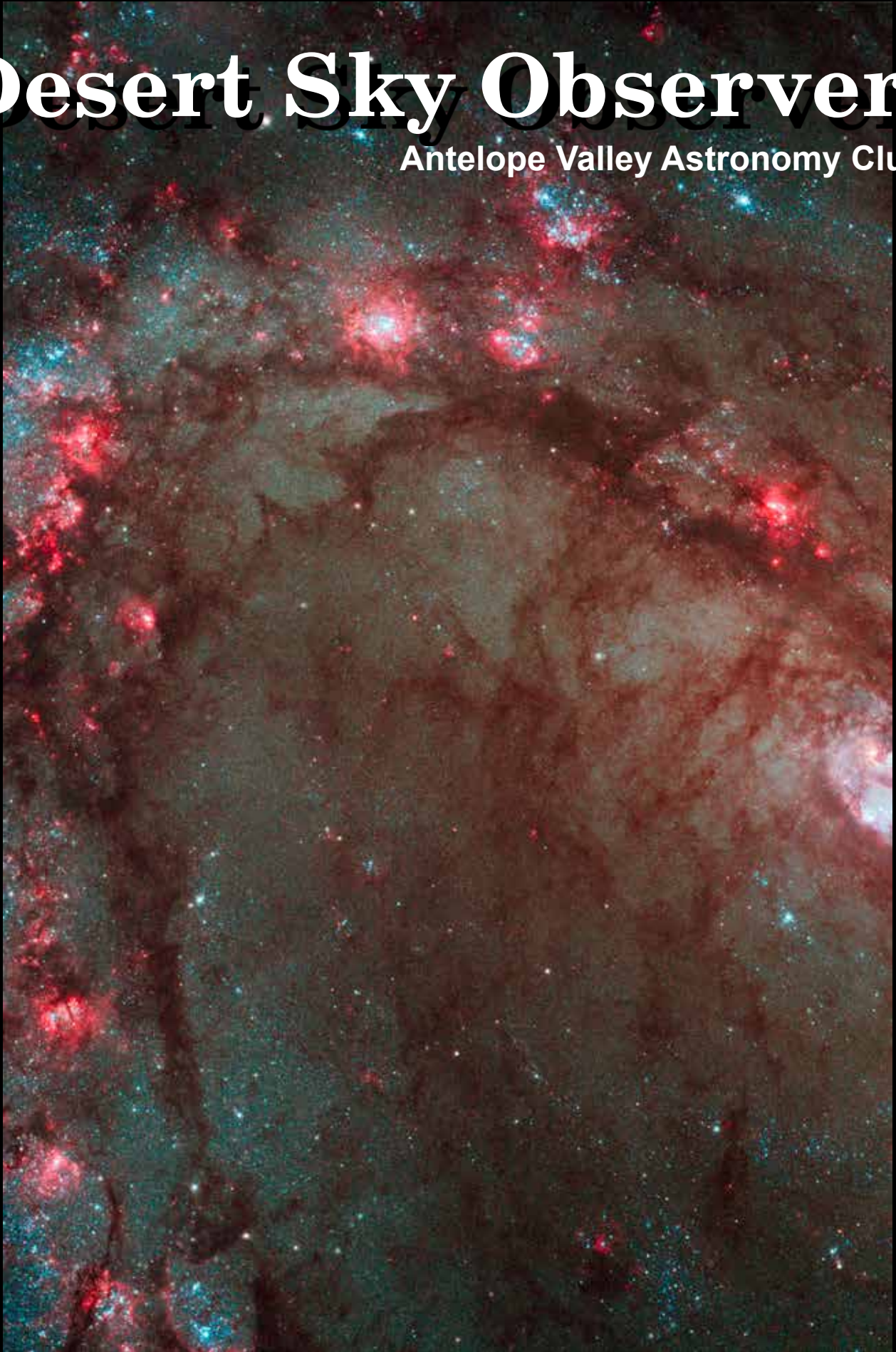


Volume 45.7

July 2025

# Desert Sky Observer

Antelope Valley Astronomy Club



# Desert Sky Observer

www.avastronomyclub.org

July 2025

## Upcoming Events

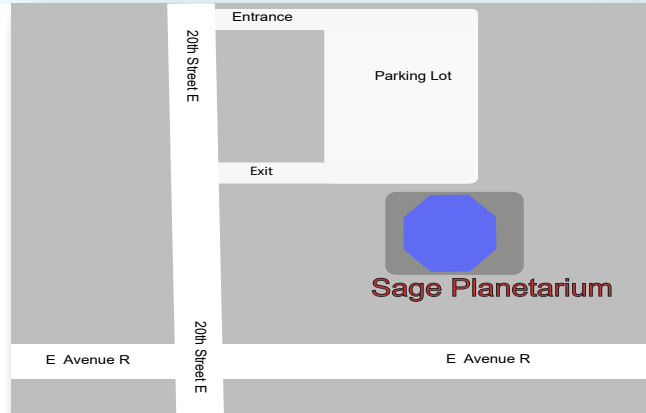
July 11: Club Meeting  
July 12: Moonwalk @ PDW 8:30 pm  
July 26: DSSP @ Mt Pinos

Every clear night: Personal Star Party

August 2: Lunar Club @ PDW  
August 8: Club Meeting  
August 16: Moonwalk @ PDW @ 8:00 pm  
August 23: DSSP @ Mt Pinos



AVAC Calendar



## Board Members

**President:** Phil Wriedt (661) 917-4874  
[president@avastronomyclub.org](mailto:president@avastronomyclub.org)

**Vice-President:** Matt Leone (661) 713-1894  
[vice-president@avastronomyclub.org](mailto:vice-president@avastronomyclub.org)

**Secretary:** Rose Moore (661) 972-1953  
[secretary@avastronomyclub.org](mailto:secretary@avastronomyclub.org)

**Treasurer:** Rod Girard (661) 803-7838  
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**Director of Community Development:**  
Christian Amaya (661) 972-0091  
[community@avastronomyclub.org](mailto:community@avastronomyclub.org)

## Appointed Positions

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

**Equipment & Library:**  
vacant  
[library@avastronomyclub.org](mailto:library@avastronomyclub.org)

**Club Historian:** vacant  
[history@avastronomyclub.org](mailto:history@avastronomyclub.org)

**Webmaster:** Steve Trotta (661) 269-5428  
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**Night Sky Coordinator:**  
Rose Moore (661) 972-1953

**Astronomical League Coordinator:**  
Phil Wriedt (661) 917-4874  
[al@avastronomyclub.org](mailto:al@avastronomyclub.org)



## 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 20<sup>th</sup> 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 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/](http://www.avastronomyclub.org/)  
[www.instagram.com/av\\_astronomyclub](https://www.instagram.com/av_astronomyclub)

[www.avastronomyclub.org](http://www.avastronomyclub.org)

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

## President's Message

By Phil Wriedt

Hi there,

Last weekend, June 28/29th, we had a Dark Sky Star Party at Chuchupate. After a year-and-a-half I finally made it. It was so good to get out under the dark sky again. I was the last to arrive, at least 1½ hours late getting there. Setting up in the dark I must have kicked the tripod 4 or 5 times. Get there early, set up in daylight. Our next Dark Sky Star Party will be on the 26th of July at Mt Pinos; the Sun sets at 8:02pm, the 2½ day old Moon will set at 9:32pm. Like with Moonwalks, the weather will rule what happens, with some luck, it will be cloudless, windless and without smoke. I know it's July, but nights still get cold at 8300 feet so don't forget warm clothes, food, water and toilet paper.

