



DC Winters

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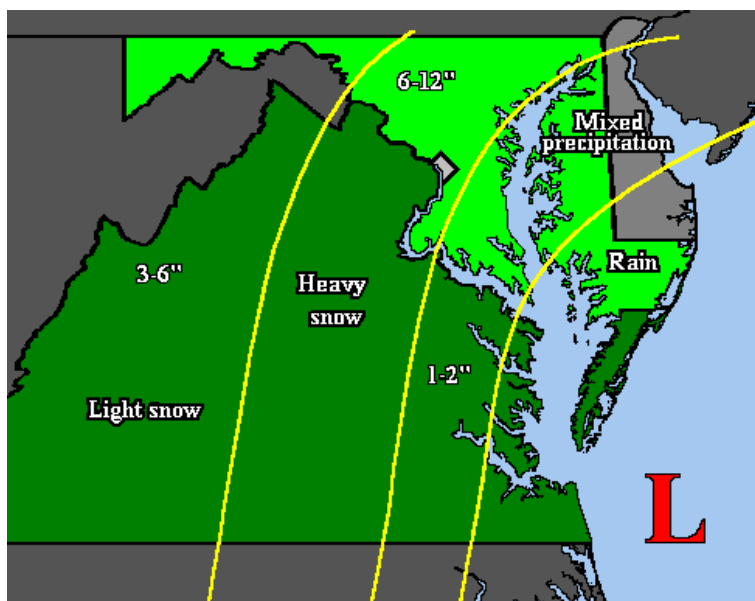
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Mid Atlantic Winters

Snow, Wind, Ice and Cold

Washington's biggest winter storms are the great "Nor'easters". They get their name from the powerful northeast winds they produce. In order for a nor'easter to give Washington a large amount of snow, there must first be a source of cold air. High pressure builds over New England. The high's arctic air mass spreads south into the Washington area. The dense, cold air tries to move west over the Appalachian Mountains, but it can not. It remains trapped on the east side funneling south over the coastal plain. East of the arctic air lies the warm water of the Gulf Stream. The contrast of the cold air sinking into the Carolinas and warm air off the Carolina Coast creates a breeding ground for storms. Combine the strong temperature contrast with other meteorological conditions such as the right position of the jet stream, and a storm's development can become "explosive" (a sudden, rapid intensification; a dramatic drop in the central pressure of the storm). Some meteorologists refer to this as a "bomb".

For a good nor'easter to develop, the jet stream usually enters the West Coast of the US and splits. The north branch of the jet stream crosses over the northern Rockies and Canada. It supports the southward sinking cold air. The southern branch dips down to the Gulf Coast states, then turns northeast across Virginia and rejoins the north branch near Newfoundland. The south branch of the jet stream carries a disturbance from the Gulf Coast to the Carolina Coast where it intensifies into a storm. Winds around the storm carry warm, moist air from over the ocean, inland. The air rises up and over the arctic air on the coastal plain. It cools and snow begins. The storm's exact track and speed become critical in properly forecasting and warning for heavy snow across the greater Washington Metropolitan area. It is quite common for the rain-snow line to fall right over the District.



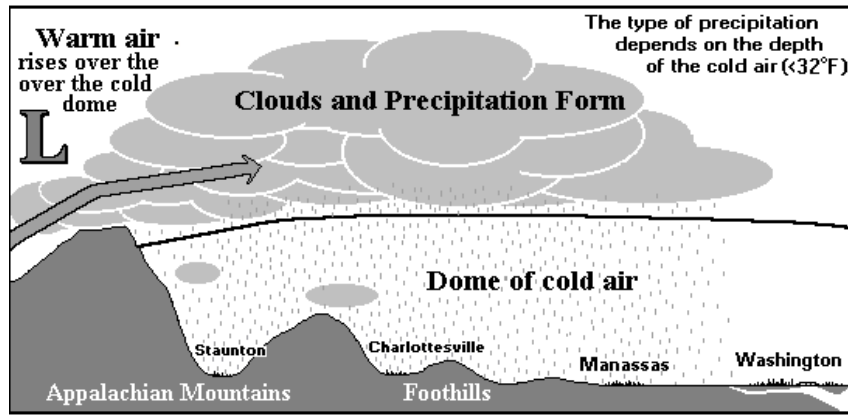
Heavy snow generally occurs in a narrow 50 mile-wide band about 150 miles northwest of the low pressure center (represented as an "L" on the diagram to the left). However, air rising up into the mountains may intensify snowfall there and broaden the area of heavy snow. Closer to the low, the warm ocean air changes the precipitation over to sleet, freezing rain, and eventually rain. If the forecasted storm track is off by just a little bit, it may mean the difference between heavy rain, freezing rain or sleet (marked as mixed precipitation in the diagram), and a foot or more of snow.

