

Southwest Florida Astronomical Society

SWFAS



The Eyepiece February 2012

A MESSAGE FROM THE PRESIDENT

It's winter, where is the cooler weather?

Our public events this past month took a major hit from the weather. Clouds either shut down or were major interference in all our activities. Often the days in-between were clear!

This month we have Dr. Theo Koupelis from Edison College speaking on *Unstable Solar Dynamics*. Dr. Koupelis is the Associate Dean, Math and Sciences. His talk last year was excellent.

As it is a new year, it is annual dues time again. Dues are \$20.00/year. I sent out initial notices to all who have email. If you are getting this via regular mail, please check to see if you have paid your dues. Please pay at the meetings or events we are holding or send your payment in to SWFAS, P.O. Box 100127, Cape Coral, Florida 33910. If you have any questions about your dues, contact me.

In February we have the following: Carol Stewart and I are doing solar observing at Gulf Elementary on the 9th. I am also going to Littleton Elementary in NFM the evening of the 9th for their Science Night. On the 17th, we have the Cape Coral Rotary Park Public Star Party. We have our star party at CRP on the 18th. On the 25th we return to Rotary Park for solar observing at the Burrowing Owl Festival. On March 31st, we are going to do solar observing at the Three Oaks Family Fun Day in San Carlos Park.

CRP Star Party Schedule for 2012: February 18th, March 24th, April 21st, May 19th, June 23rd, July 21st, August 18th, September 15th, October 13th, November 10th, and December 15th. Please contact Bruce Dissette if you have any questions.

Ron has the following meeting programs scheduled.

March 3rd: Jack Berninger – Search for Extra Terrestrials

April 5th: Jack Berninger – Comets, Asteroids and Extinctions

The sky this month:

Venus dominates the evening sky after sunset, but Jupiter is slowly moving westward to meet it. Mars is getting brighter in the back part of Leo and approaches opposition on March 3rd. Saturn is very nicely placed near Spica rising later in the night. Moon in February: Full moon on the 7th, Last Quarter on the 14th, and New on the 21st. This year we have a Leap Year 1st Quarter on the 29th.

Club Positions

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Upcoming Meetings

On Thursday February 2nd, Dr. Theo Koupelis from Edison College will speak on the findings from the 2010 Solar Dynamics Observer Satellite, particularly in view of the Earth's changing Magnetosphere. The title of his talk is *Unstable Solar Dynamics*. Jack Berninger will speak to the club on March 3rd (*Search for Extra Terrestrials*) and April 5th (*Comets, Asteroids, and Extinctions*).

Upcoming Events

CRP Star Party Schedule

February 18th, March 24th, April 21st, May 19th, June 23rd, July 21st, August 18th, September 15th, October 13th, November 10th, and December 15th. Please contact Bruce Dissette if you have any questions.

Public Events

February 17th, Cape Coral Rotary Park Public Star Party.

February 25th, Cape Coral Rotary Park, solar observing at the Burrowing Owl Festival

Club Sponsored Events

February 9th, Gulf Elementary School, Carol Stewart and Brian Risley are doing solar observing.

February 9th, Littleton Elementary in NFM, Brian Risley will attend their Science Night.

March 31st, Three Oaks Elementary Family Fun Day, San Carlos Park, solar observing.

Re-thinking an Alien World

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.

- Author: Dr. Tony Phillips | Production editor: Dr. Tony Phillips | Credit: Science@NASA

- http://science.nasa.gov/science-news/science-at-nasa/2012/13jan_rethink/

Where to Look for Eros

On January 31st, Eros reached its shortest distance to Earth. We have to wait another 44 years until the asteroid will come this close to our planet again, in January 2056. So, it's worth to have a look at this piece of rock measuring only 33 km. Although Eros is now so bright, it shows up even in a pair of small binoculars, it looks just like any other star, making it hard to recognize if you are not familiar with the patterns of the fixed stars. Even experienced star gazers may find this a challenge, as Eros is now in the inconspicuous constellation of Sextans. Here's a guide to find Eros.

First, you need to know where to look. The image below shows the heavens at midnight for an observer on the northern hemisphere looking towards the southeast.



