

NOAA In Your State Michigan

“NOAA’s science based work touches 300 million Americans daily, protecting lives and livelihoods. NOAA’s products and services are the result of the hard work of our dedicated staff and partner organizations located in program and research offices throughout the globe. The following is a summary of NOAA programs based in, and focused on, your state. The entries are listed by statewide, region, and then by congressional districts and cities or towns.”

Dr. Kathryn Sullivan

Acting Under Secretary of Commerce for Oceans and Atmosphere
and NOAA Administrator



Due to congressional redistricting after the 2010 Census, we have tried to ensure that all changes in districts and locations have been accurately reflected. Corrections to the district and location for any entry may be sent to

NIYUpdate@noaa.gov.

MI

Great Lakes

National Ocean Service (NOS)

Coastal Services Center

Coastal Storms Program

Coastal Storms Program transitioned resources to the Great Lakes region in 2012 and will continue providing support through 2017. Great Lakes project work will focus on the following priority areas: 1) improved weather observations, modeling, and risk communication to address hazards affecting beach safety (rip currents) and coastal development; 2) Shoreline assessment and management; and 3) storm water impacts on aquatic resources. Outreach coordinators will be located with Minnesota and Wisconsin Sea Grant and a small grants competition will be held in FY13, administered by Ohio Sea Grant.

<http://www.csc.noaa.gov/csp/>

National Ocean Service (NOS)

Integrated Ocean Observing System Program

IOOS Regional Association

The U.S. Integrated Ocean Observing System (IOOS®) is envisioned to be an operational system and a network of regional partners responsible for regional observations, data management, modeling and analysis, education and outreach, and research and development. The overarching purpose of U.S. IOOS is to address regional and national needs for ocean data and information. The Great Lakes Observing System (GLOS) is one of these Regional Associations. 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. GLOS is intended to gather and integrate chemical, biologic and hydrologic data, and monitor lake conditions and trends over time.

<http://www.glos.us/>

**National Ocean Service (NOS)
National Centers for Coastal Ocean Science
Mussel Watch Program**

Mussel Watch Program is the longest continuous, nationwide contaminant monitoring program in U.S. coastal waters. The program analyzes sediment and bivalve tissue chemistry for a suite of organic contaminants and trace metals to identify trends at over 300 selected coastal sites, including Michigan, from 1986 to present. The program has long-term data on total mercury in mussels from 23 monitoring sites as well as 30 additional sites which were added to support the Great Lakes Restoration Initiative.

<http://ccma.nos.noaa.gov/about/coast/nsandt/welcome.html>

**National Ocean Service (NOS)
Office of Ocean and Coastal Resource Management
Michigan Coastal Management Program**

Through a unique Federal-state partnership, NOAA's Office of Ocean and Coastal Resource Management (OCRM) works with the Michigan Department of Environmental Quality to implement the National Coastal Management Program in Michigan. OCRM provides the coastal management program with financial and technical assistance to further the goals of the Coastal Zone Management Act to protect, restore and responsibly develop our nation's coastal communities and resources by balancing the often competing demands of coastal resource use, economic development and conservation.

<http://coastalmanagement.noaa.gov/mystate/mi.html>

Muskegon

**National Ocean Service (NOS)
Office of Ocean and Coastal Resource Management
Coastal and Estuarine Land Conservation Program**

The Coastal and Estuarine Land Conservation Program (CELCP) brings together conservation partners to protect coastal and estuarine lands considered important for their ecological, conservation, recreational, historical or aesthetic values. The program provides state and local governments with matching funds to purchase significant coastal and estuarine lands, or conservation easements on these important lands that are threatened by development. Lands or conservation easements acquired with CELCP funds are protected in perpetuity so that they may be enjoyed by future generations. To date, the program has protected more than 90,000 acres of land nationally and two project grants have been awarded in Michigan, with two more in progress in 2012. CELCP was established in 2002 as a companion the *Coastal Zone Management Act (CZMA)* and reauthorized in 2009.

