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a brief moment in space

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A Message From the Director

Georgia Space Grant Consortium

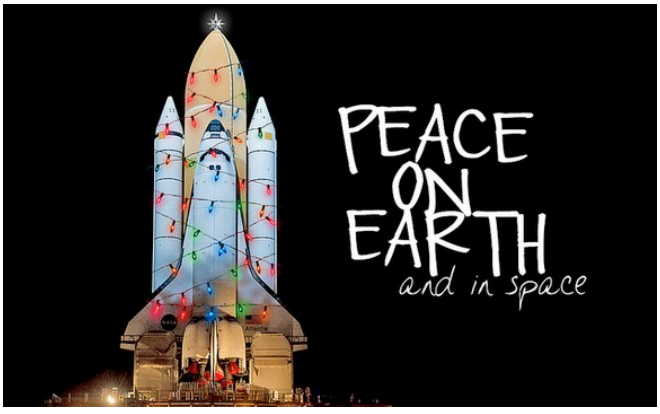
The world was recently captivated by several accomplishments involving the nation's space endeavors. These include the remarkable landing and on-going success of NASA's Mars Curiosity Rover. The many following this story were educated on the precise engineering needed for a robotic vehicle to survive the "7 Minutes of Terror" during entry, descent and landing. The excitement of the scientists and engineers upon touchdown was contagious and the exploration underway to better understand planetary science and its impact on life inspires our next set of explorers, scientists and engineers. In addition, the unique new partnership between NASA and industry partners is beginning to bear fruit. The successful launch, International Space Station (ISS) resupply and touchdown of Space X's Dragon Spacecraft last month points to a new mode of space exploration involving the private sector and NASA.

To make missions and partnerships such as these possible, NASA's Space Grant Consortia conduct inter-disciplinary training, research, internship and fellowship programs for undergraduate and graduate students, K-12 student and teacher training programs, and public outreach. In its 2012 Strategic Plan developed last month, NASA's Space Grant Program committed to several major actions to support the critical national need in STEM training. These actions, in part, include 1) Utilizing the unique space grant network and pipeline to enhance the impact of K-12 programs through experiential training activities, 2) Increasing industry involvement in Space Grant by building national and local partnerships, and 3) Conducting collaborative multi-state experiential higher education programs.

Dr. Stephen Ruffin

The Georgia Space Grant Consortium is well positioned to build upon its successes, and address the major STEM needs in the state and nationally. In Georgia, the effective teacher workshops, student summer programs, and unique new science exhibits supported by the Georgia Space Grant consortium and highlighted in this newsletter help fulfill this important mission.

Season's Greetings!



Coca-Cola Space Science Center Receives SSME Nozzle!

SSME Nozzle Arrives in Columbus, Ga

A main engine engine nozzle used nine times to fly space shuttles into orbit arrived at the Coca-Cola Space Science Center (CCSSC) on Friday, July 20, 2012. The arrival date of the $15 million artifact coincided with the 43rd anniversary of man's first walk on the moon. Space Shuttle Main Engine (SSME) nozzle #5002 flew on all four shuttles during its service lifetime.

To celebrate the arrival, free public ceremonies took place as the nozzle was transported from NASA's Marshall Space Flight Center in Huntsville, AL to Columbus, GA.

The arrival of the shuttle artifact followed 2 years of planning and preparation called the "Countdown to Launch". This initiative included a $4 million renovation to the CCSSC to better display the Center's collection of shuttle artifacts. Owned and operated by Columbus State University, the CCSSC seeks to further advance science education and outreach for regional school-age children and teachers, while providing innovative and unique opportunities for inquiry-based STEM (Science, Technology, Engineering, and Math) education.

NASA Education Outcome 3: Informal Education

GSGC Supports CDEP Students

Fort Valley State University's CDEP Program

NASA Education Outcome 1: Higher Education

Dr. Isaac Crumbly

The Cooperative Developmental Energy Program (CDEP) was founded July 1, 1983 by Dr. Isaac J. Crumbly at Fort Valley State University. CDEP is an innovative cooperative program between FVSU, private and government sectors of the nation's energy industry, and other partnering institutions. Although CDEP's initial focus was targeted for the energy industry, the program has expanded over the years to include other sectors of the nation's workforce.

