

Southwest Florida Astronomical Society

SWFAS



The Eyepiece March 2012

A MESSAGE FROM THE PRESIDENT

Weather strikes solar observing again! It looked like it was going to be bad for the Rotary Park star party, but it turned out good! We had about 200 people and the skies opened up quite a bit after 7pm. I do want to thank all those who came out to help.

At the Burrowing Owl Festival, we got a few hours in early with the sun blasting through thin clouds, but by noon, heavier clouds rolled in and we really had nothing the rest of the day. I do want to thank Dick Gala for coming out and I especially want to thank my wife our new member Tami Kittle who did great jobs with the handouts/posters.

Littleton Elementary Science Night turned out to be pretty good, with about 200 people overall. Carol Stewart and I had 11 3rd grade classes at Gulf Elementary on the 16th. One class did not get to see the sun due to heavy clouds. (Thanks to Ron Apple for the use of his PST at the solar events!)

Kelly Williamson with help from Tony Heiner had a good night for a change on the 24th at Hickey's Creek.

I would like to welcome our new Honorary Members: Carole Holmberg, Dr. Manny Mon, Mark Kelly, Dr. Theo Koupelis and Dr. Angela Meyer. Carole and Theo were presented with their awards at the February meeting. I had a chance to surprise Mark in front of one of his astronomy classes at Mariner and also was able to present Manny with his award down at FGCU. He is giving Angela hers, as I was unable to get them both together.

This month we have Jack Berninger speaking on *Search for Extra Terrestrials*. Jack is a naturalist from Cincinnati and a retired high school biology teacher. He has done presentations at various astronomical societies and other scientific groups as well as workshops at a variety of state and national science conventions.

As it is a new year, it is annual dues time again. Dues are \$20/year. I sent out 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 our meetings or events or send your payment in to SWFAS, P.O. Box 100127, Cape Coral, Florida 33910. If you have questions about your dues, contact me.

On March 31st, we will do solar/moon observing at Three Oaks Family Fun Day in San Carlos Park. We are providing them with one of the Galileoscope kits for a door or raffle prize.

I am planning to do another event with our church group out at the Riverside Retreat in Alva on March 10th both day and night. We also have been asked to come out to Sanibel to do a presentation where we can show off the CPC-800 that was donated by the Pecks. They would like to see some things through it. A date has not been set, but will probably be a week night.

Bob Francis has resigned as our ALCOR representative. If anyone is interested, this involves keeping up with the membership roster and reporting it electronically quarterly to the Astronomical League.

Club Positions

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Coordinator (ALCOR):

vacant

Newsletter Editor:

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Upcoming Meetings

Jack Berninger will speak to the club on March 1st. The title of his talk is *Search for Extra Terrestrials*. Mr. Berninger will also speak on April 5th about *Comets, Asteroids, and Extinctions*.

Upcoming Events

CRP Star Party Schedule

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.

Club Sponsored Events

March 10th, Riverside Retreat in Alva, day and evening.

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

Planets Gather in Evening Sky

There is a marvellous opportunity to observe and photograph a grouping of planets in the last week of February and early March. Mercury, Venus and Jupiter are all visible in the western sky shortly after 6pm, about 40 minutes after sunset.

Venus is the dominant planet by far, a blazing evening "star" shining at magnitude -4.2. This is an excellent evening apparition of Venus and it is over thirty degrees above the west-south-west horizon as the evening twilight starts to fade, setting a whopping four hours after the Sun.

Venus is still pulling clear of the Sun as it heads towards greatest eastern elongation in late March. Through a small telescope Venus exhibits a 65 percent illuminated disc spanning nearly eighteen arcseconds across.



Caption: A fantastic line-up of planets with the Moon is visible to naked eye observers in the western evening sky of 25 February. AN graphic by Greg Smye-Rumsby.

Jupiter is a fading evening object but is very conspicuous despite being two magnitudes fainter than Venus, glowing at magnitude -2.2. The gas giant lies about 15 degrees north of Venus but as Jupiter sinks into the western murk it draws closer to Venus; they are their closest in mid March. Jupiter has about a two-hour observing window before its altitude seriously impacts on its observation. A day after buzzing Venus

the crescent moon encounters Jupiter, lying about five degrees south of the planet.

