



# Desert Sky Observer

Volume 33

Antelope Valley Astronomy Club Newsletter

May 2013

## Up-Coming Events

- May 3: Star Party @ [College of the Canyons](#)
- May 4: Moon Walk @ [Prime Desert Woodlands](#)
- May 10: Club Meeting\*
- May 11: Dark Sky Star Party @ [Red Rock State Park](#)
- May 25-27: RTMC @ [Camp Oakes](#)

\* 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

Is it already May? The nights are warm and days are long – and the calendar is filling up! We have star parties at College of the Canyons and Prime Desert the first weekend followed by our dark sky star party out at Red Rocks. We'll join the rangers at the Red Rocks, Ricardo Campground Visitor's Center and the China Lake Astronomical Society for a night of dark and steady skies.

Later on the 22nd will be RTMC at Camp Oakes in Big Bear. Unfortunately the long weekend will also coincide with the full moon so it won't be much of a star party. But a few of us will still be heading up for the weekend for vendor row, the Saturday Swap Meet and of course the raffles and awards.

If you haven't made it out to a star party yet then you've missed some nice evenings (no, really!). The Messier Marathon was a success after fighting the howling winds and blowing sands we weren't sure if we should set up or not. Frank cooked up a nice feast and after the chow the wind seemed to abate. If it wasn't for Tom Hames, though, we may have missed a good night. He declared that since he dragged his scope out all this way he may as well set up. Soon Matt, Bill, Bill & Pam, Frank and Bob joined in – I decided that a lawn chair and binoculars would suffice.

The Wind died and eventually the clouds cleared off and it was a great night. I edged Matt with 73 objects – though there may be a few of those that I only thought I saw. Still, to beat the 24" LooneyScope my strategy was to send anybody that wandered into the campsite over to his scope so he had to waste his time sharing views through the big scope (I don't think he minded at all).

We've also decided to rename the Doug Drake Award, given annually to the member who makes the most of a bad situation, to the Drake award in honor of Kathy Drake and her sand dune driving skills! I won't go into details – suffice it to say she unintentionally spent the night after burying her car up to the axels in the sand!

Well, don't just read about it – dust off that scope and come out to join us under the stars!



## Vice President

### Frank Moore

Well, another Poppy Festival in the books. I think it may be our most successful ever. We had enthusiastic crowds viewing through our telescopes, handed out a lot of literature, and we were well prepared with a professional looking booth and displays.

We debuted the new banner with its first public display. Posted against the white background of our booth, it almost looked as though you could jump into the scene. We also made the first use of our “Velcro” display board with information about the AVAC, “What’s Up In The Sky Today” (specifically what was going on in the sky during the days of the Poppy Festival), the Kepler Mission, an explanation of Hydrogen Alpha telescopes, and a shot out to our sponsors.

I used 50 sheets of 8 ½ x 11 Glossy Photo Paper and 47 laminating pouches in putting the display together. The beauty of it is that all of the media is laminated and it all attaches to the board with Velcro strips. Thus it can be saved, removed, rearranged, and replaced as necessary for different venues, events, and purposes. I think it will serve us well. A big thank you to everyone who turned out to help in the booth or stopped by to visit. Images of our crew, booth, banner, and display at the Poppy Festival can be found in the Poppy Festival Album on the AVAC facebook page. Remember to “like” the Facebook page when you go visit. <https://www.facebook.com/avastronomyclub>

Our speaker at the May 10 meeting will be Mike Simmons, the President of Astronomers Without Borders. The last time Mike spoke to the AVAC Astronomers Without Borders was a fledgling organization just trying to get off the ground. In the ensuing years it has grown into a world class organization which “fosters understanding and goodwill across national and cultural boundaries by creating relationships through the universal appeal of astronomy.” I spoke to Mike, and saw a presentation about their recent activities and campaigns at the Arizona Science and Astronomy Expo. It should be an enlightening evening with images and stories about how they are bringing astronomy, and knowledge of the cosmos, to the far corners for the world.

The speaker at our June 14 meeting will be Tom Hames, one of the early members of the AVAC who has recently become active again. Tom is an adept amateur telescope maker and an accomplished artist. Whether you realized it or not, you’ve seen his art since it adorns the walls of the SAGE Planetarium and lobby. Appropriately, Tom will be speaking on his astronomy art and will be teaching a class on the same to the youth group before the general meeting. Tom’s website, “Instruments of Light”, can be found here <http://www.instrumentsoflight.com/>

The last viewing and reporting session for the 2013 GLOBE at Night campaign runs from April 29 – May 8. If you haven’t done so already, I encourage everyone to get out there, observe and report your sky brightness measurements. The GLOBE at Night program is an international citizen-science campaign to raise public awareness of the impact of light pollution by inviting citizen-scientists to measure their night sky brightness and submit their observations to a website from a computer or smart phone. We’ve got to know where it’s broke, so we can encourage citizens, industry, and government to fix it.