<http://coastalmanagement.noaa.gov/land/>

**National Weather Service (NWS)
National Data Buoy Center
Michigan Buoys**

The National Weather Service (NWS), through its National Data Buoy Center (NDBC), develops, deploys, operates, and maintains the current national data buoy network of moored and drifting weather buoys and land stations that serve all of the Nation's coastal states and territories. Within this network, 110 of the buoys and 51 of the land stations are maintained directly by NDBC. Located at NASA's Stennis Space Center in Mississippi, supports weather and marine warning and forecast services in real time by providing deep ocean and coastal meteorological and oceanographic observations. These data provide valuable information used by NWS supercomputers to produce computer-generated model forecasts of the atmosphere and climate. NDBC manages the Volunteer Observing Ship program to acquire additional meteorological and oceanographic observations supporting NWS mission requirements. NDBC also supports operational and research programs of NOAA and other national and international organizations.

<http://www.ndbc.noaa.gov/>

**Office of Oceanic and Atmospheric Research (OAR)
Great Lakes Environmental Research Laboratory
GLERL CoastWatch**

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.

<http://coastwatch.glerl.noaa.gov/>

Statewide

**National Ocean Service (NOS)
Coastal Services Center
Coastal Management Fellowship**

The NOAA Coastal Management Fellowship matches postgraduate students with state coastal zone programs to work on two-year projects proposed by the state. The Michigan Coastal Management Program is hosting a fellow who will develop metrics, tools, and plans to address competing uses in Michigan's working waterfronts.

<http://www.csc.noaa.gov/cms/fellows.html>

**National Weather Service (NWS)
Automated Surface Observing Systems
Michigan 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.

http://www.nws.noaa.gov/mirs/public/prods/maps/map_images/state-maps/asos_09/MI_asos.pdf and
<http://www.nws.noaa.gov/asos/>

**National Weather Service (NWS)
Cooperative Observer Program
Michigan 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 265 COOP sites in Michigan.

http://www.nws.noaa.gov/mirs/public/prods/maps/map_images/state-maps/coop_09/MI_coop.pdf and
<http://www.nws.noaa.gov/om/coop/>

**National Weather Service (NWS)
NOAA Weather Radio All Hazards
Michigan 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.

http://www.nws.noaa.gov/mirs/public/prods/maps/map_images/state-maps/nwr_09/MI_nwr.pdf and
<http://www.nws.noaa.gov/nwr/>

**Office of Oceanic and Atmospheric Research (OAR)
National Sea Grant College Program
Michigan Sea Grant College Program**

NOAA's National Sea Grant College Program is a federal-university partnership that integrates research, education and outreach (extension and communications). Sea Grant forms a network of 33 programs in all U.S. coastal and Great Lakes states, Puerto Rico and Guam. Michigan is in the heart of one of the most biologically diverse freshwater ecosystems in the world. A joint program of University of Michigan (UM) and Michigan State University (MSU), Michigan Sea Grant currently funds research and education projects focusing on coastal communities and economies, marine and aquatic science education, fisheries, coastal habitat and invasive species. Established in 1969 at the University of Michigan, Michigan Sea Grant supports efforts in five coastal regions throughout the state, as well as offices at UM and MSU.

<http://www.miseagrant.umich.edu/>

**MI- 1
Alpena**

**National Ocean Service (NOS)
Office of National Marine Sanctuaries
Thunder Bay National Marine Sanctuary and Underwater Preserve**

The Thunder Bay National Marine Sanctuary and Underwater Preserve in Lake Huron encompasses 448 square miles, extending along the high water mark between the northern and southern boundaries of Alpena County and extending from those points lakeward to longitude 83 degrees west. Protection and management of the sanctuary is entirely focused on Thunder Bay's extraordinary collection of underwater cultural resources (primarily shipwrecks). Dubbed "Shipwreck Alley," the treacherous waters around Thunder Bay claimed nearly 200 ships. 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.

