

## The 26 July, 2012 twin tier severe weather and tornado outbreak: Part I: Environmental characteristics

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Environmental characteristics are examined from a severe weather outbreak over southern New York and northern Pennsylvania. The large-scale pattern on 26 July featured zonal mid-level flow and large shear, with New York and Pennsylvania on the southern edge of the strongest flow aloft. Very unstable air and an elevated mixed layer was located over Pennsylvania, while less unstable air with low lifted condensation levels was located to the north, across central New York. At the surface, low pressure was located over Lake Ontario, with a trough extending to the south, across New York and Pennsylvania. High resolution model forecasts were inconclusive on the preferred convective mode, indicating the development of either broken lines or clusters of storms.

A short study comparing environmental features on the 26<sup>th</sup>, to factors associated with other recent, high-impact warm-season convective lines, is shown. Many similarities between the environment on the 26<sup>th</sup>, and previous environments are indicated, including a west-southwest flow aloft with modest height falls, and surface low pressure located over the Great Lakes. Large convective available potential energy (CAPE) downstream from the line was present for all events, along with strong shear primarily in the lowest 3 km of the atmosphere.