



GULF OF MEXICO COASTAL OCEAN OBSERVING SYSTEM

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Products and Services Advisory Council Meeting 9-10 November 2016, New Orleans, LA

The Products and Services Advisory Committee (PSAC) meeting of the Gulf of Mexico Coastal Ocean Observing System Regional Association (GCOOS-RA) was held at the Doubletree by Hilton, New Orleans, LA, November 9-10, 2016. This document constitutes the report of the PSAC.

1.0 Opening of Meeting

1.1 Welcome

The meeting began with a welcome by Adm. Ken Barbor, PSAC Chair. Participants of the PSAC meeting then provided brief introductions for the benefit of the group.

Adm. Barbor presented an overview of the role of the PSAC and vision for moving forward. For some of the PSAC members, it had been some time since the last meeting and for others; this was their first PSAC meeting. His overview highlighted:

- The PSAC should help identify audiences and products for the GCOOS and provide guidance through the process of developing, piloting, and assessing products and services.
- This meeting was reconstituting the PSAC and moving forward the PSAC should be a self-sustaining, vibrant council providing participation, evaluation, and determining needs for future products.
- Many stakeholder workshops and the Outreach and Education Council have been integral in product development.

In addition to Adm. Barber's introduction, Dr. Matt Howard, GCOOS Data Management and Communications Coordinator, also addressed the PSAC and emphasized that the GCOOS will benefit from their opinions and expertise to develop and prioritize theme areas and products.

1.2 Purpose of Meeting

Objectives

1. Identify potential new products and services, and provide input to improve existing GCOOS data, products, and services.
2. Refine and prioritize ideas and action items.

2.0 Survey Results and Introduction to GCOOS products

Prior to convening in New Orleans, Dr. Shin Kobara provided the PSAC members the GCOOS Strategic Plan and an online survey to choose and prioritize three topics/theme areas for future product development. The highest ranked topics from the survey were coastal hazards, data collection, harmful algal blooms (HAB's), and restoration. Other topics that ranked high on the priority list and also considered were beach monitoring, biodiversity (migratory pathways), and climate change.

Dr. Kobara demonstrated the functions and capabilities of GCOOS products using product examples. Demonstration included:

- Using the Hypoxia/ Nutrient page to show the creation of interactive maps from data.
- Hypoxia Nutrient page also provides data
- Using the Sea Level Rise Scenarios product to show how data retrieved from other organizations can be transformed into overlays on GCOOS interactive maps.
- Displayed Citizen Science data by retrieving data from the Galveston Bay Foundation on the GCOOS page.
- Discussed how data can be made available and used to create map services and feature services.

Dr. Howard added that GCOOS products are created from custom mash-ups of data sets. PSAC objectives are to determine what products are useful to GCOOS stakeholder groups.

2.1 Brainstorming

The PSAC met for the rest of the morning to gather and discuss ideas for potential products. Coastal Hazards was the first theme area discussed, as it was one of the top priority themes to emerge from the pre-meeting survey.

- Greg Steyer contributed ideas for possible product theme areas including tools used by USGS to predict collision and overwash regimes during storm events, wave and storm surge modeling especially to advance beyond nearshore areas to adjacent habitat communities.
- Steyer also brought up the use LIDAR data by USGS to create high resolution aerial imagery that can be used to show water levels and storm surges and map shoreline change.
- A discussion took place on the use of data from Hurricane Sandy to show storm surge impact on water treatment facilities, landfills, and other potentials for contamination. Can predictive capabilities be developed with regards to storm surge models and rainfall the may show potential impact on

superfund sites or wastewater treatment facilities? Who is the customer for this type of decision support tool?

- Steyer discussed that shoreline change data is available and are there possibilities to build off of that data for other applications. A potential customer for this type of product would be restoration managers and coastal planners.
- Steve Sempier brought up the idea of transferring data to enhance existing tools. The economic and social aspects of data sets and products are lacking.
- Sempier discussed the need for training people in the industry to use the available tools and added that the most useful tools expand applications and augment existing tools. Sempier also discussed benefits of not over complicating products or inundating with information.

Water quality and beach conditions was another topic area discussed during this brainstorming session.

