



Desert Sky Observer

Volume 36

Antelope Valley Astronomy Club Newsletter

September 2016

Up-Coming Events

- September 3: Dark Sky Star Party
- September 9: Club Meeting*
- September 17: [Prime Desert Moonwalk](#)
- September 23: [Mt. Wilson Trip](#)

* 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 fellow star huggers.

It certainly has been a rather odd summer of star gazing season for us this year. With wildfires popping up everywhere, we're never sure what the viewing conditions will be on any given date or at any of our observing sites. At least at our house near Tehachapi, where we have relatively dark skies and normally good viewing conditions, it seems like there's a fire somewhere near any point of the compass. As a result it seems that smoke affects the clarity of the sky no matter which way the wind blows.

On Saturday August 6 we had our annual "Star-B-Cue" picnic, star party, and public outreach event at the Brite Lake Recreation area near Tehachapi. We had a good turnout of members who enjoyed the barbecue and participated in the raffle and silent auction. I hope to see a lot of you raffle winners in your new astronomy t-shirts from "InfiniTees" at future events. The temperature couldn't have been much better and the skies were clear and dark. My fears of smoke from nearby fires did not materialize and the weather was perfect. Once again we shared the wonders of the cosmos with visitors who came from near and far. Thanks to my wife Rose, Judy Fuentes, Deborah Eaves, Ann C and few others for organizing the raffle and silent auctions. A big thank you to Dennis Eaves for manning the BBQ grille while I was attending to other tasks. Finally, thank you to everyone who donated items for the raffle and silent auction. The help from all of you made it the most stress free picnic, for me, since I became AVAC President.

At our meeting on Friday August 12 we had a wonderful presentation on the Thirty Meter Telescope from Dr. Warren Skidmore, Visiting Researcher at NASA Jet Propulsion Laboratory and Telescope Research Scientist at the Thirty Meter Telescope. It was a very informative presentation and I could tell by the number of questions at the end of the presentation that he had really sparked a lot of interest in the project. Warren also had wonderful handouts and Thirty Meter Telescope memorabilia. In order to avoid a "Black Friday" style mad rush, we used the six Thirty Meter Telescope coffee mugs he had brought as our free raffle items at the meeting. Dr. Skidmore said we could contact him to get more mugs and Rose will be following up on this.

As is our custom, I told Dr. Skidmore that we give our guest speakers an honorarium. When he declined I asked if he'd like us to instead give his honorarium to a favorite charity as we have in the past. Dr.

Skidmore said, “Why yes, you could give a donation to Autism Speaks,” and went on to relate that he has an autistic daughter. Between the amount we normally have budgeted for speaker honorariums, and the extra amount donated by members at the meeting, I’m proud to say that the Antelope Valley Astronomy Club made a \$200 donation to Autism Speaks in honor of daughter Skidmore and his daughter. Thank you to you all!!

On Saturday August 27 we had our monthly outreach event at the “Moonwalk” at Prime Desert Woodland. There was some smoke on the horizons, and it was a bit hazy, but overall we had halfway decent viewing. Early in the session, the conjunction of Venus and Jupiter made it possible to get both of them in the field of view of a telescope before they set at about 8:30. Saturn was up throughout the night and Mars rose later into the event. Several of us stayed on the solar system objects while a few others, myself included, went for the deep sky objects we could get under the conditions. As turned out, my favorite outreach object, M57 the Ring Nebula, looked great at 165 power with a Tele Vue Ethos eyepiece and Lumicon Deep Sky Filter to bring out the contrast. Approximately 100 members of the public were in attendance. There were nine club members including myself, Don Bryden, Darrell Bennett, Tom Hames, Bill Schebeck and Rod Girard with telescopes and Patricia Naftel and Jennifer Peterman on the walk with Jeremy as he shared the constellations and star stories with the public.

Our trip for a half-night of viewing on the 60” telescope at the Mount Wilson observatory is on Friday September 23 and Rose will be sending details to those who have signed up.

