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

Jessica Losego
Meteorologist
University of North Carolina - Institute for the Environment

Rick Luettich – Director, UNC IMS & DHS Center of Excellence
Carola Kaiser - Louisiana State University
Brian Blanton - UNC RENCI
Jason Fleming - Seahorse Coastal Consulting

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.renci.org/

What is CERA-Atlantic Coast?

CERA (Coastal Emergency Risks 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 SLOSH and wave models that you currently view because they use different inputs, 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:

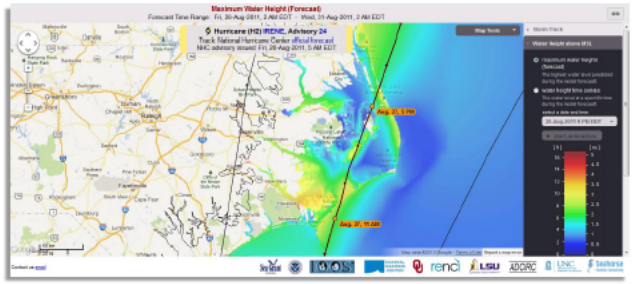
- U.S. Coast Guard Atlantic Command
- National Hurricane Center (NHC)
- NWS offices in North Carolina

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 gage stations with observed 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:

Jessica Losego
Institute for the Environment,
UNC Chapel Hill
jlosego@unc.edu,
919-445-9663



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- 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

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- 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

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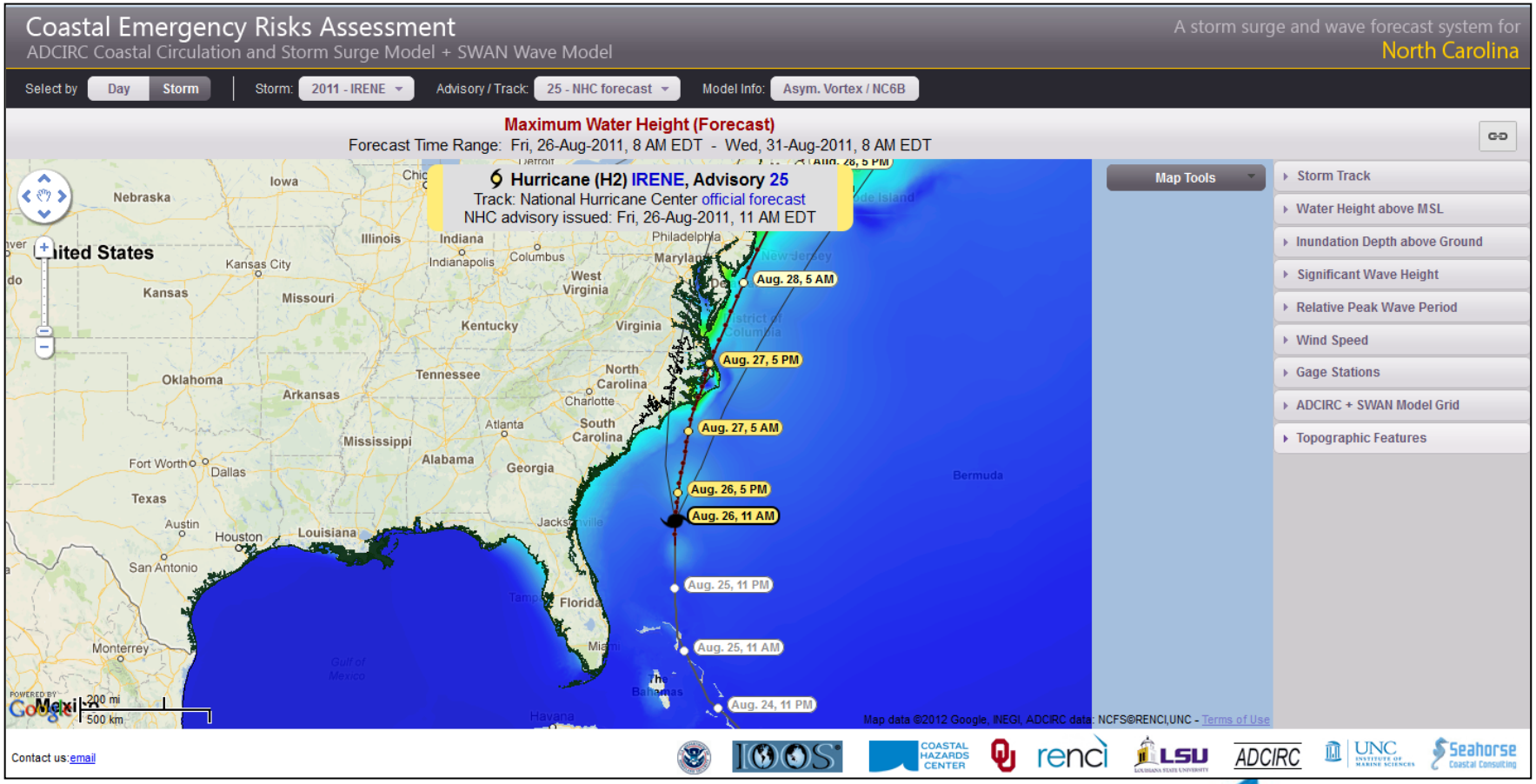

