



Monthly Notices of the Everglades Astronomical Society



Naples, FL
December 2011

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President's Message:

The Winter Star Party tickets have arrived! If you missed your chance to sign up it's still possible to attend; often it's possible to pick up tickets on Astromart or from a fellow club member who is not able to attend. Unlike the Superbowl, you usually just pay list price.

This year I think we will start the telescope building class in February instead of March; last time it got too hot to work outside and we were rushed to completion. Figure on spending roughly \$600. It's true you could buy a telescope for less than this, but the beauty of your own hand-made telescope is priceless! If you are interested, now would be a good time to budget for it.

Clear Skies,
Mike Usher
(239) 643-6017

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).

Fak Dates	Sun Set	Moonrise	Moonset
Dec 17	5:39pm	11:36am	11:59am
Dec 24	5:42pm	6:59am	5:53pm
Jan 14	5:56pm	11:32pm	10:39am
Jan 21	6:02pm	5:41am	4:39pm

Next Meeting: (*Bring a friend!*)

December 13th, 2011
Time 7:00 – 9 pm
At the Norris Center, 755 8th Avenue South, Naples, FL

Sky Events:

Dec 2 -- First Quarter Moon
Dec 10 -- Full Moon
Dec 17 -- Last Quarter Moon
Dec 24 -- New Moon

Eclipse Dates:

December 10: Total lunar eclipse This eclipse will be fully visible from Alaska. The Moon will enter the penumbra at 2:32 A.M. AKST and will leave the penumbra at 8:32 A.M. AKST. The eclipse will be partially visible from parts of North America: Central and western areas will be able to observe both a penumbral and umbral eclipse. The Moon will enter the penumbra at 3:32 A.M. PST and the umbra at 4:45 A.M. PST. A penumbral eclipse will be visible from most of the East Coast, starting at 6:32 A.M. EST, just before the Moon sets.

Meteor Showers:

Meteor Shower: **Geminid**
Radiant and direction: Gemini (S)
Morning of maximum: Dec. 13-14
Hourly rate: 75-100
Parent body: 3200 Phaethon

Meteor Shower: **Ursids**
Radiant and direction: Ursa Minor
Morning of maximum: Dec 22
Hourly rate: 10-20
Parent body: Comet 8P/Tuttle (also visible)

Astronomical Trivia Question of the Month:

When astronomers refer to a planet as a Super-Earth, what do they mean?

- A. That the planet is made of Kryptonite.
- B. The planet is a perfect match for Earth in size and composition.
- C. The planet has a mass of 1.3 to 10 times that of Earth, but does not refer to its chemical composition, nor does it refer to being in a "habitable" temperature zone around its parent star.
- D. The planet has the same chemical composition as Earth, and is 1.3 to 10 times bigger, and lies within a "habitable" zone around its parent star.

**Answer on next page.*



Re-thinking an Alien World: The Strange Case of 55 Cancri e

By Dr. Tony Phillips

Forty light years from Earth, a rocky world named "55 Cancri e" circles perilously close to a stellar inferno. Completing one orbit in only 18 hours, the alien planet is 26 times closer to its parent star than Mercury is to the Sun. If Earth were in the same position, the soil beneath our feet would heat up to about 3200 F. Researchers have long thought that 55 Cancri e must be a wasteland of parched rock.

Now they're thinking again. New observations by NASA's Spitzer Space Telescope suggest that 55 Cancri e may be wetter and weirder than anyone imagined.

Spitzer recently measured the extraordinarily small amount of light 55 Cancri e blocks when it crosses in front of its star. These transits occur every 18 hours, giving researchers repeated opportunities to gather the data they need to estimate the width, volume and density of the planet.

According to the new observations, 55 Cancri e has a mass 7.8 times and a radius just over twice that of Earth. Those properties place 55 Cancri e in the "super-Earth" class of exoplanets, a few dozen of which have been found. Only a handful of known super-Earths, however, cross the face of their stars as viewed from our vantage point in the cosmos, so 55 Cancri e is better understood than most.

When 55 Cancri e was discovered in 2004, initial estimates of its size and mass were consistent with a dense planet of solid rock. Spitzer data suggest otherwise: About a fifth of the planet's mass must be

made of light elements and compounds—including water. Given the intense heat and high pressure these materials likely experience, researchers think the compounds likely exist in a "supercritical" fluid state.

