

May 2021 Central NC Climate Summary

By Phillip Badgett and James Danco

May brought a return to drought conditions for portions of the region.

In a continuation of the pattern in April, May 2021 turned out to be another very dry month, with frequent but mostly dry cold frontal passages. Typically, May brings frequent rain and visually green conditions with the new growth on all the trees, plants, and grasses. This particular May turned dry enough that some brown started to show up in the newly germinated grasses, and some plants needed irrigation to keep them from wilting. In fact, for the state of North Carolina as a whole, it was the 13th-driest May since 1895 (and the driest since 2007) with a statewide average precipitation of 2.19 inches, according to the National Centers for Environmental Information. Greensboro only had 7 of 31 days with measurable rainfall, and only 4 days produced more than a tenth of an inch. Not faring much better, Fayetteville and Raleigh had measurable rain on 9 and 11 days respectively. The May 2021 monthly precipitation totals are found in Table 1. Greensboro was about a half inch below normal, while Raleigh and Fayetteville were just under half of normal.

Table 1: Monthly Precipitation Statistics

Site	Total precipitation (in.)	Departure from Normal (in.)	Max Daily Precipitation (in.)
Greensboro (GSO)	3.02	-0.47	1.07 on 5/3
Raleigh-Durham (RDU)	1.65	-1.73	0.37 on 5/10
Fayetteville (FAY)	1.54	-1.57	0.49 on 5/7

In better news, May 2021 was cooler than normal, which alleviated the drought conditions somewhat by limiting evaporation and helping with the irrigation process. As shown in Table 2, overall temperatures ended mostly 1-2°F below the 30-year averages. Several strong cold fronts brought much cooler air as they passed. There were several days in which the daily average temperatures were 10-20°F below normal. Meanwhile there were only two days with 90+°F temperatures at Greensboro, while Raleigh tallied five and Fayetteville seven such days. Lows for the month were especially below normal, by about 3-4°F, as the low dew points and lack of clouds allowed for ideal radiational cooling conditions. Many nights fell into the 40s, with even some upper-30s at mid-month. Lows were in the 40s or below on 10 of the 31 days at Greensboro and Raleigh, and 9 days at Fayetteville. In fact, based on minimum temperatures alone, Raleigh tied for the 27th-coolest May since records began in 1887, and it was the coolest May based on nighttime lows since 2006 at both Raleigh and Fayetteville.

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)	76.7	54.3	65.5	-2.0	90 on 5/24, 5/26	41 on 5/14
Raleigh-Durham (RDU)	79.5	54.0	66.8	-2.0	94 on 5/26	37 on 5/13
Fayetteville (FAY)	83.0	56.6	69.8	-1.1	97 on 5/26	42 on 5/13

The time series of daily temperature for the month at Greensboro, Raleigh, and Fayetteville can be found in Figure 1. There were large temperature swings again in May, with the below-normal periods winning out overall. May 12 was especially cool, with highs of only 57°F at Greensboro and Raleigh (a record low maximum temperature at Raleigh) and 62°F at Fayetteville. However, there were plenty of warm-to-hot days sprinkled throughout the month as well, including the hottest day of the month (May 26), when Greensboro hit 90°F, Raleigh hit a record 94°F, and Fayetteville hit 97°F. Also note the many days of the month that had lows in the 40s and 50s. The coolest period was from May 12-15 when each morning had lows in the upper-30s to mid-40s. Raleigh hit daily record lows of 37°F on the 13th and 40°F on the 15th.

