

Volume 43.8

August 2023

Desert Sky Observer

Antelope Valley Astronomy Club



Desert Sky Observer

www.avastronomyclub.org

August 2023

Upcoming Events

August 11: Club Meeting
August 19: DSSP @ Mt Pinos
August 26: Moonwalk at PDW @ 8:00 PM

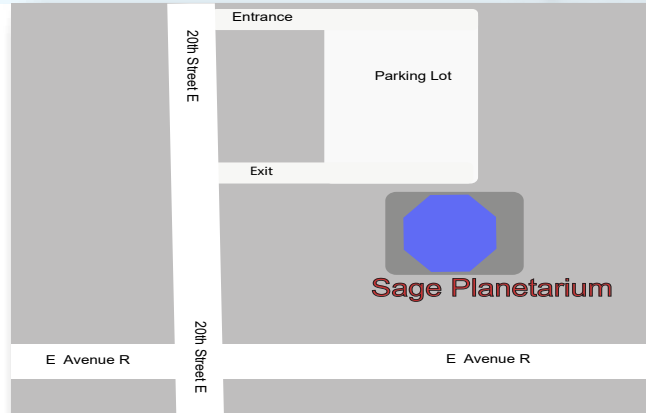
Every clear night: Personal Star Party

September 8: Club Meeting
September 9: Moonwalk at PDW @ 7:30 PM
September 16: DSSP @ Chuchupate

October 13: Club Business Meeting
October 21: Lunar Club



AVAC Calendar



Board Members

President: Phil Wriedt (661) 917-4874
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Vice-President: Navin Arjuna 661-789-7927
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Secretary: Rose Moore (661) 972-1953
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Treasurer: Rod Girard (661) 803-7838
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Appointed Positions

Newsletter Editor: Phil Wriedt (661) 917-4874
dso@avastronomyclub.org

Equipment & Library:
John VanEvera 661-754-1819
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Club Historian: vacant
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Webmaster: Steve Trotta (661) 269-5428
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Astronomical League Coordinator:
Phil Wriedt (661) 917-4874
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Monthly Meetings

Monthly meetings are held at the **S.A.G.E. Planetarium** in Palmdale, the second Friday of each month except December. The meeting location is at the northeast corner of Avenue R and 20th Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium.*

Membership

Membership in the Antelope Valley Astronomy Club is open to any individual or family.

The Club has three categories of membership.

- Family membership at \$30.00 per year.
- Individual membership at \$25.00 per year.
- Junior membership at \$15.00 per year.

Membership entitles you to ...

- The Desert Sky Observer -- monthly newsletter
- The Reflector -- the publication of the Astronomical League.
- The AVAC Membership Manual.
- To borrow club equipment, books, videos, and other items.

AVAC

PO Box 8545

Lancaster, CA 93539-8545

Visit the Antelope Valley Astronomy Club website at www.avastronomyclub.org/.



www.avastronomyclub.org

The Antelope Valley Astronomy Club, Inc. is a 26 USC §503(c)(3) California Non-Profit Corporation.

The AVAC is a Sustaining Member of The Astronomical League and the International Dark-Sky Association



President's Message

By Phil Wriedt

Hi There!

We have a Club Meeting on the 11th this month. We are still being affected by Covid, so there won't be an outside speaker at our meeting. I know Rose has been shaking the NASA Speakers Bureau, and a speaker hasn't fallen out since Dr Boorman in May. In July, via Zoom, we were to have Dr Barth from the U of Arkansas, (he seems to have disappeared into the aether). We will have live speakers soon; until then we will be helping Jeremy perfect his presentation.

We have a Moonwalk on the 26th at Prime Desert Woodland. Sunset is at 7:27pm, so the Moonwalk will start about 8:30 pm, plan to get there by about 6:30 pm to setup in daylight. There were about 88 members of the public, including Pack 41 from Rosamond, and 4 members, 3 with telescopes that came last month. This is your chance to impress the public and pass along your knowledge. Come, bring your telescope, binoculars, star chart, and of course enthusiasm. See You There!

We had scheduled a Lunar Club at Matt's on August 19th, the problem is Matt is going to the DSSP at Mt Pinos. The Moon will be 12% waxing and set about 9:27 pm, so it's time for Lunar Club at Mt Pinos!

Our last Deep Sky Star Party on July 15th was at Mt Pinos . . . I know Matt Leone went. Our next DSSP will be on the 19th at Mt Pinos (sunset 7:36). Mt Pinos Nordic Center parking lot is at 8350 feet and has some really dark skies. Get there Early, as this is a very popular location. The lot holds maybe 250 cars and double parking is normal. Come out enjoy a dark sky. Let's put the party back in "Star Party"!

For those who are members of Dark Sky International they are starting a LA County charter. Email them at LACounty@Darksky.org for more information.

Keep Looking Up, Phil

On The Cover

Please note: North is 154.2° left of vertical RA: 12h 26' 48.89" DEC: 21° 49' 59.24" (Coma Berenices)

Streaks of light and bright arcs betray the presence of a vast gravitational lens in this image from the NASA/ESA/CSA James Webb Space Telescope. A galaxy cluster in the foreground has magnified distant galaxies, warping their shapes and creating the bright smears of light spread throughout this image. This effect, referred to by astronomers as gravitational lensing, occurs when a massive celestial object such as a galaxy cluster causes a sufficient curvature of spacetime for light to be visibly bent around it, as if by a gargantuan lens.

One of the consequential effects of gravitational lensing is that it can magnify distant astronomical objects, letting astronomers study objects that would otherwise be too faint or far away. This useful quirk of gravitational lensing has also been used to reveal some of the most distant galaxies humanity has ever encountered. The long, bright, and distorted arc spreading out near the core is one such example. A distant galaxy known as the Cosmic Seahorse, its brightness is greatly magnified by the gravitational lens, which has enabled astronomers to study star formation there.

This image was captured by NIRCam, Webb's primary near-infrared camera, and contains the lensing galaxy cluster SDSS J1226+2149. It lies at a distance of around 6.3 billion light-years from Earth, in the constellation

From the Secretary By Rose Moore

Members:

I hope you all are staying cool and taking care of yourselves in this heat! Thank you to all who came out to the club's events this past month. Jeremy was able to use the new projectors for a couple of shows at our last meeting and there is definitely an improvement!!

