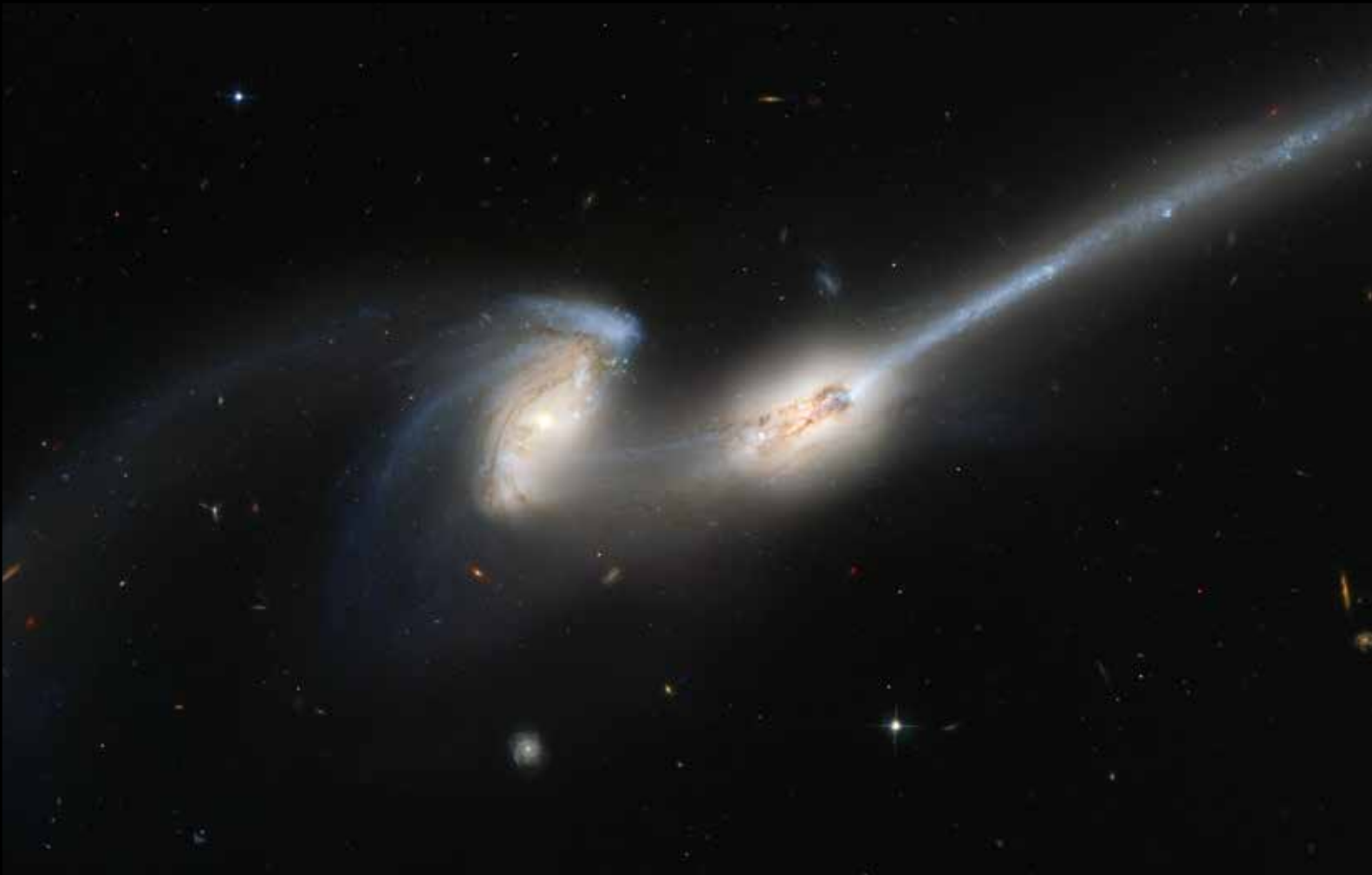


Volume 46.3

March 2026

# Desert Sky Observer

Antelope Valley Astronomy Club



# Desert Sky Observer

www.avastronomyclub.org

March 2026

## Upcoming Events

March 3: Total Lunar Eclipse 12:44am - 6:24am  
March 7: Moonwalk @ PDW 6:30 PM  
March 8: Daylight Saving time begins  
March 13: Club Meeting/Painting Class  
March 19: Amargosa Middle School Star Party  
March 21: Messier Marathon @ Red Rock Canyon SP

April 10: Club Meeting  
April 18: DSSP @ TBD  
April 25: Moonwalk @ PDW 8:00PM



AVAC Calendar



## Board Members

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

**Vice-President:** Vacant  
[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  
[treasurer@avastronomyclub.org](mailto:treasurer@avastronomyclub.org)

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

## Appointed Positions

### Lunar Club:

Matt Leone (661) 713-1894

**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  
[webmaster@avastronomyclub.org](mailto:webmaster@avastronomyclub.org)

**Night Sky Coordinator:**  
Rose Moore (661) 972-1953

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

**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 §501(c)(3) California Non-Profit Corporation.

## President's Message

By Phil Wriedt

Welcome everyone,

The next event will be the Total Lunar Eclipse viewing at SAGE in the very early hours of Tuesday, March 3. The Moon will enter the penumbra about 12:44am, and the umbra about 1:49am. Totality is achieved about 3:04 am, with totality lasting almost 59 minutes. The Moon starts emerging at 4:03am, and it's all over by 6:23am. While its been warm the past few days, it won't be that warm, bring a jacket or two and bring something insulated to sit on. No matter how many jackets you wear, sitting on the concrete benches will suck all of the heat out of your sitter.

After that, our first Moonwalk of the year will be on March 7. Sunset will be at 5:54, a 80% waning gibbous Moon will rise at 10:26 pm; Get there early so you can set up in daylight. If you get a telescope by then, bring it, or if not, just come join the party at Prime Desert Woodland; the more members there, the better it will be. Don't forget warm clothes, jackets, gloves, etc., so be a Scout and Be Prepared. There is a better than fair chance that a cold rain front could come through. Hopefully it will be a cloudless (and smokeless) night.

Our Monthly Meeting on the 13th, will be a Astro Painting Class led by Sue Leone. This meeting will start early at 6:30 (art takes time!). Get there early, so you have time to watch the paint dry. Turn the page,(but not yet) Rose has a lot more information.

Our next Dark Sky Star Party, will be on the 21st of March at Red Rock State Park. This will be the best opportunity to do a Messier Marathon. We are planning to get campsites 1 & 2 because they aren't right up against the cliffs, this will ensure the greatest view of the sky. After that, the next DSSP will be on April 18th, probably at Red Cliffs or Red Rock Canyon and this is the alternate date for a Messier Marathon. Watch for the emails or for the text message to know what's happening.

There will a star party at Amargosa Creek Middle School (Avenue J & 27th Street W) on the March 19th. We need to have members with telescopes. Watch for the email notices for more details, like where to go and setup.

Please come to the meetings, come to the events, join the crowd! The more the merrier!

Stay Warm and Keep Looking Up,

Phil

## On The Cover

Note: North is 64.6° right of vertical RA: 12h 46' 10.4" DEC: 30° 43' 38.77" 300 mly (Coma Berenices)

[Advanced Camera for Surveys](#) (ACS), the newest camera on NASA/ESA Hubble Space Telescope, has captured a spectacular pair of galaxies engaged in a celestial dance of cat and mouse or, in this case, mouse and mouse.