Remember, our meeting on Friday October 14 is the Annual Business Meeting and Board Election. As I’ve mentioned many times before, many members of the board have served for a very long time and it’s time for others to step up and take a leadership role in the organization. PLEASE send us your nominations via note, text message, email, phone...or carrier pigeon (Did I leave anything out?) . Don’t be shy about nominating yourself either, as it’s perfectly acceptable, and maybe preferable, since we know you’ll accept the nomination. Don’t worry about not knowing how the board or any given position works....we’ll give you FREE lessons. I’m listening for my phone to be ringing off the hook with volunteers. Thank you.



Secretary

Rose Moore

We will be having a speaker for our September meeting. Tim Thompson will be returning and speaking on the 'Size of the Universe'. See Bill's note above.

For those members who are going on the trip to Mt. Wilson, I will be emailing out the instructions, directions and info given me by the Session Director for that night. We will be car pooling from the Park and Ride on the 14 and Sierra Hwy in Palmdale, and a map to that area will be provided as well.

If any of the members attending have any particular objects they would like to see, please email me so that I can send a short list to the Session Director. If you have any questions, or need to cancel your spot, please contact me asap.

We have our yearly Business Meeting next month. We need members to attend to vote for Board positions, and to voice their opinion in the running of the club. We need members to step up to fill in the Board positions that will be vacant for 2017. I will not be running, nor will accept, a board position for the upcoming year.

Space Place

Is there a super-Earth in the Solar System out beyond Neptune?

By Ethan Siegel

When the advent of large telescopes brought us the discoveries of Uranus and then Neptune, they also brought the great hope of a Solar System even richer in terms of large, massive worlds. While the asteroid belt and the Kuiper belt were each found to possess a large number of substantial icy-and-rocky worlds, none of them approached even Earth in size or mass, much less the true giant worlds. Meanwhile, all-sky infrared surveys, sensitive to red dwarfs, brown dwarfs and Jupiter-mass gas giants, were unable to detect anything new that was closer than Proxima Centauri. At the same time, Kepler taught us that super-Earths, planets between Earth and Neptune in size, were the galaxy's most common, despite our Solar System having none.



A possible super-Earth/mini-Neptune world hundreds of times more distant than Earth is from the Sun. Image credit: R. Hurt / Caltech (IPAC)

The discovery of Sedna in 2003 turned out to be even more groundbreaking than astronomers realized. Although many Trans-Neptunian Objects (TNOs) were discovered beginning in the 1990s, Sedna had properties all the others didn't. With an extremely eccentric orbit and an aphelion taking it farther from the Sun than any other world known at the time, it represented our first glimpse of the hypothetical Oort cloud: a spherical distribution of bodies ranging from hundreds to tens of thousands of A.U. from the Sun. Since the discovery of Sedna, five other long-period, very eccentric TNOs were found prior to 2016 as well. While you'd expect their orbital parameters to be randomly distributed if they occurred by chance, their orbital

orientations with respect to the Sun are clustered extremely narrowly: with less than a 1-in-10,000 chance of such an effect appearing randomly.\

Whenever we see a new phenomenon with a surprisingly non-random appearance, our scientific intuition calls out for a physical explanation. Astronomers Konstantin Batygin and Mike Brown provided a compelling possibility earlier this year: perhaps a massive perturbing body very distant from the Sun provided the gravitational "kick" to hurl these objects towards the Sun. A single addition to the Solar System would explain the orbits of all of these long-period TNOs, a planet about 10 times the mass of Earth approximately 200 A.U. from the Sun, referred to as **Planet Nine**. More Sedna-like TNOs with similarly aligned orbits are predicted, and since January of 2016, another was found, with its orbit aligning perfectly with these predictions.

Ten meter class telescopes like Keck and Subaru, plus NASA's NEOWISE mission, are currently searching for this hypothetical, massive world. If it exists, it invites the question of its origin: did it form along with our Solar System, or was it captured from another star's vicinity much more recently? Regardless, if Batygin and Brown are right and this object is real, our Solar System may contain a super-Earth after all.

News Headlines

Planet Found in Habitable Zone Around Nearest Star

Astronomers using ESO telescopes and other facilities have found clear evidence of a planet orbiting the closest star to Earth, Proxima Centauri. The long-sought world, designated Proxima b, orbits its cool red parent star every 11 days and has a temperature suitable for liquid water to exist on its surface. This rocky world is a little more massive than the Earth and is the closest exoplanet to us — and it may also be the closest possible abode for life outside the Solar System.

<http://www.eso.org/public/news/eso1629/>

A SETI Signal?

