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Fig. 3.16. As in Fig. 3.15 but for ALT category 2S.

Fig. 3.17. As in Fig. 3.15 but for ALT category 3N.

Fig. 3.18. As in Fig. 3.15 but for ALT category 3S.

Fig. 3.19. As in Fig. 3.15 but for ALT category 4N.

Fig. 3.20. As in Fig. 3.15, but for ALT category 4S.

Fig. 3.21. Location of storm reports occurring from 0400 UTC 6 June to 0400 UTC 7 June 2002.

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Fig. 3.23. As in Fig. 3.22 except at 0000 UTC 7 June 2002.

Fig. 3.24. Radar reflectivity (dBZ) and surface observations of (counterclockwise from top right) abbreviated altimeter setting (hPa), temperature (°C), dewpoint (°C), θ_e (K), and winds (barbs, kt) from 6 June 2002 at (a) 1700, (b), (c) 1800, (d) 1900, (e) 2000, (f), (g) 2100, (h) 2200, and (i) 2300 UTC; and from 7 June 2002 at (j), (k) 0000, and (l) 0100 UTC. Severe convective wind reports (blue dots), severe hail reports (green dots), and

tornado reports (red dots) occurring 0–59 min prior to the time of each image are shown. A manual analysis of altimeter setting (black contours), frontal position, and ALT position (dashed line) is shown in panels (b), (f), and (j). A manual analysis of θ_e (black contours) is shown in panels (c), (g), and (k).

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Fig. 3.26. NOAA HYSPLIT 24-h backward parcel trajectories originating at 100 m AGL at 1700 UTC 6 June 2002. Red, blue, and yellow correspond to trajectories originating at 36.0°N, 37.4°N, and 38.8°N, respectively.

Fig. 3.27. Skew *T*–log *p* diagram of temperature (°C), dewpoint (°C), and wind (barbs, kt) at 1200 UTC 6 June 2002 for (a) WAL and (b) IAD.

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Fig. 3.29. Skew *T*–log *p* diagram of NARR-derived (a) temperature (black line, °C), dewpoint (red line, °C), and wind (barbs, kt) for FAF at 2100 UTC 6 June; (b) a conceptual model of an environment conducive to wet microbursts from Atkins and Wakimoto (1991) showing temperature (solid line, °C) and dewpoint (dashed line, °C). Panels (c) and (d) are the same as (a) and (b), respectively, except that they are log-*p* diagrams of the vertical profile of θ_e.

Fig. 3.30. Meteogram from 1700 to 2200 UTC 6 June 2002 showing wind (barbs, kt), temperature (black line, °C), and dewpoint (red line, °C) at (a) FDK and (b) OMH. Red arrows correspond to the approximate tornado touchdown time for each station.

Fig. 3.31. Shows the stations between the prefrontal and alongfront convective storms that exhibited surface winds that backed from 2000 to 2100 UTC. Wind barbs (kt) at 2000 (2100) UTC plotted in red (blue).

Fig. 3.32. As in Fig. 3.29a but for (a) FDK and (b) OMH. Observed 2100 UTC surface winds are shown to the right of the NARR-derived winds.

Fig. 4.1. Conceptual model of (a)–(c) key features of the severe composites of ALT categories 2–4, respectively. Blue shading indicates areas of MUCAPE > 1000 J kg^{-1}, yellow shading indicates areas of VWS > 30 kt, and red shading indicates areas of *Q*-vector divergence $< -3 \times 10^{-15}$ K m^{-2} s^{-1}. Red (blue) numbers indicate the percentage of severe (nonsevere) composite members that exhibit the indicated feature. Blue numbers are only included for features that discriminate between the severe and nonsevere composites.

Fig. 4.2. Conceptual model based upon the 6 June 2002 severe convective storm event showing MSLP (black contours, hPa), VWS (dark blue contours, ≥ 25 kt), and 10-m winds (barbs, kt). Prefrontal storms (dots colored according to the key in the bottom left of the image) initiate along a wind-shift boundary in the immediate lee of the

Appalachians west of the ALT (dashed black line) at $t = t_0$. The ALT marks the location of an axis of high θ_e (green shading). The storms intensify at $t = t_0 + \Delta t$ upon approaching the ALT and collocated high θ_e axis.