April 2023 Central NC Climate Summary

By Phillip Badgett and James Danco

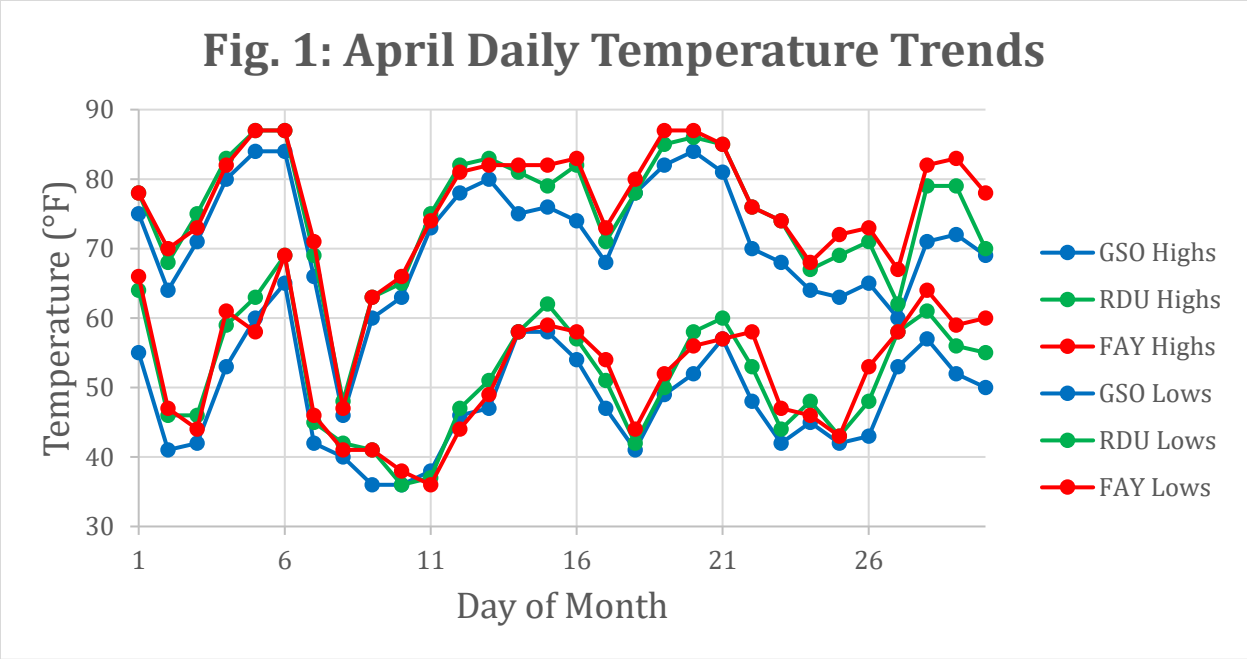
Warmth Continues in April with a Return to Wetness.

Generally springlike temperatures continued to be felt in April 2023 across central NC. According to preliminary data from NCEI, the statewide temperature averaged 60.3°F, which ranked as the 24th-warmest April in the 129 years of official records. As shown in Table 1, the three climate sites in central NC were warmer than normal, by 0.5°F at Greensboro, 1.5°F at Fayetteville, and 2.6°F at Raleigh. Raleigh actually had its 7th-warmest April on record going back to 1887, and Fayetteville tied for its 13th-warmest April going back to 1910. The warmest days in April (when temperatures reached the mid-to-upper-80s) occurred during two intense warm spells, one on April 5-6 and the other on April 19-21. Low temperatures only dipped into the mid-to-upper-60s on the 6th, which tied or broke record high minimums at all three climate sites.

