

Volume 43.3

March 2023

# Desert Sky Observer

Antelope Valley Astronomy Club



# Desert Sky Observer

www.avastronomyclub.org

March 2023

## Upcoming Events

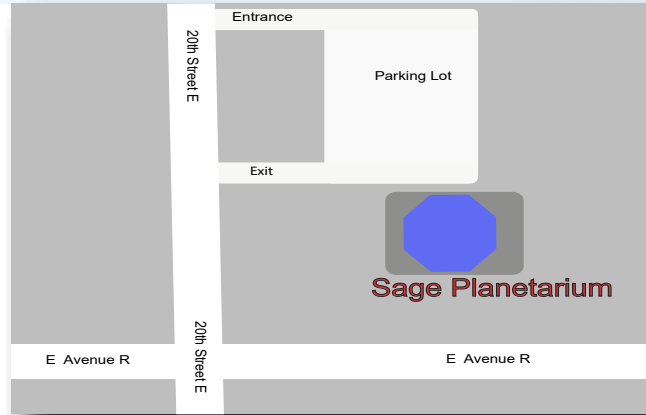
March 10: Club Meeting  
March 11: Moonwalk 6:30pm @ PDW  
March 12: Daylight Saving Time begins  
March 14: Telescope Class at The Sage @ 6:30 pm  
March 25: Messier Marathon @ Saddleback Butte SP  
March 28: Astronomy Class at The Sage @ 6:30pm

Every clear night: Personal Star Party

April 14: Club Meeting  
April 15: Moonwalk 8:00 pm @ PDW  
April 22: Dark Sky Star Party @ Chuchupate  
April 28: College of the Canyons Star Party



AVAC Calendar



## Board Members

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

**Vice-President:** Navin Arjuna 661-789-7927  
[vice-president@avastronomyclub.org](mailto:vice-president@avastronomyclub.org)

**Secretary:** Rose Moore (661) 972-1953  
[secretary@avastronomyclub.org](mailto:secretary@avastronomyclub.org)

**Treasurer:** Rod Girard (661) 803-7838  
[treasurer@avastronomyclub.org](mailto:treasurer@avastronomyclub.org)

## Appointed Positions

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

**Equipment & Library:**  
John VanEvera 661-754-1819  
[library@avastronomyclub.org](mailto:library@avastronomyclub.org)

**Club Historian:** vacant  
[history@avastronomyclub.org](mailto:history@avastronomyclub.org)

**Webmaster:** Steve Trotta (661) 269-5428  
[webmaster@avastronomyclub.org](mailto:webmaster@avastronomyclub.org)

**Astronomical League Coordinator:**  
Frank Moore (661) 972-4775  
[al@avastronomyclub.org](mailto:al@avastronomyclub.org)



## Monthly Meetings

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

## Membership

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

The Club has three categories of membership.

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

Membership entitles you to ...

- The Desert Sky Observer -- monthly newsletter
- The 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/](http://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](http://www.avastronomyclub.org)



## President's Message

By Phil Wriedt

Hi There!

Our last meeting/telescope night/star party, on the 10th of February was cold and a bit hazy, but members did show up, and of paramount importance the public came. I lost track, but there were at least 20 families with kids and maybe a dozen others. There were 4 or 5 member telescopes and 5 or 6 members without. So, a success! Hopefully new members will be the result.

Starting in January, Jeremy started 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. In March, the dates are the 14th and the 28th, respectively. Both classes will start at 6:30pm at the Sage Planetarium. While many of you have been using your telescope for some time, and have extensive knowledge of astronomy, sitting in on a beginning class may expose you to new ideas or reinforce your current knowledge. Come join us. More information will come by emails and at meetings.

Our first Deep Sky Star Party for the year is scheduled for March 25th at Saddleback State Park. Last month it was reported to be on the 18th but someone else got in line before us. We now have a reservation for the group campsite on the 25th. Ultimately it costs the Club \$100 to use this campsite. Everyone is welcome, but please let Rose know if you plan on going so we have a handle on how many will be there. This is one of the best times to attempt a Messier Marathon. Plan on coming, let's put the party back in "Star Party"!

We have a Moonwalk on the 11th at Prime Desert Woodland. The Moonwalk will start about 6:30 pm, so get there by about 5:00pm to setup in daylight. Come, bring your telescope, binoculars, star chart, and of course enthusiasm. Meet the public and help answer questions. See You There!

On April 28th, we are participating in the Spring Star Party at the College of the Canyons. We do this along with "The Local Group" aka Santa Clarita Astronomy Club. As usual, everything we do outdoors, the weather is a factor. If it's raining, snowing, or high winds blowing, you can guess that the event will be canceled

Remember it's renewal time again, see page 5.

Keep Looking Up, Phil

## On The Cover

Please note: North is 24.6° right of vertical

RA: 5h 26' 24.93" DEC: -6° 42' 55.06"

Just weeks after NASA astronauts repaired the Hubble Space Telescope in December 1999, the Hubble Heritage Project snapped this picture of NGC 1999, a nebula in the constellation Orion. The Heritage astronomers, in collaboration with scientists in Texas and Ireland, used Hubble's Wide Field Planetary Camera 2 (WFPC2) to obtain this colour image.

Credit:

NASA/ESA and the Hubble Heritage Team (STScI)

## From the Secretary By Rose Moore

Members:

We have a meeting on Friday March 10th at 7:00 pm. Our speaker will be Geo Somoza from the Griffith Observatory and Mt. Wilson, and he will be doing a presentation on the Griffith Observatory. Also at the meeting, we will be having a brief dedication of a plaque for our late member, Tom Hames. This will be presented to the SAGE and placed near one of his artworks.

On Saturday, March 11th we have a Prime Desert Moon Walk with Jeremy. This will start at 6:30pm. We'll need members with telescopes for the event. Weather permitting.

