



NOAA In Your State

Michigan

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 Michigan

Lake Michigan Field Station	Muskegon	MI-3
Marine Instrumentation Laboratory	South Haven	MI-4
Great Lakes Environmental Research Laboratory	Ann Arbor	MI-6
Thunder Bay National Marine Sanctuary	Statewide	MI

The state of Michigan also has one Cooperative Institute, four Weather Forecast Offices, three Labs and Field Offices, three Science on a Sphere® exhibitions, and one Habitat Focus Area.

[Weather Forecast Offices](#)

Gaylord	MI-1
Marquette	MI-1
Grand Rapids	MI-3
White Lake/Metro Detroit	MI-10

[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 Michigan. There are 122 [WFOs nationwide](#) of which four are in Michigan. Highly trained forecasters issue warnings and forecasts for weather 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, 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 Michigan weather, visit [www.weather.gov](#) and, on the national map, click on the relevant county or district.

[Science On a Sphere®](#)

Alpena	MI-1
Kalamazoo	MI-4
East Lansing	MI-7
Royal Oak	MI-11

[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 in a way that is simultaneously intuitive and captivating what are sometimes complex environmental processes. They are located at the Great Lakes Maritime Heritage Center in Alpena, Valley Museum in Kalamazoo, and Detroit Zoo in Royal Oak.

[MI-1, 2, 5, 6, 10](#)

[Muskegon, Alpena, South Haven, Saginaw](#)

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 seasonal buoys are located offshore of Muskegon, MI in Lake Michigan, and in Saginaw Bay and Thunderbay, in Lake Huron. The buoys collect meteorological data air data (wind direction, barometric pressure, wind speed, maximum wind speed, air temperature; water near-surface data) 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.

Alpena

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

The Marine Instrumentation Laboratory at the Great Lakes Environmental Research Laboratory (GLERL) has deployed and is maintaining a real-time network of meteorological instrument packages including Alpena, MI. The Alpena station measures/records wind speed, max wind speed, wind direction, and air temperature, and wind chill at two-minute increments updated every ten minutes. In addition there is a webcam with five views, images are updated six times per hour, six hour animation loops of these images are also posted.

Chatham

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.

Cheboygan

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

The Marine Instrumentation Laboratory at the Great Lakes Environmental Research Laboratory (GLERL) has deployed and is maintaining a real-time network of meteorological instrument packages including one on the Spectacle Reef Light offshore of Cheboygan, Michigan. The Spectacle Reef Light station measures/records wind speed, wind direction, and air temperature, relative humidity, dew point, barometric pressure, incident solar radiation and surface water temperature at 2-minute increments updated twice per hour. In addition there is a webcam with four views, images are updated six times per hour, six hour animation loops of these images are also posted.

Gaylord

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.

National Weather Service (NWS) - [Weather Forecast Office](#)- See [Page 2](#) for detail.

Mackinaw City

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

The Marine Instrumentation Laboratory at the Great Lakes Environmental Research Laboratory (GLERL) has deployed and is maintaining a real-time network of meteorological instrument packages including one the White Shoal Light offshore of Mackinaw City, Michigan. The White Shoal Light station measures/records wind speed, wind direction, and air temperature, relative humidity, dew point, barometric pressure, incident solar radiation and surface water temperature at 2-minute increments updated twice per hour. In addition there is a webcam with three views. Images are updated hourly.

Marquette

National Weather Service (NWS) - [Weather Forecast Office](#)- See [Page 2](#) for detail.

Sault Ste. Marie

National Ocean Service (NOS) - [Soo Locks PORTS®](#)

A Physical Oceanographic Real-Time System (PORTS®) is operated cooperatively with the U.S. Army Corps of Engineers and provides real-time data quality-controlled and disseminated to local users for safe and efficient navigation. Real-time data are available for water levels from seven stations and meteorological data from six locations.

Traverse City

National Ocean Service (NOS) – [Office for Coastal Management](#)

The NOAA Office for Coastal Management practices a partner-based, boots on the ground approach to coastal management. The organization currently has staff in the eight regions who provide assistance to local, state, and regional coastal resource management efforts and facilitate customer feedback and assessments. Great Lakes regional staff are located in Chanhassen and Duluth, MN, Chicago, IL, Traverse City, MI, and Madison, WI. In addition to providing NOAA products and services, these staff represent NOAA on multiple regional governance structures, including but not limited to, the Great Lakes Restoration Initiative and the Great Lakes Regional Collaboration to improve the management of natural resources.

