SECOORA
Southeast Coastal Ocean Observing Regional Association

SECOORA 2015 ANNUAL REPORT

Image Credit: Angela Simone, SUNY Geneseo

Leveraging local resources. Meeting regional needs. Supporting national priorities.

> *"The southeast US is a critically important ecosystem to all citizens of the United States providing both jobs and recreation for millions of Americans each year. The observing system you [SECOORA] are developing will improve maritime safety, enhance forecasts of hurricanes, severe weather, pollution and harmful algal blooms, as well as, provide needed water quality monitoring for restoration and ocean modeling efforts."*
>
> Robert P. Jones, Executive Director
> Southeastern Fisheries Association, Inc.

IOOS
Integrated Ocean Observing System

NOTE FROM THE EXECUTIVE DIRECTOR

Partnership and growth defined 2015. We welcomed new members, submitted a five-year funding proposal to the US Integrated Ocean Observing System (US IOOS®), and partnered with NOAA Ocean Acidification Program to facilitate the Southeast Ocean Coastal Acidification Network.

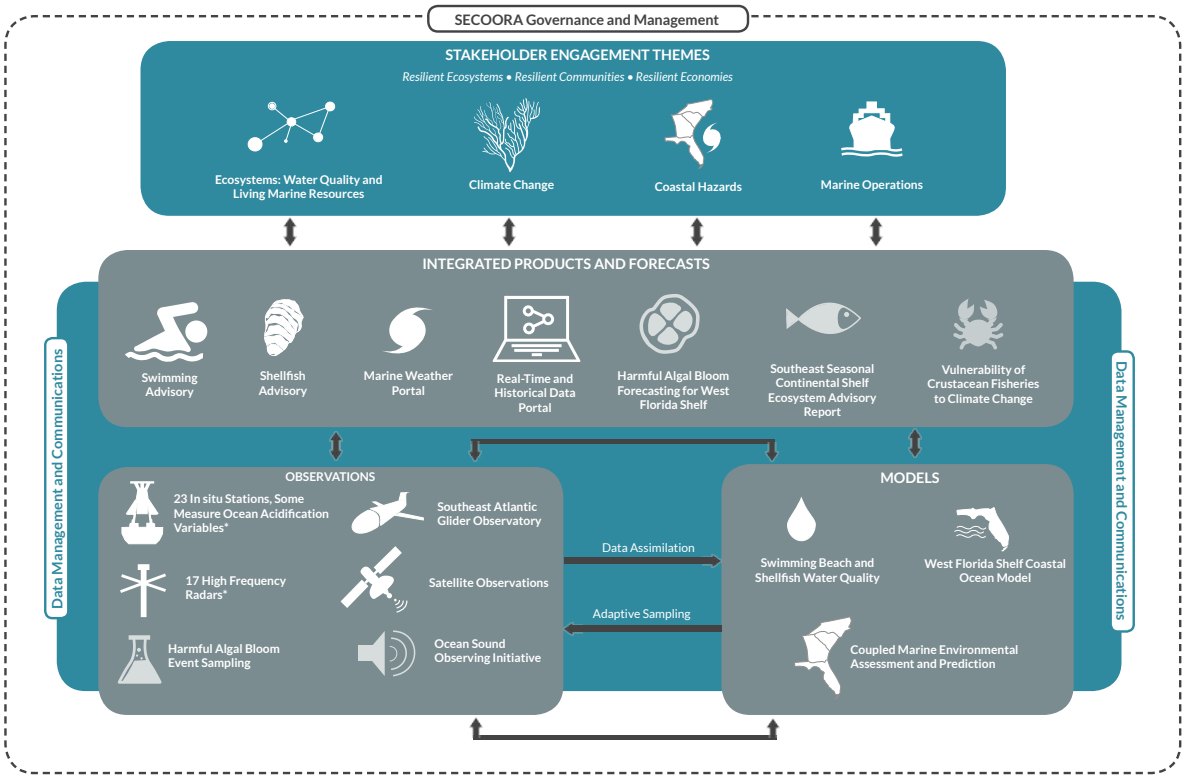
It has only been a remarkable year because of you. With the help of our Board, members, principal investigators, stakeholders, US IOOS and dedicated staff, SECOORA is a stronger organization. We should all celebrate another year of sustained operation of the 20 in-situ stations and 15 high frequency radars that comprise the SECOORA observing system.