Our events for August include our club meeting on Friday August 11th at 7pm; a dark sky star party at Mt. Pinos on Saturday August 19th; ~~also a Lunar Club event for the same day, Saturday August 19th, for those who won't be going to the dark sky star party;~~ and we have a Prime Desert Moon Walk with Jeremy on Saturday August 26th starting at 8pm. Further emails will be sent out prior to each event. [*Editors note: Lunar Club is canceled this month, Matt is going to Mt Pinos. Sorry Rose, I forgot to mention this...*]

The Perseid Meteor Show has started and will peak August 12th and 13th. The Moon will be 10% full. The Perseids are from comet 109P/Swift-Tuttle during its numerous returns to the inner solar system. They are called Perseids since the radiant (the area of the sky where the meteors seem to originate) is located near the prominent constellation of Perseus the hero when at maximum activity. The showers are best seen after midnight.

Upcoming events include: a presentation on Messier Objects by Matt Leone in September; the star party at College of the Canyons in October, date TBA; our club Christmas Party for December 9th; and Sue Leone's astronomy paint class which is now rescheduled for January.

If any newer members need their badges, please email me (rmorion1@bak.rr.com), so that I can bring them to the next meeting in August.

Clear skies, Rose

On The Cover ... continued

Coma Berenices. By combining Webb's sensitivity with the magnifying effect of gravitational lensing, astronomers were able to use this gravitational lens to explore the earliest stages of star formation in distant galaxies. To do so, they relied on earlier studies by the NASA/ESA Hubble Space Telescope, which provided the 'prescription' for this gravitational lens.

This image shows only one observation from a programme designed to probe star formation in distant galaxies. As well as revealing how quickly stars form and characterising the environments in these galaxies that gave rise to new stars, these observations will demonstrate the capabilities of Webb and provide richly detailed datasets to the astronomical community. Astronomers expect Webb's crystal-clear vision and cutting-edge instruments to provide new insights into star formation in distant, gravitationally lensed galaxies.

[Image description: Many small galaxies are scattered on a black background: mainly, white, oval-shaped and red, spiral galaxies. To the lower right is a galaxy cluster, with a very large and bright elliptical galaxy at its centre. Thin, reddish, stretched-out arcs surround it. One arc is thick and much brighter. Another red galaxy is large and warped, just next to the cluster core.]

Credit: ESA/Webb, NASA & CSA, J. Rigby

Super Blue Sturgeon Moon

by Vivian White, Astronomy Society of the Pacific, NASA Night Sky Network

On August 1st, catch a **full Moon** rising in the east just 30 minutes after sunset. We are seeing the entire sunlit side of the Moon as it is nearly (but not quite) in line with the Sun and Earth. The Farmers' Almanac calls this month's Moon the "Sturgeon Moon", for the time of year when this giant fish was once abundant in the Great Lakes. Cultures around the world give full Moons special names, often related to growing seasons or celebrations.

As the Moon rises later and later each night, the bright sunlit part appears to get smaller or "wane" - we call this a waning **gibbous Moon**. About a week later, on August 8th, we see only one half of the Moon alight. At this phase, the Moon rises around midnight and sets around noon. Have you ever seen the Moon in the day-time? You may notice this phase towards the southwest in the morning sky. Hold up a ball or egg beside it and see how the Sun lights up the same part.

By August 16th, the Moon has gone through its crescent phase and is now only showing its dark side towards the Earth. Did you know the **dark side** and the **far side** of the Moon are different? The Moon always shows the same face towards Earth due to the gravitational pull of Earth, so the far side of the Moon was only viewed by humans for the first time in 1968 with the Apollo 8 mission. However, the dark side is pointed at us almost all the time. As the Moon orbits the Earth, the sunlit side changes slowly until the full dark side is facing us during a **new Moon**. When the Moon is just a small crescent, you can sometimes even see the light of an **Earthshine**

reflecting off Earth and lighting up the dark side of the Moon faintly.

Then as the Moon reappears, making a waxing (or growing) **crescent Moon**, best seen in the afternoons. By the time it reaches the first quarter on August 24th, we see the other half of the Moon lit up. At this point, the Moon passes through Earth's orbit and marks the spot where the Earth was just 3 hours prior. It takes the Earth about 3 hours to move the distance between the Moon and Earth.

The Moon on August 30th is referred to as a blue moon. **Blue moons** are not actually blue in color of course; it refers to the second full Moon in any month. Since it takes 29.5 days to complete the cycle from full to new and back to full, most months will see only one. But occasionally, you'll fit two into one month, hence the phrase "once in a blue moon." We see a blue moon about once every 3 years on average - next in May 2026. In addition, this full Moon appears larger in the sky than any other full Moon this year - an unofficial **supermoon**. A supermoon appears larger than average because it is closer in its slightly elliptical orbit. The difference in apparent size between the smallest and largest full Moon is about the size difference between a quarter and a nickel. Even at its largest, you can always cover the whole Moon with your pinky extended at arm's length.

Follow the Moon with us this month and keep a Moon journal if you like - you may be surprised what you discover! moon.nasa.gov/moon-observation

Additional Skywatching Resources

Plan your skywatching with help from our planner page, featuring daily stargazing tips courtesy EarthSky monthly sky maps, and videos from NASA/JPL. You can even find out how to spot the International Space Station! Both Astronomy and Sky and Telescope magazines offer regular stargazing guides to readers, both in print and online. Want to join a group of folks for a star party? Find clubs and astronomy events near you, and may you have clear skies!

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Image of waning crescent Moon shown next to a ball on a stick that is lit by the Sun on the same side as the Moon, with trees and a blue sky in the background. Try this with an egg or any round object when you see the Moon during the day!

Credit: Vivian White



Earthshine as seen from the International Space Station with the sun just set - Astronaut Photograph ISS028-E-20073 was taken on July 31, 2011, and is provided by the ISS Crew Earth Observations Facility and the Earth Science and Remote Sensing Unit, Johnson Space Center

Space News

News from around the Net

JWST Finds New Planet-Forming Rings Around Fomalhaut

Throughout recorded history, Fomalhaut's main claim to fame has been its rank as the sky's most isolated 1st-magnitude star. The luminary of Piscis Austrinus the Southern Fish stands alone on autumn evenings, a beacon in the southern sky amidst a smattering of less impressive suns. Then, 40 years ago, astronomers discovered excess infrared radiation pouring from the star. As scientists pointed ever-more-powerful telescopes in its direction, a picture emerged of an otherwise normal sun surrounded by a disk of warm dust. . . . (continued at <https://www.astronomy.com/science/jwst-finds-new-planet-forming-rings-around-fomalhaut/>)



The Puzzle Of The Galaxy With No Dark Matter

A team of scientists, led by the researcher at the IAC and the University of La Laguna (ULL) Sebastián Comerón, has found that the galaxy NGC 1277 does not contain dark matter. This is the first time that a massive galaxy (it has a mass several times that of the Milky Way) does not show evidence for this invisible component of the universe. "This result does not fit in with the currently accepted cosmological models, which include dark matter" explains Comerón. . . . (continued at <https://www.sciencedaily.com/releases/2023/07/230719112630.htm>)



Does This Exoplanet Have A Sibling Sharing The Same Orbit?

