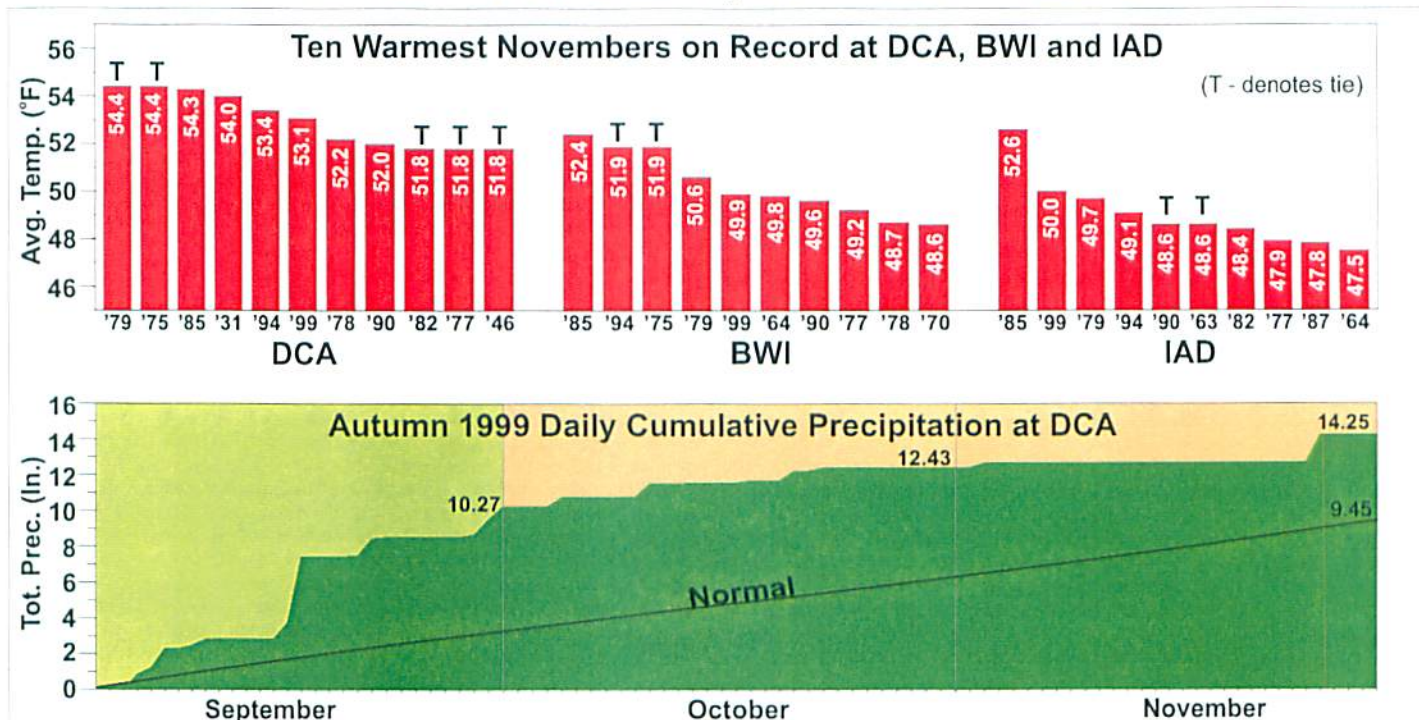




**PRECIPITATION SUMMARY AND TEMPERATURE OBSERVATIONS
FOR THE WASHINGTON, DC & BALTIMORE, MD AREA**

**NOVEMBER 1999 & AUTUMN REVIEW
NOVEMBER: ABNORMALLY WARM
AUTUMN: VERY WET START, BUT RELATIVELY DRY END**



HIGHLIGHTS

MONTHLY

- Abnormally warm with subnormal precipitation across the Washington/Baltimore area;
- Sixth warmest November on record at DCA (Dep. Nml.: +3.3°F), fifth at BWI (Dep. Nml.: +3.1°F) & second at IAD (Dep. Nml.: +4.6°F);
- 19 days with at or above normal temperatures at DCA, including 8 days with 70°F+ highs;
- Daily record highs at both DCA (76°F) & BWI (75°F) on the 10th;
- First 32°F or lower reading of the season at DCA (31°F) on the 18th;
- Seventh month of 1999 with subnormal precipitation at DCA, BWI and IAD;
- Only 3 days with measurable precipitation (> 0.01") at DCA;