Winds around the storm become intense. Inland, a blizzard may be brewing with visibility near zero in blowing and falling snow and winds gusting over 35 mph. On the coast, even stronger northeast winds blow near the storm's center. Large waves rack the coast and erode the beaches. Sometimes water piles inland causing major coastal flooding. Unlike a hurricane which usually comes and

goes within one tidal cycle, the nor'easter can linger through several tides. Each tide piles more and more water on shore and into the bays and takes more and more sand away.

Perhaps the strongest nor'easter of this century struck on March 5-9, 1962. It is known as the Ash Wednesday Storm. It caused over \$200 million (1962 dollars) in property damage and major coastal erosion from North Carolina to Long Island, NY. In New Jersey alone, it was estimated to have destroyed or greatly damaged 45,000 homes. The Red Cross recorded that the storm killed 40 people. It hit during "Spring Tide." When the sun and moon are in phase, they produce a higher than normal astronomical tide. Water reached nine feet at Norfolk (flooding begins around five feet). Houses were toppled into the ocean and boardwalks were broken and twisted. The islands of Chincoteague and Assateague were completely underwater. Ocean City, Maryland sustained major damage especially to the south end of the island. Winds up to 70 mph built 40-foot waves at sea. Heavy snow fell in the Appalachian Mountains. Big Meadows, southeast of Luray, recorded Virginia's greatest 24-hour snowfall with 33 inches and the greatest single storm snowfall with 42 inches. Nearly two feet of snow fell from Charlottesville (21 inches) to Luray (24 inches) to Winchester (22 inches). Roads were blocked and electrical service was out for several days. Washington fell into the mixed precipitation zone.

During January and February of 1994, the Washington region was struck by a series of ice storms. This area had been long over due, but it was unprecedented to have several ice storms occur one after the other. Ice storms are more common in the valleys and foothills just east of the Appalachian Mountains than in Washington and southern Maryland. Utility company records show the frequency with which wires have fallen due to ice and needed repairing. The set up for an ice storm is similar to that for snow. High pressure sits over New England and cold dry air slides south across the Washington region. The cold air tries to push west but can not rise over the mountains. It becomes trapped on the east side. This is called "cold air damming". A storm moves northeast from the



southern plains or Gulf Coast region. Instead of passing south and east of Washington, it moves up the west slopes of the mountains. Warm, moist air rises over the mountains and the trapped cold air on the east side. Precipitation begins (See diagram).

The type of precipitation depends on the depth of the cold air. At first it is often deep enough for snow, but the warm air associated with the nearing storm erodes the cold air to the east of the mountains. The cold air mass gets shallower and shallower. Soon it is no longer snow, but rain, falling into cold air (below 32° F). The rain droplets freeze into small ice pellets known

as sleet. When sleet hits the ground, it bounces and does not stick to objects. Therefore, sleet is generally considered no more than a nuisance. However, in February 1994, a winter storm dumped several inches of sleet over the Frederick area -- enough to cause considerable problems on roadways.

Eventually, the cold air mass is so shallow that the rain does not freeze until it hits the ground. Any object with a temperature below 32° F will suddenly find a glaze of ice accumulating on it. This is known as freezing rain and is very dangerous. The glaze of ice on roadways and walkways is treacherous. As ice accumulates on trees and wires, the weight eventually causes them to break, knocking out power and phone service. Sometimes, so much ice can accumulate that structural damage occurs to buildings and communication towers collapse under its weight. After a horrific ice storm struck on February 10-11, 1994, portions of Southern Maryland and central Virginia were without power for a week from ice laden trees and wires falling.

Other types of weather systems generally bring only 1 to 4 inches of snow to the Washington Metropolitan area. These storms include the "Alberta Clipper," a fast moving storm from the Alberta, Canada region, and cold fronts sweeping through from the west. However, there are exceptions. On January 9, 1996, an unusually strong Alberta Clipper passed through the metro area. This was only a day after snow had ended from a great nor'easter which dropped up to 2 feet on portions of the greater Washington area. While Virginia and western Maryland saw only a trace to an inch of snow from the clipper, the District and areas northeast to Baltimore received 4 to 5 inches of fresh snow. The snow caused plows to move away from clearing secondary roads and residential areas and go back to plowing the main arteries and emergency routes. For more details, see the Blizzard of 1996.

Records go back a long time in the Washington area, thanks to early record keeping by weather observers such as Benjamin Franklin, George Washington and Thomas Jefferson. Listed below are just some of the historic winter storms to impact the region.

Washington's Historic Winter Storms and Cold Waves

January 28, 1772: This storm was named the Washington and Jefferson Snow Storm since both of their diaries recorded it. The storm left 36 inches of snow (3 feet) in central and northern Virginia and the Washington area. Official weather records did not begin until after the Civil War. Therefore, this storm is not listed as the record, but it was the largest snow for this area ever noted.

