

October 2022 Central NC Climate Summary

By Phillip Badgett and James Danco

October turns cool and dry.

October 2022 had bookend systems that brought rain on the 1st and 31st. Had it not been for these two systems, central NC would have had one of the driest Octobers on record as high pressure dominated the region. Much of the state had less than an inch of rain from the 2nd through the 30th. Ian's remnant rain ended on the 1st, and information on the remnants can be found in the September 2022 summary. The 17th featured a cold frontal passage which brought some rain to the northern Piedmont. The only other significant rain came on Halloween, when a low pressure system that developed in the Gulf of Mexico moved up the coast and gave a much-needed, widespread soaking to a good portion of central NC. This "Halloween soaker" was the system of the month for October 2022. By month's end, as shown in Table 1, Greensboro and Raleigh were around 2 inches drier than normal. Raleigh tied for its 24th-driest October, with records going back to 1887. Fayetteville measured just 0.26 inches for the entire month, making it the 5th-driest October on record going back to 1910. According to preliminary data from NCEI, the state of NC had an average rainfall of only 2.07 inches. This made it the 37th-driest October since 1895.

Table 1: Monthly Precipitation Statistics

Site	Total precipitation (in.)	Departure from Normal (in.)	Max Daily Precipitation (in.)
Greensboro (GSO)	1.40	-1.70	0.49 on 10/17
Raleigh-Durham (RDU)	1.28	-2.09	0.58 on 10/17
Fayetteville (FAY)	0.26	-2.97	0.08 on 10/13, 10/28 and 10/29

Some of the cooperative station reports from around central NC included: Lexington 2.77 inches, Winston-Salem 4.29 inches, Mount Airy 3.69 inches, Danbury 3.35 inches, Yanceyville 3.80 inches, Eden 3.41 inches, Henderson 3.92 inches, Carthage 1.36 inches, Cary 3.21 inches, Raleigh (NCSU) 0.59 inches, Louisburg 3.25 inches, Apex 3.66 inches, Chapel Hill 3.99 inches, Jackson Springs 0.45 inches, Clayton 4.19 inches, Laurinburg 2.94, Rocky Mount 1.09 inches, Tarboro 2.30 inches, and Clinton 2.45 inches.

Figure 1 depicts the low pressure system that brought much-needed rainfall to central NC on the evening of the 31st. As shown in Figure 2, the heaviest rain of 1-3 inches fell from Raleigh to Rocky Mount, with little in the far northern Piedmont and southern Coastal Plain.

