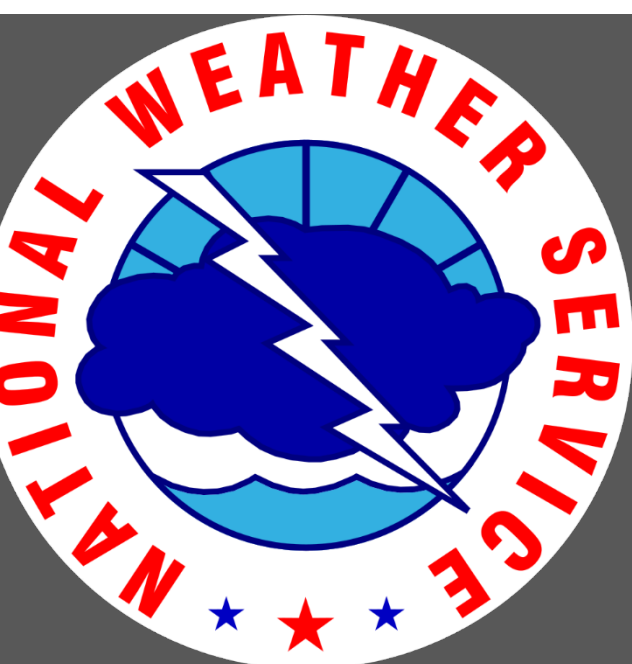




Examining an Extremely Wet Year across Central North Carolina

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Introduction

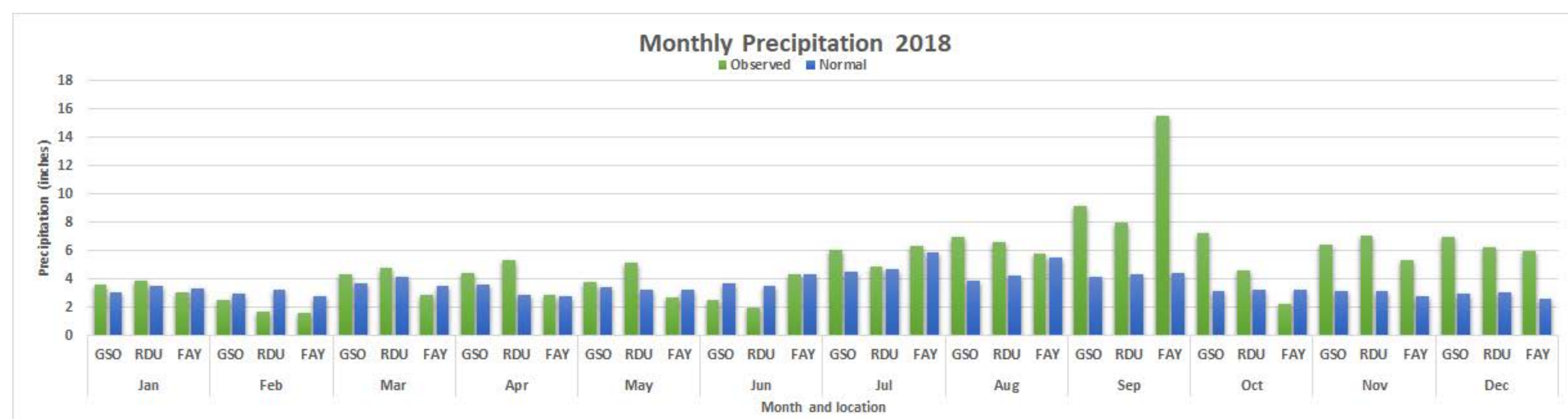
2018 featured large precipitation totals across much of central NC with many locations reporting the wettest year on record. The significant rainfall had tremendous impacts including flash flooding, prolonged river flooding, and large supplies at numerous reservoirs. Yearly precipitation totals jumped upward in the fall and early winter as four major precipitation events impacted the area.

Hurricane Florence (September 13-18) dropped 10 to 30 inches of rain across much of central NC.

