

Volume 40.6

June 2020

Desert Sky Observer

Antelope Valley Astronomy Club



Desert Sky Observer

www.avastronomyclub.org

June 2020

Upcoming Events

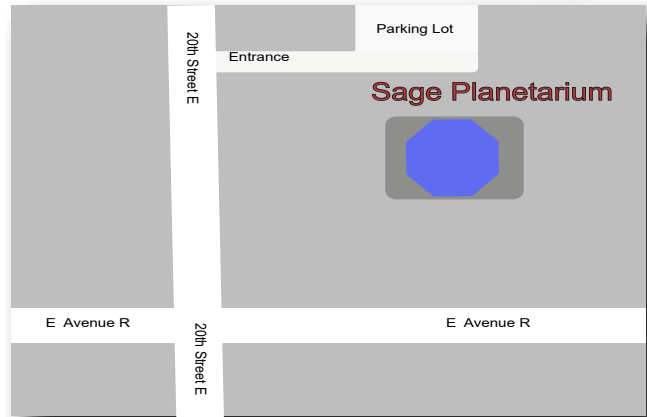
June 6: PDW Moonwalk ?
June 12: Club Meeting Ahhh. . . .No
June 20: DSSP at . . .Chuchupate ?

Any night without clouds: Personal Star Party

July 10: Club Meeting ?
July 18: DSSP at Mt Pinos or ?
July 25: PDW Moonwalk . . . ?



AVAC Calendar



Board Members

President: Darrel Bennet (661) 220-0122
president@avastronomyclub.org

Vice-President: Matt Leone (661) 713-1894
vice-president@avastronomyclub.org

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

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

Appointed Positions

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

Equipment & Library:
John Van Evera 661-754-1819
library@avastronomyclub.org

Club Historian: vacant
history@avastronomyclub.org

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

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



Monthly Meetings

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

Membership

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

The Club has three categories of membership.

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

Membership entitles you to ...

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

AVAC

PO Box 8545

Lancaster, CA 93539-8545

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



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 Darrel Bennet

Well hello everyone, I hope you are all doing great during this ordeal. We are going on four months now with this stay at home order. I have been out of work and it's driving me crazy. At first, I started to cook a lot, like 10 dozen cookies and now I started gardening. It has been too windy at night to take out my scope but the winds seem to be dying down now that the heat has come.

There will not be a club meeting in June and I am still waiting to hear from Jeremy when it is ok to come back. Over Memorial Day weekend, we had our first Star Party at Chuchupate. Matt got there on Friday night and Jim, Ann and I got there on Saturday afternoon. The weather was great, not too hot and very little wind. Tom Hames and his family came a little later. By nightfall, the parking lot was full of telescopes. The Kern County and the Ventura County Astronomy Clubs were both there too. Matt, Jim, and Ann stayed the night but when I went home, it was about 11:30pm.

We are still waiting to hear about Mt. Wilson for August 22nd to see if it is a go. As soon as we find out about it, we will start a sign-up sheet. We will keep you informed about future Star Parties and events as the Board finds out about them.

Until then, stay healthy and keep looking up

Darrel



On The Cover

To celebrate its 28th anniversary in space the NASA/ESA Hubble Space Telescope took this amazing and colourful image of the Lagoon Nebula. The whole nebula, about 4000 light-years away, is an incredible 55 light-years wide and 20 light-years tall. This image shows only a small part of this turbulent star-formation region, about four light-years across.

This stunning nebula was first catalogued in 1654 by the Italian astronomer Giovanni Battista Hodierna, who sought to record nebulous objects in the night sky so they would not be mistaken for comets. Since Hodierna's observations, the Lagoon Nebula has been photographed and analysed by many telescopes and astronomers all over the world.

The observations were taken by Hubble's Wide Field Camera 3 between 12 February and 18 February 2018.

Credit:
NASA, ESA, STScI

From the Secretary

By Rose Moore

Unfortunately we've had another month without an astronomy meeting and PDW. Looking over the current restrictions, which may be in effect all summer, we may not have any club events coming up anytime soon. Please check your emails for information about what has been officially canceled and what may occur. This Memorial Day weekend we were able to have a DSSP up at Chuchupate with the okay given by the Rangers.

We are scheduled for a trip to Mt. Wilson on Saturday, August 22nd. Further information will be coming as we get into summer.

Some celestial happenings for June include: June 4th, Mercury is at greatest eastern elongation. This will be the best time to view Mercury in the western sky just after sunset. Mercury will be setting between 9-9:45pm for June. Evening planets up are Jupiter and Saturn, but both will rise late in the evening at 10:42pm and 11:00pm respectively. The Summer Solstice is on June 20th. June 21st is the New Moon, and hopefully a club star party that weekend. Or you can go out and observe from your home! If anyone does any observing, let us know, so we can put the info in the DSO!

Be safe, hoping to see all of you soon! Rose

Member Scope for Sale

Member Duane Lewis is selling his 9.25 inch Celestron CGEM OTA with the tripod, CGE mount, counterweights, one 1.25" 20mm Plossl eyepiece, a 1.25" diagonal and a 2" diagonal, telrad mount, and a Denkmeir (unknown model) binocular viewer. The OTA was tuned up by member Don Bryden before he moved. It has not been used since. Price is \$1200. Duane is unable to have this set up for viewing because of lack of space. So arrangements will have to be made for viewing the scope and accessories. For more info please contact Duane by email only: gurba1826@gmail.com -- or contact Rose by email: rmorion@bak.rr.com

