

Vandenberg Amateur Astronomical Society presents The Sidereal Times



M27 Dumbbell nebula (see page 7)

Meeting News:

The January meeting we briefly discussed the brochure that Tom created for VAAS, collected some membership dues and enjoyed an evening of Pizza and camaraderie at Mi Amori pizza parlor.

Reminder: VAAS club meeting Feb 10th 7:00PM
Manzanita School, teachers lounge.



Lunar Calendar:

New Moon 26th

Full Moon 11th

Zaca winery event



Presidents Message

Pizza! SpaceX! Syrabs and Stars! Los FloresPark!

What a month January was for all of us in VAAS. Our annual Pizza Party at Mi Amore found a large number of our group enjoying food, fellowship, and renewing our memberships.

SpaceX gave the Central Coast a beautiful launch Saturday morning, January 14, with its Falcon 9 carrying 10 Iridium satellites into orbit. I was thrilled to watch through simple field glasses as the amazingly tall "bird" rose over the hill and into a perfectly clear blue sky. I also had an amazing view as the SpaceX crew maneuvered the Falcon 9 first stage for three or four minutes of its successful return to an out-of-view landing on a barge out in the Pacific. A first-time event for the West Coast.

VAAS made a strong showing at the Zaca Mesa Winery's membership party. My personal thanks to our members who joined me, Vahan, Jana, Andy and Lisha, Louise, and Vince for their presentations and friendly interactions with Zaca Mesa's staff and guests. The overcast night forced us inside as anticipated but a fun evening was had by all. We enjoyed the fine wine they gifted each of us for our efforts!

At "press time" we have two members committed to showing visitors the deep sky wonders above Los Flores Park for their Star Party, Saturday, January 28th. Thank you, Vince and Craig for stepping up! The next Los Flores Park Star Party will be the night of April 1st. Let's plan early for this one and make a strong showing for the very nice crew of Los Flores as they help educate the public about the joys of nature.

Nearly a year ago, we recognized the need for a brochure about VAAS to have available at outreach events. The idea evolved into a rack card that could be handed out, mailed, or displayed in public spaces. The card is now a reality and has been distributed to several venues around Lompoc. They were enthusiastically received by the Lompoc Museum, Lompoc Public Library, the Dick DeWees Center, the Boys and Girls Club, and the Chamber of Commerce. Cards are also in Solvang at the Visitors Center, The Wildling Museum, and The Book Loft. Think of this card as having a two-fold purpose: to increase opportunities for VAAS outreach in our area and to encourage new membership. Think of ways you can use this card to promote VAAS, places you would like to see them, and friends you can give them to. Bring your ideas to our meeting on the 10th where we will have them available for distribution.

Speaking of the meeting, Jana will make a presentation on meteorites, complete with examples from her collection. See you there!

Tom

Events

Feb 4th Star party at the Observatory.



Feb 11th Full Moon. The Moon will be located on the opposite side of Earth as the Sun and its face will be fully illuminated. This phase occurs at 00:33 UTC.

Also on this date there will be a Penumbral Lunar eclipse. It will be visible in most of South America, Eastern Canada, and South Eastern Africa.

Feb 18th Star party at the Observatory.



Feb 25th Star party at the Observatory.



Feb 26th Annual solar eclipse of the Sun. The Sun's Corona will not be visible during an annual eclipse. The path will begin off the coast of Chile and pass through southern Chile and Argentina, across the Atlantic Ocean and into Angola and the Congo in Africa.

Zaca Winery Event



Star party's and Events

Jan 7th Star party at the observatory cancelled due to weather.



Jan 21st Star party at the observatory. Star party cancelled due to weather.



Jan 21st Zaca Mesa Winery Stars and Syrah event. Jana Hunking, Vince Tobin, Tom Gerald, Andy and Lisha Wallace, Louise Gray and Vahan Yeterian in attendance. Vince set up his warped space time and angular displays, Vahan his laptop with astro pictures, Andy had 2 scopes for display and Jana gave a very well received presentation on the Sun and eclipses. Vince had almost all the guests and some children working his Warped Space and Time display and also demonstrated the effect of angular momentum. Andy gave a presentation about the scopes and optics systems. Tom helped set up all the displays and interfaced with the guests of the winery. Louise also interfaced with guests. Vahan presented astro photos and discussed how the photos were taken and processed and included technical facts about several of the objects of interest that were viewed. About 50 guests plus winery personnel were in attendance. There were lots of questions from the guests about astronomy, telescopes, displays and our program. It was a very well received event for the guests and Winery personnel. It was a good night for VAAS.



