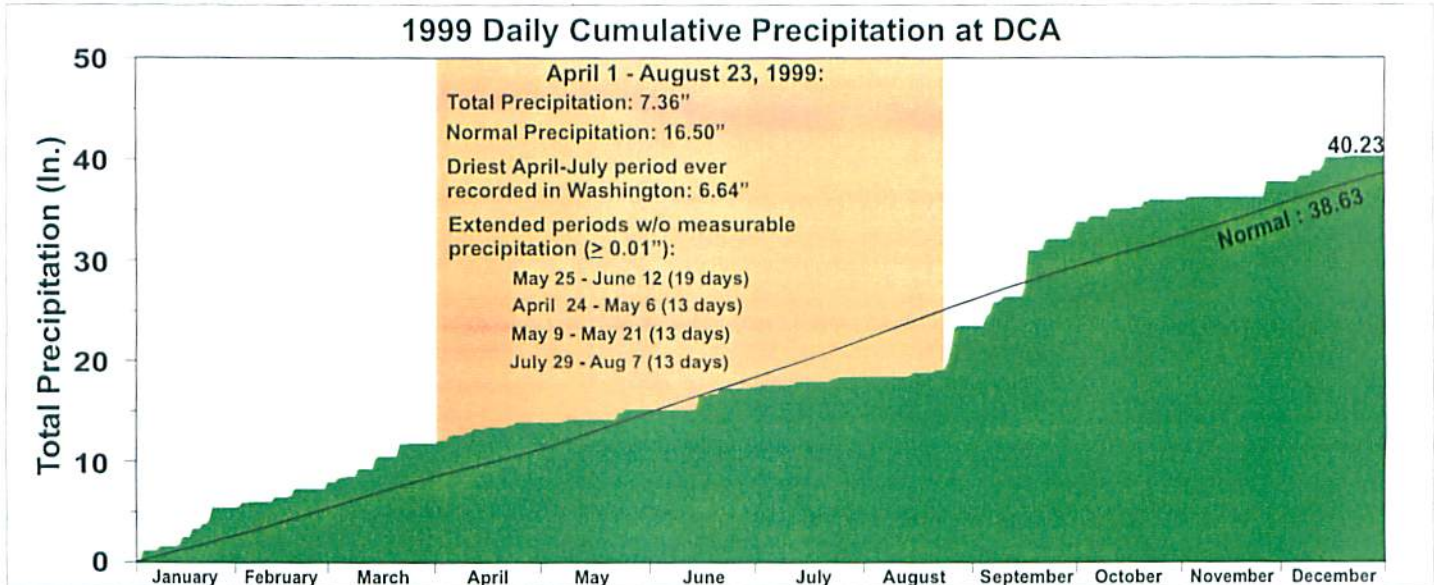




PRECIPITATION SUMMARY AND TEMPERATURE OBSERVATIONS  
FOR THE WASHINGTON, DC & BALTIMORE, MD AREA

**DECEMBER 1999 & ANNUAL REVIEW**  
**A WETTER THAN NORMAL YEAR DESPITE SEVERE SPRING**  
**& SUMMER DROUGHT**



**HIGHLIGHTS**

**MONTHLY**

- Above normal temperatures and subnormal precipitation across the Washington/Baltimore area;
- Monthly temperature departures between  $+2^{\circ}\text{F}$  and  $+3^{\circ}\text{F}$  at the three major airports ;
- 23 days (74%) with at or above normal temperatures at DCA;
- 2 days (24th and 25th) with highs of  $32^{\circ}\text{F}$  and 11 days with lows of  $32^{\circ}\text{F}$  or lower at DCA ;
- Monthly precipitation deficits of about one-half inch at DCA, BWI and IAD;
- 10th consecutive December with subnormal snowfall at DCA.

