

Additional NOAA Research Tools and Resources

[National Environmental Satellite, Data, and Information Service - Interagency and International Affairs Division \(NESDIS-IIAD\)](#)

NESDIS IIAD builds relationships with government organizations around the world. NESDIS and NOAA could not accomplish all they do without scientific and data exchange with our partners built on years of cooperation and collaboration. NESDIS IIAD facilitates access to NOAA data for non-NOAA domestic and international partners in support of weather forecasting, science and protection of life and property. In addition, IIAD provides capacity building support. The Mission is: To meet the challenge of understanding and predicting changes in climate, weather, oceans, and coasts, NESDIS IIAD facilitates the access, provision, and use of in situ and satellite data and products, and develops and implements U.S. policy by:

- Linking Earth observation needs to in situ and satellite resources through bilateral international and interagency partnerships;
- Coordinating global solutions to shared challenges in obtaining, processing, and building capacity to exploit both in situ and satellite data by representing NOAA and the United States in multilateral satellite and data information organizations;
- Providing insight into international developments and partnerships through timely analysis for NOAA decision-makers; and
- Leading the international community in the adoption of responsible policies for satellite operation and data, including full and open data sharing

[National Environmental Satellite, Data, and Information Service \(NESDIS\)](#)

The NESDIS science enterprise transforms the “bits and bytes” received from satellites and other sources around the globe into environmental intelligence. From official comprehensive assessments of the environment to mapping the ocean floor from space, NESDIS science helps us better understand our complex planet. Use these interactive tools to view and download real-time, full-resolution satellite imagery. Learn about the NOAA GOES Satellites [here](#) also.

[National Geodetic Survey](#)

NOAA’s National Geodetic Survey (NGS) provides the framework for all positioning activities in the Nation. The mission of the National Geodetic Survey (NGS) is to define, maintain and provide access to the National Spatial Reference System (NSRS). The NSRS provides a consistent coordinate system that defines latitude, longitude, height, scale, gravity, and orientation throughout the United States and its territories.

[National Ocean Services - NOAA Ecological Forecasting](#)

An ecological forecast predicts changes in ecosystems and ecosystem components in response to an environmental driver such as climate variability, extreme weather conditions, pollution, or habitat change. It also provides information about how people, economies, and communities may be affected. Local authorities and members of the public use these early warnings to make decisions to protect the health and well-being of a particular area.

[National Ocean Services at NOAA Coastal Services Center in partnership with NOAA's National Hurricane Center and National Climatic Data Center - Hurricane Tracker](#)

NOAA's Historical Hurricane Tracks, a free online tool, now includes all 2012 global hurricanes. The site, developed by the NOAA Coastal Services Center in partnership with NOAA's National Hurricane Center and National Climatic Data Center, offers data and information on coastal county hurricane strikes through 2012. It also provides links to detailed reports on the life histories and effects of U.S. tropical cyclones since 1958, with additional U.S. storm paths traced as far back as 1851. The site contains global hurricane data from as far back as 1842.

Of note, the online tool now incorporates the path of and details on Hurricane Sandy. Barreling up the U.S. Atlantic coast, the super storm made landfall in New Jersey on October 29, 2012. It was one of the costliest storms in American history, affecting parts of 24 states, and killing scores of people. Total U.S. damage estimates from the storm exceed \$50 billion.

In addition to showing tracks of storms, the site provides insight on the increasing numbers of U.S. citizens and infrastructure at risk from hurricanes, detailing population changes for U.S. coastal counties from 1900 to 2000.

[National Weather Service - Space Weather Prediction Center \(SWPC\)](#)

Space Weather impacts numerous facets of everyday life, from where airplanes can safely fly, to how accurately a farmer plows his field. In addition, there are a large variety of phenomena that are driven by the variability of the sun over periods ranging from hours to years. SWPC provides information for novices and experts alike about the impacts and phenomena of Space Weather. SWPC provides numerous tools, graphics and datasets to help both the casual user and research scientists understand and make use of the vast array of space weather information. Forecasts of several types are available to give warning of upcoming space activity, and models provide longer term outlooks for future events.

[NOAA - Climate Data Online](#)

Climate Data Online (CDO) provides free access to NCDC's archive of global historical weather and climate data in addition to station history information. These data include quality controlled daily, monthly, seasonal, and yearly measurements of temperature, precipitation, wind, and degree days as well as radar data and 30-year Climate Normals. Customers can also order most of these data as certified hard copies for legal use.

