



Southeast Coastal Ocean Observing Regional Association (SECOORA):
A Framework for Monitoring, Prediction and Assessment to
Support Decision-Makers Needs for Coastal and Ocean
Data and Tools

Revised Scope of Work - Year 5

TOPIC AREA 1: Continued Development of Regional Coastal Ocean Observing Systems
AWARD TYPE: Cooperative Agreement
PROJECT DURATION: June 1, 2011 – May 31, 2016

This revised grant proposal is submitted in response to the Funding Opportunity Title:
Continued Development of Regional Coastal Ocean Observing Systems
Revision Submitted: July 16, 2015
Year 5: June 1, 2015 - May 31, 2016
Funding Request: \$2,602,151

Principal Investigator:

Debra Hernandez, Executive Director
SECOORA
PO Box 13856
Charleston, SC 29422
P: 843-906-8686
E: debra@secoora.org

Associate Investigator:

Megan Lee, Business Manager
SECOORA
PO Box 13856
Charleston, SC 29422
P: 843-864-6755
E: mlee@secoora.org

Associate Investigator:

Conrad C. Lautenbacher, Jr., PhD., Board Chair
GeoOptics
5673, Bend Creek Road
Dunwoody, GA 30338
P: 770-730-5911
E: cclsel@comcast.net

Associate Investigator:

Vembu Subramanian, RCOOS Manager
SECOORA
PO Box 13856
Charleston, SC 29422
P: 803-777-1548
F: 843-881-7968
E: vembu@secoora.org

Introduction

SECOORA has been allocated \$2,602,151 for the final year (Year 5) of the five-year Regional Coastal and Ocean Observing System (RCOOS) project. This is a slight increase from our U.S. IOOS® FY2014 award level but only represents 63% of the funding that was requested for Year 5 in our original 5 year proposal funding request. This revised scope of work describes the activities that will be undertaken with this level of funding. As per the U.S. IOOS FY2015 award letter, SECOORA will commit: (1) no less than \$600,000 towards supporting priority High Frequency (HF) Radars, (2) \$20,000 for maintenance of the HF radar site located at Core Banks, NC, (3) \$10,000 to USF to support ship-time for SECOORA internship activities, (4) \$7000 to support IOOS Advisory Committee travel, (5) \$108,015 to support water sampling and Gray’s Reef buoy maintenance in conjunction with NOAA’s Ocean Acidification Program, and \$5000 for a Southeast Ocean and Coastal Acidification Network (SOCAN) engagement workshop, and (6) \$30,000 to support the continued curation of IOOS open source repositories with special focus on system integration test products. Major goals and objectives for Year 5 are described in Table 1.

Table 1. Major Goals and Objectives

Goals	Objectives
Goal 1: Sustain SECOORA as a Regional Information Coordination Entity	1.1: Ensure Stakeholders Inform RA Priorities and RCOOS Development and Implementation. 1.2: Coordinate and Implement a Conceptual Operations Plan for a Southeast (SE) RCOOS.
Goal 2: Sustain an Observing Subsystem for the SE	2.1: Sustain Moored and Coastal Stations. 2.2: Maintain HF Radar Operations. 2.3: Support coordinated Glider deployments in SE. (Not funded in Year 5) 2.4: Support Hurricane Wind & Water Level Measurements. (Not funded in Year 5) 2.5: Support Ocean Acidification (OA) activities in the region. 2.6: Expand the coastal monitoring network.
Goal 3: Support a Multi-Scale Multi-Resolution Modeling Subsystem	3.1: Support Regional and South Atlantic Bight Gulf of Mexico (SABGOM) circulation Modeling. 3.2: Support participation in the National Hurricane Center Joint Hurricane Testbed. 3.3: Improve Beach/Shellfish Water Quality Advisories.
Goal 4: Enhance the Data Management and Communication (DMAC) Subsystem	4.1: Service data providers and capture new data. 4.2: Provide data, data products, and information to users and stakeholders rapidly and effectively. 4.3: Coordinate and collaborate on data management efforts with U.S. IOOS 4.4: Incorporate DMAC within SECOORA core operations. 4.5: Implement a transition plan with the new DMAC contractor. 4.6: Consolidate and develop a DMAC infrastructure plan to improve efficiency and operational status. 4.7: Support the continued curation of IOOS open source repositories with special focus on system integration test products.

Goals	Objectives
Goal 5: Support a Targeted and Leveraged Education and Outreach Subsystem	5.1: Provide tools and opportunities for observing related science education. (Not funded in Year 5.) 5.2: Increase understanding of and support for observing through targeted Stakeholder Outreach. 5.3: Support SECOORA/IOOS summer intern at University of South Florida, St. Petersburg. 5.4: Support development of a State-of-the-Science whitepaper on climate impacts to fisheries. 5.4: Implement an Education and Outreach plan with SECOORA partners.

Goal 1: Sustain SECOORA as a Regional Information Coordination Entity (RICE)

SECOORA is an independently operating 501(c) (3). We will provide fiscal management for this award. Megan Lee is SECOORA’s Business Manager and serves as fiscal manager, with assistance from a part-time accountant/bookkeeper, and oversight from the Executive Director. We will be responsible for overall project management, which includes fiduciary oversight of all subawards, preparation and submission of financial and progress reports, and ensuring coordination and collaboration both among PIs within each RCOOS subcomponent and among PIs across the other RCOOS subcomponents. Fourteen PIs, two subcontractors and 16 separate sub-awards contribute to this project necessitating significant effort for project and fiscal management, technical communications, integration and task coordination. Responsibilities will be shared among the Executive Director (D. Hernandez), RCOOS Manager (V. Subramanian), and the Business Manager (M. Lee). Communication Specialist (A. Wakely) will assist with website content, e-newsletters, Facebook and Twitter posts, and other related outreach activities. In year 5, SECOORA will incorporate DMAC within its core operations.

SECOORA is a membership-based organization that seeks stakeholders with interests in coastal and ocean observing, data and information to help prioritize our activities and participate in developing stakeholder-based products and decision making tools. With Year 5 funding, SECOORA will continue to seek new members through our website, outreach via newsletters and direct recruitment by the staff and Board of Directors. We will also host a board meeting in December 2015 and an annual members and stakeholders meeting in May 2016. SECOORA will partner with stakeholders, such as the Governors’ South Atlantic Alliance (GSAA), federal agency representatives, fishery managers, private agencies and others. SECOORA will continue advancement of a Conceptual Operations Plan for a fully instrumented RCOOS with defined service levels, commensurate with funding, that provides coordinated monitoring, assessment and prediction. We will also be working with SECOORA’s Board, PIs and Members to prioritize activities in recognition of ongoing budget limitations. We will continue to interact with the IOOS Association, U.S. IOOS Program Office (IOOS PO) and other IOOS Regional Associations to ensure that messages, products, and projects are coordinated and resources are leveraged. SECOORA will sponsor coastal ocean observing related meetings and activities; and SECOORA staff and Board will attend IOOS Association, IOOS PO, and other RA meetings as funding allows.

