



Image Credit: USF CMS

The SECOORA Story:

Linking scientists, policy-makers and coastal communities to understand our ever-changing ocean

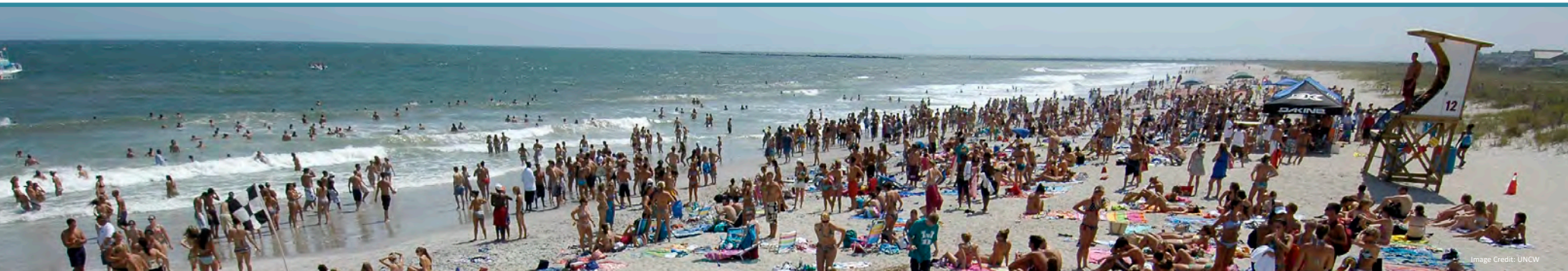


Image Credit: UNCW

Debra Hernandez | debra@secoora.org | www.secoora.org

Three Things to Know About SECOORA

1

Who We Are:
Ocean scientists and stakeholders



2

What We Do: Collect coastal ocean data to understand change



3

Why We Do It:
To improve decision-making

- What are the current conditions?
- Where will it flood?
- What are the trends in ... temperature, sea level or wave patterns?





Who We Are: Part of a National Program



11
Regional
coastal
observing
systems

NOAA led
U.S. IOOS®



Who We Are: A Coastal Ocean Science Non-Profit

MISSION

SECOORA's mission is to observe, understand, and increase awareness of our coastal ocean; promoting knowledge, economic and environmental health through strong regional partnerships.

5 YEAR VISION

SECOORA is the recognized leader, valued partner, and go to source for coastal ocean information in the southeast.

CORE VALUES

We believe in...



Scientific integrity, technical excellence, and innovation



Inclusive and collaborative partnerships



Active stewardship of coastal ocean ecosystems



Leadership in coastal ocean science



Accessible useful information for addressing societal needs



Science based discovery and decision-making



Positive and supportive SECOORA working environments



STRATEGIC GOALS

1 Increase exposure and broaden usage of SECOORA's information and products

- Improve web-based information systems and web presence.
- Provide state-of-the-art tools, including phone apps, data analysis tools and decision support tools, and information on how to use the tools.
- Implement an effective outreach strategy to reach priority user groups, such as managers, fisheries managers, marine planners, etc.

2 Utilize a prioritized science-justified ocean observing system plan to guide and inform decision making and implementation

- Regularly review status of Coastal Ocean Observing System technologies and advancements.
- Develop agreement on the Regional Coastal Ocean Observing System Plan utilizing existing proposal, plans and documents.
- Utilize the RCOOS plan for funding opportunities.

3 Expand partnerships – including membership and stakeholder engagement

- Outreach to and engage represented sectors to participate in SECOORA activities and better market current services, including benefits to the economy and promote opportunities for potential partners (non-members) to the SECOORA network.

4 Engage and inform students and the public in ocean observing

- Support citizen-science opportunities.
- Engage students in problem solving using ocean observing data.
- Establish our researchers and program managers as resources for students and the general public.
- Identify and pursue cooperative educational funding opportunities.

5 Improve SECOORA's structure and effectiveness

- Expand SECOORA's membership.
- Ensure SECOORA's structure and effectiveness.
- Review and improve SECOORA's effectiveness.

secoora.org/about





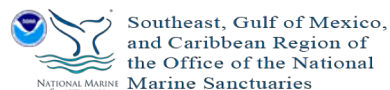
Who We are: SECOORA Members



THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL



UNIVERSITY OF
SOUTH CAROLINA
Arnold School of Public Health





What We Do: Sustain Long Term Observations

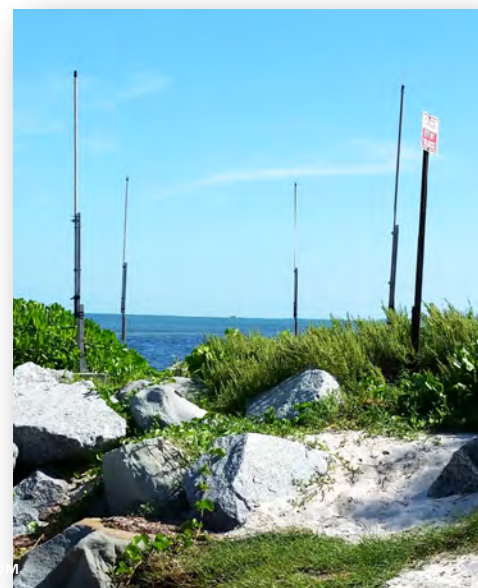
“Old School”



