

Volume 43.1

January 2023

Desert Sky Observer

Antelope Valley Astronomy Club



Desert Sky Observer

www.avastronomyclub.org

January 2023

Upcoming Events

January 10: Telescope Class at The Sage @ 6:30 pm

January 13: Club Meeting and Star Party

6:00pm till . . .

January 14: Moonwalk 5:30 pm @ PDW

January 24: Astronomy Class at The Sage @ 6:30pm

Every clear night: Personal Star Party

February 4: Moonwalk 6:00pm @ PDW

February 10: Club Meeting

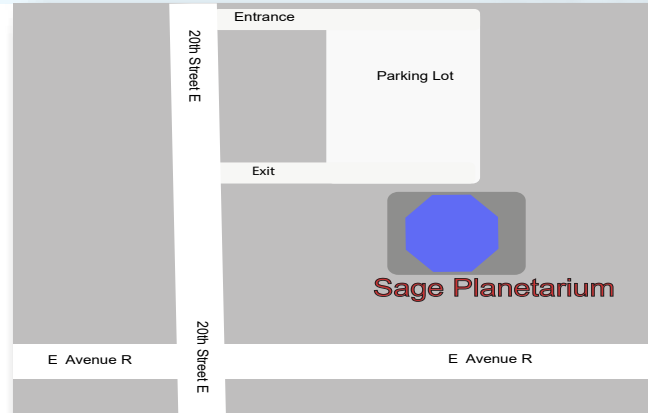
February 14: Telescope Class at The Sage @ 6:30 pm

February 18: AV Regional Science Olympiad 8:00 am - 4:30pm

February 28: Astronomy Class at The Sage @ 6:30pm



AVAC Calendar



Board Members

President: Phil Wriedt (661) 917-4874

president@avastronomyclub.org

Vice-President: Navin Arjuna 661-789-7927

vice-president@avastronomyclub.org

Secretary: Rose Moore (661) 972-1953

secretary@avastronomyclub.org

Treasurer: Rod Girard (661) 803-7838

treasurer@avastronomyclub.org

Appointed Positions

Newsletter Editor: Phil Wriedt (661) 917-4874

dso@avastronomyclub.org

Equipment & Library:

John VanEvera 661-754-1819

library@avastronomyclub.org

Club Historian: vacant

history@avastronomyclub.org

Webmaster: Steve Trotta (661) 269-5428

webmaster@avastronomyclub.org

Astronomical League Coordinator:

Frank Moore (661) 972-4775

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 20th Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium.*

Membership

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

The Club has three categories of membership.

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

Membership entitles you to ...

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

AVAC

PO Box 8545

Lancaster, CA 93539-8545

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

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

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



www.avastronomyclub.org

President's Message

By Phil Wriedt

Hi There!

Hope everyone had a wonderful holiday season.

We had a Moon Walk on Saturday December 3rd. It was cold, partly cloudy and even turning off the parking lot lights didn't help much. We were competing against the City's holiday light show. There were 20 or so, that showed for the Moon Walk, a couple of hundred for the light show. Few came over to look at the stars. At the time it seemed like a waste of time.

Our Christmas Party was the 10th of December at Gino's Italian Restaurant. I hope everyone who attended had a good time.

Our first meeting of the new year, the 13th of January will be a star party in the parking lot at the Sage! We will be starting at 6:00 pm (setup starts after 5:00) and going till about 9pm. Jeremy is inviting students from the local school district. Bring your telescopes, but afterwards leave them in your car (if it is safe to do so), 'cause the next day we have a Moonwalk at PDW starting at 6:30 pm.

Starting in January, Jeremy announced that he will be holding a class on The Telescope on the 2nd Tuesday of the month, and on the 4th Tuesday, there will be a class on Astronomy. Both classes will start at 6:30pm at the Sage Planetarium. So come on the 10th and the 24th, review what you already know, and learn something new.

On Saturday, February 18 at 8:00AM we are going to be an exhibitor at the AV Regional Science Olympiad at the AV College. That's right -- 8 o'clock in the morning (for an astronomer?). More information will be forthcoming soon.

See you at the next meeting.

Keep Looking Up, Phil

On The Cover

Please note: North is 98.1° left of vertical

RA: 1h 7' 47.18" DEC: -15° 30' 19.684"

This image from the NASA/ESA/CSA James Webb Space Telescope depicts IC 1623, an entwined pair of interacting galaxies which lies around 270 million light-years from Earth in the constellation Cetus. The two galaxies in IC 1623 are plunging headlong into one another in a process known as a galaxy merger. Their collision has ignited a frenzied spate of star formation known as a starburst, creating new stars at a rate more than twenty times that of the Milky Way galaxy.

This interacting galaxy system is particularly bright at infrared wavelengths, making it a perfect proving ground for Webb's ability to study luminous galaxies. A team of astronomers captured IC 1623 across the infrared portions of the electromagnetic spectrum using a trio of Webb's cutting-edge scientific instruments: MIRI, NIRSpec, and NIRCам. In so doing, they provided an abundance of data that will allow the astronomical community at large to fully explore how Webb's unprecedented capabilities will help to unravel the complex interactions in galactic ecosystems. These observations are also accompanied by data from other observatories, including the NASA/ESA Hubble Space Telescope, and will help set the stage for future observations of galactic systems with Webb.

The merger of these two galaxies has long been of interest to astronomers, and has previously been imaged by Hubble and by other space telescopes. The ongoing, extreme starburst causes intense infrared emission, and the merging galaxies may well be in the process of forming a supermassive black hole. A thick band of dust has blocked these valuable insights from the view of telescopes like Hubble. However, Webb's infrared sensitivity and its impressive resolution at those wavelengths allows it to see past the dust and has resulted in

From the Secretary

By Rose Moore

Members:

I hope everyone had a Merry Christmas and a safe and enjoyable holiday season!

A big thank you to all the members who were able to attend the Christmas dinner party at Gino's this year! Thank you also to all those that donated gifts for the raffle. If you need a Donation Tax Form, please let me know. There were many donated gifts and Darrell Bennett was our grand prize winner of the 8 inch Dob scope.

