

Vandenberg Amateur Astronomical Society presents The Sidereal Times



Swan Nebula (see page 5)

Meeting News:

At the April meeting we discussed several requests for VAAS support for various organizations such as YMCA and Hancock college astronomy night. Authorized the purchase of A blue ray DVD player for the club.

Note: We will have a Special guest speaker, Dr. Bassi who will present a speech explaining The History of Rockets.

Reminder: VAAS club meeting Friday May 11th at Manzanita school teachers lounge 7:00 PM.



Lunar Calendar:

New Moon 15th
Full Moon 1st & 29th



Presidents Message

Hello, VAAS Members and Friends,

A big thank you to Jana and Vahan, Dave, and all of you for carrying on without me at our April meeting. Some good business was conducted and interests were shared. Special thanks from me personally to Ken Spraker for securing a proper Blu-Ray disc player for our use at future meetings. Our first opportunity to use it will be at our June meeting; anyone for STAR WARS? [...Just kidding.] Maybe we will take another try at that 400 Year History of the Telescope.

Speaking of our long, ever-expanding knowledge of the universe: today the European Space Agency released a massive tome of data compiled by its Gaia Mission space probe since it first started operating in 2014. Orbiting the Sun a million miles from earth, Gaia amassed precise measurements of 1.7 billion... 1.7 BILLION... stars in our galaxy, the so-called Milky Way. However, with all that, Gaia covered only about 1 per cent of the roughly 100 billion stars in our galactic neighborhood. Nonetheless, astronomers and other scientists will have a totally new view of this galaxy: knowing for the first time precisely the distances, brightness and colors of these stars. There are even precise measurements of the speeds with which over 7 million stars are moving away from or toward each other. Scientists all over the world went to work on the data as soon as it was released this morning and within hours discoveries were being made. The Gaia data is being hailed as a turning point in our knowledge of our galaxy.

So much more that I want to share with you, about recent outreach events that Vince and I were a part of and, of course, the upcoming InSight Mars Mission. That will come in a separate email to you a little later. I just HAD to process this Gaia news with you all. I heard a wonderful report about it on KCBX/NPR on my way home from work today and for the rest of my drive that was all I could think about...that and watching the road, that is.

See you at our May 11th meeting, at which we welcome the return of Dr. Joe Bassi and his history of rocketry and spaceflight, sure to be a fascinating program.

Skyward,
Tom

Events

May 5th *Star party at the Observatory.*

😊 Yea!

May 6 & 7th Eta Aquarids is an above average shower capable of producing up to 60 meteors per hour at its peak. Most of the activity is in the Southern hemisphere, in the northern hemisphere the rate can reach about 30 meteors per hour. It is produced by dust particles left behind by Comet Halley. The shower runs annually April 19th to May 28th. It peaks this year on the night of May 6th and morning of the 7th. Meteors will radiate from the constellation of Aquarius but can appear anywhere in the sky.

May 9th The giant planet Jupiter will be at its closest approach to Earth (opposition). It will be brighter than any other time of the year and will be visible all night long. This is the best time to view Jupiter or photograph the planet.

May 12th *Star party at Figueroa Mt and /or the Observatory.*

😊 Yea!

May 19th *Star party at the Observatory.*

😊 Yea!



Star party's and Events

Apr 7th Star party at the Observatory. Cancelled due to Weather!



Nuts!

Apr 13th After the club meeting Dave and Craig worked on modifications to the 14 inch at the observatory. Primary goal was polar alignment. Polar alignment went very well. Still more work is pending to get the rest of the upgrades installed on the 14 inch system.



Cool!

Apr 14th Star party at the Observatory or Figueroa Mt. No Figueroa this evening so the Observatory was the place for Vince, Dave and Craig. Weather was not very cooperative. Dave and Craig installed aligned and boresighted the finder scope to the 14" main tube. Installed the USB extension and the power cable for the USB hub and ran it to the pier under the carpet. Vince had his 16 inch Dob and looked for and found a comet. He also spent some time wandering around the galaxy clusters and Virgo. Cloud cover, secured and departed 10 Pm.



Yea!

Apr 20th Dave and Vahan on site 7:30 Pm to recheck star calibration on the 14 inch scope. Unfortunately the marine layer moved in, total overcast. Secured and departed 8:20 Pm.



Nuts!

Apr 21st Star party at the Observatory. Marine layer moved in early today, star party cancelled due to weather.



Nuts!



