



Desert Sky Observer

Volume 38

Antelope Valley Astronomy Club Newsletter

October 2018

Up-Coming Events

- October 6: [Dark Sky Star Party](#)
- October 12: [Annual Club Business Meeting](#)
- October 13: [Lunar Club](#)
- October 20: [Prime Desert Moon Walk](#)

* Monthly meetings are held at the S.A.G.E. Planetarium in Palmdale, the second Friday of each month. 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*



President Frank Moore

Hello AVAC members. We're heading into fall when the days get shorter and nights get longer. Are you ready for it to get dark sooner so you don't have to stay up so late waiting for dark skies? October is also notable for another big reason. Can you guess what that is? No, not Halloween, or even Jeremy Amarant's famous "Scary Science" demonstrations in the schools, at the SAGE and at Prime Desert Woodland. Not even the summer constellations sinking below the Western horizon earlier every evening while the winter constellations rise out of the East earlier each night while offering up some different constellations and deep sky objects. |

October means that it's time for our Annual Business Meeting and Board Election at the meeting on Friday October 12. I'm sure you've all been counting the days, and anxiously waiting for your chance to volunteer to lead the Antelope Valley Astronomy Club in the New Year. Am I right or am I right? This is the chance to make a difference and to serve the organization as an officer on the board in the coming year?

So...let's all show up for the Annual Business Meeting at the SAGE Planetarium, at 7:00pm on Friday October 12. Nominate yourself, and throw your hat into the ring as a candidate as an officer on the Executive Board. Or nominate another member that might be too shy to nominate them self. No experience is necessary and we, the current board, will give you FREE LESSONS in how to plan events and conduct the business of the club. You too can learn the exciting art of non-profit organization management. How much better can it get than that and I hope to see all of you there.

Other fun stuff coming up in October will include a dark sky start party at the Chuchupate observing site on Saturday October 6 which will also be the first night of the annual Draconid meteor shower. The Draconid's peak on October 8 and run in conjunction with the Orionid meteor shower which starts on October 2, peaks on October 21/22 and runs till November 7. It could be a good show up there but with meteor showers you never know. Also of note, is the fact the Uranus will be in opposition on October 23 and will be fully illuminated by the sun and at its closest approach to the earth on that date. Due to its distance, it will still appear as a tiny green dot but it's worth the hunt if you've got a telescope that is up to the task.

Despite competing local events, we still had 139 members of the public at the Prime Desert Woodland Moonwalk on Saturday September 22 and four AVAC member telescopes via which they could view the cosmos. The October moonwalk will be at 6:30 pm on Saturday October 20 and will be immediately preceded by Jeremy's "Scary Science" in the PDW interpretive center. Don't miss it.

The weekend before that, we had a night of lunar observing and a Mexican food fest at Judy Fuentes' house in Antelope Acres. The turnout was more than I ever anticipated and I want to offer my sincere thanks to Judy for the use of her property, as well as for her fantastic taquitos, and to everyone who (unexpectedly) brought out a literal smorgasbord of Mexican treats from tacos, to enchiladas, to tamales and chips, guacamole and salsa. Incredibly, and even though we were so close to the city and had 34% illuminated moon, we were also able to observe a fall cornucopia of deep sky objects. The sky was unexpectedly clear and steady and was perhaps the best I had ever seen from so close to the Lancaster/Palmdale metro area. Our next lunar observing event, again at Judy's, will be on Saturday October 13.

The November Dark Sky Star Party is scheduled for Saturday November 3. We'll have to gauge interest before determining the location since many of us will be attending the Nightfall Star Party in Borrego springs which runs from Thursday November 1 till Sunday November 4. Also in November, don't forget to put the Red Light Tours at the Exotic Feline Breeding Compound (EFBC) in Rosamond on your calendars for Saturday November 10 as well be supporting the event with a star party.

Get out there and keep looking up!



Secretary

Rose Moore

Thank you to all who came out to the Lunar Club meeting at Judy's in September! We had a little Mexican Fiesta for Mexican Independence Day, and a good night for observing! Thank you to everyone who brought food! And thank you Judy for allowing us to invade your home and backyard, and for helping heat and serve the food!!

Our next Lunar Club is Saturday Oct. 16th at 6pm at Judy's home. Also upcoming is Prime Desert Woodland Moon Walk on Saturday Oct. 20th at 6:30pm. Set up time is approximately 1 hour before. We need members with telescopes. Weather permitting!

Our October meeting is our annual Business Meeting on Friday Oct. 12th at 7pm. Come out to support your club! We need you to show up and vote for new Board members and to voice any changes or suggestions you would like to see with the club.

Also at October's meeting we will start the sign-up sheet for the Christmas Party. The Christmas Party will be held at Gino's Restaurant in Lancaster on Saturday December 8th, starting at 6pm. The cost per person will be \$20. This is only open to members and their guest(s). Further info to follow.

We will have a speaker at November's meeting. Our speaker will be Dr. Jeff Rich who is the Outreach Coordinator at the Carnegie Observatories in Pasadena. His topic will be 'Merging Galaxies' and also a summary on the Carnegie Observatories.

Space Place

Observe the Moon

By Jane Houston Jones and Jessica Stoller-Conrad

This year's International Observe the Moon Night is on Oct. 20. Look for astronomy clubs and science centers in your area inviting you to view the Moon at their star parties that evening!

On Oct. 20, the 11-day-old waxing gibbous Moon will rise in the late afternoon and set before dawn. Sunlight will reveal most of the lunar surface and the Moon will be visible all night long. You can observe the Moon's features whether you're observing with the unaided eye, through binoculars or through a telescope.

