

Southern Plains to Southern Mid-Atlantic Winter Storm

February 25th-26th, 2015

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Meteorological Overview:

A late February winter storm brought heavy snow and patchy ice accumulations to portions of the southern Plains, Gulf Coast states, and southern Mid-Atlantic region on 25-26, February, 2015 (Fig. 1). A 500 hPa shortwave initiated the event as it ejected out across Texas early Wednesday and helped induce cyclogenesis along a frontal boundary that stretched through the northern Gulf of Mexico (Fig. 2). While the shortwave and surface low progressed eastward on Wednesday, low level southerly winds ahead of the system transported warm and moist Gulf of Mexico air northward over the frontal boundary (Fig. 3), which developed and fueled widespread precipitation from east Texas to South Carolina. Precipitation lifted farther into the southern Mid-Atlantic states Wednesday night as the shortwave energy pivoted northeastward and the surface low redeveloped off the Carolina coast (Fig. 4). Falling temperatures during the event changed rain over to snow within the northern edge of the precipitation shield, and additional lift from strong upper divergence from a coupled jet structure helped focus a swath of 3 to 6 inch snowfall accumulations from northeast Texas to the Delmarva Peninsula (Fig. 5 and 6). Snowfall totals approached or even exceeded a foot in northern Alabama and along the Virginia and North Carolina border (Fig. 6). Also, sleet and a few 0.05 to 0.50 inch freezing rain reports were observed south of the heavy snow axis, where warm Gulf of Mexico air nosed in over a freezing or below freezing surface layer.

Impacts:

The late February winter storm impacted locations from northeast Texas to the Southeast and southern Mid-Atlantic region. Rain quickly changed to a heavy wet snow on Wednesday 25 February, 2015 which rapidly deteriorated road conditions across the region and led to several traffic incidents and road closures. Also, the heavy wet snow downed trees and powerlines, leaving hundreds of thousands without power the morning of Thursday February 26, 2015. The storm made history books in Huntsville, Alabama, where the 8.1 inches of snow that fell ranks second for the most snow measured in a 24 hour period, and the 8.1 inches also officially makes February 2015 the snowiest February on record. For several towns and cities across the southern Plains, Gulf Coast states, and southern Mid-Atlantic region, this storm was at the tail end of an anomalously cold and active February (see event reviews from [“Southern Plains to Mid-Atlantic Winter Storm”](#), [“Mississippi Valley to Northeast Winter Storm”](#), and [“Southwest U.S. to Southern Mid-Atlantic Winter Storm”](#)).

Images:

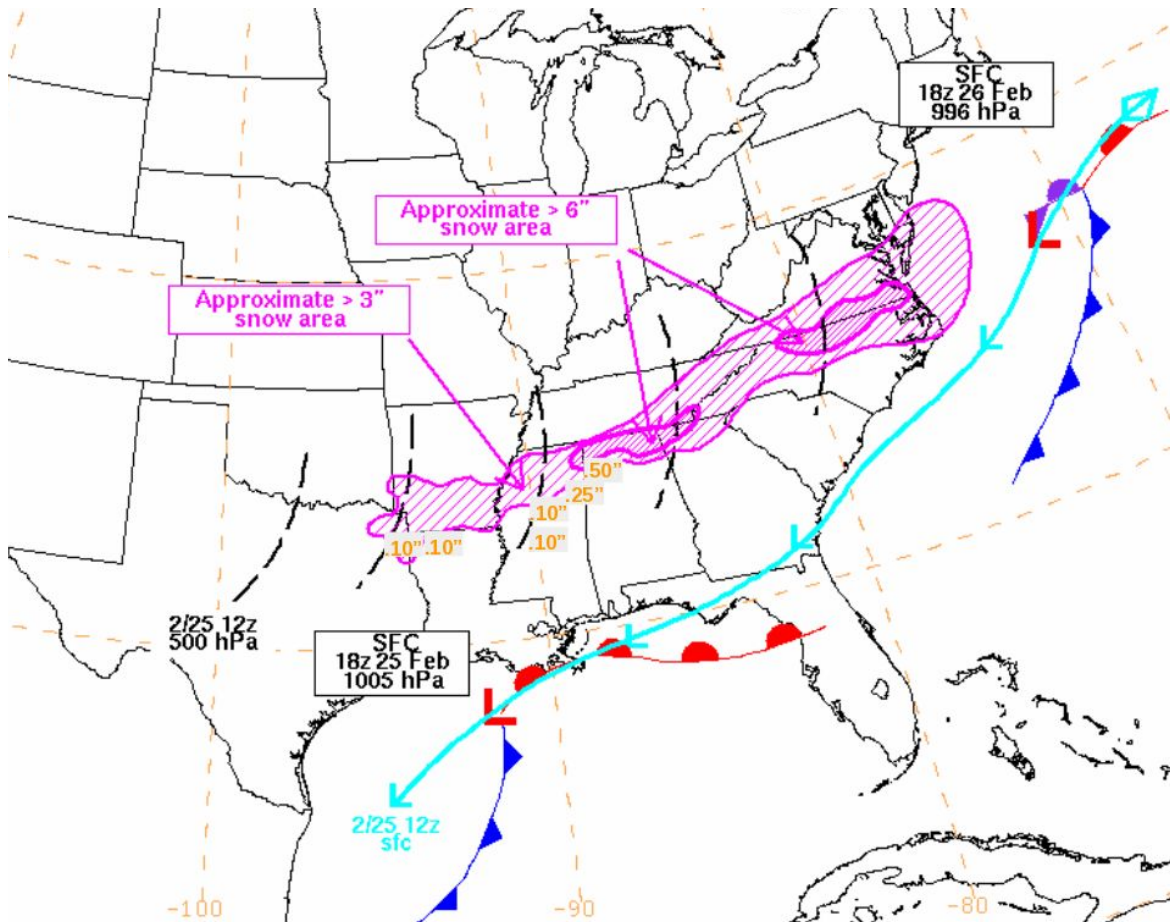
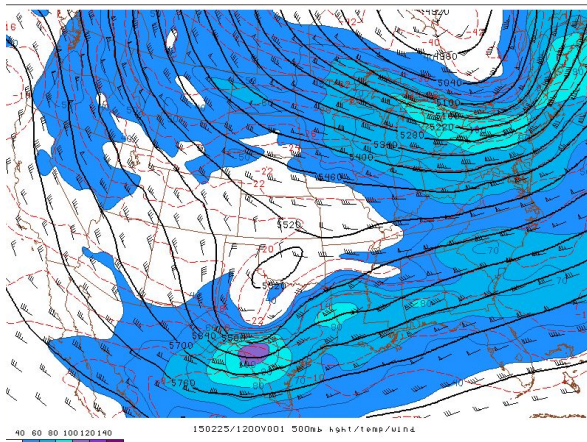
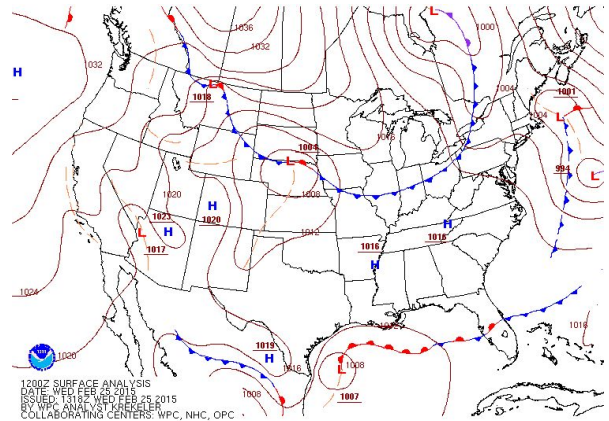


Figure 1: Summary of the Southern Plains to Southern Mid-Atlantic winter storm (25-26 February, 2015) depicting the surface low track every 6 hours (cyan), the 500 hPa shortwave every 6 hours (dashed black line), approximate areas of greater than 3 and 6 inches of snow (magenta), select freezing rain reports in inches (orange), and select surface analysis during the event (18 UTC 25 February, 2015 and 18 UTC 26 February, 2015).



a.



b.

Figure 2: (a.) 500 hPa heights (dm), temperature ($^{\circ}\text{C}$) and wind (kts), and (b.) surface analysis from 12 UTC 25 February, 2015 (images courtesy of SPC and WPC).

