

Climatology of South Carolina

Upper Savannah River Basin Council

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South Carolina State Climatology Office
SC Department of Natural Resources
January 4th, 2024

REMARKS.	Abstracts for
of the day & at night.	Barometer
and Clear day.	Maximum
Cold - Rain before daylight.	Minimum
Disagreeable day.	Range
Unpleasant day.	
Clear Rain after 3 P.M.	
Day - very disagreeable.	Thermometer
Day - Heavy and continued showers till 7 P.M. 59.20 - 2 P.M.	
Clear and Cloudless day.	Hottest Day, 24th
Unpleasant day.	
most of the day.	
of the day Bombardment of shot & shrapnel.	Thermometer
Day - Shower of Fat Shrapnel & Mean, 7 P.M. 59.50 - 2 P.M.	
Clear & Cloudless.	Evacuation of Shot & shrapnel, 7 P.M. 71.20
Evening Cloudy & Rain after 4 P.M.	Minimum, 7 P.M. 48.0
Disagreeable - Cold & windy after 4 P.M.	
most of the day - wind high.	
Unpleasant day - high wind.	Register
most of the day - Clear after 4 P.M.	Mean Night, 53.76
Clear and beautiful day.	
Clear and Cloudless Sabbath day.	
Clear & delightful day.	Dew Point
Clear and pleasant day.	Mean
Clear and warm day.	
Clear and pleasant day.	
Clear and Cloudless day.	Winds
Light shower in morning - Clear afternoon.	Rise
Clear & Cloudless afternoon.	North 0.
Clear and delightful day.	North east 7.
Clear and Cloudless day.	North west 6.
	South 3.
	South east 2.
	South west 5.
	East 4.
	West 3.
	Weather
	Fair, 15 days - Cloudy, 7 P.M.
	Partly clearing months -
	Quantity of
	Inches



SC State Climatology Office Team



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South Carolina
State Climatologist



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Assistant State
Climatologist



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Water Resource
Climatologist



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Severe Weather
Liaison

What Is A State Climatology Office?

Promote climate and weather awareness and knowledge through the development and delivery of science-based climate services and tools on a local and state level.



Climate Office Responsibilities

1

Coordinate and collect weather observations for the purpose of climate monitoring

2

Summarize and disseminate weather and climate information

3

Perform climate and weather impact assessments

4

Demonstrate the value of climate information in the decision-making process

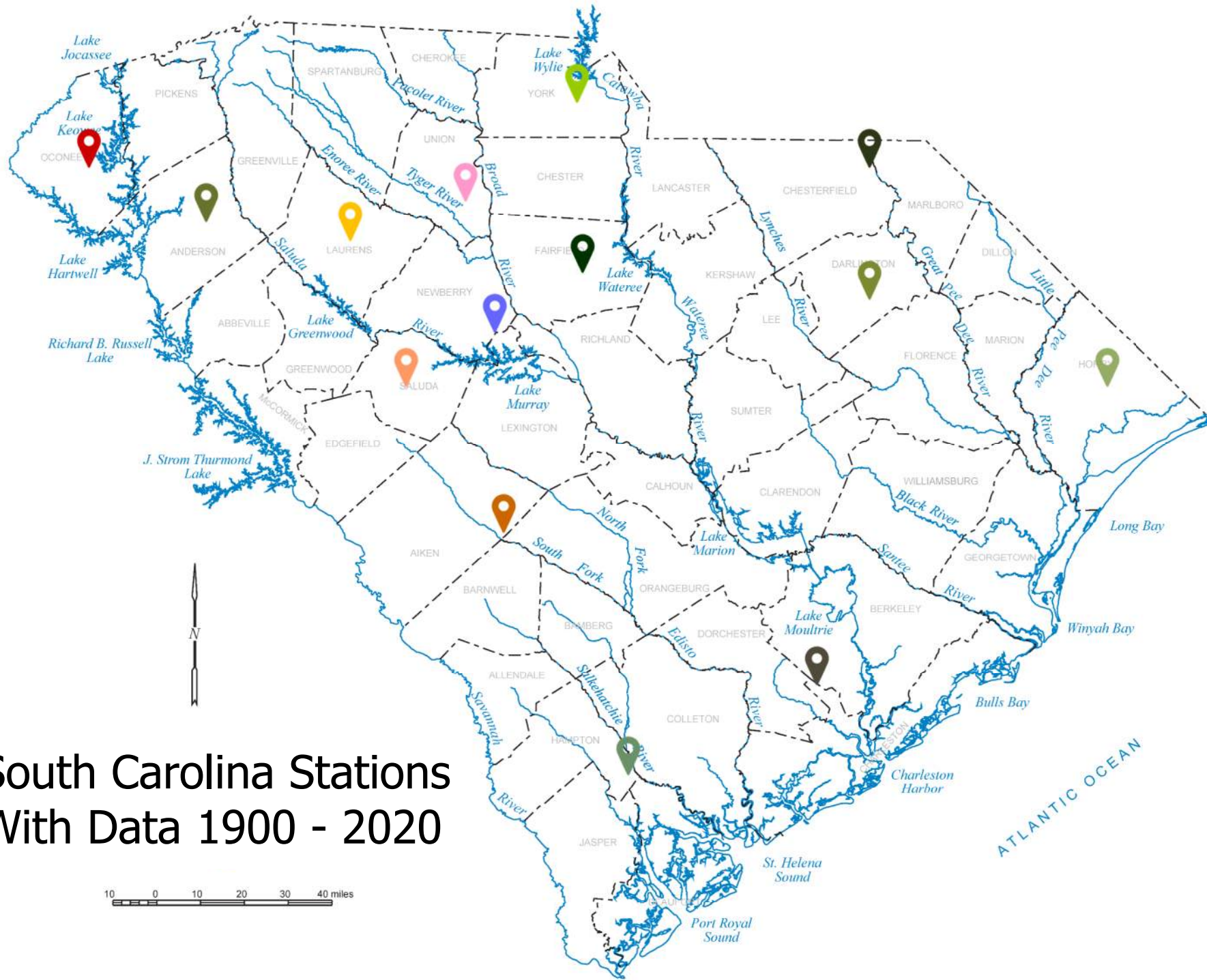
5

Conduct applied climate research

















Temperatures

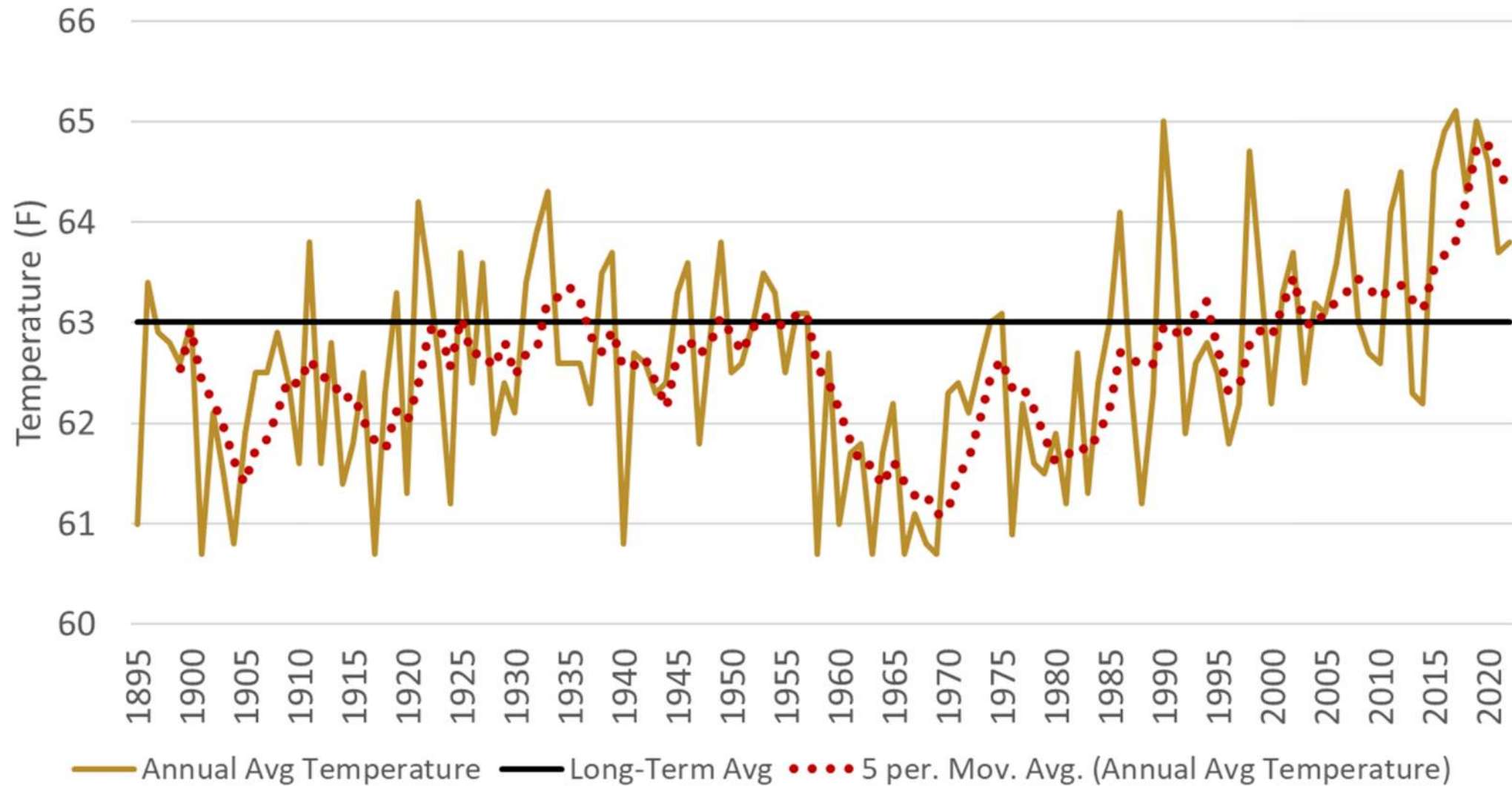




South Carolina Stations With Data 1900 - 2020

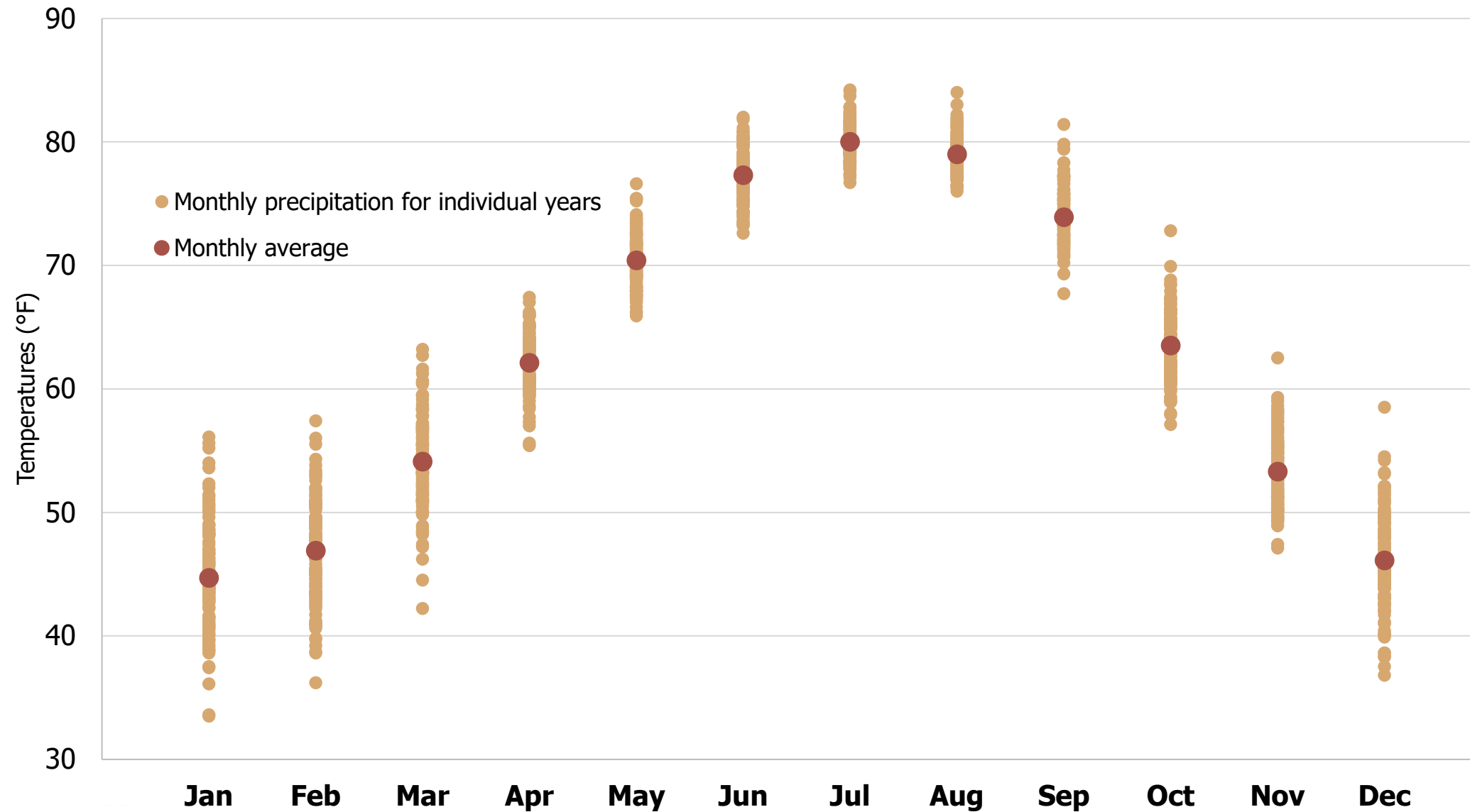
-  Anderson
-  Blackville
-  Cheraw
-  Conway
-  Darlington
-  Laurens
-  Little Mountain
-  Saluda
-  Santuck
-  Summerville
-  Walhalla
-  Winnsboro
-  Winthrop University
-  Yemassee

South Carolina Annual Average Temperature (1895-2022)

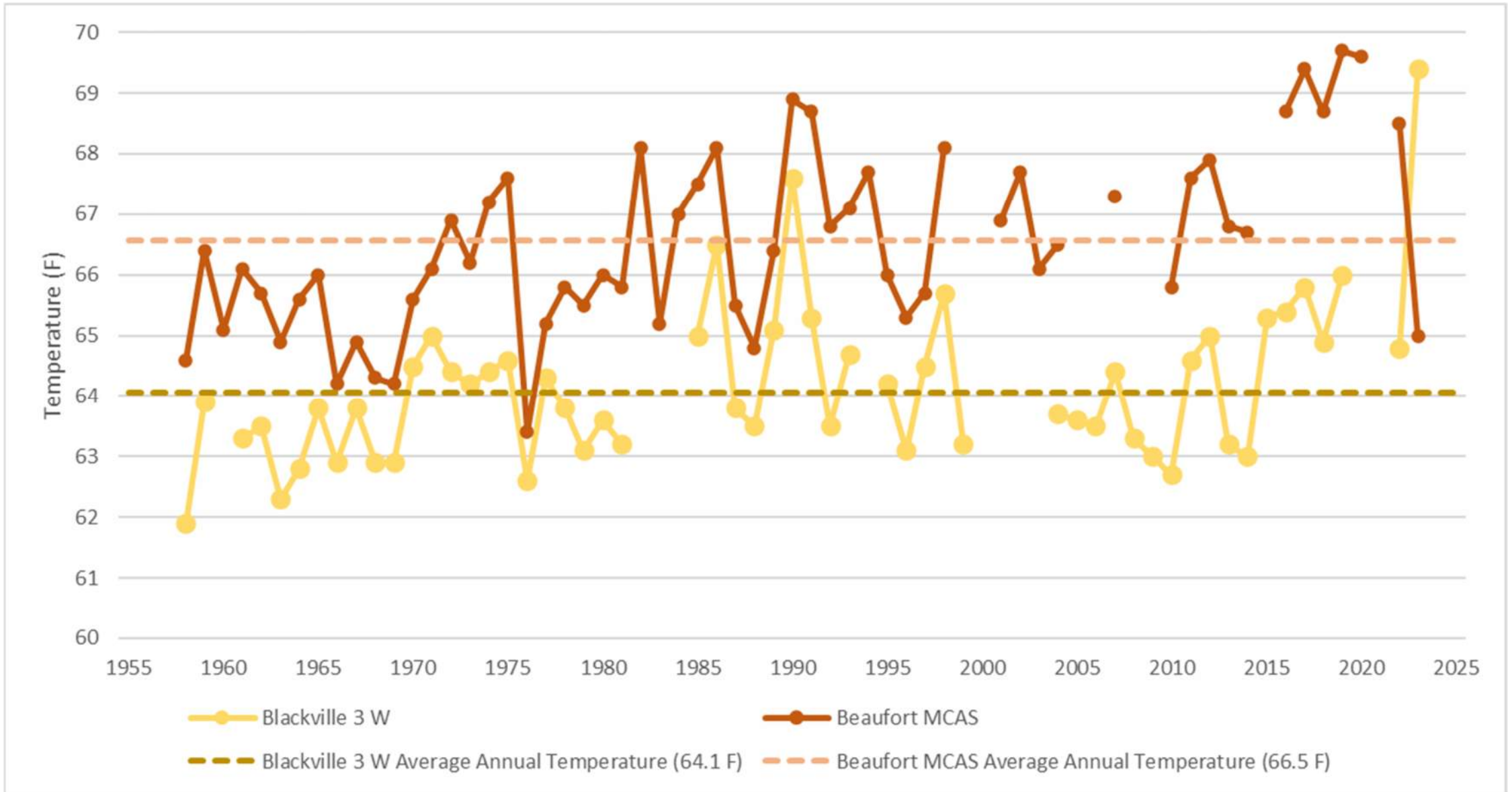


**SC has warmed one degree Fahrenheit over the past 120 years.
This is less than Earth as a whole, which has warmed nearly two degrees.**

