NIGHTFALL

A PUBLICATION OF THE HUACHUCA ASTRONOMY CLUB

OCTOBER 2015

PRESIDENT'S NOTES

An asteroid nicknamed "Spooky" is making its way past Earth Halloween night. I'm being serious. This is not a joke. The Panoramic Survey Telescope & Rapid Response System (Pan-STARRS) discovered 2015 TB145 (that's what they named the asteroid) October 11 and now predict the 300- to 600-meter wide asteroid will pass by Earth at 17:18 UT (10:18 a.m. MST). The derived orbit has the asteroid passing by at about 1.3 lunar distances (about 300,000 miles) away from Earth's surface. It will also be moving at an extremely high velocity, 35 km/s or (78,000 mph). The nature of the orbit and preliminary observation of the physical properties of 2015 TB145 has led to the possibility that it is cometary in nature. .

At 10 a.m. MST (1700 GMT) on October 31, Slooh (space for Everyone) (http://live.slooh.com/) will air a live webcast of the asteroid featuring time-lapse views of 2015 TB145, which completes one lap around the sun every three years, captured by powerful telescopes. The Virtual Telescope Project (http://www.virtualtelescope.eu/) will also broadcast its own free show at 5 p.m. MST on Oct. 30 (0000 GMT on Oct. 31).

The latest information leads us to think its brightness will reach magnitude 10, which would make it visible through an eight-inch telescope. The best time for Spooky-hunting will be the night before its closest approach, on Friday, October 30. As it slowly moves across the field of stars within the bright constellation Orion, the asteroid will pass a relatively bright eighth magnitude star HIP 23301 (visible through telescopes and maybe big binoculars) at 12:20 a.m. local time, Saturday morning.

Since these are faint objects, a computerized telescope with the ability to select an object to slew to, would come in quite handy. As it nears, expect to read and hear of other organizations covering the object, and perhaps viewing instructions as well. This should be very cool to watch as it wizzes past ,but be reminded that an object more than thirty time larger than the Chelyabinsk meteorite and packing H-bomb energy gave us less than three weeks to prepare, Spooky indeed, Happy Halloween!

AT THE OCTOBER MEETING

We are pleased to announce a talk by famed comet hunter and author David Levy at the October meeting of the Huachuca Astronomy Club. Our October meeting will be held in the Cochise College library (Library Commons) on the Sierra Vista Campus on Friday, October 30, 2015 at 7PM. The meeting is FREE and open to the public.

DR. DAVID LEVY is the discoverer (or co-discoverer) of 22 comets and 53 asteroids and is the author of 34 books. He was catapulted to international fame with the discovery of Comet Shoemaker–Levy 9 (D/1993 F2), the comet that broke apart and collided with Jupiter in July 1994, providing the first direct observation of an extraterrestrial collision of Solar System objects. Among his many books are The Quest for Comets, a biography of Pluto-discoverer Clyde Tombaugh in 2006, and his tribute to Gene Shoemaker in Shoemaker by Levy. He has provided periodic articles for Sky and Telescope magazine as well as Parade Magazine, Sky News and, Astronomy Magazine. The asteroid 3673 Levy was named in his honor. David was awarded the C.A. Chant Medal of the Royal Astronomical Society of Canada in 1980 and was recipient of the 1990 G. Bruce Blair Medal. In 1993, he won the Amateur Achievement Award of the Astronomical Society of the Pacific. In 2007, Levy received the Smithsonian Astrophysical Observatory's Edgar Wilson Award for the discovery of comets

David's talk is entitled Sixty years of observing: The observing records go public.

We will treat David and Wendee to dinner at Outback at 5PM before the meeting. Members that would like to join us for dinner should RSVP to Ted Forte by email: tedforte511@gmail.com

Also at the Meeting

Tickets go on sale for the HAC Holiday Party to be held at the Mimosa Pizzeria on Hwy 92 in Hereford on Friday December 18. Tickets are $20 per person. YOU MUST PURCHASE YOUR TICKET IN ADVANCE before December 10. Seating is limited, so buy your tickets early.

LAST CHANCE FOR HANDBOOKS AND CALENDARS

The October meeting is the final sign up for the 2016 RASC Observer's Handbook ($22.50 each) and the Astronomy Magazine 2016 Deep Sky Mysteries Calendars (6.50 each). You must pay for your item when signing up. The calendars and handbooks will be placed on order after the October meeting and will be distributed when received.

Welcome our new member

Katherine Mitchell of Sierra Vista joined the club in September. Welcome, we are glad you joined!