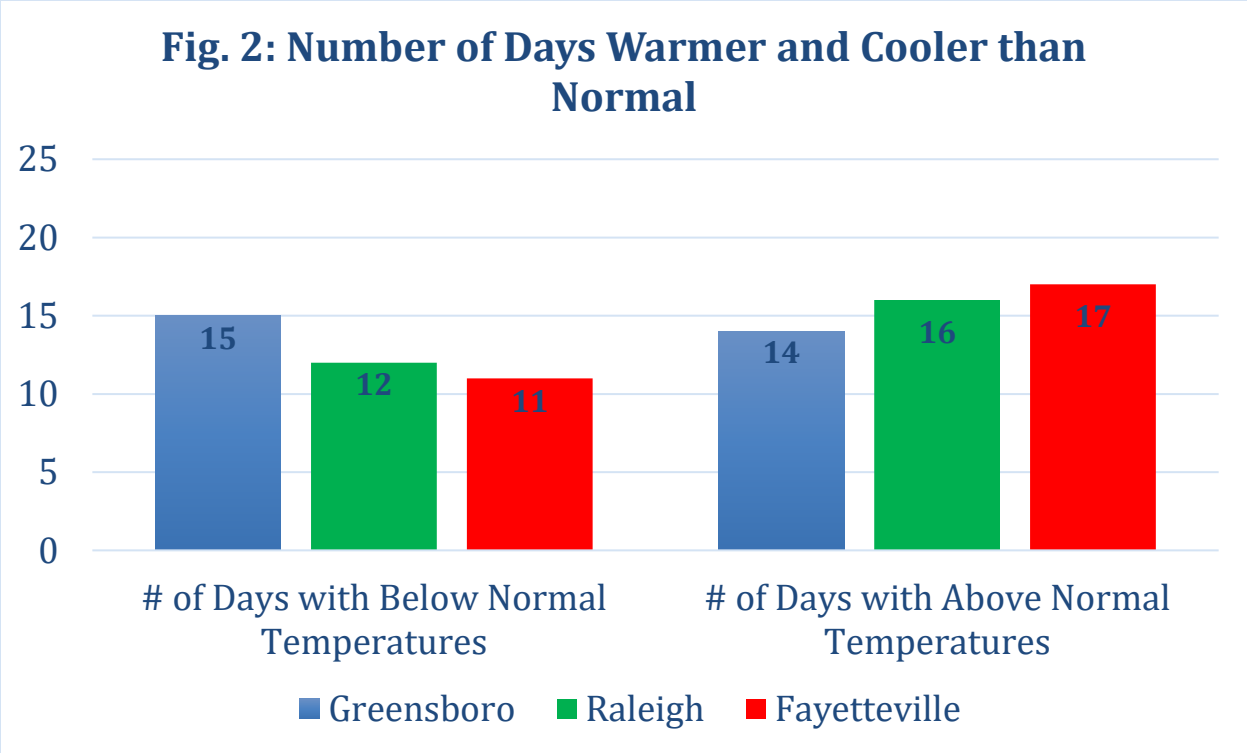
Table 1: Monthly Temperature Statistics

Site	Avg High Temp (°F)	Avg Low Temp (°F)	Avg Temp (°F)	Departure From Normal (°F)	Maximum Temperature (°F)	Minimum temperature (°F)
Greensboro (GSO)	71.5	48.3	59.9	+0.5	84 on 4/5, 4/6 and 4/20	36 on 4/9 and 4/10
Raleigh-Durham (RDU)	75.2	51.7	63.5	+2.6	87 on 4/5 and 4/6	36 on 4/10
Fayetteville (FAY)	76.4	52.2	64.3	+1.5	87 on 4/6, 4/19 and 4/20	36 on 4/11

The time series of daily temperature for the month at Greensboro, Raleigh, and Fayetteville can be found in Figure 1. There were two cool periods: one from the 7th through the 11th and the other from the 23rd through the 27th. Fayetteville even set a record low maximum temperature on the 8th of just 47°F, which was 26°F below normal and even below the normal low temperature on that date. All three climate sites then dropped into the mid-to-upper-30s on the 10th and 11th, and isolated spots got lower than that. The NC state climate office's ECONet station in Siler City dipped down to 29°F on April 10. This was certainly cold enough for frost and freeze conditions. Otherwise, temperatures were mild for the remainder of the month, with highs mainly in the 70s and 80s.



As shown in Figure 2, there were roughly the same number of warmer and cooler than normal days in April at Greensboro. At Raleigh and Fayetteville, a slight majority of days was warmer than normal.



April 2023 turned wet across NC. According to NCEI, the preliminary statewide average rainfall was 5.77 inches. This made it the 8th-wettest April in the past 129 years. The April 2023 monthly precipitation totals at the three climate sites in central NC are found in Table 2. Both Greensboro and Raleigh had over 7 inches of rain for the month, which the 3rd-wettest April on record at both locations. Fayetteville wasn't as wet but still was above normal. Weekends were especially wet, a pattern that has been true all year. According to the NC climate office, from January 2023 through April 2023 it rained on more than 70% of weekends just about everywhere in the state. The average is only about 50%. Out of the 17 full weekends from January through April, at least a trace of precipitation was measured at Raleigh on 16 of those, with measurable rainfall on 14. Both of those rank as the most from January through April since 1945 when modern records began.

