



Gulf of Mexico Monitoring: Developing Long-Term Water Quality Monitoring

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Gulf of Mexico Watershed Extent in the United States



Source: ESRI maps, National Hydrography Dataset, U.S. EPA (September, 2011)

Total U.S. Gulf Watershed Extent:

1,741,246 sq miles (56% of continental U.S.)

Contributing U.S. Watershed Regions:

Mississippi 1,295,860 sq miles (41.9%)

Rio Grande 132,845 sq miles (4.2%)

South Atlantic-Gulf 133,263 sq miles (4.3%)

Texas-Gulf 179,278 sq miles (5.8%)

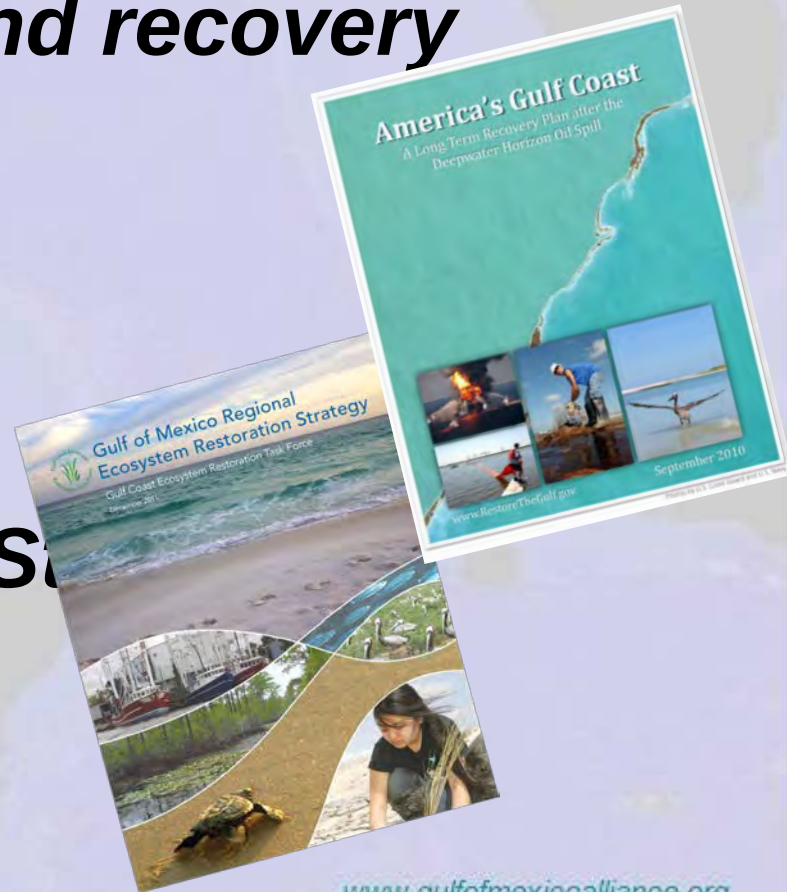
Legend

- Major Rivers
- Mississippi Region
- Rio Grande Region
- South Atlantic-Gulf Region
- Texas-Gulf Region
- State Boundaries



Long-term restoration: coordinate monitoring

- Mabus Report “America’s Gulf Coast”:
Long-term restoration and recovery beyond the oil spill
- Gulf Coast Ecosystem Restoration Task Force:
Gulf of Mexico Regional Ecosystem Restoration Strategy
- Gulf of Mexico Alliance:
Governors’ Action Plan





Gulf Funding

- Clean Water Act Fines
 - RESTORE Act
 - Some type of settlement
- NRDA restoration funding
- Gulf of Mexico Research Initiative (\$500M from BP)
- Annual appropriations
- However, planning needs to precede funding





Opportunity

- Develop holistic monitoring plan
- Building on existing efforts
- Need for coordination:
 - GOMA/GOMRI
 - GCERTF
 - NRDA
 - Hypoxia Task Force
 - Feds
 - States
 - Local Gov
 - NGOs



GOMA process:

- 1. Develop Monitoring Framework.**
- 2. Identify priority monitoring issues.**
- 3. Identify most important questions for issues.**
- 4. Design monitoring to answer those questions.**
- 5. Compare needed monitoring to existing.**
- 6. Develop plan to fill gaps & provide integration.**
 - **Incorporate “foundational monitoring.”**
- 7. Implement.**



