

# ***Southern California Coastal Ocean Observing System (SCCOOS)***

## **Strategic Advisory Committee Meeting**

February 24, 2009

The Ocean Institute, Dana Point, CA

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### **MINUTES**

#### **Committee Members Present**

Brian Aldrich, *U.S. Coast Guard*, Tom Barnes, *California Department of Fish and Game*, Jeff Crooks, *Tijuana River National Estuarine Research Reserve*, Chris Crompton, *Southern California Stormwater Monitoring Coalition*, Lesley Ewing, *California Coastal Commission*, Roberto Garcia, *Naval Air Systems Command*, Samuel Johnson, *U.S. Geological Survey*, Robin Lewis, *California Oil Spill Prevention and Response*, Captain Richard McKenna, *Marine Exchange of Southern California*, Russ Moll, *California Sea Grant*, Dave Panzer, *Minerals Management Service*, George Robertson, *Central Bight Water Quality Working Group*, Arthur Shak, *U.S. Army Corps of Engineers*, Sheila Semans, *California State Coastal Conservancy* [*present via teleconference*]

#### **Attendees**

Rick Baker, *Ocean Institute*, Chris Beegan, *State Water Resources Control Board*, Matthew Capon, *U.S. Coast Guard*, David Caron, *University of Southern California (USC)*, Melissa Carter, *Scripps Institution of Oceanography*, Chris Cohen, *Scripps Institution of Oceanography*, Reid Crispino, *Marine Exchange of Southern California*, Russ Davis, *Scripps Institution of Oceanography*, John Hennigan, *U.S. Coast Guard*, Christina Hoffman, *NOAA Coastal Services Center*, Ben Holt, *Jet Propulsion Laboratory*, Sue Magdziarz, *Ocean Institute*, Jim McWilliams, *University of California, Los Angeles (UCLA)*, Steve Ramp, *Central and Northern California Ocean Observing System (CeNCOOS)*, Kathleen Ritzman, *Scripps Institution of Oceanography*, Dan Rudnick, *Scripps Institution of Oceanography*, Libe Washburn, *University of California, Santa Barbara (UCSB)*, Steve Weisberg, *Southern California Coastal Water Research Project (SCCWRP)*, Zdenka Willis, *NOAA Integrated Ocean Observing System Program*

#### **SCCOOS Staff**

Amanda Dillon, *Program Assistant*, Lisa Hazard, *Information Management*, Carolyn Keen, *Communications*, Eric Terrill, *Technical Director*, Julie Thomas, *Executive Director*

#### **1. Welcome and Introductions**

Julie Thomas welcomed the group and noted that the Senior Advisory Committee is now called the Strategic Advisory Committee. Attendees introduced themselves. Thomas thanked the Ocean Institute for hosting the meeting and Sue Magdziarz, Coordinator, Center for Cooperation in Research and Education at the Ocean Institute, for all her help with meeting logistics.

Magdziarz described the SCCOOS partnership with the Ocean Institute. The “Weather and Water 5<sup>th</sup> Grade Program” was developed with funding from SCCOOS. The program aligns with the California Science Content Standards, includes nine weeks of lesson plans and a field trip to Ocean Institute. There is also a “Forces of Nature: Southern California Weather” web site

developed with Scripps that ties into science education standards. In addition, the Ocean Institute has a Coastal Data Information Program (CDIP) Buoy in the lobby.

Thomas introduced Libe Washburn, the new Chair of the SCCOOS Board of Governors. Washburn reiterated that the focus of the meeting is to learn more about data products for user communities, and that SCCOOS and CeNCOOS are working together to unify efforts and present a more unified front for ocean observing in California.

## **2. Update on IOOS (Integrated Ocean Observing System)**

Zdenka Willis provided an update on IOOS. There is a tremendous opportunity for IOOS with the change of administration. IOOS is working on branding and launching new communications tools online. The web site will be [www.ioos.gov](http://www.ioos.gov) with a new logo.

The context of IOOS is larger than the individual regions; there are regional, national, and global components. The NOAA IOOS program office participates at the national level with the Council on Environmental Quality's Committee on Ocean Policy, the National Science and Technology Council's U.S. Group on Earth Observations, and the Interagency Working Group on Ocean Observations (IWGOO). The Global Component includes the World Meteorological Organization, Integrated Oceanographic Commission's (WMO-IOC) Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) and the intergovernmental Group on Earth Observations (GEO). The interest in global ocean observations is increasing.

