



Desert Sky Observer

Volume 36

Antelope Valley Astronomy Club Newsletter

June 2016

Up-Coming Events

June 4: Dark Sky Star Party @ TBA

June 4: [Prime Desert Moonwalk](#)

June 10: Club Meeting*

* 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 friends and members.

Welcome to the post Riverside Telescope Maker's Conference (RTMC) edition of my DSO column. Normally, by now, I'd be telling you that I'm rested up from our long RTMC weekend and refreshed and recharged. Unfortunately, that's not the case since my 85 year old mother became ill right after our return and the ensuing days have been filled with long days at the hospital and trips back and forth to and from Bakersfield. In that regard, I'm a bit distracted and I hope that you will forgive me if my column is a bit disjointed

Those who have been to RTMC in the past, at YMCA Camp Oakes near Big Bear, will be familiar with the usual location of the AVAC camp and once again we were in the same spot. Rose and I were the fourth vehicle in line, waiting for entry on Thursday morning, and we had no problem being the first to arrive at our "spot" and establishing our camp. In fact, it was easier than ever to get to our spot, with no fear of damage to the motorhome, since the drought and bark beetle infestation had forced the YMCA Camp Oakes staff to remove many diseased pine trees and trim the diseased portion off others. In that regard, there is much more wide open space than in the past in which to establish camp and fewer trees to block open views of the skies. Still, it's a very scenic place.

Shortly after our arrival, AVAC member Bob Hanel from Torrance arrived followed in close order by Darrell Bennett and we started to establish our camp and set up our telescopes. In the late afternoon, Bob Ayres, who was staying at a hotel in town rather than camping, arrived and set up his telescope as well. Between us we had our Celestron C-11 on a Losmandy G-11, Rose's 12" Meade Lightbridge dob, Darrell's 12" Meade LX-90 system, and Bob Ayres' 10" Meade SCT on an Orion Atlas mount. Bob Hanel, who was doing only daylight solar viewing, had a 60mm Coronado, double stacked, h-alpha telescope on an iOptron mount. Ann C, who arrived Friday morning, and Jim Pendleton and Kennedy, who arrived Friday afternoon, filled out our ranks.

Darrell, Bob Ayres, and I observed Thursday night till the 35 degree temperature and dew beginning to settle on the equipment drove us inside. The skies were brilliantly clear and dark enough that the Milky Way made a spectacular display later in the evening.

On Friday morning, we loaded the canopy, display board, table and chairs, and other display materials into Darrell's pickup truck and drove down to setup in the vendor area. No brag, just fact, but in my opinion we had the nicest looking display there of either organizations or vendors. It was certainly the most colorful. We took turns manning the booth on Friday and Saturday, visited with other vendors and sponsors, and answered questions about our club and activities.

Friday night was warmer and drier than Thursday, and even though we were out later the temperatures never dipped below the low 40's and dew never formed on our equipment. In addition to Darrell, myself, and Bob Ayres, Rose spent many hours observing with her Lightbridge, in fact more time than she'd spent in years, and the clear and dark skies allowed us to observe many of our favorite objects plus more obscure objects that are hard to find in less pristine skies. We observed many galaxies, nebulae, and clusters from the Messier and NGC catalogs with a couple of highlights being the Needle Galaxy and, of course, my last object of the night being the Veil Nebula.

On Saturday night, by the time the awards presentation, raffles, and keynote address were over it was late and, rather than observe through our own scopes, we all decided to wander over to the main telescope field where we observed through the telescopes of amateur telescope makers, manufacturers, and vendors before retiring for the night.

All in all it was a great trip and with an estimated paid attendance of 565, compared to 425 in 2015, as well as more vendor participation, it looks like the event may be on the mend. I sure hope so because I always look forward to it. I want to thank all of the club members who attended, and especially Darrell Bennett, for your help. Those of us who attended will be sharing the "goodies" we got at RTMC with you in the coming months.

As noted in last month's DSO, because the normal Dark Sky Star Party date of June 4 falls so close to RTMC, and because it's also the night of a Prime Desert Woodland Moonwalk, we're asking everyone to support the Moon Walk in lieu of a dark sky star party.