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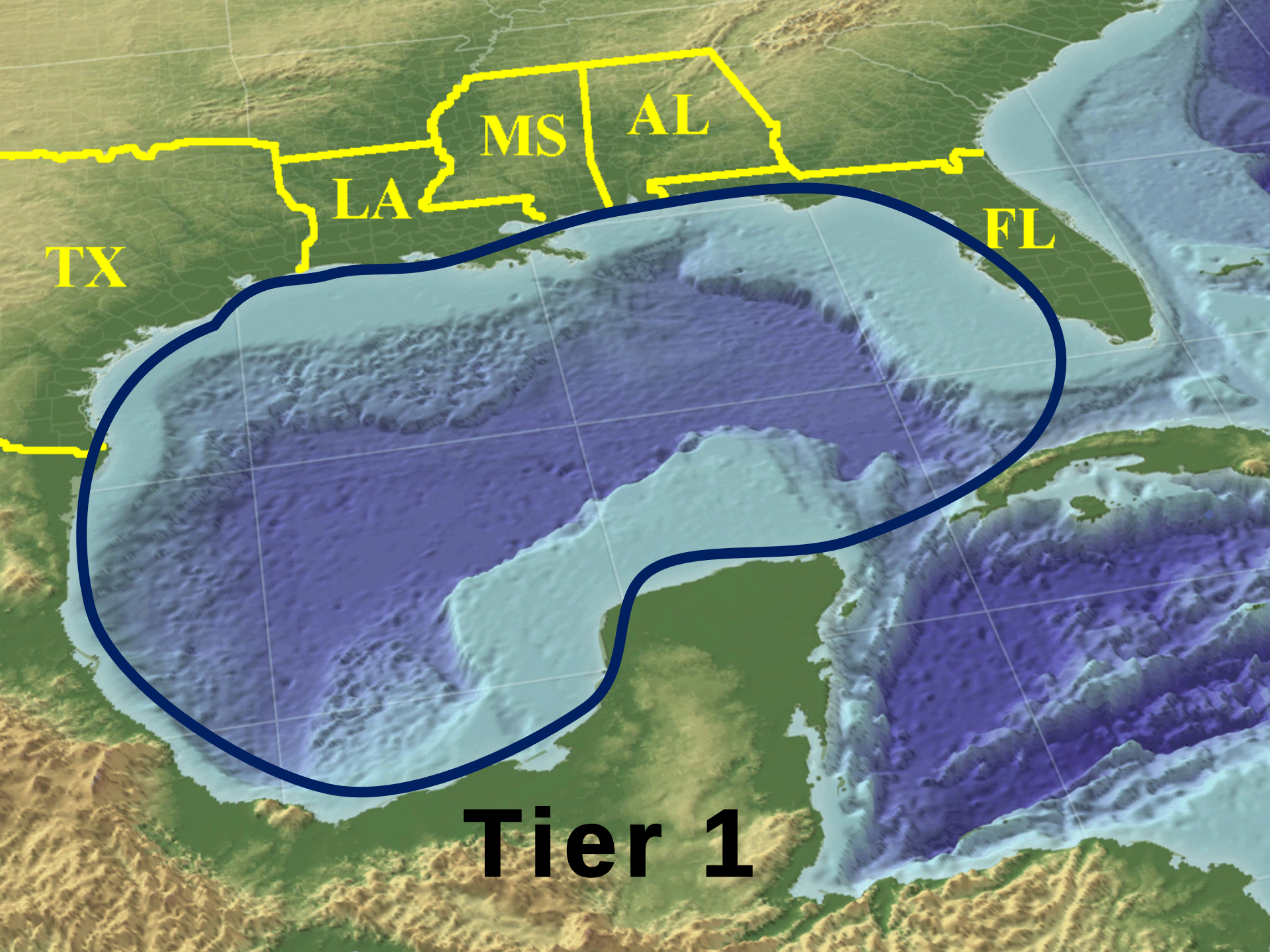
Dealing with Scale

- Monitoring systems are designed to address specific questions.
- Scale of the monitoring question(s) being asked drives scale of the monitoring system required.
- Gulf Monitoring Framework organized around the scale of monitoring required.



