



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

MARCH 2012

MARCH EVENTS

Wednesday, March 7 – Regular PAC Meeting @ 6 PM in the Founders Suite, Prescott Public Library. Club member John Carter will speak about 'Backyard Spectroscopy'.

Wednesday, March 14 - METASIG @ 5:00 PM at a local restaurant. Sign up at the meeting on March 7.

Thursday, March 15 - 3rd Thursday presentation @ 6:30 PM in the Prescott Public Library Founders Suite - "The City Dark" - A documentary film about light pollution and the disappearing night sky.

Saturday, March 17 - Starry Nights @ 7:00 PM at Pronghorn Park in Prescott Valley. Sign up at meeting March 7.

FROM THE PRESIDENT

By David Viscio

Ms. Breesa Patrick of Lake Valley Elementary School, 3900 Starlight Drive, Prescott Valley has requested PAC provide astronomers and telescopes for their Family Science Night on Thursday, May 3, 2012 (night after our May meeting). Although this is the first year for the event, she hopes for an attendance of 75-100. More details will be provided as the event draws closer.

On May 20, 2012 an annular solar eclipse will occur in the US with the eclipse track running from northern California, through Nevada, northern Arizona and the 'Four Corners'. Events are being planned at the Glen Canyon National Rec. Area and Canyon de Chelly. In the appendix are copies of e-mails and contacts for anyone interested in participating in these events.

On June 5-6, 2012 the Venus transit will occur with the next one in 2117. So this is an opportunity to show the public a rare event. In Arizona the transit will begin at about 3:00 PM on June 5 and will be in progress at sunset. The club should consider if it wants to have a public showing, where and how.

THE HIDDEN POWER OF SEA SALT, REVEALED

Last year, when NASA launched the Aquarius/SAC-D satellite carrying the first sensor for measuring sea salt from space, scientists expected the measurements to have unparalleled sensitivity. Yet the fine details it's revealing about ocean saltiness are surprising even the Aquarius team.

"We have just four months of data, but we're already seeing very rich detail in surface salinity patterns," says principal investigator Gary Lagerloef of Earth & Space Research in Seattle. "We're finding that Aquarius can monitor even small scale changes such as specific river outflow and its influence on the ocean."

Using one of the most sensitive microwave radiometers ever built, Aquarius can sense as little as 0.2 parts salt to 1,000 parts water. That's about like a dash of salt in a gallon jug of water.

"You wouldn't even taste it," says Lagerloef. "Yet Aquarius can detect that amount from 408 miles above the Earth. And it's working even better than expected."

Salinity is critical because it changes the density of surface seawater, and density controls the ocean currents that move heat around our planet. A good example is the Gulf Stream, which carries heat to higher latitudes and moderates the climate.

"When variations in density divert ocean currents, weather patterns like temperature and rainfall are affected. In turn, precipitation and evaporation, and fresh water from river outflow and melt ice determine salinity. It's an intricately connected cycle."

The atmosphere is the ocean's partner. The freshwater exchange between the atmosphere and the ocean dominates the global water cycle. Seventy-eight percent of global rainfall occurs over the ocean, and 85 percent of global evaporation is from the ocean. An accurate picture of the ocean's salinity will help scientists better understand the profound ocean/atmosphere coupling that determines climate variability.

"Ocean salinity has been changing," says Lagerloef. "Decades of data from ships and buoys tell us so. Some ocean regions are seeing an increase in salinity, which means more fresh water is being lost through evaporation. Other areas are getting more rainfall and therefore lower salinity. We don't know why. We just know something fundamental is going on in the water cycle."

