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

Revised Scope of Work - Year 2 Core IOOS Funding

TOPIC AREA 1: Implementation and Development of Regional Coastal Ocean Observing Systems
AWARD TYPE: Cooperative Agreement
PROJECT DURATION: July 1, 2021 – June 30, 2026

This revised grant proposal is submitted in response to the Funding Opportunity Title:
Implementation of the U.S. Integrated Ocean Observing System (IOOS)
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Goals, Objectives, and Workplans

With the $**3,061,136** funding award, SECOORA will implement Goals 1 through 4 (as identified in our original proposal) to support SECOORA's base capacity and enhance the RCOOS. Objectives and tasks are described below and included in Table 1, Milestones.

Goal 1: Continue successful operation of the SECOORA governance and management subsystem.

Objective 1.A: Maintain the SECOORA governance and operational structure through implementation of SECOORA's Bylaws and Strategic Plan.

SECOORA's Strategic Plan was updated for the 2021-2023 period. A key priority is to advance our commitment to a diverse, equitable, and inclusive organization which will further enhance our role in the region as a coordinating entity. SECOORA will leverage successful diversity and workforce training initiatives undertaken by our members and partners. SECOORA is also working with the IOOS Association, other IOOS regions, and the IOOS Program Office on workforce development initiatives to expand and diversify workforces and improve our ability to provide relevant ocean and coastal data and information to underserved or underrepresented communities. Progress is shared with the Board and members during annual meetings. The Year 2 Board meetings will be held in December 2022 and the Board and Members meeting held in May 2023 (locations and dates TBD).

Objective 1.B: Maintain SECOORA's certification as a Regional Association.

SECOORA is certified by NOAA as a RICE. SECOORA prioritizes, gathers, manages, and distributes observation data for the SE, and has the data management architecture, policies, and procedures to support these activities. SECOORA is submitting its RICE certification renewal in May 2022. SECOORA will maintain certification throughout Years 2-5. SECOORA's Renewal Certification web page is not currently available but will be public facing once the renewal application is submitted to the IOOS Program Office. The renewal certification page will have extensive details on our operations and policies and the site will be maintained and updated throughout the five-year period. The original certification page is still available, and documents, such as annual data sharing plans for SECOORA funded observing assets, are updated on the site as needed: secoora.org/certification.

Objective 1.C: Annually update SECOORA's 2020-2025 RCOOS Plan.

Implementation of the RCOOS Plan occurs through the four subsystems: observing, DMAC, modeling and analysis, and engagement. Details of this implementation throughout the five-year period of this proposal are described in Goals 2 – 4. The SECOORA Deputy Director leads management of the RCOOS through execution of subawards with our partners and supports SECOORA's Science Committee which reviews annual updates to the Plan. During Year 1, SECOORA updated the HFR Build Out Plan (the draft plan was reviewed by SECOORA PIs, staff, and the IOOS HFR lead, Brian Zelenke, in March 2022), and drafted a Harmful Algal Bloom Plan. Both documents are part of the overall RCOOS Plan; however, they provide more detailed information on observing, data management, and modeling needs than could be described in the comprehensive RCOOS Plan. Both documents, once finalized, will be included on the RCOOS plan webpage and discussed in the Renewal Certification application materials.

Goal 2: Maintain and augment the SECOORA observing subsystem.

Objective 2.A: Maintain existing long-term coastal and ocean observing operations.

Moorings: SECOORA real-time and non-real-time moorings are operated by the University of North Carolina Wilmington (UNCW) and the University of South Florida (USF). UNCW maintains 12 real-time moorings and 1 non-real-time mooring along the coasts of NC and SC. USF maintains 2 real-time moorings and 2 non-real-time moorings located on the West Florida Shelf. UNCW and USF also support

the FACT Animal Telemetry Network (ATN) by deploying acoustic receivers attached to existing moorings (4 on UNCW moorings, 2 on USF moorings) to record tagged fish passage near the receivers. The receivers are recovered twice each year during mooring turnaround cruises, downloaded, and the data shared with the FACT ATN node.

All real-time moorings/instrumentation have a targeted up-time of 85%. All UNCW and USF real-time data is made available to SECOORA and NDBC. QARTOD required and recommended tests are conducted for all real-time data and roll-up pass/suspect/fail flags are provided with the data. Non-real-time moorings are serviced 2 times per year; data from these stations are downloaded from the sensors, quality controlled, and shared for archival with SECOORA and NOAA's NCEI. A list of real-time ocean observing moorings and associated data collected by each mooring is found in Appendix 1, Table 1A. A list of non-real-time moorings and associated data collected by each mooring is found in Appendix 1, Table 1B.

High Frequency Radar (HFR): SECOORA operates 20 HFR. UNC-Chapel Hill (UNCCH) and East Carolina University's Coastal Studies Institute (CSI) operate CODAR HFR on the North Carolina Outer Banks and USF operates CODAR on the west coast of Florida. The University of South Carolina (USC), UGA Skidaway Institute of Oceanography (SkIO), Florida Institute of Technology (FIT), and the University of Miami (UM) operate WERA HFR distributed across the 4-state region.

SECOORA HFR operators will provide surface current data in near real-time 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. USC, SkIO, FIT, UM, UNCCH, and CSI have all received FCC operational licenses for their systems. USF is awaiting FCC approve for the Venice antenna registration before submitting the FCC license application for approval. All HFR operators maintain a list of recapitalization costs required for continued HFR operations and the information was provided with the January 2022 Year 1 progress report. HFR, operators, location, and operating frequencies are in Appendix 1, Table 2.

Glider Operations: The SECOORA glider team includes SkIO, USF, UNCCH, and Georgia Tech. The team will conduct four (4) regional glider missions to capture regional 4-D information about temperature, salinity, and density structure, oxygen/turbidity/CDOM/chl-a concentrations for use to investigate hydrography and circulation dynamics in the region, including connectivity between the Loop Current, Florida Current, Gulf Stream. Each glider mission is 20-30 days in duration. The team will continue to integrate smart piloting strategies using GENIoS to optimize navigation based on real time data streams from operational ocean models, HFR, and other gliders. The glider team follows data collection and data sharing methods identified in the U.S. Underwater Glider Workshop Report. Mission data are disseminated to the international scientific community via the National Glider Data Assembly Center (DAC) where they are made available to the oceanographic modeling community. Glider owners, manufacture year, and sensor payload are detailed in Appendix 1, Table 3.

Biological Data Collection: The Estuarine Soundscape Observatory Network in the Southeast (ESONS) is led by the University of South Carolina Beaufort (USCB). The ESONS observatory consists of 9 existing passive acoustic sensors deployed in South Carolina: 3 in the May River, 1 in Chechessee Creek, 1 in Colleton River, 3 in Charleston Harbor, and 1 North Inlet Winyah Bay NERR. Each station includes a passive acoustic recorder, water level loggers, and a temperature logger, all used to monitor animal behavior at multiple levels of biological complexity (from snapping shrimp to fish to marine mammals) and time scales. See Appendix 1, Table 4 for a list of stations. The project team will conduct an annual soundscape analysis to identify species, range, and seasonality for the May River, Chechessee Creek,

Colleton River, Charleston Harbor, and North Inlet Winyah Bay. The collected wav files are shared with SECOORA for storage and visualization on the soundscape webpage. The webpage is updated annually to include new soundscape endpoints for each species and to expand the number of species available on the page.

Objective 2.B: Expand the observing subsystem to address the region's highest priority needs as identified in the SECOORA RCOOS Plan.

Water Level Initiative (WLI): SECOORA established a real-time, regional water level network in Year 1 to address needs for real-time community flooding information. Year 2 WLI team members include representatives from the American Shore and Beach Preservation Association (ASBPA), Hohonu, and Georgia Tech. Year 2 activities will include maintenance of sensors deployed in Year 1 and identification of new sensor locations for Year 2 which will be installed by ASBPA/Hohonu (12 water level stations) and Georgia Tech (10 water level stations). Year 2 activities also include working with the NOAA IOOS Environmental Compliance Manager to complete the environmental compliance requirements for sensor installations (note that planned sensor deployment documentation has already been shared with the Environmental Compliance Manager via a Google Drive spreadsheet). While the Year 2 NEPA process is underway, team members will apply for any required state or municipal permits. The water level advisory committee, convened in Year 1 and comprised of NOAA, state, and regional governments, and Sea Grant representatives, will continue to provide oversite for this project. Locations and sensor information for the water level stations deployed in Year 1 are available in Appendix 1, Table 5.

Goal 3: Implement, integrate, and expand the Data Management Cyberinfrastructure, and Modeling and Analysis subsystems.

The DMAC subsystem is an integrating and foundational subsystem of the RCOOS, that when coupled with the observing and modeling and analysis subsystems, enables the transformation of raw data into accessible and credible information for decision-makers. SECOORA works with its DMAC contractor, Axiom Data Science, to provide data management support, data systems architecture, software engineering, and cyberinfrastructure operational services to meet the US IOOS DMAC data standards and requirements. Axiom works with SECOORA and our partners to support a regional data assembly center, operate and continuously improved its functionality, and provide a regional web-based data portal (https://portal.secoora.org/) for access to ocean and coastal environmental data and information products across the US SE.

Objective 3.A: Maintain and enhance the DMAC subsystem.

Core DMAC subsystem: SECOORA will continue to operate and improve the core DMAC subsystem. More information on SECOORA data standards and requirements and adherence to the NOAA Environmental Data Management Framework can be found in the SECOORA Data Management and Cyberinfrastructure Plan, which includes the Data Sharing Policy and Methods to Address IOOS Core Capabilities.

Core components of the SECOORA DMAC subsystem include the following:

- High Performance Computing (HPC)
- Data Assembly and Quality
- Implementation of Community Standards and Systems
- Modern Big Data Analysis and Machine Learning
- Data Product Support
- Integration with Other National Cyberinfrastructure

- Human Expertise and Capacity
- Annual data archival for physical oceanographic, biogeochemical, and meteorological data with NOAA's NCEI
- Product Usage Statistics – SECOORA uses Google Analytics to track usage statistics for the data portal, webpage, and products.

Additional details on these subcomponents can be found here: https://secoora.org/certification/ - section III. Data Management and Cyberinfrastructure. DMAC documentation also will be provided on the Renewal Certification website, once available.

Objective 3.B: Maintain and enhance the Modeling and Analysis subsystem

3.B1. Modeling: Provide forecasts for select coastal ocean phenomena

CNAPS Model: SECOORA project team members at NCSU and Fathom Science will maintain and continue developing CNAPS to provide near-real time nowcasts/forecasts for regional-scale marine environment conditions. During Year 1, the project team experimented running CNAPS on Amazon Web Service (AWS) and found that AWS was more expensive to use for routine model operations and data storage than originally thought. In Year 2, the team will explore other cloud computing options such as Microsoft Azure, Google Could Platform, and IBM PaaS. The team does think that cloud services will reduce CNAPS system downtime related to NCSU high performance computing system hardware failures or university computing system shutdowns during public emergencies (e.g., COVID-19, storms). The team is working with SECOORA and Axiom Data Science to assist with the distribution of the CNAPS modeling results. As part of this effort NCSU and Fathom science will deliver all CNAPS model results to SECOORA through a direct download pathway and not through a THREDDS OPeNDAP endpoint. The data volumes and access requirements have made THREDDS unreliable as the main CNAPS data access method. The NCSU computing system cannot manage the server load for current model data requests and distributing the data directly through file downloads will alleviate significant infrastructure maintenance requirements. CNAPS modeling results can then be delivered to the IOOS Model Viewer in a reliable manner. RPS can choose to obtain the CNAPS modeling results from our new direct download distribution methods or from SECOORA/Axiom after the transition to direct download distribution is complete.

WFS Models: SECOORA partner, USF, will maintain the West Florida Shelf and Tampa Bay (WFCOM and TBCOM) daily nowcasts/forecasts of currents, temperature and salinity, and surface height fields with a targeted up-time of 90%. WFCOM downscales from the deep ocean, across the continental shelf and into the major estuaries by nesting the unstructured grid FVCOM in the GOM HYCOM, affording increasingly finer resolution upon approaching the coast. TBCOM achieves 20-m resolution by nesting FVCOM in WFCOM. TBCOM includes Tampa Bay, Sarasota Bay, the Intra-Coastal Waterway and all of the inlets connecting these with the GOM. The latest version of WFCOM includes the west FL Intra-coastal Waterway and inlets, a realistic representation of the FL Keys and inlets extending north to Biscayne Bay. Both WFCOM and TBCOM provide daily, 4.5 day (1 day hindcast, 3.5 day forecast) trajectories to assist with red tide tracking, search and rescue operations, and glider path planning. Model output is available via NOAA GOODS and the COMPS THREDDS server.

3.B2. Integrate improvements in the analysis components of the modeling and analysis subsystem to speed transformation of data into information required by users.

AI Portal: Florida Wildlife Research Institute (FWRI) and Axiom will build and demonstrate an artificial intelligence annotation data portal (AI portal). Year 2 activities include continuing documentation of data standards for AI applications; defining metadata; formatting requirements for imagery, video, and acoustic data; and resolving file storage and access solutions for common AI workflows. Additionally, the team will

host an end-user workshop for relevant SECOORA members and stakeholders that will be used to guide portal requirements gathering and beta version development efforts. Year 2 portal demonstration will focus on two data workflows related to imagery and video files for anomaly detection and image classification.

Southeast Area Monitoring and Assessment Program, South Atlantic (SEAMAP-SA): SC Department of Natural Resources (SCDNR) and Axiom will improve and expand biological data analysis tools including integration of long-term SEAMAP-SA living marine resource survey data (fish and marine mammal tagging, turtle counts, species life history) with environmental information. The team is developing new data access, exploration, analysis, and visualization tools for the SECOORA portal. Axiom is assisting SCDNR with appropriate DarwinCore terminology and Axiom is developing the data and code tables needed to house new data types which will be available on the SECOORA portal. SCDNR will test downloads and summaries of the new data types to ensure accuracy. SCDNR staff will conduct outreach with data users to determine the best way to output data summaries for the living marine resource survey data. Finally, Axiom and SCDNR will develop appropriate extraction tools for users to obtain abundance/biomass data for more than one species at a time.

Goal 4: Effectively implement the engagement subsystem to support product co-design and delivery.

A central goal of SECOORA is to develop, in partnership with end users, operational products that will support decision-making. Along with ongoing delivery of the regional model forecasts that fill temporal and spatial gaps in observations, SECOORA will develop and enhance products in collaboration with our partners to support their operational needs.

Objective 4.A. Engage with stakeholders to identify and respond to their needs

4.A1. Support community-driven networks focused on priority societal issues aligned with SECOORA's mission and Strategic Plan.

SECOORA partners with other national and regional networks to leverage expertise and expand observing capacity. SECOORA will remain engaged with these groups during Year 2:

- IOOS Association is a national nonprofit organization established to advance U.S. IOOS and the nation's coastal observation information needs by working with the 11 Regional Associations, US IOOS, NOAA federal agencies, and other partners
- SECOORA will continue to manage funding, partner on proposals, and provide personnel support for the FACT Network, Southeast Ocean and Coastal Acidification Network (SOCAN), and the Southeast and Caribbean Disaster Resilience Partnership (SCDRP).
- The Water Level Advisory Committee is engaged with the Water Level Network and will provide guidance and feedback for the team related to senor locations, station metrics, data sharing, etc. (Objective 2B).

4.A2. Maintain and enhance the SECOORA outreach and engagement subsystem to address priority issues in the region

The SECOORA Communications Director will continue the Coastal Ocean Observing in Your Community webinar series, website updates with news stories and extreme event pages such as the Florida Red Tide Resources Page and the Hurricane Resources Page, quarterly newsletters, social media posts, and hosting and participating in workshops and meetings.

4.A3. Engage students in problem solving using ocean observing data.

The SECOORA Education and Outreach Committee, under the leadership of the Communications Director, provides guidance on prioritizing education and outreach needs. Annually SECOORA will host two student awards: the Data Challenge and Vembu Subramanian Ocean Scholars Award. SECOORA will continue providing opportunities for formal and informal educators to develop online coastal and ocean related curriculum. Additionally, SECOORA staff and PIs actively support education activities through data workshops and hosting field trips to coastal monitoring stations throughout the region.

Objective 4.B: Product Development.

SECOORA is formalizing product development procedures that include iterative end user engagement so that products are co-designed with users based on their requirements. SECOORA will work with stakeholders to identify product needs and evaluate existing products to determine ongoing limitations and demands as well as potential for expanding either geographic coverage or product offerings. All proposed products fit within the identified SECOORA focus areas and provide environmental and/or economic benefit to our stakeholders. Current products include Text a Buoy, the Marine Weather Portal (MWP), the Hurricane Portal and How's the Beach. We anticipate future products will address water level data, acoustic data (i.e., soundscapes or summary habitat use and seasonality from fish tags), and HFR.

SECOORA will invest in the follow product development efforts:

How's the Beach Expansion: Support the enhancement of How's the Beach nowcasts (UofSC), and the integration of How's the Beach, ShellCast (NCSU), and Beach Condition Reporting System (BCRS, Mote Marine Lab). The project team will: 1) continue to identify state and local community water quality monitoring efforts and assimilate their data in to the How's the Beach system; 2) develop documentation on web development and data sharing related to the integration of How's the Beach with BCRS and How's the Beach with Shellcast; 3) release a beta product that shows the combined coverage of How's the Beach and BCRS in two FL locations and in two locations in the Myrtle Beach Grand Strand area; and 4) release a beta products that shows the combined coverage of How's the Beach and Shellcast for two additional locations in NC.

Situational Awareness Support-tool for weather forecasters and ocean rescue groups: Using data from NC and SC buoys, this module will leverage the SECOORA DMAC subsystem to allow weather forecasters and ocean rescue groups to register, administer, and view custom thresholds for any combination of in situ parameters. This product will implement elements of the SECOORA COMT product developed for the St. John's River where users can select thresholds of interest and auto-generate data and forecasts. Additionally, users will be able to save their selected thresholds and rexeive texts or emails when the threshold criteria is met or exceed (e.g. waves are above 2 ft, winds are above 15 knots). The prototype will be tested with the Wrightsville Beach Ocean Rescue and NWS meteorologists in Wilmington, NC Feedback from these offices will be used to refine the product.

Water Level Network User Interface: SECOORA is leveraging previously funded AOOS and Axiom work on the Alaska community water level initiative to establish the SECOORA Water Level Network. The public facing Southeast Water Level Network webpage is available. During Year 2, individual station pages will be developed for the SECOORA portal so that users can access water level data.

Summary

The proposed $3,061,136 in funding will support the continued operation and expansion of the core RCOOS framework. As a mature RA, SECOORA must balance maintenance, filling important gaps in observations, and creating new connections to users through thoughtful expansion of products and

services to build-out the RCOOS. The proposed activities will deliver stakeholders the ongoing observations and modeling products they rely on, and new integrative project components that leverage existing SECOORA efforts (observations, models, and DMAC) to create new and exciting opportunities.

Milestones and Cost Proposal

Table 1. Goals, Objectives/Milestones and Schedule

Milestones	Q1	Q2	Q3	Q4
Goal 1: Continue successful operation of the SECOORA governance and management subsystem				
Maintain the SECOORA governance and operational structure	X	X	X	X
Maintain SECOORA's certification as a RICE	X	X	X	X
Update the SECOORA RCOOS Plan	X	X	X	X
Goal 2: Maintain and augment the SECOORA observing subsystem				
Operate and maintain 14 existing real-time moorings offshore of NC, SC, and FL	X	X	X	X
Operate and maintain 3 non-real time moorings offshore of NC and FL	X	X	X	X
Operate and maintain 20 HFRs regionwide	X	X	X	X
Conduct 4 glider missions	X	X	X	X
Maintain the SC estuarine soundscape observatory using passive acoustic recorders	X	X	X	X
Site, deploy, and maintain water level sensors	X	X	X	X
Goal 3: Implement, integrate, and expand the DMAC and Modeling and Analysis subsystems				
Maintain and enhance the SECOORA DMAC subsystem	X	X	X	X
Maintain the CNAPS model, move system to Cloud	X	X	X	X
Maintain the WFS models (WFCOM and TBCOM)	X	X	X	X
Construct an interactive AI annotation data portal	X	X	X	X
Develop biological data analysis tools through integrations of SEAMAP-SA fish survey data	X	X	X	X
Goal 4: Effectively implement the Engagement subsystem to support product co-design and delivery				
Maintain and enhance the SECOORA outreach and engagement subsystem	X	X	X	X
Engage students through SECOORA scholarship and funding opportunities	X	X	X	X
Enhance How's the Beach to include products for shellfish & recreational swimming water advisories	X	X	X	X
Develop a situational awareness tool for weather forecasters and ocean rescue	X	X	X	X
Continue developing water level interface on the SECOORA data portal to support water level station deployments	X	X	X	X

Cost Proposal. Summarized costs of this 2020-2021 effort are in Table 2. $3,061,136 support Goals 1 through 4.