Table 2: Monthly Precipitation Statistics

Site	Total precipitation (in.)	Departure from Normal (in.)	Max Daily Precipitation (in.)
Greensboro (GSO)	**7.33**	**+3.55**	**1.55 on 4/7**
Raleigh-Durham (RDU)	**7.84**	**+4.31**	**2.02 on 4/7**
Fayetteville (FAY)	**4.26**	**+1.11**	**1.66 on 4/8**

Some of the cooperative station rainfall reports from around central NC in April included: Sparta 6.86 inches (+1.50), Lexington 6.03 inches (+2.07), Winston-Salem 6.54 inches (+2.83), Burlington 6.12 inches (+2.29), Mount Airy 7.42 inches (+3.13), Danbury 5.37 inches (+1.14), Yanceyville 6.43 inches (+2.12), Eden 5.52 inches (+1.61), Henderson 6.97 inches (+3.11), Carthage 7.69 inches (+4.37), Cary 6.97 inches (+3.24), Raleigh (NCSU) 5.79 inches (+2.16), Louisburg 9.29 inches (+5.81), Apex 9.71 inches (+4.08), Chapel Hill 7.88 inches (+4.17), Jackson Springs 6.88 inches (+3.41), Clayton 3.64 inches (+2.16), Laurinburg 3.95 inches (+1.00), Rocky Mount 6.25 inches (+2.64), Tarboro 4.45 inches (+1.82), and Clinton 4.51 inches (+1.10).

The "system of the month" was a strong cold front that approached NC from the northwest late on Thursday, April 6. Although most of the dynamics had passed well to the north and west of our region by late afternoon, strong heating ahead of the surface cold front led to the development of scattered severe thunderstorms over portions of VA and northwest NC. High temperatures reached well into the 80s, with 84°F reported at Greensboro, 87°F at Raleigh, and 87°F at Fayetteville. Hail and spotty wind damage were reported with the storms over northwest NC, with hail size up to golf balls reported at Mount Airy and penny to nickel hail reported near Winston-Salem (Kernersville, Sedge Garden, and Welcome) between 500 PM and 600 PM. Several trees were reported down near Welcome in northern Davidson County just before 600 PM. The storms formed a line before weakening as they moved east through the Triad region during Thursday evening. They dumped some locally heavy rainfall, with Greensboro reporting 1.04

inches of rain on April 6. Greensboro also reported a wind gust to 40 mph from the west as the line moved through. The line weakened with loss of heating as it moved across northern NC into the Triangle area.

