

Volume 46.6

June 2026

Desert Sky Observer

Antelope Valley Astronomy Club



Desert Sky Observer

www.avastronomyclub.org

June 2026

Upcoming Events

June 6: Moonwalk @ PDW 8:30PM

June 12: Club Meeting

June 13: DSSP @ Chuchupate

June 20: Lunar Club @ PDW

Every clear night: Personal Star Party

July 10: Club Meeting

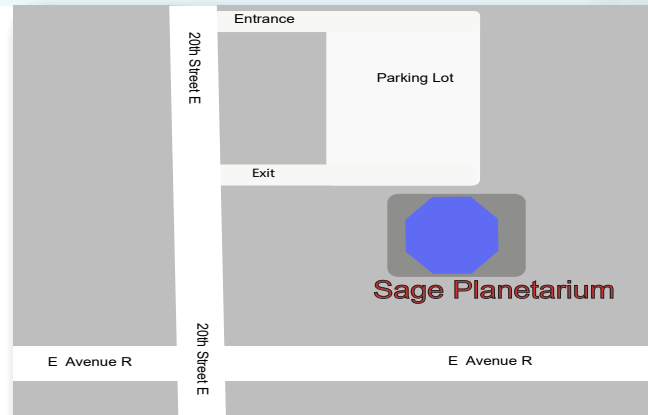
July 11: DSSP @ Mt Pinos

July 18: Lunar Club @ PDW

July 25: Moonwalk @ PDW 8:30 PM



AVAC Calendar



Board Members

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Director of Community Development:

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Appointed Positions

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Club Historian: vacant

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Monthly Meetings

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

Membership

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

The Club has three categories of membership.

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

Membership entitles you to ...

- The Desert Sky Observer -- monthly newsletter
- The AVAC Membership Manual.
- To borrow club equipment, books, videos, and other items.

AVAC

PO Box 8545

Lancaster, CA 93539-8545

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

www.instagram.com/av_astronomyclub



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,

This Saturday night, on June 6th we have a Moonwalk at Prime Desert Woodland park. Sunset is at 8:03 pm, nautical dusk is at 8:32 pm. Mercury, Venus and Jupiter will be up, 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. I can't believe it, but the weather forecast for Saturday night is Partly Cloudy and Breezy. Come prepared.

Our next Dark Sky Star Party, will be on June 13th at Chuchupate, sunset is at 8:10 pm. (See maps on page 8) The May DSSP was forecasted to be Windy. My understanding is it was barely breezy. So, be prepared for anything. Watch for the emails or for the text message to know what's happening.

The next Club Meeting will be on Friday, the 12th. Our speaker, Naveen Vetcha, is coming to us via Zoom from Huntsville, Al (imagine if we reimbursed him gas money). Please, come to the meeting, tell your friends and neighbors; let's see if we can fill the planetarium. We have a speaker lined up for July also.

The third Saturday of June, the 20th, the day before the first quarter Moon, we will have a Lunar Club meeting at Prime Desert Woodland. No Moonwalk, just set up the scopes and howl at the Moon.

I hope to see everyone at the Moonwalk on Saturday.

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 102.2° right of vertical RA: 13h 25' 18.67" DEC: -21° 8' 2.00" 65Mly Mag: 11.4 (Virgo)

Two powerful instruments of the NASA/ESA/CSA James Webb Space Telescope joined forces to create this scenic galaxy view for today's [Picture of the Month](#). This spiral galaxy is named NGC 5134, and it's located 65 million light-years away in the constellation [Virgo](#).

Though 65 million light-years may seem like a huge distance — the light that Webb collected to create this image has been journeying to us from NGC 5134 since soon after Tyrannosaurus rex went extinct — NGC 5134 is fairly close by as far as galaxies go. Because of the galaxy's relative proximity, Webb can spot incredible details in its tightly wound spiral arms.

Webb's Mid-InfraRed Instrument (MIRI) collects the mid-infrared light emitted by the warm dust that speckles NGC 5134's interstellar clouds, tracing clumps and strands of dusty gas. Some of the dust is composed of complex organic molecules called polycyclic aromatic hydrocarbons, which feature interconnected rings of carbon atoms and provide a way for astronomers to study the chemistry happening in interstellar clouds. Webb's Near-InfraRed Camera (NIRCam) records shorter-wavelength near-infrared light, mostly from the stars and star clusters that dot the galaxy's spiral arms.

Together, the MIRI and NIRCam data paint a portrait of a galaxy in constant ebb and flow. The gas clouds that billow along NGC 5134's spiral arms are the sites of star formation, and each star that forms chips away at the galaxy's supply of star-forming gas. When stars die, they recycle some of that gas back into the galaxy. Massive stars more than about eight times the mass of the Sun do so spectacularly, in cataclysmic supernova explosions that spread stellar material across hundreds of light-years.

[continued on page 4](#)

From the Secretary

By Rose Moore

Members:

Thank you to all the members who came out to the club events and meeting this month! Your participation is very much appreciated! We had a wonderful speaker at our May meeting, Sarah McCandless from JPL/NASA, speaking on the Europa Clipper mission and more!

Coming up in June we have a Prime Desert Woodland Moon Walk on Saturday, June 6th, starting at 8:30pm, weather permitting. We will need members with telescopes for this event. Venus will be up until 10:47pm, as well as Jupiter.

