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NOAA Update on Gulf of America Hypoxic Zone

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Hypoxia Task Force Meeting
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Outline

- Hypoxic Zone Monitoring Results (2024, 2025)
- Retrospective Analysis (2024, 2025)
- Recent Peer-Reviewed Publications
- Emerging Technologies for Hypoxia Monitoring

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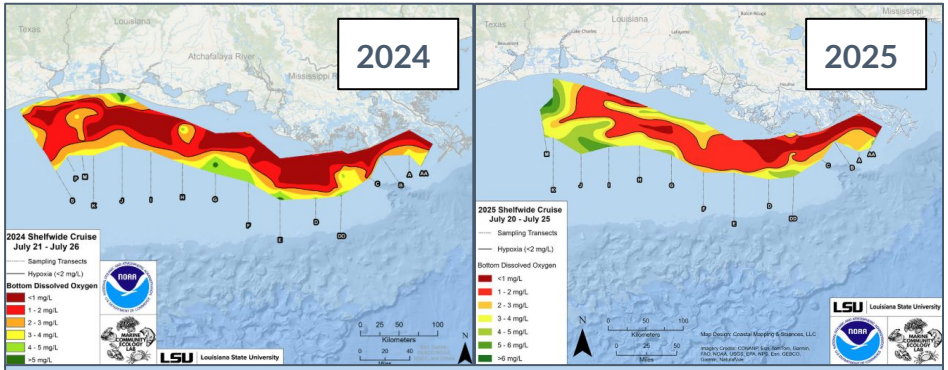
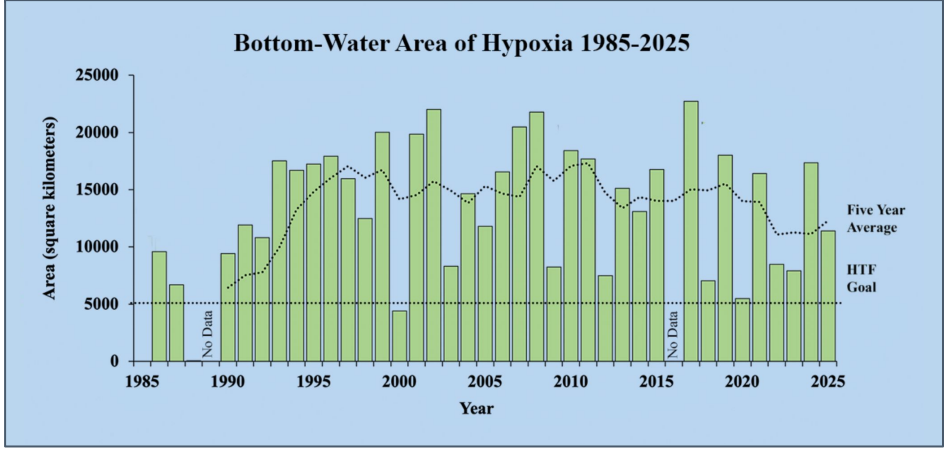
Hypoxia Zone Monitoring Results





Source: (Rabalais, LSU, NOAA)

Measured mid-summer extent of hypoxic zone – Key metric to assess progress toward the 2035 HTF Coastal Goal (5,000 km^2)

	2024	2025
Predicted Size	15,092 km^2	14,437 km^2
Measured Size	17,366 km^2	11,401 km^2
5-Year Average	11,132 km^2	12,315 km^2

Forecast models within margin of error but overall hypoxic zone was larger than expected in 2024 and smaller than expected in 2025.

