

NESDIS NEWS

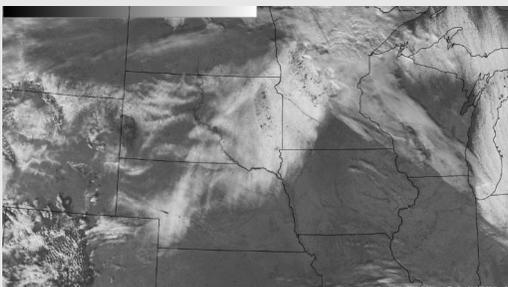
National Environmental Satellite, Data, and Information Service

November 2016



GOES-R, the first of NOAA's highly advanced geostationary weather satellites, successfully lifted off from Cape Canaveral, Florida on November 19, 2016 at 6:42pm EST and is on its way to orbit! Successful spacecraft separation, solar array deployment, and satellite communication and power have been confirmed and GOES-R is flying free in space for the first time. In about two weeks, once GOES-R is situated in orbit 22,300 miles above Earth, it will be known as GOES-16. Within a year, after undergoing a checkout and validation of its six instruments, the new satellite will become operational. Get the [latest updates](#) on GOES-R or watch a [video of the launch](#). (Photo credit: United Launch Alliance)

DID YOU KNOW?



GOES-R: What's Next?

[NOAA's GOES-R](#) satellite is expected to achieve geostationary orbit approximately 16 days after launch.

Once that occurs, the satellite will be known as GOES-16, placed in the

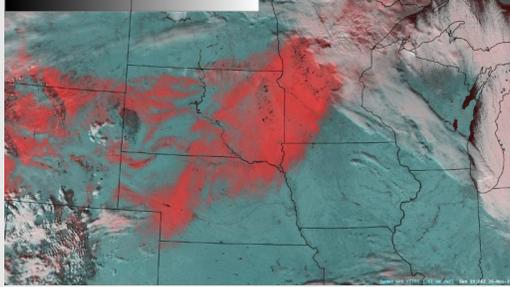


Photo credit: Cooperative Institute of Meteorological Satellite Studies

The NOAA/NASA Suomi NPP satellite, which is flying the Visible Infrared Imaging Radiometer Suite (VIIRS) instrument, is capable of distinguishing snow and ice.

The above images depict the same region in the midwestern United States. The top image is visible imagery, which is essentially a snapshot of what the satellite sees. The bottom image is a red-green-blue (RGB) image, discriminating between snow and cloud. The snow (red) is what remains from the snow storm that swept through the midwest and northeast in mid-November.

The GOES-R satellite will have a similar capability with its Advanced Baseline Imager (ABI) instrument. In conjunction with other bands, the snow/ice band will be used for daytime cloud, snow, and ice discrimination, total cloud cover estimation, cloud-top phase, and smoke detection from fires with low burn rates.

Daytime delineation between water, ice, and clouds will be very helpful for aircraft routing.

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. To view rescues by calendar year, visit the [SARSAT rescues map](#).

Select recent SARSAT rescues:

1) On October 20, 2016, the signal from a personal locator beacon (PLB) was detected approximately 173 nautical miles southeast of Cape Fear, North Carolina. The PLB was activated by the three-person crew of the 40-foot Canadian sailing vessel *Juste Ciel* when they encountered severe weather while

89.5 degrees West checkout location, and begin a post-launch testing checkout period of approximately six months.

Post-launch testing includes on-orbit calibration, instrument-level testing, and product validation. After this checkout period, operational and products handover from NASA to NOAA occurs.

GOES-16 will then undergo six months of extended validation before being assigned to its operational orbit at either GOES-East (75 degrees West) or GOES-West (137 degrees West). The final decision will be based on the health and performance of the GOES constellation.



The GOES-R weather satellite.

2016 Lake Erie Algal Bloom



NOAA's National Centers for Coastal Ocean Science (NCCOS) recently reported that Lake Erie's 2016 *Microcystis* cyanobacteria bloom was "mild compared to the last few years, with a severity index of 3.2, much lower than the 10.5 record observed in 2015."

