# January 2025 Central NC Weather Summary

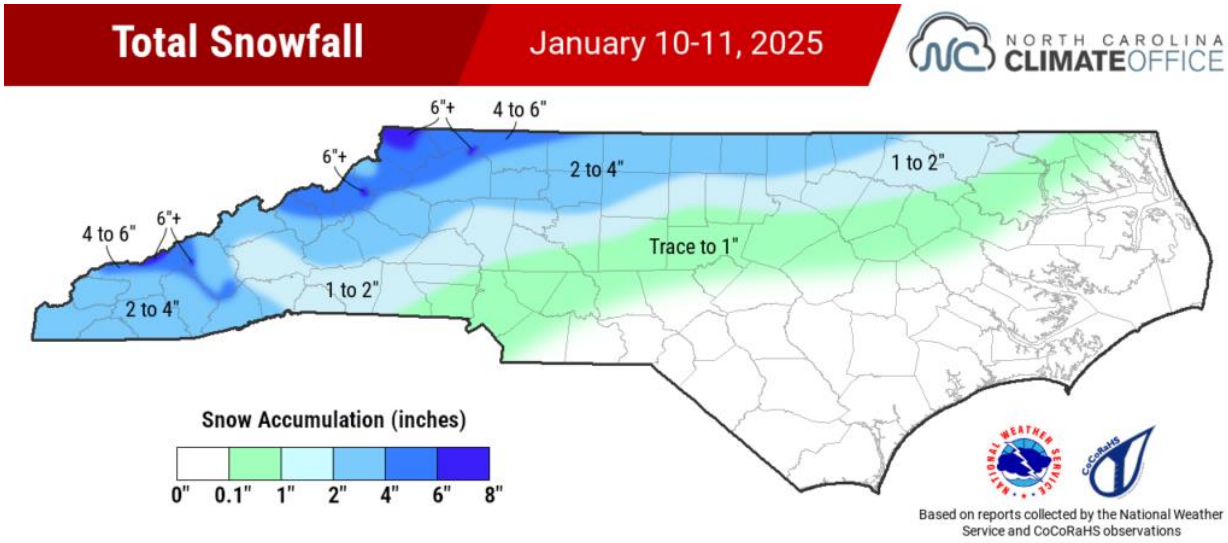
***By Phillip Badgett and James Danco***

## The snowless streak ends at 1000+ days in a cold January.

Cold and dry air made its presence felt during a good part of January across central NC. Almost unheard of, this was the first "colder than normal" month in a year and a half. The last month with below normal temperatures at all three climate sites and statewide was 19 months ago, June 2023. It was not just colder than normal, but the white stuff made a comeback after a couple of snowless winters. The year 2025 got cold as Arctic high pressure built into the region from the north beginning on January 3. This was followed by additional reinforcing Arctic high pressures that built into NC from the north, setting the stage for a typical winter storm setup for our region by January 10. Low pressure developed along the Gulf Coast and moved northeast toward southeastern NC. It proved to have just enough moisture and cold air to bring snow to the western and northern sections of the state, with some cold rain and icing to the south and east. Raleigh finally recorded a snowfall of 0.7 inches on January 10-11 after 1,076 days of no measurable snowfall since January 29, 2022. This was the 2nd-longest snowless streak in Raleigh since records began in 1887. The top of the list for snowless streaks ended in February 1993 at 1,164 days.