- Andy Reich brought up using historical data to predict probabilities of beach water quality. Data from wastewater outlets, nearshore currents, river discharge, for example, could be used in a trend analysis to predict a compromise in beach water quality.
- Reich also brought up expanding the HAB product and mentioned an FWC visualization.
- Discussion of developing a product to be used by oyster and shellfish commercial and recreational fishermen and coastal managers to predict and/or identify potential water quality issues that may affect industry.
- Sempier discussed an example of a significant HAB event in Alabama and Florida and the potential use of a tool that can predict and track the HAB movement from state to state. This could be a potential tool to highlight Gulfwide monitoring capabilities of GCOOS and events that affect or move across state boundaries.

Data Collection

- Adm. Barbor mentioned building out the capabilities of high frequency radar coverage in the Gulf of Mexico. Discussion included priorities for existing coverage gaps and funding sources.
- Matt Howard asked the group to discuss ideas for data based products that would utilize HF radar data. Some discussion points include:
 - Hazardous spills response as outlined on IOOS website.
 - Could develop useful products for recreation boating, sailing, commerce.
 - Could be a useful tool for developing a model for bacteriological monitoring and red tide predictions.

River Discharges

- The topic of monitoring/ measuring freshwater flow into bay systems was discussed. Rainfall amounts and river discharge data could be used to

develop a product for the oyster/ shellfish industry. Data could be used to model projections for freshwater input into a bay system (identify boundaries of bay systems).

- Oyster/ shellfish is an important economic and cultural factor in Gulf communities and this could be a useful tool to determine optimal harvesting windows based on freshwater input into a system (too much or too little).
- Steyer indicated that MS Sound could be an ideal pilot site for this product. Gulf Coast Research Lab could be a potential source for resources.
- Potential product customers include commercial and recreational oyster and shellfish harvesters, the Department of Marine Resources, and coastal resource managers.

3.0 Joint PSAC and OEC Session

3.1 Welcome, Introductions

The session began with a welcome from Dr. Chris Simoniello, and Dr. Shin Kobara. PSAC and OEC members and GCOOS staff gave brief introductions.

3.2 GCOOS-RA Updates

Dr. Barb Kirkpatrick, GCOOS-RA Executive Director, gave a presentation on GCOOS-RA updates.

- Provided an overview of the GCOOS-RA staff. The GCOOS-RA is made up of two full time positions and the rest of the staff spend a partial percentage of their time on GCOOS projects or are part time employees.
- The new GCOOS Strategic Plan is a great accomplishment. The document outlines the GCOOS four main focus areas and specific goals for the next five years. The new strategic plan is a consolidated and attractive product that will be a useful tool for educating stakeholders, politicians, and members about the GCOOS mission and goals.
- GCOOS has submitted the application for IOOS certification. Certification from IOOS will enhance the quality assurance and quality control capabilities and protect the GCOOS from liability to data available through the GCOOS. Certification will also provide integrity for GCOOS data.
 - Three of eleven regional associations have recently submitted applications to IOOS for certification, which may affect the timeline to certification.
 - There is a 90 day (actual days not business days) review period for certification. The 90 day clock may be halted if additional information or edits are requested.

3.3 Overview of PSAC – Goals of Council Members

Adm. Ken Barbor, PSAC chair, provided a brief overview of the PSAC goals. Main

goals of the PSAC are to identify audiences for products and services, identify new products and services, be innovative in the approach to development, and assess at each stage of development. He also relayed the intent of the PSAC to reach a broad sector of audiences that may benefit from products and services.

3.4 Overview of OEC – Goals of Council Members

Chris Verlinde, OEC Chair, provided a brief overview of the OEC goals. Given the long history of the OEC and the successful collaborative products developed, she suggested a similar approach by used by the PSAC. She showed examples of products and programs developed and outlined the approach taken by the education community from concept to implementation.

3.5 Overview of GCOOS DM capabilities

Dr. Matt Howard, GCOOS DMAC lead, provided an overview of the communications and capabilities of GCOOS DMAC.

- Create innovative products
- The DMAC team moves data through sensors, analysis, and modeling.
- The DMAC Scope includes
 - Metadata management
 - Data discovery
 - Uniform online Growth
 - Data access and transport
 - Data archive
- Federal Requirement (NOAA) of open (free) access to data.
- GCOOS DMAC team
 - Dr. Matt Howard: DMAC lead, subject matter expert, programming
 - Felimon Gayanilo: Data portal, system architect, web services
 - Dr. Shin Kobara: Products, GIS, web programming
 - Bob Currier: Decision support tools, Code
 - Marion Stoessel: Data transformations, data expert
 - Chuan Yuan Hsu: graduate students and data technician
 - The above position are roughly equal to three FTE's from the GCOOS budget.