Our club meeting is on Friday June 12th at 7pm. We will have a speaker by Zoom, Naveen Vetcha, who spoke to us last year. He will be speaking on 'Star Lore of India'. Naveen is a member of the Aerosciences Team at Amentum, and a member of the Huntsville, AL, Astronomy Club. Please come out and enjoy his presentation!

We have a dark sky star party planned for Saturday June 13th at Chuchupate, weather permitting. Further info and directions to follow.

There is a possible Lunar Club planned for Saturday June 20th. Stay tuned for info as the date gets closer!

Coming up will be a speaker for July's meeting, a Lunar Eclipse Aug. 27th, Prime Desert Moon Walks, dark sky star parties, and a possible event with the AV Naturalists.

Clear skies, Rose

On The Cover. . . Continued

Stars like the Sun give back some of their material as well, though more gently; these stars will balloon into bubbling red giants before shrugging off their atmospheres and sending them into space. Whether expelled by explosive supernovae or gentle red giants, this gas can then be incorporated into new stars.

This give and take between gas and stars is the focus of the observing programme (#3707) for which these images were taken. This programme aims to study 55 galaxies in the nearby Universe that are actively forming new stars and have been studied across a broad range of wavelengths. The new Webb data contribute a rich understanding of individual star clusters and star-forming clouds and have already been used to study the life cycle of tiny dust grains, the shape and properties of star-forming clouds, the links between interstellar gas and dust, and the process by which newly formed stars reshape their surrounding environment.

By using Webb to study the infrared light nearby galaxies like NGC 5134 whose stars and gas can be seen in detail, astronomers can apply their knowledge to galaxies too distant to be observed so closely — like those that are scattered in the background of this image, barely more than points of light.

[Image Description: A spiral galaxy, seen tilted diagonally. It has a blue-white, glowing spot at its core. Its oval-shaped disc glows faintly blue throughout with light from its many stars. The disc is filled with waves and strands of bright red dust that swirl around the core. At places there are holes torn in the dust, while elsewhere it forms dense clumps that glow orange. Several tiny, distant galaxies appear across the background.]

Links:

- [Pan video: NGC 5134](#)
- [Space Sparks Episode 22: NGC 5134](#)
- [Image on ESA website](#)

Credit: ESA/Webb, NASA & CSA, A. Leroy

A Beautiful Death: How A Dying Star Created The Crystal Ball Nebula

Planetary nebulae like the Crystal Ball Nebula (NGC 1514) are sort of like stellar obituaries. Though crystal balls supposedly reveal the future, the Crystal Ball Nebula tells us more about the past. It shows us how a binary pair of stars met their end. And since NGC 1514 is 1500 light years away, we're seeing what it looked like 1500 years ago. Planetary nebula have nothing to do with planets. They just looked like planets in early telescopes, and astronomer William Herschel, who discovered the Crystal Ball Nebula, is the one who coined the term. Planetary nebula are purely stellar. They occur when a low-mass or intermediate-mass star expels its outer envelopes of gas...(continued at <https://www.universetoday.com/articles/a-beautiful-death-how-a-dying-star-created-the-crystal-ball-nebula>)



Astronomers De-Fog Exoplanet Atmospheres With New Cloud-Detecting Method

Sand clouds form every morning but clear up by nightfall on WASP-94A b, a well-studied gas giant in a constellation located nearly 700 light years away from Earth. Using data from the James Webb Space Telescope (JWST), research published in the journal Science is among the first to detect cloud cycles on a Hot Jupiter exoplanet. By isolating the clouds, researchers can more accurately measure the planet's atmosphere and provide one of the clearest pictures to date of the planet's composition—a significant advance in planetary science. "I've been looking at exoplanets for 20 years, and general cloudiness has been a thorn in our side. . . . (continued at <https://phys.org/news/2026-05-astronomers-de-fog-exoplanet-atmospheres.html>)



After 10 Years Of Upgrades, This Legendary Telescope Has Returned To Chase Black Holes, Asteroids And Cosmic Chemistry

The Haystack 37m Telescope has been a landmark in radio astronomy and radar studies of the solar system since its first light in 1964. Over the following four decades, it supported NASA's Apollo landings on the moon, made planetary radar maps of the surface of Venus, contributed to experimental tests of Einstein's general relativity, supported the development of VLBI, and conducted foundational studies of quasars and star-forming regions. Recently, the Haystack 37m Telescope—a 37-meter radio and millimeter-wavelength antenna at MIT Haystack Observatory in Westford, Massachusetts—made its return to front-line astronomical research . . . (continued at <https://phys.org/news/2026-05-years-legendary-telescope-black-holes.html>)



A Beacon Of Light In Swirls Of Dust

This latest Picture of the Month from the NASA/ESA/CSA James Webb Space Telescope features Messier 77 (M77), a barred spiral galaxy famous among astronomers for its combination of relative proximity and spectacular features to study. It is located 45 million light-years away in the constellation Cetus (The Whale). This new image from Webb's Mid-Infrared Instrument (MIRI) highlights its swirling spiral arms, the dust in its disc and its piercingly bright core like never before. At the heart of M77 is a compact region filled with hot gas that handily outshines the rest of the galaxy put together, even overcoming the light-gathering capacity of Webb's cameras. . . . (continued at https://www.esa.int/Science_Exploration/Space_Science/Webb/A_beacon_of_light_in_swirls_of_dust)



