



# Desert Sky Observer

Volume 33

Antelope Valley Astronomy Club Newsletter

September 2013

## Up-Coming Events

September 7: Dark Sky Star Party @ [Mt. Pinos](#)

September 13: Club Meeting\*

September 14: [Lancaster's Celebration on the Blvd Event](#)

September 21: Prime Desert Woodlands Moon Walk @ [Prime Desert Woodlands](#)

September 25: Acton Library Lecture/Star Party Series @ [Acton Library](#)

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



## President

### Don Bryden

I can't believe it's already September. Don't forget this weekend is our last Pinos trip for the year. The skies will be great and if you stay up late you can get a preview of the Winter constellations. Although it's nearly Fall the Summer triangle is high overhead. This may seem odd but the Summer triangle is so called because it's appearance in the night sky, rising lowly in the East, marks the beginning of Summer.

This means that some prime Milky Way gems are well placed for viewing this weekend such as the Trifid, Lagoon and Swan nebulae as well as M22 and numerous other globular clusters in Sagittarius and Ophiucus. The Veil and Crescent nebulae will show up nicely in Cygnus also nearby we have the Dumbell and Ring too. There will also be several nice double stars such as Albireo in Cygnus, Marfik in Ophiucus and the double double in Lyra.

If you miss Pinos then be sure to head out to Red Cliffs (nearby Red Rock Canyon) for our October star party. Easy access and steady skies make this a great location. Also at the end of the month and into November we'll be going to Nightfall. This star party has some of the darkest skies in the US and you can stay at the Palm Canyon Resort in the Anza-Borrego state park. The star party is free and has daily and nightly activities. You can stay for free nearby in the park or at the resort which will be the host for the star party.

Well we have a pretty full calendar what with these star parties and the outreach events (see Rose's article below) – there's no excuse for not getting out with your fellow club members and enjoying the night sky so I hope to see everyone under the stars!



## Vice President

### Frank Moore

Summer is winding down and Fall is on the horizon folks. We had an eventful August with events for Fall and Winter already beginning to trickle in.

Our Annual “Star-B-Que” picnic at the Brite Lake Recreation Area near Tehachapi was a resounding success. Not only did we have great food and fellowship but the skies were wonderful for the star party that followed. A big thank you to all who attended and contributed to the success of the event.

Once again the Tehachapi Valley Recreation and Parks District accommodated us by turning off the parking lot lights, and other nearby lights in the campground, so we could enjoy dark skies for our viewing. For the second year in a row the Tehachapi-Cummings County Water District also turned off the lights in their nearby complex so we had wonderfully dark skies. I was busy for a time setting up both of our telescopes and attending to other duties, and was astounded when I finally paused to really look up. By 9:30 the Milky Way was really popping and we had great views of Saturn, Venus, and deep sky objects.

The Tehachapi news came through in promoting the event with a story in the regular edition and on the cover of their “the Weekender” arts and entertainment supplement. We had a steady stream of visitors, anxious to see the celestial sights through our telescopes, and it seemed like every telescope had a line at it for several hours. The Tehachapi Valley Recreation and Parks District would also like to plan an additional event, apart from our picnic, in 2014 and I’m anxiously looking forward to using their interest as an opportunity to promote a “dark skies ordinance” to the City of Tehachapi.

By now most of you are probably aware that the Pacific Astronomy and Telescope Show (PATS) was canceled for 2013. Our sponsor, Woodland Hills Camera and Telescopes, is filling the void with their own event the “Science, Imaging, and Astronomy Expo” (SIA Expo) at Pierce College on Saturday October 19th. We will be an exhibitor at the event with our display and literature. <http://siaexpo.com/>

The Arizona Science and Astronomy Expo (ASAE), will be held in Tucson, AZ on Saturday and Sunday November 16th and 17th. The AVAC is also going to have a booth at this event. Though it’s a long way out of our local area for the purpose of recruitment and outreach, the opportunities for networking with manufacturers, vendors, and other clubs and outreach and educational organizations is so great that we felt we just couldn’t pass it up. Plus, the booth will give us a gathering place for members who attend the event. The ASAE is already the largest gathering of science and astronomy companies and organizations in the western United States, and the way it’s shaping up this year it will probably be the largest such event in the country. Please let Frank, Don, or Rose know if you are contemplating attending and might be able to help out with the booth. We might also be able to plan carpooling and sharing hotel accommodations. <http://www.scienceandastronomy.com/>

