

December 2024 Central NC Climate Summary

By Phillip Badgett and James Danco

December turns colder.

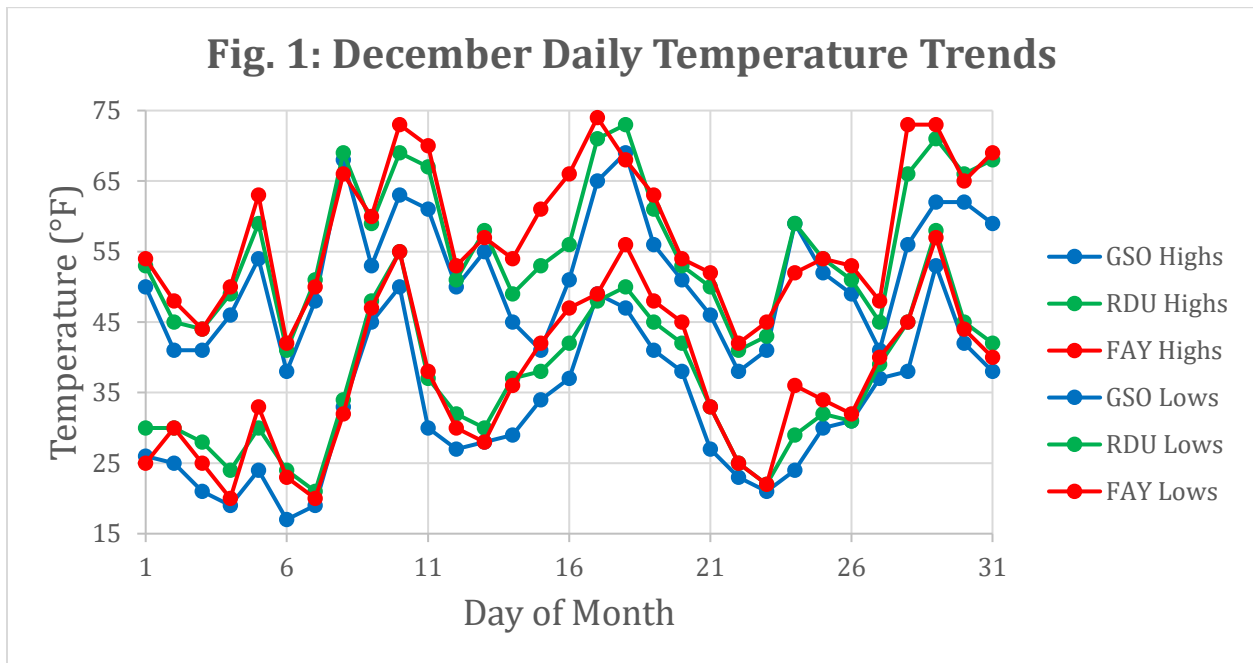
December started much colder as several cold fronts surged through the region. During the first week of the month, Greensboro and Fayetteville averaged more than 10°F below normal. Lows reached into the teens at Greensboro on the 4th, 6th, and 7th. A light snow event occurred on the early morning of December 3 as Greensboro recorded 0.4 inches. This broke a 1037-day streak without any measurable snow there, the 2nd-longest streak on record. This light snowfall was felt throughout the Triad region where numerous accidents were reported during the early morning. Portions of the western Piedmont received 1 to 2 inches. The snow did not reach the Triangle nor most of the rest of central NC. However, the colder than normal temperatures touched all areas of the state. Raleigh fell below 32°F for the first seven days of the month, bottoming out at 21°F on December 7. Fayetteville dropped to 20°F on the 4th and 7th. The cold weather gave way to much warmer conditions for the second and third weeks of the month, and then conditions fluctuated between cold and warm to end the month.