According to the NCCOS [Experimental Lake Erie Harmful Algal Bloom Bulletin](#), in the western Lake Erie basin, this year's bloom biomass was more toxic than in 2015 but less than half the toxicity of 2014.

The above true-color images from the NOAA/NASA Suomi NPP's Visible Infrared Imaging Radiometer Suite (VIIRS) instrument show the extent of the algal blooms in Lake Erie on October 11, 2015 (left) and, by way of comparison, October 10, 2016 (right). As you can see, the 2016 bloom is much smaller than that of the prior year.

Since satellites can measure the different wavelengths of light that are absorbed by the planet surface and reflected back to space, NOAA scientists can use that data to calculate how much green pigment associated with the algae is contained in the surface waters. Chlorophyll pigment strongly absorbs red and blue wavelengths of light and reflects green. Data from Suomi NPP, as well as predecessor satellites such as NASA's Aqua, have been used by NOAA to monitor oceanic chlorophyll concentration since 1987.

traveling from Norfolk, Virginia to the British Isles. The signal was received by NOAA's Satellite Operations Facility in Suitland, Maryland, and was sent to the Coast Guard District 5, who issued an Urgent Marine Information Broadcast and directed Air Station Elizabeth City to launch a C-130 fixed-wing aircraft and a helicopter to the scene. The Amver vessel *Privsea* was diverted to the scene and took the *Juste Ciel* in tow. Due to the distance offshore, the U.S. Navy vessel *Mesa Verde* rendezvoused with the Coast Guard helicopter for refueling. The helicopter arrived on scene and hoisted the crew of *Juste Ciel* and transported them to Elizabeth City for medical treatment. All three crew members were suffering from physical exhaustion and dehydration.

2) On November 17, 2016, the signal from an emergency position indicating radio beacon (EPIRB) was detected approximately 572 nautical miles northeast of Miami, Florida. The EPIRB was activated when the sailing vessel *Leopard* capsized, leaving the three people on board to abandon ship in a dinghy. The signal was received by NOAA's Satellite Operations Facility in Suitland, Maryland, and was sent to the Coast Guard District 7, who contacted the beacon owner, who provided the vessel's last known position. The Coast Guard notified RCC Cuba and issued an Enhanced Group Call to find nearby vessels. The Coast Guard also launched an HC-130, which located the disabled vessel and crew. The HC-130 vectored a good samaritan to recover the three people. There were no injuries or illness to report.

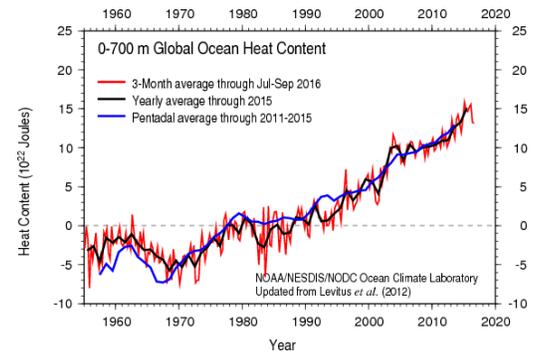
Select Publications

1) A scientist from [NOAA's National Centers for Environmental Information](#) recently co-authored a review paper in the journal *Earth's Future* titled [The global warming hiatus: slowdown or redistribution?](#)

In this study, the authors review studies with diverse information that examined the "global warming hiatus," including uncertainties and knowledge gaps. One insight is that the global mean surface temperatures, which exhibited a smaller rate of warming during 1998-2012 compared to warming in the latter half of the 20th century, is a surface characteristic that does not represent slowdown in warming of the climate system. Rather, it is an energy redistribution within that system, in particular from the surface to the deeper ocean. Better understanding of the ocean

Ocean Heat Content: July - September 2016 Update

[NOAA's National Centers for Environmental Information](#) are not only responsible for archiving NOAA data, but also perform scientific analyses and develop products.



One such product, [ocean heat content](#), is essential for understanding and modeling global climate. Greater than 90% of excess heat in the Earth's system is absorbed by the ocean, and expansion due to increased heat contributes to sea level rise.