PLEASE support YOUR club. PLEASE support our speakers. PLEASE support Jeremy Amarant and the SAGE Planetarium. Treat yourself to an enjoyable evening with an informative talk, a tour of the night sky on the planetarium dome, and maybe a special treat in the form of a short dome show. We’d love to see you there.



## Director of Community Development

### Rose Moore

I would like to thank all the members who came out to the event at the Lancaster Indian Museum! With the high winds, it did not look promising. But we did have a nice evening of viewing, with approximately 100 attendees. We viewed the Pleiades, as well as M42, and Jupiter. We had a fairly flat area just at the end of the parking lot to view from. The attendees were very grateful for our being there! We may consider having another star party there sometime in the future!

Also many thanks to the members who came out to help at the Poppy Festival this past weekend! We had some telescopes with white light filters, as well as the 2 solar scopes, and the Sun Spotter. Our focus was the Sun, but later in the afternoon, the scopes turned to take a look at the Moon and Jupiter. Venus and Mercury were too close to the Sun to view. We sold over 300 tickets for the raffle for the 6 inch scope, which was won by a 9 year old who purchased the ticket while his dad was at other nearby booths! We'll hopefully be giving him his scope at our meeting in May. The scope was donated by Woodland Hills Telescope, a very big thank you!

We have several events this month, starting with the College of the Canyons Star Party on Friday May 3rd, in Santa Clarita, from 6-11pm. Come on out with your telescopes for this public outreach event!

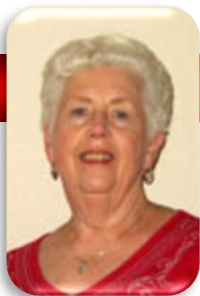
On Saturday, May 4th at 8:30pm, we have a Prime Desert Woodlands Moon Walk with Jeremy. Bring your scopes to show the public some night sky objects, or take the walk with Jeremy through the Preserve. The warmer weather should bring a larger crowd!

See Don's note above for info on our DSSP at Red Rock State Park, along with the China Lake club on Saturday, May 11th.

Towards the end of the month is the annual RTMC (The Riverside Telescope Makers Conference) event at Camp Oakes, near Big Bear City. The event runs from Wednesday May 22nd through Monday May 27th. There will be camping, vendors, and talks. Most of the main events run from Friday into Sunday early afternoon. Here's a link for those that need information and/or registration: <http://www.rtmcastronomyexpo.org/general.html>.

We have an Acton Library Astronomy Lecture on Wednesday May 22nd, at 6:30pm with Jeremy. Tonight's lecture will be 'Saying Goodbye to Orion'. Saturday June 1st is a Prime Desert Moon Walk with Jeremy starting at 8:30pm. Telescopes are needed for this event.

Come on out and start enjoying the warm summer evenings and do some observing!



## Secretary

### Pam Grove

We had a nice turn out, for the Saddle Butte star party and barbecue last month, despite the high winds and blowing sand in the afternoon. Our meteorologist Don predicted the winds would slow down after sunset. Low and behold he was right! He set up his Coronado to view the sun. Frank cooked up burgers and dogs. With the sides it was another success!

Matt decided to cook up some bacon early as he purchased 10Lbs.

Then it was time for the Messier Marathon to begin! Don brought out his binoculars for the night, and was showing everyone up, finding so many Messier's! Frank and Rose decided not to set up their scopes. Ellen had her 6" Dob ready to go. Bill Shebeck had his Binos and Matt was busy setting up his 24" Looney Scope. Bob Ayers readied his scope and Kennedy hers as well. We set up our 11" Celestron and Tom Hames his home made scope that he made when he was 15 years old!

Around 10PM we started to get a cloud coverage, and Matt reassured it would blow over in an hour or two. He was right. Saturn was beautiful once again!

At 11:30 P.M. Matt cooked up more bacon for everyone to enjoy!

A good time was enjoyed by all!

