



Coastal Resilience Center (CRC)

A Nationwide Consortium Led by the University of North Carolina at Chapel Hill

A DHS Center of Excellence

The CRC conducts research and education to enhance the resilience of the nation’s people, infrastructure, economies, and the natural environment to the impacts of coastal hazards such as floods and hurricanes. This includes developing new tools and methods to help communities mitigate, recover from, and adapt to natural hazard risks, including the effects of future trends. CRC also develops educational programs to meet current and future workforce needs across the Homeland Security Enterprise in coastal and computational engineering, computer science and engineering, social science, coastal infrastructure, disaster science, and natural hazards resilience.

Research and Education Capabilities

- High-resolution coastal flood, storm surge and wind forecasting
- Hazard mitigation and community resilience
- Education and training for the current and future homeland security workforce
- Equity in disaster management

About CRC

LAUNCH	2015
PARTNERS	More than 15 university, non-profit, and industry partners
EXPERTISE	Disaster recovery and mitigation planning, coastal hazards/storm surge modeling, risk communication, decision support modeling, infrastructure assessment, and engineering
DHS ALIGNMENT	Cybersecurity and Infrastructure Security Agency (CISA), Federal Emergency Management Agency (FEMA), DHS Science and Technology (S&T), U.S. Coast Guard (USCG)

Feedback from Our Partners

“The partnership with Dr. Rick Luettich at the Coastal Resilience Center is essential to provide forecasted surge information to North Carolina Department of Transportation’s (NCDOT) Transportation Surge Analysis Predictive Program (T-SAPP).”

Matt Lauffer, Assistant State Hydraulics Engineer, North Carolina Department of Transportation (NCDOT)

University Partners

Colorado State University
Jackson State University*
North Carolina State University
Old Dominion University
Oregon State University
Pennsylvania State University
Texas A&M University
Texas A&M University at Galveston
Tougaloo College*
University of Puerto Rico-Mayaguez*
University of Rhode Island
University of Texas Austin*

*Minority Serving Institutions (MSI)

Enterprise Partners

American Planning Association
American Rivers
The Water Institute



For a complete list of partners and more information, please visit www.coastalresiliencecenter.org

For more information on DHS Centers of Excellence, please visit www.dhs.gov/science-and-technology/centers-excellence



Impacts



Addressing Equity in Disaster Management

With the increasing frequency and impacts of coastal storms, CRC's research explores ways to fortify disproportionately marginalized communities, building the resilience of people, infrastructure, economies, and the natural environment to coastal hazards. As part of this research, CRC held a workshop on Disasters and Equity in March 2024, which explored solutions to fill critical gaps in preparedness and address inequities in disaster resilience. This two-day meeting resulted in a detailed summary and briefing materials, as well as recommendations for future research.



Guiding Resilient Planning and Rebuilding

CRC developed the Plan Integration for Resilience Scorecard to assess community plans for their ability to work collectively to reduce future flooding and storm risks. The Resilience Scorecard has been used in Norfolk, Virginia; League City, Texas; and Nashua, New Hampshire, to assess communities near Houston, Texas, following Hurricane Harvey. In the wake of Hurricane Matthew, CRC worked with several communities to develop community rebuilding plans.



Forecasting Impacts of Severe Storms in New England

CRC created the storm modeling system RI-CHAMP (Rhode Island Coastal Hazards, Analysis, Modeling and Prediction) to forecast the impacts of major storm events, helping to mitigate threats to people, infrastructure and economy. Since December 2023, the Rhode Island Emergency Management Agency has activated RI-CHAMP for multiple coastal weather events in order to make informed decisions and implement preparations around key assets in coastal areas.



Protecting Flood-Prone Communities

CRC uses the ADCIRC Prediction System (APS) to predict location and severity of coastal flooding. During the 2024 hurricane season, CRC provided DHS with updates that were presented to senior DHS leadership. CRC provided DHS with daily situational awareness briefings which were included in daily briefings to Secretary of Homeland Security Alejandro Mayorkas and other departmental leadership.



Educating the Next Generation of Hazards Professionals

Through education programs, CRC educates future hazard researchers, educators and practitioners, emphasizing the development of courses, minors, and certificate programs at MSIs. Since 2016, instructors have taught more than 30 courses to more than 500 students across seven university campuses.