Huachuca Astronomy Club
Sierra Vista Arizona

Nightfall

A Publication of the Huachuca Astronomy Club

May 2017

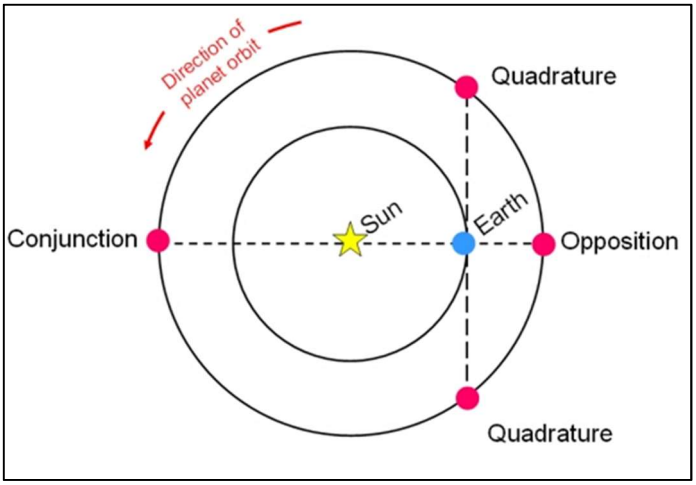
President's Notes

Is it May? What happened to April?

Well anyway, welcome to May. If you follow the HAClist group on-line, you know some of us have been spending our viewing time galaxy-hopping in the vicinity of Leo and Virgo. That happens this time of year, but sometimes while looking at one type of thing you can miss out on another thing. We don't want to do that. Meanwhile, others are starting to focus solely on the Sun in preparation for the eclipse in August. However, we don't want to do just that either. It's only May, after all! No, we want to look the opposite direction from the Sun, and look at something a good deal closer than other galaxies.

We want to stare awhile at Jupiter.

A Solar System body at opposition, on the opposite side of the Earth from the Sun



Credit: © Swinburne University of Technology

Some of you may have noticed Jupiter is beaming all night long. Well, that is because it is in the opposite direction of the Sun or as they say, at opposition. Similar to when the Moon is full it rises in the east just as the sun sets in the west, so, too, the outer planets are at times, to us on Earth, opposite the Sun. And, so those planets, too, rise in the east just as the Sun is setting. We see them at that those times at their biggest and brightest. That time for Jupiter was early in April. Now it is rising before the Sun sets, and so is well placed high in the sky early in the evening. This gives plenty of time to stare and wait for calm times where you can finally pump up the power and see Jupiter as the giant planet should be seen.

At higher magnification, the rich colors show off subtle variations, and the interplay of the bands, zones, and the great storms are enough to make you think about gluing your best planetary eyepiece permanently into your scope. But then you might miss out on the movements of the Galilean moons, Io, Europa, Ganymede, and Callisto, right? Well you are in luck. You can cement that eyepiece in place because, as I said, Jupiter is almost in opposition. In addition to being big and bright around the time of opposition, the shadow transits across the face of Jupiter can be seen more frequently, because the Sun is shining directly onto the planet (with respect to Earth), and the moons' shadows, from our perspective, are cast onto the planet's disk, instead of sideways into space. This means all the activity is happening within a small angle of view, on and across the planet's disk at once. Moons, shadows, and bands -- oh my! Get the glue out.

This year there will be many opportunities to see single moon shadows play across Jupiter's disk, but only a few double shadow crossings. Our opportunities arrive May 18, when there will be double shadows of Io and Europa plus a moon transit for 49 minutes, starting at 9:55 p.m. local time. On May 26, shadows of Io and Ganymede, plus moon transit for 72 minutes, starts at 9:47 p.m. Then again, on June 3, we get two shadows Io and Ganymede again and, yes, another moon transit for 55 minutes, starts at 8:21 p.m. If you miss all those, on June 19 two shadows, Io and Europa take 35 minutes to cross, starting at 8:04 p.m. As always, check my times (I could be an hour off) and begin watching early anyway because it is exciting to watch celestial mechanics at work.

Think about it, these moons are orbiting Jupiter just as they were when Galileo first turned his telescope towards Jupiter in 1610. With a telescope, not even as good as your finder (and definitely not as good as your birding binoculars) he was able to figure out that those four dots of light were small worlds orbiting not the Earth but Jupiter. Moreover, after a year of following those little dots he also figured out each of their orbital periods. So, when you go outside, aim your scope at Jupiter and crank up the power to see the detail and beauty of the Jovian system. Take a minute to reflect that the little dance of these moons as noted by Galileo fundamentally changed the perception of cosmos and our

place in it forever. Then go back to looking at the cool little dots crossing the face of Jupiter.

