VAAS Website: www.vaas.universeii.com/ 2, June 2019

Vandenberg Amateur Astronomical Society presents The Sidereal Times

Nebulas (see page 5)

Meeting *News:*

At the May meeting we discussed the VAFB Tour and some possible future events we may support.

Reminder: VAAS club meeting Friday June 14th 7:00 Pm at Manzanita School Teachers Lounge.

Lunar Calendar:

New Moon 3rd
Full Moon 17th

VAFB Tour

Presidents Message

Hello, Fellow Sky Watchers,

Our last meeting should be called "Jana Night," first we celebrated her birthday and second we were entertained and enlightened by her program on major astronomical observatories. To give Jana a card signed by all in attendance was so satisfying after her honoring each of us with cards over the years. Thank you, Louise, for initiating this celebration, and for the birthday cupcakes!

Jana's program was very impressive, not just because of the myriad of supporting materials she shared, but also by the number of these observatories she had actually visited. Also, I think I can speak for all that we were happy to see she had been an "Arizona Highways" shining star in more than one appearance.

Responding to interest expressed at the May meeting, I contacted the Lompoc Chamber and we are scheduled to be at Old Town Market on Friday, July 26th. Their theme for the night is "Celebrate Lompoc," through which they show off the diversity of activities available to people in the Lompoc area, perfect for our participation. Also, for that particular night the usual $30.00 exhibitor fee is waived, a real motivator. Set-up times and other details will be discussed at our July meeting.

Meanwhile, I hope I see all of you at our June meeting on the 14th!

Skyward,
Tom

Events

June 1st ***Star Party at the Observatory / Figueroa Mt.***

Yea!

June 4th New Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 10:02 UTC. Best time to observe faint objects such as galaxies and clusters.

June 8th ***Star Party at the Observatory.***

Yea!

June 10th Jupiter at opposition: The great planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be righter than any other time of year time of year and will be visible all night long. This is the best time to photograph the planet and its moons.

June 21st June solstice occurs at 15:54 UTC. The north pole of the Earth will be tilted toward the Sun which will have reached its north most position in the sky and will be directly over the Tropic of Cancer at 23.44 degrees north latitude. The first day of Summer (Summer solstice) in the Northern hemisphere and the first day of Winter (Winter Solstice) in the Southern hemisphere.

June 23rd Mercury at greatest Eastern elongation of 25.2° from the Sun. This is the best time to observe Mercury since it will be at its highest point above the horizon in the evening sky. Look for the planet low in the Western sky just after sunset.

June 29th ***Star Party at the Observatory***.

Yea!

VAFB Tour

Star **party's and Events**

May 4th Star Party at the Observatory, cancelled due to weather.

Nuts**!**

May 11th Star Party at the Observatory. Tom, Danny and Vahan on site 6:30 Pm. Ebbe, Joel and Candy @ 6:50 Pm. The Marine layer started moving in so no stars tonight. The mice have moved in, a dead one and 3to 4 running around. Can't find where they are getting in. Set 4 Mouse Traps. Need to come up on Monday and check traps and look for possible entry points. Cleaned up the floor and held a short session about the telescope and mounting. Secured and departed 8:30 Pm.

Oh my no stars!

May 25th Star Party at the Observatory. Cancelled due to weather.

Nuts!

