



## NOAA In Your State



***NOAA is an agency that enriches life through science. Our reach goes from the surface of the sun to the depths of the ocean floor as we work to keep citizens informed of the changing environment around them. From daily weather forecasts, severe storm warnings, and climate monitoring to fisheries management, coastal restoration and supporting marine commerce, NOAA’s products and services support economic vitality and affect more than one-third of America’s gross domestic product. NOAA’s dedicated scientists use cutting-edge research and high-tech instrumentation to provide citizens, planners, emergency managers and other decision makers with reliable information they need when they need it.***

***The following is a summary of NOAA facilities, staff, programs, or activities based in, or focused on, your state or territory: Starting with highlights, then by [congressional districts and cities or towns](#), [Great Lakes programs](#), and then [statewide programs](#).***

### [Highlights of NOAA in Ohio](#)

<a href="#">Center Weather Service Unit</a>	Cleveland	OH-11
<a href="#">Old Woman Creek National Estuarine Research Reserve</a>	Huron	OH-9
<a href="#">Ohio River Forecast Office</a>	Wilmington	OH-2
<a href="#">PORTS®</a>	Cleveland	OH-11
	Toledo	OH-9

The state of Ohio is home to two weather forecast offices, [Science On a Sphere® at the Boonshoft Museum](#), Ohio Sea Grant College Program, one National Estuarine Research Reserve, and multiple observing platforms.

## [Weather Forecast Offices](#)

Cleveland OH-11

Wilmington OH-2

[National Weather Service \(NWS\) Weather Forecast Offices \(WFO\)](#) are staffed 24/7/365 and provide weather, water, and climate forecasts and warnings to residents of Ohio. There are 122 [WFOs nationwide](#) of which two are in Ohio. Highly trained forecasters issue warnings and forecasts for events, including severe thunderstorms, tornadoes, hurricanes, winter storms, floods, and heat waves to the general public, media, emergency management and law enforcement officials, the aviation and marine communities, agricultural interests, businesses, and others. Information is disseminated in many ways, including wireless emergency alerts, social media, [weather.gov](#), and NOAA Weather Radio All Hazards. Each WFO has a Warning Coordination Meteorologist who actively conducts outreach and educational programs that strengthen working relationships with local partners in emergency management, government, the media and academic communities. Forecasters provide Impact-based Decision Support Services (IDSS), both remotely and on-site during critical emergencies such as wildfires, floods and chemical spills, and major recovery efforts. To gather data for forecasting and other purposes, NWS WFO staff monitor, maintain and use Automated Surface Observing Stations and Doppler Weather Radar. In addition to the WFOs, NWS operates specialized national prediction [centers](#) and regional headquarters throughout the U.S. for a total of 168 operational units. Over 85% of NWS' workforce is in the field. For current Ohio weather, visit [www.weather.gov](#) and, on the national map, click on the relevant county or district.

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## [Science On a Sphere®](#)

Dayton OH-9

[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 complex environmental processes in a way that is simultaneously intuitive and captivating. It is located at the Boonshoft Museum.

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### **[OH-2](#)**

#### **[Wilmington](#)**

#### **National Weather Service (NWS) - [River Forecast Office](#)**

The Ohio River Forecast Center (RFC) performs continuous river basin modeling and provides hydrologic forecast and guidance products for rivers and streams for the entire Ohio River Basin and its tributaries, and the Lake Erie drainage basin in Ohio. These products include forecasts of river stage and flow, probabilistic river forecasts, reservoir inflow forecasts, gridded precipitation estimates and forecasts, spring flood outlooks, and flash flood and headwater guidance. RFCs work closely with local, state and federal water management agencies, including the U.S. Army Corps of Engineers,

U.S. Bureau of Reclamation, and U.S. Geological Survey, to provide water and flood information for critical decisions (aka Impact-based Decision-Support Services or IDSS).

**National Weather Service (NWS) - [Weather Forecast Office](#)**

The NWS Weather Forecast Office (WFO) is staffed around-the-clock every day, and provides the best possible weather, water, and climate forecasts and warnings to residents of southwest Ohio. Highly trained forecasters issue warnings and forecasts for events, including severe thunderstorms, tornadoes, winter storms, floods, and heat waves. This essential information is provided to the general public, media, emergency management and law enforcement officials, the aviation and marine communities, agricultural interests, businesses, and others. Information is disseminated in many ways, including through dedicated government channels, satellite, the Internet, and NOAA Weather Radio All Hazards. Forecasters also provide Impact-based Decision-Support Services (IDSS), both remotely and on-site, during critical emergencies, such as wildfires, floods, chemical spills, and for major recovery efforts such as those following the Joplin and Moore tornadoes, Hurricanes Katrina and Sandy, and the Sept. 11, 2001, terrorist attacks in New York City and Washington D.C. The WFO collects and disseminates precipitation, river, and rainfall data, and prepares local climatological data. Each WFO has a Warning Coordination Meteorologist who actively conducts outreach and educational programs, which helps build strong working relationships with local partners in emergency management, government, the media and academic communities. The WFO operates Automated Surface Observing Stations (ASOS), as well as the local Doppler Weather Radar, which provides critical information about current weather conditions. The radar data enables forecasters to issue warnings for tornadoes, severe thunderstorms, and flash floods.