MI-1 through 10

MI-3

Grand Rapids

National Weather Service - [Weather Forecast Office](#)-See [Page 2](#) for detail.

Muskegon

Office of Oceanic and Atmospheric Research (OAR) – [GLERL Lake Michigan Field Station](#)

The NOAA Great Lakes Environmental Research Laboratory (GLERL) Lake Michigan Field Station (LMFS) is strategically located on the eastern shore of Lake Michigan in Muskegon, Michigan. The LMFS serves as the home base for field operations, research, and GLERL vessel operations - critical assets in providing physical access to the Great Lakes and advancing NOAA's mission in the region. Located on Lake Michigan's Muskegon Channel, GLERL's field station occupies three buildings. Employees at the facility, include research staff, vessel crew, a marine superintendent, and administrative personnel. Additionally, the proximity of the field station to Lake Michigan provides a unique opportunity for engagement with tourists, recreational users, and members of the community.

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

The Marine Instrumentation Laboratory at the Great Lakes Environmental Research Laboratory (GLERL) has deployed and is maintaining a real-time network of shore-based meteorological instrument packages including locations on Lake Michigan. The meteorological observations obtained from the network are being used in GLERL's Great Lakes Coastal Forecasting System to improve nowcasts and forecasts of wind, waves, water levels, ice cover and circulation. The Muskegon station measures wind speed, max wind speed, wind direction, air temperature, dew point, relative humidity, station pressure, sea level pressure, and PAR at two-minute increments. Additionally there are seven Muskegon webcams, images are updated six times per hour.

Office of Oceanic and Atmospheric Research (OAR), National Marine Fisheries Service (NMFS), National Ocean Service (NOS) - [Muskegon Lake Habitat Focus Area](#)

The Muskegon Lake was selected as a [NOAA Habitat Focus Area](#) (HFA). HFAs are targeted places where NOAA addresses high priority habitat issues by collaborating with partners and communities. Over the past several years, NOAA, led by the [Office of Habitat Conservation](#), has selected 11 HFAs across the country which have achieved significant results for ecosystems and communities. While each HFA focuses on individual habitat conservation goals, the overarching goal is to leverage collective expertise and demonstrate results in a short time period. The Muskegon Lake watershed has been a center for industrial activity since the late 1800s. To address the impact of this industrial legacy, the Muskegon Lake Habitat Focus Area team has identified a number of objectives they will target over the next five years including addressing loss of fish and wildlife habitat within Muskegon and Bear lakes, rebuilding sport fisheries and populations of aquatic organisms to sustainable levels, and increasing coastal tourism, access and recreation opportunities.

NOAA Commissioned Officer Corps (NOAA Corps) - [GLERL Field Station and Vessel Operations Coordinator](#)

The NOAA Commissioned Officer Corps stations an officer at the Great Lakes Environmental Research Laboratory in support of small boat operations and scientific research at the Laboratory. This officer serves as the small boat vessel operations coordinator, managing administrative tasks for the labs vessels along with other operational duties. They assist with the execution of science projects and facilitate vessel user objectives, becoming an integral link between the scientific and operational sides of the Lab. In addition, the officer is the liaison for the Lab to the co-located USCG Station, ensuring cooperation with all projects and operations undertaken by the Lab. Other duties include assisting in an ongoing effort to catalogue Great Lakes research vessels, their mission capabilities, material condition, and stakeholder requirements; assisting with customer support through development of new tools to communicate the group and vessel capabilities; and managing facility safety, operations, and shared service across multiple GLERL Branches.

[MI-4](#)

[Kalamazoo](#)

NOAA Office of Education – [Science On a Sphere®](#)- See [Page 2](#) for detail.

