

CeNCOOS Winter Meeting, January 20 & 21, 2015

NOAA Southwest Fishery Science Center, Santa Cruz, CA

Executive Summary

CeNCOOS convened a meeting of its Governing Council, interested stakeholders, and community members on January 20 and 21, 2015 at the NOAA Southeast Fishery Science Center in Santa Cruz. The meeting was attended by over 60 people. On January 20th, programmatic updates were given by the U.S. Integrated Ocean Observing System (IOOS®) program office, the IOOS Association, and the CeNCOOS program office. Project summaries were given for grant/project funding received by the CeNCOOS office in 2014 or expected for 2015. The process by which CeNCOOS will write the 2016-2021 RCOOS funding proposal was detailed to the attendees. On January 21st, working groups were conducted (with CeNCOOS current PIs and other interested parties) on shore stations, high frequency radar, and modeling. Concurrent sessions were held on data management and visualization. The day ended with a governance session.

Governing Council actions:

- Voted to postpone the 2015 CeNCOOS Governing Council elections until September 2015 (approved)
- Described the process by which the Governing Council and Program Office will draft the 2016-2021 RCOOS grant proposal. The Council decided to convene a meeting in late May/early June of 2015 to finalize the suite of projects that will be included in the RCOOS grant proposal.

Draft Minutes

January 20, 2015

Opening Session:

- CeNCOOS Governing Council Chair Raphe Kudela welcomed participants to the meeting.

- Nate Mantua, Southwest Fisheries Science Center, provided an introduction highlighting the unusual atmospheric and oceanic conditions that dominated the region during 2014 (presentation available on CeNCOOS web site).

- CeNCOOS Director David Anderson reviewed activities and progress made during the past year, and future plans. He described community and research efforts to monitor the state of the coast, such as the Ocean Health Index.

- Carl Gouldman, NOAA IOOS, described the activities and priorities of the IOOS in Washington DC.

- Josie Quintrell described the role of the IOOS Association. This year, the IOOSA Congressional communications will focus on re-authorization of ICOOS act and seeking a plus up of \$5 million from the President's budget for the IOOS program. The next round of Congressional meetings will be March 4-6.

- _ Rob Bohenek (Axiom) & Jennifer Patterson (CeNCOOS) provided updates on data management advancements and the new CeNCOOS website (cencoos.org).

Funded Projects Session (four presentations):

1. CeNCOOS: Integrating Marine Observations for Decision Makers and the General Public (David Anderson). Results from year 4 sub-awards, including the CeNCOOS program office and data partner Axiom Consulting.

2. National Marine Sanctuaries as Sentinel Sites for a Demonstration Marine Biodiversity Observing Network (Francisco Chavez). Started in 2014 and will run for 5 years. Focus on Monterey Bay and Florida Keys sanctuaries. With U. of South Florida.

3. Merging satellite and numerical model data in the California Current to create continuous imagery and forecasts of harmful algal blooms (Clarissa Anderson). A new Harmful Algal Bloom model for California provides forecasts of HAB events one to three days into the future. Forecasts are available for *Pseudo-nitzschia* abundance, particulate domoic acid (the biotoxin released by *Pseudo-nitzschia*) and cellular domoic acid.

4. Imaging Flow Cytobot (Raphe Kudela). Acquisition of an instrument to image and analyze plankton; will be used in San Francisco Bay and compared to 40 year time series of plankton abundance.

Stakeholder Session

Panelists: Mary Miller(SF Exploratorium), Dan Malone(UCSC/PISCO), Tenaya Norris (The Marine Mammal Center), Skyli McCafee (OST/OPC). Panelists offered views and suggestions regarding the use of CeNCOOS data by their organizations/fields, and also by the groups represented by the governing council (academic/research organizations, for-profit industries, federal government, state government, local/regional/tribal governments, and non-profit organizations). Meeting participants shared additional views and suggestions.

