

Coastal Adaptation Planning: SC and Beyond

Braxton Davis

Director, Policy and Planning Division
South Carolina Coastal Management Program

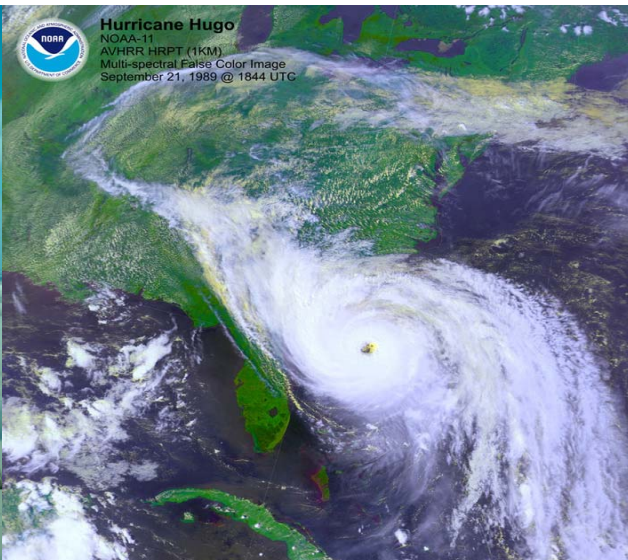


Ocean and Coastal
Resource Management

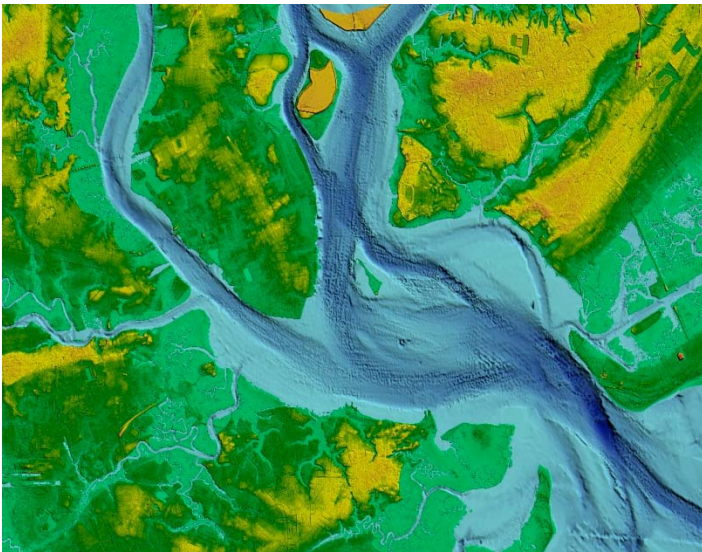
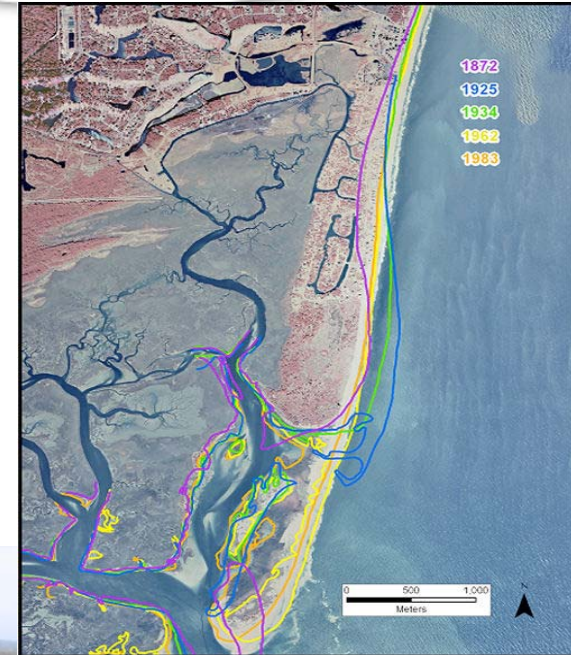
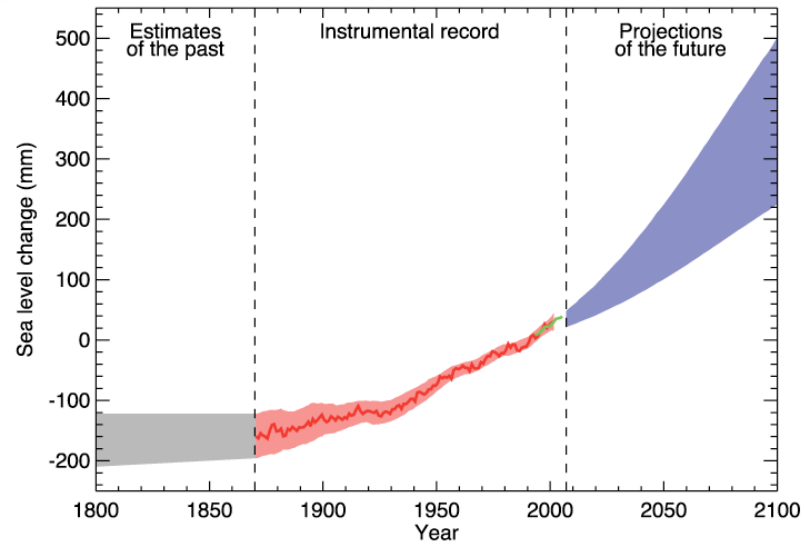
February 5, 2011