A star system 94 light-years away is in the spotlight as a possible candidate for intelligent inhabitants, thanks to the discovery of a radio signal by a group of Russian astronomers.

HD 164595, a solar system a few billion years older than the Sun but centered on a star of comparable size and brightness, is the purported source of a signal found with the RATAN-600 radio telescope in Zelenchukskaya, at the northern foot of the Caucasus Mountains. This system is known to have one planet, a Neptune-sized world in such a very tight orbit, making it unattractive for life. However, there could be other planets in this system that are still undiscovered.

<http://goo.gl/CtVM2c>

NASA's Mission to Asteroid Bennu: OSIRIS-Rex

OSIRIS-REx will travel to a near-Earth asteroid called Bennu and bring a small sample back to Earth for study. The mission is scheduled to launch Sept. 8, 2016, from Cape Canaveral Air Force Station. As planned, the spacecraft will reach Bennu in 2018 and return a sample to Earth in 2023.

<http://www.nasa.gov/osiris-rex>

NASA regains contact with long-silent solar science spacecraft

For the first time in nearly two years, NASA has made contact with a science spacecraft on the opposite side of the sun from the Earth, the agency announced Aug. 22.

NASA said that the Deep Space Network (DSN) established a lock on a carrier signal from the STEREO-B spacecraft at 6:27 p.m. Eastern Aug. 21.

<http://spacenews.com/nasa-regains-contact-with-long-silent-solar-science-spacecraft/>

September Sky Data

New Sep 1 First Qtr Sep 9 Full Sep 16 Last Qtr Sep 23

Best time for deep sky observing this month:
Sept 1 - Sept 5 and Sept 22 – Sept 30



Mercury passes through superior conjunction on September 12th. By the last week of the month it will reappear into the pre-dawn sky when it brightens by almost three magnitudes in just 9 days: from magnitude +2.5 on the 19th up to -0.4 on the 28th.

Venus begins September just a few degrees above the western horizon and sets about 1 hour after the Sun. As the month progresses, this interval increases slightly to 1.25 hours, its brightness having increased slightly from -3.8 to -3.9 magnitudes. At the same time its gibbous disk fattens from 11 to 12 arc seconds diameter.

Mars can be seen after nightfall low in the south-southwest. It fades from magnitude -0.3 to +0.1 as September progresses with its angular size dropping from 10.5 to 8.8 arc seconds. Given its low elevation it is unlikely that any features could be discerned on the surface.

Jupiter passes behind the Sun (Superior Conjunction) on the 26th of September and so will only be seen low in the western sky after sunset for the first week or so of the month. It starts the month shining at magnitude -1.7 and has an angular size of 31 arc seconds. Given a low horizon and clear skies one may still be able to see the equatorial bands in the atmosphere and the four Galilean moons as they weave their way around it.

Saturn can be seen after sunset low in the southwest shining with a magnitude of +0.5. One hour after sunset at the start of the month it will lie only some 10 degrees above the horizon so the atmosphere will limit our view. By month's end it will only be a few degrees elevation at this time so early this month is really our last chance to observe it for a month or so as it passes behind the Sun.

There are no major **meteor-showers** in September, though there are various minor showers producing a few meteors an hour from radiants in Cassiopeia, Auriga, Aquarius and Pisces. But this is generally a good time of the year for seeing sporadic meteors, which may appear at any time, in any part of the sky.

Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
9/1/2016	07:40	20:37	07:24	20:17
9/5/2016	11:20	22:48	07:27	20:11
9/10/2016	15:43	01:27	07:31	20:04
9/15/2016	19:28	06:16	07:35	19:57
9/20/2016	23:01	11:56	07:38	19:50
9/25/2016	02:39	16:41	07:42	19:43
9/30/2016	07:24	19:42	07:46	19:36

