

May 9, 2016

Regina Evans
Regional Grants Administrator
U.S. IOOS® Program Office
1100 Wayne Avenue, Suite 1225
Silver Spring, MD 20910

Dear Regina,

On behalf of the Southern California Coastal Ocean Observing System (SCCOOS), we would like to submit the following scope of work and revisions to the U.S. Integrated Ocean Observing System (IOOS®) Program for Fiscal Year 2016. This letter outlines the projects that will be conducted at the recommended funding amount of \$2,418,098, and highlight the reductions to the original proposed \$4 million budget.

For FY 2016, SCCOOS received an increased allocation of directed funding and a decrease in base funds. The decrease in base funding (\$78,491) will be reflected in the amount allotted to data management.

In addition to the reduction of data management, these Tier 3 specific proposed project initiatives will not be supported:

- Upgrade and/or replace HF radar hardware to improve the network to ensure continued distribution of near real-time surface currents along the coast of Southern California;
- Sensing, mapping and spatial modeling krill off southern California;
- Add acoustic data collection to glider surveys to allow the study of underwater sound from marine mammals;
- Expand glider operations to cover one alongshore transect;
- Coordination of Santa Barbara Biodiversity Observation Network available tools, development of new techniques and infrastructure, and integration of these components into a cohesive program to advance the knowledge and understanding of the patterns and drivers of change in marine biodiversity;
- Connecting the shelf and nearshore regions to assess physical drivers of variability of the coastal environment of southern California by co-locating a Fiber Optic Distributed Temperature Sensing (DTS) system to run in parallel with the automated Newport Pier shore station;
- Integration outer-shelf to shoreline modeling on the local scale to advance our understanding of the transport and fate studies of coastal materials (e.g., rivers, sewage, oils spills and nearshore HABs);
- Add biogeochemical CoSiNE model to the high resolution 3-Km ROMS real time data assimilation and nowcast/forecast providing real-time information for better fisheries management and response to environmental hazards (e.g. early warning for harmful algae blooms, hypoxic events, and low-pH water intrusions into aquaculture areas);
- Supplement SCCOOS framework with airborne observations of water quality from NASA/Jet Propulsion Lab Portable Remote Sensing Imaging Spectrometer (PRISM) to bridge spatial and temporal gaps for in situ and satellite observations, as well as provide validation, to better inform decision-makers



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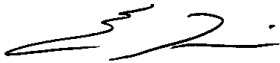
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and improve understanding of the changing water quality conditions of the coastal ocean in southern California;

- Add additional phytoplankton sampling to harmful algal bloom monitoring to increase our biological sampling and to improve the understanding of the environmental causes and health effects in California waters;
- Adding two USC Wrigley Institute’s time series of costal ocean monitoring sites in southern California. These data would be made publically available, integrate into regional SCCOOS ‘Climate and Ecosystems’ initiatives and ongoing carbonate monitoring efforts, and meet NOAA objectives to enhance national understanding of ocean carbonate dynamics;
- Integrate air-sea flux of CO₂ to existing SCCOOS CalCOFI sampling stations to better constrain coastal carbon budgets and, in addition, capture and characterize natural variability and ocean change;

Despite the reductions required by lower funding levels than originally proposed, IOOS awards provide a critical source of funds for sustaining core operations and a valuable resource for leveraging additional grants and building new partnerships. Thank you for your continued support.

Sincerely,



Eric Terrill – PI
SCCOOS Technical Director



Julie Thomas – Co-PI
SCCOOS Executive Director

FY 2016 MILESTONE SCHEDULE (*Shaded areas will be reduced or eliminated*)

CLIMATE VARIABILITY AND CHANGE	
Monthly	Operate and maintain network of one glider lines to collect measurements of temperature, salinity,

	chlorophyll, current velocity, dissolved oxygen and acoustic backscatter; deliver data to SCCOOS website and push to modeling centers
Years 1-5	Continue to develop integrate and enhance long-term time series products for distribution
Year 1	Collaborate and integrate new OA observations such as those being deployed by the Santa Monica Bay Restoration and XPrize next generation sensors
Ongoing	Expand glider operations to cover one alongshore transect
Ongoing	Add two carbonate chemistry time series for coastal ocean monitoring in Southern California Bight and display on the SCCOOS website
Ongoing	Operations and maintenance of integrated air-sea flux system of CO ₂ at Carlsbad Aquafarm and on CalCOFI vessel.
Years 1-2	Quality control Carlsbad Aquafarm and CalCOFI data, deliver data to SCCOOS databases and analyze for publication
Ongoing	Develop and install an online calibration setup for pH sensors operating at Carlsbad Aquafarm and on CalCOFI vessels
Year 3	Develop an in situ calibration system for SeapHOx operating at Carlsbad Aquafarm and on CalCOFI vessels
COASTAL HAZARDS	
Years 1-2	Compile database of historical bathymetry surveys. Develop model for Newport and Seal Beach inundation sites
Years 3-5	Develop model for Huntington and Imperial Beach inundation sites
Hourly	Shoreline inundation forecast, validation, and dissemination of warnings to select city managers
Ongoing	Expand development and integration of inundation webpage
ECOSYSTEMS, FISHERIES AND WATER QUALITY	
Weekly	Monitor HABs at six pier stations in Southern California by collecting weekly measurements of temperature, salinity, chlorophyll, and nutrients; provide data online and distribute via the California HABMAP listserv
Quarterly	Continue to collect CalCOFI observations and measurements
Ongoing	Conduct automated sampling at four shore stations of temperature, salinity, chlorophyll, turbidity, and water level
Twice yearly	Conduct shipboard observations with CalCOFI surveys to count seabirds; post online
Annually	Publish survey reports and maps of seabird species' distribution and abundance on SCCOOS web site
Ongoing	Display the 3-km ROMS ocean forecasting system for real-time operations statewide;
Ongoing	Validate the 3-km CA ROMS output against non-assimilated observations
Year 1	Continue to develop and transition 3-Km ROMS to cloud computing
Ongoing	Develop a coupled ROMS/biogeochemical model to aid the evaluation of the effects of nutrient inputs on bloom formation and nutrient cycles
Year 1	Ingest, quality control, disseminate and visualize the mooring data including OA parameters
Year 1	Ingest, format and visualize the POTWs data for the quarterly hydrographic surveys
Ongoing	Ingest and visualize Santa Barbara Biodiversity Observation Network
Ongoing	Develop shelf and surfzone pollution exchange products
Ongoing	Add freshwater forcing by rivers and wastewater treatment plants to 3-km ROMS model
Ongoing	Add time series of krill biomass from bioacoustics
Ongoing	Add flow cytometry for picoplankton and bacteria to HABs data
Ongoing	Add acoustic data collection to gliders to collect marine mammal data
Ongoing	Connect the shelf and nearshore regions to assess physical drivers of variability via a Fiber Optic DTS System
MARINE OPERATIONS	
Annually	Provide training to first responders of maritime incidences in the use of SCCOOS products
Ongoing	Operate and maintain the network of short, medium, and long range HF radar systems and deliver data streams to the National HFR Network
Year 1	Provide HF Radar Quality Control Development
Ongoing	Maintain and expand integrated, customized products with multi-layer views of observations, nowcasts, and forecasts. Collaborate with the Port of Long Beach to maximize the benefit of SCCOOS observations
Ongoing	Deliver surface current data and surface wind analyses to aid spill response, SAR real-time recovery, and post-analysis trajectories
Ongoing	Upgrade and/or replace HF radar hardware as needed