May 2018 Moon



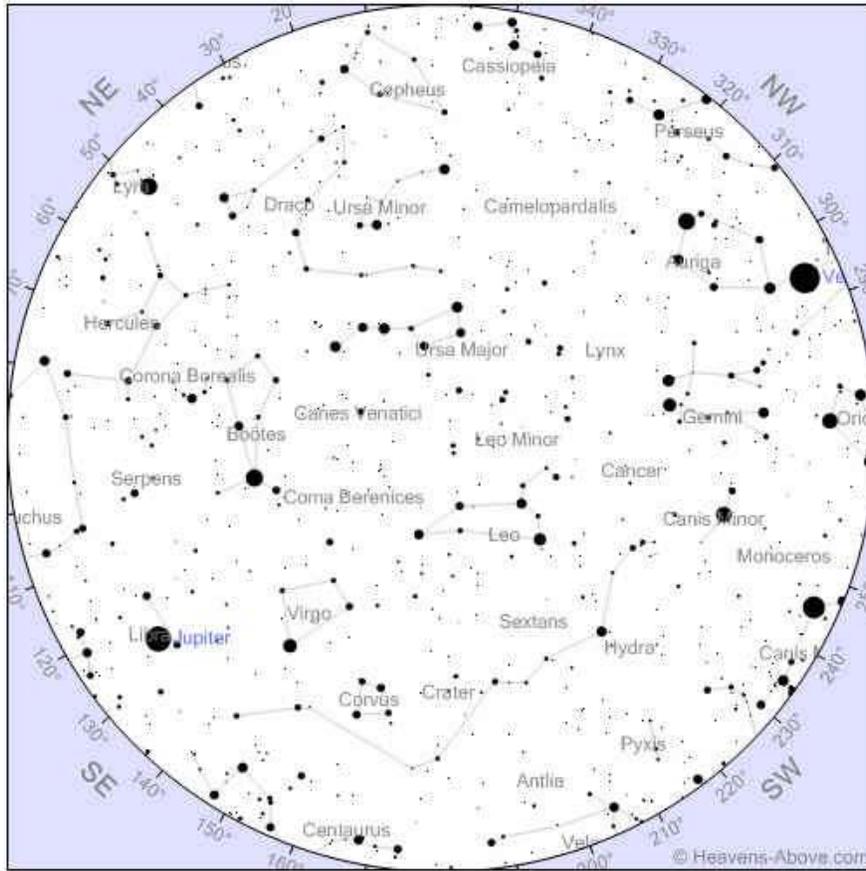
Full 1st & 29th, New 15th, Last Quarter 8th, First Quarter 22nd.

Moon Fact

Perhaps the most important effect of the Moon is the way it stabilizes our rotation. When the Earth rotates it wobbles slightly back and forth on its axis. It's like a top which doesn't spin in a vertical position on the table or on the floor. But without the Moon we'd be wobbling much more. (precession 1° every 72 years)

May 2018 Sky

Some Objects of interest, Jupiter, M13,



Time

Year	2018	Month	5	Day	7	Hour	21	Minute	28
------	------	-------	---	-----	---	------	----	--------	----



Photo Courtesy Craig Fair



The Swan (omega) Nebula Messier 17 is between 5000 and 6000 light years from Earth and it spans some 15 light years in diameter. The cloud of interstellar matter of which this nebula is part is roughly 40 light years in diameter and has a mass of 30,000 solar masses. The total mass of the nebula alone is estimated at 800 solar masses. It is considered one of the brightest and most massive star forming regions of our galaxy. Its local geometry is similar to the Orion nebula except it is viewed edge on versus face on. The open cluster NGC 6618 lies imbedded in the nebulosity and causes the gasses of the nebula to shine due to the radiation from these hot young stars, however the actual number of stars in the nebula is much larger, up to 800, 100 of the spectral type earlier than B9 and nine of the spectral type O, plus over a 1000 stars in formation in its outer regions. It is also one of the youngest clusters known with an age of just a million years. The luminous blue variable HD 168607 located in the south east part of the Omega nebula is generally assumed to be associated with it, its close neighbor the blue Hypergiant HD 168625 may be too.. The Swan portion of M17, the omega nebula in the Sagittarius is said to resemble a barber's pole.

As stated M17 contains one of our galaxy's youngest star clusters, at only one million years old, however many of the young stars in this cluster are impossible to see because of the gas and dust that surrounds them. The powerful radiation from the young stars evaporates and erodes the dense clouds of cold gas in which new stars form. One such pocket is seen at the center of the brightest region of the nebula and is about 10 times larger than our solar system. Other dense pockets of gas have formed in the remarkable dark features jutting inward from the left corner of the image.

Celestron 9.25 inch SCT Celestron CGEM mount. Autoguided Orion StarShoot guide camera, PHD guiding software, QHY 10 Astro camera, EZCap Camera software, 10 x 300 sec lights and darks, 10 x .001 sec bias all processed in DSS Stacking software. Final processing in Adobe Lightroom. It was a beautiful night on Mt Figueroa.

