



GCOOS FALL BOARD and MEMBERS' MEETING

Virtual

10 & 12 OCTOBER 2023

10 October 2023 - Open Board Meeting

Meeting notes – Chris Simoniello

Participating Board Members: Alyssa Dausman (joined at 2:05), Dave Driver (arrived 1:15, after intros), Sara Graves, Pat Hogan, Stephan Howden, Kate Hubbard, Kirsten Larsen, Ruth Perry, Bill Lingsch, Nick Shay, Joe Swaykos, Nan Walker, Tom Wissing, Kim Yates

Missing Board Members: Suraida Nanez-James, Antonietta Quigg, Jan van Smirren

Participating Staff Members: Jorge Brenner, Grant Craig, Bob Currier, Hannah Dillahunt, Felimon Gayanilo, Barb Kirkpatrick, Uchenna Nwankwo, Tuomo Saari, Chris Simoniello, Nadine Slimak, Jennifer Vreeland

(Not sure if Laura, Sandeep or Solomon joined?)

Welcome: GCOOS Board Chair Kirsten Larsen welcomed everyone and reviewed the agenda. Brief board introductions were made.

GCOOS Updates (see slides): GCOOS Executive Director Dr. Jorge Brenner thanked everyone for joining. He welcomed new board, staff and members to GCOOS. The Y3 IOOS award to GCOOS is ~\$3.6M and began July 1st. We are also managing 8 other projects, some with IOOS funds and others totaling about \$5M. There are five new data providers as part of the NTL and three additional radars. Tuomo is working on new biological data (reef fish visual data). The HAB team is working with TX Red Tide Rangers. GANDALF is not just handling Slocum gliders but a variety of autonomous platforms including Seagliders and Saildrones. There have been 23 missions totaling more than 1000 wet days. The work has supported planning and piloting for missions. Stakeholder engagement has included a survey of the National Marine Sanctuary staff for MBON development; facilitation support for the Center for Ocean Mapping and Innovative Technology for assessing needs for a Crowd Sourced Bathymetry network; and a survey to determine data monitoring for population, habitat and stressors for offshore cetaceans in the GoM as part of the CETACEAN project. GCAN has recent website updates, is working to expand collaborations

with other CANs and is participating in a project to create an international story map for OA. New GCOOS PI Catherine Hancock is installing a radar in Panama City that will be managed with USM and serve to fill gaps in surface currents. Dr. Kevin Xu, LSU, received a ~\$5M grant to install a HFR network in LA. Inflation Reduction Act project proposals are about to get underway—please reach out to GCOOS if you have ideas or are aware of critical gaps in observations. IOOS will receive about \$100M for 5 yr projects. There will be two topics: for Topic 1, each RA will receive about \$5M; for Topic 2, there must be collaborations across RAs and funds will be competitively awarded.

Questions? No questions were asked. Kirsten commented that IRA funding is a big deal in NOAA and they are sending funding opportunities to communities through different grant programs.

Panel 1: Ocean Heat Data, Moderator—Dr. Pat Hogan, GCOOS Board Member

Pat explained that this panel was being held as a result of discussions at the last members meeting when there was an extreme heat wave in the south. He asked that questions be held until all panelists had presented.

Zhankun Wang (NOAA/NCEI), *"Upper Oceanic Warming in the Gulf of Mexico between 1950 and 2020"* (See slides). Tim Boyer, James Reagan and Pat H are collaborators on this work. The goal is to quantify warming trends in the GoM and determine relation to hurricanes and SLR. The team created spatial maps for every 5 years since 1951 using data from the World Ocean Database. There's been an average SST increase of about 1 C since 1970. The largest warming has been in the upper 50m but also see a signal down to ~200m. ECCO provides better flux estimates of warming. Based on 2023 papers, acceleration of SLR is of concern; there has been a rate increase since 2010. At the same time, there is also a rate increase in SST—contributing to thermosteric SLR. The rate of SST increase in the GoM is about 2x the world avg. The team is investigating the role of the Loop Current.