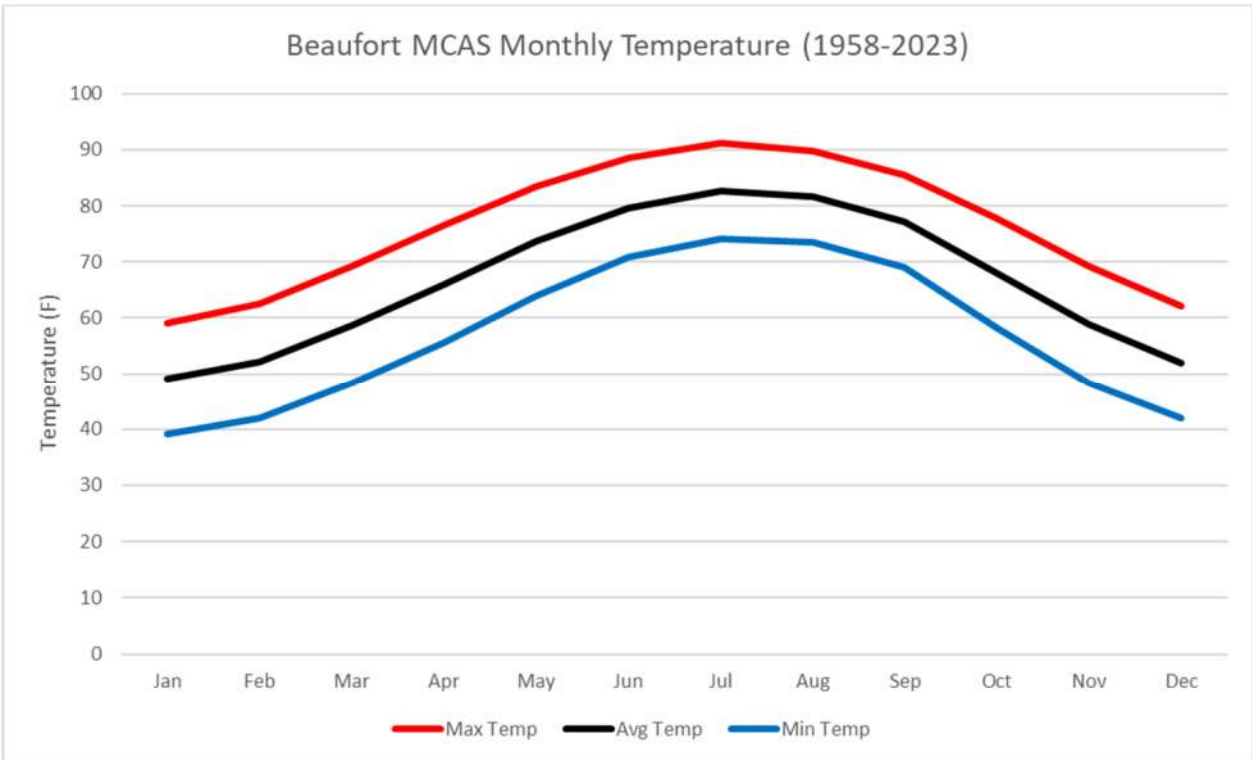
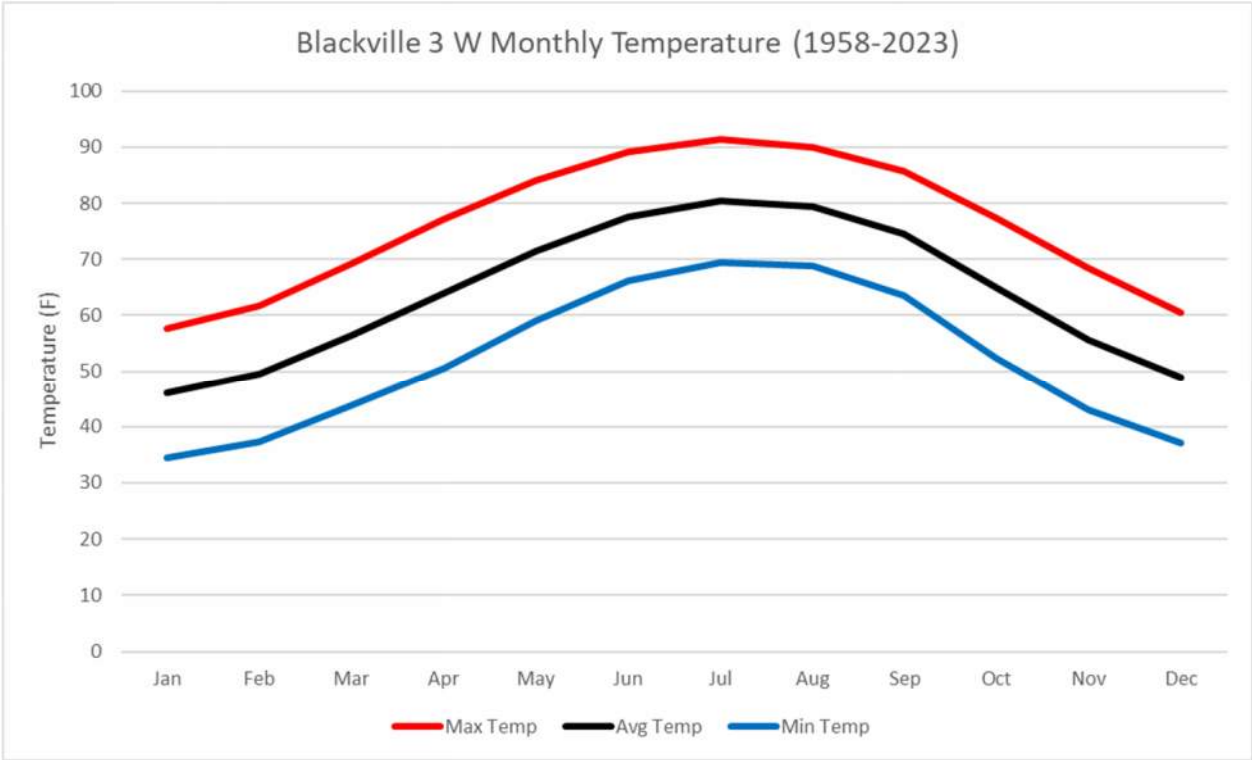
South Carolina Monthly Average Temperature (1895 – 2022)



Blackville 3 W & Beaufort MCAS Airport Annual Average Temperature (1958 – 2023)

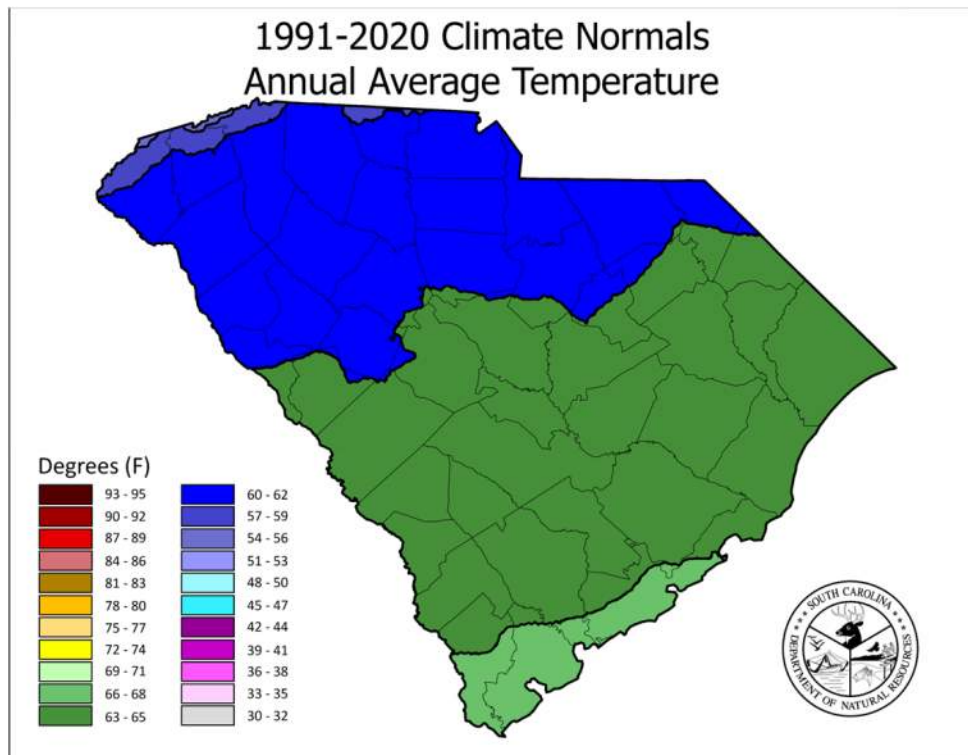


Monthly Temperature Comparison Blackville 3 W & Beaufort MCAS Airport

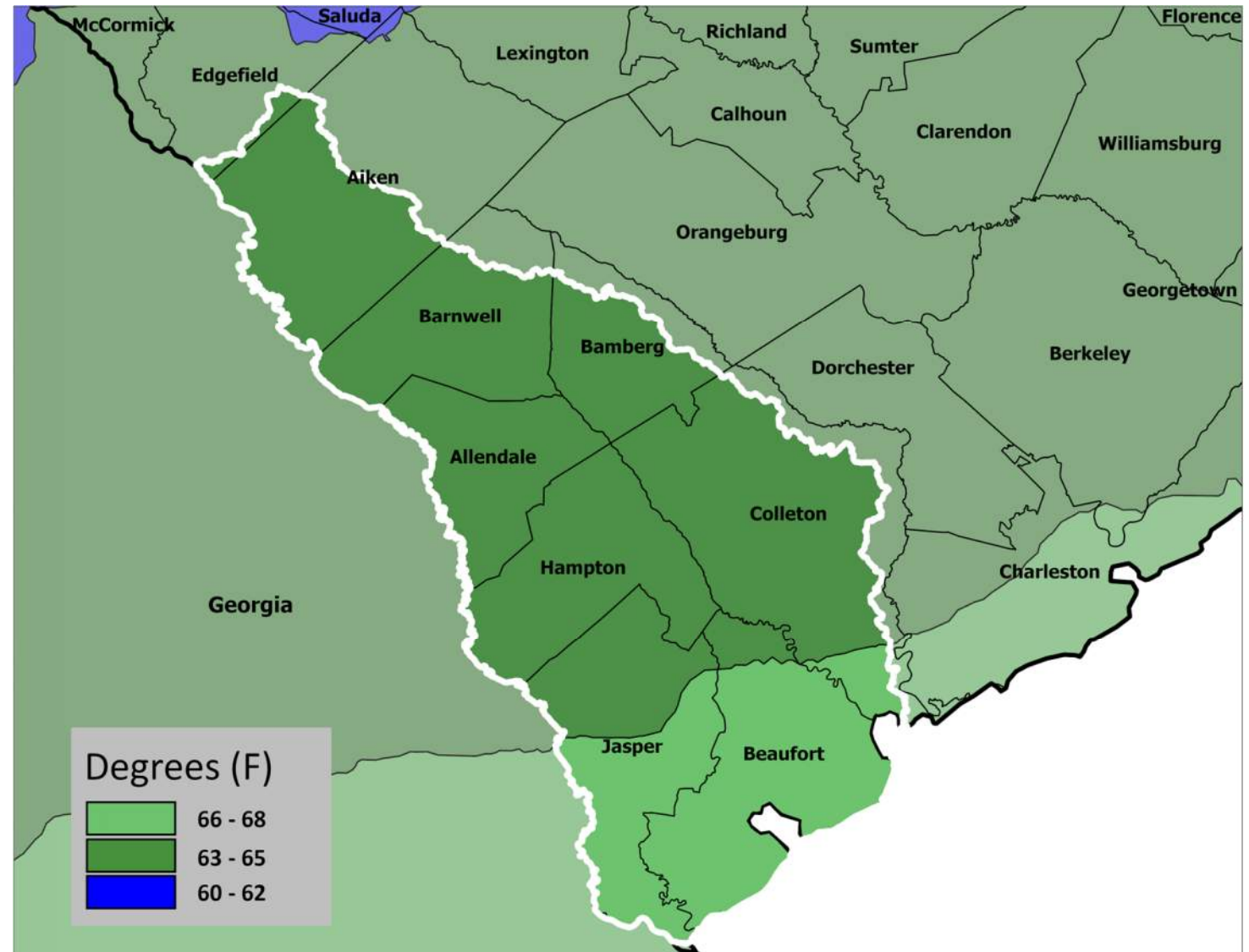


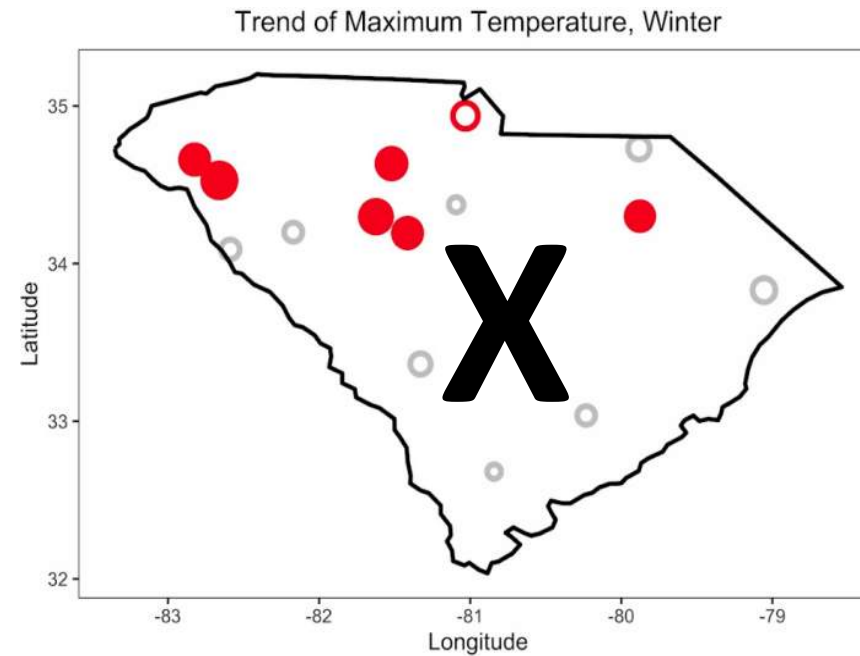
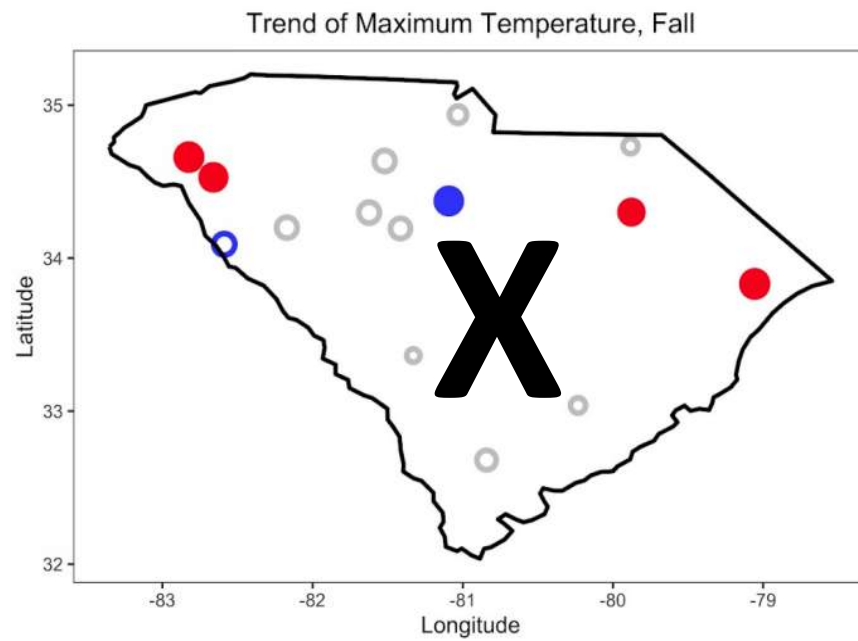
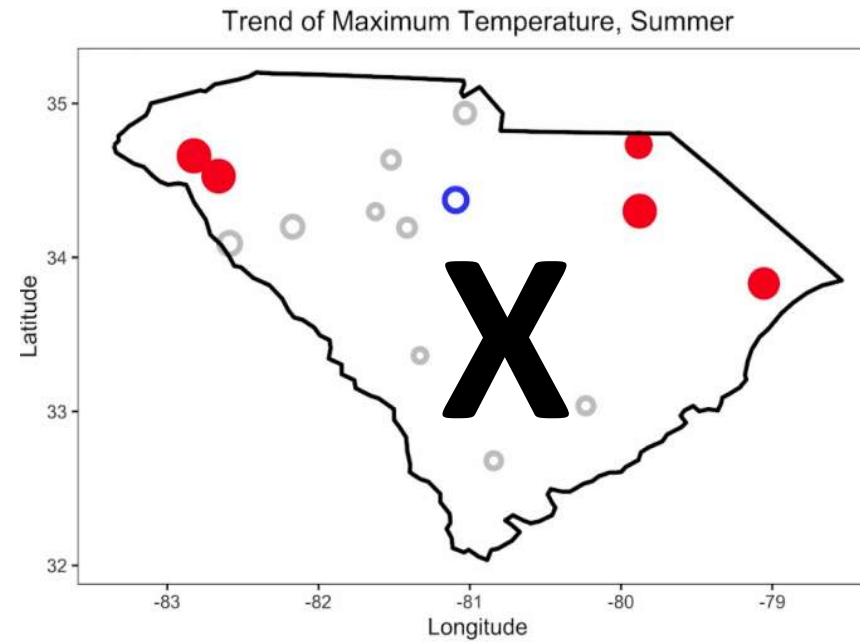
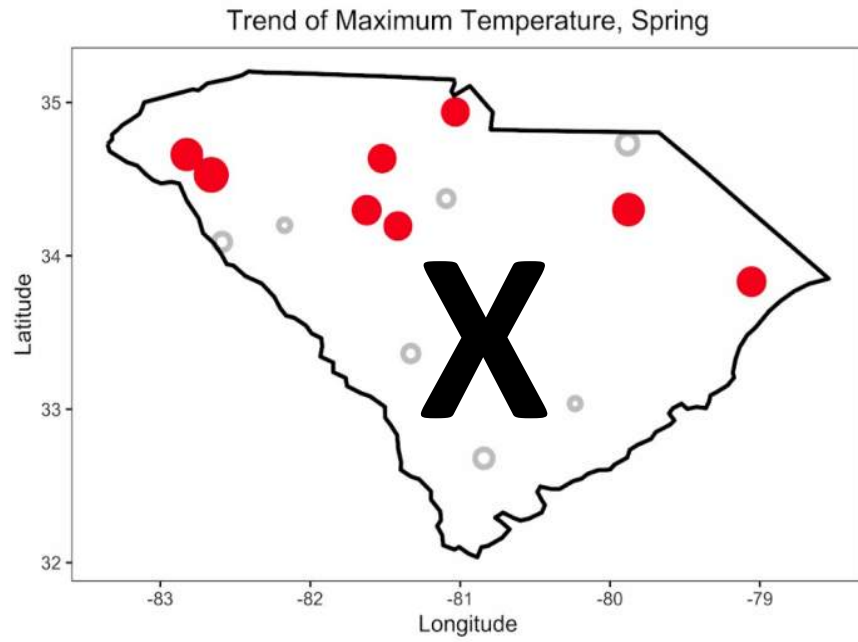
Minimum temperatures are the biggest differences between these two stations

