

# Integrated Vulnerability Assessment in the Chesapeake Bay

## Creating Priorities for Adaptation and Restoration



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JHT, Inc.  
ISSRM Conference 2016



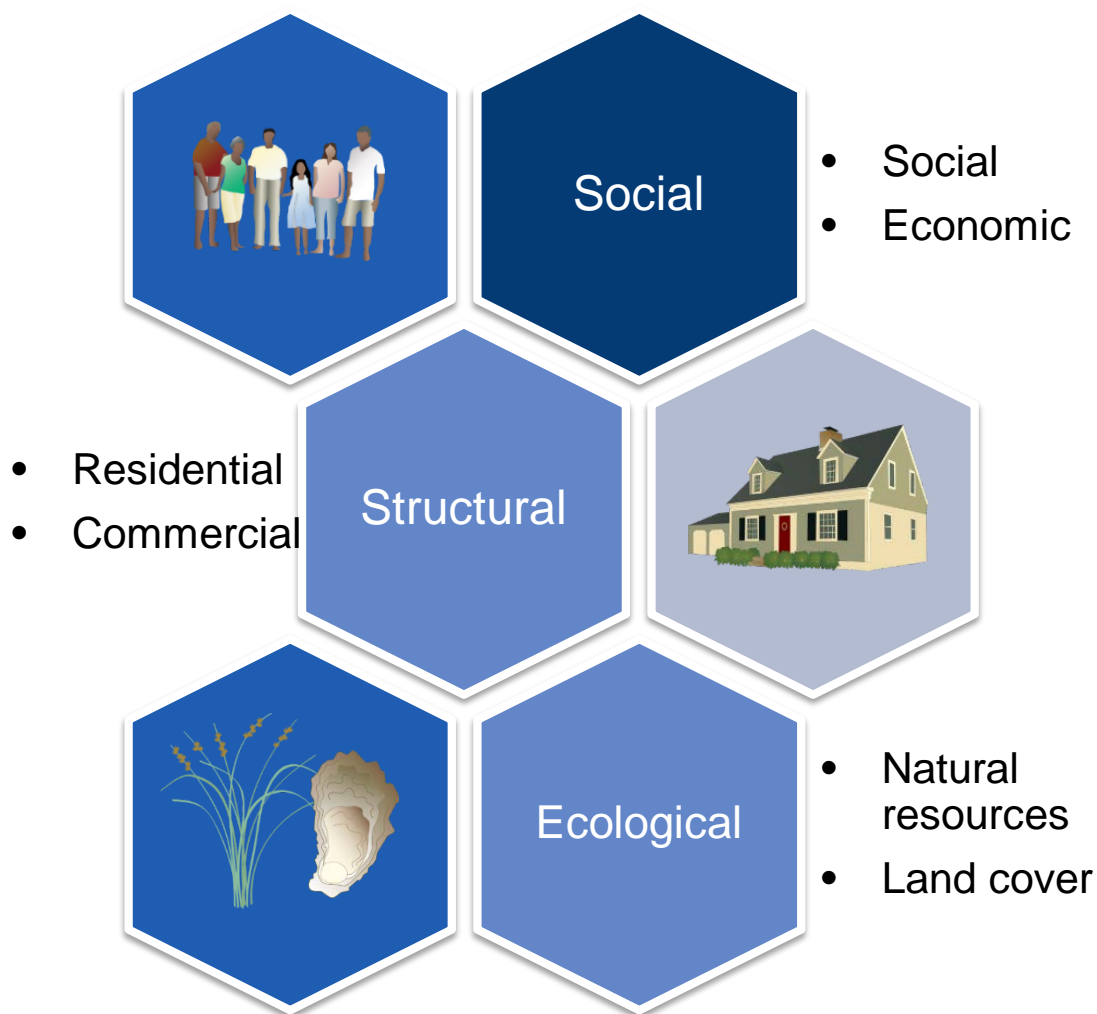
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# Introduction to the Project

