Northeast Regional Climate Center Mid-Atlantic Climate

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JULY 2013

VOLUME 113 NUMBER 7

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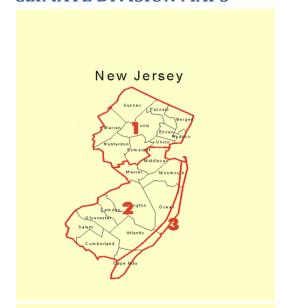
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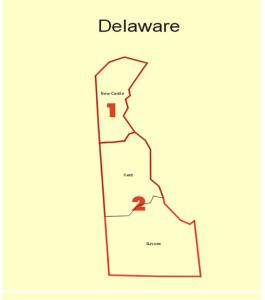
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CLIMATE DIVISION MAPS



New Jersey Climate Divisions

- 1 Northern
- 2 Southern
- 3 Coastal



Maryland

Delaware Climate Divisions

- 1 Northern
- 2 Southern

Maryland Climate Divisions

- 1 Southeastern Shore
- 2 Central Eastern Shore
- 3 Lower Southern
- 4 Upper Southern
- 5 Northeastern Shore
- 6 Northern Central
- 7 Appalachian Mountain
- 8 Allegheny Plateau

JULY WEATHER HIGHLIGHTS

For the fourth month in a row, the Mid-Atlantic region experienced above-normal temperatures. The average temperature of 78.0 degrees was 2.4 degrees above normal, making it the 6th warmest July since 1895. All three states were warmer than normal. New Jersey's departure of +3.2 degrees made it the 4th warmest July on record while Delaware's departure of +2.3 degrees made it the 7th warmest July. Maryland ended the month at +1.9 degrees making it the state's 12th warmest July. New Jersey's three divisions ranked this July among their top 10 warmest as did Delaware's two divisions. Of Maryland's eight divisions, seven ranked this July among their top 15 warmest. Rankings are listed below. The warm spot of the month was Harrison, NJ, which topped out at 102 degrees on the 19th. For three months running, Deep Creek, MD, was one of the cool spots with a low of 46 degrees on the 30th. Oakland, MD, also dropped down to 46 degrees on the 29th and 30th.

Climate Division Rank (warmest since 1895)

New Jersey		
Northern		3 rd
Southern		5 th
Coastal		9 th
Delaware		
Northern		5 th
Southern		6 th
Maryland		
Southeastern Shore		3 rd
Northeastern Shore		6 th
Appalachian Mountains	7 th	
Central Eastern Shore		7 th
Lower Southern		10 th
Upper Southern		10 th
Allegheny Plateau		15 th
North Central		28 th

The Mid-Atlantic remained wetter than normal during July. The region's monthly total of 4.90 inches, 114 percent of normal, made it the wettest July since 2005. Delaware was the wettest state at 131 percent of normal precipitation. The state's two divisions received above-normal precipitation, as well. New Jersey ended the month at 123 percent of normal, with its three divisions all wetter than normal. Maryland wrapped up July with 104 percent of normal precipitation. Five of its eight divisions were wetter than normal, with the Northeastern Shore having its 10th wettest July. The National Weather Service office in Mount Holly, NJ, was the site of the greatest monthly and daily rainfall. On the 23rd 6.25 inches of rain fell, which contributed to the site's monthly total of 12.72 inches.

Heavy rain during June left waterways running high and the ground saturated going into July. Downpours were common throughout July, which led to flash flooding in several parts of the region. On the 1st, heavy rains stranded motorists in northern New Jersey leading to water rescues. Up to 5.00 inches of rain fell in the suburbs of Washington D.C. on the 12th, causing a portion of I-495 to be shut down in Montgomery County, MD, due to standing water. On the 28th, up to 6.00 inches of rain fell in New Jersey, flooding portions of Interstates 76 and 287. In addition, the precipitation affected agriculture. While heavy precipitation was localized in New Jersey, some farmers in Burlington County reported the wet weather caused disease in vegetables, with some fields being abandoned, while farmers in Cape May County reported some squash fields were completely lost due to excess moisture. Three EF-0 tornadoes touched down in July: one in Union County, NJ, and another in Prince George's County, MD, on the 1st and one in Harford County, MD, on the 23rd. The tornadoes primarily uprooted and topped trees, but also caused some structural and crop damage. In addition, a gustnado in New Jersey on the 22nd downed trees and caused some roof damage. One other highlight of the month was a

hot, humid air mass that set up over the region from July 14 through 20. Washington, D.C. set a record for consecutive days above 80 degrees when the temperature at Reagan Airport did not drop below 80 degrees, even at night, for 5 days from July 16-20. Washington Dulles, VA, set a record for consecutive days above 70 degrees when the temperature did not drop below 70 degrees, even at night, for 10 days from July 14-23. Wilmington, DE, set the same record but starting earlier in the month, when the temperature did not drop below 70 degrees, even at night, for 23 days from July 1-23. At the Inner Harbor in Baltimore, Maryland, the warm temperatures contributed to an overgrowth of bacteria and a lack of oxygen in the waters. The harbor's water turned a milky green and hundreds of fish died.