CDEP focuses on the recruitment and placement of academically talented minorities and females into careers in STEM. This objective is accomplished by providing university students with a dual-degree program in engineering, geosciences and health physics supported through scholarships and internship programs.

To increase and retain the number of students entering the pipeline, CDEP implemented the Mathematics, Science, and Engineering Academy in 1993. M-SEA is an early intervention program that targets minority and female students who have just been promoted to the ninth grade. M-SEA students are introduced to the fields of energy, mathematics, earth science, biology, engineering, and computer science. Students who remain in the CDEP pipeline until their senior year in high school increase their chances of receiving full scholarships for college in one of CDEP's 3+2 dual degree programs.

Fort Valley State University CDEP Pipeline Students.

"CDEPers" are an elite group of students prepared to meet the needs of a professional STEM educated workforce. For more information visit the CDEP website at: http://www.fvsu.edu/academics/cdep

NASA Education Outcome 3: Informal Education

Ga Tech College of Engineering Hosts Space (Un)Conference Sponsored by GSGC

SPACEUP ATLANTA

SpaceUp Atlanta was a space unconference, where participants decided the topics, schedule, and structure of the event. Unconferences have been held about technology, science, transit, and even cupcakes, but this was the first one focused on space exploration, science, STEM and anything about space. Everyone who attended SpaceUp was encouraged to give a talk, moderate a panel, or start a discussion. Held on Saturday, October 6 and coordinated by the Georgia Tech SEDS chapter, the event gathered students, teachers, space professionals and enthusiasts in the greater Atlanta region to foster a grassroots space community. GT graduate student Curtis Iwata was instrumental in obtaining support from the GSGC.

SpaceUp Atlanta participants

STEM Workshops for K -12 Teachers

Museum of Aviation/ NASA RERC Teacher Opportunities

The Museum of Aviation at Robins AFB, Warner Robins, Georgia has hosted the NASA Regional Educators Resource Center for the past 5 years. As part of its mission, the NASA Georgia RERC provides monthly, hands-on, STEM workshops for teachers in grades K- 12. The workshops are a partnership between the NASA Georgia RERC and ORBIT Education, Inc., affiliate of the GSGC. Workshops focus on grade specific, standards-based activities using NASA educational materials and resources. Over the years, NASA's Kennedy Space Center, Goddard Space Flight Center, Marshall Space Flight Center, and Glenn Research Center have participated and supported workshops at the NASA Georgia RERC. Workshops are also supported by Education Specialists from the Aerospace Education Services Project (AESP).

Presenter Storm Robinson Conducts a Robotics session

Participants attending the workshop come from public, private, parochial, and home schools from districts and counties throughout the state. Teachers attending the sessions include pre-service as well as in-service educators.

The NASA Georgia RERC also sponsors the annual Georgia STEM Day, a one day conference featuring multiple concurrent sessions for STEM teachers across all grade levels. The conference attracts over 100 teachers from throughout the state and region for hands-on sessions and seminars.

Dr. Susan Hoban, GSTC presents STEM activity

The NASA Georgia RERC is a member of the NASA AESP Professional Development Network, one of only 4 sites in the state.

The NASA Georgia RERC provides an annual calendar of workshops held during the school year. For further information on these sessions or the NASA Georgia RERC visit the website at: http://www.moaeducation.com/nasa.php or contact Clare Swinford, RERC Manager at: Clare Swinford cswinford@museumofaviation.org

NASA Education Outcome 3: Informal Education

Non-traditional Student Interns at LaRC

John Luecke At NASA Academy

In John Luecke's essay for a NASA internship he says, "NASA has been a lifelong dream of mine, ever since I first watched Armstrong walk on the Moon. Lots of things in life got in the way of that dream, but now I am working hard to make that dream a reality. My selection in the NCAS NASA Scholarship Fall 2010 gave me the opportunity to go to JSC - and I learned that my dream might actually become a reality! I plan to Ga Tech to obtain my Masters in Aerospace Engineering. While there, I intend to take advantage of the Internship Programs they have so that I can continue to gain knowledge and work at NASA."

The GGSC helped John move closer to his goal of becoming an aerospace engineering by funding his summer internship at Langley Research Center.

John was a student at Gainesville State College pursuing an Associate Degree in Engineering when he applied for the Langley Internship.