Located 300 million light-years away in the constellation Coma Berenices, the colliding galaxies have been nicknamed "The Mice" because of the long tails of stars and gas emanating from each galaxy. Otherwise known as NGC 4676, the pair will eventually merge into a single giant galaxy.

Credit: NASA, Holland Ford (JHU), the ACS Science Team and ESA

## From the Secretary

By Rose Moore

### Members:

There are a few club events coming this month! We start off with a Lunar eclipse on Tuesday March 3rd. Jeremy will be having an event at the SAGE Planetarium, and there will be an email with full information coming out before the event.

Our first Prime Desert Moon Walk of the year will be Saturday March 7th, starting at 6:30pm; come on out and participate by bringing your scope or taking the walk. Set up time is 30-45 minutes prior to event; weather permitting. Email to follow.

We have Sue's Paint Class at our next club meeting on Friday March 13th! Arrival time is between 6:30-7pm, to allow time to set up and/or pay Rod for the class. Class starts at 7pm. The cost is \$20 per member and \$25 per non-member. There is a cap on the total of participants, so let a Board member know if you're signing up. The costs includes the canvas, paints, brushes, and Sue's expertise! Come out and have some fun!

On Thursday March 19th we have a Star Party at the Amargosa Creek Middle School in Lancaster. We need members with telescopes or astronomy/space items of interest to show the students. More info coming in an email or two before the event!

The first club star party of the year will be the Messier Marathon on Saturday March 21st. The Messier Marathon is held every year around this time, a star party dedicated to finding the 110 astronomical objects on Charles Messier's list of objects. We are in the process of trying to reserve campsites #1 and #2 at Red Rocks State Park. Additional sites will be available nearby. We will let you know as soon as we have more information. You may arrive any time that afternoon. This is an overnight star party and members will need to clear the sites by 9am Sunday morning. More emails coming!

Coming up in April is our club meeting, a dark sky star party, College of the Canyons Spring Star Party, and a PDW Moon Walk. We are working on getting a NASA speaker for May. Our speaker for June will be a Zoom presentation by Naveen Vetcha, talking on 'Star Lore from India'. Naveen has been a previous speaker for us in 2025.

Rose

## Star Party Palpitations and Rewards by Tom Koonce, AVAC

Ah, the Public Star Party. Or as I like to call it: “The Gathering of People Who Want to Put Greasy Fingerprints on My Expensive Eyepieces.”

Like you, I’m an amateur astronomer. I spend my weekends in the freezing desert, whispering sweet naughties to my apochromatic refractor and debating the optical merits of different nitrogen-purged eyepieces with my observing buddies. But several times a year, in fits of misplaced altruism, I haul ninety pounds of precision ground glass and German-engineered steel to local parks or schools to “share the wonders of the universe” with the unwashed masses.

It’s a dangerous game, my friends. Mostly for my blood pressure.

The anxiety begins the moment the sun dips. That’s when the “Flashlight Brigade” arrives. You know the type: they show up with 10-million-candlepower LED searchlights—the kind used by the Coast Guard to find lost sailors, pointing them directly into my soul. “Is this where the space stuff is?” they yell, effectively vaporizing the night vision I spent forty minutes cultivating in the dark. My retinas are screaming, and the Orion Nebula has just been replaced by a pulsing green blob of likely ocular damage.

Once they stumble blindly toward my rig, the real “Final Destination” vibes start. I have an eyepiece that costs more than my first car. To a toddler, however, it looks like a very expensive cup holder for their sticky, half-melted cherry Push-Pop. I hear the clutches of my GEM’s tracking motor groan in agony as a small human hangs off the mount like a baby orangutan. The telescope, which was precisely aligned with the North Celestial Pole, is now pointing at a nearby Port-a-Potty.

“What am I looking at?” they ask. “The crushing weight of my own regrets,” I mutter to myself, realigning the scope while praying to the gods of collimation.

Then come the questions. I typically hear a couple of people asking why Saturn doesn’t look like the Hubble photos... you know, the ones taken by a multi-billion-dollar satellite orbiting the Earth. “It’s so small,” they complain. Listen, Karen, you’re looking at a gas giant 800 million miles away through a tube in a public park next to a Taco Bell. The fact that you can see the rings at all is a miracle of physics. Manage your expectations.

But the true apex predator of the star party is the “Phone Photographer.” This person insists on holding their iPhone 14 Pro Max up to my eyepiece to “get a quick shot.” They don’t just tap it; they ram the camera lens into the glass with the force of a tectonic plate shift. They spend ten minutes fumbling with their settings, their screen glowing at 100% brightness like a miniature sun, while a line of twenty people grows restless behind them.

By 10:00 PM, my telescope is covered in a fine mist of sneeze particles, my tripod has been kicked four times, and I’ve been told three times that “astrology is so interesting.”

But then, just as I’m about to pack up and retreat to my cave of solitude, something weird happens. A kid who spent the last ten minutes kicking my tripod finally puts his eye to the glass. He goes dead silent. The fidgeting stops. “Whoa,” he whispers. “Is that... is that real? It looks like a photo.”

I realize that for this kid, who lives under the orange haze of city light pollution, the universe has been a flat, empty ceiling until five seconds ago. Now, he’s seeing the ancient, cratered Highlands of the Moon, a tightly packed spherical cluster of thousands of stars, or perhaps the ghostly glow of a nursery where stars are born.

Then there’s the exhausted mom who’s been chasing him all night. She takes a turn, looks at Saturn’s rings, and forgets to breathe for a few seconds. The cynicism of the “Phone Photographers” and the blinding white-light flashlights fade away. For those brief, shimmering moments, I’m not just some person with an expensive hobby and a short fuse; I’m a freaking wizard showing people the exit door from their daily grind. They are getting a glimpse of a Universe more vast and awe-inspiring than they have ever acknowledged.

Sure, I’ll spend tomorrow morning obsessively cleaning smudge marks off my TeleVue eyepieces and recalibrating my mount. But seeing those looks of genuine, ego-shattering awe on strangers’ faces? It’s absolutely worth the tiny bit of retinal damage and calming meditation.

News from around the Net

### **NASA Is Preparing To Roll Artemis II Rocket Back Into The Hangar**

In the coming weeks or months, the Artemis II rocket will make its launch window and take off from Launch Pad 39A at NASA's Kennedy Space Center in Florida. The mission will then carry Commander Reid Wiseman, Pilot Victor Glover, Mission Specialist Christina Koch, and Canadian Mission Specialist Jeremy Hansen on a ten-day trip around the Moon. The flight will not only validate the Space Launch System (SLS) and Orion spacecraft for crewed missions. It will also raise the curtain on humanity's long-awaited return to the Moon; this time, with the intention of staying. As the launch window approaches, ground crews and engineers are busy going over the rocket and spacecraft to ensure all systems are functioning and working together. After the most recent Wet Dress Rehearsal, . . .(continued at <https://www.universetoday.com/articles/nasa-is-preparing-to-roll-artemis-ii-rocket-back-into-the-hangar> )



### **How Long Could Earth Microbes Live On Mars?**

Searching for past or present life on Mars is the sole driving force behind every mission we send to the red planet, from orbiters to landers to rovers. However, there remains a concern in the scientific community about Earth-based microbes hitching a ride on Mars-bound spacecraft, also called forward contamination. The concern is potentially mistaking Earth microbes for Mars life or that Earth microbes potentially influence samples of Mars life we might find. While NASA is dedicated to mitigating it as much as possible, could new methods help determine how long Earth-based microbes could survive on Mars and alleviate concerns about forward contamination?. . .(continued at <https://phys.org/news/2026-02-earth-microbes-mars.html> )



