Volume 46.5 May 2026

Desert Sky Observer

Antelope Valley Astronomy Club

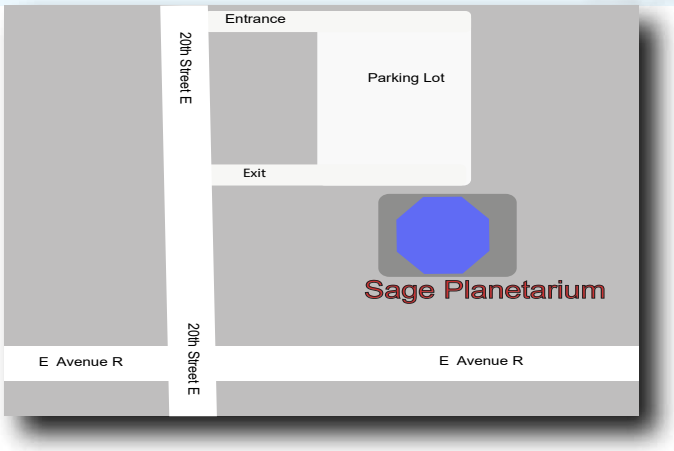
Upcoming Events

May 8: Club Meeting
May 9: Moonwalk @ PDW 8:00PM
May 16: DSSP @ Chuchupate

Every clear night: Personal Star Party

AVAC Calendar

June 6: Moonwalk @ PDW 8:30PM
June 12: Club Meeting
June 13: DSSP @ Chuchupate
June 20: Lunar Club @ PDW



Monthly Meetings

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

Board Members

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

www.avastronomyclub.org

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President's Message

By Phil Wriedt

Welcome everyone,

The next event will be the Club Meeting, on the 8th. We have a speaker from NASA/JPL. Sarah McCandless, a navigation engineer, supporting Europa Clipper and NEO Surveyor. We have been having a horrible time getting speakers from NASA. In the past year ¾ of the coordinators and ¾ of the potential speakers are gone, no longer employed by NASA, and lost to us as a speaker. Rose has been on the hunt for months and finally got someone to answer. Please, come to the meeting, tell your friends and neighbors; let's see if we can fill the planetarium. We have speakers lined up for June and July.

The next night, on May 9th we have a Moonwalk at Prime Desert Woodland park scheduled. Sunset is at 7:44 pm, astronomical dusk is at 8:45 pm. Venus and Jupiter will be up, by dusk Rigel will have set; Virgo will be just east of the meridian. We need members with telescopes. Star Parties like these are the most effective way to interact with the general public; this is one way to get new members and introduce astronomy to the kids and parents that come. The Moonwalk in April had a dozen people even though it was clouded over.

Our next Dark Sky Star Party, will be on May 16 at Chuchupate. (See maps on page 11) This will be our next try at a Club Star Party. What are the chances of rain or clouds could interfere, three months in a row? Be prepared for anything. Watch for the emails or for the text message to know what's happening.

On April 24th we participated at Star Party at the College of the Canyons. Even though it was partly cloudy several member with telescopes were there. Thank You for representing the Club! The same day we had an event at the SOAR High School in Palmdale. Rod tried his best, but the school canceled the event the same day. . . .

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

Stay Warm, or Cool, and Keep Looking Up,

Phil

On The Cover

Note: North is 191.2°right of vertical RA: 6h 16' 25.1" DEC: -21° 22' 34.62" (Canis Major)

NGC 2207 : On the left IC 2163: On the right Distance: 81 ±39 Mly Apparent mag: 12.2/ 11.6

In the direction of the constellation Canis Major, two spiral galaxies pass by each other like majestic ships in the night. The near-collision has been caught in images taken by the NASA/ESA Hubble Space Telescope and its Wide Field Planetary Camera 2.

Credit:
NASA/ESA and The Hubble Heritage Team (STScI)

From the Secretary

By Rose Moore

Members:

Thank you to all the members who turned out for AVAC events last month! Thank you for attending these events and representing our club!

Our club meeting is on Friday May 8th, starting at 7pm. We are still waiting to hear from NASA regarding a speaker. So stay tuned!

We have a Prime Desert Moon Walk on Saturday May 9th starting at 8:30pm. We need members with telescopes for this event. Free and open to the public, weather permitting. We have not had good weather for our events this year, so let's hope we have a good night in May! Email to follow.

Our dark sky star party is planned for Saturday May 16th at Chuchupate. We're hoping for good weather for May's star party! Free and open to the public, will email prior to the event.

Coming up in June: PDW Moon Walk on June 6th, club meeting with speaker Naveen Vetcha on June 12th, a DSSP at Chuchupate on June 13th, and a Lunar Club Observing session on June 20th. We also have a speaker for our July meeting.

I will be sending out an email to club members asking if anyone is interested in a day tour of Mt. Wilson, about 2 hours long, and having lunch before or after in their Cosmos Cafe. If interested please let me know.

Please come out to the meetings and events! We can not keep this club going without your participation!

Clear skies, Rose

The Backbone Of Your Setup - Tips For Choosing A Telescope Mount

Tom Koonce, AVAC member since 1996

Hey everyone!

If you've been doing this for a while, you've heard the phrase: "The mount is the most important part of your telescope setup." It's a bit of a cliché, but it's 100% true. You can have a $4,000 telescope, but if it's sitting on a shaky, uncoordinated mount, your images will look like blurry, colorful blobs, and visual observing will feel like riding a rollercoaster.

Whether you're looking to upgrade from a grab-and-go setup for visual observing or trying to capture stunning deep-sky nebulae, your mount has to do the heavy lifting—literally.

Before going any further, what do I mean by "mount"? There are typically two parts that make up a mount. The first is the mount head, like a german equatorial mount head or an yoke-like Alt-Az mount head. The second part is the base, like a sturdy tripod, or perhaps a portable or permanent pier. In the following description, I'll consider the mount to be everything from the head that holds onto the telescope to the tripod base as all part of the "mount".

Beyond cost—which you can minimize by buying used—here are some key criteria for selecting a mount suitable for both visual observation and astrophotography:

1. Payload Capacity (The "Is it Too Heavy?" Test)

This is #1 for a reason. The mount must either be able to carry your optical tube (OTA), diagonal, biggest eyepieces (visual), and/or finderscope, dew control equipment, Astro camera, guide scope, and all those heavy adapters and significant cabling while withstanding slight sudden breezes, or gentle bumps.

The Rule: If you are doing Astrophotography, try not to exceed 50–60% of the manufacturer's rated capacity. Why: If you push a mount to its limit, you'll get sluggish movement, vibrations, and subpar images. The way you prioritize mount criteria depends heavily on your imaging goals because Deep-Sky Imaging requires long, ultra-precise exposures, whereas Planetary Viewing/Imaging relies on high magnification and "lucky imaging".

