

Astronomy Club of Lompoc Presents The Sidereal Times



Solar Prominence (see page 5)

Meeting News:

At the December meeting we discussed some general ACL business and events we supported and the Solar retrofit to the Observatory..

Reminder: ACL club meeting Friday January 10th 6:00 Pm @ Floriano's Mexican Restaurant 1129 North H St. Lompoc. (Our annual New Year meeting & party)



Lunar Calendar:

New Moon 24th
Full Moon 10th



Presidents Message

Hello, Fellow Stargazers:

Well, 2019 may go down as the "Barely Year We Survived" with all the weather-canceled Star Parties we suffered through, major illnesses among members and the loss of one of us, Dave Pierce. On the positive side, however, this is the year we "renewed ourselves" with a new name, simplifying and clarifying our identity, Moreover, the Star Parties we did manage to have were well-attended and lots of incredible views were shared. We enjoyed some wonderful community outreach events at various schools, VAFB, the Old Town Market, and even a gathering of hundreds of women motorcyclists (thank you, Vince!). We enjoyed wonderful presentations at our meetings by Dr. Joseph Bassi, David Gibbs of the Central Coast Astronomical Society, and Jana, our Vice President. Joe gave a riveting recounting of the Apollo 11 Mission; David Gibbs opened many eyes to the vital concerns over light pollution and its impacts upon ground-based astronomy and life itself; Jana gave detailed surveys of some of our greatest astronomical observatories here in the West and elsewhere, including the James Webb Orbiting Telescope. Capping off all this good in this year were our Fall Picnic and the amazing work done by so many hands installing the new solar panels and batteries at our Observatory. This work will power our needs for a long time to come, an auspicious upgrade, indeed.

Thank you, all of you, for your good work, attendance, and support across 2019. Dr. Bassi is already onboard for a presentation in the early Spring. I know you will all enjoy our January meeting/Taco Feast at Floriano's! Remember that is the meeting at which we renew our memberships and that it starts at 6:00PM. I regret that I will not be able to attend: family needs are taking me out of town at that time. Three extra tacos for some lucky person, though!

Happy New Year and keep your eyes...

Skyward,

Tom

Tom Gerald, President

Events

January 3 & 4 Quadrantids Meteor shower is an above average Shower with up to 40 meteors per hour at its peak. It is thought to be produced by dust grains left behind by an extinct comet 2003 EH1 that was discovered in 2003. It peaks this year on the night of the 3rd and morning of the 4th. Meteors will radiate from the constellation of Bootes but can appear anywhere in the sky.

January 10th Penumbral Lunar eclipse occurs when the Moon passes through the Earth's partial shadow. The eclipse will be visible throughout most of Europe, Africa, Asia the Indian Ocean and Western Australia.

January 4th *Star Party at the Observatory.*



January 18th *Star Party at the Observatory.*



January 25th *Star Party at the Observatory.*



Battery system Solar retrofit Nov 2019



Star party's and Events

December 7th Star Party @ observatory, Cancelled due to weather.....Rain!

December 21th Star Party @ the Observatory. Cancelled due to weather.

December 28th Star Party @ the Observatory. No input.