Outreach Efforts

Press Releases and Media Teleconferences
Numerous news articles written with large reach

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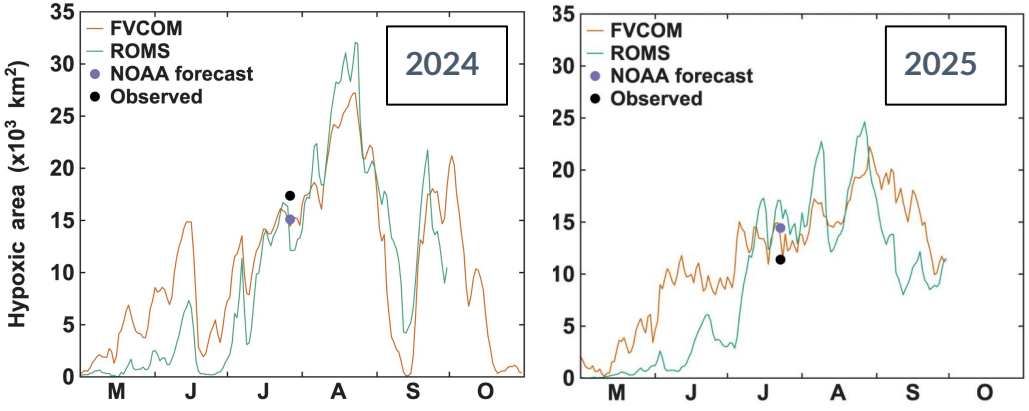
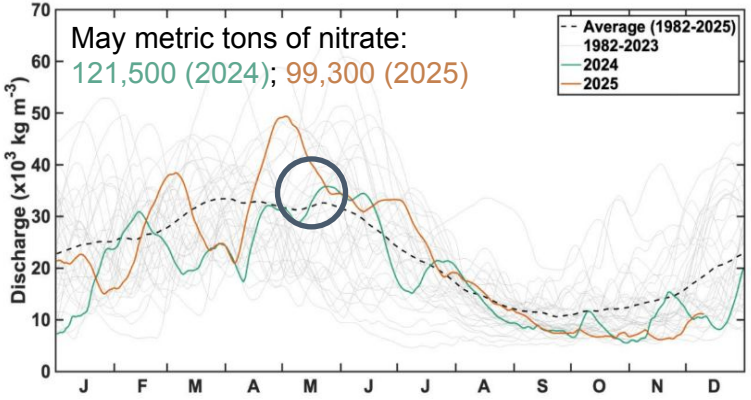
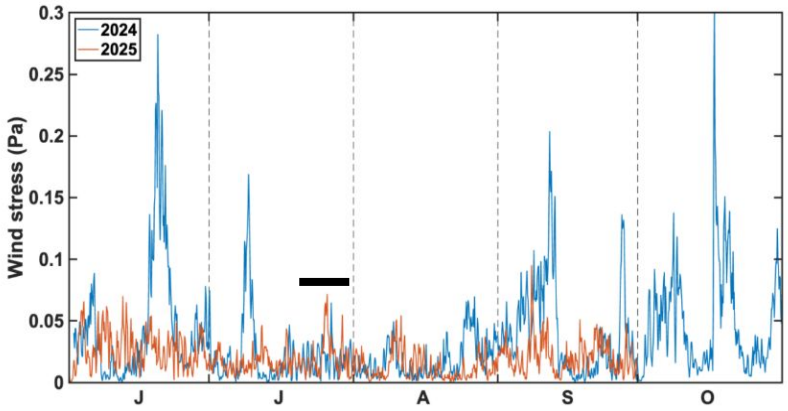
Retrospective Analysis

- Models captured seasonal dynamics and had generally good agreement with the forecast and cruise data
- Springtime nutrient loading is a major driver for hypoxia size during the summer
- Wind mixing events, discharge and water column stratification are contributing factors

