



Meteorology Seminar

Title: Dual-Doppler Analysis of Two Tornadoic Thunderstorms

Speaker: Katherine Donner-Willingham, University of Oklahoma

Date: Thu 14th February 2008 at 2:15PM

Location: Mathematical Sciences Seminar Room

Abstract: High-resolution Dual-Doppler Analysis of Two Tornadoic Thunderstorms using a New Formulation of Advection-Correction.

The over 1000 tornadoes that occur in the United States each year can cause fantastic destruction and loss of life. Early and accurate tornado detection is important for improving the safety of life and property. Two tornadoic thunderstorms impacted the Oklahoma City area on 8 May 2003 and 10 May 2003. A dual-Doppler analysis of these storms was used to additionally verify and complement the results of the neuro-fuzzy tornado detection algorithm (NFTDA), a new tornado detection procedure. A new formulation of advection-correction was used with radar data from the two tornadoic thunderstorms to mitigate the temporal errors associated with non-simultaneous data collection. Provision was made for spatially variable pattern-translation components from analysis of the reflectivity field. Traditional dual-Doppler analysis method was applied to the data corrected for advection to retrieve the wind field within the storms. High-resolution, near-tornado scale images of the mesocyclone and vertical velocity are presented. The NFTDA detections were consistent with tornado shear anomalies found in the horizontal wind field at low-levels during the dual-Doppler analysis times.

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