I am pleased to present the first electronic issue of VSGC’s SpaceLink newsletter. This is our effort to be a good steward of the environment, broaden our audience, be technologically accessible and also be cost effective. I hope you will enjoy this issue as we fill you in on some of the exciting VSGC programs.

I recently returned from the September National Council of Space Grant Director’s meeting in Green Bay, Wisconsin. VSGC is pleased to be a part of such a dynamic national grassroots network of Space Grant professionals from across the country who work with NASA with a focus on STEM education, research and workforce development.

Our Consortium has started a Small Satellite Working Group which is sharing current initiatives, resources, capabilities and interests, and working together to build collaborative projects. All Virginia Space Grant universities and member representatives from NASA Langley and NASA Wallops are participating. Our efforts build on our strong history of student flight programs ranging from sounding rocket and balloon missions to cubesats, UAVs and airborne instruments.

As this issue attests, we have had an extremely productive summer at VSGC. With our Virginia Aerospace Science and Technology Scholars (VASTS) program, 145 Virginia high school juniors attended one of three week-long residential Summer Academies at NASA Langley where they experienced hands-on STEM activities and interaction with NASA mentors (see page 4). Through the GearUp STEM Summer Academy, 108 high school sophomores and 10 parents attended a hands-on, three-day academy at the College of William and Mary in June (see page 6).

The NASA Langley Aerospace Research Summer Scholars (LARSS) program celebrated a great milestone in August with a twenty-fifth anniversary event attended by 280 people, many of whom were current or former interns. Many LARSS student placements have been sponsored by our sister Space Grant programs across the country (see page 3). A total of 174 LARSS interns undertook mentored research experiences at NASA Langley this summer. Virginia Tech hosted 20 INSPIRE (Interdisciplinary National Science Project Incorporating Research and Education Experience) students in June. Co-sponsored by NASA and VSGC, the program is a multitier year-round effort designed for students in 9th to 12th grade who are interested in STEM education and careers.

To strengthen Virginia’s research infrastructure, VSGC awarded five faculty a New Investigator Program research grant for $10,000 per faculty (see page 7). VSGC continues to support NASAs efforts to build a national community of global climate change educators (note name change on page 2) and held an orientation workshop for 14 new NASA PI’s October 12 in Raleigh, NC.

Best to all,

Mary Dandy
On October 1, 2011, NASA Innovations in Global Climate Change Education (IGCCE) officially changed its name to NASA Innovations in Climate Education (NICE). The new web address is https://nice.larc.nasa.gov. The new name reflects a commitment to increase the public's climate science literacy through the work of seventy one exemplary educational projects across the nation.

VSGC supports the NICE program by providing program integration, building a national community amongst climate educators and providing access to NASA educational resources and data.

Fourteen of the NICE projects are new this year. The awards were made under MUREP/IGCCE having the goals of increasing the number of underrepresented/underserved students prepared to teach climate change content, prepared for employment and/or to enter graduate school in technical fields relevant to global climate change; and to advance the understanding of how to effectively teach global climate change concepts. In order to facilitate this new group joining in with the previous cohort of PI's, VSGC held a one day workshop in Raleigh, NC on October 12th for the new PI's. During the orientation, the new PI's met the NASA and VSGC management teams and each other. They learned about the project reporting and evaluations requirements, the NASA product review process, using our website and had time to network with each other. We received wonderful feedback from the PI's about how valuable the information presented was to them.

 Winners Selected for FAA Design Competition for Universities

The Federal Aviation Administration (FAA) recently selected winners for its fifth annual Design Competition for Universities. Panels of FAA, industry, and academic experts chose the first place winners, which were Binghamton University-State University of New York, the University of Southern California, Embry-Riddle Aeronautical University in Daytona Beach, Fla., and the University of California at Berkley. Awards were also given to eight other submissions. Awards were presented in four technical challenge categories: airport operation and maintenance; runway safety/runway incursions; airport environmental interactions; and management and planning.