Planet Data

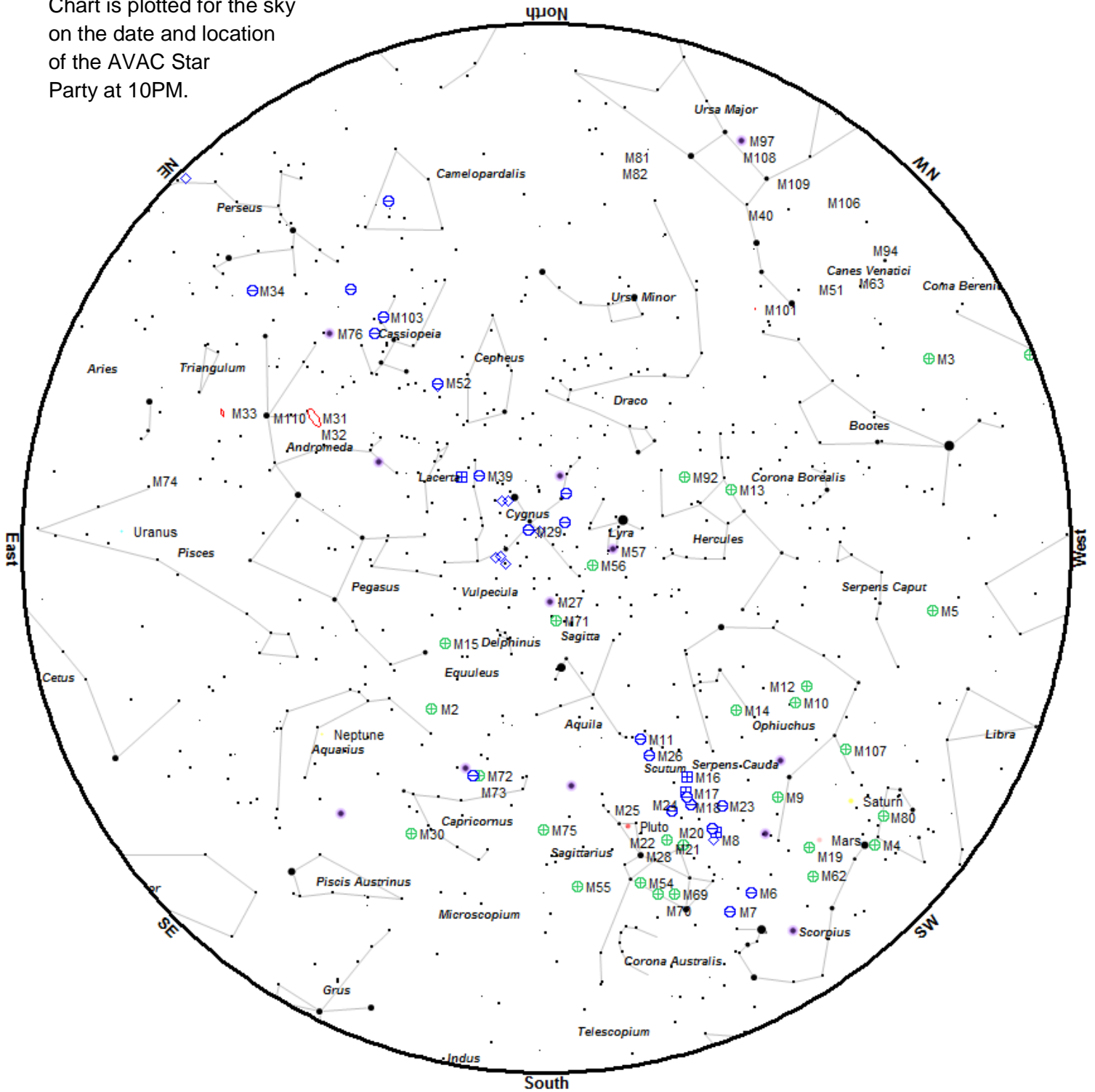
	Sep 1			
	Rise	Transit	Set	Mag
Mercury	07:52	13:54	19:52	1.6
Venus	08:14	14:20	20:26	-3.8
Mars	14:03	18:56	23:49	-0.3
Jupiter	07:47	14:01	20:13	-1.7
Saturn	13:31	18:40	23:48	0.5

	Sep 15			
	Rise	Transit	Set	Mag
Mercury	06:01	12:22	18:35	4.0
Venus	08:42	14:27	20:14	-3.9
Mars	13:47	18:38	23:28	-0.1
Jupiter	07:06	13:17	19:26	-1.7
Saturn	12:39	17:47	22:55	0.5

	Sep 30			
	Rise	Transit	Set	Mag
Mercury	05:18	11:40	18:01	-0.7
Venus	09:12	14:37	20:03	-3.9
Mars	13:30	18:21	23:12	0.1
Jupiter	06:22	12:30	18:35	-1.7
Saturn	11:41	16:52	21:59	0.6

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.