Winter of 1779-1780: This winter was so cold that ice was piled 20 feet high along the Virginia Coast and stayed there until spring! The upper portion of the Chesapeake Bay was frozen allowing people to walk from Annapolis to Kent Island, Maryland. In March, a regiment of the Virginia Infantry marched from Falmouth to Fredericksburg. They walked across ice on the Rappahannock River which had been frozen since the previous November.

January 16-18, 1857: This was the great blizzard and freeze. More than a foot of snow fell with temperatures near zero. Strong winds caused structural damage on land and wrecked ships at sea. Great drifts blocked transportation through the state. Richmond was cut off from Washington for seven days. Norfolk was buried under 20 foot drifts of snow! The cold became so extreme that all Virginia rivers were frozen over. The Chesapeake Bay was solid ice a mile and a half out from its coastline. At Cape Henry (at the mouth of the Chesapeake), one could walk out 100 yards from the lighthouse on the frozen ocean.

January 21, 1863: A severe coastal storm dropped heavy rains on the Fredericksburg area. It disrupted the Union Army offensive operation in the ill-famed "Mud March".

December 1880: Parts of western and central Maryland received nearly two feet of snow which aided in plummeting temperatures. The coldest temperatures occurred between December 30, 1880, and January 1, 1881. Baltimore dropped to -6° F, Emmitsburg -19° F, Woodstock (Howard County) -17° F, and Northwest Washington, DC was -15° F.

March 11-13, 1888: The Blizzard of '88 was also known as the White Hurricane. The storm began in Washington the morning of March 11 and by evening, the city and surrounding area was an ice-entangled mess with fallen tree limbs, electric lines and downed telegraph poles. The city was completely blacked out with the exception of a few gas lights. On the morning of the 12th, people arose to find a half foot of snow and ice blanketing the city. Winds blew up to 48 mph taking down any utility poles left standing. All communication was cut off to the outside world. It took a week to restore the links and for Washington to find out that Baltimore and New York had been hit even harder. By storm's end, New York was buried under 21 inches of snow. Temperatures had been in the single digits and teens and the wind roared at 35 mph with gusts up to 75 mph blowing drifts to 20 feet deep burying some homes and buildings.

The strong northwest winds behind the storm blew so hard that they emptied the Tidal Potomac. Boat builders said that low tide was five feet below normal. Only a small channel down the middle of the river contained water that soon froze. Dust was seen blowing along the dried out riverbed! In Baltimore, the low tides grounded ships at their docks. Without telegraph, officials reverted to sending messages by signal lamps from one old watch tower to another. On the Chesapeake Bay, the water was at its lowest tide on record preventing ships from sailing up it. Most of the craft that were on the bay were driven to shore in the winds causing serious damage or

complete loss. At least 40 mariners died, most of which were on oyster dredges that either capsized or were thrown onto the shore. On the coast of Maryland and Virginia, there was flooding that submerged an entire island washing away a large herd of cattle that had been wintering there.

February 1899: The Great Arctic Outbreak of '99 and the Great Eastern Blizzard of '99 occurred this month. A snowstorm struck the Washington area on February 8 dumping 14 inches of snow. Extreme cold settled in behind the storm. Quantico recorded a record low of -20° F and Washington, DC recorded -15° F. The blizzard struck on Valentine's Day dropping 21 inches in Washington and Baltimore. Winds drove the snow into 10 foot drifts. These blocked transportation lines into the city causing a major coal shortage that resulted in rationing. Food was also rationed, though not as severely as the coal. The storm had given Washington a snow depth of 34 inches (almost 3 feet) and the city recorded its greatest monthly snow total with 35.2 inches. Its greatest seasonal snowfall total was reached that season with 54.4 inches. Warrenton recorded 54 inches (four and a half feet) just during the month of February, setting a state record for monthly snowfall. That winter (1898-1899) was so cold over a large part of the US that ice flowed from the Mississippi River into the Gulf of Mexico! The only other time that this has been seen was on February 13, 1784, when ice flows blocked the Mississippi River at New Orleans and then passed into the Gulf of Mexico.

March-April, 1907: On March 22, the temperature reached 90° F in Northwest Washington, DC and 88° F in College Park. The next day, DC recorded 93° F and on the 29th 90° F again. The average temperature for the last 10 days of March was 62° F. By April 2, the minimum temperature fell to 23° F and for the first 22 days of the month, the temperature averaged only 44° F. The cool spell continued through May and June.

January 13-14, 1912 Cold Wave: A record cold wave settled in over the state. On January 13, Oakland, in western Maryland's Garrett County, recorded the state's *all time record low* temperature of -40° F. On the 14th, College Park reported -26° F, Hagerstown -27° F, Frederick -21° F, Laurel -19° F and Tacoma Park -8° F.