VAFB Tour

June 2019 Moon

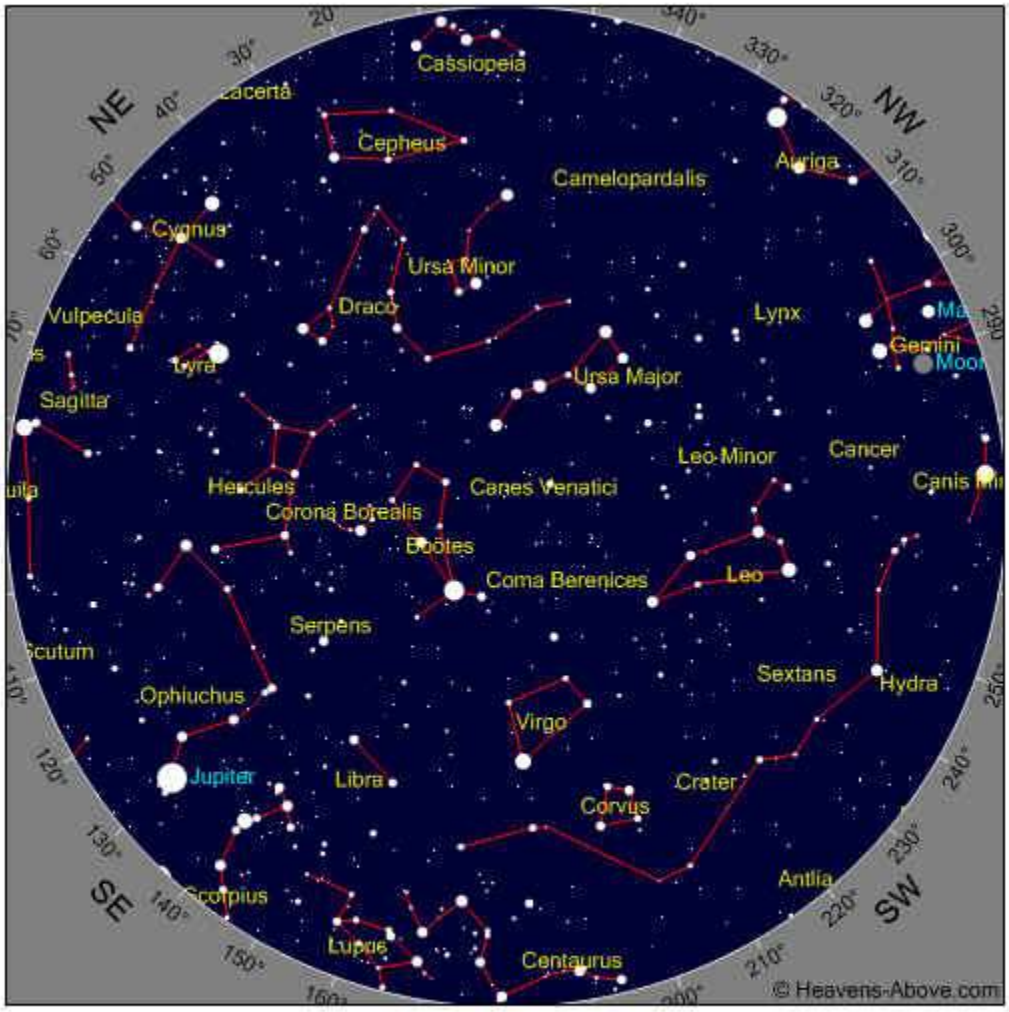
Full 17th, New 3rd, Last Quarter 25th, First Quarter 10th.

Moon Facts

The average composition of the lunar surface by weight is roughly 43 percent oxygen, 20 percent silicon, 19 percent magnesium, 10 percent iron, 3 percent calcium, 3 percent aluminum, 0.42 percent chromium, 0.18 percent titanium and 0.12 percent manganese.

