

Central and Northern California Ocean Observing System (CeNCOOS)
Southern California Coastal Ocean Observing System (SCCOOS)
Joint Strategic Advisory Committee Meeting
San Francisco State University Romberg Tiburon Center
Tiburon, California
June 4, 2012

Attendees, Agenda, and Notes

JSAC Members and Additional Attendees

Brian Aldrich, *United States Coast Guard – Aids to Navigation*
Sarah Allen, *National Park Service – Scientific Community Liason*
Warren Blier, *National Weather Service – Science and Operations Officer*
MarielaPaz Carpio-Obeso, *State Water Resources Control Board – Chief of the Ocean Unit*
Chris Crompton, *Southern California Stormwater Monitoring Coalition – Alt County of Orange Commissioner*
Michael Dillabough, *Army Corps San Francisco District – Operations and Readiness Director*
Jim Eckman, *California Sea Grant – Director*
Lesley Ewing, *California Coastal Commission – Senior Coastal Engineer*
Roberto Garcia, *Naval Air Systems Command (NAVAIR) – Head of the Geophysics Branch*
Sam Johnson, *US Geological Survey – Chief Scientist*
David Manning, *Sonoma County Water Agency – Principal Environmental Specialist*
Skyli McAfee, *California Ocean Science Trust (OST) – Executive Director*
George Robertson, *Orange County Sanitation District – Senior Scientist*
Sam Schuchat, *California Coastal Conservancy – Executive Officer*
Justin Smith, *Sonoma County Water Agency*
Rebecca Smyth, *NOAA Coastal Services Center – Division Chief*
Martha Sutula, *Couthern California Coastal Water Research Project – Principal Scientist Biogeochemistry Dept*
William Sydeman, *Farallon Institute for Advanced Ecosystem Research – President and Senior Scientist*
Amy Vierra, *California Natural Resource Agency - Oceans Program Policy Analyst*
Kathy Weldon, *City of Encinitas – Coastal Program Manager*
Francisco (Cisco) Werner, *NOAA Southwest Fisheries Science Center – Science and Research Director*
Liz Whiteman, *Ocean Science Trust – Director of MPA Monitoring Enterprise*
Deborah Wilson-Vandenberg, *California Department of Fish and Game – Marine Fisheries Research Manager*

CeNCOOS Regional Associates Attendees

Fred Bahr, *CeNCOOS Product Developer*
Toby Garfield, *SFSU's San Francisco Bay Project Leader*
Raphe Kudela, *University of California Santa Cruz*
Erica McPhee Shaw, *Moss Landing Marine Lab – Associate Professor*
Jennifer Patterson, *CeNCOOS Information and Data Manager*
Leslie Rosenfeld, *CeNCOOS Program Director*
Janine Scianna, *CeNCOOS Program Manager*

SCCOOS Regional Associates Attendees

Chris Cohen, *SCCOOS Public and Government Relations Coordinator*
Lisa Hazard, *SCCOOS Information and Data Manager*
Dan Rudnick, *Executive Steering Committee Chair*
Eric Terrill, *SCCOOS Technical Director*
Julie Thomas, *SCCOOS Executive Director*
Libe Washburn, *Board of Governor's Chair*
Danielle Williams, *SCCOOS Program Coordinator*

1. Continental Breakfast

Welcome – Toby Garfield
SCCOOS Update – Julie Thomas
CeNCOOS Update – Leslie Rosenfeld
Introductions of JSAC attendees

2. IOOS Program Office – Janine Scianna

3. West Coast Governors Alliance Partnership – Amy Vierra and Beth Smyth

4. Presentation on San Francisco Bay – Toby Garfield

5. Maritime Operations and Coastal Hazards

Debris Cleanup in San Francisco Bay – Mike Dillabough, *US Army Corp of Engineers*
Existing National Weather Service Products – Warren Blier
How SCCOOS Data are Used in NAVAIR Offshore Daily Operations – Roberto Garcia