**[OH-7, 12, 15](#)**

**[Columbus](#)**

**National Ocean Service (NOS) - [Regional Geodetic Advisor](#)**

The Regional Geodetic Advisor is a National Ocean Service (NOS) employee that resides in a region and serves as a liaison between the National Geodetic Survey (NGS) and its public, academic and private sector constituents within their assigned region. NGS has a Regional Geodetic Advisor stationed in Columbus, Ohio serving the Appalachian region – Ohio, Kentucky, Pennsylvania, and West Virginia. The Geodetic Advisor provides training, guidance and assistance to constituents managing geospatial activities that are tied to the National Spatial Reference System (NSRS), the framework and coordinate system for all positioning activities in the Nation. The Geodetic Advisor serves as a subject matter expert in geodesy and regional geodetic issues, collaborating internally across NOS and NOAA to ensure that all regional geospatial activities are properly referenced to the NSRS.

**[OH-9](#)**

**[Huron](#)**

**National Ocean Service (NOS) - [Old Woman Creek National Estuarine Research Reserve](#)**

The 573-acre Old Woman Creek Research Reserve, designated in 1980 and managed by Ohio Department of Natural Resources, is one of two reserves representing a freshwater estuary on the Great Lakes. Located on the southwestern shore of Lake Erie, the site features freshwater marshes, swamp forests, a barrier beach, upland forests, and a riparian stream. As one of the few remaining intact examples of a freshwater estuary on the southern shore of Lake Erie, the reserve is a critical spawning and nursery ground for many recreational and commercial fisheries including crappie, blue gill, and channel catfish. The program's stewardship, research, education and training programs increase public awareness and increase the decision making capacity of local decision makers.

### **[Put-In-Bay](#)**

#### **Office of Oceanic and Atmospheric Research (OAR) - [Stone Laboratory](#)**

The National Sea Grant College Program (Sea Grant) is a federal-university partnership administered by NOAA that integrates research, extension outreach, and education. Sea Grant forms a national network of 34 programs in all U.S. coastal and Great Lakes states, Puerto Rico, and Guam. Sea Grant extension agents are stationed at Stone Laboratory in Put-in-Bay, Ohio. As trusted experts who are considered honest brokers of information (non-advocacy), Sea Grant extension agents provide reliable technical and science-based information to residents to address local needs while also transferring research priorities back to their universities.

### **[Toledo](#)**

#### **Office of Oceanic and Atmospheric Research (OAR) - [Realtime Environmental Coastal Observation Network Stations](#)**

The goal of the Great Lakes Environmental Research Laboratory's Real Time Environmental Coastal Observation Network (RECON) project is to develop a national network of low cost coastal buoys capable of seabed to sea-surface observations. This wireless Internet observation system, with shore stations at coastal locations covering approximately 800 square miles of sea surface, uses commercially available networking equipment allowing straightforward integration into a nationwide network. The Toledo Marker 2 Station is a shore station that measures/records wind speed, wind direction, wind gust, and air temperature at two-minute increments. Additionally there are four webcam views, with images updated every twenty minutes.

### **[OH-10](#)**

#### **[Dayton](#)**

#### **NOAA Office of Education**

##### **- [Science On a Sphere® at the Boonshoft Museum](#)**

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 complex environmental processes in a way that is simultaneously intuitive and captivating.

### **[OH-11](#)**

#### **[Cleveland](#)**

#### **National Weather Service (NWS) - [Center Weather Service Unit](#)**

Housed in the Federal Aviation Administration's Cleveland Air Traffic Control Center (ARTCC), the Center Weather Service Unit (CWSU) staff provides aviation forecasts and other weather information to ARTCC personnel for use in directing the safe, smooth flow of aviation traffic in northern Ohio, western Pennsylvania, western New York, northern West Virginia, and southeast Michigan.

#### **National Weather Service (NWS) - [Weather Forecast Office](#)**

Located at Cleveland Hopkins International Airport, this NWS Weather Forecast Office (WFO) is staffed around-the-clock every day, and provides the best possible weather, water, and climate forecasts and warnings to residents of northern Ohio and northwestern Pennsylvania. This office also provides marine forecasts for Lake Erie. Highly trained forecasters issue warnings and forecasts for events, including severe thunderstorms, tornadoes, winter storms, floods, and heat waves. This essential information is provided to the general public, media, emergency management and law enforcement officials, the aviation and marine communities, agricultural interests, businesses, and others. Information is disseminated

in many ways, including through dedicated government channels, satellite, the Internet, and NOAA Weather Radio All Hazards.

