



# Desert Sky Observer

**Volume 35**

**Antelope Valley Astronomy Club Newsletter**

**January 2015**

## Up-Coming Events

**January 7:** [Quarterly Board Meeting](#)

**January 9:** Club Meeting\*

**January 10:** [Prime Desert Moon Walk](#)

**January 16:** [Cub Scout Star Party](#)

\* 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**

### **Frank Moore**

The winter solstice has come and gone, and once again we begin the slow climb toward longer days and shorter nights. In between the occasional winter storms, we'll have those crisp, clear nights that offer beautiful views of the stars, planets, and deep space objects....IF you can take the COLD.

Out of necessity, organized astronomy club events usually slow down a bit this time of year but we still have a few items on our calendar. We have a Prime Desert Woodland Moonwalk with Jeremy Amarant on Saturday January 10 at 6:00 PM. Even though it was cold, windy, and partly cloudy, we still had 46 people attend the Moonwalk on Saturday December 13. With Orion up early this time of year, it affords us the rare opportunity to share the nebula with those who come out to the events.

On Friday January 16, we will be having an education and outreach event for Cub Scouts at Northlake Hills Elementary School near Castaic Lake. We'll start the event around 5:30 PM with set up beginning from 4:00 to 4:30. Because Dark Sky Star Parties aren't well attended this time of year, the Boy Scout event will also serve as our January DSSP. Watch for announcements about this event on the website and in your email.

I hope everyone had a wonderful Christmas and holiday season. Our annual Christmas Party, held this year at Julianni's Italian Ristorante was a rousing success. The venue was wonderful, with plenty of room for us to spread out and to accommodate our silent auction and raffle, and the food was fantastic. The servers were friendly and efficient and even prepared boxes of the left over entrees for those who wanted to take them home. This was our first experience with this venue and though there are a few things we might do differently if we use it again in the future, I was very pleased overall.

The raffle for the 8" Skywatcher collapsible dobsonian telescope, as donated by AVAC member and High Desert Telescopes owner Tom Hames, was won by Kevin Reilly. Kevin was so thrilled with it that he told me he took it home, collimated it, and used it that very night after the party. Kevin brought it out to the Prime Desert Woodland Moonwalk on December 13 and it was easy to setup and offered some wonderful views to the public. Kevin, who normally hauls his 13.1" dob "Big Red" out to these events, was impressed

with its portability and optical quality. Anyone looking for a good value in a high quality, portable, and easy to use dob should talk to Tom Hames about this line of telescopes.

Don Bryden won the 5.3" Astronomers Without Borders "One Sky" telescope but, the last I knew hadn't really had a chance to try it out. The donation of this telescope supported two outreach organizations, the international outreach group Astronomers Without Borders and the Antelope Valley Astronomy club. It was a "win-win" situation.

I would like to thank everyone who brought items for the raffles and silent auction. Sorry I can't remember it all. Matt and Sue Leone donated a battery operated/rechargeable vacuum cleaner, several pairs of sewing scissors, cleaning supplies, and vacuum/sewing maintenance items from their business, Al's Vacuum and Sewing. Robert Lynch donated a green laser and a selection of astronomy, tools, and outdoor items from his eBay store, Nebula Hunters Astronomy and Music. I also want to offer a big "Thank You" to Sam Sweiss of Lumicon for his generous donation of items both for the silent auction as well as for use in the club's equipment lending library.

Lockheed Martin, again, has graciously given their support to the AVAC this year with a check for \$2500. This year's donation is largely intended to facilitate a large educational and public outreach event to support STEM activities in our local schools and community. During a board meeting about such an event, the name "Cosmic University" was suggested and I think we will stick with that. In the coming months, I would welcome member ideas and suggestions into how we organize and conduct this event. We will have to come up with a program, curriculum, venue, and other ways to organize the event and we NEED your ideas. We will also continue to support Lockheed Martin at many of their annual events like the Antelope Valley Science Olympiad and their science fair, "A Night to Explore". I would like to acknowledge and thank AVAC member Tom Koonce for his continued help and support in facilitating and nurturing our partnership with Lockheed Martin.

As we develop our activity and event calendar for the coming year, your suggestions and ideas in regard to events and venues would be most welcome. We can't meet your needs unless we know what it is that is important to you. Please let the board members know what you would like to see in our programs and events. In that regard, while organizing our Dark Sky Star Parties, and working with Jeremy Amarant for his Prime Desert Woodland Moonwalk dates, we came up with a few star party nights where a crescent moon will be visible for at least a few hours during the star party. This will give all us a chance to do some lunar observing and should be really rewarding for those, especially beginners, with smaller telescopes, which perform well for lunar observing. Matt Leone and Tom Hames also intend to have at least a few public Lunar Observing Parties in the parking lot of their business, Al's Sewing and Vacuum and High Desert Telescopes, at 904 W Lancaster Blvd, throughout the year. Keep an eye on the website, facebook page and email for announcements about these events.

Mark your calendars, the Messier Marathon is scheduled for Saturday, March 21, most likely to be held at Saddleback Butte State Park. Think good thoughts, say a prayer, and call on good mojo to ensure we have a clear night. We also have Lunar Eclipses on Saturday April 4 and Sunday September 27.

It should be a great year and I look forward to seeing you at our meetings at the S.A.G.E. Planetarium and our observing events throughout the year.



