

# Vandenberg Amateur Astronomical Society presents The Sidereal Times



Messier 13(see page 5)

### Meeting News:

At the March meeting we talked about the solar eclipse for this year and purchasing solar glasses. We also had a guest local Paleontologist Rex Saint Onge that talked about the Chumash Indians history, their Astronomy and their folklore.

**Reminder: VAAS club meeting April 14th 7:00PM  
Manzanita School Teachers Lounge.**



### Lunar Calendar:

New Moon Apr 26th

Full Moon Apr 11th

Rex Saint Onge



### Presidents Message

Welcome to April, VAAS Members and Interested Stargazers,

Well, after our March meeting great turn-out our April (Friday, 14<sup>th</sup>) meeting will seem pretty low-key, but will be packed with exciting planning for the near future. At the last meeting Rex Saint Onge of the Guadalupe Cultural Arts and Education Center entertained and enlightened us all with his historic discoveries, research-informed speculations, and insights regarding Ancient Chumash knowledge of astronomy. He demonstrated clearly how it was a vital part of their spiritual and agricultural lives. I came away from the meeting struck by the very real sense that we members of VAAS are carrying on an ancient quest right here on the Central Coast!

As to planning: Rex is still on board to give us a private tour of the Center, so we will finalize plans for an outing in May. Also, we will discuss our outreach to Manzanita School for their "Earth Day Celebration of the Sun" when we host students at the observatory April 20<sup>th</sup>. Nichelle Rourke, teacher at Manzanita will attend our meeting to facilitate our planning. In addition, we need to start definite plans for hosting our community for a viewing of the Solar Eclipse in August. One thing we must decide immediately is whether to purchase Eclipse Viewing glasses that we will in turn sell to attendees, or simply give away on a first-come basis. Before the meeting I will send you some options to consider as to price and supplier.

NOW: for our upcoming meeting's program, I ask that each of us bring ONE article related in some way or other to astronomy, be it from a magazine, newspaper, internet, wherever and whatever, just an item that has caught your attention recently. We will take no more than five minutes each sharing these with the group. Don't worry about duplicating someone else's article, we will only gain a different perspective! You will receive a reminder of this a few days prior to our meeting.

I look forward to seeing all of you on the 14<sup>th</sup>!

Ever skyward,

Tom

## Events

**April 1<sup>st</sup>** Mercury at greatest Eastern elongation of 19° from the Sun. It is the best time to view Mercury since it will be at its highest point above the horizon in the evening sky. Look low in the Western sky.

**April 1<sup>st</sup>** *Star party at the observatory.*



**April 7<sup>th</sup>** Jupiter at opposition. The planet will be at its closest approach to Earth. It will be brighter than any other time of the year. It will be visible all night long and this is the best time to photograph the planet.

**April 22<sup>nd</sup> and 23<sup>rd</sup>** The Lyrids meteor shower is an average shower usually producing about 30 meteors per hour. It is produced by dust particles left over from Comet C/1861 G1 Thatcher. It peaks this year on the night of the 22<sup>nd</sup> and the morning of the 23<sup>rd</sup>. Meteors will radiate from the constellation of Lyra but can appear anywhere in the sky.

**April 22<sup>nd</sup>** *Star Party at the observatory.*



**April 29<sup>th</sup>** Is international Astronomy day. It is an annual event intended to provide a means of interacting between the general public and various astronomy groups and organizations. The theme of Astronomy day is “Bringing astronomy to the public” Plan special events to be put on that day by your organization.

**April 29<sup>th</sup>** *Star party at the Figueroa Mtn.*



## Star party's and Events

**March 4<sup>th</sup>** Star Party at the Observatory. Cancelled due to weather.



Nuts!

**March 18<sup>th</sup>** Star Party at the Observatory. Cancelled due to weather.



Nuts!