March 29, 1921: In Washington, an early spring abruptly ended when a cold front passed through. On March 28, it was 82° F at noon in Washington. The temperature fell to 26° F by the morning of the 29th: a fall of 56° F in less than 24 hours. In College Park, the temperature fell from 83° F to 25° F and reached a minimum of 20° F on the 30th. The warm temperatures early in the year caused an early bloom on the fruit trees in the state. The sudden downfall of temperatures in early April caused great damage to the crop for the year.

January 28, 1922: Exactly 150 years after the Washington and Jefferson Storm came the deepest snow of this century to hit parts of Virginia. This storm is listed as the record. A band of heavy snow stretched across Richmond (19 inches), Washington, DC (28 inches), and Baltimore (25 inches) immobilizing the region. The weight of the snow was too much for the Knickerbocker Theater on 18th Street and Columbia in Northwest Washington, DC. The roof of the theater collapsed taking the balcony down with it and crushing nearly 100 people to death. The storm is known historically as the Knickerbocker Storm.

April 1, 1924: This April Fools Day Storm produced the latest recorded major snowfall (4 or more inches). Baltimore recorded over 9 inches of snow and Washington received 5 inches. The latest snow ever recorded at Baltimore was a trace on May 9, 1923. In Washington, the latest snow was seen on May 10, 1906, when a trace fell.

February 7, 1936: Over 14 inches of snow fell in the Washington area in a heavy snow band that stretched from the Virginia mountains across southern Washington, southern Maryland and the Lower Eastern Shore where 12 to 18 inches of snow fell. The heavy snow helped to set up the Great Spring Flood of March 1936, on the Potomac River. It was one of Washington's worst floods.

March 29-30, 1942: The Palm Sunday Snowstorm was another seasonal late comer. Baltimore received its greatest snow in 20 years with 22 inches measured. Washington recorded 12 inches. Hagerstown recorded 22 inches in 24 hours.

November 6-7, 1953: This is the earliest recorded major snowfall (4 or more inches) with 5.9 inches recorded in Baltimore. The earliest measurable snowfall in both Baltimore and Washington, DC was 0.3 inches on October 10, 1979, during the World Series. Trace amounts in Baltimore also fell on October 9, 1895, and 1903, and in Washington on Oct. 5, 1892.

February 15-16, 1958: Over 14 inches of snow fell in the Washington area. Another nor'easter struck on March 21, but the heavy snow fell northeast of Washington. With the March storm, Westminster had 28 inches of snow on the ground and a total of 42 inches for the month.

January 30-31, 1966: A blizzard struck Washington and the Northeast US. One to two feet of snow covered a large part of Virginia and Maryland: Fredericksburg - 15.5 inches; Manassas - 13 inches; Washington - 14 inches (added to a previous snow, the depth on the ground came to 20 inches); and Baltimore - 12 inches. Intense blowing and drifting snow continued and kept roads closed for several more days crippling transportation lines and causing a food shortage and rationing.

January 1977: The Bicentennial Winter was the coldest seen on the East Coast since before the founding of the republic. In Washington, the snow began on January 4, just as the Carter Administration was moving into town. New storms dropped a few more inches every few days to put a fresh coating on the streets that were just clearing from the previous storm. It gave a clean look to the piles of dirty snow that were accumulating along roadways and in parking lots. The Tidal Potomac (salt water) froze solid, enough that people could skate across it near the Memorial Bridge. The average temperature in Washington for the month of January was 25.4° F which was the coldest since 1856 when the temperature averaged 21.4° F. The normal January average temperature for Washington is 34.6° F. The prolonged cold wave caused oil and natural gas shortages. President Carter asked people to turn thermostats down to conserve energy. Washington did not see the heavy snow that the Great Lake region experienced that winter. Cold winds blowing across the warm lakes brought 68 inches of snow to Buffalo, NY. Washington recorded 10 inches of snow in January, but none fell the rest of the winter ending it 5.5 inches below normal. The cold wave penetrated into the South. On January 19, snowflakes were seen in Miami, Florida!

February 18-19, 1979: The Presidents Day Storm was considered the worst storm in 57 years to strike the Washington area. Snow depths from the storm were up to 20 inches over Northern Virginia and Maryland. At times, snow was falling 2 to 3 inches per hour and temperatures were in the single digits to teens. Huge tractors and other farm machinery had been driven to the Mall in DC to protest for higher agricultural pricing. When the storm hit, the farmers used their equipment to help the locals dig out of the nearly two feet of snow. Four deaths occurred in Virginia, which were attributed to heart attacks due to stress from overexertion during and after the storm, and 18 injuries occurred from falls on ice.

February 11-12, 1983: This storm beat the Presidents Day Storm and was the second greatest snowfall of record for the Washington area. It covered an unusually large portion of Virginia and Maryland with more than a foot of snow. The storm set a new 24 hour snowfall record in Lynchburg, Virginia, with 14.6 inches, Roanoke with 18.6 inches and Baltimore, Maryland with 22.8 inches. Parts of Northern Virginia measured as much as 30 inches on the ground. Washington, DC officially recorded 17 inches at National Airport, but

2 feet of snow fell in surrounding suburbs. Winds gusted over 25 mph all day on February 11 causing drifts up to five feet. The heavy snow and winds paralyzed the region. The cost of clearing the snow from Virginia roads came to \$9 million.