SEASONAL

- Near normal temperatures and wetter than normal conditions across the Washington/Baltimore area;
- Wettest Autumn since 1966 at BWI (15.93"; third wettest overall) and ninth wettest at IAD (13.60"; tied with 1992);
- Seasonal precipitation surpluses of 4.80" at DCA, 6.22" at BWI and 3.74" at IAD;
- 72% of seasonal precipitation total at DCA fell in September (10.27"); only 15% in October (2.16") & 12% in November (1.82");
- Wettest September ever recorded at BWI (11.50"), second at DCA (4th overall in Washington; 10.27"), and third at IAD (9.32");
- Remnants of Tropical Storm Dennis produced between 1 and 5 inches of rain across the local area from the September 4th-6th and more than 9 inches in Augusta County, VA;
- Heavy rain (up to 1 foot near the Chesapeake Bay), tropical storm force winds (39-74 mph), localized flooding and widespread power outages (some lasting a week) on September 16th as Hurricane Floyd passed to the east of the Washington/Baltimore area;
- 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);
- 52 Autumn days with at or below normal temperatures at DCA;

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NOVEMBER 1999: Above normal temperatures and subnormal precipitation prevailed across the Washington/Baltimore area. Monthly temperature departures between +3°F and +5°F were observed at the three major airports, producing the sixth, fifth and second warmest November on record at DCA, BWI and IAD, respectively. There were 19 days with at or above normal temperatures at DCA (17 at BWI, 20 at IAD), including 8 days (5 at BWI and 8 at IAD) with 70°F+ highs. Arctic air remained entrenched in Canada most of the month resulting in very few days (only 2) with lows at or below 32°F at DCA. In fact, the first freezing temperature of Autumn was recorded on the 18th at DCA when the mercury dipped to 31°F while readings in the low to middle twenties were observed at both BWI and IAD. The first significant blast of cold air this season infiltrated the local area on the last day of the month as highs struggled to reach 40°F at the three major airports. Breezy conditions accompanied the blast of cold air, producing wind chill temperatures in the teens across much of the area. Otherwise, minimum temperatures were often higher than normal. In fact, DCA recorded 27 days with lows at or above normal.

Relatively dry weather dominated most of the month across the local area. There were only 3 days with measurable precipitation at DCA (5 at both BWI and IAD), yielding monthly precipitation totals below 2 inches at each airport. No measurable precipitation fell from the 3rd-24th (22 consecutive days) at DCA. Nearly all of the monthly precipitation totals were the result of two rain events. On the 2nd, a storm system generated between 0.25" and 1.00" of precipitation across much of the area. Most of the rain fell during the afternoon and was accompanied by wind gusts up to 40 mph. On the 26th, another storm system generated heavy rain during the afternoon and evening, yielding amounts over an inch at both DCA and BWI and slightly lesser amounts at IAD. At some locations, the rain was accompanied by thunder, lightning, and strong wind gusts (35 mph at DCA & 51 mph at ADW.) The relatively dry conditions abetted forest fires that charred portions of Shenandoah National Park.

NOVEMBER 1999 WEATHER STATISTICS FOR THE WASHINGTON/BALTIMORE AREA:

Station Location	Temperatures (°F)					Extreme/Day		Precipitation (In)			
	AvMx	AvMn	AvgT	NmIT	DepNml	MaxT	MinT	Total	Norm	DepNml	Yr to Date
National (DCA)	61.8	44.4	53.1	49.8	+3.3	76/10	31/18*	1.82	3.12	-1.30	37.74
Baltimore (BWI)	60.1	39.8	49.9	46.8	+3.1	75/10	24/18	1.95	3.32	-1.37	40.97
Dulles (IAD)	61.2	38.9	50.0	45.4	+4.6	74/1 ^o	22/18	1.72	3.30	-1.58	40.94
Ft. Belvoir (DAA)	65.2	42.0	53.6	N/A	N/A	79/1 ^o	27/18	1.89	3.0	-1.1	41.54
Andrews AFB (ADW)	58.9	39.3	49.1	N/A	N/A	72/10 [^]	23/18	1.01	3.3	-2.3	40.90

Other Occurrences: * November 30th; [#] November 6th & 10th; ^o November 6th & 10th; [^] November 21st.