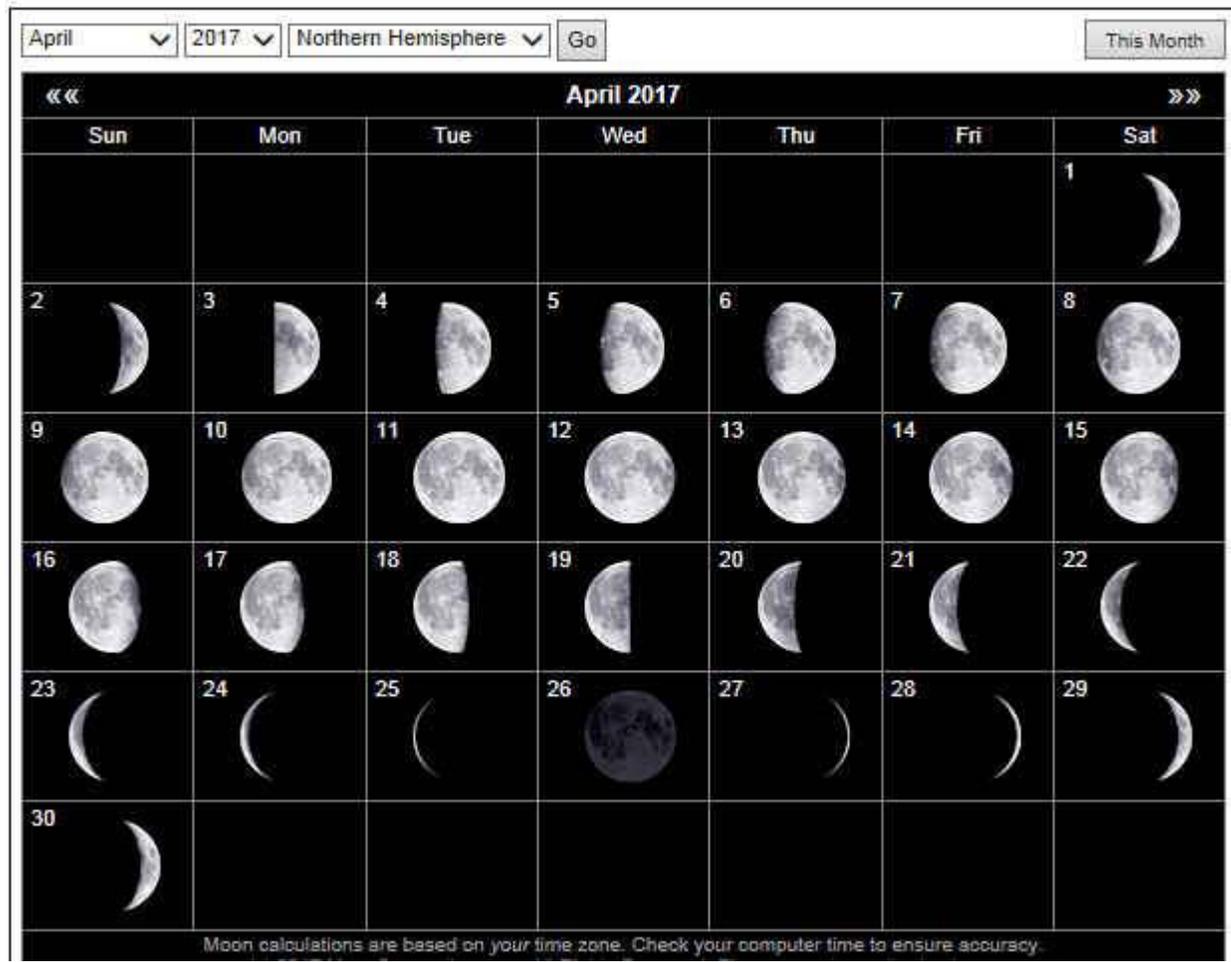
**March 25<sup>th</sup>** Star Party at Figueroa Mtn. Cancelled due to weather.



Nuts!



## April 2017 Moon



Full 11th, New 26th, 1<sup>st</sup> Quarter 3rd, Last Quarter 19th

### Moon Facts

Formed 4.6 billion years ago around 30-50 million years after the formation of the solar system.

Both sides of the Moon see the same amount of Sunlight.