Using the Atacama Large Millimeter/submillimeter Array (ALMA), astronomers have found the possible 'sibling' of a planet orbiting a distant star. The team has detected a cloud of debris that might be sharing this planet's orbit and which, they believe, could be the building blocks of a new planet or the remnants of one already formed. If confirmed, this discovery would be the strongest evidence yet that two exoplanets can share one orbit. . . . (continued at <https://www.sciencedaily.com/releases/2023/07/230719112636.htm>)



A Jekyll-Hyde White Dwarf

Astronomers have found a bizarre, two-faced white dwarf: one side hydrogen, the other helium. White dwarfs are the dense embers left behind when Sun-like stars die. They shove a Sun's worth of mass into a sphere the size of Earth, giving them surface gravities some 100,000 times that of our world. As a result, the atoms in these erstwhile stellar cores separate by mass — the heavier stuff sinks, and the lighter stuff rises. . . . (continued at <https://skyandtelescope.org/astronomy-news/a-jekyll-hyde-white-dwarf/>)



Space Storms Could Cause Chaos Without Forecast Developments

The world is unprepared for the next big storm from outer space, an overwhelming majority of scientists agree. Nine in ten space weather experts said that without accurate forecasting of space weather, Earth would suffer serious damage to its infrastructure. Of the 144 scientists surveyed on the dangers of geomagnetic storms, just over half said current forecasting capabilities were not good enough to prevent space weather wreaking havoc back home. . . . (continued at <https://phys.org/news/2023-07-space-storms-chaos.html>)



Astronomers Have A New Trick To Work Out The Age Of Stars

Twinkle, twinkle little star, I wonder just how old you are. It isn't an easy question to answer. Stars are notoriously difficult to age. We know the age of the Sun because we happen to live on one of its orbiting rocks, and we know very well how old the rock is. Without that information, things become a bit more fuzzy. But that could change thanks to a new study. We do know a few broad rules about determining the age of a star. For example, generally the higher the. . . . (continued at <https://www.universetoday.com/162534/astronomers-have-a-new-trick-to-work-out-the-age-of-stars/>)



Space News

News from around the Net

Coronal Rain Has Been Seen Splashing On The Sun

Plasma rain in the sun's atmosphere makes a splash when it lands. New observations from the European Space Agency's Solar Orbiter have revealed previously unseen details of how this coronal rain falls, including bright fireball effects and sudden upward surges in plasma. "These are the highest resolution images we have ever obtained from the solar corona," says solar physicist Patrick Antolin of Northumbria University in Newcastle upon Tyne, England. He presented the results at the National Astronomy Meeting in Cardiff, Wales . . . (continued at <https://www.sciencenews.org/article/coronal-rain-sun-space>)



'Go For Stack': First parts of space shuttle Endeavour vertical display lifted into place at California Science Center For the first time in 12 years, 3 months and 21 days, the stacking of a NASA space shuttle has begun again. On Thursday (July 20), the aft skirts for two solid rocket boosters were moved into place. This time though, the preparations were not for a launch into Earth orbit and occurred far away from NASA's Vehicle Assembly Building (VAB) in Florida. Instead, a truck-mounted crane hoisted the 7.5-foot-tall by 18-foot-wide (2.3 by 5.5 meter) aft skirts, one by one, from where they had been parked outside of the California Science . . . (continued at <http://www.collectspace.com/news/news-072023a-space-shuttle-endeavour-aft-skirts-go-for-stack.html>)



Boeing Has Now Lost \$1.1 Billion On Starliner, With No Crew Flight In Sight

A difficult summer for the Starliner program continued this week, with Boeing reporting additional losses on the vehicle's development and NASA saying it's too early to discuss potential launch dates for the crewed spacecraft. Throughout this spring, NASA and Boeing had been working toward a July launch date of the spacecraft, which will carry two astronauts for the first time. However, just weeks before this launch was due to occur, Boeing announced on June 1 that there were two serious issues with Starliner. One of these involved the "soft links" in the lines that connect the Starliner capsule to its parachutes, and the second problem came with hundreds of feet of P-213 glass cloth tape inside the spacecraft found to be flammable. . . . (continued at <https://arstechnica.com/space/2023/07/boeing-has-now-lost-1-1-billion-on-starliner-with-no-crew-flight-in-sight/>)



Auroral-Like Glow Produced By SpaceX Rockets Making Holes In The Ionosphere

Last week, many Californians witnessed a red glow in the sky that could have been mistaken for an aurora. The recent burst of solar activity is bringing polar lights to lower latitudes than has happened for a long time, but nothing this large and bright has reached the outskirts of LA – instead, the sky colors came from a SpaceX rocket creating a hole in the ionosphere. In the early days of space exploration, references were made to rockets "punching holes in the sky" and letting something awful through. Whether anyone really feared this, or it was just a way . . . (continued at <https://www.iflscience.com/auroral-like-glow-produced-by-spacex-rockets-making-holes-in-the-ionosphere-69995>)



NASA's Juno Is Getting Ever Closer To Jupiter's Moon Io

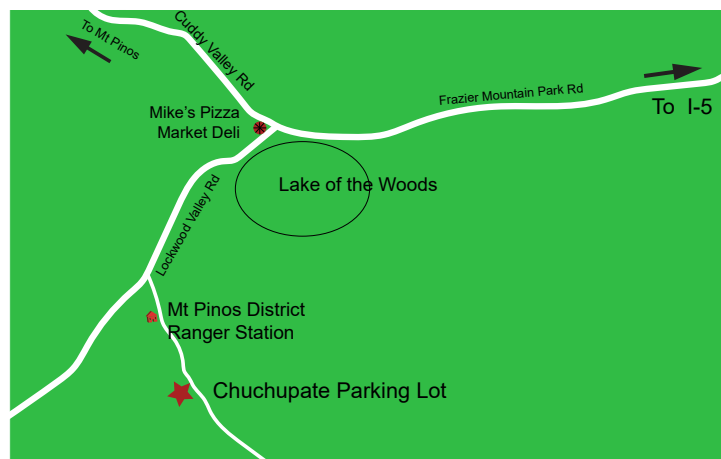
The spinning, solar-powered spacecraft will take another look of the fiery Jovian moon on July 30. When NASA's Juno mission flies by Jupiter's fiery moon Io on Sunday, July 30, the spacecraft will be making its closest approach yet, coming within 13,700 miles (22,000 kilometers) of it. Data collected by the Italian-built JIRAM (Jovian InfraRed Auroral Mapper) and other science instruments is expected to provide a wealth of information on the hundreds of erupting volcanoes pouring out molten lava and sulfurous gases all over the volcano-festooned moon. "While JIRAM was designed to look at Jupiter's polar aurora, its capability to identify heat sources is proving to be indispensable in our hunt for active volcanos on Io," . . . (Continued at <https://phys.org/news/2023-07-nasa-juno-closer-jupiter-moon.html>)



Dark Sky Observing Sites

The Chuchupate parking lot is a half a mile beyond the Mt Pinos ranger station (on some maps The Chuchupate Ranger Sta.), the parking lot is also called Frazier Mountain trailhead.