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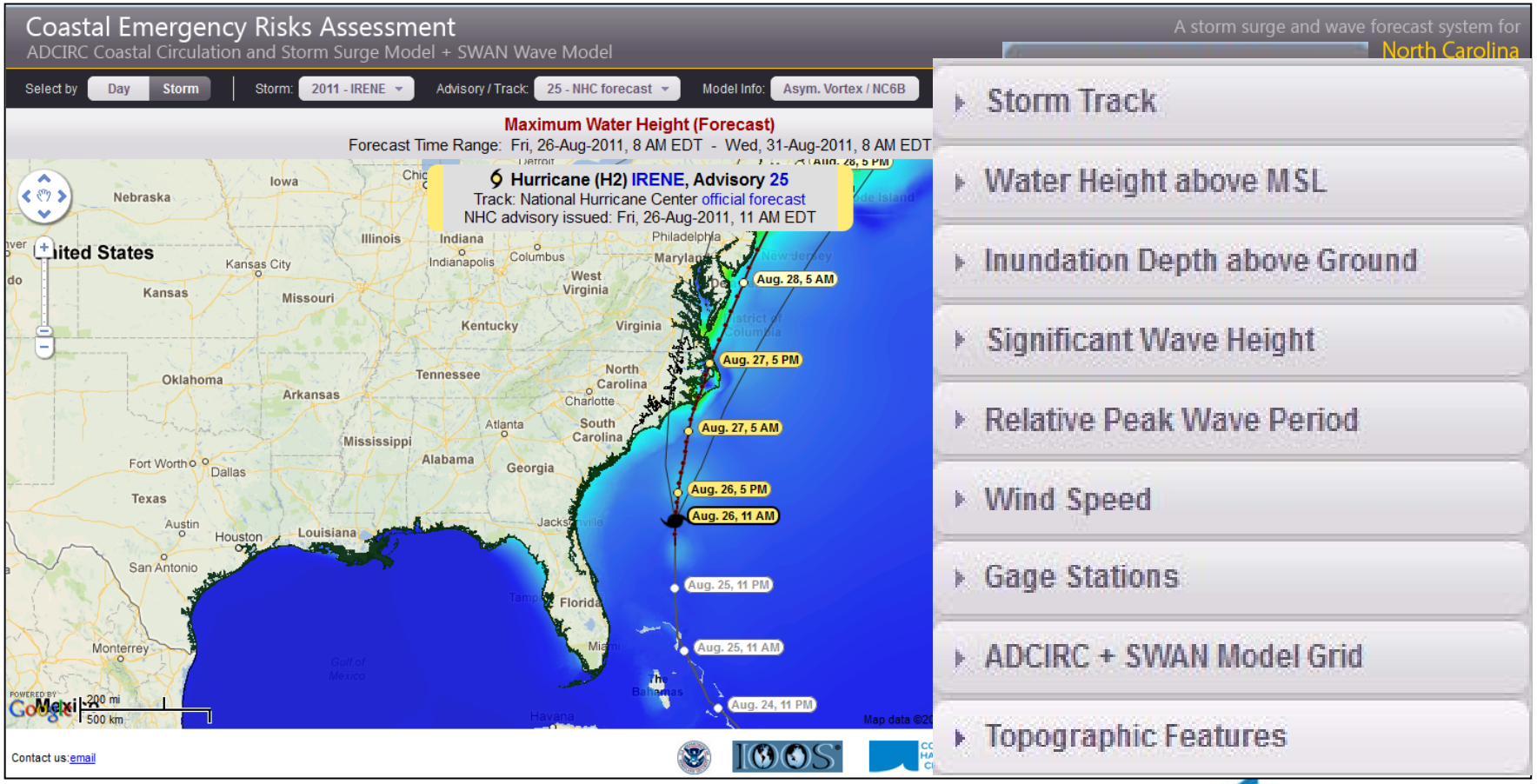