## Vice President

### Don Bryden

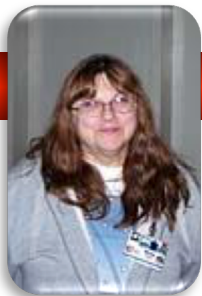
Happy new year! January is normally a slow month for the club but not this year! We start off with the club meeting at the SAGE Planetarium and a viewing of “The City Dark” a documentary about the harmful effects of light pollution and the loss of our night sky. This is a special presentation, designed for our dome and more in depth than the PBS broadcast. Then join Frank and Jeremy for a few raffles and a tour of the night sky.

The next night will be a Prime Desert Moonwalk, 6pm at Prime Desert Woodland Preserve in Lancaster. Come out and set up your scope and share your view of the night sky or just go on the walk with Jeremy. If you get tired of looking at the impressive Orion Nebula, try spotting the season’s best comet. Comet Lovejoy C2014/Q2 is currently cruising through Lepus but should be nicely positioned in Taurus by the time of the moonwalk. Use the chart on the right to follow Lovejoy’s progress. By closest approach on January 7<sup>th</sup> it is predicted to be around magnitude 5, naked eye visible!

The following Friday, the 16<sup>th</sup>, we’ll be out at Northlake Hills Elementary School, 32545 Ridge Route Road, Castaic, CA 91384, for our dark sky star party. Now most January star parties are cold and cloudy but we’re hoping for clear skies this time since we’re also doing some outreach with the Cub Scouts. So please try to come out and lend a hand. We need scopes and members to help show the scouts what’s up in the night sky. We’ll meet between 4 and 5pm and start with Mars after the sun sets and maybe Venus too if the horizon is clear. We’ll move on to the Pleiades, Orion and of course, Comet Lovejoy!

So let’s hope for clear skies and warm nights and I’ll see you all out under the stars!





## Secretary

### Rose Moore

Many thanks to everyone who came to the Christmas Party, those that donated items, and those that helped out! Julianni's was a good place to have our party and all of you helped make it a success! Congrats to all our raffle and silent auction winners. And thank you to Tom Hames and Frank Moore for the 2 telescopes which they donated for our 2 grand prizes! If anyone has any comments or suggestions for next year, please let me or Don know.

Don Bryden is now our Vice President for 2015. Please show him your support this coming year, as the VP position is the hardest position to fill, and is the position which has the difficult task of finding monthly speakers and arranging our Summer Picnic and Christmas Party.

Come on out and support your club! We need your help in our club events for members as well as public outreach! We can not maintain the success of our club without you!

Stay warm and clear skies!

Rose

## Space Place

### Keeping an Eye on Storms and More

By Kieran Mulvaney

In late July 2013, Tropical Storm Flossie barreled furiously toward Hawaii. The question was not if it would strike, but when and where it might do so.

During the afternoon hours of July 29, forecasts predicted landfall later that week on the state's Big Island; however, by the time residents of the 50<sup>th</sup> state awoke the following morning things had changed. NOAA's Central Pacific Hurricane Center warned that the islands of Oahu, Molokai and Maui were now at a greater risk.

This overnight recalculation was thanks to the Day/Night Band viewing capabilities of the Visible Infrared Imaging Radiometer Suite, or VIIRS, on board the Suomi National Polar-Orbiting Partnership (Suomi NPP) satellite. VIIRS is able to collect visible imagery at night, according to Mitch Goldberg, program scientist for NOAA's Joint Polar Satellite System (JPSS), of which Suomi NPP is a part. That means it was able to spot some high-level circulation further north than expected during the nighttime hours. This was an important observation which impacted the whole forecast. Without this forecast, said the Hurricane Center's Tom Evans, "we would have basically been guessing on Tropical Storm Flossie's center."

Polar-orbiting satellites, like Suomi NPP and the future JPSS-1 and JPSS-2 (scheduled for launch in 2017 and 2021, respectively), sweep in a longitudinal path over Earth as the planet rotates beneath them—scanning the globe twice a day. VIIRS, the imager that will be aboard all the JPSS satellites, images 3,000 km-wide swaths on each orbit, with each swath overlapping the next by 200 km to ensure uninterrupted global coverage. This high-resolution, rapidly updating coverage allows researchers to see weather patterns change in near real-time.



