

ANDREW KEMP/YALE UNIVERSITY

# FRAMING CLIMATE CHANGE IN THE CAROLINAS



Rodanthe, NC



Carolinas Integrated Sciences & Assessments

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Adaptation Futures Conference

Tucson, AZ 29 May - 31 May 2012

The Influence  
of Perceived  
Risks,  
Institutional  
Priorities, and  
Public Support



# ALL SCALES, ALL SECTORS, DIFFERENT IMPACTS



- Climate variability and human-induced global climate change will have complex reach into U.S. social, environmental, and economic systems (Karl et al. 2009)
- Climate impacts will be experienced, and most effectively responded to, at the local and regional level
- Diverse social, environmental, and economic sectors may experience different degrees of climate change impacts within specific local or regional areas of the U.S.

# CLIMATE CHANGE IN THE CAROLINAS



## ■ Overview of the Region

- North and South Carolina share similar climates, resources, economies and social culture.
  - Economic Sectors – 1980-2010 (shifted from agriculture and manufacturing to knowledge-based and service-related)\*
  - Population Change - 1980-2010 (grew from 5.9 to 9.5 m in NC and 3.1 to 4.6 m in SC due to in-migration)\*\*
- General Climate Concerns (Konrad et al. 2012)
  - Temperature Change (summer temperatures increasing)
  - Inter-annual Variability in Precipitation (drought, flooding, salt-water intrusion)
  - Sea-Level Rise
- Key Challenges and Vulnerabilities
  - Land-use and Development
  - Coastal Development
  - Water and Wildlife Management

\*NC Dept. of Commerce, 2011

\*\*U.S. Dept. of Labor, 2012

# RESEARCH QUESTIONS



- How are study sector mitigation or adaptation activities framed and communicated to constituent groups?
  - What are the key climate change concerns (i.e. direct and indirect impacts) of the study sectors?
  - What activities to address those concerns have been implemented or are being planned?
  
- What can this tell us about the dynamics that drive responses to climate change in the Carolinas?