We have several events in January. Please check your calendars! Starting on Tuesday, Jan. 10th, is the Telescope Class, taught by Jeremy, from 6:30pm to 8pm. This is being given at the SAGE Planetarium, and are free and open to the members and public.

Our meeting on Friday, Jan. 13th, is our Telescope Night for the students of the Palmdale School District. We will need members with telescopes for this event. Please note that the outreach event will start at 6pm and go to approximately 9pm. Set up time is 30-60 mins prior to the event. Weather permitting. Planets up will be Mars, Jupiter, Saturn (up till about 7:30pm), Venus (down about 6:38pm). Also Uranus and Neptune are up, but may be difficult to see due to the lights. The waning gibbous Moon does not rise till 11:30pm.

Saturday, Jan. 14th, is a PDW Moon Walk starting at 5:30pm. Weather permitting. We need members with telescopes for this event.

The last event for January is the Astronomy Class, given at the SAGE by Jeremy, starting at 6:30pm on Tuesday Jan. 24th.

For February we have a packed month! We have a PDW Moon Walk (Feb. 4th), club meeting (Feb. 10th), Telescope Class (14th), the Antelope Valley College Science Olympiad (Feb. 18th), and the Astronomy Class (Feb. 28th).

Please come out to support your club and Jeremy's classes! You do not have to attend all, but any participation by you helps our club in doing any outreach event!

Stay warm, clear skies. Rose

On The Cover ... continued

the spectacular image above, a combination of MIRI and NIRCam imagery.

The luminous core of the galaxy merger turns out to be both very bright and highly compact, so much so that Webb's diffraction spikes appear atop the galaxy in this image. The 8-pronged, snowflake-like diffraction spikes are created by the interaction of starlight with the physical structure of the telescope. The spiky quality of Webb's observations is particularly noticeable in images containing bright stars, such as Webb's first deep field image.

MIRI was contributed by ESA and NASA, with the instrument designed and built by a consortium of nationally funded European Institutes (The MIRI European Consortium) in partnership with JPL and the University of Arizona.

NIRSpec was built for the European Space Agency (ESA) by a consortium of European companies led by Airbus Defence and Space (ADS) with NASA's Goddard Space Flight Center providing its detector and micro-shutter subsystems.

Credit: ESA/Webb, NASA & CSA, L. Armus & A. Evans

Acknowledgement: R. Colombari

AVAC Membership Renewal

It is that time year again, time to renew your AVAC Membership and HOORAY!!!, we are back in the Sage Planetarium for our monthly meetings. We have had in person meetings for the last few months now and it has been great. However if you haven't had a chance to make it out to one of these meetings I wholeheartedly encourage you to attend. The Sage Planetarium is one of the club's most rewarding benefits.

It is very gratifying to see the early membership renewals. In these times of financial uncertainty our members are more than ever the lifeblood for the AVAC. That said, please worry not, financially the club is still solvent and we are able to meet all our obligations while providing for future club events and guest speakers etc.

Please remember that our meetings are open to the public and all will be welcome. So, if for any reason you are unable to renew your membership you are still welcome to attend and we look forward to seeing you all again.

For administrative reasons we encourage members to renew their membership in January. For myself the easiest way to renew my membership was through the AVAC website via our PayPal account. However you can renew at our monthly club meetings with good old cash or by check.

For those unable to attend our monthly meeting you can renew your membership through the mail by sending a check to the club's Post Office Box:

Antelope Valley Astronomy Club
PO BOX 8545
Lancaster, CA 93539-8545

For members less familiar with the club's website, it is actually fairly simple:

- Google Antelope Valley Astronomy Club and then open on the link.
- Click on MEMBER and then click on LOGIN.
- The default Member Name will be your Membership Number.
- If you had Signed Up on line you would have created a Password, but if you have forgotten it, use the Forgot Password link.
- Once you have Logged In, under Member click on Profile.
- Under Profile click on Membership.
- Under Your Current Membership click on Renew Now.
- You will have the choice of paying with a PayPal account or with a Credit Card.
- If you choose Credit Card PayPal will allow you to pay as a Guest

Thank you,

Rod Girard AVAC Treasurer

Spot the Messenger: Observe Mercury

by David Prosper, NASA Night Sky Network

Most planets are easy to spot in the night sky, but have you spotted Mercury? Nicknamed *the Messenger* for its speed across the sky, Mercury is also the closest planet to the Sun. Its swift movements close to our Sun accorded it special importance to ancient observers, while also making detailed study difficult. However, recent missions to Mercury have resulted in amazing discoveries, with more to come.

Mercury can be one of the brightest planets in the sky – but also easy to miss! Why is that? Since it orbits so close to the Sun, observing Mercury is trickier than the rest of the “bright planets” in our solar system: Venus, Mars, Jupiter, and Saturn. Mercury always appears near our Sun from our Earth-bound point of view, making it easy to miss in the glare of the Sun or behind small obstructions along the horizon. That’s why prime Mercury viewing happens either right before sunrise or right after sunset; when the Sun is blocked by the horizon, Mercury’s shine can then briefly pierce the glow of twilight. Mercury often appears similar to a “tiny Moon” in a telescope since, like fellow inner planet Venus, it shows distinct phases when viewed from Earth! Mercury’s small size means a telescope is needed to observe its phases since they can’t be discerned with your unaided eye. Safety warning: If you want to observe Mercury with your telescope during daytime or before sunrise, **be extremely careful**: you don’t want the Sun to accidentally enter your telescope’s field of view. As you may already well understand, this is extremely dangerous and can not only destroy your equipment, but permanently blind you as well! That risk is why NASA does not allow space telescopes like Hubble or the JWST to view Mercury or other objects close to the Sun, since even the tiniest error could destroy billions of dollars of irreplaceable equipment.