The National Centers for Environmental Information (NCEI) reported that the average temperature across the state of NC for December was 43.8°F. Even with the colder temperatures finally arriving, the lingering warmth especially in the southeast part of the state still made it the 41st-warmest December in 130 years of record. Greensboro averaged just below normal for the month, while Raleigh and Fayetteville were just above normal. Plenty of nights reached 32°F or below. Greensboro tallied 17 such days, Raleigh 14, and Fayetteville 12. On the flipside, Fayetteville had 5 days reaching 70°F or above and 14 days reaching 60°F or above. The warmest temperatures occurred around mid-month, while the coldest readings were during the first week of the month. The monthly temperature statistics at the three climate sites are depicted in Table 1.

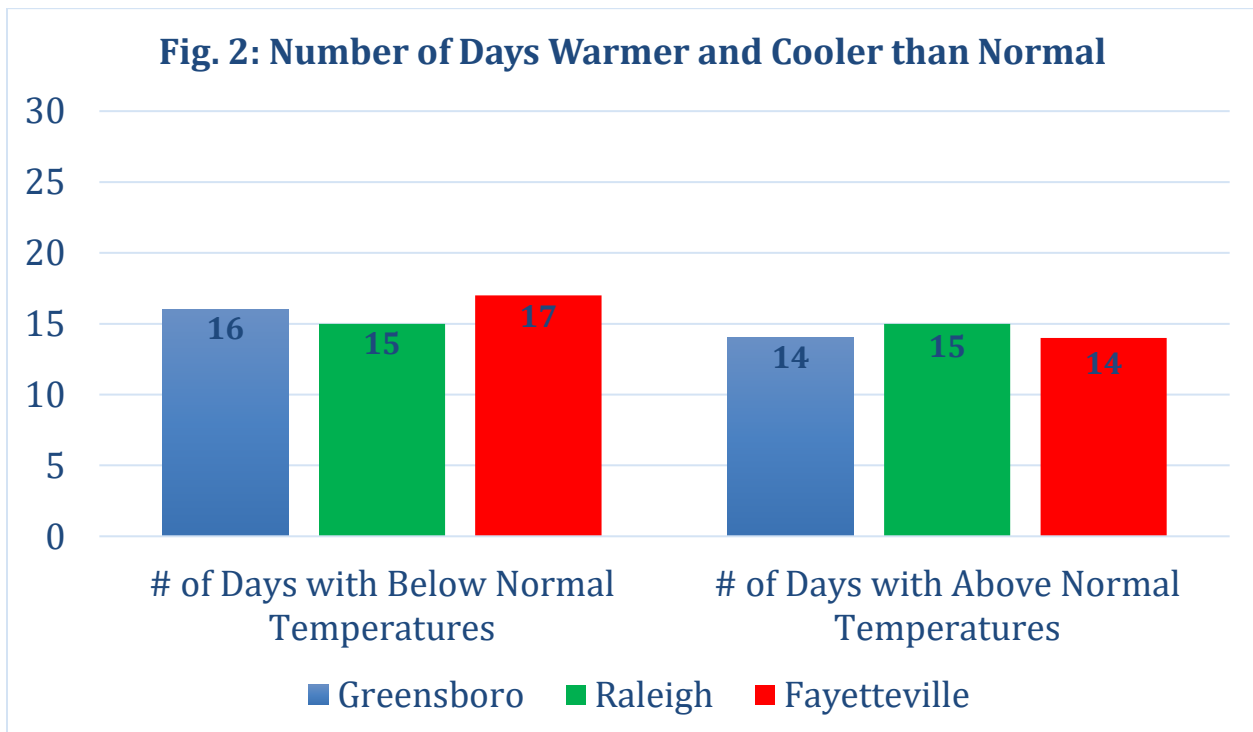
Table 1: Monthly Temperature Statistics

Site	Avg High Temp (°F)	Avg Low Temp (°F)	Avg Temp (°F)	Departure From Normal (°F)	Maximum Temperature (°F)	Minimum temperature (°F)
Greensboro (GSO)	52.0	32.4	42.2	-0.3	69 on 12/18	17 on 12/6
Raleigh-Durham (RDU)	56.3	36.3	46.3	+1.7	73 on 12/18	21 on 12/7
Fayetteville (FAY)	57.9	36.7	47.3	+0.8	74 on 12/17	20 on 12/4 and 12/7

The time series of daily temperature for the month at Greensboro, Raleigh, and Fayetteville can be found in Figure 1. Temperatures reached well into the 60s to even 70s from northwest to southeast during the warmest periods and fell into the teens and 20s during the cold spells.



