



Desert Sky Observer

Volume 37

Antelope Valley Astronomy Club Newsletter

November 2017

Up-Coming Events

November 4: [Prime Desert Moon Walk](#)

November 10: Club Meeting*

November 18: [Dark Sky Star Party](#)

* 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

The question of the ages....for astronomers: Why is it that the government starts Standard Time, and the end of Daylight Savings Time, just in time for it to get too cold for star parties? It's just not right and somehow seems backwards to me. Of course, for me, I'd like to see the end of DST altogether. I guess we just don't have good enough "astronomy lobbyists" in Sacramento or Washington.

We had a number of memorable Antelope Valley Astronomy Club events in October. First, but apparently not foremost in the eyes of most of the membership as the turnout was so light, we had our Annual Business Meeting and Board Election on Friday the 13th of October. Were most of you superstitious about traveling on the date? Yeah, that must have been it.

In any event, we had a very light turnout for the business meeting and, with no new nominations for board positions and no one new stepping up to the plate and volunteering to serve on the Executive Board, all of the existing board members reluctantly agreed to serve another term. Imagine that, the vote was unanimous. The AVAC 2018 Executive Board will be: President – Frank Moore, Secretary – Rose Moore, Treasurer – Rod Girard, Director of Community Development – Robert Lynch Jr and, for now, Vice President is still vacant. C'mon folks please, somebody, raise your hand, send an email, make a phone call, launch a carrier pigeon and send me a note telling that you'd be willing to serve as Vice President. We'll help you out as all of us on the board help each other out in a collaborative effort.

In Star Party news, Rose and I attended the annual Nightfall Star Party at the Palm Canyon Hotel and RV Resort in Borrego Springs from Thursday October 19 thru Sunday October 22. Bob Ayres was also there for all three nights and Rod Girard came down and shared our RV site with us on Saturday the 21st. We had mixed weather with Thursday night being mostly cloudy till about 11:00 pm, Friday night being partially cloudy early on but then clearing off before getting WINDY, and Saturday night being absolutely perfect. It's a wonderful event, scheduled for November 1 – 4 in 2018, so start making your plans now.

On Friday October 27, the AVAC was well represented at the College of the Canyons Fall Star Party. We had more members and telescopes there than any other organization which included The Local Group Astronomy Club of Santa Clarita and the Burbank Sidewalk Astronomers. AVAC members helping out with their telescopes included Rose and Frank Moore, Kevin Reilly, Darrell Bennett, Kris and Susie Chase,

Ellen Mahler and Rod Girard. Ann Coleal helped Rose with the handouts. The public turnout was a little lighter than usual, no doubt due to the Los Angeles Dodgers' World Series Game, but we were still kept busy and it gave everyone a little longer at the eyepiece.

The next night, on Saturday October 28, we supported Jeremy Amarant at the monthly Prime Desert Woodland Moonwalk. The was preceded by Jeremy's annual "Scary Science" event and Rose celebrated Halloween with decorations around the observing site and a bowl full of candy. This was also International Observe The Moon Night and we tried to emphasize lunar observing and had lunar maps on display and handouts for the public. Once again the World Series Game and other Halloween activities in town might have affected attendance but we still counted 95 members of the public and 10 members of the AVAC with five telescopes. Darrell Bennett was on hand with his 12" Meade SCT, Tom Hames had a 16" Meade Lightbridge, Matt and Michael Leone had their big Celestron 6" Refractor, Rod Girard had his Celestron C-9.25 with a Mallincam and screen for video observing and Rose and I had our 11" Celestron SCT. Once again, Ann helped Rose with the handouts.

Because of the holidays in November, which include Veteran's Day and Thanksgiving, the next Prime Desert Woodland Event will be held on Saturday November 4. Because Thanksgiving is on Thursday November 23, and numerous members expressed the sentiment that they will be busy or traveling for the holiday, plus the colder weather, discussion has led us to forego and cancel the November 18 Darky Sky Star Party.

Remember, our Annual Christmas Party is on Saturday December 2 at Gino's Italian Ristorante in the Lancaster Marketplace. You may remember that we previously had this event there when it was Julianni's. Rose has included details on the deadline to RSVP and ticket purchases and payment in her DSO submission.

As was noted in an email that Rose sent out, we are NOT going to have a silent auction at the Christmas Party and will save that activity for the summer picnic. This just takes up too much room and too much time, and causes too much work for our board members, especially the Treasurer, when we'd rather be relaxing and enjoying the friendship and fellowship at the event. We WILL be having a door prize and raffle for which everyone in attendance will receive one free ticket with additional chances available for purchase.

The donation of raffle items is welcome but certainly not required and, rather than just placing them on the table, we will be placing them, wrapped, under a tree for winners to come up select. You may wrap your donations, place them in small gift bags, or just bring them unwrapped and we will place them in gift bags at the event. Raffle items need not be astronomy related but no "white elephants" or joke gifts please. Mutually agreeable exchanges of the raffle items will certainly be allowed. You may give your items to a board member at the next AVAC meeting or just bring them to the Christmas Party.

We hope to make it a special event and hope as many of you as possible will attend.

I know it might be a little early to start thinking about it, but I'd like everyone to consider another 2018 event and get back to me about whether or not you are interested in attending as soon as possible. The 50th Anniversary Riverside Telescope Makers Conference (RTMC) will be held at YMCA Camp Oakes near Big Bear City on May 24 – May 28, 2018 (Thursday thru Monday, Memorial Day Weekend). You can go for as many, or as few, nights as you wish. In light of the 50th Anniversary, we have hopes that the organizers will be able to make it a truly memorable event and restore some of the enthusiasm and attendance that has been lost in recent years. We sponsored this event for many years and, if we have enough members who intend on attending, we will consider doing so again. If you get a chance, get back to me and let me know if this is something you might consider doing this year. Thanks.

Till next time, keep your eyes on the sky and the frost off your optics. – Frank Moore



Secretary

Rose Moore

Thank you members for coming out to our last couple of events! We had a good turnout, members and public, for the College of the Canyons and our last PDW!

