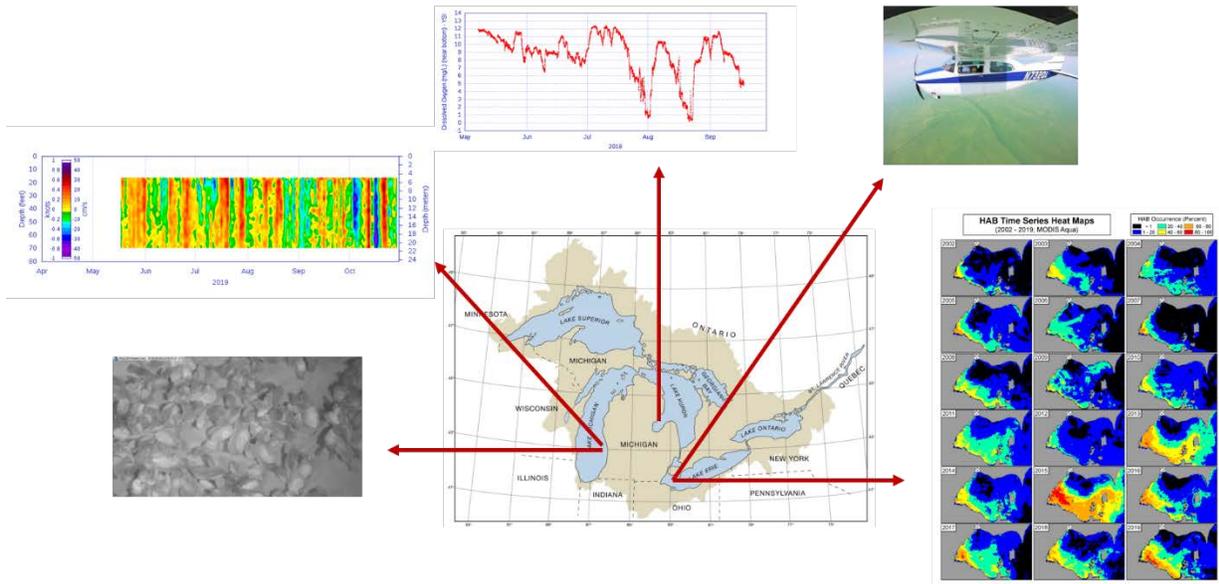




NOAA GLRI Webinar - Project Fact Sheet

Project Title	Synthesis, Observations, Response (SOAR)
Project Lead	PI: Steve Ruberg Co-PIs: Andrea Vander Woude, Henry Vanderploeg, Reagan Errera
Funding amount (\$) and years funded	FY16 - \$1,095,000 FY17 - \$900,000 FY18 - \$990,000 FY19 - \$1,080,000 FY20 - \$1,100,000
External partners, collaborators and/or sub-awardees	Tom Johengen, Brad Cardinale, Russ Miller, Bob Shuchman, Mike Sayers, Joseph Smith, Heidi Purcell, Ashley Burtner, Dack Stuart, Paul DenUyl, Cooperative Institute for Great Lakes Research (CIGLR)
GLRI Focus Area	FA 5
GLRI Action Plan Primary Measure	Objective: 5.2 -- Conduct comprehensive science programs and projects.
	Measure(s) of Progress: 5.3.2 - Annual Great Lakes monitoring conducted and used to prioritize GLRI funding decisions each year
Brief project description	<p>The SOAR project provides environmental information about coastal conditions to researchers and regional managers on Lakes Michigan, Huron and Erie. The implementation of the project includes the deployment and support of on-water and remote sensing platforms where observations from these systems are used to develop ecosystem models and forecasts, report on restoration progress, and aid in decision support for regional managers.</p> <p>The project monitors and reports on ecosystem state, hypoxic conditions, harmful algal blooms (HABs), and nutrients using real-time sensor networks, hyperspectral flyovers, and satellite remote sensing. Decision support information products include a seasonal forecast, real-time data from buoys, a hyperspectral report of HABs around water intakes, and HAB areal extent for feedback on adaptive management success.</p>



Clockwise starting at lower left: Quagga mussel image from bottom sensor package on Lake Michigan real-time buoy; 2019 Lake Michigan coastal currents; 2018 extended hypoxia events in Saginaw Bay; conducting hyperspectral flyovers of water intakes on Lake Erie; western Lake Erie HAB areal extent from the NASA MODIS satellite, 2002-2019

Data / Instruments	Products	End Users
Airborne Hyperspectral Camera	Raw Radiance Data, Cyanobacteria Levels and Phytoplankton Groups	Municipal Drinking Water Managers, Academic Researchers and Federal Agencies
Optical Properties	Improves Remote Sensing-based Water Quality Products (i.e. Color-Producing Agent Algorithm)	NESDIS, Academic Researchers, EPA GLNPO
Spaceborne MODIS Satellite	HAB Areal Extent	EPA GLNPO, NOAA GLERL, Academic Researchers
Real-time Nutrient Buoys (Lake Erie)	Chlorophyll, Winds, Temperature, Turbidity, Nitrogen, Phosphorous, Dissolved Oxygen, Blue-Green Algae	Municipal Drinking Water Managers, GLOS, Academic Researchers (Models), Federal Agencies (Forecasts)
Real-time Ecosystem Buoys (Lake Michigan, Saginaw Bay)	Chlorophyll, Winds, Waves, Currents, Temperature, Turbidity, Dissolved Oxygen, Blue-Green Algae	GLOS, NDBC, Academic Researchers (Models), Federal Agencies (Forecasts), NWS (Validation), Coast Guard
SOAR Under Ice	Ice Thickness, Ice Type, and Ecosystem Buoy Products	Ice-Modelers and Ecosystem Buoy Users

A summary of SOAR products and primary users of the products.

GLOS (Great Lakes Observing System); NDBC (NOAA's National Data Buoy Center)