Despite being a small and seemingly barren world, Mercury is full of interesting features. It’s one of the four rocky (or terrestrial) planets in our solar system, along with Earth, Venus, and Mars. Mercury is the smallest planet in our solar system and also possesses the most eccentric, or non-circular, orbit of any planet as well: during a Mercurian year of 88 Earth days, the planet orbits between 29 million and 43 million miles from our Sun – a 14-million-mile difference! Surprisingly, Mercury is **not** the hottest planet in our solar system, despite being closest to the Sun; that honor goes to Venus, courtesy its thick greenhouse shroud of carbon dioxide. Since Mercury lacks a substantial atmosphere and the insulating properties a layer of thick air brings to a planet, its temperature swings wildly between a daytime temperature of 800 degrees Fahrenheit (427 degrees Celsius) and -290 degrees Fahrenheit (-179 degrees Celsius) at night. Similar to our Moon, evidence of water ice is present at Mercury’s poles, possibly hiding in the frigid permanent shadows cast inside a few craters. Evidence for ice on Mercury was first detected by radar observations from Earth, and followup observations from NASA’s MESSENGER mission added additional strong evidence for its presence. Mercury sports a comet-like tail made primarily of sodium which has been photographed by skilled astrophotographers. The tail results from neutral atoms in its thin atmosphere being pushed away from Mercury by pressure from the nearby Sun’s radiation.

NASA’s Mariner 10 was Mercury’s first robotic explorer, flying by three times between 1974-1975. Decades later, NASA’s MESSENGER first visited Mercury in 2008, flying by three times before settling into an orbit in 2011. MESSENGER thoroughly studied and mapped the planet before smashing into Mercury at mission’s end in 2015. Since MESSENGER, Mercury was briefly visited by BepiColombo, a joint ESA/JAXA probe, which first flew by in 2021 and is expected to enter orbit in 2025 - after completing six flybys. Need more Mercury in your life? Check out NASA’s discoveries and science about Mercury at solarsystem.nasa.gov/mercury/, and visit the rest of the universe at nasa.gov.

Desert Sky Observer

www.avastronomyclub.org

January 2023

**Facing Southeast
Before Sunrise
January 30, 2023**



Mercury reaches maximum western elongation on the morning of January 30, which means that your best chance to spot it is right before sunrise that day! Look for Mercury towards the southeast and find the clearest horizon you can. Observers located in more southern latitudes of the Northern Hemisphere have an advantage when observing Mercury as it will be a bit higher in the sky from their location, but it's worth a try no matter where you live. Binoculars will help pick out Mercury's elusive light from the pre-dawn glow of the Sun.

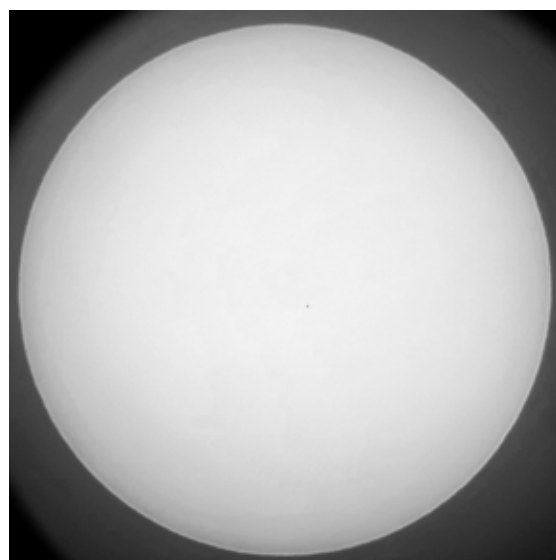
Image created with assistance from Stellarium



Mercury is hot, small, and heavily cratered across its gray surface, as seen in this image from NASA MESSENGER. Mercury is the most heavily cratered planet in our solar system, since it lacks either a substantial atmosphere or geologic activity to erode surface features like craters - similar in certain aspects to the surface of our own Moon.

Credit: NASA/Johns Hopkins University Applied Physics Laboratory/Carnegie Source: <https://solarsystem.nasa.gov/resources/439/mercurys-subtle-colors/>

On rare occasion, Earthbound observers can observe Mercury, like Venus, transiting the Sun. Mercury frequently travels between Earth and the Sun, but only rarely does the geometry of all three bodies line up to allow observers from Earth to view Mercury's tiny shadow as it crosses our star's massive disc. You can see one such event in this photo taken by Laurie Anson of the Westminster Astronomical Society on November 11, 2019. If you missed it, set a reminder for Mercury's next transit: November 13, 2032.



Additional Skywatching Resources

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

This article is distributed by NASA Night Sky Network

The Night Sky Network program supports astronomy clubs across the USA dedicated to astronomy outreach. Visit nightsky.jpl.nasa.gov to find local clubs, events, and more!

Space News

News from around the Net

Why The Universe Is Always Changing

If science has taught us anything, it's that nothing lasts forever. With everything that's happening, we might count on the sky to give us a sense of stability. But maybe we're asking too much. The Moon, which Shakespeare presciently called "inconstant," moves 1½ inches (3.8 centimeters) farther from Earth each year. Not worth losing sleep over. But on Mars, the billionaire astronauts may be less sanguine. The largest martian satellite, Phobos, orbits more closely to its planet's surface than any other moon in the solar system, just 3,700 miles (6,000 kilometers) away. It's also moving closer at some 6 feet (1.8 meters) per century. . . . (continued at <https://astronomy.com/magazine/bob-berman/2022/12/instability>)



Alien Planet Found Spiraling To Its Doom Around An Aging Star

For the first time, astronomers have spotted an exoplanet whose orbit is decaying around an evolved, or older, host star. The stricken world appears destined to spiral closer and closer to its maturing star until collision and ultimate obliteration. The discovery offers new insights into the long-winded process of planetary orbital decay by providing the first look at a system at this late stage of evolution.