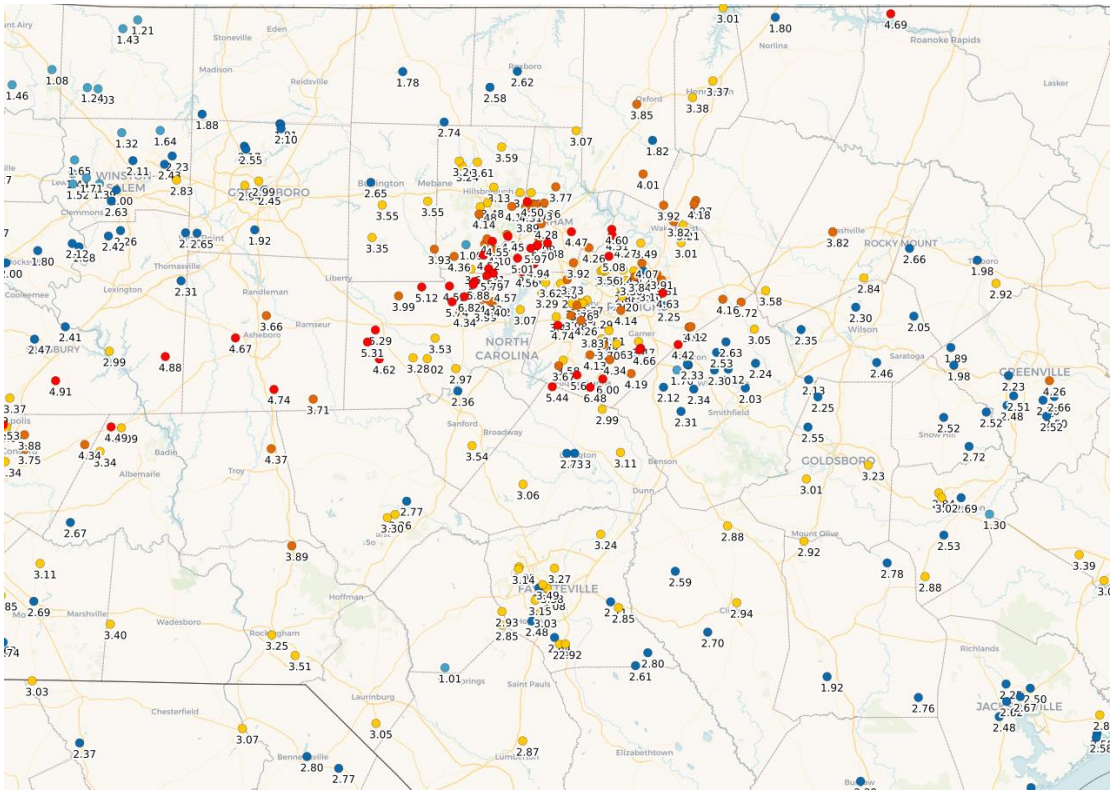
The aforementioned line of storms left a well-defined outflow boundary that stalled over the eastern Piedmont and northern Sandhills early on Friday, April 7. In addition, a strong cold front moved out of VA into NC from the north merging with the old outflow. As upper-level energy approached associated with the approach of a disturbance aloft, thunderstorms with very heavy rain ignited along the boundary over portions of the NE Piedmont. Very slow-moving thunderstorms produced enough rainfall to flood and close some highways and neighborhood roads around Fuquay-Varina between 730 AM and 1000 AM. There were reports of locally 5+ inches of rain in this region. The thunderstorms also affected Chapel Hill, Durham, and Raleigh with very heavy rain and lightning. There was a report of a house fire caused by lightning in Fuquay-Varina at 700 AM. The thunderstorms spread out into areas of heavy rain through the morning into the afternoon. Rainfall amounts of 1 to 3 inches were common. It was just enough heavy rainfall to produce some urban and poor drainage flooding in Chapel Hill between 500 and 600 PM. Several trees were blown down due to non-thunderstorm wind damage as NE-E winds picked up behind the southward moving cold front to between 20 and 35 mph. Raleigh reported a gust to 36 mph from the east, Greensboro reported a 38 mph wind gust from the east, and Fayetteville reached a gust to 35 mph from the NE on April 7. Raleigh-Durham Airport had 2.02 inches on April 7, its highest one-day total since the remnants of Ian from September 30, 2022.

Temperatures plunged with the rain and NE wind during the day on April 7. It was around 70°F at midnight before the front came through. Temperatures fell into the 40s during the afternoon of the 7th. This temperature drop was even more dramatic when considering it was 87°F at Raleigh and Fayetteville on April 6, then in the mid-40s on the afternoon of April 7. This was a drop of 40°F in 24 hours. Additional shortwaves (with one final strong one passing over Saturday night) kept stratiform rain going across much of NC on April 8. The rain finally ended from the northwest in the early morning of the 9th as the shortwave trough moved offshore. Minor flooding occurred along many of the mainstem rivers including the Tar, Neuse, Deep, Haw, and Rocky rivers.

The 72-hour storm total rainfall was generally 2.5-5.0 inches, with locally 5-6+ inches. Some of the highest reported totals included: Pittsboro (Chatham County) 6.82 inches, Fuquay-Varina (Wake) 6.48 inches, Durham (Durham) 5.97 inches, Siler City (Chatham) 5.31 inches, Chapel Hill (Orange) 5.31 inches, Apex (Wake) 4.78 inches, Asheboro (Randolph) 4.67 inches, Youngsville (Franklin) 4.18 inches, Creedmoor (Granville) 4.01 inches, Hillsborough (Orange) 3.96 inches, Norman (Richmond) 3.89 inches, Raeford (Hoke) 3.80 inches, Graham (Alamance) 3.76 inches, Laurinburg (Scotland) 3.57 inches, Sanford (Lee) 3.54 inches, Raleigh (Wake) 3.46 inches, Whispering Pines (Moore) 3.30 inches, Greensboro (Guilford) 3.25 inches, Greensboro Airport (Guilford) 3.18 inches, Lillington (Harnett) 3.16 inches, Kernersville (Forsyth) 2.85 inches, Rocky Mount (Nash) 2.84 inches, Roxboro (Person) 2.62 inches, Clayton (Johnston) 2.53 inches, Wadesboro (Anson) 2.47 inches, and Fayetteville (Cumberland) 1.99 inches.