Star Magnitudes					Galaxy	Nebula
●	●	●	●	●		
0	1	2	3	4	Globular Cluster	Planetary Nebula
					Cluster+Nebosity	

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 best time to observe the object. The difficulty column describes how difficult it is to observe the object from the current location on a perfect night in a 6 inch Newtonian telescope.

ID	Cls	Con	RA 2000	Dec 2000	Mag	Begin	Best	End	Difficulty
NGC 6178	Open	Sco	16h35m47.0s	-45°38'36"	7.2	20:20	20:26	20:35	detectable
NGC 5986	Glob	Lup	15h46m03.0s	-37°47'12"	7.6	20:17	20:29	20:47	difficult
NGC 6124	Open	Sco	16h25m20.0s	-40°39'12"	6.3	20:18	20:32	20:57	challenging
NGC 6322	Open	Sco	17h18m25.0s	-42°56'00"	6.5	20:19	20:35	21:14	easy
NGC 6388	Glob	Sco	17h36m17.0s	-44°44'06"	6.8	20:25	20:36	20:54	challenging
NGC 5897	Glob	Lib	15h17m24.0s	-21°00'36"	8.4	20:21	20:37	21:09	challenging
M 80	Glob	Sco	16h17m02.0s	-22°58'30"	7.3	20:25	20:41	21:20	detectable
M 62	Glob	Oph	17h01m13.0s	-30°06'48"	6.4	20:26	20:42	21:30	detectable
NGC 6541	Glob	CrA	18h08m02.0s	-43°42'54"	6.3	20:28	20:42	21:15	challenging
M 19	Glob	Oph	17h02m38.0s	-26°16'06"	6.8	20:27	20:43	21:31	detectable
M 5	Glob	Ser	15h18m34.0s	+02°05'00"	5.7	20:26	20:44	20:58	easy
M 6	Open	Sco	17h40m20.0s	-32°15'12"	4.6	20:22	20:44	22:13	easy
NGC 6383	Open	Sco	17h34m48.0s	-32°34'00"	5.4	20:24	20:44	21:58	easy
M 7	Open	Sco	17h53m51.0s	-34°47'36"	3.3	20:23	20:44	22:04	detectable
NGC 5195	Gal	CVn	13h29m59.6s	+47°15'58"	10.5	20:31	20:46	20:58	detectable
M 51	Gal	CVn	13h29m52.3s	+47°11'40"	8.7	20:28	20:46	20:58	easy
M 9	Glob	Oph	17h19m12.0s	-18°31'00"	7.8	20:29	20:47	21:18	difficult
M 12	Glob	Oph	16h47m14.0s	-01°56'48"	6.1	20:26	20:47	22:13	easy
M 10	Glob	Oph	16h57m09.0s	-04°06'00"	6.6	20:28	20:48	22:15	detectable
M 101	Gal	UMa	14h03m12.4s	+54°20'53"	8.4	20:32	20:48	21:47	detectable
M 23	Open	Sgr	17h57m04.0s	-18°59'06"	5.9	20:26	20:49	21:52	detectable
M 20	Open	Sgr	18h02m42.0s	-22°58'18"	5.2	20:24	20:49	21:17	easy
M 8	Neb	Sgr	18h04m02.0s	-24°23'14"	5.0	20:24	20:49	20:54	easy
M 14	Glob	Oph	17h37m36.0s	-03°14'48"	7.6	20:27	20:50	22:42	detectable
M 21	Open	Sgr	18h04m13.0s	-22°29'24"	7.2	20:26	20:50	21:24	detectable
M 13	Glob	Her	16h41m41.0s	+36°27'36"	5.8	20:26	20:51	23:31	easy
M 28	Glob	Sgr	18h24m33.0s	-24°52'12"	6.9	20:26	20:51	21:02	detectable
M 18	Open	Sgr	18h19m58.0s	-17°06'06"	7.5	20:23	20:52	22:30	easy
NGC 6572	PNe	Oph	18h12m06.4s	+06°51'12"	8.0	20:13	20:53	00:05	obvious
M 16	Open	Ser	18h18m48.0s	-13°48'24"	6.5	20:20	20:53	22:50	obvious
M 92	Glob	Her	17h17m07.0s	+43°08'12"	6.5	20:24	20:53	00:09	easy
M 17	Open	Sgr	18h20m47.0s	-16°10'18"	7.3	20:30	20:53	22:34	difficult
M 25	Open	Sgr	18h31m47.0s	-19°07'00"	6.2	20:27	20:54	22:27	detectable
M 22	Glob	Sgr	18h36m24.0s	-23°54'12"	5.2	20:25	20:54	21:35	detectable
M 70	Glob	Sgr	18h43m13.0s	-32°17'30"	7.8	20:27	20:54	22:31	detectable
NGC 6543	PNe	Dra	17h58m33.4s	+66°37'59"	8.3	20:16	20:57	02:14	obvious
NGC 6633	Open	Oph	18h27m15.0s	+06°30'30"	5.6	20:22	20:57	00:20	easy
M 54	Glob	Sgr	18h55m03.0s	-30°28'42"	7.7	20:29	21:00	22:31	difficult
M 11	Open	Sct	18h51m05.0s	-06°16'12"	6.1	20:27	21:02	23:49	detectable