Forecasters also provide Impact-based Decision-Support Services (IDSS), both remotely and on-site, during critical emergencies, such as wildfires, floods, chemical spills, and for major recovery efforts such as those following the Joplin and Moore tornadoes, Hurricanes Katrina and Sandy, and the Sept. 11, 2001, terrorist attacks in New York City and Washington D.C. The WFO collects and disseminates precipitation, river, and rainfall data, and prepares local climatological data. Each WFO has a Warning Coordination Meteorologist who actively conducts outreach and educational programs, which helps build strong working relationships with local partners in emergency management, government, the media and academic communities. The WFO operates Automated Surface Observing Stations (ASOS), as well as the local Doppler Weather Radar, which provides critical information about current weather conditions. The radar data enables forecasters to issue warnings for tornadoes, severe thunderstorms, and flash floods.

**Office of Oceanic and Atmospheric Research (OAR) - [Real-Time Environmental Coastal Observation Network](#)**

The goal of the Great Lakes Environmental Research Laboratory's (GLERL's) Real-time Environmental Coastal Observation Network (RECON) project is to develop a national network of low cost coastal buoys capable of seabed to sea-surface observations. This wireless Internet observation system, with shore stations at coastal locations covering approximately 800 square miles of sea surface, uses commercially available networking equipment allowing straightforward integration into a nationwide network. The Cleveland buoy collects meteorological data (wind speed, direction, air temperature) and provides lake surface and sub surface measurements of chemical, biological, and physical parameters including water temperature, significant wave height, maximum wave height, dissolved oxygen, and conductivity. The system is designed to allow controlled access to multi-institutional users through surface buoys and sub-surface sensor guest ports located on an underwater hub. The observation network currently provides environmental data to state, federal, and university researchers, educators and resource managers.

**OH-12**

**Coshocton**

**Office of Oceanic and Atmospheric Research (OAR) - [U.S. Climate Reference Network](#)**

The US Climate Reference Network (USCRN) is an operationally viable research network of more than 138 climate stations that are deployed nationwide. Data from the USCRN are used in various climate monitoring activities and for placing current climate anomalies into an historical perspective. The USCRN provides the United States with a reference network that contributes to an International network under the auspices of the Global Climate Observing System (GCOS). ARL/ATDD manage the USCRN in partnership with NOAA's NESDIS/NCEI.

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**Great Lakes**

**Multiple NOAA Programs - Lake Erie Harmful Algal Bloom Forecast**

A Harmful Algal Bloom Program (HAB) bulletin has been developed to provide a weekly forecast for *Microcystis* blooms in western Lake Erie to local health officials, water treatment managers, natural resource managers and several research scientists in the area. HABs produce toxins that may pose a significant risk to human and animal health through water recreation and may form scum that are unsightly and odorous to beach visitors, impacting the coastal economy. Forecasts depicting current and future locations of blooms, as well as intensity, will alert scientists and managers to possible threats to the Great Lakes beaches and assist in mitigation efforts.

There are three Lake Erie HAB Forecasting Products:

1. The **Western Lake Erie Harmful Algal Bloom Early Season Projections**, issued weekly by the National Centers for Coastal Ocean Science (NCCOS/NOS) beginning in May, estimate bloom severity based on measurements of phosphorus loading from the Maumee River combined with long-range forecasts and historical records. Projections are issued until NCCOS and Ohio Sea Grant issue the Seasonal Lake Erie HAB Forecast in late June.
2. **Lake Erie HAB Seasonal Forecast:** NCCOS and Ohio Sea Grant issue a seasonal forecast in late June. The Seasonal Lake Erie HAB Forecast gives coastal managers and drinking water facility operators a general sense of how “bad” the upcoming bloom season has the potential to be. The seasonal forecast is an ensemble of models based largely upon phosphorus discharge from the Maumee River.
3. The **Lake Erie HAB forecast (nowcast and 5 day forecast)** provides the current bloom extent and 5-day outlooks of where the bloom will travel and what the concentrations are likely to be seen, allowing managers to determine whether to take preventative actions. It is issued by the National Centers for Coastal Ocean Science (NCCOS/NOS) twice a week during bloom season (July - Oct) to the Lake Erie HAB Alert subscribers list and posted to the NCCOS Lake Erie HAB Forecast page.