### **Largest Ever Radio Sky Survey Maps The Universe In Unprecedented Detail**

An international collaboration using the Low Frequency Array (LOFAR) has published an exceptionally detailed radio sky map, revealing 13.7 million cosmic sources and delivering the most complete census yet of actively growing supermassive black holes. It showcases an extraordinary variety of systems powered by these black holes, whose radio emission can extend for millions of light-years. The newly released LOFAR Two-meter Sky Survey (LoTSS-DR3) marks a major milestone in radio astronomy and international scientific collaboration. The results will be published in *Astronomy & Astrophysics*. By observing the sky at low radio frequencies, the survey reveals a dramatically different view of the universe than that seen at optical wavelengths. . . .(continued at <https://phys.org/news/2026-02-largest-radio-sky-survey-universe.html> )



### **First Evidence Of A Subsurface Lava Tube On Venus**

Volcanic activity is not unique to Earth: traces of volcanic activity, such as lava tubes, have been found on Mars and the moon. Now, the University of Trento has demonstrated the existence of an empty lava tube even in the depths of Venus, a planet whose surface and geology have been largely shaped by volcanic processes. The cave was identified through radar data analysis. The discovery was published by Nature Communications. "Our knowledge of Venus is still limited, and until now we have never had the opportunity . . . (continued at <https://phys.org/news/2026-02-evidence-subsurface-lava-tube-venus.html> )



### **Starliner Investigation Identifies Flawed NASA Decision Making**

NASA released Feb. 19 an independent report into the Boeing CST-100 Starliner Crew Flight Test (CFT) mission, which suffered thruster failures during the spacecraft's approach to the International Space Station. The incident led NASA to return the spacecraft uncrewed, with the two astronauts who launched on Starliner remaining on the ISS for more than eight months before coming home on a Crew Dragon. The report recommended that NASA classify the incident as a "Type A" mishap, citing both the technical issues with the flight as well as organizational problems. "Starliner has design and engineering deficiencies that must be corrected, but the most troubling failure revealed by this investigation is not hardware," NASA Administrator Jared Isaacman said . . . (continued at <https://spacenews.com/starliner-investigation-identifies-flawed-nasa-decision-making/> )



## Space News

News from around the Net

### **One Of The Biggest Stars In The Universe Might Be Getting Ready To Explode**

One of the largest known stars in the universe underwent a dramatic transformation in 2014, new research shows, and may be preparing to explode. A study led by Gonzalo Muñoz-Sanchez at the National Observatory of Athens, published in Nature Astronomy today, argues that the enormous star WOH G64 has transitioned from a red supergiant to a rare yellow hypergiant—in what may be evidence of an impending supernova. The evidence suggests we may be witnessing, in real time, a massive star shedding its outer layers, shrinking as it heats up, and moving closer to the end of its short life. . .

.(continued at <https://phys.org/news/2026-02-biggest-stars-universe-ready.html> )



### **Watch the Young Moon Greet Mercury at Sunset**

Well before the official start of spring, skywatchers divine the season's arrival in the slant of the crescent Moon at dusk. From fall through early winter, the young Moon keeps low in the southern sky, where bright twilight makes a day-old crescent difficult if not impossible for Northern Hemisphere observers to see. But by February, its angle to the western horizon steepens considerably. Just a day after the new Moon, the fragile crescent pole vaults almost directly above the Sun into a dark sky. . . .

(continued at <https://skyandtelescope.org/astronomy-news/watch-the-young-moon-greet-mercury-at-sunset/> )



### **CINEMA Mission Will Explore Auroras And Earth's Mysterious Magnetotail**

Every winter, thousands of tourists travel to high-latitude regions like Scandinavia, Canada, and Alaska hoping to see the Aurora Borealis or Northern Lights. Vincent Ledvina, an aurora guide and Ph.D. student in space physics at the University of Alaska Fairbanks, estimates he leads 1,000 people on aurora tours each year. Some ask Ledvina how the dazzling curtains of light are created, and he tells them that auroras occur when high-energy particles from space are funneled by Earth's magnetosphere into the polar atmosphere and collide with different molecules in the air. Ledvina says that more specific questions can be difficult to answer. . . .

(continued at <https://phys.org/news/2026-02-cinema-mission-explore-auroras-earth.html> )



### **Astronomers Discover Second Failed Supernova Candidate**

Astronomers might have seen a star in the Andromeda Galaxy collapse directly into a black hole, without the accompanying supernova. If confirmed, it would be the most complete observational record ever made of a star's transformation into a black hole. Andromeda (M31) is the nearest major galaxy to the Milky Way at 2.5 million light-years away. In 2014, a supergiant star in Andromeda known as M31-2014-DS1 brightened slightly at infrared wavelengths, before swiftly dimming well below its original luminosity by 2016. .... a team led by Kishalay De (Flatiron Institute) examined almost two decades' worth of archival data on the star from the Near-Earth Object Wide-Field Infrared Survey Explorer (NEOWISE) space mission. . . .

(continued at <https://skyandtelescope.org/astronomy-news/astronomers-discover-second-failed-supernova-candidate/> )



### **NASA Space Telescope Gets 1st Clear X-Ray Image Of Sun-Like Star Blowing A Bubble**

Astronomers have captured the first views of a young sun-like star blowing bubbles, offering a rare glimpse at how our solar neighborhood might have behaved in its youth. Using NASA's Chandra X-ray Observatory, researchers observed HD 61005 — a young star located about 120 light-years from Earth with roughly the same mass and temperature as our sun — and detected a vast bubble of hot gas surrounding it. This wind-blown bubble, known as an "astrosphere," forms when a star's powerful stellar wind slams into surrounding interstellar gas and dust, carving out a protective cavity much like the sun's heliosphere that shields our solar system from galactic cosmic rays, according to a statement from NASA. . . .

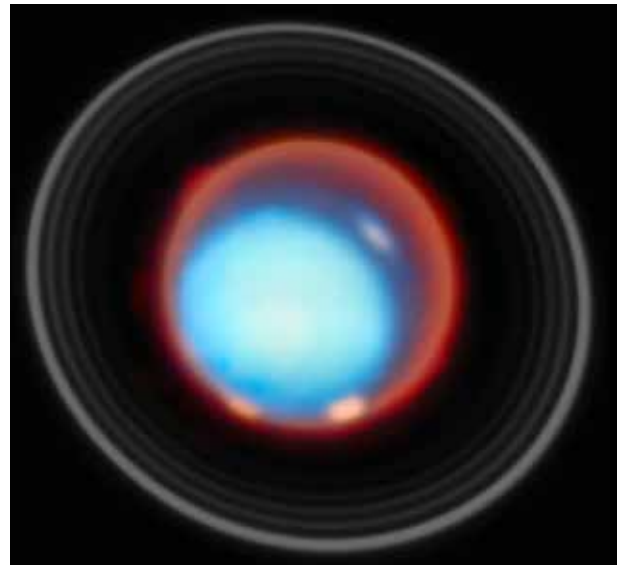
(continued at <https://www.space.com/astronomy/stars/nasa-space-telescope-gets-1st-clear-x-ray-image-of-sun-like-star-blowing-a-bubble> )



## Webb maps the mysterious upper atmosphere of Uranus

[weic2602](#) — [Science Release](#) 19 February 2026

For the first time, an international team of astronomers have mapped the vertical structure of Uranus's upper atmosphere, uncovering how temperature and charged particles vary with height across the planet. Using Webb's NIRSPEC instrument, the team observed Uranus for nearly a full rotation, detecting the faint glow from molecules high above the clouds. These unique data provide the most detailed portrait yet of where the planet's auroras form, how they are influenced by its unusually tilted magnetic field, and how Uranus's atmosphere has continued to cool over the past three decades. The results offer a new window into how ice-giant planets distribute energy in their upper layers.



