

Southern Plains to Mid-Atlantic Winter Storm 5-6 March, 2015

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Meteorological Overview: An early March snowstorm spanned from northern Texas to Massachusetts and delivered impressive amounts of both mixed precipitation and snow. On 4 March, a large 500 hPa trough, with a northeast/southwest tilt, was moving eastward across the Four Corners and into the plains and Upper Midwest. Between forcing from this upper level trough and anomalously high moisture from the Gulf of Mexico, a significant winter weather event occurred through the evening and night of 04 March from northern Texas to the Tennessee Valley. North Texas received the heaviest band of precipitation during the late hours of 4 March. Moderate to heavy snow and sleet fell for many. As a result, northern suburbs of Dallas received upwards to 6 inches of snow; on average, areas around north Texas received 2-4 inches (Figure 1). The band of snow quickly exited the region after 0600 UTC as the upper level trough progressed toward the Mississippi valley (Figure 2).

During the Dallas snow event, the precipitation shield also spread across the Tennessee valley. Initially, there was warm air advection moving across the southern plains and Southeast and most of the precipitation fell as rain. However, once the Arctic air settled in it quickly changed over to snow. The line of heavy snow across the Tennessee valley, which delivered upwards of 23 inches across Kentucky and 8 inches across western Tennessee, fell mostly in the early morning hours of 5 March (Figure 1). Meanwhile, a glaze of sleet and ice began covering parts of Tennessee, Alabama and Mississippi. The Mid-Atlantic and Northeast was still reporting a mix of rain and snow by 1200 UTC on 5 March. However, an impressive 175 knot jet streak set up over the Northeast and created a zone of upper level divergence. As a result, by 1500 UTC, a burst of moderate to heavy snow occurred across the Mid-Atlantic and Northeast. This band of snow continued to move across these regions through most of the late morning and afternoon of 5 March. On average, 8 to 10 inches of snow blanketed the Mid-Atlantic and the Northeast with some pockets that measured almost a foot. By the night of 5 March, most of the snow tapered off around the Northeast and Mid-Atlantic as the 500 hPa trough quickly moved over the North Atlantic Ocean.

Impacts: Many impacts were felt during and after this snowstorm. Hundreds of motorists were left stranded overnight in Kentucky as nearly 2 feet of snow fell. In addition, over 4,000 flights were cancelled from Texas to New York. The hardest impacted airports were Dallas/Fort Worth, Washington DC region, Philadelphia and New York. In fact, one airplane that was landing at the LaGuardia Airport on the morning of 5 March slid off the runway and hit a snowbank that stopped the plane from going into Flushing Bay. Luckily, only minor injuries were reported. The government, schools, and businesses from the Tennessee valley to the Northeast closed down on 5 March. Countless snowfall records were broken across these regions. After this snowstorm, frigid, Arctic air settled across this region. Thus, right after the record breaking snowfall occurred, many of the same areas were also breaking low temperature records. Although this snowstorm did deliver a few inches of snow to Massachusetts, Boston did not receive any and was still a few inches away from breaking its yearly snowfall record.