Clear Skies.

Welcome our new members

Maureen Harris of Sierra Vista joined the club at the Earth Day celebration at Veterans Memorial park. Welcome! We are glad you joined.

The May meeting

The May meeting will be held in the Student Union community room at Cochise College, Sierra Vista campus at 7 pm on May 12. May's program will be a discussion and demonstration of photographic techniques for the August eclipse by various HAC members.

The August eclipse outreach event

HAC will conduct an outreach event to observe the partial solar eclipse from the Sierra Vista library on Monday, August 21. Many of our most active members will be out of town to observe the total solar eclipse so volunteers are needed to help with the Sierra Vista library event. Please contact Bert Kelher if you will be in town and can help with this event.

The May 4 Patterson Public Night

The Patterson Public Night on May 4 was quite well attended. Up to 70 people were there. Some guests heard about us on the radio, some saw the notice in the Herald and others found our website and Facebook notices. We are on the schedule in the latest AAA Highways magazine as well. One couple came from Tucson just for the event and another couple evidently came all the way from Phoenix. But if you think that was a record, you'd be wrong, one person there was from Higham Ferrers in the UK bringing greetings to us from HAC members Rick and Sue Johnston who moved there for work last year.

HAC was well represented too. Ken Duncan, Rick Burke and Stacy and David Chitwood set up telescopes and a group of Boy Scouts set up the club's 6-inch Dob and had a ball showing people the moon and Jupiter. Fred Chitwood and Phillip Shulsky handled things in the dome. Ted Forte was kept pretty busy with the six Boy Scouts that are working on their astronomy merit badges. Several other members at the event included Howard Day, Gary Grue, Cindy Lund, Alan McElroy, John Sullivan, and Jennifer Belieff. The weather was just about perfect and the sky was nice.

The one uninvited guest, a juvenile rattlesnake, kept to himself over by the Learning Resource Center door. (By the rest rooms). It caused a little concern when it was finally discovered near the end of the event, but it was given a wide berth and presented no problems. Campus security was notified but opted to leave it unmolested.

As crowded as it was, there was room for more. All HAC members are encouraged to come out to Public Night, share their enthusiasm for observing the night sky, and hobnob with fellow members. It's always a lot of fun and as the crowds have been fairly large, we can certainly use the help. The next public night is June 1 starting about 8 pm. That will be our last pre-monsoon event for this year. We'll open again September 7.

Club Observing Party at Blue Marvel Observatory

By Gary and Aracelis Grue

We wanted to invite everyone to another observing party at our BMO observatory on Saturday May 20th. Everyone is welcome to come anytime after 7 PM. Our address is 8955 S. Bryerly Ct. Hereford, which is inside the Wild Horse Subdivision. Directions to (BMO) are to take Hwy 92 south past the Hereford Post Office (go 3 miles past post office or 1 mile past the Three Canyons exit) and then turn left onto Andalusian way (entrance to Wild Horse subdivision), and after going through the gate make an immediate left onto S. Bryerly Dr, go about 1 mile and make another left on S. Bryerly Ct. following it to the end and we are the last house on the right side. We will have plenty of snacks available so you don't need to bring anything.

The Wild Horse gate does close (after dusk) and we will be later providing a gate code before the event. When you turn into the entrance there will be a turnout to the right just before the gate. If you have any questions or problems please feel free to call me on my cell at (559)760-3827.

Important: if we do weather cancel we will also have as a backup date May 27 at the same time. This is only if we cancel due to weather on the scheduled May 20 date. If the weather does cause a cancellation on May 20th we will also send a message out that day to everyone on the HAC list. You can also call us anytime on my cell phone if there are any concerns.

Hope to see everyone

8955 S. Bryerly Ct
Hereford 85615
Cell 559-760-3827
Clear Skies, everyone.

HAC Star Party Report - April 22, 2017

By Craig Gundy

The weather was great for the April 22 observing event at Bob & Barb Kepple's Desert Starlight Observatory. Popular opinion held that avoiding the term "star party" was largely responsible for breaking the bad weather curse.