## Space Place

### Exploring the Water World

In some ways, we know more about Mars, Venus and the Moon than we know about Earth. That's because 70% of our solar system's watery blue planet is hidden under its ocean. The ocean contains about 98% of all the water on Earth. In total volume, it makes up more than 99% of the space inhabited by living creatures on the planet.

As dominant a feature as it is, the ocean—at least below a few tens of meters deep—is an alien world most of us seldom contemplate. But perhaps we should.

The ocean stores heat like a “fly wheel” for climate. Its huge capacity as a heat and water reservoir moderates the climate of Earth. Within this Earth system, both the physical and biological processes of the ocean play a key role in the water cycle, the carbon cycle, and climate variability.

This great reservoir continuously exchanges heat, moisture, and carbon with the atmosphere, driving our weather patterns and influencing the slow, subtle changes in our climate.

The study of Earth and its ocean is a big part of NASA's mission. Before satellites, the information we had about the ocean was pretty much “hit or miss,” with the only data collectors being ships, buoys, and instruments set adrift on the waves.

Now ocean-observing satellites measure surface topography, currents, waves, and winds. They monitor the health of phytoplankton, which live in the surface layer of the ocean and supply half the oxygen in the atmosphere. Satellites monitor the extent of Arctic sea ice so we can compare this important parameter with

that of past years. Satellites also measure rainfall, the amount of sunlight reaching the sea, the temperature of the ocean's surface, and even its salinity!

Using remote sensing data and computer models, scientists can now investigate how the oceans affect the evolution of weather, hurricanes, and climate. In just a few months, one satellite can collect more information about the ocean than all the ships and buoys in the world have collected over the past 100 years!

NASA's Earth Science Division has launched many missions to planet Earth. These satellites and other studies all help us understand how the atmosphere, the ocean, the land and life—including humans—all interact together.

Find out more about NASA's ocean studies at <http://science.nasa.gov/earth-science/oceanography>. Kids will have fun exploring our planet at The Space Place, <http://spaceplace.nasa.gov/earth>.

*This article was written by Diane K. Fisher and provided through the courtesy of the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.*



*This image from September 2012, shows that the Arctic sea is the smallest recorded since record keeping began in 1979. This image is from NASA's Scientific Visualization Studio at Goddard Space Flight Center.*

## News Headlines

### **Pulsar Takes Tests of General Relativity Into New Territory**

Astronomers have used ESO's Very Large Telescope, along with radio telescopes around the world, to find and study a bizarre stellar pair consisting of the most massive neutron star confirmed so far, orbited by a white dwarf star. This strange new binary allows tests of Einstein's theory of gravity -- general relativity -- in ways that were not possible up to now.

<http://spaceref.com/astronomy/pulsars/pulsar-takes-tests-of-general-relativity-into-new-territory.html#more>

### **Astronomers Discover Massive Star Factory in Early Universe**

Astronomers, including Matt Bradford, Jamie Bock, Darren Dowell, Hien Nguyen and Jonas Zmuidzinas of NASA's Jet Propulsion Laboratory, Pasadena, Calif., have discovered a dust-filled, massive galaxy churning out stars when the cosmos was a mere 880 million years old. This is the earliest starburst galaxy ever observed.

[www.nasa.gov/mission\\_pages/herschel/news/herschel20130417.html](http://www.nasa.gov/mission_pages/herschel/news/herschel20130417.html)

### **Kepler Discovers its Smallest Habitable Zone Planets**

NASA's Kepler mission has discovered two new planetary systems that include three super-Earth-size planets in the "habitable zone," the range of distance from a star where the surface temperature of an orbiting planet might be suitable for liquid water. The Kepler-62 system has five planets: 62b, 62c, 62d, 62e and 62f. The Kepler-69 system has two planets: 69b and 69c. Kepler-62e, 62f and 69c are the super-Earth-sized planets.

[http://www.spacedaily.com/reports/Kepler\\_Discovers\\_its\\_Smallest\\_Habitable\\_Zone\\_Planets\\_999.html](http://www.spacedaily.com/reports/Kepler_Discovers_its_Smallest_Habitable_Zone_Planets_999.html)

### **Titan's Methane World -- Not Built to Last?**

"We are seeing an active Titan whose active chemistry may come to an end in some tens of million years," said JPL scientist Christophe Sotin, who has been analyzing Cassini measurements of Titan's lakes and seas. Titan, it appears, will eventually run out of methane.

