

**CeNCOOS Governing Council Meeting – Spring 2018**  
**Thursday, May 3, 2018**  
[SF Exploratorium](#)  
**Teacher Institute Classroom, Room 2610**

Confirmed attendees: Alex Parker (CSU Maritime Academy), Krista Kamer (CSU COAST), Karina Nielsen (Estuary & Ocean Science Center, SF State), Liz Whiteman (Ocean Science Trust), Frederick Bahr (CeNCOOS), Lynn deWitt (NOAA Fisheries/SWFSC/ERD), Patrick Daniel (CeNCOOS), Laura Rogers-Bennett (Cal Dept Fish and Wildlife/BML), Lynn Korwatch (Marine Exchange), Mary Miller (SF Exploratorium), John Largier (UC Davis), Carl Gouldman (US IOOS/NOAA), Andrew DeVogelaere/Jennifer Brown (Monterey Bay National Marine Sanctuary), Francisco Chavez (MBARI), Ryan Hartnett (SFSU), Alex Harper (CeNCOOS), Henry Ruhl (CeNCOOS)

**Agenda**

<b>Welcome and Overview</b>	
8:30am	Light breakfast and coffee in the Observatory
9:00am	Welcome, Intro to SF Exploratorium, and Agenda Review, Introductions – Mary Miller, SF Exploratorium
9:15am	CeNCOOS in the National Context – Carl Gouldman, US IOOS
<b>CeNCOOS Program Office Update</b>	
9:45am	CeNCOOS Program Office Update – Henry Ruhl, CeNCOOS/MBARI
10:00am	RICE Application Process Overview – Alex Harper, CeNCOOS/MBARI
10:15am	DMAC and Product Improvements – Patrick Daniel, CeNCOOS/MBARI
10:30am	Break
<b>CeNCOOS Community Updates</b>	
10:40am	Working group highlights (~5 minutes each) <ul style="list-style-type: none"> <li>• Shore Stations – Karina Nielson and Ryan Hartnett, SFSU</li> <li>• HFR – Chad Whelan, CODAR and John Largier, UCD</li> <li>• Gliders – Jack Barth, OSU (remote)</li> <li>• DMAC – Rob Bochenek, Axiom Data Science</li> <li>• Modeling – Chris Edwards, UCSC</li> <li>• Products – John Largier, UCD</li> </ul>

11:20am	Program office linked projects review: <i>Biological Observing (MBON, ATN), FlowCytobot (OTT, NCCOS), PacShellfish (IOOS, OAP), RMOS4D (COMT)</i> – Henry Ruhl/Francisco Chavez, CeNCOOS/MBARI
<b>Priority Setting and Future Visioning</b>	
11:35am	Gaps and priorities, including site visit feedback – Henry Ruhl/Francisco Chavez, CeNCOOS/MBARI
11:50am	Prospects for future funding – Henry Ruhl, CeNCOOS/MBARI
12:15pm	Lunch – Outreach Brainstorming Session. <i>Which communities should CeNCOOS target to gather requirements for future products?</i>
<b>Governing Council Business and Decision-making</b>	
1:15pm	MOA, Framework for Decision-making, and DMP: <i>Consideration of recommendations and voting (20 minutes each)</i> – Alex Harper <ul style="list-style-type: none"> <li>• RICE revisions to MOA, Framework for Decision-Making, DMP</li> <li>• Standing committees and JSAC</li> <li>• Elections</li> <li>• Executive Committee Chair Transition</li> </ul>
2:15pm	Break
2:30pm	Budget (Y3) proposal and discussion. Major budget items to discuss (15 minutes each) [CLOSED SESSION]: <ul style="list-style-type: none"> <li>• HFR</li> <li>• Shore stations</li> <li>• Gliders</li> <li>• Modeling &amp; Products</li> <li>• DMAC</li> </ul>
4:00pm	Governing Council feedback discussion - All
5:00pm	Adjourn (Reception at SF Exploratorium)