If you have a flat western horizon or can find a suitable observing site then there is a great chance to see the start of Mercury's best evening apparition of the year for the northern hemisphere. On the evening of 24 February the innermost planet lies about five degrees above the horizon at the end of civil twilight (the Sun more than six degrees below the horizon) at 6.10pm. It climbs steadily away from the horizon so that it is a reasonable nine degrees up by the end of February. Through a small telescope it shows a shrinking phase illuminated by 66 percent by the end of the month. Its apparent diameter continues to grow slightly, reaching 6.4 arcseconds.

Uranus is on the scene too, lying in between Venus and Mercury but it's likely you will need binoculars or a small telescope to spot it as although at mag. +5.9 it is technically a naked eye object, its low altitude around sunset (14 degrees) will shave tenths of a magnitude off that value.

Remember, if you are sweeping for Mercury with binoculars or a telescope, even with your naked eye, then wait until the Sun has set. If you attempt to locate Mercury while the Sun is up and it accidentally enters your field of view then permanent damage to your eyesight is the likely outcome.

- by Mark Armstrong, Posted in Astronomy Now

- for full article, see <http://www.astronomynow.com/news/n1202/23planets/>

Mission to Land on a Comet

The Rosetta spacecraft is en route to intercept a comet— and to make history. In 2014, Rosetta will enter orbit around comet 67P/Churyumov-Gerasimenko and land a probe on it, two firsts. Rosetta's goal is to learn the primordial story a comet tells as it gloriously falls to pieces. Comets are primitive leftovers from our solar system's "construction" about 4.5 billion years ago. Because they spend much of their time in the deep freeze of the outer solar system, comets are well preserved—a gold mine for astronomers who want to know what conditions were like back "in the beginning."

As their elongated orbits swing them closer to the sun, comets transform into the most breathtaking bodies in the night sky. A European Space Agency mission launched in 2004 with U.S. instruments on board, Rosetta will have a front-row seat for the metamorphosis.

What we know of comets so far comes from a handful of flyby missions.

"In some ways, a flyby is just a tantalizing glimpse of a comet at one stage in its evolution," says Claudia Alexander, project scientist for the U.S. Rosetta Project. "Rosetta is different. It will orbit 67P for 17 months. We'll see this comet evolve right before our eyes as we accompany it toward the sun and back out again."

Fierce solar heat will have a profound effect on Rosetta's target. "We'll watch the comet start as just a little nugget in space and then become something poetic and beautiful, trailing a vast tail." At the moment, Rosetta is "resting up" for the challenges ahead. It's hibernating, engaged in its high-speed chase while fast asleep.

Reveille is on or around New Year's Day 2014, when the spacecraft begins a months-long program of self-checkups.

If all goes well, in August of the same year, Rosetta will enter orbit around 67P's nucleus and begin scanning its surface for a landing site. Once a site is chosen, the spacecraft will descend as low as 1 km to deploy the lander.

The lander's name is Philae after an island in the Nile, the site of an obelisk that helped decipher—you guessed it—the Rosetta Stone.

Touchdown is scheduled for November 2014, when Philae will make the first ever controlled landing on a comet's nucleus. Because a comet has little gravity, the lander will anchor itself with harpoons.

Once it is fastened, the lander will commence an unprecedented first-hand study of a comet's nucleus. Among other things, it will gather samples for examination by automatic onboard microscopes and take panoramic images of the comet's terrain from ground level.

Meanwhile, orbiting overhead, the Rosetta spacecraft will be busy, too. Onboard sensors will map the comet's surface and magnetic field, monitor the comet's erupting jets and geysers, measure outflow rates, and much more. Together, the orbiter and lander will build up the first 3D picture of the layers and pockets under the surface of a comet.

The results should tell quite a story indeed.

- Author: Dauna Coulter | Editor: Dr. Tony Phillips | Credit: Science@NASA

- http://science.nasa.gov/science-news/science-at-nasa/2012/02feb_rosetta/

Transit of Venus Info

This website automatically detects your location and depicts it on a map. It then calculates your local circumstances (such as interior and exterior contact times) for the 2012 transit of Venus. Your time zone and daylight saving time option are automatically selected. Or you can drag a marker to a different observing site on a map or search for an address and it will instantly update the data. Website also includes observing guidelines, weather prospects, a calculator to compute the solar parallax using the timings from two sites (e.g., yours and someone else's), details about historic transit of Venus expeditions, and more.

