

# Astronomy Club of Lompoc Presents The Sidereal Times



Solar Prominence (see page 5)

**Meeting News** At the August meeting we had a presentation of astrophotos and discussed election of ACL officers..

**Reminder:** ACL club meeting Friday September 11<sup>th</sup> on Zoom Video 7:00 Pm.



**Lunar Calendar:**

New Moon 17<sup>th</sup>

Full Moon 2<sup>nd</sup>

All Astrophotos in this news letter are by ACL members



**Presidents Message**

Hello, Friends,

Well, if it's not the fog, it's the smoke! Just can't get a break, can we? I did have a nice couple of nights before the fires that allowed me to show some wonders of our solar system to my family, particularly the oldest grandchild. At six, she now has seen sunspots, lunar craters and the Sea of Tranquility, and the major bands and Galilean moons of Jupiter. Saturn just couldn't rise from behind the neighbor's home before her bedtime! Looking back at my message to you from a year ago, I see that fog prevented her having any sightings during her visit at that time.

If we do get some breaks soon, you can rest assured I will be checking out Mars. The God of War is ruling the Southern horizon before dawn currently in what is purported to be its best showing since 2003. Maybe someone will even get so lucky as to spy Phobos [Fear] or Deimos [Terror]... though given the size of each and our viewing conditions, that is doubtful. However, as long as a global dust storm doesn't shroud it, we should be in for some intriguing views.

One thing coming up is the semi-annual Astronomy Day, in October, apparently on the 5<sup>th</sup>, though I have seen conflicting dates posted online. I am open to some form of pandemic-safe celebration, most likely an article in the Lompoc Record. Your suggestions are welcome!

Skyward,

Tom

## Events

**September 11<sup>th</sup>** Neptune at opposition will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. Due to its extreme distance from Earth it will appear as a tiny blue dot in all but the most powerful telescopes.

**September 12<sup>th</sup>** *Star Party at the Observatory?????*

**September 19<sup>th</sup>** *Star Party at the Observatory?????*

**September 22<sup>nd</sup>** September equinox occurs at 13:30 UTC. The Sun Will shine directly on the equator and there will be nearly equal Amounts of day and night throughout the world. This is the first day of Fall (Autuminal equinox) in the Northern hemisphere and the first day of Spring (Vernal equinox) in the Southern hemisphere.

**September 26<sup>th</sup>** *Star Party at the Observatory?????*



## Star party's and Events

**August 15<sup>th</sup>, 22<sup>nd</sup> and 29<sup>th</sup>** Star Party @ observatory was Cancelled due to Covid-19 pandemic.



## September 2020 Moon



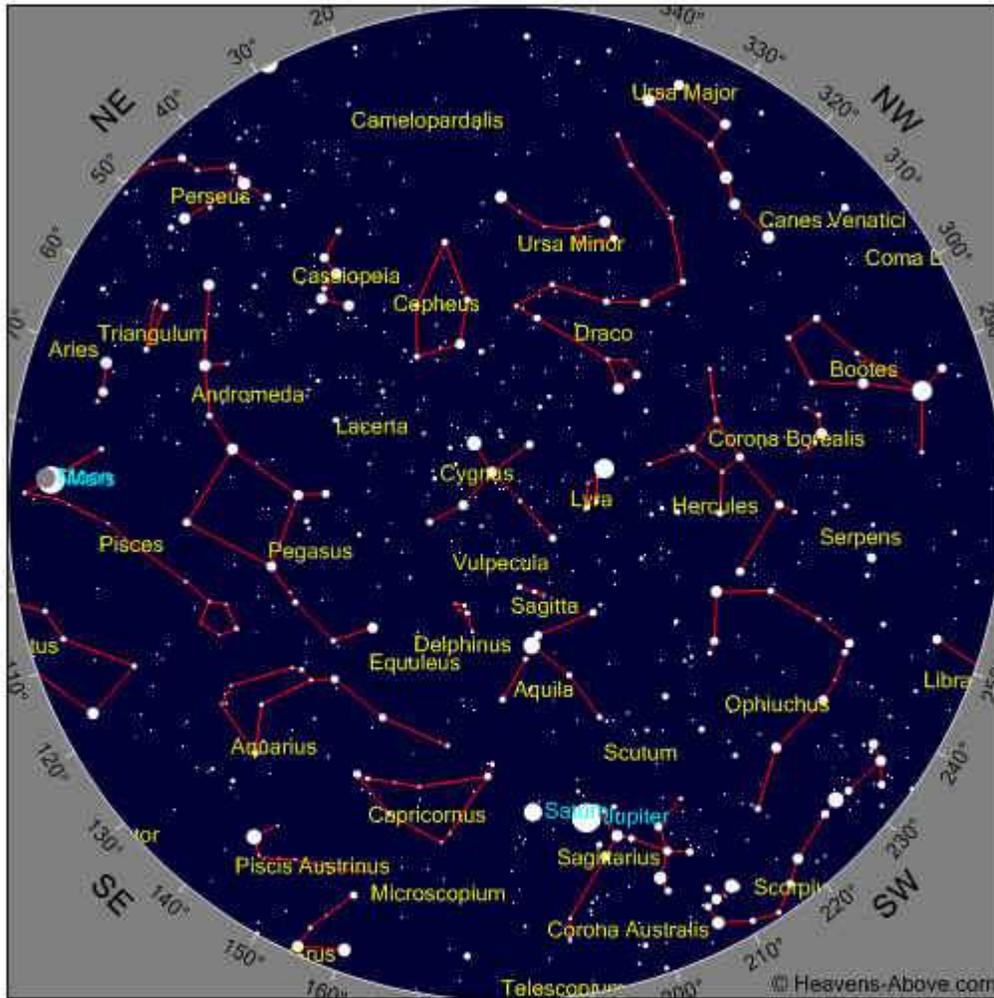
Full 2<sup>nd</sup>, New 17<sup>th</sup>, Last Quarter 10<sup>th</sup>, First Quarter 1 Oct