Five Year Proposal Process

-Aric Bickel described the process and timeline leading to the submission of the 2016-2021 RCOOS grant proposal. The Federal Funding Opportunity announcement is expected to be distributed in mid-February. The proposals will be due six months later (mid-August). The focus of the proposal, and development process, will be discussed in the governance session.

January 21, 2015

Working Group Session (concurrent with data) (see notes under governance session):

1. High Frequency Radar (John Largier, facilitator)
2. Shore Stations (Karina Neilsen, facilitator)
3. Modeling (Chris Edwards, facilitator)

Data Session (concurrent with Working Group session):

1. Exploring the CeNCOOS Data Portal (Rob Bochenek, Axiom)
2. New Tools for Data Exploration and Visualization (Mary Miller, Exploratorium)
3. New CeNCOOS website (Jennifer Patterson)

Governance Session:

Governing Council attendees: Eric Bjorkstedt, Francisco Chavez, Andrew DeVogelaere, Lynn deWitt, Krista Kamer, Raphe Kudela (chair), Skyli McCafee (phone), John Largier,, Mary Miller, Karina Neilsen, Laura Rogers-Bennett, Dean Wendt (phone).

Quorum present? Yes

- Summary of Working Group Session Reports:

High Frequency Radar (Largier)

The old age of the current system was discussed. The condition of the CeNCOOS HFR array is described separately in three regional assessments made in Fall 2014 by Largier, Whelan, and Cook. A plan for sacrificial sites to replace sites that fail or need repair should consider that some sites were purchased with research funds and others with COCMP funds. The long-range plan to reprocess the raw high frequency radar data was discussed, and participants noted that most of the raw data exists, although in different locations. The steps and decisions regarding algorithms (how to process, how to quality-control) need to be determined and are the major challenge in completing this goal. ERD mentioned playing a role in reprocessing. HFR products and needs were

discussed. Some of these needs could be addressed by the national HFR office, and we might benefit from more interaction, and refreshing our participation on national committees.

Shore Stations (Neilsen)

The shore station working group discussed the next five year proposal, noting that a focus on a specific issue would require re-thinking locations and instrument types. A number of different instruments and sensors were discussed, including nutrient sensors (ongoing development) dissolved oxygen (including subsurface measurements related to hypoxia), pH (including different sensors, other ocean acidification sensors. Shore stations need to be augmented to measure harmful algal blooms. NANOOS is looking at deploying the environmental sensor package (ESP). Rapid-deployment capabilities were discussed. Sensors used for animal tags, and other low-cost sensors, might be obtained to enable rapid deployment. Opportunities exist with citizen scientists, and through partnerships with industry (e.g., shellfish growers, SF bar pilots) to expand the geographic range and types of measurements being made. Citizen scientists could enable plankton analysis. Bottle samples at shore stations would enable chemistry measurements. Distributed sources of funding support the shore stations. In some cases the CeNCOOS support is only one fifth of the support needed, reducing the influence that CeNCOOS has regarding the observing efforts.

Modeling (Edwards)

The modeling group described a wide range of modeling activities in the region, some supported by CeNCOOS and some supported by others, including regional scale ocean models, coupled physical-biological models, HABS models, USGS wave models, and atmospheric models. Search and rescue uses 30 different regional models. A coupled version of COAMPs is being developed. The modeling groups would benefit from clearly articulated user needs and requirements [perhaps this could be facilitated by CeNCOOS]. Some users have expressed the need for high resolution models, for example of the entrance to Humboldt Harbor. Some users have expressed interest in specific variables, such as dissolved oxygen, and the saturation state. Some uses benefit from the uncertainty estimates that can be provided by ensembles. Monitoring the modeling (up-time, statistics, operational status, other metrics) would be valuable. The modeling group also discussed likely improvements and directions of modeling and forecasting expected during the next five years, including the evolution of operational forecasts. Some of the CeNCOOS modeling efforts are contributing to this development.

-Financial Report. Dave Anderson provided a brief report on the funding received by CeNCOOS, and disbursed in the form of sub-awards during year 4 (June 1, 2014-May 31, 2015).

