National Aeronautics and Space Administration

Island Access

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The Director's Cut

Anniversaries, whether personal ones like a wedding anniversary or those of major historical events, provide us an opportunity to reflect, remember and reminisce, lest we forget.

This month, I'm reminded of a number of key events in our nation's history that carry a special meaning and purpose both in the big picture of our country and closer to home here at Wallops.

An event that immediately comes to mind is Independence Day. This Fourth of July we celebrate 238 years since the adoption of the Declaration of Independence. The document's immortal words of patriotism and freedom are remembered as a symbol for the liberty we as a nation cherish. When I reflect on this day, I think about the extreme courage of our nation's founders when faced with extremely difficult circumstances.

Later this month, July 28, we will mark the 100th Anniversary of the beginning of World War I. Known as The Great War, it was one of the deadliest wars in history, resulting in sweeping political changes and reforms. Today, it reminds me of the sacrifices so many have made — and continue to make — to secure some of the very basic rights and freedoms we enjoy every day.

On basic rights and freedoms, it was only 50 years ago, July 2, that the Civil Rights Act of 1964 was enacted. In the words of Administrator Bolden, the signing was a pivotal moment in our nation's ongoing struggle to right the wrongs of the past and form "a more perfect union." It also ushered in an era of diversity and inclusion that in the last half-century has literally transformed the face of America, including the face of NASA. In reflecting on the act, I think of LGBT Pride Month, celebrated every June, and the importance of fostering diversity and acknowledging and respecting different backgrounds, perspectives, and life experiences.

Speaking of life experiences, just 45 years ago, July 16, three astronauts launched from Cape Canaveral, Fla., on an iconic, nation-rallying mission to the moon. Four days later, June 20, Neil Armstrong became the first man to walk on the lunar surface followed shortly thereafter by Buzz Aldrin. When I think about that accomplishment, I'm reminded that here at NASA we're always taking on the tough challenges.

On July 4, 1945, Wallops launched their first research rocket, known as Tiamat. The Tiamat program lasted until 1948.

If you need any evidence of that today, check out how Wallops contributed to the successful test of the Low-Density Supersonic Decelerator, completed just a few days ago and featured on page 5 of this magazine. Coming up this July 18, the Wallops Visitor Center is scheduled to host a special commemorative event marking the 45th Anniversary of Apollo 11, and I encourage all of you to attend if you can.

For a parting shot, it was 69 years ago that we launched our first test rocket, June 27, 1945. Seven days later on Independence Day, we launched our first research rocket, known as Tiamat. Thousands of launches later, Wallops continues to thrive, taking on those tough challenges and making invaluable contributions to science and new discoveries.

The year of our first launch coincides with the establishment of the National Advisory Committee on Aeronautics (NACA) here. Doing the math, 2015 is our 70th Anniversary, and work is kicking off now on a celebration next year to recognize this huge milestone, the enormous accomplishments over the years, and the men and women who made—and continue to make — it all happen.

Lest we forget.

— *Bill Wrobel, Director of Wallops Flight Facility*

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What's up @NASAWallops?

McAuliffe on hand for Wallops Research Park groundbreaking

WALLOPS ISLAND — Virginia Governor Terry McAuliffe joined NASA Goddard Space Flight Center Director Chris Scolese, Congressman Scott Rigell and nearly 100 people for the groundbreaking ceremony June 9 for the Wallops Research Park located just outside the gate of the NASA Wallops Flight Facility. The Park is an economic development effort between the Commonwealth of Virginia, Accomack County and the Chincoteague Bay Field Station to foster growth in business, research and educational activities in the area, particularly those related to the core activities at Wallops.

From right, Accomack County Supervisor Ron Wolff, Wallops Research Park Leadership Council Chairman Tom Young, Wallops Director Bill Wrobel, Virginia Governor Terry McAuliffe, Congressman Scott Rigell, and Center Director Chris Scolese break ground on the Wallops Research Park June 9.

MACRI signing ceremony

WALLOPS ISLAND — NASA joined with other Federal government agencies, academia, and non-profit organizations for the establishment of the Mid-Atlantic Coastal Resilience Institute (MACRI) at the Wallops Flight Facility June 9. MACRI will be the platform to combine and leverage the capabilities of participating institutions to provide an unprecedented integration of science and its applications to understand, predict, and integrate resilience into local, state, and regional policy planning for both human and natural coastal communities. MACRI participants include the NASA Goddard Space Flight Center's, Wallops Flight Facility and Goddard Institute of Space Science; U.S. Fish and Wildlife Service; U.S. Geological Survey; Chincoteague Bay Field Station of the Marine Science Consortium, the Universities of Virginia, Maryland and Delaware; the College of William and Mary; and The Nature Conservancy.