Don’t miss the September meeting. The speaker will be our own member Brandon Wood, The subject will be “Rockets over Mojave” about the past, present, and future of private space entrepreneurship out of the Mojave Air and Space Port. Brandon has aerospace engineering degrees from the US Air Force Academy and MIT. He served as an engineer in the US Air Force for 11 years and worked on the development and flight test of a variety of aerospace vehicles spanning the spectrum from hover to hypersonics to satellites. He’s been a flight test engineer and program manager at Scaled Composites for 6 years working, as he relates it, “In the exciting and flexible culture that Burt Rutan created in Mojave”. Brandon is currently the

configuration lead for the rocket-launching aircraft under construction for Paul Allen's Stratolaunch air launch program. I know I'm looking forward to it!!

Finally folks, and other board members will probably mention this is well, we have our Annual Business Meeting and Board Election coming up in October. We need nominations for board positions. If you know anyone who would be interested in serving on the AVAC Executive Board please nominate them. If YOU would be interested PLEASE nominate yourself. Many of us on the current board have been serving for a very long time and it would be nice to have some new faces, new ideas, and a fresh perspective on our activities.

I wish us all dark skies.



## Director of Community Development

### Rose Moore

Many thanks to those that attended and helped out at our club picnic! Special thanks to Pam who helped everywhere! And to Judy and Virginia who helped with the hamburger assembly line, and to Pam and Bill's son-in-law who was our BBQ head chef and cook!!!!

Thank you to all who helped that I forgot, and to all for bringing food and other items to make our picnic another success!

I would like to thank all those that attended the Lockheed Martin's 'A Night To Explore' this past weekend! We had a good turnout of club members! Our astronomy booth with it's poster board set ups, videos, moon globe, and handouts, was the best booth there! The parking lights were never turned off (because they're controlled by the city), but the attendees were still able to view some celestial objects!

Our first event for September is the Lancaster 'Celebrate America on the Blvd' event. This is scheduled for Saturday, September 14th, from 5pm to 9pm. I will have further details soon. We will be setting up a booth and meet and greet the public and hand out information. We will have a few telescopes set up to be on the Sun, Moon, and Venus.....not sure if it will be dark enough for any dark sky objects. But it will be a good opportunity to meet with the public.

On Saturday, September 21st we have a Prime Desert Moon Walk with Jeremy at 7pm. The Moon will be coming up around 8:13pm. We need members with telescopes to come out to help at this event!

On Wednesday, September 25th at 6:30pm is an Acton Library Astronomy Lecture on 'The Big Bang Revisited', hosted by Jeremy. Come on out and listen to an informative lecture and support Jeremy!!

On Saturday, September 28th we will have our 2nd scheduled event for a public star party at the Poppy Reserve. This will be free and open to the public as was the last event. Start time is 7pm, end time around 11pm. The Moon will not be up till after midnight. Hopefully we will have good skies to view a few dark sky objects to show the attendees. We will need members with telescopes for this event.

Other upcoming events are: the club's annual Business meeting for Friday, Oct. 11th at 7pm, please attend and voice who you want on our Executive Board, and to discuss anything about the club's business and workings. We have another PDW on Oct. 19th, and Acton Library Astronomy Lecture on Oct. 23rd, and a tentative star party for teens at Edwards AFB on Friday Oct. 25th.

We have quite a few events coming up, please come out and support your club!!

Clear skies and see you there!



## Secretary

### Pam Grove

Our annual club picnic (STAR-B-QUE) once again was a success! Thanks to Frank & Rose for all their hard work, arranging and organizing to make this event possible.

