

Southwest Florida Astronomical Society

SWFAS



The Eyepiece March 2009

A MESSAGE FROM THE PRESIDENT

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February ended with many of us joining our friends in the Everglades Astronomical Society in Naples for the annual Winter Star Party down in the Keys. This was an extended party this year due to the fact that the Southern Cross Astronomical Society in Miami was celebrating their twenty-fifth year for the Winter Star Party. With an extra two days and sunny skies for the entire time, the viewing was great. We did have to contend with a steady wind and some evening clouds drifting in and out, but with the exception of the wind, the viewing was great.

We had twelve people representing the two clubs, and six of us won prizes in the big prize give-away on Friday. Considering over 600 people were in attendance, I think we came out looking pretty good. As usual, they had some great prizes and Rick Piper, President of the Everglades Astronomical Society in Naples won an Orion EON 72mm ED Apochromatic Refractor Telescope.

We have two events scheduled for this month. Our first event is scheduled for March 6th from 6:00 PM to 10:00 PM when we will provide a star party for the Cape Coral Rotary Club. We are currently looking for volunteers to support this event. Our second event, which is a major event for us will be on March 13th from 6:00 PM to 10:00 PM when we will provide a star party for the Christa McAuliff Charter Elementary School in Cape Coral. This is a first time event for them, and the school has gone all out in preparing for this, and also their Parent Teachers Organization is giving us a nice donation for our effort. At last count, they had sold over 150 tickets.

Planets in the evening sky for March consist of Venus (in the west), and Saturn (in the east). Mercury and Jupiter can be viewed in the morning sky (in the southeast), along with Mars (in the east).

Please remember to pay your dues for 2009. Dues can be paid at our monthly meeting, or mailed to our post office box i.e. Southwest Florida Astronomical Society, Inc., PO Box 100127, Cape Coral, Florida 33910. Your continued support is greatly appreciated.

March Meeting

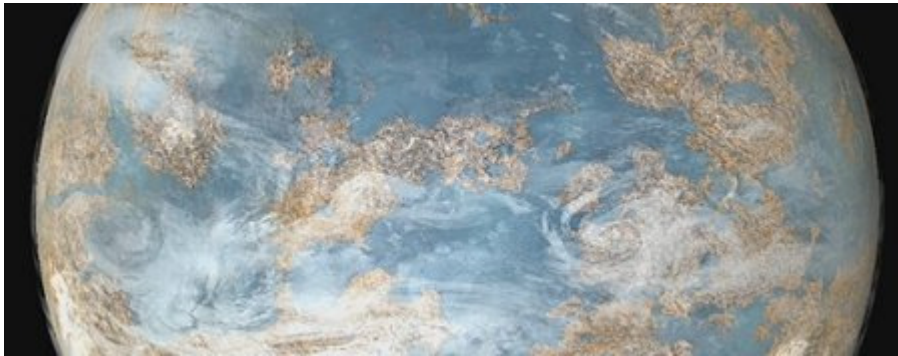
Our March meeting will be at the Calusa Nature Center Planetarium at 7:30 pm on Thursday, March 5th. Our guest speaker for the evening will be Mr. John Hicks. Mr. Hicks will give a talk on *The Characteristics of the Sun and Global Warming*.

Kepler Mission to Hunt for Earth-like Planets

Are there other worlds like ours? Are we alone?

NASA's Kepler spacecraft is about to begin an unprecedented journey that could answer these ancient questions.

Kepler is scheduled to blast into space from Cape Canaveral, Fla., aboard a Delta II rocket on March 5 at 10:48 p.m. EST. It is the first mission with the ability to find planets like Earth -- rocky planets that orbit sun-like stars in a warm zone where liquid water could be maintained on the surface.



Above: An artist's concept of an Earth-like planet orbiting a distant star. Credit: Dana Berry/NASA.

The mission will spend three and a half years surveying more than 100,000 sun-like stars in the Cygnus-Lyra region of our Milky Way galaxy. It is expected to find hundreds of planets the size of Earth and larger orbiting at various distances from their stars. If Earth-size planets are common in the habitable zone (where conditions favor liquid water), Kepler could find dozens of worlds like ours. On the other hand, if those planets are rare, Kepler might find none.