Fig. 1: WPC Surface Analysis at 00z on 11/1

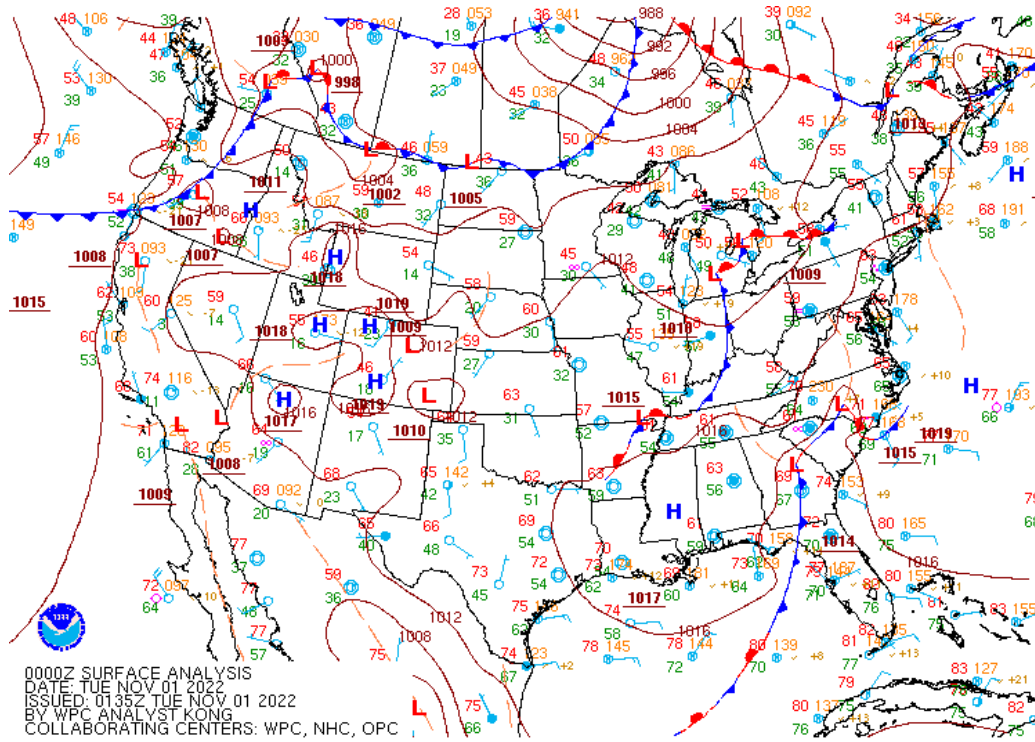
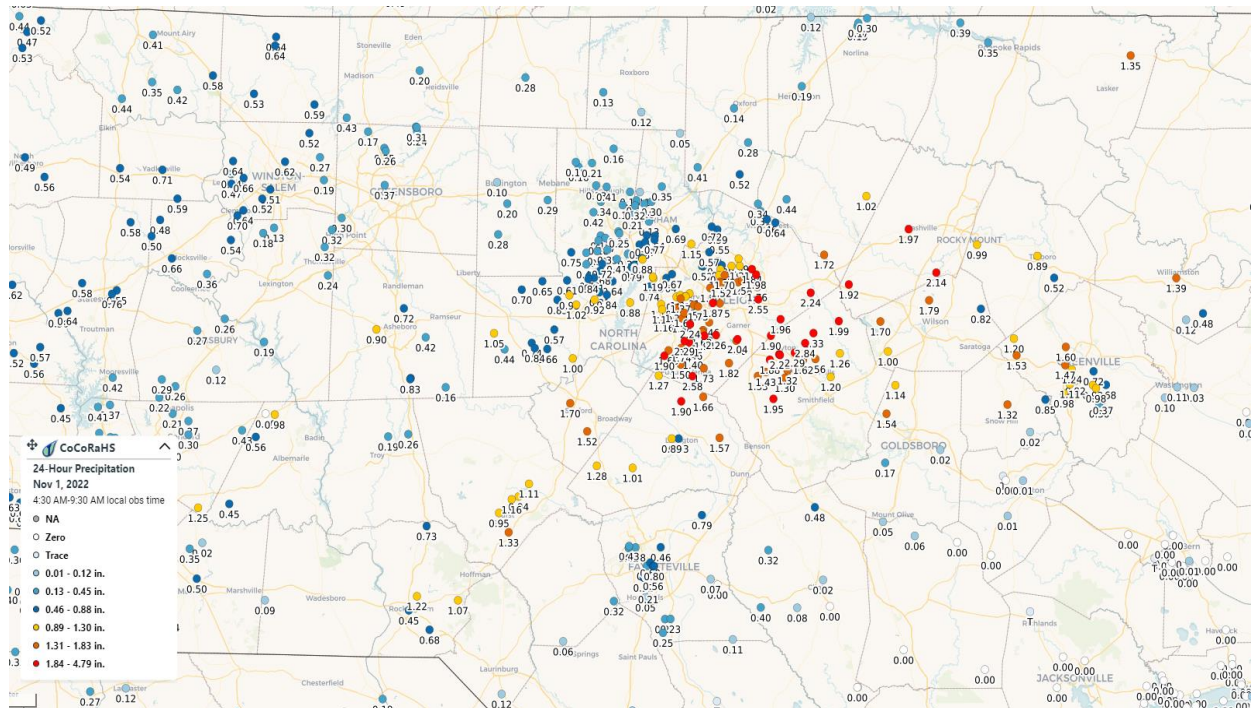


Fig. 2: CoCoRaHS 24-hour Precipitation Reports Ending the Morning of 11/1



The rain from the system on the last day of the month did help the drought conditions by keeping the Raleigh metro area NE to the VA border out of the Abnormally Dry (D0) category. However, as Figure 3 indicates, after almost the entire state was drought free at the beginning of October, D0 conditions crept into over 80% of the state by the end of the month. There was even some Moderate Drought (D1) across parts of the southern Piedmont and southern Coastal Plain.