Table 2. Costs by Objective, PI and Institution

Obj.	PI/Contractor	Inst.	YR 2
Goal 1	**Governance & Outreach**		
1.A – 1.C	Hernandez (Governance & Outreach)	SECOORA	$628,482
	Goal 1 Sub-total		**$628,482**
Goal 2	**Maintain and augment the SECOORA observing subsystem**		
2.A – 2.B	**Moorings**		
	Leonard (NC and SC)	UNCW	$329,362
	Weisberg (FL)	USF	$300,000
	Hernandez (R/V Savannah ship time)	SECOORA	$49,750
	High Frequency Radar		
	Seim (CORE)	UNC-CH	$56,021
	Muglia (DUCK, HATY, OCRA)	ECU CSI	$67,779
	Merz (VENI, RDSR, NAPL)	USF	$110,000
	Voulgaris (CSW, MBSP, GTN)	UofSC	$110,000
	Savidge/Edwards (CAT, JEK, CNS, KSC)	UGA SkIO	$121,500
	Shay (CDN, VIR, STF, NKL)	UM	$123,800
	Hernandez (electricity for SkIO KCS HFR)	SECOORA	$2,300

Table 2. Costs by Objective, PI and Institution Continued

Obj.	PI/Contractor	Inst.	YR 2
Goal 2	**Maintain and augment the SECOORA observing subsystem**		
	Gliders		
	Edwards	UGA SkIO	$64,000
	Lembke	USF, UNC-CH, GT	$60,000
	Seim	UNC-CH	$40,000
	Zhang	GT	$32,000
	Hernandez (glider operating funds)	SECOORA	$4,000
	Biological Data Collection		
	Montie - ESONS (SC)	USC-B	$100,000
	Water Level Stations		
	Elko and Glazer (NC, SC, FL)	ASBPA & Hohonu	$74,985
	Cobb and DiLorenzo (GA)	GT	$75,000
	Goal 2 Sub-total		**$1,811,496**
Goal 3	**Implement, integrate, and expand the DMAC and Modeling and Analysis subsystems**		
3.A	*Maintain and Enhance the DMAC subsystem*		
	Core DMAC support	Axiom	$199,659
3.B	*Maintain and enhance the Modeling and Analysis subsystem*		
	He - CNAPS model	NCSU & Fathom Science	$149,983
	Weisberg – WFS models	USF	Included in Moorings budget line
	McEachron – AI annotation portal	FWRI	$88,000
	Smart - SEAMAP	SC DNR	$33,856
	Goal 3 Sub-total		**$471,498**
Goal 4	**Effectively implement the engagement subsystem to support product co-design and delivery**		
4.A1	*Support community-driven networks focused on priority societal issues aligned with SECOORA's mission and Strategic Plan.*		
4.A2	*Maintain and enhance the SECOORA outreach and engagement subsystem to address priority issues in the region* – Costs included in Goal 1: SECOORA Governance and Outreach		
4.A3	*Engage students in problem solving using ocean observing data*		
4.B	*Product Development*		
	Porter (How's the Beach Expansion)	UofSC	$149,660
	Situational Awareness Support-tool	UNCW	Included in Moorings budget line
	Goal 4 Sub-total		**$149,660**
	GRAND TOTAL		**$3,061,136**

Appendices

Appendix 1: Asset Tables

Budget justification and SF242As follow the appendix.

Appendix 1: Asset tables

Table 1A. Real-Time SECOORA oceanographic moorings

Real Time Moorings	Operator	Deployment Month/Year	Wind Spd, Gust, Dir.	Air Temp	Barometric Pressure	Rel. Humidity	SW/LW Radiation	Water Temp	Cond/ Salinity	Currents	Waves	Water Depth	Passive Acoustic (Fish Tags)*
LEJ3 - Outer Onslow Bay	UNCW	11/2015	X	X	X	X		X	X				X
LEJ3Wave	UNCW	11/2015						X			X		
ILM3 - Outer Onslow Bay	UNCW	06/2005	X	X	X	X		X	X				X
ILM2 - Inshore Onslow Bay	UNCW	07/2005	X	X	X	X		X	X				X
ILM2Wave	UNCW	05/2008						X			X		
SUN2 - Northern Long Bay	UNCW	02/2005	X	X	X	X		X	X				
SUN2Wave	UNCW	03/2012						X			X		
CAP2 - Inshore Capers Island	UNCW	02/2005	X	X	X	X		X	X				
CAP2Wave - Inshore Capers Island	UNCW	07/2021						X			X		
FRP2 - Inshore Fripp Island	UNCW	02/2005	X	X	X	X		X	X				

Table 1A. Real-Time SECOORA oceanographic moorings continued

Real Time Moorings	Operator	Deployment Month/Year	Wind Spd, Gust, Dir.	Air Temp	Barometric Pressure	Rel. Humidity	SW/LW Radiation	Water Temp	Cond/ Salinity	Currents	Waves	Water Depth	Passive Acoustic (Fish Tags)*
CHR60 - Charleston Harbor	UNCW	3/2022	X	X	X	X		X	X				
CHR60 - Wave	UNCW	3/2022						X			X	X	
C10 - WFS Central nearshore	USF	09/1998	X	X	X	X	X	X	X	X			X
C12 - WFS Central offshore	USF	09/1998	X	X	X	X		X	X	X			X

* Acoustic receivers internally record fish tags. Data downloaded when buoys are serviced.

Table 1B. Non real-time SECOORA oceanographic moorings operational in Year 2

Non Real Time Station Name	Operator	Deployment Month/Year	Deployment Depth (m)	Water Temp	Cond/ Salinity	Currents	Waves	Water Level	Passive Acoustics (Fish Tags)
C11 - WFS Subsurface	USF	07/1998	20	X	X	X	X	X	
C15 - WFS Subsurface	USF	07/1998	10	X	X	X	X		
OB27M	UNCW	04/2000	30	X	X	X	X		X

Table 2: SECOORA Priority HFR

Operator	Year Installed	Vendor	Station Name/State	Station Code	Latitude (N)	Longitude (W)	Nominal Frequency (MHz)
UNCCH & CSI	2003	CODAR	Duck, NC	DUCK	36.18	-75.75	5
UNCCH & CSI	2003	CODAR	Cape Hatteras, NC	HATY	35.26	-75.52	5
UNCCH & CSI	2013	CODAR	Core Banks, NC	CORE	34.76	-76.41	5
UNCCH & CSI	2017	CODAR	Ocracoke, NC	OCRA	35.1	-75.96	5
UofSC	2012	WERA	Georgetown, SC	GTN	33.25	-79.15	5.25
UofSC	2013	WERA	Caswell Beach, NC	CSW	33.88	-78.11	5.25
UofSC	TBD 2021	WERA	Myrtle Beach State Park, SC	MBSP	33.64	-78.92	13.5
SkIO	2006	WERA	St. Catherine, GA	CAT	31.69	-81.13	5.5
SkIO	2009	WERA	Jekyll Island, GA	JEK	31.06	-81.41	13.5
SkIO	Winter 2022	WERA	Canaveral National Seashore, FL	CNS	28.93	-80.82	13.5
SkIO	2022	WERA	Kennedy Space Center	KSC	28.59	-80.58	13.5
FIT	2022	WERA	Treasure Shores Park, FL	TSP	27.79	-80.42	13.5
FIT*	TBD	WERA	TBD	TBD	TBD	TBD	13.5
UM**	2008	WERA	Dania Beach, FL	STF	26.08	-80.12	12.7
UM	2008	WERA	Virginia Key, FL	VIR	25.74	-80.15	13.5
UM	2004	WERA	Crandon Park, FL	CDN	25.71	-80.15	13.5
UM**	2021	WERA	North Key Largo, FL	NKL	25.24	-80.31	12.7
USF	2003	CODAR	Redington Shores, FL	RDSR	27.83	-82.83	5
USF	2004	CODAR	Venice, FL	VEN	27.08	-82.45	5
USF	2005	CODAR	Naples, FL	NAPL	26.16	-81.81	5

*FIT siting for second HFR is still in progress

** UM is in the process of changing HFR frequencies to be in compliance with FCC permits by summer 2022.

Table 3: Glider fleet available by SECOORA team members

Glider Name	Owner/ Operator	Year manufactured	Conduct-ivity	Temp	Salinity	DO	Chl-a	CDOM	Back-scatter	Water column biomass	Passive acoustic receiver (tags)	Passive acoustic receiver (soundscape)	ADCP /DVL
Franklin	SECOORA/ SkIO	2019	X	X	X	X	X	X	X		X	X*	
Angus	SkIO	2018	X	X	X	X	X	X	X		X	X*	X*
Pelagia	UNCW/SkIO	2006	X	X	X	X	X	X	X				
Salacia	NCSU/SkIO	2008	X	X	X								
Bass	USF	2008	X	X	X	X	X	X	X		X*	X	
Sam	USF	2008	X	X	X	X	X	X	X		X*	X	
Gansett	USF	2019	X	X	X	X	X	X	X	X	X*		
Stella	USF	2019	X	X	X	X	X	X	X	X	X*		

*Glider can be outfitted with the sensor; however, the sensor is not on the glider at all times.

Table 4. Soundscape passive acoustic monitoring

Passive Acoustic "Soundscapes" Operator	Station Locations	Number of Stations	Deployment Year	Passive acoustic recorder	Water Temp	Water Level
USC Beaufort	May River, SC	3	2013	X	X	X
USC Beaufort	Chechessee Creek, SC	1	2019	X	X	X
USC Beaufort	Colleton River, SC	1	2019	X	X	X
USC Beaufort	Charleston Harbor, SC	3	2017	X	X	X
USC Beaufort	North Inlet-Winyah Bay NERR	1	2019	X	X	X

Table 5: Year 2 water level station installation locations and partner affiliations. Project team members have worked with partners to identify water level sensor deployment locations.

Affiliation	Sensor Location - County	Sensor Location - State	Year Installed	Number of Sensors Installed	Sensor Type	Water Level	Cond/ Salinity
Georgia Tech	Camden County	GA	2022	11	MaxBotix 7388 HRXL	X	
Georgia Tech	Nassau County	FL	2021	2	MaxBotix 7388 HRXL	X	
ASBPA	Beaufort County	SC	2021	1	MaxBotix 7388 HRXL	X	
ASBPA	Horry County	SC	2021	1	MaxBotix 7388 HRXL	X	
ASBPA	Currituck County	NC	2021	1	MaxBotix 7388 HRXL	X	
ASBPA	Dare County	NC	2021	1	MaxBotix 7388 HRXL	X	
ASBPA	Carteret County	NC	2021	2	MaxBotix 7388 HRXL	X	
ASBPA	Brunswick County	NC	2021	1	MaxBotix 7388 HRXL	X	
ASBPA	Pender County	NC	2021	2	MaxBotix 7388 HRXL	X	
ASBPA	Nassau County	FL	2021	2	MaxBotix 7388 HRXL	X	
ASBPA	Lee County	FL	2021	1	MaxBotix 7388 HRXL	X	
ASBPA	Pinellas County	FL	2022	1	MaxBotix 7388 HRXL	X	
CCU-FAU	Nassau County	FL	2021	1	MaxBotix 7388 HRXL	X	
CCU-FAU	St Lucie County	FL	2022	3	MaxBotix 7388 HRXL	X	
CCU-FAU	Broward County	FL	2021	2	MaxBotix 7388 HRXL	X	
CCU-FAU	Broward County	FL	2022	2	MaxBotix 7388 HRXL	X	
FIU	Miami-Dade County	FL	2021	4	Aqua Troll 200	X	X
FIU	Broward County	FL	2022	1	Aqua Troll 200	X	X
Total installations:				39			

SECOORA, Debra Hernandez
Budget Justification Year 2

Total Request Year 2 CORE = $3,061,136

SALARY ($312,482)

- Principal Investigator: Debra Hernandez (8 person-months x $11,019.66/month base salary = **$88,157**). Hernandez is the SECOORA Executive Director and leads the organization with the guidance of the SECOORA Board of Directors. Hernandez oversees the day-to-day operations for the organization, supervises employees, and represents SECOORA at IOOS and IOOS Association meetings and regional and national events.
- Deputy Director, Jennifer Dorton (8.0 person-months x $8,175.14/month base salary = **$65,401**), oversees RCOOS implementation, works with SECOORA PIs to assure they are meeting their goals and objectives, and is the DMAC lead. Dorton is provides guidance to the SECOORA DMAC contract, Axiom Data Science.
- Chief Financial Officer, Megan Lee (8.0 person-months x $8,091.37/month base salary = **$64,731**), leads SECOORA financial, contractual, and related business duties. Lee is also responsible for developing annual operating budgets and coordinating the annual financial audit.
- Communications Director, Abbey Wakely (11 person-months x $5,437.078 base salary = **$59,808**), is responsible for SECOORA website content, development of outreach materials, social media, graphics design, and meeting planning.
- Program Assistant, Laura Korman (6 person-months x $4,583.33/month base salary = $**27,500**), is responsible for working with SECOORA affiliate groups such as the Southeast Coastal and Ocean Acidification Network (SOCAN), providing program management support for the SECOORA Water Level Initiative, and assisting with website updates, Board communications, and meeting planning.
- Accountant, Tracy Buchman (2 person-months x $3,442.50 = **$6,885**), is the SECOORA accountant and assists with the annual financial audit.

FRINGE ($84,370)

The SECOORA Fringe Benefits rate is calculated at 27% of total base salary = **$84,370**.

TRAVEL ($52,894)

SECOORA, contractors, and subawardees adhere to the rules/regulations of the Fly America Act.

SECOORA Staff Travel ($33,893): SECOORA uses the 2022 GSA rates to estimate hotel and per diem expenses. In all situations, 18% for taxes and fees are added to the hotel base nightly rate. Unless otherwise indicated, Year 2 flights are based on a Travelocity search conducted on 4/1/2022. Mileage reimbursement rate is at $0.585/mile. Hernandez and Lee home location is Charleston, SC; Dorton home location is Wilmington, NC; Wakely home location is Lakeland, FL; Korman home location is Amelia Island, FL. All costs are rounded to the nearest dollar. The following are anticipated trips by SECOORA staff:

Silver Spring, MD for IOOS Association Director candidate interviews. Hernandez is on the IOOS Associate Board of Directors and the board will be interviewing finalists for the Director position. Travel is anticipated in September, dates TBD but expected to be 3 days/2 nights. Flight: $381. Airport parking: $10/day x 3 days = $30. Hotel: $257 x 18% tax x 2 nights = $607. Per diem: $74 x 3 = $222. Local travel

(e.g., Uber, taxi) to/from airport: $50 roundtrip. Total: **$1,290**

Oceans 2022, October 17-21, Hampton Roads, VA. Hernandez and Dorton will participate and present on the SECOORA water level initiative. 5 days/4 nights. Registration: $700 x 2 people = $1,400. Hernandez Flight: $635. Airport parking for Hernandez: $10/day x 5 days = $50. Hotel $106/night x 18% tax x 4 nights x 2 travelers = $1,001. Per diem: $59 x 5 days x 2 travelers = $590. Dorton mileage: 500 miles roundtrip x $0.585 = $293. Hotel parking: $10/night x 4 = $40. Total: **$4,009**

Radio Operators Working Group (ROWG) meeting, November 1-4, 2022. Meeting location is at the ECU Coastal Studies Institute in Wanchese, NC. SECOORA is helping host the meeting. Dorton will participate. Hotel: $96 x 18% tax x 3 nights = $340. Milage 530 roundtrip x $0.585/mile = $310. Per diem: $69/day x 4 days = $276. Total: **$926**

Fall staff retreat, Charleston, mid-November 2022. Dorton, Wakely, and Korman will travel to Charleston to meet with Hernandez and Lee. Round-trip mileage for Dorton to Charleston, SC is 373 miles x $0.585 = $218. Round-trip mileage for Korman to Charleston is 455 miles x $0.585 = $266. Airfare for Wakely: $369. Taxi/Uber to/from Tampa Airport for Wakely: $80 roundtrip. Hotel: $189/night x 18% tax x 3 travelers x 2 nights equals $1,338. Per diem $74 x 3 travelers x 3 days equals $666. Total: **$2,937**.

Melbourne, FL for the Hightower Park HFR installation – Dorton and Korman, Oct. 31 – Nov 4. Dorton flight, $575. Dorton airport parking: $10/day x 5 days = $50. Korman roundtrip mileage, 440 miles x .585 = $257. Hotel: $141 x 18% tax x 4 nights x 2 travelers = $1,331. Per diem: $69 x 5 days x 2 travelers = $690. Total: **$2,903**.