November 11, 1987: The Veteran's Day Storm will not be forgotten by many Washington travelers. Almost a foot (11.5 inches) fell at National Airport. Prince Georges County, MD was hard hit with up to 13 inches of snow falling in a short amount of time. It caught motorists off guard and stranded cars on the Capitol Beltway. There were so many cars that snow plows could not get through to open the clogged arteries. Cars littered the roadway for more than 24 hours. The event precipitated the development of the Washington Metropolitan Area Snow Plan to facilitate preparedness and response to future storms.

This storm struck before the days of lightning detection networks and Doppler weather radar. When thunderstorms began dumping heavy snow over the Fredericksburg VA, forecasters had no idea. The storm moved northeast across the southern Metropolitan area (Prince Georges County). It was not until the fast accumulating snow hit Camp Springs, where at the time the Weather Forecast Office was located, did forecasters realize what was happening.

March 13-14, 1993: The Superstorm of March '93 had a large area of impact that went all the way from Florida and Alabama north through New England. The storm was blamed for some 200 deaths and cost two billion dollars to repair damages and remove snow. In Florida, the storm produced an ocean surge of 9 to 12 feet that killed 11 people on the panhandle (more deaths than the storm surge from Hurricanes Hugo and Andrew) and it spawned 11 tornadoes. In a large swath from Alabama to New England, it dropped over a foot of snow. In the Mid Atlantic region, weather stations recorded their lowest pressure ever as the storm's center passed.

The March 1993 storm was not "the storm of the century" for Washington. Washington had seen greater snowfall and more damage by past storms. The Washington area saw 8 inches to the southeast of the city, 13 inches in the District and within the beltway, and 18 inches north and west of the city in Loudoun, Frederick and portions of Montgomery Counties. Unlike most winter storms that along up the coast, this storm took a more inland track across Richmond and the Chesapeake Bay. Extreme southwest Virginia saw 30 to 42 inches of snow where some roofs collapsed under the weight of the snow. Winds produced blizzard conditions over portions of northern Virginia and central and western Maryland with snow drifts up to 12 feet! Interstates shut down. Shelters opened for nearly 4000 stranded travelers and those that left without heat and electricity. The National Guard was called to help with emergency transport and critical snow removal. Eleven people died in Virginia, one in the District, and one in Maryland during and immediately following the storm. The deaths were mainly from heart attacks brought on by overexertion while shoveling snow or from exposure and hypothermia. Snow removal and clean-up costs were estimated at \$16 million in Virginia, \$22 million in Maryland, and \$500,000 in the District of Columbia.

January-February, 1994: These two months saw an unusual assault of ice storms on the Washington area. It began in mid January with an arctic blast that sent temperatures below zero over northern Virginia and western and central Maryland for a couple of mornings. The sudden cold wave shot up the use of electricity and natural gas. The effect was over such a large portion of the Eastern US that the power companies went into rolling black outs so as not to lose the grid entirely and requested people to conserve energy.

Between mid January and mid February, about a dozen storms hit dropping snow, sleet, and freezing rain. The most devastating storm struck February 10-11 leaving a coat of ice, one to three inches thick, from freezing rain and sleet! The hardest hit was an area from near Fredericksburg across southern Maryland and Annapolis. Some counties lost 10 percent of their trees from the heavy ice. Roads were blocked and impassable. Electric and phone lines were down with as much as 90 percent of the area's people without power. Even with help from out-of-state utility companies, many people were without power for a week. A presidential disaster declaration was given. Damages were estimated at near 100 million dollars for the region. There were numerous injuries from automobile accidents and people falling on ice. It was likely the iciest winter the Washington area has ever seen.

January 7-13, 1996: The Blizzard of '96 or the Great Furlough Storm began early on Sunday, January 7. Just two days earlier, an impasse between a republican congress and a democratic president over the 1996 Federal Budget had finally come to an end. Many federal employees had been on furlough with government offices shut down for almost a month. Employees would finally return to work on Monday, January 8. However, mother nature did not cooperate. By Monday morning, Washington, DC was buried under 17 to 21 inches of snow. Thirty to 36 inches of snow fell over Frederick and western Loudoun Counties. Baltimore recorded over 22 inches and even Ocean City received 10 inches of snow. The entire region was paralyzed and the Federal Government remained shut down. As road crews worked hard to clear the snow, an "Alberta Clipper" shot through on Tuesday, January 9 dumping an additional 3 to 5 inches from Washington northeast through Baltimore. Plows that would have been working on secondary roads and residential areas were sent back to the primary roads. The government remained shut for 4 days that week and many schools and businesses announced their closure for the entire week. A third storm struck on Friday, January 12 dumping another 4 to 6 inches over the metro area. A maximum of 6 to 12 inches of snow fell over Frederick Counties. By the week's end, most of the Washington area was buried under 2 to 3 feet of snow! (See map shown above).

