VAAS Website: www.vaas.universeii.com/ 2, October 2017

Vandenberg Amateur Astronomical Society presents The Sidereal Times

Double Cluster (see page 5)

<u>Meeting *News:*</u>

At the September meeting we discussed solar eclipse here and at Madras Oregon. Also scheduled the VAAS picnic for October 21st at river park. Welcomed 2 new members Rick Miles and Donald Mahon and his wife Kaye.

<u>Reminder:</u> VAAS club meeting Oct 13th 7:00 PM at Manzanita school Teachers lounge.

<u>Lunar Calendar:</u>

New Moon 19th
Full Moon 5th

<u>Aug 21 Madras Or. Eclipse through glasses</u>

<u>Presidents Message</u>

Hello, Sky watchers!

Two fun events are in store for us in addition to our usual gatherings for Star Parties. There is our annual picnic out at River Park on the 21^{st} of course. Plan to eat hardily and share in stories and laughter. Vahan, the BBQ Wizard, will be manning the grill and bringing forth his amazing beef delights for us and we will each contribute our favorite dish.

The weekend before, at our October meeting, we will learn about the fascinating subject of Space Weather from Dr. Joseph Bassi. Dr. Bassi will discuss what space weather is, some of its impacts on human activity, and offer a brief survey of the history of space weather science. He will also offer insights into exactly how scientists and the US government monitor space weather. Dr. Bassi is a retired US Air Force Lt. Colonel after twenty-six years of active service. Never one to stop learning, he has earned a degree on average of every seven years of his adult life. He graduated from Manhattan College in 1974 with a BS in Physics [Magma Cum Laude], and received his PhD in 2009 from UCSB. He is the author of the book **A Scientific Peak: How Boulder Became a World Center for Space and Atmospheric Science.**

I look forward to seeing all of you at these events.

Skyward,
Tom

Events

Oct 8th The Draconids meteor shower is a minor shower producing only about 10 meteors per hour. The Draconids are produced by dust grains left behind by Comet 21P Giacobini-Zinner. It is an unusual shower in that best viewing is in the early evening instead of the usual early morning like most meteor showers. Meteors will radiate from the constellation of Draco but can appear anywhere in the sky.

Oct 21st VAAS picnic at River Park. Tri Tip, Beans and garlic bread by club treasury. Start serving at 12:30 bring a dish to share with the group.

OCT 14th ***Star party at the observatory.***
Yea!

Oct 19th Uranus is at opposition, the blue green planet will be at its closest approach to Earth. It will be brighter than any other time of the year and will be visible all night long.

Oct 21th ***Star party at the Figueroa Mountain site 1.5.***
Yea!

Oct 21 & 22 Orionids meteor shower is an average shower producing up to 20 meteors per hour at its peak. The Orionids are produced by dust grains left behind by comet Halley. It peaks this year on the night of the 21st and morning of the 22nd. Meteors will radiate from the constellation of Orion but can appear anywhere in the sky.

Oct 28th ***Star Party at the observatory.***
Yea!

Jana Teaching geology of Madras Oregon Aug 21st

Star party's and Events

Sept 16th Star party at the observatory. Vahan on site at 6:30 pm. Sky was partially cloudy with a very light wind. Vince and Andy on site at 6:50 pm. Set up the observatory for star cal's at dark. 7:20 pm sky cleared, 7:40 pm suddenly the sky was totally and completely overcast, goofy weather no stars tonight. Secured and departed at 8:00 pm.
Yea!

