Volume 42.6 June 2022

Desert Sky Observer

Antelope Valley Astronomy Club

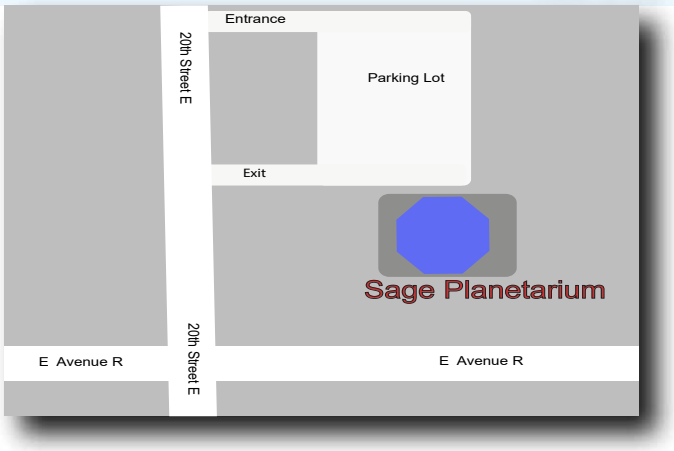
Upcoming Events

June 4: Moonwalk 8:30 pm @ PDW
June 10: Club Meeting
June 24: Mt Wilson trip
June 25: DSSP @ Chuchupate

Every clear night: Personal Star Party

July 8: Club Meeting
July 23: Moonwalk 8:30 pm @ PDW
July 30: DSSP @ Chuchupate

AVAC Calendar



Board Members

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president@avastronomyclub.org

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Treasurer: Rod Girard (661) 803-7838
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www.avastronomyclub.org
ANTELOPE VALLEY
ASTRONOMY CLUB, INC.

Monthly Meetings

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

Membership

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

The Club has three categories of membership.

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

Membership entitles you to ...

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

AVAC
PO Box 8545
Lancaster, CA 93539-8545

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

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

President's Message

By Phil Wriedt

Hi There!

I'm sorry this is getting to you rather late this month. For those of you that did not already know I came down with a case of shingles on the left side of my face and left eye. While I'm doing better now, let's just say there are better ways to lose 25 pounds in six weeks! Please get the Shingles vaccine when you can even if you think you haven't had the chickenpox; that was my argument too.

In my absence I missed a Lunar Eclipse party, 2 PDW Moonwalks, and Red Rock Canyon Star Party. I understand Red Rock was a total blowout.

The next event will be our Mt. Wilson trip on the 24th. We will meet at the Pearblossom Park-and-Ride at 5:30 pm and leave for the mountain as soon thereafter as possible. Bring your snacks and cold drinks (no alcohol) and a list of what you'd like to see. Do remember to take a jacket.

The next day, on the 25th, a DSSP at Chuchupate is scheduled for those whose need for stars hasn't been fulfilled by the previous night.

In July there will be a Club Meeting on the 8th, PDW Moonwalk on the 23rd, and DSSP at Chuchupate on the 30th.

Remember, the above activities require member participation, You get out of it what you put into it.

Keep Looking Up, Phil

On The Cover

This stellar swarm is M80 (NGC 6093), one of the densest of the 147 known globular star clusters in the Milky Way galaxy. Located about 28,000 light-years from Earth, M80 contains hundreds of thousands of stars, all held together by their mutual gravitational attraction. Globular clusters are particularly useful for studying stellar evolution, since all of the stars in the cluster have the same age (about 15 billion years), but cover a range of stellar masses.

Every star visible in this image is either more highly evolved than, or in a few rare cases more massive than, our own Sun. Especially obvious are the bright red giants, which are stars similar to the Sun in mass that are nearing the ends of their lives.

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

From the Secretary

By Rose Moore

Members:

Summer is here, so it's time to get out your telescopes and head out to some events!

Our first event for June is a Prime Desert Moon Walk with Jeremy on Saturday, June 4th at 8:30pm. Weather permitting. We need members with telescopes to help support this event. Set up time is approximately 30-60 mins before the walk. There will be no planets up, and a 23% crescent Moon. Sunset is at 8:04pm.

We have a club meeting on Friday June 10th at 7pm. We will have an in person speaker: Robert Zellum from JPL/NASA. He will be speaking on Exoplanets. Robert is running a citizen science project call Exoplanet Watch which involves amateur astronomers observing transiting exoplanets. Come on out to hear his presentation!

On Friday June 24th we have the club's trip up to Mt. Wilson. I will have maps and directions at June's meeting, as well as sending them out via email. Everyone attending the trip: please bring a copy of the directions with you, so you can help the person driving. And also be prepared to drive-have plenty of gas in your car! We are allowed a maximum of 8-10 cars in the small parking area near the 60 inch. Once I hear from the telescope coordinator, we will let everyone know what time to meet up at the Pearblossom Park and Ride. We allow extra time to meet up and for people to decide on who is driving. Please read your emails coming in with information!