At left, Members of the Mid-Atlantic Coastal Resilience Institute gather for a group photo following the MACRI agreement signing ceremony here June 9.

Navy concludes first FCLP detachment operation

WALLOPS ISLAND — The Navy completed its first E-2/C-2 detachment to NASA's Wallops Flight Facility (WFF) for conducting Field Carrier Landing Practice (FCLP) operations Friday, June 27, completing about 3,746 training passes.

About 200 aviators, aircrew and maintenance personnel, along with eight aircraft, from Carrier Airborne Early Warning Squadron 120 (VAW 120), deployed to the Eastern Shore of Virginia for the operations.

Landing an aircraft on the flight deck of an underway aircraft carrier is one of the most complex and demanding tasks required of any pilot. FCLP is the foundation of carrier aviation, providing aviators with critical real world training before landing on an aircraft carrier. Before any carrier aviator – no matter how experienced – can fly to a carrier, he or she must successfully complete multiple day and night FCLP periods at a properly equipped airfield ashore.

An C-2 lands on a practice carrier deck on the Wallops Runway.

This will be the only time a detachment will be sent to Wallops for FCLP operations this summer.

RockOn! provides student payloads a ride to space!

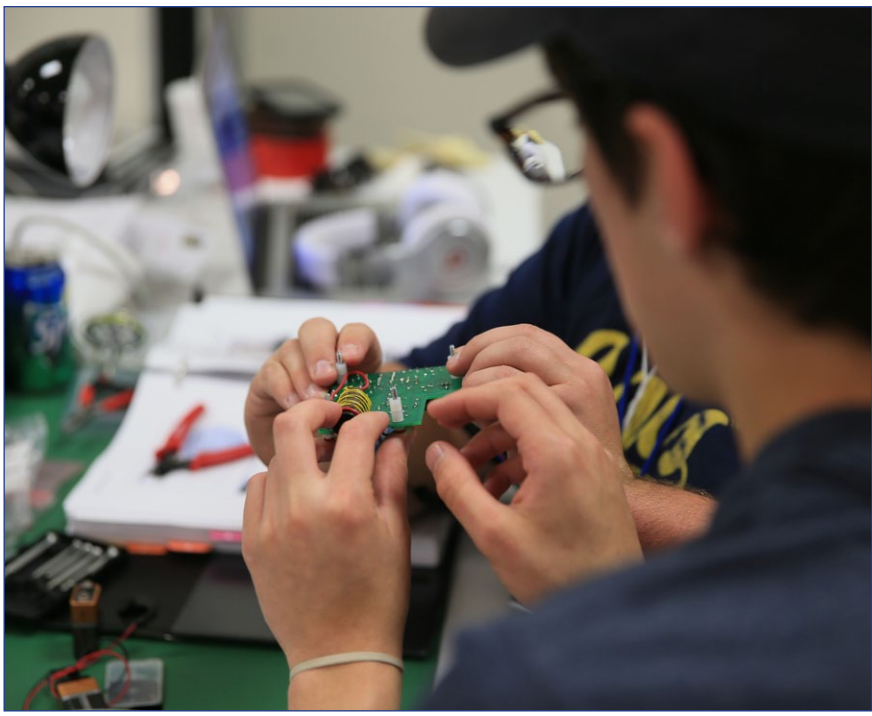
WALLOPS ISLAND — The RockOn Terrier-Improved Orion sounding rocket containing multiple student-built experiments launched successfully at 7:21 a.m. EDT June 26, 2014, from NASA's Wallops Flight Facility in Virginia.

The payload was recovered and returned to Wallops around noon the same day, and the students conducted their preliminary analysis on their experiments.