Coming up on Saturday November 4th is another PDW Moon Walk at 6:30 pm. Come out and share the night sky with your telescope or enjoy the Moon Walk with Jeremy!

Weather permitting, dress accordingly.

On Saturday December 2nd at 6pm is our Christmas Party. This year it is at Gino's Ristorante, 44960 Valley Central Way, Lancaster, CA 93536 - in the Marketplace Shopping Center. It is located off of the 14, between Ave. I and Lancaster Blvd. If there are any questions, please contact a Board member! **The deadline for signing up for the Christmas Party is Nov. 18th, as we need to let Gino's know how many are attending.**

This will be a buffet style as we've had before and includes: Chicken Parmigiana, Lasagna, Penne Pasta Primavera (with veggies), Salad, Veggie Platter, Garlic Bread, Choice of Dessert (Tiramisu, Cheesecake, Chocolate Mouse), Soft drinks, Iced Tea, Coffee.

You may pay at the next meeting on Friday Nov. 10th, mail in a check to our post office box (AVAC, P.O. Box 8545, Lancaster, CA 93539), or pay via the Paypal link from the website: <http://www.avastronomyclub.org/christmas.html>

We will be having a raffle (see Frank's note above), so if you'd like to donate an item please bring it wrapped up for the Christmas Party. We will have extra bags and tissue paper if any gifts arrived unwrapped. You do not have to donate a raffle item to attend! If you plan to donate anything, please let a Board member know.

If you have any nominations for the Keith Lawson Award or the Holland Fountain Award, please let a Board member know asap!!

See you there! Rose

News Headlines

Small Asteroid or Comet 'Visits' from Beyond the Solar System

A small, recently discovered asteroid -- or perhaps a comet -- appears to have originated from outside the solar system, coming from somewhere else in our galaxy. If so, it would be the first "interstellar object" to be observed and confirmed by astronomers.

<https://goo.gl/EX3Ti6>

Atmosphere of the Moon

On the moon, there's no air to breathe, no breezes to make the flags planted there by the Apollo astronauts flutter. However, there is a very, very thin layer of gases on the lunar surface that can almost be called an atmosphere. Technically, it's considered an exosphere.

<https://www.space.com/18067-moon-atmosphere.html>

Cassini Images Still Being Processed

A month after it's fateful plunge into the gas giant, great images are still coming in from NASA's Cassini Mission to Saturn!

https://www.nasa.gov/mission_pages/cassini/images/index.html

Finding Ceres' global ocean

The inner solar system's only dwarf planet likely once hosted an entire ocean, now locked away in its crust. NASA's Dawn mission continues to reveal the intriguing past of Ceres, the Texas-sized dwarf planet residing in the main asteroid belt. Now, two new studies are delving even deeper into the world's potentially water-rich history.

<http://www.astronomy.com/news/2017/10/ceres-once-had-a-global-ocean>

Cosmic Forge of Rare Heavy Elements Discovered

The precious elements in our Earth-bound bling, gold and platinum, are thought to have been forged in ancient fiery cataclysms, when pairs of neutron stars spiraled together and merged into black holes....the first optical counterpart to a gravitational wave event, confirms that binary neutron star mergers are indeed major cosmic production sites of rare heavy elements.

<https://www.noao.edu/news/2017/pr1705.php>

Hubble Discovers Wobbling Galaxies

Using the NASA/ESA Hubble Space Telescope, astronomers have discovered that the brightest galaxies within galaxy clusters "wobble" relative to the cluster's centre of mass. This unexpected result is inconsistent with predictions made by the current standard model of dark matter. With further analysis it may provide insights into the nature of dark matter, perhaps even indicating that new physics is at work.

<http://spaceref.com/astronomy/hubble-discovers-wobbling-galaxies.html>

New Research Says "Levitating" Sands Explain how Mars Got its Landscape

Mars modern landscape is something of a paradox. It's many surface features are very similar to those on Earth that are caused by water-borne erosion. But for the life of them, scientists cannot imagine how water could have flown on Mars' cold and desiccated surface for most of Mars' history. Whereas Mars was once a warmer, wetter place, it has had a very thin atmosphere for billions of years now, which makes water flow and erosion highly unlikely.

<https://www.universetoday.com/137669/new-research-may-explain-mars-got-landscape1/>

November Sky Data

Full Nov 3 Last Qtr Nov 10 New Nov 18 First Qtr Nov 26

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



Mercury passed between us and the Sun on October 8th and will become visible again after sunset in the latter part of the month. It reaches greatest elongation, 22 degrees east of the Sun, on November 23rd but, due to the shallow angle of the ecliptic to the horizon, never lies far above the horizon.

Venus magnitude remains at -3.4 during the month as its angular diameter shrinks from 10.4 to 10 arc seconds. However, at the same time, its illuminated phase increases from 96% to 99% - which explains why its magnitude does not change.

Mars is now a morning object at the start of its new apparition and rises three to four hours earlier than the Sun. During the month, Mars has a magnitude of 1.9 and an angular size of just 3.9 to 4.2 arc seconds so no details will be seen on its salmon-pink surface.

Jupiter passed behind the Sun on October 26th and so will become visible again in the pre-dawn sky after the first week or so November. By the end of November it will rise some two hours before the Sun.

Saturn can be seen low in the southwest during twilight this month dropping down towards the horizon a little more each week. Last month, Saturn's rings reach their maximum tilt to the line of sight of 27 degrees.

The Leonid **meteor shower** happens every year around in mid November, as our world crosses the orbital path of Comet Tempel-Tuttle. In 2017, the peak night of the shower is expected from midnight to dawn on Friday and Saturday mornings of November 17 and 18. Best yet, there is no moon to intrude on the Leonid meteor shower in 2017. Although this shower is known for its periodic storms, no Leonid storm is expected this year.

Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
11/1/2017	5:47pm	5:17am	8:13am	6:57pm
11/5/2017	7:40pm	8:45am	7:17am	5:53pm
11/10/2017	n/a	1:38pm	7:21am	5:49pm
11/15/2017	4:42am	4:38pm	7:27am	5:47pm
11/20/2017	9:15am	7:45pm	7:31am	5:44pm
11/25/2017	12:57pm	n/a	7:35am	5:42pm
11/30/2017	4:57pm	5:04am	8:41am	5:41pm

Planet Data

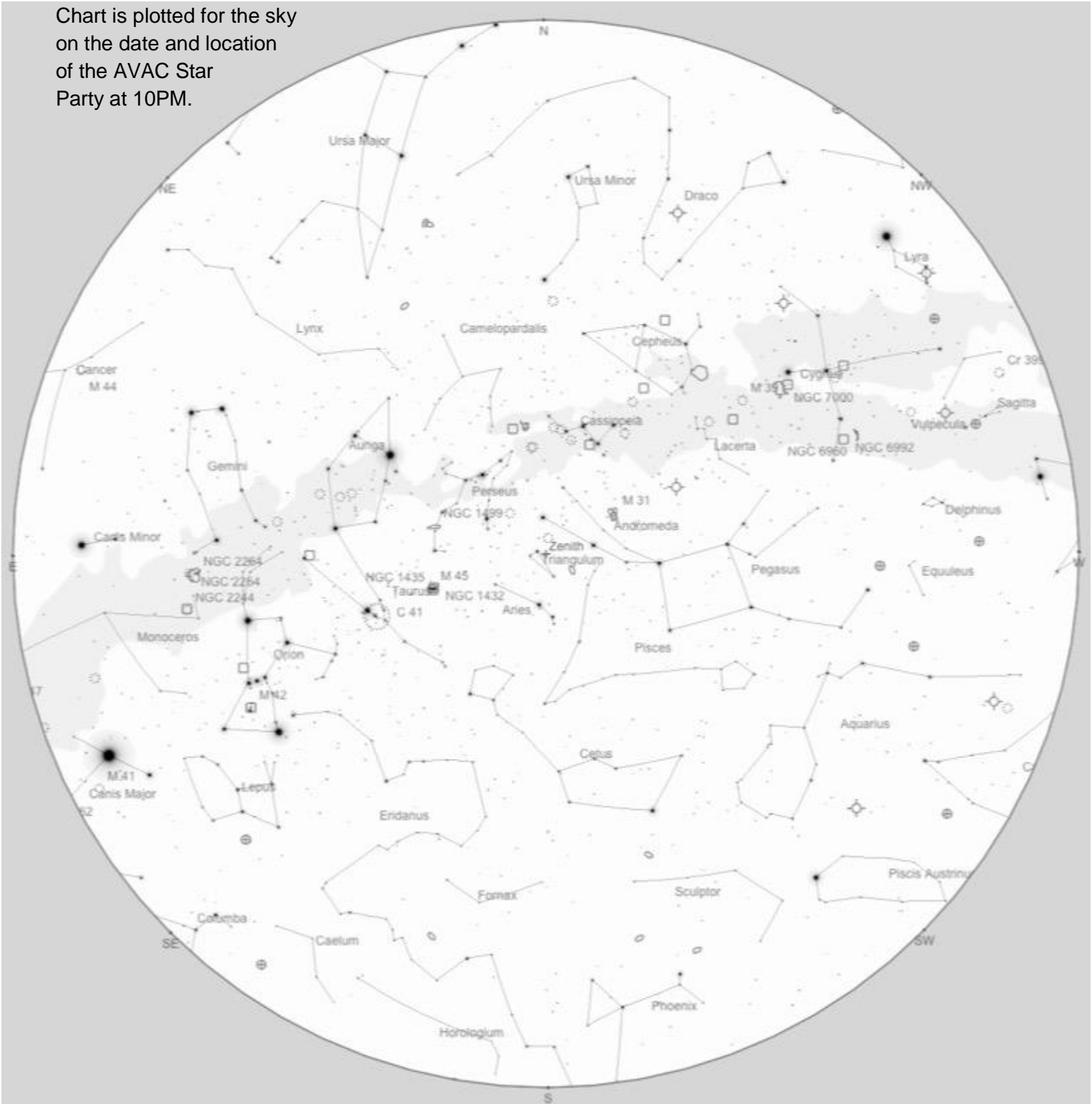
	Nov 1			
	Rise	Transit	Set	Mag
Mercury	9:29am	2:35pm	7:40pm	-0.3
Venus	6:54am	12:36am	6:19pm	-3.4
Mars	5:36am	11:35am	5:34pm	2.0
Jupiter	7:52am	1:21pm	6:51pm	-1.2
Saturn	11:48am	4:47pm	9:45pm	1.7

	Nov 15			
	Rise	Transit	Set	Mag
Mercury	10:13am	3:03pm	7:53pm	-0.2
Venus	7:23am	12:48pm	6:13pm	-3.4
Mars	5:22am	11:12am	5:02pm	1.9
Jupiter	7:11am	12:38pm	6:04pm	-1.2
Saturn	10:59am	3:57pm	8:56pm	1.6

	Nov 30			
	Rise	Transit	Set	Mag
Mercury	10:21am	3:10pm	7:59pm	0.2
Venus	7:56am	1:04pm	6:13pm	-3.4
Mars	5:08am	10:48am	4:28pm	1.9
Jupiter	6:27am	11:51am	5:15pm	-1.3
Saturn	10:07am	3:05pm	8:04pm	1.6

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 transit time of the object.

