

## Overview

- **Purpose:** To facilitate climate adaptation action for six Great Lakes cities through the Great Lakes Adaptation Assessment for Cities (GLAA-C) project. This story uses the process of working with the City of Toledo as an example.
- **Partners:** City of Toledo, City of Ann Arbor, City of Flint, City of Kingston, City of Thunder Bay, Kresge Foundation, University of Michigan's Graham Sustainability Institute
- **People:** Practitioners and community members from the five cities
- **Impact:** Created various resources for the six partner cities; the City of Toledo used them to produce tailored historical observations and a narrative presentation about stormwater management and climate change. To allow practitioners to continue to build their relationships with GLISA and other researchers, the Great Lakes Climate Adaptation Network (GLCAN) was formed.

In 2010, Great Lakes cities were just beginning to think about climate adaptation, but little formal work had been done. To facilitate action, the Great Lakes Integrated Sciences and Assessments (GLISA) applied for and won funding for the Great Lakes Adaptation Assessment for Cities (GLAA-C), an Integrated Assessment project funded jointly by the Kresge Foundation and the University of Michigan's Graham Sustainability Institute. It focused on providing mid-size cities throughout the Great Lakes region with resources and expertise to increase their understanding of climate change and implement adaptation strategies. In late 2012, GLISA distributed a call to cities across the region to apply to participate in the GLAA-C project. In response to a growing concern over the potential impacts of climate change on water management, Toledo (Ohio) applied and was chosen to be a part of the GLAA-C project, along with 5 other cities: Ann Arbor and Flint (Michigan), Dayton (Ohio), and Kingston and Thunder Bay (Ontario).

These new relationships were part of a coordinated "boundary chain" partnership between GLAA-C cities and GLISA. The decision-makers in this chain, Toledo Department of Public Utilities (DPU) staff, sought distilled and customized climate and adaptation information to inform water management decisions and investments. While GLISA intended to use the GLAA-C project to address specific city needs like this one, GLISA also sought to investigate the opportunities and barriers for co-producing climate knowledge.

In Toledo, a high priority was to combine resources from regional activities taking place through the USEPA, NOAA's Coastal Services Center, and other Lake Erie Watershed and Maumee River Watershed efforts with decision-relevant climate information. To do this, GLISA worked with local practitioners to co-develop locally relevant climate information (i.e., climate presentation slides, graphics, informational handouts), faculty-led student research efforts, and organizing and co-hosting workshops and networking opportunities for city practitioners throughout the region. One key resource developed was the Cities Impacts & Adaptation Tool (CIAT), an online climate adaptation planning support tool for decision-makers at the municipal level in the Great Lakes region. In addition,



Flooding in Toledo, source: Great Lakes Coastal Resilience Planning Guide.

the Great Lakes Atlas is an interactive map that provides social, economic, and demographic statistics on 225 counties across the Great Lakes region. While commonplace years later, these two resources were novel at the time and served as early models for how to aggregate and share adaptation information with practitioners. As a result, Toledo produced tailored historical observations and a narrative presentation about stormwater management and climate change in the city. It promoted green infrastructure incentives and engaged three private landholders to strengthen stormwater management practices in Silver Creek Watershed, an area especially prone to flooding.

During the GLAA-C project, practitioners found it valuable to meet and interact with each other, and to exchange information and ideas. They wanted to continue to build their relationships with GLISA practitioners and other researchers, so in 2015, they formed the [Great Lakes Climate Adaptation Network \(GLCAN\)](#) as a regional network of the Urban Sustainability Directors Network (USDN). GLCAN continues today as a regional network of local government staff and partners that actively work together to identify and act on the unique climate adaptation challenges of the Great Lakes region. GLCAN's formation was an unintended, but extremely valuable, long-term outcome of GLAA-C, and it is led by practitioner co-chairs with administrative support from GLISA. City of Toledo staff remain core members of GLCAN to this day. GLISA continues to partner with Toledo on stormwater management to implement a municipal vulnerability assessment, which helped city staff incorporate climate and socioeconomic data to better understand neighborhoods that are more vulnerable to flooding. Staff also identified opportunities to expand the data they collect about their stormwater system and will consider information about increasing precipitation to inform their storm sewer capacity design. The assessment may also help the city secure grant funding and provide justification for stormwater management projects in the future.

*“What emerged to be one of the most important components to this partnership was the safe space it established for an open and honest exchange between University (GLISA) researchers and real-world practitioners.”*

*– Matt Naud, former Environmental Coordinator for the City of Ann Arbor (MI) and GLAA-C practitioner*

## About GLISA Advancing Climate Knowledge for Adaptation and Resilience with Great Lakes Communities

Established in 2010, GLISA is a collaboration between the University of Michigan and Michigan State University, supported by the National Oceanic and Atmospheric Administration (NOAA). As one of 11 NOAA Regional Integrated Sciences and Assessments (RISA) teams, GLISA works at the boundary between climate science and decision-makers, striving to enhance Great Lakes communities' capacity to understand, plan for, and respond to climate impacts now and in the future. Our team of social and physical scientists collaborates to:

- Develop usable climate information tailored to stakeholder needs;
- Develop, implement, and evaluate resources and tools to apply climate information to decision-making;
- Facilitate collaborative activities, education, and training and support stakeholder networks; and,
- Investigate emerging climate issues and synthesize findings for practitioners.



### Great Lakes Integrated Sciences + Assessments (GLISA)

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Example of GLISA's boundary chain model of stakeholder engagement for the Great Lakes Climate Adaptation Network (GLCAN). Climate information is tailored and moves through different boundary organizations (links in the chain) to connect science to users. Adapted from Lemos et al. 2014.