



Priority Issue Team

Water Quality

Texas

Louisiana

Mississippi

Alabama

Florida



Integrating Coastal Monitoring: The GOMA Experience



Steve Wolfe
Coordinator
GOMA WQ Team

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Cincinnati, OH



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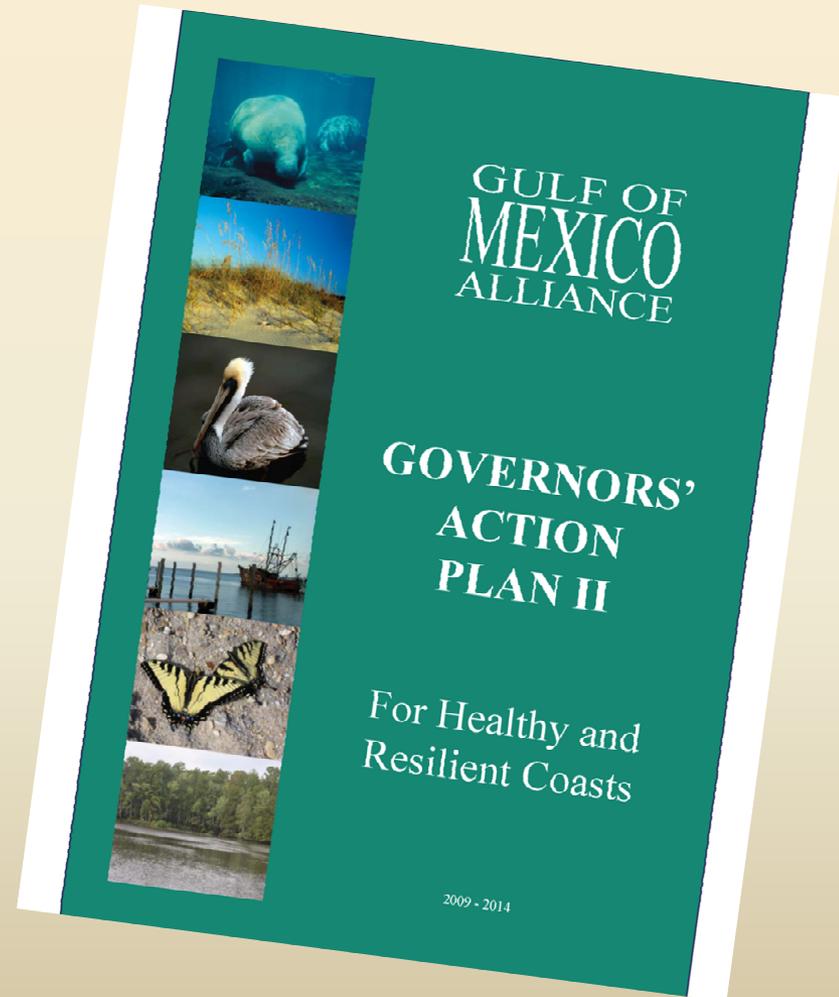
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- Alliance of Governors of five U.S. Gulf states.
- Supported by Workgroup of 13 Federal agencies.
- Develops and carries out targeted *Governors' Action Plan* focused on highest Gulf priorities across states.





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GOMA - very simplified

- **Six Priority Issue Teams**
- **One is Water Quality Team**
- **A number of the Actions of the WQ Team are oriented around monitoring.**



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Intra- and Inter- state Issues

- Different programs and degree of dedicated resources
- Different State agencies involved
- Different resource commitments to ambient monitoring
- Inconsistent standards for common parameters
- Not all parameters of interest have standards in all jurisdictions



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Intra- and Inter- state Issues

- **Data comparability**
- **Collaboration**



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Intra- and Inter- state Issues:

- **Data comparability**

- Round robins
- Improving and/or standardizing methods (where appropriate)

- **Collaboration**

- Devised framework that supports monitoring coordination/integration
- Designed the *Gulf Monitoring Network* (GMN)
- Seeking regional funding for “Foundational Monitoring” portion of GMN



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Intra- and Inter- state Issues:

- **Data comparability**
 - *Round robins*
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 - Devise framework that improves monitoring integration
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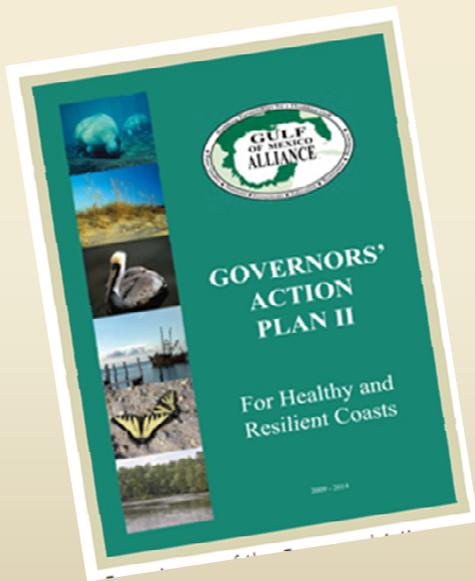
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Round Robin Program goals:



1. Figure out existing comparability
2. Determine the trouble spots
3. Decide what will make it better

EXPECTED RESULTS

✦ *Data collected from around the Gulf is of known and comparable quality.*



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The Question for RRs



How **precise and accurate** are the measurements generated from water samples collected

- at the same place
- at the same time

Each sampling group and lab uses slightly different

- methods
- equipment

How much does it matter?