Here are a few of the Moon's features you might spot on the evening of October 20:

Sinus Iridum—Latin for “Bay of Rainbows”—is the little half circle visible on the western side of the Moon near the lunar terminator—the line between light and dark. Another feature, the Jura Mountains, ring the Moon's western edge. You can see them catch the morning Sun.

Just south of the Sinus Iridum you can see a large, flat plain called the Mare Imbrium. This feature is called a mare—Latin for “sea”—because early astronomers mistook it for a sea on Moon's surface. Because the Moon will be approaching full, the large craters Copernicus and Tycho will also take center stage.

Copernicus is 58 miles (93 kilometers) across. Although its impact crater rays—seen as lines leading out from the crater—will be much more visible at Full Moon, you will still be able to see them on October 20. Tycho, on the other hand, lies in a field of craters near the southern edge of the visible surface of the Moon. At 53 miles (85 kilometers) across, it's a little smaller than Copernicus. However, its massive ray system spans more than 932 miles (1500 kilometers)!

And if you're very observant on the 20th, you'll be able to check off all six of the Apollo lunar landing site locations, too!

In addition to the Moon, we'll be able to observe two meteor showers this month: the Orionids and the Southern Taurids. Although both will have low rates of meteors, they'll be visible in the same part of the sky.

The Orionids peak on Oct. 21, but they are active from Oct. 16 to Oct. 30. Start looking at about 10 p.m. and you can continue to look until 5 a.m. With the bright moonlight you may see only five to 10 swift and faint Orionids per hour.

If you see a slow, bright meteor, that's from the Taurid meteor shower. The Taurids radiate from the nearby constellation Taurus, the Bull. Taurids are active from Sept. 10 through Nov. 20, so you may see both a slow Taurid and a fast Orionid piercing your sky this month. You'll be lucky to see five Taurids per hour on the peak night of Oct. 10.

You can also still catch the great lineup of bright planets in October, with Jupiter, Saturn and Mars lining up with the Moon again this month. And early birds can even catch Venus just before dawn!

You can find out more about International Observe the Moon Night at <https://moon.nasa.gov/observe>.

This article is provided by NASA Space Place. With articles, activities, crafts, games, and lesson plans, NASA Space Place encourages everyone to get excited about science and technology. Visit <https://spaceplace.nasa.gov/> to explore space and Earth science!

News Headlines

The Chill of Solar Minimum

The sun is entering one of the deepest Solar Minima of the Space Age. Sunspots have been absent for most of 2018, and the sun's ultraviolet output has sharply dropped. New research shows that Earth's upper atmosphere is responding.

"We see a cooling trend," says Martin Mlynchak of NASA's Langley Research Center. "High above Earth's surface, near the edge of space, our atmosphere is losing heat energy. If current trends continue, it could soon set a Space Age record for cold."

<https://spaceweatherarchive.com/2018/09/27/the-chill-of-solar-minimum/>

ECOSTRESS Maps LA's Hot Spots

NASA's ECOSystem Spaceborne Thermal Radiometer Experiment on Space Station (ECOSTRESS) captured new imagery of variations in surface-temperature patterns in Los Angeles County. The first of its kind to be taken by one of the agency's newest Earth-observing mission, it is more detailed than previous imagery and, unlike prior imagery, was acquired at different times of the day.

<https://go.nasa.gov/2Qjbnng>

Juno Captures Elusive 'Brown Barge'

A long, brown oval known as a "brown barge" in Jupiter's South Equatorial Belt has been captured by NASA's Juno spacecraft. Brown barges are cyclonic regions that usually lie within Jupiter's dark North Equatorial Belt, although they are sometimes found in the similarly dark South Equatorial Belt as well. They can often be difficult to detect visually because their color blends in with the dark surroundings. At other times, the dark belt material recedes, creating a lighter-colored background against which the brown barge is more conspicuous.

<https://go.nasa.gov/2RbnDFR>

Our street lighting doesn't need to be this bad

Most streets are either too bright or too dark. Streets and roads without street lighting account for nearly a third of all the fatal crashes at night. When street lights are too bright they can cause light pollution, something that delays the maturity of crops, aggravates astronomers, and disorients wildlife like sea turtle hatchlings....

<https://www.popsoci.com/street-lighting-science>

\$4.5M science foundation grant latest in Kitt Peak telescope revitalization

A \$4.5 million National Science Foundation grant will be used to develop a state-of-the-art public visitor program for Kitt Peak National Observatory. The foundation awarded the grant to the Association of Universities for Research in Astronomy to develop the program, called Windows on the Universe Center for Astronomy Outreach, within the McMath-Pierce Solar Telescope facility on the mountain about 50 miles southwest of Tucson.

<https://bit.ly/2xKTDs6>

October Sky Data

Last Qtr Oct 2/31 New Oct 8 First Qtr Oct 16 Full Oct 24



Planet Summary

Mercury might just be spotted very low in the west at the very end of the month and binoculars could well be needed - but please do not use them until after the Sun has set. Look up and to the left of where the Sun has set as its angular separation from the Sun is not great.

Venus is not visible this month but will be seen low in the east just before sunrise by the middle of next month.

Mars made its closest approach to Earth since 2003 on the night of July 30th/31st. It can be seen due south shining at a magnitude of -1.1 around 9 pm at the start of October but this falls to -0.4 by month's end when it is due south at ~8 pm. Its angular size is 16 arc seconds at the start of October but this falls to 12 arc seconds by month's end.

Jupiter can be seen low in the west soon after sunset at the start of the month. It shines at magnitude -1.4 (falling to -1.3 during the month) and has a disk some 32.6 (falling to 31.4) arc seconds across.