For Visual: You can push it to 75–80% of capacity, but you'll be better off keeping it lower, around 50-60%.

2. Mount Type: Alt-Az vs. Equatorial (EQ)

Alt-Azimuth (Alt-Az): Think camera tripod (up/down, left/right). Great for visual because it's easy and intuitive.

Equatorial (EQ): Tilts on an axis parallel to Earth's axis. This is non-negotiable for deep-sky astrophotography because it prevents field rotation, where the object twists in your frame over time.

3. Stability and Damping Time (No Wobble)

A great mount is a solid mount. If you tap the telescope, the vibrations should disappear in under 5 seconds (preferably under 2 seconds). If your mount vibrates constantly in a light breeze, you'll never see fine detail on planets or take sharp images. A good rule of thumb for selecting a well performing mount is when choosing a mount for a telescope, always select (at least) the next step up in mount size than the one typically recommended that came with it. If it comes with a medium-duty tripod, get the heavy-duty tripod. If it comes with a heavy-duty tripod, get the extra-heavy duty field tripod or a portable pier. If the specs say you could potentially put your 8 pound imaging system refractor onto a Sky Watcher Star Adventurer GTI mount rated at 11 pounds, save more money and get a mount/tripod arrangement that is designed for 22 or 30 pounds. After many years of observing from the parking lot on Mt. Pinos and many star parties, I've never heard anyone complain that their mount was just "too sturdy" when a mini windstorm whipped through the telescopes in the early evening or when they felt the breezes kick up during a long series of 30 minute exposures of distant galaxy clusters.

4. Tracking Accuracy

Earth spins, and your target moves. An EQ mount must track the sky smoothly to counteract this. For astrophotography, you need a mount with periodic error correction (PEC), which fixes minor imperfections in the gears.

Pro Tip: If you plan on taking long 5+ minute exposures, make sure the mount is autoguider compatible.

5. GoTo Capabilities (Is it Motorized?)

If you're not 100% confident in moving around the sky yet, that's perfectly okay. Do you want to spend your night searching for the Ring Nebula, or looking at it? Many different types of "GoTo" mounts automatically find and track objects. They're a lifesaver for light-polluted city skies where you can't see faint stars to "star hop" manually. Or under clear dark skies where the sheer number of stars visible can be a bit overwhelming.

6. Portability and Weight

Does the mount live in your observatory, or do you carry it to your backyard, or travel to dark sites? A Losmandy G11 or an EQ6-R Pro are workhorses, but they're heavy and bulky to transport in their cases. Remember that the weight of the mount is just part of what's required… then there's the counterweights and the solid stainless steel counterweight balance bar that have to be carried and then assembled onto the Equitorial mount head for it to function correctly. If you need to travel, consider a lighter, modern harmonic drive mount (like the ZWO AM3N, AM5N or iOptron CEM40 or CEM70), which can carry massive loads without heavy counterweights. (These are $$$-$$$$$ but very compact and portable) If you have a SCT or reflector telescope, it may have a simple Alt-AZ mount. The Dobsonian mount approach for large newtonians is the simplest, most sturdy and straightforward mount there is, and the fork-mounted SCT on a tripod is the other common Alt-Az mount. It depends on the stability and beefy-ness of the supporting tripod for it to be effective. It's probably obvious that a one arm fork mount is inherently less stable than a dual fork Alt-Az mount. But both mounts may be built to dampen out vibrations satisfactorily. Typically, the heavier a mount is, typically the better it is in damping out vibration, but it becomes exponentially harder to move around, and it may end up living in your closet because you dread having to lug the beast out each time you want to do some observing.

7. Connectivity and Modern Features

Can you connect the mount to your laptop to run Stellarium, N.I.N.A., or Ekos? USB, Wi-Fi, and/or Bluetooth connectivity are a must for modern astrophotography. Wi-Fi capability is also great for controlling the mount from a smartphone app. Some use a dedicated iPad or tablet to run their pointing program for the scope, and others use the latest generation of mini Windows computers that mount to the telescope and plug into all aspects of their imaging telescope's capabilities from autoguiding, to focusing, control of dew heaters, and full automation of their astro-image data collection. I'll just mention that having a an old-fashioned hand controller to run your telescope can be a good thing at star parties where there could be many, many Wi-Fi and/or Bluetooth-enabled scopes in a relatively small area all battling for a free channel.

8. Polar Alignment Ease

If you go with an EQ mount, you must align it near the North Star (Polaris) each time you use it unless you've installed it on a permanent pier. A quality mount should have a built-in, illuminated polar finderscope or software assistance (like Celestron's All-Star Polar Alignment) to make this process easy. Some telescope mounts don't need to do this because they can use "plate solving" technology, your precise gps location, the exact time, and a camera that can match up its picture of the stars to its stored images of the night sky to self align the mount. This is amazing tech, but just pointing near Polaris and starting to observe is usually just fine for strictly visual observations.

Some recommendations

For Visual Only: A solid manual or GoTo Alt-Az (like a Sky-Watcher AZ-GTI, EQ-AL55i, or Vixen Porta) is perfect.

For Astrophotography (Entry/Mid): A German Equatorial GoTo mount like the Celestron AVX or Sky-Watcher HEQ5 is a classic starting point.

For Astrophotography (Serious): The Losmandy G11G or G11 Titan, Sky-Watcher EQ6-R Pro, EQ8-R, ZWO AM5N Strain Wave mount are currently kings of the "Astrobin" community database for a reason (Ref: https://welcome.astrobin.com/). Just because someone will ask…The Holy Grail is the Astro-Physics Mach2GTO. But good luck getting your hands on one. There are several other EXCELLENT mounts I didn't have room to mention, but this may get you imagining the upgrades you may want to do in the future!

Clear skies, and keep your mounts steady!

Space News

News from around the Net

Another Instrument Shut Down On Voyager 1 To Extend Its Interstellar Mission

The farthest spacecraft from Earth, the Voyager 1 probe, has just shut down another instrument. The reason for this shutdown is that Voyager's mission team wants to conserve power, which the aging spacecraft is in short supply of. The instrument in question is the Low-energy Charged Particles (LECP) experiment, which the Voyager probes used to study solar wind and the interstellar medium (ISM). Basically, the decision was made to power down this instrument so humanity's first interstellar mission could continue exploring the Universe. Like its sister mission, *Voyager 1* uses three Radioisotope Thermoelectric Generators (RTGs), devices that convert heat from decaying Plutonium-238 into electricity. . . . (continued at https://www.universetoday.com/articles/another-instrument-shut-down-on-voyager-1-to-extend-its-interstellar-mission)

The World Is Getting Brighter At Night But Some Places Are Going Dark

Earth's nights are steadily getting brighter overall, but the changes vary dramatically by region. Rapid urban growth is lighting up countries like China and India, while parts of Europe are dimming due to energy-saving efforts and new lighting technologies. The most detailed satellite analysis yet shows these shifts happening faster and more unevenly than expected. Even global trends can mask sharp local contrasts, from war-related blackouts to deliberate reductions in light pollution.. . . (continued at https://www.sciencedaily.com/releases/2026/04/260409101057.htm)

Why is it so hard to make a working toilet fit for space travel?

