



# SECOORA

Southeast Coastal Ocean Observing  
Regional Association



# 2014

## ANNUAL REPORT

SECOORA



SECOORA and US IOOS hosted intern captures a photo of his swim back to the R/V Bellows after learning how to service an ADCP off the West Florida Shelf.

Read more on page 7.  
[www.secoora.org/node/446](http://www.secoora.org/node/446)

Image Credit: Pedro Matos-Llavona

**IOOS**<sup>®</sup>  
INTEGRATED OCEAN OBSERVING SYSTEM



The Southeast Coastal Ocean Observing Regional Association (SECOORA) collects and delivers critical data and information necessary to increase our understanding of our coasts and oceans along the shorelines of 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 information to provide necessary near real-time marine weather and related ocean data. SECOORA's goals include observing, tracking, predicting, managing, and adapting to changes in the southeastern US marine environment. We are taking action to improve safety, enhance our economy and protect our environment.



SECOORA is one of the eleven regional associations that partner with the Integrated Ocean Observing System,

US IOOS®. IOOS is a federal, regional and private-sector partnership committed to tracking, predicting, managing, and adapting to changes in our ocean, coastal and Great Lakes environment.



Integrated Ocean Observing System (IOOS) Association is a non-profit organization formed by the regional associations in support of the US IOOS. IOOS

Association works with the eleven regional associations, the US IOOS Program Office in NOAA and other partners to address the nation's coastal and ocean observing needs. SECOORA is an active member of the IOOS Association.

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Team members releasing Rosette sampler off the coast of Miami during the WHARF research cruise.

Read more on page 8.  
[www.secoora.org/node/425](http://www.secoora.org/node/425)

Image Credit: Jodi Brewster



**Marine forecasts without wave and current interactions in South Florida are impossible. Thus, as the Meteorologist In Charge of the South Florida Weather Forecast Office, I support this applied research effort . . . as it can greatly impact our marine forecasting capabilities and operations.”**

Dr. Pablo Santos, Meteorologist In Charge,  
*National Weather Service, Miami WFO*

Dr. Santos speaking about the Wave Heights and Currents in the Florida Straits (WHARF) project. Learn about WHARF on page 8.



## LETTER FROM THE EXECUTIVE DIRECTOR

The Southeast Coastal Ocean Observing Regional Association (SECOORA) provides critical ocean and coastal data and information to meet the needs of the people who live and work along the shorelines of the Southeast. With an income of \$2,650,000 in 2014, SECOORA funded activities in North Carolina, South Carolina, Georgia and Florida that helped improve the Southeast's safety, economy and environment. SECOORA continued to sustain coastal and ocean observations throughout the region by funding the operation of eleven buoys, fifteen radar stations and ten coastal stations that collect ocean and coastal observations.

Sustained marine observations are necessary to understand and predict the workings of the coastal ocean and its ecosystems. These observations help save lives and support our growing coastal and ocean economy. As we report on SECOORA-by-the-numbers, it is important to remember the significant time, effort and funding necessary to keep the ocean observing equipment in the water and operating. Because of the leveraging provided by our observing system operators, we accomplish a lot with our available funding. We should all celebrate another year of sustained operations of the thirty-six stations that comprise the SECOORA observing system.

Another important milestone this year is a new partnership to diversify our funding sources. This year we embarked on an effort to leverage private sector support for charitable causes. In partnership with Amazon, SECOORA is participating in the AmazonSmile program. By shopping via AmazonSmile, and designating SECOORA as your charitable organization, Amazon will donate 0.5% of your purchase to SECOORA. You can help raise money for SECOORA by shopping AmazonSmile! All proceeds from this program will be dedicated to creating opportunities for students to develop ocean science and technology skills.

With the help of our Board, members, principal investigators, partners, stakeholders, US IOOS and dedicated staff we have strengthened our organization and expanded our impact. I would like to thank all of our partners and stakeholders who make what we do possible. Please visit our website, [www.secoora.org](http://www.secoora.org), for more information on how you can become more involved with SECOORA.



