

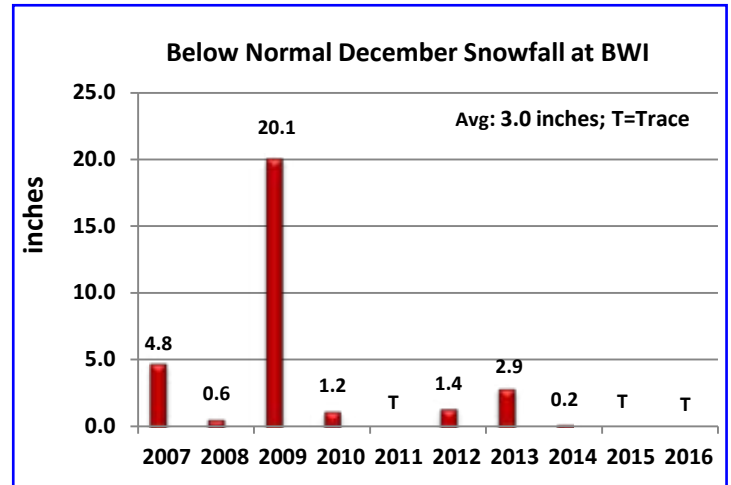
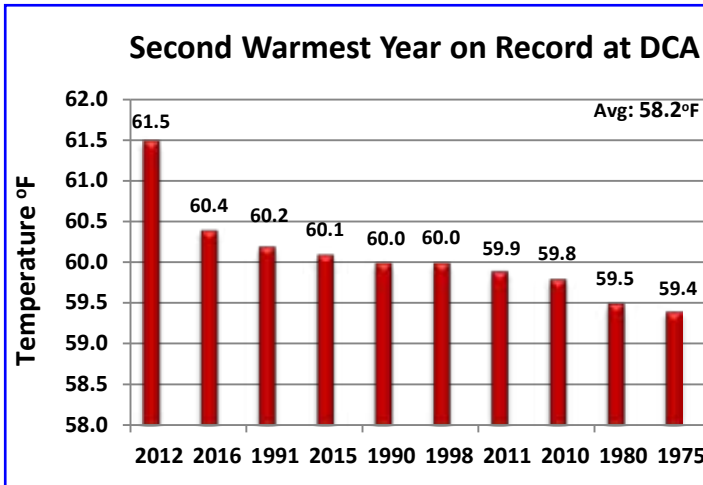


# PRESTO

PREcipitation Summary and Temperature Observations  
For the Washington, DC and Baltimore, MD Area



## DECEMBER: Above Normal Temperatures; High Impact Ice Event ANNUAL 2016: Second Warmest on Record in Washington; Driest Since 2001; "Blizzard of 2016" and Ellicott City Flood



### December Highlights

- Above normal temperatures: DCA, +2.1°F; BWI and IAD, +1.6°F
- Above normal readings at the three major airports for 6<sup>th</sup> consecutive December and 7<sup>th</sup> consecutive month
- First subfreezing highs (30°F at DCA, 27°F at BWI and IAD) this winter season on 16<sup>th</sup>; wind chill values in single digits; IAD recorded record low temperature of 9°F
- Subnormal precipitation for 7<sup>th</sup> consecutive month at DCA, 6<sup>th</sup> at IAD and 4<sup>th</sup> at BWI
- No measurable snowfall at the three major airports; first such occurrence for three consecutive Decembers on record at DCA and IAD and for two at BWI
- Sleet and freezing rain coated roads on morning of 17<sup>th</sup>, resulting in four fatalities and dozens more injured. Sections of the Capital Beltway and I-95 were closed for hours; a tanker truck went off the highway and burst into flames in Baltimore killing two and injuring at least 12, causing a 55 car pileup, according to press reports. Ice accumulations reached 0.2" at BWI and near Pimlico in Baltimore City and 0.13" near Leesburg, (Loudoun County) VA.

