South Atlantic Coastal Comprehensive Study

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U.S.ARMY

US Army Corps of Engineers
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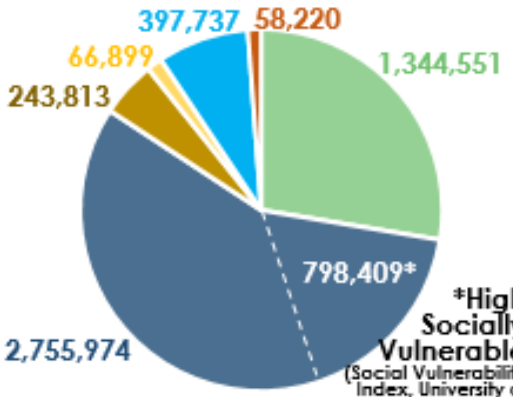
260
HURRICANES
STRIKES
(1851 – 2017)
260 South Atlantic Division
68 North Atlantic Division
59 Southwest Division
57 Mississippi Valley Division

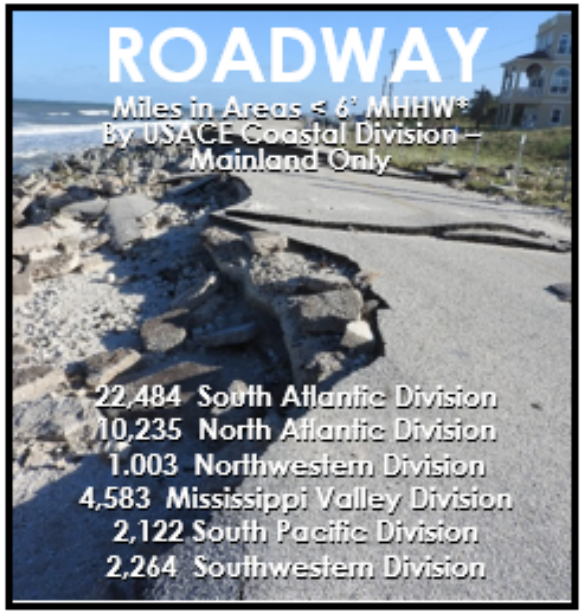
SOUTH ATLANTIC DIVISION – MOST VULERABLE COASTAL DIVISION IN USACE

POPULATION

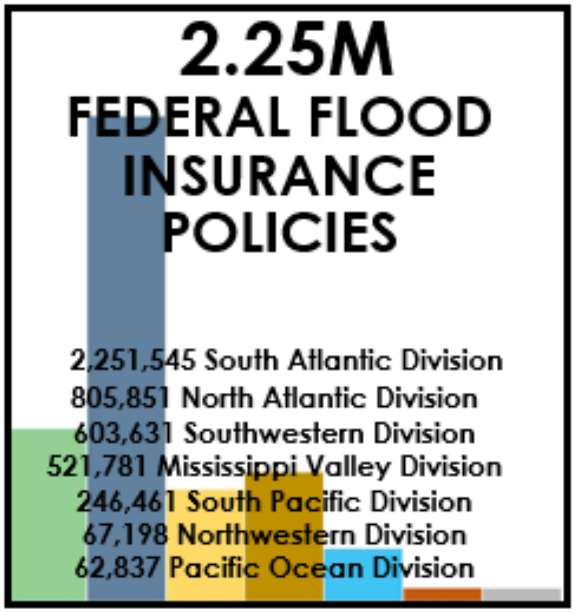
In Areas < 6' MHHW*
By USACE Coastal Division – Mainland Only



*High Socially Vulnerable (Social Vulnerability Index, University of South Carolina)

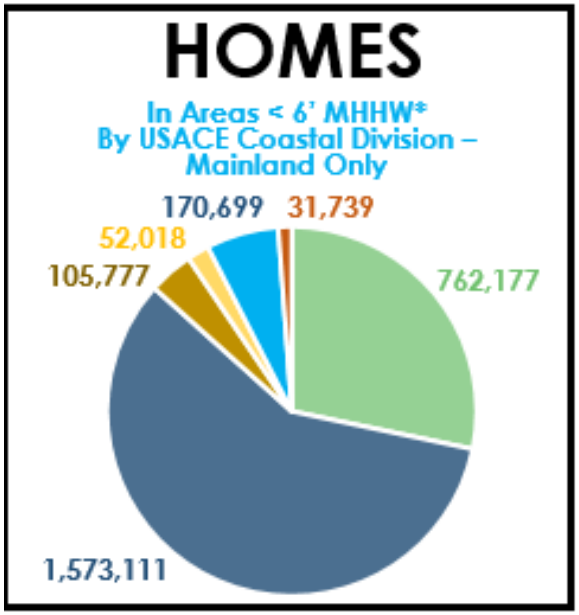


2.25M FEDERAL FLOOD INSURANCE POLICIES



HOMES

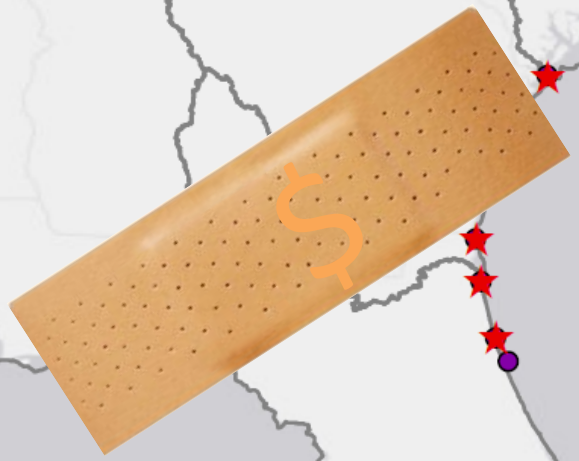
In Areas < 6' MHHW*
By USACE Coastal Division – Mainland Only



