

# **Establishing a Cooperative Hypoxic Zone Monitoring Program**

## ***The 6th Annual NOAA/NGI Hypoxia Research Coordination Workshop***

12-13 September 2016

Mississippi State University Science and Technology Center  
1021 Balch Blvd, Stennis Space Center, MS 39529

### **Workshop Purpose**

To develop a framework for a multi-partner Gulf of Mexico hypoxic zone monitoring program, and plan the follow-up coordination needed to move forward with implementation. The [Gulf of Mexico Hypoxia Monitoring Implementation Plan](#) (2009, revised 2012) and subsequent workshops provide a foundation for a sustainable monitoring program that is driven by specific hypoxia management objectives and products. These efforts led to advancements in monitoring extent (i.e. intermittent expansion of temporal and spatial coverage) and technology (e.g. glider application) to meet the core program requirements. However, the monitoring program has been supported primarily through NOAA competitive research funding (i.e. NGOMEX program), which ended in FY 2015. A programmatic and financial strategy to support a requirement-driven monitoring program will be prepared as a pre-meeting document which will be explored further at the workshop to identify the optimal monitoring requirements for management needs, and funding mechanisms and logistics of implementation based on the needs, abilities and constraints of partners.

### **Workshop Objectives**

- Identify the potential agency, interagency, private sector, and institutional partners whose missions would be advanced by a robust and sustained Gulf hypoxia monitoring program.
- Determine the monitoring program components most beneficial to potential partners.
- Document partner roles in establishing a cooperative hypoxia monitoring program.
- Determine the steps needed to establish a cooperative monitoring program, including available resources from ongoing, planned, or newly coordinated programs.

### **Inputs**

- A pre-workshop monitoring strategy with current and proposed programmatic and financial requirements to inform workshop proceedings.
- An outline of activities of current monitoring programs in the Gulf of Mexico to facilitate partner-building during working sessions.

### **Expected Outputs**

- A workshop report identifying monitoring requirements linked to key management needs and the mechanisms, resources, and potential collaborations necessary to implement and sustain a monitoring program that encompasses the Hypoxic Zone and other Gulf ecosystem management issues.
- Establishment of small teams of workshop attendees to advance implementation of key elements of Gulf monitoring identified at the workshop.

## AGENDA

<b>Day 1</b> <b>Monday, 12 Sept 2016</b>	
8:00 a.m. to 9:00 a.m.	<b>Registration</b>
9:00 a.m. to 9:15 a.m.	<b>Opening Remarks</b> <ul style="list-style-type: none"> <li>• Welcome – <i>Steve Ashby (NGI)</i> (5 min)</li> <li>• Workshop Overview – <i>Alan Lewitus (NOAA)</i> (10 min)</li> </ul>
9:15 a.m. to 9:30 a.m.	<b>Keynote Presentation</b> <ul style="list-style-type: none"> <li>• <i>Mary Erickson (NOAA) and Ellen Gilinsky (EPA)</i> (15 min) What do we hope to achieve and why it is important.</li> </ul>
9:30 a.m. to 10:15 a.m.	<b>Monitoring Program Overview</b> <ul style="list-style-type: none"> <li>• <i>Alan Lewitus (NOAA)</i> (30 min talk + 15 min discussion) Program objectives will be discussed with respect to the: <ul style="list-style-type: none"> <li>- Historical, current and future monitoring activities</li> <li>- Products (outputs) needed to manage the Gulf hypoxic zone</li> <li>- System Requirements (programmatic, financial) – take-home points from pre-workshop documents</li> <li>- Transition to Operations activities (where applicable)</li> </ul> </li> </ul>
10:15 a.m. to 10:30 a.m.	<b>Break</b>
10:30 a.m. to 10:40 a.m.	<b>Power of Gulf Partnerships</b> <ul style="list-style-type: none"> <li>• <i>Ben Scaggs (EPA)</i> (10 min)</li> </ul>
10:40 a.m. to 11:35 a.m.	<b>Current State of Monitoring System Organizational Support</b> Many valuable components have at least short-term support, including: <ul style="list-style-type: none"> <li>• Mid-summer ship survey – <i>Nancy Rabalais (LUMCON)</i> (10 min)</li> <li>• Observing systems – <i>Barb Kirkpatrick (GCOOS)</i> (10 min)</li> <li>• Gliders – <i>Steve DiMarco (TAMU)</i> and <i>Stephan Howden (USM)</i> (10 min)</li> <li>• Modeling (3D time-variable) – <i>Dubravko Justic (LSU)</i> (10 min)</li> <li>• Discussion (15 min)</li> </ul>
11:35 a.m. to	<b>Diving Deeper into Related Programs and their Specific Management</b>