## **CeNCOOS Spring 2018 Governing Council Meeting Summary Report**

### **Action items:**

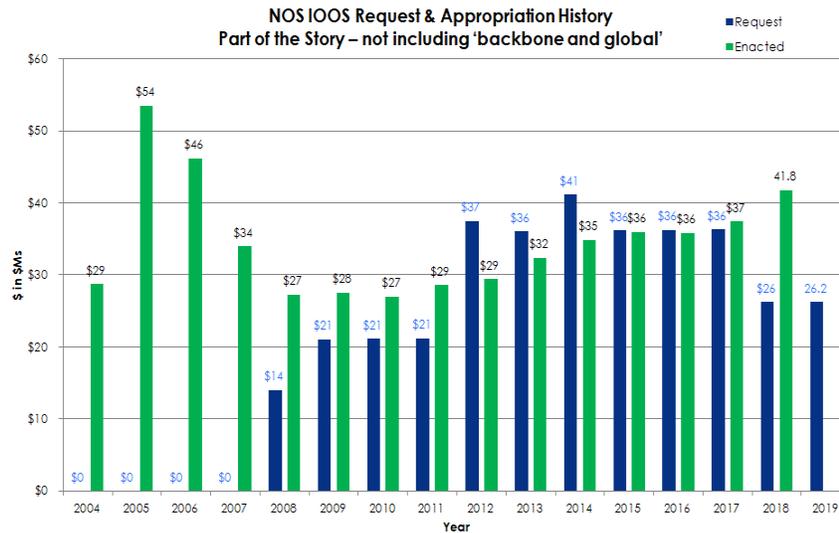
- Action 1. CeNCOOS w/ Outreach and Education experts: Create outreach calendar (including monthly harbor safety meetings) [Outreach and Ed]
- Action 2. Information Products Task Team to advise the CeNCOOS program office on evaluation procedure for current and potential future products that consider the value of the product [Products and Tools]
- Action 3. CeNCOOS w/ Outreach and Education experts: Outreach Materials - create new materials for public engagement (e.g. card with url to data portal and notes on new capabilities) [Outreach and Ed]
- Action 4. CeNCOOS with Products Committee: Identify how CeNCOOS products/data are used in higher ed and work with educators to build out curriculum and resources [Outreach and Ed]
- Action 5. CeNCOOS w/ GC members: Work with National Marine Sanctuaries to reach out to new communities [Outreach and Ed]
- Action 6. CeNCOOS w/ GC members: Look into COAST policy liaison structure for policy engagement [Outreach and Ed]
- Action 7. CeNCOOS with Election Task Team (Mary, Karina, Alex, and Lynn) - revise election procedure to reduce turn-over and provide opportunity for new participation [Governance]
- Action 8. CeNCOOS: Look at conservation hatcheries for potential opportunities
- Action 9. Shore Stations technical WG: Work with CeNCOOS office to provide additional training webinars, esp. new gear, equip, or assess training needs [Observations; networks]
- Action 10. Shore Station Technical WG: Plan for recapitalization [Observations]
- Action 11. Shore Station Advisory Committee: Regional analyses, Networked proposals e.g. development of aragonite saturation state product, testing empirical models of carbonate system parameters in the nearshore.
- Action 12. CeNCOOS: Observing and products gaps highlighted during the meeting to investigate further include:
  - Gap a. Bay Currents App
  - Gap b. "Filling the Gaps" on gliders
  - Gap c. SUNA Nitrate sensors on gliders

### **Welcome and Overview**

Mary Miller welcomed the group to the Exploratorium during a breakfast hosted in the Observatory. Data visualizations for surface current mapping, real time water quality monitoring, and tides are all on exhibit in the Observatory.

## Update from U.S. IOOS

Carl gave an overview and activities at the U.S. IOOS office. Conveyed importance of blue economy now and in the future. Gave overview of NOAA NOS-IOOS mission areas. IOOS is a “partnership effort that leverages dispersed national investments to deliver ocean, coastal and Great Lakes data relevant to decision-makers.” Discussed the history of IOOS appropriations (Fig. 1). Continue to focus on customer service (Fig 2).



**Figure 1.** This bar graph is showing the annual funding “enacted” for IOOS within the National Ocean Service of NOAA from 2008 – 2017. 2008 was the first year IOOS was in the President’s Budget and it was not close to what we may have been receiving in prior years, but just getting into the budget was a major step in sustaining IOOS.