6. Climate and Ecosystems

Marine Protected Areas Monitoring Enterprise – Liz Whiteman
Monitoring Trends and Variability in Climate-Ecosystem Conditions Through Time – William Sydeman

7. Water Quality and Ocean Acidification

Introduction of Mariela Carpio-Obeso and her Recent Appointment with the State Water Resource Board
Southern California Water Research Project Interest in Biogeochemical Products – Martha Sutula
How SCCOOS Data Will Be Used for the Outfall Diversion with the Orange County Sanitation Department
That is set to Take Place in September 2012 – George Robertson

8. Breakout Sessions

A. Maritime Operations and Coastal Hazards

Attended By: Brian Aldrich, Fred Bahr, Warren Blier, Mike Dillabough, Leslie Ewing, Robert Garcia, Toby Garfield, Sam Johnson, Julie Thomas, and Danielle Williams

The group had a number of agency people & we concentrated on source feedback from IOOS to agencies.

Source Topics for Nearshore Interactions and Coastal Hazards

Societal Impacts

- Waves/Run-up (tides)
 - The lifeguard community helps update us on rip currents and inundation.
 - Requested improved swell/wave
 - Better validation for swan models.
- Rip Currents
- Inundation/Flooding
 - Can we improve our inundation models? Beach models have improved; onshore information is great, but 0-10 meters is bad
 - NOAA buoys are huge and heavy (3500 lbs) and CDIP less so (400lbs). USACE has been very helpful in keeping cost down by performing CDIP buoy maintenance. Also, buoys are funded by USACE. The only hurdle is that the USCG Commanders change every 3 years so each new CO has to be updated on the buoys and sustained funding. There is currently a mandate that states that USACE sustains our buoys. Training is constant.
 - Gaps in NOAA buoys: There are less NOAA buoys now. Some of the CDIP buoys are filling gaps
 - WAMOS (Radar) may be helpful with wave heights but it is expensive. Also resolution is limited. Great application is for pocket beaches that need specific info.

- NWS is in charge of NOAA buoys & decides which ones to shut down. They are also in charge of flood warnings on their website based on tides, WaveWatch3, and meteorological conditions
 - Are the Feds missing add-ons? These help local flavor.
 - CDIP provides a lot of leverage & advantage
 - NRL has high resolution, CO-AMPS model that is used for marine forecast
 - NAVAIR is running models with 6 km resolution
 - NWS does 3 km resolution
 - Weather models should stay on federal side which is expensive
 - Fed, state, and local are collaborating in Washington State with profile observations and high resolution modeling system for real time weather forecast. This is funded as well.
- Tsunami/Seiching Currents
 - Public need accuracy of inundation (Example: Tsunami's). Bad information equals chaos; if we had a clear idea of inundation we can be better prepared.
 - Stated that evacuation routes/procedures should not be on the OOS website. Rather the OOS website should direct to NWS site.
 - If the OOSes have inundation/evacuation maps
 - We need to make sure that information is consistent.
 - OOSes are evaluating the high currents generated by tsunami's
 - How do people interpret the warning and what actions do they take?
 - Why are they making the decision that they make (usually don't want believe the information given and require a 2nd source of information to verify).
 - The OOSes train USCG/NWS for inundation/evacuation
 - Discussed about further training and drill down exercises and more in depth explanations?
 - Need to re-initiate our marine operations meetings. We also need to figure out what local agencies that would benefit and invite.
 - Commercial boaters want this but don't want to pay for it.
 - They would respond better to one large fee (port tax) instead of a bunch of little fees.
 - Is there baseline data for long term tracking?
 - Historic & current wave patterns show no changes.
 - This may be deceiving because before iridium - power outages would eliminate large storm tracking. We need something up for archiving data & time series of historic data.
- Long Term Sea Level Rise

