Website: http://acl.universeii.com 2, March 2020

Astronomy Club of Lompoc
Presents
The Sidereal Times

Mare Imbrium (see page 5)

Meeting *News* At the February meeting we discussed supporting some local events Manzanita school solar for the students, Outreach for Orcutt school and student projects. Also YMCA kids day in Lompoc. Distributed ACL buttons to attending members. Dr Bassie's next visit.

Reminder: ACL club meeting Friday March 13th At Manzanita School Teachers Lounge 7:00 Pm.

Lunar Calendar:
New Moon 24th
Full Moon 9th

Party at the observatory

Presidents Message

Hello, Star Lovers,

Thank you, Vahan, for getting made for us our great Astronomy Club of Lompoc buttons! They readily catch the eye and are an easy way to promote interest in our group. Every member gets a free button, so anyone who missed the February meeting, be sure to attend March 13th to secure yours. Want another for a friend? Extra buttons are available for $3.00 each.

As expected, our attendance at the last meeting was a tad thin, since we had big competition with Valentine's Day. Eight of us had an excellent time of sharing; an abundance of chocolates helped, of course. However, Jana's presentation on the Aurora Borealis lead to several probing questions and lively discussion to close out our fun evening. Thank you, Jana!

Inklings Printing is updating our rack cards to reflect not just our new name and logo, but our year-round meetings as well. I had stopped by to see if they would print some stickers to show the new name for the fifty or so remaining cards, and Robert offered to simply reprint. The idea of stickers trashing their good work obviously made his skin crawl! Hopefully the new cards will be in hand for our March meeting.

Speaking of changes and updates, we will soon have a Facebook page to promote ACL to the public. Facebook has become a standard tool for businesses and civic groups to connect with and inform their broader communities and to guide them to their websites for full information. If you have personal astronomy photos or photos of our activities you would like to share, email them to me; Joel Krueger has submitted some beautiful shots to give us a foundation.

In closing, Dr. Joe Bassi today committed to a program with us for our MAY meeting; let's hope we can secure a special venue for this event and bring a large public support to his talk. This will be a great way to celebrate our 35th year of promoting the love of astronomy here on the elbow of California!

See you March 13th at the Manzanita Teachers' Lounge.

Skyward,
Tom

Events

March 14th ***Star Party at the Observatory***.

Yes!

March 20th March Equinox occurs at 0350 UTC. The Sun will shine directly over the Equator and there will be nearly equal amounts of Day and night throughout the world. The first day of Spring in the Northern hemisphere and the first day of Fall in the Southern Hemisphere.

March 21st ***Star Party at the Observatory.***

Yes!

March 24th Mercury at greatest Western elongation at 27.8 degrees from the sun. This is the best time to observe Mercury since it will be at its highest point above the horizon in the morning sky. Look for the planet in the morning sky just before sunrise.

(Also on)

March 24th Venus at greatest Eastern elongation of 46.1 degrees from the Sun. This is the best time to view Venus since it will be at Its highest point above the horizon in the evening sky. Look for the bright planet just after sunset.

March 28th ***Star Party at the Observatory***.

Yes!

Vince & solar scope 2016 ACL BBQ

Star party's and Events

February 7th Star Party @ observatory, Event cancelled due to weather.

Nuts!

February 21th Star Party @ the Observatory. Vince and some guests on site ~ 8:00 Pm. Looked at Orion nebula, Betelgeuse, and a few other objects. Fog moved in at approx 9:00 Pm secured and departed.

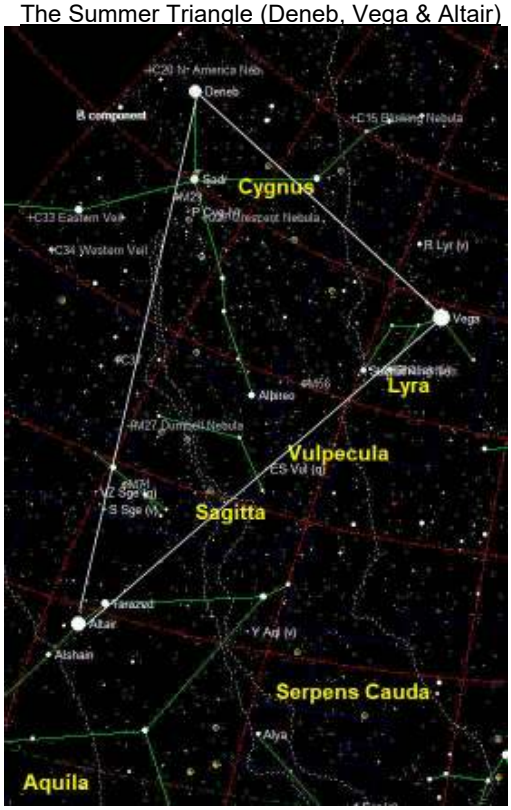
Yea!