Follow the direction of the two front stars of the Lion's body (η Leo and Regulus) towards the south. Sextans is then in between Mars and α Hya. If you located Sextans, the next step is to become familiar with the star pattern of the constellation. Looking through binoculars, see if you can match some stars from the detailed finder chart. Your star-hop to Eros could start at β Sex, a star of magnitude 5. From there, pan south to δ Sex, then moving towards the south-east in an arc to find the three stars forming a triangle (at the February 1 position of Eros on the chart). Now that you are looking at the star field where Eros should be, make sure to identify a star that isn't on the chart and is a little brighter than its surrounding stars. That's Eros! Keeping a close look at the asteroid, you should be able to notice its changing position after an hour or two. If you have never done something like this, finding Eros is a great exercise in star hopping. Once you become familiar with the star patterns on the path of Eros, they will lead you as trustful friends to this unique view, night after night! Getting Eros in your field of view will certainly be an experience you will cherish for a lifetime (at least until 2056!).

- <http://transitofvenus.nl/wp/2012/01/31/where-to-look-for-eros/>

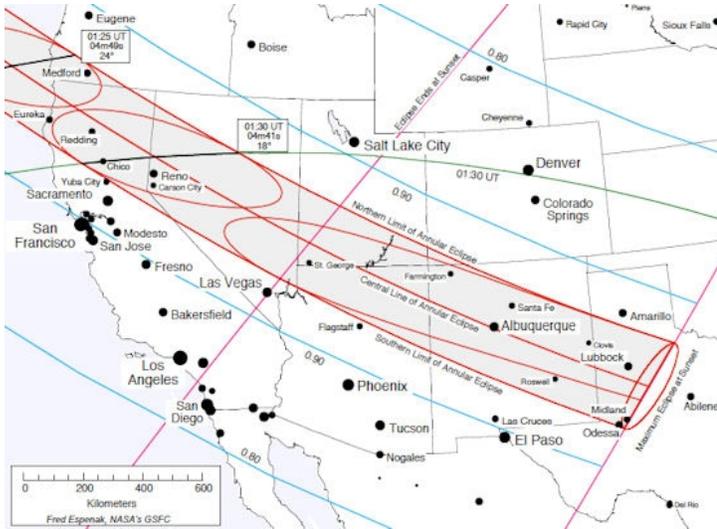
- Posted on January 31, 2012 by Steven van Roode

NASA Approaches a Girl

A humorous video from the Onion:

