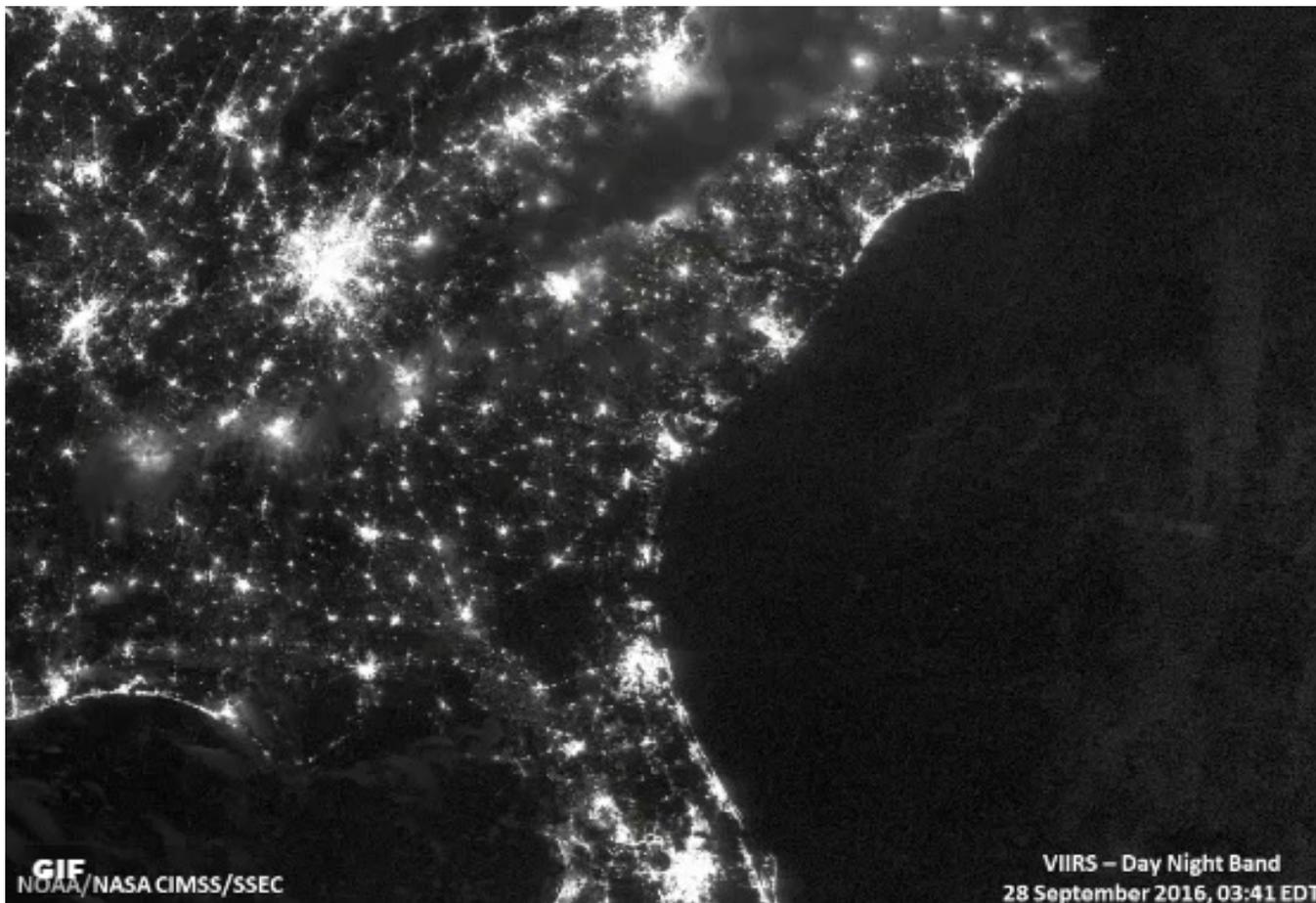


# NESDIS NEWS

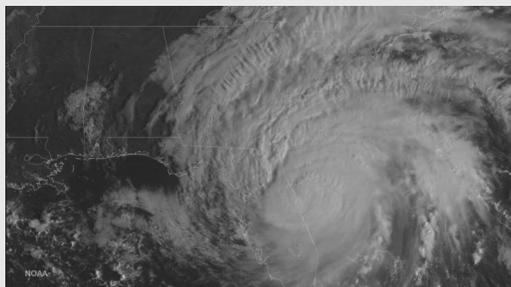
National Environmental Satellite, Data, and Information Service