North Atlantic Division | South Atlantic Division | Mississippi Valley Division | Southwestern Division | South Pacific Division | Northwestern Division | Pacific Ocean Division

Sources: 1. ClimateCentral.org 2. FEMA.gov/reports 3. Coast.NOAA.gov 4. 2035 South Atlantic Division Strategic Assessment

South Atlantic Division- Coastal Storm Risk Management



SAW

SAC

SAS

SAM

SAJ

>2500 miles of ocean coastline
>18,000 miles tidal coastline
- 38 Federal projects
- 29 Hurricane Irma PIRs
- Current focus on sandy beaches only

★ FRM Projects with Irma PIR
● SAD Coastal FRM Projects

Questions we need to answer:

What areas are at greatest risk?
What is at risk?

- Population & Infrastructure
- Social Vulnerability
- Environmental & Cultural

Where can limited resources buy down the most risk?

- Fed vs non-Federal actions
  - Guide for stakeholders
- Now (O&M, Construction)
- Future (Investigations)

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Outline & Goal

- What is the SACS
- Why SACS? Programmatic Benefits
- SACS Concept
- Southeast Coastal Assessment
- SACS/NACS comparison
- Foundational Elements of SACS
  - State Appendices/Focus Area Action Plans
  - Coastal Hazard System
- Team Overview
- Path Forward

Authority, Funding, &Timing

- AUTHORITY: Section 1204 WRRDA 16
- FUNDING: PL115-123
  - $16M,100% Federal
- IG provided but may no longer be applicable
- Concurrent Supplemental Opportunities

NACCS Lessons Learned

- NACCS had dedicated funding and team resources to meet aggressive schedules.
- Not typical USACE Feasibility study, not a decision document. Must be agile and timely with top cover.

Per Section 1204 of the Water Resources Development Act of 2016

- (a) Identify risks and vulnerabilities of [coastal areas within SAD AOR] to increased hurricane and storm damage as a result of sea level rise (SLR).
- (b1) Conduct analysis of current CSRM projects with an emphasis on RSM practices to sustain/enhance current levels of storm protection.
- (b3) Recommend measures to address coastal vulnerability of areas affected by SLR.
- (b4c) Submit a report recommending specific and detailed actions.

Programmatic Benefits

- Demonstrate need for studies/projects
- Prioritized needs/risks to maximize return on investment
- "IWRM" - Watershed approach including back bay, barrier and riverine areas
- Blueprint for storm preparation/response
- Enhance USACE leadership of coastal risk management, resilience, and sustainability
- Building Partnerships
- "Knowledge Management" - Develop a regional coastal team with shared/integrated tools
- Inform, integrate, Supplemental CSRM studies/projects
- Develop foundational elements for additional studies/future construction to be completed more efficiently/expeditiously.