FACT Winter Meeting 2022, anticipated location is Jensen Beach, FL, dates TBD. FACT is a SECOORA affiliate (https://secoora.org/fact/). Wakely will participate. Round trip mileage from Lakeland, FL: 274 x $0.585 = $160. One-night hotel: $141 x 18% tax = $166. Per diem: $64 x 2 days = $128. Total: **$454.**

SECOORA Board of Directors Meeting. December 2022, Location TBD; anticipated 2 days/1 night travel. Transportation costs are estimated based on previous years transportation costs to the SECOORA board meeting location: Dorton flight $367; Hernandez and Lee flight $394 x 2 = $788. Wakely flight = $377. Korman flight = $394. Airport parking for all travelers is estimated at $10/day x 2 days x 5 travelers = $100. Hotel: 5 travelers x $200/night (inclusive of tax) x 1 nights = $1,000. Rental car: $70/day x 2 days = $140. Rental car fuel: $25. Per diem: $56/day x 2 days x 5 travelers = $560. At this time, SECOORA has not set up a contract with a hotel so we are using rates similar to previous years room rates and per diem for Annual meetings. Total: **$3,751**

Spring staff retreat, Charleston, March 2023. Dorton, Wakely, and Korman will travel to Charleston to meet with Hernandez and Lee. Round-trip mileage for Dorton to Charleston, SC is 373 miles x $0.585 = $218. Round-trip mileage for Korman to Charleston is 455 miles x $0.585 = $266. Airfare for Wakely: $369. Taxi/Uber to/from Tampa Airport for Wakely: $80 roundtrip. Hotel: $228/night x 18% tax x 3 travelers x 2 nights equals $1,614. Hotel parking for Dorton and Korman: $12/day x 2 nights x 2 travelers = $48. Per diem $74 x 3 travelers x 3 days equals $666. Total: **$3,261**

SECART meeting, Spring 2023. Location and dates TBD. Hernandez is a member of NOAA's Southeast and Caribbean Regional Team (SECART) and participates in their meetings. It is anticipated that the meeting will be 2 days/1 night and hosted in the southeast region. Travel costs are estimated based on a

previous SECART meeting hosted in Savannah, GA. Roundtrip mileage: 226 x $0.585/mile = $132. Hotel: $138 x 18% tax = $163. Parking at hotel: $10 per day = $20. Per diem: $64 x 2 days = $128. Total **$443**

IOOS Association meeting Spring 2023. Exact dates and location TBD. Anticipate 3 days/2 nights. Using Silver Spring, MD for travel estimates. Hernandez and Dorton will participate. Hernandez flight, $658. Airport parking in Charleston: $10 x 3 days = $30. Dorton flight $467. Airport parking in Wilmington: $10 x 3 days = $30. Local travel (i.e., Metro or Uber) $30/person x 2 people = $60. Two nights hotel: $258 x 18% taxes x 2 nights x 2 people = $1,218. Per diem: $74 x 3 days x 2 people: $444. Total: **$2,907**

SECOORA Annual Meeting and Board of Directors Meeting. May 2023, Location TBD; anticipated 3 days/2 nights travel. Transportation costs are estimated based on previous years transportation costs to the SECOORA annual meeting location: Dorton flight $367; Hernandez and Lee flight $394 x 2 = $788. Wakely flight = $377. Korman flight = $394. Airport parking for all travelers is estimated at $10/day x 2 days x 5 travelers = $100. Hotel: 5 travelers x $200/night (inclusive of tax) x 2 nights = $2,000. Per diem: $56/day x 3 days x 5 travelers = $840. At this time, SECOORA has not set up a contract with a hotel so we are using rates similar to previous years room rates and per diem for Annual meetings. Total: **$4,866**

FACT Summer Meeting 2023, anticipated location is Jensen Beach, FL, dates TBD. FACT is a SECOORA affiliate (https://secoora.org/fact/). Wakely will participate. Round trip mileage from Lakeland, FL: 274 x $0.585 = $160. One-night hotel: $141 x 18% tax = $166. Per diem: $64 x 2 days = $128. Total: **$454**

IOOS DMAC meeting, Silver Spring. Summer 2023. Dates TBD, 4 days/3 nights. Dorton will participate in the meeting. Airfare: $467; Airport parking in Wilmington: $10 x 4 days = $40. Hotel: $258 x 18% tax x 3 nights equals $913. Per diem: $74 x 4 days equals $296. Uber/metro expenses for DC are estimated at $40. Total **$1,756**

South Carolina Beach Advocates 2023 Annual meeting, Kiawah Island, SC, Dates TBC. Travel based on 2022 meeting participation. Hernandez will attend, 3 days/2 nights. Registration (non-member): $175. Mileage:130 miles roundtrip x $0.585 = $76. Conference Hotel: $124 x 20% tax and resort fees x 2 nights = $298. Per diem: $74/day x 3 days = $222. Total: **$771**

Local mileage to meet with stakeholders and project PIs to discuss project progress:

- Hernandez - Coastal Carolina University, Conway, SC: 200 miles roundtrip x $0.585/mile = $117
- Hernandez – Skidaway Institute of Oceanography, Savannah, GA: 274 miles roundtrip x $0.585 = $160
- Hernandez – Kiawah Island, SC: 130 miles roundtrip x $0.585 = $76
- Lee – local mileage in Charleston area for banking, post office, office supply store, meetings with Hernandez etc. (based on 2021 mileage reimbursements): 40 miles/month x 12 months x $.585 = $281
- Korman – Jacksonville University, Jacksonville, FL: 37 miles roundtrip x $0.585 x 2 trips = $87
- Dorton – NC State University, Raleigh, NC for the NC Coastal Conference (2-day event, Nov 2022, mileage only): 310 miles round trip x $.585 = $181
- Dorton – UNC Institute of Marine Sciences, Morehead City, NC: 190 miles roundtrip x $0.585 = $111
- Dorton – meet Skidaway Institute of Oceanography staff on I-95 in GA for glider delivery: 600 miles roundtrip x $0.585/mile = $351

- Dorton – Fort Caswell, NC to help with HFR maintenance: 90 miles roundtrip x $0.585/mile x 2 trips/year = $105
- Dorton – Myrtle Beach State Park, Myrtle Beach, SC to help with HFR maintenance: 176 miles roundtrip x $0.585/mile x 2 trips/year = $206
- Wakely – USF St. Petersburg campus for undergraduate outreach: 140 miles roundtrip x $0.585/mile x 6 trips/year = $491

Total local milage: **$2,166**

SECOORA Board Travel ($20,000): Funds are requested to support SECOORA Board member travel to the December 2022 Board Meeting and May 2023 Board and Members Meeting. Locations and dates are TBD. Estimated cost for meeting travel is based on a review of expenses for 3 meetings (2017, 2018, 2021). On average, SECOORA spends $10,000 ($10,000 x 2 = $20,000) to pay for travel for Board members for each meeting. These funds will be used to pay for Board travel (flights, rental cars, or mileage). Each meeting will be for 2 nights hotel accommodation, 2 days per diem for each Board member (for meals not provided at the meeting), and any ancillary costs such as taxis or shuttles.

SUPPLIES ($5,575)

Outreach and Education Supplies

- Stand up banner (full color): **$275**
- Table covering w/ SECOORA logo: **$200**
- Water level signs: $50 each x 30 signs = **$1,500**
- Two Occulus V/R headsets for undergraduate outreach: $299 x 3 = **$897**
- Annual report printing (full color): **$200**

Office Supplies

- Printer Paper (based on 2021 costs for 5 employees): **$75**
- Printer cartridges for laser jet printers (based on 2021 costs for 5 employees): **$760**
- Web camera for hybrid (virtual and in-person) meetings: **$315**
- Office chair replacement: **$268**
- Computer monitor replacements: $300 x 2 = **$600**
- Computer keyboard replacement, wireless: **$107**
- Post-it Easel Pads (4 pack): $144 x 2 = **$288**
- Business Cards (based on 2019 costs): **$90**

CONTRACTUAL ($279,159)

Elliott Davis, LLC - Accounting/Auditor **($23,000).** SECOORA will contract with a private accounting firm to perform annual audit and accounting services based on federal fiscal report requirements. The estimated cost is $23,000.

Soul Advantage- Human Resources Consultant **($9,500)** provides annual HR services for SECOORA, including employee salary benchmarking, annual benefits review, performance appraisal process updates, and team training.

ESP Advisors ($12,000) provides monthly updates on ocean and environmental policy developments at the national level and serves as a strategic policy advisor.

Axiom Data Science ($234,659). Axiom is the SECOORA data management contractor. Axiom maintains the SECOORA web portal and catalog, provide data management infrastructure, work with SECOORA PI to ingest data and serve to regional and national data assembly centers. Axiom staff also participate in IOOS National DMAC meetings and monthly calls. Details of Axiom responsibilities are found in the SECOORA Data Management Plan.

TOTAL OTHER COSTS ($2,264,995)

OTHER COSTS – NON SUBAWARDS ($123,050)

Dues (**$15,000).** Annual member dues ($10,000) for IOOS Association and other organizational dues (e.g., MTS, $5,000). SECOORA also will work with the IOOS Association and other IOOS regions on workforce development initiatives to expand and diversify the ocean, coastal and Great Lake workforces and to improve our ability to provide relevant ocean and coastal data and information to underserved or underrepresented communities.

SECOORA Sponsorship ($3,000). SECOORA requests $3,000 for meeting sponsorship and attendance to conduct SECOORA outreach. SECOORA may use the funds to co-sponsor a booth at national or regional meetings. In some instances, these funds would need to be paid in 2022 for 2023 meetings (e.g., attendee registration, sponsorship).

SECOORA Board and Annual Meeting Expenses (**$10,000).** Estimated cost for the December 2022 Board Meeting and May 2023 Board and Members meeting is based on a review of meeting hosting expenses for 3 meetings (2018, 2019, 2021). Funds will be used to pay for meeting hosting fees (e.g., room rental, A/V expenses) and attendee coffee breaks (i.e., light refreshments - coffee, water, tea service).

SECOORA Business Services ($15,000). Tort liability insurance ($2,900), Communication and digital infrastructure support (e.g., GoToMeeting monthly fees, web domain registrations expenses, Windows and Adobe licenses, $3,700). Home Office Reimbursements are for telephone and internet for 5 staff reimbursed at $140/month/person = $8,400.

Egrants software license fee ($13,000). Annual expense for Escion grant management software.

Marine Insurance ($11,000). SECOORA has insurance on the SECOORA owned glider, Franklin. Based on the premium for 2020, the anticipated cost for insurance is $11,000.

Reserved Operational Funds:
Reserved Operational Funds are funds SECOORA will directly pay for or will add to subaward contracts.

Reserved HFR Operational Funds - Kennedy Space Center Electrical ($2,300). NASA requires that SECOORA pay the electricity bill for the Skidaway Institute of Oceanography HFR deployed at the NASA Kennedy Space Center. Costs are based on NASA estimated 1-year electrical costs for station operation.

Reserved Glider Operational Funds ($4,000). SECOORA will directly pay for 2-3 vessel charters for glider deployments and recoveries. Vessel charters range from $700 - $3,500 each depending on how far

the vessel has to travel to the deployment/recovery location. Estimated costs are based on 2021 paid charter rates.

Reserved Observing Operational Funds - Shiptime ($49,750). SECOORA will use the R/V Savannah (UNOLS vessel operated by UGA's Skidaway Institute of Oceanography) for four days to service the UNCW moorings offshore of South Carolina, in spring 2023.

OTHER COSTS – SUBAWARDS ($2,141,945)

All SECOORA Subawardees adhere to the rules and regulations of the Fly America Act. If Subawardees do not mention where Travel costs originate from, please note they are based on historical travel costs for the organization. Subawardess are listed in order they are found in the SECOORA Descope Proposal. All supporting SF424As and Budget Justifications of each follow in the subsequent pages.

- University of North Carolina Wilmington, Ocean Buoys/Moorings, Lead PI Lynn Leonard: **$329,362**
- University of South Florida, Ocean Buoys/Moorings, Lead PI Robert Weisberg: **$300,000**
- UNC Chapel Hill, HFR, Lead PI Harvey Seim: **$56,020**
- ECU Coastal Studies Institute, HFR, Lead PI Michael Muglia: **$67,779**
- University of South Florida, HFR, Lead PI Cliff Merz: **$110,000**
- University of South Carolina, HFR, Lead PI George Voulgaris: **$110,000**
- UGA Skidaway Institute of Oceanography, HFR, Co-Lead PIs Dana Savidge and Catherine Edwards: **$121,500**
- Florida Institute of Technology, HFR, Lead PI Steven Lazarus: **$91,000**
- University of Miami, HFR, Lead PI Lynn (Nick) Shay: **$123,800**
- UGA Skidaway Institute of Oceanography, Gliders, Lead PI Catherine Edwards: **$64,000**
- University of South Florida, Gliders, Lead PI Chad Lembke: **$60,000**
- UNC Chapel Hill, Gliders, Lead PI Harvey Seim: **$40,000**
- Georgia Tech, Gliders, Lead PI Fumin Zhang: **$32,000**
- University of South Carolina Beaufort, Biological Data Collection, Lead PI Eric Montie: **$100,000**
- American Shore and Beach Preservation Association, Water Level Initiative, Lead PI Nicole Elko: **$74,985**
- Georgia Tech, Water Level Initiative, Co-Lead PIs Kim Cobb and Emanuele Di Lorenzo: **$75,000**
- NC State University, Modeling, Lead PI Ruoying He: **$89,482**
- Fathom Science, Modeling, Lead PI Ruoying He: **$60,501**
- Florida Fish and Wildlife Commission, Data Management, Lead PI Luke McEachron: **$68,000**
- South Carolina Department of Natural Resources, Data Management, Lead PI Tracey Smart: **$18,856**
- University of South Carolina, Product Development, Lead PI Dwayne Porter: **$149,660**

TOTAL DIRECT COSTS ($2,999,475)

INDIRECT COSTS ($61,661)

SECOORA's indirect rate is 10% (elected de minimus rate) on all direct charges and the first $25,000 of all contracts/subawards. Total indirect is **$61,661.**

SF424As and Budget Justifications for Contractors and Subawards are in the following pages:

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ACQUISITION AND GRANTS OFFICE

December 9, 2021

Ms. Megan C. Lee
Chief Financial Officer
Southeast Coastal Ocean Observing Regional Association (SECOORA)
P.O. Box 13856
Charleston, SC 29422

Dear Ms. Lee:

The Office of Management and Budget approved revisions to 2 CFR Part 200, Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, allow even those organizations already in possession of an approved Federal indirect cost rate, to use the de minimis rate of 10%. You do not have to request permission to use the de minimis or maintain documentation to support its use. The effective date of this change was November 12, 2020.

Please let me know if you have other questions or need anything else. Thank you.

Sincerely,

Lamar Dwayne Revis

Lamar Dwayne Revis
Grants Officer

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. SECOORA	11.012	$	$	$ 3,061,136.00	$	$ 3,061,136.00
2.						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 3,061,136.00	$ 0.00	$ 3,061,136.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 312,482.00	$	$	$	$ 312,482.00
b. Fringe Benefits	84,370.00				84,370.00
c. Travel	52,894.00				52,894.00
d. Equipment					0.00
e. Supplies	5,575.00				5,575.00
f. Contractual	279,159.00				279,159.00
g. Construction					0.00
h. Other	2,264,995.00				2,264,995.00
i. Total Direct Charges *(sum of 6a-6h)*	2,999,475.00	0.00	0.00	0.00	2,999,475.00
j. Indirect Charges	61,661.00				61,661.00
k. TOTALS *(sum of 6i and 6j)*	$ 3,061,136.00	$ 0.00	$ 0.00	$ 0.00	$ 3,061,136.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 3,061,136.00	$ 765,284.00	$ 765,284.00	$ 765,284.00	$ 765,284.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 3,061,136.00	$ 765,284.00	$ 765,284.00	$ 765,284.00	$ 765,284.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $2,999,475	22. Indirect Charges: $61,661; 10% de minimus on all direct charges,1st $25K on contracts/subs
23. Remarks:	

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BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Axiom	11.012	$	$	$ 234,659.00	$	$ 234,659.00
2. Core DMAC						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 234,659.00	$ 0.00	$ 234,659.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 129,467.00	$	$	$	$ 129,467.00
b. Fringe Benefits	32,367.00				32,367.00
c. Travel					0.00
d. Equipment					0.00
e. Supplies					0.00
f. Contractual					0.00
g. Construction					0.00
h. Other					0.00
i. Total Direct Charges *(sum of 6a-6h)*	161,834.00	0.00	0.00	0.00	161,834.00
j. Indirect Charges	72,825.00				72,825.00
k. TOTALS *(sum of 6i and 6j)*	$ 234,659.00	$ 0.00	$ 0.00	$ 0.00	$ 234,659.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 234,659.00	$ 58,664.75	$ 58,664.75	$ 58,664.75	$ 58,664.75
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 234,659.00	$ 58,664.75	$ 58,664.75	$ 58,664.75	$ 58,664.75

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $161,834	22. Indirect Charges: $72,825; 45% salary and fringe only.
23. Remarks:	

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Axiom Data Science - SECOORA Core Data Management and Communications Services,
Lead PI Rob Bochenek
Year 2 Budget Justification

The requested funds will be used to conduct data management services based on the following tasks: 1) SECOORA Core Data Management Services, 2) Support for the Florida Fish and Wildlife Research Institute (FWRI) Artificial Intelligence (AI) portal, and 3) Support for the South Carolina Department of Natural Resources (SCDNR) Southeast Monitoring and Assessment Program – South Atlantic (SEAMAP-SA) data transformation and visualization project. Salary funding is broken down by task in the below justification.

Total Funding Request: $234,659

Total Salary ($129,497)

Task 1. Core Data Management Salary ($110,157)

- Brian Stone, Senior Software Engineer, is budgeted at 17%FTE ($22,440; 353.6 hours) to provide standardized web services for the SECOORA data portal.
- Chris Turner, Data Librarian, is budgeted at 5%FTE ($4,650; 104 hours) to provide support for metadata creation in the Research Workspace and to coordinate the transfer of data to national archives for long-term preservation.
- Dave Foster, Senior Software Engineer, is budgeted at 10%FTE ($12,200; 208 hours) to develop web services and process data into standard formats for access using interoperability services.
- Dr. Kristen Thyng, MetOcean Data Scientist, is budgeted at 7%FTE ($9,800; 145.6 hours) to provide scientific support and to provide technical assistance for data ingest using the Research Workspace.
- Kyle Wilcox, Software Architect, is budgeted at 18%FTE ($25,200; 374.4 hours) to manage the execution of DMAC tasks, to manage the SECOORA data interoperability system, communicate with data providers, and to attend all project meetings.
- Lauren Showalter, Project Manager, is budgeted at 10%FTE ($10,400; 208 hours) to provide project management support, data coordination, respond to user feedback, and to participate in project meetings.
- Luke Campbell, Senior Software Engineer, is budgeted at 12%FTE ($14,640; 249.6 hours) to support historical and real-time data ingestion and to comply with data standard formats.
- Rob Bochenek, Information Architect, is budgeted at 5.2265%FTE ($5,227; 108.7112 hours) to manage the program and DMAC personnel and to ensure high-quality operation of the SDS.
- Shane StSavage, Software Architect, is budgeted at 4%FTE ($5,600; 83.2 hours) to support the SECOORA data system and to manage the physical data center for data ingest and storage.

Task 2. FWRI Project Support Salary ($11,034)

- Dave Foster, Senior Software Engineer, is budgeted at 1% FTE ($1,220; 20.8 hours) to develop the AI data portal.
- Kyle Wilcox, Software Architect, is budgeted at 6.27% FTE ($8,774; 130.36 hours) to manage the technical aspects of the tool development and expansion of tools and data types.
- Lauren Showalter, Project Manager, is budgeted at 1%FTE ($1,040; 20.8 hours) to provide project management support, respond to user feedback, and participate in project meetings.

CONTRACTUAL

Task 3: SCDNR SEAMAP-SA Salary ($8,276)

- Dave Foster, Senior Software Engineer, is budgeted at 1%FTE ($1,220; 20.8 hours) to provide enhancements to the current system and to support the development of new tools.
- Kyle Wilcox, Software Architect, is budgeted at 4.297%FTE ($6,016; 89.3776 hours) to manage the technical aspects of the tool development and expansion of tools and data types.
- Lauren Showalter, Project Manager, is budgeted at 1%FTE ($1,040; 20.8 hours) to provide project management support, respond to user feedback, and participate in project meetings.

Fringe ($32,367)

Fringe benefits are calculated at 25% of total salary to cover 401K, health insurance, and paid leave for staff salaries.

Indirect Costs ($72,825)

Axiom Data Science's federally approved indirect cost rate requested is 45% MTDC (total direct costs, minus equipment, supplies, and subcontracts in excess of $25,000).

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ACQUISITION AND GRANTS OFFICE

June 9, 2020

Ms. Mary Beth Rudofski, CRA
Principal Consultant
Point Consulting Group
830-13 A1A North, Unit 164
Ponte Vedra Beach, FL 32082

Dear Ms. Rudofski:

This letter is in response to your email communication of June 2, 2020. It is an acknowledgment that the Grants Management Division of the National Oceanic and Atmospheric Administration (NOAA) has received required Indirect Cost Rate Proposals (Proposals) for the organization, Axiom Data Science, LLC (Axiom), for fiscal years 2016, 2017, and 2018. As discussed in previous conversations, NOAA has not yet contracted a Certified Public Accountant (CPA) to analyze and evaluate of the Proposals. Therefore, signed Indirect Cost Rate Agreements for each Proposal cannot be provided to Axiom at this time. However, NOAA's Contracting Office is presently working to secure a CPA, and that process will be completed in the next few months. The aforementioned Proposals will then be turned over to the CPA for review.

Due to the issue outlined above, the following information should be used by Axiom for its operations:

Axiom may use of a predetermined rate of 45% of Modified Total Direct Costs for fiscal year 2019;

Axiom may use a provisional rate of 45% of Modified Total Direct Costs effective fiscal year 2020 that does not expire until NOAA approves an indirect cost rate for fiscal year 2020.

