



Outreach & Engagement

Our program provides education and outreach for the emergency management community, the public, and K-12 teachers and students in Eastern North Carolina schools. Our activities include

- Partnering with Renci Europa to form a GIS Disaster Response Team
- Demonstrating “HAZUS” hazard loss estimation software for emergency managers
- Participating in public presentations and forums, such as the NC ArcUser Group, the NC GIS Conference, and other GIS workshops
- Organizing and supporting major symposiums and workshops each year to bring together researchers, managers, and the public
- Providing K-12 education programs in the public schools
- Conducting ECU's annual Visualization Challenge
- Developing partnerships with local branches of NOAA, the US Army Corps of Engineers, the UNC Coastal Studies Institute, and engagement centers for GIScience



Michelle Covi and the Renci ROVER have visited thousands of K-12 students from around NC.



Dr. Reide Corbett (right) demonstrates the NC COHAZ Decision Portal website at a kiosk outside the Renci offices during an Open House.

www.coastal.geology.ecu.edu/NCCOHAZ/

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Real-time Hazards Map from NC COHAZ



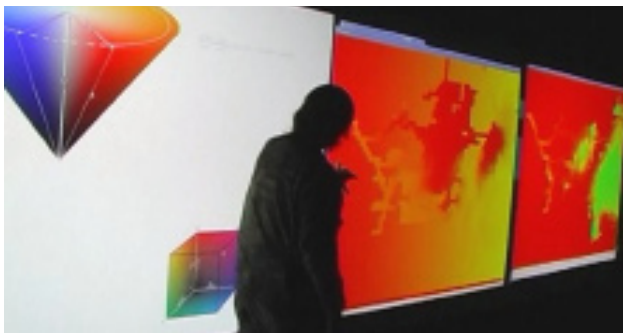
Deployment of system to monitor NC estuaries

3D model created in Google Earth and Google SketchUp

Visualizing
North Carolina's
Coastal Hazards

Analysis • Visualization • Outreach

The Visualization Wall is a 21×6-foot rear-projection screen capable of high resolution stereoscopic 3D imaging.



Storm Surge Visualization

Storm surge geovisualizations have attracted the interest of coastal emergency managers facing the problems of risk awareness and evacuation compliance. In cooperation with Dare and New Hanover counties, we are developing a near-real-time storm surge mapping tool that can be used both in times of imminent hurricane landfall and in preparedness education. To graphically illustrate the effects and magnitude of storm surges on locally recognizable buildings and landmarks this tool combines

- 3D modeling
- GIS web services
- Data development

Learning from Past Storms

To improve public awareness of the risk of living and owning property along the coast, we must not forget the past. This project will construct a website and awareness campaign for communicating the potential ramifications of past storms if they were to occur today. Our efforts will collate geologic, geographic, oceanographic, and historical information so that people can visualize, understand, and learn from past events.

This project begins by focusing on a few storms, including a two-day symposium on the 10th anniversary of Hurricane Floyd and the deployment of interactive kiosks in key outreach areas such as NC Aquariums and ferry terminals.

Beach Erosion

Beach erosion and overwash receive a lot of media and public attention, but we have limited knowledge of the underlying causes of the variations in these patterns. This project aims to relate coastal erosion observations to the geological framework using empirical techniques, GIS, and geovisualization. By taking this approach, we will provide information to managers and the public about why barrier islands erode. Furthermore, this framework of information can be used to evaluate the availability of sediment to be used in beach nourishment, a common erosion mitigation strategy.



SLOSH models visualize the effects of storm surge by rendering predicted flood waters over 3D models of locally recognizable structures in Google Earth.

Estuarine Erosion

Erosion is a problem affecting our entire coast, including estuaries, bays, and sounds. In this project, ECU scientists with additional support from NOAA are examining estuarine erosion rates and causes. Also, they are working with the Division of Coastal Management to map the NC shoreline and evaluate mitigation strategies and potential consequences.

Using observation work, wave modeling, and remote sensing, this project will deliver erosion rate information that can inform the planning and vulnerability analysis of infrastructure and property.

These data and maps will be available through kiosks connected to the NC COHAZ Decision Portal: www.coastal.geology.ecu.edu/NCCOHAZ/

Sea-Level Rise

Research by ECU scientists has demonstrated that the average rate of relative sea-level rise has increased dramatically during the 20th century, but variation in sea-level rise is not well understood. This project will address this knowledge gap by examining time-series aerial images to evaluate long-term (1958–1998) sea-level rise versus recent (1998–2008) storm effects. To measure rates of sea-level rise, we will use a combination of

- Microfossil transfer functions
- Radiochemical geochronometers
- Artificial neural networks

Population Vulnerability

By estimating the economic vulnerabilities of public and private investments, we can identify investments that are cost effective by

- Integrating spatial risk maps with residential and business property valuation
- Applying spatial econometric methods to estimate property values
- Using contingent valuation techniques to estimate the value of esthetic, environmental, and historical resources at risk

The spatial model will incorporate envelopes of forecasted wetland response from ecosystem models, rates of sea-level rise from field work, and potential future extents of storm surges calculated from ADCIRC models.

The Sound ROVER is equipped for challenging geospatial data collection along NC's coasts. Some of its features include high-precision Trimble GPS receivers, a hyperspectral spectrometer, a laser rangefinder, and a Garmin 535s echosounder.

