FY2008: Regional Integrated Ocean Observing System Development

NOAA continued a merit-based funding process in 2008 to enhance regional ocean observing systems and achieve three long-term outcomes: establishing coordinated regional observing and data management infrastructures, developing applications and products for regional stakeholders, and crafting regional and national data management and communications protocols. In addition, regional associations received planning grant awards designed to assist them in stakeholder engagement, education and outreach, and long-range planning activities.

SOUTHERN CALIFORNIA REGION

The Southern California Region runs south from Point Conception to the Mexico border. In 2008, three implementation awards were provided to recipients at the University of California at San Diego, Scripps Institution of Oceanography totaling $853,785. The 2008 Regional Association Planning Grant award to this region is $353,785. Scripps serves as the fiscal agent for the Southern California Coastal Ocean Observing System.

Project Title:

Implementation of Regional Integrated Ocean Observing System: Southern California Regional Coastal Ocean Observing System (SCCOOS)

Recipient/ Lead Principal Investigator:

University of California at San Diego, Scripps Institution of Oceanography/
Dr. Eric Terrill (*eterrill@ucsd.edu*)

Cost:

Funded: FY 2008 (Year 1) - $500,000
Proposed (subject to available funds): Year 2 - $3,157,438

Performance:

This project will continue to expand activities that have been identified as priorities by the SCCOOS stakeholder community. These include supporting the southern California beach water quality management community including issues related to Harmful Algal Blooms (HABs), maintaining area-wide ocean assessment to identify secular trends in the environment and their relationship to ecosystem variability, supporting operational users such as search and rescue, oil spill, and marine safety, and managing and distributing ocean information of public interest. In year one, this project will focus on establishing a HAB surveillance program, maintaining forecasts and nowcasts of ocean and atmospheric conditions, continued acquisition of nearshore larval and fish counts to complement California Department of fish and game management of fisheries, and the generation of a coastal climatology to aid management decisions as they relate to climate change and ecosystem variability. In year two, the project will include a new data management focus, in addition to expanded observation and modeling efforts.

Schedule:

1. Years 1-2

(over)

- Conduct nearshore egg and larval surveys for in-shore California Cooperative Oceanic Fisheries Investigations (CALCOFI) stations
- Conduct HAB surveillance shoreline sampling
- Develop climate relevant indices for ecosystem assessment
- Operate a real-time operational atmospheric model at 1-km
- Maintain and operate Regional Ocean Modeling System (ROMS) at 1-km over southern California Bight

2. Year 2
   - Maintain and operate auto-shore stations for shoreline water quality
   - Implement underway CTD (a measurement of temperature and depth) – San Pedro to Catalina
   - Provide real-time and historical trends of surfzone wave heights and currents bightwide
   - Maintain existing lines of long-line glider tracks at northern and southern SCCOOS boundaries
   - Maintain and operate HF Radar
   - Conduct discharge plume surveys
   - Implement in-shore glider track to observe HABs
   - Implement Santa Monica Bay Mooring and HAB speciation technology
   - Maintain SCCOOS data feeds, data delivery, IOOS DMAC, and the SCCOOS website
   - Develop and run training workshops
   - Develop and run a finer resolution ROMS, Santa Monica and San Pedro bays, and San Diego coast
   - Develop retrospective bight-scale hindcast and assimilation technique development

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Project Title:

Long Beach/Los Angeles Harbor IOOS Demonstration Project
http://www.sccoos.org/data/harbors/lalb/fullscreen.php

Recipient/ Lead Principal Investigator:

University of California at San Diego, Scripps Institution of Oceanography/
Julianna Thomas (*jot@splash.ucsd.edu*)

Cost:

Funded: This project was selected in FY07 and all three project years were fully funded with FY07 dollars at a total project cost of $99,999. FY08 is the second year of the project.

Performance:

This project will integrate regional assets by leveraging existing observations, models, and data management to develop products that contribute to the safety and efficiency of maritime transportation. The proposed customized website for Long Beach/Los Angeles Harbor entrance is designed to provide critical marine conditions necessary for the safe passage inbound and outbound from Long Beach/Los Angeles Harbor.

