

# Vandenberg Amateur Astronomical Society presents The Sidereal Times



Lagoon Nebula M8 (see page 5)

### Meeting News:

The November meeting we discussed the brochure and had Nomination of club officers for 2017 operating year. A fine presentation was given by Dave McNally on astrophotography and a great hands on demonstration of Warped Space Time was presented by Vince Tobin.

**Reminder:** VAAS club meeting Dec 9th 7:00PM  
Manzanita School, teachers lounge.



### Lunar Calendar:

New Moon 29th  
Full Moon 14th

VAAS Observatory



### Presidents Message

Our October VAAS meeting was a fun time, with Vince bringing his “trampoline – looking display showing the curvature of space and time. With a stretched cloth hanging from pvc pipes in a basic circle, he placed a heavy ball in the middle- drawing down the cloth like a funnel. Then he tossed a variety of small balls, marbles, and coins (all of different densities) that swirled around the funnel in smaller and smaller orbits until they fell in the bottom. We were invited to all participate, and I found it so fun, I did not want to stop!

Dave also brought an interesting project to show us- his equipment that he uses to connect his different cameras to his scope for astrophotography. He showed us how he could interchange them and how they could help with different exposures. He explained the difference between a clock drive for tracking shorter exposures vs active guiding to get longer exposures.

Vahan and Dave cleaned out our Observatory of old VAAS items that were in the way and now are being stored in the Endeavour Center on the VMS campus on Mt. View Blvd. Thanks to both of them, and to the presenters in October! We are always looking for presenters for each meeting.

Since I wanted to step down from the President’s position after 2 years, Tom Gerald was nominated and accepted the position. Congratulations Tom! He will be taking over in January, and I will be the Vice President, Vince continues as Treasurer, and Vahan will continue doing the newsletter.

Our December meeting will be a casual Christmas party, with members bringing a snack or treats to celebrate the holidays. Hope you all can make this meeting. We can swap astronomy stories, and articles of interest. Remember they could use help at the Los Flores Star Party Dec. 2 at 5-8pm in Santa Maria.

Happy Thanksgiving to all! Jana

## Events

### Dec 10th *Star party at Observatory.*



Dec 11<sup>th</sup> Mercury will be at greatest elongation of 20.8 degrees from the Sun. Best time to view is in the evening sky because it will be at its highest point above the horizon.

Dec 13,14<sup>th</sup> Geminids meteor shower is the king of meteor showers producing up to 120 multicolored meteors per hour at its peak. It is produced by dust grains left over by asteroid 3200 Phaethon. It peaks this year on the night of the 13<sup>th</sup> and morning of the 14<sup>th</sup>. Meteors will radiate from the constellation of Gemini but can appear anywhere in the sky.

### Dec 17th *Star Party at the observatory.*



Dec 21<sup>st</sup> December Solstice occurs at 10:44 UTC. The South pole of Earth is tilted toward the Sun which will have reached its South most position in the sky and will be directly over the tropic of Capricorn at 23.44 degrees South Latitude. The first day of Winter in the Northern hemisphere and the first day of Summer in the Southern hemisphere.

Dec 21,22<sup>nd</sup> Ursids meteor shower is a minor shower producing about 5 to 10 meteors per hour. It is produced by dust grains left over by comet Tuttle. It peaks on the evening of the 21<sup>st</sup> and morning of the 22<sup>nd</sup>. Meteors will radiate from Ursa Minor but can appear anywhere in the sky.

### Dec 30th *Star Party at the Observatory.*



Clarence Ruth school Outreach



## Star party's and Events

Nov 5<sup>th</sup> Star Party at the Observatory. Star Party cancelled due to weather, solid overcast.