SwRI Findings Reconsider The Existence Of Europa's Vapor Plumes

Looking back at 14 years of Hubble telescope data for Jupiter's moon Europa has given Southwest Research Institute (SwRI) scientists a better understanding of its tenuous atmosphere. The findings have cast doubt on previous evidence suggesting that the icy moon intermittently discharges faint water plumes from a presumed subsurface ocean. "The evidence for water vapor plumes on Europa isn't as strong as we first understood it," said SwRI's Dr. Kurt Retherford, one of the authors of a 2014 paper initially making that assertion. . . . (continued at <https://www.swri.org/newsroom/press-releases/swri-findings-reconsider-the-existence-of-europa-s-vapor-plumes>)



Sombrero Galaxy: The Universe's Dusty Brimmed Hat Revealed Like Never Before

[noirlab2612](#) — [Science Release](#) 24 April 2026

The Sombrero galaxy (Messier 104) is a galactic masterpiece that captivates scientists and astronomy enthusiasts alike. Its intricate system of globular star clusters lends insight into stellar populations, and astronomers are intrigued by the super-massive black hole at its center. Its distinctive visual features and relative brightness make it a favorite among amateur astronomers. The fascinating story of its discovery, involving three esteemed astronomers, has earned it a spot on one of the most important lists of deep sky objects. Today, it stands as one of the most iconic galaxies in the night sky.

Messier 104 resides approximately 30 million light-years from Earth in the constellation Virgo (see finder chart). It spans an impressive 50,000 light-years across, and is among the brightest galaxies in the Virgo constellation. Despite its grandeur, it appears relatively dim in the night sky — just below the threshold of naked-eye visibility, though it can be observed with a small telescope or binoculars.

This image was captured with the 570-megapixel Department of Energy-fabricated Dark Energy Camera (DECam) mounted on the U.S. National Science Foundation Víctor M. Blanco 4-meter Telescope at Cerro Tololo Inter-American Observatory (CTIO) in Chile, a Program of NSF NOIRLab.



Messier 104, nicknamed the Sombrero Galaxy, is a popular target for amateur observing and astronomical research. Its recognizable extended halo, as well as a faint stellar stream, are captured in exquisite detail in this image from the Department of Energy-fabricated Dark Energy Camera, mounted on the U.S. National Science Foundation Víctor M. Blanco 4-meter Telescope at Cerro Tololo Inter-American Observatory in Chile, a Program of NSF NOIRLab.

The incredible resolution of DECam reveals the Sombrero Galaxy's striking features. At its core is an intensely bright nucleus, which is surrounded by a swarm of around 2000 globular star clusters. A thin, dark band of cold dust and hydrogen gas traces the perimeter of the disk, where most of the galaxy's star formation takes place. The moniker "Sombrero Galaxy" comes from its striking resemblance to a sombrero, with its pronounced central bulge and dark dust trail that resemble the lofty crown and expansive brim of the traditional Mexican hat.

Also visible in this image is the galaxy's enormous glowing halo, which appears to stretch over three times the width of the Sombrero itself. This may be the first time the halo has been captured with this level of detail and at this large a scale. DECam's incredible sensitivity also captured a sweeping stellar stream extending from the south side of the galaxy. The halo and the stellar stream are populated with stars that have been torn from their home galaxies, hinting at a past galactic merger between the Sombrero and a smaller satellite galaxy.

The story of Messier 104's discovery is intertwined with the endeavors of several prominent astronomers. It was initially spotted by the French astronomer and comet hunter Pierre Méchain in 1781 when he was an associate of the renowned comet hunter Charles Messier. At that time, Messier was compiling a list of non-cometary celestial objects, now famously known as the Messier Catalogue, to aid other astronomers in distinguishing these objects from passing comets.

Interestingly, Messier 104 did not find its place in the original publication of Messier's list. However, it was later discovered that Messier added it by hand to his personal copy. Independently, in 1784, the well-known astronomer William Herschel also stumbled upon this remarkable galaxy and designated it as H I.43.

It wasn't until French astronomer Camille Flammarion's subsequent confirmation that these two independent discoveries were the same object that Messier 104 officially earned its place in the Messier Catalogue in 1921. Thus, through the collaborative efforts of these astronomers across different eras, the Sombrero Galaxy has become a celebrated addition to our knowledge of deep sky objects.

Its alluring visual characteristics, coupled with its accessibility to amateur equipment, contribute to Messier 104's popularity among stargazers. Amateur astronomers often enjoy observing and photographing the Sombrero Galaxy, making it a prime target for citizen science projects and public outreach efforts. It is an excellent subject for sharing the wonders of the Universe with the public and fostering engagement with astronomy and science.

More information

The Dark Energy Camera ([DECam](#)) was designed specifically for the Dark Energy Survey (DES). It was funded by the U.S. Department of Energy (DOE) and was built and tested at DOE's Fermilab. To provide new insights into the accelerating expansion of our Universe, the DECam records the motions and distances of galaxies in the distant past. While the full DES study ended in 2019, the camera continues to provide new insights to astronomers and astrophysicists.

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, MIN-CyT–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 (Kitt Peak) to the Tohono O'odham Nation, and Maunakea to the Kanaka Maoli (Native Hawaiians) community.