<http://saturn.jpl.nasa.gov/news/cassiniscienceleague/science20130412/>

### **New Insights on How Spiral Galaxies Get Their Arms**

Spiral galaxies are some of the most beautiful and photogenic residents of the universe. Our own Milky Way is a spiral. Our solar system and Earth reside somewhere near one of its filamentous arms. And nearly 70 percent of the galaxies closest to the Milky Way are spirals. But despite their common shape, how galaxies like ours get and maintain their characteristic arms has proved to be an enduring puzzle in astrophysics. How do the arms of spiral galaxies arise? Do they change or come and go over time?

<http://www.cfa.harvard.edu/news/2013/pr201310.html>

### **Cassini observes meteors colliding with Saturn's rings**

NASA's Cassini spacecraft has provided the first direct evidence of small meteoroids breaking into streams of rubble and crashing into Saturn's rings. These observations make Saturn's rings the only location besides Earth, the moon, and Jupiter where scientists and amateur astronomers have been able to observe impacts as they occur. Studying the impact rate of meteoroids from outside the Saturn system helps scientists understand how different planet systems in the solar system formed.

<http://phys.org/news/2013-04-cassini-meteors-colliding-saturn.html>

## Astrophoto of The Month



**Comet PanSTARRS with a day-old moon** By Don Bryden

Nikon D300, F/5, 70-300 mm zoom lens at 170 mm, ISO 1600, .6" exposure Date: March 12, 2013.

## May Sky Data

Last Qtr May 2      New May 9      First Qtr May 17      Full May 24



**Best time for deep sky observing this month:  
May 20 through May 30**

**Mercury** moves to May's evening sky, but will be hard to spot until late month. On May 25, the planet will set almost ninety minutes after the Sun and will be easily identified sitting  $10^\circ$  above the western horizon, close to brilliant Venus.

**Venus** will appear as a brilliant yellow star in the evening sky, right after sunset. Located  $10^\circ$  above the western horizon half an hour after sundown, it remains on view until after 9:30 P.M. local daylight time. The planet shines at a stunning -4 magnitude, about ten times brighter than the brightest star Sirius, and by far the brightest celestial object after the Sun and Moon.

**Mars** is too deep in the solar glare and cannot be observed until early June, when it will reappear in the morning sky.

**Jupiter** lies in Taurus the Bull, just above Aldebaran, the brightest star in the constellation and one of the brightest in the nighttime sky. It glows brightly at magnitude -2 and is visible in the west as evening twilight fades.

**Saturn** reached opposition last month, on the night of April 28. The planet glows low in the southeast as twilight fades, to the lower left of Spica and farther lower right of Arcturus. A small telescope will reveal Saturn's system of rings which span 42", surrounding a disk about 19" in diameter. The rings are tilted  $18^\circ$  to our line of sight, the widest open they have been since the year 2006.

The Eta Aquarids **meteor shower** will be peaking Sunday, May 5. The nights preceding and for a few days afterwards will also be good for watching. The Eta Aquarids typically put on a very good show, generally reaching rates of about 40-85 meteors an hour. They are usually one of the best meteor showers of the year, so make sure that you get out to see them. This year is looking particularly good, as the peak will be happening simultaneously with the New Moon, so the sky will be very dark, the perfect environment for watching meteors.

## Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
5/1/2013	00:49	11:45	06:01	19:37
5/5/2013	03:20	15:53	05:57	19:40
5/10/2013	06:20	20:36	05:52	19:44
5/15/2013	10:26	-----	05:48	19:48
5/20/2013	15:14	02:30	05:45	19:52
5/25/2013	20:48	06:13	05:42	19:55
5/31/2013	00:47	12:46	05:40	19:59

## Planet Data

	May 1			
	Rise	Transit	Set	Mag
<b>Mercury</b>	05:31	12:07	18:45	-1.1
<b>Venus</b>	06:25	13:24	20:23	-3.9
<b>Mars</b>	05:47	12:36	19:24	1.3
<b>Jupiter</b>	08:00	15:18	22:32	-2.0
<b>Saturn</b>	19:01	00:35	06:10	0.1