Also would like to thank Matt, for supplying hamburgers, and hot dogs and all those that brought food, cooked and helped clean up. For those that donated items for the raffle and auction, thank you for supporting your club.

We had a great turn out with the public being invited after 7 P.M.

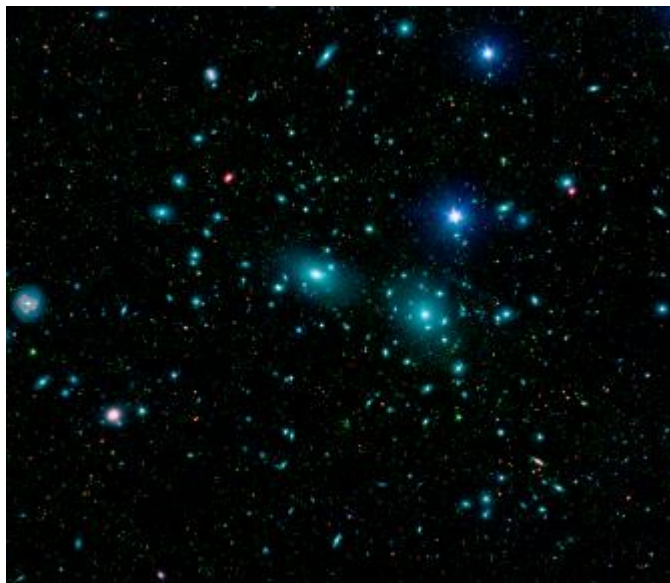
The International Space Station gave us a good show. Skies were clear and our own galaxy the Milky Way was awesome!

Everyone had a good time!

## Space Place

### Size Does Matter, But So Does Dark Energy

By Dr. Ethan Siegel



*Digital mosaic of infrared light (courtesy of Spitzer) and visible light (SDSS) of the Coma Cluster, the largest member of the Coma Supercluster. Image credit: NASA / JPL-Caltech / Goddard Space Flight Center / Sloan Digital Sky Survey.*

Here in our own galactic backyard, the Milky Way contains some 200-400 billion stars, and that's not even the biggest galaxy in our own local group. Andromeda (M31) is even bigger and more massive than we are, made up of around a trillion stars! When you throw in the Triangulum Galaxy (M33), the Large and Small Magellanic Clouds, and the dozens of dwarf galaxies and hundreds of globular clusters gravitationally bound to us and our nearest neighbors, our local group sure does seem impressive.

Yet that's just chicken feed compared to the largest structures in the universe. Giant clusters and superclusters of galaxies, containing thousands of times the mass of our entire local group, can be found omnidirectionally with telescope surveys. Perhaps the two most famous examples are the nearby Virgo Cluster and the somewhat more distant Coma Supercluster, the latter containing more than 3,000 galaxies. There are millions of giant clusters like this in our observable universe, and the gravitational forces at play are absolutely tremendous: there are literally quadrillions of times the mass of our Sun in these systems.

The largest superclusters line up along filaments, forming a great cosmic web of structure with huge intergalactic voids in between the galaxy-rich regions. These galaxy filaments span anywhere from hundreds

of millions of light-years all the way up to more than a billion light years in length. The CfA2 Great Wall, the Sloan Great Wall, and most recently, the Huge-LQG (Large Quasar Group) are the largest known ones, with the Huge-LQG -- a group of at least 73 quasars – apparently stretching nearly 4 billion light years in its longest direction: more than 5% of the observable universe! With more mass than a million Milky Way galaxies in there, this structure is a puzzle for cosmology.

You see, with the normal matter, dark matter, and dark energy in our universe, there's an upper limit to the size of gravitationally bound filaments that should form. The Huge-LQG, if real, is more than double the size of that largest predicted structure, and this could cast doubts on the core principle of cosmology: that on the largest scales, the universe is roughly uniform everywhere. But this might not pose a problem at all, thanks to an unlikely culprit: dark energy. Just as the local group is part of the Virgo Supercluster but recedes from it, and the Leo Cluster -- a large member of the Coma Supercluster -- is accelerating away from Coma, it's conceivable that the Huge-LQG isn't a single, bound structure at all, but will eventually be driven apart by dark energy. Either way, we're just a tiny drop in the vast cosmic ocean, on the outskirts of its rich, yet barely fathomable depths.