Daily Maximum Temperature Records (°F)

Station	Date	New	Previous
Newark, NJ	19	100	100 in 1999

Daily Low Maximum Temperature Records (°F)

Station	Date	New	<u>Previous</u>
Newark, NJ	25	68	73 in 1969

Daily High Minimum Temperature Records (°F)

Station	Date	New	Previous
Washington Dulles, DC	2	73	73 in 2012
Washington National, DC	18	80	80 in 2012
Washington Dulles, DC	19	77	75 in 1991
Washington National, DC	19	81	79 in 2011
Newark, NJ	19	82	80 in 1982
Washington Dulles, DC	20	75	75 in 2011
Newark, NJ	20	78	78 in 2005

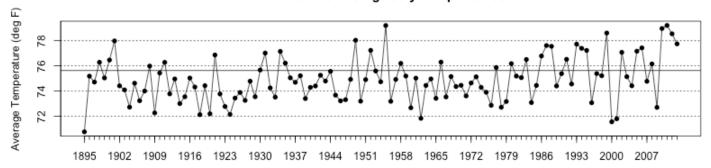
Daily High Average Temperature Records (°F)

Station	Date	New	Previous
Newark, NJ	18	90.0	90.0 in 1982
Washington Dulles, DC	19	86.0	85.0 in 1991
Atlantic City, NJ	19	88.0	88.0 in 1982
Washington National, DC	19	88.0	88.0 in 2011
Newark, NJ	19	91.0	89.0 in 1982

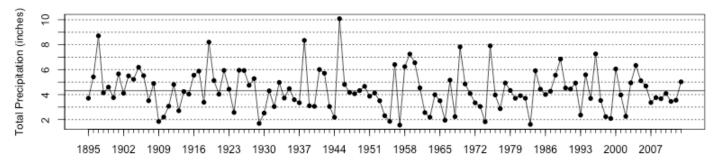
Daily Precipitation Records (inches)

Station	Date	New	<u>Previous</u>
Washington Dulles, DC	11	3.71	1.12 in 1977

Mid Atlantic Average July Temperatures



Mid Atlantic July Precipitation Totals



The 2013 values depicted on these graphs are based on preliminary data.

Yet another hot summer month: July 2013 Summary

Dr. David A. Robinson, New Jersey State Climatologist NJ Agricultural Experiment Station, Rutgers University

July 2013 marked yet another in a lengthening sequence of hot mid-summer months across New Jersey. Most notable this year was the frequency of unusually warm nighttime temperatures. Accompanying the warmth and often excessive humidity were widely varying rainfall totals, which on a statewide basis averaged above the long-term mean.

Temperature

The statewide average temperature of 78.2° was 3.2° above average. This ranks as the 5th warmest July since records commenced in 1895 (Table 1). Remarkably, the most recent four Julys all are within the top six, with three other Julys from the last 20 years also populating the top 10.

Rank	Year	July Avg. Temp.
1	1955	79.0°
2	2011	78.8°
3	2010	78.7°
4	1999	78.4°
5	2013	78.2°
6	2012	78.1°
7	1949	77.8°
8	2006	77.3°
9	1994	77.1°
10	1901	77.0°

Table 1. The ten warmest Julys across New Jersey since 1895.

The warmth of July 2013 was characterized by nighttime temperatures that struggled to drop below 70°. While statewide average monthly minimums are not available, it is worth noting that on 26 days one or more of the over 50 NJWxNet stations failed to dip below 70°. In New Brunswick (Middlesex County), the more than century-long station at Rutgers Gardens (outside the core of the developed community, thus not experiencing an urban heat island effect) experienced 21 days with minimums at or above 70° with an average minimum of 69.8°. This average was not only 4.9° above the 1981-2010 normal but was by far the warmest monthly minimum on record. This exceeded the previous record warm minimum (July 1955) by 1.8° and the 21 days shattered the previous record number of 70° or warmer minimums in a month, which had been 15 in August 2005.

There were also plenty of hot July afternoons, with 18 days seeing at least one station rising to 90° or higher. This included eight-day (4th-11th) and ten-day (14th-23rd) runs. Does this mean NJ only had two heat waves in July? Well, that is the case if one considers three or more consecutive days of 90° warmth as constituting a heat wave. Thus the disinterest of those of us in the state climate office in counting the number of seasonal "heat waves". A better measure is to pay attention to the number of days exceeding the 90° threshold, statewide or at individual locations. And as seen above, it does not hurt to evaluate night time lows as well.

Hawthorne (Passaic) reached 93° on the 4th, with three other stations (including Newark Airport (Essex)) at 91°. Hawthorne saw 95° on the 5th, with three stations at 93°. Seven stations topped out at 95° on the 6th, with Hawthorne and Newark at 96° on the 7th and

three locations at 95°. The 8th-11th saw state maximums of 90°-91° in communities such as Point Pleasant (Ocean), New Brunswick, Jersey City (Hudson), Piney Hollow (Gloucester), Newark, and Hawthorne.

The 14th-20th marked the most uncomfortable July interval. Accompanying scorching daytime maximums were high humidity levels, resulting in the heat index exceeding 110° at some locations during afternoon hours. Little relief was found at night, as minimums remained in the 70°s almost everywhere most nights, and even a few times were in the low 80°s in some urban and coastal locations. Hawthorne got to 94° on the 14th and Newark 93°. Newark reached 97° on the 15th, with five stations at 96° and five others at 95°. Hawthorne was 96° and six stations 95° on the 16th. New Brunswick was hottest at 98° on the 17th, with three stations at 97°. Newark baked at 101° on the 18th, when Berkeley Township (Ocean), Jersey City, and Toms River (Ocean) rose to 99°. This hottest day of the month also saw six stations at 98° and only High Point Monument (Sussex) and Bivalve (Cumberland) maxing out below 90°, with highs of 88° and 89°, respectively. The National Weather Service Cooperative station in Harrison (Hudson) rose to 102° on the 19th, with Newark and Point Pleasant at 100°. Berkeley Township and Jersey City reached 99° on the 19th, while Harvey Cedars (Ocean) was "coolest" at 84°. Point Pleasant saw 97° on the 20th, when Sea Girt (Monmouth), Berkeley Township, and Newark topped out at 96°. The 21st-23rd found three stations up to 92°, four stations to 90°, and New Brunswick to 90°, on these respective dates.

