

Northeast U.S. Winter Storm

February 9 - 10, 2017

By: Allison Santorelli, WPC meteorologist

Meteorological Overview:

A quick moving, yet intense, storm brought heavy snowfall and blizzard conditions to portions of the Northeast U.S. between 9 - 10 February, 2017. A strong cold front moved through the Northeast on 8 February, with sections of eastern New York and New Jersey seeing afternoon high temperatures near 60 degrees Fahrenheit prior to its passage. By the next day however, high temperatures struggled to get above 30 degrees Fahrenheit with heavy snow and blizzard conditions.

Around the same time that the strong cold front was ushering very cold air into the Northeast, an upper level shortwave was intensifying as it moved eastward across the middle Mississippi and Tennessee Valleys (Figure 1). Initially, this produced light to moderate snowfall, generally less than 6", across portions of the Ohio Valley (Figure 2). Meanwhile, the energy at the base of this trough interacted with the cold front and a wave of low pressure formed along the boundary in the Mid-Atlantic. Moderate to heavy snowfall spread eastward into northern portions of the Mid-Atlantic and eventually the Northeast by 12 UTC on 9 February.

This low pressure center rapidly deepened as it moved up the Northeast coast on 9 February 2017, with the central pressure dropping more than 24 hPa in 24 hours, undergoing what can be referred to as "bombogenesis". A strong baroclinic zone in the lower levels combined with favorable upper level divergence also helped to intensify snowfall across the Northeast on 9 February, with several reports across New York and southern New England of snowfall rates as high as 4 inches per hour, very low visibility, blizzard conditions, and even thundersnow. Heavy snow continued spreading northward along the New England Coast on 9 February before coming to an end across eastern Maine by 06 UTC 10 February.

Despite the short duration, this storm produced some remarkable snowfall accumulations across much of the Northeast with totals ranging from 4 inches to almost 2 feet (Figure 2). The heaviest snow fell from southeast New York to far southern New Hampshire, as well as parts of DownEast Maine where much of this region saw greater than a foot of snow. The highest reported total from this storm was 24 inches near Cooper, Maine. In addition to heavy snows, the rapidly deepening cyclone brought gusty winds in excess of 50 or 60 miles per hour, which resulted in hazardous blizzard conditions. Coastal flooding was also a concern, especially along the New England coast.

Impacts:

The winter storm of 9-10 February, 2017 was rated a Category 1 on the Regional Snowfall Index (RSI) scale, with a value of 2.154. The storm affected a total of over 60 million people. Long lasting blizzard conditions and intense snowfall resulted in major disruptions to travel with numerous delays and cancellations at airports all across the Northeast. Boston reported over 4 hours of blizzard conditions as the visibility at Logan Airport dropped to just 1/16 of a mile. Power outages were common as heavy snow weighed down tree branches, and area schools and businesses were closed. Both Philadelphia and Boston declared snow emergencies. This storm was ranked the fourth heaviest calendar day snowfall at Hartford-Bradley airport in Connecticut and can also be blamed for at least one fatality in Manhattan, New York City when a doorman slipped on ice and fell through a glass window while shoveling snow.