*weic2602a.tif* Credit: ESA/Webb, NASA, CSA, STScI, P. Tiranti, H. Melin, M. Zamani (ESA/Webb)

Led by Paola Tiranti of Northumbria University in the United Kingdom, the study mapped out the temperature and density of ions in the atmosphere extending up to 5,000 kilometres above Uranus's cloud tops, a region called the ionosphere where the atmosphere becomes ionised and interacts strongly with the planet's magnetic field. The measurements show that temperatures peak between 3,000 and 4,000 kilometres, while ion densities reach their maximum around 1,000 kilometres, revealing clear longitudinal variations linked to the complex geometry of the magnetic field.

*"This is the first time we've been able to see Uranus's upper atmosphere in three dimensions,"* said Tiranti. *"With Webb's sensitivity, we can trace how energy moves upward through the planet's atmosphere and even see the influence of its lopsided magnetic field."*

Webb's data confirm that Uranus's upper atmosphere is still cooling, extending a trend that began in the early 1990s. The team measured an average temperature of around 426 kelvins (about 150 degrees Celsius), lower than values recorded by ground-based telescopes or previous spacecraft.

Two bright auroral bands were detected near Uranus's magnetic poles, together with a distinct depletion in emission and ion density in part of the region between two bands (a feature likely linked to transitions in magnetic field lines). Similar darkened regions have been seen at Jupiter, where the geometry of the magnetic field there controls how charged particles travel through the upper atmosphere.

*"Uranus's magnetosphere is one of the strangest in the Solar System,"* added Tiranti. *"It's tilted and offset from the planet's rotation axis, which means its auroras sweep across the surface in complex ways. Webb has now shown us how deeply those effects reach into the atmosphere. By revealing Uranus's*

vertical structure in such detail, Webb is helping us understand the energy balance of the ice giants. This is a crucial step towards characterising giant planets beyond our Solar System.”

The study is based on data from JWST General Observer programme [5073](#) (PI: H. Melin of Northumbria University in the United Kingdom), which used [NIRSpec](#)’s Integral Field Unit on 19 January 2025 to observe Uranus for 15 hours. The research has been [published today](#) in the Geophysical Research Letters.

## 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, STScI, P. Tiranti, H. Melin, M. Zamani (ESA/Webb)

## Links

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

## Contacts

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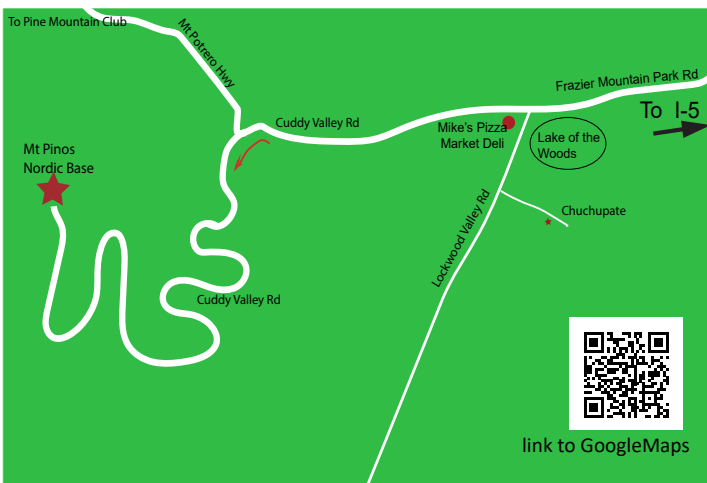
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## Dark Sky Observing Sites

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.

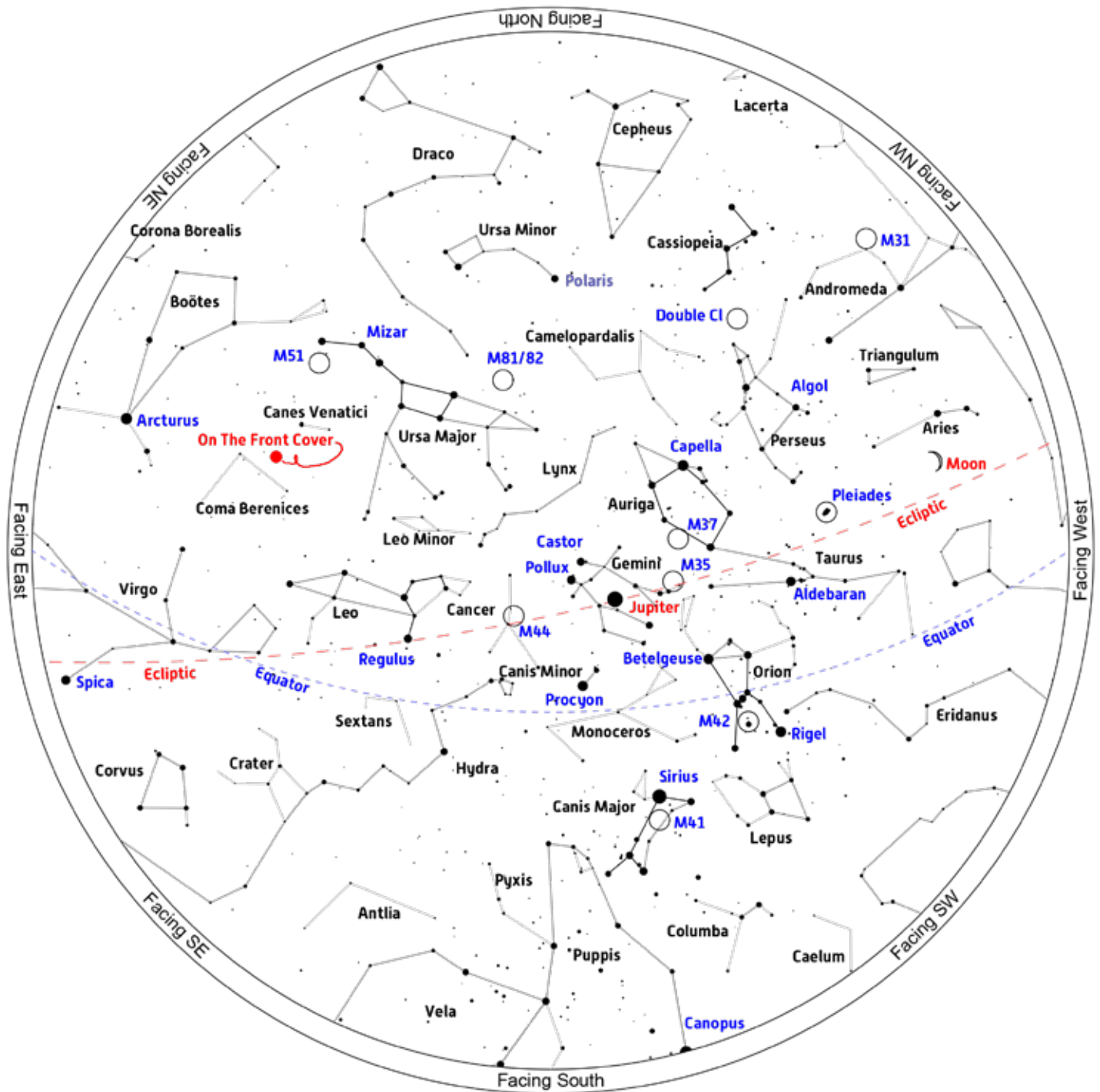
[RV7F+FF Frazier Park, California](#) (link to GoogleMaps)

**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: 2026 March 21, 21:00 (UTC -07:00)

Powered by: Heavens-Above.com

## Solar System Summary

The **Sun** starts the month in the middle of Aquarius ending the month near the middle of Aquarius.

