Gray’s Reef $pCO_2$ Monitoring and Data Synthesis

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Objective and Approach

Objective
• Support NOAA MAPCO2 System – maintenance.
• Method internal consistency experiments (underway, discrete sample, mooring system)
• Climate quality measurements for long-term monitoring and model development

SECOORA Focus Area
• Offshore monitoring to assess
  • Climate Variability for \( pCO_2 \), pH, and acidification variables
• Inshore – through modeling transport of carbonate chemistry variables
• Provide acidification information to South Atlantic Bight coastal managers
Accomplishments

• Continued routine maintenance and cleaning of the MAPCO$_2$ system

• Water sample collection in May 2018, August 2018 (twice), and December 2018

• Internal consistency studies are ongoing

• With approximately 10 years of observations we calculated the climatology (manuscript in prep)

Blue line is one-day average, green line is 30 day smoothed climatology (calculated July 2006 to July 2015), black line (year 2014) is daily average for that one year – some anomaly occurred in the summer.
Impact

• The GR mooring provides high quality observations that will allow stakeholders and managers to make decisions concern the placement of aquaculture facilities.

• Observations from the GR mooring have shown that there has been a significant decrease in pH since initial deployment.

• If this project was not funded we would lose the longest running coastal CO$_2$ mooring.

• So far, only scientists are using the data.

• “Recent work by Reimer et al. [2017] provides a break-through, although not without difficulty, and indicates what we may expect around the world as both CO$_2$ and temperature simultaneously rise at the highly populated land-sea interface.”

Peter Brewer, AGU https://eos.org/editors-vox/coastal-ocean-warming-adds-to-co2-burden