We have 2 more classes this month at the SAGE Planetarium. We have a Telescope Class on Tuesday March 14th, and an Astronomy Class on Tuesday March 28th. Both classes start at 6:30pm, and are given by Jeremy. These will be the last 2 classes of the series. The classes are free and open to the public.

We have our first dark sky star party of 2023 coming up on Saturday March 25th at Saddleback State Park. We have reserved the large group campsite. Members may arrive in the afternoon, and you are welcome to come even without a telescope. Members are always willing to share! This is an overnight star party, and members will need to leave the site by 9am Sunday morning. Weather permitting. More information and directions will be sent out in an email.

I will be looking at booking us a date for a trip up to Mt. Wilson this year. I don't know details yet, as I will try to book something on March 1st when they open up their calendar. If interested please let one of the Board members know, or put your name on the list at the next few meetings. If we don't have enough members/people to attend, then we'll have to or be forced cancel.

See you at the meeting! Rose

## 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 Morning and Evening Star: Observe Venus

by David Prosper, NASA Night Sky Network

**Venus** is usually the brightest planet in our skies, and is called “Earth’s Twin” due to its similar size to Earth and its rocky composition. However, Venus is a nightmare version of our planet, featuring a thick, crushing atmosphere of acidic clouds, greenhouse gasses, howling winds, and intense heat at its surface.

This rocky inner world’s orbit brings it closer to Earth than any of the other planets, and is the second closest to the Sun after Mercury. Like Mercury, Venus orbits between our planet and the Sun, so Earth-based observers can observe Venus in the morning before sunrise, or in the evening after sunset – but never high in the sky in the middle of the evening, unlike the outer planets. Since Venus is so striking in its twilight appearances, the planet features heavily in sky mythologies worldwide. Venus’s bright morning and evening appearances are the origin for its dual nicknames: the Morning Star, and the Evening Star. Some ancient astronomers never made the connection, and assumed the Evening Star and Morning Star were two unrelated objects! Observers can even spot Venus during the daytime, if the sky is very clear and the planet is bright enough. Venus also has phases, similar to the Moon and Mercury. Galileo’s observations of Venus’s phases helped turn the astronomy world upside down in the early 1600s, and you can see them yourself using a telescope or even a surprisingly low-power pair of binoculars. **Warning:** Please be very careful when observing Venus with a telescope in the early morning or daytime. Never allow the Sun to enter your instrument’s field of view, as you could be permanently blinded.

Venus’s other moniker of “Earth’s Twin” is a bit misleading. In terms of their surface temperatures and atmospheres, Venus and Earth are extremely different! The surface of Venus is warmer than that of Mercury, despite Mercury being many millions of miles closer

to the Sun. While Mercury is still a scorching 800 degrees Fahrenheit (427 degrees Celsius), Venus is even hotter: 900 degrees Fahrenheit (482 degrees Celsius). The vast amount of carbon dioxide in the thick Venusian atmosphere acts as an insulating blanket that retains much of the Sun’s heat, creating the runaway greenhouse effect that dominates its present-day climate. The Venusian surface is a crushing 90 Earth atmospheres on top of its absurd temperatures. These extreme conditions mean that the mission life of any past Venusian robotic landers were measured in **hours** at best – and usually minutes! However, conditions in Venus’s upper atmosphere may be much more hospitable, with temperatures and pressures at 30 miles (50 km) above the surface that are much more Earth-like in temperature and pressure. Studies of the Venusian atmosphere, including seasonal appearances of dark streaks and faint signals of suggestive chemistry, intrigue researchers with the possibility that some sort of life may persist in its clouds. But far more evidence is needed to confirm such a claim, since non-biological factors like volcanism and other processes could also be the source for these signals.

Venus’s thick sulfuric acid clouds block direct visual observations of its surface from optical telescopes on Earth. Multiwavelength observations from space probes show evidence of active volcanoes and possibly some sort of plate tectonics, but followup missions will be needed to confirm the presence of active volcanism, plate tectonics, and any possible signs of life. In order to do so, NASA is sending two new missions to Venus by the end of this decade: the orbiter **VERITAS**, which will map the surface in high detail and study the chemistry of its rocks and volcanoes, and **DAVINCI+**, which will study its atmosphere and possible tectonic surface features via a “descent sphere” that will plunge into Venus’s clouds. Follow their development and discover more about Venus at [solarsystem.nasa.gov/venus](https://solarsystem.nasa.gov/venus), and of course, continue your exploration of the universe at [nasa.gov](https://nasa.gov).



*Venus and Jupiter continue to move closer together in the evening sky this month. Jupiter will continue its descent towards the horizon while Venus will continue to climb and will be visible in the evenings though mid-summer of 2023. It's a great year for Venus fans!*

*Image created with assistance from Stellarium*

*The top layers of Venus's cloud pop in this contrast-enhanced image, reprocessed with modern techniques from Mariner10 data.*

*Credit: NASA/JPL-Caltech*

*Source: <https://solarsystem.nasa.gov/resources/2524/newly-processed-views-of-venus-from-mariner-10/>*



## 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](https://nightsky.jpl.nasa.gov) to find local clubs, events, and more!

## Space News

News from around the Net

### **A Replacement Soyuz Arrives Safely At The International Space Station**

The crew of the International Space Station can now breathe a little easier. An uncrewed replacement Soyuz docked safely to the station, meaning NASA astronaut Frank Rubio and Roscosmos cosmonauts Sergey Prokopyev and Dmitri Petelin can make it back home to Earth. The new Soyuz MS-23 will replace MS-22, which suffered a serious radiator coolant leak on December 14, 2022. After much deliberation, Russian controllers decided that it would be safer to send a replacement Soyuz . . .