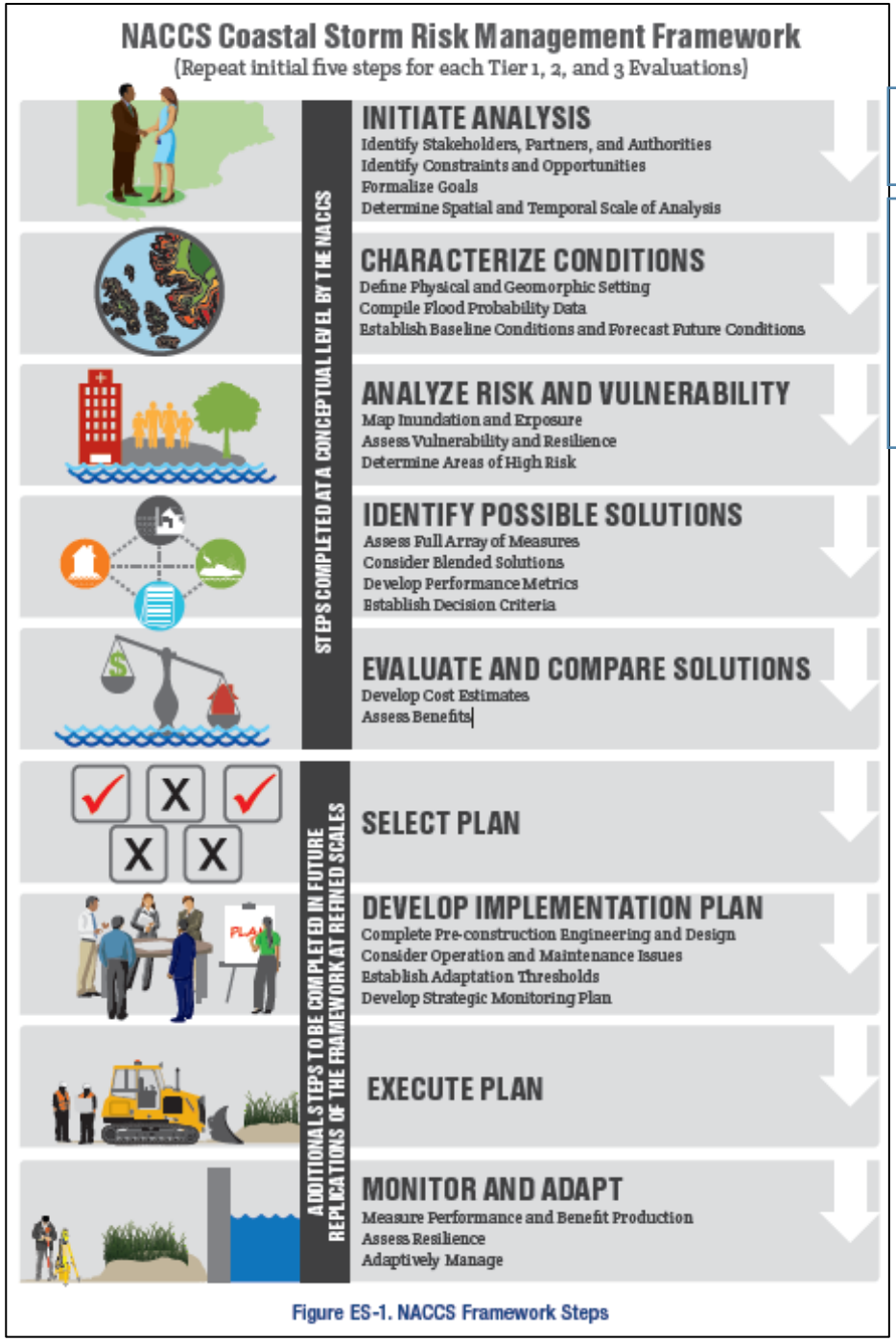


Figure ES-1. NACCS Framework Steps

Early Challenges and Opportunities

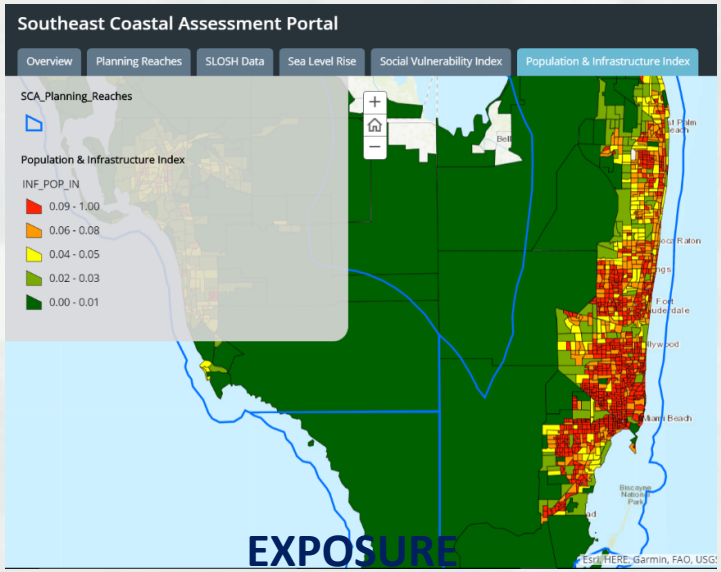
SOUTHEAST COASTAL ASSESSMENT (SCA):
A coordinated and comprehensive coastal shoreline and risk assessment

- Scoped at $2.5M over 2 years
- Actual $400,000

SACS

Post SACS

SCA – Risk Assessment



