



Desert Sky Observer

Volume 33

Antelope Valley Astronomy Club Newsletter

July 2013

Up-Coming Events

July 9: Dark Sky Star Party @ [Mt. Pinos](#)

July 12: Club Meeting*

July 24: Acton Library Lecture/Star Party Series @ [Acton Library](#)

July 27: Prime Desert Woodlands Moon Walk @ [Prime Desert Woodlands](#)

* 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 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

Don Bryden

Summertime! It's a trade-off for sure. The evenings are warmer but you have to stay up till 9:30 or later for full darkness. I know some members who hate the cold and don't like staying up late. Maybe they should just do solar observing! Still, if you can stand the late nights, cool air and high altitudes, then Mt. Pinos is for you. This coming weekend, July 6th, will be our first visit and some are making it a nice long weekend. Even though I'll be gone until that Saturday, I still can't wait.

If you want something a bit lower and warmer then I hope you can make our annual Star-B-Cue on August 3rd at Brite Lake. We'll have a nice cookout and lots of goodies to raffle and for the silent auction so you won't want to miss it.

We had a nice star party for the Scouts at Lake Castaic last month even though the lights in the parking areas were way too bright. Thanks to a few covert members who shall remain nameless the lights at our end at least were temporarily shut off! Once we maneuvered an RV to block the other lights we actually had some fairly nice skies. The steadiness made up for the lack of darkness and the views of Saturn were stunning.

I also want to thank Rose, Frank, Bob K, Bob A, Jeff and Robert for braving the heat last Thursday at Desert Sands Park for another Cub Scout outreach. Unfortunately to look at the sun you have to be out in it and it must have been 105 degrees in the shade! I conveniently had to work and only stopped by for a few minutes and thought that was bad enough.

This time of year I say we stick to nighttime observing so I hope to see you all out there under the stars!



Vice President

Frank Moore

It's been an eventful month since our last DSO. We had the Powerhouse fire which threatened several members' residences, forcing them to evacuate, and which smoked out the monthly event at Prime Desert Woodland. The weekend after the most active night of the Powerhouse fire, we conducted a public outreach star party for Cub Scouts at the new Hideaway Campground next to the west side of the Lake Castaic Lagoon. Though light pollution from the park itself, and from nearby Santa Clarita was an issue, the skies were very steady and we were able to give the kids awesome views of Saturn, The Ring Nebula, several globular clusters, and I even had Bode's Nebula just before quitting time. We got a lot of "ooohs, aaahhs, and WOWs" out of the kids which is what live for. Right?

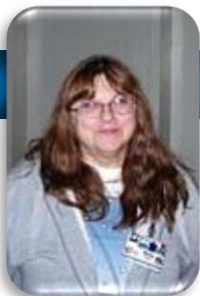
On May 20th, Don Bryden and I had a great morning doing a "Closest Star to the Earth Party" (Solar observing) for Third Grade classes at Miller Elementary School in Lancaster. We had great bunch of kids and really sparked their interest and imagination. I had visual aids to explain what they would be seeing through the 60mm Coronado and telescopes with white light filters and Don engaged the with a few facts, figures, and quizzes. The reaction of some of the Special Education kids was especially heartening. At the end of our session Don got Venus in his Stellarvue so the last class got an extra treat. Last week we received a huge manila envelope full of hand drawn thank you cards many with renditions of myself, Don, and our telescopes.

Tom Hames presented a show about his astronomy, science fiction, and other art at our last club meeting. The provenance behind some of his works, including being used in magazines, films, or cartoons or commissioned by celebrities was fascinating. Thanks Tom!!

At the July 12 meeting I will be making a presentation on light pollution replete with images of good lights, bad lights, good skies, bad skies, and things everyone can do to help improve the light in their personal space and in their communities. Some of the content will be courtesy of Bryce Canyon "Dark Ranger" Kevin Poe with his unique and often humorous perspective and much of it from the IDA. As you all probably know, this is a subject near and dear to my heart and I hope you will find it enlightening.

Once again, we've reserved Pavilion 1 and 2 and the main parking lot at the Brite Lake Recreation Area near Tehachapi for our annual "Star-B-Que" and star party on Saturday August 3. Rose will be posting details in her DSO article.

Dark Skies.



Director of Community Development

Rose Moore

The month of July has just 2 events scheduled so far for public outreach. First is the Acton Library Astronomy Lecture, with Jeremy on Wednesday July 24th at 6:30pm. The speaker for tonight is Dr. Scott Griffin speaking on 'Water, Water, Everywhere'. The lecture is free and open to the public.