Although it has been a noteworthy year, it did not come without challenges. We are listening to our users. In 2016, we will be upgrading our website, finalizing the Board driven Strategic Plan and working to become more responsive.

Thanks to all of our partners, stakeholders and members who make what we do possible. Please visit our website, www.secoora.org, for more information on how you can become involved with SECOORA.

Sincerely,

Debra Hernandez, Executive Director



The above schematic is a visual representation of the five-year plan for the SECOORA Ocean Observing System. With oversight from Governance and Management, and in collaboration with Principal Investigators, Data Management and Communications successfully manages and integrates data for a suite of tools and applications. Each component is linked to priority stakeholder needs under four theme areas.

*Numbers reflect proposed and existing stations

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Children, teens, and families learned about the basic functions of buoys and a variety of sensors at the Charleston 2015 STEM Festival. Visitors explored SECOORA real-time buoy data off the coast of South Carolina via our data portal.

Images Credit: SECOORA

SECOORA THEME AREAS

Connecting Stakeholders to Data

MARINE OPERATIONS

Observing stations are the real time eyes on the water. Data from stations are critical for informing weather forecasters and others responsible for planning boat and ship operations. Mariners need to know the true local conditions before heading out the on the water.

Unfortunately, more and more frequently we are seeing equipment being decommissioned due to lack of funding. With less money, we need to be more creative. SECOORA teamed with members and partners to help keep buoys that collect and deliver valuable data in the water.

Buoy for a Cause: SECOORA and member University of North Carolina Wilmington crowdsourced the additional $16,000 needed to replace decommissioned NDBC buoy 41036, in Onslow Bay, NC.

Cape Canaveral Buoys: Two NOAA buoys off the east coast of Florida were slated for retirement in spring 2016. SECOORA's Board joined with others that rely on these buoys and contacted NOAA urging them to reconsider. NOAA listened and agreed to maintain Cape Canaveral Buoys 41009 and 41010 through the end of 2016. Updates on this issue can be found at www.secoora.org/CapeCanaveralBuoys.

COASTAL HAZARDS

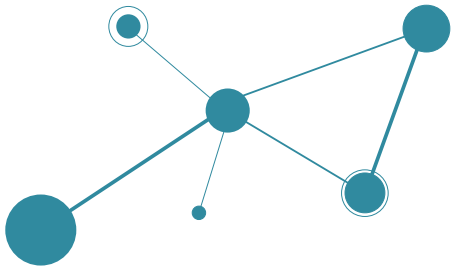
Coastal hazards come in many varieties in the southeast, and include hurricanes, coastal inundation and rip currents. This year, SECOORA focused on two specific threats to the safety of coastal residents and visitors: 1) inundation associated with storms and 2) rip currents.

Coastal Inundation: Dams broke, houses flooded, and much of South Carolina was underwater. In the wake of the historic and record-breaking rainfalls experienced in the Carolinas in October, data from SECOORA funded buoys are being coupled with other monitoring data to study the event and understand impacts to the marine environment. These buoys recorded the events in real time, and the data could also help improve the prediction of water levels along the coast for future storms.

Rip Currents: The number one cause for rescues and drownings at the beach is rip currents, yet our ability to accurately forecast them is limited. NOAA National Weather Service (NWS) and partners have developed a probabilistic rip current forecast model to provide officials with a tool to predict the likelihood of a rip current. SECOORA funded a validation study to collect wave and visual rip current observations at Emerald Isle, NC. The data from the study will be used to improve and validate the rip current model.

“By replacing NDBC buoy 41036…. the UNCW efforts will fill a void in coastal data that has left NWS and local stakeholder largely “blind” as to offshore condition across our [North Carolina] southern coastal area.”

Richard Brandy, Meteorologist in Charge-
National Weather Service, Moorehead City, NC

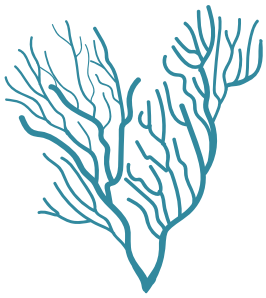


ECOSYSTEMS, WATER QUALITY, AND LIVING MARINE RESOURCES

Ocean and coastal conditions are constantly changing. Observations, models and partnerships are necessary to understand the southeast’s complex ecosystems.