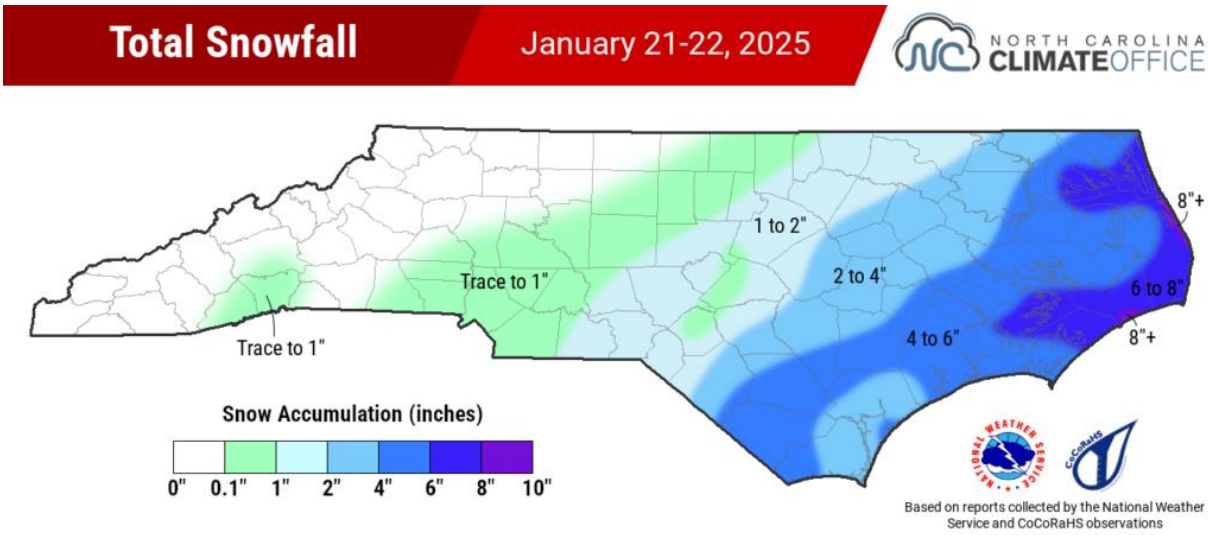
The January 10-11 winter storm brought 2 to 7 inches of snow from the mountains of NC into the far northwest and northern Piedmont. Mount Airy reported 6 inches of snow while areas around Winston-Salem reported 3 inches, Greensboro 2.3 inches, Yanceyville 2.2 inches, and Burlington 1 inch. See the snowfall map from the NC Climate Office in Figure 1. The snow quickly transitioned to sleet and freezing rain across most of central NC, with around a tenth of an inch of ice across the southern Piedmont, Sandhills, Triangle region, and parts of the Coastal Plain.

### Fig. 1: Total Snowfall across NC on January 10-11, 2025



The second winter storm in January affected the region January 21 and 22 as low pressure tracked just offshore. Very cold air was in place across the state and this meant snow would fall even along the immediate coast, where totals were highest. In fact, temperatures were so cold that Fayetteville set a daily record low maximum temperature of just 30°F on the 21st while Greensboro tied a daily low maximum temperature record of 29°F on the 22nd. The cold air also helped boost snow-to-liquid ratios to around 20:1 over central NC instead of the 8:1 to 10:1 we usually get. Kill Devil Hills totaled 9 inches, while Ocracoke and Cape Hatteras reported 8 inches. Over the Coastal Plain, Tarboro reported 3.5 inches of snow, followed by Rocky Mount with 3 inches, Goldsboro 2 inches, Raleigh 1.5 inches, and Greensboro only a trace. The totals are shown below in Figure 2.