The Kepler telescope is specially designed to detect the periodic dimming of stars caused by transiting planets. Some star systems are oriented in such a way that their planets cross in front of their stars, as seen from our Earthly point of view. As the planets transit, they cause their stars' light to slightly dim, or wink. The telescope can register changes in brightness of only 20 parts per million.

"If Kepler were to look down at a small town on Earth at night from space, it would be able to detect the dimming of a porch light as somebody passed in front," said James Fanson, Kepler project manager.

To accomplish this feat, Kepler will use the largest camera ever launched into space, a 95-megapixel array of charged couple devices or "CCDs."

Right: Kepler's completed flight focal plane array with the 42 science CCDs and four fine guidance CCDs in the corners.

By staring at one large patch of sky for the duration of its lifetime, Kepler will be able to watch planets periodically transit their stars over multiple cycles. This will allow astronomers to confirm the presence of planets. Earth-size planets in habitable zones would theoretically take about a year to complete one orbit, so



Kepler will monitor those stars for at least three years to confirm their presence. Ground-based telescopes and NASA's Hubble and Spitzer space telescopes will perform follow-up studies on the larger planets that they can see. For more information about the Kepler mission, visit: <http://www.nasa.gov/kepler>.
- *Science@NASA*

Extreme Gamma-ray Burst

The first gamma-ray burst to be seen in high-resolution from NASA's Fermi Gamma-ray Space Telescope is one for the record books. The blast had the greatest total energy, the fastest motions and the highest-energy initial emissions ever seen. This explosion, designated GRB 080916C, occurred at 7:13 p.m. EDT on Sept. 15, 2008, in the constellation Carina. Fermi's other instrument, the Gamma-ray Burst Monitor, simultaneously recorded the event. Together, the two instruments provide a view of the blast's initial, or prompt, gamma-ray emission from energies between 3,000 to more than 5 billion times that of visible light.

Gamma-ray bursts are the universe's most luminous explosions. Astronomers believe most occur when exotic massive stars run out of nuclear fuel. As a star's core collapses into a black hole, jets of material -- powered by processes not yet fully understood -- blast outward at nearly the speed of light. The jets bore all the way through the collapsing star and continue into space, where they interact with gas previously shed by the star and generate bright afterglows that fade with time.

The first thing astronomers usually do after a gamma-ray burst is scramble to detect the fading afterglow. An afterglow's spectrum (i.e., its colors) can reveal the distance to the blast site. This is crucial information astronomers must have to calculate a gamma-ray burst's power.

Nearly 32 hours after the blast, a group in Germany found the afterglow of GRB 080916C.

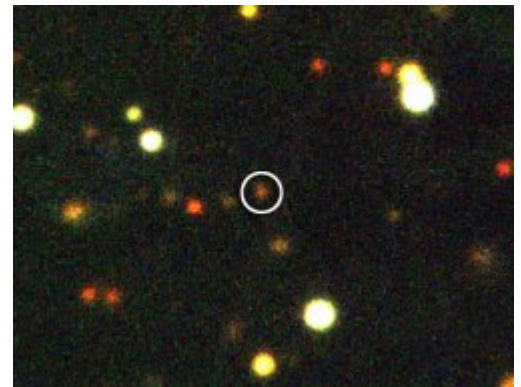
Right: The fading afterglow.

According to their data, the explosion took place 12.2 billion light-years away.

With the distance in hand, Fermi team members calculated that the blast exceeded the power of approximately 9,000 ordinary supernovae, if the energy was emitted equally in all directions. This is a standard way for astronomers to compare events even though gamma-ray bursts emit most of their energy in tight jets.

Coupled with the Fermi measurements, the distance also helps astronomers determine the speed of the gamma-ray emitting material. Within the jet of this burst, gas bullets must have moved at least 99.9999 percent the speed of light. This burst's tremendous power and speed make it the most extreme recorded to date.

- *Science@NASA*



NASA Creates the No Boundaries Project and Student Contest

NASA has teamed with USA TODAY Education to create the "No Boundaries" project and national student competition. This project is designed to help students explore careers in science, technology, engineering and mathematics, and learn more about NASA.