As shown in Figure 2, there were roughly equal numbers of warmer and cooler than normal days in December at the three climate sites, with a slight majority being cooler than normal at Greensboro and Fayetteville.

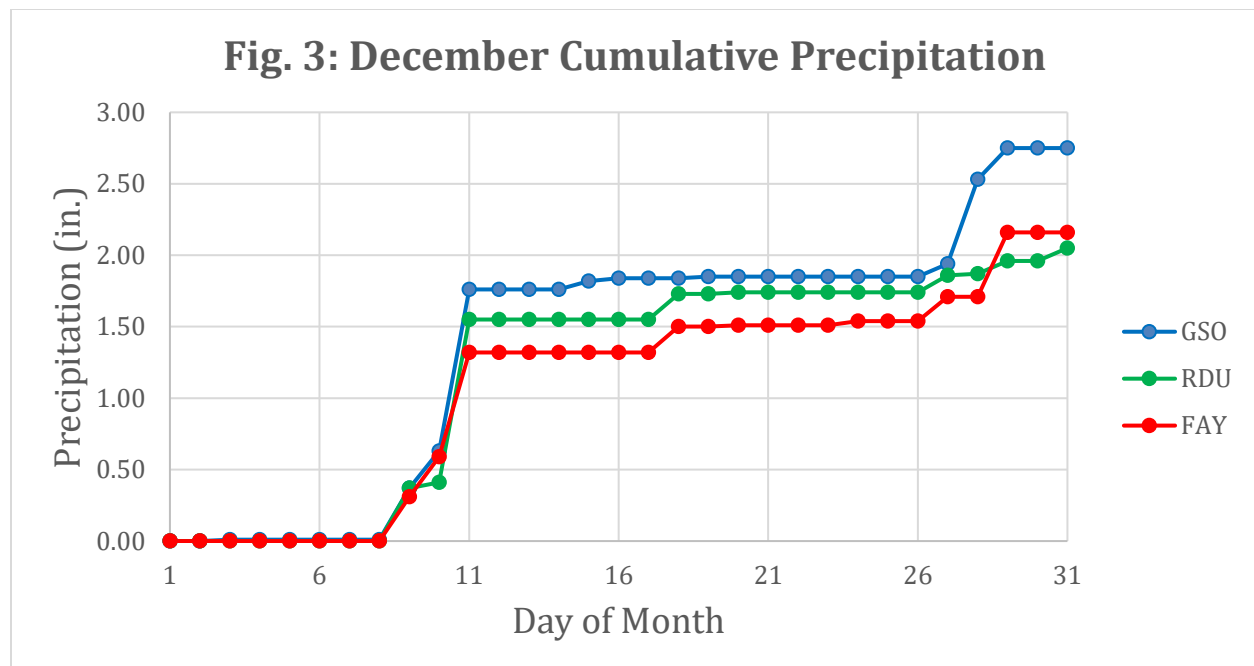


Wetter than normal conditions replaced the dryness over the western part of NC in December 2024; however, it remained fairly dry in the east as the rainy systems tracked too far to the west. The Triad roughly marked the transition line between wet to the west and dry to the east. However, even Greensboro’s rainfall total remained lower than the historic normal. Just to the west, including the NC Foothills, wetter than normal rainfall boosted rainfall totals into 2 to 3 inch surpluses. This included Mount Airy that had a monthly rainfall surplus of 3.09 inches. This made it the 5th-wettest December on record there. Looking around NC, according to NCEI the statewide average rainfall was 3.08 inches. This total made it the 51st-driest December since 1895. The December 2024 monthly precipitation totals at the three climate sites are found in Table 2.

