February 12-13, 2014 Ice and Snow Event

OPEN-FILE REPORT

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

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March 25, 2014

Event Summary:

The 12-13 February winter storm event had three distinct components that impacted South Carolina. The first was a expansive high pressure system that migrated east and advected cold dry Canadian air southwestwards down the eastern slopes of the Appalachians forming a thickening "wedge" of cold air over South Carolina (Figures 1 and 2). A weak upper level wave and offshore low on Tuesday 11 February initiated a rain event that slowly transitioned into a snow and sleet event for most of the State. After a brief lull during the day on Wednesday, 12 February, a deeper, more energetic upper level feature and a deepening coastal low over the northeastern Gulf of Mexico (Figure 3.) provided a complicated finish to this winter event.

After tracking across northern Florida, coastal surface low deepened rapidly offshore South Carolina increasing moisture advection in the lower levels. The trough aloft (Figures 4-8) advected warm air aloft from the southwest, increasing the "warm nose" seen in the Charleston upper air soundings (Figures 9-11) This warm advection eroded the emplaced cold air wedge causing a transition to a freezing rain event for inland areas of the Low Country into the Midlands along the I-20 interstate corridor.

Wrap around snowfall during the morning of 13th of February added several more inches of snow as the coastal low continued to deepen as it accelerated northeast. Ice and snow total are depicted below by figures 12 and 1. Representative accumulations are listed on table 1 and table 2.

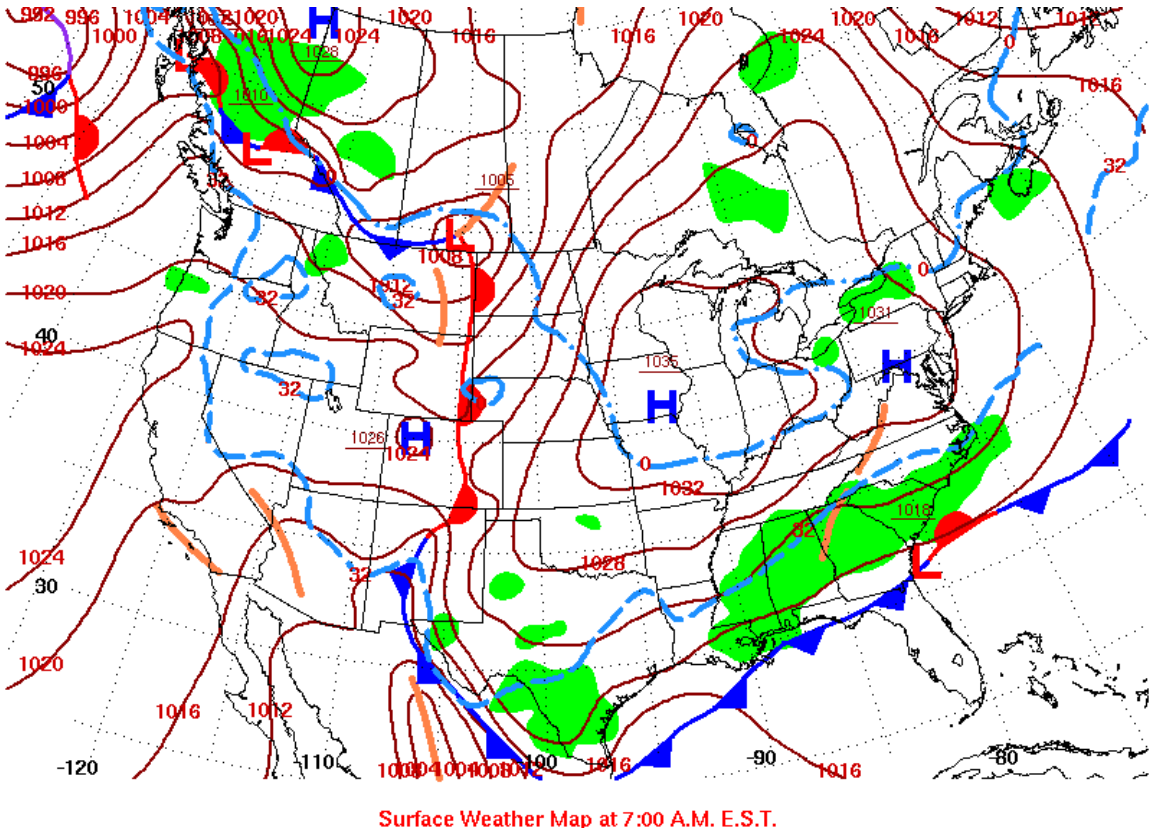

Figure 1. Synoptic situation 1200Z 11 FEB 2014 (NOAA, HPC).

