# September 2020 Central NC Climate Summary

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

## Two remnant tropical cyclones keep NC wet in September.

The remnants of Hurricane Sally, which made landfall over the Florida panhandle, moved across NC September 16-18. This remnant tropical system combined with scattered to numerous thunderstorms during the month to continue the wet theme of the summer into fall. The system brought generally 1 to 3 inches of rain over NC; however, there were localized areas that received over 6 inches of rainfall which included 6.61 inches at Warrenton in the Northeast Piedmont. Yet another tropical system's remnants affected central NC on September 25, when the remnants of Tropical Storm Beta moved northward across the state. This system brought the heaviest rain to the Southern Piedmont into the Sandhills, but essentially exacerbated the wet conditions over the state. In addition, locally severe thunderstorms developed during the afternoon on September 26, dropping up to golf-ball-sized hail over portions of central NC, including the western part of the Triangle area.

The monthly average temperatures and their departures from normal at the three climate sites are depicted in Table 1. The temperatures during September averaged slightly below normal (by about 1-2°F) in all but the Sandhills and Southern Coastal Plain of central NC (including Fayetteville) where it was near normal.

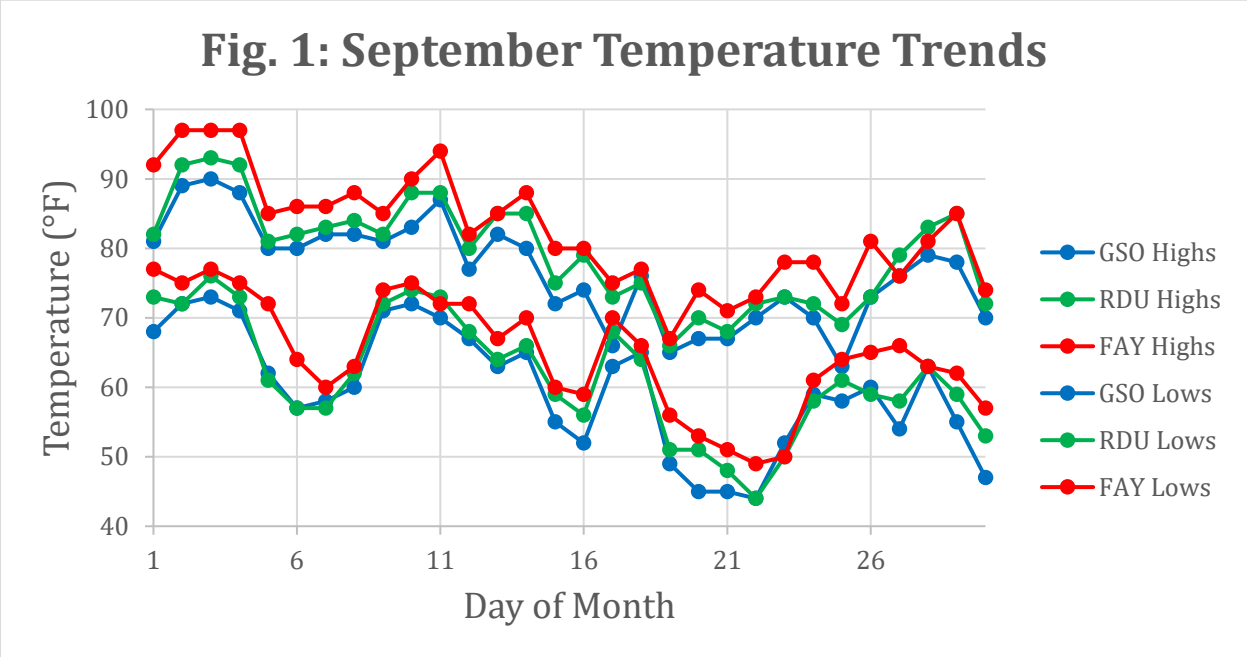
### Table 1: Monthly Temperature Statistics

| Site | Avg High Temp (°F) | Avg Low Temp (°F) | Avg Temp (°F) | Departure From Normal (°F) | Maximum Temperature (°F) | Minimum temperature (°F) |
|---|---|---|---|---|---|---|
| Greensboro (GSO) | 76.7 | 59.8 | 68.3 | -1.9 | 90 on 9/3 | 44 on 9/22 |
| Raleigh-Durham (RDU) | 79.4 | 61.7 | 70.5 | -1.4 | 93 on 9/3 | 44 on 9/22 |
| Fayetteville (FAY) | 82.5 | 64.8 | 73.7 | +0.1 | 97 on 9/2, 9/3, 9/4 | 49 on 9/22 |