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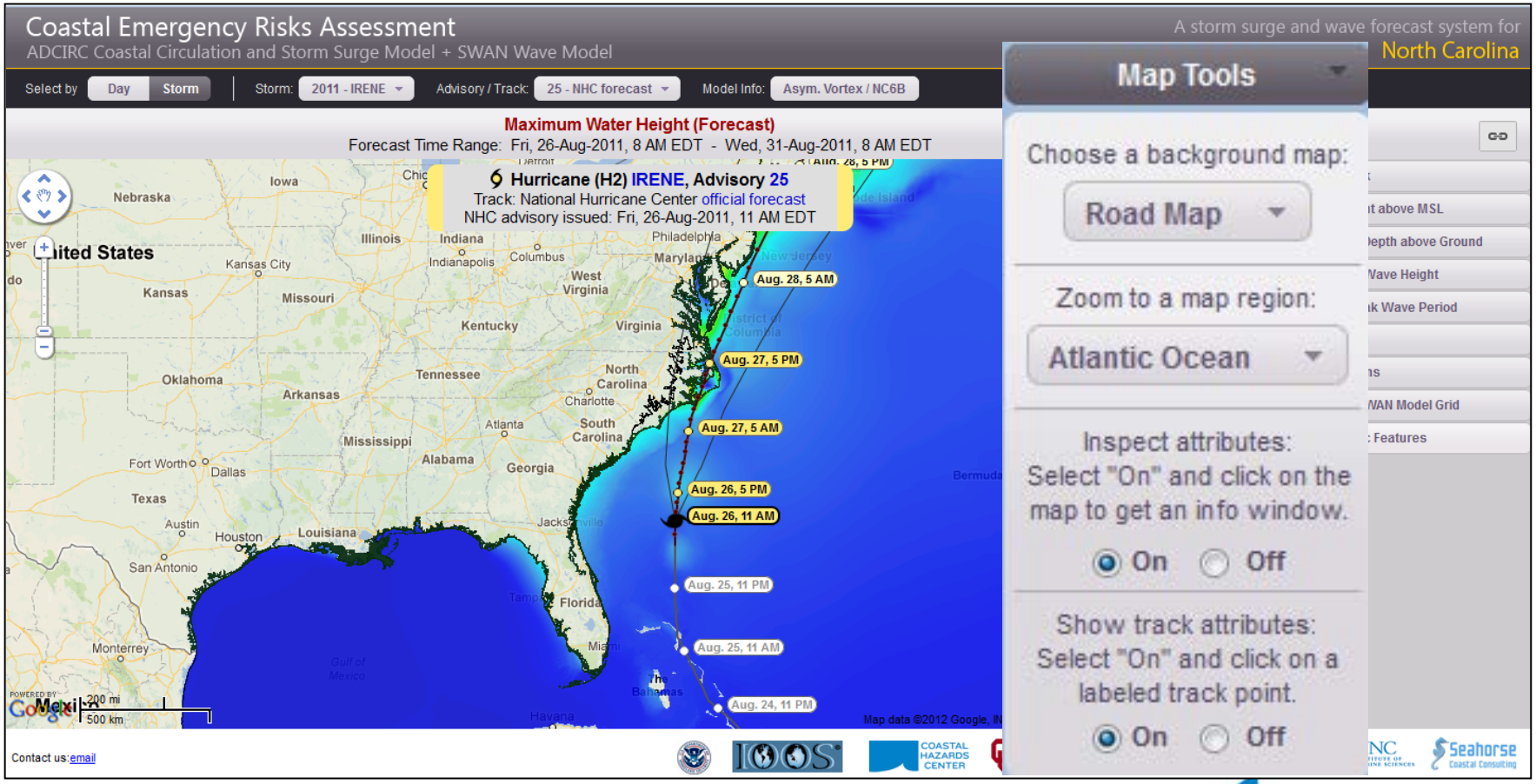