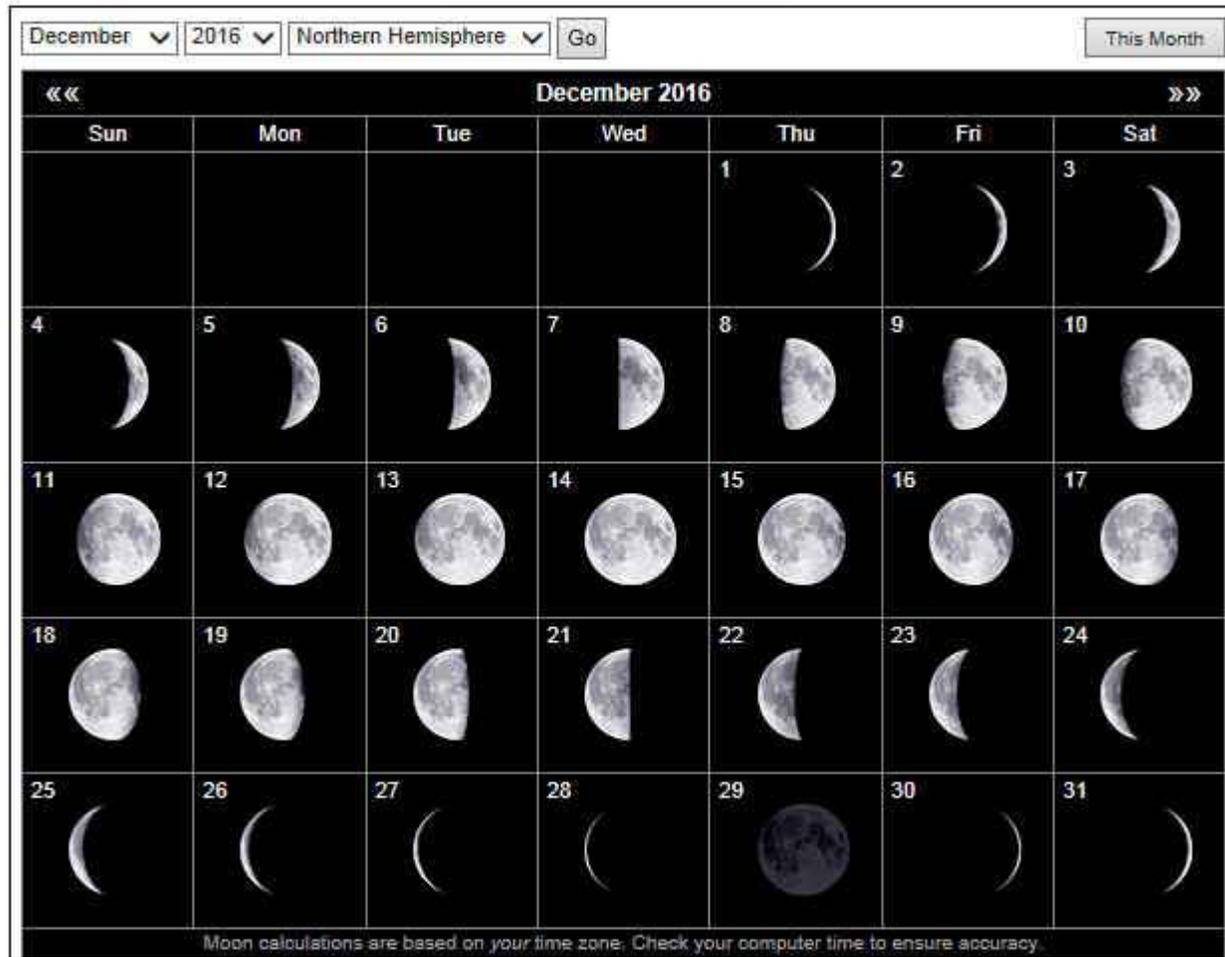
Nov 19<sup>th</sup> Star party at the Observatory. Dave, Vince and Vahan on site. Vahan did some touch up painting in the observatory, general cleaning and vacuumed the carpet. Dave installed the new computer and started testing the serial link to the telescope, still have some problems to solve. Andy Wallace and his family (wife and kids) and another family showed up. Andy set up his refractor and imaged Venus and Mars. It was about 50% overcast but we did get to look at several objects, like the Ring nebula, with the observatory 14" and Andy's 4 inch scope. It started clearing up a bit more as the evening progressed. All in all it was a short but good night under the stars.



Nov 26<sup>th</sup> Star Party at the Observatory. Star party cancelled due to weather.



