GULF OF MEXICO
COASTAL OCEAN
OBSERVING SYSTEM
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GCOOS-RA Annual Board and Members Meeting

March 22-24, 2017

New Orleans, LA

The 24th Meeting of the Gulf of Mexico Coastal Ocean Observing System Regional Association (GCOOS-RA) Board of Directors (BOD) was held on 22-24 March 2017 in New Orleans, LA. The attendees and their GCOOS-RA roles are listed in Appendix A. The agenda is given in Appendix B.

March 22nd and March 24th 2017: Closed Meeting of the GCOOS-RA Board of Directors

MARCH 23, 2017: ANNUAL MEMBERS MEETING

GCOOS-RA Members Meeting

The Members meeting commenced with a welcome by GCOOS Executive Director, Dr. Barbara Kirkpatrick, followed by participant introductions. GCOOS Board Chair, Bill Lingsch, provided opening remarks and summarized the agenda topics to be presented. The agenda was adopted unanimously before Barb provided an overview of key outcomes from the past year. The list of attendees and their affiliations is given in Appendix A. The agenda is given in Appendix C.

Director's Report

Highlights from the Director's report (Kirkpatrick), provided above, were summarized for participants. Bill Lingsch commented that it is important for participants to know that what they do affects lives, jobs and coastal economies. Members are at the heart of why GCOOS exists. Sara Graves requested that if members know people with data or service needs GCOOS can provide to let the staff and Board know. Praise was extended to the staff for the rigorous job being done with documentation, public awareness and press coverage. Participants were encouraged to continue submitting items to share via the GCOOS newsletter.

Report from the IOOS Program Director

IOOS Program Director, Carl Gouldman, was sworn in February 6, 2017, and envisions continuing building on existing IOOS success. Emphasis is on observations and predictions supporting Department

of Commerce activities, preparedness and risk reduction, stewardship, and recreation and tourism. Highlights and comments from his presentation include the following:

- The U.S. Ocean Enterprise Study was undertaken to assess the value of U.S. business activity related to ocean measurements. The survey was given in 2015 to 410 companies in 36 states. Results show that income generated by the ocean enterprise exceed $7 billion annually.
- Advocacy work for IOOS has kept the program funded at approximately $35 M.
- FY2017 milestones include receiving certification applications from 10 of 11 regions. The process has given IOOS credibility and shows evolution of the IOOS program.
- A test case is underway in Long Beach, CA, to show the increased revenue that can be generated by high resolution forecasts of bridge clearance; it is estimated that a one foot change in pitch can translate to an 11 ft depth change for some deep draft vessels.
- Congratulations was extended to GCOOS for efforts related to the hill briefings, DMAC leadership, outreach and education accomplishments, coordination of an extensive partnership network, the HealthMap project and more.
- Bill Woodward, funded by BOEM, is the new ATN lead at IOOS;
- A draft of the 2018-2022 IOOS Strategic Plan is expected to be ready for review this summer.
- Two National Weather Service WFOs are being funded to test the feasibility of using second order HFR returns to get at significant wave height/wave energy to support operations.
- IOOS has a cooperative agreement with Surfline to get cameras for video feeds on surf conditions.

IOOS Association

Josie Quintrell provided an update on activities of the IOOS Association. Serious budget cuts are proposed across the federal government to provide a $54B increase for defense with no new money. On the table are discussions that would zero out $250M in targeted NOAA grants and programs supporting coastal and marine management research, and education, including Sea Grant. A 30% cut to EPA is proposed. As an extramural program, we are vulnerable. Topics discussed during the presentation include the following:

- Closing the Gaps campaign: despite a successful phase 2 which got senate and house approval for a $2M increase in the IOOS FY18-23 budget, Congress did not pass a budget so we are under Continuing Resolution until April 28. It is currently unknown if FY18 funds will be available.
- Engage your representatives: Gaining support is critical to keep IOOS in the budget, especially with the current OMB leader who only wants to fund authorized programs. Senators Cantwell and Wicker are expected to reintroduce Senate S1886 this spring. Congressional outreach, with focus on maritime transportation, is especially needed.
- HFR: a working group is looking at how to get O&M funds for HFR and how to track usage. Carl says that within one $29M line item is $5M for HFR. Of the $5M, $1M is for the coastal ocean test bed, $1M for ACT and the remaining $3M will support OTT-funded projects.

