

SOURCES AND SEASONAL DISTRIBUTIONS OF ORGANIC MATTER IN THE CALOOSAHATCHEE RIVER ESTUARY: IMPACTS OF HURRICANE IAN

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Management of the Caloosahatchee River estuary has been a long-standing water quality challenge. Discharge events from Lake Okeechobee (Lake O) have previously contributed to the occurrence of Harmful Algal Blooms (HABs) and are known to affect estuarine water quality. However, the contributions of the Caloosahatchee River watershed on the estuary have been less studied. To monitor the water quality and identify sources of organic matter in the system, we conducted monthly sampling from April 2022 through September 2023, spanning from Lake O to the Gulf of Mexico. Noticeable seasonal patterns were observed, including an increase in dissolved organic carbon (DOC) and colored dissolved organic matter (CDOM) during the early wet season (May to July) and a decrease during the wet season through dry season (August to May). The source of organic matter appears to be more influenced by the flow from the surrounding watershed during the wet season than by the flow from Lake O. During our sampling campaign, Hurricane Ian altered water quality throughout the region, characterized by elevated levels of DOC and fluorescent DOM (FDOM) at a mesohaline site (mid-estuary), indicating the delivery of terrestrially derived organic matter after the storm. Additionally, a notable increase in autochthonous FDOM was observed in meso/euhaline sites, indicating increased nearshore biological productivity after the hurricane, followed by a red tide bloom in the Gulf of Mexico. Evaluating the delivery of terrestrial and autochthonous DOM to the nearshore allows us to better understand how coastal biogeochemistry and phytoplankton communities respond to hurricanes, which are predicted to increase in frequency and intensity due to climate change.

PRESENTER BIO: Dr. Lee is a research assistant scientist in environmental engineering science at the University of Florida. She has a strong background in marine biogeochemistry, with a focus on coastal environments. Her ongoing research focuses on investigating various systems using multiple biogeochemical tracers including stable isotopes.