

Up To Date

NASA's Independent Verification & Validation Program
Educator Resource Center Newsletter
Fairmont, West Virginia

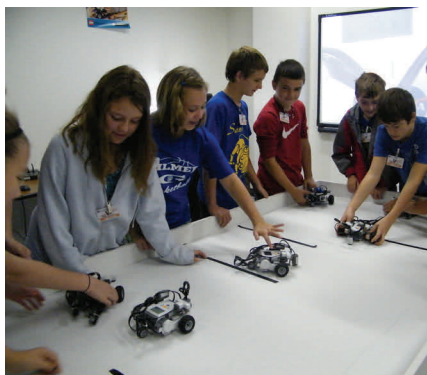
September-October 2012

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STEM Competitions

FLL: First Lego League has over 20,000 teams worldwide and is continuing to grow. Each year students ages 9-14 build and program a robot to complete unique tasks, develop a research presentation on a STEM topic, and they have FUN doing it. The national registration is closed for this season, but the WV state tournament registration is open until Nov. 7. If you are a FLL team and want to register for the WV tournament, you can log in with your coach ID at <https://gofll.usfirst.org> and find our 'event'. Once we receive your registration we will confirm you are a WV team and will accept your registration. Print out that email and mail your non-refundable check to Michele Poland at Fairmont State. Details are provided in the email confirmation.



Testing out programming skills necessary for FFL NXT competitions.

FLL Training: The NASA IV&V ERC offers dozens of workshops every year through our Robotics Explorations and WeDo Robots for elementary programs and our Robots and Ratios training (based on Lego NXT robots) aimed at middle school educators. We will travel to your school to conduct these workshops for 10-20 educators and certify you to borrow our \$15,000 kit of equipment. Besides learning about gear ratios and proportional mathematics, you will discover just how easy, fun, and educational programming a robot can be. These trainings are great preparation if you are considering starting a team or want to start a robotics program in your school.

TARC: The Team America Rocketry Challenge is open to the first 1,000 teams that submit a completed application, including payment, postmarked no later than **November 30, 2012**. Teams must be made up of a minimum of 3 and no more than 10 students who are currently enrolled in grades 7 through 12 in U.S. schools. The goal of the program is to build and fly (before March 25, 2013) a model rocket that carries a raw egg to 750 feet and back safely. Teams that score in the 100 best for the nation are invited to compete for a share of the \$60,000 prize package in a national fly-off in May. Register NOW at <http://www.rocketcontest.org> and let us know if you need any assistance in training, funding, or just have questions. The ERC holds annually sanctioned launch events where we will bring lunch, launchers, and NAR members to certify your flights.

TARC Training: The NASA IV&V ERC offers free educator trainings at your location for 10-20 teachers on the Basic Rocketry for elementary-middle grades where we cover Newton's laws and how to design soda straw rockets, soda bottle rockets, stop rockets, and many more. For middle-higher school grade educators we proved an Introduction to Model Rocketry where teachers will build and fly a rocket, learn the principles of rocket stability, design a better rocket using engineering and simulation software, and be certified to borrow our launch pad.



RWDC: Real World Design Aviation Challenge Every teacher that registers before **NOVEMBER 16** in the RWDC gets \$1 million in professional engineering software along with training, curriculum materials, and access to mentors. Teams of 3-7 high school students use these resources to literally design an aircraft. Not a paper plane or a balsa wood flyer. . . a real plane using the same 3D-CAD software NASA uses to design spacecraft. They will test their design in a virtual wind tunnel, and they will generate a report showing their final product. [Note: Once you register, the software is yours to use for a year. Even if your team doesn't win, all you have to do to get



Real World Design Challenge teams at state tournament at NASA IV&V.

the free software is register a HS team.] The students will use live and pre-recorded video trainings to learn the necessary design steps, will be mentored by engineers through a virtual workspace, and will submit their reports to NASA IV&V. You are invited to NASA in Fairmont where we will hold the Governor's Cup challenge which is when your team presents their findings to a panel of aerospace engineers. The top WV team is GUARANTEED to receive an all-expenses paid trip to the nation's capitol

To register visit
<http://RealWorldDesignChallenge.org>
and click on "Sign Up"

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STEM Competitions

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RWDC Training: The NASA IV&V ERC and the MidAtlantic Aerospace Corporation (MAAC) team up to provide free trainings on aerospace concepts, CAD design, rapid prototyping, and much more. To schedule a free training for your new RWDC Team at the NASA Facility, contact us at erc@ivv.nasa.gov

FIRST Tech Challenge: Once your students graduate from FLL, the next step might be to participate in FTC. Be aware, this is a serious commitment since registration and robot is almost \$1,000 but it is SO worth it. (You re-use the robot each subsequent year and you get FREE access to the same PTC 3D-CAD software that is used in RWDC.) Also, your students get to:

- Design, build, and program robots (based on NXT brick but using LabView or Robot C)

- Apply real-world math and science concepts

- Develop problem-solving, organizational, and team-building skills

- Compete and cooperate in alliances and tournaments

- Earn a place in the World Championship

- Qualify for over \$11 million in college scholarships

- And these are all “Priceless”!

Peggy Vance at the Logan County Career and Technical Center holds an annual FTC tournament that NASA IV&V will be supporting every March in Chapmanville, WV.

To register, visit <http://www.usfirst.org/roboticsprograms/ftc> and click on “New to FTC”

First Tech Training: The NASA IV&V is in the process of developing a training program for FTC but to be honest this is new to us too! If you are interested in training, let us know so we can reach a critical mass and host an event soon. If you know a good trainer, let us know that too.