Sincerely,

Lamar Dwayne Revis

Lamar Dwayne Revis
Grants Officer

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. UNCW	11.012	$	$	$ 329,362.00	$	$ 329,362.00
2. Leonard						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 329,362.00	$ 0.00	$ 329,362.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 70,905.00	$	$	$	$ 70,905.00
b. Fringe Benefits	21,591.00				21,591.00
c. Travel	5,115.00				5,115.00
d. Equipment	20,349.00				20,349.00
e. Supplies	36,622.00				36,622.00
f. Contractual	47,000.00				47,000.00
g. Construction					0.00
h. Other	41,615.00				41,615.00
i. Total Direct Charges *(sum of 6a-6h)*	243,197.00	0.00	0.00	0.00	243,197.00
j. Indirect Charges	86,165.00				86,165.00
k. TOTALS *(sum of 6i and 6j)*	$ 329,362.00	$ 0.00	$ 0.00	$ 0.00	$ 329,362.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 329,362.00	$ 82,340.50	$ 82,340.50	$ 82,340.50	$ 82,340.50
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 329,362.00	$ 82,340.50	$ 82,340.50	$ 82,340.50	$ 82,340.50

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $243,197	22. Indirect Charges: $86,165; 49% MTDC minus equipment and subcontract.
23. Remarks:	

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University of North Carolina Wilmington, Lynn Leonard
Year 2 Budget Justification

TOTAL COST YEAR 2: $329,362

SALARY ($70,905)

PI Lynn Leonard (1 month x $12,250/month base salary = **$12,250**) is responsible for administration of funds and resources, staff supervision, accountability to SECOORA regarding grant goals.
Technician – (12 months x $4,587.92./month base salary = **$55,055**) is responsible for the physical maintenance and buildout of buoys, setup and monitoring of data telemetry and QA/QC, maintenance of sensors, procurement of necessary supplies.
Graduate Student – (3 months x $1,200/month base salary = **$3,600**) will assist the Technician in physical maintenance of buoy systems, assisting in development of data products.

FRINGE ($21,591)

UNCW assesses benefits at 34.23% of total salary for the mooring technician. The benefits rate for the PI is assessed at 19.87%. Fringe benefits on student salary are assessed at 8.65%.

DOMESTIC TRAVEL ($5,115)

UNCW personnel home location is Wilmington NC. UNCW follows the Fly America Act. Travel costs are rounded up to the whole dollar value. Per diem is based on the State of North Carolina rate.

Buoy turnarounds and repairs:
One (1) buoy turnaround cruise onboard the R/V Savannah. Two buoy technicians participate. A state vehicle is use for travel. Hotel is not required; however, per diem costs are incurred.

- Per diem: $44.10 per person x 2 people x 3 days = **$265**

FRP2 and CAP2 maintenance trips (Charleston, SC buoys) – hotel cost based on prior trips.

- Hotel: $160/night x 1 night x 2 people x 3 trips = $960
- Per diem: $44.10 per person x 2 people x 3 trips x 2 days per trip = $529

Total FRP2 and CAP2 travel costs: **$1,489**

CHR60 and CHR60wave maintenance trips. CHR60wave will require maintenance twice per year for sensor cleaning and mooring maintenance. (Charleston, SC).

- Hotel: $160/night x 2 nights/trip x 2 people x 2 trips = $1,280
- Per diem: $44.10 per person x 2 people x 3 days/trip x 2 trips = $529

Total CHR60 travel costs: **$1,809**

Emergency travel related to storm/disaster buoy recovery – SC buoys are visited after tropical storms and hurricanes to assess any damages and swap sensors that are no longer reporting properly. CHR60, FRP2 and CAP2 emergence response (Charleston, SC buoys) – number of trips and costs based on prior trips:

- Hotel: $160/night x 2 people x 1 night x 1 trip = $320
- Per diem: $44.10 per person x 2 people x 1 trip x 2 days per trip = $176

Total FRP2 and CAP2 emergency response travel costs: **$496**

Travel for SECOORA Annual Meeting

The PI will participate in the SECOORA Annual meeting. Meeting location TBD but generally occurs in May. Cost estimate are based on previous meeting attendance.

- Flight: $433
- Hotel: $200/night x 2 nights x 1 room = $400
- Per diem: $44.10 x 3 days x 1 person = $132
- Cab/Uber from destination airport to hotel and return: $60
- Airport parking in Wilmington, NC: $10/day x 3 days = $30

Total for SECOORA Annual Meeting: **$1,055**

EQUIPMENT ($20,349)

All equipment must be purchased; none of the listed equipment is available for lease.

- Smart Sofar Spotter wave buoy system: 1 wave buoy x $8,960 per wave buoy = **$8,690**. This buoy will be deployed as the back-up system for the new CHR60wave site and provide wave height, wave direction, wave period, and water level.
- Standard Sofar Spotter wave buoy and included iridium telemetry service = $**5,890.** This buoy will be used as the backup system for the FRP2Wave buoy.
- The remaining $**5,769** will be used to replace or upgrade aging or damaged equipment such as CTDs or data loggers.

EXPENDABLE SUPPLIES ($36,622)

Anticipated supplies and approximate cost for each based on previous/historic purchase price. Prices subject to change annually. These are items that are used to replace sensors, electronics, and communications equipment onboard the existing 12 CORMP buoys.

- Boat fuel (based on annual boat fuel consumption for use of UNCW small vessels): **$5,000**
- Waverider Batteries: **$13,058** for two battery payloads and one mooring element.
- Replacement Modems: $500 each x 2 = **$1,000**
- Buoy Antennas: $320 each x 3 per year = **$960**
- Waterproof Enclosures for electronics onboard buoy: $120 each x 6 per year = **$720**
- Mooring chain: **$7,500** for replacement chain for currently deployed buoys.
- Connectors, hardware, paint, wiring, solar panels, electronic components. **$2,800**
- Meteorological sensors. **$5,584**

CONTRACTUAL ($47,000)

Second Creek Consulting. Second Creek Consulting will work with UNCW personnel to enhance QA/QC protocols for data provided by UNCW moorings, assist with data recovery for the cell phone modem communications, modify communication protocols (as needed) in consultation with and as directed by UNCW personnel, collaborate with UNCW staff to ensure UNCW meets mandated QARTOD requirements for real-time data, and contribute to grant products that may include: progress reports to the sponsor, meeting presentations, and professional publications. Total contract value equals **$47,000**.

OTHER COSTS ($41,615)

Purchased Services **($12,315):**

- Amazon Cloud Computing and Web Hosting services. $90/month x 12 months = **$1,080**
- Verizon Cellular telemetry, $150/month x 12 months = **$1,800**

- MetOcean Iridium Telemetry Service, **$4,732** per year, based on historic annual billing.
- Fedex shipping services. **$1,503**, estimated, based on historic annual billing.
- Freight charges for buoy transit to/from UNCW and Skidaway Institute of Oceanography (home port of the R/V Savannah) = **$3,200**.

Hardware maintenance costs (calibrations, maintenance, repair, **$6,400**). All costs based on historic annual billing.

- Seabird SBE-16 CTD calibration, $1,200/each x 2 calibrations = **$2,400**
- Teledyne RDI ADCP repair, recalibration, $2,000/each x 2 calibrations = **$4,000**

Shiptime **($22,900):**
Funds from the purchased services budget line are also used to pay for UNCW research vessel support. The R/V Cape Fear, R/V Sea Hawk and R/V Tomtate will be used to support mooring operations. Examples of UNCW vessels costs are as follows (note that fuel costs are estimates based on 2022 rates and subject to change based on the daily fuel price):

- Recover and redeploy WaveRiders for battery swaps and general maintenance. Two WaveRider trips are estimated for Year 1 on R/V SeaHawk: $600 day rate + fuel (estimate at $750) = $1,350 per trip x 2 trips = **$2,700**
- Service the OB27 Bottom frame with divers from the R/V Seahawk. 4 trips per year on R/V SeaHawk: $600 day rate + fuel (estimate at $1000) = $1,600 per trip x 4 trips = **$6,400**
- R/V Cape Fear for mooring deployments: UNCW will use the R/V Cape Fear to turnaround the Onslow Bay moorings (ILM and LEJ buoys) in Summer/Fall 2021. This will require 3 individual trips. Each trip is billed as follows: 12-hour day at $2,000 per trip + fuel (estimated at $1450 per trip) = $3,450 x 3 trips = **$10,350**
- R/V Cape Fear for mooring deployments: UNCW will use the R/V Cape Fear to turnaround the Long Bay mooring SUN2WAVE buoy. Each trip is billed as follows: 12-hour day at $2,000 per trip + fuel (estimated at $1,450 per trip) = $3,450 x 1 = **$3,450**.

DIRECT COSTS ($243,197)

INDIRECT COSTS ($86,165)

UNCW assesses indirect costs at 49% of modified total direct costs. Indirect is not charged on equipment over $5,000 or Fabricated Equipment. The sub-awardee, Second Creek Consulting, had indirect charged to the first $25,000 of the sub-award in Year 1, therefore, is not subject to IDC in Year 2. The IDC rate agreement found here: https://uncw.edu/sparc/documents/developbudget/uncwf_arateagreement2018.pdf

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. USF - MOOR	11.012	$	$	$ 300,000.00	$	$ 300,000.00
2. Weisburg						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 300,000.00	$ 0.00	$ 300,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 80,432.00	$	$	$	$ 80,432.00
b. Fringe Benefits	19,624.00				19,624.00
c. Travel	2,700.00				2,700.00
d. Equipment	12,017.00				12,017.00
e. Supplies	32,700.00				32,700.00
f. Contractual					0.00
g. Construction					0.00
h. Other	72,854.00				72,854.00
i. Total Direct Charges *(sum of 6a-6h)*	220,327.00	0.00	0.00	0.00	220,327.00
j. Indirect Charges	79,673.00				79,673.00
k. TOTALS *(sum of 6i and 6j)*	$ 300,000.00	$ 0.00	$ 0.00	$ 0.00	$ 300,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 300,000.00	$ 75,000.00	$ 75,000.00	$ 75,000.00	$ 75,000.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 300,000.00	$ 75,000.00	$ 75,000.00	$ 75,000.00	$ 75,000.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $220,327	22. Indirect Charges: $79,673; 49.5% MTDC minus equipment, tuition,boat rental, shiptime
23. Remarks:	

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University of South Florida (USF), Moorings and Modeling, Lead PI: Robert H. Weisberg
Year 2 Budget Justification

TOTAL COST YEAR 2: $300,000

SALARY ($80,432)

Principal Investigator - R.H. Weisberg (0.5 month summer salary x $19,430 base summer salary = **$9,715**) will share in overall project guidance with Co-PI. (9-month appointment)
Co-PI - Y. Liu (1 month summer salary x $8,502/month base summer salary = **$8,502**) will assist with all aspects of modeling, data analyses and data collection and share in overall project guidance with PI. (9-month appointment)
Data Manager- Jeff Donovan (3 months salary x $9,917.34/month base salary = **$29,752**) will support computer operations and data management/dissemination. (12-month appointment)
Data Analyst (OPS) - Dennis Mayer (3 months salary x $2,581/month base salary = **$7,743**) will support data processing and quality control. (12-month appointment)
Graduate Student - Salary funds are requested for graduate student support (12 months x $2,060/month base salary = **$24,720**)

FRINGE ($19,624)

- PI and co-PI: Fringe benefits are calculated @ 20.57% of salary. Health Insurance is not charged during summer months for 9-month faculty appointments.
- Data Manager: Fringe benefits are calculated @ 20.57% of salary plus $1,654.66/month medical and life insurance.
- Data Analyst (OPS): Fringe benefits are calculated @ 20.57%.
- Graduate Student fringe benefits are calculated @ 0.2% of graduate support ($24,720 x 0.2% = $48), plus graduate student health insurance ($262.50/month x 12 month = $3151). Total student fringe = $3,200.

DOMESTIC TRAVEL ($2,700)

Travel for fieldwork:
Travel is requested for local mileage for two mooring technicians to travel to/from research vessel mooring locations and local travel to purchase supply items. USF mileage rate is $0.445 per mile. Travel includes: St. Petersburg to Sarasota, FL (7 trips per year): 77 miles round trip x 8 trips x $0.445 = **$275**.

Travel for meetings and conferences:
Domestic travel is budgeted for P.I. and staff to participate in operational work, SECOORA events, and for dissemination of scientific information at professional meetings. USF follows the Fly America Act. A breakdown of funds, based on a current year example, could be as follows:

Co-PI Yonggang Liu, PI Robert Weisberg or a graduate student will present at the AGU Fall meeting in San Francisco, CA, in 2022. Estimated travel costs for 5 days/4 nights are listed below:

- Airfare: Travelocity (3/8/22) estimates are $400 roundtrip
- Registration fee $585 (refer to the 2021 AGU Fall Meeting registration fee)
- Hotel: AGU hotels are estimated at $275 per night inclusive of taxes. Estimated hotel: $1,100
- Shuttle to/from airport (in San Francisco) estimated cost = $100
- Per Diem: USF rate equals $36 x 5 days = $180
- Parking at Tampa airport is approximately $12 per day = $60

- Estimated per person cost for the AGU meeting is $**2,425.**

EQUIPMENT ($12,017)

Linux data server/workstation (no F&A). This data server/workstation will be used to support our data analysis and modeling. This equipment is only available for purchase.

SUPPLIES ($32,700)

Expendable supplies are for annual costs associated with maintaining 3 met-ocean buoys and 2 bottom mounted ADCP stations. Also included are computing costs for maintaining computer systems for real-time data transmission and model output. Major sub-categories are listed in the table below with a more detailed description included below.

Expendable Supply -Year 1

Computer supplies	$2,100
Mooring Hardware	$6,100
Batteries	$5,000
Cables and connectors	$8,500
Diving Expenses	$1,500
Sensor spares	$5,500
Misc hardware, supplies and replacements	$4,000
Total:	$32,700

- Computer supplies include the replacement of aging PC's and monitors, UPS batteries, cables, components and hard drives for existing systems needed for data processing, real-time telemetry and model output.
- Mooring hardware includes shackles, mooring wire and misc. hardware replaced with each deployment.
- Batteries include solar, ADCP lithium and CTD lithium batteries.
- Cables and connectors are for sensor and power systems, all underwater cables are replaced annually with other power and surface met cables cycled out on 3- and 5-year cycles.
- Diving expenses/supplies are for required servicing of SCUBA equipment, air fills, and replacements needed for deployment diving support.
- Sensor spares are for replacement of met sensors (relative humidity, barometric pressure and wind).
- Misc. hardware, supplies and replacements include as needed replacement of solar panels, navigation lights, satellite beacons and tools and supplies needed for mooring deployment and service.

OTHER COSTS ($72,854)

Ocean Technology Group and USF Marine Shop – **$9,000**. Engineering support from OTG is for sensor integration and maintenance of the real-time telemetry system. Machine Shop support is for fabrication of mooring anchors, repairs to moorings and sensor brackets. The budgeted costs are based on previous year expenses.

Hardware maintenance (calibrations, maintenance, repair) – **$13,000**
Seabird CTDs (10 total) are calibrated annually ($900 each) for $9,000 in CTD calibration expenses. ADCPs require service by the manufacturer on 3-to-5-year cycles. USF has a total of 10 ADCPs used on this project with two rotating through service annually. The cost to service each is approximately $2,000 each. USF will send 2 ADCPs back for service ($4,000).

Tuition Costs (no F&A) – **$10,354**
Graduate student tuition is calculated as 24 credit hours for three semesters with an in-state tuition rate of $431 per credit hour.

Charter/Fishing Boat Rental (no F&A) – **$4,000**
For servicing of moorings to troubleshoot and repair issues (4 days, $1,000 per day including fuel, based on pervious costs for charter vessels).

Shiptime (no F&A) – **$33,000**
Required for mooring deployments utilizing the Florida of Institute of Oceanography's R/V Weatherbird (3 days, $11,000 per day).

Freight/Shipping Costs - **$500**
Shipping costs incurred when shipping hardware to manufacturers for service.

Publication Costs - **$3,000**
Cost of publishing scientific information and results in refereed journals.

TOTAL DIRECT COSTS (220,327)

INDIRECT COSTS ($79,673)
The indirect cost rate is calculated at 49.5% Modified Total Direct Costs (MTDC) minus equipment, tuition, charter/fishing boat rental and shiptime. See rate agreement: https://www.usf.edu/research-innovation/sr/documents/indirect-rates.pdf

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. UNCCH - HFR	11.012	$	$	$ 56,020.00	$	$ 56,020.00
2. Seim						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 56,020.00	$ 0.00	$ 56,020.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 30,494.00	$	$	$	$ 30,494.00
b. Fringe Benefits	10,526.00				10,526.00
c. Travel	1,125.00				1,125.00
d. Equipment					0.00
e. Supplies	1,715.00				1,715.00
f. Contractual					0.00
g. Construction					0.00
h. Other	600.00				600.00
i. Total Direct Charges *(sum of 6a-6h)*	44,460.00	0.00	0.00	0.00	44,460.00
j. Indirect Charges	11,560.00				11,560.00
k. TOTALS *(sum of 6i and 6j)*	$ 56,020.00	$ 0.00	$ 0.00	$ 0.00	$ 56,020.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 56,020.00	$ 14,005.00	$ 14,005.00	$ 14,005.00	$ 14,005.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 56,020.00	$ 14,005.00	$ 14,005.00	$ 14,005.00	$ 14,005.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $44,460	22. Indirect Charges: $11,560; 26 %
23. Remarks:	

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Standard Form 424A (Rev. 7-97) Page 2

UNC Chapel Hill, HFR, H. Seim
Year 2 Budget Justification

TOTAL COST YEAR 2: $56,020

SALARY ($30,494)

Principal Investigator – Harvey Seim (0.2497 month x $15,472.75/month base salary = **$3,863**) is responsible for coordination of UNC-CH High Frequency Radar (HFR) maintenance, operation, data management, and data quality control.
Research Associate – Haines (2.1 months x $6,590/month base salary = **$13,839**) will manage the data flow and servers and bears primary responsibility for quality control efforts.
Technician – Tony Whipple, at UNC Institute of Marine Science (UNC-IMS) (2 months x **$6,396**/month base salary = **$12,792**) will support the CORE HFR installation.

FRINGE ($10,526)

Fringe benefits are calculated as 26.174% and health insurance is assessed at $584.92 per month for all personnel listed.

DOMESTIC TRAVEL ($1,125)

The Core Banks HFR installation is remote, requiring a 60-mile round trip drive from UNC-IMS to the ferry terminal and 4-wheel drive vehicle for access on the island for April - October. Access to Core Banks during winter requires a boat when the ferry does not operate.

Spring/Summer/Fall travel (4 trips annually)

- $60 per day for 4-wheel drive university vehicle x 4 trips = $240
- $60 for roundtrip ferry charges ($30 each way) x 4 trips = $240

Total Spring/Summer/Fall travel: **$480**

Winter (2 trips)

- UNC vessel day rate plus fuel required to access Core Banks: $322.50 x 2 trips = **$645**

EXPENDABLE SUPPLIES ($1,715)

A supplies budget is included to cover miscellaneous expenses for repairs and maintenance including items routinely purchased for CORE. Examples of supply items that are used each year include:

- 100’ of spectra line, $120
- 1000’ spool of RG8 cable $1,500
- N-type connectors, $15 each
- Replacement solar panels, $200 each
- Tools, $50

OTHER COSTS ($600)

Communication/Data Telemetry Charges – CORE uses cell tower communications which costs $50 per month x 12 months = **$600**/year.