It is somewhat unusual to discuss warm minimum temperatures. However, when NJ has almost certainly not had any month in more than a century of observations with such excessive overnight warmth, attention is warranted. On 26 July days, at least one NJWxNet station had a minimum at or above 70°. This included the 1st-24th and 27th-28th. The 19th saw the warmest minimums, with 82° and 80° at Newark and Point Pleasant to go along with 81° at Jersey City and 80° at five other stations. Only Walpack (Sussex) at 67° was below 70°. The 20th saw all stations in the 70°s with the exception of Walpack at 69°. With excessive humidity levels throughout the majority of the first three weeks of July it was difficult to rid the surface and lower atmosphere of the previous afternoon's heat via outgoing radiation. Such a process works most effectively when the lower atmosphere is rather dry. While this humidity and generally moist surface conditions likely "saved" the state from even higher daytime maximums (some of the sun's energy went toward evaporation, not heating, and sometimes afternoon clouds appeared), we paid for it through the discomfort wrought by the moist atmosphere.

However, a brief drier spell toward the middle of July and a more refreshing air mass during the last week of the month resulted in ten days with minimum temperatures below 60° at one or more locations. The 12th found Walpack at 58°, and both High Point (Sussex) and High Point Monument stations fell to 59° on the 13th. The 24th saw Walpack and the Monument stations at 54°. The monthly low of 49° occurred at Walpack on the 25th, when ten stations dropped into the 50°s. Walpack was 52° on the 26th and joined at that mark by Pequest (Warren) on the 27th. Looking to the coastal plain, Berkeley Township (Ocean) and Woodbine (Cape May) were the coolest locations in the state at 58° and 59°, respectively, on the 28th. Walpack took low honors at 53° on the 29th. Statewide, the 30th was the coolest morning of July, with Walpack and Pequest down to 50° and 37 other stations between 51° and 59°. Atlantic City Marina at 66° was the mildest that morning. Walpack again fell to 50° on the 31st.

Precipitation and storms

As is often the case during the summer season with its hit and miss showers and thunderstorms, precipitation totals varied considerably across New Jersey this past July. The overall state average of 5.84" is 1.32" above normal and ranks as the 24th wettest back to 1895. As first stated in the June narrative, a point of information is warranted here. While over an inch fell in some locations on the afternoon of the June 30th, most National Weather Service (NWS) Cooperative observers had already reported for the day, as had Community Collaborative Rain, Hail, and Snow Network (CoCoRaHS) observers. Most take measurements close to 7 AM, with the historic rule being that the morning observation "ends" that particular calendar day. Thus any rain after that time on the June 30th was reported on July 1st. While this practice can be debated, one can only compare June and July 2013 with previous such months by following suit. Thus one might say that July 2013 totals are a bit inflated (by the way, it did not rain from 7AM on July 31 to 7AM August 1), and June totals minimized, despite the fact that June 2013 was the wettest on record without including the post-7AM June 30th rains.

July's storms most often had eyes on the western counties, especially from Salem up to Hunterdon where values were at least several inches above average. Meanwhile the eastern counties caught closer to average rainfall, with scattered areas, particularly

along the shore, coming in several inches below average. Among the over 200 CoCoRaHS, NJWxNet and NWS Cooperative stations with complete or near complete July totals, two stations in Mount Holly (Burlington) took top honors with 14.08" and 12.72". These impressive totals were followed by 11.28" in Pennsville (Salem), 9.86" at Mount Ephraim (Camden), 9.65" in Lebanon (Hunterdon), and 9.60" in Jackson (Ocean). On the low end, only 1.55" accumulated in Lacey Township (Ocean). This is only a mere 30 miles or so to the east of Mount Holly! Other dry spots included Seaside Heights (Ocean) at 2.01", Upper Township (Cape May) 2.22", Linwood (Atlantic) 2.47", Toms River (Ocean) 2.39", Eatontown (Monmouth) 2.56", and Palisades Park (Bergen) 2.63".

The rain on the afternoon and evening of June 30th mostly fell in the far southwest and northwest corners of the state. It amounted to 1.00"-2.00" in a few locations, while over two thirds of the state had no more than a few tenths of an inch. As the 1st dawned and CoCoRaHS observers began checking their gauges a powerful thunderstorm complex entered the state through Hunterdon County. This complex rapidly made its way to the northeast, leaving NJ in the Bergen County area by mid morning. Accompanied by intense lightning, straight line winds brought down trees along its journey and the first NJ tornado of 2013 struck western Union County. The EFO tornado touched down in Berkeley Heights at 9:17 AM, passed through New Providence and dissipated in Summit at 9:25 AM, a path of 4.8 miles. The tornado was approximately 50 yards wide and had maximum winds of 85 mph. Extensive tree damage occurred along its path, with roof damage and power outages also observed. Fortunately no one was injured. Rainfall totals for the 30th and 1st had to be bundled together due to the varying observation times of observers the morning of the 1st, some observing before the storm passed, others shortly after. Totals were as large as 3.07" in Woolwich Township (Gloucester), 2.70" in Kingwood (Hunterdon), 2.67" in Franklin Township (Hunterdon), and 2.69" at Newton (Sussex). Flash flooding occurred during the morning of the 1st.

Storms on the evening of the 2nd tracked along a line from Camden County northeast to Monmouth County. Fairfield (Camden) picked up 1.24", Freehold (Monmouth) 1.15", and Millstone (Monmouth) 1.14". The afternoon and evening of the 3rd saw moderate to heavy rainfall in storms that moved from Burlington County eastward to the Monmouth/Ocean border, with little falling elsewhere in NJ. 1.93" accumulated at Sea Girt (Monmouth), 1.90" in Point Pleasant Beach (Ocean), and 1.68" in Brick (Ocean). More storms on the 7th deposited 1.22" at Wantage (Sussex), and 0.86" and 0.72" in two Lebanon (Hunterdon) gauges. Considerably less rain fell outside of the northwest corner and Hunterdon/Morris region, however strong winds toppled trees onto homes and power lines at locations in Somerset, Morris, Essex, and Bergen counties.