## December 2016 Moon



Full 14th, New 29th 1<sup>st</sup> Quarter 7th, Last Quarter 21st

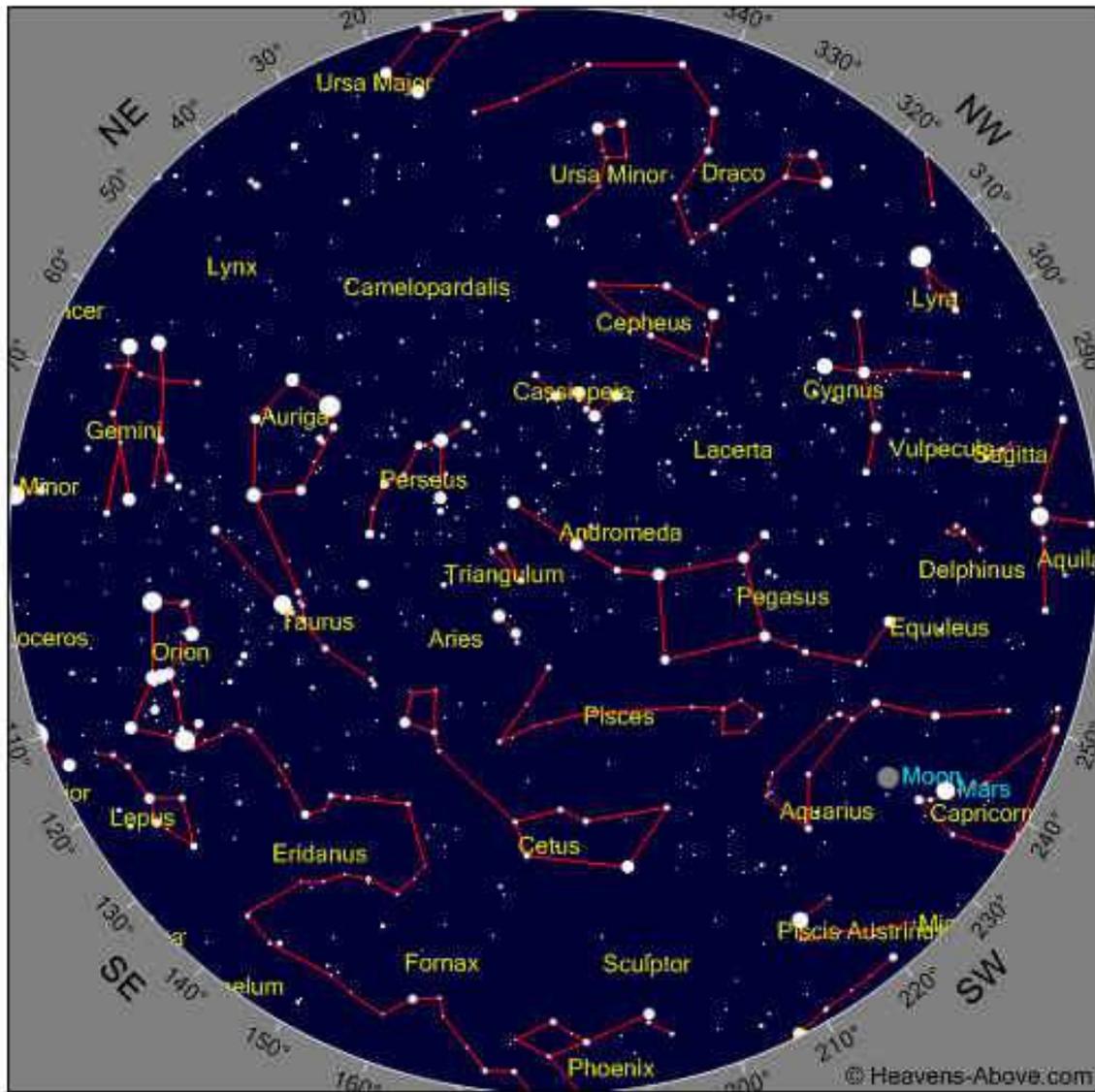
### Moon Talk

Since ancient times, full moons have been associated with odd or insane behavior, including sleepwalking, suicide, illegal activity, fits of violence and, of course, transforming into werewolves. Indeed, the words "lunacy" and "lunatic" come from the Roman goddess of the moon, Luna, who was said to ride her silver chariot across the dark sky each night.

In the 1820s, the Bavarian astronomer Franz von Paula Gruithuisen claimed to have glimpsed entire cities on the moon with his telescope. He wrote that the "lunarians" who lived there had built sophisticated buildings, roads and forts. Most of his colleagues scoffed at his assertion

## December 2016 Sky

Some Objects of interest M1, M42, M31, Double Cluster



### Time

Year	2016	Month	12	Day	5	Hour	20	Minute	28
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Photo Courtesy Jon Walke