(continued at <https://www.universetoday.com/160292/a-replacement-soyuz-arrives-safely-at-the-international-space-station/#more-160292> )



### **Astronomers Suspected There Should Be A Planet Here, And Then They Took A Picture Of It**

To date, astronomers have confirmed 5,272 exoplanets in 3,943 systems using a variety of detection methods. Of these, 1,834 are Neptune-like, 1,636 are gas giants (Jupiter-sized or larger), 1,602 are rocky planets several times the size and mass of Earth (Super-Earths), and 195 have been Earth-like. With so many exoplanets available for study (and next-generation instruments optimized for the task), the process is shifting from discovery to characterization. And discoveries, which are happening regularly, are providing teasers of what astronomers will likely see in the near future. . . .

(continued at <https://www.universetoday.com/160247/astronomers-suspected-there-should-be-a-planet-here-and-then-they-took-a-picture-of-it/#more-160247> )



### **Euclid Spacecraft Prepares To Probe Universe's Dark Mysteries**

For now, Europe's Euclid spacecraft sits quietly in a sterilized room in the south of France, its golden trim gleaming under the fluorescent light. But in a few months the space telescope will blast off on history's first mission to search for two of the universe's greatest mysteries: dark matter and dark energy. Though together they make up 95 percent of the universe, almost nothing is known about either—a glaring hole in scientific understanding that Euclid project manager Giuseppe Racca dubbed a “cosmic embarrassment”. . . . (continued at <https://phys.org/news/2023-02-euclid-spacecraft-probe-universe-dark.html> )



### **Night Skies Are Getting 9.6% Brighter Every Year As Light Pollution Erases Stars For Everyone**

For most of human history, the stars blazed in an otherwise dark night sky. But starting around the Industrial Revolution, as artificial light increasingly lit cities and towns at night, the stars began to disappear. We are two astronomers who depend on dark night skies to do our research. For decades, astronomers have been building telescopes in the darkest places on Earth to avoid light pollution. Today, most people live in cities or suburbs that needlessly shine light into the sky at night, dramatically reducing the visibility of stars. . . . (continued at <https://phys.org/news/2023-02-night-skies-brighter-year-pollution.html> )



### **Providing Power on Earth's Evil Twin**

How do you make a battery that works for months in conditions that melt lead solder, boil electrolytes in battery cells, and are the equivalent of being a kilometer under water? NASA and Advanced Thermal Batteries, Inc. (ATB) have taken on this challenge to enable a long-lived lander for the Venus surface. The result is the first battery to demonstrate the capability to operate at Venus temperatures for an entire Venus solar day (~120 Earth-days). This new technology employs unique chemistry and a resilient design that leverages an approach often used to power smart missiles. This battery system is still in development, . . . (continued at <https://science.nasa.gov/technology/technology-highlights/providing-power-on-earth-s-evil-twin> )





## Space News

News from around the Net

### **Scientists Find Meteorite In Texas From Fireball That Exploded With The Force of 8 Tons of TNT**

Scientists have found a meteorite from a 1,000-pound space rock that exploded over Texas with the force of 8 tons of TNT this month. At any given moment, the Earth is being bombarded by pieces of organic space debris known as meteoroids. Fortunately, most meteoroids are tiny, with a typical size ranging from a grain of sand and a pebble, and they don't typically pose a threat to the planet or the life on it. But on Feb. 15, a much larger meteoroid slammed into Earth's atmosphere, and fragments of it rained down across Texas. . . .(continued at <https://www.space.com/nasa-confirms-meteor-over-texas-feb-15-2023> )



### **Generations Of Stars Shape Their Galaxies, Webb Images Reveal**

An ambitious project to image the face of 19 stunning spiral galaxies is well underway. A new publication showcases dramatic James Webb Space Telescope observations of five of these spirals, known by their call numbers: NGC 1365, NGC 7496, NGC 628, NGC 1433, and IC 5332. The views are already shedding light on the ways in which newborn stars shape the galaxies they reside in. In these images, Webb captures the warm infrared glow of starbirth and the dust that shrouds it, especially tiny grains known as polycyclic aromatic hydrocarbons. Stellar embryos nest in an intricate jumble of filaments, . . .(continued at <https://skyandtelescope.org/astronomy-news/generations-of-stars-shape-their-galaxies-webb-images-reveal/> )



### **New Aurorae Detected On Jupiter's Four Largest Moons**

Astronomers using W. M. Keck Observatory on Maunakea in Hawai'i have discovered that aurorae at visible wavelengths appear on all 4 major moons of Jupiter: Io, Europa, Ganymede, and Callisto. Using Keck Observatory's High-Resolution Echelle Spectrometer (HIRES) as well as high-resolution spectrographs at the Large Binocular Telescope and Apache Point Observatory, a team led by Caltech and Boston University observed the moons in Jupiter's shadow so that their faint aurorae, which are caused by the gas giant's strong magnetic field, could be spotted without competition from bright sunlight reflected off of their surfaces. . . . (continued at <https://phys.org/news/2023-02-aurorae-jupiter-largest-moons.html> )



### **Boeing's Starliner On Track To Launch Its 1st Astronaut Flight This Spring, NASA Says**

Boeing's Starliner crew vehicle is on track to fly its first astronauts in space in April. In a Feb. 17 update, NASA and Boeing officials outlined the aerospace company's work on its entry for NASA's commercial crew program, and where the historic flight might fit into the space station's busy manifest in upcoming months. "We don't have any big announcements, but we thought we would share the progress," said Steve Stich, manager of NASA's Commercial Crew Program, at the start of last week's call. . . . (continued at <https://www.space.com/boeing-starliner-on-track-first-crewed-launch-april-2023> )



