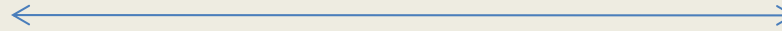


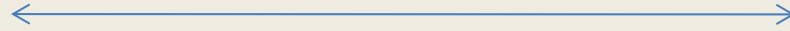
*Record Highs for Wednesday, March 14, 2012 from the NOAA NCDC.*



# Water Resources and Resiliency: NOAA Highlights from the Region

Geno Olmi, Coordinator  
NOAA Southeast and Caribbean Regional Team

March 2012

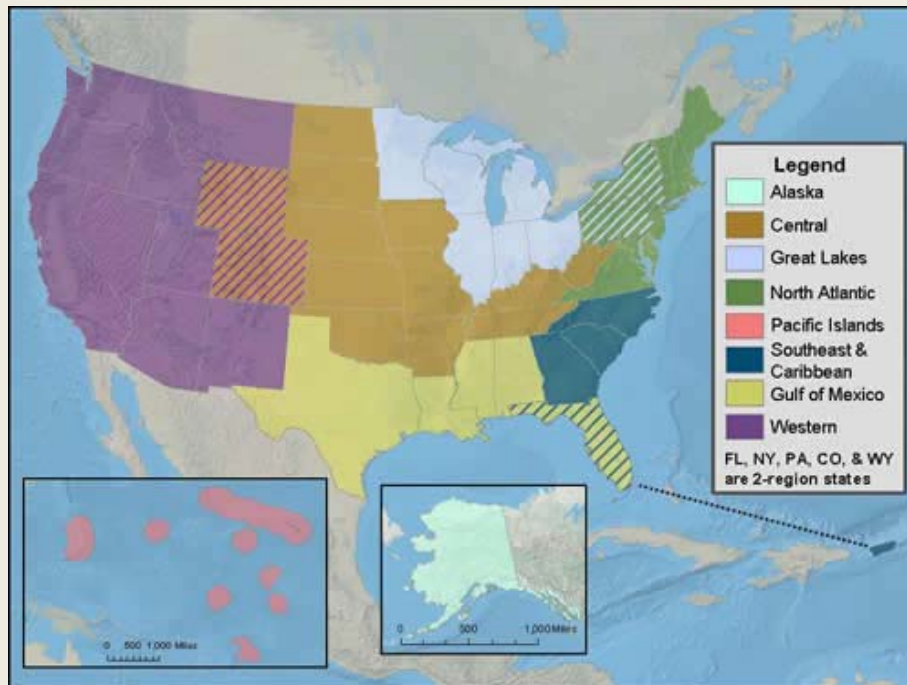


## Outline:

- SECART
- Water resources
- Resiliency

# NOAA Regional Collaboration

## Eight Regional Collaboration Teams

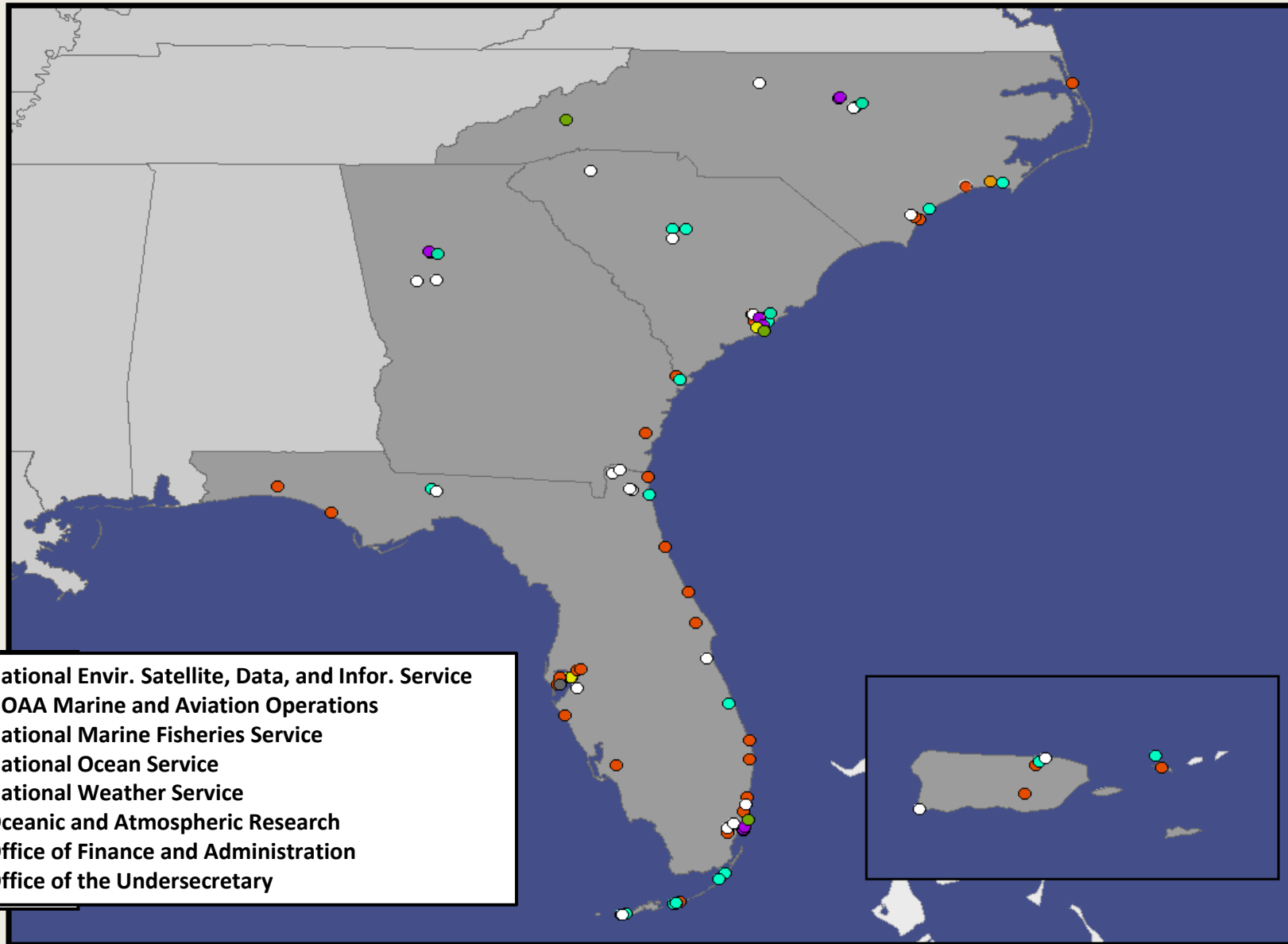


- Address mission priorities at appropriate geographic scales
- Address distinct regional challenges that require NOAA's expertise
- Improved stakeholder relations and support
- Improved internal communications and efficiency

Southeast and Caribbean Regional Team (SECART): NC, SC, GA, FL, PR, USVI



# NOAA in SE & Caribbean Region





# NOAA Assets

## NOAA Facilities

- Center for Coastal Environmental Health (NOS) – Charleston
- Center for Human Health Risk (NOS) – Charleston
- Coastal Services Center (NOS) – Charleston
- Center for Coastal Fisheries and Habitat Research (NOS) – Beaufort
- National Climatic Data Center (OAR) – Asheville
- Atlantic Oceanographic and Meteorological Laboratory (OAR) – Miami
- NMFS Southeast Fisheries Science Center – Miami, Beaufort
- NMFS Southeast Regional Office – St. Petersburg
- NMFS Habitat, Protected Species, and Fisheries personnel
- NWS Southeast River Forecast Center – Atlanta
- NWS Weather Forecast Offices (12)
- National Marine Sanctuaries (NC, GA, FL)
- Geodetic Advisors (NC, SC, FL, PR)
- Aircraft Operations (St. Petersburg)
- Marine Operations (Charleston, Miami)