[South Haven](#)

Office of Oceanic and Atmospheric Research (OAR) – [Real-Time Meteorological Observation Network](#)

The Marine Instrumentation Laboratory at the Great Lakes Environmental Research Laboratory (GLERL) has deployed and is maintaining a real-time network of shore-based meteorological instrument packages including locations on Lake Michigan. The meteorological observations obtained from the network are being used in GLERL's Great Lakes Coastal Forecasting System to improve nowcasts and forecasts of wind, waves, water levels, ice cover and circulation. The South

Haven station measures wind speed, max wind speed, wind direction, air temperature, and wind chill at two-minute increments. Additionally there are four South Haven webcam views, images are updated twice per hour.

MI-6

Ann Arbor

National Ocean Service (NOS) - [OR&R Preparedness, 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 SSC for Michigan is based in Ann Arbor, MI at the NOAA Great Lakes Environmental Research Laboratory. The SSC is also a NOAA Corps Officer that supports the Agency's response efforts to hazardous materials released into the Great Lakes.

The [NOAA Marine Debris Program \(MDP\)](#) in the Office of Response and Restoration (OR&R) supports national and international efforts to reduce the impacts of marine debris. The **MDP Great Lakes Regional Coordinator**, based in Ann Arbor, 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. The MDP Bipartisan Infrastructure Law Grants Management Specialist, also based in Ann Arbor, supports the management, administration, and award of Bipartisan Infrastructure Law funding through the MDP.

National Environmental Satellite, Data, and Information Service (NESDIS) - [The Center for Satellite Applications and Research - CoastWatch Great Lakes, collocated with NOAA Research Great Lakes Environmental Research Laboratory, Ann Arbor, Michigan](#)

The CoastWatch mission is to provide and ensure timely access to near real-time satellite data to protect, restore, and manage U.S. coastal ocean resources, and understand climate variability and change to further enhance society's quality of life. Our primary users include federal, state, and local marine scientists, coastal resource managers, and the public. There are two components to CoastWatch: Central Operations and Regional Nodes. Central Operations, managed by NOAA's National Environmental Satellite, Data, and Information Service (NESDIS), coordinates the processing, delivery, quality control and storage of data products.

The Great Lakes Environmental Research Laboratory (GLERL) functions as the Great Lakes regional node and is hosted by the Office of Oceanic and Atmospheric Research. In this capacity, GLERL 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 access to near real-time and retrospective satellite observations and Great Lakes data. The goals and objectives of the CoastWatch Great Lakes Program directly support NOAA's statutory responsibilities in estuarine and marine science living marine resource protection, and ecosystem monitoring and management.

The CoastWatch node at GLERL 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, 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 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 commercial and recreational users in the waters of IL, IN, MI, MN, NY, OH, PA, and WI.

Office of Oceanic and Atmospheric Research (OAR) – [Great Lakes Regional Integrated Sciences and Assessments](#)

The Great Lakes Integrated Sciences and Assessments (GLISA) is a cooperative agreement between NOAA's Climate Program Office (CPO) and the University of Michigan. It is one of several, Climate Adaptation Partnerships (CAP/RISA), formerly Regional Integrated Sciences and Assessments, teams contributing to the advancement of equitable climate adaptation through sustained regional research and community engagement. GLISA integrates information from a wide array of scientific fields, develops collaborations between entities with similar goals, and helps inform decision makers throughout the region with sound science. GLISA offers a unique approach to building climate literacy, long-term sustainability, and facilitating smart decision-making across seven Great Lakes states (Minnesota, Wisconsin, Illinois, Indiana, Ohio, Michigan, and New York) and the province of Ontario. GLISA focuses on three critical sectors in the Great Lakes region—agriculture, watershed management, and natural resources-based recreation and tourism—which are interconnected through issues of water quality and quantity. The overarching goal of GLISA is to accelerate and scale-up the impact of climate knowledge in the GL region to inform sustainable and equitable adaptation action. Core partners of GLISA include the University of Michigan, Michigan State University, the College of Menominee Nation, and the University of Wisconsin-Madison. Contact information and more details about this team can be found [here](#).