The Artemis II mission was anything but easy. On April 1 NASA launched four astronauts inside a minivan-sized spacecraft on a record-breaking 10-day journey around the moon, bringing them safely back to Earth with incredible precision. It was a technological success for the agency as much as it was a symbolic one, inspiring a shared sense of awe for Earth and human capability. There was, however, one pesky problem: the astronauts couldn't empty the toilet. . . . . (continued at https://www.scientificamerican.com/article/nasas-artemis-ii-was-a-major-success-so-why-couldnt-the-crew-flush-the-toilet/)

3I/ATLAS Contains 30 Times More Semi-Heavy Water Than Comets In Our Solar System

New observations of the interstellar comet 3I/ATLAS include the first measurement of the abundance of deuterated water relative to ordinary water in an interstellar object. Astronomers using the Atacama Large Millimeter/submillimeter Array (ALMA) discovered that the interstellar comet 3I/ATLAS is made of an astonishingly high ratio of semi-heavy water relative to water, indicating that its system of origin likely formed under conditions far colder than our own. The findings are published in Nature Astronomy. . . . At this point in time, 3I/ATLAS has been observed by many telescopes and instruments; however, Paneque-Carreño emphasizes the unique contribution of ALMA to this discovery. "Most instruments can't point toward the sun, but radio telescopes like ALMA can. We were able to observe the comet within days after perihelion, just as it peeked out from its transit behind the sun. . . . .(continued at https://phys.org/news/2026-04-3iatlas-semi-heavy-comets-solar.html)

The Nancy Grace Roman Space Telescope, NASA's Next Great Observatory, Is Finally Complete

On Tuesday (April 21) here at NASA's Goddard Space Flight Center, I watched as scientists stood proudly around a metal contraption with towering orange solar panels and a sparkling silver base. Gleaming right before me in a sterile white clean room stood the Nancy Grace Roman Space Telescope — at last, complete. "I very much hope, and in fact, expect, that the most exciting science from Roman is going to be the things that we didn't expect, that we couldn't predict, but that will set the new deep questions for future missions to address," Julie McEnery, senior project scientist of Roman said during a press conference on Tuesday. . . . . (continued at https://www.space.com/space-exploration/the-nancy-grace-roman-space-telescope-nasas-next-great-observatory-is-finally-complete)

Space News

News from around the Net

James Webb Space Telescope's Strange Little Red Dots May Really Be 'Black Hole Stars', X-Ray Data Suggests The discovery of an X-ray signal coinciding with the location of one of the mysterious 'little red dots' found by the James Webb Space Telescope (JWST) has strengthened the theory that the dots are 'black hole stars' — huge, dense clumps of gas energized by the presence of a growing supermassive black hole within them. The little red dots may be the biggest cosmological discovery made so far by the JWST, and possibly the most important since the discovery of dark energy in 1998. If they are what astronomers think they are, then they would act as a crucial missing link in the formation of not only supermassive black holes but also the galaxies that grow around them. . . . (continued at https://www.space.com/astronomy/black-holes/james-webb-space-telescopes-strange-little-red-dots-may-really-be-black-hole-stars-x-ray-data-suggests)

Astronomers Find The Edge Of The Milky Way

Astronomers have located the edge of the Milky Way's star-forming disk for the first time, showing that star formation is focused within 40,000 light-years of our galactic center. isk galaxies like the Milky Way form stars "inside-out" — starting from the center and working outwards through the disk. So, as a general rule, the farther out astronomers look, the younger the stars are. Now, research led by Karl Fiteni (then at University of Malta), carried out under the supervision of Joseph Caruana and Victor Debattista, has analyzed more than 100,000 giant stars. . . .(continued at https://skyandtelescope.org/astronomy-news/astronomers-find-the-edge-of-the-milky-way/)

How To Prepare For A Star Party

Some people may think that the words astronomer and party-animal don't go together. Nonetheless, for many astronomy enthusiasts, star parties are the social highlight of the observing season. Star parties are informal gatherings of amateur astronomers that let them share the night sky and their telescopes with the public and other observers. They can range from a few hours at a local park to week-long events held at distant dark-sky sites. They are usually sponsored by a local astronomy club, museum, or park. . . . . (continued at https://www.astronomy.com/observing/how-to-prepare-for-a-star-party/)

Here's A Quick Guide To Tell Meteors From Machines In Your Wide-Field Images Of The Night Sky.

As ever more night-sky images pop up on social media, I see more and more artificial satellites misidentified as meteors. So many satellites crisscross my own pictures — especially when photographing meteor showers — I sometimes scratch my head trying to tell one from the other. Whether we like it or not, the proliferation of Earth-orbiting satellites in recent years has compelled us all to contend with the increasing mechanization of the night sky. To that end, here are several ways to distinguish meteors from their machine imitators. . . . (continued at https://skyandtelescope.org/astronomy-news/satellite-or-meteor-dissecting-light-trails-in-your-sky-photos/)

Gravitational Waves May Have Created Dark Matter In The Early Universe

Gravitational waves may have played a key role in creating dark matter during the universe's earliest moments, according to a new study by Professor Joachim Kopp of Johannes Gutenberg University Mainz (JGU) and the PRISMA++ Cluster of Excellence, working with Dr. Azadeh Maleknejad from Swansea University. Published in Physical Review Letters, the research introduces fresh calculations that point to a previously unexplored process in which so-called stochastic gravitational waves could give rise to dark matter. This work addresses one of the biggest unanswered questions in particle physics. Everything we can see, including planets, stars, and life on Earth, is made of visible matter, yet this accounts for only about four percent of the universe. . . . . (continued at https://www.sciencedaily.com/releases/2026/04/260424233217.htm)

The Local Universe's Expansion Rate Is Clearer Than Ever, but Still Doesn't Add Up

noirlab2611 — Science Release 10 April 2026

An international collaboration of astronomers has produced one of the most precise measurements yet of how fast the local Universe is expanding. The result deepens one of the most significant challenges in modern cosmology. John Blakeslee, astronomer at NSF NOIRLab, funded by the U.S. National Science Foundation, is a member of the collaboration, and telescopes across two NSF NOIRLab Programs contributed data.

