

Northeast U.S. Winter Storm

14-15 February, 2015

By: Sean Ryan, WPC Meteorologist

Meteorological Overview:

One winter storm in a series of major winter storms to affect the northeastern U.S. occurred on 14-15 February, 2015. Prior to this event, much of the northeastern U.S. already had 2 to 3 feet of snow on the ground. This event would produce another 1 to 2 feet of snow in many areas, particularly across southeastern New England, along with wind gusts exceeding 60 mph in some instances.

Early on 14 February, a vigorous 500 hPa low and the associated surface low pressure system moved across southern Ontario and the lower Great Lakes. At this time, the system produced light to moderate snowfall accumulations across these areas. As the system reached the Appalachians and Mid-Atlantic states, the surface low over southeastern Ontario began to weaken as a new surface low quickly developed over the Delmarva region around 00 UTC on 15 February. The 500 hPa trough became negatively tilted and eventually developed a closed circulation as it crossed the Northeast early on 15 February. As this occurred the offshore surface low rapidly deepened from 990 hPa at 06 UTC to 978 hPa at 12 UTC on 15 February. As the upper-level trough acquired a negative tilt the surface low also wrapped back westward toward the New England coast for a period of several hours before resuming its northeastward motion. This “loop” in the surface low track back toward the coastline during a period of rapid intensification resulted in a prolonged period of heavy snow across southeastern New England. Snow came to an end across southern New England by midday on 15 February, but persisted across Maine until early evening. Additionally, lake effect snows occurred downwind of Lake Erie and Lake Ontario as surface winds turned west-northwesterly as the coastal low pressure system developed and moved northeastward.

Snowfall totals of 6 inches or more fell across much of southeastern New England from Rhode Island and eastern Connecticut north to southern Maine. Snowfall totals of 16 to 22 inches fell over eastern portions of Massachusetts, in the vicinities of Boston and Plymouth. Heavy snow also fell across the far eastern tip of Maine, where 1 to 2 feet were common. The highest snowfall total of the storm also occurred in this area, with 25.4 inches reported near Robbinston, Maine. In addition to the heavy snow, strong winds occurred across much of the Mid-Atlantic and Northeast as the surface low rapidly intensified offshore. Wind gusts in excess of 50 to 60 mph were common, with gusts in excess of 60 mph reported across coastal areas of the Mid-Atlantic and Northeast.

Impacts:

This was the second major snowstorm to strike the same areas of the Northeast in less than one week. Some areas of eastern Massachusetts received a combined three feet of snow from the two storms. Such heavy snowfall amounts in a short time span resulted in dangerous roof collapses. Difficulty removing the excessive snowfall accumulations from roadways resulted in many businesses remaining closed for days. At least 1900 flights were cancelled across the Northeast, with some airports such as Boston Logan Airport nearly ceasing operations during the height of the storm.