### The Planets

**Mercury** begins its fall back toward the Sun achieving inferior conjunction on the 6th. After a few weeks climbing away from the rising Sun, on the 21st, a stationary point 22° west of the Sun.

**Venus**, in the evening twilight, starting the month on the edge Aquarius, moving normally across Pisces and at the end of the month crossing into Aries. On the 7th, passes by Saturn and Neptune.

**Mars** spending the month in Aquarius separating itself from the rising Sun, at mag 1.2. On the 15th/16th Mercury passes by 3½° north.

**Jupiter** after opposition, is still in Gemini moving in retrograde motion resuming normal motion on the 11th of next month.

**Saturn** moving in normal motion in southern Pisces in the company of Neptune, and by the end of the month is at mag 0.8. On the 24th it is in solar conjunction.

**Uranus** in normal motion, at mag 5.7 passing between the Pleiades and the Hyades over the next 6 months

**Neptune** in normal motion in southern Pisces at mag 7.9. On the 7th Venus passes less than ½° north. Solar conjunction is on the 22nd.

### Dwarf Planets

**134340 Pluto** still moving normally in western Capricorn, at mag 14.5, in the morning twilight.

**1 Ceres** spends the month in normal motion moving across the corner of Pisces and back into Cetus, at mag 9.1.

**2 Pallas** in the morning twilight moving from eastern Aquarius to Pisces at the end of the month, at magnitude 10.2.

**3 Juno** continues moving normally in southern Aquila at mag 11.2.

**4 Vesta** moves in normal motion, at mag 8, from eastern Capricorn into central Aquarius by month's end.

## Moon Phases



First Qtr  
Mar 25

Full  
Mar 3

Third Qtr  
Mar 11

New  
Mar 18

## Sun and Moon Rise and Set\*

| Date      | Moonrise | Moonset | Sunrise | Sunset |
|-----------|----------|---------|---------|--------|
| 3/1/2026  | 16:14    | 05:25   | 06:21   | 17:48  |
| 3/5/2026  | 20:26    | 07:14   | 06:16   | 17:52  |
| 3/10/2026 | 01:25    | 10:57   | 07:09   | 18:56  |
| 3/15/2026 | 05:15    | 15:45   | 07:03   | 19:00  |
| 3/20/2026 | 07:39    | 21:19   | 06:56   | 19:04  |
| 3/25/2026 | 11:35    | 02:04   | 06:49   | 19:08  |
| 3/30/2026 | 17:11    | 05:26   | 06:42   | 19:12  |

## Planet Data\*

### March 1

|         | Rise  | Transit | Set   | Mag  | Phase% |
|---------|-------|---------|-------|------|--------|
| Mercury | 06:37 | 12:38   | 18:38 | 2.6  | 7.2    |
| Venus   | 07:02 | 15:55   | 18:49 | -3.9 | 97.5   |
| Mars    | 05:55 | 11:22   | 16:49 | 1.2  | 99.4   |
| Jupiter | 13:09 | 20:19   | 03:33 | -2.5 | 99.3   |
| Saturn  | 07:26 | 15:24   | 19:23 | 1.0  | 99.9   |

### March 15

|         | Rise  | Transit | Set   | Mag  | Phase% |
|---------|-------|---------|-------|------|--------|
| Mercury | 06:16 | 12:01   | 17:46 | 2.1  | 12.7   |
| Venus   | 07:51 | 14:04   | 20:17 | -3.9 | 96.0   |
| Mars    | 06:30 | 12:08   | 17:47 | 1.2  | 99.1   |
| Jupiter | 13:14 | 20:34   | 03:38 | -2.4 | 99.2   |
| Saturn  | 07:35 | 13:35   | 19:36 | 0.9  | 99.9   |

### March 30

|         | Rise  | Transit | Set   | Mag  | Phase% |
|---------|-------|---------|-------|------|--------|
| Mercury | 05:37 | 11:18   | 16:59 | 0.5  | 44.0   |
| Venus   | 07:39 | 14:13   | 20:48 | -3.9 | 93.9   |
| Mars    | 06:02 | 11:53   | 17:44 | 1.2  | 98.7   |
| Jupiter | 12:17 | 19:27   | 02:41 | -2.3 | 99.0   |
| Saturn  | 06:41 | 12:43   | 18:46 | 0.9  | 100.   |

\*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 March 21, 2026. The list is sorted by the transit time of the object.