[NOAA - National Centers for Environmental Information \(NCEI\)](#)

NCEI is the world's largest provider of weather and climate data. Land-based, marine, model, radar, weather balloon, satellite, and paleoclimatic are just a few of the types of datasets available. Detailed descriptions of the available products and platforms are below.

[NOAA - National Centers for Environmental Information \(NCEI\) - Archive Information Request System](#)

Some of NCEI's data holdings are archived on a Hierarchical Data Storage System (HDSS), which includes a tape robotics system for data archived on tape. NCEI provides direct online access to these data through the Archive Information Request System (AIRS). Other services for archived data are available elsewhere on the NCEI website, so this is not a compilation of all HDSS-archived datasets. As with all of our online services, we provide the data and products at no cost to customers. Files are generally delivered in their native formats as archived by NCEI. Click on data categories below to view a list of available datasets. Information will include brief descriptions, periods of record, links to documentation, and ordering options.

[NOAA - National Weather Service - GIS](#)

Many of the National Weather Service data sets are available in formats that are able to be imported directly into Geographic Information Systems (GIS) or your own custom map viewers or web pages. Data formats include downloadable shapefiles, web services, KML files and our basemaps in shapefile format. The ESRI Story Map (in the link) shows various types of NWS data that are available for public use. There are many links within the Story Map that can provide you with additional information about how you can use NWS data for yourself.

[NOAA - NOS - Tides and Currents](#)

The Center for Operational Oceanographic Products and Services (CO-OPS) and its predecessors have gathered oceanographic data along our nation's coasts for over 200 years to protect life, property, and the environment. Serving both the public and other government agencies, CO-OPS is the authoritative source for accurate, reliable, and timely water-level and current measurements that support safe and efficient maritime commerce, sound coastal management, and recreation.

[NOAA - NWS - Office of Water Prediction \(OWP\)](#)

The Office of Water Prediction (OWP) collaboratively researches, develops and delivers state-of-the-science national hydrologic analyses, forecast information, data, decision-support services and guidance to support and inform essential emergency services and water management decisions. In partnership with NWS national, regional, and local offices, the OWP coordinates, integrates and supports consistent water prediction activities from global to local levels. The OWP will play a critical role in enhancing water-related products and decision-support services across the country in support of the strategic objective to build a Weather-Ready Nation. The Office of Water Prediction provides an unprecedented opportunity to improve federal coordination and collaboration in the water sector to address 21st century water resource challenges, such as water security and analysis and prediction of hydrologic extremes.

[NOAA - NWS - Tsunami Warning System](#)

Water level data, historical tsunamis, recent tsunami

[NOAA - Science on a Sphere](#)

Science On a Sphere® (SOS) is a room sized, global display system that uses computers and video projectors to display planetary data onto a six foot diameter sphere, analogous to a giant animated globe. Researchers at NOAA developed Science On a Sphere® as an educational tool to help illustrate Earth System science to people of all ages. Animated images of atmospheric storms, climate change, and ocean temperature can be shown on the sphere, which is used to explain what are sometimes complex environmental processes, in a way that is simultaneously intuitive and captivating.

Science On a Sphere® extends NOAA's educational program goals, which are designed to increase public understanding of the environment. Using NOAA's collective experience and knowledge of the Earth's land, oceans, and atmosphere, NOAA uses Science On a Sphere® as an instrument to enhance informal educational programs in science centers, universities, and museums across the country. Science On a Sphere® is available to any institution and is currently in operation at a number of facilities in the US.

[NOAA Central Library](#)

The mission of the NOAA Central Library is to support and further NOAA's mission of promoting global environmental stewardship in order to conserve and wisely manage the Nation's marine and coastal resources; and describing, monitoring, and predicting changes in the Earth's environment in order to ensure and enhance sustainable economic opportunities. The NCRL provides scientific, technical and legislative information covering global climate change, aquaculture, coastal zone management, fisheries, meteorology, ocean/atmospheric interactions, remote sensing, cartography, geophysics, photogrammetry, GIS, and water resources to NOAA scientists, administrators, and others working in related disciplines in support of NOAA's programs.