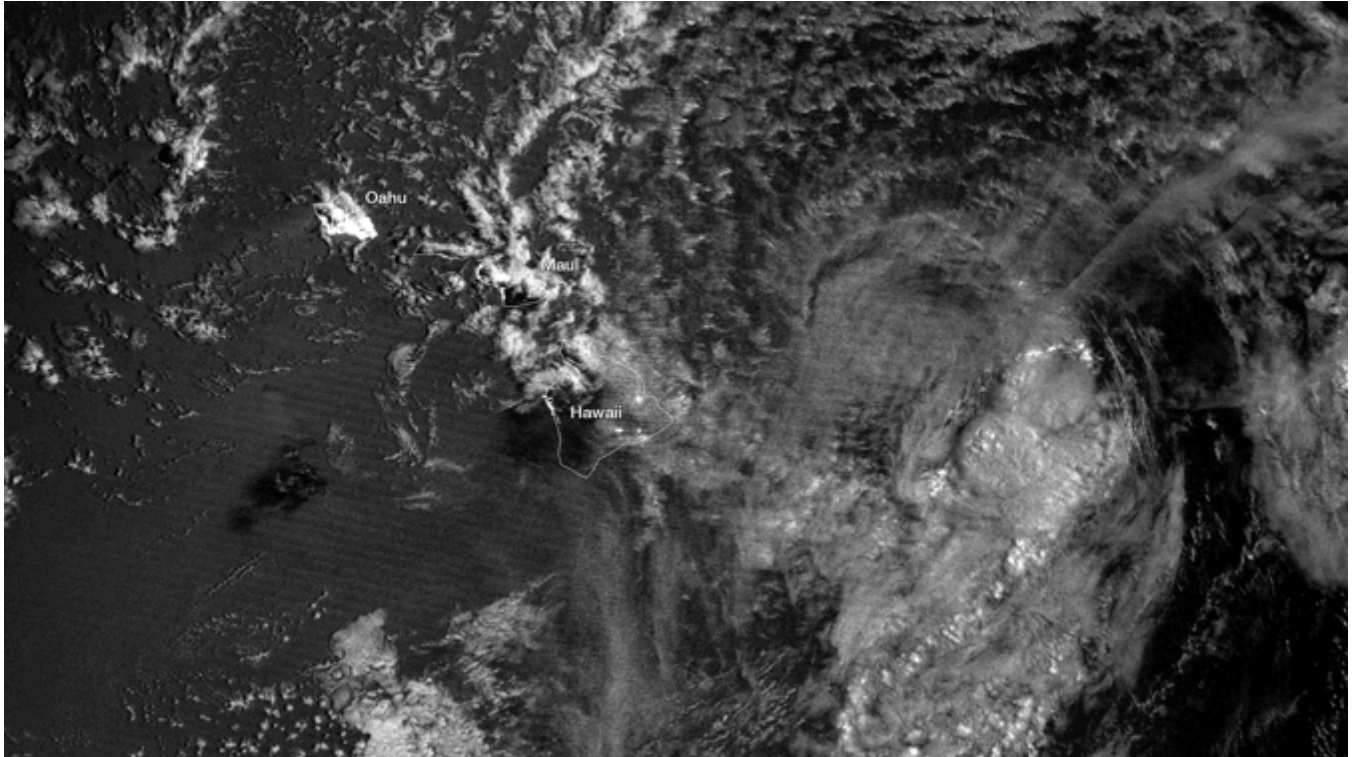
Instruments on Suomi NPP allow scientists to study such long-term changes too—things like, “the patterns of sea surface temperature, or coral bleaching,” says Goldberg. They are even used by the World Bank to determine how much energy is burned off and wasted from natural gas flares on oil drilling platforms.

While scientists are excited by the JPSS series’ wide range of capabilities, the ability to address pressing immediate concerns is, for many, the most tangible value. That was certainly the case in July 2013, when thanks to Suomi NPP, authorities had ample time to close ports and facilities, open shelters, activate emergency procedures, and issue flash flood warnings. Despite heavy rains, high surf, and widespread power outages, accidents and injuries were few. By the time the storm passed, Hawaii was soaked.

But it was largely unharmed.

Learn more about JPSS here: <http://www.jpss.noaa.gov>.

Kids can learn all about how hurricanes form at NASA’s Space Place: <http://spaceplace.nasa.gov/hurricanes>



*S-NPP captured this image of Tropical Storm Flossie heading toward Hawaii using its VIIRS Combined Day-Night Band sensor. Credit: NOAA.*

## News Headlines

### **On Pluto's Doorstep, NASA's New Horizons Spacecraft Awakens for Encounter**

After a voyage of nearly nine years and three billion miles – the farthest any space mission has ever traveled to reach its primary target – NASA's New Horizons spacecraft came out of hibernation today for its long-awaited 2015 encounter with the Pluto system.

[http://pluto.jhuapl.edu/news\\_center/news/20141206.php](http://pluto.jhuapl.edu/news_center/news/20141206.php)

### **Binocular Comet Lovejoy Heading Our Way**

A new Comet Lovejoy, designated C/2014 Q2, is heading our way out of deep space and out of the deep southern sky. It may brighten to 5th magnitude from late December through much of January as it climbs into excellent viewing position for the Northern Hemisphere, high in the dark winter night.

<http://www.skyandtelescope.com/astronomy-news/observing-news/binocular-comet-lovejoy-heading-c2014-q2-lovejoy-1211142/>

### **NASA Rover Finds Active and Ancient Organic Chemistry on Mars**

NASA's Mars Curiosity rover has measured a tenfold spike in methane, an organic chemical, in the atmosphere around it and detected other organic molecules in a rock-powder sample collected by the robotic laboratory's drill. "This temporary increase in methane -- sharply up and then back down -- tells us there must be some relatively localized source," said Sushil Atreya of the University of Michigan, Ann Arbor.

<http://www.jpl.nasa.gov/news/news.php?feature=4413>

### **Orion Aces First Flight Test**

The spacecraft that serves as a cornerstone of NASA's long-term human space exploration plans carried out nearly flawlessly a brief but critical first flight test Dec. 5. A United Launch Alliance Delta 4 Heavy lifted off at 7:05 a.m. Dec. 5 from Space Launch Complex 37 at Cape Canaveral Air Force Station, at the beginning of a two-hour, 39-minute launch window. The rocket placed the Orion spacecraft into a transfer orbit of 185 by 888 kilometers about 17 minutes and 30 seconds after liftoff.

