SKILL ASSESSMENT OF MULTIPLE HYPOXIA MODELS IN THE CHESAPEAKE BAY AND IMPLICATIONS FOR MANAGEMENT DECISIONS

The Chesapeake Bay Program (CBP) has used their coupled watershed-water quality modeling system to develop a set of Total Maximum Daily Loads (TMDLs) for nutrients and sediment in an effort to reduce eutrophication impacts which include decreasing the seasonal occurrence of hypoxia within the Bay. The CBP is now considering the use of a multiple model approach to enhance the confidence in their model projections and to better define uncertainty. This study statistically compares the CBP regulatory model with multiple implementations of the Regional Ocean Modeling System (ROMS) in terms of skill in reproducing monthly profiles of hydrodynamics, nutrients, chlorophyll and dissolved oxygen at ~30 stations throughout the Bay. Preliminary results show that although all the models substantially underestimate stratification throughout the Bay, they all have significant skill in reproducing the mean and seasonal variability of bottom dissolved oxygen. This study demonstrates that multiple community models can be used together to provide independent confidence bounds for management decisions based on CBP model results.

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