



## Progress Report

**Project Title:** Southeast Coastal Ocean Observing Regional Association (SECOORA):  
Delivering actionable coastal and ocean information from high-quality science and observations for the  
Southeast

**Award number:** #NA21NOS0120097

**Period of Activity:** 01/01/2022 – 06/30/2022

**Principal Investigator(s):** Debra Hernandez, SECOORA Executive Director

### I. PROJECT MILESTONES:

Milestone Table. Milestones from the SECOORA Year 1 Descopes table are identified by SECOORA subsystem in Section II Progress and Accomplishments. High-level milestones/deliverables, accomplishments and any issues are included for each project. Status of each milestone/deliverable is reported as complete, on-track, or delayed. If the milestone is delayed, a justification for the delay and description of activities employed or to be employed to mitigate the delay are provided.

### II. Progress and Accomplishments

Project and Task(s)	Status
<b>GOVERNANCE SUBSYSTEM</b>	
<b>Maintain the SECOORA governance and operational structure through implementation of SECOORA <a href="#">bylaws</a> and <a href="#">Strategic Plan</a>.</b>	
<p>Accomplishments:</p> <ul style="list-style-type: none"> <li>SECOORA hired a new program coordinator, Laura (Korman) Nunnamaker. Laura is advancing SECOORA’s new water level network, engaging in the Regional Ocean Data Sharing initiatives undertaken by the 4-state region, and managing some of SECOORA’s affiliate programs and projects such as the Southeast Coastal and Ocean Acidification Network (<a href="#">SOCAN</a>), the regional ocean data sharing initiative and the Southeast and Caribbean Disaster Resilience Partnership (<a href="#">SCDRP</a>). Learn more: <a href="https://secoora.org/secoora-is-proud-to-introduce-new-program-coordinator/">https://secoora.org/secoora-is-proud-to-introduce-new-program-coordinator/</a></li> <li>Dr. Greg Dusek, Chief Scientist NOAA CO-OPS, joined SECOORA in March for a four-month-long detail as a part of NOAA’s Leadership Competencies Development Program. While at SECOORA, Greg is helping define installation and survey requirements for SECOORA’s Water Level Network, initiating the development of a SECOORA modeling strategy, and leading development of a strategic plan to transition the <a href="#">Webcams for Coastal Observations and Operational Support</a> (WebCOOS) project to a sustained national network.</li> </ul>	On-track



<ul style="list-style-type: none"> <li>• SECOORA engaged contractor Megan Trembl to provide project management services.</li> </ul>	
<b>Maintain SECOORA's certification as a RICE</b>	
<p>The Certification renewal package was submitted to the IOOS office on 5/18/2022. All documents were reviewed and accepted by the IOOS Program Office. On 6/1/2022, Oriana Villar emailed the SECOORA team that the final clearance process for the RCOS MOA between SECOORA and NOAA is underway, and it would take about 3 weeks to complete. All documents for the renewal are available online: <a href="https://secoora.org/certification/">https://secoora.org/certification/</a>.</p>	On-track
<b>Update the SECOORA RCOOS Plan</b>	
<p>The revised <a href="#">2022 SECOORA HFR Build Out Plan</a> was released on 4/27/2022. This document outlines HFR build-out needs and requirements for the region. The <a href="#">2022 SECOORA Harmful Algal Bloom Plan</a> was released on 4/20/2022. This document will be used to guide SECOORA investments in HABS observing in the region. Both documents are addendums to the overall <a href="#">SECOORA RCOOS Plan</a>. SECOORA is in the process of outlining a Modeling Framework that will help identify modeling needs in the region and strategies for expanding modelling efforts.</p>	On-track
<b>OBSERVING SUBSYSTEM</b>	
<b>HF Radar Operations &amp; Maintenance</b>	
<p>SECOORA HF Radar (HFR) operators provide surface current data in near real-time from 20 HFRs with a targeted up-time of 85%. Hourly data is provided to SECOORA and to the <a href="#">HFR National Network</a>. Operational and quality metrics are routinely checked. These include assessment of daily variations in coverage and uptime using metrics such as database latency, range of coverage, and number of solutions as implemented by the National HFR Network. The SECOORA HFR network supports both operational and research communities by providing high quality, ocean surface current data in near real-time. PIs in the SECOORA region operate CODAR and WERA systems.</p> <p>HFR operators, system status, and IT infrastructure information by site are available here: <a href="https://docs.google.com/spreadsheets/d/1L1w00TPG1K7xXyh_iXXw6T7JaGT8rLZwnZMWfrnIXOI/edit?usp=sharing">https://docs.google.com/spreadsheets/d/1L1w00TPG1K7xXyh_iXXw6T7JaGT8rLZwnZMWfrnIXOI/edit?usp=sharing</a>.</p> <p>Note that the St. Catherines, GA (CAT) HFR was destroyed by a wildfire 6/21/2022. UGA's Skidaway Institute of Oceanography (SKIO) is working with the university insurance agent to determine if they will receive any funding to replace the system.</p>	On-track
<b>SECOORA Glider Network</b>	

<p>The SECOORA glider team includes SkIO, University of South Florida (USF), UNC-Chapel Hill (UNC-CH), and Georgia Tech. The goal for the team is to conduct 4 SECOORA glider missions annually. See table <b>IOOS, NOAA, Other Agency Funding</b> for details on hurricane glider missions and Navy glider support.</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>• 2 missions were completed during the current reporting period (see table below). 3 glider missions were completed during previous report period for a total of 5 missions completed in Year 1. All data are submitted to the National Glider DAC and the SECOORA Data Portal.</li> </ul> <table border="1" data-bbox="201 562 1230 661"> <thead> <tr> <th>Team Lead</th> <th>Glider Name</th> <th>Deployment Date</th> <th>Recovery Date</th> <th>Days in Water</th> </tr> </thead> <tbody> <tr> <td>SkIO</td> <td><a href="#">Angus</a></td> <td>4/4/2022</td> <td>4/25/2022</td> <td>21</td> </tr> <tr> <td>USF</td> <td><a href="#">Sam</a></td> <td>5/6/2022</td> <td>6/1/2022</td> <td>27</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>• UNC-CH continues to explore best methods for post-processing CTD observations as a science product. Next steps involve revisiting and re-calibrating an independent model of glider flight.</li> <li>• Georgia Tech continues to make GENIoS toolbox upgrades: 1) Significant efforts are underway to convert the code from Matlab to Python, which will facilitate code sharing after beta testing planned in Year 2. 2) The team developed a neural-network based belief abstraction algorithm for state estimation in glider navigation tasks, which facilitates the glider’s uncertainty-aware path planning. Anomaly detection functions were integrated into the adaptive learning method to detect anomaly conditions. During the Angus mission in April, GENIoS was used to control the glider’s waypoints and to detect anomalies.</li> </ul> <p>Issues: Franklin’s CTD repair took more than 6 months, which prevented its use for spring 2022 deployments.</p>	Team Lead	Glider Name	Deployment Date	Recovery Date	Days in Water	SkIO	<a href="#">Angus</a>	4/4/2022	4/25/2022	21	USF	<a href="#">Sam</a>	5/6/2022	6/1/2022	27	<p>On-track</p>
Team Lead	Glider Name	Deployment Date	Recovery Date	Days in Water												
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<p><b>Sustain the SECOORA Real-Time and Non-Real-Time Mooring Network</b></p>	
<p>All real-time moorings/instrumentation have a targeted up-time of 85%.</p> <p>UNC-Wilmington (UNCW) maintains 12 real-time moorings and 1 non-real-time mooring (OB27M) along the coasts of NC and SC. Non-real-time data is provided to SECOORA via Research Workspace. Real-time quality-controlled (QC) data is provided to SECOORA and NDBC.</p> <p>Accomplishments – See also: <b>Expand the SECOORA Real-time Observing Network</b> section</p> <ul style="list-style-type: none"> <li>• Buoy turnaround cruises were completed this reporting period as follows: 1) R/V Savannah, 3/17-18/2022, to turn around FRP2, CAP2, SUN2 and deploy CHR60 (met and wave); 2) R/V Cape Fear, 5/31/2022 to turnaround ILM2; 3) R/V Cape Fear 6/1/2022 to turnaround ILM3.</li> <li>• UNCW supports the FACT Network (ATN) by deploying acoustic receivers on 4 existing Onslow Bay, NC moorings (ILM2, ILM3, LEJ3, OB27M) to record tagged fish passage near the receivers. Receivers on ILM2 and ILM3 were recovered on 5/31 and 6/1 and data files sent to FACT.</li> </ul> <p>UNCW up-time statistics for 1/1/2022-6/30/2022 for real-time moorings:</p>	<p>On-track</p>