Nan Walker (LSU), *"Sea Surface Temperature Evolution in the Gulf of Mexico from April through September 2023"* (See slides). Co-authors are Alaric Haag, Robert Leben for SSH, and Pat Hogan for SST anomaly maps. Using the new advanced baseline imager GOES-East, the team looked at upwelled areas in the northern Gulf and Texas coast near Yucatan where water temperatures were 24 C compared to the broader Gulf with water at 31C. They investigated SST in spring 2023 to see patterns and the time evolution of changes and relations to monthly SST climatological values. Data were grabbed from Google cloud and composite images from over 1 night created. The LC has been active since last year; you can see story maps showing eddy shedding and reattachment on the ESL website. Stratification due to FW input can cause rapid heating of Gulf SST. High pressure systems/weaker winds could help to explain warm water. Low wind fields and fewer clouds lead to more rapid increases in temperature. Why wasn't the SST anomaly greater than 1C? The high heat capacity of water compared to land means a lot more energy is needed to change SST relative to land. Also, the heat input to water is spread over many meters in the vertical; not so for land. An atmospheric anomaly over land might have been less extreme over the GoM.

Brian Dzwonkowski (USA), *"Marine Heat Waves in the Gulf of Mexico"* (See slides) Temperatures need to be five days above the 90th percentile to be considered a heat wave but there are also other definitions. Finding subsurface ocean T data can be very challenging--long-term time series data for bottom water is very limited. Warming impacts on weather and ecology lead to economic impacts. Over the last four years, marine heat wave indicators are getting worse—more intense in N. GoM than Southern GoM. This is of concern because the heat is a source of energy for hurricanes. Also demonstrated impacts on

oyster recruitment—high number of days with high heat leads to poor oyster recruitment year. The cause of the correlation is uncertain—a lot of mechanisms possible with extreme heat. Extreme conditions of heat one year can inform management for subsequent year. SST is generally a good way to indicate MHW. Need long-term time series, especially at depth to predict with more accuracy.

Deepwater glider missions on a regular basis can help fill the data gap; also more Argo floats in the GoM and more modeling to address in situ data challenges.

Nick Shay (UM RSMAS), "*Oceanic Heat Content Variability in the IntraAmerican Seas: Implications for Hurricane Intensity*" (See slides) Nick and new student David Noonan are investigating an OHC 24 yr-evaluated product. The Caribbean warm pool plays big role in GoM temperatures. When Hurricane Opal hit in 1995, intensification from a Cat 1 to Cat 4 as it passed over a LC eddy caught forecasters by surprise. Depths of the 26 C isotherm and mixed layer are critical to know. He is using SST and blending altimeter data to get the SSH anomaly field. There is a lot to learn about how El Nino impacts the Caribbean and GoM. In 2015, H. Patricia rapidly developed to a Cat 5 storm. Currently, El Nino's effect on OHC is not what it was in 2015—it is now 2-3x higher than in non-El Nino years. There is great interest in understanding the relationship between El Nino and sea level pressure in the Caribbean, GoM and main development region—a typical high pressure in the tropical Atlantic-- and shifting of Walker circulation during El Nino. Enhanced shear over the Caribbean during El Nino years could dampen storms but there is a lot of push and pull at play that depends on things like storm strength, and atmospheric shear vs. what is happening in the ocean. Work needs to be done to determine key drivers that influence the threshold for intensity change. Work in progress is looking at the heat and fuel that the NW Caribbean provides to the GoM—via subtropical water through the Caribbean basin warm pool. This in turn affects the mixed layer depth (typically ~50-60 m) and the 26 C isotherm, which varies to about 150 m. Nick said gliders and floats are going into the western side of the FL Strait, down to about 2000m, to measure ocean shear, and shear-induced mixing to better understand SST responses. The information will also help deduce 3D upwelling that occurs.

Questions: Stephan asked about high salinity east of the MS delta in the N GoM in July; it seems that MS River water was pushed east for a longer period of time this summer, possibly associated with upwelling. Did Nan or others notice this? Nan responded that it is a normal phenomenon for westerly winds to blow MS River water to the east toward the MS-AL shelf, but she had not looked at the details of this. There was less river water in late spring/summer than usual but even though it was quite low, there's still major river discharge all the time. Upwelling possibly explains the higher salinity—it was amazing in July but diminished by August. It is interesting that MS river water is colder than the GoM when it exists the river but warms rapidly to become some of the hottest Gulf water. Brian said swimming in the upwelled water was delightful! Nan said that the wind normally switches direction every 5-6 days, constantly fluctuating between upwelling/downwelling-favorable conditions, but for the period Stephan asked about, there were upwelling-favorable winds for an extended time. Brian confirmed that salinity values from sensors on his buoys were also higher than usual. Nan speculated as to other possible explanations saying that MS river spring floods were lower than normal so lack of freshwater might explain high salinity.

