



# Desert Sky Observer

Volume 34

Antelope Valley Astronomy Club Newsletter

August 2014

## Up-Coming Events

- August 06 Club Board Meeting
- August 08 Club Meeting
- August 16 Prime Desert Moon Walk
- August 23 Club Star-B-QUE Star Party @ Brite Lake

\* Monthly meetings are held at the S.A.G.E. Planetarium on the Cactus School campus in Palmdale, the second Friday of each month. The meeting location is at the northeast corner of Avenue R and 20<sup>th</sup> Street East. Meetings start at 7 p.m. and are open to the public. *Please note that food and drink are not allowed in the planetarium*



**President**  
**Frank Moore**

What an observing season we're having folks. (Yes, I am being facetious.)

First, at the end of March, our Messier Marathon was nearly blown away by wind and then was almost completely clouded over with only the occasional sucker holes. Still, we made the best of it and had a good barbeque and nice time of friendship and fellowship.

Next, in April the opening day of the Poppy Festival greeted Rose and I with snow in Tehachapi and we had high winds, dust, and scattered clouds throughout the entirety of the event in Lancaster. It was so windy and dusty that we had to pack everything in early on the first day of the event. Still, we put on a good show for the public and shared visions of the Sun and a few Planets with them.

Our Discovery School outreach in May found us dodging the clouds but still managing to share some solar and planetary views with the kids, teachers, and parents including the rare treat of catching Mercury at dusk. In like manner, the Tehachapi High School star party was initially clouded over but cleared up late allowing us to share some deep sky images with the attendees.

Members who attended The Starlight Festival and RTMC in Big Bear were at first greeted by rain and hail with it eventually clearing up in the latter days of the event. Looking on the bright side, the saturated ground ensured that they didn't have to deal with the usually ever present dust at Camp Oakes.

In keeping with this year's pattern, our star party at the Poppy Reserve in June found us dealing with wind and conditions which varied from clouds on the horizon, to almost totally overcast, to scattered clouds which allowed us to view deep sky images and share our passion with the public.

This past weekend was much of the same. Rose, Duane Lewis, and I manned the AVAC presence at Lockheed Martin's "A Night to Explore" at the Palmdale Boys and Girls club. Though we had clear skies earlier in the day, by the time we were set up at the event the sky was mostly overcast. I found myself actively seeking out clients during brief clearings either grabbing folks in the parking lot, or going inside and telling folks, "If you want to see prominences through the solar scope come right now." At dusk, and after dark, we were able to show them Mars and Saturn though it was either through thin clouds or an occasional clearing. Conditions made viewing deep space objects impossible.

Rose was inside with the display board, which had been updated with the most current celestial events, brochures, handouts and some materials about the Orion crew capsule program that Lockheed Martin had provided. I also had materials from the International Dark Sky Association's "Save Our Stars" program including IDA brochures, decals, and dark skies videos playing on a 32" monitor. Once again, ours was the best looking booth there. Robert Lynch showed up later in the evening and was able to help Rose with the booth for a time and to man the observations at our scope as I began to strike the booth and pack up.

We have our Star-B-Que and picnic coming up at Brite Lake near Tehachapi on August 23. This is our private picnic at 4:00 PM followed by a public star party starting at 7:30. Let's all hope that this pattern of tropical of moisture and high temperatures is broken by then and that we can have temperate weather and clear skies for viewing. Don't forget to RSVP for our head count and tell Rose or any board member what you're bringing for the potluck. The club provides the meat and drinks and Rose will be sending out an email soon with details and noting items that we might still need. Also, look around and see if you have any extra astronomy goodies you might want to donate for the raffle and silent auction.

Turn off some lights...and "Save Our Stars".



## Vice President Rose Moore

We do not have a speaker for August's meeting so there will be a video presentation by Jeremy on 'Back to the Moon for Good', plus our dome show. Our speaker for September's meeting will be Chris Butler, topic TBA soon. October's meeting is our Annual Business Meeting, so it's almost time to start thinking of who you want to nominate for next year's Board positions!