To get there, take the Frazier Mountain Park RD east about 7 miles from I-5, to Lake Of The Woods, Turn left on Lockwood Valley Rd. (If you see Mike's Pizza on your left you missed the turn) In less than a mile there is a road to the left, go past the ranger station, the parking lot is on the right. The Club gathers in the upper end of the lot. The Elevation is 5430 feet. There is a vault toilet.



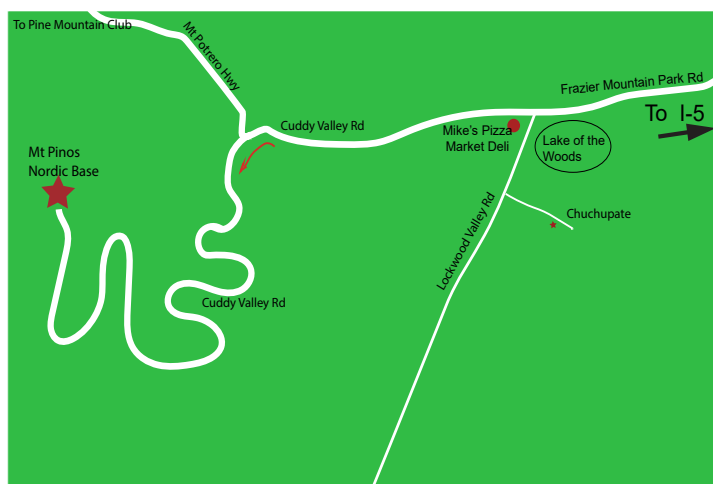
The Red Cliffs Natural Area is part of **Red Rock Canyon State Park** is a day use area and is not for use by the public after dark. The Club gets a special permit for a star party and pays a fee.

To get there: Take the CA-14 north 25 miles past Mojave. You will see giant red cliffs on the right side and a small sign that says "Red Cliffs Natural Area" and a dirt road. (If you see the large sign for the Ricardo campground, you drove a mile too far). Follow the road to the large parking lot (that hasn't been graded in a long time). Elevation is 2410 feet. There is a vault toilet.

Mt Pinos is a parking lot at 8350 feet for the "Mt Pinos Nordic Base." There is a vault toilet 300 yds to the east in the Chula Vista campground.

To get there: From I-5, get off at Frazier Mountain Park Rd and drive west about 7 miles to Mike's Pizza/Market Deli at Lockwood Valley Rd. Keep on the main roadway (don't turn left to go to Chuchupate). Continue past Mike's Pizza on Cuddy Valley Rd (the road's new name) about 5 miles. Continue straight (do not turn right on to Mil Potrero Hwy) for another 8 1/2 miles to the parking area.

Note: The entire drive from I-5 is uphill.



Solar System Summary

The **Sun** moves from the middle of Cancer to the middle of Leo.

The Planets

Mercury begins the month at the feet of Leo, rising away from the setting Sun. On the 10th it arrives at Greatest Eastern Elongation of 27°. Mercury continues moving east until the 21th when it's retrograde motion begins again.

Venus is in retrograde motion, preparing for its inferior conjunction on the 13th. After passing into the morning twilight winds up in southern Cancer 27° west of the Sun.

Mars moves east in southern Leo, staying just above the ecliptic winding up in Virgo at the end of the month just 25° east of the Sun.

Jupiter spends the month moving east into southern Aries. As Jupiter rises on the 8th the 51% waning Moon passes north by just more than 2°.

Saturn spends the month slowly moving retrograde in central Aquarius at mag 0.5. The 95% waning Moon passes 3 ½° south on the morning of the 3rd and 99% waxing Moon 2 ½° south just afternoon on 31st.

Uranus is slowly moving east in eastern Aries at mag 5.7. On the 8th the 44% waning Moon passes 2° north.

Neptune is moving in retrograde in southern Pisces at 7.8. On the 31st the full Moon passes less than 3° to the south.

Dwarf Planets

134340 Pluto spends the month on the eastern edge of Sagittarius in retrograde at mag 14.4 just south of M75. On the 26th Comet 49P/Arend-Rigaux passes 4.5 arc-minutes south at Mag 22.81.

1 Ceres spends the month in Virgo (mag 8.8), heading southeast.

2 Pallas at mag 9.0 having just moved north across the ecliptic continues east from southern Leo into Virgo at month's end.

3 Juno at mag 9.75, moves east from southern Gemini, passing thru northern Canis Minor coming to rest in Cancer at month's end at 10.0.

4 Vesta at mag 8.6, spends the month in eastern Taurus and at month's end brightens to mag 8.46.

Moon Phases



First Qtr
Aug 24

Full
Aug 1 & 30

Third Qtr
Aug 8

New
Aug 16

Sun and Moon Rise and Set*

| Date | Moonrise | Moonset | Sunrise | Sunset |
|-----------|----------|---------|---------|--------|
| 8/1/2023 | 20:28 | 05:38 | 06:03 | 19:54 |
| 8/5/2023 | 22:40 | 10:35 | 06:05 | 19:50 |
| 8/10/2023 | 00:53 | 16:02 | 06:09 | 19:45 |
| 8/15/2023 | 05:22 | 19:46 | 06:13 | 19:40 |
| 8/20/2023 | 10:06 | 21:50 | 06:17 | 19:34 |
| 8/25/2023 | 15:23 | 00:02 | 06:20 | 19:28 |
| 8/30/2023 | 19:35 | 05:44 | 06:24 | 19:21 |

Planet Data*

August 1

| | Rise | Transit | Set | Mag | Phase% |
|---------|-------|---------|-------|-------|--------|
| Mercury | 08:08 | 14:40 | 21:10 | 0.12 | 61.6 |
| Venus | 07:38 | 14:00 | 20:21 | -4.19 | 4.8 |
| Mars | 08:51 | 15:13 | 21:36 | 1.77 | 96.9 |
| Jupiter | 00:12 | 07:00 | 13:44 | -2.45 | 98.9 |
| Saturn | 21:11 | 02:45 | 08:17 | 0.57 | 99.9 |