3.6 Examples of GCOOS products

Dr. Shin Kobara provided examples of GCOOS products. Demonstration included:

- Using the Citizen Science page to show the creation of interactive table and charts from data.
- Displayed Lionfish Observation map and introduced the capabilities to interact with external map layers such as another invasive species, Tiger Shrimp

4.0 GCOOS OEC and PSAC Breakout Session

Prior to the meeting, Dr. Chris Simoniello provided working groups and direction for the breakout session.

Purpose

- OEC and PSAC work to identify new products to benefit the Gulf community.
- Work through the product development process similar to what was done for the Eco Hero game, boater web pages, and Citizen Science portal.

Several topics have been put forward by the PSAC. Among them are:

- Coastal hazards, navigation, marine forecast models, nearshore currents
- HAB detection, beach monitoring, biodiversity, migratory pathways, invasive species, water quality
- Data collection, observations for model initialization and validation
- Monitoring for restoration impacts, facilitating collaborations

One goal was to make sure the products identified aligned with the newly released GCOOS Strategic Plan.

The OEC and PSAC were divided into three working groups. Each group focused on product development for a different set of topics. The three group focus areas were:

- Coastal Hazards/ Navigation
- Ecosystem Monitoring/ Biology
- Data, Model, Observations

Questions to be addressed in the report-out session include:

1. What product(s) is/are needed?
2. For what purpose is the product needed?
3. Who will benefit from the product?
4. Can an existing product be improved? If so, identify the product and needed improvement.

Group 1: Coastal Hazards/ Navigation

Initial discussion was based on the latest GCOOS strategic plan and its key theme section about Coastal Hazards. Target audience would be emergency manager and it will be helpful to provide what-if scenario such as when and where storm may hit. In addition, training section of how to use tools will be helpful. There are several tools available already and some research are going on to find the gap and differences among available tools.

Then discussion covered several topics including

- water quality,
- beach condition (bacteria),
- rip current,
- sea-level rise,
- spill response,
- coastal resiliency

and revisualization (for different user group). Citizen weather report, PORT system, metrological data were mentioned when data aggregation were discussed. Rip current was mentioned as an example of one of potential decision support tools with those aggregated data sets. Wave period, significant wave height and wind are important parameters.

Group 2: Ecosystem Monitoring/ Biology

One of the products that emerged from discussion was a product to demonstrate coastal resiliency in different areas along the Gulf coast. The USGS Coastal Change portal was mentioned as an example of a coastal resiliency product which uses historical data to make predictions. There is an existing product that was developed approximately ten years ago that produced visualizations of coastal inundation overlayed over three-dimensional map views based on different weather scenarios. The product was shelved and never put into circulation. Joe Swaykos identified the contact/ project lead at Stennis and will contact to inquire about access to existing development.

Another product idea also supporting the coastal resiliency/ coastal hazards topic area was an updateable infrastructure mapping tool to estimate storm surge taking into consideration detailed landscape features such as percentage of impervious landscape features that would increase storm surge effects. The MS/ AL coast was used as an example when comparing the effects of storm surge from hurricane Frederick (1979) and Katrina (2205) and the changes in the landscapes natural features to mitigate storm surge effects.

A product that made water quality information readily available to the general public was discussed. The need for a product to answer an often-asked question from the general public, "is the water safe?"

Items discussed include:

- Seasonal monitoring
- Spatial coverage issues, sampling variability, lag reporting
- Multiple agencies have pieces that could be contributed toward successful product
- Testing for Vibrio, Enterococcus
- Expand the Beach Conditions Reporting System
- Would same product target multiple user groups (public, coastal managers,

- scientists) or would there be a need for different products?
- The product would benefit beachgoers with up to date, reliable, and pertinent water quality information.

A final idea discussed was a product that displayed available species tracking and mapping information. Some examples of similar products cited was a sargassum tracking tool in TX, the Fly Over Country App, and Cornell Birdcast. Other agencies supporting similar products may be will to share code. This type of product may be useful to the general public, scientists, resource managers, and educators.

