

Mid-Summer 2013 was second most humid in D.C.'s recorded history

By Rick Grow, Published: August 12 at 10:27 am

Highest Average Dew Point (June 30-July 23)

Dew Point (F)	Year
71.4	1949
71.2	2013
71.2	1994
69.3	1977
69.1	1981
69.1	1948
69.1	1955
68.5	2005
68.5	1990
68.3	1993
68.1	2006
68.1	1987

(Rick Grow)

As we had reported earlier this summer, [Washington, D.C. set a record for the longest streak above 80 degrees](#), running warmer than that mark for 138 hours – or over five and a half days – from July 15 through July 21.

Now let this fact sink in: the period from June 30 through July 23, 2013 (compared to past stretches over these same dates), was the second most humid in recorded history (dating back to 1937).

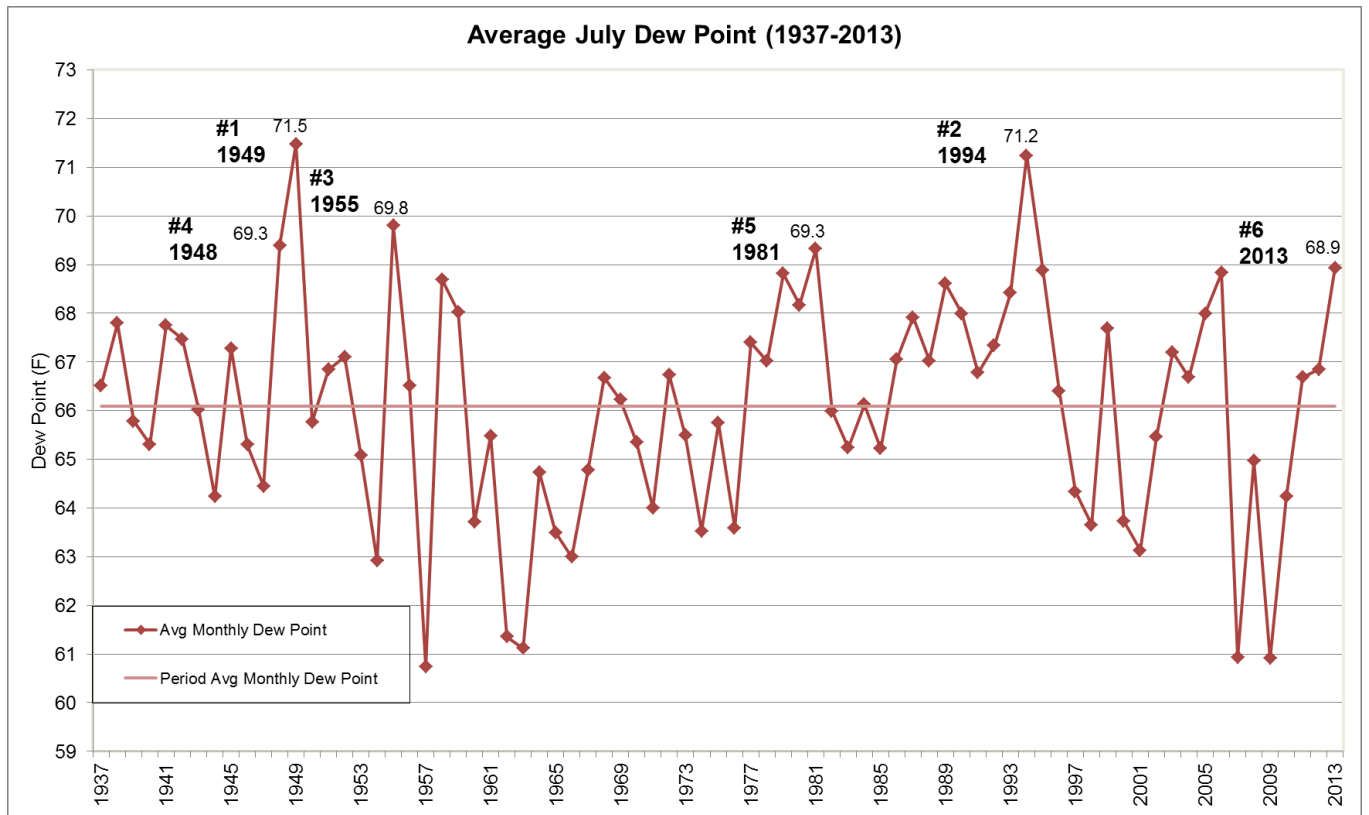
This is even more impressive considering that the roughly three-week span encompasses the hottest time of year in Washington (with average highs of 88-89 and lows of 70-71).