# Working with Partners

- Sea Grant Programs (5)
- Cooperative Institutes (3)
- Coastal Management Programs (6)
- National Estuarine Research Reserves (6)
- Regional Integrated Science Assessment Centers (2)
- Southeast Regional Climate Center
- Southeastern Coastal Ocean Observing Regional Association
- Caribbean Regional Association
- Caribbean Coral Reef Institute
- Others



# Example SECART Activities

- Support regional partnerships
  - South Atlantic Alliance
  - Southeast Regional Partnership for Planning and Sustainability
  - NOAA in the Carolinas
  - NOAA in the Caribbean
- Engage stakeholders
  - NOAA All Hazards Workshop
  - Caribbean Climate Change Conference
  - CMSP workshop (with TNC)
  - National Ocean Policy
  - NOAA Strategic Plan



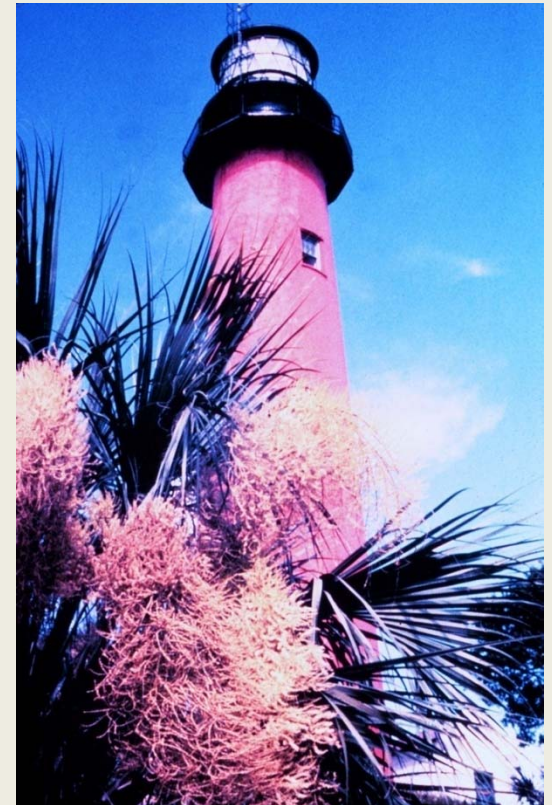


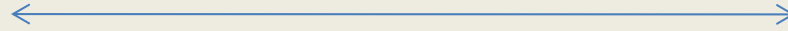
- 



# SECART Strengths

- Regional perspective
- Connections to NOAA - where to go for what
- Linking parts of NOAA for greater efficiency
- Work with partners
- Promote regional priorities within NOAA
- Facilitate stakeholder engagement
- Leverage funds for regional benefit
- Opportunities to collaboratively seek funds to support priority issues



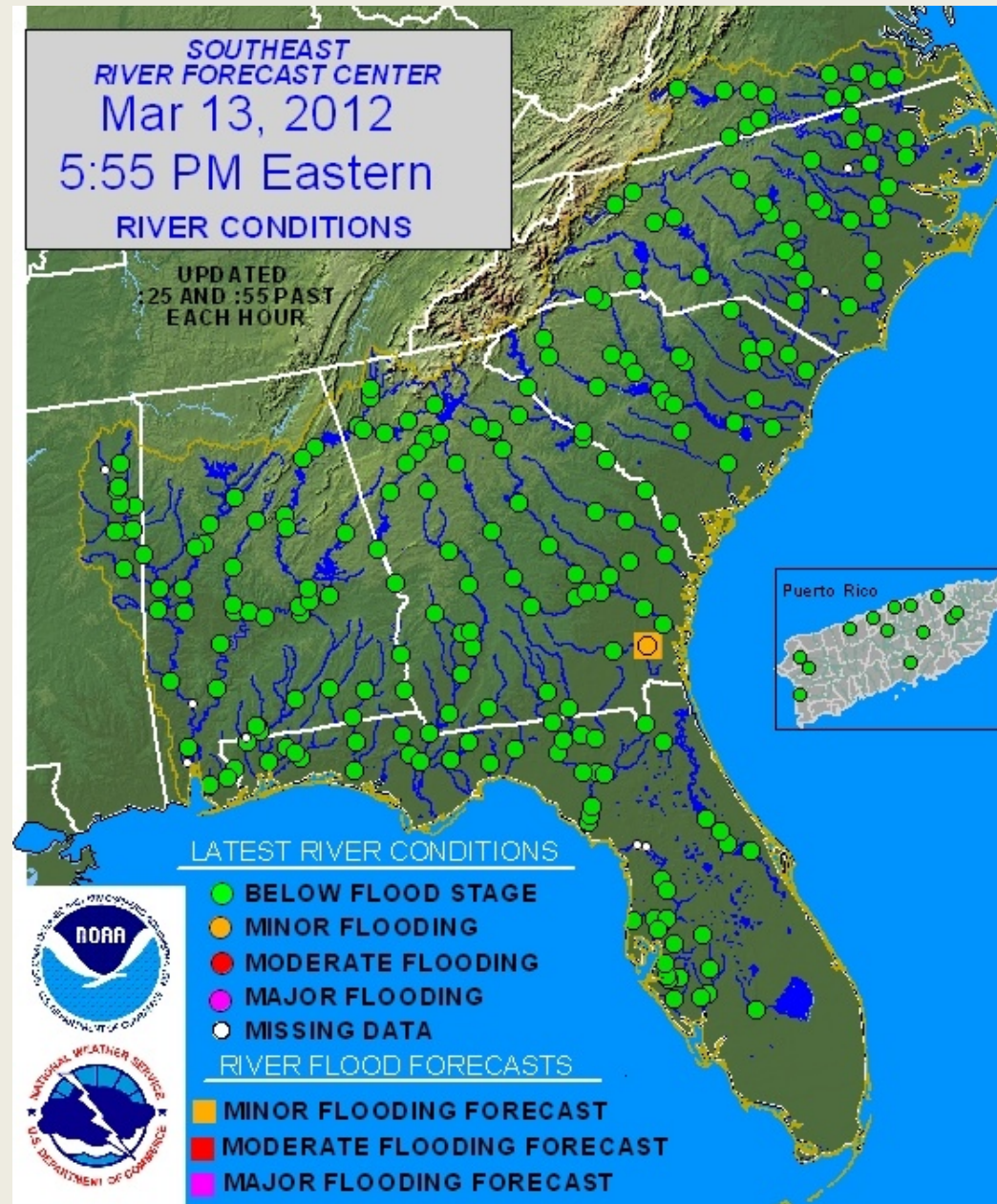


# Water Resources



- How much water?
- Not enough water
- Too much water
- Go with the flow

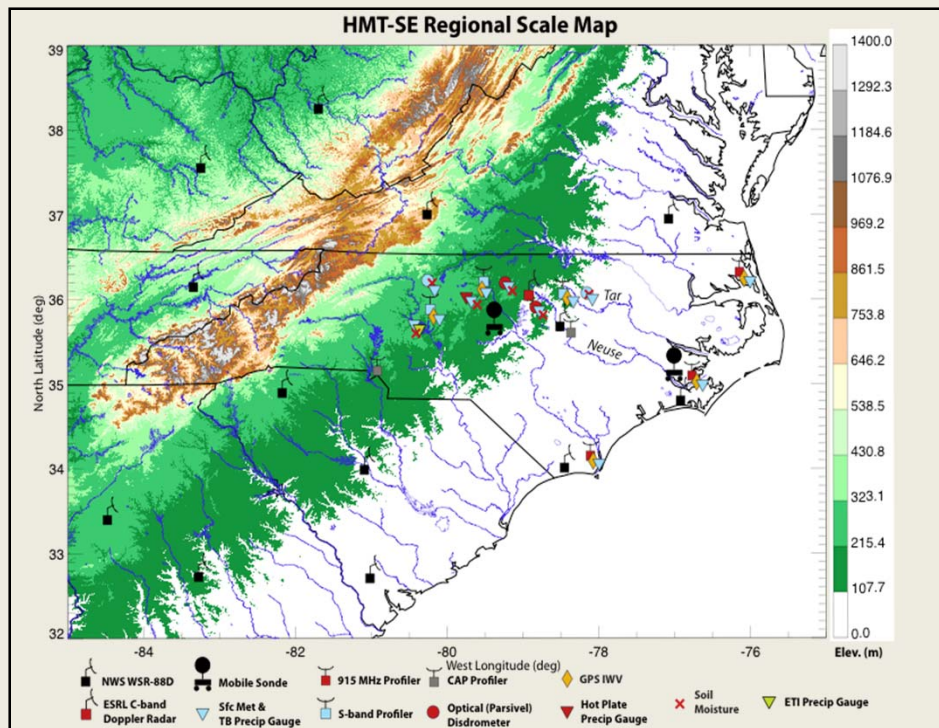
How  
much  
water?