For those that are not taking the pre-tour, I will need to know who is not going up with the main group, (and wait in a car during the tour), and who will be heading up later. I have to let our telescope coordinator know if he's going to have to have the gates reopened later to let members in. However, you will have to be there at a certain time for the docent or someone to let you in, and they will not come back and forth to the gate to let people in!!

On Saturday June 25th, there is a tentative dark sky star party at Chuchupate for those who want to attend.

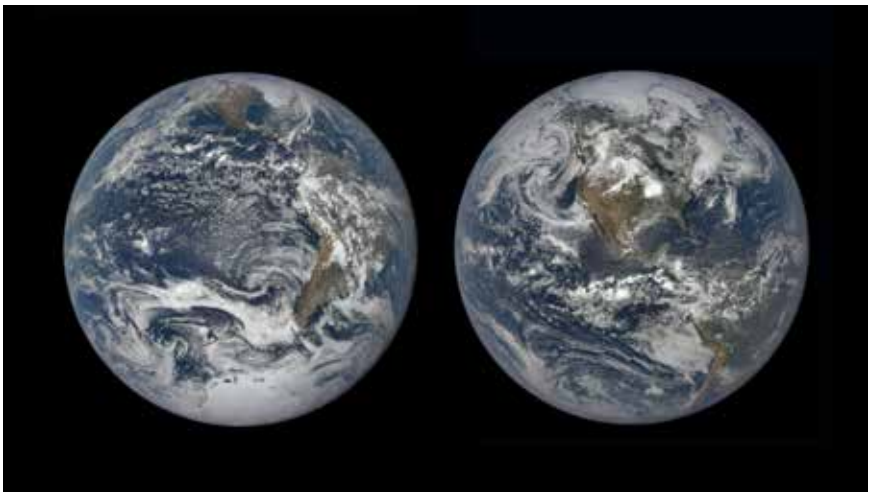
Coming up at the August club meeting will be an astronomy painting class, hosted by member Sue Leone. Further info coming in an email regarding costs. This will be opened to members first, and at a reduced cost. We hope to see you there!

Clear skies, Rose

Darrell Bennett, cell phone
2022-05-12 21:26
3.55mm 1/9 sec F2.2 iso 2450

Night Sky Notes: Solstice Shadows

by David Prosper, NASA Night Sky Network



These images from NASA's DSCOVR mission shows the Sun-facing side of Earth during the December 2018 solstice (left) and June 2019 solstice (right). Notice how much of each hemisphere is visible in each photo; December's solstice heavily favors the Southern Hemisphere and shows all of South America and much of Antarctica and the South Pole, but only some of North America. June's solstice, in contrast, heavily favors the Northern Hemisphere and shows the North Pole and the entirety of North America, but only some of South America.
Credit: NASA/DSCOVR EPIC Source: https://www.nasa.gov/image-feature/goddard/2021/summer-solstice-in-the-northern-hemisphere

Solstices mark the changing of seasons, occur twice a year, and feature the year's shortest and longest daylight hours - depending on your hemisphere. These extremes in the length of day and night make solstice days more noticeable to many observers than the subtle equality of day and night experienced during equinoxes. Solstices were some of our earliest astronomical observations, celebrated throughout history via many summer and winter celebrations.

Solstices occur twice yearly, and in 2022 they arrive on June 21 at 5:13 am EDT (9:13 UTC), and December 21 at 4:48pm EST (21:48 UTC). The June solstice marks the moment when the Sun is at its northernmost position in relation to Earth's equator, and the December solstice marks its southernmost position. The summer solstice occurs on the day when the Sun reaches its highest point at solar noon for regions outside of the tropics, and those observers experience the longest amount of daylight for the year. Conversely, during the winter solstice, the Sun is at its lowest point at solar noon for the year and observers outside of the tropics experience the least amount of daylight- and the longest night – of the year. The June solstice marks the beginning of summer for folks in the Northern Hemisphere and winter for Southern Hemisphere folks, and in December the opposite is true, as a result of the tilt of Earth's axis of rotation. For example, this means that the Northern Hemisphere receives more direct light from the Sun than the Southern Hemisphere during the June solstice. Earth's tilt is enough that northern polar regions experience 24-hour sunlight during the June solstice, while southern polar regions experience 24-hour night, deep in Earth's shadow. That same tilt means that the Earth's polar regions also experience a reversal of light and shadow half a year later in December, with 24 hours of night in the north and 24 hours of daylight in the south. Depending on how close you are to the poles, these extreme lighting conditions can last for many months, their duration deepening the closer you are to the poles.

While solstice days are very noticeable to observers in mid to high latitudes, that's not the case for observers in he tropics - areas of Earth found between the Tropic of Cancer and the Tropic of Capricorn. Instead, individuals experience two "zero shadow" days per year. On these days, with the sun directly overhead at solar noon, objects cast a minimal shadow compared to the rest of the year. If you want to see your own shadow at that moment, you have to jump! The exact date for zero shadow days depends

A presenter from the San Antonio Astronomy Club in Puerto Rico demonstrating some Earth-Sun geometry to a group during a "Zero Shadow Day" event. As Puerto Rico lies a few degrees south of the Tropic of Cancer, their two zero shadow days arrive just a few weeks before and after the June solstice. Globes are a handy and practical way to help visualize solstices and equinoxes for large outdoor groups, especially outdoors during sunny days!

