Coastal Conservation Connections

Part 3

Partnerships Focused on Resource Management

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Developing Adaptive Management Strategies for Agriculture in Coastal Areas

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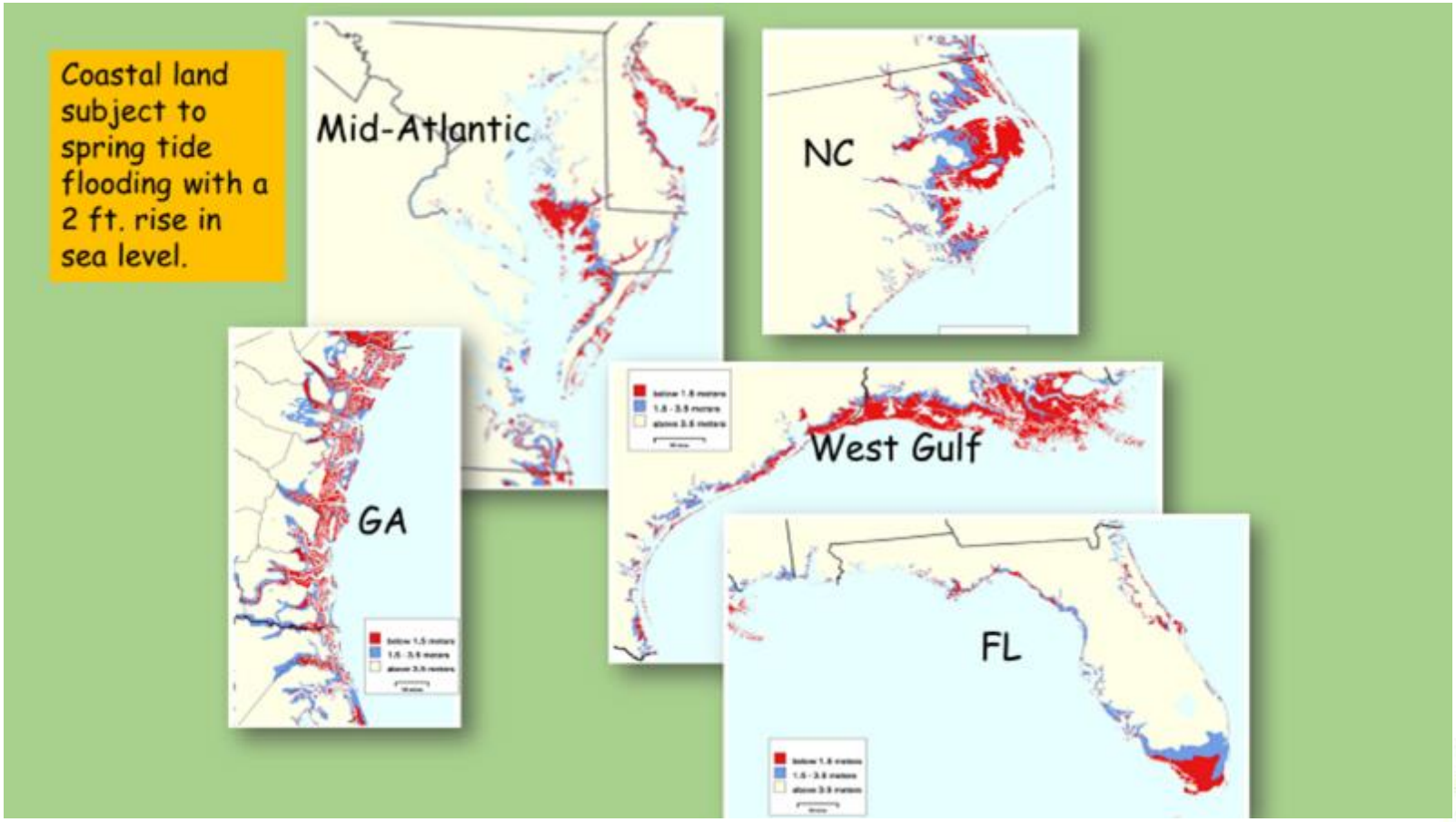
USDA NRCS Climate Change Assessment and Adaptation Plan-2014

- Key Climate Change Predictions:
  - Coastal storms are expected to increasingly contain damaging winds leading to greater extreme wave heights (Storm surges) and coastal damage.
  - Sea Levels are projected to rise 6-8 inches over the next 40 years
- Resulting Impacts:
  - Increased salinization of near-coastal waters
  - Increased flooding frequency of marginal lands
  - Changes in plant adaptability in specific locations due to environmental shifts
  - Increased competition from weeds/invasive plants
  - Increased soil health challenges due to potential increased erosion and changes in soil chemical and biological processes.