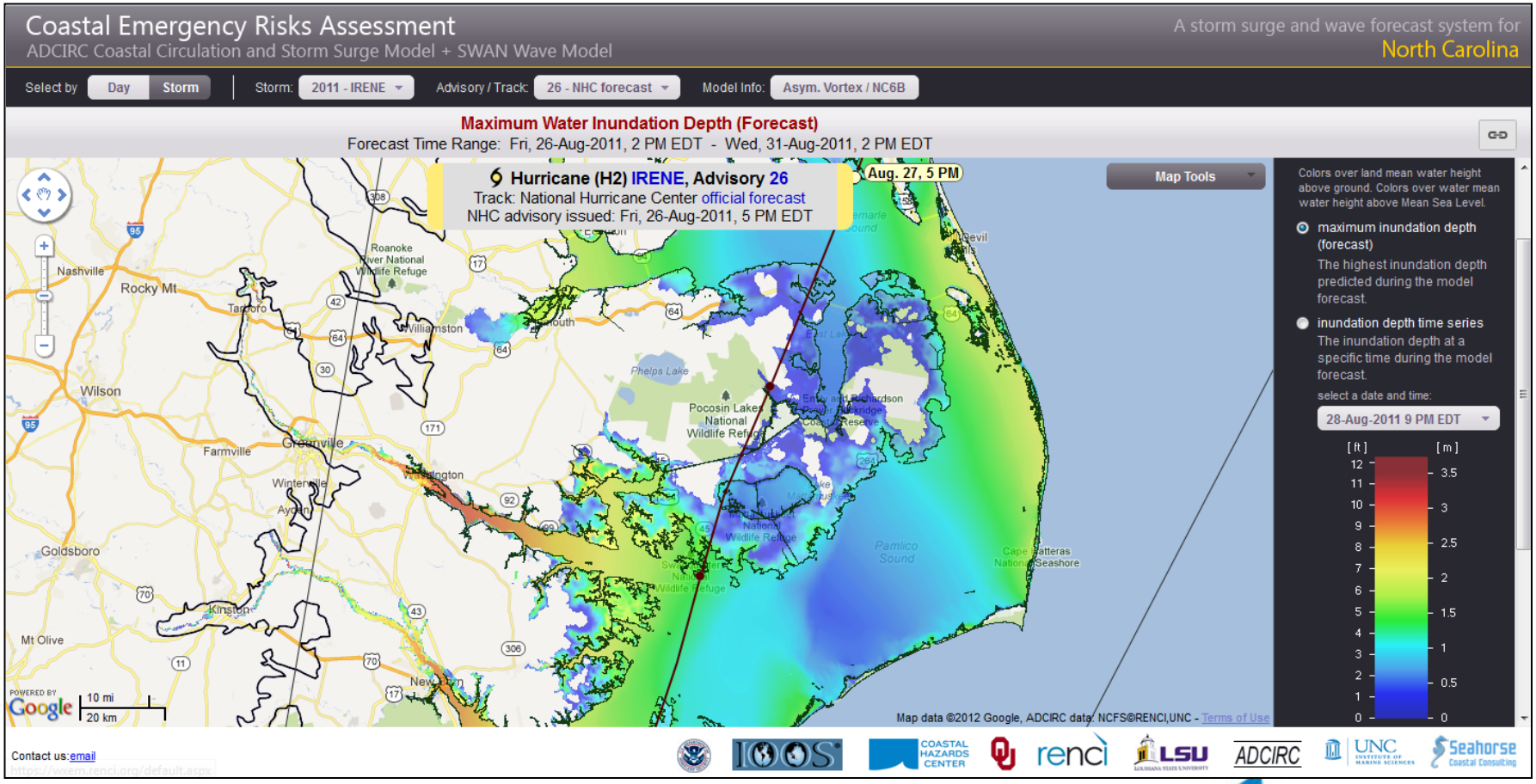
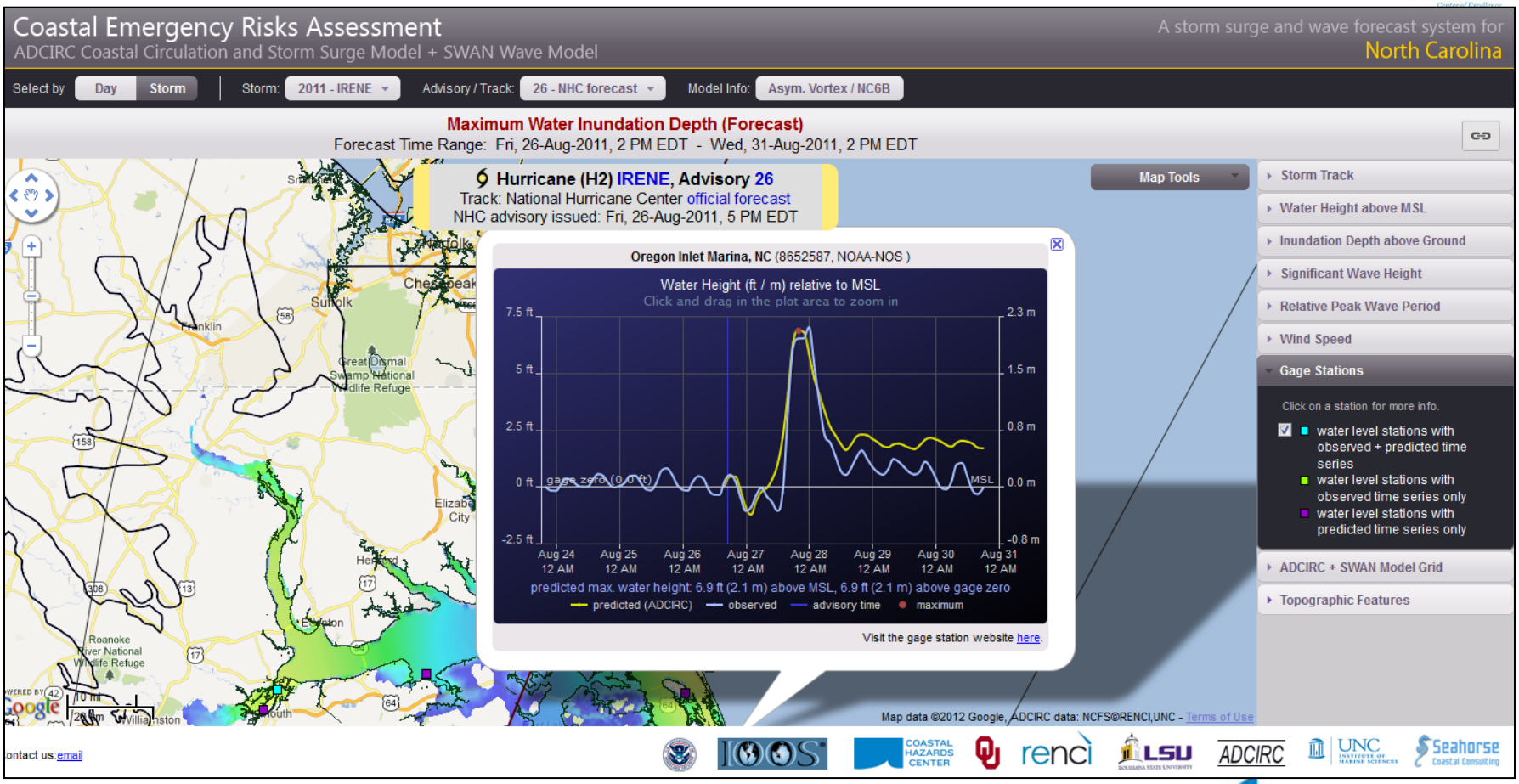