February 22nd Star Party @ the Observatory, cancelled due to weather.

Nuts!

February 29th Star party at the observatory.

The Summer Triangle (Deneb, Vega & Altair)



March 2020 Moon

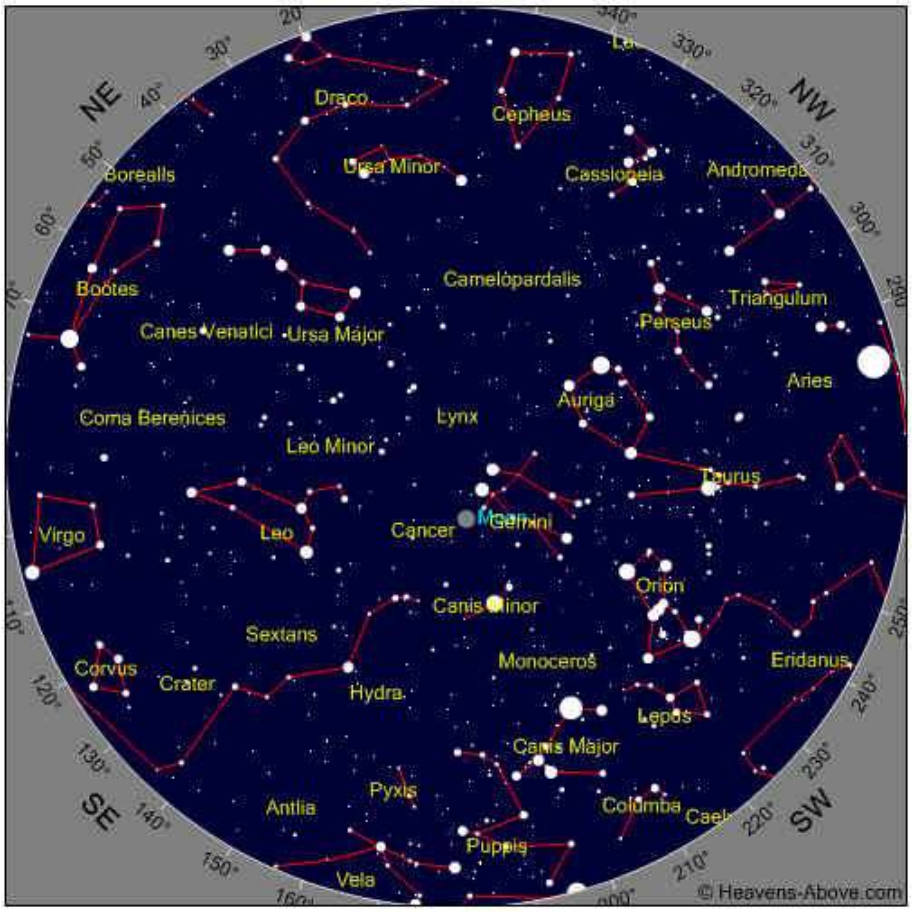
Full 9 th, New 24th, Last Quarter 16th , First Quarter 2nd

Moon Facts and Folklore

The moon's rate of rotation is uniform but its rate of revolution is not, so we're able to see just around the edge of each limb from time to time. Put another way, the two motions do not keep perfectly in step, even though they come out together at the end of the month. We call this effect libration of longitude.