-Elections. Five representatives to the Governing Council will be elected this year. A motion was made and passed, to conduct the council elections in September-November, after the IOOS proposal is completed in August.

- Five Year Proposal Process. The process to develop the IOOS proposal (due August 2015 (for 2016-2022 funding)) was discussed, using the timeline presented by Aric Bickel. The current five-year award ends in May 2016. The need for an overarching theme was mentioned by several participants. Participants suggested that the CeNCOOS office circulate information and ideas during the next month, prior to the FFO announcement, regarding overarching themes and proposal

direction. Additional guidance and feedback should be sought from Sanctuary, MPA, and other stakeholders in the region. The office, on behalf of the Governing Council, will seek input from the CeNCOOS community. After the FFO announcement, the program office will initiate email discussion regarding proposal themes. Once the proposal theme is selected, CeNCOOS will request expressions of interest. It was noted that expressions contributed to the office in the Fall 2014 can be used for this response. The CeNCOOS office and executive council will work together to organize the expressions for consideration by the Governing Council. Writing assignments and planning for the elements of the proposal will occur between April and June. A draft proposal outline will be reviewed by the Council at the June meeting, and the final proposal will be prepared in June and July.

-Other business. A summer meeting of the governing council was suggested for June 2015; San Francisco, Oakland, and Sacramento were proposed locations. The June date was suggested because a draft five year proposal will be available for discussion, and sufficient time remains to make decisions and changes regarding the final proposal.

The meeting was adjourned at 3:15pm.

Registered Participants

Sarah Allen, National Park Service
David Anderson, CeNCOOS
Clarissa Anderson, UCSC
Fred Bahr, CeNCOOS
Aric Bickel, CeNCOOS
Eric Bjorkstedt, NOAA/NMFS
Warren Blier, National Weather Service
Barbara Block, Stanford University
Robert J. Bochenek, Axiom Data Science LLC
Carrie Bretz, CSUMB - SFML
David Caron, USC
Yi Chao, UCLA
Francisco Chavez, MBARI
Jim Christmann, Monterey Canyon Research Vessels, Inc.
Mike Cook, Naval Postgraduate School
Daniel Costa, UCSC
Greg Dale, Coast Seafoods
Andrew DeVogelaere, Monterey Bay NMS
Lynn deWitt, NOAA/SWFSC/ERD
Tim Doherty, NOAA
Jeffery Dorman, Farallon Institute
James Doyle, NRL
Lee Eddington, Naval Air Warfare Center
Christopher Edwards, UCSC
Jan Freiwald, Reef Check
Toby Garfield, NOAA SWFSC
Carl Gouldman, U.S. IOOS
Bruce Gritton, Naval Oceanography
Garrett Haertel, CCLEAN
Jim Harvey, MLML
Laird Henkel, CDFW
Max Hubbard, Codar Ocean Sensors, Ltd
Sarah Hutto, Gulf of the Farallones National Marine Sanctuary
Phaedra Jessen, FNMOC U.S. Navy
Krista Kamer, CSU COAST
Bill Kerr, Fleet Numerical Meteorology & Oceanography Center
Randy Kochevar, Stanford University
Kristy Kroeker, UCSC
Raphael Kudela, UCSC
John Largier, UC Davis
Ivanov Leonid, Naval Postgraduate School
Anniken Lydon, SF Bay Conservation and Development Commission
Skyli McAfee, Ocean Science Trust/Ocean Protection Council
Mike McCann, MBARI
Mary Miller, SF Exploratorium
Carlos Moffat, IMS Santa Cruz
Andrew Moore, UCSC
Kendra Negrey, UCSC
Karina Nielsen, SFSU/Romberg Tiburon Center
Tenaya Norris, The Marine Mammal Center
Jeffery Paduan, Naval Postgraduate School
Adam Paganini, SFSU
Jennifer Patterson, CeNCOOS
Misty Peacock, UCSC
Steve Peters, County of Santa Cruz
Josie Quintrell, IOOS Association
M. Raimonet, USGS
Steven R. Ramp, Soliton Ocean Services, Inc.
Dale Robinson CoastWatch, NOAA SWFSC
Laura Rogers-Bennett, CDFW
Leslie Rosenfeld, Ocean Champion
John Ryan, MBARI
Tara Schraga, USGS
Jason Smith, MLML
Mark Swenson, FNMOC U.S. Navy
Jessica Taatjes, CSU COAST
Lisa Uttal, Monterey Bay NMS
Grant Waltz, Cal Poly State University
Kim Ward
Dean Wendt, Cal Poly State University
Chad Whelan, Codar Ocean Sensors, Ltd

