

Vandenberg Amateur Astronomical Society presents The Sidereal Times



Messier 33 (see page 5)

Meeting News:

At the December meeting we elected club officers for 2018 operating year. Also set the date and place for our annual New Years party in January 2018. Welcome to our new Treasurer, Andy Wallace.

Reminder: VAAS club meeting and New Years party January 12th 7:00 Pm at Mi Amore pizza parlor In Lompoc. Courtesy VAAS treasury, drinks etc not included.



Lunar Calendar:

New Moon 17th

Full Moon 2nd



Presidents Message

Happy New Year, Friends!

Thank you for a wonderful 2017! Program highlights across the year were Rex Saint Onge's presentation on Chumash astronomy and Dr. Joseph Bassi's program about space weather. We had excellent participation in the Lompoc Old Town Market in August, sharing views of sunspots with many eager people. In September, we had lively an excited discussion of our experiences of the previous month's Solar Eclipse and reports on the turn out for the eclipse-viewing we hosted at our Observatory. Our picnic at River Park was highlighted by amazing solar viewing thanks to Vince Tobin. As an added bonus across the year, Vahan closed out three of our meetings playing his cello.

Coming up in 2018, we will have the opportunity to enjoy the Allan Hancock portable planetarium in operation in a program very soon. We also hope to have a presentation on the upcoming InSight Mars Mission which is to launch from Vandenberg in May, the first interplanetary mission to launch from this facility. In May, Dr. Bassi will return to present his history of rocketry and space exploration.

Up first, however, is our Annual Pizza Party at Mi Amore, always a fun kick-off of the New Year. Pizza and some beverages are on The Society, so plan to come and enjoy. Remember: first to arrive get to share a limited offering of tasty chicken wings! Also, club dues are paid at this gathering, so bring your checkbook or cash, and let's give Andy, our newly-elected Treasurer his first taste of his job...yes, that was a pun... may as well get the bad jokes started here and now.

Looking forward to seeing all of you across the coming year.
Skyward,
Tom

Events

Jan 1st Mercury at greatest Western elongation of 22.7 degrees from the Sun. Best time to view Mercury is look low in the Eastern sky just before Sunrise.

Jan 2nd Full Moon super moon occurs at 02:24 UTC. This Moon was known by early Native American Indians as the Full Wolf Moon because this was the time of year when hungry Wolf packs howled outside their camps.

Jan 3rd & 4th Quadrantids meteor shower is an above average meteor shower. It is thought to be produced by dust grains left over from extinct comet known as 2003 EH1. It peaks on the night of the 3rd and the morning of the 4th. Meteors radiate from the constellation of Bootis but can appear anywhere in the sky.

Jan 13th *Star party at the Observatory.*

😊 Yea!

Jan 20th *Star party at Figueroa Mountain..*

😊 Yea!

Jan 27th *Star party at the Observatory.*

😊 Yea!

Jan 31st Total Lunar eclipse occurs when the Moon passes through the Earth's dark shadow or Umbra. The eclipse will be visible throughout Western North America, Eastern Asia, Australia and the Pacific Ocean.

Some past VAAS Events



Star party's and Events

Dec 9th Star Party at the Observatory. With the fires in the area sky laden with smoke, ash and dust, the star party was cancelled.



Dec 16th Star Party at the Observatory. Cancelled due to weather, smoke, ash and clouds.



Dec 23rd Star Party at the Observatory. This event is canceled. It is better time spent with Family and friends for Christmas.

😊 Yea!