The goal of this project is for students to work in small groups to develop a creative project that markets careers in science, technology, engineering and math to teens. The No Boundaries Web site has a Teacher Toolkit available and step-by-step instructions for teachers to implement the project in their classrooms. Background information and links to Web sites with career information are also provided.

After presenting their projects, groups are encouraged to enter them in the No Boundaries National Competition. All contest entries must be submitted to USA TODAY Education no later than May 15, 2009.

To learn more about the project and contest, visit the No Boundaries Web site at <http://www.noboundaries-stemcareers.com/> .

- education@usatoday.com.

Scale Model of Sun and Earth in Living Plants and Flowers

Many representations of scale model solar systems have been implemented successfully. There is a fantastic scale model of our Milky Way galaxy, "a 100-foot diameter outdoor scale model"... "mapped in living plants and flowers and based on current astrophysical data" on the Kona coast of Hawaii Island.

Artist Jon Lomberg, who worked with the late Carl Sagan on the Cosmos book and television series (and is a resident of Honaunau) conceived of and designed the Galaxy Garden to "encourage scientific education about our place in the universe".

The website is <http://galaxygarden.net/> . Peruse the website - the Galaxy Garden is an amazing experience

- by Gary Fujihara

25 Random Things About ... the Milky Way Galaxy

Those of you on Facebook may have heard of the "25 Random Things About Me" phenomenon, where you are invited to write, well, 25 random things about yourself for all your friends to read, then invite your friends to do the same.

It's an intriguing literary exercise for sure.

But don't worry, we're not going to write 25 random things about ourselves... we're not that interesting.

Instead, in the spirit of this recent cultural novelty, we present "25 Random Things About The Milky Way Galaxy".

1. In Greek Mythology, the Milky Way was created by milk spilled when Hera, the wife (and sister!) of Zeus, was nursing Hercules.

2. Wherever you live in the world, and whatever the season, if you have dark sky you can step outside on a clear night and see the nearby spiral arms of the Milky Way.

3. The center of the Milky Way is in the direction of Sagittarius, which is low on the horizon for observers in the Northern Hemisphere. But near the equator, or in the Southern Hemisphere, the center of the Milky Way is almost directly overhead... a spectacular sight!

Read about the other 22 Random Things at The One Minute Astronomer:

<http://www.oneminuteastronomer.com/2009/02/12/25-random-things-milky-way/>

- from an email from Don Franks

Educational Spacewalk Simulations for STS-125

A beta version of software simulating the planned spacewalk for the upcoming Hubble servicing mission is now available for download at:

<http://www.nasa.gov/audience/foreducators/spacesuits/simulation/index.html>

- from Carla Rosenberg, NASA HQ, Space Operations Mission Directorate

Colliding Satellites

Experts are calling it an "unprecedented event." Two large satellites have collided in Earth orbit. Kosmos 2251 crashed into Iridium 33 on Tuesday, Feb. 10th, approximately 800 km over northern Siberia; both were destroyed. The resulting clouds of debris contain more than 500 fragments, significantly increasing the orbital debris population at altitudes where the collision occurred. The Air Force Space Surveillance Radar is monitoring the clouds as they pass over the radar facility in Texas.

- *spaceweather.com*

MESSENGER Continues Hunt for Ever-Elusive Vulcanoids

MESSENGER reaches its orbital perihelion last month, passing within 0.31 astronomical units (AU) of the Sun (one AU is nearly 93 million miles). The mission's imaging team is taking advantage of the probe's proximity to the fiery sphere to continue their search for vulcanoids – small, rocky asteroids that have been postulated to circle the Sun in stable orbits inside the orbit of Mercury.

Vulcanoids are named after Vulcan, a planet once proposed to explain unusual motions in Mercury's orbit. Scientists have long suspected that these small, faint "space rocks" exist. There is a gravitationally stable region between the orbit of Mercury and the Sun, which means that any objects that originally formed there billions of years ago might still be there today. All other such regions in the solar system are occupied by some type of debris (e.g., Trojan asteroids at stable points along the orbits of Jupiter and Neptune and Kuiper Belt objects near and beyond the orbit of Pluto).