Our next Moonwalk is on July 12th. Sunset is at 8:07pm and astronomical dusk is late at 9:50 pm. The only planet visible will be Mars, up till 10:55pm. The 94% Moon will rise at 9:49 pm. Get there early so you can setup in daylight. If you have a telescope bring it, or if not, just come join the party at Prime Desert Woodland. The more members there, the better it will be. We had 51 visitors on the Walk last month. Don't forget warm clothes, jackets, gloves, etc., well, maybe not in July, but be prepared. There is still a non-zero chance that a cold front could come through. Hopefully it will be a cloudless night.

At our next Club Meeting on the 11th, we have a speaker! Naveen Vetcha, from the Huntsville Marshall Space Flight Center will make a presentation via Zoom about the James West Space Telescope. In August, we have another Zoom speaker who's going to talk on astrophotography, using your cell phone.

If anybody knows or has an idea where we can get a speaker, please contact Rose or Matt.

On August 2nd the Lunar Club will meet again. There will be a 9½ day Moon. It will probably be at Prime Desert Woodland again.

Keep Looking Up, Phil

## On The Cover

Note: North is 8.4° left of vertical RA: 13h 37' 4.55" DEC: -29° 51' 39.87" Dist: 15 Mly (Hydra)

*The spectacular new camera installed on the NASA/ESA Hubble Space Telescope during Servicing Mission 4 in May has delivered the most detailed view of star birth in the graceful, curving arms of the nearby spiral galaxy M83.*

*Nicknamed the Southern Pinwheel, M83 is undergoing more rapid star formation than our own Milky Way galaxy, especially in its nucleus. The sharp "eye" of the Wide Field Camera 3 (WFC3) has captured hundreds of young star clusters, ancient swarms of globular star clusters, and hundreds of thousands of individual stars, mostly blue supergiants and red supergiants.*

*The image, taken in August 2009, provides a close-up view of the myriad stars near the galaxy's core, the bright whitish region at far right.*

*WFC3's broad wavelength range, from ultraviolet to near-infrared, reveals stars at different stages of evolution, allowing astronomers to dissect the galaxy's star-formation history.*

*The image reveals in unprecedented detail the current rapid rate of star birth in this famous "grand design" spiral galaxy. The newest generations of stars are forming largely in clusters on the edges of the dark dust lanes, the backbone of the spiral arms. These fledgling stars, only a few million years old, are bursting out of their dusty cocoons and producing bubbles of reddish glowing hydrogen gas.*

[continued on page 4](#)

## From the Secretary

By Rose Moore

Members:

We have our club meeting on Friday July 11th at 7pm at the SAGE Planetarium. Our speaker will be via Zoom: Naveen Vetcha, from the Huntsville Marshall Space Flight Center. He'll be giving a presentation on the James Webb Telescope. Naveen worked on the JWT's sunshield, as well as other space flight programs. He is also an amateur astronomer with the Huntsville Astronomical Society. Please come on out and support your club and enjoy this presentation!

There will be a Prime Desert Moon Walk starting at 8:30pm on Saturday July 12th. We need members with telescopes to support this event. Set up time is 30-60 mins prior to the event. If you don't have a telescope, come out to take the astronomy walk and talk with Jeremy! Free and open to the public. Weather permitting.

On Saturday July 26 we have our club dark sky star party at Mt. Pinos. You may arrive, and leave, at any time on the weekend. Most members arrive on Saturday afternoon. Weather permitting, please check the weather before leaving for the star party. An email will come out a few days before the event. \*If coming for only part of a night to observe, and you plan on leaving during the night, please park your car on the perimeter with your headlights facing the road out. When you leave use your parking lights, and after exiting the parking lot, turn on your headlights. Do not point your lights into the parking lot where people are observing and/or doing photography. \*Bring your own food/snacks and enough to drink. Dress appropriately. Be aware of the altitude - 8300 ft at the parking lot. \*Remember there are no bathroom facilities at the parking lot. The nearest restrooms (pit toilets) are a ¼ mile walk in the Chula Vista Campground. Cell phone reception can be absent or sketchy.

Coming up in August will be a Lunar Observing session, a club meeting with a Zoom presentation on basic astrophotography including using your smart phone, a Prime Desert Moon Walk, and another club dark sky star party at Mt. Pinos!

If any members have a club telescope out, please return it to the SAGE Planetarium. They are only supposed to be out for one month at a time. You can return it on the meeting night or make arrangements with Jeremy.

Clear skies, Rose

## On The Cover ... continued

*The excavated regions give a colourful "Swiss cheese" appearance to the spiral arm. Gradually, the young stars' fierce winds (streams of charged particles) blow away the gas, revealing bright blue star clusters. These stars are about 1 million to 10 million years old. The older populations of stars are not as blue.*

*A bar of stars, gas, and dust slicing across the core of the galaxy may be instigating most of the star birth in the galaxy's core. The bar funnels material to the galaxy's centre, where the most active star formation is taking place. The brightest star clusters reside along an arc near the core.*

*The remains of about 60 supernova blasts, the deaths of massive stars, can be seen in the image, five times more than known previously in this region. WFC3 identified the remnants of exploded stars. By studying these remnants, astronomers can better understand the nature of the progenitor stars, which are responsible for the creation and dispersal of most of the galaxy's heavy elements.*

*M83, located in the Southern Hemisphere, is often compared to M51, dubbed the Whirlpool galaxy, in the Northern Hemisphere. Located 15 million light-years away in the constellation Hydra, M83 is two times closer to Earth than M51.*

*Credit: NASA, ESA and the Hubble Heritage Team (STScI/AURA)*

## Space News

News from around the Net

### Vera C. Rubin Observatory Releases Long-Awaited First Photos

At the summit of Cerro Pachón, the Chilean mountain home to the newly constructed Vera C. Rubin Observatory, fatigued yet focused scientists gather in the observatory's control room. They're monitoring the telescope's systems while waiting to troubleshoot a problem that has been plaguing them: The telescope's camera is overheating, just weeks before the observatory is set to release its first images to the public. Those images, now unveiled during a June 23rd "first look" event, are just the beginning. . . . (continued at <https://skyandtelescope.org/astronomy-news/vera-c-rubin-observatory-releases-long-awaited-first-photos/> )



### Largest Oort Cloud Comet Ever Observed Reveals Its Secrets Under ALMA's Powerful Gaze

A team of astronomers has made a groundbreaking discovery by detecting molecular activity in comet C/2014 UN271 (Bernardinelli-Bernstein)—the largest and second most distantly active comet ever observed from the Oort Cloud. Using the powerful Atacama Large Millimeter/submillimeter Array (ALMA) in Chile, researchers observed this giant comet while it was more than halfway to Neptune, at an astonishing distance of 16.6 times the distance between the sun and Earth. C/2014 UN271 is a true behemoth, measuring nearly 85 miles (140 km) across—more than 10 times the size of most known comets. . . . (continued at <https://phys.org/news/2025-06-largest-oort-cloud-comet-reveals.html> )