<http://spacenews.com/orion-aces-first-flight-test/>

### **A Simulation of the Universe with Realistic Galaxies**

For years, astronomers have studied the formation of galaxies using computer simulations, but with limited success. The galaxies that formed in previous simulations were often too massive, too small, too old and too spherical. An international team of astronomers, based at the Universities of Leiden in the Netherlands and Durham in the UK and led by professor Joop Schaye, developed a simulation of the universe in which realistic galaxies are created; their mass, size and age are similar to those of observed galaxies.

<http://spaceref.com/astronomy/a-simulation-of-the-universe-with-realistic-galaxies.html>

### **“Perfect storm” quenching star formation around a supermassive black hole**

High-energy jets powered by supermassive black holes can blast away a galaxy's star-forming fuel, resulting in so-called "red and dead" galaxies: those brimming with ancient red stars yet containing little or no hydrogen gas to create new ones. Now astronomers using the Atacama Large Millimeter/submillimeter Array have discovered that black holes don't have to be nearly so powerful to shut down star formation.

<http://www.astronomy.com/news/2014/12/perfect-storm-quenching-star-formation-around-a-supermassive-black-hole>

## January Sky Data

Full  
Jan 4Last Qtr  
Jan 13New  
Jan 20First Qtr  
Jan 26

**Best time for deep sky observing this month:**  
**January 7 through January 25**

On New Year's Day **Mercury** can be seen low in the southwest down to the lower right of Venus. It will be just 3 degrees away from Venus so they can both be seen in the field of a pair of binoculars. Mercury reaches greatest elongation east on January 14th when it will lie 19 degrees away from the Sun. It will become lost from view as it moves to inferior conjunction on January 30th.

**Venus** is now an evening object shining at magnitude -3.9 all month and setting some 90 minutes after the Sun as the month begins, it should be easy to spot low above the southwestern horizon.

**Mars** is moving eastward relative to the stars, starting the month in Capricornus and moving into Aquarius on the 8th. It dims slightly from magnitude +1.1 to +1.2 during the month as the angular size of its disk falls from 4.8 down to 4.4 arc seconds. It is best observed as darkness falls, low above the south western horizon. Given its low elevation, no details will be seen on its salmon-pink surface.

**Jupiter** rises at around 19:51 at the beginning of the month lying around 8.5 degrees up to the right of Regulus in Leo. By the end of the month it rises at around 17:37 with a slight increase in magnitude to -2.6. It will then be due south and so highest in the sky at around 00:30.

**Saturn** is now a morning object, rising at 03:46 as the month begins but by about 02:00 at its end. It starts the month in Libra but moves into Scorpius on the 4th of the month. Its diameter increases from 15.5 to 16.1 arc seconds during the month. Its rings are now opened out to ~24 degrees.

The Quadrantid **meteor shower** is always the first meteor shower of every new year, and 2015 is no exception. Unfortunately the waxing gibbous moon will obscure this year's presentation. We recommend watching before dawn on January 3 and 4. Shortly before dawn, the moon will be low in the west, or will have already set.

## Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
1/1/2015	14:24	03:36	06:59	16:51
1/5/2015	17:49	07:03	06:59	16:55
1/10/2015	22:18	10:00	06:59	16:59
1/15/2015	02:00	12:55	06:58	17:04
1/20/2015	06:46	17:48	06:56	17:09
1/25/2015	10:19	23:27	06:54	17:14
1/31/2015	14:50	04:13	06:50	17:20