TOTAL DIRECT COSTS ($44,460)

INDIRECT COSTS ($11,560)

An off-campus overhead rate of 26% is applied since the majority of the effort is on the Outer Banks. Total IDC equals $11,560. IDC rate agreement: https://research.unc.edu/wp-content/uploads/sites/61/2017/02/FY2017-FY2020-FA-Rate-Agreement-with-Components-002.pdf

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. ECU CSI	11.012	$	$	$ 67,779.00	$	$ 67,779.00
2. Muglia						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 67,779.00	$ 0.00	$ 67,779.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 28,866.00	$	$	$	$ 28,866.00
b. Fringe Benefits	12,367.00				12,367.00
c. Travel	4,000.00				4,000.00
d. Equipment					0.00
e. Supplies	4,880.00				4,880.00
f. Contractual					0.00
g. Construction					0.00
h. Other	3,680.00				3,680.00
i. Total Direct Charges *(sum of 6a-6h)*	53,793.00	0.00	0.00	0.00	53,793.00
j. Indirect Charges	13,986.00				13,986.00
k. TOTALS *(sum of 6i and 6j)*	$ 67,779.00	$ 0.00	$ 0.00	$ 0.00	$ 67,779.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 67,779.00	$ 16,944.75	$ 16,944.75	$ 16,944.75	$ 16,944.75
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 67,779.00	$ 16,944.75	$ 16,944.75	$ 16,944.75	$ 16,944.75

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $53,793	22. Indirect Charges: $13,986; 26% MTDC
23. Remarks:	

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East Carolina University - Coastal Studies Institute, Dr. Mike Muglia

Year 2 Budget Justification

TOTAL COST YEAR 2: $67,779

SALARY ($28,866)

Principal Investigator, Dr. Mike Muglia ($8,746/month base salary x 1.5 months [0.75 summer and 0.75 academic] = **$13,119**), will supervise operation of three CODAR systems (DUCK, HATY, and OCRA). He will accompany his 2 technicians in the field training them on radar maintenance and repair. Dr. Muglia has a 9-month appointment.

Technician, Patterson Taylor ($3,243/month base salary x 2.5 month = **$8,108**) supports the DUCK CODAR system at the Field Research Facility in Duck, NC, the HATY CODAR on Cape Hatteras National Park Service land in Buxton, NC, and the OCRA CODAR installed at Ocracoke Airport on Cape Hatteras National Park Service land.

Technician, TBN – ($3,055.6/month base salary x 2.5 months = **$7,639**) will support all three radar sites and will be the lead support tech.

FRINGE ($12,367)

Fringe benefits are based on actual expenses and are budgeted as a percentage of salary/wages. For FY 2021-22, personnel fringe benefits are estimated at 30.68%, including FICA, unemployment insurance, worker's compensation, and retirement. Additionally, fixed amount ($7,019/year) for health insurance is included for full time staff/technicians and health insurance is included on the effort expended by faculty during the 9-month academic year.

Principal Investigator, Mike Muglia: $13,119 x 30.68% = $4,026 + $585 health insurance ($7,019/9 months [Dr. Muglia has a 9-month appointment] *0.75 academic months) = $**4,611**

Note: Dr. Muglia has a 9-month appointment, health insurance is calculated only on academic year effort (0.75 month).

Technician, Patterson Taylor: $8,108 x 30.68% = $2,488 + $1,462 health insurance ($7,019/12months x 2.5 months) = **$3,950**

Technician, TBN: $7,639 x 30.68% = $2,344 + $1,462 health insurance ($7,019/12months x 2.5 months) = **$3,806**.

DOMESTIC TRAVEL ($4,000)

Travel for fieldwork:
A budget of **$3,200** for travel is requested to cover routine and emergency trips to service and repair equipment at all sites. Two CSI personnel participate on each trip. State of NC truck vehicle rates for 2021 are $0.61/mile.

Routine maintenance trips:

- DUCK: 106 roundtrip miles x 6 trips per year x $0.61/mile = $388
- HATY: 102 roundtrip miles x 6 trips per year x $0.61/mile = $373
- OCRA: 175 roundtrip miles (and roundtrip ferry) x 2 trips at mileage only x $0.61/mile = $214 for 2 day trips
- Due to the OCRA location, some overnight trips are required. Four (4) trips are anticipated to be overnight (mileage and hotel).
    - Hotel: $125 x 1 night x 2 people x 4 trips = $1000
    - Mileage: 175 roundtrip miles x 4 trips x $0.61/mile = $427

In addition, mileage costs for emergency repair visits to any of the above listed sites can be incurred. These emergency trips are needed to prep systems for storms or fix damaged instruments following storms. In a typical

year, 2-3 emergency site visits are required to any of the stations (DUCK, HATY, OCRA). **$798** is budgeted for travel related to emergency repairs.

Travel for meetings and conferences:
PI will participate in the SECOORA meeting that will be hosted in December 2021 in St. Petersburg, FL. The nearest airport is Norfolk, VA. Only **$800** is requested to cover partial travel costs. Below costs based on previous meeting expenses:

- Flight: $320 – CSI personnel follow the Fly America Act
- Hotel: $200/night x 2 nights = $400
- Airport parking in Norfolk: $30
- Per diem: $41/day x 3 days = $123

EXPENDABLE SUPPLIES ($4,880)

The supply budget will cover miscellaneous expenses for HFR repairs. All costs based on previous year purchases:

- Support lines (100' of spectra line): **$120**
- Cable (1000' spool of RG8 at $1,500/spool x 2 spools: **$3,000**
- Terminations (a single N-type connector): **$15**
- Mac mini: **$1,000**
- Specialized tools (e.g. N-type connector crimping tool): **$100**
- Network electronics: web power switch **($120),** cradle point router (**$400**)
- Small repair items such as cable ties, electrical tape, shed shelving, and air conditioner duct repair supplies: **$125**

OTHER COSTS ($3,680)

Electricity/Back-up Power Costs – **$2,240**

- HATY power is $100/month x 12 months = $1,200.
- A propane generator provides back-up power at HATY. Fuel and generator maintenance are $1,040/year.

Communication/Data Telemetry Charges - **$1440**

- HATY: Verizon "Above Unlimited" plan for $40/month x 12 = $480
- OCRA: Verizon "Above Unlimited" plan for $40/month x 12 months = $480
- DUCK: Verizon "Above Unlimited" plan for $40/month x 12 months = $480

DIRECT COSTS ($53,793)

INDIRECT COSTS ($13,986)

Indirect costs (F&A) are calculated using the institution's federally negotiated rate of 26.00% for research conducted off campus (DHHS is ECU's cognizant agency; the agreement is dated 08/06/2020). This rate is applied to modified total direct costs, which, for this project, is all direct costs delineated above.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. USF - HFR	11.012	$	$	$ 110,000.00	$	$ 110,000.00
2. Merz						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 110,000.00	$ 0.00	$ 110,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 39,065.00	$	$	$	$ 39,065.00
b. Fringe Benefits	9,690.00				9,690.00
c. Travel	4,598.00				4,598.00
d. Equipment	5,600.00				5,600.00
e. Supplies	6,500.00				6,500.00
f. Contractual					0.00
g. Construction					0.00
h. Other	12,486.00				12,486.00
i. Total Direct Charges *(sum of 6a-6h)*	77,939.00	0.00	0.00	0.00	77,939.00
j. Indirect Charges	32,061.00				32,061.00
k. TOTALS *(sum of 6i and 6j)*	$ 110,000.00	$ 0.00	$ 0.00	$ 0.00	$ 110,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 110,000.00	$ 27,500.00	$ 27,500.00	$ 27,500.00	$ 27,500.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 110,000.00	$ 27,500.00	$ 27,500.00	$ 27,500.00	$ 27,500.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $77,939	22. Indirect Charges: $32,061; 49.5% MTDC minus equipment and electricity/telemetry charges.
23. Remarks:	

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University of South Florida, HFR, Lead PI: Clifford R. Merz, Co-PI: Robert H. Weisberg
Year 2 Budget Justification

TOTAL COST YEAR 2: $110,000

SALARY ($39,065)

Principal Investigator: C. R. Merz, 9-month academic appointment, requests 2.0 months summer salary x $10,019.50/month base summer salary = **$20,039**. The PI will provide overall project guidance, will oversee the HF-Radar operations as well as function as the HF-Radar Operations Director and in-field technician.

Co-Principal Investigator: R.H. Weisberg, 9-month academic appointment, requests 0.25 months summer salary x $19,430/month base summer salary = **$4,858**. The Co-PI will provide administrative and scientific program support.

Senior Research Scientist: Y. Liu, 9-month academic appointment, requests 0.5 months summer salary x $8,502/month base summer salary = **$4,251**. Y. Liu will provide scientific oversight of the data set.

Professional: Jeff Donovan, a senior systems and software engineer, requests 1.0-month salary x $9,917/month base salary = **$9,917**. Donovan will support computer operations and data management and dissemination.

FRINGE ($9,690)

Fringe benefits are calculated @ 20.57% of total requested salary (Merz, Weisberg, Liu, Donovan), plus $1,654.66/month for medical and life insurance (Donovan only). 20.57% is retirement; FICA; Medicare; Leave Pool.

TRAVEL ($4,598)

Travel for Fieldwork: USF maintains CODAR HFRs at three geographic locations. Two locations are visited monthly and the Naples site, due to distance from the USF campus is visited twice a year. The project team primarily uses a University owned vehicle in support of HFR maintenance or a rental car when appropriate. The USF vehicle rate is $32.00/day with mileage billed at $0.445 per mile. The travel funds requested to service radar sites are budgeted at $2,598 using the USF vehicle breakdown as follows:

- Redington Shores: 35 miles roundtrip x .445/mile x 12 visits = $187 annual mileage. Vehicle fees are $32/day x 12 days annually = $384. The annual cost is estimated at **$571**.
- Venice: 125 miles roundtrip x .445/mile x 12 visits = $668 annual mileage. Vehicle fees are $32/day x 12 days = $384. The annual cost is estimated at **$1,052**.
- Naples: 340 miles roundtrip x .445/mile x 2 visits = $303 annual mileage. Vehicle fees are $32/day x 2 days/trip x 2 trips annually = $128. Because of the distance of this site from the USF campus, one-night hotel is needed. Based on historic costs, hotel costs estimated at $200 per night x 2 trips per year = $400. USF per diem $36 x 2 days per trip x 2 trips per year = $144. The annual cost estimate for this location is **$975**.

Travel for SECOORA Meetings: PI will participate in the annual meeting; however, the date and location is presently TBD. Based on historic cost for participating in SECOORA annual meetings, **$2,000** is budgeted for airfare, hotel, per diem, local travel (e.g., cab/Uber), and airport parking.

EQUIPMENT ($5,600)

An industrial air conditioner is required for remote site electronic equipment cooling at the USF Redington Shores CODAR site. AC units have to be purchased. The CODAR system has to remain cooled in order to be operational. Total cost $5,600 this is based on historic costs for AC units.

SUPPLIES ($6,500)

Supply funds are requested for existing HFR network operation. Supplies are needed annually for repairs and system maintenance. Supply purchases may include, but are not limited to the following:

- remote HFR site computer(s): $1,200
- cables: $2,000
- parts such as cellular communication data modems: $750
- Portable Floor/window A/C unit: $1,350
- Smart UPS devices: $1,200

OTHER COSTS ($12,486)

Electricity Charges

Pinellas County annual electricity usage fee for two HFR is based on 2021 charges. Electricity is approximately $185.83/month x 12 months = **$2,230**.

Communication/Data Telemetry Charges

Annual cellular airtime for all HFR site data transfer = **$5,340**.

CODAR Support

Support from CODAR is purchased as a 24-hour support contract time bundle to be used as required depending upon central processing/remote site needs: **$3,600**.

Freight

HFR equipment must be shipped back to CODAR for repairs; therefore, **$800** is budgeted for freight/shipping costs (based on previous year costs).

Publication Costs: $516.

TOTAL DIRECT COSTS ($77,939)

INDIRECT COSTS ($32,061)

The indirect cost rate calculated at 49.5% Modified Total Direct Costs (MTDC). IDC is not charged on the Electricity, Data Telemetry, or Permanent Equipment.

University of South Florida Facilities and Administrative Cost Rate Agreement dated 08/20/2021. Cognizant Agency: Department of Health and Human Services, Darryl W. Mayes, 214-767-3261. https://www.usf.edu/research-innovation/sr/documents/indirect-rates.pdf

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. USC	11.012	$	$	$ 110,000.00	$	$ 110,000.00
2. Voulgaris						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 110,000.00	$ 0.00	$ 110,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 50,266.00	$	$	$	$ 50,266.00
b. Fringe Benefits	16,664.00				16,664.00
c. Travel	3,900.00				3,900.00
d. Equipment					0.00
e. Supplies	2,142.00				2,142.00
f. Contractual					0.00
g. Construction					0.00
h. Other	8,062.00				8,062.00
i. Total Direct Charges *(sum of 6a-6h)*	81,034.00	0.00	0.00	0.00	81,034.00
j. Indirect Charges	28,966.00				28,966.00
k. TOTALS *(sum of 6i and 6j)*	$ 110,000.00	$ 0.00	$ 0.00	$ 0.00	$ 110,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 110,000.00	$ 27,500.00	$ 27,500.00	$ 27,500.00	$ 27,500.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 110,000.00	$ 27,500.00	$ 27,500.00	$ 27,500.00	$ 27,500.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $81,034	22. Indirect Charges: $28,966; 36% MTDC minus tuition
23. Remarks:	

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University of South Carolina, Columbia – George Voulgaris
Budget Justification – Year 2

Total Costs: $110,000

SALARY ($50,266)

Principal Investigator, George Voulgaris (1 month summer salary x $14,095/month base summer salary = **$14,095**) will oversee management of the project including installations, operations and research and development and hands on assistance in field operations as required. The PI is a faculty member with a 9-month academic appointment.

Technician – Part time (52 weeks x 21.744 hrs/week x $21.50/hour base pay = **$24,310**) technician will aid in daily operations and on-site maintenance of the three HFR sites, overseeing data transmission from remote HFR sites to central site at USC, and data management at the central site.

Graduate Student (4.5 months x $2,635.777/month base salary = **$11,861**) will help with technical aspects of the project including data management and field duties.

FRINGE ($16,664)

Fringe benefits include 30.09% of total salary for faculty and staff (subtotal $11,556) and 0.60% for enrolled graduate students (subtotal $71). Health benefits for the PI are covered as part of the academic salary. Health benefits for the technician (12 mo x $419.72/month health insurance = $5,037). Note, per University policy, part time employees working over 20 hrs per week are entitled to full benefits including health coverage.

TRAVEL ($3,900)

Travel for routine priority radar site maintenance for Caswell, NC (CSW, out of state), Georgetown, SC (GTN, in state) and Myrtle Beach state park (MBSP, in state). USC personnel (1 person) will make 6 trips at 3 days/trip visiting all 3 sites on one trip (Columbia, SC to GTN, to MBSP, to CSW and return to Columbia). Per diem is based on University daily rates. Hotel costs are based on pervious travel/historic costs.

- Mileage: 500 miles roundtrip to visit all 3 sites per visit x $0.52 per mile x 6 trips/year = $1,560
- Accommodation: $120 per night x 2 nights per trip x 6 trips/year = $1,440
- Per diem: 3-days/trip x $50/day x 6 trips/year = $900
- The total travel amount for 6 maintenance trips per year is $3,900.

SUPPLIES ($2,142)

Example supply items needed annually include:

- antenna aluminum support stands - $320
- stainless steel radials for antennas - $315
- cable supports that allow suspension of cables so that they do not interfere with nesting of marine turtles (GTN site): $250
- U/V resistant zip ties: $211
- Connectors: $380
- Wood: $280
- Tape: $190

- Thermally contracting insulators: $196

OTHER COSTS ($8,062)

Electricity Charges – **($6,120**) based on historic monthly average costs for each site.

- GTN electricity bills average at $130 per month x 12 months = $1,560 per year
- CSW electricity bills are $250 per month x 12 months = $3,000 per year
- MBSP electricity bills are $130 per month x 12 months = $1,560 per year

Communication/Data Telemetry Charges – Internet connection with static IP for data transmission from the remote sites (provided through Verizon Wireless).

- $38.02 per month (including taxes and fees) x 3 sites x 12 months = **$1,369**.

Tuition (excluded from IDC)

- 1 credit hour for Graduate Student at **$573** (amount excluded from IDC)

DIRECT COSTS ($81,034)

INDIRECT COSTS ($28,966)

The indirect cost rate is applied to all modified total direct costs, consisting of all salaries and wages, fringe benefits, materials, supplies, services, travel and subgrants and subcontracts up to the first $25,000 of each subgrant or subcontract (regardless of the period covered by the subgrant or subcontract). Modified total direct costs exclude equipment, capital expenditures, charges for patient care, student tuition remission, rental costs of off-site facilities, scholarships and fellowships as well as the portion of each grant and subcontract in excess of $25,000. IDC is charged on all expenses excluding equipment ($0) and tuition ($573).

The USC negotiated rate for service projects of **36% is applied to the modified direct costs (total direct ($81,034) – tuition ($573)) amount of $80,461**. For applicable rates see (accessed on 10/7/2020): https://sc.edu/about/offices_and_divisions/sponsored_awards_management/documents/usc_facilities_and_administration_rates.pdf.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. UGA - Edwards	11.012	$	$	$ 121,500.00	$	$ 121,500.00
2. HFR						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 121,500.00	$ 0.00	$ 121,500.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 38,899.00	$	$	$	$ 38,899.00
b. Fringe Benefits	13,508.00				13,508.00
c. Travel	10,644.00				10,644.00
d. Equipment					0.00
e. Supplies	8,357.00				8,357.00
f. Contractual					0.00
g. Construction					0.00
h. Other	9,056.00				9,056.00
i. Total Direct Charges *(sum of 6a-6h)*	80,464.00	0.00	0.00	0.00	80,464.00
j. Indirect Charges	41,036.00				41,036.00
k. TOTALS *(sum of 6i and 6j)*	$ 121,500.00	$ 0.00	$ 0.00	$ 0.00	$ 121,500.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 121,500.00	$ 30,375.00	$ 30,375.00	$ 30,375.00	$ 30,375.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 121,500.00	$ 30,375.00	$ 30,375.00	$ 30,375.00	$ 30,375.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $80,464	22. Indirect Charges: $41,036; 51%
23. Remarks:	

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Skidaway Institute of Oceanography, University of Georgia, Catherine Edwards and Dana Savidge

Year 2 HFR Budget Justification

Total Costs: $121,500

SALARY ($38,899)

Principal Investigator, Catherine Edwards ($10,544/month base summer salary x 0.755 months = **$7,961**) is responsible for project oversight and supervision of technicians.
Co-PI, Dana Savidge (no salary requested) will assist with High Frequency Radar (HFR) data analysis and data quality control.
Radar Technician, Kris Maedke-Russell ($4,583.42/month base salary x 6.75 months = **$30,938**) is responsible for HFR operation, maintenance, repairs, data processing, and efforts to assure that data is made available to SECOORA and HFRNet.

FRINGE ($13,508)

Fringe benefit rates are 22% for faculty summer salary and 38% for staff based on UGA's published rates. UGA fringe rates are based on annual salary level, and include FICA, retirement, life insurance, and health insurance. https://spa.uga.edu/frequently-used-information/#1496751157696-90ea7dfe-7d89

TRAVEL ($10,644)

Co-PI Savidge and the technician will participate in the SECOORA Annual meeting. Home location for both is Savannah, GA. Meeting location TBD but occurs each May. Cost listed below are based on previous meeting attendance. Per diem is based on anticipated GSA per diem rates for an out of state trip.

- Hotel: $200/night x 2 nights x 2 rooms (1 room/person) = $800
- Per diem: $66 x 3 days x 2 people = $396
- Mileage: estimated at 750 miles roundtrip x $0.575/mile = $431
- Hotel parking: $12/day x 3 days = $36
  Total for SECOORA Annual Meeting attendance: **$1,663**

ROWG meeting - the technician (home location, Savannah, GA) will participate in the annual Radiowave Operators Working Group Meeting (ROWG). The meeting location is anticipated to be the ECU Coastal Studies Institute in Wanchese, NC. UGA/Skidaway Institute of Oceanography complies with the Fly America Act. Hotel and per diem based on GSA rates since the travel is out of state.

- Round-trip flight to/from Savannah to Norfolk, VA (closest airport, internet flight search conducted 3/30/22) = $500
- Hotel: $151/night x 3 nights = $453
- Per diem: $69/day x 4 day = $276
- Rental car: 4 days x $77/day (Travelocity search on 3/30/22) = $308
- Rental car fuel = $35 (estimate)
  Total for ROWG Meeting: **$1,572**

Travel to St Catherine's Island (CAT HFR)

- 100 miles roundtrip x $0.575/mile x 7 trips = $403
- Per diem (based on UGA in-state per diem rate): $15/day x 2 persons x 7 trips = $210
  Total cost for CAT travel: **$613**

Travel to Jekyll Island (JEK HFR)

- 200 miles roundtrip x $0.575/mile x 7 trips = $805
- Per diem (based on UGA in-state per diem rate): $15/day x 2 person x 7 trips = $210
  Total cost for JEK travel: **$1,015**

Travel to Canaveral National Seashore (CNS HFR), Kennedy Space Center (KSC HFR)
Travel to the CNS and KSC sites requires two technicians. Travel is for 3 days, 2 nights each trip. Per diem based on GSA rates since the travel is out of state.