	ILM2	ILM3	LEJ3	SUN2	CAP2	FRP2	CHR60
Air Temperature	99%	95%	86%	100%	99%	99%	100%
Air Pressure	99%	95%	86%	100%	99%	99%	100%
Wind Speed, Gust, Direction	99%	95%	86%	100%	99%	99%	100%
Salinity	78%	59%	86%	85%	68%	99%	100%
Surface Water Temperature	78%	45%	86%	85%	67%	99%	100%
Waves	100%	N/A	91%	100%	78%	N/A	100%
ILM2, LEJ3, SUN2, CAP2, & CHR60 have two buoys on site: a met buoy and a wave buoy							

Issues:

- LEJ3 was struck by a vessel and damaged on 12/15/2021 and replaced with a new buoy on 1/24/2022.
- ILM2 CTD lost power on 3/2/2022 and was replaced on 4/13/2022.
- ILM3 CTD lost power on 2/14/2022 and was replaced on 4/21/2022. On 6/1/2022, the CTD conductivity cell failed and the CTD was replaced on 6/24/2022.
- CAP2 CTD communications cable damaged on 1/20/2022. CTD data restored with buoy swap on 3/17/2022.
- CAP2WAVE mooring was struck by a vessel and buoy went adrift on 5/13/2022. The buoy was recovered by the Charleston Branch Pilots and redeployed on 6/24/2022.
- SUN2 CTD lost power on 2/23/2022; data restored with buoy swap on 3/18/2022.

USF maintains 2 real-time moorings (C10 and C12) and 2 non-real-time moorings (C11 and C15). All moorings are located on the West Florida Shelf (WFS) and help describe and understand the circulation of WFS and the role that the circulation plays in shelf ecology and other matters of societal concern (e.g., HAB bloom dynamics). QC flags based on QARTOD standards are provided to SECOORA with real-time data. Real-time data flows to SECOORA and NDBC. Non-real-time data are shared via Research Workspace.

Accomplishments: USF conducted a research cruise on the R/V Weatherbird II from 6/27-29/2022 to service real-time moorings and swap instrumentation on the non-real-time moorings (C11 and C15). Data from the non-real-time moorings are being downloaded and will be shared with Axiom via Research Workspace for inclusion on the SECOORA data portal. Finally, USF supports the FACT Network (ATN) by deploying acoustic receivers on two USF buoys (C12 and C22) to record tagged fish passage near the receivers.

USF up-time statistics for 1/1/2022-6/30/2022 for real-time moorings

USF	C10	C12
Wind	97%	95%
Air Pressure	97%	95%
Water Temperature	74%	95%
Salinity (Surface)	74%	95%
Air Temperature	97%	95%
Relative Humidity	97%	95%
Longwave Radiation	98%	N/A
Shortwave Radiation	98%	N/A
Currents	97%	95%

Issues:

- The C10 salinity and temperature sensor (CTD) experienced a cable failure on

<p>5/12/2022. This resulted in a loss of real-time transmissions. This buoy was replaced on 6/28/2022 and all parameters are now transmitting in real time. The cable failure only caused a loss of real-time data from the instrument. The CTD internally logged the temperature and salinity data and the data was downloaded after instrument recovery.</p>	
<p><b>Expand the SECOORA Real-time Observing Network</b></p>	
<p>UNCW sited and deployed 1 SoFar wave buoy, CAP2Wave, near the existing CAP2 met buoy on 7/5/2021. Data from this buoy are flowing to SECOORA and NOAA NDBC. CAP2Wave buoy statistics are included in the UNCW statistics in the above section.</p>	<p>Complete</p>
<ul style="list-style-type: none"> <li>• UNCW sited and deployed Charleston Harbor, SC buoys (1 met buoy and 1 wave buoy) on 3/17/2022. Environmental Compliance documentation and permits from USACE and USCG were completed before the buoy deployments.</li> <li>• Data from these buoys are flowing to SECOORA and NOAA NDBC. <a href="#">CHR60</a> and <a href="#">CHR60Wave</a> buoy statistics are included in the UNCW statistics in the above section.</li> <li>• SECOORA news story: <a href="https://secoora.org/new-buoys-off-the-coast-of-south-carolina-supporting-ship-operations-and-harbor-pilots/">https://secoora.org/new-buoys-off-the-coast-of-south-carolina-supporting-ship-operations-and-harbor-pilots/</a></li> </ul>	<p>Complete</p>
<p>RD Sea International has identified sites for two new buoys off the east coast of Florida, approximately 20 miles offshore of Ft. Pierce, FL and the other approximately 20 miles out of the Ponce de Leon Inlet, FL. Both mooring locations are in the 20-25 m isobath. Locations for the moorings were discussed with the NWS Melbourne, FL forecast office and shared with the South Atlantic Fishery Management Council. These locations will fill critical gaps in marine weather and oceanographic data.</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>• The NEPA Environmental Compliance documents for both buoys were submitted to the IOOS Environmental Compliance Coordinator on 5/2/2022.</li> <li>• The USACE permit application (under NWP #5) for the two buoys was submitted to the Jacksonville, FL USACE district office on 5/10/2022. The project manager was assigned on 5/13/2022.</li> </ul>	<p>On-track</p>
<p>Water Level Initiative: The SECOORA water level team includes partners from the American Shore and Beach Preservation Association (ASBPA)/Hohonu, Coastal Carolina University (CCU)-Florida Atlantic University (FAU), Georgia Tech, and Florida International University (FIU). The team sited and deployed 66 water level sensors within the SECOORA region in Year 1. Learn more: <a href="https://secoora.org/southeast-water-level-network/">https://secoora.org/southeast-water-level-network/</a>. Note that the IOOS Environmental Compliance Coordinator has evaluated all installation sites identified in Year 1.</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>• Project teams installed sensors at the test location in Fernandina Beach, FL. This site is being used to evaluate water level data against an existing, co-located NWLON station.</li> <li>• Project teams are working with Axiom to standardize the water level data, metadata, and QA/QC procedures.</li> <li>• Water Level Advisory committee was established to guide the project. Quarterly meetings are on-going.</li> </ul>	<p>On-track</p>