# How much water?

## Hydro-meteorology Testbed (HMT)- Southeast

HMT is led by NOAA's Environmental Systems Research laboratory with partners across NOAA, other agencies, and universities



Purpose: Accelerate the infusion of new technologies, models, and scientific results from the research community into daily forecasting operations of the National Weather Service (NWS) and its River Forecast Centers (RFCs)

- Operational Needs and Requirements Workshop (2009)
- Research Planning Workshop (2009)
- Research Plan (2010)
- Active Steering Team
- Pilot Project 2013?



# Not Enough Water

## U.S. Drought Monitor

March 6, 2012

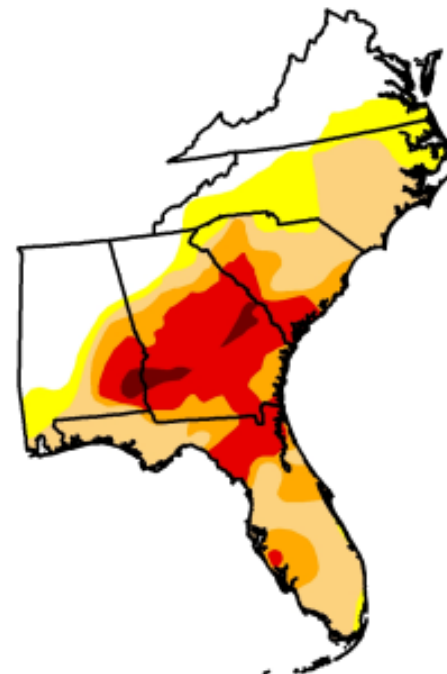
Valid 7 a.m. EST

### Southeast

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	26.24	73.76	59.02	32.47	19.04	1.62
Last Week (02/28/2012 map)	24.97	75.03	58.78	36.93	24.26	8.11
3 Months Ago (12/06/2011 map)	43.19	56.81	43.30	31.28	19.41	0.00
Start of Calendar Year (12/27/2011 map)	40.38	59.62	43.05	28.62	18.71	0.00
Start of Water Year (09/27/2011 map)	42.24	57.76	41.82	31.77	23.48	0.00
One Year Ago (03/01/2011 map)	5.82	94.18	75.79	27.10	4.43	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>