Exposure: Number of assets, people, sensitive environment within the Hazard Footprint

Hazard: Footprint of the Hazard and Probability of the Hazard (Large footprint / Low Probability | Small Footprint / High Probability)

Relative Risk: % chance annual probability that # Assets are flooded to any extent

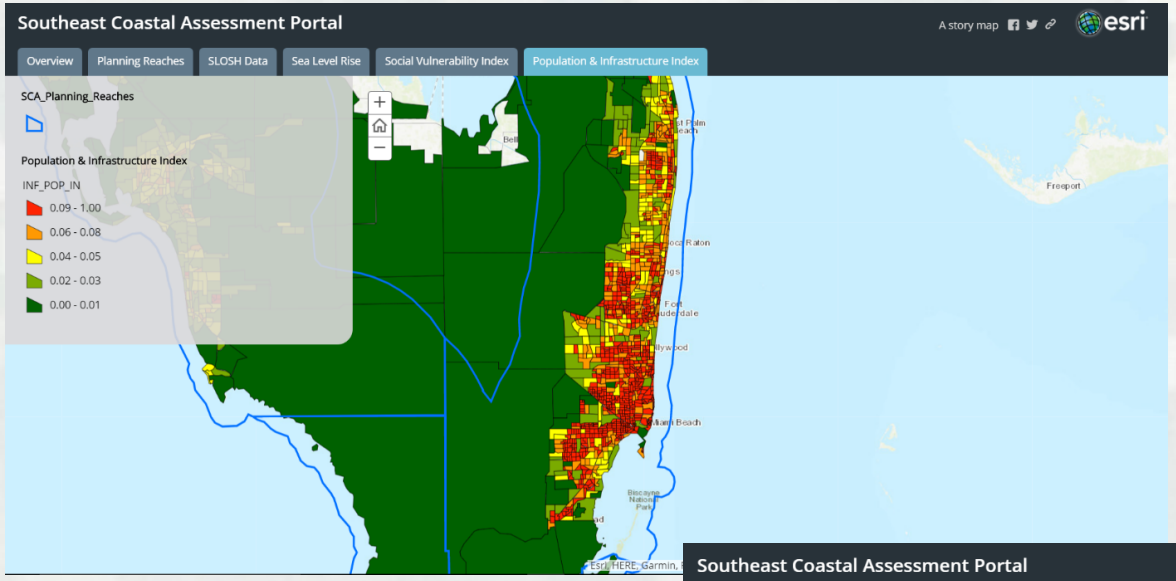
where Relative Risk:

= Exposure Density X Probability and Area of the Hazard

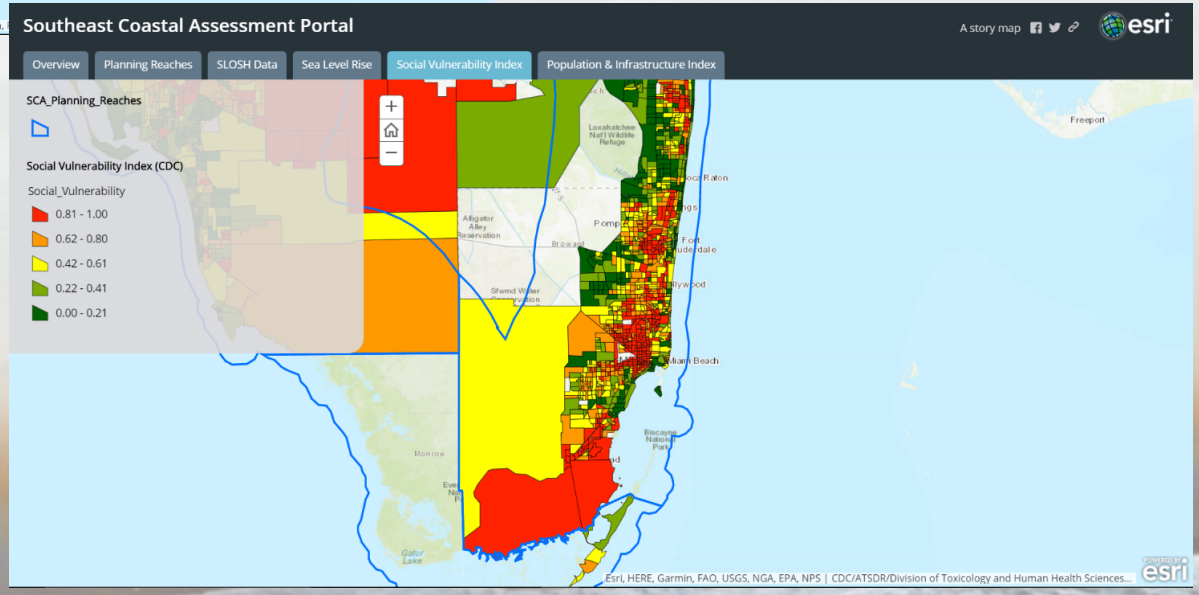
= # Assets/mi^2*P*mi^2

where mi^2 is the aerial extent of the Hazard

SCA – Exposure Indices



Population and Infrastructure



Social Vulnerability + Environmental and Cultural

SCA – Hazard Scenarios

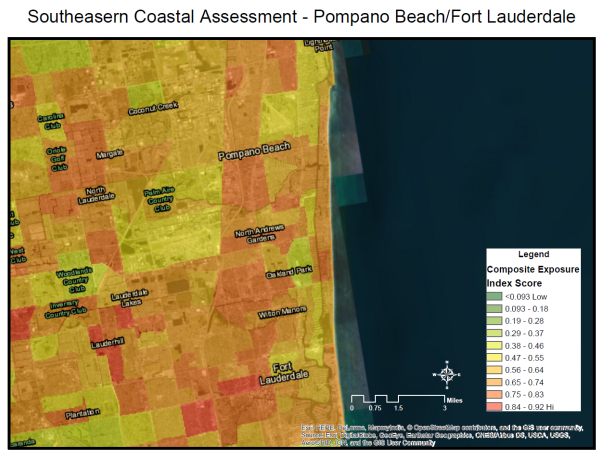
1% Chance Annual Flood

10% Chance Annual Flood

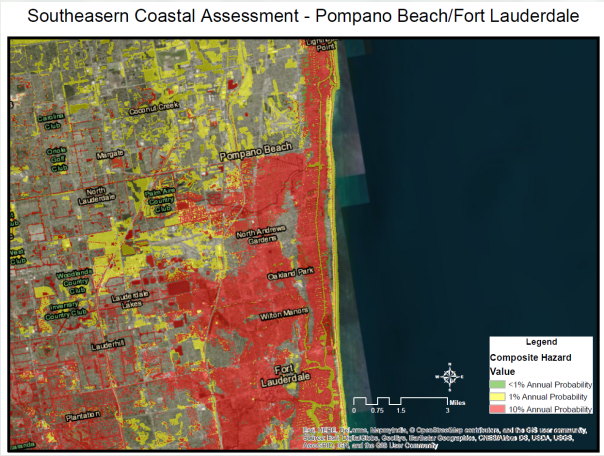
10% Chance Annual Flood + 3 FT SLR

CAT 5 MOM

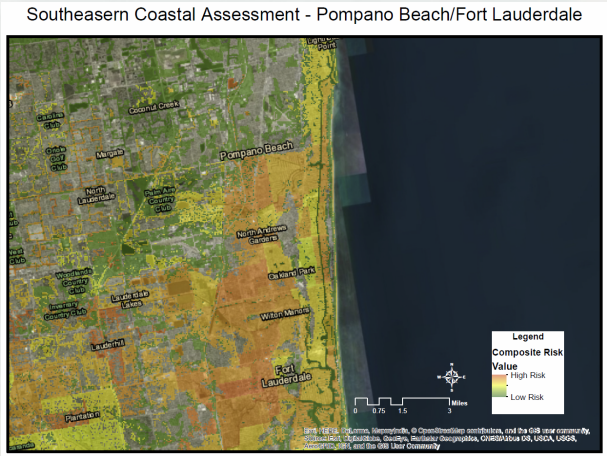
What has come out of SCA: Exposure x Hazard = Risk



Composite Exposure Index



Composite Hazard Index



Composite Risk Index

Identify what is at risk

Population affected: 6,398,038

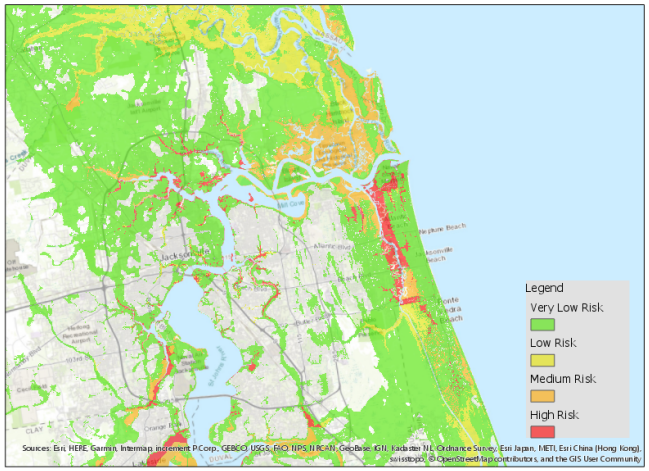
Acres of Wetlands: 144,208

Miles of Shoreline including back bays: 5,103

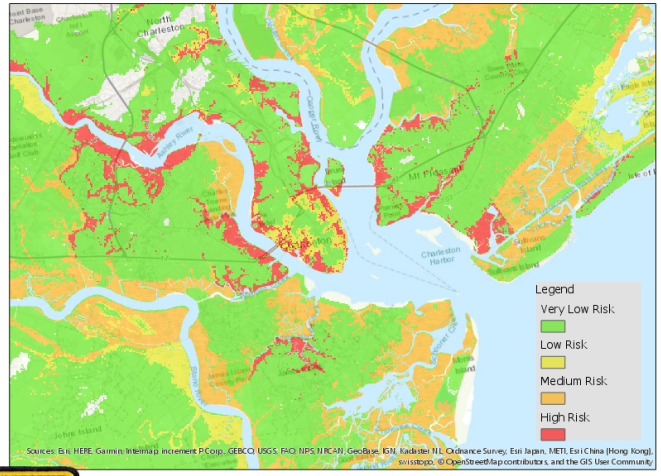
Critical Infrastructure elements affected: 32,805