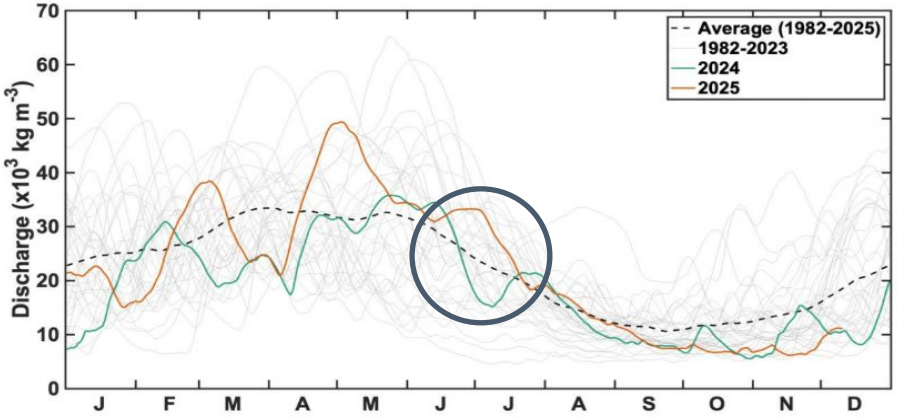


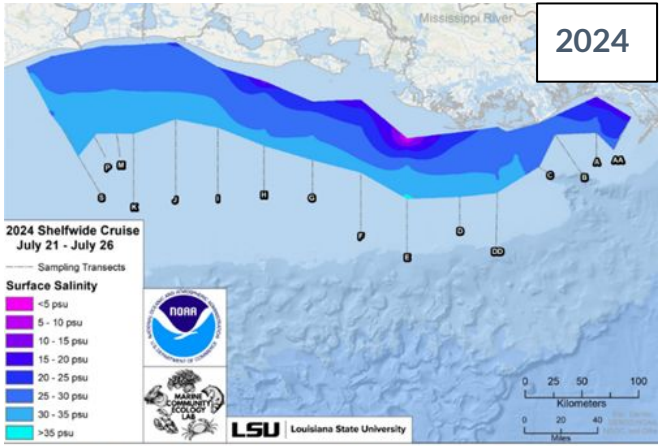


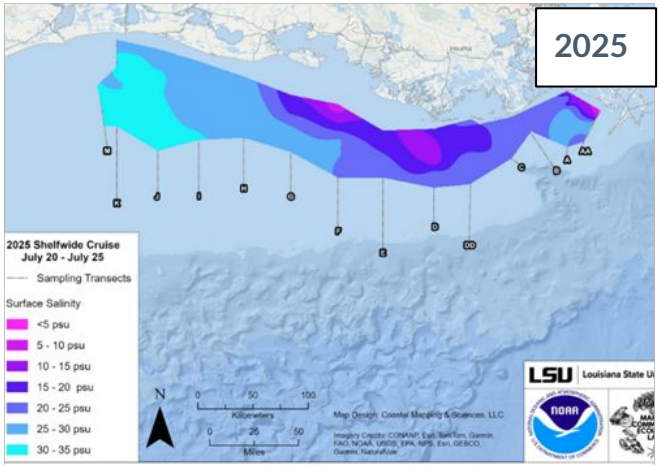


Source: (Fennel, Dalhousie; Justic, LSU)