NOAA IOOS is focused on observations, data management, modeling and analysis, as well as education. The National Data Management and Communications (DMAC) subsystem will integrate data at the national level with the Data Integration Framework (DIF) that includes coastal inundation, harmful algal bloom forecast, hurricane intensity forecast, and integrated ecosystem assessment. IOOS continues to pursue regional implementation of the DIF and Interagency/ Global Earth Observation System of Systems (GEOSS) data management collaborations. Documents are available online at [www.ioos.noaa.gov](http://www.ioos.noaa.gov).

Regional Associations (RAs) meet national missions through strong connections to stakeholders (475 partnerships) and ocean observing, DMAC, modeling, and products. The RAs also support the IOOS missions with data and products for transportation/homeland security, ecosystems and public health, climate, and natural hazards/weather prediction. For example:

- SCCOOS with the Hyperion Treatment Plant Diversion and CeNCOOS with effluent trajectories,
- West Coast Governors' Agreement Action Plan using Integrated Ecosystem Assessments (IEAs) to define ecosystem health, and
- Instrument testing and validation: Alliance for Coastal Technologies.

**Federal and Regional Partnerships** include California Seafloor Mapping (NOAA and U.S. Geological Survey) and National High Frequency (HF) Radar servers/data management system. SCCOOS leads the way with HF radar; development at the national level begins with SCCOOS delivering data to support oil spills, search and rescue, HABs, and water quality.

**Interagency Partnerships** include:

- National operational waves plan (at print for publication),
- National HF radar plan (first round of comments collected),
- Model standards (Rich Signell, U.S. Geological Survey detail),
- National Water Quality Monitoring Network (Regional Pilots),
- Marine Protected Areas (Federal Advisory Committee Act white paper written and interagency group being formed),
- Integrated Ocean and Coastal Mapping (IOCM): working with Interagency Working Groups (IWG-IOCM) for RA activities and requirements,
- Interagency Working Group on Ocean Observations (IWGOO): April 09 Industry Workshop,
- Ocean Biogeographic Information System (sharing data standards),
- Hydrographic Services Review Panel:
  - Waves from Army Corps/CDIP into NOAA Physical Oceanographic Real-Time System (PORTS®) Memorandum Of Understanding in the works
  - Working to get IOOS Regional data/models into PORTS®,
- Ocean Observatories Initiative (OOI),
- Google,
- Environmental Protection Agency: support to NERACOOS through United States Group on Earth Observations (U.S. GEO),
- DMAC ST,
- West Coast Governors' Agreement on Ocean Health: HABs summit (NOAA IOOS, three RAs participated), and
- Ocean Energy Meeting on February 2, 2009.

Kathleen Ritzman announced that FY09 Funding for NOAA is projected to be flat for IOOS; and that there must be a greater effort made with the legislation.

Eric Terrill said that with the state budget crisis, bond funds were frozen. The Coastal Conservancy is looking for other sources of funds while developing advocacy and user group support. Would the SAC members be willing to sign a letter or be contacted?

Zdenka Willis provided information on the stimulus breakout, compiled by the Consortium for Ocean Leadership, and the NOAA budget. There are two lines in the NOAA budget for NOAA IOOS and Regional IOOS and there was an Alliance for Coastal Technologies (ACT) earmark in FY08 and a FY09 House earmark.

### **3. Update SCCOOS-CeNCOOS collaboration**

Steve Ramp, Director of CeNCOOS, noted that with 11 Regional Associations, California is the only state that has two ocean observing systems. These were established because the state has such large coastal areas and the two regions were originally defined by the different needs of users. However, there is a lot of overlap. Although CeNCOOS is more focused on MPAs and SCCOOS on water quality, the needs and interests of the two groups are merging. There are already similar governance structures; CeNCOOS has four staff members, but would like to add more if the budget allows. There is value in working together more closely. The two teams recently met for an all-day retreat, where it was decided to form one "Joint Strategic Advisory Committee" (JSAC). On March 20, there will be a CeNCOOS Board of Governors Meeting to

approve the Committee and list of advisors. The first meeting of JSAC will be planned for early fall.

#### **4. Water Quality Presentation**

George Robertson provided an overview of water quality efforts in Orange County. Water quality issues in the San Pedro Shelf include:

- ocean outfalls (treated waste water is discharged in these areas),
- rivers and streams (plumes),
- ports and harbors (tidal exchange, understanding impact on environment), and
- oil platforms.