Space Place Article
October 2015

Solar Wind Creates—and Whips—a Magnetic Tail Around Earth

By Ethan Siegel

As Earth spins on its axis, our planet's interior spins as well. Deep inside our world, Earth's metal-rich core produces a magnetic field that spans the entire globe, with the magnetic poles offset only slightly from our rotational axis. If you fly up to great distances, well above Earth's surface, you'll find that this magnetic web, called the magnetosphere, is no longer spherical. It not only bends away from the direction of the sun at high altitudes, but it exhibits some very strange features, all thanks to the effects of our parent star.

The sun isn't just the primary source of light and heat for our world; it also emits an intense stream of charged particles, the solar wind, and has its own intense magnetic field that extends much farther into space than our own planet's does. The solar wind travels fast, making the 150 million km (93 million mile) journey to our world in around three days, and is greatly affected by Earth. Under normal circumstances, our world's magnetic field acts like a shield for these particles, bending them out of the way of our planet and protecting plant and animal life from this harmful radiation.

But for every action, there's an equal and opposite reaction: as our magnetosphere bends the solar wind's ions, these particles also distort our magnetosphere, creating a long magnetotail that not only flattens and narrows, but whips back-and-forth in the onrushing solar wind. The particles are so diffuse that collisions between them practically never occur, but the electromagnetic interactions create waves in Earth's magnetosphere, which grow in magnitude and then transfer energy to other particles. The charged particles travel within the magnetic field toward both poles, and when they hit the ionosphere region of Earth's upper atmosphere, they collide with ions of oxygen and nitrogen causing aurora. Missions such as the European Space Agency and NASA Cluster mission have just led to the first accurate model and understanding of equatorial magnetosonic waves, one such example of the interactions that cause Earth's magnetotail to whip around in the wind like so.

The shape of Earth's magnetic field not only affects aurorae, but can also impact satellite electronics. Understanding its shape and how the magnetosphere interacts with the solar wind can also lead to more accurate predictions of energetic electrons in near-Earth space that can disrupt our technological infrastructure. As our knowledge increases, we may someday be able to reach one of the holy grails of connecting heliophysics to Earth: forecasting and accurately predicting space weather and its effects. Thanks to the Cluster Inner Magnetosphere Campaign, Van Allen Probes, Mars Odyssey Thermal Emission Imaging System, Magnetospheric Multiscale, and Heliophysics System Observatory missions, we're closer to this than ever before.

Kids can learn about how solar wind defines the edges of our solar system at NASA Space Place. http://spaceplace.nasa.gov/interstellar

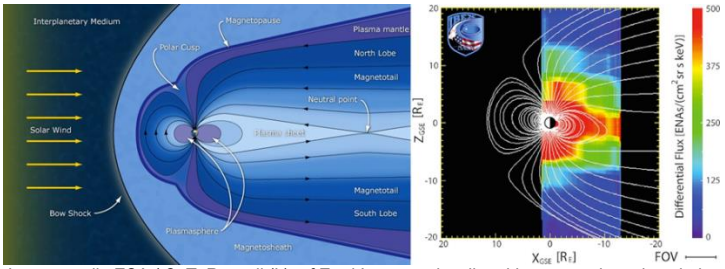
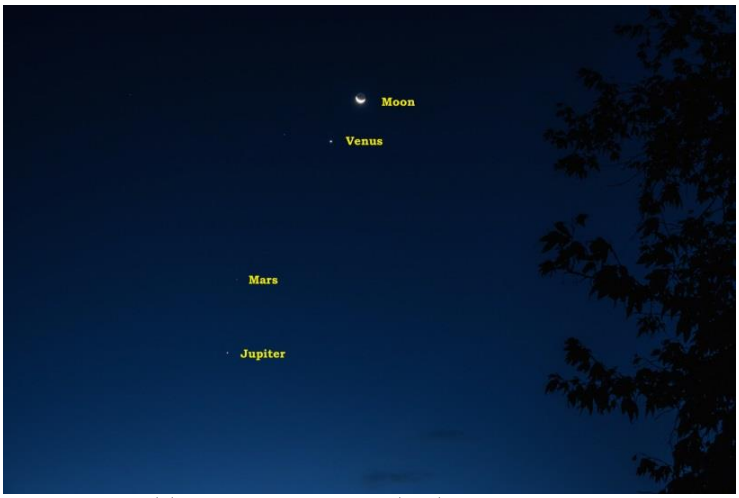


Image credit: ESA / C. T. Russell (L), of Earth's magnetic tail and its cause: the solar wind; Southwest Research Institute / IBEX Science Team (R), of the first image of the plasma sheet and plasmasphere created around Earth by the solar wind.

