

Aspects of the Rochelle-Fairdale Illinois EF-4 Tornado of April 9th 2015

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On 9 April 2015, northern Illinois experienced a violent and deadly long tracked EF-4 tornado, the strongest such tornado to occur in the Chicago forecast area since the devastating F-5 that struck Plainfield, IL on August 28th, 1990. The tornado persisted for approximately 41 minutes while covering a distance of just over 30 miles. While this tornado remained over rural parts of northern Illinois, its track impacted the far northern portions of Rochelle, IL and also hit the small town of Fairdale, IL, where 2 fatalities occurred.

Not only was this a rare event for northern Illinois, but it also was arguably one of the most documented tornados in the region, both in real-time and after the event. During the event, warning forecasters were able to watch a live streaming video of the tornado on the Weather Channel, as well as view uploaded photos via social media. Then in the days to follow, hi-resolution aerial surveys of the tornado track were conducted by NOAA's National Geodetic Survey (NGS) and the Civil Air Patrol (CAP). In addition, NWS Chicago worked with NASA's Short-term Prediction Research and Transition Center (SPoRT) to obtain additional hi-resolution satellite imagery of the damage path. These data, in combination with ground surveys, proved invaluable in precisely mapping the 30 mile long EF-4 tornado.

In the spring of 2013 the National Weather Service began implementing Impact Based Warnings (IBW's) to increase the urgency for people in a tornado's path to take immediate action to save their lives. These allow the warning forecaster to use enhanced wording such as "considerable" or "catastrophic" to describe the damage during large and destructive tornados. In the case of the April 9th warning, the forecaster made the decision to utilize the considerable damage tag following the influx of pictures and live video of the tornado in addition to the development of a Tornado Debris Signature (TDS) evident in dual polarization (dual-pol) radar imagery. Not only is a TDS a direct indication of a damaging tornado, but recent research has also shown the height of the TDS to be a good proxy for the actual strength of a tornado. Therefore, this can give the forecaster even higher confidence that a destructive and potentially deadly tornado is ongoing.

This presentation will cover several pre- and post-storm aspects of this event, including the near-storm environment, key radar signatures, and the utilization of hi-resolution aircraft and satellite imagery to document the precise tornado track.