Central and Northern California Ocean Observing System (CeNCOOS)
Southern California Coastal Ocean Observing System (SCCOOS)

Joint Strategic Advisory Committee Meeting
20 October 2009
Oakland, CA

NOTES

Committee Members Present
Brian Aldrich, *U.S. Coast Guard*
Linda Duguay, *University of Southern California Sea Grant*
Lesley Ewing, *California Coastal Commission*
Roberto Garcia, *Naval Air Systems Command*
Steven Goldbeck, *San Francisco Bay Conservation and Development Commission*
Samuel Johnson, *U.S. Geological Survey*
Robin Lewis, *California Oil Spill Prevention and Response*
Amber Mace, *Ocean Science Trust/Ocean Protection Council*
David Manning (for Randy Poole), *Sonoma County Water Agency*
Russ Moll, *California Sea Grant*
Cheri Recchia, *Ocean Science Trust Monitoring Enterprise*
George Robertson, *Central Bight Water Quality Working Group*
Sheila Semans, *California State Coastal Conservancy*
Mark Swenson (for Mike Clancy), *Fleet Numerical Meteorology and Oceanography Center*
Ray Tsuneyoshi, *California Department of Boating and Waterways*

Additional Attendees
Lt. Morgan Barbieri, *U.S. Coast Guard*
Brock Bernstein, *Consultant*
Francisco Chavez, *Monterey Bay Aquarium Research Institute*
Kenneth Coale, *Moss Landing Marine Laboratories*
Patrick Coulson, *Marine Resource Assessment Program*
Russ Davis, *Scripps Institution of Oceanography*
Toby Garfield, *San Francisco State University*
Nancy Ferris, *U.S. Army Corps of Engineers*
Burt Jones, *University of Southern California*
Steven Le, *SAIC*
Mark Moline, *California Polytechnic University, San Luis Obispo*
Judd Muskat, *California Oil Spill Prevention and Response*
Bill O'Reilly, *Scripps Institution of Oceanography*
Dave Reynolds, *National Weather Service*
Dan Rudnick, *Scripps Institution of Oceanography*
Courtney Scarborough, *San Francisco Bay Conservation and Development Commission*
Dave Siegel, *University of California, Santa Barbara*
Ann Sturm, *U.S. Army Corps of Engineers*
Libe Washburn, *University of California, Santa Barbara (UCSB)*
Steve Weisberg, *Southern California Coastal Water Research Project (SCCWRP)*
Lt. Sara Young, *U.S. Coast Guard*

Staff
Chris Cohen, *SCCOOS Outreach Coordinator and Government Affairs Specialist*
Amanda Dillon, *SCCOOS Program Assistant*
Lisa Hazard, *SCCOOS Information Management*
Heather Kerkering, *CeNCOOS Program Coordinator*
Steve Ramp, *CeNCOOS Program Director*
Eric Terrill, *SCCOOS Technical Director*
Julie Thomas, *SCCOOS Executive Director*

1. **Welcome** – Heather Kerkering
   Welcome from the State of California – Sheila Semans
   Introductions – Steve Ramp & Julie Thomas

JSAC members and attendees introduced themselves, explained the missions of their organizations, described how they use ocean observations in their work and what additional information is required.

2. JSAC Member Presentations
Representative JSAC members provided presentations highlighting ocean observing collaboration and interaction.

George Robertson, Senior Scientist, Central Bight Water Quality Working Group, Orange County Sanitation District
The Orange County Sanitation District (OCSD) requires ocean observing data for real-time management decisions, such as inshore outfall operations and the "Bight '08" (Southern California Bight Regional Marine Monitoring Program) water quality surveys. OCSD plans to use SCCOOS data to determine the direction of discharge plumes from outfall operations and target water sampling. The surfzone transport models also help predict the water quality impact to beaches. The "Bight '08" study beginning this winter will use ocean observing data to determine when to sample as well as utilizing LIDAR (Light Detection and Ranging) data and pier temperature.

For the inshore outfall, staff will monitor the OCSD diversion project page on the SCCOOS web site to determine prevailing current speed and direction. Modeled probabilities show where the plume could impact water quality, using the long-term data sets from the California Cooperative Oceanic Fisheries Investigations (CalCOFI) and nearshore stations. OCSD staff will collect sediment and match to Regional Ocean Modeling System (ROMS) to determine the impact to sediment.

Judd Muskat, Staff Environmental Scientist, California Oil Spill Prevention and Response (OSPR)
OSPR received a research grant to evaluate the use of CODAR for oil spills and real-time NOAA data to verify models. When there was an oil spill on Platform A, aircraft traced the outline of the spill and showed that the spill followed current vectors. The California Air Resources Board requires ships that travel within 24 miles of the coast to switch fuels, which has created havoc in the industry. Ships are taking new routes where there are no well-defined travel lanes, increasing

the risk of accidents and spills. It is valuable to have available surface current information in a variety of formats for response to spills, such as the *Cosco Busan* in 2007.

