

Analysis of Two Severe Wind-producing, Null Tornado Bow Echo Events

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Among the many challenging aspects of forecasting and warning for QLCS events is anticipating the potential for mesovortices and tornadoes with their associated enhanced damage potential. Two bow echo cases are analyzed in which severe winds caused significant damage and loss of life, but no tornadoes were reported. The 18 June 2010 case produced several mesovortices and 70-80 mph winds, mainly during the period of peak diurnal heating. The 21 July 2008 was nocturnal and resulted in two fatalities with winds measured as high as 94 mph, but produced virtually no mesovortices and no tornadoes.

It is hypothesized that an environment favorable for supercell tornadoes is likewise favorable for QLCS tornadogenesis. Thus the lack of a favorable environment as determined by parameters typically used to assess supercell tornado potential may indicate the lack of tornadic potential for QLCSs as well.