Astronomers have sought to measure the expansion rate of the Universe using two fundamentally different approaches. One method relies on measuring distances to stars and galaxies in the nearby Universe. The other uses measurements of the cosmic microwave background to predict what the expansion rate would be today under the standard model of cosmology.

These two approaches are expected to yield the same result, but they don't. Measurements based on the nearby Universe consistently indicate a higher expansion rate — around 73 kilometers per second per megaparsec — while predictions derived from the early Universe yield a lower value, closer to 67 or 68. Although the numerical difference is modest, it is far larger than can be explained by statistical uncertainty. This persistent disagreement, known as the Hubble tension, has now been observed across multiple independent studies and techniques.

By bringing together decades of independent observations into a single, unified framework, an international collaboration of astronomers has achieved the most precise direct measurement to date of the expansion rate of the nearby Universe. In a paper published on 10 April in Astronomy & Astrophysics, the H0 Distance Network (H0DN) Collaboration reports a value of the Hubble constant of 73.50 ± 0.81 kilometers per second per megaparsec, corresponding to a precision of just over 1%.

The study, "The Local Distance Network: a community consensus report on the measurement of the Hubble constant at ≈1% precision," is the outcome of a broad community effort launched at the International Space Science Institute (ISSI) Breakthrough Workshop, "What's under the H0od?", held at ISSI in Bern, Switzerland, in March 2025.

"*This isn't just a new value of the Hubble constant*," the collaboration notes, "*it's a community-built framework that brings decades of independent distance measurements together, transparently and accessibly.*"

NSF NOIRLab contributed both expertise and observational data to this effort. John Blakeslee, astronomer and Director of Research and Science Services at NSF NOIRLab, is a member of the collaboration. The study includes data from telescopes at NSF Cerro Tololo Inter-American Observatory (CTIO) in Chile and NSF Kitt Peak National Observatory (KPNO) in Arizona, both Programs of NSF NOIRLab. Those data were incorporated into a broader, collaborative framework spanning both ground and space-based observatories, helping to strengthen the overall result.

Rather than relying on a single method, the team constructed a "distance network" that links many overlapping techniques for measuring distances across the local Universe. These include observations of pulsating Cepheid variable stars, red giant stars that shine with a known brightness, Type Ia supernovae, and certain types of galaxies. This approach enables multiple independent paths to the same final result, and allows for a critical test: is the discrepancy caused by an error within a single method? The results indicate that this is unlikely. Even when individual techniques are removed from the analysis, the overall result changes only minimally. Independent measurements remain consistent with one another, reinforcing the robustness of the locally measured expansion rate.

"*This work effectively rules out explanations of the Hubble tension that rely on a single overlooked error in local distance measurements*," the authors conclude. "*If the tension is real, as the growing body of evidence suggests, it may point to new physics beyond the standard cosmological model.*"

The implications are significant. The lower expansion rate inferred from the early Universe depends on the standard model of cosmology, which describes how the Universe has evolved since the Big Bang. If that model is incomplete — for example, if it does not fully account for the behavior of dark energy, new particles, or modifications to gravity — its predictions for the present-day expansion rate would be affected.

In that case, the Hubble tension may not be the result of measurement error, but rather evidence that the current model of the Universe is missing a key component. The local distance network also establishes a framework for future investigations. By making its methods and data openly available, the collaboration has created a foundation that can be expanded with new observations. With next-generation observatories expected to provide even more precise measurements, astronomers aim to determine whether this discrepancy will ultimately be resolved or continue to point toward new physics.

More information

This research is presented in a paper titled "The Local Distance Network: A community consensus report on the measurement of the Hubble constant at ≈1% precision" to appear in Astronomy & Astrophysics. DOI: 10.1051/0004-6361/202557993

The results are presented by the H0DN Collaboration.

NSF NOIRLab, the U.S. National Science Foundation center for ground-based optical-infrared astronomy, operates the International Gemini Observatory (a facility of NSF, NRC–Canada, ANID–Chile, MCTIC–Brazil, MINCyT–Argentina, and KASI–Republic of Korea), NSF Kitt Peak National Observatory (KPNO), NSF Cerro Tololo Inter-American Observatory (CTIO), the Community Science and Data Center (CSDC), and NSF–DOE Vera C. Rubin Observatory (in cooperation with DOE's SLAC National Accelerator Laboratory). It is managed by the Association of Universities for Research in Astronomy (AURA) under a cooperative agreement with NSF and is headquartered in Tucson, Arizona.

The scientific community is honored to have the opportunity to conduct astronomical research on I'oligam Du'ag (Kitt Peak) in Arizona, on Maunakea in Hawai'i, and on Cerro Tololo and Cerro Pachón in Chile. We recognize and acknowledge the very significant cultural role and reverence of I'oligam Du'ag to the Tohono O'odham Nation, and Maunakea to the Kanaka Maoli (Native Hawaiians) community.

The International Space Science Institute (ISSI) is an Institute of Advanced Studies, where scientists from all over the world meet in a neutral, welcoming, and multi-disciplinary setting to discuss and publish about relevant and compelling topics related to four Disciplines: Astrophysics, Heliophysics, Planetary Science and Earth Science. ISSI's mission is to advance science by facilitating scientific community interactions, meetings, discussions, and publications aimed at a deeper understanding of results from different space missions, ground-based observations, and theory. This is achieved through a broad portfolio of scientific opportunities that include: International Teams, Workshops, Working Groups, Fora, or visits of individual Visiting Scientists. For additional information related to ISSI and to the opportunities it offers, see: www.issibern.ch.

Links

- Read the paper: The Local Distance Network: A community consensus report on the measurement of the Hubble constant at ≈1% precision
- ISSI press release
- Check out other NOIRLab Science Releases

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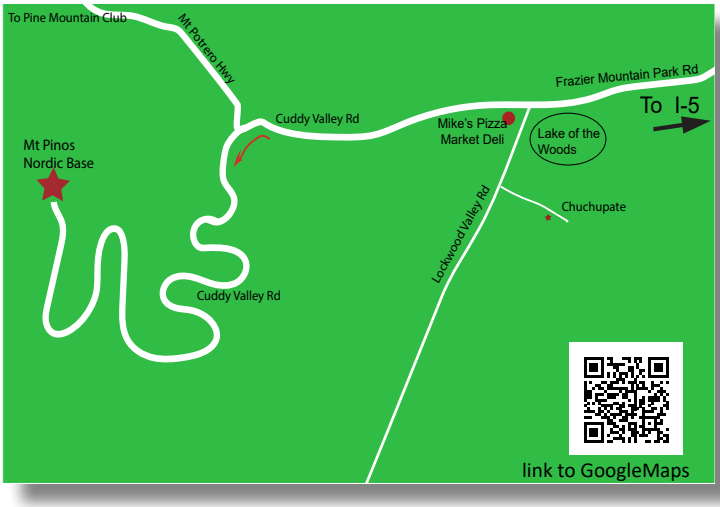
Dark Sky Observing Sites

