

September 2019 Review

General Summary

September 2019 was very warm to hot and aside from locally heavy rainfall associated with Hurricane Dorian across far southeast VA and northeast NC, much drier than normal. Monthly average temperature departures primarily ranged from 3 to 6 degrees above the long term means. Most days of the month had above normal temperatures throughout the region, with the last week in the month seeing well above normal values with some daily record highs and record high mins set. Richmond recorded 12 days with highs in the 90s which is the most in September since 1980 (normal is 3 days and the most on record is 15 days in 1970). Due to an onshore flow near the coast much of the time, temperatures were not nearly as hot; Norfolk and Elizabeth City had 3 days in the 90s and Salisbury had 2 days.

Precipitation was almost everywhere well below normal, with Richmond recording its 5th driest September on record with a total of just 0.42" for the entire month. The coop site in Clarksville, VA ended up with just a trace. The only exception to the dry conditions was near the coast in northeast NC where Hurricane Dorian brought in excess of 5" of rainfall on the 6th. Elizabeth City received 6.56": easily a daily record for the date and the 4th highest single day rain total on record. For the entire month, Elizabeth City recorded over 10 inches of rain but it fell on just 6 days of the month (normal is 9 days). Norfolk's total monthly rainfall of 3.63" was only marginally drier than average, but the rain fell on just 2 days (tied with 1884 for the fewest number of days on record in September). Richmond had just 3 days of measureable rain (normal is 8 and the only month with fewer days was 2 in 1922), Salisbury had 7 days which was near the normal (8 days) but the monthly total was just 1.35" (14th driest).

The series of pages that follow show various statistics for September 2019, with a look ahead at October Climatology on the final slide.

Daily High Temperature Departures at Richmond & Norfolk

September 2019: Richmond, VA

Observed Maximum Temperature Departure from Normal (°F)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 89° +3° 86°	2 92° +7° 85°	3 91° +6° 85°	4 94° +9° 85°	5 81° -4° 85°	6 81° -3° 84°	7 88° +4° 84°
8 88° +4° 84°	9 85° +2° 83°	10 89° +6° 83°	11 95° +12° 83°	12 98° +15° 83°	13 75° -7° 82°	14 85° +3° 82°
15 88° +6° 82°	16 94° +13° 81°	17 81° 0° 81°	18 80° 0° 80°	19 75° -5° 80°	20 80° 0° 80°	21 91° +12° 79°
22 92° +13° 79°	23 94° +15° 79°	24 87° +9° 78°	25 86° +8° 78°	26 95° +18° 77°	27 86° +9° 77°	28 93° +16° 77°
29 94° +18° 76°	30 81° +5° 76°					