Among the wrecks in and around the sanctuary are those vessels that carried immigrants and pioneers traveling west for new homes, schooners carrying Midwestern grain and lumber, passengers and package freight steamers, and evolving generations of bulk freighters specially designed to carry iron ore, coal, grain, cement, and other bulk commodities. They are evidence of the Great Lakes' pervasive influence in regional and national history, and capture the cultural, personal, environmental, technological and economic aspects of maritime history. To date, 46 shipwrecks have been discovered within the sanctuary, with another 45 located in the immediate region. Well preserved by Lake Huron's cold, fresh water, the 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, kayaking. Additionally, NOAA's 20,000 square foot Great Lake Marine Heritage Center brings more than 70,000 visitors to the region annually. Through research, resource protection and education the sanctuary seeks to protect these unique and non-renewable historic sites for future generations.

<http://thunderbay.noaa.gov/>

**National Ocean Service (NOS)
Thunder Bay National Marine Sanctuary
Great Lakes Bay-Watershed Training Program**

NOAA B-WET 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 (MWEEs). B-WET currently serves seven areas of the country: California, Chesapeake Bay, Great Lakes, Gulf of Mexico, Hawai'i, New England, and the Pacific Northwest. 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 opportunity for priorities and eligibility details.

<http://thunderbay.noaa.gov/B-WET/>

**Office of Oceanic and Atmospheric Research (OAR)
Great Lakes Environmental Research Laboratory
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, at Muskegon and South Haven and on Lake Huron at Alpena. The Lake Huron Alpena Thunder Bay National Marine Sanctuary & Underwater Preserve Meteorological Station measures/records wind speed, wind gust, wind direction, and air temperature at 5-minute increments updated every half-hour at. In addition, a webcam features images of Lake Huron's Thunder Bay that are updated every half-hour.

<http://www.glerl.noaa.gov/metdata/apn/>

Chatham

National Environmental Satellite, Data, and Information Service (NESDIS) and Office of Oceanic and Atmospheric Research (OAR)

Climate Reference Network

Chatham Station

The U.S. Climate Reference Network (USCRN) is an operational network of climate stations. Data from the USCRN will be used in operational climate monitoring activities and for placing current climate anomalies into an historical perspective. NOAA's National Climatic Data Center (NCDC) manages the USCRN. The USCRN will also provide the United States with a reference network that contributes to an International network under the auspices of the Global Climate Observing System (GCOS). NOAA's National Environmental Satellite, Data, and Information Service and NOAA's Office of Oceanic and Atmospheric Research jointly manage USCRN.

<http://www.ncdc.noaa.gov/crn/>

Gaylord

National Environmental Satellite, Data, and Information Service (NESDIS) and Office of Oceanic and Atmospheric Research (OAR)

Climate Reference Network

Gaylord Station

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<http://www.ncdc.noaa.gov/crn/>

**National Weather Service (NWS)
Weather Forecast Office
Gaylord WFO**

Located near Gaylord, 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 25 counties in the northern section of Michigan's Lower Peninsula and two counties in the eastern Upper Peninsula, and provides marine forecasts and warnings for near-shore waters of Lake Huron, Lake Michigan and Lake Superior. 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 provide on-site, detailed weather support during critical emergencies, such as wildfires, floods, chemical spills, and for major recovery efforts such as those following the Greensboro, Kansas, tornado; Hurricane Katrina; and the Sept. 11, 2001, terrorist attack in New York City. 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.

<http://www.crh.noaa.gov/apx>

Marquette

**National Weather Service (NWS)
Weather Forecast Office
Negaunee WFO**

Located in Negaunee Township, 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 13 counties in Michigan's Upper Peninsula, and provides marine forecasts and warnings for near-shore waters of Lake Michigan and Lake Superior, and for the open waters of Lake Superior. 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.

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<http://www.crh.noaa.gov/mqt/>

Sault Ste. Marie

**National Ocean Service (NOS)
Center for Operational Oceanographic Products and Services
Soo Locks PORTS®**

A Physical Oceanographic Real-Time System (PORTS®) is operated cooperatively with the local maritime community in Sault Ste. Marie 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.