#### **National Ocean Service (NOS) – [Bipartisan Infrastructure Law](#)**

The Bipartisan Infrastructure Law is helping coastal communities build the future they want to see. The legislation provides a historic investment in coastal protection and restoration that will increase community resilience to climate change and extreme weather events, and improve how we manage our ocean resources. Projects funded under this law protect and restore ecologically significant habitats, including conserving lands that play a critical role in helping communities become more resilient to natural hazards. Ohio received funding for one project in FY22, as well as funds to build the state's capacity to protect its coastal communities and resources.

#### **National Ocean Service (NOS) - [Navigation Manager](#)**

NOAA's navigation managers work directly with pilots, port authorities, and recreational boating organizations in Ohio to help identify the navigational challenges facing marine transportation in Ohio and provide NOAA's resources and services that promote safe and efficient navigation. Navigation managers are on call to provide expertise and NOAA navigation response coordination in case of severe coastal weather events or other marine emergencies. The Office of Coast Survey has a Navigation Manager located in Cleveland, OH to support mariners and stakeholders in Great Lakes waters.

#### **NOAA Commissioned Officer Corps (NOAA Corps) - [Navigation Manager, Great Lakes Region](#)**

The NOAA Commissioned Officer Corps stations an officer with the National Ocean Service Navigation Services Division in Cleveland in support of NOAA's strategic goal of Promoting Safe Navigation by interacting and working closely with the entire maritime community. This officer performs a variety of functions, including liaising with the USCG, US Army Corps of Engineers, Department of Defense, state and municipal offices, and Canadian maritime and charting representatives; working with the maritime community to rectify any identified navigation issues, keeping stakeholders informed of progress; expanding awareness of Coast Survey programs through outreach efforts at conferences and workshops; and conducting special projects as directed, such as Coast Pilot updates, chart evaluations, ECDIS applications, and forward special charting requests. In addition, the officer is the liaison to shipping companies, pilot associations, port authorities, port users, and other interested parties to identify and understand their needs for navigation products and services.

#### **National Ocean Service (NOS) - [Navigation Response Team](#)**

The Office of Coast Survey (OCS) maintains the nation's nautical charts and publications for U.S. coasts and the Great Lakes. OCS navigation managers are strategically located in U.S. coastal areas to provide regional support to federal and state agencies in order to assist with navigational challenges. The Office of Coast Survey's Navigation Response

Branch (NRB) conducts routine and emergency hydrographic surveys; and working with the regional Navigation Managers, navigation response teams (NRT) work around-the-clock after storms to speed the reopening of ports and waterways. During emergency response, the NRTs provide time-sensitive information to the U.S. Coast Guard or port officials, and transmit data to NOAA cartographers for updating Coast Survey's suite of navigational charts. Mobile integrated response team (MIST) kits are available to the Great Lakes that can be used on a vessel of opportunity and staffed by NRT members.

#### **National Marine Fisheries Service (NMFS) - [Restoration Center](#)**

The [NOAA Restoration Center](#), within the [Office of Habitat Conservation](#), works with partners across the nation to restore habitat to sustain fisheries, recover protected species, and maintain resilient coastal ecosystems and communities. We have over 30 years conducting habitat restoration through competitive funding opportunities and technical assistance. We also work to reverse habitat damage from disasters like oil spills, ship groundings, and severe storms. In the Great Lakes, the NOAA Restoration Center focuses on restoring the most degraded environments--designated Areas of Concern. Our projects address loss of habitat and diminished fish and wildlife populations. NOAA also works with the [Great Lakes Restoration Initiative](#) to implement habitat restoration projects that will help improve Areas of Concern. See the interactive [Restoration Atlas](#) to find habitat restoration projects near you. Site visits to see habitat projects may be available in Ohio, please inquire if interested.

#### **National Marine Fisheries Service (NMFS), National Ocean Service (NOS), and NOAA General Counsel - [Damage Assessment, Remediation, and Restoration Program](#)**

NOAA's Damage Assessment, Remediation, and Restoration Program (DARRP) assesses and restores habitat, fisheries, protected species and recreational uses that have been harmed by oil spills, chemical releases, and ship groundings. Working with federal, state, and tribal entities, and responsible parties, we have recovered funding from responsible parties for restoration of critical habitats, fisheries, protected species and recreational uses nationwide. These projects promote recovery of the ecosystem and provide economic benefits from tourism, recreation, green jobs, coastal resiliency, property values and quality of life. Ohio is a co-trustee with NOAA for assessment and restoration after pollution incidents in Ohio. For more information about our work in Ohio, visit: [DARRP in Your State](#) (and use the top menu to navigate to "Ohio") and this [interactive map](#).