Saturn will be visible in the south-west after sunset at the beginning of October. Its disk has an angular size of 16.5 arc seconds falling to 15.7 during the month. Its brightness reduces from 1.6 to 1.7 magnitudes as the month progresses. The rings were at their widest last year but are still well open and spanning ~2.5 times the size of Saturn's globe.

The annual Draconid **meteor shower** peaks in October, but don't get your hopes up for a spectacular sky show. Even at their peak — which, this year, occurs Tuesday, Oct. 9 — the Draconids are usually modest, generating just a few meteors per hour. Still, it's worth looking up, because the shower occasionally puts on an incredible display. In 1933, for example, skywatchers in Europe saw up to 500 Draconids per minute, according to Space.com skywatching columnist Joe Rao. And observers throughout the Western United States saw thousands of Draconids per hour at the shower's peak in 1946, he added.

Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
10/1/2018	23:40	13:16	06:49	18:35
10/5/2018	02:53	16:44	06:51	18:30
10/10/2018	08:23	19:52	06:55	18:23
10/15/2018	13:10	23:29	06:59	18:17
10/20/2018	16:27	03:05	07:03	18:11
10/25/2018	19:14	07:59	07:08	18:05
10/31/2018	n/a	13:57	07:13	17:59

Planet Data

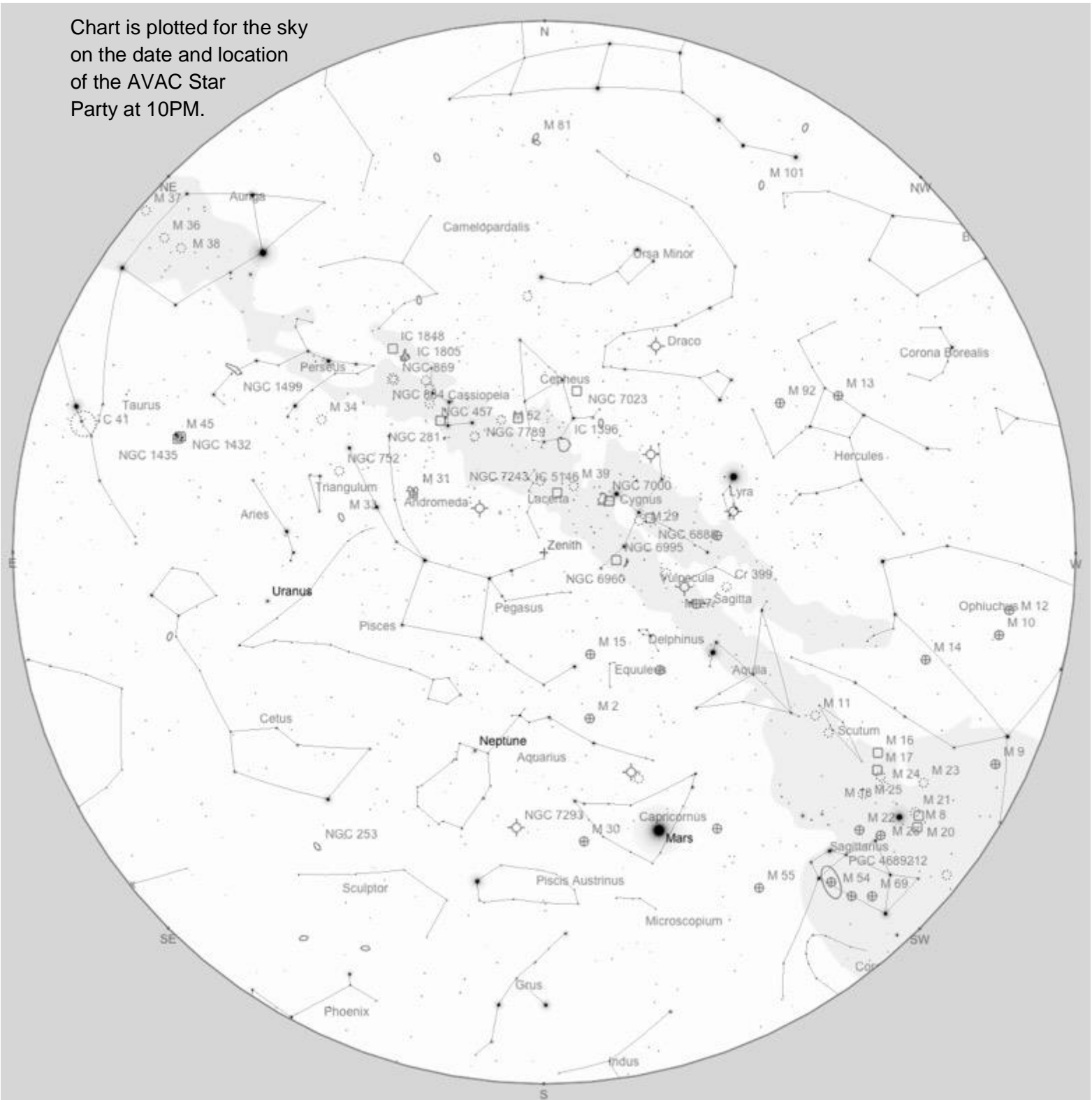
	Oct 1			
	Rise	Transit	Set	Mag
Mercury	07:30	13:16	19:03	-0.7
Venus	09:35	14:37	19:38	-4.2
Mars	15:54	20:52	01:50	-1.1
Jupiter	10:20	15:33	20:47	-1.4
Saturn	13:29	18:26	23:24	1.6

	Oct 15			
	Rise	Transit	Set	Mag
Mercury	08:23	13:43	19:02	-0.2
Venus	08:32	13:34	18:35	-3.7
Mars	15:16	20:22	01:28	-0.8
Jupiter	09:38	14:49	20:01	-1.3
Saturn	12:37	17:34	22:32	1.6

	Oct 31			
	Rise	Transit	Set	Mag
Mercury	09:10	14:07	19:04	-0.1
Venus	06:41	11:59	17:17	-3.4
Mars	14:36	19:52	01:08	-0.4
Jupiter	08:51	14:00	19:09	-1.3
Saturn	11:39	16:36	21:33	1.7

Planet, Sun, and Moon data calculated for local time at Lancaster, CA

Chart is plotted for the sky on the date and location of the AVAC Star Party at 10PM.