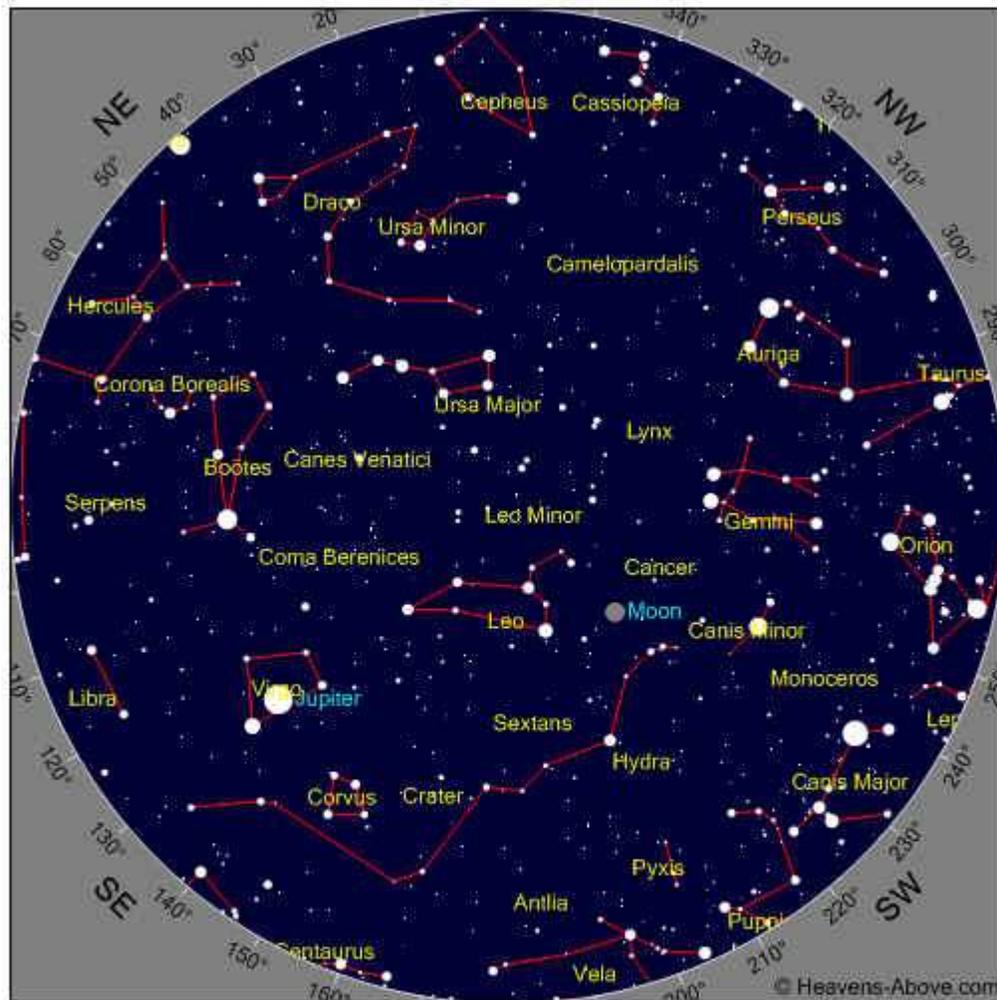
The Moon has only been walked on by 12 people all American males.

Selmer



## April 2017 Sky

Some Objects of interest M13, M42, Jupiter, M92, Moon



### Time

Year	2017	Month	4	Day	5	Hour	22	Minute	38
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Photo Courtesy Vahan Yeterian



Messier 13, NGC 6205, also known as the Great Globular Cluster in the constellation of Hercules. M13 is one of the brightest and best known globular in the northern sky. It has an apparent magnitude of 5.8 and lies at a distance of 25,100 light years from Earth. It has an age estimated to be 11.65 billion years and contains about 300,000 stars. The estimated mass is half a million solar masses. M13 stretches across 20 arc minutes of sky that corresponds to a linear diameter of 145 light years. The brightest star in M13 is V 11, a red giant classified as a Cepheid variable and has a visual magnitude of 11.95. The cluster contains an unusually young B2 type star designated Barnard 29. The star does not really belong to the globular cluster but was presumably picked up by M13 on its orbit around the Milky Way. Other stars in the cluster are very old and only have about 5% of the Sun's iron content as they were formed before stars in our galaxy created metals. M13 also contains about 15 blue stragglers, old stars that appear younger and bluer than their neighbors. M13 is a class V globular cluster, one with an intermediate concentration of stars toward the center. It has a densely packed central region with up to a hundred stars populating a cube only 3 light years on a side. To illustrate, Alpha Centauri the nearest star system to Earth, is just over 4 light years away. In other words stars in the cluster's core region are about 500 times more concentrated than those in our immediate stellar neighborhood. Globular clusters orbit the Milky Way Galaxy outside the galactic disk at tens of thousands of light years away.

Image capture was with a C-9.25 SCT, C-AVX mount, Canon T3(mod)DSLR. 10 2min Lights, darks, 10 bias and 10 flats. Image processing Deep Sky Stacker software.

## **For what its Worth**

NASA's Spitzer Space Telescope has revealed the first known system of seven Earth sized planets around a single star. Three of these planets are firmly located in the habitable zone, the area around the parent star where a rocky planet is most likely to have liquid water. The discovery sets a new record for greatest number of habitable-zone planets found around a single star outside our solar system. All of these seven planets could have liquid water – key to life as we know it – under the right atmospheric conditions, but the chances are highest with the three in the habitable zone. “This discovery could be a significant piece in the puzzle of finding habitable environments, places that are conducive to life,” said Thomas Zurbuchen, associate administrator of the agency’s Science Mission Directorate in Washington. “Answering the question ‘are we alone’ is a top science priority and finding so many planets like these for the first time in the habitable zone is a remarkable step forward toward that goal.”