<http://tidesandcurrents.noaa.gov/ports/index.shtml?port=sl>

MI-1 through 10

Great Lakes and tributary cities

National Ocean Service (NOS)

Center for Operational Oceanographic Products and Services

Great Lakes Real-Time Currents Monitoring

The National Ocean Service (NOS) operates 30 long-term continuously operating water level stations in the state of Michigan, 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 Michigan at Port Inland, Holland, Ludington, and Menominee; on Lake Huron at Lakeport, Harbor Beach, Essexville, Alpena, Mackinaw City and De Tour Village; on Lake Erie at Fermi Power Plan; on the Detroit River at Gibraltar, Wyandotte, Fort Wayne, and Windmill Point; on the Lake St. Clair and St. Clair River at St. Clair Shores, Algonac, St. Clair State Police, Dry Dock, Mouth of the Black River, Dunn Paper, and Fort Gratiot; on Lake Superior at Ontonagon, Marquette C.G. and Point Iroquois; and on the St. Mary's River at U.S. Slip, West Neebish Island, S.W. Pier, Little Rapids and Rock Cut.

<http://tidesandcurrents.noaa.gov/cdata/StationList?type=Current+Data&filter=active>

National Ocean Service (NOS)

Center for Operational Oceanographic Products and Services

National Water Level Observation Network

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<http://tidesandcurrents.noaa.gov>

MI- 2

Allendale

Office of Oceanic and Atmospheric Research (OAR)

Cooperative Institute

Cooperative Institute for Limnology and Ecosystems Research, Grand Valley State University

Established in 2007, the Cooperative Institute for Limnology and Ecosystems Research (CILER) conducts collaborative research through a ten-member consortium of academic institutions in the Great Lakes region. CILER's primary NOAA research partner is the Great Lakes Environmental Research Laboratory; CILER 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. CILER is administratively housed at the University of Michigan, and is comprised of [Grand Valley State University](#), Michigan State University, Ohio State University, Penn State University, State University of New York-Stony Brook, University of Illinois of Urbana-Champaign, University of Michigan, University of Minnesota, University of Toledo, and University of Wisconsin. CILER conducts research across six scientific themes: (1) Great Lakes forecasting; (2) invasive species; (3) observing systems; (4) protection and restoration of resources; (5) integrated assessment; and (6) education and outreach.

<http://ciler.snre.umich.edu>

Grand Haven

Office of Oceanic and Atmospheric Research (OAR)

Great Lakes Environmental Research Laboratory

Real-time Environmental Coastal Observation Network Stations

The goal of the 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. Each system collects meteorological data and provides sub-surface measurements of chemical, biological, and physical parameters. 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.

<http://www.glerl.noaa.gov/res/recon/station-ghn.html>

Muskegon

National Ocean Service (NOS)

Office of Coast Survey

Navigation Manager

The Navigation Managers of the Office of Coast Survey (OCS) directly support the NOAA strategic goal to "Promote Safe Navigation." These representatives assist the Coast Survey with managing the National Oceanic and Atmospheric Administration's nautical chart data collection and information programs to meet constituent needs. Coast Survey programs provide coastal navigation services and new electronic technologies to help mariners and pilots significantly reduce the risk of accidents and spills. In general, Navigation Managers are focused on resolving charting and navigation questions, educating constituents on emerging charting technologies and their uses, and soliciting feedback on NOAA's navigation products and services from the commercial maritime industry. OCS has a Navigation Manager located in Muskegon, MI to support mariners and stakeholders in the Great Lakes region.

<http://www.nauticalcharts.noaa.gov/nsd/reps.htm>

Office of Oceanic and Atmospheric Research (OAR)

Great Lakes Environmental Research Laboratory

Lake Michigan Field Station

The Lake Michigan Field Station serves as NOAA's base of operations for Great Lakes research and the homeport for GLERL's research vessels, which operate throughout the Great Lakes. The Lake Michigan Field Station now includes research vessel docking and several buildings that provide space for wet and dry laboratories, small vessel storage and repair, a meeting room, dormitories, and researcher office space. Presently, three full-time scientists, six-ship crew, a marine superintendent, and administrative support staff are based at the field station. The Field Station also houses NOAA National Ocean Services Coast Survey's navigation response team. They are responsible for charting issues and hydrographic surveys on the Great Lakes.