The first place teams presented their work at the Airport Consultants Council/FAA/Transportation Security Administration Summer Series Workshop in Arlington in July. The competition is administered by the FAA Office of Runway Safety and is managed for the FAA by the Virginia Space Grant Consortium.

Over the past four years, 50 universities have participated in the competition and participants have submitted 160 design proposals to address airport and runway safety issues.

Typical student feedback noted, “The opportunities to converse, discuss, and refine a potential solution to a large-scale problem with industry leaders was in and of itself something few college students will have upon entry to the workforce.”

http://FAADesignCompetition.odu.edu
LARSS 25th Anniversary Celebration

The NASA Langley Aerospace Research Summer Scholars (LARSS) Program recently celebrated its 25th year as a premier program and has served as a model for other NASA education programs within the agency. Some 4,600 students have been placed in mentored internships since the program’s inception in 1986. LARSS has the distinction of being the oldest internship program within NASA and has the reputation of producing a well-educated, well-trained and diverse workforce in STEM areas. Over 280 people attended a banquet on August 4 to celebrate the success of LARSS and to honor other summer educational programs at NASA Langley.

Attendees included current and past LARSS interns and mentors, NASA personnel, including senior officials, invited guests and program staff. LARSS has been managed by the Virginia Space Grant Consortium since 2006 under a subaward from the National Institute of Aerospace.

Banquet proceedings included a tribute to Sam Mas- senberg, the former University Affairs Officer who implemented LARSS in 1986. Other program highlights included a brief welcome by Lesa Roe, NASA Langley Center Director, and a keynote address by Ken Reightler, former NASA astronaut and Vice President for Engineering Services of ATK Aerospace Systems. Debbie Murray, LARSS Program Coordinator and Sarah Pauls, Program Assistant were honored as program staff along with Kathy Powell, LaRC higher education coordinator.

Undergraduate Student Attends Shuttle Symposium

VSGC sponsored Minnae Chabwera, a sophomore STEM Bridge student from Hampton University to attend the Space Shuttle Symposium at Georgia Tech this summer as part of her experience as a STEM Bridge Scholarship recipient. She was also a LARSS intern at NASA Langley Research Center for 10 weeks during the summer. “The passion the speakers had for the space shuttle program and what I had learned from past research helped me realize the importance of the space shuttle to our nation,” said Chabwera. “Not only did the space shuttle era raise the morale of our nation, it allowed American astronauts to be the first people to make it to and return safely from the moon.”
For three exciting weeks this summer, 145 enthusiastic high school juniors from across the Commonwealth descended on NASA Langley Research Center for the Virginia Aerospace Science and Technology Scholars (VASTS) Summer Academies. From the moment they arrived until the moment they departed, the Scholars’ hours were filled with hands-on STEM activities. Under the guidance of NASA mentors and Master Teachers, the Scholars worked in project teams to design a human mission to Mars.

While at NASA Langley, they are exposed to a wide-array of career options within the aerospace field and have opportunities to discuss with their mentors paths of study in STEM areas. Other activities included robotic rover design and field testing, facility tours, seminars, and an opportunity to discuss their mission design with an astronaut. Prior to the Summer Academy experience, Scholars participated in a 20-week online course in Intro to Aerospace Engineering Technology under the facilitation of Master Teachers.

Currently applications are being accepted for the 2011-2012 VASTS program with the deadline of November 4. The application is available on the VASTS website: www.vasts.spacegrant.org
In Her Own Words

As a junior physics major, double minor in mathematics and leadership studies at Hampton University, I have been awarded many opportunities throughout my tenure. Each opportunity has allowed me to walk away with an enhanced vision of what my future could be as well as what is necessary to reach that final goal. Becoming a part of the Undergraduate Science, Technology, Engineering, and Math (STEM) Bridge Scholarship Program is one of those events which has led me to valuable opportunities. An outcome of becoming associated with the STEM Bridge Scholarship and Ms. Denice Dublin (VSGC staff) has afforded me opportunities to meet many significant, accomplished individuals. STEM Bridge has been the prime initial step for me to enter the NASA pipeline. The STEM Bridge program has inspired me to apply for other programs directly related to my field of interest such as the Langley Aerospace Research Summer Scholars (LARSS) program and the Undergraduate Research Scholarship, propelling me towards the attainment of my degree with beneficial experience under my belt.

