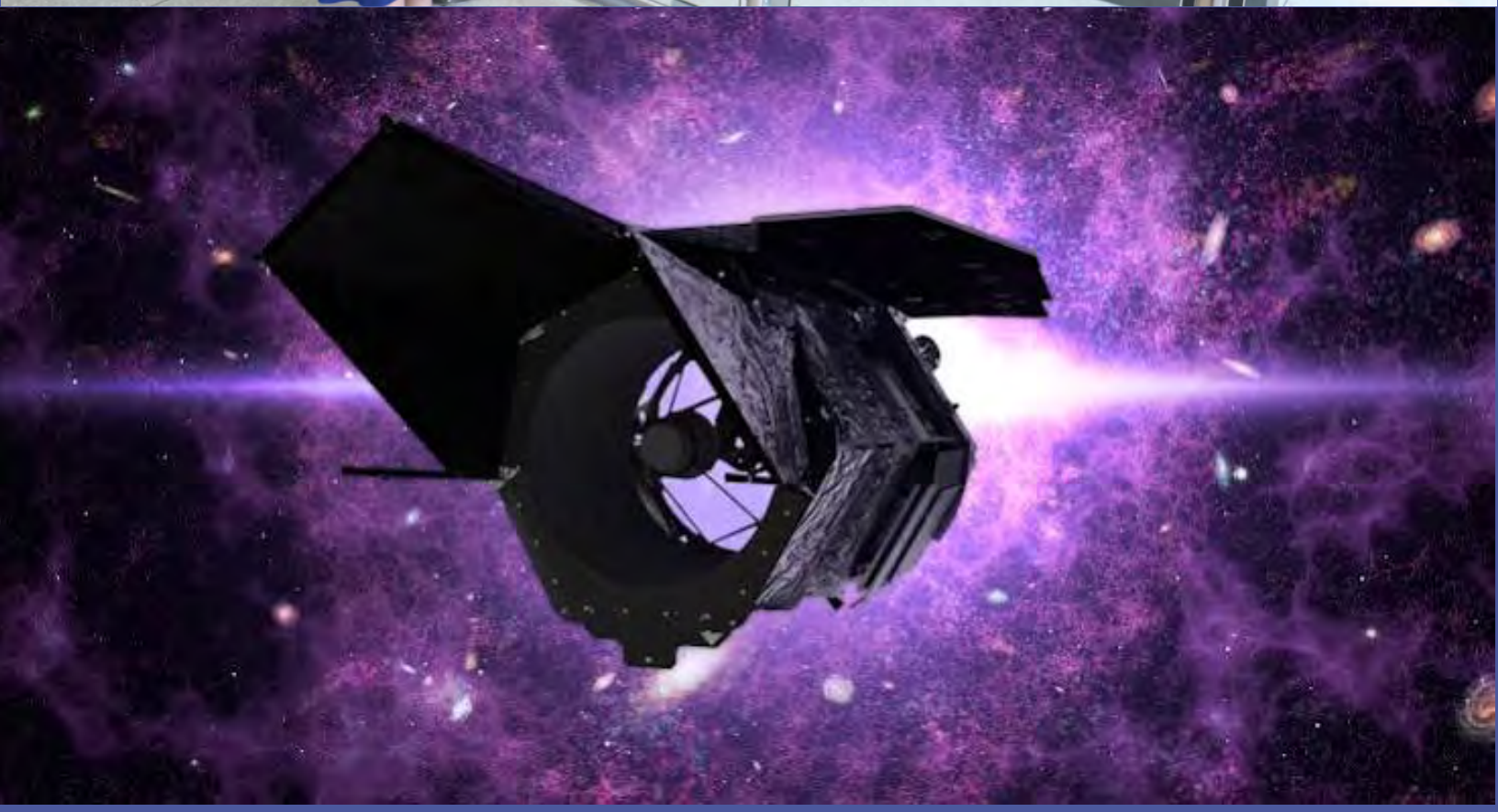
Volume 46.10 October 2026

Desert Sky Observer

Antelope Valley Astronomy Club





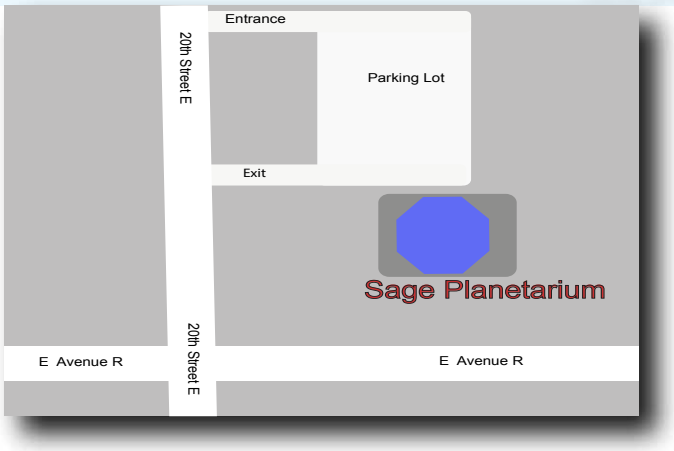
Upcoming Events

Oct. 09: Club Business Meeting 7:00 PM
Oct. 10: DSSP @ Red Cliffs
Oct. 16: College of the Canyons Fall Star Party 6-9:30 PM
Oct. 24: Spooky Science CANCELED
Oct. 24: Moon Walk REPLACED
Oct. 24: Star Party @ PDW 6:30 PM

Every Clear Night: A Personal Star Party

Nov. 13: Club Meeting 7:00PM
Nov. 14: Moon Walk @ PDW 5:30 PM
Nov. 14: Lunar Club @ PDW 5:30 PM

AVAC Calendar



Board Members

President: Vacant
president@avastronomyclub.org

Vice-President: Vacant
vice-president@avastronomyclub.org

Secretary: Rose Moore (661) 972-1953
secretary@avastronomyclub.org

Treasurer: Rod Girard (661) 803-7838
treasurer@avastronomyclub.org

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

Appointed Positions

Lunar Club:
Matt Leone (661) 713-1894

Equipment & Library: vacant
library@avastronomyclub.org

Club Historian: vacant
history@avastronomyclub.org

Webmaster: Steve Trotta (661) 269-5428
webmaster@avastronomyclub.org

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

Newsletter Editor: Vacant
dso@avastronomyclub.org

Astronomical League Coordinator:
Phil Wriedt (661) 917-4874
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 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.

The Editor's Message

By Rod Girard

The hi-light of our September meeting was the zoom presentation titled "The Life of a Star: from Birth to End" presented by Professor Teresa Ciardi, Professor of Astronomy & Physical Science at the College of the Canyons. Teresa's unique, engaging style of speaking was both informative and entertaining. She defiantly connected with our members, rapping up with a lively question and answer session which included questions from two of our youngest family members. It was one of the best question and answer sessions that I can remember. It was great to see such enthusiasm.

Its been difficult to find guess speaker since corporate and NASA budget cuts, not to mention the pandemic. But our Secretary, Rose, has been relentless and undeterred in her pursuit of speakers and we owe her a world or thanks.

I just received a text from Jeremy Amarant. For the first time in my memory, since I have been a member of the Antelope Valley Astronomy Club, Jeremy will be unable to attend the October 24th MoonWalk or Spooky Science and both are canceled. Replacing the MoonWalk the AVAC will hold a Star Party at the Prime Desert Woodlands on October 24, 2026. Please make every effort to attend, I'm certain that Jeremy will appreciate our support.

As informative as Professor Ciardi's presentation was, I still like reading a more scientific description or lecture on "The Life and Death of Stars". If you feel the same, try the following link. In my opinion, it's well written and definitely technical. Enjoy!

https://faculty.wcas.northwestern.edu/infocom/The%20Website/index.html#:~:text=The,-Life%20And%20Death

Correction: In the September DSO I mistakenly wrote Tom Koonce's website address as ASTRO-Tom's.com . It should have been written as astro-tom.com . If you have the opportunity, please visit Tom's website.

Clear Skies...

