

PROJECT BRIEF



MAPS, MARSHES, AND MANAGEMENT: ECOLOGICAL EFFECTS OF SEA LEVEL RISE IN NORTH CAROLINA

RENCI Engagement Center for Coastal Hazards

Research and outreach to improve understanding of the interaction between physical, biological, and human processes in North Carolina's coastal region, especially those related to coastal hazards

CICS- NC

Cooperative Institute for Climate and Satellites provides foci for collaborative research in support of NOAA mission goals related to satellite and climate data

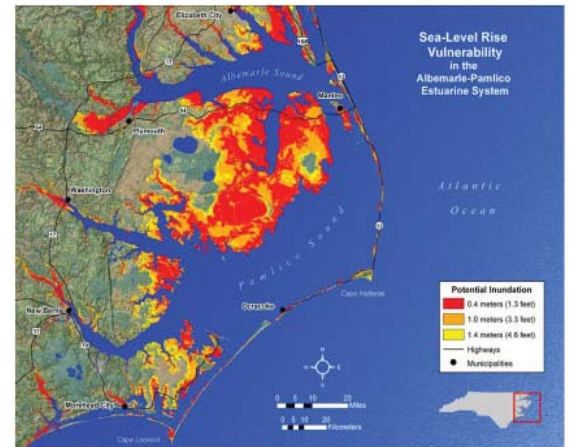
Challenge

Coastal managers concerned are increasingly calling upon scientists to provide information on sea-level rise. Toward this, the NOAA-supported North Carolina Ecological Effects of Sea-Level Rise (NCEESLR) project measured processes and rates of relative sea-level rise, producing important baselines and model simulations to estimates of wetlands responses to sea-level rise. Maps, shoreline and wetland change trends, and observations of estuarine system evolution were developed. To support coastal managers in their efforts related to climate adaptation, this project assimilates results from the NCEESLR project and adds analytical visualization and geospatial tools. The goal of is to provide information and tools to enhance coastal ecological management and decision-making for ecological restoration, shoreline erosion abatement and planning for sustainability of wetlands undergoing sea-level changes.

Response

The project develops and implements sea-level rise geospatial tools in partnership with state, local, and non-profit organizations. Products include a continuum from simple, static maps to dynamic, interactive visualizations. The portfolio of NC EESLR products will include:

- Website portal for interactive SLR mapping, including digital historical shorelines, inlets, and erosion rates from across the Albemarle-Pamlico Estuarine System.
- Map and toolkit use case scenarios with collaborating staff of The Nature Conservancy, NC DENR, and local municipal agencies.
- Site-specific modeling to predict marsh responses, adapting methods and results from prior work on the Marsh Equilibrium Model (MEMII), Sea-Level Affecting Marshes Model, and geospatial inundation models.



Impact

Giving coastal managers access to scientific results in a one-stop portal with visualizations and case studies will support their adoption of geospatial data and predictive models for decision-making and planning for sea-level rise. The geovisual tools will enhance understanding of potential impacts and provide landscape and site-specific information (erosion, accretion, hotspots, suitability for abatement and restoration) that have been unavailable. In collaboration with The Nature Conservancy and NC DENR, the project will work with local officials from the Town of Plymouth and elsewhere to ensure the relevance of the tools and enable their adoption by planners and decision-makers.

Principal Investigator

Dr. Thomas R. Allen, Associate Professor of Geography, East Carolina University, leads the project as Principal Investigator. Allen is a specialist in Geographic Information Science (GISci) and coastal systems and the Director of the Renaissance Computing Institute at ECU. For further information contact:

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