

TROPICAL CYCLONE TORNADOES COURSE:

WES STUDENT HANDOUT TROPICAL STORM ANDREA

***Presented By: The Warning Decision
Training Branch***

AWIPS-1 Version



Welcome to the Tropical Storm Andrea simulation application for the Tropical Cyclone Tornadoes Course. The purpose of this WES application is to provide you with an effective operationally-relevant situation related to radar-based storm interrogation, the warning decision making process, and storm based warnings for potentially tornadic convection with tropical cyclones.

Please attempt this simulation application only after completing the online instructional modules of the Tropical Cyclone Tornadoes course and the simulation application pre-brief presentation.

Performance Objectives:

The primary performance objectives of the simulation are as follows:

- Determine the range from radar for each convective storm to identify the appropriate radar-based interrogation guidance
- Assess the tornadic potential of each storm using the WSR-88D base products and the radar interrogation guidance
- Apply guidance into the warning decision making process to determine which storm(s) require the issuance of a Tornado Warning
- Apply proper storm-based warning fundamentals and techniques and properly communicate the threat in the warning text
- Perform continuous assessment of the convection and issue follow-up statements and/or reissue warning(s) as necessary

Work with your training facilitator to ensure that you understand the objectives that you will focus on during the simulation application.

Simulation Pre-Brief:

A short presentation will provide you with the following material to better prepare you for the simulation application:

- National Hurricane Center (NHC) advisory on Tropical Storm Andrea
- Storm Prediction Center (SPC) convective outlook and products
- Environmental assessment with emphasis on tornadic potential within the CWA
- Radar overview of the start of the simulation application

The end of simulation quiz will cover material that has been provided to you in this pre-brief presentation.

<http://www.wdtb.noaa.gov/courses/TC-tor/preBrief/player.html>

Simulation Details:

Case Folder:	2013June06
WFO Localization:	Tampa Bay, FL (TBW)
Simulation Start Date/Time:	6 June 2013 - 1445 UTC
Simulation End Date/Time:	6 June 2013 - 1530 UTC
Simulation Mode:	Displaced Real-Time (DRT)
WESSL Script File:	TBW.wessl
Estimated Completion Time:	45 minutes for DRT Simulation

A reference sheet containing the recommended radar interrogation guidance is provided on the last page of this document to assist you during the simulation.

Procedures:

The table shown on the next page lists the procedure bundles available for your radar interrogation of the tornadic potential for the convective storms within your domain. The procedure bundles can be found under the procedure **"Radar_KTBW"** by selecting *Procedures* under the *File* menu in D-2D, and then select *Open* from the sub-menu that appears.

Procedure “Radar_KTBW”

<u>Procedure Bundle</u>	<u>Description</u>	
0.5 Z/SRM Analysis	0.5° Tilt Reflectivity (dBZ) 0.5° Tilt Storm Relative Motion Velocity (kts)	
All-Tilts Z/SRM Analysis	All-Tilts Reflectivity (dBZ) All-Tilts Storm Relative Motion Velocity (kts)	
ZDR/KDP Analysis	0.5° Tilt Differential Reflectivity (dB) 0.5° Tilt Specific Differential Phase (deg/km)	
Dual-Pol Four-Panel	0.5° Tilt Reflectivity (dBZ) 0.5° Tilt Storm Relative Motion Velocity (kts)	0.5° Tilt Differential Reflectivity (dB) 0.5° Tilt Base Velocity (kts)
	0.5° Tilt Specific Differential Phase (deg/km) 0.5° Tilt Hydrometeor Classification	0.5° Tilt Correlation Coefficient 0.5° Tilt Spectrum Width (kts)

Simulation Post-Brief:

A post-brief presentation will appear at the conclusion of the simulation via the WESSL script. The post-brief presentation will contain the following material:

- Instructor analysis of the tornadic potential of the convection
- Storm-based warning strategies
- Local storm reports

Receiving Credit for Completing the WES Application:

Once you have completed the WES application and have viewed both of the pre-brief and post-brief presentations, log in to the NWS Learning Center to take the end of simulation quiz. A score of 70% or greater is required to pass and receive credit for the WES component of the Tropical Cyclone Tornadoes course.

<https://doc.learn.com/noaa/nws>

Recommended Radar Interrogation Guidance for Potential of Tropical Cyclone Tornadoes

Range from Radar: < 40 nm	Range from Radar: 40-70 nm	Range from Radar: > 70 nm
<p><u>Rotation Intensity</u></p> <p>Low-level $V_r \geq 20$ kts <input type="checkbox"/></p> <p>Contracting low-level diameter <input type="checkbox"/></p> <p>Low-level shear increasing to $\geq 0.01s^{-1}$ <input type="checkbox"/></p> <p><u>Convective Features</u></p> <p>Inflow notch or hook echo (appendage) feature <input type="checkbox"/></p> <p><i>(Identify at least one of the two following features)</i></p> <p>Horizontal Separation of Greater ZDR/KDP Values <input type="checkbox"/></p> <p>Mesocyclonic VES with enhanced radial velocity values of ≈ 30 kts or greater <input type="checkbox"/></p>	<p><u>Rotation Intensity</u></p> <p>0.5° Tilt $V_r \geq 15$ kts <input type="checkbox"/></p> <p>Contracting diameter at the 0.5° tilt <input type="checkbox"/></p> <p><u>Convective Features</u></p> <p><i>(Identify at least one of the two following features)</i></p> <p>Horizontal Separation of Greater ZDR/KDP Values <input type="checkbox"/></p> <p>Mesocyclonic VES with enhanced radial velocity values of ≈ 30 kts or greater <input type="checkbox"/></p> <div style="border: 1px solid red; background-color: #ffe6e6; padding: 5px; margin-top: 10px;"> <p><i>Inflow notches, hook features could add confidence but not viable discriminators</i></p> </div>	<p><u>Rotation Intensity</u></p> <p>0.5° Tilt $V_r \geq 12$ kts <input type="checkbox"/></p> <p><u>Notes About the Guidance:</u></p> <p>Consider some of the following challenges when applying this guidance:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Range folding <input type="checkbox"/> Cone of silence <input type="checkbox"/> Distance from radar <p>Use your best judgment when applying this guidance, and remember that no guidance is perfect.</p> <p><u>Goal:</u> Reduce FAR</p>

Contact Information -- Email: tropicalhelp@wdtb.noaa.gov
 NWSChat: WDTBChat