To use the chart, go outside within an hour or so of the time listed and hold it up to the sky. Turn the chart so the direction you are looking is at the bottom of the chart. If you are looking to the south then have 'South horizon' at the lower edge.

Suggested Observing List

The list below contains objects that will be visible on the night of the AVAC Star Party. The list is sorted by the transit time of the object.

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC6757	Gal	Dra	19h 05m 06s	+55°43'03"	14.0	Circum	19:23	Circum
NGC6749	Glob	Aql	19h 05m 15s	+01°54'02"	11.1	13:16	19:23	01:31
NGC6751	P Neb	Aql	19h 05m 56s	-05°59'31"	13.0	13:38	19:24	01:11
NGC6755	Open	Aql	19h 07m 49s	+04°16'00"	7.5	13:12	19:26	01:40
NGC6760	Glob	Aql	19h 11m 12s	+01°01'50"	9.1	13:24	19:29	01:35
NGC6772	P Neb	Aql	19h 14m 36s	-02°42'24"	14.0	13:37	19:33	01:28
M56	Glob	Lyr	19h 16m 36s	+30°11'02"	9.5	11:59	19:35	03:11
NGC6789	Gal	Dra	19h 16m 42s	+63°58'19"	13.0	Circum	19:35	Circum
NGC6778	P Neb	Aql	19h 18m 25s	-01°35'48"	13.0	13:38	19:37	01:35
NGC6781	P Neb	Aql	19h 18m 28s	+06°32'20"	12.0	13:16	19:37	01:57
NGC6791	Open	Lyr	19h 20m 53s	+37°46'18"	9.5	11:29	19:39	03:49
NGC6790	P Neb	Aql	19h 22m 57s	+01°30'48"	10.0	13:34	19:41	01:48
NGC6803	P Neb	Aql	19h 31m 16s	+10°03'23"	11.0	13:19	19:49	02:20
NGC6804	P Neb	Aql	19h 31m 35s	+09°13'31"	12.0	13:22	19:50	02:18
NGC6807	P Neb	Aql	19h 34m 34s	+05°41'03"	14.0	13:35	19:53	02:11
NGC6811	Open	Cyg	19h 37m 17s	+46°23'18"	6.8	10:49	19:55	05:02
M55	Glob	Sgr	19h 40m 00s	-30°57'44"	7.0	15:30	19:58	00:26
NGC6813	Neb	Vul	19h 40m 22s	+27°18'34"		12:34	19:59	03:24
NGC6819	Open	Cyg	19h 41m 18s	+40°11'12"	7.3	11:36	19:59	04:23
NGC6820	Neb	Vul	19h 42m 28s	+23°05'17"		12:51	20:01	03:11
NGC6818	P Neb	Sgr	19h 43m 58s	-14°09'10"	10.0	14:39	20:02	01:26
NGC6826	P Neb	Cyg	19h 44m 48s	+50°31'30"	10.0	10:15	20:03	05:51
NGC6833	P Neb	Cyg	19h 49m 47s	+48°57'40"	14.0	10:38	20:08	05:38
NGC6830	Open	Vul	19h 50m 59s	+23°06'00"	7.9	12:59	20:09	03:19
NGC6834	Open	Cyg	19h 52m 12s	+29°24'30"	7.8	12:37	20:10	03:43
M71	Glob	Sge	19h 53m 46s	+18°46'42"	8.5	13:16	20:12	03:08
NGC6842	P Neb	Vul	19h 55m 02s	+29°17'20"	14.0	12:41	20:13	03:46
M27	P Neb	Vul	19h 59m 36s	+22°43'15"	7.5	13:09	20:18	03:27
NGC6866	Open	Cyg	20h 03m 55s	+44°09'30"	7.6	11:33	20:22	05:11
NGC6871	Open	Cyg	20h 05m 59s	+35°46'38"	5.2	12:24	20:24	04:25
M75	Glob	Sgr	20h 06m 05s	-21°55'19"	9.5	15:24	20:24	01:24
NGC6884	P Neb	Cyg	20h 10m 24s	+46°27'39"	13.0	11:22	20:29	05:36
NGC6879	P Neb	Sge	20h 10m 27s	+16°55'22"	13.0	13:38	20:29	03:19
NGC6881	P Neb	Cyg	20h 10m 52s	+37°24'42"	14.0	12:21	20:29	04:38
NGC6883	Open	Cyg	20h 11m 20s	+35°49'55"	8.0	12:29	20:30	04:30
NGC6882	Open	Vul	20h 11m 58s	+26°29'00"	8.1	13:08	20:30	03:52
NGC6888	Neb	Cyg	20h 12m 06s	+38°21'17"		12:17	20:30	04:44
NGC6886	P Neb	Sge	20h 12m 43s	+19°59'22"	12.0	13:31	20:31	03:31
NGC6891	P Neb	Del	20h 15m 09s	+12°42'16"	12.0	13:55	20:33	03:11

