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: 01/01/2025 – 06/30/2025
Principal Investigator(s): Debra Hernandez, SECOORA Executive Director

I. PROJECT MILESTONES:
Milestone Table. Milestones from the SECOORA Year 4 Descope 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**
GOVERANCE SUBSYSTEM	
Maintain the SECOORA governance and operational structure through implementation of SECOORA bylaws and Strategic Plan.	
Accomplishments: • The SECOORA Board met virtually on 5/19/25 to approve the FY26 Board Election Slate and confirm the final approach to the IOOS 5 Year Proposal. • The 2025 SECOORA Annual Meeting was held virtually on 5/14/25, with a maximum of 70 attendees. The main topics were centered around improving SECOORA's messaging strategies and exploring fundraising avenues. Materials and a summary can be found here: https://secoora.org/2025-secoora-annual-meeting/ • In conjunction with the Annual Meeting, the Board met on 5/15/25 to discuss funding strategies and approve the results of the FY26 Board Election. • Dr. Asli Aslan (GA Southern University) replaced Bill Savidge in the At-Large Georgia Board seat. Bill had reached the limit of time served on the Board. • The Board met virtually on 6/25/25 to approve a 45-day timeline for the IOOS 5 Year Proposal LOI solicitation and discuss follow-ups from the Annual Meeting.	On-track
Maintain SECOORA's Certification as a RICE	

The RCOS MOA between SECOORA and NOAA was executed on 8/22/22. All documents submitted for certification are found here: https://secoora.org/certification/. The SECOORA By-Laws are available here: https://secoora.org/resources/by-laws/. The audit for Years 2023 and 2024 is available here: https://secoora.org/wp-content/uploads/2024/07/Audit-FINAL-2023-Southeast-Coastal-FS-2023-Final.pdf	On-track
Update the SECOORA RCOOS Plan	
The SECOORA Board of Directors approved the revised RCOOS Plan at the December 2024 meeting. The 2026-2030 RCOOS Plan can be found here: https://secoora.org/wp-content/uploads/2025/02/Complete-RCOOS-Plan-2026-2030.pdf	Complete
OBSERVING SUBSYSTEM	
HF Radar Operations & Maintenance	
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 HFR National Network. 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. Progress report details are found in the following google drive worksheets: • The HFR report that details HFR operators, system status, and IT infrastructure needs by site is available here – review the worksheet titled "1 - 6 2025": https://docs.google.com/spreadsheets/d/1L1w00TPG1K7xXyh_iXXw6T7JaGT8rLZwnZMWfrnlXOI/edit?usp=sharing	On-track
SECOORA Glider Network	
The SECOORA glider team includes SkIO, the University of South Florida (USF), UNC-Chapel Hill (UNC-CH), and Georgia Tech. See table **IOOS, NOAA, Other Agency Funding** for details on Navy glider support, Hurricane glider support, and the OMAO Saildrone-Glider project. Accomplishments: • Two SECOORA glider missions for 59 days at sea were completed (see table below). All data are submitted to the National Glider DAC and the glider data can be found on the SECOORA Data Portal. • SECOORA glider Franklin was deployed in January for passive acoustic monitoring of critically endangered right whales in the migration corridor off GA/FL. • Franklin was brought back to Skidaway on 1/29/25 and redeployed for a second time on 2/3/25 off St. Augustine, FL along with USF Bass. After 5 days, a local fisherman picked up Franklin while it was at the surface and took it home. After tracking the glider and contacting local police, the glider was picked up at the fisherman's home in	On-track

Jacksonville, FL. Bass completed its mission with no incident.

- SkIO conducted lab testing and maintenance of SECOORA gliders Franklin and unit_1091, as well as gliders Angus (SkIO), Pelagia (UNCW), and Salacia (NCSU). Franklin & unit 1091 had their forward ballast pumps serviced, and their science bay sensors calibrated for the upcoming season. The science bay for unit 1091 did not function properly when reassembled, and reports values consistent with an open circuit on the thermistor. RBR advises that it be returned to the manufacturer for more service, as it cannot be fixed in the lab. Talks are underway to find a strategy for repair that will permit the glider to be used in the 2025 hurricane season for SECOORA-funded work. G1 Pelagia is now ready to be deployed for future missions after several years on the bench due to multiple hardware failures. G1 Salacia is a backup glider and will be used in 2025 if needed.
- The glider team participates in weekly Hurricane Glider team calls. Edwards participates in weekly science meetings and submits weekly briefings to the NOAA Environmental Modeling Group about model performance in regional Essential Ocean Features using data from gliders, floats, and satellites.

Team Lead	Glider Name	Deployment Date	Recovery Date	Days in Water
SkIO	Franklin	1/2/25	2/8/25	37
USF	Bass	2/3/25	2/26/25	22

Sustain the SECOORA Real-Time and Non-Real-Time Mooring Network

On-track

All real-time moorings/instrumentation have a targeted up-time of 85%.

UNCW maintains 12 real-time moorings and 1 non-real-time mooring (OB27M) along the coasts of NC and SC. OB27M data is provided to SECOORA via Research Workspace twice a year. Real-time quality-controlled (QC) data is provided to SECOORA and Tetra Tech/Axiom makes the data available to NDBC via ERDDAP server.

Accomplishments:

- UNCW conducted buoy turnarounds as follows: ILM3 on 1/13/25, ILM2 on 1/16/25, CAP2WAVE on 2/17/25 and 05/19/25. The turnaround of SC buoys FRP2, CAP2, and CHR60 was delayed due to uncertainty of continued funding for IOOS RAs. UNCW has scheduled the R/V Savannah for 9/16-17 to perform SC buoy turnarounds. All new buoy systems and components for this cruise are ready and in place.
- UNCW supports the FACT Network (ATN) by deploying acoustic receivers on 4 existing Onslow Bay, NC moorings. The ILM3 Vemco receiver was swapped on 01/13/25 and the OB27M Vemco was swapped on 04/24/25. All data were downloaded and provided to FACT.
- UNCW deployed and tested a new wave buoy manufactured by Obscape. The buoy was co-located at the ILM2WAVE site on 07/30/24 and recovered on 11/7/24. Dr. Joe Long and one of his students, Cole Boudreau, completed an error assessment of the bulk wave data from these deployments. Analysis found that the wave data produced by the Obscape buoy was statistically similar to the data produced by the ILM2WAVE Datawell Waverider buoy. Incorporating these lower cost sensors into the CORMP array is planned as additional wave observing needs arise.
- The UNCW buoy team met with representatives from US Coast Guard Station Wrightsville Beach to discuss how the Coast Guard Auxiliary can assist with

maintaining offshore buoys. The Auxiliary has received permission from their local command to assist with buoy reconnaissance (i.e., eyes on reports for malfunctioning systems) and recovery of small assets such as the SoFar wave buoys.

- UNCW up-time statistics for 01/01/25 – 06/30/25 for real-time moorings:

	ILM2	ILM3	LEJ3	SUN2	CAP2	FRP2	CHR60
Air Temperature	100%	92%	90%	100%	100%	99%	99%
Air Pressure	100%	92%	90%	100%	100%	99%	99%
Wind Speed, Gust, Direction	100%	92%	90%	100%	100%	99%	99%
Salinity	86%	92%	90%	100%	100%	99%	84%
Surface Water Temperature	86%	92%	90%	100%	100%	99%	84%
Waves	100%	N/A	57%	96%	100%	94%	80%
ILM2, LEJ3, SUN2, CAP2, & CHR60 have two buoys on site: a met buoy and a wave buoy							

Issues:

- LEJ3WAVE stopped reporting on 12/6/25. CDIP mobilized and shipped a replacement buoy. Weather and shiptime conflicts slowed down redeployment. The buoy was replaced on 3/6/25 and is performing normally at this time.
- CHR60WAVE stopped reporting on 5/25/25. The site will be serviced ASAP.
- CHR60 needs service to the CTD system. Data has been either missing or unreliable since 6/2/25. The site will be serviced when CHR60WAVE is serviced.

USF maintains 2 real-time buoys (C10 & C12) and 2 non-real time moorings (C11 & C15) with SECOORA funding and leverages SECOORA funding with other grants to maintain 2 additional real-time buoys (C13 and C22). All systems are located on the West Florida Shelf (WFS) and, together with modeling efforts, help describe and understand the circulation of the WFS and the role that 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 the real-time data. Real-time data flows to SECOORA and Tetra Tech/Axiom makes the data available to NDBC via ERDDAP server. Non-real-time data are shared via Research Workspace annually.

Accomplishments:

- Two research cruises were executed during the reporting period. The COMPS team used the R/V Hogarth (1/27-1/29/2025) to service sites C10, C13 and C22 and swap top-side sensors damaged during hurricane season. The team turned around buoys C12 and C13 and bottom mounted ADCP stations C11 and C15 (6/29-7/3/2025) on the R/V Weatherbird II.
- While some data was recovered from instruments that were deployed during the hurricanes, significant damage was sustained to 1-meter and water column CTDs deployed on C13. Buoys C10 and C22 have not been turned around since Fall 2024 so status of subsurface non real-time CTDs is unknown.
- USF partners with Eckerd College to provide undergraduate training internships that focus on field and laboratory experiences. Four paid interns (Grace Humphrey, Olivia Smith, Lillian Ring, and Landon McLaughlin) participated on sea-going activities and oceanographic data analysis. These internships are made possible through SECOORA and leveraged funding.

USF up-time statistics for 7/1/24-12/31/24 for real-time buoys:

USF	C10	C12	C13	C22
Wind	99%	99%	83%	84%
Air Pressure	99%	99%	83%	84%
Surface Water Temperature	99%	99%	83%	84%
Salinity (Surface)	99%	99%	83%	84%
Air Temperature	99%	99%	83%	84%
Relative Humidity	99%	99%	83%	84%
Longwave Radiation	99%	N/A	N/A	N/A
Shortwave Radiation	99%	N/A	N/A	N/A
Currents (ADCP)	98%	55%	N/A	48%
Sub-Surface Temperature	N/A	N/A	14%	N/A

Issues:

- The C12 ADCP up-time fell to 55% due to an instrument reset problem that was found to be caused by aging electronic components. The USF team suspects the resets are due to current induced in the data transmit cable. The team has hardened the system to this issue and initial results are positive.
- The up-time for stations C13 and C22 was slightly less than 85% due to the combined effects of the passage of Hurricane Milton and difficulties in servicing due to transit distance to the buoys (110 and 150 nm respectively). C13 ADCP and sub-surface temperature data returns were significantly less than 85%. The ADCP suffered the same instrument reset problem as seen at C12. While all above water instruments on C13 and C22 were replaced after the 2024 hurricanes, the full moorings were not recovered and redeployed which is why the update time for stats for the sub-surface sensors (ADCP on C22 and sub-surface temperature on C13) are low.

Expand the SECOORA Real-time Observing Network

Water Level Initiative: The SECOORA water level team members funded through the IOOS Core award include partners from the American Shore and Beach Preservation Association (ASBPA)/Hohonu and Georgia Tech. Partners from Coastal Carolina University (CCU)/Florida Atlantic University (FAU), and Florida International University (FIU) are funded through the SECOORA BIL award.

On-track

Water level sensor locations can be viewed here: https://wl.secoora.org.

Georgia Tech (GT) Accomplishments

- GT operates 17 water level stations in GA and FL.
- The team has been developing a QA/QC process to integrate real-time quality control flags with the GT water level data submitted to SECOORA. While the process has worked well for flagging archived data, it has not worked to QC real-time data. The team will continue working on this during Year 5.
- The original GT sensor data API architecture is not performing well. GT is developing a new, more streamlined database and API platform that should provide more reliable data availability and better performance.
- The GT water level sensor network was based on a unique network architecture using LoRaWAN radios for low cost, low data-rate sensor communications. This was a promising new technology that delivered significant early success. Unfortunately, the

LoRaWAN technology is not widely adopted in the US and the previously announced infrastructure investment from commercial operators has not materialized. There are no LoRaWAN base stations available in GA except for the ones that GT installed and maintains. Unfortunately, there have been significant issues with lightning damage to most of the important, well-placed gateways due to their vulnerability in high elevation, exposed locations. Going forward, GT will only use LoRaWAN-based communications in locations with nearby infrastructure that allows for installing a lower profile, less vulnerable LoRaWAN gateway that only reaches one or two monitoring stations. Good examples of this are the Tybee Burton 4H Center, Skidaway Institute, UGA Sea Grant/MAREX, and local marinas. These locations have internet service available which provides a backup communication option when needed.

- For locations where monitoring is desired, but no local host is available and LoRaWAN is not an option, the team will switch to a cellular based telemetry solution. These stations include North River Causeway in Camden County, GA and Highway 17 at Salt Creek in Chatham County, GA.
- GT is reviewing their priority water level location list and plans to retire four stations deployed in the most difficult locations. Sites to be decommissioned include:
    - Fernandina Beach (two test stations), Nassau County, FL
    - Meeting Street Boat Ramp, Camden County, GA
    - Montgomery Cross Road at Vernon River, Chatham County, GA

ASBPA/Hohonu Accomplishments

- Hohonu operates 33 sensors in the SECOORA Region. Due to repeat vandalism, the water level sensor at Snow's Cut, NC (near Carolina Beach) was removed from service which reduced the number of stations supported from 34 down to 33.
- Hohonu upgraded the sensor hardware in years 3 and 4 to replace legacy telemetry cell systems (e.g. 2G) with LTE grade systems. This upgrade addressed uptime challenges experienced previously resulting in more consistent data telemetry with fewer data gaps and average uptime of greater than 94%.
- Stations that need upgraded LTE grade sensors include:
    - Emerald Isle Boat Launch, NC
    - Bald Head Island, NC
    - Cape Lookout National Seashore, NC
    - John's Pass, FL
    - Duck, NC
    - Washington Acres Boat Ramp, NC

Uptime stats by operator and station are listed below:

Station Name	Owner	Uptime (%)
Fernandina Beach, FL A	GT	40%
Fernandina Beach, FL B	GT	40%
St Mary's Waterfront Pavilion, GA	GT	75%
North River Causeway, GA	GT	10%
Meeting Street Boat Ramp, GA	GT	10%
Montgomery Cross Road at Vernon River, GA	GT	50%
Tybee Island 4 H Center Dock, GA	GT	90%

Hunt Drive at Burnside Island, GA	GT	80%
Shipyard Road, Savannah, GA	GT	50%
Solomon Bridge, Savannah, GA	GT	60%
Hwy 80 at Chimney Creek, GA	GT	50%
Turner Creek Boat Ramp, GA	GT	60%
Walthour Road, Savannah, GA	GT	60%
Lazaretto Creek Fishing Pier, Savannah, GA	GT	60%
Catalina Drive, Savannah, GA	GT	60%
Hwy 17 at Salt Creek, Savannah, GA	GT	0%
UGA Marine Extension, GA	GT	80%
Georgetown County Hwy 701 Bridge, SC	Hohonu	100%
Holden Beach, Brunswick County, NC	Hohonu	100%
Captiva Island, FL	Hohonu	100%
Sullivan's Island, SC	Hohonu	100%
Surf City	Hohonu	100%
Fernandina 1, FL	Hohonu	100%
Mexico Beach, FL	Hohonu	100%
Isle of Palms, SC	Hohonu	100%
Ocean Isle Beach, NC	Hohonu	100%
Oyster Landing (N Inlet Estuary), SC	Hohonu	100%
The Citadel, Ashley River, SC	Hohonu	100%
Marine Corp Recruit Depot Parris Island, SC	Hohonu	100%
New Bern, NC	Hohonu	100%
Port Royal Sound Foundation SC	Hohonu	100%
Georgetown, SC	Hohonu	100%
North Myrtle Beach, Cherry Grove, SC	Hohonu	100%
Fort Raleigh National Historic Site, NC	Hohonu	100%
Currituck Co, NC	Hohonu	100%
Hilton Head	Hohonu	100%
Hammocks Beach State Park	Hohonu	100%
Topsail Beach, NC	Hohonu	100%
Sanibel, FL	Hohonu	100%
Fripp Island, SC	Hohonu	100%
Fernandina 2, FL	Hohonu	98%
City of Beaufort SC	Hohonu	95%
Folly River Bridge, SC	Hohonu	98%
Emerald Isle, NC Boat Launch	Hohonu	81%
Bald Head Island, NC	Hohonu	60%
Colington Creek Inn Dock, Kill Devil Hills, NC	Hohonu	59%
Cape Lookout National Seashore, NC	Hohonu	51%
Duck, NC Sanderling	Hohonu	41%
Washington Acres Boat Ramp, NC	Hohonu	38%
Snow's Cut Bridge, NC	Hohonu	0%
John's Pass, FL	Hohonu	0%

SECOORA Biological Data Collection	
University of South Carolina Beaufort (USCB) operates and maintains the SC estuarine soundscape observatory (https://sound.secoora.org/). The team operates passive acoustic recorders located in the May River (3 stations), Charleston Harbor (3 stations), Chechessee Creek (1 station), and Colleton River (1 station). Two new platforms were established near Pritchard's Island, SC on 5/22/25 through support from the Pritchard's Island Foundation. Data from these stations will be shared with SECOORA. Each platform consists of a passive acoustic recorder (DSG-Oceans or Loggerhead Instruments LS1), water level logger (HOBO), and a water temperature logger (HOBO). The DSG-Oceans or LS1s (gain set to 14 dB; HTI 96-min sensitivity -180 dBV re 1 µPa) record sound for 2 min every 1 hour (24 wav files/day) at a sampling rate of 80 or 96 kHz, respectively. The project team serviced stations in Charleston Harbor and May River this reporting period. Acoustic data was lost at station D in Charleston Harbor from 3/8/25 to 5/1/25 due to recorder failure. Acoustic data was not collected at stations 9M, 14M, and 37M in the May River from 1/29/25 to 2/14/25 due to recorder failure. HOBO loggers failed at May River stations 9M and 37M from 10/30/24 to 1/29/25 and Charleston Harbor station D from 1/13/25 to 5/1/25 because the HOBO loggers needed servicing. All other recorders and sensors were successfully deployed and retrieved during this project period.	Complete
DMAC AND MODELING & ANALYSIS SUBSYSTEMS	
SECOORA DMAC subsystem	

As the data management team, Tetra Tech/Axiom provides support to SECOORA by maintaining the data cyberinfrastructure, providing data visualization and analytical tools, and ensuring data services are available and accessible to SECOORA stakeholders.
 	
