ATLAS) in the evening sky on October 17, 2024.

(Looking for last month's 'Night Sky'? Find it at this link…)
Comet C/2023 A3 (Tsuchinshan–ATLAS) lived up to expectations last month and still lingers in the evening sky as a binocular object. Sadly, the potentially spectacular sungrazing Comet C/2024 S1 (ATLAS) disintegrated on Oct. 28 as it made a close pass of the Sun. But November still has plenty in store with longer and colder stargazing sessions for northern observers while southern-hemisphere stargazers enjoy the warmer nights of spring. For deep-sky observers, there are plenty of open star clusters in Cassiopeia and Perseus and galaxies in Pegasus, Andromeda, and Sculptor. Orion rises well into the evening and dominates the southern sky after midnight, while the stars of northern spring rise before dawn. Saturn remains in the sky, still in a good position for viewing, while bright Mars and brilliant Jupiter dominate the sky after midnight. Here's what to see in the night sky this month.

1 November 2024. New Moon, 12:47 UT

3 Nov. Daylight savings time ends for most in North America. Use at least some of your extra hour for some after-dinner stargazing!

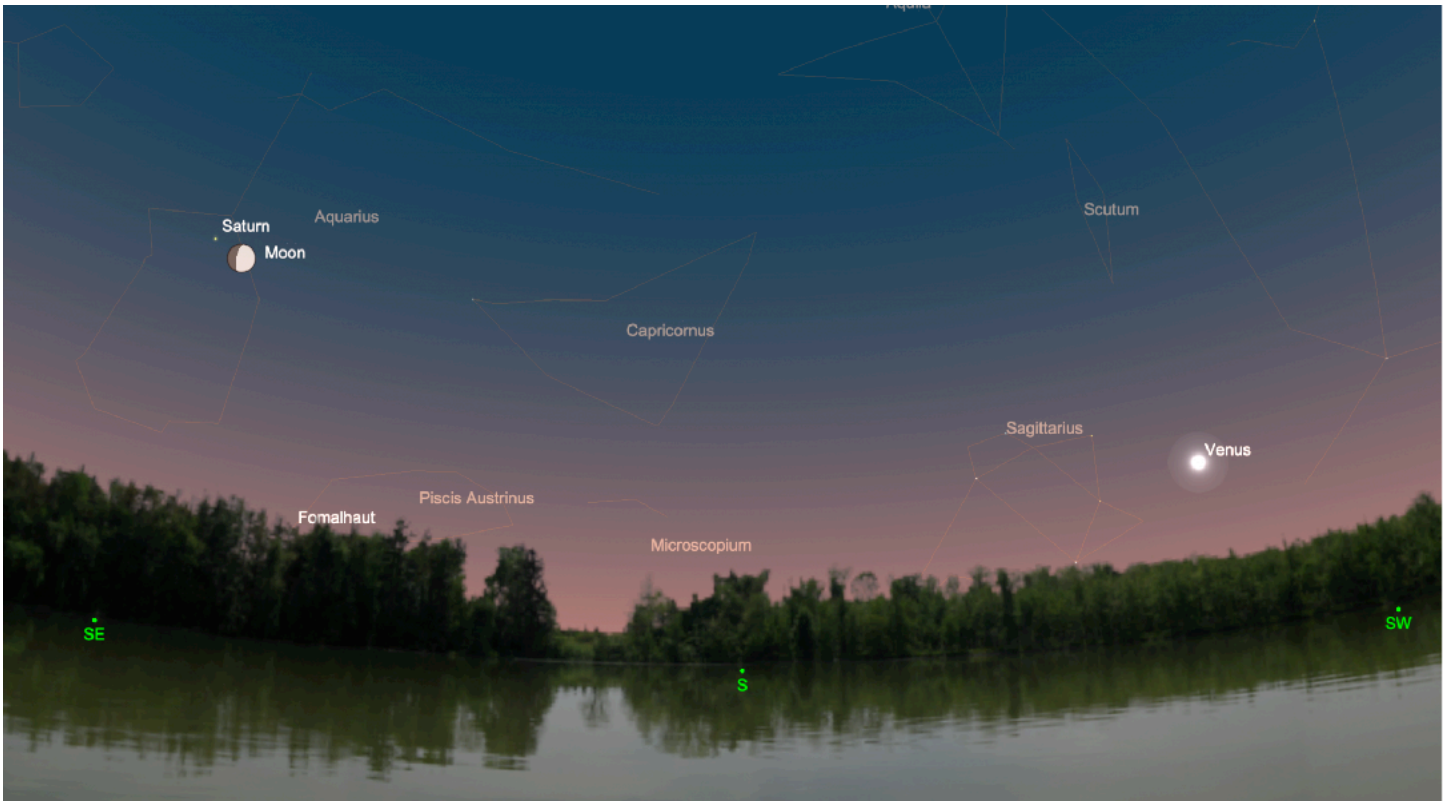


The crescent moon and Venus low in the southwest on the evening of Nov. 4, 2024.

4 Nov. After the sun goes down, look low in the southwest to see a slender crescent moon about 3.5° south of Venus. You need a clear view of the horizon to see the pair. Venus appears (in a telescope) about ¾ illuminated and shines at magnitude -4.0.

6-12 Nov. The Taurid meteor showers peak this week with only a little moonlight around to obscure the view. There are two Taurid showers, the Northern and Southern Taurids, and they both peak in late October through mid-November. They're sometimes called the Halloween Fireballs. You can see these bright, slow-moving meteors in the northern and southern hemispheres at essentially any time of night. This event usually shows 5-10 meteors an hour, although some predictions suggest more plentiful meteors this year.

