Goldschmidt 2026 Abstract
https://doi.org/10.46427/gold2026.34015

# Coastal Ocean Hypoxia and Acidification Along the North American East Coast and Gulf of Mexico

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Intensive organic matter decomposition under productive river plumes on continental shelves and coastal bays consumes oxygen and often leads to seasonal subsurface-water hypoxia and, in conjunction with warming and rising atmospheric $CO_2$, acidification under stratified summer conditions. This talk synthesizes subsurface hypoxia and acidification across multiple systems from cold Scotian shelf, Gulf of Maine and Cold Pool in the Mid-Atlantic Bight, to warm bottom water on the northern Gulf of Mexico under the Mississippi River plume. I will analyze and compare their spatiotemporal patterns and dynamics at various timescales, illustrating how region-specific interactions between physical processes (e.g., initial wintertime surface water temperature, summertime stratification, disruption by storms, etc.) and biogeochemical drivers (e.g., nutrient loading, organic matter remineralization) and global forcing (e.g., warming and $CO_2$ increase) regulate the severity and persistence of these dual stressors. Multiple carbonate chemistry parameters ($pCO_2$, pH, alkalinity, dissolved inorganic carbon concentration and stable isotope, etc.) and fundamental principles, inspired by Professor Mucci's work, will be applied to the synthesis and presentation.