NWS Wakefield - Richmond

September 2019: Norfolk, VA

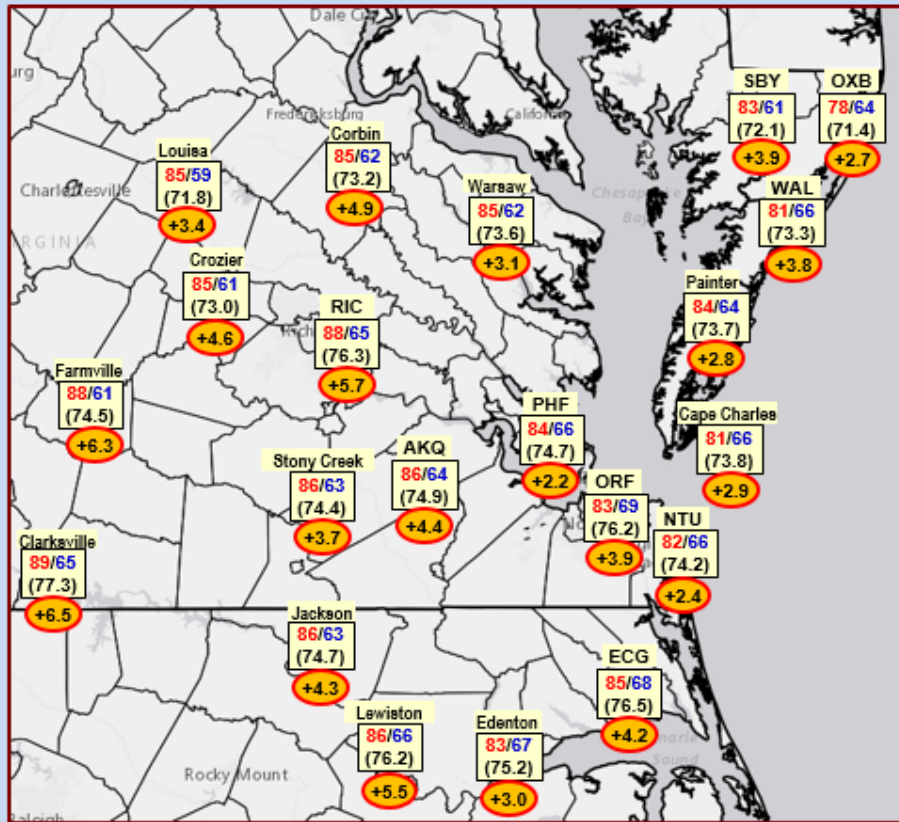
Observed Maximum Temperature Departure from Normal (°F)

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1 84° +1° 83°	2 87° +4° 83°	3 84° +2° 82°	4 89° +7° 82°	5 86° +4° 82°	6 77° -5° 82°	7 81° -1° 82°
8 84° +3° 81°	9 80° -1° 81°	10 81° 0° 81°	11 88° +7° 81°	12 92° +12° 80°	13 80° 0° 80°	14 84° +4° 80°
15 86° +6° 80°	16 84° +5° 79°	17 80° +1° 79°	18 76° -3° 79°	19 74° -4° 78°	20 74° -4° 78°	21 85° +7° 78°
22 88° +10° 78°	23 89° +12° 77°	24 81° +4° 77°	25 80° +3° 77°	26 91° +15° 76°	27 81° +5° 76°	28 90° +14° 76°
29 84° +9° 75°	30 78° +3° 75°					

