

## PURPOSE AND STRUCTURE

The Department of Homeland Security Center of Excellence for Natural Disasters, Coastal Infrastructure, and Emergency Management, led by the University of North Carolina at Chapel Hill and Jackson State University in Jackson, Mississippi will enhance the Nation's ability to safeguard populations, properties, and economies and improve community resiliency to the consequences of natural disasters, including hurricanes, floods, tsunamis, tornadoes, earthquakes, droughts, and wildfires.



## MISSION

The Center has two principal components: Research and Education. Both focus on advancing understanding of hazard resilience and transferring that knowledge into action, resulting in reduced loss of life or injury and lessened damages to the built and natural environment.



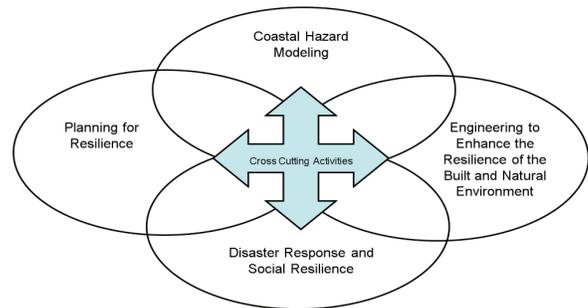
### The UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

The Center of Excellence co-lead for research (DIEM) is located at the University of North Carolina at Chapel Hill. DIEM partners, comprised of physical and social scientists, engineers, and modeling specialists, conduct research on natural hazards and disasters and disseminate the knowledge developed to hazard scholars and practitioners, community officials, individuals, and other end-users.

## RESEARCH

DIEM is organized around four closely linked research focus areas:

### Center of Excellence Conceptual Diagram



- 1) The **Coastal Hazards Modeling** focus area emphasizes the study of the physical science of hazards to understand the meteorological, hydrological, geophysical, and other characteristics of hazards, develop improved models to assess their behavior and test these models in order to predict impacts on human settlements and natural systems.
- 2) The **Engineering to Enhance the Resilience of the Built and Natural Environment** focus area emphasizes the interaction between hazards and the built and natural environments to promote an improved understanding of how infrastructure, including natural systems, can be designed or managed to facilitate resilience.
- 3) The **Disaster Response and Social Resilience** focus area examines the institutional and social conditions that facilitate improved levels of community preparedness, emergency response and post disaster recovery.
- 4) The **Planning for Resilience** focus area evaluates planning and decision-support tools. Plan evaluation methods are used to determine the efficacy of hazard mitigation, disaster recovery and preparedness plans, including their ability to improve resilience.

Cross cutting activities support the research of the four focus areas and translate that research into action and include, an **Education Component**, an **Advisory Board**, and **Advanced Information Systems**. The latter provides visualization, analysis, and geospatial technology that enhance the effectiveness and integration of the research and the products that are derived from it.

# Advancing natural hazards resilience through multi-disciplinary research, innovative engagement strategies, and education

## JACKSON STATE UNIVERSITY

The Department of Homeland Security Center of Excellence for Natural Disasters, Coastal Infrastructure and Emergency Management education co-lead (NDCIEM) is Jackson State University. NDCIEM is focused on developing curricula that promote holistic, creative, and resilient solutions to the challenges of natural disasters in the Nation's coastal zone and on providing analytical tools for local emergency managers. Examples of NDCIEM's programs include:

- Undergraduate and graduate research-oriented curricula in coastal engineering with a focus on natural disasters at Jackson State University.
- Methods for rapid, high-resolution storm surge forecasting for use by local emergency managers and others.
- Natural disaster concentration and integration into existing course tracks at Alcorn State University, Jackson State University, Johnson C. Smith University, Mississippi Valley State University, and South Carolina State University.
- Emergency and public safety management courses at Alcorn State University, Jackson State University, Mississippi Valley State University, and the University of Houston.
- Disaster science and management courses for peer-to-peer or distance education at Louisiana State University.
- Disaster response data integrated into core research methods classes in the social sciences at Tougaloo College.



**NDCIEM**



## PARTNERS

- University of North Carolina at Chapel Hill – Research Lead
- Jackson State University – Education Lead
- Alcorn State University
- California State Polytechnic University at San Luis Obispo
- Georgia State University
- Johnson C. Smith University
- Louisiana State University
- Medical University of South Carolina
- Mississippi State University
- Mississippi Valley State University
- NOAA National Weather Service Severe Storms Laboratory
- North Carolina State University
- Renaissance Computing Institute
- Rensselaer Polytechnic Institute
- Rice University
- South Carolina State University
- Texas Southern University
- Tougaloo College
- Tulane University
- University of Connecticut
- University of Delaware
- University of Houston
- University of North Carolina at Charlotte
- University of Oklahoma
- University of Texas at Dallas
- U.S Army Corps of Engineers