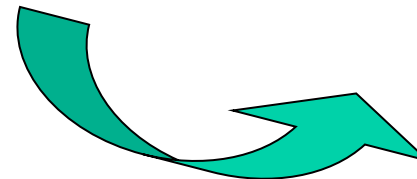
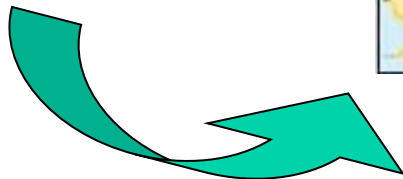
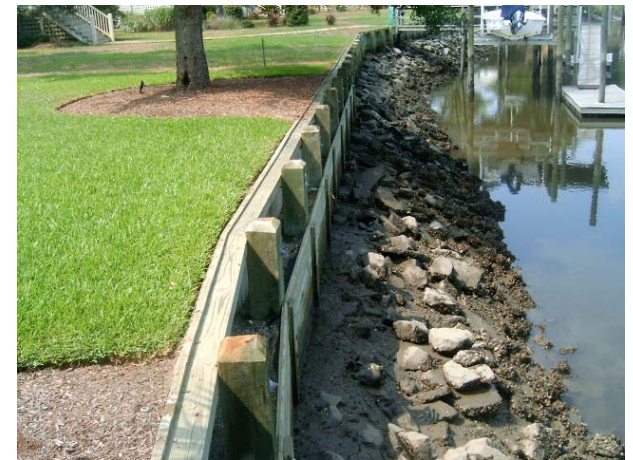
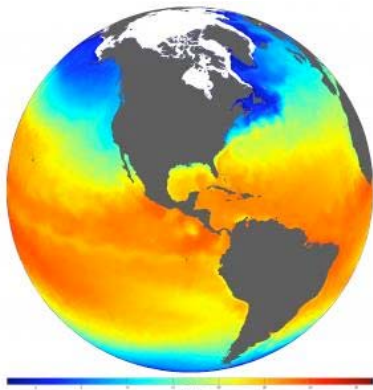
Coastal Impacts of Climate Change