<http://transitofvenus.nl/wp/where-when/local-transit-times/>

Another means to project an image of the sun is to make your own device which fits in the eyepiece of your existing scope. Instructions for a Sun Funnel, for which parts cost less than \$25.00, are at http://cdn.transitofvenus.org/docs/Build_a_Sun_Funnel.pdf.

NASA Spinoff 2011 Unveiled

NASA's Spinoff 2011 publication, now available online, reveals how the space agency's ingenuity and partnerships have saved thousands of lives, generated billions of dollars, and created thousands of American jobs.

The latest edition of Spinoff records 44 journeys of NASA's most innovative technologies. It chronicles their origins in NASA missions and programs and their transfer to the public in the form of practical commercial products and benefits to society.

"This year's Spinoff demonstrates once again how through productive and innovative partnerships, NASA's aerospace research brings real returns to the American people in the form of tangible products, services and new jobs," NASA Administrator Charles Bolden said. "For 35 years, Spinoff has been the definitive resource for those who want to learn how space exploration benefits life on Earth."

In Spinoff 2011, readers can discover:

- A new firefighting system, influenced by a NASA-derived rocket design that extinguishes fires more quickly than traditional systems, saving lives and property.
- Software employing NASA-invented tools to help commercial airlines fly shorter routes and help save millions of gallons of fuel each year, reducing costs to airlines while benefiting the environment.
- A fitness monitoring technology developed with the help of NASA expertise that, when fitted in a strap or shirt, can be used to measure and record vital signs. The technology is now in use to monitor the health of professional athletes and members of the armed services.
- An emergency response software tool that can capture, analyze and combine data into maps, charts and other information essential to disaster managers responding to events such as wildfires, floods or Earthquakes. This technology can save millions of dollars in losses from disasters and, more importantly, can help save lives when tragedy strikes.

This year's Spinoff includes a special section to celebrate the commercial technologies that resulted from NASA's 30-year Space Shuttle Program. Also featured are spinoffs that have come from the construction of the International Space Station and work aboard the orbiting outpost. An additional section discusses the potential benefits of NASA's future technology investments.

Spinoff 2011 includes features about NASA's aeronautics and space research; award-winning technologies; diverse partnerships; and support for science, technology, engineering, and math education. The publication also provides reference and resource information about NASA. Spinoff 2011 is available online at: <http://spinoff.nasa.gov>

To access an interactive feature about how NASA impacts your daily life, visit the NASA Home and City website at: <http://www.nasa.gov/city>

A New Take On The Powers of Ten

This new animation is an interactive display of the powers of ten. Click on an object to learn more about it and zoom in and out to understand more about the scale of the universe. Here is the link directly to the website where the 14 year old twin boys created it:

<http://htwins.net/scale2/>

VLT Reveals Detailed Infrared Image of the Carina Nebula

ESO's Very Large Telescope has delivered the most detailed infrared image of the Carina Nebula stellar nursery taken so far. Many previously hidden features, scattered across a spectacular celestial landscape of gas, dust and young stars, have emerged.



Deep in the heart of the southern Milky Way lies a stellar nursery called the Carina Nebula. It is about 7500 light-years from Earth in the constellation of Carina (The Keel). This cloud of glowing gas and dust is one of the closest incubators of very massive stars to the Earth and includes several of the brightest and heaviest stars known. One of them, the mysterious and highly unstable star Eta Carinae, was the second brightest star in the entire night sky for several years in the 1840s and is likely to explode as a supernova in the near future, by astronomical standards. The Carina Nebula is a perfect laboratory for astronomers studying the violent births and early lives of stars.

Although this nebula is spectacular in normal visible-light pictures, many of its secrets are hidden behind thick clouds of dust. To penetrate this veil a European team of astronomers has used the power of ESO's Very Large Telescope along with an infrared-sensitive camera called HAWK-I.

Hundreds of individual images have been combined to create this picture, which is the most detailed infrared mosaic of the nebula ever taken and one of the most dramatic images ever created by the VLT. It shows not just the brilliant massive stars, but hundreds of thousands of much fainter stars that were previously invisible.

