Up To Date

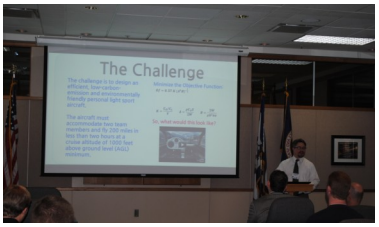
NASA IV&V Program
Educator Resource Center Newsletter

February 2012

Inside this issue:

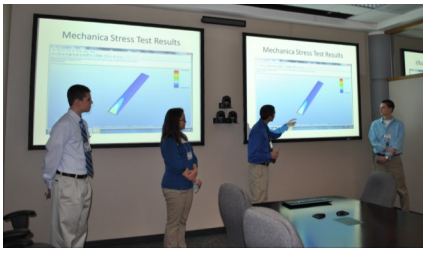
RWDC State Competition

The Aether Aeronauts from Cabell Midland High School have won this year's WV Real World Design Challenge. They competed with other high school students from across the state in designing a next-generation personal sport aircraft using real professional tools.



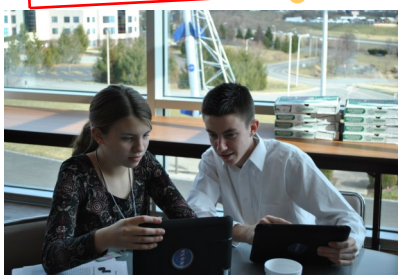
"This year's State Challenge was particularly difficult. Winning the State Challenge distinguishes these students as being among the Nation's best and brightest" said Aleksander Marthinussen of the MidAtlantic Aerospace Complex who helped sponsor and run the WV competition. The team is invited to compete in the National Challenge and will receive an all-expenses-paid trip to Washington, DC in April where they will compete for the top national honor. "I believe our team has a very strong shot at placing in the top three in the nation and presenting their research in the IMAX Theatre of the Smithsonian Air and Space Museum this April," said coach Jenny Nash of Marshall University.

The Real World Design Challenge is an annual high school competition run by a public-private partnership with the goal of sustainably increasing the Science, Technology, Engineering, and Mathematics (STEM) workforce. The partners are focused on working within the context of the American educational system to transform STEM education in the United States by providing professional science and engineering and learning resources to students and teachers.



The Real World Design Challenge partners bring a broad base of resources and expertise from business, government, and academia. Throughout the pilot year, the partners have specifically focused on securing resources with high scaling costs. In fact, the 2009 competition brought more than a quarter-billion dollars in resources to schools, and the 2010 competition brought schools nearly a half billion dollars in resources. The Challenge is *free* to teachers and students. *Each teacher gets $1 million in professional engineering software and teams get access to professional mentors.*

"The Real World Design Challenge bridges the needs of the industry with the future of education. It teaches innovation, creativity, collaboration and other 21st Century skills using the expertise that industry, government and higher education have been perfecting for decades. With this real world approach to learning, we can keep our workforce strong and ensure America's prosperity for the future. These students will be the future innovators that will help keep America the world leader." Dr. Ralph K. Coppola, Director of the Real World Design Challenge & Director of Government & Strategic Education Programs for Programs at PTC.



For more information contact:

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ensign@ivv.nasa.gov

Or go to the RWDC website to learn more

www.realworlddesignchallenge.org

Photo Credits: ERC Staff
Top left: Todd Ensign introduces the challenge
Bottom left: Lt. Colonel Jeremy Anfinson USAF was guest speaker
Top center: Aether Aeronauts
Center: Polar Designs present their design and test results
Top right: Try-Umph team members
Bottom right: Student participants "land the Space Shuttle" on the ERC's iPad2's.