Fig. 3: U.S. Drought Monitor for North Carolina on October 4 (top) and November 1 (bottom)

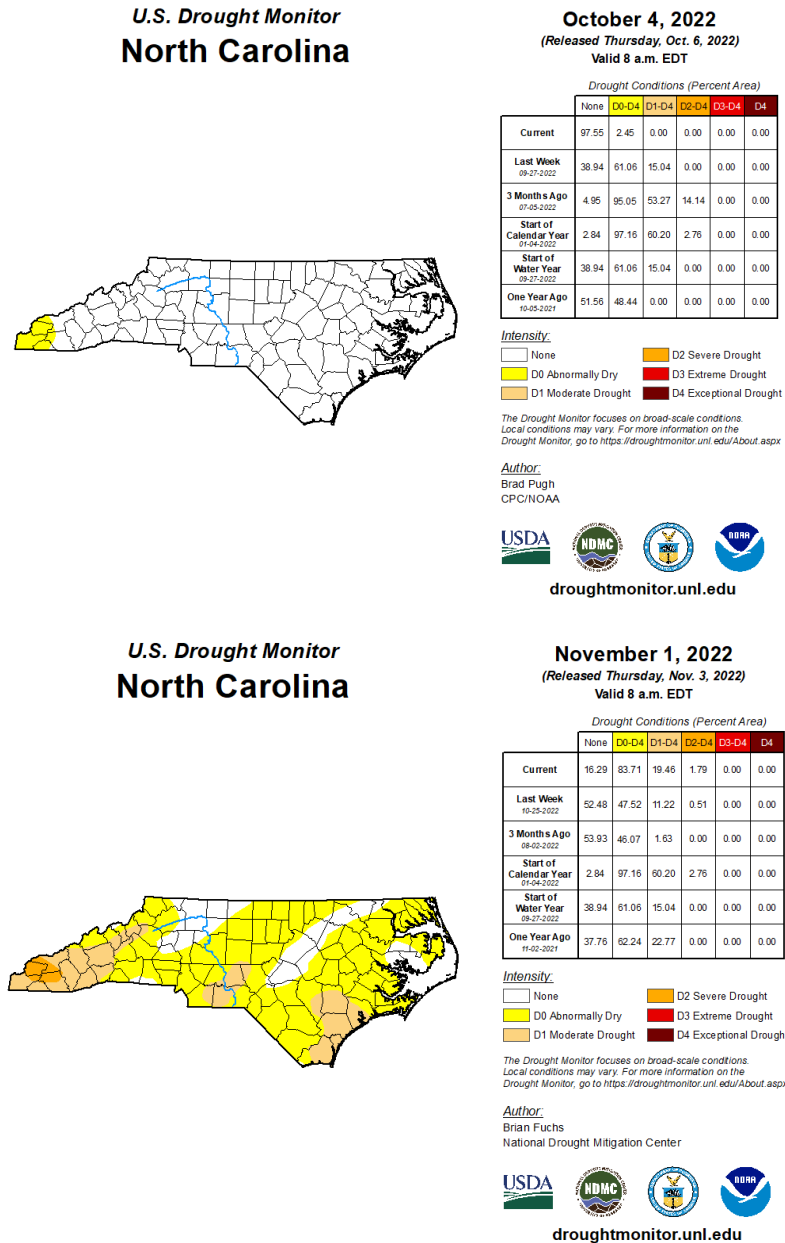
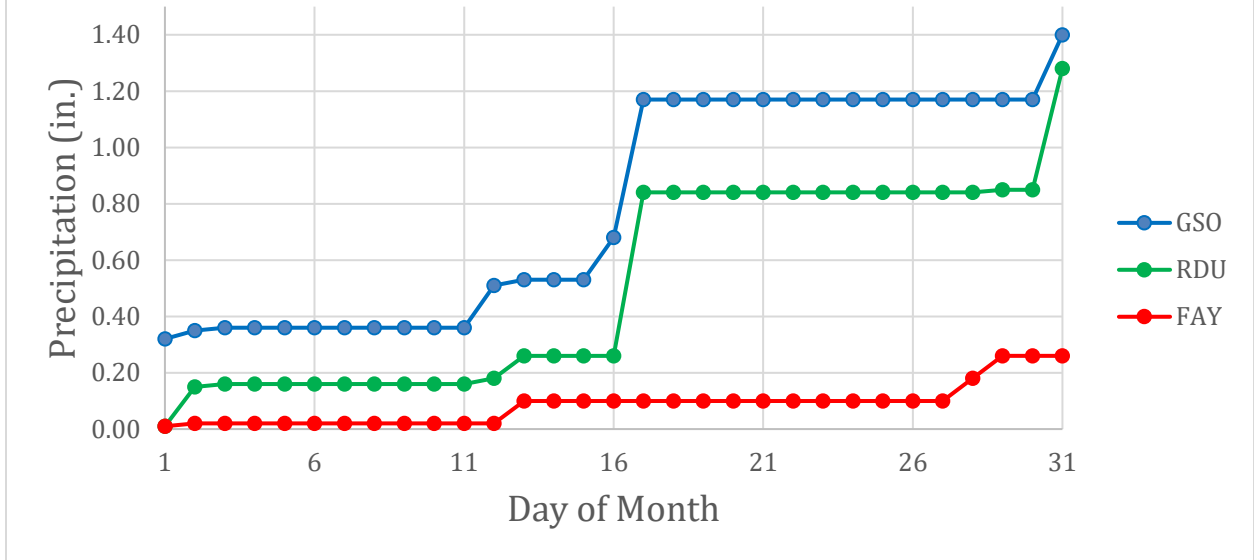


