

Integrating Modeling Tools and Observations for Prediction and Management of HABs in the St. Lucie Estuary and Watershed

USACE Harmful Algal Bloom Research & Development Initiative



Delivering scalable freshwater HAB prevention, detection, and management technologies through collaboration, partnership, and cutting-edge science.

Lead: Mauricio Arias, PhD, PE, University of South Florida

Problem

Managing harmful algal blooms (HABs) in the St. Lucie Estuary and Watershed is a complex problem that requires the integration of fundamental knowledge about ecosystem structure and function with state-of-the-art statistical and mechanistic models.

Objective

The primary objective of this effort is to generate actionable knowledge and develop a decision support tool that will allow managers to better predict and manage HABs in the St. Lucie Estuary and Watershed at multiple temporal scales. This project will integrate related efforts ongoing for Lake Okeechobee (Lake O) and Chattahoochee Estuary System to form a comprehensive HAB management tool for Lake O and receiving waters.

Approach

The project will be organized around multistakeholder workshops to engage the project team with resource managers and decision-makers, synthesize critical information, leverage existing and new state-of-the-art biophysical models, and create an integrated data-driven modeling platform for prediction and management of HABs.

Partnership/Leveraging Opportunities

This work will leverage multiple collaborations and other work units including:

- Partnership with the University of Florida's Center for Coastal Solutions
- Partnership with the South Florida Water Management District, Coastal Ecosystems Section
- Collaboration with the ongoing USEPA-funded project "Temporal and Spatial Optimization of Existing and Emerging Nutrient Management Technologies and Practices for Control of Harmful Algal Blooms"
- Collaboration and coordination with the ERDC-funded project "Coupling Lake, Watershed, and Estuarine Models to Better Understand the Role of Engineered Freshwater Discharges in Driving the Severity, Location, and Timing of Harmful Algal Blooms"

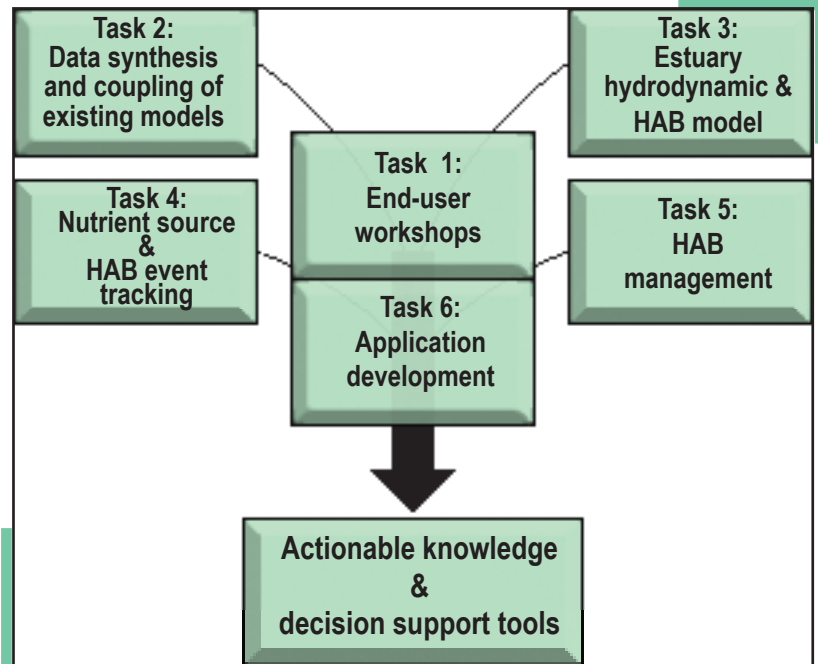


Figure 1. Conceptual diagram of project tasks.

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Major Milestones

Date	Milestone
FY22	Eleven water quality monitoring campaigns
FY22, Q2	Project kickoff meeting and end-user workshop
FY22, Q2	Attendance and presentation at in-progress review meeting
FY22, Q3	Second end-user workshop
FY22, Q3	Attendance and presentation at interagency workshop
FY22, Q4	Annual Report
FY23	Draft Final Report
FY24	Final Report

Value to USACE Mission

By integrating modeling tools and observations, the project will provide a more comprehensive understanding of the factors that contribute to HABs and how they can be mitigated. This will help USACE to more effectively carry out its mission of managing and maintaining the nation's water resources for the benefit of the public.



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