Links

- [Explore the Sombrero Galaxy in more detail](#)
- [Photos of the Víctor M. Blanco 4-meter Telescope](#)
- [Videos of the Víctor M. Blanco 4-meter Telescope](#)
- [Images taken by DECam](#)
- [Check out other NOIRLab Photo Releases](#)

Contacts

Josie Fenske

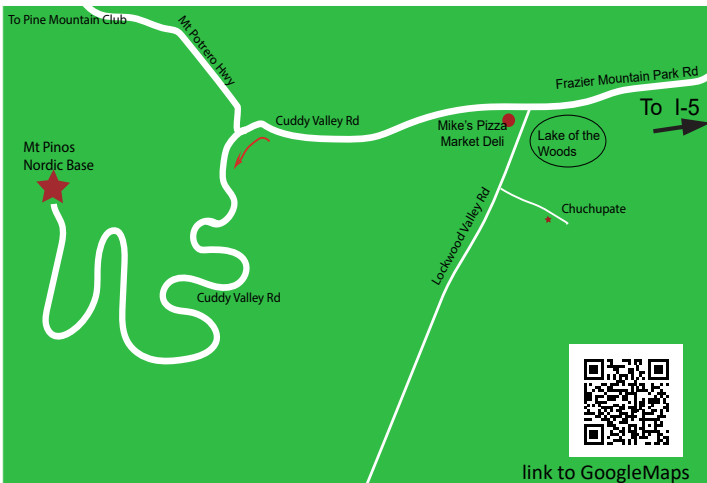
Public Information Officer NSF NOIRLab

Email: josie.fenske@noirlab.edu

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.

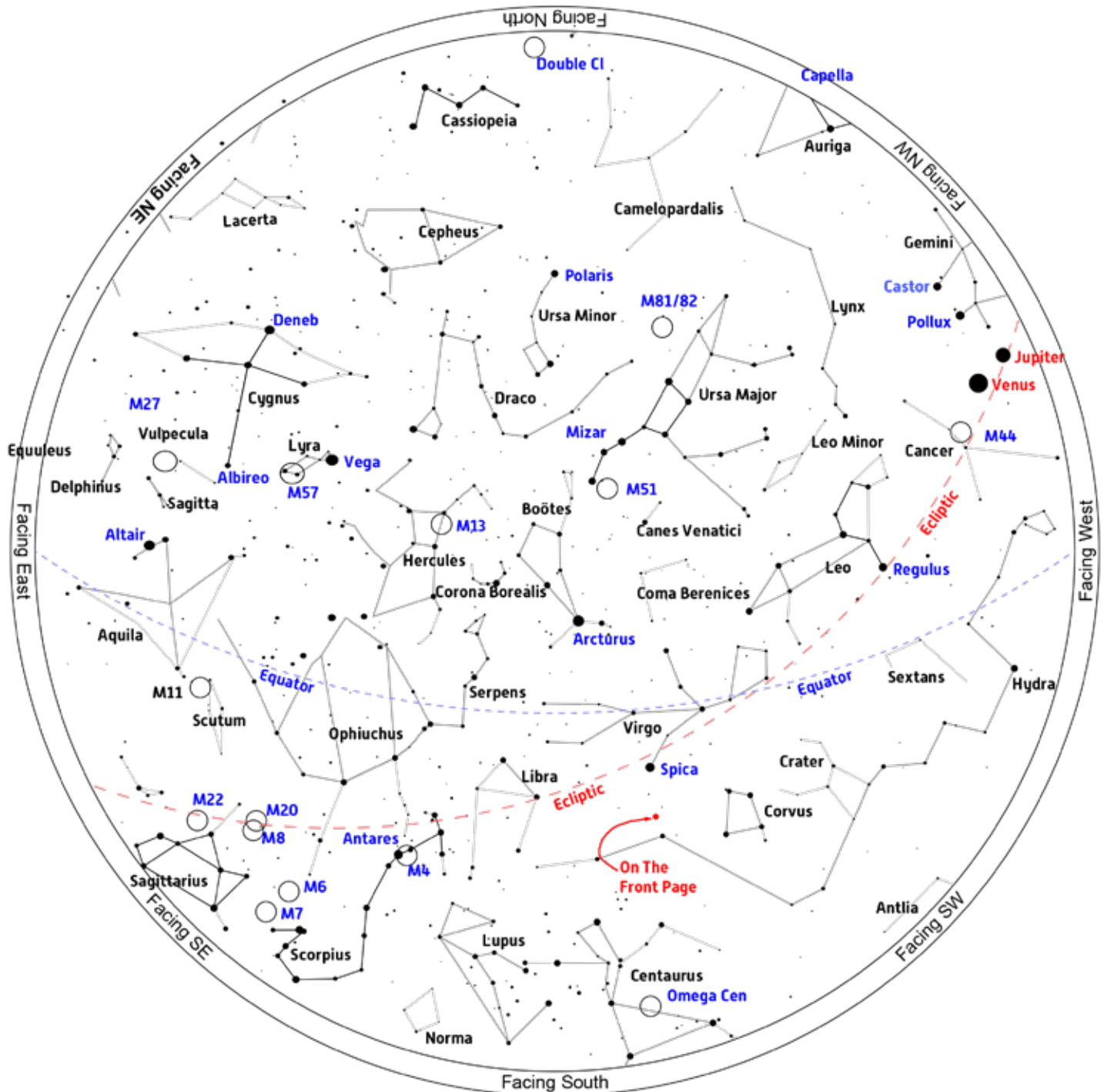
[RV7F+FF Frazier Park, California](#) (link to GoogleMaps)

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 June 13, 22:00 (UTC -07:00)

Powered by: Heavens-Above.com

Solar System Summary

The **Sun** starts the month in the middle of Taurus ending the month at the feet of Gemini.