On The Cover

Named after NASA's first chief astronomer, the 'mother of the Hubble Space Telescope,' the Nancy Grace Roman Space Telescope was launched on 30 August 2026 on a trajectory which will park it in a Lagrange Point Sun-Earth L2 orbit in late November or early December. This is the same orbit as the James Webb Space Telescope.
With a 2.4 meter (7.9 foot) primary mirror the Nancy Grace Roman Telescope will have a field of view at least 100 times larger than Hubble's. It is equipped with two scientific instruments. The Wide-Field Instrument (WFI), a 300.8 megapixel multi-band visible and near-infrared camera with a 0.28 square degree field of view. The Coronagraph Instrument (CGI) a high-contrast, small field of view camera and spectrometer covering visible and near-infrared wavelenghts, using a novel starlight suppression technology. With these instruments the NGR has the objective of potentially measuring the light from a billion galaxies in its lifetime. This observatory will also be able to block starlight to directly see exoplanets and planet-forming disks, complete a statistical census of planetary systems in our galaxy, and settle essential questions in the areas of dark energy, exoplanets, and infrared astrophysics. This will include probing the chronology of the universe and growth of cosmic structure, with the end goal of measuring the effects of dark energy, the consistency of general relativity and the curvature of spacetime.

From the Secretary

By Rose Moore

It's October again, and time for our Annual Business meeting, Friday October 9th. We need members to attend!! This meeting is important for electing Board members for 2027, and for discussing topics of interest related to the club, issues and possible changes. The positions of club president and vice president are vacant, and we need to fill those. Members interested in a position should be present at this meeting, and need to look over the AVAC Operations Manual to read up on the duties of each position. PDF's of the Operations Manual and the Constitution and By-Laws are available on the bottom of the AVAC website homepage.

We have a dark sky star party scheduled for Saturday October 10th, and will be at Red Cliffs Nature area on the 14. I will be getting the permit for the club's overnight use of the area. Weather permitting. Further info to follow.

On Friday October 16th, the AVAC will be supporting the College of the Canyons Fall Star Party. This event is from 6pm to 9:30pm. We need members with telescopes for this event! There will be a guest speaker; Dave Margrave speaking on "Artemis II and the Core Stage Rocket Engine". Dave is the RS-25 Engine Program Chief Engineer. The RS-25 engine was first used on the Space Shuttle, and is being used on the Space Launch System for the Artemis rocket. There will be demonstrations, presentations, and food available for purchase. Further info to follow.

The Prime Desert Moon Walk for Saturday, October 24th, has been canceled. There is some discussion on having a star party at PDW that evening for the public. We will have more information and send out an email. Coming up in November will be our club meeting, and a Prime Desert Moon Walk. The weather will determine if we have a dark sky star party.

A sign up sheet has been started for the club Christmas Party. Our party is scheduled for Saturday December 5th, at the Greenhouse Cafe. Time: 5:30pm to 9pm. Cost: $25 per member and each guest, and $15 per child 12 and under. There will be a grand prize and raffle items! An email has been sent out with the menu and all information. The top 3 pasta dishes and the top 2 salad dishes will be chosen for the buffet. Rod will have to let the Cafe know of our selections approximately 2 weeks before the party. Please come to a meeting or let me know by email if you are attending and your selections!

See you at October's meeting!

On The Cover. . . Continued



Who was Nancy Grace Roman?

Known as the "mother of the Hubble Space Telescope," Nancy Grace Roman was born May 16, 1925 in Nashville, Tennessee, and died December 25, 2018. From a young age, she showed an interest in astronomy and when she was 11 years old she organized a club with her classmates learning about constellations and celestial objects from a book. By high school, she realized that she had a passion for astronomy and wanted to pursue it. In 1946 she received her Bachelor of Arts degree in Astronomy from Swarthmore College in Pennsylvania. Then in 1949 she received her Ph.D. from the University of Chicago and stayed at the university for a further six years working at the Yerkes Observatory. In 1955 it became evident that due to her gender she would not obtain tenure and left to work at the Naval Research Laboratory. At the NRL, from 1955 to 1959, Dr. Roman worked in the new field of Radio Astronomy. Becoming the head of Microwave Spectroscopy helped her to adapt to an engineering environment. In 1959 Dr. Roman accepted an invitation to join NASA, where she was the first female executive at NASA and became the first Chief of Astronomy. She held various other positions in NASA, including Chief of Astronomy and Solar Physics and Chief of Astronomy and Relativity. Part of Dr. Roman's job included planning a program of satellites and rockets. She also administered a significant program of grants to support the astronomical community. One of the biggest challenges of her career was getting the Hubble Space Telescope approved by the U.S. Congress. It is through her work with this mission that she was coined "the mother of Hubble" by her colleagues, specifically by Edward J. Weiler, her successor at NASA as Chief of Astronomy following her retirement in 1979. When asked what she thought was the most interesting discovery by Hubble, her reply was "dark energy"! Hubble confirmed the astounding initial measurements that the expansion of the universe was accelerating and extended those measurements to higher redshifts. These discoveries excited Dr. Roman, as well as the astronomical community. It was for these reasons that NASA's next major space observatory, which will be tasked with increasing our understanding of dark energy, the universe, and our place in it, was dedicated to Dr. Nancy Grace Roman, the pioneer of modern space-based astronomy who made such telescopes a reality.

Editor's note: The above article is a compilation of numerous on-line articles and is not an original composition.

Space News

News from around the Net

The fall equinox doesn't really bring equal day and night - here's why:

The first day of fall in 2026 arrived Tuesday, Sept. 22, at 8:05 p.m. EDT (1205 GMT on Sept. 23), when autumn begins astronomically in the Northern Hemisphere and spring begins in the Southern Hemisphere. This date, like March 20, is called an equinox, derived from the Latin for "equal night," a reference to the idea that day and night are then of equal length worldwide. In practice, however, that is not exactly true.
www.space.com/stargazing/the-fall-equinox-doesnt-really-bring-equal-day-and-night-heres-why

Scientists Release Details About Moon's New Massive Crater:

A recent paper published in Science Advances, describes the largest ever found in modern times. That crater, which is now named McGetchin, after Tom McGetchin, a celebrated lunar scientist, was formed somewhere between April 11th and May 22nd, 2024.
https://www.universetoday.com/articles/scientists-release-details-about-moons-new-massive-crater

Hawai‘i Students Name Image of Glittering Galaxy Pair Nā ‘Uhane Māhoe Huki Pū i ke Ola:

Project Hōkūlani interns researched and named this new Gemini North image featuring the stunning pair of interacting galaxies known as NGC 7253. Nā ‘Uhane Māhoe Huki Pū i ke Ola is the Hawaiian name given to this image of NGC 7253 — a pair of spiral galaxies caught in each other’s gravity. Captured by the Gemini North telescope on Maunakea in Hawai‘i, this image created a spectacular symbolic display for this year’s interns participating in Project Hōkūlani.
https://noirlab.edu/public/news/noirlab2621/

Why are the stars around our galaxy's black hole missing their companions?:

A new study suggests that the young stars orbiting the Milky Way's central black hole may have a surprisingly ordinary origin. But the black hole's influence may be what makes their origin look more exotic than it really is.
https://phys.org/news/2026-09-stars-galaxy-black-hole-companions.html#:~:text=Why,-are the stars

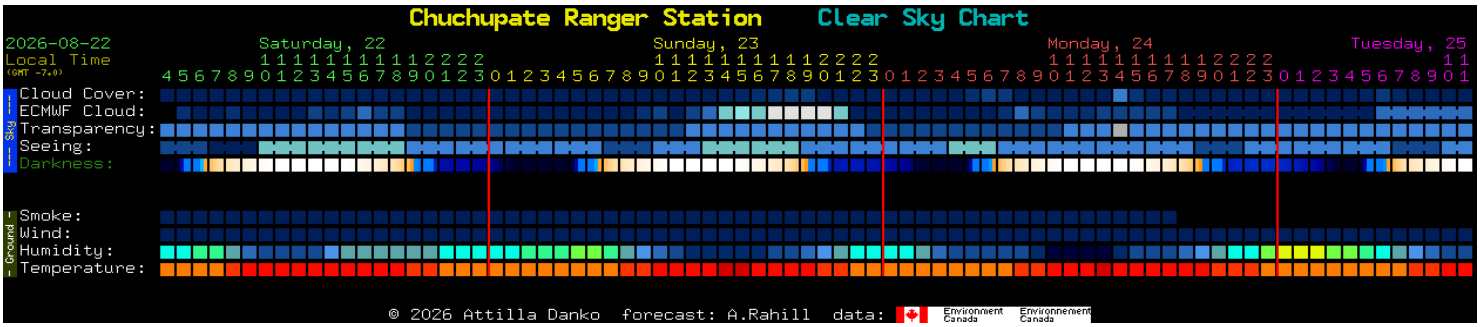
Astronomers Catch Massive Star’s Death From the First Explosive Moment:

With an extremely faint burst of X-rays and no high-velocity jets, this supernova suggests a new way for massive stars to end their lives. A rare cosmic explosion has given astronomers an unprecedented view of a massive star in its final moments...
https://noirlab.edu/public/news/noirlab2619/

Neptune-Sized Exoplanet Mysteriously Orbits Its Star Backward, Raising Questions About Planetary Formation:

About 73 light-years from Earth lies an exoplanet that has it all backward. While planets generally orbit in the same direction as their host star, this one is an outlier: It travels around its star in the opposite direction to the star’s rotation, leaving astronomers bewildered.
https://www.discovermagazine.com/neptune-sized-exoplanet-mysteriously-orbits-its-star-backward-raising-questions-about-planetary-formation-49713

Astronomical Weather:
If you want the most up to date astronomical weather information, go to https://www.cleardarksky.com/csk/ . On the same page, below the Clear Dark Sky Chart, there will be a full description and explanation for every category in the chart. The data is up to date and from my experience very reliable. Below is an example of the clear dark sky chart for Chuchupate.



