Harmful Algal Blooms Monitoring, Modeling and Remote Sensing: Advancing predictions of bloom intensity and movement

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The NOAA Great Lakes Environmental Research Laboratory's comprehensive harmful algal bloom (HAB) program, which is coordinated in partnership with the Cooperative Institute for Limnology and Ecosystems Research (CILER), investigates HAB events through the use of satellite images, advanced algorithms, hyperspectral overflights and in situ technologies (e.g. Environmental Sample Processor, gliders), and down to the ecology of bloom forming cyanobacteria at a genomics level. These on-lake experimental and monitoring efforts allow us to develop advanced models (e.g. HAB tracker) that not only predict bloom size and intensity but also the movement of HABs around the western basin of Lake Erie. The products developed by our program are of critical importance to regional stakeholders including, but not limited to Ohio EPA, City of Toledo (OH), City of Cleveland (OH), City of Monroe (MI), Old Woman Creek NERR, Cuyahoga County Board of Health, Michigan Department of Environmental Quality and Ohio Department of Health. The data that we collect is distributed to the aforementioned water utility managers, beach managers, citizen groups and academic partners on a weekly basis. During the 2014 Toledo water crisis, our website was heavily used as a central source of information on bloom toxicity and location as well as general HAB information. GLERL's long-standing HABs program continues to lead the region in advancing the understanding of HABs in the Great Lakes.