



EPHEMERIS

The official newsletter of the Prescott Astronomy Club (PAC)
e-phem-er-is: a time-based listing of future positions of solar system objects

OCTOBER 2017

UPCOMING EVENTS



Wednesday, October 4 - Regular PAC meeting @ 6:00 PM in the Founder's Suite, Prescott Public Library. Club member David Viscio will present "Recent Solar Activity", describing solar events that occurred after the solar eclipse.

Wednesday, October 11 - METASIG @ 5:00 PM at local restaurant. Sign up at October 4 meeting.

Thursday, October 12 - Pine Summit Camp @ 7:00 PM for 75 participants at an Outdoor Education Camp with 5th graders from Scottsdale Christian Academy. Sign up at October 4 regular meeting.

Saturday, October 14 - Starry Night @ 7:00 PM at the Highlands Center for Natural History. Sign up at October 4 regular meeting.

Saturday, October 14 - Tour of Vatican Observatory at Mt. Graham.

Wednesday, October 18 - Board meeting @ 6:30 PM.

Thursday, October 19 - Third Thursday Presentation @ 6:00 PM in the Founder's Suite, Prescott Public Library. Jack Crabtree, NASA Eclipse, will discuss the NASA Space Grant High Altitude Balloon Launch and photographing the moon's shadow during the August 2017 solar eclipse.

Tuesday, October 24 -- Star party @ 7:00 PM at Touchmark across from the Gateway Mall. Sign up at October 4 regular meeting.

ADAM ENGLAND THANKS PRESCOTT VALLEY TOWN COUNCIL

On Friday, September 15, Adam England the Prescott Valley Town Council meeting and thanked them for their support of the hugely successful solar eclipse event conducted at the PV

town center. Well done, Adam.



ANNUAL PAC PICNIC - SEPTEMBER 16

The annual PAC picnic was held September 16 at Watson Lake at the large ramada on the hilltop. There was lots of food and everyone enjoyed the afternoon. A raffle was held with Harkins movie tickets and gift certificates for Gabby's Grill in Prescott Valley as prizes. Congratulations to the winners.



OFFICER AND BOARD OF DIRECTOR ELECTION

Election of board members for the Prescott Astronomy Club will be held at the regular monthly meeting on November 1. Nominations will be announced in the November Ephemeris.

PAC has 8 board members: 4 officers, and 4 at-large directors. Each year the membership elects all 4 officers for a one-year term and 2 at-large directors for a two-year term. This year we need to elect a president, vice-president, secretary, treasurer and 2 at-large directors.

The president conducts the regular monthly meeting of members as well as the monthly meeting of the board and coordinates board activities. The vice president acts in place of the president when necessary and coordinates speakers at regular monthly member meetings. The treasurer handles the financial affairs, writes checks, pays bills, and deposits funds. The secretary takes minutes of board meetings, maintains PAC records, and sends club communications to members.

Each at-large director has a specific assigned responsibility for liaison between the board and those members who are in charge of various activities. One at-large director is liaison for community relations; another is liaison for outreach activities; another is the liaison for property matters; the fourth is liaison for member relations.

If you are willing be a Board member or would like more information please contact Patrick Birk no later than October 15. You may nominate yourself and/or another PAC member.

CASSINI SAYS GOODBYE

By Teagan Wall

On September 15th, the Cassini spacecraft will have its final mission. It will dive into the planet Saturn, gathering information and sending it back to Earth for as long as possible. As it dives, it will burn up in the atmosphere, much like a meteor. Cassini's original mission was supposed to last four years, but it has now been orbiting Saturn for more than 13 years!



The spacecraft has seen and discovered so many things in that time. In 2010, Cassini saw a massive storm in Saturn's northern hemisphere. During this storm, scientists learned that Saturn's atmosphere has water vapor, which rose to the surface. Cassini also looked at the giant storm at Saturn's north pole. This storm is shaped like a hexagon. NASA used pictures and other data from Cassini to learn how the storm got its six-sided shape.