GOMA Monitoring Framework

- **Tier 1-** to address questions requiring **Gulf-wide** monitoring.
- **Tier 2 -** to address questions requiring **regional** monitoring
- **Tier 3 -** to address questions requiring monitoring at the scale of an **estuary or similar-sized coastal segment**.
- **Tier 4 -** to address questions about **site-specific** problems (*not in scope of GOMA*)



TX

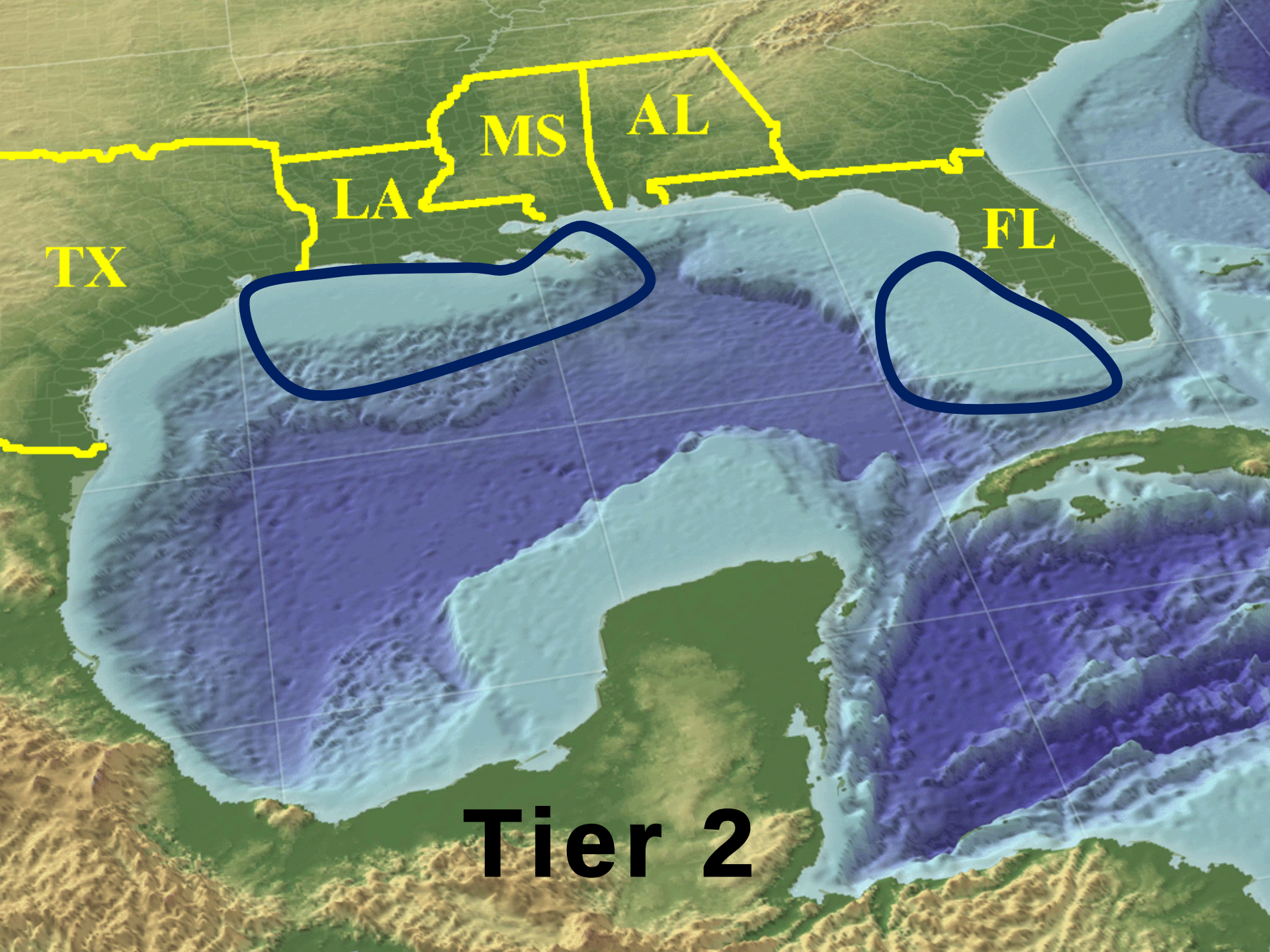
LA

MS

AL