Zaca cont

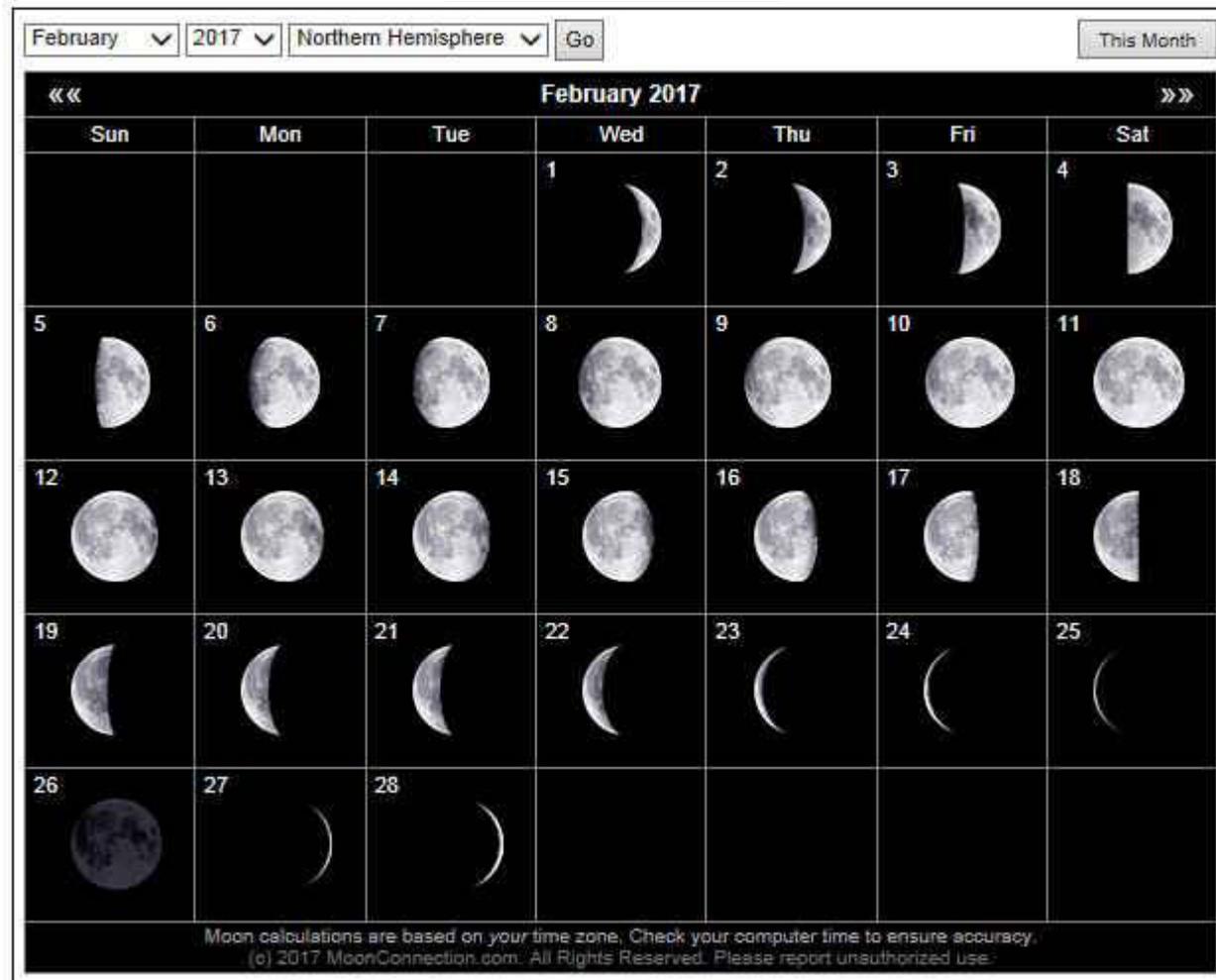


VAAS New Years 2017 Pizza Party





February 2017 Moon



Full 11th, New 26th 1st Quarter 3rd, Last Quarter 18th

Moon Talk

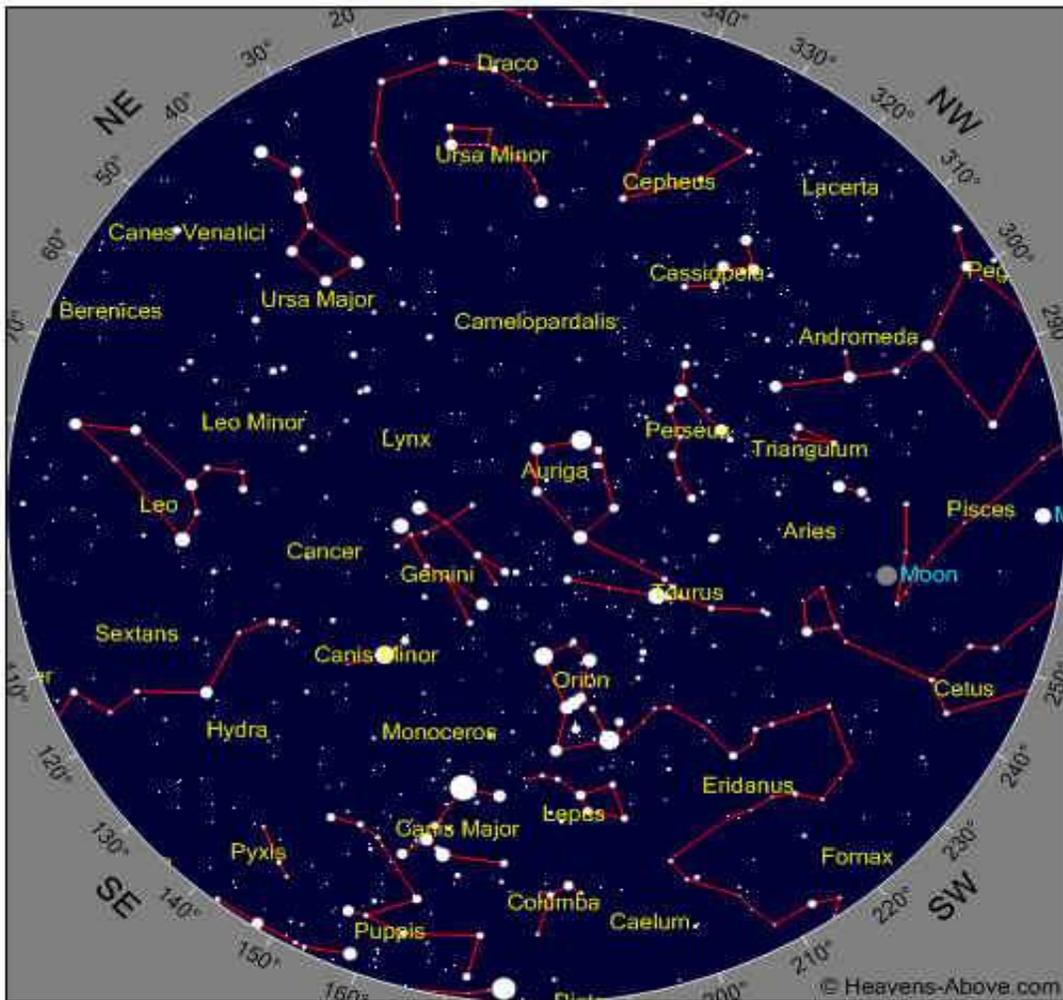
Perhaps the coolest thing about the Moon is that it always shows us the same face. This is because long ago Earth's gravitational effects slowed the Moon's rotation about its axis. Once the Moon's rotation slowed enough to match its orbital period (the time it takes the Moon to go around Earth) the effect stabilized. Many of the Moons around other planets behave similarly.

The full Moon on February 11th has been known by some Native American tribes as the Full Hunger Moon since the harsh winter weather made hunting difficult.



February 2017 Sky

Some Objects of interest M1, M42, Double cluster



Time

Year	2017	Month	2	Day	2	Hour	21	Minute	7
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Zaca Event



Photo Courtesy Jon Walke



Messier 27 NGC 6853 known as the Dumbbell nebula is located in the constellation of Vulpecula and lies at a distance of 1360 light years. Its visual magnitude brightness is 7.5 and is about 8 arcminutes in diameter. The nebula appears to be shaped like a prolate spheroid. It was found that its expansion velocity is 31Km/s. Given its semi minor axis radius of 1.01 Ly implies that the kinematic age of the nebula is 9800 yrs. The central star is a white dwarf and is estimated to have a radius of 0.055r which gives it a size larger than any other known white dwarfs. This star is an extremely hot bluish white dwarf at about 85,000 degrees Kelvin.

