



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

SEPTEMBER 2017

UPCOMING EVENTS



Wednesday, September 6 - Regular PAC meeting @ 6:30 PM in Rm. 107, Bldg. 74, Embry-Riddle Aeronautical University. Club member Christopher Texler will present “The Science Behind Solar Filters”. In addition, there will be time for members to describe their solar eclipse experiences.

Saturday, September 16 - Annual PAC Picnic @ 12:00 - 4:00 PM at Watson Lake. More details and sign up will be presented at the September 6 regular meeting.

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

Thursday, September 21 - Third Thursday Presentation @ 6:00 PM in the Founder's Suite, Prescott Public Library. Dr. Stephen Tegler, Professor and Chair, Physics and Astronomy, Northern Arizona University, will present “Kuiper Belt Objects”, describing Kuiper belt object discoveries from laboratory experiments, telescopes and spacecraft.

Saturday, September 23 - Starry Night @ 7:30 PM at Embry-Riddle Aeronautical University. Sign up at September 6 regular meeting.

ANNUAL PAC PICNIC - SEPTEMBER 16

The PAC picnic is scheduled for September 16, between 12p and 4pm at Watson Lake at the large ramada on the hilltop. (See the below map in Appendix). This is a potluck event, please bring a suitable dish of your choice to share and your own beverages. The club will provide hamburgers, hotdogs and condiments. There will be a drawing for prizes during the picnic. Prizes include Harkins movie tickets and gift certificates for Gabby’s Grill in Prescott Valley, next to the theater. A sign-up sheet was passed around at the August general meeting. If you have not signed up and wish to attend the picnic please sign up at the September general meeting or email Jeff Stillman at jstillman50@cablone.net. Parking passes for Watson Lake have been purchased and will be distributed to those who have signed up at the September general meeting. See you there!

PAC MEMBER AWARDS APPROVED

By Jeff Stillman

The PAC board has finalized plans for presenting awards to PAC members annually at each PAC Christmas dinner event. In order to purchase the appropriate quality awards, the PAC board requested an annual expenditure of \$325.00 to be used for the purchase of awards. Award purchases will be made during the 4th quarter of each year. Club members approved this expenditure at the August 2 general 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).

THE 2017 SOLAR ECLIPSE ACROSS AMERICA

By Teagan Wall

On August 21st, the sky will darken, the temperature will drop and all fifty United States will be able to see the Moon pass—at least partially—in front of the Sun. It's a solar eclipse!

A solar eclipse happens when the Moon passes between the Sun and Earth, casting its shadow on Earth. Sometimes the Moon only covers up part of the Sun. That is called a partial solar eclipse. When the Moon covers up the Sun completely, it's called a total solar eclipse. As our planet rotates, the Moon's shadow moves across Earth's surface. The path of the inner part of this shadow, where the Moon totally covers the Sun, is called the path of totality.



The path of totality on August 21 stretches from Oregon to South Carolina. If you happen to be in that path, you will be able to experience a total solar eclipse! If you're in any of the 50 United States during this time, you can see a partial solar eclipse.

No matter where you'll be for the eclipse, remember that SAFETY is very important. Never look at the Sun when any part of it is exposed, like during a partial eclipse! It can hurt your eyes very badly. If you want to view the eclipse, you can buy special eclipse glasses. Go the NASA 2017 Eclipse Safety website to learn more about what glasses to buy.

If you are in the path of the total eclipse, you may look directly at the eclipse only when the Moon has completely covered the Sun. This is called totality, and it lasts a very short time. You must be sure to put your eclipse glasses back on before the Sun peeks out from behind the Moon.