In FY18, IOOS was funded at \$41.8 total. Additional funding came from the NOAA Center for Water Prediction (FY17-FY18) and there is potential that this funding will sustain. Regarding HFR, IOOS is working on a cost/benefit analysis for hardening versus replacing HFR infrastructure. In FY17, new radars in NANOOS, GCOOS. In FY18, new radars will be deployed in SECOORA, MARACOOS, AOS. Alan Leonardi (NOAA-OAR-OER) is the lead for glider initiative within OAR.

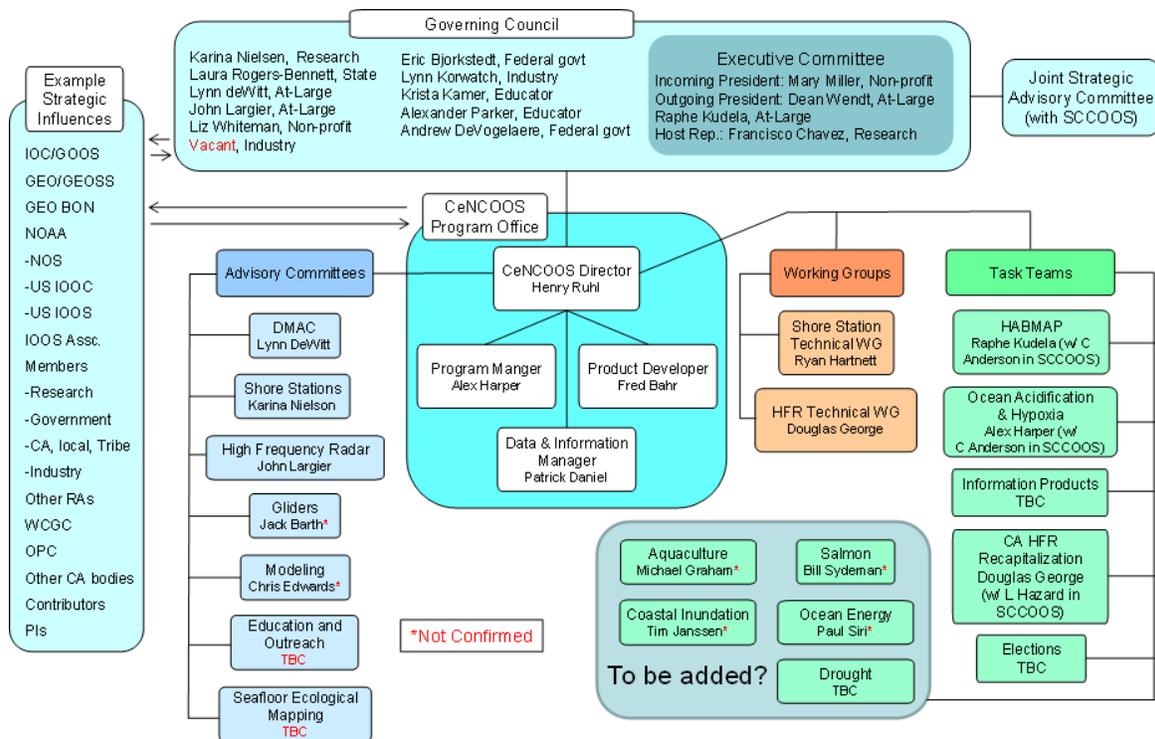


**Figure 2.** Regions are executing end to end observations, modeling predictions, education/information services. RAs produce, integrate it, and communicate; working at regional scale to meet end user needs; nesting stakeholder needs into national system.