Research Needs



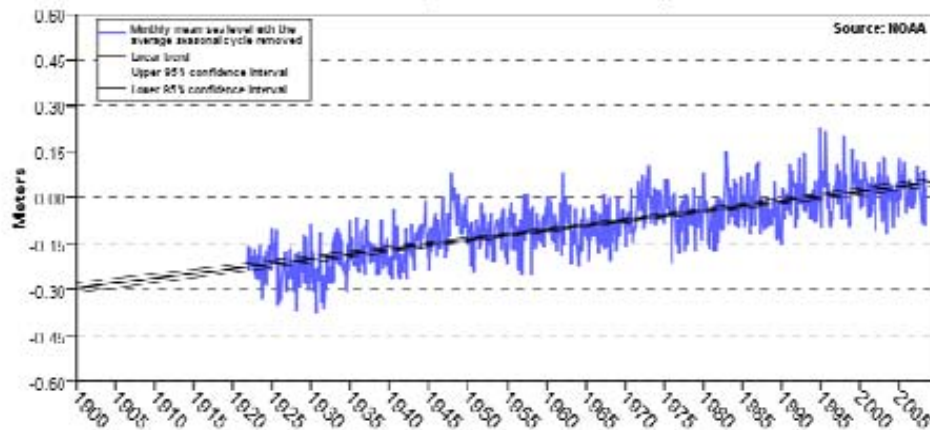
Importance of Scale



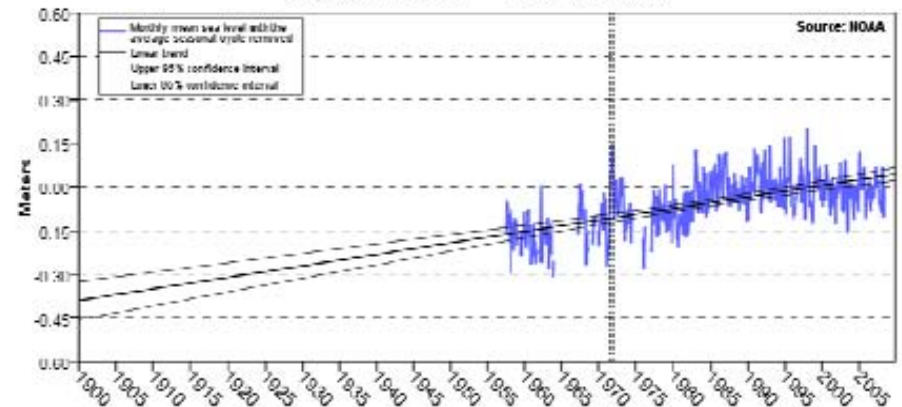
Sea Level Rise in South Carolina



Charleston, SC 3.15 +/- 0.25 mm/yr



Springmaid Pier, SC 4.09 +/- 0.76 mm/yr



Charleston Harbor RSLR (1921 – 1999): ~ 1 ft / 100 yrs

Springmaid Pier RSLR (1957 – 1999): ~ 1.5 ft / 100 yrs

Shoreline Trends

- **Beachfront development**
 - Population increases (avg. 43%) since 1987
 - Now 3,850 beachfront habitable structures
 - 1,489 (~39%) are seaward of the DHEC-OCRM setback line
- **State of the Beaches**
 - Net erosional; Long-term erosion rates commonly from 0 to 4 ft/yr
 - Inlet zones far more dynamic over short term (up to 20+ ft/yr long-term)