#### **National Ocean Service (NOS) - [National Water Level Observation Network](#)**

The National Ocean Service (NOS) operates four long-term, continuously operating water level stations in the state of Ohio, which provide data and information on Great Lakes and interconnecting waterways datum and lake level regulation and are capable of producing real-time data for storm surge warning. These stations are located on Lake Erie at Fairport, Cleveland, Marblehead and at Toledo. Station data feeds into many CO-OPS products that are used to support safe navigation, mitigate coastal hazards, and protect communities. Such products include:

- Coastal Inundation Dashboard - view water levels in real-time and during storms
- High Tide Flooding Outlooks
- Sea level trends and maps
- Real-time current measurements
- Hydrodynamic models
- Tidal and water level datums

#### **National Ocean Service (NOS) - [Cuyahoga PORTS®](#)**

A Physical Oceanographic Real-Time System (PORTS®) is operated cooperatively with the local maritime community on the Cuyahoga River at Cleveland. Real-time data are quality-controlled and disseminated to local users for safe and

efficient navigation and include water level with meteorological data from one station in Cleveland and a current meter on the Cuyahoga River.

**National Ocean Service (NOS) - [Toledo PORTS®](#)**

A Physical Oceanographic Real-Time System (PORTS®) is operated cooperatively with the local maritime community on the Maumee River at Toledo. Real-time data are quality-controlled and disseminated to local users for safe and efficient navigation and include water level with meteorological data from one station in Toledo and a current meter on the Maumee River.

**National Ocean Service (NOS) - [Phytoplankton Monitoring Network](#)**

The Phytoplankton Monitoring Network (PMN) is a nationwide community-based volunteer program of citizen scientists monitoring for the presence of organisms that can lead to Harmful Algal Bloom (HAB) formation. Volunteers serve as data collectors for marine and freshwater blooms at more than 200 coastal and inland sites in the U.S. and Caribbean. Monitoring is conducted year-round and volunteers are trained to measure salinity, air and water temperatures, and how to collect phytoplankton samples using a plankton net. Samples are then analyzed for any HAB organisms via microscopy. Data collected by PMN volunteers enhances the Nation's ability to respond to and manage the growing threat posed by HABs by collecting important data for species composition and distribution in coastal and freshwater environments and creating working relationships between volunteers and professional marine biotoxin researchers. Event monitoring can assist state and federal agencies to issue timely warnings about shellfish consumption and other public health concerns.

**National Ocean Service (NOS) - Mussel Watch Program**

The National Oceanic and Atmospheric Administration (NOAA) Mussel Watch Program (MWP) monitors the status and trends of chemical contaminants and biological stressors in the nation's coastal waters. MWP began in 1986, and is based on the periodic collection and analysis of bivalves (oysters and mussels) and sediment from a network of more than 300 monitoring sites nationwide. Contaminants monitored at each site include the EPA's Priority Pollutant List of toxic substances and a suite of chemicals of emerging concern such as flame retardants, PFAS, pharmaceuticals, and current use pesticides.

**National Ocean Service (NOS) - [Coastal and Estuarine Land Conservation Program](#)**

The Coastal and Estuarine Land Conservation Program (CELCP) brings conservation partners together to protect coastal and estuarine lands considered important for their ecological, conservation, recreational, historical, or aesthetic values. Subject to availability of funding, the program provides state and local governments with matching funds to purchase coastal and estuarine lands or obtain conservation easements for important lands threatened by development. Since 2002, the program has protected more than 110,000 acres of coastal land nationally, including over 16,000 acres protected as in-kind matching contributions. A total of twenty-four projects have been completed in Ohio. Fourteen of these projects received CELCP funds from NOAA, while another ten projects were awarded using funds from EPA's Great Lakes Restoration Initiative. These lands are protected in perpetuity. In addition, a land conservation project was funded in FY22 in Ohio under the CELCP authority with funding through the Bipartisan Infrastructure Law.

**National Ocean Service (NOS) – [National Coastal Zone Management Program](#)**

Through a unique federal-state partnership, NOAA's Office for Coastal Management works with the Ohio Department of Natural Resources to implement the National Coastal Zone Management Program in Ohio. NOAA provides the state coastal management program with financial and technical assistance to further the goals of the Coastal Zone

Management Act and ensure coastal waters and lands are used in a balanced way to support jobs, reduce use conflicts, and sustain natural resources.

**National Ocean Service (NOS) – [Digital Coast](#)**

The Digital Coast is a focused information resource developed to meet the unique needs of coastal communities. Developed and maintained by NOAA's Office for Coastal Management, content comes from hundreds of organizations, including federal, state, and local agencies, plus private sector and non-profit contributors. The Digital Coast website provides not only site-specific coastal data, but also related tools, training, and information needed to make these data useful for coastal decision makers. The Digital Coast Act authorizes the Digital Coast as a standing national program and supports NOAA's efforts to increase access to authoritative data, tools, and training that enable coastal communities to plan for long-term resilience, manage water resources, and respond to emergencies.