## Fig. 2: Total Snowfall across NC on January 21-22, 2025

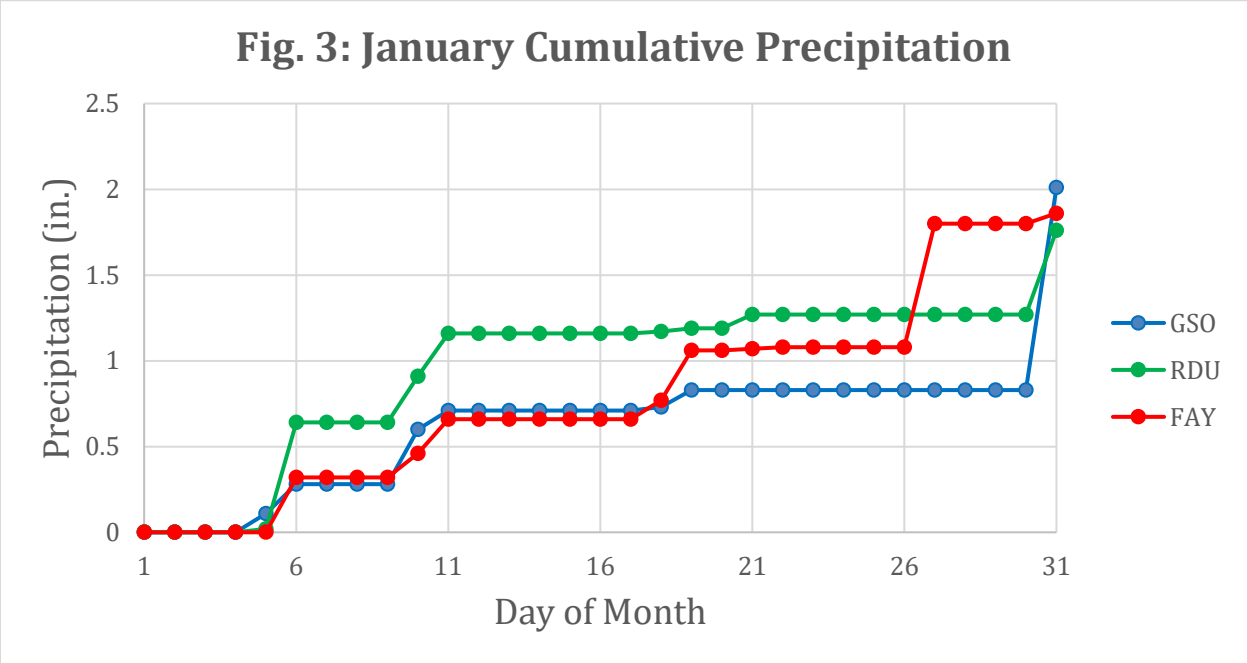



These snow events did bring welcome precipitation to our region; however, the cold and dry air essentially dominated the month, limiting precipitation totals. By month's end, it turned out to be one of the driest Januarys on record. According to preliminary data from NCEI, the state averaged only 1.62 inches of liquid equivalent precipitation making this the 7th-driest January in 131 years. All three climate sites in central NC only reported near or just under 2 inches of liquid equivalent, which was 1 to 2 inches drier than normal (Table 1). Greensboro had its 28th-driest January with records going back to 1903, Raleigh had its 19th-driest January going back to 1887, and Fayetteville had its 20th-driest January going back to 1910. Snowfall totals included: Greensboro 2.5 inches and Raleigh 2.2 inches.