Moorings



Coastal Stations



High Frequency Radar



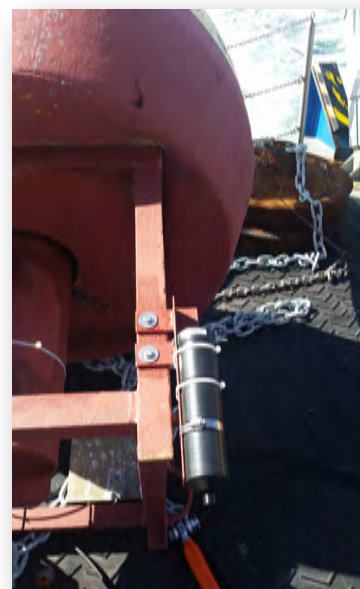
What We Do: Sustain Long Term Observations

Newer Technology



Image Credit: USF CMS

Gliders

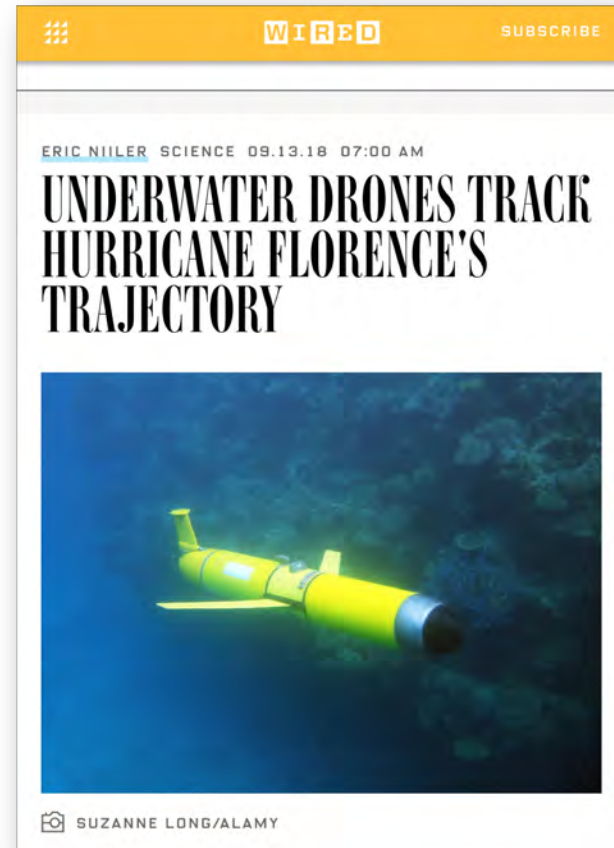


Acoustic Receivers



What We Do: Sustain Long Term Observations

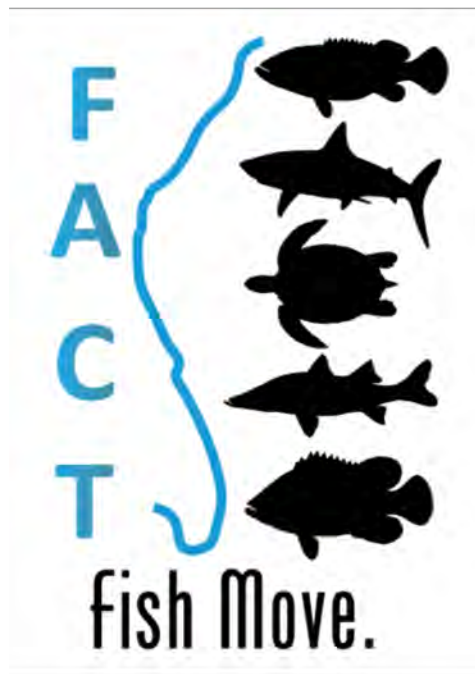
Newer Technology: Gliders





What We Do: Sustain Long Term Observations

Newer Technology: Acoustic Receivers





What We Do: Test New Technologies for Operational Observing Use

“Experimental” Technology



Web Cameras

Image Credit: Surfline



Drones

Image Credit: NOAA Fisheries



Wave Gliders

Image Credit: Eric Reyier NASA

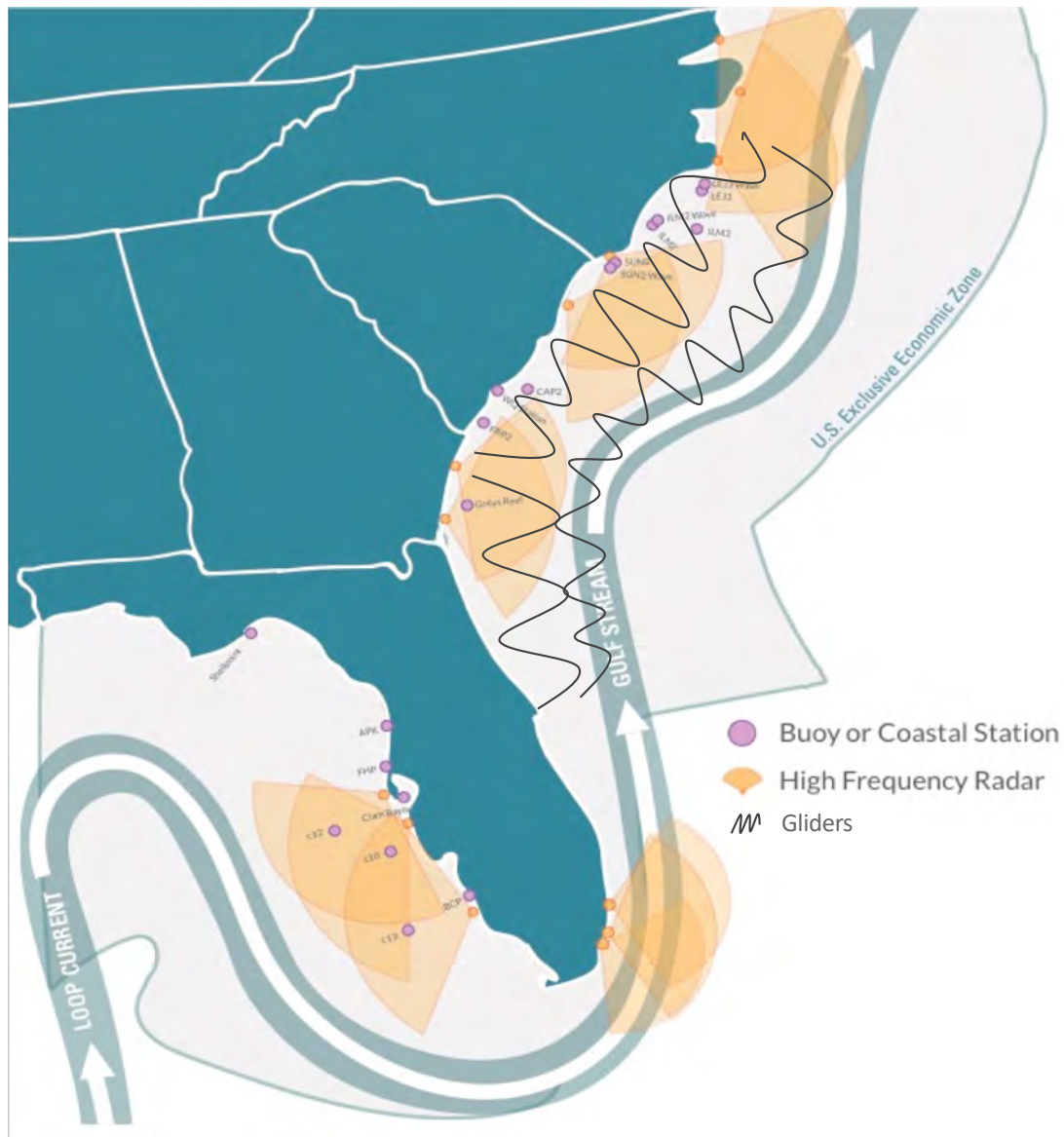


Low Cost Sensors

Image Credit: Mary Landers, SavannahNow