Holiday Music at VAAS Dec. Meeting



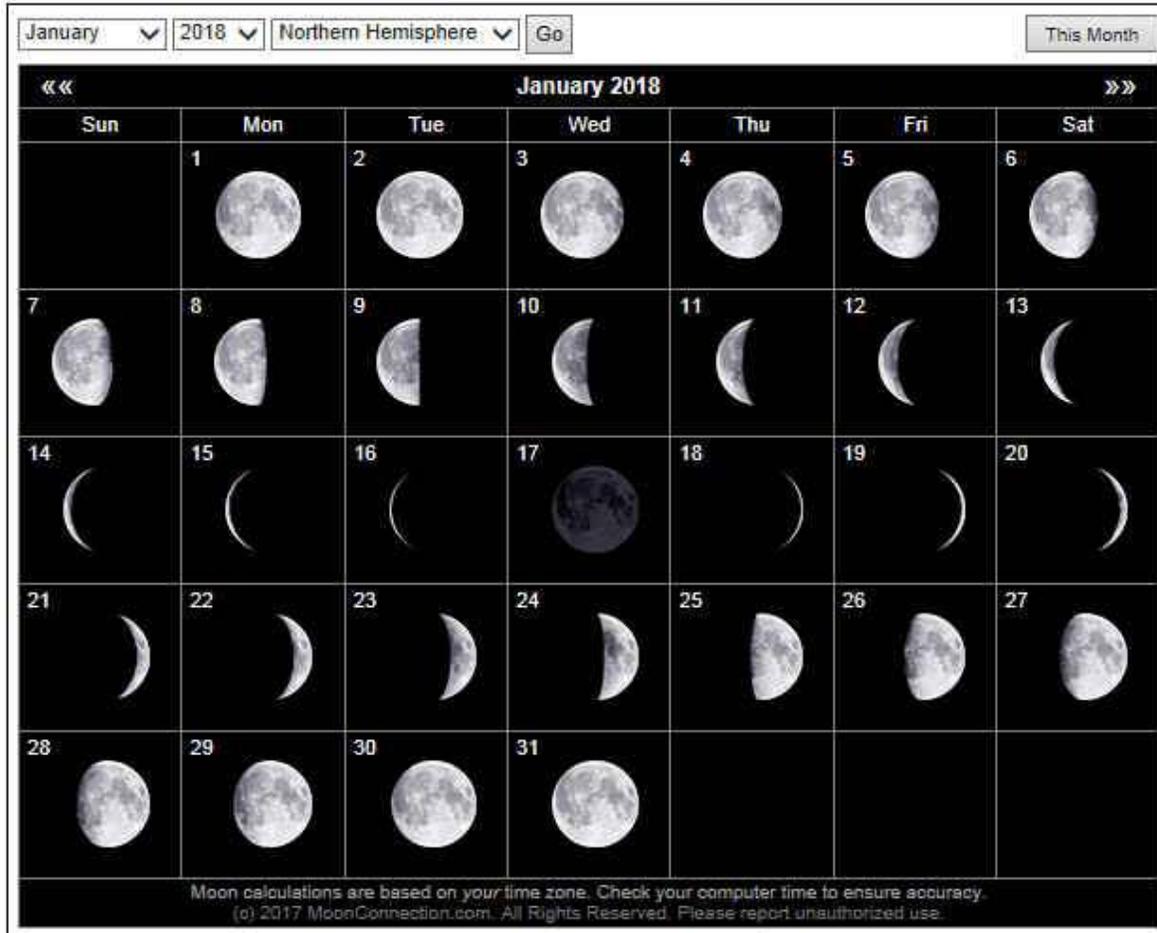
A quartet of long ago (2003)



December sky smoke and ash from Fires in SB and Ventura areas



January 2018 Moon



Full 2nd, New 17th, Last Quarter 8th, First Quarter 24th.

