

Vandenberg Amateur Astronomical Society presents The Sidereal Times



Messier 30 (see page 5)

Meeting News:

At the February meeting we discussed the brochure and talked about the Los Flores ranch support and its conflict with our Star Party schedule. Briefly discussed the Pizza party in Jan. Also the Solar eclipse occurring this year. Jana gave a presentation on meteors and various geologic rocks and crystals.

Reminder: VAAS club meeting Mar 10th 7:00 Pm Manzanita school Teachers lounge.



Lunar Calendar:

New Moon 28th

Full Moon 12th



Presidents Message

Hello VAAS members and associates! February's meeting was certainly a productive and fun one with Jana's presentation on meteorites closing out the evening in good form. Her information and her collection of meteorites and Earth-born rocks and minerals held all of us in rapt attention. I, for one, especially enjoyed her sharing how she became interested in collecting rocks as a child, curiosity leading her to it as a form of entertainment, so to speak. That curiosity has not abated in our Jana in the least.

We also discussed the need for VAAS to start preparing to host members of the community at our observatory for the eclipse in August. Those of you not venturing to other parts of the country to experience totality are encouraged to be on hand with scopes and information to share with the public. VAAS will purchase "Eclipse Glasses" for sale on site. We can discuss this further at our next meeting on Friday March 10th.

Speaking of: local Paleontologist Rex Saint Onge will give a presentation on his discoveries and theories of ancient Chumash astronomy in relation to the cycles of the year. Rex has worked extensively on this field of study and has fascinating insights to share. This will be a most enjoyable evening for us. You can learn more about Rex's work in this article from time magazine.

<http://content.time.com/time/nation/article/0,8599,1960661,00.html>

See you at the meeting

Skyward

Tom

Meteorites



Events

Mar 4th *Star party at the observatory.*



Mar 18th *Star Party at the observatory.*



MAR 20th March equinox occurs at 10:29 UTC. The Sun will Be directly over the equator and there will be nearly equal amounts of day and night throughout the world. This is the first day of spring in the northern hemisphere and the first day of fall in the southern hemisphere (Vernal Equinox).

Mar 25th *Star party at the Figueroa Mountain site 1.5.*



Star party's and Events

Jan 28th Star party at Los Flores Ranch. The event was a great success we had 10 scopes and 60 guests. The Orion Nebula was a real favorite along with Mars, Venus and M31 to name a few.. Craig was viewing The Andromeda Galaxy most of the evening while Vince did some sky hopping and Tom was on the Orion most of the evening. Later we viewed the Double Cluster and M81 & M82. A lot of camaraderie among the Astronomers. Venus and mars were also a big hit down the line of the scopes. Weather as excellent 3-4 knots of breeze and 44° temps under clear skies. 40° was reached at 9:00 and the dew was beginning fall when most all started to pack it in for the evening. A few decided to do some more work after we left.



Feb 4th Star Party at the observatory, Cancelled due to weather.



Feb 10 meeting Jana gave a presentation on the geology of meteors, meteorites and various types of geologic rocks, crystals and gem stones. Jana had many very well arranged displays from her collection that included text books and photos. It was a very comprehensive presentation and was well received by all attending. Thanks Jana.