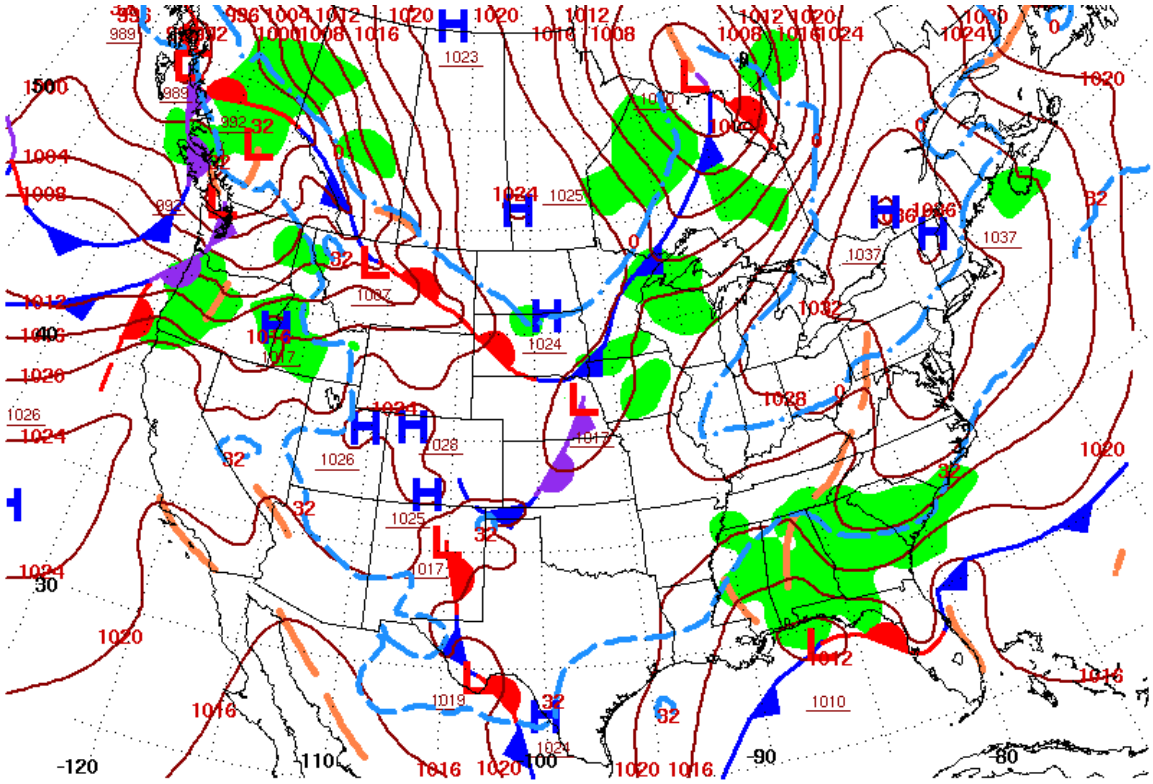

Figure 2. Synoptic situation 1200Z 12 FEB 2014 (NOAA, HPC).

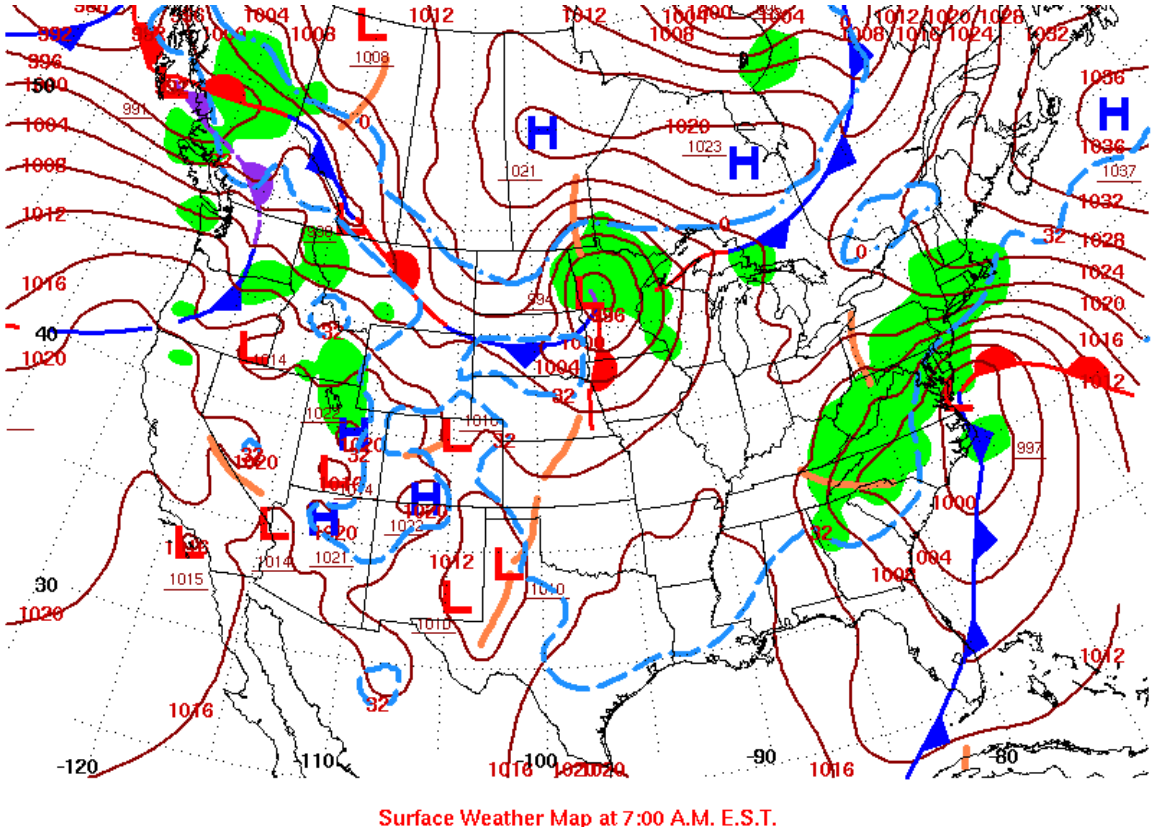

Figure 3. Synoptic situation 1200Z 13 FEB 2014 (NOAA, HPC).