***Statistics based on intersection of high risk areas designated by SCA analysis with various other data layers.**

Jacksonville, FL Risk Assessment

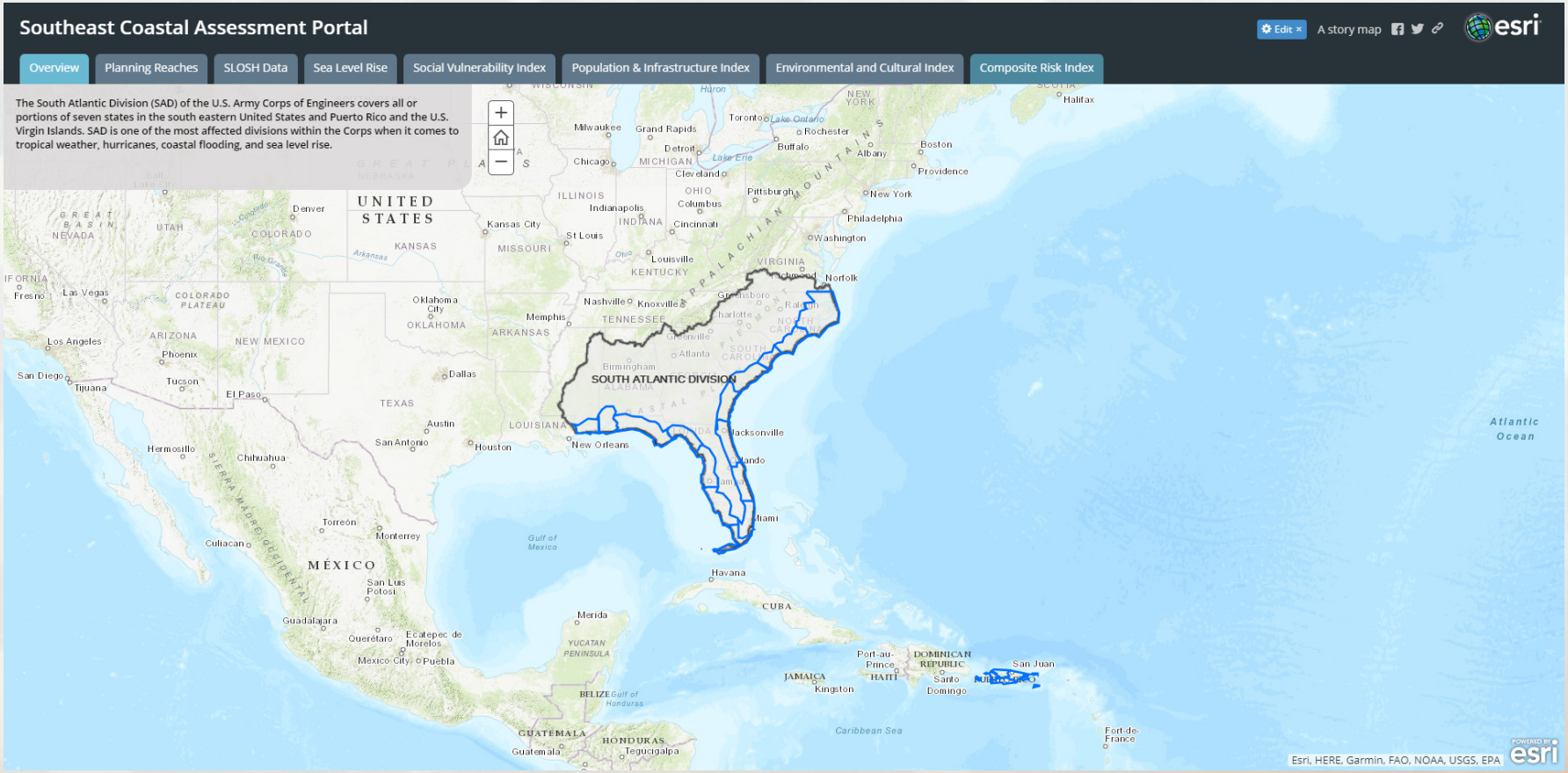


Charleston, SC Risk Assessment



The corner of Bee Street and Lockwood Drive on the afternoon of September 11, 2017. Photo credit: Erin Spencer

SCA Portal Prototype - Demo



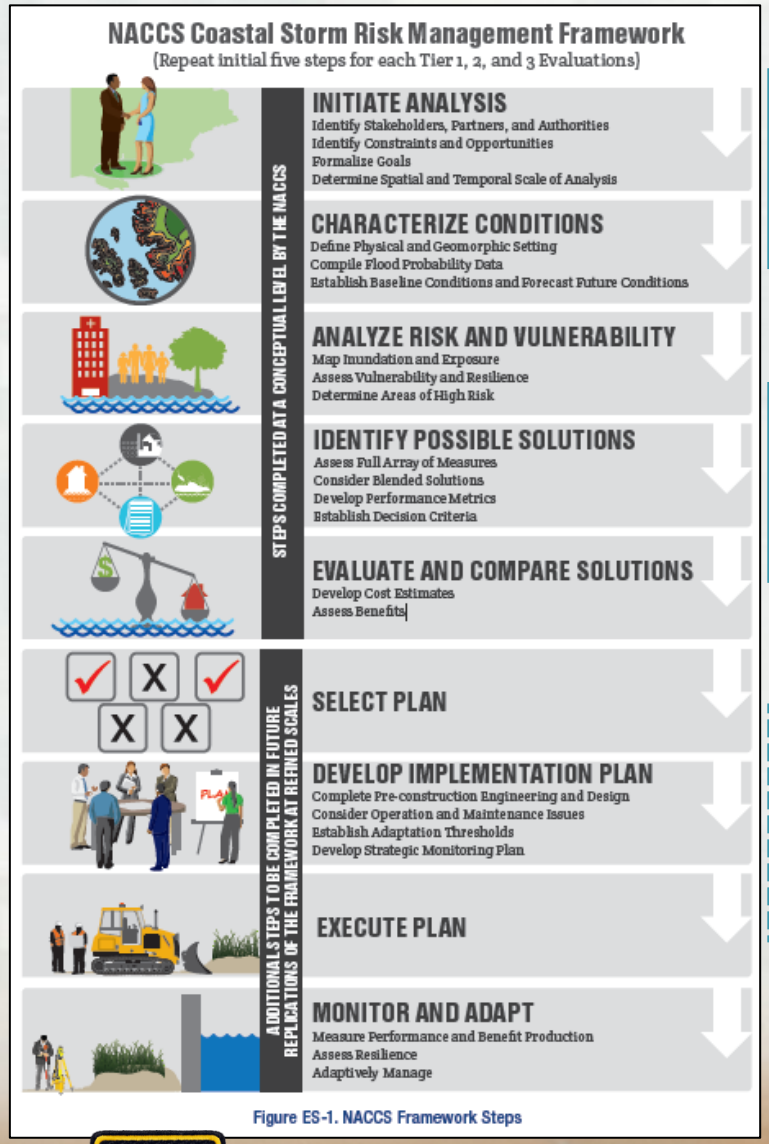


Figure ES-1. NACCS Framework Steps

SACS at the regional conceptual level

SACS Focus Area Action Plans

Feasibility & CAP at the project specific level

Goals

- Consistent, regional assessment of coastal vulnerability
- Usable Tools
- Stakeholder Inclusive
- Focus Area Action Plans provide array of actions to address risk

Lessons Learned

➢By spending additional time at the beginning of a study to accurately define and seek concurrence from stakeholders on the boundaries that could potentially change, rework at later stages of the study was avoided.