## Table 1: Monthly Precipitation Statistics

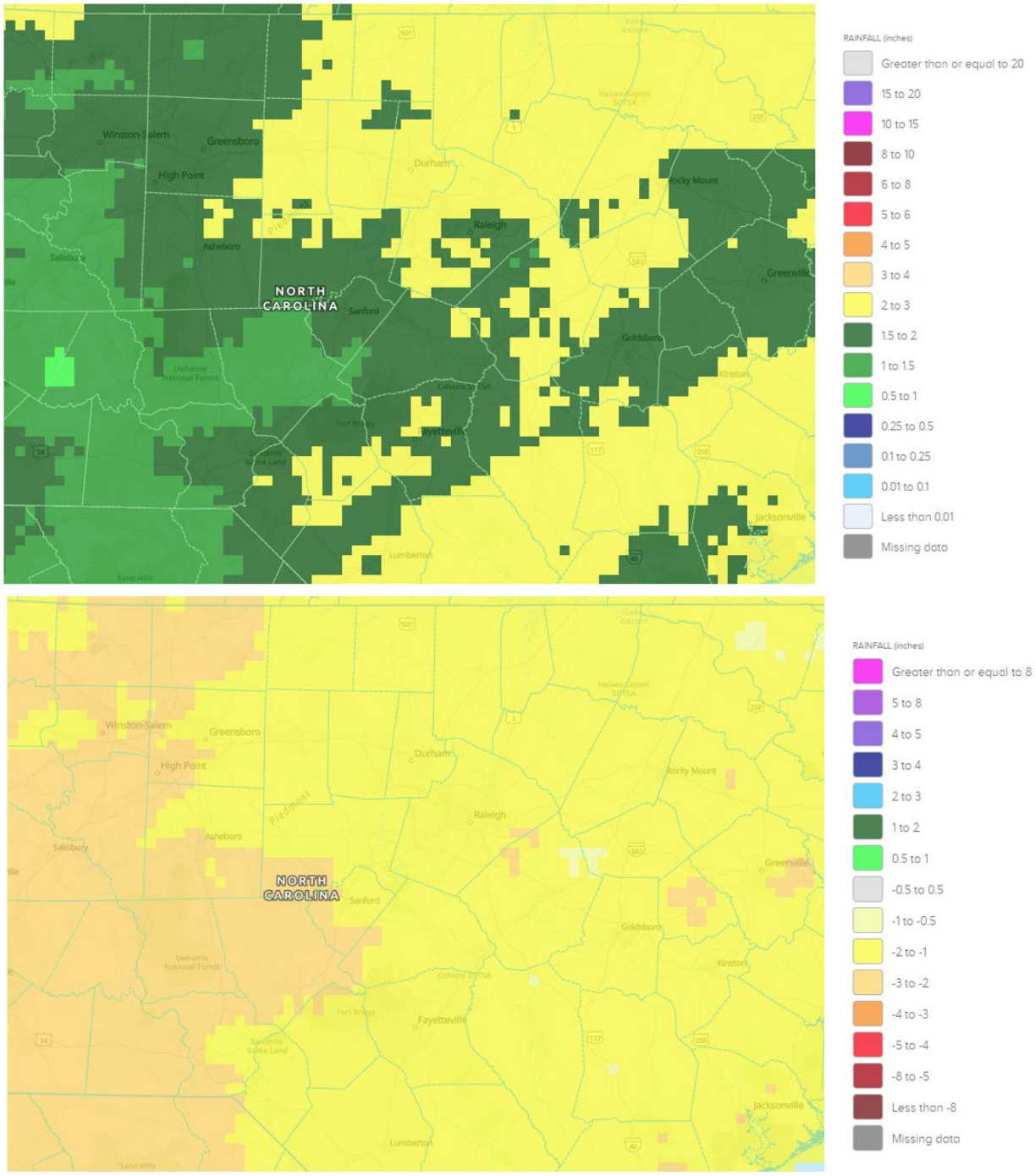
| Site | Total precipitation (in.) | Departure from Normal (in.) | Max Daily Precipitation (in.) |
|---|---|---|---|
| Greensboro (GSO) | 2.01 | -1.38 | 1.18 on 1/31 |
| Raleigh-Durham (RDU) | 1.76 | -1.67 | 0.62 on 1/6 |
| Fayetteville (FAY) | 1.86 | -1.29 | 0.72 on 1/27 |

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



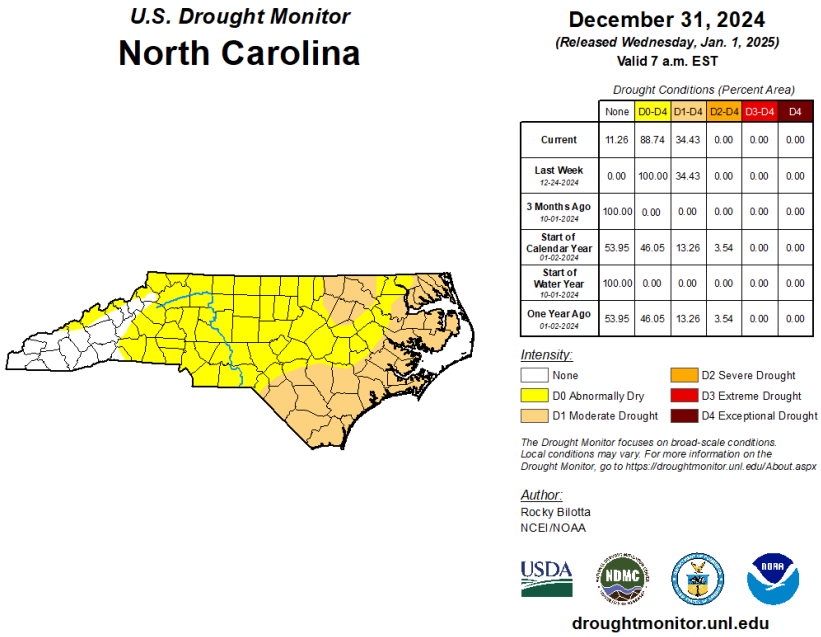

As displayed by the radar-estimated precipitation and the radar-estimated precipitation departure from normal in Figure 4, the final monthly totals were in the 1-3 inch range, which was 1-3 inches drier than normal. The lowest totals were over the southern and western Piedmont.