**ANNUAL**

- Slightly warmer and wetter than normal conditions observed across the Washington/Baltimore area;
- Annual precipitation surpluses of 1.50" at DCA, 3.06" at BWI and +3.35" at IAD;
- 8 out of 12 months with subnormal precipitation at DCA, BWI and IAD;
- Extreme drought conditions plagued the local region during the summer, resulting in significant crop losses and mandatory water restrictions for most local jurisdictions;
- Driest April-July period (Total Prec.: 6.64"; Normal Prec.: 13.55") ever recorded in Washington;
- Third driest July ever observed in Washington (Total Prec.: 1.01");
- Major ice storm on January 14th-15th across the northern and western portions of the local area downed numerous trees and power lines, knocking out power to nearly half a million customers;
- Snowiest March (8.7") since 1960 at DCA (third overall at the airport);
- Astorm on March 9th dumps nearly a foot of snow on northern Virginia and generates the largest daily March snowfall total (8.4" on the 9th) ever observed at DCA;
- Wettest September ever recorded at BWI, second at DCA (4th overall in Washington), and third at IAD;
- Wettest month (September 1999) since September 1975 at DCA (15th wettest overall in Washington), August 1955 at BWI (2nd overall) and May 1988 at IAD (6th overall);
- Wettest September day (5.02" on the 15th) & second wettest day ever recorded at BWI (records began in August 1951) and the wettest calendar day since September 5, 1979 at DCA;
- Remnants of Tropical Storm Dennis produced 1 to 5 inches of rain across the area Sept. 4th-6th and more than 9 inches in Augusta County, VA;
- Strong thunderstorms on September 9th dumped over 3 inches of rain on portions of Montgomery County, MD;
- Heavy rain (nearly 1 foot around Annapolis, MD), tropical storm force winds (39-74 mph), localized flooding and widespread power outages (some lasting a week) on Sept. 16th as Hurricane Floyd passed to the east of the Washington/Baltimore area;
- Annual temperature departures between  $+0.5^{\circ}\text{F}$  and  $+1.5^{\circ}\text{F}$  at the three major airports;
- 48 days with  $90^{\circ}\text{F}+$  highs and 57 days with lows at or below  $32^{\circ}\text{F}$  at DCA;
- Second hottest month (July 1999; Avg. Temp.:  $82.9^{\circ}\text{F}$ ) ever recorded in Washington;
- 18 consecutive days with  $90^{\circ}\text{F}+$  highs (July 22nd - August 18) at DCA.

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**DECEMBER 1999:** Above normal temperatures and subnormal precipitation highlighted the final month of 1999. Monthly temperature departures between +2°F and +3°F were reported at the three major airports. There were 23 days with at or above normal temperatures at DCA, including 18 such days during the first 3 weeks. The peak of the warmth occurred on the 4<sup>th</sup> and 5<sup>th</sup> as highs soared near 70°F at many locations. In sharp contrast, a blast of frigid Arctic air briefly gripped the region during the last week. Highs on the 24<sup>th</sup> and 25<sup>th</sup> remained below freezing at most locations (32°F at DCA on both days), the lowest maximum readings since February.

Slightly below normal precipitation was observed across most of the Washington/Baltimore area. Most of the monthly precipitation totals fell during the first half of the month. Showers on the 6<sup>th</sup> and again on the 10<sup>th</sup> each generated about 0.50" across most of the area. The most significant precipitation event occurred on the 13<sup>th</sup> and 14<sup>th</sup> when up to 1.50" of rain fell across the local area. The first wintry weather of the season occurred on the 22<sup>nd</sup> as sleet and/or very light snow fell on some locations. IAD recorded 0.2" of snow while both DCA and BWI observed a trace. On the 28<sup>th</sup>, a dusting of snow fell on many locations with only trace amounts reported at the three major airports. It was the 16<sup>th</sup> year of the last 17 with subnormal December snowfall at DCA.

**DECEMBER 1999 WEATHER STATISTICS FOR THE WASHINGTON/BALTIMORE AREA:**

Station Location	Temperatures (°F)					Extreme/Day		Precipitation (In)			Snow
	AvMx	AvMn	AvgT	NmIT	DepNml	MaxT	MinT	Total	Norm	DepNml	
National (DCA)	49.4	34.5	42.0	39.4	+2.6	68/4*	21/25	2.49	3.12	-0.63	T
Baltimore (BWI)	48.5	29.7	39.1	36.7	+2.4	68/4*	14/25	2.96	3.41	-0.45	T
Dulles (IAD)	48.2	28.2	38.2	35.4	+2.8	67/5	12/25	2.67	3.22	-0.55	0.2
Ft. Belvoir (DAA)	52.5	32.6	42.5	N/A	N/A	73/4	20/25	2.07	3.3	-1.2	T
Andrews AFB (ADW)	48.8	32.6	40.7	N/A	N/A	68/4*	20/25	1.96	3.4	-1.4	T

Other Occurrences: \* December 5th.