<ul style="list-style-type: none"> <li>Georgia Tech is working in close collaboration with governmental and community stakeholders along the Georgia coast, extending their work from Savannah to installation targets in Camden and Glynn counties. In May 2022, a 2-day workshop was held in Savannah and attended by a slate of community partners, municipal partners, and academic researchers from Georgia Tech, UGA, Savannah State, and University of South Carolina. The goals of the workshop were to better understand the community needs for the sensor network and associated end user tools and functions. During this reporting period, 5 new sensors were installed.</li> <li>FIU has installed 7 of 8 water level and salinity stations in south Florida – 3 sensors in Coral Gables, 1 in Miami, 1 in Hollywood, and 2 in Monroe County. The team is working with Axiom to share the data. Additionally, the team has permission to install two web cameras, 1 in Coral Gables and 1 in Hollywood, to monitor water level/flooding conditions at two of the sites. They are working with NOAA funded WebCOOS SECOORA partners to identify the most appropriate web cams for flood monitoring. Citizen science events are being scheduled around September and October King Tide events (targeting 2 events, 40 participants in each event). Citizen scientists will receive kits to monitor salinity and water quality of flood waters near water level stations.</li> <li>ASBPB/Hohonu has installed 23 water level sensors in NC, SC, and FL. Additionally, through a SECOORA mini-grant project from a prior award, 6 sensors were installed in NC in 2021. The project team is surveying the sensors and after 35 days of data collection they are generating MLLW datums. <a href="#">Data</a> are flowing to the SECOORA data portal. ASBPA has created a <a href="#">website</a> for communities interested in getting involved in the water level network.</li> <li>CCU-FAU hosted a virtual stakeholder workshop on 2/11/22. This workshop was used to engage partners and expand participation in the project with additional state agencies and local interests. The team planned to install a total of 20 water level sensors in Year 1 with deployments FL and SC. To date, 16 have been installed, 8 in SC and 8 in FL.</li> </ul> <p>Issues:</p> <ul style="list-style-type: none"> <li>The teams do not have a standardized survey method for their individual water level stations. SECOORA is working with NOAA CO-OPS, National Geodetic Survey, and the project teams to develop baseline survey techniques. All stations will need to be surveyed to NAVD88 so that standardized datums can also be acquired.</li> </ul>	
<p><b>SECOORA Biological Data Collection</b></p>	
<p>University of South Carolina Beaufort (USCB) - Operate and maintain the SC estuarine soundscape observatory using 9 passive acoustic recorders.</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>Routine (monthly) sensor cleaning and maintenance was conducted. Acoustic data were lost for station 37M (in the May River) from 3/2/22 to 6/10/22 due to a battery malfunction.</li> <li>Acoustic receivers capture 2-minute recordings every hour. The project team manually reviewed 6,853 sound (or wav) files for biological sounds and noise occurrences during this project period. For manual review, the team subsamples and analyzes wav files every two hours, which equates to 12 wav files/day at each station.</li> </ul>	<p>On-track</p>

<ul style="list-style-type: none"> <li>• The team performed sound pressure level (SPL) analysis on 328,070 wav files during this project period. The team is no longer performing snapping shrimp snap counts on wav files because of the inaccuracy when excessive anthropogenic noise is present, such as observed at stations in Charleston Harbor, SC. Alternatively, the team is providing high frequency (7 – 40 kHz) sound pressure levels of files that do not contain anthropogenic noise, which has been shown to correlate with snaps.</li> <li>• An SPL script was written in MATLAB for easy analysis of broadband (1 Hz – 40 kHz), low (50 – 1200 Hz), and high 7 kHz – 40 kHz) frequency SPLs and data export.</li> <li>• Caroline Tribble, graduate student in Marine Biology, College of Charleston, is using soundscape data from this project to correlate bottlenose dolphin vocalizations, dolphin sightings, and the abundance of their prey in Charleston Harbor to understand how noise affects acoustic behavior.</li> <li>• The project team is helping to develop two exhibits: 1) A bottlenose dolphin exhibit at the Port Royal Sound Foundation in Beaufort, SC which will highlight the passive acoustic monitoring and visual survey program; and, 2) An estuarine soundscapes, biological sounds of marine life, and impacts of noise pollution exhibit at the SC Aquarium, Charleston, SC.</li> </ul>	
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## DMAC AND MODELING & ANALYSIS SUBSYSTEMS

### SECOORA DMAC subsystem

<p>Axiom Data Science is the SECOORA data management team. Axiom provides the following support on an on-going, annual basis:</p> <ul style="list-style-type: none"> <li>• Maintain, operate, and develop SECOORA cyberinfrastructure to sustain long-term data stewardship for our partners and stakeholders.</li> <li>• Maintain IOOS compliant services and applications for integration with national products. <ul style="list-style-type: none"> <li>○ THREDDS 4.6.15 - <a href="https://thredds.secoora.org">https://thredds.secoora.org</a></li> <li>○ ERDDAP 2.02 - <a href="https://erddap.secoora.org">https://erddap.secoora.org</a></li> <li>○ SECOORA ISO WAF - <a href="https://thredds.secoora.org/iso">https://thredds.secoora.org/iso</a></li> <li>○ NCEI Archive - <a href="https://ncei.axiomdatascience.com/secoora/">https://ncei.axiomdatascience.com/secoora/</a></li> </ul> </li> <li>• Maintain the Glider System for the management SECOORA glider assets. The SECOORA glider data was updated for visualization in the portal (<a href="#">here</a>), as well as submitted to the National Glider DAC (GDAC). Progress was made in improving collaboration with the GDAC on running QC on glider data.</li> <li>• Support data ingestion and data standardization for the Water Level Network. This includes working with PIs create metadata for each station and setting up data transfer pathways (e.g., APIs).</li> <li>• Promote data standardization and automation through Research Workspace (RW) and standardized data ingestion processes for SECOORA-operated and non-SECOORA data assets, including moored sensors, ship-based sensors, gliders, HFR, models, and historical legacy time series data sets. Recent data sharing through RW includes surface water quality data (1998 – 2014) and research cruise data (2014 - present) from NOAA AOML for the West Florida Shelf (GOM) and Biscayne Bay water quality data from the National Park Service.</li> <li>• Promote data discovery and public access through the SECOORA data catalog and data</li> </ul>	On-track
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<p>portal.</p> <ul style="list-style-type: none"> <li>• Strengthen data stewardship within SECOORA to improve data quality, access, attribution, exchange, delivery, and storage. During this reporting period, Axiom has been working with NOAA NDBC to transfer real-time data from the SECOORA region to NDBC via ERDDAP services instead of individual operators sending data via FTP. This is an iterative process with Axiom adding new data streams weekly which must be checked by NDBC and any issues corrected before adding new stations to the feed. Anticipate completing this process in Fall 2022.</li> <li>• Implement real-time sensor QARTOD compliant quality control systems.</li> <li>• Annually archive physical oceanographic, biogeochemical, and meteorological data with NOAA’s NCEI.</li> </ul>	
<b>CNAPS Model</b>	
<p>The <a href="#">CNAPS</a> model is operated and maintained by NC State University and Fathom Science. The project team completed a 28-year (1993-2020) ocean reanalysis using the ensemble data assimilation (ENDA) method that assimilates historical data from satellites (SST, SSH) and in situ observations (temperature, salinity from ship survey, gliders, floats, moorings). This high resolution (4-km, 50 vertical layers) output was used to perform multi-decade marine environment ENDA hindcasts to generate regional ocean reanalysis and climatology (i.e., the baseline) on which to quantify climate impact and its variability in the southern U.S. marine environment. This effort was featured on a SECOORA webinar, <a href="#">“A High Resolution Ocean Reanalysis of the Northwest Atlantic in Support of the Climate Change Studies and Blue Economy”</a>. This 28-year reanalysis dataset is very large (~10TB). The team is currently investigating a long-term data archiving, sharing, and maintaining approach.</p> <p>Issue: The project team investigated the possibility of transitioning the CNAPS modeling system to the Amazon Web Service (AWS) cloud environment in hopes that this would reduce CNAPS system downtime related to hardware failures associated with an aging local computing system. However, AWS was not a cost-effective solution for achieving project objectives. More investigations into other clouding computing providers and services (Microsoft Azure, Google Cloud Platform, and IBM PaaS) are needed.</p>	On-Track
<b>WFS Model</b>	
<p>The West Florida Coastal Ocean Model (WFCOM) and the Tampa Bay Coastal Ocean Model (TBCOM) daily nowcast/forecast systems have been maintained consistently by USF during the reporting period, producing simulated currents, temperature and sea surface height fields with an “up time” of 100%. Model output is available for <a href="#">WFCOM</a>, and USF maintains a THREDDS server with access to netCDF files for <a href="#">TBCOM</a> output. Regular users of the WFCOM and TBCOM models include:</p> <ul style="list-style-type: none"> <li>• Florida Fish and Wildlife Conservation Commission, Florida Wildlife Research Institute (FWRI) for collaborative short-term Harmful Algal Bloom (HAB) trajectory nowcast/forecast products</li> <li>• USF Optical Oceanography Lab (Dr. Chuanmin Hu) Integrated Red tide Information System (IRIS) product.</li> <li>• USF Institute for Marine Remote Sensing Lab (Dr. Frank Muller-Karger) for the MBON</li> </ul>	On-track