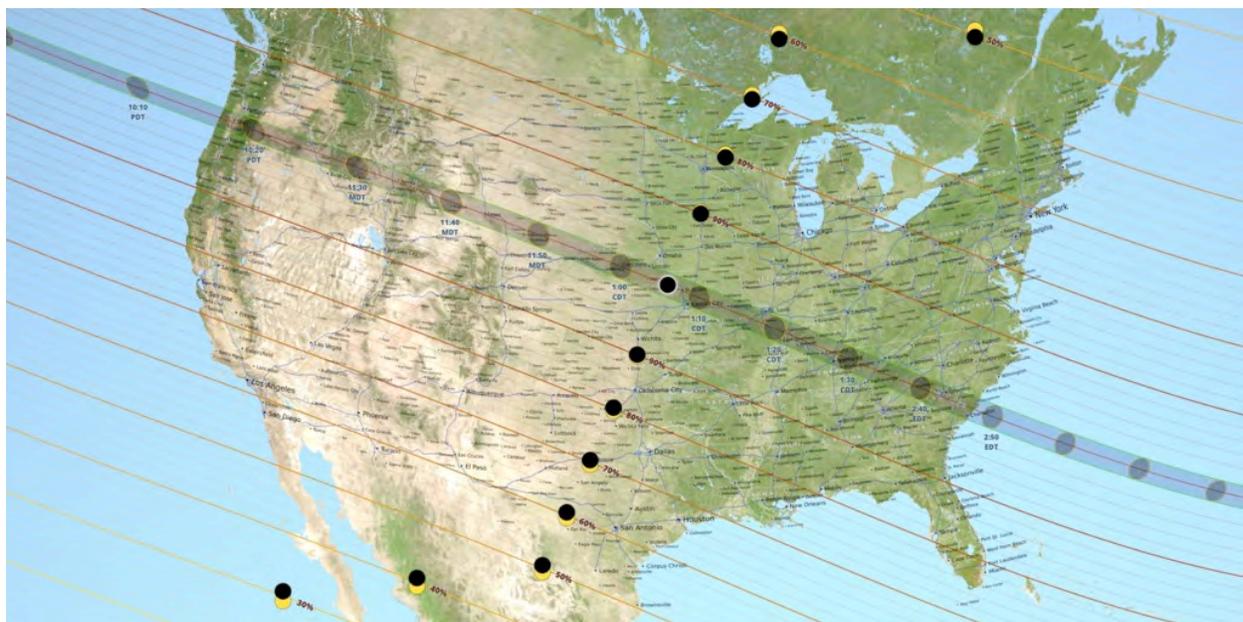
You won't be the only one watching this event! NASA scientists will use this eclipse to study our Sun. During a total solar eclipse, we can see the Sun's atmosphere, called the corona. Usually the Sun is so bright that we can't see the corona. However, when the Moon blocks out most of the Sun's light, we can get a glimpse of the corona.

The surface of the Sun is about 10,000 degrees Fahrenheit, but the corona is much hotter. It's about 2 million degrees Fahrenheit! The eclipse gives NASA researchers the chance to learn more about why the corona is so hot. In fact, while the eclipse will only last about two to three minutes in one place, scientists have found a way to have more time to study it.

NASA will use two research jets to chase the eclipse as it crosses the country. The jets will fly very high, and spend seven minutes in the shadow of the Moon. Researchers are using jets to help look for small explosions on the Sun, called nanoflares. These nanoflares may help to explain the corona's extreme heat.

Whether you're watching with eclipse glasses from the ground, or in a NASA jet from the sky, the 2017 eclipse should be quite a show! It's a fun reminder of our place in the solar system, and how much we still have to learn.

To learn more about solar eclipses, check out this NASA Space Place video: <https://spaceplace.nasa.gov/eclipse-snap>



A map of the United States showing the path of totality for the August 21, 2017 total solar eclipse. Image credit: NASA's Scientific Visualization Studio

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 Saturday, September 2, the Moon occults two double stars in Capricornus. The first, Pi, happens at 11:09 PM. Pi is listed as magnitudes 5.2 and 8.5, separated by 3 arc-seconds. The second, Rho, happens at 12:18 AM (Sunday). Rho is listed as magnitudes 4.8 and 6.9, separated by 2 arc-seconds. Pi emerges from the bright limb of the Moon at 12:09 AM (Sunday) and Rho at 1:33 AM (Sunday)

On Tuesday, September 5, at 6:46 PM, the full Moon rises spoiling any chance of seeing faint fuzzies for the night. As you would expect from last month's total solar eclipse, there is almost an eclipse of the Moon this month and you can expect very flat illumination of this full Moon.

On Tuesday, September 12, the Moon occults Aldebaran. At 4:48 AM the bright limb of the Moon covers it, at 6:02 AM (during twilight) it reappears. Later that evening the Moon is at last quarter phase and rises at 11:29 PM.

On Wednesday, September 13, if you are out between 4:00 and 5:30 AM, you can see the northern part of the Moon at its best. In particular, now would be the time to hunt for those illusive craterlets in the floor of the crater Plato.

On Monday, September 18, about 5:30 AM, you can see a lot of objects lined up. Starting at the top, brilliant Venus, Regulus, the very thin crescent Moon, Mars, and Mercury form an almost vertical line. Mars and Mercury are close on September 16. Venus and Regulus are close on September 20.

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

On Wednesday, September 27, the Moon is at first quarter phase and sets at 11:34 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.

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



OBSERVING LISTS

Observing lists are available on the PAC website to provide guidance and goals for visual and astrophotography programs. Current lists are:

Astroleague Lunar 100	Binocular Showpieces
Bright Nebulae	Caldwell
Dunlop 100	Face-On Spiral Galaxies
Globular Clusters	Herschel 400
Herschel II	Hidden Treasures
Messier	Open Clusters
Planet Maps	Planetary Nebulae
Royal Astronomical Society of Canada Finest NGC	
Saguaro Astronomy Club Best NGC	S&T Lunar 100
Telescope Showpieces	The Secret Deep



The lists are in PDF format and can be downloaded and printed for use.