Vice President

Bill Schebeck

The Prime Desert Woodlands Moon Walks have had record attendance the last two outings, in spite of poor observing conditions. Thanks to the members for coming out to support these events.

Mars is looking good on clear nights. It is the brightest since 2005. Some saw part of the transit of Mercury. Saturn will be in opposition on June 11th, so if we are lucky, it will be great to view a PDW. I love it when someone looks at me and asks if Saturn is a picture in my scope. The moon Titan may be visible.

May 24th was great viewing and raises hopes for June. There should be some large meteors from time to time. Scorpius will be up and it provides a good place to practice using a star chart. There is a lot to see, even with a small scope.

Enjoy the warmer weather. See you at the next meeting



Secretary

Rose Moore

A reminder that you may still sign up for the Mt. Wilson trip. We have 1 opening left, and there are just a few people on the standby list. Money will be due before August 1st, and the cost will be \$30 per member. You can pay via [PayPal](#), or by giving your payment to our Treasurer, Virginia, at the June or July meeting. Another way to pay is by check, which can be mailed to the club PO box.

This trip is open to adults and children over the age of 12. There is no handicapped access, and it is not ADA compliant. The dome is at an elevation of 5700 feet, so this trip is not recommended to those with heart or respiratory problems. They will provide hot water, hot cocoa, coffee, tea, cups, stirrers, spoons. You may bring your own snacks and beverages. Smoking and alcohol is NOT permitted at Mt. Wilson. Dress appropriately, warm layers. There will be only red flashlights inside the dome during observing, and white flashlights are permitted outside when leaving the dome.

We heard from one of our attendees at our last PDW, that a former member - Alan Richardson - passed away. Alan and his wife Rosie were former members of the club. They last attended our event at the Antelope Valley Indian Museum a couple of years ago. Condolences to family and friends.

Space Place

NOAA's Joint Polar Satellite System (JPSS) to revolutionize Earth-watching

By Ethan Siegel

If you want to collect data with a variety of instruments over an entire planet as quickly as possible, there are two trade-offs you have to consider: how far away you are from the world in question, and what orientation and direction you choose to orbit it. For a single satellite, the best of all worlds comes from a low-Earth polar orbit, which does all of the following:

- Orbits the Earth very quickly: once every 101 minutes,
- Is close enough at 824 km high to take incredibly high-resolution imagery,
- Five separate instruments each probing various weather and climate phenomena,
- Is capable of obtaining full-planet coverage every 12 hours.

The type of data this new satellite – the Joint Polar Satellite System-1 (JPSS-1) -- will take will be essential to extreme weather prediction and in early warning systems, which could have severely mitigated the impact of natural disasters like Hurricane Katrina. Each of the five instruments on board are fundamentally different and complementary to one another. They are:

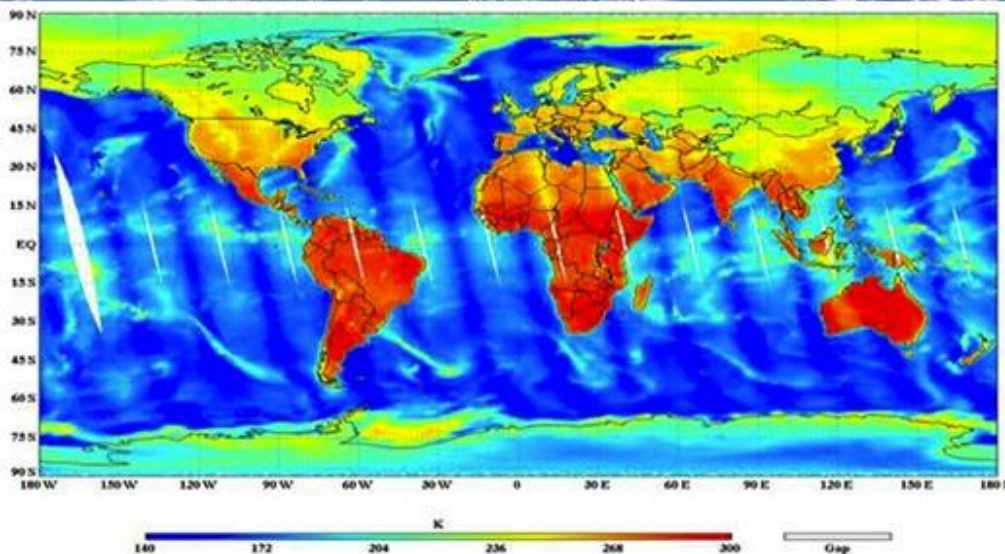
1. The Cross-track Infrared Sounder (CrIS), which will measure the 3D structure of the atmosphere, water vapor and temperature in over 1,000 infrared spectral channels. This instrument is vital for weather forecasting up to seven days in advance of major weather events.
2. The Advanced Technology Microwave Sounder (ATMS), which assists CrIS by adding 22 microwave channels to improve temperature and moisture readings down to 1 Kelvin accuracy for tropospheric layers.