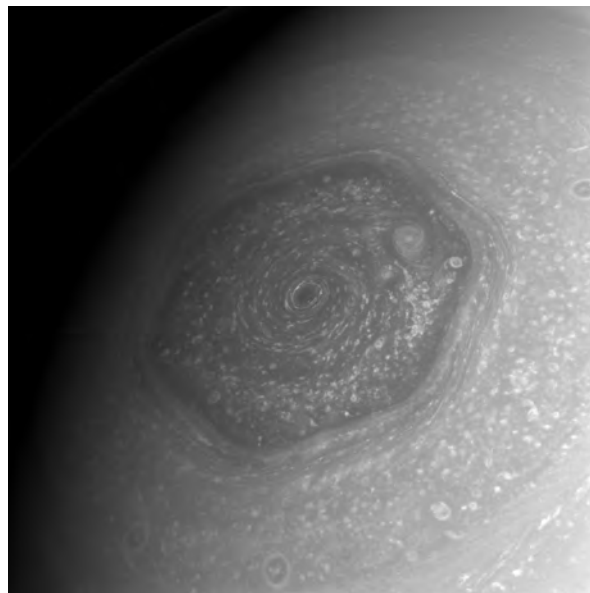
Cassini also looked at some of Saturn's moons, such as Titan and Enceladus. Titan is Saturn's largest moon. Cassini carried a lander to Titan. The lander, called Huygens, parachuted from Cassini down to the surface of the moon. It turns out, Titan is quite an exciting place! It has seas, rivers, lakes and rain. This means that in some ways, Titan's landscape looks a bit like Earth. However, its seas and rivers aren't made of water—they're made of a chemical called methane.

Cassini also helped us learn that Saturn's moon Enceladus is covered in ice. Underneath the ice is a giant liquid ocean that covers the whole moon. Tall geysers from this ocean spray out of cracks in the ice and into space, like a giant sneeze. Cassini flew through one of these geysers. We learned that the ocean is made of very salty water, along with some of the chemicals that living things need.

If there is life on Enceladus, NASA scientists don't want life from Earth getting mixed in. Tiny living things may have hitched a ride on Cassini when it left Earth. If these germs are still alive, and they land on Enceladus, they could grow and spread. We want to protect Enceladus, so that if we find life, we can be sure it didn't come from Earth. This idea is called planetary protection.

Scientists worry that when Cassini runs out of fuel, it could crash into Titan or Enceladus. So years ago, they came up with a plan to prevent that from happening. Cassini will complete its exploration by diving into Saturn—on purpose. The spacecraft will burn up and become part of the planet it explored. During its final plunge, Cassini will tell us more about Saturn's atmosphere, and protect the moons at the same time. What an exciting way to say goodbye!

To learn more about Saturn, check out NASA Space Place: <https://spaceplace.nasa.gov/all-about-saturn>



This image of the hexagonal storm on Saturn's north pole was taken by Cassini in 2013.

Image credit: NASA/JPL-Caltech/Space Science Institute

SOLAR PROJECTION WITH OIL FUNNEL

By Corinne Shaw

Rick Alling, a professor at ASU, made an interesting sun projection attachment for his telescope for the eclipse.

- Use an oil funnel for changing the oil on your car. Use the larger funnel with a portion that holds the can in place. This large expanse of plastic on the funnel makes a nice shade for your eyes as you're viewing the projected picture.
- Be careful to get funnel that fits your eyepiece or telescope.
- Attach the funnel to your telescope with a clamp for easy set-up and removal.
- Attach a white sheet of mylar paper or vellum so the image will easily show through onto the paper.
- As advertising, you can add your logo to the viewing screen.



IF IT'S CLEAR

By Fulton Wright, Jr., PAC

Celestial events (from Sky & Telescope magazine, Astronomy magazine and anywhere else I can find information) customized for Prescott, Arizona. Remember, the Moon is 1/2 degree or 30 arcminutes in diameter. All times are Mountain Standard Time.



On Thursday, October 5, about 5:30 AM, you can see 3 objects within half a degree of each other. Venus (magnitude -4) is in the middle. Mars (magnitude 2) is to the lower right. Sigma Leonis (magnitude 4) is to the upper left. Later that evening, the full Moon rises spoiling any chance of seeing faint fuzzies for the night.

On Wednesday, October 11, at 11:17 PM the last quarter moon rises.

On Sunday, October 15, at 3:14 AM, the star, Regulus, appears from behind the dark limb of the Moon. The star will be only 9 degrees above the horizon.

On Thursday, October 19, it is new Moon and you have all night to hunt for faint fuzzies.

On Friday, October 27, it is first quarter Moon, which sets at 11:58 PM.

NEED TO KNOW - ASK A MEMBER

A new 15-minute segment is being added to the regular general meetings where members can have their ‘burning’ questions answered by other knowledgeable members. If you have an astronomy related question you would like explained, submit the question to Jeff Stillman (jstillman50@cableone.net). You can also bring up the question at the meeting.

