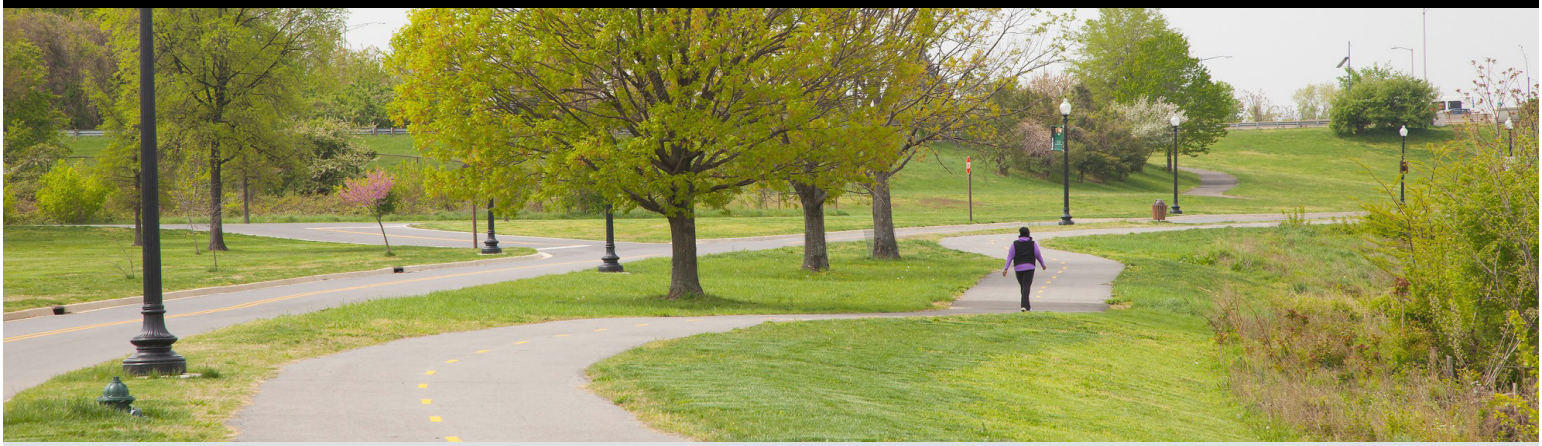
National Capital Region Network

National Park Service
U.S. Department of the Interior

Inventory and Monitoring Division



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2021 Weather in Review: National Capital Parks-East

In all, 2021 was extremely warm, and the year ended as the 3rd warmest 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 (+0.24 °F per decade and +0.40 inches per decade, respectively).

This brief provides county-scale weather data for Washington, D.C. 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 3rd warmest year ever recorded at the park. All of the seasons were very warm (Figure 1). Eleven months had higher than normal temperatures with March, October, and December all being at least 4.5 °F above long-term averages (Table 1).

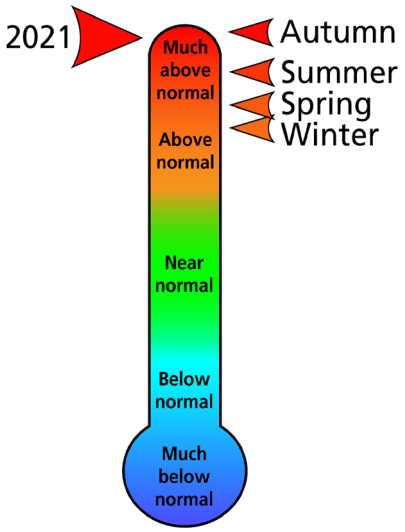

Figure 1. Seasonal and annual temperature rankings. An arrow at the top of the figure would represent the warmest year/season on record (since 1895); at the bottom, the coldest year/season on record. Winter = Jan–Mar, Spring = Apr–June, Summer = July–Sept, Autumn = Oct–Dec. Data are available at www.ncdc.noaa.gov/cag/county/rankings.

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	36.7	+2.8
February	35.8	+0.2
March	48.8	+4.5
April	56.4	+2.2
May	64.0	+0.0
June	74.8	+2.4
July	79.0	+2.2
August	78.5	+3.5
September	70.8	+2.3
October	64.4	+7.3
November	45.8	-0.3
December	45.8	+8.9
2021	58.4	+3.0

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 48th wettest on record. In all, 43.1 inches of precipitation fell, about 1 inch more than the long-term average (Table 2).