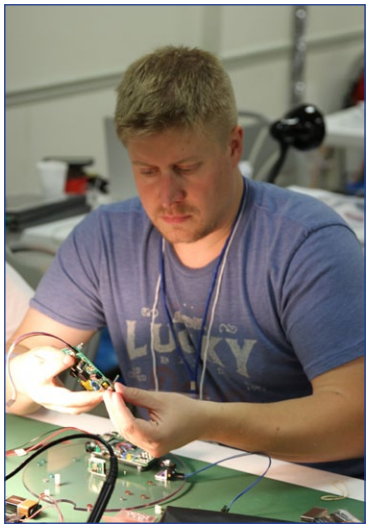
In addition to the RockOn! experiments, a group of more complex experiments from the RockSat-C program also flew on the sounding rocket. These experiments were developed by students, many of whom have participated in a previous RockOn! workshop, from Mitchell Community College, Statesville, North Carolina; West Virginia University, Morgantown; Carthage College, Kenosha, Wisconsin; Temple University, Philadelphia; and Howard University in Washington.

"The RockOn! and RockSat-C programs are part of an effort to expand students' skills in developing experiments for spaceflight," said Chris Koehler, director of the Colorado Space Grant Consortium.

According to the preliminary information, the payload flew to an altitude of 73.3 miles and landed via parachute 43.9 miles from Wallops Island in the Atlantic Ocean 12.16 minutes after launch.



Students work in teams to prepare their experiments for launch.



Students from multiple universities around the country created experiments to launch aboard a Terrier-Improved Orion sounding rocket, above, on June 26, 2014.

A shot from the LDSD payload shows the earth in the background as the balloon that carried it floats away.

Wallops plays major role in LDSD launch

New technology successfully tested for sending larger payloads to Mars

KEKAHA, Hawaii — NASA conducted a successful test of a new technology for landing larger payloads on Mars during a launch at 8:45 a.m. HST (2:45 p.m. EDT) June 28 from the Pacific Missile Range Facility (PMRF) in Kauai, Hawaii.

During the past four years, Wallops' Balloon Program and Range and Mission Management Office (RMMO) have provided support integral to the Jet Propulsion Laboratory (JPL) led Low-Density Supersonic Decelerator (LDSD) project.

For example, the Balloon Program Office/Columbia Scientific Balloon Facility provided the newly developed LDSD static launch tower, balloon carrier and balloon flight operations management.

"What was a challenge for this project is that we could not launch the balloon in the typical manner, with a mobile launch vehicle," said Debbie Fairbrother, NASA Balloon Program Office chief. "For safety, given the rocket motor on LDSD, we needed to remove people from the area around the test vehicle. So, we had to design and build a static launch tower — it was the first of its kind."

After the tower was built, NASA conducted numerous flight tests to verify its operational readiness. On launch day, the new launch tower and balloon performed "flawlessly," placing the test vehicle at the proper drop point over the range for the test, Fairbrother said.

The new landing technologies that were tested in LDSD included the Supersonic Inflatable Aerodynamic Decelerator (SIAD), resembling a large doughnut and the Supersonic Disk Sail Parachute.

"All indications are that the SIAD deployed flawlessly, and because of that, we got the opportunity to test the second technology, the enormous supersonic parachute, which is almost a year ahead of schedule," said Ian Clark, principal investigator for LDSD at JPL.

In addition to providing the balloon, the Wallops RMMO provided project management expertise pulling all the Wallops elements together and

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A Wallops Wish

Jaxsen Palmer gets a special tour of Pad 0A, HIF and aircraft hangars

Young Jaxsen Palmer and Mother Megan McFadden approach Pad 0A at the Mid-Atlantic Regional Space Port for the adventure of a lifetime.

If you had one wish, what would it be? Why, visit NASA Wallops, of course! That was the choice of three-year-old Jaxsen Palmer, NASA's newest rocket scientist and new Wallops alumnus.

Jaxsen, diagnosed with Acute Lymphatic Leukemia, loves all things related to rockets. He, with the aid of the Casey Cares Foundation, a Baltimore-based charity that provides uplifting opportunities to critically ill children and their families throughout the Mid-Atlantic region, came to Wallops with the hope of seeing some spacecraft up close and personal.

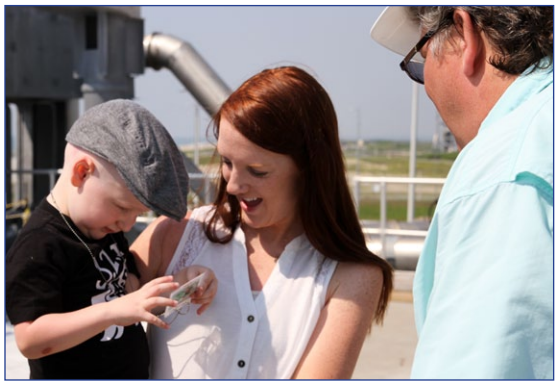
Wallops Visitors Center staffer, Jessica Beebe, joins Jaxsen and Megan for a special moment during the tour.