SECOORA supports monitoring and modeling of surface, in-column and seafloor water quality parameters, which are primarily physical and chemical observations. Biological observations monitor living marine resources. All these observations must be linked to understand ecosystem changes. Incorporating real time biological measurements into operational coastal ocean observing systems is challenging, primarily because of the variety of biological characteristics and variability that can be measured.

An effort to address this challenge is the Biological Observation Experiment, a collaboration between SECOORA, USF and Mote Marine Laboratory. Research shows fish have evolved to use acoustics for courtship and spawning. Passive acoustic hydrophone surveys can be used to document the time and place where reproductive activity occurs. This project is testing to see if acoustic measurements of fish sounds and movement can be feasibly integrated into the existing operational observing systems.



CLIMATE CHANGE

SECOORA is devoted to sustaining observations through partnering to understand climate variability and its effect on our oceans. Below are initiatives that SECOORA participated in throughout 2015:

Climate Variability Workshop: SECOORA hosted a tri-regional workshop on the impact of climate variability on fisheries. In partnership with the private sector (ROFFS™), National Marine Fisheries Service and fellow Regional Associations, workshop attendees vetted and voted on a prioritized list of research and monitoring needs for each region.

SOCAN: Similar to a sponge, the ocean absorbs the excess carbon dioxide in the atmosphere. Ocean Acidification (OA) is the ongoing decrease in the pH of the Earth’s oceans, caused by the uptake of carbon dioxide from the atmosphere. SECOORA facilitated the Southeast Ocean and Coastal Acidification Network (SOCAN). SOCAN brings experts and industry together to identify the knowledge and research needs to address potential problems caused by OA. Throughout 2015, twenty OA focused webinars were broadcasts to document what is known, what isn’t, and what research in other locales can be applied to better understand OA effects in the southeast. http://secoora.org/socan