<http://www.youtube.com/watch?v=wE840i2uynw>

Annular Solar Eclipse on May 20th



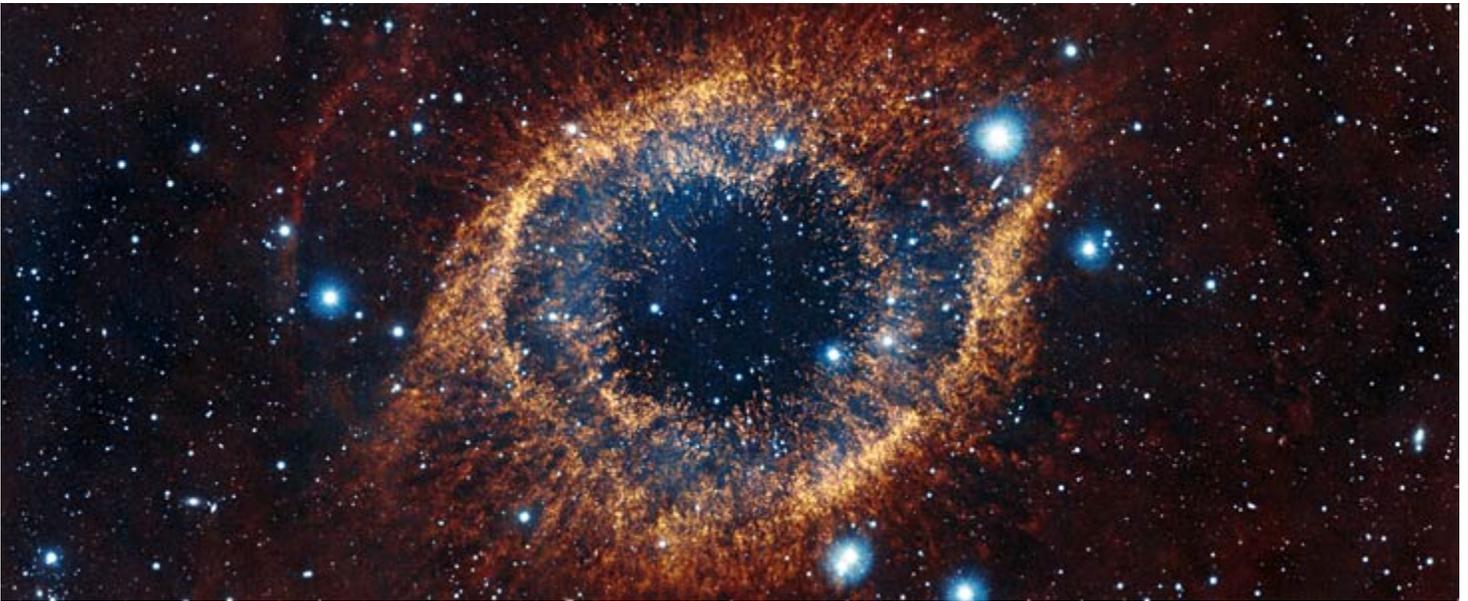
A "ring of fire" solar eclipse is coming to the USA this spring. It's the first annular eclipse visible from the contiguous United States in almost 18 years. This eclipse is NOT visible in Florida, but many people in the western US will get to see it.

- The full version of this story with accompanying images is at

http://science.nasa.gov/science-news/science-at-nasa/2012/27jan_annulareclipse/

A video version of this story is available at www.youtube.com/watch?v=7YX2blo1eRk

The Helix in New Colors



ESO's VISTA telescope at the Paranal Observatory in Chile has captured a striking new image of the Helix Nebula. This picture, taken in infrared light, reveals strands of cold nebular gas that are invisible in images taken in visible light, as well as bringing to light a rich background of stars and galaxies.

The Helix Nebula is one of the closest and most remarkable examples of a planetary nebula. It lies in the constellation of Aquarius, about 700 light-years away from Earth. This strange object formed when a star like the Sun was in the final stages of its life. Unable to hold onto its outer

layers, the star slowly shed shells of gas that became the nebula. It is evolving to become a white dwarf star and appears as the tiny blue dot seen at the center of the image.

The nebula itself is a complex object composed of dust, ionized material as well as molecular gas, arrayed in a beautiful and intricate flower-like pattern and glowing in the fierce glare of ultraviolet light from the central hot star.

The main ring of the Helix is about two light-years across, roughly half the distance between the Sun and the nearest star. However, material from the nebula spreads out from the star to at least four light-years. This is particularly clear in this infrared view since red molecular gas can be seen across much of the image.

While hard to see visually, the glow from the thinly spread gas is easily captured by VISTA's special detectors, which are very sensitive to infrared light. The 4.1-metre telescope is also able to detect an impressive array of background stars and galaxies.

The powerful vision of ESO's VISTA telescope also reveals fine structure in the nebula's rings. The infrared light picks out how the cooler, molecular gas is organized. The material clumps into filaments that radiate out from the center and the whole view resembles a celestial firework display.

Even though they look tiny, these strands of molecular hydrogen, known as cometary knots, are about the size of our Solar System. The molecules in them are able to survive the high-energy radiation that emanates from the dying star precisely because they clump into these knots, which in turn are shielded by dust and molecular gas. It is currently unclear how the cometary knots may have originated.

- The release, images and videos are available at <http://www.eso.org/public/news/eso1205/>



The Nerdiest Video Game Ever

By Dr. Tony Phillips

NASA has a job opening. Wanted: People of all ages to sort, stack, and catalogue terabytes of simulated data from a satellite that launches in 2015. Agile thumbs required. Sorting terabytes of data? It's more fun than it sounds.