March 2020 Sky

Some Objects of interest, M42, M1, Double Cluster

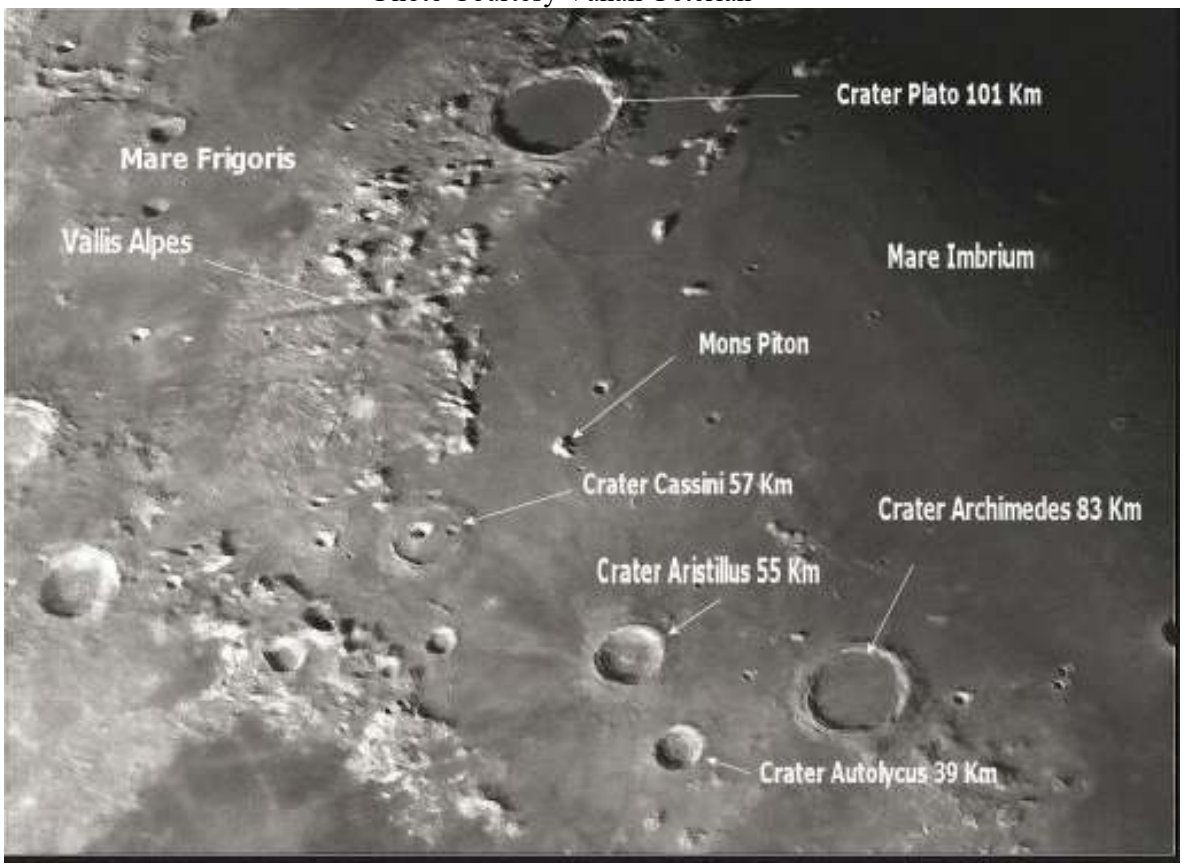


Time

Year	Month	Day	Hour	Minute
2020	3	5	21	12

Mauna Kea Observatories

Photo Courtesy Vahan Yeterian



Mare Imbrium (Latin for "**Sea of Showers**" or "**Sea of Rains**") is a vast lava plain within the Imbrium Basin on the Moon and is one of the larger craters in the solar system. The Imbrium Basin formed from the collision of a proto-planet during the late heavy bombardment. Basaltic lava later flooded the giant crater to form the flat volcanic plain seen today. The basin's age has been estimated to be 3938 ± 4 million years ago the diameter of the impactor has been estimated to be 250 ± 25 km. The Moon's maria (plural of mare) have fewer features than other areas of the Moon because molten lava pooled in the craters. With a diameter of 1145 km, Mare Imbrium is second only to Oceanus Procellarum in size among the maria, and it is the largest mare associated with an impact basin.

The Imbrium Basin is surrounded by three concentric rings of mountains, uplifted by the colossal impact event that excavated it. The outermost ring of mountains has a diameter of 1300 km and is divided into several different ranges; the Montes Carpatus to the south, the Montes Apenninus to the southeast, and the Montes Caucasus to the east. The ring mountains are not as well developed to the north and west, and it appears they were simply not raised as high in these regions by the Imbrium impact. The middle ring of mountains forms the Montes Alpes and the mountainous regions near the craters Archimedes and Plato. The innermost ring, with a diameter of 600 km, has been largely buried under the mare's basalt leaving only low hills protruding through the mare plains and mare ridges forming a roughly circular pattern. The outer ring of mountains rise roughly 7 km above the surface of Mare Imbrium. The Mare material is thought to be about 5 km deep, giving the Imbrium Basin a total depth of 12 km. The photo above was taken with an 8” SCT and an Images Plus ccd camera 5, 2 second exposures processed using RegiStax and PSP software. It represents part of Mare Imbrium.