SeaScape product: <a href="https://marinebon.org/pages/data/">https://marinebon.org/pages/data/</a> .	
<b>AI Portal</b>	
<p>Florida Wildlife Research Institute (FWRI) and Axiom are building an artificial intelligence annotation data portal (AI portal). The team developed an instructional document titled <a href="#">AI Workflows and Resources Relevant to Ocean Observing</a> to assess the AI landscape and identify current AI data management practices such as pipeline components, data storage solutions, formatting, model types, object detection, classification, and instance segmentation. This document was used as background for the AI workshop hosted on 5/24/2022 at FWRI, St. Petersburg, FL. The purpose of the workshop was to summarize shared AI experiences, challenges, and solutions by highlighting regional AI use cases and teams. Specifically, the meeting was used to 1) understand each team’s workflows, challenges, and lessons learned in the context of worked examples; 2) identify resources that could make workflows easier; and 3) articulate how new resources fit into an evolving AI landscape. Meeting participants were from FWRI, Axiom Data Science, Mote Marine Laboratory, the University of South Florida, and NOAA AOML. Use cases for AI discussed included: marine video, specifically related to detection of coral spawning and coral bleaching; fish species detection using acoustic sound recordings; and prediction of high-speed current events using ADCP data and machine learning to better measure the flushing rate of Old Tampa Bay (water quality use case).</p> <p>Issues: Jesse Lopez, lead AI/ML developer on this project, has left Axiom Data Science as of 6/30/2022. Axiom is working to identify a replacement for this project.</p>	On-track
<b>SEAMAP-SA Data and Analysis</b>	
The SC Department of Natural Resources (SCDNR) and Axiom SEAMAP-SA staff are converting turtle data and supplementary survey life history data (e.g., diet) and updating accompanying code tables into DarwinCore format for ingestion into the SECOORA data portal. SCDNR staff are conducting test data downloads and summaries of the new data types to ensure accuracy. The team is regularly meeting with Axiom staff to review the test downloads.	On-track
<b>OUTREACH, ENGAGEMENT, PRODUCT DESIGN SUBSYSTEM</b>	
<b>Support Community Driven Networks</b>	
See “NOAA, IOOS, Other Agency Funding” table	
<b>SECOORA Outreach and Engagement</b>	
<ul style="list-style-type: none"> <li>The SECOORA section of the IOOS outreach <a href="#">document</a> was updated on 7/11/22.</li> <li>Details on media engagement and outreach for SECOORA staff and project PIs are found here: <a href="https://docs.google.com/spreadsheets/d/189a6FgoOAjMvGxDxmYuf0QnEoHuPXgpNqjMWn5YFv94/edit?usp=sharing">https://docs.google.com/spreadsheets/d/189a6FgoOAjMvGxDxmYuf0QnEoHuPXgpNqjMWn5YFv94/edit?usp=sharing</a></li> </ul>	On-track
<b>Product Development</b>	

<p>The project team is comprised of representative from three existing products, How's the Beach (HTB, University of South Carolina), ShellCast (NC State University), and Beach Condition Reporting System (BCRS, Mote Marine Laboratory) are working to consolidate regional water quality products. Specific accomplishments this period include:</p> <ul style="list-style-type: none"> <li>• Needs assessments are being conducted in NC and SC to help the teams better understand the types of water quality data that regulatory agencies and shellfish growers need to make decisions. Specifically, as part of his <a href="#">dissertation</a>, Zac Hart (UofSC), conducted a survey of recreational users of beach and non-beach coastal waterways and owners/managers of water dependent business (total 143 completed surveys and 10 interviews) in the Charleston, SC area. The survey results indicate high awareness of water quality problems in the Charleston area, a strong desire to know when contact with water posed health risks, and a strong preference for automated notifications (e.g., push notifications such as text messages) about water quality issues. More broadly, the research highlighted the need for collaboration among water quality data providers, public health officials, and healthcare providers to conceptualize better mechanisms for diagnosing and documenting coastal and estuarine water-based illnesses.</li> <li>• Technical plans for integration of HTB with the BCRS have been developed and implemented to enhance each user-interface while also allowing each program to retain their respective identities and to increase web traffic between programs. HTB has already incorporated geographically relevant BCRS locations into <a href="#">howsthebeach.org</a>, which redirects users to <a href="#">visitbeaches.org</a> to view the BCRS report for their selected location. BCRS is currently working to incorporate relevant HTB locations using a similar approach.</li> <li>• HTB web developers are working with the ShellCast system and algorithm to identify best approaches for exchanging data and information between HTB and Shellcast. A new ShellCast web developer was hired in June and will work with the HTB team on this project. HTB has also started displaying ShellCast forecasts for the waters surrounding Kill Devil Hills.</li> <li>• The ShellCast team is working with the SC Department of Health and Environmental Control to expand the ShellCast forecasts of water quality conditions to shellfish harvesting waters of SC. SC DHEC has provided geospatial data needed to facilitate the expansion of ShellCast. The new ShellCast web developer is currently working on revising the web app's back-end and databases to facilitate the expansion to SC.</li> <li>• The ShellCast team met with the FL Department of Agriculture and Consumer Services in February to identify and begin to assimilate appropriate water quality data necessary to support the expansion of ShellCast to FL shellfish waters.</li> </ul>	<p>On-track</p>
<p>The Situational Awareness Tool (UNCW) is now a functional prototype. Personnel from the NOAA NWS offices in Charleston, Wilmington, and Newport-Morehead City and SECOORA have provided feedback on the product development. The prototype is currently being beta-tested. Users will be able to create custom alerts based on any combination of UNCW assets (e.g., buoys such as ILM2, ILM2Wave, CHS) and user-defined parameter thresholds (e.g., wind speed above 10 knots, wave heights above 2 ft). These alerts are triggered in real-time and currently users receive notifications via email. Notices are also triggered when an alert is no longer active.</p>	<p>On-track</p>

Water Level Network User Interface (SECOORA): Due to delays in access to IOOS Year 1 funds, the interface development start date was pushed to January 2022. The project team will begin product needs/requirements identification as a first step.	Delayed
<p>SECOORA developed data products and websites:</p> <ul style="list-style-type: none"> <li>• SECOORA is working with Eric Montie, University of South Carolina Beaufort, and the Axiom team to continue adding sounds files and new species to the Explore Estuarine Soundscapes webpage: <a href="https://sound.secoora.org/">https://sound.secoora.org/</a></li> <li>• SECOORA developed a Marine Life page to highlight the importance of collecting biological data and SECOORA supported activities: <a href="https://secoora.org/marine-life/">https://secoora.org/marine-life/</a></li> <li>• SECOORA's Text a Buoy system provides quick access to your favorite buoy. Click on the link to sign up: <a href="https://secoora.org/text-a-buoy/">https://secoora.org/text-a-buoy/</a></li> <li>• SECOORA funded a curriculum development opportunity in 2021. University of Georgia Marine Extension and Georgia Sea Grant submitted the winning proposal to design a curriculum that takes middle grade students on a virtual reality field trip to a coastal wetland. Curriculum materials are now available online: <a href="https://secoora.org/virtual-exploration-of-georgias-coastal-wetlands/">https://secoora.org/virtual-exploration-of-georgias-coastal-wetlands/</a></li> </ul>	On-Track