Summer Triangle Corner: Vega

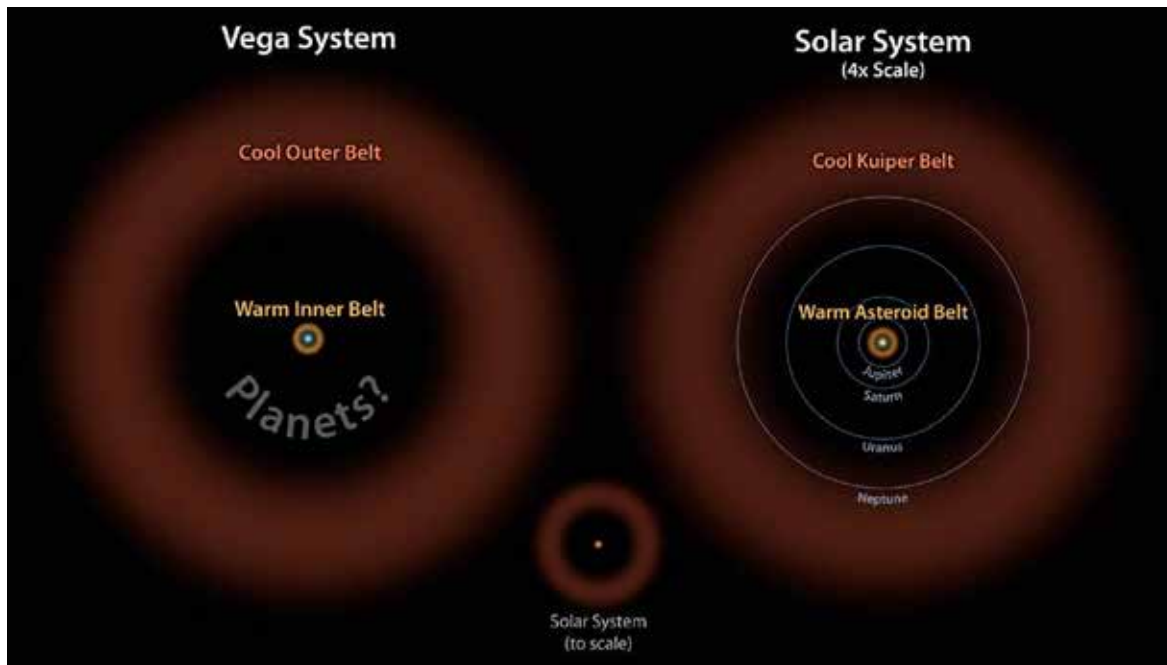
David Prosper and Vivian White, NASA Night Sky Network

If you live in the Northern Hemisphere and look up during June evenings, you'll see the brilliant star Vega shining overhead. Did you know that Vega is one of the most studied stars in our skies? As one of the brightest summer stars, Vega has fascinated astronomers for thousands of years.

Vega is the brightest star in the small Greek constellation of Lyra, the harp. It's also one of the three points of the large "Summer Triangle" asterism, making Vega one of the easiest stars to find for novice stargazers. Ancient humans from 14,000 years ago likely knew Vega for another reason: it was the Earth's northern pole star! Compare Vega's current position with that of the current north star, Polaris, and you can see how much the Earth's tilt changes over thousands of years. This slow movement is called **precession**, and in 12,000 years Vega will return to the northern pole star position. Bright Vega has been observed closely since the beginning of modern astronomy and even helped to set the standard for the current magnitude scale used to categorize the brightness of stars. Polaris and Vega have something else in common, besides being once and future pole stars: their brightness varies over time, making them variable stars. Variable stars' light can change for many different reasons. Dust, smaller stars, or even planets may block the light we see from the star. Or the star itself might be unstable with active sunspots, expansions, or eruptions changing its brightness. Most stars are so far away that we only record the change in light, and can't see their surface.

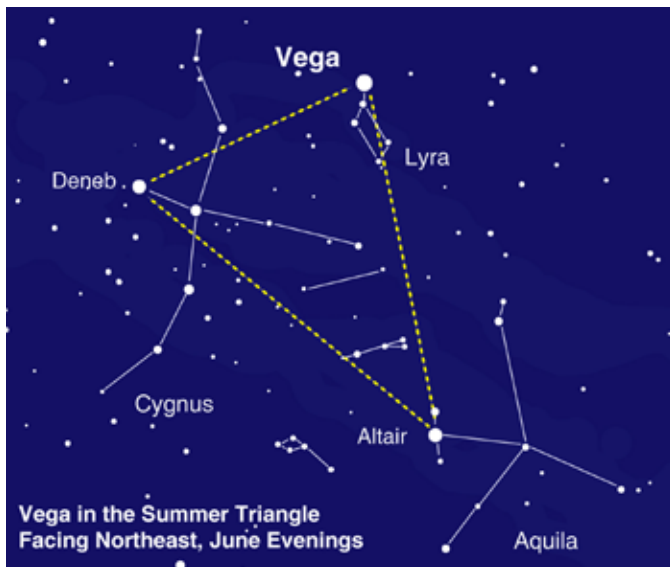
NASA's TESS satellite has ultra-sensitive light sensors primed to look for the tiny dimming of starlight caused by transits of extrasolar planets. Their sensitivity also allowed TESS to observe much smaller pulsations in a certain type of variable star's light than previously observed. These observations of **Delta Scuti** variable stars will help astronomers model their complex interiors and make sense of their distinct, seemingly chaotic, pulsations. This is a major contribution towards the field of astroseismology: the study of stellar interiors via observations of how sound waves "sing" as they travel through stars. The findings may help settle the debate over what kind of variable star Vega is. Find more details on this research, including a sonification demo that lets you "hear" the heartbeat of one of these stars, at: bit.ly/DeltaScutiTESS

Interested in learning more about variable stars? Want to observe their changing brightness? Check out the website for the American Association of Variable Star Observers (AAVSO) at aavso.org. You can also find the latest news about Vega and other fascinating stars at nasa.gov.



Vega possesses two debris fields, similar to our own solar system's asteroid and Kuiper belts. Astronomers continue to hunt for planets orbiting Vega, but as of May 2020 none have been confirmed. More info: bit.ly/VegaSystem Credit:

NASA/JPL-Caltech



Can you spot Vega? You may need to look straight up to find it, especially if observing after midnight.