Webinar: Smart Sea Level Sensors for
Emergency Planning and Response

Tuesday Feb 26: 11:30 AM – 12:30 PM



Spotlight on SECOORA Operations



What We Do: By the Numbers

13 
HF Radars

13 
Buoys

4 
Models and Applications

6 
Coastal Stations

 **6**
Glider Deployments
Annually

42 
Students Supported

12.4 
MILLION
Page views and data requests
for SECOORA supported
assets on SECOORA.org and
partner websites

40 
SECOORA Members



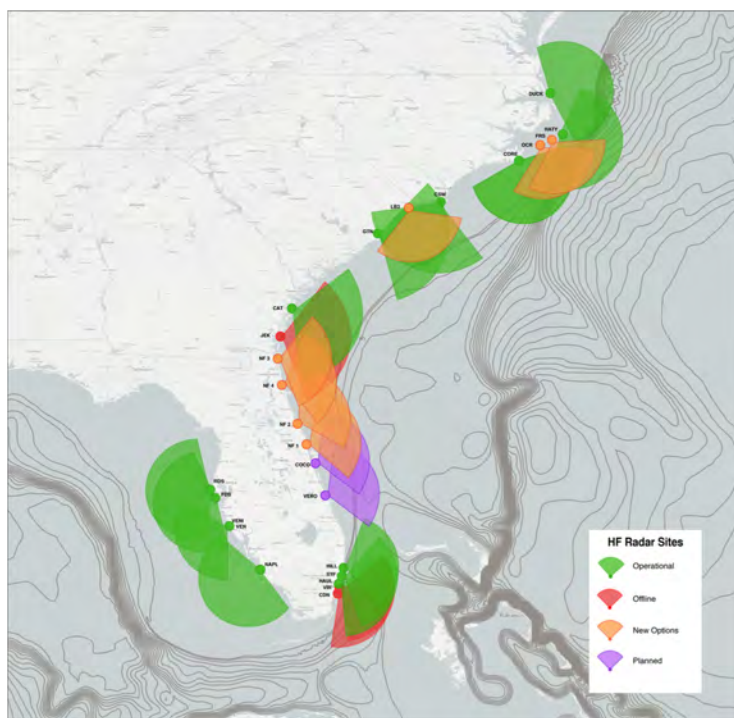
secoora.org



What We Do: Advocate and Fill Observing Gaps

2018:

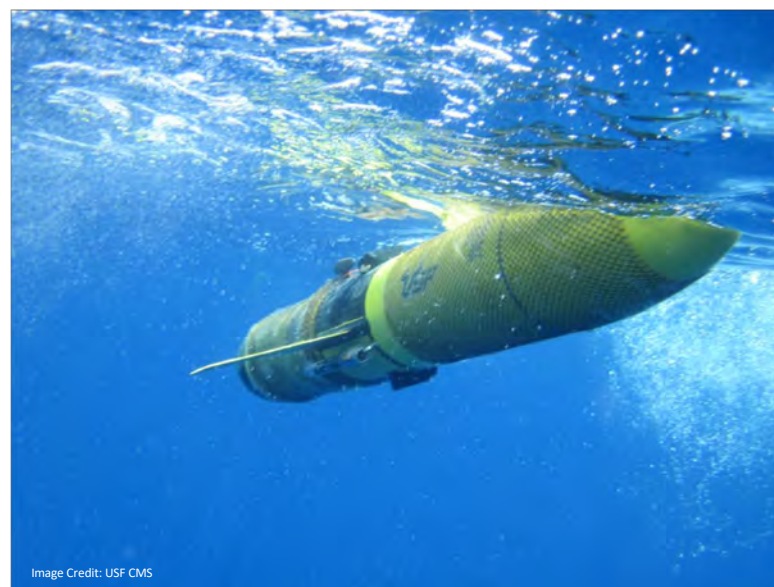
High Frequency Radar



6 New Radars Coming Soon

Orange = potential locations for the four used HFR that SECOORA and Skidaway Institute of Oceanography are purchasing Purple = Planned HFR on Cape Canaveral