| ID       | Common Name                            | Type       | Const | RA          | Dec       | Mag  | Rise  | Transit | Set   |
|----------|--|------------|-------|-------------|-----------|------|-------|---------|-------|
| M52      | The Scorpion                           | Open       | Cas   | 23h 24m 48s | +61°35.6' | 8.0  | Circ  | 12:23   | Circ  |
| NGC7662  | Blue Snowball                          | P Neb      | And   | 23h 25m 54s | +42°33.0' | 8.3  | 03:42 | 12:24   | 21:07 |
| NGC7686  |  | Open       | And   | 23h 30m 07s | +49°08.0' | 5.6  | 02:50 | 12:29   | 22:08 |
| IC5332   |  | Galaxy     | Scl   | 23h 34m 27s | -36°06.0' | 10.6 | 08:30 | 12:33   | 16:36 |
| NGC7785  |  | Galaxy     | Psc   | 23h 55m 19s | +05°54.9' | 11.6 | 06:35 | 12:54   | 19:13 |
| NGC190   |  | Galaxy     | Psc   | 00h 38m 55s | +07°03.7' | 14.0 | 07:15 | 13:37   | 20:00 |
| M110     | <small>Sat Of Andromeda Galaxy</small> | Galaxy     | And   | 00h 40m 22s | +41°41.1' | 8.9  | 05:02 | 13:39   | 22:15 |
| NGC210   |  | Galaxy     | Cet   | 00h 40m 35s | -13°52.3' | 10.9 | 08:16 | 13:39   | 19:03 |
| NGC206   | V-36                                   | Neb        | And   | 00h 40m 36s | +40°44.0' |      | 05:09 | 13:39   | 22:10 |
| Arp168   | M32                                    | Galaxy     | And   | 00h 42m 41s | +40°51.0' | 9.0  | 05:10 | 13:41   | 22:13 |
| M32      | <small>Sat Of Andromeda Galaxy</small> | Galaxy     | And   | 00h 42m 42s | +40°51.9' | 9.1  | 05:10 | 13:41   | 22:13 |
| M31      | Andromeda Galaxy                       | Galaxy     | And   | 00h 42m 44s | +41°16.1' | 4.3  | 05:07 | 13:41   | 22:15 |
| M103     | NGC581                                 | Open       | Cas   | 01h 33m 23s | +60°39.0' | 7.0  | Circ  | 14:32   | Circ  |
| NGC598   | Triangulum Galaxy                      | Galaxy     | Tri   | 01h 33m 51s | +30°39.6' | 5.7  | 06:52 | 14:32   | 22:13 |
| NGC604   | III-150                                | Neb        | Tri   | 01h 34m 33s | +30°47.0' |      | 06:52 | 14:33   | 22:14 |
| M74      | The Phantom                            | Galaxy     | Psc   | 01h 36m 42s | +15°47.0' | 9.8  | 07:47 | 14:35   | 21:23 |
| M76      | Little Dumbbell Nebula                 | P Neb      | Per   | 01h 42m 18s | +51°34.2' | 12.0 | 04:29 | 14:41   | 00:52 |
| NGC651   | Apple Core Nebula [2]                  | P Neb      | Per   | 01h 42m 21s | +51°34.1' | 12.2 | 04:30 | 14:41   | 00:52 |
| IC1805   | Heart Nebula                           | Open       | Cas   | 02h 32m 47s | +61°27.6' | 6.5  | Circ  | 15:31   | Circ  |
| NGC1052  |  | Galaxy     | Cet   | 02h 41m 05s | -08°15.3' | 10.6 | 10:00 | 15:40   | 21:19 |
| M34      | Spiral Cluster                         | Open       | Per   | 02h 42m 05s | +42°45.6' | 6.0  | 06:57 | 15:41   | 00:24 |
| M77      | Cetus A                                | Galaxy     | Cet   | 02h 42m 41s | -00°00.8' | 9.7  | 09:39 | 15:41   | 21:44 |
| NGC1084  |  | Galaxy     | Eri   | 02h 46m 00s | -07°34.6' | 10.6 | 10:03 | 15:45   | 21:26 |
| IC1848   | Soul Nebula                            | Open       | Cas   | 02h 51m 18s | +60°24.4' | 6.5  | Circ  | 15:50   | Circ  |
| M45      | Pleiades                               | Open       | Tau   | 03h 47m 30s | +24°07.0' | 1.6  | 09:31 | 16:46   | 00:01 |
| Barnard5 | B5                                     | DkNeb      | Per   | 03h 47m 53s | +32°53.0' |      | 08:57 | 16:46   | 00:36 |
| NGC1461  |  | Galaxy     | Eri   | 03h 48m 27s | -16°23.5' | 11.7 | 11:31 | 16:47   | 22:03 |
| IC353    |  | Neb        | Tau   | 03h 53m 00s | +25°48.0' |      | 09:30 | 16:52   | 00:13 |
| IC2003   |  | P Neb      | Per   | 03h 56m 22s | +33°52.5' | 13.0 | 09:01 | 16:55   | 00:49 |
| NGC1499  | California Nebula                      | Neb        | Per   | 04h 03m 14s | +36°22.0' |      | 08:56 | 17:02   | 01:08 |
| M79      | NGC1904                                | Globular   | Lep   | 05h 24m 11s | -24°31.4' | 8.5  | 13:33 | 18:23   | 23:12 |
| M38      | Starfish Cluster                       | Open       | Aur   | 05h 28m 40s | +35°50.8' | 7.0  | 10:24 | 18:27   | 02:31 |
| M1       | Crab Nebula                            | SNR        | Tau   | 05h 34m 32s | +22°00.8' | 8.4  | 11:25 | 18:33   | 01:41 |
| M42      | Great Orion Nebula                     | Open+D Neb | Ori   | 05h 35m 16s | -05°23.4' | 4.0  | 12:46 | 18:34   | 00:22 |
| M43      | De Mairan's Nebula                     | D Neb      | Ori   | 05h 35m 31s | -05°16.0' | 9.0  | 12:46 | 18:34   | 00:22 |

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| ID   | Common Name             | Type         | Const | RA          | Dec       | Mag  | Rise  | Transit | Set   |
|------|-------------------------|--------------|-------|-------------|-----------|------|-------|---------|-------|
| M36  | Pinwheel Cluster        | Open         | Aur   | 05h 36m 18s | +34°08.3' | 6.5  | 10:39 | 18:35   | 02:30 |
| M78  | NGC2068                 | D Neb        | Ori   | 05h 46m 45s | +00°04.8' | 8.0  | 12:42 | 18:45   | 00:48 |
| M37  | Salt-and-pepper Cluster | Open         | Aur   | 05h 52m 18s | +32°33.2' | 6.0  | 11:03 | 18:51   | 02:39 |
| M35  | NGC2168                 | Open         | Gem   | 06h 09m 00s | +24°21.0' | 5.5  | 11:52 | 19:08   | 02:24 |
| M41  | Little Beehive          | Open         | CMa   | 06h 46m 01s | -20°45.3' | 5.0  | 14:42 | 19:45   | 00:47 |
| M50  | Heart-shaped Cluster    | Open         | Mon   | 07h 02m 42s | -08°23.0' | 7.0  | 14:22 | 20:01   | 01:41 |
| M47  | NGC2422                 | Open         | Pup   | 07h 36m 35s | -14°29.0' | 4.5  | 15:13 | 20:35   | 01:57 |
| M46  | NGC2437                 | Open         | Pup   | 07h 41m 46s | -14°48.6' | 6.5  | 15:20 | 20:40   | 02:01 |
| M93  | NGC2447                 | Open         | Pup   | 07h 44m 30s | -23°51.4' | 6.5  | 15:51 | 20:43   | 01:35 |
| M48  | NGC2548                 | Open         | Hya   | 08h 13m 43s | -05°45.0' | 5.5  | 15:25 | 21:12   | 02:59 |
| M44  | Beehive Cluster         | Open         | Cnc   | 08h 40m 24s | +19°40.0' | 4.0  | 14:39 | 21:39   | 04:39 |
| M67  | King Cobra              | Open         | Cnc   | 08h 51m 18s | +11°48.0' | 7.5  | 15:14 | 21:50   | 04:26 |
| M81  | Bode's Galaxy           | Galaxy       | UMa   | 09h 55m 33s | +69°03.9' | 7.8  | Circ  | 22:54   | Circ  |
| M82  | Cigar Galaxy            | Galaxy       | UMa   | 09h 55m 53s | +69°40.8' | 9.2  | Circ  | 22:54   | Circ  |
| M95  | NGC3351                 | Galaxy       | Leo   | 10h 43m 58s | +11°42.2' | 10.6 | 17:07 | 23:43   | 06:18 |
| M96  | NGC3368                 | Galaxy       | Leo   | 10h 46m 46s | +11°49.2' | 10.1 | 17:09 | 23:45   | 06:21 |
| M105 | NGC3379                 | Galaxy       | Leo   | 10h 47m 50s | +12°34.9' | 10.5 | 17:08 | 23:46   | 06:25 |
| M108 | NGC3556                 | Galaxy       | UMa   | 11h 11m 31s | +55°40.4' | 10.6 | Circ  | 00:10   | Circ  |
| M97  | Owl Nebula              | P Neb        | UMa   | 11h 14m 48s | +55°01.1' | 12.0 | Circ  | 00:13   | Circ  |
| M65  | Leo Triplet             | Galaxy       | Leo   | 11h 18m 56s | +13°05.5' | 10.1 | 17:38 | 00:17   | 06:57 |
| M66  | Leo Triplet             | Galaxy       | Leo   | 11h 20m 15s | +12°59.4' | 9.7  | 17:39 | 00:19   | 06:58 |
| M109 | NGC3992                 | Galaxy       | UMa   | 11h 57m 36s | +53°22.4' | 10.6 | 14:09 | 00:56   | 11:43 |
| M98  | NGC4192                 | Galaxy       | Com   | 12h 13m 48s | +14°54.0' | 10.9 | 18:27 | 01:12   | 07:58 |
| M99  | Coma Pinwheel Galaxy    | Galaxy       | Com   | 12h 18m 50s | +14°25.0' | 10.4 | 18:34 | 01:17   | 08:01 |
| M106 | NGC4258                 | Galaxy       | CVn   | 12h 18m 58s | +47°18.2' | 9.1  | 15:57 | 01:18   | 10:38 |
| M61  | Swelling Spiral         | Galaxy       | Vir   | 12h 21m 55s | +04°28.3' | 10.1 | 19:05 | 01:20   | 07:36 |
| M40  | Winnecke 4              | Dbl+Asterism | UMa   | 12h 22m 12s | +58°05.0' | 8.7  | Circ  | 01:21   | Circ  |
| M100 | Mirror of M99           | Galaxy       | Com   | 12h 22m 55s | +15°49.3' | 10.1 | 18:33 | 01:21   | 08:10 |
| M84  | NGC4374                 | Galaxy       | Vir   | 12h 25m 04s | +12°53.2' | 10.2 | 18:44 | 01:24   | 08:03 |
| M85  | NGC4382                 | Galaxy       | Com   | 12h 25m 24s | +18°11.4' | 10.0 | 18:29 | 01:24   | 08:19 |
| M86  | NGC4406                 | Galaxy       | Vir   | 12h 26m 12s | +12°56.7' | 9.9  | 18:45 | 01:25   | 08:04 |
| M49  | NGC4472                 | Galaxy       | Vir   | 12h 29m 47s | +08°00.0' | 9.3  | 19:03 | 01:28   | 07:53 |
| M87  | Smoking Gun             | Galaxy       | Vir   | 12h 30m 49s | +12°23.4' | 9.6  | 18:52 | 01:29   | 08:07 |
| M88  | NGC4501                 | Galaxy       | Com   | 12h 31m 59s | +14°25.2' | 10.2 | 18:47 | 01:31   | 08:14 |
| M91  | Missing Messier Object  | Galaxy       | Com   | 12h 35m 27s | +14°29.7' | 10.9 | 18:50 | 01:34   | 08:18 |
| M89  | NGC4552                 | Galaxy       | Vir   | 12h 35m 40s | +12°33.3' | 10.9 | 18:56 | 01:34   | 08:12 |
| M90  | NGC4569                 | Galaxy       | Vir   | 12h 36m 50s | +13°09.7' | 10.2 | 18:55 | 01:35   | 08:15 |
| M58  | NGC4579                 | Galaxy       | Vir   | 12h 37m 44s | +11°49.1' | 10.4 | 19:00 | 01:36   | 08:12 |
| M68  | NGC4590                 | Globular     | Hya   | 12h 39m 28s | -26°44.5' | 9.0  | 20:56 | 01:38   | 06:20 |