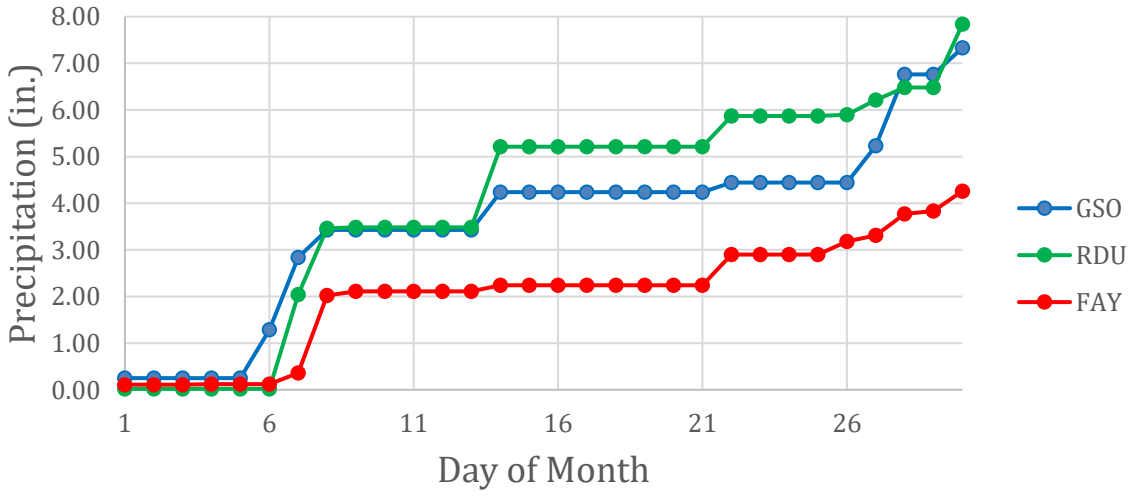
Figure 3 shows the total rainfall from CoCoRaHS observers across central NC from the morning of April 6 until the morning of April 9. The heaviest amounts were in the Triangle region where a widespread 3-6 inches fell, locally even higher than that.

Fig. 3: CoCoRaHS Total Accumulated Rainfall from the Morning of April 6 to the Morning of April 9



