

# **Supercell Initiation in the Southwestern Twin Cities Tornado Case of 8 August 2009**

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## ABSTRACT

A synoptic scale low pressure system moved into the southwest metropolitan area of the Twin Cities in the late afternoon hours on August 8, 2009 and became quasi-stationary southwest of the Twin Cities. In the region to the north of the surface low, around 00Z, thunderstorms initiated and grew explosively. At approximately 0130Z a small EF-1 tornado touched down near Orono, MN and carved a destruction path through Long Lake, MN and dissipated near Wayzata, MN.

This paper investigates the synoptic and mesoscale forcing for these tornadic thunderstorms, focusing on moisture, instability, lift, and shear. Diagnostic calculations are performed using the Plymouth State Weather Center's archive. These data show that low-level convergence and frontogenesis provided the deep lift necessary to allow convection to break out. There was a large amount of Convective Available Potential Energy (CAPE) in this case, but the Convective Inhibition (CIN) required deep lift to overcome. There was an abundance of vertical wind shear in a clockwise-turning hodograph to allow the organization of supercells as noted by Weisman and Klemp (1982).

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