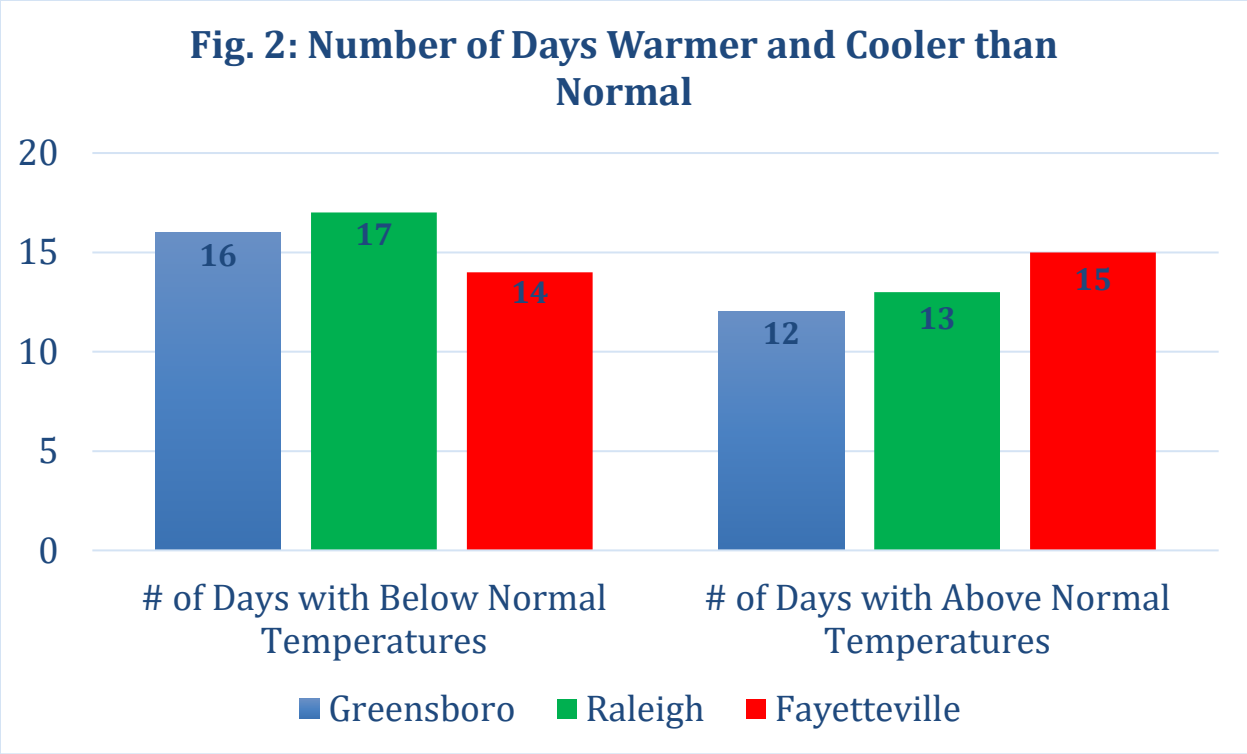
The time series of daily temperature for the month at Greensboro, Raleigh, and Fayetteville can be found in Figure 1. Note the trend of elevated temperatures at night and the slightly cooler daytime readings with the increased cloudiness and rainfall. Nighttime lows stayed in the 60s and

70s for many days, particularly in the first half of the month. In fact, a whopping six of the first ten days of September set daily record high minimum temperatures at Fayetteville (along with three at Greensboro and one at Raleigh). The full monthly record information can be found in the records section at the end of this report.

The hot summer-like temperatures during the first several days of September were knocked back by a cold frontal passage on September 4 and 5. High pressure built down the eastern seaboard into NC bringing a 20°F temperature drop at night from the mid-70s on September 3 to the upper-50s on September 6 and 7. Then, extensive cloudiness and numerous showers and thunderstorms during the rest of the month kept the temperatures down especially during the daytime. The number of 90+°F days in September 2020 became scarce compared to August 2020. Raleigh, which recorded 11 such days in August, tallied only three in September. Greensboro recorded only one 90+°F day, and Fayetteville hit 90°F only six times in September 2020. The total 90-degree days for all of 2020 can be found at the end of this summary.