In any case, early arrivals enjoyed a relaxing interlude on the back porch while the skylight faded, and then adjourned to the observatory.

Our first targets in the not-quite-dark sky were carbon stars and globular clusters. Then, as our ranks swelled to about nine observers, we set our sights on dimmer objects like the Eskimo Nebula (NGC 2392), the Whale Galaxy (NGC 4631), the Needle Galaxy (NGC 4565), the Silver Needle Galaxy (NGC 4244), followed by several others.

Later on, I understand that a few intrepid late-nighters were rewarded with a spectacular view of Omega Centauri, as it headed toward its 11:42 transit time.

Attendees (apologies for any omissions or misspellings):

Bob & Barb Kepple (of course)

Glen & DeAnn Sanner

Rick Burke

Craig Gundy

Bert Kelher

Ted Forte

Scott Tillman

Gary Grue

Ken Duncan

Gary and Aracelis Grue will host our next member star party beginning at 7:30 PM on Saturday 20 May at their Blue Marvel Observatory. BMO is a 16 x 16 foot roll-off roof observatory housing a 24-inch f/4 Newtonian on an equatorial mount. It truly is a marvelous telescope! Driving directions and a gate code will be available via the HAC list at a later date.

Until next month at BMO, may your skies be clear and wind-free!

See Comet C/2015 ER61 PanSTARRS at its Best

Article Updated: 9 May, 2017

by David Dickinson

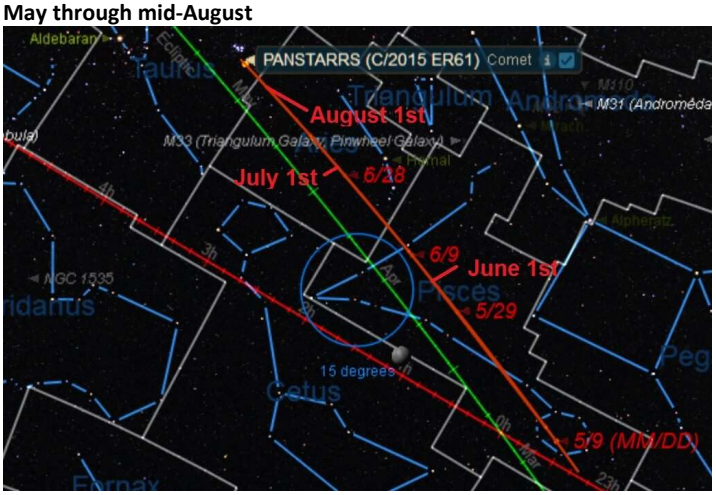
Comet C/2015 ER61 PanSTARRS shortly after outburst on April 8th.

Image credit and copyright: John Purvis.

Have you been following the springtime parade of bright comets? Thus far, the Oort cloud has offered up several fine binocular comets, including Comet 2/P Encke, 41/P Tuttle-Giacobini-Kresak, 45/P Honda-Mrkos-Pajdusakova, C/2016 U1 NEOWISE and C/2017 E4 Lovejoy. Now, another comet joins the dawn ranks, as it brightens up ahead of expectations: 2015 ER61 PanSTARRS.

Discovered on March 15th, 2015 by the prolific PanSTARRS-1 NEO survey atop Haleakala in Maui, Hawaii, Comet ER61 PanSTARRS made our who's who list of bright comets to watch for in 2017. The odd designation stems from the early identification of the object as an asteroid, before it presented observers with a cometary appearance.

The path of Comet C/2015 ER61 PanSTARRS through the sky from early May through mid-August

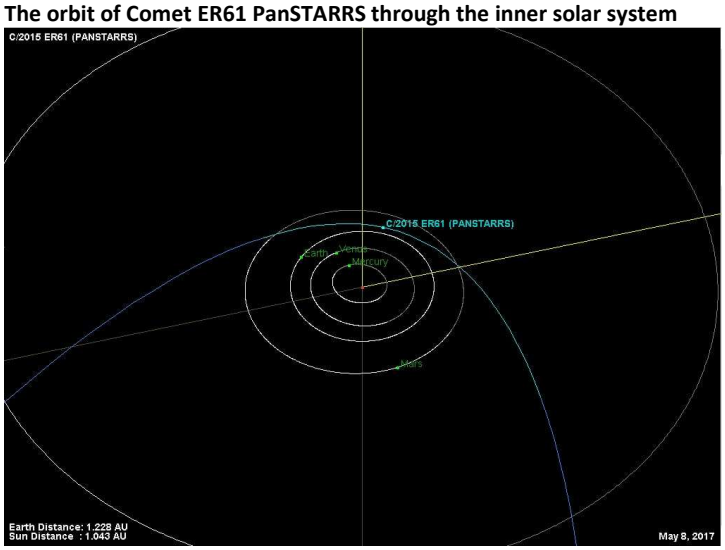


. Credit: Starry Night Education software.