Tetra Tech/Axiom provides the following support on an on-going, annual basis:
• Maintain, operate, and develop SECOORA cyberinfrastructure to sustain long-term data stewardship for partners and stakeholders.
  ○ Conducted code reviews, implemented bug fixes, and deployed infrastructure upgrades.
• Maintain IOOS compliant services and applications for integration with national products.
  ○ THREDDS 4.6.15 - https://thredds.secoora.org
  ○ ERDDAP 2.02 - https://erddap.secoora.org
  ○ SECOORA ISO WAF - https://thredds.secoora.org/iso
  ○ NCEI Archive - https://ncei.axiomdatascience.com/secoora/
• Maintain the Glider System for the management of SECOORA glider assets. The SECOORA glider data is available for visualization in the portal (here), and data is submitted to the National Glider DAC (GDAC) during glider missions. Gliders ingested this period included Franklin and Bass.
	On-track

• Support data ingestion and data standardization for the Water Level Network. Data are flowing from PIs to Tetra Tech/Axiom via transfer pathways (e.g., APIs) and are then ingested into the ERDDAP server and displayed on the SECOORA website.
• 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.
  ○ Support water level priority areas by updating water level-specific APIs and data ingests for FAU/CCU, Green Stream, Clemson, and UNCW (Burnt Mill Creek).
• Promote data discovery and public access through the SECOORA data catalog and data portal (https://portal.secoora.org).
  ○ Support other priority data sources by ingesting updates, such as the FACT temperature dataset.
• Strengthen data stewardship within SECOORA to improve data quality, access, attribution, exchange, delivery, and storage.
  ○ Deployed a new public Sensor API that provides access to Axiom's sensor data in a format similar to that of ERDDAP. This API is offering a solution for manually and programmatically accessing and downloading oceanographic sensor data with easy access to both near real-time and historical measurements. The API has been shared with various SECOORA stakeholders for use and testing, and Axiom has implemented their feedback.
  ○ Debugged and maintained sensor ingestion pipelines, including FACT temperature sensors and SECOORA water level stations, to ensure accessibility.
  ○ Investigated and updated metadata where necessary for the Research Workspace and ERDDAP systems.
• Implement real-time sensor QARTOD compliant quality control systems.
• Annually archive physical oceanographic, biogeochemical, and meteorological data with NOAA's NCEI.
• Resolve bugs or issues, such as implementing fixes for the CO-OPS collector in ERDDAP, resolving issues causing routine gaps in ERDDAP collectors, and fixing the hurricane portal ingest pipeline.
• Developed and updated the FWRI AI site decision tree and WordPress plugin.
• Engaged with stakeholders and community members through the webinar on SECOORA portals, the SECOORA Annual Meeting, the IOOS Annual DMAC Meeting, and other technical meetings.	

CNAPS Model	
The CNAPS model is operated and maintained by NC State University (NCSU) and Fathom Science. • The CNAPS nowcast and forecast modeling system provides outputs via AWS: http://54.166.175.181:8080/thredds/catalog/fmrc/cnaps1_roms_sfc_fmrc_v2/catalog.html?dataset=fmrc/cnaps1_roms_sfc_fmrc_v2/COAWST-ROMS_Surface_April_2024-Present_FMRC_best.ncd • The current focus is to identify and implement a new web platform to restore CNAPS's public-facing visualization capabilities for the oceanographic community and broader	On-Track

user base.	
WFS Model	
The USF team continues to provide the West Florida Coastal Ocean Model (WFCOM) and the Tampa Bay Coastal Ocean Model (TBCOM) daily nowcast/forecast systems. These models produce simulated currents, water temperature, and sea surface height fields. Both WFCOM and TBCOM are available here: http://ocgweb.marine.usf.edu as well as being transmitted via THREDDS server to NOAA GOODS. Specific accomplishments include: • Both the West Florida Coastal Ocean Model (WFCOM) and the Tampa Bay Coastal Ocean Model (TBCOM) daily nowcast/forecast systems produce simulated currents, temperature, and sea surface height fields with an "up time" of 100%. The continuous time series of model output is available on the COMPS THREDDS server. Model simulation results (including currents, temperature, and salinity, sea level, and particle trajectories) are made publicly available on the web as maps and figures (https://ocgweb.marine.usf.edu). The model static images and movies for Tampa Bay and West Florida Shelf sub-regions were updated daily. These can be used immediately by the users for quick reference of the circulation patterns. • The red tide short-term trajectory forecast systems delivered timely HAB forecasts to governmental agencies and the public during the major bloom event that occurred within this reporting period. The TBCOM-based short-term red tide tracking product has been improved for better visualization. Previous static maps were replaced with gif animations (and static maps) with background in Google Map, offering a clearer and more intuitive representation of red tide cell movement over time. This product is now served online to the public (http://ocgweb.marine.usf.edu/Models/TBCOM/HAB_tracking). • WFCOM and TBCOM models use various data products as forcing input, such as winds, heat fluxes, and SST. The Operational Sea Surface Temperature and Ice Analysis (OSTIA) SST data product has been used by USF for sea surface temperature forcing for many years. USF downloads the OSTIA SST data from CMEMS web portal, which is a data hub serving many types of data products that are produced by other institutions. It is not 100% reliable for daily use. On several occasions, the OSTIA SST data were not updated for multiple days, which affected model performance. USF contacted the UK Met Office, the OSTIA SST data producer, and got approval for direct data access from their data server. USF can now download OSTIA SST data daily improving the stable operation of daily automated model runs.	On-track
AI Portal	
Florida Wildlife Research Institute (FWRI) and Tetra Tech/Axiom Data Science are building an artificial intelligence annotation data portal (AI portal). The AI Gateway was completed this year and sent to SECOORA staff for review before public launch. The development site is currently hosted at: https://secoora-ai.sites.axds.co/, but this url will change to secoora.org/ai when the site is live for the public. During the reporting period, the team linked end-nodes in the interactive tree to different	On-track

sections of the AI resource document, added 14 links to additional resources in the community area, established ai@secoora.org as a mechanism to administer community user accounts, and added Fathomnet's notebooks to our worked use cases.	
SEAMAP-SA Data and Analysis	

The SCDNR SEAMAP-SA staff and Tetra Tech/Axiom are converting fishery and turtle data into DarwinCore format for ingestion into the SECOORA data portal and sharing on the MBON data portal.
• Tetra Tech/Axiom staff were tasked with conducting test uploads and providing feedback on any identified issues. Complete survey datasets have been converted to the current templates and are ready for transfer to Research Workplace (RW) pending the 'all-clear' from test uploads.
• Admin portal tests have been completed by SEAMAP-SA staff for the Reef Fish Survey (RFS) dataset.
• The annual SEAMAP Joint Annual Meeting was held in March to discuss the challenges faced during this data migration project and determine next steps to modify the Scope of Work, which include the following:
  ○ SEAMAP-SA staff determined the Hydrocast data table could be eliminated from migration to SECOORA since the hydrographic data most used by external users was incorporated as surface or bottom in the Event tables.
  ○ Instead of a zipped file download that would package together a data users selected data extraction, along with the relevant survey description and citations, data best practices/caveats, and data user acknowledgments, these documents can be housed in a share file hosted by the ASMFC. Data users would need to access the SECOORA hosted SEAMAP-SA data via the SEAMAP-SA website to ensure these documents were distributed to users.
  ○ Data user metrics will be collected via a form on the website.
  ○ SEAMAP-SA admin users are to handle data imports, uploads, deletions, and code table management.
	On-track

OUTREACH, ENGAGEMENT, PRODUCT DESIGN SUBSYSTEM	
Support Community Driven Networks	
See "NOAA, IOOS, Other Agency Funding" table, starting on page 13	
SECOORA Outreach and Engagement	
• SECOORA created an outreach one-pager found here: https://secoora.org/wp-content/uploads/2025/03/2025-SECOORA-Region-One-Pager.pdf • SECOORA released 10 news stories on the website: https://secoora.org/news/ • SECOORA hosted 4 webinars for the Coastal Observing in Your Community Webinar Series. Speakers included 2024 Data Challenge Winner Kaylee Mooney (Florida Gulf Coast University) presenting on the completion of her winning project, Tetra Tech/Axiom Data Science providing a SECOORA Data Portal Demo, Dr. Yonggang Liu (University of South Florida) presenting the findings of his Hurricane Ian Intensification	On-track

study, and Dr. Jennifer Loch (REEF Environmental Education Foundation) presenting on the SMILE project. https://secoora.org/webinar-series-index/ • Details on media engagement and outreach for SECOORA staff and project PIs are found here (on the tab labeled 7/1/24-12/31/24): https://docs.google.com/spreadsheets/d/189a6FgoOAjMvGxDxmYuf0QnEoHuPXgpNqjMWn5YFv94/edit?usp=sharing	
Product Development	
Water Level Network User Interface (SECOORA): SECOORA contracted Second Creek Consulting to develop a website and individual water level station pages which is available here: https://wl.secoora.org. The site allows users the ability to register for water level alerts for their water level sensor of interest. We have ~50 registered users user at this point.	On-track
SECOORA developed data products and websites: • The SECOORA Hurricane Resources page (https://secoora.org/hurricane-resources/) is ready to be updated as hurricanes approach the SECOORA region during the 2025 hurricane season.	On-Track
The How's the Beach (HTB) project team is comprised of representative from three existing products: HTB (University of South Carolina (UofSC)), ShellCast (NCSU), and Beach Condition Reporting System (BCRS, Mote Marine Laboratory). Specific accomplishments this period include: • The SECOORA Modeling and Reporting Workshop was held January in Wilmington, NC, in conjunction with the 2025 Coastal GeoTools Conference. https://ian.umces.edu/publications/secoora-modeling-and-reporting-workshop/ • Conducted preliminary data assimilation to assess the Pytensor-timeseries AI package to determine if the models would enhance current modeling efforts. • BCRS staff collaborated with WebCOOS to prioritize potential sites for beach webcam installation in the Gulf region based on rip current frequency, severity, and coastal flooding risk. A WebCOOS camera layer for BCRS is in the beta testing phase. • Additions of a How's the Beach (USC) bacteria nowcasting layer and a BleachWatch (Mote) data layer are in progress. • Beach Ambassadors were identified for 7 beaches in FL and 1 in SC. • Plans were made with GA DNR to begin data transfer in July for a ShellCast expansion into GA.	On-track
The UNCW developed Situational Awareness Tool (SAST): The site is live, and data users can set up alerts so they receive notices when weather or sea state data exceed their selected threshold. To use the tool, visit: https://cormp.org and click on the "Alerts" tab.	Complete

IOOS, NOAA, Other Agency Funding	
Funding Area/Recipient	**Task and status update – See Appendix A for ASAP draws by funding line**

Regional Ocean Partnership, Lead PI Debra Hernandez, SECOORA	Status: On-track Accomplishments: • Southeast and Caribbean Disaster Resilience Partnership (SCDRP) – Note that SCDRP is funded through ROP and SECART funding. ○ Status: On-track ○ See Appendix B ○ Note that Heather McCarthy stepped down as the SCDRP Executive Director on 6/30/25. The Board has decided to not advertise for the position until the funding landscape is more known. The SCDRP Board appointed Claire McGrath as the Interim Executive Director until a search for a new Executive Director is conducted. • Marine Heat: SECOORA is working with CARICOOS, GCOOS, and FACT to analyze surface and subsurface temperature data across regions to evaluate marine heatwaves and their impacts on key ecosystems. ○ Status: On-track ○ A post doc at USF, Alex Nickerson, was hired on 2/24/25 to lead the data analysis efforts and work collaboratively with the other RAs. ○ Stage 1 is data mining for bottom, mid-water, and surface water temperature data. There are observed differences between SECOORA ERDDAP and IOOS ERDDAP data servers. Many stations were double listed in IOOS ERDDAP and only the doubly listed stations were on the SECOORA ERDDAP. Questions were sent to Tetra Tech/Axiom and the IOOS DMAC team for clarification. ○ Also observed USGS stations associated with the NWIS program have variable names that are inconsistent with the variable naming conventions, in part because surface and bottom water temperatures are recorded differently. ○ Exploring NDBC data holdings to see if there are any additional datasets available through their servers. • Sea Grant engagement in the Southeast: ○ Complete: 12/31/2024
SECOORA-SECART support for SCDRP	SCDRP –Note that SCDRP is funded through ROP funds as well as SECART funding. ○ Status: On-track ○ See Appendix B
Marine Life/SECOORA	Data Wrangler for the FACT Network ○ Status: On-track ○ See Appendix C
OA/University of Georgia	OAP allotment to support the NOAA Ocean Acidification Observing Network (NOA-ON) Grey's Reef (PI Scott Noakes, UGA) ○ Status: On-track ○ See Appendix D
OA/SECOORA	OAP allotment of project resources in support of the Southeast Ocean and Coastal Acidification Network for FY24 and FY25 (PI Emily Hall) ○ Status: On-track ○ See Appendix E

HFR retuning/testing/ additional work and/or recap HFR station	Status: On-track Accomplishments: Funding was used by SECOORA to purchase cable splicing supplies for UM, a new generator for the CSI HATY HFR, CPCI and coils as well as other minor supplies for FIT, and additional CODAR support time for USF. Due to funding uncertainty, SECOORA has not prioritized planning for the FL outreach event. Of note, Kennedy Space Center was not willing to host the event so another location would have to be found, if we decide to move forward.
Harmful Algal Blooms (HABS)	PI Michael Parson, Florida Gulf Coast University, Maintain and enhance the network of long-term water quality and HAB monitoring stations in southwest Florida (SWFL). ○ Status: On-track ○ See Appendix F PI Natalie Cohen, UGA Marine Extension, Identification of environmental conditions that are conducive to HAB formation in Georgia estuaries. ○ Status: On-track ○ See Appendix G
SECOORA – Vembu Subramanian Scholarship	SECOORA hosted the 2024 Vembu Subramanian Scholarship and received 7 applications and selected 4 winners. Sub-awards to winners were executed in January 2025. Winners include: ○ Mallory Mintz, UGA SkIO Graduate Student ○ Celina Ceballos, FGCU Graduate Student ○ Anna Weber, FIT Post-Doc ○ Jamie Long, UNC Chapel Hill Undergraduate Student
Modeling/UNC-Chapel Hill	PIs Brian Blanton & Rick Leuttich ○ Status: On-track ○ See Appendix H
Modeling/University of North Florida	NOTE – the project team changed and the subaward was issued to PI Tejeda with the University of South Florida. ○ Status: On-track ○ See Appendix I
Modeling/ University of South Florida)	PI Yonggang Liu ○ Status: On-track ○ See Appendix J
DMAC	Lead PI: Filipe Fernandes ○ Status: On-track ○ See Appendix K
Gliders/SECOORA	Lead PI: Catherine Edwards, UGA SkIO to support glider deployments and recoveries during the 2024 and 2025 seasons. (OMAO: Navy gliders) ○ Status: On-track ○ See Appendix L
Gliders/SECOORA	Lead PI: Catherine Edwards, UGA SkIO to support OMAO-OAR RFP Saildrone-Glider project ○ Status: On-track ○ See Appendix M

Gliders/SECOORA	Lead PI: Catherine Edwards, UGA SkIO to support Hurricane Glider operations (two funding lines) ○ Status: On-track ○ See Appendix N
HABS – partial funding of pan regional Sargassum project, lead PI, Chuanmin Hu, USF	Lead PI: Chuanmin Hu, USF ○ Status: On-track ○ See Appendix O

III. PROJECT CHALLENGES/MODIFICATIONS:

- HFR and buoy equipment sparing and supplies have been negatively impacted by Hurricanes Helene and Milton in 2024. Future system up-times may be impacted if supplemental funding is not made available.
- Tariffs will also impact cost for sensor replacements. Some PIs have indicated that sensor manufacturers have already notified them of price increases related to tariffs.