The number of days warmer and cooler than normal in September at the three climate sites is shown in Figure 2. At Greensboro and Raleigh, a slight majority of days were cooler than normal, while a roughly equal number of days were warmer and cooler than normal at Fayetteville.




Rainfall in September 2020 began with locally heavy rain associated with the cold front during the first week of the month. Locally up to 2 inches of rain fell in the Raleigh and Wilmington areas. Then, the remnants of Sally made landfall over the Florida panhandle and tracked NE across the Carolinas during the week of September 16-18. This weakening tropical system still packed enough punch to drop widespread heavy rain over much of NC. Although the heaviest rain fell over the Foothills and Blue Ridge Mountains, there were widespread heavy totals over the Piedmont and Southern Coastal Plain exceeding 2 inches. Locally 3 to 6 inches was noted over portions of the Northeast Piedmont around Kerr Lake and Lake Gaston. This was followed by Tropical Storm Beta the last week of September that brought additional widespread rainfall.

The September 2020 final monthly totals are found in Table 2. All three climate sites finished the month at similar amounts, around 5 inches. This was slightly above normal, by about half an inch to an inch. Of note, nearby Wake County totals were much higher than those at the RDU airport location. This was due to several thunderstorms that dumped very heavy rain during the month just to the SE of RDU. This is shown by the Raleigh (NC State) cooperative observer site, which received 11.37 inches for the month (6.96 inches above normal). That total included 3.47 inches on September 1 with that localized storm, while RDU only received 0.01 inches that day. In addition, another storm produced 2.19 at Raleigh (NC State) on September 12, while RDU again totaled only 0.01.

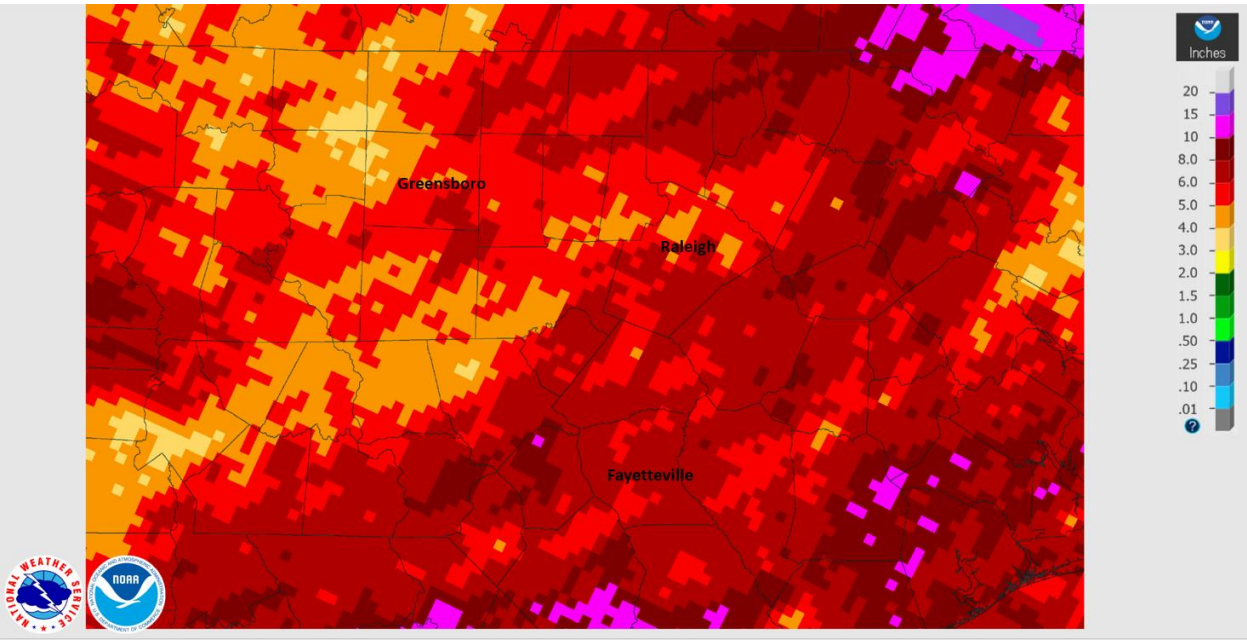
## Table 2: Monthly Precipitation Statistics

| Site | Total precipitation (in.) | Departure from Normal (in.) | Max Daily Precipitation (in.) |
|---|---|---|---|
| Greensboro (GSO) | 4.74 | +0.55 | 2.04 on 9/17 |
| Raleigh-Durham (RDU) | 5.01 | +0.65 | 2.08 on 9/17 |
| Fayetteville (FAY) | 5.27 | +0.87 | 1.60 on 9/17 |

