

Up To Date

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

November –December
2014

Inside this issue:

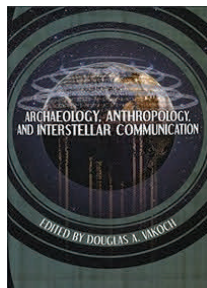
5 Classroom Tools	2
New Faces	2
Missions update	2
State FLL	3
Contact Information	4
Upcoming Events and Thank You	4

Archaeology, Anthropology, and Interstellar Communication

Archaeology, Anthropology, and Interstellar Communication, edited by Douglas A. Vakoch, was published this year and is available free from NASA as an ebook (<http://www.nasa.gov/ebooks>). It is also available as a hard copy (\$38) from various on-line sources. The introduction begins with that fateful day, April 8, 1960, in Green Bank, WV when Frank Drake, an astronomer at the National Radio Astronomy Observatory used the 85-foot radio telescope to search for signs of life beyond Earth. This compilation of chapters by various authors offers insight into the difficulty of communication across space and time. On Earth we experience frustration trying to interpret ancient writings and pictures on rocks. Some of these petroglyphs are less than a 1000 years old and yet have not been successfully deciphered. How then are we to interpret signals from space (assuming signals exist) that have taken light years to reach us?

This book examines the parallels that can be drawn from archaeologists who try to use bits of information obtained from artifacts to recreate what an ancient civili-

zation was like and anthropologists who study different cultures and their interaction with each other. The authors examine how we can incorporate these parallels to formulate our interactions with possible "alien" civilizations.



Name That Crater Contest

The MESSENGER Education and Public Outreach Team is holding a competition to name five impact craters on Mercury. The contest, open to all Earth citizens except for members of the mission's EPO team, runs from December 15, 2014, to January 15, 2015.

The spacecraft -- scheduled to impact Mercury in the spring -- has surpassed its originally planned primary orbital mission by three years. According to Project Manager Julie Edmonds, "This brave little craft, not much bigger than a Volkswagen Beetle, has traveled more than 8 billion miles since

2004 -- getting to the planet and in orbit. As scientists study the incredible data returned by MESSENGER, it becomes important to give names to surface features that are of special scientific interest."

According to the International Astronomical Union (IAU), the arbiter of planetary and satellite nomenclature since its inception in 1919, all new craters must be named after an artist, composer, or writer who was famous for more than 50 years and has been dead for more than three years.

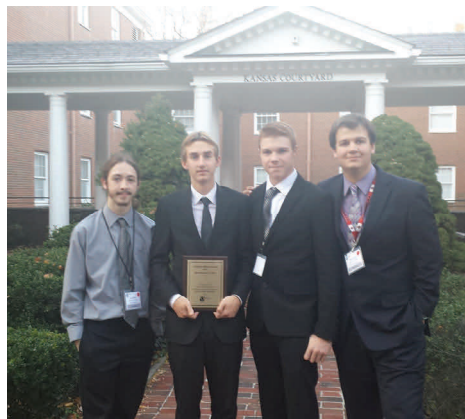
For more information and to enter the contest online:

<http://namecraters.carnegiescience.edu/>

For more information about Mercury and MESSENGER:

http://www.nasa.gov/mission_pages/me

WV Team Receives Award At National Engineering Competition



Left: Preston County students –Dillion Bowman, Coleton Tasker, Cory White, Tyler Mayne

1-mile-by-1-mile section of cornfield. The drone they designed included an infrared camera and their solution included identifying the pests and calling the pest control company to come and take care of the pests - thus saving farmers money by finding and controlling them quickly. The plaque states that it is: "In recognition of your understanding of the business perspective reflected in your design submission."

A team of high school students from Preston County, WV won the Best Business Case award at the Real World Design Challenge in Washington D.C. The challenge was to design an unmanned aircraft that could patrol for pests such as the European corn borer in a

In hopes of inspiring students to become engineers, the U.S. Department of Energy began the Real World Design Challenge in 2008. It provides high school students the opportunity to work with a team on real-

world engineering challenges faced by industry.

Every teacher participating 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 solve an engineering challenge that is currently faced by the aerospace industry. Students first compete in a state level Governor's Cup. The team with the best design in each state gets an all-expenses-paid trip to Washington, DC to compete in the national finals.

To start a team in your high school, check out the RWDC website

www.realworlddesignchallenge.org/ and contact the Educator Resource Center erc@ivv.nasa.gov for additional help.

Modern Classroom Tools Are Changing Education

These five tools are transforming the way teachers approach STEM education. Integrating these new tools into their lessons can help teachers reinforce theoretical concepts by demonstrating their real-world applications. By showing students that the knowledge is relevant and useful, teachers can help them unlock new realms of creativity in all scientific realms and possibly change their future career trajectories.