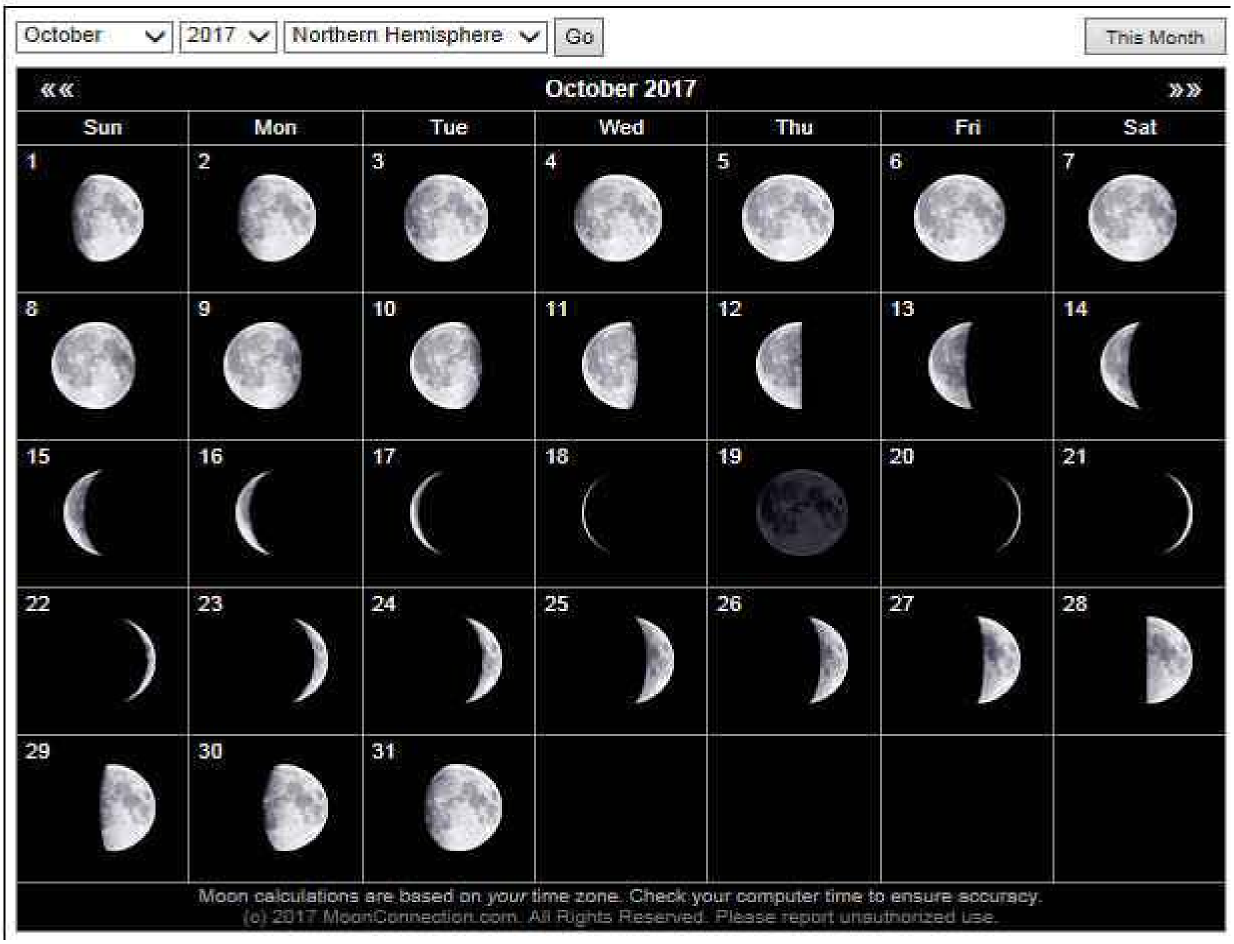
Sept 23rd Star party at Figueroa Mt. No activity reported.
Nuts!

Sept 30th Star party at the observatory. Because of the time element involved I will include this event in the November News Letter.

