

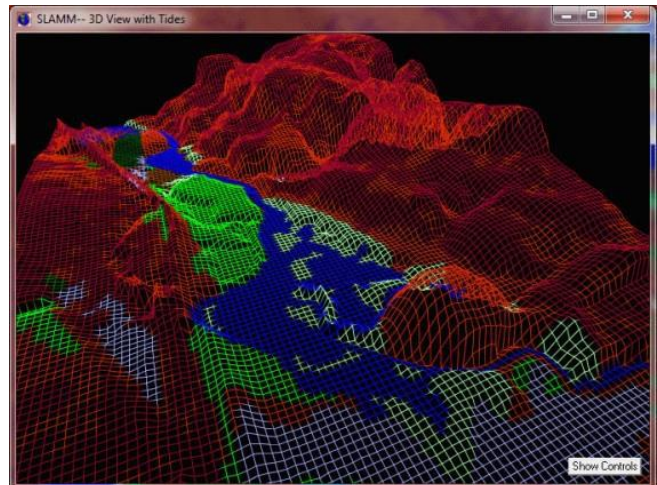
Modeling the Effects of Sea Level Rise On Coastal Wetlands for MA CZM

Project Characteristics:

- *Sea Level Rise Assessment and Projections*
- *Comparison and Evaluation of Sea Level Rise Models*
- *Spatial Data Compilation, Processing and Development*
- *Evaluation of Sea Level Rise on Coastal Wetlands Habitat Types*
- *Utilization of Ecological Models for Projecting Marsh Migration*

Woods Hole Group is working for the Massachusetts Office of Coastal Zone Management to model the effects of sea level rise on coastal wetlands statewide. Multiple candidate models were evaluated for effectiveness and appropriateness, and the Sea Level Affecting Marshes Model (SLAMM) was selected to assess the impacts to wetlands in Massachusetts. SLAMM was also linked to results from the Marsh Equilibrium Model (MEM).

Data inputs, such as topographic data, mapped wetlands, information on accretion and erosion rates of various wetland types, salinity, tide levels and ranges, percent imperviousness, and freshwater inputs, were identified, compiled and processed to simulate high-resolution changes across the entire state. The North Shore's Great Marsh was chosen as a pilot site for testing and sensitivity analysis due to the amount of detailed data available for the system. Sensitivity analyses were completed to evaluate SLAMM's sensitivity to various input parameters, and to the horizontal resolution of the elevation data. Results were used to guide and refine the model inputs for the state-wide model application.



Final model simulations include the sub-site and the state-wide simulation, for three out-year scenarios and three projected sea level rise rates based on IPCC predictions.

MCZM will utilize the results of these models to identify areas along the Massachusetts coast where wetlands can and cannot migrate and adapt to sea level rise, given current elevations and development. In doing so, the project lays the groundwork to assess potential barriers to landward migration of salt marshes and supports the advancement of adaptation strategies and policy change. In addition, Woods Hole Group will identify areas where future supplemental data collection could be performed to improve model results and refine management decisions.

Location: Coastal Massachusetts

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