August 15

| | Rise | Transit | Set | Mag | Phase% |
|---------|-------|---------|-------|-------|--------|
| Mercury | 08:25 | 14:34 | 20:39 | 0.58 | 40.4 |
| Venus | 06:11 | 12:33 | 18:55 | -3.98 | 1.2 |
| Mars | 08:38 | 14:51 | 21:03 | 1.77 | 97.6 |
| Jupiter | 23:21 | 06:10 | 12:54 | -2.55 | 98.9 |
| Saturn | 20:14 | 01:43 | 07:17 | 0.48 | 99.9 |

August 30

| | Rise | Transit | Set | Mag | Phase% |
|---------|-------|---------|-------|-------|--------|
| Mercury | 07:31 | 13:32 | 19:33 | 2.81 | 7.6 |
| Venus | 04:41 | 11:10 | 17:39 | -4.40 | 10.4 |
| Mars | 08:25 | 14:26 | 20:28 | 1.75 | 98.3 |
| Jupiter | 22:25 | 05:13 | 11:58 | -2.65 | 99.1 |
| Saturn | 19:12 | 00:40 | 06:13 | 0.41 | 100. |

*All time mentioned are local and approximate.

*Sun, Moon and Planetary date based on Quartz Hill, CA

Desert Sky Observer

www.avastronomyclub.org

August 2023

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Deep Sky Star Party or the Saturday nearest the New Moon, in this case August 19, 2023. The list is sorted by the transit time of the object.

| ID | Common Name | Type | Const | RA | Dec | Mag | Rise | Transit | Set |
|---------|--------------------------|--------------|-------|-------------|------------|------|-------|---------|-------|
| M99 | Virgo Cluster | Galaxy | Com | 12h 18m 50s | +14° 25.0' | 10.4 | 07:38 | 14:22 | 21:06 |
| M106 | NGC4258 | Galaxy | CVn | 12h 18m 58s | +47° 18.2' | 9.1 | 05:01 | 14:22 | 23:42 |
| M61 | Swelling Spiral | Galaxy | Vir | 12h 21m 55s | +04° 28.3' | 10.1 | 08:10 | 14:25 | 20:40 |
| M40 | Winnecke 4 | Dbl+Asterism | UMa | 12h 22m 12s | +58° 05.0' | 8.7 | Circ | 14:25 | Circ |
| M100 | Mirror of M99 | Galaxy | Com | 12h 22m 55s | +15° 49.3' | 10.1 | 07:38 | 14:26 | 21:14 |
| M84 | NGC4374 | Galaxy | Vir | 12h 25m 04s | +12° 53.2' | 10.2 | 07:49 | 14:28 | 21:07 |
| M85 | NGC4382 | Galaxy | Com | 12h 25m 24s | +18° 11.4' | 10.0 | 07:33 | 14:28 | 21:24 |
| M86 | NGC4406 | Galaxy | Vir | 12h 26m 12s | +12° 56.7' | 9.9 | 07:50 | 14:29 | 21:09 |
| M49 | NGC4472 | Galaxy | Vir | 12h 29m 47s | +08° 00.0' | 9.3 | 08:08 | 14:33 | 20:58 |
| M87 | Smoking Gun | Galaxy | Vir | 12h 30m 49s | +12° 23.4' | 9.6 | 07:56 | 14:34 | 21:12 |
| M88 | NGC4501 | Galaxy | Com | 12h 31m 59s | +14° 25.2' | 10.2 | 07:51 | 14:35 | 21:19 |
| M91 | Missing Messier Object | Galaxy | Com | 12h 35m 27s | +14° 29.7' | 10.9 | 07:54 | 14:38 | 21:22 |
| M89 | NGC4552 | Galaxy | Vir | 12h 35m 40s | +12° 33.3' | 10.9 | 08:00 | 14:39 | 21:17 |
| M90 | NGC4569 | Galaxy | Vir | 12h 36m 50s | +13° 09.7' | 10.2 | 08:00 | 14:40 | 21:20 |
| M58 | NGC4579 | Galaxy | Vir | 12h 37m 44s | +11° 49.1' | 10.4 | 08:05 | 14:41 | 21:17 |
| M68 | NGC4590 | Globular | Hya | 12h 39m 28s | -26° 44.5' | 9.0 | 10:01 | 14:42 | 19:24 |
| M104 | Sombrero Galaxy | Galaxy | Vir | 12h 39m 59s | -11° 37.3' | 9.2 | 09:13 | 14:43 | 20:13 |
| M59 | NGC4621 | Galaxy | Vir | 12h 42m 02s | +11° 38.7' | 10.7 | 08:09 | 14:45 | 21:21 |
| M60 | NGC4649 | Galaxy | Vir | 12h 43m 40s | +11° 33.1' | 9.8 | 08:11 | 14:47 | 21:22 |
| M94 | Croc's Eye Galaxy | Galaxy | CVn | 12h 50m 53s | +41° 07.1' | 8.9 | 06:21 | 14:54 | 23:27 |
| M64 | Black Eye Galaxy | Galaxy | Com | 12h 56m 44s | +21° 41.0' | 9.3 | 07:53 | 15:00 | 22:07 |
| M53 | NGC5024 | Globular | Com | 13h 12m 55s | +18° 10.1' | 8.5 | 08:20 | 15:16 | 22:11 |
| M63 | Sunflower Galaxy | Galaxy | CVn | 13h 15m 49s | +42° 01.7' | 9.3 | 06:40 | 15:19 | 23:58 |
| NGC5139 | Omega Centauri | Globular | Cen | 13h 26m 48s | -47° 29.0' | 3.6 | 12:39 | 15:30 | 18:20 |
| NGC5169 | | Galaxy | CVn | 13h 28m 10s | +46° 40.3' | 14.0 | 06:16 | 15:31 | 00:46 |
| NGC5204 | | Galaxy | UMa | 13h 29m 36s | +58° 25.1' | 11.3 | Circ | 15:33 | Circ |
| M51 | Whirlpool Galaxy, | Galaxy | CVn | 13h 29m 52s | +47° 11.7' | 8.9 | 06:13 | 15:33 | 00:52 |
| Arp85 | M51B | Galaxy | CVn | 13h 29m 58s | +47° 16.0' | 9.6 | 06:13 | 15:33 | 00:53 |
| NGC5182 | | Galaxy | Hya | 13h 30m 41s | -28° 09.0' | 13.0 | 10:57 | 15:34 | 20:10 |
| NGC5214 | | Galaxy | CVn | 13h 32m 49s | +41° 52.3' | 14.0 | 06:58 | 15:36 | 00:14 |
| M83 | Southern Pinwheel Galaxy | Galaxy | Hya | 13h 37m 00s | -29° 51.8' | 8.0 | 11:10 | 15:40 | 20:10 |
| HR5144 | SAO82942 | Triple | Boo | 13h 40m 40s | +19° 57.3' | 5.8 | 08:42 | 15:44 | 22:45 |
| NGC5283 | | Galaxy | Dra | 13h 41m 06s | +67° 40.3' | 14.0 | Circ | 15:44 | Circ |
| M3 | NGC5272 | Globular | CVn | 13h 42m 11s | +28° 22.5' | 7.0 | 08:14 | 15:45 | 23:16 |
| NGC5286 | C84 | Globular | Cen | 13h 46m 24s | -51° 22.0' | 7.6 | 13:40 | 15:49 | 17:58 |
| NGC5292 | | Galaxy | Cen | 13h 47m 40s | -30° 56.4' | 14.0 | 11:25 | 15:51 | 20:16 |