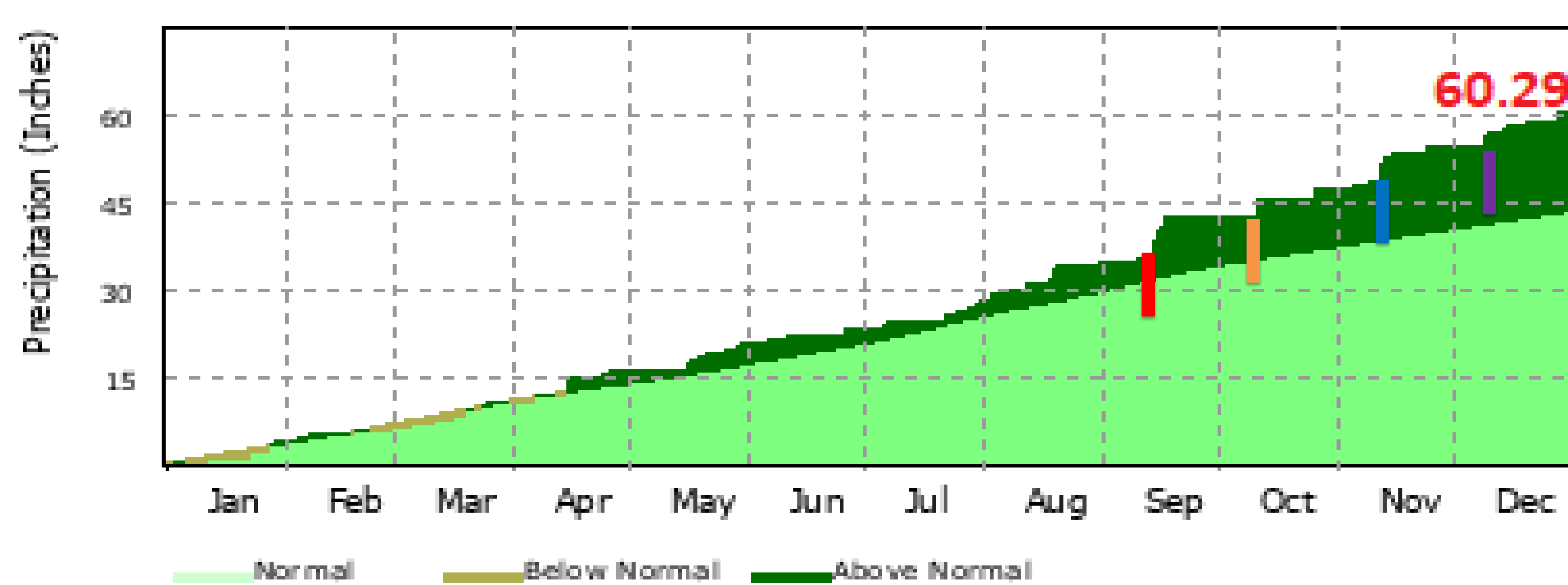
Hurricane Michael (October 12-14) dropped 2 to 6 inches of rain.

Mid-latitude cyclone (November 12-13) produced 2 to 5 inches of rain.