Inundation Depth Above Ground

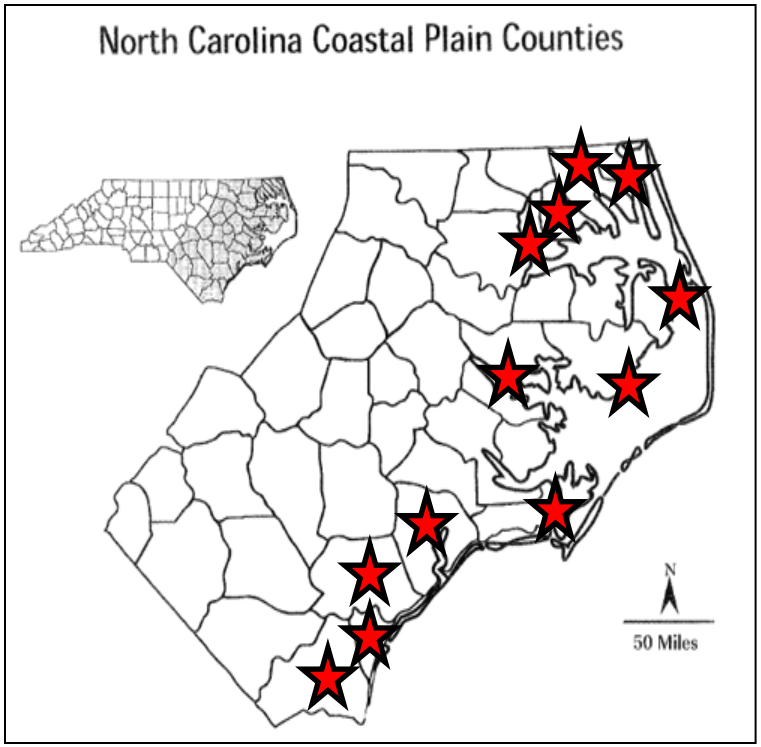


Gage Stations



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

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- 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

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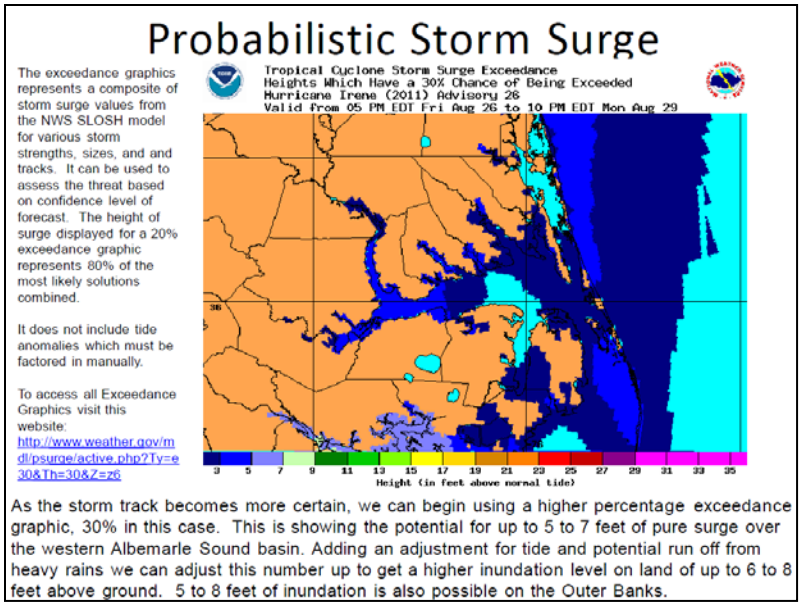
- Multiple ways EMs get surge information
  - Briefings from local NWS
  - HURRTRAK
  - NHC MOM/MEOW products



NWS Briefing Example

Preliminary Results: CERA-Atlantic

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- 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