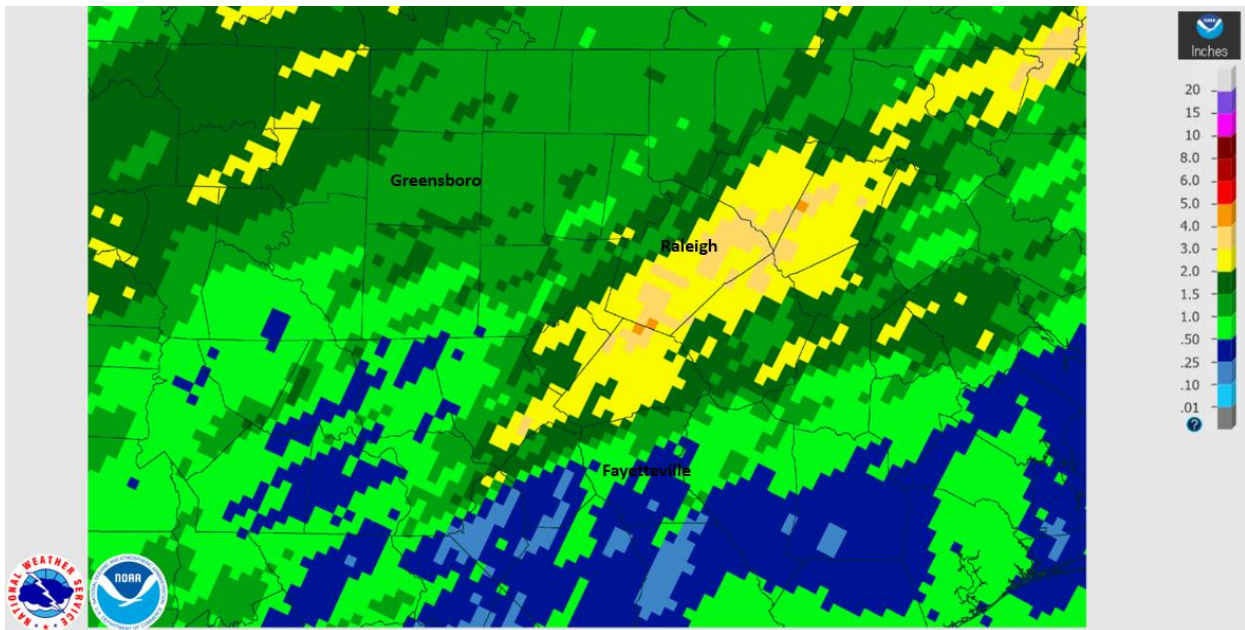
Figure 4 shows the cumulative precipitation at the three climate sites through the month. The rain at the very beginning and end of the month is evident, along with the very dry middle four weeks of October (other than the 17th).