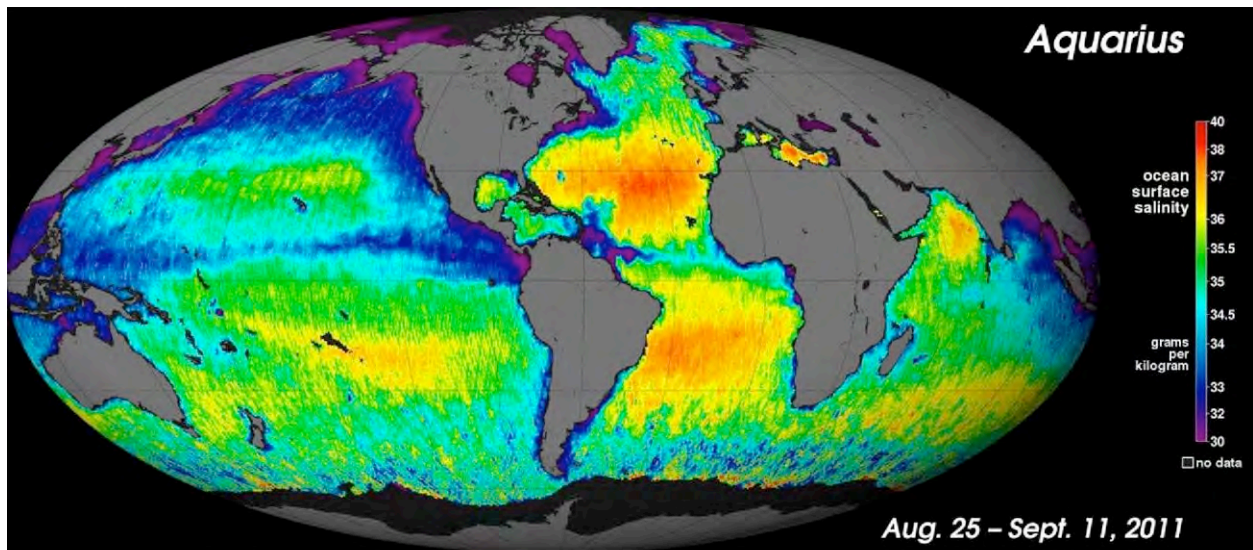
With Aquarius's comprehensive look at global salinity, scientists will have more clues to put it all together. Aquarius has collected as many sea surface salinity measurements in the first few months as the entire 125-year historical record from ships and buoys.

"By this time next year, we'll have met two of our goals: a new global map of annual average salinity and a better understanding of the seasonal cycles that determine climate."

Stay tuned for the salty results. Read more about the Aquarius mission at aquarius.nasa.gov.

Other NASA oceanography missions are Jason-1 (studying ocean surface topography), Jason-2 (follow-on to Jason-1), Jason-3 (follow-on to Jason-2, planned for launch in 2014), and Seawinds on the QuikSCAT satellite (measures wind speeds over the entire ocean). The GRACE mission (Gravity Recovery and Climate Experiment), among its other gravitational field studies, monitors fresh water supplies underground. All these missions, including Aquarius, are sponsors of a fun and educational ocean game for kids called "Go with the Flow" at spaceplace.nasa.gov/ocean-currents.

This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.



Aquarius produced this map of global ocean salinity. It is a composite of the first two and a half weeks of data. Yellow and red represent areas of higher salinity, with blues and purples indicating areas of lower salinity.

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.

Oh, no, not comet C2009 P1 (Gerradd) again! Yep. Heeeeeee's back. Between March 9 and 27, when the Moon won't be a problem, you can catch the comet passing just north of the Big Dipper in the early evening. See *Sky & Telescope*, March 2012, p.60 for more information.

On Friday, March 2, at 8:38 PM, you can see the Moon occult a double star, 15 Geminorum (HD 45352) (magnitude 6.5). Use a large (12 inch) telescope to make the stars as bright as possible.

On Saturday, March 3, Mercury is at greatest eastern elongation. This will be the best chance of seeing the planet in the evening sky for the year. Sunset is at 6:28 PM. Civil twilight ends at 6:53 PM. Nautical twilight ends at 7:23 PM. Mercury sets at 7:55 PM.