At about 40 light-years (235 trillion miles) from Earth, the system of planets is relatively close to us, in the constellation Aquarius. Because they are located outside of our solar system, these planets are scientifically known as exoplanets. This exoplanet system is called TRAPPIST-1, named for The Transiting Planets and Planetesimals Small Telescope (TRAPPIST) in Chile. In May 2016 researchers using TRAPPIST announced they had discovered three planets in the system. Assisted by several ground-based telescopes, including the European Southern Observatory's Very Large Telescope, Spitzer confirmed the existence of two of these planets and discovered five additional ones, increasing the number of known planets in the system to seven. The new results were published Wednesday in the journal *Nature*, and announced at a news briefing at NASA Headquarters in Washington.

Using Spitzer data, the team precisely measured the sizes of the seven planets and developed first estimates of the masses of six of them, allowing their density to be estimated. Based on their densities, all of the TRAPPIST-1 planets are likely to be rocky. Further observations will not only help determine whether they are rich in water, but also possibly reveal whether any could have liquid water on their surfaces. The mass of the seventh and farthest exoplanet has not yet been estimated – scientists believe it could be an icy, "snowball-like" world, but further observations are needed. In contrast to our sun, the TRAPPIST-1 star – classified as an ultra-cool dwarf – is so cool that liquid water could survive on planets orbiting very close to it, closer than is possible on planets in our solar system. All seven of the TRAPPIST-1 planetary orbits are closer to their host star than Mercury is to our sun. The planets also are very close to each other. If a person was standing on one of the planet’s surface, they could gaze up and potentially see geological features or clouds of neighboring worlds, which would sometimes appear larger than the moon in Earth's sky. The planets may also be tidally locked to their star, which means the same side of the planet is always facing the star, therefore each side is either perpetual day or night. This could mean they have weather patterns totally unlike those on Earth, such as strong winds blowing from the day side to the night side, and extreme temperature changes. Spitzer, an infrared telescope that trails Earth as it orbits the sun, was well-suited for studying TRAPPIST-1 because the star glows brightest in infrared light, whose wavelengths are longer than the eye can see. In the fall of 2016, Spitzer observed TRAPPIST-1 nearly continuously for 500 hours.

Spitzer is uniquely positioned in its orbit to observe enough crossing – transits – of the planets in front of the host star to reveal the complex architecture of the system. Engineers optimized Spitzer’s ability to observe transiting planets during Spitzer’s “warm mission,” which began after the spacecraft’s coolant ran out as planned after the first five years of operations. Pasadena, California. "Spitzer will follow up in the fall to further refine our understanding of these planets so that the James Webb Space Telescope can follow up. More observations of" This is the most exciting result I have seen in the 14 years of Spitzer operations," said Sean Carey, manager of NASA's Spitzer Science Center at Caltech/IPAC in the system are sure to reveal more secrets. "Following up on the Spitzer discovery, NASA's Hubble Space Telescope has initiated the screening of four of the planets, including the three inside the habitable zone. These observations aim at assessing the presence of puffy, hydrogen-dominated atmospheres, typical for gaseous worlds like Neptune, around these planets.

Spitzer, Hubble, and Kepler will help astronomers plan for follow-up studies using NASA's upcoming James Webb Space Telescope, launching in 2018. With much greater sensitivity, Webb will be able to detect the chemical fingerprints of water, methane, oxygen, ozone, and other components of a planet's atmosphere. Webb also will analyze planets' temperatures and surface pressures – key factors in assessing their habitability

NASA’s Jet Propulsion Laboratory (JPL) in Pasadena, California, manages the Spitzer Space Telescope mission for NASA's Science Mission Directorate. Science operations are conducted at the Spitzer Science Center, at Caltech, in Pasadena, California. Spacecraft operations are based at Lockheed Martin Space Systems Company, Littleton, Colorado. Data are archived at the Infrared Science Archive housed at Caltech/IPAC. Caltech manages JPL for NASA.

## *Club Officers*



**President  
Tom Gerald**



**Vice President  
Jana Hunking**



**Treasurer  
Vince Tobin**



**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 Apr 14th at 7:00Pm  
Manzanita School.

**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://skysurvey.org/>

VAAS.

Dave McNally is the VAAS Web Site Serf/Minion

Dave