➢The NACCS is absolutely a model for large programmatic studies. However, the expectations were not always clear and defined. The goal should be to strive to improved planning objectives.

SACS Products: Leveraging NACCS	Re-Use	Modify	New
CSRM Framework	●		
*Focus Area Action Plan (FAAP) & State Appendices		●	
Environmental & Cultural Resources at Risk Reports for FAAs			●
Project Performance Evaluation		●	
Agency Communications and Collaboration Report		●	
Conceptual Regional Sediment Budget		●	
Coastal Program Guide		●	
Natural and Nature-Based Features Report and Brochures		●	
GIS Geodatabase		●	
Institutional & Other Barriers Report		●	
*Coastal Hazards System (CHS)		●	
*Coastal Consequence Factory (Beach FX & G2CRM)			●
*Sand Source Inventory (*funded separately from SACS)			●
Regional Sediment Management Optimization			●
Resiliency		●	

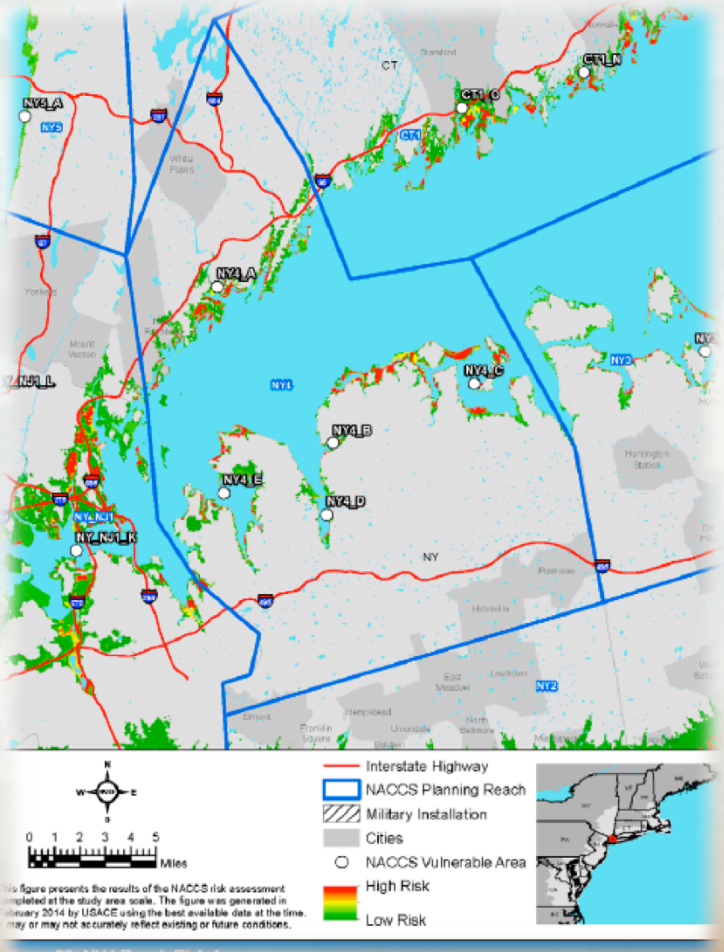
*foundational strategy

All portions of the SACS will benefit from NACCS products and lessons learned

As of: 16 Feb 2016
POC: Jackie Keiser

State Appendices

- Led by District POCs for each state.
- State-specific conditions and info relevant to **comprehensive CSRM strategies.**
- Key Components
  - Environmental, cultural, and social data.
  - Existing and future conditions.
  - Sea level rise and climate change.
  - Detail on risk assessment.
    - What's at risk
    - Value to the nation
  - Stakeholder studies/plans to address risk.
  - Focus Area Action Plans:
    - Multi-disciplinary/multi-agency teams
    - **Recon level recommendations for actionable solutions**



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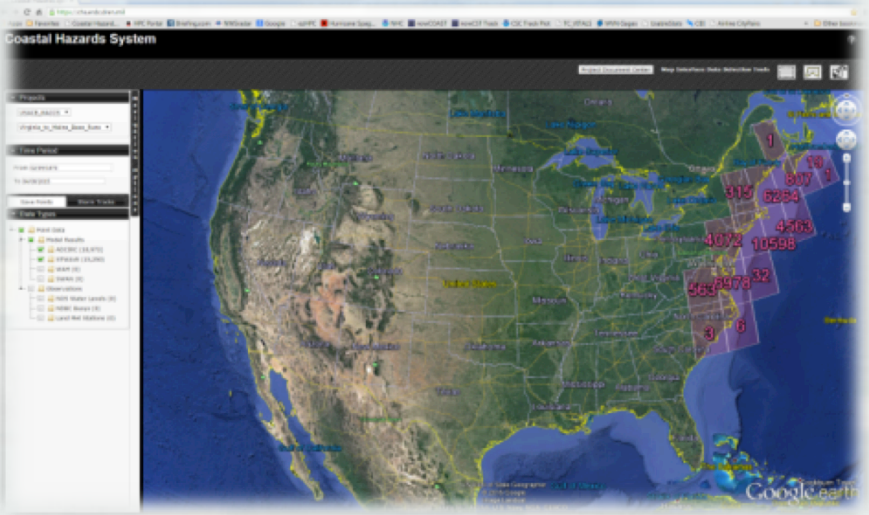
As of: 16 Feb 2016
POC: Jackie Keiser