Vulnerability Assessment of Coastal Flooding



Source: Titus, James G. and Charlie Richman. Map of Lands Vulnerable to Sea Level Rise: Modeled elevations along the U.S. Atlantic and Gulf Coasts. Climate Research, Vol. 18, November 2001

Vulnerable Agriculture in Coastal Areas

USDA Climate Hubs-Established 2014

Vision: Agricultural production and natural resources protection be maintained and strengthened under increasing climate variability and climate change

CLIMATE HUB MISSION

- Develop and deliver science-based, region-specific information and technologies to agricultural / natural resource managers and communities
- Enable climate-smart decision-making
- Provide assistance to implement those decisions

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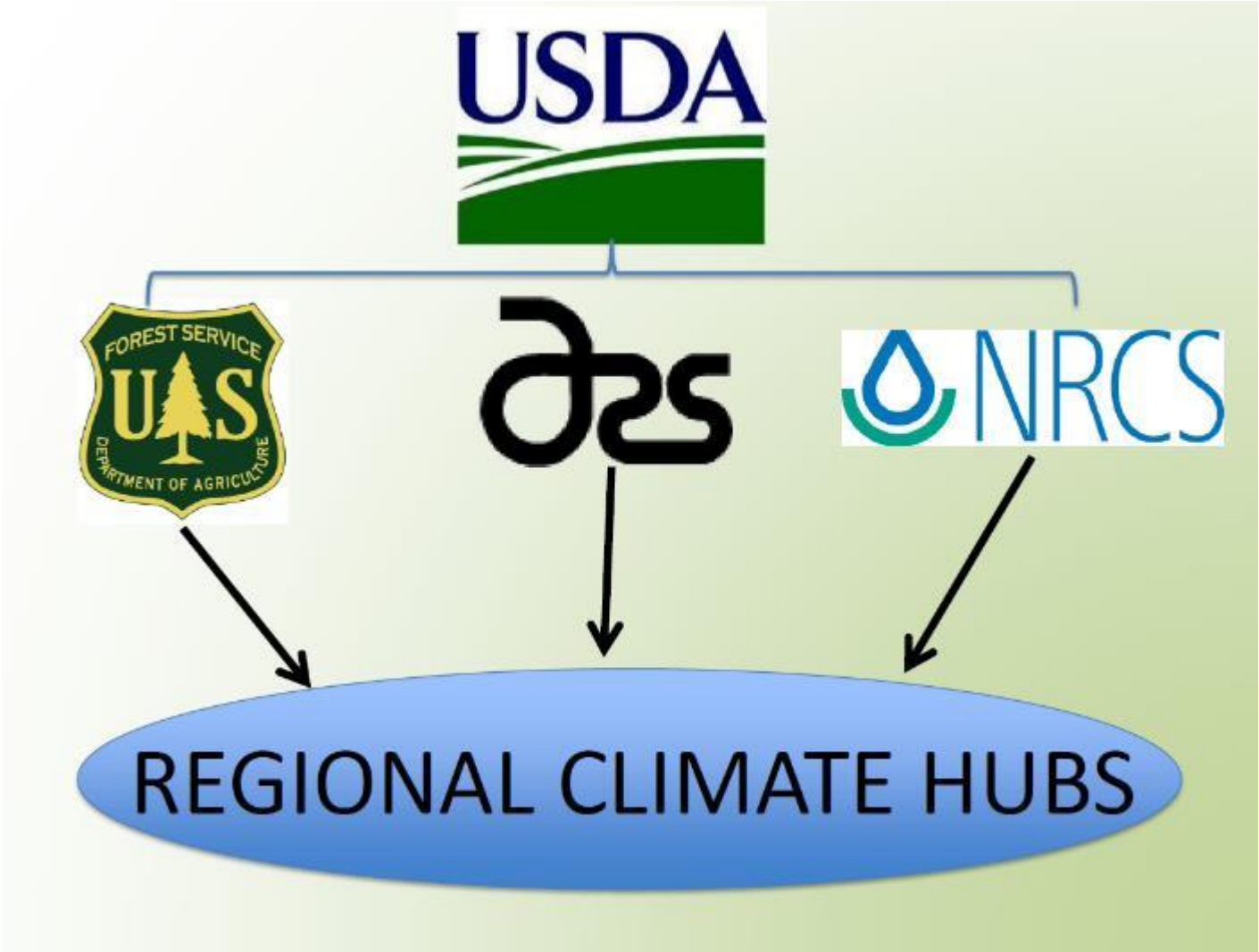
Climate Hub Structure