Learn about the many ways in which NASA strives to uncover the mysteries of the universe: <http://science.nasa.gov/astrophysics/>. Kids can make their own clusters of galaxies by checking out The Space Place's fun galactic mobile activity: <http://spaceplace.nasa.gov/galactic-mobile/>

## September Sky Data

New Sep 5      First Qtr Sep 12      Full Sep 19      Last Qtr Sep 26

**Best time for deep sky observing this month:  
September 1 through September 9**



In late September, **Mercury** might be seen just above the horizon about half an hour after sunset down to the lower right of Venus and Saturn. It will be hard to see when using binoculars or a telescope even given its magnitude of  $\sim -0.1$ .

**Venus** can be seen low above the horizon in the west-southwest after sunset as it brightens from  $-4.0$  to  $-4.2$  magnitudes. Its angular size increases during the month from 15 to 18 arc seconds as the percentage of the disk that is illuminated decreases from 74 to 64%.

**Mars** starts September in Cancer but, moving quickly across the sky, moves into Leo on the 25th. Shining at magnitude  $+1.6$  it rises about 03:00. Its magnitude of  $+1.6$  remains constant during the month with its angular size increasing a little from 4.1 to 4.4 arc.

**Jupiter** rises about 01:00 at the beginning of September and, at the start of astronomical twilight, is 25 degrees above the horizon in the south-east shining at magnitude  $-2$  with a disk  $\sim 35$  arc seconds across and lying in the constellation Gemini. By month's end Jupiter rises at 11:30 and will be at an elevation of 50 degrees before dawn breaks with a magnitude of  $-2.2$  and diameter of 37.5 arc seconds.

**Saturn**, lying in Libra, is now well past opposition so will be seen low in the south-west after sunset. Saturn's magnitude remains at  $+0.7$  during the month, while its angular size decreases a little from 16.1 to 15.6 arc seconds. The rings have opened out to  $\sim 17$  degrees from the line of sight and we are now observing the planet's southern hemisphere while much of the northern hemisphere will be hidden by the rings.

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
9/1/2013	03:02	16:59	06:30	19:23
9/5/2013	06:47	19:16	06:33	19:17
9/10/2013	11:53	22:32	06:36	19:10
9/15/2013	16:27	02:31	06:40	19:03
9/20/2013	19:39	08:00	06:43	18:56
9/25/2013	23:11	12:44	06:47	18:49
9/30/2013	02:42	16:07	06:51	18:42

