

Severe Weather Event of 13 Mar 2006

FIC Report by Bill Schaub, 15 Mar 2006

Event Summary

This report addresses the short severe weather event that occurred between 4:00 pm and 6:30 pm on 13 Mar 2006. The event was heralded well ahead of time in the HWOHUN, and a slight risk of severe thunderstorms for the Huntsville CWA appeared in the SPC Day 3 Convective Outlook early on 11 Mar 2006.

The SPC Day 1 Convective Outlook put our area under a slight risk for severe storms with a 5% tornado probability shortly after midnight on 13 Mar 2006. During the day a tornado watch was issued at 2:05 pm valid until 8 pm for all but Jackson, Dekalb, and Marshall counties in northeast Alabama. Another tornado watch was issued at 5:55 pm that included those three counties until 11 pm.

a. Synoptic situation

Leading up to the event, deep southerly flow for several days had brought unseasonably warm temperatures to most of the Southeast. Afternoon highs reached the lower 80s in many locations during 11-13 Mar 2006. By the 13th, the surface dew point temperatures had climbed into the lower 60s ahead of a surface dry line that was moving slowly east across the lower Mississippi valley. A strong surface cold front, associated with the parent upper trough over the nation's midsection, lagged behind the dry line.

Local analyses of 500-mb charts for 13/12Z and 14/00Z showed an axis of diffluence over the Huntsville CWA and an increase in the southwest winds from around 50 knots at 12Z to around 70 knots at 00Z. At 850 mb, winds for those times remained southwest around 40 knots. Surface winds were south-southwest around 15 knots and gusty. Thus the area had considerable low-level shear with a gently veering profile, and experienced an increase in mid-level speed shear as the day progressed.

The Nashville and Birmingham soundings for 13/12Z showed "loaded gun" type profiles with the 0- 3-km SRH at $353 \text{ m}^2 \text{ s}^{-2}$ and $107 \text{ m}^2 \text{ s}^{-2}$, respectively. Both soundings displayed an intrusion of dry mid-level air. A special 18Z sounding by Birmingham showed that most of the cap had eroded with a definite mid-level dry punch, but also that the surface temperature and dew point spread had widened to 16 degrees with not much low-level moisture showing. The 0- 3-km SRH at that time was $180 \text{ m}^2 \text{ s}^{-2}$. At 14/00Z, the 0- 3-km SRH from the Nashville sounding was $346 \text{ m}^2 \text{ s}^{-2}$, and from Birmingham it was $229 \text{ m}^2 \text{ s}^{-2}$. The Nashville sounding was a rain sounding with a moist-adiabatic lapse rate and temperature-dew point spread of around one degree from the surface through 500 mb. The Birmingham sounding still had a dry surface layer but a mainly dry-adiabatic lapse rate up to 700 mb.

b. The event

Two main clusters of thunderstorms affected the Huntsville CWA. Both clusters developed a few miles ahead of the surface dry line. One developed just north of the MS/AL/TN border area and moved east across southern middle Tennessee. Another cluster developed over central Mississippi and moved into west-central Alabama in and around Lamar County. One particular supercell in this cluster had a history of producing tornadoes in Mississippi. That cell was warned on for tornado potential as it approached southern Cullman County from Walker County.

Three tornado warnings (Lincoln, Moore, and Cullman counties) and one severe thunderstorm warning (Cullman County) were issued. As of this writing, the tornado warning for southern Cullman County has been verified. A trained spotter reported a tornado approximately 2 miles northeast of Arkadelphia at 5:56 pm. Brief tornado touchdowns were confirmed the next day by the county EMA.

A survey report issued on 15 Mar 2006 by the Birmingham office documented a very brief F1 tornado with this cell in northern Walker County at 5:39 pm on 13 Mar 2006. Additional information should follow after a survey of Blount County.

The LMA had some good signals on the Cullman county tornado and also on the cell that entered Lincoln County. As the Cullman county cell moved east into Blount County, the signal appeared stronger as the low-level, gate-to-gate SRM couplet intensified.

Staffing during the event was excellent. Many people who had already worked a day shift stayed on to help. Operations went smoothly and there were no software or equipment problems.