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Our second event is a Prime Desert Moon Walk with Jeremy at the Prime Desert Woodland Preserve. The event is scheduled for Saturday, July 27th at 8:30pm. Come on out with your telescope and help us show the public the night sky! Or take the walk with Jeremy! Set up time is approximately 1 hour before the event.

Also coming up is our club's annual picnic! This is scheduled for Saturday, August 3rd at approximately 4pm. Come on out for the Star-B-Que, and then later observing. The event is at Brite Lake, Tehachapi, and is an overnight event if you would like to stay late! The map is on the website. We need people to sign up so we have an approximate head count.

Please bring a side dish or other item that is on our list. Contact me for info on the food list! Donations for the raffle and the silent auction are needed, which will be held after the BBQ, and before observing. There will be members who will need to set up scopes, or set up for the raffle, so we will need everyone's help with the BBQ and getting dinner going! Please contact Rose or Frank for information, and for signing up for the event! Also see Frank's note above.

I would like to thank the members who came out for the Cub Scouts event in Palmdale and the Public Star Party at the Poppy Reserve! As I write this, these two events are coming up, and I wasn't sure I would be able to round up members, especially for the weekday Cub Scout event! Many, many thanks for those that came to lend a hand!!

Space Place

High-energy Spy

By Dr. Martin C. Weisskopf

The idea for the Chandra X-Ray Observatory was born only one year after Riccardo Giacconi discovered the first celestial X-ray source other than the Sun. In 1962, he used a sounding rocket to place the experiment above the atmosphere for a few minutes. The sounding rocket was necessary because the atmosphere blocks X-rays. If you want to look at X-ray emissions from objects like stars, galaxies, and clusters of galaxies, your instrument must get above the atmosphere.

Giacconi's idea was to launch a large diameter (about 1 meter) telescope to bring X-rays to a focus. He wanted to investigate the hazy glow of X-rays that could be seen from all directions throughout the sounding rocket flight. He wanted to find out whether this glow was, in fact, made up of many point-like objects. That is, was the glow actually from millions of X-ray sources in the Universe. Except for the brightest sources from nearby neighbors, the rocket instrument could not distinguish objects within the glow.

Giacconi's vision and the promise and importance of X-ray astronomy was borne out by many sounding rocket flights and, later satellite experiments, all of which provided years-, as opposed to minutes-, worth of data.

By 1980, we knew that X-ray sources exist within all classes of astronomical objects. In many cases, this discovery was completely unexpected. For example, that first source turned out to be a very small star in a binary system with a more normal star. The vast amount of energy needed to produce the X-rays was provided by gravity, which, because of the small star's mass (about equal to the Sun's) and compactness (about 10 km in diameter) would accelerate particles transferred from the normal star to X-ray emitting energies. In 1962, who knew such compact stars (in this case a neutron star) even existed, much less this energy transfer mechanism?



Composite image of DEM L50, a so-called superbubble found in the Large Magellanic Cloud. X-ray data from Chandra is pink, while optical data is red, green, and blue. Superbubbles are created by winds from massive stars and the shock waves produced when the stars explode as supernovas.

Dr. Weisskopf is project scientist for NASA's Chandra X-ray Observatory. This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.

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X-ray astronomy grew in importance to the fields of astronomy and astrophysics. The National Academy of Sciences, as part of its "Decadal Survey" released in 1981, recommended as its number one priority for large missions an X-ray observatory along the lines that Giacconi outlined in 1963. This observatory was eventually realized as the Chandra X-Ray Observatory, which launched in 1999.

The Chandra Project is built around a high-resolution X-ray telescope capable of sharply focusing X-rays onto two different X-ray-sensitive cameras. The focusing ability is of the caliber such that one could resolve an X-ray emitting dime at a distance of about 5 kilometers!

The building of this major scientific observatory has many stories.

Learn more about Chandra at www.science.nasa.gov/missions/chandra . Take kids on a "Trip to the Land of the Magic Windows" and see the universe in X-rays and other invisible wavelengths of light at spaceplace.nasa.gov/magic-windows.

July Sky Data

New Jul 8 First Qtr Jul 15 Full Jul 22 Last Qtr Jul 29

**Best time for deep sky observing this month:
July 2 through July 10**



Mercury passes between the Earth and the Sun on July 9th and will only become visible in the pre-dawn sky during the last week of the month. It brightens rapidly as it comes to greatest western elongation from the Sun on the 29th of July reaching almost zeroth magnitude.