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC7047	Gal	Aqr	21h 16m 28s	-00°49'36"	14.0	2:42 PM	8:43 PM	2:43 AM
NGC7063	Open	Cyg	21h 24m 21s	+36°29'12"	7.0	12:47 PM	8:51 PM	4:55 AM
NGC7067	Open	Cyg	21h 24m 23s	+48°00'36"	9.7	11:30 AM	8:51 PM	6:12 AM
NGC7076	Neb	Cep	21h 26m 24s	+62°53'33"		Circum	8:53 PM	Circum
M15	Glob	Peg	21h 29m 58s	+12°10'02"	7.5	2:20 PM	8:56 PM	3:33 AM
M39	Open	Cyg	21h 31m 42s	+48°25'00"	5.5	11:33 AM	8:58 PM	6:23 AM
M2	Glob	Aqr	21h 33m 27s	-00°49'23"	7.5	2:59 PM	9:00 PM	3:00 AM
NGC7090	Gal	Ind	21h 36m 28s	-54°33'24"	11.0	7:36 PM	9:03 PM	10:30 PM
M30	Glob	Cap	21h 40m 22s	-23°10'45"	8.5	4:11 PM	9:07 PM	2:03 AM
NGC7160	Open	Cep	21h 53m 40s	+62°36'12"	6.1	Circum	9:20 PM	Circum
NGC7172	Gal	PsA	22h 02m 02s	-31°52'12"	11.9	5:04 PM	9:28 PM	1:53 AM
NGC7188	Gal	Aqr	22h 03m 29s	-20°19'03"	14.0	4:25 PM	9:30 PM	2:35 AM
NGC7226	Open	Cep	22h 10m 27s	+55°23'54"	9.6	Circum	9:37 PM	Circum
NGC7235	Open	Cep	22h 12m 25s	+57°16'16"	7.7	Circum	9:39 PM	Circum
NGC7261	Open	Cep	22h 20m 06s	+58°03'00"	8.4	Circum	9:46 PM	Circum
NGC7354	P Neb	Cep	22h 40m 20s	+61°17'07"	13.0	Circum	10:07 PM	Circum
NGC7457	Gal	Peg	23h 01m 00s	+30°08'41"	10.8	2:51 PM	10:27 PM	6:03 AM
NGC7483	Gal	Psc	23h 05m 48s	+03°32'41"	14.0	4:20 PM	10:32 PM	4:44 AM
NGC7492	Glob	Aqr	23h 08m 27s	-15°36'41"	11.5	5:15 PM	10:35 PM	3:54 AM
NGC7513	Gal	Scl	23h 13m 14s	-28°21'30"	11.8	6:02 PM	10:40 PM	3:17 AM
NGC7538	Neb	Cep	23h 13m 38s	+61°30'42"		Circum	10:40 PM	Circum
NGC7563	Gal	Peg	23h 15m 56s	+13°11'46"	14.0	4:03 PM	10:42 PM	5:22 AM
NGC7585	Gal	Aqr	23h 18m 01s	-04°39'03"	11.7	4:54 PM	10:44 PM	4:35 AM
NGC7582	Gal	Gru	23h 18m 23s	-42°22'14"	10.6	7:12 PM	10:45 PM	2:17 AM
NGC7635	Neb	Cas	23h 20m 45s	+61°12'42"		Circum	10:47 PM	Circum
NGC7662	P Neb	And	23h 25m 54s	+42°32'06"	9.0	2:14 PM	10:52 PM	7:30 AM
NGC7822	Neb	Cep	00h 03m 36s	+67°09'00"		Circum	11:30 PM	Circum
NGC40	P Neb	Cep	00h 13m 01s	+72°31'19"	11.0	Circum	11:39 PM	Circum
NGC55	Gal	Scl	00h 15m 08s	-39°13'12"	8.0	7:51 PM	11:41 PM	3:32 AM
NGC97	Gal	And	00h 22m 30s	+29°44'43"	13.0	4:15 PM	11:49 PM	7:23 AM
NGC134	Gal	Scl	00h 30m 22s	-33°14'44"	10.1	7:38 PM	11:57 PM	4:15 AM
NGC133	Open	Cas	00h 31m 19s	+63°21'00"	9.0	Circum	11:58 PM	Circum
NGC144	Gal	Cet	00h 31m 21s	-22°38'45"	14.0	7:00 PM	11:58 PM	4:55 AM
NGC185	Gal	Cas	00h 38m 58s	+48°20'14"	9.2	2:41 PM	12:05 AM	9:29 AM
NGC189	Open	Cas	00h 39m 35s	+61°05'06"	8.8	Circum	12:06 AM	Circum
NGC210	Gal	Cet	00h 40m 35s	-13°52'24"	10.9	6:43 PM	12:07 AM	5:31 AM
M31	Gal	And	00h 42m 44s	+41°16'08"	4.3	3:39 PM	12:09 AM	8:39 AM
NGC225	Open	Cas	00h 43m 39s	+61°46'30"	7.0	Circum	12:10 AM	Circum
NGC246	P Neb	Cet	00h 47m 03s	-11°52'19"	8.0	6:43 PM	12:13 AM	5:44 AM

