CERA-Atlantic Storm Surge Web Page: Improvements for 2013 Based on EM Feedback

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Outline

• Coastal Hazards Center background
• CERA-Atlantic introduction
• EM Feedback and Changes Made
• Training
Handout in Packet

Storm Surge Tool for EMs and Decision-Makers

CERA-Atlantic Coast (formerly NC-CERA)

Website at http://nc-cera.renss.org/

What is CERA-Atlantic Coast?

CERA (Coastal Emergency Risk Assessment) - Atlantic Coast is part of the DHS Coastal Hazards Center of Excellence housed at UNC Chapel Hill in collaboration with Louisiana State University. This tool is intended to provide supplemental operational surge and wave guidance during coastal storms that threaten the U.S. East Coast.

CERA-Atlantic Coast generates five-day forecasts based on two models:
- ADCIRC coastal circulation and storm surge model
- SWAN wave model

ADCIRC and SWAN produce different outputs than SUGSH and wave models that you currently view because they use different insights, are dependent on each other’s data, have different science within the model, and are run at different resolutions.

CERA-Atlantic Coast Has Been Used By:
- U.S. Coast Guard Atlantic Command
- National Hurricane Center (NHC)
- NWS offices in North Carolina

Website Features:
- Data is overlaid on Google Maps for easy zooming and panning.
- Easy to find and use, provides five-day, deterministic storm surge forecast based on NHC advisories.
- Wind speed forecasts, including onset time of tropical storm force wind forecast.
- Wave height and period forecasts.
- River gauge stations with obtained and/or predicted water height time series.
- Real-time precipitation data for ~70 available stations in coastal and inland counties.
- Radar estimated rainfall data.
- Email notification to notify end-users that a new model run is complete.
- The website can be viewed on mobile devices.

For more CERA-Atlantic Coast information or training, contact:

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Coastal Hazards Center

- U.S. DHS Center of Excellence, est. 2008
- Research lead: UNC
- Advance understanding of natural hazards and resilience, transfer knowledge into action
- One research area: coastal hazards modeling
  - CERA-Atlantic development in partnership with LSU
CERA-Atlantic: nc-cera.renci.org

• Coastal Emergency Risks Assessment-Atlantic
  – Formerly NC-CERA
  – Interactive web visualization of ADCIRC and SWAN wave model output
  – Initiated from NHC advisories every 6 hr
  – Single, deterministic surge and wave forecast for next 5 days
  – Provide additional surge/wave guidance
CERA-Atlantic: nc-cera.renci.org
Gulf CERA: cera.cct.lsu.edu
CERA-Atlantic: nc-cera.renci.org
Gulf CERA: cera.cct.lsu.edu
Inundation Depth Above Ground
Gage Stations
Evaluation of CERA-Atlantic by NC EMs

• Conducted interviews with coastal EMs in 14 counties last summer
  – Summarized feedback, gave to developers to make changes

• Goals of evaluation
  – Explore NC EM’s perspective on surge information
  – Demo CERA-Atlantic and gather initial feedback
Preliminary Results: General to Surge

• Range of feelings on surge information
  – Desperate for surge information
  – Low priority for county b/c surge events rare
  – Fairly comfortable finding information and applying

• Need best guess of surge information 72 hr before landfall
  – Major operational decision point for evacuation: onset time of tropical storm force winds
Preliminary Results: General to Surge

- Multiple ways EMs get surge information
  - Briefings from local NWS
  - HURRTRAK
  - NHC MOM/MEOW products
Preliminary Results: CERA-Atlantic

• Fits operational time scale of needing surge information 72 hr before landfall
• Visually appealing
• Provides wave information
• Rainfall and river flooding info needs to be linked to surge
EM Suggestions → Modifications

Rainfall

• Rainfall linked to surge to determine “river inundation”
  – Tar & Neuse river discharge included, rest of basins in development

• Until then, provide easy-to-access rainfall information
  – Real-time rainfall data from State Climate Office
  – Radar estimated rainfall for last 6, 24, 48 hr
Real-time rainfall data for ~70 USGS, NWS, FAA stations

Radar estimated rainfall for last 6, 24, 48 hr
EM Suggestions → Modifications

Tropical Storm Force Wind Arrival

• Need to know what times tropical storm force winds will arrive at location
EM Suggestions → Modifications

Floodplain Overlays

- Added FEMA's Flood Hazard Areas (DFIRM) as layer
  - High Risk: 100-year flood
  - High Risk Coastal Areas: 100-year flood associated with storm waves
  - Low Risk: 500-year flood
EM Suggestions ➔ Modifications
Variations on Storm Features

• Variations
  – Max wind speed
  – Veer left and right
  – Maximum radius

• EMs can see how impacts may change, understand uncertainty
EM Suggestions → Modifications

• Color scale adjustment
  – Alternate display mode to fixed
  – Adjustable scale may have irregular intervals

• Email sent to end-users when new model run is ready
We’re Still Working On...

• Exportable shapefile for GIS
  – Working to have something for this season

• Adding arrows for wind direction and adding number values throughout map
  – Methods tested slow down page

• One page summary of important parameters’ values from CERA and NWS
Training

- Training available
  - Goal: make EMs comfortable using CERA-Atlantic
  - Instruction guide created to describe features
  - Online or in person training available
  - Email Jessica: jlosego@unc.edu
Next Steps

• Continue to gather EM feedback
• Continue working on modifications
• Make sure EMs are comfortable using CERA for this hurricane season
• Mobile version development
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