## CeNCOOS Program Office Update

### Director's Update

Henry introduced the new staff, a proposed organizational framework (Fig. 3) and gave an overview of his work in developing ocean observatory infrastructures and Science Services (e.g. data products) with the European Multidisciplinary Seafloor and water column Observatory - European Research Infrastructure Consortium. CeNCOOS mission, vision, and priorities remain the same and a new strategic planning initiative is underway with a view to launch in 2020. Possible strategic directions include, but are not limited to, increasing capabilities for biological and ecosystem observations, plastics, desalinization, and offshore energy. We will execute an Expression of Interest (EOI) solicitation process in FY18 but don't plan to fund EOIs this year. It is possible that we may fund EOIs in FY19 and we will think about guidance for EOIs, possibly around biological observations. Highlight linkages with global observing systems (e.g. EOIs).



**Figure 3.** Proposed revised organizational chart includes Advisory Committees, Working Groups, and Task Teams. The chart was presented for consideration but not formally approved.

Observing system is operating well with nearly all shore stations and HFR stations reports. Trinidad head and Monterey Bay gliders are running. C-HARM, COAMPS and ROMS models are running. The new portal was launched and website unique views are increasing. The CeNCOOS

office is focused on RICE certification, site visits and community engagement, and Y3 budget execution.

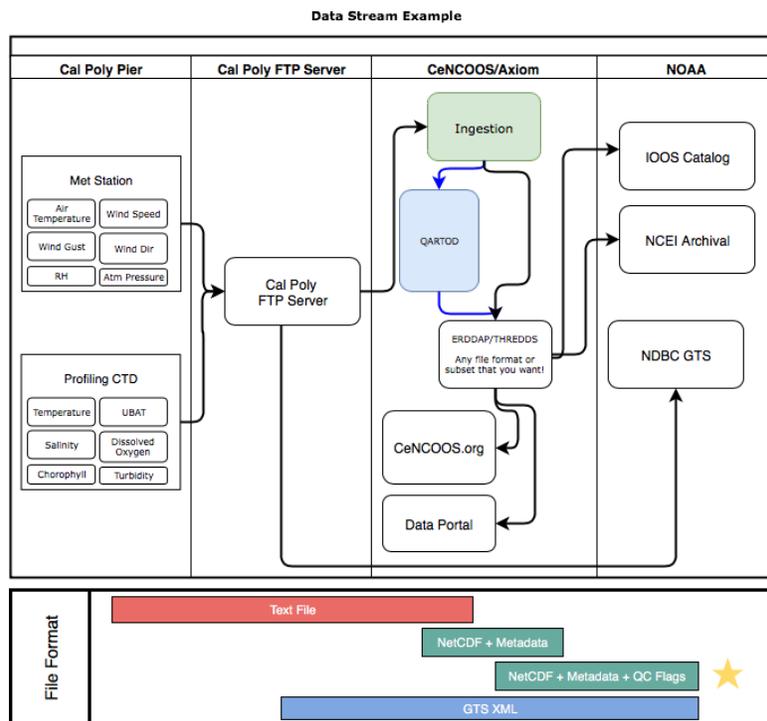
### RICE Process Update

Alex reviewed rationale for Regional Information Coordination Entity certification process including ICOOS Act mandate, federal tort liability coverage expansion, uniformity of data management practices among the RAs, etc. Certification requires adherence to organizational structure and DMAC management practices. The CeNCOOS RICE certification application was originally submitted in Jan 2017. We received substantial feedback most of which pertained to the Data Management Plan.

Some of the feedback we received on the original application submission required amendments to core CeNCOOS documents, including the MOA and Bylaws, Framework for Decision Making, and Key Personnel Roles and Responsibilities. Those changes appear in a handout and were voted on during the afternoon business session. The amended documents can be found [here](#).

### DMAC Update

Patrick gave an overview of the revised [Data Management Plan](#) that was developed based on feedback from the RICE application. The largest revision of the plan is to document the flow of data from the sensor all the way through to the end-user, through a document called a Data Stream Plan. These living documents provide a comprehensive overview of how every data source is transformed, quality controlled, and long-term archived. The Data Management Plan now also includes a in depth description of the roles and responsibilities of data management within CeNCOOS and an overview of the technical capacities of our data management partners, Axiom Data Sciences.



**Figure 4.** A visual representation of a data stream. The arrows represent the flow of data from one source to another. The bottom panel tracks the file formats throughout the data stream.