Requests one source for ocean observing data in the State of California.

Roberto Garcia, Head, Geophysics Branch, Naval Air Systems Command (NAVAIR)
For Point Mugu sea test range operations, more than 300 events a year use ocean observing products. The off-shore activity requires constant briefing of sea conditions for flights, target recovery, target presentation, small boat transfer, and Search and Rescue (SAR) mitigation. Sea surface conditions are a number one concern. High resolution directional wave data is provided for operational areas and surface currents are going to be added soon. NAVAIR would like additional data further out to sea for test ranges, and have a buoy for validation at San Nicolas Island.

Every ten years there is a study on air pollution transport along the coastline that makes data available to public. The air pollution study in 2010 will be using winds at San Nicholas. Environmental stewardship uses sea conditions to predict pelagic and benthic activity. For example, sea surface temperature was required for a University of California study on black abalone. NAVAIR also provides high resolution wind forecasts for Southern California and constantly monitors marine and weather conditions: the San Nicolas buoy is in the ocean observing network, water sampling is conducted on San Nicolas Island, and there is site support for HF radar/CODAR, AIS, etc.

Dave Reynolds, Meteorologist, NOAA National Weather Service (NWS)
The NWS requires ocean observing data to monitor shoreline flooding in Carmel Lagoon. On October 13, 2009, thirty-foot waves were reported at the Monterey buoy and threatened to flood the lagoon. Model prediction points (CDIP/MOPS) are available at this site to estimate waves and predict coastal inundation. The NWS receives automated messages for threshold exceedance of high waves. As a result, the necessary equipment to move the berm was mobilized on the beach before the flooding occurred – a success story. They plan to develop and validate further a shoreline inundation model.

Sam Johnson, Chief Scientist, U.S. Geological Survey (USGS)
The USGS has a Southern California multi-hazards project with a coastal hazards task, to prepare for a Winter Storm. Ocean observing data have been used to develop models and provide information for emergency response managers. USGS is also studying the fate and transport of fine sediment, such as with the Tijuana river experiment. Estuaries are becoming full of sediment and it is being trucked away at great cost. Beaches are losing sediment, causing erosion. USGS conducted an experiment to see the movement of sediment and monitor turbidity. The beach profile depends on current, waves and ocean data showing a synergy between regional data and focused experimental data.

The California Seafloor Mapping Project is putting together maps as tools for marine spatial planning (MSP). In President Obama's Ocean Policy draft the term MSP occurs frequently, the idea has arrived and is not going away. Multiple decision support tools are required for MSP, such as maps that can be overlaid with GIS. There are no waves or current data on maps,

although there is biological data. The challenge is how to boil down dynamic ocean information into a static series of maps that can be used by MSP.

Chris Cohen
What is marine spatial planning? It is a way to organize the human uses of marine space, balance these uses and protect ecology. UNESCO (United Nations Educational, Scientific and Cultural Organization) defines it as "a public process of analyzing and allocating the spatial and temporal distribution of human activities in marine areas to achieve ecological, economic, and social objectives that usually have been specified through a political process."

It is long-term comprehensive planning that is ecosystem-based; it is meant to be adaptable and participatory with stakeholders. It is also meant to complement other management and existing regulations including the Marine Life Protection Act (MLPA). It is a tool to achieve the goal of ecosystem-based management.

Ocean observing systems (OOS) provide relevant data and information products, and these map-based visualizations of data should allow them to be efficiently incorporated into marine spatial planning efforts. What can ocean observing systems do for MSP? It can monitor performance, provide baseline data and long-term consistent data. Physical oceanographic data compliments biological and chemical information. It is also presented in ways that are useful to people that don't have background in oceanography.

OOS can also provide monitoring for MSP and evaluate the performance of its actions. It can help facilitate stakeholder participation, an important part of MSP. Ocean observing is already focused on making useful products and becoming the coordinating entity for agencies and stakeholders.

3. Breakout discussion groups by focus area: define needs and recommend products

A. Ecosystem & Climate Trends
B. Water Quality
C. Marine Operations
D. Coastal Hazards

4. Plenary Session: focus group recommendations, action items and next steps

A. ECOSYSTEMS

1. Ocean environment impacts on salmon returns to Russian River

The Sonoma County Water Agency (SCWA) is the customer: need to implement a new "Peterson Line" and repeat surveys with ships and gliders. Provide basic environmental parameters up to and including zooplankton, leave fish surveys to National Marine Fisheries Service (NMFS). The long time series is essential, relate to the fresh water estuarine pieces, searching for the complete story.