### **New Discovery Sheds Light On Very Early Supermassive Black Holes**

Using observations taken with the Atacama Large Millimeter Array (ALMA), a radio observatory sited in Chile, the team have determined that the galaxy, named COS-87259, containing this new supermassive black hole is very extreme, forming stars at a rate 1000 times that of our own Milky Way and containing over a billion solar masses worth of interstellar dust. The galaxy shines bright from both this intense burst of star formation and the growing supermassive black hole at its centre. The black hole is considered to be a new type of primordial black hole -- one heavily enshrouded by cosmic "dust," causing nearly all of its light to be emitted in the mid-infrared range of the electromagnetic spectrum. . . .(continued at <https://www.sciencedaily.com/releases/2023/02/230224135116.htm> )



## 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).

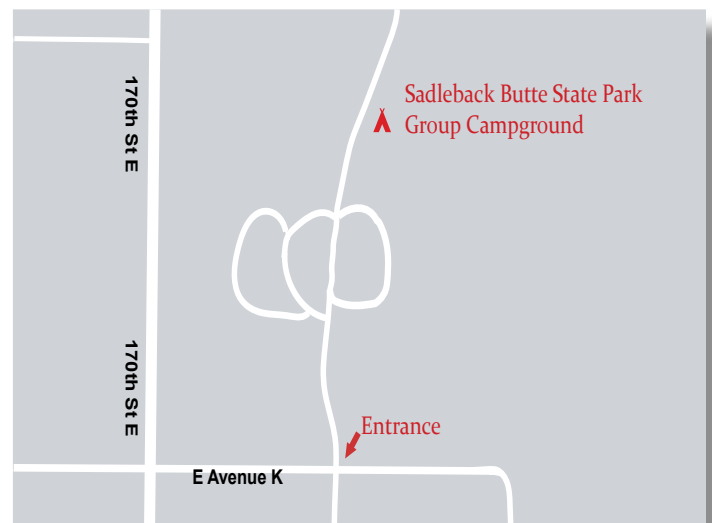
To get there, take the Frazier Mountain Park RD east about 7 miles from I-5, to Lake Of The Woods, Turn left on Lockwood Valley Rd. ( If you see Mike’s Pizza on your left you missed the turn) In less than a mile there is a road to the left, go past the ranger station, the parking lot is on the right. 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.

**Saddleback Butte State Park** is east of 170th Street East between Avenue I and Avenue K. Elevation 3651 feet. Temperatures in summer average 95° with a high of 115,° winter average lows are 33° with occasional snow. There are 37 individual campsites and one group campsite. When the club has a star party there the group campsite is used. Individual campsites cost \$20 per night. Enter off Avenue K.



## Planet Summary

The **Sun** travels from the middle of Aquarius to the middle of Pisces during March.

### Planets

**Mercury** starts the month in the morning sky. After that diving toward the Sun, reaching superior conjunction on the 17th. It returns for the last few evenings of the month, passing just 1.5° north of Jupiter on the 28th.

**Venus** in twilight, continues its climb away from the Sun becoming more prominent in the evening (till the end of July). On the 1st Jupiter is in conjunction 29 arc-mins south.

**Mars** spends the month moving east from Taurus crossing into Gemini on the 26th. The 44% waxing Moon passes by on the 28th.

**Jupiter** on March 1st Venus (mag -3.97) is in conjunction 31 arc-minutes north, Jupiter at mag -2.11. At the end of March Jupiter is just 8° east of the Sun getting ready to duck behind the Sun in April.

**Saturn** is too close to the morning Sun to be seen until maybe the middle of the month. On the 1st of March its in conjunction with Mercury. The 3% waning Moon passes to the south on the 19th.

**Uranus** is in southeastern Aries at mag 5.7 slowly moving east. On the 30th Venus passes 1° north.

**Neptune** is too close to the Sun to be seen. In solar conjunction on the 16th.

### Dwarf Planets

**134340 Pluto** spends the month on the eastern edge of Capricorn slowly moving east at mag 14.4 just southeast of M75.

**1 Ceres** starts the month on a westward swing through Coma Berenices (mag 7.16). As the month progress Ceres brightens to 6.97 traveling west amongst the galaxies.

**2 Pallas** (mag 7.8) heading from Canis Major northeast into central Monoceros heading in the direction of Procyon.

**3 Juno** (mag 9.6) moves east in northern Cetus crossing the southeast corner of Pisces before passing backing into Cetus.

**4 Vesta** (mag 8.4) spends the month chasing Juno, just south of Jupiter. Starting the month in a corner of Cetus, and ending in southeast Pisces.

## Moon Phases



First Qtr  
Mar 28

Full  
Mar 7

Third Qtr  
Mar 14

New  
Mar 21

## Sun and Moon Rise and Set\*

Date	Moonrise	Moonset	Sunrise	Sunset
3/1/2023	12:30	02:59	06:21	17:48
3/5/2023	16:21	05:41	06:16	17:52
3/10/2023	21:15	07:50	06:10	17:56
3/15/2023	02:40	12:12	07:03	19:00
3/20/2023	06:36	18:12	06:56	19:04
3/25/2023	09:10	23:50	06:49	19:08
3/30/2023	13:13	03:29	06:42	19:12

## Planet Data\*

### March 1

	Rise	Transit	Set	Mag	Phase%
Mercury	05:56	11:19	16:43	-0.62	99.3
Venus	07:45	13:59	20:14	-3.97	85.6
Mars	11:09	18:28	01:49	0.45	89.9
Jupiter	07:49	14:01	20:14	-2.11	99.7
Saturn	05:58	11:23	16:49	0.85	99.9

### March 15

	Rise	Transit	Set	Mag	Phase%
Mercury	07:07	12:59	18:51	-1.74	99.7
Venus	08:33	15:07	21:41	-4.00	82.0
Mars	11:40	18:59	02:21	0.71	89.7
Jupiter	08:02	14:18	20:34	-2.08	99.9
Saturn	06:07	11:34	17:02	0.91	99.9

