

Quantifying Storm Impacts on Coastal Carbon Budgets by Using Satellite Remote Sensing

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Dissolved Organic Carbon (DOC) from marine sediments is an overlooked aspect of coastal carbon budgets, especially in regions with seasonal hypoxic zones like Louisiana and Texas coasts. Algal blooms fueled by Mississippi River discharge cause hypoxia, leading to mass die-offs and carbon release from sediments into the water column. NASA satellite data tracks sediment-derived DOC during and after storms, overcoming obstacles like water column penetration and stratification. This data, along with oceanographic parameters, reveals sediment-derived DOC's presence in the northern Gulf of Mexico, significantly impacting coastal carbon budgets. Understanding sediment-derived DOC improves coastal carbon cycle models, informs climate change mitigation, and highlights its utility in similar hypoxic coastal systems. This approach underscores satellite data's power in environmental monitoring and management.

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My Contribution:

Data Analysis: Chose NASA websites from which to collect satellite data from. Collected data and wrote code to create figures of the Gulf of Mexico displaying DOC. Co-created the idea of using oceanographic parameters such as temperature as an identifier to track DOC before and after storms. Wrote code to create figures displaying these parameters before, during, and after storms; Compared these figures to figures showing DOC.

Presentation: Created poster with feedback from various lab members.