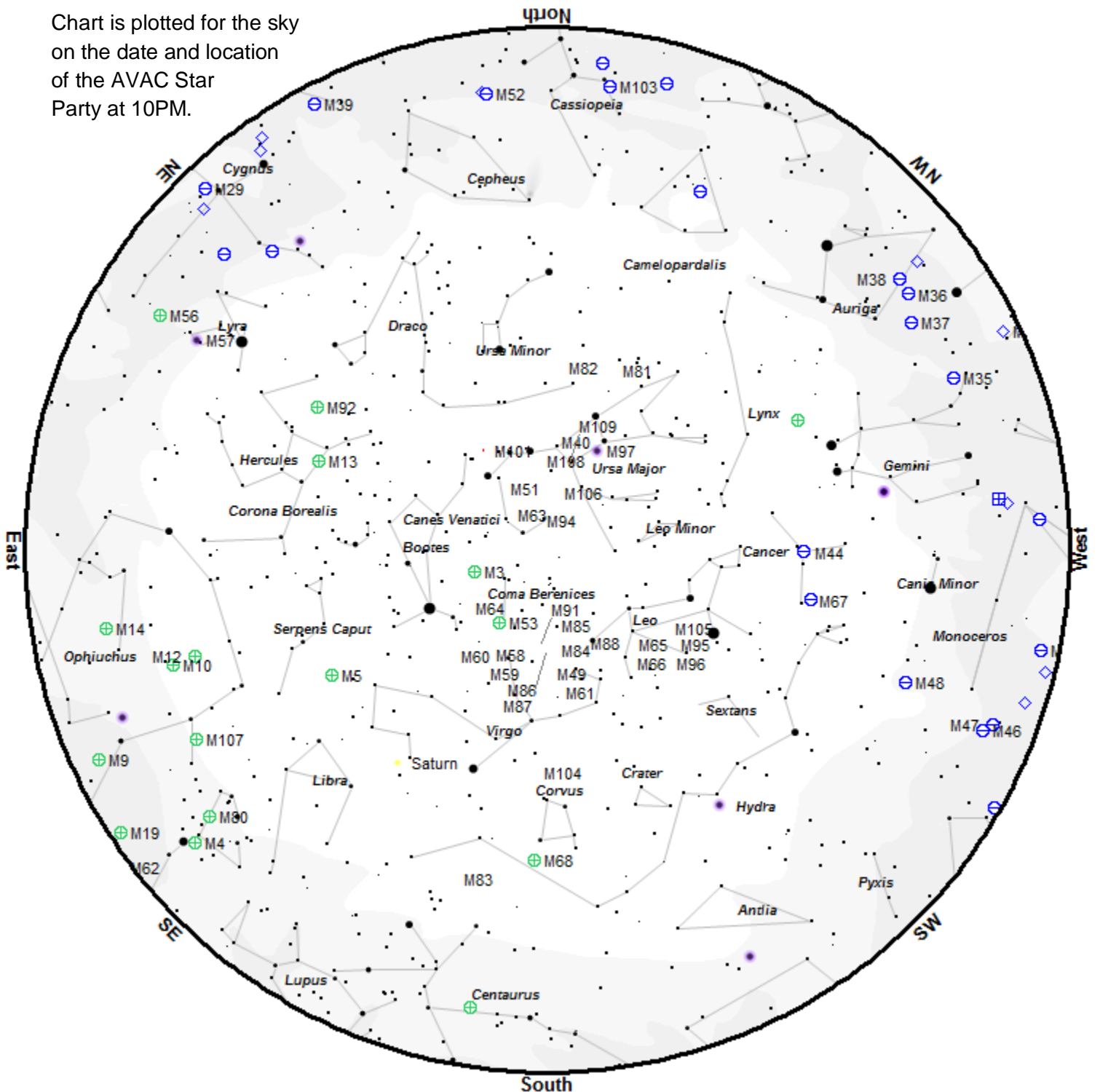
	May 15			
	Rise	Transit	Set	Mag
<b>Mercury</b>	05:59	13:07	20:19	-1.9
<b>Venus</b>	06:27	13:40	20:53	-3.9
<b>Mars</b>	05:23	12:22	19:20	1.3
<b>Jupiter</b>	07:17	14:36	21:51	-2.0
<b>Saturn</b>	18:01	23:36	05:12	0.2

	May 31			
	Rise	Transit	Set	Mag
<b>Mercury</b>	06:53	14:17	21:45	-0.3
<b>Venus</b>	06:41	14:01	21:23	-3.9
<b>Mars</b>	04:57	12:06	19:13	1.4
<b>Jupiter</b>	06:29	13:48	21:04	-1.9
<b>Saturn</b>	16:54	22:30	04:06	0.3

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.