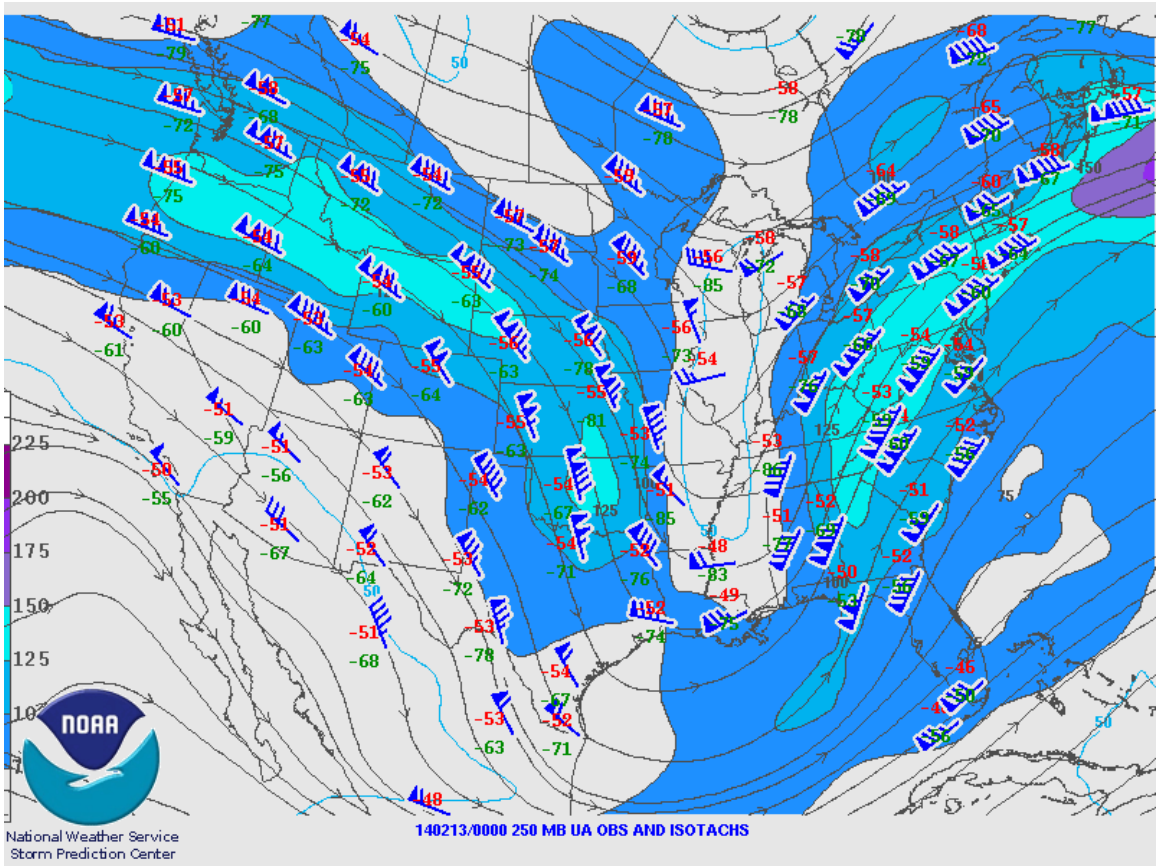

Figure 4. 250 mb 00Z 13 FEB analysis (NOAA-SPC).

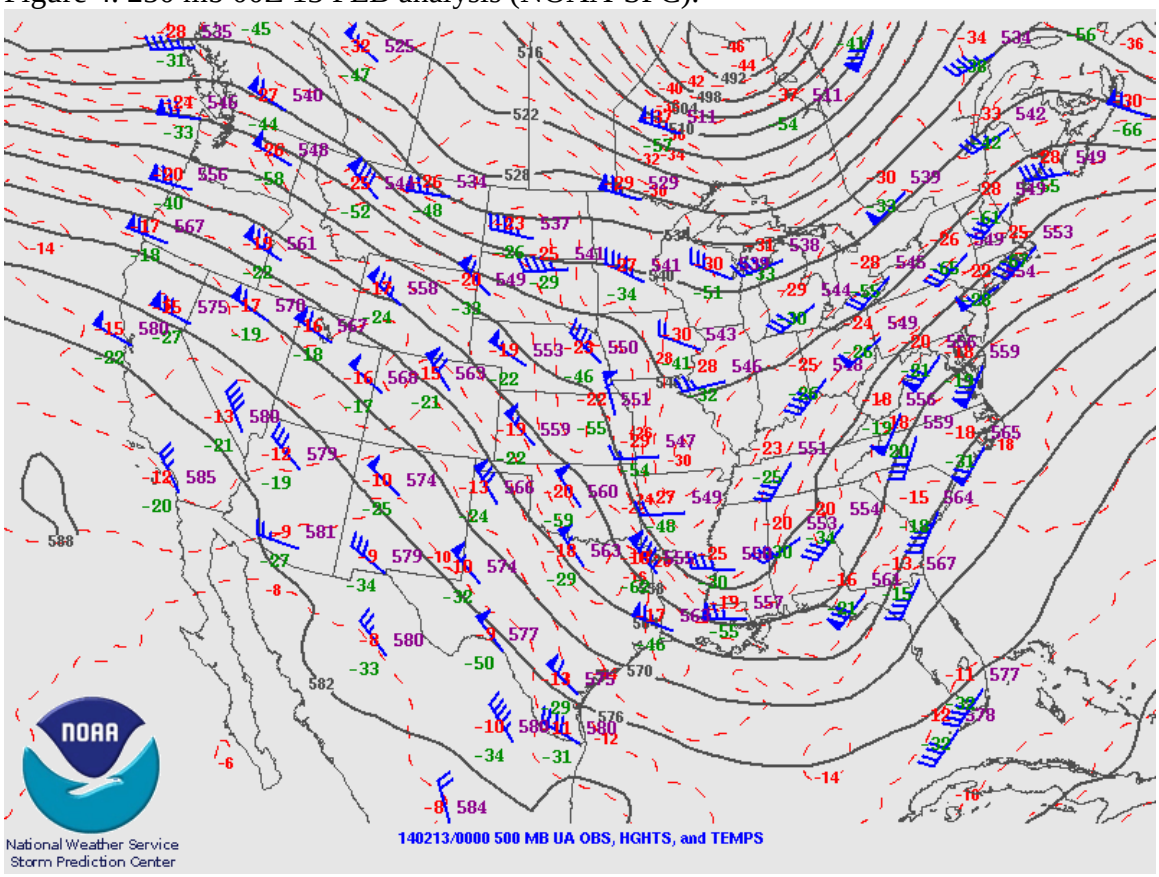

Figure 5. 500 mb 00Z 13 FEB analysis (NOAA-SPC).