(continued at <https://www.sciencedaily.com/releases/2022/12/221219094937.htm>)



Machine Learning Reveals How Black Holes Grow

As different as they may seem, black holes and Las Vegas have one thing in common: What happens there stays there -- much to the frustration of astrophysicists trying to understand how, when and why black holes form and grow. Black holes are surrounded by a mysterious, invisible layer -- the event horizon -- from which nothing can escape, be it matter, light or information. The event horizon swallows every bit of evidence about the black hole's past. . . . (continued at <https://www.sciencedaily.com/releases/2022/12/221215104726.htm>)



NASA's Mars Perseverance Rover Just Dropped Its 1st Sample On The Martian Surface

NASA's Perseverance mission dropped its first cache of precious rock samples on the sands of Mars, leaving behind a record of material that a future mission could bring back to Earth. It's a key moment in the search for life on Mars, NASA officials said in a statement on Wednesday (Dec. 21). The rover's contribution to seeking "ancient microbial life" in an old river delta, as NASA's Jet Propulsion said in an update (opens in new tab), will include 10 titanium tubes deposited at this location, nicknamed "Three Forks." . . . (continued at <https://www.space.com/nasa-perservance-rover-mars-sample-first-tube-dropped>)



Astronomers Spot Stars In The Most Distant Galaxies For The First Time

Since it launched on December 25th, 2021, the James Webb Space Telescope (JWST) has taken the sharpest and most detailed images of the universe, surpassing even its predecessor, the venerable Hubble Space Telescope. But what is especially exciting are the kinds of observations we can look forward to, where the JWST will use its advanced capabilities to address some of the most pressing cosmological mysteries. For instance, there's the problem presented by high-redshift supermassive black holes (SMBHs) or brightly-shining quasars that existed during the first billion years of the Universe. . . . (continued at <https://phys.org/news/2022-12-astronomers-stars-distant-galaxies.html>)



Home In On The Hyades

The outline of the Hyades open star cluster in Taurus is one of the best naked-eye landmarks in the winter sky. It's brightest stars form into a 'V'- or wedge-shaped-asterism, or star pattern that's an easy spot around 25 degrees to the upper-right (north-west) of Orion's famous 'Belt'. First-magnitude Aldebaran, a K-class giant star that exudes a noticeably orange-red hue, dominates the asterism though it lies too close to us (65 light years) to be a member of the open cluster. It's happy line-of-sight coincidence gives observers a great celestial signpost to the Hyades should it be needed. . . . (continued at <https://astronomynow.com/2022/12/12/home-in-on-the-hyades/>)



Space News

News from around the Net

What It Would Take To Discover Life On Saturn's Icy Moon Enceladus

The mystery of whether microbial alien life might inhabit Enceladus, one of Saturn's 83 moons, could be solved by an orbiting space probe, according to a new study led by University of Arizona researchers. In a paper published in The Planetary Science Journal, the researchers map out how a hypothetical space mission could provide definite answers. When Enceladus was initially surveyed in 1980 by NASA's Voyager 1 spacecraft, it looked like a small, not overly exciting "snowball" in the sky. Later, between 2005 to 2017, NASA's Cassini probe zipped around the Saturnian System and studied Saturn's complex rings and moons in unprecedented detail. Scientists were stunned when Cassini discovered that Enceladus' thick layer of ice hides a vast, . . . continued at <https://news.arizona.edu/story/what-it-would-take-discover-life-saturns-icy-moon-enceladus>)



Three Quarters Of Major Observatories Affected By Light Pollution

Researchers from Italy, Chile and Galicia have studied and compared the light pollution levels at major astronomical observatories across the world. The study shows that light is polluting the sky above most observatories and that immediate action is needed to decrease the amount of contamination coming from artificial light. The study presents the light pollution levels above almost 50 observatories across the globe, including the world's largest professional observatories, as well as smaller observatories for amateurs. . . . (continued at <https://phys.org/news/2022-12-quarters-major-observatories-affected-pollution.html>)



Webb's New Image Reveals a Galaxy Awash in Star Formation

When a spiral galaxy presents itself just right, observations reveal more detail. That's the case with NGC 7469, a spiral galaxy about 220 million light-years away. It's face-on towards us, and the James Webb Space Telescope captured its revealing scientific portrait. NGC 7469 is scientifically interesting for a number of reasons and is the subject of several recent papers based on James Webb Space Telescope (JWST) observations. It's a luminous infrared galaxy (LIRG) with an active galactic nucleus (AGN.) It's a Seyfert galaxy, which are some of the most intensely studied objects in the Universe. . . . (continued at <https://www.universetoday.com/159350/webbs-new-image-reveals-a-galaxy-awash-in-star-formation/#more-159350>)



NASA Makes Asteroid Defense A Priority, Moving Its Neo Surveyor Mission Into The Development Phase

There's an old adage in the engineering field – what gets funded gets built. So it's sure to be a happy time over at the Planetary Society, as NEO Surveyor, the project the organization has primarily supported over the past few years, has made it through NASA's grueling budgetary process to reach the "development" stage, with an eye for a launch of the system in 2028. NEO Surveyor is, as the name implies, a satellite specifically designed to survey for objects near the Earth (NEO). One of its primary contributions will be to look for asteroids and other small bodies that are potentially on an eventual collision course with Earth . . . (continued at <https://www.universetoday.com/159395/nasa-makes-asteroid-defense-a-priority-moving-its-neo-surveyor-mission-into-the-development-phase/#more-159395>)



Getting Started With Your New Telescope

Maybe you just got a shiny new telescope to call your own. Congratulations — you could be on your way to making lifelong friends with stupendous, faraway things in the night sky over your roof. However, most of them are so far and faint that just finding and positively identifying them is the challenge — and the accomplishment! Whether your new scope is a long, sleek tube or a compact marvel of computerized wizardry, surely you're itching to try it out. . . . (continued at <https://skyandtelescope.org/astronomy-news/getting-started-with-your-new-telescope-2/>)



Deep Dive Off The Cosmic Cliffs

One of the first images to be released by the James Webb Space Telescope team showed protostars growing in the nebulous edges of a giant star-blown bubble, NGC 3324. This bubble wall, dubbed the Cosmic Cliffs, surrounds massive O stars, which lie outside the image frame. Now, a team of astronomers is taking a closer look at this bubble wall, revealing never-before-seen details of star formation in this region. When the Hubble Space Telescope examined the same space, . . . (continued at <https://skyandtelescope.org/astronomy-news/deep-dive-cosmic-cliffs/>)