Table 2. RICE Activities

Institution (Principal Investigator)	Funding	Activity
SECOORA (Hernandez)	\$488,040	<p>Ensure continued and efficient governance, management and operations of the RA.</p> <p>Develop and submit progress and final reports, coordinate RCOOS tasks, data management and integration projects.</p> <p>Provide forums, i.e. workshops, meetings, that enable stakeholder assessment, feedback and engagement.</p> <p>Coordinate with the GSAA.</p> <p>Ensure SECOORA activities align with U.S. IOOS Program Office guidance and/or requirements.</p> <p>Develop strategic planning document and RICE U.S. IOOS Certification application.</p> <p>Coordinate and Support SOCAN activities and Steering Committee Workshop</p> <p>Coordinate and Support Fisheries Climate Workshop</p>
TOTAL	\$488,040	

Goal 2: Sustain an Observing Subsystem for the SE

The observing subsystem provides the basis for the RCOOS by supporting and integrating existing assets and observations specific to the development of products identified in this proposal. In most cases, we propose to maintain existing systems deployed as part of pre-SECOORA programs. For all observing assets, the level of funding greatly impacts spare parts and technician support for maintenance of assets and management of data. It also limits principal investigator (PI) time and ability to interface with stakeholders. SECOORA will continue to support the operation and maintenance of offshore moored stations and coastal stations with the caveat that assets in the SECOORA footprint have been purchased and maintained through a mix of state, research and IOOS funding. Operations are not sustainable at current funding levels. USF and UNCW will maintain as many moorings and coastal stations as possible with the allocated funding, and any significant equipment failures will likely result in removing assets from the water. SECOORA is allocating \$694,734 to the IOOS identified priority HF Radar sites (Appendix A) in the SECOORA footprint. Each observing asset will provide near-real-time data for multiple users, and provide information required to support proposed and existing stakeholder products (e.g., those required for extreme events applications, marine weather portal, beach/shellfish water quality advisories, and search and rescue (SAR) operations). Table 3 below provides specific information on the organizations, PIs, funding, and assets for the Observing Subsystem. Note that funding is not available for Objective 2.3: Support coordinated Glider deployments in SE and Objective 2.4: Support Hurricane Wind and Water Level Measurements. Objective 2.5: Support for NOAA’s Ocean Acidification program will continue and include a subaward to University of Delaware for field data collection and to UGA for buoy maintenance. New Objective 2.6 will support establishment of a water quality monitoring station in the central channel of Winyah Bay, SC, in partnership with the North Inlet NERR.

Table 3. Observing Subsystem Activities

Institution (Principal Investigator)	Funding	Activity
Objective 2.1: Sustain Moored and Coastal Stations		
University of South Florida (Weisberg)	\$186,168	Funding for COMPS surface moorings: C10 measures wind velocity, relative humidity, barometric pressure, sea surface temperature (SST), air temperature (AT), incoming short and long-wave radiation, in-water velocity and temperature/salinity (T/S). C12 and C13 measure wind velocity, relative humidity, barometric pressure, SST, AT, in-water velocity and T/S. C11 and C15 bottom mount non real-time systems that measure in-water velocity and T. C21 in-shore real-time station measures wind velocity, relative humidity, pressure, SST, AT.
University of South Florida (Luther)	\$55,761	Funding for COMPS in-shore stations: Six stations located along Florida's Gulf of Mexico coast from Shell Point to Big Carlos Pass. These stations typically are outfitted with water level, wind velocity, relative humidity, AT, barometric pressure, water quality and precipitation sensors.
University of NC - Wilmington (Leonard)	\$388,822	Oceanographic data from seven real-time moorings operated through partnerships of UNCW and USC will be maintained along NC and SC. Six systems measure wind velocity, barometric pressure, SST, AT, solar radiation, sea level, in-water velocity, and T/S. Two of the moorings also measure surface-waves. In addition, one coastal pier station that measures wind velocity, barometric pressure, SST, AT, solar radiation, sea level, S, and surface waves also will be supported.
TOTAL EXISTING MOORED AND COASTAL	\$630,751	
Objective 2.2: Maintain HF Radar Operations		
University of South FL (Weisberg)	\$161,452	Support three CODAR sites and installation and operation of fourth CODAR site. Location: West Florida Shelf
Skidaway Institute of Oceanography (SkIO)- University of GA (Savidge)	\$117,276	Support two WERA radar arrays. Location: St. Catherine's and Jekyll Island, GA
University of Miami (Shay)	\$161,453	Support four WERA radar arrays. Location: Crandon, Virginia Key, Broad Key and Dania Beach
University of NC - Chapel Hill (Seim)	\$137,277	Support three CODAR radar arrays. Location: Outer Banks of NC.
University of South Carolina (Voulgaris)	\$117,276	Support two WERA radar arrays. Location: Georgetown, SC and Fort Caswell, NC
TOTAL HFR	\$694,734	

Institution (Principal Investigator)	Funding	Activity
Objective 2.5: Support OA activities in the region.		
University of Georgia (Noakes)	\$38,433	Maintain the sensors on NDBC Gray's Reef National Marine Sanctuary (GRNMS) buoy (41008) as a part of national and international efforts to quantify the effects of ocean acidification on the world's ocean. These sensors include pCo2, pH, dissolved oxygen (DO), salinity and water temperature.
University of Delaware (Wei-Jun Cai)	\$64,232	Funding is provided for collection of underway pCO2 data and bulk water samples for analyses during the spring and summer 2015 cruises at the Gray's Reef mooring site for mooring data validation efforts.
SECOORA (Hernandez)	\$5000	Support SOCAN Steering Committee Workshop.
TOTAL OA Activities	\$107,665	
Objective 2.6: Expand the coastal monitoring network		
Baruch Institute, University of South Carolina (Smith)	\$39,936	Support is provided to North Inlet – Winyah Bay National Estuarine Research Reserve NERR) to install two water quality data sondes (YSI EXO2) in the upper middle reach of the mainstem bay, in western edge of the deep central channel (33° 18' 32.91" N, 79° 17' 16.77" W). This station will be configured as a water quality monitoring station consistent with the NERR's System-wide Monitoring Program (SWMP). Surface sondes will be equipped with sensors to record water temperature, conductivity/salinity, dissolved oxygen, pH, turbidity, chlorophyll fluorescence, fluorescence of dissolved organic matter (FDOM, a proxy for total dissolved organic carbon) and water depth. Bottom water sondes will be equipped with sensors to record water temperature, conductivity/salinity, dissolved oxygen, pH, turbidity and water depth.

Goal 3: Support a Multi-Scale Multi-Resolution Modeling Subsystem

The modeling components that will be carried out in Year 5 include the following:

Objective 3.1: Support South Atlantic Bight Gulf of Mexico (SABGOM) regional circulation modeling.

Objective 3.2: Participate in the National Hurricane Center Joint Hurricane Testbed.

Objective 3.3: Improve and expand beach/shellfish water quality advisories.