Lower Savannah -Salkehatchie Basin Annual Average Temperature



[South Carolina Climate Normal Maps](#)





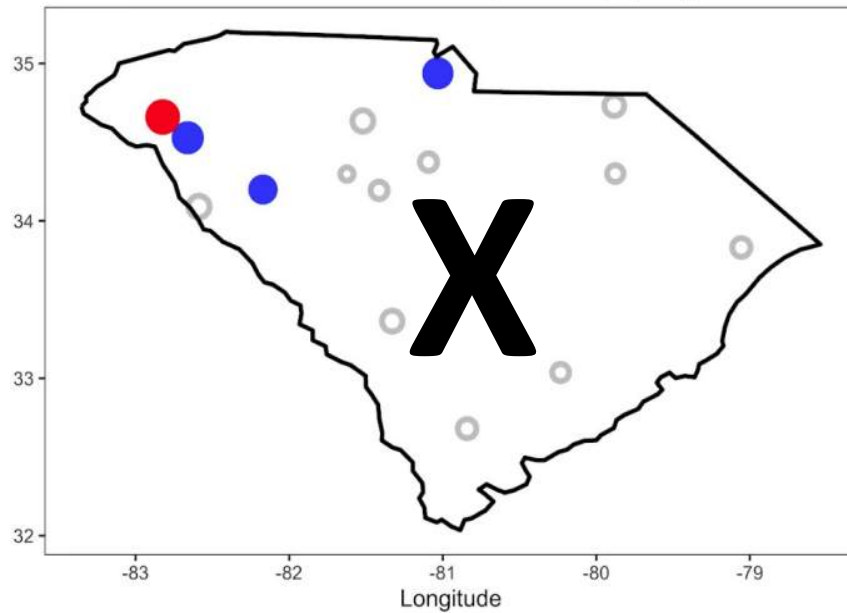
- Decrease
- Statistically-significant decrease

- Increase
- Statistically-significant increase

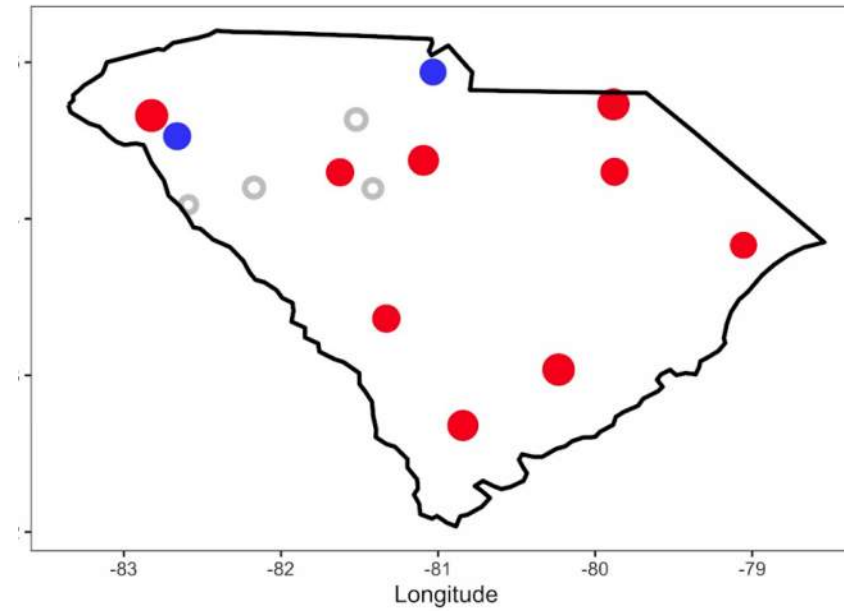
Greg Carbone
Dept of Geography



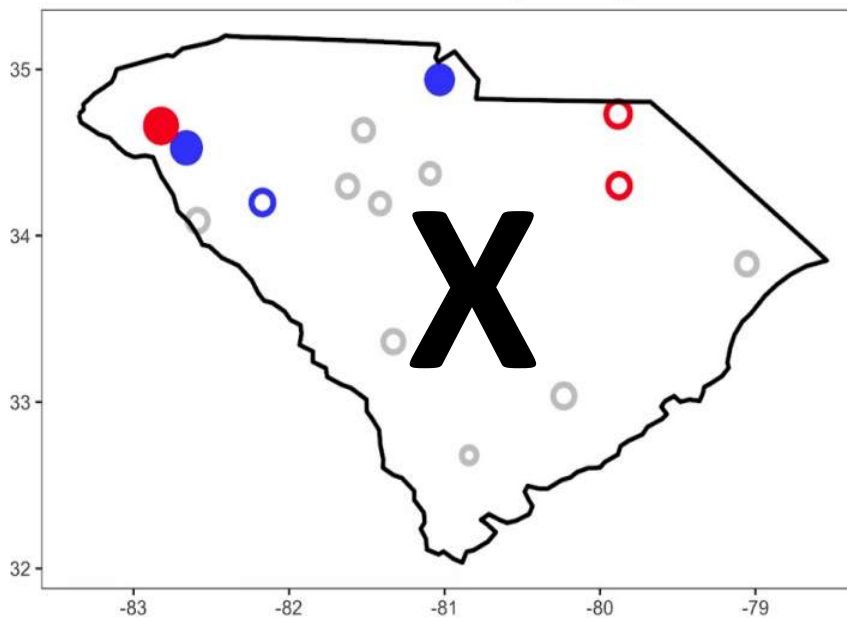
Trend of Minimum Temperature, Spring



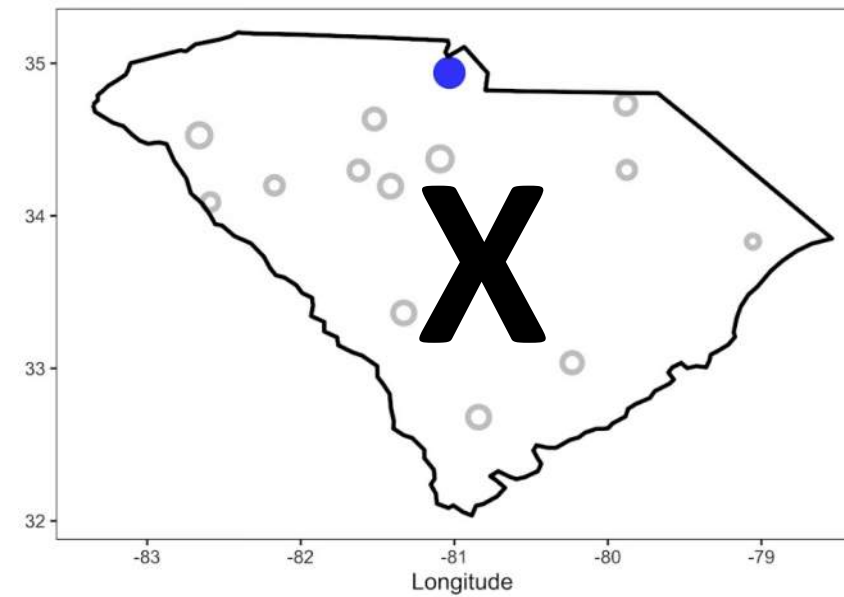
Trend of Minimum Temperature, Summer



Trend of Minimum Temperature, Fall



Trend of Minimum Temperature, Winter



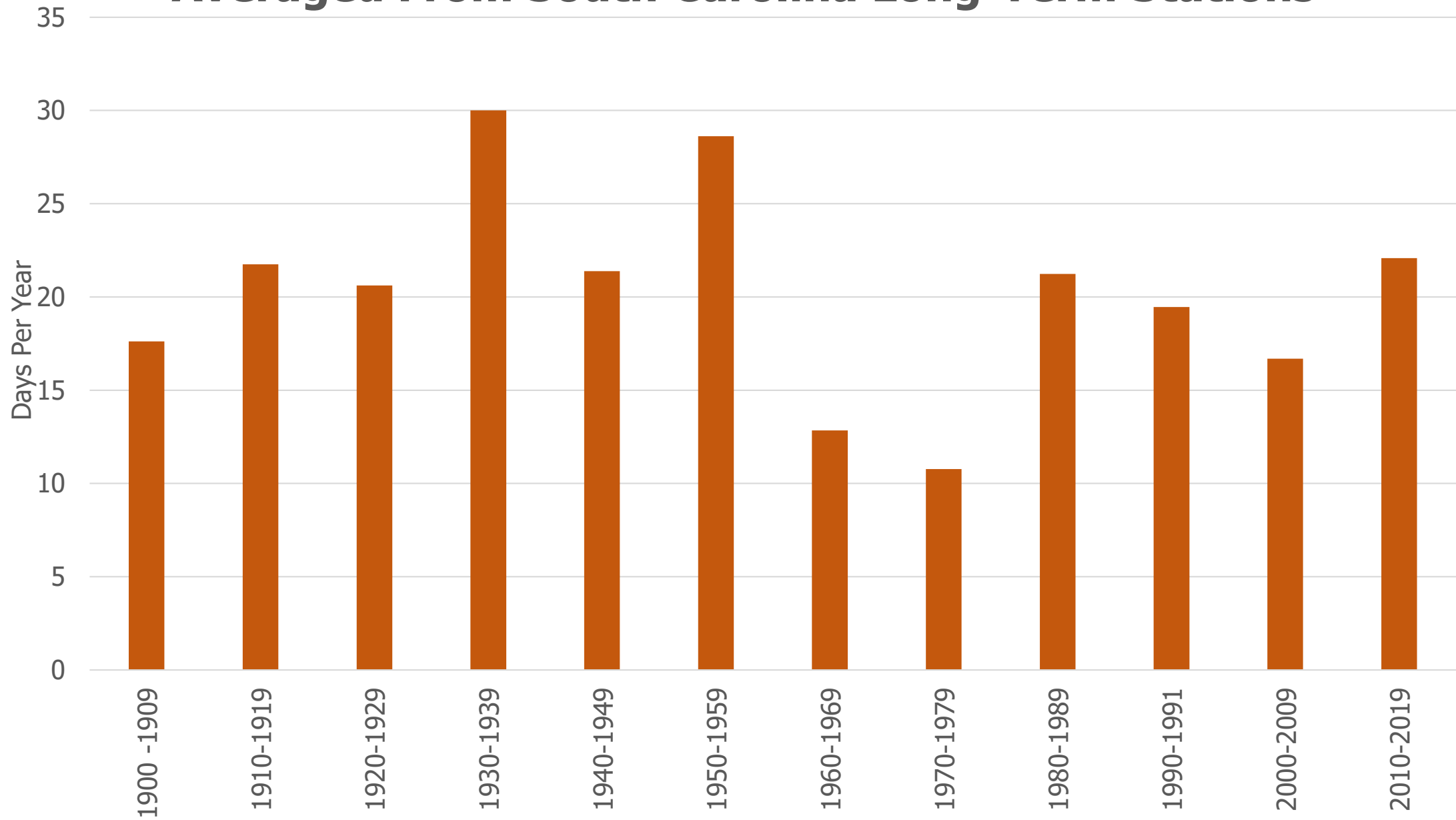
- Statistically-significant decrease
- Decrease

- Increase
- Statistically-significant increase

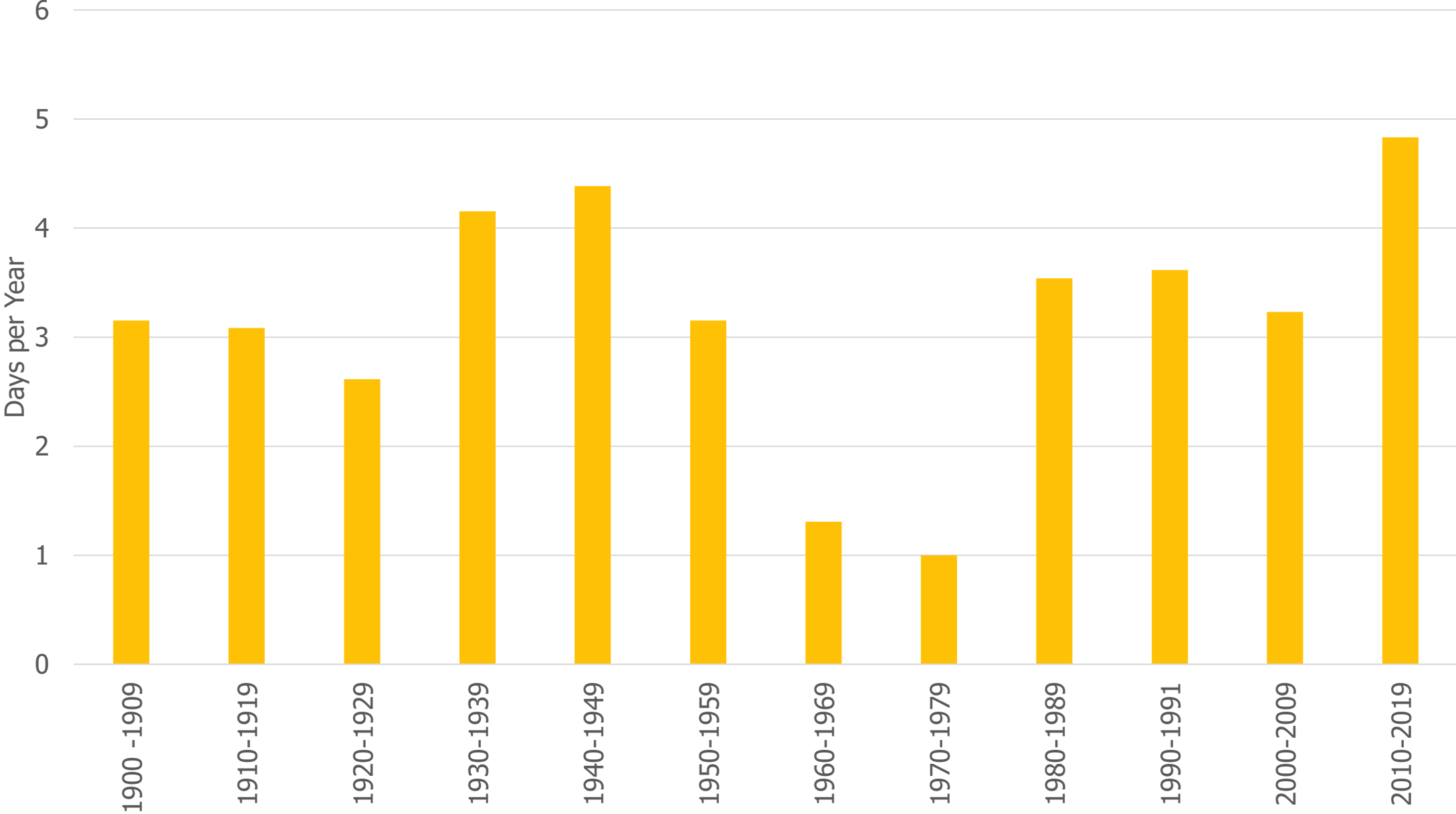
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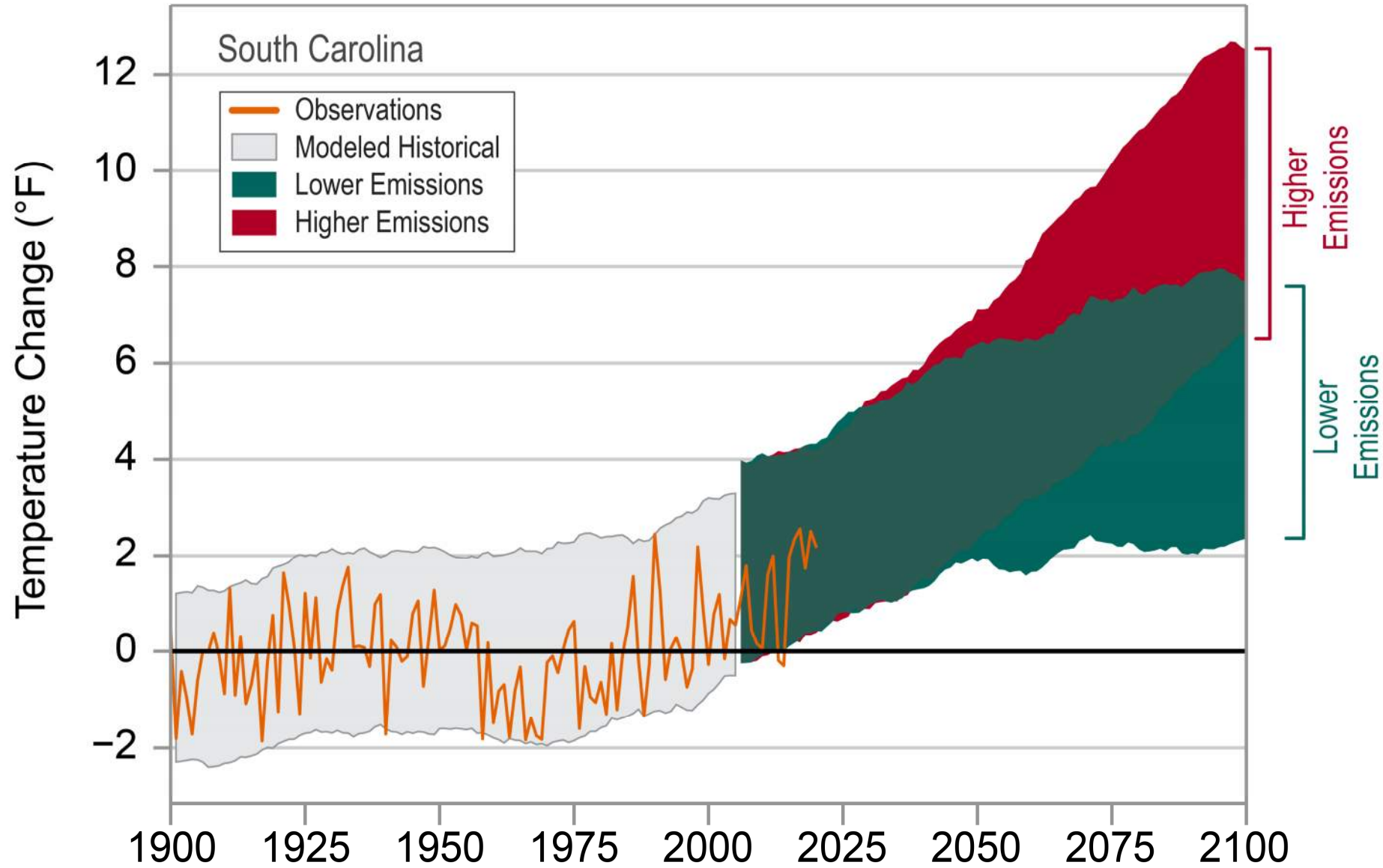
Number of Days Maximum Temperature Above 95°F Averaged From South Carolina Long-Term Stations



Number of Days Minimum Temperature Above 75°F Averaged From South Carolina Long-Term Stations