The Planets

Mercury starts the month in the evening twilight near the feet in Gemini. On the 15th it reaches G.E.E. and thereafter starts it's fall back toward the horizon.

Venus, in the evening twilight, starts the month in central Gemini, zipping through Cancer, and reaching to under the "chin" of Leo, at mag -4.07, at the end of the month. On June 9th conjunction is achieved $1\frac{1}{2}^{\circ}$ north of Jupiter.

Mars spends the month, in the morning twilight, moving normally from Aries into Taurus, at mag 1.2. sneaking up on Uranus from the west.

Jupiter starting the month still on the eastern edge of Gemini, moving in normal motion, at mag -1.9, pushing into Cancer it the end of the month. On the 9th Venus charges past just $1\frac{1}{2}^{\circ}$ north.

Saturn is moving in normal motion from the edge of Cetus at mag 0.6 into southern Pisces. On the 10th the Moon passes $4\frac{3}{4}^{\circ}$ north.

Uranus in normal motion, at mag 5.8 and passes just south the Pleiades about 9 ArcMins below the ecliptic . On the 3rd of July about midnight Mars passes $6\frac{1}{2}$ ArcMins south.

Neptune in normal motion all month in southern Pisces at mag 7.9 coming to a stop at the end of the month, and the start of a retrograde period lasting the rest of the year.

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 across central Taurus.

2 Pallas moving normally in southern Pisces, On the 12th it is less than 1° north of Saturn , at magnitude 10.

3 Juno on eastern edge Aquila at mag 9.8. On the first few days of the month Juno make a u-turn and begins a months long retrograde passage.

4 Vesta still moving in normal motion, at mag 8.2, moving across NW Cetus at months end.

Moon Phases



First Qtr
June 21

Full
June 29

Third Qtr
June 8

New
June 14

Sun and Moon Rise and Set*

Date	Moonrise	Moonset	Sunrise	Sunset
6/1/2026	21:43	06:18	05:40	20:00
6/5/2026	23:13	10:09	05:39	20:02
6/10/2026	02:00	15:22	05:39	20:05
6/15/2026	05:54	21:22	05:39	20:07
6/20/2026	11:51	00:01	05:40	20:08
6/25/2026	16:51	02:15	05:41	20:09
6/30/2026	21:09	06:03	05:43	20:09

Planet Data*

June 1

	Rise	Transit	Set	Mag	Phase%
Mercury	06:53	14:14	21:36	-0.5	66.9
Venus	08:07	15:24	22:40	-4.0	79.1
Mars	04:01	10:44	17:28	1.3	96.4
Jupiter	08:50	15:56	23:02	-1.9	99.6
Saturn	02:52	15:11	15:11	0.8	99.8

June 15

	Rise	Transit	Set	Mag	Phase%
Mercury	07:28	14:40	21:51	0.6	37.4
Venus	08:32	15:39	22:45	-4.0	74.5
Mars	03:37	10:30	17:23	1.3	95.8
Jupiter	08:09	15:13	22:17	-1.9	99.7
Saturn	01:59	08:10	14:20	0.8	99.7

June 30

	Rise	Transit	Set	Mag	Phase%
Mercury	07:12	14:08	21:03	2.4	11.3
Venus	08:59	15:49	22:39	-4.1	69.0
Mars	03:14	10:15	17:16	1.3	95.1
Jupiter	07:24	14:27	21:29	-1.8	99.8
Saturn	01:03	07:14	13:25	0.7	99.7

*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 June 13, 2026. The list is sorted by the transit time of the object.