*Debra Hernandez*

**DEBRA HERNANDEZ**  
EXECUTIVE DIRECTOR  
[www.secoora.org](http://www.secoora.org)

# SECOORA NUMBERS

BY THE

**45**  
SECOORA  
MEMBERS



**143,478**  
WEBSITE  
PAGEVIEWS  
**↑ 30%**  
FROM 2013

**\$1,306**  
INVESTMENT <sup>PER</sup>  
COASTLINE MILE  
COASTLINE MILE SOURCE: US  
CENSUS BUREAU, 2012

**17** PRINCIPAL  
INVESTIGATORS

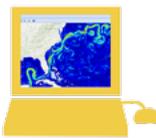


**32,273**  
MAN-HOURS  
SUPPORTED BY  
SECOORA  
FUNDING



**21**  
IN-SITU  
STATIONS

**15**   
HF RADARS

**5**   
MODELING  
PROJECTS

**9.7**   
**MILLION**  
WEBPAGE VIEWS OF SECOORA  
DATA AND INFORMATION ON  
[WWW.NBDC.NOAA.GOV](http://WWW.NBDC.NOAA.GOV)

**74.9**  
MILLION  
OBSERVATIONS  
SERVED ANNUALLY ON  
[WWW.SECOORA.ORG/MAPS](http://WWW.SECOORA.ORG/MAPS)  
**47%** ARE NON-FEDERAL  
OBSERVATIONS

**189,615**  
SOUTHEAST  
SQUARE MILES OF  
**OCEAN**  
TO OBSERVE



“My internship with SECOORA has been a key experience for my development in ocean sciences. SECOORA’s leadership in ocean observation gave me the opportunity to work with coastal ocean observations and distinguished scientists. Without any doubt, SECOORA has helped me shape my future career as an ocean scientist.”

Pedro Matos-Llavona  
Undergraduate Student  
*University of Puerto Rico at Mayagüez*

# TRAINING THE NEXT GENERATION

Through education opportunities, SECOORA is supporting the Southeast's growing ocean economy. Many of SECOORA's members are institutions of higher learning whose primary mission is to inspire and educate future generations. SECOORA coordinates with these institutions to engage students in ocean observing. The goal is to teach valuable skills and tools that can be applied to the workforce.

In collaboration with member universities, NOAA, and US IOOS, SECOORA provides a chance for students to gain hands-on experience in the field. We strive to supply young individuals with the knowledge necessary to understand they are the future of our economy. Below is a snapshot of education and outreach efforts:

- Science festivals
- Graduate student partnerships
- Intern projects

This year we successfully partnered with NOAA Education Partnership Program. The program is an annual competition that matches interns with projects. We hosted Pedro Matos-Llavona from the University of Puerto Rico at Mayagüez. Pedro spent his summer interning at University of South Florida (USF) and Florida Gulf Coast University (FGCU). Half of Pedro's time was spent analyzing data under the mentorship of Felix Jose at FGCU. For the second part of his internship, Pedro planned a research cruise on the R/V Bellows. He assisted in the process of recovering and analyzing ocean data under the mentorship of Jay Law, USF real-time Coastal Ocean Monitoring and Prediction System Research Associate. SECOORA and partners provided Pedro the chance to work with real data and instruments, strengthening his skill set and cultivating another ambassador of NOAA, IOOS and SECOORA in the process.

 SECOORA invites you to help us fund more student opportunities by utilizing AmazonSmile when you shop. See page 12 for more information.



SECOORA participated in the St. Petersburg Science Festival and taught the public the importance of ocean observing off the coast of Tampa Bay, FL.

[www.secoora.org/node/458](http://www.secoora.org/node/458)

Image Credit: Abbey Wakely, SECOORA



Vembu Subramanian, SECOORA RCOOS Manager, educating children in middle and high school about real-world applications of Geographic Information Systems during national GIS Day.

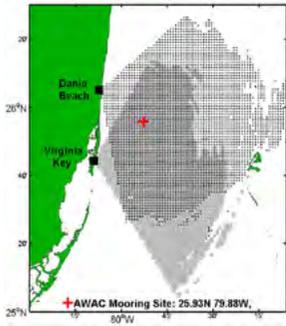
[www.secoora.org/node/466](http://www.secoora.org/node/466)

Image Credit: Abbey Wakely, SECOORA

2014

# SPECIAL PROJECTS

## INCREASING AVAILABLE WAVE DATA



Pictured above is the HF radar footprint off the coast of Miami, FL. If the WHARF project is successful, wave data would be available throughout the overlapping radar footprint as opposed to a single location.