Also on Saturday, March 3, Mars is at opposition. Although this will be the best time to view the planet for the next couple of years, it won't be great. Mars will appear only 14 arc-seconds in diameter. At least it will be fairly high in the sky (65 degrees above the horizon) when it transits at 12:46 AM (March 4). For the month before and after this opposition you have a reasonable chance of seeing some markings on the planet with your highest resolution telescope.

On Monday, March 5, at 7:25 PM as darkness is falling, Algol (Beta Persei) will be at its minimum brightness (magnitude 3.4). As the night progresses it will rise to magnitude 2.1.

On Wednesday, March 7, at 6:10 PM (21 minutes before sunset) the full Moon rises, spoiling any chance of seeing faint fuzzies for the night. This is a good night for seeing bright objects, however. In addition to the Moon, you might be able to catch Mercury before it sets (7:56 PM), Venus and Jupiter in the west, Mars in the east near the Moon, and, if you wait for it to rise at 9:37 PM, Saturn. Not only that, but the winter hexagon (Rigel, Aldebaran, Capella, Pollux, Procyon, and Sirius) along with Castor and Betelgeuse are prominent in the south. Regulus is near Mars and Spica is near Saturn.

On Saturday, March 10, 9:18 PM, the asteroid 57 Mnemosyne (magnitude 12.5) passes in front of the star HD 245465 (magnitude 9.6). You might want to travel to a site north of Phoenix to be in the path of the occultation. See <http://asteroidoccultation.com> for detailed info. And, after about 10 PM, you can see a nice triangle formed by the Moon, Saturn, and Spica, just above the eastern horizon.

On Sunday, March 11, at 2:00 AM, thumb your nose at amateur astronomers outside of Arizona as they go on daylight savings time and have to wait an additional hour to start observing.

On Monday, March 12, in the early evening, Jupiter and Venus will be near each other in the western sky. They are also close the next night.

On Wednesday, March 14, the Moon is at last quarter phase and rises at at 1:57 AM (March 15).

On Friday, March 16, Mars is in the vicinity of the trio of galaxies M95, 96 and 105. It will be passing through the area for a few days.

On Tuesday, March 20, spring begins.

On Thursday, March 22, it is new Moon and you have all night to hunt for faint fuzzies. At 7:41 PM as darkness is falling, Io moves from in front of Jupiter. Both Io's and Ganymede's shadows are on the planet. Io's shadow leaves at 8:29 PM, Ganymede's at 9:14 PM (half an hour before Jupiter sets).

On Sunday and Monday, March 25 and 26, in the early evening, the thin, crescent Moon will be passing by Jupiter and Venus.

On Tuesday, March 27, in the evening, Venus is at greatest eastern elongation, which means it looks first quarter phase (half lit). Over the next couple of months Venus will show an increasingly slender crescent phase as it grows in angular size.

On Wednesday, March 28, at 4:23 AM, the asteroid 823 Sisigambis (magnitude 13.5) moves in front of the star HD 107161 (magnitude 6.8). This event will happen very low in the southwest. See <http://asteroidoccultation.com> for detailed info.

On Thursday, March 29, at 8:18 PM, Io's shadow falls on Jupiter. (Io is already in front of the planet.) Six minutes later Ganymede moves in front of the planet.

On Friday, March 30, the Moon is at first quarter phase and sets at 2:01 AM (March 31).

NEWSLETTER CONTENT

By David Viscio (editor)

To make the Ephemeris a better tool for PAC members to enjoy and promote amateur astronomy, I encourage PAC members to submit suggestions on what you would like to see in the newsletter and to submit articles highlighting their own interests and skills to share with all club members. Send either through the Yahoo groups or e-mail me at: pkmist@gmail.com

YAHOO GROUPS

PAC currently has two Yahoo groups for members to exchange ideas and post questions.