## Planet Data

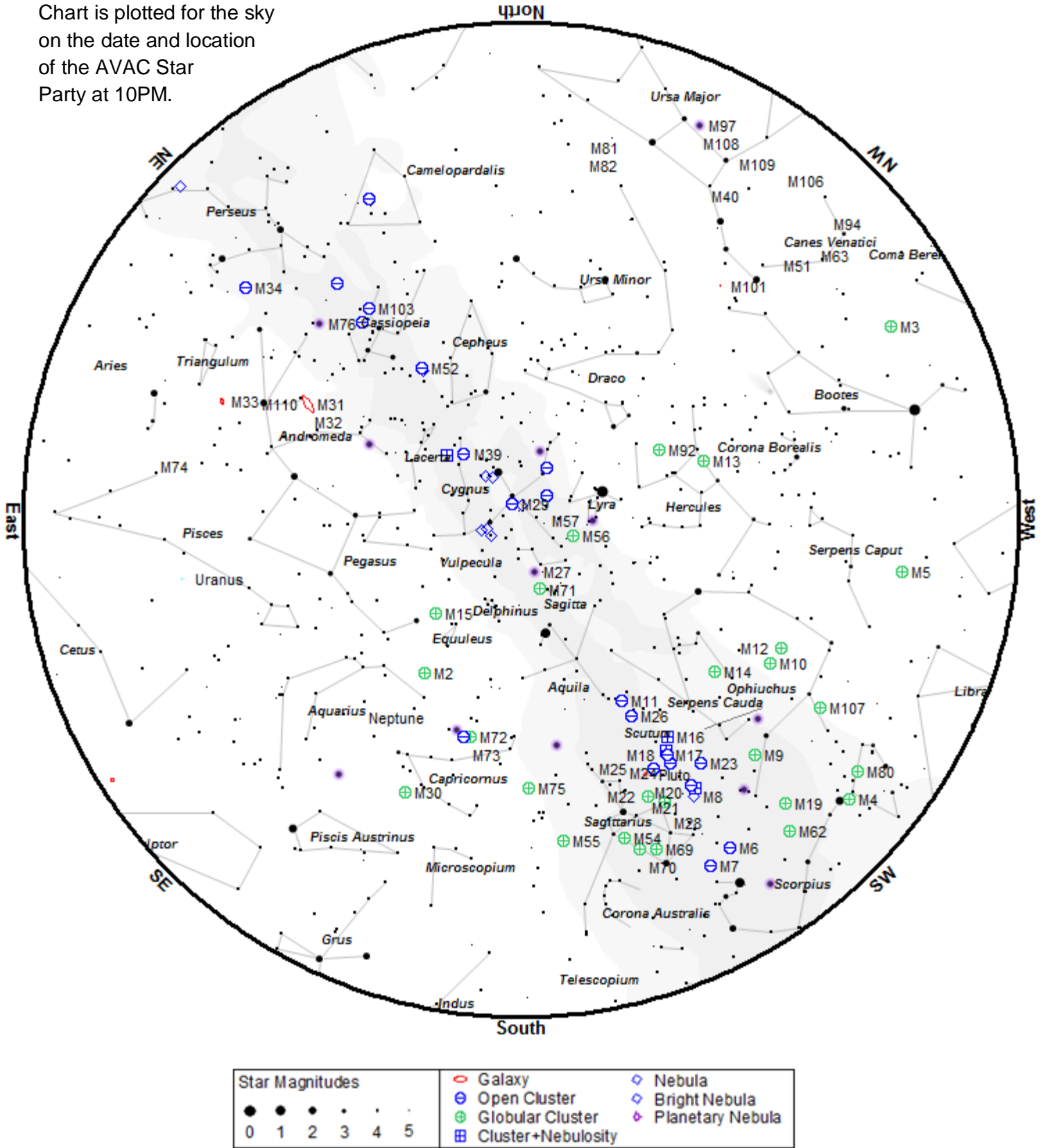
	Sep 1			
	Rise	Transit	Set	Mag
<b>Mercury</b>	07:00	13:26	19:56	-1.1
<b>Venus</b>	09:33	15:22	21:12	-4.0
<b>Mars</b>	03:21	10:33	17:47	1.6
<b>Jupiter</b>	01:51	09:11	16:33	-2.1
<b>Saturn</b>	10:53	16:34	22:12	0.7

	Sep 15			
	Rise	Transit	Set	Mag
<b>Mercury</b>	07:59	13:55	19:55	-0.3
<b>Venus</b>	09:58	15:27	20:58	-4.1
<b>Mars</b>	03:09	10:14	17:21	1.6
<b>Jupiter</b>	01:07	08:25	15:47	-2.2
<b>Saturn</b>	10:04	15:44	21:20	0.7

	Sep 30			
	Rise	Transit	Set	Mag
<b>Mercury</b>	08:43	14:13	19:45	0.0
<b>Venus</b>	10:24	15:35	20:48	-4.2
<b>Mars</b>	02:56	09:52	16:51	1.6
<b>Jupiter</b>	00:17	07:34	14:56	-2.2
<b>Saturn</b>	09:12	14:51	20:25	0.7