Table 4. Modeling and Related Tools and Product Development

Goal 3: Support a Multi-Scale Multi-Resolution Modeling Subsystem		
Institution (Principal Investigator)	Funding	Activity
North Carolina State University (He)	\$ 138,188	3.1: Support regional and SAB sub-regional circulation modeling.
University of Florida (Sheng)	\$39,317	3.2: Support participation in the National Hurricane Center Joint Hurricane Testbed
University of South Carolina (Porter)	\$69,034	3.3: Expand the beach water quality swimming advisories with other environmental variables. Demonstrate geographic transferability of modeling approach to a beach location FL.
TOTAL MODELING	\$246,539	

Goal 4: Enhance the DMAC Subsystem

In Year 5, SECOORA will be incorporating DMAC within our core operations to meet our needs and enable continued growth as an RA.

Table 5. Data Management and Communication

Institution (Principal Investigator)	Funding	Activity
University of South Carolina (Porter)	\$150,000	Maintain SECOORA DMAC Infrastructure and support SECOORA DMAC activities in Year 5
Axiom Data Science, Inc. (Kyle Wilcox)	\$152,000	Transition of existing DMAC services and activities to SECOORA core operations, ensuring no interruption of services.
IOOS Open source repositories and SECOORA Model Skill Assessment support (Fernandes)	\$30,000	Respond to requirements of both the community and the IOOS program office to further establish the IOOS Catalog as the front page for IOOS data management and distribution efforts. Increase the utility of the Catalog as a marketing tool, a program management tool, and a data discovery tool. Continue to support, maintain and advance the SECOORA Model Skill Assessment tool.
Skidaway Institute of Oceanography (SKIO)- University of GA (Savidge)	\$34,000	Support SABSOON tower data recovery and curation.
TOTAL DMAC	\$366,000	

Goal 5: Support a Targeted and Leveraged Education and Outreach Subsystem

Due to funding limitations, the primary focus of the Education and Outreach (E&O) subsystem is to provide outreach to stakeholders regarding observing technologies, data, products and services. Outreach activities are provided by all SECOORA staff including the Communication Specialist, RCOOS PIs and the SECOORA Board. Resources for formal educators are maintained on the SECOORA website, and we continue to promote the Basic Observation Buoy as a STEM education tool. Note that Goals 1 and 3 include outreach activities that complement and contribute to the E&O subsystem.

Table 6. Education and Outreach Activities

Institution (Principal Investigator)	Funding	Activity
SECOORA (Hernandez)	Funding allocated in Goal 1	Develop success stories and related outreach information.
ROFFS (Roffer)	\$14,485	Support SECOORA on fisheries climate workshop planning.
SECOORA (Hernandez, Subramanian)	\$10,000	Coordinate and develop SECOORA RCOOS Accomplishments and Lessons Learned journal publication
SECOORA (Subramanian) and USF (Law)	\$4,000	Support SECOORA/IOOS Summer Internship 2015 – USF COMPS Mooring Operations
TOTAL EDUCATION AND OUTREACH	\$28,485	

Milestone Chart

Table 7. Milestones for Year 5 by Quarter

Goals and Milestones	2014-2015 Quarter			
	1	2	3	4
Goal 1: Sustain SECOORA as a Regional Information Coordination Entity				
A. Provide timely grant reports to NOAA		X		X
B. Hold Board Meetings and Member Meeting		X		X
C. Publish e-newsletters and other outreach material	X	X	X	X
D. Coordinate observing activities with other RAs to effectively respond to NOAA and other National level requirements, including RA Certification	X	X	X	X
E. Update SECOORA website with new content on data portal, PI, member, IOOS, IOOS Association activities	X	X	X	X
F. Develop Strategic Planning document, IOOS Certification Application	X	X	X	X
G. Support local, regional, and national collaboration	X	X	X	X
H. Evaluate mechanisms to track operational statistics, product usage, and outcome measures and metrics	X	X	X	X
Goal 2: Sustain an Observing Subsystem for the SE				
A. Operate and maintain moored and coastal stations (COMPS and Carolina RCOOS)	X	X	X	X
i. Report moored and coastal stations data to secoora.org and NDBC	X	X	X	X
B. Operate and maintain priority radars				
i. Provide hourly surface current maps from the various regions via individual and SECOORA websites	X	X	X	X
ii. Provide estimates of experimental significant wave heights from the HF radar data	X	X	X	X
iii. Develop/report performance metrics of CODARs and WERAs throughout the SE including accuracy estimates of the surface currents	X	X	X	X
iv. Provide the radial currents to the National Servers (SIO) for the National HF radar network	X	X	X	X
C. Support OA activities in the region	X	X	X	X
i. Maintain the sensors on Gray's Reef National Marine Sanctuary (GRNMS) buoy (41008)	X	X	X	X
ii. Collect underway pCO2 data and bulk water samples for analyses during the spring and summer 2015 cruises at the Gray's Reef mooring site	X	X	X	X
Goal 3: Support a Multi-scale Multi-resolution Modeling Subsystem				

Goals and Milestones	2014-2015 Quarter			
	1	2	3	4
A. Support and enhance SABGOM model	x	x	x	x
i. Maintain and enhance NCSU Ocean circulation Nowcast/ Forecast modeling system and serve model output through the THREDDS server	x	x	x	x
ii. Conduct model skill assessment for all physical variables through appropriate comparisons with available observations; including near real-time comparisons with available coastal sea levels, buoy measured temperature/ salinity, HF Radar currents, and satellite observations	x	x	x	x
iii. Harmonize data and products delivery via PI website and SECOORA website; provide metadata for the products and data; provide data archival requirements and make available/share the software code for SECOORA funded product development	x	x	x	x
B. Participation in the National Hurricane Center Joint Hurricane Testbed				
i. Participate in National Hurricane Center Joint Hurricane Test Bed – ACMS (Advanced Coastal Modeling System) Forecasting System maintenance and delivery of data	x	x	x	
C. Support Fisheries Climate Workshop and compile reports				
i. Support fisheries climate workshop.	x	x	x	x
ii. Develop white paper on the state of knowledge on the vulnerabilities and effect of the environment on the ecologically and economically important managed species for the Gulf of Mexico, South Atlantic and Caribbean Sea	x	x	x	x
D. Provide a decision support tool for beach/shellfish WQ advisories				
i. Transfer the beach water quality swimming advisories application to a FL beach location	x	x	x	x
Goal 4: Implement a DMAC Subsystem				
A. Service Data Providers and RCOOS Subsystem PIs	x	x	x	x
B. Assess and advance IOOS recommended SOS implementation	x	x	x	x
C. Maintain DMAC infrastructure (hardware and software)	x	x	x	x
D. Support data providers and RCOOS Manager on implementation of QA/QC flags based on published QARTOD manuals	x	x	x	x
E. Upgrade SECOORA website services	x	x	x	x
F. Transition the DMAC services to SECOORA core operations	x	x	x	x
G. Support SABSOON tower data recovery and curation.	x	x	x	x
Goal 5: Support a targeted and leveraged Education and Outreach Subsystem				

Goals and Milestones	2014-2015 Quarter			
	1	2	3	4
A. Maintain web portal content and other outreach activities	x	x	x	x
B. Support SECOORA/IOOS summer internship at USF	x	x		
C. Develop outreach materials	x	x	x	x
D. Conduct community outreach highlighting the importance of observatories and SECOORA's products	x	x	x	x
E. Coordinate and develop SECOORA RCOOS Accomplishments and Lessons Learned journal publication	x	x	x	x
F. Coordinate and Support SOCAN activities	x	x	x	x
G. Coordinate and Support Fisheries Climate Workshop	x	x	x	
H. Develop success stories with PIs to highlight on website, newsletters, one-pagers, etc.	x	x	x	x

Appendix A: SECOORA Priority HF Radar Sites

All HF Radar Sites identified in the table below support IOOS Key Activities: Search, Rescue, Oil Spill Response, Major Ports and Shipping Lanes; USF, with the support received will find a location and install the four CODAR site. UNC-CH installed a new site at Core Banks, NC with funding received from other sources. One time IOOS funds (\$20,000) is allocated for the maintenance of this site in Year 5, hence it has been added to the SECOORA priority list of sites.