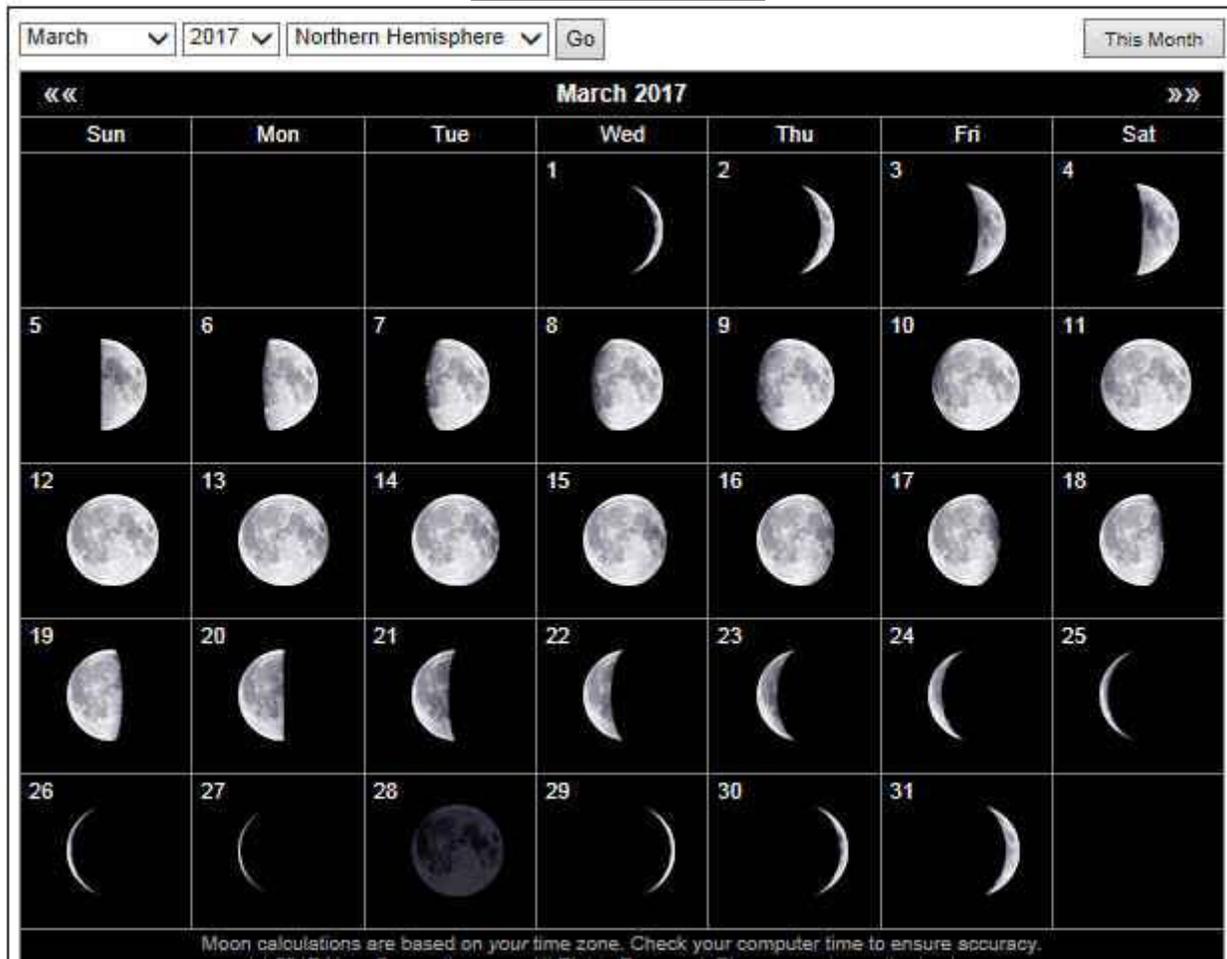
Feb 18th Star Party at the observatory. Cancelled due to weather.



Feb 25th Star Party at the observatory. Cancelled due to weather.



