

# Cooperative Science and Monitoring Initiative

A photograph of a research vessel at sunset. The sun is low on the horizon, creating a bright orange glow and a shimmering reflection on the water. Two crew members, wearing hard hats and safety gear, are on the deck. One is reaching up towards a large, complex metal instrument suspended from a crane. The instrument has a rectangular base and a vertical frame. The water is calm with gentle ripples. The sky is a mix of orange and yellow. The overall scene is serene and focused on scientific work.

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# 2012 Great Lakes Water Quality Agreement

- The Lakewide Annex (Annex 2) identifies science priorities for each lake
- The Science Annex (Annex 10) implements a cooperative science and monitoring initiative to help coordinate science programs on the Great Lakes (CSMI) to address the Annex 2 priorities.
- CSMI Task Team chaired by EPA and Environment and Climate Change Canada





# CSMI planning

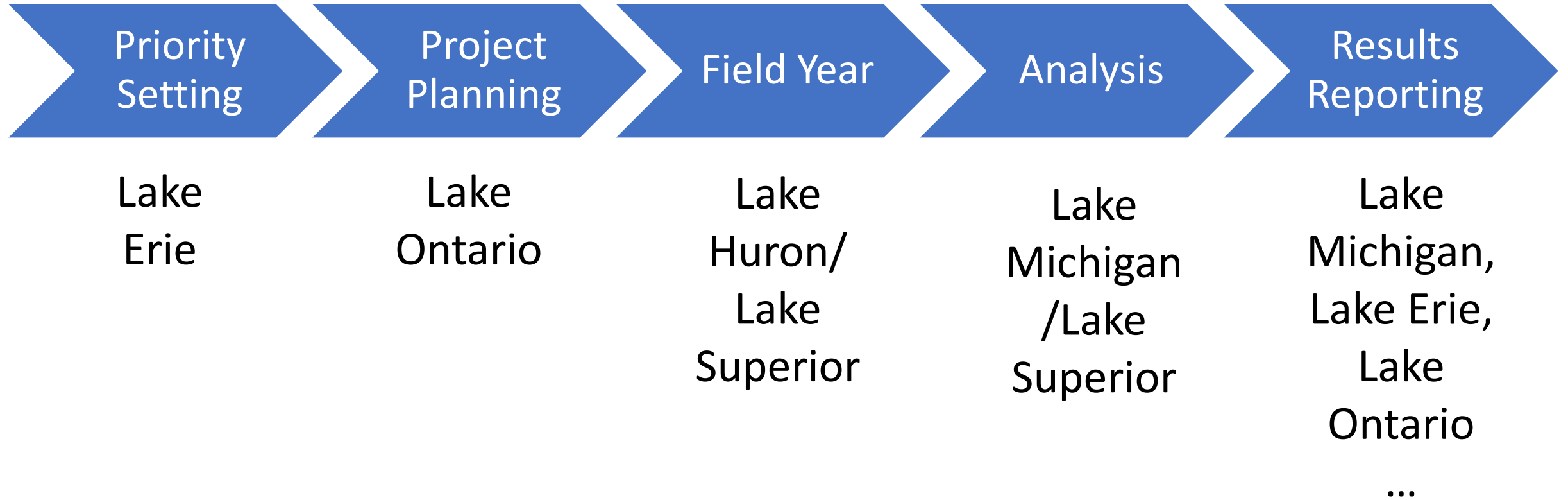


Project planning:

1. Ongoing agency monitoring efforts that address priorities.
2. Opportunities to enhance ongoing monitoring through cooperation among agencies and leverage current resources in new ways to address priorities.
3. New projects that may be developed to conduct targeted science/monitoring that specifically addresses one or more priorities and may require additional funding support.



# 2022 CSMI IMPLEMENTATION BY LAKE



# 2022 CSMI Priorities

- Lower food web and larval fish surveys
- Improve primary production estimates
- Increasing spatial and temporal coverage for sampling the North Channel
- Food web contaminants (Hg and PFAS)
- Groundwater contributions and dynamics



# Canada Planned Activities

## Chemical Contaminants

- Monitoring of contaminants in biota(CECs, CMCs, Hg) (ECCC)
- Assessment of CMCs, metals, PFAS in water/ sediment (ECCC, MECP)