Responsible Agency/Vendor	Station Name/State	Latitude (N)	Longitude (W)	Nominal Frequency (MHz)
University of North Carolina/ CODAR	Duck, NC	36.18	-75.75	5.0
University of North Carolina/ CODAR	Cape Hatteras, NC	35.26	-75.52	5.0
University of South Carolina/ WERA	Georgetown, SC1	33.25	-79.15	8.3
University of South Carolina/ WERA	Caswell Beach, NC2	33.88	-78.11	8.3
Skidaway Institute of Oceanography (UGA)/WERA	St. Catherine, GA	31.69	-81.13	8.3
Skidaway Institute of Oceanography (UGA)/WERA	Jekyll Island, GA	31.06	-81.41	8.3
University of Miami/WERA	Dania Beach, FL	26.08	-80.12	12.6
University of Miami/WERA	Virginia Key, FL	25.74	-80.15	12.6
University of Miami/WERA	Crandon Park, FL	25.71	-80.15	16.0
University of Miami/WERA	Broad Key, FL3	25.35	-80.25	16.0
University of South Florida/CODAR	Redington Shores, FL	27.83	-82.83	5.0
University of South Florida/CODAR	Venice, FL	27.08	-82.45	5.0
University of South Florida/CODAR	Naples, FL	26.16	-81.81	5.0
University of South Florida/CODAR	To be determined	N/A	N/A	12.6
University of North Carolina, Chapel Hill	Core Banks, NC	34.76	-76.41	5.0



SOUTHEAST COASTAL OCEAN OBSERVING REGIONAL ASSOCIATION

Budget sheet covers a one-year (or less) period.

Project Title: Southeast Coastal Ocean Observing Regional Association (SECOORA): A Framework for Monitoring, Prediction and Assessment to Support Decision-Makers Needs for Coastal and Ocean Data and Tools

Principal Investigator(s): Debra Hernandez **Dates:** **Begin** 06/01/2015 **End** 05/31/2016

Institution: SECOORA

BUDGET ITEMS	No. of Individuals	Man-Months		Grant Funds
		Grant	Match	
Salary and Wages				
1. Principal Investigator (s): DH	1	9.40		\$ 81,788
2. Associate Investigator(s): VS	1	12.00		\$ 88,735
ML	1	6.50		\$ 38,866
3. Professionals: CK	1	2.50		\$ 3,400
AW		3.00		\$ 10,000
4. Research Associates				
5. Research Asst. Grad. Students				
6. Prof. School Students				
7. Pre-Bac. Students				
8. Secretarial/Clerical				
9. Technical-Shop				
10. Other				
TOTAL SALARIES and WAGES				\$ 222,789
Fringe Benefits - 29%				\$ 64,609
TOTAL SALARIES, WAGES and FRINGE BENEFITS				\$ 287,397
PERMANENT EQUIPMENT (list)				
EXPENDABLE SUPPLIES, etc.				\$ 3,634
TRAVEL				
1. Domestic				\$ 40,000
2. Foreign (requires prior approval)				
PUBLICATION COSTS				
OTHER COSTS				
SOCAN Meeting				\$ 5,000
Strategic Planning				\$ 15,000
Publication Costs				\$ 10,000
IOOS Association Dues				\$ 4,500
Other Services				\$ 8,665
CONTRACTUAL:				
1. SECOORA/IOOS StudentSummer Internship - USF - Michael Kovatch				\$ 4,000
2. Accountant/ Audit - Elliott Davis Decosimo				\$ 20,100
3. Python Contract - Filipe Fernandez				\$ 30,000
4. DMAC Services - Axiom Data Science, LLC				\$ 152,000
5. Other:				
NCSU-He				\$ 138,188
ROFFS				\$ 14,485
UF				\$ 39,317
USC-Porter Model				\$ 69,034
USC- Porter DMAC				\$ 150,000
UGA-SkIO				\$ 151,276
UM				\$ 161,453
UNCCH				\$ 137,277
UNCW				\$ 388,822
USC-Voulgaris				\$ 117,276
USF-Weisberg HFR				\$ 161,452
USF-Weisberg MOOR				\$ 186,168
USF- Luther Obs				\$ 55,761
USC - Smith				\$ 39,936
UGA- OA				\$ 38,433
U Delaware- OA				\$ 64,232
TOTAL DIRECT COSTS				\$ 2,493,407
INDIRECT COSTS				
1. On campus - 12.98%				\$ 108,744
TOTAL COST				\$ 2,602,151

SECOORA Year 5 Descope Budget Justification:

The total request for this award is **\$2,602,151**

Salary + Fringe: Total funds requested are **\$287,397** for the PI (9.40 months), D. Hernandez, the RCOOS Manager (12.0 months), V. Subramanian, the Business Manager (6.50 months), M. Lee, a part-time Bookkeeper (2.5 months) C. Kight, and a part-time Communication Specialist (3.00) A. Wakely. Fringe is calculated at 29% of salary (\$64,609).

Travel: \$40,000 is requested to support trips by staff to IOOS and science meetings, regional workshops and visits to PIs, stakeholders and partners. Travel is also requested to support Board member travel to two meetings per year. IOOS Advisory Committee travel is included in the total travel line. All travel is domestic.

Supplies: \$3,634 is requested for office supplies, printing, postage, computer related expenses, other meeting supplies, and miscellaneous supplies for observing assets.

Other: \$4,500 for IOOS Association dues; **\$5,000** for a SOCAN meeting; **\$15,000** for strategic planning to occur at the SECOORA December 2015 Board meeting; **\$10,000** for publication costs; and **\$8,665** for communication support, website hosting, liability insurance, legal expenses, etc.

Indirect: SECOORA charges 12.98% on all direct charges and the first \$25,000 in contracts/subawards. Total indirect is **\$108,744**.

CONTRACTUAL: \$4,000 for the **SECOORA/IOOS Summer Internship at USF** (Michael Kovatch); **\$20,100** for audit and accounting expenses; **\$30,000** for **Python Data Analysis Tools for Oceanographers Services** (Filipe Fernandez); **\$152,000** for **DMAC Services** (Axiom Data Science, LLC).

Additional SUBAWARDS:

MODELING

NCSU- Dr. Ruoying He

TOTAL AWARD AMOUNT = \$138,188

Salary - As the PI of the project, Dr. He will commit 1 month to oversee the NCSU portion of the project, produce project reports and journal publications, and work with the SECOORA team on product delivery and promotion. We request salary support for a NCSU research associate (RA) for 12 months. The RA will assist Dr. He in maintaining and enhancing the SABGOM model.