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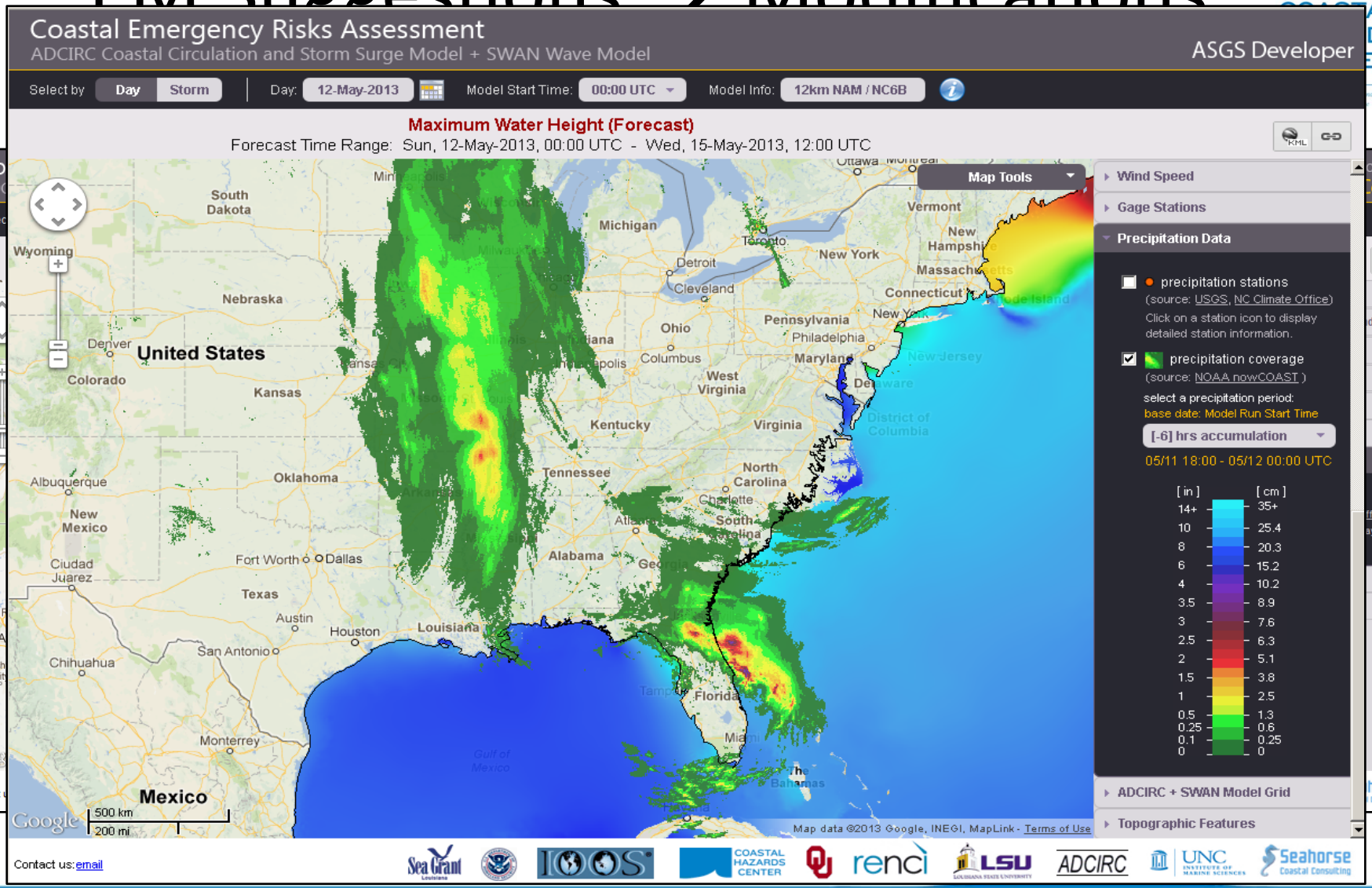
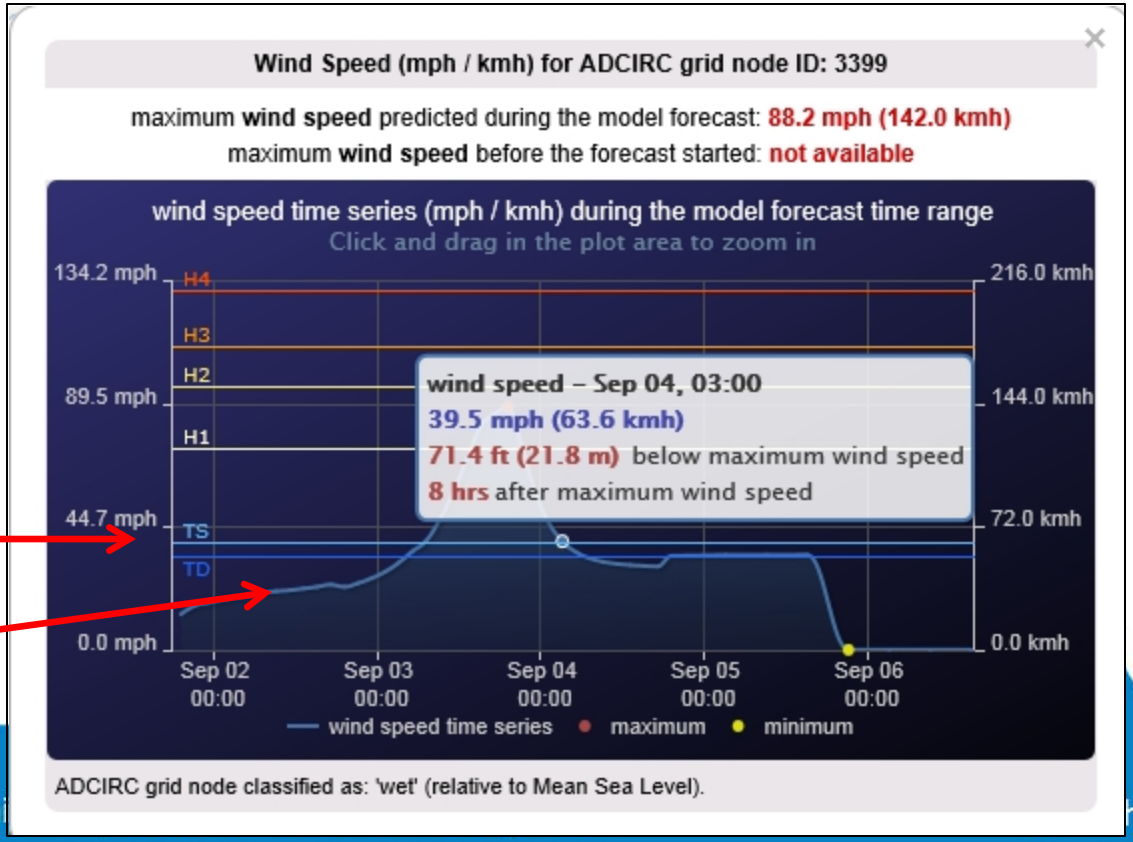
- Rainfall linked to surge to determine "river inundation"
  - Tar & Neuse river discharge included, rest of basins in development
- Until then, provide easy-to-access rainfall information
  - Real-time rainfall data from State Climate Office
  - Radar estimated rainfall for last 6, 24, 48 hr

