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2021 Weather in Review: Richmond National Battlefield Park

In all, 2021 was much warmer than average but had near-normal total precipitation. The year ended as the 9th warmest and 62nd wettest on record. Data indicate that over the long term, annual average temperature and annual total precipitation have both increased (+0.12 °F per decade and +0.38 inches per decade, respectively).

This brief provides county-scale weather data averaged from all of the counties surrounding the park, including data from 1895–2021 (i.e. period of record). These counties include Caroline, Chesterfield, Hanover, and Henrico counties, VA. Data and analyses herein are courtesy of the National Oceanic and Atmospheric Administration's (NOAA) Climate at a Glance Program.

Temperature

In total, 2021 was the 9th warmest year ever recorded at the park with autumn and summer being particularly warm (Figure 1). Nine months had higher than normal temperatures with October and December both being more than 6 °F above long-term averages (Table 1).

Table 1. Average monthly, average annual, and departures from long-term average temperatures. Departures from average are based on a comparison of 2021 average temperatures to relevant averages from 1895-2020. Data are available at <https://www.ncdc.noaa.gov/cag/county/time-series>.

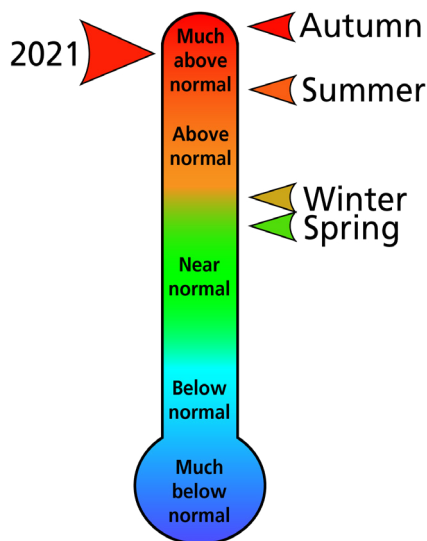


Figure 1. Seasonal and annual temperature rankings. An arrow at the top of the figure would represent the warmest year/season on record (since 1895); at the bottom, the coldest year/season on record. Data are available at <https://www.ncdc.noaa.gov/cag/county/rankings>.

Month/ Year	Average temperature (°F)	Departure from average (°F)
January	37.8	+1.1
February	37.8	-0.9
March	50.0	+3.1
April	57.6	+1.3
May	64.3	-1.2
June	74.7	+1.2
July	78.5	+1.0
August	78.5	+2.6
September	70.8	+1.2
October	64.4	+6.3
November	46.3	-1.4
December	47.4	+8.4
2021	59.0	+1.9

Precipitation

The year 2021 was a near-normal year for precipitation and was the 62nd wettest year recorded in the park's three counties (Figure 2). In total, 43.8 inches of precipitation fell, just 0.2 inches above the long-term average (Table 2).

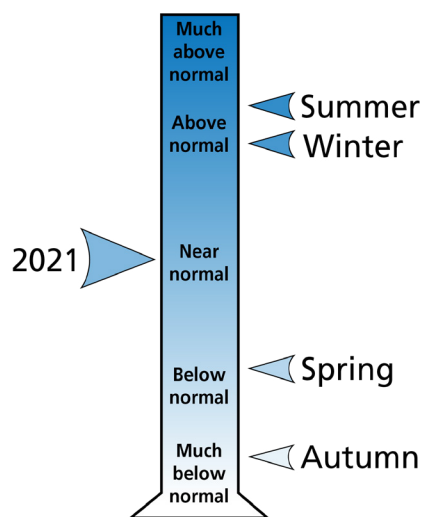


Figure 2. Seasonal and annual precipitation rankings. An arrow at the top of the figure would represent the wettest year/season on record (since 1895); at the bottom, the driest year/season on record. Data are available at <https://www.ncdc.noaa.gov/cag/county/rankings>.

Table 2. Monthly and annual total precipitation and departure from long-term averages. Departures from average are based on a comparison of 2021 precipitation to relevant averages from 1895–2020. Data are available at <https://www.ncdc.noaa.gov/cag/county/time-series>.

Month/Year	Total precipitation (in.)	Departure from average (in.)
January	2.74	-0.57
February	5.06	+2.12
March	3.80	+0.09
April	2.54	-0.80
May	2.67	-1.26
June	4.03	+0.02
July	5.62	+1.15
August	8.07	+3.42
September	3.46	-0.28
October	3.90	+0.57
November	0.76	-2.16
December	1.15	-2.09
2021	43.78	+0.20

Temperature and Precipitation (1895–2021)

Data for counties surrounding the park indicate that annual average temperature has increased approximately +0.12 °F per decade and annual total precipitation has increased approximately +0.38 inches per decade since 1895 (Figure 3).

National Park Service scientists have forecast future changes in climate too. Models estimate that by 2100, annual average temperature at the park will increase by 2.7–8.5 °F (from a best-case to worst-case scenario, respectively). Annual total precipitation is expected to increase by 8–13% (see [Gonzalez et al., 2018](#) for details).

Data in this brief are preliminary and were retrieved from NOAA on 01/10/22.

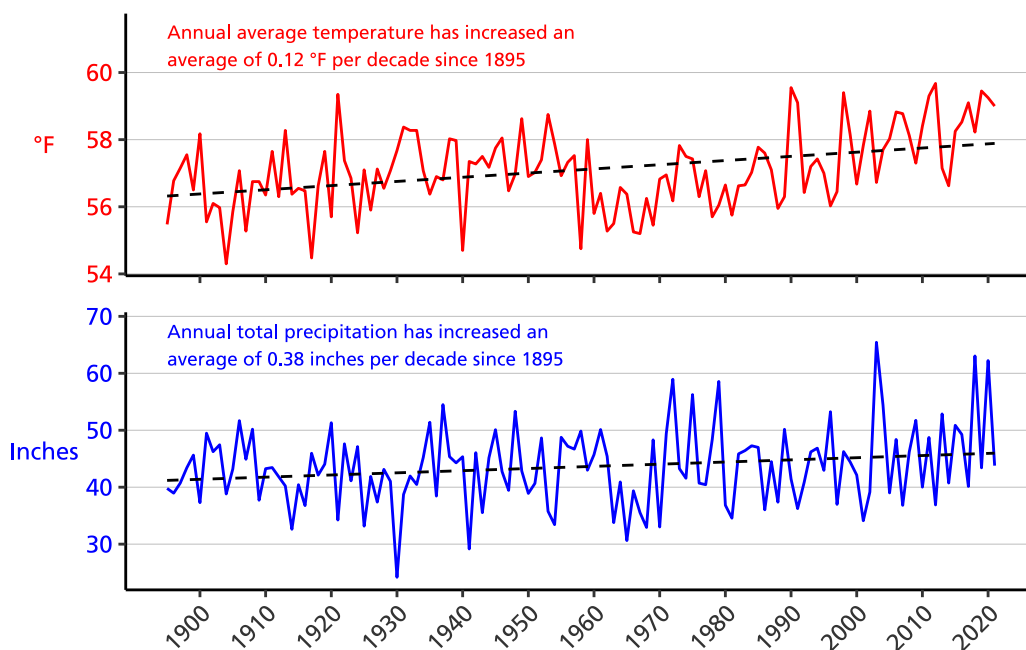


Figure 3. Annual average temperature (°F) and annual total precipitation (in.) from 1895–2021 for counties surrounding the park. Dashed lines represent linear estimates of change. Data are available at <https://www.ncdc.noaa.gov/cag/county/time-series>.

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