North Atlantic Coast Comprehensive Study: *Resilient Adaption to Increasing Risk*

U.S. Army Corps of Engineers
Coastal Storm Risk Management
Planning Center of Expertise

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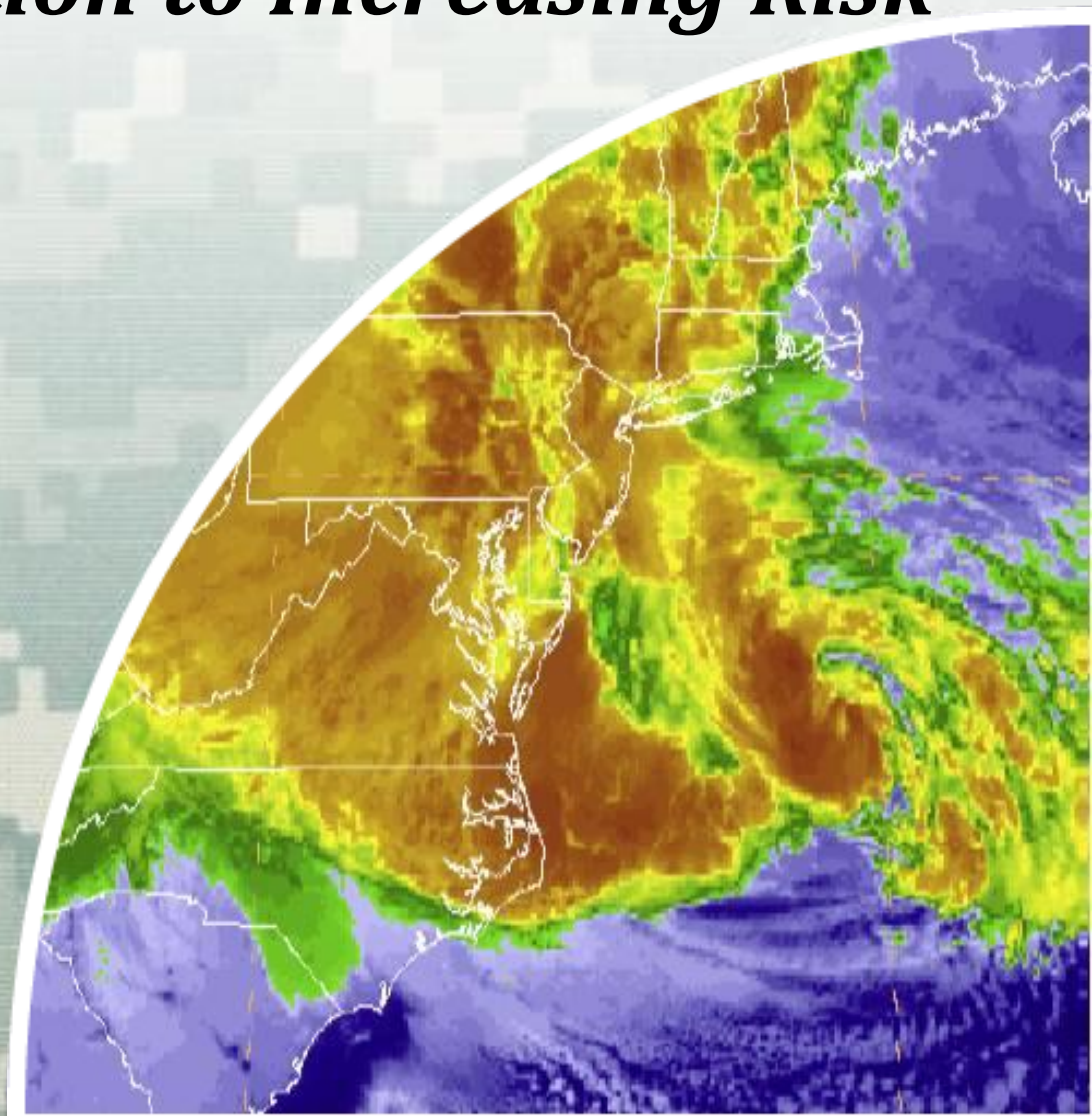
21 November 2013