Retrospective Analysis

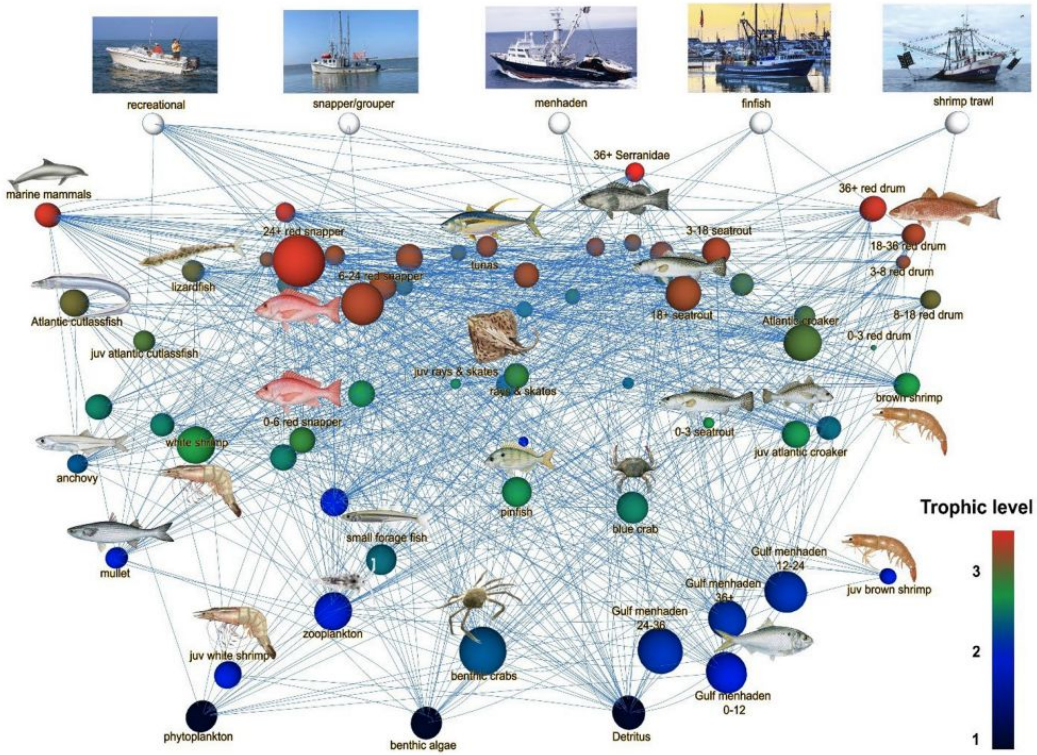






- Summertime discharge was drastically different between years, impacting dynamics seen on the shelf
  - 2024 was characterized by high salinities, water clarity and productivity
  - 2025 had a strong freshwater signal with corresponding higher turbidity and lower productivity
- Likely factors in larger hypoxia area seen in 2024 and smaller area in 2025 verses the predicted size

Recent Peer-Reviewed Publications



Source: de Mustert et al. 2025

A temperature tipping point in hypoxic zone size
Turner et al. 2024, *Limnology and Oceanography*

Bottom water quality plasticity in the northern gulf of mexico hypoxic zone
Turner et al. 2024, *Continental Shelf Research*

Advancing bioenergetics-based modeling to improve climate change projections of marine ecosystems
Rose et al. 2024, *Marine Ecology Progress Series*

Trends and drivers of hypoxic thickness and volume in the northern Gulf of Mexico: 1985–2018
Matli and Obenour 2024, *PLoS ONE*

A flexible modeling approach for evaluating the effects of hypoxia and other factors on the spatial distributions of brown shrimp Farfantepenaeus aztecus and white shrimp Litopenaeus setiferus on the Louisiana shelf
Katin et al. 2025, *Marine and Coastal Fisheries**

Using a coupled ecosystem modeling approach to evaluate effects of reductions in nutrients and hypoxia on living marine resources
De Mustert et al. 2025, *Marine and Coastal Fisheries**