June 2019 Sky

Some Objects of interest, M13, M57, Jupiter

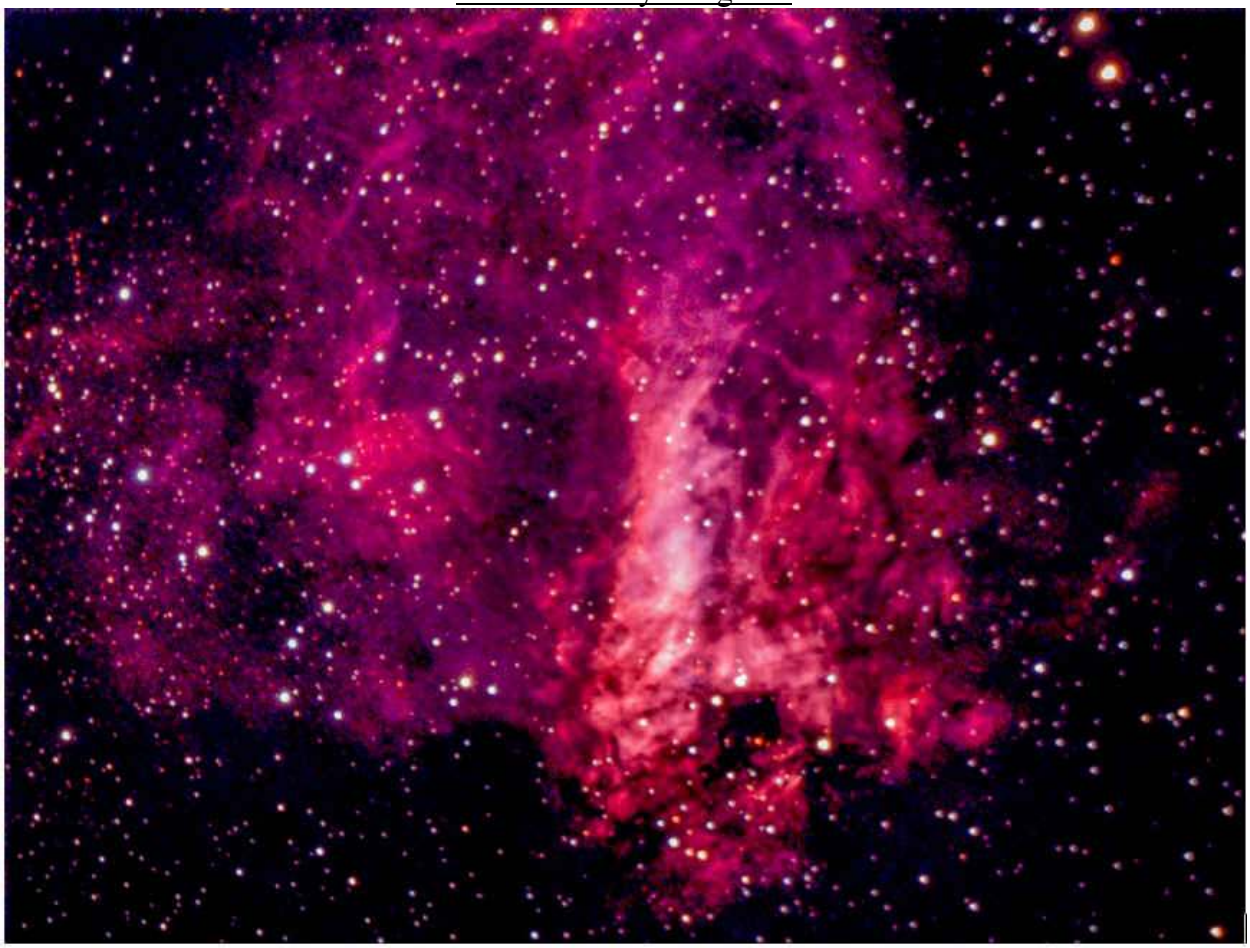


Time

Year	2019	Month	6	Day	5	Hour	21	Minute	41

Jana's Birthday @ May VAAS Meeting

Photo Courtesy Craig Fair



The Omega Nebula. Messier 17 NGC 6618 also called the San Horseshoe and the Lobster nebula is a region of star formation and shines by excited emission caused by the high energy radiation of young stars. Unlike in any other emission nebulae these stars are not obvious in optical images but hidden in the nebula. Star formation is either still active in this nebula or created very recently. A small cluster of about 35 bright but obscured seem to be imbedded in the nebulosity. The Omega nebula is about 5000 to 6000 light years from Earth and spans some 15 light years in diameter. The cloud of interstellar matter of which the nebula is part of is roughly 40 light years in diameter and has a mass of 30,000 solar masses. The total mass is estimated to be 800 solar masses. It is considered to be one of the brightest and most massive forming regions in our galaxy. Its local geometry is similar to the Orion nebula except that it is viewed edge-on rather than face-on.

The open cluster NGC 6618 lies imbedded in the nebulosity and causes the gasses to shine due to radiation. The actual number of stars in the nebula is up to 800, 100 spectral types earlier than B9 and 9 of spectral type O plus a thousand stars in formation in its outer regions. It is also one of the youngest clusters known with an age of just on million years. The luminous blue variable HD168607 located in the south east part of the Omega nebula is generally assumed to be associated with it; its close neighbor, the blue hyper giant HD168625 may be too. The swan portion of M17, the Omega nebula in the Sagittarius is said to resemble a barber pole. As for diffuse nebula the overall brightness is difficult to estimate and is given discordantly in the sources. Older estimates are given at 7.0 magnitude and were performed in northern observatories. Modern compilations list it as brighter, about 5.0 to 6.0 magnitude.

Image capture, site 1.5 Figueroa Mt, QHY 10 camera, Celestron 9.25 inch SCT, CGEM mount. 300 sec Exp, 20 lights, darks and bias files. Processed in Lightroom and Topaz DeNoise programs. Stacked in Deep Sky Stacker.

For What its Worth

The Sun a brief account:
The Sun and its atmosphere are divided into several zones and layers. The solar interior, from inside out, is made up of the core, the 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 that is 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 Suns mass. Next is the Radiative zone that extends from the core to 70 percent of the way to the suns 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
& Treasurer
Jana Hunking

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 Friday June 14th 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

Night Time Bright Objects (no scope required)

Link to "Heavens Above" web site
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/

Dave McNally is the VAAS Web Site Serf/Minion

Dave