I analyzed the humidity for this post using dew point temperature. Recall the dew point marks the temperature at which the air would be saturated (or dew would form). The higher the dew point, the higher the humidity. In summer, dew points 60 or lower are comfortable, above 65 is muggy, above 70 is uncomfortable, and above 75 is oppressive.

Related: [Weather weenies prefer dew point over relative humidity, and you should too!](#)

In this summer's ultra-humid mid-summer stretch, the average daily dew point of 71.2 degrees fell only 0.2 degrees short of matching the record high of 71.4 degrees, set in 1949. (While rounding also nudges the average daily dew point up to 71.2 degrees for the June 30-July 23 period in 1994, it lands in third place, running about 0.02 degree cooler than the 2013 reading.)

Another humid highlight of the current summer involves the month of July, within which the average daily dew point of 68.9 degrees ranked as the sixth highest on record. Unsurprisingly, July 1949 ranks first all time with an average dew point temperature of 71.5 degrees (and July 1994 ranks in second at 71.2 degrees). The long term average daily dew point for July is 66.1 degrees, meaning that 2013's 68.9-degree mark was nearly 3 degrees warmer than the 76-year climatological mean.



Rankings #1 through #6 represent the six highest average July dew points. July 2013 recorded the sixth highest average dew point for the month (Rick Grow)

Highest Average Daily Dew Points

Dew Point (F)	Month/Day	Year
78.4	August 2	1979
78.2	August 1	1979
78.1	July 15	1995
77.8	July 20	1980
77.4	July 6	1993
77.3	August 16	1978
77.1	June 25	1949
76.9	July 21	1980
76.9	July 22	1978
76.7	August 15	1978

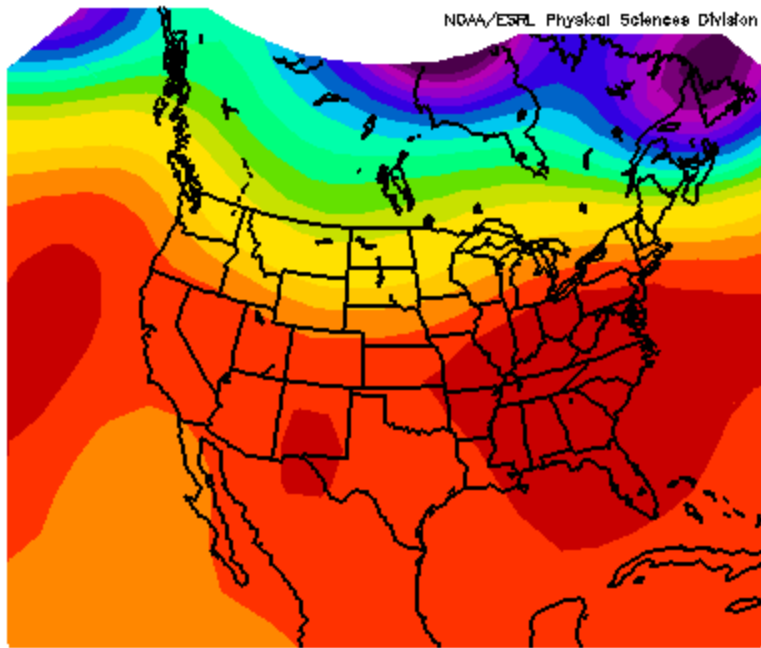
(Rick Grow)

Despite these historically notable facts, the average daily dew point for any one day in July 2013 did not reach anywhere near the record high. On July 19, the dew point averaged 75.9 degrees. But that temperature falls well short of the 78.4-degree average dew point recorded on August 2, 1979, and also ran 0.8 degrees cooler than the 10th-highest average dew point (76.7) reached on August 15, 1978.