My aspiration since I was a young girl has been to become an astronaut. Because of this goal I chose to major in physics and plan to continue in graduate school to study aerospace engineering. With that background, I plan to assist in the future NASA research and participate in many different programs that will assist me in reaching my goal.

During the 2011 summer, I was a LARSS intern at NASA Langley and was able to get a glimpse of what it would be like as a physicist working for NASA. I feel that I personally could provide a fresh outlook for NASA and become a useful innovator with any engineering and physics quandaries that could possibly be encountered. The work I conducted as a result of participating in the LARSS program was exceedingly beneficial to my future knowledge. Every experience I have been presented has allowed me to take something away from it that will prove to be of essential use.

As a STEM Bridge Scholar, VSGC funded me to attend the National Aeronautics and Space Administration Space Shuttle Symposium hosted at the Georgia Institute of Technology in Atlanta, Georgia. While there, I was exposed to an environment where I networked with individuals who I may meet later on in life from various NASA locations across the U.S., including the current NASA Administrator, Mr. Charles Bolden. While at the Space Shuttle Symposium, I gained a new appreciation for what the program offered our nation and the world. The beauty of NASA is that they have created programs, activities, and sites that prove to be of interest to all generations.

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Sounding Rocket Launched During RockOn! Workshop

Teams of faculty and students from across the country participated in the RockOn! Workshop held during the summer at NASA Wallops Flight Facility. The hands-on workshop teaches participants to build experiments that fly on sounding rockets in order to collect valuable scientific data. Teams work together to construct and integrate a rocket payload built from a kit during the four-day workshop. Over 150 students and faculty members have participated in RockOn! since its inception in 2008. RockOn! is sponsored by the Colorado Space Grant Consortium in partnership with Virginia Space Grant Consortium and NASA Wallops Flight Facility.
The Virginia Space Grant Consortium (VSGC) collaborated with consortium member – The College of William and Mary – for a STEM Summer Academy during the summer of 2011. The Summer Academy was sponsored through a U.S. DOE-funded GEAR UP project led by Hampton City Schools in partnership with VSGC and others. “Gear Up for Student Success” has the goal of motivating and preparing students for success in higher education. VSGC coordinates four STEM Saturday events and one STEM Summer Academy annually through the project.

A total of 108 students and 10 parents from Hampton and Phoebus High Schools attended the Academy. The three-day 2011 Summer Academy was hosted by the College of William and Mary and the Virginia Institute of Marine Science (VIMS) and allowed rising high school sophomore students and their parents to meet faculty and other professionals in engineering, science, technology, and math (STEM) fields. Other STEM disciplines were introduced to the students and parents to show them the excitement of STEM education and provide them with STEM role models and how exciting it can be to study and work in these fields.

The STEM Summer Academy included keynote speakers, hands-on discovery sessions for students, relevant programs for parents, materials and media presentations to inspire students and parents to consider a STEM education and follow STEM career pathways. The VSGC worked closely with the College of William of Mary and VIMS to identify faculty, scientists, researchers and other STEM professionals to serve as academy presenters.

VSGC also identified administrators and staff from William and Mary to provide college preparatory information and campus tours. Academy presenters offered STEM concept sessions during a short series of concurrently scheduled “exploratory” sessions during which students could explore a particular career cluster or pathway within the framework of a specific theme, such as biological marine science or the magic of chemistry. Presentations and interactive experiences included relevant and high-interest topics such as marine ecology of the Chesapeake Bay and the physics of light waves regarding refraction.