# STUDY SECTORS

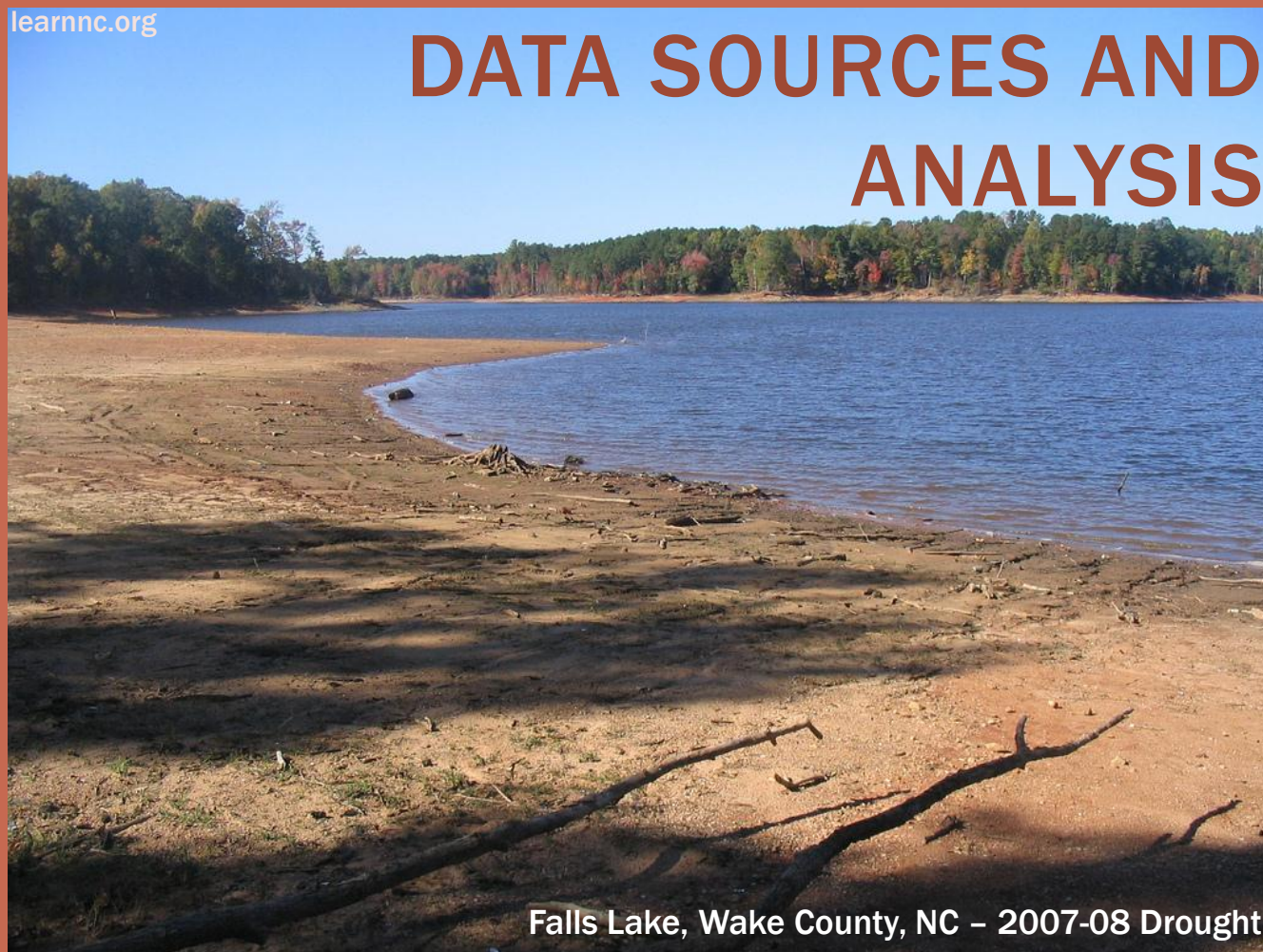


- **Forestry** (n=20)
  - Public & Private Land Managers
  - Biofuel Alternative Energy Groups
- **Government** (n=36)
  - Local & State Government Officials
  - Local & Regional Planners/Planning Organizations
  - Policy-makers and Public Policy Researchers
- **Tourism** (n=22)
  - Outdoor Recreation, General Hospitality, Research and Academia Sub-sectors
  - NGO/NPO Leaders
- **Water Management** (n=14)
  - Water Utility Managers
  - Engineers/Consulting Organizations
- **Wildlife Management** (n=25)
  - Public Agency Officials
  - Conservation Organization Leaders