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 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	Mag	Con	RA 2000	Dec 2000	Begin	Optimum	Best	Difficulty
M 14	Glob	7.6	Oph	17h37m36.0s	-03°14'48"	20:18	20:42	22:41	detectable
M 13	Glob	5.8	Her	16h41m41.0s	+36°27'36"	20:17	20:42	23:32	easy
NGC 6572	PNe	8.0	Oph	18h12m06.4s	+06°51'12"	20:05	20:44	23:52	obvious
IC 4665	Open	5.3	Oph	17h46m18.0s	+05°43'00"	20:20	20:43	22:48	detectable
M 92	Glob	6.5	Her	17h17m07.0s	+43°08'12"	20:17	20:44	00:09	easy
NGC 6633	Open	5.6	Oph	18h27m15.0s	+06°30'30"	20:14	20:47	00:05	easy
NGC 6543	PNe	8.3	Dra	17h58m33.4s	+66°37'59"	20:08	20:48	02:02	obvious
IC 4756	Open	5.4	Ser	18h39m00.0s	+05°27'00"	20:18	20:49	00:01	easy
M 11	Open	6.1	Sct	18h51m05.0s	-06°16'12"	20:19	20:51	23:45	detectable
M 57	PNe	9.4	Lyr	18h53m35.1s	+33°01'45"	20:13	20:53	01:38	easy
M 56	Glob	8.4	Lyr	19h16m36.0s	+30°11'06"	20:18	21:06	00:46	detectable
M 71	Glob	8.4	Sge	19h53m46.0s	+18°46'42"	20:15	21:42	01:56	easy
M 27	PNe	7.3	Vul	19h59m36.3s	+22°43'16"	20:16	21:47	02:07	easy
NGC 6871	Open	5.8	Cyg	20h05m59.0s	+35°46'36"	20:16	21:54	02:32	easy
NGC 6910	Open	7.3	Cyg	20h23m12.0s	+40°46'42"	20:16	22:11	03:10	easy
M 29	Open	7.5	Cyg	20h23m57.0s	+38°30'30"	20:16	22:12	02:57	easy
NGC 7009	PNe	8.3	Aqr	21h04m10.9s	-11°21'48"	20:10	22:52	01:34	obvious
M 15	Glob	6.3	Peg	21h29m58.0s	+12°10'00"	20:20	23:17	03:07	easy
M 39	Open	5.3	Cyg	21h31m48.0s	+48°26'00"	20:18	23:19	04:44	easy
M 2	Glob	6.6	Aqr	21h33m27.0s	-00°49'24"	20:24	23:21	02:43	detectable
IC 1396	Neb		Cep	21h39m06.0s	+57°30'00"	20:18	23:27	05:14	challenging
Cocoon	Neb	10.0	Cyg	21h53m24.0s	+47°16'00"	20:19	23:40	05:00	challenging
NGC 7160	Open	6.4	Cep	21h53m40.0s	+62°36'12"	20:13	23:41	05:32	obvious
NGC 7243	Open	6.7	Lac	22h15m08.0s	+49°53'54"	20:24	00:03	04:28	detectable
M 52	Open	8.2	Cas	23h24m48.0s	+61°35'36"	20:47	01:12	05:17	detectable
NGC 7789	Open	7.5	Cas	23h57m24.0s	+56°42'30"	21:40	01:44	05:19	detectable
NGC 7790	Open	7.2	Cas	23h58m24.0s	+61°12'30"	20:18	01:46	05:33	obvious
M 110	Gal	8.9	And	00h40m22.3s	+41°41'09"	22:26	02:27	05:26	detectable
M 32	Gal	8.9	And	00h42m41.8s	+40°51'58"	21:40	02:29	05:30	easy
M 31	Gal	4.3	And	00h42m44.3s	+41°16'07"	21:37	02:30	05:31	easy
NGC 457	Open	5.1	Cas	01h19m35.0s	+58°17'12"	21:15	03:07	05:34	obvious
NGC 559	Open	7.4	Cas	01h29m31.0s	+63°18'24"	21:10	03:17	05:34	easy
M 103	Open	6.9	Cas	01h33m23.0s	+60°39'00"	21:23	03:20	05:36	obvious
M 33	Gal	6.4	Tri	01h33m50.9s	+30°39'36"	23:22	03:21	05:29	detectable
M 76	PNe	10.1	Per	01h42m19.9s	+51°34'31"	23:00	03:29	05:30	detectable
NGC 637	Open	7.3	Cas	01h43m04.0s	+64°02'24"	21:22	03:30	05:37	obvious
NGC 663	Open	6.4	Cas	01h46m09.0s	+61°14'06"	21:34	03:33	05:32	easy
NGC 752	Open	6.6	And	01h57m41.0s	+37°47'06"	01:21	03:44	05:21	challenging



