

July 2024 Central NC Climate Summary

By Phillip Badgett and James Danco

Thunderstorms drench away the drought, beat down the heat.

After the 2nd-driest June across the state of NC since 1895, frequent thunderstorms in July drenched what was left of the dried-up fields and landscape. The heat continued during the month with the hottest temperatures occurring during the first half. The frequent thunderstorms, especially during the latter part of the month, seemed to knock down the daytime highs a notch or two. Fortunately, in a nearly miraculous turnaround with all the dry soil and seemingly scorched landscape from the drought and heat of June, the rains returned. In June many areas across NC struggled to reach 1 inch of rain by month's end. In July, it was not uncommon that observers across the state reported in excess of 10 inches of rain. To list a few: Louisburg 13.31 inches, Henderson 12.94 inches, Rocky Mount 11.44 inches, and Albemarle 10.16 inches.

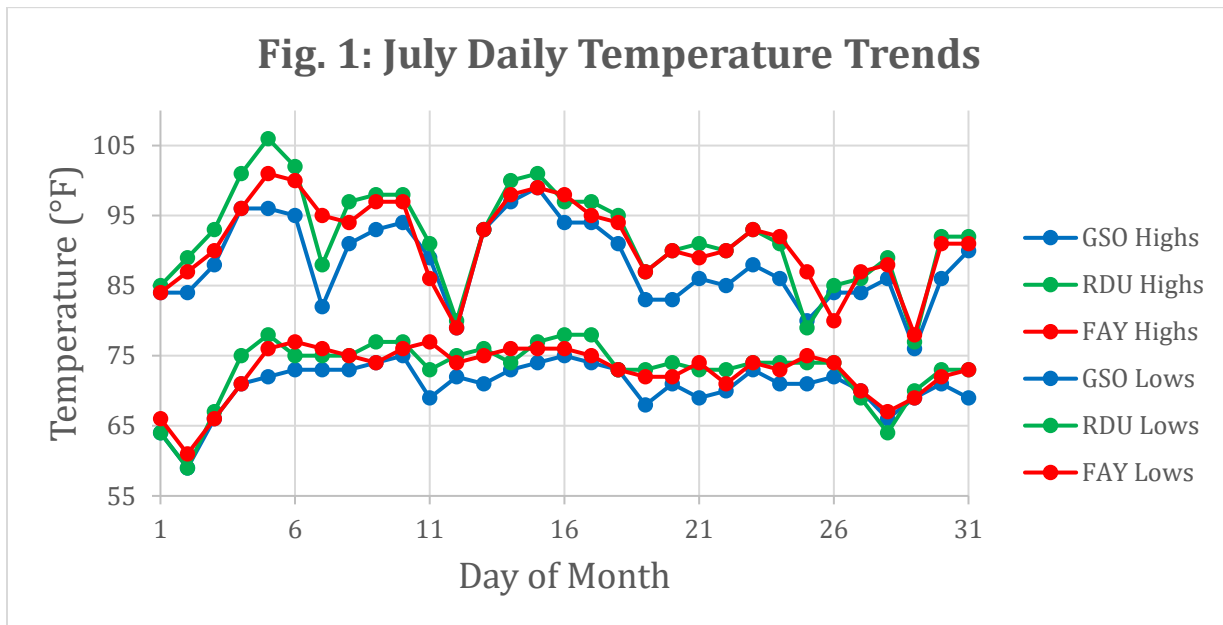
The National Centers for Environmental Information (NCEI) reported that the average temperature across the state of NC for the month of July was 78.8°F. This made it the 19th-hottest July since 1895. Greensboro and Fayetteville were 0.3°F and 0.6°F above normal, respectively, but Raleigh was quite a bit higher at 2°F above normal. The monthly average temperatures and their departures from normal at the three climate sites are depicted in Table 1.

