BUILD-OUT PLAN

Gulf of Mexico Observing System

Background

The Gulf of Mexico Coastal Ocean Observing System Regional Association (GCOOS-RA) is the stakeholder-based Gulf of Mexico regional component of the U.S. Integrated Ocean Observing System (IOOS) and is spearheading the development of the GCOOS. Our mission is to provide timely, reliable, and accurate information on the U.S. coastal and open ocean waters of the Gulf of Mexico to ensure a healthy, sustainable ocean and safe, resilient coastal communities.

Over the past 10 years, the GCOOS-RA has been working with many stakeholders. The collective expertise of these stakeholders has informed the development of a plan that includes the necessary elements for a comprehensive Gulf of Mexico Observing System. This flyer describes V.2.0 of the plan.

The Build-out Plan

The Build-out Plan for the Gulf of Mexico Observing System is a long-term vision of a Gulf regional observing and monitoring system based on stakeholder needs. It has been developed with input from subject matter experts, 16 stakeholder workshops, national observing system plans, plans of collaborators in a Gulf observing system such as the Gulf of Mexico Alliance, and through lessons learned from events, such as Hurricanes Katrina and Rita and the Deepwater Horizon Oil Spill. V.2.0 of the plan includes updates to all sections from V.1.0, originally developed prior to those events. The plan is a "living document" and will continue to change to reflect current Gulf needs.
http://gcoos.tamu.edu/BuildOut/BuildOutPlan-V2.pdf

How can the plan be used?

With its strong foundation in stakeholder and expert input, and its responsiveness to lessons learned from recent disasters, the plan can be used to help prioritize ocean and coastal observing and monitoring needs in the Gulf of Mexico. The plan helps outline what is involved in, and the costs of, a comprehensive gulf-wide observing system to meet a diversity of stakeholder needs. The needs and costs identified in the plan can be used to help justify funding requests and identify potential partnerships for meeting Gulf needs.

Plan Highlights

The plan includes the following components of a comprehensive observing system:

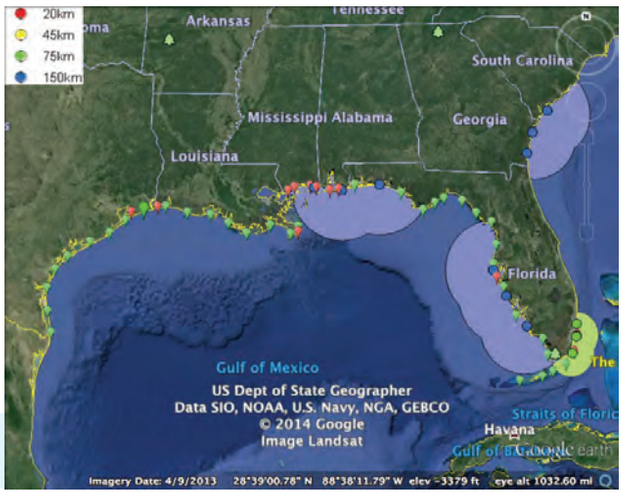
- Observing and monitoring;
- Data management and communications serving real-time, near real-time, and legacy data as well as data-based products and model output;
- Modeling and analysis;
- Outreach and education; and
- Estimated costs for the above.

Some highlights include:

- **Ecosystem Monitoring -** This section of the plan includes monitoring for Habitats, Living Marine Resources (fisheries, marine mammals, sea turtles, shore- and seabirds, plankton), and Restoration Projects. These priorities were identified from a review of existing Gulf plans and reports. For each priority, the plan includes: summaries of the management context and existing observing and monitoring capabilities, needs identified in existing plans and reports, needs identified by subject matter experts, and recommendations to improve comprehensive Gulf ecosystem observations.