## Planet Data

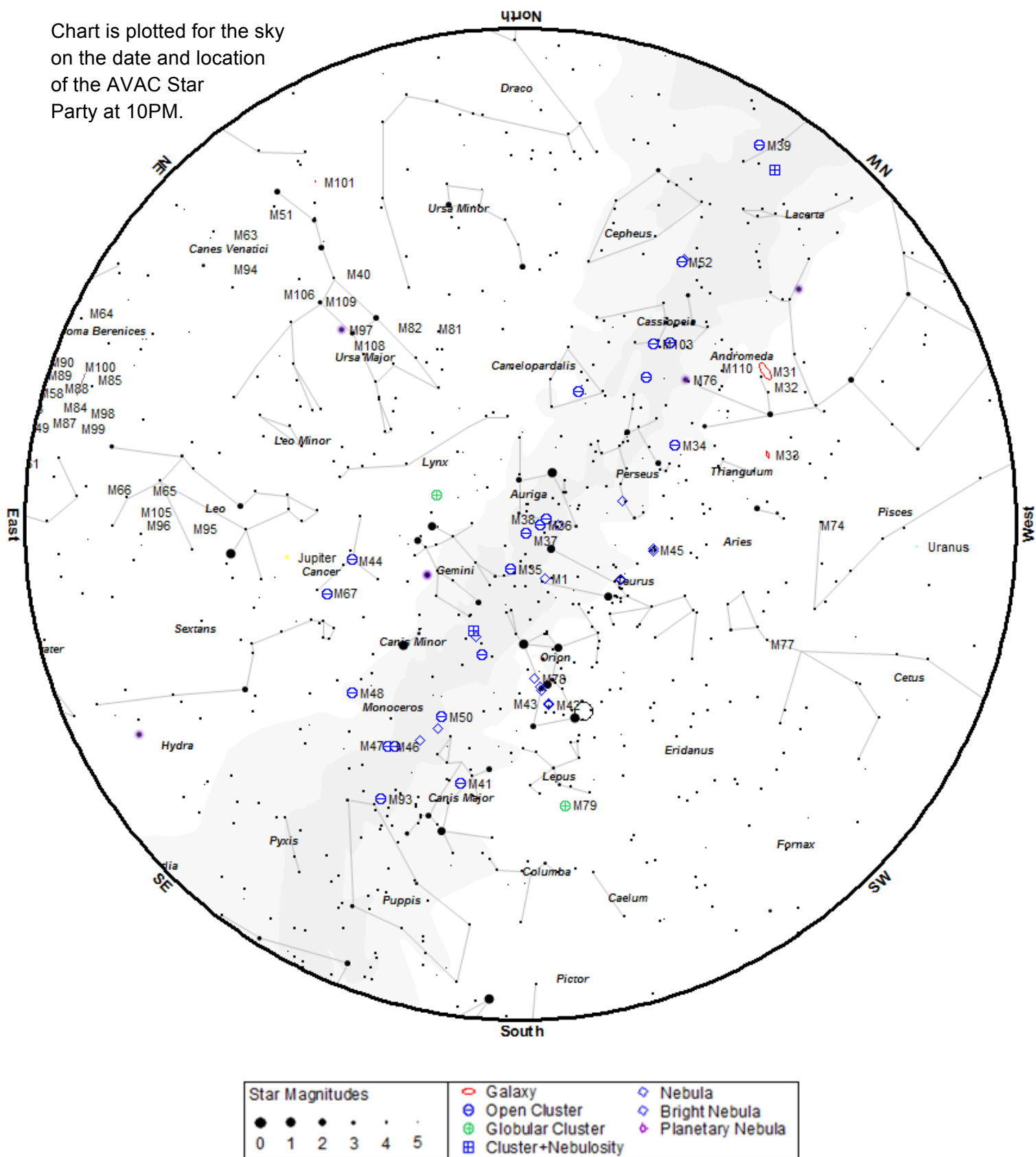
	Jan 1			
	Rise	Transit	Set	Mag
<b>Mercury</b>	07:57	12:56	17:57	-0.8
<b>Venus</b>	08:04	13:07	18:12	-3.9
<b>Mars</b>	09:18	14:44	20:09	1.1
<b>Jupiter</b>	19:51	02:42	09:32	-2.5
<b>Saturn</b>	03:46	09:01	14:18	0.6

	Jan 15			
	Rise	Transit	Set	Mag
<b>Mercury</b>	07:57	13:19	18:39	-0.5
<b>Venus</b>	08:07	13:24	18:42	-3.9
<b>Mars</b>	08:54	14:31	20:07	1.1
<b>Jupiter</b>	18:50	01:41	08:33	-2.5
<b>Saturn</b>	02:57	08:11	13:28	0.6

	Jan 31			
	Rise	Transit	Set	Mag
<b>Mercury</b>	06:16	11:41	17:14	3.8
<b>Venus</b>	08:01	13:39	19:17	-3.9
<b>Mars</b>	08:24	14:15	20:05	1.2
<b>Jupiter</b>	17:37	00:31	07:24	-2.6
<b>Saturn</b>	02:00	07:13	12:30	0.5