Table 1: Monthly Temperature Statistics

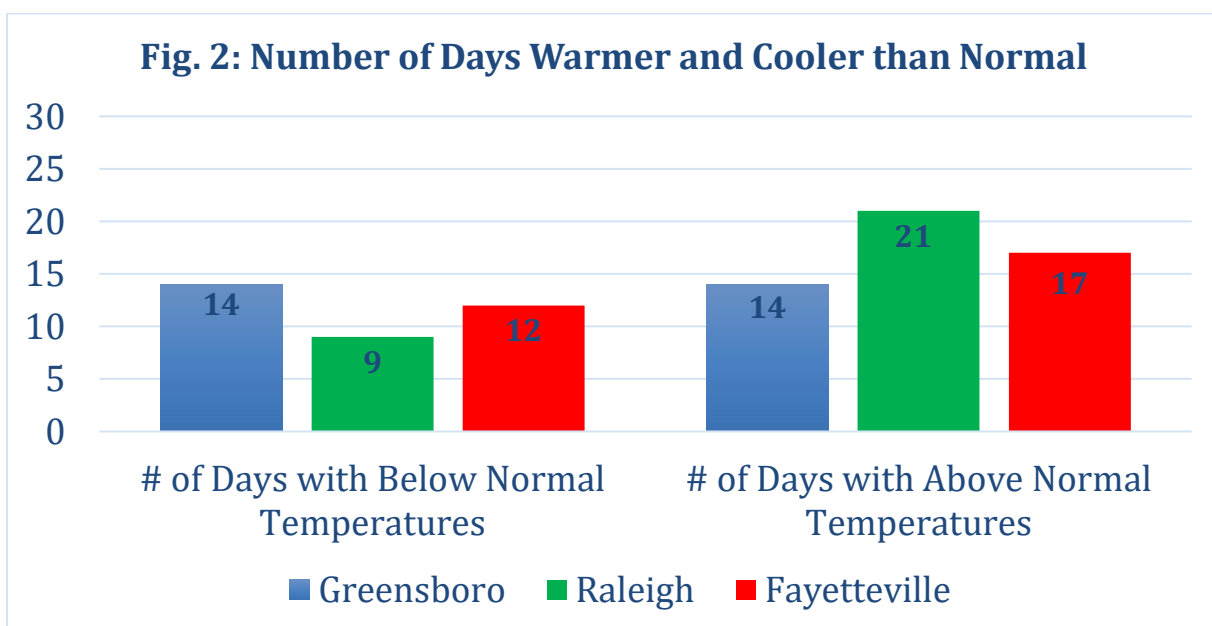
Site	Avg High Temp (°F)	Avg Low Temp (°F)	Avg Temp (°F)	Departure From Normal (°F)	Maximum Temperature (°F)	Minimum temperature (°F)
Greensboro (GSO)	88.3	70.7	79.5	+0.6	99 on 7/15	59 on 7/2
Raleigh-Durham (RDU)	92.0	73.0	82.5	+2.0	106 on 7/5	59 on 7/2
Fayetteville (FAY)	91.2	72.8	82.0	+0.3	101 on 7/5	61 on 7/2

The time series of daily temperature for the month at Greensboro, Raleigh, and Fayetteville can be found in Figure 1. In many spots, the heat peaked on July 5 when Raleigh reported 106°F. This was the hottest temperature that has ever been recorded at the Raleigh-Durham Airport. Raleigh went on to hit 90°F or better 21 of the 31 days in July, and recorded 100+°F on the 4th, 5th, 6th, 14th, and 15th. Fayetteville hit 101°F on July 5, its hottest day of the month which tied a daily

record, and it observed 20 days topping 90°F. 100+°F was reached at Fayetteville on the 5th and 6th, which tied or broke daily record highs on both days. Greensboro was a little cooler, only reaching 90°F or better on 13 days in July, with none reaching the century mark. But it did reach 99°F on the 15th, setting a new daily record. Temperatures then cooled down to near seasonable thanks to regular frontal passages and wetter conditions, with highs mostly in the 80s to lower-90s. Raleigh only reached 79°F on the 25th, which ended a 54-day streak of consecutive days with highs reaching at least 80°F. The lowest temperatures recorded this month were all on the 2nd when Greensboro and Raleigh bottomed out at 59°F, while Fayetteville was 61°F.



As shown in Figure 2, a majority of days in July were warmer than normal at Raleigh and Fayetteville, while an equal number of days were above and below normal at Greensboro.