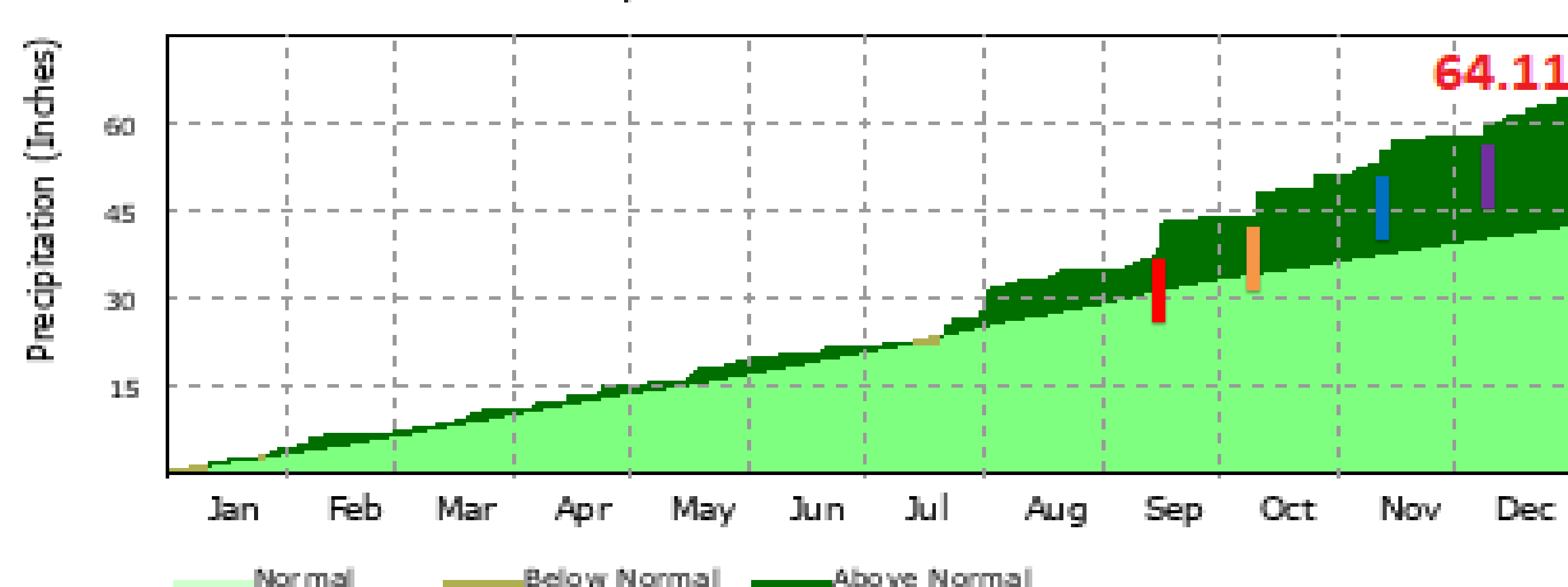
Mid-latitude cyclone (December 9-10) produced 1 to 2 inches of liquid equivalent with 6 to 16 inches of snow noted across parts of central NC.



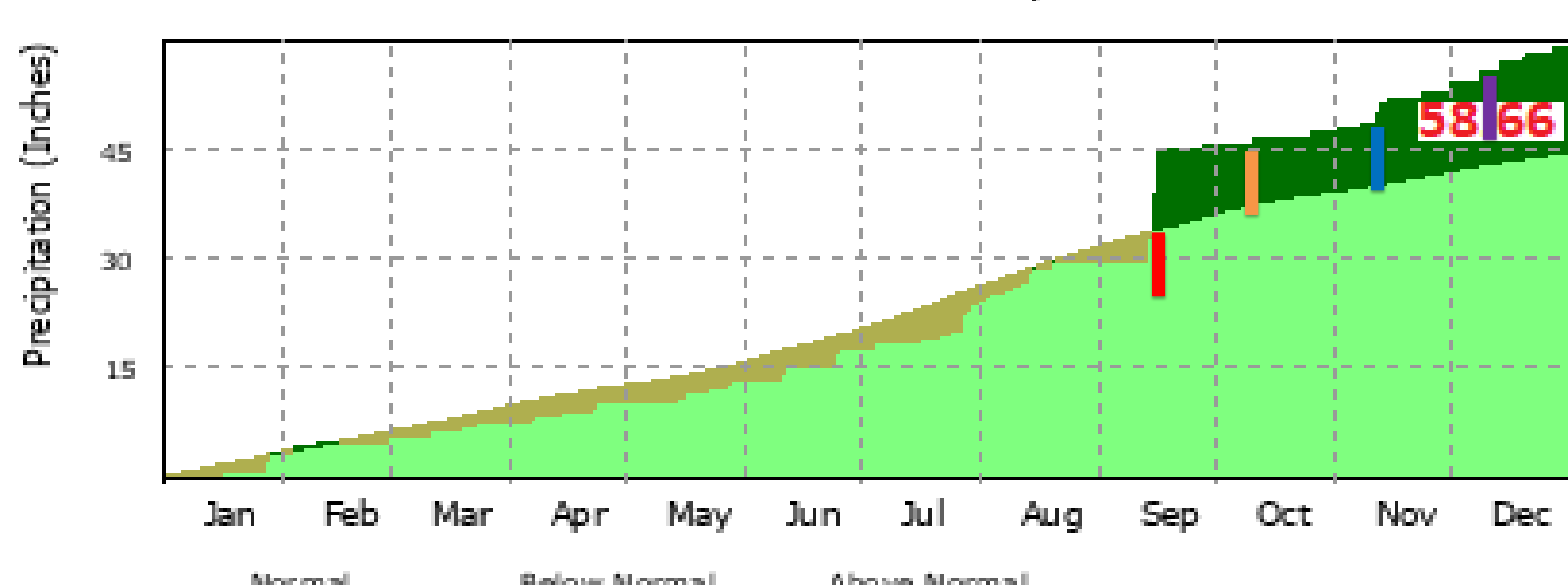
RALEIGH-DURHAM INTL AIRPORT NC, NC - 2018



