SOUTH ATLANTIC REGIONAL SYSTEMS MANAGEMENT STRATEGY

For Coastal Resilience and Sustainability


VULNERABILITY AT THE OUTER BANKS


SAVANNAH FLOODING


CHARLESTON FLOODING


BREVARD COUNTY, FLORIDA
POST-TROPICAL STORM SANDY

SOUTH ATLANTIC REGIONAL SYSTEMS MANAGEMENT (RSM) STRATEGY

7 March 2016

What is the South Atlantic RSM Strategy?

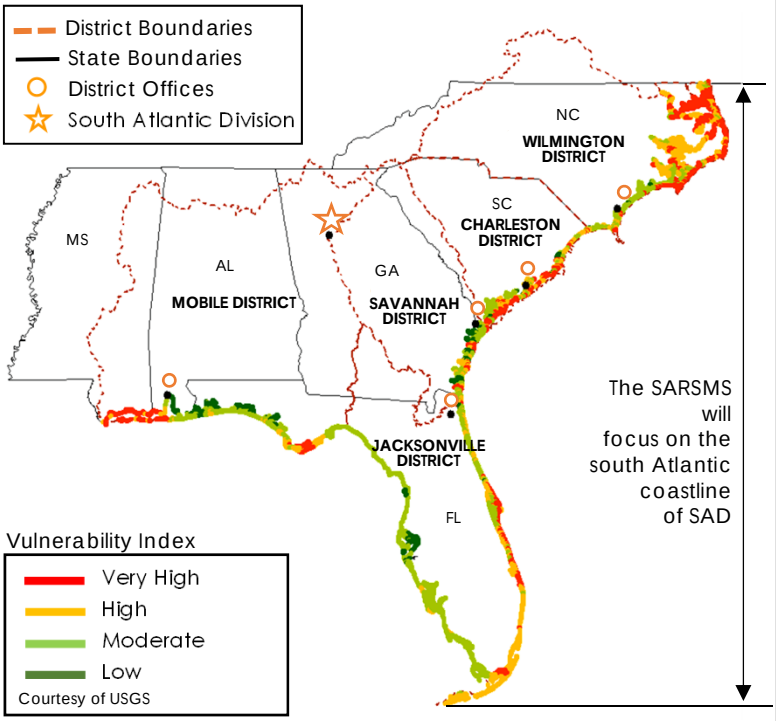
The South Atlantic RSM Strategy is a comprehensive assessment within the South Atlantic Division (SAD) to proactively address the coastal storm and flood risks of vulnerable coastal populations, property, ecosystems, economies, and infrastructure along the south Atlantic coastline now and into the future. The assessment will be modeled closely after the North Atlantic Coast Comprehensive Study (NACCS), a Congressional response and precedent-setting vulnerability and flood risk-reduction study completed for the north Atlantic coastline in the wake of Hurricane Sandy.

The South Atlantic RSM Strategy will extensively leverage the NACCS lessons learned, tools, and processes to ultimately produce a comprehensive and consistent understanding of coastal vulnerability along the entire Atlantic Coast of the United States from Maine to the Florida Keys. In addition to regional analyses of coastal vulnerability, the strategy will identify initial measures/costs that can address vulnerabilities with emphasis on regional sediment management (RSM) as an actionable strategy to sustainably maintain or enhance current levels of storm protection.

Why now?

The effects of projected climate change present an increasing threat to coastal communities and economic productivity. Climate Central, an independent non-profit organization that analyzes and reports on climate change, indicates that areas in the south Atlantic region below an elevation of 6 feet MHHW include a population over 3 million and property valued over $616 trillion – including homes and critical infrastructure investments such as hospitals, schools, government buildings, and 24,000 miles of roads. If we plan now, we can potentially minimize or even avoid impacts of both extreme and nuisance events on our communities. According to the National Research Council, pre-disaster planning can save communities approximately 75% of post-storm costs (NRC 2014).

COASTAL VULNERABILITY IN SOUTH ATLANTIC DIVISION (SAD)



10,000 miles of vulnerable coastline in the South Atlantic Division: The USGS vulnerability index is based on a combined relative score of several natural factors including tidal range, wave height, coastal slope, shoreline change, geomorphology, and historical rate of relative sea level change.

