SECOORA
Southeast Coastal Ocean Observing Regional Association

Annual Report 2017

Collecting vital environmental information for weather forecasts and hurricane warnings, safe boating, swimming, fishing and seafood.

IOOS
Integrated Ocean Observing System

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Did you know?

In 2017, SECOORA became certified as a Regional Information Coordination Entity, or RICE.

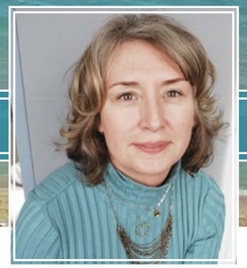
Certification recognizes that SECOORA meets NOAA federal standards for data gathering, accessibility, management, and long-term archiving. Certification requires that SECOORA continues to operate transparently and solicit stakeholder feedback to ensure that we meet their priority coastal and ocean observing needs.

Certification opens doors for greater collaborations. SECOORA's data management capacity and expertise provides a solid foundation to support member and stakeholder efforts – private, local, state or federal – to develop products and services.

To learn more about Certification, federal data sharing and archiving standards, or SECOORA's data services contact jdorton@secoora.org.

SECOORA posing for a picture with the U.S. IOOS Director after signing the official Regional Information Coordination certification agreement. Pictured left to right: Carl Gouldman (U.S. IOOS Director), Debra Hernandez (SECOORA Executive Director), and Jennifer Dorton (SECOORA Regional Coastal Ocean Observing System Manager).

Message from the Executive Director



Impacts to the blue economy defined 2017. The devastation caused by Hurricanes Harvey, Irma and Maria are still making headlines. We experienced the most active hurricane season in recent memory. SECOORA's observing infrastructure took a major hit, but many sensors survived back-to-back hurricanes with over 41% of them reporting critical data during these extreme hurricanes.

2017 also marked our ten-year anniversary. SECOORA achieved this milestone because of you. With the help of our Board, members, principal investigators, stakeholders, US Integrated Ocean Observing System (US IOOS®), and dedicated staff, SECOORA is having a positive impact in the region and evolving to be the go-to source for coastal ocean information in the Southeast.

I am pleased to announce SECOORA launched several new initiatives in 2017 – the *Coastal Observing in Your Community* webinar series, an annual student Data Challenge, and a corporate sponsorship program. SECOORA also became a certified Regional Information Coordination Entity. Certification recognizes that SECOORA meets federal standards for transparent, user-driven governance and data management, which is opening doors for even more collaborations.

Although it has been a noteworthy year, it did not come without challenges. We lost a vital member of the SECOORA family, Vembu Subramanian. His infectious laugh, positive attitude, and good humor are sorely missed. SECOORA and the community raised $50,000 in his memory. In 2018 we will make the first annual $2500 Ocean Scholars Award to continue Vembu's mentoring legacy by supporting the next generation of ocean experts.

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 current activities and how you can become involved.

Sincerely,

Debra Hernandez, Executive Director
Email: debra@secoora.org

This 2017 Annual Report is dedicated to Vembu Subramanian. Vembu left us too early. He was everyone's friend, colleague, mentor, and our social chairman. While hired in SECOORA his technical skill, Vembu's true strength was his interpersonal skill. If you had the chance to meet him, you were touched by his sincerity, laughter, and genuine kindness. And if lukcy, you may have even been "vemboozled," a term his friends used to describe his irresistible way of persuading you to have more fun than you'd planned for or imagined. In 2018, we will establish a scholarship to continue Vembu's mentoring legacy and help the next generation of ocean experts.