Scattered thunderstorms brought less than 1.00" rainfall totals to portions of central and southern NJ on the 9th, 10th, and 11th. More significant rains fell during the daytime hours of the 12th, particularly in extreme southern areas from Salem through Cumberland and into Cape May counties. Over 2.00" fell in most of this area, with impressive totals in Cape May, including Middle Township 5.60", Lower Township 5.51", Cape May 3.43", West Cape May 3.19", and Wildwood Crest 3.12". Of the 212 CoCoRaHS stations reporting this event, 47 caught more than an inch, including some locations up the Delaware Valley to Mercer County. Other areas of the state saw less than 0.50". The persistent pattern of scattered storms continued on the 13th with the focus on Mercer County and nearby environs. In Mercer, Hamilton stations received 2.92" and 1.95", Lawrence Township 1.60", and three stations in Ewing Township 1.15", 1.11" and 1.02". Montgomery (Somerset) saw 1.58". Little rain fell once 20-30 miles away from Mercer.

The hottest spell of the month was accompanied by little to no rain. It was not until the heat began to relinquish its grip that rains returned to the Garden State. During the PM hours of 20th, southern Atlantic County and areas within 30 miles or so of this area received more than 0.50", with 1.16" in Egg Harbor Township and 1.11" in both Linwood and Estell Manor. Another zone through Hunterdon, Somerset, and northern Middlesex counties caught 0.50"-1.00", topped by 1.18" in Woodbridge (Middlesex). The late afternoon of the 21st saw storms drop 1.70" at the Atlantic City Marina (Atlantic) and 1.51" and 1.29" at Stafford Township (Ocean) stations. Little rain fell elsewhere.

The heat truly broke when a frontal system moved through NJ late on the 22nd into the early morning of the 23rd. Accompanying this were the most widespread heavy rains of the month. The heaviest fell in an area encompassing northern Burlington/Mercer/western Monmouth/northwest Ocean counties, with flash flooding ensuing. Mt Holly (Burlington) received 6.44", Jackson (Ocean) 6.07", Hamilton (Mercer) 3.77", and Millstone (Monmouth) 3.62". Northern Hunterdon/southern Warren north-northeastward to northern Passaic County also saw multiple inches of rain and flooding in spots, including 4.19" in Denville

(Morris). From 0.50"-1.00" fell in most of the remainder of northern and central NJ, with 0.00"-0.50" in the southern third. Of the 232 CoCoRaHS stations reporting, 87 received 1.00"-1.99", 34 from 2.00"-2.99", 8 from 3.00"-3.99", and those mentioned above saw more than 4.00". Accompanying the severe storm in Jackson on the 22nd was a reported gustnado that took down a number of trees and lightly damaged several homes. The National Weather Service reviewed the damage and made the designation of gustnado, which typically forms in the outflow boundaries of thunderstorms. According to the NWS, they are not quite tornadoes, but they do have a rotation to them.

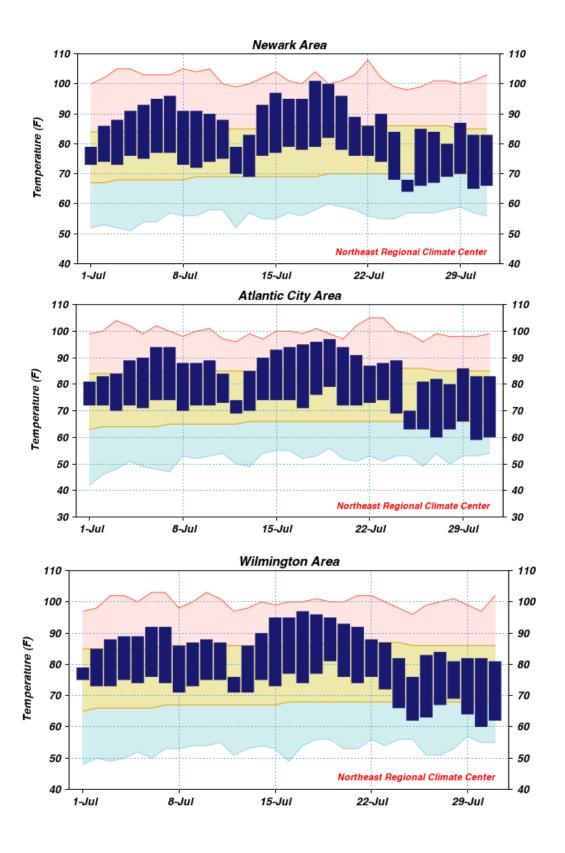
The final storms of July deluged portions of the lower Delaware Valley and west central NJ, resulting in flash flooding that closed major roadways for hours during the late Sunday afternoon and early evening of the 28th. Within just several hours, Pennsville (Salem) received 5.93", Mount Ephraim (Camden) 5.17", and East Greenwich Township (Gloucester) 4.55". The worst hit areas were most of Salem, Gloucester, and Camden counties, southwest Burlington, and western Cumberland. Still, within this zone, gauges in central Salem and Gloucester counties caught less than an inch. More than 2.00" fell in a bull's eye over northeast Hunterdon/northern Somerset/southern Morris. Some 68 CoCoRaHS stations of 225 reporting saw 1.00"-1.99", 20 from 2.00"-2.99", and 15 from 3.00"-3.99", in addition to reports noted above. Despite this count, most of the eastern third of the state received less than 0.50".