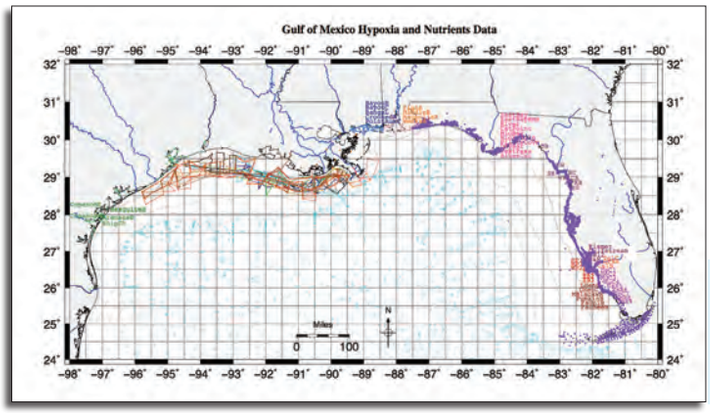
One of the Texas Automated Buoy System (TABS) buoys, deployed to efficiently direct State and Federal emergency responders. The buoys also provide real-time oceanographic and meteorological data through GCOOS, the State of Texas, and the National Data Buoy Center. (Credit: Texas A&M University Geochemical and Environmental Research Group)

- **Surface Currents and Waves Network -** This section includes a network of High Frequency (HF) radar to monitor surface currents and waves in near real-time along the U.S. Gulf of Mexico Coast. This network will provide critical data for oil spill tracking, safe marine navigation, water quality monitoring, storm forecasting, and restoration project monitoring. The network will build on the existing HF radar stations operated by the University of Southern Mississippi, University of South Florida, and University of Miami. Thirty-four additional HF radar stations are proposed. Each radar station can monitor up to hundreds of km of ocean surface, with data at spatial resolutions of 0.5-6.0 km. Visit the GCOOS Data Portal *(http://data.gcoos.org)*



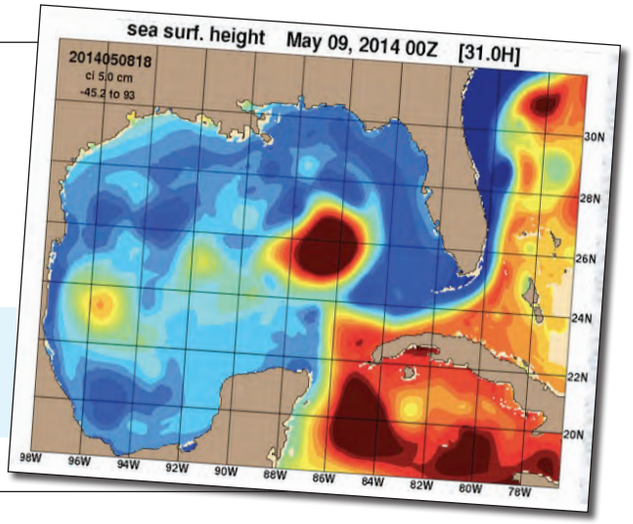
Existing and Proposed HF Radar Stations in the Gulf of Mexico. (Credit: GCOOS)

- **Data Portal and Products -** This section includes plans for the real-time and near real-time GCOOS Data Portal for the Gulf of Mexico. The plans include an expansion into other types of ecosystem data, the further development of an Integrated Water Quality Network Data Portal, entraining new data providers (including Citizen Scientists), and improving interfaces with the Modeling and Analysis subsystem. Plans for data products, such as processed satellite imagery, include decision-support tools tailored to specific users, such as State resource managers. *http://data.gcoos.org*



GCOOS staff are adding nutrients and hypoxia data to the GCOOS Data Portal with funding from IOOS and the Gulf of Mexico Alliance. This image shows nutrient and hypoxia data recently added to the portal. (Credit: GCOOS)

- **Modeling and Analysis -** The GCOOS-RA Modeling Task Team identified additional hydrodynamic and ecosystem modeling efforts to undertake and complement observations. One example is the development of a new viewer to interactively display the results of many Gulf of Mexico hydrodynamic models, as well as data.



Example model ensemble product of Gulf Sea Surface Height showing eddy separating from the Loop Current from GCOOS partner, the Naval Research Laboratory (Credit: NRL, Research Partnership to Secure Energy for America Program)

- **Outreach and Education -** This section includes: developing Outreach and Education (O/E) activities that support the GCOOS mission and the U.S. IOOS, developing activities that enhance ocean and climate literacy, facilitating dialogue among GCOOS information users and data providers, providing technology workforce and professional development opportunities, incorporating GCOOS data into Science-Technology-Engineering and Mathematics (STEM) education, and developing a Citizen Scientist element in GCOOS.

Costs

The plan includes an appendix of recommended enhancements for a Gulf of Mexico Observing System, with cost estimates for implementation.

Acknowledgements

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FMI, contact: *landry.bernard@gcoos.org* | *visit http://www.gcoos.org*