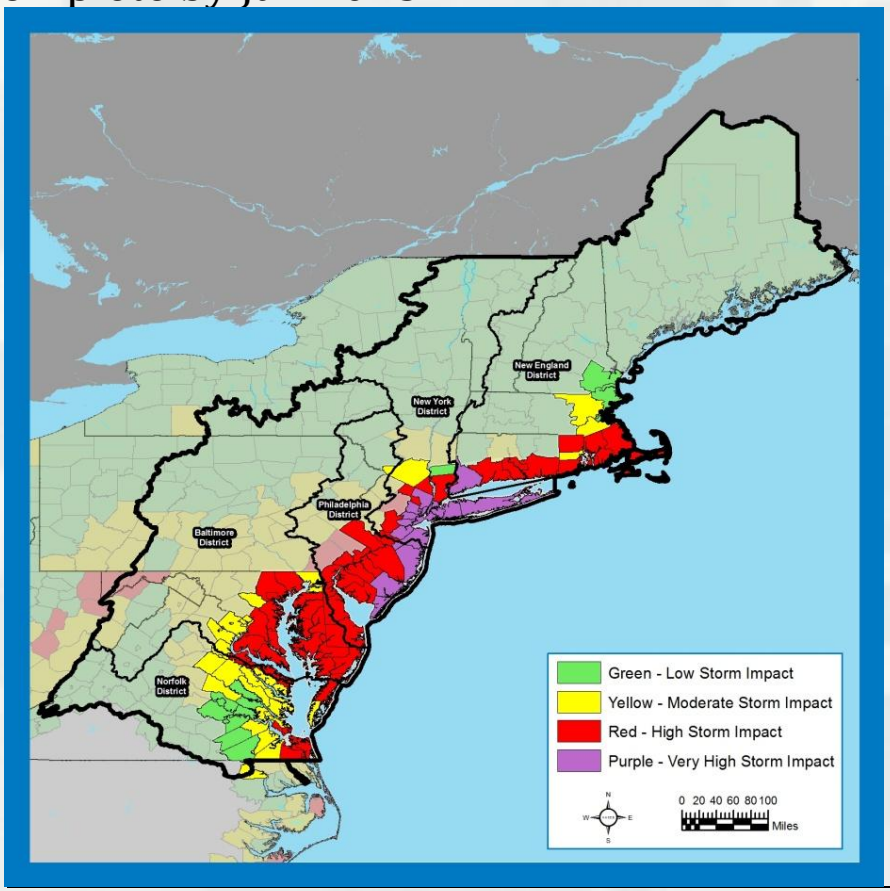
Background

- Hurricane Sandy impacted the Atlantic coastline in October 2012
- Affected entire east coast – Florida to Maine
- Greatest areas of impact: NJ, NY, CT
- Public Law 113-2

Background

"That using up to $20,000,000* of the funds provided herein, the Secretary shall conduct a **comprehensive study** to address the flood risks of **vulnerable coastal populations** in areas that were affected by Hurricane Sandy within the boundaries of the North Atlantic Division of the Corps…" (*$19M after sequestration)