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M47	NGC2422	Open	Pup	07h 36m 35s	-14°29.0'	4.5	09:42	15:04	20:26
M46	NGC2437	Open	Pup	07h 41m 46s	-14°48.6'	6.5	09:48	15:09	20:30
M93	NGC2447	Open	Pup	07h 44m 30s	-23°51.4'	6.5	10:20	15:12	20:04
M48	NGC2548	Open	Hya	08h 13m 43s	-05°45.0'	5.5	09:54	15:41	21:28
M44	Beehive Cluster	Open	Cnc	08h 40m 24s	+19°40.0'	4.0	09:08	16:08	23:08
M67	King Cobra	Open	Cnc	08h 51m 18s	+11°48.0'	7.5	09:43	16:19	22:55
M81	Bode's Galaxy	Galaxy	UMa	09h 55m 33s	+69°03.9'	7.8	Circ	17:23	Circ
M82	Cigar Galaxy	Galaxy	UMa	09h 55m 53s	+69°40.8'	9.2	Circ	17:23	Circ
M95	NGC3351	Galaxy	Leo	10h 43m 58s	+11°42.2'	10.6	11:36	18:11	00:47
M96	NGC3368	Galaxy	Leo	10h 46m 46s	+11°49.2'	10.1	11:38	18:14	00:50
M105	NGC3379	Galaxy	Leo	10h 47m 50s	+12°34.9'	10.5	11:37	18:15	00:54
M108	NGC3556	Galaxy	UMa	11h 11m 31s	+55°40.4'	10.6	Circ	18:39	Circ
M97	Owl Nebula	P Neb	UMa	11h 14m 48s	+55°01.1'	12.0	Circ	18:42	Circ
M65	Leo Triplet	Galaxy	Leo	11h 18m 56s	+13°05.5'	10.1	12:06	18:46	01:26
M66	Leo Triplet	Galaxy	Leo	11h 20m 15s	+12°59.4'	9.7	12:08	18:48	01:27
M109	NGC3992	Galaxy	UMa	11h 57m 36s	+53°22.4'	10.6	08:38	19:25	06:12
M98	NGC4192	Galaxy	Com	12h 13m 48s	+14°54.0'	10.9	12:56	19:41	02:26
M99	Virgo Cluster Pinwheel	Galaxy	Com	12h 18m 50s	+14°25.0'	10.4	13:02	19:46	02:30
M106	NGC4258	Galaxy	CVn	12h 18m 58s	+47°18.2'	9.1	10:26	19:46	05:06
M61	Swelling Spiral	Galaxy	Vir	12h 21m 55s	+04°28.3'	10.1	13:34	19:49	02:04
M40	Winnecke 4	Dbl+Asterism	UMa	12h 22m 12s	+58°05.0'	8.7	Circ	19:50	Circ
M100	Mirror of M99	Galaxy	Com	12h 22m 55s	+15°49.3'	10.1	13:02	19:50	02:38
M84	NGC4374	Galaxy	Vir	12h 25m 04s	+12°53.2'	10.2	13:13	19:52	02:32
M85	NGC4382	Galaxy	Com	12h 25m 24s	+18°11.4'	10.0	12:57	19:53	02:48
M86	NGC4406	Galaxy	Vir	12h 26m 12s	+12°56.7'	9.9	13:14	19:54	02:33
M49	NGC4472	Galaxy	Vir	12h 29m 47s	+08°00.0'	9.3	13:32	19:57	02:22
M87	Smoking Gun	Galaxy	Vir	12h 30m 49s	+12°23.4'	9.6	13:20	19:58	02:36
M88	NGC4501	Galaxy	Com	12h 31m 59s	+14°25.2'	10.2	13:16	19:59	02:43
M91	Missing Messier Object	Galaxy	Com	12h 35m 27s	+14°29.7'	10.9	13:19	20:03	02:47
M89	NGC4552	Galaxy	Vir	12h 35m 40s	+12°33.3'	10.9	13:25	20:03	02:41
M90	NGC4569	Galaxy	Vir	12h 36m 50s	+13°09.7'	10.2	13:24	20:04	02:44
M58	NGC4579	Galaxy	Vir	12h 37m 44s	+11°49.1'	10.4	13:29	20:05	02:41
M68	NGC4590	Globular	Hya	12h 39m 28s	-26°44.5'	9.0	15:25	20:07	00:49
M104	Sombrero Galaxy	Galaxy	Vir	12h 39m 59s	-11°37.3'	9.2	14:37	20:07	01:38
M59	NGC4621	Galaxy	Vir	12h 42m 02s	+11°38.7'	10.7	13:34	20:09	02:45