A supercritical fluid is a high-pressure, high-temperature state of matter best described as a liquid-like gas, and a marvelous solvent. Water becomes supercritical in some steam turbines—and it tends to dissolve the tips of the turbine blades. Supercritical carbon dioxide is used to remove caffeine from coffee beans, and sometimes to dry-clean clothes. Liquid-fueled rocket propellant is also supercritical when it emerges from the tail of a spaceship.

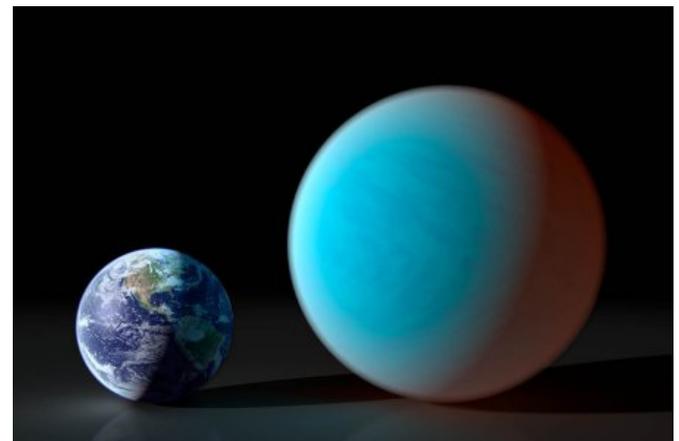
On 55 Cancri e, this stuff may be literally oozing—or is it steaming? —out of the rocks.

With supercritical solvents rising from the planet's surface, a star of terrifying proportions filling much of the daytime sky, and whole years rushing past in a matter of hours, 55 Cancri e teaches a valuable lesson: Just because a planet is similar in size to Earth does not mean the planet is like Earth.

It's something to re-think about.

Get a kid thinking about extrasolar planets by pointing him or her to "Lucy's Planet Hunt," a story in rhyme about a girl who wanted nothing more than to look for Earth-like planets when she grew up. Go to <http://spaceplace.nasa.gov/story-lucy>.

The original research reported in this story has been accepted for publication in *Astronomy and Astrophysics*. The lead author is Brice-Olivier Demory, a post-doctoral associate in Professor Sara Seager's group at MIT.



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

Artist's rendering compares the size Earth with the rocky "super-Earth" 55 Cancri e. Its year is only about 18 hours long!

Answer to the trivia question:

The answer is: **C.**

The planet has a mass of 1.3 to 10 times that of Earth, but does not refer to its chemical composition, nor does it refer to being in a "habitable" temperature zone around its parent star.

Links of the Month:

1. <http://www.cfa.harvard.edu/news/2011/pr201124.html>
 2. <http://www.astromart.com>
 3. <http://marsprogram.jpl.nasa.gov/msl/>
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Items for Sale

<http://naples.net/clubs/eas/sales.html>

Handbook of Space Astronomy and Astrophysics - Paperback; 782 pages; 338 B&W illustrations; 247 tables. 40% off list price for astronomy club members. A comprehensive compilation of the facts and figures relevant to astronomy and astrophysics. This handbook contains the most frequently used information in modern astronomy and astrophysics, and will be an essential reference for advanced amateur astronomers, university students, graduate students, researchers and professionals working in astronomy and the space sciences. For more information and to purchase the handbook go to:

http://www.astrohandbook.com/astrohandbook_clubs.html

Martin Zombeck, mvz@alum.mit.ed, Club Affiliation: EAS; date posted: 23 November 2010.

2012 Membership Dues:

For the bargain price of only **\$20.⁰⁰ per family**, all this can be yours for the coming year!

- ✓ Meet with your fellow astronomy enthusiasts at least 10 times a year.
- ✓ Many opportunities to freeze/sweat/get bitten by mosquitoes in the Fakahatchee Strand.
- ✓ View planets, nebulae and many other celestial objects.

Don't miss out! Fill out this form (please print plainly) and send it with your \$20 check, payable to:

Everglades Astronomical Society

P.O. Box 1868

Marco Island, Florida 34146

Name: _____
Address: _____
Phone: _____
Email: _____