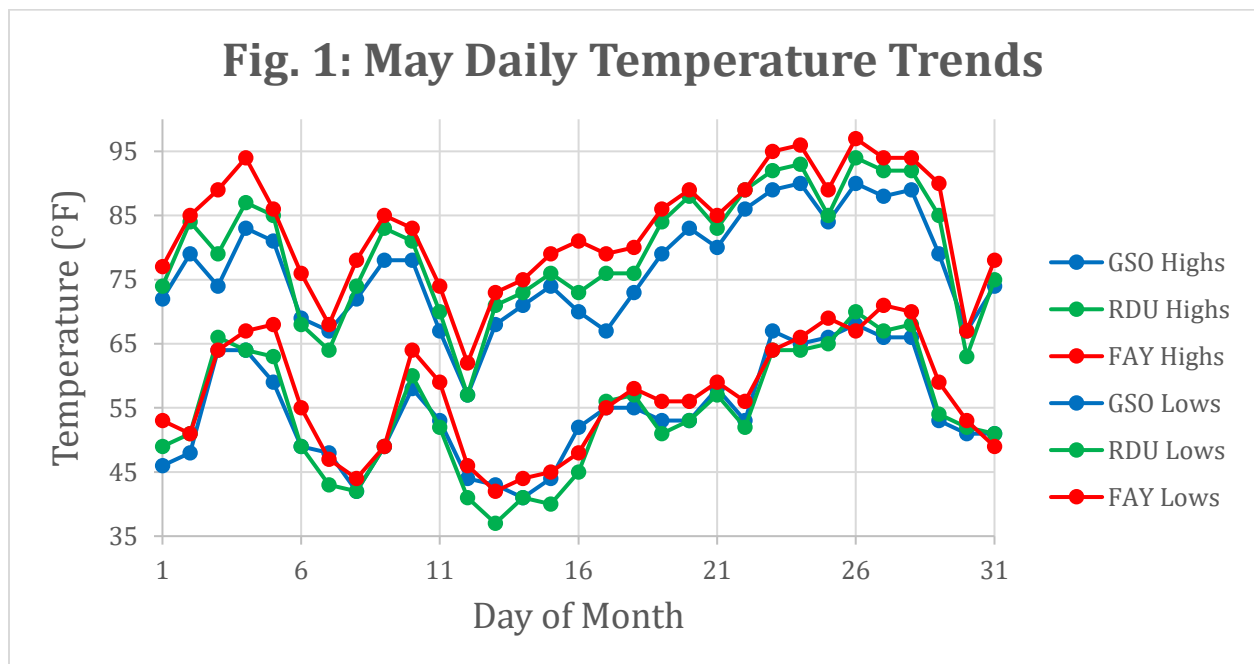
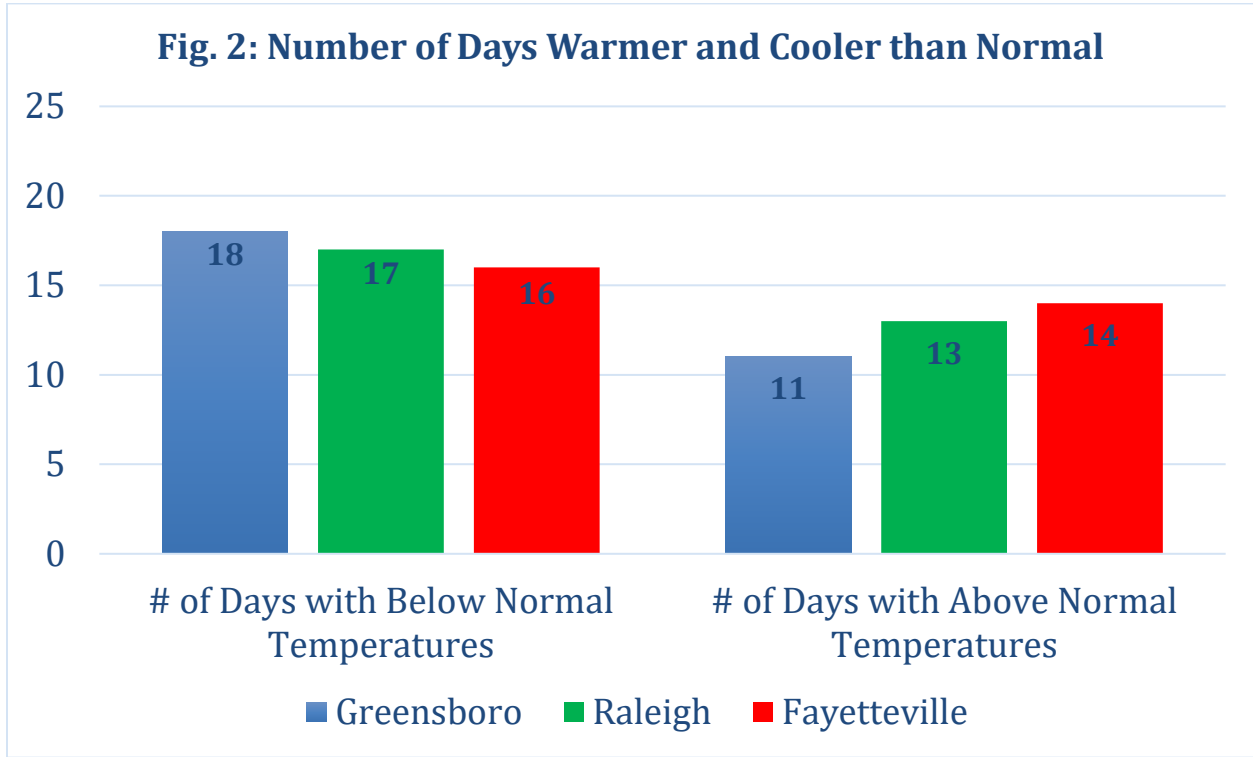


