

National Environmental Satellite, Data, and Information Service (NESDIS)

October 2014 Newsletter



Operations – Vegetation Index

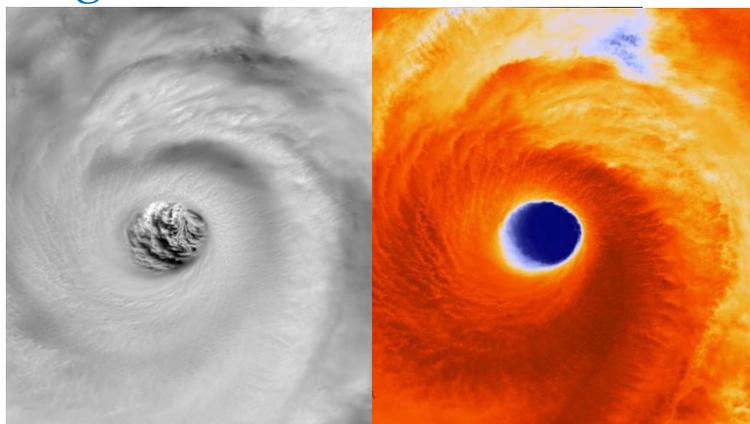
Vegetation on Our Planet

NOAA scientists use satellite observations of vegetation greenness to develop vegetation health products that can be used for a variety of applications, from weather and ecological forecasting to best practices for land use. Characterizing the vegetation can give an early warning for the outbreaks of drought, hazardous fire conditions, or even malaria break-outs in Sub-Saharan Africa.

Because vegetation greatly affects the runoff, surface temperature, and relative humidity of an area, weather forecasts are beginning to integrate vegetation dynamics into numerical models. For the past 22 years, NOAA has used AVHRR data from legacy polar-orbiting satellites to generate vegetation indexes. The VIIRS sensor on the Suomi NPP satellite is now providing these data, which is eight times more detailed and of a higher and more consistent quality. Please visit [here](#) for more information.



Image of the Month



The Eye of the Typhoon

High resolution [imagery](#) from the VIIRS instrument on the Suomi NPP satellite shows highly detailed views of the eye of Super Typhoon Vongfong as it moved north towards Japan. The image on the left is a high resolution visible image and the right is a colored infrared image. Satellite estimates indicated that the eye was approximately 50 miles wide. Vongfong made landfall on the Japanese mainland on October 13, and became a post-tropical cyclone on October 14. Vongfong was forecast to make it all the way to Alaska's Aleutian Islands.

Spotlight – Space Debris

Managing Threat of Collisions

Space around earth is littered with numerous man-made objects and natural particles that could potentially collide with operating spacecraft. These range from micro meteorites (size of a softball) to large rocket bodies averaging speeds of 17,500 mph in low-Earth orbit, where the majority of operating spacecraft reside.

There are more than 20,000 debris objects that are being monitored by the U.S. Department of Defense for satellite managers around the world. This information is used by satellite mission managers to evaluate predicted close approaches and when necessary perform a Risk Mitigation Maneuver (RMM) to maneuver the satellite away from the object. For satellites operated by NOAA, these maneuvers are planned and executed by NOAA's Satellite Operations Facility in Suitland, Maryland.

NOAA's primary weather satellite, Suomi NPP, is the first polar satellite NOAA has ever flown with maneuver capability. Since its launch in October 2011, it has required four RMMs to avoid space debris. These threats have been due to debris from: the Chinese Fengyun-1C, a meteorological satellite China destroyed in 2007 in a test of an anti-satellite missile; a 2009 collision of a functioning commercial communications satellite and a defunct Russian satellite; a discarded booster from a Delta 1 launch vehicle; and a piece of Thorad Agena-D rocket.

Regardless of the size or source of the debris, NOAA treats every threat equally and takes actions necessary to preserve our assets.

Please visit [here](#) for more information.

Message from Mark Paese

Acting Assistant Administrator for NESDIS

2014 has been a year of numerous changes for NESDIS, notably the retirement of Assistant Administrator Mary Kicza, who had served since 2006, to the naming of her successor, Dr. Stephen Volz, who joins us November 2.

2014 has also been a year of accomplishment for NESDIS, from research to information services to satellite acquisitions. Our GOES-R and JPSS programs continue to be on schedule for their launch dates, and the DSCOVER mission is scheduled to launch in January 2015 followed by Jason-3 in March. The new National Climate Assessment and World Ocean Atlas were released thanks to the work of NCDC and NODC, respectively, and the Extended Continental Shelf Project office began operations at NGDC this year. In FY 2014, researchers at STAR produced 173 peer reviewed journal articles and book sections, comprising upwards of 10% of the scholarly output of all of NOAA.

