

The 17 February 2006 Severe Weather and High Wind Event across Eastern New York and New England

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Severe thunderstorms across New York and New England, are very unusual and uncommon in the Winter. For example, Albany only averages about 1 thunderstorm day every decade in the month of February. A line of severe thunderstorms producing damaging winds in excess of 50 knots (58 mph) and large hail (greater than 1.9 cm) occurred between 1200 UTC and 1800 UTC over much of eastern New York and New England on 17 February 2006. An anomalously strong low pressure system and its associated arctic cold front focused an area of severe thunderstorms that developed between 1400 UTC and 1600 UTC 17 February 2006 from the northern Catskills and Upper Hudson region in New York southwestward into northeastern Pennsylvania. This line quickly moved through the Hudson River Valley prior to 1600 UTC with over a dozen wind damage reports caused by the line of severe thunderstorms over New York and New England. Widespread wind damage subsequently followed with powerful winds due to the strong surface pressure gradient (numerous gusts in excess of 50 knots) in the wake of the cold front.

Most of eastern New York and New England were in a warm sector that morning with temperatures in the 10-15°C range prior to the cold frontal passage. Eastern New York and New England were located in the favorable left front quadrant of mid- and upper-level jet streaks with strong divergence aloft. A line of convection developed in the highly sheared environment (0-6 km values in excess of 60 knots) with little instability. The 1200 UTC sounding from Albany revealed little or no instability ahead of the cold frontal passage, which made short term forecasting of the severe convection a few hours in advance extremely difficult; however, the cloud to ground lightning strikes associated with the line of severe thunderstorms increased forecaster awareness of the possibility of severe thunderstorms. The 850 hPa low-level jet strengthened to 60-70 kts with momentum mixing down from that level, just ahead and in the wake of the cold front. Temperatures tumbled 5-10°C with the frontal passage coupled with pressure rises of 12-16 hPa in 3 hours. Wind gusts of 60 knots and 85 knots were recorded at the Albany International and Saratoga County airports.

This talk will take a multi-scale approach analyzing the event from the synoptic-scale to the storm scale, in order to understand the environment that caused the anomalous and under-forecasted cool season severe weather over the Northeast. It will be shown that a narrow cold frontal rainband developed from the strongly forced low-instability severe convective line. Observational data used in the analyses include surface and upper air observations, satellite imagery, and KENX WSR-88D data. A variety of model guidance including the NCEP/NCAR Global Reanalysis dataset (1961-1990 mean and standardized anomalies) and NAM 12km data will be shown in the presentation.