Figure 2 shows a majority of the days in May had average temperatures that were cooler than normal.



As displayed by the radar-estimated precipitation in Figure 3, monthly rainfall totals mostly ranged from 1 to 4 inches, lowest in the northeast and far south. Thus the vast majority of places were around 1 to 3 inches drier than normal, with only a few isolated small pockets of near-normal precipitation (Figure 4).

Additional selected ASOS or cooperative observations for May 2021: Winston-Salem (Forsyth County) 3.58 inches (0.16 below normal), Lexington (Davidson County) 2.43 inches (0.90 below normal), Mount Airy (Surry County) 2.36 inches (2.17 below normal), Raleigh (NCSU) 2.42 inches (1.55 below normal), Louisburg (Franklin County) 0.50 inches (3.21 below normal), Rocky Mount (Nash County) 1.20 inches (3.21 below normal), Clinton (Sampson County) 1.72 inches (2.33 below normal), Asheboro (Randolph County) 2.60 inches (1.16 below normal), and Jackson Springs (Montgomery County) 1.84 inches (1.53 below normal).

Fig. 3: Radar-Estimated Monthly Precipitation

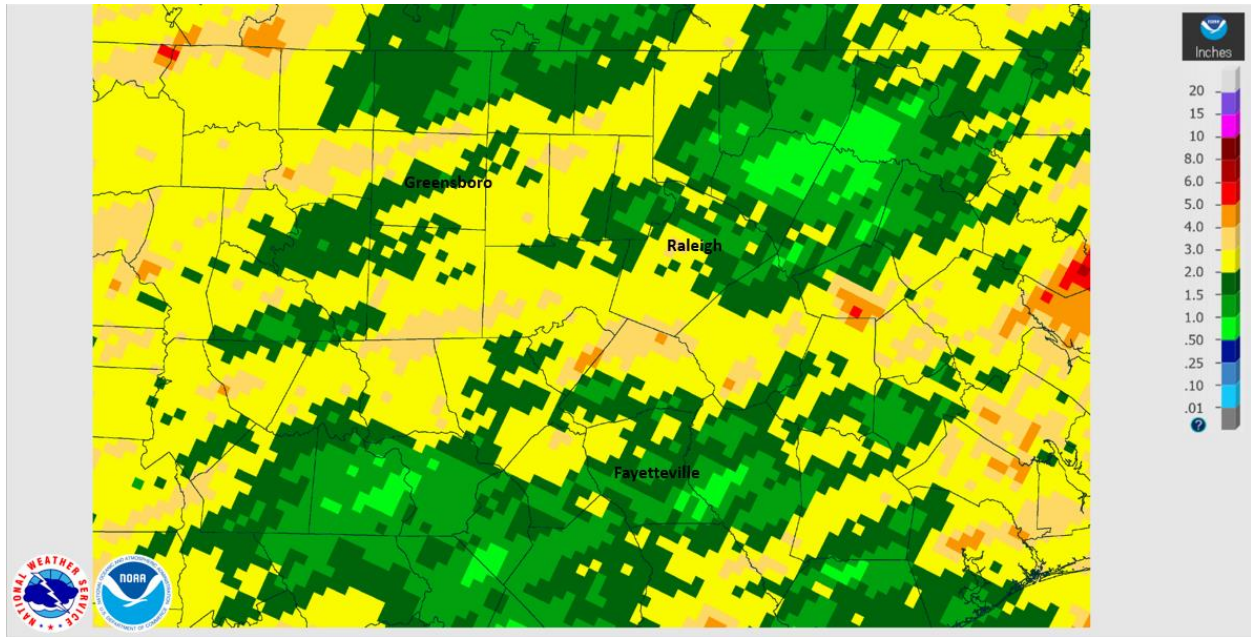
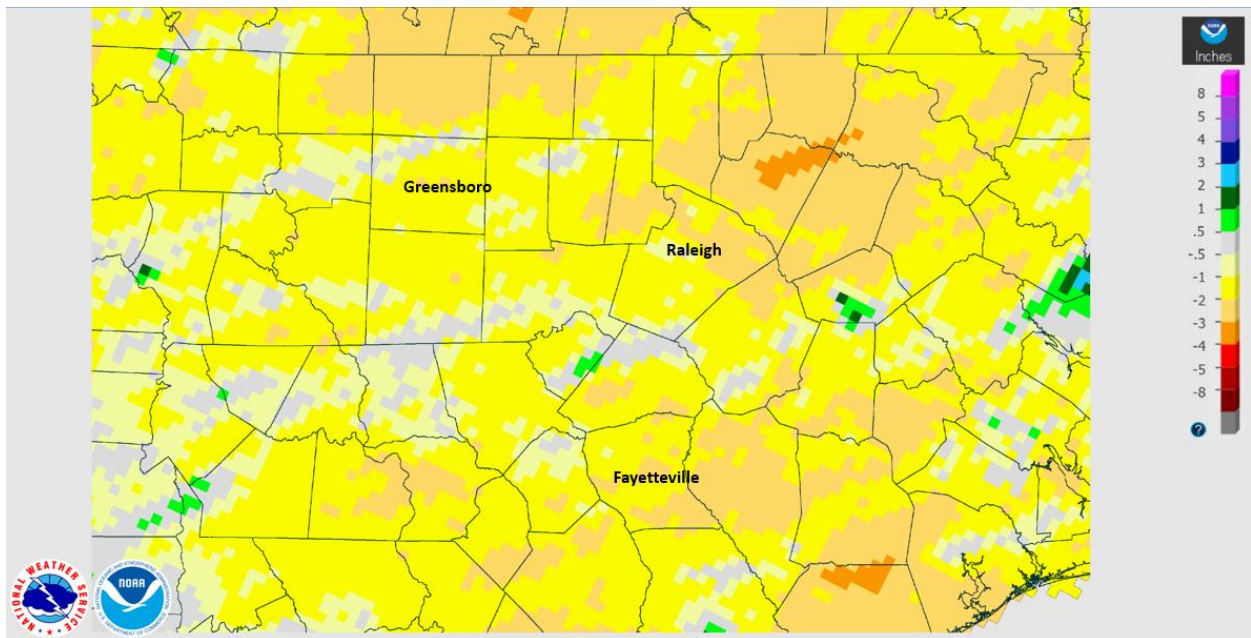
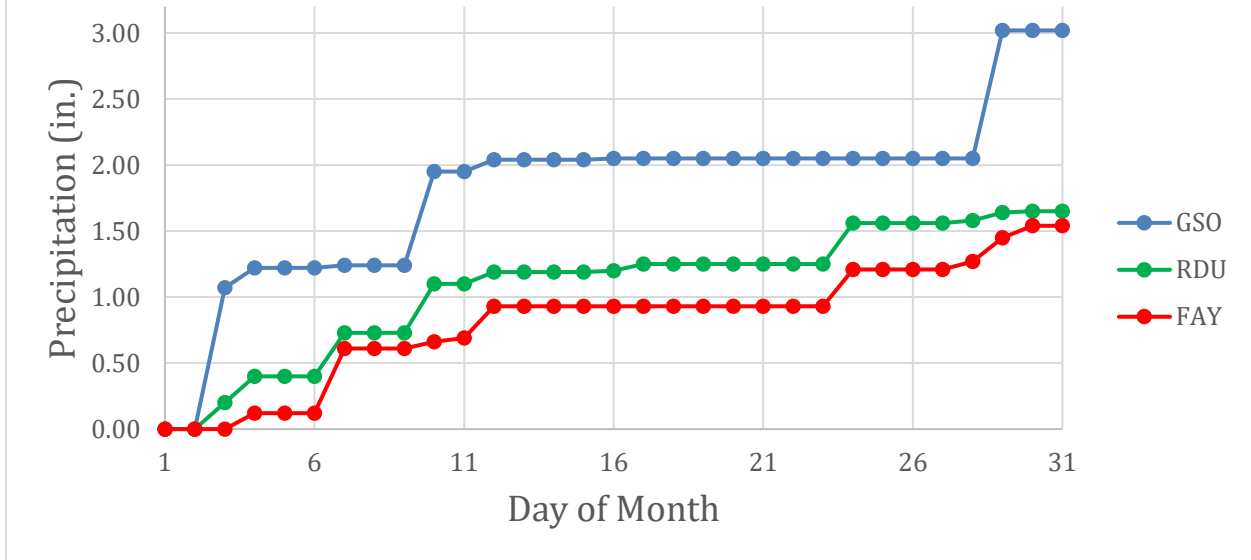