GREENSBORO NC, NC - 2018



FAYETTEVILLE REGL AIRPORT NC, NC - 2018



Precipitation Highlights

Greensboro, NC broke the all-time calendar year precipitation record (records date back to 1903) with 64.11 inches of rain. The previous record was 62.32 inches set in 2003.

Raleigh, NC observed the fourth wettest year on record (records date back to 1887) with 60.29 inches of rain. The wettest year on record was 1936 which had 64.22 inches.

Fayetteville, NC observed the sixth wettest year on record (records date back to 1910) with 58.66 inches of rain. The wettest year on record was 1936 which had 69.12 inches.

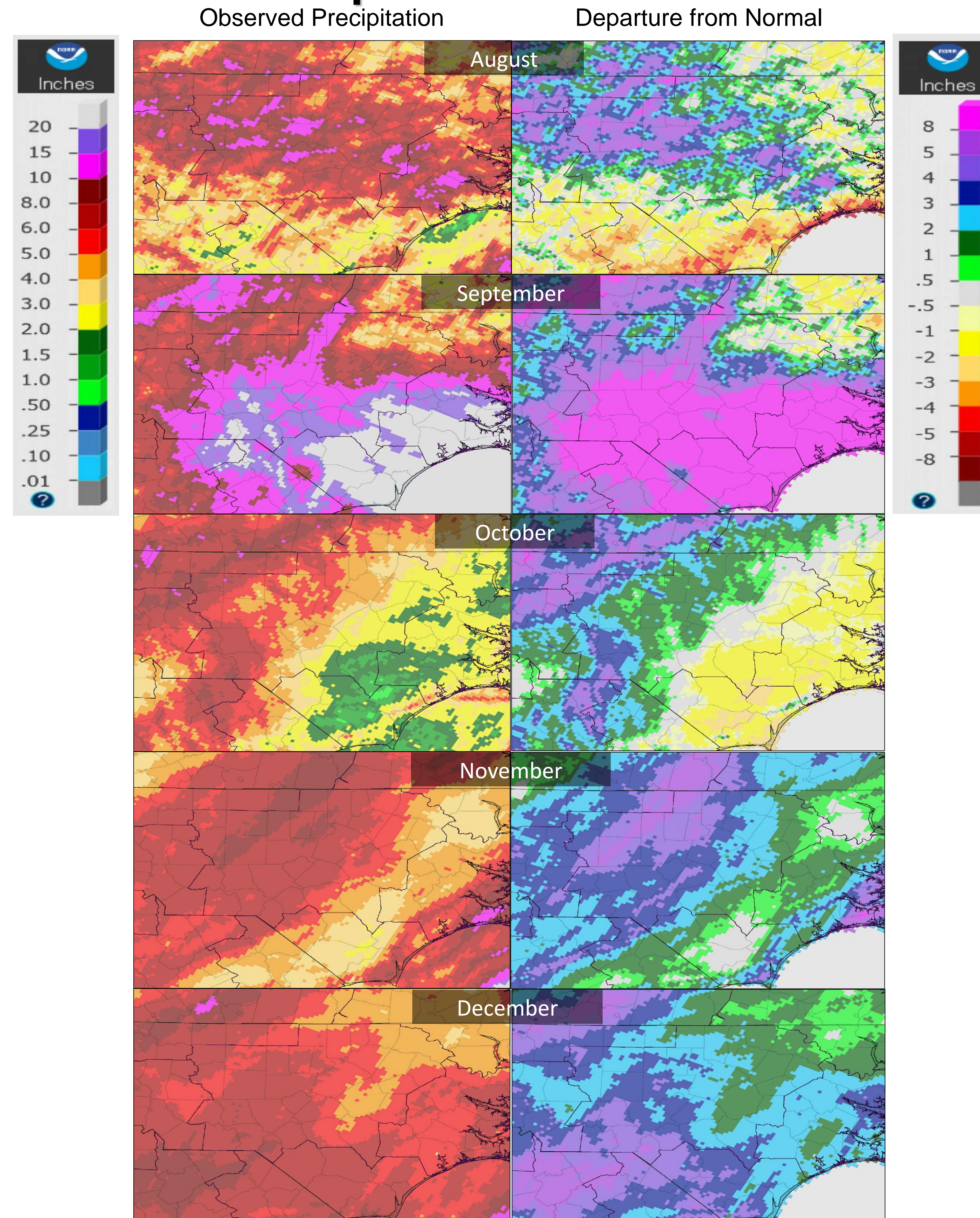
At Greensboro, each month from September through December 2018 ranked in the top ten wettest months on record for that specific month (September was the 7th wettest, October was 6th, November was 6th, December was 2nd).