Nan asked about the number of rip current-related deaths in MS, AL and the FL Panhandle this year and if there's a possibility that upwelling and the interplay of wind and currents had anything to do with these. Brian said he heard about these in the news but not sure if any coupling had been done. Stephan said looking at the winds and waves could provide an indication. Nick said that rip currents are usually very small scale and that topography plays a big role compared to upwelling which is larger in scope. Pat commented that he saw more sharks than usual off the Chandeleur Islands and wondered if related to upwelling. Nick shared that sharks and tarpon follow the 26 C isotherm but not sure why. Brian asked

Zhankun about Marine Heat Wave trend information in a recent paper focused on the N. GoM. There seemed to be contrasting information about which parts of the Gulf are most affected. Stephan asked Nick about the amount of heat needed to drive storm intensification. He estimated that the threshold to intensify a storm is between 30 and 40 kJ/square meter. When moving over water like the LC, there is a more sustained heat flux; heat flux calculations using aircraft data show high heat flux along frontal structures—places where you go from cold to warm or warm to cold tend to be high action areas for tropical cyclones.

Panel 2: Offshore Wind Data, Moderator—Dr. Ruth Perry, GCOOS Board Member

OSW is a hot topic in the North Atlantic, California and more recently, the GoM. IOOS is interested in data sharing and a role in serving public/private partnerships. Projects will be about 30-40 years in duration—5-7 year planning, ~30 yr operations, then decommissioning. Many places don't have existing offshore infrastructures and support services like the GoM. What does data look like for OSW? Where can IOOS play a role? What are developers' perspectives on data and partnerships?

Tershara Matthews (Offshore Wind Policy Leader, WSP USA), *“Environmental Data Collection Over the Lifetime of an Offshore Wind Project”*

(No presentation) Tershara has 14 years of regulatory experience, mainly on the BOEM management side of things, including the development of the agency's first renewable programs. For identifying potential wind areas in GoM, they reached out to NOAA because they'd already done marine spatial planning to scope aquaculture sites. They decided something similar was needed for OSW, including understanding stakeholder concerns. They built off NOAA's survey to include questions about physical constraints with oil and gas, existing platforms, natural concerns like muddy slopes, restored areas from the DWH, wildlife refuges, considerations for fisheries and shoreline birds, data needs, and front end planning with end users.

Daniel Doolittle (Principle, Integral), *“Data Collection During the Site Assessment and Characterization Phases to Inform COP Development”*

(See slides) What does data look like? Very unwieldy! NEPA process and EIS for OSW farm development—if it seems unfamiliar, welcome to the club! It is an emerging industry. There are currently only seven active turbines in US waters, with a number of foundations and elements being installed this summer. He has been working in OSW since 2011, first in the Netherlands then for the Block Island wind farm in RI since 2016. There is concern over acoustic noise impacts of OSW. Companies have one year to assess a mile-high view of what is contained in their lease area and what they should be concerned about. BOEM is looking for two key metrics—data completeness and sufficiency. New rule-making steps are in progress and the industry is learning as we go. There are myriad data sets—the beginning of a new ocean data revolution that Dan's not seen in his career—including the density, resolution and growing openness to share information. It is now common to have 200-300 per cent overlap in sonar bathymetry data, previously unheard of in the industry. This is driving innovations previously not seen. There are usually one or two buoys in a lease area to allow developers to assess resources—how much wind is there; how much energy can be generated to sell? Strong private-public partnerships are very important. NERACOOS and MARACOOS are currently hosting OSW data. There are numerous reports, guiding activities, data types and surveys (e.g., COP) to feed NEPA assessments, including socioeconomic and social data.

