

Supporting the Blue Economy - SECOORA 2018 Annual Meeting

SECOORA Principal Investigator Abstracts

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Operate and Maintain Gray's Reef Ocean Acidification Buoy

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Operation of the Grays Reef time-series mooring has been a multi-organization effort, which has successfully collected high-resolution data since 2006. The mooring is located in the South Atlantic Bight (SAB) offshore Georgia, USA and within the boundaries of Gray's Reef National Marine Sanctuary (GRNMS). It sits along the divide between the inner and middle shelf with water depths of 20 m. Water chemistry is primarily controlled by the middle shelf oceanic dynamics, but during heavy rain events, it can be affected by freshwater plumes coming from the numerous rivers along the Georgia and South Carolina coast. Temperature, salinity and biological activity also play a major role in the pCO₂ variability with seasonal changes being apparent. During summer months, GRNMS acts as a CO₂ source to the atmosphere while during winter months it is a CO₂ sink. The benthic community at GRNMS has proven to be hardy enduring large seasonal swings of seawater CO₂ and pH. At this point, it is unclear at what point the benthic community will experience detrimental effects of the decreasing seawater pH. It is clear that for the ten-year monitoring effort, the atmospheric and seawater CO₂ has been increasing annually causing the seawater pH to decrease. Research planned for the sanctuary will be aimed at determining how these organisms cope with the seasonal changes and how they will adapt to rising seawater CO₂ over time.

All data transmitted from the buoy is sent to the Pacific Marine Laboratory, NOAA, Seattle WA for quality assurance monitoring. Real-time data can be graphically viewed at <https://www.pmel.noaa.gov/co2/story/Grays+Reef>. Additionally, data that has been processed through the quality control and assurance process can be accessed through the website.

During Year 3, a Georgia Southern University graduate student will be engaged to apply the GRNMS ocean acidification data in a research project relating oculina coral growth to carbon dioxide concentrations. The project is in the early stages of development and depending on funding will take place starting July 2018.