Societal Response

- Time Series/Sustained Observations
 - Waves/currents: On the CeNCOOS and SCCOOS sites, there are lots of data disseminated. However, it is not interactive. It's not structured for feedback
 - Inundation at Carmel Beach remains an issue. Need translation how offshore buoy heights translate to nearshore breaking wave height.
 - Patrick (USGS) could be helpful with using web cams & his models
 - A hurdle is that validation is important but expensive
 - Army Corps interested in the SF Bay debris convergence.
 - The USACE would like to get a hold of surface current modeling to compare to the debris crew.
 - Request to integrate wave data and HF radar data with search & rescue model (SAROP NOAA provides info to use USGS via GNOME model. This produces current vector model that are great for OR&R.
 - Asked for training sessions
 - Federal/state/local
 - Discussion of websites: What we should & shouldn't try to do
 - OOSes don't have an investigative portion of the site for the public. Therefore there isn't a way to get feedback.
 - Data Management – Interoperability of data access (CSMP) is important for shippers and for Bay/estuarine.

Societal Needs

- The Navy needs more data for test sites. There are areas that models aren't complete (ex: temperature not validated well)
- Difficult to verify because of atmospheric conditions.
- The Navy needs specific info that affects the function of operations. Such as sea surface roughness, clutter conditions: important for radar accuracy and currently isn't very easy because it's archaic.
 - PODAC @JPL might have information that would be helpful to the NAVY.

Partnerships

- Would be good to better plan roles and responsibilities in order to avoid duplication.
 - Funding opportunities by leveraging multiple approaches
 - All believe that an integrated data system would be beneficial.
 - IOOS is working hard to integrate servers at federal level
 - State & local not allowed access because system isn't adequately maintained.
 - Coastal Services Center is working on this integration
 - The USACE liked Liz Whiteman's presentation when she stated that different agencies with a common interest need to collaborate to get funding. It is harder to cut projects that are multi-agency. Partnerships are the best way to pursue funding.
 - The start is there but we need planning for partnerships and someone has to take the lead on assigning tasks.
 - Operational factors to develop a strategic plan
 - Currents
 - HABS
 - Beach safety
 - Biogeochemical meeting is a great way to accomplish this
 - Beach safety forecasting is needed.

B. Climate and Ecosystems

Valuable Products

- SST Data (Cisco)
- Chl data, PP proxies (Cisco)
- Skyli: not dependent on data (yet). Want CeNCOOS to support resource mgmt. decisions
- DFG: Not as familiar
- MPAs: human resources
- Sydeman: currents, water mass (gyre scale) exchange, and upwelling products on finer temporal scale
- Eckman: surface currents (model validation, connectivity), productivity measures
 - 3D models: best assim data sets are glider profiles + satellite SSH

Funding Streams

- Bussan cleanup fund availability?
- NPDES permit dues?
 - SEP projects to offset discharge exceedance fines
 - Way to demonstrate synthesized mgmt. strategies
 - Need simpler 1-pagers on mgmt. tools or issues (e.g. gliders)
 - Need synthesized "snapshots" or generalized oceanographic characterizations to be distilled
 - Limitation is mgmt. questions, not funding. Designed products will demonstrate value
 - SCOOP report recommendations
- Larger question of stakeholder outreach and problem identification
 - Rudnick: typically happens via random contact
 - Approach: committee vs. one-off contacts?
 - PFMC: Looking to do annual reporting on CCLME
 - Dedicated SGFs to interface between agencies and OOSes?

Missed Opportunities

- Skyli: on C-CAN steering cmte

- Work on standardizing OA data collection and calibration, then turn to RAs for operations and visualization
- Bight 13 and biogeochemical modeling of discharges
- MPA ME
 - Take advantage of different stages of MPA establishment to interface with RAs at each stage
- Movement away from ship data collection to automated data collection assets
 - Opportunity in platform/sensor development
- Identifying ecosystem condition indicators
 - IEAs
- Unification of RA websites for CA

Value of Geoportal Data Visualizations

- Need to clearly identify value of that type of
- PORTs page for Long Beach is good example of specialized display
- Duplication of efforts? Need W. Coast RAs to create a regional effort at geospatial data display
 - Difficult with diff funding sources
- (Perceived) difficulty in including time series into geospatial tools
- Role of RAs maybe be to provide data streams to stakeholders who build their own geoportals