USDA Climate Change Hubs
Partners

Land grant universities, Cooperative Extension Service.

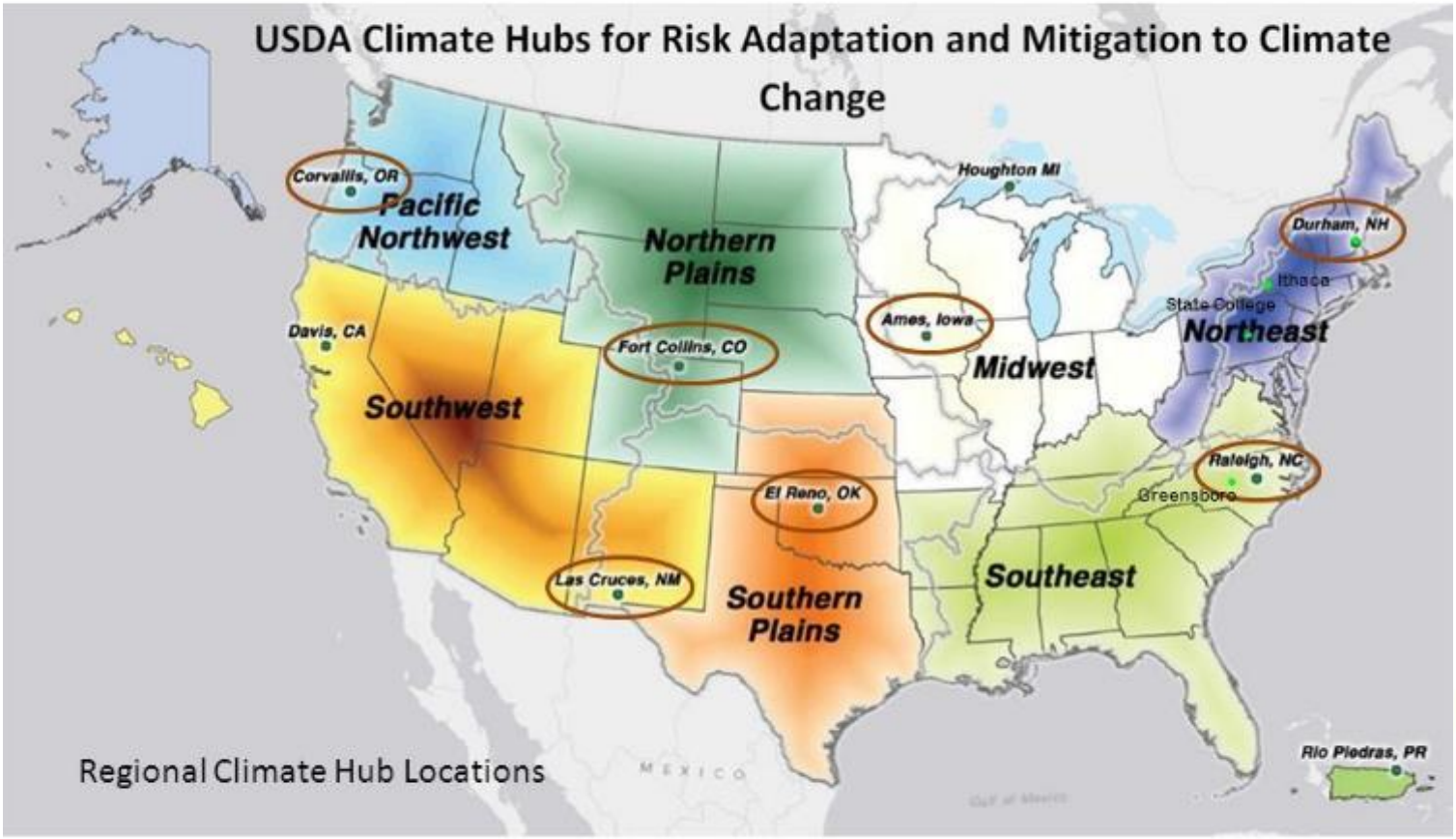
State, regional and local governments (i.e. Conservation Districts).