Credit & Source: Juan Velázquez / San Antonio Astronomy Club

on latitude; observers on the Tropic of Cancer (23.5° north of the equator) experience a zero shadow day on the June solstice, and observers on the Tropic of Capricorn (23.5° south of the equator) get their zero shadow day on December's solstice. Observers on the equator experience two zero shadow days, being xactly in between these two lines of latitude; equatorial zero shadow days fall on the March and September equinoxes.

There is some serious science that can be done by carefully observing solstice shadows. In approximately 200 BC, Eratosthenes is said to have observed sunlight shining straight down the shaft of a well during high noon on the solstice, near the modern-day Egyptian city of Aswan. Inspired, he compared measurements of solstice shadows between that location and measurements taken north, in the city of Alexandria. By calculating the difference in the lengths of these shadows, along with the distance between the two cities, Eratosthenes calculated a rough early estimate for the circumference of Earth – and also provided further evidence that the Earth is a sphere! Are you having difficulty visualizing solstice lighting and geometry? You can build a "Suntrack" model that helps demonstrate the path the Sun takes through the sky during the seasons; find instructions at stanford.io/3FY4mBm. You can find more fun activities and resources like this model on NASA Wavelength: science.nasa.gov/learners/wavelength.And of course, discover the latest NASA science at nasa.gov.

Additional Skywatching Resources

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

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

Space News

News from around the Net

The Sun Is Waking Up — Right On Schedule

The Sun is waking up. In recent weeks, NASA has announced X-class solar flares, observers have seen large sunspot groups with the unaided eye, and online services have issued multiple aurora alerts even for mid-latitudes. After years of quiescence — the Sun was more often spotless than not in 2018, 2019, and 2020 — the change of pace is exciting solar observers. The Sun goes through 11-year cycles of magnetically instigated activity, which include sunspots, flares, and massive eruptions. . . . (continued at https://skyandtelescope.org/astronomy-news/the-sun-is-waking-up-right-on-schedule/)

New Discovery About Distant Galaxies: Stars Are More Massive Than We Thought

For as long as humans have studied the heavens, how stars look in distant galaxies has been a mystery. In a study published today in The Astrophysical Journal, a team of researchers at the University of Copenhagen's Niels Bohr Institute is doing away with previous understandings of stars beyond our own galaxy. Since 1955, it has been assumed that the composition of stars in the universe's other galaxies is similar to that of the hundreds of billions of stars within our own . . . (continued at https://www.sciencedaily.com/releases/2022/05/220525102952.htm)

Astronomers Find Hidden Trove Of Massive Black Holes

As a giant spiral galaxy, the Milky Way is believed to have been built up from mergers of many smaller dwarf galaxies. For example, the Magellanic Clouds seen in the southern sky are dwarf galaxies that will merge into the Milky Way. Each dwarf that falls in may bring with it a central massive black hole, tens or hundreds of thousands of times the mass of our sun, potentially destined to be swallowed by the Milky Way's central supermassive black hole. . . (continued at https://www.sciencedaily.com/releases/2022/05/220524100511.htm)

These Galaxies Have No Dark Matter — And Astronomers May Finally Know Why

DARK MATTER is an invisible, intangible substance thought to make up roughly five-sixths of all matter in the universe. But scientists turned to an unusual inspiration to study dark matter: the TV show House. Like Hugh Laurie's titular character in the show, the authors whittled down "symptoms" to find a new way for giant collisions between galaxies to expel dark matter, which could yield critical insights on the elusive phenomenon's properties. The results were published Wednesday in Nature. . . (Continued at https://www.inverse.com/science/dark-matter-in-galaxies)

New Calculations Of Solar Spectrum Resolve Decade-Long Controversy About The Sun's Chemical Composition

What do you do when a tried-and-true method for determining the sun's chemical composition appears to be at odds with an innovative, precise technique for mapping the sun's inner structure? That was the situation facing astronomers studying the sun—until new calculations that have now been published by Ekaterina Magg, Maria Bergemann and colleagues, and that resolve the apparent contradiction. . . . (Continued at https://phys.org/news/2022-05-solar-spectrum-decade-long-controversy-sun.html)

