



# Monthly Notices of the Everglades Astronomical Society



Naples, FL  
September 2016

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## President's Message

It is so great to be back to Southwest Florida after three months up north. I'm especially looking forward to returning to our new year's meeting cycle on September 13, 2016. I was feeling a bit guilty at my lack of observing whilst I was up there. Between the mosquitoes and rain/clouds, it was just not happening. I felt less guilty when I kept getting e-mails from Charlie canceling observing sessions down here because of the same issues I was having. What little observing I did get in was fabulous. Maybe this year will present better conditions.

There are a few things coming up this September and October. The equinox lands on September 22<sup>nd</sup> this year. You may want to throw a party for that. On September 26<sup>th</sup>, Jupiter is in conjunction with the sun. For those of you who observe Mercury, it will be at its greatest elongation on September 28<sup>th</sup>. Its highest point will be 18° west of the sun in the morning sky. The Chiefland Star Party is October 23<sup>rd</sup> through the 30<sup>th</sup>. As this is fairly close to us, you may want to consider going. The web-site for more information can be found in the September 2016 Reflector magazine.

I'm currently working on the agenda for the next meeting. If there is something that you would like include, please send it along to me. Our speaker will be Chris Pritchard. His talk will be "A New Way to Astronomy". See you soon.

Clear skies, Denise Sabatini

## Dates for the "Fak"

Usually the best times to go out to the Fakahatchee Strand viewing site are moonless nights. Below is a list of upcoming Saturday nights that you will often find fellow club members out there enjoying the skies with you (weather permitting).

| Date         | Moonrise   | Moonset   |
|--------------|------------|-----------|
| September 24 | 12:27 a.m. | 2:09 p.m. |
| October 1    | 6:47 a.m.  | 6:52 p.m. |

## Sky Events

Sept. 7 - Jupiter Transit (Io)  
Sept. 9 - First Quarter  
Sept. 16 - Full Moon  
Sept. 17 - Jupiter Transit (Callisto)  
Sept. 22 - Autumn Equinox  
Sept. 23 - Last Quarter  
Sept. 29 - Jupiter Transit (Europa)  
Sept. 30 - New Moon

## Next Meeting

**September 13, 2016: Time 7:00 – 9:00 pm**  
Norris Center, Cambier Park

## Perseids Meteor Shower by Jackie Richards

This year's Perseids Meteor Shower did not disappoint and many meteor pictures were captured. Club members were out viewing the event on the mornings of August 12<sup>th</sup> at the



Perseids Meteor Shower taken by Jackie Richards on the morning of 8/12/16 at the Picayune Strand Preserve. Top streak is a meteor. Bottom streak is an airplane.

Picayune Strand and on August 13<sup>th</sup> at the Fak. The picture above was taken by me at the Picayune Strand shortly before sunrise on August 12<sup>th</sup>.

Club members conducted meteor counts during 30-minute intervals and the outcomes are listed below:

| Name            | Date    | Time                  | Meteors Seen in 30 mins. |
|-----------------|---------|-----------------------|--------------------------|
| Rick Piper      | 8/12/16 | 4:20 a.m. – 4:50 a.m. | 48                       |
| Jackie Richards | 8/13/16 | 2:19 a.m. – 2:49 a.m. | 18                       |
| Robyn Pritchard | 8/13/16 | 2:22 a.m. – 2:52 a.m. | 17                       |
| Rick Piper      | 8/13/16 | 2:30 a.m. – 3:00 a.m. | 18                       |
| Jackie Richards | 8/13/16 | 5:07 a.m. - 5:37 a.m. | 32                       |

As you can see from the above chart, the closer you get to sunrise, the more meteors you will see, with the estimated meteors per hour on August 12<sup>th</sup> (the peak morning) being 96 (calculated by doubling a 30-minute count) and on August 13<sup>th</sup> being 64. So this tops the usual 60 meteors per hour that this meteor shower usually offers. It had been expected that this year's meteor shower would provide more meteors than usual because Earth would collide with more material than usual from Comet Swift Tuttle, which is the source of the Perseids Meteor Shower. This is because Jupiter's gravity has tugged the debris stream in such a way that Earth is moving through the middle of the stream, rather than the edge.

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### Published Articles by EAS Members

Ted Wolfe's article in the Naples News/Collier Citizen on August 30, 2016, Looking Up: No igloo here: Eskimo Nebula Once Vibrant Star.

<http://www.naplesnews.com/story/news/local/communities/collier-citizen/2016/08/30/looking-up-no-igloo-here-eskimo-nebula-once-vibrant-star/89599122/>

TO VIEW THE ABOVE ARTICLE, PRESS "CTRL" AND LEFT CLICK BUTTON.