Chuchupate / Mt. Pinos area live Video:
If you want to see live camera streaming and local weather information for the Chuchupate and Mt. Pinos area, try going to; https:www.frazmtn.com/cams/ .

California live video streaming:
If you want to see live weather video streaming from hundreds of cameras, all around California, try going to; https://cameras.alertcalifornia.org .

Local Clubs

The following is a list of astronomy clubs or societies which are local to the Antelope Valley Astronomy Club. Please take time to visit their sites. It is interesting to see what other clubs are doing and who knows, you might discover an event that you would like to attend. If there is a club you would like added to this list please let the Editor know. We would prefer clubs local to Southern California, however others may be considered.

Astronomical Society of the Desert, Rancho Mirage
https://www.astrorx.org

Big Bear Valley Astronomical Society, Big Bear City
https://bearvalleyastronomers.org

China Lake Astronomical Society, Ridgecrest
https://www.chinalakeastro.org

Kern County Astronomical Society
https://www.kernastro.org/

Local Group of Santa Clarita, Santa Clarita
https://www.lgscv.org

Los Angeles Astronomical Society, Los Angeles
https://www.laas.org

Mountain Skies Astronomical Society, Lake Arrowhead
https://www.mountain-skies.org

Orange County Astronomers
https://www.ocastronomers.org/

Riverside Astronomical Society, Riverside
https://www.rivastro.org

Santa Monica Astronomy Club, Woodland Hills
https://samoastronomy.org

Ventura County Astronomical Society, Simi Valley
https://www.vcas.org



Classic Department Store Telescope
(file image)



18 inch Obsession Dobsonian Telescope
(file image)



Seestar S30 Pro
(file image)

The Sky is Big Enough for All Areas of Our Hobby

It was a fuzzy view of Saturn through a 50mm “department store” telescope that hooked me into amateur astronomy in 1969. That Christmas, Santa Claus brought me a way of seeing things much farther away than mountains I could see from my small town. On weekend nights and throughout the summer, I visually explored the Moon, Saturn, and Jupiter. I also found the Andromeda galaxy and scanned the Milky Way, wondering what other objects lay hidden among the stars in the skies each night. You may have had a similar personal experience.

My first foray into astrophotography began in the early 1990s, armed with a classic, fork-mounted Celestron C8 on an equatorial wedge and a 35mm SLR film camera. In those days, getting a sharp image was a complete roll of the dice. Without immediate digital feedback, I had to take a series of photos, slightly adjusting the focus between each shot, and then wait days for the film to be developed just to see the results. My absolute best shot was a recognizable, yet blurry, image of the Moon's Clavius crater region. After a mountain of blood, sweat, and tears spent battling tracking errors, telescope vibrations, and the limitation of film sensitivities, I realized I had zero natural talent for the craft. The frustration completely extinguished my imaging enthusiasm, driving me straight back to strictly visual astronomy. A decade later, in 2001, I saved up for a large Dobsonian telescope—and I have been happily enjoying the pure visual experience ever since.

Fast-forward 25 years to the beginning of this year, when I decided to test the waters of modern smart telescopes. Intrigued by the new wave of automated gear, I bought a ZWO Seestar S30 Pro. It checked every box: a reasonably affordable price, quality optics, a high-resolution sensor, and promised imaging simplicity. Knowing the robust resale markets on Cloudy Nights and Astromart mitigated any financial risk, I took the plunge. On my very first use of the smart scope on my back porch in Lancaster, I easily imaged the Sun, then as night fell, the Moon, Saturn, and both the Andromeda and M51 galaxies. Seeing those great results made me smile. Technology has officially evolved from the "Stone Age" of the 1980s and 90s, successfully solving the vast majority of the old astrophotography headaches.

After a quarter-century away from the hobby, I have watched "astrophotography" evolve into modern "astro-imaging." More and more amateur astronomers are integrating Electronically Assisted Astronomy (EAA) into their routines or transitioning entirely to rigs with onboard computing and wireless connectivity. While it is a bit bittersweet to see fewer massive Dobsonians or Schmidt-Cassegrains at star parties in favor of compact smart telescopes, this shift is undeniably positive. Smart tech is bringing fresh faces into our hobby. Anything that keeps people looking up, raises awareness about light pollution, and brings us together to share our passion for the night sky is a massive win for amateur astronomy!

EAA is a fascinating frontier for our hobby. Thanks to the user-friendly design of modern smart telescopes, the learning curve is surprisingly gentle. You do not need to be an expert. You can jump right into digital observing without needing to master complex concepts like quantum efficiency, sensor optimization, dithering, or plate solving. But…
Pure visual astronomy still offers an immediate, unfiltered connection to the night sky. While astro-imaging replaces eyepiece time with screens, software, and cable management, a visual telescope grants instant gratification. There is something profound about knowing that the photons hitting your retina left a distant galaxy millions of years ago, traveling across space directly to your eye rather than through a digital sensor. Ditching the glowing screens preserves your true dark adaptation, revealing passing meteors and the depths of the Milky Way. Fostering mindfulness and a deep sense of personal scale, star-hopping with just a finder scope and a paper atlas lets you experience the cosmos exactly as Galileo, Cassini, and Messier did centuries ago.
Finally, there is a shared social joy when passing the view through an eyepiece to a friend or child that yields an immediate, shared "wow" moment. A digital image rarely replicates this. Perhaps you're like me now: Your love of the night sky now encompasses both visual and electronically assisted astronomy in ways that complement each other, both happening side-by-side. In any case, I hope that wherever your greatest passion lies in this hobby, you can create opportunities to share it with others and enjoy your nights together under the big night sky.

Clear Skies!
Tom Koonce

Rose's Local Events and Other Happenings....

The Orionids Meteor Showers peak on October 21-22nd, and the Leonids Meteor Showers peak on November 17-18th.

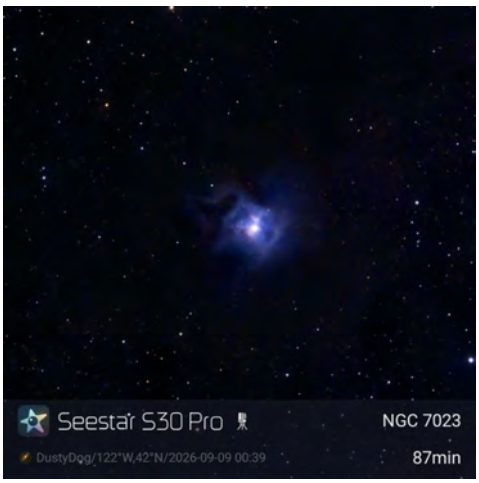
Joshua Tree Night Sky Festival: October 9-10th, Twentynine Palms, CA. Link: https://skysthelimit29.org/

California Dark Sky Festival: October 8-11th, Panamint Valley, CA. Link: https://www.easternsierraobservatory.com/california-dark-sky-festival

Nightfall Star Party and Imaging Conference: November 6-8th, Borrego Springs, CA. Link: https://nightfallstarparty.com/







