Southern California Coastal Ocean Observing System (SCCOOS)

IMPACT STATEMENT in response to proposal for Development of the Regional Coastal Ocean Observing System (RCOOS) for Southern California

Submitted in response to Federal Funding Opportunity:
FY 2007 Regional Integrated Ocean Observing System
CFDA 11.473 Coastal Services Center, NOAA
One Year Proposal

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IMPACT STATEMENT

As a result of a reduction in funding [proposed $1.8M and 0.5M recommended] to the Southern California Coastal Ocean Observing System, a significant change of scope is to be implemented in FY07.

Background

In FY04, SCCOOS initiated the development of regional IOOS capacity in Southern California through the Coastal Observing Technology System (COTS) program. The region is comprised of ~20 million people, representing 25% of the coastal population of the U.S., live within fifty miles of the coast. The population density raises concerns about human impacts on our environment and on how the environment, in turn, will impact the economy and societal development. Dealing with this dense population requires more effective management of the coastal ocean through more accurate and comprehensive observations, and the management and delivery of those data into useful decision making tools – a mission of SCCOOS. .

Contextual use of SCCOOS RCOOS funds and Impacts of Reduction

COTS funding is critical to SCCOOS's multi-year strategy to build a decision support system for addressing regional societal needs. Policymakers, resource managers, marine safety personnel, and researchers in the Southern California Bight (SCB) have critical information requirements for (a) observing and understanding how oceanic factors impact waste disposal and water quality; (b) knowing environmental factors that affect managing fisheries and endangered marine species; (c) observing conditions (e.g. sea state) that create hazards to enable early warnings; (d) monitoring the health of beaches to preserve recreational activities and provide erosion protection; and (e) observing and predicting algal blooms, specifically harmful algal blooms that kill fish, marine mammals and birds and affect tourism. Since 2004, SCCOOS has been awarded approximately $1.5M per year to build and operate the Regional Coastal Ocean Observing System (RCOOS) for Southern California..

SCCOOS functions as both the Regional Association (RA) and the Regional Coastal Ocean Observing System (RCOOS). SCCOOS operates through a system of awards between the implementers of the observing system, retains a Board of Governors, Executive Steering Committee, and Senior Advisory Committee. The latter represents 18 federal, state, and local mission-driven agencies who will benefit from a functioning regional IOOS. Care has been given to managing early IOOS expectations of the Senior Advisory Committee, with technical activities within SCCOOS focused on the gathering of observations and early delivery of useful data products and decision tools. The RCOOS development is principally funded through two awards: a State of California Coastal Ocean Currents Monitoring Program (COCMP) – a $21M ocean circulation monitoring program, and RCOOS funds, previously administered through the COTS program. The implementation of RCOOS funding has allowed a broad range of value-added efforts that leverages both the developing user structure and the California investment in observing system infrastructure. Our reduction in funding has resulted in significant change to the developing RCOOS effort:

- Removal of quarterly nearshore biological surveys that extended CALCOFI measurements closer to the coast to support assessments required for once through power plant cooling and to define baseline biological variability for the planned network of Marine Protected Areas.
- Removal of vessel based surveys (bi-weekly) in the Santa Monica Bay to support water quality and environmental assessments.
- Removal of all education and outreach efforts, including continuing development and deployment of a 5th grade science curriculum based upon ocean observing data feeds that met State of California public school science standards.
- Removal of coastal ocean model development efforts.
- Removal of two oceanographic moorings (bio-physical-chemical systems with optics, temperature, salinity, nitrate, ADCP) located offshore Santa Barbara, and San Diego. These two moorings were scheduled to begin reporting data to NDBC in FY07.
- Removal of advance remote sensing product development and delivery efforts that were focused on products for assessing coastal ecosystems.
- Removal of operations and maintenance costs for three automatic shore stations (sea level, temperature, salinity, chlorophyll) located in San Diego, Newport Beach, and Santa Barbara.
- Removal of a routine harmful algal bloom sampling program designed to identify toxic species and identification of any toxins present in the nearshore zone of highest human contact.