Messier 8 The Lagoon nebula NGC 6523 is an interstellar cloud in the constellation of Sagittarius. It is an emission nebula and has an H II region. Messier 8 is estimated to be 4000 to 6000 light years from Earth. It spans 40 to 60 minutes in the sky that translates to an actual dimension of 110 Light years by 50 light years. Like many nebulas it appears pink in time exposure color photos but is gray to the eye when peering through a telescope. The nebula contains a number of Bok globules (dark collapsing clouds of protostellar material) the most prominent of which have been catalogued by E.E. Barnard as B88, 89 and B296. It also includes a tunnel-like or tornado-like structure caused by a Hot O type star that emanates ultra violet light heating and ionizing gasses on the surface of the nebula. The nebula also contains at its center a structure known as the Hour Glass nebula, Not to be confused with the better known Hour Glass nebula in the constellation of Musca. In 2006 the first four Herbig-Haro objects were detected within the hour glass that provided the first direct evidence of active star formation by accretion within it. The dark areas of the nebula are just clouds of dust that block light. Inside the nebula is a young open star cluster NGC 6530 that is situated just slightly to the front of the nebula from our perspective.

**M8 (Lagoon nebula), 31 Jul 16 @ 0700 UTC, C8 1280mm @ F/6.3, 600mm w/PHD2 guide. T3i(mod) ISO 1600 12x300s lights, 20 darks/40bias/40 Flat.**



## **For What its Worth**

### ***What Light, Dark, Bias and Flat frames do in Astrophotography***

#### **Light Frames**

Light frames contain the actual image data of the object you are photographing and usually consist of several frames. There are many imperfections in light frames that need to be removed before they can be stacked. The stacking itself should reduce the random noise in the light frames however there are other non-random imperfections that need to be dealt with. Some examples are thermal noise, vignetting, dust, bias signal and hot pixels to name a few. Fixing these problems are the job of the Dark, Bias and Flat frames. After the Light frames have been calibrated they can be aligned and stacked to produce a final image. All images Light, Dark, Bias and Flats must be in RAW format.

#### **Dark Frames**

The purpose of taking Darks is like zeroing a scale. Each pixel on the camera is different, some read the signal hotter and some read the signal colder. Dark frames are taken with a cap over the aperture of the telescope so no light can get in. This way you have a picture of what black / nothing should look like. However, dark frames are not purely black. They still contain the hot pixels, thermal signal and what ever non-random is present in your image. By subtracting the dark frames from the light frames you are in a sense zeroing them. Dark frames also contain random noise like the light frames. When you subtract a dark frame the random noise also gets subtracted from the light frame that adds noise to the final image. This is why multiple dark frames should be taken so they can be stacked together to reduce the effect of the noise. It is important that dark frames are taken at the same thermal temperature as lights since the thermal signal is dependent on temperature. They should also have the same ISO and exposure length.

#### **Bias Frames**

Bias frames are used to remove the readout signal from your camera sensor. Even when a pixel has not received any sort of signal there is still variation on how the camera reads data off the sensor. Bias frames can be subtracted from lights, darks and flats to remove this variation. To capture the bias signal pictures need to be taken at zero exposure length or as close as possible and with the lens cap on. They are not dependant on temperature but should be taken at the same ISO. Note: bias frames are also contained in the dark frames but removing the bias signal from the darks can help programs like Deep Sky Stacker optimize the dark frames. If bias frames are used they will be subtracted from all other images at the start of the stacking process.

#### **Flat Frames**

Just like with darks flats are zeroing the image but this time flats are correcting optical imperfections. Most telescopes do not distribute light evenly across the camera sensor. This causes images to be brighter in the center and darker toward the edges. There is also dust on the camera sensor and dust on the telescope optics that causes dark blotches to appear. Flats correct for this by taking a picture of what a blank evenly illuminated surface should look like. The flats are then stacked together and the lights are divided by them. This evens out the illumination throughout the light frame. Flats need to be taken with the same focus, camera orientation and optical setup as the lights. There are many ways to take flats such as using the evening sky, a light box or pointing the telescope at a white computer screen. To take the flats drape and tape a white "T" shirt over the telescope aperture and image the evening or morning sky or computer screen and take images about 10 or 20, let the camera decide the correct exposure.

#### **Image Processing Software**

There are several image processing programs on the market or the WEB. One very good program is Deep Sky Stacker, it is a freeware program that can be downloaded from the Web. Another very good one that is available is Pixinsight but is not free. There are other programs available but the two mentioned are most popular.

## *Club Officers*



**President  
Jana Hunking**



**Vice President  
Tom Gerald**



**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 Dec 9<sup>th</sup> 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

