

Up To Date

NASA IV&V Program
Educator Resource Center Newsletter

November 2010

Star Party



Learning to adjust the Firstscope

Clear skies, a brilliant crescent moon, and the Milky Way stretching across the heavens provided a perfect backdrop for a Star Party organized by gifted teacher, Stacy Jennings on November 10, 2010.

Hosted by Wesley and Barb Menear at their home outside Reedsville, WV, the dark skies of the beautiful country setting allowed students, parents, teachers, and guests to



Some Star Party students gather for a group photo

view craters, valleys, and maria on the moon as well as four of Jupiter's moons and bands of clouds in the Jovian atmosphere.

The viewers learned to use several types of telescopes including the ERC's ten Firstscopes, the computerized Celestron NexStar 4SE and a computerized Meade Reflector belonging to the Menears with the help of Pam Casto, Educa-



Looking at craters on the crescent moon

tion Specialist at the Educator Resource Center, and Wes Menear the host.

Hot cocoa and snacks helped keep up the energy level of those present as they gazed upward.

Exclamations of "Wow!" and "Come, Look at this!" could be heard from the students as they became adept at locating objects in the night sky.

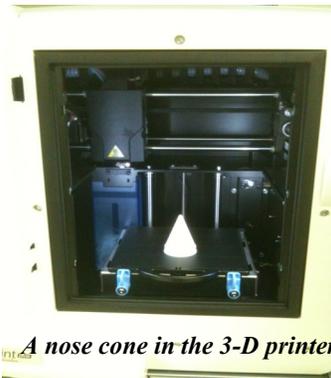
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The next telescope training workshop will be at the ERC on February 12, 2011. To sign up visit the ERC website: <http://erc.ivv.nasa.gov>

3-D Printer Now Operational

The ERC's 3-D printer is now available for use by trained educators. Using software such as Pro/Engineer, Inventor, or Solid Works, users can design objects on the ERC lab computers and their school computers and send the files to the 3-D printer where they are created as three dimensional plastic objects. These objects then are placed in a clean station where support material necessary for building the object is dissolved away.



A nose cone in the 3-D printer

What effect does the shape of a nose cone have on the flight of a model rocket? How about the size and shape of the fins?

What about wing and fin design on airplanes to make a more efficient flying machine? These and much more will be explored in future 3-D workshops at the ERC.

Applications of 3-D printing in the workplace include design visualization, prototyping/CAD, metal casting, architecture, education, geospatial, healthcare and entertainment. Other applications would include reconstructing fossils in paleontology,



The nose cone emerges from the clean station

recreating irreplaceable artifacts in archaeology, reconstructing bones and body parts in forensic pathology and reconstructing heavily damaged evidence acquired from crime scene investigations.

Liberty High School Career Day

On November 9, 2010, Liberty High School in Clarksburg, WV held their annual career day. Students heard from presenters of local area industries about career options. Attending this event on behalf of NASA IV&V were Jess White, STEM Initiative Lead, and Eric Sylvania, IV&V Project Manager. Jess provided an overview of NASA and NASA IV&V efforts and careers. Eric provided a very unique call for students to follow their passions as they look forward to careers. Eric's presentation was very inspirational and motivating as his presentation focused more on identifying your passion and following that interest as you prepare for a career. The students also received an overview and application for the NASA IV&V

Engineering Apprenticeship Program (NEAP).

Laura Capozzi, Science Teacher and Career Day Organizer, said, "As always, your presentation was informative and helpful. Many of our students commented that they did not know about NASA before your talk. I know you sparked some interest."



Jess White speaks at Liberty High School

Upcoming ERC Workshops

- November 23 Fly by Math**.....
.....5:00-7:00 pm
- December 2 Making the Invisible Detectable**.....5:00-7:00 pm
- December 4 Real World Design Challenge Training**
.....10:00 am-2:00 pm
- December 14 Plants in Space: Hydroponics**.....4:00-8:00 pm
- January 17 Intro. To Model Rocketry**10:00 am-4:00 pm
- February 9 NASA Engineering Design Challenges and West Point Bridge Competition**.....
.....10:00 am-4:00 pm
- February 12 Afterschool Universe /Telescopes**..1:00-7:00 pm

Musleman High School Hosts GLOBE Surface Temperature Training

Science, special education, and home school educators met at Musleman High School in Berkley County for an all-day GLOBE training on GPS, Clouds, Surface Temperature Protocols, and analyzing student data using My World GIS. The training was organized by teacher Deb Stevens who has initiated previous collaborations between the science and special education departments to collect GLOBE atmosphere data.

After experiencing first hand how to create and find waypoints using GPS, Dr. Kevin Czajkowski, the PI for the GLOBE Surface Temperature Protocol joined the group via Skype and explained his research in the Urban Heat Island Effect and encouraged the group to participate in the upcoming field campaign (Nov. 29 - Dec. 22, 2010). Dr. C. also recommended that students should analyze surface temperature data using geo-spatial tools (GPS/GIS/remote sensing)

and submit a virtual poster presentation on his website: <http://satellitesk12.org>.

Thanks to the ERC's Equipment Loan Program, the group was able to borrow a class set of GPS units and Infrared Thermometers so they could start collecting data immediately. The class wrapped up with hands-on activity located on the Earth Exploration Toolbook website (http://serc.carleton.edu/eet/cities_warm/index.html) where student data is downloaded from the GLOBE website and sites inside cities and outside cities are compared to demonstrate the Urban Heat Island Effect.