<http://www.glerl.noaa.gov/lmfs/>

Office of Oceanic and Atmospheric Research (OAR)

Great Lakes Environmental Research Laboratory

NOAA Laboratory

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, and circulation. Muskegon Station Measurements: Wind speed, max wind speed, wind direction, air temperature, dew point, relative humidity, station pressure, and sea level pressure. Additionally there are four Muskegon web cams.

<http://www.glerl.noaa.gov/metdata/mkg/>

MI- 3

Grand Rapids

National Weather Service

Weather Forecast Office

Grand Rapids WFO

Located at the Kent County International Airport in Grand Rapids, 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 23 counties in western Michigan and provides p marine forecasts and warnings for near-shore waters of Lake Michigan. 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 provide on-site, detailed weather support during critical emergencies, such as wildfires, floods, chemical spills, and for major recovery efforts such as those following the Greensboro, Kansas, tornado; Hurricane Katrina; and the Sept. 11, 2001, terrorist attack in New York City. 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.

<http://www.crh.noaa.gov/grr>

MI- 6

South Haven

Office of Oceanic and Atmospheric Research (OAR) Great Lakes Environmental Research Laboratory 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 at Saugatuck. The Saugatuck station measures/records wind speed, wind gust, wind direction, and air temperature at 5-minute increments updated hourly.

<http://www.glerl.noaa.gov/metdata/shv/>

MI- 8

Lansing

National Ocean Service (NOS) National Geodetic Survey Geodetic Advisor

The Geodetic Advisor is a jointly funded National Ocean Service (NOS) employee that resides in the state to provide liaison between NOS and the host state. The Geodetic Advisor guides and assists the state's charting, geodetic and surveying programs through technical expertise. The program is designed to fill a need for more accurate geodetic surveys, and is in response to the desire of states to improve their surveying techniques to meet Federal Geodetic Control subcommittee standards and specifications. The surveys provide the basis for all forms of mapping and engineering projects and monitoring of the dynamic Earth. This program also provides technical assistance in planning and implementing Geographic/Land Information System (GIS/LIS) projects.

<http://www.ngs.noaa.gov/ADVISORS/AdvisorsIndex.shtml>

National Ocean Service (NOS) Office of Ocean and Coastal Resource Management Michigan Coastal Management Program

Through a unique Federal-state partnership, NOAA's Office of Ocean and Coastal Resource Management (OCRM) works with the Michigan Department of Natural Resources and Environment (MDNRE) to implement the National Coastal Management Program in Michigan. OCRM provides the MDNRE with financial and technical assistance to further the goals of the Coastal Zone Management Act to protect, restore and responsibly develop our nation's coastal communities and resources by balancing the often competing demands of coastal resource use, economic development and conservation. Michigan's coastal zone extends lakeward to include all submerged lands, waters and islands of the Great Lakes and connecting waterways to the state and/or international boundary. The landward boundary is a minimum 1000 ft from the ordinary high water mark and extends inland to encompass resources and resource uses which have a physical, chemical, biological or other demonstrable impact upon the Great Lakes or are influenced by the Great Lakes.

<http://coastalmanagement.noaa.gov/mystate/ri.html>

Office of Oceanic and Atmospheric Research (OAR) Cooperative Institute Cooperative Institute for Limnology and Ecosystems Research, Michigan State University

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<http://ciler.snre.umich.edu>

MI-9
Royal Oak
Office of Oceanic and Atmospheric Research (OAR)
Earth System Research Laboratory/Global Systems Division
Science On a Sphere® - Detroit Zoo
Science On a Sphere (SOS) is a room-sized global display system that uses computers and video projectors to display planetary data onto a six foot diameter sphere, analogous to a giant animated globe. Researchers at NOAA developed Science On a Sphere® as an educational tool to help illustrate Earth System science to people of all ages. Animated images of atmospheric storms, climate change, and ocean temperature can be shown on the sphere which is used to explain what are sometimes complex environmental processes, in a way that is simultaneously intuitive and captivating.
<http://www.sos.noaa.gov/> and http://sos.noaa.gov/What_is_SOS/sites.php