1. 3-D Printers
2. iPads
3. Graphing Calculators
4. LEGOS
5. Flight Simulators

NASA's IV&V Educator Resource Center provides these tools for educators and students in its workshops and in the equipment loan kits that are used in classrooms across West Virginia.

For more information:

<http://www.theatlantic.com/education/archive/2014/11/five-tools-that-are-transforming-stem-education/382305/>

New FIRST AmeriCorps VISTA's Join the ERC



Ryan Utzman joined NASA's Educator Resource Center in July of 2014. Ryan, who has six years experience as a member of the Morgantown Area Robotics team, specializes in helping FTC, and FRC teams, as well as having an active role in robotics competitions of all types. In his free time, he enjoys reading and sports. For Ryan, future plans include becoming an educator and perhaps another year of volunteering as a FIRST AmeriCorps VISTA at the ERC.

Michael Lyden became a part of the ERC team in May of 2014. Michael's area of specialty is Jr. FLL and FLL. A mathematics education major in college, he has signed on to serve two years as a VISTA volunteer for the ERC's robotics program. His work in helping to form Jr. FLL teams resulted in 16 K-3 teams exhibiting at state competition this year. He enjoys reading, cooking, and doing math puzzles in his free time. He believes robotics provides great hands-on experiences with math in the classroom and will be making it an integral part of his teaching.

The ERC will be adding a third FIRST AmeriCorps VISTA in early 2015.



NASA Mission News

NASA Goddard Instrument Makes First Detection of Organic Matter on Mars

The team responsible for the Sample Analysis at Mars (SAM) instrument suite on NASA's Curiosity rover has made the first definitive detection of organic molecules at Mars. Organic molecules are the building blocks of all known forms of terrestrial life, and consist of a wide variety of molecules made primarily of carbon, hydrogen, and oxygen atoms. However, organic molecules can also be made by chemical reactions that don't involve life, and there is not enough evidence to tell if the matter found by the team came from ancient Martian life or from a non-biological process. Examples of non-biological sources include chemical reactions in water at ancient Martian hot springs or delivery of organic material to Mars by interplanetary dust or fragments of asteroids and comets.

Student 3-D Printing on the International Space Station

NASA in conjunction with the American Society of Mechanical Engineers Foundation, has issued a series of "Future Engineers" 3D Space Challenges for students focused on solving real-world space exploration problems. Students will become the creators and innovators of tomorrow by using 3D modeling software to submit their designs and have the opportunity for their design to be printed on the first 3D printer aboard the International Space Station. The winning student will watch from NASA's Payload Operations Center with the mission control team as the item is printed in space. The Design a Space Tool Challenge is the first in series of challenges where students in grades K-12 will create and submit a digital 3D model of a tool that they think astronauts need in space. Future Engineers is a multi-year education initiative that consists of 3D Space Challenges and curriculum videos on the site that parents and educators can use to get kids designing today. To sign up for more information on the challenge, visit:

<http://www.futureengineers.org>

New Horizons Mission to Pluto Operators at the Johns Hopkins University Applied Physics Laboratory in Laurel, Md., confirmed at 9:53 p.m. (EST) Dec. 6, that New Horizons, operating on pre-programmed computer commands, had switched from hibernation to "active" mode. Moving at light speed, the radio signal from New Horizons – currently more than 2.9 billion miles from Earth, and just over 162 million miles from Pluto – needed four hours and 26 minutes to reach NASA's Deep Space Network station in Canberra, Australia. With a seven-instrument science payload that includes advanced imaging infrared and ultraviolet spectrometers, a compact multicolor camera, a high-resolution telescopic camera, two powerful particle spectrometers and a space-dust detector, New Horizons will begin observing the Pluto system on Jan. 15. New Horizons' closest approach to Pluto will occur on July 14, but plenty of highlights are expected before then, including, by mid-May, views of the Pluto system better than what the mighty Hubble Space Telescope can provide of the dwarf planet and its moons.

FIRST LEGO League State

Congratulations to all the teams who attended the WV State Championship Tournament! Below is the list of awards given out at the closing ceremony. Please join me in celebrating their accomplishments!

Volunteer of the Year Award: Jim Higgins
Coach/Mentor of the Year Award: Karen Davis

TEAM AWARDS

Judges' Award - All Around Performance: #1343 Cybertooth Tigers

Judges' Award - Rising Star: #13569 Big B's

3rd Place Robot Game: #1700 Faith Builders

2nd Place Robot Game: #13864 High Tech Hornets 2

1st Place Robot Game: #3050 Technomancers

Robot Design - Mechanical Design: #5858 Rock 'n Robots

Robot Design - Programming: #423 ThunderBlocks

Robot Design - Strategy and Innovation: #12800 SWAT

Project - Research: #3703 Clover STEMs

Project - Presentation: #5824 The STEMTISTS

Core Values - Inspiration: #1374 Guyan Valley

Core Values - Teamwork: #7507 Boa Constructors

Core Values - Gracious Professionalism: #11328 Cyborg Dragons

Champion's Award 1st Runner-Up: #15004 Astronomically Accurate Astronomers

2014 Tournament Champion: #3050 Technomancers

There are a lot of exclamation points on this page but they do not begin to convey the energy and excitement experienced at the state tournament!