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC254	Gal	Scl	00h 47m 28s	-31°25'16"	11.8	7:48 PM	12:14 AM	4:40 AM
NGC263	Gal	Cet	00h 48m 48s	-13°06'27"	14.0	6:49 PM	12:15 AM	5:42 AM
NGC288	Glob	Scl	00h 52m 45s	-26°35'01"	8.1	7:35 PM	12:19 AM	5:03 AM
NGC307	Gal	Cet	00h 56m 33s	-01°46'19"	14.0	6:25 PM	12:23 AM	6:21 AM
NGC309	Gal	Cet	00h 56m 43s	-09°54'50"	11.8	6:47 PM	12:23 AM	5:59 AM
NGC326	Gal	Psc	00h 58m 23s	+26°51'55"	13.2	5:01 PM	12:25 AM	7:48 AM
NGC381	Open	Cas	01h 08m 19s	+61°35'00"	9.0	Circum	12:35 AM	Circum
NGC436	Open	Cas	01h 15m 58s	+58°48'42"	8.8	Circum	12:42 AM	Circum
NGC507	Gal	Psc	01h 23m 40s	+33°15'21"	11.2	5:01 PM	12:50 AM	8:39 AM
NGC584	Gal	Cet	01h 31m 21s	-06°52'05"	10.4	7:14 PM	12:58 AM	6:42 AM
M103	Open	Cas	01h 33m 23s	+60°39'00"	7.0	Circum	1:00 AM	Circum
M33	Gal	Tri	01h 33m 51s	+30°39'37"	6.2	5:22 PM	1:00 AM	8:38 AM
NGC613	Gal	Scl	01h 34m 18s	-29°25'08"	10.0	8:27 PM	1:01 AM	5:34 AM
NGC615	Gal	Cet	01h 35m 06s	-07°20'26"	11.5	7:19 PM	1:01 AM	6:44 AM
NGC636	Gal	Cet	01h 39m 06s	-07°30'45"	11.3	7:23 PM	1:05 AM	6:48 AM
M76	P Neb	Per	01h 42m 18s	+51°34'15"	12.0	3:06 PM	1:09 AM	11:11 AM
NGC637	Open	Cas	01h 43m 04s	+64°02'24"	8.2	Circum	1:09 AM	Circum
NGC659	Open	Cas	01h 44m 24s	+60°40'24"	7.9	Circum	1:11 AM	Circum
NGC706	Gal	Psc	01h 51m 51s	+06°17'46"	13.0	6:58 PM	1:18 AM	7:38 AM
NGC725	Gal	Cet	01h 52m 36s	-16°31'04"	14.0	8:02 PM	1:19 AM	6:36 AM
NGC720	Gal	Cet	01h 53m 00s	-13°44'19"	10.2	7:55 PM	1:19 AM	6:44 AM
NGC752	Open	And	01h 57m 41s	+37°47'06"	5.7	5:14 PM	1:24 AM	9:35 AM
NGC744	Open	Per	01h 58m 33s	+55°28'24"	7.9	Circum	1:25 AM	Circum
NGC798	Gal	Tri	02h 03m 20s	+32°04'39"	14.0	5:46 PM	1:30 AM	9:13 AM
NGC869	Open	Per	02h 19m 00s	+57°07'42"	4.0	Circum	1:45 AM	Circum
NGC884	Open	Per	02h 22m 18s	+57°08'12"	4.0	Circum	1:49 AM	Circum
NGC907	Gal	Cet	02h 23m 02s	-20°42'46"	13.0	8:46 PM	1:49 AM	6:53 AM
NGC896	Neb	Cas	02h 25m 28s	+62°01'09"		Circum	1:52 AM	Circum
NGC1012	Gal	Ari	02h 39m 15s	+30°09'05"	13.0	6:30 PM	2:06 AM	9:42 AM
NGC1023	Gal	Per	02h 40m 24s	+39°03'46"	9.5	5:49 PM	2:07 AM	10:24 AM
NGC1055	Gal	Cet	02h 41m 45s	+00°26'33"	10.6	8:04 PM	2:08 AM	8:12 AM
NGC1027	Open	Cas	02h 42m 40s	+61°35'42"	6.7	Circum	2:09 AM	Circum
M77	Gal	Cet	02h 42m 41s	-00°00'48"	9.7	8:06 PM	2:09 AM	8:12 AM
NGC1073	Gal	Cet	02h 43m 40s	+01°22'33"	11.0	8:04 PM	2:10 AM	8:16 AM
NGC1097	Gal	For	02h 46m 19s	-30°16'29"	9.3	9:42 PM	2:13 AM	6:43 AM
NGC1087	Gal	Cet	02h 46m 25s	-00°29'56"	11.0	8:11 PM	2:13 AM	8:14 AM
NGC1085	Gal	Cet	02h 46m 25s	+03°36'25"	14.0	8:00 PM	2:13 AM	8:25 AM
NGC1160	Gal	Per	03h 01m 13s	+44°57'17"	13.0	5:33 PM	2:28 AM	11:23 AM
NGC1167	Gal	Per	03h 01m 42s	+35°12'19"	12.3	6:30 PM	2:28 AM	10:26 AM
NGC1169	Gal	Per	03h 03m 35s	+46°23'08"	11.7	5:24 PM	2:30 AM	11:36 AM
NGC1261	Glob	Hor	03h 12m 16s	-55°12'57"	8.4	1:27 AM	2:39 AM	3:50 AM
NGC1262	Gal	Eri	03h 15m 34s	-15°52'48"	14.0	9:23 PM	2:42 AM	8:00 AM
NGC1300	Gal	Eri	03h 19m 41s	-19°24'41"	10.4	9:38 PM	2:46 AM	7:54 AM
NGC1316	Gal	For	03h 22m 42s	-37°12'30"	8.9	10:49 PM	2:49 AM	6:50 AM
NGC1326	Gal	For	03h 23m 56s	-36°27'51"	10.5	10:46 PM	2:50 AM	6:54 AM