Open to all PAC members:

<http://tech.groups.yahoo.com/group/Prescott-Astronomy-Club/>

Astrophotography special interest group:

<http://tech.groups.yahoo.com/group/pacastrophotography/>

We encourage all members to join a group.

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Subject: Annular Eclipse in Page, Az
From: Joan_Mayer@nps.gov
Date: 4:00 PM
BCC: pbirck@cableone.net

Hello All,

I am beginning to plan for a 2-3 day event in Page and Glen Canyon NRA for the Annular Eclipse. I was hoping to get in touch with each astro club in Arizona to see if any of you have tentative plans to come up to our area to view the eclipse. I am looking to see if any club members would like to volunteer in any capacity for our event. I am in the process of seeking a Key Note Speaker-my prospects are Tyler Nordgren-author/professor of physics and astronomy and/or Ian Cheney, A City Dark. Several schools from Tucson and Phoenix have expressed interest in coming up for a field trip on the Friday before so they can meet armature astronomers. We have several great locations to view the eclipse-these are also where large tour bus companies have already been promoting to bring people. The National Park Service will have traffic management plans in place for several locations (day and night observing). We believe once the City of Page realizes bus tours are beginning to book Page hotel rooms, they will be willing to talk about the impact this event might have on Page,

I hope to hear back from all of you even if you don't plan on coming up to Page. The more astronomers who show up, the more interesting it will be for the general public and school groups. Astronomy is getting a lot of attention from our visitors so we think, this one event (simple and brief) could make a real difference in encouraging people to attend more astronomy events wherever they visit. This could mean more invitations by hotels to hire astro clubs, could be great for fund-raising. Simple, it could be great.

I can be best reached on email, then cell, then office phone.

best regards,
joan

Joan B. Mayer
Education Specialist and Special Events Coordinator
Glen Canyon National Recreation Area
Rainbow Bridge National Monument
928-640-0817 (cell)
928-608-6353 (W)
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Joan_Mayer@nps.gov

Fwd: Annular Eclipse on May 20

Patrick Birck <pbirck@cableone.net>
To: David Viscio <pkmist@gmail.com>

Thu, Feb 2, 2012 at 8:06 PM

Nora McKerry is the park service contact at Canyon de Chelly. Gene Hill operates the mobile AIMER Lab for NAU and NASA.

Pat

----- Original Message -----

Subject: Annular Eclipse on May 20

Date: Mon, 30 Jan 2012 19:07:17 -0700

From: Gene Hill <gene33@mac.com>

To: Nora McKerry <Nora_cKerry@nps.gov>

CC: Mansel Nelson <mansel.nelson@nau.edu>, Ed Anderson <Ed.Anderson@nau.edu>, Patrick Birck <pbirck@cableone.net>

Nora,

As you likely know, there is an Annular Eclipse of the Sun on May 20, 2012. Canyon de Chelly appears to be right on the path of totality, so it would seem to be a likely place for a gathering to watch the event. I have learned that your counterpart at Glen Canyon NRA is planning a 3-day event with speakers.

I work part-time with a NASA funded program out of Northern Arizona University to teach astronomy and space science in schools on the Reservations in the state. This would seem to be a good opportunity to encourage families to bring their children to see the Annular Eclipse. I believe we could bring several telescopes with solar filters from NAU to assist in viewing. I am sure others will be bringing telescopes, as well.