<p><b>12:30 p.m.</b></p> <p><b>Session Chair: Stephan Howden (USM)</b></p>	<p><b>Driver Needs</b></p> <p>A cooperative monitoring program could meet a wide breadth of management needs, including:</p> <ul style="list-style-type: none"> <li>• Linkage with watershed modeling tools to support nutrient reduction efforts – <i>Mike Woodside (USGS)</i> (10 min)</li> <li>• Diversions – <i>Ehab Mesehle (The Water Institute of the Gulf)</i> (10 min)</li> <li>• Fisheries – <i>Jeff Rester (Gulf States Marine Fisheries Commission)</i> and <i>Lisa DesFosse (NOAA)</i> (10 min)</li> <li>• RESTORE Act – <i>Steve Giordano (NOAA)</i> (10 min)</li> <li>• Discussion (15 min)</li> </ul>
<p><b>12:30 p.m. to 1:30 p.m.</b></p>	<p><b>Lunch</b></p>
<p><b>1:30 p.m. to 1:45 p.m.</b></p>	<p><b>Recap of Morning’s Talks and Instructions for Afternoon Working Sessions</b></p> <ul style="list-style-type: none"> <li>• <i>Alan Lewitus (NOAA)</i> (15 min)</li> </ul>
<p><b>1:45 p.m. to 3:00 p.m.</b></p>	<p style="text-align: center;"><b>Working Session – One</b></p> <p><b>Three Breakouts Groups:</b></p> <p><b><u>Breakout 1:</u></b> Researchers – Attendees with knowledge of monitoring requirements to support analysis tools (primarily models) that lead to management products.</p> <p><b><u>Breakout 2:</u></b> Related Programs – Attendees who represent programs with interests that likely overlap with programs focused primarily on hypoxia management.</p> <p><b><u>Breakout 3:</u></b> Supporters – Representatives of programs that have a primary interest in hypoxia management (e.g. Hypoxia Task Force) and that can take action, advocate, and provide support for elements of a hypoxia monitoring program.</p> <p><b>Breakout 1: Researchers</b> (Facilitator: <i>Kristen Laursen, NOAA</i>)</p> <p><b>Key Question:</b> <i>What are the technical monitoring requirements to support analysis tools (primarily models) that are needed to develop management products?</i></p> <p><b>Purpose:</b> To narrow and define the minimum monitoring components and space/time sampling that will be crucial to support a robust application of</p>

models (primarily 3D time-variable deterministic). These modeling tools are critical to the development of required products.

- Come to agreement on the minimum annual monitoring requirements (e.g. cruises, gliders, moorings) for validation of the statistical and 3D time-variable deterministic models.
- Come to agreement on additional monitoring that may be required to periodically calibrate the management models, both the space/time dimensions and the frequency (e.g. every 5 or 10 years?)

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**Breakout 2: Related Programs** (Facilitator: *Lael Butler, EPA*)

**Key Question:** *What is the overlap between related programs and hypoxia management programs with regard to the monitoring efforts that they require?*

**Purpose:** To identify the specific monitoring types (e.g. cruises, gliders, fixed moorings), parameters (e.g. temp, salinity, DO) and space/time dimensions that related programs, including government and industry, require and that can also be used to augment dedicated hypoxia monitoring resources.

- Review existing monitoring efforts of related programs to identify ongoing observations of potential mutual benefit to hypoxia management programs.
- Identify gaps in current monitoring programs that could possibly be supported by related programs and, if filled, could benefit both related programs and hypoxia management programs.

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**Breakout 3: Supporters** (Facilitator: *Tim Tomastik, NOAA*)

**Key Question:** *How could partners already committed to management of hypoxia, and helping to support Gulf hypoxia monitoring to some degree, sustain and expand upon those commitments to a hypoxia monitoring program?*

**Purpose:** To identify what current efforts by partner agencies need to be sustained and which partner agencies may be able to fill anticipated gaps with cruises, new technologies (e.g. gliders) or moorings. Participants will also explore ways in which partnerships built around a monitoring program can be forged in a manner that will enhance the potential to secure and sustain the resources that are needed.