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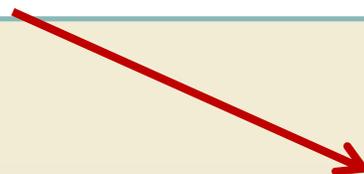
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GOMA Round Robins

- **Field RRs** – Sample Collection & Field Measurements
 - **Analytical RRs** – Laboratory Analysis





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What is a Field Round Robin?

Many samplers at the same place and time

Everyone samples using their normal methods.





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Field Round Robin Program At a Glance

- Six RR's at sites in AL, FL, LA, MS, and TX (Nearshore and offshore marine waters)
- June 2008 – June 2012
- States provided staff & equipment from their coastal sampling programs
- 8 – 10 Sampling groups per RR



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Field Round Robin Program At a Glance

- Field Measurements
 - Dissolved Oxygen (DO)
 - Temperature
 - Salinity
 - Conductivity
 - pH
- Three Replicates, at
- Two-to-Four depths





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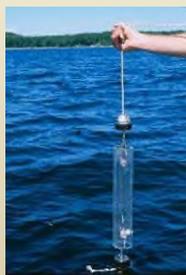
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Field Round Robin Program At a Glance

Looked at issues of:

- Meter calibration
- Calibration standards
- Potential depth effects
- Field filtering
- Sample acidification/preservation



All samples were analyzed by one laboratory



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Field Round Robins Summary

- Field measurements look generally comparable
- Nutrients, when detected, look comparable
- Occasional preservation errors
- Calibration needs further study



**extensive statistical analysis of RR results, SOP available*



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What is an Analytical Round Robin?

A large volume of water was collected from each site.



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Arrival at FDEP Lab
for splitting &
shipping



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Analytical Round Robins

Each sample is homogenized





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Analytical Round Robins
... preserved/prepared as appropriate, then split into bottles



Sometimes 3 reps per site per analyte per lab, sometimes 4 reps





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Analytical Round Robins

Bottles are randomized and labeled (720 bottles in our biggest RR)





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Analytical Round Robins

Samples are packed and overnight shipped to the labs

Labs were to analyze as they normally do





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Analytical Round Robin Program At a Glance

- Nine RR's (8 - nearshore, 1 - offshore)
- Water collected from two sites per Round Robin
- Water collected in AL (2), FL (5), MS (1), TX (1)
- February 2008 - November 2012
- 8-16 Labs per RR
- RRs 1-6: BOD, CBOD, Chlorophyll-a, Nutrient suite
- RRs 7-9: TSS, Turbidity, Chlorophyll-a, Nutrient suite



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Analytical Round Robin Program Nutrients Summary

- Nutrient samples collected from near shore marine waters often were below the detection limits or present in low quantities.
- This led to the spiking of some analytes in subsequent round robins.
- Nutrient results were comparable in the spiked samples when levels were detected.
- Improved analytical methods with lower detection levels needed.



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Analytical Round Robin Program Non-Nutrient Summary

- BOD and CBOD are seldom above detection
- Wide range of MDL/PQL for multiple analytes
- Methods with lower detection limits needed
- TSS definitely needs work, very high variability



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GOMA Round Robin Summary

- Field and Analytical Round Robin reports are available on the WQ Team page of the GOMA website:

www.GulfofMexicoAlliance.org



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Intra- and Inter- state Issues:

- **Data comparability**
 - Round robins
 - *Improving and/or standardizing methods where appropriate*
- **Collaboration**
 - Devise framework that improves monitoring integration
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Improving and/or standardizing methods where appropriate:

- States agreed on methods for analysis of nutrients and associated parameters.
- Have identified those analytes for which the adopted methods have detection/quantitation limits that are too high for use in estuarine and coastal waters. *“BDL” is not a useful result for understanding nutrients and their effect on ecosystems.*



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Intra- and Inter- state Issues:

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- **Collaboration**

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Devise framework that improves monitoring integration:

- Identified and agreed upon Priority Monitoring Issues across Gulf (nutrients, HABs, coastal pathogens, mercury in seafood).
- Identified and agreed upon most important monitoring questions for each issue.
- Identified hurdles to implementation, e.g.:
 - Scale
 - Funding



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Design the Gulf Monitoring Network:

- Network designed to provide the minimum monitoring required to address the questions identified for the priority monitoring issues.



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Design the Gulf Monitoring Network:

- The design results from more than two years of effort:
 - hands-on involvement in design workshops by over 40 monitoring and priority-area experts from more than 30 state, federal, academic, and NGO agencies and entities;
 - design review and modification by more than 100 additional experts.