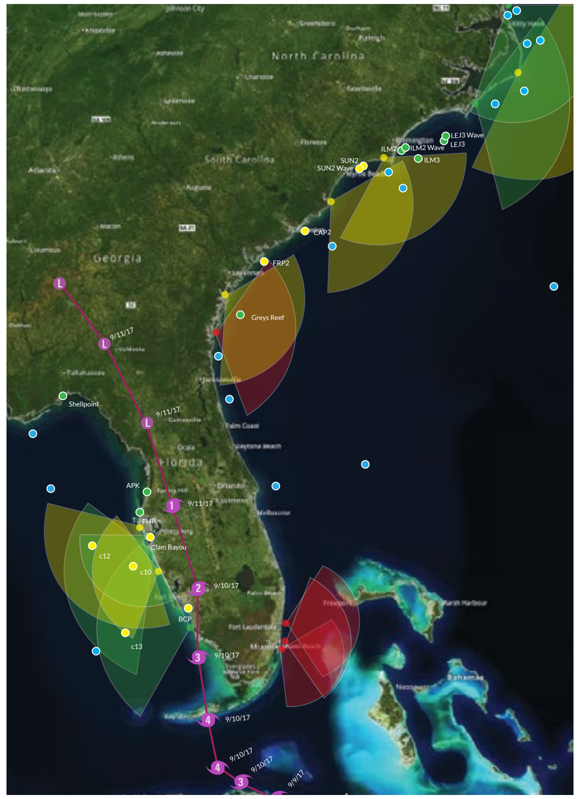

Image Credit: NASA

Providing Vital Data During Hurricane Season

Hurricanes Irma and Maria wreaked havoc on the Southeast U.S. and Caribbean regions. Storm surge flooded towns and high sustained winds removed roofs, devastating both natural and human infrastructure.

SECOORA supports observing infrastructure that provides real-time data on storm conditions. This data is critical for weather reporting, forecasting, emergency management, and public safety.

Unfortunately, like other infrastructure in the storms' paths, SECOORA's ocean observing assets were damaged and need to be repaired. In 2018, SECOORA is working with legislators and impacted communities to raise awareness of the value of these assets and the need to repair and maintain them. These observing assets inform us about whether our ocean 'highways' are safe for work and recreation.



The SECOORA footprint spans the eastern side of Gulf of Mexico and the South Atlantic Bight. Pictured is Hurricane Irma's track overlaid on SECOORA observing assets. The dots represent moorings and coastal stations. The fans represent High Frequency radar coverage. Over 41% of SECOORA assets survived impacts from Hurricanes Irma and Maria.

- 🟢 *Operational*
- 🟡 *Operational but needs repairs*
- 🔴 *Non-Operational*

9 of 13
High Frequency Radars are damaged or destroyed

9 of 18
Buoys and Coastal Stations are damaged or destroyed

> The timeliness of credible data is critical to the National Weather Service (NWS) and its mission to protect life and property… Data sources used by the NWS are diverse... However, it is the ground truth data from observational platforms such as the [SECOORA funded] USF COMPS buoys and coastal stations that provide us with necessary data to warn the public.

Brian LaMarre, Meteorologist-in-Charge,
NOAA National Weather Service
Gulf of Mexico Regional Collaboration Team Lead

Leveraging Public and Private Partnerships

Web cameras are transforming environmental monitoring. Applications related to transportation and commerce, emergency preparedness and risk reduction, and stewardship of coastal resources are incorporating data from both live and archived video feeds.

The National Ocean Service Web Camera Applications Testbed (WebCAT) is a short-term project to install web cameras in five locations in the Southeast to count right whales, spot rip currents, validate wave run up models, understand human use of natural resources and more.

This unique project is a public-private partnership leveraging the expertise and capabilities of the partners below.

One challenge of the project was identifying hosts to house the cameras for the WebCAT initiative. Pictured left to right is Mark Willis (Surfline), Dennis Murphy (Surfline) and Debra Hernandez (SECOORA) exploring locations in South Carolina for the webcams. Visit www.secoora.org/webcat to view the cameras live feed.

Investing in the Next Generation of Ocean Experts

Through education opportunities, SECOORA is supporting the Southeast's growing ocean economy by creating workforce training opportunities for students. SECOORA partners with member institutions to engage students in ocean observing. The goal is to teach valuable skills and tools that can be applied once students enter the workforce.