The below link provides previous articles in the Collier Citizen by Ted Wolfe that appeared over past years.  
<http://search.naplesnews.com/jmg.aspx?k=looking+up+ted+wolfe>

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## NGC 6559 By Ted Wolfe

Here is a very cool object in the southern skies with six hours of exposure from my Chilean site. It is NGC 6559, a complex nebula (both emission and reflection) that shows a wonderful purple hue where they mix. Also worth noting are:

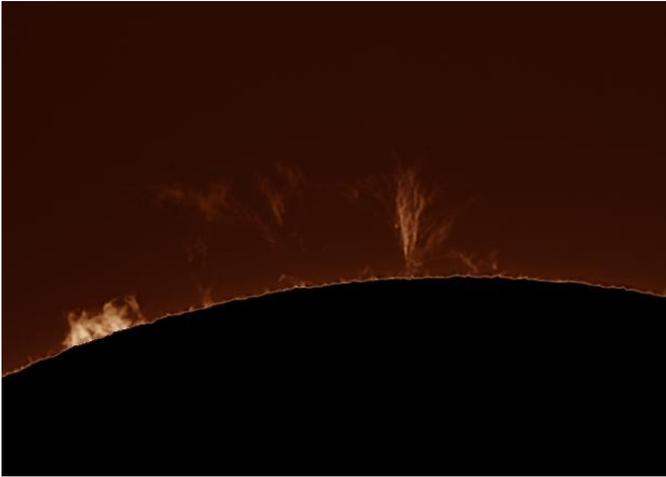
- The dark dust that encircles the whole nebula, cutting off the light from the distant stars behind it.
- The vast field of old yellow stars that frames the outer part of the picture.
- The major feature at the top looks a little like a "bobble head". It appears to be staring down its "nose" toward the big yellow star on the left side of the picture.
- The contrast between the dark, snake-like dust lane meandering through the lower part of the nebula and the bright pink, sort of flat feature in the same region.

Hope you enjoy it.



NGC 6559 by Ted Wolfe from his Chilean site.

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The Sun taken by Chuck Pavlick on 8/11/16. Telescope: Lunt 60 Solar scope w/2.5 powermate; camera: DMK 21au618; 500 frames processed in Registax and Photoshop

\* \* \*



## A 'Habitable' World Around Proxima Centauri May Not Be Very Earth-Like

Now that we know the closest star has a potentially habitable planet, it's time to ask if it's really like ours.

“To consider the Earth as the only populated world in infinite space is as absurd as to assert that in an entire field sown with millet, only one grain will grow.” -*Metrodorus of Chios*

One of the ultimate goals of humanity, when looking out at the Universe, is to discover another planet capable of supporting human life, or perhaps even containing other intelligent, living beings. Beyond our Solar System, the nearest stars are the trinary system Alpha Centauri, consisting of Alpha Centauri A, a sun-like star, Alpha Centauri B, a star slightly smaller and cooler than our Sun, and Proxima Centauri, a low-mass red dwarf that's the closest one of all. Last week, the European Southern Observatory made an announcement, stating that there's an Earth-like planet around Proxima Centauri, just 4.24 light years away. With an estimated mass of 1.3 times Earth and receiving 70% of the incident sunlight, the world makes a complete revolution around its star in just 11 days. If verified, this would be the closest planet outside of our Solar System ever discovered.



The stars Alpha Centauri (upper left) including A and B, Beta Centauri (upper right), and Proxima Centauri (circled). Image credit: Wikimedia Commons user Skatebiker.

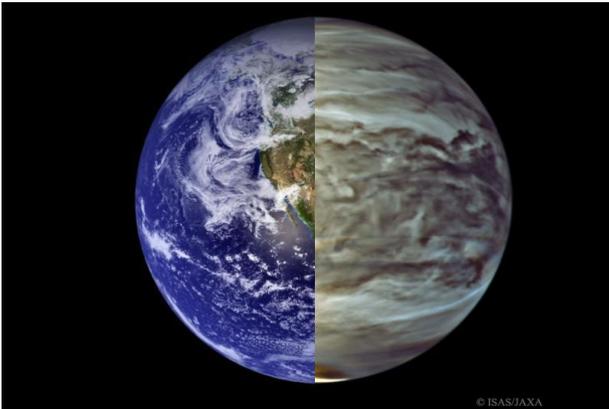
If you had come to the world's leading scientists a mere 25 years ago and asked how many planets there were around stars other than our own, all you would have gotten were guesses. None had ever been discovered and confirmed, and the few “claimed detections” that had existed were all overturned. Fast-forward to the present day, and we have thousands of confirmed planets with thousands more as “candidates” waiting in the wings. Most of these were uncovered by NASA's Kepler mission, which viewed a portion of a nearby spiral arm, looking at 150,000 stars hundreds to thousands of light years away. Although that information was enough to tell us that *most* stars have planets and that a significant percentage have rocky worlds in the potentially habitable zones of their star systems, it doesn't hold the same allure that the nearest stars do.