Group 3: Data, Model, Observations

- Fog forecasts for navigation. Temperature and humidity data are needed for this; visibility cameras are increasingly available for marine operations.
- High resolution salinity measurements are needed for precision navigation because freshwater cells can cause radical changes in buoyancy. High resolution bathymetry data is also needed for precision navigation.
- Story maps were mentioned as a way to communicate information on the expanded Beach Conditions site and a means to make the public more knowledgeable;
- Add a search feature to the GCOOS site to enable users to enter something like “SST” and see all locations where data can be accessed.
- Other topics overlapped with Coastal Hazards and Ecosystem Monitoring and are included above.

After team report-outs concluded, Kobara explained how the PSAC members would prioritize identified products and services the following day. Simoniello thanked both groups for their valuable input and provided information about Day 2 logistics. Visit ([OEC REPORT](#)) for the full OEC report.

4.1 Summary of Breakout Group Reports

Most of the potential products ideas and details discussed can be aggregated as three main themes.

1. Coastal Hazards: The following ideas or parameters were discussed to for enhancing existing capabilities or new product development.
 - Target: Products for use by emergency management and coastal planning
 - Shoreline change: show geomorphologic change over time
 - High resolution bathymetry: LIDAR (National 3D elevation model)
 - Coastal flooding, sea level rise, inundation
 - Products to simulate and visualize inundation events

- 3d visualization model (USM has developed model to potentially use or build up)
- Flood/ storm surge: updateable maps that account for infrastructure and impervious surfaces to predict flooding areas
- What-if scenarios
- Increase salinity stations – incorporate USGS stations
 - Saltwater intrusion monitoring during storm and non-storm events (USGS)
- Ocean currents
- Rip currents (not as much of issue in some low energy area in Gulf)

2. Water Quality: A common theme among group discussions was the need for a reliable, user friendly, and easy to access source for basic water quality information for the general public (beachgoers). Another target audience discussed for a water quality product was the oyster/ shellfish industry (managers/ DMR/ commercial and recreational harvesters).

- Access to beach closures or measurements of harmful bacteria (Vibrio, Enterococcus)
- HAB's
- Why does the water smell?
- Data for oyster/ shellfish industry
 - Freshwater flow
 - Rainfall
 - Bacteria
 - River discharge
 - Salinity
 - Historical data (H-N Portal)
- Overlay other data (citizen science water quality data)

3. Beach Monitoring: There were many cross cutting ideas over the three main theme areas for product development. A third theme area was products to improve and enhance existing capabilities for beach monitoring. An example of a nice “one-stop” beach-monitoring product discussed was from the CARICOOS Portal. The product uses an interactive map with radar, wave, current, and buoy stations. Other parameters such as hazard warnings can be layered. Other potential data to include:

- Rip current (higher energy areas of Gulf or storm events)
- HAB
- Clarity
- Wave height, wave period
- Wind (warnings)
- Warnings and conditions represented by red, green, and yellow flags
- CDC information
- Oil Spill

- HF Radar coverage

5.0 Prioritization

The PSAC discussed ideas from the previous day to narrow the focus of the discussed product ideas, identify potential products for enhancement and/ or development and create action items.

The PSAC agreed that water quality monitoring is a key product for the Gulf of Mexico region. Research is needed to find out how to access existing data (e.g. EPA) for the GCOOS Portal. Another target group that emerged in discussion again was the oyster fishery. Adm. Ken Barbor reiterated that oysters are a big story in MS and MS sound would be an ideal pilot for a product. Greg Steyer discussed products from the previous day where USGS data and products could be utilized. These coastal hazard product areas included the National 3D Elevation Program, 3D visualization of storm events (e.g. Sandy, Matthew), flood control infrastructure, sediment movement inland data, and projections from offshore and nearshore physical forces.

After some discussion about how real time or near real time data and historical data can build good GCOOS products PSAC members suggested to build onto existing GCOOS capabilities and create an environmental anomalies map. As an initial step, the focus is on visualizing water temperature and salinity and show monthly, seasonal, and yearly mean and trend, and actual value at the observing station. If an anomaly exists, it should show a red flag or different marker on a map. The environmental anomaly map can be applied to other products including water quality and beach monitoring as well as coastal hazards.

Some specific product ideas discussed for an environmental anomalies map product include:

- Each station could show a “wagon wheel” layout for data display
- Level of anomaly represented by color (green/ red color indicators)
- Initial limitation by number of data stations
- Anomaly parameters: seasonal, spatial, persistence of anomaly
- Historical trend (5 year, 10 years)
- Possible funding from NRDA or National Academy

Next Steps could include:

- Why? Connect anomaly station with what is happening in the Gulf or watershed
- Show hotspots
- Habitat connections: relate anomalies to resources

The product for oyster/ shellfish managers and harvesters could be derived from the environmental anomalies product. Gulfwide salinity and temperature time-

series information and HAB spatial information would be useful to highlight or build tool for the oyster/ shellfish industry.