9 Nov. First Quarter Moon, 05:55 UT Below: Saturn lies near the moon on the evening of Nov. 10, 2024.



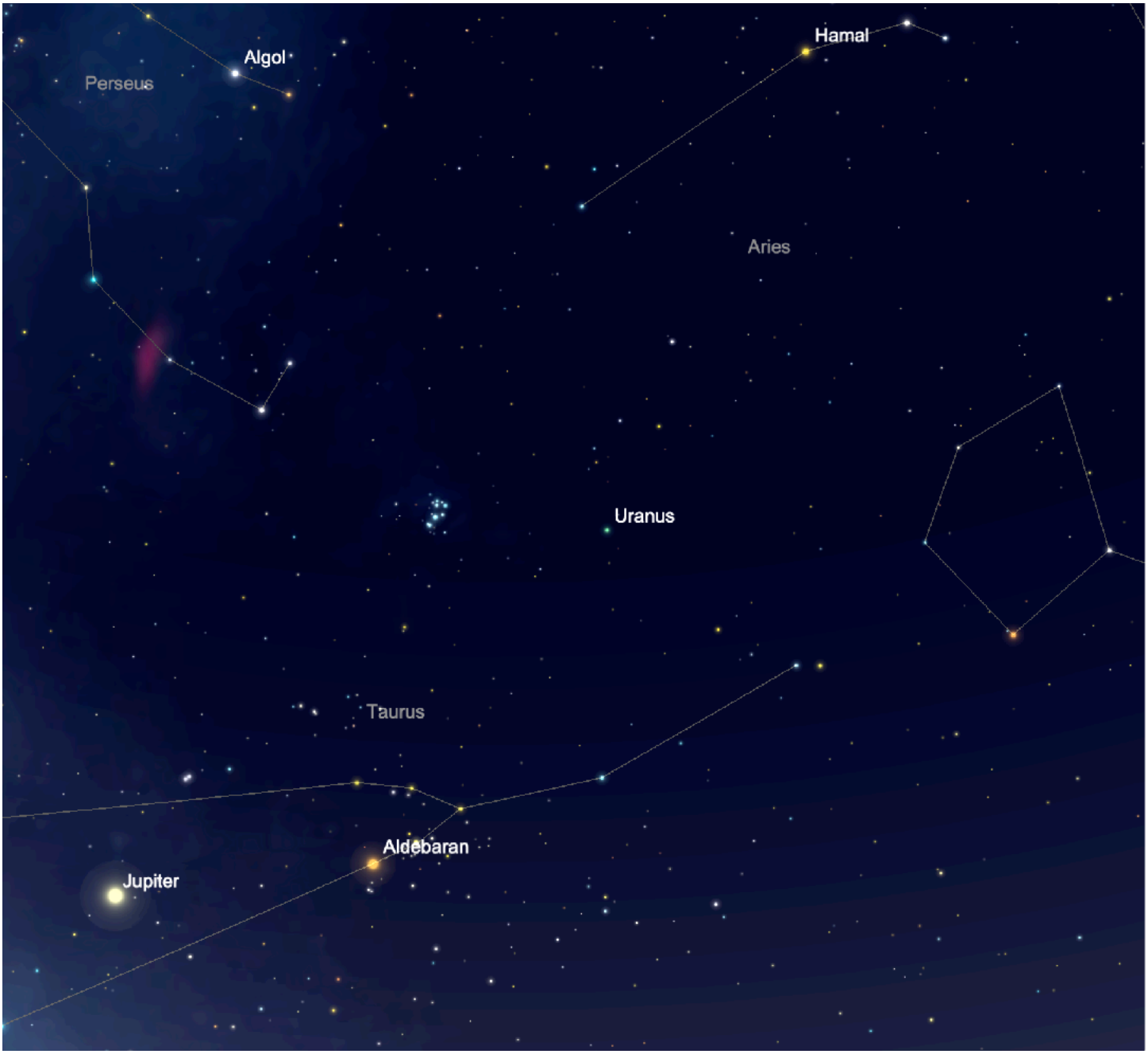
10 Nov. The waxing gibbous moon lies about half a degree from Saturn tonight. With an apparent diameter of 18″, the planet still shines at magnitude +0.9 and remains a promising target in a telescope. Observers in Central America, northern South America, and south Florida see the moon occult the planet. This link has timing of the occultation for numerous locations.

12 Nov. Neptune lies roughly half a degree south of the moon, and observers in much of North America (except for the northwest) see the moon occult the planet. Timing and details at this link.

14 Nov. Moon reaches perigee at a distance of 360,109 km at 11:00 UT

15 Nov. Full Moon, 21:29 UT (the full 'Beaver Moon'). This is also a 'super moon' since it occurs at perigee; the Moon appears 14% larger than when it lies at apogee.

16 Nov. Saturn ends its retrograde motion and begins moving eastward once again against the background stars.
16 Nov. Mercury reaches greatest eastern elongation about 23° from the Sun. It lies about 19° east of Venus in the evening sky – a challenging sight in the bright twilight.



Uranus lies west of the Pleiades as it reaches opposition on Nov. 17, 2024.

17 Nov. Uranus reaches opposition as it rises in the east as the Sun sets in the west. This distant ice giant lies just at the edge of naked-eye visibility at magnitude +5.7 with a disk that spans about 3.7″. You can see it with binoculars or telescope about 6° southwest of the Pleiades. Uranus remains visible through the end of 2024 and into the new year in this part of the sky. If you have dark sky, try to see the planet without optics. Although the planet was plainly, though not easily, visible to pre-telescopic stargazers, it wasn't 'discovered' until William Herschel found it with a 6" telescope on March 13, 1781. For an even bigger challenge – try to find some or all of the bright Moons of Uranus with the help of this handy-dandy moon finder at Sky&Telescope.