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| ID | Common Name | Type | Const | RA | Dec | Mag | Rise | Transit | Set |
|------------|--------------------------|----------|-------|-------------|------------|------|-------|---------|-------|
| NGC5356 | | Galaxy | Vir | 13h 54m 59s | +05° 20.0' | 14.0 | 09:40 | 15:58 | 22:15 |
| NGC5363 | | Galaxy | Vir | 13h 56m 07s | +05° 15.2' | 10.2 | 09:42 | 15:59 | 22:16 |
| NGC5447 | III-787 | Neb | UMa | 14h 02m 29s | +54° 16.3' | | 04:49 | 16:05 | 03:22 |
| M101 | Pinwheel Galaxy | Galaxy | UMa | 14h 03m 13s | +54° 20.9' | 8.2 | 04:46 | 16:06 | 03:26 |
| NGC5461 | III-788 | Neb | UMa | 14h 03m 42s | +54° 19.0' | | 04:48 | 16:07 | 03:25 |
| NGC5485 | | Galaxy | UMa | 14h 07m 11s | +55° 00.0' | 11.5 | Circ | 16:10 | Circ |
| NGC5460 | | Open | Cen | 14h 07m 27s | -48° 20.6' | 5.6 | 13:28 | 16:10 | 18:53 |
| NGC5500 | | Galaxy | Boo | 14h 10m 15s | +48° 32.7' | 14.0 | 06:40 | 16:13 | 01:46 |
| IC991 | | Galaxy | Vir | 14h 17m 48s | -13° 52.3' | 13.0 | 10:57 | 16:21 | 21:44 |
| HR5362 | SAO224838 | Dbl | Lup | 14h 20m 10s | -43° 03.5' | 5.6 | 12:59 | 16:23 | 19:47 |
| IC4406 | Retina Nebula | P Neb | Lup | 14h 22m 26s | -44° 09.0' | 11.0 | 13:09 | 16:25 | 19:42 |
| HR5409 | HD126868 | Triple | Vir | 14h 28m 12s | -02° 13.6' | 4.8 | 10:35 | 16:31 | 22:28 |
| NGC5669 | | Galaxy | Boo | 14h 32m 44s | +09° 53.4' | 12.0 | 10:05 | 16:36 | 23:06 |
| NGC5689 | | Galaxy | Boo | 14h 35m 30s | +48° 44.5' | 11.9 | 07:03 | 16:38 | 02:13 |
| M102 | Spindle Galaxy | Galaxy | Dra | 15h 06m 30s | +55° 45.7' | 10.8 | Circ | 17:09 | Circ |
| NGC5875 | | Galaxy | Boo | 15h 09m 13s | +52° 31.6' | 13.0 | 06:43 | 17:12 | 03:41 |
| NGC5907 | Splinter Galaxy | Galaxy | Dra | 15h 15m 54s | +56° 19.7' | 11.4 | Circ | 17:19 | Circ |
| NGC5882 | | P Neb | Lup | 15h 16m 50s | -45° 38.9' | 11.0 | 14:14 | 17:20 | 20:25 |
| NGC5897 | | Globular | Lib | 15h 17m 24s | -21° 00.6' | 8.6 | 12:19 | 17:20 | 22:22 |
| M5 | NGC5904 | Globular | Ser | 15h 18m 33s | +02° 04.9' | 7.0 | 11:13 | 17:21 | 23:30 |
| Barnard228 | B228 | DkNeb | Lup | 15h 44m 00s | -34° 30.0' | | 13:37 | 17:47 | 21:57 |
| IC4593 | White Eyed Pea | P Neb | Her | 16h 11m 44s | +12° 04.3' | 11.0 | 11:38 | 18:15 | 00:52 |
| IC4592 | Jabbah | Neb | Sco | 16h 11m 59s | -19° 27.4' | | 13:08 | 18:15 | 23:21 |
| M80 | NGC6093 | Globular | Sco | 16h 17m 03s | -22° 58.5' | 8.5 | 13:25 | 18:20 | 23:15 |
| IC4601 | | Neb | Sco | 16h 20m 18s | -20° 04.9' | | 13:19 | 18:23 | 23:28 |
| Abell38 | | P Neb | Sco | 16h 23m 17s | -31° 44.9' | 11.7 | 14:04 | 18:26 | 22:48 |
| M4 | Cat's Eye | Globular | Sco | 16h 23m 35s | -26° 31.5' | 7.5 | 13:44 | 18:26 | 23:09 |
| IC4603 | Rho Ophiuchi Complex [1] | Neb | Oph | 16h 25m 24s | -24° 28.0' | | 13:38 | 18:28 | 23:18 |
| IC4604 | Rho Ophiuchi Complex [2] | Neb | Oph | 16h 25m 33s | -23° 26.5' | | 13:35 | 18:28 | 23:22 |
| NGC6124 | C75 | Open | Sco | 16h 25m 36s | -40° 40.0' | 5.8 | 14:50 | 18:29 | 22:07 |
| Abell39 | | P Neb | Her | 16h 27m 33s | +27° 54.5' | 12.9 | 11:01 | 18:30 | 02:00 |
| IC4605 | | Neb | Sco | 16h 30m 12s | -25° 06.8' | | 13:46 | 18:33 | 23:21 |
| NGC6153 | | P Neb | Sco | 16h 31m 31s | -40° 15.2' | 12.0 | 14:53 | 18:34 | 22:15 |
| NGC6181 | | Galaxy | Her | 16h 32m 21s | +19° 49.5' | 11.9 | 11:34 | 18:35 | 01:36 |
| NGC6171 | | Globular | Oph | 16h 32m 32s | -13° 03.1' | 8.1 | 13:09 | 18:35 | 00:01 |
| NGC6178 | | Open | Sco | 16h 35m 47s | -45° 38.6' | 7.2 | 15:33 | 18:39 | 21:44 |
| NGC6193 | C82 | Open | Ara | 16h 41m 18s | -48° 46.0' | 5.2 | 16:06 | 18:44 | 21:23 |