Change in ocean heat content is calculated from the difference of observed temperature profiles from the long-term mean. For July - September 2016, global ocean heat content was lower than for the same quarter in 2015, but is still the second highest July-September ocean heat content on record.

The central North Pacific Ocean and subpolar North Atlantic Ocean remain cooler than the long-term mean, and lower than normal ocean heat content still extends around the equator across the Pacific Ocean, in the southwestern Atlantic, and Indian Ocean.

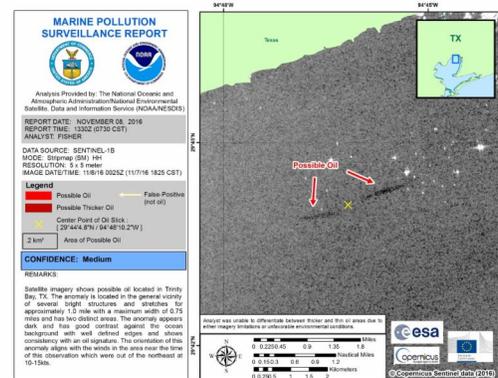
Sump Malfunction Leak Detected in Trinity Bay

On November 11, 2016, the Office of Satellite Products and Operations detected a potential oil slick in Trinity Bay, Texas.

Images from the Sentinel-1B satellite were analyzed and an

anomaly in the image was detected. This enabled the Oil Spill Office - Region 2 of the Texas General Land Office in La Porte, Texas, to identify a sump malfunction that was responsible for the anomaly detected in the satellite. NOAA's satellite analysis provided the first indication of the problem.

NOAA receives Sentinel-1B data from our partners at the European Space Agency (ESA) on a full and open basis, pursuant to a U.S.- European Commission Agreement and a lower, technical implementation agreement between NOAA and ESA. The Sentinel-1 mission is a constellation of two satellites, Sentinel-1A and Sentinel-1B, that image the Earth every six days.



distribution and redistribution of heat will help better monitor Earth's energy budget.

NESDIS in the NEWS

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

EOS

[First of the Next Generation Weather Satellites Hits the Sky](#)

Florida Today (op-ed by Dr. Sullivan)
[U.S. Launches 1 of Most Powerful Satellites in History](#)

The Hill (op-ed by Secretary Pritzker)
[Launching the Next Generation of Weather Satellites](#)

Aerospace Technology
[ULA Launches New GOES-R Satellite for NASA and NOAA](#)

BBC News
[Satellite to help planes avoid turbulence](#)

Washington Post
[U.S. launches next-generation weather satellite that will revolutionize forecasting](#)

Space News
[Next Generation of Weather Satellite Launches](#)

Message from Dr. Stephen Volz

Assistant Administrator for NESDIS

November has been a very exciting month for NOAA, our partners, and the Nation.



After over 10 years of development of the GOES-R Series, the first satellite in the series, GOES-R, was launched on November 19, 2016 at 6:42 pm.

GOES-R will provide improved hurricane track and intensity forecasts, increased thunderstorm and tornado warning lead time, improved aviation flight route planning, better data for long-term climate variability studies, improved air quality warnings, better monitoring of space weather to improve geomagnetic storm forecasting, improved solar flare warnings for communications and navigation disruptions, and more accurate monitoring of energetic particles responsible for radiation hazards.

The weather community also indicated their strong interest in GOES-R with many local TV stations broadcasting from Cape Canaveral to explain to their viewers about the benefits that GOES-R will bring to their local forecasts. In addition to students involved in various aspects of developing GOES-R at our Cooperative Institutes, I am pleased that wide press coverage on all platforms exposed a generation of STEM students from elementary to high school that weather satellites could be a career choice.

On behalf of NOAA, I'd like to thank NASA, our industry partners - Ball Aerospace, Lockheed Martin, Harris Corporation, the University of Colorado's Laboratory for Atmospheric and Space Physics, Assurance Technology Corporation, United Launch Alliance, and subcontractors - and Congress for their support of this historic satellite launch.

Please contact Sierra Jones at 202.482.6140 or 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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