Dark Sky Observing Sites

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

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



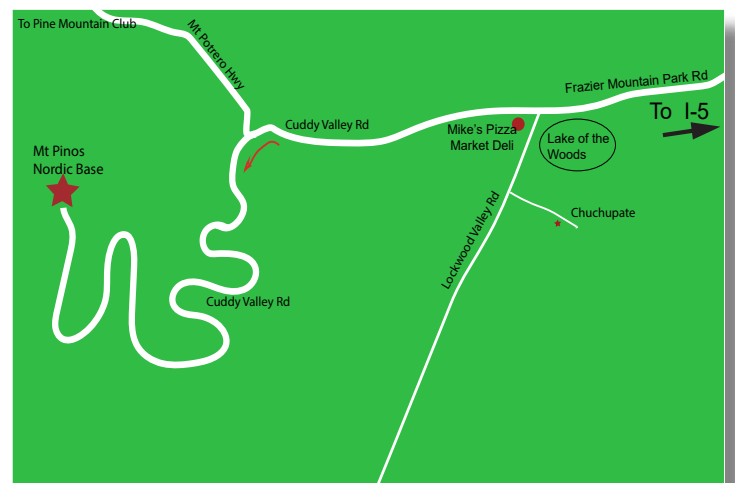
The Red Cliffs Natural Area is part of **Red Rock Canyon State Park** is a day use area and is not for use by the public after dark. The Club gets a special permit for a star party and pays a fee.

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

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

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

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



Planet Summary

The **Sun** starts the year near the handle of Sagittarius and ends January in the middle of Capricorn.

Mercury starts the month in the evening sky in retrograde falling toward inferior conjunction on the 7th; it re-emerges in the morning sky mid-month gradually reaching greatest western elongation of 25° on the 30th at 0.0 mag.

Venus in twilight, begins its climb away from the Sun becoming more prominent in the evening. On the 22nd Saturn and the Moon have a close encounter

Mars starts the month in retrograde in central Taurus. By the 15th it reaches its second stationary point, and resumes its eastward movement. The 74% waxing Moon occults Mars on the 30th about 20:45.

Jupiter continues moving across the southern corner of Pisces. On the 24th Jupiter reverses itself and resumes its eastward march. The 67% waxing Moon passes by on the 25th, 2.5° to the south.

Saturn starts the year among the stars of eastern Capricorn. On the 22nd Saturn(mag 0.8) and Venus(mag -3.8) are in close conjunction, just 26 arc-mins south. The 2.8% waxing Moon passes 5.5° to the south. After this Saturn disappears behind the Sun for a month.

Uranus is virtually stationary southeastern Aries at mag 5.7. On the 1st the 77% waxing Moon occults Uranus between 12:30 and 12:30pm. On the 28th the 55% Moon passes 28 arc-minutes north at 8:30 pm..

Neptune spends the month slowly moving east at the northeastern edge of Aquarius at mag 7.9.

Pluto spends the month on the eastern edge of Sagittarius passing behind the Sun on the 18th, slowly moving east at mag 14.4.

Asteroids

Ceres (mag 8.5) starts the month in northwestern Virgo. At the end of the month Ceres begins retrograde motion still in Virgo (7.8).

Pallas (mag 7.6) starts the month under the back foot of Canis Major and moves northwest under the body halfway to Mirzam.

Juno (mag 9.5) moves east from Aquarius across the NW corner of Cetus, the southern corner of Pisces, and then back into Cetus.

Vesta (mag 8.3) spends the month chasing Juno across Aquarius ending in the NW corner of Cetus.

Moon Phases



First Qtr
Jan 28

Full
Jan 6

Third Qtr
Jan 14

New
Jan 21

Sun and Moon Rise and Set*

Date	Moonrise	Moonset	Sunrise	Sunset
1/1/2023	13:09	02:16	06:59	16:52
1/5/2023	15:49	06:15	07:00	16:56
1/10/2023	20:34	09:35	07:00	17:00
1/15/2023	00:28	11:45	06:59	17:05
1/20/2023	06:11	15:50	06:57	17:09
1/25/2023	09:45	21:59	06:55	17:14
1/30/2023	12:18	02:12	06:52	17:20

Planet Data*

January 1

	Rise	Transit	Set	Mag	Phase%
Mercury	07:45	12:47	17:49	1.85	11.2
Venus	08:12	13:11	18:11	-3.91	95.7
Mars	14:18	21:33	04:53	-1.18	97.0
Jupiter	11:14	17:14	23:14	-2.41	99.0
Saturn	09:30	14:49	20:08	0.81	99.8

January 15

	Rise	Transit	Set	Mag	Phase%
Mercury	05:46	10:50	15:54	0.94	22.9
Venus	08:16	13:28	18:41	-3.92	93.9
Mars	13:20	20:35	03:54	-0.73	94.4
Jupiter	10:24	16:26	22:28	-2.32	99.2
Saturn	08:39	13:59	19:20	0.82	99.9