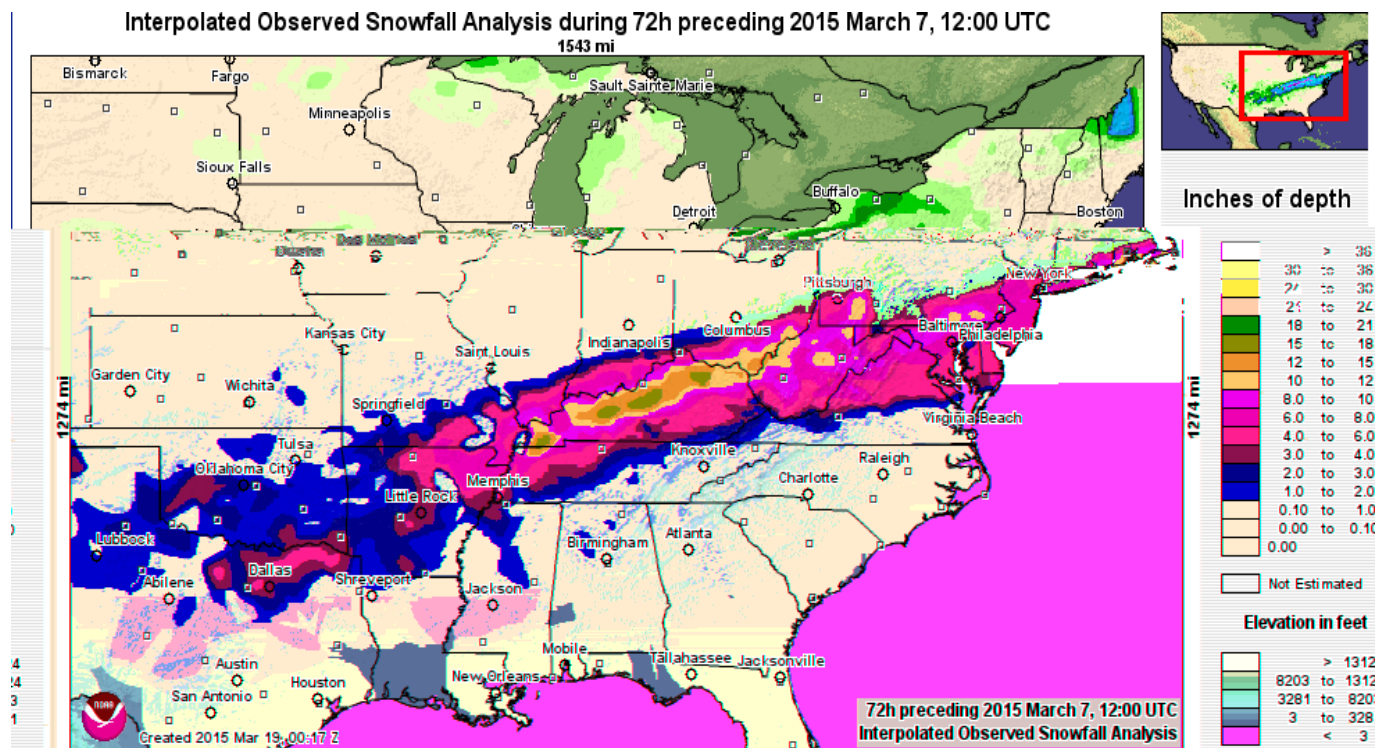


Figure 1: Map showing snowfall amounts over a 72 hour period from 4-6 March 2015 (NOHRSC).

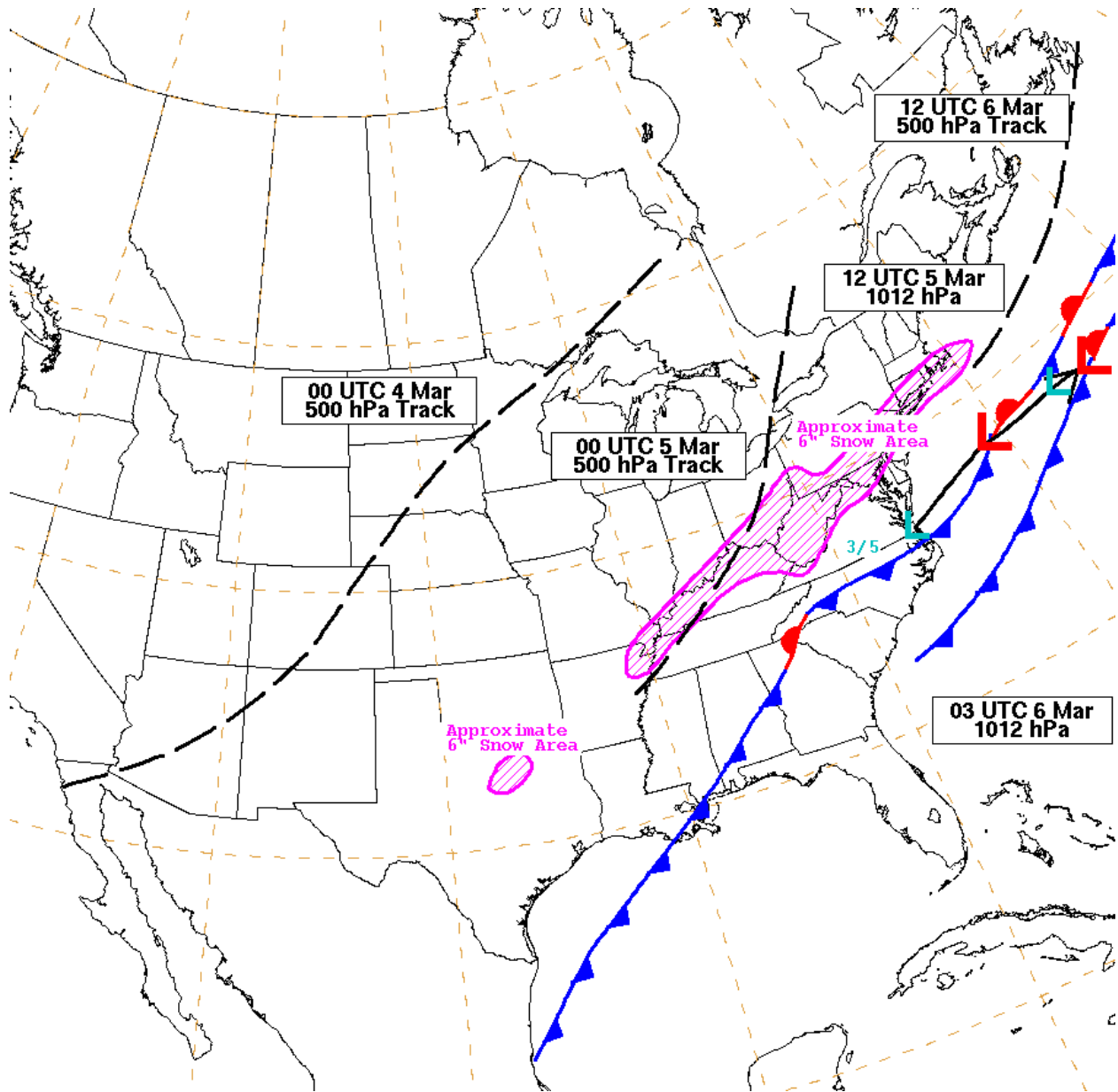


Figure 2: Surface low tracks (cyan), 500 hPa trough (black), and approximate area of greater than 6 inches of snow (pink). The surface frontal analysis at 1200 UTC 05 March and 0300 UTC 06 March is also shown.