

Public Abstract

First Name:Ryan

Middle Name:Joseph

Last Name:Difani

Adviser's First Name:Neil

Adviser's Last Name:Fox

Co-Adviser's First Name:

Co-Adviser's Last Name:

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Title:DISCRIMINATION OF ELEVATED CONVECTION BASED ON LOW-LEVEL RADAR-DERIVED CONVERGENCE

Elevated convection has now been widely associated with severe hazards such as large hail and heavy rainfall, however, high winds and tornadoes are not as common (e.g., Grant 1995, Moore et al. 2003, Horgan et al. 2007). While these operational impacts of elevated convection are known, as well as the environmental conditions favorable for elevated convection (e.g., Moore et al. 2003), recent studies have called into question our understanding of how to identify convection as elevated as it seems more complex than once thought (e.g., Corfidi et al. 2008). Thus, this study seeks to gain further insight to elevated convection using dual-polarization Doppler radar, a method by which elevated convection has been studied quite rarely. Specifically, the Doppler velocity-derived convergence (divergence) product will be used to examine any differences specifically with respect to low-level convergence at the base of a convective updraft. Overall comparisons of the newly defined convergence column associated with the updraft will also be made. Both an elevated case and a surface-based case will be closely examined with the aforementioned comparisons made. The elevated case is one (IOP 1) of several intense observing periods (IOPs) which included the deployment of teams to collect upper-air data via weather balloons that are derived from the 2014 and 2015 Program for Research on Elevated Convection with Intense Precipitation (PRECIP) field campaign. Four other IOPs will also be examined with respect to the results from the elevated versus surface-based comparisons. Statistical evidence indicates that convergence is reduced in association with an elevated convective event beneath the inversion as compared to the low-levels of surface-based event. Furthermore, there are indications that the radar-derived convergence product can be used to classify convective type on a cell-by-cell basis and that transitions of cells from one convective type to another can be observed.