- Identify programmatic tools (strategic plans, budget projections, FTE commitments, etc.) for improving upon and sustaining current efforts

	<p>for hypoxia monitoring within agencies and institutions.</p> <ul style="list-style-type: none"> <li>Identify opportunities to forge new, and strengthen existing, partnerships across agencies and institutions in a manner that will lead to stronger long-term commitments to hypoxia monitoring in a visible and collaborative manner (e.g. interagency working groups, administration ocean plans, etc.).</li> </ul>
<b>3:00 p.m. to 3:15 p.m.</b>	<b>Break</b>
<b>3:15 p.m. to 3:35 p.m.</b>	<b>Report-out from Breakout Sessions</b>
<b>3:35 p.m. to 4:45 p.m.</b>	<p style="text-align: center;"><b>Working Session – Two</b></p> <p><b>Document Potential Partner Roles in Establishing a Cooperative Hypoxia Monitoring Program</b></p> <p><b>Purpose:</b> Whole group discussion merging the three breakout groups:</p> <ul style="list-style-type: none"> <li>“Researchers” refinement of monitoring needs</li> <li>“Related Programs” identification of synergies between hypoxia and non-hypoxia monitoring programs</li> <li>“Supporters” identification of opportunities to achieve hypoxia monitoring program needs</li> </ul> <p>Strawman matrix will be filled out during discussion, capturing existing, planned, and potential new opportunities for a collaborative monitoring program, with short- and longer-term time frames.</p> <p>This will stimulate potential collaborations that will be carried over to the evening social and be developed into a matrix to inform discussions for the third working session tomorrow.</p>
<b>4:45 p.m. to 5:00 p.m.</b>	<p><b>Preview of Day Two</b></p> <ul style="list-style-type: none"> <li><i>David Scheurer (NOAA) (15 min)</i></li> </ul>
<b>5:30 p.m. to 7:30 p.m.</b>	<b>Evening Social at Infinity Center</b>
<p><b>Day 2</b> <b>Tuesday, 13 Sept 2016</b></p>	

<p><b>9:00 a.m. to 9:30 a.m.</b></p>	<p><b>A cooperative monitoring program is achievable.</b></p> <ul style="list-style-type: none"> <li>• <i>Rob Magnien (NOAA)</i> (20 min talk + 10 min discussion) Lessons from the Chesapeake. What do you think are the keys to success for the Gulf?</li> </ul>
<p><b>9:30 a.m. to 10:00 a.m.</b></p>	<p><b>Review of Day 1 – Review the Implementation Matrix</b></p> <ul style="list-style-type: none"> <li>• <i>Alan Lewitus (NOAA)</i> (30 min)</li> </ul> <p><b>Purpose:</b> Review a first draft strawman matrix of specific monitoring requirements and potential partners and mechanisms for implementation before working as a group to further refine this matrix.</p> <ul style="list-style-type: none"> <li>• The matrix will be developed by the steering committee based on discussion from day one.</li> </ul>
<p><b>10:00 a.m. to 10:15 a.m.</b></p>	<p><b>Break</b></p>
<p><b>10:15 a.m. to 11:30 a.m.</b></p>	<p style="text-align: center;"><b>Working Session – Three</b></p> <p><b>What are the steps to support and maximize the value of a cooperative hypoxia monitoring program?</b></p> <p><b>Purpose:</b> Refine the steps needed to lay the foundation for a cooperative monitoring program.</p> <ul style="list-style-type: none"> <li>• As a group, update first draft strawman matrix to include: <ul style="list-style-type: none"> <li>-contributors</li> <li>-planned and ongoing monitoring activities</li> <li>-potential plans lacking financial support</li> <li>-newly conceived initiatives</li> </ul> </li> <li>• What is each partner doing over the next year to maintain or pursue the activity?</li> <li>• What is each partner doing over the next 2-5 years to maintain or pursue the activity?</li> </ul>
<p><b>11:30 a.m. to 12:00 p.m.</b></p>	<p><b>Closeout of Main Meeting</b></p> <ul style="list-style-type: none"> <li>• Review changes to strawman</li> <li>• Critical next steps for implementation</li> <li>• Final discussion</li> </ul>
<p><b>12:00 p.m.</b></p>	<p><b>Meeting Adjourned</b></p>
<p><b>12:30 p.m. to 3:00 p.m.</b></p>	<p><b>Steering Committee Discussion of Next Steps (Closed Meeting)</b></p>