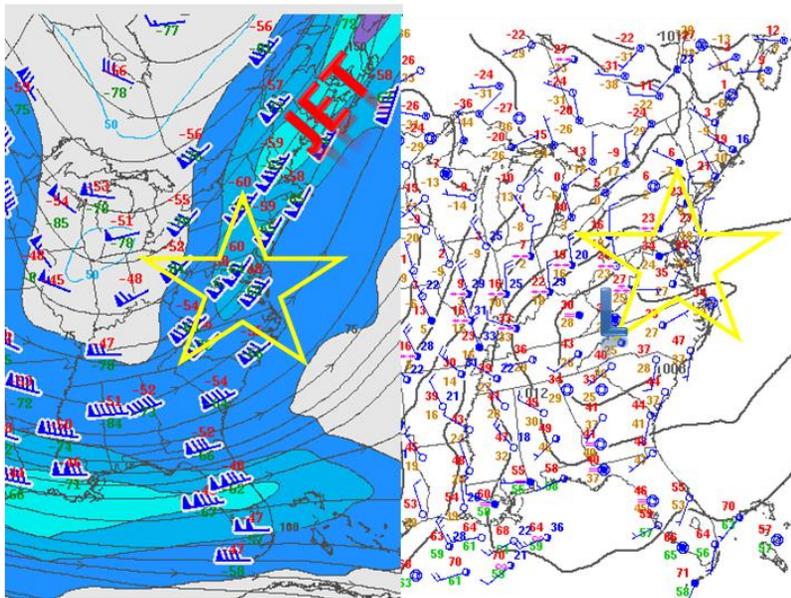


January 21, 2014 Winter Storm

By Heather Sheffield, General Forecaster

The snow forecast quickly escalated 36 hours prior to the first snowflakes on Tuesday, January 21, 2014. Model Guidance over the weekend and prior to the event became snowier with each model run and consistency led to the issuance of a Winter Storm Warning on Monday, January 20, 2014.

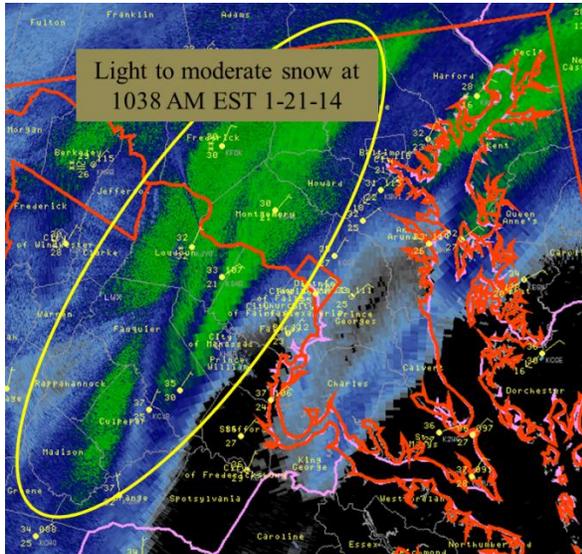
An upper trough was located across the eastern half of the United States. The storm track leading up to this event featured numerous waves of low pressure, called Alberta clippers, diving southeastward around the upper trough from central Canada into the mid-Atlantic region. Alberta clippers typically produce little precipitation since they originate from central Canada- a region without a large source of moisture. However, the one Alberta clipper that moved into the Northern Plains on the Monday afternoon of January 20 was able to tap into deeper moisture from the Gulf of Mexico and Atlantic Ocean as low pressure rapidly developed in the Mid-Atlantic States on Tuesday. The strengthening of low pressure occurred in response to the position of several jet streaks in the upper levels of the troposphere- one over the northern Gulf Coast and another over New England (image below). An arctic cold front dropped southward into the region Tuesday morning, allowing cold air to sink southward into the region and precipitation with this event to be snow.



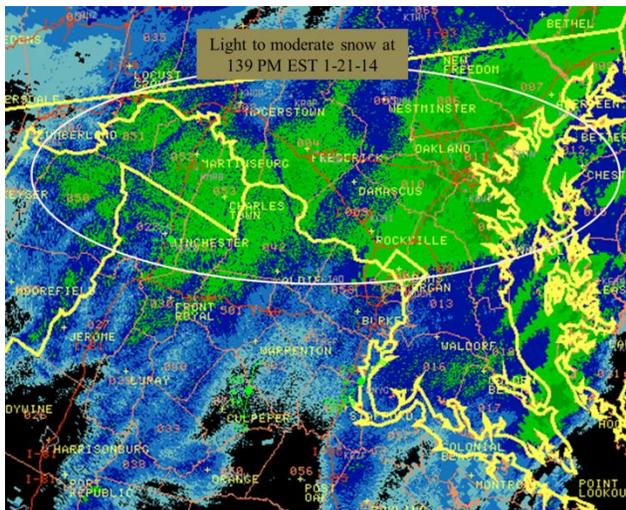
12Z 300mb Upper Air Obs and 12Z Surface Analysis

Snow began to move over the Potomac Highlands early Tuesday morning. Reagan National Airport and Southern Maryland were in the upper 30s around sunrise Tuesday morning. Temperatures just before the snow arrived were above freezing across the greater Baltimore and

DC metropolitan area due to light easterly surface flow and abundant cloud cover on Monday night, but quickly dropped once snow started to fall (note: temperatures at the NWS forecast office in Sterling, VA drop 5 degrees in 15 minutes at the onset). Snow that started to fall in DC was able to wet the ground initially, limiting accumulations on the roadways.



In the early afternoon Tuesday, radar was depicting light to moderate snow remaining across northern Virginia, DC and northern Maryland, where there were reports of 3". Meteorologists on shift at the office noted how the visibility and snow had been falling for hours with little accumulation (only 1 inch as of 1 PM EST). Strong mid-level winds may have caused the snowflakes to destruct as they fell causing them to be so tiny.



Low pressure moved off the North Carolina coast by late Tuesday afternoon as the shortwave trough moved over the Appalachian Mountains. Snow in association with the shortwave trough began to move into Central Virginia. Further north, a front in the mid levels of the troposphere

was the focus for light to moderate snow across the northern Mid Atlantic. Moderate bands with snowfall rates of 1" per hour were reported for several hours, bringing additional accumulation through the evening. The back edge of the snow became evident in the evening and Winter Storm Warnings were dropped from west to east. Snow began to wrap around the departing surface low and southern Maryland received their accumulation in the evening. This winter storm broke the record for the longest stretch of consecutive days without seeing 2 inches of snow at Reagan National Airport. It also broke daily snowfall records at all three major airports for January 21: Dulles International (8.5), Reagan National (3.8) and Baltimore-Washington International (5.1). The previous records were 2.0 (1982), 3.8 (1982) and 3.2 (2001) respectively.