Late northern hemisphere Spring through Summer sees the comet maintaining a decent elevation above the eastern

horizon at dawn, gliding north and parallel to the ecliptic plane through the constellations Pisces, Aries and Taurus from May through mid-August. The comet passed 1.08 AU from the Earth last month on April 4th, and is now racing away from us. The comet's location near the March equinoctial point on the celestial hemisphere assures an equally good apparition for both the northern and southern hemisphere. As seen from latitude 30 degrees north, the comet sits 30 degrees above the eastern horizon, through the remainder of May. Venus also makes a brilliant beacon to track down Comet ER61 PanSTARRS, as the planet heads towards greatest elongation 46 degrees west of the Sun on June 3rd.

The orbit of Comet ER61 PanSTARRS through the inner solar system



Credit: NASA/JPL.

The comet is also on a 7,591 year long orbit inbound, which takes it out nearly 2,500 AU from the Sun. That's 190 times the Pluto-Sun distance, and the fourth most distant aphelion of any solar system object known. The 2015-2017 passage of the comet through the inner solar system actually shortened the orbit of Comet ER61 PanSTARRS down to an aphelion of only 854 AU due to a 0.9 AU pass near Jupiter last year on March 28th, 2016. A similar orbital shortening by Jove occurred for Comet Hale-Bopp in 1996, which came in on an 4,200 year orbit and departed the inner solar system on a shorter 2,500 year path around the Sun.

This article is provided by NASA Space Place.

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Space Place Article April 2017

NOAA's Joint Polar Satellite System (JPSS) to monitor Earth as never before

By Ethan Siegel

Later this year, an ambitious new Earth-monitoring satellite will launch into a polar orbit around our planet. The new satellite—called JPSS-1—is a collaboration between NASA and NOAA. It is part of a mission called the Joint Polar Satellite System, or JPSS.

At a destination altitude of only 824 km, it will complete an orbit around Earth in just 101 minutes, collecting extraordinarily high-resolution imagery of our surface, oceans and atmosphere. It will obtain full-planet coverage every 12 hours using five separate, independent instruments. This approach enables near-continuous monitoring of a huge variety of weather and climate phenomena.

JPSS-1 will improve the prediction of severe weather events and will help advance early warning systems. It will also be indispensable for long-term climate monitoring, as it will track global rainfall, drought conditions and ocean properties.

The five independent instruments on board are the main assets of this mission:

The Cross-track Infrared Sounder (CrIS) will detail the atmosphere's 3D structure, measuring water vapor and temperature in over 1,000 infrared spectral channels. It will enable accurate weather forecasting up to seven days in advance of any major weather events.

- The Advanced Technology Microwave Sounder (ATMS) adds 22 microwave channels to CrIS's measurements, improving temperature and moisture readings.

- Taking visible and infrared images of Earth's surface at 750 meter resolution, the Visible Infrared Imaging Radiometer Suite (VIIRS) instrument will enable monitoring of weather patterns, fires, sea temperatures, light pollution, and ocean color observations at unprecedented resolutions.

- The Ozone Mapping and Profiler Suite (OMPS) will measure how ozone concentration varies with altitude and

in time over every location on Earth's surface. This can help us understand how UV light penetrates the various layers of Earth's atmosphere.

• The Clouds and the Earth's Radiant System (CERES) instrument will quantify the effect of clouds on Earth's energy balance, measuring solar reflectance and Earth's radiance. It will greatly reduce one of the largest sources of uncertainty in climate modeling.

The information from this satellite will be important for emergency responders, airline pilots, cargo ships, farmers and coastal residents, and many others. Long and short term weather monitoring will be greatly enhanced by JPSS-1 and the rest of the upcoming satellites in the JPSS system.

Want to teach kids about polar and geostationary orbits? Go to the NASA Space Place: https://spaceplace.nasa.gov/geo-orbits/

Caption: Ball and Raytheon technicians integrate the VIIRS Optical and Electrical Modules onto the JPSS-1 spacecraft in 2015. The spacecraft will be ready for launch later this year. Image Credit: Ball Aerospace & Technologies Corp.

want Ads

For sale: Meade EXT60AT never used before, includes tri-pod.