4

Desert Sky Observer

3. The Visible Infrared Imaging Radiometer Suite (VIIRS) instrument, which takes visible and infrared pictures at a resolution of just 400 meters (1312 feet), enables us to track not just weather patterns but fires, sea temperatures, nighttime light pollution as well as ocean-color observations.
4. The Ozone Mapping and Profiler Suite (OMPS), which measures how the ozone concentration varies with altitude and in time over every location on Earth's surface. This instrument is a vital tool for understanding how effectively ultraviolet light penetrates the atmosphere.
5. Finally, the Clouds and the Earth's Radiant System (CERES) will help understand the effect of clouds on Earth's energy balance, presently one of the largest sources of uncertainty in climate modeling.

The JPSS-1 satellite is a sophisticated weather monitoring tool, and paves the way for its' sister satellites JPSS-2, 3 and 4. It promises to not only provide early and detailed warnings for disasters like hurricanes, volcanoes and storms, but for longer-term effects like droughts and climate changes. Emergency responders, airline pilots, cargo ships, farmers and coastal residents all rely on NOAA and the National Weather Service for informative short-and-long-term data. The JPSS constellation of satellites will extend and enhance our monitoring capabilities far into the future.



Images credit: an artist's concept of the JPSS-2 Satellite for NOAA and NASA by Orbital ATK (top); complete temperature map of the world from NOAA's National Weather Service (bottom).

June Sky Data

New
Jun 4First Qtr
Jun 12Full
Jun 20Last Qtr
Jun 27

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

Mercury is a pre-dawn object for the first week or so of the month best seen about 30-45 minutes before sunrise. It starts the month at magnitude +0.8 with an angular size of 9 arc seconds. This increases to magnitude zero by the 11th - perhaps the best time to view - with the angular size having dropped to 7.3 arc seconds.

Venus reaches superior conjunction (that is directly behind the Sun) on June 6th and so cannot be observed this month.

Mars reached opposition on May 22nd and came closest to the Earth for 11 years on the 30th. So June is a second excellent month to observe it. Mars starts the month at magnitude -2, drops to to -1.7 by the 16th and -1.4 by month's end. At the same time the angular size drops from 18.6 to 16.4 arc seconds.

Jupiter stands out in the southwest and west at nightfall. Its brightness falls slightly from magnitude -2.1 to -1.9 while its angular size drops from 37 to 34 arc seconds. Jupiter is now in the lower part of Leo, slowly moving eastwards towards Virgo which it will enter in August.

Saturn reaches opposition on June 3rd, and so will be visible in the southeast at nightfall and will not set until dawn the following morning. This is a good time to observe Saturn whose globe is ~18 arcs seconds across and whose rings span some 41 arc seconds across. They make a beautiful sight as are tilted 26 degrees from the line of sight - almost as open as they can be.

There are no significant **meteor-showers** in June.

June is the best time of the year to see **Noctilucent Clouds**. These are beautiful, high-altitude clouds that form only occasionally, and usually only for a few weeks around midsummer. They are formed of tiny ice-crystals, and they have a sharply-defined structure. NLCs shine with a clear, blue-white light and often exhibit a rippled pattern, like the marks left by waves on the beach. They are usually seen low in the northern sky. In June, the best time to look for them is around 1 am.

Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
6/1/2016	04:13	17:17	06:39	21:00
6/5/2016	07:25	21:44	06:39	21:02
6/10/2016	12:23	-----	06:38	21:04
6/15/2016	16:55	03:42	06:38	21:06
6/20/2016	21:21	07:02	06:39	21:07
6/25/2016	00:57	11:52	06:40	21:08
6/30/2016	03:35	17:17	06:42	21:08

Planet Data

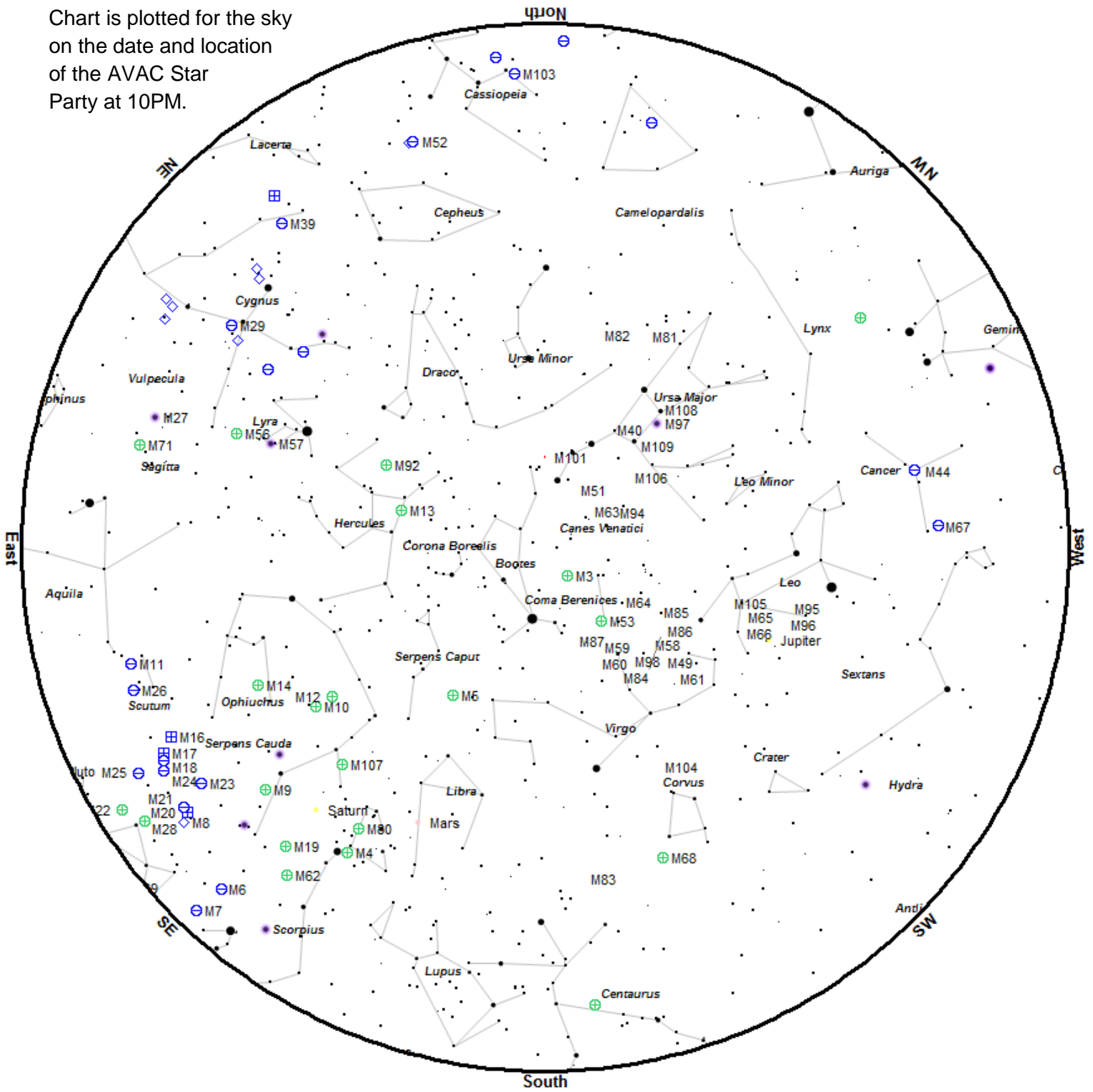
	Jun 1			
	Rise	Transit	Set	Mag
Mercury	04:28	11:15	18:03	0.8
Venus	05:31	12:43	19:57	-3.9
Mars	18:43	23:48	04:53	-2.0
Jupiter	12:43	19:11	01:38	-2.1
Saturn	19:47	00:54	06:02	0.0