Thank you for your continued support, and Happy New Fiscal Year!

www.nesdis.noaa.gov

Update: Satellite Acquisition Programs

GOES-R Series:

- GOES-R remains on target for a second quarter FY 2016 launch.
- GOES-R spacecraft bus successfully completed mating of the system and core modules.
- The Geostationary Lightning Mapper (GLM) instrument for GOES-R is officially complete. Training modules have been released to introduce users to the capabilities of the GLM so that they can be prepared to utilize the data to maximum extent possible once GOES-R is launched.
- GOES-R spacecraft integration efforts continue. The Earth Pointing Platform, the Advanced Baseline Imager (ABI), and GLM have all been integrated onto the spacecraft this month.
- The Release Final Product Set hardware for the Core Ground System was shipped to the NOAA Satellite Operations Facility.
- The Extreme Ultraviolet X-Ray Irradiance Sensor (EXIS) FM2 for GOES-S completed the pre-shipment review.

COSMIC-2:

- U.S. Air Force (USAF) is on target to support COSMIC-2 with a third quarter FY 2016 launch of the first six satellites in equatorial orbit by SpaceX.
- Initial work to build the ground system processing system is underway with international and domestic partners. The ground system will be capable of ingesting data from other sources, including commercial.
- A Request for Information on commercial-based options was released in September and NOAA is reviewing responses.

JPSS:

- Suomi NPP continues to operate nominally and is providing data that is being ingested in NWS numerical weather prediction models.
- JPSS-1 remains on target for launch in the second quarter of FY 2017. Instrument integration will begin in first quarter of FY 2015.
- A Request for Offer was released to industry for the JPSS-2 satellite and follow-on missions in August 2014. All proposals have been received and are currently under review.

Jason-3:

- Launch planned for second quarter of FY 2015 out of Vandenberg Air Force Base, Lompoc, CA on a SpaceX launch vehicle.
- Final Satellite Performance Tests are underway. Satellite will be placed in temporary storage in November 2014.
- Operational Ground Tests with all partners are progressing well and will be complete by February 2015.

DSCOVR:

- DSCOVR remains on target for a January 2015 launch out of Cape Canaveral, FL on a SpaceX launch vehicle.
- DSCOVR Operations Readiness Review and the Pre-Shipments Review are scheduled for November.
- DSCOVR Mission and Flight Readiness Reviews are scheduled for December.
- All pre-launch IT security actions have been closed.

Activities at the Data Centers

National Geophysical Data Center (NGDC):

NGDC's Earth Observation Group (EOG) specializes in nighttime observations of lights and combustion sources worldwide, relying heavily upon the Visible Infrared Imaging Radiometer Suite (VIIRS) currently flying on the Suomi NPP satellite. Once VIIRS data have been used for operational weather forecasting and placed in archive, the data are available for a number of unique analyses. One such application of these data is EOG's VIIRS Nightfire (VNF) product that provides locations and magnitudes of gas flares worldwide and are being used as a discovery tool by companies that specialize in the recovery of natural gas from existing oil fields. The VNF data are analyzed in conjunction with logistic issues to evaluate the profitability of gas capture and recovery.

National Climatic Data Center (NCDC):

The NCDC recently added two datasets to the [World Data Center for Paleoclimatology](#) inventory. They include data for the North Atlantic Oscillation, Medieval Climate Anomaly, El Niño-Southern Oscillation, and drought. Over 9,375 datasets were accessed from this archive in September. NCDC continues to add new datasets to their paleoclimate archive in a continuous effort to bring this important and useful information to users worldwide.

National Oceanographic Data Center (NODC):

Greater awareness of the oceans' role in global climate change has led to improved acquisition, dissemination, and quality control of oceanographic data through international projects, thus broadening the demand for ocean modeling on spatial scales finer than 1-degree resolution. NODC's *World Ocean Atlas* climatologies have been used to provide initial and boundary conditions for modeling studies, as well as baselines for climate studies. An [article](#) on the *World Ocean Atlas 2013* was published in *Eos, Transactions, American Geophysical Union*. The NODC authors highlight the need for higher resolution *in situ* climatological mean fields (see image below – mean annual temperature at (a) 1° resolution versus (b) 0.25° resolution).