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

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Refreshments: Open

Publicity: Stephen Eubanks

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ASTRONOMY PICTURE OF THE DAY: AUGUST 18, 2017

PERSEIDS OVER THE PYRÉNÉES

Image Credit & Copyright: Jean-Francois Graffand



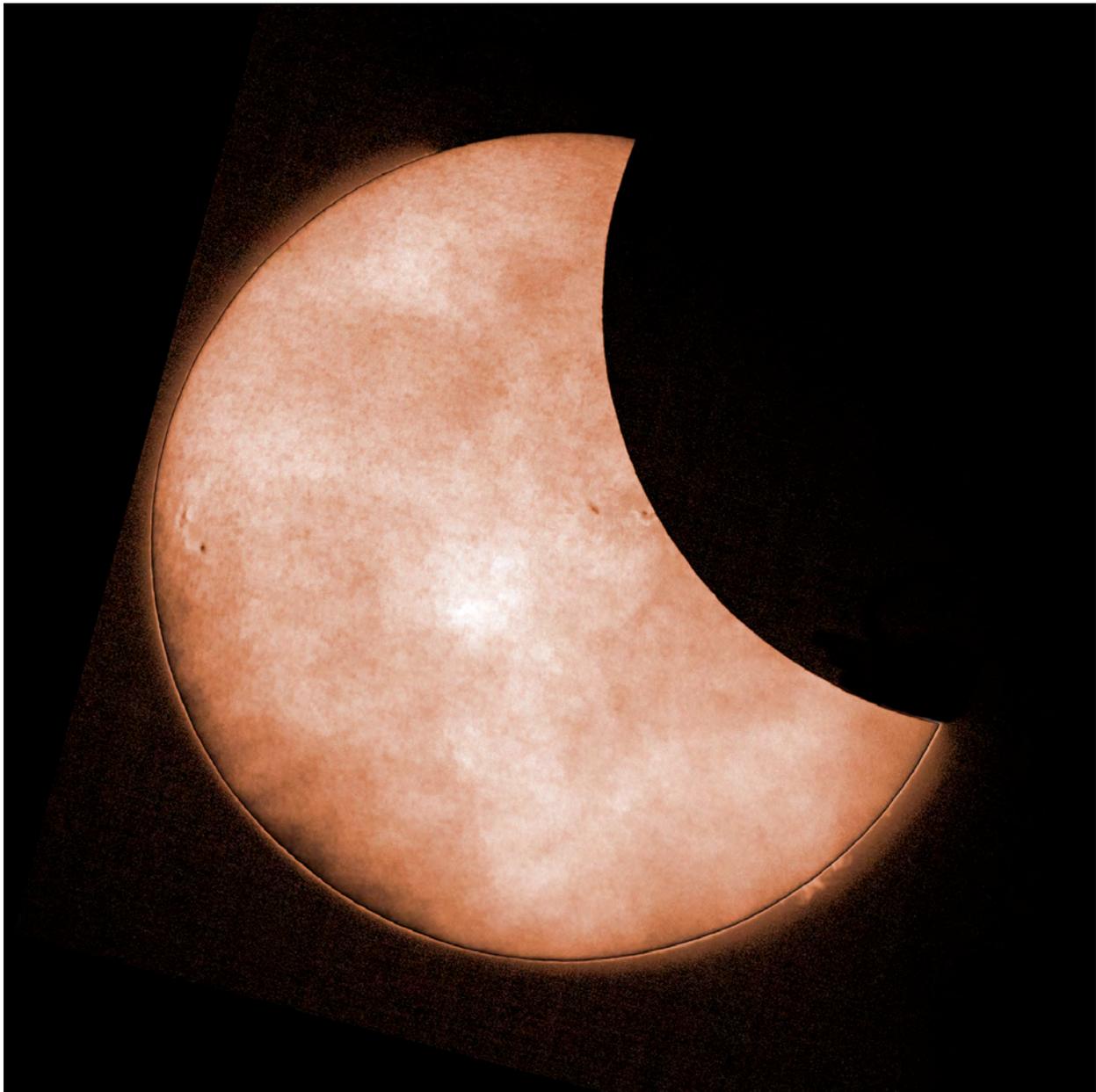
This mountain and night skyscape stretches across the French Pyrenees National Park on August 12, near the peak of the annual Perseid meteor shower. The multi-exposure panoramic view was composed from the Col d'Aubisque, a mountain pass, about an hour before the bright gibbous moon rose. Centered is a misty valley and lights from the region's Gourette ski station toward the south. Taken over the following hour, frames capturing some of the night's long bright perseid meteors were aligned against the backdrop of stars and Milky Way.

SOLAR ECLIPSE OVER PRESCOTT VALLEY

David Viscio

Hydrogen-alpha image of partial solar eclipse was acquired through cloud cover at 9:47 AM, revealing emerging sunspot group 2672 at the left, the moon covering half of sunspot group 2671 near center and a significant prominence at the lower right.

Coronado SolarMax II 90mm H- α filter on Takahashi Sky 90 refractor with Scopetronix 1.6x amplifier (800mm f/8.9); Canon EOS 60Da; processed in Adobe Photoshop CS6; composite of 2 images: 1/250s at ISO 200 and 1/100s at ISO 400.



Watson Lake Park