Fringe benefits in University of North Carolina System are 30% and 18% for faculty and postdocs, respectively.

Travel - Travel funds (\$3024 for domestic and **\$4000 for international travel**) have been requested: (1) for Dr. He and his RA to attend the SECOORA annual meeting [2 people for 3

days; the cost breakdown includes: \$1200 for airfare and ground transportation, \$1114 for lodging, and \$710 for per diem]; (2) for Dr. He to attend the AGU meeting to report research findings [1 person for 5 days; the cost breakdown includes: \$750 for airfare and ground transportation, \$750 for lodging, and \$500 for per diem]; (3) for Dr. He to attend EGU spring meeting in Vienna, Austria to report research findings [1 person for 5 days; the cost breakdown includes: \$750 for airfare and ground transportation, \$750 for lodging, and \$500 for per diem].

Equipment- We request funds (\$20,000) to purchase a 35TB RAID data server. SABGOM operational model simulations are data intensive. The equipment is critical for model data delivering and archiving.

Supplies- Supplies not covered by administrative costs, including backup UPS batteries and computer/data storage cables are budgeted (\$1400).

Publications- (\$1200) To pay page costs for publications arising from this project.

Indirect Costs- Indirect costs at North Carolina State University in this project year are 49% of Modified Total Direct Costs (MTDC), the same as at the start of this five year project. MTDC is the sum of all direct costs, minus equipment and tuition.

ROFFS – Dr. Mitch Roffer

TOTAL AWARD AMOUNT = \$14,485

Salary- Salary and fringe benefits are requested for Mitchell A. Roffer, Principal Investigator. Mitchell A. Roffer salary (\$7,083) plus 43% fringe for a total of \$10,129.

Indirect Costs- The cost basis for the ROFFS™ overhead rate of 43% is calculated on the basis of operational costs (rent, maintenance, taxes etc) divided by direct labor costs. We certify that this is the lowest rate that we can provide.

University of Florida – Dr. Peter Sheng

TOTAL AWARD AMOUNT = \$39,317

Salary and Fringe - The work will be conducted by Drs. Sheng (PI), Paramygin (Associate Investigator), and Davis (Associate Investigator). Dr. Sheng will oversee the study. Dr. Paramygin will carry out the running of the ACMS during the 2015 hurricane season and preparation of the data for transmission to the NHC Testbed. Dr. Davis will oversee the smoothing running of the data server which connects the ACMS system and the NHC Testbed. Primary of the budget is to support the salary of Drs. Sheng, Paramygin, and Davis for one week, 2 months, and one week, respectively. **Fringe Rate -** The 2 associate investigators (Davis & Paramygin) rates are 25.7% (faculty fringe) and the PI's (Sheng) fringe rate is 5.4% (other OPS).

Supplies- \$3,000 is needed to purchase a data server for this project

Indirect Costs - Indirect cost rates (IDC) are negotiated and determined by the Department of Health and Human Services. The University currently has an approved IDC rate of 50.0% of Modified Total Direct Costs (MTDC) for on-campus organized research.

University of South Carolina- Dr. Dwayne Porter

TOTAL AWARD AMOUNT = \$69,034

Salary/Wages and Benefits (\$45,616 + \$6,573)- Dr. Porter is PI of the project and will have overall responsibility for the activity, including project oversight, planning, implementation, and reporting. Dr. Porter is requesting 0.75 months of summer salary support. Funds are requested to partially support one core staff member who will have primary responsibilities for the data integration, modeling efforts, and information dissemination as described in the proposal. Funds are also requested to support a Graduate Research Assistant who will be responsible for data assimilation and integration, and model development.

Fringe has been calculated at 24.21% of total wages plus insurance at \$356.30 per month for the core staff member. The fringe rate on the GRA is 0.65%.

Expendable Supplies (\$1,000)- Funds are requested for basic IT-related supplies.

Travel (\$1,600)- Requested travel funds will partially support participation in offsite SECOORA meetings and meetings with product end users as related to product design, development, evaluation, and implementation. Allowable charges will adhere to state and federal per diem guidelines as appropriate.

Indirect Costs (\$14,245)- IDC is calculated as 26.0% of allowable direct costs. The off-campus IDC rate is applied as the proposed activities will be undertaken primarily in the Sarasota area of southwest FL.

DMAC

University of South Carolina - Dr. Dwayne Porter

TOTAL AWARD AMOUNT = \$150,000

Salary/Wages and Benefits (\$101,197 + \$29,666)- Dr. Porter is PI of the project and will have overall responsibility for the activity, including project oversight, planning, implementation, and reporting. Dr. Porter is requesting 0.25 months of summer salary support. Funds are requested to partially support two core staff members who will have primary responsibilities for the data management and system maintenance activities as described in the proposal. Fringe has been calculated at 24.21% of wages plus insurance at \$837.38 per month for the staff member with full family benefits and at \$356.30 for the staff member with individual benefits.

Expendable Supplies (\$500)- Funds are requested for basic IT supplies.

Travel (\$900)- Requested travel funds will partially support participation in offsite SECOORA meetings. Allowable charges will adhere to state and federal per diem guidelines as appropriate.

Indirect Costs (\$17,736)- IDC is calculated as 13.41% of allowable direct costs. This rate reflects the SECOORA federally-approved IDC rate and represents a significant reduction from the USC federally-approved rate. This is a significant allowance on the part of USC in an effort to maintain the SECOORA DMAC infrastructure to ensure continuity of operations.

OBSERVATIONS

University of Georgia/ Skidaway Institute of Oceanography – Dr. Dana Savidge

TOTAL AWARD AMOUNT = \$151,276

Salary - Salary support is requested for Dr. D. Savidge (1.5 month) and the technical staff at 6 months total per year for HFR operation, maintenance and data processing. An additional three months technical salary is requested for tower data recovery. Fringe benefit rates are 19.41 for faculty summer salary and 41% for staff.

Travel- PI Travel costs are budgeted at \$1.5K per year. Travel support is requested for PI and one technician to travel to annual SECOORA meetings. Estimate is based on 2 way travel within southeast, and two nights lodging per individual, occasional meals.

Equipment - Costs for equipment to maintain existing radars is requested at 14.05K per year.

Supplies- Materials and supplies also includes small boat and institute vehicle charges, which are required to access radar sites on the islands.

Indirect Costs- SkIO indirect cost rate is 50% of MTDC.

University of Miami – Dr. Nick Shay

TOTAL AWARD AMOUNT = \$161,453

Salary- Support is requested for Dr. L. K. Shay (1 month), Mr. Jorge Martinez-Pedraja (Technician: ~11 months) and a student (11.5 months) in 2015-2016 to operate and maintain WERAs in South Florida. As part of this year's activity, we expect to deploy a fourth radar in North Key Largo pending state approval. Fringe benefits for faculty are 26.9% and approximately 42.8% for the technician.

Other costs - include telephone lines and electricity at the sites (\$2K), expendable supplies (\$950) such as, disks/CDs to store data, and computing services.