Students who will be the next generation of coastal and ocean scientists, managers, decision makers, and entrepreneurs have the opportunity to help tell a story with SECOORA data via the Data Challenge. SECOORA's 2017 Data Challenge was a huge success. Applicants used their ingenuity to discover, integrate, and provide access to coastal ocean data – biological, physical, and more. Congratulations to the winners, who all received $2,500!

Undergraduate

SPLASSH into Ocean Acidification with SECOORA's pH Data

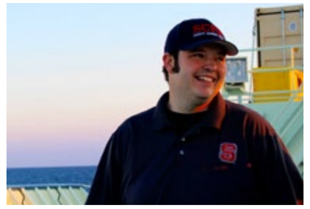
John Mwaniki, Kennesaw State University

Graduate

The Economics and Spatial Flexibility of Fisheries and Recreational Water Operations in Biscayne Bay, Florida

Samantha Dowdell, University of Miami

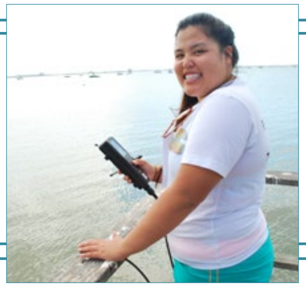
Public / Other



Development of a 5-Year Daily, Cloud-Free Sea Surface Temperature and Chlorophyll-a Reconstruction Dataset Using the Data Interpolating Empirical Orthogonal Functions Method

Joseph B. Zambon, Ph.D.

SECOORA participated in the St. Petersburg Science Festival with the Gulf of Mexico Coastal Ocean Observing System. This event provided the opportunity to highlight the importance of ocean observing off the coast of Tampa Bay, FL.



Each year SECOORA teams with YSI/ Xylem and University of South Florida to teach undergraduate students about the importance of water quality, metrological data, and coastal ocean observing systems.