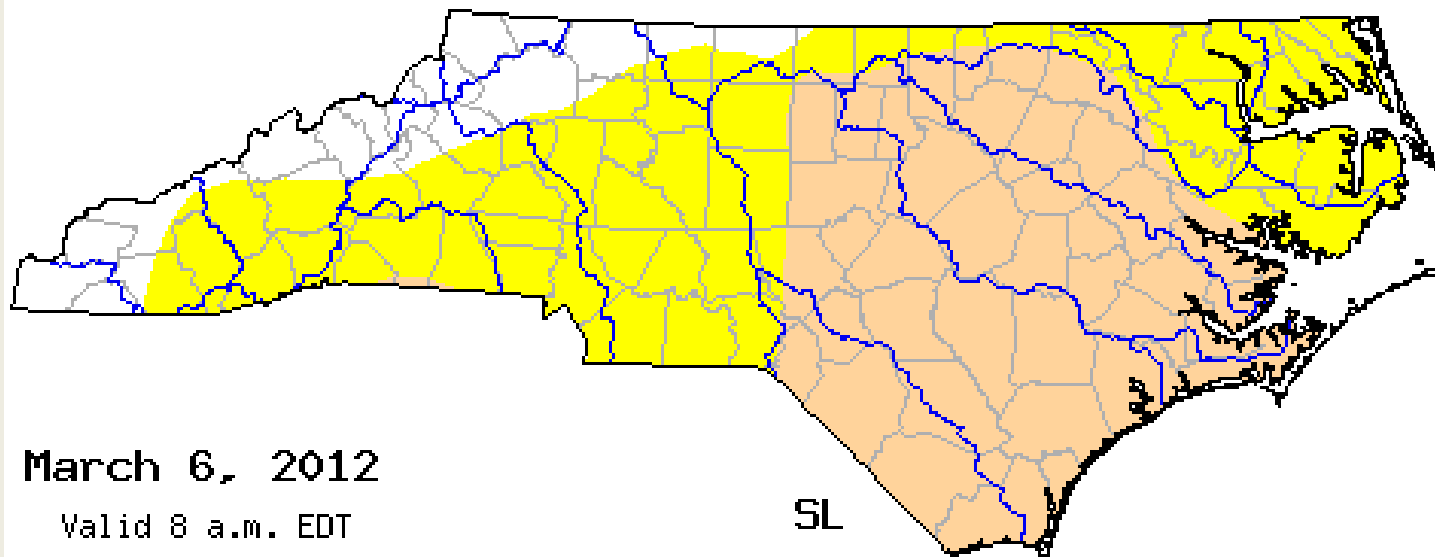


Released Thursday, March 8, 2012

Michael Brewer, National Climatic Data Center, NOAA








## US Drought Monitor of NORTH CAROLINA



**NC Drought Management Advisory Council**

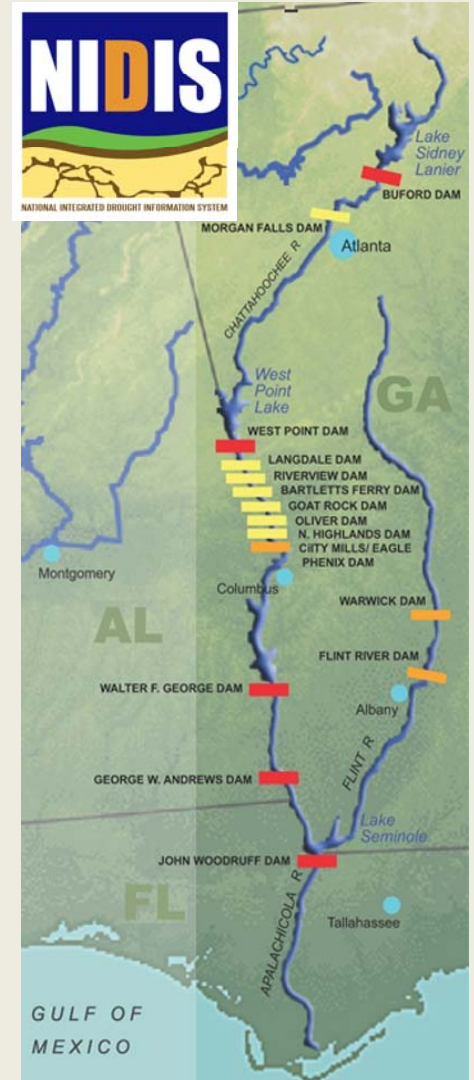
### Drought Classifications

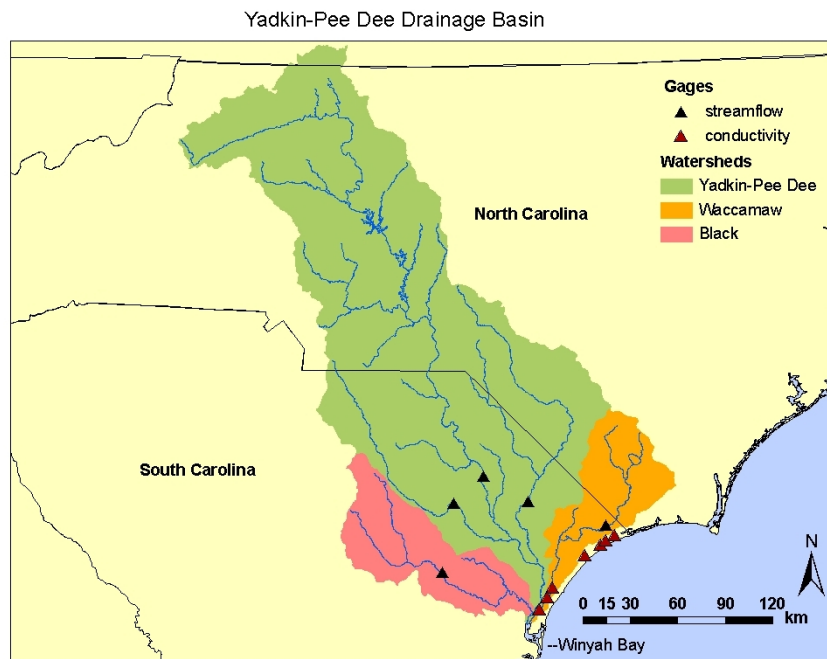
-  D0 - Abnormally Dry
-  D1 - Moderate Drought
-  D2 - Severe Drought
-  D3 - Extreme Drought
-  D4 - Exceptional Drought

# National Integrated Drought Information System

## Southeast Pilot

- Develop drought early-warning information system for the Apalachicola-Chatahoochee-Flint (ACF) Basin in GA, AL, FL, and another basin in the Carolinas
- Explore and demonstrate regionally-relevant warning and risk reduction strategies that incorporate drought monitoring and prediction information, in partnership with multi-sector users
- Integrate into the U.S. Drought Portal and eventually NOAA's Climate Portal
- NOAA entities participating in SE pilot: CPO, NCDC, NWS Southern Region, CPC, SE RFC, CSC, Apalachicola NERR, Southeast Climate Consortium RISA, Carolinas RISA (CISA)





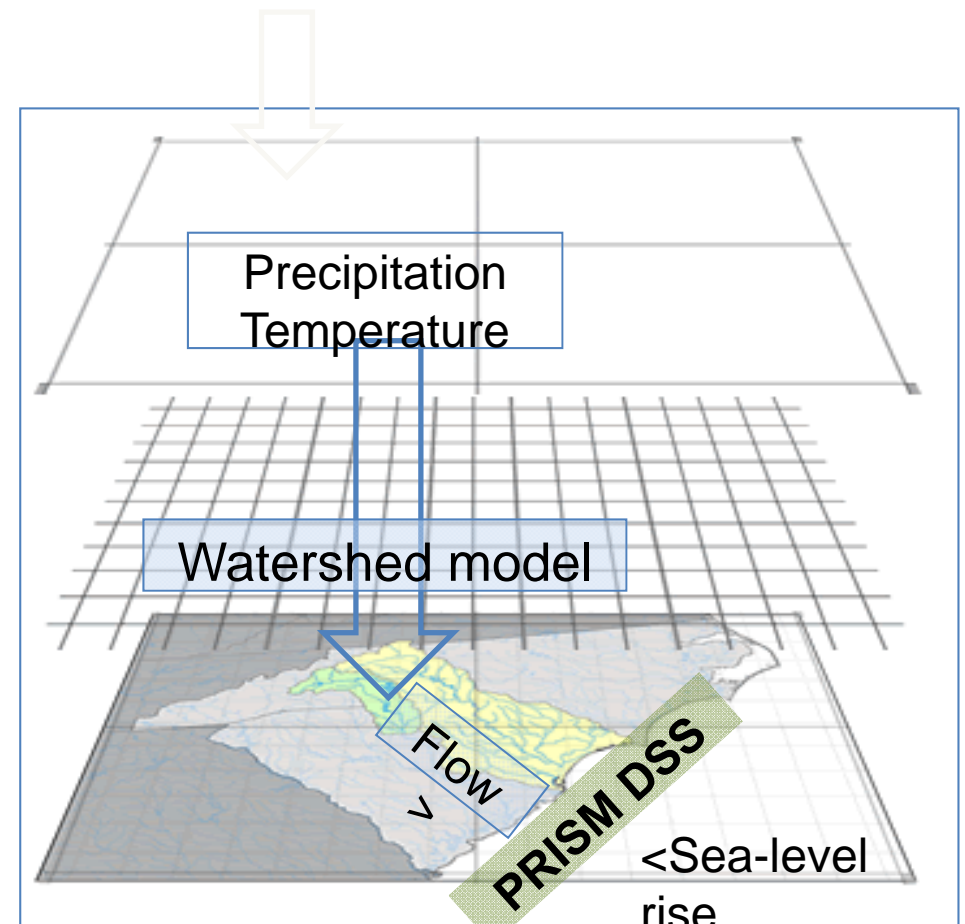
# Salinity Intrusion Project

Carolinas Regional Integrated Science Assessment Center

**Global & regional circulation models**

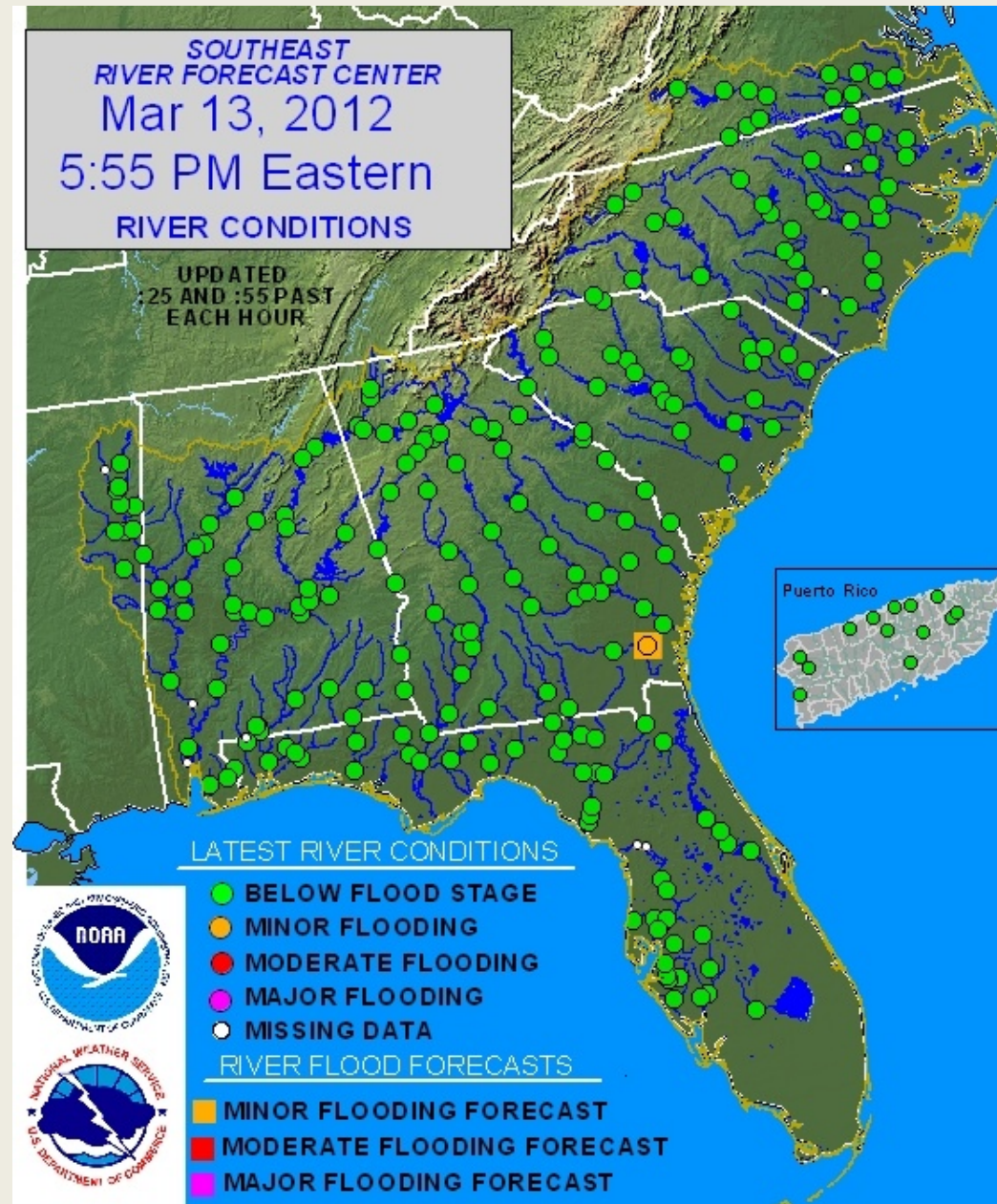
**Gridded rainfall input to watershed model**