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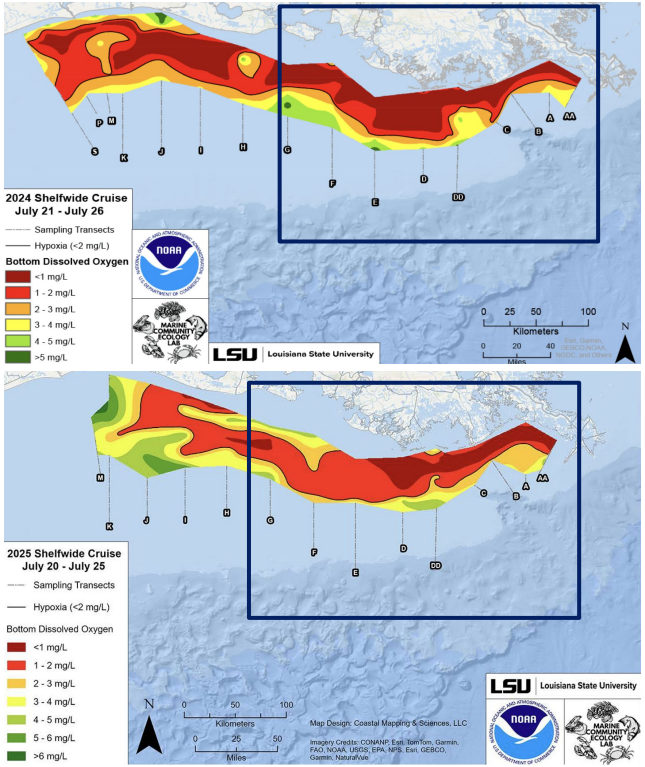
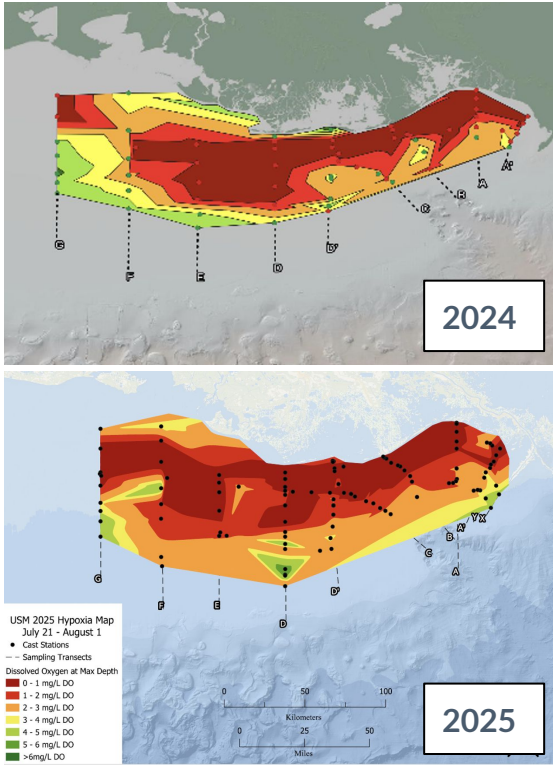
Emerging Technologies for Hypoxia Monitoring

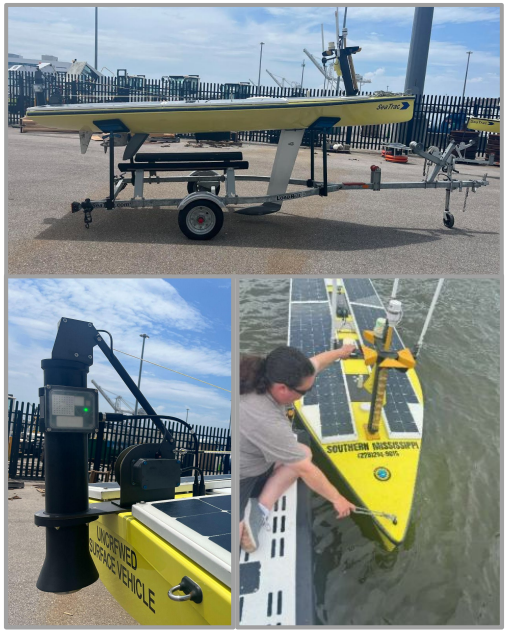
Ship-Based Data Collection Platform



ASV Data Collection Platform



Autonomous Surface Vehicle (ASV)



Source: (Howden, Stephan; USM)

UxS Operations Center
Office of Marine and Aviation Operations

The University of Southern Mississippi

Roger F. Wicker Center for Ocean Enterprise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Thank you
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