Observed and Projected Temperature Change

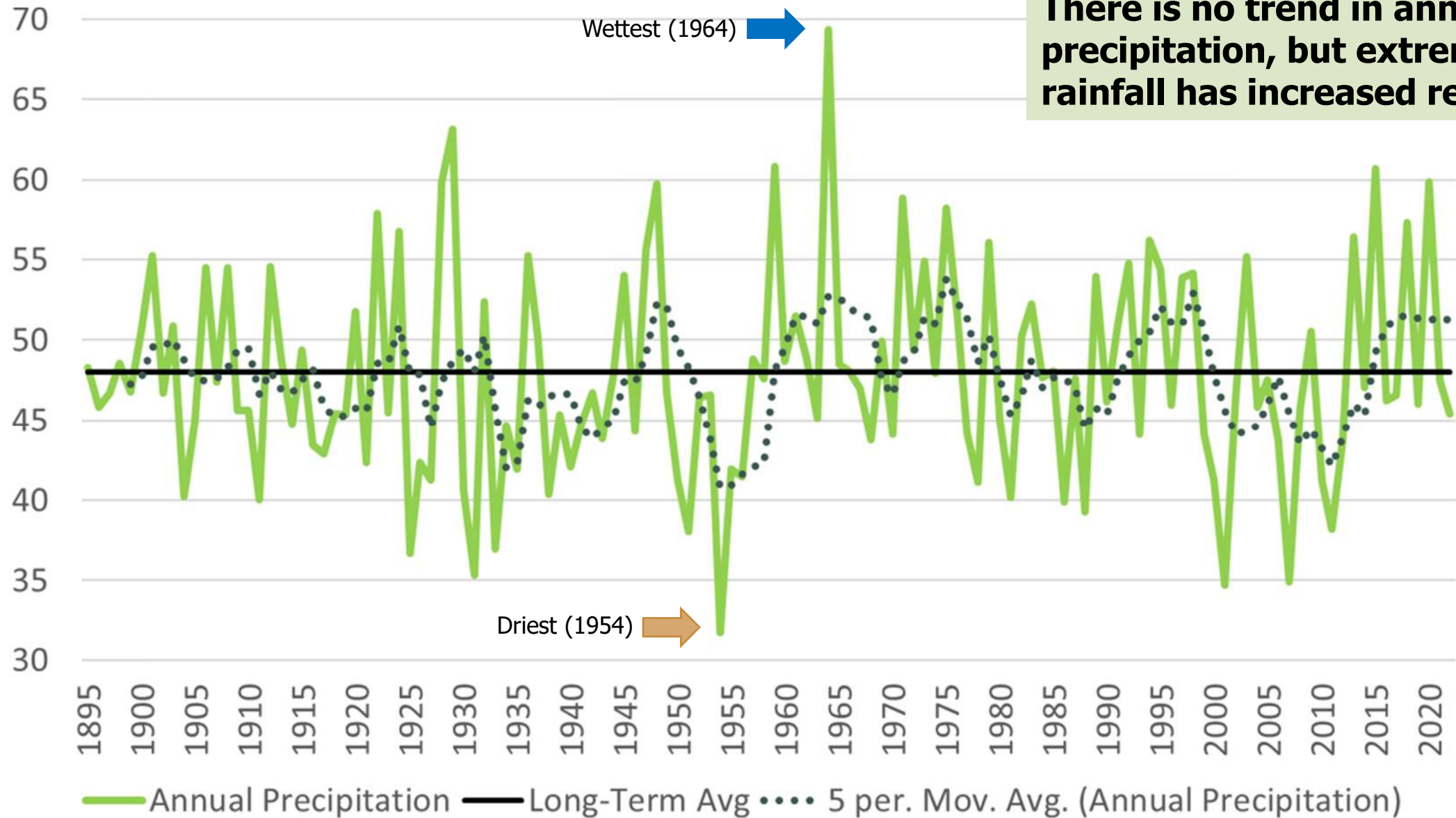




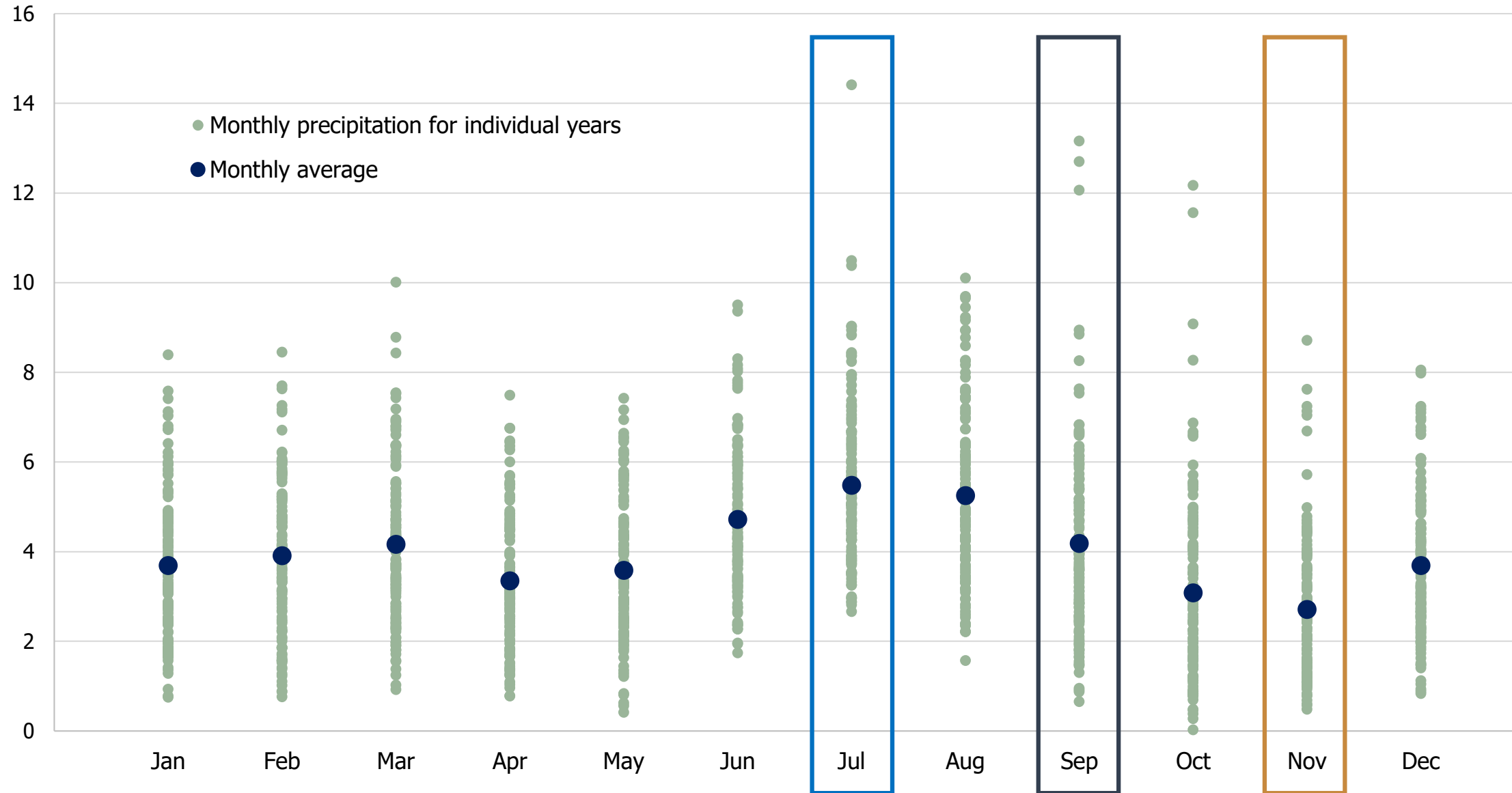
Precipitation



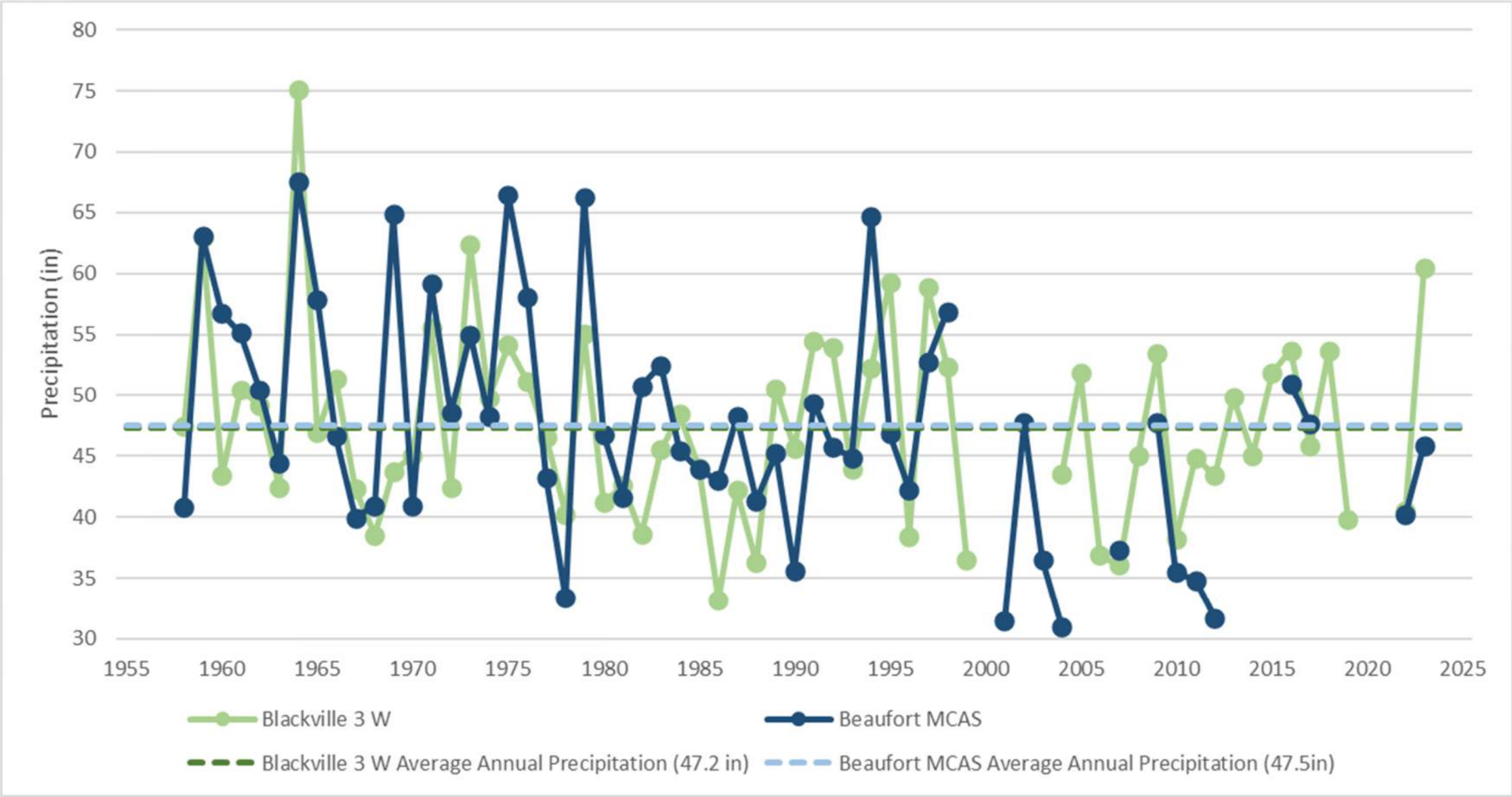
South Carolina Annual Precipitation (1895-2022)



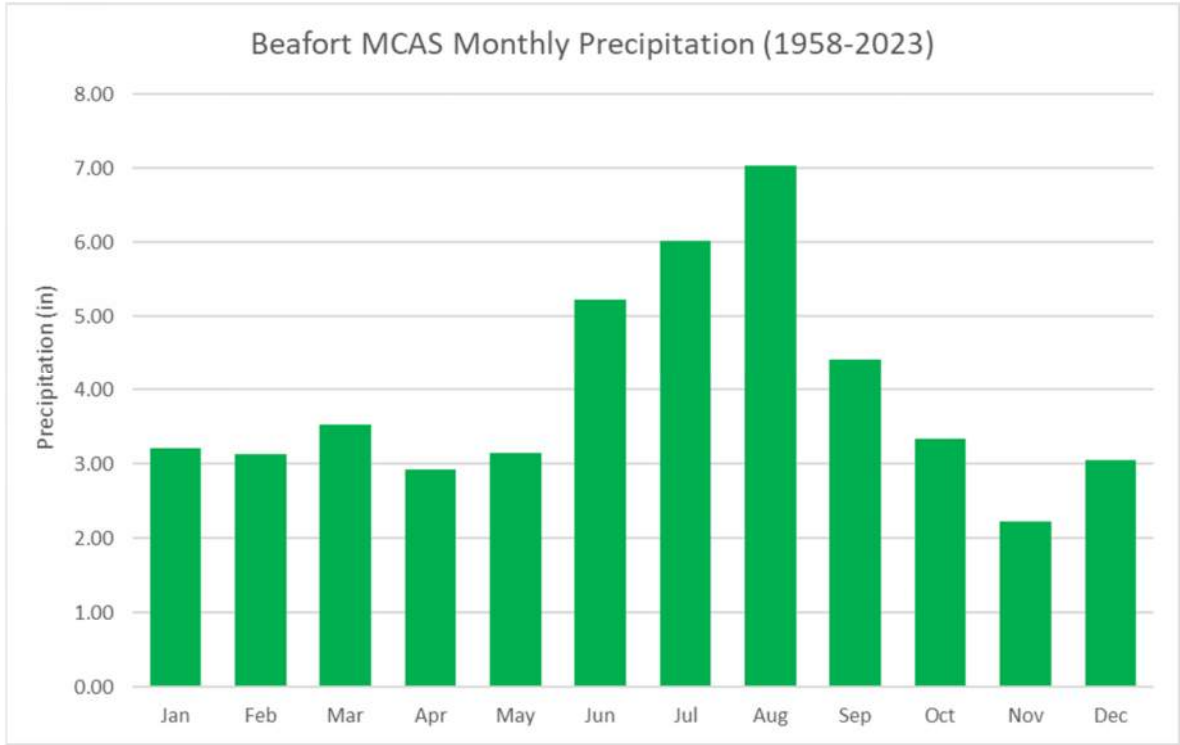
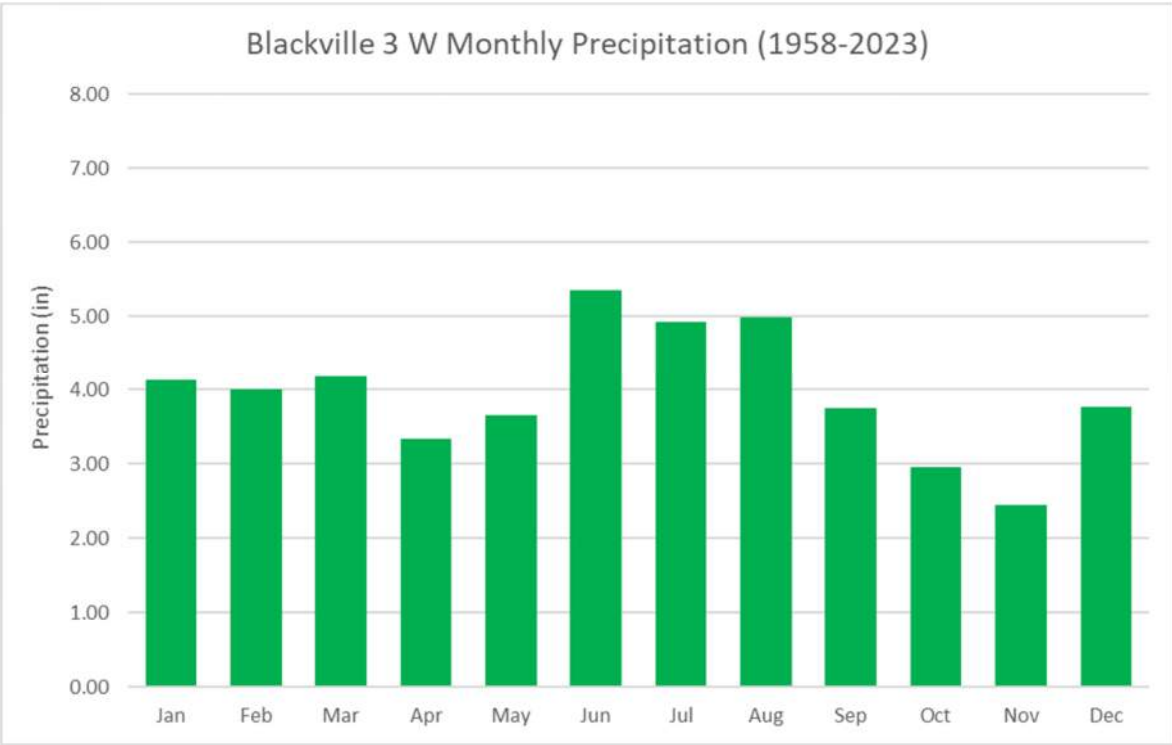
South Carolina Monthly Precipitation (1895 – 2022)



Blackville 3 W & Beaufort MCAS Airport Annual Average Precipitation (1958 – 2023)