- Complete by Jan 2015

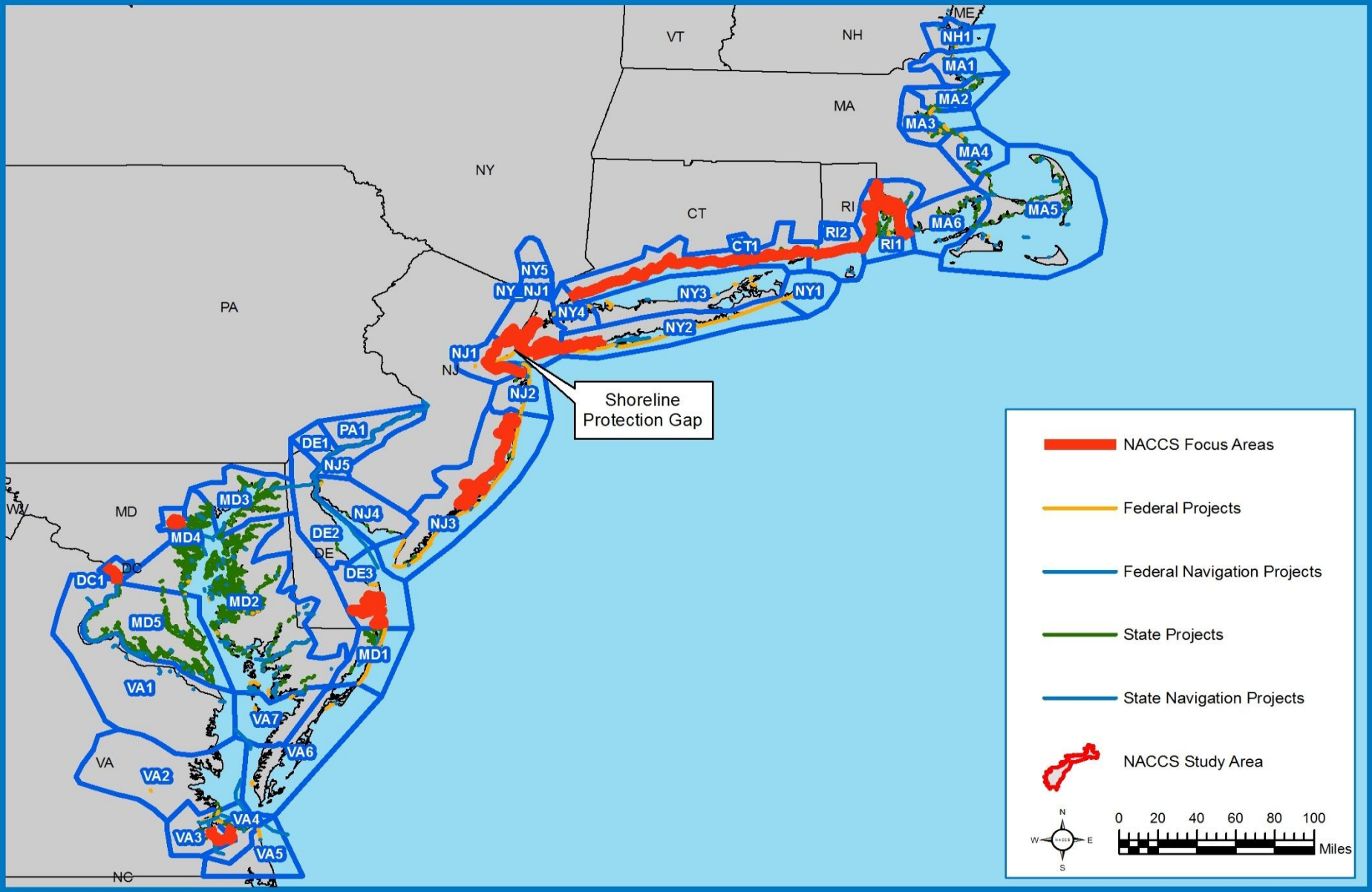


Goals:

- Provide a Risk Reduction Framework , consistent with USACE-NOAA Rebuilding Principles

- Support Resilient Coastal Communities and robust, sustainable coastal landscape systems, considering future sea level rise and climate change scenarios, to reduce risk to vulnerable population, property, ecosystems, and infrastructure.

NACCS Study Area



Future Scenarios

- **Climate Change and Sea Level Rise**
  - Sea level is increasing throughout the study area
  - Increased populations and infrastructure exposed to storm surge and frequency of flooding
  - Shorelines are changing in response to sea level rise
  - Historic erosion patterns will continue and accelerate
- **Socioeconomic**
  - Population is aging (i.e. more difficult to evacuate/relocate during flooding)
  - Population is increasing (more people exposed to flooding)
  - Importance of operating channels and ports will become more critical to regional and national economy
- **Environmental**
  - Habitats subject to more stress with population increase, climate change, and other effects

NACCS Framework

- **Goals**
  - Reduce risk to vulnerable coastal populations
  - Ensure a sustainable and robust coastal landscape system, considering climate change (CC) and sea level rise (SLR), to reduce risk to vulnerable populations, ecosystems and infrastructure

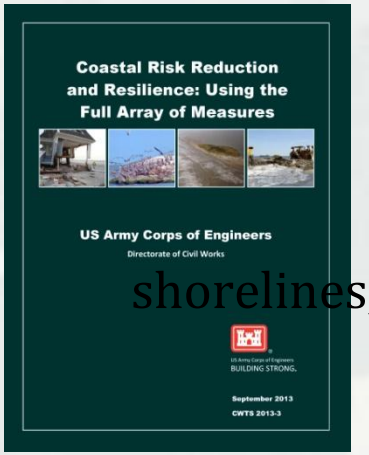
- **Objectives**
  - Reduce vulnerability of coastal populations and infrastructure to future flooding and storms
  - Promote robust , resilient, and sustainable coastal landscape system, considering CC and SLR scenarios for 2018, 2068, 2100, and 2118
  - Increase the availability of information to enhance local decision-making
  - Promote the development of new tools and technology to provide innovative solutions (i.e. nature-based features)

NACCS Framework

- Who and what is exposed to flood risk?
- Where is the flood risk?
- What are the appropriate strategies and measures to reduce flood risk?
- What is the relative cost of a particular strategy compared to the anticipated risk reduction?
- What data is available to make a RISK INFORMED decision?
- What data gaps exist/can be closed through the NACCS?

Risk Reduction Measures

- **Structural**
  - Storm surge barriers, levees, breakwaters, groins, beach fill, dunes
  - Natural and nature-based features (e.g. living shorelines, wetlands, oyster reefs, SAV restoration)



- **Non-Structural** (e.g. floodproofing, acquisition, evacuation, flood warning, etc.)

- **Policy/Programmatic** (e.g. floodplain management, land use planning, State/municipal policy, natural resources, surface water management, education, flood insurance programs, etc.)