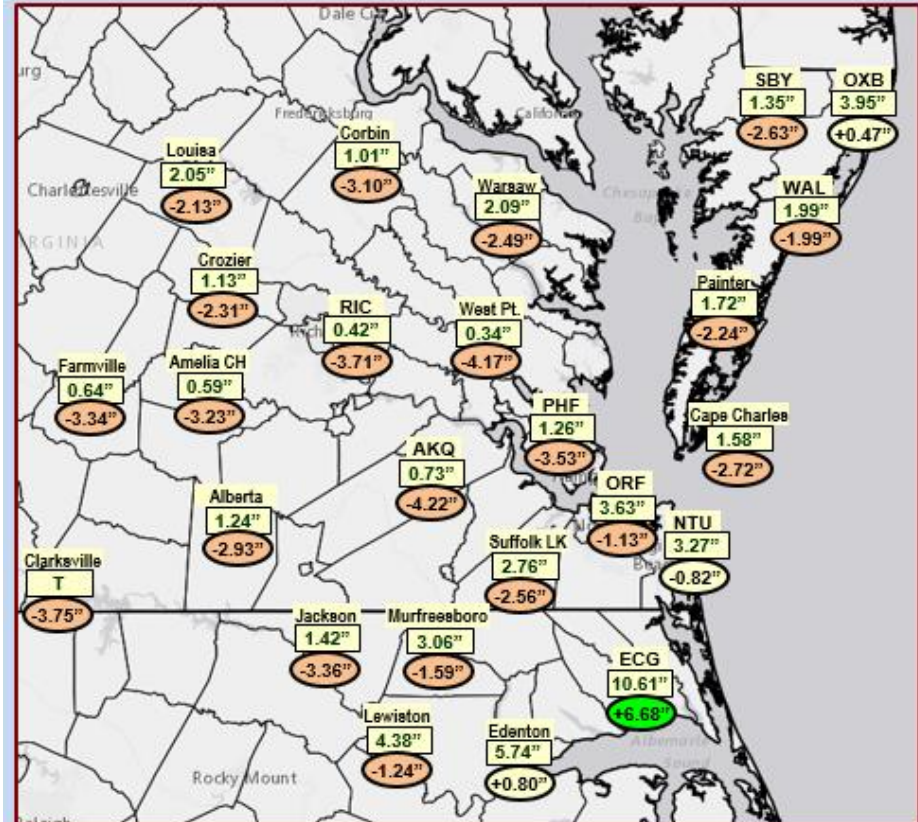
NWS Wakefield - Norfolk

Regional Temperature & Precipitation Maps

September 2019 Temperature Data



September 2019 Precipitation Data



Departures from the 30-year normals (1981-2010) are shown for both **average temperature** and **total precipitation**. For temperature, the departures are shaded orange for 1 F or more warmer than average and blue for 1 F or more cooler than average (green shading indicates values within one degree of normal). Similarly, precipitation departures are shaded green for 1.00" or more wetter than average and tan for 1.00" or more drier than normal (near normal values are shaded the same color as the precipitation amount box).

Tabular Summary of Data for Main Climate Sites:

September 2019 Temperature Summary Data										* also on other dates
Site	Avg Max		Avg Min		Avg Temp		Warmest	Coldest	Significance / Remarks	
	(°F)		(°F)		(°F)		(°F)	(°F)	(if Top Ten List, etc.)	
	Actual	Dep	Actual	Dep	Actual	Dep	Date	Date		
Richmond	87.6	6.4	64.9	4.8	76.3	5.7	98 on 12th	49 on 20th	5th Warmest on Record	
Norfolk	83.3	4.0	69.2	3.9	76.2	3.9	92 on 12th	55 on 20th	9th Warmest on Record	
Salisbury	82.9	4.5	61.3	3.3	72.1	3.9	96 on 12th	42 on 20th		
Elizabeth City	84.7	3.5	68.2	5.1	76.5	4.2	91 on *29th	52 on 20th	4th Warmest on Record	
Wakefield	86.0	4.3	63.8	4.4	74.9	4.4	95 on 12th	46 on 20th	N/A (data period too short)	

September 2019 Precipitation & Snowfall Summary Data											
Site	Total Pre		# Pre Days		Greatest		Total Snow		# Snow Days		Significance / Remarks
	(in.)		(≥0.01")		(in.)		(in.)		(≥0.1")		(if Top Ten List, etc.)
	Actual	Dep	Actual	Dep	Actual	Date	Act	Dep	Act	Dep	
Richmond	0.42	-3.71	3	-5	0.38	6th	0.0	0.0	0	0	5th Driest on Record
Norfolk	3.63	-1.13	2	-7	1.86	6th	0.0	0.0	0	0	
Salisbury	1.35	-2.63	7	-1	0.96	6th	0.0	0.0	0	0	
Elizabeth City	10.61	6.68	6	-3	6.56	6th	0.0	0.0	0	0	
Wakefield	0.73	-4.22	5	-4	0.50	6th	0.0	0.0	0	0	N/A (data period too short)

* **“Dep”= Departure** from the 30-year normals (1981-2010). Temperature departures are shaded orange for 1 F or more warmer than average and blue for 1 F or more cooler than average. Similarly, precipitation departures are shaded green for 0.50” or more wetter than average and tan for 0.50” or more drier than average and snowfall departures are shaded purple for 0.5” or more above average and tan for 0.5” or more below average.

Daily Records for Long Term Climate Sites:

Norfolk, VA Records (Period of Record 146 yrs./1874-2019)

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Record Highs: 90 (28th)

Record Low Maximums: none set.