Top: Jaxsen peeks over the cockpit as he "pilots" a Beechcraft T-34, guided by NASA Research Pilots Gerrit Everson, left, and Alan Barringer, right.

At right: Jaxsen explores a massive Navy E-2 Hawkeye aircraft accompanied by his mother, Megan McFadden.

At left: Pulling his parents Nick Palmer and Megan McFadden along in excitement, Jaxsen visits the Antares rocket during a tour of the Horizontal Integration Facility (HIF).

Jaxsen steps off of a Navy E-2 Hawkeye aircraft.



At left: Jaxsen receives a souvenir from Darrell Gheen at the Mid-Atlantic Regional Spaceport.

At right: NASA Research Pilot Dennis Rieke greets Jaxsen and his father, Nick Palmer, beginning their tour of the Wallops hangars with a look at the C-130.

The NASA Wallops D3R radar, left, and the NPOL radar, right, ready to sample an approaching North Carolina storm.
Credit: J. Hardin, CSU

Wallops and Greenbelt Earth Science Researchers Lead GPM IPHEx Field Effort

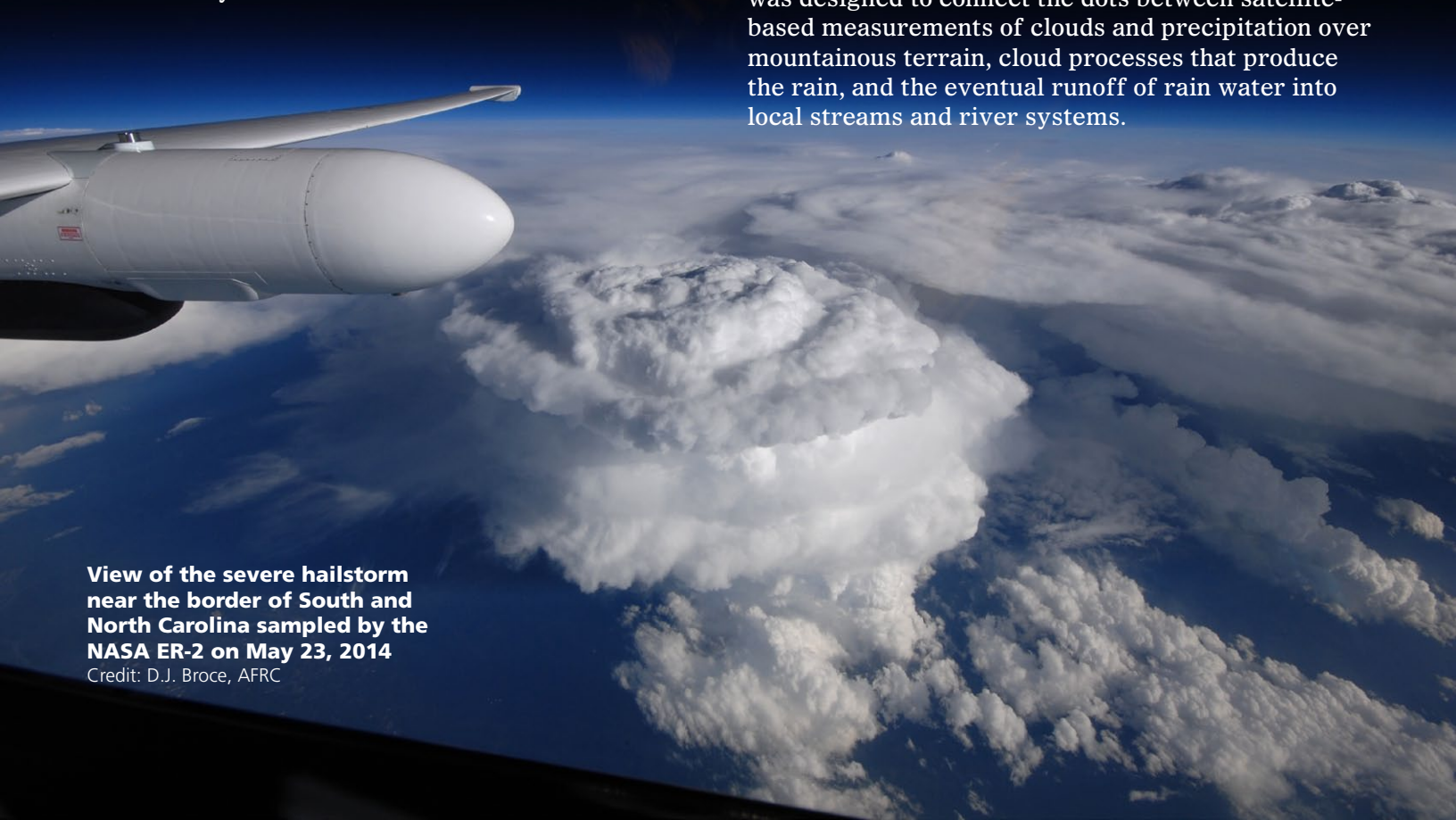
WALLOPS ISLAND — Rain, ice, hail, severe winds, thunderstorms, and heavy fog – the Appalachian Mountains in the southeast United States have it all.