The VSGC appreciates the partnership with the College of William and Mary and the excellent faculty, staff and administrators who contributed their time and resources to make this a very successful event. VSGC is now planning the Gear Up Summer Academy for 2012 in partnership with another higher education institution with the hope of providing hands-on instruction in STEM and good role models who can motivate and inspire high school students to consider their future in STEM and explore STEM career pathways.
Five faculty members from VSGC member universities received a New Investigator Program award for the 2011-2012 cycle. Faculty members include: Dr. Phil Arras, University of Virginia, Department of Astronomy; Dr. Stella Bondi, Old Dominion University, Department of Engineering Technology; Dr. K. Todd Lowe, Virginia Tech, Aerospace and Ocean Engineering; Dr. Iordanka Panayotova, Old Dominion University, Department of Mathematics and Statistics; and Dr. Kristin Wustholz, College of William and Mary, Department of Chemistry.

The program is designed to strengthen Virginia’s aerospace-related infrastructure by providing start-up funding to university faculty who are conducting research aligned with NASA’s mission. Since the initial program in 2009, VSGC has awarded $150,000 to 15 faculty members.

Each faculty member received $10,000 for a one-year period of performance and universities are required to provide a 1:1 cost match. The New Investigator Program is open to tenure track faculty who have yet to become established researchers and are within the first five years of their academic career. An RFP will be released in the spring of 2012 for the upcoming New Investigator Program cycle.

NASA-related research being conducted through New Investigator Program awards include:

- Physics of Estrasolar Planet Atmospheres, Interiors and Orbits: Dr. Phil Arras, UVA
- Fiber Reinforced Polymer and Composite Material-Analyzing Mechanical Properties: Dr. Stella Bondi, ODU
- Demonstration of a 16 Simultaneous Point, Spatiotemporally Resolved Flow Thermometry Technique for High Speed Flow Research: Dr. K. Todd Lowe, VT
- High Altitude Clear Air Atmospheric Turbulence: Improving the Forecasting through Increasing the Fundamental Understanding of Causes and Mechanisms Leading to Turbulence: Dr. Iordanka Panayotova, ODU
- Enhancing the Electron Transfer of Dye-Sensitized Solar Cells Using Single Molecule Microscopy: Dr. Kristin Wustholz, W&M

Middle school students from greater Peninsula school divisions will have an opportunity to apply for three upcoming Engineering Technology Exploratory Saturday series. Offered through the Governor’s Academy for Innovation, Technology and Engineering (GAITE), this program is a partnership between Peninsula school divisions, local businesses, Virginia Space Grant Consortium and NASA. This series of Saturday workshops will provide students and parents with interactive hands-on activities, demonstrations and career planning resources.

Workshop presenters and guest speakers will include engineering technologists from NASA Langley, Canon Virginia, Newport News Shipbuilding, and Thomas Nelson Community College.

Featured topics are: Designing the Future, scheduled for January 21, hosted by Thomas Nelson Community College; Connecting the Future, February 25, hosted by Canon Virginia; and Automating the Future, March 17, hosted by NASA Langley Research Center.

GAITE website: http://www.nhrec.org
Congratulations Teacher Education Scholarship Winners

The Virginia Space Grant Consortium (VSGC) awarded a total of $22,500 in Teacher Education and Community College Scholarships for the 2010-2011 academic year. The awards include nine Teacher Education Scholarships and nine Community College Scholarships.

Teacher Education Scholarships are $1,000 awards given to students enrolled in a program of study that would qualify them to teach in a pre-college setting. This encourages students to become teachers of mathematics, technology education, and the sciences, especially space and environmental science.

The program is open to undergraduate students who are U.S. citizens and are enrolled full-time (minimum of 12 credit hours) when they actually receive the award. Students may apply during their senior year of high school or sophomore year in a community college. This award is contingent on matriculation to a Virginia Space Grant university and can apply when they declare their intent to enter the teacher certification program.

Those students enrolled in a career transition program leading to a degree in education are also eligible to apply.

Paul Beck is a senior at Old Dominion University. He is pursuing a teaching degree in Technology Education.

Clair Brown is a senior at Old Dominion University. She is pursuing a teaching degree in Mathematics.

Sarah Deel is a junior at Virginia Tech. She is pursuing a teaching degree in Biology.

Sherry Smith is a junior at Old Dominion University. She is pursuing a teaching degree in Atmospheric Sciences.