Present infrastructure and methodology is used to collect, analyze, and disseminate wave and surface currents data in near real-time. The following parameters will be integrated in the web display: wave measurements, model wave nowcasts and forecasts, sea surface temperature (in-situ and remote), HF radar-derived surface currents, tides, and modeled winds. The final website design will include information windows activated on the display map for areas of interest as selected by the stakeholders. The intent is that maritime traffic users will access near real-time data for immediate transit decisions or forecast information for planning purposes.

Schedule:

1. Year 1
   - Aggregate existing relevant assets for website products
   - Develop Federal Geographic Data Committee (FGDC) compliant XML metadata and use a common data model

2. Years 1-3
   - Meet with Long Beach/Los Angeles Harbor stakeholders at project start, mid-point, and end of year to obtain input and feedback
   - Refine website development
   - Transmit data to NOAA National Data Buoy Center

3. Year 2
   - Hold tutorial in Long Beach/Los Angeles area to train stakeholders in the most efficient and productive use of the website, and assure the optimum use of site as a decision-support tool
   - Begin meeting with stakeholders for a second harbor

4. Year 3
   - Meet with both harbor stakeholders to evaluate the applicability and usefulness of the product

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Project Title:

Using Ocean Data Assimilation to Incorporate Environmental Variability into Sardine and Squid Assessments

Recipient/ Lead Principal Investigator:

University of California at San Diego, Scripps Institute of Oceanography/
Dr. Arthur J. Miller (*ajmiller@ucsd.edu*)

Cost:

Funded: FY 2007 (Year 1) - $474,559
FY 2008 (Year 2) - $353,785
Proposed (subject to available funds): Year 3 - $464,705

Performance:

This project will study the influence of physical oceanography on the populations of sardine and squid by selecting key El Niño and La Niña time periods (which represent environmental extremes) for intensive analysis, comparison, and contrast to typical conditions. The project will include

extensive analysis of the various IOOS data using sophisticated ocean data assimilation tools. The overall goals are to develop a coupled ecological and hydrologic model for assessing and predicting the physical oceanographic influences on sardine and squid stocks using both IOOS and federal and state fisheries data.

The primary steps in accomplishing this project are: 1) study the physical oceanographic state during the key years using sophisticated ocean data assimilation tools of the Regional Ocean Modeling System (ROMS); 2) relate the biological observations to the time-evolving physical state using statistical models; and 3) evaluate the predictive capability of the physical-biological system using independent years of data. The end goal is to deliver the system to stock assessment managers through the Southwest Fisheries Science Center. The resulting forecast will be presented to the sardine and squid stock managers and scientists for consideration in the catch quotas for these species.

Schedule:

1. Year 1
   - Assemble physical oceanographic datasets for assimilation during key years
   - Test forward run in ocean model domain for first key time period
   - Begin inverse method data assimilation for first key time period

2. Years 1-2
   - Assemble biological datasets

3. Years 1-3
   - Present initial results at scientific meetings and workshops, discuss results with the Pacific Marine Fisheries Management Council and the Coastal Pelagic Species Management Team
   - Analyze zooplankton samples
   - Analyze squid egg bed habitats
   - Conduct diet and plankton investigation in the laboratory and at sea
   - Examine sardine feeding morphology and diet
   - Investigate physical factors that influence abundance/distribution of suitable planktonic prey

4. Year 2
   - Complete inverse method data assimilation for first key time period
   - Test forward run in ocean model domain for second key time period

5. Years 2-3
   - Use diagnostic tools to analyze ocean model fits for some physical processes affecting biology

6. Year 3
   - Begin and complete inverse method data assimilation for second key time period
   - Integrate sardine prey production with physical ocean model fits
   - Examine model ability to accurately predict temporal and spatial variation in sardine recruitment

NOAA Contacts:

NOAA Coastal Services Center: Mary Culver (*Mary.Culver@noaa.gov*)
NOAA IOOS Program Office: Jennie Lyons (*Jennie.Lyons@noaa.gov*)