Our club summer Star-B-Que is this month on Saturday August 23<sup>rd</sup> starting at 4pm. The location this year is Brite Lake in Tehachapi. Directions will be posted on the website, and we will also have copies at our next meeting. We have started a sign up sheet. Please either sign up at the next meeting, or email me, to make sure you are on the list! We need a head count by the week before, so that purchases can be made for the right amount of food and items. We also need new or used items for the raffle and silent auction. Come for just the bbq or to stargaze at our public star party, which starts around 7:30pm! This is an overnight event till 8am Sunday.

Other upcoming events include: Prime Desert Woodlands on August 16<sup>th</sup>, September 13<sup>th</sup>, and October 11<sup>th</sup>. Also, a Total Lunar Eclipse on Wednesday October 8<sup>th</sup> and a Partial Solar Eclipse on Thursday October 23<sup>rd</sup>.

See you there!

Rose



## Director of Community Development

**Don Bryden**

July 29, 2014

Did you hear about the most anticipated astronomical event of the year? Or at least in October? You may be thinking about our second total lunar eclipse of the year that will happen early in the morning of October 8<sup>th</sup>, but no, that's not it! No, I'm talking about the passing of comet C/2013 A1 Siding Spring. It's going to come within only 82,000 miles, only narrowly missing colliding with the planet! Oh, did I mention, the planet is Mars, not the Earth? Still, Mars and a bright comet in the same field of view! The only downside is that by mid-October Mars will be low in the west after sunset. It'll take dark skies and an unobstructed view to the west to see it... Well not to worry, there's always that lunar eclipse!

For August we have a Prime Desert Moonwalk on the 16<sup>th</sup> and the picnic a week later. The afternoon of the 17<sup>th</sup> until the morning of the 18<sup>th</sup> you may be able to spy a very close conjunction of Jupiter and Venus. They'll be closest on Sunday afternoon but the Sun may interfere. Your best bet is early Monday morning just before sunrise. The following Friday, Mars and Saturn will be at their closest (though not nearly as close as the Venus-Jupiter pair). Look for them the following night, during the club picnic, as Mars and Saturn will still be nice and close. Then on the night of the 31<sup>st</sup> the moon will join them in a nice triple conjunction!

So there are plenty of observing opportunities this month and I hope to see you all under the stars.

## Space Place

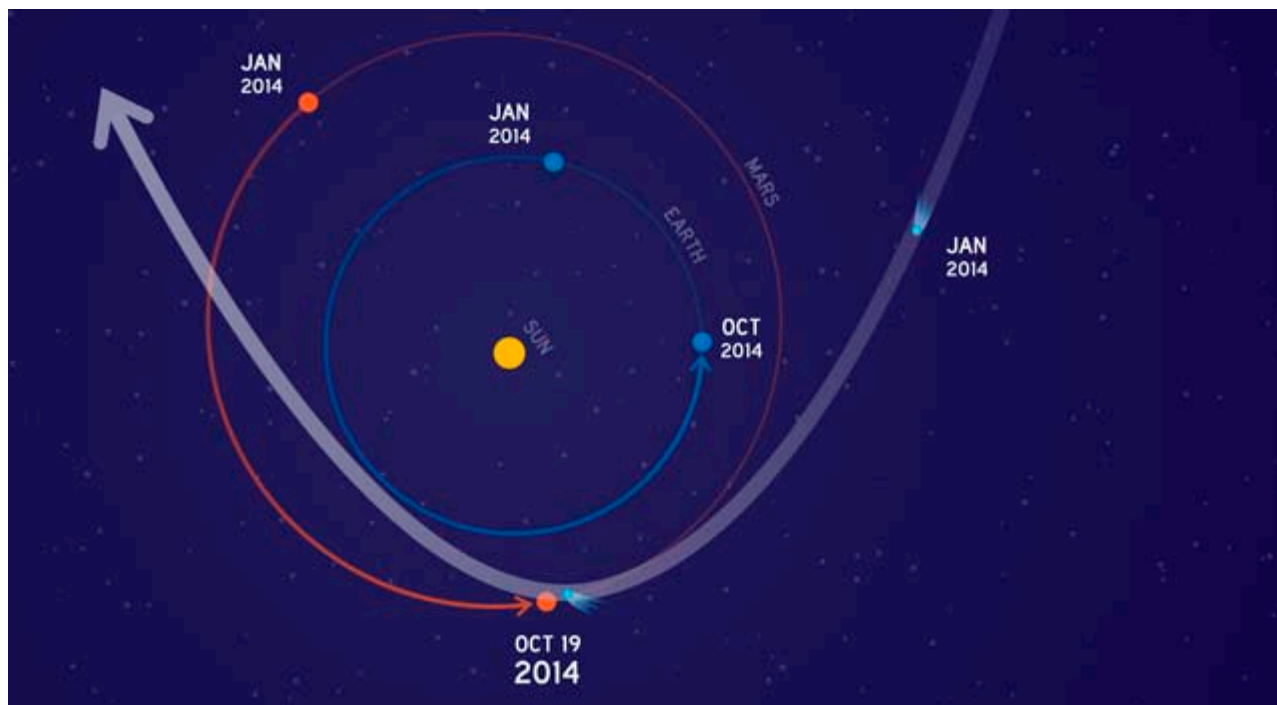
Here is a Video Link to a Project that is quite an amazing story in its use of old imaging technology. Data that would have been lost forever were it not for the Engineers and Volunteers. It starts out slow but builds to a fantastic story.