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



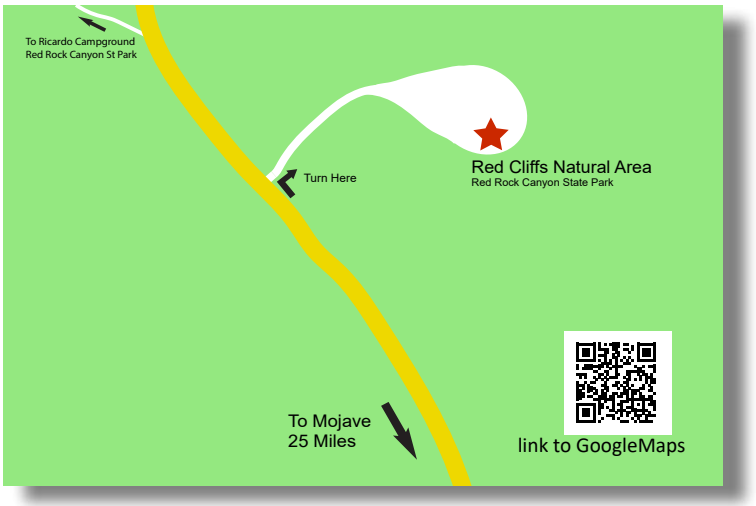
Mt Pinos is a parking lot at 8350 feet for the "Mt Pinos Nordic Base." There is a vault toilet 300 yds to the east in the Chula Vista campground.

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.

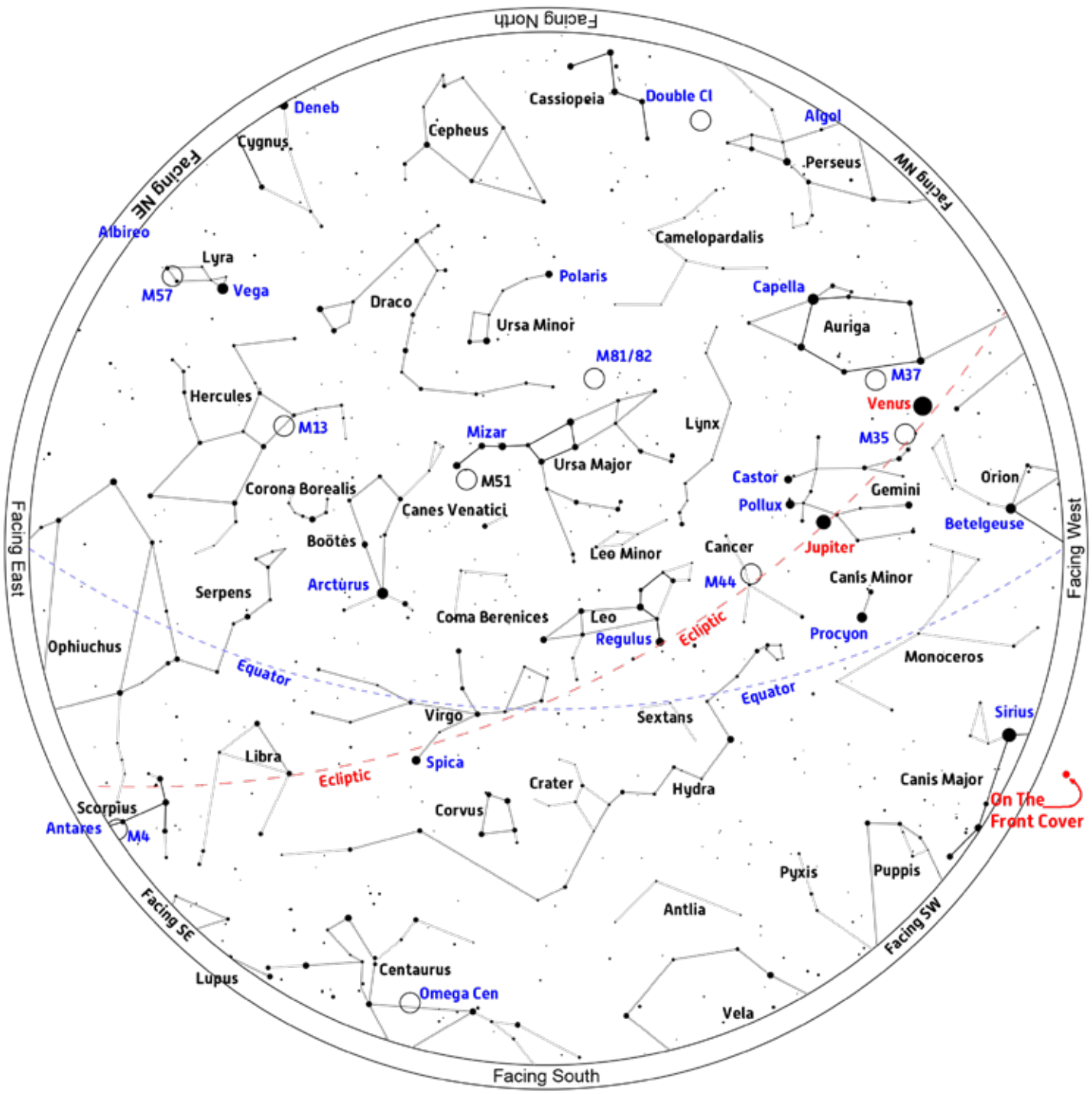
RV7F+FF Frazier Park, California (link to GoogleMaps)

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 May 16, 21:00 (UTC -07:00)

Powered by: Heavens-Above.com

Solar System Summary

The **Sun** starts the month in the middle of Aries ending the month in central Taurus.

The Planets

Mercury in the morning twilight falls back toward the Sun. On the 14th superior conjunction is achieved. By the end of the month it is in eastern Taurus at mag -0.5

Venus, in the evening twilight, starts the month in central Taurus, moving normally and crossing into Gemini on the 20th. By the end of the month it's closing with Jupiter, at Mag -3.98. On June 9th conjunction is achieved 1½° north of Jupiter.

Mars spends the month, in the morning twilight, moving normally from Pisces into Aries, at mag 1.2. On the 14th the 5% waning Moon passes by 4½° north.

Jupiter still in Gemini, moving in normal motion, at mag -1.9. On the 20th the 20% waxing Moon passes by less than 2¼° north.

Saturn still moving in normal motion in the NW corner of Cetus at mag 0.8.

Uranus in normal motion, at mag 5.8 and passes between the Pleiades and the Hyades over the next 6 months. On the 22nd is in conjunction with the Sun.