A last product idea for development was a Migratory Species corridor animation map. This was not a suggestion from the PSAC but came up in joint discussions between the PSAC and the OEC. The GCOOS website lacks biological data (especially megafauna data). The nature conservancy can share multi species migration data with GCOOS. Jorge Brenner explained that the Nature Conservancy currently tracks 26 species. The focus is on species that present conservation challenges (e.g. species that cross borders and shipping routes). The migratory species tracks cannot be given but could be a future possibility with permission from each distributor. GCOOS would be able to show migratory species corridors (models results) and its animation.

[Link to OEC report](#)

Appendix 1: List of Participants and Affiliations GCOOS PSAC Meeting 9-10 November 2016

Name	Affiliation
Kenneth Barbor	University of Southern Mississippi
Jorge Brenner	The Nature Conservancy
James Gibeaut	Harte Research Institute for Gulf of Mexico Studies
Jerry Madden	Shreveport Sail and Power Squadron
Andy Reich	Florida Department of Health
Greg Steyer	United States Geological Survey
Steve Sempier	MS/ AL SeaGrant
Bill Lingsch	Vencore Services & Solutions, Inc.
Matthew Howard	GCOOS
Barb Kirkpatrick	GCOOS
Grant Craig	GCOOS
Shin Kobara	GCOOS

Appendix 2: Meeting Agenda

GCOOS Products and Services Advisory Council (PSAC) Meeting

DoubleTree by Hilton New Orleans
300 Canal St, New Orleans, LA 70130
November 9-10, 2016

Overall objectives

1. Identify and discuss potential new products and services, and provide input to improve existing GCOOS data, products and service

2. Refine and prioritize ideas and action items

Expected outcomes

- Three to five concrete ideas and priorities of future products & service

Meeting sessions:

- November 9, 2016 10:30 AM – 5 PM
- November 10, 2016 9:00 AM – 1PM

Draft Meeting Agenda

Wednesday, November 9, 2016

PART 1: Introduction

9:30 – 10:00 Check-in

10:00 – 10:10 Welcome and Introductions (Chair?)

10:10 – 10:15 Meeting objectives and deliverables (Shin Kobara)

10:15 – 10:30 Introduction of PSAC members and GCOOS staff

10:30 – 11:15 Introduction to currently available GCOOS products (Shin Kobara)

11:15 – 11:30 Coffee break

11:30 – 12:30 Survey Results & Brainstorming

- Climate Change
- Healthy Marine Ecosystems
- Human Health
- Resource Management
- Marine Transportation
- National Security
- Coastal Hazards
- Fisheries and ports are two ideas- but also have heard emergency management and public health/beaches.

12:30 - 1:30 Lunch provided by GCOOS

PART 2: Joint PSAC and Outreach & Education Advisory Council session

1:30 – 1:50 Welcome, introductions, expectations of joint session (Chris S and Shin)

1:50 – 2:05 GCOOS-RA Updates from the Executive Director (Barb Kirkpatrick)

2:05 – 2:15 Overview of PSAC –what are goals of Council members? (Chair, PSAC)

2:15 – 2:25 Overview of OEC—what are goals of Council members? (Chris V)

2:25 – 2:40 Overview of GCOOS DM capabilities (Matt)

2:40 – 3:00 Example of GCOOS products (e.g., Citizen Science, Invasive spp; Shin)

3:00 – 3:20 Afternoon break

3:20 – 4:20 Brainstorm types of products—mixed OEC/PSAC teams in small groups (we will need to provide guiding questions; we can do ~4 groups of 8).

4:20 – 5:00 Group reports and discussions (10 min per group)

5:00 Joint session closing remarks (Barb)

Thursday, November 10, 2016

PART 5: Prioritization

9:00 – 11:30 Synthesize ideas from previous day and Prioritize product ideas

- 3 achievable action items
- Time-span
 - Long-term (2-3 years)
 - Mid-term (1-2 years)
 - Short-term (< 1 year)

11:30 – 12:30 Lunch provided by GCOOS

12:30 – 1:00 Next steps and Summary of PSAC Action items

1:00 Meeting Adjourned