Like many planetary nebula M27 contains knots in its central region. The knots vary in appearance from symmetric objects with tails to less tailed objects. The nebula is much brighter than the central star that it indicates the central star emits primarily high energetic radiation in the non visible part of the electromagnetic spectrum. The radiation is absorbed by exciting the nebula's gas and re-emitted by the nebula to visible light. Image capture, C8 1200mm at f/6.3, 600mm w/PHD2 guide. T3i ISO 1600 6x300s lights, 20 darks/40 bias/40 flats.



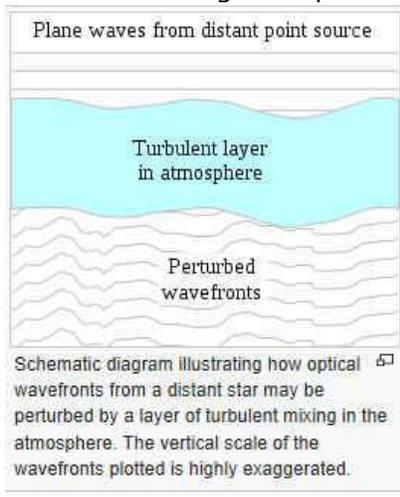
For What its Worth

Astronomical seeing refers to the blurring and twinkling of astronomical objects such as stars caused by turbulent mixing of the Earth's atmosphere that causes variations of the optical refractive index. Astronomical seeing conditions on a given night at a given location describe how much the Earth's atmosphere perturbs the images of stars seen through a telescope. The most common seeing measurement is the diameter (more correctly the Full Width at Half Maximum) of the optical intensity across the seeing disc (Point Spread Function for seeing through the atmosphere). The FWHM of the point spread function (loosely called the seeing disk diameter or "Seeing") is a reference to the best possible angular resolution which can be achieved by an optical telescope in a long photographic exposure and corresponds to the FWHM of the fuzzy blob seen when observing a point-like source, such as a star, through the atmosphere.

The size of the seeing disk is determined by the astronomical seeing condition at the time of observation. The best conditions give a seeing disk of ~ 0.4 arcseconds and are found at high altitude observatories on small islands such as Mauna Kea or La Palma. Seeing is one of the biggest problems for Earth-based astronomy. While large telescopes have theoretically milli-arcsecond resolution, the real image will never be better than the average seeing disk during observation. This can easily mean a factor of 100 between the potential and practical resolution.

Starting in the 1990s new adaptive optics were introduced that help correct for these effects, dramatically improving the resolution of ground based telescopes. Without an atmosphere a small star would have an apparent size, an Airy Disk in a telescope image determined by diffraction and would be inversely proportional to the diameter of the telescope. When light enters the Earth's atmosphere the different temperature layers and different wind speeds distort the light wave. The effects of atmospheric seeing are qualitatively similar throughout the visible and near infra-red wavebands. At large telescopes the long exposure image resolution is generally slightly higher at longer wavelengths, and time scale for the changes in the dancing speckle patterns is substantially lower. The effects of the atmosphere can be modeled as rotating cells of air moving turbulently. Seeing is always a variable quantity, different from place to place, from night to night, and even on a scale of minutes. Astronomers often talk about "good" nights with low average seeing disk diameter, and "bad" nights where the seeing diameter is so high that all observations were worthless.

Turbulent mixing example:



Club Officers



**President
Tom Gerald**



**Vice President
Jana Hunking**



**Treasurer
Vince Tobin**



**News Letter Editor
Vahan Yeterian**

*“Astronomy compels the soul to look upward,
and leads us from this world to another”.*
(Plato)



Club Meeting

Reminder Club meeting Feb 10th at 7:00Pm
Manzanita charter School.

Star Parties (as always weather permitting)

Other Astronomy Club Meetings

Central Coast Astronomical Society

Link to web site...

<http://www.centralcoastastronomy.org/>

Santa Barbara Astronomical Unit

Link to web site...

[http:// www.sbau.org/#AU_EVENTS_Calendar](http://www.sbau.org/#AU_EVENTS_Calendar)

Night Time Bright Objects (no scope required)

Link to “Heavens Above” web site

[http:// www.heavens-above.com/](http://www.heavens-above.com/)

(Iridium Satellite)

(ISS Visible Pass)

Be sure to set the nearest location from their
pull-down menu.

The web site link below will take you to some
Great Milky Way interactive images and how
It was developed. (Type it in the search box.)

<http://skysurvey.org/>

VAAS.

Dave McNally is the VAAS Web Site Serf/Minion

Dave