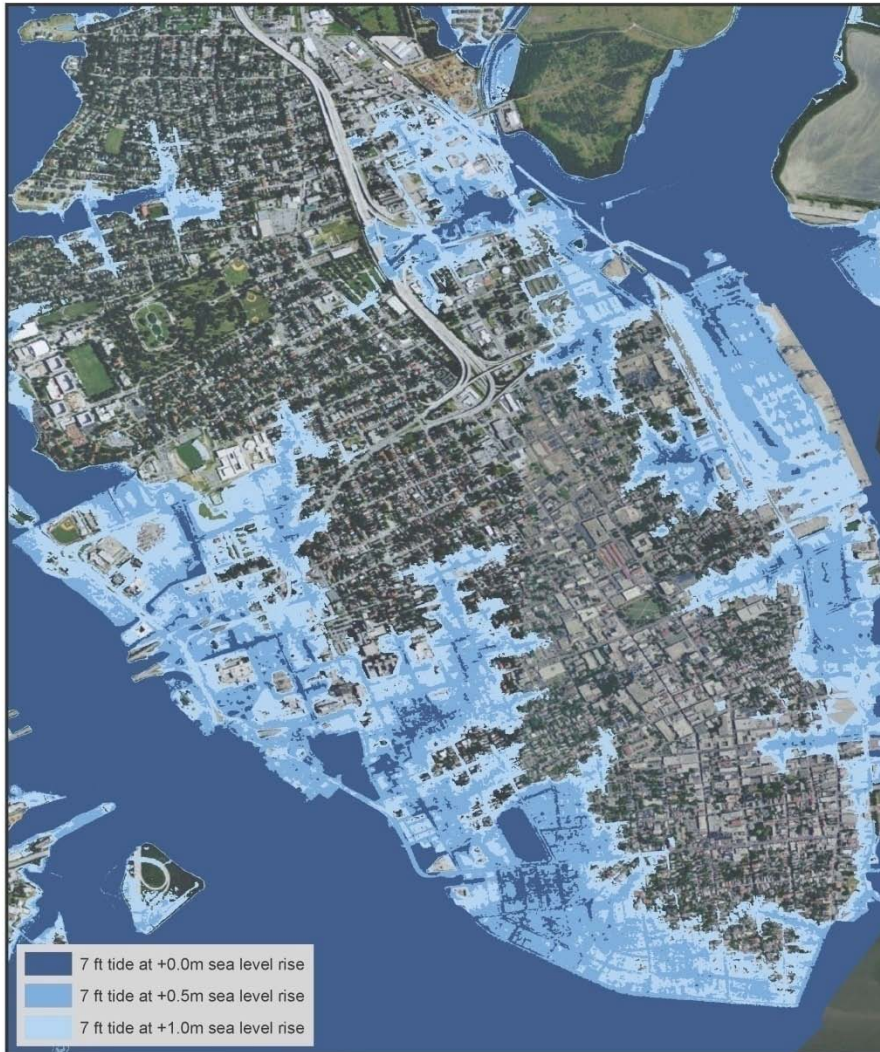


Shoreline Trends

- **Renourishment Projects**
 - 25 projects since 1985; ~\$225 million (44% fed)
- **Extent of “hard” stabilization**
 - Seawalls/revetments: ~24.3 miles (27% of developed)
 - 165 Groins statewide – 4 proposals in-house
 - 111 Emergency Orders (since 1985)
 - Sheltered/Estuarine – unknown; over 1,000 permits since 2001



Flooding in Charleston



NOAA NWS Charleston issues
shallow coastal flooding
advisories for 7 ft tides

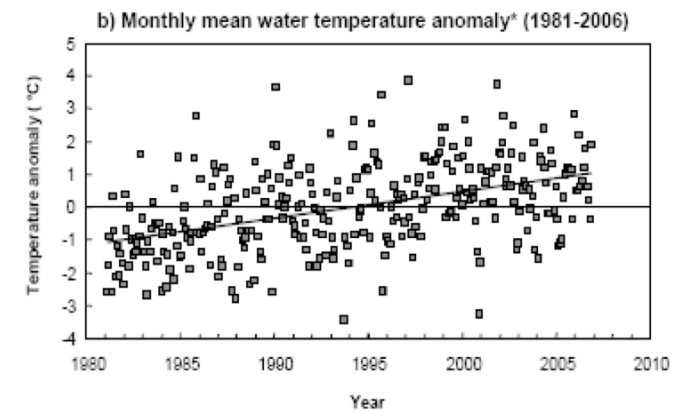
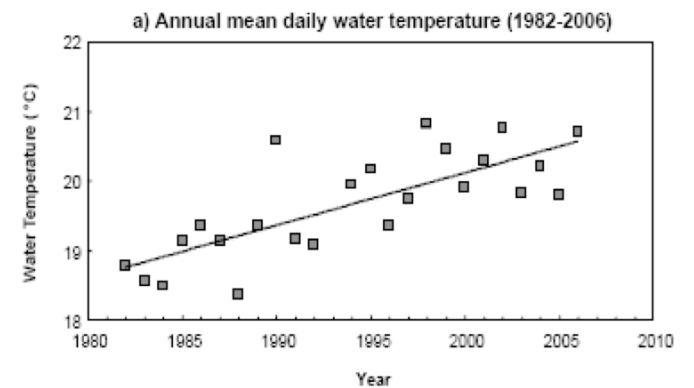
7 ft tides were predicted to occur
twice during 2008