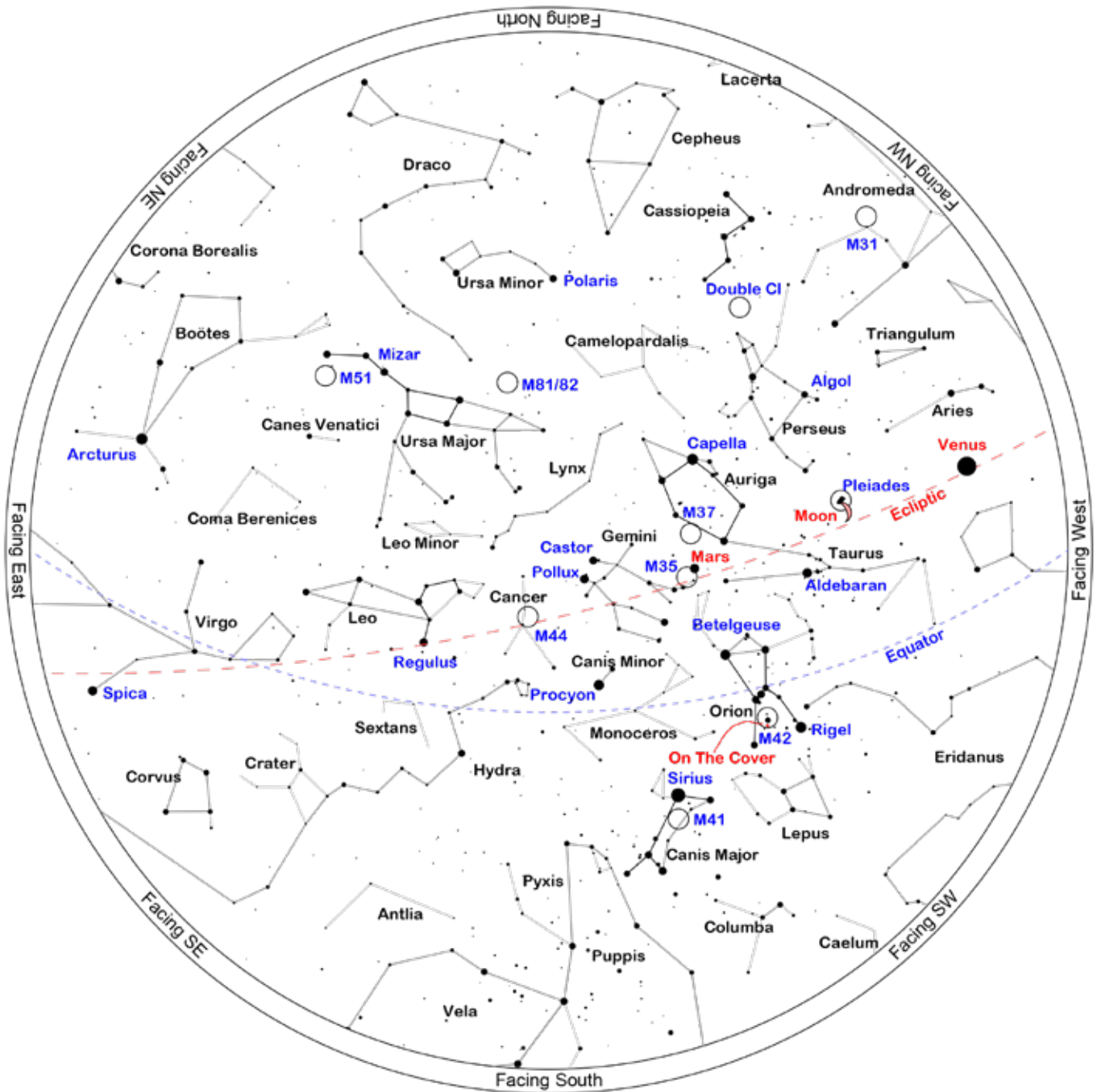
### March 30

	Rise	Transit	Set	Mag	Phase%
Mercury	07:16	13:46	20:17	-1.17	82.1
Venus	08:23	15:17	22:11	-4.03	77.6
Mars	11:13	18:32	01:54	0.97	89.9
Jupiter	07:13	13:32	19:52	-2.06	99.9
Saturn	05:13	10:42	16:11	0.96	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 March 25, 21:00 (UTC -07:00)

Powered by: Heavens-Above.com

# Desert Sky Observer

www.avastronomyclub.org

March 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 March 25, 2023. The list is sorted by the transit time of the object.