Office of Oceanic and Atmospheric Research (OAR) - [Cooperative Institute for Great Lakes Research](#)

The Cooperative Institute for Great Lakes Research (CIGLR) was awarded to the University of Michigan. CIGLR serves as a mechanism to promote collaborative research between university scientists and those in NOAA. The mission of CIGLR is to lead exciting new research, train the next generation of scientists, and turn research into action for safe and healthy Great Lakes communities. The primary NOAA research partner of CIGLR is the Great Lakes Environmental Research Laboratory. CIGLR also collaborates with NOAA's Office of Oceanic and Atmospheric Research, National Ocean Service, National Weather Service, and National Environment Satellite, Data, and Information Service. CIGLR conducts research across four themes: (1) observing systems and advanced technology; (2) invasive species and food-web ecology; (3) hydrometeorological and ecosystem forecasting; and (4) protection and restoration of resources.

Office of Oceanic and Atmospheric Research (OAR) - [Great Lakes Environmental Research Laboratory](#)

The Great Lakes Environmental Research Laboratory (GLERL) is a scientific research facility based in Ann Arbor, Michigan, operating as part of the National Oceanic and Atmospheric Administration (NOAA) Office of Oceanic and Atmospheric Research (OAR). GLERL's Ann Arbor facility houses experimental and marine instrumentation laboratories furnished with state-of-the-art equipment and technology to support GLERL's scientific research. GLERL's research capacity is further strengthened by its in-house partnership with NOAA's Cooperative Institute for Great Lakes Research (CIGLR), composed of a consortium of academic institutions in the region. In addition, NOAA's Great Lakes Sea Grant Network serves as a vital in-house partnership that functions to connect NOAA research to the communication and outreach capabilities of NOAA Sea Grant.

Office of Oceanic and Atmospheric Research (OAR) - [Great Lakes Center of Expertise for Oil Spill Preparedness and Response](#)

The newly established United States Coast Guard (USCG) Great Lakes Center of Expertise (GLCOE) for Oil Spill Response and Research will reside at the NOAA Great Lakes Environmental Research Laboratory (GLERL) and Lake

Superior State University. Five staff members from the USCG sit in the GLERL Ann Arbor facility and work collaboratively with GLERL, the Cooperative Institute for Great Lakes Research (CIGLR), and others. These partners are collaborating to: Monitor and assess freshwater oil spill response technologies and the behavior and effects of oil spills in the Great Lakes; Identify and seek to fill gaps in Great Lakes oil spill research; Conduct research, development, testing, and evaluation for freshwater oil spill response equipment, technologies, and techniques to mitigate and respond to oil spills in the Great Lakes; Educate and train Federal, State, and local first responders; Work with the academic and the private sector to develop and standardize maritime oil spill response training and techniques for use on the Great Lakes.

Office of Oceanic and Atmospheric Research (OAR) - [Uncrewed Systems Research Transition Office \(UxSRTO\) Project for HAB Detection and Forecasting](#)

With support from the Uncrewed Systems Research Transition Office (UxSRTO), Uncrewed Aircraft Systems (UAS) are used by NOAA to monitor drinking water intake systems in the western basin of Lake Erie and post-process imagery of cyanobacteria levels surrounding intake systems. Drinking water municipalities within Lake Erie will integrate hyperspectral imagery from UAS into the NOAA Lake Erie Harmful Algal Bloom (HAB) Forecast. Unlike satellite-based measurements that typically drive these modeled forecasts, UAS are not limited to detection of cyanoHABs when clouds are present, and the nearshore data is far more detailed and useful.

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 Lake 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. CoastWatch data are used in a variety of ways, including near real-time observation and tracking of algal blooms, plumes, ice cover, ice type, wind speed/direction, water levels, 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 on the Great Lakes node. Great Lakes CoastWatch data and products benefit riparians as well as research, operational, and recreational users.

[Ann Arbor](#)

National Ocean Service (NOS) - [Centers of Excellence](#)

The Center of Excellence for Great Lakes and Human Health (CEGLHH) focuses on understanding the inter-relationships between the Great Lakes ecosystem, water quality and human health. The Center employs a multidisciplinary approach to understand and forecast coastal-related human health impacts for natural resource and public policy decision-making, and develop tools to reduce human health risks associated with three research priority areas: beach closures, harmful algal blooms, and drinking water quality.

[MI-7](#)

[East Lansing](#)

NOAA Office of Education - [Science On a Sphere®](#)- See [Page 2](#) for detail.