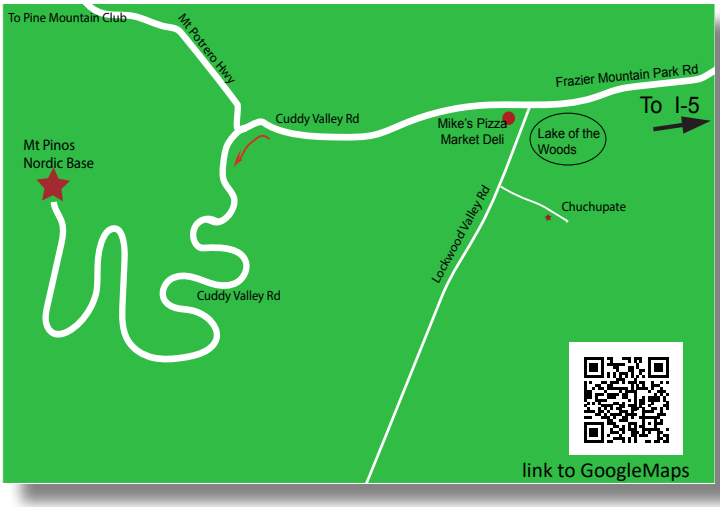
Images by Jerry Bell

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





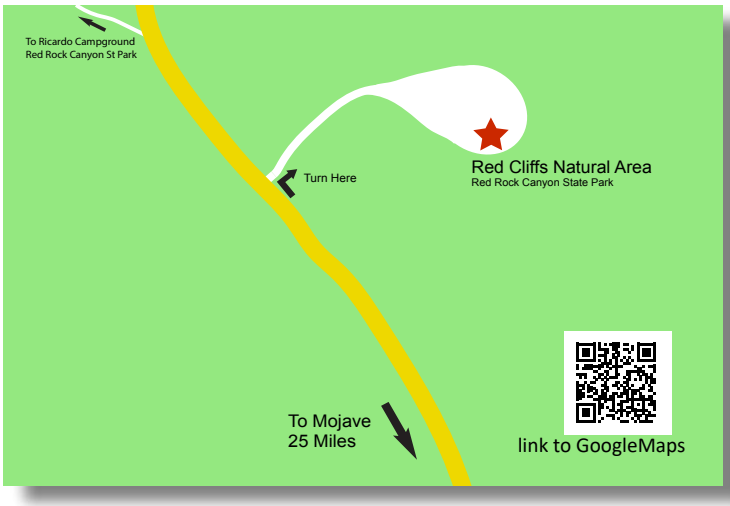
Mt Pinos is a parking lot at 8350 feet for the "Mt Pinos Nordic Base." There is a vault toilet 300 yds to the east in the Chula Vista campground.

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.

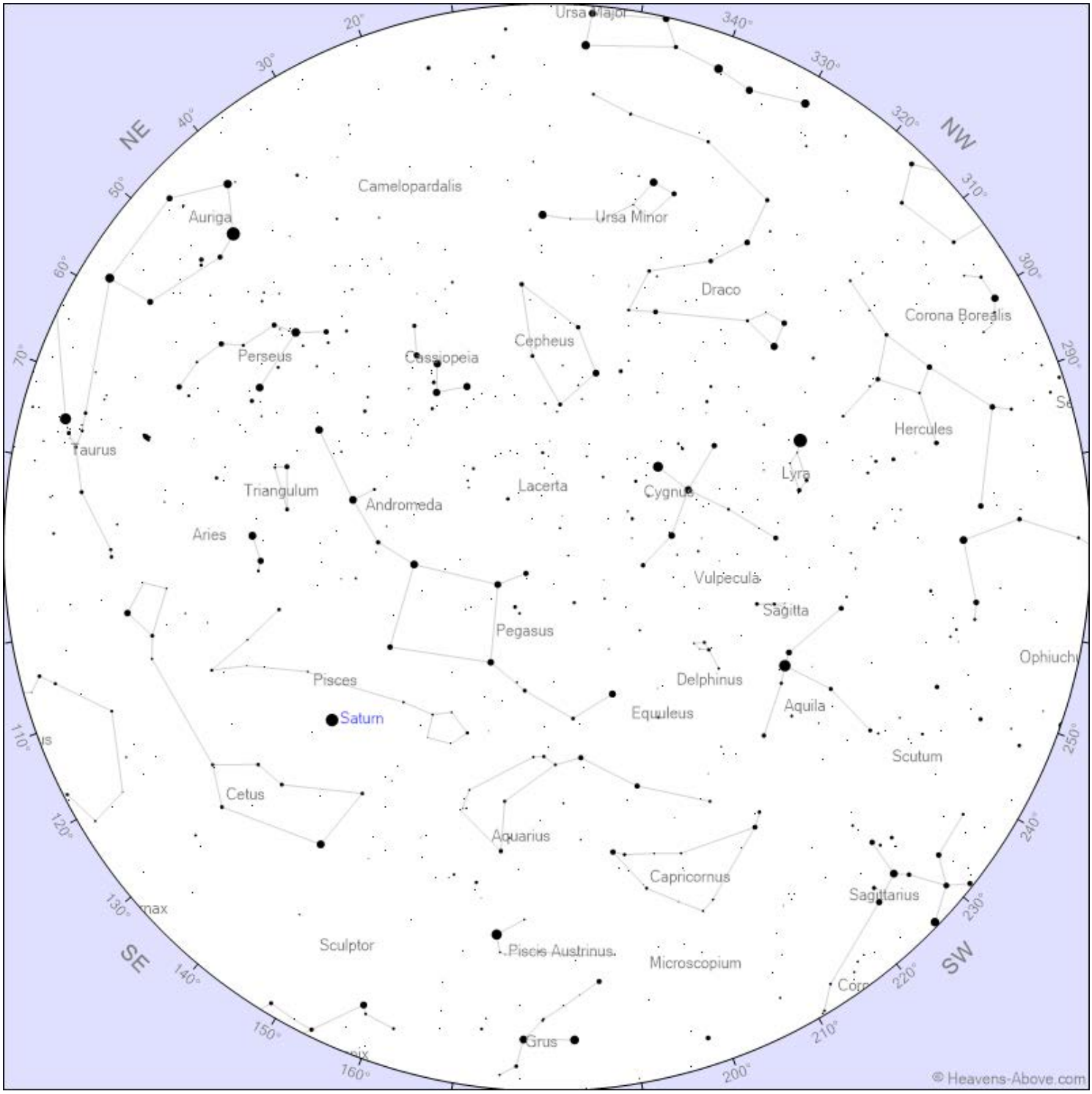
RV7F+FF Frazier Park, California (link to GoogleMaps)

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



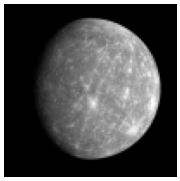
Location: Palmdale, 34.5793°N, 118.1171°W
Time: 10 October 2026 22:00 (UTC -07:00)

Solar System Summary

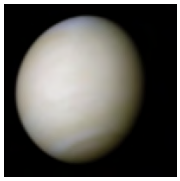


On Oct. 10 the Moon is a 0 day-old waxing crescent, and recently passed new moon. From Lancaster, it is not readily observable since it is very close to the Sun, at a separation of only 5° from it.

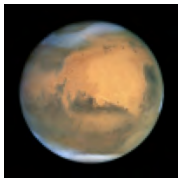
Planets



Mercury is emerging into the evening sky as it approaches greatest elongation east. From Lancaster, it is not observable – it will reach its highest point in the sky during daytime and is no higher than 5° above the horizon at dusk.



Venus will soon pass in front of the Sun at inferior solar conjunction. From Lancaster, it is not observable – it will reach its highest point in the sky during daytime and is no higher than 0° above the horizon at dusk.



Mars is currently emerging from behind the Sun. From Lancaster, it is visible in the dawn sky, rising at 01:12 (PDT) and reaching an altitude of 60° above the eastern horizon before fading from view as dawn breaks at around 06:15.



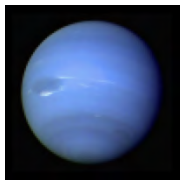
Jupiter recently passed behind the Sun at solar conjunction. From Lancaster, however, it is visible in the dawn sky, rising at 02:22 (PDT) and reaching an altitude of 50° above the eastern horizon before fading from view as dawn breaks at around 06:36.



Saturn recently passed opposition. From Lancaster, it is visible between 19:06 and 05:32. It will become accessible at around 19:06, when it rises to an altitude of 10° above your eastern horizon. It will reach its highest point in the sky at 00:19, 56° above your southern horizon. It will become inaccessible at around 05:32 when it sinks below 10° the horizon.



Uranus is currently visible as a morning object. From Lancaster, it is visible in the morning sky, becoming accessible around 22:36, when it reaches an altitude of 21° above your eastern horizon. It will then reach its highest point in the sky at 03:48, 76° above your southern horizon. It will be lost to dawn twilight.



Neptune recently passed opposition. From Lancaster, it is visible between 19:33 and 03:53. It will become accessible at around 19:33, when it rises to an altitude of 21° above your eastern horizon. It will reach its highest point in the sky at 23:43, 54° above your southern horizon. It will become inaccessible at around 03:53.