NASA Greenbelt and Wallops Earth scientists completed a six-week joint campaign June 15 with NOAA and Duke University in western North Carolina to better understand the difficult-to-predict weather patterns of mountain regions.

The Integrated Precipitation and Hydrology Experiment (IPHEx) field campaign provided ground truth for measurements made by the Global Precipitation Measurement (GPM) mission's Core Observatory.

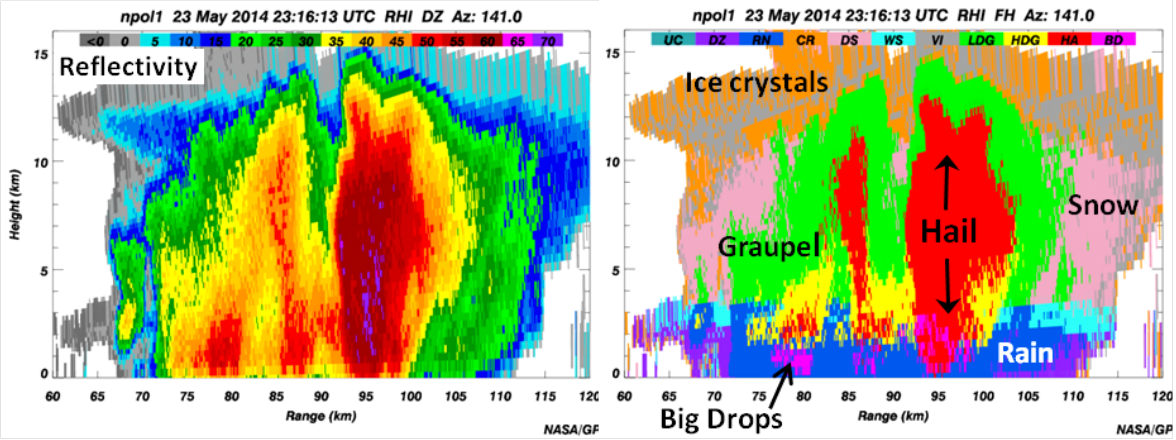
GPM is an international satellite mission to observe rain and snow around the world. The advanced instruments on the GPM Core Observatory satellite, launched Feb. 27, provide the next generation of precipitation measurements, including the new capability to detect snow and light rain. The Earth Science Office of Field Support at Wallops led field campaign science planning and implementation and also deployed its world-class research radars and associated gauge instrumentation to support the effort.

IPHEx was led by GPM Deputy Project Scientist and Wallops Code 610.W Branch Chief, Walt Petersen. It was designed to connect the dots between satellite-based measurements of clouds and precipitation over mountainous terrain, cloud processes that produce the rain, and the eventual runoff of rain water into local streams and river systems.



View of the severe hailstorm near the border of South and North Carolina sampled by the NASA ER-2 on May 23, 2014
Credit: D.J. Broce, AFRC

The NASA ER-2 at Warner-Robbins AFB is prepared for a mission on June 11, 2014.
Credit: D.S. Broce, AFRC



A vertical "slice" of the hail storm made from the NPOL radar with returned echo power on the left and the precipitation types on the right (note the very tall hail core in red; the hail core extended to nearly 40,000 feet and the echo top to 55,000 feet). This storm produced golf ball to tennis-ball sized hail.