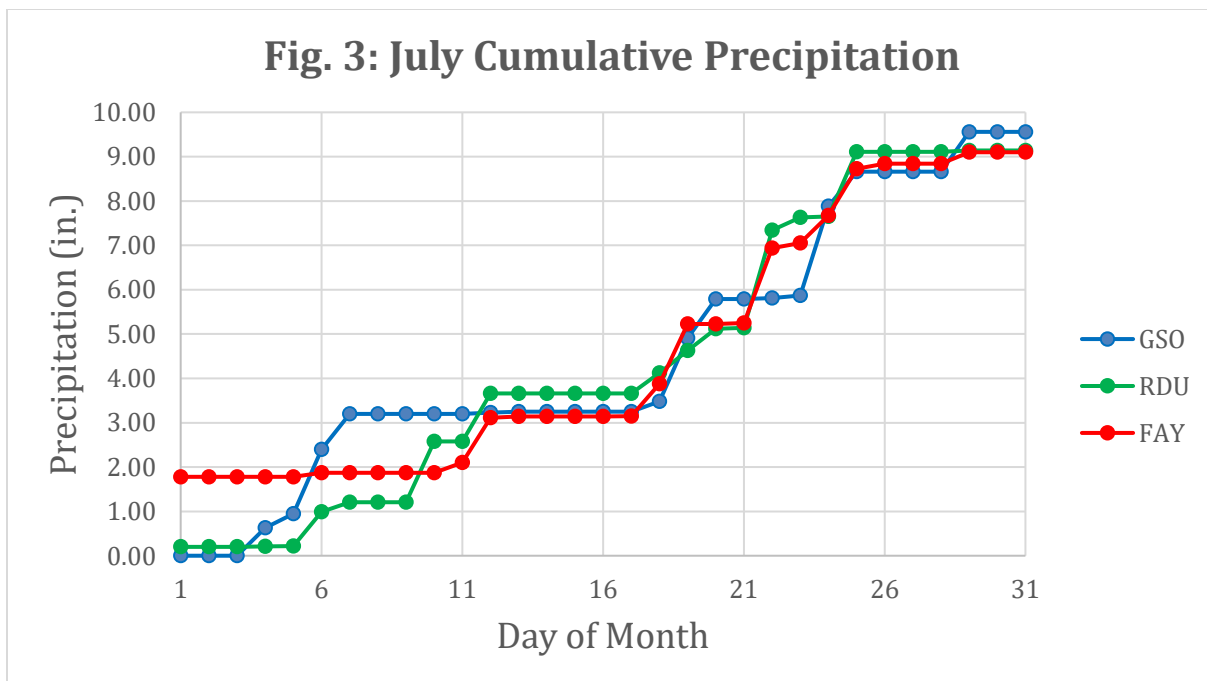


Unlike June which had long stretches of dry weather, July brought many days with thunderstorms and measurable rainfall. Raleigh reported 14 days with a thunderstorm and 16 days with measurable rainfall. Greensboro reported 10 days with a thunderstorm and 14 days with measurable rainfall. Not to be left out, Fayetteville reported 11 days with a thunderstorm and 15 days with measurable rainfall. Across the state, NCEI reported a statewide average of 8.73 inches of rainfall. This turned out to be the 6th-wettest July on record. The final totals at the three climate sites all exceeded 9 inches, which was 4-5+ inches wetter than normal. It was the 7th-wettest July at Greensboro with records going back to 1903, the 9th-wettest July at Raleigh with records back to 1887, and the 12th-wettest July at Fayetteville with records back to 1910. Lillington had its wettest July on record, according to the NC State Climate Office. The July 2024 monthly precipitation totals are found in Table 2.