**ANNUAL 1999:** Slightly warmer and wetter than normal conditions were observed across the Washington/Baltimore area with annual temperature departures around +1°F and annual precipitation surpluses between 1 and 3.5 inches at the three major airports. Despite these surpluses, the local region experienced one of the worst droughts in recent memory, leading to significant agricultural losses, and mandatory water restrictions for most jurisdictions. From April 1 - August 23, about 45% of normal precipitation fell at DCA (7.36"; Normal: 16.50). The dry conditions were accompanied by frequent periods of intense heat, especially in July (DCA recorded the second hottest month on record) and most of August. The year commenced with a warm and wet January. The wet conditions ended a string of six consecutive months (July-December 1998) of very dry weather. In fact, January 1999 precipitation totals at DCA exceeded the combined September-December 1998 total. The most notable precipitation events included a 2-4 inch snowfall on the 8<sup>th</sup> and one of the worst ice storms in recent memory on the 14<sup>th</sup> and 15<sup>th</sup>. The 2.2" of snow at DCA on the 8<sup>th</sup> was the first 1"+ snowfall at DCA since February 8, 1997 and ended a record 23-month streak without a 1"+ snowfall in Washington. About a week later, heavy rains accompanied by subfreezing temperatures coated trees, power lines and roads with a heavy glaze of ice in Montgomery, Howard and portions of Anne Arundel counties in Maryland as well as Fairfax and Loudoun counties in Virginia. The storm knocked out power to nearly 500,000 customers. In February, near-normal precipitation was recorded at most locations but once again snowfall fell short of normal with less than an inch reported at all five local airports. The first month of meteorological spring yielded near- to slightly-above normal precipitation and the snowiest March (8.7") in Washington since 1960. All five airports reported over 3.4" of liquid precipitation and more than 7 inches of snow. The most notable precipitation event was a snowstorm on the 9<sup>th</sup> that began during the morning rush hour and created dangerous driving conditions. Despite relatively warm ground temperatures, up to 11 inches of snow blanketed northern Virginia (8.9" at IAD, 8.4" at DCA and 4.9" at BWI). It was the largest snowfall at DCA and IAD since the "Blizzard of 1996", and the largest snowfall at BWI since Feb. '97. It was also the largest March snowfall for most areas since the "Storm of the Century" in 1993; however, this event eclipsed the 1993 storm at DCA and was their greatest daily March snowfall on record. In April, a string of consecutive months with subnormal precipitation began. Just over 2 inches was measured at most locations. May produced only a little over an inch of rain for most locations. DCA observed 1.28", marking it the driest May since 1986 (8<sup>th</sup> driest overall) while the 0.95" at ADW was the lowest May total on record. Drier than normal conditions continued into June, leading to a worsening of drought conditions. June precipitation totals were around 2 inches, and very dry conditions enveloped the area in July. DCA reported a monthly precipitation total of only 1.28". This total, combined with those of previous three months (only 6.64" at DCA), yielded the driest April-July period on record in Washington. Dry conditions prevailed for most of August (only 0.64" through the 22<sup>nd</sup>), forcing many locations to issue mandatory water restrictions. However, during a five-day period (23rd-27th) more than 4 inches of beneficial rain soaked the area. DCA observed 2.03 inches of rain on the 26th, their highest single-day total since August 20, 1997. This rainfall combined with the previous day's yielded a total of 3.40", the largest 2-day total at the airport since November 27-28th, 1993 and more than the June-July 1999 total. At IAD, 3.03" of rain fell on the 25<sup>th</sup>, establishing a new daily record. At BWI, more than an inch of rain was observed on 3 consecutive days (24th-26th) and downtown Baltimore was deluged with up to 4.50" of rain in less than two hours on the 26<sup>th</sup>. The abundant late-August rains provided short-term relief from the extreme drought conditions that had plagued most of the area since mid-1998, but came too late to benefit agricultural interests and did little to raise river levels which remained near record lows at month's end. In September, two tropical systems generated abundant rainfall across the Washington/Baltimore area and brought an end to the drought. The five local airports reported amounts of 5-14 inches and total between 15 and 20 inches were observed in portions of Baltimore, Anne Arundel and Montgomery counties in Maryland. BWI observed its wettest September on record (11.50") while DCA recorded the second wettest (5<sup>th</sup> overall in Washington) with 10.27" and IAD the third wettest (9.32"). In addition, it was the second wettest month ever recorded at BWI and the wettest since August, 1955. At DCA, it was the wettest month since September 1973 (10<sup>th</sup> wettest overall). The first significant rain event occurred from the 4th-6th as the remnants of Tropical Storm Dennis moved through the region, dumping 1"-3" of precipitation on most locations and over 4" in portions of Montgomery, Howard, and Anne Arundel counties in Maryland. To the south and west, precipitation totals topped 9 inches in Augusta County, VA. The heaviest rain event for most of the local area occurred on September 16<sup>th</sup> as Hurricane Floyd tracked to the south and east of Washington and Baltimore. Rainfall actually commenced on the 15<sup>th</sup> (about an inch for most areas), as easterly winds on the north side of Floyd interacted with a frontal system to the west of Washington. Hurricane Floyd made landfall near Cape Fear, North Carolina, as a Category Two hurricane (winds of 96-110 mph) and dumped more than two FEET of rain on parts of eastern North Carolina and eventually over 12 inches across much of the Virginia Tidewater area. The heavy rains in these areas generated the worst flooding on record. In the local area, winds and rain increased in intensity on the morning of the 16<sup>th</sup>. Tropical storm force winds (39-73 mph) battered much of the area, downing numerous trees and power lines and resulting in widespread power outages lasting up to a week. The storm produced nearly a foot of rain around Annapolis, MD while 2-6 inches were observed at the three major airports. At BWI, 5.02" of rain fell on the 16<sup>th</sup>, making it the wettest September day and the second wettest calendar day since records began in August 1951. DCA reported 3.67" on the 16<sup>th</sup>, the wettest calendar day since September 5, 1979. In contrast, the final three months of the year all produced subnormal precipitation with monthly deficits of less than an inch in both October and December and slightly more than an inch in November at the three major airports.