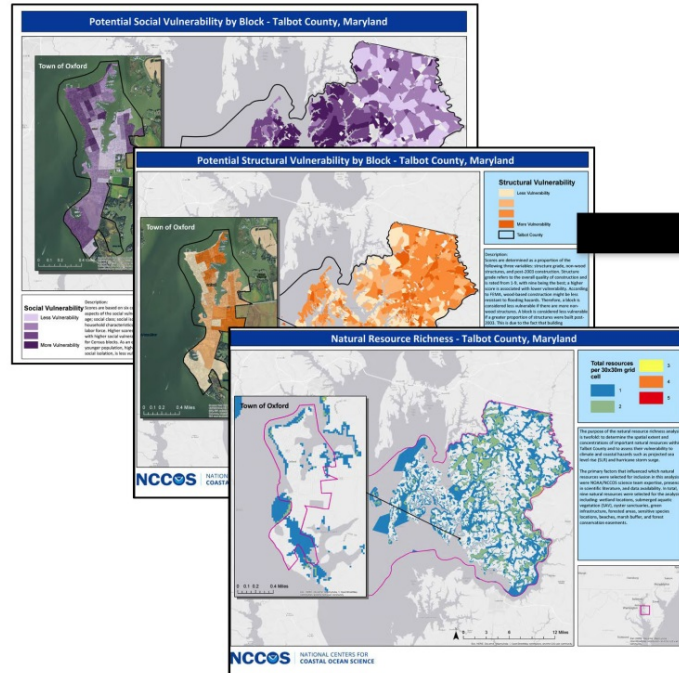
**Goal:** assess the climate change vulnerabilities of the social, structural, and ecological systems

