

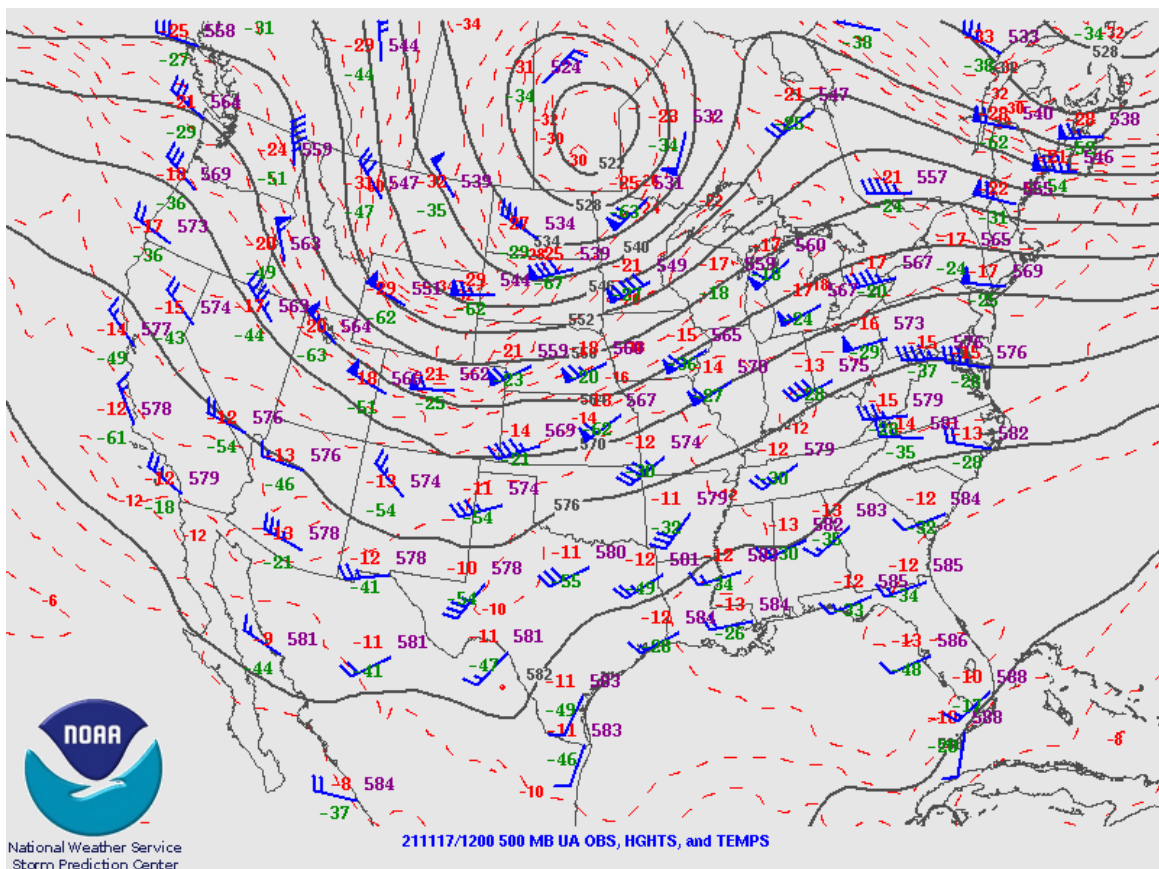
# November 2021 Central NC Climate Summary

*By Phillip Badgett and James Danco*

November 2021 the 3<sup>rd</sup>-driest November since 1903 at Greensboro.

November 2021 had little rainfall. The rainfall was so scarce that many locations recorded less than half an inch for the month. November is typically one of the driest months of the year, but to put the dryness of November 2021 in perspective, the 30-year average rainfall is around 3.25 inches for most of the region. There were only 4 to 6 days with measurable rainfall at Greensboro, Raleigh and Fayetteville, and most of those rainfall events were less than a tenth of an inch. By month's end, Greensboro recorded only 0.30 inches, making it the 3<sup>rd</sup>-driest November since records began in 1903. Fayetteville tallied only 0.62 inches of rain. This was low enough to make it tied with 1942 for the 7<sup>th</sup>-driest November at Fayetteville since records began in 1910. At Raleigh, a total of 0.75 inches fell, just enough to keep it out of the top ten driest Novembers on record but still the 17<sup>th</sup>-driest. A flat and persistent ridge of high pressure frequently parked from the Gulf of Mexico to off the NC coast, blocking moisture transport from the Gulf of Mexico and the Atlantic ahead of the cold frontal passages. See Figure 1.