<p>Star Magnitudes</p> <p>● ● ● ● ●</p> <p>0 1 2 3 4 5</p>	<p>○ Galaxy</p> <p>⊕ Open Cluster</p> <p>⊕ Globular Cluster</p> <p>⊕ Cluster+Nebulosity</p>	<p>◇ Nebula</p> <p>◇ Bright Nebula</p> <p>◇ Planetary Nebula</p>
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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	Best	End	Difficulty
NGC 3132	PNe	8.2	Vel	10h07m01.8s	-40°26'11"	20:51	21:07	21:42	easy
NGC 2392	PNe	8.6	Gem	07h29m10.8s	+20°54'42"	20:55	21:18	21:30	obvious
NGC 3242	PNe	8.6	Hya	10h24m46.1s	-18°38'32"	20:51	21:20	21:46	obvious
M 67	Open	7.4	Cnc	08h51m18.0s	+11°48'00"	21:06	21:22	22:08	detectable
M 44	Open	3.9	Cnc	08h40m24.0s	+19°40'00"	21:00	21:23	22:39	easy
NGC 3227	Gal	11.5	Leo	10h23m30.6s	+19°51'54"	21:05	21:29	23:01	difficult
M 65	Gal	10.1	Leo	11h18m55.7s	+13°05'32"	21:00	21:31	00:04	detectable
M 66	Gal	9.7	Leo	11h20m14.9s	+12°59'30"	21:01	21:32	00:10	detectable
M 82	Gal	9.0	UMa	09h55m52.4s	+69°40'47"	21:01	21:32	01:37	detectable
M 81	Gal	7.8	UMa	09h55m33.1s	+69°03'56"	21:01	21:32	01:22	detectable
M 97	PNe	9.7	UMa	11h14m47.7s	+55°01'09"	21:03	21:36	01:03	detectable
M 106	Gal	9.1	CVn	12h18m57.6s	+47°18'13"	21:02	21:54	01:46	detectable
M 84	Gal	10.1	Vir	12h25m03.9s	+12°53'12"	21:01	21:58	01:05	detectable
M 86	Gal	9.8	Vir	12h26m12.2s	+12°56'44"	21:04	21:59	00:51	detectable
M 49	Gal	9.3	Vir	12h29m46.8s	+08°00'01"	21:02	22:03	01:09	detectable
M 87	Gal	9.6	Vir	12h30m49.2s	+12°23'29"	21:01	22:04	01:12	detectable
NGC 4565	Gal	10.1	Com	12h36m20.8s	+25°59'15"	21:04	22:09	01:06	difficult
M 68	Glob	7.3	Hya	12h39m28.0s	-26°44'36"	21:03	22:12	00:05	detectable
M 104	Gal	9.1	Vir	12h39m59.3s	-11°37'22"	21:00	22:12	00:49	detectable
M 94	Gal	8.7	CVn	12h50m53.1s	+41°07'12"	21:00	22:23	02:41	detectable
M 64	Gal	9.3	Com	12h56m43.8s	+21°41'00"	21:01	22:28	02:03	detectable
NGC 5128	Gal	7.8	Cen	13h25m27.7s	-43°01'07"	21:29	22:58	00:27	challenging
NGC 5139	Glob	3.9	Cen	13h26m46.0s	-47°28'36"	21:53	22:59	00:04	challenging
M 51	Gal	8.7	CVn	13h29m52.3s	+47°11'40"	21:00	23:01	03:36	easy
NGC 5195	Gal	10.5	CVn	13h29m59.6s	+47°15'58"	21:05	23:02	02:51	detectable
M 83	Gal	7.8	Hya	13h37m00.8s	-29°51'56"	21:18	23:09	01:03	detectable
M 3	Glob	6.3	CVn	13h42m11.0s	+28°22'42"	21:02	23:14	03:11	detectable
M 101	Gal	8.4	UMa	14h03m12.4s	+54°20'53"	21:08	23:35	03:24	detectable
NGC 5897	Glob	8.4	Lib	15h17m24.0s	-21°00'36"	23:24	00:49	02:14	challenging
M 5	Glob	5.7	Ser	15h18m34.0s	+02°05'00"	21:34	00:50	04:06	easy
NGC 5986	Glob	7.6	Lup	15h46m03.0s	-37°47'12"	00:13	01:18	02:22	challenging
M 80	Glob	7.3	Sco	16h17m02.0s	-22°58'30"	00:50	01:49	02:48	detectable
NGC 6178	Open	7.2	Sco	16h35m47.0s	-45°38'36"	01:10	02:07	03:05	detectable
M 13	Glob	5.8	Her	16h41m41.0s	+36°27'36"	21:52	02:13	04:37	easy
NGC 6193	Open	5.4	Ara	16h41m20.0s	-48°45'48"	01:42	02:13	02:44	challenging
M 12	Glob	6.1	Oph	16h47m14.0s	-01°56'48"	23:05	02:19	04:35	easy
M 10	Glob	6.6	Oph	16h57m09.0s	-04°06'00"	23:46	02:28	04:31	detectable
M 62	Glob	6.4	Oph	17h01m13.0s	-30°06'48"	00:41	02:33	04:21	detectable
M 19	Glob	6.8	Oph	17h02m38.0s	-26°16'06"	00:46	02:34	04:18	detectable