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

Astronomy Calendar of Celestial Events for Calendar Year 2020

This astronomy calendar of celestial events contains dates for notable celestial events including moon phases, meteor showers, eclipses, oppositions, conjunctions, and other interesting events. Most of the astronomical events on this calendar can be seen with unaided eye, although some may require a good pair of binoculars for best viewing. . . . (continued at <http://www.seasky.org/astronomy/astronomy-calendar-2020.html>)



Globular Clusters Await: Hello, Messier 3! Globular cluster season is here.

One of my favorite seasons is globular-cluster season — and the object that best heralds its arrival is the third object listed in Charles Messier’s 18th-century catalog of non-comets, M3. Although the cluster is situated in the relatively obscure constellation Canes Venatici, its proximity to the zero-magnitude golden gem Arcturus gives M3 the appearance of belonging to neighboring Boötes. . . . (continued at <https://skyandtelescope.org/astronomy-news/hello-messier-3/>)



Comet SWAN’s Final Song

Despite early expectations Comet SWAN appears to be fizzling, providing yet another opportunity to appreciate what makes these objects so unique. Like you, I waited patiently for Comet SWAN (C/2020 F8). Watched it brighten and develop a beautiful gas tail in April and early May, excited that it was on track to become an easy naked-eye object by mid-May. . . . (continued at <https://skyandtelescope.org/astronomy-news/comet-swan-song/>)



See Spring’s Finest Spiral Galaxies

Spiral galaxies are some of the most beautiful objects in the universe. We tour spring’s best and brightest. Ever since I was a young amateur I’ve wanted to see spiral arms. In the telescopes of my youth galactic structure was hard to come by. While I could often distinguish a galaxy’s bright core from its faint disk, arms held out on me until I could afford a larger instrument. . . . (continued at <https://skyandtelescope.org/astronomy-news/see-springs-finest-spiral-galaxies/>)



ATLAS telescope discovers first-of-its-kind asteroid

We often think of asteroids and comets as distinct types of small bodies, but astronomers have discovered an increasing number of “crossovers.” These objects initially appear to be asteroids, and later develop activity, such as tails, that are typical of comets. Now, the University of Hawai’i Asteroid Terrestrial-impact Last Alert System (ATLAS) has discovered the first known Jupiter Trojan asteroid to have sprouted a comet-like tail. . . . (continued at <https://www.sciencedaily.com/releases/2020/05/200522095508.htm>)



Space News

News from around the Net. . .continued

ESPRESSO confirms the presence of an Earth-sized planet around the nearest star

The existence of a planet the size of Earth around the closest star to the Sun, Proxima Centauri, has been confirmed by an international team of scientists including researchers from the University of Geneva (UNIGE). The results, published in *Astronomy & Astrophysics*, reveal that the planet in question, Proxima b, has a mass of 1.17 Earth masses and is located in the habitable zone of its star, which it orbits in 11.2 days. (continued at <https://phys.org/news/2020-05-espresso-presence-earth-nearest-star.html>)



Pi in the Sky: General Relativity Passes the Ratio's Test

Using gravitational waves to approximate pi, physicists see no problem with Einstein's theory. At least 3,700 years ago, Babylonian mathematicians approximated the ratio of a circle's circumference to its diameter. They inscribed their answer, the first discovered value of pi, on a humble clay tablet: 25/8, or 3.125. Now Carl-Johan Haster, a theoretical astrophysicist at the Massachusetts Institute of Technology, has managed to do almost as well: in a study uploaded to the preprint server arXiv.org, he measured pi to be about 3.115. (continued at <https://www.scientificamerican.com/article/pi-in-the-sky-general-relativity-passes-the-ratios-test/>)



Mud volcanoes may spew on Mars, scientists say

Mars may sport two different types of volcanoes, just like Earth. The Red Planet has had plenty of "normal" lava-spewing volcanoes, one of which created the biggest mountain in the solar system: the 16-mile-high (25 kilometers) monster Olympus Mons. But some Mars volcanoes may erupt with mud rather than molten rock, a new study suggests. (continued at <https://www.space.com/mars-mud-volcanoes-lava-flows.html>)



ESO telescope sees signs of planet birth

Observations made with the European Southern Observatory's Very Large Telescope (ESO's VLT) have revealed the telltale signs of a star system being born. Around the young star AB Aurigae lies a dense disc of dust and gas in which astronomers have spotted a prominent spiral structure with a 'twist' that marks the site where a planet may be forming. (continued at <https://www.sciencedaily.com/releases/2020/05/200520084127.htm>)



Pluto's strange atmosphere just collapsed

The dramatic fall in atmospheric pressure on Pluto is much larger than astronomers expected. Pluto's atmosphere is hard to observe from Earth. It can only be studied when Pluto passes in front of a distant star, allowing astronomers to see the effect the atmosphere has on starlight. When this happened in 2016, it confirmed that Pluto's atmosphere was growing, a trend that astronomers had observed since 1988, when they noticed it for the first time. Now, all that has changed (continued at <https://astronomy.com/news/2020/05/plutos-strange-atmosphere-just-collapsed>)



Space News

News from around the Net. . .continued

NASA Supercomputers Power COVID-19 Research

NASA is flexing its supercomputing muscle to help crack some of the most pressing questions surrounding COVID-19, from basic science on how the virus interacts with cells in the human body to genetic risk factors to screening for potential therapeutic drugs. In addition to its support of Earth, planetary, aerospace, heliophysics and astrophysics projects, the agency's supercomputer at NASA's Ames Research Center in California's Silicon Valley, also has an allocation of time on it reserved for national priorities. . . . (continued at <https://www.nasa.gov/feature/esd/2020/nasa-supercomputers-power-covid-19-research>)