Action Items/Areas to Look Into

- Synthesized 1-pagers for managers (e.g. CCLME, glider 101, etc.)
 - Analysis that's applied and useful to managers
 - Capture the value of OOS to management
- MPAs
 - Connectivity
 - Distilled characterizations of areas
- Funding
 - Identify audience for a products, then identify funding source
- Biogeochemical modeling (e.g. SCCWRP)
- IEAs
- DMAC
 - Converge CeNCOOS/SCCOOS websites?
 - Explore different options for data visualizations. What about time series data?
- Connect with topical community websites (e.g. MPA's Ocean Spaces, HABS, etc.)

C. Water Quality and Ocean Acidification

Participants: Sarah Allen (*National Parks Service*), MarielaPaz Carpio-Obeso, Chris Cohen, Chris Crompton, Lisa Hazard, Raphe Kudela, Erika McPhee-Shaw, George Robertson, Martha Stula, Eric Terrill, Johanna Weston

It was noted that many people in this session were both producers and users of OOS water quality data.

Amendments to the State Water Resources Control Board (SWRCB) California Ocean Plan will be unveiled in summer or fall 2012. These amendments will include new standards on ocean acidification. Under the Ocean Plan, each discharger must participate in "regional monitoring." Participants discussed how Dischargers could work with OOS to help meet this requirement, which is coordinated through each regional water board.

Ideas included:

- Applying new technologies, including AUVs and gliders, which is something that the dischargers can't do in-house, and that the OOS have expertise in
- Deploying moorings in strategic locations.
- Expanding OOS water quality observations offshore. ○ Dischargers are interested in knowing how representative nearshore measurements are off the offshore, and what we might be missing by not having as many observations offshore.
- Addressing water quality/biological/physical connections.
- Focusing on "natural" water quality; dischargers need to show that they are not impacting it.

- In the CeNCOOS region, there is no SCCRWP equivalent to coordinate these efforts, and much of the monitoring work is being done by private contractors.
- Potential funding from dischargers and the regional boards

Main SWRCB Ocean Unit priorities for upcoming year are sediment quality, trash policy, and the salt and brine ocean plan amendment. Ocean acidification will also be a focus. Regarding ocean acidification, the group discussed the challenges associated with the long timescales for analyzing variability.

Real time observations are useful and important to OOS water quality data users, but an increased focus on synthesis and summary products (not at the detriment of real time observations) based on observations-validated model hindcasts would be very helpful. A seasonal or annual atlas or report would help managers the understand broader water quality context in which their monitoring activities are occurring. Participants noted several things including:

- This could be done periodically, not just in response to specific requests.
- There is a need for funding and labor to produce these.
- Outreach will be an important component.
- This would help managers optimize their monitoring schemes and understand measurements in a broader context and longer trends.

The discussion of models also turned to the need for mission-driven models as opposed to one going all the time for everything. It was also stated that a roadmap for model use would be helpful for potential users. The OOS should focus more on helping potential users learn about how we portray models and what their uses are. We should explain their best applications in order to help develop management questions. It was noted that education is an important use of water quality data as well.

There are significant differences between water quality observation and model uses in the CeNCOOS and SCCOOS regions. In the SCCOOS region, dischargers are a main user. In the CeNCOOS region, uses are more driven by HAB monitoring and aquaculture. In addition, the majority of OOS funding is from the federal government, but they are addressing important state issues as well.

Participants discussed how there should be an increased coordination and leadership role for OOS among data collectors, users, and providers. The OOS are permanent entities, and creating efficiencies through partnerships—and better coordinating parallel efforts—is a scientific and management necessity when all groups are on tight budgets. It was mentioned that the Ocean Protection Council might be able to play a larger role in this.

9. Break Group Summaries

10. Wrap-up/Synthesis

11. Website Discussion and Feedback