**Salinity intrusion model**





Too  
much  
water



# Too much water

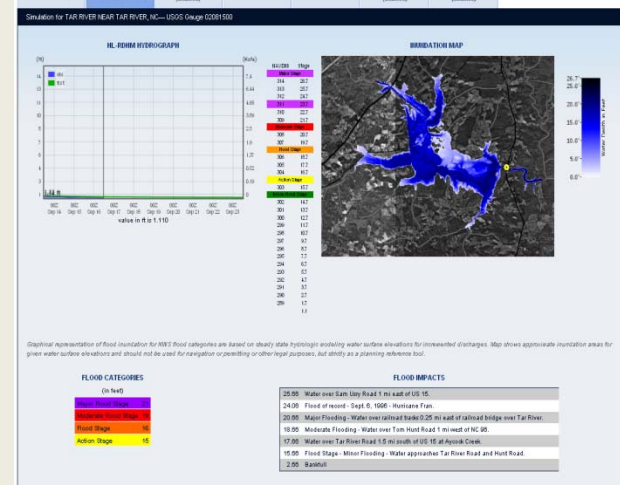
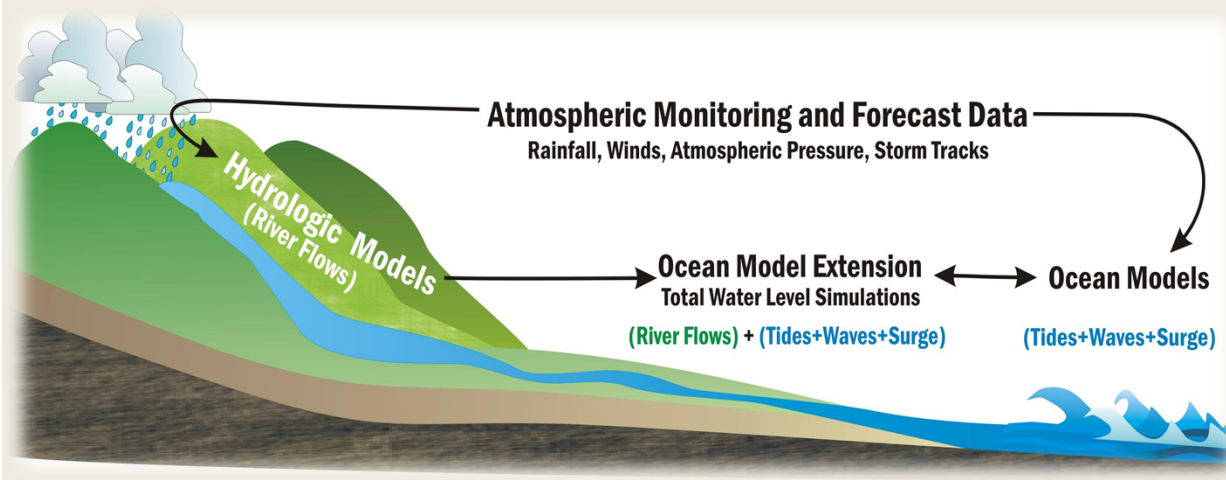
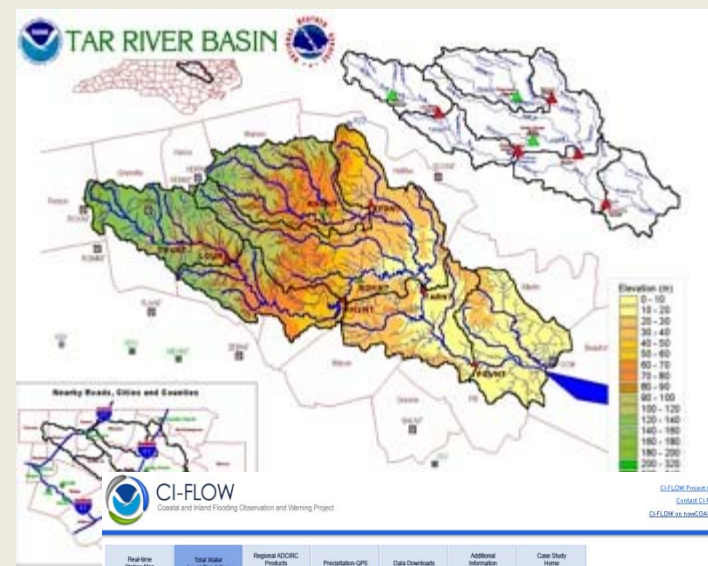
Southeast and Caribbean Regional Team



## Coastal and Inland Flood Observation and Warning (CI-FLOW) project

### Integrated Water Resources Services

- Prototype system combining observations, weather and water models, and decision support tools to predict total water levels in coastal basins.
- The CI-FLOW project has brought together a diverse team of national, regional, state and university partners to improve the quality of flood and storm surge information