February 15-17, 2003: The weather map on Saturday the 15th showed high pressure over southwest Ontario with low pressure forming along the Oklahoma/Arkansas border. By Sunday morning that area of high pressure had strengthened and moved over southwest Quebec. This allowed a steady stream of cold air to flow down the east side of the Appalachian Mountains into the mid Atlantic region - all three major airports reported temperatures in the teens throughout the day. At the same time low pressure was moving from Alabama to a position just off the North Carolina/Virginia coast. The provided a steady stream of moisture to flow into the mid Atlantic states. By 4 am on the 16th heavy snow was being reported at all three major airports, reducing visibility to one quarter mile or less. The high pressure across Atlantic Canada helped to hold the low, a definite Nor'easter, in place, which allowed the snowfall to continue throughout the day. The snowfall finally abated during the morning of Monday the 17th - Presidents Day. Totals for the storm included 16.4" at DCA, 26.8" at BWI, and 21.7" at IAD. Many schools were closed for the entire week.

February 13-14, 2007: *The Valentine's Day Sleet Storm.* The weather map the morning of Tuesday the 13th showed low pressure strengthening over Arkansas, with a stationary front extending eastward across North Carolina. Temperatures in the NWS Sterling forecast area that morning were in the lower 30s. However, with high pressure over upstate New York, surface temperatures dropped below freezing by early afternoon on northerly winds. Of greater importance was what was happening to the temperature of the column of air up to 8000 feet above the surface. Weather balloon soundings taken every six hours at NWS Sterling showed that warm, above freezing air was flowing into the area on southwesterly winds between 5000 feet and 8000 feet. This was causing the snow falling from the clouds to melt, but as these drops descended further to refreeze prior to reaching the surface, forming sleet. East of Washington DC the column of subfreezing air was not as thick, and the drops remained liquid until they reached the surface, where they refroze on contact to form freezing rain. East of the Blue Ridge, sleet accumulated quickly on the morning of the 14th - Valentine's Day. Totals for the storm ranged from 4-8" of snow and sleet across northern Virginia and central Maryland, to up to ¾ inch of ice in southern Prince Georges County. Almost 69,000 homes lost power in Anne Arundel County. The days after the storm were of little help to road and power crews, as well as those trying to clear driveways, as temperatures remained subfreezing until the afternoon of the 17th.

December 18-19, 2009: On the morning of Friday, December 18th low pressure was located in the Gulf of Mexico near the Florida Panhandle. Cold high pressure was located over southern Quebec. By Friday evening the low moved off the North Carolina coast and underwent explosive intensification. Snow began at Dulles Airport around 730 pm Friday evening, and then continued through 11 pm on Saturday. By Sunday morning the low had moved east of Cape Cod.

The lowest snow total for the storm was 8-10" in southeast St. Mary's County. Everywhere else in the Sterling forecast area received at least 14 inches, with the highest totals recorded from the central Shenandoah Valley to the central Allegheny Highlands. Totals include...in Washington DC 16.4" at National Airport. In Maryland, 18.0" at BWI, Glenn Burnie 22.5", Frederick 22.0", and Columbia 23.0". In Virginia, Dulles Airport had 18.0", Stuarts Draft 28.8", Waynesboro 28.0", Centreville 23.0", and Linden 26.8". The greatest snow total for this storm was in Cherry Grove, WV – 30.0". For all three major airports this was the largest single December snowfall in history.

February 5-6, 2010: "Blizzard One." On the morning of Friday February 5th low pressure was located just south of the Florida panhandle, with cold high pressure centered over Ontario stretching southeastward into the mid Atlantic states. Snow began at Dulles during the morning of the 5th. By 10 am visibility was reduced to 1/2 mile. By early evening visibility further dropped to ¼ mile in moderate to heavy snow, eventually falling to 1/16 of a mile with 35 mph winds around midnight on the 6th. The surface map on the morning of the 6th showed deep low pressure just east of Virginia Beach. Northeasterly winds of 25-30 mph persisted throughout much of the day Saturday. Visibility remained extremely poor through 4 pm Saturday afternoon. These conditions reflected those at the other major airports, and throughout the mid Atlantic region.

This proved to be the second historic snowfall of the 2009/10 winter season. The two day totals at the three major airports – BWI 25.0", DCA 17.8", IAD 32.4". The total at Dulles was not only the greatest two day snowfall since records began in March 1963; it crushed the previous two day total of 23.2" set in January 1996. The total at DCA was the 4th greatest two day snowfall in Washington DC since records began in 1871; for Baltimore it was their second greatest.