**Fig. 1: 500 mb Observations, Heights, and Temperatures on 11/17**

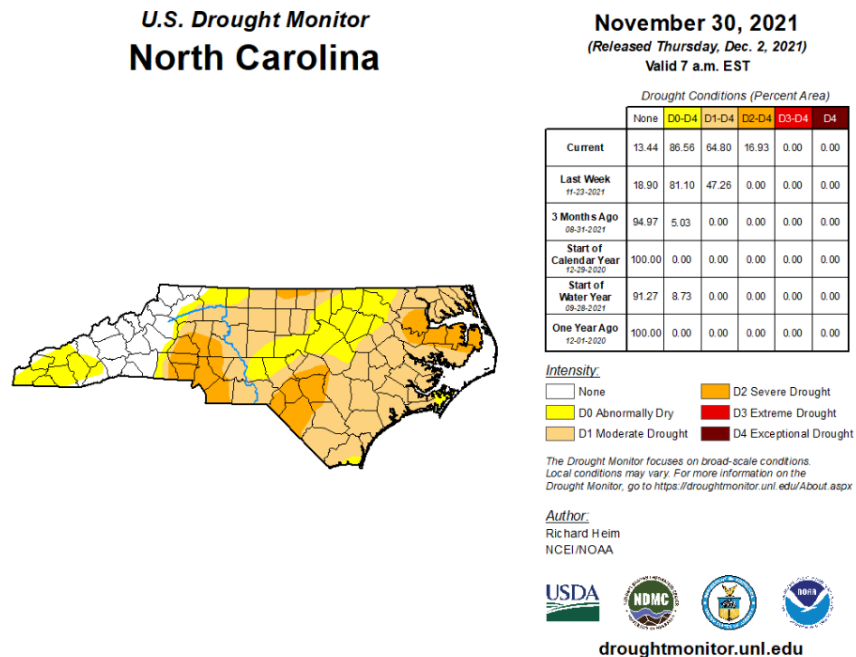


Rainfall events were few and far between in November with mostly light intensity. Greensboro reported measurable rainfall (0.01 inches or more) on only 5 days this month, with only 1 day exceeding a tenth of an inch. Raleigh had measurable rainfall on only 4 days and Fayetteville recorded rainfall on 6 days. Only two of those days brought a tenth of an inch or more at both locations. Raleigh was the only climate site to record at least half an inch with any November rainfall event, when 0.52 fell on November 22 as a line of heavy showers moved through. It only rained heavily for less than 30 minutes. By month's end, rainfall totals were 2-3 inches below normal at all three climate sites (Table 1). Drought conditions expanded quickly with those huge rainfall deficits. At least Abnormally Dry (D0) conditions covered all of central NC, and over 86% of the state, with at least Moderate Drought (D1) covering nearly 65% of the state. Severe Drought (D2) covered parts of the Sandhills and southwestern Piedmont (Figure 2).