As July begins, **Venus** is 25 degrees east of the Sun at Sunset. Given a really low western horizon at the end of twilight it will have an elevation of just 5 degrees. During the evening of July 3rd, Venus is within the Beehive star cluster (M44 in Cancer) and the stars, though far fainter might be visible with binoculars at around 10:30 pm.

Mars will lie about 7 degrees above the north-eastern horizon half an hour before sunrise as July. On the morning of the 6th it will lie between the horns of Taurus some 6 degrees to the left of a thin crescent Moon. By the end of July, Mars will rise 2 hours before the Sun having moved eastwards into Gemini on the 14th of the month. From the 20th to the 24th of July it passes just above Jupiter being only 0.8 degrees distant on the morning of the 22nd.

Jupiter passed behind the Sun on the 19th of June and so, in July, re-emerges into the pre-dawn sky shining at magnitude -1.9. On the 6th of July it might just be possible to spot Jupiter down to the lower left of a thin crescent Moon and the planet Mars. During the month it will gradually rise sooner than the Sun making it easier to spot and move closer to Mars when, on the 22nd they are only 0.8 degrees apart.

Saturn is now several months past opposition so will be seen in the south west after sunset. It lies 11 degrees to the left of Spica. Saturn's magnitude falls during the month, from +0.5 to +0.6 magnitudes, while its angular size decreases from 17.6 to 17.1 arc seconds. The rings have now opened out to ~17 degrees from the line of sight and we are now observing the planet's southern hemisphere

Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
7/1/2013	01:06	14:35	05:42	20:08
7/5/2013	03:45	18:08	05:44	20:08
7/10/2013	08:05	21:28	05:47	20:07
7/15/2013	12:53	-----	05:50	20:05
7/20/2013	18:10	03:38	05:53	20:02
7/25/2013	21:55	09:21	05:57	19:59
7/31/2013	00:59	15:13	06:01	19:54

Planet Data

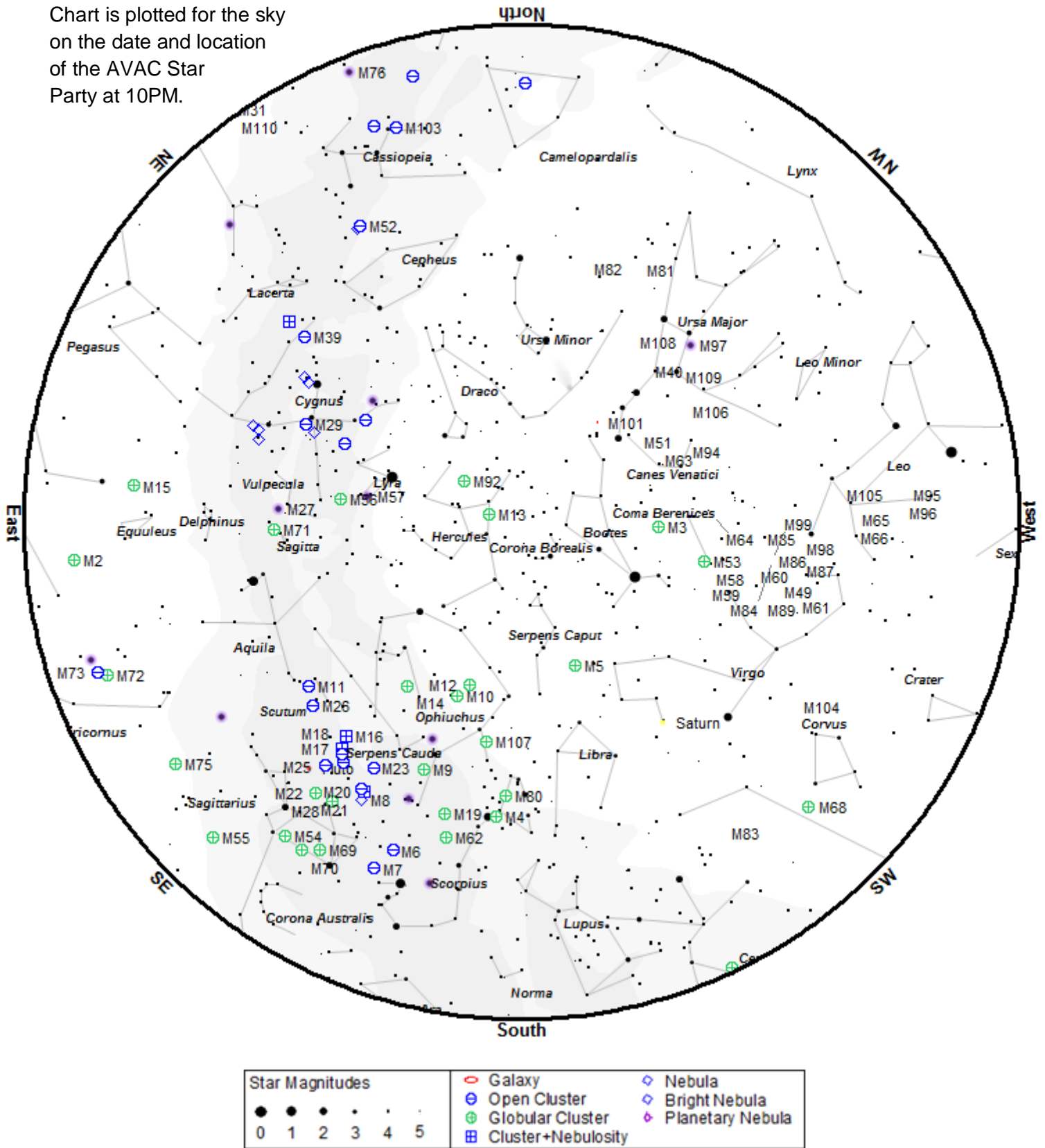
	Jul 1			
	Rise	Transit	Set	Mag
Mercury	06:40	13:49	20:53	3.3
Venus	07:36	14:48	22:01	-3.9
Mars	04:17	11:41	19:06	1.5
Jupiter	04:57	12:22	19:44	-1.9
Saturn	14:49	20:29	02:09	0.5