Totals around the NWS Sterling forecast area included...in Washington DC 27.5" at American University, and 21.0" in Anacostia. In central Maryland...Frostburg 36.0", Hancock 30.5", Wolfsville 30.0", Mount Airy 28.5", Norrisville 30.0", Elkridge 38.3", Pimlico 28.0", Crofton 34.0", Clarksburg 32.0", and Laurel 32.2". In northern Virginia...Howellsville 37.0", Arnel 31.5", Berryville 32.0", Marshall 32.0", Leesburg 34.5", Chantilly 28.0", and Alexandria 28.9". In eastern West Virginia...Vanville 30.0", Middleway 31.0", Lehew 34.0", Smiths Crossroads 29.5", Keyser 29.2", and Bayard 33.0".

February 9-10, 2010: "Blizzard Two." The mid Atlantic region only had three days to remove the 13" in Charlottesville to 38" in Howard County received in "blizzard one." A winter storm watch was issued for the region on the afternoon of Sunday the 7th – just one day after "blizzard one" had ended. On the morning of Monday the 8th cold high pressure settled into the mid Atlantic region, while low pressure was forming across south Texas, with a second low pressure area centered over Iowa.

Skies over the mid Atlantic on the overnight hours of the 9th were clear, which allowed temperatures to plummet into the lower teens at most locations by 7 am Tuesday. On Tuesday morning those two low pressure areas were set to merge over the Ohio Valley. Light snow began to fall in the mid afternoon hours, which continued intermittently through the evening and overnight. By midnight the low pressure areas had combined and moved to the North Carolina coast. This tracked rapidly up the coastline, and by 5 am the low intensified deeply off the Delmarva. Around this time conditions degraded rapidly – visibility reduced as wind speed increased. The snow was fine and powdery, and blew around easily as wind gusts increased to 40-50 mph. For a period around 7 am VDOT ordered its snowplows to halt operations as visibility was reduced to less than 100 feet at times. Snow, strong gusty winds and poor visibility continued into the late afternoon.

Totals for this storm were less than the first storm, with a tighter precipitation gradient from northeast to southwest, but with snow banks five feet or higher along roads this left snowplows with little room to remove the second round of snow. Totals for the second storm of the week include in Washington DC...DCA 10.8", and American University 14.0". In central Maryland...Hancock 15.8", Smithsburg 25.0", Westminster 26.0", Glyndon 24.5", Scarborough 21.0", Pimlico 20.5", Elkridge 16.5", Pasadena 20.8", Germantown 18.0", and Laurel 7.5". In northern Virginia...Falls Church 13.4", Alexandria 12.5", Vienna 11.0", Marshall 6.0", Winchester 5.0", and Leesburg 12.0". In eastern West Virginia...Shepherdstown 14.0", Martinsburg 16.0", Berkeley Springs 11.4", Romney 12.0", and Bayard 14.0".

February 2010 statistics

DCA. This was the first time (since snowfall records were kept in 1884) that Washington DC recorded two separate double digit snowfalls in the same month. The one week snowfall record for Washington DC was also bested with a total of 28.6". The previous record was 28.0", set in 1922 during the famed Knickerbocker Storm.

BWI received 49.5" during three snowfalls in the first ten days of February. An additional one-half inch was received later in the month. The 50" total made February 2010 the single snowiest month in the history of Baltimore since snowfall records began in 1893, breaking the prior record of 40.5" set in February 2003.

Dulles received 45.7" during the first ten days of February. Combined with another .4" received later in the month, this made February 2010 the snowiest month at Dulles since records began in 1963. The prior record was 34.9" in February 2003.

January 26, 2011: A potent winter storm impacted the Washington and Baltimore metropolitan areas on Wednesday, January 26th. The storm came in two waves: The first wave triggered a period of sleet and snow across northern Maryland in the early morning. A second, stronger wave brought a burst of heavy snow to much of the region Wednesday afternoon and evening.

A potent upper low moved through the area during the late afternoon and evening. Conditions deteriorated rapidly as heavy precipitation overspread the region at the start of the afternoon rush hour. Colder air moved into the area during this time, allowing precipitation to change quickly to sleet and then heavy snow. There were many reports of thunder and lightning occurring with the sleet and snow. Heavy snow continued through the evening hours with snowfall rates around 2 to 3 inches per hour at the height of the event.

Snowfall totals were highest across the northern and western suburbs of Washington D.C. While snowfall amounts fell far short of the extraordinary totals from the December 2009 and February 2010 storms, the timing and intensity of the heavy snow made this storm memorable. The snowfall, coinciding with the afternoon commute, led to multiple hours of gridlocked traffic due to the treacherous driving conditions. There were countless reports of commuters needing 5 to 10 hours to get home, while others abandoned their vehicles. Snowplows were unable to move in the gridlock.

The heavy, wet snow brought down many trees and powerlines. The Washington Post reported almost 400,000 people lost power in the D.C. area that evening.

