Assessing the Skill of the Regional Ocean Modeling System in Narragansett Bay

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The Regional Ocean Modeling System (ROMS) is a framework for oceanic models that has been used to understand Rhode Island's coastal waters. The model is important in predicting hypoxia events, beach closures, biological activity, and the effects of climate change on economies and ecosystems. This project sought to quantitatively assess the skill of ROMS when applied to Narragansett Bay. To do so, we compared model predictions of temperature and salinity in the winter and summer of 2006 to observational data from that year. Time series were sourced from National Oceanic and Atmospheric Administration (NOAA) fixed-elevation sensors and Rhode Island Department of Environmental Management (RI DEM) buoys, and depth profiles were derived from Insomniacs and Daytrippers ship-based observations. We assessed the covariance and bias between the model and observations with respect to both time and depth. The model varied in accuracy depending on geography, depth, and whether temperature or salinity was evaluated.

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