Joel Southall (Manager of Environmental Affairs and Sustainability, RWE Offshore Wind GmbH), *“A Developer's Perspective on Data Collection”* (See slides) RWE was the first lease winner in the GoM. They

are active developers in CA and the east coast. Their approach to OSW is to lay the groundwork for development and monitoring, working with stakeholders and partners to put all the pieces together for a large-scale plan. The GoM lease they won (Lake Charles lease) is about 44 mi off the coast of LA in 10-25 m depth. It spans a little over 1000 sq acres (roughly ~13 mi x 13 mi) and has an excellent infrastructure and supply chain. RWE needs a space for forums to talk with multiple partners, focused on cooperative research and monitoring. Working with partners is important to help with the synthesis part of the information and also for standardizing data. Biological data is also of interest.

Questions: Stephan commented that cabled observatories are rare because they are expensive and asked if the OSW farms that cables with power and communication that could be used as nodes for undersea observatories. Daniel said there's always a treasure trove of good ideas and this is one. However, there's a challenge with the insurability of cable and infrastructure (turbines, foundations). The past can inform where we're going but not necessarily a predictor of the future, especially with the evolution of developer thinking. Anything is possible and it is technically doable. We should be thinking about a mechanism to address insurability and unintended financial cost to wind farms. Joel said this is an interesting idea with promise but there's still uncertainty; if not a node on a cabled observatory, perhaps a NTL-like approach with information to a central location. Ruth says NJ already has platforms of opportunity. Frank Muller-Karger shared information about MBON biological standards and observations into IOOS—if Joel is seeking standards and an interoperable framework, they should talk with GCOOS and SECOORA. Joel thanked Frank and said that when he started with this in 2020, there were a lot of standardization issues. RWE participated in biological baseline surveys on the west coast with an informal group (5 west coast lease areas) and there were standardization issues. They wrote a white paper on methodology, data and storage. When writing a contract for someone to collect data, the ability to provide a guidance document with the contract makes it easier, more consistent and leads to better projects. Frank asked if GCOOS could help connect Joel with MBON to discuss shared standards.

ACTION follow up with Frank and Joel re data standards.

Tershara was asked if wind farm operators will have to submit data to BOEM or NOAA, similar to how the oil and gas community submits ADCP data to GCOOS (previously NDBC). BOEM and NOAA are currently discussing this. In the past, this was considered proprietary data and a decision was not made prior to her departure from BOEM. Dan asked why she thought the wind industry isn't receiving NTLs and if they can be expected in the future. Tershara says yes, she sees them coming in future and reminded people that NTLs do not regulate, they help to inform. There are no NTLs in place for the OSW industry and it takes a long time to get through the NTL process. Ruth asked what other role there might be for IOOS to facilitate data sharing with the OSW industry. Tershara thinks there is a critical need to help understand the path of hurricanes as projects grow. There will be different impacts from storms on wind turbines vs oil and gas platforms; suitability information is needed. Pat asked about the hurricane resilience of structures e.g., features like folding blades and designs that decrease wind resistance. There is a long delay from the time a block is leased to the actual production of energy---almost 10 yrs. Is this similar to the development of an oil and gas field? Dan said the OSW regulations written under the Obama administration were designed for a few small projects to come online—not large-scale. BOEM does upfront compliance for large-scale projects but there is currently no clear train of authority—BOEM, BSEE, NEPA process are all part of the process. The O&G industry has a more streamlined approach with NEPA. The US needs to figure out how to more rapidly install wind turbines. CA legislation is endeavoring to accelerate the permitting process, not by being less rigorous with oversight/inspection but on the administrative side. The conversation about the role for IOOS can possibly be continued at the GCOOS Spring meeting. There was interest for GCOOS to lead

conversations and provide a space for discussions. There was a comment about the joint industry project on genomic standards, possibly being released at the end of 2023.

4:10 – 4:30 p.m. GCOOS Investigator Reports (3-minute updates):
Moderator — Dr. Chris Simoniello, GCOOS Outreach and Education Manager

Frank Muller-Karger (USF), *“Continued Development of the US MBON”*

Alaric Haag (LSU), *“ESL Cloud-masked SST Layer for GCOOS Gandalf”*

Brian Dzwonkowski (DISL), *“Updates from ARCOS”*

Chad Lembke (USF), *“Glider Data Acquired During Hurricane Idalia”*

Darren Henrichs (TAMU), *“Continuing the HAB Early-warning System Using Imaging FlowCytobot Data in Texas”*

Eric Milbrandt (SCCF), *“Observations and Recovery from Hurricane Ian by the River, Estuary and Coastal Observing Network (RECON)”*

NO questions of speakers

Additional Topics and Discussion, Dr. Kim Yates, GCOOS Board Member
General Q/A no questions

Closing Remarks, Kirsten Larsen, GCOOS Board Chair: The spring meeting will be in person in TX, possibly in May in Galveston. There was interest in expanding the meeting so there could be an evening activity for participants to interact and possibly a student poster session. If you have topics of interest, please let us know.