With only 0.5 m RSLR, this
advisory could be issued
289 days



NOAA's Coastal Services Center

Other Potential Impacts



*Temperature anomaly = (month average) - (1981 to 2006 average for month)

Ongoing Initiatives in South Carolina

“Guidance for South Carolina on Near-Term Coastal Adaptation Priorities”

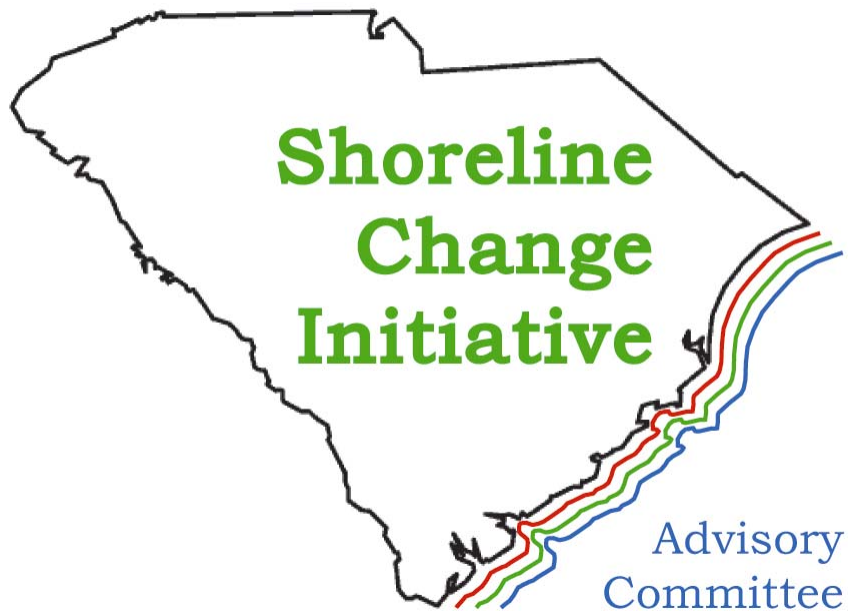
(\$350K grant from the NOAA Climate Program Office)

- Research the potential physical, social, and economic impacts of sea-level rise, coastal inundation, and storm surges on coastal communities in South Carolina
- Produce an adaptation guidance document for local and state coastal managers based on PI research + outcomes of a public workshop
- Convene a Southeastern Regional Advisory Panel on coastal climate change adaptation

*B. Davis, SC CZM; S. Cutter, USC; S. Templeton, Clemson;
P. Gayes, CCU; J. Morris; USC; J. Whitehead, SCSG*

Ongoing Initiatives in South Carolina

Shoreline Change Advisory Committee / Blue Ribbon Panel



- 5-year effort to examine research and policy issues
- SCAC made up of 23 public officials, scientists, and stakeholders
- 175-page report presents 20-year history, status and trends, and 13 general recommendations

Ongoing Initiatives in South Carolina

ADAPTING TO SHORELINE CHANGE

A FOUNDATION FOR IMPROVED
MANAGEMENT AND PLANNING IN SOUTH CAROLINA

FINAL REPORT OF THE
SHORELINE CHANGE ADVISORY COMMITTEE

April 2010

South Carolina Department of Health and Environmental Control

Sec. 1: “Minimize Risks to Beachfront Communities”

