

ECOHAB: *Karenia*

FWRI ECOHAB PROJECT COMPONENTS

Laboratory and Field Studies

Laboratory studies will be conducted to:

- Evaluate the importance of the [microbial loop](#) as a regulator of nutrient availability and nutrient quality (or nutrient form);
- Examine the role of migratory behavior and [photochemistry](#) on nutrient acquisition by *Karenia brevis*; and
- Compare the [nutritional physiology](#) (carbon, nitrogen, and phosphorus) of *K. brevis* cultures grown under a range of environmentally relevant conditions.



Scientists studying *Karenia brevis* in the laboratory

Field studies will be conducted to:



Offshore *Trichodesmium* bloom

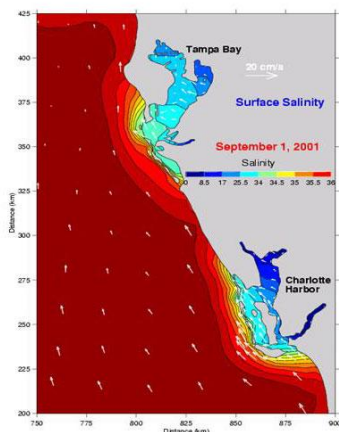
- Compare the nutritional physiology of *K. brevis* within various [bloom](#) stages and across environments where blooms occur ([estuarine](#), [coastal](#), and [offshore](#) areas);
- Evaluate potential sources of new and regenerated nutrients from multiple sources, including nitrogen-fixing organisms (e.g., *Trichodesmium*, *Lyngbya*, and unicellular diazotrophs) and other microbes, [zooplankton](#), particulate and dissolved inorganic and organic material from estuaries and coastal waters, [atmospheric deposition](#), benthic sources, and photochemical reactions; and
- Collect physical, biological, chemical, and oceanographic data from waters in southwest Florida as well as *K. brevis* blooms during annual cooperative [research cruises](#).



Water sampling aboard a research cruise



Physical Measurements and Models

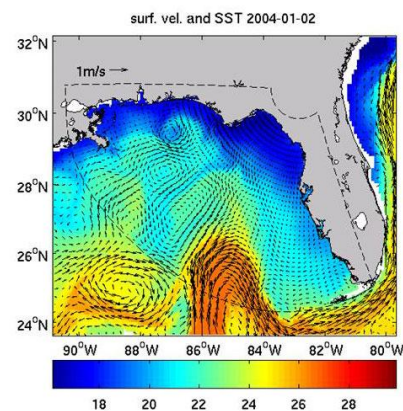


Salinity results of the West Florida Shelf model

Photo Credit: R.H. Weisberg, University of South Florida

Data will be collected to examine the physical environment of the [West Florida Shelf](#) and the influence of ocean and estuarine inputs on *K. brevis* movement and concentration (<http://ocgweb.marine.usf.edu/index.shtml>).

Circulation models of the West Florida Shelf (<http://ocgmod1.marine.usf.edu/pyocean-web/>) will be coupled with nearshore nutrient monitoring measurements to quantify the flux of estuarine nutrients to a nearshore bloom and further develop a biological red tide model to predict the evolution and movements of red tides.



Circulation model results

Photo Credit: R.H. Weisberg, University of South Florida

Water Quality Monitoring



MARVIN platform in the Caloosahatchee River

Three autonomous water quality monitoring platforms, or MARVINS (MERHAB Autonomous Research Vessel for *IN situ* sampling), will be stationed in southwest Florida coastal and estuarine waters to measure chemical, biological, and physical water quality parameters 24 hours a day, 7 days a week. MARVIN real-time data are provided at <http://www.marvindata.org>.

Unless otherwise noted, all images are credited to the Florida Fish and Wildlife Conservation Commission and ECOHAB: *Karenia* project affiliates.