IOOS, NOAA, Other Agency Funding	
Funding Area/Recipient	Task and status update – See Appendix A for ASAP draws by funding line
Restoration/ CETACEAN, Lead PI Lauren Showalter, Axiom Data Science	<p>Status: On-track</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>• Phase II proof of concept is complete. This includes a CETACEAN data portal delivered with an updated landing page and portal visualizations (<a href="https://cetacean.portal.axds.co/?ls=CA_9q24t#">https://cetacean.portal.axds.co/?ls=CA_9q24t#</a> (password protected with access provided to the CETACEAN Executive and Steering Committee members). The data portal and catalog make data available to users with custom tags and visualizations for marine mammal survey data that can be viewed with several environmental factors that have been binned at various time scales as requested by the CETACEAN Executive Committee.</li> <li>• Initial portal development and design feedback was collected in collaboration with the GCOOS team. That information is driving the data ingestion, visualization, and development tasks. Feedback also was collected from the CETACEAN Steering and Executive committees and developed into Use Case 1 that focused on the needs of a restoration planner in the Gulf of Mexico. Datasets of interest were identified by the CETACEAN project manager and translated into tasks for the Axiom team.</li> <li>• Axiom held meetings with the GoMMAPPS data providers to refine the data visualization tools for the ship based and aerial survey data that Axiom ingested into the system. This feedback has all been documented and added to the Axiom backlog with the majority of the updates being</li> </ul>

	<p>completed. The CETACEAN catalog has been updated to include sorting and tags so users can easily access all Use Case 1 data when they enter the system.</p> <p>Issues: This project is on a 6-month pause beginning July 1. Axiom has developed planning products for the CETACEAN management team for review and comment, but they have not received much feedback. The Axiom backlog is well documented with possible tasks for the remainder of the project identified. Further development will rely on the CETACEAN team for input and the development of the work plan going forward.</p>
<p>Regional Ocean Partnership, Lead PI Debra Hernandez, SECOORA</p>	<p>Status: On-track</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>• SECOORA initiated a contract with Second Creek Consulting to set up a QARTOD interface specific to the water level initiative. The QARTOD system will send the SECOORA Deputy Director and water level PIs daily updates on sensor performance, including an analysis of tests passed/failed. The initial tests included are Timing, Syntax, Range, Spike, Change Rate, and Flatline. The Climatology test will be included after the water level sensors are in place for 1 year. The QARTOD system will also track the up time for each water level sensor so that SECOORA staff can query the system to determine if stations are reporting below our 85% target threshold.</li> <li>• Community engagement – SECOORA is actively working with our Water Level Network teams and local communities to identify and fill gaps in water level observations. See flyer: <a href="https://secoora.org/wp-content/uploads/2022/04/Water-Level-Community-One-Page-2.pdf">https://secoora.org/wp-content/uploads/2022/04/Water-Level-Community-One-Page-2.pdf</a> . Additionally, SECOORA has been engaging with PIs and existing organizations that have established relationships with underserved communities. One-to-one engagement appears to be the most effective way to build relationships with minority communities. SECOORA anticipates leveraging existing Sea Grant, environmental justice, and university connections to ensure water level sensors are available in minority communities.</li> </ul> <p>Issues: We are somewhat delayed in designing a user interface for accessing water level data because we want to complete more community engagement to effectively assess needs prior to designing the product/data access interface.</p>
<p>SECOORA/OMAO funding to support Navy glider missions, Lead PI Catherine Edwards, UGA SkIO</p>	<p>Status: On-track</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>• PI Edwards designed and participated in multiple post-season briefings with NOAA/Navy leadership, including Deputy Oceanographer of the Navy, Dr. Ekstrom.</li> <li>• PI Edwards is working with the Navy and IOOS to coordinate and plan for Navy glider operations in the SAB for hurricane season 2022.</li> </ul>



<p>UNC-Chapel Hill, Lead PIs Brian Blanton &amp; Rick Leuttich</p>	<p>Status: On-track</p> <p>Accomplishments: The project team is computing a long-term reanalysis of coastal water levels for the US eastern and Gulf of Mexico coasts. A recent data assimilation scheme for the ADCIRC model allows for corrections to model predictions based on errors between a prior solution and observations of water levels. Using NOAA/NOS gauge observations, time-series of prior errors are processed to compute a daily sequence of dynamic water level correction surfaces on the ADCIRC grid. The long-term simulation is then rerun by incorporating the error information. The duration of this reanalysis is from 1979 through 2021, resulting in 43 years of simulation.</p> <p>In this reporting period, we decided, in consultation with NOAA/IOOS, to recompute the prior 43-yr simulation to include the wind-wave model SWAN in the computations. SWAN and ADCIRC are formally coupled together, allowing the wind-wave characteristics to be computed on the same numerical (triangular) ADCIRC grid. This significantly simplifies data handling between the models. The SWAN model component requires substantially more computational time (compared to ADCIRC-only configurations). The simulations were conducted on RENCIs high-performance cluster Hatteras, in 13-month “annual” chunks where the previous year’s December was used as the spin-up period for tides and meteorology. Each 13-month simulation took approximately 144 wall hours on 512 cores, with 3-4 concurrent runs. This is longer than reported in the prior reporting period, due to inclusion of the wave model component.</p> <p>The main project deliverable is the resulting 43-year dataset of coastal waves and water levels on the ADCIRC grid. Each year is stored in netCDF and posted to RENCIs primary THREDDS Data Server (TDS) at the following: <a href="http://tds.renci.org/thredds/catalog/Reanalysis/ADCIRC/ERA5/hsofs/catalog.html">http://tds.renci.org/thredds/catalog/Reanalysis/ADCIRC/ERA5/hsofs/catalog.html</a></p> <p>The processed ERA5 meteorology is also posted at: <a href="http://tds.renci.org/thredds/catalog/Reanalysis/Forcing/Winds/ERA5/catalog.html">http://tds.renci.org/thredds/catalog/Reanalysis/Forcing/Winds/ERA5/catalog.html</a></p>
<p>SECOORA – SECART support for:</p> <p>1) SCDRP Coordinator, PI Meredith Hovis</p> <p>2) SE Shellfish workshop, PIs AK Leight &amp; John Schmidt</p>	<p>1) Status SCDRP: On-Track</p> <p>Accomplishments</p> <ul style="list-style-type: none"> <li>• SCDRP: Hosted the 2022 Annual Meeting, 1/26-27/2022. The meeting them was Unique Communities, Shared Challenges: Addressing Resilience Equitably." More about the meeting and speaker lineup is available online at: <a href="https://www.scdrp.secoora.org/meet22">https://www.scdrp.secoora.org/meet22</a>. There were approximately 130 participants and the recordings from the meeting are available on the SCDRP YouTube channel: <a href="https://www.youtube.com/playlist?list=PLN1Eo26yGEtC8u8bOQPazldbYfjWMK8Yi">https://www.youtube.com/playlist?list=PLN1Eo26yGEtC8u8bOQPazldbYfjWMK8Yi</a></li> <li>• Six virtual monthly partnership meetings were hosted. Each meeting included a presentation from a member or speaker on their work related to climate adaptation and resilience. All the presentations from</li> </ul>