IV. PUBLICATIONS:

See Google Drive links for a list of Peer Reviewed Publications. See the 2024 Publications tab: https://docs.google.com/spreadsheets/d/1k1Z_u7olTH24HyqNxFI7bpb73gYMubSpDJeD6J2XaPo/edit?usp=sharing

V. BUDGET SUMMARY:

- Were the oldest ASAP TAS BETC accounting lines invoiced first?
  - This is Year 4 of the award. SECOORA is spending down Year 1, 2, 3, and 4 ASAP TAS BETC lines. See Appendix Q.
- 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 Year 4 subawards and contracts related to this award.
- Give a brief update on project invoicing for the reporting period. Were there any delays with invoicing or payment?
  - SECOORA continues to receive all year 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. Most subawardees invoice quarterly.
- 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 equipment was purchased by SECOORA during this reporting period.
- Include changes in key scientific, technical or management personnel, not included in certification.
  - No changes have been made this reporting period.
- Include changes to the organizational structure such as: changes in status or partners organizations and points of contact.
  - No changes to organizational structure have been made this reporting period.
- Provide an update about travel completed during the reporting period.
  Examples of travel completed during the reporting period include:
  - Theo Jass participated in the Coastal Geotools workshop in Wilmington, NC, January 27-30.
  - Hernandez participated in the SCDRP meeting held in Wilmington, NC, Feb 3-6

    - Dorton traveled to Charleston, SC for in-person team meeting with Hernandez April 17-18.
    - Noakes participated in the Georgia Aquaculture Conference in Athens, GA on April 18
    - Hernandez and Dorton participated in the IOOS Association Meeting held in Washington, DC April 29-May 1.
- What are the total travel expenditures to date on the award though the reporting period?
    - Total travel expenditures through June 30, 2025 equal $138,955.
- Are there any plans to initiate a new partnership (contract or subaward) during the next reporting period?
    - No

VII. SUCCESS STORIES

- Success stories can be found on this spreadsheet on the "2024 1-6" tab: https://docs.google.com/spreadsheets/d/1eq_yczZY0h3xciWp4jirHrv1P5KasEXBpQ-MYHap_sc/edit?gid=683531107#gid=683531107

End Report

ASAP.gov Automated Standard Application for Payments
BUREAU OF THE FISCAL SERVICE

Account Detail Profile Inquiry

Date: 06/27/2025
Time: 10:20 AM

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:
NOAACOOPNOS

Available Balance:
$4,379,762.67

Total Cumulative Draw Limit:
$18,492,126.00

Account Detail ID	Account Status	Cumulative Draw Limit	Draws/RP/BE To Date
FY 23 OAP-T-004-008	OPEN	$67,466.00	- $52,688.95
FY 24 NATDMAC 024-008-004	OPEN	$165,000.00	- $71,875.00
FY 24 REG024-008-002	OPEN	$3,509,694.00	- $1,023,044.96
FY21CETACEAN2021-X-000-005	OPEN	$350,000.00	- $350,000.00
FY21NATDMAC021-T-000-002	OPEN	$90,000.00	- $90,000.00
FY21NCDIS021-T-000-009	OPEN	$190,000.00	- $190,000.00
FY21NOSHQ021-X-000-001	OPEN	$10,000.00	- $10,000.00
FY21OAP021-T-000-007	OPEN	$71,365.00	- $71,078.97
FY21OCM021-T-000-006	OPEN	$244,444.00	- $204,574.03
FY21OMAO021-T-000-008	OPEN	$10,000.00	- $10,000.00
FY21REG021-T-000-003	OPEN	$3,576,136.00	- $3,555,289.58
FY21SECART021-T-000-004	OPEN	$10,500.00	- $10,382.39
FY22 COOPS NCDIS022-T-002-001	OPEN	$357,500.00	- $357,500.00
FY22 OAP 022-T-002-003	OPEN	$76,915.00	- $76,595.36
FY22 OCM WATER 022-T-002-005	OPEN	$197,144.00	- $192,883.15
FY22 OCMROP022-T-002-006	OPEN	$244,400.00	- $191,435.48
FY22 OMAOBATTERY022-T-002-007	OPEN	$30,000.00	- $30,000.00
FY22 SECART022-T-002-002	OPEN	$4,800.00	- $4,800.00
FY22F4DISCRETION022-T-002-009	OPEN	$150,000.00	- $150,000.00
FY22NATDMAC022-T-002-004	OPEN	$159,153.00	- $156,851.00
FY22REG022-T-001-001	OPEN	$3,061,136.00	- $3,026,403.82
FY22REG022-T-002-008	OPEN	$324,201.00	- $245,989.71
FY23 NATL DMAC023-T-004-005	OPEN	$165,000.00	- $153,066.12
FY23 REGIONAL023-008-001	OPEN	$40,000.00	- $0.00
FY23 REGIONAL023-T-003-002	OPEN	$3,061,136.00	- $2,708,765.97
FY23 REGIONAL023-T-004-001	OPEN	$521,100.00	- $399,285.49
FY23 SEACART023-T-003-001	OPEN	$3,800.00	- $3,800.00
FY23NCDIS OCM023-T-004-009	OPEN	$195,400.00	- $195,400.00
FY23NCDIS023-T-004-003	OPEN	$132,500.00	- $132,500.00
FY23OCM023-T-004-004	OPEN	$100,000.00	- $0.00
FY23OMAO023-T-004-006	OPEN	$40,000.00	- $40,000.00
FY23ROP023-T-004-007	OPEN	$249,760.00	- $120,000.78

ASAP.gov
Automated Standard Application for Payments
BUREAU OF THE FISCAL SERVICE

Account Detail Profile Inquiry

Date: 06/27/2025
Time: 10:20 AM

Account Detail ID	Account Status	Cumulative Draw Limit	Draws/RP/BE To Date
FY23UGA023-T-004-002	OPEN	$51,882.00	- $672.98
FY24 AOML DC 024-008-007	OPEN	$54,844.00	- $0.00
FY24 CORA 024-008-003	OPEN	$325,000.00	- $188,661.68
FY24 OAP 024-008-008	OPEN	$183,090.00	- $12,676.75
FY24 OCM WATER 024-008-005	OPEN	$150,000.00	- $0.00
FY24 OMAO OPS 024-008-006	OPEN	$66,000.00	- $6,813.63
FY24 SECART 024-008-010	OPEN	$3,000.00	- $2,500.53
FY24- OCM ROP 024-008-009	OPEN	$249,760.00	- $76,827.00

SECOORA PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/15/2025 01:58:57 PM)
Project: Southeast & Caribbean Disaster Resilience Partnership, Heather McCarthy
Project Title: Southeast & Caribbean Disaster Resilience Partnership

2022-2027 BIL PROGRESS REPORT - TOPIC 2

PROGRESS TOWARDS OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives. Limit the information to include only the work completed within the six month reporting period. Indicate if you anticipate any changes to the project Scope of Work (SOW). For each objective, describe your progress and indicate if the objective is: - "Complete" and date of completion - "On-Track" - "Delayed" and include an explanation for the delay and a description of activities employed to mitigate the delay.
Objective 1. Virtual SCDRP Monthly Partnership Meetings focused on critical and emerging topics. ON-TRACK
January 23, 2025: Kaylee Mooney, the 2023 SECOORA Data Challenge Winner and Graduate Student at Florida Gulf Coast University, presented "Implementing Vulnerability into Historic Hurricane Normalizations." This meeting was co-hosted with SCDRP's parent organization, SECOORA, and included speakers: Debra Hernandez (Executive Director), Emily Noakes (Communications and Engagement Specialist), Theo Jass (WebCOOS Manager), and Cotie Alsbrooks (Water Level Manager). 63 participants attended.

February 27, 2025: Dr. Michelle Covi, the Coastal Resilience DoD Liaison, University of Georgia Marine Extension and Georgia Sea Grant, presented "Department of Defense Building Resilience across the Fences."

March 27, 2025: Dr. Matthew Browning and Dr. Olivia McAnirlin, Co-Directors of the Virtual Reality & Nature Lab at Clemson University, presented "From Spark to Inferno: Preparing Communities for Wildfire with FireReady VR.

April 24, 2025: This meeting focused on "Longterm Resiliency Planning in North Carolina in the wake of Hurricane Helene" and featured the following 4 panelists: Brian Byfield, NC Office of Recovery & Resiliency within the NC Dept of Public Safety; Adam Stein, NOAA Office for Coastal Management, and the NOAA Advisor for NC Helene Interagency Recovery Coordination; Dr. Mary Roderick, Economic & Community Development Department, Land of Sky Regional Council; Drew Christy, GROW NC (Governor's Recovery Office for Western North Carolina);

May Monthly Partnership Meeting held (May 29, 2025): Dr. Robert Macnee, Climate Resilience Consulting, presented "Disaster Resilience in Uncertain Times."

June Monthly Partnership Meeting (held June 26, 2026): Luis Gallardo, Executive Director, Center for Habitat Reconstruction.

Objective 2. Annual regional convening at the SCDRP Annual Meeting: COMPLETE

The SCDRP 9th Annual Meeting was held at the Aloft Hotel in Wilmington, North Carolina, February 3-6, 2025. This Annual Meeting was the largest in SCDRP history with 130 registered attendees. There were 7 panel sessions and 2 special sessions led by a total of 57 guest speakers and moderators on current climate and disaster resilience issues. Other Annual Meeting accomplishments:

- SCDRP awarded 10 registration scholarships to graduate students, early career professionals, and nonprofit representatives.
- Secured 15 meeting sponsors for the event.
- Organized the first-ever Mentor/Mentee Meet-up for Cohort #1 of the new SCDRP Mentorship Program.
- Hosted 2 Super Collider Poster Sessions.
- Delivered a Special Session on SCDRP Regional Initiatives highlighting the new SCDRP Mentorship Program. Recruited new mentors and mentees through a Prospective Mentor/Mentee Huddle.
- Provided invitational travel for 2 SECOORA/SCDRP staff members.
- Provided invitational travel assistance and honorarium for 2 Keynote Speakers: Dr. Amanda Martin (Chief Resilience Officer, State of North Carolina), and Dr. Rajni Shankar-Brown (Stetson University)
- Provided invitational travel to VIP panelist, Dave Jones, Stormcenter Communications.
- Organized and executed the 2-hour Battleship Experience Field Trip featuring 12 speakers from the U.S. Army Corps of Engineers, University of North Carolina Wilmington, Moffatt & Nichol, and Battleship North Carolina. Participants rotated through 4 themed stations highlighting a unique aspect of Eagle Island, the Cape Fear River, or the Living with Water Project, from historical conservation to environmental monitoring and sustainable engineering.
- Facilitated and participated in a post-meeting Roundtable Discussion between 21 professionals focused on “A Stafford Act for the 21st Century” hosted by the Duke University Nicholas Institute for Energy, Environment, and Sustainability, in conjunction with the SCDRP Annual Meeting.

Objective 3. Expand and diversify our membership. = ON-TRACK
The Partnership Committee met monthly to identify and fill membership gaps among fields of work and invite speakers to present on timely resilience topics during the Monthly Partnership Meetings. The new SCDRP Mentorship Program was an excellent recruiting mechanism for new Members. During the reporting period, SCDRP added 21 Individual Members, 5 Student Members, and signed up 63 new newsletter recipients.

Objective 4. Offer resources and educational opportunities to our members and communities. ON-TRACK

- Launched the SCDRP Mentorship Program with the inaugural 23-member Cohort #1.
- Conducted 2 Mentee Focus Groups to gather feedback for future improvements to the SCDRP Mentorship Program.
- Initiated a new SCDRP Summer Workshop Series entitled “Pathways to Resilience: Learning from Leaders, Connecting with Peers” to provide students, early career professionals, and others with an opportunity to learn from experts in the field (mentors) in a virtual small group setting.
- Delivered 21 SCDRP Weekly Newsletters to 588-647 listserv participants featuring webinars, seminars, workshops, training sessions, funding opportunities, job opportunities, and relevant policy and SCDRP updates. Newsletter Average Open Rates ranged from 45% to 48%.
- The SCDRP Homepage was redesigned, and a new Annual Meeting Archive webpage and Newsletter Archive webpage were created and added.

- Added, shared in newsletters, and archived on Resources webpage: 32 new Resources, 262 new Job Postings, and 69 new Funding Resources Available.
- During January 2024, more people visited the SCDRP website than ever recorded – 1,798 site sessions and 1,242 unique visitors were recorded.

Objective 5. Formalize new Policies & Procedures. ON-TRACK
The Governance Committee met monthly and refined the Advisory Board Policies & Procedures.

Objective 6. Implement fundraising strategies to sustain the organization. = ON-TRACK

- The Development Committee met monthly to execute fundraising strategies including Annual Meeting sponsorships, philanthropic and corporate support, and increasing the number of dues-paying Members.
- Annual Meeting Sponsorship drive was completed, and fundraising goals were met.
- Submitted a $50,000 proposal to the Clif Family Foundation on 3/1/2025 – project was not funded.
- Submitted a $300,000 3-year proposal to Mosaic Momentum philanthropic organization on 3/5/2025 – project was not funded.
- The new SCDRP Finance Committee met to review monthly debits and credits and develop multiple budget scenarios for the future.

Objective 7. Participate in collaborative efforts to advance solutions that address regional resilience issues. ON-TRACK

Participated in 10 virtual meetings with resilience professionals within the region to explore potential new collaborations including Miami Climate Alliance, Climate Resilience Consulting, College of Charleston, NovaForge Consulting Partners, Clemson University, Foster Exploration & Production II, Lee County Emergency Management.

PUBLICATIONS & CONFERENCE PRESENTATIONS

2 Please list any published scientific papers, conference papers, or notable presentations given within the reporting period related to this award. This may include presentations at non-traditional venues. Do not include publications outside of the six month reporting period. For presentations, include the title, name(s) of the presenter(s), date, and the venue (e.g., CERF, AGU). If possible provide a link to your presentation.

- SCDRP 2024 IMPACT REPORT, Heather McCarthy and Claire McGrath, February 3, 2025. https://www.scdrp.secoora.org/scdrp-publications
- SCDRP Regional Initiatives presentation including SCDRP updates on the new SCDRP Mentorship Program, followed by a panel discussion with Mentors and Mentees, during the SCDRP 9th Annual Meeting in Wilmington, North Carolina. Presenters: Heather McCarthy and Claire McGrath, February 5, 2025. https://youtu.be/efzCk2XHkj8?feature=shared

MEDIA ENGAGEMENT, EDUCATION, AND OUTREACH

3 Please describe outreach and engagement activities related to this award conducted during the six-month reporting period. This may include stakeholder meetings, speaking at community/public events, hosting workshops, etc. If there was media coverage (newspaper, local media), please include links to the coverage.
SCDRP January 2025 Monthly Partnership Meeting: Implementing Vulnerability into Historic Hurricane Normalizations: https://youtu.be/1bHiHvHwIYo?feature=shared

Appendix B: SCDRP

SCDRP February 2025 Monthly Partnership Meeting: Dept of Defense Building Resilience Across the Fences: https://youtu.be/MBBvjmsJ6-A?feature=shared
SCDRP March 2025 Monthly Partnership Meeting: From Spark to Inferno: Preparing Communities for Wildlife with FireReady VR: https://youtu.be/Nhxue_XEQQQ?feature=shared

SCDRP April 2025 Monthly Partnership Meeting: Panel Discussion on Long-Term Resiliency Planning in NC in the Wake of Helene: https://youtu.be/gqyOrcL3HTU?feature=shared

SCDRP May 2025 Monthly Partnership Meeting: Disaster Resilience in Uncertain Times: https://youtu.be/MHYR3eCLGi0?feature=shared

SECOORA PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/13/2025 03:03:23 PM)
Project Title: FACT Data Wrangler, PI Joy Young

2021-2026 SECOORA PROGRESS REPORT

PROGRESS TOWARDS OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six month reporting period. Pay special attention to the six month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives and note if the objective is Complete, On-Track, or Delayed. If an objective is delayed, a justification for the delay (e.g., travel restrictions, late receipt of contract) must be provided along with a new completion date and description of activities employed to mitigate the delay.

Priority 1:
Conduct two major (i.e. inter-network matching) telemetry data processing events.

- Data processing event was completed in February 2025. Tag metadata for 341 new tags were processed. Metadata and detection data from 247 downloads were processed. Forty-one projects contributed data during the push. PIs were notified of new detection extracts in November 2025.
- Data processing event is in progress and will be completed in July 2025. Tag metadata for 595 new tags were processed. Metadata and detection data from 1,423 downloads were processed. Fifty-six projects contributed data during this push. Detections extracts will be made (n=1,987) and PIs notified in July 2025.
- As of June 2025, the database holds data for 234 projects from 121 organizations. The database holds metadata for 20,724 receivers and 13,804 tags. It contains over 379 million detections of which over 189 million are verified animal detections.

Collect and upload environmental data from array owners in conjunction with data processing events.

- Environmental data (sea temperature) was pulled from event logs of sensor-enabled receivers and uploaded to Research Workspace in March 2025. Updates included adding approximately 300,000 new data points and adding two projects, bringing up the total number of stations (historical and current) to 659. Axiom updated the temperature data with SECOORA in May 2025.
- FACT is working with Axiom on their workflow to ingest temperature data and investigating the possibility of taking a more active role in its publication in the SECOORA ERDDAP.

- Priority 2:
  Work with PIs to resolve incomplete telemetry datasets (based on process under priority 1).
- During the October and June data pushes, several issues arose including decoding files produced by Fathom Connect and the new NexTrak receivers. Updating the extension for Fathom allowed for translation of NexTrak files. However, Fathom Connect files had to be translated in VUE – a program that is set for sunsetting by Innovasea. Additionally, there is some concern that files translated in VUE will not contain all data from the receiver. Initiated conversation between Innovasea and OTN to create a workflow to effectively translate those data into files that may be ingested in the node.

- In February 2025, we began ingesting PIT tag metadata, increasing the types of tags registered in the network node.
- Incomplete telemetry datasets issues included correcting tag and receiver metadata, adding new receiver metadata that was missing, and combining or splitting projects. In general, about 25% of tickets are classified as database fixes.

PUBLICATIONS & CONFERENCE PRESENTATIONS

2 Please list any published scientific papers, conference papers, or notable presentations given within the reporting period related to this award. This may include presentations at non-traditional venues. Do not include publications outside of the six month reporting period. For presentations, include the title, name(s) of the presenter(s), date the presentation was made, and the venue (e.g., CERF, AGU). Also note whether the materials presented (e.g., PowerPoint® slides) remain available to SECOORA and IOOS and, if so, how they may be accessed (i.e., list the website address or online file sharing link such as Google Drive).

- Multiple presentations including FACT Network Updates and Data 101. J. Young. 11-13 February 2025. The FACT Network Meeting. Jensen Beach, FL.
- The FACT Network Update. J. Young. 6 March 2025. Ocean Tracking International Data Management Committee. Halifax, NS.

SECOORA MOORINGS AND WATER LEVEL PROGRESS REPORT: JANUARY 1 - JUNE 30, 2025

Status: Submitted (07/02/2025 12:52:22 PM)
Project Title: Grey's Reef OA mooring, PI Scott Noakes

2021-2026 MOORINGS AND WATER LEVEL STATIONS PROGRESS REPORT

ACCOMPLISHSMENTS TOWARDS OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six month reporting period. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and describe progress towards meeting the objectives. For each objective provide one of the following indicators: Complete, On-Track, or Delayed and anticipated date of completion. If an objective is delayed, a justification for the delay (e.g., manufacture turnaround times for repairs, NEPA compliance taking longer than anticipated) must be provided along with a new completion date and description of activities employed to mitigate the delay.
On 2/23/25, Triton's Grace was employed to collect water samples near the Gray's Reef Buoy. The first water sample was collected at 1000 hr (ET) and the last sample was collected at 1450 hr. A total of 5 water samples were collected during the sampling event. This sampling event serves as the first for 2025 with more to come during the year. Upon return to Athens, the samples were sent to Mote Marine in Sarasota for analyses. The total analytical package consists of temperature, salinity, DIC, Total Alkalinity, and pH. In addition to the water sample collection, one dive was conducted at the Monitoring Site #20 within Gray's Reef. The goal of this dive was to locate potential Oculina coral colonies for the coral monitoring effort.

On 5/18/25, Triton's Grace headed offshore to replace the Seabird mounted under the buoy. In December, it was determined that fishermen had cut the communication cable (on the Seabird side) when their steel leader fishing gear had become entangled with the instrument. Upon arrival at the buoy, it was determined that the waves and wind were not conducive for working under the buoy so we moved on to the Research Area to change out the seafloor instruments. A drop marker was deployed at the instrument site and then all three instruments (SAMI-CO2, SAMI-pH and Seabird) were lowered to the seafloor by rope with marker floats attached. The divers descended to the seafloor and gathered the instruments and then proceeded to locate the seafloor instrument package. Visibility and the close proximity of the drop marker made it relatively easy to locate the instrument package. The replacement instruments were moved to the package location. One by one, the existing instruments were removed from the package mount and the replacements were installed. The old instruments were bagged and moved away from the package in preparation for recovery. Once the divers returned to the boat, the instruments and drop marker were recovered. The instruments were connected to a computer and shut down. They were then packaged in coolers for transport back to Athens, GA.