Coastal Hazards System

- StormSim: Coastal storm statistics
- Long-term storage of, and public access to, modeled coastal storm data.
- Easily accessible data; search, browse, visualize
- Contextual data products and tools that support federal decision making
  - Complete statistical description
  - Support risk management/ assessment/ communication
  - Support project design and evaluation
  - Support expedient coastal storm response prediction, emergency management, operations



CHS for SACS

- Gulf and Atlantic Shorelines (Double Effort Compared to NACCS)
- Phased rollout
- $ 3 million over 4 years
- Led by ERDC

Team Overview

Hierarchy

- Executive Committee – Overall guidance, approval, top cover, vertical coordination
- Command Center – Scope development and management, Coastal program integration, general oversight, vertical coordination
- PDT
  - Regional PM
  - Regional Leads
  - District PMs and PDTs

Project Delivery Team

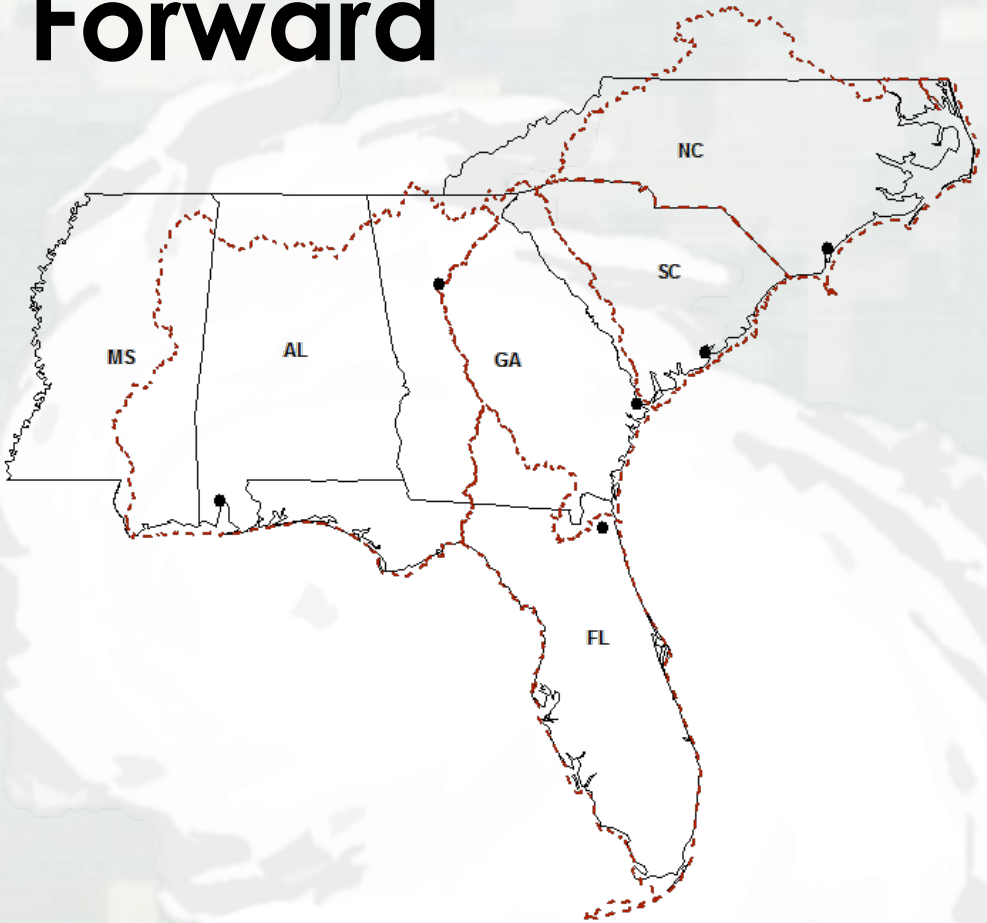
- SAD & SAD Districts
- NAD-PCX, ERDC, IWR & Other SMEs
- State & Federal Agencies
- NGOs
- Contractors
- Stakeholders

Lesson Learned

➢Access to USACE experts across the CENAD, outside of CENAD, and from ERDC and CEWIR to lead various sub teams resulted in high quality project analyses and products completed on schedule

Path Forward

- Each District PM to provide comments on draft scope
- HQ/NAD-PCX meeting to present scope
- District PDT's and technical leads/tasks established
- Revise PMP
  - Strategy document
  - Schedule/budget
- Extensive stakeholder outreach
- Focus Action Areas Identified




Questions?