**Purpose:** science-based information to help improve community resiliency to climate and coastal hazard impacts

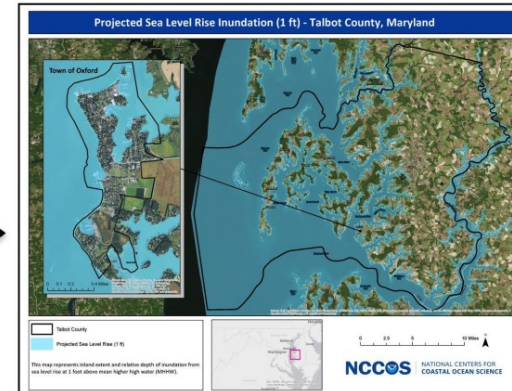


# Introduction to the Integrated Vulnerability Assessment Framework

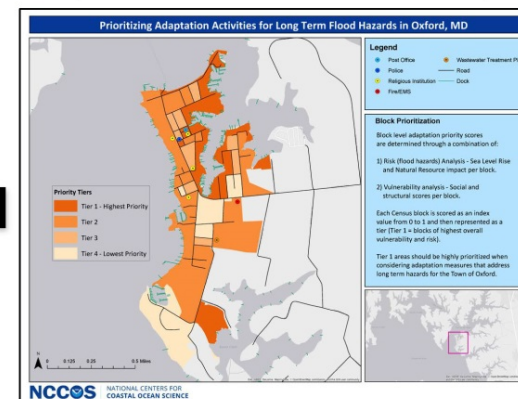
## 1. Assess Vulnerability



## 2. Assess Flood Risk



## 3. Prioritize Adaptation Areas

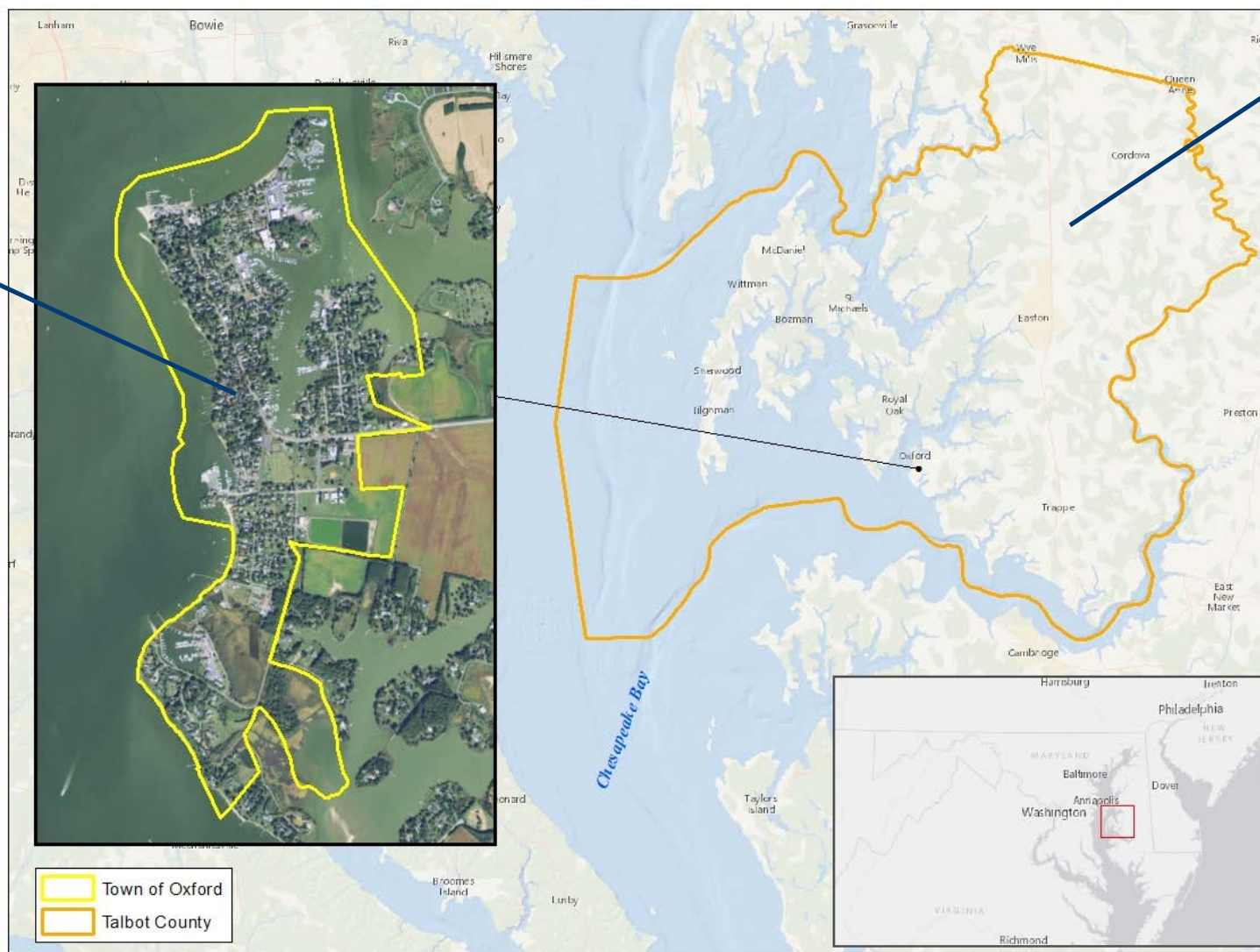


## 4. Take Management Action





# Site 1: Town of Oxford and Talbot County, MD

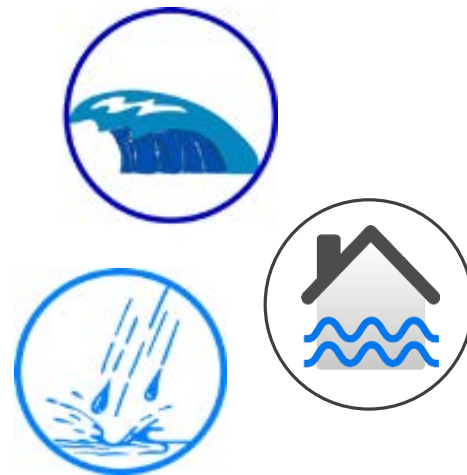


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# Methods & Analysis

- Worked with community to identify climate impacts of most concern:
  - Category 1 Hurricane Storm Surge
  - Sea Level Rise of 1 Foot
  - Stormwater Flooding
- Utilized the Integrated Vulnerability Assessment Framework to combine social, structural, and environmental vulnerability with flood hazard risks