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| ID | Common Name | Type | Const | RA | Dec | Mag | Rise | Transit | Set |
|------------|--|----------|-------|-------------|------------|------|-------|---------|-------|
| M13 | Hercules Globular Cluster, Great Hercules Cluster | Globular | Her | 16h 41m 41s | +36° 27.5' | 7.0 | 10:38 | 18:45 | 02:52 |
| NGC6210 | Turtle Planetary Nebula | P Neb | Her | 16h 44m 30s | +23° 48.0' | 9.0 | 11:33 | 18:47 | 02:02 |
| Barnard44a | B44a | DkNeb | Sco | 16h 44m 45s | -40° 20.0' | | 15:07 | 18:48 | 22:28 |
| NGC6204 | | Open | Ara | 16h 46m 09s | -47° 01.0' | 8.2 | 15:55 | 18:49 | 21:43 |
| M12 | Gumball Globular | Globular | Oph | 16h 47m 14s | -01° 56.8' | 8.0 | 12:53 | 18:50 | 00:48 |
| NGC6231 | C76, Table of Scorpius | Open | Sco | 16h 54m 00s | -41° 48.0' | 2.6 | 15:25 | 18:57 | 22:29 |
| IC4628 | Prawn Nebula | Neb | Sco | 16h 56m 58s | -40° 27.3' | | 15:20 | 19:00 | 22:40 |
| NGC6254 | | Globular | Oph | 16h 57m 09s | -04° 05.9' | 6.6 | 13:09 | 19:00 | 00:51 |
| Barnard47 | B47 | DkNeb | Oph | 16h 59m 42s | -22° 38.0' | | 14:07 | 19:03 | 23:59 |
| M62 | Flickering Globular | Globular | Oph | 17h 01m 13s | -30° 06.7' | 8.0 | 14:35 | 19:04 | 23:33 |
| M19 | NGC6273 | Globular | Oph | 17h 02m 38s | -26° 16.0' | 8.5 | 14:22 | 19:06 | 23:49 |
| Barnard51 | B51 | DkNeb | Oph | 17h 04m 44s | -22° 15.0' | | 14:10 | 19:08 | 00:05 |
| IC4637 | | P Neb | Sco | 17h 05m 10s | -40° 53.1' | 14.0 | 15:31 | 19:08 | 22:45 |
| Barnard56 | B56 | DkNeb | Sco | 17h 08m 48s | -32° 05.0' | | 14:51 | 19:12 | 23:33 |
| Barnard59 | Pipe Nebula | DkNeb | Oph | 17h 11m 23s | -27° 29.0' | | 14:35 | 19:14 | 23:53 |
| NGC6302 | Bug Nebula | P Neb | Sco | 17h 13m 42s | -37° 06.0' | 9.6 | 15:19 | 19:17 | 23:14 |
| Barnard251 | B251 | DkNeb | Oph | 17h 13m 48s | -20° 09.0' | | 14:12 | 19:17 | 00:21 |
| Barnard63 | B63 | DkNeb | Oph | 17h 16m 00s | -21° 28.0' | | 14:19 | 19:19 | 00:19 |
| M92 | NGC6341 | Globular | Her | 17h 17m 07s | +43° 08.1' | 7.5 | 10:33 | 19:20 | 04:07 |
| M9 | NGC6333 | Globular | Oph | 17h 19m 12s | -18° 31.0' | 9.0 | 14:13 | 19:22 | 00:32 |
| NGC6326 | | P Neb | Ara | 17h 20m 46s | -51° 45.2' | 12.0 | 17:20 | 19:24 | 21:27 |
| Barnard256 | B256 | DkNeb | Oph | 17h 22m 12s | -28° 49.0' | | 14:51 | 19:25 | 23:59 |
| Barnard67a | B67a | DkNeb | Oph | 17h 22m 30s | -21° 53.0' | | 14:27 | 19:25 | 00:24 |
| Barnard71 | B71 | DkNeb | Oph | 17h 23m 02s | -24° 00.0' | | 14:35 | 19:26 | 00:17 |
| NGC6357 | Lobster Nebula | Neb | Sco | 17h 24m 43s | -34° 12.1' | | 15:16 | 19:28 | 23:39 |
| IC4651 | | Open | Ara | 17h 24m 52s | -49° 56.5' | 6.9 | 17:02 | 19:28 | 21:54 |
| Abell41 | | P Neb | Ser | 17h 29m 04s | -15° 13.3' | 13.9 | 14:12 | 19:32 | 00:51 |
| Abell42 | | P Neb | Oph | 17h 31m 31s | -08° 19.1' | 14.6 | 13:55 | 19:34 | 01:14 |
| Barnard78 | B78 | DkNeb | Oph | 17h 32m 00s | -25° 35.0' | | 14:49 | 19:35 | 00:21 |
| NGC6388 | | Globular | Sco | 17h 36m 17s | -44° 44.1' | 6.9 | 16:27 | 19:39 | 22:51 |
| M14 | NGC6402 | Globular | Oph | 17h 37m 36s | -03° 14.7' | 9.5 | 13:47 | 19:41 | 01:34 |
| Barnard276 | B276 | DkNeb | Oph | 17h 39m 39s | -19° 49.0' | | 14:37 | 19:43 | 00:48 |
| M6 | Butterfly Cluster | Open | Sco | 17h 40m 20s | -32° 15.2' | 4.5 | 15:23 | 19:43 | 00:03 |
| NGC6397 | C86 | Globular | Ara | 17h 40m 42s | -53° 40.0' | 5.6 | 18:11 | 19:44 | 21:16 |
| NGC6426 | | Globular | Oph | 17h 44m 55s | +03° 10.1' | 11.2 | 13:36 | 19:48 | 01:59 |
| Barnard83a | B83a | DkNeb | Sgr | 17h 45m 18s | -20° 00.0' | | 14:43 | 19:48 | 00:53 |
| IC4665 | | Open | Oph | 17h 46m 30s | +05° 39.0' | 4.2 | 13:31 | 19:49 | 02:08 |
| NGC6445 | Crescent Nebula | P Neb | Sgr | 17h 49m 15s | -20° 00.6' | 13.0 | 14:47 | 19:52 | 00:57 |