The dazzling star Eta Carinae itself appears at the lower left of the new picture. It is surrounded by clouds of gas that are glowing under the onslaught of fierce ultraviolet radiation. Across the image there are also many compact blobs of dark material that remain opaque even in the infrared. These are the dusty cocoons in which new stars are forming.

Over the last few million years this region of the sky has formed large numbers of stars both individually and in clusters. The bright star cluster close to the center of the picture is called Trumpler 14. Although this object is seen well in visible light, many more fainter stars can be seen in this infrared view. And towards the left side of the image a small concentration of stars that appear yellow can be seen. This grouping was seen for the first time in this new data from the VLT: these stars cannot be seen in visible light at all. This is just one of many new objects revealed for the first time in this spectacular panorama.

- The release, images and videos are available at <http://www.eso.org/public/news/eso1208/>



The Hidden Power of Sea Salt, Revealed

By Dauna Coulter

Last year, when NASA launched the Aquarius/SAC-D satellite carrying the first sensor for measuring sea salt from space, scientists expected the measurements to have unparalleled sensitivity. Yet the fine details it's revealing about ocean

saltiness are surprising even the Aquarius team.

"We have just four months of data, but we're already seeing very rich detail in surface salinity patterns," says principal investigator Gary Lagerloef of Earth & Space Research in Seattle.

"We're finding that Aquarius can monitor even small scale changes such as specific river outflow and its influence on the ocean."

Using one of the most sensitive microwave radiometers ever built, Aquarius can sense as little as 0.2 parts salt to 1,000 parts water. That's about like a dash of salt in a gallon jug of water.

"You wouldn't even taste it," says Lagerloef. "Yet Aquarius can detect that amount from 408 miles above the Earth. And it's working even better than expected."

Salinity is critical because it changes the density of surface seawater, and density controls the ocean currents that move heat around our planet. A good example is the Gulf Stream, which carries heat to higher latitudes and moderates the climate.

"When variations in density divert ocean currents, weather patterns like temperature and rainfall are affected. In turn, precipitation and evaporation, and fresh water from river outflow and melt ice determine salinity. It's an intricately connected cycle."

The atmosphere is the ocean's partner. The freshwater exchange between the atmosphere and

the ocean dominates the global water cycle. Seventy-eight percent of global rainfall occurs over the ocean, and 85 percent of global evaporation is from the ocean. An accurate picture of the ocean's salinity will help scientists better understand the profound ocean/atmosphere coupling that determines climate variability.

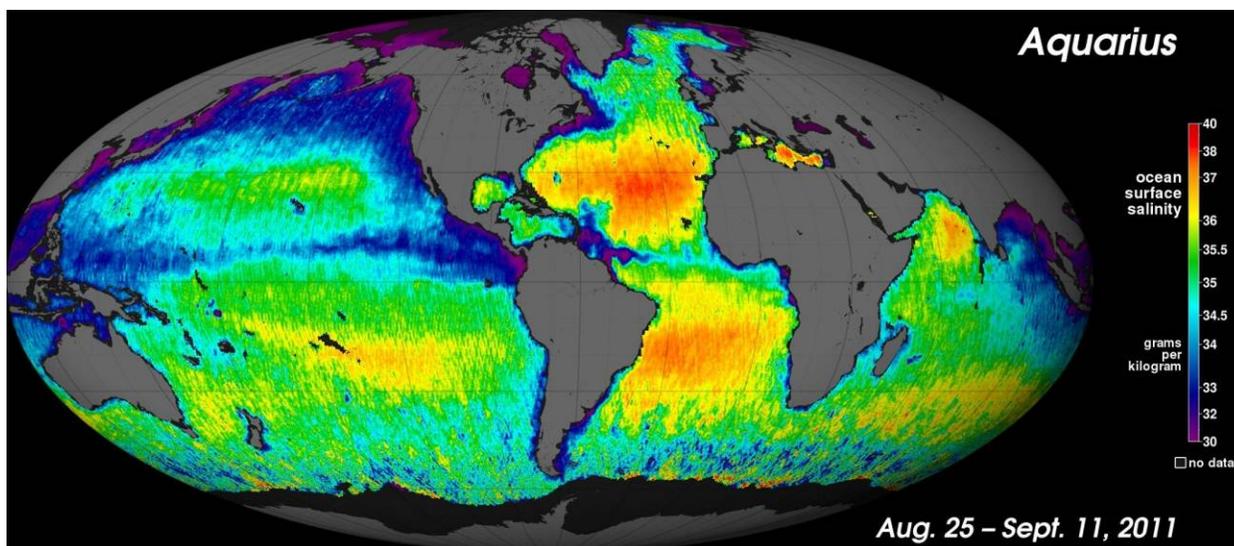
"Ocean salinity has been changing," says Lagerloef. "Decades of data from ships and buoys tell us so. Some ocean regions are seeing an increase in salinity, which means more fresh water is being lost through evaporation. Other areas are getting more rainfall and therefore lower salinity. We don't know why. We just know something fundamental is going on in the water cycle."