October 2016



Hurricane Matthew formed near the Windward Islands on September 28, 2016. The hurricane worked its way up the eastern seaboard and swept over North Carolina on October 9, 2016. The above comparison of nighttime images from the Visible Infrared Imaging Radiometer Suite (VIIRS) instrument's Day/Night Band aboard the NOAA/NASA Suomi NPP, courtesy of our partners at the [Cooperative Institute for Meteorological Satellite Studies](#), shows a notable reduction in the glow of city lights in areas with no power. The "before" image was from September 28, 2016, before Hurricane Matthew arrived, and the "after" images are from October 9 and 10, 2016, after the passage of the Hurricane.

## DID YOU KNOW?



Hurricane Matthew's eye wall brushes coast of

## GOES-R Satellite Launch Rescheduled

Before Hurricane Matthew, the launch date for [NOAA's GOES-R](#) satellite was set for November 4, 2016.

Once Matthew passed, the

Florida, as captured by NOAA's GOES-East satellite.

A new forecast model, called E-SHIPS, was applied operationally by the [National Hurricane Center \(NHC\)](#) forecasters for the first time during Hurricane Matthew.

The model was jointly developed by folks at the [National Centers for Environmental Information \(NCEI\)](#) and the NHC. The model was transitioned to NHC operations this past spring.

The model provides modified hurricane intensity forecasts during eyewall replacement cycles, and was used by NHC forecasters during Matthew's eyewall replacement cycle, which occurred as Matthew moved along the Florida coast.

An [eyewall replacement cycle](#) occurs naturally during intense tropical cyclones and is a key indicator that a storm's strength and size is about to change dramatically.

## SARSAT Saves

The [Search and Rescue Satellite Aided Tracking](#) system detects and locates mariners, aviators, and recreational enthusiasts in distress. The satellites relay distress signals from emergency beacons to a network of ground stations and ultimately to the U.S. Mission Control Center in Suitland, Maryland. The Center processes the distress signal and alerts the appropriate search and rescue authorities to who is in distress and where they are located.

Select recent SARSAT rescues:

1) On October 11, 2016, the signal from a personal locator beacon (PLB) was detected approximately 13 nautical miles south of Barrow, Alaska. The PLB was activated when three individuals on ATVs were stuck in the snow. They set out on foot but became lost and stranded. The signal was received by NOAA's Satellite Operations Facility in Suitland, Maryland, and was sent to the Alaska Rescue Coordination Center (AKRCC), who contacted the North Slope Borough Search and Rescue (NSB). The NSB launched a helicopter to the position indicated by the SARSAT alert and recovered the three individuals.

2) On October 12, 2016, the signal from an emergency position indicating radio beacon (EPIRB) was detected approximately 92 nautical miles west of Key West, Florida. The EPIRB was activated when a 37-foot sailing vessel capsized, resulting in two people in the water. The signal was received by

launch team conducted an assessment of the launch infrastructure and determined that a move of the launch date was needed based on the storm's impacts.

Throughout the storm, the GOES-R spacecraft remained safe inside Astrotech Space Operations, in Titusville, Fla.