MI-8

Genesee

NOAA Office of Education - [Environmental Literacy Program](#)

The Environmental Literacy Program (ELP), administered by NOAA's Office of Education, provides grants and support for formal (K-12) and informal education to advance the agency's mission. In Michigan, ELP funded a project by the Kettering University in Genesee County. The project aims to build the environmental literacy of children, youth, and adults so that they can become knowledgeable about ways to increase their community's resilience to extreme weather, climate change, and other environmental hazards, and be involved in achieving that resilience. To achieve this goal, the project integrates relevant state and local resilience plans and collaborates with stakeholders who are actively implementing these plans.

The [Kettering University project](#) employs NOAA resources and educational methods to promote community-level environmental literacy, enabling participants to better comprehend threats and implement solutions that build resilience to extreme weather, climate change, and other environmental hazards. Environmental literacy includes the knowledge, skills, and confidence to 1) reason about the ways that human and natural systems interact globally and locally; 2) participate in civic processes; and 3) incorporate scientific information, cultural knowledge, and diverse community values when taking action to anticipate, prepare for, respond to, and recover from environmental hazards, including mitigating and adapting to climate change.

MI-10

Thunder Bay Island

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

The Marine Instrumentation Laboratory at the Great Lakes Environmental Research Laboratory (GLERL) has deployed and is maintaining a real-time network of meteorological instrument packages including on Thunder Bay Island, offshore of Alpena, MI. The Thunder Bay Island station measures/records wind speed, max wind speed, wind direction, and air temperature at two-minute increments updated twice per hour. In addition there is a webcam with five views. Images are updated hourly. Twenty-four hour animation loops of these images are also posted.

White Lake/Metro Detroit

National Weather Service (NWS) - [Weather Forecast Office](#)- See [Page 2](#) for detail.

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

NOAA's navigation managers work directly with pilots, port authorities, and recreational boating organizations in Michigan. They help identify the navigational challenges facing marine transportation in Michigan 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 in Cleveland, OH, to support mariners and stakeholders in the Great Lakes.

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 the Coast Survey's suite of navigational charts. Mobile integrated survey team (MIST) can be applied to a vessel of opportunity to provide response capability in the Great Lakes.

MI-11

Royal Oak

NOAA Office of Education - [Science On a Sphere®](#)- See [Page 2](#) for detail.

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.

MI-13

Washtenaw

NOAA Office of Education - [Environmental Literacy Program](#)

The Environmental Literacy Program (ELP), administered by NOAA's Office of Education, provides grants and support for formal (K-12) and informal education to advance the agency's mission. In Michigan, ELP funded a project by the Michigan Sea Grant in Washtenaw County. The project aims to build the environmental literacy of children, youth, and adults so that they can become knowledgeable about ways to increase their community's resilience to extreme weather, climate change, and other environmental hazards, and be involved in achieving that resilience. To achieve this goal, the project integrates relevant state and local resilience plans and collaborates with stakeholders who are actively implementing these plans.

The [Michigan Sea Grant project](#) employs NOAA resources and educational methods to promote community-level environmental literacy, enabling participants to better comprehend threats and implement solutions that build resilience to extreme weather, climate change, and other environmental hazards. Environmental literacy includes the knowledge, skills, and confidence to 1) reason about the ways that human and natural systems interact globally and locally; 2) participate in civic processes; and 3) incorporate scientific information, cultural knowledge, and diverse community values when taking action to anticipate, prepare for, respond to, and recover from environmental hazards, including mitigating and adapting to climate change.

Statewide

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 is also working 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 your state, please inquire if interested.

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 four are in Michigan.

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 27 ASOS stations in Michigan.

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

The National Weather Service (NWS) Cooperative Observer Program (COOP) is 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 created to provide observational meteorological data 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, state and local entities, as well as private companies. 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 365 COOP sites in Michigan.

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 28 NWR transmitters in Michigan.

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. Michigan received funding in FY22 to build the state's capacity to protect its coastal communities and resources.