Image Credit: Yosuke Shimizu, www.bit.ly/1QdAqPB

SECOORA BY THE NUMBERS

43 SECOORA MEMBERS JOIN TODAY!

20 IN-SITU STATIONS

15 HF RADARS

5 MODELING PROJECTS

6.8 MILLION WEBPAGE VIEWS OF SECOORA DATA AND INFORMATION ON WWW.NBDC.NOAA.GOV

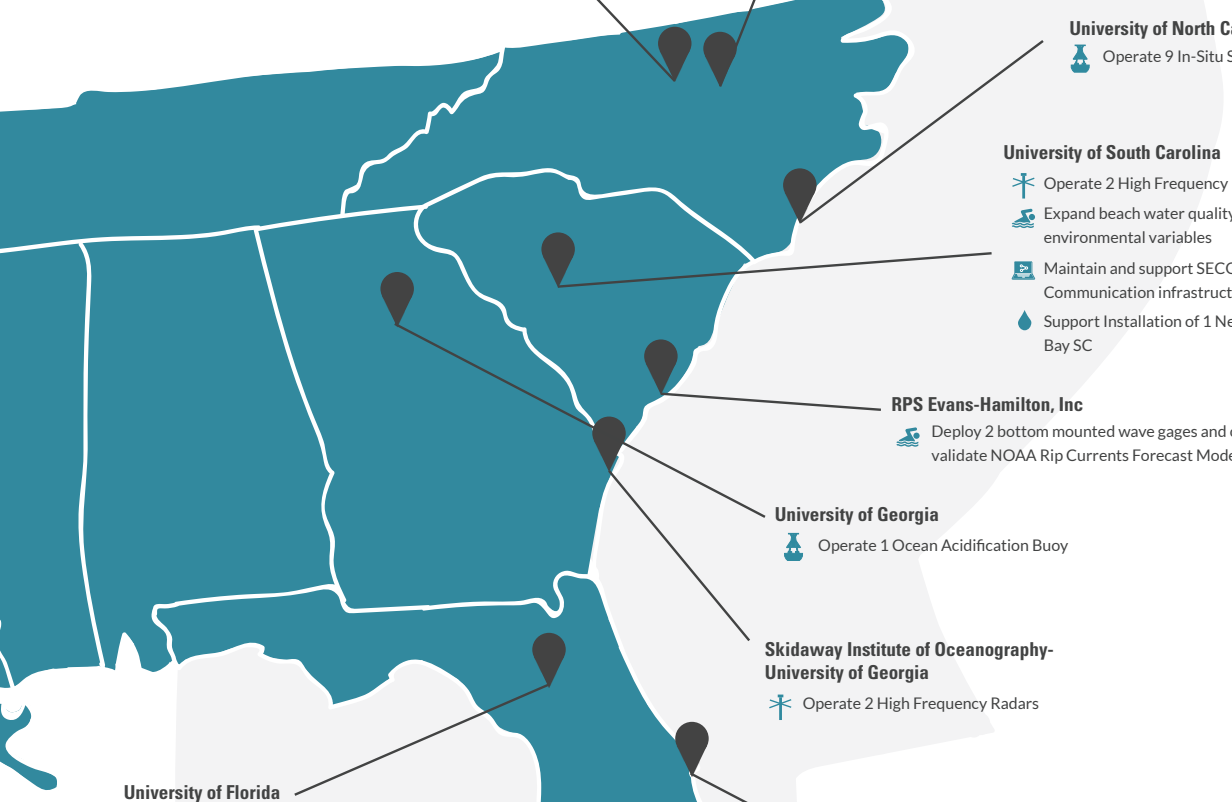
225,929 WEBSITE PAGEVIEWS

57% FROM 2014

75.9 MILLION OBSERVATIONS SERVED ANNUALLY ON WWW.SECOORA.ORG/MAPS/

39% ARE NON-FEDERAL OBSERVATIONS

SECOORA PROJECTS BY STATE



North Carolina State University
- Coastal Circulation Nowcast/Forecast System for the South Atlantic Bight and Gulf of Mexico
- Storm Surge Forecast and Inundation Modeling

University of North Carolina at Chapel Hill
- Operate 3 High Frequency Radars

University of North Carolina Wilmington
- Operate 9 In-Situ Stations

University of South Carolina
- Operate 2 High Frequency Radars
- Expand beach water quality swimming advisories with other environmental variables
- Maintain and support SECOORA Data Management and Communication infrastructure and activities
- Support Installation of 1 New Water Quality Station in Winyah Bay SC

RPS Evans-Hamilton, Inc
- Deploy 2 bottom mounted wave gages and cameras off NC to validate NOAA Rip Currents Forecast Model

University of Georgia
- Operate 1 Ocean Acidification Buoy

Skidaway Institute of Oceanography-University of Georgia
- Operate 2 High Frequency Radars

University of Florida
- Participate in NOAA National Hurricane Center Joint Hurricane Testbed

University of South Florida College of Marine Science
- Operate 4 High Frequency Radars
- Operate 9 In-Situ Stations

Roffer's Ocean Fishing Forecasting Service
- Develop data products derived from satellite and in situ observations for fisheries stock assessment in collaboration with SAFMC
- Partner on fisheries climate workshop planning

Mote Marine Laboratory
- Test whether acoustic measurements of fish sounds and movement can be integrated into observing systems

University of Miami
- Operate 4 High Frequency Radars

OTHER PROJECTS

Axiom Data Science
- Improve Data Management and Communications services and activities

University of Delaware
- Analyze water samples at Gray's Reef OA mooring site for data validation

Filipe Fernandes
- Develop a quick, easy, and automated model-observation online comparison tool

SECOORA MEMBERS

SECOORA BOARD OF DIRECTORS

Conrad C. Lautenbacher, GeoOptics* - Chairman
William Hogarth, Florida Institute of Oceanography* - Vice Chairman
Jim Nelson, University of Georgia Skidaway Institute of Oceanography* - Secretary
Peter Hamilton, Leidos Corporation* - Treasurer
George Maul, Florida Institute of Technology* - Past Chair
George Voulgaris, University of South Carolina College of Arts and Sciences*
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Lisa Adams, Kennesaw State University*
Lynn Leonard, University of North Carolina Wilmington*
Nick Shay, University of Miami Rosenstiel School of Marine and Atmospheric Science
Roger Pugliese, South Atlantic Fishery Management Council*
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Jeff Copeland, WeatherFlow*
Tim Short, SRI International*
Marcel Reichert, SC DNR Marine Resources Division*
Bob Weisberg, University of South Florida College of Marine Science

