

Developing tools to assess flood risk and mitigation strategies for Great Lakes communities



CORE QUESTION:

How can communities reduce risk and minimize damage from coastal flooding?

High Great Lakes water levels, especially when combined with intense rainfall and stormy waves, can cause serious flooding in coastal communities. These floods threaten homes, roads, public beaches and parks, sewage treatment plants, and other infrastructure. The damage can cost communities millions of dollars and often disproportionately affects low-income and minority areas.

As climate change fuels stronger and more frequent storms, Great Lakes coastal communities are looking for ways to prepare and adapt to keep their residents and infrastructure safe from floods.

MODELING RISKS AND REWARDS

In 2023, Michigan Sea Grant received \$500,000 in funding from National Sea Grant for a project that will help improve resilience under future climate change scenarios in disadvantaged coastal communities in Michigan and Wisconsin.

This collaborative effort includes researchers from the University of Michigan, the Cooperative Institute for Great Lakes Research (CIGLR), the University of Wisconsin, and Wisconsin Sea Grant. The project will assess flood risk for disadvantaged communities in Berrien County, MI, and in Milwaukee, WI, and will provide a framework to extend the analysis around the Great Lakes region.

The team will use computer models to simulate how different climate change scenarios could affect flooding

risk for the three communities. The team will also model direct economic impacts from flood damage.

Then, the team will talk to community stakeholders about potential tools and tactics for reducing flood risk. Solutions could rely on nature-based green infrastructure (such as rain gardens or restored wetlands) or traditional gray infrastructure (such as improved sewer systems and seawalls). Using computer models, the project team can identify effective options and assess benefits and costs for residents of different socio-economic statuses.

Along the way, a stakeholder advisory board made of community leaders and staff from regional governments and agencies will help guide the project. The team will ultimately create flood projections and planning tools that are available and accessible to communities around the Great Lakes seeking to be more resilient in the face of coastal flooding.

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