In-The-Sky.org

Moon Phases



First Qtr	Full	Third Qtr	New
Oct. 18	Oct. 25	Oct. 03	Oct. 10

Sun and Moon Rise and Set*

Date	Moonrise	Moonset	Sunrise	Sunset
10/1/2026	22:06	12:22	06:44	18:36
10/5/2026	01:32	15:47	06:47	18:30
10/10/2026	07:00	18:09	06:51	18:24
10/15/2026	12:04	21:21	06:55	18:17
10/20/2026	15:19	01:13	06:59	18:11
10/25/2026	17:40	06:30	07:04	18:05
10/30/2026	23:21	13:12	07:10	18:00

Planet Data*

Oct. 10, 2026

	Rise	Culm.	Set
Mercury	08:56	14:07	19:18
Venus	08:42	13:43	18:44
Mars	01:12	08:12	15:13
Jupiter	02:22	09:09	15:55
Saturn	18:12	00:19	06:26
Uranus	20:43	03:48	10:53
Neptune	17:41	23:43	05:45

09 Oct 2026 – Mercury at highest altitude in evening sky
11 Oct 2026 – Mercury at greatest elongation east
20 Nov 2026 – Mercury at highest altitude in morning sky
20 Nov 2026 – Mercury at greatest elongation west

14 Dec 2026 – Venus at highest altitude in morning sky
03 Jan 2027 – Venus at greatest elongation west
21 Mar 2028 – Venus at greatest elongation east

10 Jan 2027 – Mars enters retrograde motion
19 Feb 2027 – Mars at opposition
19 Feb 2027 – Mars at perigee

12 Dec 2026 – Jupiter enters retrograde motion
10 Feb 2027 – Jupiter at opposition
12 Apr 2027 – Jupiter ends retrograde motion

04 Oct 2026 – Saturn at opposition
10 Dec 2026 – Saturn ends retrograde motion
09 Aug 2027 – Saturn enters retrograde motion
17 Oct 2027 – Saturn at opposition

25 Nov 2026 – Uranus at opposition
08 Feb 2027 – Uranus ends retrograde motion
15 Sep 2027 – Uranus enters retrograde motion

12 Dec 2026 – Neptune ends retrograde motion
09 Jul 2027 – Neptune enters retrograde motion
28 Sep 2027 – Neptune at opposition

*Sun, Moon and Planetary date based on Lancaster, 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 October 10, 2026. The list is sorted by the Transit time of the

ID	Name	Type	RA	Dec	Mag	Rise	Transit	Set	Const
NGC 3242	Ghost of Jupiter	Planetary Nebula	10h 24m 48s	-18°38.2'	8.6	4:54AM	10:02AM	3:10PM	Hya
M95	NGC3351	Galaxy	10h 43m 58s	+11°42.2'	10.6	3:44AM	10:21AM	4:57PM	Leo
M96	NGC3368	Galaxy	10h 46m 46s	+11°49.2'	10.1	3:47AM	10:24AM	5:00PM	Leo
M105	NGC3379	Galaxy	10h 47m 50s	+12°34.9'	10.5	3:46AM	10:25AM	5:04PM	Leo
M108	NGC3556	Galaxy	11h 11m 31s	+55°40.4'	10.6	Circum	10:48AM	Circum	UMa
M97	Owl Nebula, NGC3587	P Neb	11h 14m 48s	+55°01.1'	12.0	Circum	10:52AM	Circum	UMa
M65	Leo Triplet, NGC3623	Galaxy	11h 18m 56s	+13°05.5'	10.1	4:15AM	10:56AM	5:36PM	Leo
M66	Leo Triplet, NGC3627	Galaxy	11h 20m 15s	+12°59.4'	9.7	4:17AM	10:57AM	5:37PM	Leo
NGC 3877		Galaxy	11h 46m 07s	+47°29.6'	11.0	1:56AM	11:23AM	8:50PM	UMa
M109	NGC3992	Galaxy	11h 57m 36s	+53°22.4'	10.6	12:34AM	11:35AM	10:35PM	UMa
NGC4036		Galaxy	12h 01m 27s	+61°53.7'	10.6	Circum	11:38AM	Circum	UMa
NGC 4038	The Antennae Galaxy	Galaxy	12h 01m 53s	-18°51.9'	10.3	6:31AM	11:39AM	4:46PM	Crv
NGC 4039	The Antennae	Galaxy	12h 01m 54s	-18°53.1'	10.6	6:32AM	11:39AM	4:46PM	Crv
M98	NGC4192	Galaxy	12h 13m 48s	+14°54.0'	10.9	5:05AM	11:51AM	6:37PM	Com
NGC 4244		Galaxy	12h 17m 29s	+37°48.4'	10.4	3:38AM	11:54AM	8:11PM	CVn
M106	NGC4258	Galaxy	12h 18m 58s	+47°18.2'	9.1	2:31AM	11:56AM	9:21PM	CVn
M99	Pinwheel Galaxy, NGC4254	Galaxy	12h 18m 50s	+14°25.0'	10.4	5:11AM	11:56AM	6:40PM	Com
M40	Winnecke 4	Dbl+Asterism	12h 22m 12s	+58°05.0'	8.7	Circum	11:59AM	Circum	UMa
M61	Swelling Spiral, NGC4303	Galaxy	12h 21m 55s	+04°28.3'	10.1	5:43AM	11:59AM	6:14PM	Vir
M100	Mirror of M99, NGC4321	Galaxy	12h 22m 55s	+15°49.3'	10.1	5:11AM	12:00PM	6:49PM	Com
NGC 4361		Planetary Nebula	12h 24m 30s	-18°47.6'	10.3	6:54AM	12:01PM	5:09PM	Crv
Mel 111	Coma Berenices Star Cluster	Open Cluster	12h 25m 00s	+26°00.1'	1.8	4:38AM	12:02PM	7:26PM	Com
M85	NGC4382	Galaxy	12h 25m 24s	+18°11.4'	10.0	5:06AM	12:02PM	6:59PM	Com
M86	NGC4406	Galaxy	12h 26m 12s	+12°56.7'	9.9	5:23AM	12:03PM	6:43PM	Vir
3C 273		Quasar	12h 29m 06s	+02°03.0'	12.0	5:57AM	12:06PM	6:15PM	Vir
M49	NGC4472	Galaxy	12h 29m 47s	+08°00.0'	9.3	5:41AM	12:07PM	6:32PM	Vir
M87	Smoking Gun, Virgo A, NGC4486	Galaxy	12h 30m 49s	+12°23.4'	9.6	5:29AM	12:08PM	6:46PM	Vir
M88	NGC4501	Galaxy	12h 31m 59s	+14°25.2'	10.2	5:24AM	12:09PM	6:54PM	Com
NGC 4526	Lost Galaxy	Galaxy	12h 34m 03s	+07°42.0'	9.7	5:46AM	12:11PM	6:36PM	Vir
M91	Missing Messier Object, NGC4548	Galaxy	12h 35m 27s	+14°29.7'	10.9	5:28AM	12:12PM	6:57PM	Com
M89	NGC4552	Galaxy	12h 35m 40s	+12°33.3'	10.9	5:34AM	12:13PM	6:52PM	Vir
NGC 4565	Bernice's Hair Clip	Galaxy	12h 36m 20s	+25°59.3'	9.6	4:50AM	12:13PM	7:37PM	Com
NGC 4567	Siamese Twins	Galaxy	12h 36m 33s	+11°15.5'	11.3	5:38AM	12:13PM	6:49PM	Vir
NGC 4568	Siamese Twins	Galaxy	12h 36m 35s	+11°14.2'	10.8	5:38AM	12:13PM	6:49PM	Vir
M90	NGC4569	Galaxy	12h 36m 50s	+13°09.7'	10.2	5:33AM	12:14PM	6:55PM	Vir
M58	NGC4579	Galaxy	12h 37m 44s	+11°49.1'	10.4	5:38AM	12:15PM	6:51PM	Vir
M68	NGC4590	Globular	12h 39m 28s	-26°44.5'	9.0	7:36AM	12:16PM	4:57PM	Hya
M104	Sombrero Galaxy, NGC4594	Galaxy	12h 39m 59s	-11°37.3'	9.2	6:47AM	12:17PM	5:46PM	Vir
NGC 4631		Galaxy	12h 42m 11s	+32°32.7'	9.2	4:29AM	12:19PM	8:10PM	CVn
M59	NGC4621	Galaxy	12h 42m 02s	+11°38.7'	10.7	5:43AM	12:19PM	6:55PM	Vir
NGC 4656		Galaxy	12h 43m 58s	+32°10.3'	10.5	4:32AM	12:21PM	8:10PM	CVn
M60	NGC4649	Galaxy	12h 43m 40s	+11°33.1'	9.8	5:45AM	12:21PM	6:57PM	Vir
M94	Croc's Eye Galaxy, NGC4736	Galaxy	12h 50m 53s	+41°07.1'	8.9	3:51AM	12:28PM	9:04PM	CVn
M64	Black Eye Galaxy, NGC4826	Galaxy	12h 56m 44s	+21°41.0'	9.3	5:26AM	12:34PM	7:42PM	Com
Abell 1656	Coma Gal Cluster	Galactic Cluster	12h 59m 48s	+27°59.0'	11.0	5:05AM	12:37PM	8:08PM	Com
M53	NGC5024	Globular	13h 12m 55s	+18°10.1'	8.5	5:53AM	12:50PM	7:46PM	Com
M63	Sunflower Galaxy, NGC5055	Galaxy	13h 15m 49s	+42°01.7'	9.3	4:10AM	12:53PM	9:35PM	CVn
NGC 5128	Centaurus A	Galaxy	13h 25m 29s	-43°01.1'	6.8	9:42AM	1:02PM	4:23PM	Cen