In fact it's a game: Satellite Insight. The Space Place Team at the Jet Propulsion Laboratory created the entertaining app for iPhones to get the word out about GOES-R, an advanced Earth science satellite built by NOAA and NASA.

Described by the Los Angeles Times as possibly "the nerdiest game ever," Satellite Insight may be downloaded for free from Apple's app store. Be careful, though, once you start playing it's hard to stop. Some reviewers have likened it to Tetris, one of the most popular video games of all time.

GOES, short for "Geostationary Operational Environmental Satellite," is the workhorse spacecraft for weather forecasters. NOAA operates two (at a time) in geosynchronous orbit, one above the west coast of N. America and one above the east coast. They monitor clouds, wind, rain, hurricanes, tornadoes and even solar flares. The GOES program has been in action since 1975. GOES-R is the next-generation satellite with advanced technologies far beyond those of the older GOES satellites. It has sensors for lightning detection, wildfire mapping, storm tracking, search and rescue, solar imaging, and more. Many of the sensors are trailblazers. For example, the Advanced Baseline Imager has 60 times the capability of the current imager—16 channels

instead of 5. It has twice the spatial resolution and five times the temporal refresh rate, including the 30-second imaging of weather systems over a region of 1000 km x 1000 km. Also, the Geostationary Lightning Mapper can count and pinpoint lightning bolts over the Americas 24/7. It's the first such detector to fly on a geosynchronous satellite, and it could lead to transformative advances in severe storm warning capability.

All in all, GOES-R represents a "huge technological leap from the current GOES." We know this because Satellite Insight tells us so. The app has an informative "Learn More" feature where players can find out about the satellite and the data they have been sorting.

Which brings us back to sorting data. It's a bit like eating Cheerios; just don't tell the kids it's nutritious, and they love it. Helping GOES-R gather and stash data from all those advanced sensors is just as satisfying, too—a dose of Earth science wrapped in thumb-flying fun. More information about Satellite Insight may be found on the web at <http://itunes.apple.com/us/app/satellite-insight/id463588902?mt=8>. The game also available in web form (flying thumbs optional) at spaceplace.nasa.gov/satellite-insight.

Left: New iPhone game is first NOAA app and only the second NASA game app. Just as with the real GOES-R, the challenge with Satellite Insight is to keep up with the massive influx of weather and other environmental data.

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



Why is it easier to float on the ocean than on a lake? It's because salty water is denser than fresh water. Wherever ocean water and fresh water meet, the saltier water sinks. Saltiness, or salinity, has a profound effect on ocean currents, too. Of course, so does heat, since warm water is less dense than cold water. These two simple facts, so important to understanding Earth's climate, are demonstrated in a fun way with our new "Go with the Flow" game. Use your salt and heat "tools" to create currents that will carry you to the treasure. Flow . . . er, go to <http://spaceplace.nasa.gov/ocean-currents>.

Check out our great sites for kids:

<http://climate.nasa.gov/kids>

<http://scijinks.gov>

<http://spaceplace.nasa.gov>

- Distributed by Laura K. Lincoln, on behalf of the Space Place Team.



Hello Night Sky Network StarGazers,

We hope you're having a smashing start to 2012! We know many of you have held Board Elections so we'd like to congratulate new and incumbent members of club boards. The NSN

