IMPACTS OF HURRICANE ASSOCIATED WQ CHANGES TO ECOSYSTEM HEALTH: IMPLICATIONS FOR FUTURE COORDINATION

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For millennia, coastal ecosystems have evolved to be resilient to hurricane impacts. However, storms are becoming more intense and more frequent, while ecosystem health continues to be compromised by anthropogenic activities such as habitat loss and water quality degradation. The result is that these ecosystems are more vulnerable to hurricane impacts than ever before. For example, the passage of Hurricane Irma in 2017 preceded the worst red tide event in recorded history along the southwest Florida coast, followed by record losses of seagrass habitat, much of which has yet to fully recover. Now more than ever, it is imperative that resource managers and emergency managers alike have a coordinated response plan to assess ecosystem health associated with hurricanes. In 2022, Hurricane Ian made landfall in southwest Florida as a category 4 storm bringing catastrophic winds and storm surge. Ian also produced a wide swath of extremely heavy rainfall that led to some of the worst and deadliest freshwater flooding ever recorded in the Charlotte Harbor watershed. Immediately following the passage of Ian there were concerns by local officials about potential water quality impacts. State, regional, and local entities came together to formulate and execute a coordinated water quality response plan just days after the storm passed. Here we present a portion of this larger effort focusing on hypoxia severity, extent, and recovery in the Peace River, Myakka River, and Charlotte Harbor estuary. We compare these results with those from a similar effort after Hurricane Charley in 2004. For both Ian and Charley, dissolved oxygen concentrations took 2-3 months to return to pre-storm levels. We also examine other water quality parameters such as total nitrogen and total phosphorus, and share some lessons learned for future hurricane water quality coordination.

PRESENTER BIO: Dr. Anastasiou is Chief Water Quality Scientist for the Southwest Florida Water Management District with 25 years of experience in marine ecology, habitat restoration, water quality monitoring, and seagrass mapping. He is also the District EOC Water Quality Response Unit lead, and a US Navy Meteorology and Oceanography Reserve Officer.