The boat returned to the buoy and it was determined that sea conditions had improved sufficiently for divers to work under the buoy. Two divers worked to install the Seabird under the buoy while another person worked on the buoy deck to thread the new cable through the thru port. The Seabird was then connected to the MAPCO2 to start transmitting data during the next cycle. Unfortunately, it was later determined that the Seabird was only transmitting temperature and not the regular variables. After the buoy work was completed, the boat was moved to the JY Reef area to do a coral recon dive. It has

been determined that the JY Reef area will be the site for the first Oculina coral monitoring stations. Healthy Oculina coral colonies seem to be abundant in that area making the area a good place to start the station selection process

On June 11, 2025, the replacement MAPCO2 system was tested in Athens, GA. All systems seem to be in good order and ready for deployment. Unfortunately, the Triton's Grace vessel was not available during June so the MAPCO2 servicing has been scheduled for early July. In addition to receiving the MAPCO2 and SAMI-pH, PMEL also sent a replacement Seabird. The existing Seabird will undergo diagnostics once we are back on the buoy to see if the reason it isn't transmitting the water quality data can be determined. If the problem can't be resolved, the replacement Seabird will be installed.

The data from the discreet water samples have been completed and received from Mote Marine for the sampling events starting in December 2023 through February 2025. The data was reviewed and compiled into files for uploading to the OAP Scientific Data Information System. All discreet data files have been uploaded for archival.

On Sunday, June 29, 2025, we headed offshore to service the MAPCO2 system on the Gray's Reef buoy. Triton's Grace departed Kilkenny Marina at 800 hr to head offshore. Seas were 3 ft with about a 6 second period making conditions a bit choppy. Upon arrival at the buoy, it was determined that it was too rough for divers to work under the buoy. As a result, the topside operations were started. The MAPCO2 electronics, battery pack, equilibrator, iridium antenna and span gas were replaced. The airblock attached to the equilibrator had a zinc plated nut instead of stainless steel so it had frozen due to the salt conditions. After considerable effort, the nut finally gave way and the airblock was removed.
The Seabird had been replaced in May but had not been reporting data. However, upon system boot up, the Seabird started responding with data. As a result, the Seabird was not replaced. After about an hour, the sea had calmed considerably so the divers were able to work under the buoy. The SAMI-pH was replaced and connected to the system. The MAPCO2 continued to boot up and check calibration. After about 45 minutes, it was determined that all was good and the computer was disconnected.

Discreet water samples were also collected at the buoy. The first sample was collected at 958 hr (Eastern Time) when Triton's Grace first arrived at the scene. After the MAPCO2 was restarted, another sample was collected at 1353 hr and the final sample was collected at 1500 hr. Upon return to Athens, the samples were packed and shipped to Mote Marine in Sarasota, FL for analyses.

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2 Describe any problems/delays related to low (below 85%) up-time and provide a description of activities employed to mitigate the problem/delays.
Working offshore is never a simple task so delays are the norm and are expected. However, the MAPCO2 continued to work at 100%. The SAMI-pH did well until recently but is no longer transmitting data. It will be replaced in July during full system servicing.

SECOORA PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/15/2025 01:45:27 PM)
Project Title: Southeast Ocean and Coastal Acidification Network, Lead PI Emily Hall

2021-2026 SECOORA PROGRESS REPORT

PROGRESS TOWARDS OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six-month reporting period. Pay special attention to the six-month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives and note if the objective is Complete, On-Track, or Delayed. If an objective is delayed, a justification for the delay (e.g., travel restrictions, late receipt of contract) must be provided along with a new completion date and description of activities employed to mitigate the delay.

1. SOCAN will continue to participate in more frequent collaboration among the CANs to assess research and monitoring gaps as well as overall social and economic vulnerabilities. SOCAN and GCAN has initiated development of a comprehensive list of cultural groups who might be affected by acidification throughout the Southeast and overlapping areas of the Gulf of Mexico. SOCAN was invited to a MACAN-led workshop to discuss acidification needs, vulnerabilities, and education to overlapping groups in the Southeast and Mid-Atlantic. This meeting will take place in July 2026. On-Track
2. SOCAN will hold up to two virtual meetings or town halls per year within the FY24-27 funding cycle. A virtual workshop is scheduled for August 2025 on communication of OA through zoos and aquariums. Each SOCAN virtual meeting will be made available on the SOCAN website. On-Track
3. SOCAN will continue to work with researchers from Coastal Carolina University (CCU) after the Sea Grant funding, that was awarded to Mote Marine Laboratory with SOCAN as a collaborator, has ended to co-author papers related to the project. On-Track
4. Emily Hall, SOCAN lead and researcher at Mote Marine Laboratory, was awarded SECOORA funding to purchase and deploy a SeapHOx on the seafloor at Looe Key, FL. The SeapHOx has been deployed (on and off, weather dependent) for ~ 1 year now and PIs Hall and Reimer are working toward synthesizing the data from the SeapHOx for temporal variability. SOCAN will seek further funding opportunities to supplement salary needs to update data, synthesize data, and produce data products. On-Track
5. SOCAN will partner with MACAN to plan and host an underrepresented community listening session in either southern Virginia or northern North Carolina (where there is some regional overlap) with financial support from MACAN. On-Track
6. SOCAN will host its biennial virtual workshop in 2025 focusing on the state-of-the-science and outreach education in the region, though if other funding becomes available, the meeting will be held in-person. On-Track
7. SOCAN will continue its social media presence on Twitter (X), Facebook, Instagram, the Ocean Acidification Information Exchange, and email updates to members. On-Track
8. SOCAN will collaborate with GCAN over the next three years to produce a peer-reviewed manuscript that builds off the SOCAN-GCAN Stakeholder Engagement Survey project. This manuscript is in prep and is due July 30, 2025 for review. On-Track

PUBLICATIONS & CONFERENCE PRESENTATIONS

2 List any published scientific papers, conference papers, or notable presentations given within the reporting period related to this award. This may include presentations at non-traditional venues. Do not include publications outside of the six-month reporting period. For presentations, include the title, name(s) of the presenter(s), date the presentation was made, and the venue (e.g., CERF, AGU). Also note whether the materials presented (e.g., PowerPoint® slides) remain available to SECOORA and IOOS and, if so, how they may be accessed (i.e., list the website address or online file sharing link such as Google Drive).

- AMLC June 2025 (San Juan, Puerto Rico): Coral Reef Acidification Lower (Coral) Keys: SeapHOx Deployment to Monitor Long-term Seafloor pH. Oral presentation by PI Hall and her team.

SECOORA PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/15/2025 11:01:47 AM)
Project Title: Expansion of the Estero Bay HAB Water Quality Monitoring Network, PI Michael Parsons

2021-2026 SECOORA PROGRESS REPORT

PROGRESS TOWARDS OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six-month reporting period. Pay special attention to the six-month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives and note if the objective is Complete, On-Track, or Delayed. If an objective is delayed, a justification for the delay (e.g., travel restrictions, late receipt of contract) must be provided along with a new completion date and description of activities employed to mitigate the delay.
The first objective to utilize a long-term augmented water quality sensor network as an early warning system for potential harmful algal blooms (HABs) and acute water quality events (e.g., run-off) has been completed. There are now five YSI EXO2 sondes deployed at five live streaming fixed stations continually collecting water quality data every ten minutes including the Vester Field Station (Bonita Springs, FL), Gulf Star Marina (Fort Myers Beach, FL), New Pass Bridge (Fort Myers Beach, FL), Sanibel Island's city dock (Sanibel Island, FL), and Mound House Museum (Fort Myers Beach, FL).

The second objective to use other tools to study HABs, such as an Imaging FlowCytoBot (IFCB), is currently on-track. Currently, 24 of the 90 that were collected for IFCB analysis at the sonde stations have been analyzed on the IFCB and with the remaining samples, these data will be used to characterize baseline and site-specific phytoplankton communities present. Unfortunately, these samples take a significant amount of time to run as there are significant amounts of detritus that are also detected by the IFCB requiring extensive cleaning of the instrument between samples. There is currently no database or library of the phytoplankton community in the southwest Florida region alongside continuous environmental multiparameter sonde data signifying the importance and knowledge gap that the currently funded project is fulfilling. This group has also been deploying YSI ProSample P autosamplers at Vester Field Station, Gulf Star Marina, New Pass Bridge, and Sanibel Island on a routine basis, collecting water samples every hour for 24 hours at each site. A total of 4 deployments have been completed since January 2025. All twenty-four sample bottles of water are analyzed and recorded using a Turner Trilogy fluorometer for extracted chlorophyll a (EPA Method 445.0) and chlorophyll a in-vivo. Samples from each hour were preserved for IFCB analysis. Extracted chlorophyll a concentration ranges over a 24 hour period in dry season 2025 for Gulf Star Marina was 1.26 – 4.39, New Pass Bridge was 0.92 – 2.68, Vester Field Station was 0.89 – 7.21, and Sanibel City Dock was 0.49 – 1.92 ug/L. Extracted pheophytin concentrations ranges over a 24 hour period in dry season 2025 for Gulf Star Marina was 0.98 – 3.36, New Pass Bridge was 1.21 – 3.38, Vester Field Station was 2.32 – 18.38, and Sanibel City Dock was 0.76 – 2.23 ug/L. Chlorophyll a in-vivo concentration ranges over a 24 hour period in dry season 2025 for Gulf Star Marina was 11.73 – 24.84, New Pass Bridge was 4.89 – 11.14, Vester Field Station was 10.97 – 28.68, and Sanibel City Dock was 3.2 – 10.25 ug/L.

Discussions have been ongoing with other IFCB users in the Gulf and elsewhere in the United States

to facilitate IFCB libraries and classifiers. While such integration is hypothetically possible, several hurdles were identified: 1) live versus preserved samples (will affect how the IFCB classifies phytoplankton); 2) different foci among the IFCB working groups (some focus on specific HABs; others are more broadly examining the phytoplankton community - these differences in effort cause biases in classifiers); and 3) regional differences in phytoplankton communities (i.e., libraries and classifiers will not be valid in other regions). Continued discussions will be useful to identify and implement solutions to rectify these hurdles.

MEDIA ENGAGEMENT, EDUCATION, AND OUTREACH

2 List any media coverage related to this award and include links to news stories and media coverage. Only include media coverage conducted within this six month reporting period.

- WINK News – Fort Myers Beach unveils sensor for live water quality monitoring (https://www.winknews.com/news/lee/fort-myers-beach-unveils-sensor-for-live-water-quality-monitoring/article_f81288a8-1b3e-4304-8f57-801bc64d6549.html).
- Environmental Monitor – From Hurricanes to Florida's Red Tides: Monitoring the Southwest Gulf Coast (https://www.fondriest.com/news/from-hurricanes-to-floridas-red-tides-monitoring-the-southwest-gulf-coast.htm).
- New water quality monitoring station at Mound House unveiled (https://www.gulfshorebusiness.com/gb_daily/new-water-quality-monitoring-station-at-mound-house-unveiled/).

PRODUCT DEVELOPMENT & DELIVERY

3 Provide a brief description of the status of all products or tools currently available or under development as part of this award. Include weblinks where available. Use this section to report instances in which IOOS-funded science related to this project has been transitioned to support products developed by your organization or even beyond your organization. For example, this might include models, apps, mapping tools, etc. that are being used by state or federal agencies to assist with decision support. Also describe who is using the products and the number of users. Only report on work conducted within the six-month reporting cycle.
The team supports the live streaming of the 5 fixed stations here: WQdatalive.com.. The users that access these data streams include the public (homeowners, business owners, boaters, fishermen, beachgoers, etc.), local resource managers (Lee county, Estero Bay Aquatic Preserve), and state resource managers (Florida Fish and Wildlife Commission, Southwest Florida Water Management District, Florida Department of Environmental Protection).

LEVERAGED FUNDING

4 Provide a brief summary on project leveraging (i.e., how you leveraged your SECOORA award to receive other funding). Also include the proposal/project title, funding agency, amount of funding received, project start date and duration of the project. Only report on leveraging activities within the six-month reporting cycle.
The funding and support from SECOORA gave our team the expertise and knowledge to be able to leverage internal Florida Gulf Coast University Water School funding to acquire six Lufft WS-Series Smart Weather Sensors that will be deployed at the current live streaming stations. These stations will stream air temperature, pressure, wind speed & direction, and precipitation. Our team's goal is to continue to expand our expertise, regional footprint, and data acquisition throughout the southwest

Florida region to obtain the best snapshot of long-term weather conditions, water quality, and harmful algal bloom initiation.

The sonde that was set up at the Mound House was purchased through an award provided by the Fort Myers Beach Chamber of Commerce Water Foundation ROSE (Research Outreach Stewardship and Education) program. Adam Catasus and Marlin Smith set up the sonde at the Mound House and linked it to the network with the other four sondes. A ribbon cutting ceremony was held to much fanfare, including press coverage (see above).

SECOORA PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (06/24/2025 02:41:21 PM)

Project Title: Establishing a monitoring program and identifying environmental drivers of periodic harmful algal blooms in a model estuary of coastal GA, PI Natalie Cohen

2021-2026 SECOORA PROGRESS REPORT

PROGRESS TOWARDS OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six-month reporting period. Pay special attention to the six-month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives and note if the objective is Complete, On-Track, or Delayed. If an objective is delayed, a justification for the delay (e.g., travel restrictions, late receipt of contract) must be provided along with a new completion date and description of activities employed to mitigate the delay.

Objective is on track. Year 2 of estuary monitoring was completed, with Year 3 of summer monitoring currently underway. Our work to date has shown that Akashiwo blooms at the hottest window of the year regardless of salinity levels. This past year, a hurricane brought fresher, more nutrient rich conditions, which did not impede blooms in mid-August. Temperature may therefore be one of the strongest predictors. A statistical analysis is planned as part of graduate student Mallory Mintz's PhD thesis to determine which sole factor or combination of factors best predict their abundance. There was no documented oyster crash in 2024, as was observed in our first year of monitoring. In June 2025, Akashiwo has appeared in the estuary earlier than in previous years (previous years it first appeared in July).

Water quality parameters, nutrients, and cell densities continue to be collected to generate a seasonal view of HAB dynamics. A spatial analysis using rented skiffs demonstrated highest HAB levels in brackish waters, with abundances dropping off in freshwater and towards the sound. Additional boat trips are planned for summer 2025 to expand spatial coverage of the coastal GA region.

Bioinformatic analysis is underway using RNA collected during the 2023 bloom. We aim to determine whether Akashiwo could be responsible for the oyster crash that occurred that summer, or other harmful microbes, such as Vibrio, contributed.

PUBLICATIONS & CONFERENCE PRESENTATIONS

2 Please list any published scientific papers, conference papers, or notable presentations given within the reporting period related to this award. This may include presentations at non-traditional venues. Do not include publications outside of the six month reporting period. For presentations, include the title, name(s) of the presenter(s), date the presentation was made, and the venue (e.g., CERF, AGU). Also note whether the materials presented (e.g., PowerPoint® slides) remain available to SECOORA and IOOS and, if so, how they may be accessed (i.e., list the website address or online file sharing link such as Google Drive).

Mallory Mintz, Katie Higgins, Elizabeth Harvey, Justin Manley, Natalie Cohen. Akashiwo sanguinea Blooms in Coastal Georgia: Insights from high-resolution monitoring efforts. Aquaculture 2025, New Orleans LA. Feb 2025.

MEDIA ENGAGEMENT, EDUCATION, AND OUTREACH

3 Please list any media coverage related to this award and include links to news stories and media coverage. Only include media coverage conducted within this six month reporting period.
Mallory and Natalie were interviewed by Yokogawa for using the FlowCam fluid imaging system in UGA research. Our work monitoring water quality parameters and HAB dynamics was highlighted as a case study:
https://www.fluidimaging.com/blog/flowcam-protects-shellfish-hatcheries-from-habs

We are additionally planning for a webinar with FlowCam and the Marine Technology Society which will be live on July 30, featuring this monitoring work:
https://mtsociety.memberclicks.net/index.php%3Foption=com_jevents&task=icalevent.detail&evid=283&year=2025&month=006&day=11&uid=1bd975fefd0b30ee19d494195332af17

PRODUCT DEVELOPMENT & DELIVERY

4 Please provide a brief description of the status of all products or tools currently available or under development as part of this award. Include weblinks where available. Use this section to report instances in which IOOS-funded science related to this project has been transitioned to support products developed by your organization or even beyond your organization. For example, this might include models, apps, mapping tools, etc. that are being used by state or federal agencies to assist with decision support. Also describe who is using the products and the number of users. Only report on work conducted within the six month reporting cycle.

GA HAB data is currently on the SECOORA portal:
https://portal.secoora.org/?_gl=1*14386n6*_ga*MjAxMTA2Nzk1NC4xNzE4NzM4NTM5*_ga_RC8GRWWEYM*MTc0MDA3NDk3MC4xOC4wLjE3NDAwNzQ5NzAuMC4wLjA.#metadata/130215/station/data

And on the SECOORA HAB page: https://secoora.org/georgia-harmful-algal-blooms/

LEVERAGED FUNDING

5 Provide a brief summary on project leveraging (i.e., how you leveraged your SECOORA award to receive other funding). Also include the proposal/project title, funding agency, amount of funding received, project start date and duration of the project. Only report on leveraging activities within the six month reporting cycle.
The SECOORA Vembu Ocean Scholars Award awarded to Mallory Mintz enabled her participation at the 2025 Aquaculture conference in New Orleans, LA where she presented an oral talk to an audience of aquaculture experts (February 2025).