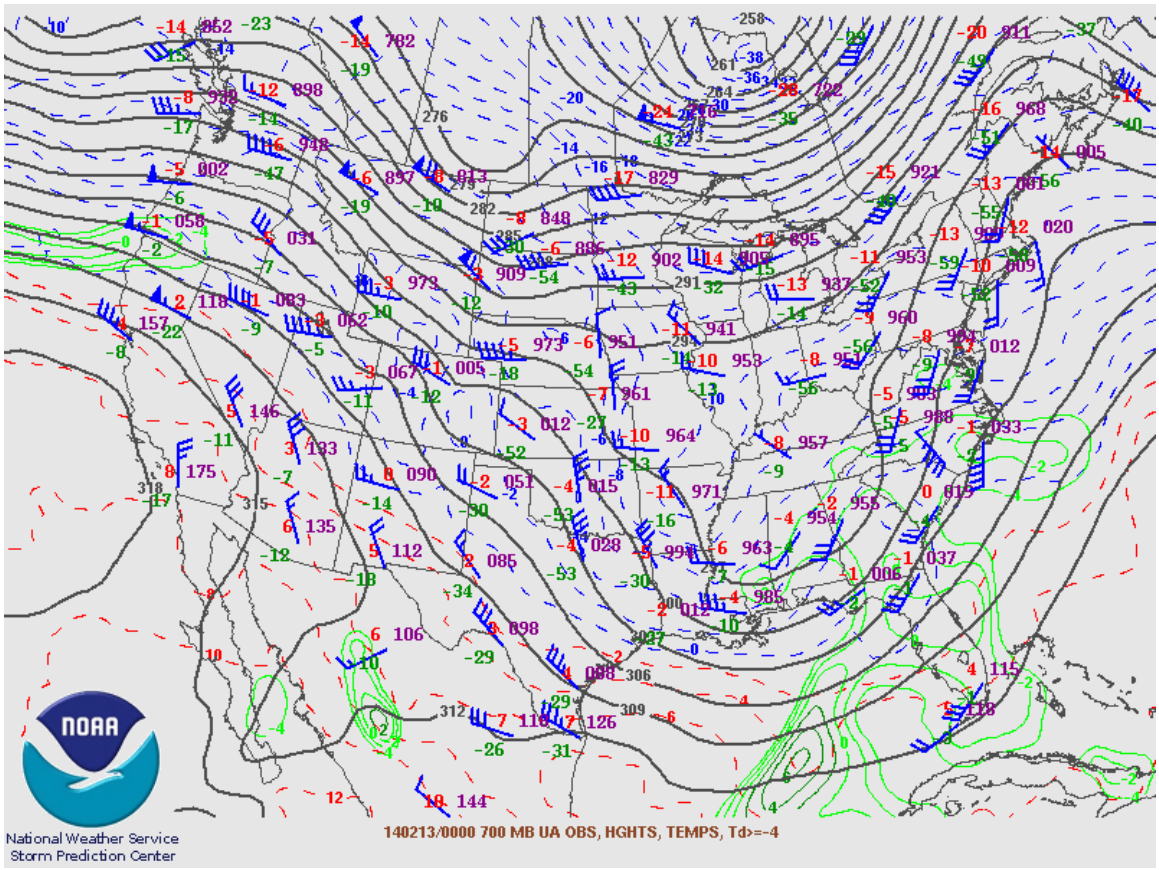

Figure 6. 700 mb 00Z 13 FEB analysis (NOAA-SPC).