### "Shattering" NSF Budget Proposal Threatens Gravitational Wave Science

One of two Nobel Prize-winning LIGO sites is on the budgetary chopping block. In 2015, two giant, spindly-armed detectors called the Laser Interferometer Gravitational-Wave Observatory (LIGO) enabled astronomers to detect ripples in spacetime for the first time, confirming Einstein's theory of gravity and taking home the ultimate honor: a Nobel Prize. Now, just one decade later, the Trump administration has proposed shuttering one detector in its National Science Foundation (NSF) budget request, stunning a scientific community whose field has only continued to grow. . . . (continued at [https://skyandtelescope.org/astronomy-news/shattering-nsf-budget-proposal-threatens-gravitational-wave-science/#google\\_vignette](https://skyandtelescope.org/astronomy-news/shattering-nsf-budget-proposal-threatens-gravitational-wave-science/#google_vignette) )



### NASA's Roman To Peer Into Cosmic 'Lenses' To Better Define Dark Matter

Dark matter affects how stars move within galaxies, how galaxies build up over time, and how everything in the universe is held together—but no existing tool has directly detected it. While dark matter does not reflect, absorb, or emit light, it can still be indirectly observed by telescopes. To better characterize dark matter, astronomers look for its influence on the light they can observe. Dark matter possesses mass, therefore it can distort light traveling through the cosmos in a process known as gravitational lensing. The Nancy Grace Roman Space Telescope, set to survey the sky following its launch, . . . (continued at <https://phys.org/news/2025-06-nasa-roman-peer-cosmic-lenses.html> )



### Mystery Object In The Milky Way

Every 44 minutes and 12 seconds, there's a flash of radio waves coming from deep in the plane of the Milky Way. The radio source is some 15,000 light-years away in the southern constellation Scutum — about two-thirds of the way between us and our galaxy's central supermassive black hole. But we still don't know what it is. . . . (continued at <https://skyandtelescope.org/astronomy-news/mystery-object-in-the-milky-way/> )



### Mysterious Fast Radio Burst Turns Out To Be From Long-Dead NASA Satellite

A team of astronomers and astrophysicists affiliated with several institutions in Australia has found that a mysterious fast radio burst (FRB) detected last year originated not from a distant source, but from one circling the planet—a long-dead satellite. . . . On June 13, 2024, a team working at the Australian Square Kilometer Array Pathfinder heard something unexpected—a potential FRB that lasted less than 30 nanoseconds. . . . (continued at <https://phys.org/news/2025-06-mysterious-fast-radio-dead-nasa.htm> )



News from around the Net

### **A Mission To Collect A Sample From Apophis**

The coming of asteroid (99942) Apophis in April 2029 has sparked plenty of discussion both inside and outside the astronomical community. Despite original fears that it would pose a threat, Apophis will safely pass around 32,000 km away from Earth - though admittedly that is still closer than some geostationary communications satellites. That close approach offers a unique opportunity for those interested in asteroid science to take an up-close look at one of these relics of the early solar system, and various groups are planning to do just that . . . (continued at <https://www.universetoday.com/articles/a-mission-to-collect-a-sample-from-apophis> )



### **Mojave Lichen Defies Death Rays—Could Life Thrive On Distant Exoplanets?**

The question of whether Earth is alone in harboring life has captivated humanity for millennia. In recent years, scientists have turned to Earth-like planets in other solar systems that may show the most promise, but many revolve around stars that emit much stronger solar radiation than our own. Now, a new study offers evidence that life as we know it may be able to thrive on those Earth-like exoplanets. Published June 12th in *Astrobiology*, the new research demonstrated that lichen found in the Mojave Desert survived for 3 months under levels of solar radiation previously considered lethal. The common lichen, *Clavascidium lacinulatum*, was injured, but able to recover and replicate. . . . (continued at <https://www.sciencedaily.com/releases/2025/06/250624224813.htm> )



### **These Five Famous Stars In The Sky Host Exoplanets — Observe Them Tonight**

Just a few decades ago, when we glanced skyward, we didn't know for certain whether any star visible to the naked eye hosts planets like our own. Now, NASA scientists estimate that, on average, there may be at least one planet for every star in the Milky Way. That's billions of extrasolar planets in our island universe alone — not to mention the billions of stars in the trillions of other galaxies in the cosmos. Of the more than 5,000 exoplanets that have been confirmed so far and many more thousands of candidates, most orbit stars the mass of the Sun or lower. The spring night sky, however, offers us several examples of bright stars larger than the Sun . . . (continued at <https://www.astronomy.com/observing/look-out-for-five-exoplanet-hosts/> )



### **Light From Dawn Of The Universe Observed By Earth-Based Telescopes**

For the first time, scientists have used Earth-based telescopes funded by the U.S. National Science Foundation to look back over 13 billion years and measure how the first stars in the universe affected light emitted from the Big Bang. Using the NSF Cosmology Large Angular Scale Surveyor (NSF CLASS) telescopes in northern Chile, astrophysicists have measured this polarized microwave light to create a clearer picture of one of the least understood epochs in the history of the universe, the cosmic dawn. The NSF CLASS telescopes are uniquely designed to detect the large-scale fingerprints left by the first stars in the relic Big Bang light. . . . (continued at <https://www.nsf.gov/news/light-dawn-universe-observed-earth-based-telescopes> )



### **Roman Telescope Core Components Complete Vibration Testing**

Spacecraft violently shake, rattle, and roll on their way into space aboard a giant explosion. Therefore, they must also be tested to make sure they can withstand those forces before getting to their orbit for deployment. One of NASA's major observatories recently completed part of its trials, with the core portion of the Nancy Grace Roman Space Telescope successfully completing its shock and vibration testing a few weeks ago. The testing took place at NASA's Goddard Space Flight Center, where the core portion is being assembled. Eventually it will be combined with an "outer" portion to complete the whole telescope, and which will undergo its own set of testing as a full assembly. However, at least for now . . . . (continued at <https://www.universetoday.com/articles/roman-telescope-core-components-complete-vibration-testing> )



## July's Night Sky Notes: Spy the Scorpion

By: Kat Troche, Astronomy Society of the Pacific, NASA Night Sky Network

As summer deepens in the Northern Hemisphere, a familiar constellation rises with the galactic core of the Milky Way each evening: Scorpius the Scorpion. One of the twelve zodiacal constellations, Scorpius contains many notable objects, making it an observer's delight during the warmer months. Here are some items to spy in July:



The star map of the Scorpius constellation highlights the star Antares and several notable deep-sky objects like the Rho Ophiuchi Complex, Messier 4, the Cat's Paw Nebula, and Caldwell 76, the Baby Scorpion Cluster. Credit: Stellarium Web

- **Antares:** referred to as “the heart of the scorpion,” this supergiant has a distinct reddish hue and is visible to the naked eye. If you have good skies, try to split this binary star with a medium-sized telescope. Antares is a double star with a white main-sequence companion that comes in at a 5.4 magnitude.
- **Messier 4:** one of the easiest globular clusters to find, M4 is the closest of these star clusters to Earth at 5,500 light years. With a magnitude of about 5.6, you can spot this with a small or medium-sized telescope in average skies. Darker skies will reveal the bright core. Use Antares as a guide star for this short trip across the sky.
- **Caldwell 76:** If you prefer open star clusters, locate C76, also known as the Baby Scorpion Cluster, right where the ‘stinger’ of Scorpius starts to curve. At a magnitude of 2.6, it is slightly brighter than M4, albeit smaller, and can be spotted with binoculars and the naked eye under good sky conditions.

Lastly, if you have an astrophotography set up, capture the [Cat's Paw Nebula](#) near the stinger of Scorpius. You can also capture the [Rho Ophiuchi cloud complex](#) in the nearby constellation Ophiuchus. Brilliant Antares can be found at the center of this wondrous structure.