Gliders



1 New Glider Joining the SECOORA Glider Fleet



What We Do: Certification & Data Management



SECOORA meets federal standards for:

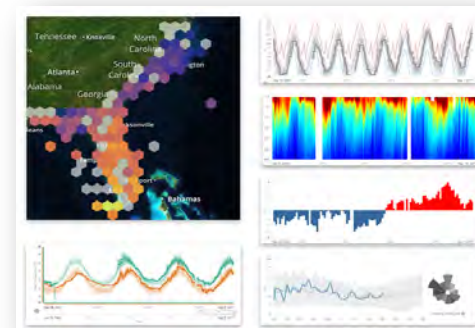
- Data gathering
- Data management
- Long-term archiving

Operate:

- inclusively
- transparently
- solicit input



Axiom Data Science maintains SECOORA's data management system, data catalog, and data portal. Axiom assures that all data management systems are highly redundant to assure data are always available.



Members have access to our data management tools and expertise.

7 Benefits of Becoming a Member and Contributing Data to SECOORA

- 1** Meet your open data sharing needs through Integrated Ocean Observing System (IOOS®) - a Global Earth Observing System of Systems approved data system.
- 2** Assimilate, visualize and publish your data to both regional and national data portals for integration and exploration.
- 3** Access collaborative tools to securely store and share provisional and curated data.
- 4** Receive technical assistance for packaging information and data in useful ways to meet end users needs.
- 5** Store and archive data with DataONE and National Centers for Environmental Information in standard formats and with standards-compliant metadata - receive a DOI for dataset citation.
- 6** Ability to perform cloud-based reproducible analytical workflows accessing data available through SECOORA data holdings.
- 7** Efficiently access and analyze high-volume data products, including model results and satellite imagery.

Thank you for
being a member!



What We Do: Student Opportunities

Clam Bayou Outreach and Education



200+ Undergraduate Students
14 Lab visits 2014-2018



Vembu Subramanian Scholarship



SECOORA is continuing Vembu's mentoring legacy and helping the next generation of ocean experts by **sponsoring an annual award of up to \$2500.**

NOAA Education Partnership Program and Hollings Undergrad Scholarships

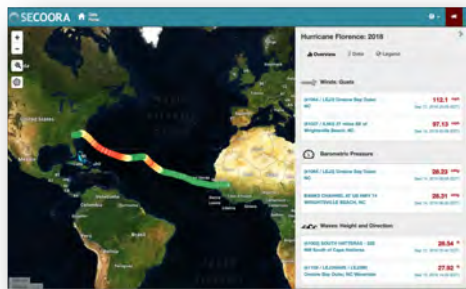


Each year SECOORA has coordinates with the IOOS Summer Internship Program to host a NOAA Hollings Undergraduate Scholar or Educational Partnership Program (EPP) Intern at our member institutions.