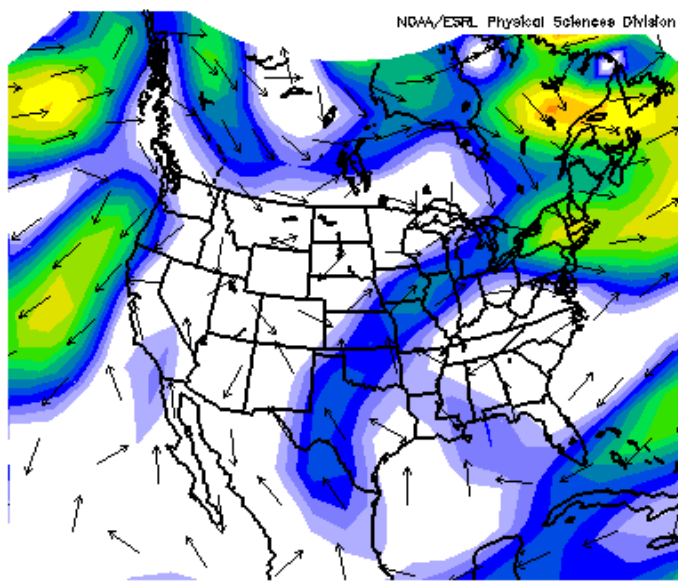
Even the heat index was underwhelmingly low. The combination of a 93-degree temperature and 79-degree dew point made it feel like 110 degrees (the heat index value) at 2 p.m. on July 19, 2013. In both July 1980 and July 1995, the heat index in D.C. surged to 119 degrees, thanks to much hotter air temperatures of 98 and 99, respectively. And, of course, who can forget July 22, 2011, when a temperature of 102 and dew point of 78 at 3 p.m. combined to raise the heat index to an extremely oppressive 121 degrees?

The mid-July heat wave of 1995 deserves more attention here since it produced notoriously high dew points. In a [post on worldwide record dew points](#), Weather Underground's Christopher Burt wrote that Appleton, Wis. – a town in eastern Wisconsin nearly equidistant from Green Bay and Oshkosh – recorded the highest U.S. dew point temperature (90 degrees). That reading coupled with the 5 p.m. air temperature of 101 on July 13 equated to a heat index value of 148 degrees.