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC6894	P Neb	Cyg	20h 16m 24s	+30°33'55"	14.0	12:57	20:35	04:12
NGC6905	P Neb	Del	20h 22m 23s	+20°06'16"	12.0	13:40	20:41	03:41
NGC6910	Open	Cyg	20h 23m 12s	+40°46'42"	7.4	12:14	20:41	05:08
M29	Open	Cyg	20h 23m 57s	+38°30'30"	9.0	12:28	20:42	04:56
NGC6914	Neb	Cyg	20h 24m 43s	+42°28'57"		12:05	20:43	05:21
NGC6939	Open	Cep	20h 31m 30s	+60°39'42"	7.8	Circum	20:50	Circum
NGC6923	Gal	Mic	20h 31m 39s	-30°49'55"	12.1	16:22	20:50	01:18
NGC6928	Gal	Del	20h 32m 50s	+09°55'38"	12.6	14:21	20:51	03:21
NGC6924	Gal	Cap	20h 33m 19s	-25°28'27"	14.0	16:03	20:52	01:40
NGC6934	Glob	Del	20h 34m 11s	+07°24'17"	8.9	14:29	20:52	03:15
NGC6925	Gal	Mic	20h 34m 21s	-31°58'50"	11.3	16:29	20:53	01:16
NGC6960	Neb	Cyg	20h 45m 58s	+30°35'42"		13:26	21:04	04:42
NGC6958	Gal	Mic	20h 48m 43s	-37°59'50"	12.0	17:10	21:07	01:03
M72	Glob	Aqr	20h 53m 28s	-12°32'14"	10.0	15:43	21:12	02:40
NGC6992	Neb	Cyg	20h 56m 19s	+31°44'36"		13:32	21:15	04:57
NGC6997	Open	Cyg	20h 56m 39s	+44°37'54"	10.0	12:22	21:15	06:07
NGC6995	Neb	Cyg	20h 57m 10s	+31°14'06"		13:35	21:15	04:56
NGC7000	Neb	Cyg	20h 59m 18s	+44°31'00"		12:26	21:17	06:09
NGC7008	P Neb	Cyg	21h 00m 33s	+54°32'35"	13.0	10:15	21:19	08:22
NGC7006	Glob	Del	21h 01m 29s	+16°11'15"	10.6	14:32	21:20	04:08
NGC7023	Open	Cep	21h 01m 36s	+68°10'10"	7.0	Circum	21:20	Circum
NGC7009	P Neb	Aqr	21h 04m 11s	-11°21'50"	8.0	15:51	21:22	02:54
NGC7026	P Neb	Cyg	21h 06m 19s	+47°51'08"	13.0	12:05	21:25	06:44
NGC7027	P Neb	Cyg	21h 07m 02s	+42°14'10"	10.0	12:49	21:25	06:01
NGC7031	Open	Cyg	21h 07m 12s	+50°52'30"	9.1	11:33	21:25	07:18
NGC7039	Open	Cyg	21h 10m 48s	+45°37'00"	7.6	12:29	21:29	06:29
NGC7048	P Neb	Cyg	21h 14m 15s	+46°17'18"	11.0	12:27	21:32	06:38
NGC7049	Gal	Ind	21h 19m 00s	-48°33'46"	10.7	18:51	21:37	00:24
NGC7076	Neb	Cep	21h 26m 24s	+62°53'33"		Circum	21:45	Circum
NGC7082	Open	Cyg	21h 29m 17s	+47°07'36"	7.2	12:35	21:47	07:00
M15	Glob	Peg	21h 29m 58s	+12°10'02"	7.5	15:12	21:48	04:25
M39	Open	Cyg	21h 31m 42s	+48°25'00"	5.5	12:25	21:50	07:15
M2	Glob	Aqr	21h 33m 27s	-00°49'23"	7.5	15:51	21:52	03:52
M30	Glob	Cap	21h 40m 22s	-23°10'45"	8.5	17:03	21:59	02:54
NGC7142	Open	Cep	21h 45m 09s	+65°46'30"	9.3	Circum	22:03	Circum
NGC7135	Gal	PsA	21h 49m 46s	-34°52'35"	11.7	17:57	22:08	02:19
NGC7172	Gal	PsA	22h 02m 02s	-31°52'12"	11.9	17:56	22:20	02:44
NGC7196	Gal	Ind	22h 05m 55s	-50°07'10"	11.5	19:53	22:24	00:55
NGC7217	Gal	Peg	22h 07m 52s	+31°21'33"	10.2	14:45	22:26	06:07
NGC7214	Gal	PsA	22h 09m 08s	-27°48'35"	12.4	17:48	22:27	03:07
NGC7235	Open	Cep	22h 12m 25s	+57°16'16"	7.7	Circum	22:31	Circum
NGC7243	Open	Lac	22h 15m 08s	+49°53'54"	6.4	12:53	22:33	08:14
NGC7245	Open	Lac	22h 15m 11s	+54°20'36"	9.2	11:36	22:33	09:30
NGC7253	Gal	Peg	22h 19m 28s	+29°23'45"	14.0	15:05	22:38	06:11
NGC7261	Open	Cep	22h 20m 06s	+58°03'00"	8.4	Circum	22:38	Circum