SECOORA By the Numbers

13 HF Radars

13 Buoys

4 Models and Applications

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

40 SECOORA Members

SECOORA Southeast Coastal Ocean Observing Regional Association

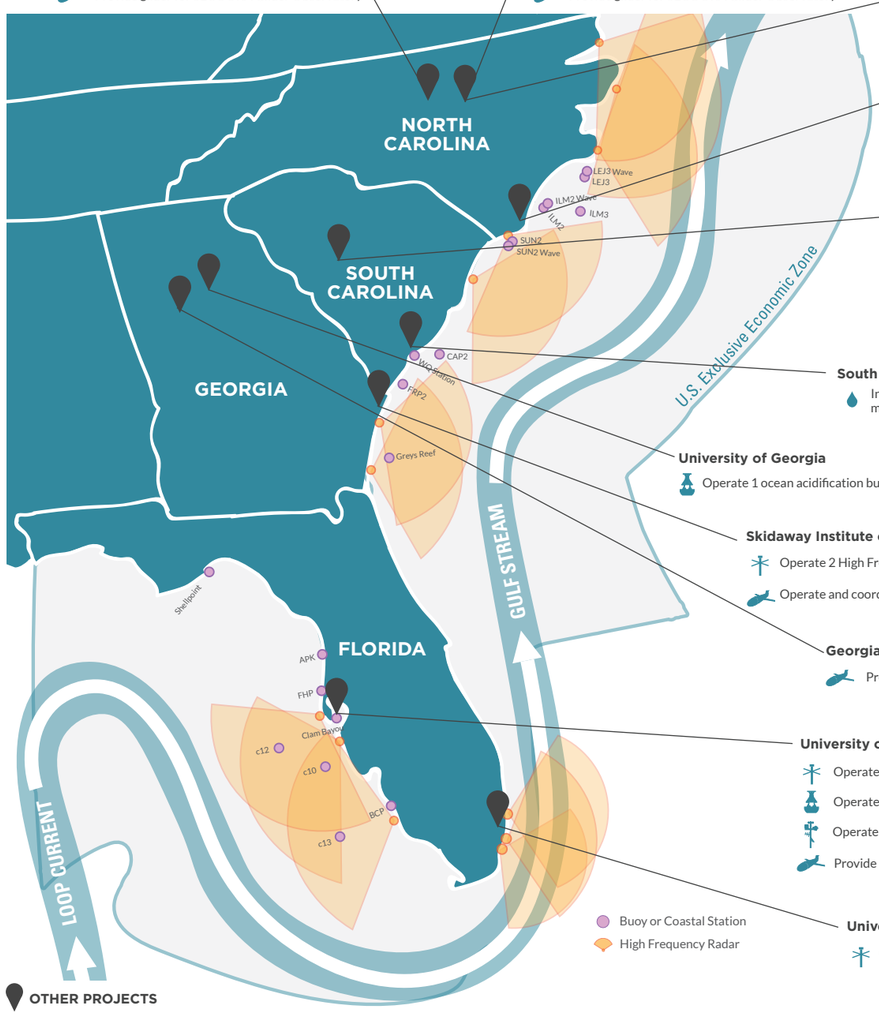
www.secoora.org

6 Coastal Stations

6 Glider Deployments Annually

42 Students Supported

SECOORA Projects By State



University of North Carolina at Chapel Hill
- Operate 3 High Frequency radars
- Provide glider for SECOORA Glider Observatory

North Carolina State University
- Coastal circulation nowcast/forecast system for the South Atlantic Bight and Gulf of Mexico
- Provide glider for SECOORA Glider Observatory

Fathom Science
- Prototyping operational ocean prediction systems in the cloud

University of North Carolina Wilmington
- Operate 9 buoys and 1 non real-time mooring
- Deploy 4 acoustic receivers on NC moorings to support fisheries tracking
- Update SECOORA Marine Weather Portal

University of South Carolina
- Operate 2 High Frequency radars
- Expand beach water quality swimming advisories with other environmental variables

South Carolina Department of Natural Resources
- Install and operate 1 new water quality and meteorological station in the Charleston Harbor

University of Georgia
- Operate 1 ocean acidification buoy

Skidaway Institute of Oceanography - University of Georgia
- Operate 2 High Frequency radars
- Operate and coordinate 6 glider deployments

Georgia Institute of Technology
- Provide glider mission control services

University of South Florida College of Marine Science
- Operate 3 High Frequency radars
- Operate 3 buoys and 2 non real-time buoys
- Operate 5 coastal stations
- Provide glider for SECOORA Glider Observatory

University of Miami
- Operate 3 High Frequency radars

OTHER PROJECTS

Axiom Data Science
Maintain and support SECOORA Data Management and Communication infrastructure and activities

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

Surfline
Install 5 web cameras in Southeast coastal locations for research purposes

SECOORA Members

SECOORA BOARD OF DIRECTORS

Michael Crosby, Mote Marine Laboratory - Chairman
Rick DeVoe, South Carolina Sea Grant Consortium* - Vice Chairman
Jeff Copeland, WeatherFlow Inc.* - Secretary
George Maul, Florida Institute of Technology* - Treasurer
Quinton White, Jacksonville University* - Past Chair
Lisa Adams, Kennesaw State University†
Pat Halpin, Duke University*
Ruoying He, North Carolina State University*
Conrad Lautenbacher, GeoOptics, Inc.***
Jim Murley, Miami-Dade County
Jim Nelson, Skidaway Institute of Oceanography - University of Georgia*
Roger Pugliese, South Atlantic Fisheries Management Council*
Marcel Reichert, South Carolina Department of Natural Resources*
Mitchell Roffer, ROFFS™ Inc.*
Nick Shay, University of Miami
Robert Weisberg, University of South Florida
Mark Willis, Surfline*