	Jun 15			
	Rise	Transit	Set	Mag
Mercury	04:21	11:26	18:27	-0.3
Venus	05:43	13:03	20:23	-3.9
Mars	17:31	22:37	03:43	-1.7
Jupiter	11:50	18:20	00:46	-2.0
Saturn	18:47	23:55	05:03	0.1

	Jun 31			
	Rise	Transit	Set	Mag
Mercury	05:05	12:22	19:44	-1.6
Venus	06:07	13:24	20:43	-3.9
Mars	16:26	21:32	02:39	-1.4
Jupiter	11:00	17:28	23:52	-1.9
Saturn	17:44	22:52	04:00	0.2

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
●	●	●	●	●	●	⊕ Open Cluster	◇ Bright Nebula
0	1	2	3	4	5	⊕ Globular Cluster	◇ Planetary Nebula
						⊕ Cluster+Nebulosity	

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 3242	PNe	Hya	10h24m46.1s	-18°38'32"	8.6	21:14	21:35	22:18	obvious
NGC 5139	Glob	Cen	13h26m46.0s	-47°28'36"	3.9	21:16	21:40	22:31	challenging
NGC 5128	Gal	Cen	13h25m27.7s	-43°01'07"	7.8	21:17	21:44	22:53	challenging
M 68	Glob	Hya	12h39m28.0s	-26°44'36"	7.3	21:24	21:46	22:50	detectable
NGC 3227	Gal	Leo	10h23m30.6s	+19°51'54"	11.5	21:30	21:47	22:30	difficult
M 65	Gal	Leo	11h18m55.7s	+13°05'32"	10.1	21:26	21:49	23:09	detectable
M 66	Gal	Leo	11h20m14.9s	+12°59'30"	9.7	21:26	21:50	23:09	detectable
M 104	Gal	Vir	12h39m59.3s	-11°37'22"	9.1	21:24	21:51	23:18	detectable
M 84	Gal	Vir	12h25m03.9s	+12°53'12"	10.1	21:26	21:53	23:47	detectable
M 49	Gal	Vir	12h29m46.8s	+08°00'01"	9.3	21:26	21:54	23:49	detectable
M 83	Gal	Hya	13h37m00.8s	-29°51'56"	7.8	21:23	21:53	23:36	detectable
M 86	Gal	Vir	12h26m12.2s	+12°56'44"	9.8	21:29	21:54	23:34	detectable
M 87	Gal	Vir	12h30m49.2s	+12°23'29"	9.6	21:27	21:54	23:53	detectable
M 82	Gal	UMa	09h55m52.4s	+69°40'47"	9.0	21:26	21:56	00:21	detectable
M 97	PNe	UMa	11h14m47.7s	+55°01'09"	9.7	21:28	21:56	00:04	detectable
NGC 4565	Gal	Com	12h36m20.8s	+25°59'15"	10.1	21:29	21:56	23:55	difficult
Coll 256	Open	Com	12h25m06.0s	+26°06'00"	2.9	21:24	21:56	00:42	easy
M 81	Gal	UMa	09h55m33.1s	+69°03'56"	7.8	21:28	21:57	00:18	detectable
M 64	Gal	Com	12h56m43.8s	+21°41'00"	9.3	21:24	21:57	00:37	detectable
M 106	Gal	CVn	12h18m57.6s	+47°18'13"	9.1	21:29	21:58	00:27	detectable
M 94	Gal	CVn	12h50m53.1s	+41°07'12"	8.7	21:24	21:59	01:15	detectable
NGC 5195	Gal	CVn	13h29m59.6s	+47°15'58"	10.5	21:28	22:05	01:24	detectable
M 51	Gal	CVn	13h29m52.3s	+47°11'40"	8.7	21:24	22:05	02:04	easy
M 3	Glob	CVn	13h42m11.0s	+28°22'42"	6.3	21:23	22:05	01:42	easy
M 101	Gal	UMa	14h03m12.4s	+54°20'53"	8.4	21:29	22:13	01:59	detectable
M 5	Glob	Ser	15h18m34.0s	+02°05'00"	5.7	21:24	23:14	02:37	easy
NGC 5897	Glob	Lib	15h17m24.0s	-21°00'36"	8.4	21:45	23:14	00:48	challenging
NGC 5986	Glob	Lup	15h46m03.0s	-37°47'12"	7.6	22:30	23:42	00:54	difficult
M 80	Glob	Sco	16h17m02.0s	-22°58'30"	7.3	23:01	00:13	01:23	detectable
NGC 6124	Open	Sco	16h25m20.0s	-40°39'12"	6.3	22:39	00:22	02:02	challenging
NGC 6167	Open	Nor	16h34m34.0s	-49°46'18"	6.6	00:07	00:31	00:54	challenging
NGC 6178	Open	Sco	16h35m47.0s	-45°38'36"	7.2	23:31	00:32	01:33	detectable
M 13	Glob	Her	16h41m41.0s	+36°27'36"	5.8	21:27	00:37	04:10	easy
NGC 6193	Open	Ara	16h41m20.0s	-48°45'48"	5.4	00:01	00:38	01:14	difficult
M 12	Glob	Oph	16h47m14.0s	-01°56'48"	6.1	21:36	00:43	03:57	easy
M 10	Glob	Oph	16h57m09.0s	-04°06'00"	6.6	22:03	00:53	03:42	detectable
M 62	Glob	Oph	17h01m13.0s	-30°06'48"	6.4	23:00	00:57	02:54	detectable
M 19	Glob	Oph	17h02m38.0s	-26°16'06"	6.8	23:03	00:59	02:54	detectable

