

## standard format

The Labor Day 2014 Northern Michigan Tornado Event

Matt Gillen and Bruce Smith, WFO Gaylord Michigan

On September 1, 2014, four tornadoes impacted northern Lower Michigan. This presentation will examine the science associated with these EF0 and EF1 tornadoes particularly considering the synoptic environment, up until the event began to unfold, was not expected to support organized severe convection. One factor believed to have contributed to the event was a large area of low stratus observed across northern Michigan during the morning. This likely allowed near surface winds to remain backed – even after the clouds eroded – which contributed to enhanced low level helicity and a greater potential for rotation within any sustained updrafts that developed. This hypothesis is supported by the special 1800 UTC APX sounding taken that day. Both the synoptic and sub-synoptic scale environment will be examined using data from various sources, including local/regional soundings, SPC outlooks and analyses, and GRLevel 2 data. The presentation will describe how convection developed along a pre-frontal trough after the air mass had moistened and destabilized during the morning. Height falls ahead of an approaching mid-level trough pivoting through the Great Lakes region resulted in enhanced lift, and further contributed to the event. One key takeaway from this presentation is to remind forecasters that tornadoes in the Great Lakes region (and elsewhere) can occur even when traditional thermodynamic and kinematic parameters initially appear marginal. Therefore, remaining cognizant of the subtleties associated with the local meteorological environment, and how it is changing, is absolutely critical.