Neptune in normal motion in southern Pisces at mag 7.9.

Dwarf Planets

134340 Pluto still in western Capricorn begins a retrograde period ending in med October, at mag 14.5, in the early morning.

1 Ceres spends the month in normal motion moving from Aries into Taurus. On the 15th Ceres transitions to the morning twilight.

2 Pallas in the morning twilight moving normally in southern Pisces, and at the end of the month, it's at magnitude 10.2, and 2½°NW of Saturn.

3 Juno continues moving normally in eastern Aquila at mag 10.7.

4 Vesta moves in normal motion, at mag 8.3, from central Aquarius into NW Cetus at the month's end.

Moon Phases

First Qtr May 23 | Full May 1 | Third Qtr May 9 | New May 16

Sun and Moon Rise and Set*

Date	Moonrise	Moonset	Sunrise	Sunset
5/1/2026	20:04	05:40	06:02	19:37
5/5/2026	23:47	08:23	05:56	19:40
5/10/2026	02:12	13:19	05:53	19:44
5/15/2026	04:37	15:59	05:49	19:48
5/20/2026	09:31	23:22	05:46	19:52
5/25/2026	15:00	02:25	05:43	19:56
5/30/2026	19:56	04:49	05:41	19:59

Planet Data*

May 1

	Rise	Transit	Set	Mag	Phase%
Mercury	05:31	11:59	18:37	-0.9	88.3
Venus	07:33	14:44	21:55	-3.9	87.6
Mars	04:59	11:18	17:37	1.2	97.6
Jupiter	10:27	17:36	00:44	-2.1	99.2
Saturn	04:45	10:52	16:58	0.9	99.9

May 15

	Rise	Transit	Set	Mag	Phase%
Mercury	05:54	12:55	19:57	-2.1	99.6
Venus	07:43	15:02	22:20	-4.0	84.1
Mars	04:32	11:02	17:33	1.3	97.1
Jupiter	09:43	16:50	23:57	-2.0	99.3
Saturn	03:54	10:02	16:10	0.8	99.8

May 30

	Rise	Transit	Set	Mag	Phase%
Mercury	06:45	14:07	21:28	-0.6	77.8
Venus	08:04	15:21	22:38	-4.0	79.7
Mars	04:05	10:46	17:28	1.3	96.5
Jupiter	08:57	16:02	23:08	-1.9	99.5
Saturn	02:59	09:08	15:18	0.8	99.8

*Sun, Moon and Planetary date based on Quartz Hill, CA
*All time mentioned are local and approximate.

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 May 16, 2026. The list is sorted by the transit time of the object.

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC1175		Galaxy	Per	03h 04m 32s	+42°20.3'	12.8	03:41	12:22	21:03
IC2003		P Neb	Per	03h 56m 22s	+33°52.5'	13.0	05:20	13:14	21:08
NGC1496		Open	Per	04h 04m 32s	+52°39.7'	10.0	02:51	13:22	23:53
NGC1502		Open	Cam	04h 07m 50s	+62°19.8'	5.7	Circ	13:26	Circ
NGC1514	Crystal Ball Nebula	P Neb	Tau	04h 09m 17s	+30°46.5'	10.0	05:46	13:27	21:08
NGC1513		Open	Per	04h 09m 57s	+49°30.8'	8.4	03:44	13:28	23:11
IC359		Neb	Tau	04h 12m 28s	+27°42.1'		06:02	13:30	20:59
NGC1535		P Neb	Eri	04h 14m 16s	-12°44.3'	10.0	08:05	13:32	18:59
Barnard10	B10	DkNeb	Tau	04h 18m 41s	+28°16.0'		06:06	13:36	21:07
NGC1545		Open	Per	04h 20m 57s	+50°15.2'	6.2	03:46	13:39	23:31
NGC1569		Galaxy	Cam	04h 30m 49s	+64°50.8'	11.2	Circ	13:49	Circ
Barnard18	B18	DkNeb	Tau	04h 31m 13s	+24°21.0'		06:33	13:49	21:05
NGC1582		Open	Per	04h 31m 53s	+43°49.0'	7.0	04:58	13:50	22:41
NGC1560		Galaxy	Cam	04h 32m 48s	+71°52.7'	11.5	Circ	13:51	Circ
Barnard19	B19	DkNeb	Tau	04h 33m 00s	+26°16.0'		06:28	13:51	21:14
Barnard20	B20	DkNeb	Per	04h 37m 04s	+50°58.0'		03:53	13:55	23:57
IC2087		Neb	Tau	04h 40m 00s	+25°44.5'		06:37	13:58	21:19
Barnard23	B23	DkNeb	Tau	04h 40m 33s	+29°52.0'		06:21	13:58	21:35
NGC1624		Open	Per	04h 40m 36s	+50°27.6'	10.4	04:03	13:58	23:54
NGC1640		Galaxy	Eri	04h 42m 14s	-20°26.0'	11.7	08:57	14:00	19:03
NGC1647		Open	Tau	04h 45m 55s	+19°06.8'	6.4	07:05	14:04	21:02
IC2118	Witch Head Nebula	Neb	Eri	05h 04m 54s	-07°15.0'		08:40	14:23	20:05
NGC1851	C73	Globular	Col	05h 14m 06s	-40°03.0'	7.3	10:49	14:32	18:14
IC405	Flaming Star Nebula	Neb	Aur	05h 16m 29s	+34°21.3'		06:38	14:34	22:31
M79	NGC1904	Globular	Lep	05h 24m 11s	-24°31.4'	8.5	09:52	14:42	19:32
M38	Starfish Cluster	Open	Aur	05h 28m 40s	+35°50.8'	7.0	06:43	14:46	22:50
M1	Crab Nebula	SNR	Tau	05h 34m 32s	+22°00.8'	8.4	07:44	14:52	22:00
M42	Great Orion Nebula	Open+D Neb	Ori	05h 35m 16s	-05°23.4'	4.0	09:05	14:53	20:41
M43	Orion Nebula Extension	D Neb	Ori	05h 35m 31s	-05°16.0'	9.0	09:05	14:53	20:41
M36	Pinwheel Cluster	Open	Aur	05h 36m 18s	+34°08.3'	6.5	06:59	14:54	22:50
M78	NGC2068	D Neb	Ori	05h 46m 45s	+00°04.8'	8.0	09:02	15:05	21:07
M37	Salt-and-pepper Cluster	Open	Aur	05h 52m 18s	+32°33.2'	6.0	07:22	15:10	22:58
M35	NGC2168	Open	Gem	06h 09m 00s	+24°21.0'	5.5	08:11	15:27	22:43
M41	Little Beehive	Open	CMa	06h 46m 01s	-20°45.3'	5.0	11:01	16:04	21:06
M50	Heart-shaped Cluster	Open	Mon	07h 02m 42s	-08°23.0'	7.0	10:41	16:20	22:00