	<p>the Partnership meetings are posted on our YouTube channel (same link as above bullet).</p> <ul style="list-style-type: none"> <li>• Support expansion of the current SCDRP organization to Caribbean countries that are involved in the Department of State’s Technical Working Group on Disaster Resilience, Recovery, and Planning by: 1) increasing access for Spanish-speaking populations; and 2) inviting new individuals and groups from the Caribbean to speak at the Partnership meetings.</li> <li>• SCDRP <a href="#">hired a program coordinator</a>, Josephine Jeni Justin, who will support SCDRP communications, help coordinate partnership meetings, and assist in Annual Meeting Planning.</li> </ul> <p>Issues SCDRP: Meredith Hovis, the SCDRP Executive Director, is leaving to take a Post-Doc position. The Executive Director job posting is available online: <a href="https://www.scdrp.secoora.org/jobs">https://www.scdrp.secoora.org/jobs</a></p> <p>2) Status Shellfish Workshop: Complete</p> <p>Accomplishments: The Shellfish Workshop was hosted June 28-29 in Beaufort, SC at the Port Royal Sound Foundation. Shellfish managers from NC, SC, GA, and FL attended the meeting. The meeting was led by NOAA SECART representatives AK Leight and John Schmidt. Jennifer Dorton, SECOORA Deputy Director also participated. A meeting summary will be shared with SECART and SECOORA.</p>
Filipe Fernandes	<p>Status: On-Track</p> <p>Accomplishments: See Appendix B for a list of tasks completed during this reporting period. This information has already been shared with the IOOS program office, specifically with Kathy Bailey, Micah Wengren, and Mathew Biddle.</p>
Ocean Acidification, Lead PI Scott Noakes, UGA	<p>Status: On-Track</p> <p>Accomplishments: Overall, the MAPCO2 system has been operating properly and the project is on track. The SAMI-pH mounted under the Gray's Reef buoy last reported useable data on March 31, 2022.</p> <p>Issues. PMEL did not have any pH sensors to send to UGA until June 10. The charter vessel Triton's Grace was reserved for June 21 so that the PI could swap the SAMI-PH sensor, but unfortunately, sea conditions were not conducive for working under the buoy. The next potential date available was June 30 but that charter was also canceled due to rough sea conditions. The vessel has been rescheduled for July 18.</p>
Ocean Acidification, SOCAN Network, Lead PIs Emily Hall (Mote Marine Lab) and Janet Reimer	<p>Status: On-track</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>• The Executive Team meets monthly and the SOCAN working groups meet every other month (alternating with each other). Emily Hall continues to lead the science working group, focusing on proposal development, information sharing, and developing a list of OA data sources in the southeast. Janet Reimer continues to lead the stakeholder</li> </ul>

	<p>working group, developing the OA webinar series and determining stakeholder needs in the southeast.</p> <ul style="list-style-type: none"> <li>• SOCAN hosted a Town Hall on 3/23/22 with over 50 attendees. The agenda focused on an introduction to SOCAN; an overview of general Southeast state of knowledge and research efforts; and two talks from researchers on the connection between harmful algal blooms and acidification by Hans Paerl (UNC Chapel Hill) and Tristyn Bercel (Mote Marine Laboratory).</li> <li>• SOCAN wrote the meeting report for the December 2021 workshop on Social and Environmental vulnerabilities in the Southeast. The report was in support of the Interagency Working Group on Acidification national vulnerability assessment. The report is available on the <a href="#">SOCAN</a> website.</li> <li>• The SOCAN website was updated to include a reference list and education materials from NOAA and the Ocean Acidification Information Exchange: <a href="http://www.socan.secoora.org">www.socan.secoora.org</a></li> </ul>
Florida Atlantic University (FAU), HFR support, lead PI Bill Baxley	<p>Status: Complete</p> <p>Accomplishments: Funding was used to purchase supply items required for the HAUL and HILL CODAR HFR.</p>
SECOORA/ROWG Meeting support, Lead PI Mike Muglia, ECU Coastal Studies Institute	<p>Status: On-track</p> <p>Accomplishments: The ROWG planning team will host the 12<sup>th</sup> Radiowave Operators Working Group meeting at the ECU Coastal Studies Institute 11/2-3, 2022 with a Radar Manufacturer Day on 11/4. The meeting <a href="#">registration link</a> is live. For more information: <a href="https://ioos.noaa.gov/project/hf-radar/">https://ioos.noaa.gov/project/hf-radar/</a>.</p>
Fill the Gaps – Glider one-time support for hurricane missions, Lead PI Catherine Edwards, UGA SkIO	<p>Status: On-track</p> <p>Accomplishments: Glider instruments have been sent back for manufacture repairs/calibrations in preparation for hurricane glider season. SkIO, USF, and SECOORA participate in weekly Hurricane Glider team calls led by the IOOS Program Office. Coordinated plans for summer 2022 hurricane missions with GCOOS, CariCOOS, SECOORA, and MARACOOS are underway.</p>
Harmful Algal Blooms (HABs), Lead PI Chuanmin Hu, USF	<p>Status: On-track</p> <p>Accomplishments: Significant progress has been made on developing algorithms to use high-resolution satellite imagery collected from PlanetScope CubeSat constellations for the purpose of mapping and monitoring Sargassum. These images are available every 1-2 days over Florida Keys and Miami Beach at a resolution of 3-4 m per pixel. But they have only 3-4 spectral bands, thus requiring algorithms specifically tuned for these sensors. The project team published a <a href="#">paper</a> on the algorithm work, where they demonstrated that it's possible to estimate Sargassum quantity on beaches and in nearshore waters. Between April and June 2022, there was large amount of Sargassum in the Gulf of Mexico, which was transported from the Caribbean Sea through the Yucatan channel. Some of this Sargassum was further transported to the Straits of Florida and then along the east coast of Florida, resulting in beaching events. C. Hu created a Sargassum <a href="#">tracking video</a> that highlights the movement of the sargassum between 4/1/2022 – 6/21/2022.</p>

<p>Marine Biodiversity Observations Network, Lead PI Neil Hammerschlag, University of Miami</p>	<p>Status: On-track</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>• Conducted a series of meetings with MBON-ATN and network leaders (including FACT, ACT, iTAG, OTN) and identified the existing network directories and data pipelines for the BioTrack project. By 6/16/22, members of each network were contacted with an open invitation for data contributions. So far, 25 principal investigators from 24 institutions (~46 acoustic telemetry projects) committed to the project. The call is open until 7/30. Once data has been contributed, the team will be ready for the next steps of data formatting and analysis.</li> <li>• In collaboration with ATN, the team developed a data management plan that was formalized in a data sharing and use agreement sent to all potential collaborators. This document describes the project objectives, expected products, data sharing steps, and data archiving options.</li> <li>• Different species distribution modeling approaches are being considered to determine the best approach for sharing data and creating a map that shows shared multi-species hotspots. After a 4-month immersion in the scientific literature, a few candidate methods are being tested with smaller chunks of tracking data that are already available. After concluding the data compilation and processing, the models will be adjusted to the full dataset. The expectation is to have the first results by 01/2023.</li> </ul>
<p>SECOORA/FACT Data Wrangler, Lead PI Joy Young, Fisheries Data Solutions</p>	<p>Status: On-track</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>• One data matching event was completed in March 2022. Data were provided from 51 projects, with 6 new projects included.</li> <li>• Some of the FACT team also collect water temperature data at or near the receivers. Temperature data were submitted to SECOORA from 8 projects ranging from southwest Florida to South Carolina. Those data are currently stored in the FACT/SECOORA node. A need was identified to restructure how temperature data are provided to SECOORA since FACT PIs did not want the exact sensor location identified in the SECOORA data portal. FACT, OTN, and Axiom staff are working to develop a plan to 'match' sensor temperature data with receiver locations similar to how tag detection data are matched so that exact sensor placement cannot be determined.</li> <li>• The biannual FACT meeting was held 5/17-18/2022 at the Brevard Zoo in Melbourne, Florida. The meeting included eight project updates, four partner talks, two network talks, seven student scientific talks, five professional scientific talks, a data report writing workshop, and a data analysis workshop. Over 70 people registered for the meeting, but due to covid outbreaks in several labs, in-person attendance was 45-50 (depending on the day) and 25 virtual attendees.</li> </ul>
<p>Georgia Department of Natural Resources</p>	<p>Status: On-Track</p> <p>The IOOS ATN lead, Bill Woodward, requested that a portion of the GA DNR funding be directed to the University of Hawaii (UH) to support the</p>