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC1325	Gal	Eri	03h 24m 25s	-21°32'40"	11.6	9:50 PM	2:51 AM	7:52 AM
NGC1333	Neb	Per	03h 29m 20s	+31°24'56"		7:15 PM	2:56 AM	10:37 AM
NGC1395	Gal	Eri	03h 38m 30s	-23°01'39"	11.0	10:09 PM	3:05 AM	8:01 AM
NGC1448	Gal	Hor	03h 44m 32s	-44°38'41"	11.0	11:53 PM	3:11 AM	6:28 AM
NGC1432	Neb	Tau	03h 45m 50s	+24°22'06"		7:58 PM	3:12 AM	10:27 AM
NGC1435	Neb	Tau	03h 46m 10s	+23°45'54"		8:00 PM	3:13 AM	10:25 AM
M45	Open	Tau	03h 47m 30s	+24°07'00"	1.6	8:00 PM	3:14 AM	10:27 AM
NGC1444	Open	Per	03h 49m 25s	+52°39'30"	6.6	4:56 PM	3:16 AM	1:35 PM
NGC1491	Neb	Per	04h 03m 14s	+51°18'57"		5:31 PM	3:30 AM	1:28 PM
NGC1499	Neb	Per	04h 03m 14s	+36°22'00"		7:26 PM	3:30 AM	11:33 AM
NGC1518	Gal	Eri	04h 06m 49s	-21°10'44"	11.8	10:31 PM	3:33 AM	8:35 AM
NGC1501	P Neb	Cam	04h 06m 59s	+60°55'14"	13.0	Circum	3:33 AM	Circum
NGC1502	Open	Cam	04h 07m 50s	+62°19'54"	5.7	Circum	3:34 AM	Circum
NGC1521	Gal	Eri	04h 08m 19s	-21°03'07"	11.4	10:32 PM	3:35 AM	8:37 AM
NGC1514	P Neb	Tau	04h 09m 17s	+30°46'33"	10.0	7:57 PM	3:36 AM	11:14 AM
NGC1513	Open	Per	04h 09m 57s	+49°30'54"	8.4	6:00 PM	3:36 AM	1:13 PM
NGC1535	P Neb	Eri	04h 14m 16s	-12°44'22"	10.0	10:13 PM	3:41 AM	9:08 AM
NGC1549	Gal	Dor	04h 15m 45s	-55°35'31"	9.9	2:42 AM	3:42 AM	4:42 AM
NGC1596	Gal	Dor	04h 27m 38s	-55°01'36"	11.0	2:38 AM	3:54 AM	5:10 AM
NGC1579	Neb	Per	04h 30m 14s	+35°16'47"		7:58 PM	3:57 AM	11:55 AM
NGC1664	Open	Aur	04h 51m 06s	+43°40'30"	7.6	7:32 PM	4:17 AM	1:03 PM
NGC1724	Open	Aur	05h 03m 32s	+49°29'30"	10.0	6:54 PM	4:30 AM	2:06 PM
NGC1788	Neb	Ori	05h 06m 53s	-03°20'27"		10:40 PM	4:33 AM	10:27 AM
NGC1808	Gal	Col	05h 07m 43s	-37°30'48"	9.9	12:35 AM	4:34 AM	8:33 AM
NGC1817	Open	Tau	05h 12m 15s	+16°41'24"	7.7	9:49 PM	4:39 AM	11:28 AM
NGC1851	Glob	Col	05h 14m 07s	-40°02'46"	7.3	12:55 AM	4:40 AM	8:26 AM
M79	Glob	Lep	05h 24m 11s	-24°31'29"	8.5	11:59 PM	4:51 AM	9:42 AM
NGC1907	Open	Aur	05h 28m 05s	+35°19'30"	8.2	8:56 PM	4:54 AM	12:53 PM
NGC1952	Neb	Tau	05h 34m 32s	+22°00'52"	8.4	9:54 PM	5:01 AM	12:07 PM
NGC1973	Neb	Ori	05h 35m 05s	-04°43'55"		11:12 PM	5:01 AM	10:51 AM
NGC1981	Open	Ori	05h 35m 09s	-04°25'54"	4.6	11:11 PM	5:01 AM	10:52 AM
NGC1977	Neb	Ori	05h 35m 16s	-04°49'15"		11:12 PM	5:02 AM	10:51 AM
M42	D Neb	Ori	05h 35m 16s	-05°23'25"	4.0	11:13 PM	5:02 AM	10:50 AM
NGC1975	Neb	Ori	05h 35m 18s	-04°41'05"		11:12 PM	5:02 AM	10:52 AM
NGC1980	Neb	Ori	05h 35m 25s	-05°54'54"		11:15 PM	5:02 AM	10:48 AM
M43	D Neb	Ori	05h 35m 31s	-05°16'03"	9.0	11:13 PM	5:02 AM	10:50 AM
NGC1990	Neb	Ori	05h 36m 13s	-01°12'07"		11:03 PM	5:03 AM	11:02 AM
NGC1999	Neb	Ori	05h 36m 25s	-06°42'57"		11:18 PM	5:03 AM	10:47 AM
NGC2023	Neb	Ori	05h 41m 38s	-02°15'33"		11:11 PM	5:08 AM	11:05 AM
NGC2024	Neb	Ori	05h 41m 42s	-01°51'24"		11:10 PM	5:08 AM	11:06 AM
NGC2022	P Neb	Ori	05h 42m 06s	+09°05'13"	12.0	10:41 PM	5:08 AM	11:36 AM
NGC2064	Neb	Ori	05h 46m 18s	+00°00'21"		11:10 PM	5:13 AM	11:15 AM
NGC2067	Neb	Ori	05h 46m 31s	+00°07'54"		11:10 PM	5:13 AM	11:16 AM
M78	D Neb	Ori	05h 46m 45s	+00°04'48"	8.0	11:10 PM	5:13 AM	11:16 AM
NGC2071	Neb	Ori	05h 47m 07s	+00°17'39"		11:10 PM	5:13 AM	11:17 AM