Record Lows: none set.

Record High Minimums: 77 (5th), 75 (28th).

Daily Precipitation: none set.

Daily Snowfall: none set.

Richmond, VA Daily Records (Period of Record 123 yrs./1897-2019)

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Record Highs: 98 F (12th), 93 (28th), 94 (29th).

Record Low Maximums: none set.

Record Lows: none set.

Record High Minimums: *70 (28th).

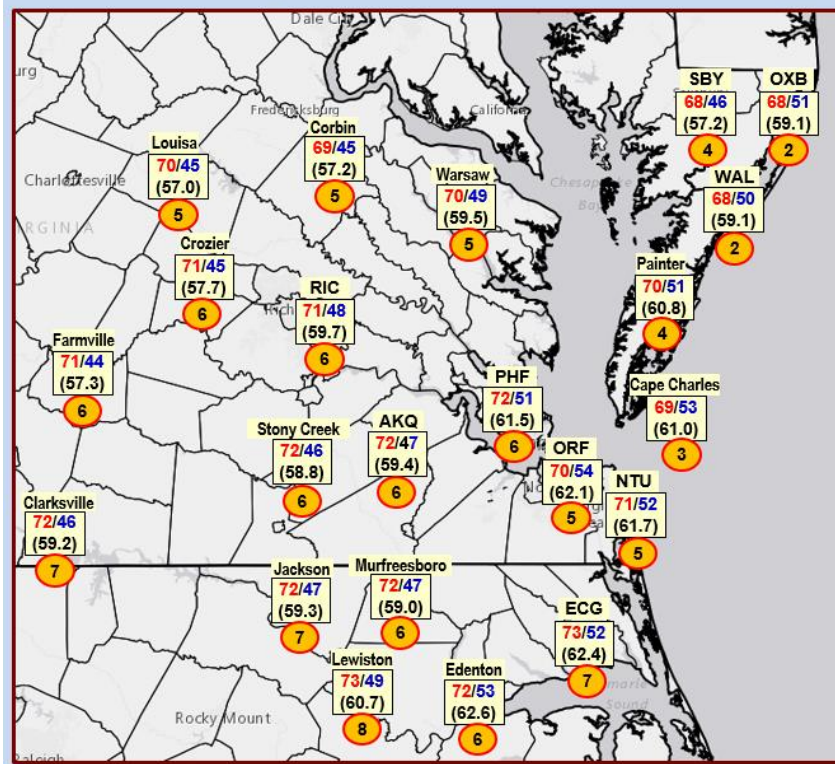
Daily Precipitation: none set.

Daily Snowfall: none set.

October Climatology

October is the “middle” month of meteorological Fall and on average sees a significant drop in temperature from the beginning to the end of the month. **Daily normal highs** average in the upper 70s over interior southern VA and NE NC during the first week of the month, falling to the mid to upper 60s by the end of the month. Near the coastal areas and over the northern interior, **daily highs** average in the mid 70s early in the month, falling to the lower to mid 60s by month’s end. **Daily normal lows** generally range from the mid to upper 50s along the SE VA and NE NC coast, falling to the upper 40s by month’s end. Inland, **daily lows** average in the low to mid 50s early in the month, falling to the low to mid 40s by the end of the month (over much of the central and northern Piedmont, lows are a little cooler, generally close to 50F early, falling to near 40F by late in the month). Climatologically, October is among the driest months of the year at most of our climate and co-op sites, and in terms of the number of days with measurable rainfall, it averages the fewest of all months. The following graphics depict the long term means for temperature and precipitation at various locations across the CWA. For temperature, the number shown in the **orange circle** is the mean number of days with a high of 80F or higher. Similarly for precipitation, the value in the **green circle** represents the mean number of days with measurable precipitation.

October Temperature (1981-2010 Climatology)



October Precipitation (1981-2010 Climatology)