Moon Folklore & Facts

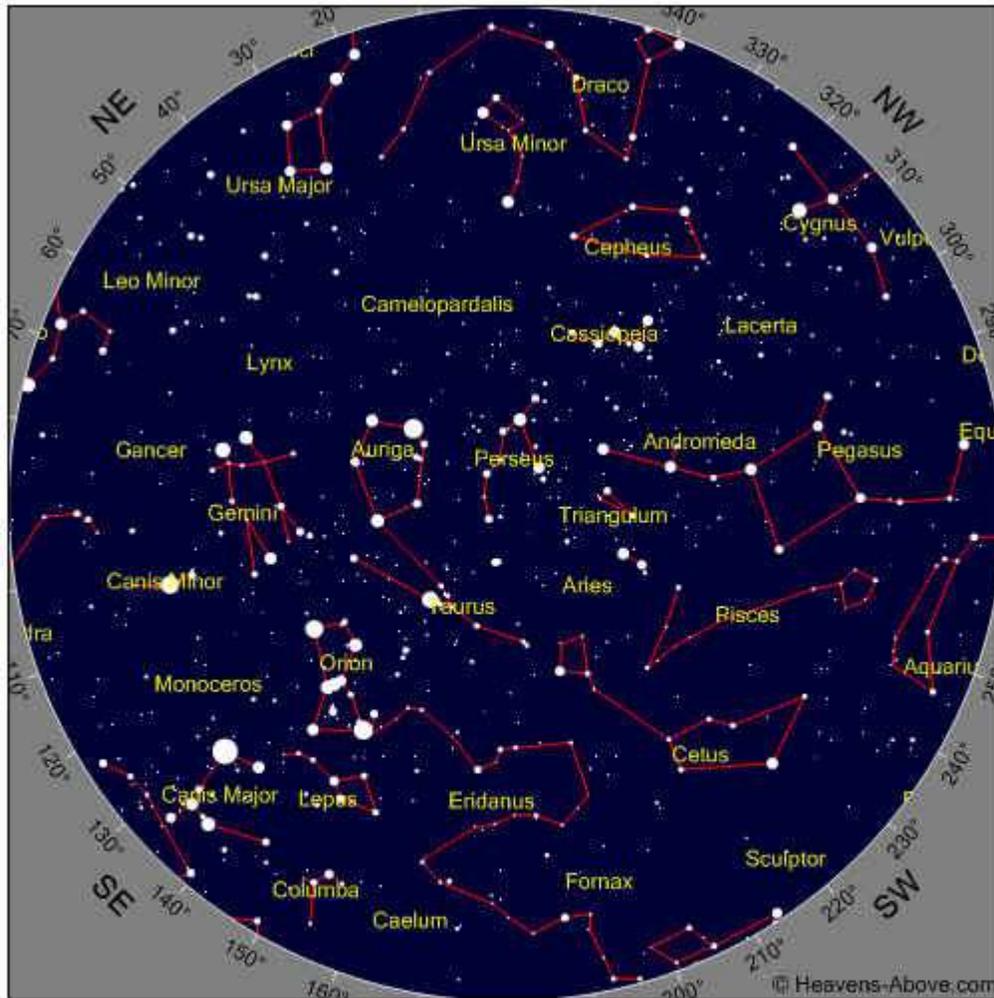
Since ancient times, full Moons have been associated with odd and insane behavior, including sleepwalking, suicide, illegal activity, fits of violence, and of course transforming into Werewolves. Indeed the word “Lunacy” comes from the Roman goddess of the Moon, Luna, who was said to ride her silver chariot across the dark sky each night. Hippocrates, considered the Father of Modern Medicine, wrote in the 5th century B.C. one who is sized with terror, fright, and madness during the night is being visited by the goddess of the Moon. In 18th century England people on trial for murder could campaign for a lighter sentence on grounds of lunacy if the crime was committed under a full Moon.

VAAS Special Events



January 2018 Sky

Some Objects of interest, M42, M31, M1



Time

Year	2018	Month	1	Day	5	Hour	20	Minute	38
------	------	-------	---	-----	---	------	----	--------	----

VAAS Special Events @ Wine country



Photo Courtesy Gary Satterfield



M33 NGC 598 Triangulum galaxy is approximately 2.723 million light years distant and contains approximately 40 billion stars. It is the 3rd largest galaxy of the local group of galaxies behind the Milky Way and Andromeda galaxies. It is the most distant permanent object (galaxy) that can be viewed with the naked eye. It is the smallest spiral galaxy of the local group and is believed to be a satellite of the Andromeda galaxy due to their interaction, velocities, and proximity to one another. It also has an H-II nucleus a diameter of 60,000 light years and is roughly 40% the size of the Milky Way galaxy. A comparison of star population exhibits about 40 billion stars compared to the Milky Way 400 billion and the Andromeda galaxy's 1 trillion stars. The combined mass of all baryonic matter in the galaxy may be 10 to the 10th solar masses. In 2006 a group of astronomers announced the discovery of an eclipsing binary star in the galaxy. The Triangulum galaxy is a source of Water Maser emissions. Observation of two water masers on opposite sides of M33 researchers, for the first time, were able to estimate the angular rotation and proper motion of the galaxy. A velocity of 190 +/- 60 kilometers per second relative to the Milky Way was computed which means that Triangulum is moving toward the Andromeda galaxy. Evidence was found around a clumpy stream of hydrogen gas linking Andromeda with Triangulum that suggests that the two may have tidally interacted in the past. A distance of less than 300 kiloparsecs between the two supports this hypothesis. Star formation is taking place at a rate that is strongly correlated with the local gas density and rate per unit area. Image capture by an AT65EDO scope w/modded Canon 500D on a Hypertuned CGEM mount and ImagesPlus Camera Control guiding with a mini Borg50 & SBIG ST-I mono using PHD2. The CGEM is controlled with NexRemote and a wireless Logitech Rumble Pad. Image data: 29 x 600 sec frames @ ISO 200. Bias, Flats and Darks x24ea. 97.385% processing with PixInsight. Touch ups in Adobe Lightroom.