12 October 2023 - Closed Board Meeting

Meeting notes – Chris Simoniello

GCOOS Board Chair Kirsten Larsen called the meeting to order at 1:05 ET, welcomed everyone and asked for a motion to approve the agenda. Sara made the motion, Joe second, and all in favor. Roll was then taken with the following members in attendance:

Alyssa Dausman, Pat Hogan, Stephan Howden, Kate Hubbard, Sara Graves, Kirsten Larsen, Bill Lingsch, Ruth Perry, Joe Swaykos and Kim Yates; Nan Walker and Tom Wissing arrived shortly after roll call.

Absentee board members: Dave Driver, Suraida Nanez-James, Antonietta Quigg, Nick Shay, and Jan van Smirren

Other participants included Jorge Brenner, Susan Fox, Carl Gouldman, Chris Simoniello and Jennifer Vreeland.

Kirsten thanked everyone for joining the October 10th members meeting and asked for thoughts about it. Sara thought presentations were great, providing a wealth of information from across the Gulf. Joe thought the topics were relevant and on target. Pat said there has been a lot of email communication following the MHW panel; a lot of interest was generated. The two panels (Marine Heat Waves and Offshore Wind) provided a nice balance between technical science and management applications. Kim commented on Ruth's suggestion that more time was needed for questions and discussion and also said we should have an open discussion block to hear from members, possibly to solicit input on topics for future panels. Stephan asked if an ad hoc MHW committee is needed for MWH and/or OSW. Pat said they already exist and there are other avenues where these things are being discussed, mainly because there is already a push from the administration with money to back them. Pat thanked everyone for allowing his panel speakers to use additional time on the agenda. Kim asked everyone to continue thinking about relevant topics for the next meeting. Stephan suggested that instead of ad hoc committees, there is a post-panel follow-up to inform people about opportunities to get involved; whether interested in science, regulatory issues or economic benefit, there should be a purpose for getting involved.

Discussion shifted to following up on GCOOS bylaw changes previously proposed. The two proposed changes are: 1) having an election process that requires board candidates to be vetted by the Executive Committee; and 2) Eliminating the requirement for Government Sector board representatives to be from both state and federal organizations. Kim made a motion to accept both bylaw changes, Stephan second, discussion ensued then all in favor. This change removes limitations to the Government Sector candidate pool that resulted from the federal to state ratio requirement. Kim said this could also open up new questions if we include international members down the road.

GCOOS Executive Director Dr. Jorge Brenner provided a budget overview prior to seeking approval for Year 3 GCOOS expenditures. Annual budget approval by the board is specified in the bylaws. (See slides) All GCOOS financial and technical reports were submitted on time and approved by IOOS. On the most recent IOOS five-year award, we received about \$2.5M in Y1, including ear mark funds from Senator Wicker, \$3.5M in Y2 and \$3.6M this year. In May, we were able to close out the previous five-year award which ended up being seven years after two no-cost extensions. We had \$13.1M for that award, with about \$95K going to IDC and unused subaward funds totaling ~\$40K. Jorge mentioned the possibility of hosting a webinar series to highlight the outcomes of the work under that award. There is still a funding disparity within the RA budgets. Stephan said he would be interested in looking at the history of IOOS RA investments over time, with an emphasis on the cumulative core funding vs. coastline distance. Tom asked if the numbers for supplemental add-ons are a one-time investment or given over multiple yrs. Jorge said these are cumulative values. The main Y3 IOOS award add-ons support gliders, HFR, HABS, and NTL, OA and MBON-related activities.