Travel - (\$5K) is primarily to/from the sites and attend national meetings. We have also included \$2K per year for student insurance as they have no fringe benefits at UM.

Indirect costs - The off campus UM indirect cost recovery is 26% of MTDC since the data collection is from remote sites off campus.

University of North Carolina – Chapel Hill – Dr. Harvey Seim

TOTAL AWARD AMOUNT = \$137,277

Salary- Support is requested for the PI H. Seim (0.5 mons), M. Muglia, the lead technical staff, who lives on the Outer Banks and will perform or lead the bulk of needed maintenance (6 mons), S. Haines, who is responsible for data management (3 mons), and two staff at the Institute of Marine Sciences, T. Whipple and R. Neve, who will help Muglia support the Core Banks installation (6 weeks each). Fringe benefits are calculated as 22.634% of salary plus \$448.17 per month for staff health insurance.

Travel- A budget of \$5,057 for travel is requested to cover routine trips to service and repair equipment at all sites which are all remote. The Core Banks installation is particularly remote, requiring a ferry and 4-wheel drive vehicle for access, and may require a separate vessel for access during winter months when the ferry does not operate. As expenses allow these funds may also support travel to radar operator meetings.

Supplies- Under this category are supplies, power and communications costs, generator and shed maintenance and repair costs, budgeted at \$21,000. At the Buxton site the month power bill is approximately \$150/month and maintenance/repair and diesel fuel costs to maintain the backup diesel generator (the unit is older and has required consider upkeep) are budgeted at \$2000. Similar costs are anticipated at the Core Banks site (\$2000). \$600 are budgeted for upkeep of the sheds that house the electronics at these sites. Communications costs are roughly \$300/month/site, or \$10,800 total. \$5,600 is requested in supplies to cover costs associated with equipment repairs/replacements. In the past these have included component failures in the electronics, antenna repairs, lightning protection replacement and cable replacement.

Indirect Costs -The off-campus indirect charge of 26% is requested because the installations are all on the Outer Banks and the bulk of the funding goes to Muglia who works at the coast. All expenses are eligible for indirect costs for a total of \$28,327.

University of North Carolina – Wilmington – Dr. Lynn Leonard

TOTAL AWARD AMOUNT = \$388,822

Salary – Salary is requested for the following personnel: **(1)** One RCOOS mooring technician who will provide O&M support for the 8 buoys and one pier system operated by UNCW. Total requested technician salary equals \$40,200. It should be noted that UNCW will fund the second mooring technician associated with this project. This funding has been offered for the duration of Year 5; and **(2)** 4.0 months of support is requested for the project

manager (\$18,000) to provide on-going communications with permitting agencies (USCG, USACE) and stakeholders regarding observing activities in the Carolinas region, participate in field work in support of mooring operations, manage budgets and contracts, prepare project and personnel reports, coordinate integration activities and manage the project team on a daily basis.

UNCW assesses benefits at 37% of total salaries for the mooring technicians and 34.6% of the total salary for the project manager. This equals \$21,102 for all personnel involved on the project. The total salary request, inclusive of base pay plus benefits, equals \$79,302.

Supplies- Expendable supplies are requested (\$36,000). Examples of items that are purchased from supply funds include buoy modems, data loggers, wiring, cables, buoy batteries, SIM cards, mooring chain, anchor material, boat supplies, and lab supplies.

Travel - RCOOS personnel request funds for travel in support of mooring deployments and pier maintenance activities. The mooring technicians have to travel around NC, SC and GA to provide maintenance for the RCOOS moorings. Travel support funds are used to pay for the State of NC lease vehicle and associated mileage (used in support of the RCOOS project) and for boat fuel for UNCW small boat usage. Also funds are used to support PI travel for SECOORA meetings. The total travel request equals \$9,000.

Purchased Services - Support for mooring operations and maintenance, and sensors associated with each mooring is requested (\$45,019). Funds will cover the cost of equipment calibrations (e.g. weather sensors, CTDs, ADCPS), Iridium telemetry fees for the offshore moorings (ILM3 and LEJ3), and cell phone charges for moorings communicating through cell modems (ILM2, SUN2, SUN2 Wave, FRP2, and CAP2).

Funds from the purchased services budget line is 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.

Contracted Services: (1) UNCW will issue a contract to Skidaway Institute of Oceanography to cover 8 days on-board the R/V Savannah for the spring and fall mooring turnarounds. The R/V Savannah day rate for FY16 is \$10,000 for a total contract value of \$80,000. **(2)** UNCW will issue a contract to Second Creek Consulting who will provide support to the SECOORA data management team, provide QA/QC expertise for the data provided by UNCW moorings, assist with data recovery for the cell phone modem communications, and manage the CORMP website. Total contract award value equals \$43,000.

Indirect Costs - IDC at UNCW uses a modified indirect cost rate. IDC is assessed at 44% of the award except equipment purchases and IDC is only assessed on the first \$25,000 of subcontracts. Total IDC charged for this award is \$96,501.

University of South Carolina – Dr. George Voulgaris

TOTAL AWARD AMOUNT = \$117,276

Salary- One month of summer salary (\$12,290) is requested for the PI (G. Voulgaris) responsible for the management and administration of the 2 site radars. Three months of salary (\$17,100) is requested for technical support to assist in the operations and on-site maintenance of the two sites. This support is offered by Mr. Jeffrey Jefferson, who has been trained in WERA systems and has sufficient experience to carry out the requested tasks. Finally a 10.5 month support (2 academic semesters and 1.5 summer semesters for a total of \$19,950) is requested for a graduate student to assist in the maintenance and mainly in data analysis of the HF Radars. The total request for salaries and wages is \$49,340. Fringe benefits (see: <https://sam.research.sc.edu/fringebenefits.html>, accessed on 6/4/2015) at 24.21% for the technical support and the PI and at 0.65% for the student (full time, enrolled) are estimated; in addition \$356.30 per month (for 3 mos) for medical benefits for the technician has been accounted for (employ only medical: \$344.58 and dental: \$11.72). The total cost of fringe benefits is \$8,314. The total request for salaries and Fringe benefits is \$57,654.

Travel- Domestic: 12 day trips (1 per month) to each site (442mile return trip for CSW station; 250 miles return trip to GTN station, 692miles x 12 x 50.5c per mile = \$4,193), daily allowance \$32 x 12 x 2 = \$768. Total domestic travel request is: \$5,729.

Supplies- Various RF connectors (\$500); consumables for repairs (tape, insulation tubes, cable protective pipes etc) \$1,400; upgrades to remote station computer boards and CPU \$900; miscellaneous field tools and incidentals \$204. Total Supplies: \$3,004.

Other Costs:

1. Electricity charges (to be paid to the Bell W. Baruch Foundation, property owner of the radar installation site) for the GTN station is estimated on average at \$125 per month (total \$1,500 per year), internet connection with static IP provided through Verizon is estimated on \$40 per month per station, total cost of \$960. Total for electricity and communication charges: \$2,460.
2. System hardware maintenance charges for the radar equipment pro-rated at \$1,100 / month for part replacements to ensure rapid maintenance of sites and replacement of faulted parts and upgrades. Total cost \$13,200 per year.
3. Tuition Costs for the graduate student (6 hrs per academic semester, and 1 credit hour for summer, for a total of 13 credit hrs, at a cost of \$501 per credit hour, see: <http://sc.edu/bursar/fees.shtml>, accessed 6/4/2015) have been included in this category for a total tuition cost of \$6,513.