NGC 5139	Omega Centauri	Globular Cluster	13h 26m 46s	-47°28.7'	3.7	10:18AM	1:04PM	3:49PM	Cen
M51	Whirlpool Galaxy, NGC5194	Galaxy	13h 29m 52s	+47°11.7'	8.9	3:43AM	1:07PM	10:31PM	CVn
NGC5195		Galaxy	13h 29m 59s	+47°16.0'	9.6	3:42AM	1:07PM	10:32PM	CVn
M83	Southern Pinwheel Galaxy, NGC5236	Galaxy	13h 37m 00s	-29°51.8'	8.0	8:46AM	1:14PM	5:42PM	Hya
M3	NGC5272	Globular	13h 42m 11s	+28°22.5'	7.0	5:46AM	1:19PM	8:52PM	CVn
M101	Pinwheel Galaxy, NGC5457	Galaxy	14h 03m 13s	+54°20.9'	8.2	Circum	1:40PM	Circum	UMa
NGC 5746		Galaxy	14h 44m 57s	+01°57.3'	10.3	8:14AM	2:22PM	8:30PM	Vir
M102	Spindle Galaxy, NGC5866	Galaxy	15h 06m 30s	+55°45.7'	10.8	Circum	2:43PM	Circum	Dra
NGC 5907		Galaxy	15h 15m 52s	+56°19.8'	10.3	Circum	2:53PM	Circum	Dra
M5	NGC5904	Globular	15h 18m 33s	+02°04.9'	7.0	8:47AM	2:55PM	9:04PM	Ser
NGC5986		Globular	15h 46m 04s	-37°47.1'	7.1	11:31AM	3:23PM	7:15PM	Lup
M80	NGC6093	Globular	16h 17m 03s	-22°58.5'	8.5	11:00AM	3:54PM	8:48PM	Sco
M4	Cat's Eye, NGC6121	Globular	16h 23m 35s	-26°31.5'	7.5	11:19AM	4:01PM	8:42PM	Sco
M107	NGC6171	Globular	16h 32m 32s	-13°03.1'	10.0	10:44AM	4:09PM	9:35PM	Oph
M13	Great Hercules Cluster, NGC6205	Globular	16h 41m 41s	+36°27.5'	7.0	8:09AM	4:19PM	12:28AM	Her
NGC 6210		Planetary Nebula	16h 44m 30s	+23°48.7'	9.7	9:06AM	4:21PM	11:37PM	Her
M12	Gumball Globular, NGC6218	Globular	16h 47m 14s	-01°56.8'	8.0	10:27AM	4:24PM	10:21PM	Oph
NGC 6231	Table of Scorpius	Open Cluster	16h 54m 01s	-41°48.1'	2.6	1:02PM	4:31PM	8:00PM	Sco
M10	NGC6254	Globular	16h 57m 09s	-04°05.9'	7.5	10:43AM	4:34PM	10:25PM	Oph
M62	Flickering Globular, NGC6266	Globular	17h 01m 13s	-30°06.7'	8.0	12:11PM	4:38PM	9:05PM	Oph
M19	NGC6273	Globular	17h 02m 38s	-26°16.0'	8.5	11:58AM	4:40PM	9:22PM	Oph
NGC6281		Open	17h 04m 41s	-37°59.1'	5.4	12:51PM	4:42PM	8:32PM	Sco
M92	NGC6341	Globular	17h 17m 07s	+43°08.1'	7.5	8:04AM	4:54PM	1:44AM	Her
M9	NGC6333	Globular	17h 19m 12s	-18°31.0'	9.0	11:48AM	4:56PM	10:05PM	Oph
B 59	Pipe Nebula (stem)	Dark Nebula	17h 21m 02s	-27°00.0'		12:19PM	4:58PM	9:37PM	Oph
NGC 6369		Planetary Nebula	17h 29m 22s	-23°45.6'	11.0	12:15PM	5:06PM	9:57PM	Oph
B 78	Pipe Nebula (bowl)	Dark Nebula	17h 33m 02s	-26°00.0'		12:27PM	5:10PM	9:53PM	Oph
M14	NGC6402	Globular	17h 37m 36s	-03°14.7'	9.5	11:21AM	5:15PM	11:08PM	Oph
NGC 6397		Globular Cluster	17h 40m 43s	-53°40.5'	5.7	3:56PM	5:18PM	6:40PM	Ara
M6	Butterfly Cluster, NGC6405	Open	17h 40m 20s	-32°15.2'	4.5	12:59PM	5:17PM	9:35PM	Sco
IC 4665		Open Cluster	17h 46m 20s	+05°43.1'	4.2	11:04AM	5:23PM	11:42PM	Oph
M7	Scorpion's Tail, NGC6475	Open	17h 53m 51s	-34°47.6'	3.5	1:24PM	5:31PM	9:38PM	Sco
NGC 6543	Cat's Eye Nebula	Planetary Nebula	17h 58m 36s	+66°38.2'	8.3	Circum	5:36PM	Circum	Dra
M23	NGC6494	Open	17h 57m 04s	-18°59.1'	6.0	12:27PM	5:34PM	10:41PM	Sgr
M20	Trifid Nebula, NGC6514	Open+D Neb	18h 02m 42s	-22°58.2'	5.0	12:46PM	5:40PM	10:33PM	Sgr
M8	Lagoon Nebula, NGC6523	Open+D Neb	18h 03m 41s	-24°22.7'	5.0	12:52PM	5:41PM	10:29PM	Sgr
M21	NGC6531	Open	18h 04m 13s	-22°29.3'	7.0	12:46PM	5:41PM	10:37PM	Sgr
NGC 6572		Planetary Nebula	18h 12m 09s	+06°51.0'	9.0	11:27AM	5:49PM	12:11AM	Oph
M24	Small Sagittarius Star Cloud, NGC6603	Open	18h 18m 26s	-18°24.3'	4.5	12:47PM	5:55PM	11:04PM	Sgr
M16	Eagle Nebula, NGC6611	Open+D Neb	18h 18m 48s	-13°48.3'	6.5	12:33PM	5:56PM	11:19PM	Ser
M18	Black Swan, NGC6613	Open	18h 19m 58s	-17°06.1'	8.0	12:44PM	5:57PM	11:10PM	Sgr
M17	Omega Nebula, Swan Nebula, NGC6618	Open+D Neb	18h 20m 47s	-16°10.3'	7.0	12:42PM	5:58PM	11:14PM	Sgr
M28	NGC6626	Globular	18h 24m 33s	-24°52.1'	8.5	1:14PM	6:01PM	10:49PM	Sgr
NGC 6633		Open Cluster	18h 27m 43s	+06°34.2'	4.6	11:43AM	6:05PM	12:26AM	Oph
M69	NGC6637	Globular	18h 31m 23s	-32°20.8'	9.0	1:51PM	6:08PM	10:26PM	Sgr
M25		Open	18h 31m 42s	-19°07.0'	6.5	1:02PM	6:09PM	11:15PM	Sgr
M22	Great Sagittarius Cluster, NGC6656	Globular	18h 36m 24s	-23°54.2'	6.5	1:23PM	6:13PM	11:04PM	Sgr
M70	NGC6681	Globular	18h 43m 12s	-32°17.4'	9.0	2:02PM	6:20PM	10:38PM	Sgr
M26	NGC6694	Open	18h 45m 18s	-09°23.0'	9.5	12:46PM	6:22PM	11:58PM	Sct