SECOORA PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/16/2025 11:52:42 AM)

Project Title: Multi-decadal re-analysis of coastal water level to support NOAA sea level and flood risk products, PI Brian Blanton

2021-2026 SECOORA PROGRESS REPORT

PROGRESS TOWARDS OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six month reporting period. Pay special attention to the six month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives and note if the objective is Complete, On-Track, or Delayed. If an objective is delayed, a justification for the delay (e.g., travel restrictions, late receipt of contract) must be provided along with a new completion date and description of activities employed to mitigate the delay.
This SECOORA/IOOS/NOAA project is computing a long-term reanalysis of coastal water levels for the US eastern and Gulf of Mexico coasts, using a data assimilation (DA) scheme for the ADCIRC model (Asher et al, 2019). The assimilation process corrects model predictions based on errors between a prior solution and observed water levels. Using NOAA/NOS NWLON gauge observations, time-series of prior errors (prediction - observations) are determined and used to compute a sequence of dynamic water level correction surfaces on the ADCIRC grid. The long-term simulation is then rerun by including the error surfaces as an additional input, resulting in a new (posterior) prediction of coastal water levels. The atmospheric forcing is from the ECMWF's ERA5 reanalysis (Hersbach et al, 2022). The reanalysis simulation period is 1979-2022, and the simulations include the wind-wave model SWAN. In previous reports, the progress and results from the Gulf and East Coast (GEC) were described.

In this performance period (1 Jan - 30 Jun 2025), the main effort has been preparing for a reanalysis simulation for areas of interest in the Pacific Ocean, including the relevant Pacific Islands, coastal Alaska, and the California/Oregon/Washington coast. The complexity of this large area has motivated us to consider three separate regions; 1) the western US coastline, including the southern-facing AK coast (EPAC); 2) polar AK area, including the western-facing AK coast and Aleutian Islands (AK); and 3) the US Affiliated Pacific Islands (PI). Each of these regions presents specific challenges, such as sea ice concentration (siconc) in the polar AK area, Columbia River flows in the EPAC region, and a completely open boundary encircling the relevant Pacific islands. Additionally, long-term sea level trends exhibit considerably more variation as compared to the US east coast, for which trends are largely increasing.

There are four high-level tasks in this period:

1) ADCIRC Grids: For each of the three regions, ADCIRC grids are being developed that start from the high-resolution global GSTOFS grid used operationally by NOAA. The EPAC regional grid was developed in previous project years by T. Asher and is being extensively evaluated for performance and prediction skill. A testing grid for the AK region was generated using the OceanMesh2d grid generation software, allowing us to sort out the application and impact of

siconc. The ERA5 Reanalysis output includes a sea ice model, and the ice field is available in the same manner as the wind and pressure fields. Development of a PI grid has not started in this period.

2) Meteorological input: We have spent significant effort shifting toward a more unified meteorological input approach to ADCIRC, called nws14. Nws14 allows direct reading of netCDF-formatted fields for wind, pressure, and sea ice, substantially simplifying the pre-processing steps needed for the simulations. [The CORA GEC simulations used the ascii-based "OWI" formatted input (nws12), requiring an intermediate interpolation step from the netCDF files to OWI files. This is no longer needed.] This task has included downloading ERA5 meteorology to cover the three Pacific regions, and siconc for the AK region.

3) Wave spectra on open boundary: We have been evaluating the use of wind-wave spectra on the open boundary for the SWAN model. In CORA-GEC, incoming wave energy on the open boundary was ignored, meaning that all wind-wave energy was entirely internally generated. Given the relatively narrower continental shelf along much of the west US coast, and clearly in the PI region, swell propagation into the region may be important to consider. We have been downloading wind-wave data from ERA5 (which uses the WAM model for wind waves) to apply as open boundary conditions for the SWAN model. The full, directional wave spectra is available, but not through the usual ERA5 access method. I.e., spatial subsetting of the spectra is not possible, requiring download of the entire global grid. This is prohibitively time-consuming, and we are thus evaluating using only the windsea and swell partitions, which are available using the same access approach as the meteorology. The windsea and swell partitions represent the main components of the wind-wave field.

4) Observation data gathering and analysis: We have acquired most of the water level data for the three Pacific regions needed for the error analysis. Initial analysis of the data reveals large gaps at many stations, similar to the situation in the GEC study. There is very little water level data for the polar AK area, which will impact the error analysis and assimilation step.

The UNC research group has continued to engage with the NOAA team through twice-monthly virtual meetings where progress and status toward the overall objectives of the reanalysis project are described and discussed. Additional, more detailed technical discussions have been held on an as-needed basis to address specific modeling objectives and issues, such as the Columbia River outflow and SWAN wind-wave model performance. Due to the need to develop a baseline reanalysis for the Pacific regions, we have deferred (to a later TBD date) the development of an enhanced version of ERA5 meteorology that includes more energetic and higher-resolution hurricanes. We note that NOAA announced the CORA-GEC dataset at the 2025 annual meeting of the American Meteorological Society, with dataset release and press announcements described below.

MEDIA ENGAGEMENT, EDUCATION, AND OUTREACH

2 Please list any media coverage related to this award and include links to news stories and media coverage. Only include media coverage conducted within this six month reporting period.
NOAA announced the availability of the Gulf and East Coast dataset on 13 Jan 2025:
https://www.noaa.gov/news-release/new-noaa-dataset-to-help-improve-flood-mitigation-tools-flood-risk-assessment

PRODUCT DEVELOPMENT & DELIVERY

3 Provide a brief description of the status of all products or tools currently available or under development as part of this award. Include weblinks where available. Use this section to report instances in which IOOS-funded science related to this project has been transitioned to support products developed by your organization or even beyond your organization. For example, this might include models, apps, mapping tools, etc. that are being used by state or federal agencies to assist with decision support. Also describe who is using the products and the number of users. Only report on work conducted within the six-month reporting cycle.
The V1.1 dataset was made available to the general public and researchers on NOAA's Open Data Dissemination (NODD) system and https://tidesandcurrents.noaa.gov/cora.html.

The report and other information that completely describes the reanalysis and assimilation process is here:
https://www.fisheries.noaa.gov/inport/item/75048
https://repository.library.noaa.gov/view/noaa/66833#moretextPAmods.subject_name
https://repository.library.noaa.gov/view/noaa/66833/noaa_66833_DS1.pdf

SECOORA PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/17/2025 12:54:51 PM)
Project Title: Evaluation of Coastal Models in NOAA Operational Environments, PI Andres Tejada

2021-2026 SECOORA PROGRESS REPORT

PROGRESS TOWARDS OBJECTIVES

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During this reporting period, substantial progress was made toward achieving the project's objectives, specifically focusing on simulations utilizing the newly developed SMS mesh (first mentioned in the first progress report).

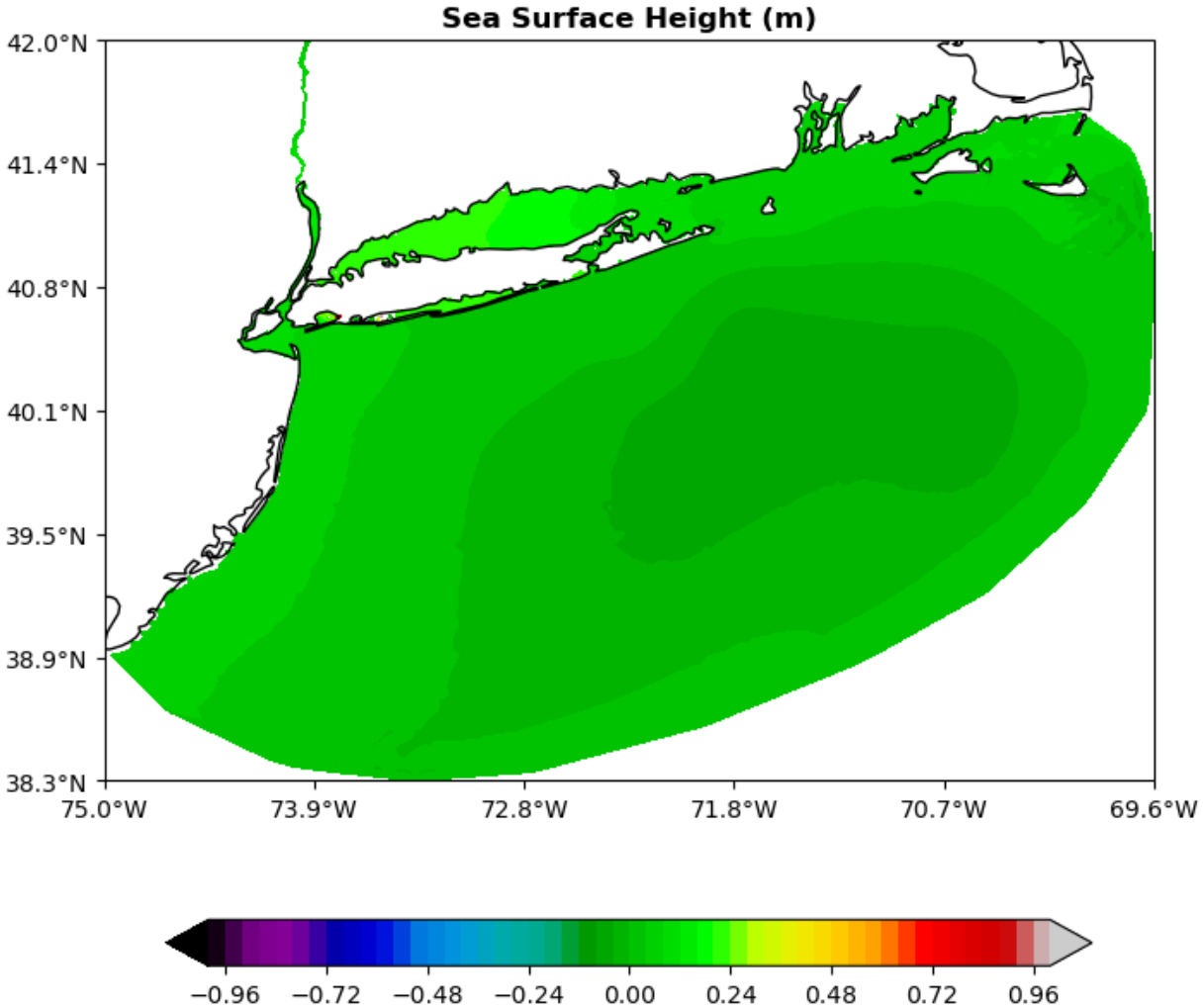
Model Simulation and Analysis: On-Track. Extensive simulations were performed using the refined SMS mesh, which consists of 225,132 elements with resolutions ranging from 20 to 4000 m. These simulations effectively captured tidal dynamics in New York Harbor, demonstrating significant improvements in spatial resolution and accuracy. Simulation results for key tidal constituents (K1, M2, N2, and S2) show good agreement with observed data, affirming the mesh's capability to accurately represent complex coastal hydrodynamics.

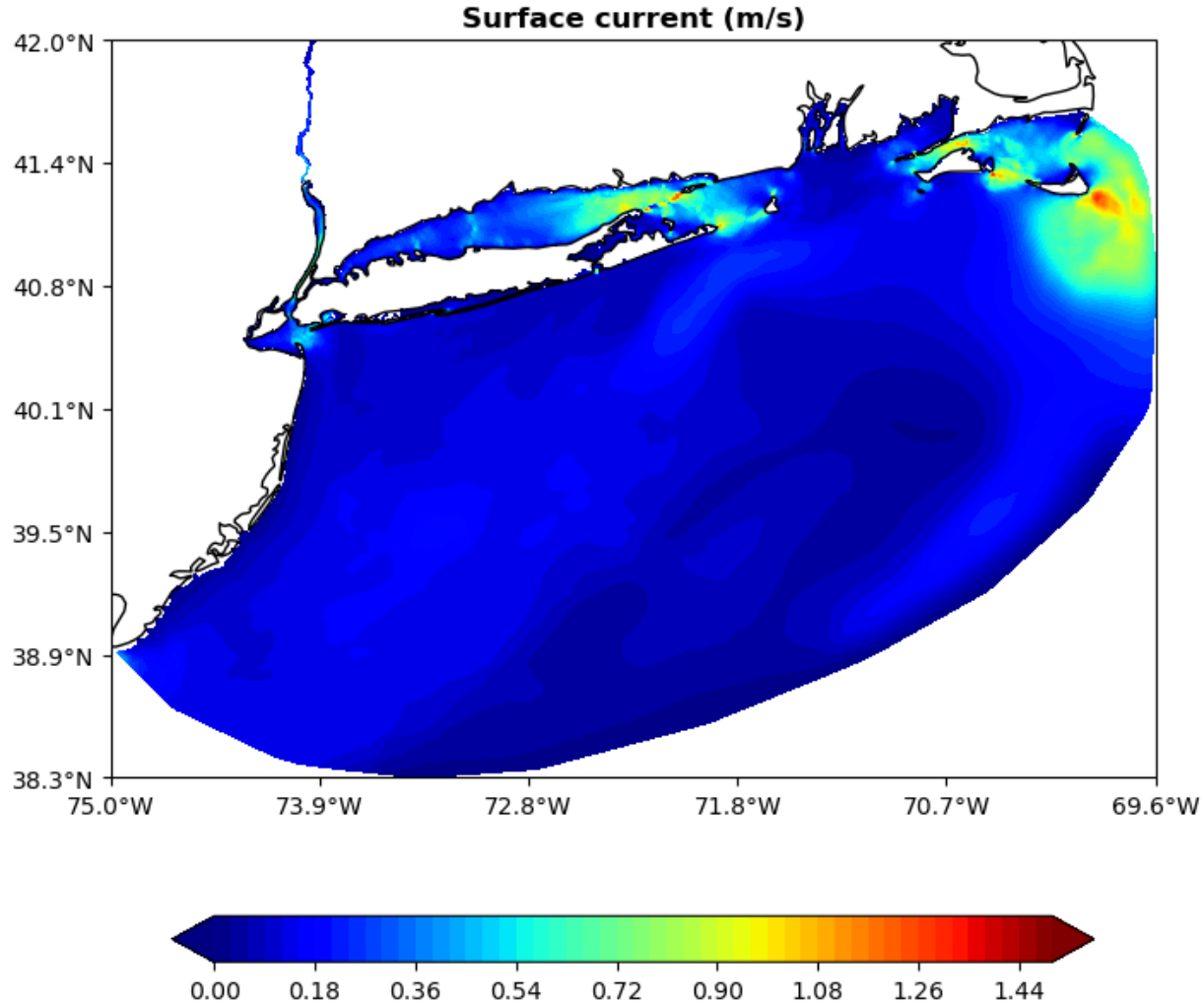
Validation and Results Assessment: On-Track. The simulation outcomes have been rigorously validated against observational data provided by NOAA. The SMS mesh allowed for improved representation of fine-scale features such as intricate coastlines and bathymetric variations, significantly enhancing model performance. Results presented in the attached slide deck highlight robust validation metrics and spatial accuracy across the modeled tidal constituents.

Broader Impacts: The successful simulation runs and validations provide enhanced confidence in predictive capabilities related to coastal flooding, storm surge impacts, and water quality management within New York Harbor. These advancements directly contribute to improved coastal management strategies, infrastructure resilience planning, and overall public safety.

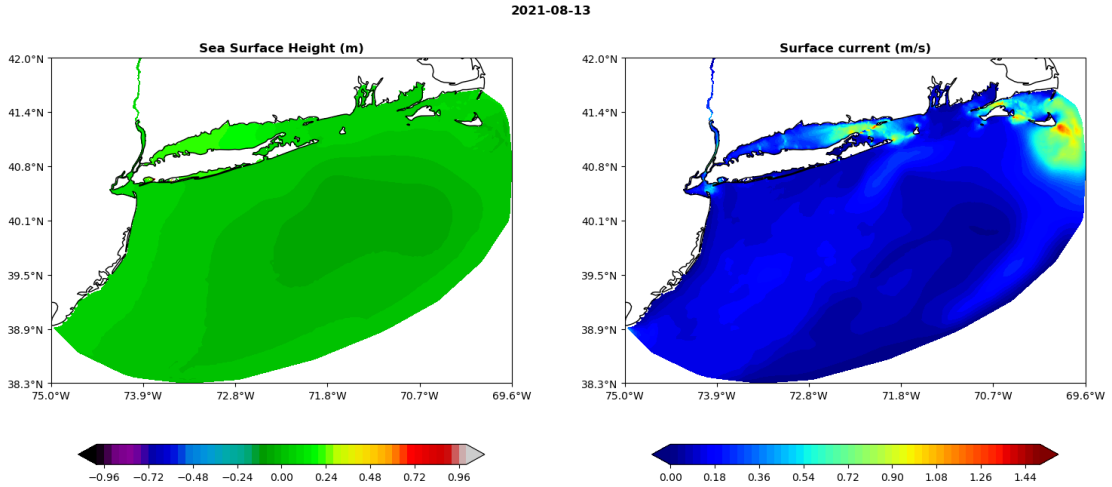
No substantive changes to the project Scope of Work (SOW) are anticipated. All objectives remain on track for timely completion.