Program Focus for FY07

With input from the Senior Advisory Committee, the Executive Steering Committee reshaped the focus of FY07 RCOOS development funds to be directed towards developing optimal nowcast/forecasts of ocean surface currents and the computation of trajectories based upon these synthesized surface currents. This directed focus is a direct response to pulls established by our stakeholder community, and leverages the State's existing investment in HF radar and associated observations directed towards coastal ocean circulation monitoring. Product development will focus on water quality related problems in Southern California, with a priority directed towards supporting a planned 3 week diversion of the Hyperion Outfall in 10m of water during FY07. Supporting this effort will be a deployment of in-situ assets including gliders, drifters, and REMUS auv to track the plume. This cluster of observations will contribute to constraining the observations provided by the HF radar and a single mooring located in Santa Monica Bay, and feed into the SCCOOS data assimilating model which will provide nowcast/forecast products of direct relevance to coastal managers involved with diversion effort. Over the planned three week diversion, over 7 billion gallons of sewage will be dispersed in a surface plume in Santa Monica Bay, introducing potential human health and

ecosystem risks that will necessitate careful environmental management. SCCOOS will support this effort as a milestone activity to demonstrate capability.

Specific activities for SCCOOS RCOOS efforts with NOAA FY07 funding will include:

- *Data management, data information, and data delivery to the public, and stakeholders.*
- *Retention of the oceanographic mooring in Santa Monica Bay to assist in characterizing the environment during the Hyperion Discharge, and to continue to provide baseline data for Marine Protected Area planning currently underway in Santa Monica Bay.*
- *Data assimilating ocean model operations that will assimilate HF radar surface current data, and be driven by atmospheric and tidal forcing.*
- *Optimized surface currents and trajectory product development.*
- *A Cross-shelf glider transects designed to constrain the coastal ocean circulation model.*
- *A small focused deployment of drifters, AUVs, and a single glider to assist in tracking a coastal plume generated by a local outfall diversion in Santa Monica Bay. Focused remote sensing data collection to track the plume during this diversion.*
- *Continued operation of a single automatic shore station located on the Santa Monica Pier.*
- *Low level maintenance (beam pattern and telemetry) of two long range HF radar systems to provide broad area inputs to our forecasting model. These systems complement the short range HF radar systems supported by the State of California.*
- *Surfzone current forecasts and model developments used for products related to estimating the fate and transport of stormwater and for current products in use by the Southern California marine safety community.*

A table of initially proposed and revised activities (and their funding level) follows:

COMPONENT		original		new FY07
Ecosystems				
CalCOFI Alongshore Sampling, Biomass & Primary Production.	$	93,236.00	$	-
Santa Monica Bay Shipboard Surveys	$	31,957.00	$	-
Data Management				
Observation System Design, Quality Assurance, Quality Control	$	11,292.00	$	-
Data Management/Web Operations	$	76,211.00	$	76,211.00
Data Management for assimilating model	$	26,687.00	$	10,000.00
Optimized surface currents and trajectory product development	$	50,825.00	$	44,000.00
Educational and Outreach				
Web-based Education & Outreach	$	9,984.00	$	-
Outreach for Students	$	43,696.00	$	-
Autonomous				
Vehicles Gliders	$	86,182.00	$	51,182.00
REMUS AUV deployments at special sites.	$	30,000.00	$	30,000.00
LA Basin/Shelf glider	$	35,000.00	$	35,000.00
Ocean Modeling				
Ocean Assimilation & Modeling.	$	73,433.00	$	60,000.00
Surf Zone Modeling	$	79,888.00	$	55,000.00
Model Development	$	53,715.00	$	-
Ocean Moorings				
San Diego Multidisciplinary Mooring	$	140,000.00	$	-
Santa Barbara Multidisciplinary Mooring	$	140,000.00	$	-
Santa Monica Bay Multidisciplinary Mooring	$	110,000.00	$	70,000.00
Remote Sensing				
Maintenance of Near-Realtime interface to Po.DAAC	$	13,000.00	$	13,000.00
Time Series Products	$	20,925.00	$	-
Long Range				
HF Radar Complete LR HF radar installation, validate, calibrate, integrate	$	80,333.00	$	30,000.00
Drifter Correlation	$	11,714.00	$	11,714.00
Shore Station Program				
Automatic shore stations, nutrient and chlorophyll sampling	$	46,000.00	$	-
	$	54,000.00	$	13,500.00
Special Sites				
Program Rapid Response Program Support (SCCOOS-wide)	$	558,659.00	$	-
TOTAL	$	1,876,737.00	$	500,000.00