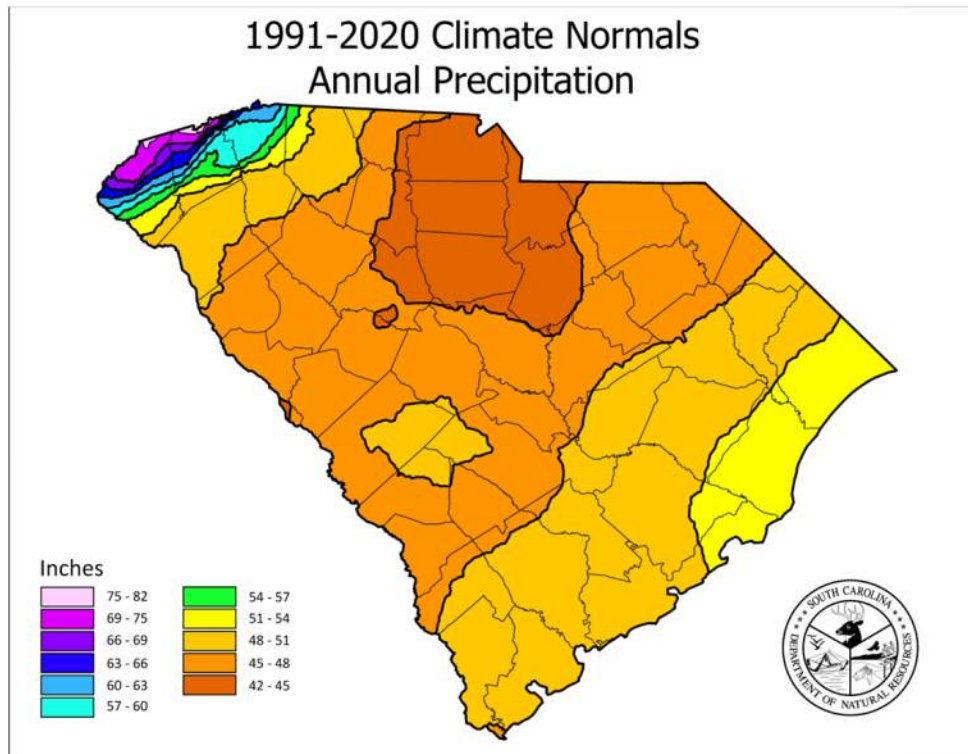


Monthly Precipitation Comparison Blackville 3 W & Beaufort MCAS Airport

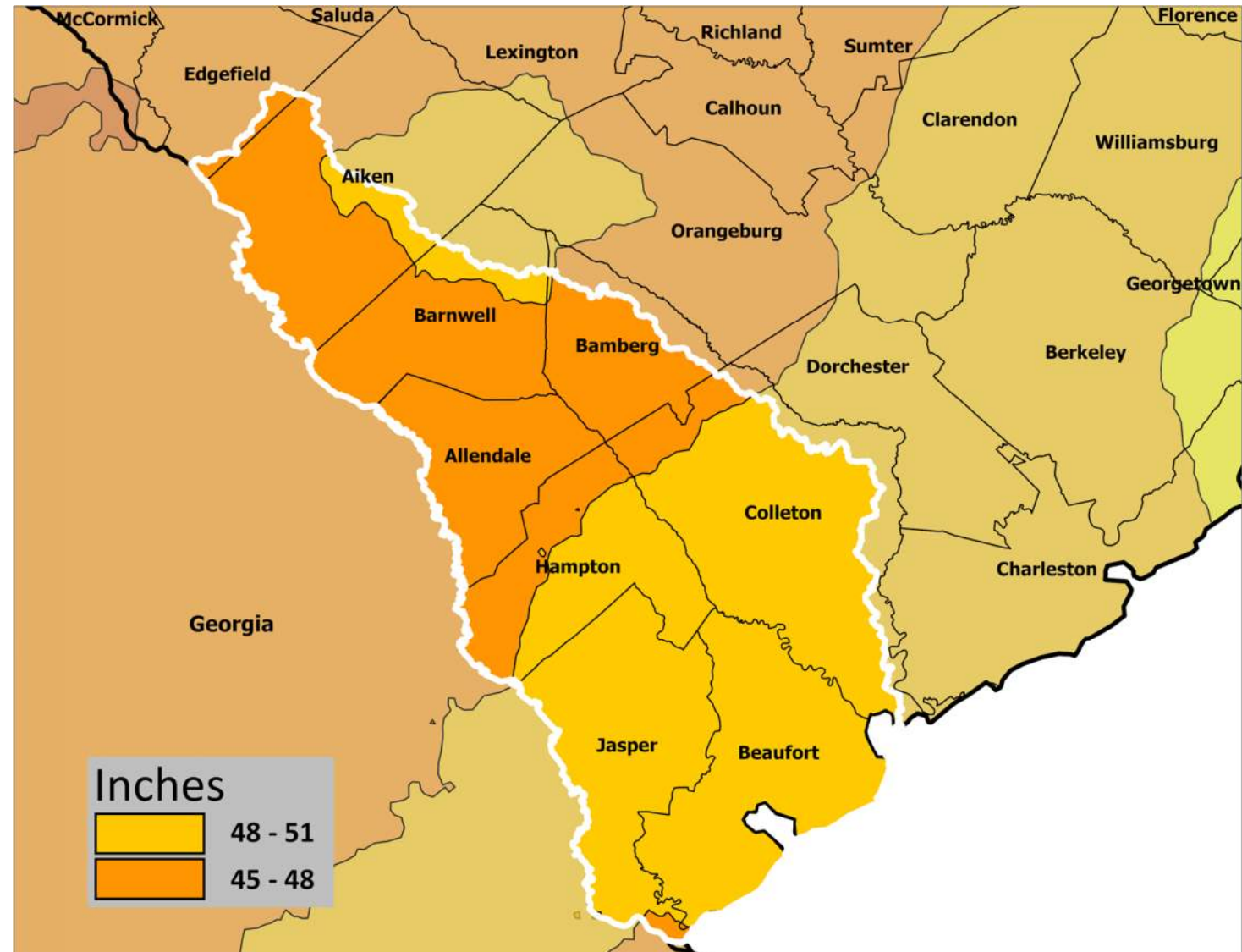


While average annual precipitation is almost identical between these two stations, monthly precipitation varies.

Lower Savannah -Salkehatchie Basin Annual Average Precipitation



[South Carolina Climate Normal Maps](#)

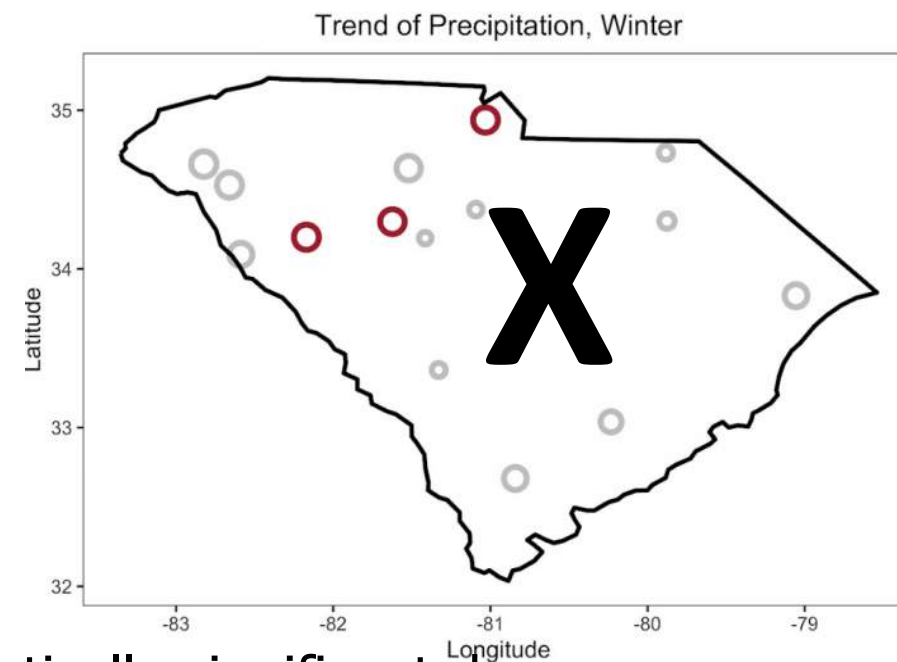
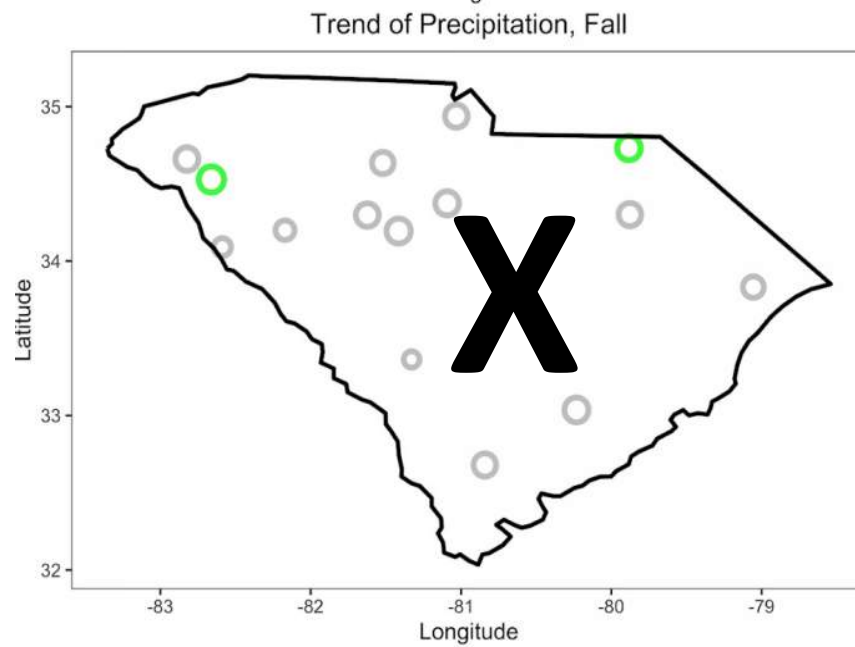
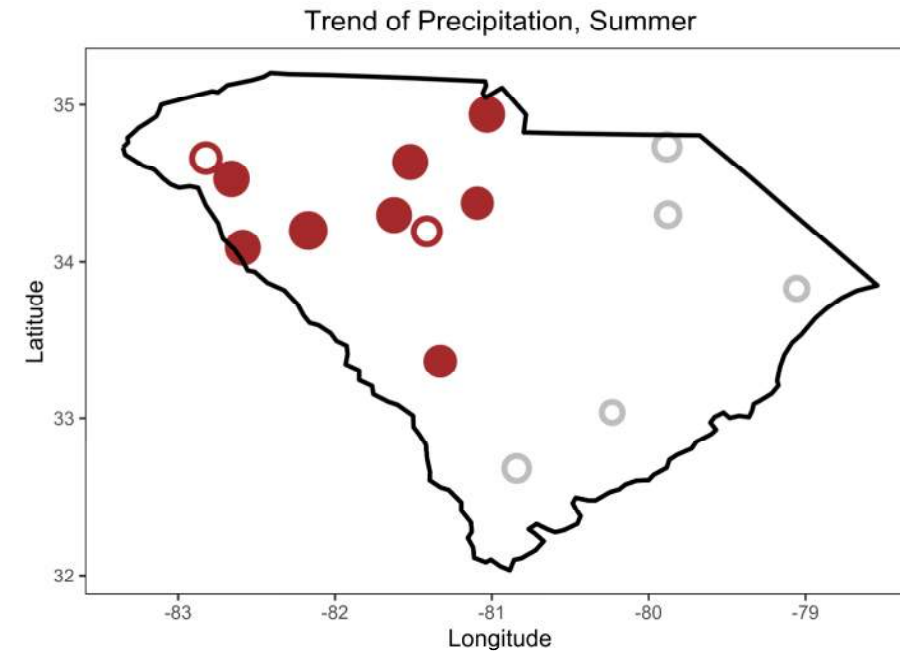
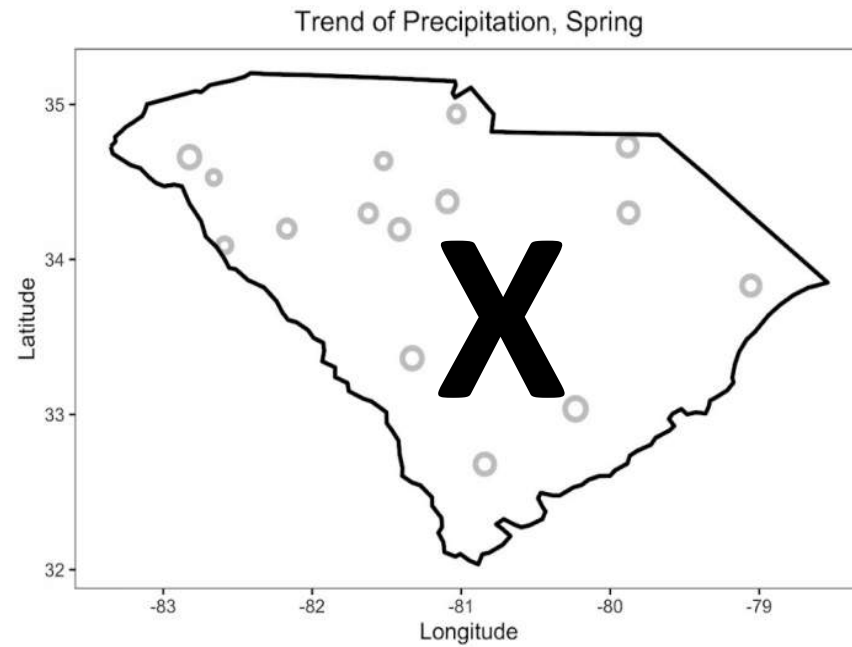


Five Driest Years for Blackville 3 W and Beaufort MCAS Airport (1958 – 2023)

	Blackville 3 W Annual Average 47.2 inches		Beaufort MCAS Airport Annual Average 47.5 in	
Rank	Year	Precipitation (in)	Year	Precipitation (in)
1	1986	33.21	2004	30.95
2	2007	36.10	2001	31.48
3	1988	36.30	2012	31.70
4	1999	36.55	1978	33.38
5	2006	36.88	2011	34.84

Five Wettest Years for Blackville 3 W and Beaufort MCAS Airport (1958 – 2023)

	Blackville 3 W Annual Average 47.2 inches		Beaufort MCAS Airport Annual Average 47.5 in	
Rank	Year	Precipitation (in)	Year	Precipitation (in)
1	1964*	75.10	1964*	67.63
2	1959	63.02	1975	66.44
3	1973	62.34	1979	66.29
4	1995	59.28	1969	64.88
5	1997	58.85	1994	64.66