### **CeNCOOS Community Updates**

#### **Shore Stations, Karina Nielsen & Ryan Hartnett (EOS Center, SF State)**

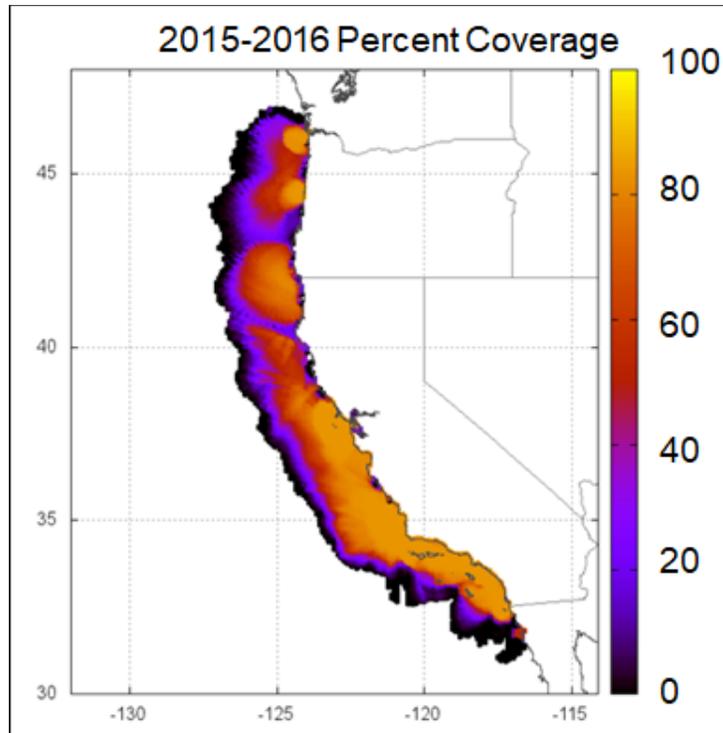
Karina proposed renaming “shore stations” to “coastal observing stations”. This is a loosely organized, heavily leveraged network. Some stations are not funded by CeNCOOS. Key partners are HSU, UCD, SFSU, Exploratorium, USCS, MLML, and CalPoly. Recent successes include: new Burkeolator in Humboldt Bay, SF Bay carbonate moorings, USCS Imaging flow cytobot automated classifier, and Moss Landing SNUA Nitrate and pCO<sub>2</sub> sensors added. Challenges include: Learning new equipment and integrating comms, maintaining and updating > 10 year old instruments, and mismatched workloads vs budget.

PIs connect the public to data through open houses, websites, higher education curriculum, open houses, and exhibits and data displays. Current areas of focus include investigating eelgrass decline in Morro Bay, developing an SF Bay Carbonate Chemistry Group, SF Bay QA/QC protocol development “case study”, Dungeness crab larvae exposure response to low DO/high pH, and marine heat waves among others. Humboldt Bay continues to expand its Carbon Observatory and conduct important eelgrass, aquaculture, and OA monitoring.

#### **HF Radar – Surface Current Mapping, John Largier, Chad Whelan, Jeff Paduan, Doug George**

John suggested that there is an effort made to refer to high-frequency-radar derived surface currents as surface current mapping, as it describes the observation, instead of the instrumentation. The current network of 26 sites was established by state funds and includes standard range, high-resolution and long-range sites. Data streams are sent to CORDC (IOOS-funded) repository at UCSD, where real-time data are archived. Overall the network is functioning well with many site reporting 100% of the time.

The HFR community is addressing the seconding “coming of age” of surface current mapping. As the real-time products in support of operational challenges have matured, how do we add value to the dataset by making it a more useful tool for retrospective assessment of climate change and environmental conditions. Data are used in many published scientific papers (not HFR-focused), but there is no good mechanism in place for tracking this data use. Challenges facing HFR include optimizing coverage (Figure 5), aging instruments/infrastructure, and flat funding. Current activities involve reconfiguring the Gulf of Farallones, North coast, and Monterey Bay networks, new APM approach development, recap and state engagement, renewing Bay Currents app, and a “decade of data” roll-out. In the future HFR community will assess and enhance value of specific sites as data-assimilation input to numerical models and intersect better with ecosystem assessments, wildlife tracking, water quality, micro-plastics, sediment plumes, and spatial mapping/planning. There is also an effort to make the data more consumer accessible.