<p>(GA DNR), Lead PI Chris Kalinowsky</p>	<p>establishment of the PIRAT (Pacific Islands Regional Acoustic Telemetry) Network. SECOORA established a subaward with the UH for \$27,300 on 1/12/22.</p> <p>Accomplishments:</p> <ul style="list-style-type: none"> <li>February-March 2022: PIRAT cyberinfrastructure went live. Tom TinHan (node manager) attended a 1-week node management training workshop hosted by OTN, set up a cloud-server to host the PIRAT database, and successfully installed OTN-provided database software and QA-QC tools on the server.</li> <li>In April, the PIRAT Network website and data portal were launched (<a href="https://PIRATnetwork.org">https://PIRATnetwork.org</a>). Researchers can learn more about the network, view documentation such as data templates and the PIRAT User Agreement &amp; Data Policy, and information about the projects hosted by PIRAT. This also serves as a secure data portal (submission/access) for PIRAT Network members.</li> <li>May: An announcement was sent out to over 50 researchers in the Pacific Islands Region who had previously voiced interest in joining a Pacific regional node. PIRAT leadership have had responses from several groups and are now working to get the new data formatted and loaded into the database.</li> </ul> <p>Issues: GA DNR is unable to accept funding to maintain the GA receiver array. Bill Woodward requested that the remaining funding be used to support the FACT network. SECOORA is working with Joy Young, FACT Data Wrangler, to identify FACT projects to support with these funds.</p>
<p>SECOORA/Vembu Scholarship</p>	<p>Status: On-track</p> <p>Accomplishments: Anna Finch, 2021/22 Hollings Scholar is working with Dr. Frank Muller-Karger, USF Institute for Marine Remote Sensing Lab. SECOORA is helping cover the cost of Anna's summer housing since it was more than the Hollings Scholar housing allowance. Anna participated on a USF mooring turnaround cruise in June and is assisting with projects related to the Marine Biodiversity Observing Network (MBON). Specifically, Anna is analyzing the distribution and abundance of phytoplankton functional types in the Florida Keys and how they change throughout the seasons. This will hopefully help to better understand how phytoplankton communities in the Florida Keys respond to changes in environmental factors, which could provide clues into how they will respond to climate change</p> <p>Issues: None</p>

### III. PROJECT CHALLENGES/MODIFICATIONS:

- Fuel costs are increasing the cost for ship-based work such as buoy repairs, buoy turnaround cruises, and glider deployments and recoveries. SECOORA anticipates continued higher than normal ship costs for the upcoming year.

### IV. PUBLICATIONS:

See Google Drive links for a Publications list and Workshops, Conferences and Symposia lists. There are two worksheets found in this file. These worksheets are updated for each progress report period:

[https://docs.google.com/spreadsheets/d/1k1Z\\_u7oITH24HyqNxFl7bpb73gYMubSpDJeD6J2XaPo/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1k1Z_u7oITH24HyqNxFl7bpb73gYMubSpDJeD6J2XaPo/edit?usp=sharing)

Details on media engagement and outreach for SECOORA staff and project PIs are found here:

<https://docs.google.com/spreadsheets/d/189a6FgoOAjMvGxDxmYuf0QnEoHuPXgpNqjMWn5YFv94/edit?usp=sharing>

## V. CERTIFICATION UPDATES

- See page 2, Governance Subsystem for information related to Certification.

## VI. BUDGET SUMMARY:

- Were the oldest ASAP TAS BETC accounting lines invoiced first?
  - This is Year 1 of the award. SECOORA is spending Year 1 ASAP TAS BETC lines first.
- Give details on any delays with initiating a contract/subaward. Note any issues with the previous year funds or other issues that occurred during the reporting period. Will this result with a work stoppage or cause significant problems with the partnership?
  - SECOORA has issued all subawards and subcontracts related to this award except for the ATN funding for Georgia Department of Natural Resources (GA DNR). GA DNR is no longer willing to accept subawards to maintain the offshore coastal receiver array. SECOORA worked with the IOOS ATN coordinator, Bill Woodward to identify the best use of the GA DNR directed funding (\$80,000). A portion of the funds (\$27,300) was provided to the UH to support the establishment of the PIRAT node. The remaining \$52,700 will be used to support data management efforts for the FACT node.
- Give a brief update on project invoicing for the reporting period. Were there any delays with invoicing or payment?
  - SECOORA continues to receive Year 1 invoices. There is always a delay between when a subawardee conducts work and when SECOORA is given an invoice for that work. SECOORA regularly monitors invoicing frequencies with subawardees/subcontractors.
- Provide details on any property or equipment charged directly to the award having a useful life of more than one year and an acquisition cost of \$5,000 or more per unit during the period.
  - No property was purchased during this reporting period.
- Include changes in key scientific, technical or management personnel, not included in certification.
  - Laura Korman Nunnamaker, who has been a contractor for SECOORA, was hired as a full time SECOORA employee as of 6/1/2022. This does not impact certification as key personnel have not changed.
- Include changes to the organizational structure such as: changes in status or partners organizations and points of contact. As a reminder, a change to the award's Principal Investigator and a change in an award's Key Person Specified in the Application requires NOAA approval through Grants Online. Guidance for both these Award Action Requests is available on Grants Online at [http://www.corporateservices.noaa.gov/grantsonline/Documents/AAR\\_Assistance/Recipient\\_AAAR\\_Help.htm](http://www.corporateservices.noaa.gov/grantsonline/Documents/AAR_Assistance/Recipient_AAAR_Help.htm)
  - No changes to organizational structure.
- Provide an update about travel completed during the reporting period.
  - SECOORA is starting to travel under this award. During this reporting period for example Jennifer Dorton attended the SECART Shellfish Meeting in Beaufort, SC in June and Janet Reimer and Emily Hall traveled to the SECOORA Annual Meeting in June.
- Are there any plans to initiate a new partnership (contract or subaward) during the next reporting period?
  - No.

See ASAP summary in Appendix A for a breakdown of funding and draws by ASAP line.

## VII. SUCCESS STORIES

Success Story	Brief Description	Contact
Adopt a Buoy: Donors Can Sponsor Platforms for a Fixed Period Time Through a Gift to the Endowment	In partnership with the UNCW Advancement Office, we have identified a donor to make the initial gift (\$25,000K) and are completing the endowment agreement. The plan is to provide a mechanism by which donors can sponsor platforms for a fixed period time through a gift to the endowment (i.e. "adopt a buoy"). The official agreement should be in place during the next reporting cycle.	lynnl@uncw.edu
SECOORA Principal Investigators Teaming Together and Leveraging Projects for Funding to Measure Underwater Noise of Vessels in Shallow Environments	"Testing a Novel Strategy to Measure Underwater Radiated Noise of Vessels in Shallow Coastal Oceans" was submitted to the US DOT Maritime Administration (MARAD) for \$431,235. The project, will leverage UNCW CORMP assets and create a new partnership with the University of South Carolina Beaufort Estuarine Soundscape Observatory Network in the Southeast (ESONS) to test a novel strategy to measure underwater noise of vessels in shallow environments (< 150 m) that could inform international monitoring, contribute to ISO 17208-3 standards, and evaluate the risk to marine animals. Both CORMP and ESONS are supported by SECOORA. The proposed work period is 9/1/22 to 12/31/24 and funding will be provided through a Cooperative Agreement under development by the MARAD contracts office.	lynnl@uncw.edu
Virtual Exploration of Georgia's Coastal Wetlands	"I think that the VR wetland curriculum is a fabulous idea for any middle school classroom! Oftentimes it is challenging to find something that will not only actively engage the students, but also challenge them while doubling as an extension. The curriculum does exactly that!! We have been able to dive into our "back-yard" and make the connection using cutting edge technology, an immediate win for both the students and teachers involved. I have truly enjoyed being a part of such an innovative endeavor, and I look forward to harnessing this curriculum for years to come!" - Alexia Branch, Middle School Teacher	abbey@secoora.org
New Buoys off the Coast of South Carolina Supporting Ship Operations and Harbor Pilots	"The new buoys CHR60 and CHR60WAVE are already providing valuable weather and sea state data for ships transiting into and out of Charleston Harbor. This is important meteorological and oceanographic information to help aid in safe and efficient marine	abbey@secoora.org

