



COASTAL RESILIENCE CENTER

The University of North Carolina at Chapel Hill

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Research and Education Areas

- Disaster Dynamics
- Building Resilient Communities
- Coastal Infrastructure Resilience
- Education and Workforce Development

Mission: *To enhance the nation's ability to safeguard people, infrastructure, and economies from coastal natural hazards such as floods and hurricanes. CRC will also consider the impact of future climate trends on coastal resilience.*

Quick Facts

- Awarded in April 2015, this Center will build on the successes of the Coastal Hazards COE. Examples include:
 - Informing the U.S. Coast Guard on operational decisions in advance of and during disasters by developing a hurricane storm surge and flood inundation model and applying the results in real-time situations.
 - Providing tools and analysis supporting Federal Emergency Management Agency's (FEMA) hazard mitigation planning and floodplain mapping programs.
 - Analyzing the quality of emergency management plans and translating that information to practitioners and policymakers through best practices, resulting in new and modified national standards of practice.
 - Educating the next generation of hazard scholars and practitioners through the delivery of more than 230 hazards and disaster-related university courses with a total enrollment of 5,200 students. Approximately 85 percent of the courses and 60 percent of the enrollments were at Minority Serving Institutions (MSIs).

Partners

- Led by the University of North Carolina (UNC) at Chapel Hill in partnership with Jackson State University in Jackson, MS.
- Partners include federal agencies, state and local governments, professional associations and 22 academic research institutions.

Research and Education Focus

- Conducting research that directly addresses key challenges associated with coastal vulnerability and enhancing resilience:
 - Developing more refined storm surge models and delivering accurate, timely predictions of storm surge prior to land-falling storms.
 - Assisting FEMA, states, and local governments in developing better predictions of coastal hazards and pre-disaster plans that help reduce vulnerability and improve the speed and quality of recovery and reconstruction after a disaster occurs.
 - Improving our understanding of why individuals choose to implement risk-reduction measures at the household level.
 - Improving our ability to communicate risk to multiple audiences and take action based on that understanding.
 - Educating the next generation of students who will become hazards researchers, educators and practitioners, emphasizing the development of certificate and degree programs at Minority Serving Institutions (MSIs).

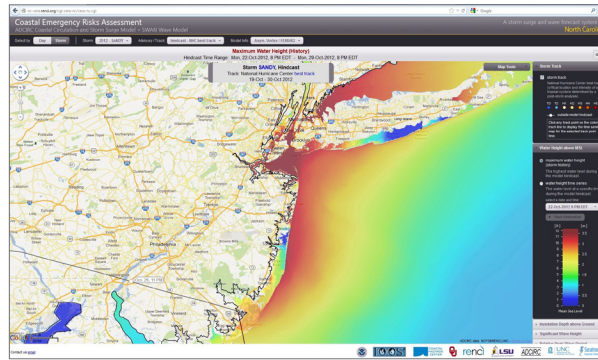
Research and Education Partners

Colorado State University
Cornell University
East Carolina University
Jackson State University *
Johnson C. Smith University *
Louisiana State University
North Carolina State University
Old Dominion University
Oregon State University
Renaissance Computing Institute
Rensselaer Polytechnic Institute
Texas A&M University
Tougaloo College *
University of Central Florida
University of Delaware
University of Maryland
University of North Florida
University of Puerto Rico-Mayaguez *
University of Rhode Island
University of Texas at Austin

* Denotes a Minority Serving Institution

CHC Highlights

Getting Ahead of The Storm - Predicting Hazard Dynamics



Improving coastal resilience depends on accurate predictions of coastal hazards to enable planning and risk reduction measures prior to events and support effective response activities during events. Building on the successes of the Advanced Circulation Storm Surge Model (ADCIRC), CRC is

expanding its coastal hazards modeling capabilities by including more complete tropical cyclone meteorological models, precipitation driven flooding and an expansion of the areas where high resolution hazard predictions are available. Further research will be conducted to improve the accuracy, efficiency and accessibility of CRC coastal hazard models and thus their usefulness for decision makers and actions that affect coastal resilience.

Measuring Health Assessment of Levee Systems

As climate change leads to rising sea water levels, the integrity and reliability of flood-control infrastructure become increasingly important. This project employs a sensor-based and model-aided approach to provide engineers and decision-makers with tools to assess the health of and provide early warning of deteriorating levees in the Sacramento Delta and produce a performance-based, network-level health assessment of the levee system.

Measuring Recovery Through Healthy Community Indicators

To facilitate community evaluations of recovery outcomes, the Disaster Recovery Tracking Tool provides 79 metrics, organized within ten focus areas, for tracking progress towards recovery. By using this tool, communities can assess pre- and post-disaster conditions, using baseline and current data, to prioritize recovery goals and activities. Continuing under CRC, researchers will refine the tool's metrics and pilot the tool in several communities.

Education and Workforce Development



CRC education and workforce development develops and delivers resilience-related courses within existing undergraduate and graduate degree programs in disciplines ranging from engineering to social sciences. This includes certificate programs in Natural Hazards Resilience,

Resiliency of Coastal Infrastructure, Community Resilience, Disaster Science and Management, and Project Management for Emergency Managers.

The CRC's Summer Student Internship Program (SUMREX) will provide meaningful summer research experiences with CRC research partners for students from Minority Serving Institutions within the CRC network, fostering integration and collaboration between CRC research and education projects across the Center.