Weather Event Simulator Training Case
Hurricane Charley August 13, 2004

AWOC WES Case: Trainee Lessons

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A. Overview and Performance Objectives

This WES Case incorporates D2D, GFE, GHG, TCM, and Graphical HLS data and tools into four lessons. These lessons help the student identify tropical cyclone features that have bearing on storm effects. The scenarios use the WES and GFE to help forecasters become familiar with the TCMWindTool, Hazard grids, GHG, and the Graphical HLS.

The latest GFE can be used with full AWIPS cases to:

- Test GHG,
- Test text formatters
- Test procedures
- Test smart tools
- Train forecasters on new GFE techniques and features
- Train forecasters to become more familiar with their backup CWAs, etc.
- Train forecasters to assemble the Graphical HLS

Notes:

B. Simulation Scenarios

Scenario 1.
Objective: The challenge with Charley was recognizing the intensification, track changes, and scope of damage from surge, wind, tornadoes and rainfall. Although Charley was a category 4 hurricane, the eyewall diameter was small and wind damage was minimal outside of the eyewall. The resulting surge was only 7 feet - about half of what SLOSH predicted. Using any available case data from 1300 UTC to 1800 UTC, Recognize the area(s) of strongest convection, maximum wind, and locations of greatest damage potential before and during landfall. Recognize the possibility of outer rain band tornadoes and/or eyewall mesovorticies, and their associated damage potential.

Steps:

a. Using case data between 1600 and 1800 UTC issue appropriate short fused warnings for severe weather. Export the warnings to /home/XXTORx Where XX are your initials and x is a consecutive number

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b. View visible and IR satellite data from 1300-1800 UTC, note movement and cloud top temperatures. Was a decrease in cloud top temperatures visible?

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c. When did the storm begin to turn toward Charlotte County?

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d. View all other available satellite products, note areas where convection and winds are the strongest.

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e. View WSR-88D 8-bit reflectivity, velocity, and SRM data in the four lowest levels. What are the highest wind speeds between 1500 UTC and 1800 UTC, and where are they?

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f. Using standard wind reduction (about 90% of the 700-hPa value) what winds could be expected at the surface?

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g. Are the winds strong in the outer bands?

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h. View the 4 bit velocity data. Are wind speeds different?

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i. View the 1200 and 1800 UTC soundings. How high would you expect the highest precip/cloud tops based on the sounding and satellite tops?

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j. View the Echo Top product. Where are the highest tops located?

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k. View VIL data. Where are the highest VILs located?

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l. View the spectrum width data. Are the highest spectrum widths located near the eyewall of Charley?

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m. Where would you expect tornadoes?

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n. What other products besides those from TPC help with the storm impacts and their scope?

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Scenario 2.

Objective: Using GFE, GHG, and TCM data just prior to landfall from 1500 UTC to 1800 UTC use the WES and GFE to become familiar with the TCMWindTool, Hazard grids, and GHG:

Steps:

a. Run the TBWRunGFESimulation.sh. script from the "Run Sim D2D GFE":icon on the toolbar. Follow the instructions in the window that opens. This will start the simulator, load your case, start a D2D session, start the IFPServer and GFE. Open the GFE in "Practice VTEC" mode.

b. After GFE starts draw three one hour background wind field grids for 13/1200-0000 UTC 14/0000-1200 UTC and 14/1200-0000 UTC and interpolate.

c. Load the TCM winds into the GFE wind grids over your background wind field using the TCMWindTool Procedure.

d. Edit hazard grids to include a hurricane warning for coastal counties south of Tarpon Springs and a hurricane watch north of Tarpon Springs.

e. Edit hazard grids to include an inland hurricane wind warning for inland counties south of Tarpon Springs and an inland hurricane wind watch north of Tarpon Springs.

f. Use GHG to produce inland high wind text products.

g. Add call to action statements.

h. Based on your short fused prediction of maximum winds just prior to landfall, identify the area of highest storm surge potential.

i. Use GHG to produce a Hurricane Local Statement for 18Z.

Scenario 3.

Objective: Using simulation data beginning at 1800 UTC and ending at 2100 UTC, recognize the area(s) of maximum wind in the storm, and locations of greatest damage potential during and after landfall. Recognize the possibility of outer rain band tornadoes and/or eyewall mesovorticies, and their associated damage potential.

Steps:

a. Use GHG or Warngen to issue the appropriate short-fused product(s) to heighten the public's awareness of the impending damaging winds

b. Update any HLS's in effect as needed.