Appendix I: Meeting Agenda

CeNCOOS Winter Meeting Final Agenda January 20 & 21, 2015

**NOAA Southwest Fishery Science Center
110 Shaffer Road
Santa Cruz, CA 95060**

[Map](#)

January 20

The first day of our meeting will focus on program, project, and funding updates and user/stakeholder feedback. For each of these sessions, time will be allotted for attendee questions and discussion.

9:00 Coffee and Morning Snacks (30min)

9:30 Opening (10min) – Raphael Kudela, CeNCOOS Executive Committee Chair

9:40 Southwest Fishery Science Center Remarks (15min)

9:55 Director Remarks (30min) – David Anderson, CeNCOOS Director

10:25 IOOS Remarks (30min) – Carl Gouldman Deputy Director, U.S. IOOS

10:55 IOOSA Remarks (20min) – Josie Quintrell, IOOSA Director

11:15 Break (15min)

11:30 New Website Demo and DMAC Advances (20min) – Jennifer Patterson, CeNCOOS Information Manager

11:50 New Portal Features and Future Plans (30min) – Rob Bochenek, Axiom

12:20 Lunch (60min)

Will be provided at the meeting venue

1:20 Reports on Funded Projects for 2015 (100min)

- Observing System (IOOS) (D. Anderson)
- Marine Biodiversity Observing Network (Chavez)
- Harmful Algal Bloom Monitoring and Forecast (C. Anderson)
- Imaging Flow Cytobot (Kudela)

3:00 Break (15min)

3:15 Stakeholder feedback session (75min)

We want your input! This will be a facilitated session to give attendees the opportunity to provide feedback and address specific questions to the CeNCOOS Governing Council and Program Office. There will be a panel of stakeholder representatives that will give brief statements on their uses of ocean observing data and what products/future plans would be desirable for the user group they represent. Attendees will then have an opportunity to contribute to the discussion.

4:30 Overview of 5-year Proposal Process (30min) – Aric Bickel, CeNCOOS Program Manager

5:30 – 7:30 Reception – La Feliz Room, Seymour Marine Discovery Center ([map](#))

January 21

The second day of our meeting will consist predominately of working sessions. The day will begin with three working groups, which will be small groups of CeNCOOS PIs, operators, and stakeholders discussing technical, platform specific issues related to the topic (if you registered for one of the working group sessions you will receive venue information in a separate email). Concurrent with the working group meetings, there will be a few sessions in the main meeting room further exploring the CeNCOOS data portal and website, and the work being done by the San Francisco Exploratorium and partners to develop new data exploration and visualization tools. These will be interactive discussions with plenty of time for questions and feedback from the group. The last session of the day will be a Governing Council working session; it will be an open session, but there will not be time allotted for attendee questions or feedback.

9:15 Exploring the CeNCOOS Data Portal (45min) – Rob Bochenek, Axiom

10:15 San Francisco Exploratorium Data Exploration Tool Demonstration (45min)

11:15 The New CeNCOOS Website: Capabilities and Possibilities (45min) – Jennifer Patterson, CeNCOOS

12:00 Lunch (30min)

Lunch will be provided at the meeting venue

12:30 Governance Session (150min)

3:00 Adjourn

8:00 Shore Station Working Group (70min)

9:10 Break (10min)

9:20 Modeling Working Group (70min)

10:30 Break (15min)

10:45 HFR Working Group (70min)