If the Link will not work, just copy and paste to your Browser.

<http://vimeo.com/100736619>

## News Headlines

### NASA Mars Spacecraft Prepare for Close Comet Flyby



This graphic depicts the orbit of comet C/2013 A1 Siding Spring as it swings around the sun in 2014. On Oct. 19, the comet will have a very close pass at Mars. Its nucleus will miss Mars by about 82,000 miles (132,000 kilometers). The comet's trail of dust particles shed by the nucleus might be wide enough to reach Mars or might also miss it. See more information [about this comet](#).

NASA is taking steps to protect its Mars orbiters, while preserving opportunities to gather valuable scientific data, as Comet C/2013 A1 Siding Spring heads toward a close flyby of Mars on Oct. 19.

The comet's nucleus will miss Mars by about 82,000 miles (132,000 kilometers), shedding material hurtling at about 35 miles (56 kilometers) per second, relative to Mars and Mars-orbiting spacecraft. At that velocity, even the smallest particle -- estimated to be about one-fiftieth of an inch (half a millimeter) across -- could cause significant damage to a spacecraft.

NASA currently operates two Mars orbiters, with a third on its way and expected to arrive in Martian orbit just a month before the comet flyby. Teams operating the orbiters plan to have all spacecraft positioned on the opposite side of the Red Planet when the comet is most likely to pass by.

"Three expert teams have modeled this comet for NASA and provided forecasts for its flyby of Mars," explained Rich Zurek, chief scientist for the Mars Exploration Program at NASA's Jet Propulsion Laboratory in Pasadena, California. "The hazard is not an impact of the comet nucleus, but the trail of debris coming from it. Using constraints provided by Earth-based observations, the modeling results indicate that

the hazard is not as great as first anticipated. Mars will be right at the edge of the debris cloud, so it might encounter some of the particles -- or it might not."

During the day's events, the smallest distance between Siding Spring's nucleus and Mars will be less than one-tenth the distance of any known previous Earthly comet flyby. The period of greatest risk to orbiting spacecraft will start about 90 minutes later and last about 20 minutes, when Mars will come closest to the center of the widening dust trail from the nucleus.

NASA's Mars Reconnaissance Orbiter (MRO) made one orbit-adjustment maneuver on July 2 as part of the process of repositioning the spacecraft for the Oct. 19 event. An additional maneuver is planned for Aug. 27. The team operating NASA's Mars Odyssey orbiter is planning a similar maneuver on Aug. 5 to put that spacecraft on track to be in the right place at the right time, as well.

NASA's Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft is on its way to the Red Planet and will enter orbit on Sept. 21. The MAVEN team is planning to conduct a precautionary maneuver on Oct. 9, prior to the start of the mission's main science phase in early November.

In the days before and after the comet's flyby, NASA will study the comet by taking advantage of how close it comes to Mars. Researchers plan to use several instruments on the Mars orbiters to study the nucleus, the coma surrounding the nucleus, and the tail of Siding Spring, as well as the possible effects on the Martian atmosphere. This particular comet has never before entered the inner solar system, so it will provide a fresh source of clues to our solar system's earliest days.

MAVEN will study gases coming off the comet's nucleus into its coma as it is warmed by the sun. MAVEN also will look for effects the comet flyby may have on the planet's upper atmosphere and observe the comet as it travels through the solar wind.