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

NOS operates 28 long-term continuously operating water level stations in the state of Michigan which provide data and information on Great Lakes and interconnecting waterways data and lake level regulation and are capable of producing real-time data for storm surge warning. These stations are located at Menominee, Port Inland, Port Iroquois, Marquette, Ontonagon, Algonac, St Clair St Police, Dry Dock, Mouth of the Black River, Dunn Paper, Fort Gratiot, St Clair Shores, Gibraltar, Wyandotte, Fort Wayne, Windmill Point, Fermi Power Plant, Lakeport, Harbor Beach, Essexville, Alpena, Mackinaw City, De Tour Village, Rock Cut, West Neebish Island, Little Rapids, Ludington and Holland. 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) - [Great Lakes Bay Watershed Education 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) - [Thunder Bay National Marine Sanctuary](#)

Located in northwestern Lake Huron, Thunder Bay is adjacent to one of the most treacherous stretches of water within the Great Lakes system. Unpredictable weather and rocky shoals earned the area the name, "Shipwreck Alley." Today, the 4,300 square mile Thunder Bay National Marine Sanctuary protects one of America's best preserved and nationally significant collections of shipwrecks. Fire, ice, collisions, and storms have claimed ships in and around Thunder Bay. To date, 99 historic shipwrecks have been discovered in the waters adjacent to Alpena, Alcona, and Presque Isle counties, and five shipwrecks off Mackinaw and Cheboygan counties. Protection and management of the sanctuary is entirely focused on this extraordinary collection of underwater cultural resources and historic research indicates that as many as 100 additional shipwrecks may yet be found within the sanctuary's waters. Thunder Bay National Marine Sanctuary in Lake Huron encompasses 4,300 square miles, protecting 99 known historic shipwrecks in Alpena, Alcona and Presque Isle counties, and five shipwrecks from Mackinaw and Cheboygan counties. Protection and management of the sanctuary is entirely focused on Thunder Bay's extraordinary collection of underwater cultural resources (primarily shipwrecks). Dubbed "Shipwreck Alley," historic research indicates that as many as 100 additional shipwrecks may be found in the treacherous waters around Thunder Bay. Intense weather patterns, islands, and rocky shoals, and heavy vessel traffic, and converging shipping lanes all contributed to the area's vast collection of shipwrecks. These submerged archaeological sites are nearly a complete collection of Great Lakes vessel types from small schooners and pioneer steamboats of the 1830s, to enormous industrial bulk carriers that supported the Midwest's heavy industries during the twentieth century.

Well preserved by Lake Huron's cold, fresh water of the Great Lakes, the shipwreck sites are a haven for historians, archaeologists, and the public. The sanctuary's waters are important to the local economy as a destination for snorkeling, diving, boating, and paddling kayaking. Additionally, NOAA's 20,000 square foot visitor center for the sanctuary, the Great Lake Marine Heritage Center in Alpena, brings nearly 100,000 visitors to the region annually. Through research, education and community involvement the sanctuary seeks to protect these unique and non-renewable historic sites for future generations.

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

Through a unique federal-state partnership, NOAA's Office for Coastal Management works with the Michigan Department of Environmental, Great Lakes, and Energy to implement the National Coastal Zone Management Program in Michigan. 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 Estuarine Research Reserve Science Collaborative](#)

The National Estuarine Research Reserve Science Collaborative is a partnership between NOAA and the University of Michigan Water Center. The Science Collaborative supports user-driven collaborative research that addresses coastal management issues important to the National Estuarine Research Reserve System and coastal decision-makers. Research focus areas include climate change, water quality, habitat restoration, ecosystem service valuation, and synthesis of monitoring data.

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. Seven projects have been successfully completed in Michigan, four with CELCP funding, and another three with funds from EPA's Great Lakes Restoration Initiative.

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 Michigan, nine projects have been funded, one in FY18, two in FY19, one in FY20, three in FY21, and two in FY22.

National Ocean Service (NOS) - [OR&R](#) and U.S. Coast Guard Great Lakes Oil Spill Center of Expertise