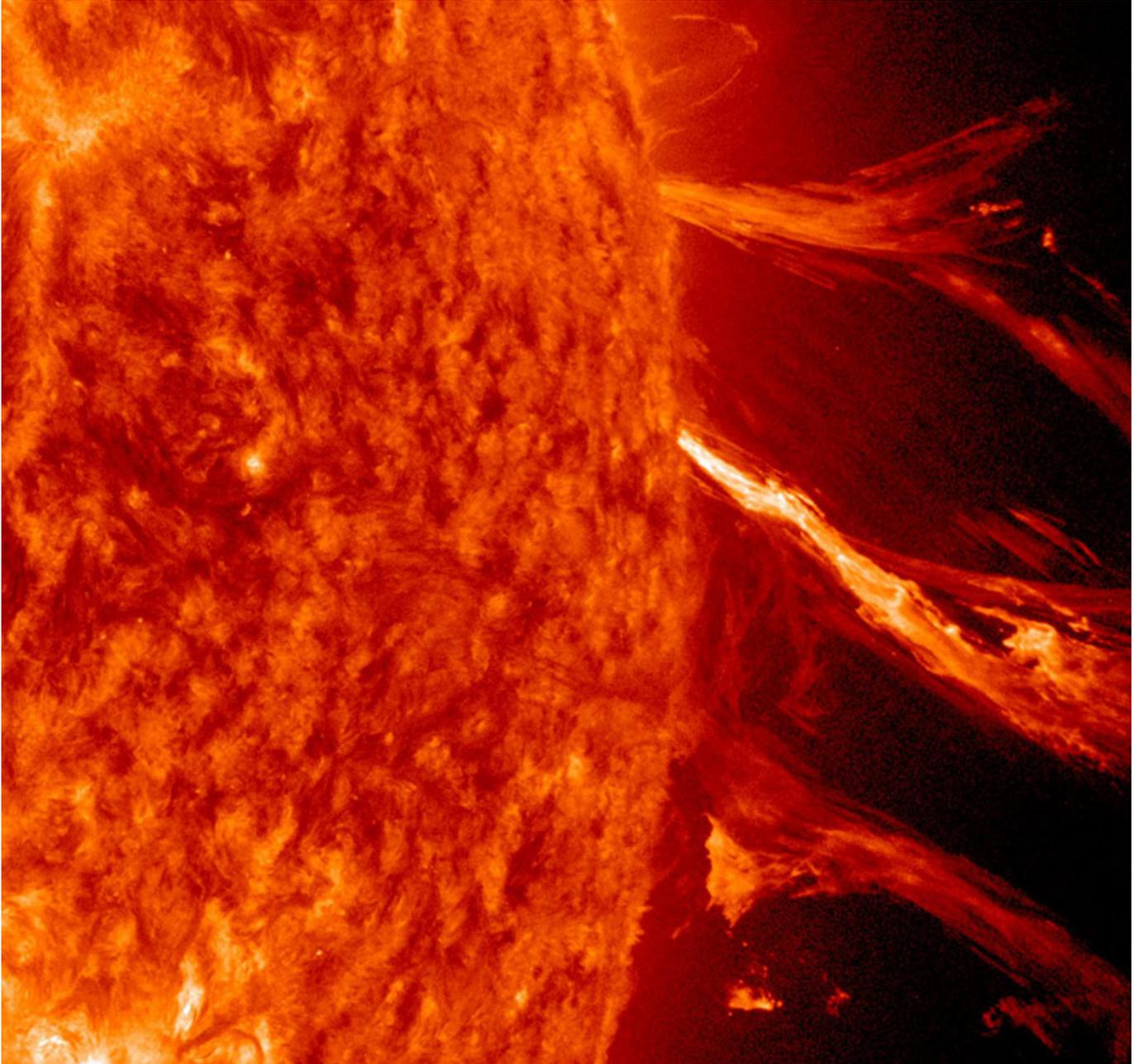


Team thanks all club members for your dedication to public outreach and keeping the love of astronomy going. You really make a difference to the astronomy community!

Make your 2012 outreach events a dazzling success! Entertain visitors with the new "Our Magnetic Sun" ToolKit coming in May. Publicity opportunities for Transit of Venus events include automatically listing your events on the NASA Sun Earth Day website. The new NSN website

changes will be released by the first of February and there's a new Universe in the Classroom issue focusing on 2012. Read on!

Our Magnetic Sun ToolKit - Coming in May



You'll love the activities in "Our Magnetic Sun" ToolKit, to be released in time for Transit of Venus solar observing events. The ToolKit will help support your solar outreach so that lines at the telescope are manageable and there will be plenty for people to do when they're not looking through the telescope. Make sure your club is eligible for the ToolKit by holding and logging at

least two events using NSN resources between now and the end of April.

Publicity on NASA Sun Earth Day

When you post your events on the NSN calendar, they show up on Go StarGaze, the iPhone app. For the June 5th Transit of Venus events, once you post your events on the NSN website, they'll automatically post to the NASA Sun Earth Day calendar, giving your club even more publicity. Just be sure you post all your public events on the NSN website, and you'll get loads of publicity!