(Water Masers are galactic geyser spewing clouds of water at 100's of kilometers/sec.)

Garv's Observing Site and Equipment



For What its Worth

Interferometer

An astronomical interferometer is an array of separate telescopes, mirror segments, or radio telescope antennas that work together as a single telescope to provide higher resolution images of objects such as Stars, nebulas and galaxies by means of interferometry. The advantage of this technique is that it can theoretically produce images with the angular resolution of a telescope with an aperture equal to the separation between the component telescopes. The main drawback is that it does not collect as much light as the complete instrument mirror. This is mainly useful for the resolution of more luminous astronomical objects such as close binary stars. Another drawback is that the maximum angular size of a detectable emission source is limited by the minimum gap between detectors in the collector array. Interferometry is most widely used in radio astronomy in which signals from separate radio telescopes are combined. A mathematical signal processing technique called aperture synthesis is used to combine the separate signals to create High Resolution images. In very long baseline interferometry (VLBI) radio telescopes separated by thousands of kilometers are combined to form a radio interferometer with a resolution which would be given by a hypothetical single dish with an aperture of thousands of kilometers in diameter. At the shorter wavelengths used in infra red astronomy and optical astronomy it is more difficult to combine the light from separate telescopes because the light must be kept coherent within a fraction of a wavelength over optical paths requiring very precise optics. Practical optical and infrared astronomical interferometers have only recently been developed and are at the cutting edge of astronomical research. At optical wavelengths aperture synthesis allows the atmospheric seeing resolution to be overcome allowing the angular resolution to reach the diffraction limit of the optics.

Astronomical interferometers can produce higher resolution images than any other type of telescope. At radio wavelengths image resolutions of a few microseconds have been obtained and image resolutions of fractional milliarcseconds have been achieved at visible and infrared wavelengths..

One simple layout of an astronomical interferometer is a parabolic arrangement of mirror pieces giving a partially complete reflecting telescope but with a sparse or dilute aperture. In fact the parabolic arrangement of mirrors is not important as long as the optical path lengths from the astronomical object to the beam combiner (focus) are the same as would be given by the complete mirror case. Instead most existing arrays use planar geometry and Labeyries hypertelescope will use a spherical geometry.

(Labeyrie, an observational astrophysicist at the College de France in Paris, has been talking about a ground-based kilometer-wide hypertelescope since 1996. Its key lies in the art of optical interferometry, a method of marshalling the light-combining power of several different telescopes into one.)

Define

(Astronomy) a radio or optical array consisting of two or more telescopes separated by a known distance and connected so that the radiation from a source in space undergoes interference enabling the source to be imaged to the position of the source to be accurately determined.

(physics) any acoustic, optical, or microwave instrument that uses interference patterns or fringes to make accurate measurements of wavelength, wave velocity, distance, etc.

The resolving power of the interferometer is found to be somewhat more than double that of a telescope of the same aperture.

By applying the interferometer method to star Capella, arcsecond distances of much less than one-twentieth of a second of arc were measured.

More VAAS Special Events



Club Officers



President
Tom Gerald



Vice President
Jana Hunking



Treasurer
Andy Wallace



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 Jan 12th at 7:00Pm
Mi Amori Pizza parlor in Lompoc.
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