Dark Sky Observing Sites

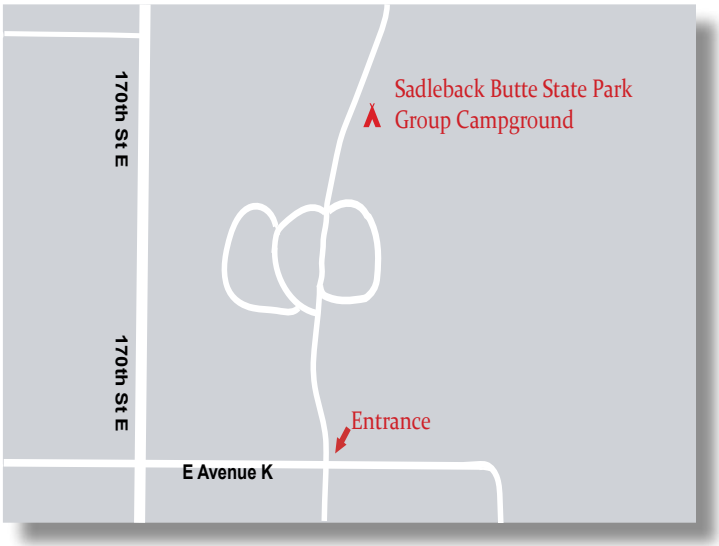
The Chuchupate parking lot is a half a mile beyond the Mt Pinos ranger station (on some maps The Chuchupate Ranger Sta., the parking lot is also called Frazier Mountain trailhead).

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** starts June in mid-Taurus and is between the Twins by months end .

Mercury starts the month in western Taurus, hard to see against the rising Sun, until about the 10th . By now it defines the eastern end of the naked-eye planets that are distributed along the morning ecliptic in order: Mercury, Venus, Mars, Jupiter and Saturn.

Venus begins the month in Aries and finishes in Taurus. On the 12th Uranus passes 1½° to the north. On the 22nd M45 is 6 ° north. On the 26th the 6% wanning Moon is 3° to the north.

Mars begins the month the month in Pisces occupying a spot right next to Jupiter. As the month progresses Mars moves farther East as it slow it gains magnitude.

Jupiter spends much of June in Pisces and on the 25th passes over into Cetus. On the 21st the almost 1st quarter Moon passes less than 5° to the south.

Saturn begins the month starting its retrograde near the tail of Capricorn. On the 22nd the 55% waning Moon passes some 5° to south. The ¾ wanning Moon passes 5° to the south on th 18th.

Uranus continues moving east in central Aries at mag 5.8. On the 11th it will be in conjunction with Venus. On the 24th of June the 15% wanning Moon will be 3 arc-mins south (at 4 pm).

Neptune, in the morning sky, in Pisces slowly moving west until the 28th when it reaches its first stationary point thereafter begins its 6 month retrograde motion.

Pluto spends the month slowing moving east on the western edge of Sagittarius at mag 14.4.

Moon Phases

First Qtr Jun 7 | Full Jun 14 | Third Qtr Jun 20 | New Jun 28

Sun and Moon Rise and Set*

Date	Moonrise	Moonset	Sunrise	Sunset
6/1/2022	07:09	22:23	05:40	20:00
6/5/2022	10:54	00:26	05:39	20:02
6/10/2022	16:04	02:49	05:39	20:05
6/15/2022	22:02	06:38	05:39	20:07
6/20/2022	00:50	12:30	05:39	20:08
6/25/2022	03:09	05:41	05:41	20:09
6/30/2022	06:51	21:50	05:43	20:09

Planet Data*

June 1

	Rise	Transit	Set	Mag	Phase%
Mercury	05:04	11:51	18:37	2.6	9.0
Venus	03:51	10:25	17:00	-3.97	78.0
Mars	02:32	08:32	14:41	0.67	87.3
Jupiter	02:25	08:28	14:31	-2.31	99.1
Saturn	00:39	06:00	11:26	0.73	99.7

June 15

	Rise	Transit	Set	Mag	Phase%
Mercury	04:27	11:18	18:10	0.67	34.4
Venus	03:45	10:34	17:25	-3.94	81.9
Mars	02:04	08:19	14:34	0.57	86.5
Jupiter	01:36	07:41	13:46	-2.39	98.9
Saturn	23:43	05:05	10:31	0.66	99.8