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M110	Satellite Of Andromeda Galaxy	Galaxy	And	00h 40m 22s	+41° 41.1'	8.9	03:46	12:23	21:00
NGC210		Galaxy	Cet	00h 40m 35s	-13° 52.3'	10.9	07:00	12:23	17:47
NGC206	V-36	Neb	And	00h 40m 36s	+40° 44.0'		03:52	12:23	20:54
Arp168	M32	Galaxy	And	00h 42m 41s	+40° 51.0'	9.0	03:54	12:25	20:57
M32	Satellite Of Andromeda Galaxy	Galaxy	And	00h 42m 42s	+40° 51.9'	9.1	03:54	12:25	20:57
M31	Andromeda Galaxy	Galaxy	And	00h 42m 44s	+41° 16.1'	4.3	03:51	12:25	20:59
NGC246	C56	P Neb	Cet	00h 47m 00s	-11° 53.0'	10.9	07:00	12:29	17:59
NGC254		Galaxy	Scl	00h 47m 28s	-31° 25.2'	11.8	08:06	12:30	16:54
NGC288		Globular	Scl	00h 52m 45s	-26° 35.0'	8.1	07:53	12:35	17:18
NGC281	PacMan Nebula	Open	Cas	00h 52m 54s	+56° 37.4'	7.0	Circ	12:35	Circ
IC59	Gamma Cassiopeiae Nebula	Neb	Cas	00h 57m 29s	+61° 08.6'		Circ	12:40	Circ
NGC598	Triangulum Pinwheel Galaxy	Galaxy	Tri	01h 33m 51s	+30° 39.6'	5.7	05:36	13:16	20:57
NGC604	III-150	Neb	Tri	01h 34m 33s	+30° 47.0'		05:36	13:17	20:58
M74	The Phantom	Galaxy	Psc	01h 36m 42s	+15° 47.0'	9.8	06:31	13:19	20:07
M76	Little Dumbbell Nebula	P Neb	Per	01h 42m 18s	+51° 34.2'	12.0	03:13	13:25	23:37
NGC651	Apple Core Nebula	P Neb	Per	01h 42m 21s	+51° 34.1'	12.2	03:13	13:25	23:37
NGC637		Open	Cas	01h 43m 04s	+64° 02.4'	8.2	Circ	13:26	Circ
NGC654		Open	Cas	01h 44m 00s	+61° 53.0'	6.5	Circ	13:26	Circ
M34	Spiral Cluster	Open	Per	02h 42m 05s	+42° 45.6'	6.0	05:41	14:25	23:09
M77	Cetus A	Galaxy	Cet	02h 42m 41s	-00° 00.8'	9.7	08:22	14:25	20:28
NGC1084		Galaxy	Eri	02h 46m 00s	-07° 34.6'	10.6	08:47	14:28	20:10
IC1848	Soul Nebula	Open	Cas	02h 51m 18s	+60° 24.4'	6.5	Circ	14:34	Circ
NGC1156		Galaxy	Ari	02h 59m 42s	+25° 14.2'	11.7	07:23	14:42	22:02
IC348		Open	Per	03h 44m 34s	+32° 09.7'	7.3	07:40	15:27	23:14
M45	Pleiades, Subaru	Open	Tau	03h 47m 30s	+24° 07.0'	1.6	08:15	15:30	22:45
Barnard5	B5	DkNeb	Per	03h 47m 53s	+32° 53.0'		07:40	15:30	23:20
NGC1461		Galaxy	Eri	03h 48m 27s	-16° 23.5'	11.7	10:15	15:31	20:47
IC353		Neb	Tau	03h 53m 00s	+25° 48.0'		08:14	15:35	22:57
IC2003		P Neb	Per	03h 56m 22s	+33° 52.5'	13.0	07:44	15:39	23:33
NGC1499	California Nebula	Neb	Per	04h 03m 14s	+36° 22.0'		07:39	15:46	23:52
NGC1514	Crystal Ball Neb	P Neb	Tau	04h 09m 17s	+30° 46.5'	10.0	08:11	15:52	23:33
NGC1513		Open	Per	04h 09m 57s	+49° 30.8'	8.4	06:09	15:52	01:36
IC359		Neb	Tau	04h 12m 28s	+27° 42.1'		08:26	15:55	23:23
NGC1535		P Neb	Eri	04h 14m 16s	-12° 44.3'	10.0	10:30	15:57	21:24

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ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
IC405	Flaming Star Nebula	Neb	Aur	05h 16m 29s	+34° 21.3'		09:02	16:59	00:56
M79	NGC1904	Globular	Lep	05h 24m 11s	-24° 31.4'	8.5	12:17	17:07	21:56
M38	Starfish Cluster	Open	Aur	05h 28m 40s	+35° 50.8'	7.0	09:07	17:11	01:15
M1	Crab Nebula	SNR	Tau	05h 34m 32s	+22° 00.8'	8.4	10:09	17:17	00:25
M42	Great Orion Nebula	Open+D Neb	Ori	05h 35m 16s	-05° 23.4'	4.0	11:30	17:18	23:06
M43	De Mairan's Nebula	D Neb	Ori	05h 35m 31s	-05° 16.0'	9.0	11:30	17:18	23:06
M36	Pinwheel Cluster	Open	Aur	05h 36m 18s	+34° 08.3'	6.5	09:23	17:19	01:14
M78	NGC2068	D Neb	Ori	05h 46m 45s	+00° 04.8'	8.0	11:26	17:29	23:32
M37	Auriga Salt-and-pepper Cluster	Open	Aur	05h 52m 18s	+32° 33.2'	6.0	09:46	17:35	01:23
M35	NGC2168	Open	Gem	06h 09m 00s	+24° 21.0'	5.5	10:35	17:51	01:08
M41	Little Beehive	Open	CMA	06h 46m 01s	-20° 45.3'	5.0	13:26	18:28	23:31
M50	Heart-shaped Cluster	Open	Mon	07h 02m 42s	-08° 23.0'	7.0	13:06	18:45	00:25
M47	NGC2422	Open	Pup	07h 36m 35s	-14° 29.0'	4.5	13:57	19:19	00:41
M46	NGC2437	Open	Pup	07h 41m 46s	-14° 48.6'	6.5	14:03	19:24	00:45
M93	NGC2447	Open	Pup	07h 44m 30s	-23° 51.4'	6.5	14:35	19:27	00:19
M48	NGC2548	Open	Hya	08h 13m 43s	-05° 45.0'	5.5	14:09	19:56	01:43
M44	Beehive Cluster	Open	Cnc	08h 40m 24s	+19° 40.0'	4.0	13:23	20:23	03:23
M67	King Cobra	Open	Cnc	08h 51m 18s	+11° 48.0'	7.5	13:58	20:34	03:10
M81	Bode's Galaxy	Galaxy	UMa	09h 55m 33s	+69° 03.9'	7.8	Circ	21:38	Circ
M82	Cigar Galaxy	Galaxy	UMa	09h 55m 53s	+69° 40.8'	9.2	Circ	21:38	Circ
M95	NGC3351	Galaxy	Leo	10h 43m 58s	+11° 42.2'	10.6	15:51	22:26	05:02
M96	NGC3368,UGC5882	Galaxy	Leo	10h 46m 46s	+11° 49.2'	10.1	15:53	22:29	05:05
M105	NGC3379	Galaxy	Leo	10h 47m 50s	+12° 34.9'	10.5	15:52	22:30	05:09
M108	NGC3556,UGC6225	Galaxy	UMa	11h 11m 31s	+55° 40.4'	10.6	Circ	22:54	Circ
M97	Owl Nebula	P Neb	UMa	11h 14m 48s	+55° 01.1'	12.0	Circm	22:57	Circm
M65	Leo Triplet	Galaxy	Leo	11h 18m 56s	+13° 05.5'	10.1	16:22	23:01	05:41
M66	Leo Triplet	Galaxy	Leo	11h 20m 15s	+12° 59.4'	9.7	16:23	23:03	05:42
M109	NGC3992,UGC6937	Galaxy	UMa	11h 57m 36s	+53° 22.4'	10.6	12:52	23:40	10:28
M98	NGC4192,UGC7231	Galaxy	Com	12h 13m 48s	+14° 54.0'	10.9	17:11	23:56	06:42
M99	Virgo/Coma Pinwheel Galaxy	Galaxy	Com	12h 18m 50s	+14° 25.0'	10.4	17:17	00:01	06:45
M106	NGC4258	Galaxy	CVn	12h 18m 58s	+47° 18.2'	9.1	14:41	00:01	09:22
M61	Swelling Spiral	Galaxy	Vir	12h 21m 55s	+04° 28.3'	10.1	17:49	00:04	06:20
M40	Winnecke 4	DbI+Asterism	UMa	12h 22m 12s	+58° 05.0'	8.7	Circ	00:05	Circ
M100	Mirror of M99	Galaxy	Com	12h 22m 55s	+15° 49.3'	10.1	17:17	00:05	06:54
M84	NGC4374,UGC7494	Galaxy	Vir	12h 25m 04s	+12° 53.2'	10.2	17:28	00:08	06:47
M85	NGC4382,UGC7508	Galaxy	Com	12h 25m 24s	+18° 11.4'	10.0	17:12	00:08	07:03
M86	NGC4406,UGC7532	Galaxy	Vir	12H 26M 12S	+12° 56.7'	9.9	17:29	00:09	06:48
M49	NGC4472,UGC7629	Galaxy	Vir	12H 29M 47S	+08° 00.0'	9.3	17:47	00:12	06:37