# Go with the flow?

## Cape Fear (HUC 0303)

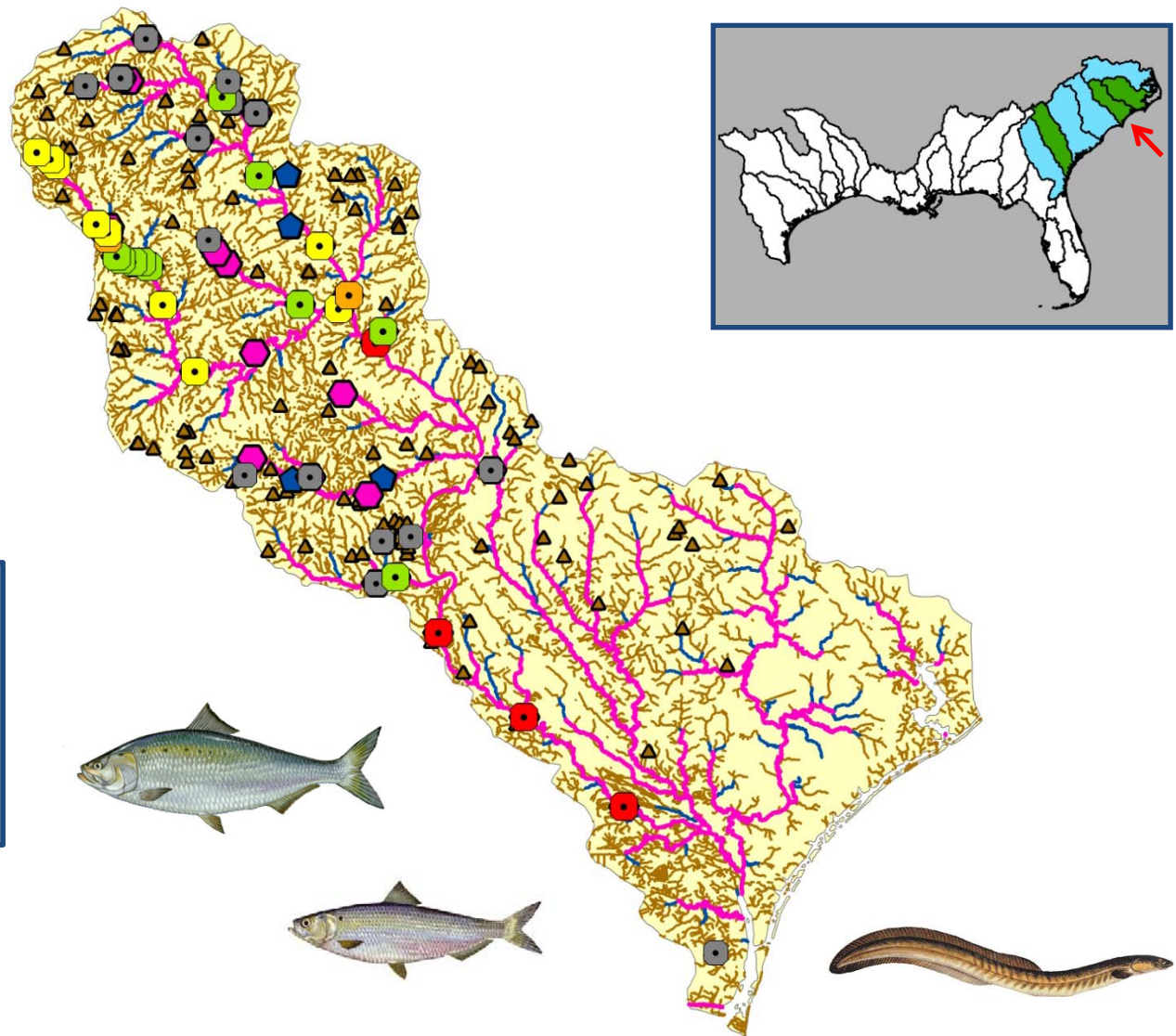
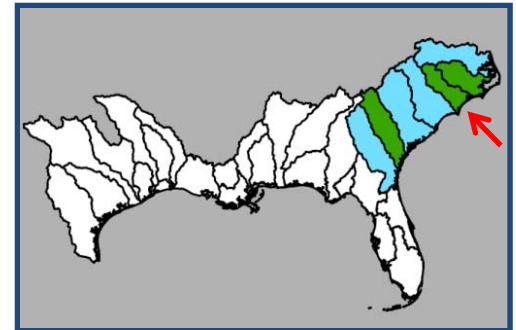
### Southeast Region Hydropower Dams

#### TOTAL

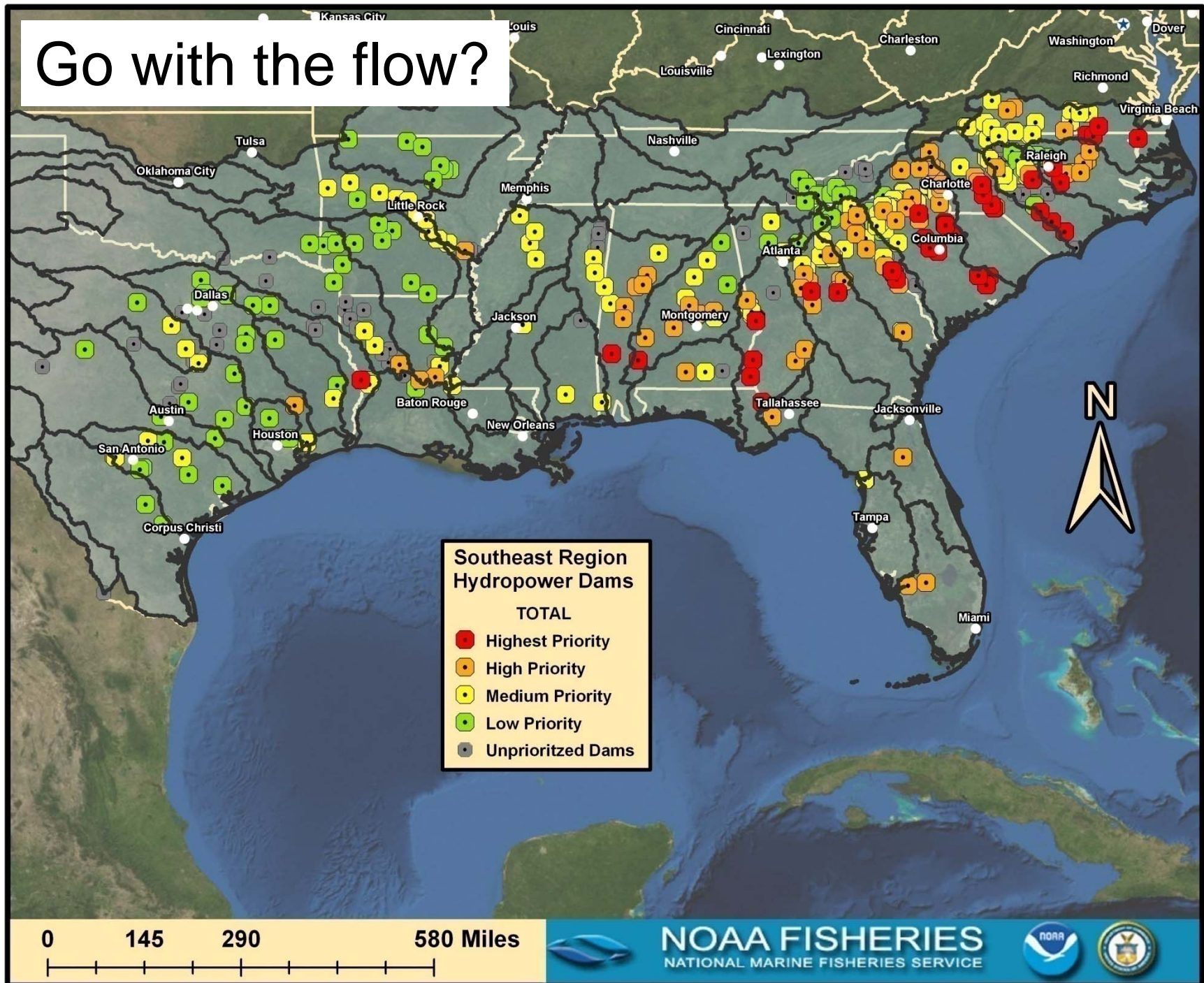
- Highest Priority
- High Priority
- Medium Priority
- Low Priority
- Unprioritized Dams