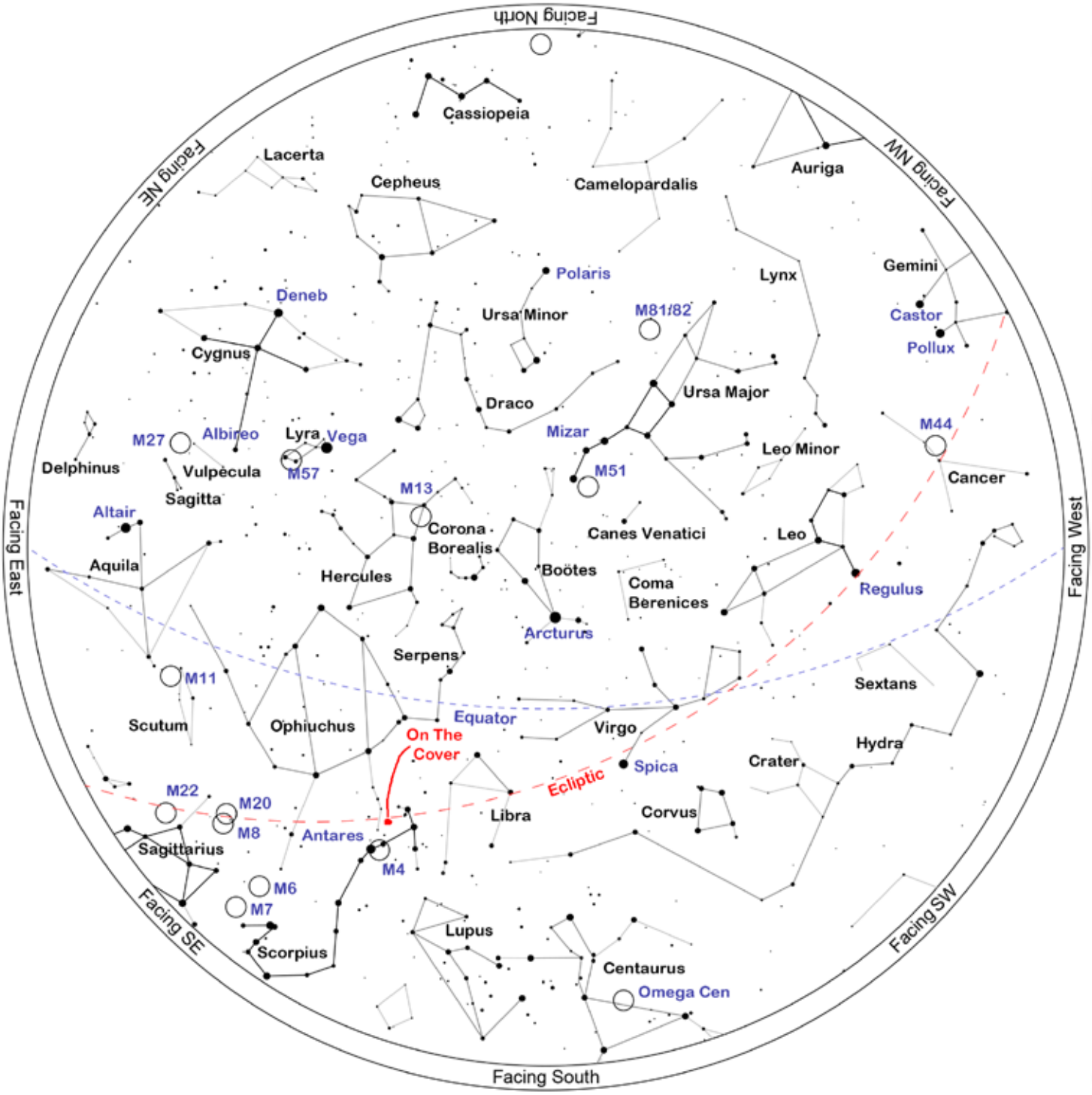
June 30

	Rise	Transit	Set	Mag	Phase%
Mercury	04:33	11:42	18:51	-0.68	71.1
Venus	03:46	10:49	17:52	-3.92	85.8
Mars	01:34	08:00	14:27	0.46	85.7
Jupiter	00:37	06:48	12:54	-2.49	98.9
Saturn	22:43	04:05	09:30	0.57	99.8

*All time mentioned are local and approximate.

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

Sky Chart



Location: Palmdale, CA 93551
Latitude: 34° 36' N, longitude: 118° 11' W
Time: 2022 June 25, 21:00 (UTC -07:00)

Powered by: Heavens-Above.com

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 25, 2022. The list is sorted by the transit time of the object.