### Manaiakalani

While many cultures tell tales of a ‘scorpion’ in the sky, several Polynesian cultures see the same stars as the demigod Māui’s fishhook, [Manaiakalani](#). It is said that Māui didn’t just use his hook for giant fish in the sea, but to pull new islands from the bottom of the ocean. There are many references to the Milky Way representing a fish. As Manaiakalani rises from the southeast, it appears to pull the great celestial fish across a glittering sea of stars.



A digital map of the Rho Ophiuchi Complex. Credit: Stellarium Web



The Rho Ophiuchi cloud complex, closest star-forming region to Earth, as photographed by the James Webb Space Telescope's NIRCam. Credit: NASA, ESA, CSA, STScI, Klaus Pontoppidan (STScI)

## Measure Your Darkness

While you can use smartphone apps or dedicated devices like a Sky Quality Meter, Scorpius is a great constellation to measure your sky darkness with! On a clear night, can you trail the curve of the tail? Can you see the scorpion's heart? Use our free printable [Dark Sky Wheel](#), featuring the stars of Scorpius on one side and Orion on the other for measurements during cooler months. You can find this resource and more in the [Big Astronomy Toolkit](#).

## ADDITIONAL LINKS:

Messier 4: <https://science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubble-messier-catalog/messier-4/>  
Caldwell 76: <https://science.nasa.gov/mission/hubble/science/explore-the-night-sky/hubble-caldwell-catalog/caldwell-76/>  
Cat's Paw Nebula: <https://www.nasa.gov/image-article/newborn-stars-blow-bubbles-cats-paw-nebula/>  
Rho Ophiuchi: <https://apod.nasa.gov/apod/ap190513.html>  
Manaiakalani: [https://archive.hokulea.com/ike/hookele/hawaiian\\_star\\_lines.html#manaiakalani](https://archive.hokulea.com/ike/hookele/hawaiian_star_lines.html#manaiakalani)  
Dark Sky Wheel: <https://nightsky.jpl.nasa.gov/news/337/>  
Big Astronomy Toolkit: <https://nightsky.jpl.nasa.gov/news/341/>

## IMAGE CREDITS:

Scorpius Constellation: <https://i.imgur.com/pKpLhWC.png>  
Rho Ophiuchi Digital Image: <https://i.imgur.com/Xydr7gh.png>  
JWST Rho Ophiuchi: <https://webbtelescope.org/contents/media/images/2023/128/01H449193V5Q4Q6GFBKXAZ3S03>

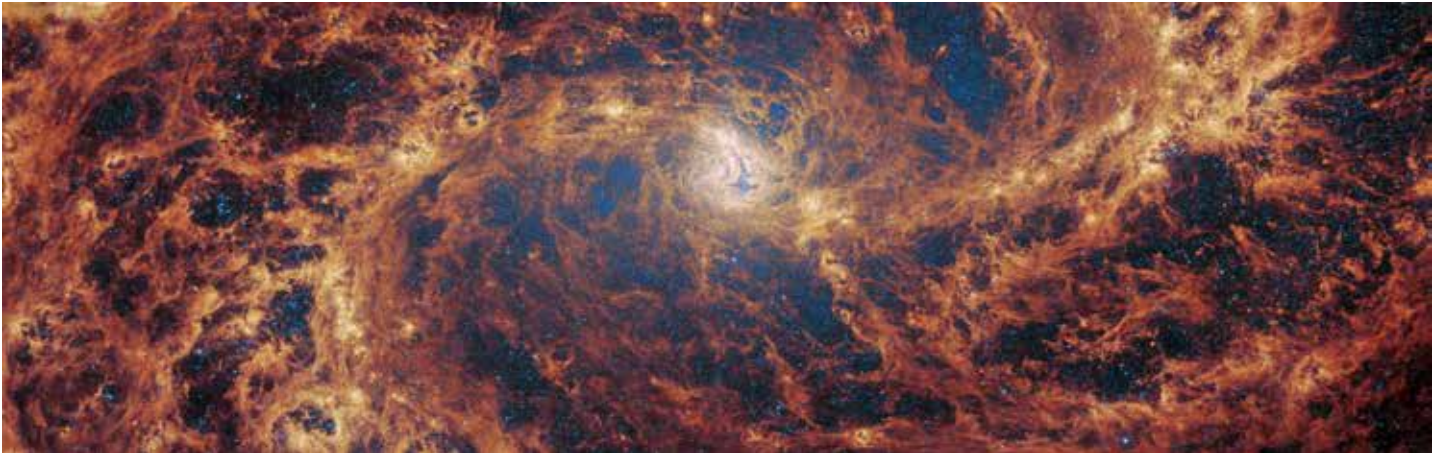
## Additional Skywatching Resources

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!

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](https://nightsky.jpl.nasa.gov) to find local clubs, events, and more!

For sale: 4 inch Celestron Equatorial telescope. Includes mount, solar filter, finder scope, eyepieces, two inch diagonal, carrying bag. Few scratches on finish. Price: \$250. Email either Duane ([gurba1826@gmail.com](mailto:gurba1826@gmail.com)) or Rose ([rmorion1@bak.rr.com](mailto:rmorion1@bak.rr.com))

## Webb Uncovers Possible Hidden Supermassive Black Hole In Nearby Spiral Galaxy M83 [weic2509 — Science Release](#) 17 April 2025



**Astronomers using the NASA/ESA/CSA James Webb Space Telescope have discovered evidence that suggests the presence of a long-sought supermassive black hole at the heart of the nearby spiral galaxy Messier 83 (M83). This surprising finding, made possible by Webb’s Mid-Infrared Instrument (MIRI), reveals highly ionised neon gas that could be a telltale signature of an active galactic nucleus (AGN), a growing black hole at the center of a galaxy.**

M83, also known as the Southern Pinwheel Galaxy, has long been an enigma. While massive spiral galaxies often host AGNs, astronomers have struggled for decades to confirm one in M83. Previous observations hinted that if a supermassive black hole existed there, it must be dormant or hidden behind thick dust. Now, Webb’s unprecedented sensitivity and spatial resolution have unveiled signs that suggest otherwise.

“Our discovery of highly ionised neon emission in the nucleus of M83 was unexpected,” said Svea Hernandez, lead author of the new study with AURA for the European Space Agency at the Space Telescope Science Institute in Baltimore, USA. “These signatures require large amounts of energy to be produced—more than what normal stars can generate. This strongly suggests the presence of an AGN that has been elusive until now.”

“Before Webb, we simply did not have the tools to detect such faint and highly ionised gas signatures in M83’s nucleus,” Hernandez added. “Now, with its incredible mid-infrared sensitivity, we are finally able to explore these hidden depths of the galaxy and uncover what was once invisible.”

Webb’s mid-infrared observations allowed astronomers to peer through dust and detect the telltale signs of highly ionised gas in small clumps near the [galactic nucleus](#). The energy needed to create these signatures is significantly higher than what supernovae or other stellar processes can provide, making an AGN the most likely explanation. However, alternative scenarios, such as extreme shock waves in the interstellar medium, are still being investigated.

“Webb is revolutionising our understanding of galaxies,” said co-author Linda Smith of the Space Telescope Science Institute. “For years, astronomers have searched for a black hole in M83 without success. Now, we finally have a compelling clue that suggests one may be present.”

“This discovery showcases how Webb is making unexpected breakthroughs,” Smith continued. “Astronomers thought they had ruled out an AGN in M83, but now we have fresh evidence that challenges past assumptions and opens new avenues for exploration.”

