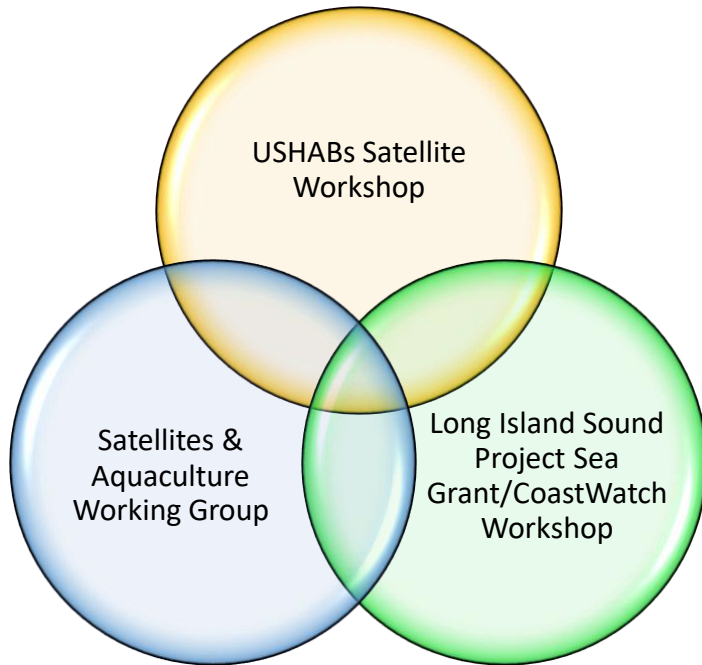


HAB Liaison Engagement in the Northeast 2022-2024

Key Project Partners: NCCOS HAB-FB, CoastWatch, Sea Grant



Rivers, streams, lakes and coastal waters are valuable natural resources that support a variety of industries, including fisheries, recreation, tourism, agriculture and manufacturing in the northeastern United States (NE-US). These industries depend on healthy ecosystems for success and can be negatively impacted by harmful algal blooms (HABs) that produce toxic or harmful effects on people, animals, commodities, and environments.

There are different satellites products and methods used for bloom detection with no one size fits all approach. HAB tracking and predicting are interdisciplinary problems requiring observations and models. Chlorophyll biomass can be seen and quantified from satellites and satellite data can be useful for initiating and validating bloom models. Model accuracy for short-term and seasonal forecasts can be improved by including biological measurements and simulated data.

Three distinct but complimentary efforts have sought/seek to advance satellite product development and delivery in the NE-US.

1) In 2022, a workshop was convened during the U.S. Symposium on Harmful Algae (USHABs). The objectives were to provide an opportunity for participants to

discuss their HAB detection and forecasting needs, a venue for NCCOS to introduce workshop participants to their HAB remote sensing products, a mechanism for participants to provide feedback to NCCOS about potential products and delivery formats it could develop to address needs, and a forum to foster partnerships for improving HAB detection and forecasting.

The half-day workshop, attended by 22 participants, featured talks discussing available satellite products as well as operational examples of their use; demonstrations in breakout groups to allow participants to become familiar with remote sensing data and products and their applicability to specific HABs and geographic areas; and group discussion about species of concern, research gaps, and stakeholder needs.

The workshop attracted a broader national audience; however, specific to the northeast, because of the workshop NCCOS was provided with many new connections and awareness of ongoing freshwater monitoring across New York state. Additionally, they received guidance on needs for remote sensing tools and products, and several participants requested more assistance to use tools introduced through follow-up email.



Breakout demonstration during USHABs workshop

2) In 2023, a new working group within NOAA was formed to advance satellite use in aquaculture decision-making. Participants include Aquaculture leads within NOAA Fisheries, NOAA NCCOS, and NOAA Sea Grant, along with optical oceanographers from NOAA CoastWatch and NOAA NCCOS HAB-Forecasting Branch, including the HAB Liaison. The group engaged aquaculture agents during a Sea Grant aquaculture chat.

Follow-up discussion with Sea Grant agents in the NE, resulted in the delivery of satellite products to agents and their agency partners for input on applicability and usefulness. Additional efforts to engage state agency partners are ongoing. Next steps are to monitor satellite imagery and send alerts when blooms are observed.

3) And finally, in 2023, a Long Island Sound Project funded through New York Sea Grant, seeks to 1) Evaluate the impacts of key environmental stressors and examine the drivers of HABs across a range of environmental conditions, including during extreme events. 2) Co-produce satellite products relevant to water quality and harmful algal bloom outbreaks, to support water resource management, policy, and decision making. 3) Integrate results into NOAA's CoastWatch Program and develop data products and services that are interoperable, easily accessible, and widely distributed, supporting federal, state, and local environmental justice initiatives, and CCMP priorities for inclusive management of LIS resources. 4) Incorporate satellite products into resource

management and decisions relevant to water quality and shellfisheries operations. This project is a collaboration between researchers at City University of New York – City College (PI), Columbia University and NOAA CoastWatch (Co-PIs).

As part of this project a virtual Sea Grant / CoastWatch workshop was held in 2024 with key stakeholders from New York and Connecticut state agencies and NOAA regional partners to guide application development; the liaison served as organizer & facilitator. Input was received from participants in terms of how the different agencies make decisions, and how satellite data can help inform them regarding where and when to sample, how to decide on spatial extent of closures, and how to fill temporal and spatial gaps of regular water quality monthly sampling to improve understanding of phytoplankton transitions in Long Island Sound.

Data products developed in Year-1 will be placed into visualization tools that were determined to be useful in outreach discussions for user demonstrations, evaluations, and integration into their application and decision-making tools. Additional workshops, in-person training, and virtual training opportunities with Long Island Sound stakeholders are planned for year-2.