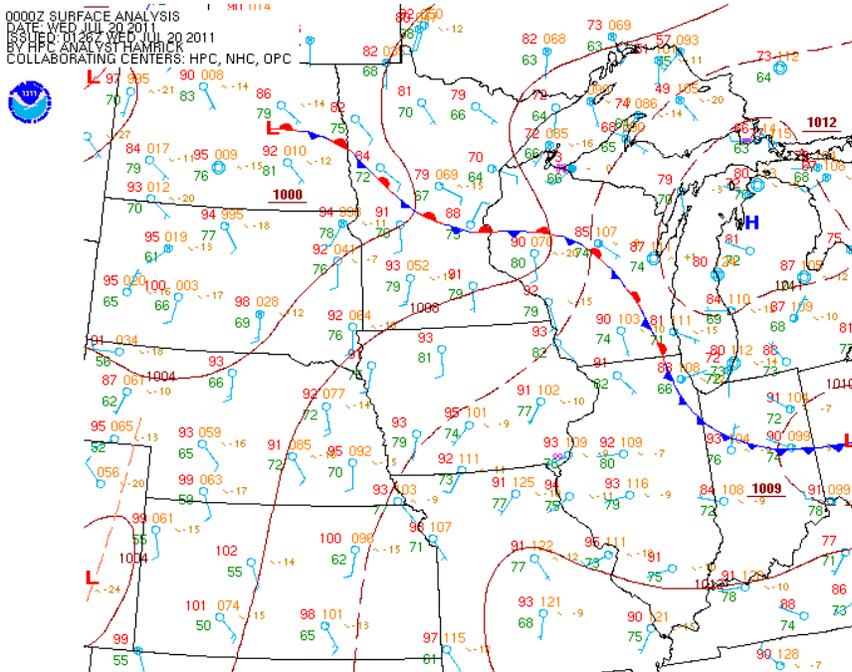


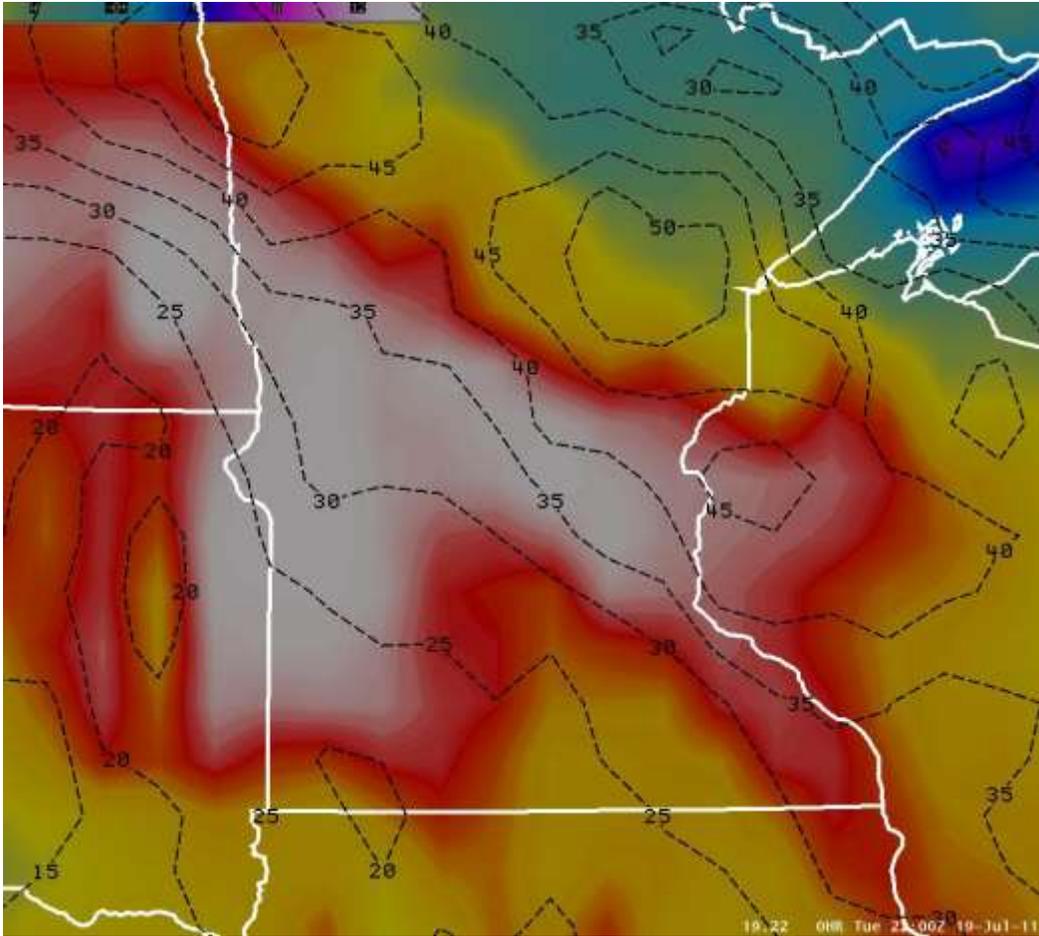
# July 19, 2011: Wind and Hail Event

## Synopsis

A prolonged hot and humid stretch was entrenched across the central U.S. by July 19th. Temperatures in the mid to upper 90s with amazingly high dew points in the mid 70s to lower 80s offered substantial instability across the region by later that afternoon. But even before that, severe storms had developed in northern Minnesota during the early morning of the 19th. While overall these storms weakened as they progressed east, a single supercellular storm deviated southward towards the Twin Cities. This storm fed on deeper instability to the south, and followed the path of a low-level boundary where winds were convergent. This storm produced sporadic damaging winds and some large hail, including into the northern Twin Cities metro area. In the wake of the morning storms, the surface front (seen to the right) and the instability gradient became very well-defined as it inched northward. This boundary acted as a focus for redeveloping storms during the late afternoon into the evening, with storms feeding on the extremely unstable air to the south. The combination of instability and deep layer wind shear (seen below), favored clusters of storms evolving southeast from central Minnesota into western Wisconsin. Some of these storms again exhibited temporary supercell characteristics at first. At times, low-level rotation in favorable areas prompted tornado warnings. The storms also became west-to-east oriented and trained over the same areas as they slowly evolved southward. This led to heavy rainfall and some localized flooding from Chippewa into Taylor and Clark Counties in Wisconsin.

