

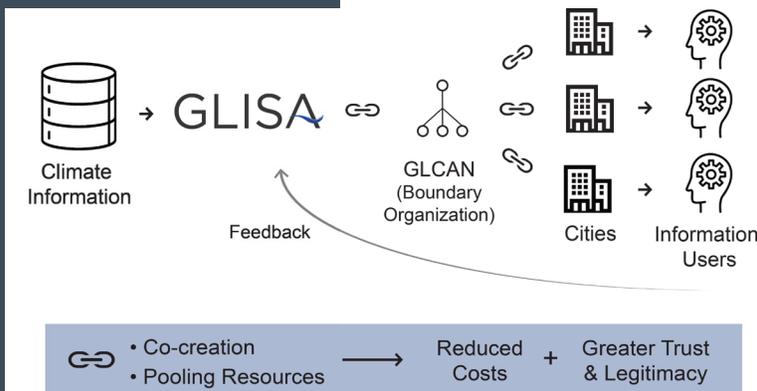
Overview

- **Purpose:** To contribute to the U.S. National Climate Assessment (NCA) process.
- **Partners:** U.S. Global Change Research Program (USGCRP), the National Laboratory for Agriculture and the Environment (for NCA3), NOAA Great Lakes Environmental Research Laboratory (GLERL, for NCA4)
- **People:** Regional stakeholders; NCA chapter co-author teams
- **Impact:** Contributed to the Third and Fourth NCAs (NCA3 and NCA4) that were published in 2014 and 2018, respectively, for the Great Lakes region, and co-hosted a satellite location of the Midwest Regional Engagement workshop in 2017 for NCA4.

The U.S. Global Change Research Program (USGCRP) delivers a National Climate Assessment (NCA) report to Congress and the President every four years, as mandated by the 1990 Global Change Research Act. Its purpose is to thoroughly examine the effects of climate change on the United States to inform various decision-makers. The Great Lakes Integrated Sciences and Assessments (GLISA) has contributed substantially to both the Third NCA (NCA3) in 2014 and the Fourth NCA (NCA4) in 2018 for the Great Lakes region. The region is embedded in a complex system that includes interaction among the lakes, land use, and the atmosphere, which warrants careful consideration in the climate information used for adaptation planning, local research, and policy decisions. Although the assessments were published in 2014 and 2018, GLISA's involvement spanned the years leading up to their completion and afterwards promoting the assessments.

In 2014, at the request of the [U.S. Global Change Research Program](#), GLISA and the National Laboratory for Agriculture and the Environment formed a Midwest regional team to provide technical input to NCA3. GLISA Principal Investigator (PI) and Co-director Don Scavia served as the convening lead author of the Midwest Regional Chapter of NCA3. Julie Winkler, GLISA co-PI, led converting the Midwest Technical Input Reports into an Island Press published book. A series of [ten white papers](#) comprised the chapters of the NCA3 technical input report; they focused on the potential impacts, vulnerabilities, and adaptation options to climate variability and change across many sectors, including energy, agriculture, and tourism. Co-PIs Thomas Dietz and Maria Carmen Lemos served on the National Research Council Committee that reviewed NCA3 and its application and use.

As a complement to NCA3, GLISA produced a [Synthesis Report](#) of the assessment derived from the Midwest and Northeast chapters to help stakeholders in the region discern the key messages for eight states comprising the Great Lakes region. GLISA acquired the dataset used to make many of the maps in the Assessment and with permission, recreated all of the maps for the



In this boundary chain model, information is tailored and moves through different boundary organizations (links in the chain) to connect science to users. By co-creating information and pooling resources throughout the chain, trust and legitimacy are built and cost is decreased.

Great Lakes region (e.g., average annual temperature, total annual precipitation, number of days per year over 90°F, changes in frost-free season length). The report and maps have been widely distributed in the Great Lakes and have been well received by scholars, practitioners, and educators in the region.

In partnership with the NOAA Great Lakes Environmental Research Laboratory (GLERL), GLISA co-hosted a satellite location of the Midwest Regional Engagement workshop in March 2017, in Ann Arbor (MI) to inform the development of NCA4. GLISA organized and facilitated the meeting, leading the 30 attendees through two breakout sessions on climate impacts in the region and sector-specific conversations on transportation/urban systems, adaptation, and the Great Lakes basin. GLISA collected feedback and reported back to the Chicago location on behalf of the attendees.

At the request of USGCRP, GLISA contributed again to NCA4 by serving as co-authors on the [Midwest](#) chapter in NCA4 Volume II, [Climate Change Impacts, Risks, and Adaptation](#), published December 2018. GLISA Co-director Maria Carmen Lemos and Program Manager Jenna Jorns were co-authors, and Graduate Student Research Assistant Katherine Browne was a technical contributor. Lemos led the development of a key message dedicated to community vulnerability and adaptation to better integrate the social sciences into the chapter and Jorns led a case study on the Great Lakes region, highlighting impacts specific to the lakes themselves and coastal communities.

After the release of the NCA4 Volume II, Lemos and Jorns both participated in a number of media interviews to represent the co-author team and promote the assessment; most notably: Detroit ABC TV, Michigan Radio (NPR), and a NPR Stateside program. GLISA's contributions to NCA3 and NCA4 exemplify the team's ability to serve as a boundary organization and collaborate with national, regional, and local partners to co-develop climate knowledge.

“The message of this report is that things are getting more threatening, but also it is inviting us to think about things we can do right now to either mitigate the effects of climate change or better respond to recover from it.”

*– Maria Carmen Lemos,
11/27/18 interview with Detroit
ABC affiliate*

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.