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

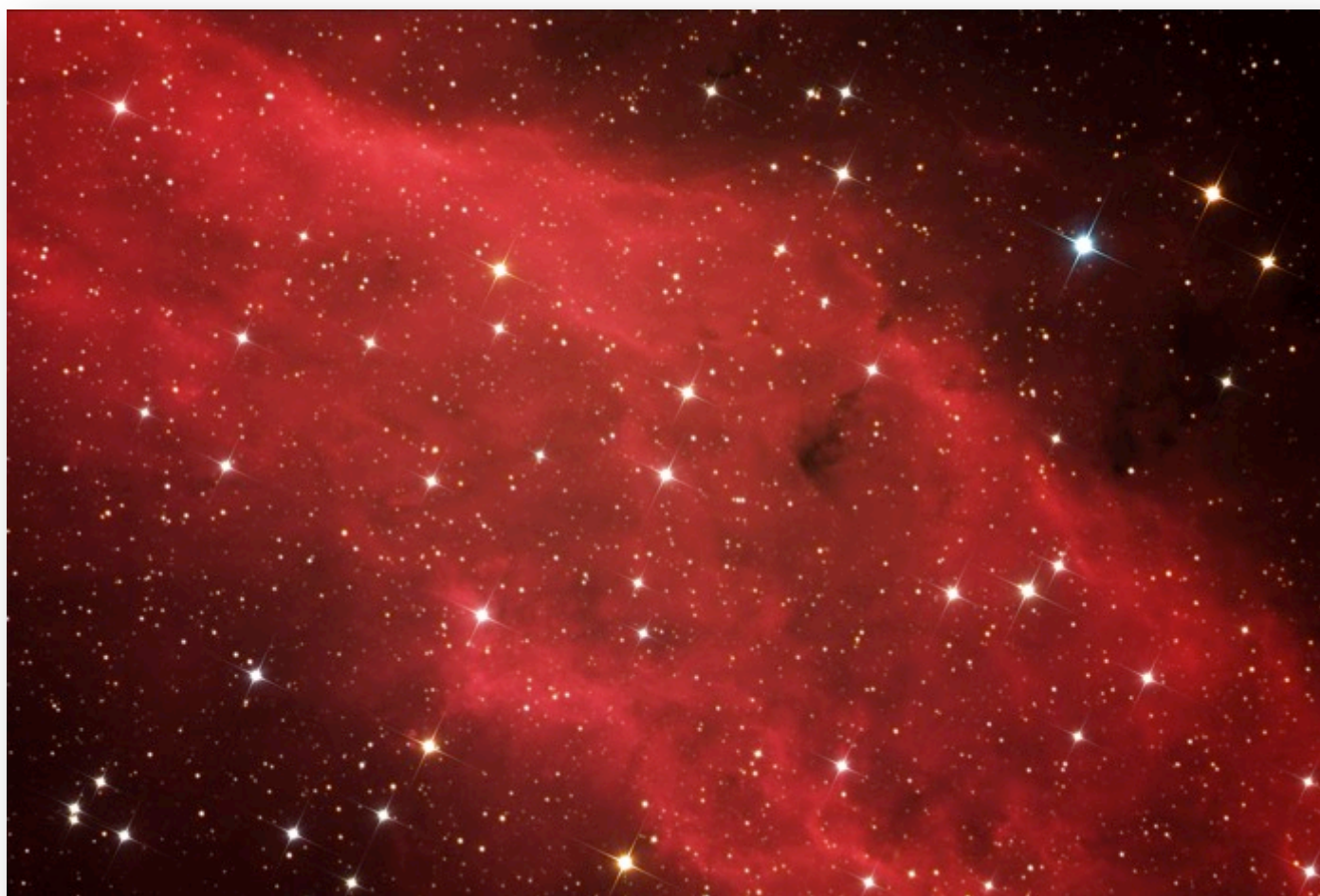
The list below contains objects that will be visible on the night of the AVAC Star Party. The list is sorted by the best time to observe the object. The difficulty column describes how difficult it is to observe the object from the current location on a perfect night in a 6 inch Newtonian telescope.

ID	Cls	Con	RA 2000	Dec 2000	Mag	Begin	Best	End	Difficulty
NGC 55	Gal	Scl	00h15m08.4s	-39°13'13"	8.5	18:11	18:27	18:58	challenging
M 39	Open	Cyg	21h31m48.0s	+48°26'00"	5.3	18:16	18:36	19:08	easy
NGC 253	Gal	Scl	00h47m33.1s	-25°17'20"	7.9	18:18	18:36	19:33	detectable
NGC 288	Glob	Scl	00h52m45.0s	-26°35'00"	8.1	18:23	18:36	19:07	challenging
IC 1396	Neb	Cep	21h39m06.0s	+57°30'00"		18:15	18:37	19:36	challenging
IC 5146	Neb	Cyg	21h53m24.0s	+47°16'00"	10.0	18:17	18:37	19:28	challenging
NGC 7243	Open	Lac	22h15m08.0s	+49°53'54"	6.7	18:20	18:38	19:55	detectable
NGC 7160	Open	Cep	21h53m40.0s	+62°36'12"	6.4	18:11	18:38	20:05	obvious
M 52	Open	Cas	23h24m48.0s	+61°35'36"	8.2	18:21	18:41	20:34	detectable
NGC 7789	Open	Cas	23h57m24.0s	+56°42'30"	7.5	18:21	18:41	20:40	detectable
NGC 7790	Open	Cas	23h58m24.0s	+61°12'30"	7.2	18:12	18:41	22:05	easy
M 32	Gal	And	00h42m41.8s	+40°51'58"	8.9	18:16	18:41	21:42	easy
M 110	Gal	And	00h40m22.3s	+41°41'09"	8.9	18:18	18:42	20:58	detectable
M 31	Gal	And	00h42m44.3s	+41°16'07"	4.3	18:15	18:42	21:41	easy
M 33	Gal	Tri	01h33m50.9s	+30°39'36"	6.4	18:17	18:44	21:37	detectable
NGC 457	Open	Cas	01h19m35.0s	+58°17'12"	5.1	18:14	18:45	23:19	obvious
NGC 559	Open	Cas	01h29m31.0s	+63°18'24"	7.4	18:13	18:46	23:43	easy
M 103	Open	Cas	01h33m23.0s	+60°39'00"	6.9	18:11	18:46	23:39	obvious
M 76	PNe	Per	01h42m19.9s	+51°34'31"	10.1	18:18	18:46	22:15	detectable
NGC 637	Open	Cas	01h43m04.0s	+64°02'24"	7.3	18:10	18:47	23:59	obvious
NGC 663	Open	Cas	01h46m09.0s	+61°14'06"	6.4	18:14	18:47	23:53	easy
NGC 752	Open	And	01h57m41.0s	+37°47'06"	6.6	18:25	18:47	20:33	challenging
NGC 869	Open	Per	02h19m00.0s	+57°07'42"	4.3	18:10	18:51	00:16	obvious
NGC 884	Open	Per	02h22m18.0s	+57°08'12"	4.4	18:11	18:51	00:19	obvious
NGC 957	Open	Per	02h33m21.0s	+57°33'36"	7.2	18:15	18:53	00:17	easy
Heart Neb	Neb	Cas	02h33m52.0s	+61°26'50"	6.5	18:26	18:55	21:41	challenging
M 77	Gal	Cet	02h42m40.8s	-00°00'48"	9.7	18:18	18:55	22:00	detectable
M 34	Open	Per	02h42m05.0s	+42°45'42"	5.8	18:16	18:57	23:14	easy
NGC 1027	Open	Cas	02h42m40.0s	+61°35'42"	7.4	18:19	18:57	23:32	detectable
NGC 1245	Open	Per	03h14m42.0s	+47°14'12"	7.7	18:27	19:22	21:42	challenging
NGC 1342	Open	Per	03h31m38.0s	+37°22'36"	7.2	18:15	19:39	23:57	detectable
M 45	Open	Tau	03h47m00.0s	+24°07'00"	1.5	18:12	19:54	00:30	obvious
NGC 1444	Open	Per	03h49m25.0s	+52°39'30"	6.4	18:09	19:57	01:35	obvious
NGC 1502	Open	Cam	04h07m50.0s	+62°19'54"	4.1	18:09	20:16	02:18	obvious
NGC 1528	Open	Per	04h15m23.0s	+51°12'54"	6.4	18:16	20:22	01:38	easy
Hyades	Open	Tau	04h26m54.0s	+15°52'00"	0.8	18:15	20:34	00:49	obvious
NGC 1647	Open	Tau	04h45m55.0s	+19°06'54"	6.2	18:22	20:53	00:15	detectable
NGC 1664	Open	Aur	04h51m06.0s	+43°40'30"	7.2	18:14	20:58	02:01	easy