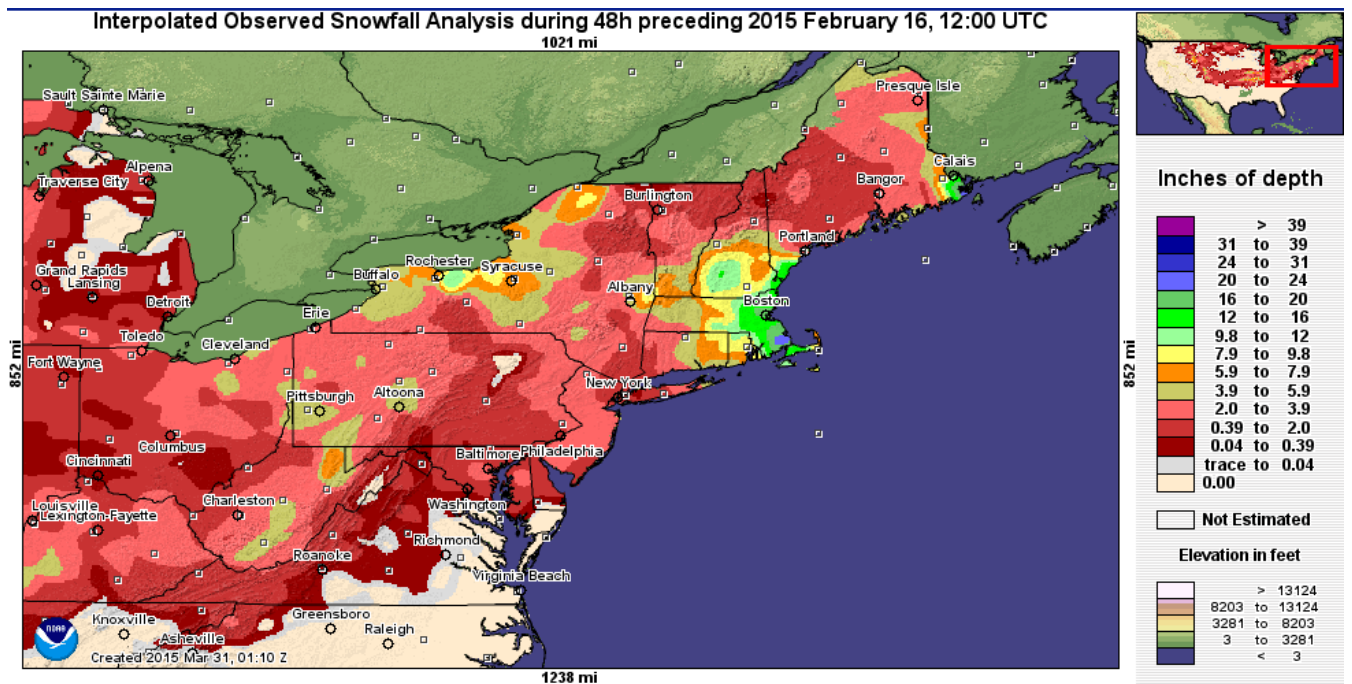


Figure 1: Total accumulated snowfall for the 48 hour period ending at 12 UTC on 16 February.

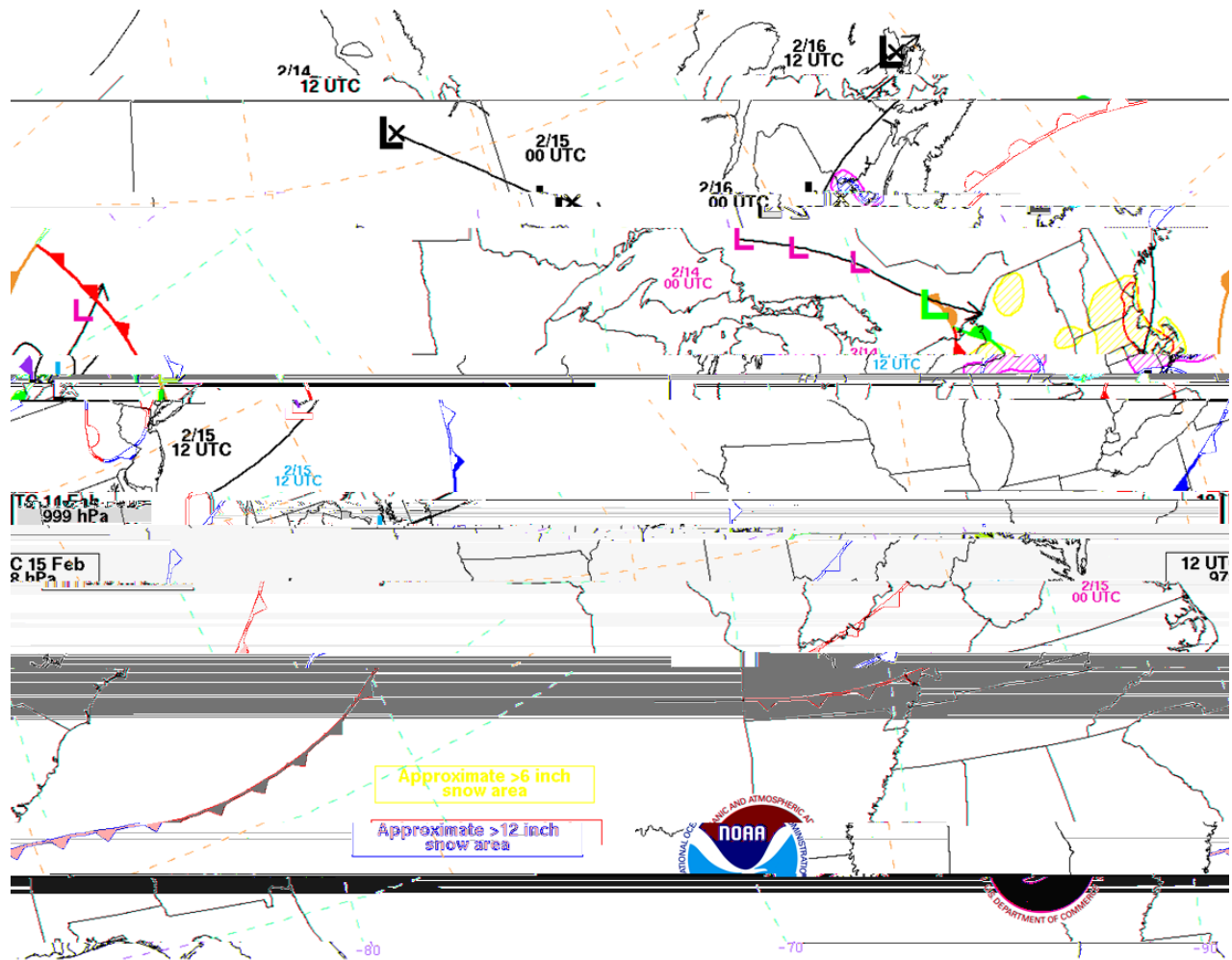


Figure 2: 500 hPa low (black L) track, surface low (blue) track, area of 6 inch (magenta) and 12 inch (blue) or greater snowfall (magenta) from 14-16 January, 2015.