17 Nov. Jupiter rises in the east about 5° from the gibbous Moon. The big planet appears tangled in the horns of Taurus as it shines at a mesmerizing magnitude -2.8 and spans nearly 48". The planet reaches opposition next month – from now through March is the best time to observe this big and complex world.

17-20 Nov. The Leonid meteor shower has been quiet these past many years and it remains a modest shower despite some historical outbursts. The shower occurs as the Earth passes through the path of the periodic Comet 55/P Tempel-Tuttle. A peak of 15 meteors per hour is typical for the Leonids. But nothing's assured and a few extras may arrive. Leonids can appear anywhere in the sky but appear to trace their paths back to a radiant in the 'Sickle' of Leo. This year, the moon obscures the fainter meteors.

20 Nov. The moon continues its eastward trip along the ecliptic and this morning lies less than 5° from brightening Mars in the early-morning sky in the constellation Cancer. The planet shines at magnitude -0.2 and spans a little over 10″. It continues to brighten on the way to its January 2025 opposition.

23 Nov. Last Quarter Moon, 01:28 UT
26 Nov. Moon reaches apogee at a distance of 405,314 km at 12:00 UT

27 Nov. The waning crescent moon rises near Spica in the southeastern sky before dawn. Observers in eastern and central North America and the northeastern edge of South America can see the moon eclipse the star. Details and timing at this link.

November Night Sky Notes: Snowballs from Space

This article is distributed by the NASA Night Sky Network, a coalition of hundreds of astronomy clubs across the US dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, stargazing info and more.

By Kat Troche

If you spotted comet C/2023 A3 (Tsuchinshan-ATLAS) in person, or seen photos online this October, you might have been inspired to learn more about these visitors from the outer Solar System. Get ready for the next comet and find out how comets are connected to some of our favorite annual astronomy events.

Comet Composition

A comet is defined as an icy body that is small in size and can develop a 'tail' of gas as it approaches the Sun from the outer Solar System. The key traits of a comet are its nucleus, coma, and tail.

The nucleus of the comet is comprised of ice, gas, dust, and rock. This central structure can be up to 80 miles wide in some instances, as recorded by the Hubble Space Telescope in 2022 – large for a comet but too small to see with a telescope. As the comet reaches the inner Solar System, the ice from the nucleus starts to vaporize, converting into gas. The gas cloud that forms around the comet as it approaches the Sun is called the coma. This helps give the comet its glow. But beware: much like Icarus, sometimes these bodies don't survive their journey around the Sun and can fall apart the closer it gets.

The most prominent feature is the tail of the comet. Under moderately dark skies, the brightest comets show a dust tail, pointed away from the Sun. When photographing comets, you can sometimes resolve the second tail, made of ionized gases that have been electronically charged by solar radiation. These ion tails can appear bluish, in comparison to the white color of the dust tail. The ion tail is also always pointed away from the Sun. In 2007, NASA's STEREO mission captured images of C/2006 P1 McNaught and its dust tail, stretching over 100 million miles. Studies of those images revealed that solar wind influenced both the ion and dust tail, creating striations – bands – giving both tails a feather appearance in the night sky.

Comet McNaught over the Pacific Ocean. Image taken from Paranal Observatory in January 2007. Credits: ESO/Sebastian Deiries

Coming and Going

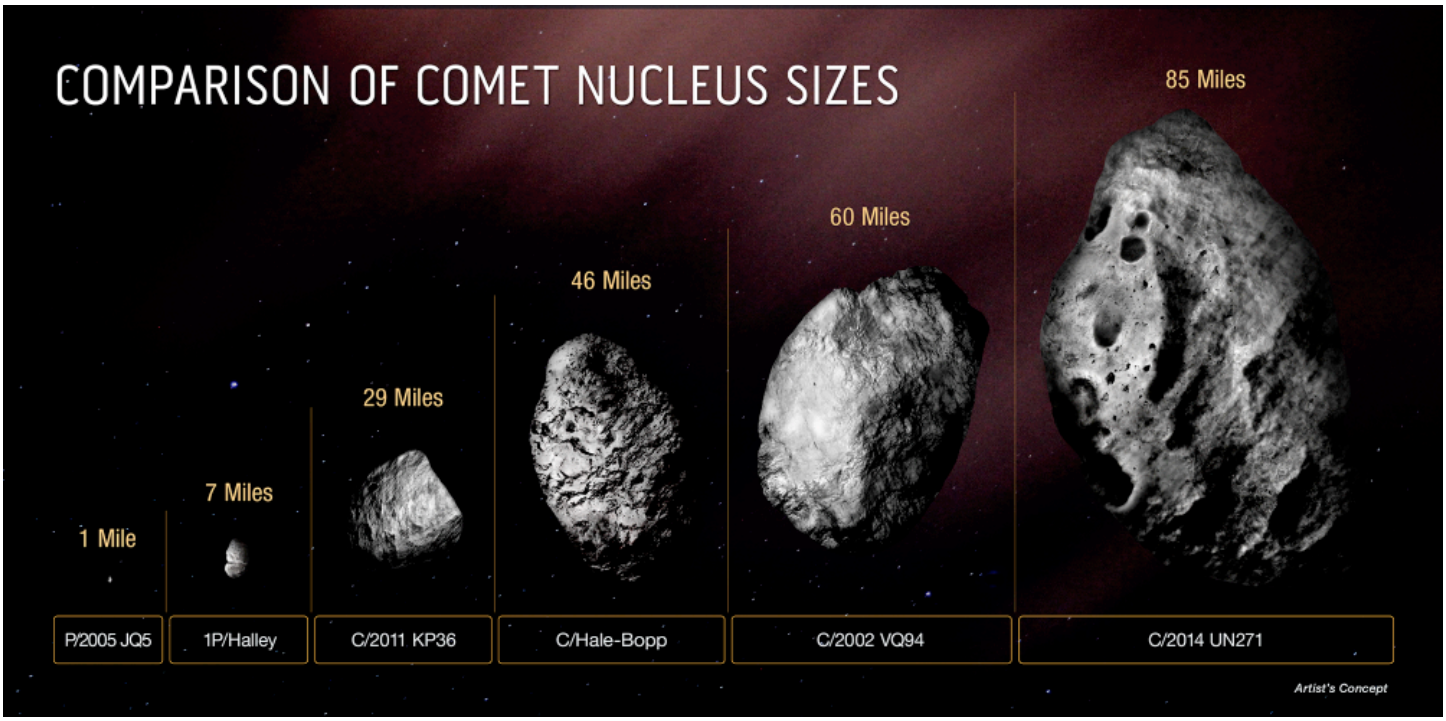
Comets appear from beyond Uranus, in the Kuiper Belt, and may even come from as far as the Oort Cloud. These visitors can be short-period comets like Halley's Comet, returning every 76 years. This may seem long to us, but long-period