SCCOOS performs routine monitoring for fecal coliform, and conducted a plume tracking special study that enabled mapping of a much larger area in much greater detail than previously possible. SCCOOS resources include gliders that can be deployed for extended periods of time and cover much larger areas to collect temperature, salinity, and chlorophyll fluorescence data. The District spent millions to move to secondary treatment, but data thus far does not support improvements in water quality as a result of the upgrade. Sources of contamination are still undetermined.

To discuss this afternoon:

- What tools are you using now?
- What is SCCOOS doing well?  
What isn't it doing well?
- What is it missing?
- Integration of existing technologies?

#### **5. Harmful Algal Blooms (HABs) Presentation**

Dave Caron provided an update on collaborative HABs Programs:

- Five-member SCCOOS HAB Monitoring Program,
- RADPALERT: NOAA Monitoring and Event Response for Harmful Algal Blooms (MERHAB),
- Center for Embedded Networked Sensing (CENS),
- West Basin Desalination Pilot Study, and
- Proposed: Viral studies of toxigenic *Pseudo-nitzschia*.

The Southern California HABs monitoring program involves researchers from Cal Poly, UCSB, UCLA, USC, SCCWRP and UCSD (Scripps). The goal of this group is to formally share information and data, particularly during bloom events. A web site (hosted by SCCOOS) is under development, and will display all data collected weekly from the pier sites.

There is an overall goal of OOS-HABs interaction, including:

- Bloom monitoring: Shoreline [i.e. pier] surveillance of HABs and toxins,
- Product Development and Display: web-based dissemination of information (Jennifer Bowen, UCSD),

- Bloom Tracking (space and time): glider observations and buoy reconnaissance,
- “Event Response” Sampling (by region, very limited), and
- Regional Ocean Characterization: environmental forcing factors, nutrient upwelling mapping, modeling.

The focus of the SCCOOS-HABs effort is on *Pseudo-nitzschia* and domoic acid. SCCOOS-HAB Group “Parameter” measurements (weekly pier-based measurements) include: live and preserved specimens, domoic acid concentrations in plankton samples, primary inorganic nutrients, extracted chlorophyll from plankton samples, temperature, and salinity. The “Event Response” measurements include glider studies (SCCOOS & MERHAB) and limited ancillary ship work to characterize the extent of HAB event (SCCWRP regional collaborative effort).

The Prototype web page for SCCOOS-HABs can be used as a template for other groups along the coast. RAPDALERT is to locate events in near real time; it is NOAA MERHAB funded and includes *Pseudo-nitzschia* and domoic acid on the San Pedro Shelf, ship-based sampling, and glider surveys. A large component of the program is working to get gliders to do things “on the fly” by networking and re-tasking glider missions. There is a great opportunity for overlap and collaboration with ocean observing to take information and put it into physical oceanographic context.

Center for Embedded Networked Sensing (CENS) is using wireless communications to form networks; the Networked Aquatic Microbial Observing Systems is coming online later this spring. The fish kills in King Harbor (Summer of 2005) prompted a water quality study; however, researchers should get to sites earlier to look at the cause, not the aftermath. The West Basin Desalination Pilot Study shows how reverse osmosis might interact with toxic blooms, using two coastal ocean moorings at the plant locations to understand HABs.

Some questions for conducting HABs monitoring within OOS:

- Nuts and bolts: standardizing sampling/analyses and formats for web presentations?
- Conceptual: how to fund a HAB monitoring component and integrate OOS products?
- HABs researchers want predictive capability; what are the impacts?

## **6. Climate Impacts on Ecosystems Presentation**

Russ Davis discussed the impacts of climate variability on ecosystem abundances, distribution, and productivity. The part of SCCOOS that is directed to climate impacts is small but has potential. It is important because of:

- Fisheries managers setting extraction limits,
- Marine Protected Areas (MPAs) evaluation of efficacy inside and outside protected areas,
- Conservation strategies affected by climate impacts on the resiliency of the ecosystem.

Alaska Salmon increase during warm-coast phase of Pacific Decadal Oscillation (PDO). Oregon/Washington is out of phase. What is needed?

- Monitor processes (upwelling, currents) that affect nutrient supply to lowest trophic levels and oxygen to animals,
- Account for the impact of varying currents on ecosystem makeup, and

- Measure the impact on recruitment of larval dispersal/concentration by currents, eddies and fronts.

SCCOOS observations implemented for the climate-ecosystem connection include: CalCOFI stations (nearshore, offshore, and discharger surveys), glider lines, and time series between Catalina and the harbor. Data assimilation can be used to improve stock assessments; small pelagic fish stock assessment is based on egg density as a measure of adult abundance. If the preferred habitat can be defined and data assimilating models can infer habitat distribution, sampling variability can be greatly reduced.