LEGEND

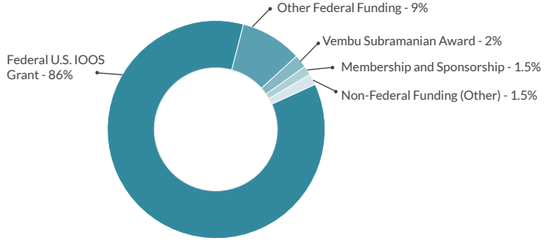
Sustaining Member:	Blue
Institutional Members:	*
Individual Members:	†
Affiliate Members:	**
Public Seat	***
New Member:	*Italicized*

SECOORA MEMBERS, NON-DIRECTORS

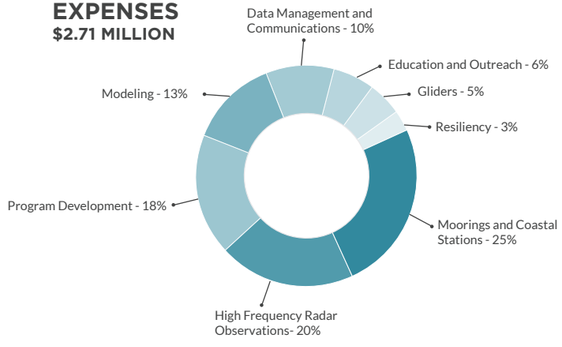
Jennifer Bennett Mintz, NOAA Ocean Acidification Program**
Greg Bossart, Georgia Aquarium*
Rick Cole, RDSea International†
Manhar Dhanak, Florida Atlantic University, SeaTech*
Jim Fourqruean, Florida International University*
Paul Gayes, Coastal Carolina University*
Peter Hamilton†
Dennis Hanisak, Florida Atlantic University, Harbor Branch Oceanographic Institute*
Markus Huettel, Florida State University*
Phillip Kramer, Florida Institute of Oceanography*
Lynn Leonard, University of North Carolina Wilmington*
Cliff Merz, Dialytics, Inc. †
Kathleen O'Keife, FL Fish and Wildlife Research Institute*
Geno Olmi, NOAA Southeast and Caribbean Regional Collaboration Team**
Michael Piehler, University of North Carolina at Chapel Hill*
Dwayne Porter, University of South Carolina Arnold School of Public Health
Trap Puckett, RPS Evans-Hamilton, Inc†
Ryan Rykaczewski, University of South Carolina College of Arts and Sciences*
George Sedberry, Southeast, Gulf of Mexico, and Caribbean Region of the Office of the National Marine Sanctuaries†
Peter Sheng, University of Florida*
Tim Short, SRI International*
Eric Strom, U.S. Geological Survey**
*Jennifer Warillow, Fathom Science**

SECOORA Financials

INCOME
$2.8 MILLION



EXPENSES
$2.71 MILLION



"Fathom Science joined SECOORA to expand our industry, government, and academic relationships to advance metocean analytics and prediction. We look forward to working with SECOORA members in strong partnerships and collaborations."

Jennifer Warrillow
Fathom Science
http://fathomscience.com/

FATHOM SCIENCE UNDERSTANDING THE DEPTHS

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 observing future. Email debra@secoora.org to join!

1 NEW MEMBER JOINED IN 2017

SECOORA

Southeast Coastal Ocean Observing Regional Association

SECOORA is the coastal ocean observing system for North Carolina, South Carolina, Georgia, and Florida. A coastal observing system is a combination of many components - from humans to hardware - that is used to collect data on our coastal environment. This data is then transformed into products and services that support safe and efficient marine operations, coastal economies, and a healthy, sustainable environment. SECOORA helps improve:

SAFETY

By supporting search and rescue operations and safe boating, swimming and extreme weather response

ECONOMY

By improving routing for maritime commerce and enabling private sector value-added products

PUBLIC HEALTH

By modeling and monitoring water quality variables and physical ocean data

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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

The 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

www.facebook.com/secoora

www.secoora.org

www.twitter.com/secoora

communications@secoora.org

Pictured is University of North Carolina Wilmington getting ready to redeploy marine weather buoys in Spring 2017.

Image Credit: Brett Bolton, UNCW