Fig. 4: Radar-Estimated Monthly Departure from Normal Precipitation



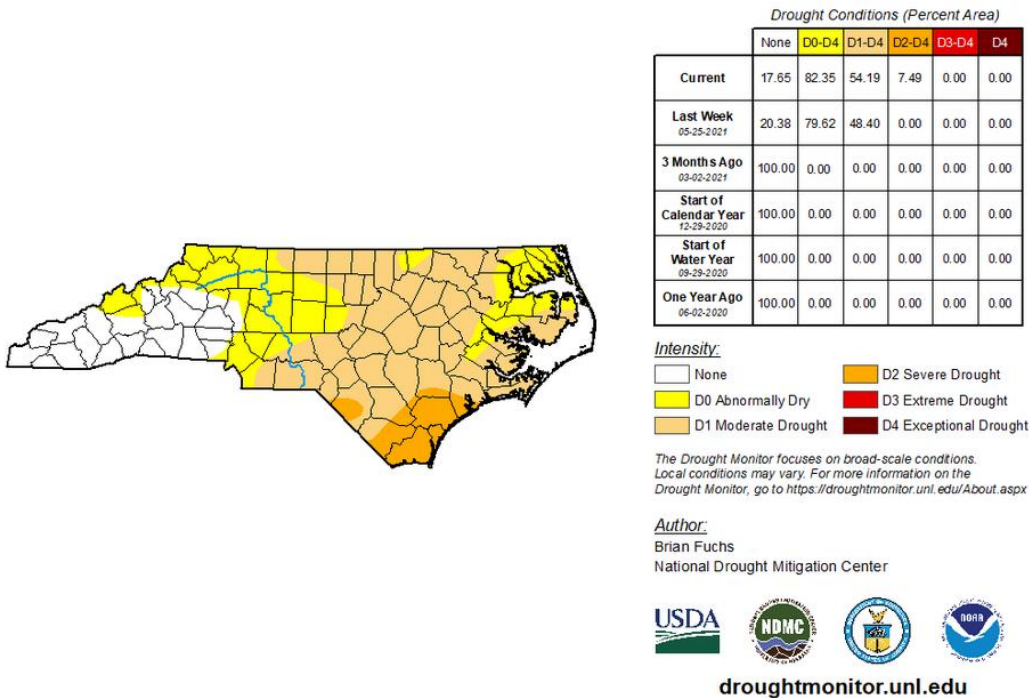
The cumulative precipitation at the three climate sites for the month of May is shown in Figure 5. The little rain that did fall was largely at the beginning and very end of the month, with the middle almost completely dry at all three climate sites.