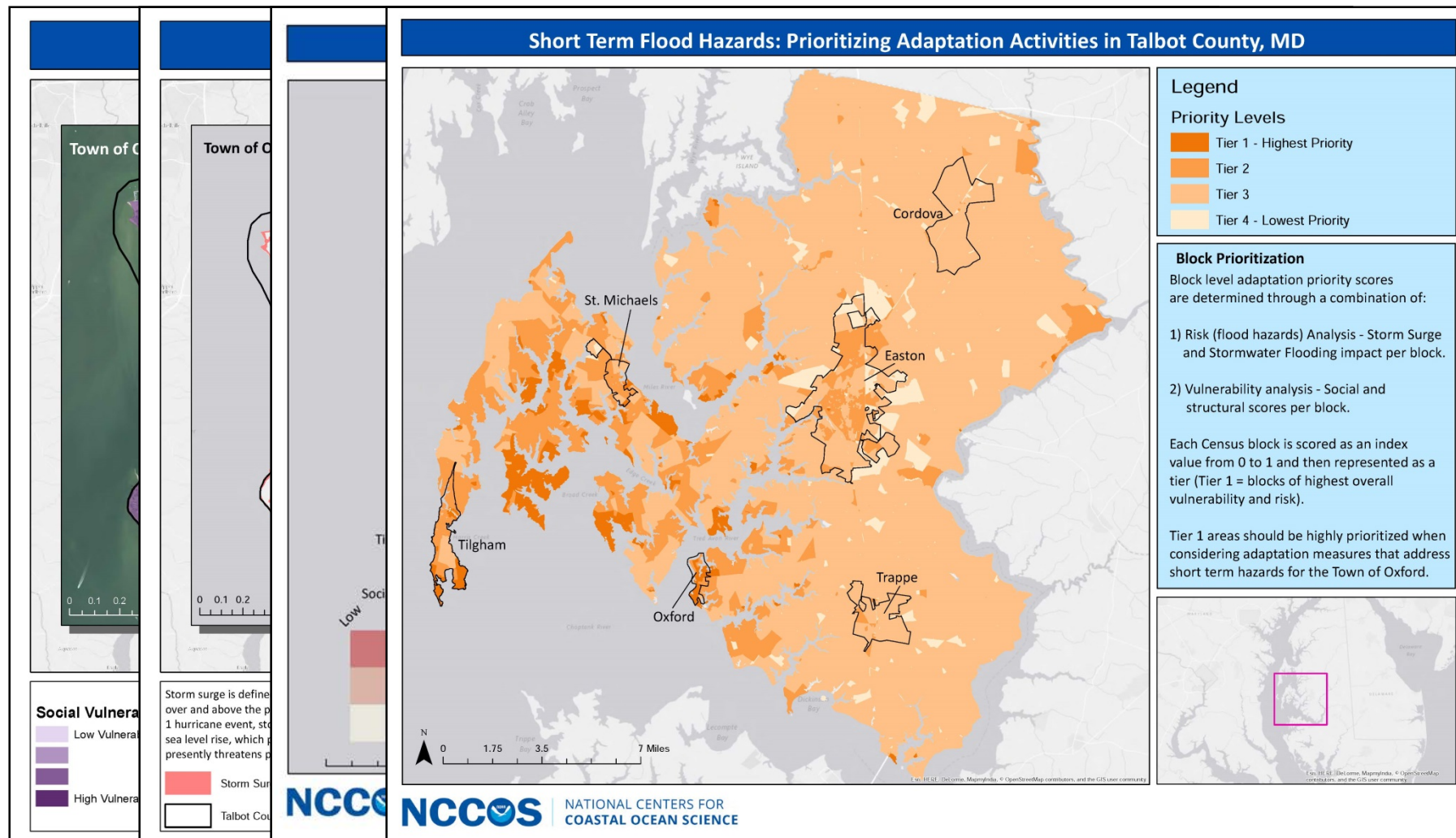


# Methods & Analysis

- Base vulnerability scores were determined for each block within the study area
  - Social and structural composite scores
- Flood risks were mapped
  - Sea level rise, storm surge, and stormwater flood prone areas
- Bivariate choropleth maps were created which combined/intersected base vulnerability and flood hazard risks
- Priority adaptation maps created
  - Priority areas are tiered (1-4)