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ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M60	NGC4649	Galaxy	Vir	12h 43m 40s	+11°33.1'	9.8	13:36	20:11	02:46
M94	Croc's Eye Galaxy	Galaxy	CVn	12h 50m 53s	+41°07.1'	8.9	11:45	20:18	04:51
M64	Black Eye Galaxy	Galaxy	Com	12h 56m 44s	+21°41.0'	9.3	13:17	20:24	03:31
M53	NGC5024	Globular	Com	13h 12m 55s	+18°10.1'	8.5	13:45	20:40	03:36
M63	Sunflower Galaxy	Galaxy	CVn	13h 15m 49s	+42°01.7'	9.3	12:04	20:43	05:22
NGC5139	Omega Centauri	Globular	Cen	13h 26m 48s	-47°29.0'	3.6	18:04	20:54	23:45
NGC5169		Galaxy	CVn	13h 28m 10s	+46°40.3'	14.0	11:41	20:56	06:10
NGC5204		Galaxy	UMa	13h 29m 36s	+58°25.1'	11.3	Circ	20:57	Circ
M51	Whirlpool Galaxy	Galaxy	CVn	13h 29m 52s	+47°11.7'	8.9	11:38	20:57	06:16
Arp85	M51B	Galaxy	CVn	13h 29m 58s	+47°16.0'	9.6	11:38	20:57	06:17
NGC5182		Galaxy	Hya	13h 30m 41s	-28°09.0'	13.0	16:21	20:58	01:35
NGC5214		Galaxy	CVn	13h 32m 49s	+41°52.3'	14.0	12:22	21:00	05:38
M83	So. Pinwheel Galaxy	Galaxy	Hya	13h 37m 00s	-29°51.8'	8.0	16:34	21:04	01:34
HR5144	HD119055	Triple	Boo	13h 40m 40s	+19°57.3'	5.8	14:07	21:08	04:09
NGC5283		Galaxy	Dra	13h 41m 06s	+67°40.3'	14.0	Circ	21:08	Circ
M3	NGC5272	Globular	CVn	13h 42m 11s	+28°22.5'	7.0	13:39	21:10	04:41
NGC5286	C84	Globular	Cen	13h 46m 24s	-51°22.0'	7.6	19:04	21:14	23:23
NGC5292		Galaxy	Cen	13h 47m 40s	-30°56.4'	14.0	16:49	21:15	01:41
NGC5356		Galaxy	Vir	13h 54m 59s	+05°20.0'	14.0	15:05	21:22	03:40
NGC5363		Galaxy	Vir	13h 56m 07s	+05°15.2'	10.2	15:06	21:24	03:41
NGC5447	III-787	Neb	UMa	14h 02m 29s	+54°16.3'		10:15	21:30	08:45
M101	Pinwheel Galaxy	Galaxy	UMa	14h 03m 13s	+54°20.9'	8.2	10:12	21:31	08:49
NGC5461	III-788	Neb	UMa	14h 03m 42s	+54°19.0'		10:14	21:31	08:48
NGC5485		Galaxy	UMa	14h 07m 11s	+55°00.0'	11.5	Circ	21:35	Circ
NGC5460		Open	Cen	14h 07m 27s	-48°20.6'	5.6	18:52	21:35	00:18
NGC5500		Galaxy	Boo	14h 10m 15s	+48°32.7'	14.0	12:05	21:38	07:10
IC991		Galaxy	Vir	14h 17m 48s	-13°52.3'	13.0	16:22	21:45	03:09
HR5362	HD125383	Dbl	Lup	14h 20m 10s	-43°03.5'	5.6	18:23	21:48	01:12
IC4406	Retina Nebula	P Neb	Lup	14h 22m 26s	-44°09.0'	11.0	18:33	21:50	01:07
HR5409	HD126868	Triple	Vir	14h 28m 12s	-02°13.6'	4.8	15:59	21:56	03:52
NGC5669		Galaxy	Boo	14h 32m 44s	+09°53.4'	12.0	15:30	22:00	04:31
NGC5689		Galaxy	Boo	14h 35m 30s	+48°44.5'	11.9	12:28	22:03	07:38
M102	Spindle Galaxy (duplicate of M101?)	Galaxy	Dra	15h 06m 30s	+55°45.7'	10.8	Circ	22:34	Circ
NGC5875		Galaxy	Boo	15h 09m 13s	+52°31.6'	13.0	12:08	22:37	09:05
NGC5907	Splinter Galaxy	Galaxy	Dra	15h 15m 54s	+56°19.7'	11.4	Circ	22:43	Circ
NGC5882		P Neb	Lup	15h 16m 50s	-45°38.9'	11.0	19:39	22:44	01:50
NGC5897		Globular	Lib	15h 17m 24s	-21°00.6'	8.6	17:43	22:45	03:46
M5	NGC5904	Globular	Ser	15h 18m 33s	+02°04.9'	7.0	16:37	22:46	04:54

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ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
IC4593	White Eyed Pea	P Neb	Her	16h 11m 44s	+12°04.3'	11.0	17:02	23:39	06:16
IC4592	Jabbah	Neb	Sco	16h 11m 59s	-19°27.4'		18:33	23:39	04:46
M80	NGC6093	Globular	Sco	16h 17m 03s	-22°58.5'	8.5	18:49	23:44	04:39
IC4601		Neb	Sco	16h 20m 18s	-20°04.9'		18:43	23:48	04:52
Abell38		P Neb	Sco	16h 23m 17s	-31°44.9'	11.7	19:28	23:51	04:13
M4	Cat's Eye	Globular	Sco	16h 23m 35s	-26°31.5'	7.5	19:08	23:51	04:34
IC4603	Rho Ophiuchi Complex [1]	Neb	Oph	16h 25m 24s	-24°28.0'		19:03	23:53	04:43
IC4604	Rho Ophiuchi Complex [2]	Neb	Oph	16h 25m 33s	-23°26.5'		19:00	23:53	04:46
NGC6124	C75	Open	Sco	16h 25m 36s	-40°40.0'	5.8	20:14	23:53	03:32
Abell39		P Neb	Her	16h 27m 33s	+27°54.5'	12.9	16:26	23:55	07:24
IC4605		Neb	Sco	16h 30m 12s	-25°06.8'		19:10	23:58	04:45
NGC6153		P Neb	Sco	16h 31m 31s	-40°15.2'	12.0	20:18	23:59	03:40
NGC6181		Galaxy	Her	16h 32m 21s	+19°49.5'	11.9	16:59	00:00	07:00
NGC6171		Globular	Oph	16h 32m 32s	-13°03.1'	8.1	18:34	00:00	05:26
NGC6178		Open	Sco	16h 35m 47s	-45°38.6'	7.2	20:57	00:03	03:09
NGC6193	C82	Open	Ara	16h 41m 18s	-48°46.0'	5.2	21:30	00:09	02:47
M13	Great Hercules Cluster	Globular	Her	16h 41m 41s	+36°27.5'	7.0	16:02	00:09	08:16
NGC6210	Turtle Planetary Nebula	P Neb	Her	16h 44m 30s	+23°48.0'	9.0	16:58	00:12	07:26
Barnard44a	B44a	DkNeb	Sco	16h 44m 45s	-40°20.0'		20:31	00:12	03:53
NGC6204		Open	Ara	16h 46m 09s	-47°01.0'	8.2	21:19	00:14	03:08
M12	Gumball Globular	Globular	Oph	16h 47m 14s	-01°56.8'	8.0	18:17	00:15	06:12
NGC6231	Table of Scorpius	Open	Sco	16h 54m 00s	-41°48.0'	2.6	20:49	00:21	03:53
IC4628	Prawn Nebula	Neb	Sco	16h 56m 58s	-40°27.3'		20:44	00:24	04:04
NGC6254		Globular	Oph	16h 57m 09s	-04°05.9'	6.6	18:33	00:25	06:16
Barnard47	B47	DkNeb	Oph	16h 59m 42s	-22°38.0'		19:31	00:27	05:23
M62	Flickering Globular	Globular	Oph	17h 01m 13s	-30°06.7'	8.0	20:00	00:29	04:58
M19	NGC6273	Globular	Oph	17h 02m 38s	-26°16.0'	8.5	19:46	00:30	05:14
Barnard51	B51	DkNeb	Oph	17h 04m 44s	-22°15.0'		19:35	00:32	05:30
IC4637		P Neb	Sco	17h 05m 10s	-40°53.1'	14.0	20:55	00:33	04:10
NGC6302	C69,Bug Nebula	P Neb	Sco	17h 13m 42s	-37°06.0'	9.6	20:43	00:41	04:39
Barnard251	B251	DkNeb	Oph	17h 13m 48s	-20°09.0'		19:37	00:41	05:45
Barnard63	B63	DkNeb	Oph	17h 16m 00s	-21°28.0'		19:43	00:43	05:43
M92	NGC6341	Globular	Her	17h 17m 07s	+43°08.1'	7.5	15:58	00:45	09:31
M9	NGC6333	Globular	Oph	17h 19m 12s	-18°31.0'	9.0	19:37	00:47	05:56
NGC6326		P Neb	Ara	17h 20m 46s	-51°45.2'	12.0	22:44	00:48	02:52
NGC6357	Lobster Nebula	Neb	Sco	17h 24m 43s	-34°12.1'		20:40	00:52	05:04
IC4651		Open	Ara	17h 24m 52s	-49°56.5'	6.9	22:26	00:52	03:19
Abell41		P Neb	Ser	17h 29m 04s	-15°13.3'	13.9	19:37	00:56	06:16