ID	Cls	Mag	Con	RA 2000	Dec 2000	Begin	Best	End	Difficulty
M 92	Glob	6.5	Her	17h17m07.0s	+43°08'12"	22:18	02:49	04:37	easy
NGC 6322	Open	6.5	Sco	17h18m25.0s	-42°56'00"	01:25	02:50	04:15	easy
M 9	Glob	7.8	Oph	17h19m12.0s	-18°31'00"	00:59	02:51	04:27	difficult
NGC 6383	Open	5.4	Sco	17h34m48.0s	-32°34'00"	01:05	03:06	04:35	easy
NGC 6388	Glob	6.8	Sco	17h36m17.0s	-44°44'06"	02:28	03:08	03:47	challenging
M 14	Glob	7.6	Oph	17h37m36.0s	-03°14'48"	00:25	03:09	04:34	detectable
M 6	Open	4.6	Sco	17h40m20.0s	-32°15'12"	00:57	03:11	04:40	easy
M 7	Open	3.3	Sco	17h53m51.0s	-34°47'36"	01:37	03:25	04:36	detectable
M 23	Open	5.9	Sgr	17h57m04.0s	-18°59'06"	01:42	03:28	04:37	detectable
NGC 6543	PNe	8.3	Dra	17h58m33.4s	+66°37'59"	21:07	03:29	04:47	obvious
M 20	Open	5.2	Sgr	18h02m42.0s	-22°58'18"	02:35	03:34	04:33	easy
M 21	Open	7.2	Sgr	18h04m13.0s	-22°29'24"	02:29	03:35	04:36	detectable
M 8	Neb	5.0	Sgr	18h04m02.0s	-24°23'14"	03:13	03:35	03:58	easy
NGC 6541	Glob	6.3	CrA	18h08m02.0s	-43°42'54"	02:55	03:40	04:20	challenging
NGC 6572	PNe	8.0	Oph	18h12m06.4s	+06°51'12"	23:53	03:43	04:53	obvious
M 16	Open	6.5	Ser	18h18m48.0s	-13°48'24"	01:25	03:48	04:43	obvious
M 18	Open	7.5	Sgr	18h19m58.0s	-17°06'06"	01:48	03:49	04:41	easy
M 17	Open	7.3	Sgr	18h20m47.0s	-16°10'18"	01:58	03:50	04:32	difficult
NGC 6633	Open	5.6	Oph	18h27m15.0s	+06°30'30"	00:14	03:52	04:40	easy
M 28	Glob	6.9	Sgr	18h24m33.0s	-24°52'12"	01:56	03:54	04:36	detectable
M 25	Open	6.2	Sgr	18h31m47.0s	-19°07'00"	02:17	03:57	04:35	detectable
M 57	PNe	9.4	Lyr	18h53m35.1s	+33°01'45"	23:49	03:59	04:42	easy
M 22	Glob	5.2	Sgr	18h36m24.0s	-23°54'12"	03:29	04:00	04:36	detectable
M 11	Open	6.1	Sct	18h51m05.0s	-06°16'12"	01:35	04:02	04:37	detectable
M 56	Glob	8.4	Lyr	19h16m36.0s	+30°11'06"	01:23	04:04	04:35	detectable
M 70	Glob	7.8	Sgr	18h43m13.0s	-32°17'30"	02:40	04:05	04:34	difficult
NGC 6716	Open	7.5	Sgr	18h54m34.0s	-19°54'06"	02:48	04:06	04:39	detectable
NGC 6871	Open	5.8	Cyg	20h05m59.0s	+35°46'36"	01:12	04:07	04:38	easy
M 29	Open	7.5	Cyg	20h23m57.0s	+38°30'30"	01:20	04:08	04:37	easy
NGC 7160	Open	6.4	Cep	21h53m40.0s	+62°36'12"	01:16	04:08	04:41	obvious
NGC 6910	Open	7.3	Cyg	20h23m12.0s	+40°46'42"	01:09	04:08	04:37	easy
M 27	PNe	7.3	Vul	19h59m36.3s	+22°43'16"	01:24	04:08	04:37	easy
M 71	Glob	8.4	Sge	19h53m46.0s	+18°46'42"	01:26	04:08	04:39	easy
M 54	Glob	7.7	Sgr	18h55m03.0s	-30°28'42"	03:02	04:08	04:32	challenging
M 39	Open	5.3	Cyg	21h31m48.0s	+48°26'00"	01:36	04:09	04:36	easy
NGC 7243	Open	6.7	Lac	22h15m08.0s	+49°53'54"	02:43	04:10	04:32	detectable
Cocoon	Neb	10.0	Cyg	21h53m24.0s	+47°16'00"	01:56	04:10	04:37	challenging
M 52	Open	8.2	Cas	23h24m48.0s	+61°35'36"	03:10	04:11	04:28	detectable
NGC 7790	Open	7.2	Cas	23h58m24.0s	+61°12'30"	03:24	04:12	04:38	easy
NGC 6723	Glob	6.8	Sgr	18h59m33.0s	-36°37'54"	03:10	04:12	04:36	difficult
M 15	Glob	6.3	Peg	21h29m58.0s	+12°10'00"	02:54	04:14	04:36	detectable
NGC 6818	PNe	10.0	Sgr	19h43m57.8s	-14°09'12"	02:51	04:15	04:46	easy
M 55	Glob	6.3	Sgr	19h40m00.0s	-30°57'42"	03:19	04:16	04:36	detectable
M 2	Glob	6.6	Aqr	21h33m27.0s	-00°49'24"	03:38	04:17	04:36	detectable
NGC 7009	PNe	8.3	Aqr	21h04m10.9s	-11°21'48"	03:55	04:19	04:48	obvious