2. San Francisco Bay observations

Bay Conservation and Development (BCDC) is the customer: need more observations of basic variables including temperature, salinity, pH, water clarity, and currents. The sediment input and

transport is paramount. Compare existing conditions with new locations and initiate observations for eel grass and wetland health, water quality, contaminant transport, and accident response.

3. Marine Protected Areas (MPAs) and the five-year state of the environment on the central coast
Ocean Science Trust (OST) Monitoring Enterprise is the customer: statute demands evaluation of effectiveness at five-year mark. Require a summary description of the ocean climate from 2007-2011. The challenge is to establish links between species success and oceanographic conditions.

4. IOOS and Marine Spatial Planning (MSP)/Ecosystem-Based Management (EBM)
NOAA NMFS and the State of California are the customers. It is a top priority of NOAA administrator who has been a leading champion of it in the past. Regional ocean observing is essential to the process of marine planning and ecosystem management. Link IOOS and MSP/EBM by matching observational scales to management needs.

B. WATER QUALITY

Water Quality Issues include:

- Microbial contamination: human health, marine organisms
- Harmful Algal Blooms (HABs)
- Environmental Health
- Ocean Outfalls, watersheds, storm runoff, non-point sources
- Endocrine disruptors: sewage discharges, drugs, plastics pose a complex chemistry problem, but can be tracked through ocean observing
- Desalination plants: water quality issue to track, also high energy usage
- Ocean acidification and low oxygen zones: begin to monitor
- Nutrient Loading (TMDLs)

Short Term Goals:
1. Increase outreach: news items released to local news agencies, ocean weather reports, “State of the Bay/Ocean”
2. Make HABs web site more user friendly and add marine mammal strandings
3. Continue plume tracking: discharges, outfalls, runoff

Long Term Goals:
1. Need tools to track Total Maximum Daily Loads (TMDLs)
2. Monitoring for desalination plants
3. Provide data and products for MSP/MPAs/ASBS
4. Statistical evaluation of impacts- runoffs and watersheds
5. MPAs: hydrographic variations and climate variability
6. Link OOS to SWAMP (surface water ambient monitoring program)- watershed and surface water quality
7. Ocean acidification and low oxygen: add sensors for Ph, O2, CO2, Nitrates
8. Acquire ocean observations from UNOLS vessels
9. Develop proxies for outfall measurements (e.g. CDOM) and use buoys/vehicles for monitoring
10. Statewide HAB effort

C. MARINE OPERATIONS

Short Term Goals:

1. Getting OOS information out to a broader range of the public
2. Training for marine specialists in LA
3. Developing materials for public- kiosks (in collaboration with California Department of Boating and Waterways)
4. Training for smaller marine safety groups, such as local police

Long Term Goals:

1. Evolve towards single web based access for data – improving communication
2. Evaluate ROMs model (real-time, re-analysis)
3. Synthesis products- for training days or risk assessments
4. Re-evaluate how to better use ocean information
5. Requests for farther offshore information and closer inshore

D. COASTAL HAZARDS

Continue long-term sustained monitoring

Short Term Goals:

1. Standards for LIDAR (workshop to be held in San Antonio in Nov 2009 will address standards).
2. Track Pacific Decadal Oscillation (PDO) and El Niño Southern Oscillation (ENSO) for environmental trends and climate change variability
3. Customize and integrate storm portal websites – create an online display for users. Provide a 'real-time' coastal hazards map with appropriate text for the public. (For example, 'What does a 3ft storm surge mean to you?')
4 Continue data integration and interoperability of coastal data
5. Expand experimental automated "Inundation Warning" and provide a 5-7 days warning system.
6 Provide product education and outreach – user training for web sites
7. Expand beach reports – with Heal the Bay and Surfrider

Long Term Goals:

1. Provide MSP context atlases (reports of long term trends) – historical storms, ENSO PDO, and offshore bathymetry
2. Monitor spring transitions for fisheries: strength, duration and biological impacts for California coast (partner with PaCOOS)
3. Add additional pressure gauges in sensitive harbors such as Crescent City (tsunami advisory, seiche)
4. Establish a probability index for returning hazards – planning for events
5. Build a long-term storm database (oceanographic information)
6. Improve input data and forecast for NWS rip currents
7. Utilize ships of opportunity – for instrumentation and sampling on vessels
8. Improve deep-water and atmospheric models
9. Conduct multi-hazards analysis

10. Consider harbor monitoring – biological and physical (ex. Pressure gauges for improved tsumani and seiche wave warnings).

In summary – the JSAC will continue discussions throughout the year. The next meeting will be held in Southern California during the summer months. The date will be published as soon as it is finalized.