Naval Oceanographic Office

Dr. Bill Burnett, Deputy Commander and Technical Director to the Commander, Navy Meteorology and Oceanography Command, provided an overview of the Navy's efforts focused on Unmanned Systems. Highlights from his presentation included the following:

- Unmanned Systems are critical for the Navy. There is an Unmanned Systems Operational Demonstration planned for the MS Gulf Coast, 30 May to 1 June 2017. Testing will take place in shallow and deepwater areas with the goal of getting high resolution data to NDBC for use in modeling the environment to better fly vehicles.
- An international demonstration of unmanned systems is planned in 2019. Dr. Burnett says to let him know if interested in participating.
- Task Force Ocean: It is critical to understand ocean sciences for tactical advantage. The Department of Defense has interest in learning where the gaps are and providing funds to fill. He stated, "We live and die by your observations and vice versa."
- By the numbers: 70% of the planet is water; 80% of people live along the coast; 90% of commerce is on the seas; and 99% of communications are across oceans.
- Work is underway in MS Sound to build infrastructure to train, license and deploy unmanned systems; see below for a description of the USM five-week certification program.
- NAVO has about 100 gliders; there is interest to make these useful to GCOOS and industry. The governor of MS has put money from DWH to NOARC to acquire more unmanned systems.

Following Dr. Burnett's presentation, the floor was opened to discussion. Dr. Burnett was candid about the need for IOOS to share with the Navy while the Navy might not necessarily be able to share with IOOS. In addition to GCOOS data, the Navy uses other IOOS data to improve models and knowledge of the whole environment. Nick Shay's team at the University of Miami is using unmanned systems deployed from C130 and NOAA aircraft to obtain boundary layer measurements.

University of Southern Mississippi's Ocean Sciences and Technology Program

Dr. Monty Graham provided an overview of the value of the Gulf to Mississippi's economy and USM's Ocean Sciences & Technology Program. Although only having 80 miles of coastline, the state has a tremendous reliance on the Gulf, contributing to its $14.96B GDP through more than 51,000 ocean-related jobs. The new USM program is being developed to provide technology-focused workforce development. The Unmanned Maritime Systems Certification requires three courses, practical exercises in shallow and deep water, decision making and troubleshooting. There are three tiers of certification, novice, journeyman and expert, and sessions offered in spring for U.S. Navy personnel and in fall for civilians.

Marine Biodiversity Observation Network

Dr. Frank Muller-Karger presented to the group via teleconference. He summarized activities of the Group on Earth Observations Biodiversity Observation Network (GEOBON) and the Marine Biodiversity Observation Network (MBON). Highlights of his presentation include the following:

- GCOOS receives a variety of data from MBON including time series abundance of certain fish species and indices of the number of species. The current interface is too complicated for most users so working on a simpler one.
- To better understand how life in the sea will change if biogeochemistry changes, seascapes showing statistical relationships among pixels of data are being created. The goal is to have a product by October to contribute to the international group. Current work is on comparing virus types and abundance across different seascapes.
- Costing out operational research dollars for biological systems in a scalable way is how IOC prefers it to be done. MBON and ATN are working on a task team to identify first tier operational needs. A group in France, Bio-Argo, is using zooplankton cameras on Argos floats. However, their high power draw requires a cabled platform.
- The Special Committee on Oceanic Research (SCOR) is seeking proposals to identify technologies that can be incorporated into the Global Ocean Observing System. Contact Frank if interested.
- Sanctuaries MBON, with Frank at the helm, is the proud recipient of the 2016 National Ocean Partnership Program Excellence in Partnering Award.

National Academies of Science, Engineering, and Medicine

Dr. Sarah Graves, presenting on behalf of Chris Elfring, informed the group that the Committee on Advancing Understanding of Gulf of Mexico Loop Current Dynamics was meeting the same time as the GCOOS Board. Nick Shay commented that the committee is focused on oil and gas and suggested the task be made broader; upper ocean thermodynamics are important for rapid intensification of hurricanes, and air-sea interactions over the Loop Current don't only affect the Gulf but the entire eastern seaboard.