In addition to Y3 core and add-on funds, we have an additional \$600K from EPA but due to the timing of the IOOS fiscal year in October, funds will not likely arrive until January 2024. With these funds, GCOOS will exceed \$4M in Y3. Pat asked why MML and USF funds were higher than expected. Jorge explained in Y1 and Y2, MML lost glider capacity due to loss of staff. USF was given additional funds to supplement MML Y1 and 2 missions. MML regained glider capacity, so their budget was bumped up in Y3.

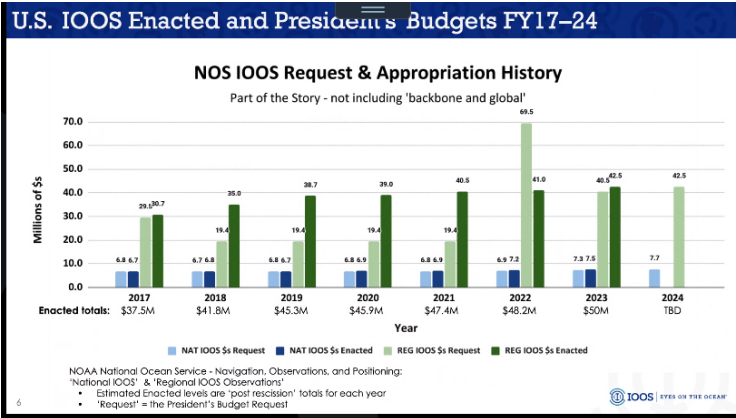
The Y3 IOOS budget includes: ~\$465K IDC; 28% for GCOOS salaries, travel, equipment and about 85% for subawards. This year, we sponsored GOMCON at \$25K. Additional IOOS funding includes 2 disaster

supplements and one BIL. Pat asked if we are aware of the National Academies master program for gliders. Jorge said yes and that Mexico was the first to deploy in the Yucatan. Mexican pilots are already sharing data on Gandalf. They resolved WFO and GTS issues. GERG and Rutgers are expected to deploy in late fall, and both will be on Gandalf. Steve DiMarco is coordinating the field program and Tony Knap is also coordinating through the Gulf glider group. BIL funding includes a new server for DMAC and increasing cloud service capabilities.

There are also several non-IOOS funded projects including: BOEM air quality and experimental Metocean data at \$235K/yr for 5 years (Felimon & Tuomo); COMT Galveston Bay model development and transition to operations with GERG, led by Kevin Xu of LSU at \$90K/yr for 3 years (Felimon, Chris, Jorge); NOPP MBON with USF to continue standardization of biological data on ERDDAP servers and support OE efforts at \$50K/yr for 5 years (Chris, Jorge, Tuomo); CPO MBON to conduct work similar to NOPP MBON at \$135K/yr for 3 years (Chris, Jorge, Tuomo). Pat asked if we handle most project deliverables in house or if we contract others; Ruth asked about the demands on staff and cautioned not to over-commit, especially with IRA funding coming soon. Deciding what projects to take on and what to avoid should consider cost/benefits of participation. Bill asked who the LSU COMT project will be transitioned to; Jorge will be discussing with Kevin at LSU next week. This is his first transitional role so need to figure out the process. Stephan asked about the MBON standards being tackled and if there are NCEI partners on the project. Emphasis is on processes for eDNA, acoustics, standardizing survey data and getting information into ERDDAP to enable sharing. There are NCEI folks engaged with U.S. MBON. Kate said EcoHAB recently announced another funding opportunity, and that PIs are heavily encouraged to work with RAs. LOIs are due next week so we may see an uptick in requests. Joe complimented Jorge on the great job he is doing managing complex budgets.

Several new participants joined the meeting: Carl Gouldman, Grant Craig, Felimon Gayanilo, Hannah Dillahunt, Tuomo Saari, Barb Kirkpatrick, and Bob Currier

Susan Fox, U.S. IOOS Regional Coordinator, provided an overview of Inflation Reduction Act Funding. She is based in Charleston, SC, and since early 2023 has coordinated the activities of five RAs: GCOOS, GLOS, NANOOS, PacIOOS, and SECOORA. In addition to managing our cooperative agreement, she supports budget execution, reviews progress reports and shares opportunities that align with the central tenets of IOOS: building a climate ready nation; making equity central to NOAA mission and accelerating growth in an information-based blue economy. She shared information about IOOS request and appropriation history from 2017-2027 (see image below).