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ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M87	Smoking Gun,	Galaxy	Vir	12h 30m 49s	+12° 23.4'	9.6	17:35	00:13	06:51
M88	NGC4501	Galaxy	Com	12h 31m 59s	+14° 25.2'	10.2	17:31	00:14	06:58
M91	Missing Messier Object	Galaxy	Com	12h 35m 27s	+14° 29.7'	10.9	17:34	00:18	07:02
M89	NGC4552	Galaxy	Vir	12h 35m 40s	+12° 33.3'	10.9	17:40	00:18	06:56
M90	NGC4569	Galaxy	Vir	12h 36m 50s	+13° 09.7'	10.2	17:39	00:19	06:59
M58	NGC4579	Galaxy	Vir	12h 37m 44s	+11° 49.1'	10.4	17:44	00:20	06:56
M68	NGC4590	Globular	Hya	12h 39m 28s	-26° 44.5'	9.0	19:40	00:22	05:04
M104	Sombrero Galaxy	Galaxy	Vir	12h 39m 59s	-11° 37.3'	9.2	18:52	00:22	05:53
M59	NGC4621	Galaxy	Vir	12h 42m 02s	+11° 38.7'	10.7	17:49	00:25	07:00
M60	NGC4649	Galaxy	Vir	12h 43m 40s	+11° 33.1'	9.8	17:51	00:26	07:01
M94	Croc's Eye Galaxy	Galaxy	CVn	12h 50m 53s	+41° 07.1'	8.9	16:00	00:33	09:07
M64	Black Eye Galaxy, Sleeping Beauty Galaxy	Galaxy	Com	12h 56m 44s	+21° 41.0'	9.3	17:32	00:39	07:46
M53	NGC5024	Globular	Com	13h 12m 55s	+18° 10.1'	8.5	18:00	00:55	07:51
M63	Sunflower Galaxy	Galaxy	CVn	13h 15m 49s	+42° 01.7'	9.3	16:19	00:58	09:37
NGC5139	C80, Omega Cen- tauri	Globular	Cen	13h 26m 48s	-47° 29.0'	3.6	22:19	01:09	04:00
NGC5169		Galaxy	CVn	13h 28m 10s	+46° 40.3'	14.0	15:56	01:11	10:25
NGC5204		Galaxy	UMa	13h 29m 36s	+58° 25.1'	11.3	Circ	01:12	Circ
M51	Whirlpool Galaxy, Question Mark Galaxy	Galaxy	CVn	13h 29m 52s	+47° 11.7'	8.9	15:53	01:12	10:32
Arp85	M51B	Galaxy	CVn	13h 29m 58s	+47° 16.0'	9.6	15:52	01:12	10:33
NGC5182		Galaxy	Hya	13h 30m 41s	-28° 09.0'	13.0	20:37	01:13	05:50
NGC5214		Galaxy	CVn	13h 32m 49s	+41° 52.3'	14.0	16:37	01:15	09:53
M83	Southern Pinwheel Galaxy	Galaxy	Hya	13h 37m 00s	-29° 51.8'	8.0	20:50	01:19	05:49
HR5144	SAO82942,	Triple	Boo	13h 40m 40s	+19° 57.3'	5.8	18:22	01:23	08:24
NGC5283		Galaxy	Dra	13h 41m 06s	+67° 40.3'	14.0	Circ	01:24	Circ
M3	NGC5272	Globular	CVn	13h 42m 11s	+28° 22.5'	7.0	17:54	01:25	08:56
NGC5286	C84	Globular	Cen	13h 46m 24s	-51° 22.0'	7.6	23:20	01:29	03:38
NGC5292		Galaxy	Cen	13h 47m 40s	-30° 56.4'	14.0	21:05	01:30	05:56
NGC5356		Galaxy	Vir	13h 54m 59s	+05° 20.0'	14.0	19:20	01:37	07:55
NGC5363		Galaxy	Vir	13h 56m 07s	+05° 15.2'	10.2	19:21	01:39	07:56
NGC5447	III-787	Neb	UMa	14h 02m 29s	+54° 16.3'		14:28	01:45	13:01
M101	Pinwheel Galaxy	Galaxy	UMa	14h 03m 13s	+54° 20.9'	8.2	14:26	01:46	13:06
M102	Spindle Galaxy (duplicate of M101?)	Galaxy	Dra	15h 06m 30s	+55° 45.7'	10.8	Circ	02:49	Circ
NGC5875		Galaxy	Boo	15h 09m 13s	+52° 31.6'	13.0	16:23	02:52	13:21
NGC5907	Splinter Galaxy	Galaxy	Dra	15h 15m 54s	+56° 19.7'	11.4	Circ	02:58	Circ
NGC5882		P Neb	Lup	15h 16m 50s	-45° 38.9'	11.0	23:54	02:59	06:05
M5	NGC5904	Globular	Ser	15h 18m 33s	+02° 04.9'	7.0	20:53	03:01	09:10