The so-called vulcanoid region between the orbit of Mercury and the Sun is the main gravitationally stable region that is not known to be occupied. The region is, however, the most difficult to observe. Any vulcanoids would be difficult to detect from Earth because of the strong glare of the Sun. Previous vulcanoid searches have revealed no bodies larger than 60 kilometers in diameter. But MESSENGER's travels in near-Mercury space enable a search for vulcanoids from a vantage never before attempted, says MESSENGER Science Team Member Clark Chapman, who is spearheading the team's search along with his associate, William Merline. "With MESSENGER, we can search for vulcanoids as small as 15 kilometers across," said Chapman, a senior scientist at the Southwest Research Institute in Boulder, Colorado.

MESSENGER Thermal Engineer Maintains Cool in Extreme Environs

The Mercury-bound MESSENGER spacecraft will be assaulted by temperatures as high as 700°F as it orbits the planet closest to the Sun, and the only thing that will stand between its room-temperature science instruments and the blistering heat is a handmade ceramic-cloth quilt just one-quarter of an inch thick. Carl Jack Ercol, the man largely responsible for making sure that MESSENGER will be able to stand up to such harsh heat once imagined he'd make his living in a darker, much cooler environment:

the coal mining industry. Read more about Ercol at http://messenger.jhuapl.edu/who_we_are/member_focus.html.
- *MESSENGER Mission News*

Some Websites about Venus

Since Venus is so bright, it is not surprising that many people will ask about “the bright light in the west.” Here are some sites that help explain both the brightness and the changes of Venus:

http://stargazing.suite101.com/article.cfm/the_bright_star_in_the_west has a simple, concise explanation of the bright light in the west. Apparently it is a popular site, with comments left by readers.

<http://www.msnbc.msn.com/id/26459084> tells the reader what to expect as the planet Venus comes closer to the Sun.

The question of Venus’s brightness is also answered here, with a little math added:
<http://www.romesg.com/?p=174>

<http://gegenschein.wordpress.com/2009/01/12/venus-begins-2009-brilliantly/> adds little to the explanation, but is a good read regardless.

Some facts about Venus: <http://www.aerospaceguide.net/planet/planetvenus.html>
- *Columbus (Ohio) Astronomical Society*



The Space Place

Where did all these gadgets come from?!

by Dr. Tony Phillips

Ion propulsion. Artificial intelligence. Hyper-spectral imagers. It sounds like science fiction, but all these technologies are now flying around the solar system on real-life NASA missions.

How did they get there? Answer: the New Millennium Program (NMP). NMP is a special NASA program that flight tests wild and far-out technologies. And if they pass the test, they can be used on real space missions.

The list of probes that have benefited from technologies incubated by NMP reads like the Who’s Who of cutting-edge space exploration: Spirit and Opportunity (the phenomenally successful rovers exploring Mars), the Spitzer Space Telescope, the New Horizons

mission to Pluto, the Dawn asteroid-exploration mission, the comet-smashing probe Deep Impact, and others. Some missions were merely enhanced by NMP technologies; others would have been impossible without them.