SECOORA MEMBERS- NON DIRECTORS

James Locascio, Mote Marine Laboratory
Cameron Hunt, Metanomy, Inc.
Mitch Roffer, ROFFS™*
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Peter Sheng, University of Florida*
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Jennifer Zimmerman, OTT Hydromet†
Trap Puckett, RPS Evans-Hamilton, Inc.†
Cliff Merz, Dialytics, Inc.†
Geno Olmi, NOAA Southeast and Caribbean Regional Collaboration Team**
George Sedberry, Southeast, Gulf of Mexico, and Caribbean Region of the Office of the National Marine Sanctuaries**
Eric Strom, U.S. Geologic Survey**
Jennifer Bennett Mintz, NOAA Ocean Acidification Program**

LEGEND	
Sustaining Member:	Blue
Institutional Members:	*
Individual Members:	†
Affiliate Members:	**
New Member:	*Italicized*

"Metanomy joined SECOORA because we believe that citizen science, open source software, and open data standards are powerful enablers to the decision makers who rely on environmental science."

Cameron Hunt
President,
Metanomy, Inc. 501(c)(3)

Metanomy technology in context

JOIN SECOORA

SECOORA is designed by users, for users. Our membership provides opportunities for organizations to influence coastal ocean observing activities in the southeast.

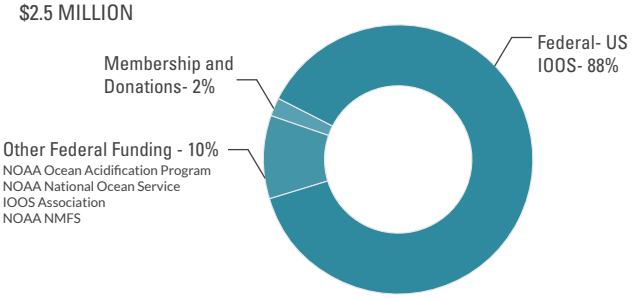
From North Carolina to Florida, universities, state and local agencies, businesses and others have joined SECOORA to set our regional priorities.

Become a member today and be a part of the Southeast's future. Email debra@secoora.org to join!

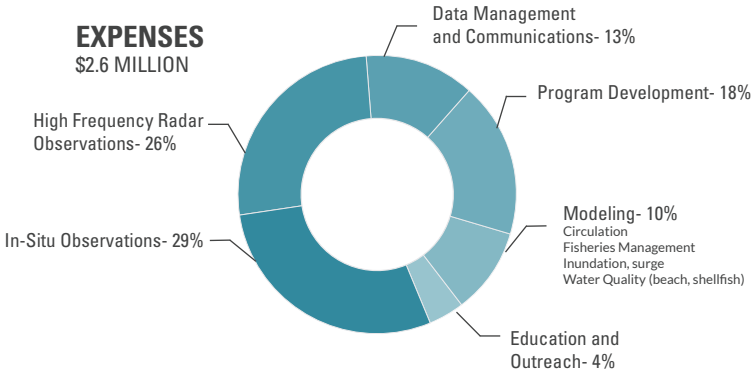
5 NEW MEMBERS JOINED IN 2015

SECOORA FINANCIALS

INCOME
$2.5 MILLION



EXPENSES
$2.6 MILLION



SECOORA

Southeast Coastal Ocean Observing Regional Association

The Southeast Coastal Ocean Observing Regional Association (SECOORA) coordinates projects and leverages resources to observe 1,938 miles of coastline and 189,615 square miles of coastal ocean in North Carolina, South Carolina, Georgia and Florida. Users, such as recreational beach goers, local, state and federal emergency responders, coastal zone planners and more, use our data to provide near real-time marine weather and other coastal ocean information. SECOORA takes action to improve safety, enhance our economy, and protect our environment.

IOOS Integrated Ocean Observing System

SECOORA is one of the 11 Regional Associations that partner with the US IOOS to observe the changes in our ocean, coastal and Great Lakes environment.

IOOS Association

IOOS Association is a non-profit organization formed by the regional associations in support of the US IOOS. SECOORA is an active member of the IOOS Association.

STAY CONNECTED

SECOORA's website is dedicated to providing the information you need to increase your understanding of the southeast's coastal ocean. In 2016, SECOORA will be redoing our website based on user feedback. Explore our website, www.secoora.org, or social media outlets today to learn more.

https://www.facebook.com/secoora

www.twitter.com/secoora

Pictured is Michael Kovatch, SECOORA 2015 Intern, practicing his diving. During his internship, Michael became a certified American Academy of Underwater Sciences diver.

Image Credit: Jay Law, USF CMS