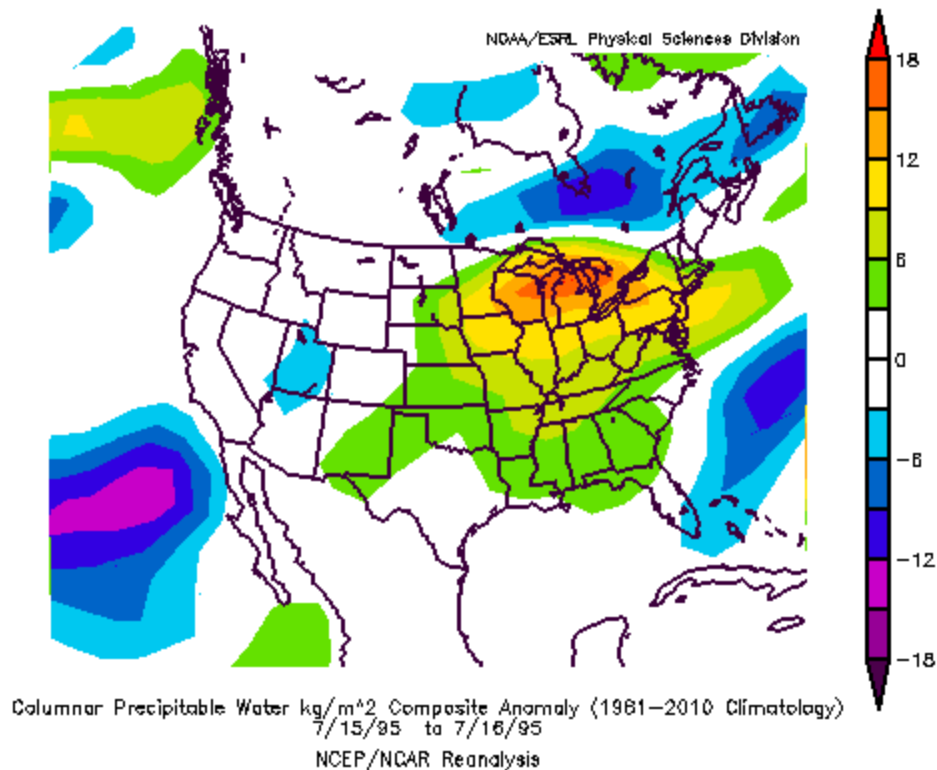
A few days later on July 15, 1995, Washington, D.C. recorded dew points of 82 degrees at 2 p.m. and 10 p.m. and, more impressively, the hourly dew point stayed at or above 79 degrees for 15 consecutive hours, from 12 p.m. until 2 a.m. on the 16th. In this 2013 summer, the city managed only two separate five-hour stretches of dew point readings at or above 77 degrees, from 9 p.m. on July 18 through 1 a.m. on July 19, and from 11 a.m. through 4 p.m. on the 19th.



500mb Geopotential Height (m) Composite Mean
7/15/95 to 7/16/95
NCEP/NCAR Reanalysis

