

November 1, 2014 Snow Event

OPEN-FILE REPORT

**South Carolina Department of Natural Resources
Land, Water and Conservation Division South
Carolina State Climatology Office**

Compiled by: Mark Malsick
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Event Summary:

The synoptic pattern responsible for the 1 November morning snow event consisted of an expansive ridge of continental polar air centered over eastern South Dakota (Figures 1. and 2.), and a deepening upper-level trough over the eastern United States (Figures 3. and 4). Beneath the trough was a low pressure system developing over Mississippi on 31 October.

Within the deepening trough, a 500 mb cut-off circulation (Figure 5.) developed and migrated along the base of the trough in conjunction with flanking 105 knot jet streak. As the closed low migrated along the base of the trough, the trough became negatively tilted allowing differential advection of cold, very dry middle and upper-level air over the surface low. Upper-level divergence in the left exit region of the jet streak deepened the surface low over South Carolina, increasing the advection of warm moist air, saturating the boundary level beneath the cold pocket aloft (Figures 6. and 7.).

This well-timed dynamic lift and instability over the State forced a concentrated convective system that produced a brief, yet productive, snow event for the Upstate and western Midlands (Figure 8. and Table 1.).

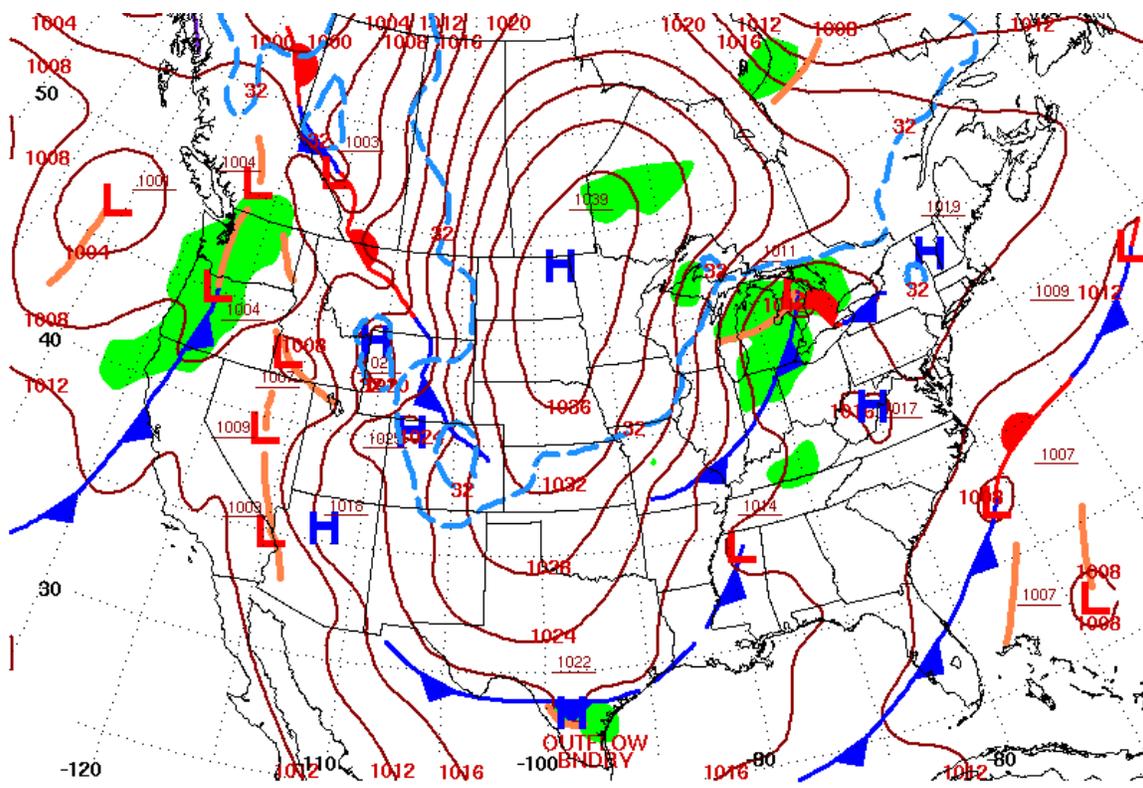
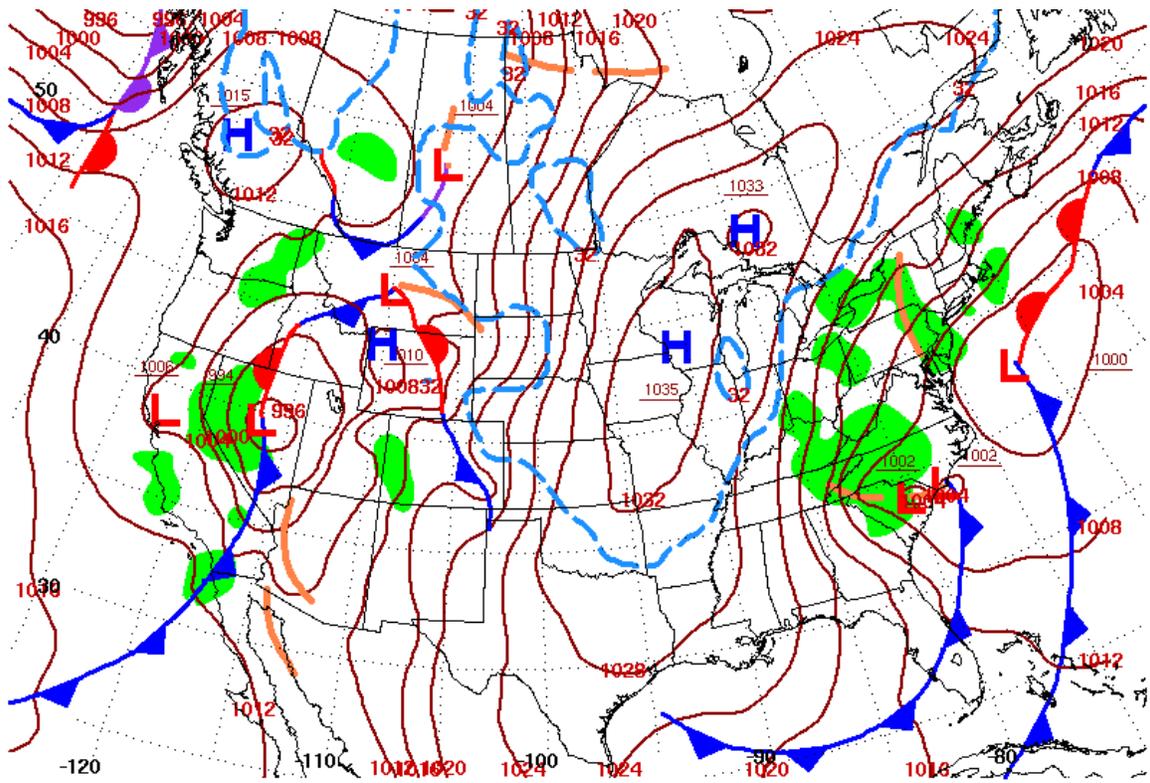


Figure 1. Synoptic situation 1200Z 31 OCT 2014 (NOAA, WPC).



Surface Weather Map at 7:00 A.M. E.S.T.

Figure 2. Synoptic situation 1200Z 1 NOV 2014 (NOAA, WPC).