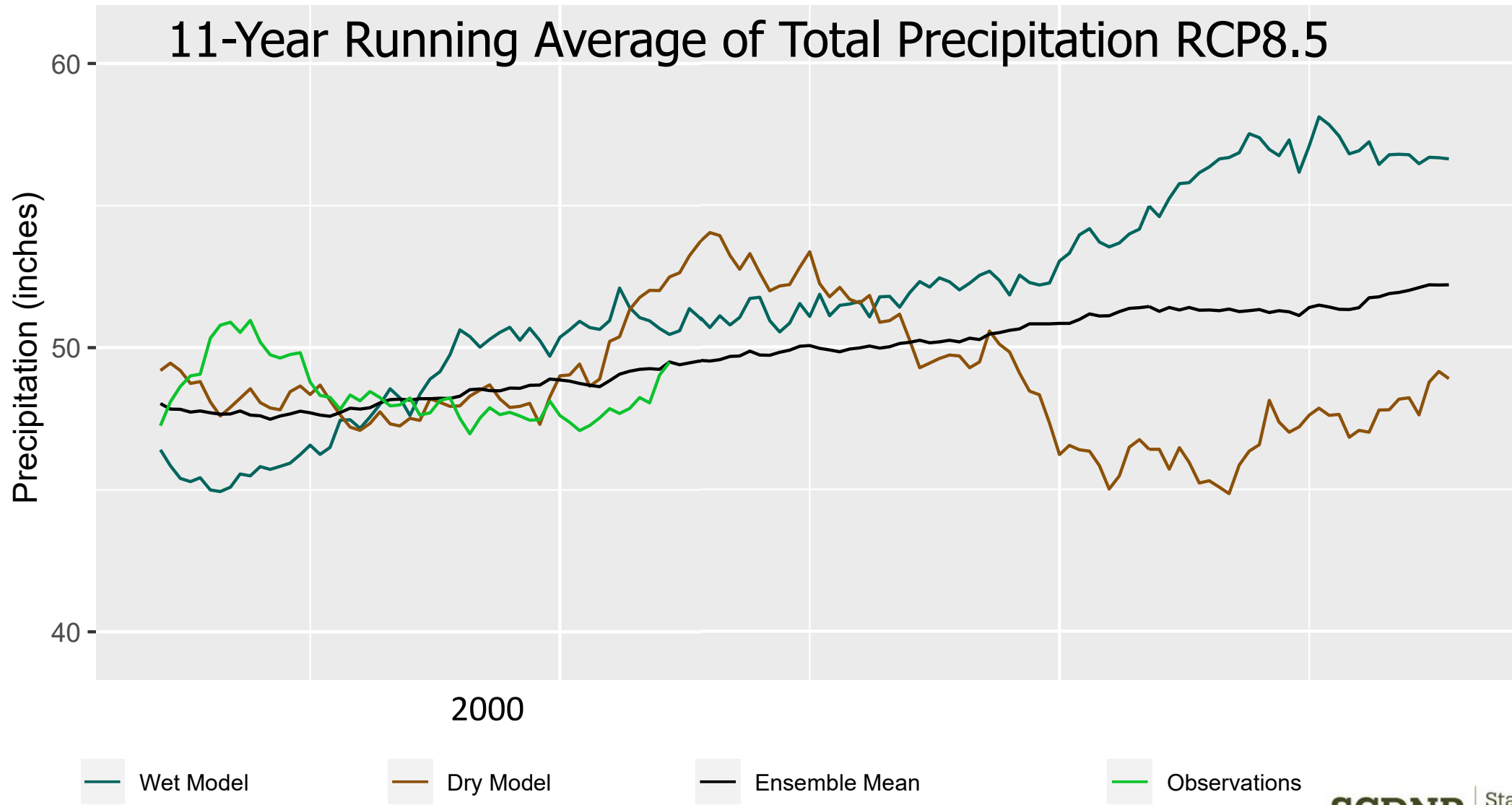


-  Decrease
-  Increase

 Statistically-significant decrease

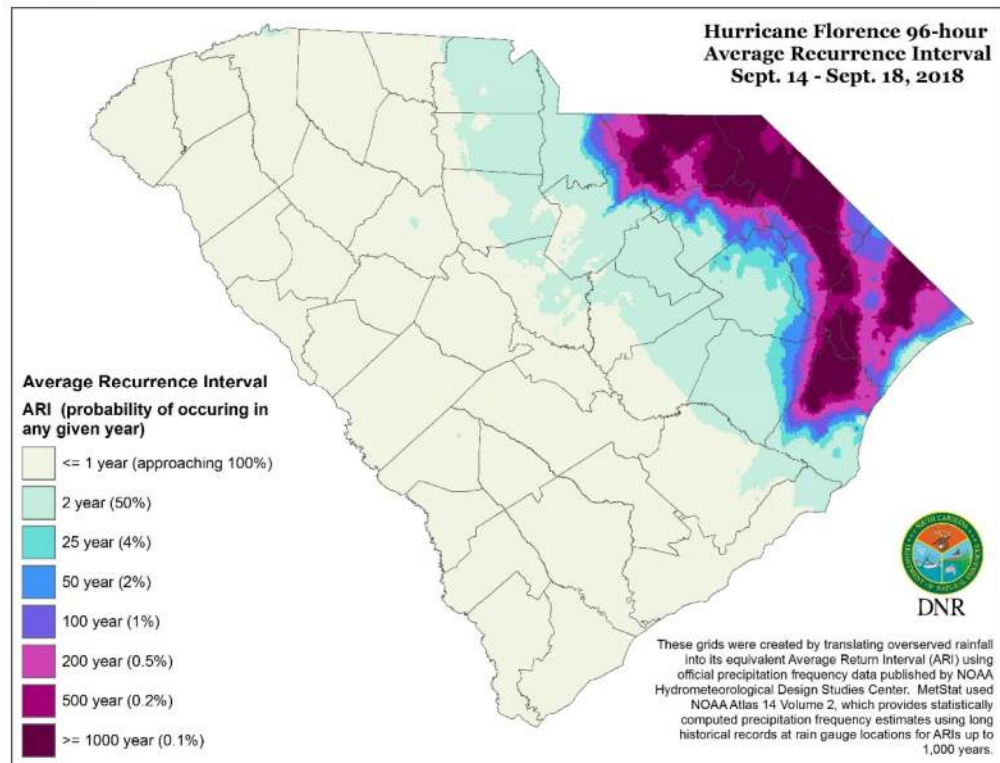
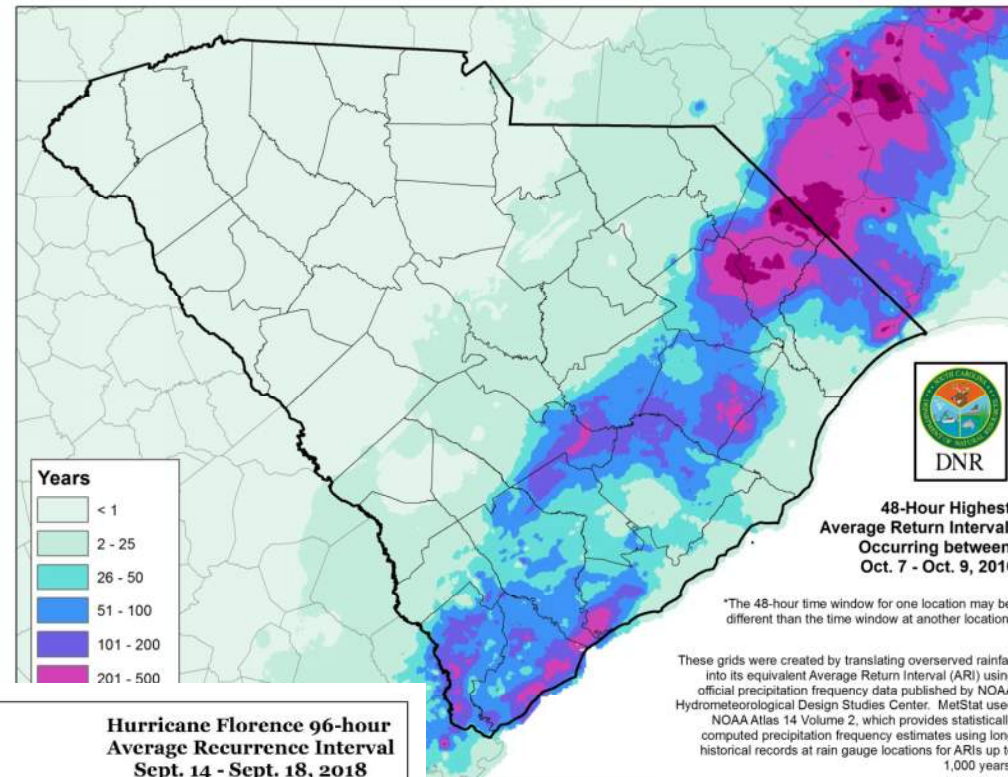
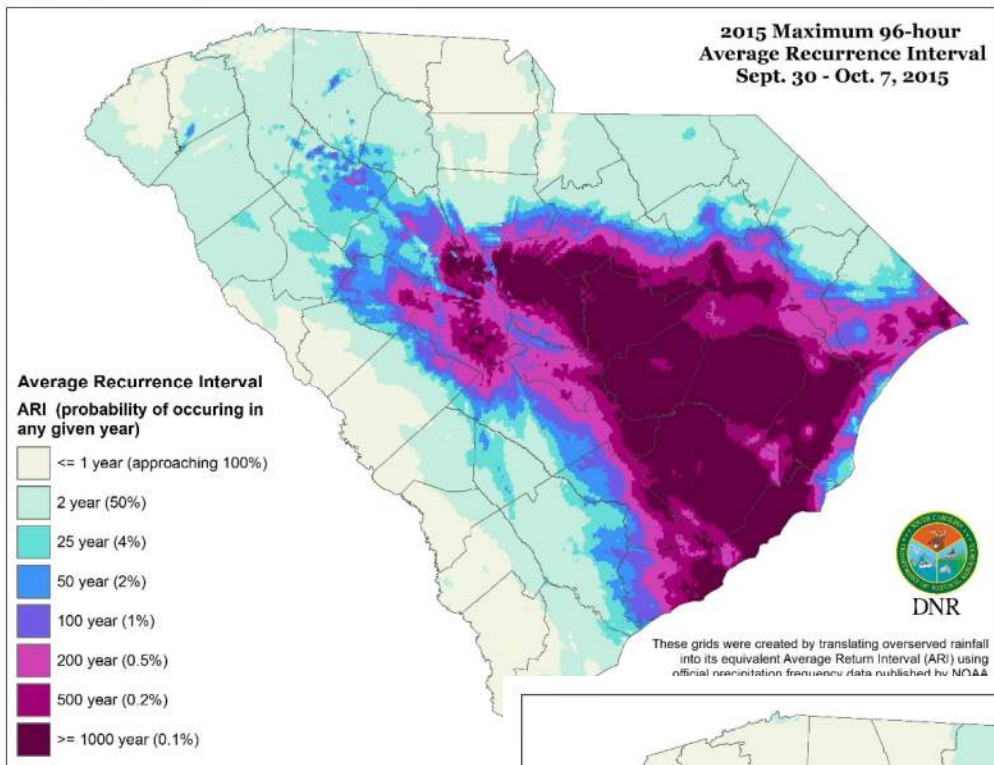
Precipitation Projections

- Modest increases in annual precipitation
- Continued annual and decadal variability



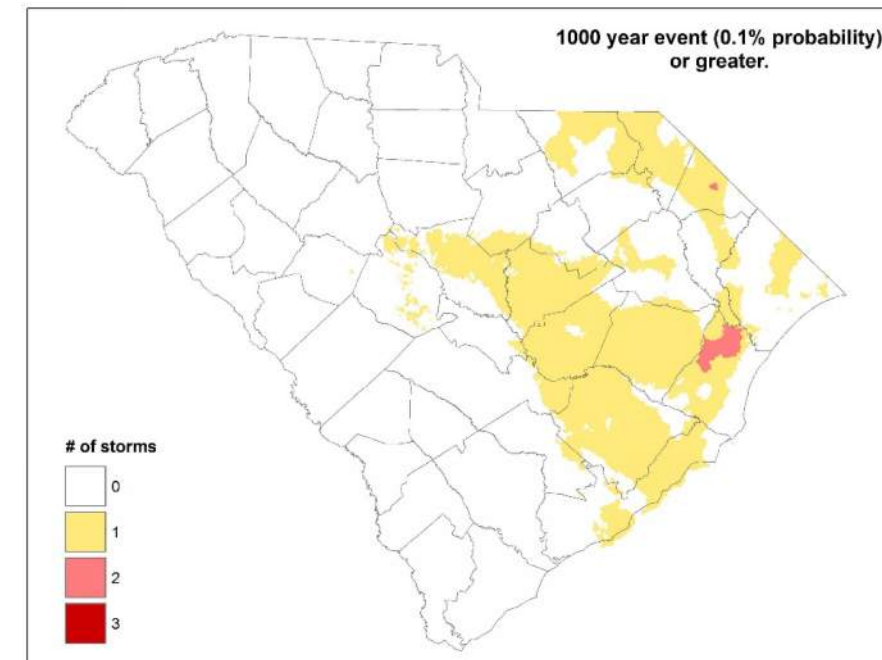
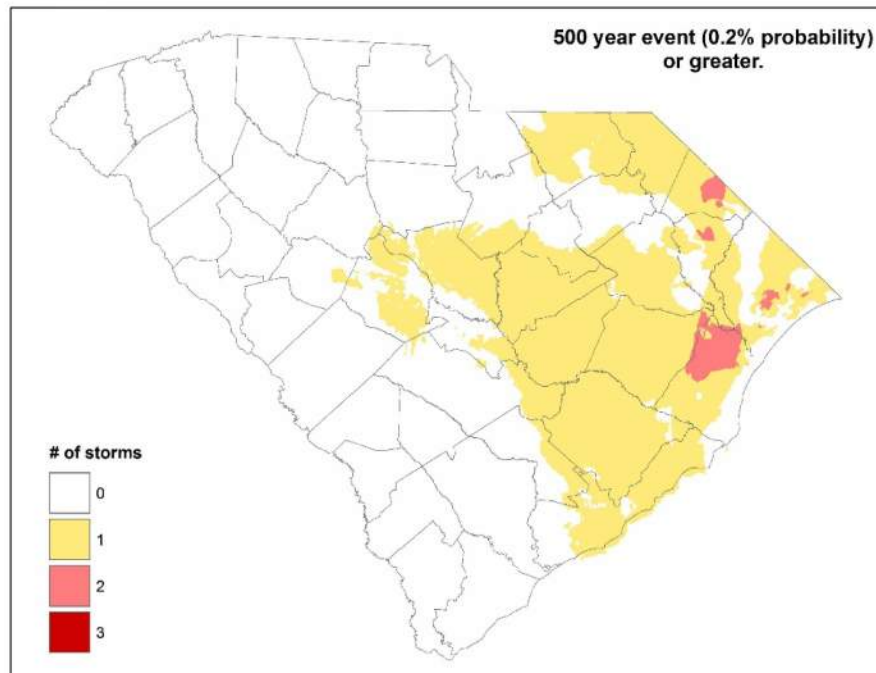
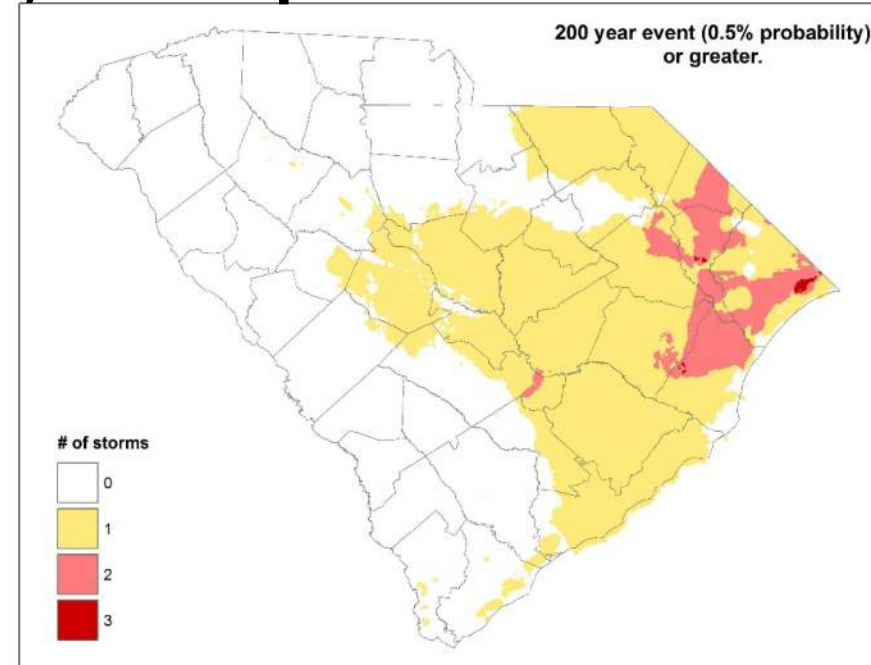
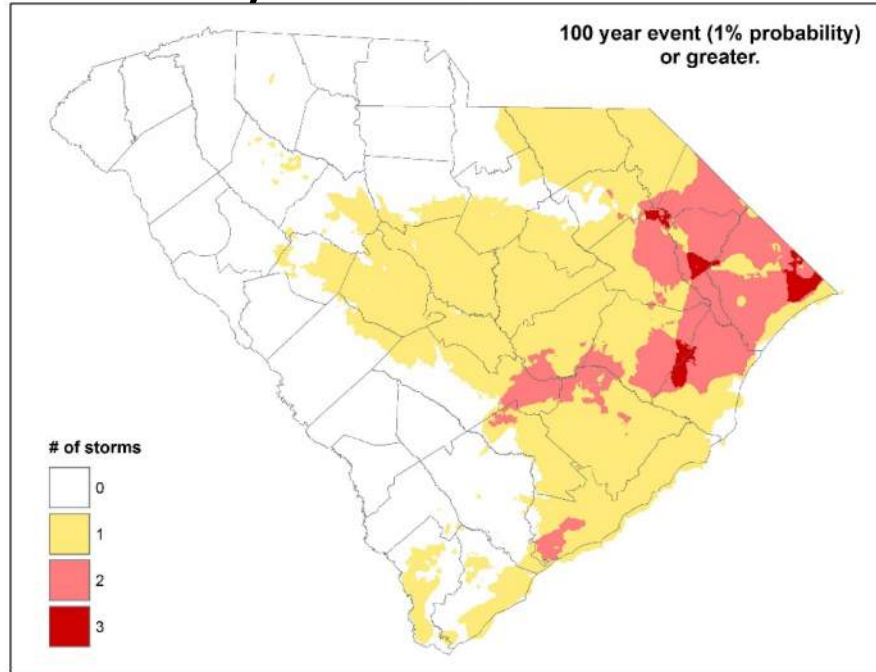


Extreme Rainfall

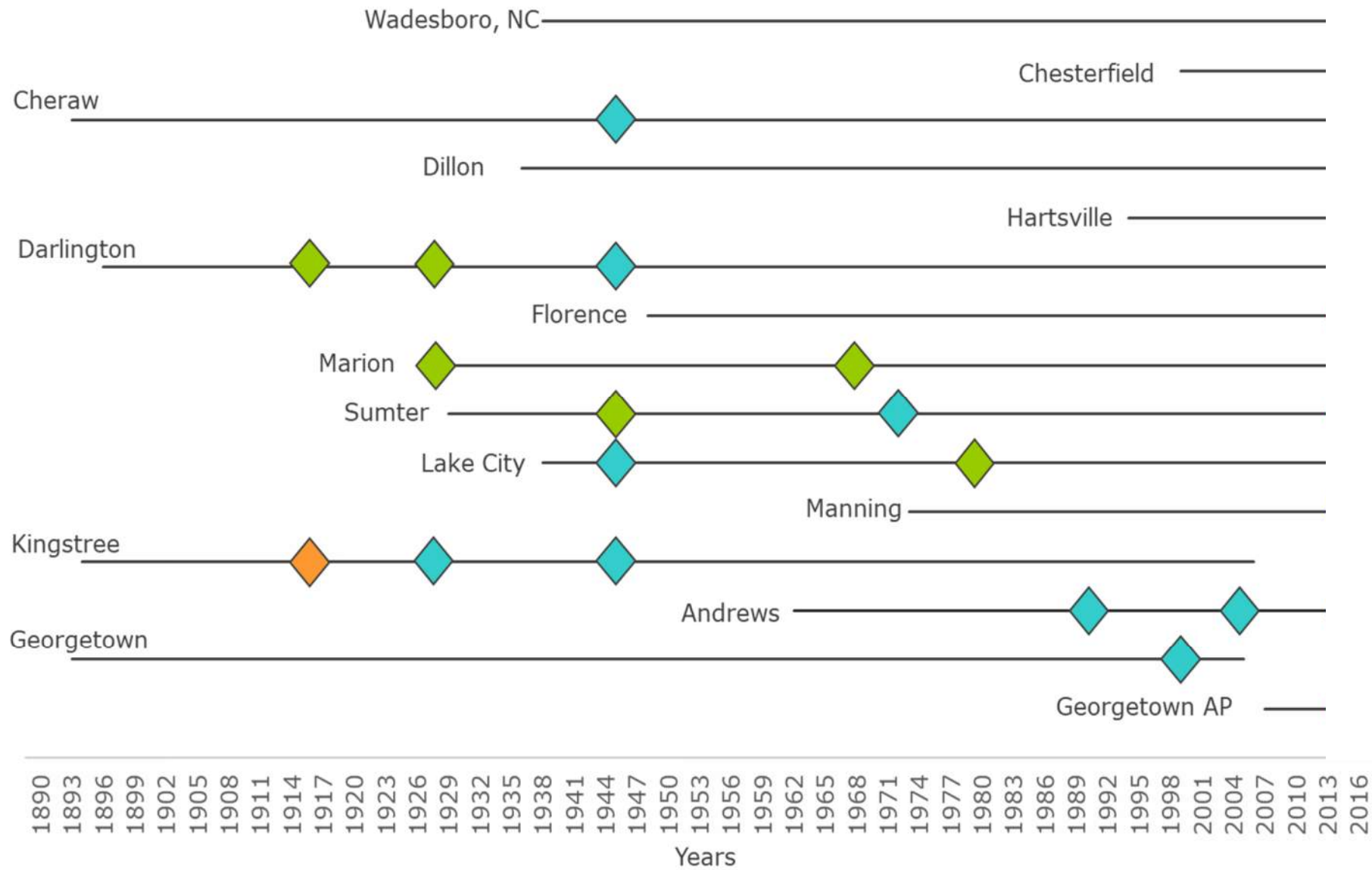


Areas in purple met or exceeded the 500-year event, a probability of 0.2% happening each year

Areas impacted by one or more of the recent extreme storms (October 2015, Hurricane Matthew 2016, and Tropical Storm Florence 2018)