Susan shared information about the three current NOAA IRA funding opportunities. These include: \$575M for the climate resilience regional challenge; \$100M for ocean-based climate resilience accelerators; and \$60M to support a climate-ready workforce.

Three Current NOAA IRA Funding Opportunities

Climate Resilience Regional Challenge
\$575 million

- Risk reduction
- Regional coordination and collaboration
- Equity and inclusion
- Enduring capacity

- Track 1: Regional Collaborative Building and Strategy Development (\$25M)
- Track 2: Implementation of Resilience and Adaptation Actions (\$550M)

Ocean-based Climate Resilience Accelerators
\$100 million

- Support businesses in commercializing technologies related to NOAA's mission to help communities prepare for, adapt to, and build resilience to climate challenges
- Renewable energy
- Carbon sequestration monitoring and accounting
- Hazard mitigation and coastal resilience
- Ecosystem services, incl. change

Climate Ready Workforce
\$60 million

- Training and support services to help American workers advance their careers and implement climate resilience efforts within public and private sectors

IOOS has two topic areas for RA funds: 1) \$55M for RA-specific outcomes to be divided equally and non-competitively among RAs (~\$5M each); and 2) \$45M for RA collaborations to be competitively awarded. Emphases will be on community resilience targeting frontline and overburdened communities; stakeholder engagement, new partnerships, equitable service delivery, advancing ocean information network capacity, and services addressing challenges society faces. Susan concluded by thanking GCOOS for recent highlights including filling vacant positions, being a leader at Oceans 2023 MTS, collaborating with the UGOS team and LSU COMT, progress on the CETACEAN project, building relationships with Mexican partners, and successfully completing the recertification process.

Pat asked who is eligible to apply and Stephan expanded to include international partners. Carl said specific requirements are identified in each NOFO but that he does not see a problem, especially for established partners. Other RAs have subawards with Canadian partners. Jorge said he was told a few months back that we could partner with Mexican colleagues and thanked Carl and his team at NOS who worked hard to get these funding opportunities to us. Pat asked how the cost estimates for O&M are determined; lab by lab or if there is a template. Carl said in the RFA, there is a section for RAs to document how they would maintain ability with core IOOS resources.

Funding Opportunity and Priorities Discussion (See slides) Jorge asked the GCOOS Board to guide determination of priority topics for GCOOS IRA proposals and to think about a process to write the proposals. There are only a few months before proposals are due (March 5, 2024) and the holidays are rapidly approaching. For Topic Area 2: Pan-regional or National Outcomes, there are guidelines stating what projects might address. These include: establishing a national network of water level observations; building on MBON and Sanctuary Watch to support ecosystem condition reporting; building capacity to ingest OSW data; supporting NHABON; building capabilities to forecast storm intensification, marine heatwaves and ecosystem change; building out an operational acoustic telemetry network; and creating sustainable communities of practice for the IOOS network.

Pat asked if we need to stand up a working group to help with proposals because there is a lot of content to consider, covering broad topics. How can we distill and prioritize to maximize opportunities? The water level network would build off work being done by SECOORA using low-cost sensors (~\$2500 each) and local networks for management. Information would support a variety of applications including inundation predictions for evacuation routes. When budgeting, you need to consider the costs of both sensors and the platforms they go on. Kim commented that we need to ID how new capabilities would be sustained in the long-term.

- Create Board teams to look at all possibilities and evaluate.
- Need a checklist of realistic costs, O&M, staff time, and transition to non-IRA funding.
- Technical expertise for recapitalization topics and expertise for products/dissemination is needed.
- Timeline: aim to ID projects in the next few weeks

Activities aimed at better serving marginalized communities, particularly indigenous and tribal peoples, can benefit by building on existing relationships and projects with the NOAA Regional Collaboration Team and LA Sea Grant. Joe reminded everyone we just updated the buildout plan so it would be a good place to start. Carl said that because the Topic 1 funding of \$5M is non-competitive, we can work with the IOOS office to refine and iterate on ideas. Susan will be running FAQ lists on the IOOS RA page. The page will also include ideas for Topic 2 and POCs for the different topics. Nan asked if GCOOS should include funding to improve dissemination of information on the website, specifying that some information does not show up well on Gandalf. It might be beneficial for her to have a conversation with Bob and Jorge about this. Stephan commented that there are likely long-term operational costs/updates for new observations and products we disseminate and asked if we need to write a business plan stating how things will be maintained beyond the funding period. Carl wants to see new products ramp up so said not to avoid building new products for fear we cannot sustain. We should outline how we will seek additional funding and what will happen if we do not (e.g., things get turned off).