First Look: NASA's James Webb Space Telescope Fully Stowed

NASA's James Webb Space Telescope has been successfully folded and stowed into the same configuration it will have when loaded onto an Ariane 5 rocket for launch next year. Webb stowed into an Ariane V rocket for launch. Webb is NASA's largest and most complex space science telescope ever built. Too big for any rocket available in its fully expanded form, the entire observatory was designed to fold in on itself to achieve a much smaller configuration. . . . (continued at <https://www.nasa.gov/feature/goddard/2020/first-look-nasa-s-james-webb-space-telescope-fully-stowed>)



Air Deliveries Bring NASA's Perseverance Mars Rover Closer to Launch

Progress continues to speed along as NASA's Perseverance rover readies for its launch this summer. On May 11, the rover team at the agency's Kennedy Space Center in Florida received the tubes tasked with holding the first samples collected at Mars for eventual return to Earth. A week later, the Atlas V launch vehicle that will hurl Perseverance to the Red Planet arrived at the launch site. Working together, personnel from NASA's Jet Propulsion Laboratory in Southern California and United Launch Alliance in Centennial, Colorado, were also able to extend the rover's launch period by six days, from Jul. 17-Aug. 5 to Jul. 17-Aug. 11 (continued at <https://www.nasa.gov/feature/jpl/air-deliveries-bring-nasas-perseverance-mars-rover-closer-to-launch>)



SpaceX Demo-2: Crew Dragon Reaches Orbit, News Conference at 6:30 p.m. EDT

The SpaceX Crew Dragon spacecraft carrying NASA astronauts Robert Behnken and Douglas Hurley on their way to the International Space Station has safely reached orbit, and the nosecone has been opened. At 4:09 p.m. EDT, the Crew Dragon will conduct a phase burn to put it on its trajectory to meet up with the space station tomorrow for docking at 10:29 a.m. . . . (continued at <https://blogs.nasa.gov/commercialcrew/2020/05/30/spacex-demo-2-crew-dragon-reaches-orbit-news-conference-at-630-p-m-edt/>)



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.



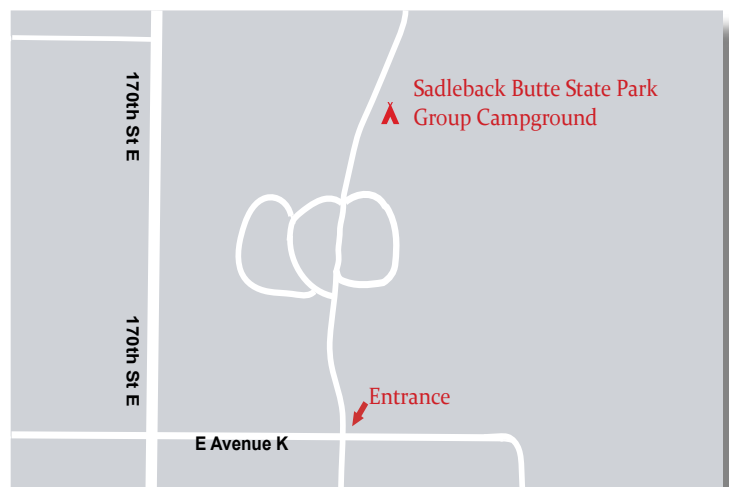
The Red Cliffs Natural Area is part of **Red Rock Canyon State Park** is a day use area and is not for use by the public after dark. The Club gets a special permit for a star party and pays a fee.

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.



Saddleback Butte State Park



Planet Summary

The **Sun** starts May in Taurus and crosses into Gemini by the 20th of the month

Mercury is at greatest eastern elongation (GEE) on the 4th at Mag +0.6 and will be visible in the evening sky until mid month.

Venus reaches inferior conjunction on the 3rd just passing by the Sun by 0.2°. Venus quickly shoots into the morning sky, and is observable after midmonth. The Moon has a close approach on the 19th. Its retrograde motion stops on the 24th when it reaches a stationary point, after which it resumes its prograde motion.

Mars starts the month in Aquarius and ends in Pisces. The Moon passes by to the south on the 12th and 13th. Neptune pass to the north by less than 2° on the 12th and 13th.

Jupiter spends the month in Sagittarius heading west away for Saturn. Jupiter will continue its retrograde motion for the next 3 months. On the afternoon of the 8th the waning gibbous Moon passes to the south of Jupiter.

Saturn spends the month heading west in Capricorn, arriving at the boarder of Sagittarius on the 30th. Saturn continues its retrograde motion which will continue until late September. On the morning of the 9th the Moon passes 5° to the south.

Uranus will spend 2020 in southern Aries at magnitude 5+. The 14% waning Moon will pass by early morning on the 17th.

Neptune will spend the month stationary in northeast Aquarius at mag. 7.8. Mars will have a close encounter, passing 1° 43' south on the 14th.

Pluto starts the month 2° west of Jupiter in Sagittarius at mag 14, and ends the month less then 1/2° south of Jupiter.

Sun and Moon Rise and Set



First Qtr
June 28

Full
June 5

Third Qtr
June 12

New
June 20

Sun and Moon Rise and Set*

Date	Moonrise	Moonset	Sunrise	Sunset
6/1/2020	15:37	03:02	05:41	20:01
6/5/2020	20:17	05:36	05:40	20:03
6/10/2020	23:29	10:22	05:39	20:06
6/15/2020	02:24	15:04	05:39	20:08
6/20/2020	05:10	19:55	05:40	20:09
6/25/2020	10:06	23:56	05:11	20:10
6/30/2020	15:43	02:10	05:43	20:10