	Jul 15			
	Rise	Transit	Set	Mag
Mercury	05:13	12:22	19:25	3.2
Venus	08:05	15:01	21:58	-3.9
Mars	04:02	11:27	18:53	1.6
Jupiter	04:16	11:38	19:03	-1.9
Saturn	13:54	19:34	01:14	0.6

	Jul 31			
	Rise	Transit	Set	Mag
Mercury	04:28	11:42	18:54	-0.1
Venus	08:36	15:11	21:46	-3.9
Mars	03:47	11:11	18:36	1.6
Jupiter	03:29	10:50	18:14	-2.0
Saturn	12:53	18:33	00:12	0.6

Planet, Sun, and Moon data calculated for local time at Lancaster, CA

Chart is plotted for the sky on the date and location of the AVAC Star Party at 10PM.



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 4565	Gal	10.1	Com	12h36m20.8s	+25°59'15"	21:34	21:53	22:52	difficult
M 64	Gal	9.3	Com	12h56m43.8s	+21°41'00"	21:31	21:54	23:23	detectable
M 106	Gal	9.1	CVn	12h18m57.6s	+47°18'13"	21:33	21:57	23:31	detectable
M 94	Gal	8.7	CVn	12h50m53.1s	+41°07'12"	21:29	21:57	23:59	easy
M 3	Glob	6.3	CVn	13h42m11.0s	+28°22'42"	21:28	21:57	00:16	easy
NGC 5195	Gal	10.5	CVn	13h29m59.6s	+47°15'58"	21:32	21:59	00:09	detectable
M 51	Gal	8.7	CVn	13h29m52.3s	+47°11'40"	21:28	21:59	00:47	easy
M 5	Glob	5.7	Ser	15h18m34.0s	+02°05'00"	21:26	22:01	00:50	easy
M 101	Gal	8.4	UMa	14h03m12.4s	+54°20'53"	21:32	22:01	00:34	detectable
M 13	Glob	5.8	Her	16h41m41.0s	+36°27'36"	21:26	22:38	03:20	easy
M 12	Glob	6.1	Oph	16h47m14.0s	-01°56'48"	21:26	22:44	02:05	easy
M 10	Glob	6.6	Oph	16h57m09.0s	-04°06'00"	21:29	22:53	01:56	detectable
M 92	Glob	6.5	Her	17h17m07.0s	+43°08'12"	21:27	23:13	04:05	easy
M 14	Glob	7.6	Oph	17h37m36.0s	-03°14'48"	21:32	23:33	02:38	detectable
IC 4665	Open	5.3	Oph	17h46m18.0s	+05°43'00"	21:34	23:42	02:47	detectable
NGC 6543	PNe	8.3	Dra	17h58m33.4s	+66°37'59"	21:17	23:53	04:43	obvious
NGC 6572	PNe	8.0	Oph	18h12m06.4s	+06°51'12"	21:13	00:08	03:59	obvious
NGC 6633	Open	5.6	Oph	18h27m15.0s	+06°30'30"	21:28	00:23	04:13	easy
IC 4756	Open	5.4	Ser	18h39m00.0s	+05°27'00"	21:35	00:34	04:05	easy
M 11	Open	6.1	Sct	18h51m05.0s	-06°16'12"	21:48	00:47	03:52	detectable
M 57	PNe	9.4	Lyr	18h53m35.1s	+33°01'45"	21:28	00:49	04:35	easy
M 56	Glob	8.4	Lyr	19h16m36.0s	+30°11'06"	21:44	01:12	04:24	detectable
M 71	Glob	8.4	Sge	19h53m46.0s	+18°46'42"	21:45	01:49	04:35	easy