### Annual Highlights

- Second warmest year on record in Washington and at IAD, with 5 of the warmest years at Washington beginning in 2010.
- Above normal temperatures at DCA and BWI for 10 months; 9 at IAD
- Second driest year in past 10 years at DCA (31.70", -8.04" below normal) and IAD (35.33", -6.21" below normal)
- "Blizzard of 2016" Jan. 22-23, resulted in near white out conditions at times. Roads impassable; airports, government and businesses closed. Many school systems closed through the following week. There were 9 fatalities; initial economic loss estimated at \$570 million, according to press reports. Snowfall amounts ranged from about 1.5' to over 3'. Greatest totals in Maryland include 38.5" near Potomac; BWI measured a record 29.2", and a all-time single daily record of 25.5" on the 23<sup>rd</sup>. In DC, 26.0" was measured at the Dalecarlia Reservoir, 22.4"; DCA, 17.8", equalling its 4<sup>th</sup> greatest total on record. In Virginia, 36.6" was measured near Bluemont (Loudoun County), IAD reported 29.3", 2<sup>nd</sup> only to "Snowmageddon" in 2010. IAD set a calendar day January record of 22.1" on the 23<sup>rd</sup> and an all-time record, 28", for snow depth on the 24<sup>th</sup>. The snowfall jackpot occurred near Johnsontown (Berkeley County), WV, with 43.0".
- Second warmest March on record at IAD, fourth warmest in DC and sixth warmest at BWI with positive departures of +6.7°F at DCA and +6.4°F at BWI and IAD
- DCA marked 10 days in March with highs at or above 70°F and a record 79°F on March 10. BWI and IAD set record highs of 82°F on March 9 and 80°F on the 10<sup>th</sup>
- Powerful northwest winds in the wake of a strong cold front on April 2 into 3<sup>rd</sup> resulted in two injuries near College Park (Prince Georges County), MD, when a tree fell on a car. Winds gusted to 66 mph at IAD and 59 mph at DCA.
- Third hottest summer on record in Washington and at IAD; 5<sup>th</sup> hottest at BWI
- On June 21, severe thunderstorms spawned an EF-0 long track tornado across west central Howard County, MD. Maximum wind speeds were estimated at 80 mph, maximum path width of 500 yards and length of 12.75 miles, causing tree and property damage. Hail was measured at 1.50" near Clarksburg (Montgomery County), MD, and 1.25" near Reston (Fairfax County), VA. Water cascaded down escalators of the Cleveland Park Metro Station in D.C., closing station; rainfall totals included 3.38" in Damascus (Montgomery County), MD, and 2.81" near Annapolis (Ann Arundel County), MD
- Historic flooding occurred in Ellicott City (Howard County), MD, on July 30, dumping 5.96" in 2 hours, for a storm total of 6.36". Flash flooding occurred when water overflowed streams joining the nearby Patascope River. The river rose 13 feet in 100 minutes, submerging much of the historic Old Town section of the city. According to press reports, there were two fatalities, 120 water rescues, at least 200 buildings damaged and 6 destroyed, damages estimated in the millions.
- On July 19, severe thunderstorms in the evening caused widespread tree damage on the National Mall near the Washington Monument, which some press reports compared in scope to damage resulting from the June 29, 2012, derecho. PEPCO reported about 10,000 customers lost power during the storm.
- Warmest autumn on record in Washington with an average temperature was 63.9°F; 2<sup>nd</sup> warmest on record at IAD with an average temperature of 60.0°F
- Heavy rain across area from Sep. 28-30 with totals of 2"-5" and more than 7" in some locations. Thunderstorms resulted in death of one person on 29<sup>th</sup> when a tree fell in a driveway in Maurertown (Shenandoah), VA. Numerous road closures. Greatest totals: 7.68" near Prince Frederick (Calvert County), VA, 7.43" near Mechanicsville (St. Mary's County), MD, and 7.04" in Winchester (Frederick County), VA.
- Record warmth Oct. 17-21 resulted in the warmest 5 consecutive days on record at DCA and IAD (5<sup>th</sup> warmest period at BWI) for the second half of October. BWI set record highs of 84°F on the 18<sup>th</sup> and 87°F the following day. IAD recorded a record high 84°F on 17<sup>th</sup>, 85°F on the 18<sup>th</sup>, 87°F on the 19<sup>th</sup>

## December 2016

**Temperatures:** Meteorological winter started with above normal temperatures: DCA, +2.1°F; BWI and IAD, +1.6°F; marking the 6th consecutive December with above normal temperatures and the 7th consecutive month with above normal readings at the three major airports. DCA hit 60°F or greater on 4 days, BWI, on 3 days and IAD, 2 days. Minimum readings were at or above 40°F on 8 days at DCA. There were three intrusions of Arctic air: 9<sup>th</sup>-10<sup>th</sup>, 15<sup>th</sup>-16<sup>th</sup> and 19<sup>th</sup>-20<sup>th</sup>. The middle event featured the most intense cold. All three airports reported subfreezing highs on the 16<sup>th</sup> (DCA, 30°F; BWI and IAD, 27°F), the first such instance this winter season. Wind chill values were in the single digits; IAD recorded a record low temperature of 9°F. The intense cold never lingered beyond 2 days before temperatures rebounded to near or above normal.