ID	Cls	Con	RA 2000	Dec 2000	Mag	Begin	Best	End	Difficulty
NGC 1746	Open	Tau	05h03m50.0s	+23°46'12"	6.1	18:23	21:11	00:40	detectable
NGC 1851	Glob	Col	05h14m06.0s	-40°02'48"	7.1	20:07	21:21	22:35	difficult
M 38	Open	Aur	05h28m40.0s	+35°50'54"	6.8	18:20	21:36	01:53	detectable
M 36	Open	Aur	05h36m18.0s	+34°08'24"	6.5	18:15	21:41	02:41	easy
M 43	Neb	Ori	05h35m30.0s	-05°16'00"	9.0	19:34	21:42	23:52	difficult
M 1	Neb	Tau	05h34m30.0s	+22°01'00"	8.4	18:58	21:42	00:24	difficult
M 42	Neb	Ori	05h35m18.0s	-05°23'00"	4.0	18:32	21:42	00:52	easy
IC 434	Neb	Ori	05h41m00.0s	-02°27'00"	11.0	18:26	21:48	01:09	challenging
M 78	Neb	Ori	05h46m48.0s	+00°05'00"	8.0	19:43	21:53	00:03	difficult
M 37	Open	Aur	05h52m18.0s	+32°33'12"	6.2	18:17	21:59	02:45	easy
NGC 2129	Open	Gem	06h01m07.0s	+23°19'20"	7.0	18:14	22:08	02:43	obvious
NGC 2169	Open	Ori	06h08m24.0s	+13°57'54"	7.0	18:18	22:15	02:27	obvious
M 35	Open	Gem	06h09m00.0s	+24°21'00"	5.6	18:21	22:16	02:39	easy
NGC 2175	Open	Ori	06h09m39.0s	+20°29'12"	6.8	18:34	22:17	02:02	detectable
NGC 2237	Neb	Mon	06h32m02.0s	+04°59'10"	5.5	20:39	22:39	00:38	challenging
NGC 2264	Open	Mon	06h40m58.0s	+09°53'42"	4.1	18:47	22:48	02:49	easy
M 41	Open	CMa	06h46m01.0s	-20°45'24"	5.0	21:16	22:52	00:31	easy
NGC 2301	Open	Mon	06h51m45.0s	+00°27'36"	6.3	19:27	22:58	02:31	easy
M 50	Open	Mon	07h02m42.0s	-08°23'00"	7.2	20:12	23:09	02:06	detectable
NGC 2353	Open	Mon	07h14m30.0s	-10°16'00"	5.2	20:33	23:21	02:09	easy
NGC 2360	Open	CMa	07h17m43.0s	-15°38'30"	9.1	21:55	23:24	00:53	challenging
NGC 2355	Open	Gem	07h16m59.0s	+13°45'00"	9.7	20:38	23:24	02:08	difficult
NGC 2392	PNe	Gem	07h29m10.8s	+20°54'42"	8.6	19:07	23:36	04:05	obvious
NGC 2393	Gal	Gem	07h30m04.6s	+34°01'40"	14.6	18:38	23:37	04:34	not visible
NGC 2423	Open	Pup	07h37m06.0s	-13°52'18"	7.0	21:15	23:44	02:13	easy
M 47	Open	Pup	07h36m35.0s	-14°29'00"	4.3	21:18	23:43	02:09	obvious
NGC 2439	Open	Pup	07h40m45.0s	-31°41'36"	7.1	21:35	23:47	01:59	detectable
M 46	Open	Pup	07h41m46.0s	-14°48'36"	6.6	21:25	23:48	02:12	detectable
NGC 2440	PNe	Pup	07h41m55.4s	-18°12'31"	11.5	21:49	23:48	01:47	detectable
M 93	Open	Pup	07h44m30.0s	-23°51'24"	6.5	22:53	23:51	00:48	easy
NGC 2451	Open	Pup	07h45m23.0s	-37°57'21"	3.7	21:52	23:51	01:50	easy
NGC 2477	Open	Pup	07h52m10.0s	-38°31'48"	5.7	22:07	23:58	01:50	easy
NGC 2506	Open	Mon	08h00m01.0s	-10°46'12"	8.9	22:07	00:06	02:05	difficult
NGC 2547	Open	Vel	08h10m09.0s	-49°12'54"	5.0	23:42	00:17	00:49	challenging
NGC 2546	Open	Pup	08h12m15.0s	-37°35'42"	5.2	23:05	00:19	01:33	difficult
NGC 2571	Open	Pup	08h18m56.0s	-29°45'00"	7.4	22:07	00:25	02:43	detectable
M 44	Open	Cnc	08h40m24.0s	+19°40'00"	3.9	20:38	00:47	04:53	easy
IC 2391	Open	Vel	08h40m32.0s	-53°02'00"	2.6	00:06	00:47	01:27	not visible
IC 2395	Open	Vel	08h42m30.0s	-48°06'48"	4.6	23:53	00:49	01:44	detectable
M 67	Open	Cnc	08h51m18.0s	+11°48'00"	7.4	21:58	00:57	03:55	detectable
M 82	Gal	UMa	09h55m52.4s	+69°40'47"	9.0	19:48	02:02	05:44	detectable
M 81	Gal	UMa	09h55m33.1s	+69°03'56"	7.8	20:07	02:02	05:43	detectable
NGC 3132	PNe	Vel	10h07m01.8s	-40°26'11"	8.2	00:23	02:12	04:02	easy
NGC 3132	PNe	Vel	10h07m01.8s	-40°26'11"	8.2	00:23	02:12	04:02	easy
NGC 3201	Glob	Vel	10h17m37.0s	-46°24'42"	6.9	01:06	02:24	03:40	not visible