Products and Services Advisory Council Meeting

Dr. Shin Kobara and Grant Craig provided a summary of the GCOOS PSAC meeting, held in conjunction with the Outreach and Education Council meeting, November, 2016, in New Orleans, LA. Products were discussed in the context of the four GCOOS priority areas: Marine Operations, Coastal Hazards, Healthy Ecosystems and Living Resources, and Human Health and Safety. See the PSAC meeting report for meeting outcomes.

An update on products was also provided by Kobara. Included were Environmental Anomaly Data Maps and Water Quality Data, RESTORE Act and bathymetry demonstrations, and fish spawning aggregations in the Gulf of Mexico. For more information on these products, contact Dr. Kobara at shinichi@tamu.edu. Anomalies on different times scales (e.g., monthly, seasonal, annual) can be selected. Interest was expressed in being able to visualize the change in hypoxic bottom water over time. Chad Lembke offered USF bathymetry data for GCOOS to incorporate.

GCOOS Outreach and Education

Dr. Chris Simoniello provided a summary of GCOOS O/E activities. These activities were leveraged with outreach supporting the MBON project and a min-grant from the NOAA Climate Stewards Education Project. Highlights include the following:

- Weekly hands-on lessons during the 2016-17 school year were developed and taught to K-5 students in two schools, one a Title 1 school. Professional Development was extended to K-

12 educators in five schools, three of these with Title 1 status. The work led to leading a $1.5M proposal for Magnet School Assistance Program funding supporting the county's Bridging the Achievement Gap Campaign.

- The GCOOS OEC met in November 2016 to identify next steps for further development of the Citizen Science Data Portal. Expansion direction is pending the outcome of a National Academies proposal review. The OEC also collaborated with the PSAC to identify and prioritize needed regional products; and participated in professional development to gain skills to implement GLOBE Observer app development aimed at crowd sourcing the tracking of Zika-carrying mosquito species in the GoM. Contributions to this NSF-funded project will be included in a 4-part PBS series *Crowd In the Cloud*, exploring the new frontier of citizen science in the age of mobile technology. See the 2016 OEC meeting report.
- In addition to targeted outreach to formal and informal educators and the public, efforts this reporting period engaged flood plain managers, undergraduate and graduate students, emergency managers and NGOs.
- GCOOS O/E work led to an invite to showcase Gulf monitoring in a television broadcast by Xploration Station, Season 4 Xploration Awesome Planet, hosted by Philippe Cousteau. Filming will take place in New Orleans, LA, May 2017.
- The GCOOS Citizen Science Data Portal team, led by Kobara and Simoniello, is a 2017 EPA Gulf Guardian award winner.

GCOOS Gulf Glider Task Team

GCOOS Gulf Glider Task Team Chair Chad Lembke provided an update on team activities, including participation in the U.S. underwater glider workshop. He stated that user group discussions are coming online and that he has a promotional video from the Navy that he can share. Glider data to GCOOS is passed to IOOS and subsurface data is getting to the GTS in a timely manner. Carl said it is important to determine how to quantify the glider information passing from GCOOS to IOOS and the GTS. Sensors on gliders are not yet accurate enough to quantify small scale changes in flow but crude measurements of velocity based on real vs plotted glider course offset can be made.

GCOOS Data Management and Communications

Dr. Matthew Howard provided a summary of GCOOS DMAC activities. See Howard's presentation for a full description. GCOOS recently became an Earth Science Information Partners (ESIP) member. NOAA/ NASA are long-term funders of ESIP which was created to aid scientific reproducibility through referencing precise data, adhering to rigorous data stewardship and curation practices, ensuring transparency and accountability, and aiding in tracking the impact and use of data sets. Upcoming DM efforts will focus on participation in the June 2017 Deepwater Horizon Long Term Data Management Coordination Workshop; NOAA Marine Modeling Work Group; and establishing a single page hurricane bulletin on the GCOOS website in preparation for hurricane season. Congratulations was extended to Matt for writing Chapter 5 of the National Academies report "*Effective Monitoring to Evaluate Ecological Restoration in the Gulf of Mexico*."

Following Matt's presentation, Nadine Slimak, GCOOS communications contractor, provided a summary of projects she has been developing with GCOOS staff. In addition to the highly praised press releases,

she continues to lead efforts on the GCOOS newsletter and led the design and development of the Strategic Plan.