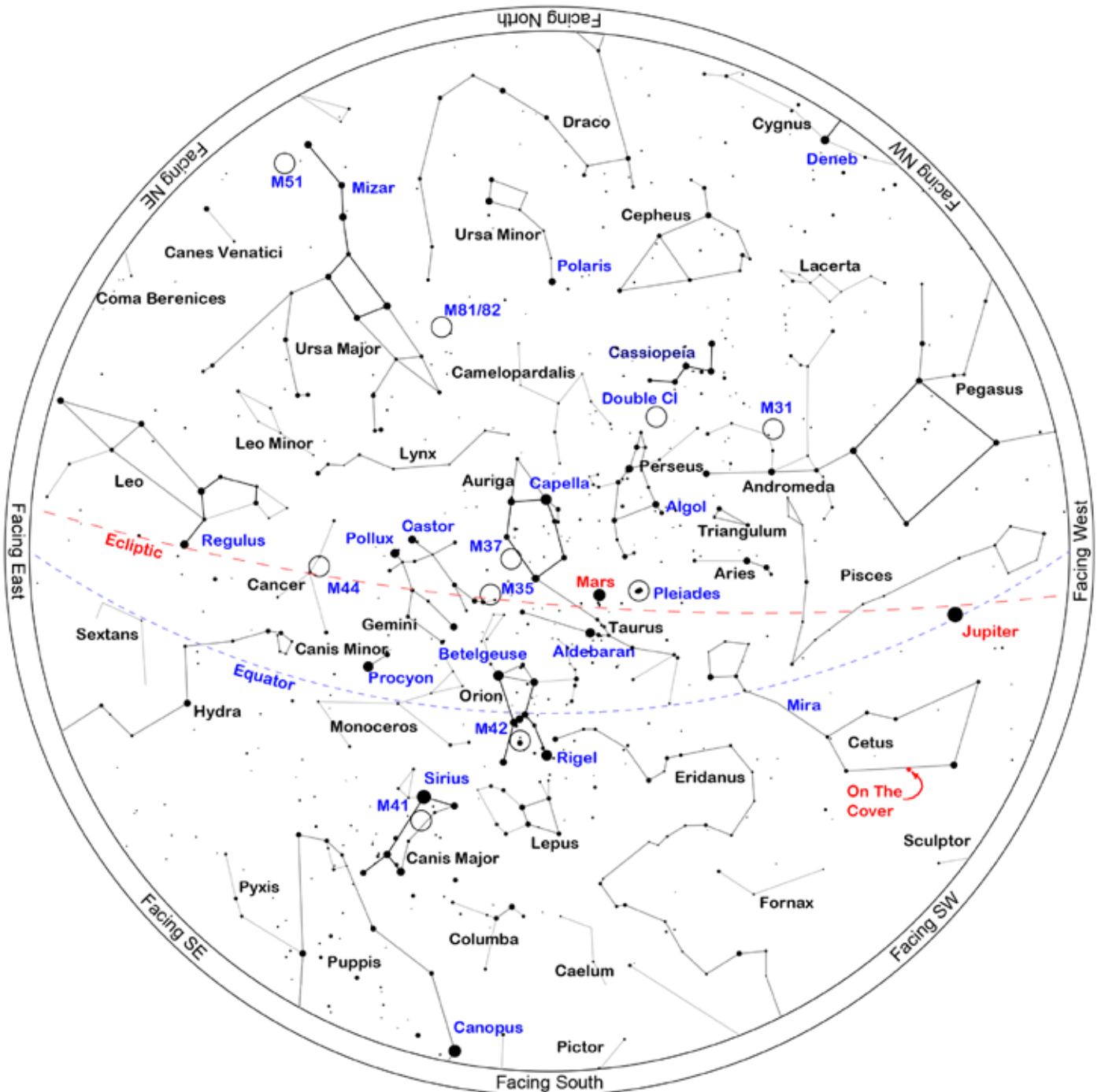
January 30

	Rise	Transit	Set	Mag	Phase%
Mercury	05:22	10:21	15:21	-0.09	64.4
Venus	08:11	13:42	19:14	-3.93	91.6
Mars	12:28	19:44	03:04	-0.28	92.1
Jupiter	09:31	15:37	21:42	-2.24	99.3
Saturn	07:45	13:07	18:29	0.81	99.9

*All time mentioned are local and approximate.

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

Sky Chart



Location: Set from geolocation service
Latitude: 34° 39' N, longitude: 118° 10' W
Time: 2023 January 21, 21:00 (UTC -08:00)

Powered by: Heavens-Above.com

Desert Sky Observer

www.avastronomyclub.org

January 2023

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Deep Sky Star Party or the Saturday nearest the New Moon, in this case January 21, 2023. 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	15:16	Circ
NGC7662	Blue Snowball	P Neb	And	23h 25m 54s	+42° 33.0'	8.3	06:34	15:17	23:59
NGC7686		Open	And	23h 30m 07s	+49° 08.0'	5.6	05:42	15:21	01:00
IC5332		Galaxy	Scl	23h 34m 27s	-36° 06.0'	10.6	11:23	15:25	19:28
NGC7785		Galaxy	Psc	23h 55m 19s	+05° 54.9'	11.6	09:27	15:46	22:05
HR9071	Sig Cas	Triple	Cas	23h 59m 01s	+55° 45.3'	4.9	Circ	15:50	Circ
NGC7822		Neb	Cep	00h 03m 36s	+67° 09.0'		Circ	15:54	Circ
NGC55	C72	S Gal	Scl	00h 14m 54s	-39° 11.0'	7.9	12:19	16:06	19:53
NGC129		Open	Cas	00h 30m 00s	+60° 13.1'	6.5	Circ	16:21	Circ
NGC133		Open	Cas	00h 31m 19s	+63° 21.0'	9.0	Circ	16:22	Circ
NGC146		Open	Cas	00h 33m 03s	+63° 18.0'	9.1	Circ	16:24	Circ
NGC147	C17	E Gal	Cas	00h 33m 12s	+48° 30.0'	9.3	06:52	16:24	01:57
NGC190		Galaxy	Psc	00h 38m 55s	+07° 03.7'	14.0	10:07	16:30	22:52
M110	Satellite Of Andromeda Galaxy	Galaxy	And	00h 40m 22s	+41° 41.1'	8.9	07:54	16:31	01:08
NGC210		Galaxy	Cet	00h 40m 35s	-13° 52.3'	10.9	11:08	16:31	21:55
NGC206	V-36	Neb	And	00h 40m 36s	+40° 44.0'		08:01	16:31	01:02
Arp168	M32	Galaxy	And	00h 42m 41s	+40° 51.0'	9.0	08:02	16:34	01:05
M32	Satellite Of Andromeda Galaxy	Galaxy	And	00h 42m 42s	+40° 51.9'	9.1	08:02	16:34	01:05
M31	Andromeda Galaxy	Galaxy	And	00h 42m 44s	+41° 16.1'	4.3	07:59	16:34	01:08
NGC246	C56	P Neb	Cet	00h 47m 00s	-11° 53.0'	10.9	11:08	16:38	22:07
NGC254		Galaxy	Scl	00h 47m 28s	-31° 25.2'	11.8	12:15	16:38	21:02
NGC288		Globular	Scl	00h 52m 45s	-26° 35.0'	8.1	12:01	16:44	21:26
NGC281	PacMan Nebula	Open	Cas	00h 52m 54s	+56° 37.4'	7.0	Circ	16:44	Circ
IC59	Gamma Cassiopeiae Nebula	Neb	Cas	00h 57m 29s	+61° 08.6'		Circ	16:48	Circ
IC63	Gamma Cassiopeiae Nebula	Neb	Cas	00h 59m 29s	+60° 54.7'		Circ	16:50	Circ
C51	IC1613	IrrGal	Cet	01h 04m 48s	+02° 07.0'	9.3	10:47	16:56	23:04
NGC474		Galaxy	Psc	01h 20m 07s	+03° 24.9'	11.1	10:59	17:11	23:23
NGC485		Galaxy	Psc	01h 21m 28s	+07° 01.0'	14.0	10:50	17:12	23:35
M103	NGC581	Open	Cas	01h 33m 23s	+60° 39.0'	7.0	Circ	17:24	Circ
NGC598	Triangulum Pinwheel Galaxy	Galaxy	Tri	01h 33m 51s	+30° 39.6'	5.7	09:44	17:25	01:05
NGC604	III-150	Neb	Tri	01h 34m 33s	+30° 47.0'		09:45	17:25	01:06
M74	The Phantom	Galaxy	Psc	01h 36m 42s	+15° 47.0'	9.8	10:40	17:28	00:16
M76	Little Dumbbell Nebula	P Neb	Per	01h 42m 18s	+51° 34.2'	12.0	07:21	17:33	03:45
NGC651	Apple Core Nebula	P Neb	Per	01h 42m 21s	+51° 34.1'	12.2	07:21	17:33	03:45
NGC637		Open	Cas	01h 43m 04s	+64° 02.4'	8.2	Circ	17:34	Circ