Fig. 5: May Cumulative Precipitation



The lack of rain in May resulted in the US Drought Monitor introducing an area of D0 Abnormally Dry to D1 Moderate Drought conditions for all of central NC, with D1 for most of the region. D2 Severe Drought was even introduced in far SE NC. This is shown in Figure 6.

Fig. 6: U.S. Drought Monitor for North Carolina on June 1, 2021



The dry weather also resulted in continued below-normal streamflow and soil moisture, especially from the Triangle south and eastward, as shown in Figures 7 and 8.

Fig. 7: 28-day Average Streamflow in North Carolina Compared to Historical Streamflow for the Day of the Year

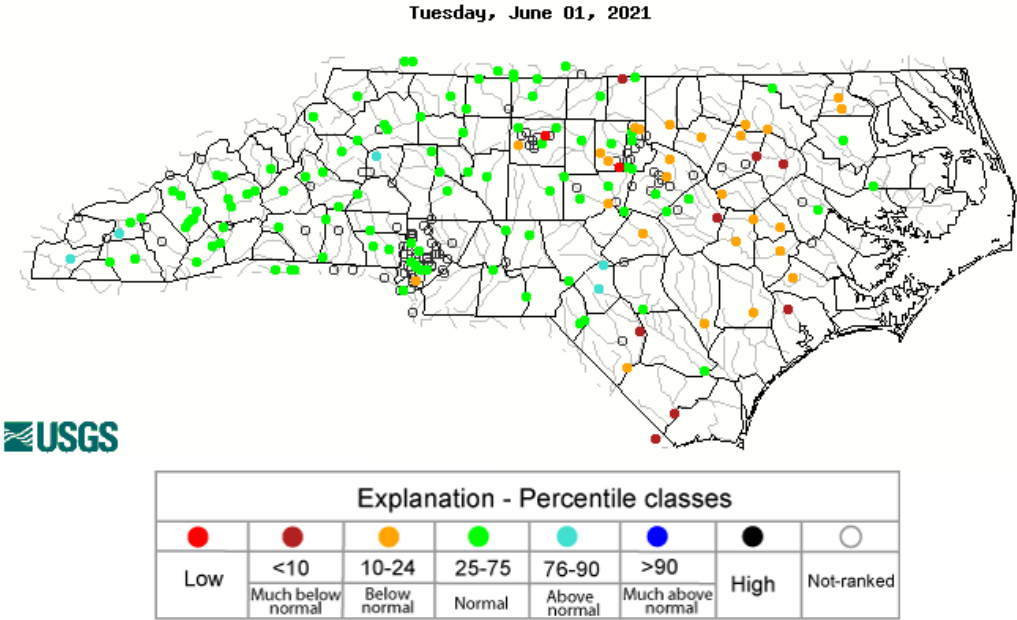
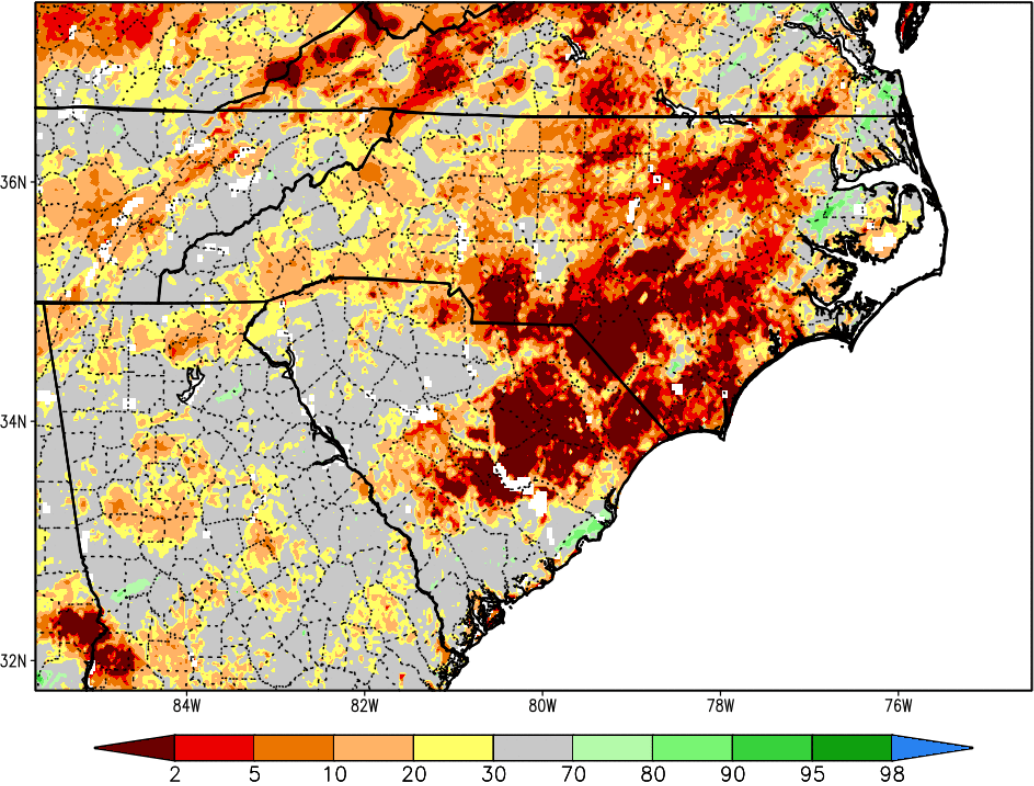