Jennifer Vreeland, the newest GCOOS staff member, was welcomed by the team. She provided a summary of her efforts working with the NOAA office to ramp up the Gulf Coastal Ocean Acidification Network.

Eric Milbrandt, Sanibel-Captiva Conservation Foundation (SCCF), updated the group on his RECON efforts via teleconference. SCCF has a new website for boaters and fishermen with wave height, water level/coastal inundation and hazards being of most interest. Much of their work focuses on healthy ecosystems and living resources, especially nutrients, shifting salinity levels and biological indicators. Data are used weekly in USACOE reports and those of state and federal agencies with recommendations for lake operations and water management. SCCC has funding to deploy a wave height buoy next year. IOOS is working with CO-OPS to determine how to ingest regional water level data and Carl will possibly use RECON information when capabilities are in place. Kudos from the Board were extended to SCCF for linking their progress report to the GCOOS Strategic Plan and Buildout Plan.

Jordon Beckler, Mote Marine Laboratory (MML), expressed gratitude to GCOOS for expanding his network broadly as an early career scientist. He is currently maintaining two fixed locations with OPD sensors and working with GCOOS staff on outreach and education related to his Ocean Technology club. He thanked Bob Currier stating that Gandalf has enabled him to double the time his gliders are in the water because he can focus more on the science and less on the IT burden. He was excited to share work using two new instruments: an *In situ* toxin analyzer (HPLC) and next generation OPD, expected to be deployed fall 2017. This will have colorimetric and iron detection capabilities. He is currently working with GCOOS O/E to develop an interactive exhibit related to his work at MML for their public aquarium.

Tracy Fanara provided an update on the MML Beach Conditions Reporting System (BCRS) and contributions from Bob Currier's HABscope camera-microscope work. The product accelerates counts of *Karenia brevis* cells, cutting sampling time to five minutes, and gets uploaded to NOAA's real-time respiratory site. Volunteer training is intense, with four people (2 citizens, 1 lifeguard and 1 FWC employee) currently trained. Reports are made daily and videos uploaded to Currier. Nick Shay suggested that the source of HABs might be identified by backtracking using surface currents measured from Bob Weisberg's nearby HFR system. Simoniello and Craig offered assistance identifying potential volunteers in Pinellas County to be trained to use the HABscope. Tracy said she is looking into a Citizen Science app for HABS—a separate link on the BCRS site where people can report HAB effects they experience. Joe Swaykos commented that it is exciting to see young scientists enthusiastic about this work and that it bodes well for the future.

Appendix **A**: Members Meeting Attendees—

Dr. William Burnett	Deputy Commander & Technical Director Commander, Naval Meteorology and Oceanography Command, U.S. Navy
Barb Kirkpatrick	Executive Director, GCOOS
Bill Lingsch	Vencore, Inc. /GCOOS Board Chair

Chris Simoniello	GCOOS
Jean May-Brett	LSTA/LATU
Carl Gouldman	Director, IOOS
Alyssa Dausman	Science Director, Gulf Coast Ecosystem Restoration Council
Mike Spranger	USF/GCOOS Board of Directors
Dave Driver	BP/GCOOS Board of Directors
Nancy Rabalais	LSU/LUMCON/GCOOS Board of Directors
Stephen Howden	USM/GCOOS Board of Directors
Steve Buschang	Texas General Land Office/GCOOS Board of Directors
Jan van Smirren	BMT Group/GCOOS Board of Directors
Gary Jeffress	TAMU-CC/ GCOOS Board of Directors
Rebecca Green	BOEM
Joe Swaykos	NOAA National Data Buoy Center/GCOOS Board of Directors
Terry McPherson	LMI/GCOOD Board of Directors
Sarah Graves	UAB Huntsville/GCOOS Board of Directors
Matthew Howard	GCOOS/TAMU
Jen Vreeland	GCOOS
Nadine Slimak	GCOOS
Jerry Madden	Shreveport Sail and Power Squadron
Alex Scott	CB&I
Chad Lembke	USF
Shin Kobara	GCOOS
Grant Craig	GCOOS
Monty Graham	USM
Virgil Sutherland	Anthropocene Institute
Kathleen O'keife	Fl FWC
Steve Ashby	NGI
Nick Shay	UM/RSMAS
Julie Bosch	NOAA/NCEI
Phillip Hoffmann	NOAA-OAR
Brian Milan	LSU
Josie Quintrell	IOOS
Pack Leung	Shell
Dianne Lindstedt	SeaGrant/LSU
Jerry Hurkens	Subsea Technologies
Jordan Beckler	Mote Marine Laboratories
Tracy Fanara	Mote Marine Laboratories
Tom Soniat	Oyster Sentinel
Bryan Mensi	Navy
Chunyan Li	LSU