comets like Comet Hale-Bopp, observed from 1996-1997 won't return to the inner Solar System until the year 4385. Other types include non-periodic comets like NEOWISE, which only pass through our Solar System once.

But our experiences of these comets are not limited to the occasional fluffy snowball. As comets orbit the Sun, they can leave a trail of rocky debris in its orbital path. When Earth finds itself passing through one of these debris fields, we experience meteor showers! The most well-known of these is the Perseid meteor shower, caused by Comet 109P/Swift-Tuttle. While this meteor shower happens every August in the northern hemisphere, we won't see Comet Swift-Tuttle again until the year 2126.

A view of the 2023 Perseid meteor shower from the southernmost part of Sequoia National Forest, near Piute Peak. Debris from comet Swift-Tuttle creates the Perseids. Credit: NASA/Preston Dyches

See how many comets (and asteroids!) have been discovered on NASA's Comets page, learn how you can cook up a comet, and check out our mid-month article where we'll provide tips on how to take astrophotos with your smartphone!

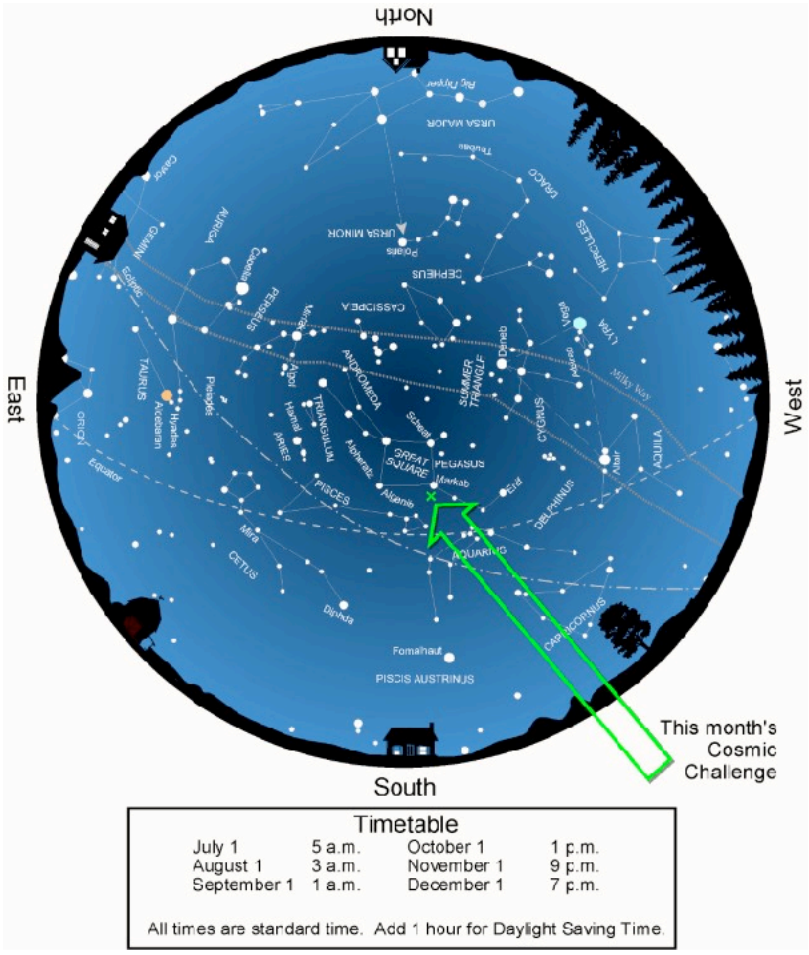


Phil Harrington's Cosmic Challenge

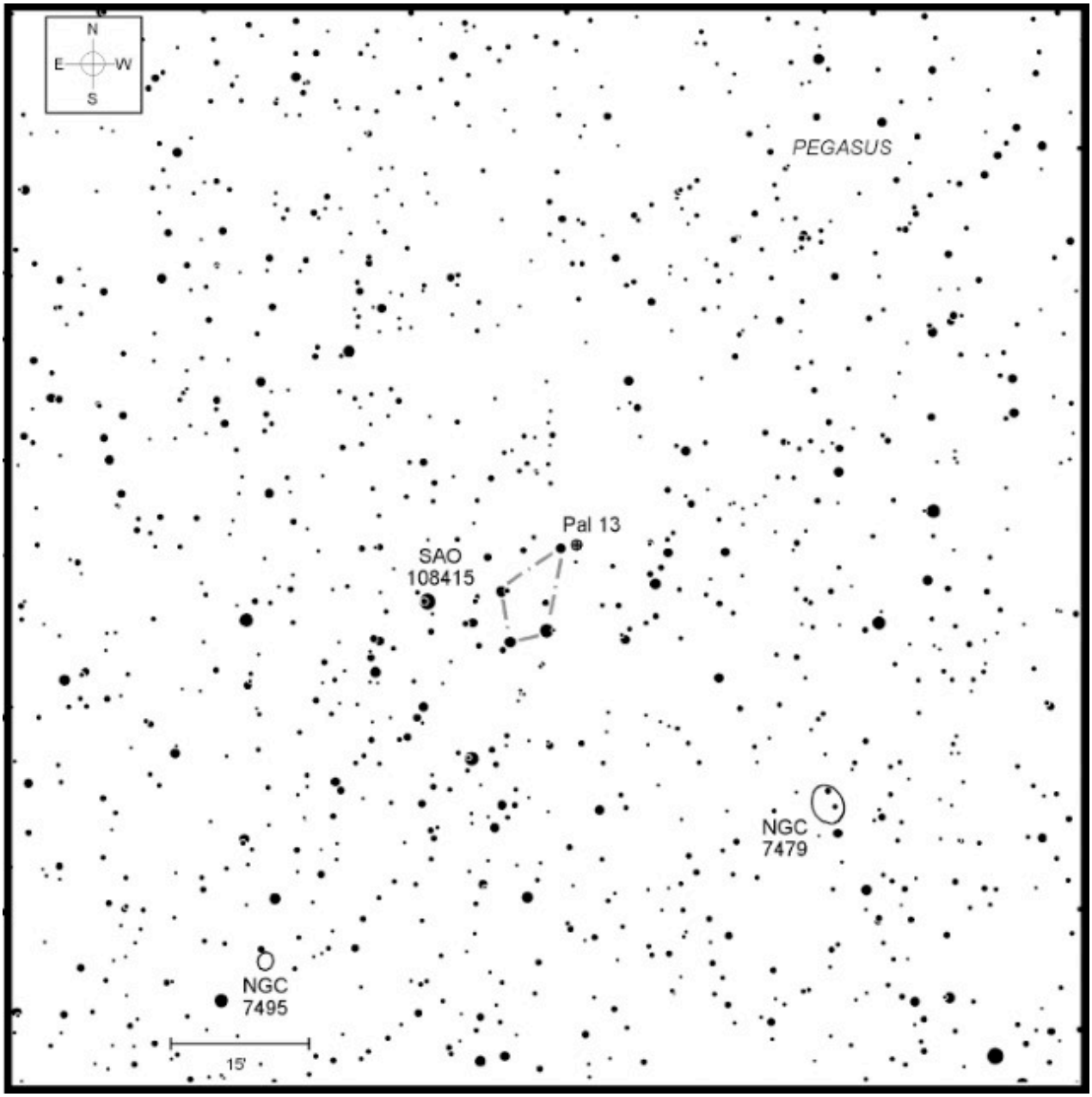
Palomar 13 and Friends	
	**This month's suggested aperture range:** 10-14” (25-36 cm) Telescopes Featured Meade LX200 12”

Target	Type	RA	DEC	Constellation	Magnitude	Size
Palomar 13	Globular cluster	23h 06.7m	+12° 46.3’	Pegasus	13.8	0.7'
NGC 7479	Galaxy	23h 05.0m	+12° 19.3’	Pegasus	10.9	4’x3’
NGC 7495	Galaxy	23h 08.9m	+12° 03’	Pegasus	12.5	1.6’

Pegasus is best known to deep-sky observers as a breeding ground for faint galaxies, with more than 100 faint NGC galaxies littering this winged steed. Floating seemingly out of place among those systems is the globular cluster M15, one of the season's finest targets. Did you know that there is a second globular within Pegasus lying just within the grasp of your 10-inch telescope? That little known target is Palomar 13, one of those nasty globulars discovered by Abell and company while surveying the Palomar Observatory Sky Survey half a century ago.



