

ASSESSING SOCIAL-ENVIRONMENTAL VULNERABILITY AND FLOOD RISK FOR COMMUNITY ADAPTATION PLANNING IN THE CHESAPEAKE BAY

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The Chesapeake Bay and its watershed are deeply intertwined in the history, culture and economy of communities in this region. Understanding the vulnerabilities of communities along the Bay to climate and coastal hazard impacts requires integrated science. This project aims to provide a framework for an integrated social-environmental vulnerability assessment that would provide coastal communities with the information needed to identify and prioritize adaptation actions.

A variety of ecological, social, economic and cultural indicators are significant when considering the potential impacts of sea level rise and other climatic shifts (e.g., precipitation changes) on coastal communities. Using existing indicators of vulnerability (e.g., SoVI, Cutter, Boruff, and Shirley 2003), as well as novel approaches to indicator development and application for coastal communities (e.g., Dillard et al. 2013, Jepson and Colburn 2013), a set of appropriate metrics were identified and/or developed for the assessment. The following categories of vulnerability were examined: social (e.g., demographics of the population, economic characteristics) and environmental, including both natural and built environment (e.g. distribution of natural resources, characteristics of commercial and residential structures). These vulnerabilities are investigated alongside the risks of various flood hazards, including stormwater flooding, storm surge, and sea level rise. This work builds upon a range of NOAA methods and products (e.g., CSC's Digital Coast, NMFS Social Indicators, NCCOS Community Well-being Indicators, NCCOS Hydrologic Modeling, NCCOS Biogeographic Assessment Framework). Further, the project seeks to advance analytic techniques for integrating measures of vulnerability with measures of risk in a spatial assessment.

The overarching goal of this project was to evaluate the community's vulnerability to the localized impacts of climate variability and change. The scientific assessment paralleled community and stakeholder engagement to ensure that vulnerability was appropriately identified and translated in a way that would serve as a foundation for the community to address risk and identify adaptation strategies moving forward.

Ultimately, the results of the vulnerability assessment will be used to inform community-led adaptation planning and corresponding management actions.