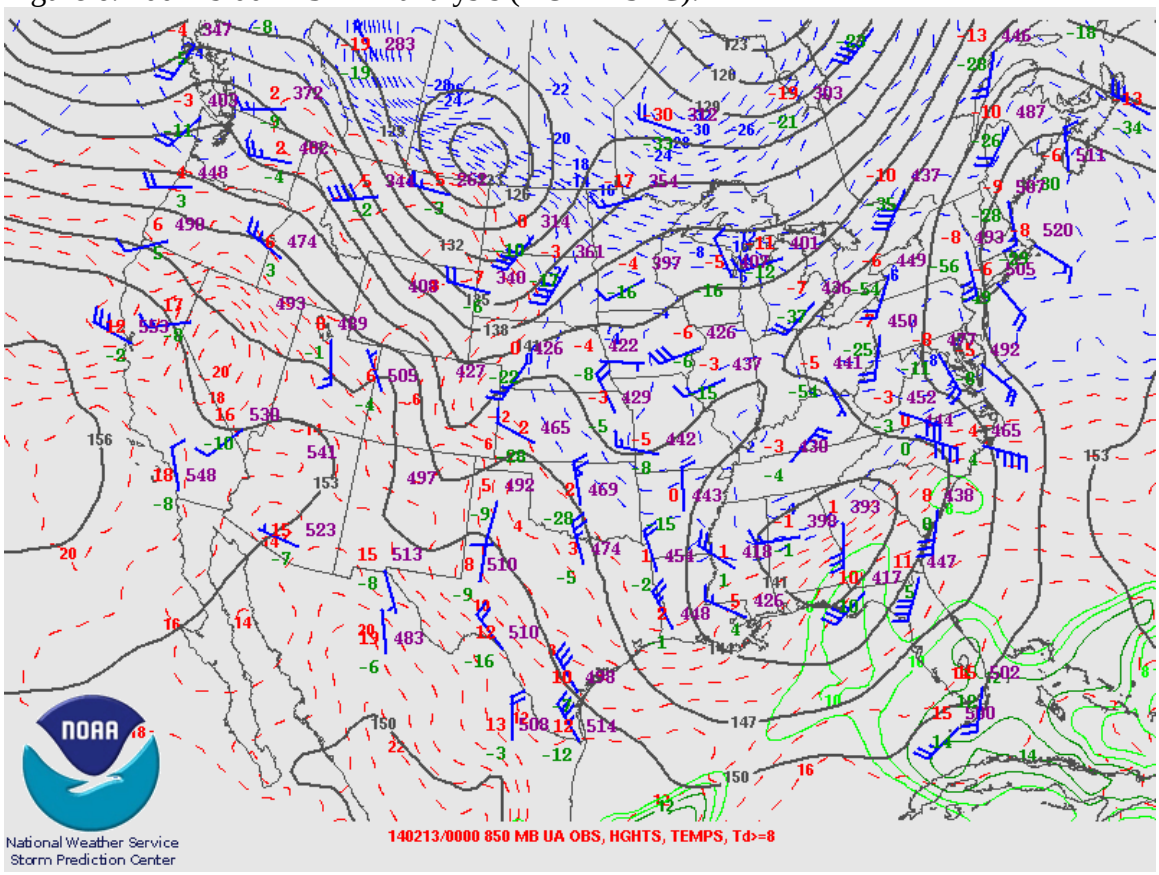

Figure 7. 850 mb 00Z 13 FEB analysis (NOAA-SPC).

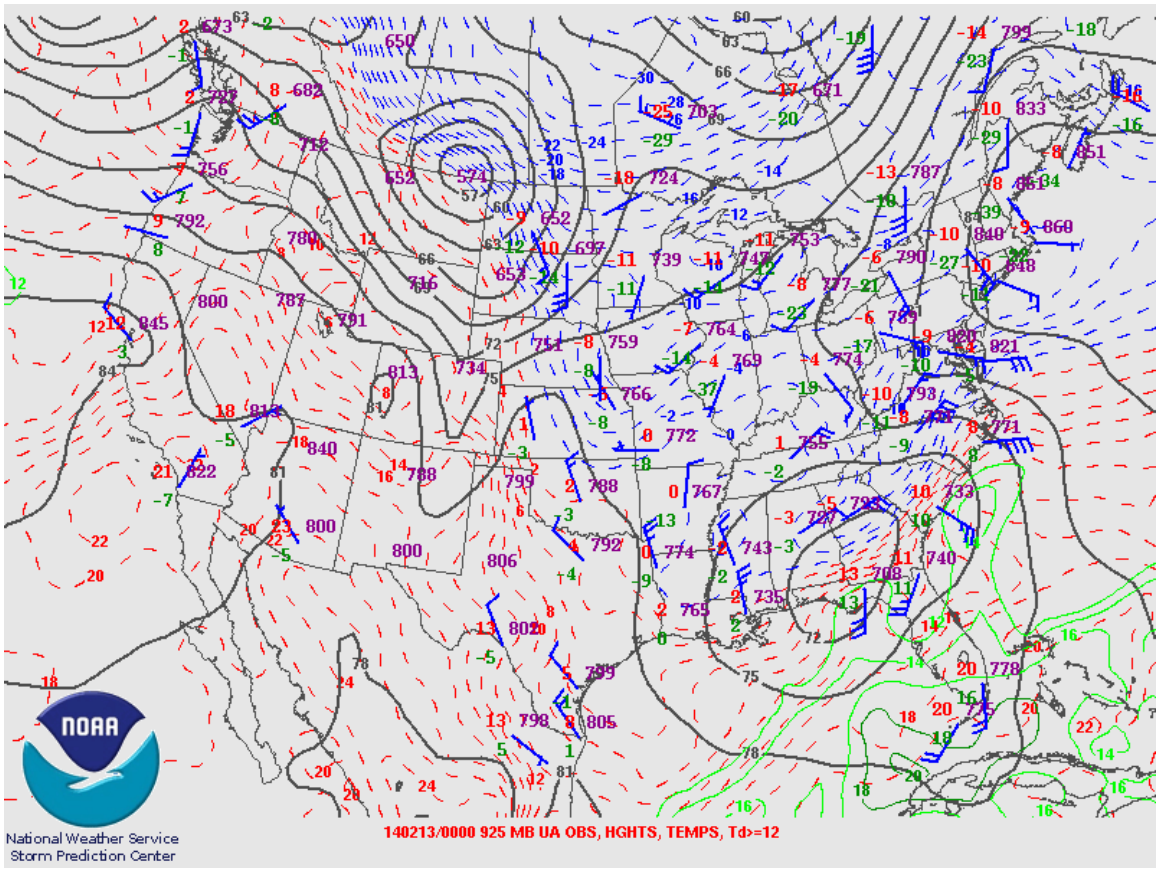

Figure 8. 925 mb 00Z 13 FEB analysis (NOAA-SPC).