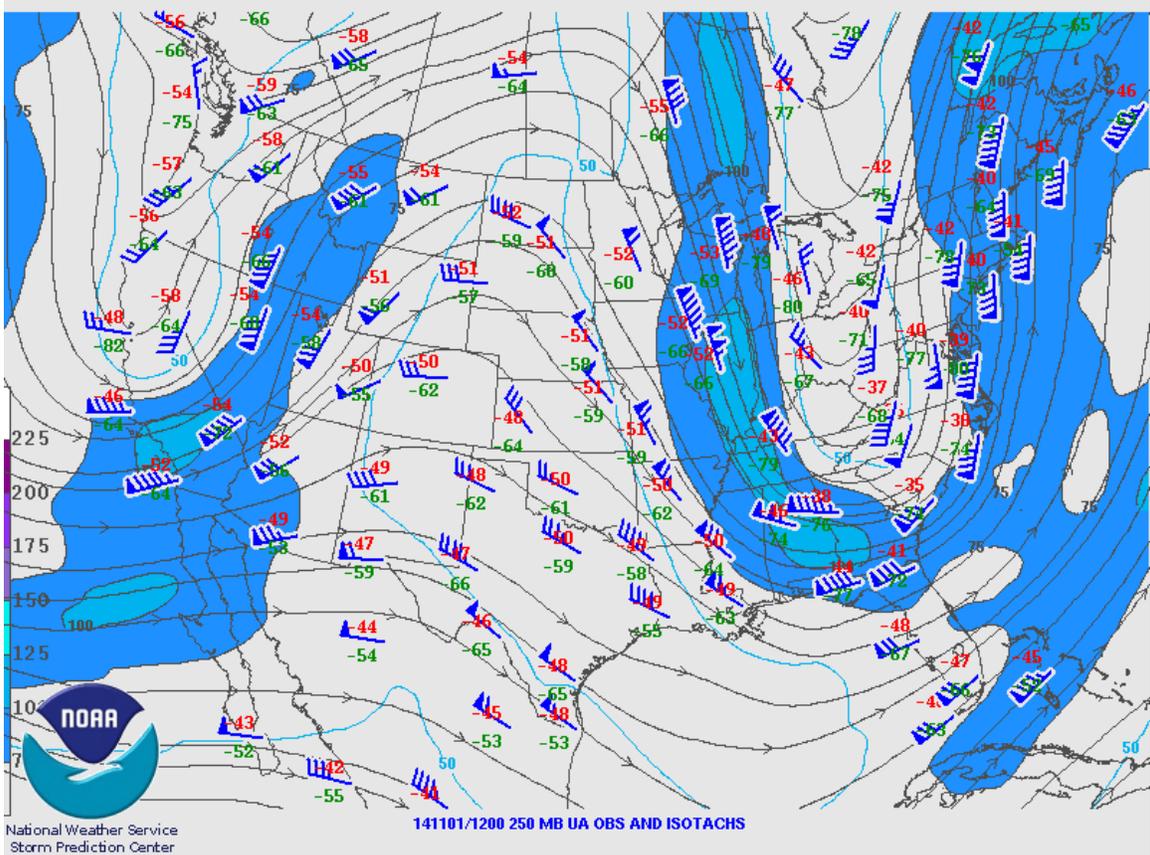


Figure 3. 250 mb 12Z 1 NOV analysis (NOAA,SPC).