  - Short-term (storm surge) vs. Long-term prioritization (sea level rise)



# Results & Outcomes





# Results & Outcomes

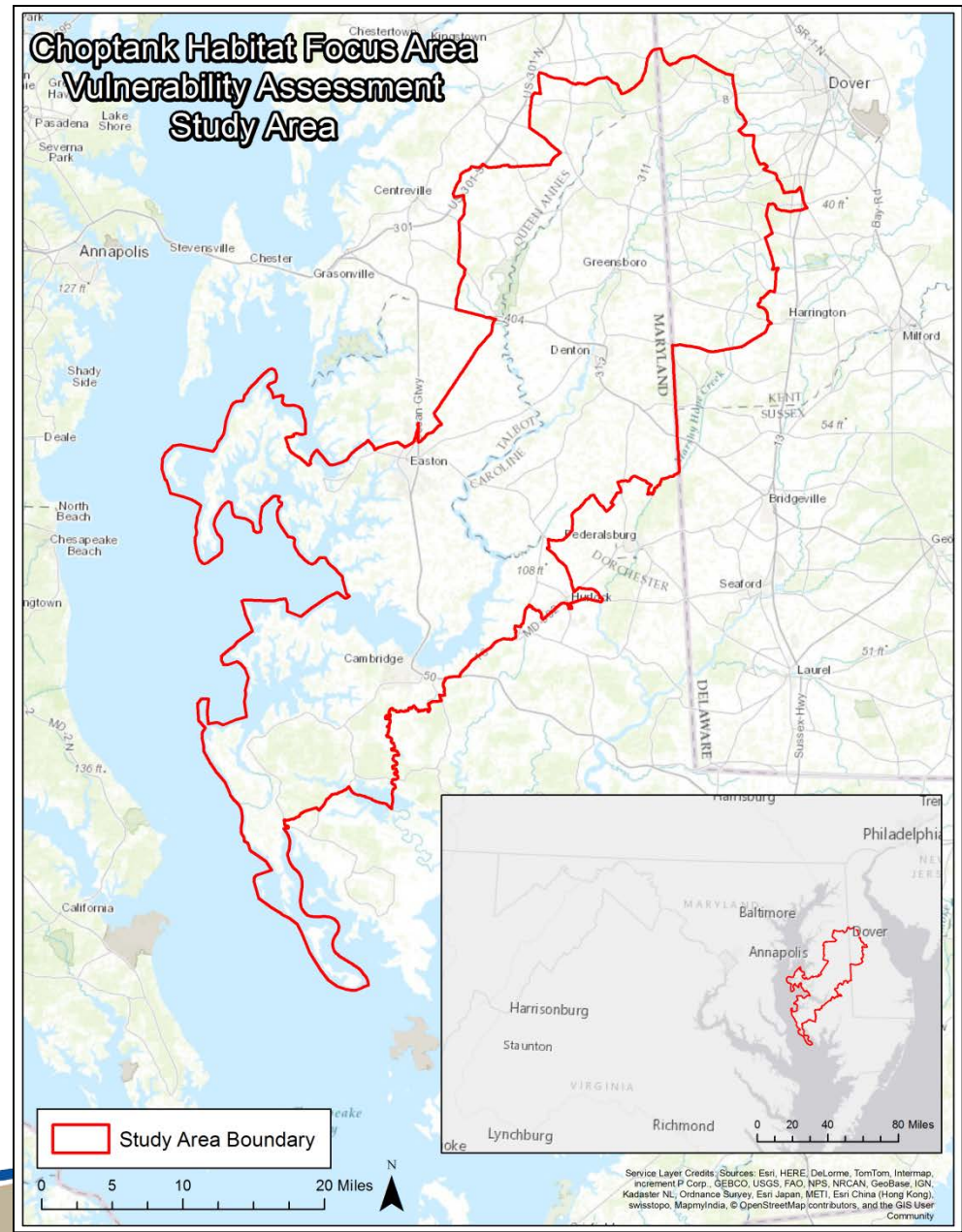
- Potential Applications:
  - Prioritization of mitigation projects/best management practices
  - Support for grant applications to secure funds for adaptation, BMPs
  - Incorporation of stormwater flood prone areas layer into Talbot County's interactive Flood Risk Map
  - Inclusion of social factors in update of Talbot County Hazard Mitigation Plan