Indirect Costs- The USC negotiated rate (see attached document) for service projects of 35% (see: <https://sam.research.sc.edu/idc14-17.html> and <https://sam.research.sc.edu/pdf/IDC%20Rate%20Agreement.pdf>) on all expenses excluding equipment and tuition (\$6,513) has been applied making the total IDC \$28,715.

University of South Florida - HFR - Dr. Bob Weisberg

TOTAL AWARD AMOUNT = \$161,452

Salary (\$68,926)- The P.I., R.H.Weisberg (1 month), will provide overall project guidance assisted by co-P.I. C. Merz (2 months). J. Donovan (1 month) will help to manage data and computational systems. Y. Liu (2 months) will assist with analyses. These salary monies will provide partial support together with other related projects. Fringe benefits are calculated @ 16.44%, plus 1269/mo. (medical and life insurance) on faculty and staff with 12 month appointments.

Equipment (\$32,000) - continues the staged acquisition of componentry to complete a fourth CODAR installation and to maintain site operations. Expenses include site controllers and CODAT AMP generators.

Travel (\$4,000)- Domestic travel is for site servicing, P.I. interactions and dissemination of scientific information at professional meetings. Materials and supplies are for CODAR site maintenance.

Supplies (4,720) – For HFR related supplies

Other costs - are for site related telecommunications and electricity (both excluded in MTDC), CODAR service agreement, publication and freight (for shipping parts between USF and vendor).

Indirect costs – Indirect costs are charged @ 49.5% on Modified Total Direct Costs (MTDC). MTDC for this award is TDC minus equipment and telephone/electric costs.

University of South Florida - Moorings - Dr. Bob Weisberg

TOTAL AWARD AMOUNT = \$186,168

Salary and Fringe (\$95,228) - P.I R.H.Weisberg (2 months) will provide overall project guidance assisted by co-P.I. Y. Liu (3 months). J. Donovan (2 months) will help to manage data and computational systems. J. Law (1 month) will provide sea-going expertise assisted by support from our CMS-COT engineering group. These salary monies will provide partial support together with other related projects. Fringe benefits are calculated @ 16.44%, plus 1269/mo. (medical and life insurance) on faculty and staff with twelve month appointments.

Travel (\$3,392) - is for P.I. interactions and dissemination of scientific information at professional meetings.

Materials and supplies (\$8,400)- are for mooring system hardware, wire rope, cables, connectors, other expendables and batteries for powering equipment deployed at sea.

Other costs are for small boat usage to service moorings and to support the training of an intern, sensor calibration expenses, shop support, publication and freight (for calibrations).

Other Costs (\$18,500) – Funds are for use of small boats, FIO shiptime match, calibration costs, publication and freight costs.

Indirect Costs (\$60,649) - Indirect costs are charged @ 49.5% on MTDC, where for this budget MTDC are TDC minus the FIO shiptime match.

University of South Florida – Dr. Mark Luther

TOTAL AWARD AMOUNT = \$55,761

Salary and Benefits: Approximately 1.0 month salary and benefits are requested in each year for M. Luther and a Data Technician, Jeff Donovan. Fringe benefits include FICA, Retirement, Medicare and Worker's Comp. These total benefits are calculated at the standard state university rates of 16.94% of salary plus \$1,269/month for health and life insurance for Donovan. Total salary and benefits is estimated at \$22,562 in Year 5.

Travel: Funds are requested in each year for travel for the PI's and/or Field Engineer to attend two professional/technical meetings (Airfare: \$500 each x 2; Per Diem and incidentals: 3 days each x 2 @ \$250/day=\$1,500). Additional local travel to service coastal observing sites in the amount of \$500 is requested. Total travel requested is \$3,000.

Supplies: The total cost estimate for expendable supplies is estimated at \$11,736 in Year 5, which includes but is not limited to miscellaneous expenses such as mounting hardware and supplies for mounting instrumentation, power, and telemetry equipment, batteries, solar cells, boat fuel, and lab supplies needed in the preparation/calibration of sensor equipment, as well as data acquisition equipment and oceanographic or meteorological sensors, costing under \$5,000, as needed. A portion of software maintenance for the COMPS GOES satellite receiver system is included in this category. Specific sensor equipment to be purchased is unknown until such time as equipment fails in the field.

Indirect Costs: Indirect Costs are charged at 49.5% of Modified Total Direct Costs and are estimated at \$18,463 in Year 5. University of South Florida Facilities and Administrative Cost Rate Agreement dated 06/30/2014. Cognizant Agency: Department of Health and Human Services, Darryl W. Mayes, 301-492-4855.

University of South Carolina – Dr. Erik Smith

TOTAL AWARD AMOUNT = \$39,936

Equipment- The North Inlet-Winyah Bay (NI-WB) NERR presently has partial funding in hand to support the initial establishment of the described station infrastructure and instrumentation for the surface water data sondes and telemetry equipment. The NI-WB NERR additionally anticipates being able to support the annual operating costs of this

station with current levels of NERRS Operations Grant funding. The NI-WB NERR is requesting funding from SECOORA for the purchase of equipment to instrument bottom water data sondes and associated telemetry for this station. Specifically, we seek funding for the purchase of two YSI EXO2 data sondes equipped with conductivity/temperature, pH, dissolved oxygen, turbidity, and FDOM sensors plus associated anti-fouling guards at a total cost of \$32,917, as well as one Suttron satellite telemetry package consisting of a SatLink2-V2 and 10dB satellite antenna, solar power supply system, lightning protection and enclosure system at a cost of \$7,019.

Indirect Costs- As only capital equipment funds are requested, USC indirect costs do not apply.

OCEAN ACIDIFICATION

University of Georgia - Dr. Scott Noakes

TOTAL AWARD AMOUNT = \$38,433

Salary (\$18,196) —a salary support at the level of 3 months is requested for Dr. Noakes. He will be in charge of the GRNMS mooring sensors including interfacing with PMEL, NDBC and SECOORA. This effort also includes participation in SECOORA conference calls and meetings. Educational and outreach efforts will be included as the opportunity arises such as webinars for OAP, SECOORA or GRNMS as in previous years. Fringe benefit (**\$7,590**) is calculated at the rate of 41.71%. Since no other UGA personnel are included in this budget, the project leans heavily on the efforts of the GRNMS vessel and personnel to aid in servicing the mooring.

Materials and Supplies (\$2,016) - is requested for materials associated with sensor deployment, recovery, maintenance and shipping. Estimated expenses are for: Shipping equipment back to PMEL or factory; Nylon ties, tape, gloves, tools, nuts, bolts, etc.; Air fills, dive gear maintenance and repairs.