Image Credit: UM RSMAS

One of the major consumers of coastal ocean observations is the National Weather Service (NWS). NWS forecasters need real-time coastal and ocean data and information to make accurate marine weather forecasts. Waves and currents are key parameters of these forecasts, but in many areas in the Southeast region there is either none or very limited wave data available to support marine forecasting. To address this issue, SECOORA funded the Wave Heights And Currents in the Florida Straits (WHARF) project. WHARF is intended to provide a quality control index for the extraction of real-time significant wave-height using high frequency radars (HF radars).

As shown in the diagram to the left, HF radar systems provide data over a broad area of the coastal ocean. The overall goal of WHARF is to evaluate and prove HF radars can be used to provide near real-time wave data, in addition to the surface current data, without having to deploy expensive new equipment.

NWS forecasters will use WHARF results to improve marine forecasts of waves and currents across the Florida Straits, which holds one of the fastest moving currents in the world. The WHARF project could increase coverage areas where wave data is currently unavailable. Those that play or work in these waters are dependent on accurate wave height and surface current information to safely navigate.



Matthew Archer, a PhD student working in Dr. Nick Shay's Upper Ocean Dynamics Laboratory at UM Rosenstiel School of Marine and Atmospheric Science lab, is coordinating the deployment of a subsurface mooring in the Straits of Florida. Contact Nick Shay at [nshay@rsmas.miami.edu](mailto:nshay@rsmas.miami.edu), for more information.