Astronomy @ Hapgood School Nov 2019 / Tom Gerald



January 2020 Moon



Full 10th, New 24th, Last Quarter 17th, First Quarter 3rd

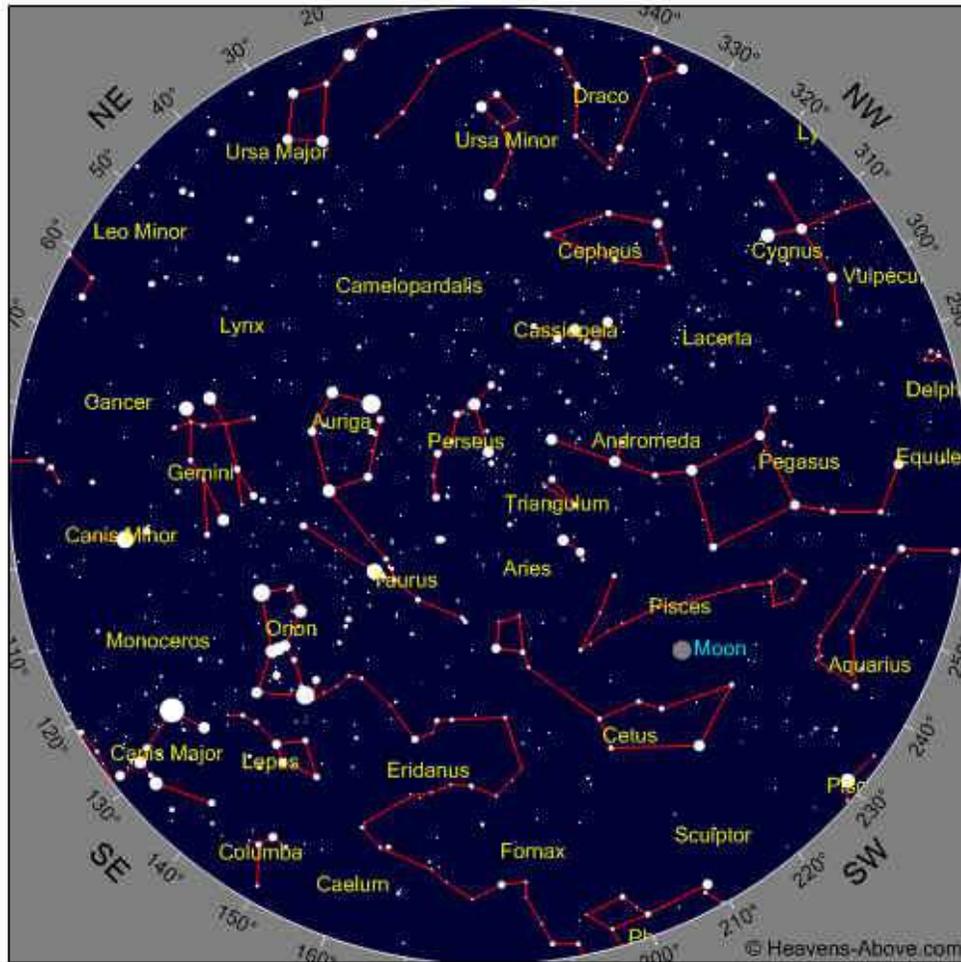
Moon Facts and Folklore

The first Space Craft to send back pictures of the Moon was Luna 3 (built by the Soviet Union) in October 1959.

The Apollo missions brought back 2196 rock samples weighing 382 Kg in total.

January 2020 Sky

Some Objects of interest, M42, M31, M1



Time

| | | | | | | | | | |
|------|------|-------|---|-----|---|------|----|--------|----|
| Year | 2020 | Month | 1 | Day | 2 | Hour | 20 | Minute | 20 |
|------|------|-------|---|-----|---|------|----|--------|----|

