



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

DECEMBER 2017

UPCOMING EVENTS

Wednesday, December 13 - Annual Holiday Party @ 5:30 to 8:30 PM at the Gurley Street Grill. This event will be a combined dinner, club meeting and awards ceremony. Payment of \$27 per person is required in advance and must be received by December 5. Payment can be made on the PAC website using Paypal or by check made out to the Prescott Astronomy Club sent to the PAC treasurer, Stephen Eubanks, 736 Peppermint Way, Prescott, AZ 86305.



Wednesday, December 20 - Board meeting @ 6:30 PM.

2018 OFFICER AND BOARD OF DIRECTOR ELECTION RESULTS

The election of officers and at-large directors for 2018 was held at the regular meeting of members on November 1, 2017. The following members were elected:

President: Jeff Stillman

Vice President: John Carter

Secretary: Doug Tilley

Treasurer: John Baesemann

At-large Directors: Adam England and Joel Cohen (2-year term)

At-large Directors: Dennis Eaton (1-year term)

At-large Directors: Pat Bledsoe (continuing for 1 year)

Congratulations to all and thank you for your willingness to serve the Prescott Astronomy Club.

SALE OF PAC EQUIPMENT - 8" MEADE LX200 SCT

The Board of Directors has decided to sell one of its telescopes, an 8-inch Meade LX200 SCT. Members who wish to buy it will have until December 20 to submit a sealed bid to John Baesemann. When the bid period has ended, bids will be opened and the member submitting the highest bid will be able to purchase the scope for his/her bid price. If there are no successful bids, the item will be offered to the public at a higher price. Here are photos and a description of the scope and accessories.



Meade LX 200 8" aperture, f/10 Schmidt-Cassegrain telescope

Original padded box

Optical tube and fork mount weight = 37 lbs

Meade tripod with 2" diameter legs, weight = 20 lbs

Meade hand controller

Meade finder scope 8x50

Power required – minimum 12-volts to maximum 18-volts DC; comes with Sceptre AC to DC 18-volt, 2 Amp converter; appears to operate better with 18 volts

Meade diagonal -- 1 1/4"

Eyepieces: all 1 1/4"

3 Meade Super Plossl -- 26mm, 32mm, 40mm

Barlow -- 1.8x Televue

Filters -- Celestron polarizing filter and #23A red filter -- both 1 1/4"

Original Meade manual

The minimum bid price to members is \$450. Anyone who is interested in seeing the telescope can contact Patrick Birck (pbirck@cableone.net) to arrange a mutually convenient time.

STUDYING STORMS FROM THE SKY

By Teagan Wall

The United States had a rough hurricane season this year. Scientists collect information before and during hurricanes to understand the storms and help people stay safe. However, collecting information during a violent storm is very difficult.



Hurricanes are constantly changing. This means that we need a lot of really precise data about the storm. It's pretty hard to learn about hurricanes while inside the storm, and instruments on the ground can be broken by high winds and flooding. One solution is to study hurricanes from above. NASA and NOAA can use satellites to keep an eye on storms that are difficult to study on the ground.

In Puerto Rico, Hurricane Maria was so strong that it knocked out radar before it even hit land. Radar can be used to predict a storm's path and intensity—and without radar, it is difficult to tell how intense a storm will be. Luckily, scientists were able to use information from a weather satellite called GOES-16, short for Geostationary Operational Environmental Satellite – 16.

The "G" in GOES-16 stands for geostationary. This means that the satellite is always above the same place on the Earth, so during Hurricane Maria, it never lost sight of the storm. GOES-16's job as a weather satellite hasn't officially started yet, but it was collecting information and was able to help.

From 22,000 miles above Earth, GOES-16 watched Hurricane Maria, and kept scientists on the ground up to date. Knowing where a storm is—and what it's doing—can help keep people safe, and get help to the people that need it.

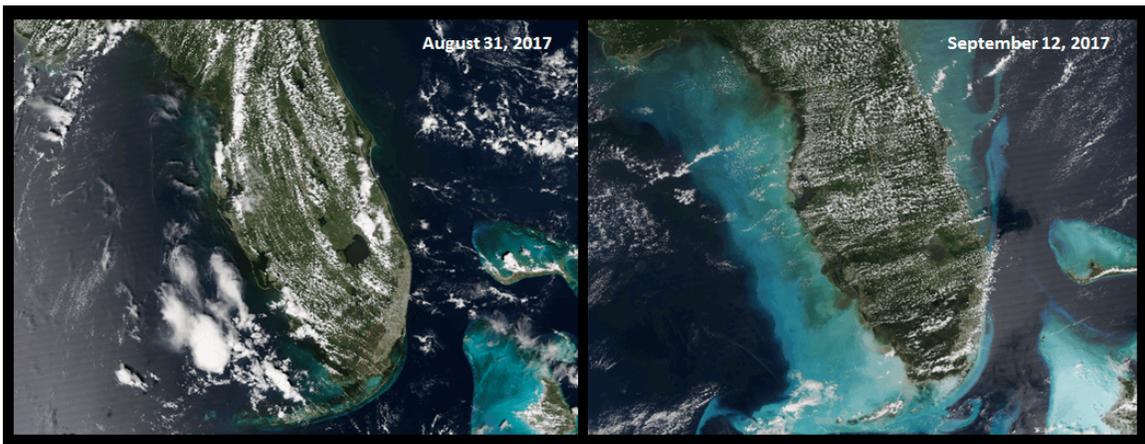
Hurricanes can also have a huge impact on the environment—even after they're gone. To learn about how Hurricane Irma affected the Florida coast, scientists used images from an

environmental satellite called Suomi National Polar-orbiting Partnership, or Suomi-NPP. One of the instruments on this satellite, called VIIRS (Visible Infrared Imaging Radiometer Suite), took pictures of Florida before and after the Hurricane.