Odyssey will study thermal and spectral properties of the comet's coma and tail. MRO will monitor Mars' atmosphere for possible temperature increases and cloud formation, as well as changes in electron density at high altitudes. The MRO team also plans to study gases in the comet's coma. Along with other MRO observations, the team anticipates this event will yield detailed views of the comet's nucleus and potentially reveal its rotation rate and surface features.

Mars' atmosphere, though much thinner than Earth's, is thick enough that NASA does not anticipate any hazard to the Opportunity and Curiosity rovers on the planet's surface, even if dust particles from the comet hit the atmosphere and form into meteors. Rover cameras may be used to observe the comet before the flyby, and to monitor the atmosphere for meteors while the comet's dust trail is closest to the planet.

Observations from Earth-based and space telescopes provided data used for modeling to make predictions about Siding Spring's Mars flyby, which were in turn used for planning protective maneuvers. The three modeling teams were headed by researchers at the University of Maryland in College Park, the Planetary Science Institute in Tucson, Arizona, and JPL. For more information about the Mars flyby of comet Siding Spring, visit: <http://mars.nasa.gov/comets/sidingspring>

## Astrophoto of The Month



### **The Eagle Nebula**

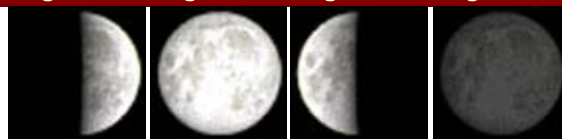
M16, the Eagle Nebula in Serpens. Over thirty hours of narrowband data (Ha, OIII and SII) mapped to the Canada-France-Hawaii Telescope palette. Where the Hubble palette maps Ha to green, SII to red and OIII to blue, the CFHT palette is Ha-OIII-SII as RGB.

Courtesy: Don Bryden-Two Goats Observatory



## August Sky Data

First Qtr Aug 4      Full Aug 10      Last Qtr Aug 17      New Aug 25



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

The mornings of August 12th and 13th: midnight to dawn - look out for the Perseid meteor shower.



A Perseid meteor

If clear, these two mornings should give us a chance of observing the Perseid meteor shower - produced by debris from the comet Swift-Tuttle. The peak of the shower is actually around mid-day on the 12th so the morning of the 12th should be somewhat better than the 13th, but the peak is quite broad and so there is a second chance to see them on the morning of the 13th. Most meteors are seen looking about 50 degrees from the "radiant" which lies between Perseus and Cassiopeia. Sadly, this year, the Moon will be just past full, so its light will wash out the fainter meteors but, within a half hour period, you should still see half a dozen or more.

### AUGUST 17

**An unusual daytime conjunction** - Venus and Jupiter, both visible in the daytime, will only be 14 arc-minutes apart! Look around 5pm when the sky is not so bright. The pair will be **BELOW** the sun.

## Sun and Moon Rise and Set

Date	Moonrise	Moonset	Sunrise	Sunset
8/01/2014	11:16	22:58	06:03	19:55
8/05/2014	15:10	00:57	06:06	19:51
8/10/2014	19:40	06:06	06:09	19:46
8/15/2014	23:03	11:46	06:13	19:40
8/20/2014	02:05	16:19	06:17	19:34
8/25/2014	06:28	19:25	06:21	19:28
8/31/2014	12:01	22:54	06:25	19:20

## Planet Data

	Aug 1			
	Rise	Transit	Set	Mag
<b>Mercury</b>	05:22	12:29	17:34	-1.6
<b>Venus</b>	04:16	11:26	18:35	-3.9
<b>Mars</b>	12:51	18:15	23:38	0.4
<b>Jupiter</b>	06:35	12:35	19:35	-1.8
<b>Saturn</b>	13:51	19:10	00:35	0.5

	Aug 15			
	Rise	Transit	Set	Mag
<b>Mercury</b>	18:47	13:28	20:08	-1.2
<b>Venus</b>	04:42	11:43	18:44	-3.9
<b>Mars</b>	12:35	17:51	23:06	0.5
<b>Jupiter</b>	04:55	11:53	18:50	-1.8
<b>Saturn</b>	12:58	18:17	23:37	0.6

