



Monthly Notices of the Everglades Astronomical Society



Naples, FL
June 2010

Co-Presidents: Charlie Paul, Rick Piper; **Vice President:** Michael Usher; **Secretary:** Todd Strackbein;
Treasurer: Bob Gurnitz; **Newsletter Editor:** Frank Ligas (EAS.Naples.NewsLetter@gmail.com);
Fack Coordinator: Charlie Paul -- for information on viewing (cpaul651@earthlink.net , 239-410-8192)
Webmaster: Martin Zombeck (mvz@alum.mit.edu)

Home Page: <http://gator.naples.net/clubs/eas>

President's Message

Thank you Todd & Mike for taking over the last meeting. Charlie was called out of town while I was on vacation. I never saw a cloud for the 10 days I spent in Southern Arizona. Backyard domes are popping up there like popcorn! Deep Sky objects look incredible in the black sky. I've returned to the onset of summer heat and the Florida humidity.

This is our last meeting before the summer. We will have what we call the Coffee Shop get together in July & August. I hope to see you at the Books-A-Million on the second Tuesday at 7pm next month. Then return to our regular meetings in September.

This month, Tuesday June 8th at 7pm, Dennis Albright will present our program on Pluto. I hope to see you at the Norris Center on the corner of 8th & 8th.

Good skies – clean glass.
Co-President
Rick Piper

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 | Sun Set | Moonrise | Moonset |
|---------|-----------|-----------|-----------|
| June 5 | 8:17 p.m. | 2:13 a.m. | 2:05 p.m. |
| June 12 | 8:20 p.m. | 7:36 a.m. | 8:51 p.m. |

Sky Events

June 4 – Last Quarter Moon
June 12 -- New Moon
June 19 -- First Quarter Moon
June 26 -- Full Moon

Meteor Showers: *No major showers this month*
Radiant and direction: -----
Morning of maximum: -----
Hourly rate: -----
Parent body: -----

Next Meeting

June 8, 2010
Time 7:00 – 9 pm
At the Norris Center, 755 8th Avenue South, Naples, FL

Astronomical Trivia Question of the Month

What percentage of the sun's energy reaches Earth?

- a. 1/10,000 of a percent.
- b. 1/2 of a billionth of a percent.
- c. 6x's the total output.
- d. one quadrillionth of a percent.

**Answer on next page.*



Ancient Supernova Riddle, Solved

By Dr. Tony Phillips

Australopithecus squinted at the blue African sky. He had never seen a star in broad daylight before, but he could see one today. Was it dangerous? He stared for a

long time, puzzled, but nothing happened, and after a while he strode across the savanna unconcerned. Millions of years later, we know better.

That star was a supernova, one of many that exploded in our corner of the Milky Way around the Pliocene era of pre-humans. Australopithecus left no records; we know the explosions happened because their debris is still around. The solar system and everything else within about 300 light-years is surrounded by supernova exhaust—a haze of million-degree gas that permeates all of local space.

Supernovas are dangerous things, and when one appears in the daytime sky, it is cause for alarm. How did Earth survive? Modern astronomers believe the blasts were too far away (albeit not by much) to zap our planet with lethal amounts of radiation. Also, the Sun's magnetic field has done a good job holding the hot gas at bay. In other words, we lucked out.

The debris from those old explosions has the compelling power of a train wreck; astronomers have trouble tearing their eyes away. Over the years, they've thoroughly surveyed the wreckage and therein found a mystery—clouds of hydrogen and helium apparently too fragile to have survived the blasts. One of them, whimsically called “the Local Fluff,” is on the doorstep of the solar system.

“The observed temperature and density of the Fluff do not provide enough pressure to resist the crushing action of the hot supernova gas around it,” says astronomer Merav Opher of George Mason University. “It makes us wonder, how can such a cloud exist?”

NASA's Voyager spacecraft may have found the answer. NASA's two Voyager probes have been racing out of the solar system for more than 30 years. They are now beyond the orbit of Pluto and on the verge of entering interstellar space. “The Voyagers are not actually inside the Local Fluff,” explains Opher. “But they are getting close and can sense what the cloud is like as they approach it.”

And the answer is ...

“Magnetism,” says Opher. “Voyager data show that the Fluff is strongly magnetized with a field strength between 4 and 5 microgauss. This magnetic field can provide the pressure required to resist destruction.”

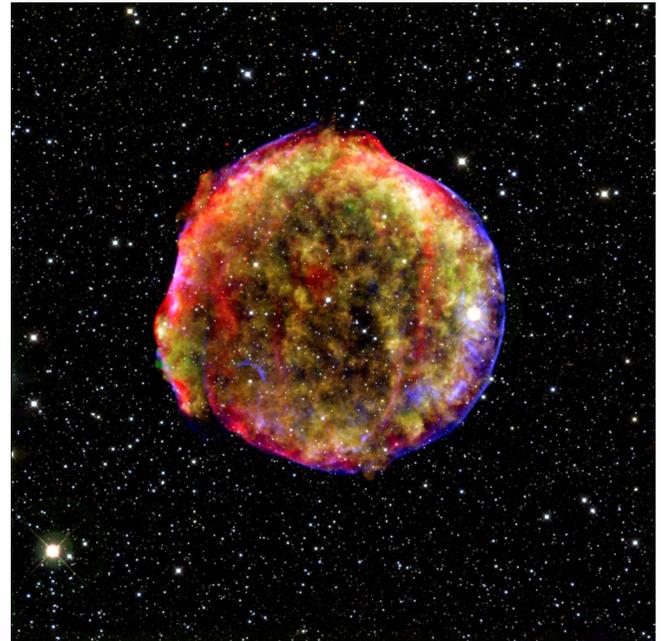
If fluffy clouds of hydrogen can survive a supernova blast, maybe it's not so surprising that we did, too.

“Indeed, this is helping us understand how supernovas interact with their environment—and how destructive the blasts actually are,” says Opher.

Maybe Australopithecus was on to something after all. Opher's original research describing Voyager's discovery of the magnetic field in the Local Fluff may be found in *Nature*, 462, 1036-1038 (24 December 2009).

The Space Place has a new Amazing Fact page about the Voyagers' Golden Records, with sample images and sounds of Earth. Just in case one of the Voyager's ever meets up with ET, we will want to introduce ourselves. Visit <http://spaceplace.nasa.gov/en/kids/voyager> .

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



Caption: Left-over cloud from the Tycho supernova, witnessed by Tycho Brahe and other astronomers over 400 years ago. This image combines infrared light captured by the Spitzer Space Telescope with x-rays captured by the Chandra X-ray Observatory, plus visible light from the Calar Alto Observatory in Spain.

Answer to the trivia question:

B: *½ a billionth of a percent to the sun's total output makes its way to Earth.*

Other facts to consider as we set in for a long hot summer:

- Every year the sun evaporates 100,000 cubic miles of water from Earth (that weighs 400 trillion tons!)
- If a piece of the sun the size of a pinhead were to be placed on Earth, you could not safely stand within 90 miles of it!
- If the sun were the size of a dot on an ordinary-sized letter 'i', then the nearest star would be 10 miles away.

2010 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: _____
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