

Southern California Coastal Ocean Observing System (SCCOOS)

Projected Impacts Resulting From Loss of FY07 COTS Funds

Background

In FY04, SCCOOS initiated the development of regional IOOS capacity in Southern California through the Coastal Observing Technology System (COTS) earmark process. 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 COTS funds

COTS funding is critical to SCCOOS's multi-year strategy to develop 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.

SCCOOS functions as both the Regional Association (RA) and the Regional Coastal Ocean Observing System (RCOOS). Since the inception of SCCOOS, attention has been placed on developing an organizational structure that meets the needs of region. SCCOOS operates through a system of contracts 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. SCCOOS funding principally comes from a NOAA grant to develop the SCOOS organization structure and participate in national IOOS development, a State of California Coastal Ocean Currents Monitoring Program (COCMP) – a \$21M ocean circulation monitoring program, and COTS. While the first two programs have narrow focus (yet are large in scope), the implementation of COTS has allowed a broad range of value-added efforts that leverages both the developing user structure and the California investment in observing system infrastructure. Loss of COTS funding will force a credibility loss with our early regional IOOS customers represented by our Senior Advisory Committee and the general public, and remove inertia to the functioning components of SCCOOS supported by COTS. These components include:

- 3 oceanographic moorings (bio-physical-chemical systems with optics, temperature, salinity, nitrate, ADCP) located offshore Santa Barbara, Santa Monica, and San Diego. 1 mooring presently reports in realtime to NDBC, with the other two to move to real-time upgrades in FY07.
- Cross-shelf glider transects designed to constrain ocean climate models designed to assist fisheries and PACOOS efforts.
- A rapid response capability of drifters, AUVs, and glider deployments. These systems are used in focus area studies to complement the regular operation of radar and their validation, and are used to support oil and other spills. SCCOOS drifters are used by MMS, discharge agencies, and the California Office of Spill Prevention and Response.
- Data assimilating ocean model development efforts that are scheduled to move to proto-operational real time operation in FY07.
- Two long range HF radar operated by SCCOOS and whose data is delivered to NDBC. These systems complement the short range HF radar systems supported by the State of California.
- Nearshore biological surveys that extend 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.
- Surfzone current forecasts and model developments used for tracking stormwater and predicting erosion by

- stormwater districts and sanitation districts (Orange County Sanitation District).
- Data management and product development/delivery efforts for SCCOOS observations.

Impacts to Trained Staff

The training of technical staff (technicians, programmers, data managers, engineers) with skills specialized to coastal observing tasks, can take years, with their potential loss representing the most tangible threat to SCCOOS. Surveys of the 11 organizations supported indicate that five staff may lose their jobs. This staff works in areas of mooring operations, ocean circulation model development and operations, data qa/qc and data management, and surf-zone wave driven circulation modeling. Other staff impacts would be the re-tasking of technical personnel to other projects. A 1 year gap of funding to FY08 would not guarantee the return of these re-tasked staff.

List of products and users impacted

Loss of COTS funding will affect the continued availability of the following maturing SCCOOS products available at www.sccoos.org. We expect these impacts to be significant by the close of CY07 as FY07 funds typically arrive in October. Note: These continually evolving products are consistent with NOAA 5-4-12 IOOS development plan.

- 18 Manual Shore Station Data - (Historical time series of temperature and salinity from 1916 – present) Uses: Climate, shoreline water quality, fisheries and biological resources. Data presently used by NOAA fisheries for managing sardine harvest levels.
- Six Automated Shore Stations (temperature, pressure, salinity, chlorophyll). Uses: climate, high frequency shoreline change, water quality, bio/blooms
- Shoreline Water Quality Data from State required AB411 shoreline bacteria sampling conducted by six municipal public health agencies participating. Uses: Water quality: dischargers, county health, EPA, NGOs, risk managers, public
- Hydrographic Cast Data Access - (Interface to view and download hydrography data. Data sets at present include quarterly monitoring data from the major POTW operators with NPDES permits in Southern California). Uses: dischargers, coastal climatology for constraining ocean models
- Remote Sensing Data Access - (OCM, MODIS, and GOES satellites for ocean color products such as chlorophyll and turbidity, sea surface temperature, and atmospheric conditions. quick image browser for recent data, Po.DAAC interface. Uses: coastal blooms, water quality, stormwater plume tracking, bio/fisheries
- Wind and Precipitation Forecast Interface - (Forecasted winds by the Navy COAMPS wind model operated at 3km resolution. Interface allows mouse over capability to determine values within region plus access to time history and forecast of winds). Uses: Marine operations, sailing, oil spill / search - rescue, water quality. Forces circulation models.
- Meteorological Data Interface - Over 400 met stations aggregated and data display/access. Uses: Marine operations, water quality, oil spill/search rescue.
- Bathymetry maps - (For subregions within Southern California. Users are able to download the image files into a free, 3D viewer.) Users: dump site planning activities, fishing, recreation, model boundary conditions.
- Mooring Data to the three ocean moorings (FY07 plans to move data from all moorings to NDBC, display tool for federal and SCCOOS moorings) Uses: constrain circulation model, oil spill, search and rescue, climate change
- Chlorophyll and HAB data - Time series presentation, information products Uses: Public health, ecosystem evaluation
- Observing system products developed to meet California 5th grade science standards and used in educational outreach. An estimated 15,000 students presently use SCCOOS developed educational materials whose technical content is supported by COTS.

A summary of available SCCOOS products is available at: <http://www.sccoos.org/interactive-map/>

Additionally, multivariate products have been requested by specialized users and would receive attention in FY07:

- Marine operations community have asked for wind, currents, waves, SST

- Shoreline NOW conditions: surf height, long shore currents, winds, air temp/water temp, precipitation forecast
- Water quality: data archive retrieval alongside other pertinent information (precipitation, met conditions, alongshore currents (surf + offshore)
- Power plant intakes – want currents near intake due to clogging by kelp

An example of SCCOOS ability to respond to users can be found on the Hyperion Discharge Environmental Data Support Page (<http://www.sccoos.org/projects/hyperion/>). The site outlines environmental data support to decision makers responding to a nearshore discharge of close to 1 billion gallons of sewage that occurred November 2007.