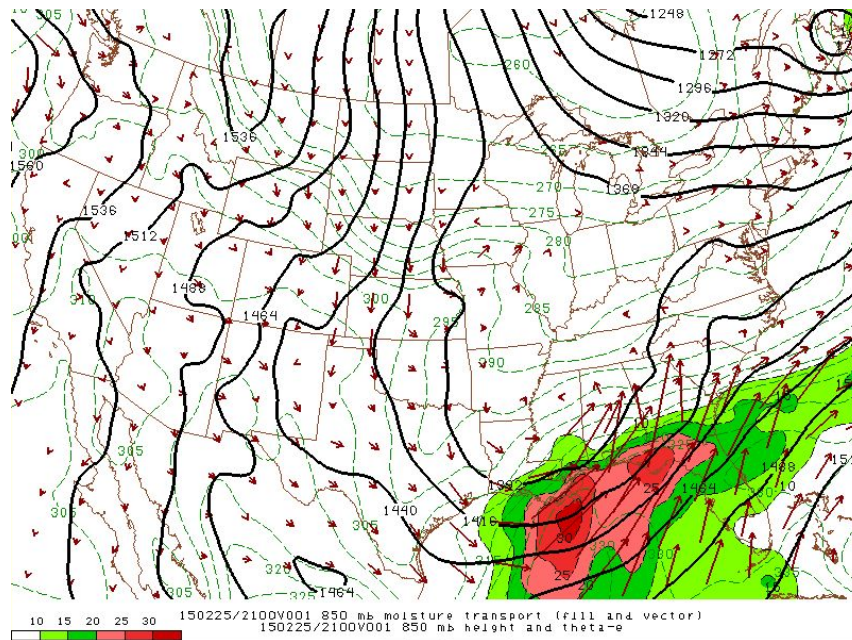
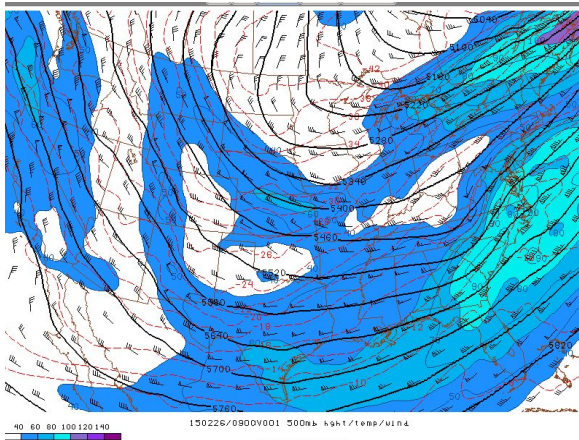
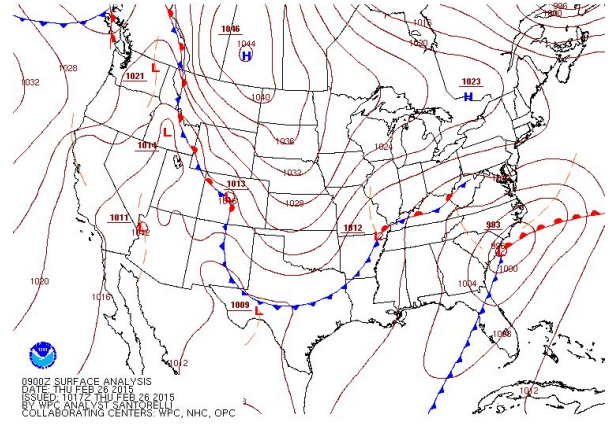


Figure 3: 850 hPa moisture transport ($\text{m/s} \cdot 100$), height (dm), and theta-e (K) from 21 UTC 25 February, 2015 (image courtesy of SPC).



a.



b.

Figure 4: (a.) 500 hPa heights (*dm*), temperature ($^{\circ}\text{C}$) and wind (*kts*), and (b.) surface analysis from 09 UTC 26 February, 2015 (*images courtesy of SPC and WPC*).