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# DATA SOURCES AND ANALYSIS



Falls Lake, Wake County, NC – 2007-08 Drought

# DATA SOURCES

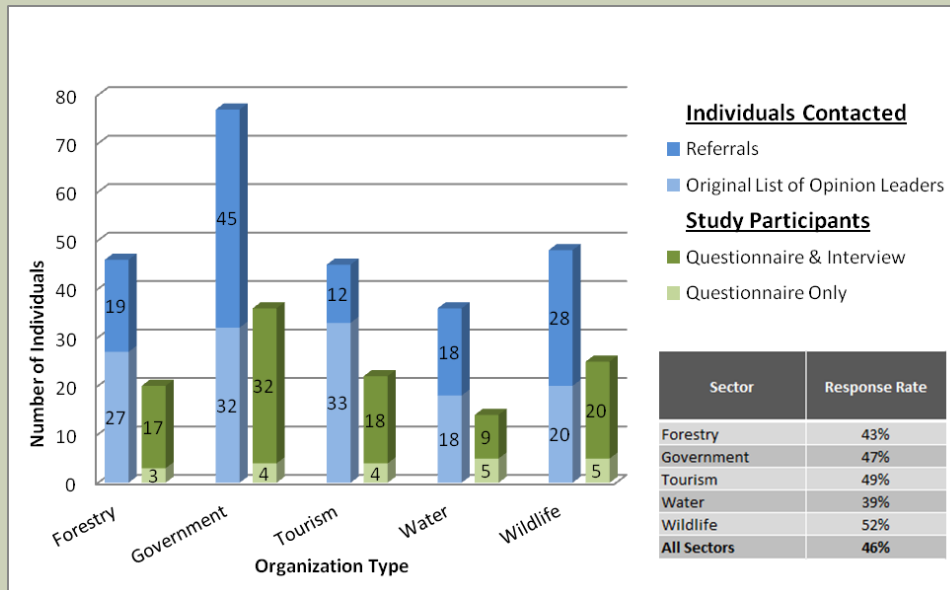


## Climate Change Documents in the Carolinas

- Web-based search to identify climate change-related documents and key decision-makers and organizations (128 documents identified)

## Questionnaires/Interviews with Key Leaders

- Identification of “opinion leaders” in each section within the region
- Online Questionnaire and Follow-Up Phone Interview with Snowball Sampling



| Sector             | Response Rate |
|--------------------|---------------|
| Forestry           | 43%           |
| Government         | 47%           |
| Tourism            | 49%           |
| Water              | 39%           |
| Wildlife           | 52%           |
| <b>All Sectors</b> | <b>46%</b>    |

- 252 - Individuals Invited to Participate
- 21 - Questionnaire Respondents
- 96 - Questionnaire & Interview Participants
- 117 - Total Participants (46% response rate)

# ANALYSIS METHODS



## ■ Nvivo Coding

- Four Coding Categories
  - *Climate Concerns and Decisions*
  - *Climate Change Activities*
  - *Framing Strategies*
  - *Needs*
- Nvivo Matrix Coding

## ■ Weighted Average Analysis

- Data transferred to Microsoft Excel where program features were used to calculate descriptive statistics for each concern, activity, and framing category by sector



Pickens Sentinel

# RESULTS



Town Creek Flooding, Pickens, SC - June 2006

# CLIMATE CHANGE CONCERN CATEGORIES



- **Temperature**
  - Average temperature increases
- **Precipitation**
  - Hydrological cycle changes
- **Extreme Events**
  - Increased frequency of extreme weather events
- **Sea Level Rise**
- **Wildfire**
- **Public/Ecological Health**
- **Water Quality**

# MOST COMMON CLIMATE CHANGE CONCERNS

| Climate Change Concern                                | Forestry | Government | Tourism | Water | Wildlife |
|---|----------|------------|---------|-------|----------|
| ★ Temperature Change                                  | 29%      | 6%         | 24%     | 14%   | 38%      |
| ★ Precipitation Change-<br>Drought-Flooding           | 22%      | 31%        | 10%     | 24%   | 28%      |
| ★ Extreme Events (severe<br>storms, hurricanes, etc.) | 9%       | 27%        | 23%     | 22%   | 13%      |
| SLR<br>(and related coastal<br>flooding)              | 4%       | 19%        | 12%     | 5%    | 60%      |
| Wildfire  | 27%      | 9%         | 12%     | 0%    | 11%      |
| Public/Ecological Health                              | 0%       | 10%        | 0%      | 0%    | 7%       |
| Water Quality<br>(not for utilities)                  | 13%      | 0%         | 18%     | 7%    | 32%      |

At or above 20%

*“At the regional scale, climate change adaptation is still down the list in terms of priorities and what kinds of issues people are concerned about...Climate change has not been at the top of the list.”*  
(Government Sector)



# CLIMATE CHANGE ACTIVITY CATEGORIES



- Data Collection and Monitoring of Climate Impacts
- Ecological Protection and Conservation
- Education and Outreach
- Greenhouse Gas Emissions Reductions
- Land Management
- Policy and Law Revisions
- Strategic Planning
- Sustainability Projects and Programs
- Hazard Mitigation & Emergency Management
- Infrastructure & Ecological Alterations
- Internal Policies, Practices, and Management
- Resources Management