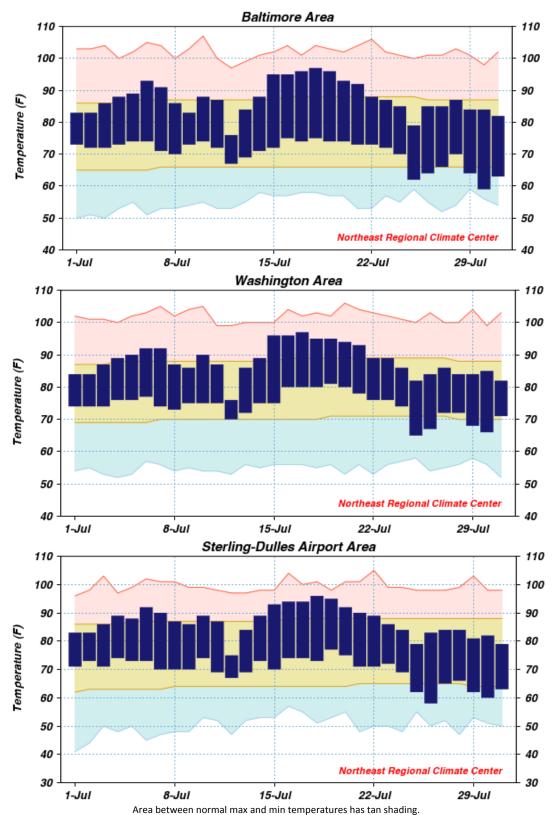
Wind and Pressure

While local thunderstorm winds, including the tornado on the 1^{st} and gustnado on the 22^{nd} clearly saw winds gusting over 50 mph, the NJWxNet only had two instances this month where a station reported a gust exceeding 40 mph. Sea Girt peaked at 47 mph on the 9^{th} and Upper Deerfield (Cumberland) gusted to 45 mph on the 20^{th} .

Barometric pressure was highest on the 14th, with most stations rising to the mid 30.30"s. Lowest pressures were observed on the 23rd and were mainly in the mid 29.50"s range.

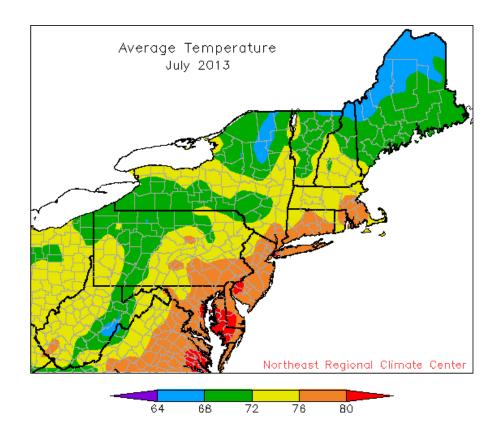
DAILY AVERAGE TEMPERATURES AND THE 30-YEAR NORMAL

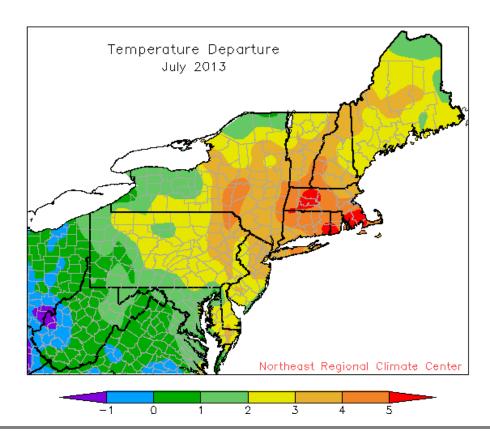




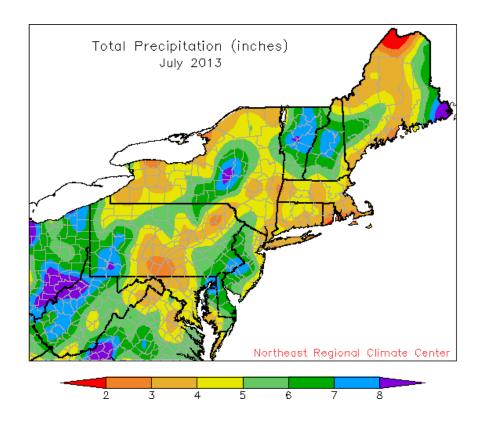
Red line connects record high temperatures.
Light blue line connects record low temperatures.

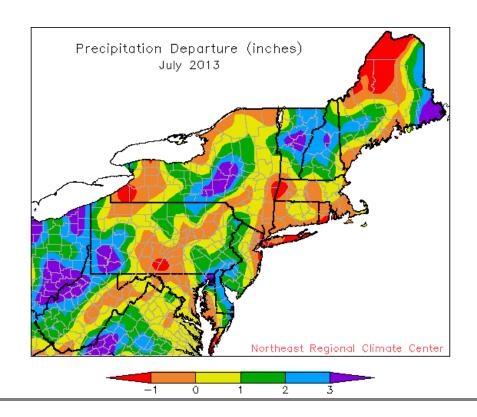
MONTHLY TEMPERATURE MAPS





MONTHLY PRECIPITATION MAPS





PRELIMINARY MONTHLY SUMMARIZED DATA JULY 2013

	1	TEMPERATURE (r'					<u> </u>			TATION (INCH		
STATION		MONTHLY AVERAGES			EXTRE		NUMBER OF DAYS			MONTHLY TOTALS			EXTREMES		SNOWFALL	
	AVG	AVG	MON	DEPRT	MON DAY	MON DAY	MAX		MIN		MON	DEPRT	DAYS	DLY DAY	MON	DLY DAY
	MAX	MIN	AVG		MAX	MIN	90+	70-	65+ !	50-	TOT		0.1+	MAX	TOT	MAX
-DE: NORTHERN-																
WILMINGTON NEW CAS	87.2	71.7	79.5	2.7	97 17	60 30	10	0	26	0	4.05	-0.52	7	1.50 28	0	
WILMNGTON PORTER R	87.7	70.5	79.1	2.9	98 19	60 25	15	0	27	0	5.75	0.39	9	1.25 12	0	
-DIVISION-		,,,,	79.3	2.8	30 23	00 25	10	·	-,	•		0.03	-	1125 12	Ů	
-DIVISION-			19.3	2.0							4.90	0.03				
-DE: SOUTHERN-																
DOVER	87.6	70.9	79.3	1.6	97 17	61 30	10	0	27	0					0	
-DIVISION-			79.3	2.2												
-STATE-			79.3	2.3							1.08	-3.25			0	
-MD: SOUTHEASTERN-																
SALISBURY WICOMICO	89.3	72.7	81.0	4.2	97 18+	62 30	16	0	28	0	3.81	-0.57	5	2.27 12	0	
															_	
SNOW HILL 4 N	89.1	70.7		2.5	96 19+	57 30	13	U	27	0	5.32	0.93	8	2.33 12	NM	
-DIVISION-			80.5	3.3							4.57	0.25				
-MD: CENTRAL EAST-																
ROYAL OAK 2 SSW	88.4	72.8	80.6	2.0	96 17	62 30	14	0	28	0	3.32	-1.05	5	1.16 12	0	
-DIVISION-			80.6	2.2							3.32	-1.11				
																
