



2020 Weather in Review: Thomas Stone National Historic Site

Weather and climate play significant roles in driving both physical and ecological processes. For example, forest stand dynamics and ecology are affected by meteorological and climatological events such as wind, ice storms, and drought. For research and long-term ecological monitoring, weather and climate data provide the potential for correlations to be made with observed physical and ecological pattern data. This resource brief provides a summary of both historic and current (2020) weather data for [Thomas Stone National Historic Site](#), Maryland (MD).

Temperature

Overall, 2020 was the warmest year on record, with an average temperature of 59.4°F — 3.4 degrees higher than the average annual temperature (Figure 1). Seasonally, summer, autumn and winter fell with “much above normal” temperatures, while spring fell within “near normal” temperatures. Nine months had greater than 2 degrees above the average monthly temperature, including January, February, March, June, July, August, October, November and December, with March having the greatest increase in temperature at 7.0 degrees above average. Only April, May, and September had lower than average monthly temperatures (Table 1).

Table 1. Charles County, Maryland average monthly, average annual, and departures from long-term average temperatures. Departures from average are based on a comparison of 2020 average temperatures to relevant averages from 1895-2019. Data are available at NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series, published January 2021, retrieved on January 13, 2021 from https://www.ncdc.noaa.gov/cag/county/time-series/MD-017/tavg/all/12/2020-2020?base_prd=true&begbaseyear=1895&endbaseyear=2019&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2020.

Month (2019)	Average temperature (°F)	Departure from long-term average temperature (°F)
January	41.3	+6.6
February	43.1	+6.8
March	52.0	+7.0
April	54.2	-0.5
May	62.3	-2.1
June	74.9	+2.2
July	82.2	+5.2
August	78.2	+2.9
September	68.6	-0.4
October	60.8	+3.1
November	53.4	+6.6
December	41.4	+3.7
Annual	59.4	+3.4

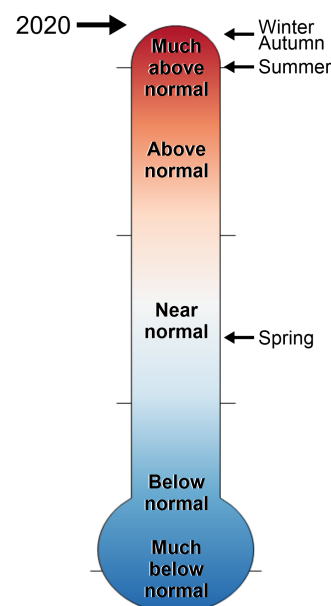


Figure 1. Charles County, Maryland annual and seasonal temperature rankings from 1895-2020. Of the 126 records, 2020 was the warmest year. Seasonally, it was the 3rd warmest autumn and winter, 59th coolest spring, and 10th warmest summer. Data are available at NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series, published January 2021, retrieved on January 13, 2020 from <https://www.ncdc.noaa.gov/cag/county/rankings/MD-017/tavg/202012>.

Precipitation

Overall, 2020 was the 2nd wettest year on record with a total of 59.12 inches of precipitation (Figure 2, Table 2). Seasonally, summer and autumn had precipitation levels “much above normal” amounts. Spring was at “near normal” levels while winter fell to a “below normal” level. Eight of the months had higher average monthly precipitation averages, while four had lower. August was the wettest month at 7.93 inches above average, and March was the driest month at -1.44 inches below average.

Table 2. Charles County, Maryland monthly and annual total precipitation and departures from long-term average totals. Departures from average are based on a comparison of 2020 precipitation levels to relevant averages from 1895-2019. Data are available at NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series, published January 2021, retrieved on January 13, 2021 from https://www.ncdc.noaa.gov/cag/county/time-series/MD-017/pcp/all/12/2020-2020?base_prd=true&begbaseyear=1895&endbaseyear=2019&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2020.