ID	Common Name	Type		RA	Dec	Mag	Rise	Transit	Set
NGC5907	Splinter Galaxy	Galaxy	Dra	15h 15m 54s	+56° 19.7'	11.4	Circu	21:59	Circ
NGC5882		P Neb	Lup	15h 16m 50s	-45° 38.9'	11.0	18:56	22:00	01:05
NGC5897		Globular	Lib	15h 17m 24s	-21° 00.6'	8.6	17:00	22:01	03:02
M5	NGC5904	Globular	Ser	15h 18m 33s	+02° 04.9'	7.0	15:54	22:02	04:11
Barnard228	B228	DkNeb	Lup	15h 44m 00s	-34° 30.0'		18:18	22:28	02:37
IC4593	White Eyed Pea	P Neb	Her	16h 11m 44s	+12° 04.3'	11.0	16:18	22:55	05:32
IC4592	Jabbah	Neb	Sco	16h 11m 59s	-19° 27.4'		17:49	22:56	04:02
M80	NGC6093	Globular	Sco	16h 17m 03s	-22° 58.5'	8.5	18:06	23:01	03:55
IC4601		Neb	Sco	16h 20m 18s	-20° 04.9'		18:00	23:04	04:08
Abell38		P Neb	Sco	16h 23m 17s	-31° 44.9'	11.7	18:45	23:07	03:29
M4	Cat's Eye, NGC6121	Globular	Sco	16h 23m 35s	-26° 31.5'	7.5	18:25	23:07	03:49
IC4603	Rho Ophiuchi Complex [1]	Neb	Oph	16h 25m 24s	-24° 28.0'		18:20	23:09	03:58
IC4604	Rho Ophiuchi Complex [2]	Neb	Oph	16h 25m 33s	-23° 26.5'		18:16	23:09	04:02
NGC6124	C75	Open	Sco	16h 25m 36s	-40° 40.0'	5.8	19:31	23:09	02:47
Abell39		P Neb	Her	16h 27m 33s	+27° 54.5'	12.9	15:41	23:11	06:41
IC4605		Neb	Sco	16h 30m 12s	-25° 06.8'		18:27	23:14	04:01
NGC6153		P Neb	Sco	16h 31m 31s	-40° 15.2'	12.0	19:35	23:15	02:55
NGC6181		Galaxy	Her	16h 32m 21s	+19° 49.5'	11.9	16:15	23:16	06:17
NGC6171		Globular	Oph	16h 32m 32s	-13° 03.1'	8.1	17:50	23:16	04:42
NGC6178		Open	Sco	16h 35m 47s	-45° 38.6'	7.2	20:15	23:19	02:24
NGC6193	C82	Open	Ara	16h 41m 18s	-48° 46.0'	5.2	20:48	23:25	02:02
M13	Hercules Globular Cluster	Globular	Her	16h 41m 41s	+36° 27.5'	7.0	15:18	23:25	07:33
NGC6210	Turtle Planetary Nebula	P Neb	Her	16h 44m 30s	+23° 48.0'	9.0	16:13	23:28	06:43
Barnar-d44a	B44a	DkNeb	Sco	16h 44m 45s	-40° 20.0'		19:49	23:28	03:08
NGC6204		Open	Ara	16h 46m 09s	-47° 01.0'	8.2	20:37	23:30	02:23
M12	Gumball Globular	Globular	Oph	16h 47m 14s	-01° 56.8'	8.0	17:33	23:31	05:28
NGC6231	Table of Scorpius	Open	Sco	16h 54m 00s	-41° 48.0'	2.6	20:07	23:38	03:09
IC4628	Prawn Nebula	Neb	Sco	16h 56m 58s	-40° 27.3'		20:01	23:41	03:20
NGC6254		Globular	Oph	16h 57m 09s	-04° 05.9'	6.6	17:49	23:41	05:32
Barnard47		DkNeb	Oph	16h 59m 42s	-22° 38.0'		18:48	23:43	04:39
M62	Flickering Globular	Globular	Oph	17h 01m 13s	-30° 06.7'	8.0	19:16	23:45	04:13
M19	NGC6273	Globular	Oph	17h 02m 38s	-26° 16.0'	8.5	19:03	23:46	04:29
Barnard51	B51	DkNeb	Oph	17h 04m 44s	-22° 15.0'		18:51	23:48	04:45
IC4637		P Neb	Sco	17h 05m 10s	-40° 53.1'	14.0	20:12	23:49	03:25

