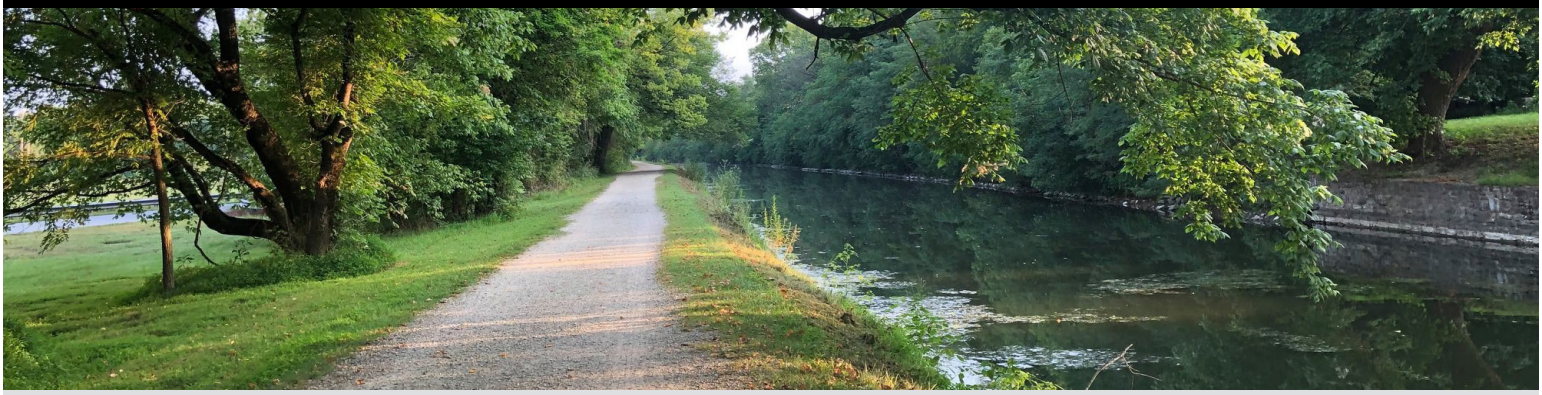
National Capital Region Network

National Park Service
U.S. Department of the Interior

Inventory and Monitoring Division



NPS photo

2021 Weather in Review: Chesapeake & Ohio Canal National Historical Park

In all, 2021 was very warm, and the year ended as the 4th warmest year on record (since 1895). In contrast, annual total precipitation was close to normal, though the summer was very wet and the autumn was extremely dry.

Data indicate that over the long term, annual average temperature and annual total precipitation have both increased (+0.20 °F per decade and +0.20 inches per decade, respectively).

This brief provides county-scale weather data for Washington County, Maryland. In particular, the brief summarizes 2021 weather and compares it to 126 years of historical data (1895–2020). 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 4th warmest year ever recorded at the park. All of the seasons were warmer than normal (Figure 1). Over the year, ten months had higher than normal temperatures, with October and December both being more than 6.5 °F above long-term averages (Table 1).

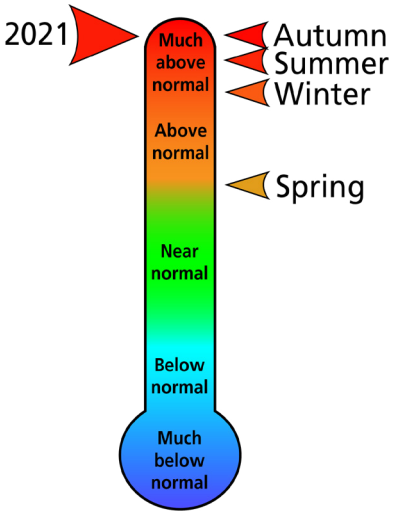


Figure 1. Seasonal and annual temperature rankings. An arrow at the top of the figure would represent the warmest year/season on record (since 1895); at the bottom, the coldest year/season on record. Winter = Jan–Mar, Spring = Apr–June, Summer = July–Sept, Autumn = Oct–Dec. Data are available at www.ncdc.noaa.gov/cag/county/rankings.

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

Month/ Year	Average temperature (°F)	Departure from average (°F)
January	33.3	+3.2
February	32.0	+0.0
March	45.4	+4.4
April	53.8	+2.4
May	60.4	-1.2
June	71.6	+1.6
July	75.5	+1.1
August	76.3	+3.9
September	67.6	+2.0
October	60.8	+6.7
November	42.3	-0.6
December	41.4	+8.1
2021	55.0	+2.6

Precipitation

Though total precipitation for the year was near normal, 2021 had a very wet summer and an extremely dry autumn (Figure 2). The year ended as the 63rd wettest on record. In all, 38.78 inches of precipitation fell, 0.57 inches less than the long-term average (Table 2).