**Precipitation:** Below normal precipitation was measured at the three major airports for the 7th consecutive month at DCA, 6th consecutive month at IAD and 4th consecutive month at BWI: DCA, 2.61" (-0.44"); BWI, 2.77" (-0.60") and IAD, 2.36" (-0.60"). December was also the 2nd driest at the three airports in the past 10 years. The three major airports reported no measurable snowfall, the first such occurrence for three consecutive Decembers on record at DCA and IAD and for two consecutive Decembers at BWI. The month did feature one storm on the 17<sup>th</sup> that resulted in dangerous road conditions when sleet and freezing rain coated roads during the morning. There were four traffic related fatalities and dozens of injuries. Sections of the Capital Beltway and I-95 were closed for hours. A tanker truck went off the highway and burst into flames in Baltimore killing two and injuring at least 12, resulting in a massive 55 car pileup, according to press reports. Ice accumulations reached 0.2" at BWI and near Pimlico in Baltimore City and 0.13" near Leesburg, (Loudoun County) VA. The event began as snow across northern MD with 1.0" measured in Westminster (Carroll County).

The largest rain event of the month occurred on the 6<sup>th</sup> with over an inch reported at many locations. Greatest amounts were 1.70" near Leonardtown, (St. Mary's County), MD, and 1.45" near Haymarket (Prince William County), VA. DCA and IAD reported 1.03", a daily record at IAD. On the 15<sup>th</sup> and 18<sup>th</sup> were windy. On the 15<sup>th</sup>, peak gusts reached 55 mph at Brooklyn Park (Anne Arundel County) MD, 52 mph at DCA and 51 mph at IAD. On the 18<sup>th</sup>, peak gusts measured 56 mph in Gaithersburg (Montgomery County), MD, and 54 mph near the US Capitol in Washington and at DCA. Many locations observed their first snowfall of the season on the 30<sup>th</sup> as a brief snow squall moved across the area. The snow whitened grassy surfaces with as much as 0.4" measured near Gaither (Howard County), MD.

### December 2016 Weather Statistics for the Washington/Baltimore Area

Location	Station Temperatures (°F)					Extreme/Day		Precipitation (inches)				
	AvMx	AvMin	AvgT	NmlT	DepNml	Max	Min	Total	Nml	DepNml	Snow	Year to Date
National (DCA)	49.2	34.4	41.8	39.7	+2.1	68/27	17/16	2.61	3.05	-0.44	T	31.70
Baltimore (BWI)	46.7	30.0	38.3	36.7	+1.6	66/27	13/16	2.77	3.37	-0.60	T	40.52
Dulles (IAD)	46.9	29.5	38.2	36.6	+1.6	67/27	9/16	2.36	2.96	-0.60	T	35.33

**Annual Temperatures 2016:** The year was well above normal: DCA, 60.4°F (+2.2°F), BWI, 57.1°F (+2.0°F) and IAD, 57.1°F (+1.8°F). DCA and IAD recorded their 2nd warmest average annual temperature on record (see cover graphic). January and February were near normal but each featured a significant cold wave, Jan. 19-23 and Feb. 11-15. March was the 2nd warmest March on record at IAD, 4th warmest in Washington and 6th warmest at BWI. DCA recorded a record 79°F on March 10. BWI and IAD soared to record highs of 82°F on the 9<sup>th</sup> and 80°F on the 10<sup>th</sup>. On April 6, BWI and IAD set record low temperatures of 24°F. DCA and BWI recorded the season's final freeze on April 10, IAD on the 14<sup>th</sup>. It was the first May since 2009 with subnormal temperatures at DCA and since 2008 at BWI and IAD. In contrast, BWI observed its first 90°F days of the season May 26-27. DCA did not record a 90°F or greater reading in May for the first time since 2009. On June 11, DCA and BWI maximum temperatures soared to 96°F and to a daily record high of 95°F at IAD. In July, maximum temperatures were at or above 90°F at DCA from the 13<sup>th</sup> through month's end, except on the 20<sup>th</sup>. DCA recorded 23 days at or above 90°F, marking the most such days in a month since 2011 and its fourth highest total of 90°F days on record; BWI recorded 20 such days, its third highest total; IAD recorded 21 such days, its second highest. The area's hottest day was the 25<sup>th</sup> when all three airports soared to 100°F, setting a record at IAD and equalling a record at DCA and BWI. It was the first triple digit reading at the three area airports since July 26, 2012. August observed 23 days with maximum temperatures at or above 90°F, topping the 22 days in 1980 as the most ever in August. IAD's average temperature of 79.4°F marked its hottest August. Numerous records were set at DCA: high of 101°F on August 13, 100°F on the 14<sup>th</sup> and 99°F on the 12<sup>th</sup>. September tied for the 3<sup>rd</sup> hottest in Washington's history and warmest since 1980; it was the hottest September on record in IAD's 53-year history, with an average temperature of 73.1°F. On September 14, DCA set a daily record of 95°F. October 17-21 marked the warmest 5 consecutive October days on record at DCA and IAD. BWI set record highs of 84°F on the 18<sup>th</sup> and 87°F on the 19<sup>th</sup>. IAD recorded a record maximum reading of 84°F on Oct 17, 85°F on the 18<sup>th</sup>, 87°F on the 19<sup>th</sup>. BWI and IAD recorded their first freeze of the season on Oct 26, with minimum readings of 30°F at IAD and 32°F at BWI. On November 3, DCA recorded a record 83°F. DCA recorded its first freeze off the season (32°F) on November 23. December was warmer than normal (see above).