NOAA's Office of Response and Restoration (OR&R) has engaged in a number of projects with the Great Lakes Oil Spill National Center of Expertise (NCOE) related to protecting the Great Lakes from spills in recent years, including highlights such as: updates to Environmental Sensitivity Index (ESI) maps and data pursuant to the Great Lakes ESI Act of 2020, funding from the U.S. Coast Guard and Great Lakes Restoration Initiative (GLRI) allowing for refreshed data for the St. Marys and St. Lawrence Rivers in 2021 in addition to updates to Lake Erie in 2022, new data for Lakes Ontario and Michigan set to be complete in 2023, a series of webinars, trainings, workshops, and tabletop exercises in 2022 to enhance readiness for oil spill response and environmental threats in the Great Lakes, and Scientific Support Coordinators have provided active support for 19 incident responses in the Great Lakes region since the start of 2021. Under new agreements with the NCOE, OR&R will be working on a series of projects to help protect the Great Lakes, including enhancing data management, advancing capabilities to detect oil in ice environments, improving use of Uncrewed Systems for response, and transitioning research into applications. We will also be developing a Federal On-Scene Coordinator user guide for oil spill response in oil under ice conditions. The NCOE is located at NOAA's Great Lakes Environmental Research Laboratory (GLERL) in Ann Arbor and Lake Superior State University in Sault Ste. Marie.

National Ocean Service (NOS) - [OR&R Regional Resource 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.

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 is based in New York, New York.

National Ocean Service (NOS) – [OR&R 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) - [NOAA Marine Debris Program \(MDP\)](#)

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 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 Michigan, the MDP is working with the National Park Service to develop and install an outreach and educational exhibit on marine debris in Isle Royale National Park. The MDP also works with local communities and organizations to prevent and remove marine debris. The Superior Watershed Partnership is partnering with Upper Peninsula tribes and community partners to implement on-the-ground clean-up events and educational outreach throughout Michigan's Upper Peninsula. 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) - [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) - [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.

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 Ann Arbor, MI serving the great lakes region – Illinois,

Indiana, Michigan, and Wisconsin. 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.

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. Michigan is a co-trustee with NOAA for assessment and restoration after pollution incidents in Michigan. For more information about our work in Michigan, visit: [DARRP in Your State](#) (and use the top menu to navigate to "Michigan") and this [interactive map](#).

National Marine Fisheries Service (NMFS) - [Office of Law Enforcement](#)

NOAA's Office of Law Enforcement is the only conservation enforcement program (Federal or State) that is exclusively dedicated to Federal fisheries and marine resource enforcement. Its mission is to protect global marine resources by enforcing domestic laws and international treaties and obligations dedicated to protecting wildlife and their natural habitat. Our special agents and enforcement officers ensure compliance with these laws and take enforcement action if there are violations. Additionally, the Cooperative Enforcement Program allows NOAA the ability to leverage the resources and assistance of 27 coastal states and U.S. territorial marine conservation law enforcement agencies in direct support of the Federal enforcement mission. Effective fisheries law enforcement is critical to creating a level playing field for U.S. fishermen and enabling sustainable fisheries to support vibrant coastal communities. The Office of Law Enforcement's Northeast Division is headquartered in Gloucester, Massachusetts, with a Michigan field office in Ann Arbor.

Office of Oceanic and Atmospheric Research (OAR) – [Michigan Sea Grant](#)

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. Michigan Sea Grant College Program promotes better understanding, conservation and use of Michigan's coastal resources. The program supports research, education and outreach efforts designed to foster science-based decisions about the use and conservation of Great Lakes resources. Michigan Sea Grant is in the heart of one of the most biologically diverse freshwater ecosystems in the world. With more than 3,288 miles of Great Lakes shoreline, 11,000 inland lakes and 36,000 miles of rivers — water is what makes Michigan a special place. The Great Lakes are not just a "local" issue, housing about one-fifth of the world's fresh surface water supply, and nine-tenths of the U.S. supply. A collaborative effort of University of Michigan and Michigan State University, Michigan Sea Grant supports efforts in coastal regions throughout the state. The program was established in 1969 at the University of Michigan. Administrative offices are located in Ann Arbor and East Lansing. Get involved with Sea Grant through state and national opportunities like the John A. Knauss Marine Policy Fellowship program at seagrant.noaa.gov.

NOAA Office of Education - [Science On a Sphere®](#) - See [Page 2](#) for detail.

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

The Marine Instrumentation Laboratory at the Great Lakes Environmental Research Laboratory (GLERL) has deployed and is maintaining a real-time network of meteorological instrument packages including Alpena, MI. The Alpena station measures/records wind speed, max wind speed, wind direction, and air temperature, and wind chill at 2-minute increments updated twice per hour. In addition there is a webcam with four views, images are updated six times per hour, six hour animation loops of these images are also posted.

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](#).