Washington D.C. measured 5.0 inches of snowfall on January 26th. The 7.6 inches of snowfall at Baltimore and 7.3 inches at Dulles both set daily snowfall records for January 26th.

February 13, 2014: This storm followed the time proven pattern for what is required for the Mid Atlantic to receive large snowfall totals. On February 12th the northeastern US was blanketed with high pressure centered over northern New England. This allowed cold air to be funneled down the eastern seaboard. At the same time another key factor, low pressure along the Gulf Coast, was developing. This would provide the needed moisture. Another key factor in snowfall production is that the Gulf low track northeast and intensify off the Virginia coast. This is indeed where the low was positioned on the morning of the 13th. This allowed moisture to stream into the Mid Atlantic on northeasterly winds while a column of subfreezing air kept the precipitation frozen. Snow fell heavily overnight on the 13th and did not let up until mid-afternoon.

Some totals for this storm: in Maryland: Glydon 26", Westminster 25", Owings Mills, Reisterstown, and Millers 24", Manchester 23", Sykesville and Frostburg 22". In West Virginia: Romney and Mount Storm 28", Cherry Grove 25", and Berkeley 19". In Virginia: Haywood and Linden 21", Gainesville and Winchester 20", Elkton, Earleysville and Leesburg 18". Reagan National Airport received 7.2".

Jan 22-23, 2016 Blizzard: One of the amazing things about this storm was that just a few weeks prior, due to the effects of El Nino, Washington DC and Baltimore both experienced their warmest end of the year in history – with average temperatures for the last ten days of almost four degrees warmer than had previously ever been recorded. On both Christmas Eve and Christmas Day Baltimore topped 70 degrees. DCA's four day average temperature for December 24-27 was 61.5 degrees. Perhaps most impressively Dulles broke its low maximum temperature record on December 25 by 21 degrees! The 63 degree reading was also the warmest low temperature ever recorded in December at Dulles.

The weather began to turn January 17th, when low pressure brought a mix of snow and rain to the Mid Atlantic. On the 20th a cold front brought an inch of snow to Washington DC metro area and caused temperatures to fall back below freezing leading up to January 23.

Low pressure developed along the Texas-Louisiana border on the afternoon of January 21. At the same time arctic high pressure descended on the eastern US. This provided a feed of cold air into the Mid Atlantic. On the afternoon of the 22nd the low moved off the Georgia coast. Snow began to fall that morning in the central Shenandoah Valley. By mid-afternoon it moved into the DC metro area, becoming extremely heavy across the entire region by early evening, and continuing throughout the night. On the morning of the 23rd the low was located just east of Cape Hatteras. Snow continued to pile up at 1-2 inch per hour rates. It came to an end during mid-afternoon in the central Shenandoah Valley, but continued until around midnight north of the Potomac River to the Pennsylvania border as the low tracked northeast of the Delmarva.

Snowfall totals in the NWS Sterling forecast area included... Washington DC: 26" at Delcarlia Reservoir, 22.4" at the National Zoo, and 21" in Adams Morgan. In central Maryland: North Potomac 38.5", Cascade and Maugansville 37.5", Frostburg 34", Point of Rocks 35.2", Scarboro 33.5", Westminster 32.2", and Reisterstown 32.1". In eastern West Virginia: Glengary 42", Sheperdstown 40.5", Jones Springs 39", Bayard 34.5", and Smith Crossroads 33.2". In northern Virginia: Gainesboro 38", Bluemont 36.6", Ashburn 36", Berryville 35", Karo and Bull Run both 32.1", and Carrsbrook, Hightown, Earleysville, Chantilly and Opal all 30".

Washington Winter Statistics

Average Snowfall = 16.6 inches at National ; 22.8 inches at Dulles

Average Monthly Snowfall:

November	1.0 inches	February	6.3 inches
December	3.1	March	1.6
January	6.2	April	Trace

Earliest Snowfall = Trace on Oct. 5, 1892; .03 inches on Oct. 10, 1979
 Latest Snowfall = Trace on May 10, 1906; .5 inches on Apr. 28, 1898
 Biggest Snowstorm = 28 inches, Jan. 1922 (official); 36 inches, Jan. 1772 (unofficial)

Snow Cover:

(Greatest Number of Consecutive Days with an inch or more on the ground)

November:	4 days from November 25 through 28, 1938
December:	20 days from December 8 through 27, 1989
January:	21 days from January 5 through 25, 1893
February:	26 days from February 1 through 26, 1905
March:	12 days from March 3 through 14, 1960

Snowiest Month = 35.2 inches during Feb. 1899.
 Snowiest Season = 55.9 inches during 2009-2010 winter.
 Season with the Least Snow = only 0.1 inches of snow fell in 1972-1973.
 Coldest Temperature = -15° F on Feb. 11, 1899

Top 1-,2- and 3-Day Snowfalls



















See this [link](#) for a list of the greatest snowfalls received at the three major airports.

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