Upcoming Workshops and Events

Mar. 3 Life on Earth and Elsewhere? Webinar .....10:30 AM-12:30 PM

Mar. 6 Student Planetary Geology (filled)

Mar. 7 Lunar/Meteorite Certification.....5 PM—8 PM

Mar. 10 Robots and Ratios .....10 AM—4 PM

March 20 Student Rocketry (filled)

Mar. 21 Sun-Earth Day Celebration.....time TBA

Mar. 24 Robotics Explorations Webinar....10-11:30 AM

Mar. 24 Robotics Explorations and WeDo Workshop .....1 PM—5 PM

Apr. 10 Student Electromagnetic Spectrum (filled)

Apr. 11 Intro. to GPS.....5 PM-8 PM

Apr. 17 Basic Rocketry.....4 PM-7 PM

Apr. 21 Hydrogen and Solar Energy.....10 AM-4 PM

Apr. 21 Bring Hubble Space Telescope Discoveries to Your Classroom Webinar .....11:00 AM-12:30 PM

Apr. 24 Student Rocketry Workshop (filled)

May 5 Afterschool Universe.....10 AM–4 PM

May 19 Globe, Probe, and GIS .....10 AM-4 PM

Space Weather

WVU Dept. of Physics research assistant professor, Dr. Amy Keesee, presented information on the structure of the sun, the mechanics of how the sun produces energy, and how that energy produces space weather during February's Space Weather workshop. At WVU's Women in Science and Engineering website Dr. Keesee explains that her research spans a wide range of disciplines, and is based on the fact that the Sun sends out a continuous stream of particles called the solar wind. The interaction of the solar wind with Earth's magnetic field creates an envelope called the magnetic field. Depending on conditions of the sun and solar wind, the solar wind can deposit energetic particles into the magnetosphere causing a geomagnetic storm characterized by heating and transport of particles in the magnetosphere. These energetic particles can disrupt satellites and even the power grid. Because our society relies heavily on these technologies for national security, navigation, and everyday life, it is important to understand and eventually be able to predict, how the magnetosphere reacts to these events. Educators learned how to combine information from Dr. Keesee with data and photos gathered using the ERC's solar instruments into an iMovie created on iPad2's. They were then certified to borrow the Space Weather kit containing all the equipment necessary to teach about space weather in their classrooms.

Dr. Amy Keesee instructs educators about Space Weather at the ERC

The Coronado Personal Solar telescope allows direct viewing of the sun and is used to study coronal mass ejections, solar flares, sunspots, and prominences. In this photo, an educator is using the scope during the February 4th Space Weather workshop.

At the White House! Edited press release

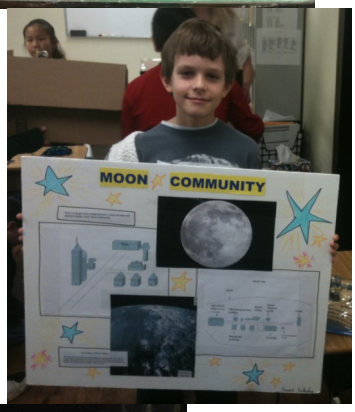
A GLOBE project conducted by teachers and students from Huntington High School who have been trained in GLOBE protocols was presented at the White House Science Fair. NASA IV&V, The GLOBE Program, and the state of West Virginia were proud to be represented at the fair by Ben Jones (16), Emily Waybright (16), and Derek Carson (17) who presented their authentic research into the relationship between surface temperature and cloud cover.

Rick Sharpe is a Huntington High School science teacher who has attended many evening and weekend seminars at the NASA Independent Verification & Validation (IV&V) Educator Resource Center (ERC) in Fairmont, West Virginia, as well as multiple week-long grant funded summer institutes on the GLOBE Program which the ERC co-taught with organizations including Fairmont State University, America View, West Virginia University, The JASON Project, Glenville State and others. According to Mr. Sharpe, "GLOBE protocols are a vital part of our earth science curriculum at HHS and they allow our students to engage in genuine science that is relevant to their lives. GLOBE allows us to engage students with a wide range of abilities because they are hands-on and cover many topics." One of Mr. Sharpe's areas of GLOBE certification is in the Surface Temperature Protocols which he uses annually with students *to* compete in the Surface Temperature Field Campaign and Science Fair competition hosted by GLOBE Scientist, Dr. Kevin Czajkowski, from the University of Toledo. http://satellitesk12.org