Planet Data*

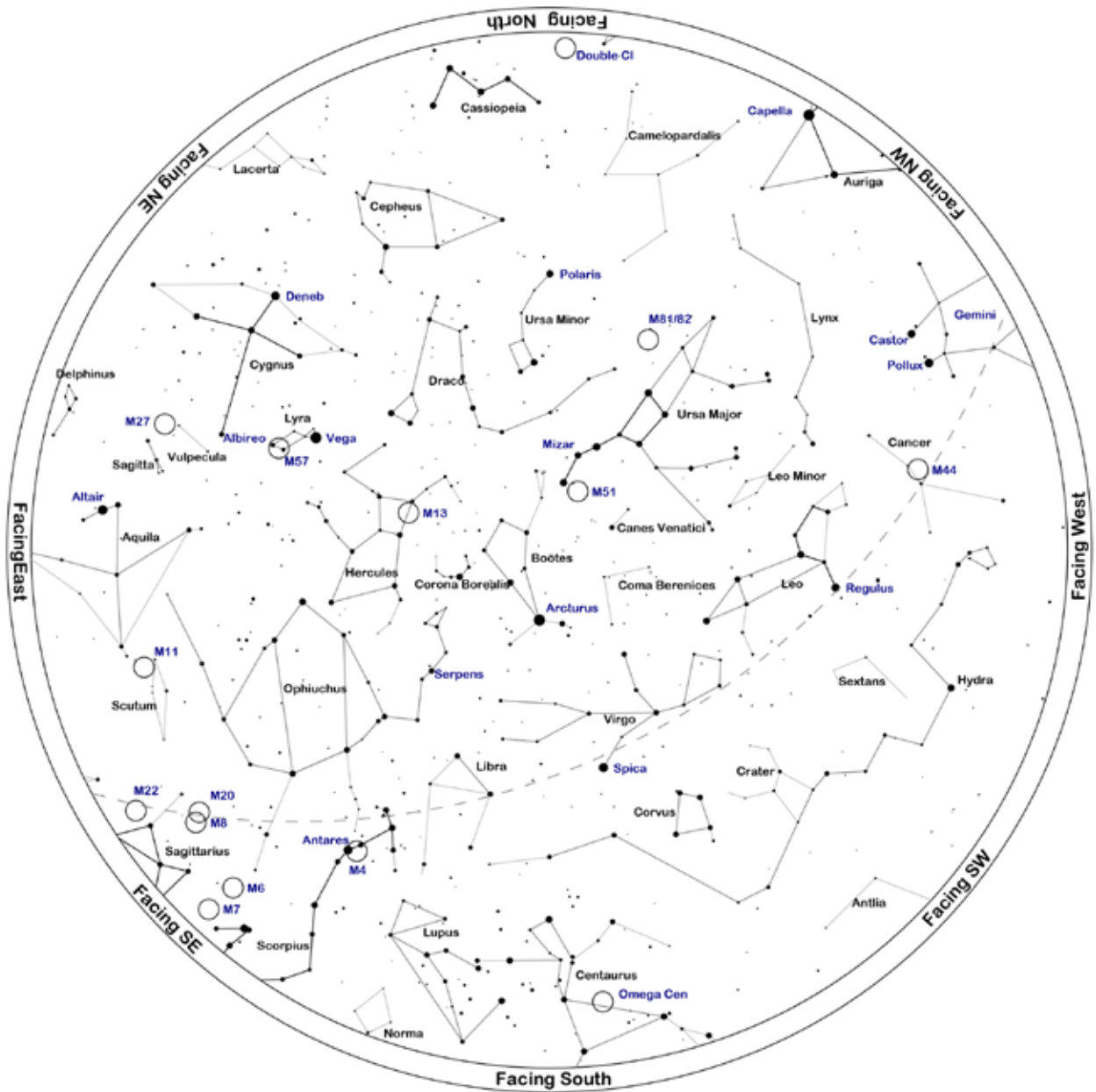
	June 1				
	Rise	Transit	Set	Mag	Phase%
Mercury	07:13	14:32	21:52	0.36	42.02
Venus	05:52	13:03	20:14	-3.76	0.09
Mars	01:23	07:11	12:50	-0.04	84.69
Jupiter	23:02	04:02	09:07	-2.61	99.52
Saturn	23:18	04:23	09:31	0.41	99.85

	June 15				
	Rise	Transit	Set	Mag	Phase%
Mercury	07:10	14:17	21:23	1.92	15.35
Venus	04:40	11:37	18:35	-4.21	5.35
Mars	01:02	06:50	12:38	-0.25	84.39
Jupiter	22:03	03:03	08:07	-2.68	99.76
Saturn	22:21	03:25	08:32	0.32	99.91

	June 30				
	Rise	Transit	Set	Mag	Phase%
Mercury	06:02	12:57	19:52	5.03	0.76
Venus	03:43	10:35	17:26	-4.46	18.91
Mars	00:29	06:27	12:23	-0.50	84.45
Jupiter	20:58	01:57	07:00	-2.74	99.94
Saturn	21:19	02:22	07:29	0.22	99.97

*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: 2020 June 20, 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 20,2020. The list is sorted by the transit time of the object.