Timeline 4-day Maximum Rainfall Events Along The Pee Dee Watershed



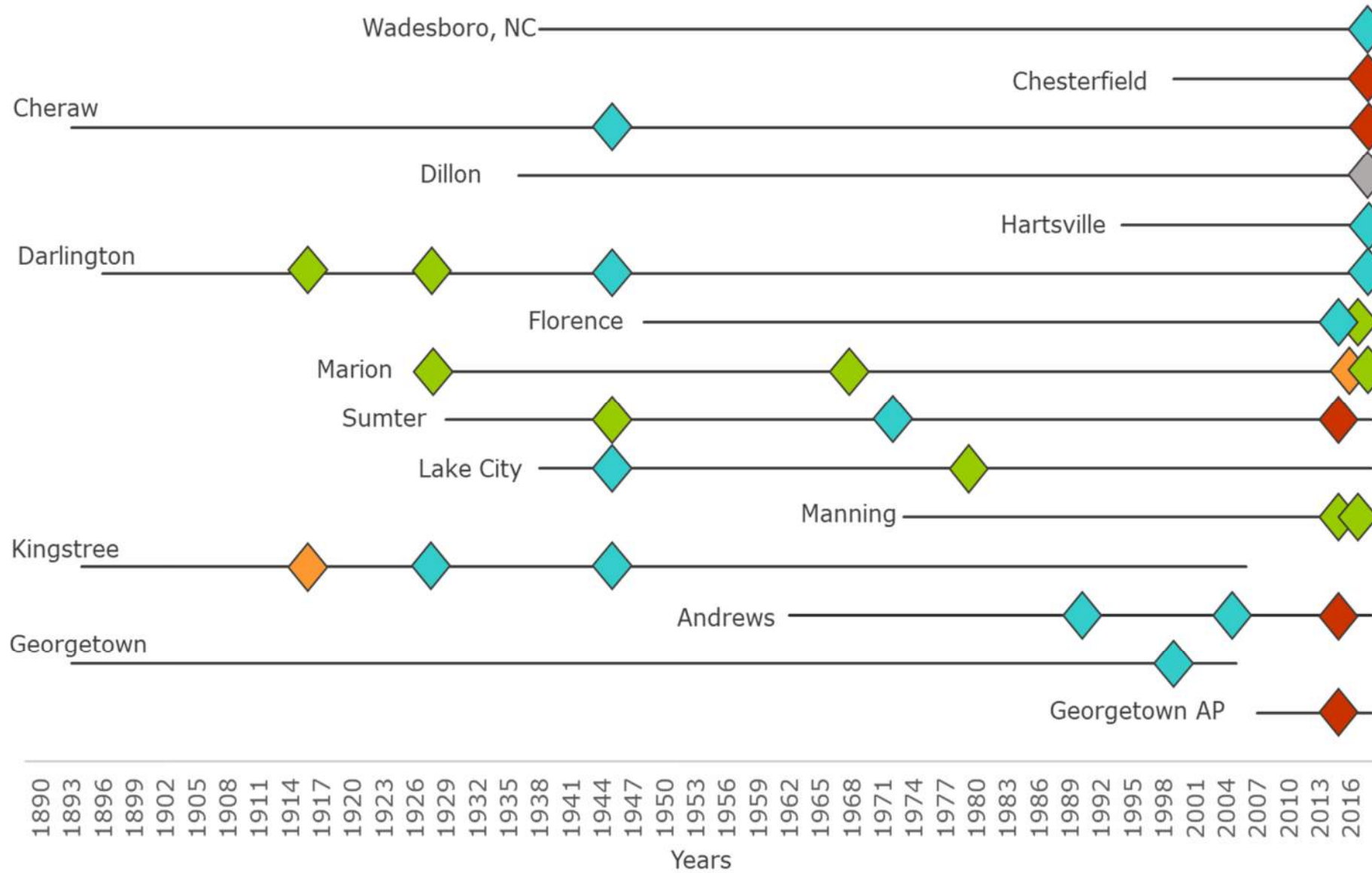
(Ending 2014)

The purposes of ARI/AEP analysis, the following scale will be used in this

Average Recurrence Intervals (AEP)

- ◆ 1,000 Year (0.1%)
- ◆ 500 Year (0.2%)
- ◆ 200 Year (0.5%)
- ◆ 100 Year (1.0%)

Timeline 4-day Maximum Rainfall Events Along The Pee Dee Watershed



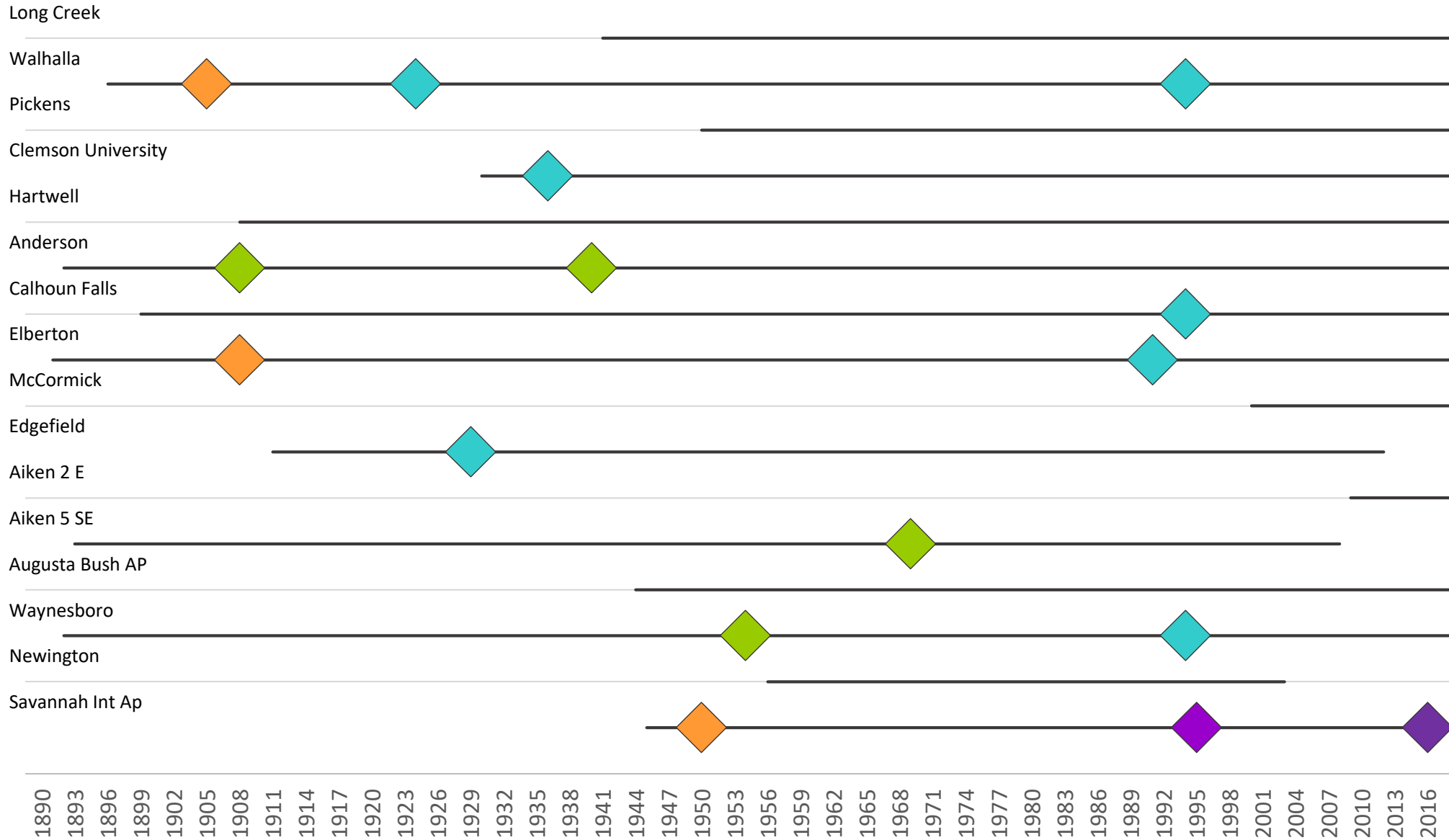
The purposes of ARI/AEP analysis, the following scale will be used in this

Average Recurrence Intervals (AEP)

- 1,000 Year (0.1%)
- 500 Year (0.2%)
- 200 Year (0.5%)
- 100 Year (1.0%)

(Ending 2020)

Timeline of 4-day Rainfall Events along the Savannah River



The purposes of ARI/AEP analysis, the following scale will be used in this

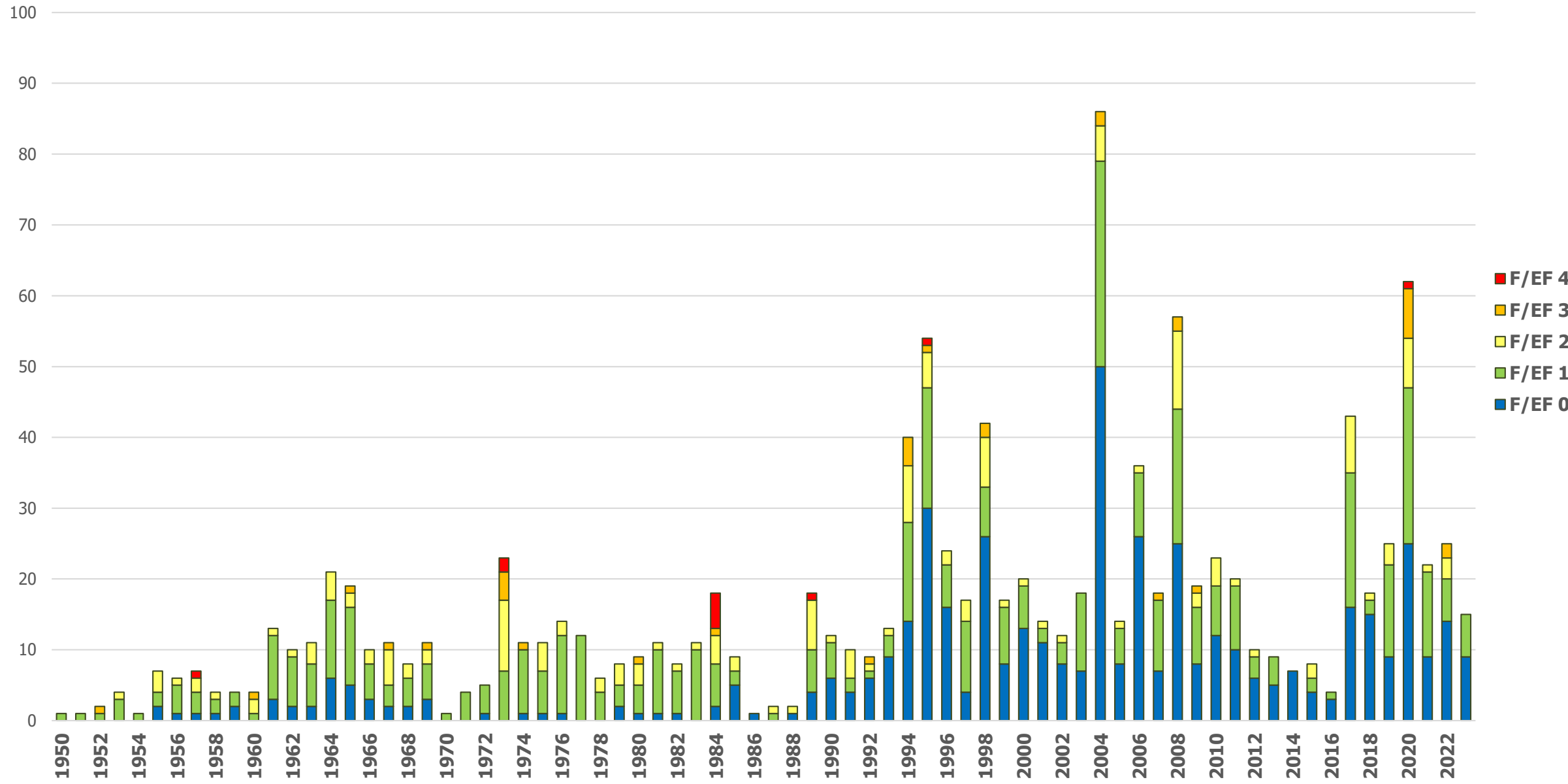
Average Recurrence Intervals (AEP)

- ◆ 1,000 Year (0.1%)
- ◆ 500 Year (0.2%)
- ◆ 200 Year (0.5%)
- ◆ 100 Year (1.0%)
- ◆ 50 Year (2.0%)

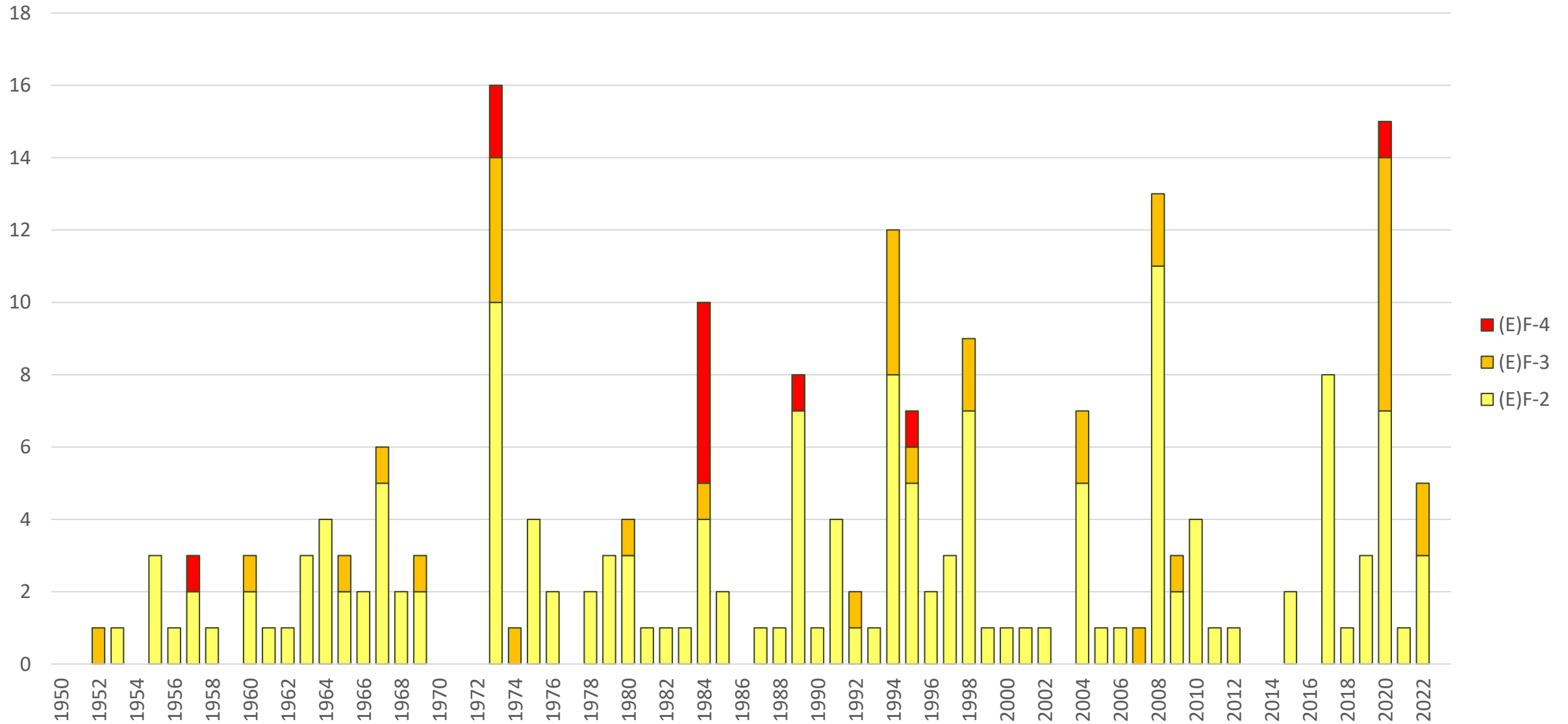


Tornadoes

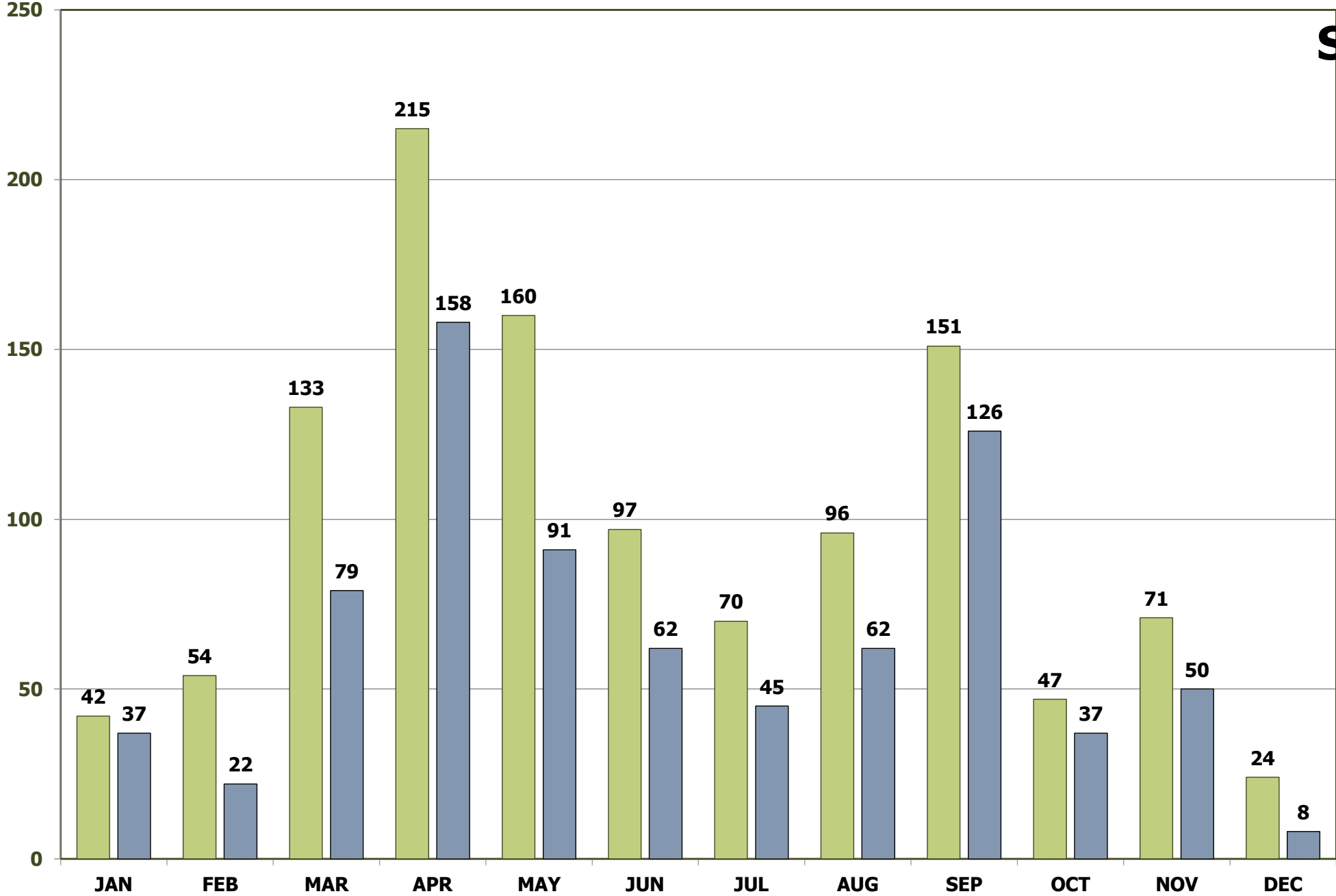
South Carolina Tornadoes (1950 to Present)