Old Solar

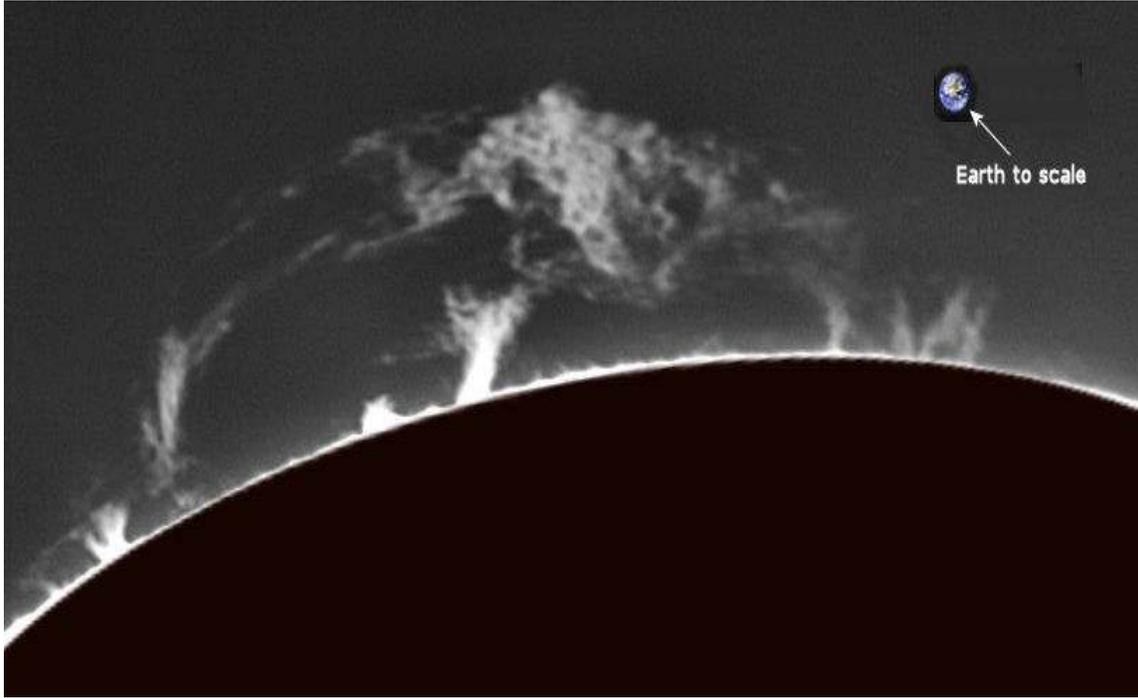


New Solar



"It is a beautiful synchronicity that you are using the power of a star in order to observe the stars"
(Quote by Aaron Anderson)

Photo Courtesy Vahan Yeterian



A prominence is a large, bright, gaseous feature extending outward from the Sun's surface, often in a loop shape. Prominences are anchored to the Sun's surface in the photosphere, and extend outwards into the Sun's corona. While the corona consists of extremely hot ionized gasses, known as plasma, which do not emit much visible light, prominences contain much cooler plasma, similar in composition to that of the chromosphere. The prominence plasma is typically a hundred times more luminous and denser than the coronal plasma. A prominence forms over time scales of about a day and may persist in the corona for several weeks or months, looping hundreds of thousands of miles into space. Some prominences break apart and may then give rise to coronal mass ejections. Scientists are currently researching how and why prominences are formed. The red-glowing looped material is plasma, a hot gas composed of electrically charged hydrogen and helium. The prominence plasma flows along a tangled and twisted structure of magnetic fields generated by the Sun's internal dynamo. An erupting prominence occurs when such a structure becomes unstable and bursts outward, releasing the plasma. A typical prominence extends over many thousands of kilometers; the largest on record was estimated at over 800,000 km (500,000 mi) long roughly a solar radius.

When a prominence is viewed from a different perspective so that it is against the Sun's disk instead of against space, it appears darker than the background. This formation is instead called a **solar filament**. It is possible for a projection to be both a filament and a prominence. Some prominences are so powerful that they throw out matter from the Sun into space at speeds ranging from 600 km/s to more than 1000 km/s. Other prominences form huge loops or arching columns of glowing gases over sunspots that can reach heights of hundreds of thousands of kilometers. Prominences may last for a few days or even for a few months. Image capture with Canon DSLR (modified) Coronado 0.5 H-alpha PST 3 sec exposure processed with PSP 9.

For What its Worth

When it comes to astronomical observations, it is important to note what your sky conditions are. The reason is simple enough - sky conditions affect how you see things. You may find, like most amateur astronomers, that you'll enjoy keeping a record of your observations. Understanding how to assess and log factors such as transparency, limiting magnitude and stability are important contributions as to how, and when, you can see certain astronomical subjects. By reading the tips below, you'll be better equipped to more accurately record sky conditions in your observing journals.