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC7302	Gal	Aqr	22h 32m 24s	-14°07'15"	12.1	17:27	22:51	04:14
NGC7314	Gal	PsA	22h 35m 46s	-26°03'01"	10.9	18:08	22:54	03:40
NGC7316	Gal	Peg	22h 35m 56s	+20°19'20"	14.0	15:53	22:54	05:55
NGC7332	Gal	Peg	22h 37m 25s	+23°47'54"	11.0	15:43	22:56	06:08
NGC7354	P Neb	Cep	22h 40m 20s	+61°17'07"	13.0	Circum	22:59	Circum
NGC7377	Gal	Aqr	22h 47m 47s	-22°18'43"	11.6	18:07	23:06	04:05
NGC7392	Gal	Aqr	22h 51m 49s	-20°36'26"	11.9	18:06	23:10	04:14
NGC7469	Gal	Peg	23h 03m 16s	+08°52'26"	11.9	16:54	23:21	05:48
NGC7492	Glob	Aqr	23h 08m 27s	-15°36'41"	11.5	18:07	23:27	04:46
NGC7510	Open	Cep	23h 11m 04s	+60°34'15"	7.9	Circum	23:29	Circum
NGC7513	Gal	Scl	23h 13m 14s	-28°21'30"	11.8	18:54	23:31	04:09
NGC7538	Neb	Cep	23h 13m 38s	+61°30'42"		Circum	23:32	Circum
NGC7541	Gal	Psc	23h 14m 44s	+04°32'02"	11.7	17:18	23:33	05:48
NGC7585	Gal	Aqr	23h 18m 01s	-04°39'03"	11.7	17:46	23:36	05:26
NGC7635	Neb	Cas	23h 20m 45s	+61°12'42"		Circum	23:39	Circum
M52	Open	Cas	23h 24m 48s	+61°35'36"	8.0	Circum	23:43	Circum
NGC7662	P Neb	And	23h 25m 54s	+42°32'06"	9.0	15:06	23:44	08:22
NGC7686	Open	And	23h 30m 07s	+49°08'00"	5.6	14:16	23:48	09:21
NGC7822	Neb	Cep	00h 03m 36s	+67°09'00"		Circum	00:22	Circum
NGC40	P Neb	Cep	00h 13m 01s	+72°31'19"	11.0	Circum	00:31	Circum
NGC55	Gal	Scl	00h 15m 08s	-39°13'12"	8.0	20:43	00:33	04:24
NGC103	Open	Cas	00h 25m 16s	+61°19'24"	9.8	Circum	00:43	Circum
NGC129	Open	Cas	00h 30m 00s	+60°13'06"	6.5	Circum	00:48	Circum
NGC146	Open	Cas	00h 33m 03s	+63°18'06"	9.1	Circum	00:51	Circum
NGC189	Open	Cas	00h 39m 35s	+61°05'06"	8.8	Circum	00:58	Circum
M31	Gal	And	00h 42m 44s	+41°16'08"	4.3	16:31	01:01	09:31
NGC225	Open	Cas	00h 43m 39s	+61°46'30"	7.0	Circum	01:02	Circum
NGC246	P Neb	Cet	00h 47m 03s	-11°52'19"	8.0	19:35	01:05	06:35
NGC188	Open	Cep	00h 47m 28s	+85°15'18"	8.1	Circum	01:06	Circum
NGC255	Gal	Cet	00h 47m 47s	-11°28'06"	11.8	19:35	01:06	06:37
NGC278	Gal	Cas	00h 52m 04s	+47°33'02"	10.9	15:54	01:10	10:27
NGC279	Gal	Cet	00h 52m 09s	-02°13'06"	14.0	19:14	01:10	07:07
NGC288	Glob	Scl	00h 52m 45s	-26°35'01"	8.1	20:27	01:11	05:55
NGC281	Open	Cas	00h 52m 54s	+56°37'29"	7.0	Circum	01:11	Circum
NGC300	Gal	Scl	00h 54m 53s	-37°41'03"	9.0	21:15	01:13	05:11
NGC381	Open	Cas	01h 08m 19s	+61°35'00"	9.0	Circum	01:27	Circum
NGC436	Open	Cas	01h 15m 58s	+58°48'42"	8.8	Circum	01:34	Circum
NGC474	Gal	Psc	01h 20m 07s	+03°24'55"	11.1	19:26	01:38	07:50
NGC472	Gal	Psc	01h 20m 29s	+32°42'32"	14.0	17:52	01:39	09:25
NGC477	Gal	And	01h 21m 20s	+40°29'19"	14.0	17:14	01:40	10:05
NGC488	Gal	Psc	01h 21m 47s	+05°15'23"	10.3	19:23	01:40	07:57
NGC514	Gal	Psc	01h 24m 04s	+12°55'02"	11.9	19:04	01:42	08:21
NGC520	Gal	Psc	01h 24m 35s	+03°47'31"	11.2	19:30	01:43	07:56
NGC536	Gal	And	01h 26m 22s	+34°42'10"	13.0	17:49	01:45	09:40
M103	Open	Cas	01h 33m 23s	+60°39'00"	7.0	Circum	01:52	Circum