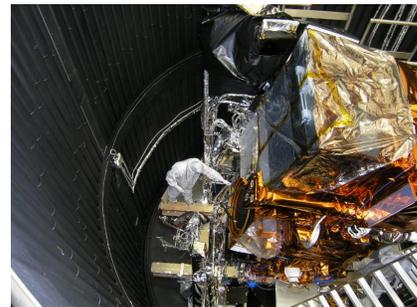
NOAA has been working with partners - NASA, United Launch Alliance, and the U.S. Air Force's 45th Space Wing - to prepare for the launch of the GOES-R spacecraft. The new launch date of November 16, 2016 has been approved by the 45th Space Wing and the mission team continues to make good progress recovering from the Hurricane Matthew impacts.



The GOES-R weather satellite in clean room at Astrotech. Credit: NASA

## Update on Launch of JPSS-1 Satellite

Over the last few months, NOAA and NASA leadership have been assessing various aspects of the [JPSS program](#) to determine an appropriate launch date for JPSS-1, balancing elements of hardware risk, program cost, and observing system continuity. Based on this assessment, we have set a new launch commitment date for JPSS-1 of Q4 FY 2017.



JPSS-1 in the thermal vacuum chamber. Credit: Ball Aerospace and Technologies Corporation

An aggressive JPSS-1 schedule was established in 2013, to address concerns with system robustness and avoid a possible gap in polar satellite coverage. Now, as we near launch and address issues with both the flight and ground system, we are adjusting our timeline to ensure we build in enough time to address all known issues.

The existing polar constellation, led by Suomi NPP and supported by legacy satellites NOAA-15, -18, and -19, is performing reasonably well and meeting all NOAA observing needs. As a result of the current health of the on-orbit portfolio, coupled with an effort to minimize flight and ground system risk prior to launch, NOAA has directed a change to the launch commitment date from Q2 FY 2017 to Q4 FY 2017.

The additional four to six months will enable full retirement of the existing Suomi NPP ground system and reduce flight and ground system risk, while continuing our efforts to minimize the risk of an on-orbit gap in the polar observing system.

NOAA's Satellite Operations Facility in Suitland, Maryland, and was sent to the Coast Guard District 7, who issued an Urgent Marine Information Broadcast and ordered the launch of a helicopter and boats. The helicopter arrived at the coordinates provided by the SARSAT alert and rescued both people from the water.

## Select Publications

1) A scientist from [NOAA's Center for Satellite Applications and Research](#) recently co-authored an article in the journal *ISPRS Journal of Photogrammetry and Remote Sensing*, titled [Changes in satellite-derived impervious surface area at US historical climatology network stations](#).

In this study, the authors describe an assessment of the changes in Landsat satellite-derived impervious surface area within 100 and 1000 meters of the location of climate stations included in the U.S. Historical Climatology Network within the 2001 to 2011 time interval. The climate stations that have increased levels of nearby impervious surface area are likely experiencing changes in the environment related to increased urbanization in the region.

1) A scientist from [NOAA's National Centers for Environmental Information](#), who is also associated with the [Cooperative Institute for Climate and Satellites at North Carolina State University](#), recently co-authored an article in the journal *Atmosphere-Ocean* titled [Evaluation of Total Precipitable Water from CRCM4 using the NVAP-MEaSUREs Dataset and ERA-Interim Reanalysis Data](#).

In this study, the authors analyze the behavior of precipitable water through the annual cycle over a 22 years period. The fourth-generation Canadian Regional Climate Model's (CRCM4) precipitable water is evaluated and compared with observational data and ERA-Interim reanalysis data over five Canadian basins. High-resolution regional climate model simulations may provide sufficiently accurate simulation of atmospheric water vapor to serve as input for incorporating global warming considerations into precipitation design values.

## NESDIS in the NEWS

You can find the most recent editions of **NESDIS Newsletters** [here](#).

## U.S. Climate Reference Network and Hurricane Matthew

The [U.S. Climate Reference Network \(USCRN\)](#) is a systematic sustained network of climate monitoring stations with sites across the conterminous U.S., Alaska, and Hawaii. These stations use high-quality instruments to measure temperature, precipitation, wind speed, soil conditions, and more, to provide a continuous series of climate observations for monitoring trends in the nation's climate.