Month (2019)	Total precipitation (in)	Departure from long-term average precipitation (in)
January	3.07	-0.10
February	2.92	+0.09
March	2.15	-1.44
April	5.37	+2.03
May	3.21	-0.67
June	2.70	-1.25
July	5.37	+1.09
August	12.24	+7.93
September	5.80	+2.16
October	5.27	+2.05
November	5.77	+2.92
December	5.25	+2.01
Annual	59.12	+16.83

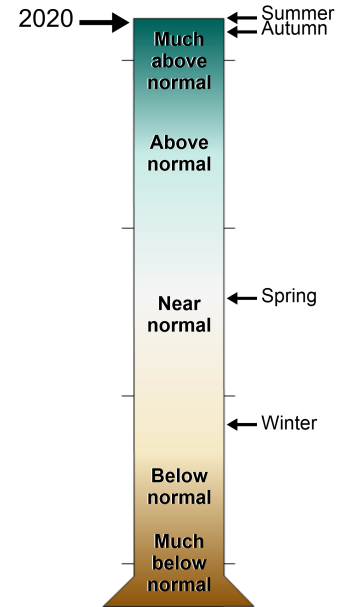


Figure 2. Charles County, Maryland annual and seasonal precipitation rankings from 1895-2020. Of the 126 records, 2020 was the 2nd wettest year. Seasonally, it was the 39th driest winter, 61st wettest spring, 1st wettest summer, and 4th wettest autumn. Data are available at NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series, published January 2021, retrieved on January 13, 2021 from <https://www.ncdc.noaa.gov/cag/county/rankings/MD-017/pcp/202012>.

Temperature and Precipitation Trends (1895–2020)

Temperature and precipitation data are gathered from the [U.S. Climate Division Database](https://www.noaa.gov/data/monitoring-assessments/climate-at-a-glance/county-time-series), which stores data from January 1895 through 2020, and can be accessed via the National Oceanic and Atmospheric Administration’s (NOAA) [National Centers for Environmental Information](https://www.noaa.gov/data/monitoring-assessments/climate-at-a-glance/county-time-series) (NCEI) website (Figure 3). Users can choose different geographic scales (i.e., global, national, statewide), different temporal scales, and display them in various types of graphical formats. Temperature and precipitation data presented in this brief are for Charles County, MD.

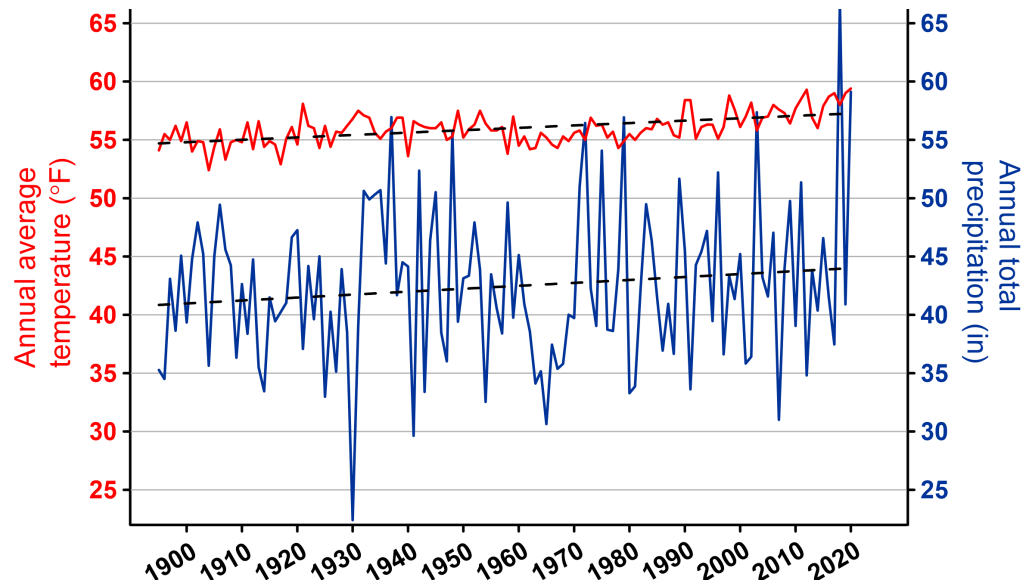


Figure 3. Charles County, Maryland yearly average temperature and precipitation from 1895 to 2020. Dashed lines represent the 1895-2020 trend for each parameter; +0.2°F/decade for temperature and +0.25 in/decade for precipitation. Data are available at NOAA National Centers for Environmental Information, Climate at a Glance: County Time Series, published January 2021, retrieved on January 13, 2021 from <https://www.ncdc.noaa.gov/cag/county/time-series/>.

Wind

Wind can impact forest conditions differently depending on wind speed (blow-overs, breakage, root damage) and direction (physiological processes, growth). Wind data are collected from a NOAA weather station located in Dahlgren, VA, and made available through [NOAA's Tides and Currents website](https://tidesandcurrents.noaa.gov/met.html?id=8635027) (Figure 4).