	<p>transportation.” - Tom Boyle, Director, Vessel Operations, South Carolina Ports Authority April 7 2022  <a href="https://secoora.org/new-buoys-off-the-coast-of-south-carolina-supporting-ship-operations-and-harbor-pilots/">https://secoora.org/new-buoys-off-the-coast-of-south-carolina-supporting-ship-operations-and-harbor-pilots/</a></p>	
<p>Water Shapes Our Planet and Our Lives Science Virtual Curriculum</p>	<p>Teacher's quote using in the classroom: “The combination of videos and interaction is wonderful. It has been a breeze for me as a teacher to have the kits all put together. That is always a sticking point for teachers, gathering enough materials, prepping materials, etc. Two more weeks of club. The kids are saying, "It's the best club ever." Amazing how much kids crave science!” - Darcy Webb, Bay Vista Fundamental, St. Pete’s, FL, February 2022</p>	<p>abbey@secoora.org &amp; darcywebb@icloud.com</p>

End Report

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## Account Detail Profile Inquiry

Date: 07/06/2022  
Time: 3:59 PM**ALC/Region:**

13140001

**Agency Short Name:**

NOAA

**Account ID:**

FNA21NOS0120097

**Recipient ID:**

4530798

**Recipient Short Name:**

SECOORA

**Inquiry Results:****Account Type:**

Control Account

**Account ID:**

FNA21NOS0120097

**Description:**

NOACOOPNOS

**Available Balance:**

\$5,867,390.01

**Total Cumulative Draw Limit:**

\$7,613,581.00

Account Detail ID	Account Status	Cumulative Draw Limit	Draws/RP/BE To Date
FY21CETACEAN2021-X-000-005	OPEN	\$350,000.00	- \$296,027.12
FY21NATDMAC021-T-000-002	OPEN	\$90,000.00	- \$68,125.00
FY21NCDIS021-T-000-009	OPEN	\$190,000.00	- \$150,786.80
FY21NOSHQ021-X-000-001	CLOSED	\$10,000.00	- \$10,000.00
FY21OAP021-T-000-007	OPEN	\$71,365.00	- \$19,952.87
FY21OCM021-T-000-006	OPEN	\$244,444.00	- \$19,508.28
FY21OMAO021-T-000-008	OPEN	\$10,000.00	- \$0.00
FY21REG021-T-000-003	OPEN	\$3,576,136.00	- \$1,176,505.01
FY21SECART021-T-000-004	OPEN	\$10,500.00	- \$5,285.91
FY22REG022-T-001-001	OPEN	\$3,061,136.00	- \$0.00

## Python Data Analysis Tools for Oceanographers

Filipe Fernandes

Progress and Accomplishments during the reporting period (6/1/2022 – 6/30/2022)

### Tasks:

1. Assist in the development of the IOOS.us Documentation and Demonstration sub pages;
2. Support current and continue developing important software packages to the IOOS enterprise;
3. Ensure software deployment via conda-forge packages and updates.

### 1) Assist in the development of the IOOS.us Documentation and Demonstration sub pages

Fixed a few stale notebooks to use modern tools and data sources ([ioos/ioos\\_code\\_lab #62](#), [#63](#), [#66](#), [70](#), [#71](#), [#84](#), [#88](#)), moved some notebooks that should be in the data access category ([#82](#)), and fixed the publication/update dates in some notebooks ([#87](#)). In addition, performed some maintenance work on the Continuous Integration ([#81](#), [#83](#), [#89](#), and [#90](#)) to ensure faster builds and that the install instructions are fully tested.

Updated the install instructions, environment, binder links added ([#57](#), [#58](#), [#64](#), and [#69](#)), and added a Pull Request (PR) template ([#86](#)) to avoid some regression, like forgetting to add important metadata to the PR.

### 2) Support current and continue developing important software packages to the IOOS enterprise

This activity can be divided into three-sections: (a) packages from the IOOS GitHub organization, (b) packages from third party organizations that are important for IOOS, and (c) pangeo/cloud support.

We made the *compliance-checker* continuous integration system faster by recording the network interactions in the ERDDAP tests and moving the installation to micromamba, added py310 testing, fixed a pathlib bug, and fixed the PyPI wheel publication ([ioos/compliance-checker #894](#), [#895](#), [#901](#), [#908](#), [#931](#), [#932](#), and [#933](#)).

Added autodoc typehints Improved *erddapy*'s PyPI metadata, testing, and release automation ([ioos/erddapy #226](#), [#233](#), [#234](#), [#235](#), [#238](#), and [#247](#)). Fixed a bug with the time and griddap constraints, dropped support for Python 3.6 and pandas <1 ([#236](#), [#237](#), [#239](#) and [240](#)).

Issued a new release of *odvc* with modern publishing tools ([ioos/odvc #28](#), [#29](#), [#31](#), and [#32](#)).

There were many contributions to OSS projects in multiple repositories the ones that are worth mentioning in this report are:

- Added *cftime* and *gsw* to *pyodide*, the python distribution on the web. ([pyodide/pyodide #2504](#) and [#2511](#)).
- Fixed encoding in *python-ctd* and issued a new release ([pyoceans/python-ctd #133](#), [#143](#), [#144](#), [#145](#), [#147](#), and [#148](#)).
- Reactivated the *python-windrose* project with CI, tests, and a new release ([python-windrose/windrose #173](#), [#174](#), [#175](#), [#176](#), [#177](#), [#178](#), [#179](#), [#180](#), [#181](#), and [#182](#)).
- Updated documentation and frequency checks in *utide* ([wesleybowman/UTide #105](#), [#107](#), [#108](#), and [#110](#)).

## Appendix B

- Make *xbitinfo* a package, fixed *pywafo* packaging, added py310 testing to *poceano-core* and issued a new release of *branca* ([observingClouds/xbitinfo #110](#), [wafo-project/pywafo #54](#), [pyoceans/pocean-core #67](#), and [python-visualization/branca #109](#)).
- Small improvements to the *cf\_xarray* library and documentation ([xarray-contrib/cf-xarray #269](#), [#272](#), [#273](#), [#275](#), and [#276](#)).

### 3) Ensure software deployment via conda-forge packages and updates

This effort can be separated into (a) infrastructure maintenance, (b) new packages, and (c) packages updates.

Marked *poppler* version 22.01.0 as broken on Windows and fixed the miniforge release ([conda-forge/admin-requests #417](#) and [conda-forge/miniforge #315](#));

Added *s5cmd*, *mpl-point-clicker*, *wafo*, *lazy-loader*, *opendap-protocol*, and *deprecat* ([conda-forge/staged-recipes #18339](#), [#18667](#), [#18669](#), [#18695](#), [#18799](#), and [#19012](#));

Pull Requests links

- [conda-forge/cryptography-vectors-feedstock #55](#)
- [conda-forge/ephem-feedstock #28](#)
- [conda-forge/intake-stac-feedstock #8](#)
- [conda-forge/jax-feedstock #82](#)
- [conda-forge/jaxlib-feedstock #93](#)
- [conda-forge/libxslt-feedstock #27](#)
- [conda-forge/odvc-feedstock #4](#)
- [conda-forge/p7zip-feedstock #6](#)
- [conda-forge/pandas-feedstock #134](#)
- [conda-forge/usgs-feedstock #17](#)