Image Credit: Jodi Brewster

## IMPROVING ACCESS TO HISTORICAL OCEAN DATA

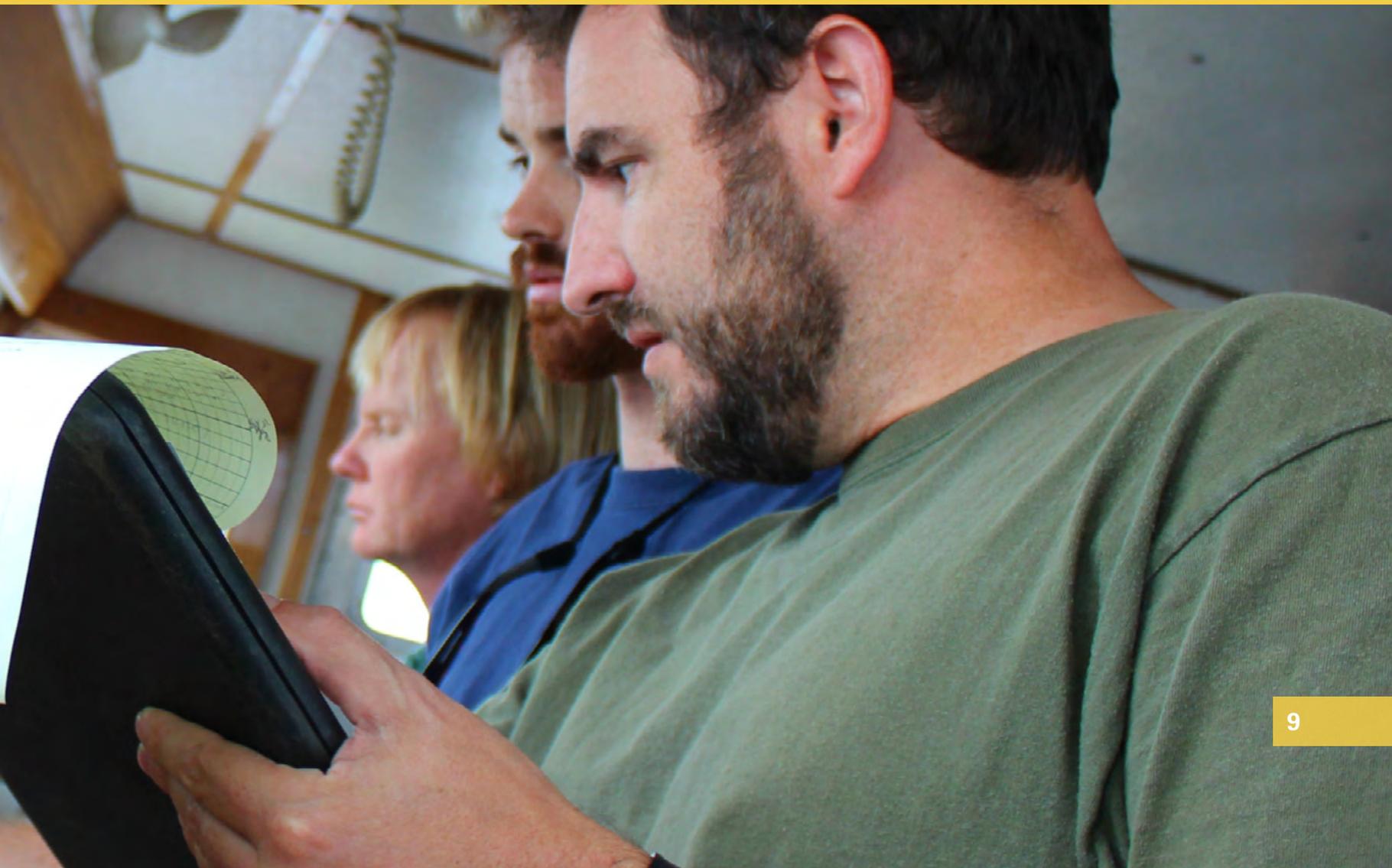


Each year SECOORA funds special projects that are driven by stakeholder needs and this year we focused on fisheries managers. Fisheries managers rely on surveys of fish health and abundance to determine fishing limitations. Trends in biological data are not always effectively linked to the trends in physical oceanographic data and information. SECOORA is improving access to historical physical oceanographic data to help fisheries managers better understand the connections between the physical and biological data.

Second Creek Consulting in partnership with University of South Carolina software engineers developed the Climatology Tool that aims to address the need to access historical data. The tool allows users to view and analyze trends in temperature and salinity in both time and space. A key feature of this user application is the ability to access historical temperature and salinity data from select SECOORA buoys. Another feature includes graphing modeled temperature and salinity data.

The modeled data is from the South Atlantic Bight and Gulf of Mexico forecasting model operated by researchers at North Carolina State University. Scientists studying fish stocks now have improved access to physical oceanographic data, which can potentially result in better understanding of changes in fish health and abundance.

Explore the Climatology Tool at [www.secoora.org/data/secooraclimatologyproduct](http://www.secoora.org/data/secooraclimatologyproduct)



# 2014 | SECOORA MEMBERSHIP

## THANK YOU MEMBERS

SECOORA is composed of diverse organizations that support and use the Southeast's regional coastal ocean observing system. With our members, SECOORA is able to build and maintain its observing enterprise. Members guide SECOORA activities by determining our funding priorities, participating in product development activities, increasing our understanding of coastal waters, ensuring the longevity of our observing network and more. Thank you for your support in 2014; we look forward to continuing our partnership in the coming year.

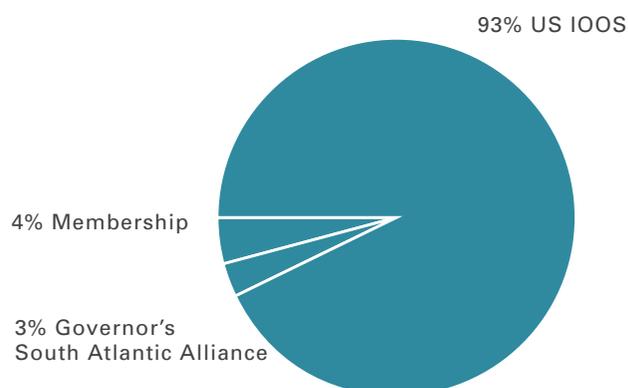
## JOIN SECOORA TODAY

SECOORA members are invaluable contributors to our enterprise. Join SECOORA! Please contact Debra Hernandez, SECOORA Executive Director, at 843.906.8686 or [debra@secoora.org](mailto:debra@secoora.org), if you would like to become a member.