Above: Evening star map. Credit: Map adapted from Star Watch by Phil Harrington



Above: Finder chart for this month's Cosmic Challenge.

Credit for the discovery of Palomar 13 actually goes to A.G. Wilson in 1955. Though an accomplished astronomer, Wilson was not a student of bright deep-sky objects. He nicknamed his find the "Pegasus Globular Cluster," apparently forgetting all about M15. When Abell later published the list of Palomar clusters, he credited Wilson with the discovery, but omitted his ill-considered nickname.

Although Palomar 13 only shines at 14th magnitude, zeroing in on it is simple thanks to its position 2½° south-southeast of Markab [Alpha (α) Pegasi], the southwestern star in the Great Square. Follow a winding line of 7th- and 8th-magnitude stars southward to 7th-magnitude SAO 108415, and then look just to its west to find a diamond pattern of four 8th- to 10th-magnitude stars. One more hop, 9' northwest of the diamond and you'll find an 11th-magnitude star along with Palomar 13 just a bit to its west.

As one of the smallest, faintest globular clusters known, Palomar 13 takes extra effort to be seen. With averted vision through my 10-inch reflector at 181x, I can just seek it out as a small, hazy spot. I can find no evidence of a central concentration, but instead only see a dim, featureless blur.

Above: Palomar 13 looks like a tiny faint blur in this image taken through the author's 6-inch (15cm) f/2.2 Celestron Origin Home Observatory. Barred spiral galaxy NGC 7479 is much more obvious at right.
Below: Close-up of Palomar 13 through the Celestron Origin.

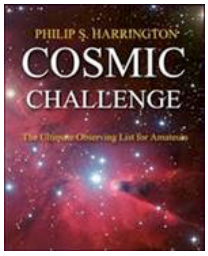
Palomar 13 on SIMBAD Astronomical Database.