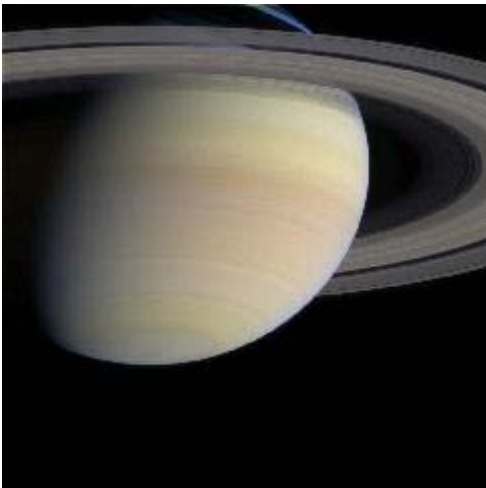
	Aug 31			
	Rise	Transit	Set	Mag
<b>Mercury</b>	07:59	14:05	20:10	-0.2
<b>Venus</b>	05:15	11:59	18:44	-3.9
<b>Mars</b>	12:21	17:27	22:33	0.6
<b>Jupiter</b>	04:09	11:04	17:58	-1.8
<b>Saturn</b>	11:59	17:17	22:36	0.6

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

**Jupiter**

A Cassini image of Jupiter . NASA

**Jupiter.** Jupiter passed behind the Sun on the 24th of July so will not be visible in the early part of the month. By mid month, should you have a low east-north-east horizon, it will be visible shining at magnitude -1.8. By month's end it will have risen to around 20 degrees above the horizon by 5:30 am BST. Though hindered by the atmosphere, early risers should be able to spot the equatorial belts across the ~32 arc second disk and the Galilean satellites as they weave their way around it. From the 14th to the 21st, Jupiter lies within 4 degrees of Venus. It will appear far less bright than Venus as, though larger, it is seven times further from the Sun and only receives ~2% of the sunlight that falls on Venus.

**Saturn**

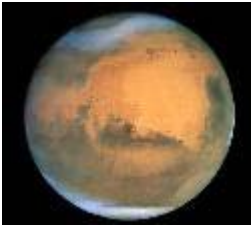
The Planet Saturn. Cassini - NASA

**Saturn** lies in Libra near the wide double star Alpha Librae falling in brightness a little from +0.5 to +0.6 magnitudes during the month. One hour after sunset it will lie ~20 degrees above the horizon so the atmosphere will limit the view of its 17 arc second disk but the ring system should still show nicely along with Titan, its largest satellite.

**Mercury**

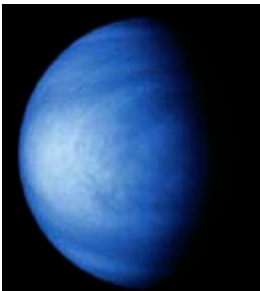
Messenger image of Mercury NASA

**Mercury** will be so low above the horizon this month that it will be very difficult to spot even with binoculars or a telescope.

**Mars**

Hubble Space Telescope image of Mars.  
Jim Bell et al. AURA / STScI / NASA

**Mars:** As August begins, Mars lies midway between Spica and Alpha Librae and moves eastwards from Virgo into Libra on the 10th. Mars shrinks from 7.7 to 7.0 arc seconds in angular diameter during the month and at the same time its brightness falls from magnitude +0.4 to +0.6. It is best observed as darkness falls but, given its low elevation, it is unlikely that any details will be seen on its salmon-pink surface.

**Venus**

Venus showing some cloud structure.

**Venus** rises in the east-northeast in the pre dawn sky but, on the 1st, is only ~20 degrees above the horizon by sunrise. On the far side of the Sun, its disk, now almost fully lit, drops in angular size from 10.7 to 10.2 arc seconds during the month but, at the same time, the percentage of the disk which is illuminated increases from 82 to 97%. As a result the effective area reflecting the sun's light stays almost constant so the magnitude stays at -3.8. Venus moves from Gemini on the 11th to join Jupiter in Cancer before moving into Leo on the 27th but, by then, it will only be 14 degrees above the horizon at sunrise.