-MD: LOWER SOUTHE-																
MECHANICSVILLE 5 N	84.8	69.4	77.1	1.6	92 20+	59 30	5	0	27	0	3.06	-1.25	5	1.03 3	0	
SOLOMONS	87.1	74.2	80.6	1.0	96 19	67 26	10			0					NM	
-DIVISION-			78.8	2.1							3.06	-1.06				
-MD: UPPER SOUTHE-																
BALTIMORE WASH INT	87.6	70.5	79.0	2.0	97 18	59 30	9	0	26	0	2.77	-1.30	7	0.66 12	0	
BELTSVILLE	86.5	70.0	78.3	1.0	95 20+	58 30	9	0	25	0	2.95	-0.99	9	0.69 12	0	
DALECARLIA RSVR	87.6	71.0	79.3	1.0	98 20	60 30	15	0	27	0	6.44	1.85	10	2.40 12	0	
LAUREL 3 W	88.0	71.4	79.7	1.1	99 18	60 25	10		28	0		-0.87	9	0.95 12	NM	
MD SCI CTR BALTIMO		75.7	83.4	2.7	100 19	66 25	18		31	0		-1.15	10	0.94 12	NM	
NATL ARBORETUM DC	89.4		81.0	1.4	97 18	62 30	14	0	28	0	3.30	-1.02	11	0.89 12	NM	
OXON HILL	87.5	70.8	79.2	0.9	95 20+	63 31+	11	0	26	0					0	
UPPER MARLBORO 3 N	87.1	69.6	78.3	1.3	95 19	59 30	9	0	26	0	7.74	3.72	8	3.82 12	NM	
-DIVISION-			79.8	2.0							4.26	0.05				
-MD: NORTHEASTERN-																
STEVENSVILLE	86.3	73.3	79.8	2.9	94 19	66 26+	9	0	31	0	7.42		9	4.41 12	0	
-DIVISION-			79.8				_	-		-	7.42	3.23	-		-	
211121011			,,,,,	2.0							,,,,	0.20				
-MD: NORTHERN CEN-																
ABERDEEN PHILLIPS	86.1	70.9	78.5	1.3	95 16	61 25	8	0	26	0					0	
BRIGHTON DAM	84.5	67.6	76.1		95 19	56 30	7	0	25	0	4.04		11	0.84 23	0	
CONOWINGO DAM *	84.2	68.4	76.3	-1.9	94 19	59 31					8.42	4.13	7	3.10 13	NM	
CYLBURN	83.6	69.8	76.7	2.4	93 20	59 25	4	0	25	0					NM	
DAMASCUS 3 SSW		66.5		0.8	93 20+	56 31+	6		23	0	3.83	-0.29	9	0.81 21	0	
EMMITSBURG 2 SE *	85.0		75.8	1.3	94 19+	54 25	1	-		-		-0.82	9	0.69 23	0	
							_		2.4	0						
MILLERS 4 NE	84.5	66.7		2.2	94 18	53 25	7	U	24	0	4.73	0.74	11	0.96 23	0	
-DIVISION-			76.3	0.7							4.77	0.79				
-MD: APPALACHIAN -																
CUMBERLAND 2	89.2	66.4	77.8	1.0	100 20	55 26	16	0	22	0	2.33	-1.23	8	0.52 8	NM	
SHARPSBURG 5 S		65.3		1.7	96 19	53 30	8		22						NM	
WILLIAMSPORT *		65.8		0.8	97 19+		1	,		•					0	
	00.3	03.0			9/ 19+	56 26+					2 22	1 20			"	
-DIVISION-			76.5	3.4							2.33	-1.38				
-MD: ALLEGHENY PL-																
OAKLAND 1 SE	79.6	60.2	69.9	1.5	89 20+	46 30+	0	1	7	5	4.66	-0.80	11	1.30 23	0	
SAVAGE RIVER DAM *	80.4	62.6	71.5	1.3	90 18	52 27+	1				5.30	0.98	13	0.85 8	NM	
SINES DEEP CREEK *	78.8		68.7		87 20+	46 30						_			NM	
KITZMILLER 1 W		63.3			93 19	51 29		0	17	0					NM	
-DIVISION-	01.9	03.3	70.7	1.6	93 19	J1 Z7	4	U	1/	v	4.98	0.03			INITI	
,10101			. 3 • 7	1.0							1.55					
-STATE-			77.8	1.9							4.32	0.15			0	
-NJ: NORTHERN-																
BOONTON 1 SE	86 1	68 5	77.3	3.4	96 20+	59 31+	11	1	25	0	6.30	1.25	5	2.02 23	0	
	00.1		3	U • I	1 20 201	32 311	1	_	20	-	1 0.00	1.23	_	2.02 23		