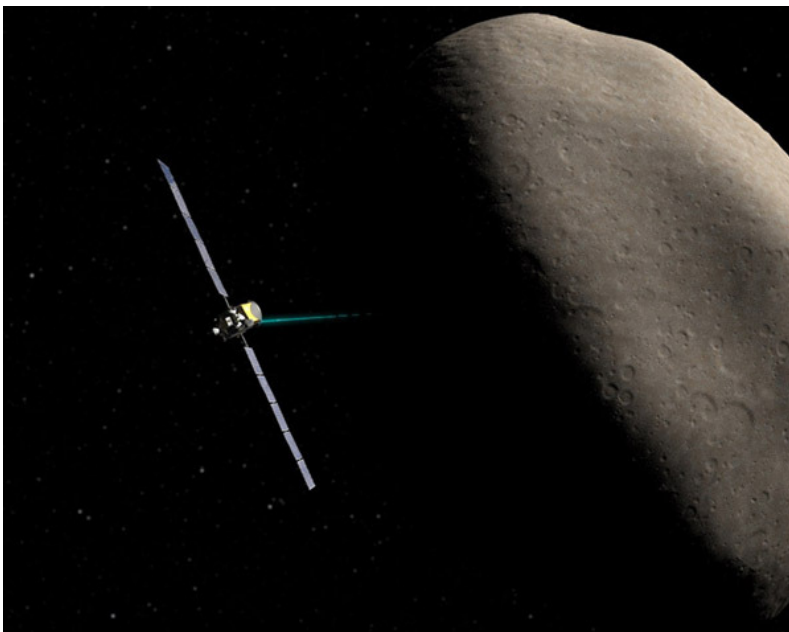
"In order to assess the impact of NMP technologies, NASA has developed a scorecard to keep track of all the places our technologies are being used," says New Millennium Program manager Christopher Stevens of the Jet Propulsion Laboratory.

For example, ion propulsion technology flight-tested on the NMP mission Deep Space 1, launched in October 1998, is now flying aboard the Dawn mission. Dawn will be the first probe to orbit an asteroid (Vesta) and then travel to and orbit a dwarf planet (Ceres). The highly efficient ion engine is vital to the success of the 3 billion mile, 8 year journey. The mission could not have been flown using conventional chemical propulsion; launching the enormous amount of fuel required would have broken the project's budget. "Ion propulsion was the only practical way," says Stevens.

In total, 10 technologies tested by Deep Space 1 have been adopted by more than 20 robotic probes. One, the Small Deep Space Transponder, has become the standard system for Earth communications for all deep-space missions.

And Deep Space 1 is just one of NMP's missions. About a half-dozen others have flown or will fly, and their advanced technologies are only beginning to be adopted. That's because it takes years to design probes that use these technologies, but Stevens says experience shows that "if you validate experimental technologies in space, and reduce the risk of using them, missions will pick them up."

Stevens knew many of these technologies when they were just a glimmer in an engineer's eye. Now they're "all grown up" and flying around the solar system. It's enough to make a program manager proud!



The results of all NMP's technology validations are online and the list is impressive: nmp.nasa.gov/TECHNOLOGY/scorecard/scorecard_results.cfm. For kids, the rhyming storybook, "Professor Starr's Dream Trip: Or, How a Little Technology Goes a Long Way" at spaceplace.nasa.gov/en/kids/nmp/starr gives a scientist's perspective on the technology that makes possible the Dawn mission.

Caption:

Dawn will be the first spacecraft to establish orbits around two separate target bodies during its mission—thanks to ion propulsion validated by Deep Space 1.

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



IYA 2009 Box

By the end of this week all active clubs should have received your IYA box. Happy IYA!

Google Map

If you haven't already entered your club information, Night Sky Network has a brand new interactive map for visitors to find your club. Jump on the bandwagon and show off your club by using the Google map feature on our website and add your club logo while you are at it: <http://nightsky.jpl.nasa.gov/club-map.cfm>

Your Club Coordinator can include your club logo and club locations, such as where you hold club meetings and have public astronomy events. The new map will allow potential visitors to:

- more easily find your club
- get step-by-step directions to your event locations
- link to your website

You want more?! Just like you, the Astronomical Society of the Pacific (ASP) believes in improving science literacy through the enjoyment of astronomy. To keep up-to-date on activities, events, and resources provided by the ASP, sign up for free monthly notifications here: <http://www.astrosociety.org/pubs/newsletter.html>

- *Marni Berendsen, Kenneth Frank and Vivian White, Night Sky Network Administrators*

SWFAS Minutes – February 5, 2009

7:30 – Meeting Called Into Session By Bob Francis.

Bob Francis – President: Welcome everyone to the February meeting. Introduction of new members and visitors.

Bob: Information about Joe Cambala. Joe was a very active member of the club and lived in Canada. He was very at the FAK. Bob learned that Joe has passed away this last December. The club had a minute of prayer for Joe and his family.

Bob: January was a very active month for the club and will continue to be very active for the rest of year. 2009 is the International Year of Astronomy.