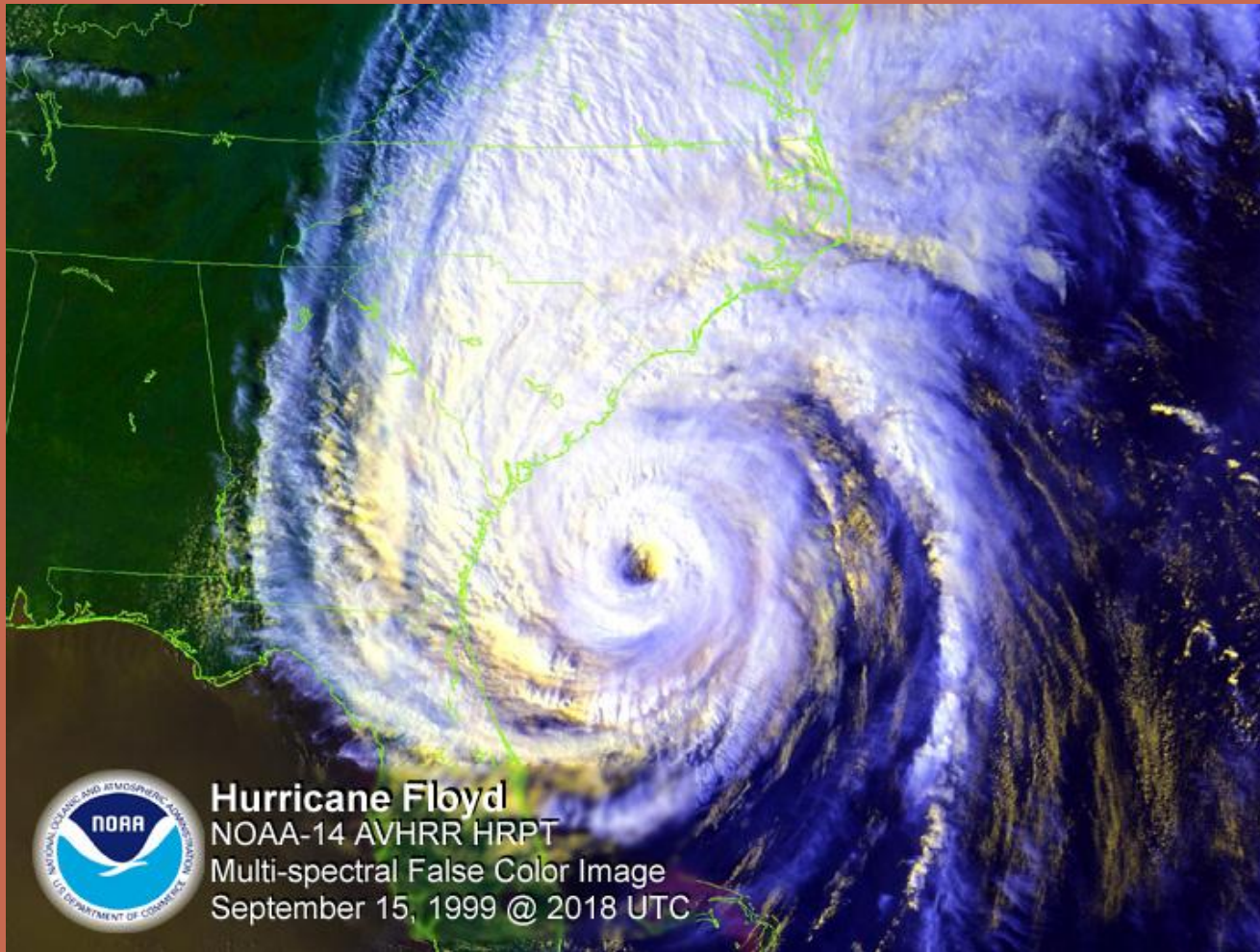
# MOST COMMON CLIMATE CHANGE ACTIVITIES



| Climate Change Activity                   | Forestry | Government | Tourism | Water | Wildlife |
|---|----------|------------|---------|-------|----------|
| Data Collection & Monitoring of Impacts   | 23%      | 39%        | 13%     | 25%   | 45%      |
| Ecological Protection and Conservation    | 11%      | 17%        | 21%     | 4%    | 66%      |
| Education & Outreach                      | 28%      | 38%        | 37%     | 11%   | 26%      |
| Greenhouse Gas Emissions Reductions       | 30%      | 48%        | 30%     | 11%   | 19%      |
| Land Management                           | 26%      | 0%         | 0%      | 0%    | 0%       |
| Policy and Law Revisions                  | 7%       | 22%        | 12%     | 0%    | 11%      |
| Strategic Planning                        | 0%       | 44%        | 15%     | 0%    | 14%      |
| Sustainability Projects & Programs        | 5%       | 29%        | 44%     | 4%    | 0%       |
| Hazard Mitigation/Emergency Manag.        | 10%      | 48%        | 10%     | 6%    | 0%       |
| Infrastructure & Ecological Alterations   | 0%       | 35%        | 5%      | 12%   | 35%      |
| Internal Policies, Practices & Management | 27%      | 0%         | 13%     | 0%    | 18%      |
| Resource Management                       | 11%      | 12%        | 0%      | 69%   | 0%       |

At or above 20%





**Hurricane Floyd**  
NOAA-14 AVHRR HRPT  
Multi-spectral False Color Image  
September 15, 1999 @ 2018 UTC

# FRAMING CLIMATE CHANGE IN THE CAROLINAS



# FRAMING CLIMATE CHANGE ACTIVITIES



- Participants asked how they communicate information about climate change and related organizational activities to constituent groups
  - Careful attention to framing public communication
  - Rarely focus on climate change externally, but acknowledge internally
  - Incorporate action into other salient areas of public concern
- What are frames?
  - “Refers to modes of presentation that journalists and other communicators use to present information in a way that resonates with existing underlying schemas among their audience” (Shoemaker & Reese (1996))