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
Bar-nard56	B56	DkNeb	Sco	17h 08m 48s	-32° 05.0'		19:32	23:52	04:13
Barnard59	Pipe Nebula	DkNeb	Oph	17h 11m 23s	-27° 29.0'		19:16	23:55	04:33
NGC6302	Bug Nebula	P Neb	Sco	17h 13m 42s	-37° 06.0'	9.6	20:00	23:57	03:54
Barnard251	B251	DkNeb	Oph	17h 13m 48s	-20° 09.0'		18:53	23:57	05:01
Barnard63		DkNeb	Oph	17h 16m 00s	-21° 28.0'		19:00	00:00	04:59
M92	NGC6341	Globular	Her	17h 17m 07s	+43° 08.1'	7.5	15:13	00:01	08:48
M9	NGC6333	Globular	Oph	17h 19m 12s	-18° 31.0'	9.0	18:54	00:03	05:12
NGC6326		P Neb	Ara	17h 20m 46s	-51° 45.2'	12.0	22:03	00:04	02:06
Barnard256	B256	DkNeb	Oph	17h 22m 12s	-28° 49.0'		19:32	00:06	04:39
Barnard67a	B67a	DkNeb	Oph	17h 22m 30s	-21° 53.0'		19:08	00:06	05:04
Barnard71	B71	DkNeb	Oph	17h 23m 02s	-24° 00.0'		19:16	00:07	04:58
NGC6357	Lobster Nebula	Neb	Sco	17h 24m 43s	-34° 12.1'		19:57	00:08	04:19
IC4651		Open	Ara	17h 24m 52s	-49° 56.5'	6.9	21:44	00:08	02:33
Abell41		P Neb	Ser	17h 29m 04s	-15° 13.3'	13.9	18:53	00:13	05:32
Abell42		P Neb	Oph	17h 31m 31s	-08° 19.1'	14.6	18:36	00:15	05:55
Barnard78	B78	DkNeb	Oph	17h 32m 00s	-25° 35.0'		19:30	00:16	05:01
NGC6388		Globular	Sco	17h 36m 17s	-44° 44.1'	6.9	21:09	00:20	03:31
M14	NGC6402	Globular	Oph	17h 37m 36s	-03° 14.7'	9.5	18:27	00:21	06:15
Barnard276	B276	DkNeb	Oph	17h 39m 39s	-19° 49.0'		19:18	00:23	05:28
M6	Butterfly Cluster	Open	Sco	17h 40m 20s	-32° 15.2'	4.5	20:04	00:24	04:43
NGC6397	C86	Globular	Ara	17h 40m 42s	-53° 40.0'	5.6	22:55	00:24	01:54
NGC6426		Globular	Oph	17h 44m 55s	+03° 10.1'	11.2	18:17	00:28	06:40
Barnard83a	B83a	DkNeb	Sgr	17h 45m 18s	-20° 00.0'		19:24	00:29	05:33
IC4665		Open	Oph	17h 46m 30s	+05° 39.0'	4.2	18:12	00:30	06:49
NGC6445	Crescent Nebula	P Neb	Sgr	17h 49m 15s	-20° 00.6'	13.0	19:28	00:33	05:37
NGC6503		Galaxy	Dra	17h 49m 27s	+70° 08.6'	10.2	Circ	00:33	Circ
NGC6441		Globular	Sco	17h 50m 13s	-37° 03.0'	7.4	20:36	00:34	04:31
Barnard283	B283	DkNeb	Sco	17h 51m 00s	-33° 52.0'		20:22	00:35	04:47
Barnard285	B285	DkNeb	Ser	17h 51m 32s	-12° 52.0'		19:09	00:35	06:01
M7	Scorpion's Tail	Open	Sco	17h 53m 51s	-34° 47.6'	3.5	20:29	00:37	04:46
IC4670		Neb	Sgr	17h 55m 07s	-21° 44.6'		19:40	00:39	05:37
NGC6501		Galaxy	Her	17h 56m 04s	+18° 22.3'	12.3	17:43	00:40	07:36
M23	NGC6494	Open	Sgr	17h 57m 04s	-18° 59.1'	6.0	19:33	00:41	05:48
NGC6543	C6,Cat Eye Nebula	P Neb	Dra	17h 58m 36s	+66° 38.0'	8.1	Circ	00:42	Circ
NGC6496		Globular	Sco	17h 59m 04s	-44° 16.0'	9.2	21:28	00:43	03:57

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
Barnard291	B291	DkNeb	Sgr	17h 59m 43s	-33° 53.0'		20:31	00:43	04:56
Barnard292	B292	DkNeb	Sgr	18h 00m 34s	-33° 20.0'		20:29	00:44	04:59
Barnard293	B293	DkNeb	Sgr	18h 01m 12s	-35° 20.0'		20:39	00:45	04:51
M20	Trifid Nebula, The Clover	Open+D Neb	Sgr	18h 02m 42s	-22° 58.2'	5.0	19:52	00:46	05:41
M8	Lagoon Nebula, Dragon Nebula	Open+D Neb	Sgr	18h 03m 41s	-24° 22.7'	5.0	19:58	00:47	05:37
Barnard295	B295	DkNeb	Sgr	18h 04m 05s	-31° 09.0'		20:23	00:48	05:12
M21	NGC6531	Open	Sgr	18h 04m 13s	-22° 29.3'	7.0	19:52	00:48	05:44
NGC6530		Open	Sgr	18h 04m 31s	-24° 21.5'	4.6	19:58	00:48	05:38
NGC6528		Globular	Sgr	18h 04m 50s	-30° 03.3'	9.5	20:20	00:48	05:17
IC4684		Neb	Sgr	18h 09m 08s	-23° 26.1'		20:00	00:53	05:46
Barnard291	B291	DkNeb	Sgr	17h 59m 43s	-33° 53.0'		20:31	00:43	04:56
Barnard292	B292	DkNeb	Sgr	18h 00m 34s	-33° 20.0'		20:29	00:44	04:59
Barnard293	B293	DkNeb	Sgr	18h 01m 12s	-35° 20.0'		20:39	00:45	04:51
M20	The Clover	Open+D Neb	Sgr	18h 02m 42s	-22° 58.2'	5.0	19:52	00:46	05:41
M8	Lagoon Nebula,	Open+D Neb	Sgr	18h 03m 41s	-24° 22.7'	5.0	19:58	00:47	05:37
Bar-nard295	B295	DkNeb	Sgr	18h 04m 05s	-31° 09.0'		20:23	00:48	05:12
M21	NGC6531	Open	Sgr	18h 04m 13s	-22° 29.3'	7.0	19:52	00:48	05:44
NGC6530		Open	Sgr	18h 04m 31s	-24° 21.5'	4.6	19:58	00:48	05:38
NGC6528		Globular	Sgr	18h 04m 50s	-30° 03.3'	9.5	20:20	00:48	05:17
IC4684		Neb	Sgr	18h 09m 08s	-23° 26.1'		20:00	00:53	05:46
IC1284		Neb	Sgr	18h 17m 39s	-19° 40.3'		19:56	01:01	06:07
M24	Small Sagittarius Star Cloud,	Open	Sgr	18h 18m 26s	-18° 24.3'	4.5	19:53	01:02	06:11
M16	Eagle Nebula,	Open+D Neb	Ser	18h 18m 48s	-13° 48.3'	6.5	19:39	01:02	06:26
Bar-nard308	B308	DkNeb	Sgr	18h 19m 08s	-22° 14.0'		20:06	01:03	06:00
M18	Black Swan, NGC6613	Open	Sgr	18h 19m 58s	-17° 06.1'	8.0	19:50	01:04	06:17
M17	Horseshoe Nebula	Open+D Neb	Sgr	18h 20m 47s	-16° 10.3'	7.0	19:48	01:04	06:21
HR6923	HD170073	Mult	Dra	18h 23m 54s	+58° 48.0'	5.0	Circ	01:07	Circ
M28	NGC6626	Globular	Sgr	18h 24m 33s	-24° 52.1'	8.5	20:20	01:08	05:56
Barnard95	B95	DkNeb	Sct	18h 25m 35s	-11° 44.0'		19:40	01:09	06:39
Barnard97	B97	DkNeb	Sct	18h 29m 05s	-09° 55.0'		19:38	01:13	06:48