MI-11
White Lake/Metro Detroit
National Weather Service (NWS)
Weather Forecast Office
Detroit WFO
Located in White Lake Township, this NWS Weather Service Office (WFO) is staffed around-the-clock every day, and provides the best possible weather, water, and climate forecasts and warnings to residents of southeast Michigan and provides marine forecasts and warnings for near-shore and open waters of Lake Huron. 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 provide on-site, detailed weather support during critical emergencies, such as wildfires, floods, chemical spills, and for major recovery efforts such as those following the Greensboro, Kansas, tornado; Hurricane Katrina; and the Sept. 11, 2001, terrorist attack in New York City. 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.
<http://www.crh.noaa.gov/dtx>

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Ann Arbor
Office of Oceanic and Atmospheric Research (OAR)
Great Lakes Environmental Research Laboratory
NOAA Laboratory
The Great Lakes Environmental Research Laboratory (GLERL) mission is to conduct high-quality research and provide scientific leadership on important issues in both Great Lakes and marine coastal environments leading to new knowledge, tools, approaches, awareness and services. GLERL Research focuses on Ecosystem Forecasting. Ecosystem forecasting predicts the effects of biological, chemical, physical, and human-induced changes on ecosystems and their components. These qualitative and quantitative forecasts offer scientifically sound state-of-the-art estimations of likely outcomes.
<http://www.glerl.noaa.gov>

Office of Oceanic and Atmospheric Research (OAR)
Great Lakes Environmental Research Laboratory
Great Lakes Coastal Forecast System
The Great Lakes Coastal Forecasting System is useful to all users of the Great Lakes coastal waters who require real-time information and forecasts of temperatures, currents, water levels, and waves. Physical processes have a major impact on environmental, chemical, and biological processes and influence many other types of user activities, such as water supply management, waste water management, power plant siting, shipping, recreational and commercial boating and fishing, shoreline erosion and redistribution of sedimentary material. Planners and managers responsible for any part of the Great Lakes ecosystem that is affected by lake circulation, such as transport of toxic material or nutrient enrichment processes have full access to the information provided by Great Lakes Coastal Forecast System (GLCFS web site) to assist them in the decision making process.
<http://www.glerl.noaa.gov/res/glcfs/>

Office of Oceanic and Atmospheric Research (OAR)

Cooperative Institute

Cooperative Institute for Limnology and Ecosystems Research, University of Michigan

Established in 2007, Cooperative Institute for Limnology and Ecosystems Research (CILER) conducts collaborative research through a ten-member consortium of academic institutions in the Great Lakes region. CILER's primary NOAA research partner is the Great Lakes Environmental Research Laboratory; CILER 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. CILER is administratively housed at the University of Michigan, and is comprised of Grand Valley State University, Michigan State University, Ohio State University, Penn State University, State University of New York-Stony Brook, University of Illinois of Urbana-Champaign, University of Michigan, University of Minnesota, University of Toledo, and University of Wisconsin. CILER conducts research across six scientific themes: (1) Great Lakes forecasting; (2) invasive species; (3) observing systems; (4) protection and restoration of resources; (5) integrated assessment; and (6) education and outreach.

<http://ciler.snre.umich.edu>

Office of Oceanic and Atmospheric Research (OAR)

Climate Program Office

Regional Integrated Sciences and Assessments

The Great Lakes Regional Integrated Sciences and Assessments Center (GLISA) was established as a cooperative agreement between NOAA's Climate Program Office and University of Michigan and Michigan State University. GLISA spotlights three critical sectors in the region--agriculture, watershed management, and natural resources-based recreation and tourism—which are interconnected through issues of water quality and quantity. The two overarching goals of GLISA are to contribute to the long-term sustainability of the region in the face of a changing climate and to improve the utility of scientific knowledge to decision making. Cooperating institutions are University of Michigan, Michigan State University, and The Ohio State University with funding from NOAA's Regional Integrated Sciences and Assessments (RISA) Program.

<http://www.graham.umich.edu/centers/glisa.php>

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Ann Arbor

National Ocean Service (NOS)

Oceans and Human Health Initiative

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.

<http://www.glerl.noaa.gov/res/Centers/HumanHealth/>