EM Suggestions → Modifications



EM Suggestions → Modifications Tropical Storm Force Wind Arrival

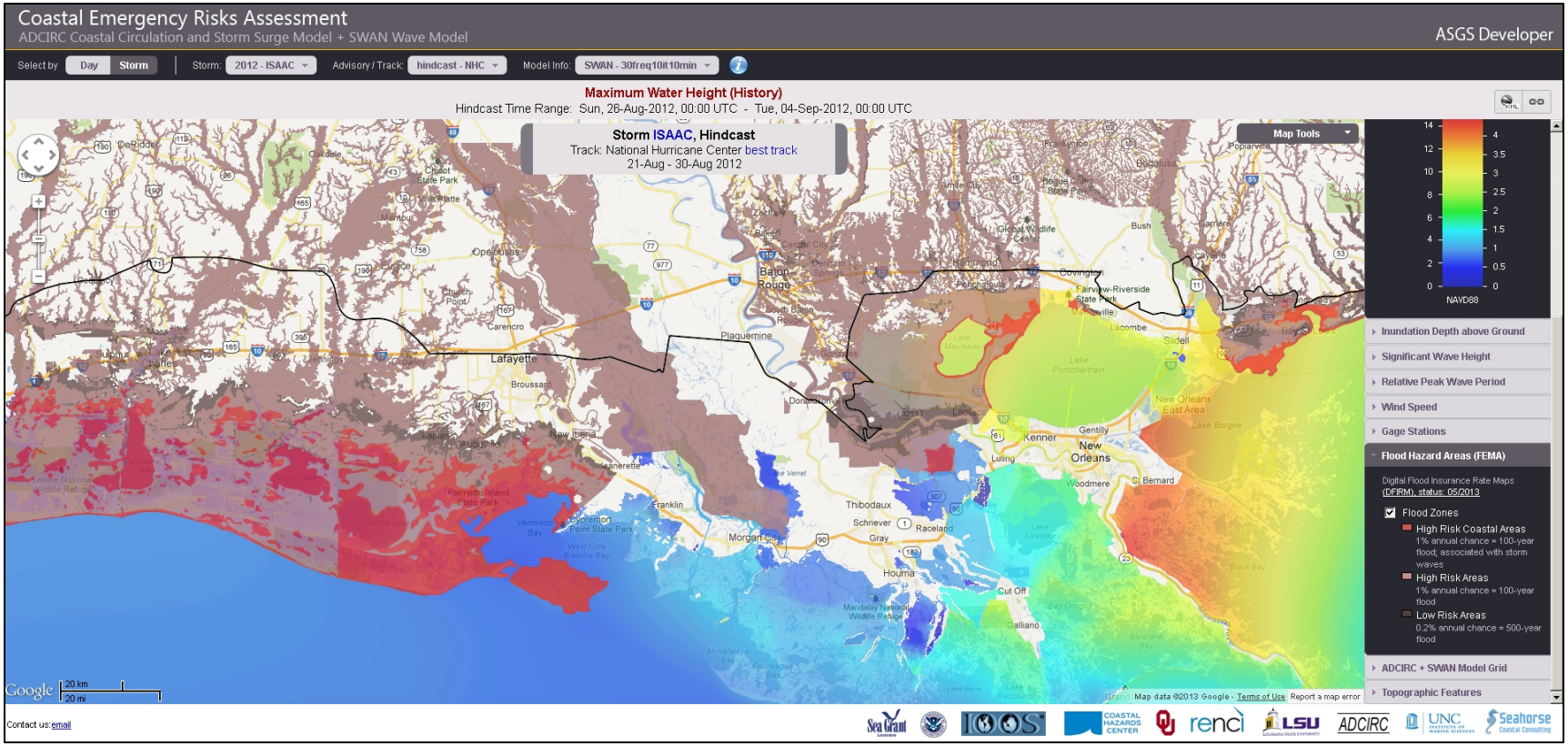
- Need to know what times tropical storm force winds will arrive at location