Table 2: Monthly Precipitation Statistics

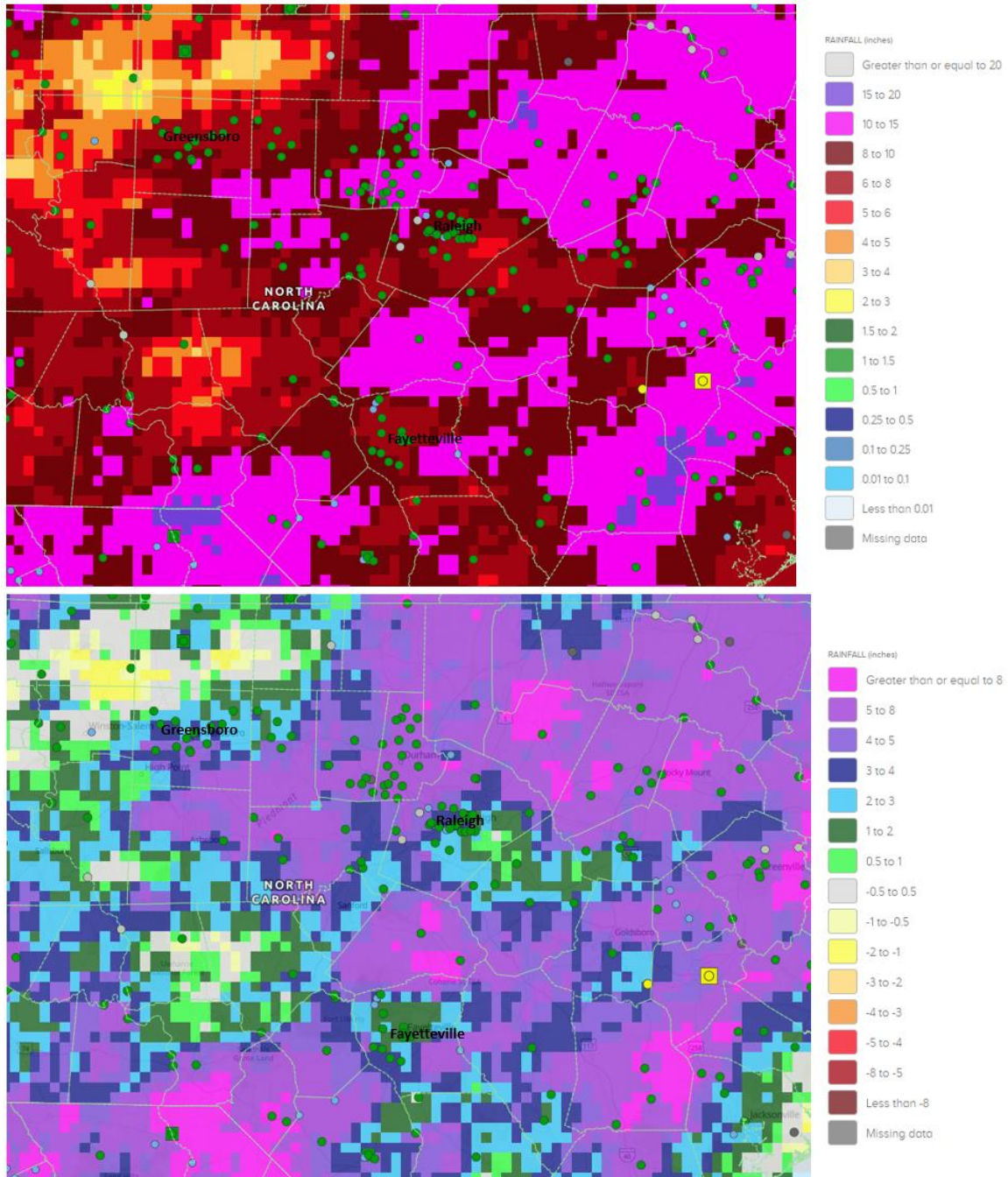
Site	Total precipitation (in.)	Departure from Normal (in.)	Max Daily Precipitation (in.)
Greensboro (GSO)	9.56	+5.38	2.01 on 7/24
Raleigh-Durham (RDU)	9.14	+4.12	2.20 on 7/22
Fayetteville (FAY)	9.10	+4.15	1.78 on 7/1

The cumulative precipitation at the three climate sites for July is shown in Figure 3.



As displayed by the radar-estimated precipitation and the radar-estimated precipitation departure from normal in Figure 4, the final monthly totals exceeded 10 inches across a large part of the NE Piedmont and northern Coastal Plain, and scattered portions of the southern Piedmont, Sandhills, and central/southern Coastal Plain. This was mostly 5-8 inches above normal. Other areas were mostly in the 6-10 inch range (1-4 inches above normal), and the driest spots in the western Piedmont received 4-6 inches which was near normal.