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ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M4	Cat's Eye	Globular	Sco	16h 23m 35s	-26° 31.5'	7.5	23:24	04:06	08:49
M13	Great Hercules Cluster	Globular	Her	16h 41m 41s	+36° 27.5'	7.0	20:17	04:24	12:31
M12	Gumball Globular	Globular	Oph	16h 47m 14s	-01° 56.8'	8.0	22:32	04:30	10:27
M62	Flickering Globular	Globular	Oph	17h 01m 13s	-30° 06.7'	8.0	00:15	04:44	09:13
M19	NGC6273	Globular	Oph	17h 02m 38s	-26° 16.0'	8.5	00:02	04:45	09:29
M92	NGC6341	Globular	Her	17h 17m 07s	+43° 08.1'	7.5	20:13	05:00	13:46
M9	NGC6333	Globular	Oph	17h 19m 12s	-18° 31.0'	9.0	23:52	05:02	10:11
M14	NGC6402	Globular	Oph	17h 37m 36s	-03° 14.7'	9.5	23:26	05:20	11:14
M6	Butterfly Cluster	Open	Sco	17h 40m 20s	-32° 15.2'	4.5	01:03	05:23	09:43
M7	Scorpion's Tail, Ptolemy's Cluster	Open	Sco	17h 53m 51s	-34° 47.6'	3.5	01:27	05:36	09:45
M20	Trifid Nebula	Open+D Neb	Sgr	18h 02m 42s	-22° 58.2'	5.0	00:50	05:45	10:40
M8	Lagoon Nebula, Dragon Nebula	Open+D Neb	Sgr	18h 03m 41s	-24° 22.7'	5.0	00:56	05:46	10:36
M21	NGC6531	Open	Sgr	18h 04m 13s	-22° 29.3'	7.0	00:50	05:47	10:43
M24	Small Sagittarius Star Cloud	Open	Sgr	18h 18m 26s	-18° 24.3'	4.5	00:51	06:01	11:11
M16	Eagle Nebula	Open+D Neb	Ser	18h 18m 48s	-13° 48.3'	6.5	00:38	06:01	11:25
M18	Black Swan,	Open	Sgr	18h 19m 58s	-17° 06.1'	8.0	00:49	06:02	11:16
M17	Horseshoe Nebula	Open+D Neb	Sgr	18h 20m 47s	-16° 10.3'	7.0	00:47	06:03	11:20
M28	NGC6626	Globular	Sgr	18h 24m 33s	-24° 52.1'	8.5	01:19	06:07	10:55
M25	M25	Open	Sgr	18h 31m 42s	-19° 07.0'	6.5	01:07	06:14	11:22
M11	Wild Duck Cluster	Open	Sct	18h 51m 05s	-06° 16.1'	7.0	00:48	06:34	12:19
M57	Ring Nebula	P Neb	Lyr	18h 53m 35s	+33° 01.7'	9.5	22:45	06:36	14:27
M56	NGC6779	Globular	Lyr	19h 16m 36s	+30° 11.0'	9.5	23:21	06:59	14:37
M55	NGC6809	Globular	Sgr	19h 40m 00s	-30° 57.7'	7.0	02:57	07:22	11:48
M75	NGC6864	Globular	Sgr	20h 06m 05s	-21° 55.3'	9.5	02:50	07:49	12:47
M73	NGC6994	Open+Asterism	Aqr	20h 58m 56s	-12° 38.1'	9.0	03:14	08:41	14:09
M39	NGC7092	Open	Cyg	21h 31m 42s	+48° 25.0'	5.5	23:43	09:14	18:46
M2	NGC7089	Globular	Aqr	21h 33m 27s	-00° 49.3'	7.5	03:15	09:16	15:16
M52	The Scorpion	Open	Cas	23h 24m 48s	+61° 35.6'	8.0	Circ	11:07	Circ

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



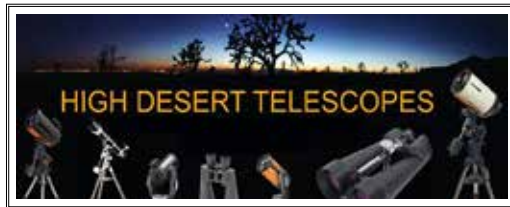
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