# Site 2: Choptank Habitat Focus Area, MD & DE

- Extension to larger Chesapeake Bay area
- NOAA designated Habitat Focus Areas
  - Protect and manage deteriorating natural habitats
- Watershed-level management



# Changes in Project Objectives

- **Need:**
  - Science to support siting and design of restoration projects
- **Potential Applications:**
  - Identify vulnerable areas where restoration may have co-benefits for habitat and communities
  - Prioritize areas for adaptation
  - Support for grant applications to secure funds for BMPs
  - Integration of generated mapping layers into existing online mapping tools, including Choptank Data Atlas





# Changes in Methodology & Analysis

- The Choptank HFA vulnerability assessment represents a “scaling up” of the methods used in Oxford
  - Census Block Groups are the chosen unit of analysis for this larger scale
- Worked with Choptank HFA management to identify climate impacts of most concern:
  - Category 1 and 2 storm surge
  - Sea level rise of 1 and 2 ft
  - Stormwater flooding



# Changes in Methodology & Analysis

- Working with more data
  - Data collection from 5 counties and 2 states
  - More robust socioeconomic data
  - Additional flood hazards
- Included additional analysis
  - Natural resource valuation
    - Value accrual to property owners adjacent to resources





# Current Status

- Data collection is complete
- Most of the analysis work is complete
  - Natural resource richness, natural resource valuation, stormwater flood prone areas
  - Scores for social, structural, and natural resource vulnerability have been determined for each block group
    - These block group scores have been intersected with flood hazards and mapped



# Conclusions

- **Important Highlights:**
  - Benefit of local-state-federal partnership
  - Risks identified by the community
  - Quantification of vulnerabilities and risks creates foundation for decision making
  - Provides guidance for current and future conditions
- **Next Steps:**
  - Create priority adaptation scores for each block group
  - Draft final report



# Thank you

## NCCOS Project Team

- Maria Dillard – Social Scientist (PI)
  - Eric Messick – Planner/Geographer
  - Seann Regan – Geographer
  - Jarrod Loerzel – Social Scientist
  - Matt Gorstein – Economist
  - Chloe Fleming – Marine Policy
  - Anne Blair – Ecologist
  - A.K. Leight – Ecologist
- + Regional, state, and local partners

## For more information:

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Sunset on the Tred Avon River at the Cooperative  
Oxford Laboratory



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