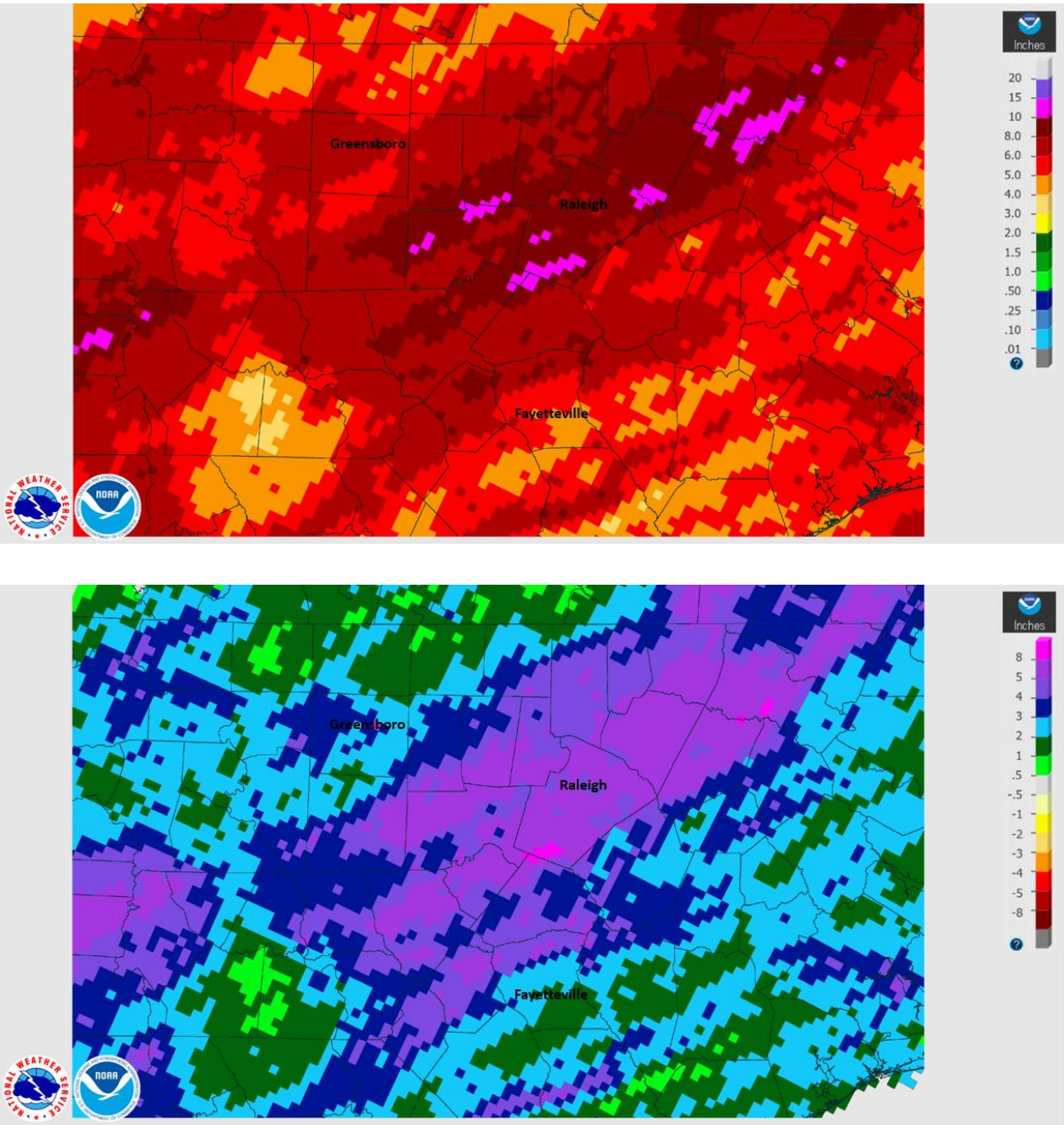
The cumulative precipitation at the three climate sites for April is shown in Figure 4. Note the multiple wet periods, particularly the 6th-8th and the 27th-30th. However, the middle of the month wasn't without rain either, as Raleigh had a daily record 1.73 inches on the 14th.