	TEMPERATURE (F)	PRECIPITATION (INCHES)					
STATION	MONTHLY AVERAGES	EXTREMES	NUMBER OF DAYS	MONTHLY TOTALS	EXTREMES	SNOWFALL		
	AVG AVG MON DEPRT	MON DAY MON DAY	MAX MIN	MON DEPRT DAYS	DLY DAY	MON DLY DAY		
	MAX MIN AVG	MAX MIN	90+ 70- 65+ 50-	TOT 0.1+	MAX	TOT MAX		
BOUND BROOK 2 W				4.81 -0.10 7	1.30 29	0		
CANOE BROOK	87.2 70.1 78.6 4.2	98 19 59 31+	11 1 26 0	4.13 -0.60 4	1.35 28+	0		
CHARLOTTEBURG RSV*	83.3 66.9 75.0 2.9	93 19 56 30				NM		
CRANFORD	86.6 71.5 79.0 4.1	99 20 61 31	11 0 27 0	4.61 -0.56 6	1.53 29	0		
FLEMINGTON 5 NNW *	86.5 67.8 77.2 3.4	96 20+ 55 30				0		
HARRISON	88.3 73.0 80.7 3.5	102 19 63 31+	14 1 27 0	3.22 -1.32 6	1.50 2	NM		
LAMBERTVILLE				5.92 0.65 9	1.47 23	0		
NEWARK INTL AP	88.6 73.2 80.9 3.5	101 18 64 25	15 1 30 0	3.74 -1.02 7	1.07 1	0		
PHILLIPSBURG EAST*	86.5 68.3 77.4 3.1	97 19 58 31+				0		
POTTERSVILLE 2 NNW	83.2 67.8 75.5	92 20+ 57 31	3 1 24 0	7.76 2.17 7	3.15 29	NM		
RINGWOOD	87.8 66.4 77.1	99 18 54 30	14 1 21 0		1	NM		
SUSSEX 2 NW	86.2 67.4 76.8 5.7	95 20+ 56 31+	10 0 22 0		1	0		
WAYNE	87.3 71.3 79.3	98 20 58 31	13 1 27 0	4.71 7	1.71 2	0		
WERTSVILLE 4 NE	85.5 68.4 76.9 2.7	95 20+ 57 31+	9 1 24 0	5.76 0.32 8	1.26 2	0		
RIEGELSVILLE				6.96 9	1.79 23	0		
TOCKS ISLAND	83.7 66.8 75.2	93 19 55 25	5 0 24 0			NM		
-DIVISION-	77.6 3.9			5.03 0.25				
-NJ: SOUTHERN-								
ATLANTIC CITY INTL	87.2 70.1 78.6 2.4	97 19 59 30	11 1 25 0	3.40 -0.32 7	0.77 12	0		
ESTELL MANOR	86.1 69.4 77.8 2.6	94 20+ 57 30	8 0 26 0	5.03 0.87 8	1.58 13	NM		
FREEHOLD MARLBORO	87.4 68.9 78.1 2.5	97 19 56 30	12 0 25 0	5.43 0.40 7	1.37 14	0		
HAMMONTON 1 NE	88.1 70.6 79.4 3.0	98 19 59 31	12 1 27 0	3.88 -0.38 9	0.93 21	0		
HIGHTSTOWN 2 W	87.9 68.3 78.1 3.4	97 19 55 31	11 1 24 0	6.11 1.14 9	2.07 23	0		
INDIAN MILLS	87.4 68.8 78.1 3.2	95 19+ 55 30	9 0 26 0	5.24 0.85 9	1.75 29	0		
MILLVILLE MUNI AP*	87.0 71.1 79.0 3.4	96 17 61 29		5.64 1.97 10	2.44 12	NM		
NEW BRUNSWICK 3 SE	88.5 69.8 79.1 3.9	98 20+ 57 30	14 1 26 0	4.92 -0.16 6	1.27 23	0		
SEABROOK FARMS	88.0 71.8 79.9	97 20+ 63 31+	11 0 27 0	6.07 9	2.07 29	0		
SOMERDALE 4 SW	86.6 68.8 77.7	98 19 57 30	9 1 25 0	8.35 4.30 10	3.55 29	0		
ATSION	86.4 68.9 77.7	95 20+ 56 31+	10 1 25 0	5.44 8	1.40 29	NM		
TRENTON MERCER CO	86.2 70.1 78.1 2.4	96 18 60 31+	10 1 24 0	5.44 0.49 8	1.27 12	NM		
PHILADELPHIA MT HO	87.1 70.4 78.7	98 19 60 31+	11 1 26 0	12.72 12	6.25 23	0		
-DIVISION-	78.5 2.9			5.97 1.58	1			
					1			
-NJ: COASTAL-					1			
ATLANTIC CITY	80.3 71.9 76.1 0.5	93 16 65 26	2 1 31 0	4.42 1.11 8	1.29 21	0		
CAPE MAY 2 NW	85.3 69.6 77.5 1.4	94 18 60 30	8 0 27 0	5.66 1.96 6	3.83 12	0		
LONG BRANCH OAKHUR	85.8 70.3 78.0 3.6	97 20 54 26	10 1 28 0	3.10 -1.67 7	0.63 1	NM		
-DIVISION-	77.2 1.9		v	4.39 0.48		•		
					1			
-STATE-	78.1 3.2			5.51 1.01		0		