At Raleigh, November 2018 was the 7th wettest November on record and December 2018 was the 8th wettest.

At Fayetteville, September 2018 had an incredible 15.54 inches of rain, which broke the record for the all-time wettest September and was the 3rd wettest of any month in recorded history. December 2018 was also the 6th wettest December on record.

The number of days in 2018 with 0.50" of precipitation or more was 43 at Greensboro, 42 at Raleigh, and 33 at Fayetteville. At Greensboro and Raleigh, this means nearly one in every eight days of the year had at least half an inch of rain.

Precipitation Distribution



Impacts on Rivers

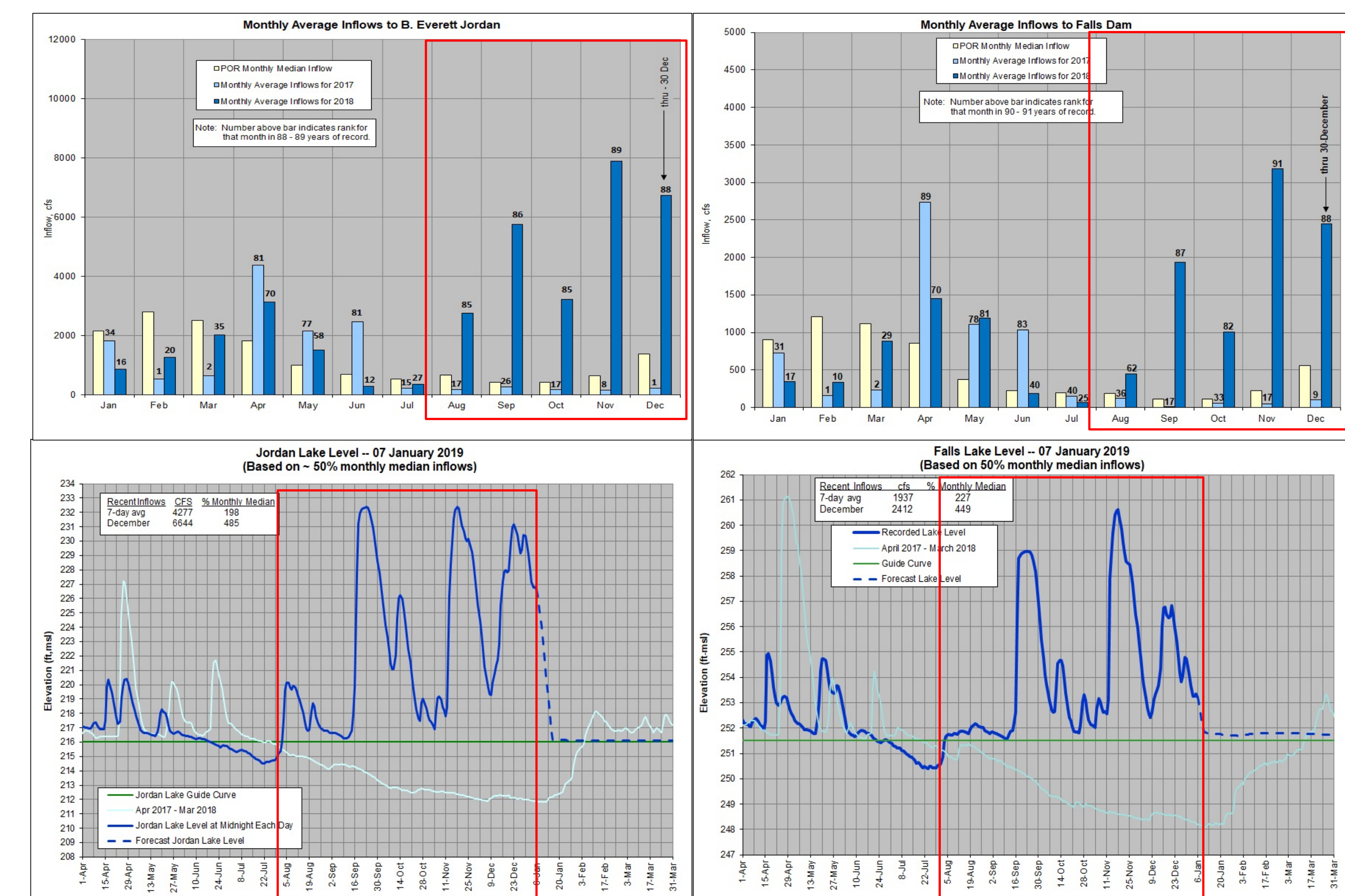
During the final 109 days of the year (September 14 to December 31), only 14 days did not have at least one river flood warning in effect. Broken down by month, this includes 17 of the 30 days in September, 28 of the 31 days in October, 23 of the 30 days in November, and 27 of the 31 days in December. The only days in this period that did not have a flood warning in effect were 10/9, 10/14-15, 11/3-4, 11/7-11, 12/7-9, and 12/13.

Among the 17 river forecast points in central NC, there were 11 top five crests in 2018.

Five river forecast points (Haw River at Haw River, Haw River near Bynum, Deep River near Moncure, Little River at Manchester, and Cape Fear River at Lillington) even had multiple top ten crests in 2018. All of them were from **Hurricane Florence**, **Hurricane Michael**, and the **November 12-13 mid-latitude cyclone**.

The Little River at Manchester had an all-time record crest of 38.30 feet on September 18, 2018 from Hurricane Florence. This was over 20 feet above flood stage and over 11 feet above major flood stage. It also shattered the previous record of 32.19 feet set on October 10, 2016 from Hurricane Michael.

Impacts on Reservoirs



Acknowledgements

NOAA Weather Prediction Center: Tropical Cyclone Rain Analysis
<https://www.wpc.ncep.noaa.gov/tropical/rain/>

Multisensor precipitation estimates provided by the Advanced Hydrologic Prediction System (AHPS) website
<https://water.weather.gov/precip/>

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Multisensor precipitation estimates and departure from normal across central NC for each calendar month. In general, the greatest precipitation amounts fell across the western and northwestern portions of central NC with the exception of September when Hurricane Florence dumped more than 20 inches of rain across southeastern areas.