Table 2: Monthly Precipitation Statistics

Site	Total precipitation (in.)	Departure from Normal (in.)	Max Daily Precipitation (in.)
Greensboro (GSO)	2.75	-0.42	1.13 on 12/11
Raleigh-Durham (RDU)	2.05	-1.34	1.14 on 12/11
Fayetteville (FAY)	2.16	-0.81	0.73 on 12/11

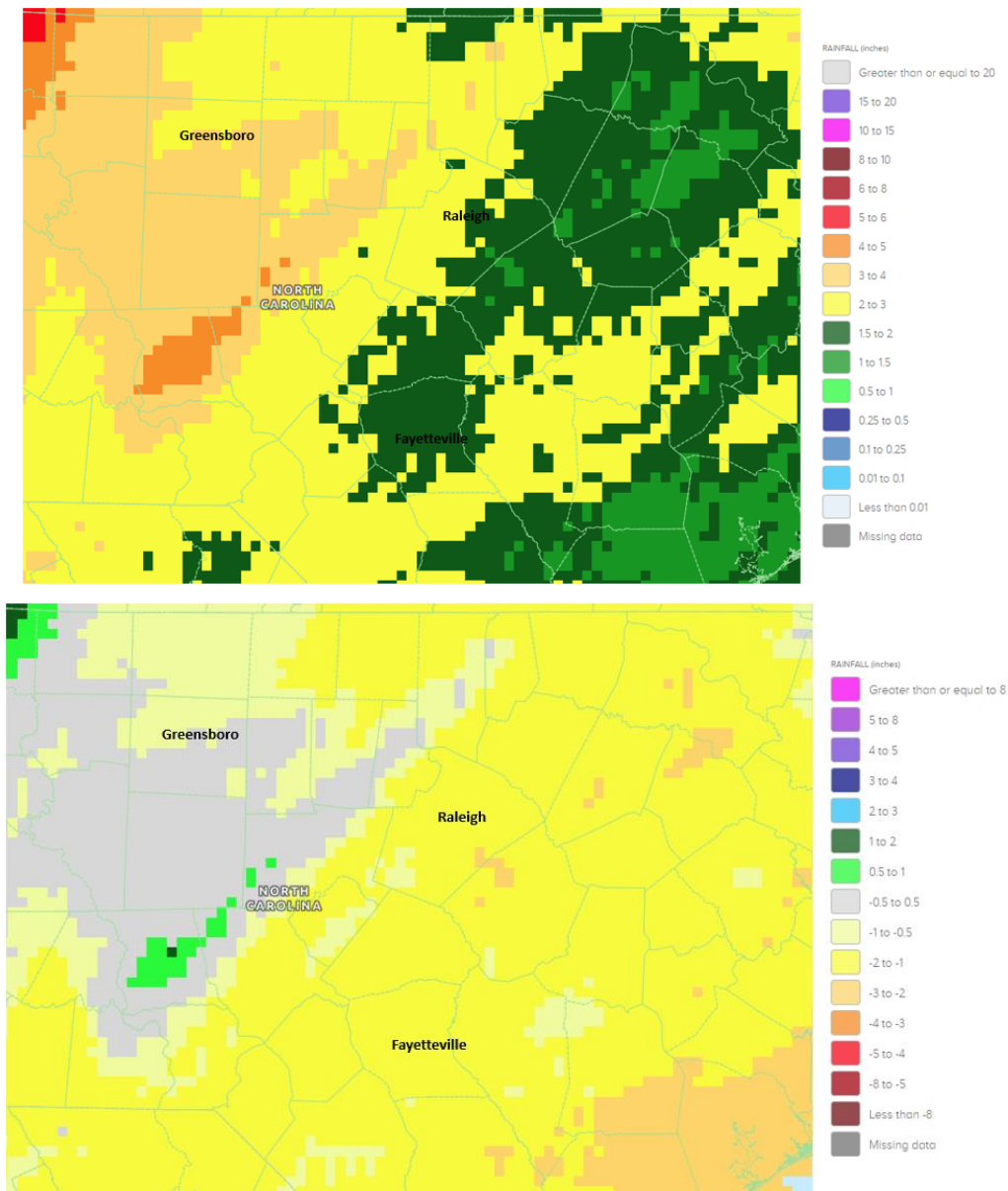
The cumulative precipitation at the three climate sites for the month of December is shown in Figure 3. The wettest periods were from the 9th-11th and to a lesser extent the 27th-29th with frontal passages, while the rest of the month was largely dry.