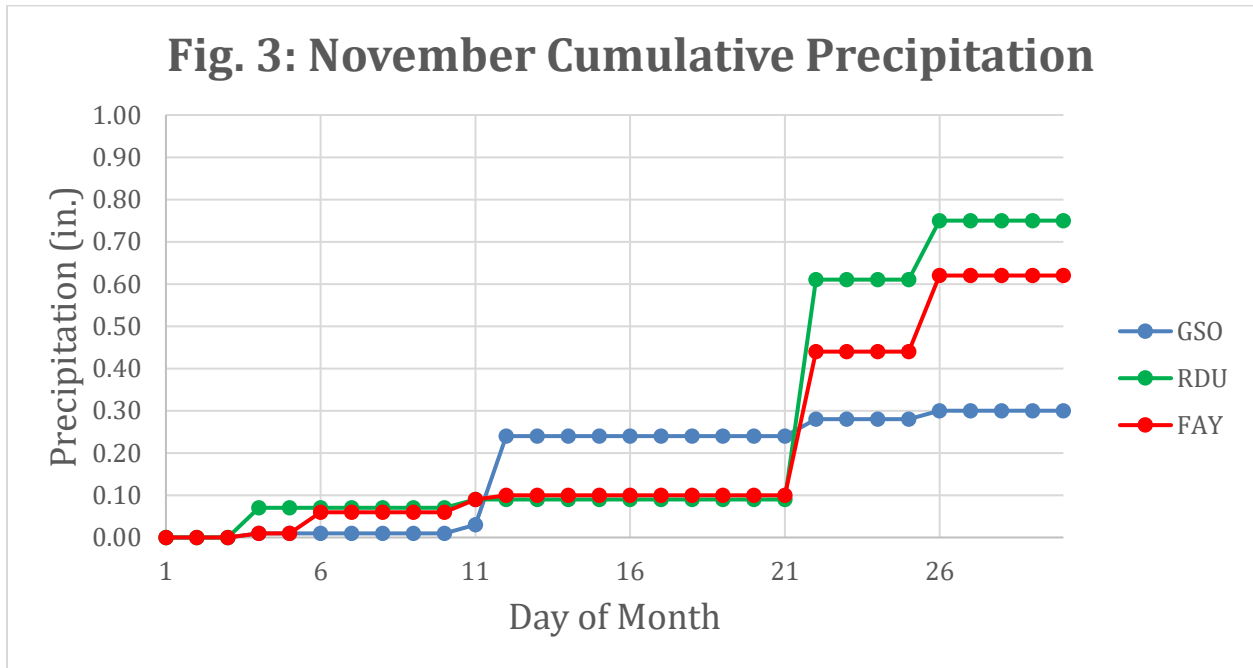
**Table 1: Monthly Precipitation Statistics**

Site	Total precipitation (in.)	Departure from Normal (in.)	Max Daily Precipitation (in.)
Greensboro (GSO)	0.30	-2.97	0.21 on 11/12
Raleigh-Durham (RDU)	0.75	-2.57	0.52 on 11/22
Fayetteville (FAY)	0.62	-2.42	0.34 on 11/22

**Fig. 2: U.S. Drought Monitor for North Carolina on November 30**



The cumulative precipitation at the three climate sites for the month of November is shown in Figure 3.