The team is planning follow-up studies using other observatories, such as the NASA/ESA Hubble Space Telescope, the Atacama Large Millimeter/submillimeter Array (ALMA) and the Very Large Telescope (VLT), to further investigate the nature of the gas and confirm the presence of a supermassive black hole in M83. These additional observations will help determine whether the newly detected emission definitively originates from an AGN or if other high-energy processes are at play.

continued on next page

This study demonstrates Webb's ability to uncover hidden structures within galaxies and opens the door to more discoveries in the realm of black hole astrophysics. As astronomers continue to push the limits of Webb's capabilities, the universe's most elusive mysteries are coming into sharper focus.

The results have been [published today](#) in The Astrophysical Journal.

## More information

Webb is the largest, most powerful telescope ever launched into space. Under an international collaboration agreement, ESA provided the telescope's launch service, using the Ariane 5 launch vehicle. Working with partners, ESA was responsible for the development and qualification of Ariane 5 adaptations for the Webb mission and for the procurement of the launch service by Arianespace. ESA also provided the workhorse spectrograph NIRSpec and 50% of the mid-infrared instrument MIRI, which was designed and built by a consortium of nationally funded European Institutes (The MIRI European Consortium) in partnership with JPL and the University of Arizona.

Webb is an international partnership between NASA, ESA and the Canadian Space Agency (CSA).

Image Credit: ESA/Webb, NASA & CSA, A. Adamo (Stockholm University) and the FEAST JWST team

## Links

- [Release on ESA website](#)
- [Science paper](#)

## Contacts

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ESA Newsroom and Media Relations Office  
Email: [media@esa.int](mailto:media@esa.int)

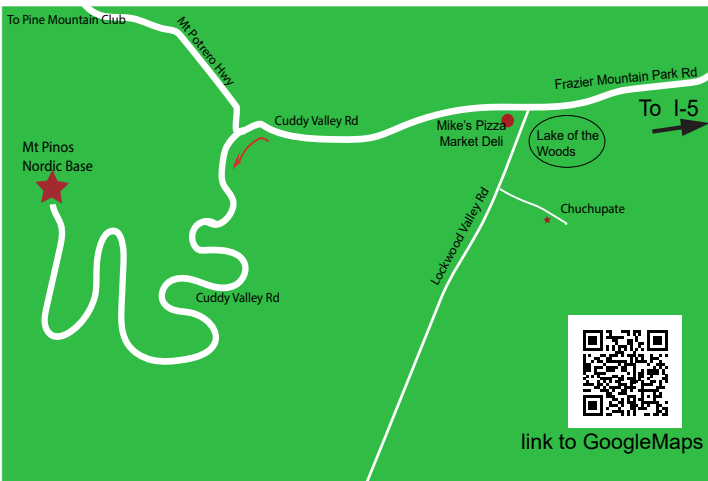


*"All I'm saying is now is the time to develop the technology to deflect an asteroid."*

## 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. (link to GoogleMaps) [RX3R+3F, Frazier Park, CA 93225](#)



**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.

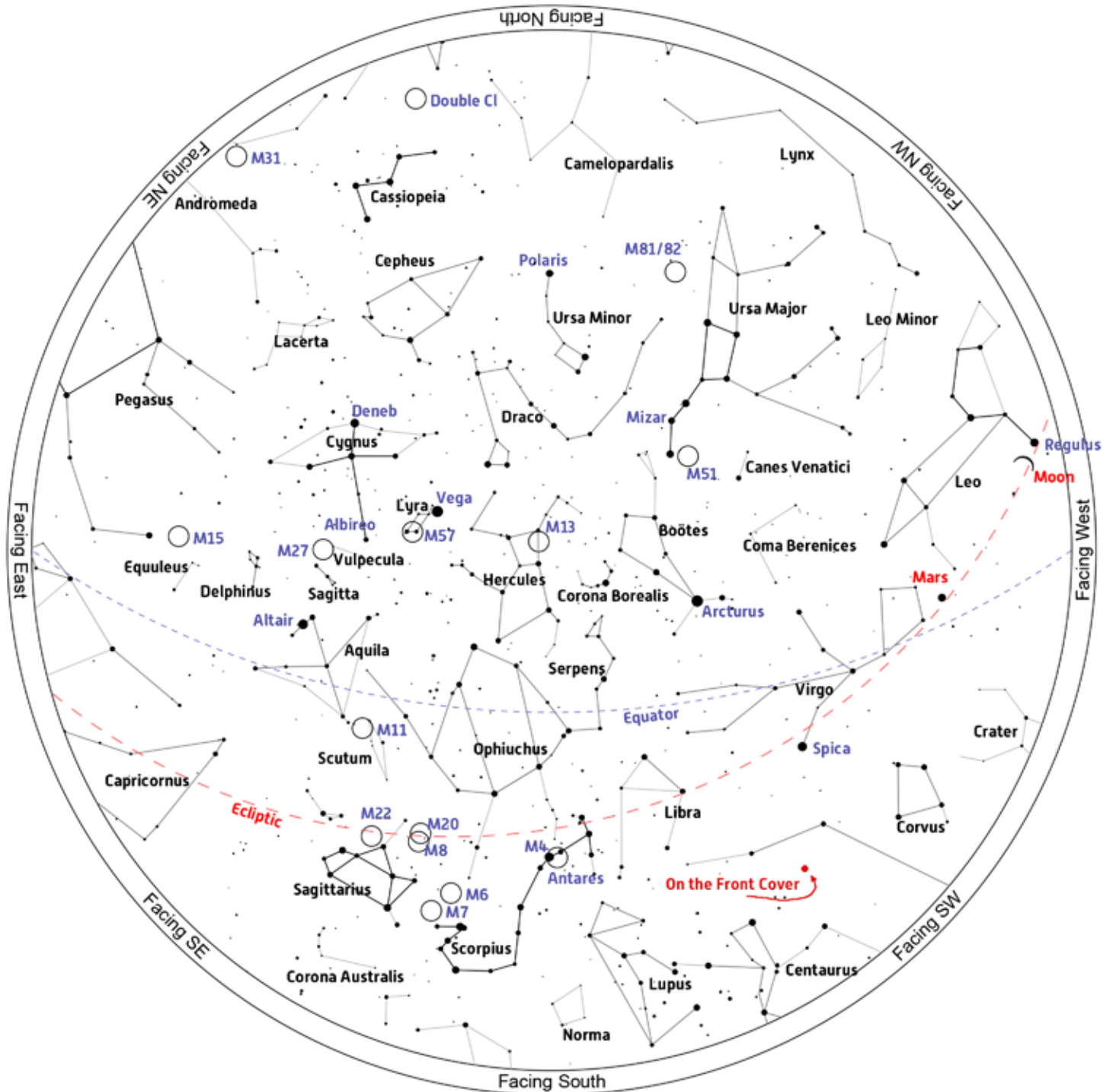
[RV7F+FF Frazier Park, California](#) (link to GoogleMaps)

**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. . . . (link to GoogleMaps). [926F+X5 Ricardo, California](#)



## Sky Chart



Location: Palmdale, CA 93551  
Latitude: 34° 36' N, longitude: 118° 11' W  
Time: 2025 July 26, 21:00 (UTC -07:00)

Powered by: Heavens-Above.com

## Solar System Summary

The **Sun** starts the month in central Gemini ending the month in central Cancer.

### The Planets

**Mercury** now in the evening twilight reaches Greatest Elongation East(26°) on the 5th, about 2½° SW of M44 in Cancer. Mercury is at inferior conjunction on Aug 1st.