For more information about the GLOBE Program Surface Temperature Field Campaign, go to <http://globe.gov/news/articles/the-surface-temperature-field-campaign>



Educators make cloud percent cover observations during their Surface Temperature workshop.

Year of the Solar System: Birth of Worlds

November starts a new topic for NASA's Year of the Solar System (YSS) – Birth of Worlds!

NASA's Year of the Solar System missions will shed new light on the solar system family's birth story, as planetary data and scientific computer models change our views of how our solar system formed. On November 4, the EPOXI mission will fly past comet Hartley 2 to gather snapshots of our distant past; comets are the "storytellers" from the early solar system, preserving the very stuff from which the solar system family was born! Join NASA in celebrating this month - explore how our solar system's formation resulted in planets orbiting the Sun and experience activities about the components of our solar system.

Visit the **YSS website** to find activities for classroom and informal learning environments, night-sky viewing events and mission milestones, recommended resources, downloadable materials, and more! Coming soon: ways to register your YSS events and to share your experiences.

<http://solarsystem.nasa.gov/yss/>

A "Tweetable" announcement in **140 characters or less**: Get Involved in NASA YSS! Nov. Topic: Birth of Worlds: Solar System Formation.

Link to YSS from Your Website

We invite you to be a YSS partner during the Year of the Solar System. Post the YSS graphic element on your website and link to the YSS page. You can find YSS graphics at <http://tinyurl.com/yss-downloads>

Throw a Night-Sky Viewing Party

November offers great viewing of Jupiter.

<http://tinyurl.com/yss-starparty>

Get Involved

Build your own scale model of the solar system – and share it at the Year of the Solar System website!. Museums, libraries, science centers, schools, planetariums, and others are invited to create scale models of the Solar System and share their events a experiences through the Year of the Solar

System website. For more information, visit:

<http://tinyurl.com/yss-featured>

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YEAR OF THE
SOLAR SYSTEM

The Winter Sky—December adapted from www.astronomytoday.com

December features two meteor showers, the **Geminid meteors** and the **Ursids meteors**. The Ursids provide a quieter show, with about 9 expected per hour at peak, **December 22**. The Geminids are more active with up to 80 meteors an hour at peak, overnight **December 13** into **December 14**. The Geminids seem to emanate from the constellation Gemini the Twins, which rises above the eastern horizon a couple hours after Sunset. All the other known meteor showers were believed to have been produced by debris left behind by comets, but the asteroid 3200 Phaethon is probably the parent of the Geminid meteor shower.

A **Total Lunar Eclipse** will darken the Moon on **December 20 and 21**. The entire event will be visible from North America. The limb of the Moon begins to fall into the dark shadow of Earth at

1:32 a.m. EST December 21. The total stage, when the Moon is completely within Earth's shadow, lasts for approximately 73 minutes, from 2:40 a.m. to 3:53 a.m. EST. During totality, the Moon can take on strange shades, from orange to red to violet, depending on the particulates in the atmosphere at different locations. The event is over by 5:02 a.m. EST.

Uranus has been floating near Jupiter all through **October, November, and December**, and during this time period the two planets reach their closest on the last day of the year, **December 31**, when they lie just a little more than half a degree apart. Even though Uranus is relatively bright, at magnitude 5.8, it is very tricky to know which point of light is the planet and which is just another star. Its proximity to Jupiter over the end of 2010 will help observers finally nab it.

While Uranus is quite close to Jupiter on **December 31**, it is not the point of light closest to Jupiter. It's best to use a telescope to find Uranus. First aim it at Jupiter, the bright point of light in the west by the end of December. Through the telescope, you will easily see the disk of Jupiter and its Moons. The closest point of light to Jupiter is actually a star of nearly the same brightness as Uranus by the name of 20 Piscium. This star is just to the lower right of Jupiter on **December 31**. Uranus can be found farther above Jupiter and a little to the right. Remember that through a telescope, the view will be inverted, which means Uranus will actually be found below Jupiter as you star-hop through the eyepiece. Keep tracking these two planets into the New Year, when on **January 5** they are half a degree apart and side by side.

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ERC Website: <http://erc.ivv.nasa.gov>

Links to Student Competitions

First Lego League Robotics:

<http://www.firstlegoleague.org/>

Real World Design Challenge:

<http://www.realworlddesignchallenge.org/>

Team America Rocketry Challenge:

<http://rocketcontest.org/>

Green Aviation Contests:

<http://aero.larc.nasa.gov/competitions.htm>

The NASA Independent Verification and Validation Program Educator Resource Center's goal is to serve teachers, informal educators, and pre-service teachers to enable them to reach their goals. Through a grant with Fairmont State University, the NASA IV&V Program ERC provides materials, equipment for loan, and professional development workshops for informal and formal educators both at the facility and around the state of West Virginia that reflect NASA's current research and technology.



Quote of the Month:

An investment in knowledge always pays the best interest. - Benjamin Franklin

Where in WV is the ERC?

November Workshops in Red

November Equipment Loans in Blue

To schedule a workshop:

Contact the ERC by calling 304-367-8436 or emailing:

pamela.casto@ivv.nasa.gov

To schedule equipment for loan:

First check the equipment loan calendar on the ERC website to see if the equipment is available for the dates desired. Then email Amy Phillips who will schedule the dates.

amy.phillips@ivv.nasa.gov

Calling Amy Friend at 304-367-8251 is also an option for scheduling.