For What its Worth

Even small changes in solar activity can impact Earth's climate in significant and surprisingly complex ways. The Sun is a constant star when compared with many others in the galaxy. Some stars pulsate dramatically, varying wildly in size and brightness and even exploding. In comparison the Sun varies in the amount of light it emits by only 0.1 percent over the course of a relatively stable 11 year long pattern known as the solar cycle. Still the light reaching the top of Earth's atmosphere provides about 2,500 times as much energy as the total of all other sources combined. As such even 0.1 percent of the amount of light the Sun emits exceeds all other energy sources the Earth's atmosphere sees combined, such as the radioactivity naturally emitted from Earth's core. To learn more about how such tiny variations in solar energy might impact terrestrial climate the National Research Council (NRC) convened dozens of experts in fields such as plasma physics, solar activity, atmospheric chemistry, fluid dynamics and energetic particle physics. The ways these solar fluctuations could influence Earth were complicated in nature. For instance solar energetic particles and cosmic rays could reduce ozone levels in the stratosphere. This in turn alters the behavior of the atmosphere below it, perhaps even pushing storms on the surface off course. In the lower stratosphere the presence of ozone causes local warming because of the breakup of ozone molecules by ultra-violet light. When the ozone is removed the stratosphere there becomes cooler increasing the temperature contrast between the tropics and the polar region. The contrast in temperatures in the stratosphere and the upper troposphere leads to atmospheric flow west to east. The instability make for eddies or irregular motions. These eddies feed the strength of jet streams, ultimately altering the flows in the upper troposphere, the layer of atmosphere closest to Earth's surface. The geographical positioning of the jet streams aloft can alter the distribution of storms over the middle latitudes. So the Sun might have a role to play in this kind of process. This is a very difficult mechanism to prove in climate models. That does not mean it may not exist, it is just hard to prove. Solar variability is leaving a definite imprint on climate especially in the Pacific Ocean.

When researchers look at sea surface temperature data using sunspot peak years, the tropical Pacific showed a pattern very much like that expected with La Nina, a cyclical cooling of the Pacific ocean that regularly affects climate worldwide, with sunspot peak years leading to a cooling of almost 1 degree C (1.8 deg F) in the equatorial eastern Pacific. In addition, peaks in the sunspot cycle were linked with increased precipitation in a number of areas across the globe as well as above normal sea level pressure in the mid latitude North and South Pacific. The Pacific is particularly sensitive to small variations in trade winds. Solar activity may influence processes linked with trade wind strength. Scientists have often speculated whether the Maunder Minimum, a 70 year dearth of sunspots in the late 17th to early 18th century was linked with the coldest part of the little ice age during which Europe and North America experienced bitterly cold winters. This regional cooling may be linked with a drop in the Sun's extreme ultraviolet radiation. In fact the Sun could currently be on the cusp of a miniature version of the Maunder Minimum since the current solar cycle is the weakest in more than 50 years. If the Sun is really entering an unfamiliar phase of the solar cycle then we must redouble our efforts to understand the Sun's climate link.

Although the Sun is the main source of heat for Earth solar variability may have more of a regional effect than a global one. As such solar variability is not the cause of the global warming seen in recent times. While the Sun is the dominant energy source powering our climate system, do not assume that it is causing much of recent climate changes. It is pretty stable, think of it as an 800-pound gorilla in climate, it has the weight to cause enormous changes but lucky for us its pretty placidly lazy. While solar changes have historically caused climate changes, the Sun is most likely responsible for less than 15 percent of the global temperature increases we have seen over the last century during which human caused changes such as increased greenhouse gasses may have caused some atmospheric warming.

Tracking the Sun: In the future, researchers suggested to better understand how solar variability might affect the Earth, a future space observatory may include a radiometric imager. Such a device could essentially map the surface of the Sun and reveal the contributions of each of its surface features to the Sun's luminosity. The solar disk is dotted by dark sunspots and bright magnetic areas known as faculae. Sunspots tend to vanish during low points in the solar cycle. Therefore, a radiometric imager could help reveal the links between prolonged spotlessness on the Sun and Earth climate.

Ancient signals of climate such as tree rings and ice cores might also help shed light on the link between Sun and climate. Since variations in Earth's magnetic field and atmospheric circulation might disrupt this evidence on Earth, a better long term record of solar radiation might lie in the rocks and sediments of the Moon and Mars.

Like Maunder Minimum UGH!



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 Friday May 11th 7:00Pm
Manzanita School Teachers lounge. Dr. Bassi guest
speaker on History of Rockets.

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://skysurvev.org/>

Dave McNally is the VAAS Web Site Serf/Minion

Dave