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M47	NGC2422	Open	Pup	07h 36m 35s	-14°29.0'	4.5	11:33	16:54	22:16
M46	NGC2437	Open	Pup	07h 41m 46s	-14°48.6'	6.5	11:39	17:00	22:20
M93	NGC2447	Open	Pup	07h 44m 30s	-23°51.4'	6.5	12:10	17:02	21:54
M48	NGC2548	Open	Hya	08h 13m 43s	-05°45.0'	5.5	11:45	17:31	23:18
M44	Beehive Cluster	Open	Cnc	08h 40m 24s	+19°40.0'	4.0	10:58	17:58	00:58
M67	King Cobra	Open	Cnc	08h 51m 18s	+11°48.0'	7.5	11:33	18:09	00:45
M81	Bode's Galaxy	Galaxy	UMa	09h 55m 33s	+69°03.9'	7.8	Circ	19:13	Circ
M82	Cigar Galaxy	Galaxy	UMa	09h 55m 53s	+69°40.8'	9.2	Circ	19:14	Circ
M95	NGC3351	Galaxy	Leo	10h 43m 58s	+11°42.2'	10.6	13:26	20:02	02:37
M96	NGC3368	Galaxy	Leo	10h 46m 46s	+11°49.2'	10.1	13:28	20:05	02:41
M105	NGC3379	Galaxy	Leo	10h 47m 50s	+12°34.9'	10.5	13:27	20:06	02:44
M108	NGC3556	Galaxy	UMa	11h 11m 31s	+55°40.4'	10.6	Circ	20:29	Circ
M97	Owl Nebula	P Neb	UMa	11h 14m 48s	+55°01.1'	12.0	Circ	20:33	Circ
M65	Leo Triplet	Galaxy	Leo	11h 18m 56s	+13°05.5'	10.1	13:57	20:37	03:17
M66	Leo Triplet	Galaxy	Leo	11h 20m 15s	+12°59.4'	9.7	13:58	20:38	03:18
M109	NGC3992	Galaxy	UMa	11h 57m 36s	+53°22.4'	10.6	10:29	21:15	08:02
M98	NGC4192	Galaxy	Com	12h 13m 48s	+14°54.0'	10.9	14:46	21:32	04:17
M99	Pinwheel Galaxy	Galaxy	Com	12h 18m 50s	+14°25.0'	10.4	14:53	21:37	04:20
M106	NGC4258	Galaxy	CVn	12h 18m 58s	+47°18.2'	9.1	12:17	21:37	06:57
M61	Swelling Spiral	Galaxy	Vir	12h 21m 55s	+04°28.3'	10.1	15:25	21:40	03:55
M40	Winnecke 4	Dbl+Asterism	UMa	12h 22m 12s	+58°05.0'	8.7	Circ	21:40	Circ
M100	Mirror of M99	Galaxy	Com	12h 22m 55s	+15°49.3'	10.1	14:53	21:41	04:29
M84	NGC4374	Galaxy	Vir	12h 25m 04s	+12°53.2'	10.2	15:04	21:43	04:22
M85	NGC4382	Galaxy	Com	12h 25m 24s	+18°11.4'	10.0	14:48	21:43	04:39
M86	NGC4406	Galaxy	Vir	12h 26m 12s	+12°56.7'	9.9	15:05	21:44	04:23
M49	NGC4472	Galaxy	Vir	12h 29m 47s	+08°00.0'	9.3	15:22	21:48	04:13
M87	Smoking Gun	Galaxy	Vir	12h 30m 49s	+12°23.4'	9.6	15:11	21:49	04:26
M88	NGC4501	Galaxy	Com	12h 31m 59s	+14°25.2'	10.2	15:06	21:50	04:34
M91	Missing Messier Object	Galaxy	Com	12h 35m 27s	+14°29.7'	10.9	15:09	21:53	04:37
M89	NGC4552	Galaxy	Vir	12h 35m 40s	+12°33.3'	10.9	15:15	21:53	04:32
M90	NGC4569	Galaxy	Vir	12h 36m 50s	+13°09.7'	10.2	15:15	21:55	04:35
M58	NGC4579	Galaxy	Vir	12h 37m 44s	+11°49.1'	10.4	15:19	21:56	04:32
M68	NGC4590	Globular	Hya	12h 39m 28s	-26°44.5'	9.0	17:15	21:57	02:39
M104	Sombrero Galaxy	Galaxy	Vir	12h 39m 59s	-11°37.3'	9.2	16:28	21:58	03:28
M59	NGC4621	Galaxy	Vir	12h 42m 02s	+11°38.7'	10.7	15:24	22:00	04:35
M60	NGC4649	Galaxy	Vir	12h 43m 40s	+11°33.1'	9.8	15:26	22:01	04:37
M94	Croc's Eye Galaxy	Galaxy	CVn	12h 50m 53s	+41°07.1'	8.9	13:36	22:09	06:42
M64	Black Eye Galaxy	Galaxy	Com	12h 56m 44s	+21°41.0'	9.3	15:08	22:15	05:21