- 750 miles roundtrip x $0.575/mile x 4 trips = $1,725
- Per diem: $69 x 2 people x 3 days x 4 trips = $1,656
- Hotel: $150/night x 2 nights x 2 people x 4 trips = $2,400
  The total for CNS travel = **$5,781**

SUPPLIES ($8,357)

Materials and supplies are budgeted at $7,615. This includes annual costs, at $1,800 per year x 4 sites = **$7,300** to purchase electronics (e.g., Apple Mac Mini or comparable laptop), radar repair parts and shipping, general hardware and lumber (e.g., plywood, 2 x 4s), spools, cable connectors, wire connectors, window A/C units, and replacement antennas. This estimate is based on historic purchases and operational requirements for each site. An additional **$1,057** is budgeted for maintenance of Skidaway Institute of Oceanography data servers and the purchase of external storage devices.

OTHER COSTS ($9,056)

Electricity Charges:
Jekyll Island: $110 monthly estimate (based on previous bills) x 12 months = **$1,320**
St. Catherine's: $110 monthly estimate (based on previous bills) x 12 months = **$1,320**
Canaveral National Seashore: $150/month estimate (based on increased HVAC needs relative to GA sites due to warmer ambient temperatures) x 12 months = **$1,800**
Kennedy Space Center: these costs will be paid directly by SECOORA.

Communication/Data Telemetry Charges:
Jekyll Island: $50 monthly estimate (based on previous bills) x 12 months = **$600**
St. Catherine's: $93 monthly estimate (based on previous bills) x 12 months = **$1,116**
Canaveral National Seashore: $100/month estimate (based on St. Catherine's) x 12 months = **$1,200**
Kennedy Space Center: $100/month estimate (based on St. Catherine's) x 12 months = **$1,200**

Site Services
Site Rental Fee for Jekyll Island: **$500** annually

DIRECT COSTS ($80,464)

INDIRECT COSTS ($41,036)

Indirect costs are calculated at the federally negotiated rate of 51% MTDC for on-campus research projects per the F&A Rate Agreement negotiated with the Department of Health & Human Services dated May 30, 2018.IDC is not charged on equipment. The total IDC charge is **$41,036.** https://spa.uga.edu/frequently-used-information/#1496751061745-520f4a33-141c

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. FIT	11.012	$	$	$ 91,000.00	$	$ 91,000.00
2. Lazarus						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 91,000.00	$ 0.00	$ 91,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 28,325.00	$	$	$	$ 28,325.00
b. Fringe Benefits	2,499.00				2,499.00
c. Travel	2,671.00				2,671.00
d. Equipment					0.00
e. Supplies	1,240.00				1,240.00
f. Contractual					0.00
g. Construction					0.00
h. Other	28,080.00				28,080.00
i. Total Direct Charges *(sum of 6a-6h)*	62,815.00	0.00	0.00	0.00	62,815.00
j. Indirect Charges	28,185.00				28,185.00
k. TOTALS *(sum of 6i and 6j)*	$ 91,000.00	$ 0.00	$ 0.00	$ 0.00	$ 91,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 91,000.00	$ 22,750.00	$ 22,750.00	$ 22,750.00	$ 22,750.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 91,000.00	$ 22,750.00	$ 22,750.00	$ 22,750.00	$ 22,750.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $62,815	22. Indirect Charges: $28,185; 44.87% MTDC
23. Remarks:	

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Dr. Steven Lazarus, Florida Institute of Technology
Year 2 Budget Justification

TOTAL COST YEAR 2: $91,000

SALARY ($28,325)

Lead PI Steven Lazarus (($10,700/month summer salary x 0.75 months = **$8,025**) will provide overall project management including supervision of personnel (consultant and PhD student), conduct regular site visits to HFR sites, conduct in-person (or on-line) meetings with park personnel and SECOORA HFR team.

PhD Student (TBD, 12 months at $1,691.70/month = **$20,300**) will provide HFR installation support, maintenance support, intermediate site visits, community outreach, and project related research.

FRINGE ($2,499)

Florida Tech's fringe rate is 31.14%. There is no fringe on the graduate student salary.

TRAVEL ($2,671)*

*All is based on historic travel

Treasure Shores: The PI and student will make 15 roundtrips to meet with Park staff, download data from computers, conduct repairs and maintenance. Treasure Shores is 56 miles roundtrip from FIT.

- 15 trips x 56 miles x $0.545/mile = **$458**

Hightower Park: The PI and student will make approximately 15 roundtrips to meet with permitting personnel, to install the radar during the Fall 2022, and conduct site visits related to maintenance and repairs. Hightower Park is 26 miles roundtrip from FIT.

- 15 trips x 26 miles x $0.545/mile = **$213**

SECOORA Annual Meeting: This meeting is hosted each May and the meeting locations vary each year. The May 2022 meeting location is TBD. Anticipated travel is for 3 days/2 nights. The below costs are estimates for PI participation. PI home location is Melbourne, FL.

- Airfare $450
- Lodging ($225 per night, inclusive of tax) $450 (based on previous SECOORA hotel meeting rates)
- Transportation (e.g., airport parking at Melbourne International airport, taxi) $50
- Per diem $150 (will be reimbursed at the GSA rate based on location)

Estimated costs to participate in the SECOORA Annual Meeting = **$1,100**

ROWG Meeting: The remaining travel funds will used to cover the cost of PI or student participation in the HFR related Radiowave Operators Working Group (ROWG) meeting. At this time, meeting locations and dates have not been published. Anticipated travel is for 2 days/1 night. The below costs are estimates:

- Airfare $450
- Lodging $250
- Transportation (e.g., airport parking at Melbourne International airport, rental car & fuel): $100
- Per diem $100

Estimated costs to participate in the ROWG meeting = **$900**

SUPPLIES ($1,240)

Funds ($1,240) are requested to purchase miscellaneous supplies (such as tools and hardware) and paint, doors, and hardware to for maintenance/upgrades to the lifeguard tower which will house the radar at Treasure Shores Park.

OTHER COSTS ($28,080)

Consultant: Dr. Eric Thosteson (Up-Rev Engineering) - **$24,000** is requested to assist with HFR deployment, operation, maintenance. Dr. Thosteson will assist with the following tasks: hurricane set-down (based on two storms annually) and set-up (post-storm), anticipated site repairs due to storms, and on-site maintenance for Treasure Shores and assistance with the deployment of the Hightower Beach Park site in Fall 2022.

Communication/Data Telemetry Charges:
Anticipated costs for Verizon or another service provider for Treasure Shores and Hightower Park sites $100/month x 12 months = **$1,200** annually. These cost estimates are based on costs provided by other HFR operators.

Power:
$120/month/site x 2 sites (cost estimate is based on other operational HFR sites) = **$2,880**.

TOTAL DIRECT COSTS ($62,815)

INDIRECT ($28,185)

The FIT IDC rate for on-campus research is 44.87%, modified total direct costs. IDC is excluded from equipment, capital expenditures, rental costs, and scholarships and fellowships. Additional information can be found here: https://www.fit.edu/policies/research-and-sponsored-programs/policies/indirect-costs-for-sponsored-and-private-projects/.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. UM	11.012	$	$	$ 123,800.00	$	$ 123,800.00
2. Shay						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 123,800.00	$ 0.00	$ 123,800.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 65,838.00	$	$	$	$ 65,838.00
b. Fringe Benefits	22,221.00				22,221.00
c. Travel	2,184.00				2,184.00
d. Equipment					0.00
e. Supplies	322.00				322.00
f. Contractual					0.00
g. Construction					0.00
h. Other	7,689.00				7,689.00
i. Total Direct Charges *(sum of 6a-6h)*	98,254.00	0.00	0.00	0.00	98,254.00
j. Indirect Charges	25,546.00				25,546.00
k. TOTALS *(sum of 6i and 6j)*	$ 123,800.00	$ 0.00	$ 0.00	$ 0.00	$ 123,800.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 123,800.00	$ 30,950.00	$ 30,950.00	$ 30,950.00	$ 30,950.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 123,800.00	$ 30,950.00	$ 30,950.00	$ 30,950.00	$ 30,950.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $98,254	22. Indirect Charges: $25,546; 26% MTDC.
23. Remarks:	

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University of Miami - RSMAS, Lynn K. Shay
Year 2 Budget Justification

TOTAL COST YEAR 2: $123,800

SALARY ($65,838)

Principal Investigator, Lynn K. Shay (0.76 month x $24,811/month base salary = **$18,856**), will supervise UM staff and oversee the project which include HF radar operations, project spending, and provision of progress reports to SECOORA.

Research Associate, Jorge Martinez-Pedraja (10 months x $4,490.90/month base salary = **$44,909**), is the lead field technician who is responsible for maintaining the radars and keeping them operational.

Associate Research Scientist, Benjamin Jaimes (0.25 month x $8,291/month base salary = **$2,073**), works on the data acquired from the HF radars as well as assisting in field operations and maintenance. His duties also include addressing IT issues that may arise.

FRINGE ($22,221)

University of Miami Fringe Benefit rate for the PI is assessed at 26.90% and the Research Associate and Associate Research Scientist benefits are assessed at 36.50%. https://www.ora.miami.edu/forms-and-rates/fringe-benefit-rates/index.html.

TRAVEL ($2,184)

Project team visits HFR sites at 2-week intervals (26 trips per station) to download data from the computers and check the site for potential problems. PI will follow the Fly America Act.

Dania Beach, 26 trips by car x 50 miles roundtrip @ 0.56 per mile = $728.
Virginia Key, 26 trips by car x 5 miles roundtrip @ 0.56 per mile = $72.80
Crandon Park, 26 trips by car x 5 miles roundtrip @ 0.56 per mile = $72.80
North Key Largo, 26 trips by car x 90 miles roundtrip @ 0.56 per mile = $1,310.40
Total for servicing HFR sites: **$2,184.**

SUPPLIES ($322)

Miscellaneous supplies for site maintenance include but not limited to hard drives, cables, pvc to protect cables, ups batteries, etc.

OTHER COSTS ($7,689)

Outside Services: **$2,625**
Recalibrate eight WERA Filters ($280 per filter) for conversion from 12.7MHz to 13.5MHz at Helzel Messtechnik GmbH in Germany to be FCC compliant. The amount also includes shipping, insurance, and bank fee.

Monthly Electricity Charges: **$2,760**

- Virginia Key: $60/month x 12 months = $720
- North Key Largo: $170/month x 12 = $2,040

Communication/Data Telemetry Charges: **$2,304**

- AT&T service: $48/month x 3 sites x 12 months (Virginia Key, Dania Beach, North Key Largo) = $1,728
- Sprint service: $48/month x 1 site x 12 months (Crandon Park) = $576

DIRECT COSTS ($98,254)

INDIRECT COSTS ($25,546)

UM off campus IDC rate is 26% of Direct Costs. https://www.ora.miami.edu/forms-and-rates/facilities-and-administrative-rates/index.html

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. UGA - Edwards	11.012	$	$	$ 64,000.00	$	$ 64,000.00
2. Glider						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 64,000.00	$ 0.00	$ 64,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 25,398.00	$	$	$	$ 25,398.00
b. Fringe Benefits	8,521.00				8,521.00
c. Travel	1,487.00				1,487.00
d. Equipment					0.00
e. Supplies	1,763.00				1,763.00
f. Contractual					0.00
g. Construction					0.00
h. Other	5,215.00				5,215.00
i. Total Direct Charges *(sum of 6a-6h)*	42,384.00	0.00	0.00	0.00	42,384.00
j. Indirect Charges	21,616.00				21,616.00
k. TOTALS *(sum of 6i and 6j)*	$ 64,000.00	$ 0.00	$ 0.00	$ 0.00	$ 64,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 64,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 64,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00	$ 16,000.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $42,384	22. Indirect Charges: $21`,616; 51%
23. Remarks:	

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Standard Form 424A (Rev. 7-97) Page 2

Skidaway Institute of Oceanography, University of Georgia, Catherine Edwards
Year 2 Budget Justification

TOTAL COST YEAR 2: $64,000

SALARY ($25,398)

Principal Investigator, Catherine Edwards (0.67 month summer salary x $10,544/month base summer salary = **$7,065**) is responsible for project oversight, supervision of glider technicians, coordination with SECOORA glider observatory co-PIs, SECOORA leadership, and intra-IOOS efforts.
Glider Technicians, Kris Maedke-Russell and Karen Dreger (4 months total technician support x $4,583/month base salary = **$18,333**). The technicians assist with glider prep, piloting, recoveries, oxygen calibrations, and maintenance.

FRINGE ($8,521)

Fringe benefit rates are 22% for faculty summer salary and 38% for staff based on UGA rates. UGA fringe rates are based on annual salary level, and include FICA, retirement, life insurance, and health insurance. See: https://spa.uga.edu/frequently-used-information/#1496751157696-90ea7dfe-7d89

TRAVEL ($1,487)

Travel to glider deployment and recovery locations and instrument transportation between glider observatory PIs is detailed below. All travel originates from Savannah, GA. In-state per diem is based on State of GA reimbursement rates. Out of state per diem follows GSA reimbursement rates. UGA/Skidaway Institute of Oceanography complies with the Fly America Act.

GA travel – Brunswick, GA

- Mileage – 180 miles roundtrip x $0.575 x 4 trips = $414
- Per diem - $27/day x 1 day x 4 trips = $108
- Total: **$522**

The PI (Edwards) or K. Dreger will participate in the SECOORA Annual meeting. Meeting location TBD but generally occurs in May annually. Cost listed below are based on previous meeting attendance.

- Hotel: $150/night x 2 nights x 1 room = $300
- Per diem: $66 x 3 days x 1 person = $198
- Mileage: estimated at 750 miles roundtrip x $0.575/mile = $431
- Hotel parking: $12/day x 3 days = $36
- Total for SECOORA Annual Meeting attendance: **$965**

SUPPLIES ($1,763)

$1,763 is requested to cover supplies, including anti-fouling materials, glider batteries, ballasting supplies, tools for deployment/recovery, other required expendables, and fuel for vessel support.

OTHER COSTS ($5,215)

Communication/Data Telemetry Charges **($2,400**) – Gliders communicate and transmit a subset of measured data back to shore at regular intervals via a RUDICS Iridium satellite connection. $1,800 is requested to cover Iridium costs for 1 deployment calling into the SkIO base station. An additional $600 per year is requested to cover Argos service for the SECOORA and SkIO gliders.

Purchased Services (**$415**) – Service and factory maintenance for the SkIO or SECOORA glider. Regular service includes factory CTD calibrations, DO sensor calibrations/repairs, pump service as needed, and general repairs to the gliders when damaged during operations. $415 is requested to partially offset these costs.

Charter Services (**$2,400**) – Small boat operations are required for glider deployments and recoveries. Two (2) charters at an average cost of $1,200 per trip, inclusive of charter fee and fuel are budgeted (based on historical costs) = $2,400.

TOTAL DIRECT COSTS ($42,384)

INDIRECT COSTS ($21,616)

Indirect costs are calculated at the federally negotiated rate of 51% MTDC for on-campus research projects per the F&A Rate Agreement negotiated with the Department of Health & Human Services dated May 30, 2018. IDC is not charged on equipment. https://spa.uga.edu/frequently-used-information/#1496751061745-520f4a33-141c

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. USF Lembke	11.012	$	$	$ 60,000.00	$	$ 60,000.00
2. Glider						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 60,000.00	$ 0.00	$ 60,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 18,406.00	$	$	$	$ 18,406.00
b. Fringe Benefits	6,806.00				6,806.00
c. Travel	2,176.00				2,176.00
d. Equipment					0.00
e. Supplies	3,371.00				3,371.00
f. Contractual	2,520.00				2,520.00
g. Construction					0.00
h. Other	8,639.00				8,639.00
i. Total Direct Charges *(sum of 6a-6h)*	41,918.00	0.00	0.00	0.00	41,918.00
j. Indirect Charges	18,082.00				18,082.00
k. TOTALS *(sum of 6i and 6j)*	$ 60,000.00	$ 0.00	$ 0.00	$ 0.00	$ 60,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 60,000.00	$ 15,000.00	$ 15,000.00	$ 15,000.00	$ 15,000.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 60,000.00	$ 15,000.00	$ 15,000.00	$ 15,000.00	$ 15,000.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $41,918	22. Indirect Charges: $18,082; 49.5% MTDC minus shiptime, tuition, vessel rental,etc.
23. Remarks:	

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University of South Florida, College of Marine Science, Glider operations, Lead PI: Chad Lembke
Year 2 Budget Justification

TOTAL COST YEAR 2: $60,000

SALARY ($18,406)

Principal Investigator, Chad Lembke ($86,217/yr. for 9-month appointment: $9,579.67/month summer salary x 0.25 months of summer salary x = **$2,395**) will lead the USF glider observatory effort and he is responsible coordination with other members of the SECOORA glider observatory team. Lembke will supervise engineers, researchers, and students.
Research Associate, Alex Silverman ($84,239/yr. 12-month appointment: $7,019.92/month base salary x 0.5 months = **$3,510**) will lead glider preparation and maintenance as well as support for glider flight path planning and piloting.
Research Associate, Heather Broadbent ($68,007/yr. 12-month appointment: $5,667.25/month base salary x 1.5 months = **$8,501**) will assist in glider preparation and maintenance, piloting, and is also responsible for data QA/QC at the end of missions.
Graduate Students, one graduate student will assist in all glider deployments, lab work, and field activities ($24,000/yr. per student; $2,000/month base salary x 2 months support = **$4,000**).

FRINGE ($6,806)

Fringe benefits, including health/life insurance, are included as direct costs on salaries following the USF Sponsored Research Office guidelines. Faculty and staff fringe = 20.57%. Graduate student fringe rate = 0.20%.

Health and life insurance is $1,654.66/month for family coverage for the two research associates and $263/month for full-time students. Health insurance is not included on Lembke's time and effort (i.e., only the 20.57% in fringe). All numbers rounded up to the nearest dollar.

- PI – $493
- Research Associates fringe and health insurance – $5,780
- Graduate student fringe - 0.20% x $4,000 = $8.00
- Graduate student health insurance - 1 student x 2 months x $263/month health insurance = $525

TRAVEL ($2,176)

Travel funds are needed for glider deployment, recovery, and instrument transportation between glider observatory PIs. Four (4) trips from the home location of St. Petersburg, FL to Cape Canaveral, FL are required annually. Two USF personnel will participate on each trip. The breakdown is as follows:

Hotel: $125/night x 1 night x 2 travelers x 4 trips = **$1,000**
Rental vehicle: $75/day x 2 days x 4 trips = **$600**
Per diem (state of FL rate): $36/day x 2 days x 2 travelers x 4 trips = **$576**
Total Travel = $2,176

SUPPLIES ($3,371)

Lab and field supplies ($3,371) include, but are not limited to, tools, moorings, lines, ballast weights, necessary glider components (e.g., wings), wiring, hard drives, glider batteries, etc.

CONTRACTUAL ($2,520)

Consulting Services
Advanced Oceanics will contract with USF and provide a glider technician/operator for glider mission support (e.g., piloting, sensor troubleshooting). The contract value is $2,520.

OTHER COSTS ($8,639)

Communication/Data Telemetry Charges (**$3,050**)
RUDICS Iridium satellite telemetry (MetOcean) is required for glider communications with lab computer. Iridium costs for two 2-4-week glider deployments x $1,250/deployment = **$2,500**. Argos service for glider tracking (Woods Hole Group) is $275/month x 2 months = **$550**. All costs based on current plan pricing from MetOcean and Woods Hole Group.