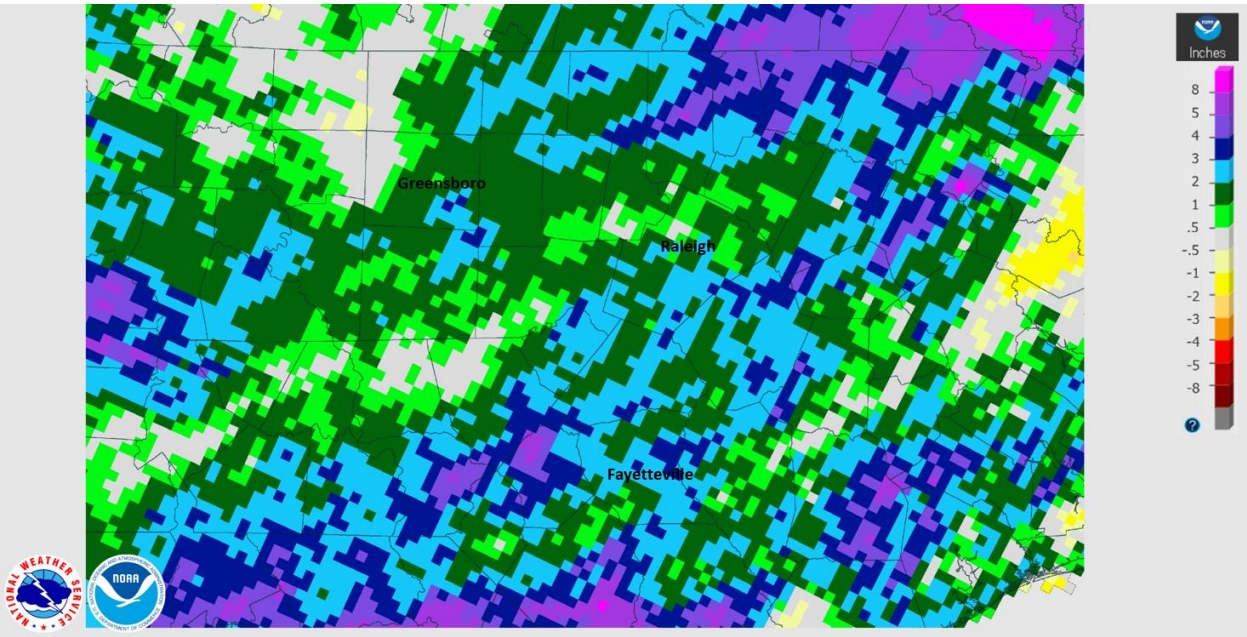
Additional selected cooperative observations for September 2020: Apex (Wake County) 9.33 inches (4.85 inches above normal), Cary (Wake County) 10.09 inches (5.45 above normal), Louisburg (Franklin County) 8.15 inches (3.97 above normal), Rocky Mount (Nash County) 7.65 inches (3.22 above normal), Roxboro (Person County) 4.25 inches (0.34 above normal), Clinton (Sampson County) 6.18 inches (1.05 above normal), Albemarle (Stanly County) 4.60 inches (0.30 above normal), Laurinburg (Scotland County) 5.06 inches (0.36 above normal), and Jackson Springs (Montgomery County) 6.87 inches (2.55 above normal).

As displayed by the radar-estimated precipitation in Figures 3 and 4, final monthly totals were generally about 4 to 8 inches across most of central NC with locally higher amounts, which was above normal.