John Luecke's summer 2012 NASA Academy project was at Langley Research Center's Systems Integration and Test Branch. The project that John worked on was the LN2 Manifold for the 8' x 15' Thermal Vacuum Chamber. The purpose of the project was to organize the LN2 Supply and Exhaust for Internal Chamber use into a User-Friendly System; eliminate need to install new equipment connections piece-meal; portability and storability; make it multi-functional (LN2, GN2, Chill Water, etc.) and insure ease of use.

John Luecke at NASA LaRC

As a result of John's stellar work at Langley, he has continued to work there and is currently working on his Bachelor's Degree in Electrical Engineering at Old Dominion University, with plans to come to Georgia Tech for graduate school.

NASA Education Outcome 1: Higher Education

ARLISS / CanSat

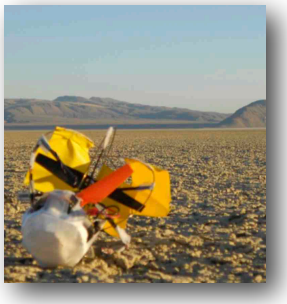
GSGC FUNDS LEVERAGE SPONSORSHIP

The ARLISS project is a yearly engineering contest in the Black Rock Desert of Nevada. Student-designed machines are loaded into model rockets, and launched up to 10,000 feet. After the machine is ejected from the rocket, it must autonomously navigate to a target location a few kilometers away from the launch site. The machine may use any mode of transportation (flying, rolling, hopping, etc.) to get to the target, but it must pass strict requirements on size and weight.

For the 2012 competition, a team of Georgia Tech undergraduate and graduate students, with faculty advisor Dr. William Singhose, constructed a micro hopping rotochute to compete in the ComeBack competition. The machine was designed to fall to the ground, then travel to the target with a series of hops.

The Georgia Space Grant Consortium has sponsored the Georgia Tech team since 2004. Leveraging these funds, in 2013, Boeing will sponsor a major expansion to the Georgia-Tech-based club. Multinational design teams composed of students from universities in Hungary, Greece, South Korea, and India will collaborate with students from Georgia Tech to design and build several entries for next years ARLISS contest.

NASA Education Outcome 1: Higher Education



ARLISS

School Teacher Participates In Fellowship at Ga Tech

JUNO Mission Inspires Educator

During the summer of 2012, Jayma Koval, an East Cobb Middle School science teacher, spent 6 weeks working in the Planetary Atmospheres Lab on the Georgia Tech campus. Working under the supervision of Professor Paul Steffes, Co-PI on NASA's Juno Mission, Jayma assisted with research in support of atmospheric studies of Venus.

Two pressurized ovens in the lab are used to simulate the atmospheres of Jupiter and Venus. Different mixtures and pressures of gases are added at given temperatures to simulate certain layers of the atmosphere. For instance, one experiment involved adding up to 92 bars of carbon dioxide at 435 K, which is approaching conditions on the surface of Venus. The data from the simulations will be compared to data collected from Juno and ground-based radio telescopes.

Pressurized Ovens on the Roof of the Van Leer Bldg., Ga Tech

Asked about the challenges working in the lab, Jayma remarked, "During the first couple of weeks of my fellowship it seemed as if each day brought a new challenge with the equipment. The experiments were delayed due to various issues: a broken temperature sensor, the indoor oven not reaching the desired temperature because of wiring issues, the outdoor oven not stabilizing at a specific temperature due to atmospheric conditions, equipment breaking due to extreme temperatures, etc. All of these challenges brought great lessons in problem solving. I observed and assisted with fixing the malfunctions and learned a great deal more about electricity and a variety of tools for solving the problems."

Overcoming Technical Challenges

Jayma Koval

In addition to the experiential portion of her fellowship Jayma also gathered educational resource materials that will be used to support a NASA ePDN self-directed course for teachers on the Electromagnetic Spectrum. Her research included investigating other NASA missions and evaluating the activities presented as part of their E/PO (Educational and Public Outreach) proposals.

One of the highlights of the fellowship was the opportunity to visit NASA's Jet Propulsion Lab (JPL) and attend a workshop at the JPL Educator Resource Center. At JPL, Ms. Koval met with Dr. Steve Levin, Project Scientist for JUNO and had the opportunity to visit with Dr. Glenn Orton, Senior Research Scientist, using NASA's Infrared Telescope Facility on the summit of Mauna Kea.

