National Aeronautics and Space Administration
Jet Propulsion Laboratory
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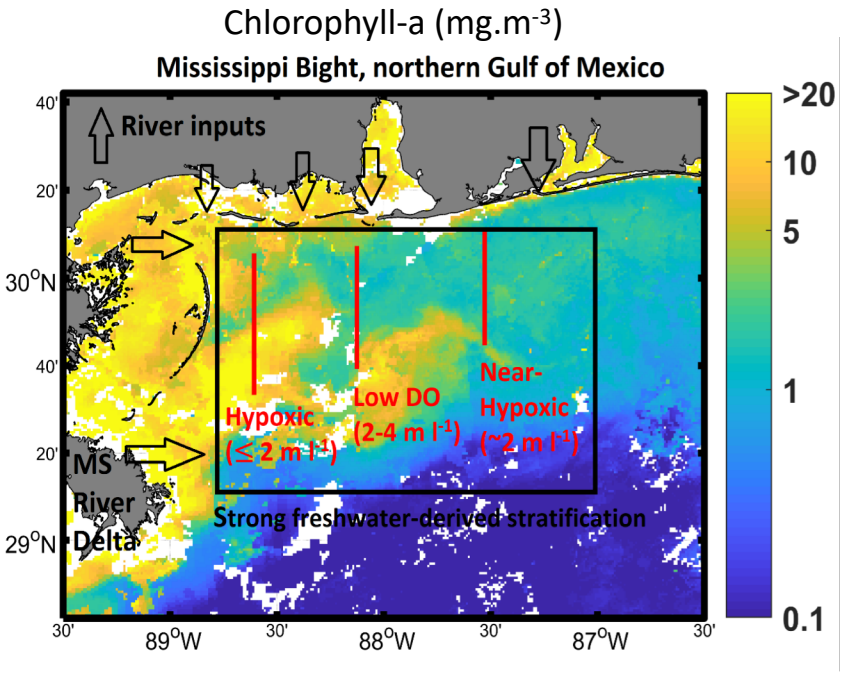
# Tracking the sea surface salinity and dissolved oxygen on a seasonally stratified shelf, Mississippi, northern Gulf of Mexico




**Problem:** Shelf hypoxia is a well-recognized management issue for a growing number of coastal regions that can alter food web dynamics and biogeochemical cycling, resulting in threats to fisheries, coastal economies, and ecosystem health. River discharge is often a critical ingredient for shelf hypoxia (via high nutrients and stratifying effects) – e.g. 'Dead Zone' in the northern Gulf of Mexico which lays to the west of the Mississippi River Delta.

**Finding:** Satellite-derived SSS data shows Northern Gulf of Mexico **East** of the Mississippi River Delta is strongly influence by river discharge. This freshwater cap has strong stratification that limits vertical exchange of the bottom water leading to significant area of low dissolved oxygen and hypoxic areas across the shelf. There is a potential for a 'Dead Zone' east of the Mississippi River Delta.

**Significance**: Satellite-derived SSS is a useful tool in targeting coastal areas that are potentially vulnerable to hypoxia. The extensive area **East** of the Mississippi River Delta is impacted by freshwater discharge, on par with the region to the west of the Delta (i.e. Lousiana/Texas 'Dead Zone'). *There is a need for this shelf region to be considered in developing future hypoxia management strategies for the northern Gulf of Mexico.*

Dzwonkowski, B., S. Fournier, J.T. Reager, S. Milroy, K. Park, A. Greer, A. Shiller, I. Soto, S.L. Dykstra, and V. Sanial (2018) Tracking the sea surface salinity and dissolved oxygen on a seasonally stratified shelf, Mississippi, northern Gulf of Mexico, *Continental Shelf Research,* 169, 25-33. doi.org/10.1016/j.csr.2018.09.009
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