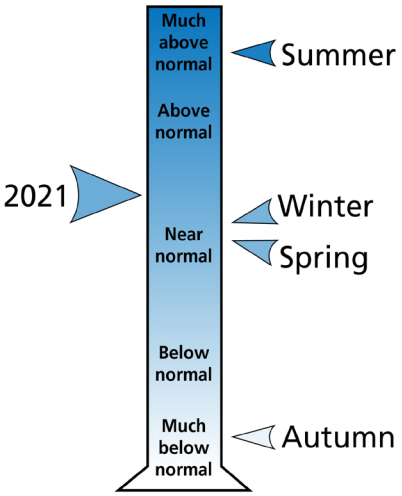

Figure 2. Seasonal and annual precipitation rankings. An arrow at the top of the figure would represent the wettest year/season on record (since 1895); at the bottom, the driest year/season on record. Winter = Jan–Mar, Spring = Apr–June, Summer = July–Sept, Autumn = Oct–Dec. Data are available at www.ncdc.noaa.gov/cag/county/rankings.

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	1.86	-1.16
February	4.13	+1.35
March	3.40	-0.11
April	3.00	-0.35
May	3.62	-0.29
June	4.41	+0.53
July	4.19	-0.02
August	7.95	+3.66
September	5.00	+1.32
October	3.88	+0.65
November	0.98	-1.94
December	0.68	-2.60
2021	43.10	+1.03

Temperature and Precipitation (1895–2021)

Data for Washington, D.C. indicate that annual average temperature has increased approximately +0.24 °F per decade and annual total precipitation has increased approximately +0.40 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 7–14% (see Gonzalez et al., 2018 for details).

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

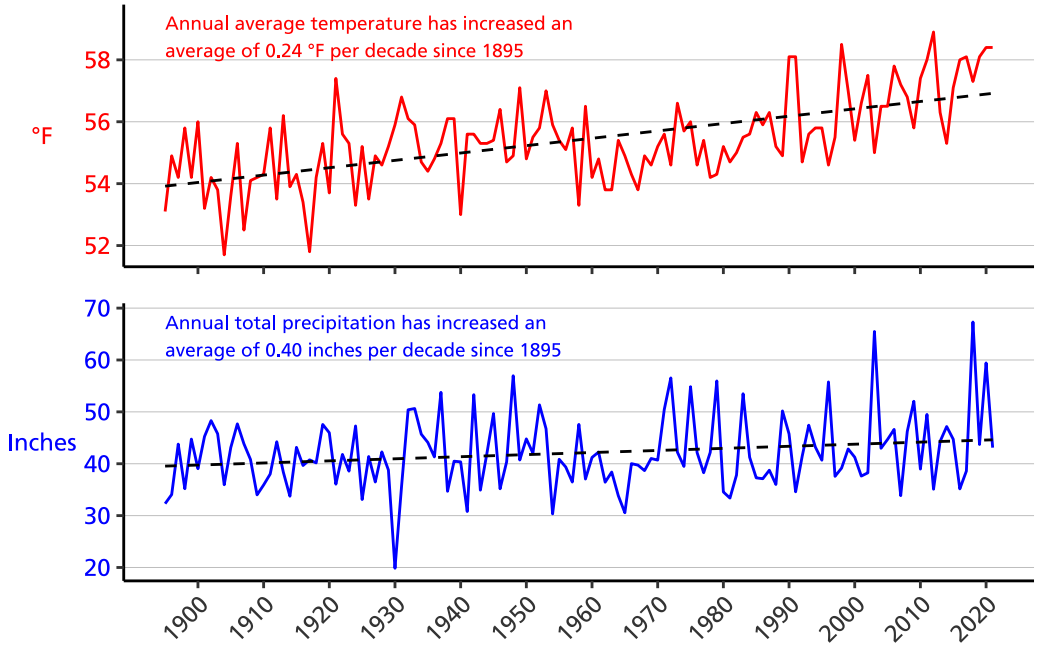

Figure 3. Annual average temperature (°F) and annual total precipitation (in.) from 1895–2021 for Washington, D.C. Dashed lines represent linear estimates of change. Data are available at www.ncdc.noaa.gov/cag/county/time-series.

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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