FL

Tier 1



TX

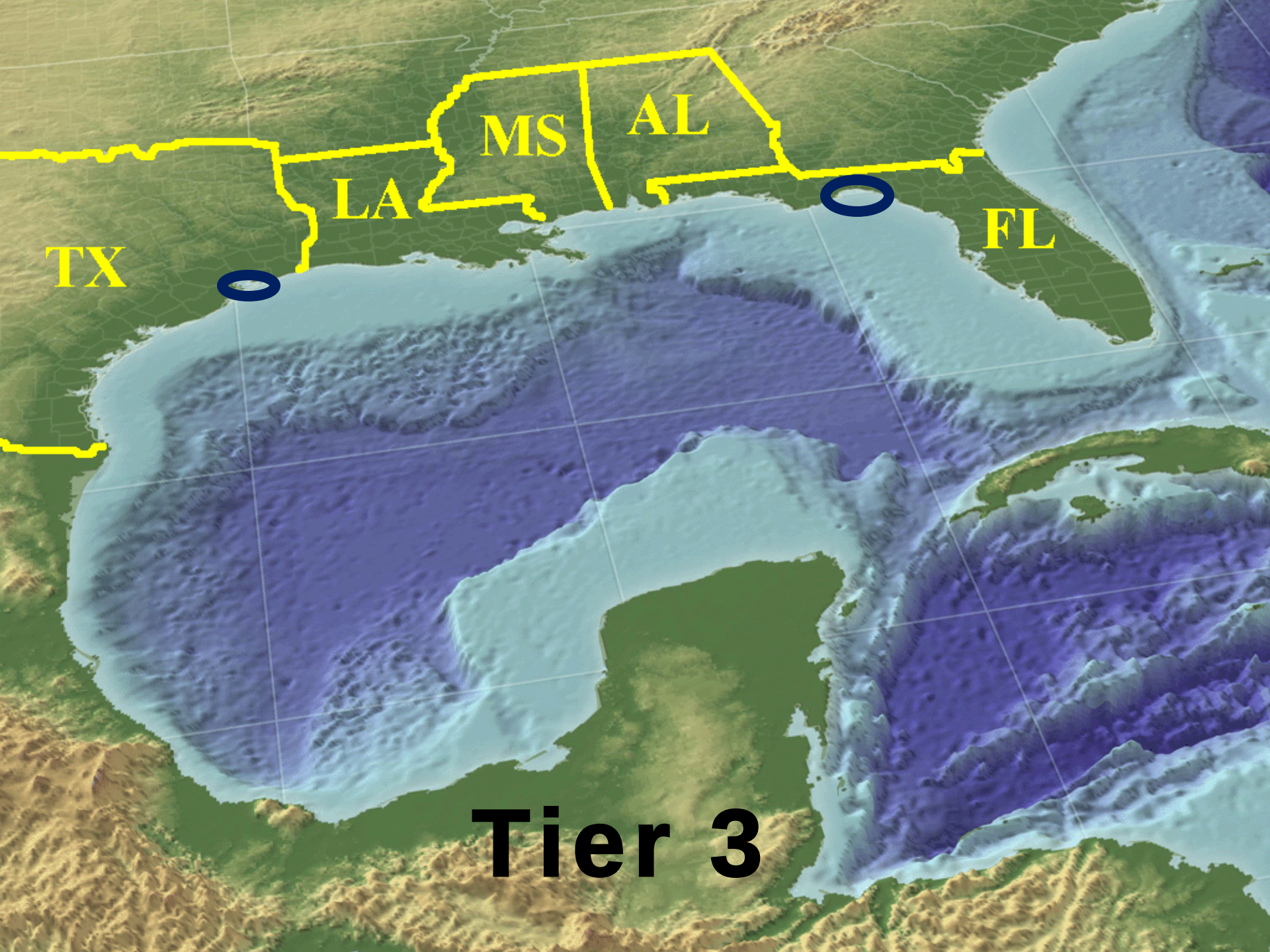
LA

MS

AL

FL

Tier 2



Tier 3



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Priority Issues for Long-Term Monitoring

- WQ Team Leads from the five Gulf states identified draft GOMA Monitoring Priorities following a Nov 2011 GOMA workshop focused on Gulf monitoring needs.
- These draft priorities were vetted through the five State governments before being finalized.