Some of the local cooperative station rainfall reports from around central NC from December 2024 included: Sparta 6.67 inches (+2.16), Winston-Salem 2.99 inches (-0.31), Albemarle 3.58 inches (-0.34), Burlington 1.79 inches (-1.48), Mount Airy 7.29 inches (+3.09), Danbury 3.77 inches (-0.19), Reidsville 2.64 inches (-0.93), Henderson 3.39 inches (-0.50), Cary 2.38 inches (-1.15), Raleigh (NCSU) M (M), Roxboro M (M), Apex M (M), Louisburg M (M), Laurinburg 2.38 inches (-1.17), Rocky Mount M (M), and Clinton 2.52 inches (-1.01).

As displayed by Figure 4, the final monthly totals across central NC ranged from 3 to 5 inches generally west of Raleigh, which was near normal. However, from Raleigh to the south and east, totals were only in the 1 to 3 inch range, which was about 1 to 2 inches drier than normal.

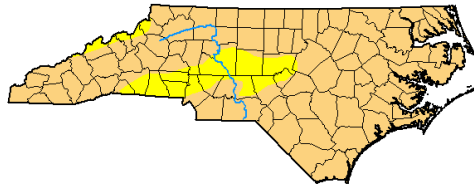
Fig. 4: Radar-Estimated Monthly Precipitation and Departure from Normal Precipitation



The rains around the 9th-11th helped to eliminate Moderate Drought (D1) conditions for much of the Piedmont and brought them back to Abnormally Dry (D0), which is shown in Figure 5. However, D1 remained across most of the Coastal Plain. The state as a whole went from 88% in D1 at the beginning of the month to just 34% in D1 by the end.

Fig. 5: US Drought Monitor for NC on December 3 (top) and December 31 (bottom)

**U.S. Drought Monitor
North Carolina**



December 3, 2024
(Released Thursday, Dec. 5, 2024)
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	87.99	0.00	0.00	0.00
Last Week 11-26-2024	0.00	100.00	33.27	0.00	0.00	0.00
3 Months Ago 09-03-2024	84.97	15.03	5.24	0.00	0.00	0.00
Start of Calendar Year 01-01-2024	53.95	46.05	13.26	3.54	0.00	0.00
Start of Water Year 10-01-2024	100.00	0.00	0.00	0.00	0.00	0.00
One Year Ago 12-05-2023	20.04	79.96	57.96	31.11	8.84	0.00

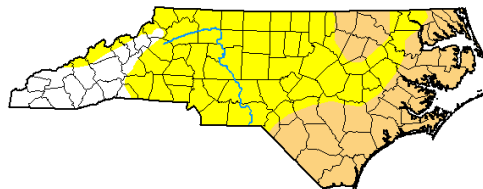
Intensity:
 None
 D0 Abnormally Dry
 D1 Moderate Drought
 D2 Severe Drought
 D3 Extreme Drought
 D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

Author:
David Simeral
Western Regional Climate Center



**U.S. Drought Monitor
North Carolina**



December 31, 2024
(Released Wednesday, Jan. 1, 2025)
Valid 7 a.m. EST

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	11.26	88.74	34.43	0.00	0.00	0.00
Last Week 12-24-2024	0.00	100.00	34.43	0.00	0.00	0.00
3 Months Ago 10-01-2024	100.00	0.00	0.00	0.00	0.00	0.00
Start of Calendar Year 01-01-2024	53.95	46.05	13.26	3.54	0.00	0.00
Start of Water Year 10-01-2024	100.00	0.00	0.00	0.00	0.00	0.00
One Year Ago 01-02-2024	53.95	46.05	13.26	3.54	0.00	0.00