ID	Cls	Con	RA 2000	Dec 2000	Mag	Begin	Best	End	Difficulty
M 92	Glob	Her	17h17m07.0s	+43°08'12"	6.5	21:30	01:12	04:13	easy
M 9	Glob	Oph	17h19m12.0s	-18°31'00"	7.8	23:17	01:15	03:12	difficult
NGC 6322	Open	Sco	17h18m25.0s	-42°56'00"	6.5	23:44	01:15	02:44	easy
NGC 6383	Open	Sco	17h34m48.0s	-32°34'00"	5.4	23:24	01:30	03:37	easy
NGC 6388	Glob	Sco	17h36m17.0s	-44°44'06"	6.8	00:44	01:32	02:20	challenging
M 14	Glob	Oph	17h37m36.0s	-03°14'48"	7.6	22:45	01:33	04:04	detectable
M 6	Open	Sco	17h40m20.0s	-32°15'12"	4.6	23:16	01:35	03:55	easy
IC 4665	Open	Oph	17h46m18.0s	+05°43'00"	5.3	22:49	01:42	04:04	detectable
M 7	Open	Sco	17h53m51.0s	-34°47'36"	3.3	23:53	01:50	03:45	detectable
M 23	Open	Sgr	17h57m04.0s	-18°59'06"	5.9	23:59	01:52	03:47	detectable
NGC 6543	PNe	Dra	17h58m33.4s	+66°37'59"	8.3	21:17	01:53	04:24	obvious
M 20	Open	Sgr	18h02m42.0s	-22°58'18"	5.2	00:46	01:58	03:10	easy
M 21	Open	Sgr	18h04m13.0s	-22°29'24"	7.2	00:42	01:59	03:17	detectable
M 8	Neb	Sgr	18h04m02.0s	-24°23'14"	5.0	01:12	02:00	02:48	easy
NGC 6541	Glob	CrA	18h08m02.0s	-43°42'54"	6.3	01:14	02:04	02:53	challenging
NGC 6572	PNe	Oph	18h12m06.4s	+06°51'12"	8.0	22:15	02:07	04:30	obvious
M 16	Open	Ser	18h18m48.0s	-13°48'24"	6.5	23:45	02:14	04:21	obvious
M 18	Open	Sgr	18h19m58.0s	-17°06'06"	7.5	00:07	02:16	04:19	easy
M 17	Open	Sgr	18h20m47.0s	-16°10'18"	7.3	00:13	02:16	04:02	difficult
M 28	Glob	Sgr	18h24m33.0s	-24°52'12"	6.9	01:45	02:20	02:56	detectable
NGC 6633	Open	Oph	18h27m15.0s	+06°30'30"	5.6	22:33	02:23	04:18	easy
M 25	Open	Sgr	18h31m47.0s	-19°07'00"	6.2	00:34	02:27	04:11	detectable
M 22	Glob	Sgr	18h36m24.0s	-23°54'12"	5.2	01:34	02:32	03:29	detectable
IC 4756	Open	Ser	18h39m00.0s	+05°27'00"	5.4	23:15	02:34	04:15	easy