M11	Wild Duck Cluster, NGC6705	Open	18h 51m 05s	-06°16.1'	7.0	12:43PM	6:28PM	12:13AM	Sct
M57	Ring Nebula, NGC6720	P Neb	18h 53m 35s	+33°01.7'	9.5	10:38AM	6:30PM	2:23AM	Lyr
M54	NGC6715	Globular	18h 55m 03s	-30°28.7'	8.5	2:06PM	6:32PM	10:58PM	Sgr
NGC6723		Globular	18h 59m 33s	-36°37.9'	7.3	2:39PM	6:36PM	10:34PM	Sgr
M56	NGC6779	Globular	19h 16m 36s	+30°11.0'	9.5	11:13AM	6:54PM	2:34AM	Lyr
NGC 6781		Planetary Nebula	19h 18m 28s	+06°32.7'	11.8	12:34PM	6:55PM	1:17AM	Aql
NGC6790		P Neb	19h 22m 57s	+01°30.8'	10.0	12:53PM	7:00PM	1:07AM	Aql
Cr 399	Brocchi's Cluster or The Coathanger	Asterism	19h 25m 26s	+20°11.2'	3.6	11:59AM	7:02PM	2:05AM	Vul
Albireo		Star	19h 30m 45s	+27°57.9'	3.1	11:37AM	7:08PM	2:39AM	Cyg
M55	NGC6809	Globular	19h 40m 00s	-30°57.7'	7.0	2:53PM	7:17PM	11:41PM	Sgr
NGC 6819		Open Cluster	19h 41m 20s	+40°11.3'	7.3	10:48AM	7:18PM	3:49AM	Cyg
NGC6826	Blinking Planetary	P Neb	19h 44m 48s	+50°31.5'	10.0	9:18AM	7:22PM	5:25AM	Cyg
NGC 6826	Blinking Planetary	Planetary Nebula	19h 44m 53s	+50°31.6'	8.8	9:18AM	7:22PM	5:25AM	Cyg
M71	NGC6838	Globular	19h 53m 46s	+18°46.6'	8.5	12:32PM	7:31PM	2:29AM	Sge
M27	Dumbbell Nebula, NGC6853	P Neb	19h 59m 36s	+22°43.2'	7.5	12:25PM	7:37PM	2:48AM	Vul
NGC6871		Open	20h 05m 59s	+35°46.6'	5.2	11:37AM	7:43PM	3:49AM	Cyg
M75	NGC6864	Globular	20h 06m 05s	-21°55.3'	9.5	2:46PM	7:43PM	12:40AM	Sgr
NGC 6888	Crescent Nebula	Bright Nebula	20h 12m 14s	+38°20.3'	8.0	11:30AM	7:49PM	4:09AM	Cyg
NGC 6885		Open Cluster	20h 12m 02s	+26°29.3'	8.1	12:24PM	7:49PM	3:14AM	Vul
M29	Cooling Tower, NGC6913	Open	20h 23m 57s	+38°30.5'	9.0	11:40AM	8:01PM	4:21AM	Cyg
NGC 6939		Open Cluster	20h 31m 27s	+60°38.3'	7.8	Circum	8:08PM	Circum	Cep
NGC 6960	Western Veil	Supernova Remnant	20h 45m 38s	+30°43.3'		12:40PM	8:23PM	4:05AM	Cyg
M72	NGC6981	Globular	20h 53m 28s	-12°32.2'	10.0	3:04PM	8:30PM	1:57AM	Aqr
NGC 6992	Eastern Veil	Supernova Remnant	20h 56m 14s	+31°04.3'		12:49PM	8:33PM	4:17AM	Cyg
NGC 7000	North American Nebula	Bright Nebula	20h 58m 32s	+44°33.3'		11:35AM	8:35PM	5:36AM	Cyg
M73	NGC6994	Open+Asterism	20h 58m 56s	-12°38.1'	9.0	3:09PM	8:36PM	2:02AM	Aqr
NGC 7009	Saturn Nebula	Planetary Nebula	21h 04m 15s	-11°21.8'	8.3	3:11PM	8:41PM	2:11AM	Aqr
NGC7027		P Neb	21h 07m 02s	+42°14.1'	10.0	12:00PM	8:44PM	5:28AM	Cyg
M15	Great Pegasus Cluster, NGC7078	Globular	21h 29m 58s	+12°10.0'	7.5	2:29PM	9:07PM	3:45AM	Peg
M39	NGC7092	Open	21h 31m 42s	+48°25.0'	5.5	11:32AM	9:09PM	6:45AM	Cyg
M2	NGC7089	Globular	21h 33m 27s	-00°49.3'	7.5	3:10PM	9:10PM	3:11AM	Aqr
IC 1396		Bright Nebula	21h 39m 09s	+57°47.0'	3.5	Circum	9:16PM	Circum	Cep
M30	NGC7099	Globular	21h 40m 22s	-23°10.7'	8.5	4:24PM	9:17PM	2:10AM	Cap
NGC 7293	Helical Nebula	Planetary Nebula	22h 29m 40s	-20°47.3'	6.3	5:05PM	10:07PM	3:08AM	Aqr
NGC 7331	Little Andromeda Galaxy	Galaxy	22h 37m 08s	+34°25.4'	9.5	2:15PM	10:14PM	6:13AM	Peg
King 10		Open Cluster	22h 54m 58s	+59°10.2'		Circum	10:32PM	Circum	Cep
NGC7410		Galaxy	22h 55m 01s	-39°39.7'	10.4	6:50PM	10:32PM	2:14AM	Gru
M52	The Scorpion, NGC7654	Open	23h 24m 48s	+61°35.6'	8.0	Circum	11:02PM	Circum	Cas
NGC 7662	Blue Snowball Nebula	Planetary Nebula	23h 25m 57s	+42°32.7'	8.6	2:17PM	11:03PM	7:49AM	And
NGC 7789		Open Cluster	23h 57m 04s	+56°44.1'	6.7	Circum	11:34PM	Circum	Cas
NGC 40		Planetary Nebula	00h 13m 08s	+72°31.7'	10.7	Circum	11:50PM	Circum	Cep
NGC 40		Planetary Nebula	00h 13m 08s	+72°31.7'	10.7	Circum	11:50PM	Circum	Cep
M110	Satellite Of Andromeda Galaxy, NGC205	Galaxy	00h 40m 22s	+41°41.1'	8.9	3:37PM	12:17AM	8:57AM	And
NGC 225		Open Cluster	00h 43m 28s	+61°47.1'	7.0	Circum	12:20AM	Circum	Cas
M32	Satellite Of Andromeda Galaxy, NGC221	Galaxy	00h 42m 42s	+40°51.9'	9.1	3:45PM	12:20AM	8:54AM	And
M31	Andromeda Galaxy, NGC224	Galaxy	00h 42m 44s	+41°16.1'	4.3	3:42PM	12:20AM	8:57AM	And
NGC 247		Galaxy	00h 47m 11s	-20°45.3'	9.1	7:23PM	12:24AM	5:25AM	Cet
NGC 253		Galaxy	00h 47m 35s	-25°17.0'	7.2	7:39PM	12:24AM	5:10AM	Scl
NGC 457	Owl Cluster	Open Cluster	01h 19m 10s	+58°20.0'	6.4	Circum	12:56AM	Circum	Cas