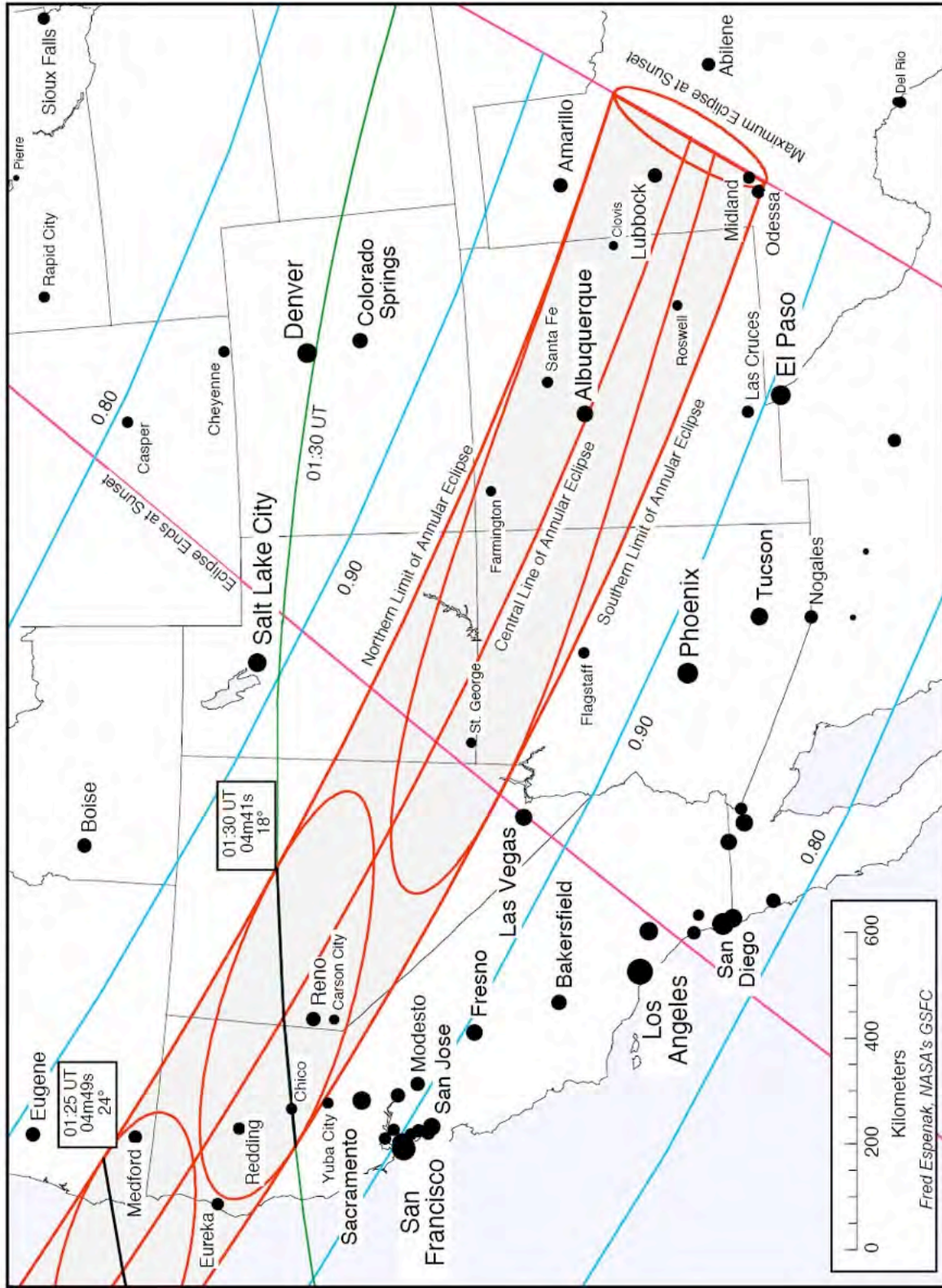
Mansel Nelson, my immediate supervisor, has offered to help with publicity and marketing whatever we might plan. I do not envision a full-scale production, but we will likely have knowledgeable individuals there who could offer some interpretation of the event--but mostly a solar eclipse is something to see and not hear analyses about.

I would appreciate hearing from you of your interest in planning something at Canyon de Chelly for this rare event.

Gene

Gene Hill
gene33@mac.com
cell: [712-898-6409](tel:712-898-6409)

Annular Solar Eclipse of 2012 May 20





M17 and M18 - David Viscio