



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 recovery planning
- Education and training for the current and future homeland security workforce

About CRC

LAUNCH	2015
PARTNERS	More than 30 university, industry, and government partners
EXPERTISE	Disaster recovery and mitigation planning, coastal hazards/storm surge modeling, risk communication, decision support modeling, infrastructure assessment, and engineering
DHS ALIGNMENT	Federal Emergency Management Agency (FEMA), Cybersecurity and Infrastructure Security Agency (CISA), U.S. Coast Guard (USCG), DHS Science and Technology (S&T)

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*
Johnson C. Smith University*
Louisiana State University
North Carolina State University
Old Dominion University
Oregon State University
Texas A&M University*
Tougaloo College*
University of Puerto Rico-Mayaguez*
University of Rhode Island
University of Texas – Austin*

*Minority Serving Institution (MSI)

Enterprise Partners

American Planning Association
American Red Cross
Association of State Floodplain
Managers
International Association of Emergency
Managers
National Association of Emergency
Managers
American Shore & Beach Preservation
Association



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

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

Impacts



Protecting Flood-Prone Communities

CRC uses the ADCIRC Prediction System (APS) to predict location and severity of coastal flooding. During Hurricane Ian in 2022, 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.



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.



Defending Coastal Structures Against Surge

CRC researchers are adapting federal computer models to better guide construction of coastal infrastructure, addressing fluid pressures on doors, windows and other structural elements caused by overland waves and storm surge. This work supports FEMA's Hazus-Multi Hazard flood damage estimation tool.



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.