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| ID         | Common Name                         | Type       | Const | RA          | Dec       | Mag  | Rise  | Transit | Set   |
|------------|-------------------------------------|------------|-------|-------------|-----------|------|-------|---------|-------|
| M104       | Sombrero Galaxy                     | Galaxy     | Vir   | 12h 39m 59s | -11°37.3' | 9.2  | 20:08 | 01:39   | 07:09 |
| M59        | NGC4621                             | Galaxy     | Vir   | 12h 42m 02s | +11°38.7' | 10.7 | 19:05 | 01:41   | 08:16 |
| M60        | NGC4649                             | Galaxy     | Vir   | 12h 43m 40s | +11°33.1' | 9.8  | 19:07 | 01:42   | 08:18 |
| M94        | Croc's Eye Galaxy                   | Galaxy     | CVn   | 12h 50m 53s | +41°07.1' | 8.9  | 17:16 | 01:49   | 10:22 |
| M64        | Black Eye Galaxy                    | Galaxy     | Com   | 12h 56m 44s | +21°41.0' | 9.3  | 18:48 | 01:55   | 09:02 |
| M53        | NGC5024                             | Globular   | Com   | 13h 12m 55s | +18°10.1' | 8.5  | 19:16 | 02:11   | 09:07 |
| M63        | Sunflower Galaxy                    | Galaxy     | CVn   | 13h 15m 49s | +42°01.7' | 9.3  | 17:36 | 02:14   | 10:53 |
| M51        | Whirlpool Galaxy                    | Galaxy     | CVn   | 13h 29m 52s | +47°11.7' | 8.9  | 17:09 | 02:28   | 11:48 |
| Arp85      | M51B                                | Galaxy     | CVn   | 13h 29m 58s | +47°16.0' | 9.6  | 17:09 | 02:29   | 11:48 |
| M83        | Southern Pinwheel Galaxy            | Galaxy     | Hya   | 13h 37m 00s | -29°51.8' | 8.0  | 22:06 | 02:36   | 07:06 |
| M3         | NGC5272                             | Globular   | CVn   | 13h 42m 11s | +28°22.5' | 7.0  | 19:10 | 02:41   | 10:12 |
| M101       | Pinwheel Galaxy                     | Galaxy     | UMa   | 14h 03m 13s | +54°20.9' | 8.2  | 15:43 | 03:02   | 14:20 |
| M102       | Spindle Galaxy (duplicate of M101?) | Galaxy     | Dra   | 15h 06m 30s | +55°45.7' | 10.8 | Circ  | 04:05   | Circ  |
| M5         | NGC5904                             | Globular   | Ser   | 15h 18m 33s | +02°04.9' | 7.0  | 22:09 | 04:17   | 10:26 |
| M80        | NGC6093                             | Globular   | Sco   | 16h 17m 03s | -22°58.5' | 8.5  | 00:21 | 05:16   | 10:11 |
| IC4601     |                                     | Neb        | Sco   | 16h 20m 18s | -20°04.9' |      | 00:14 | 05:19   | 10:23 |
| Abell38    |                                     | P Neb      | Sco   | 16h 23m 17s | -31°44.9' | 11.7 | 00:59 | 05:22   | 09:44 |
| M4         | Cat's Eye                           | Globular   | Sco   | 16h 23m 35s | -26°31.5' | 7.5  | 00:40 | 05:22   | 10:05 |
| M13        | Great Hercules Cluster              | Globular   | Her   | 16h 41m 41s | +36°27.5' | 7.0  | 21:33 | 05:40   | 13:47 |
| NGC6210    | Turtle Planetary Nebula             | P Neb      | Her   | 16h 44m 30s | +23°48.0' | 9.0  | 22:29 | 05:43   | 12:57 |
| M12        | Gumball Globular                    | Globular   | Oph   | 16h 47m 14s | -01°56.8' | 8.0  | 23:48 | 05:46   | 11:43 |
| M62        | Flickering Globular                 | Globular   | Oph   | 17h 01m 13s | -30°06.7' | 8.0  | 01:31 | 06:00   | 10:29 |
| M19        | NGC6273                             | Globular   | Oph   | 17h 02m 38s | -26°16.0' | 8.5  | 01:18 | 06:01   | 10:45 |
| M92        | NGC6341                             | Globular   | Her   | 17h 17m 07s | +43°08.1' | 7.5  | 21:29 | 06:16   | 15:02 |
| M9         | NGC6333                             | Globular   | Oph   | 17h 19m 12s | -18°31.0' | 9.0  | 01:08 | 06:18   | 11:27 |
| Abell41    |                                     | P Neb      | Ser   | 17h 29m 04s | -15°13.3' | 13.9 | 01:08 | 06:28   | 11:47 |
| Abell42    |                                     | P Neb      | Oph   | 17h 31m 31s | -08°19.1' | 14.6 | 00:50 | 06:30   | 12:10 |
| M14        | NGC6402                             | Globular   | Oph   | 17h 37m 36s | -03°14.7' | 9.5  | 00:42 | 06:36   | 12:30 |
| M6         | Butterfly Cluster                   | Open       | Sco   | 17h 40m 20s | -32°15.2' | 4.5  | 02:19 | 06:39   | 10:59 |
| M7         | Ptolemy's Cluster                   | Open       | Sco   | 17h 53m 51s | -34°47.6' | 3.5  | 02:43 | 06:52   | 11:01 |
| M23        | NGC6494                             | Open       | Sgr   | 17h 57m 04s | -18°59.1' | 6.0  | 01:48 | 06:56   | 12:04 |
| M20        | Trifid Nebula                       | Open+D Neb | Sgr   | 18h 02m 42s | -22°58.2' | 5.0  | 02:06 | 07:01   | 11:56 |
| M8         | Lagoon Nebula                       | Open+D Neb | Sgr   | 18h 03m 41s | -24°22.7' | 5.0  | 02:12 | 07:02   | 11:52 |
| Barnard295 | B295                                | DkNeb      | Sgr   | 18h 04m 05s | -31°09.0' |      | 02:38 | 07:03   | 11:27 |
| M21        | NGC6531                             | Open       | Sgr   | 18h 04m 13s | -22°29.3' | 7.0  | 02:06 | 07:03   | 11:59 |
| M24        | Small Sagittarius Star Cloud        | Open       | Sgr   | 18h 18m 26s | -18°24.3' | 4.5  | 02:07 | 07:17   | 12:27 |
| M16        | Eagle Nebula                        | Open+D Neb | Ser   | 18h 18m 48s | -13°48.3' | 6.5  | 01:54 | 07:17   | 12:41 |

