

April 2-3, 2006 Severe weather – Event overview

David Nadler – Senior Forecaster
WFO Huntsville, AL

I. Introduction

The afternoon of April 2, an intensifying storm system over the Upper Midwest spawned a significant severe weather outbreak from the mid Mississippi to the Ohio valley. The tail-end of the severe weather affected the Tennessee valley during the overnight hours of April 3. Across northern Alabama and southern middle Tennessee, several marginally severe thunderstorms, producing hail and brief strong wind gusts, occurred between the hours of 2:00 and 4:00am CDT (0700 and 0900 UTC).

II. Synoptic Discussion

Three days prior to the event, the SPC had portions of our CWFA in a “slight risk” of severe thunderstorms, with the higher threat across our northern and western counties. On the morning of April 2, a mini-MCS formed over eastern Arkansas, along lingering outflow boundaries. Sustained by mid level energy, this complex drifted northeast, just clipping extreme northern Lauderdale county around midday. Meanwhile, the main line of convection was firing over central MO/AR. Across our area, temperatures warmed into the lower 80s with more sun than clouds, however dewpoints by afternoon had fallen from the mid 60s to between 58-60F, suggesting some low level drying had occurred. Mesoscale/RUC40 analysis confirmed this, indicating a shallow warm/dry layer invading from the south/southwest at around 850MB. The 00Z/03 Nashville, TN (OHX) sounding showed this as well, which could have been a primary factor in convective inhibition across northern AL on the afternoon/evening of the April 2.

Throughout the evening of April 2, as the upper level low wrapped up over northern IL, a well-defined low level boundary, characterized by a wind shift and much drier air behind the feature, stretched from central AR to south-central KY by 03Z/03. A line of deep convection, including the deadly tornadoes that raked AR, the bootheel of MO and western TN, slowly pushed south and east. A tornado watch was stretched south to include our southern middle TN counties around 0330Z/03. Conditions continued to remain benign across the forecast area through midnight (05Z). As the low level frontal boundary approached the area, it appeared to turn more into a disorganized line of strong to severe thunderstorms, especially the farther south it moved, as it pushed away from the main energy and upward forcing of the storm system. However, real-time data and short-range models indicated a strong 500MB elongated vorticity maxima along the low level frontal boundary, coupled with a 100 knot 300MB speed max diving into this region from the central Plains. Once this all came together, it was realized there would finally be a narrow window of strong to potentially severe thunderstorms across the TN valley. The SPC decided it would be best to include much of northern and central AL in a tornado watch around 07Z/03 that would last through 13Z/03. Despite the latest thinking that the

tornado potential had and would greatly diminish the farther south the convective line moved, given the resultant storm nature earlier in the evening, there was little argument with SPC's thinking.

Just before 07Z/03, as the main convective line associated with the low level frontal boundary approached, a noticeable outflow boundary picked up by the GWX radar was seen pushing into the western counties of the CWFA. Within minutes, a line of storms fired along this boundary over eastern Franklin and extreme southeast Colbert counties. Storm structure and its potential warranted our first warnings (severe thunderstorm) for eastern Franklin and Lawrence counties at 0720Z valid through 0800Z, with the main threats being hail and strong damaging wind. The SVR was extended east to include Morgan county through 0845Z, despite some fluctuations in storm intensity. Thereafter, the storms appeared to weaken below severe thresholds. Other storms within the line, originating across southern middle TN, were producing generally pea-size hail and wind gusts to 40 mph. Special Weather Statements were issued to handle these threats.

III. Storm Reports

A Preliminary Local Storm Report was issued the morning of April 3. Two of the three SVRs were verified from reports of penny-size hail. Unfortunately, while searching for verification, we received word that golf-ball size hail briefly occurred over extreme southeast Colbert county, near the town of Leighton. All other reports were of hail up ½ inch and minor wind damage.