### Mean April Flow

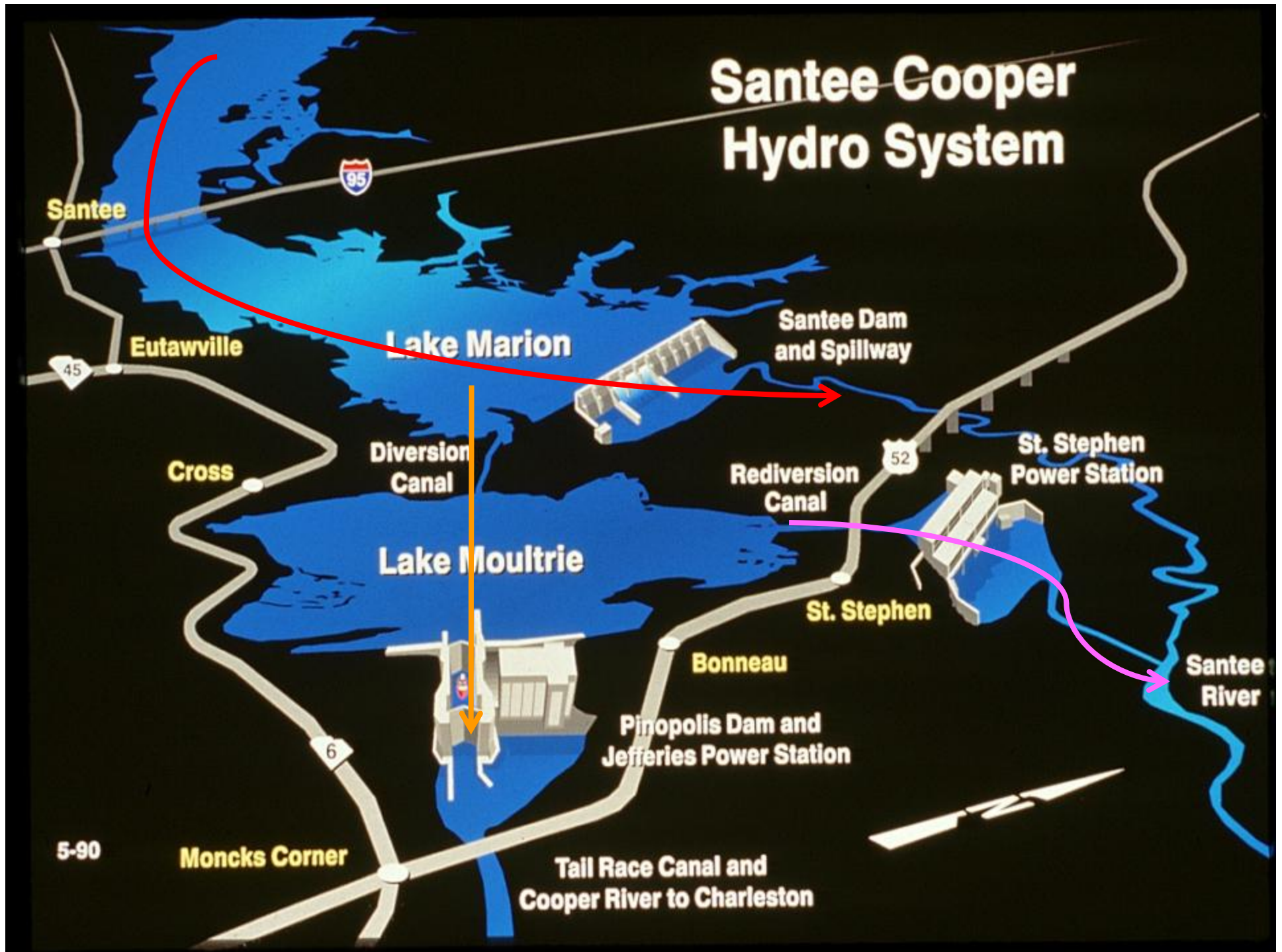
≥100 cfs  
≥ 50 cfs  
Perennial



# Go with the flow?



# Santee Cooper Hydro System



# South Florida Ecosystem Restoration

Southeast and Caribbean Regional Team



- Over the past 50 years the south Florida ecosystem has been seriously degraded by disruptions to the natural hydrology for flood control, agriculture and urban development.
- Collaborative, long-term effort (federal, tribal, state, local, NGO) to restore the ecosystems of South Florida (Everglades, Florida Bay, Biscayne Bay, more)
- The Comprehensive Everglades Restoration Plan (CERP) is the heart of the South Florida Ecosystem Restoration Initiative
- CERP consists of more than 60 projects affecting water management.



CERP's purpose is to “get the water right” for the natural system of remaining freshwater wetlands and coastal waters while maintaining support for existing urban and agricultural systems



# NOAA Contributions to South Florida Ecosystem Restoration

## NOAA's historic involvement

1993 NOAA and USGS led multi-agency preparation of draft Federal Objectives for CERP Reconnaissance Study

1994-1999 NOAA assisted in alternative plan development of Comprehensive Study

2000-2011 NOAA helped develop performance measures for evaluation and assessment

## NOAA involvement in multi-governmental Task Force

Undersecretary level participation in Task Force

Regional-level participation in Working Group

Regional level participation in Science Coordination Group

NOAA contributions to "stop-light" assessment reports

## NOAA participates in Comprehensive Everglades Restoration Plan (CERP) science working groups

Southern Coastal Systems regional monitoring and assessment team

Biennial System Status Report

## NOAA conducts monitoring and assessment projects

Florida Bay Juvenile Sport Fish

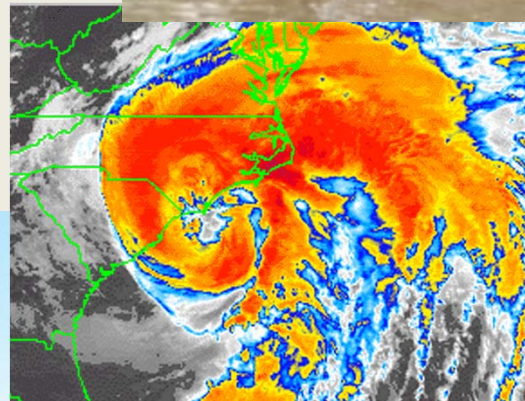
Biscayne Bay nearshore ecosystem

Pre-CERP status, variability, and relationships with salinity

# Resiliency

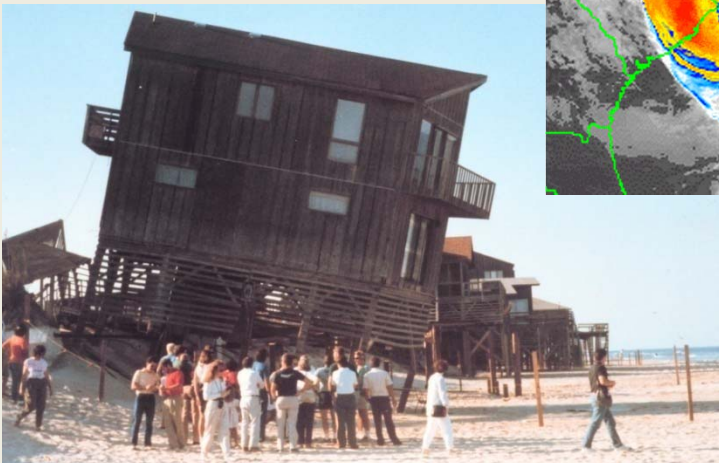
Resilience of what?

- Habitats
- Shorelines
- Communities



Resilient to what?