**National Ocean Service (NOS) – [National Coastal Resilience Fund](#)**

The National Coastal Resilience Fund is a partnership effort between NOAA and the National Fish and Wildlife Foundation (NFWF) to restore, increase, and strengthen natural infrastructure to protect coastal communities, while also enhancing habitat for fish and wildlife. In Ohio, six projects have been funded, one in FY19 and FY20 and two in FY21 and FY22.

**National Ocean Service (NOS) - [Great Lakes Bay Watershed Education and Training Program](#)**

The NOAA Bay Watershed Education and Training (B-WET) program is an environmental education program that promotes locally relevant, experiential learning in the K-12 environment. The primary delivery of B-WET is through competitive funding that promotes Meaningful Watershed Educational Experiences. The Great Lakes B-WET program recognizes that knowledge and commitment built from firsthand experience, especially in the context of one's community and culture, is essential for achieving environmental stewardship. Great Lakes B-WET responds to regional education and environmental priorities through local implementation of competitive grant funds. Please see regional funding opportunities for priorities and eligibility details.

**National Ocean Service (NOS) - [OR&R Response and Restoration Coordinators](#)**

NOAA's Office of Response and Restoration (OR&R) is a center of expertise in preparing for, evaluating, and responding to threats to coastal environments, including oil and chemical spills, releases from hazardous waste sites, disasters, and marine debris. To fulfill its mission of protecting and restoring NOAA trust resources, OR&R provides scientific and technical support to prepare for and respond to environmental threats that coastal communities face; determines damage to natural resources from those releases; protects and restores marine and coastal ecosystems; and works with coastal communities to address critical local and regional coastal challenges.

- Eleven regionally based **Scientific Support Coordinators (SSC)** harness the input of a multi-disciplinary team to address issues such as oil slick trajectory forecasting, environmental tradeoffs, best practices, resources at risk, and chemical hazard assessment to reduce risks to coastal habitats and resources. The SSCs for Ohio are based in Mobile, Alabama at NOAA's Gulf of Mexico Disaster Response Center and Ann Arbor, Michigan at the NOAA Great Lakes Environmental Research Laboratory.
- OR&R identifies and quantifies environmental injury caused by releases of oil and hazardous materials. Our network of **Regional Resource Coordinators** work with multidisciplinary scientific, economic, and legal teams with the goal of securing the appropriate amount and type of restoration required to restore injured NOAA trust resources and compensate the public for their lost use. We collaborate with NMFS Restoration Center and NOAA General Council through the Damage Assessment, Remediation, and Restoration Program (DARRP) to

ensure the process is efficient, legally defensible and restoration focused. The RRC serving the Great Lakes region is based in New York, NY.

**NOAA Commissioned Officer Corps (NOAA Corps) - [Scientific Support Coordinator](#)**

The NOAA Commissioned Officer Corps stations an officer with the National Ocean Service Office of Response and Restoration Emergency Response Division in Cleveland in support of the Agency's response efforts to hazardous materials releases into the Great Lakes. This officer provides support to the Federal On-Scene Coordinator (FOSC) during oil and hazardous materials releases, covering an Area of Responsibility that includes all of USCG District 9, spanning 8 states and an international border and totaling more than 295,000 square miles. They are a technical expert, providing scientific information to the FOSC and leading the NOAA Scientific Support Team during response. The officer fills several different roles in the incident command structure, and coordinates with other NOAA line offices and programs in order to best utilize all assets available. In addition, the SSC is the primary liaison for scientific matters between federal, state, local, private, tribal, and Canadian agencies in planning for, preparing for, and responding to oil and hazardous materials incidents.

**National Ocean Service (NOS) – OR&R [Great Lakes Environmental Response Management Application and Response Tools for Oil and Chemical Spills](#)**

Assessing important spatial information and designing successful restoration projects rely upon interpreting and mapping geographic information, including the location, duration, and impacts from oil spills, other hazardous materials, or debris released into the environment. Great Lakes Environmental Response Management Application (ERMA®) is an online mapping tool that integrates both static and real-time data, such as ship locations, weather, and ocean currents, providing an easy-to-use common operating picture for environmental responders and decision makers. In addition to ERMA, the Office of Response and Restoration (OR&R) offers a suite of [tools](#) to support emergency responders dealing with oil and chemical spills. From Environmental Sensitivity Index (ESI) maps and data which provide concise summaries of coastal resources including biological resources and sensitive shorelines to GNOME, a trajectory and fate model that predicts the route and weathering of pollutants spilled on water, and so much more, these tools provide easy-access to critical data that support a wide range of needs for emergency responders, ultimately supporting our coastal communities.