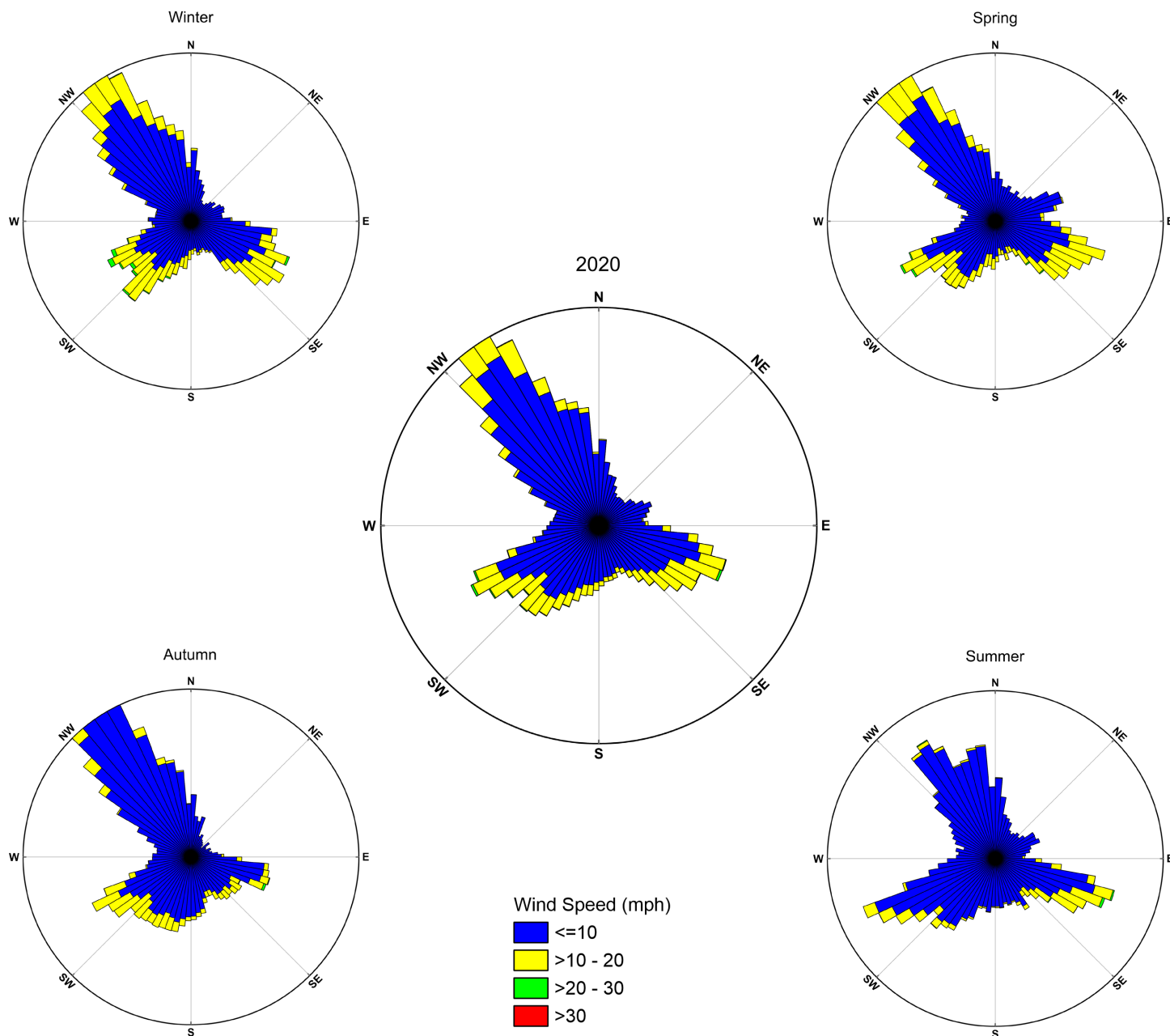


Figure 4. Wind charts reflecting both the seasonal and annual wind direction and speed in Dahlgren, Virginia during 2020. Each direction is divided up into categories called bins that are color coated to represent the frequency of a certain wind speed. The length of the bin represents the number of times wind comes from a given direction as well as the speed of the wind. The longer the length of the bin, the more frequent the given speed was recorded. Data are available at <https://tidesandcurrents.noaa.gov/met.html?id=8635027>.



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