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M31	Galaxy	And	00h 42m 44s	+41° 16.1'	4.3	00:57	09:31	18:05
NGC246	P Neb	Cet	00h 47m 00s	-11° 53.0'	10.9	04:06	09:36	15:05
NGC253	S Gal	Scl	00h 47m 36s	-25° 17.0'	7.1	04:49	09:36	14:23
NGC288	Globular	Scl	00h 52m 45s	-26° 35.0'	8.1	04:59	09:41	14:24
NGC584	Galaxy	Cet	01h 31m 21s	-06° 52.0'	10.4	04:36	10:20	16:04
M33	Galaxy	Tri	01h 33m 51s	+30° 39.6'	6.2	02:42	10:22	18:03
M76	P Neb	Per	01h 42m 18s	+51° 34.2'	12.0	00:19	10:31	20:43
NGC663	Open	Cas	01h 46m 00s	+61° 15.0'	7.1	Circum	10:35	Circum
NGC752	Open	And	01h 57m 48s	+37° 41.0'	5.7	02:33	10:46	19:00
NGC869	Open	Per	02h 20m 00s	+57° 08.0'	4.3	Circum	11:09	Circum
NGC884	Open	Per	02h 22m 18s	+57° 08.1'	4.0	Circum	11:11	Circum
NGC908	Galaxy	Cet	02h 23m 05s	-21° 14.0'	10.2	06:11	11:12	16:12
NGC896	Neb	Cas	02h 25m 28s	+62° 01.1'		Circum	11:14	Circum
NGC1027	Open	Cas	02h 42m 40s	+61° 35.7'	6.7	Circum	11:31	Circum
NGC1097	S Gal	For	02h 46m 18s	-30° 17.0'	9.2	07:07	11:35	16:03
HR963	Dbl	For	03h 12m 04s	-28° 59.2'	3.9	07:27	12:01	16:34
NGC1261	Globular	Hor	03h 12m 18s	-55° 13.0'	8.4	11:08	12:01	12:53
NGC1291	Galaxy	Eri	03h 17m 18s	-41° 06.4'	8.5	08:30	12:06	15:42
NGC1302	Galaxy	For	03h 19m 51s	-26° 03.6'	11.0	07:24	12:08	16:53
NGC1342	Open	Per	03h 31m 38s	+37° 22.6'	6.7	04:09	12:20	20:32
NGC1432	Neb	Tau	03h 45m 50s	+24° 22.1'		05:18	12:34	19:51
NGC1435	Neb	Tau	03h 46m 10s	+23° 45.8'		05:21	12:35	19:49
M45	Open	Tau	03h 47m 30s	+24° 07.0'	1.6	05:21	12:36	19:51
NGC1499	Neb	Per	04h 03m 14s	+36° 22.0'		04:45	12:52	20:58
NGC1502	Open	Cam	04h 07m 50s	+62° 19.8'	5.7	Circum	12:56	Circum
NGC1514	P Neb	Tau	04h 09m 17s	+30° 46.5'	10.0	05:17	12:58	20:39
NGC1535	P Neb	Eri	04h 14m 16s	-12° 44.3'	10.0	07:36	13:03	18:30
NGC1528	Open	Per	04h 15m 23s	+51° 12.9'	6.4	02:58	13:04	23:10
NGC1579	Neb	Per	04h 30m 14s	+35° 16.7'		05:18	13:19	21:20
NGC1600	Galaxy	Eri	04h 31m 40s	-05° 05.2'	11.1	07:32	13:20	19:09
NGC1662	Open	Ori	04h 48m 27s	+10° 56.1'	6.4	07:04	13:37	20:11
NGC1664	Open	Aur	04h 51m 06s	+43° 40.4'	7.6	04:49	13:40	22:30
NGC1784	Galaxy	Lep	05h 05m 27s	-11° 52.3'	11.8	08:25	13:54	19:23
NGC1778	Open	Aur	05h 08m 04s	+37° 01.4'	7.7	05:47	13:57	22:06
NGC1807	Open	Tau	05h 10m 43s	+16° 31.3'	7.0	07:09	13:59	20:50
NGC1851	Globular	Col	05h 14m 06s	-40° 03.0'	7.3	10:20	14:03	17:45
C31	BrNeb	Aur	05h 16m 12s	+34° 16.0'		06:09	14:05	22:01

Desert Sky Observer

www.avastronomyclub.org

June 2020

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC1893	Open	Aur	05h 22m 45s	+33° 24.7'	7.5	06:19	14:11	22:04
M79	Globular	Lep	05h 24m 11s	-24° 31.4'	8.5	09:23	14:13	19:02
M38	Open	Aur	05h 28m 40s	+35° 50.8'	7.0	06:13	14:17	22:21
NGC1981	Open	Ori	05h 35m 09s	-04° 25.9'	4.6	08:33	14:24	20:14
NGC1977	Neb	Ori	05h 35m 16s	-04° 49.2'		08:34	14:24	20:13
M42	Open+D Neb	Ori	05h 35m 16s	-05° 23.4'	4.0	08:36	14:24	20:12
NGC1975	Neb	Ori	05h 35m 18s	-04° 41.0'		08:34	14:24	20:14
NGC1980	Neb	Ori	05h 35m 25s	-05° 54.9'		08:38	14:24	20:10
M43	D Neb	Ori	05h 35m 31s	-05° 16.0'	9.0	08:36	14:24	20:12
NGC1990	Neb	Ori	05h 36m 13s	-01° 12.1'		08:25	14:25	20:24
M36	Open	Aur	05h 36m 18s	+34° 08.3'	6.5	06:29	14:25	22:20
NGC1999	Neb	Ori	05h 36m 25s	-06° 43.0'		08:41	14:25	20:09
NGC2023	Neb	Ori	05h 41m 38s	-02° 15.5'		08:34	14:30	20:27
NGC2024	Neb	Ori	05h 41m 42s	-01° 51.4'		08:33	14:30	20:28
NGC2022	P Neb	Ori	05h 42m 06s	+09° 05.2'	12.0	08:02	14:31	20:59
NGC2064	Neb	Ori	05h 46m 18s	+00° 00.3'		08:32	14:35	20:38
M37	Open	Aur	05h 52m 18s	+32° 33.1'	6.0	06:53	14:41	22:29
NGC2169	Open	Ori	06h 08m 24s	+13° 57.9'	5.9	08:15	14:57	21:39
M35	Open	Gem	06h 09m 00s	+24° 21.0'	5.5	07:41	14:58	22:14
NGC2174	Neb	Ori	06h 09m 24s	+20° 39.5'		07:55	14:58	22:01
NGC2175	Open	Ori	06h 09m 40s	+20° 29.2'	6.8	07:55	14:58	22:01
NGC2217	Galaxy	CMa	06h 21m 40s	-27° 14.0'	10.4	10:30	15:10	19:50
NGC2232	Open	Mon	06h 28m 01s	-04° 50.8'	3.9	09:27	15:17	21:06
NGC2237	BrNeb	Mon	06h 32m 18s	+05° 03.0'		09:04	15:21	21:38
NGC2244	Open	Mon	06h 32m 24s	+04° 52.0'	4.8	09:05	15:21	21:37
NGC2264	Open	Mon	06h 40m 58s	+09° 53.7'	3.9	08:59	15:30	22:00
M41	Open	CMa	06h 46m 01s	-20° 45.3'	5.0	10:32	15:35	20:37
NGC2281	Open	Aur	06h 48m 17s	+41° 04.7'	5.4	07:04	15:37	00:10
NGC2298	Globular	Pup	06h 48m 59s	-36° 00.2'	9.4	11:34	15:38	19:41
M50	Open	Mon	07h 02m 42s	-08° 23.0'	7.0	10:12	15:51	21:31
NGC2343	Open	Mon	07h 08m 06s	-10° 37.0'	6.7	10:24	15:57	21:30
NGC2362	Open	CMa	07h 18m 48s	-24° 57.0'	4.1	11:19	16:07	20:56
NGC2384	Open	CMa	07h 25m 10s	-21° 01.3'	7.4	11:12	16:14	21:15
NGC2396	Open	Pup	07h 28m 00s	-11° 43.0'	7.0	10:47	16:17	21:46
NGC2392	P Neb	Gem	07h 29m 12s	+20° 55.0'	9.2	09:13	16:18	23:22
NGC2414	Open	Pup	07h 33m 12s	-15° 27.1'	7.9	11:03	16:22	21:41
M47	Open	Pup	07h 36m 35s	-14° 29.0'	4.5	11:03	16:25	21:47
NGC2438	P Neb	Pup	07h 41m 50s	-14° 44.1'	10.0	11:09	16:30	21:51
NGC2440	P Neb	Pup	07h 41m 55s	-18° 12.5'	11.0	11:20	16:31	21:41