WQ Monitoring Priorities

- 1. Use the existing GOMA interagency structure to coordinate funding and monitoring.**
- 2. Long-term monitoring to support nutrient management and reduction efforts**
- 3. Long-term monitoring to support GOMA water quality human-health priorities: coastal pathogens, harmful algal blooms, and mercury in fish.**



Long-term monitoring priorities for GCERTF

- **The GOMA priorities align well with the water-quality monitoring goals laid out in the recommendations to the President from the Gulf Coast Ecosystem Restoration Task Force.**



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Priority Monitoring Questions

The following entities charged with identifying the most important questions that require Gulf WQ monitoring:

- 1. Nutrients** - the GOMA Nutrients Team
- 2. Harmful Algal Blooms** – the HABs Workgroup of the GOMA WQ Team
- 3. Mercury in Seafood** – the Mercury Workgroup of the GOMA WQ Team
- 4. Coastal Pathogens** - the Pathogens Workgroup of the GOMA WQ Team



Priority Monitoring Questions

- **Nutrients questions scheduled to be finalized at the annual GOMA All-Hands Meeting in June.**



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Design Monitoring to Answer Questions

- Design monitoring system to address highest-priority issue – ***Nutrients***.
- Separate design required for each Tier, total of three monitoring-system designs.
- Add monitoring necessary to address other priority issues by sequentially expanding upon nutrient design.



Design Monitoring to Answer Questions

- A workshop scheduled for August to create nutrient system designs for the three Monitoring Tiers.



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Compare Design to Existing Monitoring

- Catalog of Monitoring Programs presently under construction.
 - Catalog is GIS-based application containing information as to who monitors what in the Gulf using which methods, and exactly where that monitoring is taking place.
 - Due to roll out end of June 2012.
 - Due to be populated with data about existing monitoring programs by September 2012.



Compare Design to Existing Monitoring

- Nutrient-monitoring designs will be “overlaid” on Catalog information to identify gaps in monitoring coverage (sites) as well as in types of monitoring that are needed to address the nutrient-monitoring questions.
- A workshop scheduled for Sept 2012 to perform this nutrient “overlay”.



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Fill Gaps, Integrate Monitoring

- Develop implementation plan to guide monitoring network build out.
- The Gulf Alliance has the collaborations and partnerships in place to accomplish this task.
- Details of plan will depend in part on the funding mechanisms available at the time, and will include:



Why This Workshop?

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Potential Monitoring Strategies

What is “Foundational Monitoring”?

What is the logic behind the strategy?



What is the foundational monitoring program?

The core of the comprehensive monitoring program - The scope of monitoring that we are committed to continue even during budget slumps

- The minimal amount of monitoring necessary to meet the basic purpose of the monitoring program?
- The minimal amount of monitoring needed to define status and trends?
- The minimal amount of monitoring necessary to maintain credibility of the program's prioritization or decision-support process?
- The minimal amount of monitoring necessary to support a "report card" or other reporting/tracking mechanism?



What is the logic behind the strategy?

There are several options/approaches

(1) Monitor the most commonly needed parameters:

at the most commonly needed tier?

at all three tiers?

- Poll the work groups (water quality, nutrients, harmful algal blooms, mercury) for a list of parameters that would be useful to them.
- Poll the stakeholders (Federal, State, and local) for a list of parameters that would be useful to them.
- Design a program to monitor the most frequently listed parameters.



What is the logic behind the strategy?

(2) Address the most common questions:
at the most common tier?
at all three tiers?

- Poll same group collecting a list of the questions that they are trying to answer.
- Identify the commonality/similarity/overlap in the questions.
- Design program to provide data that will help answer the most frequently asked questions.



What is the logic behind the strategy?

(3) Address the most important questions:
at the most important tier?
at all three tiers?

- Poll the same group collecting a list of their most important question(s)
- Rank the questions to identify highest priorities.
- Design program to provide data that will help answer the most important questions.



What is the logic behind the strategy?

- (1) Monitor the most commonly needed parameters:
- (2) Address the most common questions:
- (3) Address the most important questions:
 - at the most common tier?
 - at the most important tier?
 - at all tiers?

What other logic would you suggest?