As mentioned earlier, annual temperatures averaged slightly above normal with departures of +0.9°F at DCA, +0.7°F at BWI and +1.4°F at IAD. The year began with a period of very cold weather in early January. Temperatures averaged more than 6°F below normal during the first 11 days. Less than a week later, milder air infiltrated the local area, yielding at or above normal temperatures for 18 of the last 20 days. During this time, temperatures average more than 9°F above normal at DCA and highs at most locations topped 70°F on the 23<sup>rd</sup> (more typical of late April). Warmer than normal weather dominated during February with monthly departures between +2°F and +4°F at DCA, BWI and IAD. In March, a persistent flow of cold Canadian air produced 20 days with subnormal temperatures at DCA and monthly temperatures departures between -1.5°F and -3°F at the three major airports. Near normal temperatures prevailed during April, May and June. In July, intense heat enveloped the local area. DCA observed the second hottest July (also second hottest month; Avg. Temp.: 82.9°F and Dep. Nml.: +2.9°F) on record while BWI and IAD recorded their sixth warmest July. Highs at or above 90°F were reported on each day during July 3rd-10th, with the most intense heat occurring on the 5<sup>th</sup> and 6<sup>th</sup> when readings soared above 100°F at many locations. DCA established daily record highs on both days (5<sup>th</sup> & 6<sup>th</sup>) with readings of 102°F and 103°F, respectively. In addition, abnormally hot conditions prevailed on Independence Day with the high topping out at 99°F at DCA, the hottest "Fourth of July" since 1919 in Washington. Hot conditions continued through July and into August as 90°F+ highs were observed on 29 of 34 days at DCA during July 15<sup>th</sup>-August 18<sup>th</sup>. Near normal temperatures returned in September then unusually cool conditions dominated October (monthly departure of -2°F and lower). Both November and December were marked by more abnormal warmth. Monthly departures between +3°F and +5°F were common in November and more than +2°F in December.

**ANNUAL 1999 WEATHER STATISTICS FOR THE WASHINGTON/BALTIMORE AREA:**

Station Location	Temperatures (°F)					Extreme/Month-Day		Precipitation (In)			
	AvMx	AvMn	AvgT	NmIT	DepNml	MaxT	MinT	Total	Norm	DepNml	Snow
National (DCA)	67.8	50.0	58.9	58.0	+0.9	103/7-6	16/1-6	40.23	38.63	+1.50	11.1
Baltimore (BWI)	66.2	45.5	55.8	55.1	+0.7	102/7-5	7/1-6	43.93	40.76	+3.17	12.1
Dulles (IAD)	66.7	43.8	55.2	53.8	+1.4	99/7-5	4/1-6	43.61	40.24	+3.37	19.8
Ft. Belvoir (DAA)	70.4	48.0	59.2	N/A	N/A	104/7-5*	11/1-6	43.61	41.7	+1.9	10.0
Andrews AFB (ADW)	66.7	46.5	56.6	N/A	N/A	100/7-5*	9/1-6	42.86	42.5	+0.4	16.8

Other Occurrences: \* July 12th.

**LOOKING AHEAD TO DECEMBER:** A warmer than normal January?

Since 1990, when December has been colder than normal the following January has also been colder than normal; and when December temperatures have been above-normal the following January has also been above-normal at DCA. With this in mind, will January 2000 be warmer than normal since abnormal warmth was observed in December, or will this coincidental pattern come to an end? [January Normal Average Temperature at DCA: 34.6°F]