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ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
Abell42		P Neb	Oph	17h 31m 31s	-08°19.1'	14.6	19:19	00:59	06:39
Barnard78	B78	DkNeb	Oph	17h 32m 00s	-25°35.0'		20:13	00:59	05:45
NGC6388		Globular	Sco	17h 36m 17s	-44°44.1'	6.9	21:51	01:04	04:16
M14	NGC6402	Globular	Oph	17h 37m 36s	-03°14.7'	9.5	19:11	01:05	06:59
Barnard276	B276	DkNeb	Oph	17h 39m 39s	-19°49.0'		20:02	01:07	06:12
M6	Butterfly Cluster	Open	Sco	17h 40m 20s	-32°15.2'	4.5	20:47	01:08	05:28
NGC6397	C86	Globular	Ara	17h 40m 42s	-53°40.0'	5.6	23:35	01:08	02:41
NGC6426		Globular	Oph	17h 44m 55s	+03°10.1'	11.2	19:01	01:12	07:24
Barnard83a	B83a	DkNeb	Sgr	17h 45m 18s	-20°00.0'		20:08	01:13	06:17
IC4665		Open	Oph	17h 46m 30s	+05°39.0'	4.2	18:55	01:14	07:32
NGC6445	Crescent Nebula	P Neb	Sgr	17h 49m 15s	-20°00.6'	13.0	20:12	01:17	06:21
NGC6503		Galaxy	Dra	17h 49m 27s	+70°08.6'	10.2	Circ	01:17	Circ
NGC6441		Globular	Sco	17h 50m 13s	-37°03.0'	7.4	21:19	01:18	05:16
M7	Scorpion's Tail	Open	Sco	17h 53m 51s	-34°47.6'	3.5	21:12	01:21	05:30
IC4670		Neb	Sgr	17h 55m 07s	-21°44.6'		20:23	01:22	06:22
NGC6501		Galaxy	Her	17h 56m 04s	+18°22.3'	12.3	18:27	01:23	08:19
M23	NGC6494	Open	Sgr	17h 57m 04s	-18°59.1'	6.0	20:16	01:24	06:32
NGC6543	Cat Eye Nebula	P Neb	Dra	17h 58m 36s	+66°38.0'	8.1	Circ	01:26	Circ
NGC6496		Globular	Sco	17h 59m 04s	-44°16.0'	9.2	22:11	01:26	04:42
Barnard291	B291	DkNeb	Sgr	17h 59m 43s	-33°53.0'		21:14	01:27	05:40
Barnard292	B292	DkNeb	Sgr	18h 00m 34s	-33°20.0'		21:12	01:28	05:44
Barnard293	B293	DkNeb	Sgr	18h 01m 12s	-35°20.0'		21:22	01:29	05:35
M20	Trifid Nebula	Open+D Neb	Sgr	18h 02m 42s	-22°58.2'	5.0	20:35	01:30	06:25
M8	Lagoon Nebula	Open+D Neb	Sgr	18h 03m 41s	-24°22.7'	5.0	20:41	01:31	06:21
Barnard295	B295	DkNeb	Sgr	18h 04m 05s	-31°09.0'		21:07	01:31	05:56
M21	NGC6531	Open	Sgr	18h 04m 13s	-22°29.3'	7.0	20:35	01:32	06:28
NGC6530		Open	Sgr	18h 04m 31s	-24°21.5'	4.6	20:42	01:32	06:22
NGC6528		Globular	Sgr	18h 04m 50s	-30°03.3'	9.5	21:03	01:32	06:01

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
Austral
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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