SOUTH ATLANTIC RSM STRATEGY FEATURES


Extensive Outreach and Stakeholder Collaboration

Consistent Coastal Vulnerability Assessments with Sea Level Change

Catalogue of Ongoing Efforts of Federal, State, Local and Non-governmental Organizations

Coastal Storm and Flood Risk Management Strategy for Future Action in Communities


Opportunities for Regional Sediment Management (RSM) Implementation

SOUTH ATLANTIC REGIONAL SYSTEMS MANAGEMENT STRATEGY

SOUTH ATLANTIC RSM STRATEGY: GOAL

The goal of the SARSMS is to identify the risks and vulnerabilities of south Atlantic coastal areas to storms and sea level change, as well as opportunities to enhance resiliency, increase sustainability, and lower risks to population centers, economic development, and environmental resources.

SOUTH ATLANTIC RSM STRATEGY: FRAMEWORK , TOOLS AND PRODUCTS

With this strategy, everyone – individuals, local, state and Federal governments, and non-governmental organizations – can make more risk-informed decisions regarding their communities, such as those related to land use, infrastructure investments, building codes, and evacuation planning. The South Atlantic RSM Strategy will employ a framework similar to that of the NACCS illustrated below. It will result in a regional reconnaissance-level analysis of coastal risk and vulnerability, as well as potential solutions for vulnerable areas to be studied in more detail in the future by an appropriate action agency or organization. The SARSMS will not include detailed analyses to recommend authorization of specific construction projects or a detailed environmental impact analysis.

SARSM STRATEGY: TOOLS AND PRODUCTS

1 COASTAL STORM/FLOOD HAZARD MAPPING

- Current storm surge inundation
- Future storm surge inundation using both USACE and NOAA sea level change (SLC) scenarios

2 RISK AND VULNERABILITY ASSESSMENTS

Additional layers of GIS data to determine who and what could be exposed to a flood event now and in the future, and the potential consequences:

- Environmental, cultural, and social data
- Existing and future land use data
- Resilience of natural/engineered systems

An area's level of risk is a function of its exposure and the probability of the storm/flood occurrence.

3 SPECIALTY REPORTS | PRODUCTS

Examples include:

- Preliminary Environmental and Cultural Reports
- Extreme Water Level Reports
- Conceptual Regional Sediment Management Budgets
- Institutional and Other Barriers Reports

4 CONCEPTUAL COASTAL STORM RISK REDUCTION STRATEGIES (ROUGH ORDER OF MAGNITUDE COSTS)

Examples of risk reduction measures include:

Structural
- Storm surge barriers, levees, breakwaters, groins, beach fill, and dunes

Natural and Nature-Based Features
- Living shorelines, wetlands, oyster reefs, and submerged aquatic vegetation restoration

Non-Structural
- Floodproofing, acquisition, evacuation, and flood warnings

Policy/Programmatic
- Floodplain management, land use planning, state/municipal policy, natural resources, surface water management, education, and flood insurance programs

SOUTH ATLANTIC RSM STRATEGY: IMPLEMENTATION FRAMEWORK

STEPS COMPLETED AT A CONCEPTUALS LEVEL BY THE SARCS

INITIATE ANALYSIS
- Identify Stakeholders, Partners, and Authorities
- Identify Constraints and Opportunities
- Formulate Goals
- Determine Spatial and Temporal Scale of Analysis

CHARACTERIZE CONDITIONS
- Define Physical and Geomorphic Setting
- Compile Flood Probability Data
- Establish Baseline Conditions and Forecast Future Conditions

ANALYZE RISK AND VULNERABILITY
- Map Inundation and Exposure
- Assess Vulnerability and Resilience
- Determine Areas of High Risk

IDENTIFY POSSIBLE SOLUTIONS
- Assess Full Array of Measures
- Consider Blended Solutions
- Develop Performance Metrics
- Establish Decision Criteria

EVALUATE AND COMPARE SOLUTIONS
- Develop Cost Estimates
- Assess Benefits

FUTURE ACTIONS TO BE COMPLETED BY AN APPROPRIATE LOCAL, STATE OR FEDERAL AGENCY OR NON-GOVERNMENTAL ORGANIZATION

ADDITIONAL STEPS TO BE COMPLETED IN FUTURE REPLICATIONS OF THE FRAMEWORK AT REFINED SCALES

SELECT PLAN

DEVELOP IMPLEMENTATION PLAN
- Complete Pre-construction Engineering and Design
- Consider Operation and Maintenance Issues
- Establish Adaptation Thresholds

EXECUTE PLAN

MONITOR AND ADAPT
- Measure Performance and Benefit Production
- Assess Resilience
- Adaptively Manage

North Atlantic Coast Comprehensive Study, 2015

NEXT STEPS

The South Atlantic Division has begun initial scoping for the SARSM Strategy. By leveraging lessons learned and tools available from the NACCS, it is estimated that the South Atlantic RSM Strategy can be completed in approximately three years.

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