2021-08-13

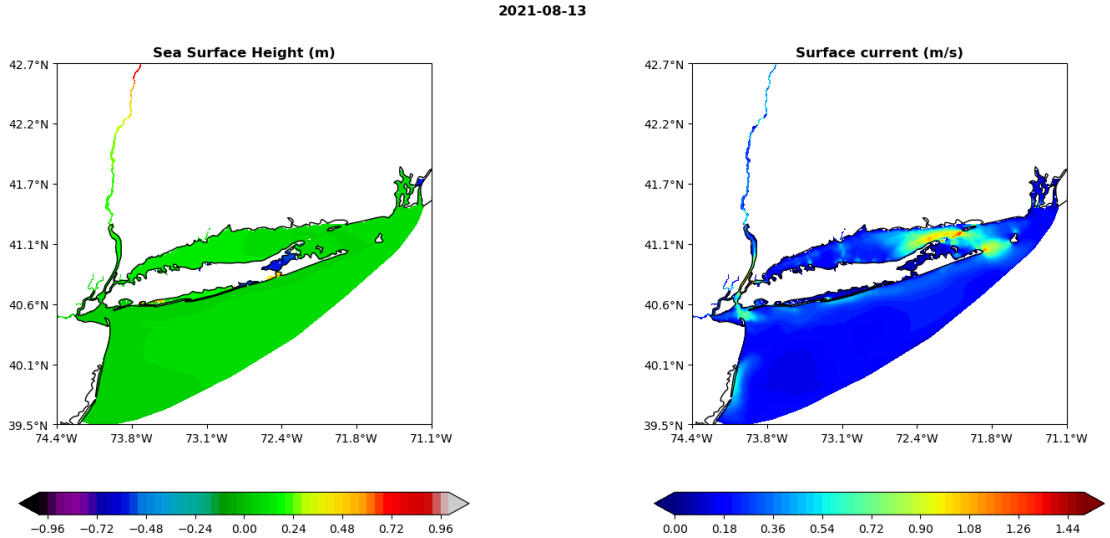

Sea Surface Height (m)
42.0°N
41.4°N
40.8°N
40.1°N
39.5°N
38.9°N
38.3°N
75.0°W
73.9°W
72.8°W
71.8°W
70.7°W
69.6°W
−0.96
−0.72
−0.48
−0.24
0.00
0.24
0.48
0.72
0.96

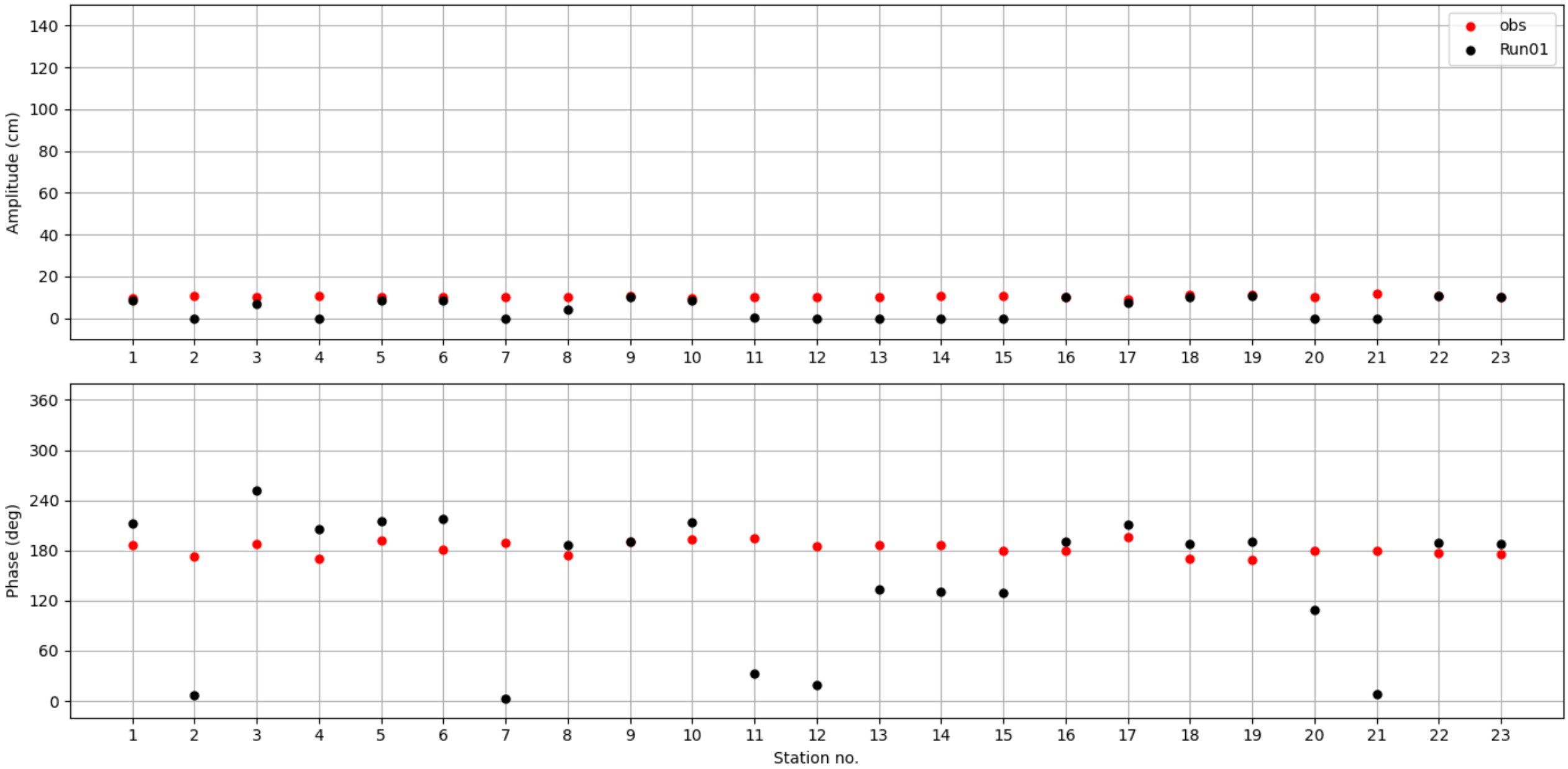

Surface current (m/s)
42.0°N
41.4°N
40.8°N
40.1°N
39.5°N
38.9°N
38.3°N
75.0°W
73.9°W
72.8°W
71.8°W
70.7°W
69.6°W
0.00
0.18
0.36
0.54
0.72
0.90
1.08
1.26
1.44

New Mesh Result

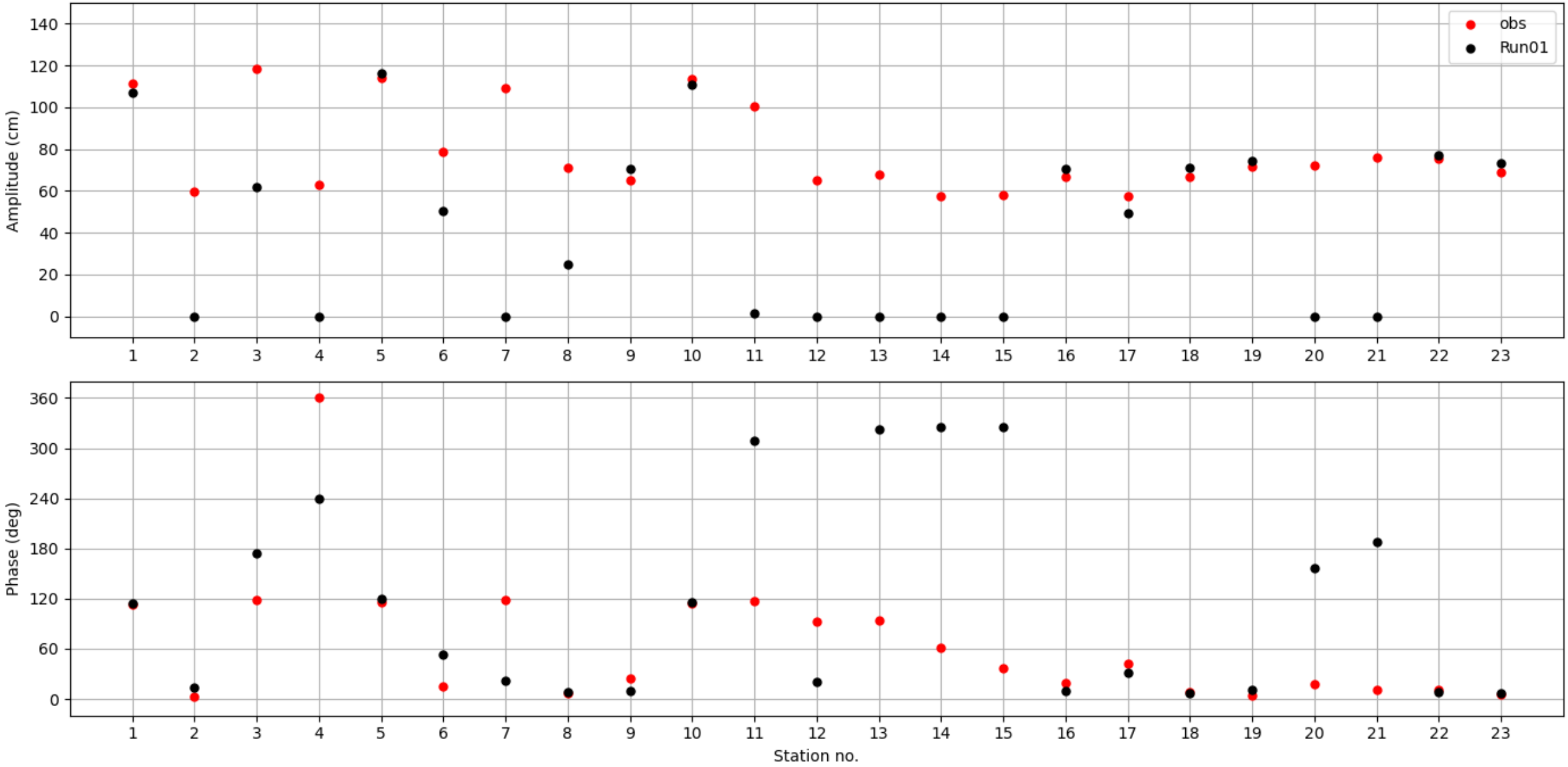


Kyungmin Park's Result

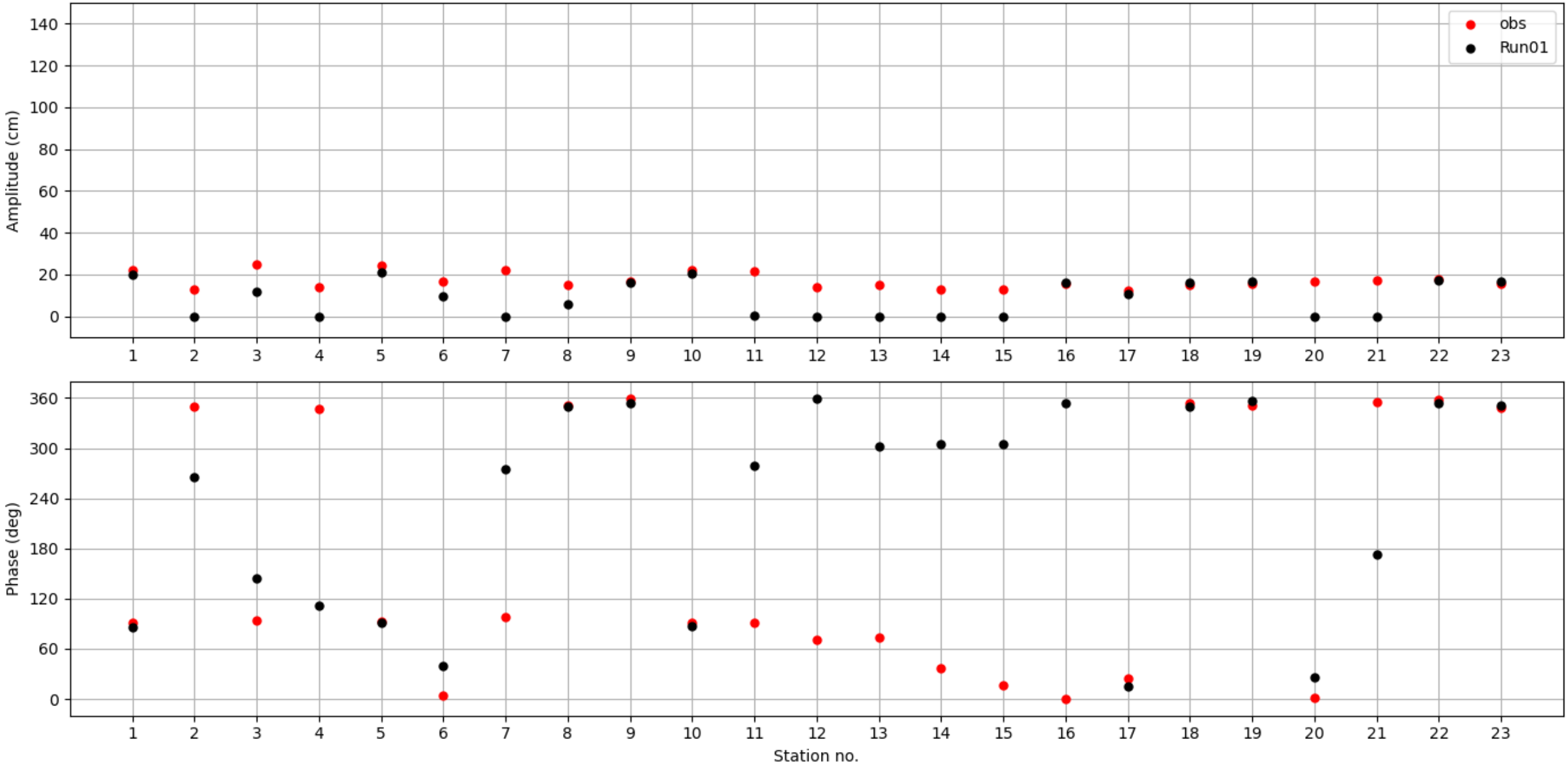



K1
obs
Run01
Amplitude (cm)
Phase (deg)
Station no.