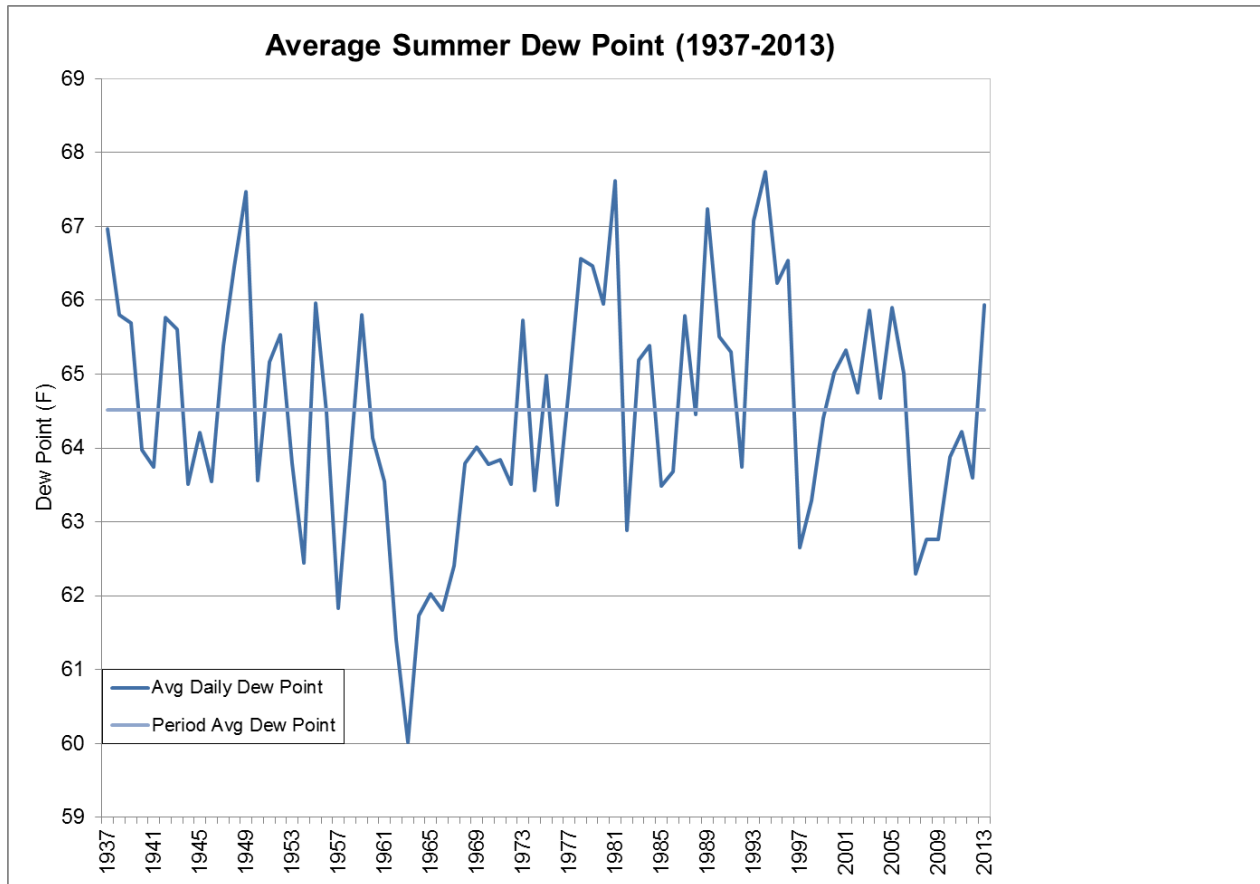


850mb Vector Wind (m/s) Composite Mean
7/15/95 to 7/15/95
NCEP/NCAR Reanalysis



Graphic on top shows the pattern at an altitude of about 18,000 feet high. An exceptionally strong ridge – or heat dome – prevailed over the Eastern U.S. on July 15-16, 1995. On the middle graphic, note the clockwise circulation (follow the arrows) around the ridge of high pressure, extending from the Bahamas into the Gulf of Mexico, and then into the Midwest and Northeast. Now, on the bottom graphic, identify via the yellow and orange colors the extremely high amount of moisture (plotted in terms of precipitable water) that the southwesterly winds transported to the Midwest, Great Lakes and Mid-Atlantic (NOAA/ESRL Physical Sciences Division)

There is one more aspect of the July 18-19, 2013, high dew point event that reduces its stature. While remarkably high, the 80.1-degree dew point measured on July 18 at 7 p.m. does not come close to matching the highest hourly dew points in recorded history. Climate records for Reagan Nat'l Airport show that a dew point temperature of 83.3 degrees may have been the most reliably highest measurement (taken on June 25, 1949). The second highest dew point measurement (82.4 degrees) was plausibly made on June 1, 1946. That torrid heat wave in July 1995 accounts for the third highest dew point (82 degrees) on record.



(Rick Grow)

Washington, D.C. endured the high humidity of July, but to date, the area is experiencing lower than normal humidity levels in August (with an average dew point of 64.7 degrees, or nearly 1 degree lower than the 76-year climatological mean of 65.6 degrees) – today’s dew points near 70 notwithstanding. June’s humidity levels were higher than normal, as the average dew point of 63.4 degrees ran over 1.5 degrees higher than the 76-year mean of 61.8 degrees.

Overall, Washingtonians have experienced a summer filled with more humidity than usual, but the cool shot arriving later this week will continue to lower the three-month dew point anomaly. Dew points average near 64.5 degrees for a normal Washington summer; so far this year, the dew point is 65.9 degrees. The most humid summer occurred in 1994 with an average dew point of 67.7 degrees. How about the least humid summer? That took place in 1963, when the dew point averaged a relatively comfortable 60 degrees.

A special word of thanks goes out to Eric Hohman, Assistant State Climatologist for Maryland (<http://www.atmos.umd.edu/~climate/>). Eric retrieved and formatted the data for this study, and it was an arduous task, one in which he excelled! He is also a graduate student at the University of Maryland, College Park, studying Atmospheric and Oceanic Science. Eric earned a Bachelor’s degree in Meteorology from Millersville University near Lancaster, Pa.