M103	NGC581	Open	01h 33m 23s	+60°39.0'	7.0	Circum	1:10AM	Circum	Cas
M33	Triangulum Galaxy, Pinwheel Galaxy, NGC598	Galaxy	01h 33m 51s	+30°39.6'	6.2	5:29PM	1:11AM	8:53AM	Tri
M74	The Phantom, NGC628	Galaxy	01h 36m 42s	+15°47.0'	9.8	6:25PM	1:14AM	8:02AM	Psc
M76	Little Dumbbell Nebula, NGC650	P Neb	01h 42m 18s	+51°34.2'	12.0	2:59PM	1:19AM	11:39AM	Per
NGC 654		Open Cluster	01h 44m 10s	+61°53.0'	6.5	Circum	1:21AM	Circum	Cas
NGC 659		Open Cluster	01h 44m 16s	+60°42.0'	7.9	Circum	1:21AM	Circum	Cas
NGC 663		Open Cluster	01h 46m 04s	+61°15.0'	7.1	Circum	1:23AM	Circum	Cas
NGC 752		Open Cluster	01h 57m 51s	+37°41.0'	5.7	5:19PM	1:35AM	9:51AM	And
Stock 2	Muscleman Cluster	Open Cluster	02h 15m 04s	+59°16.0'	4.4	Circum	1:52AM	Circum	Cas
NGC 869	Double Cluster	Open Cluster	02h 19m 03s	+57°09.0'	5.3	Circum	1:56AM	Circum	Per
NGC 884	Double Cluster	Open Cluster	02h 22m 27s	+57°06.9'	6.1	Circum	1:59AM	Circum	Per
NGC 891		Galaxy	02h 22m 36s	+42°20.8'	9.9	5:15PM	2:00AM	10:44AM	And
NGC 1023		Galaxy	02h 40m 27s	+39°03.7'	9.4	5:54PM	2:17AM	10:41AM	Per
M34	Spiral Cluster, NGC1039	Open	02h 42m 05s	+42°45.6'	6.0	5:32PM	2:19AM	11:06AM	Per
M77	Cetus A, NGC1068, UGC2188	Galaxy	02h 42m 41s	-00°00.8'	9.7	8:17PM	2:20AM	8:22AM	Cet
Mel 20	Alpha Persei Association	Open Cluster	03h 22m 03s	+48°59.9'	1.2	5:15PM	2:59AM	12:42PM	Per
M45	Pleiades, Seven Sisters, Subaru	Open	03h 47m 30s	+24°07.0'	1.6	8:08PM	3:24AM	10:41AM	Tau
NGC 1502		Open Cluster	04h 07m 45s	+62°19.8'	6.9	Circum	3:45AM	Circum	Cam
NGC1514	Crystal Ball Nebula	P Neb	04h 09m 17s	+30°46.5'	10.0	8:04PM	3:46AM	11:29AM	Tau
NGC 1528		Open Cluster	04h 15m 24s	+51°13.8'	6.4	5:38PM	3:52AM	2:07PM	Per
NGC 1535	Multiple shells	Planetary Nebula	04h 14m 16s	-12°44.2'	10.4	10:25PM	3:51AM	9:17AM	Eri
Mel 25	Hyades	Open Cluster	04h 27m 02s	+16°00.0'	0.5	9:14PM	4:04AM	10:53AM	Tau
M79	NGC1904	Globular	05h 24m 11s	-24°31.4'	8.5	12:13AM	5:01AM	9:49AM	Lep
IC 418		Planetary Nebula	05h 27m 30s	-12°41.5'	10.7	11:38PM	5:04AM	10:31AM	Lep
NGC 1907		Open Cluster	05h 28m 00s	+35°18.8'	8.2	9:01PM	5:05AM	1:08PM	Aur
M38	Starfish Cluster, NGC1912	Open	05h 28m 40s	+35°50.8'	7.0	8:59PM	5:06AM	1:12PM	Aur
M1	Crab Nebula, Taurus A, NGC1952	SNR	05h 34m 32s	+22°00.8'	8.4	10:02PM	5:11AM	12:21PM	Tau
NGC 1973	Part of Running Man Nebula	Bright Nebula	05h 35m 09s	-04°43.9'		11:23PM	5:12AM	11:01AM	Ori
M42	Great Orion Nebula, NGC1976	Open+D Neb	05h 35m 16s	-05°23.4'	4.0	11:25PM	5:12AM	11:00AM	Ori
NGC 1975	Part of Running Man Nebula	Bright Nebula	05h 35m 21s	-04°40.9'		11:23PM	5:12AM	11:02AM	Ori
NGC 1977	Part of Running Man Nebula	Bright Nebula	05h 35m 27s	-04°49.9'		11:23PM	5:12AM	11:02AM	Ori
M43	(Orion Nebula Extension), NGC1982	D Neb	05h 35m 31s	-05°16.0'	9.0	11:25PM	5:12AM	11:00AM	Ori
M36	Pinwheel Cluster, NGC1960	Open	05h 36m 18s	+34°08.3'	6.5	9:15PM	5:13AM	1:11PM	Aur
M78	NGC2068	D Neb	05h 46m 45s	+00°04.7'	8.0	11:21PM	5:24AM	11:27AM	Ori
M37	Auriga Salt-and-pepper Cluster, NGC2099	Open	05h 52m 18s	+32°33.1'	6.0	9:39PM	5:29AM	1:20PM	Aur
NGC 2158		Open Cluster	06h 07m 33s	+24°05.9'	8.6	10:28PM	5:44AM	1:01PM	Gem
NGC 2169	37 Cluster	Open Cluster	06h 08m 27s	+13°57.0'	5.9	11:02PM	5:45AM	12:29PM	Ori
M35	NGC2168	Open	06h 09m 00s	+24°21.0'	5.5	10:28PM	5:46AM	1:03PM	Gem
NGC 2174		Bright Nebula	06h 10m 01s	+20°34.0'	5.0	10:43PM	5:47AM	12:51PM	Ori
NGC 2232		Open Cluster	06h 26m 37s	-04°44.8'	3.9	12:14AM	6:04AM	11:53AM	Mon
NGC 2237	Rosette Nebula	Bright Nebula	06h 32m 19s	+04°59.0'	5.5	11:52PM	6:09AM	12:26PM	Mon
NGC 2244		Open Cluster	06h 32m 25s	+04°52.0'	4.8	11:53PM	6:09AM	12:26PM	Mon
NGC 2261	Hubble's Variable Nebula	Bright Nebula	06h 39m 13s	+08°44.0'	11.0	11:48PM	6:16AM	12:44PM	Mon
NGC 2264	Christmas Tree Cluster Nebula	Open Cluster	06h 40m 58s	+09°53.7'	3.9	11:47PM	6:18AM	12:49PM	Mon
M41	Little Beehive, NGC2287	Open	06h 46m 01s	-20°45.3'	5.0	1:22AM	6:23AM	11:24AM	CMa
NGC 2301		Open Cluster	06h 51m 49s	+00°28.0'	6.0	12:25AM	6:29AM	12:33PM	Mon
M50	Heart-shaped Cluster, NGC2323	Open	07h 02m 42s	-08°23.0'	7.0	1:01AM	6:40AM	12:19PM	Mon
NGC 2360		Open Cluster	07h 17m 48s	-15°36.8'	7.2	1:37AM	6:55AM	12:12PM	CMa
NGC 2359	Thor's Helmet or Duck Nebula	Bright Nebula	07h 17m 48s	-13°12.9'		1:30AM	6:55AM	12:20PM	CMa

NGC2362	Mexican Jumping Star	Open	07h 18m 41s	-24°57.2'	4.1	2:09AM	6:56AM	11:42AM	CMa
NGC 2362		Open Cluster	07h 18m 48s	-24°56.8'	4.1	2:09AM	6:56AM	11:43AM	CMa
NGC 2392	Eskimo Nebula or Clown Face	Planetary Nebula	07h 29m 10s	+20°54.7'	8.6	12:01AM	7:06AM	2:12PM	Gem
NGC 2403		Galaxy	07h 36m 55s	+65°35.7'	8.5	Circum	7:14AM	Circum	Cam
M47	NGC2422	Open	07h 36m 35s	-14°29.0'	4.5	1:52AM	7:13AM	12:35PM	Pup
M46	NGC2437	Open	07h 41m 46s	-14°48.6'	6.5	1:59AM	7:19AM	12:39PM	Pup
NGC 2438		Planetary Nebula	07h 41m 51s	-14°44.1'	11.0	1:59AM	7:19AM	12:39PM	Pup
M93	NGC2447,Butterfly Cluster	Open	07h 44m 30s	-23°51.3'	6.5	2:31AM	7:21AM	12:12PM	Pup
NGC 2467		Bright Nebula	07h 52m 30s	-26°22.8'	7.1	2:48AM	7:29AM	12:11PM	Pup
M48	NGC2548	Open	08h 13m 43s	-05°45.0'	5.5	2:04AM	7:51AM	1:37PM	Hya
M44	Beehive Cluster, NGC2632	Open	08h 40m 24s	+19°40.0'	4.0	1:16AM	8:17AM	3:19PM	Cnc
M67	King Cobra, NGC2682	Open	08h 51m 18s	+11°48.0'	7.5	1:52AM	8:28AM	3:05PM	Cnc
NGC 2841		Galaxy	09h 22m 01s	+50°58.3'	9.2	10:49PM	8:59AM	7:09PM	UMa
NGC 2903		Galaxy	09h 32m 10s	+21°30.0'	9.0	2:02AM	9:09AM	4:17PM	Leo
M81	Bode's Galaxy, NGC3031	Galaxy	09h 55m 33s	+69°03.9'	7.8	Circum	9:32AM	Circum	UMa
M82	Cigar Galaxy, NGC3034	Galaxy	09h 55m 53s	+69°40.8'	9.2	Circum	9:33AM	Circum	UMa
NGC 3115	Spindle Gal	Galaxy	10h 05m 14s	-07°43.0'	8.9	4:01AM	9:42AM	3:23PM	Sex

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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