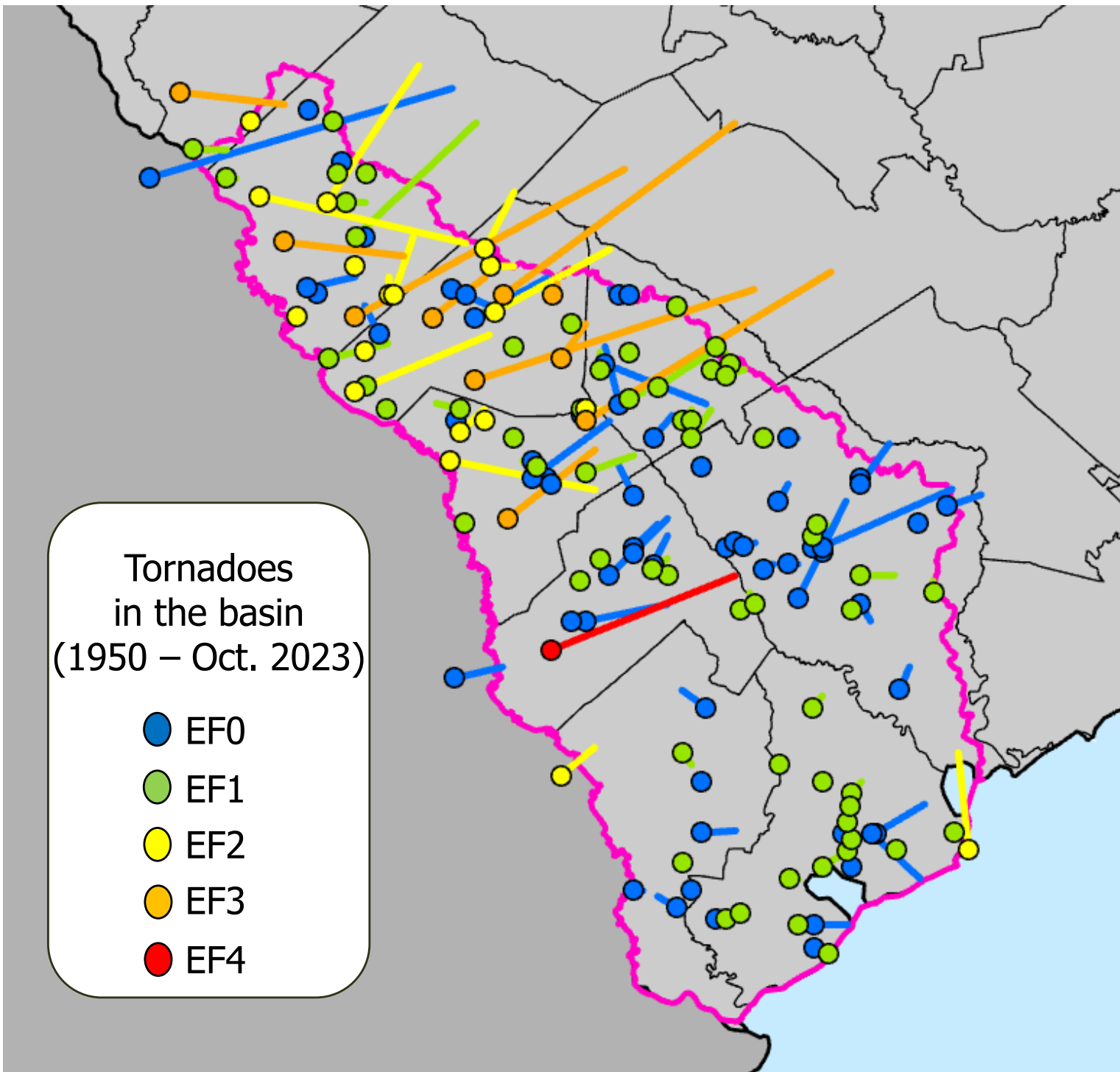
Significant Tornadoes, Rated (E)F-2 Or Higher In South Carolina 1950-Present



South Carolina Tornadoes By Month

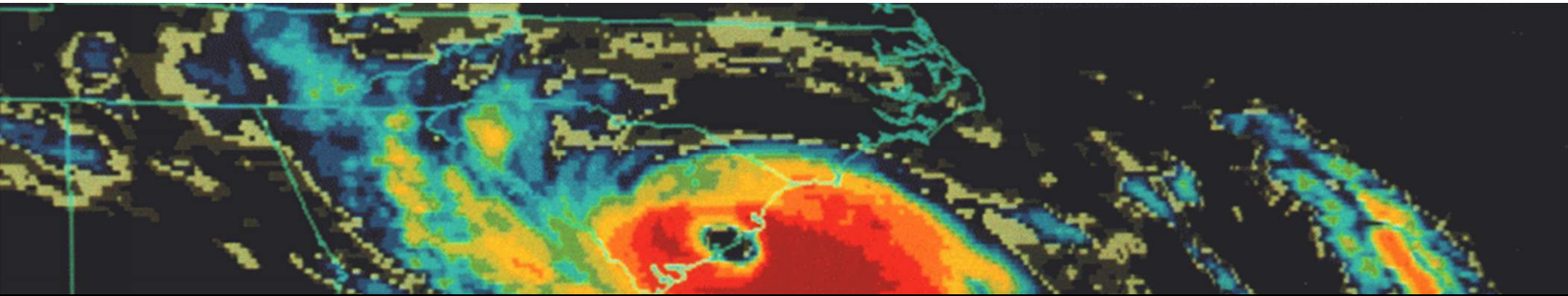


■ 1950-
2023



Tornado numbers for the basin

- 157 tornadoes have affected the basin
- Of that, 151 tornadoes have spawned inside the basin
- By Category (tracking through the basin)
 - 60 EF0s
 - 68 EF1s
 - 18 EF2s
 - 10 EF3s
 - 1 EF4s



Tropical Cyclones



Tropical Storms are part of South Carolina's Climatology and History.

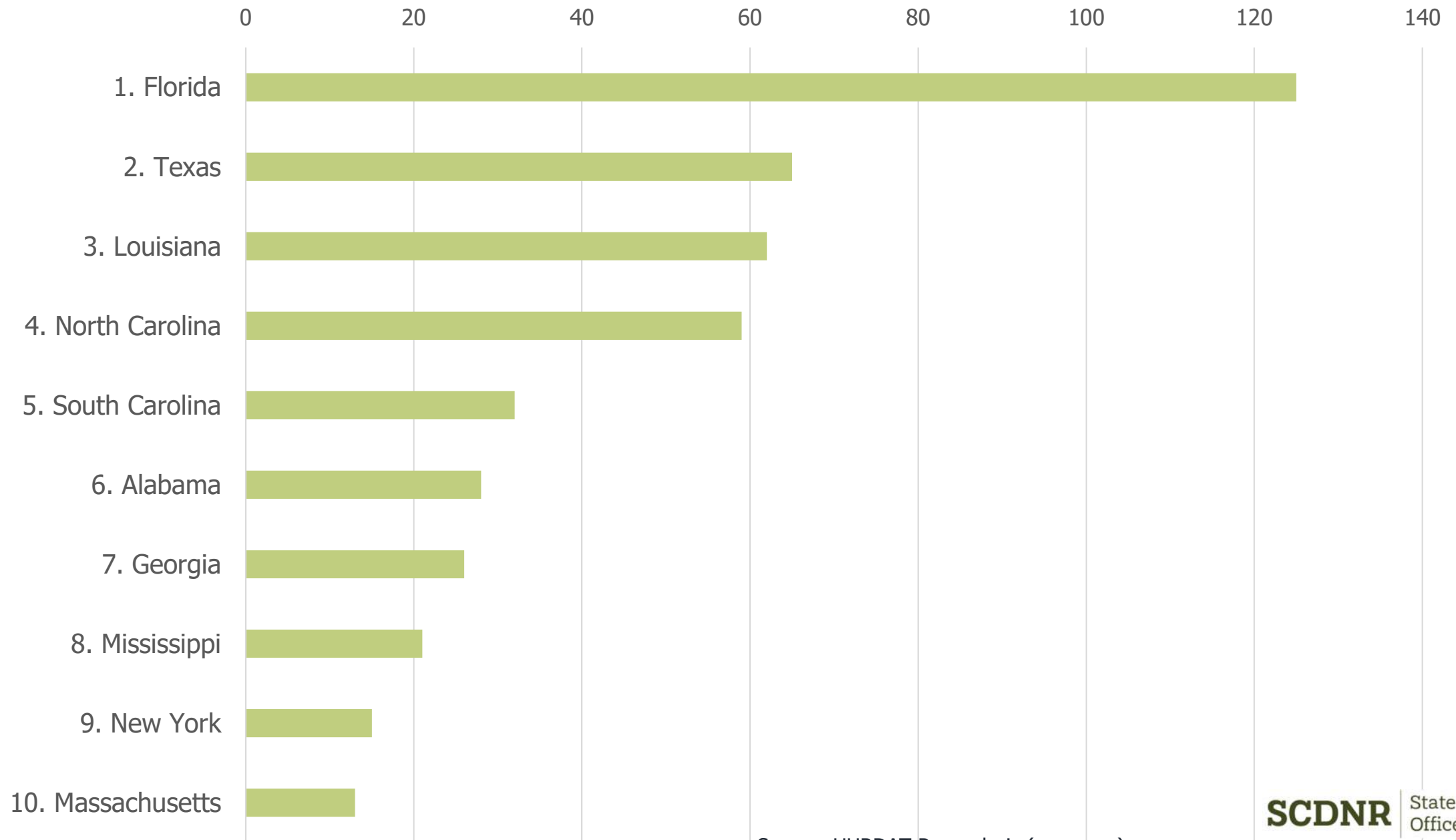
Impacts are not limited to the coast.

Inland portions of the state have been affected by:

- Heavy rains
- Flooding
- High winds
- Tornadoes

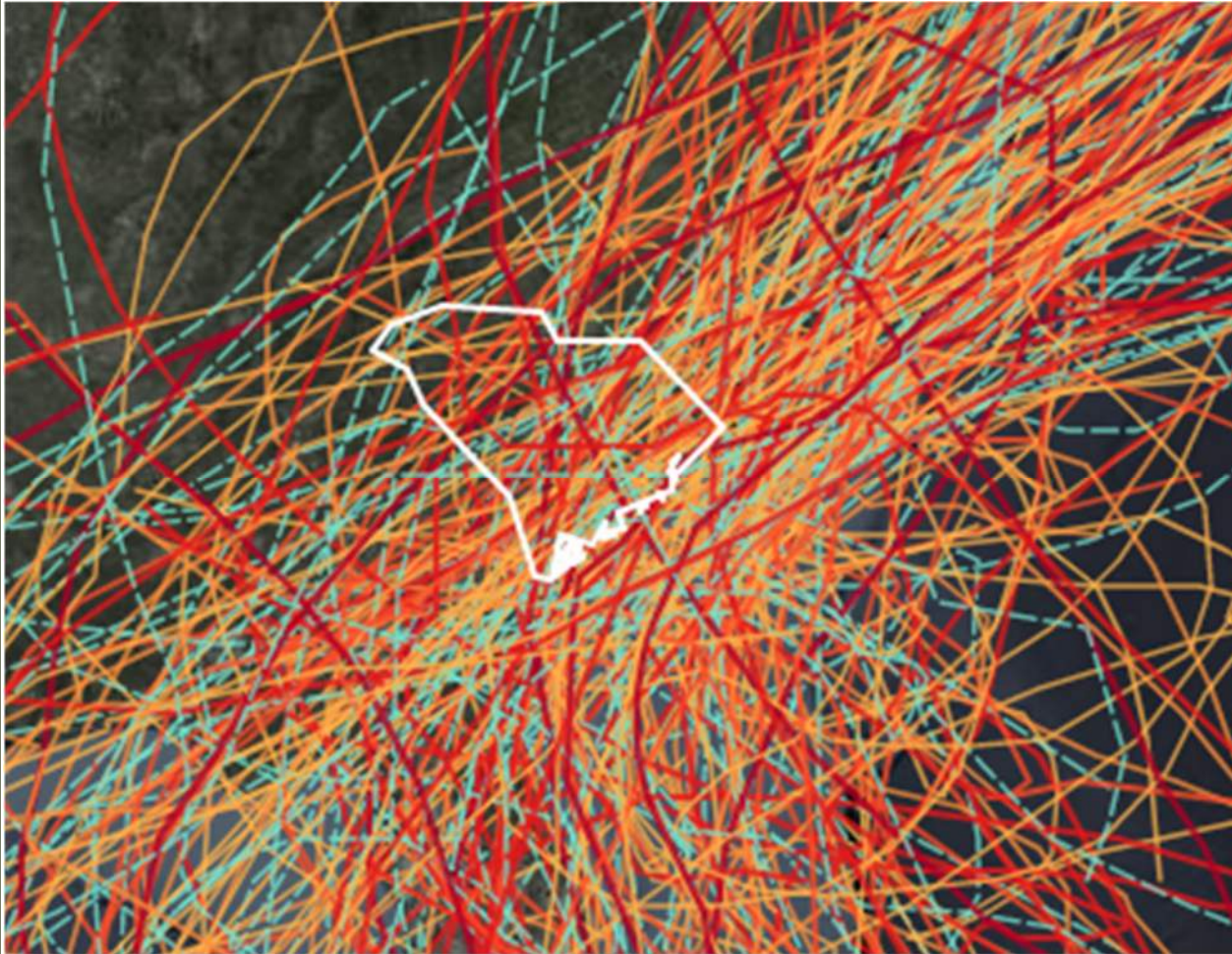


10 States Where Hurricanes Hit the Most



Source: [HURDAT Re-analysis \(noaa.gov\)](https://www.noaa.gov/hurricane/hurdat)

Tracks Of Tropical Cyclones To Impact South Carolina



86%

CHANCE OF BEING
IMPACTED BY A TROPICAL
SYSTEM, BASED ON THE LAST 50
YEARS OF DATA

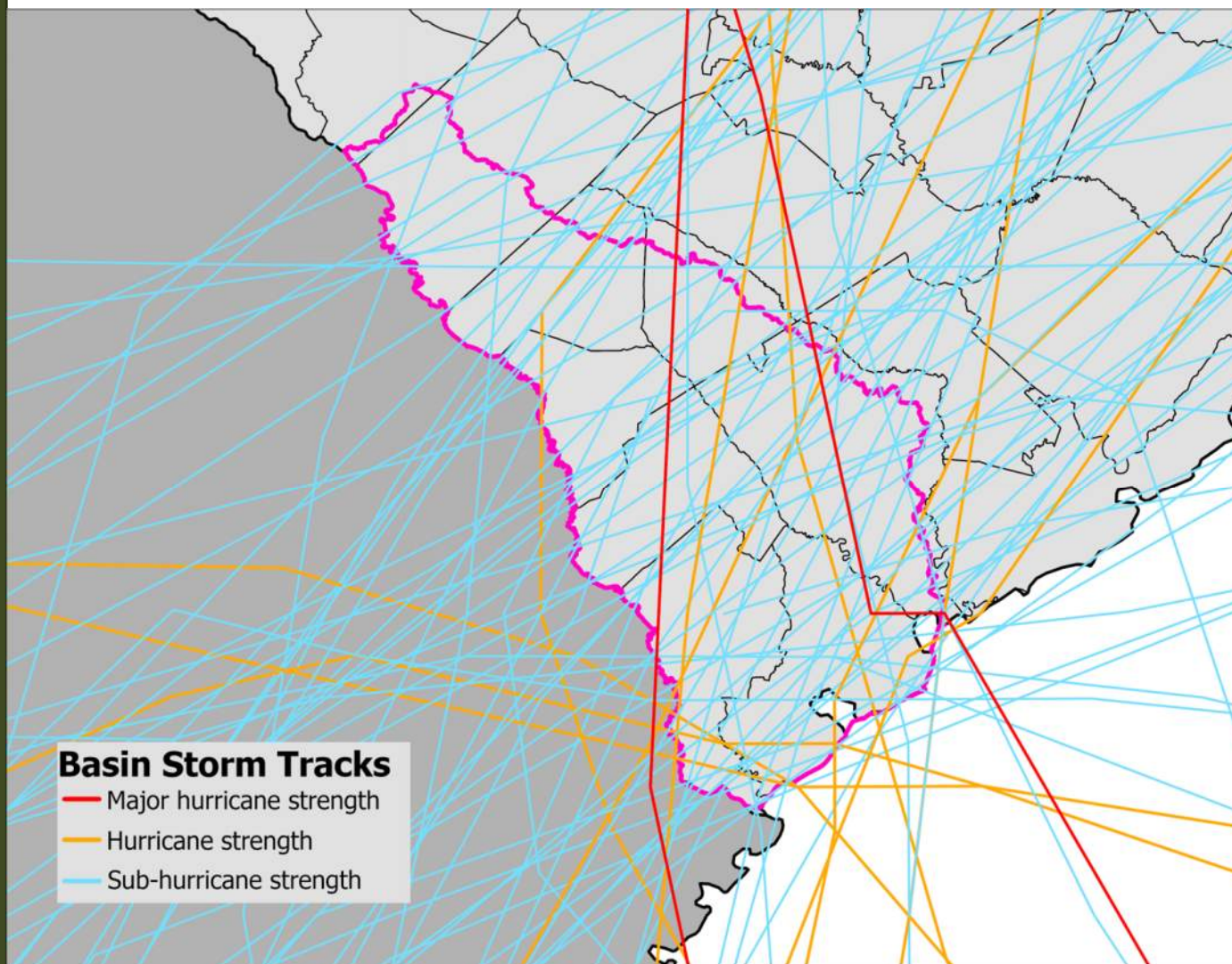
THE BREAKDOWN:

*based on
1851-2023
period of record

- 286** SYSTEMS HAVE IMPACTED SC
- 133** HAVE TRACKED THROUGH SC
- 44** MADE DIRECT LANDFALL ON THE SC COAST
- 31** WERE CATEGORY 1 OR HIGHER
- 25** HURRICANES MADE DIRECT LANDFALL ON SC COAST
- 5** MAJOR (CAT. 3+) HURRICANE IMPACTS
- 4** MAJOR (CAT. 3+) LANDFALLS

LOWER SAVANNAH- SALKEHATCHIE BASIN TROPICAL CYCLONES BY THE NUMBERS

*based on
1851-2022 period of record



THE BREAKDOWN:

- 76** HAVE TRACKED INTO THE BASIN
- 2** WERE SUBTROPICAL STRENGTH
- 10** WERE EXTRATROPICAL LOW STRENGTH
- 13** WERE TROPICAL DEPRESSION STRENGTH
- 39** WERE TROPICAL STORM STRENGTH
- 14** WERE HURRICANE STRENGTH
- 2** WERE MAJOR HURRICANE STRENGTH



Thank you

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