Travel (\$2,700) - is requested for travel to Savannah, GA to visit the GRNMS mooring for servicing or repairs as needed. Travel is also needed for a national meeting related to ocean acidification and interaction with PMEL/NDBC. Travel to NDBC at the Stennis Center will be required to test fit the MAPCO2 and mounted sensors prior to shipping to Charleston. Travel to SECOORA's annual meeting will be required. Estimated expenses are for: NDBC Stennis Center travel, Buoy servicing (est. 4-5 trips offshore), SECOORA meeting, and OCB meeting.

Indirect Costs (\$7,931)- The overhead rate is based on The University of Georgia's off-campus rate at 26%.

University of Delaware - Dr. Wei-Jun Cai

TOTAL AWARD AMOUNT = \$64,232

Personnel - The lead PI, Cai, requests a salary support at the level of 0.25 months for the one year award. He will supervise the entire project activity as well as reporting to NOAA and writing scientific papers. A 4.0-month salary is requested for a technician to conduct the fieldwork during the one year award. For fieldwork, he/she will be responsible for doing the underway pCO₂ analysis and DO Winkler titration together with the student. The technician will attend the GOMECC cruise to analyze TA. 6.0-month salary is requested for a graduate student during the one-year award who will help with and DIC analysis and TA titration. He or she will attend the GOMECC cruise. **Fringe benefit**- Per UDel's negotiated agreement, fringe benefits are calculated at 33.8% for faculty and technical person and 4.8% for the graduate student. A copy of our Negotiation agreement with the Office of Naval Research can be read at <http://www.udel.edu/research/pdf/FY15-Fringe.pdf>.

Materials and supplies - \$3,000 is requested and includes materials and chemicals for the titration and the spec-pH measurements, parts for the underway pCO₂ instrument, and two cases of CRM from Dickson.

Travel- \$2,500 is requested for up to 4 trips per year to Savannah, GA for 2 people. Each trip is budgeted at \$900 including rental van, hotel and per diem (2 nights hotel, 3 days per diem). \$700 is budget for the PI to attend one NOAA meeting each year.

Other costs- \$1,983 is requested to support publication costs.

Indirect costs – The University of Delaware's predetermined federal on-campus research rate is 56.0%. However for the workplan, a reduced F&A of 25.0% is applied per the sponsor's request. The University of Delaware's Facilities and Administrative (F&A) and Fringe Benefits rates are approved by the Department of Defense, Office of Naval Research. The distribution base for the F&A rate is MTDC. Equipment, capital expenditures, charges for patient care and tuition remission, rental costs of offsite facilities, scholarships, fellowships, and vessel (ship) charges as well as the portion of each subgrant or subcontract in excess of \$25,000 shall be excluded from the modified total direct costs. A copy of our Negotiation agreement with the Office of Naval Research can be read at <http://www.udel.edu/research/pdf/F A Agreement FY 13 14 15.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. IOOS	11.012	\$	\$	\$ 2,602,151.00	\$	\$ 2,602,151.00
2. SECOORA ONLY						0.00
3.						0.00
4.						0.00
5. Totals		\$ 0.00	\$ 0.00	\$ 2,602,151.00	\$ 0.00	\$ 2,602,151.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY					Total (5)				
	(1)	Year 1	(2)	Year 2	(3)		Year 3*	Year 3*		
a. Personnel	\$	110,408.00	\$	196,412.00	\$	211,698.00	\$	239,209.00	\$	757,727.00
b. Fringe Benefits		27,620.00		43,211.00		57,159.00		66,978.00		194,968.00
c. Travel		15,000.00		30,000.00		44,415.00		22,825.00		112,240.00
d. Equipment		0.00		0.00		0.00		0.00		0.00
e. Supplies		5,146.00		4,063.00		9,750.00		3,701.00		22,660.00
f. Contractual		1,854,826.00		1,896,943.00		2,049,959.00		2,100,888.00		7,902,616.00
g. Construction		0.00		0.00		0.00		0.00		0.00
h. Other		2,000.00		29,500.00		19,500.00		4,500.00		55,500.00
i. Total Direct Charges (sum of 6a-6h)		2,015,000.00		2,200,129.00		2,392,481.00		2,438,101.00		9,045,711.00
j. Indirect Charges				97,595.00		105,222.00		92,043.00		294,860.00
k. TOTALS (sum of 6i and 6j)	\$	2,015,000.00	\$	2,297,724.00	\$	2,497,703.00	\$	2,530,144.00	\$	9,340,571.00
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. IOOS - SECOORA ONLY	\$	\$	\$	\$ 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	\$ 2,015,000.00	\$ 503,750.00	\$ 503,750.00	\$ 503,750.00	\$ 503,750.00
14. Non-Federal	0.00				
15. TOTAL (sum of lines 13 and 14)	\$ 2,015,000.00	\$ 503,750.00	\$ 503,750.00	\$ 503,750.00	\$ 503,750.00
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. IOOS - SECOORA ONLY	\$ 2,602,151.00	\$	\$	\$	
17.					
18.					
19.					
20. TOTAL (sum of lines 16-19)	\$ 2,602,151.00	\$ 0.00	\$ 0.00	\$ 0.00	
SECTION F - OTHER BUDGET INFORMATION					
21. Direct Charges:		22. Indirect Charges:			
23. Remarks: * Please note that the last column in Section B (column (#4)) should be titled "Year 4".					

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. IOOS	11.012	\$	\$	\$ 2,602,151.00	\$	\$ 2,602,151.00
2. SECOORA ONLY						0.00
3.						0.00
4.						0.00
5. Totals		\$ 0.00	\$ 0.00	\$ 2,602,151.00	\$ 0.00	\$ 2,602,151.00

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)	
	(1)	Year 5	(2)	(3)		
a. Personnel	\$	222,789.00	\$	\$	\$ 222,789.00	
b. Fringe Benefits		64,609.00			64,609.00	
c. Travel		40,000.00			40,000.00	
d. Equipment		0.00			0.00	
e. Supplies		3,634.00			3,634.00	
f. Contractual		2,119,210.00			2,119,210.00	
g. Construction		0.00			0.00	
h. Other		43,165.00			43,165.00	
i. Total Direct Charges (sum of 6a-6h)		2,493,407.00	0.00	0.00	0.00	2,493,407.00
j. Indirect Charges		108,744.00				108,744.00
k. TOTALS (sum of 6i and 6j)	\$	2,602,151.00	\$ 0.00	\$ 0.00	\$ 0.00	\$ 2,602,151.00

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. IOOS - SECOORA ONLY	\$	\$	\$	\$ 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	\$ 2,015,000.00	\$ 503,750.00	\$ 503,750.00	\$ 503,750.00	\$ 503,750.00
14. Non-Federal	0.00				
15. TOTAL (sum of lines 13 and 14)	\$ 2,015,000.00	\$ 503,750.00	\$ 503,750.00	\$ 503,750.00	\$ 503,750.00
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. IOOS - SECOORA ONLY	\$ 2,602,151.00	\$	\$	\$	
17.					
18.					
19.					
20. TOTAL (sum of lines 16-19)	\$ 2,602,151.00	\$ 0.00	\$ 0.00	\$ 0.00	
SECTION F - OTHER BUDGET INFORMATION					
21. Direct Charges:		22. Indirect Charges:			
23. Remarks: NOTE: The grand total amount for Years 1-5 is \$11,942,722.					