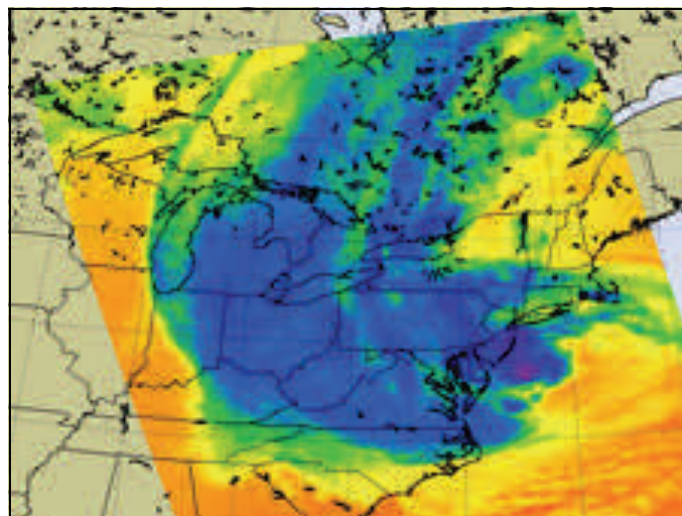
“Sandy” Photos from Space

TERRA Satellite Photo in Visible Light Wavelengths



The Moderate Resolution Imaging Spectroradiometer (MODIS) on NASA's Terra satellite acquired this image of **Hurricane Sandy** off the southeastern United States Monday morning. (Public domain NASA image courtesy LANCE MODIS Rapid Response Team at NASA GSFC)

Aqua Satellite Photo in Infrared Wavelengths



NASA's Atmospheric Infrared Sounder (AIRS) instrument on NASA's Aqua spacecraft captured this infrared image of Hurricane Sandy, another weather front to the west and cold air coming down from Canada at 2:17 p.m. EDT Oct. 29. The hurricane center is the darkest purple area in the Atlantic just to the east of the New Jersey coast, reflecting Sandy's areas of heaviest rainfall. Image Credit: NASA/JPL-Caltech/

Cross Lanes Elementary Chooses Space Theme for 2012-2013 School Year

Studying Earth, then the local neighborhood of the Solar System and finally moving on to stars and galaxies and other wonders of the universe, the student “Eagles” at Cross Lanes Elementary have embarked on a journey of learning that incorporates science, technology, engineering, and math activities into the classroom on a planned regular basis.

Principal Vanessa Brown originated the idea and with the help of an enthusiastic faculty and parent volunteers has brought the idea to successful fruition. The ERC will be doing workshops at the school approximately once a month.

Teachers are attending one or more NASA workshops as part of their in-service days. August, September, and October the teachers became certified to borrow the Planetary Geology Kit, Echo the Bat Kit, NASA, Remote Sensing, and Carnegie Dinosaurs Kit, Basic Rocketry Kit, and the Johnson Space Center Lunar and Meteorite Sample Disks. In the coming months they will be certified on Kindernauts, STARLAB, Viewing the Universe with Telescopes, After-school Universe, Living and Working in Space, and Robotic Explorations. The certifications are for life and allow them to borrow these NASA Equipment Loan Kits to use with WV students, both in the classroom and in informal settings such as STEM clubs, Scout clubs, 4-H clubs, etc...



Activities that correct student misconceptions about the Solar System were presented in a teacher workshop at Cross Lanes Elementary.

The faculty of CLES has come up with their own ideas to enrich the NASA offerings. These include a special “Science Reading Week” and a special place in the library

for STEM topic books—some from their own library and some on loan from NASA. They have also presented a play based on the Solar System entitled “The First Annual Planet Award” to parents and visitors at a monthly PTA meeting. An inflatable solar system showing the sun, the eight planets and the dwarf planet Pluto in the correct distance scale is planned to hang down the school’s longest hallway. Students have been very enthusiastic according to the classroom teachers.

Some ERC Equipment Loan Factoids

From January through September 2012 a total of 12,445 West Virginia student/ERC kit interactions occurred.

Harrison County had the most interactions with 4,795.

Monongalia County was second with 1,064.

In the southern portion of West Virginia, Kanawha County educators checked out the greatest number of ERC kits.

In order, the most popular kits checked out were: STARLAB, NXT Robotics, GPS, Kindernauts, WeDo Robotics, and Basic Rocketry.

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Upcoming Events:

Nov. 1-3 West Virginia Science Teachers Association Conference in Martinsburg

Nov. 7 Jr. FLL Recruitment Webinar 7:00 pm

Nov. 14 GLOBE Surface Temperature Workshop at ERC 4:30-7:30 pm

Nov. 17 MARS Scrimmage 8:00 –4:30 pm at White Hall WVU

Dec. 8 WV FLL Tournament at Falcon Center FSU

Dec. 11 Afterschool Universe Workshop 4:30-7:30 pm at ERC

Dec. 19 Robotics Explorations/WeDo's at 4:00-7:00 pm at ERC



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>

Quotes of the Month: *Rocketry*

Even though the release was pulled, the rocket did not rise at first, but the flame came out, and there was a steady roar. After a number of seconds it rose, slowly until it cleared the frame, and then at express-train speed, curving over to the left, and striking the ice and snow, still going at a rapid rate. It looked almost magical as it rose, without any appreciably greater noise or flame, as if it said, "I've been here long enough; I think I'll be going somewhere else, if you don't mind."

Robert Goddard, regarding the first liquid rocket flight using liquid propellants at Aunt Effie's farm, 17 March 1926

Man's mind and spirit grow with the space in which they are allowed to operate. *Krafft A. Ehricke, rocket pioneer.*

Where in WV is the ERC?

Sept.-Oct. Equipment Loan

Sept.-Oct. Workshops

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 web-site 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](#)

And Twitter: @NASAIVV_ERC

A good rule for rocket experimenters to follow is this: always assume that it will explode. *Astronautics, issue 38, October 1937*