Aug 21st Madras Oregon

Eclipse 21 Aug at observatory

Oct 2017 Moon



Full 5th, New 19th, 1st Quarter 27th, Last Quarter 12th

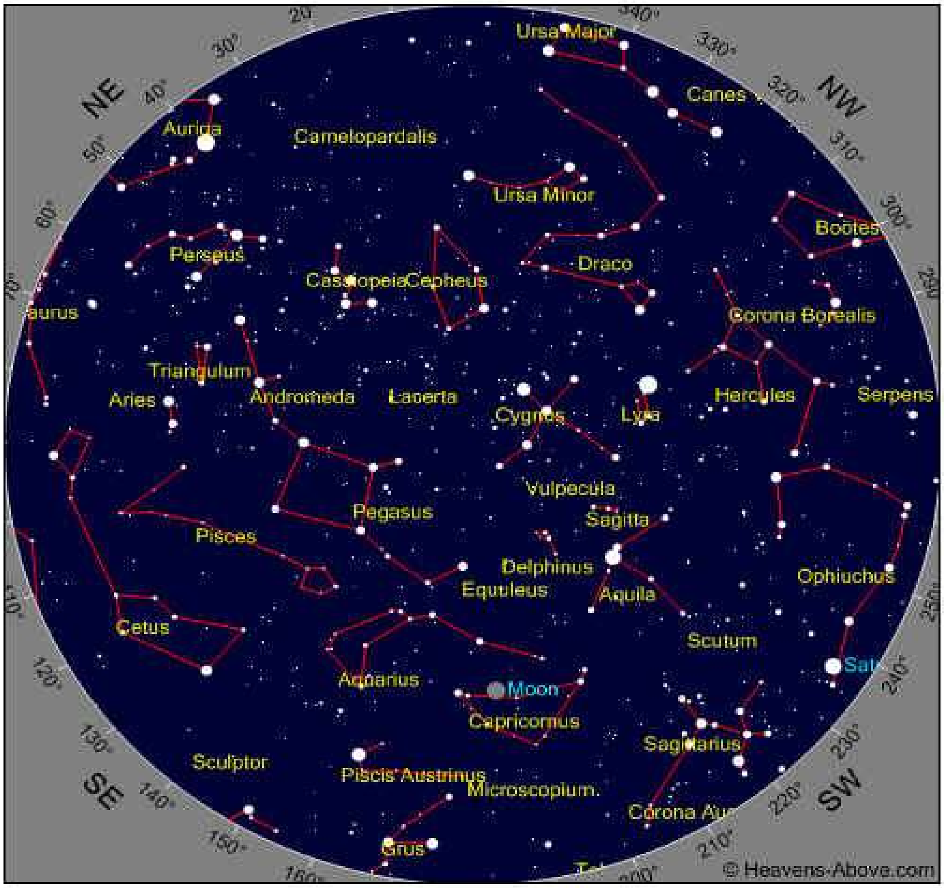
Moon Facts

The diameter of the moon's largest crater is 144 miles.

Aug 21st Eclipse (Oregon) Craig and Vince

<u>Oct 2017 Sky</u>

Some Objects of interest M 31, M42, M92, M57, Moon



Time

Year 2017 Month 9 Day 3 Hour 23 Minute 44

<u>Aug 21st Eclipse Madras Or. Jana</u>

Photo Courtesy Vahan Yeterian

The double cluster NGC 869 and NGC 884 (h & x Persei) are a few light years apart in the constellation of Perseus. The distance from us is approximately 7500 light years. NGC 869 has a solar mass of 3700 and NGC 884 weights in at 2800 solar masses. The latest research shows that both clusters are surrounded by a very extensive halo of stars giving the total mass of the complex of at least 20,000 solar masses. It is a relatively young group, about 12.8 million years old. There are more than 300 blue-white super giants in each cluster. The clusters are blue shifted and Are approaching Earth at 39 Kilometers per second. The hottest main sequence stars are of spectral class B0. The cluster lies within the Perseus arm of the Milky Way galaxy. Our solar system resides within the Orion arm. Therefore when we look at the cluster we are looking through our local spiral arm and all the way to the next spiral arm outward from the galactic center.

Image capture was with a Celestron OMNI XLT102 (4 inch) 900 mm focal length refractor and a Canon T3 Rebel (modified) DSLR. Ten Light frames at ISO 1600, 30 seconds per frame and 3 Dark frames were all processed using DSS and PSP 9 software. All images were taken in Unguided configuration.

Aug 21st eclipse % local area Jana @ Madras pin the moon on the sun Filtering the Rays

For what its Worth

When it comes to astronomy, you will find the term "arc second" used in three ways: (1) to express a given distance in declination on a star chart, (2) as a given unit of an astronomical object's size, and (3) as an expression of telescope's resolving power. Let's take a look at each use of the term in more detail.