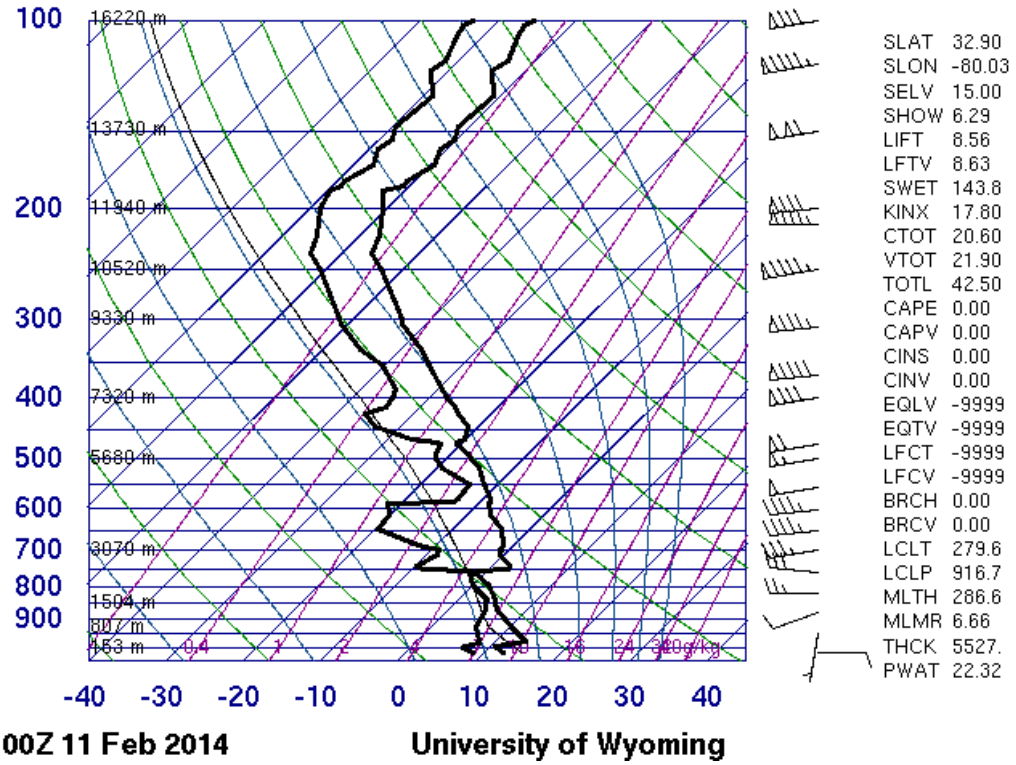

Figure 9. 00Z 11 FEB Charleston upper air sounding (University of Wyoming).

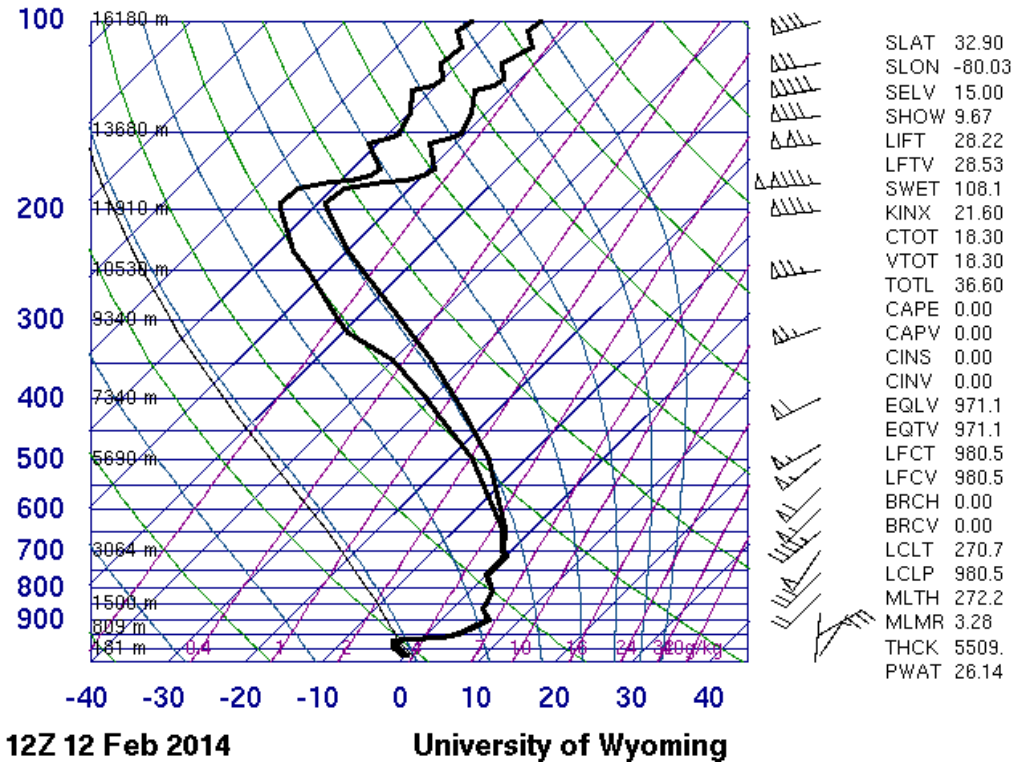

Figure 10. 12Z 12 FEB Charleston upper air sounding (University of Wyoming).