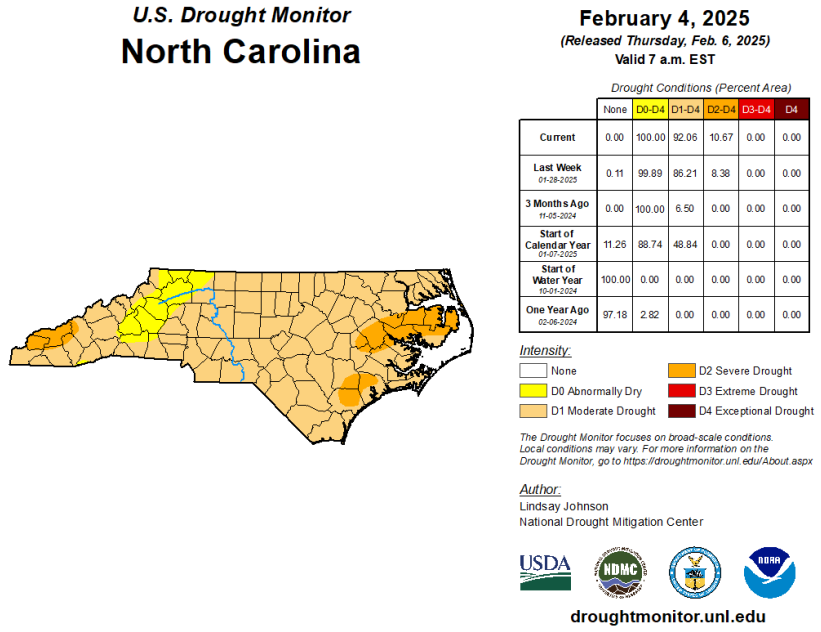
# Fig. 4: Radar-Estimated Monthly Precipitation




The low precipitation totals in January expanded and worsened the recent dryness. As shown in Figure 5, the US Drought Monitor for NC worsened by a category for many areas during January. Mostly Abnormally Dry (D0) to Moderate Drought (D1) conditions on December 31, 2024 became mostly Moderate (D1) to Severe Drought (D2) by February 4, 2025.

# Fig. 5: US Drought Monitor for NC on December 31 (top) and February 4 (bottom)




The effects of the drought were apparent in both the streamflow (Figure 6) and soil moisture (Figure 7), which were in the 20$^{th}$ percentile or less across much of central NC.