M 70	Glob	Sgr	18h43m13.0s	-32°17'30"	7.8	01:00	02:38	04:05	detectable
M 11	Open	Sct	18h51m05.0s	-06°16'12"	6.1	23:53	02:47	04:14	detectable
M 57	PNe	Lyr	18h53m35.1s	+33°01'45"	9.4	22:08	02:49	04:20	easy
NGC 6716	Open	Sgr	18h54m34.0s	-19°54'06"	7.5	01:04	02:50	04:15	detectable
M 54	Glob	Sgr	18h55m03.0s	-30°28'42"	7.7	01:21	02:50	04:05	difficult
NGC 6723	Glob	Sgr	18h59m33.0s	-36°37'54"	6.8	01:29	02:55	04:07	detectable
M 56	Glob	Lyr	19h16m36.0s	+30°11'06"	8.4	23:48	03:10	04:11	detectable
M 71	Glob	Sge	19h53m46.0s	+18°46'42"	8.4	23:52	03:32	04:18	easy
NGC 6871	Open	Cyg	20h05m59.0s	+35°46'36"	5.8	23:38	03:33	04:17	easy
NGC 6818	PNe	Sgr	19h43m57.8s	-14°09'12"	10.0	01:11	03:33	04:24	easy
M 27	PNe	Vul	19h59m36.3s	+22°43'16"	7.3	23:53	03:33	04:17	easy
NGC 6910	Open	Cyg	20h23m12.0s	+40°46'42"	7.3	23:40	03:36	04:16	easy
M 29	Open	Cyg	20h23m57.0s	+38°30'30"	7.5	23:51	03:37	04:17	easy
IC 1396	Neb	Cep	21h39m06.0s	+57°30'00"		00:09	03:40	04:15	challenging
NGC 7160	Open	Cep	21h53m40.0s	+62°36'12"	6.4	23:43	03:41	04:21	obvious
M 39	Open	Cyg	21h31m48.0s	+48°26'00"	5.3	00:13	03:42	04:16	easy

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/

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

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:

Don Bryden (661) 270-0627
al@avastronomyclub.org

Our Sponsors

Thank you to our sponsors for your generous support!

Cosmos Level Sponsors

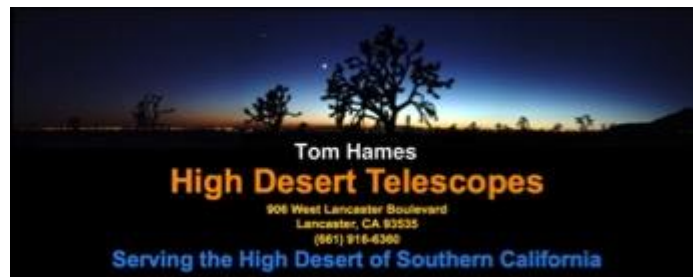


Woodland Hills Camera

5348 Topanga Canyon Blvd., Woodland Hills
888-427-8766.

www.telescopes.net

Universe Level Sponsors



Galaxy Level Sponsors



Al's Vacuum and Sewing

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