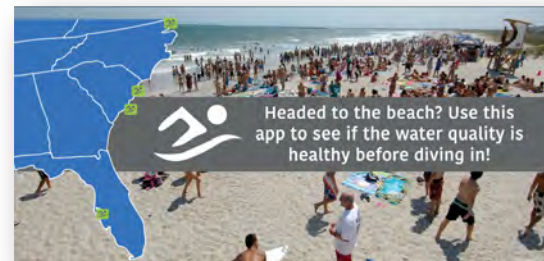
Why We Do It: Improve Decision Making

SECOORA Models and Products



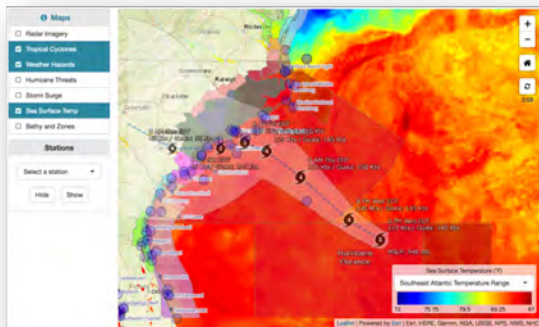
Hurricane Data Discovery Tool

<http://hurricane.portal.secoora.org/>



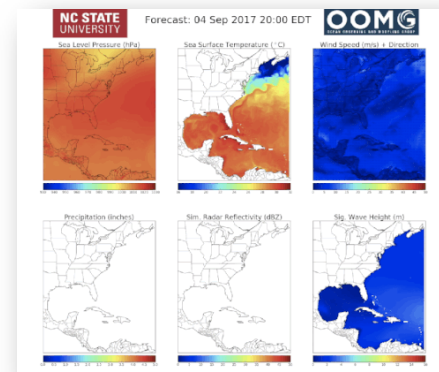
How's the Beach

<http://howsthebeach.org/>



Marine Weather Portal

<http://mwp.secoora.org/>

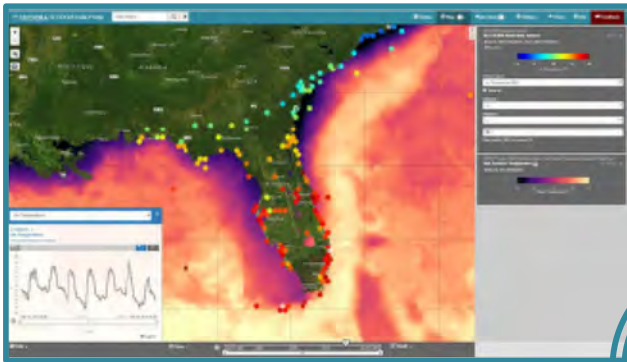


Coupled Northwest Atlantic Prediction System Model

<http://omgsrv1.meas.ncsu.edu:8080/CNAPS/>



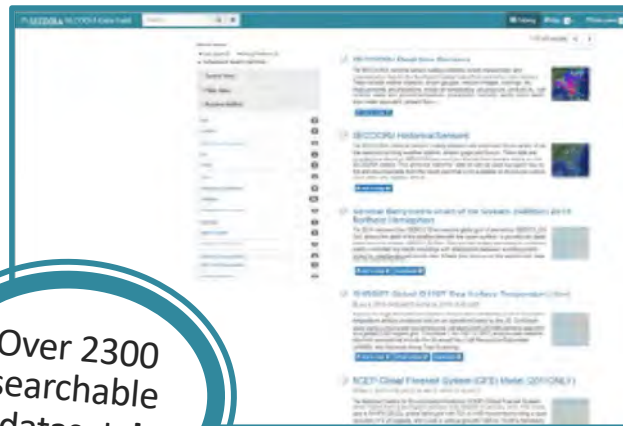
Why We Do It: Provide an Integrated Look at Data



Map

Visualize data from many sources, download data

Over 2300
searchable
datasets!



Catalog

Search data, metadata & download data



Data Views

Rapidly assimilate & compare different data streams

Visit the SECOORA Data Portal: <https://portal.secoora.org/>



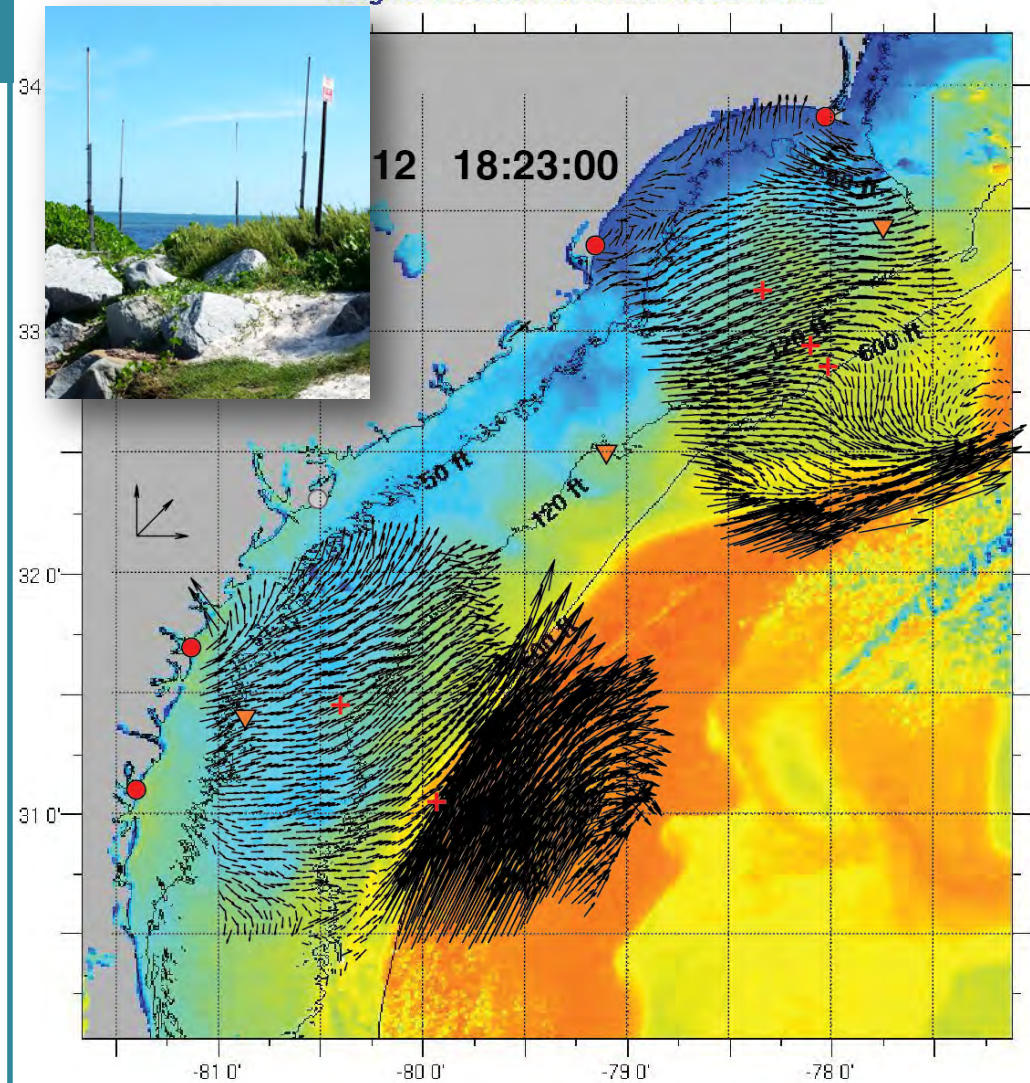
Why We Do It: Search and Rescue, oil spills, ...