**Annual Precipitation 2016:** Precipitation was well below normal at DCA, 31.70" (-8.04"), and IAD, 35.33" (-6.21") and slightly below normal at BWI, 40.52" (-1.36"). It was the driest year since 2001 in Washington and since 2007 at IAD. The final 7 months of 2016 at DCA recorded subnormal precipitation, the final 6 months at IAD and the final 4 months at BWI. The year started with the "Blizzard of 2016," January 22-23. BWI measured an all-time record snowfall of 29.2" and on January 23, an all-time single daily record of 25.5". IAD reported 29.3", second only to "Snowmageddon" on Feb. 5-6, 2010. IAD also set a single calendar day January record of 22.1" on the 23<sup>rd</sup> and set an all-time record 28" for snow depth on the 24<sup>th</sup>. On Feb. 24<sup>th</sup>, an EF-0 tornado (winds estimated at 65 mph) touched down near Beauvue (St. Mary's County) MD. A funnel cloud was spotted near Roseville (Stafford County), VA, and near Fredericksburg, VA. March and April were drier than normal and May wetter with some severe weather, hail and minor flooding. On June 21, an EF-0 long track tornado sliced across west central Howard County, MD, with maximum wind speeds estimated at 80 mph and a maximum path width of 500 yards and length of 12.75 miles, causing tree and property damage. On July 30, a storm caused an historic level of flooding in Ellicott City (Howard County), MD. Torrential downpours in a 2-hour period dumped 5.96" on the city for a storm total of 6.36". There were two fatalities, 120 water rescues, at least 200 buildings damaged and 6 destroyed, and hundreds of vehicles damaged when a wall of water rushed down Main Street, damages estimated in the tens of millions. Also on July 19, a severe thunderstorm resulted in widespread tree damage near the Washington Monument. All three months of autumn were drier than normal. After a very dry start, September ended with a slow moving 3-day storm that brought from 2"-5" of rain with more than 7" in some locations. Some areas also were impacted by thunderstorms, one of which resulted in a fatality on Sep. 29 when a falling tree fell on an individual in a driveway near Maurertown (Shenandoah), VA. The heavy rain closed roads across the area including portions of Sligo Creek Parkway in Takoma Park (Montgomery County) and Burke Lake Road near Burke (Fairfax County). Greatest amounts included 7.68" near Prince Frederick (Calvert County), MD, and 7.04" in Winchester (Frederick County), VA. In the second week of October, remnants of Hurricane Matthew swept in with heavy rainfall in the southern and eastern metro suburbs. Totals in Maryland included 3.19" near Ridge (St. Mary's County), 2.83" near Patuxent River (Calvert County) and in Virginia, 2.30" near Fredericksburg. November was dry until the final 2 days when a storm system soaked the area with 1"-3" of rain. December continued dry (see monthly summary).

### Annual 2016 Weather Statistics for the Washington/Baltimore Area

Location	Station Temperatures (°F)					Extreme/Month-Day		Precipitation (inches)			
	AvMx	AvMin	AvgT	NmlT	DepNml	Max	Min	Total	Nml	DepNml	Snow
National (DCA)	68.5	52.6	60.4	58.2	+2.2	101/8-13	13/2-14	31.70	39.74	-8.04	26.8
Baltimore (BWI)	67.2	47.0	57.1	55.1	+2.0	100/7-25	8/1-25, 2-15	40.52	41.88	-1.36	40.3
Dulles (IAD)	67.6	46.6	57.1	55.3	+1.8	100/7-25	4/1-25	35.33	41.54	-6.21	43.5

**Looking Ahead to January:** Will January reverse the trend to above normal snowfall? Listed below are the most recent 10 years when DCA observed subnormal snowfall in December and the corresponding January total. Normal DCA snowfall is 5.6".

Year	'04-'05	'06-'07	'08-'09	'10-'11	'11-'12	'12-'13	'13-'14	14-15	15-16	16-17
December	0.1	T	T	2.1	T	0.2	1.5	T	0	T
January	6.4	1.3	1.9	7.3	2.0	0.9	6.6	3.6	18.8	?