For What its Worth

CMEs a Brief Account:
Coronal Mass Ejections (CMEs) are large expulsions of plasma and magnetic field from the Sun's corona. They can eject billions of tons of coronal material and carry an embedded magnetic field (frozen in flux) that is stronger than the background solar wind interplanetary magnetic field (IMF) strength. CMEs travel outward from the Sun at speeds ranging from slower than 250 kilometers per second (km/s) to as fast as near 3000 km/s. The fastest Earth-directed CMEs can reach our planet in as little as 15-18 hours. Slower CMEs can take several days to arrive. They expand in size as they propagate away from the Sun and larger CMEs can reach a size comprising nearly a quarter of the space between Earth and the Sun by the time it reaches our planet.

The more explosive CMEs generally begin when highly twisted magnetic field structures (flux ropes) contained in the Sun's lower corona become too stressed and realign into a less tense configuration – a process called magnetic reconnection. This can result in the sudden release of electromagnetic energy in the form of a solar flare; which typically accompanies the explosive acceleration of plasma away from the Sun – the CME. These types of CMEs usually take place from areas of the Sun with localized fields of strong and stressed magnetic flux; such as active regions associated with sunspot groups. CMEs can also occur from locations where relatively cool and denser plasma is trapped and suspended by magnetic flux extending up to the inner corona - filaments and prominences. When these flux ropes reconfigure, the denser filament or prominence can collapse back to the solar surface and be quietly reabsorbed, or a CME may result. CMEs traveling faster than the background solar wind speed can generate a shock wave. These shock waves can accelerate charged particles ahead of them – causing increased radiation storm potential or intensity.

Important CME parameters used in analysis are size, speed, and direction. These properties are inferred from orbital satellites' coronagraph imagery by SWPC forecasters to determine any Earth-impact likelihood. The NASA Solar and Heliospheric Observatory (SOHO) carries a coronagraph – known as the Large Angle and Spectrometric Coronagraph (LASCO). This instrument has two ranges for optical imaging of the Sun's corona: C2 (covers distance range of 1.5 to 6 solar radii) and C3 (range of 3 to 32 solar radii). The LASCO instrument is currently the primary means used by forecasters to analyze and categorize CMEs; however another coronagraph is on the NASA STEREO-A spacecraft as an additional source.

Imminent CME arrival is first observed by the Deep Space Climate Observatory (DSCOVR) satellite located at the L1 orbital area. Sudden increases in density, total Interplanetary Magnetic Field (IMF) strength, and solar wind speed at the DSCOVR spacecraft indicate arrival of the CME-associated interplanetary shock ahead of the magnetic cloud. This can often provide 15 to 60 minutes advanced warning of shock arrival at Earth – and any possible sudden impulse or sudden storm commencement; as registered by Earth-based magnetometers.

Important aspects of an arriving CME and its likelihood for causing more intense geomagnetic storming include the strength and direction of the IMF beginning with shock arrival, followed by arrival and passage of the plasma cloud and frozen-in-flux magnetic field. More intense levels of geomagnetic storming are favored when the CME enhanced IMF becomes more pronounced and prolonged in a south-directed orientation. Some CMEs show predominantly one direction of the magnetic field during its passage, while most exhibit changing field directions as the CME passes over Earth. Generally, CMEs that impact Earth's magnetosphere will at some point have an IMF orientation that favors generation of geomagnetic storming. Geomagnetic storms are classified using a five-level NOAA Space Weather Scale. SWPC forecasters discuss analysis and geomagnetic storm potential of CMEs in the forecast discussion and predict levels of geomagnetic storming in the 3-day forecast.

Astronomy Club Officers

President
Tom Gerald

Vice President &
Treasurer
Jana Hunking

ACL Support Personnel

ACL News letter Editor
Serf / Minion Vahan Yeterian

ACL Webmaster
Serf / Minion David McNally

Club Meeting

Reminder **ACL** Club meeting March 13th 7:00 Pm
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

Link to "Heavens Above" web site
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