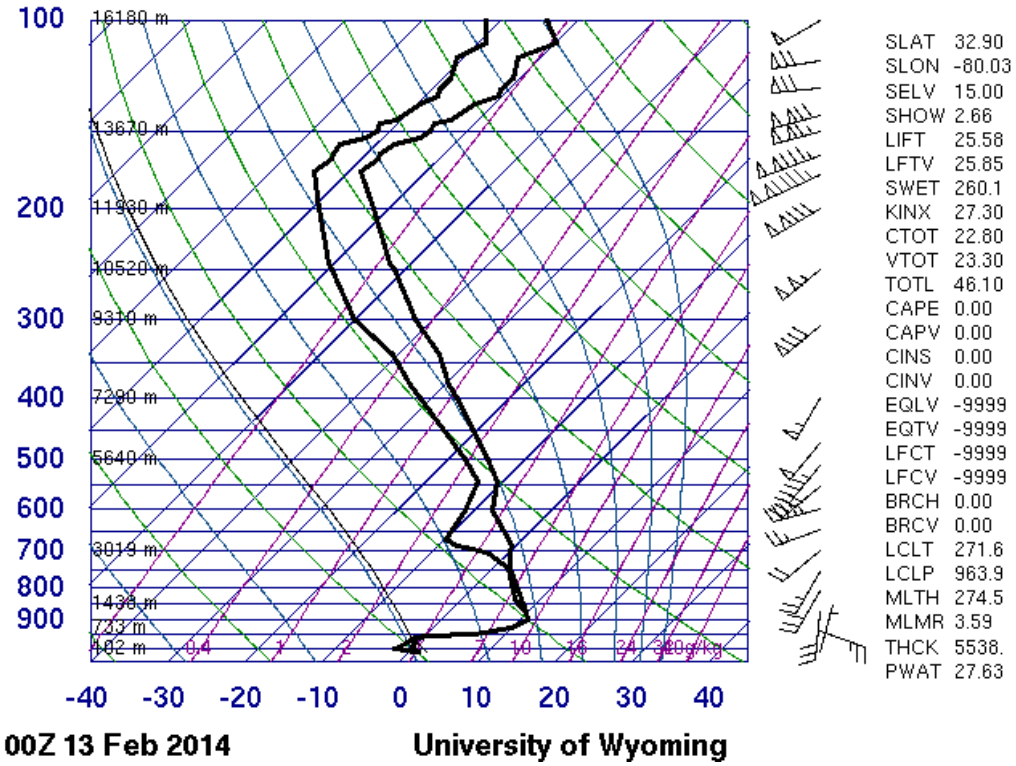

Figure 11. 00Z 13 FEB Charleston upper air sounding (University of Wyoming).

South Carolina Effects:

On 11 February the Governor declared a statewide State of Emergency in preparation for the multi-day winter storm. The South Carolina Emergency Management Division's Emergency Operations Center was opened and fully staffed by the State Emergency Response Team.

Five fatalities were directly attributable to the winter storm.

Due to heavy ice accumulation, 346,000 homes lost electricity. 28 Red Cross shelters and seven special medical needs shelters were opened to provide heated shelter for those without electricity.

The South Carolina Insurance News Service estimated the insured storm damage near $20 million. The South Carolina Forestry Commission estimated timber damage to be $360 million, affection over 1.5 million acres.

South Carolina requested and received a federal disaster declaration based upon the losses above and an additional $55 million impact to Counties and State agencies. The heaviest counties were eligible for federal assistance: Aiken, Allendale, Bamberg, Barnwell, Berkeley, Calhoun, Chesterfield, Clarendon, Colleton, Dillon, Dorchester, Edgefield, Florence, Georgetown, Hampton, Horry, Marion, Orangeburg, Saluda, Sumter and Williamsburg.

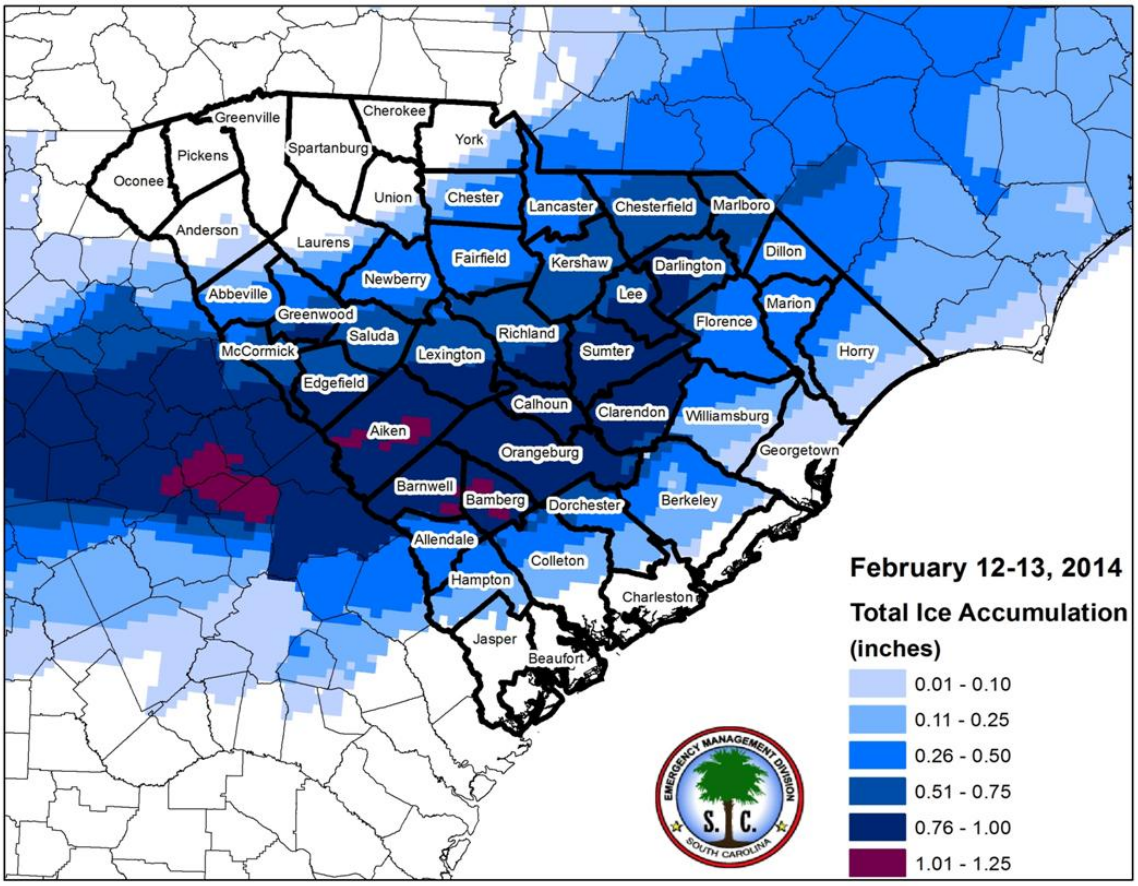

Figure 12. Observed Ice Accumulation Totals February 13, 2014. Map courtesy of the South Carolina Emergency Management Division.

