Tools to Assess Risks from Extreme Storms in the Saginaw Bay Region



A flooded farm in the Saginaw Bay region, circa 1986. (photo: Midland Office of Emergency Management) Saginaw River flooding covers boat docks in Bay City, April 2017. (photo: Michigan Sea Grant)

In recent decades, extreme storms across the United States have increased in frequency and intensity. This trend has been especially notable in the Midwest where, according to the National Oceanic and Atmospheric Administration (NOAA), the amount of precipitation falling in the heaviest storms increased by 37 percent between 1958 and 2012.

Extreme storms have had a large impact on the Saginaw Bay region over the years. A flood in 1986 caused approximately \$500 million in damage to crops, homes, infrastructure, and businesses, and 22 counties were declared disaster areas.

A June 2017 storm dropped more than 7 inches of rain in some areas overnight in mid-Michigan, causing damage to roads, bridges, homes, and businesses. Bay, Isabella, Gratiot, and Midland counties were all declared disaster areas. While it's difficult to know when exactly an extreme storm may hit, communities can take steps to assess their risks and prepare for different extreme storm scenarios.

The following online tools are helpful for communities to use to assess those risks and determine steps to take to mitigate the damage from extreme storms.

MODEL MY WATERSHED

Wiki Watershed, Stroud Water Research Center

wikiwatershed.org/model

Model My Watershed is a web app that enables citizens, conservation practitioners, municipal decision-makers, educators, and students to:

- Compare how different conservation or development scenarios could modify runoff and water quality.
- Analyze real land use and soil data in their neighborhoods and watersheds.
- Model stormwater runoff and water-quality impacts using professional-grade models.

DIGITAL COAST

National Oceanic and Atmospheric Administration (NOAA)

<u>coast.noaa.gov/digitalcoast</u>

Digital Coast is a web-based, ever-expanding collection of data, tools, trainings, and case studies designed for coastal managers. "More Than Just Data" is the slogan because coastal managers need supplemental tools and training to help them process raw data and use them effectively. Some examples of items available:

- Flood Exposure Coastal County Snapshots turn complex county-level data into easy-to-understand stories to help communities understand how to become more resilient.
- The Coastal Resilience Decision-Support Framework supports decisions to reduce the ecological and socioeconomic risks of coastal hazards.
- Environmental Response Management Application (ERMA) is used to help emergency responders and environmental resource managers deal with incidents that may adversely impact the environment, such as oil spills, chemical spills, and vessel groundings.



Backyard flooding in the Saginaw Bay region, circa 2006.

MICHIGAN HAZARD MITIGATION PLAN

michigan.gov/documents/msp/MHMP_480451_7.pdf

Successful implementation of a program to reduce Michigan's vulnerability to hazards will, out of necessity, be a joint cooperative effort between the state, local governments, and the private sector. This plan and the recommendations made are intended to provide the framework and foundation for hazard mitigation within the State of Michigan.

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FEMA FLOOD MAP SERVICE CENTER

msc.fema.gov/portal/search

This website easily allows users to find the flood map for their property using an address, place, or latitude and longitude coordinates. Users should review the tutorial on how to read a flood map in the Frequently Asked Questions (FAQs) General Information section.

FEMA NATIONAL FLOOD INSURANCE PROGRAM **COMMUNITY RATING SYSTEM (CRS)**

fema.gov/national-flood-insurance-program-communityrating-system

The National Flood Insurance Program (NFIP), Community Rating System is a voluntary incentive program that recognizes and encourages floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the following three goals:

- Reduce flood damage to insurable property;
- Strengthen and support the insurance aspects of the NFIP; and
- Encourage a comprehensive approach to floodplain management.

PREPARING FOR FUTURE STORMS

For communities in the Saginaw Bay region, preparing for extreme storms means using available tools to assess their risks. Communities face a range of potential issues if caught by surprise by these events. Given the impact to finances and quality of life, communities cannot afford to be caught unprepared for extreme events.

Michigan Sea Grant is working with decision-makers throughout the Saginaw Bay watershed to provide education about extreme storms and tools for risk assessment and planning. Additional information can be found at *michiganseagrant.org*.

michiganseagrant.org







Michigan Sea Grant helps to foster economic growth and protect Michigan's coastal, Great Lakes resources through education, research, and outreach. A collaborative effort of the University of Michigan and Michigan State University, Michigan Sea Grant is part of the NOAA-National Sea Grant network of 33 university-based programs.