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| ID | Common Name | Type | Const | RA | Dec | Mag | Rise | Transit | Set |
|------------|-----------------|------------|-------|-------------|------------|------|-------|---------|-------|
| NGC6503 | | Galaxy | Dra | 17h 49m 27s | +70° 08.6' | 10.2 | Circ | 19:52 | Circ |
| NGC6441 | | Globular | Sco | 17h 50m 13s | -37° 03.0' | 7.4 | 15:55 | 19:53 | 23:51 |
| Barnard283 | B283 | DkNeb | Sco | 17h 51m 00s | -33° 52.0' | | 15:41 | 19:54 | 00:07 |
| Barnard285 | B285 | DkNeb | Ser | 17h 51m 32s | -12° 52.0' | | 14:28 | 19:54 | 01:21 |
| M7 | Scorpion's Tail | Open | Sco | 17h 53m 51s | -34° 47.6' | 3.5 | 15:48 | 19:57 | 00:06 |
| IC4670 | | Neb | Sgr | 17h 55m 07s | -21° 44.6' | | 14:59 | 19:58 | 00:57 |
| NGC6501 | | Galaxy | Her | 17h 56m 04s | +18° 22.3' | 12.3 | 13:03 | 19:59 | 02:55 |
| M23 | NGC6494 | Open | Sgr | 17h 57m 04s | -18° 59.1' | 6.0 | 14:52 | 20:00 | 01:08 |
| NGC6543 | Cat Eye Nebula | P Neb | Dra | 17h 58m 36s | +66° 38.0' | 8.1 | Circ | 20:02 | Circ |
| NGC6496 | | Globular | Sco | 17h 59m 04s | -44° 16.0' | 9.2 | 16:46 | 20:02 | 23:18 |
| Barnard291 | B291 | DkNeb | Sgr | 17h 59m 43s | -33° 53.0' | | 15:50 | 20:03 | 00:16 |
| Barnard292 | B292 | DkNeb | Sgr | 18h 00m 34s | -33° 20.0' | | 15:48 | 20:03 | 00:19 |
| Barnard293 | B293 | DkNeb | Sgr | 18h 01m 12s | -35° 20.0' | | 15:58 | 20:04 | 00:11 |
| M20 | Trifid Nebula | Open+D Neb | Sgr | 18h 02m 42s | -22° 58.2' | 5.0 | 15:11 | 20:06 | 01:01 |
| M8 | Lagoon Nebula | Open+D Neb | Sgr | 18h 03m 41s | -24° 22.7' | 5.0 | 15:16 | 20:07 | 00:57 |
| M21 | NGC6531 | Open | Sgr | 18h 04m 13s | -22° 29.3' | 7.0 | 15:11 | 20:07 | 01:04 |
| NGC6530 | | Open | Sgr | 18h 04m 31s | -24° 21.5' | 4.6 | 15:17 | 20:07 | 00:58 |
| NGC6528 | | Globular | Sgr | 18h 04m 50s | -30° 03.3' | 9.5 | 15:39 | 20:08 | 00:37 |
| IC4684 | | Neb | Sgr | 18h 09m 08s | -23° 26.1' | | 15:19 | 20:12 | 01:05 |
| IC4685 | | Neb | Sgr | 18h 09m 18s | -23° 59.2' | | 15:21 | 20:12 | 01:04 |
| Barnard303 | B303 | DkNeb | Sgr | 18h 09m 28s | -23° 59.0' | | 15:21 | 20:12 | 01:04 |
| IC1274 | | Neb | Sgr | 18h 09m 51s | -23° 38.8' | | 15:20 | 20:13 | 01:05 |
| IC1275 | | Neb | Sgr | 18h 10m 07s | -23° 45.7' | | 15:21 | 20:13 | 01:05 |
| NGC6572 | | P Neb | Oph | 18h 12m 06s | +06° 51.2' | 9.0 | 13:53 | 20:15 | 02:37 |
| NGC6567 | | P Neb | Sgr | 18h 13m 45s | -19° 04.5' | 12.0 | 15:09 | 20:17 | 01:24 |
| IC4701 | | Neb | Sgr | 18h 16m 36s | -16° 38.0' | | 15:04 | 20:20 | 01:35 |
| Barnard93 | B93 | DkNeb | Sgr | 18h 16m 53s | -18° 03.0' | | 15:09 | 20:20 | 01:31 |
| IC1284 | | Neb | Sgr | 18h 17m 39s | -19° 40.3' | | 15:15 | 20:21 | 01:26 |

And - Andromeda
Ant - Antlia
Aps - Apus
Aql - Aquila
Aqr - Aquarius
Ara - Ara
Ari - Aries
Aur - Auriga
Boo - Bootes
Cae - Caelum
Cam - Camelopardis
Cap - Capricornus
Car - Carina
Cas - Cassiopeia
Cen - Centaurus

Cep - Cepheus
Cet - Cetus
Cha - Chamaeleon
Cir - Circinus
CMA - Canis Major
CMi - Canis Minor
Cnc - Cancer
Col - Columba
Com - Coma Berenices
CrA - Corona Australis
CrB - Corona Borealis
Crt - Crater
Cru - Crux
Crv - Corvus
CVn - Canes Venatici

Cyg - Cygnus
Del - Delphinus
Dor - Dorado
Dra - Draco
Equ - Equuleus
Eri - Eridanus
For - Fornax
Gem - Gemini
Gru - Grus
Her - Hercules
Hor - Horologium
Hya - Hydra
Hyi - Hydrus
Ind - Indus
Lac - Lacerta

Leo - Leo
Lep - Lepus
Lib - Libra
LMi - Leo Minor
Lup - Lupus
Lyn - Lynx
Lyr - Lyra
Men - Mensa
Mic - Microscopium
Mon - Monoceros
Mus - Musca
Nor - Norma
Oct - Octans
Oph - Ophiuchus
Ori - Orion

Pav - Pavo
Peg - Pegasus
Per - Perseus
Phe - Phoenix
Pic - Pictor
PsA - Pisces Austrinus
Psc - Pisces
Pup - Puppis
Pyx - Pyxis
Ret - Reticulum
Scl - Sculptor
Sco - Scorpius
Sct - Scutum
Ser - Serpens
Sex - Sextans

Sge - Sagitta
Sgr - Sagittarius
Tau - Taurus
Tel - Telescopium
TrA - Triangulum
Australis
Tri - Triangulum
Tuc - Tucana
UMa - Ursa Major
UMi - Ursa Minor
Vel - Vela
Vir - Virgo
Vol - Volans
Vul - Vulpecula

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