Real-time surface current maps from high frequency radar

- US Coast Guard
“Reduces our search area”
- Oil Spill response
- Other pollution, i.e. harmful algae blooms
- Larval transport

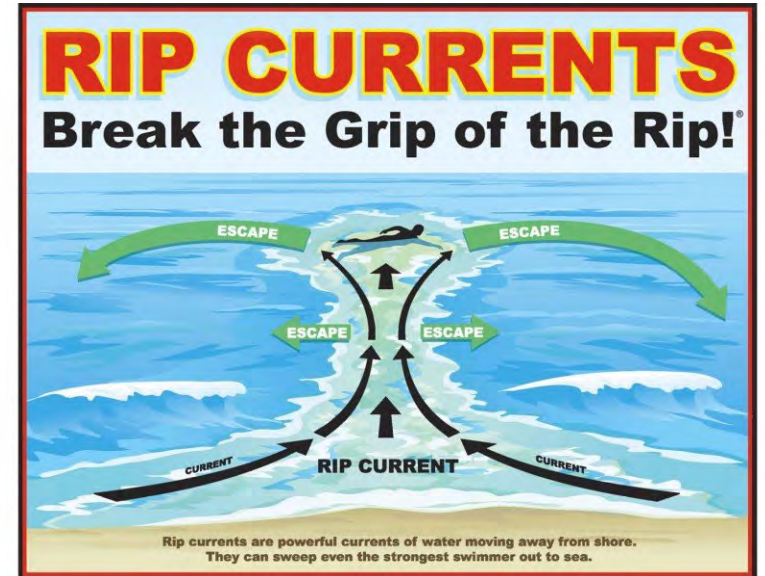
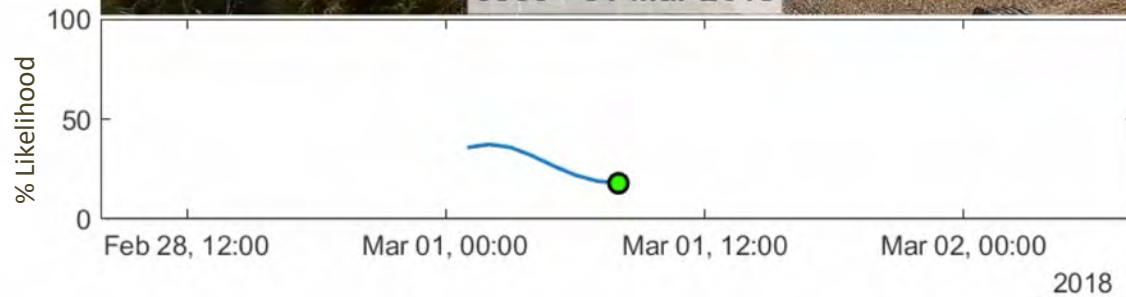
Image courtesy of D. Savidge, UGA Skidaway Institute of Oceanography

NOAA-18 Sea Surface Temperature: March 29, 2012 0833 GMT
Rutgers Coastal Ocean Observation Lab





Why We Do It: Validate Rip Current Models



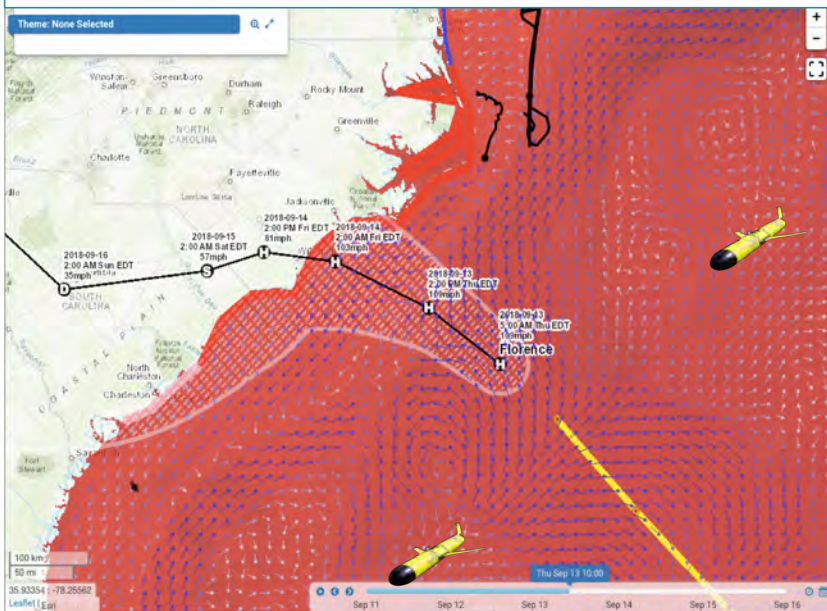
Video courtesy of
Greg Dusek, NOAA



Why We Do It: Improve Hurricane Forecasts

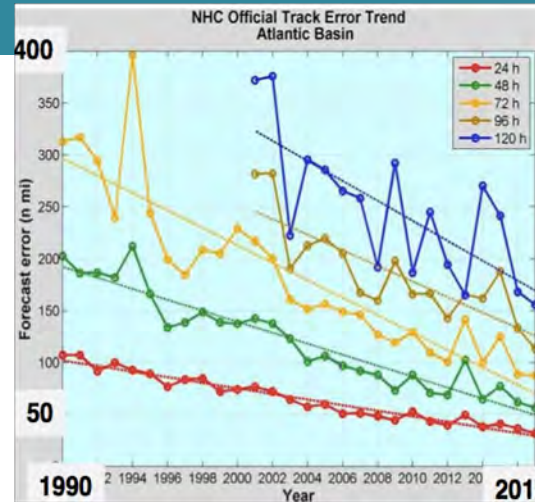
Improving hurricane intensity forecasts with glider (T, S) data