**Venus** spends the early mornings moving in normal motion, passing across the whole of Taurus to the edge of Gemini, slowly dimming while phase increases while cruising away from Earth.

**Mars** starts the month in central Leo and by the end of the month makes it only to the edge of Virgo. On the morning of the 28th, at Mars-rise, the 16% waxing Moon passes by 1+° south.

**Jupiter** continues it's normal motion heading east across Gemini stuck in the morning twilight for the next few weeks.

**Saturn** rising just after midnight still moving normally in Pisces at mag 0.9 till the 10th, when it makes it's retro turn, staying within a degree south of Neptune for most of the month.

**Uranus** continues moving normally at mag 5.8 in eastern Taurus, about 4½° south of the Pleiades.

**Neptune** is moving in retrograde in southern Pisces at mag 7.9, spending the month pacing Saturn less than 1° to the south.

### Dwarf Planets

**134340 Pluto** spends the month, again, in retrograde, still in western Capricorn, at mag 14.4.

**1 Ceres** continues the month moving east in Cetes at mag 9.0.

**2 Pallas** continues it's retrograde motion making a big loop through eastern Delphinus at magnitude 10.4.

**3 Juno** finishes its retrograde motion in Serpens Caput drifts through Libra and begins normal motion again at the end of the month, at mag 10.7.

**4 Vesta** in normal motion in eastern Virgo at mag 7.3 moves into central Libra at the end of the month.

## Moon Phases



First Qtr  
Jul 2

Full  
Jul 10

Third Qtr  
Jul 17

New  
Jul 24

## Sun and Moon Rise and Set\*

Date	Moonrise	Moonset	Sunrise	Sunset
7/1/2025	12:08	23:18	05:43	20:09
7/5/2025	15:58	01:33	05:45	20:09
7/10/2025	20:34	05:18	05:48	20:07
7/15/2025	23:14	10:47	05:51	20:05
7/20/2025	01:28	18:37	05:54	20:03
7/25/2025	06:45	20:59	05:58	20:00
7/30/2025	11:51	23:06	06:01	19:55

## Planet Data\*

July 1

	Rise	Transit	Set	Mag	Phase%
Mercury	07:47	14:46	21:44	0.43	44.4
Venus	03:02	09:53	16:45	-4.11	64.2
Mars	10:24	16:53	23:21	1.49	92.5
Jupiter	05:24	12:34	19:45	-1.90	99.9
Saturn	00:22	06:24	12:22	0.95	99.7

July 15

	Rise	Transit	Set	Mag	Phase%
Mercury	07:44	14:25	21:05	1.53	20.3
Venus	03:01	10:02	17:04	-4.05	69.6
Mars	10:09	16:28	22:47	1.55	93.4
Jupiter	04:43	11:53	19:04	-1.90	99.3
Saturn	23:27	05:29	11:27	0.88	99.8

July 30

	Rise	Transit	Set	Mag	Phase%
Mercury	06:24	13:02	19:39	4.74	1.1
Venus	03:08	10:16	17:24	-4.00	74.8
Mars	09:54	16:02	22:11	1.59	94.3
Jupiter	03:59	11:08	18:18	-1.93	99.8
Saturn	22:28	04:29	10:27	0.81	99.8

\*All time mentioned are local and approximate.

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

## 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 July 26, 2025. The list is sorted by the transit time of the object.

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M81	Bode's Galaxy	Galaxy	UMa	09h 55m 33s	+69° 03.9'	7.8	Circ	14:36	Circ
M82	Cigar Galaxy	Galaxy	UMa	09h 55m 53s	+69° 40.8'	9.2	Circ	14:36	Circ
M95	NGC3351	Galaxy	Leo	10h 43m 58s	+11° 42.2'	10.6	08:48	15:24	22:00
M96	NGC3368	Galaxy	Leo	10h 46m 46s	+11° 49.2'	10.1	08:51	15:27	22:03
M105	NGC3379	Galaxy	Leo	10h 47m 50s	+12° 34.9'	10.5	08:50	15:28	22:07
M108	NGC3556	Galaxy	UMa	11h 11m 31s	+55° 40.4'	10.6	Circ	15:52	Circ
M97	Owl Nebula	P Neb	UMa	11h 14m 48s	+55° 01.1'	12.0	Circ	15:55	Circ
M65	Leo Triplet	Galaxy	Leo	11h 18m 56s	+13° 05.5'	10.1	09:19	15:59	22:39
M66	Leo Triplet	Galaxy	Leo	11h 20m 15s	+12° 59.4'	9.7	09:21	16:01	22:40
M109	NGC3992	Galaxy	UMa	11h 57m 36s	+53° 22.4'	10.6	05:47	16:38	03:29
M98	NGC4192	Galaxy	Com	12h 13m 48s	+14° 54.0'	10.9	10:09	16:54	23:40
M99	Coma Pinwheel Galaxy	Galaxy	Com	12h 18m 50s	+14° 25.0'	10.4	10:15	16:59	23:43
M106	NGC4258	Galaxy	CVn	12h 18m 58s	+47° 18.2'	9.1	07:37	16:59	02:21
M61	Swelling Spiral	Galaxy	Vir	12h 21m 55s	+04° 28.3'	10.1	10:47	17:02	23:17
M40	Winnecke 4	Dbl+Asterism	UMa	12h 22m 12s	+58° 05.0'	8.7	Circ	17:02	Circ
M100	Mirror of M99	Galaxy	Com	12h 22m 55s	+15° 49.3'	10.1	10:15	17:03	23:52
M84	NGC4374	Galaxy	Vir	12h 25m 04s	+12° 53.2'	10.2	10:26	17:05	23:45
M85	NGC4382	Galaxy	Com	12h 25m 24s	+18° 11.4'	10.0	10:10	17:06	00:01
M86	NGC4406	Galaxy	Vir	12h 26m 12s	+12° 56.7'	9.9	10:27	17:06	23:46
M49	NGC4472	Galaxy	Vir	12h 29m 47s	+08° 00.0'	9.3	10:45	17:10	23:35
M87	Virgo A	Galaxy	Vir	12h 30m 49s	+12° 23.4'	9.6	10:33	17:11	23:49
M88	NGC4501	Galaxy	Com	12h 31m 59s	+14° 25.2'	10.2	10:28	17:12	23:56
M91	Missing Messier Object	Galaxy	Com	12h 35m 27s	+14° 29.7'	10.9	10:31	17:16	00:00
M89	NGC4552	Galaxy	Vir	12h 35m 40s	+12° 33.3'	10.9	10:37	17:16	23:54
M90	NGC4569	Galaxy	Vir	12h 36m 50s	+13° 09.7'	10.2	10:37	17:17	23:57
M58	NGC4579	Galaxy	Vir	12h 37m 44s	+11° 49.1'	10.4	10:42	17:18	23:54
M68	NGC4590	Globular	Hya	12h 39m 28s	-26° 44.5'	9.0	12:38	17:20	22:01
M104	Sombrero Galaxy	Galaxy	Vir	12h 39m 59s	-11° 37.3'	9.2	11:50	17:20	22:50
M59	NGC4621	Galaxy	Vir	12h 42m 02s	+11° 38.7'	10.7	10:47	17:22	23:58
M60	NGC4649	Galaxy	Vir	12h 43m 40s	+11° 33.1'	9.8	10:48	17:24	23:59
M94	Croc's Eye Galaxy	Galaxy	CVn	12h 50m 53s	+41° 07.1'	8.9	08:57	17:31	02:05
M64	Black Eye Galaxy	Galaxy	Com	12h 56m 44s	+21° 41.0'	9.3	10:30	17:37	00:44
M53	NGC5024	Globular	Com	13h 12m 55s	+18° 10.1'	8.5	10:57	17:53	00:49
M63	Sunflower Galaxy	Galaxy	CVn	13h 15m 49s	+42° 01.7'	9.3	09:16	17:56	02:36
NGC5139	Omega Centauri	Globular	Cen	13h 26m 48s	-47° 29.0'	3.6	15:18	18:07	20:56
NGC5169		Galaxy	CVn	13h 28m 10s	+46° 40.3'	14.0	08:53	18:08	03:24