# 2014 | FINANCIALS

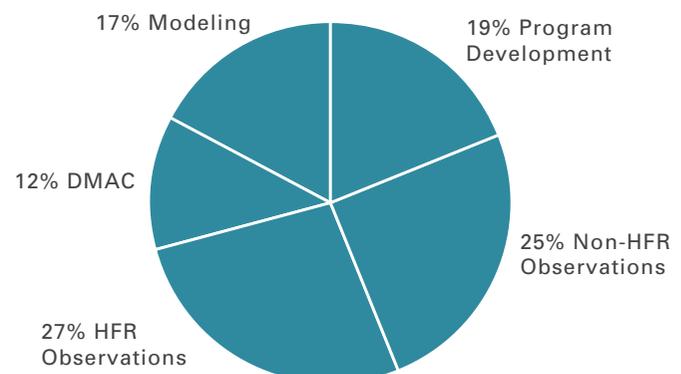
## INCOME

\$2,650,000



## EXPENSES

\$2,600,000



## SECOORA BOARD OF DIRECTORS

Conrad C. Lautenbacher, GeoOptics *Chairman*  
Rick DeVoe, South Carolina Sea Grant Consortium *Vice-Chairman*  
Jim Nelson, University of Georgia Skidaway Institute of Oceanography *Secretary*  
Peter Hamilton, Leidos Corporation *Treasurer*  
Richard Dodge, Nova Southeastern University *Member At Large*  
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Lynn Leonard, University of North Carolina Wilmington  
Mitch Roffer, Roffer's Ocean Fishing Forecasting Service, Inc  
Nick Shay, University of Miami Rosenstiel School of Marine and Atmospheric Science  
Roger Pugliese, South Atlantic Fishery Management Council  
Ruoying He, North Carolina State University  
Steve Woll, WeatherFlow  
Tim Short, SRI International  
William Hogarth, Florida Institute of Oceanography

# SECOORA MEMBERS

## INSTITUTIONAL MEMBERS

Coastal Carolina University School of Coastal and Marine Systems Science  
Duke University Marine Laboratory  
East Carolina University  
Florida Atlantic University- SeaTech  
Florida Fish and Wildlife Research Institute  
Florida Gulf Coast University  
Florida Institute of Oceanography  
Florida Institute of Technology  
Florida International University- SEAS  
Florida State University  
GeoOptics  
Georgia Aquarium  
Harbor Branch Oceanographic Institute- FAU  
Indian River State College  
Jacksonville University Marine Science Research Institute  
Kennesaw State University  
Leidos Corporation  
Liquid Robotics, Inc.  
Lockheed Martin Transportation and Security Solutions  
North Carolina State University  
Nova Southeastern University  
Roffer's Ocean Fishing Forecasting Service, Inc  
South Atlantic Fishery Management Council  
South Carolina Sea Grant Consortium  
SRI International  
SCDNR Marine Resources Division  
University of Central Florida  
University of Florida  
University of Georgia Skidaway Institute of Oceanography  
University of North Carolina at Chapel Hill  
University of North Carolina Wilmington  
University of South Carolina Arnold School of Public Health  
University of South Carolina College of Arts and Sciences  
University of South Florida  
WeatherFlow

## AFFILIATE MEMBERS

NOAA AOML  
NOAA Ocean Acidification Program  
SECART

Southeast, Gulf of Mexico, and Caribbean Region of the Office  
of National Marine Sanctuaries  
US Geologic Survey