Fig. 4: April Cumulative Precipitation



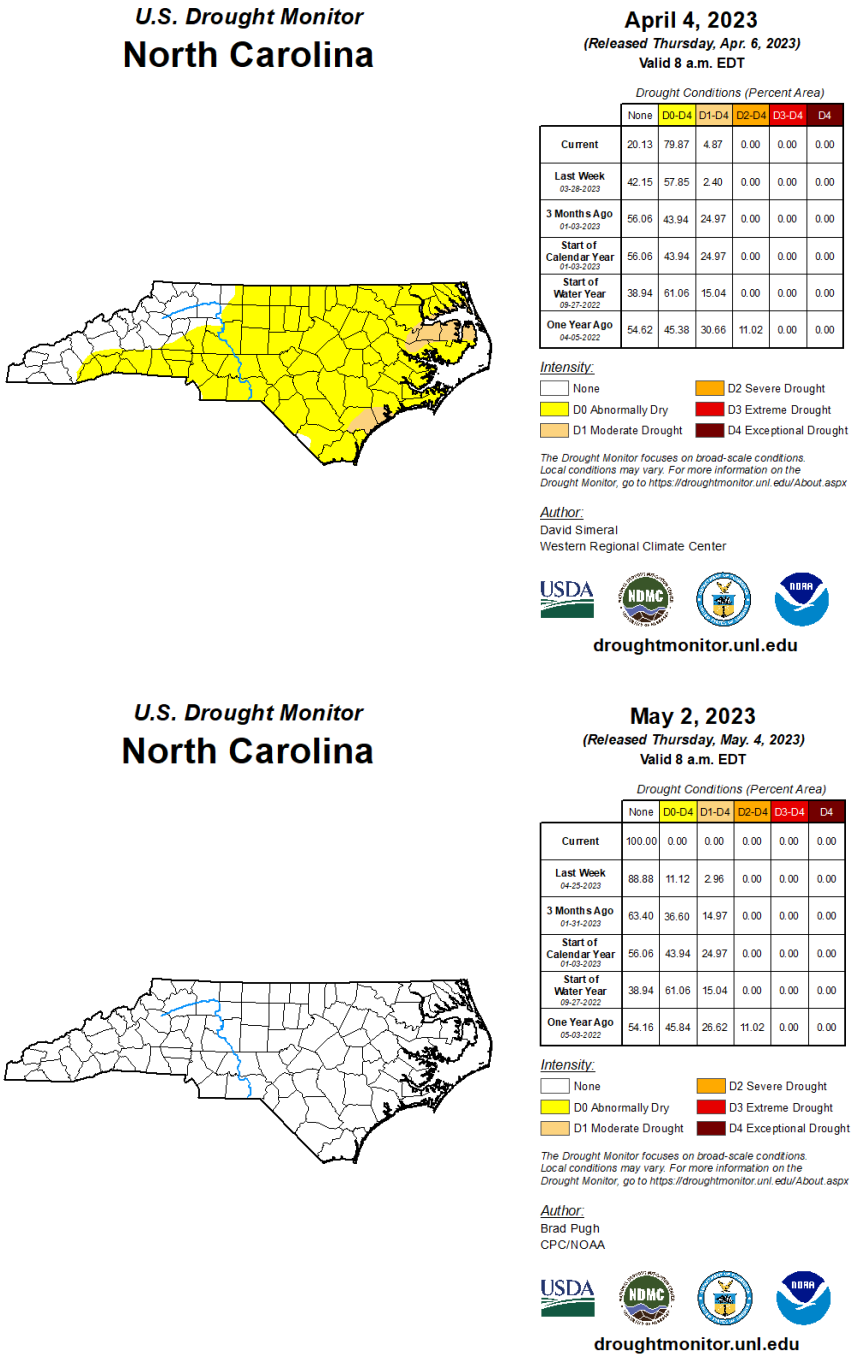
The radar-estimated monthly precipitation and precipitation departure from normal are displayed in Figure 5. The final monthly totals were highest in a stripe from the Triangle region NE into the northern Coastal Plain where 8-10+ inches fell. This was 5-8 inches above normal. Elsewhere, amounts were mostly 5-8 inches, which was still 2-5 inches above normal.

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



The US Drought Monitor maps from April 4 and May 2 are shown in Figure 6. Note just about all of central NC was in D0 (Abnormally Dry) conditions in early April, which got completely eliminated by early May thanks to all the rainfall. This was the first time since April 13, 2021 that no drought or abnormal dryness existed anywhere across the state of NC.

Fig. 6: US Drought Monitor for NC on April 4 (top) and May 2 (bottom)



Other notes:

Days with thunderstorms this month included:

Greensboro: 5
Raleigh: 4
Fayetteville: 5

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 42 mph on April 28
Raleigh: SW (230 degrees) at 44 mph on April 1
Fayetteville: SW (210 degrees) at 51 mph on April 1

Daily records:

Greensboro:

A record daily high minimum temperature of 60°F was tied on April 5. This record was last set in 2003.

A record daily high minimum temperature of 65°F was tied on April 6. This record was last set in 1967.

Raleigh:

A record daily high minimum temperature of 69°F was set on April 6. This broke the old record of 65°F set in 1967.

A record daily rainfall of 1.73 inches was set on April 14. This broke the old record of 1.42 inches set in 1947.

Fayetteville:

A record daily high minimum temperature of 69°F was set on April 6. This broke the old record of 64°F set in 1945.

A record daily low maximum temperature of 47°F was set on April 8. This broke the old record of 48°F set in 2003.

Monthly records:

Greensboro:

April 2023 was the 3rd-wettest April on record with a monthly total of 7.33 inches.

Raleigh:

April 2023 was the 3rd-wettest April on record with a monthly total of 7.84 inches.

April 2023 was the 7th-warmest April on record with an average monthly temperature of 63.5°F.

Fayetteville:

None.