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ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC2451	Open	Pup	07h 45m 15s	-37° 58.0'	2.8	12:40	16:34	20:27
NGC2477	Open	Pup	07h 52m 18s	-38° 33.0'	5.8	12:50	16:41	20:31
NGC2527	Open	Pup	08h 04m 58s	-28° 08.8'	6.5	12:17	16:54	21:30
NGC2547	Open	Vel	08h 10m 09s	-49° 12.9'	4.7	14:25	16:59	19:33
NGC2539	Open	Pup	08h 10m 37s	-12° 49.1'	6.5	11:33	16:59	22:26
NGC2546	Open	Pup	08h 12m 15s	-37° 35.7'	6.3	13:05	17:01	20:56
M48	Open	Hya	08h 13m 43s	-05° 45.0'	5.5	11:15	17:02	22:49
NGC2541	Galaxy	Lyn	08h 14m 40s	+49° 03.7'	11.8	07:25	17:03	02:42
NGC2567	Open	Pup	08h 18m 32s	-30° 38.3'	7.4	12:40	17:07	21:34
C85	Open	Vel	08h 40m 12s	-53° 04.0'	2.5	15:45	17:29	19:12
M44	Open	Cnc	08h 40m 24s	+19° 40.0'	4.0	10:29	17:29	00:29
NGC2781	Galaxy	Hya	09h 11m 28s	-14° 49.0'	11.5	12:39	18:00	23:21
NGC2768	Galaxy	UMa	09h 11m 37s	+60° 02.2'	10.0	Circum	18:00	Circum
NGC2910	Open	Vel	09h 30m 30s	-52° 55.1'	7.2	16:33	18:19	20:05
NGC2968	Galaxy	Leo	09h 43m 12s	+31° 55.7'	11.8	10:46	18:32	02:17
NGC2986	Galaxy	Hya	09h 44m 16s	-21° 16.7'	10.9	13:32	18:33	23:33
NGC3132	P Neb	Vel	10h 07m 42s	-40° 26.0'	9.4	15:16	18:56	22:36
NGC3201	Globular	Vel	10h 17m 36s	-46° 25.0'	6.7	16:07	19:06	22:06
NGC3242	P Neb	Hya	10h 24m 48s	-18° 38.0'	7.8	14:04	19:13	00:22
NGC3277	Galaxy	LMi	10h 32m 55s	+28° 30.6'	11.7	11:50	19:22	02:53
NGC3330	Open	Vel	10h 38m 46s	-54° 07.3'	7.4	18:04	19:27	20:50
NGC3448	Galaxy	UMa	10h 54m 39s	+54° 18.3'	11.7	08:26	19:43	07:00
M97	P Neb	UMa	11h 14m 48s	+55° 01.1'	12.0	Circum	20:03	Circum
NGC3599	Galaxy	Leo	11h 15m 27s	+18° 06.5'	11.9	13:09	20:04	02:59
NGC3607	Galaxy	Leo	11h 16m 55s	+18° 03.0'	10.0	13:10	20:05	03:01
NGC3610	Galaxy	UMa	11h 18m 25s	+58° 47.1'	10.8	Circum	20:07	Circum
NGC3672	Galaxy	Crt	11h 25m 02s	-09° 47.7'	11.0	14:38	20:14	01:49
NGC3705	Galaxy	Leo	11h 30m 07s	+09° 16.5'	11.0	13:50	20:19	02:47
NGC3953	Galaxy	UMa	11h 53m 49s	+52° 19.6'	10.1	10:18	20:42	07:07
NGC4036	Galaxy	UMa	12h 01m 27s	+61° 53.7'	10.6	Circum	20:50	Circum
NGC4147	Globular	Com	12h 10m 06s	+18° 32.5'	10.3	14:02	20:59	03:55
NGC4236	S Gal	Dra	12h 16m 42s	+69° 28.0'	9.7	Circum	21:05	Circum
NGC4233	Galaxy	Vir	12h 17m 08s	+07° 37.4'	11.9	14:42	21:06	03:30
M106	Galaxy	CVn	12h 18m 58s	+47° 18.2'	9.1	11:47	21:08	06:28
NGC4274	Galaxy	Com	12h 19m 51s	+29° 36.8'	10.4	13:32	21:08	04:44
M100	Galaxy	Com	12h 22m 55s	+15° 49.3'	10.1	14:23	21:12	04:00
NGC4340	Galaxy	Com	12h 23m 35s	+16° 43.3'	11.0	14:21	21:12	04:03
NGC4361	P Neb	Crv	12h 24m 31s	-18° 47.0'	10.0	16:04	21:13	02:22
M86	Galaxy	Vir	12h 26m 12s	+12° 56.7'	9.9	14:35	21:15	03:54
M87	Galaxy	Vir	12h 30m 49s	+12° 23.4'	9.6	14:42	21:19	03:57