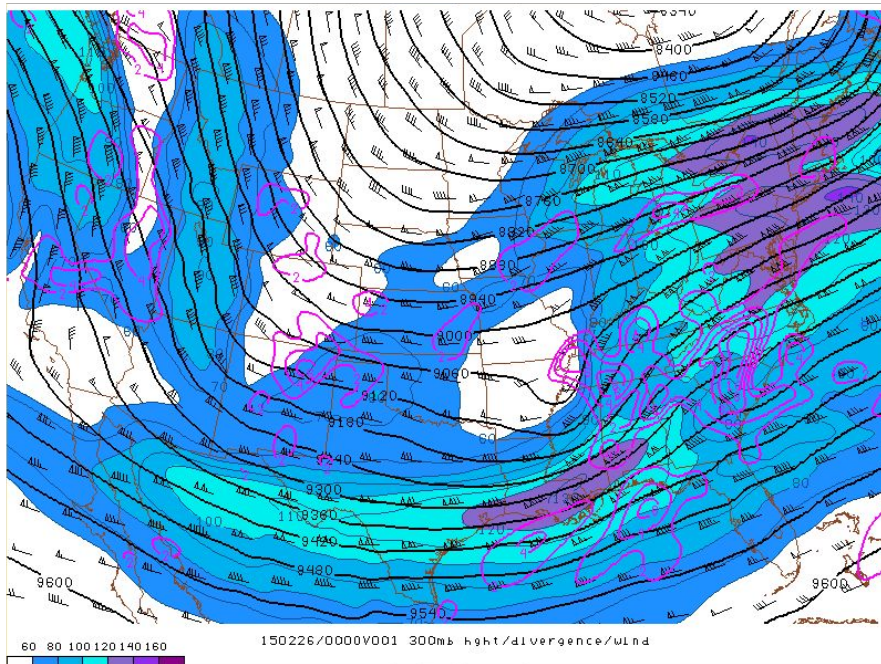


Figure 5: 300 hPa heights (*dm*), divergence (s^{-1}), and wind (*kts*) from 00 UTC 26 February, 2015 (*image courtesy SPC*).

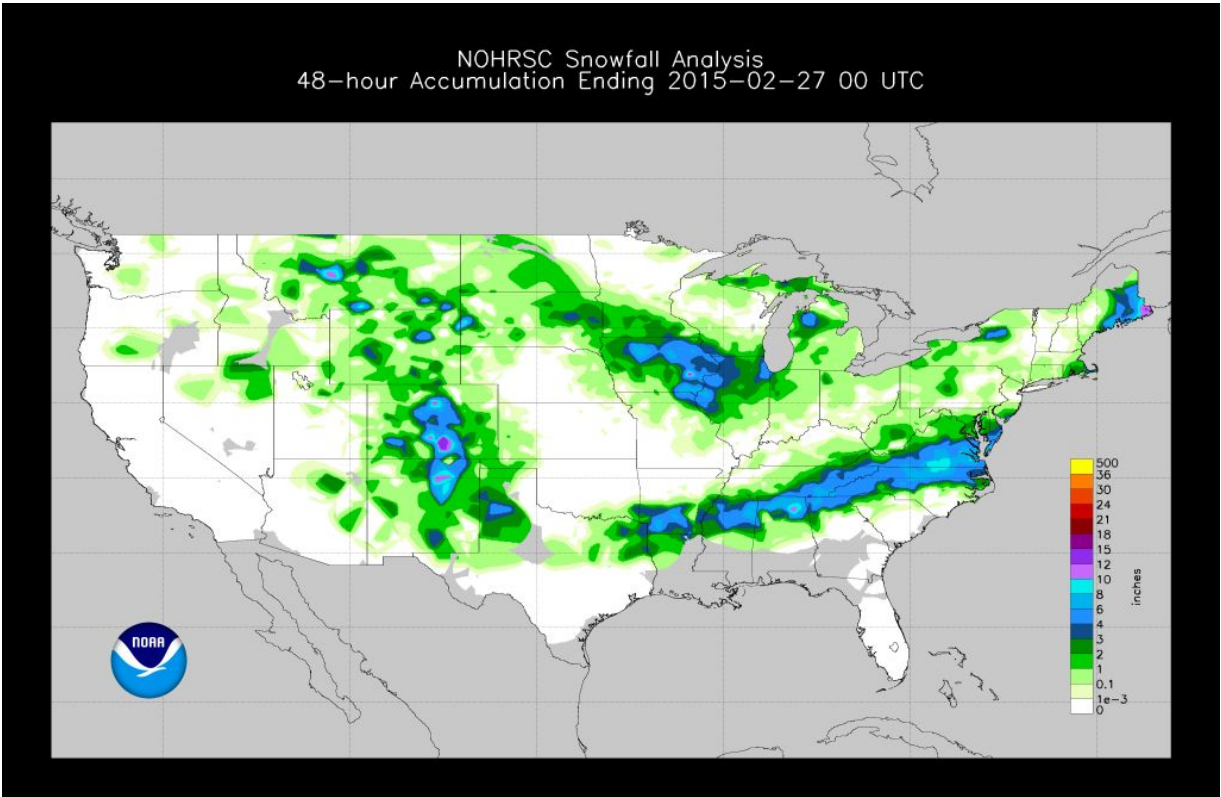


Figure 6: Snowfall analysis for 48 hours preceding 00 UTC 27 February, 2015 (image provided by NOHRSC).