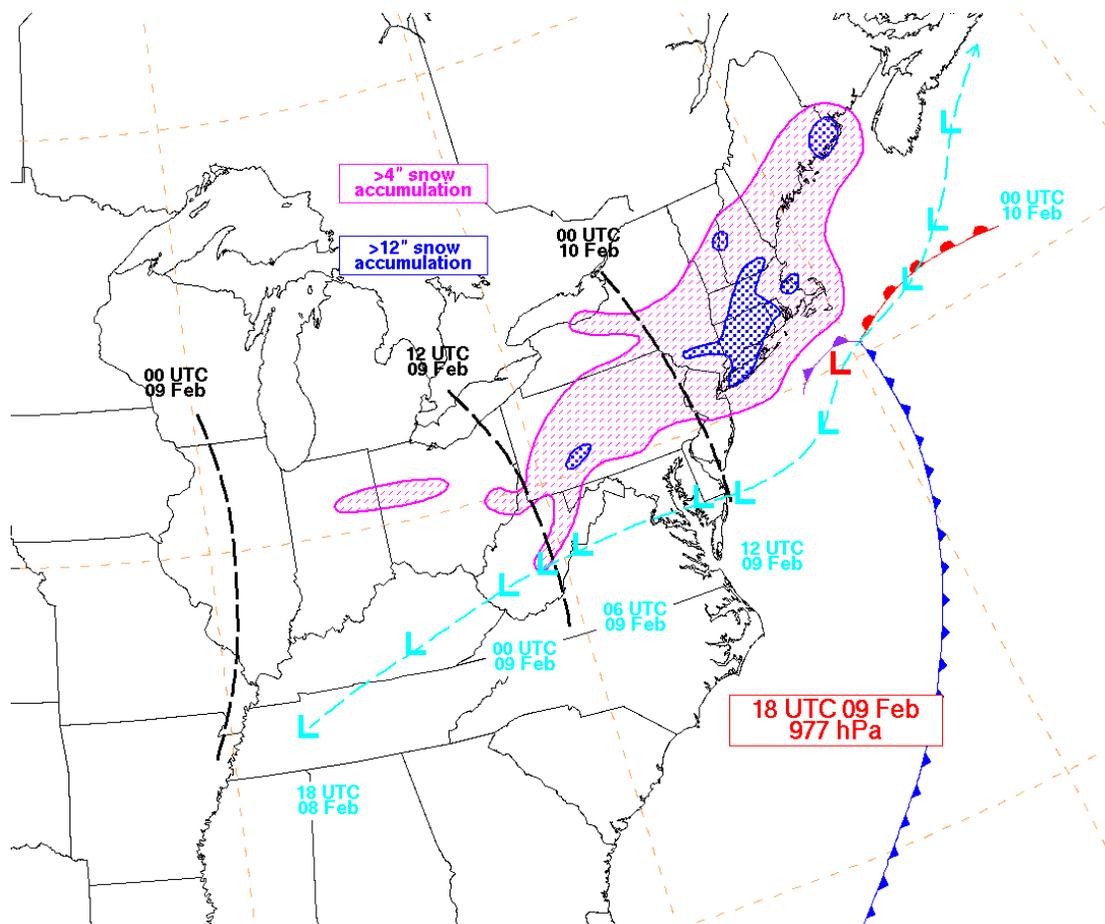


Figure 1: 500 hPa shortwave track (black), surface low track (cyan), approximate snow accumulations greater than 4 inches (pink) and 12 inches (blue), and frontal position at 18 UTC on 9 February.

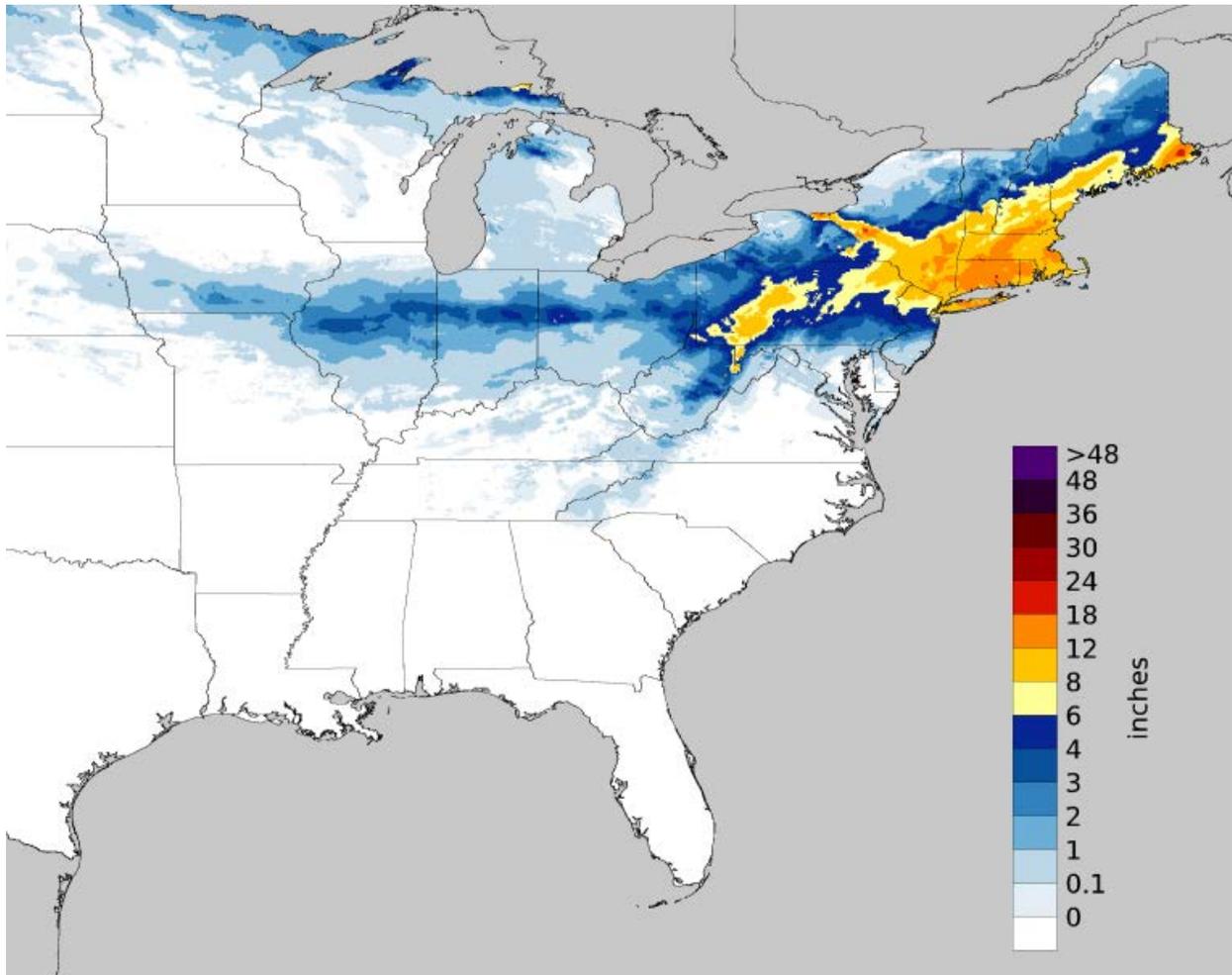


Figure 2: 48 hour total accumulated snowfall valid from 12 UTC 8 February to 12 UTC 10 February, 2017 (courtesy of NOHRSC).