With Aquarius's comprehensive look at global salinity, scientists will have more clues to put it all together. Aquarius has collected as many sea surface salinity measurements in the first few months as the entire 125-year historical record from ships and buoys.

"By this time next year, we'll have met two of our goals: a new global map of annual average salinity and a better understanding of the seasonal cycles that determine climate."

Stay tuned for the salty results. Read more about the Aquarius mission at aquarius.nasa.gov.

Other NASA oceanography missions are Jason-1 (studying ocean surface topography), Jason-2 (follow-on to Jason-1), Jason-3 (follow-on to Jason-2, planned for launch in 2014), and Seawinds on the QuikSCAT satellite (measures wind speeds over the entire ocean). The GRACE mission (Gravity Recovery and Climate Experiment), among its other gravitational field studies, monitors fresh water supplies underground. All these missions, including Aquarius, are sponsors of a fun and educational ocean game for kids called "Go with the Flow" at spaceplace.nasa.gov/ocean-currents.



Caption: Aquarius produced this map of global ocean salinity. It is a composite of the first two and a half weeks of data. Yellow and red represent areas of higher salinity, with blues and purples indicating areas of lower salinity.

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

What's it like to walk in the shoes of a meteorologist? They're not all on TV, you know! Read a first-person account of a most passionate one, Tim Schmit, on "Mission Chronicles," the Space Place blog written by scientists and engineers themselves.

See <http://spaceplace.nasa.gov/mission-chronicles/#schmit>.

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

Night Sky Network

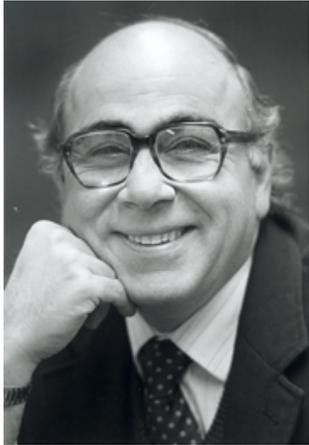
Astronomy Clubs bringing the wonders of the universe to the public



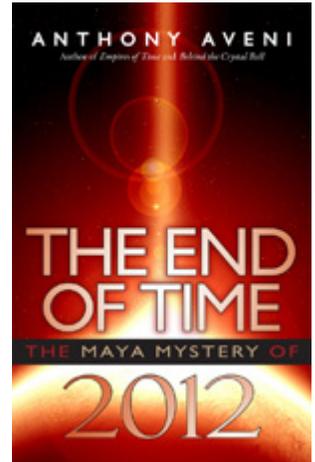
Hello Night Sky Network StarGazers,
We're excited to formally introduce the new Night Sky Network (NSN) website! Are you cheering? We hope so!

Maya 2012 Telecon!

Mark your calendar for Dr. Anthony F. Aveni on Thursday, March 22



Join the NSN members for a teleconference with one of the most prolific and loved science writers of our time, Dr. Anthony F. Aveni, as he gets us ready to face the 2012 craze with facts and humor. We are pleased to welcome the astronomer and anthropologist that Rolling Stone magazine named one of the 10 best professors in the country. He will talk about the phenomenon of the 2012 prophecies, theories, and predictions that this date marks the end of the world, or at least the end of the world as we know it. Here's your chance to bone up on



the history and science behind the mayhem to help you prep for questions from the public.