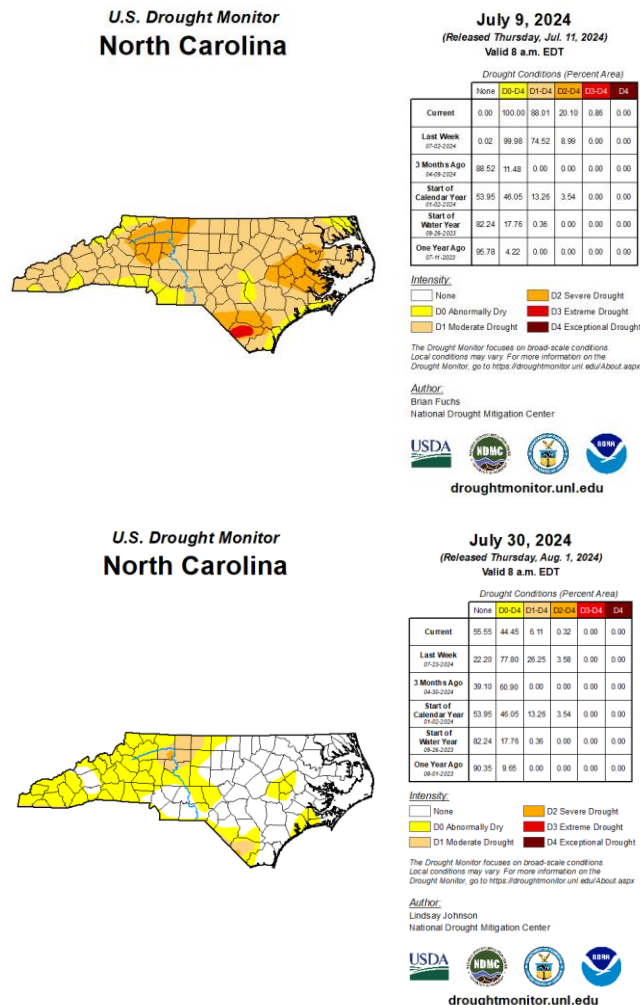
Fig. 4: Radar-Estimated Monthly Precipitation (Top) and Departure from Normal Precipitation (Bottom)



Some of the cooperative station rainfall reports from around central NC from July 2024 included: Sparta 6.31 inches (+1.08), Winston-Salem 2.67 inches (-1.57), Lexington 5.92 inches (+1.24), Burlington 9.14 inches (+4.49), Mount Airy 6.75 inches (+1.51), Danbury 4.45 inches (+0.17), Henderson 12.94 inches (+6.51), Cary 8.27 inches (+2.96), Raleigh (NC State) 5.99 inches (+1.34), Louisburg 13.31 inches (+8.46), Apex 9.34 inches (+4.27), Laurinburg 12.35 inches (+8.02), Rocky Mount 11.44 inches (+6.85), and Clinton 10.61 inches (+4.78).

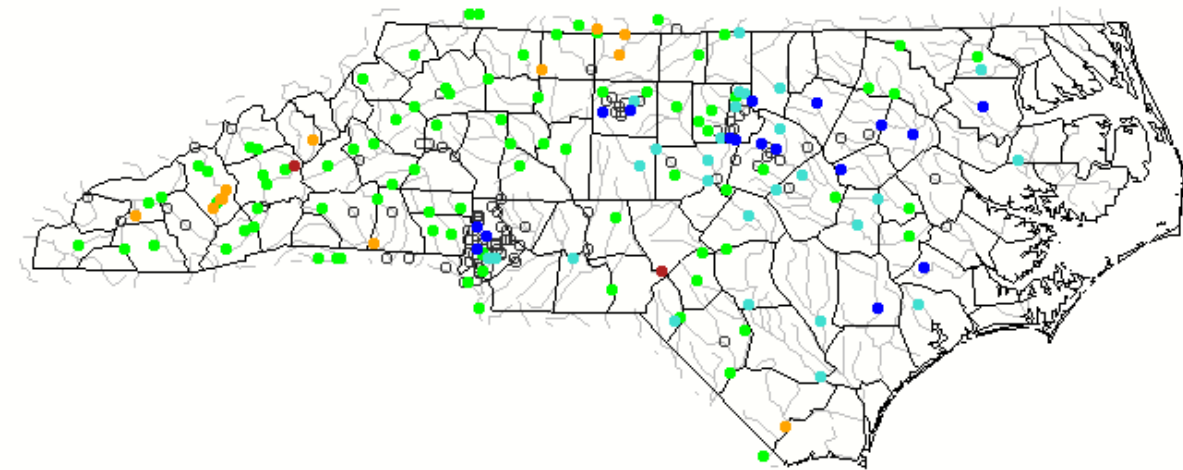
The rainfall in July drenched a state that had reached some extreme drought levels for the first time since August 2011. According to the US Drought Monitor for NC in Figure 5, the drought that rapidly developed in June peaked around July 9, when nearly all of central NC fell into the Moderate (D1) or Severe (D2) drought categories. However, by July 30, the drought had been wiped out over most of central NC, except for portions of the western Piedmont that remained Abnormally Dry (D0) to low-end Moderate (D1) drought conditions. The NC State Climate Office reported that crop conditions had improved for the remaining crops in the field including soy beans and pasture land for hay. However, much of the early corn was wiped out by the June drought.