### Moon Facts and Folklore

In some Chinese religions offerings are made to the ancestors on the night of the full Moon. A pale full Moon indicates rain, while a red one brings wind.

# September 2020 Sky

Some Objects of interest, M13, M31, M27, M57, Double Cluster



## Time

Year	2020	Month	9	Day	5	Hour	22	Minute	8
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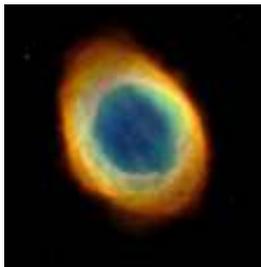
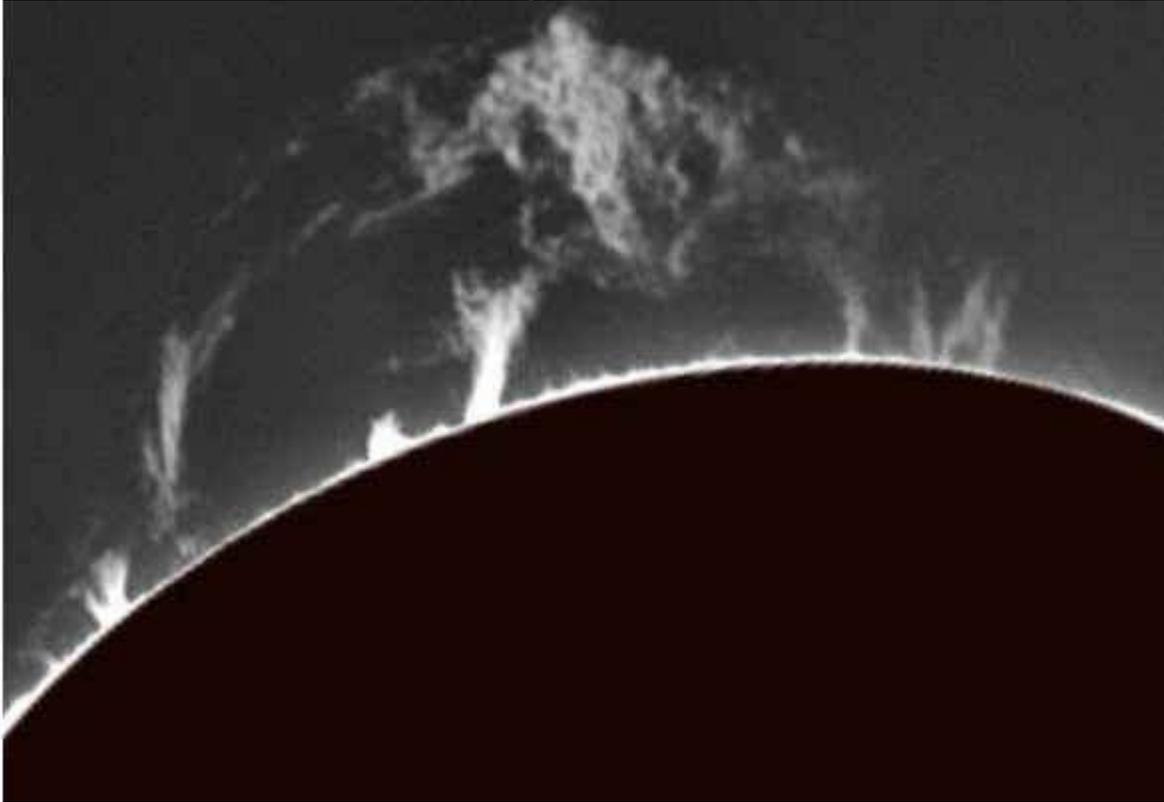