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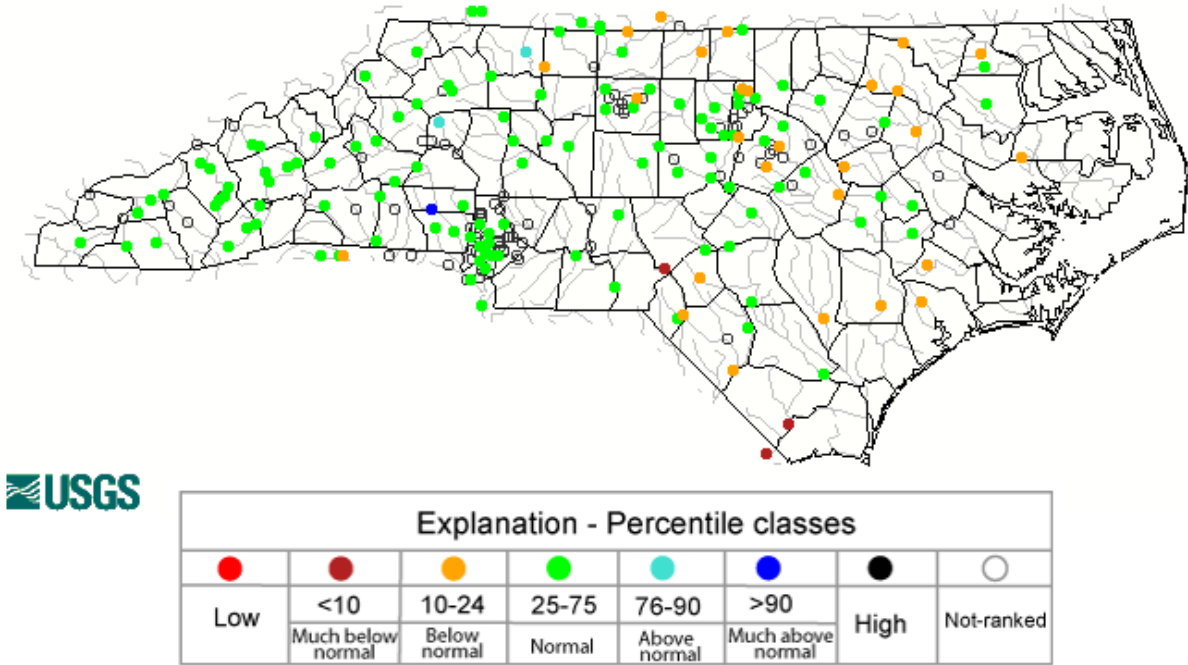
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Author:
Rocky Bilotta
NCEI/NOAA



As seen in Figure 6, the continued dry conditions across the eastern part of the state helped lower streamflow levels further, into the below-normal range for much of the Coastal Plain and parts of the northeast Piedmont and Sandhills. The western Piedmont stayed largely near normal.

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



Other notes:

Days with thunderstorms this month:

Greensboro: 1
 Raleigh: 0
 Fayetteville: 2

Days with dense fog (visibility of 1/4 mile or less):

Greensboro: 2
 Raleigh: 3
 Fayetteville: 4

Strongest wind gusts and direction:

Greensboro: NW (320 degrees) at 51 mph on December 11
Raleigh: SE (150 degrees) at 48 mph on December 29
Fayetteville SW (230 degrees) 43 mph on December 5

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

Greensboro: 17
Raleigh: 14
Fayetteville: 12

Monthly records:

Greensboro:

None.

Raleigh:

None.

Fayetteville:

None.

Daily records:

Greensboro:

None.

Raleigh:

None.

Fayetteville:

None.