Ocean coastal acidification: Development of a spectrophotometric method for monitoring seawater pH at the Bowdoin Coastal Studies Center

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Ocean acidification (OA) is the decline of seawater pH caused by increasing atmospheric carbon dioxide levels. Coastal environments are acidifying faster than the open ocean due to changes in freshwater flow, biological productivity from nutrient runoff, and coastal upwelling of CO_2-rich waters. Laboratories and ocean science groups in the Gulf of Maine use several different types of pH probes to measure and monitor ocean coastal acidification (OCA). With varying precision and accuracy among these instruments, the development of a spectrophotometric pH method using m-Cresol Purple could allow for improved monitoring and quantification of OCA in the Gulf of Maine. This method differs from other methods of measuring pH, because this is a lab-based method that requires collecting samples in bottles and bringing them back to the lab for analysis. Most pH probes use a different technology that make them more portable and accessible, but result in a lower precision and accuracy than the spectrophotometric method. [illegible] monitoring platform at the Coastal Studies Center, we are setting up the spectrophotometer to validate the sensors measurements and potentially calibrate an automated pH sensor.

Since CO_2 affects pH, many samples have been analyzed to learn how to minimize sample