**National Ocean Service (NOS) - [Marine Debris Projects and Partnerships](#) in Ohio**

The NOAA Marine Debris Program (MDP) in the Office of Response and Restoration (OR&R) leads national and international efforts to reduce the impacts of marine debris. The program supports marine debris removal, prevention, and research projects in partnership with state and local agencies, tribes, non-governmental organizations, academia, and industry. The MDP Great Lakes Regional Coordinator, based in Oak Harbor, supports coordination efforts with regional stakeholders, provides support to grant-funded projects, tracks progress of projects, and conducts regional marine debris outreach to local audiences. In Ohio, the MDP has worked with the National Park Service to develop and install an outreach and educational exhibit on marine debris at the Perry's Victory International Peace Memorial on South Bass Island. The MDP also works with local communities and organizations to prevent marine debris. The Council of the Great Lakes Region is expanding the Great Lakes Plastic Cleanup program and launching a new binational Great Lakes Circular Economy Partnership to help the Great Lakes create a circular economy. The Great Lakes Marine Debris Action Plan was published in 2020. This plan, which is facilitated by the MDP and supported by local stakeholders, provides a road map for strategic progress in making the Great Lakes, its coasts, people, and wildlife free from the impacts of marine debris.

**National Ocean Service (NOS) - [U.S. Integrated Ocean Observing System \(Great Lakes Observing System\)](#)**

The U.S. Integrated Ocean Observing System, or IOOS®, is a federally and regionally coordinated observing system with 17 interagency and 11 regional partners. The System addresses regional and national needs for coastal, ocean, and Great Lakes data and information. This includes gathering and disseminating regional observations; data management; modeling and analysis; education and outreach; and research and development. Working with government agencies, academic researchers, tribes, first nations and the private sector, the Great Lakes Observing System (GLOS) provides end-to-end services that support science, policy, management and industry in the U.S. and Canada. GLOS provides public access to critical, real-time and historical data and information about the Great Lakes, St. Lawrence River and interconnecting waterways for use in managing, safeguarding and understanding these immensely valuable freshwater resources.

**Office of Oceanic and Atmospheric Research (OAR) - [CoastWatch](#)**

The NOAA CoastWatch Great Lakes regional node obtains, produces, and delivers environmental data and products for near real-time observation of the Great Lakes to support environmental science, decision making, and supporting research. This is achieved by providing internet access to near real-time and retrospective satellite data and products, as well as in-situ Great Lakes data. The CoastWatch node at Great Lakes Environmental Research Laboratory provides clients including Federal, state, and local agencies, academic institutions, commercial/industries and the public, both within and outside of the Great Lakes region, with access to near real-time satellite observations and in-situ data for the Great Lakes. CoastWatch data are used in a variety of ways, including near real-time observation and tracking of algal blooms, plumes, ice cover, wind speed/direction, surface water intake temperatures at fish hatcheries, two and three dimensional modeling of Great Lakes physical parameters such as wave height and currents damage assessment modeling, research, and educational and recreational activities.

In addition, through a cooperative project with Michigan Sea Grant, Great Lakes CoastWatch satellite-derived surface water temperature imagery is contoured and made available via Michigan State Sea Grant's website. Great Lakes CoastWatch data and products benefit riparians as well as research, operational, and recreational users.

**Office of Oceanic and Atmospheric Research (OAR) - [Real-time Environmental Coastal Observation Network Stations](#)**

The goal of the Great Lakes Environmental Research Laboratory's (GLERL's) Real-time Environmental Coastal Observation Network (RECON) project is to develop a national network of low cost coastal buoys capable of seabed to sea-surface observations. This wireless Internet observation system, with shore stations at coastal locations covering approximately 800 square miles of sea surface, uses commercially available networking equipment allowing straightforward integration into a nationwide network. The Cleveland buoy collects meteorological data (wind speed, direction, air temperature) and provides lake surface and sub-surface measurements of chemical, biological, and physical parameters including water temperature, significant wave height, maximum wave height, dissolved oxygen, and conductivity . The system is designed to allow controlled access to multi-institutional users through surface buoys and sub-surface sensor guest ports located on an underwater hub. The observation network currently provides environmental data to state, federal, and university researchers, educators and resource managers.

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**[Statewide](#)**

**National Weather Service - [NEXRAD \(WSR-88D\) Systems](#)**

NEXRAD is used to warn the people of the United States about dangerous weather and its location. This radar technology allows meteorologists to warn the public to take shelter with more notice than ever before. The NEXRAD network provides significant improvements in severe weather and flash flood warnings, air traffic safety, flow control for air traffic, resource

protection at military bases, and management of water, agriculture, forest, and snow removal. NEXRAD radar has a range of up to 250 nautical miles, and can provide information about wind speed and direction, as well as the location, size, and shape of precipitation. There are 159 operational NEXRAD radar systems deployed throughout the United States and overseas, of which two are in Ohio.