ID	Common Name	Type	Const	RA	Dec	Mag	Rise	Transit	Set
Abell44		P Neb	Sgr	18h 30m 11s	-16° 45.4'	12.6	19:59	01:14	06:28
NGC6637		Globular	Sgr	18h 31m 23s	-32° 20.8'	7.7	20:56	01:15	05:34
IC1287		Neb	Sct	18h 31m 26s	-10° 47.7'		19:43	01:15	06:47
M25	M25	Open	Sgr	18h 31m 42s	-19° 07.0'	6.5	20:08	01:15	06:23
IC4725		Open	Sgr	18h 31m 48s	-19° 06.7'	4.6	20:08	01:15	06:23
NGC6642		Globular	Sgr	18h 31m 54s	-23° 28.5'	8.8	20:23	01:15	06:08
NGC6644		P Neb	Sgr	18h 32m 35s	-25° 07.7'	12.0	20:29	01:16	06:03
NGC6647		Open	Sgr	18h 32m 49s	-17° 13.6'	8.0	20:03	01:16	06:30
IC4732		P Neb	Sgr	18h 33m 55s	-22° 38.6'	13.0	20:22	01:17	06:13
NGC6656	Crackerjack Cluster	Globular	Sgr	18h 36m 24s	-23° 54.2'	5.1	20:29	01:20	06:11
IC4756		Open	Ser	18h 38m 54s	+05° 27.0'	5.0	19:04	01:22	07:40
NGC6681		Globular	Sgr	18h 43m 12s	-32° 17.4'	8.1	21:07	01:27	05:46
NGC6694		Open	Sct	18h 45m 18s	-09° 23.0'	8.0	19:52	01:29	07:05
IC4776		P Neb	Sgr	18h 45m 51s	-33° 20.5'	12.0	21:15	01:29	05:44
Barnard318	B318	DkNeb	Sct	18h 49m 42s	-06° 23.0'		19:48	01:33	07:18
M11	Wild Duck Cluster,	Open	Sct	18h 51m 05s	-06° 16.1'	7.0	19:49	01:35	07:20
M57	Ring Nebula	P Neb	Lyr	18h 53m 35s	+33° 01.7'	9.5	17:46	01:37	09:28
Barnard117	B117	DkNeb	Sct	18h 53m 43s	-07° 24.0'		19:55	01:37	07:19
NGC6715		Globular	Sgr	18h 55m 03s	-30° 28.7'	7.7	21:12	01:39	06:06
NGC6717	III-143	Globular	Sgr	18h 55m 06s	-22° 42.0'	9.2	20:43	01:39	06:34
Barnard122	B122	DkNeb	Sct	18h 56m 48s	-04° 45.0'		19:51	01:40	07:30
Barnard123	B123	DkNeb	Sct	18h 57m 39s	-04° 43.0'		19:52	01:41	07:31
NGC6723		Globular	Sgr	18h 59m 33s	-36° 37.9'	7.3	21:44	01:43	05:43
Barnard128	B128	DkNeb	Aql	19h 01m 40s	-04° 34.0'		19:55	01:45	07:35
NGC6729	C68	BrNeb	CrA	19h 01m 54s	-36° 57.0'		21:48	01:45	05:43
Barnard326	B326	DkNeb	Aql	19h 03m 00s	-00° 23.0'		19:45	01:47	07:48
NGC6749		Globular	Aql	19h 05m 15s	+01° 54.0'	11.1	19:41	01:49	07:57
Barnard329	B329	DkNeb	Aql	19h 06m 59s	+03° 11.0'		19:39	01:51	08:02

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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