Hurricane Florence, T-24 hr

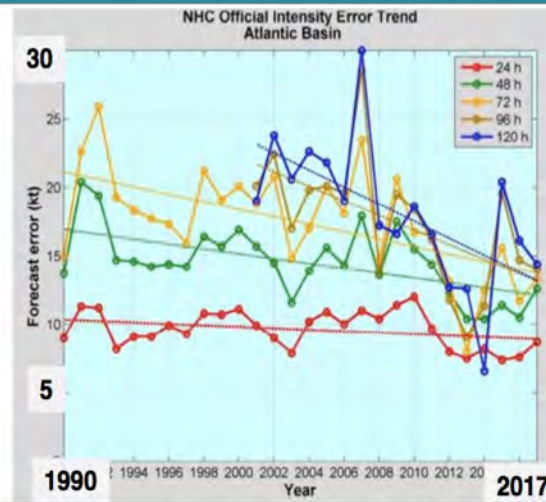


Slide images courtesy of C. Edwards, UGA Skidaway

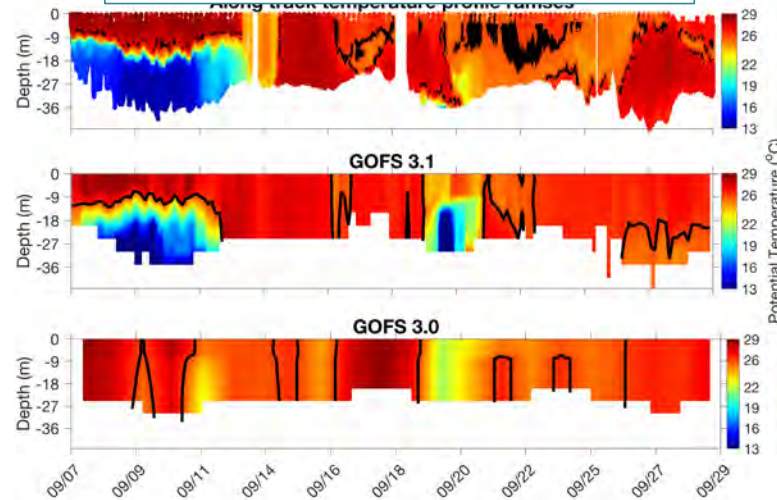
NHC track error



NHC intensity error



Along track temperature, deg C



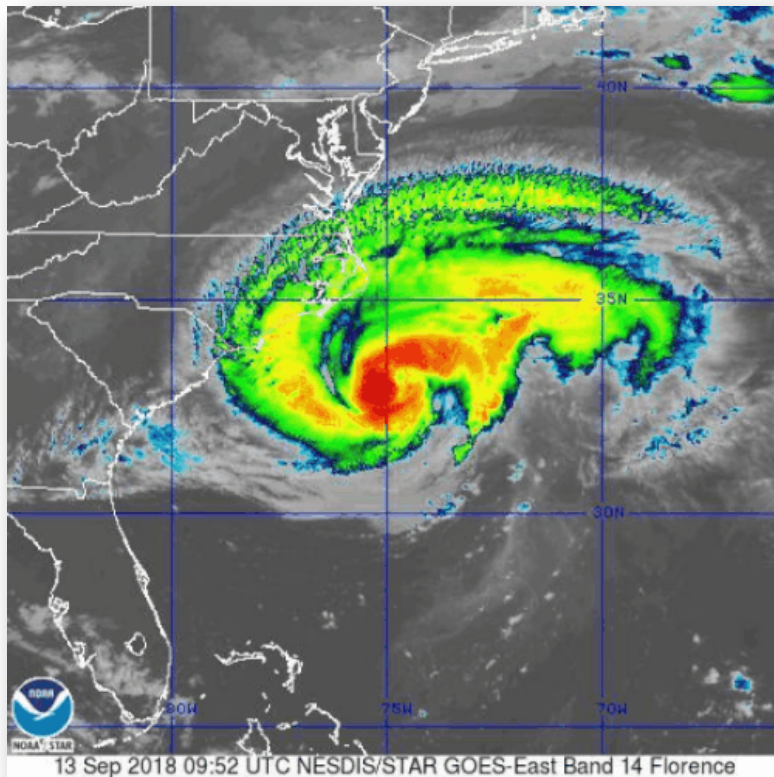
glider
observations

with
gliders

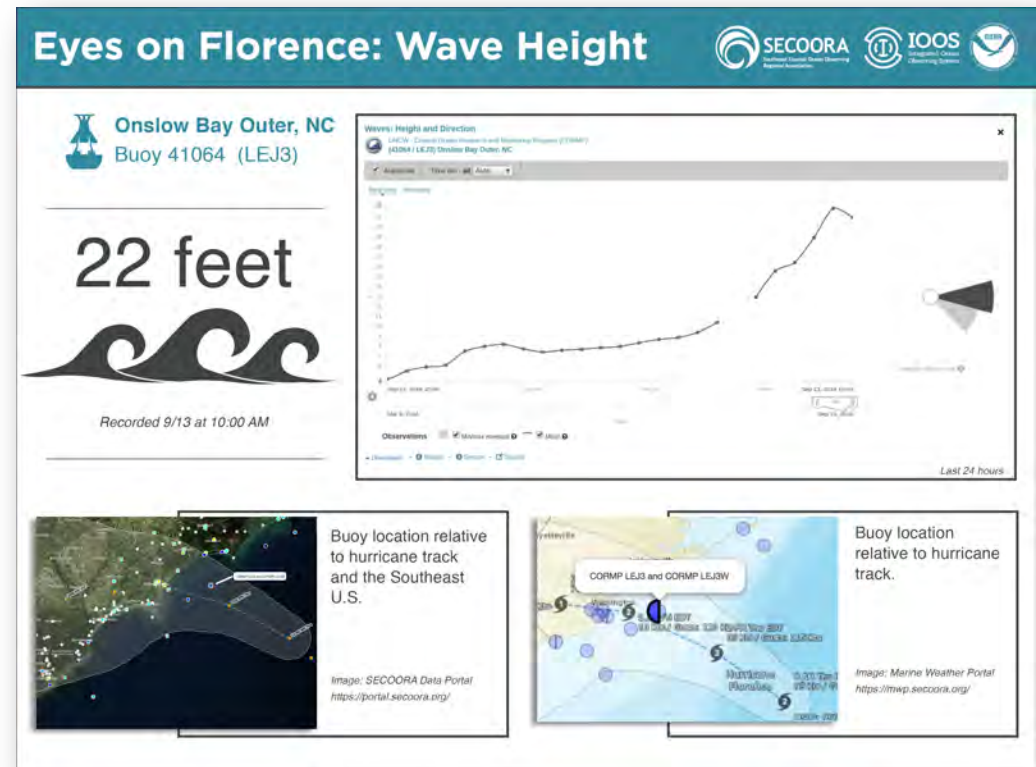
without
gliders



Why We Do It: Share Resources



Hurricane Resource Webpage
secoora.org/hurricane-resources



Hurricane Social Media Outreach



Why We Do It: Share Resources

Red Tide Data Resources for Florida



Harmful algal blooms, or HABs, occur when colonies of algae — simple plants that live in the sea and freshwater — grow out of control and produce toxic or harmful effects on people, fish, benthic organisms, marine mammals, and birds (source NOAA).

Currently, there is an unprecedented and persistent HAB, commonly known as red tide, impacting both coasts of Florida.

Red Tide in Florida

The Florida red tide occurs when high concentrations of the toxic dinoflagellate, *Karenia brevis*, is present. *Karenia brevis* creates a toxin, called a brevetoxin, that is threatening to human and animal health. Red tides have been responsible for millions of dollars in economic losses to the commercial and recreational fishing industries as well as recreation and tourism industries.

Red tide toxins that end up in the food web can be transferred to other forms of life, from tiny zooplankton to birds, fish, aquatic mammals and humans. Red tides cause massive fish kills along the Florida coast, weaken or kill marine mammals, and, when the toxins are inhaled, cause respiratory distress in humans and marine mammals.

While red tide occurs naturally, knowing when and where a red tide threat may emerge and how it may evolve along the coast is important. A number of predictive tools and data resources are available or in development to investigate this natural phenomenon.

Red Tide Data Resources

SECOORA is working to pull together all data resources related to the Red Tide in the Florida. If we are missing a resource, please email abbey@secoora.org to get it included!

Current Status



FWC Red Tide Status Update

Florida Fish and Wildlife Conservation Commission (FWC) reports on the current status of *Karenia brevis* blooms using tables, static maps, and interactive Google Earth maps. FWC provides a statewide *K. brevis* map that breaks down coastal areas to highlight when concentrations are not present, very low, low, medium, and high. In addition, they report on respiratory irritation for southwest and northwest Florida.

[Access the FWC Red Tide Status Webpage](#)