The NASA IV&V ERC is the GLOBE Partner for the state of West Virginia, and Program Manager Todd Ensign has trained over 500 WV educators, including Mr. Sharpe, in his role as the Partner Coordinator which he has held for 10 years. Additionally, Ensign serves on the GLOBE U.S. Partner Regional Ambassador Committee and is a Master Trainer who has conducted teacher workshops in several states and overseas including Costa Rica and Nigeria.

Moon Colonies in Monongalia County

North Elementary



Gifted Teacher

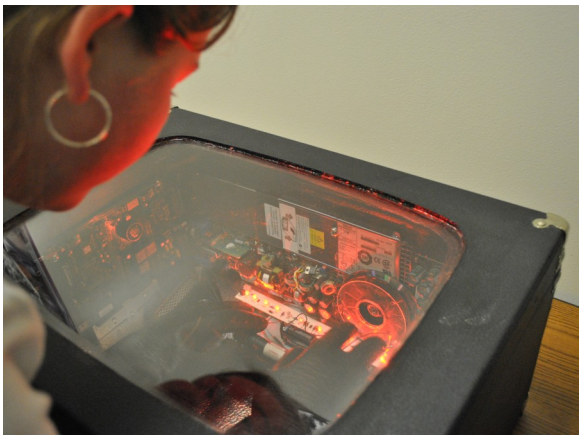
Students in the 5th grade gifted classes at North Elementary recently completed a unit about Earth's moon. After studying the requirements for life and what makes a sustainable community, and then studying the geography and geology of the moon, students created colonies that would allow humans to live, work, and play on our nearest neighbor in space. Students presented their projects to Jesse White, Todd Ensign, and Pam Casto of NASA IV&V. The bottom right colony is on display in the ERC.

Photo credits: Megan Sheely,

Living and Working in Space Features New Glovebox

Home School students and students from Mountain View Middle School were the first to try out the ERC's new Glovebox.

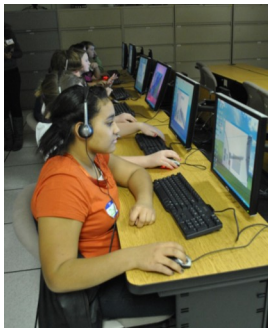
Built by Joe Irons and James Grippin, NASA IV&V technicians, the new box helps students understand what it is like to do certain types of experiments on the International Space Station. There are good reasons for doing an experiment in a Glovebox on orbit. The sealed Glovebox keeps flames, particles, fumes, and liquids away from crew members and out of the cabin air. Fumes or particles can irritate crew members skin and eyes or make the crew sick while spills could damage electrical work. Also, for some studies, it is important to protect experiment samples from the cabin air and crew.



Above: Students attempted a variety of tasks using a glovebox that mimicked working in space.

While visiting NASA IV&V, the students also connected with Johnson Space Center via the Distance Learning Network. Watching the astronauts train in the Neutral Buoyancy Lab (one of the largest indoor pools in the world) in real time was part of the DLN experience.

After completing several other activities, students ended their time in the ERC by training on the NASA game *Station Spacewalk* in which they attempted to complete missions similar to those actually done by astronauts.



Left: Students train to complete a Extra Vehicular Activity using the game Station Spacewalk

ERC Staff

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Nicole Culp….ERC Intern / Equipment Loan

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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:

Technology is nothing. What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful things with them.
Steve Jobs

Where in WV is the ERC?

February Workshops in Red

February 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 Nicole Culp who will schedule the dates.

nicole.culp@ivv.nasa.gov

Check us out on Facebook:

NASA IV&V Facility Educator Resource Center