VOLUNTEERS NEEDED

Volunteers are needed for refreshment coordinator. If you would like to help and need additional information, please contact Jeff Stillman (jstillman50@cableone.net).

BOOKS AND MAGAZINES

Over the years astronomy books have been donated to PAC. Boxes of these books will be available at the regular meetings. For a donation to PAC of \$1 per book, anyone can have a book. Books that are not purchased at a regular meeting will be available at the following Third Thursday programs. Any remaining unsold books will be donated to the Friends of the Prescott Public Library. We also have copies of past Sky and Telescope magazine. These will be available to any member wishing to take them. Unclaimed magazines will be recycled.



FOR SALE

Please visit the Classified Ads section of the club website to view the items posted there for sale:

<http://prescottastronomyclub.org/classified-ads/>

New items are added now and then, so don't miss out on something that you would like to get for yourself...or a friend.



PAC MENTORS

If you need advice on the purchase of astronomy equipment, setting up equipment, astrophotography, etc., contact a PAC mentor.

Jeff Stillman - Astrophotography - (928) 379-7088

David Viscio - General - (928) 775-2918

Greg Lutes - Visual Observing - (928) 445-4430

Joel Cohen - Beginner's Astronomy: Selecting & Using a Telescope - (856) 889-6496

Bill McDonald - Video Observing



OBSERVING LISTS

Observing lists are available in PDF format on the PAC website to provide guidance and goals for visual and astrophotography programs.

Astroleague Lunar 100

Bright Nebulae

Dunlop 100

Globular Clusters

Herschel II

Messier

Planet Maps

Royal Astronomical Society of Canada Finest NGC

Saguaro Astronomy Club Best NGC

Telescope Showpieces

Binocular Showpieces

Caldwell

Face-On Spiral Galaxies

Herschel 400

Hidden Treasures

Open Clusters

Planetary Nebulae

S&T Lunar 100

The Secret Deep



PAC WEBSITE & YAHOO GROUPS

Website: <http://www.prescottastronomyclub.org>

E-mail: <mailto:pacinfo@prescottastronomyclub.org>

Astrophotography special interest group:

<https://groups.yahoo.com/neo/groups/pacastrophotography/info>



BOARD OF DIRECTORS

President: Jeff Stillman

Vice President: Joel Cohen

Secretary: Doug Tilley

Treasurer: Stephen Eubanks

At Large: Pat Bledsoe

At Large: Dick Lewis

At Large: Bill McDonald

At Large: John Baesemann



PAC COORDINATORS

Astronomical League Coordinator: Pat Birck

Facebook: Adam England

Highland Center Coordinator: David Viscio

Hospitality: Corinne Shaw

Magazine Subscriptions: Stephen Eubanks

METASIG: Marilyn Unruh

PAC Affiliate Partner w/ NAU Space Grant Program – Jerry & Corinne Shaw

PAC Store Sales: John & Laura Verderame

Property Records: Doug Tilley

Schools & Camps Outreach: Pat Birck

Starry Nights Coordinator: Pat Birck

Third Thursday Coordinator: Corinne Shaw & Pat Birck

Membership: Stephen Eubanks

Newsletter: David Viscio

Refreshments: Open

Publicity: Adam England

Webmaster: Russell Chappell



SOLAR ECLIPSE

Greg Lutes

These two solar eclipse photos were taken at the Glendo State Park in S.E. Wyoming with a Canon Power Shot SX530HS. The camera settings were on auto and zoomed in (probably at 50X). At the 2:00 and 4:00 positions is a pinkish color that may hint of the Bailey's beads or two sets of prominences.



ASTRONOMY PICTURE OF THE DAY: SEPTEMBER 20, 2017

THE BIG CORONA

Image Credit & Copyright: Alson Wong



Most photographs don't adequately portray the magnificence of the Sun's corona. Seeing the corona first-hand during a total solar eclipse is unparalleled. The human eye can adapt to see coronal features and extent that average cameras usually cannot. Welcome, however, to the digital age. The featured picture is a combination of forty exposures from one thousandth of a second to two seconds that, together, were digitally combined and processed to highlight faint features of the total solar eclipse that occurred in August of 2017. Clearly visible are intricate layers and glowing caustics of an ever-changing mixture of hot gas and magnetic fields in the Sun's corona. Looping prominences appear bright pink just past the Sun's limb. Faint details on the night side of the New Moon can even be made out, illuminated by sunlight reflected from the dayside of the Full Earth.