## Nutrients & Bacterial Pollution

- Nearshore and index station monitoring (water quality, sediments) (MECP)
- Lake-wide surveillance (nutrients) & connecting channels (ECCC)
- Sentinel site establishment for SAV/dreissenids (ECCC & MECP)
- Satellite assessment of lake-wide productivity and HABs (Georgian and Saginaw Bay) (ECCC)

# Canada Planned Activities

## Habitat & Species

- Lake-wide Lower food-web surveys (DFO)
- Deepwater Sculpin habitat assessment (DFO)
- Larval whitefish trawls – Bruce Peninsula (PC & NDMNRF)

## Invasive Species

- AIS early detection and monitoring (DFO w USFWS, NDMNRF)
- Invasive Carp program (DFO w USFWS, NDMNRF)



# U.S. Planned Activities

## Chemical Contaminants

- Mercury sources & bioaccumulation studies (USGS)
- Contaminants in the food web investigations (US FWS, Clarkson University, EPA GLNPO)
- Sediment Surveillance Program (EPA GLNPO, USGS, UMD)

## Nutrients & Bacterial Pollution

- Realtime Biophysical Forecasts (NOAA GLERL) – Lake Michigan-Huron Operational Forecast System
- Saginaw Bay enhanced monitoring projects (multi-agency collaboration) - nearshore & tributary

# U.S. Planned Activities

## Habitat & Species

- Phytoplankton enhanced monitoring (EPA GLNPO)
- Remote sensing of primary productivity – ground-truthing with glider data (NOAA GLERL)
- Coordinated Spatial Food Web Surveys:
  - Water quality & lower food web (EPA GLNPO & ORD, NOAA GLERL, Cornell)
  - Lower food web & larval fish surveys (USGS & US FWS)
- Lakewide benthic community survey (EPA GLNPO, NOAA,)

# U.S. Planned Activities

## Invasive Species

- Dreissenid mussel surveys – (EPA GLNPO, NOAA GLERL, Buffalo State College)
  - Saginaw Bay (inner & outer), Lakewide assessments.
  - Population size, body weight condition, reproduction, and eDNA method development