TSF winds

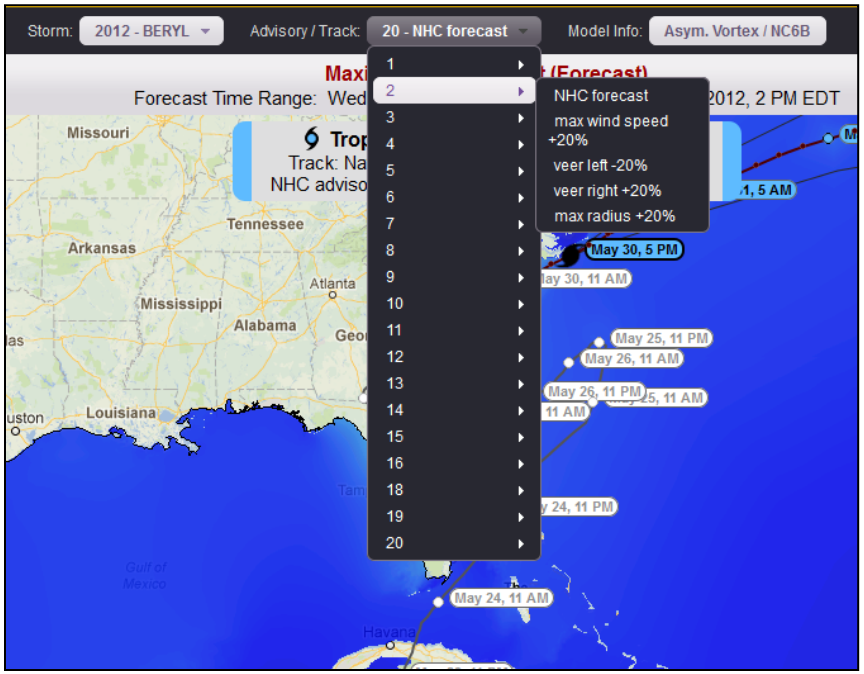
Forecasted wind speed

EM Suggestions → Modifications
Floodplain Overlays



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

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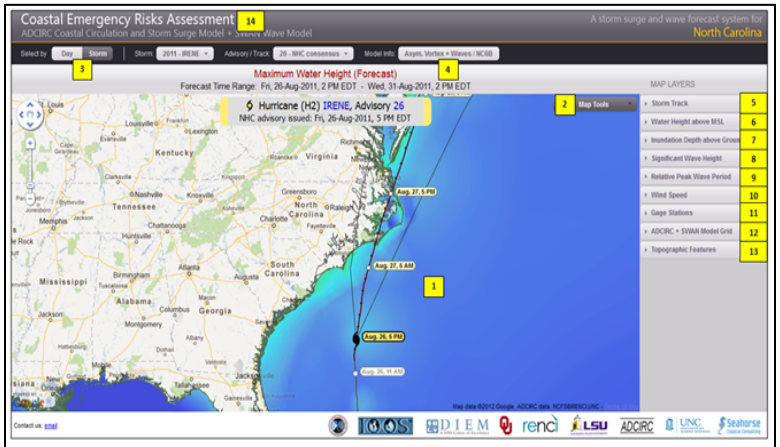
- Color scale adjustment
  - Alternate display mode to fixed
  - Adjustable scale may have irregular intervals
- Email sent to end-users when new model run is ready

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



NC-CERA Tool Features List

#	Feature Name	#	Feature Name
1	NC-CERA Map Display	8	Significant Wave Height
2	Map Tools	9	Relative Peak Wave Period
3	Day/Storm View	10	Wind Speed
4	Model Info	11	Gage Stations
5	Storm Track	12	ADCIRC + SWAN Model Grid
6	Water Height Above MSL	13	Topographic Features
7	Inundation Depth Above Ground	14	CERA Banner

Next Steps

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- 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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