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M53	NGC5024	Globular	Com	13h 12m 55s	+18°10.1'	8.5	15:35	22:31	05:26
M63	Sunflower Galaxy	Galaxy	CVn	13h 15m 49s	+42°01.7'	9.3	13:55	22:34	07:12
NGC5139	Omega Centauri	Globular	Cen	13h 26m 48s	-47°29.0'	3.6	19:54	22:45	01:35
NGC5169		Galaxy	CVn	13h 28m 10s	+46°40.3'	14.0	13:32	22:46	08:00
NGC5204		Galaxy	UMa	13h 29m 36s	+58°25.1'	11.3	Circ	22:47	Circ
M51	Whirlpool Galaxy	Galaxy	CVn	13h 29m 52s	+47°11.7'	8.9	13:29	22:48	08:07
Arp85	M51B	Galaxy	CVn	13h 29m 58s	+47°16.0'	9.6	13:28	22:48	08:07
NGC5182		Galaxy	Hya	13h 30m 41s	-28°09.0'	13.0	18:12	22:48	03:25
NGC5214		Galaxy	CVn	13h 32m 49s	+41°52.3'	14.0	14:13	22:51	07:28
M83	Southern Pinwheel	Galaxy	Hya	13h 37m 00s	-29°51.8'	8.0	18:25	22:55	03:25
HR5144	1 Boo	Triple	Boo	13h 40m 40s	+19°57.3'	5.8	15:57	22:58	06:00
NGC5283		Galaxy	Dra	13h 41m 06s	+67°40.3'	14.0	Circ	22:59	Circ
M3	NGC5272	Globular	CVn	13h 42m 11s	+28°22.5'	7.0	15:29	23:00	06:31
NGC5286	C84	Globular	Cen	13h 46m 24s	-51°22.0'	7.6	20:55	23:04	01:14
NGC5292		Galaxy	Cen	13h 47m 40s	-30°56.4'	14.0	18:40	23:05	03:31
NGC5356		Galaxy	Vir	13h 54m 59s	+05°20.0'	14.0	16:55	23:13	05:30
NGC5363		Galaxy	Vir	13h 56m 07s	+05°15.2'	10.2	16:57	23:14	05:31
NGC5447	III-787	Neb	UMa	14h 02m 29s	+54°16.3'		12:05	23:20	10:35
M101	Pinwheel Galaxy	Galaxy	UMa	14h 03m 13s	+54°20.9'	8.2	12:03	23:21	10:39
NGC5461	III-788	Neb	UMa	14h 03m 42s	+54°19.0'		12:04	23:21	10:38
NGC5485		Galaxy	UMa	14h 07m 11s	+55°00.0'	11.5	Circ	23:25	Circ
NGC5460		Open	Cen	14h 07m 27s	-48°20.6'	5.6	20:42	23:25	02:08
NGC5500		Galaxy	Boo	14h 10m 15s	+48°32.7'	14.0	13:55	23:28	09:01
IC991		Galaxy	Vir	14h 17m 48s	-13°52.3'	13.0	18:12	23:36	04:59
HR5362	HD125383	Dbl	Lup	14h 20m 10s	-43°03.5'	5.6	20:14	23:38	03:02
IC4406	Retina Nebula	P Neb	Lup	14h 22m 26s	-44°09.0'	11.0	20:24	23:40	02:57
HR5409	105 Vir, HD126868	Triple	Vir	14h 28m 12s	-02°13.6'	4.8	17:49	23:46	05:43
NGC5669		Galaxy	Boo	14h 32m 44s	+09°53.4'	12.0	17:20	23:51	06:21
NGC5689		Galaxy	Boo	14h 35m 30s	+48°44.5'	11.9	14:19	23:53	09:28
M102	Spindle Galaxy (duplicate of M101?)	Galaxy	Dra	15h 06m 30s	+55°45.7'	10.8	Circ	00:24	Circ
NGC5875		Galaxy	Boo	15h 09m 13s	+52°31.6'	13.0	13:59	00:27	10:55
NGC5907	Splinter Galaxy	Galaxy	Dra	15h 15m 54s	+56°19.7'	11.4	Circ	00:34	Circ
NGC5882		P Neb	Lup	15h 16m 50s	-45°38.9'	11.0	21:29	00:35	03:40
NGC5897		Globular	Lib	15h 17m 24s	-21°00.6'	8.6	19:34	00:35	05:37
M5	NGC5904	Globular	Ser	15h 18m 33s	+02°04.9'	7.0	18:28	00:36	06:45
Barnard228		DkNeb	Lup	15h 44m 00s	-34°30.0'		20:51	01:02	05:12
IC4593	White Eyed Pea	P Neb	Her	16h 11m 44s	+12°04.3'	11.0	18:53	01:30	08:06
IC4592	Jabbah	Neb	Sco	16h 11m 59s	-19°27.4'		20:23	01:30	06:36

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M80	NGC6093	Globular	Sco	16h 17m 03s	-22°58.5'	8.5	20:40	01:35	06:30
IC4601		Neb	Sco	16h 20m 18s	-20°04.9'		20:34	01:38	06:43
Abell38		P Neb	Sco	16h 23m 17s	-31°44.9'	11.7	21:19	01:41	06:03
M4	Cat's Eye	Globular	Sco	16h 23m 35s	-26°31.5'	7.5	20:59	01:41	06:24
IC4603	Rho Ophiuchi Complex	Neb	Oph	16h 25m 24s	-24°28.0'		20:53	01:43	06:33
IC4604	Rho Ophiuchi Complex	Neb	Oph	16h 25m 33s	-23°26.5'		20:50	01:43	06:37
NGC6124	C75	Open	Sco	16h 25m 36s	-40°40.0'	5.8	22:04	01:43	05:22
Abell39		P Neb	Her	16h 27m 33s	+27°54.5'	12.9	18:16	01:45	09:15
IC4605		Neb	Sco	16h 30m 12s	-25°06.8'		21:00	01:48	06:36
NGC6153		P Neb	Sco	16h 31m 31s	-40°15.2'	12.0	22:08	01:49	05:31
NGC6181		Galaxy	Her	16h 32m 21s	+19°49.5'	11.9	18:49	01:50	08:51
NGC6171		Globular	Oph	16h 32m 32s	-13°03.1'	8.1	20:24	01:50	07:16
NGC6178		Open	Sco	16h 35m 47s	-45°38.6'	7.2	22:48	01:54	04:59
NGC6193	C82	Open	Ara	16h 41m 18s	-48°46.0'	5.2	23:20	01:59	04:38
M13	Great Hercules Cluster	Globular	Her	16h 41m 41s	+36°27.5'	7.0	17:53	01:59	10:06
NGC6210	Turtle Planetary Nebula	P Neb	Her	16h 44m 30s	+23°48.0'	9.0	18:48	02:02	09:16
Barnard44a	B44a	DkNeb	Sco	16h 44m 45s	-40°20.0'		22:22	02:03	05:43
NGC6204		Open	Ara	16h 46m 09s	-47°01.0'	8.2	23:09	02:04	04:59
M12	Gumball Globular	Globular	Oph	16h 47m 14s	-01°56.8'	8.0	20:08	02:05	08:02
NGC6231	Table of Scorpius	Open	Sco	16h 54m 00s	-41°48.0'	2.6	22:40	02:12	05:44
IC4628	Prawn Nebula	Neb	Sco	16h 56m 58s	-40°27.3'		22:35	02:15	05:55
NGC6254		Globular	Oph	16h 57m 09s	-04°05.9'	6.6	20:24	02:15	08:06
Barnard47	B47	DkNeb	Oph	16h 59m 42s	-22°38.0'		21:21	02:17	07:14
M62	Flickering Globular	Globular	Oph	17h 01m 13s	-30°06.7'	8.0	21:50	02:19	06:48
M19	NGC6273	Globular	Oph	17h 02m 38s	-26°16.0'	8.5	21:37	02:20	07:04
Barnard51	B51	DkNeb	Oph	17h 04m 44s	-22°15.0'		21:25	02:23	07:20
IC4637		P Neb	Sco	17h 05m 10s	-40°53.1'	14.0	22:45	02:23	06:01
NGC6302	Bug Nebula	P Neb	Sco	17h 13m 42s	-37°06.0'	9.6	22:33	02:31	06:30

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

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