  - Tools used to convey complex issues succinctly and efficiently in a manner that resonates with the values, beliefs, and interests of those audiences (Scheufele & Tewksbury 2007)

# CLIMATE CHANGE FRAMING CATEGORIES



- Green Economy/Developing Jobs
- Ecosystem Conservation (resource management, ecosystem services)
- Emergency Management/Hazard Mitigation
- Public Health/Prevention
- Energy/Energy Security & Efficiency/National Security
- Moral or Ethical Imperative/Social Duty/Responsibility
- Planning & Preparedness (municipal and urban planning, transportation, resource needs)
- Sustainability for Future Generations

# MOST COMMON CLIMATE CHANGE ACTIVITY FRAMING STRATEGIES

| Climate Change Activity Framing Categories             | Forestry | Government | Tourism | Water | Wildlife |
|--|----------|------------|---------|-------|----------|
| Green Economy/Developing Jobs                          | 18%      | 20%        | 6%      | 7%    | 16%      |
| Ecosystem Conservation                                 | 25%      | 15%        | 18%     | 21%   | 52%      |
| Emergency Management/Hazard Mitigation                 | 0%       | 28%        | 17%     | 7%    | 10%      |
| Public Health/Prevention                               | 0%       | 5%         | 0%      | 0%    | 14%      |
| Energy/Energy Security & Efficiency/National Security  | 32%      | 15%        | 10%     | 13%   | 14%      |
| Moral or Ethical Imperative/Social Duty/Responsibility | 23%      | 15%        | 19%     | 13%   | 16%      |
| Planning & Preparedness                                | 9%       | 34%        | 18%     | 11%   | 17%      |
| Sustainability for Future Generations                  | 17%      | 19%        | 26%     | 13%   | 5%       |

*“I think that the politics and dynamics have shifted dramatically in North Carolina and I think climate change is a dirty word right now in the political environment of the state”  
(Forestry Sector)*



At or above 20%

# WHAT HAVE WE LEARNED?



- Sector-specific climate change concerns, activities, and communication frames exist.