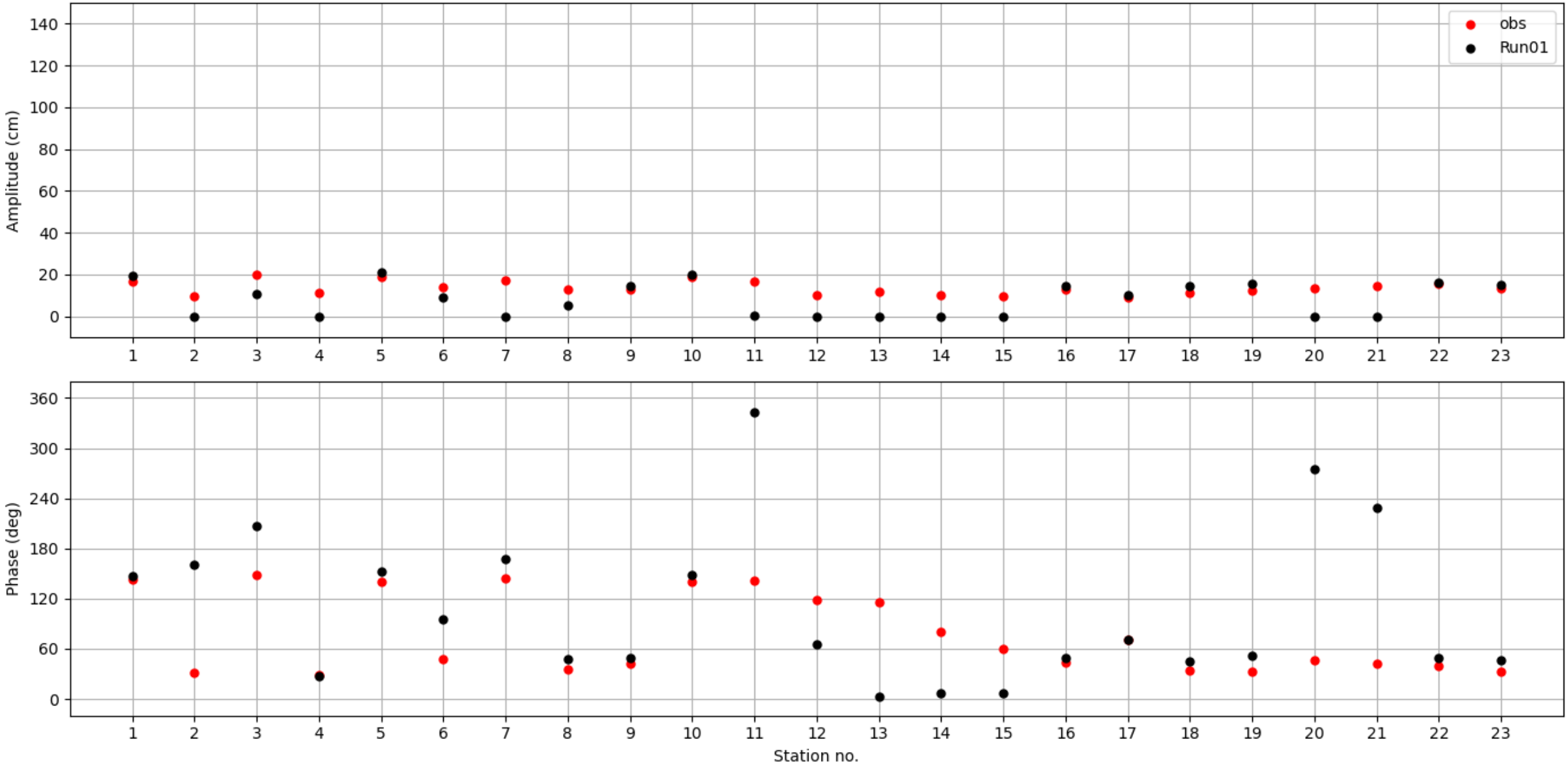
M2



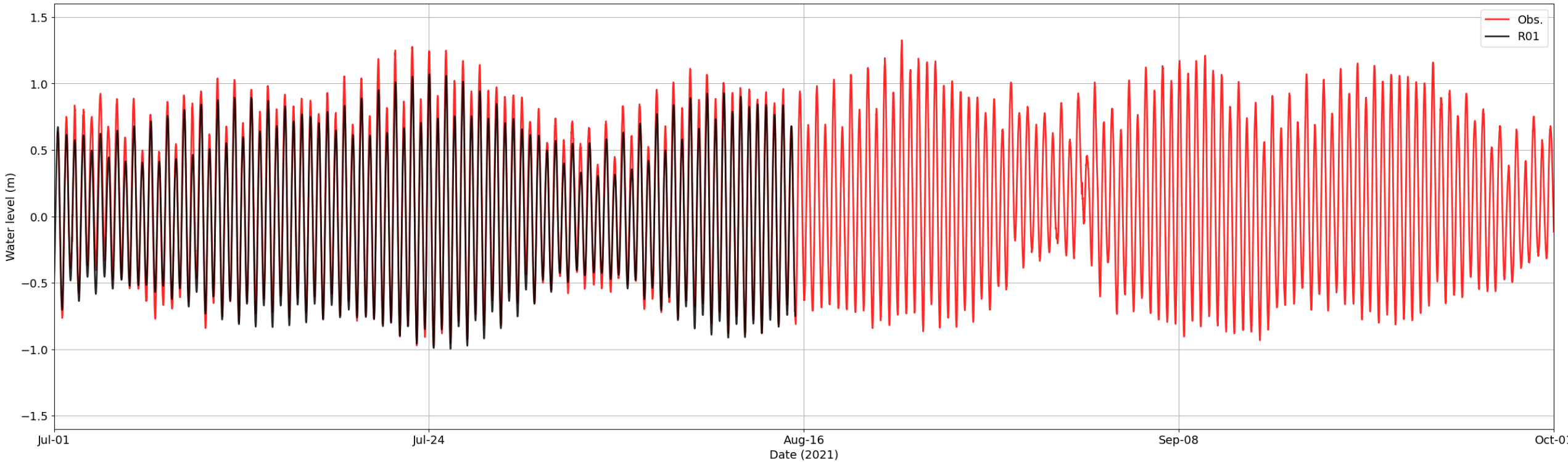
N2



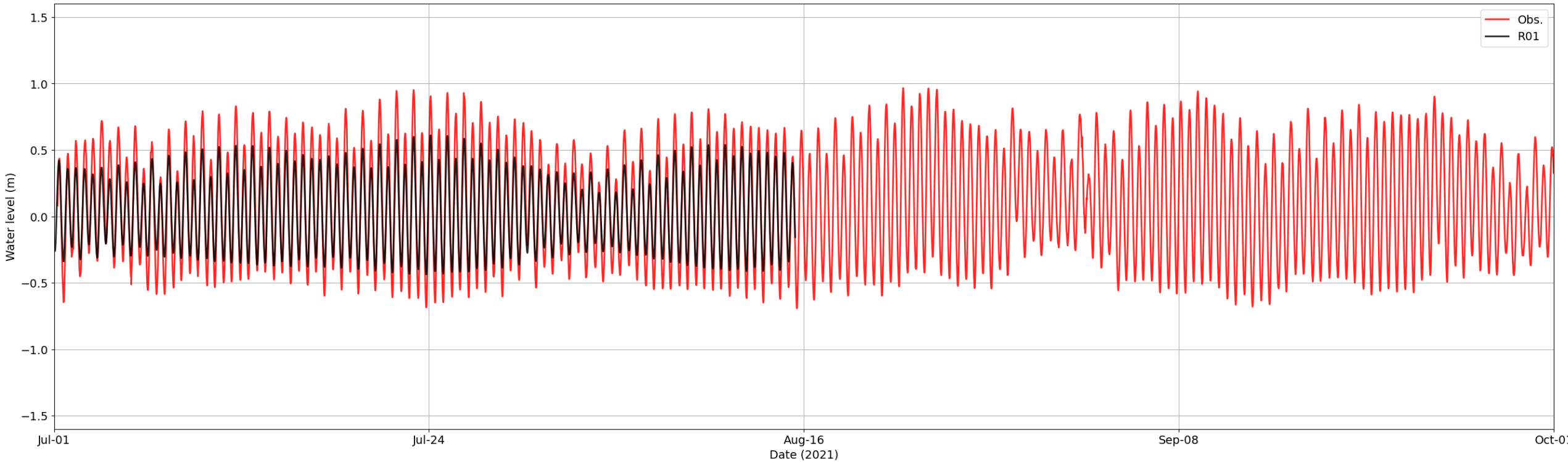
S2



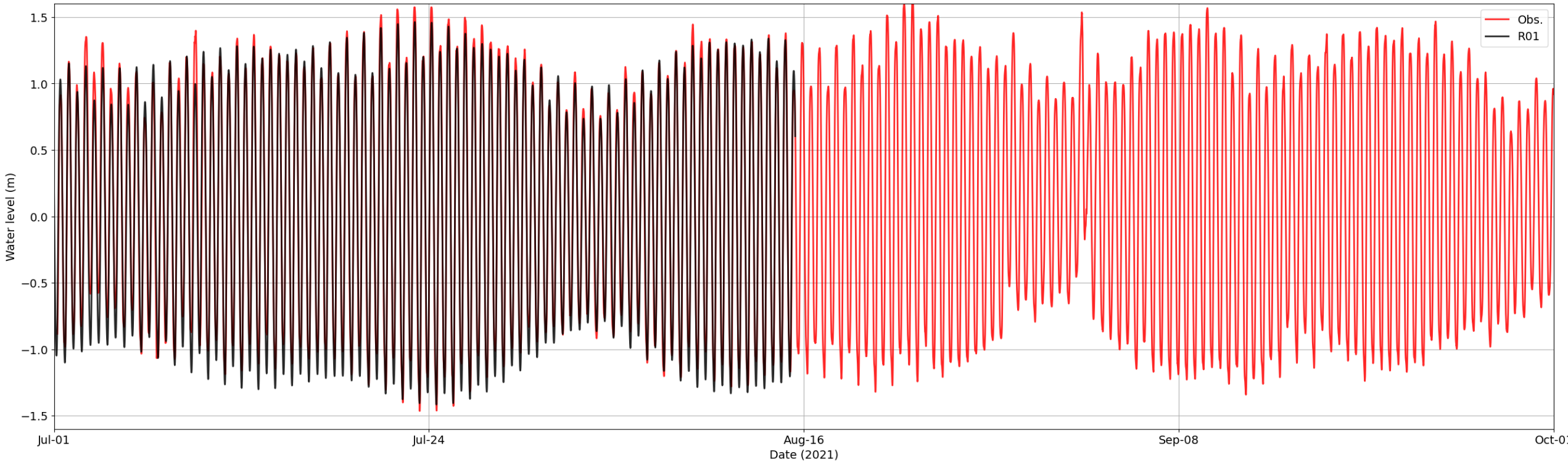
No.3 (01311875-WL), R01---> R: 0.99, RMSE: 0.12, Bias: -0.07



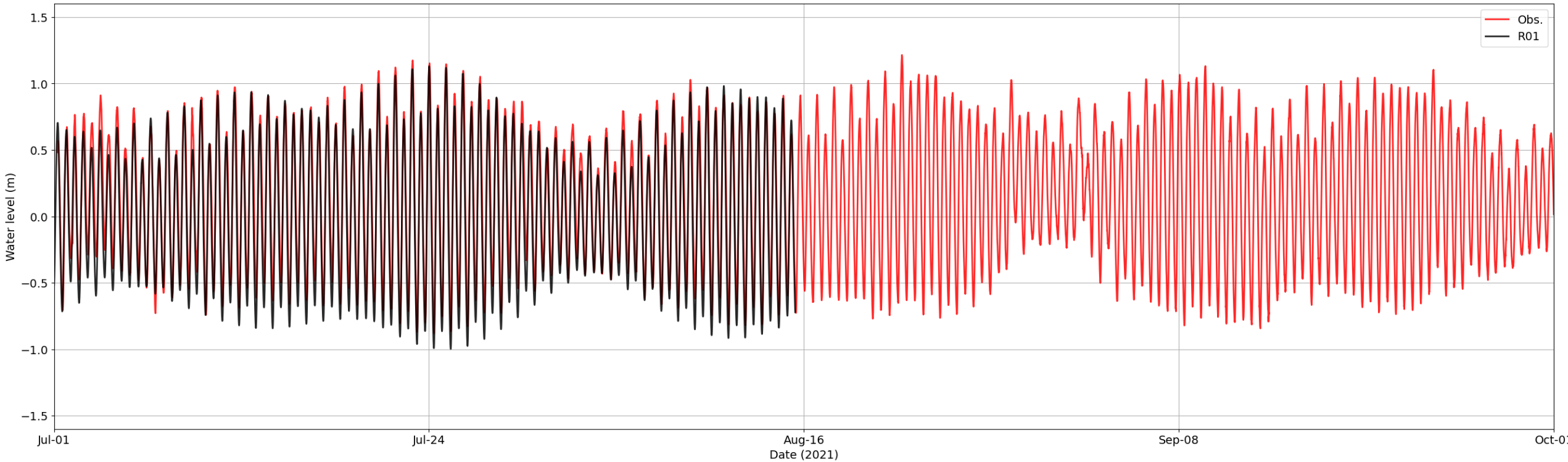
No.4 (01376269-WL), R01---> R: 0.98, RMSE: 0.16, Bias: -0.04



No.6 (8516945-WL), R01---> R: 0.99, RMSE: 0.12, Bias: -0.05



No.7 (8518750-WL), R01---> R: 0.97, RMSE: 0.16, Bias: -0.11



SECOORA PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/08/2025 08:50:15 AM)
Project Title: New York Harbor - Cook Inlet Model Testing, Lead PI Yonggang Liu

2021-2026 SECOORA PROGRESS REPORT

PROGRESS TOWARDS OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six-month reporting period. Pay special attention to the six-month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives and note if the objective is Complete, On-Track, or Delayed. If an objective is delayed, a justification for the delay (e.g., travel restrictions, late receipt of contract) must be provided along with a new completion date and description of activities employed to mitigate the delay.

The National Water Initiative is funding a coastal model evaluation in response to a series of white papers that were written by the NOAA Unified Forecast System Coastal Application Team (UFS CAT) focused on total water level, navigation, and risk reduction. The USF Ocean Circulation Lab works as a tester to configure and test Finite Volume Community Model (FVCOM) on NSF funded Texas Advanced Computing Center (TACC). They have successfully completed the required work in Rounds 1 and 2 and have now moved to Round 3.

Round 3: Testers are evaluating the model's skill using the 3-D configuration coupled with wave processes. Testers build upon their work from Round 2 and incorporate wave processes by coupling to a wave model or feeding wave data into the hydrodynamic model. The skill assessment metrics will remain the same as in Round 2, with only minor adjustments. Testers will utilize UFS-Coastal in their Round 3 configurations. There are various approaches for integrating wave processes and utilizing UFS-Coastal, and testers are encouraged to explore and select the approach that suits them best.

Here is a list of activities performed by USF Ocean Circulation Lab during this reporting period:

- The entire USF team attended monthly UFS CAT Water Quantity model evaluation online meetings and participated in discussions for FVCOM application in New York Harbor and Cook-Inlet region.
- Dr. Yonggang Liu participated in the monthly PI meetings online and made suggestions, such as how to improve the UFS website by adding education and training of next generation numerical modelers.
- Implement ocean wave modeling of the New York Harbor – Cook Inlet region by using FVCOM-SWAVE module. We found that the high resolution model (version 2, node number ~120,000) had problems in wave simulation, even though it was successful in simulating ocean circulation (both 2D and 3D). Thus, we developed a new version of the model grid with about 52,000 nodes. This version still has high resolution in the shipping channel and worked well on the HPC. We then performed initial model evaluations against the available observations using both required and suggested metrics.

- Updated the FVCOM testing team on the improved wave modeling by giving a PPT presentation on April 29, 2025.
- Tested and reported the UFS-Coastal configuration FVCOM for the New York Harbor region.
- Currently work on nesting the FVCOM to National Water Model.

This project is on-track towards meeting the objectives.

PUBLICATIONS & CONFERENCE PRESENTATIONS

2 Please list any published scientific papers, conference papers, or notable presentations given within the reporting period related to this award. This may include presentations at non-traditional venues. Do not include publications outside of the six month reporting period. For presentations, include the title, name(s) of the presenter(s), date the presentation was made, and the venue (e.g., CERF, AGU). Also note whether the materials presented (e.g., PowerPoint® slides) remain available to SECOORA and IOOS and, if so, how they may be accessed (i.e., list the website address or online file sharing link such as Google Drive).
Publication – Round 2 Summary as a NOAA Report:

Fujisaki-Manome, A., G. Seroka, J. Kelley, S. Pe'eri., J. Sienkiewicz, J. Feyen, O. Doty, K. Ide, B. Gramp., F. Ogden., T. Fanara, E. Myers, S. Moghimi, T. Cockerill, W. Wu, E. Anderson, K. Huelse, S. Memari, C. Forbes, Y. Liu, S. John, E. Di Lorenzo, K. Park, S. Wipperfurth, N. Sannikova, V. Titov, Y. Wei, C. Akan, S. Mani, C. Lindley, I. Rivin (2025), UFS Coastal Applications Team Report: Round 2 Summary of a Unified Forecast System Model Evaluation for Marine Navigation, NOAA NOS Coastal Survey Development Laboratory, 37 pages, April 2025. NOAA Technical Memorandum NOS, 37, https://repository.library.noaa.gov/view/noaa/69898

PRODUCT DEVELOPMENT & DELIVERY

3 Provide a brief description of the status of all products or tools currently available or under development as part of this award. Include weblinks where available. Use this section to report instances in which IOOS-funded science related to this project has been transitioned to support products developed by your organization or even beyond your organization. For example, this might include models, apps, mapping tools, etc. that are being used by state or federal agencies to assist with decision support. Also describe who is using the products and the number of users. Only report on work conducted within the six month reporting cycle.

The model code, model configuration, forcing/input and output data files of the FVCOM application in New York Harbor region have been made available to NOAA on the TACC computer.

Python Data Analysis Tools for Oceanographers, Filipe Fernandes

Progress and Accomplishments during the reporting period (Jan 1st, 2025 - June 30th, 2025)

The tasks were divided into:

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

Implemented fixes, updates, and continuous integration (CI) maintenance for IOOS Code Lab notebooks to ensure proper page publication and removal of outdated code and notebooks (ioos/ioos_code_lab #274, #262, #253, #265, #270, #273, #269, #260, and #256). We also prepared the Google Summer of Code (GSoC) page for the 2025 program cycle.(ioos/gsoc #65 and #66). The ATN page now is deployed in every commit (ioos/atn-docs #12, and #8). Implemented *dependabot* updates and *linkcheck* for the OHW website (oceanhackweek/oceanhackweek.github.io #340).

The keepalive GHA is deprecated and we had to remove it from all the IOOS pages (glider-dac #447, conventions-for-observing-asset-identifiers #12, erddap-gold-standard #86, ioos-atn-data #104, ioos-documentation-jekyll-skeleton #30, ioos-metadata #51, ioos.github.io #21, mbon-docs #66, ncei-archiving-cookbook #18, and passive-acoustics #6).

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

This activity can be divided into two 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.

a) *Compliance-checker and plugins*:

- Added *zizmor* inspection and trusted publishers (cc-plugin-glider #70, cc-plugin-ncei #58, cc-plugin-ugrid #28, and cc-plugin-ugrid #30).
- Many infrastructure updates (compliance-checker #1136, #1141, #1146, #1150, #1170, and #134).
- Code fixes, bugs and improvements:
    1) Filtering specific warnings to find hidden bugs compliance-checker #1137;
    2) Reverteed "WIP Domain variables cell measures coordinates" compliance-checker #1142;
    3) Fixed *mocket* import for latest version compliance-checker #1151;

4) Added CF 1.10 Checker compliance-checker #1164;
5) Test against cc6 plugin compliance-checker #1168;
6) Update cf-standard-name-table and add auto update (compliance-checker #1173 and #1175);
7) Avoid comparing *cftime* objects due to poor performance compliance-checker #1212;

Ioos_qc: Bring library to latest coding standards, remove deprecated API and code bits, fix docs and lints (ioos_qc #143, #144, #145, #146, #148, #149, #150, and #153).

Erddapy: Update GH, docs,JSON server list, CO-OPS URL, and move all URLs to HTTPS (erddapy #388, #390, #392, #393, #398, #399, #404, and #406).

Gliderpy: Split optional dependencies (gliderpy #138, #139, #140), added *search_for* and *summary* (gliderpy #142, #146, and 147), and security updates (#144, and #148).

Ioos-metrics: Improve glider metrics, fix glider notebook, and make request a but more robust to failures (ioos_metrics #101, #104, #110, #116, #123, #124, #126, and #127).

The *thredds_crawler* library was unarchived and updated for modern environments (thredds_crawler #32, #33, and 34).

Implemented packaging infrastructure for the new *xarray-subset-grid* (xarray-subset-grid #65, #68, and #72).

b) This effort consistent mostly on fixing bugs and future proofing *pocean-core* (pyoceans/pocean-core #132, #133, #134, and #135). Fixing *folium* docs (python-visualization/folium #2103). Removed *pkg_resources* deprecations from wesleybowman/UTide #138 and *.egg* deprecation if Unidata/netcdf4-python #1407. Implemented a *pixi* workflow for NOAA-CO-OPS/Next-Gen-NOS-OFS-Skill-Assessment #3, documentation updates in fsspec/filesystem_spec #1854 and harden security in TEOS-10/GSW-Python #196.

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.

a)

i) Added *r-mapdeck* to osx-arm64 conda-forge/conda-forge-pinning-feedstock #6991
ii) Archived multiple deprecated packages: conda-forge/admin-requests #1275, #1276, #1277, #1278, #1280, #1281, #1282, #1284, #1285, #1286, #1288, #1289, #1291, #1292, #1295, #1307, #1320, #1349, and #1373);
iii) Token reset to refresh package publication: conda-forge/admin-requests #1294, #1274, and #1338);

iv) Marked broken packages: *sqlite* and *importlib-metadata* (conda-forge/admin-requests #1372 and #1534);

b) New packages to conda-forge: *dinosaur*, *pyudunits2*, *redis-sentinel-url*, *rq-dashboar*, *noaa-cdo-api*, *moyopy*, *setuptools-reproducible*, *pyxylookup*, and *pyobistools*.

c) See the list of updated feedstocks in the appendix.

Pull Requests links

- conda-forge/blackjax-feedstock #22
- conda-forge/dinosaur-dycore-feedstock #6
- conda-forge/fast-barnes-py-feedstock #2
- conda-forge/importlib_metadata-feedstock #147
- conda-forge/pyparsing-feedstock #58
- conda-forge/redis-sentinel-url-feedstock #1
- conda-forge/rtree-feedstock #58
- conda-forge/sat-stac-feedstock #12
- conda-forge/typepy-feedstock #14

SECOORA GLIDER AND OTHER UNCREWED SYSTEMS PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/14/2025 04:18:06 PM)
Project Title: Navy Glider, PI Catherine Edwards

2021 - 2026 GLIDER AND OTHER UNCREWED SYSTEMS PROGRESS REPORT

PROGRESS TOWARDS MEETING OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six month reporting period. Pay special attention to the six-month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives. For each objective provide one of the following indicators: “Complete” and date of completion “On-Track” “Delayed” and anticipated date of completion. If an objective is delayed, a justification for the delay must be provided along with a new completion date and description of activities employed or to be employed to mitigate the delay.
Objective: SkIO will support IOOS Hurricane Glider efforts by assisting with Navy glider operations during Hurricane Season.
SkIO will coordinate deployment, recovery, and logistical activities with IOOS and the Navy for 1-2 gliders. On-Track.