ID	Cls	Con	RA 2000	Dec 2000	Mag	Begin	Best	End	Difficulty
NGC 3227	Gal	Leo	10h23m30.6s	+19°51'54"	11.5	23:20	02:30	05:29	difficult
NGC 3242	PNe	Hya	10h24m46.1s	-18°38'32"	8.6	00:35	02:31	04:28	obvious
M 97	PNe	UMa	11h14m47.7s	+55°01'09"	9.7	22:50	03:21	05:44	detectable
M 65	Gal	Leo	11h18m55.7s	+13°05'32"	10.1	23:56	03:25	05:43	detectable
M 66	Gal	Leo	11h20m14.9s	+12°59'30"	9.7	23:57	03:26	05:44	detectable
Col 256	Open	Com	12h25m06.0s	+26°06'00"	2.9	00:08	03:54	05:47	easy
M 106	Gal	CVn	12h18m57.6s	+47°18'13"	9.1	00:16	03:54	05:44	detectable
M 94	Gal	CVn	12h50m53.1s	+41°07'12"	8.7	00:21	05:00	05:47	detectable

## Astrophoto of The Month



The California Nebula (NGC 1499), or at least the central valley

By Don Bryden

RGB (80 minutes each), Luminance (258 minutes) and H-alpha (510 minutes)

## 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:

Frank Moore (661) 972-4775  
[president@avastronomyclub.org](mailto:president@avastronomyclub.org)

### Vice-President:

Don Bryden (661) 270-0627  
[vice-president@avastronomyclub.org](mailto:vice-president@avastronomyclub.org)

### Secretary:

Rose Moore (661) 972-1953  
[secretary@avastronomyclub.org](mailto:secretary@avastronomyclub.org)

### Treasurer:

Virgina Reed (661) 824-3932  
[treasurer@avastronomyclub.org](mailto:treasurer@avastronomyclub.org)

### Director of Community Development:

Robert Lynch, Jr.  
[community@avastronomyclub.org](mailto:community@avastronomyclub.org)

## Appointed Positions

### Newsletter Editor:

Steve Trotta (661) 269-5428  
[dso@avastronomyclub.org](mailto:dso@avastronomyclub.org)

### Equipment & Library:

Bill Grove  
[library@avastronomyclub.org](mailto:library@avastronomyclub.org)

### Club Historian:

Tom Koonce (661) 943-8200  
[history@avastronomyclub.org](mailto:history@avastronomyclub.org)

### Webmaster:

Steve Trotta (661) 269-5428  
[webmaster@avastronomyclub.org](mailto:webmaster@avastronomyclub.org)

### Astronomical League Coordinator:

Don Bryden (661) 270-0627  
[al@avastronomyclub.org](mailto:al@avastronomyclub.org)

## Our Sponsors

Thank you to our sponsors for your generous support!

### Cosmos Level Sponsors



### Woodland Hills Camera

5348 Topanga Canyon Blvd., Woodland Hills  
888-427-8766.  
[www.telescopes.net](http://www.telescopes.net)

### Galaxy Level Sponsors



### *Al's Vacuum and Sewing*

904 West Lancaster Blvd., Lancaster  
(661) 948-1521