Lunar Eclipse Pictures

Blood Moon Rising by Bob Kepple

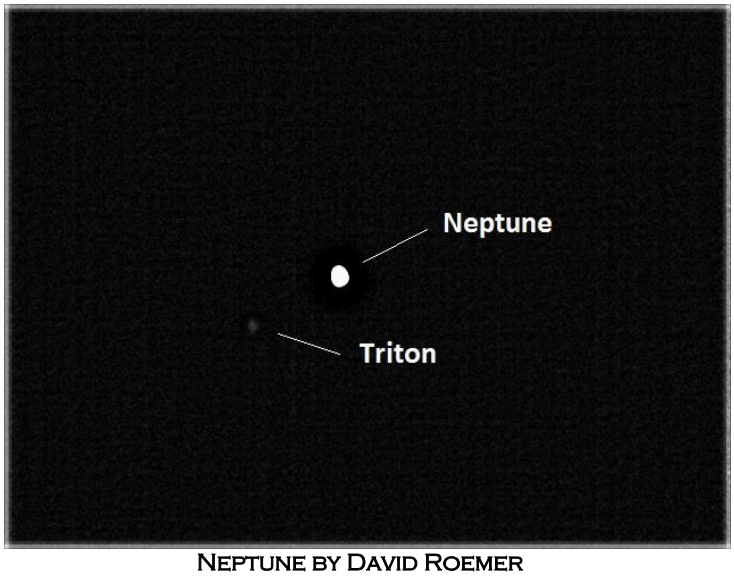


The Gathering by Ed Erbeck Jr.

Lunar Eclipse by Doug Snyder

Morning Planets by Bob Gent

Other Pictures from HAC Members



Neptune by David Roemer

Hereford Power Outage by Doug Snyder

Want Ads

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: 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 the original accessories.

Contact Mae Childs at maechilds2014@aol.com

FOR SALE: C-8 and HyperStar

Celestron 8" OTA with additional Hyperstar III Optics from Starizona. Both for $1000.00

Contact Max Mirot at galiloeo@yahoo.com

Orion SkyQuest XT10i IntelliScope

Orion Zooom 7.2mm to 21.5mm eyepiece
12.31" ID Orion Full Aperture Solar Filter (Glass)
Orion AccuFocus Motorized Focuser
Orion 2" Low-Profile Dual-Speed Hybrid Reflector Focuser
Be ready for observing, day or night! $700

Contact via email: ken@kirchners.com

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Our sponsors have been keeping us supplied in door prizes for some years. If you have not contacted them lately, please consider this. They have a lot of great astronomical products that we all need.

For more information on products and contact information, their websites are:

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Starizona	http://starizona.com/

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***Nightfall* Editor:** Cindy Lund alund@juno.com
Webmaster: Ken Kirchner
Facebook Editors: Bert Kelher and Craig Gundy

Website: http://www.hacastronomy.com
Facebook: http://www.facebook.com/HuachucaAstronomyClub

HAC Calendar of Events for Oct-Nov 2015

SU	MO	TU	WE	TH	FR	SA
18 October	**19**	**20** 4:31PM Astronomy for the Curious Class Patterson	**21**	**22**	**23**	**24**
25	**26**	**27** 8:05PM Astronomy for the Curious Class Patterson	**28**	**29**	**30** HAC Meeting Library commons 7PM David Levy	**31**
Nov 1 Daylight Savings Time ends	**2**	**3** 7:24AM Astronomy for the Curious Class Patterson	**4**	**5** Boy Scouts Patterson 6:30PM	**6**	**7** Guano Happens Kartchner 8:30AM
8	**9**	**10**	**11** 12:47PM	**12** Teacher Exchange Patterson Saturn near moon	**13**	**14** Member Star party- Max Mirot
15	**16**	**17** Leonids	**18** Leonids	**19** 1:27AM Public Night 5:45 PM Leonids	**20**	**21**
22	**23**	**24**	**25** 5:44PM	**26** 	**27** HAC Meeting Student Union 7PM Guy Consolmagno	**28**
29 Saturn in Conjunction with Sun	**30**	**Dec 1**	**2**	**3** 2:40AM	**4**	**5**
6	**7**	**8**	**9**	**10** Boys & Girls Club of Bisbee Vista Park	**11** 5:29AM	

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

MARK YOUR CALENDARS: The HAC Holiday party is December 18 at the Mimosa Pizzeria