Desert Sky Observer

www.avastronomyclub.org

January 2023

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC654		Open	Cas	01h 44m 00s	+61° 53.0'	6.5	Circ	17:35	Circ
NGC720		Galaxy	Cet	01h 53m 00s	-13° 44.3'	10.2	12:20	17:44	23:08
NGC780		Galaxy	Tri	02h 00m 35s	+28° 13.5'	14.0	10:21	17:51	01:22
NGC784		Galaxy	Tri	02h 01m 17s	+28° 50.2'	11.8	10:19	17:52	01:25
NGC821		Galaxy	Ari	02h 08m 21s	+10° 59.6'	10.8	11:25	17:59	00:33
Baily191	NGC884,	Open	Per	02h 22m 18s	+57° 08.1'	4.0	Circ	18:13	Circ
IC1795		Neb	Cas	02h 26m 32s	+62° 02.4'		Circ	18:17	Circ
NGC936		Galaxy	Cet	02h 27m 37s	-01° 09.3'	10.1	12:19	18:18	00:18
NGC943	Arp309	Galaxy	Cet	02h 29m 09s	-10° 49.0'	11.4	12:48	18:20	23:52
NGC956		Open	And	02h 32m 30s	+44° 35.6'	9.0	09:26	18:23	03:21
IC1805	Heart Nebula	Open	Cas	02h 32m 47s	+61° 27.6'	6.5	Circ	18:24	Circ
NGC1052		Galaxy	Cet	02h 41m 05s	-08° 15.3'	10.6	12:52	18:32	00:12
M34	Spiral Cluster	Open	Per	02h 42m 05s	+42° 45.6'	6.0	09:49	18:33	03:17
M77	Cetus A	Galaxy	Cet	02h 42m 41s	-00° 00.8'	9.7	12:31	18:34	00:36
NGC1084		Galaxy	Eri	02h 46m 00s	-07° 34.6'	10.6	12:55	18:37	00:19
IC1848	Soul Nebula	Open	Cas	02h 51m 18s	+60° 24.4'	6.5	Circ	18:42	Circ
NGC1156		Galaxy	Ari	02h 59m 42s	+25° 14.2'	11.7	11:31	18:51	02:10
NGC1201		Galaxy	For	03h 04m 08s	-26° 04.1'	10.6	14:11	18:55	23:39
NGC1175		Galaxy	Per	03h 04m 32s	+42° 20.3'	12.8	10:14	18:55	03:36
HR963	Alp For	Dbl	For	03h 12m 04s	-28° 59.2'	3.9	14:30	19:03	23:36
NGC1316	Fornax A	Galaxy	For	03h 22m 42s	-37° 12.4'	8.9	15:16	19:14	23:11
Barnard202	B202	DkNeb	Ari	03h 25m 38s	+30° 16.0'		11:38	19:16	02:55
Barnard204	B204	DkNeb	Ari	03h 28m 29s	+30° 11.0'		11:41	19:19	02:58
NGC1350		Galaxy	For	03h 31m 08s	-33° 37.7'	10.5	15:08	19:22	23:36
Barnard1	B1	DkNeb	Per	03h 32m 57s	+31° 09.0'		11:41	19:24	03:06
Barnard2	B2	DkNeb	Per	03h 33m 31s	+32° 19.0'		11:37	19:24	03:12
Barnard3	B3	DkNeb	Per	03h 40m 01s	+31° 58.0'		11:45	19:31	03:17
NGC1407		Galaxy	Eri	03h 40m 12s	-18° 34.8'	9.8	14:22	19:31	00:40
IC347		Galaxy	Eri	03h 42m 32s	-04° 17.9'	13.0	13:43	19:33	01:24
NGC1448		Galaxy	Hor	03h 44m 32s	-44° 38.6'	11.0	16:22	19:35	22:48
IC348		Open	Per	03h 44m 34s	+32° 09.7'	7.3	11:49	19:35	03:22
M45	Pleiades, Seven Sisters, Subaru	Open	Tau	03h 47m 30s	+24° 07.0'	1.6	12:23	19:38	02:54
Barnard5	B5	DkNeb	Per	03h 47m 53s	+32° 53.0'		11:49	19:39	03:29
NGC1461		Galaxy	Eri	03h 48m 27s	-16° 23.5'	11.7	14:23	19:39	00:55
IC353		Neb	Tau	03h 53m 00s	+25° 48.0'		12:22	19:44	03:05
IC2003		P Neb	Per	03h 56m 22s	+33° 52.5'	13.0	11:53	19:47	03:42
NGC1499	California Nebula	Neb	Per	04h 03m 14s	+36° 22.0'		11:48	19:54	04:01
NGC1515		Galaxy	Dor	04h 04m 03s	-54° 06.0'	11.0	18:32	19:55	21:18