March 2017 Moon



Full 12th, New 28th, 1st Quarter 5th, Last Quarter 20th

Moon Facts

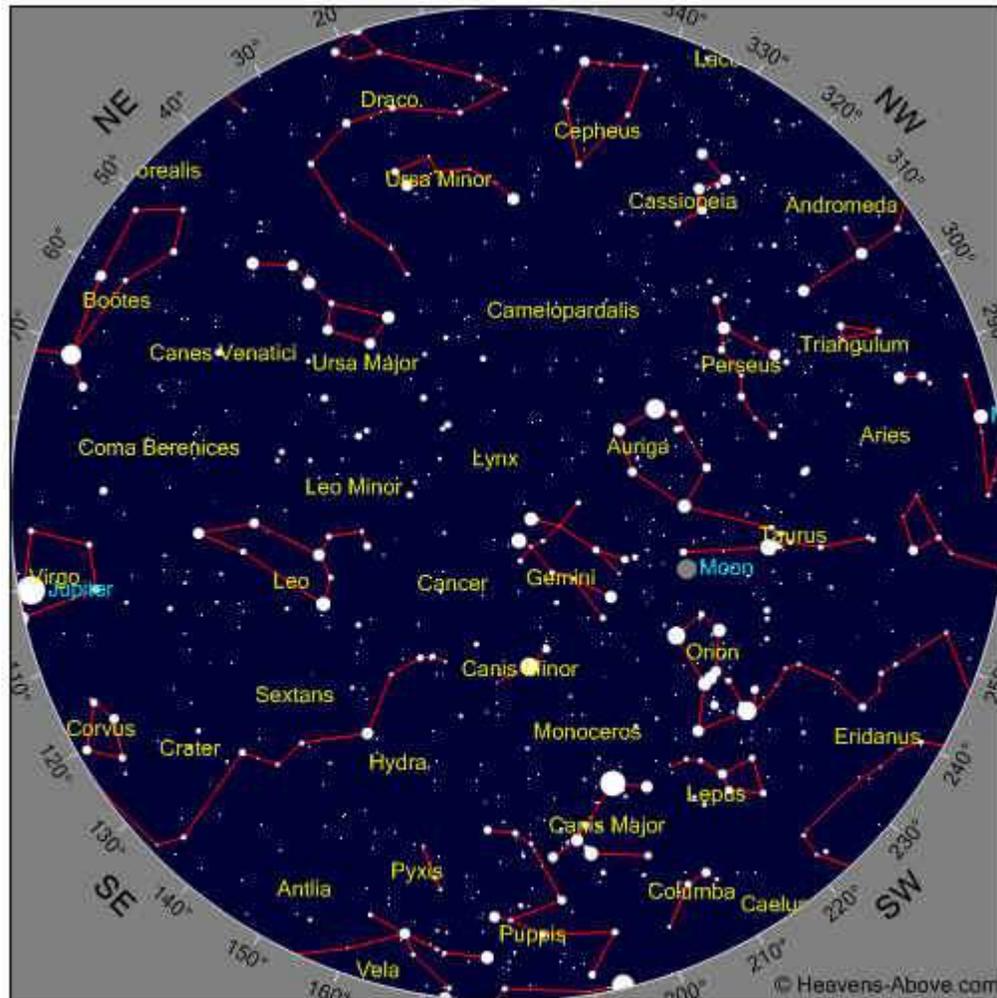
The full moon this month occurs at 14:54 UTC. This full Moon was known to Native American tribes as the Full Worm Moon because this was the time of year when the ground would begin to soften and the Earthworms would begin to appear. This has also been known as the Full Crow Moon, the Full Crust Moon and the Lenten Moon.

The Moon is the 5th largest satellite in the solar system.

The speed of the Moon's orbit around Earth is 2,300 miles per hour.

March 2017 Sky

Some Objects of interest M42, Caldwell 14



Time

Year	2017	Month	3	Day	5	Hour	20	Minute	59
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Figueroa Site 1.5



Photo Courtesy Jon Walke



Messier 30 NGC 7099 is located in the Southern constellation of Capricornus. Its retrograde orbit through the inner galactic halo is believed that this cluster was acquired from a satellite galaxy in the past. Messier 30 measures 93 light years across and lies at a distance of 26,000 light years from Earth and is approaching at a speed of 182 kilometers per second. While it looks harmless enough its tidal influence covers an enormous 139 light years far greater than its apparent size. Half of its mass is so concentrated that literally thousands of stars could be compressed in an area that spans no further than the distance of our solar system to Sirius. Inside this density only 12 variable stars have been found and very little evidence of stellar collisions but a white dwarf nova has been recorded. So what's so special about this little Globular? Try a collapsed core – and is one that has been resolved by Earth-bound telescopes.

The globular cluster NGC7099 is a prototypical collapsed core cluster. Through a series of instrumental, observational, and theoretical observations the core has been resolved by ground based telescope. The core has a radius of 2.15 arcseconds when imaged with a V band spatial resolution of 0.35 arcsec. Initial attempts at speckle imaging produced images of inadequate signal to noise and resolution. To explain these results a new fully general signal to noise model was developed. It properly accounts for all sources of noise in a speckle observation, including aliasing of high spatial frequencies by inadequate sampling of the image plane. The model is called Full Speckle Noise (FSN). A new high resolution imaging technique called ACT (Atmospheric Correlation with a Template) was developed to create sharper astronomical images and compensates for image motion due to atmospheric turbulence.