PRELIMINARY MONTHLY DEGREE DATA JULY 2013

STATION		HEATING DEGREE DAYS (BASE 65) MONTH MONTH SEASON SEASON				COOLING DEGREE DAYS (BASE 65)					GROWING DEGREE DAYS (BASE 50)				
	MONTH					H MONT	H SEASON	SEASON	MONTH MONTH SEASON SEASON						
-DE: NORTHERN-															
WILMINGTON NEW CAST	0	0	0	0	455	88	815	138	920	88	2232	149			
WILMNGTON PORTER RS	0	0	0	0	446	100			911	100					
-DE: SOUTHERN-															
DOVER	0	0	0	0	450	56	845	82	915	56	2290	44			
DOVER		U	U	U	450	50	043	02	913	30	2290	44			
-MD: SOUTHEASTERN SHORE-															
SALISBURY WICOMICO	0	-1	0	-1	506	142	1030	355	971	142	2517	410			
SNOW HILL 4 N	0	0	0	0	471	87			936	87					
-MD: CENTRAL EASTERN SHORE-															
ROYAL OAK 2 SSW	0	0	0	0	489	66			954	66					
-MD: LOWER SOUTHERN-		_	•	0	2			0.0			0101	60			
MECHANICSVILLE 5 NE	0	0	0	0	381	55	714	99	846	56	2124	60			
SOLOMONS	0	0	0	0	494	40			959	40					
-MD: UPPER SOUTHERN-															
BALTIMORE WASH INTL	0	0	0	0	445	73	853	159	910	73	2287	167			
BELTSVILLE	0	0	0	0	419	38	812	81	884	38	2236	69			
DALECARLIA RSVR	0	0	0	0	453	41	870	39	918	41	2313	-46			
LAUREL 3 W	0	0	0	0	461	38	899	79	926	38	2353	30			
MD SCI CTR BALTIMOR	0	0	0	0	579	91	1229	265	1044	91	2859	338			
NATL ARBORETUM DC	0	0	0	0	502	50			967	50					
OXON HILL	0	0	0	0	447	35	883	63	912	35	2340	-19			
UPPER MARLBORO 3 NN	0	0	0	0	420	50	838	118	885	50	2249	82			
-MD: NORTHEASTERN SHORE-	0	•			466	0.0	070	174	021	0.0	2217	150			
STEVENSVILLE	0	0	0	0	466	99	878	174	931	99	2317	158			
-MD: NORTHERN CENTRAL-															
ABERDEEN PHILLIPS F	0	0	0	0	430	52			895	52					
BRIGHTON DAM	0		0		353				818						
CONOWINGO DAM	0	0	0	0	364	-44			829	-43	1944	-250			
CYLBURN	0	-3	0	-3	371	82	690	157	836	85	2071	156			
DAMASCUS 3 SSW	0	-1	0	-1	329	38			794	39					
MILLERS 4 NE	0	-1	0	-1	337	74	609	128	802	75	1986	168			
-MD: APPALACHIAN MOUNTAIN-															
CUMBERLAND 2	0	0	0	0	405	41	768	67	870	41	2199	23			
SHARPSBURG 5 S	0	-1	0	-1	343		700	<u>.</u> ,	808	60	2133	23			
		-	Ÿ	=	343					••					
-MD: ALLEGHENY PLATEAU-															
OAKLAND 1 SE	19	-4	19	-4	181			100	627	57	1488	174			
KITZMILLER 1 W	2		2		244		441		707		1751				
-NJ: NORTHERN-															
BOONTON 1 SE	1	-1	1	-1	391	115			855	116					
CANOE BROOK	0	-2	0	-2	432		720	208	897	142	2002	221			
CRANFORD	0	-1	0	-1	443	135			908	136					
HARRISON	0	0	0	0	495		852	156	960	119	2200	117			
NEWARK INTL AP	0	0	0	0	499	116		166	964	116	2242	155			
POTTERSVILLE 2 NNW	0	,	0	•	333		551		798		1856				

STATION	HEATING DEG	HEATING DEGREE DAYS (BASE 65)				EE DAYS	(BASE 65)	GROWING DEGREE DAYS (BASE 50)			
	MONTH MONTH	SEASON	MONTH	MONTH MONTH SEASON SEASON				MONTH MONTH SEASON SEASON			
RINGWOOD	1	1		385				849			
SUSSEX 2 NW	0 -10	0	-10	375	175	587	254	840	185	1818	335
WAYNE	0	0		448		789		913		2133	
WERTSVILLE 4 NE	2 0	2	0	383	95			846	95		
TOCKS ISLAND	1	1		325		526		789		1778	
V. GOVERNO											
-NJ: SOUTHERN- ATLANTIC CITY INTL	0 0	0	0	429	82	734	120	894	82	2029	80
ESTELL MANOR	0 -1	0	-1	403	87	699	122	868	89	2045	127
FREEHOLD MARLBORO	0 -1	0	-1	418	88			883	90	2024	116
HAMMONTON 1 NE	0 -1	0	-1	453	99			918	100		
HIGHTSTOWN 2 W	0 -2	0	-2	415	112	691	147	880	114	1966	115
INDIAN MILLS	0 -1	0	-1	412	103	728	164	877	104	2099	183
NEW BRUNSWICK 3 SE	0 -1	0	-1	445	126	733	172	910	127	2037	170
SEABROOK FARMS	0	0		471				936			
SOMERDALE 4 SW	0	0		400		701		865		2038	
ATSION	0	0		404				869			
TRENTON MERCER CO A	0 0	0	0	414	84	722	145	879	84	2055	150
PHILADELPHIA MT HOL	0	0		433				898		2133	
-NJ: COASTAL-											
ATLANTIC CITY	0 0	0	0	352	22	546	8	817	22	1843	-4
CAPE MAY 2 NW	0 0	0	0	393	49	656	67	858	49	2016	74
LONG BRANCH OAKHURS	4 3	4	3	417	125			878	122	1864	130

The heating season begins July 1 and ends June 30. The cooling season begins January 1 and ends December 31.

The growing season begins March 1 and ends October 31. All departures are calculated from the 1981 - 2010 mean.

These data are considered preliminary, published data from the National Climatic Data Center may differ somewhat from the values shown here.

NORTHEAST REGIONAL CLIMATE CENTER MID-ATLANTIC CLIMATE

Northeast Regional Climate Center

1123 Bradfield Hall Cornell University Ithaca, NY 14853-1901