



# Monthly Notices of the Everglades Astronomical Society



Naples, FL  
April 2011

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## President's Message

I can't believe winter has slid by and it's spring already! That means that shortly Omega Centauri and the Southern Cross will soon be visible at a reasonable hour. We have had fine weather at the Fakahatchee strand this past month and I know that many of you made it out there for the first time.

This month we have the Conservancy Earth Day Festival on April 16; if you have a solar telescope, or just want to help out we need you there! Also this month on the 29th we have been asked to entertain a number of guests at the Ritz Carlton. I have had estimates ranging from 50 to 550 people attending and if the latter number is anywhere close to true we are going to need every telescope available. Even if you do not own a telescope you can still participate by operating one of the club-owned scopes.

I'll see you at the meeting this Tuesday!  
Clear Skies

Mike Usher

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## 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
April 2	7:44 pm	6:28 am	7:11pm
April 23	7:55 pm	12:53 am	11:48 am
April 30	7:58 pm	5:01 am	5:57 pm
May 21	8:11 pm	11:30 pm	10:32 am
May 28	8:13 pm	3:33 am	4:42 pm

## Next Meeting ( Bring a friend! )

April 12th, 2011  
Time 7:00 – 9 pm  
At the Norris Center, 755 8th Avenue South, Naples, FL

## Public Outreach Events

Conservancy Earth Day Festival -- April 16th  
Ritz Carlton -- April 29th

## Sky Events

Apr 3 -- New Moon  
Apr 11 -- First Quarter Moon  
Apr 17 -- Full Moon  
Apr 24 -- Last Quarter Moon

## Meteor Shower:

Name: **Lyrid\***  
Radiant and Direction: **Lyra (E)**  
Morning of Maximum: **Apr. 22**  
Hourly Rate: **10-20**  
Parent Body: **Thatcher (1861 I)**

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## Astronomical Trivia Question of the Month

Which is the largest know, confirmed impact crater on Earth?

- a. Sudbury Crater, Canada
- b. Vredefort Crater, South Africa
- c. Wilkes Land Crater, Antarctica
- d. Chicxulub Crater, Mexico

*\*Answer on next page.*

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## GOES-R, Zombie Fighter

By Dr. Tony Phillips

On April 5, 2010, something eerie happened to the Galaxy 15 telecommunications satellite: It turned into a zombie.

The day began as usual, with industry-owned Galaxy 15 relaying TV signals to millions of viewers in North America, when suddenly the geosynchronous satellite stopped taking commands from Earth. It was brain dead! Like any good zombie, however, its body continued to function. Within days, Galaxy 15 began to meander among other satellites in geosynchronous orbit, transmitting its own signal on top of the others'. Satellite operators scrambled to deal with the interference, all the while wondering what happened?

In horror movies, zombies are usually produced by viruses.

"In this case, the culprit was probably the sun," says Bill Denig of the National Geophysical Data Center in Boulder, Colorado. He and colleague Janet Green of NOAA's Space Weather Prediction Center recently led a study of the Galaxy 15 anomaly, and here are their conclusions:

On April 3rd, a relatively minor solar flare launched a cloud of plasma toward Earth. Galaxy 15 had experienced many such events before, but this time there was a difference.

"Galaxy 15 was just emerging from the shadow of Earth when the cloud arrived and triggered a geomagnetic storm," explains Denig. Suddenly exposed to sunlight and the ongoing storm, "the spacecraft began to heat up and charge [up]."

Electrons swirling around Galaxy 15 stuck to and penetrated the spacecraft's surface. As more and more charged particles accumulated, voltages began to rise, and—zap!—an electrostatic discharge occurred. A zombie was born.

"At least, this is what we suspect happened based on data collected by GOES satellites in the vicinity," he says. "We'll be able to diagnose events like this much better, however, after GOES-R is launched by NASA in 2015."

GOES-R is NOAA's next-generation Geostationary Operational Environmental Satellite. One of the instruments it will carry, a low-energy electron counter, is crucial to "zombie fighting." Low energy-electrons are the ones most likely to stick to a spacecraft's surface

and cause brain-frying discharges. By monitoring these particles in Earth orbit, GOES-R will provide better post-mortems for future zombie outbreaks. This could help satellite designers figure out how to build spacecraft less susceptible to discharges. Also, GOES-R will be able to issue alerts when dangerous electrons appear. Satellite operators could then take protective action—for example, putting their birds in "safe mode"—to keep the zombie population at bay.

Meanwhile, Galaxy 15 is a zombie no more. In late December 2010, after 9 months of terrorizing nearby spacecraft, the comsat was re-booted, and began responding to commands from Earth again.

All's well that ends well? True zombie fighters know better than to relax. Says Denig, "we're looking forward to GOES-R."

You and the kids in your life can learn about space weather at <http://scijinks.gov/space-weather-and-us>.

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



### Caption:

*The Galaxy 15 communication satellite was "brainless" for several months in 2010 after being exposed to a geomagnetic storm. The new GOES-R satellite will warn of such dangers.*

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### Set For Launch:

<http://www.nasa.gov/missions/highlights/schedule.html>

Date: April 29 +  
Mission: STS-134  
Launch Vehicle: Space Shuttle Endeavour  
Launch Site: Kennedy Space Center - Launch Pad 39A  
Launch Time: 3:47 a.m. EDT

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### Answer to the trivia question:

The answer is **B**. The Vredefort Crater, South Africa is the largest "*confirmed* crater" on Earth. The evidence is not conclusive yet on the alleged Wilkes Land Crater in Antarctica . [http://en.wikipedia.org/wiki/Vredefort\\_crater](http://en.wikipedia.org/wiki/Vredefort_crater)

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### News From our web site:

Mike has published a wonderful how to guide for buying a first telescope.

[http://www.naples.net/clubs/eas/tutorials/Buying\\_Your\\_First\\_Telescope.pdf](http://www.naples.net/clubs/eas/tutorials/Buying_Your_First_Telescope.pdf)

### Items for Sale

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

Aluminum ramps that telescope to 5-10' long. Perfect to roll your big dob into a van, SUV or pickup truck. New condition. \$150. See mfg. website. David Eimers, 239-353-4828, fishflash1@gmail.com, Club Affiliation: EAS; date posted: 27 November 2010.

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Handbook of Space Astronomy and Astrophysics - New; 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 click here.

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

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I have a 20" Dobsonian reflector that I am willing to part with at a very low price. It has an objective mirror with a figure few reflectors have regardless of aperture (1/18 wave peak to peak wave front error). This telescope is a great value for anyone or group who is considering a large aperture telescope. Email me at jedw.1@netzero.net for a complete description, photos and price.

Jim Edwards, date posted: 15 November 2010.

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# 2011 Membership Dues:

For the bargain price of only **\$20.<sup>00</sup> 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**

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