ID	Cls	Con	RA 2000	Dec 2000	Mag	Begin	Best	End	Difficulty
NGC 6716	Open	Sgr	18h54m34.0s	-19°54'06"	7.5	20:25	21:02	22:42	detectable
NGC 6723	Glob	Sgr	18h59m33.0s	-36°37'54"	6.8	20:26	21:03	22:32	detectable
M 57	PNe	Lyr	18h53m35.1s	+33°01'45"	9.4	20:21	21:05	01:41	easy
M 56	Glob	Lyr	19h16m36.0s	+30°11'06"	8.4	20:29	21:18	00:46	detectable
M 55	Glob	Sgr	19h40m00.0s	-30°57'42"	6.3	20:29	21:41	23:35	detectable
NGC 6818	PNe	Sgr	19h43m57.8s	-14°09'12"	10.0	20:20	21:45	00:12	easy
M 71	Glob	Sge	19h53m46.0s	+18°46'42"	8.4	20:24	21:55	01:56	easy
M 27	PNe	Vul	19h59m36.3s	+22°43'16"	7.3	20:24	22:01	02:05	easy
NGC 6871	Open	Cyg	20h05m59.0s	+35°46'36"	5.8	20:25	22:07	02:34	easy
NGC 6910	Open	Cyg	20h23m12.0s	+40°46'42"	7.3	20:25	22:24	03:06	easy
M 29	Open	Cyg	20h23m57.0s	+38°30'30"	7.5	20:26	22:25	02:56	easy
NGC 7009	PNe	Aqr	21h04m10.9s	-11°21'48"	8.3	20:21	23:05	01:49	obvious
M 15	Glob	Peg	21h29m58.0s	+12°10'00"	6.3	20:30	23:31	03:12	easy
M 39	Open	Cyg	21h31m48.0s	+48°26'00"	5.3	20:26	23:32	04:43	easy
M 2	Glob	Aqr	21h33m27.0s	-00°49'24"	6.6	20:35	23:34	02:46	detectable
IC 1396	Neb	Cep	21h39m06.0s	+57°30'00"		20:28	23:40	04:50	challenging
M 30	Glob	Cap	21h40m22.0s	-23°10'42"	6.9	22:31	23:42	00:52	detectable
NGC 7160	Open	Cep	21h53m40.0s	+62°36'12"	6.4	20:21	23:54	05:16	obvious
NGC 7243	Open	Lac	22h15m08.0s	+49°53'54"	6.7	20:35	00:16	04:32	detectable
NGC 7293	PNe	Aqr	22h29m38.5s	-20°50'14"	6.3	22:53	00:30	02:08	detectable
M 52	Open	Cas	23h24m48.0s	+61°35'36"	8.2	21:19	01:26	05:02	detectable
NGC 7789	Open	Cas	23h57m24.0s	+56°42'30"	7.5	22:01	01:58	05:06	detectable
NGC 7790	Open	Cas	23h58m24.0s	+61°12'30"	7.2	20:28	01:59	05:19	easy
NGC 55	Gal	Scl	00h15m08.4s	-39°13'13"	8.5	01:13	02:16	03:19	challenging
M 110	Gal	And	00h40m22.3s	+41°41'09"	8.9	22:53	02:41	05:10	detectable
M 31	Gal	And	00h42m44.3s	+41°16'07"	4.3	22:12	02:43	05:16	easy
M 32	Gal	And	00h42m41.8s	+40°51'58"	8.9	22:09	02:43	05:16	easy
NGC 253	Gal	Scl	00h47m33.1s	-25°17'20"	7.9	02:24	02:48	03:11	detectable
NGC 288	Glob	Scl	00h52m45.0s	-26°35'00"	8.1	01:26	02:53	04:20	challenging
NGC 457	Open	Cas	01h19m35.0s	+58°17'12"	5.1	21:28	03:20	05:19	obvious
NGC 559	Open	Cas	01h29m31.0s	+63°18'24"	7.4	21:23	03:30	05:18	easy
M 103	Open	Cas	01h33m23.0s	+60°39'00"	6.9	21:36	03:33	05:19	obvious
M 33	Gal	Tri	01h33m50.9s	+30°39'36"	6.4	23:47	03:35	05:15	detectable
M 76	PNe	Per	01h42m19.9s	+51°34'31"	10.1	23:27	03:43	05:14	detectable
NGC 637	Open	Cas	01h43m04.0s	+64°02'24"	7.3	21:35	03:43	05:22	obvious
NGC 663	Open	Cas	01h46m09.0s	+61°14'06"	6.4	21:55	03:47	05:18	easy
NGC 752	Open	And	01h57m41.0s	+37°47'06"	6.6	01:36	03:58	05:06	challenging
NGC 869	Open	Per	02h19m00.0s	+57°07'42"	4.3	22:31	04:19	05:22	obvious
NGC 884	Open	Per	02h22m18.0s	+57°08'12"	4.4	22:34	04:22	05:21	obvious
Heart Neb	Neb	Cas	02h33m52.0s	+61°26'50"	6.5	01:37	04:29	05:05	challenging
NGC 957	Open	Per	02h33m21.0s	+57°33'36"	7.2	23:07	04:30	05:18	easy
NGC 1027	Open	Cas	02h42m40.0s	+61°35'42"	7.4	00:06	04:33	05:14	detectable
M 34	Open	Per	02h42m05.0s	+42°45'42"	5.8	00:23	04:35	05:15	easy
NGC 1245	Open	Per	03h14m42.0s	+47°14'12"	7.7	02:53	04:43	05:06	challenging
NGC 1502	Open	Cam	04h07m50.0s	+62°19'54"	4.1	00:05	04:46	05:24	obvious