An extensive set of air and ground-based instruments were deployed during IPHEx. On the airborne side, the NASA ER-2 operated at its 65,000 foot altitude as a GPM satellite "simulator," carrying a suite of three different radars, two radiometers, and a lightning instrument package. The University of North Dakota Citation aircraft carried an array of cloud and precipitation probes that it used to sample precipitation within the clouds under the ER-2. Multiple NASA radars including the WFF NPOL and D3R radars scanned the clouds and precipitation from the ground on a 24/7 basis.

IPHEx scientists successfully collected 113 hours of ER-2 and 78 hours of Citation airborne data and six full weeks of ground-based science data over a wide variety of storm types ranging from severe hail storms, heavy raining mountain cloud systems, to smaller and more lightly raining maritime clouds. Collectively the IPHEx observations will provide a comprehensive view of what precipitation actually "looks like" as viewed from spaceborne instrumentation (like that carried on the ER-2).

I am Goddard

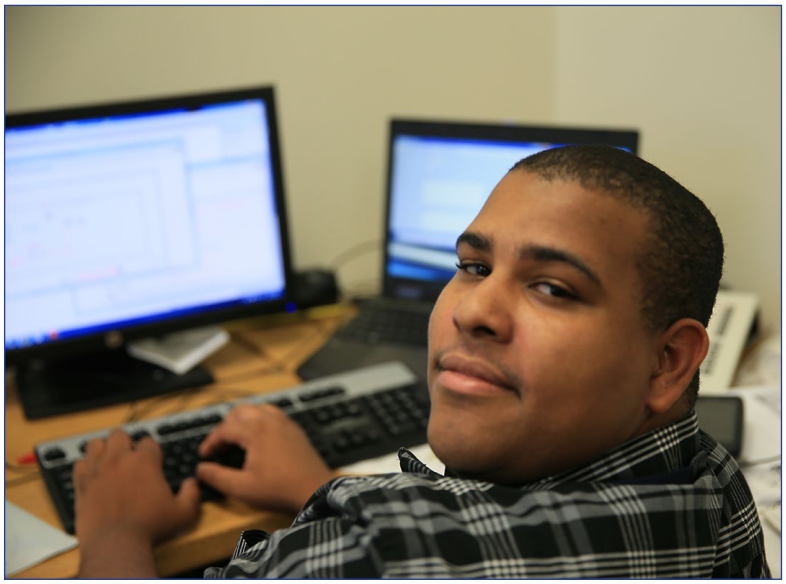
Christian Billie

From saucer-shaped disks testing new technologies to land heavier payloads on Mars, to developing launch trajectory visualizations and more, the Wallops Systems Software Engineering Branch is part of just about everything at Wallops.

Even your phone or tablet, if you like.

On August 7, 2013, Nathan Riolo, Wallops system software engineer, launched the What's up at Wallops app for Android users. The app, which includes mission information, visualizations and a compass showing what direction to look for launch viewing, provides a means for users to stay connected to Wallops.

The iOS version launched June 26, 2014, thanks to Wallops' Christian Billie, our focus for this month's Island Access. Get to know Christian better below:



Christian Billie

What is your position at Wallops?

I am a Systems Software Engineer for Code 589, part of the Software Engineering Branch of the Applied Engineering and Technology Directorate.

Where did you grow up? Where did you go to college?

I grew up on the Eastern Shore around the Accomack County area. However, I went to school at Holly Grove Christian School in Westover, Md. I ended up attending the Massachusetts Institute of Technology, graduating in 2013 with a degree in Computer Science and Engineering.

Why did you want to work at Wallops?

I have always wanted to work with NASA and become involved in the engineering that goes on around the area. Wallops was in the same area I grew up around, so it seemed like the best choice for me.

Why did you decide to do the iOS app?

It seemed to be in very high demand, given that many Wallops and Greenbelt personnel did not have Android devices and couldn't use the Android version released in 2013. In addition, this provided a unique opportunity for me to work through the entire software engineering process, which involves much more than just implementation.

What would you say to students interested in the computer science field?

I recommend starting with Python as an introduction to programming, as it is simple yet allows users to create very impressive things. Pure Computer Science is very math-focused, so you should be prepared to learn code as a tool rather than the end result of learning. Check out a book called Introduction to Algorithms to determine if this is a field you feel a passion for and would like to enter.

What has been your favorite thing about working at Wallops so far?

The culture is very humble and down-to-earth. You never feel like your colleagues are there to judge or belittle you, and the atmosphere is very relaxed, yet focused.