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ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC5204		Galaxy	UMa	13h 29m 36s	+58° 25.1'	11.3	Circ	18:10	Circ
M51	Question Mark Galaxy	Galaxy	CVn	13h 29m 52s	+47° 11.7'	8.9	08:49	18:10	03:31
Arp85	M51B	Galaxy	CVn	13h 29m 58s	+47° 16.0'	9.6	08:49	18:10	03:32
NGC5182		Galaxy	Hya	13h 30m 41s	-28° 09.0'	13.0	13:35	18:11	22:47
NGC5214		Galaxy	CVn	13h 32m 49s	+41° 52.3'	14.0	09:34	18:13	02:52
M83	Southern Pinwheel Galaxy	Galaxy	Hya	13h 37m 00s	-29° 51.8'	8.0	13:48	18:17	22:47
HR5144	1 Boo	Triple	Boo	13h 40m 40s	+19° 57.3'	5.8	11:19	18:21	01:22
NGC5283		Galaxy	Dra	13h 41m 06s	+67° 40.3'	14.0	Circ	18:21	Circ
M3	NGC5272	Globular	CVn	13h 42m 11s	+28° 22.5'	7.0	10:51	18:22	01:54
NGC5286	C84	Globular	Cen	13h 46m 24s	-51° 22.0'	7.6	16:20	18:27	20:34
NGC5292		Galaxy	Cen	13h 47m 40s	-30° 56.4'	14.0	14:03	18:28	22:53
NGC5356		Galaxy	Vir	13h 54m 59s	+05° 20.0'	14.0	12:18	18:35	00:53
NGC5363		Galaxy	Vir	13h 56m 07s	+05° 15.2'	10.2	12:19	18:36	00:54
NGC5447	III-787	Neb	UMa	14h 02m 29s	+54° 16.3'		07:20	18:43	06:06
M101	Pinwheel Galaxy	Galaxy	UMa	14h 03m 13s	+54° 20.9'	8.2	07:16	18:43	06:11
NGC5461	III-788	Neb	UMa	14h 03m 42s	+54° 19.0'		07:19	18:44	06:09
NGC5485		Galaxy	UMa	14h 07m 11s	+55° 00.0'	11.5	Circ	18:47	Circ
NGC5460		Open	Cen	14h 07m 27s	-48° 20.6'	5.6	16:07	18:48	21:29
NGC5500		Galaxy	Boo	14h 10m 15s	+48° 32.7'	14.0	09:16	18:51	04:25
IC991		Galaxy	Vir	14h 17m 48s	-13° 52.3'	13.0	13:35	18:58	00:21
HR5362	HD125383	Dbl	Lup	14h 20m 10s	-43° 03.5'	5.6	15:38	19:00	22:23
IC4406	Retina Nebula	P Neb	Lup	14h 22m 26s	-44° 09.0'	11.0	15:47	19:03	22:18
HR5409	105 Vir	Triple	Vir	14h 28m 12s	-02° 13.6'	4.8	13:12	19:08	01:05
NGC5669		Galaxy	Boo	14h 32m 44s	+09° 53.4'	12.0	12:42	19:13	01:44
NGC5689		Galaxy	Boo	14h 35m 30s	+48° 44.5'	11.9	09:39	19:16	04:52
M102	Spindle Galaxy	Galaxy	Dra	15h 06m 30s	+55° 45.7'	10.8	Circ	19:47	Circ
NGC5875		Galaxy	Boo	15h 09m 13s	+52° 31.6'	13.0	09:18	19:49	06:21
NGC5907	Splinter Galaxy	Galaxy	Dra	15h 15m 54s	+56° 19.7'	11.4	Circ	19:56	Circ
NGC5882		P Neb	Lup	15h 16m 50s	-45° 38.9'	11.0	16:53	19:57	23:01
NGC5897		Globular	Lib	15h 17m 24s	-21° 00.6'	8.6	14:57	19:58	00:59
M5	NGC5904	Globular	Ser	15h 18m 33s	+02° 04.9'	7.0	13:50	19:59	02:07
Barnard228	B228	DkNeb	Lup	15h 44m 00s	-34° 30.0'		16:15	20:24	00:34
IC4593	White Eyed Pea	P Neb	Her	16h 11m 44s	+12° 04.3'	11.0	14:15	20:52	03:29
IC4592	Jabbah	Neb	Sco	16h 11m 59s	-19° 27.4'		15:46	20:52	01:58
M80	NGC6093	Globular	Sco	16h 17m 03s	-22° 58.5'	8.5	16:03	20:57	01:52
IC4601		Neb	Sco	16h 20m 18s	-20° 04.9'		15:56	21:01	02:05
Abell38		P Neb	Sco	16h 23m 17s	-31° 44.9'	11.7	16:42	21:04	01:25
M4	Cat's Eye	Globular	Sco	16h 23m 35s	-26° 31.5'	7.5	16:22	21:04	01:46

