



Mid-Atlantic Network

Weather & Climate Resource Brief



Appomattox Court House National Historical Park & Booker T. Washington National Monument **2013 Status & Trends**

In 2013, five weather observing stations were selected to report the weather of Appomattox Court House NHP and Booker T. Washington NM which are located in the Western Piedmont climate division.

2013 was characterized by:

- *higher than average temperatures at the beginning and end of the year, but overall, temperatures were close to the 30-year average;*
- *the growing was season slightly longer than the 30-year average;*
- *above-average rainfall resulted in the 10th wettest year in the last 119 years.*

Temperature: In 2013, temperatures were slightly below the 30-year normal despite a warm January, April, October and December. 2013 was the 53rd warmest year in the 119 year record for the

Western Piedmont.

The winter began milder than normal but February and March had below average temperatures (-0.2°F [0.1°C]) resulting in temperatures right around the 30-year average. Both spring and summer temperatures were close to the 30-year average and fall temperatures were slightly higher than normal. The number of hot days was well below average, with the highest readings topping out close to 94°F (34.4°C) compared to the long-term mean of 97°F (36°C). The number of sub-freezing days was well above normal, while the lowest temperatures of the year were about 9°F (13°C) above average. The length of the growing season was slightly shorter (less than one week) at all three locations reported for the parks.

Precipitation: Wetter conditions predominated in the beginning of the year

Objectives

1. *Document current status and long-term trends in air temperature and precipitation at multiple temporal scales (e.g., daily, monthly, seasonal, annual, and decadal) and spatial scales (e.g., individual stations and aggregated stations such as climate divisions) utilizing existing weather and climate monitoring programs and datasets.*

and despite a couple of dry months, 2013 was wetter than normal. All monitoring stations reported greater than average rainfall resulting in the 10th wettest year on record. Annual rainfall exceeded the 30-yr average at each monitoring location with Roanoke showing the largest positive departure with close to 12 in (305 mm) more rainfall than the long-term average.

January had very heavy precipitation, while February and March were drier than normal followed by the 6th wet-



Importance

Climate is a dominant factor driving physical and ecological processes, and is responsible for short- and long-term changes that have profound effects on park ecosystems. Individual storm events do occasionally alter the structure of plant and animal communities. Future climate changes will likely cause migrations of plant and animal communities both northward and to higher

elevations. Superimposed on these trends is a long history of human use in the region, with its associated landscape fragmentation that will influence the ability of the plant and animal communities of the MIDN's parks to adapt to climate changes. Because of its influence on the ecology of the park units and the surrounding areas, climate was identified as a high-priority vital sign.

Management Applications

- Illustrate the effects of local climate change.
- Document how yearly weather compares to long-term average.
- Help interpret natural resource observations in relation to that year's weather.
- Provide a baseline for future comparisons.

Long-term Monitoring

A total of 32 weather observing stations were selected across the network based on their proximity to the network parks, the representativeness of the station to each park's elevation profile, the type and frequency of observations, the period of record of the data, data availability, and the percentage of time a station reports a particular parameter. Some of the stations with a longer period of record are used for comparison to a

30-year normal, while others are used to illustrate monthly averages. Two drought indices are used to estimate the severity of drought in an area. The Palmer Drought Severity Index (PDSI) is based on soil moisture, while the United States Drought Monitor (DM) – Drought Intensity Index is a synthesis of multiple indices (including the PDSI) and impacts which represents a consensus of federal and academic scientists.

2013 Status & Trends...

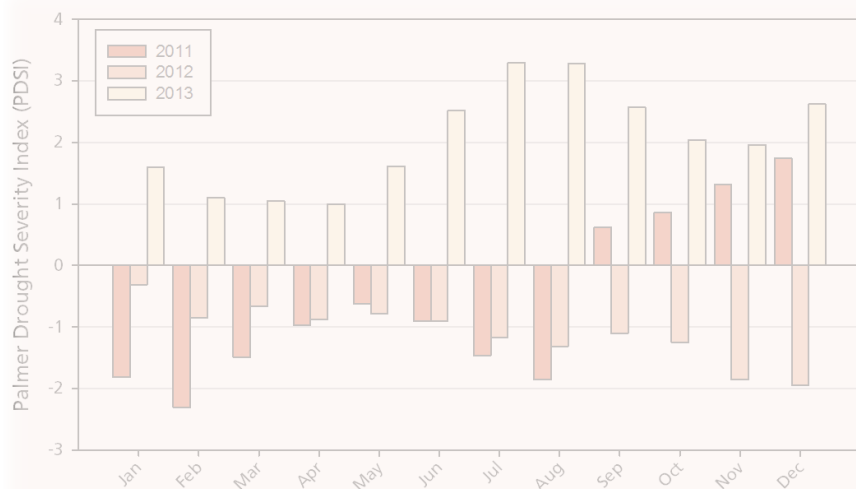
test spring on record. Rainfall varied throughout the summer but was near normal, even though September was the

driest month of the year. Precipitation increased in October and November, but December ended the year as the 9th wettest December on record. Snowfall was roughly normal at Lynchburg and

Roanoke but well above normal (more than double the average) at Appomattox and Huddleston. There were no effects of hurricanes or tropical storms experienced in the area, and the number of days with precipitation over 1 in was near normal across the region.

Drought: 2013 started with near normal conditions that remained into the spring. Wetter weather returned during the summer and persisted until December. As a result the PDSI remained at positive values throughout the year. Compared with previous years, 2013 was much wetter than 2011 winter and notably wetter than the autumn of 2012.

The full report can be found at: http://science.nature.nps.gov/im/units/midn/monitor/weather_climate.cfm.



Palmer Drought Severity Index (PDSI) for the Western Piedmont, 2011–2013. Positive values indicate periods of above normal precipitation (0 to 2: near normal; 2 to 3: moderate moisture; >3: very moist) and negative values indicate periods of drought (0 to 2: near normal; 2 to 3: moderate drought; >3: severe to extreme drought).

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Photos by Bill Tucker (front header and below) and James Comiskey (front footer).

A Final Note

The Weather and Climate Monitoring Protocol is led by Paul Knight, Pennsylvania State Climatologist, and his team including Kyle Imhoff, Chad Bahrmann, and Sonya Miller at the Pennsylvania State Climate Office. In addition to the summary information available in technical reports, a near real-time data stream is available for the selected weather observing stations, along with monthly, seasonal, and annual summaries at: <http://climate.met.psu.edu/NPS/interface.php>. This project is a collaborative effort with the Eastern Rivers and Mountains Network.



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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