- SkIO coordinated the logistics to receive 2 Navy gliders to be used in the 2025 season.
- PI Edwards designed and executed pre-season briefings with GOC personnel re piloting strategy in the Gulf Stream and coordinated with the Saildrone team for 2025 operations; however, with Saildrone not signing the approved contract, co-location of Navy gliders with an autonomous surface vehicle will not be possible this year.
- PI Edwards and SECOORA observatory co-PI Lembke participated in weekly meetings with Hurricane Glider efforts and maintained effective communications with NAVO/GOC pilots and managers.

SECOORA GLIDER AND OTHER UNCREWED SYSTEMS PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/14/2025 04:14:53 PM)

Project Title: A coordinated observing strategy for Saildrones and gliders during the Atlantic hurricane season and advancement of data assimilation for the coupled hurricane forecast system, PI Catherine Edwards

2021 - 2026 GLIDER AND OTHER UNCREWED SYSTEMS PROGRESS REPORT

PROGRESS TOWARDS MEETING OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six-month reporting period. Pay special attention to the six-month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives. For each objective provide one of the following indicators: "Complete" and date of completion "On-Track" "Delayed" and anticipated date of completion. If an objective is delayed, a justification for the delay must be provided along with a new completion date and description of activities employed or to be employed to mitigate the delay.

1. SkIO will support Saildrone/glider coordination efforts by using past and future data from both platforms.
   Edwards coordinated with project leads, mission pilots, and the larger team to plan for hurricane season 2025, but Saildrone backed out of the approved contract about a month before operations were to begin. Edwards worked with project PIs to develop an alternative strategy for 2025 and 2026 operations, which will include development work on two different autonomous platforms. SkIO will host two Oshen C-Star Autonomous Surface Vehicles and will plan to deploy them with at least one glider in rapid response mode in advance of a storm.

   2. Glider data from prior hurricane seasons will be post-processed to publication quality and shared with collaborators. These data, together with data collected in recent Saildrone missions, will be analyzed for trends related to successful colocation of the vehicles given the regional context. Complete.

   3. PI Edwards will work with the NOAA AOML/PMEL Saildrone team to coordinate deployments in hurricane season, explore spatial and regional trends in colocated data, and leverage this insight for to develop strategies for colocation and data assimilation in future hurricane seasons.
   Patterns of along- versus cross-shore variability have been identified and will be integrated into future missions in 2026 and beyond. Complete

SECOORA GLIDER AND OTHER UNCREWED SYSTEMS PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (07/14/2025 04:02:58 PM)

Project Title: Southeast Coastal Ocean Observing Regional Association (SECOORA) Regional Glider Observatory - Hurricane Glider Support

2021 - 2026 GLIDER AND OTHER UNCREWED SYSTEMS PROGRESS REPORT

PROGRESS TOWARDS MEETING OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six-month reporting period. Pay special attention to the six-month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives. For each objective provide one of the following indicators: "Complete" and date of completion "On-Track" "Delayed" and anticipated date of completion. If an objective is delayed, a justification for the delay must be provided along with a new completion date and description of activities employed or to be employed to mitigate the delay.

1. Missions: Complete. Prepare, deploy, and operate at least two dedicated missions during hurricane season to benefit the Hurricane Gliders effort. Each mission, typically 20-28 days' duration, will occur in the SE Atlantic coastal ocean, West Florida Shelf, and/or Florida Straits. The final mission of this award was with USF-Bass, which was deployed off Savannah, GA on 6/2/25 and collected data for 28 days (data collection stopped on June 30 due to low power). Of note, SECOORA collaborator UNCW assisted by recovering the glider on short notice. Communications with UNCW had been initiated and ongoing for over a week prior to pickup, but Tropical Storm Chantel, the July 4th holiday, and highly variable forecasts necessitated operations with a short weather window.

2. Maintain institutional gliders: Complete. NCSU glider Salacia has been repaired at USF and will rejoin the hurricane glider fleet in 2025. G1 Pelagia is now ready to be deployed for future missions after several years on the bench due to multiple hardware failures.

3. Maintain SECOORA gliders: On Track. SkIO sent the two SECOORA gliders for pump service and science bay calibrations of the CTD and EcoPuck units. The science bay for unit 1091, however, did not function properly when reassembled, and reports values consistent with an open circuit on the thermistor. RBR advises that it be returned to the manufacturer for (more) service, as it cannot be fixed in the lab. Talks are underway to find a strategy for repair that will permit the glider to be used in the 2025 hurricane season for SECOORA-funded work.

4. Data management: Complete. Ensure that glider data sets are made available in standardized formats via SECOORA/Axiom.

5. Real time data submission: Complete. Data will be made available to Axiom for submission to the SECOORA portal and NGDAC. Data from all deployments was shared in real time through SECOORA DMAC, with data flow verified.

6. Delayed mode data submission: Complete. Full data sets of all missions will be submitted to Research Workspace within 30 days of recovery. Full data sets of all missions were submitted to RW within 30 days of recovery.

2 Describe any major problems/delays that are outside of your control that prevented project objectives from being accomplished (e.g., COVID travel delays, manufacture turnaround times for repairs).

Timing for glider services was much longer than quoted and anticipated this year, stretching nearly 7 months, so to find that the unit that had been calibrated did not function correctly and required additional repair was a disappointment at minimum and could endanger this glider for the entire season. Talks are underway with the manufacturer to find a workaround that will let it keep flying while the repairs are conducted.

SECOORA PROGRESS REPORT: JAN 1 - JUNE 30, 2025

Status: Submitted (06/28/2025 03:15:02 PM)
Project Title: Monitoring and forecasting pelagic Sargassum in the South Atlantic Bight, PI Chuanmin Hu

2021-2026 SECOORA PROGRESS REPORT

PROGRESS TOWARDS OBJECTIVES

1 Provide a summary of progress towards meeting your project objectives for the six month reporting period. Pay special attention to the six month reporting period accomplishments and the broader impacts related to those findings. Indicate if you anticipate any substantive changes to the project Scope of Work (SOW) as you complete the information below. List each objective and text that describes progress towards meeting the objectives and note if the objective is Complete, On-Track, or Delayed. If an objective is delayed, a justification for the delay (e.g., travel restrictions, late receipt of contract) must be provided along with a new completion date and description of activities employed to mitigate the delay.

Year 4 geographic scope continued to be the Florida Keys and beaches along the east coast of Florida as well as the Florid Panhandle area.
Year 4 objectives include:

1) improve and finalize algorithms suitable for high-resolution satellite data to map and quantify Sargassum distribution and abundance
Status: On track. During this reporting period, we continued to refine the deep-learning (DL) model to extract Sargassum pixels from Sentinel-2 MSI images. Effort has been spent on minimizing the impact of sun glint by developing a calibration curve to scale the Sargassum estimates back to those levels in the absence of sun glint. We are testing a new deep-learning (DL model) for the near real-time SuperDove data (3-4 m resolution, near-daily coverage of nearshore waters).

2) generate prototype high-resolution imagery products to map and quantify Sargassum distribution and abundance.
Status: On track. Sargassum maps have been generated from Sentinel-2 MSI images and made available through the Sargassum Watch System in near real-time in the selected Florida Keys regions. High-resolution Sargassum maps images have been generated continuously and made available through SaWS in near real-time. Computer codes have been debugged to assure smooth operations. Our next step is to extend to other regions along the SE Florida coast and the Panhandle area.

During this reporting period, we were able to obtain near real-time data access to Planet SuperDove through an educational license. This new license enable the team to use Planet SuperDove data in near real-time for monitoring purpose. USF is currently testing a deep-learning model to extract Sargassum pixels from SuperDove images.

3) integrate high-resolution data with high-resolution numerical model to predict Sargassum trajectory.
Status: On track. The remote sensing group (led by C. Hu) and ocean circulation group (led by Y. Liu) have worked together to test data format, data transfer, and data integration. USF continued integration of high-resolution satellite data and high-resolution numerical circulation model to predict

the Sargassum trajectory in near-shore waters, with preliminary integrated data products. Currently, data and model integration are automated in near real-time, but the final integrated data products are still offline under internal evaluations.

PUBLICATIONS & CONFERENCE PRESENTATIONS

2 Please list any published scientific papers, conference papers, or notable presentations given within the reporting period related to this award. This may include presentations at non-traditional venues. Do not include publications outside of the six month reporting period. For presentations, include the title, name(s) of the presenter(s), date the presentation was made, and the venue (e.g., CERF, AGU). Also note whether the materials presented (e.g., PowerPoint® slides) remain available to SECOORA and IOOS and, if so, how they may be accessed (i.e., list the website address or online file sharing link such as Google Drive).

- Hu, C., B. B. Barnes, L. Qi, J. F. R. Gower, J. Jiao, and Y. Xie (2025). Monitoring pelagic Sargassum in the Atlantic Ocean from space: Principles and practices. Harmful Algae, 144, 102840, https://doi.org/10.1016/j.hal.2025.102840
- McCauley, D. J., S. Andrzejaczek, B. A. Block, et al. (2025). Improving Ocean Management Using Insights from Space. Annual Review of Marine Science. 17:381-408, https://doi.org/10.1146/annurev-marine-050823-120619
- Zhang, Y., Barnes, B. B., McGillicuddy, D. J., Jr., & Hu, C. (2025). Sargassum enrichment in mesoscale eddies of the Great Atlantic Sargassum Belt. Geophysical Research Letters, 52, e2025GL114601. https://doi.org/10.1029/2025GL114601

MEDIA ENGAGEMENT, EDUCATION, AND OUTREACH

3 Please list any media coverage related to this award and include links to news stories and media coverage. Only include media coverage conducted within this six month reporting period.

During this reporting period, C. Hu's group has continuously been interviewed by news media channels (television, newspaper, radio, online) on Sargassum inundation. Here are some examples:

https://www.miamiherald.com/news/local/environment/climate-change/article305905176.html
https://www.nbcmiami.com/news/local/seaweed-levels-in-april-break-all-time-record-in-tropical-atlantic-sargassum-what-to-know/3611075/
https://www.usatoday.com/story/news/nation/2025/04/30/stinky-seaweed-sargassum/83343528007/

4 Describe education or outreach materials related to this award that have been developed within this six-month reporting period.

C. Hu's group has been generating and distributing monthly Sargassum bulletins to many groups, where all historical bulletins can be found at the SaWS page: https://optics.marine.usf.edu/projects/saws.htlm. The team continues to use the revised layout of the bulletin to include historical statistics so the current Sargassum situation can be put in historical perspective. The most recent bulletin (for May 2025) is appended to this report.

PRODUCT DEVELOPMENT & DELIVERY

5 Please provide a brief description of the status of all products or tools currently available or under development as part of this award. Include weblinks where available. Use this section to report instances in which IOOS-funded science related to this project has been transitioned to support products developed by your organization or even beyond your organization. For example, this might include models, apps, mapping tools, etc. that are being used by state or federal agencies to assist with decision support. Also describe who is using the products and the number of users. Only report on work conducted within the six-month reporting cycle.

USF continues to work on the newest PACE satellite data, revised and improved the online imagery for the Gulf of Mexico and Caribbean Sea based on the alternative floating algae index (AFAI). We developed and tested a Deep-learning model to extract Sargassum features from both PACE (OCI) and NOAA-20 (VIIRS) imagery. These were combined with MODIS/Aqua to produce daily merged floating algae density (FAD) images (i.e., Sargassum maps) online in near real-time. We also produced weekly mean Sargassum maps based on the measurements by the 3 sensors.

For high-resolution data products, we started generating high-resolution Sargassum maps using Sentinel-2 MSI images for several selected sites in the Florida Keys.

SUCCESS STORIES

7 Briefly describe any success stories that help convey the value of your project and the impact that it has made. Success stories should include how your project has benefited local/regional stakeholders. These stories may be used by SECOORA and the IOOS Office to respond to data calls, support presentations, or used as independent stories. Provide contact details (email addresses) for the PI and stakeholder(s) impacted.
During January 2025, we predicted that 2025 may be another major Sargassum year. It turned out that 2025 was not only a major Sargassum year, but it is a record year – total Sargassum amount in the Atlantic in May 2025 already exceeded the previous historical record by 40%.

LEVERAGED FUNDING

8 Provide a summary on project leveraging (i.e., how you leveraged your SECOORA award to receive other funding). Also include the proposal/project title, funding agency, amount of funding received, project start date and duration of the project. Only report on leveraging activities within the six month reporting cycle.

C. Hu has been a co-PI of a NOAA MERHAB project. As a non-funded co-PI C. Hu supervised postdocs and students. The MERHAB project has a large scope to combine high-resolution satellite data and high-resolution numerical models for several regions to improve Sargassum monitoring and forecasting. This is the project that we leveraged on and will continue to leverage on.

In addition, during the last reporting period C. Hu received a new NASA award, “Global mapping of floating matters in the PACE and AI era”, which is to use PACE data and computer AI to map floating matters at the global scale. Part of the work is to map Sargassum in the Atlantic Ocean. This new NASA award will also be leveraged upon for our SECOORA-funded work.

Outlook of 2025 *Sargassum* blooms

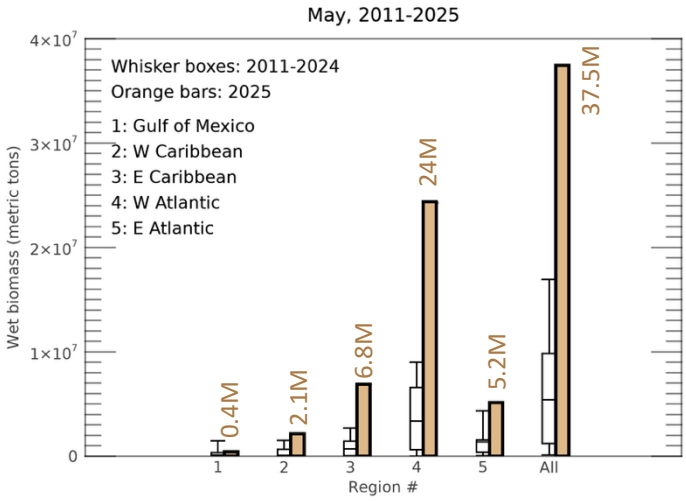
A perspective for the Caribbean Sea and Gulf of Mexico*

May 31, 2025, by the University of South Florida Optical Oceanography Lab

(bbarnes4@usf.edu, yuyuan@usf.edu, huc@usf.edu)

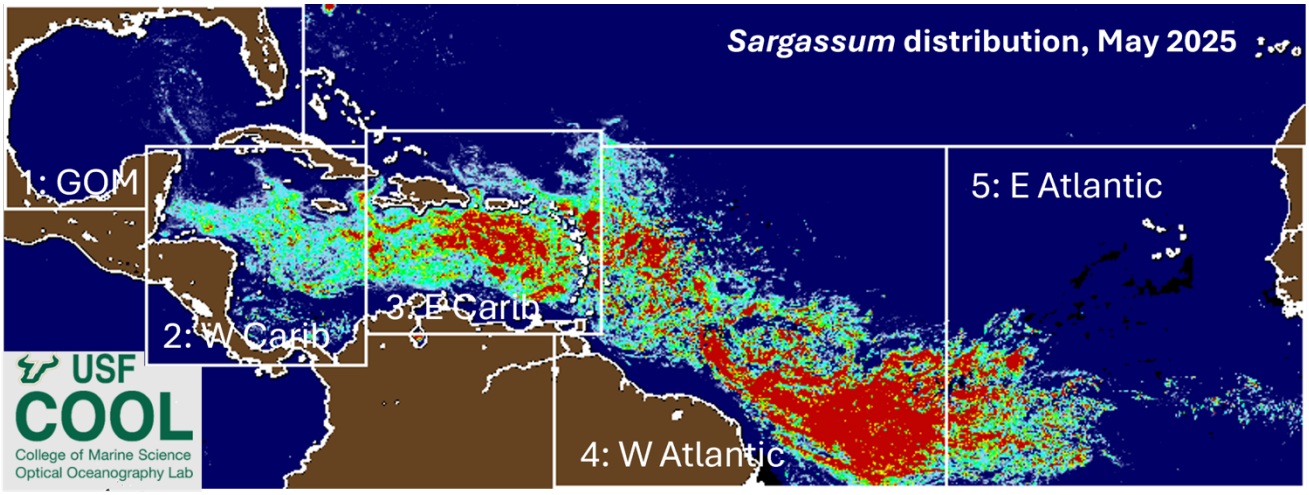
The map below shows average *Sargassum* abundance for the month of May 2025, with warm colors representing higher abundance. The top color (red) indicates that 0.4% of the ocean surface is covered by *Sargassum*, meaning that *Sargassum* clumps and mats are scattered here and there in the location. The *Sargassum* abundance for each region is compared with historical values in the same month of 2011 – 2024 in the whisker box plot below, where horizontal bars in each vertical box indicate minimum, 25%, 50%, 75%, and maximal historical values, respectively.

As predicted last month, while the spatial distribution patterns of *Sargassum* remained stable, *Sargassum* amount in each region increased in May considerably. In every but the Gulf of Mexico region, *Sargassum* amount exceeded its historical record. In particular, total *Sargassum* amount from all regions combined further increased from 31M tons in April to 37.5M tons in May, making a new record. Most of these increases are due to both local growth and physical transport. Corresponding to these increases, significant *Sargassum* inundation events may have occurred around most Caribbean nations and islands, including the Mexican Caribbean coast. Small to moderate amount of *Sargassum* may have reached some of the Florida beaches along the Florida Keys and southeast coast of Florida. Small amount of *Sargassum* was also observed in the Mississippi delta and along Texas coast.



Looking ahead: As in most previous years, June is expected to see continued increases in most regions. More *Sargassum* is expected to be transported to the west Caribbean Sea and then to the Gulf through the Yucatan. *Sargassum* inundation will continue to occur in most of the Caribbean nations and islands as well as along the southeast coast of Florida. However, although 2025 is a record year in terms of *Sargassum* amount, whether a beach or small region receives record-high *Sargassum* inundation depends not only on the offshore *Sargassum* amount, but also on local factors that are difficult to predict, including winds and ocean currents.

All previous monthly bulletins as well as daily imagery can be found under the *Sargassum* Watch System (SaWS).



Disclaimer: The bulletin is meant to provide general outlooks of current and future bloom conditions for the Caribbean Sea and Gulf of Mexico. By no means should it be used for commercial purpose or used for predicting bloom conditions for a specific location or beach. The authors of this bulletin, as well as USF and the Federal funding agencies, take no responsibility for improper use or interpretation of the bulletin. Credit for the images and information should be given to the Optical Oceanography Lab at the USF College of Marine Science.