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| ID      | Common Name         | Type          | Const | RA          | Dec       | Mag  | Rise  | Transit | Set   |
|---------|---------------------|---------------|-------|-------------|-----------|------|-------|---------|-------|
| M18     | Black Swan          | Open          | Sgr   | 18h 19m 58s | -17°06.1' | 8.0  | 02:05 | 07:19   | 12:32 |
| M17     | Omega Nebulaa       | Open+D Neb    | Sgr   | 18h 20m 47s | -16°10.3' | 7.0  | 02:03 | 07:19   | 12:36 |
| HR6923  | 39 Dra              | Mult          | Dra   | 18h 23m 54s | +58°48.0' | 5.0  | Circ  | 07:22   | Circ  |
| M28     | NGC6626             | Globular      | Sgr   | 18h 24m 33s | -24°52.1' | 8.5  | 02:35 | 07:23   | 12:12 |
| M25     | M25                 | Open          | Sgr   | 18h 31m 42s | -19°07.0' | 6.5  | 02:23 | 07:30   | 12:38 |
| M11     | Wild Duck Cluster   | Open          | Sct   | 18h 51m 05s | -06°16.1' | 7.0  | 02:04 | 07:50   | 13:35 |
| M57     | Ring Nebula         | P Neb         | Lyr   | 18h 53m 35s | +33°01.7' | 9.5  | 00:02 | 07:52   | 15:43 |
| M56     | NGC6779             | Globular      | Lyr   | 19h 16m 36s | +30°11.0' | 9.5  | 00:37 | 08:15   | 15:53 |
| M55     | NGC6809             | Globular      | Sgr   | 19h 40m 00s | -30°57.7' | 7.0  | 04:13 | 08:39   | 13:04 |
| M75     | NGC6864             | Globular      | Sgr   | 20h 06m 05s | -21°55.3' | 9.5  | 04:06 | 09:05   | 14:03 |
| M73     | NGC6994             | Open+Asterism | Aqr   | 20h 58m 56s | -12°38.1' | 9.0  | 04:30 | 09:57   | 15:25 |
| M39     | NGC7092             | Open          | Cyg   | 21h 31m 42s | +48°25.0' | 5.5  | 00:59 | 10:30   | 20:01 |
| M2      | NGC7089             | Globular      | Aqr   | 21h 33m 27s | -00°49.3' | 7.5  | 04:32 | 10:32   | 16:32 |
| NGC7090 |                     | Galaxy        | Ind   | 21h 36m 28s | -54°33.4' | 11.0 | 09:22 | 10:35   | 11:48 |
| IC1396  | Elephant Trunk      | Open          | Cep   | 21h 38m 58s | +57°29.3' | 3.5  | Circ  | 10:38   | Circ  |
| NGC7099 |                     | Globular      | Cap   | 21h 40m 22s | -23°10.7' | 7.5  | 05:45 | 10:39   | 15:33 |
| NGC7128 |                     | Open          | Cyg   | 21h 43m 57s | +53°42.9' | 9.7  | 23:47 | 10:43   | 21:38 |
| NGC7142 |                     | Open          | Cep   | 21h 45m 09s | +65°46.5' | 9.3  | Circ  | 10:44   | Circ  |
| IC5146  | Cocoon Nebula       | Open          | Cyg   | 21h 53m 29s | +47°16.0' | 7.2  | 01:32 | 10:52   | 20:12 |
| IC1434  |                     | Open          | Lac   | 22h 10m 42s | +52°51.0' | 9.0  | 00:35 | 11:09   | 21:44 |
| NGC7245 |                     | Open          | Lac   | 22h 15m 11s | +54°20.6' | 9.2  | 23:56 | 11:14   | 22:32 |
| NGC7232 |                     | Galaxy        | Gru   | 22h 15m 38s | -45°51.0' | 13.0 | 08:10 | 11:14   | 14:18 |
| NGC7261 |                     | Open          | Cep   | 22h 20m 06s | +58°03.0' | 8.4  | Circ  | 11:19   | Circ  |
| NGC7293 | C63,Helix Nebula    | P Neb         | Aqr   | 22h 29m 36s | -20°48.0' | 7.3  | 06:26 | 11:28   | 16:30 |
| NGC7380 |                     | Open          | Cep   | 22h 47m 21s | +58°07.9' | 7.2  | Circ  | 11:46   | Circ  |
| C9      | Sh2-155,Cave Nebula | BrNeb         | Cep   | 22h 56m 48s | +62°37.0' |      | Circ  | 11:55   | Circ  |
| IC1470  |                     | Neb           | Cep   | 23h 05m 10s | +60°14.6' |      | Circ  | 12:04   | Circ  |
| NGC7492 |                     | Globular      | Aqr   | 23h 08m 27s | -15°36.6' | 11.5 | 06:49 | 12:07   | 17:25 |

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 Australe  
Tri - Triangulum  
Tuc - Tucana  
UMa - Ursa Major  
UMi - Ursa Minor  
Vel - Vela  
Vir - Virgo  
Vol - Volans  
Vul - Vulpecula

## Greek Alphabet

|             |             |
|-------------|-------------|
| α - alpha   | ν - nu      |
| β - beta    | ξ - xi      |
| γ - gamma   | ο - omicron |
| δ - delta   | π - pi      |
| ε - epsilon | ρ - rho     |
| ζ - zeta    | σ - sigma   |
| η - eta     | τ - tau     |
| θ - theta   | υ - upsilon |
| ι - iota    | φ - phi     |
| κ - kappa   | χ - chi     |
| λ - lambda  | ψ - psi     |
| μ - mu      | ω - omega   |

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