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
M37	Open	Aur	05h 52m 18s	+32°33'12"	6.0	9:33 PM	5:19 AM	1:04 PM
NGC2126	Open	Aur	06h 02m 32s	+49°52'00"	10.0	7:48 PM	5:29 AM	3:09 PM
NGC2149	Neb	Mon	06h 03m 31s	-09°43'50"		11:54 PM	5:30 AM	11:06 AM
NGC2170	Neb	Mon	06h 07m 32s	-06°23'57"		11:49 PM	5:34 AM	11:19 AM
NGC2169	Open	Ori	06h 08m 24s	+13°57'54"	5.9	10:53 PM	5:35 AM	12:16 PM
M35	Open	Gem	06h 09m 00s	+24°21'00"	5.5	10:21 PM	5:35 AM	12:50 PM
NGC2174	Neb	Ori	06h 09m 24s	+20°39'34"		10:34 PM	5:36 AM	12:38 PM
NGC2182	Neb	Mon	06h 09m 31s	-06°19'35"		11:50 PM	5:36 AM	11:21 AM
NGC2183	Neb	Mon	06h 10m 47s	-06°12'43"		11:51 PM	5:37 AM	11:23 AM
NGC2185	Neb	Mon	06h 11m 00s	-06°13'36"		11:52 PM	5:37 AM	11:23 AM
NGC2207	Gal	CMa	06h 16m 22s	-21°22'22"	10.7	12:41 AM	5:43 AM	10:44 AM
NGC2232	Open	Mon	06h 28m 01s	-04°50'48"	3.9	12:05 AM	5:54 AM	11:44 AM
NGC2236	Open	Mon	06h 29m 39s	+06°49'48"	8.5	11:35 PM	5:56 AM	12:17 PM
NGC2244	Open	Mon	06h 31m 56s	+04°56'35"	4.8	11:42 PM	5:58 AM	12:14 PM
NGC2245	Neb	Mon	06h 32m 41s	+10°09'24"		11:28 PM	5:59 AM	12:30 PM
NGC2247	Neb	Mon	06h 33m 05s	+10°19'17"		11:28 PM	5:59 AM	12:31 PM
NGC2242	P Neb	Aur	06h 34m 07s	+44°46'38"	14.0	9:07 PM	6:00 AM	2:54 PM
NGC2252	Open	Mon	06h 34m 42s	+05°22'00"	8.0	11:44 PM	6:01 AM	12:18 PM
NGC2263	Gal	CMa	06h 38m 29s	-24°50'52"	13.0	1:15 AM	6:05 AM	10:55 AM
NGC2261	Neb	Mon	06h 39m 10s	+08°44'40"		11:39 PM	6:06 AM	12:32 PM
NGC2264	Open	Mon	06h 40m 58s	+09°53'42"	3.9	11:37 PM	6:07 AM	12:37 PM
M41	Open	CMa	06h 46m 01s	-20°45'24"	5.0	1:09 AM	6:12 AM	11:16 AM
NGC2282	Neb	Mon	06h 46m 51s	+01°18'56"		12:07 AM	6:13 AM	12:19 PM
NGC2281	Open	Aur	06h 48m 17s	+41°04'42"	5.4	9:46 PM	6:15 AM	2:44 PM
NGC2298	Glob	Pup	06h 48m 59s	-36°00'15"	9.4	2:09 AM	6:15 AM	10:22 AM
NGC2316	Neb	Mon	06h 59m 41s	-07°46'39"		12:44 AM	6:26 AM	12:08 PM
M50	Open	Mon	07h 02m 42s	-08°23'00"	7.0	12:49 AM	6:29 AM	12:09 PM
NGC2331	Open	Gem	07h 06m 59s	+27°15'42"	9.0	11:09 PM	6:33 AM	1:58 PM
NGC2343	Open	Mon	07h 08m 06s	-10°37'00"	6.7	1:01 AM	6:34 AM	12:08 PM
NGC2353	Open	Mon	07h 14m 30s	-10°16'00"	7.1	1:06 AM	6:41 AM	12:16 PM
NGC2359	Neb	CMa	07h 18m 30s	-13°13'36"		1:19 AM	6:45 AM	12:11 PM
NGC2362	Open	CMa	07h 18m 41s	-24°57'18"	4.1	1:55 AM	6:45 AM	11:35 AM
NGC2384	Open	CMa	07h 25m 10s	-21°01'18"	7.4	1:49 AM	6:52 AM	11:54 AM
NGC2371	P Neb	Gem	07h 25m 34s	+29°29'17"	13.0	11:19 PM	6:52 AM	2:25 PM
NGC2336	Gal	Cam	07h 27m 04s	+80°10'41"	10.5	Circum	6:53 AM	Circum
NGC2375	Gal	Gem	07h 27m 09s	+33°49'55"	14.0	11:02 PM	6:54 AM	2:45 PM
NGC2395	Open	Gem	07h 27m 12s	+13°36'30"	8.0	12:13 AM	6:54 AM	1:34 PM
NGC2392	P Neb	Gem	07h 29m 11s	+20°54'42"	10.0	11:53 PM	6:56 AM	1:58 PM
NGC2414	Open	Pup	07h 33m 12s	-15°27'12"	7.9	1:40 AM	7:00 AM	12:19 PM
NGC2421	Open	Pup	07h 36m 13s	-20°36'42"	8.3	1:58 AM	7:03 AM	12:07 PM
NGC2427	Gal	Pup	07h 36m 28s	-47°38'08"	11.6	4:08 AM	7:03 AM	9:57 AM
M47	Open	Pup	07h 36m 35s	-14°29'00"	4.5	1:40 AM	7:03 AM	12:26 PM
NGC2423	Open	Pup	07h 37m 06s	-13°52'18"	6.7	1:39 AM	7:03 AM	12:28 PM
NGC2419	Glob	Lyn	07h 38m 08s	+38°52'54"	10.4	10:48 PM	7:04 AM	3:21 PM
NGC2432	Open	Pup	07h 40m 53s	-19°04'36"	10.0	1:58 AM	7:07 AM	12:16 PM