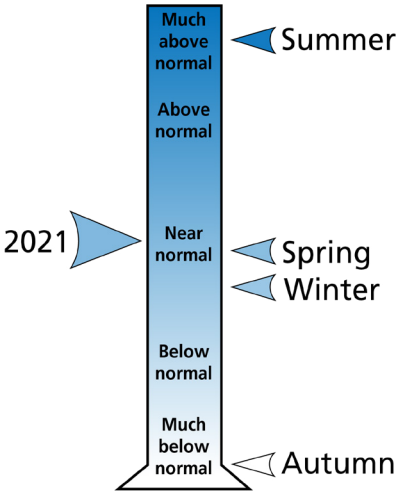


Figure 2. Seasonal and annual precipitation rankings. An arrow at the top of the figure would represent the wettest year/season on record (since 1895); at the bottom, the driest year/season on record. Winter = Jan–Mar, Spring = Apr–June, Summer = July–Sept, Autumn = Oct–Dec. Data are available at https://www.ncdc.noaa.gov/cag/county/rankings.

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

Month/ Year	Total precipitation (in.)	Departure from average (in.)
January	1.83	-0.96
February	3.50	+1.04
March	2.45	-0.87
April	2.98	-0.36
May	3.83	-0.04
June	3.97	+0.07
July	2.37	-1.37
August	4.57	+0.92
September	8.90	+5.53
October	2.12	-1.06
November	1.49	-1.32
December	0.77	-2.14
2021	38.78	-0.57

Temperature and Precipitation (1895–2021)

Data for Washington County, MD indicate that annual average temperature has increased approximately +0.20 °F per decade and annual total precipitation has increased approximately +0.20 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 3.1–9.0 °F (from a best-case to worst-case scenario, respectively). Annual total precipitation is expected to increase by 7–14% (see Gonzalez et al., 2018 for details).

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

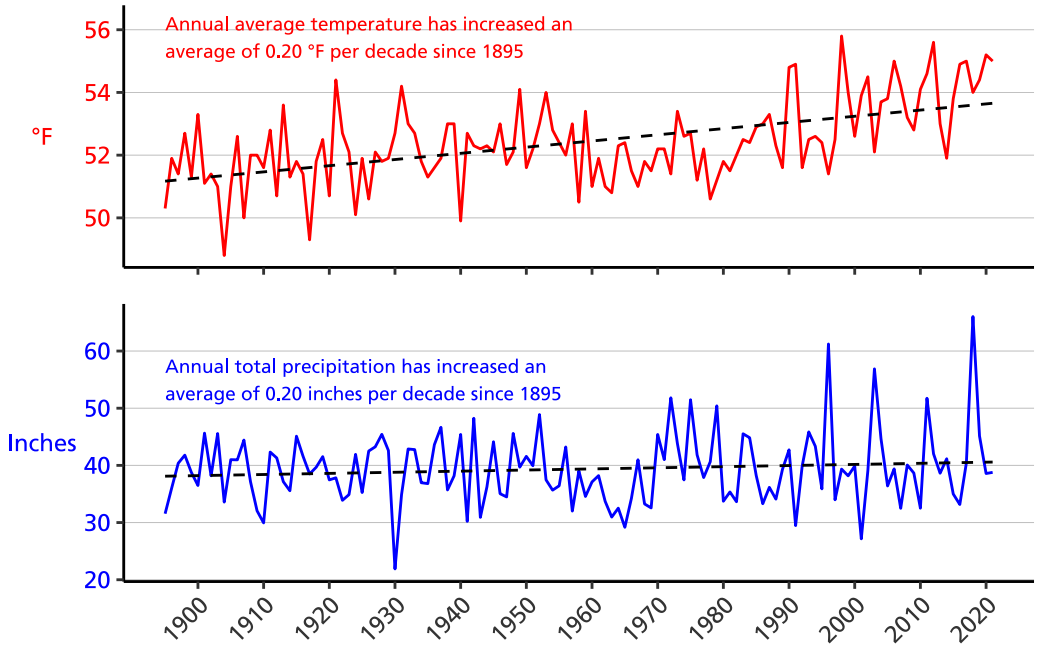


Figure 3. Annual average temperature (°F) and annual total precipitation (in.) from 1895–2021 for Washington County, MD. Dashed lines represent linear estimates of change. Data are available at www.ncdc.noaa.gov/cag/county/time-series.

Contact
Jeb Wofford
jeb_wofford@nps.gov
Biologist / Science Writer

National Capital Region Network
Liz Matthews - Program Manager
elizabeth_matthews@nps.gov
www.nps.gov/im/ncrn

Parks monitored: *Antietam NB • Catoctin Mountain Park • Chesapeake & Ohio Canal NHP • George Washington MP • Harpers Ferry NHP • Manassas NBP • Monocacy NB • National Capital Parks - East • Prince William Forest Park • Rock Creek Park • Wolf Trap NP for PA*

February 2022