Image capture with a C8 1280mm at f/6.3, 600mm w/PHD2 guide, T3i(mod) iso 1600 12x300s lights, 20 Darks/40Bias/40Flat.

For what its Worth

The Sun and its atmosphere are divided into several zones and layers. The solar interior, from inside out, is made up of the core, Radiative zone and Convective zone. The solar atmosphere above that consists of the Photosphere, Chromosphere, a transition region and the Corona. Beyond that is the solar wind, an outflow of gas from the corona. The core extends from the Sun's center to about a quarter of the way to its surface. Although it only makes up roughly 2 percent of the Sun's volume it is almost 15 times the density of lead and holds nearly half of the Sun's mass. Next is the Radiative zone that extends from the core to 70 percent of the way to the Sun's surface, making up 32 percent of the Sun's volume and 48 percent of its mass. Light from core gets scattered in this zone so that a single photon may take a million years to pass through. The Convection zone reaches up to the Sun's surface and makes up 66 percent of the Sun's volume but only a little more than 2 percent of its mass, roiling convection cells of gas, dominate this zone.

Two main kinds of solar Convection cells exist – Granulation cells about 600 miles (1,000 kilometers) wide and Super-Granulation cells about 20,000 miles (30,000 kilometers) in diameter. The Photosphere is the lowest layer of the Sun's atmosphere and emits the light we see. It is about 300 miles (500 Km) thick, although most of the light comes from its lowest third. Temperatures in the photosphere range from 11,000° F at the bottom to 7,460° F at the top. Next up is the Chromosphere, which is hotter, up to 35,500° F and is apparently made up entirely of spiky structures known as Spicules typically some 600 miles across and up to 6,000 miles high. After that is the Transition region a few hundred to a few thousand miles thick. It is heated by the corona above it and sheds most of its light as ultraviolet rays. At the top is the super-hot corona are structures such as loops and streams of ionized gas.

The Corona generally ranges from 900,000° F to 10.8 million° F and can even reach tens of millions of degrees when a solar flare occurs. Matter from the Corona is blown off as the solar wind. Just like most other stars the Sun is made up of mostly hydrogen and helium. Nearly all remaining matter consists of seven other elements, oxygen, 360 carbon, neon, nitrogen, magnesium, iron and silicon. For each million atoms of hydrogen in the Sun there are 98,000 of helium, 8 oxygen, 360 of carbon, 120 of neon, 110 of nitrogen, 40 of magne iron and 35 of silicon. Still hydrogen is the lightest of all elements and accounts for 72 percent of the Sun's mass, while helium is about 26 percent.

The strength of the Sun's magnetic field is only about twice as strong as Earth's field. However it becomes highly concentrated in small areas reaching up to 3000 times stronger than usual. These kinks and twists in the magnetic field develop because the Sun spins more rapidly at the equator than at higher latitudes and because the inner parts of the Sun rotate more quickly than at the surface. These distortions create features like Sun Spots to eruptions known as flares and Coronal Mass Ejections. Flares are the most violent eruptions in the solar system while Coronal Mass Ejections are less violent but involve extraordinary amounts of matter, a single eruption can spout roughly 20 billion tons of matter into space.

Sun Spots are relatively cool dark features on the Sun's surface that are roughly circular. They emerge where dense bundles of magnetic field lines from the Sun's interior break through the surface. The number of Sun Spots vary as solar magnetic activity does. The change in this number from a minimum of none to a maximum of roughly 250 Sun Spots or clusters of Sun Spots is known as the solar cycle and averages about 11 years long. At the end of the cycle the magnetic field rapidly changes polarity.

The Sun has enough nuclear fuel to stay much as it is now for another 5 billion years. After that it will swell to become a red giant. Eventually it will shed its outer layers and the remaining core will collapse and become a white dwarf. Slowly this will fade to enter its final phase as a dim, cool theoretical object sometimes known as a black dwarf.

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 Mar 10th at 7:00Pm
Manzanita school Teachers Lounge.

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

