OS33B-1781 - Browning of the Golden Tide: Impacts of Accumulated *Sargassum* on Sea Water Quality in Ambergris Caye, Belize

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13:40 - 18:00

Moscone South - Poster Hall

Abstract

Seasonal blooms of pelagic *Sargassum spp.* have been on the rise in the equatorial Atlantic since 2011 and are increasingly accumulating along shorelines in the Caribbean Sea. When *Sargassum* decomposes it forms plumes of brown water that extend seaward from shore and exhibit low dissolved oxygen (DO), pH, and nontransparent water. This decrease in water quality has caused environmental and economic impacts along the coast of Ambergris Caye, Belize (westernmost Caribbean). We studied the impacts of *Sargassum* decomposition during late June/early July of 2019 by measuring DO, pH, temperature, specific conductivity, water color, and clarity at twenty-one locations and along four transects perpendicular to the shore. The DO and pH values of typical transparent seawater averaged 5.8 mg/L and 8.0-8.25 respectively. Similarly, water beneath offshore patches of living (golden) *Sargassum* averaged 6.0 mg/L and 8.07. Where brown plumes were present, shoreline observations of DO and pH were as low as 0.03 mg/L and 6.44 respectively; a 99.5% decrease in DO compared to typical seawater. DO and pH values within brown plumes generally increased with distance from shore. At El Norte, the transect with the lowest DO and pH, the plume covered >265,000 m² and extended >200 m from shore, about 25% of the distance to the reef crest. Elsewhere, a brown plume extended >800 m from shore, >50% to the reef crest. While we never observed low DO or pH at the reef crest, interviews with local residents suggest the June-July 2019 brown plumes were small in comparison to past seasons. Results from our pH measurements are particularly notable given the potentially compounding effects of low pH water from *Sargassum* decomposition and oceans already experiencing global acidification. Further research is needed to determine the long-term impacts of increased decaying *Sargassum* and to determine the most effective remediation strategies.

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