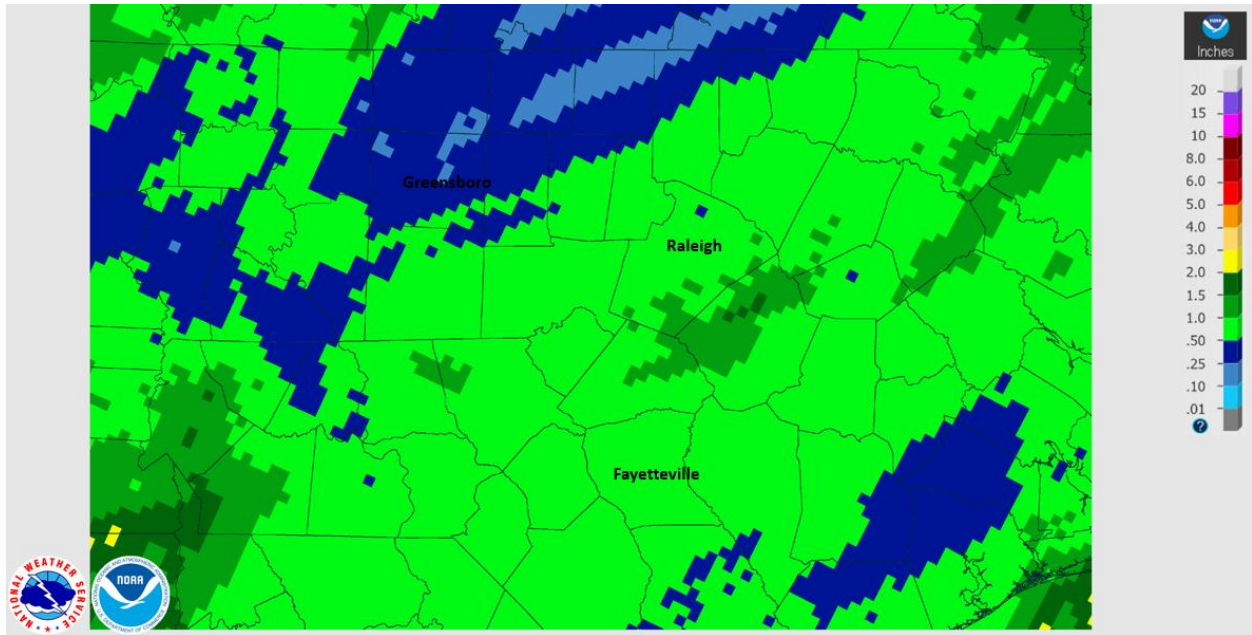


Additional selected ASOS or cooperative observations for November 2021 are listed below. Note the dryness was widespread. Not one site recorded an inch of rainfall!

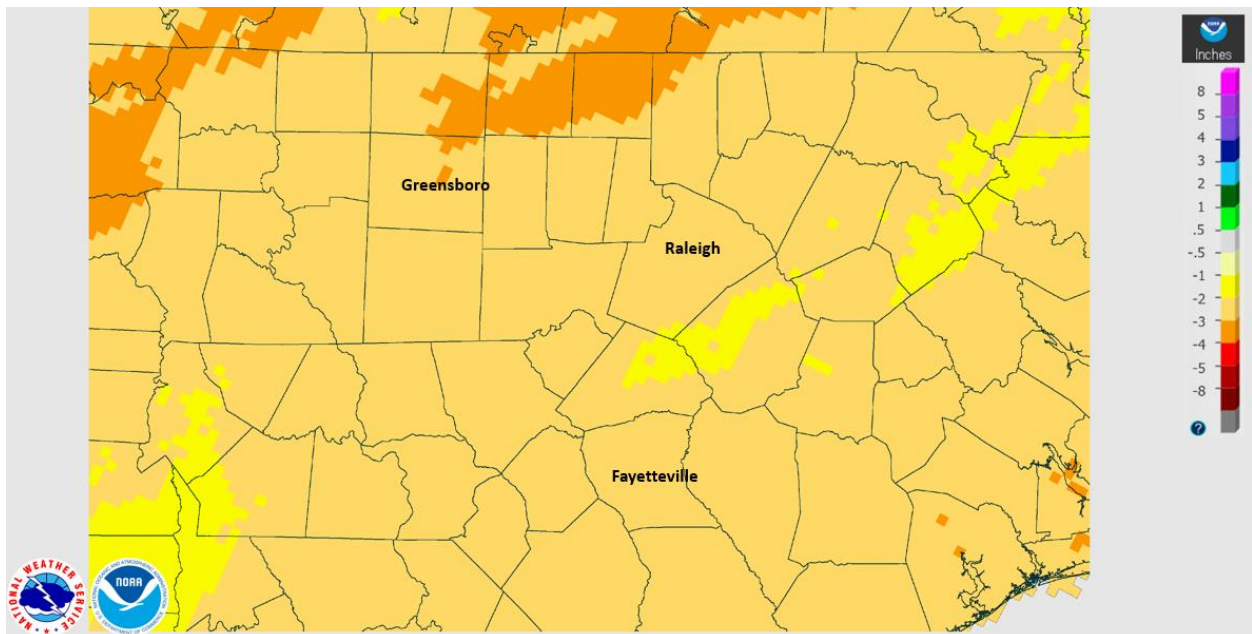
Winston-Salem (Forsyth County) 0.27 inches (2.79 below normal), Mount Airy (Surry County) 0.45 inches (2.99 below normal), Raleigh (NCSU) 0.45 inches (3.06 below normal), Louisburg (Franklin County) 0.74 inches (2.69 below normal), Rocky Mount (Nash County) 0.97 inches (2.12 below normal), Clinton (Sampson County) 0.97 inches (2.47 below normal), Asheboro (Randolph County) 0.61 inches (2.96 below normal), Yadkinville (Yadkin County) 0.44 inches (2.81 below normal), and Reidsville (Rockingham County) 0.24 inches (3.21 below normal).