Photo Courtesy Vahan Yeterian



A massive solar prominence eruption. Prominences extend outward from the Sun's surface and are often loop shaped. They are anchored to the Sun's surface in the photosphere and extend outward into the Sun's Corona. They are held above the surface by strong magnetic fields. Prominences are cooler plasma (ionized gases) than the Coronal plasma. Sometimes prominences will break apart and become a Coronal Mass Ejection (CME). CME's release huge amounts of electromagnetic radiation into space. The ejected Material is a plasma consisting of high energy particles of electrons and protons and other materials. When directed toward Earth they can cause power outages satellite malfunctions and geomagnetic storms. Image capture was accomplished with a Coronado 40mm personal Solar telescope and Image source DMK31 CCD camera. 450 out of 1000 frames were processed using RegiStax image processing software.



## For What its Worth

**Apochromatic lenses**, a lens or optical system virtually free of chromatic aberration which for practical purposes means that light of at least three different wavelengths is brought to focus at the same point. The best apochromatic lenses use fluorite crystal and may correct three different wavelengths with only two optical elements. However, because fluorite is expensive to manufacture and because of its brittleness is difficult to grind and polish and mount. High quality apochromatic refracting telescopes are costly. Reflecting telescopes, on the other hand, are apochromatic in performance without the extra cost.

**Refraction** The refraction of light rays passing through the Earth's atmosphere is due to Variations in the density and temperature which produce corresponding variations In the refractive index. Atmospheric refraction gives rise to a shift in the apparent direction of the celestial object. The effect increases the observed altitude of a celestial Object and is greatest at the horizon. Unusual density variations close to the surface may produce mirages, shimmer and other deceptive effects.

**Light intensity** The reduction in the intensity of light from a celestial body is due to absorption and scattering by Earth's atmosphere. It increases from the zenith to the horizon and effects short wavelengths more than long wavelengths, so that objects near the horizon appear redder than they do at zenith. The brightness of a star in the zenith will be reduced by only 0.3 magnitudes whereas the extinction at 20 degrees altitude is about 0.9 magnitude and at 10 degrees altitude about 1.6 magnitudes.

**Aberration of star light** The difference between the observed position of a star and its true direction is a combined result of the observers motion across the path of the incoming star light and the finite speed of light. The effect is similar to that observed by someone walking in the rain. Though the rain is in fact falling vertically, because of the person's motion the rain appears to be falling at an angle. There are three components of the aberration of star light, Annual aberration caused by Earth's revolution around the Sun, Diurnal Aberration cause by Earth's axial rotation and a very small Secular Aberration caused my the motion of the solar system through space. Stars on the Ecliptic appear to move To-and-Fro. Stars 90 degrees from the ecliptic appear to trace out a circle and stars in intermediate positions trace out ellipses.

**Astigmatism** A form of optical aberration in which the focus changes from the center to the edges of the field of view. In the presence of astigmatism the problem is compounded because there are two separate astigmatic focal surfaces. Field curvature varies with the square of the field angle or the square of the image height. Positive lens elements usually have inward curving fields and negative lenses have outward curving fields. Field curvature can be corrected to some extent by combining positive and negative lens elements. Lenses with virtually no field curvature are called flat-field lenses.

**Optical aberrations** There are 5 major types of geometrical aberrations:

Spherical aberration

Astigmatism

Coma

Curvature of field

Distortion (pincushion or barrel distortion) additionally unless we are using monochromatic light, lenses (but not mirrors) exhibit chromatic aberration (longitudinal and transverse).



## *Astronomy Club Officers*



President  
Tom Gerald

Vice President &  
Treasurer  
Jana Hunking

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## *ACL Support Personnel*

*ACL News letter Editor*  
*Serf / Minion Vahan Yeterian*



*ACL Webmaster*  
*Serf / Minion David McNally*



## Club Meeting

**Reminder** ACL Club meeting Friday September 11<sup>th</sup>  
7:00 Pm On Zoom Video.

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 Club Logo*

