



NPS

## 2022 Weather in Review: Shenandoah National Park

In all, 2022 was warmer and wetter than average. The year ended as the 21<sup>st</sup> warmest and 35<sup>th</sup> wettest on record (since 1895). Data indicate that over the long term, annual average temperature and annual total precipitation have both increased in the counties surrounding the park (+0.2 °F per decade and +0.41 inches per decade, respectively).

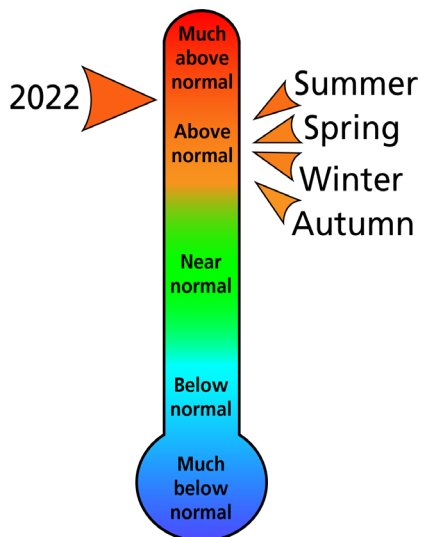
This brief provides county-scale weather data averaged from all of the counties surrounding the park, including

data from 1895–2022 (i.e., period of record). These counties include Albemarle, Augusta, Greene, Madison, Page, Rappahannock, Rockingham, and Warren counties, VA. Individual weather station data may vary from what is reported here. In particular, high elevations in the park may have experienced weather conditions that are different from those displayed in this brief. Data and analyses herein are courtesy of the National Oceanic and Atmospheric Administration's (NOAA) Climate at a Glance Program.

### Temperature

In total, 2022 was the 21<sup>st</sup> warmest year recorded in the counties surrounding the park, and all seasons were warmer than normal (Figure 1). Ten months had higher than normal temperatures with February, March, and November all being at least 3.9 °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 2022 average temperatures to relevant averages from 1895–2021. Data are available at <https://www.ncdc.noaa.gov/cag/county/time-series>.



| Month/<br>Year | Average<br>temperature (°F) | Departure from<br>average (°F) |
|----------------|-----------------------------|--------------------------------|
| January        | 30.0                        | –2.3                           |
| February       | 38.2                        | +4.1                           |
| March          | 46.4                        | +3.9                           |
| April          | 52.8                        | +0.6                           |
| May            | 63.0                        | +1.3                           |
| June           | 70.8                        | +1.4                           |
| July           | 75.1                        | +1.9                           |
| August         | 73.0                        | +1.3                           |
| September      | 66.3                        | +0.9                           |
| October        | 52.3                        | –2.3                           |
| November       | 47.8                        | +3.9                           |
| December       | 35.9                        | +1.0                           |
| <b>2022</b>    | <b>54.3</b>                 | <b>+1.3</b>                    |

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. Winter = Jan–Mar, Spring = Apr–June, Summer = July–Sept, Autumn = Oct–Dec. Data are available at <https://www.ncdc.noaa.gov/cag/county/rankings>.

# Precipitation

The year 2022 was the 35<sup>th</sup> wettest year recorded across the park's eight counties (Figure 2). All seasons were near normal or above normal for precipitation. In total, 44.5 inches of precipitation fell (Table 2).

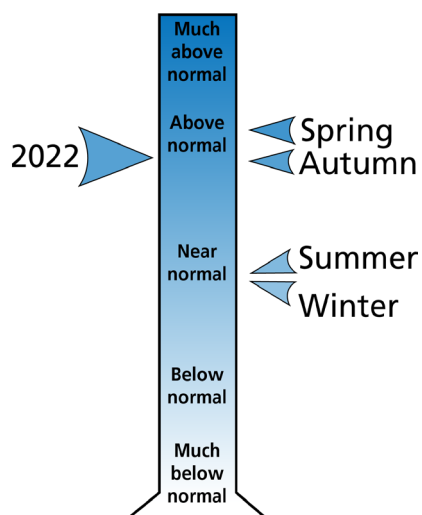


Figure 2. Seasonal and annual precipitation rankings. An arrow at the top of the figure would represent the wettest year/season on record (since 1895); at the bottom, the driest year/season on record. Winter = Jan–Mar, Spring = Apr–June, Summer = July–Sept, Autumn = Oct–Dec. Data are available at <https://www.ncdc.noaa.gov/cag/county/rankings>.