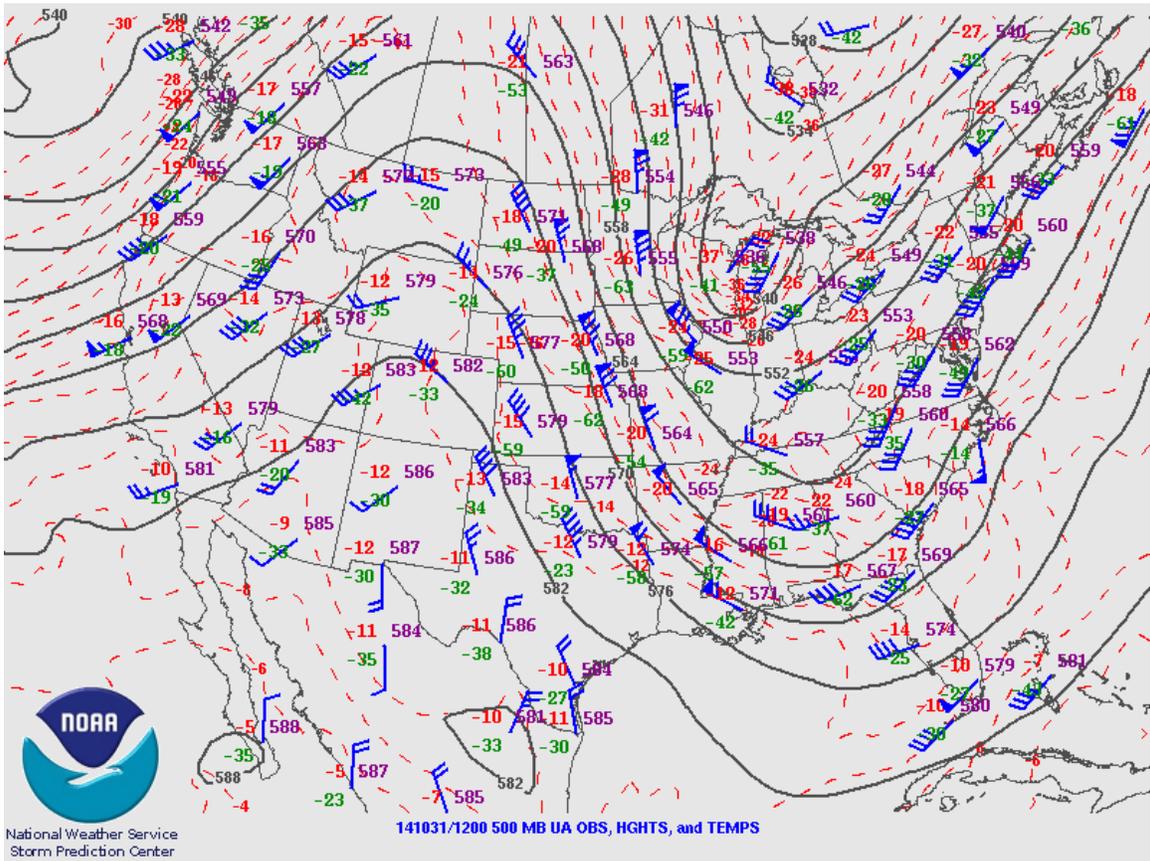


Figure 4. 500 mb 12Z 31 OCT analysis (NOAA, SPC).