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integrating them with the JPL LDSD project team and Pacific Missile Range Facility. The Wallops Range also arranged for and coordinated the ocean recovery of the LDSD test vehicle, critical flight data recorders, and the balloon.

Furthermore, NASA's Applied Engineering and Technology Directorate provided the power, instrumentation, communications, and control systems necessary to execute the flight events and engineering data collection.

This launch could not have happened without the support provided by the NASA Wallops Safety Office. They worked tirelessly with PMRF Safety to establish the constraints under which the mission could safely be conducted, said Fairbrother.

"This entire effort was just fantastic work by the whole team and is a proud moment for NASA's Space Technology Mission Directorate," said Dorothy Rasco, deputy associate administrator for the Space Technology Mission Directorate at NASA Headquarters in Washington. "This flight reminds us why NASA takes on hard technical problems, and why we test - to learn and build the tools we will need for the future of space exploration. Technology drives exploration, and yesterday's flight is a perfect example of the type of technologies we are developing to explore our solar system."

Background: The LDSD payload takes off as the balloon that carried it falls back to the earth.

The balloon, which weighed 5,132 lbs., lifted the payload and flight train of 7,861 lbs to approximately 120,000 ft. over the Pacific Ocean and dropped the test vehicle at 11:05 a.m. HST (5:05 p.m. EDT) June 28. After a powered flight, the experiment splashed down at approximately 11:35 a.m. HST (5:35 p.m. EDT) and was recovered, with a total flight time of 3 hours and 35 minutes.

In order to get larger payloads to Mars and to pave the way for future human explorers, cutting-edge technologies like LDSD are critical. Among other applications, this new space technology will enable delivery of the supplies and materials needed for long-duration missions to the Red Planet.

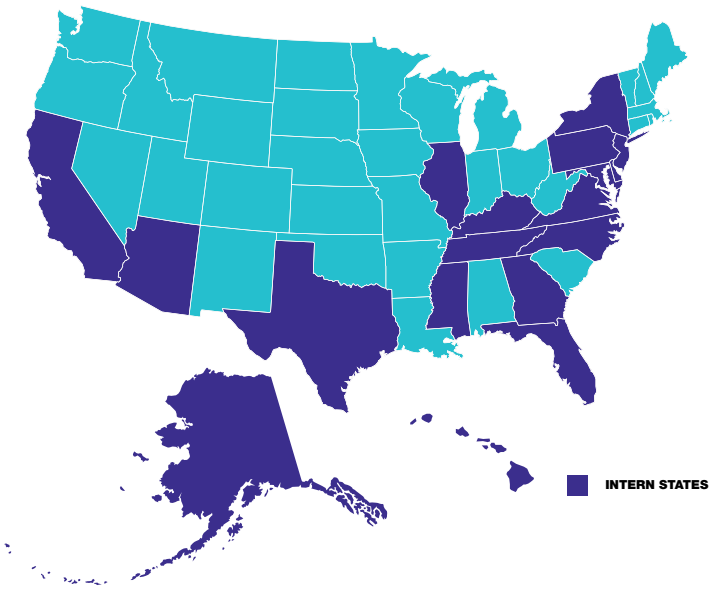
Advisory Committees at Wallops

All Wallops employees are advised of the following active advisory committees—established to provide advice, guidance, and recommendations to the director on issues, activities and events—and respective points of contact at the facility.

- **African American Advisory Committee (AAAC)** – Cheryl Johnson, Vice-Chair, and Roland Wescott
- **Hispanic Advisory Committee on Employment (HACE)** – Julio Diaz Perez
- **Lesbian, Gay, Bisexual, Transgender Advisory Committee (LGBTAC)** – Brenda Dingwall and Jay Pittman
- **Native American Advisory Committee (NAAC)** – Ben Cervantes, Chair
- **New and Developing Professionals (NDP)** – Sheryl Eni, Co-Chair
- **Women's Advisory Committee (WAC)** – Joyce Winterton
- **Veterans Advisory Committee (VAC)** – Teresita Guevara Smith
- **Asian Pacific American Advisory Committee (APAAC)** – Gerald Tiqui
- **Equal Accessibility Advisory Committee (EAAC)** – Denna Lambert

DID YOU **KNOW?**

Interns at Wallops



Wallops has students from all across the United States interning at the facility during Summer 2014. The above graphic shows the home states of the students in dark blue.