NOAA & DOI (USGS) regional climate change experts.

Non-profit organizations (NGO's) providing assistance to landowners.

Climate Hubs-Geographic Distribution

USDA Climate Hub Regions



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USDA Regional Climate Hubs

- Work with producers to communicate, educate, and understand measures to increase production system resiliency and potential transformations

Identify

- a) land use / cropping system alternatives
- b) land management systems
- c) conservation priorities to protect natural resources
- d) needed practice revisions to increase climatic resiliency.

USDA Climate Hubs Function/Role

USDA Regional Climate Hubs will provide:

- Technical & Program Support
- Assessments and Forecasts
- Outreach and Education

USDA Climate Change Hubs
Technical Support

Develop Tools,Technologies & Written Documents

- **Drought**
- **Heat stress**
- **Salt stress**
- **Excessive moisture/flooding**
- **Longer growing seasons**
- **Changes in pest pressure**

– *Value chain: Fast track tools & information*
  - Foundational research + applied research +tech transfer + outreach & education

USDA Climate Change Hubs
Assessments & Forecasts

Periodic regional assessments of risk and vulnerability in the production sector.

Contribute to the *National Climate Assessment* (4th Assessment)*

Provide accessible regional data.

Interpret climate change forecasts for hazard & adaptation planning.

*Collaborative research opportunities

USDA Climate Change Hubs
Outreach & Education

Provide outreach and extension

- To farmers, ranchers, forest landowners and tribal communities
- Science-based risk management
- Seek to partner with the Land Grant Universities, Cooperative Extension Service, & Conservation Districts

"One stop shopping for climate change info & assistance"

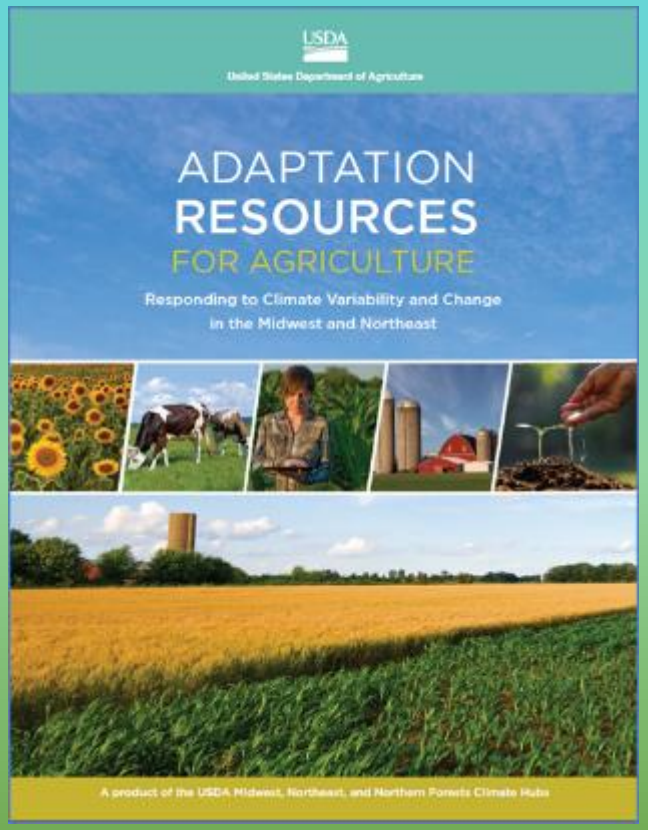
https://www.climatehubs.oce.usda.gov/

Adaptation Resources for Agriculture:

First version for the Midwest and Northeast (~ 20 States)

Does NOT recommend policy

Does NOT address all risks



Maria K. Janowiak, Daniel N. Dostie, Michael A. Wilson, Michael J. Kucera,
R. Howard Skinner, Jerry L. Hatfield, David Hollinger, and Christopher W. Swanston
USDA Technical Bulletin 1944
October 2016

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United States Department of Agriculture

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Assess and Refine Adaptive Management Strategies for Application on Saltwater Impacted Agricultural Lands.