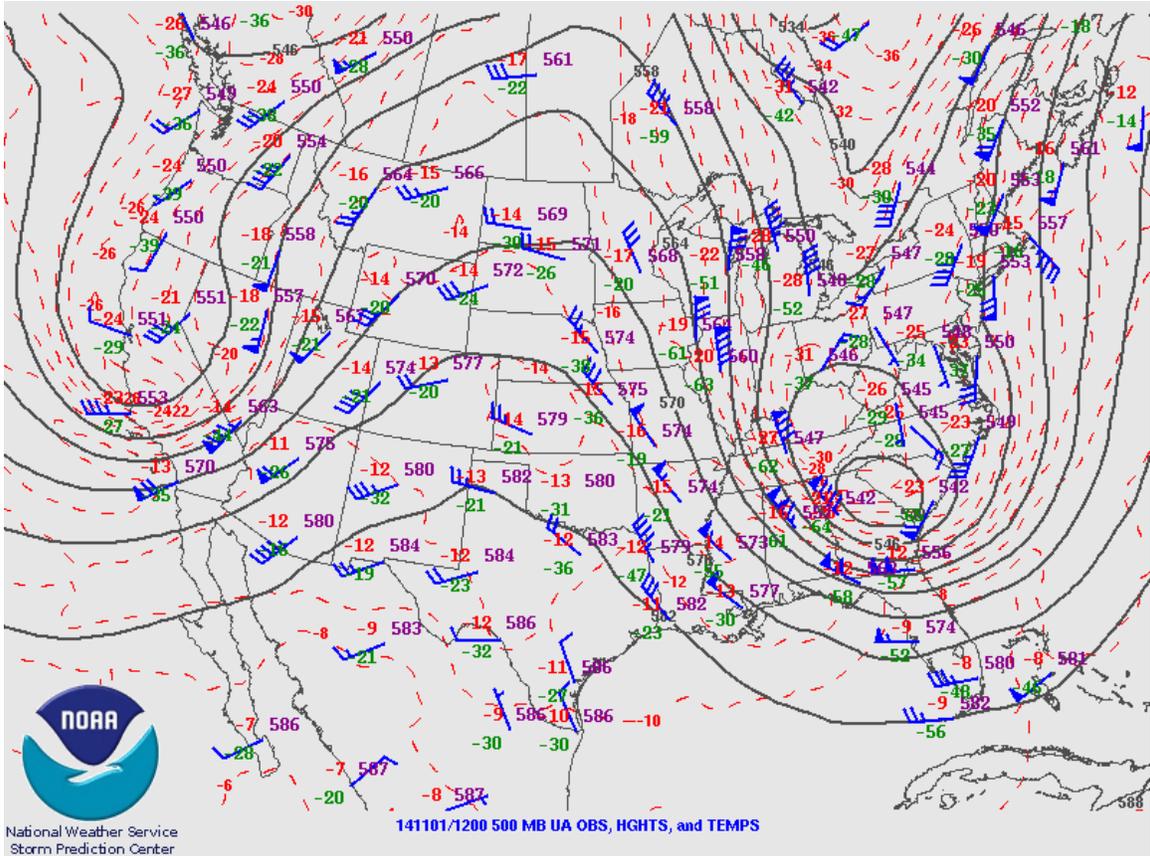


Figure 5. 500 mb 12Z 1 NOV analysis (NOAA, SPC).

72208 CHS Charleston

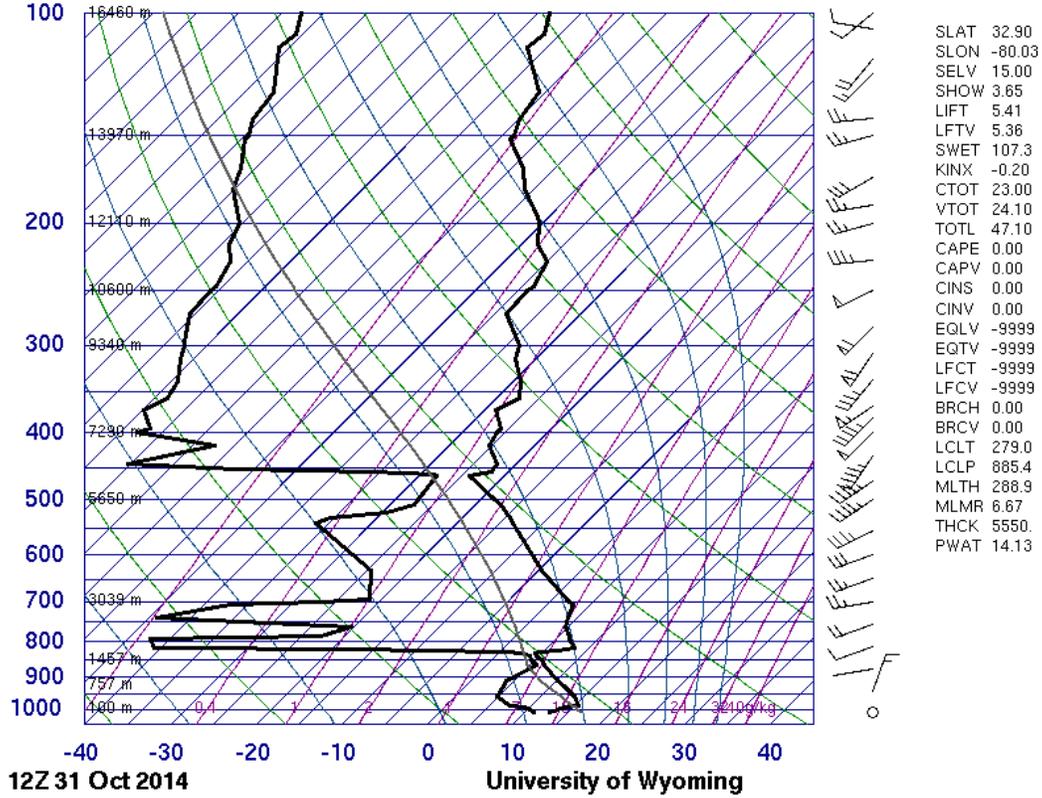


Figure 6. 12Z 31 OCT Charleston upper air sounding (University of Wyoming).