Facility Rental Fees (**$2,800**) – IDC not charged on this line
Small research vessels or charter vessels are used for glider deployments. Two charters are budgeted based on historical costs of $800 to $2,000 per charter, depending on vessel type, distance from shore for the glider deployment/recovery, and fuel usage). $2,800 is requested based on historic vessel usage costs.

Shipping (**$200**)
Funds budgeted to ship supplies/equipment to the manufacture for repairs for the project.

Tuition **($2,589**) – IDC not charged on this line
Summer tuition expense is budgeted for student based on 6 credit hours @$431.50/credit hour.

TOTAL DIRECT COSTS ($41,918)

INDIRECT COSTS ($18,082)

The indirect cost rate is calculated at 49.5% Modified Total Direct Costs (MTDC). Equipment > $5,000, equipment rental, ship time, and tuition are not assessed indirect costs. University of South Florida. USF Indirect Cost Rate Agreement, as of 8/20/2021

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. UNCCH Seim	11.012	$	$	$ 40,000.00	$	$ 40,000.00
2. Glider						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 40,000.00	$ 0.00	$ 40,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 23,886.00	$	$	$	$ 23,886.00
b. Fringe Benefits	7,057.00				7,057.00
c. Travel					0.00
d. Equipment					0.00
e. Supplies	578.00				578.00
f. Contractual					0.00
g. Construction					0.00
h. Other	225.00				225.00
i. Total Direct Charges *(sum of 6a-6h)*	31,746.00	0.00	0.00	0.00	31,746.00
j. Indirect Charges	8,254.00				8,254.00
k. TOTALS *(sum of 6i and 6j)*	$ 40,000.00	$ 0.00	$ 0.00	$ 0.00	$ 40,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 40,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 40,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00	$ 10,000.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $31,746	22. Indirect Charges: $8,254; 26%
23. Remarks:	

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UNC Chapel Hill, Gliders, Harvey Seim
Year 2 Budget Justification

TOTAL COST YEAR 2: $40,000

SALARY ($23,886)

Principal Investigator – Harvey Seim (0.28 months x $15,452.75/month base salary = **$4,327**) is project lead and glider piloting supervisor.
Research Associate – Sara Haines (1 month x $6,590/month base salary = **$6,590**) is responsible for data management and re-processing.
Technician – Tony Whipple (1.5 months x $6,396/month base salary = **$9,594**) will assist with glider piloting as well as glider engineer support (preparation, deployment and repair).
Undergraduate student - (TBD, 1.5 months x $2,250 base salary/month = **$3,375**) will assist Seim with analysis of glider observations.

FRINGE ($7,057)

Fringe benefits are calculated as 26.174% of total salary for faculty and staff and 1.84% for undergraduate students. Health insurance is $584.92 per month for faculty and staff. The total fringe equals $7,057.

SUPPLIES ($578)

Supply will be used for maintenance and repair of gliders (e.g., O-rings, waste anodes, touch-up paint) and supplies needed by the ballasting facility at the UNC Institute of Marine Sciences (e.g., pumps, tubing), including the computer used for communications with the glider. Based on historic/annual supply costs, $578 is requested.

OTHER COSTS ($225)

Iridium satellite phone service: The phone will be used for glider deployments and recoveries to ensure communications to shore. $15/mon usage fee x 12 months + $20 activation fee + $25 flex fee for monthly expensing = $225.

DIRECT COSTS ($31,746)

INDIRECT COSTS ($8,254)

This work will occur in the coastal ocean along the eastern seaboard and will require staff to work off-campus in support of the missions. We therefore request an off-campus rate of 26% (rates found here: https://research.unc.edu/sponsored-research/resources/information-sheet/#info7). Total indirect cost is $8,254.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. GT - Zhang	11.012	$	$	$ 32,000.00	$	$ 32,000.00
2. Glider						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 32,000.00	$ 0.00	$ 32,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 12,174.00	$	$	$	$ 12,174.00
b. Fringe Benefits	1,010.00				1,010.00
c. Travel	1,866.00				1,866.00
d. Equipment					0.00
e. Supplies	748.00				748.00
f. Contractual					0.00
g. Construction					0.00
h. Other	7,007.00				7,007.00
i. Total Direct Charges *(sum of 6a-6h)*	22,805.00	0.00	0.00	0.00	22,805.00
j. Indirect Charges	9,195.00				9,195.00
k. TOTALS *(sum of 6i and 6j)*	$ 32,000.00	$ 0.00	$ 0.00	$ 0.00	$ 32,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 32,000.00	$ 8,000.00	$ 8,000.00	$ 8,000.00	$ 8,000.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 32,000.00	$ 8,000.00	$ 8,000.00	$ 8,000.00	$ 8,000.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $22,805	22. Indirect Charges: $9,195; 58.2%
23. Remarks:	

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Dr. Fuming Zhang, Professor; Georgia Institute of Technology

Year 2 Budget Justification

TOTAL COST YEAR 2: $32,000

SALARY ($12,174)

Principal Investigator, Dr. Fuming Zhang (0.09 months x $14,413/month base salary = **$1,297**), will advise the graduate research assistant (graduate student) and collaborate with other glider PIs on this project. Graduate Student (TBD), 4.5 months x $2,417/month base salary = **$10,877**) will improve and maintain the glider mission planning and data visualization software (GENIoS) developed by Georgia Tech and analyze glider navigation data. The graduate student will also assist Zhang and the glider team with glider deployments.

FRINGE ($1,010)

Dr. Zhang fringe benefit rate: 32.6% = **$423**; Graduate Research Assistant fringe benefit rate: 5.4% = **$587**

TRAVEL ($1,866)

The PI home location is Atlanta, GA. The PI will participate in 2022 conference such as Oceans or AGU. $1,674 is budgeted for travel: Anticipated costs are based on previous meeting participation at Oceans 2019 in Seattle, WA. This is a 4 day/3 night trip. PI will follow the Fly America Act.

- Flight: $425
- Hotel: $143/night plus 17% tax = $167.31/night x 3 nights = $502
- Conference Registration: $655 (Member rate)
- Per Diem (GSA rate): $71 x 4 days = $284
  Total cost: $1,866

SUPPLIES ($748)

Supplies are budgeted for the maintenance of a small underwater vehicle and a small surface vehicle at GT. The vehicles are used for undergraduate education through an undergraduate research team (Robosense) in marine robotics through GT's vertically integrated projects (VIP). (https://www.vip.gatech.edu/teams/robosense). The funding will be used to purchase spare parts as listed below:

- 3 Blue Robotics T200 Thrusters at $209 each = $627
- 1 acrylic housing at $90 = $90
- Misc. costs such as S&H ~ $31
  Total supply cost: $748

OTHER COSTS ($7,007)

Tuition: Graduate Student tuition is $1,557/month x 4.5 months = **$7,007**

DIRECT COSTS ($22,805)

INDIRECT COSTS ($9,195)

Georgia Tech uses a Modified Total Direct Costs rate of 58.2%. Tuition is not included in the IDC calculation. Total IDC request = **$9,195**. The IDC rate agreement: https://osp.gatech.edu/rates.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. USC	11.012	$	$	$ 100,000.00	$	$ 100,000.00
2. Montie						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 100,000.00	$ 0.00	$ 100,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 45,000.00	$	$	$	$ 45,000.00
b. Fringe Benefits	19,008.00				19,008.00
c. Travel					0.00
d. Equipment					0.00
e. Supplies	2,830.00				2,830.00
f. Contractual					0.00
g. Construction					0.00
h. Other	5,626.00				5,626.00
i. Total Direct Charges *(sum of 6a-6h)*	72,464.00	0.00	0.00	0.00	72,464.00
j. Indirect Charges	27,536.00				27,536.00
k. TOTALS *(sum of 6i and 6j)*	$ 100,000.00	$ 0.00	$ 0.00	$ 0.00	$ 100,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 100,000.00	$ 25,000.00	$ 25,000.00	$ 25,000.00	$ 25,000.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 100,000.00	$ 25,000.00	$ 25,000.00	$ 25,000.00	$ 25,000.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $72,464	22. Indirect Charges: $27,536; 38% MTDC.
23. Remarks:	

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University of South Carolina Beaufort, Eric Montie
Year 2 Budget Justification

TOTAL COST YEAR 2: $100,000

SALARY ($45,000)

Principal Investigator, Dr. Eric Montie, – 0 month salary requested, will manage the entire project, supervise the technician, assist with fieldwork and data analysis, and prepare reports and manuscripts.
Research Associate – 12 months x $3,750/month base salary = **$45,000** total salary - will assist with deploying and retrieving passive acoustic recorders, reviewing passive acoustic data, and synthesizing results for reports and manuscripts.

FRINGE ($19,008)

Fringe rate for Research Associate is 31.04% of the salary (0.3104 x $45,000 = $13,968) plus $420/month for health insurance ($420*12 months = $5,040).

EXPENDABLE SUPPLIES ($2,830)

Chain, line, shackles, augers, signs for estuarine deployments and backup memory ($2,830)

OTHER COSTS ($5,626)

South Carolina Department of Natural Resources (SCDNR) will deploy/retrieve acoustic recorders in Charleston Harbor and Winyah Bay. SCDNR charges a service fee of $703.25/trip. 8 trips/year x $703.25/trip = $5,626

TOTAL DIRECT COSTS ($72,464)

INDIRECT COSTS ($27,536)

The indirect cost rate is 38% for on-campus research.
https://sc.edu/about/offices_and_divisions/sponsored_awards_management/documents/usc_facilities_and_administration_rates.pdf.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. ASBPA	11.012	$	$	$ 74,985.00	$	$ 74,985.00
2. Elko						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 74,985.00	$ 0.00	$ 74,985.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 42,700.00	$	$	$	$ 42,700.00
b. Fringe Benefits	0.00				0.00
c. Travel	1,500.00				1,500.00
d. Equipment	9,600.00				9,600.00
e. Supplies	2,920.00				2,920.00
f. Contractual	6,000.00				6,000.00
g. Construction					0.00
h. Other	12,265.00				12,265.00
i. Total Direct Charges *(sum of 6a-6h)*	74,985.00	0.00	0.00	0.00	74,985.00
j. Indirect Charges	0.00				0.00
k. TOTALS *(sum of 6i and 6j)*	$ 74,985.00	$ 0.00	$ 0.00	$ 0.00	$ 74,985.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 74,985.00	$ 18,746.25	$ 18,746.25	$ 18,746.25	$ 18,746.25
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 74,985.00	$ 18,746.25	$ 18,746.25	$ 18,746.25	$ 18,746.25

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $74,985	22. Indirect Charges: $0.00; 0%
23. Remarks:	

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American Shore and Beach Preservation Association (ASBPA), Nicole Elko
Year 2 Budget Justification

TOTAL COST YEAR 2: $74,985

SALARY: $42,700

Principal Investigator, Dr. Nicole Elko (2.3646 months x $8,500/month base salary = **$20,100**) is the stakeholder liaison lead of the project. Elko will coordinate internal and external collaborations, develop sensor installation plans, QA/QC data and products, coordinate survey procedures and contractors, and co-lead the end-user engagement strategy to prioritize needs. In year two, Elko will work with stakeholders to expand the network in North and South Carolina and Florida.
Co-Principal Investigator, Dr. Brian Glazer (2.4824 months x $8,500/month base salary = **$21,100**) is the technical lead of the project. Glazer and Hohonu, Inc. will lead the data analytics and innovation elements of the proposal to maintain high quality data standards. In year two, Glazer will coordinate with the SECOORA DMAC team to ensure that all data generated with SECOORA funding will be publicly available, served to live interactive web plots, and that endpoints for each measurement stream will be available to SECOORA for custom machine-to-machine or scripting applications.
Professional, Kathleen Riely (0.1765 months x $8,500/month base salary = **$1,500**) is on the board of directors of ASBPA and is also the Executive Director of the North Carolina Beach, Inlet, and Waterway Association (NCBIWA). She will assist with North Carolina community engagement, serve on the product development team, and facilitate the end user engagement strategy in North Carolina. In year two, Riely will assist with finalizing site selections and continued community engagement in North Carolina.

FRINGE: $0

No fringe benefits are requested

DOMESTIC TRAVEL ($1,500)

Travel for fieldwork:
Funds are requested to for Dr. Elko to travel from her home base on Folly Beach, SC to various sensor sites for installation and maintenance. ASBPA uses GSA rates for travel. In year two, travel for field work within Florida, North Carolina and South Carolina is budgeted at **$940.**

- Folly Beach, SC to St. Augustine, FL: 570 miles roundtrip x 1 trips x 0.585/mile = $333
- Folly Beach, SC to Corolla, NC: 990 miles roundtrip x 1 trip x 0.585/mile = $579
- Folly Beach, SC to Charleston, SC: 24 miles roundtrip x 2 trips x 0.585/mile = $28

Travel for annual meeting: Funds are requested for Dr. Elko to participate in the SECOORA annual meeting. Location TBD. Costs are based on previous SECOORA meeting participation.

- Hotel: $200 * 2 nights = $400
- Per diem: $66 * 3 days = $198

Total request is **$560**. PI has other funds to cover the costs above the requested amount.

EQUIPMENT ($9,600)

The Hohonu water level sensors will be purchased as they not available for lease. All equipment is required for Objective 2.B: Expand the observing subsystem to address the region's highest priority needs as identified in the SECOORA RCOOS Plan.

While this is a low-cost sensor with a value of <$5,000, ASBPA considers this equipment since it is not an expendable item (i.e., has a lifespan of greater than 1 year). The sensors are valued at $2,600 and are only available for purchase. Schmidt Marine Technology Partners provided 50% cost-matching grants for our non-profit to purchase sensors. In addition, each community that we are working with is required to buy-in to the observation system through a $500 direct contribution. Thus, the sensors will cost SECOORA $800 each.

In year two, we will purchase 12 sensors for installation in FL, NC and SC for a total cost of $9,600 (12 sensors x $800 = **$9,600**).

EXPENDABLE SUPPLIES ($2,920)

Supply funds (**$2,920**) are requested for the materials and hardware needed to install sensors, such as mounting brackets, lag bolts, hose clamps, deck screws and wooden 2 x 4s. Costs are based on supplies purchased in Year 1 for water level installations.

CONTRACTUAL ($6,000)

Survey Professionals – Local survey professionals will be contracted to obtain an accurate NAVD88 elevation of range zero for each installed sensor. In year two, 12 sensors (located in FL, NC and SC) will be surveyed. Survey Costs: $500/survey x 12 surveys = **$6,000**

OTHER COSTS ($12,265)

Workshops ($5,000): Workshops are a critical piece of the outreach and communications strategy which will be used to engage 40 communities across the SECOORA region. State-specific winter workshops are planned to occur in conjunction with each state's in-person beach preservation conference. In addition, we ASBPA will sponsor an annual dedicated session on this effort at ASBPA annual conference each fall. Each of the in-person conferences will include a tangential mini-workshop for the communities engaged in this project to share project results, revisit user needs, discuss next steps, and obtain product feedback.

In year two, $5,000 in total is requested to support the following conferences: 1) ASBPA ($3,000), 2) South Carolina Beach Advocates ($1,000), and 3) North Carolina Beach, Inlet and Waterways Association (NCBIWA) ($1,000). Funds will be used to cover room rental fees at the conference location, A/V fees, light refreshments (i.e., coffee, water, snacks), workshop training materials, and speaker fees.

Facilities Charge ($7,265): ASBPA requests a 12.5% facilities charge for real costs (except equipment) that our organization incurs for activities that support but are not directly charged to this grant. These costs are required to conduct the work and are critical to the success of the project and the organization. Expenses included in this category are administrative costs, legal and accounting costs, web and digital design costs, and insurance.

DIRECT COSTS ($74,985)

INDIRECT COSTS ($0)

ASBPA does not have an indirect cost rate agreement; therefore, no indirect costs are requested.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. GT	11.012	$	$	$ 75,000.00	$	$ 75,000.00
2. Cobb						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 75,000.00	$ 0.00	$ 75,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 26,281.00	$	$	$	$ 26,281.00
b. Fringe Benefits	8,568.00				8,568.00
c. Travel	2,446.00				2,446.00
d. Equipment	16,000.00				16,000.00
e. Supplies					0.00
f. Contractual					0.00
g. Construction					0.00
h. Other					0.00
i. Total Direct Charges *(sum of 6a-6h)*	53,295.00	0.00	0.00	0.00	53,295.00
j. Indirect Charges	21,705.00				21,705.00
k. TOTALS *(sum of 6i and 6j)*	$ 75,000.00	$ 0.00	$ 0.00	$ 0.00	$ 75,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 75,000.00	$ 18,750.00	$ 18,750.00	$ 18,750.00	$ 18,750.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 75,000.00	$ 18,750.00	$ 18,750.00	$ 18,750.00	$ 18,750.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $53,295	22. Indirect Charges: $21,705; 58.20% MTDC
23. Remarks:	

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Georgia Institute of Technology, Kim Cobb and Emanule Di Lorenzo

Year 2 Budget Justification

TOTAL COST YEAR 2: $75,000

SALARY ($26,281)

Principal Investigator, Cobb (0.10 months x $18,916/month base salary = **$1,892**) will oversee all aspects of the project, including engaging with municipal leaders to design the installation of the sensor networks, analyses of data streams for quality assurance/quality control, sensor network performance, data analyses, drafting of publications, presentations, and preparation of grant reports. She will also oversee the Research Associate who will be responsible for the sensor data QA/QC and preparation of data for public and research access.

Co-PI, Di Lorenzo (0.10 months x $17,916/month base salary = **$1,792**) will coordinate the design of the observational array with ongoing coastal ocean modeling efforts and engage with municipal leaders to design the installation of the sensor networks, and assist in the data interpretation of sensor data, drafting of publications, and preparation of grant reports.

Associate Investigator**,** Russell Clark (1.0 months x $13,433/month base salary = **$13,433**) will oversee the production of the sensor devices, the acquisition and configuration of the sensor and gateway devices and conduct the physical installation of the sensor and gateway devices. He will also perform assembly and benchmark each sensor and assist with data QA/QC and perform maintenance of previously deployed sensors.

Research Associate**,** Akhil Chavan (2.0 months x $4,582.50/month base salary = **$9,165**) will be responsible for the sensor data QA/QC and data preparation for public and research portal open access, as well as compilation and publication of metadata.

FRINGE ($8,568)

Georgia Tech fringe rate for faculty and staff (i.e., all personnel listed in the salary section) is subject to the same fringe rate of 32.6%. Rates are found here: https://osp.gatech.edu/rates.

DOMESTIC TRAVEL ($2,446)

Travel for fieldwork: The installation of the multi-variate sensor network will require 6 trips in Year 1 by the co-PI Clark. These trips will include travel to various locations along the Georgia coast. Estimated travel cost are based on Georgia Tech reimbursement rates for previous travel and include:

- Atlanta to Chatham Co:
  - Mileage: 550 miles roundtrip x $0.575/mile x 2 trips = $632
  - Hotel: $110/night x 2 nights x 2 trips = $440
    Total cost for 2 trips to the Chatham Co = **$1,072**
- Atlanta to Glynn Co:
  - Mileage: 600 miles roundtrip x $0.575/mile x 2 trips = $690
  - Hotel: $110/night x 2 nights x 2 trips = $440
    Total cost for 2 trips to the Chatham Co = **$1,130**
- Atlanta to Camden Co:
  - Mileage: 690 roundtrip miles x $0.575 x 2 trips = $793
  - Hotel: $110/night x 2 nights x 2 trips = $440
    The total cost for 2 trips to Camden Co = **$1,233**

The estimated total travel costs = $3,435. The PIs request **$2,446** in travel funding and will leverage other resources to cover any additional travel costs as needed.

EQUIPMENT ($16,000)

The construction of the multi-variate sensor network requires the following items. All items have a life span of greater than 1 year. These items are combined to build the equipment. *IDC is not charged on these items.*

- 5 gateway devices x $2,000 each = **$10,000**
- 10 water level sensors x $400 = **$4,000**
- Replacement costs for previously installed equipment (5 water level sensors x $400) = **$2,000**

All items are only available for purchase. All equipment is required for Objective 2.B: Expand the observing subsystem to address the region's highest priority needs as identified in the SECOORA RCOOS Plan.

