GCOOS Build-out Plan

Update and Ideas for the GOMA Data and Monitoring Team

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Gulf of Mexico Coastal Ocean Observing System Regional Association (GCOOS-RA)
Overview

• Quick History: GCOOS-RA
• GCOOS Build-out Plan (BOP) and timeline
• User requirements into BOP
• BOP alignment with Post-DWH needs
• BOP Implementation – current GCOOS-RA project examples
• Ideas for the Data and Monitoring PIT
Quick GCOOS-RA History

• Global Ocean Observing System >U.S. IOOS>GCOOS (2005)
• 5 themes of GCOOS
  – Public Health and Safety
  – Healthy Ecosystems and Water Quality
  – Mitigation of Effects of Coastal Hazards
  – Safe and Efficient Marine Operations
  – Long-Term Ocean Variability and Changes
• Membership and Partnership Model

Data Portal and Products:
• Integrated Data for Emergency, Resource Managers and Others
• Data Products for User Needs
• Integrated Data for Private Sector Use in Building Businesses
GCOOS Build-out Plan (BOP)
A long-term vision of a comprehensive Gulf observing system with costs

- **2009**: Integrated Coastal Ocean and Observing System Act (requires 10-year plan with gap analysis and cost estimates)
- **2011**: GCOOS-RA releases V.1.0 of the BOP
- **2014 and 2015**: GCOOS-RA releases V.2.0 and V.2.1

Post-DWH updates on broader ecosystem monitoring, enhancing water quality monitoring, improving DMAC and modeling
User Requirements into the BOP:

**6 Pathways**

- 17 GCOOS workshops+: 631Contributors from 297 organizations
- 90 existing plans: Requirements incorporated
- Email/listserv Requests for Information: 50 additional contributors

**GCOOS-RA Products and Services Advisory Committee**

**Other stakeholders’ meetings:** Direct engagement

**13 writing teams:** subject matter experts & Board Members
BOP Includes 19 Elements to Meet Common Stakeholder Priorities, with Cost Estimates

- Surface currents and waves network
- Fixed mooring network
- Autonomous meteorological measurement network,
- Glider and AUV network
- Satellite observations and products
- Aircraft observations
- Bathymetry and topography mapping network
- Water level network
- Enhanced PORTS® network
- Outreach and Education

- Harmful Algal Bloom Integrated Observing System
- Ecosystem monitoring
- Water quality and beach quality monitoring
- Hypoxia monitoring
- Monitoring of river discharge
- Physical modeling
- Ecosystem modeling
- Data management and communications system
- Research – input into new technology development
<table>
<thead>
<tr>
<th>RESTORE Priorities – Common Themes Across S.1603,1604,1605</th>
<th>GCOOS Build-out Plan Elements Examples</th>
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</thead>
<tbody>
<tr>
<td>Restoration and protection of fish, wildlife, and natural resources</td>
<td>Integrated Water Quality Monitoring Network, Ecosystem Monitoring, Ecosystem Modeling, Hypoxia Monitoring, Data Management, O/E</td>
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<tr>
<td>Restoration and protection of marine and coastal resources, including barrier islands, beaches, and wetlands</td>
<td>Bathymetry and Topography, River Discharge Monitoring, Enhanced Water Level Network, PORTS, Ecosystem Monitoring, Surface Currents &amp; Waves Network, Data Management, O/E</td>
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<tr>
<td>Restoration and protection of ecosystems</td>
<td>Ecosystem Monitoring, Ecosystem Modeling, Surface Currents and Waves, Data Management</td>
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<tr>
<td>Observing and monitoring</td>
<td>Observing System (14 Elements)</td>
</tr>
<tr>
<td>Restoration and protection of economy, sustainable development and sustainable technology</td>
<td>PORTS, Research and Development, Surface Currents and Waves, Circulation Modeling, Beach Monitoring</td>
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### BOP Includes Observations to Help Protect Valuable Ecosystem Services

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<tr>
<th>Ecosystem Services (NAS, 2013)</th>
<th>GCOOS BOP V.2.0 Section Examples</th>
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<tr>
<td>Provisioning services (e.g., material goods such as food, feed, fuel, and fiber)</td>
<td>Fisheries Monitoring, Physical and Ecosystem Modeling,</td>
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<td>Regulating services (e.g., climate regulation, flood control, water purification)</td>
<td>River Discharge to the Gulf, Enhanced Water Level Network, Integrated Water Quality Network, Autonomous Meteorological Stations, Harmful Algal Bloom Monitoring</td>
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<td>Cultural services (e.g., recreational, spiritual, aesthetic)</td>
<td>Beach Quality Monitoring, Surface Currents and Waves Network</td>
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<td>Supporting Services (e.g., nutrient cycling, primary productions, soil formation)</td>
<td>Integrated Water Quality Monitoring, Hypoxia Monitoring, Plankton Monitoring</td>
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**NAS. 2013. An Ecosystem Services Approach to Assessing the Impacts of the Deepwater Horizon Oil Spill in the Gulf of Mexico**
## BOP Implementation Examples and Relevance to GOMA PITs

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<tr>
<th>Implementation Project Example</th>
<th>Relevant to GOMA PITs</th>
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| Citizen Science Data Portal (Pilot Project partners: Galveston Bay Foundation, TX; Natures Academy, Bradenton, FL; FL Aquarium, Tampa, FL; GCOOS OEC)  
*Dr. Shin Kobara, GCOOS, Developer*                                                          | Data and Monitoring, Engagement & Education, Water Resources, Wildlife & Fisheries                                                                          |
| Hypoxia-Nutrients Portal: Integrated Nutrient Portal                                            | Data and Monitoring, Water Resources                                                                                                                                 |
| *Dr. Matt Howard/Marion Stoessel, GCOOS*                                                          |                                                                                                                                                         |
| CASE-EJIP/Loop Current and Eddy Forecasts                                                       | Data and Monitoring, Coastal Resilience, Wildlife & Fisheries                                                                                                                                                 |
| iTAG – integrated tracking of aquatic animals in the GOM, *Dr. Sue Barbieri, FWC, Committee Lead*  
*Bob Currier, GCOOS, Data Base Developer*                                                        | Data and Monitoring, Wildlife and Fisheries, Engagement & Education                                                                                                                                             |
| MBON—Marine Biodiversity Observation Network-*Dr. Frank Muller Karger, USF Lead, Howard & Simoniello, GCOOS* | Data and Monitoring, Habitat Resources, Wildlife and Fisheries                                                                                                                                                    |
Ideas for Data and Monitoring PIT

• Take what is useful from BOP, e.g.,
  – DMAC Guidance – includes community agreements on open data standards/web services, QA/QC manuals from QARTOD (wind, water levels, ocean optics, temperature, salinity, waves, currents, dissolved oxygen)
  – Identification of gaps and potential partnerships
  – Incorporate and implement other BOP priorities that make sense

• Submit ideas for BOP updates
• Use BOP to help justify funding requests
• Leverage ongoing GCOOS-RA projects
Questions?

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Links:

GCOOS BOP -
http://gcoos.tamu.edu/BuildOut/BuildOutPlan-V2-1.pdf

QARTOD Manuals -
http://www.ioos.noaa.gov/qartod/welcome.html

Thank you!