| Sector     | Sector-Specific Interests  |
|------------|--|
| Forestry   | Wildfire; Land Management; Internal Policies, Practices and Management                 |
| Government | Policy and Law Revisions; Strategic Planning; Hazard Mitigation & Emergency Management |
| Tourism    | Sustainability; Ecological Protection & Conservation                                   |
| Water      | Extreme Events; Precipitation Change; Resource Management                              |
| Wildlife   | Sea-Level Rise; Water Quality  |

- Enhances understanding of adaptive capacity
  - Overlap
  - Concentrated Expertise
  - Tailored Messaging

# FRAMING CLIMATE CHANGE IN THE CAROLINAS



- *“Working in a politically conservative state like South Carolina where skepticism of climate science is strong, we have decided to cede the scientific debate and focus our efforts on energy reform” (Government Sector)*
- *“Making connections between people and these resources that we have, they’re going to start to figure out that climate change is real, and when they do, we want to be the ones that they come to trusting.” (Tourism Sector)*

# FRAMING CLIMATE CHANGE IN THE CAROLINAS



- “If I say that we're doing everything we can to mitigate impacts from global warming or climate change, they would look at me and say you need to spend your time doing something else. But rather if I said we understand climate variability in weather patterns is affecting our ability to provide our intended service, that we need to prepare for those changes, they say you know, wow, that's great, we're glad you're thinking ahead” (**Water Sector**)
- “We pretty much decided a year ago that we will stop talking about climate in order to focus entirely on economics, green jobs, that whole thrust. I cannot imagine that I will go back to climate as the first point in the conversation. I think that the economic imperative is still the opener and the winner; the winning argument” (**Forestry Sector**)
- “When you talk about sustainability, you talk about how we can occupy the landscape and live a lifestyle that is, that does not rely on finite resources so it does not exhaust resources that are a component of our quality of life and contribute to the health of our communities and our ecosystems” (**Wildlife Sector**)



# CONCLUSIONS



- Framing is an essential component of efforts to address climate change in the Carolinas
  - Sector leaders not talking about climate change; focusing on impacts
    - “At this point in time we are not actively working on climate change. We are not using the term climate change. We are not actively involved in any policy that relates to climate change, you with us there?” (Government Sector)
  - External and internal communication differences highlight recognition of need to act but importance of tailored communication messages
    - “We internally as staff, as scientists and engineers, we see there is a connection between greenhouse gas emissions and climate variability. But it's not high-profile, it's not like we're waving a flag saying we are reducing our carbon footprint by x. To some of our constituents and stakeholders, they love to hear that, for a majority of them they don't care, so we've built that internally as a review process” (Water Sector)
    - “We do not always bring it back to global warming or climate change. We make that connection internally but a lot of times when we are talking about it publicly, it is really more about jobs, it is really more about diversifying our energy source.” (Forestry Sector)

# CONCLUSIONS



- Examining framing strategies used by study sectors allows us to think more about what opportunities exist to enhance local and regional response to climate change while advancing other priority issues
  - Frames that directly connect action on climate change with dimensions of societal well-being have substantial purchase.
    - Forestry – Preserving forest resources, enhancing clean air, transition from fossil fuel sources
    - Government – Mitigating future hazards and losses, strategic “smart” planning, encouraging innovating and “green” growth
    - Tourism – Protecting space for outdoor recreation and leisure, carving a “green” tourism niche, saving costs via sustainable practices
    - Water – Enhancing resource supply reliability, building more efficient H2O management systems, preparation for a dry or rainy day
    - Wildlife – Ecological health influences human health and well-being, cost of protection vs. cost of loss, supporting eco-tourism

## Acknowledgements

- Carolinas Integrated Sciences and Assessments (CISA)
- The University of South Carolina
- Research Supported by NOAA Climate Program Office, Regional Integrated Sciences and Assessments Program

For the full  
report  
referenced in  
this  
presentation  
please visit  
[www.cisa.sc.edu](http://www.cisa.sc.edu)



## ■ Questions?

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