- Extreme Events
  - storms
  - floods
- Chronic Events
  - climate change
  - erosion



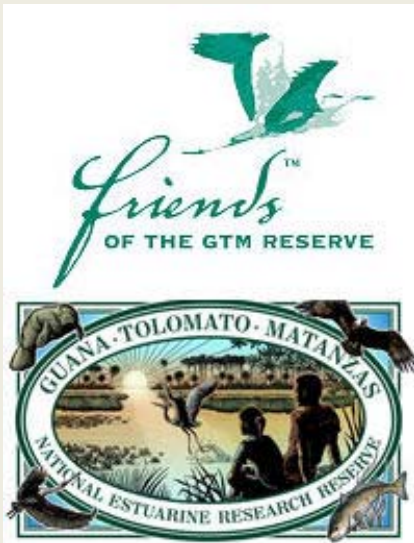
# Ecological Effects of Sea Level Rise

- NOAA NCCOS and partners
- Tools for coastal managers to mitigate regional ecological impacts of sea level rise.
- Hydrodynamic tide and storm surge model of Pamlico, Albemarle, Core, and Bogue Sounds (NC)
- High-resolution, topographic /bathymetric digital elevation model integrated into a landscape model



# Enhancing Estuarine & Shoreline Resilience

Grant: NOAA Climate  
Program Office – Sector  
Applications Research  
Program (SARP)



## **Oyster Shell Recycling Program and Oyster Reef Restoration: Guana-Tolomato-Matanzas Estuarine Research Reserve**

Oyster reefs provide protective important shelter and nursery habitat for many fish and invertebrate species, protect nearby shorelines from erosion, and help to reduce suspended particulates and turbidity within the water column by feeding on phytoplankton and suspended detritus

# Estuarine, Shoreline, and Community Resilience

Grants: “Section 309”  
projects to state Coastal  
Management Programs



**NC:** Development of New and Revised Estuarine Shoreline Management Rules

**SC:** Develop New/Revised Shoreline Management Regulations and Policies and Update the State Beachfront Management Plan

**NC:** Development of a Sea Level Rise Policy, Land Use Planning Guidelines, and Updated Assessment Report

**GA:** Community Post Disaster Redevelopment Planning

# Post-Disaster Redevelopment Planning

Southeast and Caribbean Regional Team



- State and local post-disaster planning initiatives (FL & GA)
- National Disaster Recovery Framework – connecting local, state and federal
- South Atlantic Alliance Implementation Plan Objective D.R.C. 3: *Improve post-disaster redevelopment planning for coastal communities, including infrastructure and business continuity.*
- Long-term Recovery Planning Summit July 2012



# Resiliency: Extreme Events

## NOAA Extreme Weather Information Sheets

- Provides emergency contact information
- Created by NESDIS/NCDDC
- NEWIS was available for Gulf of Mexico states but not for southeast or Caribbean
- Now available for all southeastern states and US Caribbean

# NOAA EXTREME WEATHER 2009 INFORMATION SHEET

## LOCAL INFORMATION

Virgin Islands Territorial Emergency Management Agency	St. Thomas 340-774-2244 St. Croix 340-773-2244 St. John 340-776-2244
Governor's Office ( <a href="http://www.governordejongh.com">www.governordejongh.com</a> )	St. Thomas 340-774-0001 St. Croix 340-773-1404 St. John 340-776-6484
LL Governor's Office ( <a href="http://lg.gov.vi">http://lg.gov.vi</a> )	St. Thomas 340-774-2291 St. Croix 340-773-6449 St. John 340-776-6737
Police Non-Emergencies ( <a href="http://www.vipd.gov.vi">www.vipd.gov.vi</a> )	St. Thomas 340-774-2211 St. Croix 340-778-2211 St. John 340-693-8580
Fire Department Administration	St. Thomas 340-774-6101 St. Croix 340-773-9050 St. John 340-776-6333
National Weather Service Forecast Office (San Juan, Puerto Rico) ( <a href="http://www.srh.noaa.gov/sju">www.srh.noaa.gov/sju</a> )	787-253-4586 787-729-6770
U.S. Coast Guard Search and Rescue Substation	1-800-874-7561
Coast Guard 7th District ( <a href="http://www.uscg.mil/D7">www.uscg.mil/D7</a> )	St. Croix 340-773-1460 St. John 340-776-6201
National Park Service ( <a href="http://www.nps.gov/viis">www.nps.gov/viis</a> )	St. Thomas 340-776-1291 St. Croix 340-778-6010 (Tue and Thu only) St. John 340-776-1391
Public Service Commission ( <a href="http://www.psc.gov.vi">www.psc.gov.vi</a> )	St. Thomas/Water Island 340-774-3552 St. Croix 340-773-2250 St. John 340-776-6446
Water and Power Authority ( <a href="http://www.viwa.gov.vi">www.viwa.gov.vi</a> )	St. Thomas 340-776-4844 St. Croix 340-773-1290 St. John 340-774-8784
Waste Management Authority ( <a href="http://www.viwa.org">www.viwa.org</a> )	St. Croix 340-773-0495 St. John 340-776-6346
Department of Justice ( <a href="http://www.usdoj.gov/ust/r21/vi.htm">www.usdoj.gov/ust/r21/vi.htm</a> )	St. Thomas 340-774-5666 St. Croix 340-773-0295
Department of Public Works	St. Thomas 340-776-4844 St. Croix 340-773-1290
Department of Tourism ( <a href="http://www.usvitourism.vi">www.usvitourism.vi</a> )	St. Thomas 340-774-8784 St. Croix 340-773-0495 St. John 340-776-6450
Department of Agriculture	St. Thomas 340-774-5182 St. Croix 340-778-0997
Department of Labor ( <a href="http://www.viol.gov">www.viol.gov</a> )	St. Thomas/St. John 340-776-3700 St. Croix 340-773-1994
Department of Health ( <a href="http://www.health.vi.org">www.health.vi.org</a> )	St. Thomas/St. John 340-774-9000 St. Croix 340-773-1311
Department of Human Services ( <a href="http://www.dhs.gov.vi">www.dhs.gov.vi</a> )	St. Thomas 340-774-9330 St. Croix 340-773-2323 St. John 340-776-6334
Department of Planning & Natural Resources ( <a href="http://www.dpnr.gov.vi">www.dpnr.gov.vi</a> )	St. Thomas 340-774-3320 St. Croix 340-773-1082 St. John 340-693-8735
Department of Licensing & Consumer Affairs	St. Thomas 340-774-3130 St. Croix 340-773-2226 St. John 340-693-8036
Department of Veteran's Affairs ( <a href="http://www.nasvva.net/group/usvirginislands">www.nasvva.net/group/usvirginislands</a> )	St. Thomas 340-774-6100 St. Croix 340-773-6663

## FOR ALL EMERGENCIES

From a Land Line

From your Cell Phone

Call 911

St. Croix  
340-772-9111

St. Thomas / St. John / Water Island  
340-776-9110

U.S. VIRGIN ISLANDS

# Resiliency:

Southeast and Caribbean Regional Team



# Understanding and Adapting to Climate Change

Southeast and Caribbean  
Climate Outreach Workshop  
(2010)



Southeast and Caribbean  
Climate and Hazards  
Workshop (2012)

Southeast Regional Climate Center

Southeast Climate Consortium

Southeast Climate Adaptation Workshop,  
Atlanta, GA (2010), hosted by EPA

FEMA-EPA led study of  
vulnerability to SLR in Wilmington  
and New Bern, NC (Linda Rimer,  
EPA)

South Atlantic Landscape Conservation  
Cooperative, DOI hosted at NCSU

# Carolinas Coastal Climate Outreach Initiative

NOAA-funded Sea Grant/RISA partnership

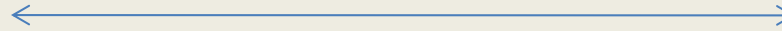
Regional Climate Extension Specialist serves NC & SC coasts:

- Inform, educate on climate variability & change
- Provide decision-relevant climate information

Projects include:

- Climate & salinity intrusion (Yadkin-Pee Dee)
- Diagramming community resilience (Sullivan's Island and McClellanville, SC; Plymouth NC)
- Sea level rise (Charleston, SC)
- Resilience & planning (Beaufort, SC)





# Community Resilience

Trainings

Social Vulnerability Index

Flood hazards “Snapshots”

Sea Level Rise Viewer

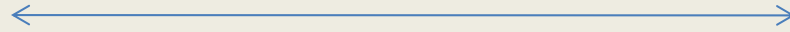
## NOAA Coastal Services Center

Risk and  
Vulnerability  
Assessment

Land Cover Change Analysis

Digital Coast

Roadmap:  
Adapting to Coastal Risks



Contact:  
Geno.Olmi@noaa.gov  
843-740-1230