Table 2. Monthly and annual total precipitation and departure from long-term averages. Departures from average are based on a comparison of 2022 precipitation to relevant averages from 1895–2021. Data are available at <https://www.ncdc.noaa.gov/cag/county/time-series>.

| Month/<br>Year | Total<br>precipitation (in.) | Departure from<br>average (in.) |
|----------------|------------------------------|---------------------------------|
| January        | 3.73                         | +0.83                           |
| February       | 1.92                         | –0.60                           |
| March          | 2.58                         | –0.76                           |
| April          | 3.41                         | +0.11                           |
| May            | 6.04                         | +2.08                           |
| June           | 4.42                         | +0.29                           |
| July           | 4.94                         | +0.83                           |
| August         | 3.76                         | –0.34                           |
| September      | 2.47                         | –1.18                           |
| October        | 2.79                         | –0.62                           |
| November       | 4.33                         | +1.44                           |
| December       | 4.05                         | +1.09                           |
| <b>2022</b>    | <b>44.46</b>                 | <b>+3.16</b>                    |

## Temperature and Precipitation (1895–2022)

Data for counties surrounding the park indicate that annual average temperature has increased approximately +0.2 °F per decade and annual total precipitation has increased approximately +0.41 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 3.1–8.8 °F (from a best-case to worst-case scenario, respectively). Annual total precipitation is expected to increase by 8–14% (see [Gonzalez et al., 2018](#) for details).

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

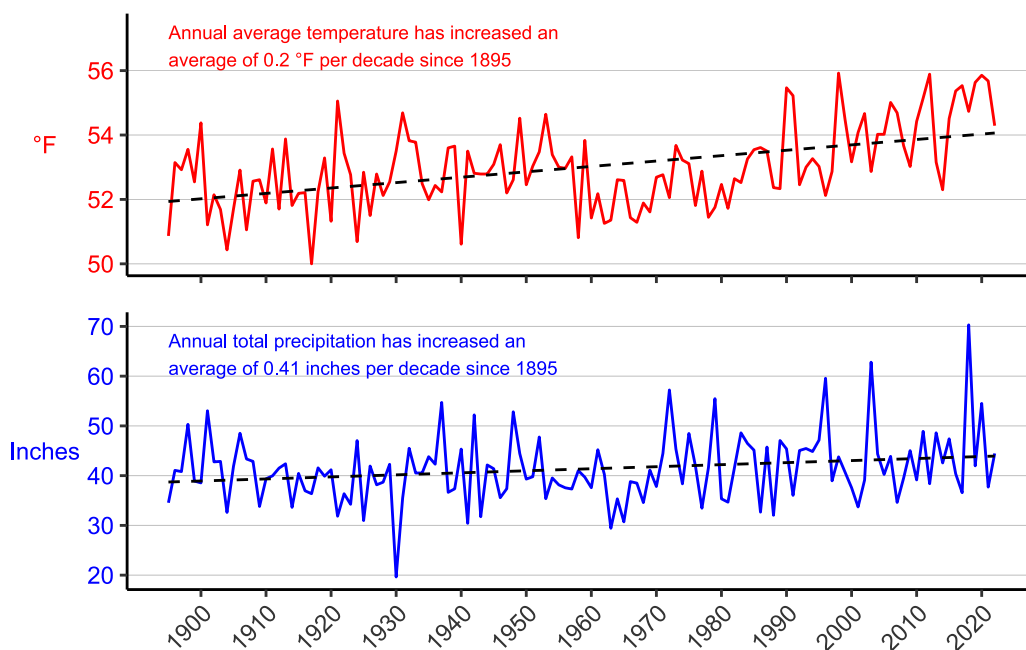


Figure 3. Annual average temperature (°F) and annual total precipitation (in.) from 1895–2022 for counties surrounding the park. Dashed lines represent linear estimates of change. Data are available at <https://www.ncdc.noaa.gov/cag/county/time-series>.

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**Parks monitored:** Appomattox Court House NHP • Booker T. Washington NM • Eisenhower NHS • Fredericksburg & Spotsylvania NMP • Gettysburg NMP • Hopewell Furnace NHS • Petersburg NB • Richmond NBP • Shenandoah NP • Valley Forge NHP