**Fig. 6: Monthly Streamflow compared to Historical Streamflow across NC in January 2025**

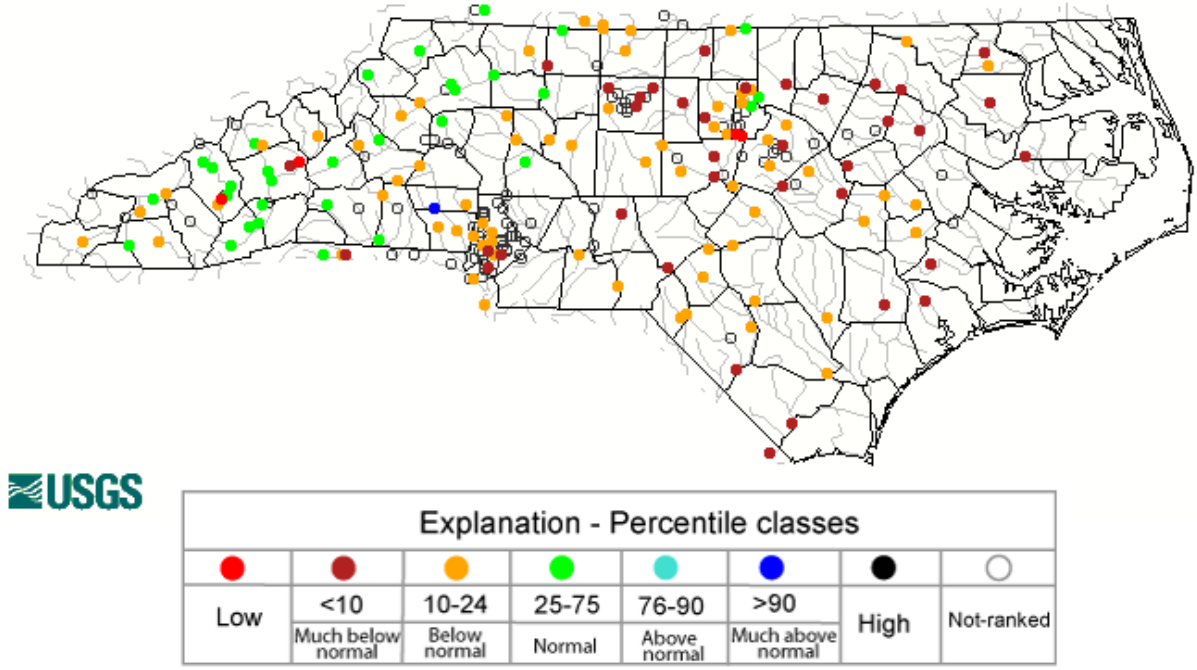
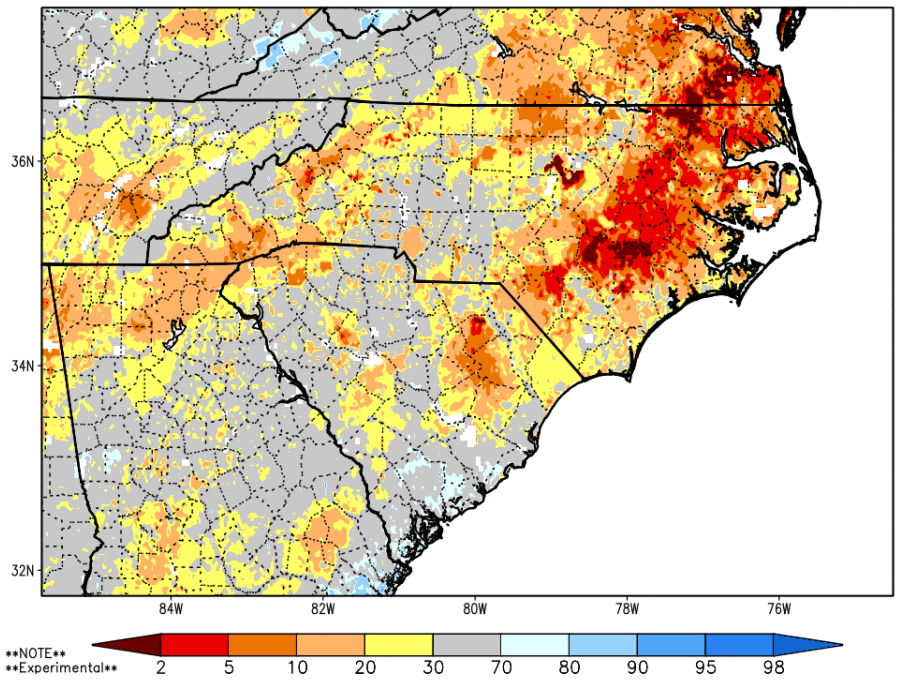