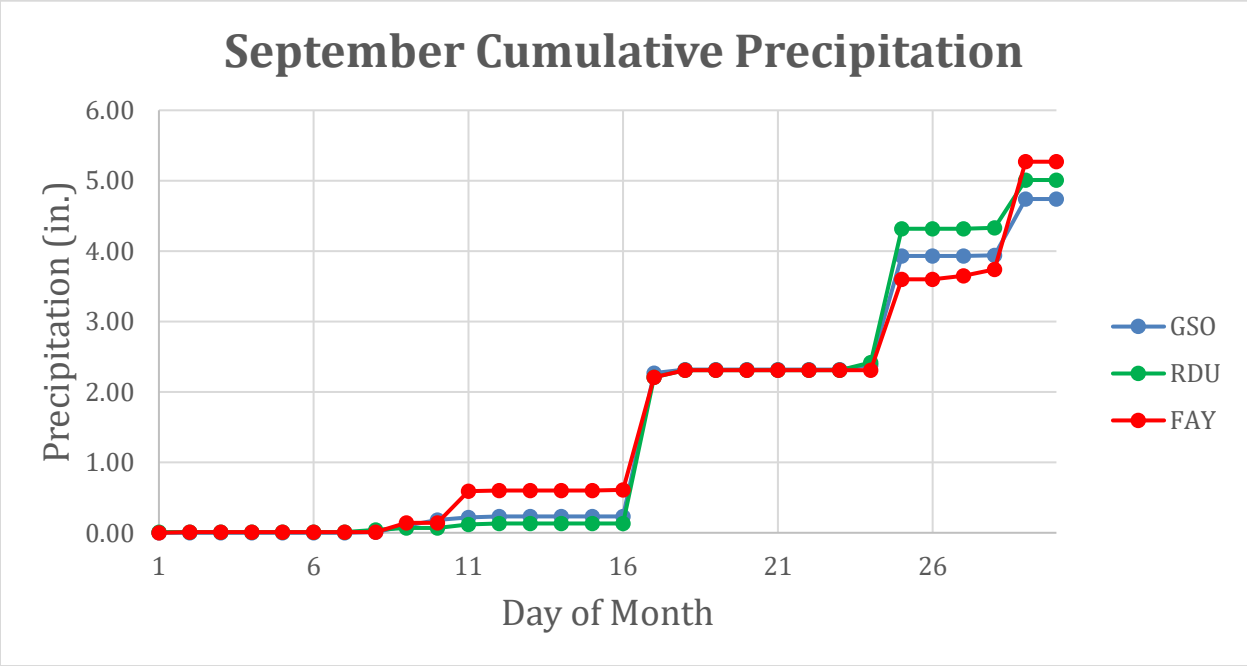
## Fig. 3: Radar-Estimated Monthly Precipitation



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




The cumulative precipitation at the three climate sites for the month of September is shown in Figure 3. Precipitation was quite similar at all three locations, and heavy rainfall from the remnants of both Sally on the 17th and Beta on the 25th is clearly evident.



# Other notes:

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

Greensboro: 1
Raleigh: 3
Fayetteville: 6

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

Greensboro: 29
Raleigh: 52
Fayetteville: 63

**Strongest wind gusts and direction:**

Greensboro: NW at 34 mph on September 29 (thunderstorm)
Raleigh: NE at 28 mph on September 19 (remnants of Sally)
Fayetteville: NW at 33 mph on September 29 (thunderstorm)

**Daily records:**

Greensboro tied a daily record high minimum temperature of 73°F on September 3. This record was last set in 1993.

Greensboro tied a daily record high minimum temperature of 71°F on September 9. This record was last set in 1947.

Greensboro tied a daily record high minimum temperature of 72°F on September 10. This record was last set in 2016.

Raleigh set a new daily record high minimum temperature of 76°F on September 3. The old record was 74°F set in 1993.

Raleigh set a daily rainfall record of 1.90 inches on September 25. This broke the old record of 1.42 inches set in 2015.

Fayetteville set a new daily record high minimum temperature of 77°F on September 1. This broke the old record of 75°F set in 2012.

Fayetteville tied a daily record high minimum temperature of 75°F on September 2. This record was last set in 1993.

Fayetteville set a new daily record high minimum temperature of 77°F on September 3. This broke the old record of 75°F set in 1921.

Fayetteville set a new daily record high minimum temperature of 75°F on September 4. This broke the old record of 73°F set in 2018.

Fayetteville set a new daily record high minimum temperature of 74°F on September 9. This broke the old record of 73°F set in 1987.

Fayetteville set a new daily record high minimum temperature of 75°F on September 10. This broke the old record of 74°F set in 2016.