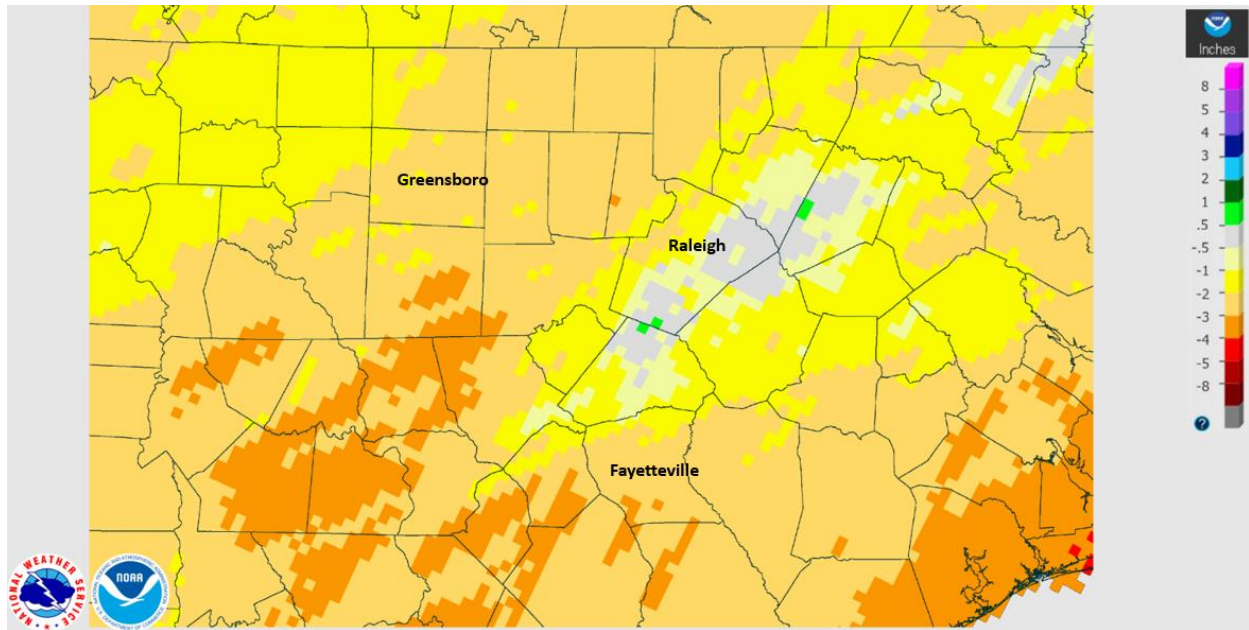
Fig. 4: October Cumulative Precipitation



Radar-estimated precipitation and the radar-estimated precipitation departure from normal for the month of October are shown in Figure 5. Total amounts ranged from only a quarter to half an inch in the far SE to 2-4 inches from Lee and Harnett counties NE to Raleigh and the northern Coastal Plain. The spots with the very highest amounts had near-normal monthly precipitation, but it was drier than normal everywhere else, with most places about 2-3 inches below normal.