**Figure 5.** The percentage of available High Frequency Radar-derived surface current data off of California from 2015-2016. Note the coverage issues, particularly in the Northern California region.

#### **Glider Update, Jack Barth (OSU)**

Jack Barth from OSU called into the meeting and gave a brief overview on the state of Glider lines in Central and Northern California. The Trinidad Head (41° 3.5'N) glider line is now in operation, after being out of the water for five months. Jack advocated for an additional glider line between Trinidad and Monterey Bay at Point Arena (39N) in order to fill in a large gap in the Glider observation ladder along the west coast, which is valuable for model assimilation and error reduction.

#### **Modelling Update, Chris Edwards (UCSC)**

Chris Edwards gave an update the modeling progress. WCOFS, the west coast wide 2-km resolution 4DVAR model, is nearly ready to go live. Once the model is operational, CeNCOOS will need to have a discussion about where and how CA-ROMS and CeNCOOS modelling efforts are directed. From a modellers perspective, equipping gliders with nutrient sensors, such as the SUNA nitrate sensors, will be vital for assimilating in situ biogeochemistry data into the models.

#### **Products Update and Discussion, John Largier (UCD), Group**

Throughout the meeting, there was discussion of products and how CeNCOOS should be developing products for and with stakeholders. Several themes emerged from the discussion around education, stakeholder engagement, evaluation of products value, and communication. The Information Products Task Team (John Largier, Krista Kamer, Lynn Korwatch) reported out on a memo identifying several topics that CeNCOOS should consider developing products around and suggesting that CeNCOOS develop a framework to identify and evaluate its products. Specifically,

CeNCOOS should pay increasing attention to “output” (what people outside the organization see and how they benefit) as it evolves from earlier days with a focus on “input” (what we do within CeNCOOS to produce data). An outline of topics and themes related to product and products development is found below.

### **CeNCOOS engagement discussion**

- Outreach Calendar - Facilitate PIs and Collaborator outreach with public
- Outreach Materials - Supply PIs and Collaborators with materials to give to the public
  - Stickers and Cards with URL to the data portal/products
- Marine Science Community - Working with established Outreach and Education entities (sanctuaries, non-profits, universities)
- Engaging with educators - How is CeNCOOS data being used in the classroom and what can be done to support its use?
- Policy Liaison - Being cognizant of CeNCOOS Program Office non-profit status, how can engage with Sacramento and Washington
  - GC Chair
  - CSU-COAST Policy Liaison
- Significant Event readiness - developing information and products that are related to periodic significant events (i.e. marine heat waves, HABs/fisheries closures, tsunamis), so that when these event occur, CeNCOOS is prepared with accurate and informative materials.

### **Product Valuation and Development and Maintenance**

- How does CeNCOOS evaluate existing and planned product utility?
- How does CeNCOOS engage with stakeholders around products and CeNCOOS data streams?
- Periodical reevaluation of products, both in use and technology to ensure the longevity of a product

### **Governing Council Business and Decision-making**

The Governing Council reviewed, edited, and ultimately approved the following revisions to the MOA & By-laws, Framework for Decision Making, and Key Personnel Roles and Responsibilities.

### **MOA & By-laws, ARTICLE I – Name and Description**

#### **Section 6. Functions and Responsibilities as a Regional Information Coordination Entity (approved by the Governing Council on May 3, 2017)**

As the representative Regional Information Coordination Entity for Central and Northern California, CeNCOOS agrees to:

- a. Demonstrate an organizational structure capable of addressing the vision, mission, goals and objectives described in MOA Article I (Sec. 2-5);
- b. Meet the information needs of user groups in the region while adhering to national standards;
- c. Meet the certification standards and compliance procedures and guidelines issued by the US IOOS in accordance with the ICOOS Act mandates;

- d. Comply with all financial oversight requirements established by the national IOOS, including requirements relating to audits;
- e. Participate as a member of the IOOS Association (an incorporated non-profit representing the interests of the regional component of IOOS);
- f. Develop and operate under a strategic operational plan;
- g. Work cooperatively with government and non-government entities at all levels to identify and provide information products for multiple users within the Central and Northern California region;
- h. Share data and ensure compatible data standards where appropriate and in accordance with applicable laws, regulations, and policies of the participating entities; and
- i. Fund any advocacy efforts with non-binding contributions from private (nongovernmental) Parties and other private funds.