Appendix **B**: March 22,24 2017 **BOD** Meeting Agenda-

March 22 and 24, 2017 GCOOS-RA Board meeting

Wednesday, March 22nd

8:30 – 9:00- Check in and light breakfast

9:00 – 9:15 – Approval of the Agenda – Bill Lingsch

9:15 – 9:30 – Welcome and Opening remarks by Board chair – Bill Lingsch

9:30 – 10:00 – Director's report- 'uncut'/using provided budget template – Kirkpatrick

10:00- 10:15 – Discussion/Comments - Open

10:15- 10:30 – Coffee Break

10:30 – 11:00 –Term Limits and Length of Terms (action item from Sept 2016 meeting) - Joe Swaykos

11:00 – 11:45 Board member Protocols and Contingencies – Joe Swaykos 11:45 – 1:00 Lunch (provided)

1:00 – 1:30 Review of the by laws regarding staff positions – Terry McPherson 1:30 – 3:00 Open discussion/topics by Board - All

3:00- 3:30 – Coffee break

3:30 – 3:45 – Selection of dates/location for Spring 2018 meeting - Barb

3:45 – 4:00 Travel reimbursement changes/W9s- Jen

4:00 – 5:00 Recap of day's discussions – Bill/Barb

6 pm Meet in hotel lobby for drinks (optional)

6:45pm Leave for dinner at The Bombay Club (15 minute walk or by cab)

(optional)

Friday, March 24, 2017

8:30 – 9:00 Check in and light breakfast

9:00- 10:30 Review of Wednesday and Thursday and follow up discussion/actions – Bill/Barb

10:30- 10:40 Announcement of Board elections results- Bill

10:40 – 11:00 Coffee break

11:00 – Noon Executive committee meets - All

Appendix **C**: March 23, 2017 Members Meeting Agenda:

March 23, 2017 GCOOS-RA Members and Board meeting
Le Pavillion Hotel, New Orleans, LA
Thursday, March 23rd, Morning

8:30 to 9:00 Check in and Light breakfast

9:00 – 9:10 Welcome and Introductions

9:10-9:15 Remarks from the President and Chair of the Board – Bill Lingsch

9:15-9:20 Adoption of Agenda

9:20- 10:00 Overview of key accomplishments during the last year – Dr. Barbara Kirkpatrick

10:00- 10:30 Vision of IOOS – New IOOS program director, Carl Gouldman

10:30- 10:45 Break

10:45- 11:15- Hill briefing/Gaps campaign – Josie Quintrell, IOOS Association

11:15 - 11:30 NAS Gulf Research Program Update- Chris Elfring, Executive Director (providing slides)

11:30- Noon Gulf of Mexico Operational Demonstration (GOMOD) Update, Dr. William Burnett, Navy Meteorology and Oceanography Command (NMOC)

12:00 – 12:15 Comments from representatives from Senatorial or Congressional offices

12:15- 1:15 pm Lunch (provided)

Afternoon
1:15- 1:35 The Marine Biodiversity Observing Network (MBON) Frank Muller Karger, USF

1:35- 2:00 The Ocean Engineering Program at USM, Monty Graham, USM

2:00- 3:00 Products and Services Advisory Council report- Ken Barbour and Shin Kobara

Outreach and Education report – Chris Verlinde and Chris Simoniello

Glider workshop/task team report out- Chad Lembke and Barb Kirkpatrick

3:00- 3:30 Break

3:30 – 3:45 Data Management, Matt Howard

3:45- 4:00 Communications -Nadine Slimak

4:00 – 4:15 GCAN (Gulf of Mexico Ocean Acidification Network) Jen Vreeland report

4:15 – 5:00 Subaward reports- Milbrandt, Fanara, Beckler

5:00- 5:30 Discussion of today's presentations and action items needed
5:30 Adjourn