Hurricane Irma was so big and powerful, that it moved massive amounts of dirt, water and pollution. The information captured by VIIRS can tell scientists how and where these particles are moving in the water. This can help with recovery efforts, and help us design better ways to prepare for hurricanes in the future.

By using satellites like GOES-16 and Suomi-NPP to observe severe storms, researchers and experts stay up to date in a safe and fast way. The more we know about hurricanes, the more effectively we can protect people and the environment from them in the future.

To learn more about hurricanes, check out NASA Space Place: <https://spaceplace.nasa.gov/hurricanes/>



These images of Florida and the Bahamas were captured by a satellite called Suomi-NPP. The image on the left was taken before Hurricane Irma and the image on the right was taken after the hurricane. The light color along the coast is dirt, sand and garbage brought up by the storm. Image credit: NASA/NOAA

IF IT'S CLEAR

By Fulton Wright, Jr., PAC

After 20 years of writing the 'If It's Clear' column, Fulton has decided to retire from writing the column. This issue will be his last one. Thank you, Fulton, for your many years of continuous contribution to the Ephemeris.



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.

For the comet hunters among you, check out Sky & Telescope, December 2017, p. 42, although it doesn't put on a very good show.

On Sunday, December 3, it is full Moon, so no hunting for faint fuzzies tonight. Instead, direct your attention to the bright ray system centered on Tycho, which can be found many places on the Moon. Not only is it a "super" Moon (somewhat closer than usual) but also you have 2 nights to check it out (Saturday and Sunday). See Astronomy Magazine, December 2017, p.37 for an article about it.

On Tuesday, December 5, starting about 6:30 AM, you can see 3 of Jupiter's moons clustered together on the upper right side of the planet. Only Ganymede is to the lower left. Look low in the south-east for the planet (magnitude -2) and follow the dance till daylight interferes.

On Sunday, December 10 you can catch a shadow on Jupiter. Here is the schedule:

At 4:35 AM Jupiter rises with Io's shadow already on it.

At 4:54 AM Io itself moves in front of the planet.

At 5:56 AM Astronomical Dawn begins (light appears in the East).

At 6:21 AM Io's shadow leaves the planet.

At 6:27 AM Nautical Dawn begins (many stars start to fade).

At 6:58 AM Civil Dawn begins (only a few stars are visible).

At 7:04 AM Io itself moves from in front of the planet.

At 7:26 AM the Sun rises.

If you want to see Io's shadow fall on Jupiter, observe the planet at 6:06 AM on December 17.

If you want to see Europa's shadow on Jupiter, the planet rises with the shadow having just fallen the planet at 3:50 AM on December 25 (Merry Christmas).

On Sunday, December 10, the Moon is at last quarter phase and rises at 1:15 AM (Monday).

The night of Wednesday, December 13, after midnight (Thursday), you might see some Geminid meteors. The Moon rises at 4:06 AM (Thursday) but is only 12% illuminated. Under dark skies you might see 120 meteors/hour. Look for slow, bright meteors radiating from the direction of the constellation Gemini. My standing offer is dinner for anyone who dresses too warmly. The December issues of Sky & Telescope and Astronomy have articles on p. 48 & 37 respectively.

On Sunday, December 17, it is new Moon, so you have all night to hunt for faint fuzzies.

On Thursday, December 21, it is the winter solstice in the northern hemisphere and you have the longest night of the year.

On Saturday, December 23, you can catch a minimum of Algol for about an hour on either side of 6:00 PM.

On Monday, December 25, Merry Christmas. Also, the Moon is at first quarter phase and sets at 12:23 AM (Tuesday).

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@cablone.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@cablone.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

John Carter - Video Observing - (928) 458-0570



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

Binocular Showpieces

Caldwell

Face-On Spiral Galaxies

Herschel 400

Hidden Treasures

Open Clusters

Planetary Nebulae



Saguaro Astronomy Club Best NGC
Telescope Showpieces

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: Open

At Large: Open

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



ASTRONOMY PICTURE OF THE DAY: November 9, 2017

NGC 1055 CLOSE-UP

Image Credit & Copyright: Processing - Robert Gendler, Roberto Colombari
Data - European Southern Observatory, Subaru Telescope (NAOJ), et al.



Big, beautiful spiral galaxy NGC 1055 is a dominant member of a small galaxy group a mere 60 million light-years away toward the aquatically intimidating constellation Cetus. Seen edge-on, the island universe spans over 100,000 light-years, a little larger than our own Milky Way. The colorful stars in this cosmic close-up of NGC 1055 are in the foreground, well within the Milky Way. But the telltale pinkish star forming regions are scattered through winding dust lanes along the distant galaxy's thin disk. With a smattering of even more distant background galaxies, the deep image also reveals a boxy halo that extends far above and below the central bulge and disk of NGC 1055. The halo itself is laced with faint, narrow structures, and could represent the mixed and spread out debris from a satellite galaxy disrupted by the larger spiral some 10 billion years ago.