Desert Sky Observer

www.avastronomyclub.org

January 2023

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC1496		Open	Per	04h 04m 32s	+52° 39.7'	10.0	09:24	19:55	06:27
NGC1502		Open	Cam	04h 07m 50s	+62° 19.8'	5.7	Circ	19:59	Circ
IC360		Neb	Tau	04h 09m 00s	+26° 06.0'		12:37	20:00	03:22
NGC1514	Crystal Ball Nebula	P Neb	Tau	04h 09m 17s	+30° 46.5'	10.0	12:19	20:00	03:41
NGC1513		Open	Per	04h 09m 57s	+49° 30.8'	8.4	10:17	20:01	05:45
IC359		Neb	Tau	04h 12m 28s	+27° 42.1'		12:35	20:03	03:32
NGC1535		P Neb	Eri	04h 14m 16s	-12° 44.3'	10.0	14:38	20:05	01:32
Barnard10	B10	DkNeb	Tau	04h 18m 41s	+28° 16.0'		12:39	20:10	03:40
NGC1545		Open	Per	04h 20m 57s	+50° 15.2'	6.2	10:19	20:12	06:05
NGC1569		Galaxy	Cam	04h 30m 49s	+64° 50.8'	11.2	Circ	20:22	Circ
Barnard18	B18	DkNeb	Tau	04h 31m 13s	+24° 21.0'		13:06	20:22	03:38
NGC1582		Open	Per	04h 31m 53s	+43° 49.0'	7.0	11:31	20:23	05:14
NGC1560		Galaxy	Cam	04h 32m 48s	+71° 52.7'	11.5	Circ	20:24	Circ
Barnard19	B19	DkNeb	Tau	04h 33m 00s	+26° 16.0'		13:01	20:24	03:47
Barnard20	B20	DkNeb	Per	04h 37m 04s	+50° 58.0'		10:25	20:28	06:31
Barnard22	B22	DkNeb	Tau	04h 38m 00s	+26° 03.0'		13:07	20:29	03:51
Barnard14	B14	DkNeb	Tau	04h 39m 59s	+25° 44.0'		13:10	20:31	03:52
IC2087		Neb	Tau	04h 40m 00s	+25° 44.5'		13:10	20:31	03:52
Barnard23	B23	DkNeb	Tau	04h 40m 33s	+29° 52.0'		12:54	20:31	04:08
NGC1624		Open	Per	04h 40m 36s	+50° 27.6'	10.4	10:36	20:31	06:27
NGC1640		Galaxy	Eri	04h 42m 14s	-20° 26.0'	11.7	15:30	20:33	01:36
NGC1647		Open	Tau	04h 45m 55s	+19° 06.8'	6.4	13:38	20:37	03:35
IC2118	Witch Head Nebula	Neb	Eri	05h 04m 54s	-07° 15.0'		15:13	20:56	02:38
NGC1851	C73	Globular	Col	05h 14m 06s	-40° 03.0'	7.3	17:23	21:05	00:47
IC405	Flaming Star Nebula	Neb	Aur	05h 16m 29s	+34° 21.3'		13:11	21:07	05:04
M79	NGC1904	Globular	Lep	05h 24m 11s	-24° 31.4'	8.5	16:25	21:15	02:05
M38	Starfish Cluster	Open	Aur	05h 28m 40s	+35° 50.8'	7.0	13:16	21:20	05:23
M1	Crab Nebula,	SNR	Tau	05h 34m 32s	+22° 00.8'	8.4	14:17	21:25	04:33
M42	Great Orion Nebula,	Open+D Neb	Ori	05h 35m 16s	-05° 23.4'	4.0	15:38	21:26	03:14
M43	De Mairan's Nebula	D Neb	Ori	05h 35m 31s	-05° 16.0'	9.0	15:38	21:26	03:15
M36	Pinwheel Cluster	Open	Aur	05h 36m 18s	+34° 08.3'	6.5	13:32	21:27	05:23
M78	NGC2068	D Neb	Ori	05h 46m 45s	+00° 04.8'	8.0	15:35	21:38	03:41
M37	Salt-and-pepper Cluster	Open	Aur	05h 52m 18s	+32° 33.2'	6.0	13:55	21:43	05:32
M35	NGC2168	Open	Gem	06h 09m 00s	+24° 21.0'	5.5	14:44	22:00	05:16
M41	Little Beehive	Open	CMa	06h 46m 01s	-20° 45.3'	5.0	17:35	22:37	03:39
M50	Heart-shaped Cluster	Open	Mon	07h 02m 42s	-08° 23.0'	7.0	17:14	22:54	04:33
M47	NGC2422	Open	Pup	07h 36m 35s	-14° 29.0'	4.5	18:06	23:27	04:49
M46	NGC2437	Open	Pup	07h 41m 46s	-14° 48.6'	6.5	18:12	23:33	04:53

Desert Sky Observer

www.avastronomyclub.org

January 2023

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

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

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

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

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

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

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

Our Sponsors

Cosmos Level Sponsors



 Woodland Hills
Camera & Telescopes **TelescopeS.NET**
5348 Topanga Canyon Blvd., Woodland Hills
888-427-427-8766 www.telescopes.net

Universe Level Sponsors



Galaxy Level Sponsors



Al's Vacuum and Sewing
904 West Lancaster Blvd., Lancaster
(661) 948-1521