While in the area, be sure to pay a call on two bonus galaxies. NGC 7479 shines at 11th magnitude, while NGC 7495 is about a magnitude and a half fainter. Both are shown on the chart above.

NGC 7479 is a splendid barred spiral galaxy approximately 105 million light-years from Earth. Classified as an SB(s)c galaxy, its structure features a well-defined central bar, from which two symmetric spiral arms extend, giving it a striking "S" shape. These arms show enhanced star formation, and the galaxy contains substantial amounts of gas and dust, fueling active star-forming regions. NGC 7479 also exhibits a unique feature — a strong, one-sided radio jet, evidence of a past merger event or interaction with a smaller galaxy. This activity suggests the presence of a central supermassive black hole, possibly powering an active galactic nucleus (AGN). The galaxy's magnetic field is also highly organized, aligned with its spiral structure.

In contrast, NGC 7495 is a spiral galaxy located about 200 million light-years from Earth. Its classification as an Sc-type galaxy indicates it has a more loosely wound spiral structure, with fainter, less defined arms compared to NGC 7479. This galaxy shows some evidence of star formation, particularly in its outer regions, though its overall activity is lower. NGC 7495's morphology is typical of intermediate-type spirals, with a smaller central bulge and less prominent bar, indicating less interaction and a more quiescent history.

Good luck with this month's challenge! Be sure to post your results in this column's discussion forum. And remember that half of the fun is the thrill of the chase. Game on!



About the Author:

Phil Harrington is a contributing editor to Astronomy magazine and is the author of 9 books on astronomy. Visit www.philharrington.net to learn more.

November Skies

by Dick Cookman

Highlights: Comet Journal, Martian Landers, Meteor Showers, Planet Plotting, November Moon
Focus Constellations: Ursa Major, Draco, Ursa Minor, Camelopardalis, Auriga, Taurus, Perseus, Cassiopeia, Cepheus, Andromeda, Triangulum, Aries, Pisces, Pegasus, Aquarius, Cygnus, Lyra

Comet Journals

Comet C/2023 A3 (Tsuchinshan-ATLAS) Comet C/2023 A3 Tsuchinshan-Atlas moves from Ophiuchus into Aquila in November. Until the 9th, glare from the waxing crescent Moon will create some competition as the comet drops to 6th magnitude, but observers should still obtain views with binoculars. Objective lenses of at least 50 mm provide best views. Perihelion passage was in late September and the comet passed perigee (closest to Earth) on October 12. It is now retreating to its origin in the Oort Cloud.

Mars Landers

Anushree Srivastava, Postdoctoral Fellow at Carnegie Institution and member of Mars 2020 SHERLOC Science and Operations Team notes that in January 2024, a fault in the motor of the SHERLOC instrument aboard NASA's Perseverance Rover caused the dust cover and autofocus mechanism to become inoperative, putting the rover's SHERLOC Raman spectroscopy capability at risk. In March, a fortunate motion of the arm on Sol 1077 opened the dust cover allowing the team to look for ways to focus the optics and operate SHERLOC with the open dust cover. The problem was solved by June, when a successful observation of the rock target Walhalla Glades. In July 2024, SHERLOC's Raman performed multiple calibrations, scans, and observations on a rock named Cheyava Falls and the team was thrilled to discover the mission's most compelling evidence for organics in Jezero Crater. Determination of whether the organic compounds were formed through biological or non-biological processes can be done when the rocks are eventually returned to laboratories here on Earth.

Planet Plottings

The Evening planets in November include Mercury (-0.2 to 2.0) in Scorpius and Ophiuchus, Venus (-3.9 to -4.0) in Ophiuchus and Sagittarius, Saturn (0.8 to 1.0 in Aquarius, Neptune (7.8 to 7.9, in Pisces), Uranus (5.6) in Taurus, and Jupiter (-2.6 to -2.7) in Taurus. Mars (0.0 to -0.5) in Cancer rises about 11PM EST but is best viewed in the southwest in predawn skies when Jupiter and Uranus are in western skies. On the 3rd, the waxing crescent Moon passes Mercury which is low in the southwest in the 1st half of the month and reaches greatest eastern elongation (23° from the Sun) on the 16th. Venus dominates the western sky in the early evening. On the 4th, it is accompanied by the waxing crescent Moon then proceeds to brighten each evening in November and December. Saturn is high in the southern sky after sunset and is passed by the waxing gibbous Moon on the 10th which then passes Neptune on the 11th. 3.5 hours after the full Frosty or Beaver's Moon on the 15th, the waning gibbous Moon passes Uranus. It then passes Jupiter on the 17th and Mars on the 20th. Jupiter rises about 8:30 PM EST, providing an eastern beacon to complement Venus in the west. Mars is approaching its January, 2025 opposition when it will be in closest proximity to Earth and is getting brighter. In November, the red planet rivals the brightest 1st magnitude stars in the night sky.

Planet	Constellation(s)	Magnitude	Planet Passages	Time	Date
Sun	Gemini	-26.5	New Moon	8:47AM EDT	11/1
Mercury	Scorpius, Ophiuchus	-0.2 to 2.0	Max. East Elongation	3:00AM EST	11/16
Venus	Ophiuchus, Sagittarius	-3.9 to -4.0			
Mars	Cancer	0.0 to -0.5			
Jupiter	Taurus	-2.6 to -2.7			
Saturn	Aquarius	0.8 to 1.0			
Uranus	Taurus	5.6	Opposition	10PM EST	11/16
Neptune	Pisces	7.8 to 7.9			

November Moon

The New Moon of November is in Libra on the 1st at 8:47AM EDT. New Moon marks the start of Lunation 1260 which ends 29.73 days later with the New Moon of December in Scorpius on the 1st at 12:22AM MST.

