NOAA'S NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE (NCCOS) FY22 EFFECTS OF SEA LEVEL RISE PROGRAM AWARDS

Turning the Tide: Advancing Natural Solutions to Sea Level Rise Impacts for Improved Management on the North-Central California Coast

- **Institutions:** Greater Farallones Association, Greater Farallones National Marine Sanctuary, U.S. Geological Survey, and Point Blue Conservation Science
- **Project Period:** September 2022 - August 2026
- **Location:** California
- **FY22 Funding:** $189,858
- **Total Anticipated Funding:** $961,217
- **Project Summary:** The importance of natural and nature-based features (NNBF) to coastal resilience has been accepted conceptually in the state of California, but these strategies are underutilized because the specific capabilities remain uncertain and they require applications across a patchwork of land ownership and management authority. This project will provide the foundational science and enable agency coordination to address regional-scale management challenges along 300 miles of the north-central California coast. Investigators will advance technical guidance to give resource managers the ability to better prioritize and weigh trade-offs between different coastal management strategies. The project will accomplish this in three ways: (1) solve the most pressing regional-scale challenges including permitting inefficiencies and beneficial reuse coordination difficulties; (2) develop best practices for evaluating the inclusion of ecological health (i.e. biodiversity) in coastal flood protection strategies; and (3) increase implementation of nature based coastal protection projects across the state, rather than conventional gray armoring approaches. Learn more.

Transportation Systems and Flood Resilience under Dynamic Sea Level Rise: Integrated Modeling to Assess Natural and Nature-Based Solutions for Roadway Flooding in Hampton Roads, Virginia

- **Institutions:** Old Dominion University, University of Colorado Boulder
- **Project Period:** September 2022 - August 2026
- **Location:** Virginia
- **FY22 Funding:** $476,639
- **Total Anticipated Funding:** $1,898,170
- **Project Summary:** Sea level rise, more intense storms, and increased frequency of extreme rainfall all exacerbate flood risk to coastal roadways. However, how sea level rise and the associated increase in flood rise will cause mobility loss in surface transportation networks, and how flooding results in pavement deterioration is poorly understood, leading to shortcomings in decision-making tools. This project will predict the adverse effects of sea level rise on transportation systems, and determine how natural and nature-based features can mitigate these effects. Advanced predictions of future flooding and changes in traffic dynamics due to flooding, combined with economic impact analysis and social vulnerability assessments will help evaluate the effectiveness of different natural and nature based feature interventions. Research will be guided by local, regional, and state decision makers, and project outcomes will be communicated with these stakeholders to inform adaptation planning. [Learn more](#)

Salt Marsh Evolution along the South Atlantic Bight

- **Institutions:** University of Georgia-CESU, U.S. Geological Survey
- **Project Period:** September 2022 - August 2026
- **Location:** South Carolina, Georgia, and Florida
- **FY22 Funding:** $180,144
- **Total Anticipated Funding:** $1,614,518
- **Project Summary:** The South Atlantic Bight (SAB) is an intertidal system spanning North Carolina, South Carolina, Georgia, and Florida coastlines with complex tidal circulations. It contains one of the most expansive salt marsh systems in the U.S., with habitats that serve as nurseries, breeding grounds and foraging areas for a variety of species. The complicated coastal geography of the region makes it difficult to predict the effects of sea level rise at a management

scale. Coastal managers and stakeholders have identified the need for detailed assessments of marsh vulnerability, including marsh movement, loss of habitat, and the ability of natural and nature-based features to mitigate marsh loss under sea level rise in the region. This project aims to assess how salt marshes in the SAB will change under future scenarios of sea level rise. Investigators will develop a hydrodynamic and ecological model, Hydro-MEM, for the region at a high spatial resolution that can effectively inform coastal manager decisions. The existing Hydro-MEM model will also be enhanced to account for additional physical processes like sediment transport, and develop probabilistic projections of marsh productivity that account for uncertainty in elevation data. Coastal managers and regional stakeholders will be engaged throughout the entire project to ensure efficient and effective translation of science to application. [Learn more](#).