

*Single-Doppler Radar Morphology and Evolution of the 29 March 2000
Dauphin Island Alabama Tornado-Producing Mesocyclone*

Jeffrey M. Medlin*

Science and Operations Officer

NOAA-NWS Forecast Office

Mobile, Alabama

*** Corresponding Authors Contact Information:**

Jeffrey M. Medlin

4000 Lakefront Dr. W.

Mobile, AL 36695

jeff.medlin@noaa.gov

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ABSTRACT

On the afternoon of 29 March 2000, an extraordinarily large and long-lived supercell thunderstorm produced a highly visible 'wedge tornado' south of Dauphin Island, Alabama. The tornado and very large-diameter hailstones were observed swirling around the vortex. Although the storm originated in southeastern Louisiana, this presentation examines the evolution and morphology of the parent mesocyclone from 2134-2232 UTC as it moved from the eastern Mississippi Sound to southeastern Dauphin Island. As a mature supercell represents a 'background process' through which a series of maturing updraft impulses sequentially move through as they evolve, this period contains the beginning of a new updraft impulse that formed into a distinct bounded weak echo region (BWER) with an overshooting thunderstorm top and their corresponding collapses. A well-defined hook echo remained ever present throughout with a tornadic vortex signature straddling the hook's tip at times. In an attempt to understand why and where the parent mesocyclone produced a tornado, the rear-flank downdraft and hook echo are closely analyzed. Initial observation indicates that a potential strong thermal gradient formed along the updraft and forward-flank downdraft interface and intensified as large hail fall occurred coincident with the BWER collapse.