ID	Type	Const	RA	Dec	Mag	Rise	Transit	Set
NGC2438	P Neb	Pup	07h 41m 50s	-14°44'07"	10.0	1:46 AM	7:08 AM	12:30 PM
NGC2440	P Neb	Pup	07h 41m 55s	-18°12'31"	11.0	1:57 AM	7:08 AM	12:20 PM
NGC2451	Open	Pup	07h 45m 15s	-37°58'00"	2.8	3:15 AM	7:12 AM	11:08 AM
NGC2452	P Neb	Pup	07h 47m 26s	-27°20'07"	13.0	2:32 AM	7:14 AM	11:55 AM
NGC2453	Open	Pup	07h 47m 35s	-27°11'42"	8.3	2:32 AM	7:14 AM	11:56 AM
NGC2455	Open	Pup	07h 49m 01s	-21°18'06"	10.0	2:13 AM	7:15 AM	12:17 PM
NGC2477	Open	Pup	07h 52m 10s	-38°31'48"	5.8	3:25 AM	7:19 AM	11:12 AM
NGC2467	Open	Pup	07h 52m 26s	-26°26'12"	7.0	2:34 AM	7:19 AM	12:03 PM
NGC2482	Open	Pup	07h 55m 12s	-24°15'30"	7.3	2:29 AM	7:22 AM	12:14 PM
NGC2483	Open	Pup	07h 55m 39s	-27°53'42"	7.6	2:43 AM	7:22 AM	12:01 PM
NGC2498	Gal	Gem	07h 59m 39s	+24°58'57"	14.0	12:09 AM	7:26 AM	2:43 PM
NGC2509	Open	Pup	08h 00m 48s	-19°03'06"	9.0	2:18 AM	7:27 AM	12:36 PM
NGC2533	Open	Pup	08h 07m 04s	-29°53'00"	7.6	3:01 AM	7:33 AM	12:05 PM
NGC2547	Open	Vel	08h 10m 09s	-49°12'54"	4.7	4:56 AM	7:36 AM	10:17 AM
NGC2546	Open	Pup	08h 12m 15s	-37°35'42"	6.3	3:40 AM	7:39 AM	11:37 AM
M48	Open	Hya	08h 13m 43s	-05°45'00"	5.5	1:53 AM	7:40 AM	1:27 PM
NGC2571	Open	Pup	08h 18m 56s	-29°45'00"	7.0	3:13 AM	7:45 AM	12:18 PM
NGC2549	Gal	Lyn	08h 18m 58s	+57°48'10"	11.1	Circum	7:45 AM	Circum
NGC2575	Gal	Cnc	08h 22m 45s	+24°17'49"	14.0	12:35 AM	7:49 AM	3:03 PM
NGC2587	Open	Pup	08h 23m 25s	-29°30'30"	9.0	3:16 AM	7:50 AM	12:23 PM
NGC2610	P Neb	Hya	08h 33m 23s	-16°08'57"	14.0	2:42 AM	8:00 AM	1:17 PM
NGC2626	Neb	Vel	08h 35m 31s	-40°40'18"		4:19 AM	8:02 AM	11:44 AM
M44	Open	Cnc	08h 40m 24s	+19°40'00"	4.0	1:08 AM	8:07 AM	3:06 PM
NGC2660	Open	Vel	08h 42m 38s	-47°12'00"	8.8	5:11 AM	8:09 AM	11:07 AM
M67	Open	Cnc	08h 51m 18s	+11°48'00"	7.5	1:42 AM	8:18 AM	2:53 PM
NGC2681	Gal	UMa	08h 53m 33s	+51°18'49"	10.3	10:21 PM	8:20 AM	6:19 PM
NGC2693	Gal	UMa	08h 56m 59s	+51°20'48"	11.7	10:24 PM	8:23 AM	6:22 PM
NGC2742	Gal	UMa	09h 07m 34s	+60°28'46"	11.7	Circum	8:34 AM	Circum
NGC2784	Gal	Hya	09h 12m 19s	-24°10'21"	10.1	3:46 AM	8:39 AM	1:31 PM
NGC2792	P Neb	Vel	09h 12m 27s	-42°25'41"	14.0	5:07 AM	8:39 AM	12:11 PM
NGC2794	Gal	Cnc	09h 16m 02s	+17°35'23"	14.0	1:50 AM	8:42 AM	3:35 PM
NGC2795	Gal	Cnc	09h 16m 04s	+17°37'42"	14.0	1:50 AM	8:42 AM	3:35 PM
NGC2835	Gal	Hya	09h 17m 53s	-22°21'18"	11.0	3:46 AM	8:44 AM	1:43 PM
NGC2880	Gal	UMa	09h 29m 35s	+62°29'27"	11.6	Circum	8:56 AM	Circum
NGC2972	Open	Vel	09h 40m 13s	-50°19'24"	9.9	6:38 AM	9:07 AM	11:36 AM
NGC2974	Gal	Sex	09h 42m 33s	-03°41'56"	10.8	3:16 AM	9:09 AM	3:02 PM
NGC2986	Gal	Hya	09h 44m 16s	-21°16'43"	10.9	4:09 AM	9:11 AM	2:13 PM
M81	Gal	UMa	09h 55m 33s	+69°03'56"	7.8	Circum	9:22 AM	Circum
NGC3060	Gal	Leo	09h 56m 19s	+16°49'52"	14.0	2:33 AM	9:23 AM	4:13 PM
NGC3067	Gal	Leo	09h 58m 21s	+32°22'10"	11.7	1:40 AM	9:25 AM	5:10 PM
NGC3105	Open	Vel	10h 00m 39s	-54°47'18"	9.7	8:05 AM	9:27 AM	10:49 AM
NGC3079	Gal	UMa	10h 01m 58s	+55°40'51"	10.6	Circum	9:28 AM	Circum

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.

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- Individual membership at \$25.00 per year.
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- Desert Sky Observer—monthly newsletter.
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Frank Moore (661) 972-4775
president@avastronomyclub.org

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vice-president@avastronomyclub.org

Secretary:

Rose Moore (661) 972-1953
secretary@avastronomyclub.org

Treasurer:

Rod Girard (661) 803-7838
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:

Vacant
library@avastronomyclub.org

Club Historian:

Tom Koonce (661) 943-8200
history@avastronomyclub.org

Webmaster:

Steve Trotta (661) 269-5428
webmaster@avastronomyclub.org

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al@avastronomyclub.org

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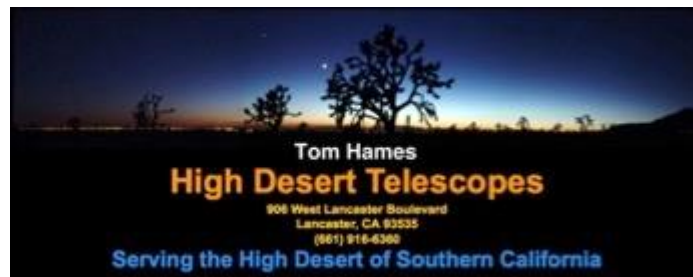


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