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July 2025

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
IC4603	Rho Ophiuchi Complex [1]	Neb	Oph	16h 25m 24s	-24° 28.0'		16:16	21:06	01:55
IC4604	Rho Ophiuchi Complex [2]	Neb	Oph	16h 25m 33s	-23° 26.5'		16:13	21:06	01:59
NGC6124	C75	Open	Sco	16h 25m 36s	-40° 40.0'	5.8	17:28	21:06	00:44
Abell39		P Neb	Her	16h 27m 33s	+27° 54.5'	12.9	13:38	21:08	04:38
IC4605		Neb	Sco	16h 30m 12s	-25° 06.8'		16:23	21:10	01:58
NGC6153		P Neb	Sco	16h 31m 31s	-40° 15.2'	12.0	17:32	21:12	00:52
NGC6181		Galaxy	Her	16h 32m 21s	+19° 49.5'	11.9	14:12	21:13	04:14
NGC6171		Globular	Oph	16h 32m 32s	-13° 03.1'	8.1	15:47	21:13	02:39
NGC6178		Open	Sco	16h 35m 47s	-45° 38.6'	7.2	18:12	21:16	00:20
NGC6193	C82	Open	Ara	16h 41m 18s	-48° 46.0'	5.2	18:45	21:22	23:58
M13	Great Hercules Cluster	Globular	Her	16h 41m 41s	+36° 27.5'	7.0	13:14	21:22	05:30
NGC6210	Turtle Planetary Nebula	P Neb	Her	16h 44m 30s	+23° 48.0'	9.0	14:10	21:25	04:39
Barnard44a	B44a	DkNeb	Sco	16h 44m 45s	-40° 20.0'		17:45	21:25	01:05
NGC6204		Open	Ara	16h 46m 09s	-47° 01.0'	8.2	18:33	21:26	00:19
M12	Gumball Globular	Globular	Oph	16h 47m 14s	-01° 56.8'	8.0	15:30	21:28	03:25
NGC6231	Table of Scorpius	Open	Sco	16h 54m 00s	-41° 48.0'	2.6	18:03	21:34	01:05
IC4628	Prawn Nebula	Neb	Sco	16h 56m 58s	-40° 27.3'		17:58	21:37	01:16
NGC6254		Globular	Oph	16h 57m 09s	-04° 05.9'	6.6	15:46	21:37	03:29
Barnard47	B47	DkNeb	Oph	16h 59m 42s	-22° 38.0'		16:44	21:40	02:36
M62	Flickering Globular	Globular	Oph	17h 01m 13s	-30° 06.7'	8.0	17:13	21:41	02:10
M19	NGC6273	Globular	Oph	17h 02m 38s	-26° 16.0'	8.5	17:00	21:43	02:26
Barnard51	B51	DkNeb	Oph	17h 04m 44s	-22° 15.0'		16:48	21:45	02:42
IC4637		P Neb	Sco	17h 05m 10s	-40° 53.1'	14.0	18:09	21:45	01:22
Barnard56	B56	DkNeb	Sco	17h 08m 48s	-32° 05.0'		17:29	21:49	02:09
Barnard59	B59,Pipe Nebula	DkNeb	Oph	17h 11m 23s	-27° 29.0'		17:13	21:52	02:30
NGC6302	C69,Bug Nebula	P Neb	Sco	17h 13m 42s	-37° 06.0'	9.6	17:57	21:54	01:51
Barnard251	B251	DkNeb	Oph	17h 13m 48s	-20° 09.0'		16:50	21:54	02:58
Barnard63	B63	DkNeb	Oph	17h 16m 00s	-21° 28.0'		16:57	21:56	02:56
M92	NGC6341	Globular	Her	17h 17m 07s	+43° 08.1'	7.5	13:10	21:57	06:45
M9	NGC6333	Globular	Oph	17h 19m 12s	-18° 31.0'	9.0	16:50	21:59	03:09
NGC6326		P Neb	Ara	17h 20m 46s	-51° 45.2'	12.0	19:59	22:01	00:03
NGC6357	Lobster Nebula	Neb	Sco	17h 24m 43s	-34° 12.1'		17:54	22:05	02:16
IC4651		Open	Ara	17h 24m 52s	-49° 56.5'	6.9	19:41	22:05	00:30
Abell41		P Neb	Ser	17h 29m 04s	-15° 13.3'	13.9	16:50	22:09	03:29
Abell42		P Neb	Oph	17h 31m 31s	-08° 19.1'	14.6	16:32	22:12	03:51
M14	NGC6402	Globular	Oph	17h 37m 36s	-03° 14.7'	9.5	16:24	22:18	04:12
M6	Butterfly Cluster	Open	Sco	17h 40m 20s	-32° 15.2'	4.5	18:01	22:21	02:40
NGC6397	C86	Globular	Ara	17h 40m 42s	-53° 40.0'	5.6	20:51	22:21	23:50
IC4665		Open	Oph	17h 46m 30s	+05° 39.0'	4.2	16:08	22:27	04:45

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July 2025

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC6445	Crescent Nebula	P Neb	Sgr	17h 49m 15s	-20° 00.6'	13.0	17:25	22:30	03:34
NGC6503		Galaxy	Dra	17h 49m 27s	+70° 08.6'	10.2	Circ	22:30	Circ
NGC6441		Globular	Sco	17h 50m 13s	-37° 03.0'	7.4	18:33	22:30	02:28
M7	Ptolemy's Cluster	Open	Sco	17h 53m 51s	-34° 47.6'	3.5	18:26	22:34	02:42
IC4670		Neb	Sgr	17h 55m 07s	-21° 44.6'		17:37	22:35	03:34
NGC6501		Galaxy	Her	17h 56m 04s	+18° 22.3'	12.3	15:40	22:36	05:33
M23	NGC6494	Open	Sgr	17h 57m 04s	-18° 59.1'	6.0	17:30	22:37	03:45
NGC6543	Cat Eye Nebula	P Neb	Dra	17h 58m 36s	+66° 38.0'	8.1	Circ	22:39	Circ
NGC6496		Globular	Sco	17h 59m 04s	-44° 16.0'	9.2	19:25	22:39	01:54
Barnard291	B291	DkNeb	Sgr	17h 59m 43s	-33° 53.0'		18:28	22:40	02:52
Barnard292	B292	DkNeb	Sgr	18h 00m 34s	-33° 20.0'		18:26	22:41	02:56
Barnard293	B293	DkNeb	Sgr	18h 01m 12s	-35° 20.0'		18:36	22:41	02:47
M20	Trifid Nebula	Open+D Neb	Sgr	18h 02m 42s	-22° 58.2'	5.0	17:48	22:43	03:38
M8	Lagoon Nebula	Open+D Neb	Sgr	18h 03m 41s	-24° 22.7'	5.0	17:54	22:44	03:34
M21	NGC6531	Open	Sgr	18h 04m 13s	-22° 29.3'	7.0	17:48	22:44	03:41
NGC6530		Open	Sgr	18h 04m 31s	-24° 21.5'	4.6	17:55	22:45	03:35
NGC6528		Globular	Sgr	18h 04m 50s	-30° 03.3'	9.5	18:16	22:45	03:14
IC4684		Neb	Sgr	18h 09m 08s	-23° 26.1'		17:56	22:49	03:42
IC4685		Neb	Sgr	18h 09m 18s	-23° 59.2'		17:58	22:50	03:41
IC1274		Neb	Sgr	18h 09m 51s	-23° 38.8'		17:58	22:50	03:42
IC1275		Neb	Sgr	18h 10m 07s	-23° 45.7'		17:58	22:50	03:42
NGC6572		P Neb	Oph	18h 12m 06s	+06° 51.2'	9.0	16:30	22:52	05:14
NGC6567		P Neb	Sgr	18h 13m 45s	-19° 04.5'	12.0	17:47	22:54	04:01
IC4701		Neb	Sgr	18h 16m 36s	-16° 38.0'		17:42	22:57	04:12
M24	Small Sagittarius Star Cloud	Open	Sgr	18h 18m 26s	-18° 24.3'	4.5	17:49	22:59	04:08
M16	Eagle Nebula	Open+D Neb	Ser	18h 18m 48s	-13° 48.3'	6.5	17:36	22:59	04:23
M18	Black Swan	Open	Sgr	18h 19m 58s	-17° 06.1'	8.0	17:47	23:00	04:14
M17	Omega Nebula	Open+D Neb	Sgr	18h 20m 47s	-16° 10.3'	7.0	17:45	23:01	04:17
M28	NGC6626	Globular	Sgr	18h 24m 33s	-24° 52.1'	8.5	18:17	23:05	03:53

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

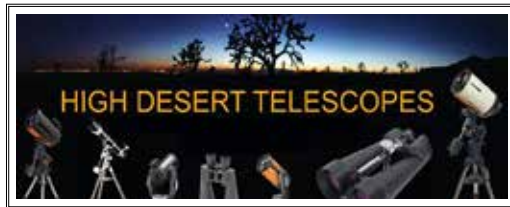
Sge - Sagitta  
Sgr - Sagittarius  
Tau - Taurus  
Tel - Telescopium  
TrA - Triangulum  
Australis  
Tri - Triangulum  
Tuc - Tucana  
UMa - Ursa Major  
UMi - Ursa Minor  
Vel - Vela  
Vir - Virgo  
Vol - Volans  
Vul - Vulpecula

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