TOTAL DIRECT COSTS ($53,289)

INDIRECT COSTS ($21,705)

This application contains the indirect rates in our Office of Naval Research (ONR) Negotiation Agreement. The FY22 F&A rate is 58.2%, based upon Modified Total Direct Costs: Total direct cost excluding equipment, graduate student tuition, and any subcontract costs in excess of the first $25,000. Further details on the Indirect Cost Rate Agreement can be retrieved at this website: http://www.osp.gatech.edu/rates.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. NCSU	11.012	$	$	$ 89,482.00	$	$ 89,482.00
2. He						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 89,482.00	$ 0.00	$ 89,482.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 48,238.00	$	$	$	$ 48,238.00
b. Fringe Benefits	10,057.00				10,057.00
c. Travel	575.00				575.00
d. Equipment					0.00
e. Supplies					0.00
f. Contractual					0.00
g. Construction					0.00
h. Other					0.00
i. Total Direct Charges *(sum of 6a-6h)*	58,870.00	0.00	0.00	0.00	58,870.00
j. Indirect Charges	30,612.00				30,612.00
k. TOTALS *(sum of 6i and 6j)*	$ 89,482.00	$ 0.00	$ 0.00	$ 0.00	$ 89,482.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 89,482.00	$ 22,370.50	$ 22,370.50	$ 22,370.50	$ 22,370.50
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 89,482.00	$ 22,370.50	$ 22,370.50	$ 22,370.50	$ 22,370.50

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $58,870	22. Indirect Charges: $30,612; 52% of MTDC.
23. Remarks:	

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Budget Justification – North Carolina State University
Budget for Year 2

Total Costs: $89,482

SALARY ($48,238)

Principal Investigator: Dr. Ruoying He (0.5 summer month x $16,231/month base summer salary = $8,115) will oversee the NCSU portion of the project, interact with project collaborators, guide and coordinate project personnel, direct modeling efforts, lead development of the products, attend project meetings, and produce project reports and journal publications. Dr. He will also assist in the modeling efforts.

Lab Manager Jennifer Warrillow (0.5 calendar month x $5,162/month base salary = $2,581) will assist with project planning, financial reports, progress reports, purchasing, travel, and manuscript preparation. She will liaise with project collaborators as needed.

Research Associate: TBD (8.50 calendar months x $4,416.65/month base salary = $37,542) will carry out model development, refinement, and validation. S/he will perform simulations, data assimilation, model-data comparisons, analyses, visualizations, and data management.

FRINGE ($10,057)

Fringe benefits are charged as a percentage of salary plus a fixed cost for health insurance, prorated for each employee's effort on the project.
Faculty summer salary: 31.34%
Staff: 31.34% + $7,370 annual health insurance ($614.17/month based on calendar effort)
Postdocs: 8.45% + $4,553 annual health insurance ($379.42/month based on calendar effort)

TRAVEL ($575)

Project team duty station is in Raleigh, NC. One person will travel to participate in a project meeting or SECOORA annual meeting (date and location TBD). Anticipated travel is 3 days/2nights. Partial reimbursement ($575) for travel costs is requested. PI has other funds to cover the overage. Below are costs incurred for previous participation in SECOORA annual meetings.

- Airfare: $450
- Lodging: $200/night x 2 nights = $400
- Ground transport (airport/hotel and return): $60
  Total: $910

TOTAL DIRECT COSTS ($58,870)

INDIRECT COSTS ($30,612)

Indirect costs are charged at NCSU's federally negotiated rate of 52.0% of Modified Total Direct Costs (MTDC). MTDC include all costs except equipment, tuition, and participant support. Link to NC State's 2021 Indirect Rate Agreement.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Fathom Science	11.012	$	$	$ 60,501.00	$	$ 60,501.00
2. He						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 60,501.00	$ 0.00	$ 60,501.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 35,043.00	$	$	$	$ 35,043.00
b. Fringe Benefits	0.00				0.00
c. Travel	559.00				559.00
d. Equipment					0.00
e. Supplies					0.00
f. Contractual					0.00
g. Construction					0.00
h. Other	24,899.00				24,899.00
i. Total Direct Charges *(sum of 6a-6h)*	60,501.00	0.00	0.00	0.00	60,501.00
j. Indirect Charges	0.00				0.00
k. TOTALS *(sum of 6i and 6j)*	$ 60,501.00	$ 0.00	$ 0.00	$ 0.00	$ 60,501.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	**1st Quarter**	**2nd Quarter**	**3rd Quarter**	**4th Quarter**
13. Federal	$ 60,501.00	$ 15,125.25	$ 15,125.25	$ 15,125.25	$ 15,125.25
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 60,501.00	$ 15,125.25	$ 15,125.25	$ 15,125.25	$ 15,125.25

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $60,501	22. Indirect Charges: $0.00; 0%
23. Remarks:	

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Budget Justification – Fathom Science LLC
Budget for Year 2

Total Costs: $60,501

SALARY ($35,043)

Principal Investigator: Dr. Ruoying He (0.5 month x $27,040/month base salary = $13,520) will oversee the Fathom Science portion of the project, coordinate NCSU and Fathom Science efforts, interact with project collaborators, guide and coordinate project personnel, direct modeling efforts, attend project meetings, and produce project reports and journal publications. Dr. He will also assist in the modeling efforts.

Associate Investigator: Dr. Joseph B. Zambon (1.25 months x $10,816/month base salary = $13,520) will primarily be responsible for generating CNAPS nowcasts/forecasts in the Amazon AWS cloud computing environment, handling data storage and processing, facilitating the transfer of data to Axiom, and resolving any issues in model data management.

Professional: Jennifer Warrillow (0.25 month x $9,013/month base salary = $2,253) will assist with project planning, financials, reports, purchasing, travel, and manuscript preparation. She will liaise with project collaborators as needed.

Associate Investigator: TBD (0.6 month at $9,583/month base salary = $5,750) will work with Drs. He and Zambon on the CNAPS model development.

FRINGE ($0)

Fringe benefits are not requested.

TRAVEL ($559)

Project team duty station is in Raleigh, NC. One person will travel to participate in a project meeting or SECOORA annual meeting (date and location TBD). Anticipated travel is 3 days/2nights. Partial reimbursement ($560) for travel costs is requested. PI has other funds to cover the overage. Below are costs incurred for previous participation in SECOORA annual meetings.

- Airfare: $450
- Lodging: $200/night x 2 nights = $400
- Ground transport (airport/hotel and return): $60
- Total: $910

OTHER COSTS ($24,899)

Computing costs – $ 10,000 - For cloud computing costs such as Amazon's AWS, based on estimated number of processing blades, reserve instances, cold storage, and data transfer charges.

Administrative costs - $14,899 – For administrative costs associated with the project, including licensing fees for intellectual property (IP).

TOTAL DIRECT COSTS ($60,502)

INDIRECT COSTS ($0)

Indirect costs are not requested.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. FWRI	11.012	$	$	$ 68,000.00	$	$ 68,000.00
2. McEachron						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 68,000.00	$ 0.00	$ 68,000.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 14,515.00	$	$	$	$ 14,515.00
b. Fringe Benefits	5,410.00				5,410.00
c. Travel	3,420.00				3,420.00
d. Equipment					0.00
e. Supplies					0.00
f. Contractual	40,000.00				40,000.00
g. Construction					0.00
h. Other					0.00
i. Total Direct Charges *(sum of 6a-6h)*	63,345.00	0.00	0.00	0.00	63,345.00
j. Indirect Charges	4,655.00				4,655.00
k. TOTALS *(sum of 6i and 6j)*	$ 68,000.00	$ 0.00	$ 0.00	$ 0.00	$ 68,000.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 68,000.00	$ 17,000.00	$ 17,000.00	$ 17,000.00	$ 17,000.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 68,000.00	$ 17,000.00	$ 17,000.00	$ 17,000.00	$ 17,000.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $63,345	22. Indirect Charges: $4,655; 19.94% of costs excluding subcontract
23. Remarks:	

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Florida Fish and Wildlife Conservation Commission, Lucas McEachron
Year 2 Budget Justification

TOTAL COST YEAR 2: $68,000

SALARY ($14,515)

Lead PI, Lucas McEachron (0 months/$0 support requested), will lead the overall project, consult with Axiom Data Science, and oversee the work completed by the Associate Investigator.
Associate Investigator, (3.284 months x $4,425.25/month base salary = $14,515), will assist PI McEachron in all aspects of managing the project team to accomplish objectives and tasks, coordinate with partners on use cases, produce deliverables, and ensure successful project completion.

FRINGE ($5,410)

Florida Fish and Wildlife Conservation Commission (FWC) fringe benefits are estimated at 37.27% of salary. The fringe breakdown for FWC employees is as follows:

Fringe	
FICA	7.5%
Retirement	10.8%
Pre-Tax Benefit Program	0.1%
State Health Insurance	18.7%
State Life Insurance	0.1%
Total	37.27%

TRAVEL ($3,420)

PI home location is St. Petersburg, FL. The PI will travel to the SECOORA annual meeting. The meeting location and dates are currently unknown; however, the meeting is typically hosted in May each year. Travel is anticipated to be 3 days/2 nights. Anticipated costs are based on historic meeting costs:

- Hotel: $150 x 2 nights = $300
- Per diem based on FWC rates: $80 x 3 days = $240
- Airfare: $500
- Other (Taxi, Parking): $20
  Total: $1,060

The PI or Associate PI (home location also St. Petersburg, FL) will travel to a national scientific conference or workshop relevant to the proposed project for training and outreach purposes (e.g., the conference on computer vision and pattern recognition, NOAA AI workshops). The meeting location and dates are currently unknown. Travel is anticipated to be 4 days/5 nights. Anticipated costs are:

- Hotel: $150 x 4 nights = $600
- Per diem: $80 x 5 days = $400
- Airfare: $500
- Other (Taxi, Parking): $30
- Partial cost of meeting registration: $180 (e.g. Ocean Science and AGU registrations are over $500 each)
  Total: $1,710

FWC will host 2 project workshops for stakeholders from the southeast region. Travel is for the PI or Associate PI. Workshops are anticipated to be 2-day events (i.e., 2 days/1 night) The meeting location and dates are currently TBD. Anticipated costs include:

- Hotel: $150 x 1 night x 2 trips = $300
- Per diem: $80 x 2 days x 2 trips = $320
- Other (Taxi, Parking): $30
  Total: $650

CONTRACTUAL ($40,000)

Subcontract to University of Miami ($20,000): Project team member Enrique Montes of the University of Miami will work with the PI and Axiom Data Science to enable interoperability of image-based annotation records with open repositories (e.g., the Ocean Biodiversity Information System (OBIS)) and coordinate activities related to the use of CoralNet. Investigator Montes will lead automated species annotations from benthic imagery collected across multiple SECOORA regions. Investigator Montes will coordinate all tasks related to metadata standardization of imagery to be utilized with CoralNet.

Subcontract to University of South Florida ($20,000): Project team member Frank Muller-Karger of the University of South Florida will work with the PI and Axiom Data Science to enable interoperability of image-based annotation records with open repositories (e.g., the Ocean Biodiversity Information System (OBIS)) and coordinate activities related to the use of CoralNet. Investigator Muller-Karger is responsible for coordinating with the Ocean Best Practice System of the IOC-UNESCO to make the tools developed by the project accessible to the wider community.

TOTAL DIRECT COSTS ($63,345)

INDIRECT COSTS ($4,655)

Indirect is 19.94% of costs, excluding contracts, or $4,655.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. SC DNR	11.012	$	$	$ 18,856.00	$	$ 18,856.00
2. Smart						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 18,856.00	$ 0.00	$ 18,856.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 10,524.00	$	$	$	$ 10,524.00
b. Fringe Benefits	4,525.00				4,525.00
c. Travel					0.00
d. Equipment					0.00
e. Supplies	600.00				600.00
f. Contractual					0.00
g. Construction					0.00
h. Other					0.00
i. Total Direct Charges *(sum of 6a-6h)*	15,649.00	0.00	0.00	0.00	15,649.00
j. Indirect Charges	3,207.00				3,207.00
k. TOTALS *(sum of 6i and 6j)*	$ 18,856.00	$ 0.00	$ 0.00	$ 0.00	$ 18,856.00
7. Program Income	$	$	$	$	$ 0.00

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Prescribed by OMB Circular A-102

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 18,856.00	$ 4,714.00	$ 4,714.00	$ 4,714.00	$ 4,714.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 18,856.00	$ 4,714.00	$ 4,714.00	$ 4,714.00	$ 4,714.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $15,649	22. Indirect Charges: $3,207; 30.47% of salaries excluding fringe
23. Remarks:	

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South Carolina Department of Natural Resources, Tracey Smart
Year 2 Budget Justification

TOTAL COST YEAR 2: $18,856

SALARY ($10,524)

Principal Investigator, (Tracey Smart, 0.4 months x $6,735/month base salary = **$2,694**) is responsible for overseeing project and budget management, preparation of reports as needed, and coordination of development of the online database. Tracey also will be responsible for polling data users for needed products and tools.

Data manager, data technician & analyst (C. Michelle Willis, 1.0 month x $4,031/month base salary = **$4,031**) is responsible for metadata development and working directly with Axiom for development of the online database (data delivery, testing, error logging, and corrections). Michelle will also be responsible for delivery data updates for new years of collections and new data and code types to Axiom.

Data manager, data technician & analyst (Amy Zimney, 1.0 month x $3,799/month base salary = **$3,799**) will work directly with Axiom for development of the online database (data delivery, testing, error logging, and corrections). Amy is also responsible for delivering to Axiom annual data updates for new collections and new data and code types.

FRINGE ($4,525)

Per agency policy, SCDNR calculates fringe as 43% of salaries for all full-time employees. SC DNR uses the State of South Carolina fringe rate calculator to determine fringe rates. The fringe rate calculator is found here: https://admin.sc.gov/dshr/benefits_and_leave

EXPENDABLE SUPPLIES ($600)

Expendable supplies to be purchased for this project include general office supplies (paper, writing utensils, and printing, $100). We anticipate the purchase of one external hard drive to assist with temporary storage of data from SEAMAP-SA surveys for delivery to Axiom ($200). SCDNR anticipates the need for adding storage space for permanent archiving on an SCDNR server ($300 for additional storage).

DIRECT COSTS ($15,649)

INDIRECT COSTS ($3,207)

Per agency policy, SCDNR calculates indirect as 30.47% of salary only.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. USC	11.012	$	$	$ 149,660.00	$	$ 149,660.00
2. Porter						0.00
3.						0.00
4.						0.00
5. Totals		$ 0.00	$ 0.00	$ 149,660.00	$ 0.00	$ 149,660.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1) Year 2	(2)	(3)		(5)
a. Personnel	$ 41,939.00	$	$	$	$ 41,939.00
b. Fringe Benefits	14,718.00				14,718.00
c. Travel	3,700.00				3,700.00
d. Equipment					0.00
e. Supplies	2,500.00				2,500.00
f. Contractual	65,000.00				65,000.00
g. Construction					0.00
h. Other					0.00
i. Total Direct Charges *(sum of 6a-6h)*	127,857.00	0.00	0.00	0.00	127,857.00
j. Indirect Charges	21,803.00				21,803.00
k. TOTALS *(sum of 6i and 6j)*	$ 149,660.00	$ 0.00	$ 0.00	$ 0.00	$ 149,660.00
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES				
(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	$	$	$	$ 0.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION D - FORECASTED CASH NEEDS					
	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 149,660.00	$ 37,415.00	$ 37,415.00	$ 37,415.00	$ 37,415.00
14. Non-Federal	0.00				
15. TOTAL *(sum of lines 13 and 14)*	$ 149,660.00	$ 37,415.00	$ 37,415.00	$ 37,415.00	$ 37,415.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT				
(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges: $127,857	22. Indirect Charges: $21,803; 26% MTDC;only part of subawards (1st 25K only on subs allowed)
23. Remarks:	

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University of South Carolina, Dr. Dwayne E. Porter
Year 2 Budget Justification

TOTAL COST YEAR 2: $149,660

SALARY ($41,939)

Principal Investigator, Dwayne Porter (0.5 summer months x $21,124 base summer salary/month = **$10,562**) will provide overall project administration and project management, assuring project goals and objectives are met.
Professional, partial support of an informatics specialist (5 months x $6,275.25 base salary/month = **$31,377**) is requested in support of nowcasting activities and product development.

FRINGE ($14,718)

Fringe benefits are charged per State of South Carolina guidelines. Fringe for the informatics specialist and for PI summer salary equals 30.09%. Insurance for the informatics specialist is charged at the individual rate ($419.72/month). Applicable state rates (see: https://sc.edu/about/offices_and_divisions/sponsored_awards_management/essential_reference_information/fringe_benefits.php).

DOMESTIC TRAVEL ($3,700)

PI home location is Columbia, SC. University of South Carolina follows the Fly America Act. Travel funds are requested to participate in the SECOORA Annual meeting, location and exact dates TBD. The meeting is hosted annually in May. Travel is anticipated to be 4 days/3 nights and the following estimated cost examples are based on previous costs associated with SECOORA meetings.

- Flight: $486
- Hotel: $164 (inclusive of tax) x 3 nights = $492
- Per diem based on State of SC rate: $32/day x 4 days = $128
- Airport Parking: $13/day x 4 days = $52
- Car rental for 4 days (based on Travelocity search): $152 + $25 fuel estimate = $177
- Total: **$1,335**

USC personnel will meet with project partners and stakeholders related to this multi-state water quality modeling project. Example costs are based on previous travel to these locations:

Day trips (example trips):

- Folly Beach, SC: 252 miles roundtrip x $0.58/mile x 1 trip = **$146**
- Savannah, GA: 324 miles roundtrip x $0.58/mile x 2 trips = **$376**
- Charleston, SC: 233 miles roundtrip x $0.58/mile x 2 trips = **$270**
- Myrtle Beach, SC: 207 miles roundtrip x $0.58/mile x 2 trips = **$240**

Overnight trips (example trips):
Morehead City, NC (2 days/1 night):

- 582 miles roundtrip x $0.58 = $338
- Hotel (inclusive of tax) = $145
- Per diem: $32 x 2 days = $64
- Total: **$547**

Sarasota, FL (2 days/1 night):

- Flight: $390 (based on Travelocity search)
- Hotel: $183 (inclusive of tax) x 1 nights = $183
- Per diem based on State of SC rate: $32/day x 2 days = $64
- Airport parking: $13/day x 2 days = $26
- Car rental for 2 days (based on Travelocity search): $98 + $25 fuel estimate = $123
- Total: **$786**

EXPENDABLE SUPPLIES ($2,500)

Funds are requested for basic IT supplies and materials costing less than $5,000 per item. Example items include a workstation at **$1700**, backup power supplies at **$150** each, monitor at **$175** each, and other supporting IT, data management and data development items. Funds will also be used as partial support for continuation of ESRI GIS site license, NVivo and Qualtrics Survey Software and to cover costs for continuation of domain names (**$475**).

CONTRACTUAL ($65,000)

- Subcontract to NC State University **($36,000)** will support the continued development of ShellCast. NCSU will develop technical plans for the integration of ShellCast and How's the Beach, assimilate environmental datasets, and expand the regional footprint for ShellCast.
- Subcontract to the University of Maryland **($14,000)** will support machine learning modeling techniques for How's the Beach and assimilate data into machine learning/AI models to refine beach forecasts.
- Subcontract to Mote Marine Laboratory **($15,000**) will support the continued development expansion of the Beach Conditions Reporting System (BCRS). Mote team members will develop technical plans for the integration of the BCRS with How's the Beach, assimilate environmental datasets, and expand the regional footprint for BCRS.

DIRECT COSTS ($127,857)

INDIRECT COSTS ($21,803)

IDC is calculated as 26.0% of allowable direct costs. This rate reflects UofSC's federally-approved IDC rate for off-campus research activities. IDC is only charged on the first $25,000 of each subcontract.