Fig. 5: Radar-Estimated Monthly Precipitation (top) and Departure from Normal Precipitation (bottom)





October temperatures turned cooler to start the month, and then progressively cooler air continued to arrive behind cold fronts throughout the month. The October monthly average temperatures and their departures from normal at the three climate sites are depicted in Table 2. By month's end, temperatures averaged around 1.5-3.5°F below normal. Low temperatures were especially cool due to plenty of nights with clear skies. As shown in the table, all three climate sites hit their monthly high temperatures on October 7, with their monthly lows occurring on October 19 (in addition to the 20th at Fayetteville). This is when the first frost of the season was recorded. The preliminary monthly temperatures across the state of NC averaged 57.8°F according to NCEI, which ranked October 2022 as the 31st-coolest October since 1895 and made it 2.6°F cooler than normal, the coolest month relative to the 30-year average since May 2020. It was also just the state's second October in the past 10 years that was cooler than the 1991-2020 average.

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)	68.2	45.8	57.0	-3.2	78 on 10/7	31 on 10/19
Raleigh-Durham (RDU)	71.9	48.7	60.3	-1.4	84 on 10/7	34 on 10/19
Fayetteville (FAY)	73.7	50.7	62.2	-1.6	84 on 10/7	34 on 10/19 and 10/20

The number of days reaching at least 90°F fell off to none for the month of October. This will be replaced by the number of days with a low of 32°F or lower going into the winter. Greensboro fell to 32°F or below on a total of 2 days, with Raleigh and Fayetteville staying at 0.

The time series of daily temperature for the month at Greensboro, Raleigh, and Fayetteville can be found in Figure 6.