Radar-estimated precipitation and the radar-estimated precipitation departure from normal across central NC are shown in Figures 4 and 5. Monthly rainfall totals ranged from just a quarter to half an inch in the far northern Piedmont (3-4 inches below normal) to generally half an inch to an inch elsewhere (2-3 inches below normal).

**Fig. 4: Radar-Estimated Monthly Precipitation**

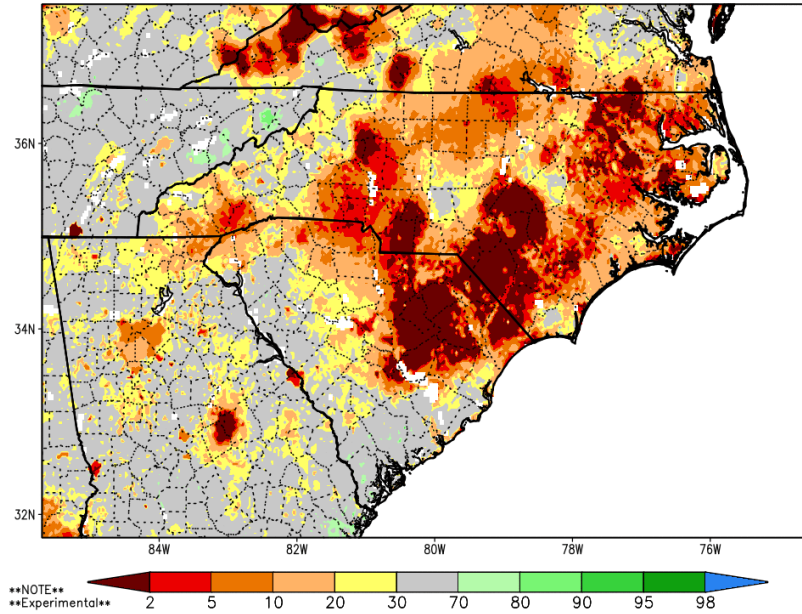


**Fig. 5: Radar-Estimated Monthly Departure from Normal Precipitation**

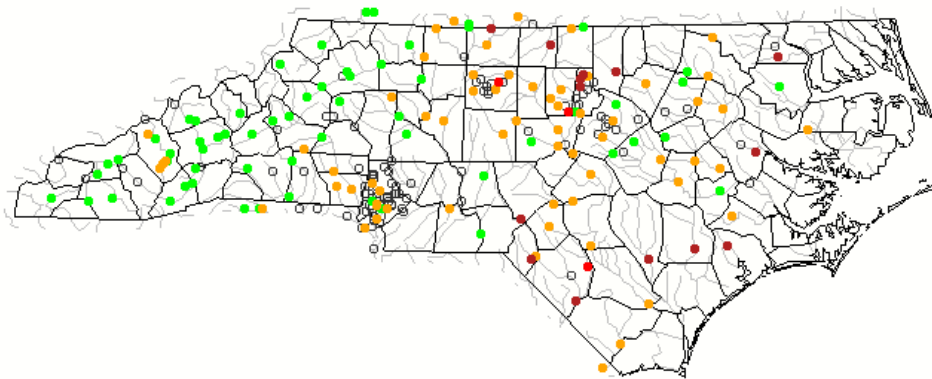


The extremely dry month resulted in degrading of the soil moisture and streamflow across NC, as shown in Figures 6 and 7.