## SUSTAINING MEMBERS

University of Miami Rosenstiel School of Marine and Atmospheric Science

## INDIVIDUAL MEMBERS

NortekUSA  
OTT Hydromet  
RDSea International  
Teledyne Instruments

## VISIT OUR WEBSITE



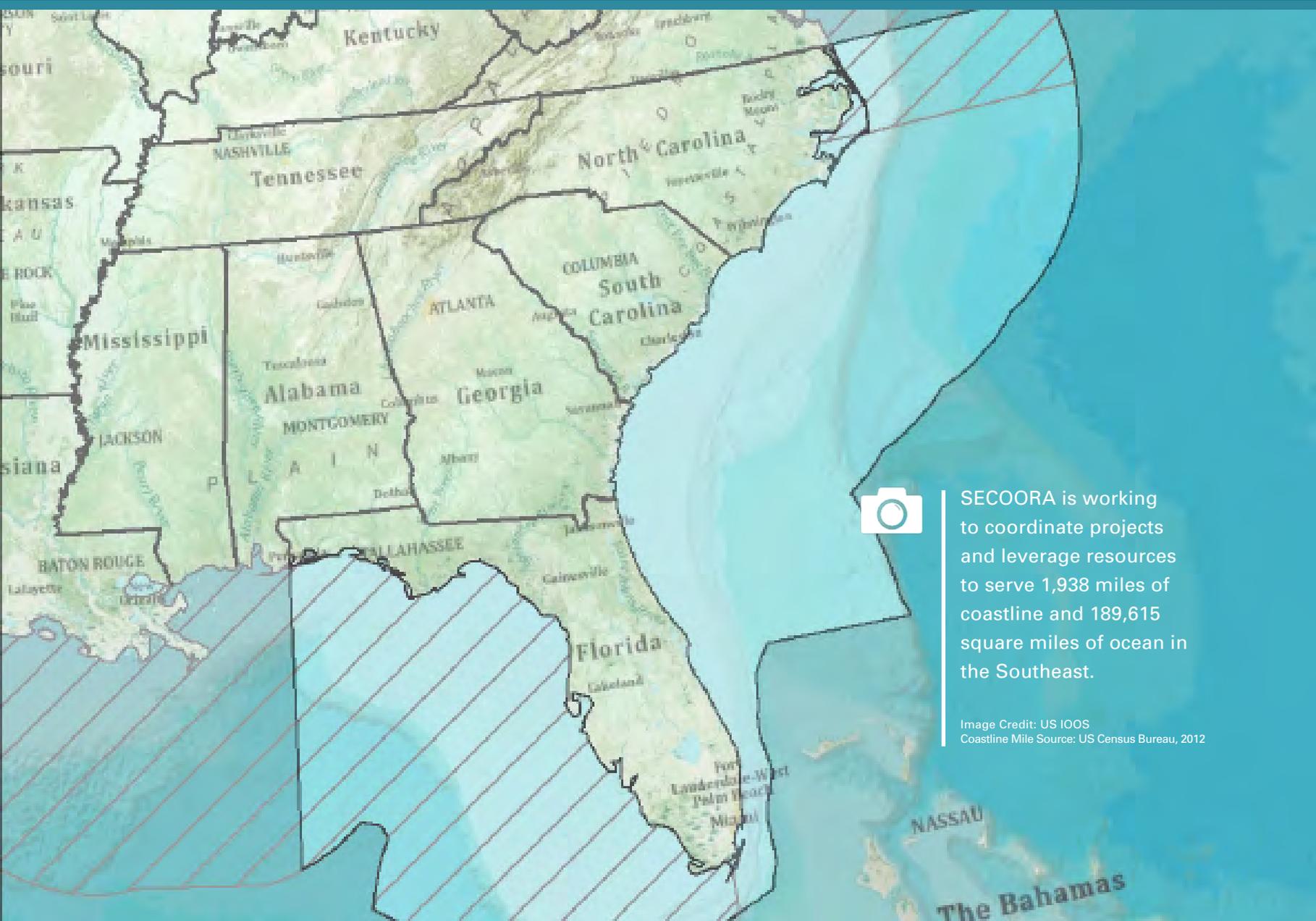
SECOORA's website is dedicated to providing the information you need to increase your understanding of the Southeast's coast and oceans. Explore our website, [www.secoora.org](http://www.secoora.org), or social media outlets today to learn more.

 [www.facebook.com/secoora](http://www.facebook.com/secoora)

 [www.twitter.com/secoora](http://www.twitter.com/secoora)

## DONATE TO SECOORA

In 2015, SECOORA hopes to generate additional funding to be used to educate students and the public about coastal ocean observing activities in the Southeast. Next time you shop, consider shopping AmazonSmile. The AmazonSmile Foundation will donate a percentage of the purchase price to SECOORA!



SECOORA is working to coordinate projects and leverage resources to serve 1,938 miles of coastline and 189,615 square miles of ocean in the Southeast.

Image Credit: US IOOS  
Coastline Mile Source: US Census Bureau, 2012