Christopher Miller, Manager, Cape May PMC

Project Liaison-Northeast/Southeast Hubs

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Project Description

Managing the impact of saltwater inundation from coastal flooding, will require producers to use more adaptive agricultural practices. This project will:

1. **Provide assessment guidelines for agricultural producers in vulnerable coastal areas of the Eastern US and Gulf Coast.**

2. **Based on the assessment, provide potential mitigation (short term), adaptation (long term) or wetland/floodplain easement options in order to reduce lost farm and forest productivity.**

3. **Establish pilot plant materials demonstration and evaluation plantings to help determine various plant species' adaptability to salt affected fields.**

Potential Adaptation Strategies

- Move crop production to higher ground/apply for wetland easement.
- Plant more salt tolerant crops (Inherent or genetically improved)
- Establish salt tolerant native plant buffers
- Apply appropriate conservation practices:
  - Riparian Herbaceous Cover (390)
  - Filter strips (393)
  - Field Borders (386)
  - Conservation Cover (327)
  - Streambank and Shoreline Protection (580)
  - Critical Area Planting (342)
- Grow value-added, alternative crops/conservation plants.

Growing Conservation Plants on Marginal Lands

- Establishing saltmeadow cordgrass (*Spartina patens*) for harvesting as a **salt hay** crop.
- Harvest native shrub stems for **soil bioengineering** applications on brackish shorelines
  - Groundsel bush (*Baccharis halimifolia*)
  - High tide bush *(Iva frutescens),* Arrowwood (*Viburnum spp.*), Indigobush (*Amorpha fruticosa)*
  - Willow (*Salix spp.*)-identify salt tolerant selections
- Planting a **bioenergy/fiber crop o**n marginal lands for on-farm use.
  - Switchgrass (*Panicum virgatum*)
  - Coastal Panicgrass (*Panicum amarum var. amarulum*)
  - Prairie cordgrass (*Spartina pectinata*)

Marshy Hay Cordgrass a.k.a. salt hay (*Spartina patens*)

Once harvested from the natural marsh for salt hay.

Valued as a weed free mulch.

Demand is still high but supply is low.

Beneficial Use of Dredge Project- Southern New Jersey

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Hyde County, North Carolina

Project Description

Introduction

Swan Quarter is only a few feet above sea level and vulnerable to wind tides from coastal storms that flood much of the area. This project will provide flood protection to the Village of Swan Quarter and the surrounding agricultural area.

Project

Location:

- Hyde County, 3rd Congressional District

Federal Funding:

- $5,280,858: When completed, a 17.7 mile long dike will encircle the Village of Swan Quarter and neighboring agricultural land. In all, about 2,400 acres will be protected when this project is completed. More than 2,000 people reside in this area. The North Carolina Department of Commerce has identified Hyde County as one of the State's most economically distressed counties with over 15 percent living below the poverty level.

Partners

- USDA, Natural Resources Conservation Service
- Hyde County Soil and Water Conservation District
- Hyde Soil and Water Commissioners

Benefits

The economic impact of repeated flood damages threatens the long term viability of this community. The project will reduce flood damages to 120 homes and businesses, decrease utility and community service disruptions, and protect farmland from being flooded and contaminated by saltwater.

Completed portion of the earthen dike protecting the Village of Swan Quarter.

A floodwall was installed to protect the Village of Swan Quarter to minimize effects on adjacent wetlands.

Funded through the American Recovery and Reinvestment Act (ARRA) of 2009, this project is part of the Obama Administration's plans to modernize the nation's infrastructure, jump-start the economy, and create jobs. NRCS is using Recovery Act dollars to update aging flood control structures, protect and maintain water supplies, improve water quality, reduce soil erosion, enhance fish and wildlife habitat, and restore wetlands. NRCS acquires easements and restores floodplains to safeguard lives and property in areas along streams and rivers that have experienced flooding.

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Project Goals and Outcome

Develop technical resources that will aid field office and conservation district staff with assessing the saltwater inundation/intrusion problem and assist with providing sound technical recommendations to farmers, landowners and tribal communities.