The Brunswick, Georgia station.

As Hurricane Matthew tracked towards Florida and the southeastern U.S. coast, the five USCRN stations closest to Matthew's path were in Titusville, Florida (Kennedy Space Center); Brunswick, Georgia (pictured above); McClellanville and Blackville, South Carolina; and Cape Charles, Virginia. All five stations operated flawlessly, and no data was lost.

The highest peak wind gust from the five USCRN stations was 57 miles per hour (mph), recorded at the Kennedy Space Center station. Matthew made official landfall in McClellanville, South Carolina as a Category 1 hurricane (with maximum sustained winds of 75 mph), and the USCRN station there recorded a total of 8.12 inches and a peak wind gust of 36 mph. The station in Cape Charles, Virginia received the most rainfall (8.40 inches).

The timely receipt of this data at [NOAA's National Centers for Environmental Information](#) was dependent on the availability of the GOES Data Collection System (DCS). The GOES DCS facilitated the posting of the data on the USCRN web site in near real-time, which assisted in monitoring efforts.

Federal, state and local agencies monitor the environment through the transmission of observations from surface-based platforms to NOAA satellites. Decision-makers in the areas of emergency response and resource allocation depend on the GOES DCS, which transmits data via federally-allocated radio frequency spectrum, even during a hurricane.

## U.S National Ice Center Supporting the University of Alaska - Fairbanks

The [U.S. National Ice Center \(USNIC\)](#) has been supporting a pair of [R/V Sikuliaq](#) missions in ice infested waters of the Arctic.

The R/V *Sikuliaq* is a 261-foot oceanographic research vessel capable of bringing scientists to the ice-choked waters of Alaska and the polar regions. She is



The R/V *Sikuliaq*. Credit: University of Alaska Fairbanks

### SpaceFlight Now

[GOES-R weather satellite's ride to space being stacked at Cape Canaveral](#)

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[Weather and Climate priorities facing the next U.S. President](#)

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[NOAA takes "huge step" in predicting solar storms' impact on earth](#)

### Washington Post -- Capital Weather Gang

[Streak of record warm months ends for the planet, but global warming continues](#)

### Inquisitr

[Satellite Tracks Hurricane Matthew from Space](#)

owned by the [National Science Foundation](#) and operated by the by the College of Fisheries and Ocean Sciences at the [University of Alaska Fairbanks](#), as part of the U.S. academic research fleet.

The first mission, known as "Dynamic Arctic," examined the complicated ocean dynamics of the Arctic and how Arctic sea ice changes are affecting the region's chemistry and ecology.

The second mission, known as the [Canada Basin Acoustic Propagation Experiment \(CANAPE\)](#), is supported by the [Office of Naval Research](#), and is being conducted by scientists at Scripps Institute of Oceanography. This mission consists of a yearlong experiment in the Canada Basin of the Arctic Ocean, and aims to understand the effects of changing Arctic conditions on low-frequency, deep-water propagation and on the low-frequency ambient noise field.

The USNIC is providing RadarSat2 and other products to the R/V *Sikuliaq* to support effective navigation and provide research data.

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## Message from Dr. Stephen Volz

### Assistant Administrator for NESDIS

As we enter a new fiscal year, I would like to thank Congress for your continued support of our important work.



FY 2016 was a successful year for NESDIS. We, along with our partners, launched and transitioned to operations the Jason-3 satellite, continued development of the GOES-R Series and JPSS Program, entered into two contracts for the Commercial Weather Data Pilot, conducted cutting edge research, developed new products, and continued to archive data and make it available to the Nation.

We look forward to what FY 2017 has to bring, starting with the launch of the GOES-R satellite on November 16. We hope to see you in Florida at the launch!

Please contact Sierra Jones at 202.482.6140 or [sierra.jones@noaa.gov](mailto:sierra.jones@noaa.gov) if you have any questions regarding NOAA's [NESDIS](#), or would like to set up a meeting.

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