Fig. 5: US Drought Monitor for NC on July 9 (top) and July 30 (bottom)



Streamflows went from below to well below normal in June to mostly above to much above normal by the end of July, as seen in Figure 6.

Fig. 6: Monthly Streamflow compared to Historical Streamflow across NC in July 2024



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

Other notes:

Days with thunderstorms this month:

Greensboro: 10

Raleigh: 14

Fayetteville: 11

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

Greensboro: 0

Raleigh: 2

Fayetteville: 2

Strongest wind gusts and direction:

Greensboro: SW (220 degrees) at 36 mph on July 6

Raleigh: S (200 degrees) at 41 mph on July 6

Fayetteville N (010 degrees) 48 mph on July 1

Number of days with high temperatures at or above 90°F:

Greensboro: 13

Raleigh: 21

Fayetteville: 20

Monthly records:

Greensboro:

July 2024 was the 7th-wettest July since records began in 1903, with a monthly rainfall total of 9.56 inches.

Raleigh:

The high of 106°F on July 5 was the hottest temperature on record at the Raleigh-Durham International Airport. The old record of 105°F was most recently set in July 2012.

July 2024 was tied with July 1993 for the 4th-warmest July since records began in 1887, with a monthly average temperature of 82.5°F.

July 2024 was the 9th-wettest July on record with a total of 9.14 inches.

Fayetteville:

July 2024 was the 12th-wettest July since records began in 1910, with a monthly rainfall total of 9.10 inches.

Daily records:

Greensboro:

A daily record rainfall of 1.45 inches was set on July 6. This broke the old record of 1.42 inches set in 1995.

A daily record high minimum temperature of 73°F was tied on July 7. This record was previously set in 2012 and 2019.

A daily record high temperature of 99°F was set on July 15. This broke the old record of 97°F previously set in 1915, 1954, and 1974.

A daily record high minimum temperature of 74°F was tied on July 15. This record was previously set in 2019.

A daily record high minimum temperature of 75°F was tied on July 16. This record was previously set in 2010.

Raleigh:

A daily record high temperature of 101°F was tied on July 4. This record was previously set in 2012.

The hottest temperature on record at the Raleigh-Durham International Airport was recorded on July 5 with 106°F. The old daily record high of 102°F was set in 1999 and 2022.

A daily record high minimum temperature of 78°F was tied on July 5. This record was last set in 1902.

A daily record high temperature of 102°F was tied on July 6. This record was previously set in 1999 and 2022.

A daily record high minimum temperature of 77°F was set on July 9. This broke the old record of 74°F set in 2014.

A daily record high minimum temperature of 77°F was tied on July 10. This record was previously set in 1981.

A daily record high temperature of 101°F was set on July 15. This broke the old record of 99°F set in 1976 and 1997.

A daily record high minimum temperature of 77°F was set on July 15. This broke the old record of 76°F set in 1992.

A daily record high minimum temperature of 78°F was set on July 16. This broke the old record of 77°F set in 2010.

Fayetteville:

A daily record high temperature of 101°F was tied on July 5. The previous record was set in 2002.

A daily record high temperature of 100°F was set on July 6. This broke the old record of 99°F set in 1918.

A daily record high minimum temperature of 77°F was set on July 6. This broke the old record of 76°F set in 2017.

A daily record high minimum temperature of 77°F was set on July 11. This broke the old record of 76°F set in 2019.