[NOAA Data Discovery Portal](#)

Two approaches to enable searching NOAA's vast data holdings: the traditional NOAA Data Catalog for all data, and the new NOAA OneStop catalog which initially includes only the archived datasets but will eventually replace the traditional data. The NOAA Data Catalog is an inventory of all NOAA data collections. The user interface allows web-based searching by keywords and other attributes; machine-to-machine searching is available using the OGC CSW protocol (Open Geospatial Consortium Catalog Service for the Web). NOAA OneStop provides enhanced collection and granule searching for only those datasets archived at the National Centers for Environmental Information (NCEI).

[NOAA Education](#)

The NOAA Education Portal is your one-stop shop to connect with learning and teaching resources about the ocean and atmosphere. Discover curricula, lesson plans, and real-time data to bring NOAA science into your classroom. Explore opportunities for educators and students of all levels. Apply for competitive funding for education projects.

[NOAA Fisheries \(NMFS\) Outreach & Education](#)

NOAA envisions healthy ecosystems, communities, and economies that are resilient in the face of change. To support this vision, the outreach and education programs aim to: Educate and inspire the nation to use science toward improving our understanding of ocean life, conserve and protect our ocean resources, encourage stewardship to care for our oceans and coasts, prepare a future workforce to continue our mission. NOAA strives to support educational opportunities for all sectors of the public—from preschoolers to postgraduates and educators to fishermen. Keep reading to find educational resources, professional development opportunities, and upcoming events.

[NOAA Fisheries \(NMFS\) Publications](#)

Publications include peer-reviewed research, key reports, documents, and the publication database.

[NOAA Fisheries \(NMFS\) Science and Data](#)

Science and data resources include data and maps, peer-reviewed research, surveys and stock assessments, and technology and tools related to NOAA Fisheries.

[NOAA Office for Coastal Management - Aquaculture](#)

The presence and location of aquaculture sites, derived from multiple state websites, include coastal and marine saltwater locations only. Additional data sets are added and improvements made as new information becomes available.

NOAA Office for Coastal Management, Bureau of Labor Statistics, Bureau of Economic Analysis - Socioeconomic Ddata

The Economics: National Ocean Watch (ENOW) data set features time-series data focused on the six economic sectors that are dependent on the oceans and Great Lakes. ENOW is available for counties, states, regions, and the nation in a wide variety of formats.

NOAA Photo Library on Flickr

NOAA Photo Library on Flickr

Office for Coastal Management - Digital Coast

This NOAA-sponsored website is focused on helping communities address coastal issues and has become one of the most-used resources in the coastal management community.

Datasets: <https://coast.noaa.gov/digitalcoast/data/home.html>

Tools: <https://coast.noaa.gov/digitalcoast/tools/>

Office of Coast Survey - Nautical Charts

We are the nation's nautical chart-maker. We are responsible for upgrading charts, surveying the seafloor, responding to maritime emergencies, and searching for underwater obstructions that pose a danger to navigation.

Office of Marine and Aviation Operations

NOAA provides a wide range of specialized airborne environmental data collection capabilities vital to understanding the Earth, conserving and managing coastal and marine resources, and protecting lives and property.

The Oceanic and Atmospheric Research International Activities Office (OAR/IA)

The Oceanic and Atmospheric Research International Activities Office (OAR/IA) advances NOAA's science enterprise and priorities on ocean, atmosphere, and climate.

NOAA maintains a dedicated and vibrant research enterprise that provides a holistic understanding of how weather, climate, ocean, and coastal systems are inextricably interconnected with each other and with society.

OAR is NOAA's research capability which innovates, incubates, and integrates new ideas and new technologies that result in improved services for the Nation.

The OAR International Activities Office:

- Leverages international collaborations and strategic partnerships;
- Supports U.S. foreign policy objectives through active participation in the Science and Technology (S&T) fora and;
- Serves the needs of OAR laboratories and programs on specific research issues and operational requests.

These efforts support NOAA's overall vision of healthy ecosystems, communities, and economies that are resilient to environmental change. OAR/IA has four operational objectives:

- Advise NOAA and its research leadership on international science policy, strategies, programs, and issues in support of U.S. foreign policy and corporate science priorities;
- Support and represent OAR interests and programs by serving its laboratories on international programmatic, administrative and operational needs;
- Promote strategic partnerships with national and international organizations that benefit NOAA and OAR's research programs in climate, atmospheric, and marine science; and
- Lead U.S. science and technology partnerships by serving as executor and administrator for several of NOAA's bilateral agreements with Australia, China, France, Indonesia, India, Japan, and Russia.