Both the Teacher Education and Community College scholarship programs are funded through NASA and the Commonwealth of Virginia. The Teacher Education Scholarship Program was established to complement the existing research science and engineering-based scholarships.

For the Community College Scholarships, a $1,500 award is provided to students enrolled in associate degree programs leading to careers in high technology fields, particularly those with aerospace relevance. This is a one-year award and is based on an evaluation of the applicant’s degree program, plan of study, past scholastic achievement and academic potential. Both the Teacher Education and Community College awards are determined by a committee of VSGC representatives.

VSGC has awarded nearly $4.6 million to some 1,070 students pursuing higher education at Virginia Space Grant universities and community colleges.

Kristen Berberich is a Master’s candidate at The College of William and Mary. She is pursuing a teaching degree in Biology.

David Cole is a Master’s candidate at The College of William and Mary. He is pursuing a teaching degree in Mathematics.

Kathryn Ottolini is a senior at The College of William and Mary. She is pursuing a teaching degree in Biology.

Tangela Owens is a junior at the University of Virginia-Wise. She is pursuing a teaching degree in Mathematics.

Tracy Thornton is a senior at Old Dominion University. He is pursuing a teaching degree in Earth Science.
Engineering Early Advantage Program for Incoming ODU Females

The VSGC-funded Engineering Early Advantage Program (EEAP) at ODU is in its 11th year and has been very successful in helping to prepare admitted ODU female engineering students for the rigor of their studies and, ultimately, the traditionally male-dominated profession. EEAP is part of ODU’s efforts to attract and retain female students in engineering. Program organizer Beverly Forbes, director of experiential education with the ODU Career Management Center and its liaison to the Batten College, said interest in the program is at its highest level ever. "We had 27 applicants, which is the highest number in the history of the program," she said. "This is the strongest group academically as well, as the selection process was so competitive this year." Female engineering students who go through the EEAP not only graduate at a higher rate than female engineers who don't participate in the program, but their graduation rate also is higher than average for all students in the college, Forbes noted. "We're so proud of this program, and every year we're proud of these girls.”

Congratulations Community College Scholarship Winners

Navid Attayan is a sophomore at Northern Virginia Community College. He is pursuing a degree in Astrobiology.

Jacob Ferguson is a sophomore at Virginia Western Community College. He is pursuing a degree in Engineering.

James Forrest is a sophomore at Thomas Nelson Community College. He is pursuing a degree in Engineering.

Stephen Jennings is a sophomore at Thomas Nelson Community College. He is pursuing a degree in Electrical Engineering.

Katherine Costello is a sophomore at Germanna Community College. She is pursuing a degree in Engineering.

Lisa Henderson is a sophomore at Thomas Nelson Community College. She is pursuing a degree in Engineering.

Thomas Hubbard is a sophomore at Virginia Western Community College. He is pursuing a degree in Civil Engineering.

Jonathan Kurzer is a sophomore at Tidewater Community College. He is pursuing a degree in Electrical Engineering.

Aaron Lam is a sophomore at Blue Ridge Community College. He is pursuing a degree in Engineering.
Congratulations STEM Bridge Scholarship Winners

The VSGC awarded a STEM Bridge Scholarship to 23 undergraduate students from federally recognized minority groups attending member universities during the 2010-2011 academic year. This competitive program offered students an opportunity to identify and investigate opportunities for research at their institution that are related to NASA’s mission. VSGC requires that awardees establish a relationship with a faculty member and a current VSGC Scholar or Fellow from the same discipline area during the award period.

VSGC assisted each awardee in identifying the appropriate individuals and in making the initial contact with faculty and other students. VSGC also facilitated an introduction to other Undergraduate STEM Bridge Scholars attending the same institution as well as the other member institutions through social media, a student orientation in the fall and a morning session during the 2011 Student Research Conference. At this year’s conference, students attended presentations led by NASA Langley representatives: Dr. Rich Antcliff, Chief Technology, Ms. Jill Marlowe, Deputy Director, Engineering Directorate, and Denisse Aranda, current graduate student Co-op and NASA ambassador. During their presentations, students are made aware of Space Grant and NASA internships and scholarships, current and future NASA research and the importance of their roles in their academic studies and research leading to future career pathways.