The Full Moon on the 15th occurs at 4:29PM EST in Aries. It is also a Supermoon which appears larger and brighter than normal because the Full Moon occurs about 34.2 hours after lunar perigee, its minimum distance during the month. November's Full Moon is the Frosty or Beaver's Moon. Colonial Americans called it the "Beaver Moon".
To the Celts it was the "Dark Moon", and it is the "White Moon" for the Chinese. Medieval English thought of it as the "Snow Moon", and the Anishinaabe (Odawa and Ojibwe) people of northern Michigan recognize it as "Gashkadino-Giizis" (Freezing Over Moon).in the western dialect and "Baashkaakodin-Giizis" (Freezing Moon) in the eastern dialect.
Ontario's Earth Haven Farm presents cultural teachings explaining the cycle of life and nature of their 13 Grandmother Moons. "The eleventh moon of Creation is the Freezing Moon, a time when the Star Nation is closest to us. As every creature being prepares for the coming fasting grounds, we are reminded to prepare ourselves for our spiritual path by learning the sacred teachings and songs that will sustain us."

Lunar perigee – Nov.14, 4:16AM MST. The Moon is at 223,762 mi. (56.46 Earth radii).

Lunar Apogee (maximum lunar distance) – Nov. 26 at 6:56AM EST. The Moon's distance is 251,850mi. (63.54 Earth radii).

Planet	Constellation	Magnitude	Moon Passages	Moon Phase	Moon Age
Sun	Gemini	-26.8	8:47AM EDT, 11/1	New	0 Days
Mercury	Libra, Ophiuchus	-0.2 to 2.0	2.0°S, 3:00AM EST, 11/3	Waxing Crescent	2.76 Days
Venus	Ophiuchus, Sagittarius	-3.9 to -4.1	3.0°S, 7:00PM EST, 11/4	Waxing Crescent	4.43 Days
Mars	Cancer	0.1 to -0.5	2.0°N, 4:00PM EST, 11/20	Waning Gibbous	20.30 Days
Jupiter	Taurus	-2.5 to -2.7	6.0°N, 10:00AM EST, 11/17	Waning Gibbous	18.05 Days
Saturn	Aquarius	0.8 to 1.0	0.09°N, 9:00PM EST, 11/10	Waxing Gibbous	9.51 Days
Uranus	Taurus	5.6	4.0°N, 8:00PM EST, 11/15	Waning Gibbous	14.47 Days
Neptune	Pisces	7.8 to 7.9	0.6° N, 9:00PM EST, 11/11	Waxing Gibbous	10.51 Days

Did you Know: NASA confirms it's developing the Moon's new time zone. *

Centennial Observatory Upcoming Events
All events are weather permitting.

Monthly Free Star Party	Centennial Observatory	Saturday, November 9, 2024	5:45 - 9:00 PM	Free
Telescope Tuesday	Centennial Observatory	Tuesday, November 12, 2024	5:45 - 9:00 PM	$1.50, ages 6 & under free, or free with planetarium admission
Telescope Tuesday	Centennial Observatory	Tuesday, November 26, 2024	6:00 - 9:00 PM	$1.50, ages 6 & under free, or free with planetarium admission

Faulkner Planetarium Shows
For the full schedule and current show times visit!

Now Showing!

You may also visit the Herrett Center Video Vault

* Previous page note: Link provided as the newsletter editor did not receive permissions for the article to be printed here.

Websites and Other Helpful Astronomy Links.

Information on passes of the ISS, the USAF's X-37B, the HST, the BlueWalker 3, and other satellites can be found at http://www.heavens-above.com/

Visit https://saberdoesthe...does-the-stars/ for tips on spotting extreme crescent Moons and https://curtrenz.com/moon.html for Full Moon and other lunar data.

Go to https://skyandtelesc...ads/MoonMap.pdf and https://celestron-si...RReeves-web.pdf and https://nightsky.jpl...ObserveMoon.pdf for simple lunar maps. Click on https://astrostrona.pl/moon-map/ for an excellent online lunar map. Visit http://www.ap-i.net/avl/en/start to download the free Virtual Moon Atlas. Consult http://time.unitariu...moon/where.html for current information on the Moon and https://www.fourmila.../lunarform.html for information on various lunar features. See https://svs.gsfc.nasa.gov/4955 a lunar phase and libration calculator and https://svs.gsfc.nasa.gov/5187/

The Lunar Reconnaissance Orbiter Camera (LROC) quick map. https://www.universa...ise-and-sunset/

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

Summaries on the planets for each month can be found at https://earthsky.org/astronomy-essentials/

The graphic at https://www.timeandd...lanets/distance displays the apparent and comparative sizes of the planets, along with their magnitudes and distances, for a given date and time.

The rise and set times and locations of the planets can be determined by clicking on https://www.timeandd...stronomy/night/

Click on https://www.curtrenz.../asteroids.html for information on asteroid occultations taking place this month.

Visit http://cometchasing.skyhound.com/ and http://www.aerith.ne...t/future-n.html and https://cobs.si/ for additional information on comets visible this month.