72208 CHS Charleston

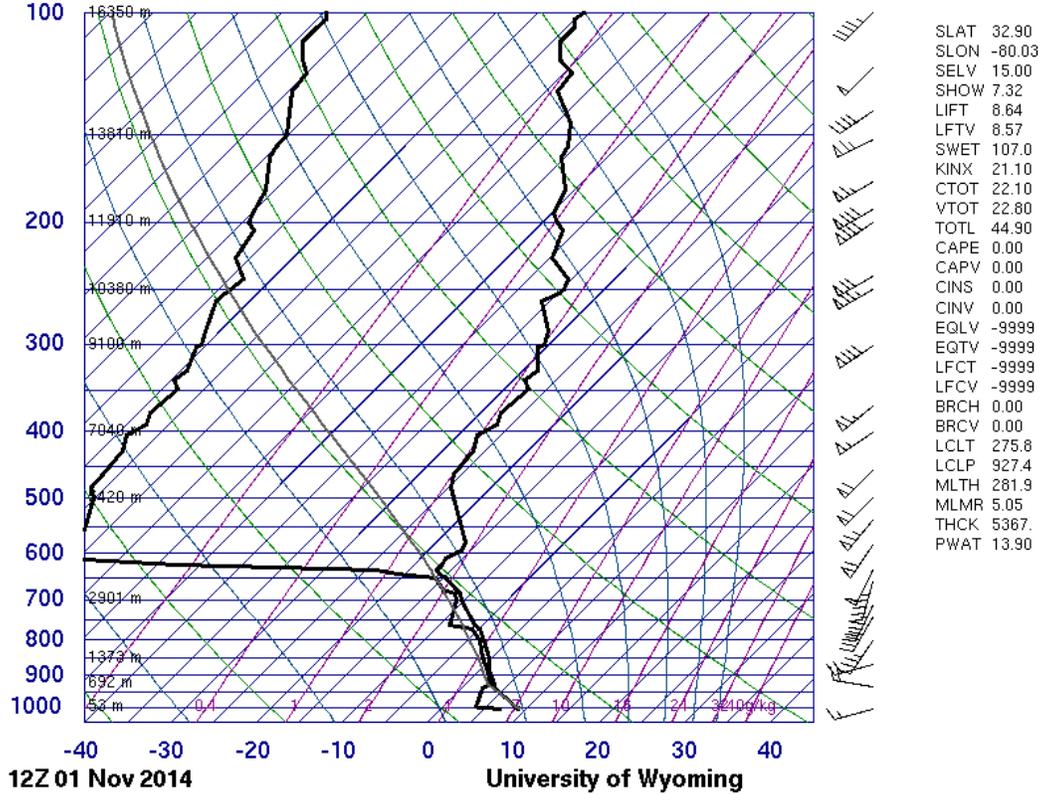


Figure 7. 12Z 1 NOV Charleston upper air sounding (University of Wyoming).

South Carolina Effects:

The NWS Cooperative Observer site in Pelion recorded a 3.0-inch snow accumulation, the earliest and heaviest known "measurable" snow in the history of South Carolina. The previous earliest and heaviest snowfall occurred on November 4, 1930 when 2-inches fell at Caesars Head.

Effects of this rare snow event were minimal. 26,000 households lost power briefly due to high winds and snow downing tree limbs. Power was restored by mid-afternoon.