AUTUMN (SEPTEMBER-NOVEMBER) 1999: Very wet conditions early in the season were significant enough to ensure a wetter than normal Autumn across the Washington/Baltimore area. Seasonal precipitation totals exceeding 1 foot were observed at four of the five local airports, producing seasonal surpluses between 3 and 7 inches. In fact, it was the wettest Autumn at BWI (15.93") since 1966. Drought conditions that enveloped the local area since late Summer of 1998 came to an abrupt end as two tropical systems generated abundant rainfall across the Washington/Baltimore area during September. Double-digit September precipitation totals were common across most of the area. The five local airports reported amounts of 6-14 inches and totals 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 (4th 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 1975 (15th wettest overall). The first significant rain event occurred from the September 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 of Washington, precipitation totals from this event topped 9 inches in Augusta County, VA. Strong thunderstorms associated with a frontal system produced heavy rain across most of the local area during the evening of the 9th. The major rain event for September occurred on the 16th as Hurricane Floyd tracked to the south and east of Washington and Baltimore. 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 over 12 inches across much of the Virginia Tidewater, generating their worst flooding on record, according to press reports. In the local area, 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 in some areas). The storm produced nearly a foot of rain near the Chesapeake Bay while 2-6 inches were observed at the three major airports. At BWI, 5.02" of rain fell on the 16th, making it the wettest September day and the second wettest calendar day since records began in August 1951. DCA reported 3.67" on the 16th, the wettest calendar day since September 5, 1979. September precipitation totals surpassed Autumn (September-November) normals at both DCA and BWI. After several weeks of stormy weather and excessive rainfall, more tranquil conditions prevailed across the region during October and November. October precipitation totals were generally between 2 and 3 inches, resulting in small monthly deficits at most locations. Five precipitation events accounted for most of the October precipitation totals, but there was no event that produced more than an inch of rain at any of the five airports. Heavy showers and thunderstorms on October 4th produced about half an inch of rain at DCA and about 0.75" at both BWI and IAD. A steady rain from October 9th-10th yielded about 0.75" at the three major airports. There were two lengthy periods without measurable rainfall. The first occurred October 22-November 1 (11 consecutive days), the second November 3rd-24th (22 consecutive days). November precipitation totals were between 1 & 2 inches below normal, the result of 27 days without measurable precipitation at DCA, including the 22 consecutive days mentioned earlier.

Temperatures averaged near normal across the local area. There were 52 Autumn days (57%) with at or below normal temperatures at DCA. September featured subnormal temperatures for the ninth time in the last ten years at DCA. At or below normal readings were observed on 17 days at DCA and for the first time since 1992, there were no days with 90°F+ highs. Cooler than normal conditions highlighted October. There were 23 days with at or below normal temperatures at DCA, yielding monthly departures between -2°F and -3°F at the three major airports. Similar to October 1998, there were no prolonged periods of excessive heat, but this year there were no days with a maximum temperature at or above 80°F for the first time since 1987 at DCA. In addition, the first 32°F or lower reading of the season was observed at IAD on the 28th. Autumn ended with a return to warmer than normal weather as November temperature departures exceeded +3°F at DCA, BWI and IAD.

AUTUMN 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
National (DCA)	68.5	51.8	60.1	60.3	-0.2	86/9-8*	31/11-18*	14.25	9.45	+4.80
Baltimore (BWI)	67.5	47.1	57.3	57.3	0.0	85/9-7 [^]	24/11-18	15.93	9.71	+6.22
Dulles (IAD)	68.0	45.4	56.7	55.9	+0.8	86/9-3 ^o	22/11-18	13.60	9.86	+3.74
Ft. Belvoir (DAA)	71.7	49.0	60.4	N/A	N/A	90/9-6 ¹	27/11-18	10.51	10.0	+0.5
Andrews AFB (ADW)	67.1	47.8	57.5	N/A	N/A	88/9-9	23/11-18	17.55	10.2	+7.4

Other Occurrences: * September 9th; ^o November 30th; [^] September 8th; ^o September 7th, 8th & 9th; ¹ September 7th & 8th.

LOOKING AHEAD TO DECEMBER: Subnormal December Snowfall Again?

Since 1983, there has only been one December (1989) with above normal snowfall at DCA. In 1991 and 1994, there was no snowfall recorded at DCA. Below is a list of December snowfalls totals from 1983-1998 at DCA [Normal December Snowfall at DCA: 3.1"].

Year	Snowfall (In.)	Year	Snowfall (In.)	Year	Snowfall (In.)	Year	Snowfall (In.)
1998	0.5	1994	0.0	1990	3.0	1986	Trace
1997	0.1	1993	2.6	1989	9.0	1985	0.7
1996	0.2	1992	1.0	1988	1.2	1984	0.3
1995	1.3	1991	0.0	1987	Trace	1983	Trace