Coastal

Coastal

<10m

<10m

10 m

10 m

0-10 meters in depth

200 m

Shelf

Shelf

Coastal

<10m

10 m

Deep Gulf

200 m

10 m

200 m

Deep Gulf

200 m

Shelf

10 m

200 m

10 m





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Design the Gulf Monitoring Network:

- *Gulf Monitoring Network, Monitoring Design Report completed August 2013.*





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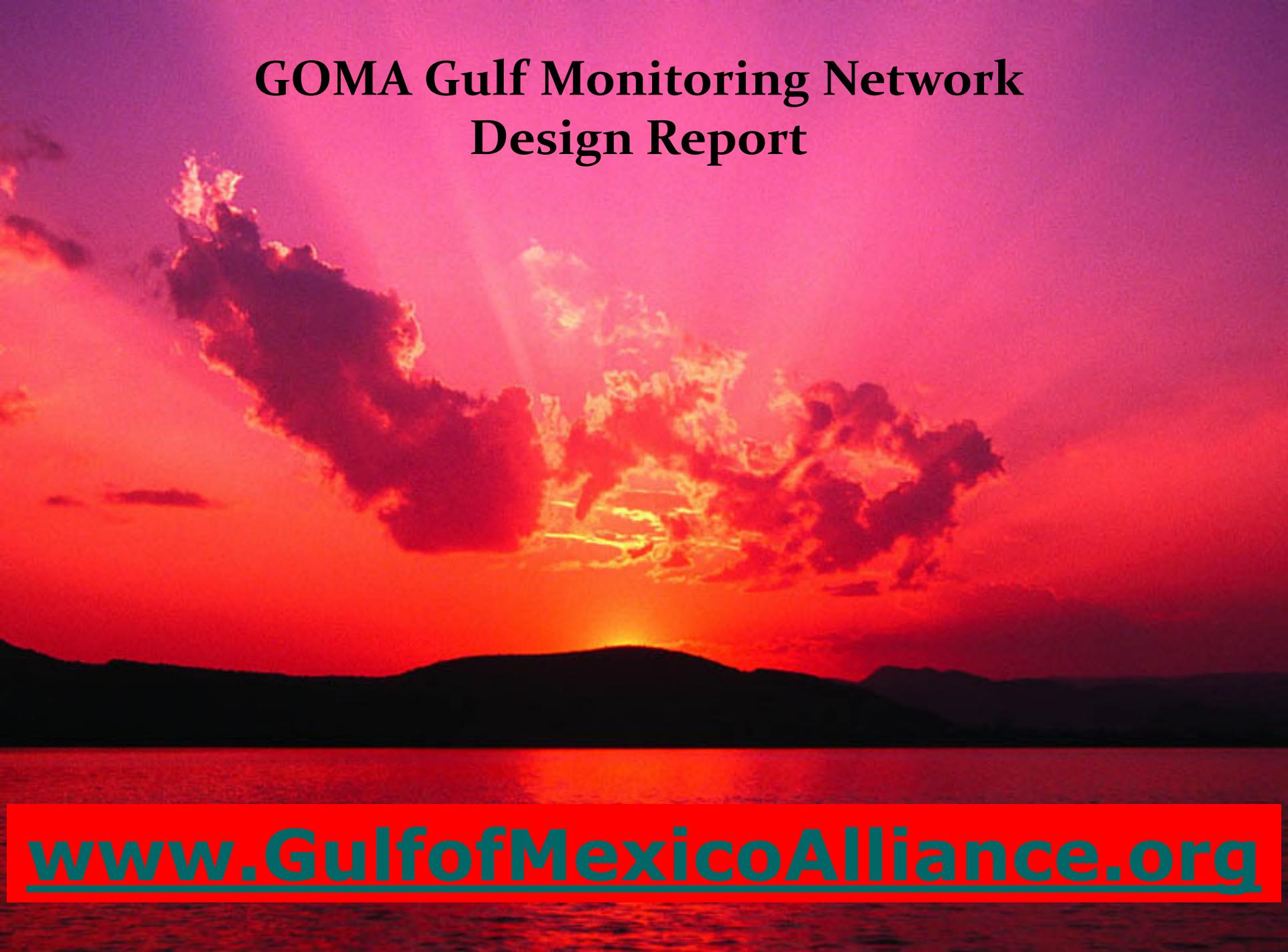
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Seek regional funding for “Foundational Monitoring”:

- Foundational Monitoring is a subset of overall GMN design, intended to have stable funding that will provide reliable, long-term monitoring that supports provides a foundation of data on which the rest of the GMN design and other monitoring programs can build.
- Foundational Monitoring was conceived as a wise use of a portion of the Gulf oil spill penalty funding.
- Penalty funding has not yet arrived in Gulf and GMN funding remains unsure.



GOMA Gulf Monitoring Network Design Report

www.GulfofMexicoAlliance.org