Modeling, Forecasting and Web Cameras

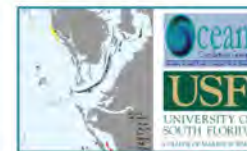
West Florida Coastal Ocean Model



For West Florida, access short-term (4.5 day) HAB trajectory forecast that is provided by the University of South Florida College of Marine Science. The forecast is based on the nowcast/forecast West Florida Coastal Ocean Model (WFCOM). Results are provided for both the surface and the near bottom waters. The two results differ due to water movement. Water movement is important to show where red tide may be transported. WFCOM provides the connectivity between three distinct ocean and coastal regions: deep ocean, nearshore shelf waters, and estuaries.

[Access 4.5 Day HAB forecast for West Florida](#)

Tampa Bay Circulation Model



For the Tampa Bay Coastal region, access the short-term (4.5 day) HAB trajectory forecast that is provided by the University of South Florida College of Marine Science. The forecast is based on the high resolution nowcast/forecast Tampa Bay Circulation Model (TBCOM). Results are provided for both the surface and the near bottom waters. The two results differ due to water movement. Water movement is important to show where red tide may be transported. The TBCOM offers more detail by virtue of higher spatial resolution.

[Access 4.5 Day HAB forecast for Tampa Bay Florida](#)

NOAA Harmful Algal Bloom Forecast



NOAA monitors conditions daily and issues twice-weekly forecasts for red tide blooms in the Gulf of Mexico and East Coast of Florida. You can find up-to-date information on where a bloom is located and a 3-4 day forecast for potential respiratory irritation arranged by regions. This information may help you find an unaffected beach if you are visiting the coast.

Web Cameras



SECOORA and Sunline support five coastal cameras in the southeastern U.S. that are specifically deployed to address coastal issues. There are 3 cameras in Florida that can be used to view effects of red tide (Bradenton, Miami and St. Augustine). Watch the cameras to see if dead fish is on the beach or monitor if others are enjoying the waters. You can also view archived.

Red Tide Resource Webpage

secoora.org/red-tide-data-resources-for-florida/

Regional Coastal Ocean Observing Plan

Strategic Priorities for the Southeast Coastal Ocean Observing Regional Association

2021-2024



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In Summary...

1

We are coastal and ocean scientists, businesses and stakeholders **working together**



2

We **monitor and observe** the ocean to understand change



3

We enable **better decision-making**





Questions?

Debra Hernandez , debra@secoora.org

www.secoora.org