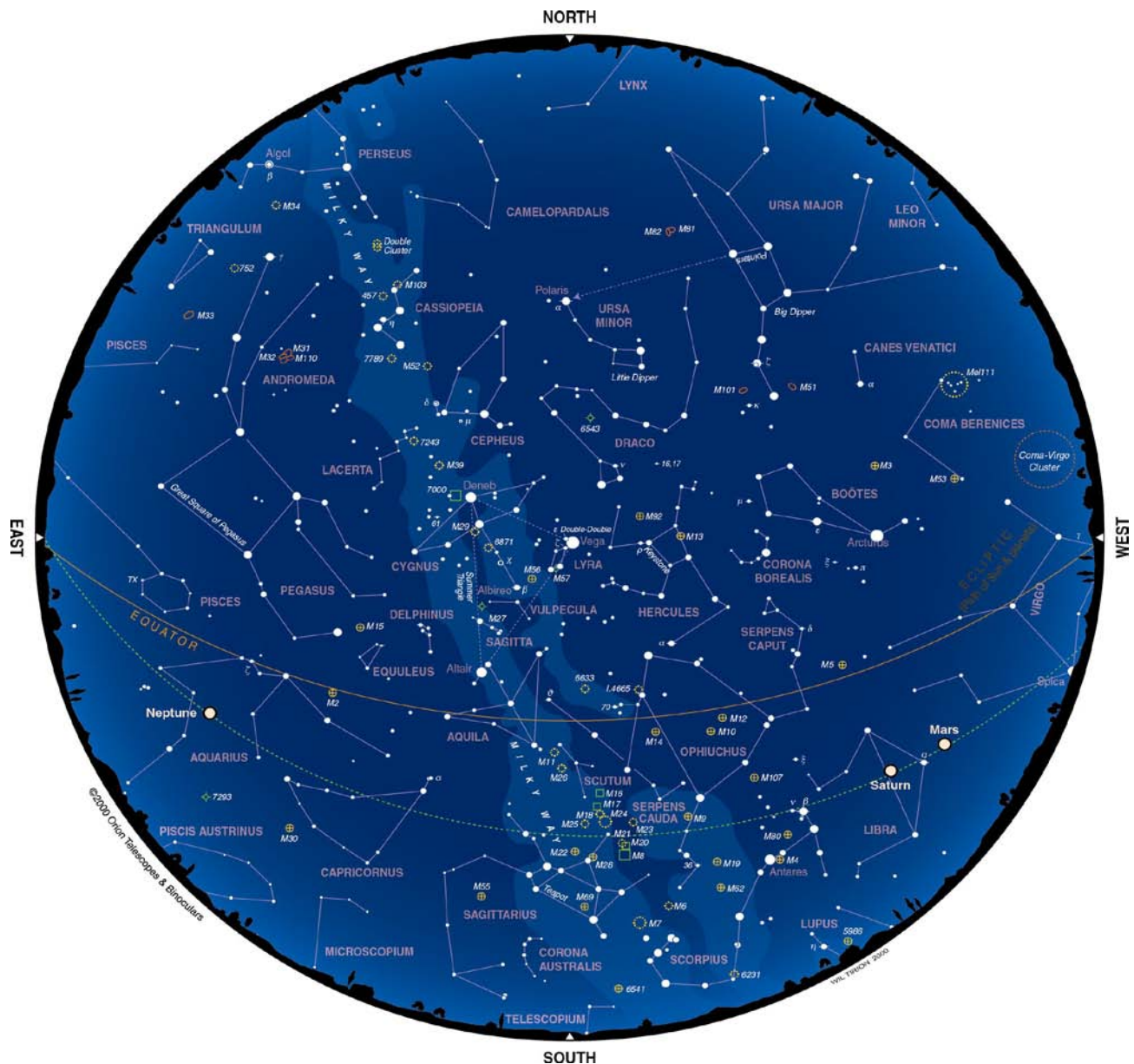
**August's Star Chart**

**How To Use This Chart:**

This chart depicts the evening sky for the times indicated. The edge represents the horizon; the chart's center is the point overhead. Hold a printout of the chart out in front of you so the horizon marked with the direction you're facing is down. Then match the stars on the map with the real stars in the sky.

This chart shows the sky as seen from 40 degrees north latitude. When viewing from a lower latitude, stars in the southern sky will appear higher above the horizon while those in the northern sky will be lower. When viewing from a latitude higher than 40 degrees, the opposite will be true.

This is the star chart for August, 2014: Early August 10 p.m. Mid August 9 p.m. Late August 8 p.m.



## 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/)

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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