As a NASA Solar System Ambassador, Jayma attended a workshop at JPL's Educator Resource Center titled: "Deep Space Network, Physics of Sounds," where she learned about some great activities that teachers could use to enrich their lessons on waves.

At the end of her summer fellowship Jayma said, "The experiences I had during this fellowship motivated me both professionally and personally. Being in such an intellectually stimulating environment inspired me to learn more about radio astronomy. I have shared many stories with my students of my time working in the lab and of the missions that I studied. I have also given presentations to science teachers on how they could incorporate Juno into their lessons. This was truly a fellowship that I won't soon forget. I'm so grateful to have these experiences and to have had the opportunity to share my knowledge with my students and fellow teachers."

Jayma Koval's summer fellowship was sponsored by GSGC Affiliate ORBIT Education, Inc.

NASA Education Outcome 1: Higher Education

The GSGC newsletter is dedicated to highlighting programs and events of the Consortia Affiliates and connect its stakeholders to NASA initiatives and opportunities. A Brief Moment In Space is published bi-monthly for the Georgia Space Grant Consortium. It is produced by ORBIT Education Inc. with support from GSGC Affiliate members. Digital copies of the newsletter are available for download from the GSGC web site. To submit articles please contact Wanda Pierson at: wanda.pierson@ae.gatech.edu

www.gasgc.org

GSGC Website Gets Facelift

The GSGC website was recently refurbished and renovated with a new look and new graphics. The website highlights current Consortia activities, links to affiliates and programs, and easier navigation for users. Included in the website are links to Consortia projects such as the STEM Agenda and features current Affiliate activities. The renovated website seeks to provide information and support for all educators and students in the state along with industry and policy makers. Visit the Georgia Space Grant Consortium website at: www.gasgc.org or join us on Facebook!

Students Tell Research Story

UGA-Grifffin Sponsors Writing Challenge

High School students from Spalding, Henry, and Fayette counties participated in a writing competition hosted by the University of Georgia Griffin campus. Titled the "NASA Science Writing Challenge", participating students related the stories of research being conducted on campus - from remote sensing to food production, moisture on Mars, and the potential causes and cures for HIV. Twelve students participated in the writing challenge, spending hours with scientists and researchers learning more about their respective topics. Students also had to access on-line sources for background information. Participants presented their written stories to a panel of judges and the winners received scholarships for a week-long Space Camp experience in Huntsville, Alabama.

The objective of the NASA Science Writing Challenge is to provide high school students with a mentoring experience with research scientists on the UGA - Griffin campus. Dr. Gerald Arkin, Dean of the College of Agricultural and Environmental Sciences and Affiliate Director of the UGA-Griffin GSGC stated, " The NASA Science Writing Challenge provided an opportunity for high school students to become more cognizant of the relevance of science, become more conversant in science, and open vistas for their intellectual exploration and discovery."

Competition entries for the 1st, 2nd and 3rd place winners were published in the Griffin Daily News.

Dr. Gerald Arkin with NASA Science Writing Challenge winners Ally Adams, Tushar Mittall, and Maria Curry

NASA Education Outcome 2: Pre-College Education

STUDENT OPPORTUNITIES

National Space Biomedical Research Institute Summer Internships
http://www.nsbri.org/summerinternship/

RASC-AL Lunar Wheel Design Challenge
https://www.nianet.org/RASCAL-wheeldesign2012/index.aspx

NASA High Altitude Student Platform Opportunity
http://laspace.lsu.edu/hasp/

RASC-AL Exploration Robo-Ops Competition
http://www.nianet.org/RoboOps-2013/index.aspx

NASA Space Technology Research Fellowships
http://www.nasa.gov/offices/oct/stp/strg/nstrf13.html

NASA DEVELOP Program
http://develop.larc.nasa.gov

NASA History Office Internships
http://history.nasa.gov/interncall.htm

NASA CubeSat Space Missions
http://go.nasa.gov/puk9K2

2013 CanSat Competition
http://www.cansatcompetition.com/Main.html

NASA Space Academy
www.academyapp.com

Student Spaceflight Experiments Program
http:ssep.ncesse.org