**Fig. 7: SPoRT-LIS 0-200 cm Soil Moisture Percentile valid January 31, 2025**

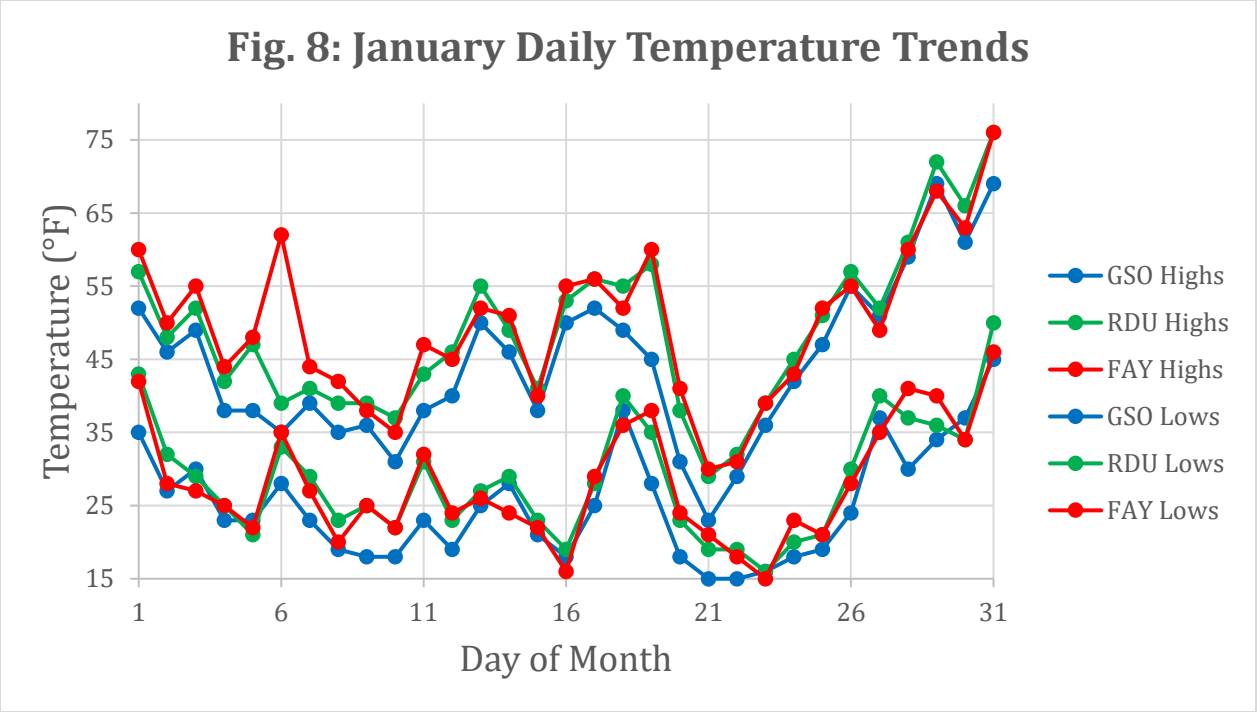


January 2025 will also go down in the record books as one of the coldest Januarys in 131 years of record keeping. Although it did not achieve a top ten mark, it did rank as the 17th-coldest January in NC with a preliminary average statewide temperature of 35.4°F, according to NCEI. The monthly average temperatures and their departures from normal at the three climate sites are depicted in Table 2. Greensboro and Fayetteville finished the month at around 5°F colder than normal while Raleigh's average temperature was a little over 3°F below normal. It was Greensboro's 19th-coldest January on record and Fayetteville's 22nd-coldest January on record.