WV FLL Grand Champions
Team Technomancers!



Jr. FLL'ers wowed everyone!

Adults had fun too!



The cast of Star Wars paid a visit to the judging rooms!



It's a bird! It's a plane! It's Super-
man! Nope—it's a DRONE!



Judges deliberations were difficult.
Too many awesome teams!



For more photos and great videos
please visit:

WV FLL

www.facebook.com/wvfl

NASA IV&V Robotics Alliance

www.WVRoboticsAlliance.org

ERC Staff

Todd Ensign ...Program Manager

todd.ensign@ivv.nasa.gov 304-367-8438

Pam Casto...Education Specialist

pam.casto@ivv.nasa.gov 304-367-8436

Jaime Ford ...Student Programs

jaime.ford@ivv.nasa.gov 304-367-8379

Ryan Utzman...AmeriCorps VISTA

rutzman@usfirst.org

Michael Lyden...AmeriCorps VISTA

mlyden@usfirst.org

Alicen Patton...ERC Intern / Office Manager

alicen.patton@ivv.nasa.gov 304-367-8251

Jennifer See....ERC Intern / Equipment Loan

jennifer.see@ivv.nasa.gov 304-367-8379

To schedule a workshop:

Call the ERC: 304-367-8436 or email:

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, then email Jennifer See who will schedule the dates.

jennifer.see@ivv.nasa.gov

Check us out on Facebook:

www.facebook.com/groups/33814011198

And Twitter:

[@NASAIVV_ERC](https://twitter.com/NASAIVV_ERC)

NASA IV&V Robotics Alliance

www.WVRoboticsAlliance.org

WV FLL

<https://www.facebook.com/wvfl>

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/>

Upcoming Events with ERC Participation

Jan. 5 WeDo Robotics Jackson Co. WV

Jan. 17 TARC launch at Mylan Park, Morgantown WV

Jan. 31 TARC launch at Mylan Park, Morgantown WV

Feb. 7 WeDo's Sheperdstown WV

Feb. 14 VEX Tournament at FSU

Feb. 21 Family Engineering Day at the Clay Center, Charleston, WV

Feb. 21 FTC Scrimmage at Weston WV

Feb.21 Regional Science Fair at FSU

Feb. 21 TARC launch at Mylan Park, Morgantown WV

Feb. 28 TARC launch at Mylan Park, Morgantown WV

Mar. 21 and 28 will also be TARC launch opportunities

A Very Special Thank You for Our Robotic Season

I am Thankful. This amazing FIRST LEGO League season (2 kick offs, 7 scrimmages, 5 qualifiers, and 1 amazing state tournament) was not possible without the following contributors:

FIRST Americorps VISTAS and a FIRST Senior Mentor. Thank you FIRST AmeriCorps VISTAs: Ryan Headlee, Michael Lyden, and Ryan Utzman, and our FIRST Senior Mentor: Jaime Ford.

The ERC staff is absolutely amazing to work with and there isn't a better team anywhere than Pam Casto, Jaime Ford, Alicen Patton, and Jen See. Everything that happens behind the scenes is thanks to them.

NASA IV&V provided great Head Judges: Jeff Northey, Justin Smith, Jennifer Neptune, and Jesse White.

Thanks to the four FRC Teams in WV! They take on HUGE roles in support of the expanding FLL program.

-337 Starbots for serving as scribes and managing the pit

-1249 RoboRats for running the hands-on driving demos

-2614 MARS for handling all refereeing (and the MARS qualifier)

-3492 PARTS for refereeing the RCBI qualifier and running Jr. FLL at the state event.

Thank you to our hosts for all the qualifiers:

RCBI/Marshall U., BridgeValley CTC, 4-H/Jackson's Mill, MARS/WVU, Shepherd U.

Thank you to our 2014 Scrimmage hosts (and 2015 qualifiers):

New River CTC, WVU-P, WV Northern CTC, MARS/WVU, BridgeValley/CTC

Our sponsors provide all the funding to let us keep this program Growing. Thank you NASA WV Space Grant and the Bharti Family.

Volunteers who we depend on to serve as judges, referees, pit managers, and dozens of other roles. Although they are sometimes a bit off the wall, we LOVE them all!

Finally, thank YOU Coaches and Parents of our FLL students. I know full well that you are the volunteers with the biggest hearts, and without you there are no teams for us to work with.

Have a Happy New Year!

Todd Ensign (WV FLL and Jr. FLL Director)