### **Section 7. Liability Indemnification (anticipated approval by the Governing Council on May 3, 2017)**

Liability protection for CeNCOOS employees is provided by their employer (the host institution) and similarly for employees of sub-award institutions liability protection ~~is~~ shall be provided by the sub-award institution.

### **Framework for Decision Making**

#### **4. Decision-making responsibility (pending approval by GC on May 3, 2018)**

The CeNCOOS governance sub-system plans, operates, continuously monitors, develops, and improves the CeNCOOS observing system. CeNCOOS Governance tasks are managed by the small team at the host institution, directed by the Governing Council, and advised by a multi-tiered system including: ~~a Governing Council, Executive Committee, and~~ working groups and advisory committees that donate time and expertise.

CeNCOOS is an open membership organization with a Governing Council democratically elected by CeNCOOS Party Members. The CeNCOOS Governing Council, in concert with the Program Director, will set the priorities according to objective criteria, calling upon outside experts as necessary. The Executive Committee, elected by the Governing Council, will assist the Director in making decisions during situations requiring a quicker response than can be achieved with the entire council. The Governing Council represents a geographically widespread and diverse group of interests. ~~Fixed~~ ~~One-year~~ terms for the Executive Committee and designated seats for various types of member organizations on the Governing Council ensure a governing structure that will retain diversity and continue to draw from the ~~remarkable~~ array of expertise found throughout the Central and Northern California region. Refer to the CeNCOOS MOA for more details on CeNCOOS governance.

#### **5. Program Office Personnel (pending approval by GC on May 3, 2018)**

CeNCOOS staff presently includes four primary positions: a Director, a Program Manager, a Product Developer, and a Data Manager. The CeNCOOS Director is responsible for overall RICE Management.

The Program Manager is responsible for Observation Systems Management across the region. The CeNCOOS Director ~~is accountable reports directly~~ to the CeNCOOS Governing Council and performs under mutually agreed upon performance objectives. The Program Manager, Product Developer, and Data and Information Manager are hired by the CeNCOOS Director and report directly to him/her with annual evaluations. Continued employment of all staff is dependent upon responsible execution of the duties incumbent to the position they hold.

The CeNCOOS Data and Information Manager has overall responsibility for the acquisition, curation, and delivery of CeNCOOS data. The information manager is also responsible for coordinating data management planning and implementation with the IOOS program office and other regional associations, and in this role attends the annual DMAC meeting and other IOOS data management coordination activities. CeNCOOS subcontracts with a data service provider ~~Axiom Data Science~~ through open competition to execute the CeNCOOS Data Management and Communications (DMAC) Sub-system. For more information about the CeNCOOS DMAC Sub-system, please see the CeNCOOS DMAC Plan.

### **13. Program Review (anticipated approval by GC on May 3, 2018)**

The final decision-making authority within CeNCOOS lies with the Governing Council. The Governing Council will provide general oversight and make major decisions such as those dealing with the organization's development, funding, and representation at the regional and national levels. As such, the Governing Council, with CeNCOOS Program Office leadership, conducts annual programmatic reviews. Reviews will take place directly following CeNCOOS Fall Science meetings. For the annual review, the full Governing Council will use the same review criteria (Table 3) to assess progress and make recommendations for future funding scenarios. The CeNCOOS Director will use those recommendations when executing future budgets. The performance of the DMAC Sub-system and the associated contract personnel are also evaluated annually by the Governing Council.