- **Parametric Costs ($$$)**

Nature-Based Features

- Natural landscapes or engineered ecosystems, and blended solutions
- Intrinsically dynamic, adaptive, and potentially more resilient than built systems

NACCS will:

- Evaluate the performance of nature-based infrastructure during Sandy
- Identify features that were especially resilient to storms
- Provide tools for benefit evaluation
- Consider nature-based features at a system-wide scale
- Work towards building a Federally-shared perspective on nature-based infrastructure, and its benefits

Closing Data Gaps

- Storm Suite Modeling
- Coastal GIS Geodatabase & Analysis
- Economic Depth-Damage Estimation Tool
- Sea Level Rise and Vulnerability Assessment & Maps
- Barriers to Implementation
- Areas Warranting further Analysis
- **Nature-Based Evaluation Framework**
- USFWS Planning Aid Reports
- Community Resiliency Survey Tool
- Conceptual Regional Sediment Budget for the North Atlantic
- State Appendices with evaluation of risk and risk reduction opportunities

Collaboration Efforts

- **Interagency and Tribal Input**
  - Formal and informal letters and email
  - Technical working meetings
  - Panel discussions and meetings upon request
  - Subject Matter Experts embedded in team and via outreach
  - Federal Register notices
  - Public website with subscribe list and opportunity for resiliency input
    - Feb-March 2014 public web posting and comment button
- **Interagency Webinar Collaboration Series**
  - Webinar 1 (30 July 2013) Green/Nature Based Infrastructure
  - Webinar 2 (29 August 2013) Ecosystem Goods and Services
  - Webinar 3 (12 September 2013) Numerical Modeling and Sea Level Rise
  - Webinar 4 (25 September 2013) Vulnerability Assessments
  - Webinar 5 (December 2013) Adaptive Management
  - Webinar 6 (December 2013) Policy Challenges

Schedule: Comprehensive Study

29 Jan 13
Enactment of Supplemental Legislation PL 113-2

Develop draft PMP and SOW (NLT 15 Mar; approved 27 Mar √)

Phase 1
Interagency & NGO coordination to assemble existing/future conditions. Assessment & formulation of measures
(PDT Milestone Meetings 1 √, 2 √, 3)

Phase 2
Interagency & international validation & collaboration

Phase 3
Finalize comprehensive report & submit to Congress (January 2015)

Jan 2013 — Jan 28, 2015

- Quarterly IPR 20 May 13
- Public Web Site
- Quarterly IPR 19 Jul 13
- Quarterly IPR 21 Nov 13
- Quarterly IPR Jan 14
- Quarterly IPR Apr 14
- Quarterly IPR Jul 14
- Sep 2014
- Quarterly IPR Oct 14

PDT Milestone 1 √ 8 May 13
PDT Milestone 2 √ 19 Jun 13
PDT Milestone 3 20 Aug 13
Further Opportunities for Input
Draft Final to HQUSACE

FEMA-NDRF Synchronization w/ missions scoping assessments

PHASE 1 [Months 1-14]
- √Initiate high level interagency coordination -federal, state, local, tribal
- √√Integrate sea level rise and climate change
- √ Integrate ongoing or planned data & reports
- √ Identify existing problems
- √ Assess future conditions
- √ Identify structural and non-structural solutions
- √ Identify programmatic and policy solutions
- √ Integrate risk reduction measures
- √ Identify near-term and long-term risks
- √ Identify gaps in current risk reduction
- √ Identify/refine planning-level cost estimates and benefits/risk reduction approaches

Agency Technical Review

PHASE 2 [Months 15-18]
- Coordinate with federal, state, local and tribal agencies
- Define IWRM and alternative approaches for systems analysis (FRM, ENR, NAV, etc)
- Develop concept animations and/or info-graphics
- Identify areas at risk and implementation options
- Identify implementation and fiscal challenges

Agency Technical Review

Prepare clearance letters to OASA (CW)

Product: Receive interagency, partner and international comments

PHASE 3 [Months 19-24]
- Additional interagency collaboration, as needed
- Conduct quality control reviews
- Conduct concurrent reviews (public, policy, ATR, legal, interagency)
- Resolve comments
- Prepare hardcopy and online materials

Product: Draft comprehensive study to HQUSACE (Sep 2014)
Product: Draft comprehensive study to OASA(CW) (Dec 2014)
Product: Submit final report to Congress

Identify Institutional Barriers

Jan 2015

Product: Storm Suite Modeling
Product: Coastal Geographic Information System Geo-database & Analysis
Product: Economic Depth-Damage Estimation Tool
Product: Sea Level Rise and Vulnerability Assessment & Maps
Product: Identification of NAD risk and preliminary approaches for system resilience