Fig. 8: NASA SPoRT-LIS 0-100 cm Soil Moisture percentile valid 6/1/21



The dry May also solidified Spring 2021 as one of the driest meteorological springs (March-April-May) on record for the region. Raleigh experienced its driest spring on record, with only 5.02 inches of precipitation in the three months compared to the normal of 11.01 inches (roughly 45% of normal). Fayetteville experienced its fourth-driest spring on record, with only 5.70 inches of rain, which was 61% of the normal amount of 9.34 inches. Preliminary statistics from the National Centers for Environmental Information indicate this was the 30th- warmest and 9th-driest spring on record for the state of North Carolina as a whole, the driest spring since 2007.

Other notes:

Days with thunderstorms this month:

Greensboro: 4

Raleigh: 6

Fayetteville: 4

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

Greensboro: 0

Raleigh: 0

Fayetteville: 0

Strongest wind gusts and direction:

Greensboro: NW at 40 mph on May 4

Raleigh: W at 46 mph on May 28

Fayetteville: SW at 47 mph on May 28

Daily records:

Greensboro:

None.

Raleigh:

A daily record low maximum temperature was set on May 12, with only 57°F for a high temperature. The previous record was 58°F set in 1960.

A daily record low temperature of 37°F was set on May 13. This broke the old record of 40°F set in 1960.

A daily record low temperature of 40°F was set on May 15. This broke the old record of 41°F set in 1895.

A daily record high temperature of 94°F was tied on May 26. This record was last set in 2019.

Fayetteville:

A daily record high minimum temperature of 68°F was tied on May 5. This record was last set in 2012.

Monthly records:

There were no monthly records of note at any of the three climate sites this month.

Seasonal records for Spring (March, April, and May combined):

Raleigh:

Spring 2021 was the driest spring on record at Raleigh with a total precipitation for March, April, and May of only 5.02 inches. This broke the previous record of 5.62 inches in 1985. The normal spring rainfall is 11.01 inches.