Asking $200.00 B/O
Contact Keith Mullen at 266-4230

For sale: Meade 10" LX200 classic telescope

In very good condition, with tripod, 120v AC and 12v DC power converters with 25' power cords, dew shield, 8x50 finder scope, electric focuser, piggy back bracket, and soft sided carrying case.Also includes a set of Meade CCD color filters, Meade CCD 3.3 focal reducer and CCD variable T-adapter. Plus some other equipment. Asking $ 1,800.

Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875.

For Sale: Pier Tech electric telescoping pier with Lati-wedge made for the latitude of Sierra Vista

All the hardware, bolts, nuts, washers and plates are with the pier. Pier Tech can make new legs for it to make it correct for anywhere in the world. The pier and wedge have never been used and the only time the pier was out of the box was to take the photos. New today, the pier and wedge are $3,400. Asking $2,800.

Contact Bob Stroxtile at strox@ssvecnet.com or call 520-249-0875.

FOR SALE: Meade Starfinder 8" Reflector Telescope

Will Sell at a very reasonable price. Included are a Telrad Finder, Filters, and additional Lenses.

Contact Mr. Jim Moses at (520) 803-0913 or by email jjmoses2@gmail.com

For Sale: Planewave CDK14 corrected Dall-Kirkham telescope.

Includes the OTA, new November 2014, optional truss rod shroud and optional upper dovetail and the accessories that were included with the telescope (primary to secondary spacing tool). There is NO FOCUSER (they do not come with one, you need to add one) but the adapter for an Optec TCFS3i (which is the focuser I used) is included. I also have the factory wooden shipping crate. The telescope has been in use every clear night in the observatory in Sonoita. This is an outstanding instrument and a great imaging scope.

FOR SALE: Celestron Celestar 8 inch S/C Deluxe - $1200.

Will also sell pieces individually

Contact Rhonda and Terry Taylor at (520) 366-2378 or by email at twrl2@yahoo.com. Or See Craigslist at http://sierravista.craigslist.org/bar/4523742100.html

FOR SALE: Older Optical Guidance Systems 12.5" f/9 Ritchey-Chretian telescope.

Very good Paul Jones ceramic optics, Robofocus secondary focuser, will include Takahashi collimating telescope. Some of the images through the scope are at Mshadephotography.com.

Contact Mike J. Shade at mshade@q.com

FOR SALE: 8" Celestron Nex Star

Good condition with all original accessories.

Contact Mae Childs at maechilds2014@aol.com

FOR SALE: 12.5" dob

Made by an local ATM in Tucson for 500.00. Celestron 8" OTA with additional Hyperstar III Optics from Starizona. Both for 1000.00

Contact Max Mirot at galiloeo@yahoo.com

Club Officers and Contacts

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HAC May/Jun Calendar of Events

SU	MO	TU	WE	TH	FR	SA
7 May Eta Aquarid Meteors	**8**	**9**	**10** 5:42 PM	**11**	**12** Hac Meeting Student Union	**13**
14 	**15**	**16**	**17** Mercury W. Elongation	**18** 8:33 PM	**19**	**20** Member Star Party Grue's Blue Marvel
21	**22**	**23**	**24**	**25** 3:44 PM	**26** Savor Sierra Vista 9pm (Library Bot Garden)	**27**
28	**29** 	**30**	**31**	**1 Jun** 8:42 AM Patterson Public Night	**2**	**3**
4	**5**	**6**	**7**	**8**	**9** 9:10am HAC Meeting Student Union	**10**
11	**12** Boys & Girls Club 9:30am Solar Viewing	**13**	**14** 	**15** Saturn at opposition	**16**	**17** 7:33am
18 	**19**	**20** Venus and Moon 2°	**21** Summer solstice 12:24am	**22** Moon occults Aldebaran 5:59am	**23** 10:31pm	**24** Member Star Party
25	**26**	**27**	**28**	**29**	**30** 8:51pm Asteroid Day	**1 July**
2 Juno at opposition	**3**	**4** 	**5**	**6**	**7**	

All event times MST. Join Haclist to keep up to date with all of the Huachuca Astronomy Club events
Send an email to: haclist-subscribe@yahoogroups.com