ID	Cls	Mag	Con	RA 2000	Dec 2000	Begin	Optimum	Best	Difficulty
NGC 869	Open	4.3	Per	02h19m00.0s	+57°07'42"	22:18	04:06	05:36	obvious
NGC 884	Open	4.4	Per	02h22m18.0s	+57°08'12"	22:21	04:09	05:36	obvious
NGC 957	Open	7.2	Per	02h33m21.0s	+57°33'36"	22:30	04:20	05:34	easy
Heart	Neb	6.5	Cas	02h33m52.0s	+61°26'50"	01:42	04:21	05:22	challenging
M 34	Open	5.8	Per	02h42m05.0s	+42°45'42"	23:48	04:28	05:33	detectable
NGC 1027	Open	7.4	Cas	02h42m40.0s	+61°35'42"	23:39	04:29	05:30	detectable
M 77	Gal	9.7	Cet	02h42m40.8s	-00°00'48"	01:11	04:29	05:32	detectable
NGC 1245	Open	7.7	Per	03h14m42.0s	+47°14'12"	02:35	04:53	05:24	challenging
NGC 1342	Open	7.2	Per	03h31m38.0s	+37°22'36"	00:48	04:58	05:33	detectable
NGC 1444	Open	6.4	Per	03h49m25.0s	+52°39'30"	23:58	04:59	05:39	obvious
NGC 1502	Open	4.1	Cam	04h07m50.0s	+62°19'54"	23:52	05:00	05:40	obvious
M 45	Open	1.5	Tau	03h47m00.0s	+24°07'00"	00:58	05:01	05:37	obvious
NGC 1528	Open	6.4	Per	04h15m23.0s	+51°12'54"	00:29	05:02	05:35	easy
NGC 1664	Open	7.2	Aur	04h51m06.0s	+43°40'30"	01:19	05:05	05:34	easy
Hyades	Open	0.8	Tau	04h26m54.0s	+15°52'00"	01:57	05:05	05:34	easy
M 38	Open	6.8	Aur	05h28m40.0s	+35°50'54"	02:32	05:07	05:32	detectable
NGC 1746	Open	6.1	Tau	05h03m50.0s	+23°46'12"	02:58	05:07	05:30	detectable
NGC 1647	Open	6.2	Tau	04h45m55.0s	+19°06'54"	02:52	05:06	05:30	detectable
M 36	Open	6.5	Aur	05h36m18.0s	+34°08'24"	02:25	05:07	05:35	easy
M 37	Open	6.2	Aur	05h52m18.0s	+32°33'12"	02:44	05:08	05:33	easy
M 1	Neb	8.4	Tau	05h34m30.0s	+22°01'00"	02:50	05:08	05:33	challenging
M 35	Open	5.6	Gem	06h09m00.0s	+24°21'00"	03:19	05:09	05:32	easy
NGC 2129	Open	7.0	Gem	06h01m07.0s	+23°19'20"	03:14	05:09	05:36	obvious
NGC 2175	Open	6.8	Ori	06h09m39.0s	+20°29'12"	03:30	05:09	05:30	detectable
NGC 2169	Open	7.0	Ori	06h08m24.0s	+13°57'54"	03:43	05:10	05:35	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/](http://www.avastronomyclub.org/)

The Antelope Valley Astronomy Club, Inc. is a 501(c)(3) Non-Profit Corporation.

The A.V.A.C. is a Sustaining Member of The Astronomical League and the International Dark-Sky Association.

## Board Members

### President:

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### Director of Community Development:

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## Appointed Positions

### Newsletter Editor:

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### Equipment & Library:

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