A.V.A.C. Information

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...

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

AVAC

**P.O. BOX 8545,
LANCASTER, CA 93539-8545**

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

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Frank Moore (661) 972-4775
president@avastronomyclub.org

Vice-President:

Bill Schebeck (661) 233-5123
vice-president@avastronomyclub.org

Secretary:

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

Treasurer:

Virginia Reed (661) 824-3932
treasurer@avastronomyclub.org

Director of Community Development:

Robert Lynch, Jr.
community@avastronomyclub.org

Appointed Positions

Newsletter Editor:

Steve Trotta (661) 269-5428
dso@avastronomyclub.org

Equipment & Library:

Bill Grove
library@avastronomyclub.org

Club Historian:

Tom Koonce (661) 943-8200
history@avastronomyclub.org

Webmaster:

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

Astronomical League Coordinator:

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al@avastronomyclub.org

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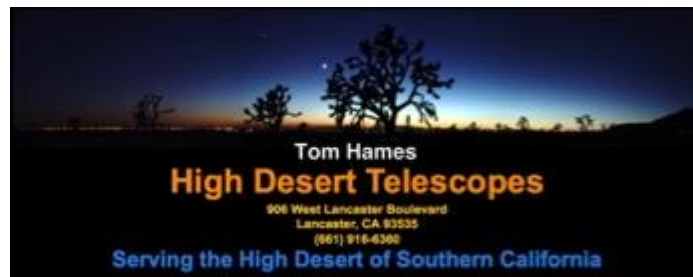


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