Table 1: Freezing Rain/Ice totals (in.):

Barnwell	1.25	Florence	0.3
Aiken	1.2	Chesterfield	0.3
Marion	1	Camden	0.3
Cross	1	Bishopville	0.3
Smoaks	1	Newberry	0.3
Bamberg	1	Saluda	0.3
Saint Matthews	1	Goose Creek	0.25
Manning	1	Huger	0.25
Orangeburg	1	McClellanville	0.25
Allendale	0.75	Cottageville	0.25
Summerville	0.75	Chester	0.25
Johnston	0.75	Pickens	0.25
Lexington	0.7	Ladson	0.2
Columbia	0.7	Mount Pleasant	0.15
Hampton	0.5	Moncks Corner	0.13
Edgefield	0.5	Johns Island	0.1
McCormick	0.5	Tarboro	0.1
Blythewood	0.37	Abbeville	0.1

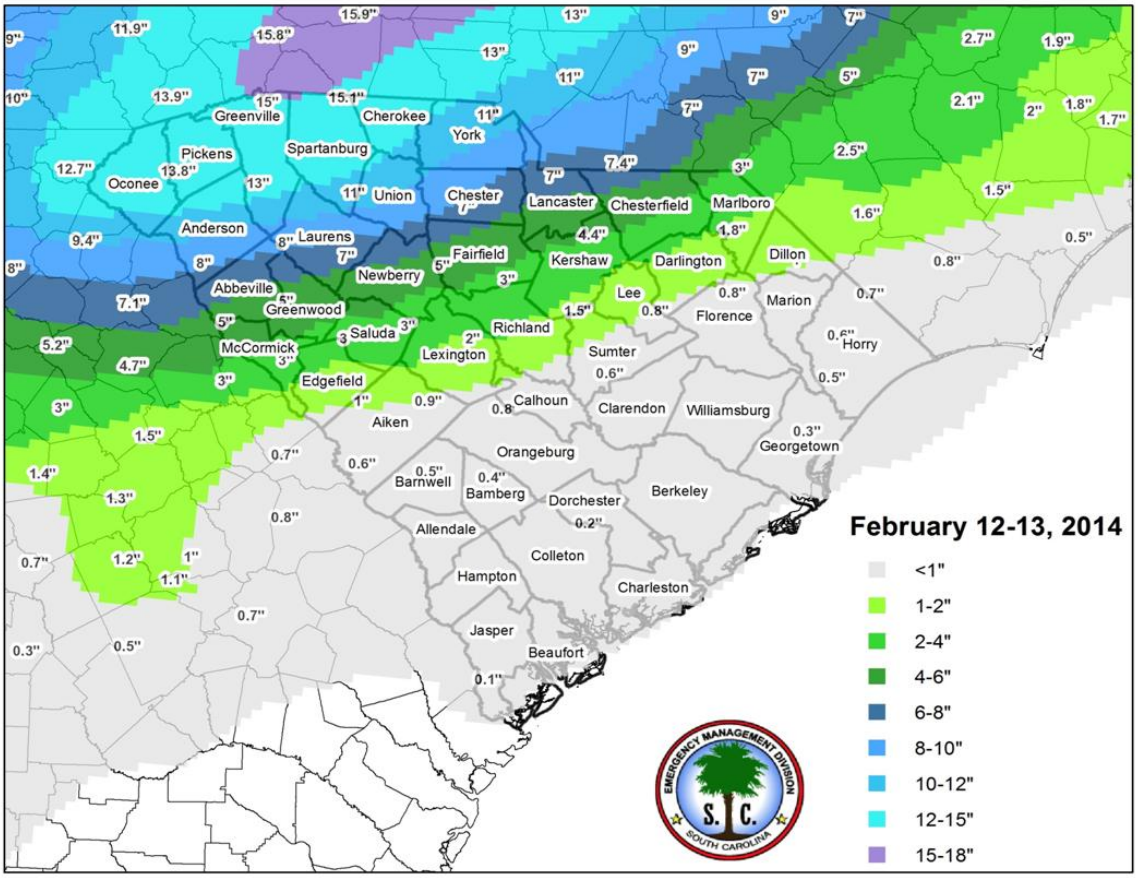

Figure 13. Observed Snow Totals February 13, 2014. Map courtesy of South Carolina Emergency Management Division.

Table 2: Snowfall totals (in.):

Clover	10	York	3.8
Pageland	9	Chester	3.5
Lancaster	8	Hartsville	3
Heath Springs	8	Dovesville	3
Mauldin	7.5	Lake View	3
Tega Cay	7	Inman	3
Rock Hill	6.5	South Of The Border	2.5
Lake Wylie	6.2	Taylors	2.5
GSP Airport	6.1	Westminster	2.5
Winnsboro	6	Spartanburg	2.5
Newberry	6	Fort Mill	2.5
Laurens	6	N York	2.5
Greenwood	5.5	Greenville	2
Chesterfield	5	Clemson	1.3
Cheraw	5	Simpsonville	1.1
Mountain Rest	4.5	Walhalla	1
Chesterfield	4	Nine Times	1
Columbia	4	Williamston	0.8
Seneca	4	Inman	0.8
Woodruff	4	Darlington	0.5

ACKNOWLEDGEMENTS:

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- National Weather Service Office, Columbia, South Carolina
- National Weather Service Office, Greenville-Spartanburg, South Carolina
- National Weather Service Office, Wilmington, North Carolina

Additional sources used for this report included the South Carolina Emergency Management Division and The State newspaper.