## Other Stressors

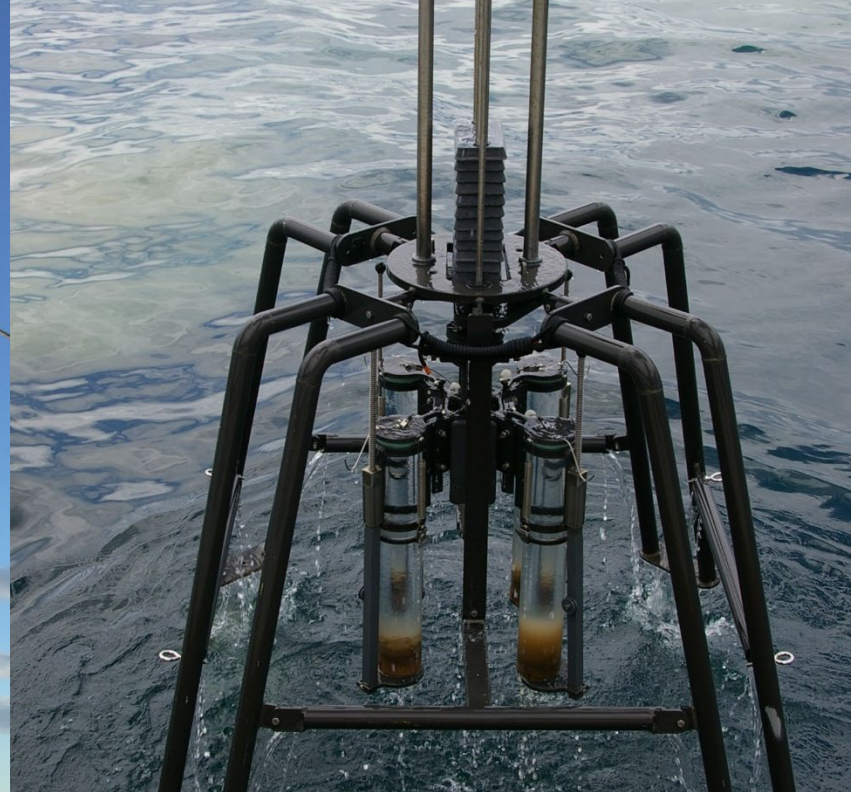
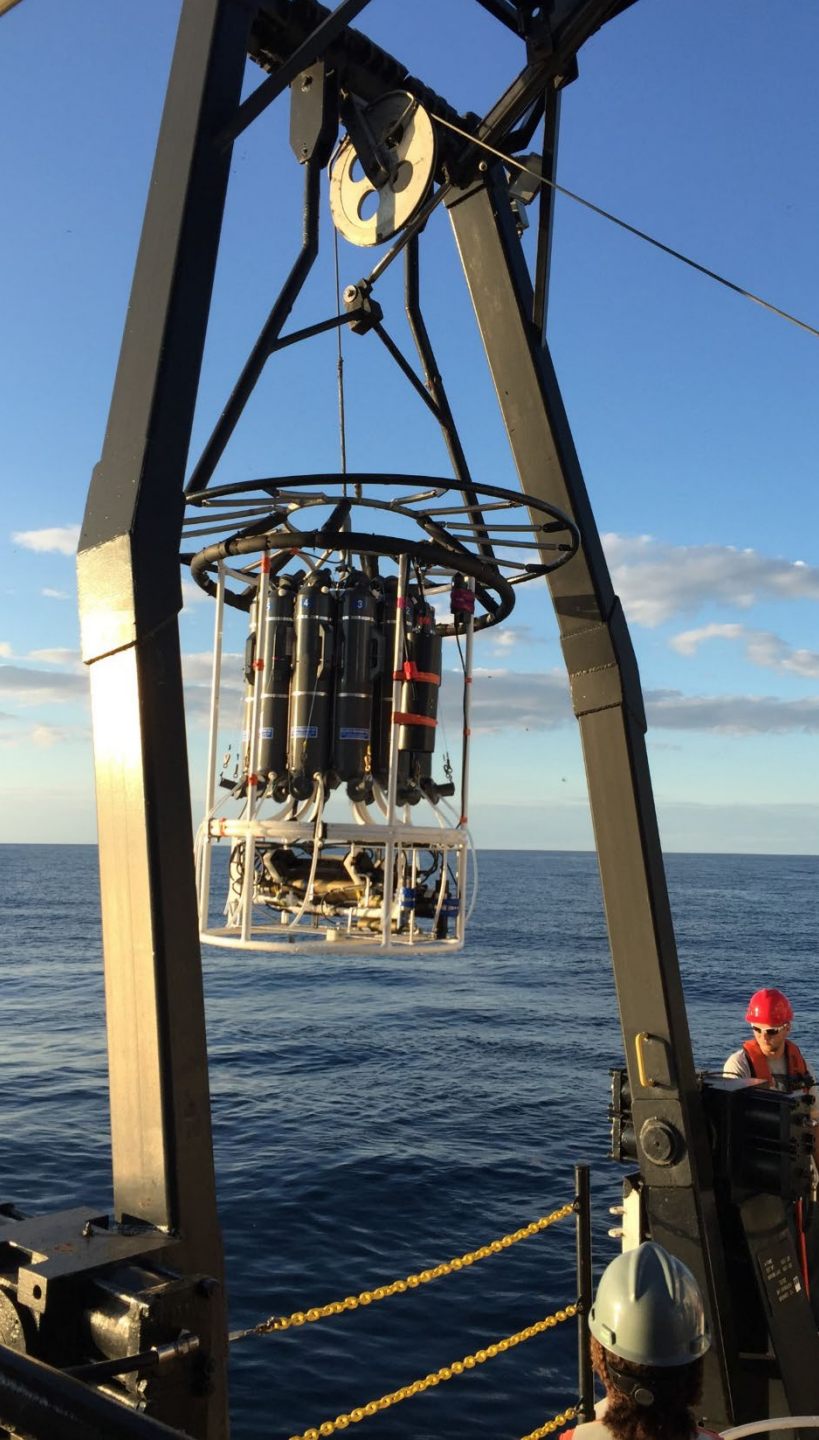
- Groundwater Systems (NOAA GLERL) – nearshore karst groundwater chemistry & biology
- Groundwater Budget (USGS) – contributions of groundwater to water & nutrient budgets

# 2022 CSMI Agency Contacts

- EPA GLNPO: Annie Scofield (Co-Chair)
- ECCCC: Dave DePew (Co-Chair)
- EPA ORD Duluth: Joel Hoffman
- USGS: Bo Bunnell
- NOAA: Ashley Elgin
- USFWS: Harry Quinlan







**Thank you**  
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