CAROLINAS INTEGRATED SCIENCES & ASSESSMENTS

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- NC Sea Grant
- NC State University
- NC Water Resources Research Institute
- NOAA Southeast and Caribbean Regional Team
- SC Sea Grant Consortium
- SC State Climatology Office
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CISA
A NOAA RISA TEAM

Established in 2003, CISA is 1 of 11 NOAA Regional Integrated Sciences and Assessments (RISA) teams. These interdisciplinary research teams expand and build the nation's capacity to prepare for and adapt to climate impacts by addressing science questions faced by decision makers.

Integrating Climate Science with Decision Making

Our research and engagement projects increase climate resilience in the Carolinas by:

- **Advancing understanding of climate and its impacts in the Carolinas –** CISA conducts applied research to answer stakeholders' questions about climate variability and extremes, projections of future climate, and climate-related impacts on the Carolinas' resources and communities.
- **Providing decision support services –** CISA collaborates with local and regional stakeholders to produce tailored information, tools, and resources to support climate-related decision making.
- **Fostering adaptation and its implementation in the region –** CISA works directly with communities to assess climate vulnerabilities and identify potential adaptation strategies and avenues for implementation to foster more resilient communities and ecosystems.
- **Supporting climate information networks –** CISA seeks to be a trusted source of climate information and provides a variety of opportunities for dialogue around climate issues.

Working Collaboratively to Support Climate Resilience

CISA has established long-term partnerships and collaborations with federal, tribal, state, and local partners. Working together enables us to leverage expertise from other agencies and organizations and build robust and coordinated efforts around climate research and decision support activities.

Our interdisciplinary, multi-state team integrates social and natural sciences to characterize the risks, vulnerabilities, and potential impacts of climate variability and change. From the insights we gain, we develop decision-relevant tools and analyses that meet our stakeholders' specific needs and help build regional capacity to address climate concerns. By emphasizing processes that facilitate learning, we help to foster information exchange among decision makers, researchers, and climate service providers.

CISA RESOURCES

Carolinas Precipitation Patterns & Probabilities Atlas: www.cisa.sc.edu/atlas
Citizen Science Condition Monitoring Web Map: www.cocorahs.org/Maps/conditionmonitoring
Convergence of Climate, Health, and Vulnerabilities website: convergence.unc.edu
Hazardous Extremes Risk Assessment (HERA) Tool: convergence.unc.edu/tools/hera/
Heat Health Vulnerability Tool (HHVT): convergence.unc.edu/tools/heat/
South Carolina Water and Climate Video Series: www.cisa.sc.edu/outreach_videos.html

Photo Credit: SC National Guard

Supporting Climate Resilience in the Carolinas

CAROLINAS INTEGRATED SCIENCES & ASSESSMENTS

ADVANCING UNDERSTANDING OF CLIMATE PROCESSES AND IMPACTS

Connections between Climate and Water

CISA uses and integrates historical climate and hydrological data, watershed models, and global and downscaled climate models to answer questions about climate impacts at the local level. Research seeks to provide information that can inform planning and preparedness for extreme rainfall events and drought. For example, the team is using different methods of climate model downscaling to develop future climate scenarios for Georgetown, SC and Charleston, SC to support projects looking at long-term planning for climate change.

Connections between Climate and Human Health

CISA and the Southeast Regional Climate Center (SERCC) collaborate to investigate links between climate and human health. Recent studies have focused on heat stress impacts on pregnancy, wet bulb globe temperature, and the impacts of extreme rainfall events on waterborne disease. Based on heat-health research findings, SERCC developed the NC Heat Health Vulnerability Tool (HHVT) in partnership with the NC State Climate Office. This tool has the capacity to predict heat-related emergency department (ED) visits at the county level based on National Weather Service daily forecasts. The Hazardous Extremes Risk Assessment (HERA) tool provides county-level information for North Carolina about the occurrences and impacts of extreme events such as heavy rainfall and flooding. Both the HHVT and the HERA tool can be accessed on the Convergence website, which houses a wealth of resources about climate and public health in the Carolinas: https://convergence.unc.edu/.

DECISION SUPPORT SERVICES

Coastal Carolinas Climate Outreach Initiative

CISA, together with the SC Sea Grant Consortium, supports a coastal climate and resilience extension specialist. This partnership allows CISA to cultivate relationships with stakeholder groups, including coastal zone management, local municipalities, and local NGOs in order to bridge the gap between coastal climate science and decision making. Examples include partnerships such as the Charleston Resilience Network.

Planning and Preparing for Drought in the Carolinas

CISA collaborates with the National Integrated Drought Information System (NIDIS) and other regional partners on several drought-related projects. This include the development of a coastal salinity index to monitor drought conditions on the coast, support for a network of citizen science observers to report the effects of drought on local communities and resources, an online atlas to provide information about drought and heavy precipitation risks and impacts, and support for the South Carolina drought response program, including the development of the new scdrought.com website.

FOSTERING CLIMATE ADAPTATION AND ITS IMPLEMENTATION IN THE REGION

Assessing Vulnerabilities and Identifying Adaptation Solutions in Local Communities

The Vulnerability, Consequences, and Adaptation Planning Scenarios (VCAPS) process was developed to allow decision makers in small municipalities to explore the potential outcomes and consequences of climate change in their towns, along with pathways to help plan and prepare. The process has been used in over 15 U.S. communities, including 8 in the Carolinas. For example, the City of Folly Beach, SC incorporated adaptation strategies generated during a VCAPS workshop into their Sea Level Rise Adaptation Report. Learn more at vcapsforplanning.org.

SUPPORT FOR CLIMATE INFORMATION NETWORKS

In addition to stakeholder engagements that are part of individual research and projects, CISA conducts a wide range of outreach and engagement activities to help create and foster climate information networks in the Carolinas. The Carolinas Climate Resilience Conference is held bi-annually to provide an in-person opportunity for information exchange and networking. CISA also supports a broader network of climate adaptation practitioners in the Southeast through leadership roles with the Southeast & Caribbean Climate Community of Practice.