**National Weather Service (NWS) - [Automated Surface Observing Systems Stations](#)**

The Automated Surface Observing Systems (ASOS) program is a joint effort of the National Weather Service (NWS), the Federal Aviation Administration (FAA), and the Department of Defense (DOD). ASOS serves as the Nation's primary surface weather observing network. ASOS is designed to support weather forecast activities and aviation operations and, at the same time, support the needs of the meteorological, hydrological, and climatological research communities. ASOS works non-stop, updating observations every minute, 24 hours a day, every day of the year observing basic weather elements, such as cloud cover, precipitation, wind, sea level pressure, and conditions, such as rain, snow, freezing rain, thunderstorms, and fog. There are 26 ASOS stations in Ohio.

**National Weather Service (NWS) - [Cooperative Observer Program Sites](#)**

The National Weather Service (NWS) Cooperative Observer Program (COOP) is truly the Nation's weather and climate observing network of, by and for the people. More than 10,000 volunteers take observations on farms, in urban and suburban areas, National Parks, seashores, and mountaintops. The data are representative of where people live, work and play. The COOP was formally created in 1890 under the NWS Organic Act to provide observational meteorological data, usually consisting of daily maximum and minimum temperatures, snowfall, and 24-hour precipitation totals, required to define the climate of the United States and to help measure long-term climate changes, and to provide observational meteorological data in near real-time to support forecast, warning and other public service programs of the NWS. The data are also used by other federal (including the Department of Homeland Security), state and local entities, as well as private companies (such as the energy and insurance industries). In some cases, the data are used to make billions of dollars' worth of decisions. For example, the energy sector uses COOP data to calculate the Heating and Cooling Degree Days which are used to determine individuals' energy bills monthly. There are 198 COOP sites in Ohio.

**National Weather Service (NWS) - [NOAA Weather Radio All Hazards Transmitters](#)**

NOAA Weather Radio All Hazards (NWR) is a nationwide network of radio stations broadcasting continuous weather information directly from the nearest National Weather Service (NWS) forecast office. NWR broadcasts official NWS warnings, watches, forecasts and other hazard information 24 hours a day, 7 days a week. Working with the Federal Communication Commission's (FCC) Emergency Alert System, NWR is an "All Hazards" radio network, making it the single source for comprehensive weather and emergency information. In conjunction with federal, state, and local emergency managers and other public officials, NWR also broadcasts warning and post-event information for all types of hazards – including natural (such as earthquakes or avalanches), environmental (such as chemical releases or oil spills), and public safety (such as AMBER alerts or 911 Telephone outages). Known as the "Voice of NOAA's National Weather Service," NWR is provided as a public service by the NWS. NWR includes 1,100 transmitters covering all 50 states, adjacent coastal waters, Puerto Rico, the U.S. Virgin Islands, and the U.S. Pacific Territories. There are 18 NWR transmitters in Ohio.

**Office of Oceanic and Atmospheric Research (OAR) – [Ohio Sea Grant College Program](#)**

The National Sea Grant College Program (Sea Grant) is a federal-university partnership administered by NOAA that integrates research, extension outreach, and education. Sea Grant forms a national network of 34 programs in all U.S. coastal and Great Lakes states, Puerto Rico, and Guam. Ohio Sea Grant, based at The Ohio State University in

Columbus, develops and supports research, education, and outreach to help people understand, rationally use, and conserve Great Lakes resources. Stone Laboratory, the Center for Lake Erie Area Research and the Great Lakes Aquatic Ecosystem Research Consortium are part of Ohio Sea Grant, with Stone Lab offering college-credit courses every summer and an aquatic workshop program for youths and adults. Five Sea Grant Extension agents are based in coastal communities between Toledo and Painesville. The program has provided great leadership in helping Ohio and the Great Lakes Region address problems associated with Harmful Algal Blooms (HABs) and excessive nutrient loading. Administrative offices are located in Columbus. Extension agents are located in Put-in-Bay. Get involved with Sea Grant through state and national opportunities like the John A. Knauss Marine Policy Fellowship program at [seagrant.noaa.gov](http://seagrant.noaa.gov).

**National Ocean Service (NOS) - Students for [Zero Waste Week](#)**

Students are inviting their local communities to "Go Green and Think Blue" by joining them in the annual *Students for Zero Waste Week campaign*. During this campaign led by the Office of National Marine Sanctuaries, students focus on reducing land-based waste in order to protect the health of local marine environments. These young leaders are raising awareness of how single-use plastic and other types of litter affect the health of local watersheds, national marine sanctuaries, and the ocean. In addition, some schools are looking at ways to reduce their energy use on campus with hopes of raising awareness of how the burning of fossil fuels also impacts the health of the ocean.

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More information for those offices may be found at [NOAA.gov](http://NOAA.gov).

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