Most of us hear “Earth-like” and immediately think of a world with continents and oceans, teeming with life, and possibly with intelligent beings on its surface. But that's not what “Earth-like” means to an astronomer, at least, not yet. There's very little we're capable of measuring at this point in time about a distant planet, particularly from a *small* planet, as the light from its parent star absolutely swamps every other signal. All we can definitively measure is a planet's physical mass, radius and orbit. If we get lucky, we can measure whether the planet has an atmosphere or not, but that information is typically only available for gas giant worlds, not for rocky planets.

If we did indeed find an Earth-mass, Earth-sized planet orbiting around Proxima Centauri at the right distance for liquid water on its surface, it gives us tremendous hope that Earth-like worlds are present around perhaps even most of the stars in the Universe. After all, only 5% of all stars are as massive as our

own Sun, while 75% of stars are red dwarfs like Proxima Centauri. Based on mass and size measurements, we could confirm that the planet is rocky, rather than gas-like or with a hydrogen/helium envelope. And if we could measure the light from the planet directly, using a variety of astronomical techniques to subtract the light from the parent star, we might even be able to tell whether the planet appears uniform over time (like a fully-clouded world like Venus does) or whether it has brightness features that change over time (like a partially clouded world like Earth does).

- Whether this world has a surface temperature like Venus, like Earth or like Mars, which depend very strongly on properties we can't measure like the atmosphere's composition.
- Whether there's the potential for liquid water on its surface, which requires the knowledge of atmospheric pressure.
- Whether there's a magnetic field shielding the planet from solar radiation, or whether that's necessary to protect any life that arose on the world.
- Whether solar activity has fried any life that could have existed in the early stages.
- Or whether the atmosphere has any biosignatures or not.



The Earth (L) in visible light, compared with Venus (R) in infrared light. While Earth's reflectivity will vary over time, Venus' will remain constant. Image credit: NASA/MODIS (L), ISIS/JAXA (R), stitching by E. Siegel.

Whether this planet exists or not—and it's important to be skeptical, as there was a planet reported around Alpha Centauri B a few years ago that went away with more data—it's important to remember that “Earth-like” is a far cry from being anything at all like the actual Earth. By these criteria, Venus or Mars would be “Earth-like” too, but you wouldn't stake your hopes of becoming an interstellar species on either of those. As great as finding a new, rocky world in the potentially habitable zone around the nearest star to the Sun would be, it's a long way from our ultimate dream of an Earth 2.0.

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**Items For Sale or Trade or Wanted:**

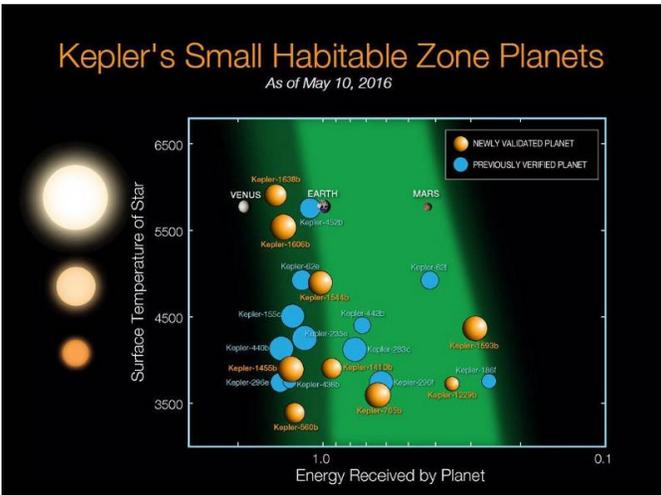
[http://www.naples.net/clubs/eas/equipment\\_sales.html](http://www.naples.net/clubs/eas/equipment_sales.html)

**Useful links (software, telescope making, telescope and equipment suppliers, astronomical data sources, iPhone and iPad Apps and more):**

<http://www.naples.net/clubs/eas/links.html>

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There are other things we'd know as well about how this world is *different* from our own. Based on the planet's mass, size and distance to its star, we'd know that it was tidally locked, meaning that the same hemisphere always faces the star, similar to how the Moon is locked to Earth. We'd know that its years are much shorter, and that its seasons would be determined by its orbit's ellipticity, not by axial tilt.



The 21 Kepler planets discovered in the habitable zones of their stars, no larger than twice the Earth's diameter. Most of these worlds orbit red dwarfs, closer to the “bottom” of the graph. Image credit: NASA Ames/N. Batalha and W. Stenzel.

But most striking are the things we *wouldn't* yet know, which include:

## EAS 2016 DUES

For the bargain price of only \$20.00 per family, all this can be yours this year:

- Meet with your fellow astronomy enthusiasts at least 10 times a year;
- Learn about astronomy and telescopes. Check out our club scope;
- Many opportunities to view planets, nebulae and other celestial objects (even if you don't have your own telescope); and
- Enjoy the many astronomy programs at our regular monthly meetings.

**Don't miss out!** Fill out this form (please print clearly) and send it with your \$20 check to the

Everglades Astronomical Society, P. O. Box 1868,  
Marco Island, Florida, 34146.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

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