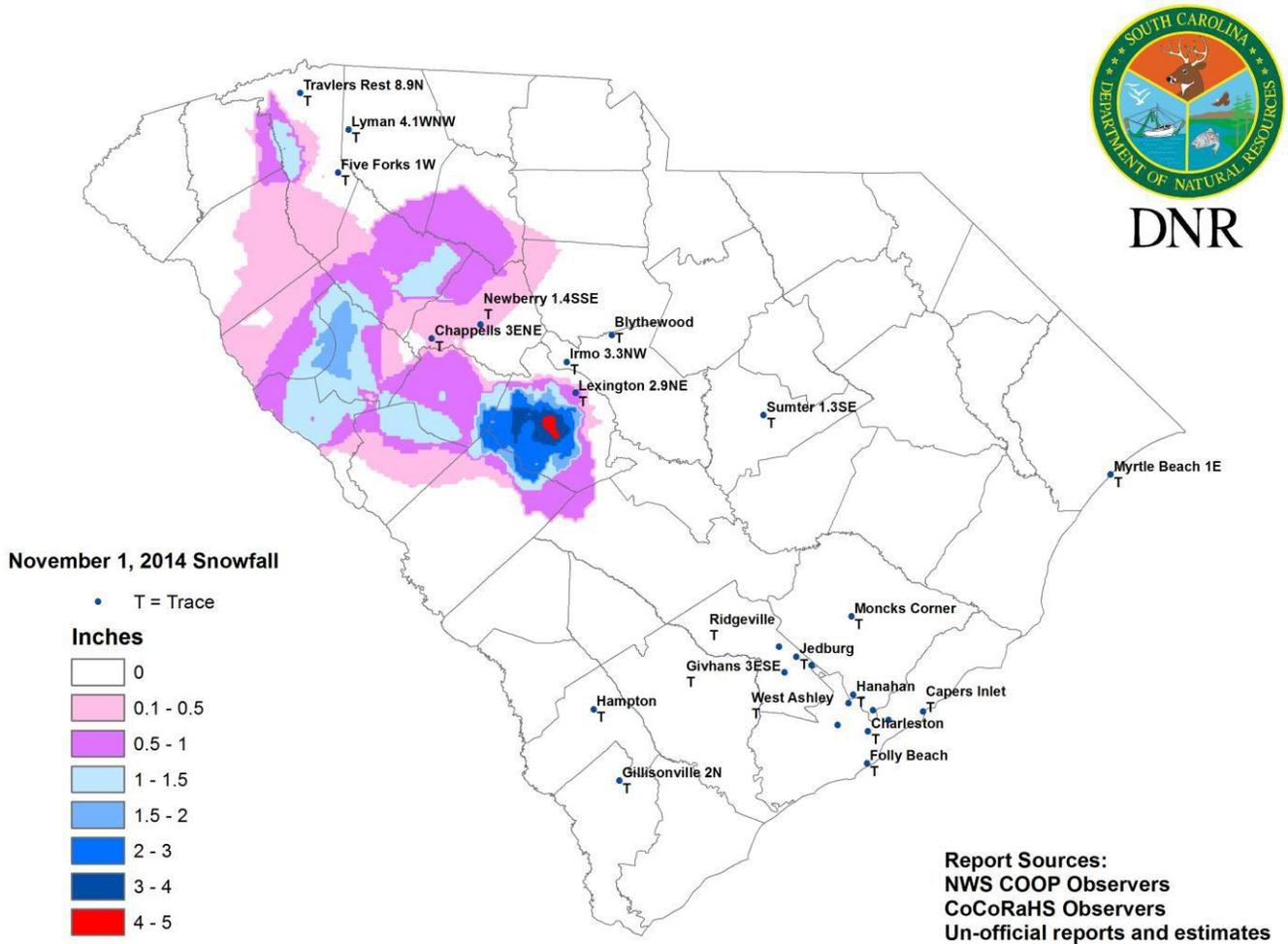


Figure 8. Observed and estimated snow totals, November 1, 2014.

Table 1: Snowfall totals (inches):

Gilbert 4ESE	4.5	Saluda 6.1SW	1.0
Red Bank	4.5	Greenwood	1.0
Gilbert	4.3	East Pelzer	1.0
Summit 1WNW	4.0	Clinton 8SW	0.9
Red Bank 3SW	4.0	Johnston	0.8
Pelion	3.0	Honea Path 4WSW	0.5
Clinton	2.8	Hodges	0.5
Berea 1NNW	2.5	Fountain Inn 10WSW	0.5
Greenwood 5W	2.5	Trenton 6.3WSW	0.2
Saluda	2.0	Mauldin	0.2
Gilbert 3S	2.0	Charleston	Trace
Hodges 6.5ENE	2.0	Folly Beach	Trace
Lexington 3.4SSE	1.5	Blythewood	Trace
Berea 3E	1.5	Myrtle Beach 1E	Trace
Lexington 1.2SW	1.5	Hampton	Trace

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- National Weather Service Office, Wilmington, North Carolina
- The Community Collaborative Rain, Hail and Snow observing network
- The University of Wyoming Department of Atmospheric Science