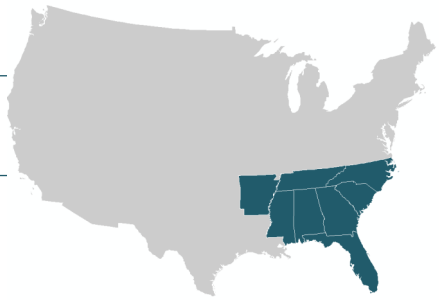
SOUTHEAST
Climate Adaptation Science Center

CLIMATE ADAPTATION SCIENCE CENTERS
FORMERLY KNOWN AS THE CLIMATE SCIENCE CENTERS

NORTH CAROLINA

PROJECT HIGHLIGHTS



North Carolina falls within the domain of the Southeast Climate Adaptation Science Center (CASC), managed by the USGS.

PROTECTING CAPE LOOKOUT'S HISTORIC STRUCTURES

Upwards of $20 billion of cultural resources and infrastructure in coastal national parks are estimated to be at high risk from climate impacts. At Cape Lookout National Seashore, historic relics of the region's maritime past are threatened by stronger storms and hurricanes, rising seas, and erosion.

WHAT:

- Southeast CASC worked with the National Park Service, State Historic Preservation Office, and other local stakeholders to develop a method for identifying which cultural resources are most in need of management action.

RESULTS:

- Identified the vulnerability and significance of 17 historic structures, then determined the best adaptation actions to minimize cultural loss over the next 30 years – such as updating building materials or relocating structures.

IMPACT:

- Helps guide annual NPS budget allocation decisions to maximize the effectiveness of management actions while considering fiscal constraints.

>> Learn More: bit.ly/CulturalResourceAdaptation

PREDICTING URBAN SPRAWL IN THE SOUTHEAST

The Southeast U.S. has grown rapidly over the past 60 years. The region is also home to diverse wildlife, and increased urbanization can lead to habitat loss and fragmentation. Coupled with the impacts of a changing climate, the region's wildlife could face a range of threats impacting effective conservation planning.

WHAT:

- Southeast CASC predicted changes in the extent of urban sprawl in the Southeast U.S. over the next 50 years.

RESULTS:

- Urban areas in the Piedmont region, which includes Raleigh and Charlotte, could increase by 165% by 2060. This area could transform into one connected urban region extending from Raleigh to Atlanta.

IMPACT:

- Helps Southeast wildlife managers identify which habitats, and corridors between habitats, might be lost due to urbanization. Considering these impacts in the context of climate change enables managers to develop adaptive management strategies that account for multiple drivers of change.

>> Learn More: bit.ly/SEUrbanization

Predicting Future River Flow

Robust predictions of river flows are essential to managing water resources for healthy aquatic ecosystems and human communities into the future. While many different models for predicting flow changes based on climate and land use exist, no study has examined the differences in these predictions.

WHAT:

- Southeast CASC evaluated river flow modeling efforts in the Southeast.
- Predicted how the number of fish species in the North Carolina Piedmont might be impacted under different scenarios of water availability.

RESULTS:

- Found that more complex, detailed models are not necessarily more accurate than simpler, regional-scale models.
- In North Carolina, fish in the Broad, Catawba, Yadkin, and Cape Fear river basins are more susceptible to species loss.

IMPACT:

- Helps managers better understand the scientific information available for predicting future water availability in the Southeast, and how changes in flow might impact aquatic ecosystems.

>> Learn More: bit.ly/SEHydroModeling

Educating the Next Generation

Global change brings an increasing set of complex and interrelated problems. A well-trained workforce that uses multidisciplinary approaches is needed to tackle these challenges. An important focus of this effort is building the capacity of scientists to communicate with stakeholders before, during, and after the research process.

WHAT:

- Southeast CASC, in collaboration with NC State University, provides scientific, professional development, and financial support to NC State graduate students pursuing research that addresses global change issues.

RESULTS:

- Since 2011, 75 diverse fellows from across disciplines have come together to discover, collaborate, and share knowledge with varied stakeholders.

IMPACT:

- Prepares students to better meet global change challenges by providing close interaction with state, federal, tribal, and NGO partners and exposing them to the realities experienced by resource managers.

>> Learn More: bit.ly/SECSCGlobalChangeFellows

NC STATE UNIVERSITY · Duke University · The University of Tennessee Knoxville · Auburn University · University of South Carolina · University of Florida

The Southeast CASC is hosted by North Carolina State University and has five partner institutions. The CASC works with natural and cultural resource managers to gather the scientific information and build the tools needed to help fish, wildlife, and ecosystems adapt to the impacts of climate change. ***Learn more: globalchange.ncsu.edu/secsc/***