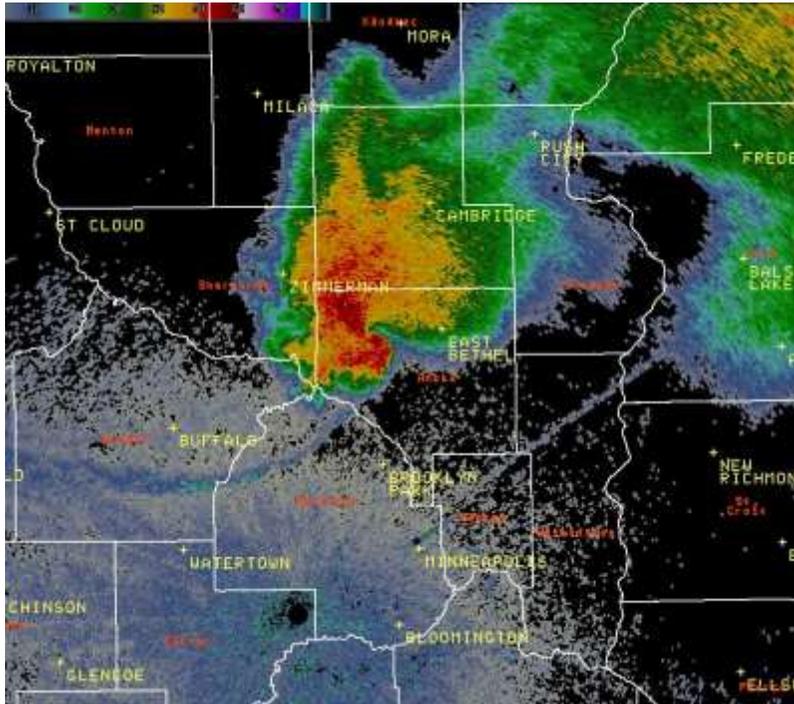


7PM Surface Weather Map

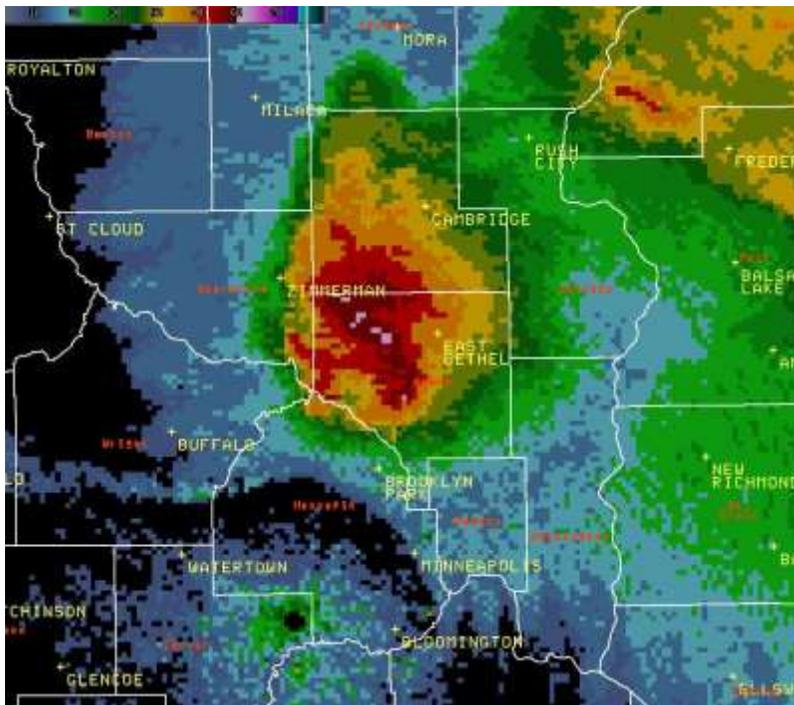


**5 pm, Severe Weather Setup of Instability and Shear:** *Instability is portrayed as an image, with the white values indicating extreme instability (ability for air to rise rapidly). The black contours indicate deep layer wind shear, with values of 35 to 45 knots across central Minnesota into western and central Wisconsin reflective of high enough shear to sustain well-developed storms*

## Graphics & Photos



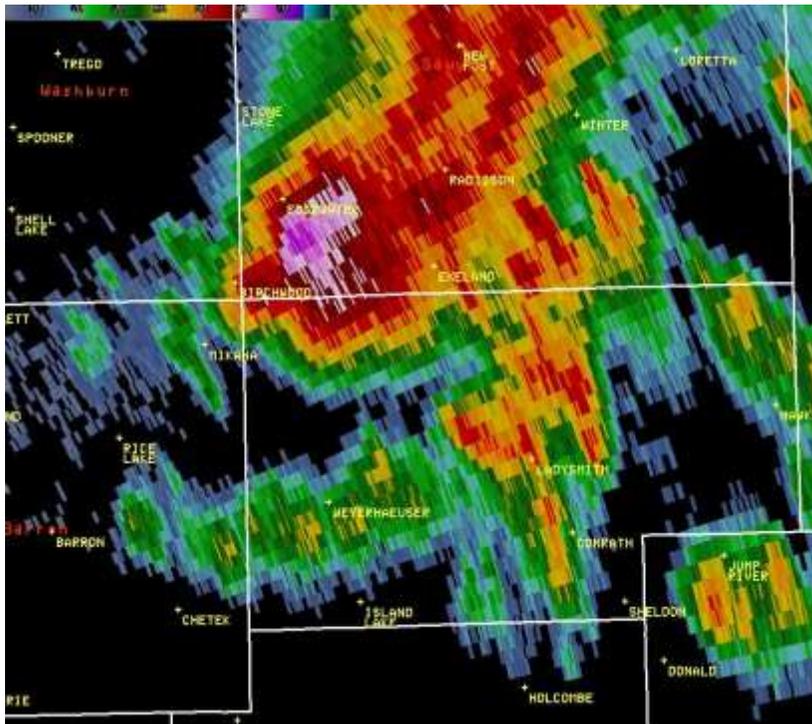
10:45 am NWS Chanhassen 0.5° Reflectivity Image



10:45 am NWS Chanhassen Composite Reflectivity Image



*West Anoka Tree Damage Photo*



*6:45 pm NWS Chanhassen 0.5° Reflectivity Image*



**6:45 pm NWS Chanhassen Velocity Image:** A supercell thunderstorm with a history of large hail to tennis ball size moving southeast into northwest Rusk County. The area in far northwest Rusk County is showing cyclonic rotation



# Storm Reports