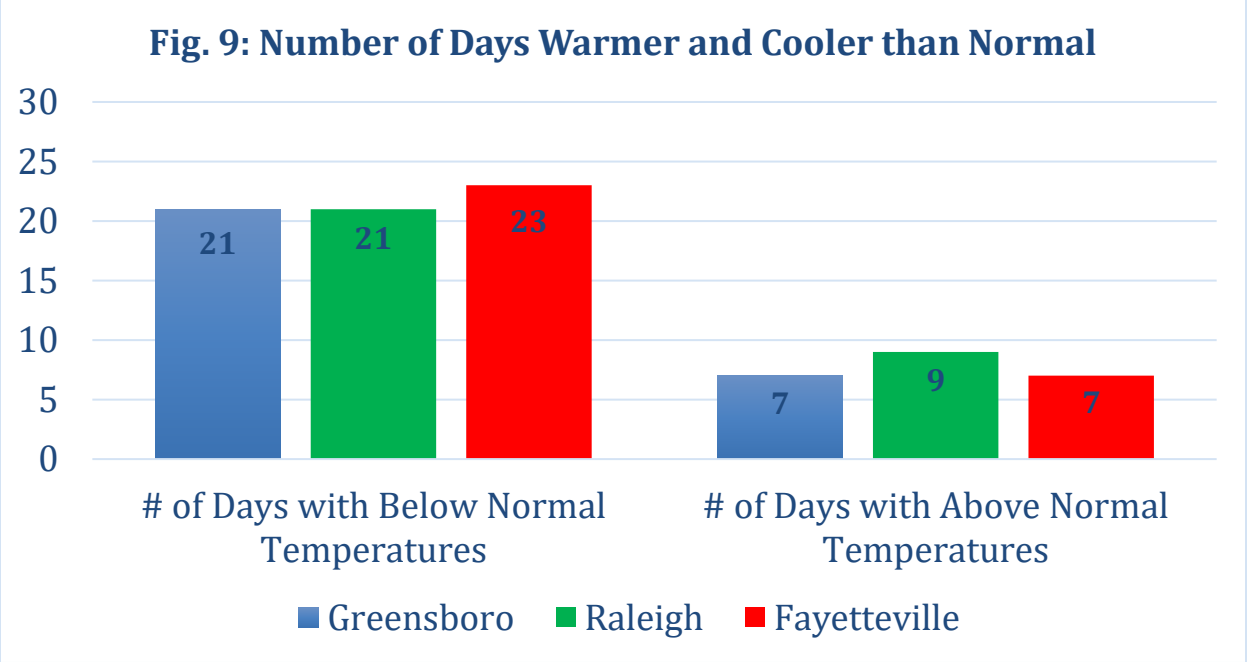
## Table 2: Monthly Temperature Statistics

| Site | Avg High Temp (°F) | Avg Low Temp (°F) | Avg Temp (°F) | Departure From Normal (°F) | Maximum Temperature (°F) | Minimum temperature (°F) |
|---|---|---|---|---|---|---|
| Greensboro (GSO) | 44.5 | 25.1 | 34.8 | -4.9 | 69 on 1/29 and 1/31 | 15 on 1/21 and 1/22 |
| Raleigh-Durham (RDU) | 48.9 | 28.5 | 38.7 | -3.2 | 76 on 1/31 | 16 on 1/23 |
| Fayetteville (FAY) | 49.8 | 27.9 | 38.9 | -5.1 | 76 on 1/31 | 15 on 1/23 |

The time series of daily temperature for the month at Greensboro, Raleigh, and Fayetteville can be found in Figure 8. The temperatures appear to have bottomed out between January 20 and 23 when there was some snow on the ground. Louisburg fell to 8°F on January 23 as one of the coldest sites in central NC. In addition, Greensboro bottomed out at 15°F on both the 21st and 22nd. Raleigh fell to a monthly low of 16°F on the 23rd, while Fayetteville recorded 15°F. Another indication of the cold this month included the number of nights in which lows fell to 32°F or below. Greensboro totaled 25 days with a freeze followed by both Raleigh and Fayetteville with 22 such days. Temperatures briefly surged at the end of the month and these were the monthly highs. Fayetteville and Raleigh topped out at 76°F on January 31, while Greensboro reached 69°F.




As shown in Figure 9, two thirds to three quarters of days in January were cooler than normal at the three climate sites.



# Other notes:

## Days with thunderstorms this month:

Greensboro: 0
Raleigh: 0
Fayetteville: 0

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

Greensboro: 1
Raleigh: 1
Fayetteville: 2

## Strongest wind gusts and direction:

Greensboro: W (290 degrees) at 46 mph on January 3
Raleigh: NW (300 degrees) at 42 mph on January 3
Fayetteville N (340 degrees) 45 mph on January 6

## Number of days with low temperatures at 32°F or below:

Greensboro: 25
Raleigh: 22
Fayetteville: 22

## Monthly records:

**Greensboro:**

None.

**Raleigh:**

None.

**Fayetteville:**

None.

## Daily records:

**Greensboro:**

A daily record low maximum temperature of 29°F was tied on January 22. This record was previously set in 2014.

**Raleigh:**

A daily record snowfall of 1.5 inches was tied on January 21. This record was previously set in 2022.

**Fayetteville:**

A daily record low maximum temperature of 30°F was set on January 21. This broke the old record of 31°F set in 1983.