Transparency or Clarity

If you have ever taken notice of a blue sky, then you know there is more than one shade of blue. One day it might be pale, the next day a break-your-heart shade that seems like it almost has purple in it. This is caused by transparency - the volume of moisture in the atmosphere - and the amount of thin cloud cover (or even pollutants) at any given time. This same transparency factor carries over into the night. While it might be dark, just how dark is it? Darkness or transparency is judged on a scale of one to ten, with one representing totally cloudy and ten representing maximum clarity. For example, a slightly hazy sky would have a transparency of around five or six. A partly cloudy sky might be considered a three. A perfectly clear night high in the mountains with no Moon, where stars seem to have a life of their own could be a nine! You can even have a moonlit night where very little light is scattered by thin clouds... a seven! The most important thing is to be consistent on the numerical value you assign to any given evening's transparency factor because it affects limiting magnitude.

Limiting Magnitude

The next factor to help you judge sky conditions is limiting magnitude, which indicates the faintest star you can see without optical aid. To assist, you will need to know the magnitude of several stars visible at the time of your observation. You can find this information on almost all star charts. For example, if you were viewing during the summer in the northern hemisphere, you might use such stars as Alpha Cygni (Deneb) with a magnitude of 1.2. Now take a look at Beta Cygni (Albireo). It has a magnitude of 3.1. Next, try 61 Cygni, which has an apparent magnitude of 5.2. If you can see this star, then the limiting magnitude of your sky is at least 5. These stars are only examples, and you can use any star for which you have a given magnitude. Take your samples from various positions around the night sky and list the faintest you can see! Always be sure to wait until you are fully dark adapted.

Stability

The next factor in judging sky conditions is stability. This is how "steady" the sky - and the image in your eyepiece - appears to be. Stability can be attributed to atmospheric conditions, or it may be nothing more than rising heat. Using your telescope, take a look at several stars in different locations in the sky. You will be judging stability, like transparency, on a scale of one to ten. Stars seen near the horizon will almost always appear to twinkle, wink in and out and move around. This is an unstable viewing condition and would rate around a two. If you are looking high above the horizon and the view looks like it is under running water, you might have great clarity, but poor stability. To help you further refine your reading, take a look at something which relies on stability to be seen, like the reasonably close double star Polaris. Does the image split into two stars easily? Do you have to focus and refocus again? If so, you might have a slightly unstable sky. However, don't make a hasty judgment. Ask yourself two very important questions: (1) Are your telescope optics at ambient temperature? And (2) Is your telescope set up in a place that might cause temperature "waves" like a concrete or blacktop surface? These two factors also play a very important role in how you see things. An unstable sky won't stop you from viewing, but never being able to come to perfect focus because of image waiver could cause you to miss small details which would otherwise be visible.

Putting It All Together

Now that you've judged your sky conditions and marked your field notes, don't stop there. While you might have great transparency, great limiting magnitude and poor stability when the evening begins, these conditions can change in a short period of time. Sometimes you'll find the most unusual combination of conditions, too. For example, a night with poor transparency might be the most stable. After you have logged sky conditions for awhile, you'll also be able to judge what types of nights work best for certain observations. For example, very stable nights are great times to shoot for tight double stars and planetary details, while nights with exceptionally good limiting magnitude could be the time to find that extremely faint galaxy you've been craving!

Astronomy Club Officers



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Serf/ Minion Vahan Yeterian



ACL Webmaster
Serf/ Minion David McNally



Club Meeting

Reminder ACL Club meeting January 10th 6:00Pm
**Floriano's Mexican Restaurant 1129 North H St.
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)

Link to "Heavens Above" web site

[http:// www.heavens-above.com/](http://www.heavens-above.com/)

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/>

*"Astronomy compels the soul to look upward,
and leads us from this world to another".
(Plato)*

ACL Temp. Club Logo