### **15. Asset Inventories and Gap Analyses (anticipated GC approval May 3, 2018)**

CeNCOOS maintains an ocean observing asset inventory for the Central and Northern California region to assist with identifying gaps assessments for the IOOS program as well as other state, federal, local, and private activities. CeNCOOS conducts gaps analysis for build-out planning purposes, which includes three Tiers of prioritization (Tier 1 being the highest and 3 the lowest priority). These tiers were last documented in 2016. CeNCOOS actively identifies and seeks opportunities to fill ~~develops specific~~ specific regional observing gaps ~~for such systems and applications as High Frequency Radars, fixed stations (e.g. shore stations and moorings), gliders, ocean acidification and hypoxia, harmful algal blooms, and other emerging areas of concern.~~

### **Key Personnel Roles and Responsibilities**

See revisions here:

[https://docs.google.com/document/d/1t4\\_U0SHf5\\_SYAc5aYLV1opaMA\\_qjQFuSFn28mwOyV-s/edit?usp=sharing](https://docs.google.com/document/d/1t4_U0SHf5_SYAc5aYLV1opaMA_qjQFuSFn28mwOyV-s/edit?usp=sharing)

## **Elections**

The Governing Council established an Election Task Team that will develop recommendations to improve GC elections while allowing for new members to join the GC.

Election Task Team Volunteers:

- Alex Parker, Cal Maritime
- Mary Miller, Exploratorium
- Karina Nielsen, EOS Center, SFSU
- Lynn deWitt, NOAA Fisheries

## **Committee Discussion**

Group discussed the history and utility for the JSAC for the CeNCOOS Region. How/if to make it work for CeNCOOS? It was agreed that it is important to maintain an entity specifically devoted to statewide coordination. It is useful to have a clear example of close collaboration with SCCOOS and to perform as a single point of contact for the State of California for ocean observing. A remit of JSAC to be refreshed with attention to balance between goals of stakeholder engagement and alignment of CA RA activity for state level needs. Through engagement in the planning and execution of JSAC meeting, we hope to see an Increase user attendance from Central and Northern California. On the other hand, the Joint Technical Strategic Committee has never met and SCCOOS has already removed the group from MOA. The GC agreed to remove reference to JTSC from governance documents.

## **Gaps and Priorities**

Henry presented on the CeNCOOS intifying priorities and potential avenues for funding for the future. These included several coastal observation sites, such as the Morro Bay Back bay site and the Indian Island site, that have been identified as being important for monitoring water quality, expanding HABMAP pier sampling to sites north of Santa Cruz and working with SCCOOS to ensure that all of the pier sampling data is properly ingested and aggregated, and supporting the Trinidad Head glider line. CeNCOOS will also prioritize increasing engagement with tribal groups such as the Wiyot Tribe, who has historically maintained the Indian Island coastal observation station, and the Tolowa Dee-Ni' Nation. Additionally, in cooperation with SCCOOS, CeNCOOS will improve engagement with the State around ocean observations and harmful algal bloom monitoring.

Chris Edwards has a proposal in with COMT to develop WCOFS, in which CeNCOOS, along with NANOOS and SCCOOS, will lead regional community engagement around the role out of the model. A pre-proposals for the California Prop-84 was also submitted on the risk assessment of expanding aquaculture in California as informed by OA and Hypoxia monitoring.

## **Strategy Directions**

CeNCOOS will be refreshing its strategy during Y3. This will include reviewing the Framework Decision Making, which is used to identify gaps, opportunities and priorities. This is an opportunity to ensure that CeNCOOS priorities are aligned with those evolving at NOS and IOOS, OPC and WCGC. NOS priorities include marine transport safety and efficiency, preparedness and risk reduction, and

stewardship, recreation and tourism. IOOS priorities include biological/ecological observing, subsurface observations, and open ocean data management and communications.

CeNCOOS may also run a call for Expression of Interests (EOI) this summer. Although there will not be funded this round, it will give the program office feedback on what PI interests are and open up dialog about external funding sources. If FY19 is level funded, the future EOI round could be funded.

### **Budget approval**

Henry presented the Y3 budget proposal to the GC. This was based on preliminary guidance values received from the US IOOS office in April. The budget was approved by the GC and included at least flat funding for all “CeNCOOS Partnership: Ocean Information for Decision Makers” sub-award holders and \$30,000 for ATN tags.