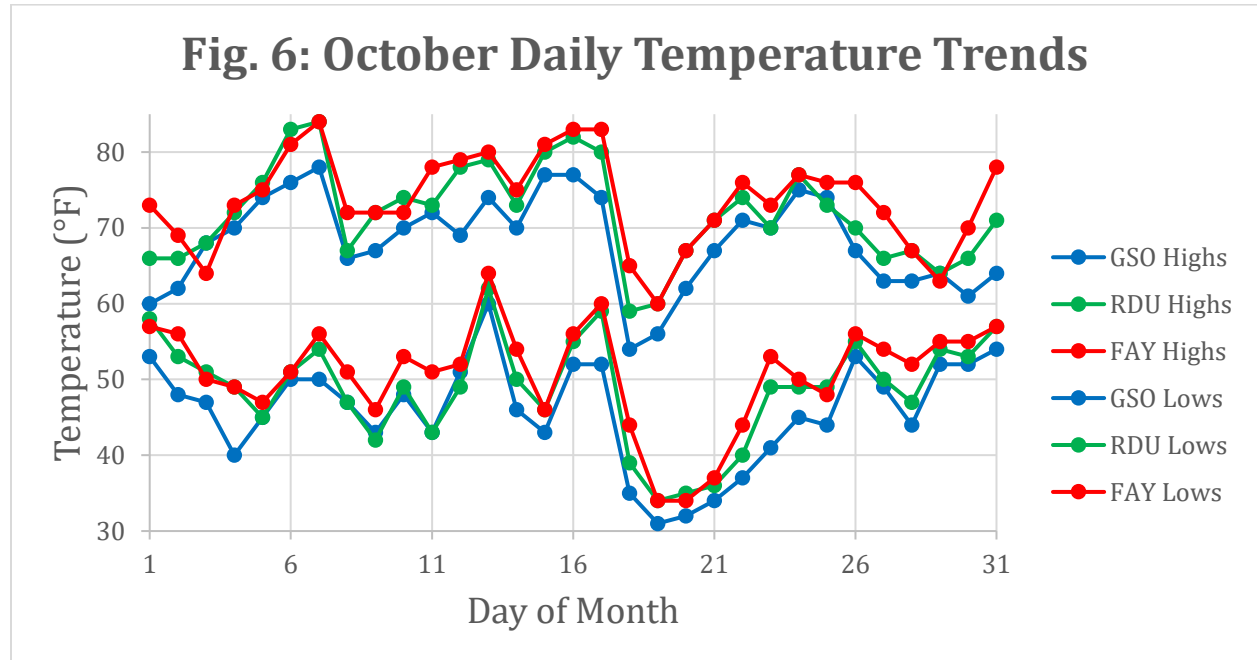
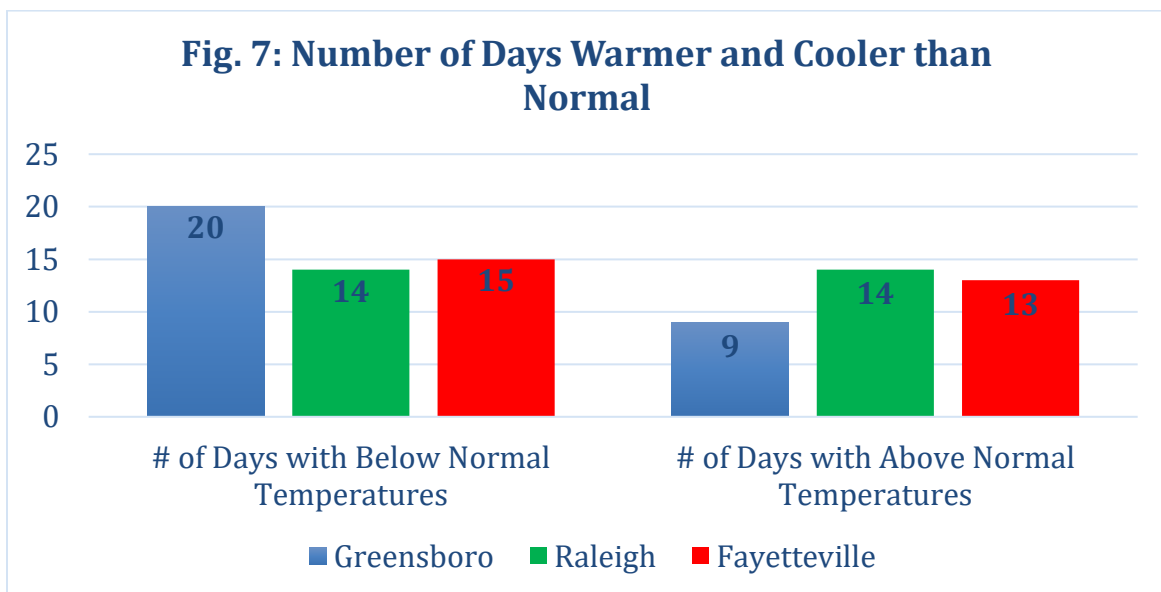


Figure 7 shows that despite the cooler-than-average temperatures overall for the month, the number of warmer and cooler than normal days was the same at Raleigh and close to equal at Fayetteville. At Greensboro, however, nearly 2/3 of days in the month were cooler than normal.



Other notes:

Days with thunderstorms this month included:

Greensboro: 0
Raleigh: 2
Fayetteville: 0

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

Greensboro: 1
Raleigh: 2
Fayetteville: 2

Strongest wind gusts and direction:

Greensboro: W (290 degrees) at 32 mph on October 18
Raleigh: W (280 degrees) at 30 mph on October 17
Fayetteville: SW (220 degrees) at 30 mph on October 17

Daily records:

Greensboro:

A daily record low maximum temperature of 60°F was tied on October 1. This record was previously set in 2011.

Raleigh:

None.

Fayetteville:

None.

Monthly records:

Greensboro:

None.

Raleigh:

None.

Fayetteville:

October 2022 was the 5th-driest October on record with a monthly total of 0.26 inches.