Sec. 2: “Improve the Planning of Beach Renourishment Projects”

Sec. 3: “Maintain Prohibitions and Further Restrict the Use of Hard Stabilization Structures”

Sec. 4: “Enhance the Management of Sheltered Coastlines”

Initiatives in Other Coastal States

The Role of Coastal Zone Management Programs in Adaptation to Climate Change

Second Annual Report of the Coastal States Organization's
Climate Change Work Group

September, 2008

Final Report of the
CSO Climate Change Work Group



Surveys of CSO membership (2007 and 2008)

-
35 coastal and Great Lakes states
and island territories

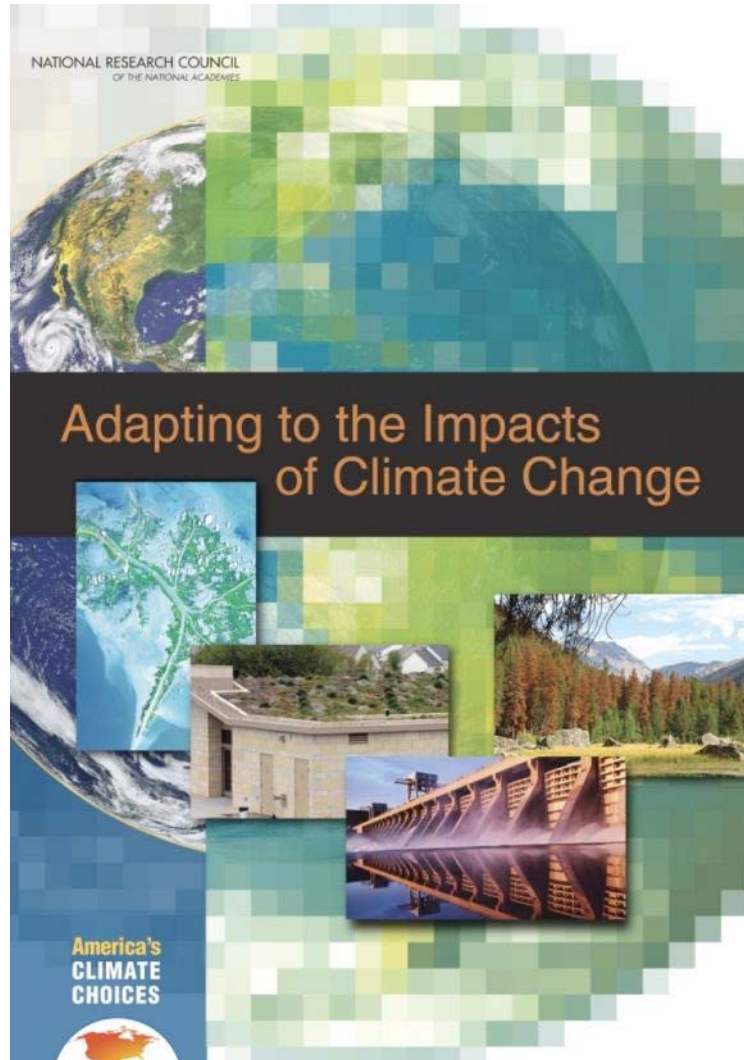
Reports highlight ongoing initiatives + information and policy needs

- Mapping/monitoring/modeling
- Support for state assessments
- Technical assistance
- Federal coordination (strategy)
- Support for federal CZMA

Initiatives in Other Coastal States

- **Sea level rise planning efforts underway in most coastal states and territories (most in assessment phases)...**
 - CSO Climate Change Work Group
 - NOAA/OCRM Coastal Adaptation Guidance Document
- **Common adaptation recommendations**
 - Public infrastructure siting and design policies
 - Wetland conservation and restoration policies
 - Adding “freeboard” above Base Flood Elevation
 - Addressing SLR in existing regional/local plans
 - Identifying land acquisition/conservation priorities