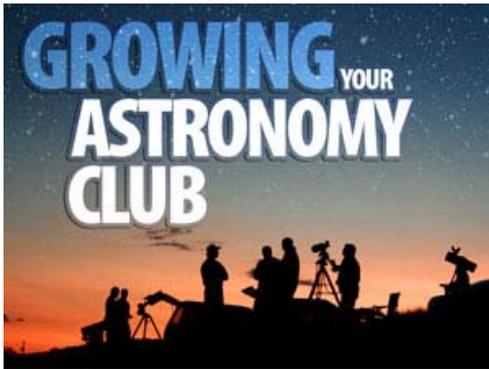
New Website Changes coming January 30th

You've been asking for website changes and we've been listening! We've made some great changes to make it easier to navigate the website, post your events, and download events into iCal-compatible calendars. It'll also be easy for the public to share events with friends on Facebook, Twitter, and other social media. Look for these changes when you log in after January 30th.

See what's coming by taking a video tour of the new NASA Night Sky Network Club Services. The Member Tour: Your role as an active club member is at

<http://www.astrosociety.org/samplers/TutorialMember.mov> .

If you're having trouble seeing the video using the link above, try watching them on YouTube. (<http://www.youtube.com/playlist?list=PL55D0B993EE824F84&feature=plcp>)



Harness the Excitement of Your New Board

Does your club have a new President or Board for 2012? Are they full of enthusiasm and ideas for improving the club? Share tips with them from our videos, Cultivating Volunteers and How to Keep 'Em Coming Back

(www.astrosociety.org/SharingTheUniverse/growing.html).

Based on extensive research, these short videos show what successful clubs are doing to attract and retain new members.

Universe in the Classroom focuses on 2012

Alice Enevoldsen, of the Pacific Science Center writes about 2012 in this issue of the ASP's Universe in the Classroom

(<http://astrosociety.org/education/publications/tnl/tnl.html>).

Enevoldsen writes, "Will we still be here a year from now? A long-standing prediction of the end of the world comes to its final reckoning in December of 2012. It's time to stock up on reality, logic, science, and rationality." In this edition of Universe in the Classroom, find out about some of the predictions for the end of the world this year, and read about how you can encourage your audience to explore and think scientifically. We think you'll find the resources listed at the end of the article especially helpful!



Wishing you clear skies and oodles of outreach,

- Marni Berendsen, Vivian White, and Jessica Santascoy, Night Sky Network

SWFAS Minutes

Meeting Date: January 5th, 2012

We met at FGCU last month. There was no business meeting, so there are no minutes.

Future Events

CALUSA NATURE CENTER PLNTRM	2-2-12	7:30 PM	MONTHLY MEETING (Speaker: Dr. Theo Koupelis)
GULF ELEMENTARY	2-9-12		SOLAR OBSERVING
LITTLETON ELEMENTARY, NFM	2-9-12		SCIENCE NIGHT
CAPE CORAL ROTARY PARK	2-17-12		PUBLIC STAR PARTY
CALOOSAHATCHEE REGIONAL PARK	2-18-12	DUSK	STAR PARTY
CAPE CORAL ROTARY PARK	2-25-12		BURROWING OWL FESTIVAL – SOL OBSERVING
CALUSA NATURE CENTER PLNTRM	3-3-12	7:30 PM	MONTHLY MEETING (Speaker: Jack Berninger)
CALOOSAHATCHEE REGIONAL PARK	3-24-12	DUSK	STAR PARTY
CALUSA NATURE CENTER PLNTRM	4-5-12	7:30 PM	MONTHLY MEETING (Speaker: Jack Berninger)
THREE OAKS ELEMENTARY, SAN CARLOS PARK	3-31-12		SOLAR OBSERVING
CALOOSAHATCHEE REGIONAL PARK	4-21-12	DUSK	STAR PARTY
CALOOSAHATCHEE REGIONAL PARK	5-19-12	DUSK	STAR PARTY

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