**Fig. 6: NASA SPoRT-LIS 0-100 cm Soil Moisture percentile valid 11/30/21**



**Fig. 7: Monthly Streamflow in North Carolina Compared to Historical Streamflow for November 2021**



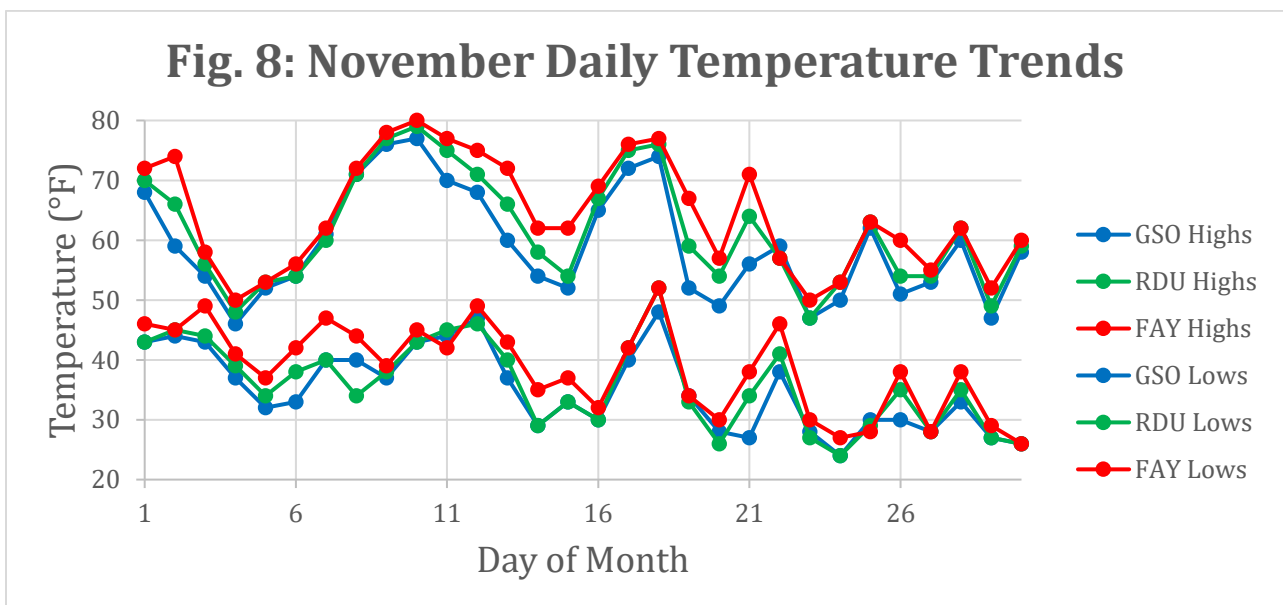
Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

In contrast to the extreme dryness seen in November 2021, the temperatures were less extreme and averaged slightly below the 30-year averages. Most locations averaged between 2°F and 3°F below normal. Temperatures were brought down by the lows which averaged close to 4°F below normal, thanks to many clear and calm nights. There were no daily record temperatures, and the number of lows 32°F or below was still near normal and included: Greensboro 12, Raleigh 9, and Fayetteville 8. The November monthly average temperatures and their departures from normal at the three climate sites are depicted in Table 2.