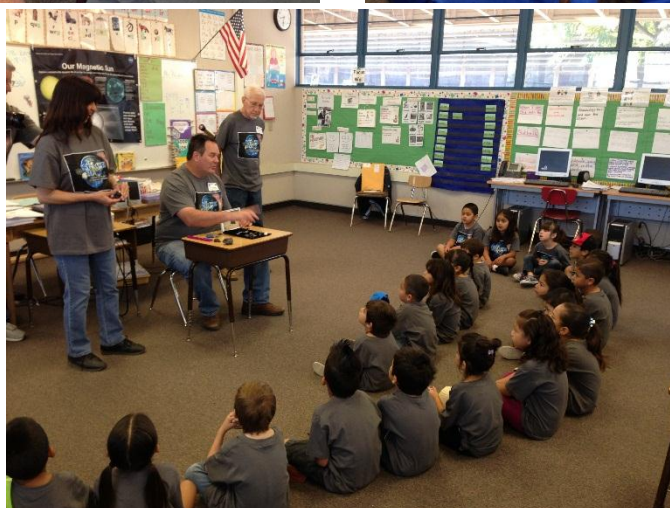
My thanks go out to the members of the AVAC for their Wonderful support of the Lockheed Martin Space Day advance Held at Jefferson Elementary school In Riverside, California on April 19th. Don Bryden, Pres., Bob Aiden, and Anne all helped present meteorites to the children. We had nine classes of up to 30 children, ranging in age from kindergarten through fourth grade.

The night before the event, the entire group was given rooms at the Mission Inn and we enjoyed a nice dinner on behalf of Lockheed Martin, the sponsor of the event. Early the next morning we met in the hotel lobby at 6:15 AM and we drove to Jefferson elementary school where we checked in, and got our class room set up and ready for the first round of children. Then we were served a delicious breakfast and got to know the day's activities. The time went by very quickly with children arriving every 25 minutes for a brand-new session. Don Bryden was the primary speaker in the morning with many sessions of kindergartners and first graders and second graders telling them about the differences between Earth rocks and rocks from outer space.

Both Don and Anna took their hand at leading several sessions and it was only myself that didn't. And I have to admit it was because I was very sick to my stomach that day and I didn't think that would be very good.

Once again the antelope Valley astronomy club community outreach was exceptional and we've made a difference in many children's lives. Many more than we would ever even know.

Best regards,  
Tom Koonce



## 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

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Visit the Antelope Valley Astronomy Club website at [www.avastronomyclub.org/](http://www.avastronomyclub.org/)

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