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M33	Gal	Tri	01h 33m 51s	+30°39'37"	6.2	18:14	01:52	09:30
NGC615	Gal	Cet	01h 35m 06s	-07°20'26"	11.5	20:10	01:53	07:36
NGC655	Gal	Cet	01h 41m 55s	-13°04'56"	14.0	20:33	02:00	07:27
M76	P Neb	Per	01h 42m 18s	+51°34'15"	12.0	15:58	02:00	12:03
NGC660	Gal	Psc	01h 43m 02s	+13°38'39"	10.8	19:21	02:01	08:42
NGC654	Open	Cas	01h 44m 00s	+61°53'06"	6.5	Circum	02:02	Circum
NGC659	Open	Cas	01h 44m 24s	+60°40'24"	7.9	Circum	02:03	Circum
NGC679	Gal	And	01h 49m 44s	+35°47'07"	12.4	18:07	02:08	10:08
NGC718	Gal	Psc	01h 53m 13s	+04°11'43"	11.7	19:57	02:11	08:26
NGC752	Open	And	01h 57m 41s	+37°47'06"	5.7	18:05	02:16	10:26
NGC772	Gal	Ari	01h 59m 20s	+19°00'29"	10.3	19:21	02:18	09:14
NGC779	Gal	Cet	01h 59m 42s	-05°57'51"	11.0	20:31	02:18	08:04
NGC804	Gal	Tri	02h 04m 02s	+30°49'57"	14.0	18:44	02:22	10:01
NGC841	Gal	And	02h 11m 17s	+37°29'50"	13.0	18:20	02:29	10:38
NGC846	Gal	And	02h 12m 12s	+44°34'05"	13.0	17:38	02:30	11:23
NGC855	Gal	Tri	02h 14m 04s	+27°52'37"	13.0	19:05	02:32	09:59
NGC872	Gal	Cet	02h 15m 25s	-17°46'54"	14.0	21:21	02:34	07:46
NGC869	Open	Per	02h 19m 00s	+57°07'42"	4.0	Circum	02:37	Circum
NGC884	Open	Per	02h 22m 18s	+57°08'12"	4.0	Circum	02:40	Circum
NGC891	Gal	And	02h 22m 33s	+42°20'54"	10.0	18:04	02:41	11:18
NGC908	Gal	Cet	02h 23m 05s	-21°14'02"	10.2	21:39	02:41	07:43
NGC896	Neb	Cas	02h 25m 28s	+62°01'09"		Circum	02:44	Circum
NGC925	Gal	Tri	02h 27m 17s	+33°34'44"	10.0	18:55	02:45	10:36
NGC936	Gal	Cet	02h 27m 37s	-01°09'20"	10.1	20:46	02:46	08:45
NGC938	Gal	Ari	02h 28m 33s	+20°17'01"	14.0	19:46	02:47	09:48
NGC965	Gal	Cet	02h 32m 25s	-18°38'24"	14.0	21:40	02:51	08:01
NGC956	Open	And	02h 32m 30s	+44°35'37"	9.0	17:58	02:51	11:43
NGC957	Open	Per	02h 33m 21s	+57°33'36"	7.6	Circum	02:52	Circum
NGC1029	Gal	Ari	02h 39m 36s	+10°47'35"	14.0	20:25	02:58	09:30
NGC1023	Gal	Per	02h 40m 24s	+39°03'46"	9.5	18:41	02:59	11:16
NGC1027	Open	Cas	02h 42m 40s	+61°35'42"	6.7	Circum	03:01	Circum
NGC1084	Gal	Eri	02h 46m 00s	-07°34'38"	10.6	21:22	03:04	08:46
NGC1097	Gal	For	02h 46m 19s	-30°16'29"	9.3	22:34	03:05	07:35
NGC1090	Gal	Cet	02h 46m 34s	-00°14'50"	11.9	21:03	03:05	09:07
NGC1261	Glob	Hor	03h 12m 16s	-55°12'57"	8.4	02:19	03:30	04:42
NGC1292	Gal	For	03h 18m 15s	-27°36'38"	13.0	22:56	03:36	08:17
NGC1317	Gal	For	03h 22m 44s	-37°06'12"	11.0	23:40	03:41	07:42
NGC1333	Neb	Per	03h 29m 20s	+31°24'56"		20:06	03:48	11:29
NGC1350	Gal	For	03h 31m 08s	-33°37'43"	10.5	23:33	03:49	08:06
NGC1353	Gal	Eri	03h 32m 03s	-20°49'06"	11.4	22:47	03:50	08:54
NGC1380	Gal	For	03h 36m 28s	-34°58'33"	11.0	23:44	03:55	08:06
NGC1426	Gal	Eri	03h 42m 49s	-22°06'33"	11.4	23:02	04:01	09:00
NGC1432	Neb	Tau	03h 45m 50s	+24°22'06"		20:50	04:04	11:18
NGC1435	Neb	Tau	03h 46m 10s	+23°45'54"		20:52	04:04	11:17
M45	Open	Tau	03h 47m 30s	+24°07'00"	1.6	20:52	04:06	11:19