Tom stated that we need to ramp up systems integration education for high school students across the GoM, perhaps submitting a proposal supporting the Climate Ready Workforce. LOIs for this are due soon. Nan proposed checking with current GCOOS PIs to see if they need funds for specific enhancements. We currently have subawards with 13 institutions, some of these with multiple projects. She and Bill agreed with the idea of reviewing the updated Build-out Plan. Sara asked if we could propose more than \$5M. Susan said we can but it is unlikely we would get and we should delineate very clearly what is over the \$5M priorities. It is unlikely any RA will not be asking for the full amount. The Excomm will be meeting within a week to discuss a proposal process. Pat said there are many initiatives,

e.g., OSW, carbon (not at the readiness level but could propose planning for the future), but which are most central to GCOOS? We need a good strategy and way to prioritize.

International Board and Other Members Discussion Dr. Kim Yates, GCOOS Board Member Kim and Joe followed up on the discussion about international participation on the GCOOS Board which started at the previous meeting. PacIOOS and NERACOOS both have international members with full voting rights. For NERACOOS, international seats (Canadian) are mandated in their by-laws. The main challenges are travel reimbursements and the longer lead times needed to get travel clearances. International members must be from a country that is part of the region defined by DOC/NOAA. PacIOOS is considering an ex-officio position for Australia that would be non-voting and not include travel expenses. MARACOOS has no restrictions for foreign nationals but currently none on the board. SECOORA has had Canadian nationals on the board (OTN) but no specific language in their by-laws about this.

Kim expressed that equity in decision making is important if we want to include representatives from Mexico. Non-US entities are currently considered associate members and do not have the right to vote. The easiest way forward is to make one change to the bylaws that allows foreign nationals to vote, ideally by the next election cycle. Joe thinks we should open an international position but not grow the board beyond 17. We should review the composition and number of board members. It should not take more than a year to institute a bylaw change if board members are actively participating. Bill said we already have colleagues participating in glider and HFR work so likely have good ideas for nominees. Sara asked what the benefit of board participation might be for Mexican colleagues. Bill asked if international members would be eligible for GCOOS funding. Jorge said TAMU has experience handling international budgets if IOOS approves and thinks the benefits of participation outweigh the challenges. Kim and Joe suggested that all Board members annually sign a statement saying they reviewed the full by-laws document and thought it would be good to do at the same time the COI forms are signed. Joe has one more year as past chair of the board after which time he plans to resign.

Board Engagement Kim said she thinks it is unacceptable that there are 10 members present but 17 board members. She emphasized there are responsibilities that go with being a board member and asked if we should consider reducing the size of the board. Pat reminded people that there used to be a rule about missing two consecutive meetings and that people who have not complied have been asked to step down. Next up for re-election will be Nick, Alyssa, Bill and Kate. Bill said we could use a phased process that lets us temporarily increase the board by one to get an international rep, then phase out another category as people come up for re-election. Stephan suggested including on the GCOOS Board web page information about responsibilities. Pat asked if we should bring back council, committee and task team reports at the meetings. The next COI forms are due before the spring meeting.

Spring Meeting Location and Agenda The current plan is to host the spring meeting in Galveston, TX, likely May 8-10 or the first week of May. Accommodations will likely be at the Tremont House which is about an eight-minute drive from TAMU-Galveston. Meeting space options include TAMU-Galveston and/or the hotel conference room. Antonietta is helping with logistics and asked for the open and closed board meetings to be at TAMU. The hotel is offering a rate of \$189/night and a discount on the conference space; Nan said May 8th is the week of LSU finals and also the Offshore Technology Conference (May 6-9) in Houston. Once dates are finalized, field trip options will be explored. Ruth might have some ideas. Several people preferred the meeting be held 1-3 May to avoid conflict with Ocea Technology Conference in Houston.

Kirsten thanked everyone for their participation before Stephan made a motion to adjourn, Joe second, and all in favor.