Pertinent SCCOOS Products include:

- Data-assimilating model synthesis of all available data allows extraction of time series anywhere in the bight,
- HF radar surface currents describe bight-wide patterns of currents for larval dispersal,
- Developing indices of upwelling, stratification, nutrient supply, productivity, abundance, and strength of eddies and fronts may improve abundance estimates/forecasts,
- Compilation of time series throughout the bight and synthesis of nearshore variability from discharger surveys will describe nearshore variability, and
- Web accessible satellite imagery (sea surface temperature, color).

## 7. Oil Spills Presentation

Terrill discussed how Coastal Ocean Currents Monitoring Program (COCMP) and Ocean Observing System programs can be used in oil spill response, a state-wide issue.

There are three different classes of activities:

1. **Planning (risk assessment and spill scenario response analysis):** facilitate and organize data, develop products using statistical trajectory synthesis, and support existing Area Committees and groups.
2. **Response during event:** delivery of timely data for factors which influence transport, response type, and data collection.
3. **Post-event impact assessment:** accurate hindcast of environment, easy access to environmental data, natural resources damage assessment, and long-term trends.

Approximately 15% of spills can be recovered mechanically, but 85% is still in water. COCMP example products include a network of surface current mapping radars deployed along California's coast and data are available in near real-time in different formats. The system is presently in last year of build-out phase and will soon transition to operations. Although the network is not yet complete, the system has been called upon for response scenarios and for participation in drills with the California Office of Spill Prevention and Response (OSPR), NOAA Emergency Response Division (HAZMAT), and the U.S. Coast Guard (USCG).

In response to the Cosco Busan incident, a tailored GIS format of HF radar data is now available to OSPR staff and has been used in drills with Safe Seas, National Preparedness for Response Exercise Program (NPREP) and in recent responses in the Santa Barbara Channel. NOAA HAZMAT now can access surface currents via a national standard format (NetCDF) and the chain of command for environmental data is from the USCG to NOAA.

SCCOOS web site features:

- toggle on/off overlays and model output prediction points,
- interactive Google Maps display of near real-time surface currents,
- surface current maps available with Southern California Platform locations,
- access to near real-time data feeds,
- Los Angeles/Long Beach customized web interface, and
- web-based display of real-time automatic identification system (AIS data) with available NOAA Charts.

Breakout questions:

- What data do you use now and how?
- What can be done now?
- Wish list?
- What are we missing?

### **8. Marine Operations Presentation**

Thomas presented on SCCOOS Marine Operations, Safety, Navigation, and Search and Rescue (SAR). The Southern California Bight has a wealth of information that can be turned into useful products. The Coastal Data Information Program (CDIP) has wave observations and models; COCMP provides surface currents. Waves, currents, and winds are all of interest to the maritime community. For the San Pedro Channel, SCCOOS has developed a customized, integrated website providing currents, waves and winds. Automated messages for threshold exceedance are sent to Jacobsen Pilots in Long Beach Harbor. It is important to send warnings of long-period swell, because super tankers will start to pitch, and with their deep draft, they run the risk of hitting the bottom. The cost can be more than \$100,000 a day to hold a tanker offshore. We will also start sending messages to the Catalina Express because wave conditions can cause transit cancellations. In addition, the Coastal Conservancy and CeNCOOS are facilitating discussions on how to develop an integrated currents, winds and waves web site for San Francisco.

Questions:

- Should we assess all the ports and harbors in Southern California to see what is needed?
- What about the offshore needs? Products?
- How do our efforts support the West Coast Governors Agreement?

### **9. California Coastal Conservancy Update**

Sheila Semans, California Coastal Conservancy, called in via teleconference to the meeting to provide an update on the state budget. The situation is difficult at the moment, there is a budget now but we do not know what that will mean for COCMP and the coast-wide HF radar system. While we are looking for permanent funding sources to keep the system on, we do not know when the bond money will be unfrozen.

With non-bond funds, we have been able to hire a consultant firm to help articulate ocean observing for policy makers, and show the efficiency and effectiveness of ocean observing and products. The consultants will focus on water quality, salmon recovery, and ocean energy. They

will assess existing technologies, the management agencies' responsibilities to address these concerns, what they are using now, and if there are recommendations for how current efforts could be improved. The consultants will produce a report, working with both CeNCOOS and SCCOOS.