First, we'll examine how an arc second is expressed when applied to a star chart and to the visible night sky. Picture the entire dome of the night sky as the face of a clock. The clock is divided into hours, minutes, and tiny seconds. Much like this imaginary clock, the celestial dome is divided into degrees and each degree is comprised of arc minutes and arc seconds. There are 60 arc minutes in each degree, and each arc minute is made up of 60 arc seconds. But, just how big would that be? Let's use the full Moon as an example. It covers approximately 1/2 a degree of night sky - which equals 30 arc minutes or 1800 arc seconds. These measurements are abbreviated into a type of astronomical shorthand. Terms for the Moon's apparent size would read 30' for arc minutes or 1800" for arc seconds.

When you look at a star chart, you'll see degrees of declination - measurements from north to south - marked along the edge. Each degree of sky contains 60 arc minutes, or 3600 arc seconds. When using an astronomical catalog or observing instructions, you'll be provided with an "address" of coordinates to celestial objects which utilizes arc seconds. This address may read something like RA 12h 22m 13s - Dec +22° 44' 11". Look at the second set of numbers. This means your object is located twenty-two degrees, forty-four arc minutes, eleven arc seconds north of the celestial equator. Although a single arc second would be too small to visually determine when looking at the sky, it is very important to celestial surveys and catalogs. It is like assigning a celestial "house number" to a specific target and allows astronomers to locate targets with precision.

When expressing the size of an astronomical object, it is often given in terms of angular diameter as seen from Earth - not its true size. Most of the time, these angular diameters are very small since most objects are very far away from Earth, so they are expressed as arc minutes, or more frequently as arc seconds. An astronomical catalog or observing guide will provide an object's size to help observers better understand what to expect from a target before they try to locate it with a telescope. This is helpful if you have never seen a particular object. Let's use two samples to illustrate this concept - a globular cluster and a double star. For example, globular cluster M80 is listed as 10' (ten arc minutes) in size. A good star chart will show this object printed to scale in relationship to the stars around it. This makes identifying it from the surrounding stellar patterns seen in the eyepiece much easier. You knew in advance the cluster would cover a certain amount of distance between identifiable stars. However, the angular distance measurement between double stars is much smaller and is always expressed as arc seconds. A good example is Polaris. The main bright star, Polaris A, is separated from small faint star, Polaris B, by 18" (eighteen arc seconds). By knowing a double star's separation in advance, you can test your telescope's ability to resolve small distances and aid you in determining sky conditions. Most general star charts don't print separations that small, so you'll need to rely upon your astronomy catalog as a resource for those numbers.

Another place in which you will encounter arc seconds is in a telescope's specifications - the resolving power. This is your telescope's ability (under ideal observing conditions) to "see" or separate a given size or distance. While there are lengthy mathematical expressions used to determine arc seconds of resolution for telescopes, a simple way to understand is to use the known separation of a double star as an example. Let's return to Polaris. If a telescope has a stated resolving power of 1.0" that means it is capable of clearly resolving an object - or distance - of one arc second. That's just 1/18th the distance between Polaris and its companion! With this information, you know our example telescope with a resolving power of 1.0" (one arc second) will be able to "split" the double star Polaris under ideal observing conditions.

While these measurements might seem a little confusing at first, you'll soon understand and appreciate them. Knowing an arc second's distance on a star chart will help you better locate objects by further refining their positions. Being able to add arc minute and arc second directional numbers to a telescope's computer aiming system will make it far more accurate. Understanding an arc second in size will assist you in relating what you see to others. For example, you might observe a comet and want to record its size in your notes. If you know a given object's size in arc minutes or arc seconds, you can compare the two and make a more accurate assessment. By knowing your telescope's resolving ability in arc seconds, you'll also know if you're able to "split" a given double star in advance - or know if your telescope is capable of "seeing" very small separations, such as revealing individual members in a star cluster. Arc seconds might be tiny, but they're very important!

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

Club Meeting

Reminder Club meeting Oct 13th at 7:00Pm
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

Night Time Bright Objects (no scope required)

Link to "Heavens Above" web site
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