M 27	PNe	7.3	Vul	19h59m36.3s	+22°43'16"	21:45	01:55	04:35	easy
NGC 6871	Open	5.8	Cyg	20h05m59.0s	+35°46'36"	21:41	02:01	04:35	easy
NGC 6910	Open	7.3	Cyg	20h23m12.0s	+40°46'42"	21:40	02:19	04:37	easy
M 29	Open	7.5	Cyg	20h23m57.0s	+38°30'30"	21:45	02:19	04:35	easy
NGC 7009	PNe	8.3	Aqr	21h04m10.9s	-11°21'48"	00:17	02:59	04:47	obvious
M 15	Glob	6.3	Peg	21h29m58.0s	+12°10'00"	23:37	03:25	04:37	easy
M 39	Open	5.3	Cyg	21h31m48.0s	+48°26'00"	22:04	03:26	04:38	easy
M 2	Glob	6.6	Aqr	21h33m27.0s	-00°49'24"	00:07	03:28	04:35	detectable
IC 1396	Neb		Cep	21h39m06.0s	+57°30'00"	21:50	03:32	04:36	challenging
NGC 7160	Open	6.4	Cep	21h53m40.0s	+62°36'12"	21:45	03:40	04:41	obvious
Cocoon	Neb	10.0	Cyg	21h53m24.0s	+47°16'00"	22:30	03:42	04:38	challenging
NGC 7243	Open	6.7	Lac	22h15m08.0s	+49°53'54"	23:44	03:50	04:33	detectable
M 52	Open	8.2	Cas	23h24m48.0s	+61°35'36"	00:45	03:58	04:30	detectable
NGC 7790	Open	7.2	Cas	23h58m24.0s	+61°12'30"	23:53	04:00	04:38	obvious
NGC 7789	Open	7.5	Cas	23h57m24.0s	+56°42'30"	01:30	04:01	04:28	detectable

ID	Cls	Mag	Con	RA 2000	Dec 2000	Begin	Best	End	Difficulty
NGC 637	Open	7.3	Cas	01h43m04.0s	+64°02'24"	01:31	04:03	04:40	obvious
NGC 559	Open	7.4	Cas	01h29m31.0s	+63°18'24"	01:19	04:03	04:36	easy
NGC 457	Open	5.1	Cas	01h19m35.0s	+58°17'12"	01:23	04:03	04:36	obvious
NGC 663	Open	6.4	Cas	01h46m09.0s	+61°14'06"	01:41	04:04	04:35	easy
M 103	Open	6.9	Cas	01h33m23.0s	+60°39'00"	01:29	04:04	04:39	obvious
M 76	PNe	10.1	Per	01h42m19.9s	+51°34'31"	02:18	04:06	04:31	detectable
M 110	Gal	8.9	And	00h40m22.3s	+41°41'09"	02:05	04:06	04:31	detectable
M 31	Gal	4.3	And	00h42m44.3s	+41°16'07"	01:25	04:05	04:34	easy
M 32	Gal	8.9	And	00h42m41.8s	+40°51'58"	01:26	04:06	04:35	easy
NGC 752	Open	6.6	And	01h57m41.0s	+37°47'06"	02:47	04:08	04:33	challenging
M 33	Gal	6.4	Tri	01h33m50.9s	+30°39'36"	02:45	04:08	04:32	detectable

Astrophoto of The Month



M13 by Don Bryden. Taken from his house with the SBIG ST10-XME through a Meade SN-10

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/

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.

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