A list of the closest approaches of comets to the Earth is posted at http://www.cometogra.../nearcomet.html

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

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

Free star maps for any month may be downloaded at http://www.skymaps.com/downloads.html and https://www.telescop...thly-Star-Chart and http://www.kenpress.com/index.html

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..._april-june.htm

Telrad finder charts for the Messier Catalog are posted at http://www.custerobs...cs/messier2.pdf and http://www.star-shin...ssierTelrad.htm

Telrad finder charts for the SAC's 110 Best of the NGC are available at https://www.saguaroa...k110BestNGC.pdf

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

Author Phil Harrington offers an excellent freeware planetarium program for binocular observers known as TUBA (Touring the Universe through Binoculars Atlas), which also includes information on purchasing binoculars, at http://www.philharrington.net/tuba.htm

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 https://telescopius.com/ and http://tonightssky.com/MainPage.php

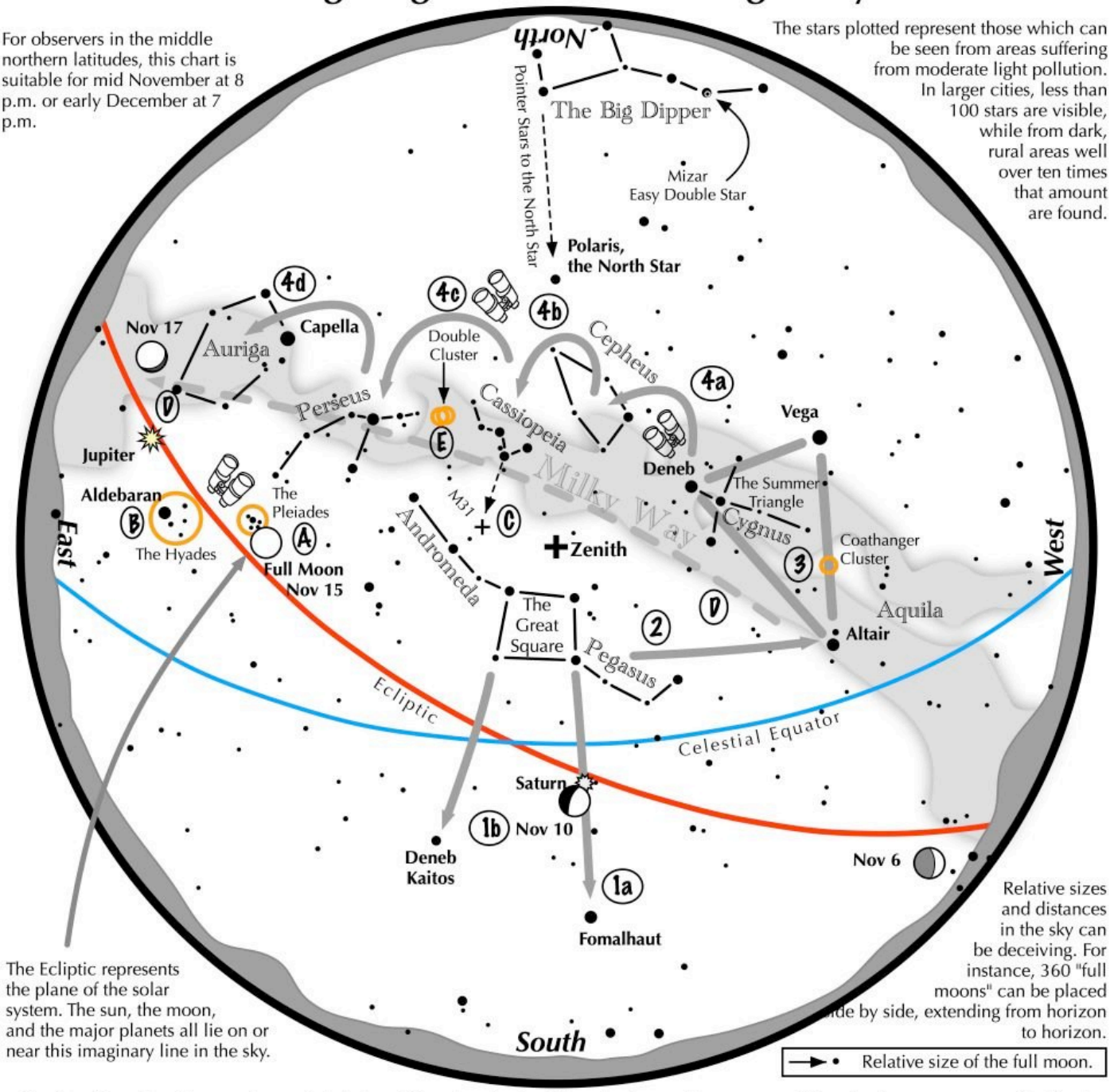
Freeware sky atlases can be downloaded at http://www.deepskywa...-atlas-full.pdf and https://www.cloudyni...ar-charts-r1021 and https://allans-stuff.com/triatlas/

For current sky charts visit the NASA Night Sky Network https://nightsky.jpl.nasa.gov/news/212/

Navigating the November Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid November at 8 p.m. or early December at 7 p.m.

The stars plotted represent those which can be seen from areas suffering from moderate light pollution. In larger cities, less than 100 stars are visible, while from dark, rural areas well over ten times that amount are found.



The Ecliptic represents the plane of the solar system. The sun, the moon, and the major planets all lie on or near this imaginary line in the sky.

Relative sizes and distances in the sky can be deceiving. For instance, 360 "full moons" can be placed side by side, extending from horizon to horizon.

Relative size of the full moon.

Navigating the November night sky: Simply start with what you know or with what you can easily find.

1. Face south. Almost overhead lies the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend a line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the south. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second brighest star in the south.
2. Draw a line westward following the southern edge of the Square until it strikes Altair, part of the "Summer Triangle."
3. Locate Vega and Deneb, the other two stars of the Summer Triangle. Vega is its brightest member, while Deneb sits in the middle of the Milky Way.
4. Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, then to Perseus, and finally to Auriga with its bright star Capella.

Binocular Highlights

A and B: Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **D:** Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas. **E.** The Double Cluster.

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.
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.