The events we had in January were:

- 1/9 – Girl Scouts in Immokalee. 12 telescopes were set up.
- 1/24 – Manatee Park. 6640 came to the event. We were a big attraction at this event.
- 1/24 – Camp Calusa Girl Scout Group
- 1/30 – Big event – Charter Elementary School in Cape Coral

This event was cancelled due to bad weather and is rescheduled to March 13, 2009. The proceeds from this event will send the 5th grade graduating class to Cape Kennedy. Charter Elementary School will also donate \$200.00 to SWFAS. Bob will send out an email around 03/01/09 to all members requesting help & volunteers.

1/31 – Discovery Day at the Edison Light Festival. The club did solar observing.

The Director accommodated us with a large space and this will probably become an annual event. This event had approximately 10,000 to 12,000 people attend. In addition, there was a big science event / expo happening too!

March 6th – This will be our 2nd year for us for the Rotary Club in Cape Coral. Last year's event was very successful and there is a high anticipation for us to hold the event.

Bob gave a thank you for all the members who volunteered and helped out for January's events. More and more people are contacting SWFAS for events. The events in the past were mostly for children but recently has moved more toward adults.

A lot of SWFAS members will be attending the 25th Annual Winter Star Party.

This is being held Feb 21st to Feb. 28th in the Keys, about 20 miles south of Marathon. We will have good represent from our club as well as the Naples Astronomy club.

Membership dues is due.

Alice Mack – Vice President: Alice found a reasonably priced Mars book at Barnes & Nobles bookstore. Alice also suggested membership cards be printed up for members of SWFAS.

Karen Nichols – Secretary: Minutes are printed in the newsletter.

Stewart Rorer – Treasurer: Treasurers report read.

Bob: A new canopy was bought for the club for upcoming events. This is a nice canopy, which has sides and is easy to assemble.

Equipment, telescopes, books, DVDs are available to members. Members can borrow the mentioned for a 2 week period and may be extended if no one else has it reserved. Call Carole Holmberg to reserve. The canopy or the 6' dining table is not available to sign out and use.

Maria Dorilag – Librarian. Maria will be taking over as the librarian. The library is being reorganized and updated. Old and outdated books and magazines are available to members free. Whatever is left over will be donated.

Bob: There are 2 viewing sites – Fakahatchee Strand and Caloosahatchee Regional Park. Viewing at CRP is set up for Feb. 21st and March 21st. Contact John Martin by 5:00 PM that day if you will be going.

Tony Heiner & Chuck Pavlick are the contacts for viewing at the FAK. Viewing at the FAK happens twice a month – the 2 weekends of the new moon. If interested in going, contact Tony or Chuck by 5:00 PM. If you have never been to the FAK, it is advised to meet up with someone to go with. Permission papers will be given to members for observing in the FAK.

The sites and directions are posted on the website: www.theeyepiece.org

*The club has a new rule. If you are interested in going to either the FAK or CRP, you need to contact John Martin for CRP or Tony Heiner or Chuck Pavlick for FAK by 5:00 PM that day. If no one calls to let them know you'll be going, it will be their discretion to not show up.

Danny Secary – Historian: Members who want to have pictures or photos on the website, send them to either Danny Secary or Dan Fitzgerald.

Open Discussion. Chuck Pavlick has the telescope set up in the back for viewing tonight.

Carole Holmberg: Presentation: Light Pollution & Magnitudes

Meeting adjourned at 8:45PM.

Calendar of Events

Thursday, March 5th, 7:30 pm, **Meeting at the Calusa Nature Center Planetarium**

Friday, March 6th, 6-10pm, **Observing at Cape Coral Rotary Club**

Friday, March 13th, 6-10 pm, **Observing at Christa McAuliff Elementary in Cape Coral**

Saturday, March 21st, dusk, **Observing at Caloosahatchee Regional Park**

Thursday, April 2nd, 7:30 pm, **Meeting at the Calusa Nature Center Planetarium,**

Southwest Florida Astronomical Society, Inc.
P.O. Box 100127
Cape Coral, FL 33910

www.theeyepiece.org