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC1444	Open	Per	03h 49m 25s	+52°39'30"	6.6	17:48	04:08	14:27
NGC1491	Neb	Per	04h 03m 14s	+51°18'57"		18:23	04:21	14:20
NGC1499	Neb	Per	04h 03m 14s	+36°22'00"		20:18	04:21	12:25
NGC1515	Gal	Dor	04h 04m 03s	-54°06'01"	11.0	02:46	04:22	05:58
NGC1501	P Neb	Cam	04h 06m 59s	+60°55'14"	13.0	Circum	04:25	Circum
NGC1502	Open	Cam	04h 07m 50s	+62°19'54"	5.7	Circum	04:26	Circum
NGC1514	P Neb	Tau	04h 09m 17s	+30°46'33"	10.0	20:49	04:27	12:06
NGC1513	Open	Per	04h 09m 57s	+49°30'54"	8.4	18:52	04:28	14:05
NGC1535	P Neb	Eri	04h 14m 16s	-12°44'22"	10.0	23:05	04:32	10:00
NGC1545	Open	Per	04h 20m 57s	+50°15'12"	6.2	18:54	04:39	14:24
NGC1579	Neb	Per	04h 30m 14s	+35°16'47"		20:50	04:48	12:47
NGC1569	Gal	Cam	04h 30m 49s	+64°50'53"	11.2	Circum	04:49	Circum
NGC1617	Gal	Dor	04h 31m 39s	-54°36'06"	10.4	03:24	04:50	06:16
NGC1662	Open	Ori	04h 48m 27s	+10°56'12"	6.4	22:34	05:07	11:39
NGC1792	Gal	Col	05h 05m 14s	-37°58'49"	10.2	01:27	05:23	09:20
NGC1788	Neb	Ori	05h 06m 53s	-03°20'27"		23:31	05:25	11:19
NGC1808	Gal	Col	05h 07m 43s	-37°30'48"	9.9	01:27	05:26	09:25
NGC1851	Glob	Col	05h 14m 07s	-40°02'46"	7.3	01:46	05:32	09:18
M79	Glob	Lep	05h 24m 11s	-24°31'29"	8.5	00:51	05:42	10:34
NGC1907	Open	Aur	05h 28m 05s	+35°19'30"	8.2	21:48	05:46	13:45
NGC1964	Gal	Lep	05h 33m 22s	-21°56'46"	10.8	00:52	05:52	10:51
NGC1952	Neb	Tau	05h 34m 32s	+22°00'52"	8.4	22:46	05:53	12:59
NGC1973	Neb	Ori	05h 35m 05s	-04°43'55"		00:03	05:53	11:43
NGC1981	Open	Ori	05h 35m 09s	-04°25'54"	4.6	00:03	05:53	11:44
NGC1977	Neb	Ori	05h 35m 16s	-04°49'15"		00:04	05:53	11:43
M42	D Neb	Ori	05h 35m 16s	-05°23'25"	4.0	00:05	05:53	11:42
NGC1975	Neb	Ori	05h 35m 18s	-04°41'05"		00:03	05:53	11:44
NGC1980	Neb	Ori	05h 35m 25s	-05°54'54"		00:07	05:54	11:40
M43	D Neb	Ori	05h 35m 31s	-05°16'03"	9.0	00:05	05:54	11:42
NGC1990	Neb	Ori	05h 36m 13s	-01°12'07"		23:55	05:54	11:54
NGC1999	Neb	Ori	05h 36m 25s	-06°42'57"		00:10	05:55	11:39
NGC2023	Neb	Ori	05h 41m 38s	-02°15'33"		00:03	06:00	11:56
NGC2024	Neb	Ori	05h 41m 42s	-01°51'24"		00:02	06:00	11:58
NGC2022	P Neb	Ori	05h 42m 06s	+09°05'13"	12.0	23:33	06:00	12:28
NGC2064	Neb	Ori	05h 46m 18s	+00°00'21"		00:02	06:04	12:07
NGC2067	Neb	Ori	05h 46m 31s	+00°07'54"		00:02	06:05	12:08
M78	D Neb	Ori	05h 46m 45s	+00°04'48"	8.0	00:02	06:05	12:08
NGC2071	Neb	Ori	05h 47m 07s	+00°17'39"		00:02	06:05	12:09
NGC2141	Open	Ori	06h 02m 55s	+10°26'48"	9.4	23:50	06:21	12:53
NGC2149	Neb	Mon	06h 03m 31s	-09°43'50"		00:46	06:22	11:58
NGC2158	Open	Gem	06h 07m 25s	+24°05'48"	8.6	23:12	06:26	13:39
NGC2170	Neb	Mon	06h 07m 32s	-06°23'57"		00:40	06:26	12:11
NGC2169	Open	Ori	06h 08m 24s	+13°57'54"	5.9	23:45	06:27	13:08
M35	Open	Gem	06h 09m 00s	+24°21'00"	5.5	23:13	06:27	13:42
NGC2174	Neb	Ori	06h 09m 24s	+20°39'34"		23:26	06:28	13:30

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC2182	Neb	Mon	06h 09m 31s	-06°19'35"		00:42	06:28	12:13
NGC2183	Neb	Mon	06h 10m 47s	-06°12'43"		00:43	06:29	12:15
NGC2185	Neb	Mon	06h 11m 00s	-06°13'36"		00:43	06:29	12:15
NGC2186	Open	Ori	06h 12m 07s	+05°27'30"	8.7	00:13	06:30	12:48
NGC2194	Open	Ori	06h 13m 45s	+12°48'24"	8.5	23:54	06:32	13:10
NGC2207	Gal	CMa	06h 16m 22s	-21°22'22"	10.7	01:33	06:35	11:36
NGC2146	Gal	Cam	06h 18m 38s	+78°21'22"	10.5	Circum	06:37	Circum
NGC2215	Open	Mon	06h 20m 49s	-07°17'00"	8.4	00:56	06:39	12:22
NGC2217	Gal	CMa	06h 21m 40s	-27°14'02"	10.4	01:58	06:40	11:22
NGC2232	Open	Mon	06h 28m 01s	-04°50'48"	3.9	00:57	06:46	12:36
NGC2244	Open	Mon	06h 31m 56s	+04°56'35"	4.8	00:34	06:50	13:06
NGC2245	Neb	Mon	06h 32m 41s	+10°09'24"		00:20	06:51	13:21
NGC2247	Neb	Mon	06h 33m 05s	+10°19'17"		00:20	06:51	13:22
NGC2242	P Neb	Aur	06h 34m 07s	+44°46'38"	14.0	21:59	06:52	15:46
NGC2254	Open	Mon	06h 35m 49s	+07°40'24"	9.7	00:30	06:54	13:18
NGC2261	Neb	Mon	06h 39m 10s	+08°44'40"		00:31	06:57	13:24

A.V.A.C. Information

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

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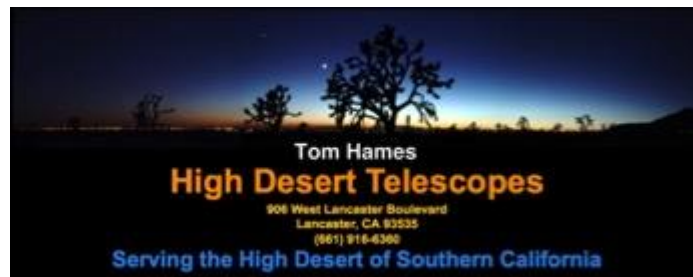


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