Dr. Aveni is widely known for his 16 very popular books, numerous TV appearances, and legendary classes. He is considered one of the founders of cultural astronomy and is an expert in the astronomical history of the Aztec and Maya Indians of ancient Mexico. His latest book is titled *The End of Time: The Maya Mystery of 2012*. He is Russell B. Colgate Distinguished University Professor of Astronomy, Anthropology, and Native American Studies at Colgate University, where he has taught since 1963.

You won't want to miss this Telecon! Visit http://nightsky.jpl.nasa.gov/club/download-view.cfm?Doc_ID=488 for more information about the telecon. (Members will need to log into the NSN first)

Facebook & Twitter - the NSN online stargazing community



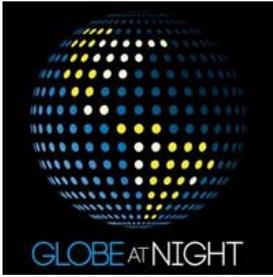
We love hearing from you on the NASA Night Sky Network Facebook page, so please keep on posting your photos and commenting. It's wonderful when you answer questions from the public, so thanks for contributing. If you have a Twitter account, and you have an extraordinary photo, especially an astrophoto, Tweet NSN and we'll retweet it. We're @nightskynetwork.

We're happy you're helping us make the NSN online stargazing community as vibrant as possible. If you haven't joined in, take the plunge!

Do you have questions about Facebook or Twitter? We're here to help! Send your questions to Jessica Santascy, jsantascy@astrosociety.org

Join the Fight for Starlight with GLOBE at Night

Many clubs participate in the Globe at Night program (www.globeatnight.org), an annual



campaign that helps to address the light pollution issue locally and globally. People all over the world record the brightness of the night sky, and a map of light-pollution levels will be released using your data. In 2012 there are three remaining opportunities to participate. February 12-21, March 13-22, and April 11-20
Join the fight for starlight!

NASA's Year of the Solar System (YSS) - Lots of Goodies for Outreach

Check out the YSS website to find fun activities and resources for outreach. February's topic for is Far-Ranging Robots. You will find information about night-sky viewing events, mission milestones, recommended resources, and downloadable materials all connected to this month's theme. The Egg Drop Lander Activity (<http://solarsystem.nasa.gov/yss/display.cfm?Year=2012&Month=2&Tab=Classrooms>) is fun for all ages. "How William Shatner Changed the World," (<http://solarsystem.nasa.gov/yss/display.cfm?Year=2012&Month=2&Tab=Educational%20Resources>) a video about creating in real life what was seen on Star Trek, could work as a conversation starter for older kids and adults.



Should Pluto have a U.S. Stamp dedicated to it in 2015?



Concept art by Dan Durda

Scientists working with the New Horizons mission, scheduled to arrive at Pluto in 2015, are mounting a public campaign to have a U.S. postage stamp in honor of the much maligned dwarf planet. You can beef up your knowledge on Pluto with the resources below and encourage people to sign the petition!

Read more about the campaign, sign the petition, and express your opinion at

[http://www.change.org/petitions/usps-honor-new-horizons-and-the-exploration-of-pluto-with-a-usps-](http://www.change.org/petitions/usps-honor-new-horizons-and-the-exploration-of-pluto-with-a-usps-stamp#USA%20#NASA)

[stamp#USA%20#NASA](http://www.change.org/petitions/usps-honor-new-horizons-and-the-exploration-of-pluto-with-a-usps-stamp#USA%20#NASA)

For more on the discovery of Pluto in Clyde Tombaugh's own words read in The Discovery of Pluto: Generally Unknown Aspects of the Story at the Astronomical Society of the Pacific website (<http://www.astrosociety.org/pluto/ab2009-23.pdf>).

Visit <http://www.pbs.org/seeinginthedark/astronomy-topics/planets-and-pluto.html> for a brief summary of what happened to Pluto's status in 2006. (The only thing that needs to be changed in that summary is that recently astronomers have found that Eris is about the SAME size as Pluto, not larger).

Wishing you clear skies and oodles of outreach,

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

SWFAS Minutes

Meeting Date: February 2nd, 2012

Minutes were unavailable at press time. They will be distributed in a future newsletter.

Future Events

CALUSA NATURE CENTER PLNTRM	3-1-12	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
ANNULAR SOLAR ECLIPSE	5-20-12		VISIBLE FROM WESTERN US, NOT FROM SW FLORIDA

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