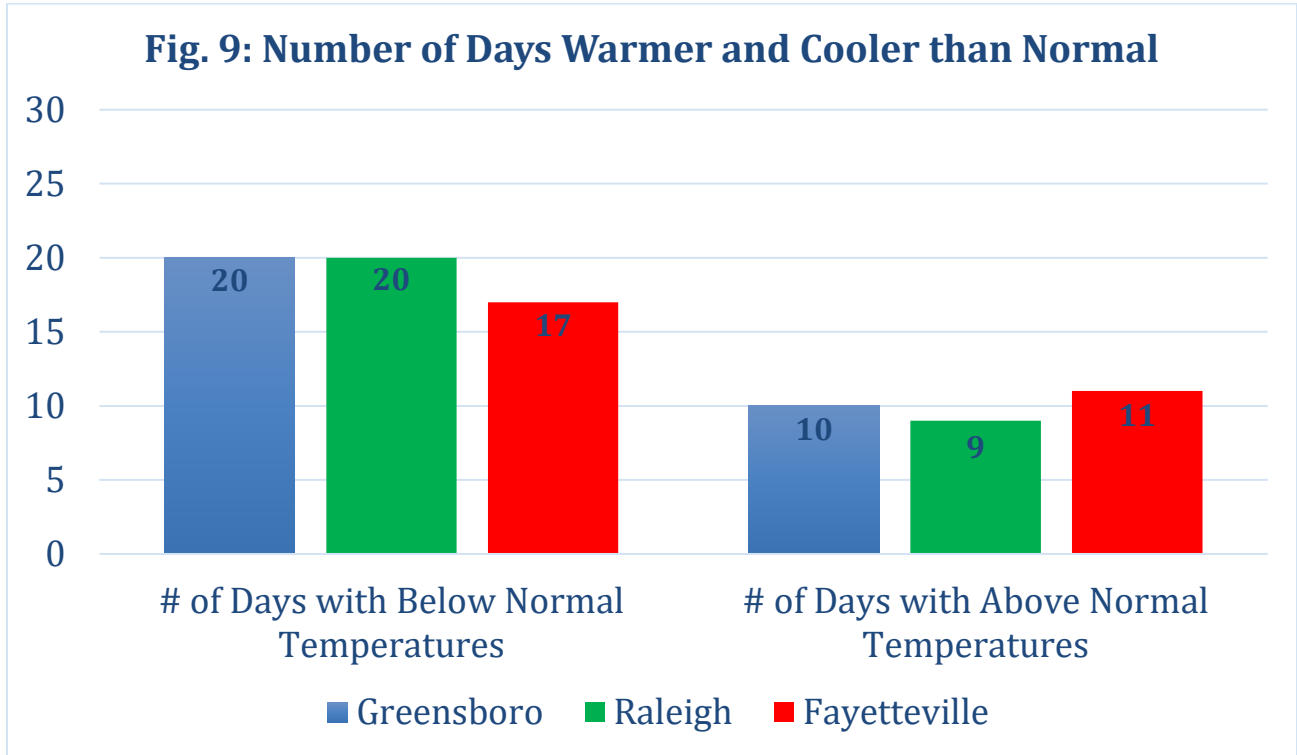
**Table 2: Monthly Temperature Statistics**

Site	Avg High Temp (°F)	Avg Low Temp (°F)	Avg Temp (°F)	Departure From Normal (°F)	Maximum Temperature (°F)	Minimum temperature (°F)
Greensboro (GSO)	59.2	35.1	47.2	-2.5	77 on 11/10	24 on 11/24
Raleigh-Durham (RDU)	61.7	36.0	48.8	-2.7	79 on 11/10	24 on 11/24
Fayetteville (FAY)	64.4	38.6	51.5	-2.1	80 on 11/10	26 on 11/30

The time series of daily temperature for the month at Greensboro, Raleigh, and Fayetteville can be found in Figure 8. Note the frequent cold frontal passages with plenty of highs in the 50s and lows in the 20s and 30s. The warmest day of the month was November 10 when highs were in the upper-70s to 80.



As shown in Figure 9, the majority of days in November were cooler than normal. Of the last 12 days in the month, 10 were cooler than normal at Greensboro and 11 at Raleigh. Only one day in that period was warmer than normal at Fayetteville.



### Other notes:

#### Days with thunderstorms this month:

Greensboro: 0  
Raleigh: 0  
Fayetteville: 0

#### Days with dense fog (visibility of ¼ mile or less):

Greensboro: 0  
Raleigh: 0  
Fayetteville: 1

## **Strongest wind gusts and direction:**

Greensboro: SW (230 degrees) at 33 mph on November 18

Raleigh: N (20 degrees) at 30 mph on November 7, S (180 degrees) at 30 mph on November 11, and SW (220 degrees) at 30 mph on November 18

Fayetteville: N (20 degrees) at 34 mph on November 6 and N (10 degrees) at 34 mph on November 7

## **Daily records:**

### **Greensboro:**

There were no new daily records set at Greensboro in November.

### **Raleigh:**

There were no new daily records set at Raleigh in November.

### **Fayetteville:**

There were no new daily records set at Fayetteville in November.

## **Monthly records:**

### **Greensboro:**

November 2021 was the 3<sup>rd</sup>-driest November on record at Greensboro with a total of only 0.30 inches of rainfall recorded.

### **Raleigh:**

There were no new monthly records set at Raleigh in November.

### **Fayetteville:**

November 2021 tied with 1942 for the 7<sup>th</sup>-driest November on record at Fayetteville with a total of only 0.62 inches of rainfall recorded.