National Research Council - 2010



4 Panel Reports:

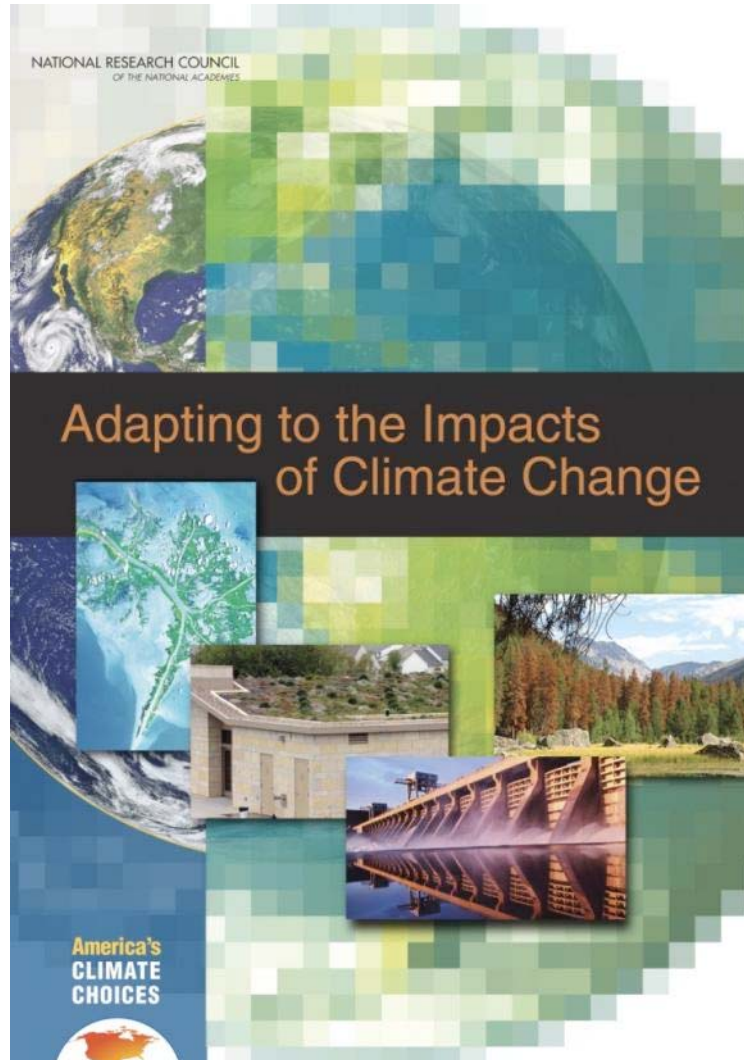
- Limiting the magnitude
- **Adapting to the impacts**
- Advancing the science
- Informing effective decisions

A final report will integrate results from all four panels (Fall, 2010)

<http://americasclimatechoices.org>



National Research Council - 2010



Key Findings:

- Inventory of adaptation options
- “Mainstream” adaptation
- Use iterative risk management approach and range of scenarios
- Numerous case studies
- Calls for federal leadership & national adaptation strategy/program
 - Bottom – up
 - Cross – sectoral

<http://americasclimatechoices.org>

Ongoing Federal Initiatives

- **Interagency Ocean Policy Task Force**
(Final Recommendations 7/19/10; CEQ/OSTP)
 - *“Area of Special Emphasis: “Resiliency and Adaptation to Climate Change and Ocean Acidification”*
 - *Research, observations, and modeling*
 - *Integration of climate sciences*
 - *Evaluation of social and economic costs related to SLR*
 - *Adaptive actions*
 - *Changes to local and regional ocean management systems*
 - *Approach to understanding human health implications*
 - **New “National Ocean Council” responsible for strategy**

In Closing...



- **Mainstreaming is good...**
- **Cross-sector planning...**
 - Interactions between “adaptations”
 - Economic scales of adaptation
 - Build on existing efforts
- **We need new ideas...**
 - Post-storm redevelopment planning / property relocation
 - Market-based mechanisms