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ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC4528	Galaxy	Vir	12h 34m 06s	+11° 19.2'	11.7	14:48	21:23	03:57
M91	Galaxy	Com	12h 35m 27s	+14° 29.7'	10.9	14:40	21:24	04:08
NGC4546	Galaxy	Vir	12h 35m 29s	-03° 47.5'	10.3	15:32	21:24	03:16
M68	Globular	Hya	12h 39m 28s	-26° 44.5'	9.0	16:46	21:28	02:10
NGC4691	Galaxy	Vir	12h 48m 14s	-03° 20.0'	11.2	15:43	21:37	03:30
NGC4753	Galaxy	Vir	12h 52m 22s	-01° 12.0'	9.9	15:42	21:41	03:40
NGC4762	Galaxy	Vir	12h 52m 56s	+11° 13.8'	10.2	15:07	21:42	04:16
NGC4936	Galaxy	Cen	13h 04m 17s	-30° 31.5'	11.3	17:26	21:53	02:20
M53	Globular	Com	13h 12m 55s	+18° 10.1'	8.5	15:06	22:02	04:57
NGC5018	Galaxy	Vir	13h 13m 01s	-19° 31.1'	10.8	16:55	22:02	03:08
NGC5053	Globular	Com	13h 16m 27s	+17° 41.8'	9.8	15:11	22:05	04:59
NGC5139	Globular	Cen	13h 26m 48s	-47° 29.0'	3.6	19:25	22:15	01:06
HR5144	Triple	Boo	13h 40m 40s	+19° 57.3'	5.8	15:28	22:29	05:30
M3	Globular	CVn	13h 42m 11s	+28° 22.5'	7.0	15:00	22:31	06:02
NGC5286	Globular	Cen	13h 46m 24s	-51° 22.0'	7.6	20:26	22:35	00:44
NGC5307	P Neb	Cen	13h 51m 03s	-51° 12.3'	12.0	20:28	22:40	00:51
NGC5354	Galaxy	CVn	13h 53m 27s	+40° 18.1'	11.5	14:14	22:42	07:10
NGC5427	Galaxy	Vir	14h 03m 26s	-06° 01.8'	11.4	17:06	22:52	04:38
NGC5474	Galaxy	UMa	14h 05m 02s	+53° 39.7'	10.9	11:59	22:54	09:48
NGC5466	Globular	Boo	14h 05m 28s	+28° 31.9'	9.1	15:22	22:54	06:26
NGC5460	Open	Cen	14h 07m 27s	-48° 20.6'	5.6	20:13	22:56	01:39
HR5362	Dbl	Lup	14h 20m 10s	-43° 03.5'	5.6	19:45	23:09	02:33
HR5409	Triple	Vir	14h 28m 12s	-02° 13.6'	4.8	17:20	23:17	05:13
NGC5634	Globular	Vir	14h 29m 37s	-05° 58.6'	9.6	17:32	23:18	05:04
NGC5660	Galaxy	Boo	14h 29m 50s	+49° 37.3'	11.8	13:33	23:18	09:03
NGC5668	Galaxy	Vir	14h 33m 24s	+04° 27.0'	11.5	17:07	23:22	05:37
NGC5694	Globular	Hya	14h 39m 36s	-26° 32.0'	10.2	18:46	23:28	04:11
NGC5713	Galaxy	Vir	14h 40m 11s	-00° 17.4'	11.4	17:27	23:29	05:31
NGC5806	Galaxy	Vir	15h 00m 00s	+01° 53.4'	11.6	17:41	23:49	05:57
NGC5812	Galaxy	Lib	15h 00m 56s	-07° 27.4'	11.2	18:07	23:50	05:32
NGC5824	Globular	Lup	15h 03m 59s	-33° 04.1'	9.0	19:36	23:53	04:09
NGC5885	Galaxy	Lib	15h 15m 04s	-10° 05.1'	11.7	18:29	00:04	05:38
NGC5882	P Neb	Lup	15h 16m 50s	-45° 38.9'	11.0	21:00	00:05	03:11
NGC5897	Globular	Lib	15h 17m 24s	-21° 00.6'	8.6	19:05	00:06	05:07
M5	Globular	Ser	15h 18m 33s	+02° 04.9'	7.0	17:59	00:07	06:16
NGC5927	Globular	Lup	15h 28m 00s	-50° 40.3'	8.3	21:59	00:17	02:34
NGC5946	Globular	Nor	15h 35m 28s	-50° 39.5'	9.6	22:06	00:24	02:42
NGC5986	Globular	Lup	15h 46m 04s	-37° 47.1'	7.1	20:40	00:35	04:29
NGC6067	Open	Nor	16h 13m 11s	-54° 13.1'	5.6	23:41	01:02	02:23
M80	Globular	Sco	16h 17m 03s	-22° 58.5'	8.5	20:11	01:06	06:01
NGC6093	Globular	Sco	16h 17m 03s	-22° 58.5'	7.2	20:11	01:06	06:01
M4	Globular	Sco	16h 23m 35s	-26° 31.5'	7.5	20:30	01:12	05:55
NGC6121	Globular	Sco	16h 23m 35s	-26° 31.5'	5.9	20:30	01:12	05:55
NGC6124	Open	Sco	16h 25m 36s	-40° 40.0'	5.8	21:35	01:14	04:53

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