Andrew Adderley is a freshman at the University of Virginia. He is pursing a degree in Engineering.

Karis Boyd-Sinkler is a freshman at the University of Virginia. She is pursuing a degree in Engineering.

Madison Crutcher is a sophomore at the College of William and Mary. She is pursuing a degree in Neuroscience.

Brent Gills is a freshman at Hampton University. He is pursuing a degree in Physics.

Hanifah Hendricks is a freshman at the University of Virginia. She is pursuing a degree in Chemical Engineering.

Michael Boone is a sophomore at the University of Virginia. He is pursuing a degree in Civil Engineering.

Minnae Chabwera is a Freshman at Hampton University. She is pursuing a degree in Physics.

Trystyn Del Rosario is a sophomore at the University of Virginia. She is pursuing a degree in Systems Engineering.

Marissa Gonzales is a freshman at Virginia Tech. She is pursuing a degree in Chemical Engineering.

Simone Hyater-Adams is a freshman at Hampton University. She is pursuing a degree in Physics.
## Congratulations STEM Bridge Scholarship Winners

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<th>Name</th>
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<tr>
<td>Shani Hall</td>
<td>Old Dominion University</td>
<td>Civil Engineering</td>
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<td>Abraham Martinez</td>
<td>Virginia Tech</td>
<td>Mechanical Engineering</td>
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<td>Jon Mitchell</td>
<td>Old Dominion University</td>
<td>Chemical Engineering</td>
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<td>Teresa Moran</td>
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<td>Emilie Reiss</td>
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<td>Victoria Ross</td>
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<td>Charles Scott</td>
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<td>Crystal Velasco</td>
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<td>William Wiggins</td>
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<td>Joshua Wise</td>
<td>Old Dominion University</td>
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The Mid Atlantic Regional Spaceport (MARS) is a full-service, FAA licensed spaceport, offering two medium/heavy lift launch pads for low earth orbit (LEO) access. Additionally, MARS clients have access to three suborbital rail launchers, dual bay horizontal integration facility, vehicle/payload storage, processing and launch facilities, a federal launch range and a cadre of experienced space technicians and engineers.

MARS features new infrastructure, including a vehicle service tower, state-of-the-art processing facility, and dual-bay horizontal integration facility, and both stationary and mobile liquid fueling facilities.

The Old Dominion University-Teacher Immersion Residency (ODU-TIR) program is an apprenticeship-based program of study for individuals with a deep commitment to teaching in high-need schools. The training program begins in August of each year and lasts for three semesters. Each student completes 42-semester hours of graduate study, including a yearlong school-based residency in a high-need school in either Norfolk Public Schools or Portsmouth Public Schools, and education pedagogy and content courses, including a state-of-the-art Immersion Internship. Tuition and fees are paid for the training year. Students also receive a $25,500 stipend and a laptop computer with student software and wireless card for the training year. During 2010-2011, nine residents completed the program and received a Masters of Science degree in secondary education that lead to licensure in math, English, social studies, earth science, biology, chemistry or physics.

Teachers also received qualification to teach dual enrollment courses. All residents were placed in full time teaching positions in Norfolk or Portsmouth city schools for the 2010-2011 school year.

As part of their program of study, residents were placed in challenging internships this past summer. Placements included NASA, Virginia Air & Space Center, Nauticus, Virginia War Museum, Horizons, WHRO, Senator Northam’s office, and the Mariner’s Museum. “The teachers enjoyed the real world research and application of the content they will be teaching. Residents were able to develop valuable teaching resources in the process.

The ODU-TIR requires a commitment of three years teaching in Norfolk Public Schools or Portsmouth Public Schools after completing the program. During that time, new teachers will have intensive mentoring to support development as a teacher. Twelve teachers have been selected for the 2011-2012 Teacher Immersion Residency Program.

To apply online, visit the Graduate School: http://admissions.odu.edu/graduate.php. In the online application, choose Secondary Education Teacher Immersion Residency. For more information, email TeacherImmersionResidency@odu.edu