



Mid-Atlantic Network

Weather & Climate Resource Brief



Fredericksburg & Spotsylvania NMP

Eisenhower National Historic Site & Gettysburg National Military Park 2014 Status & Trends

In 2014, two weather observing stations were selected to report the weather of Eisenhower National Historic Site and Gettysburg National Military Park. The parks are located in the Lower Susquehanna climate division of Pennsylvania.

2014 was characterized by:

- *Lower than average temperatures with a very cold winter and a cool summer.*
- *A mild spring and fall that resulted in a growing season that was much longer than average.*
- *Annual precipitation totals that were slightly less than normal.*

Temperature: In 2014, annual temperatures were below the 30-year normal despite a warm spring. Overall, 2014 tied as the 32nd coolest year in the 120 year record for the Lower Susquehanna.

The winter began colder than normal with January temperatures more than 7°F (4°C) lower than average in some locations. February and March were also unusually cold and the 2014 winter ultimately ranked as the 6th coldest since the late 1800's. Given the cold winter, the number of sub-freezing days for the year was above normal.

In contrast to the cold winter, the spring season (April – June) was unseasonably warm and was the 20th warmest on record for the area. The trend reversed again in summer with temperatures often 2-3°F (1-2°C) below normal and the summer being the 41st coolest on record. Overall, the number of hot days was about 30% less than normal.

Although November was very cold, a warm October and mild December created a slightly warmer than average fall season. The warm spring and fall helped

Objective

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.

create a growing season that was 23 days longer than the historic average.

Precipitation: Despite some unusual precipitation amounts during certain seasons, total precipitation for the year was only slightly below normal in the Lower Susquehanna.

January started dry but February was wetter than normal. Snowfall for the year was much higher than average with Biglerville reporting 39.8 inches (101.1 cm). The long-term average is 25.9 in (65.8 cm) of snow. All of the spring months were wet, making the spring the

Climate Change

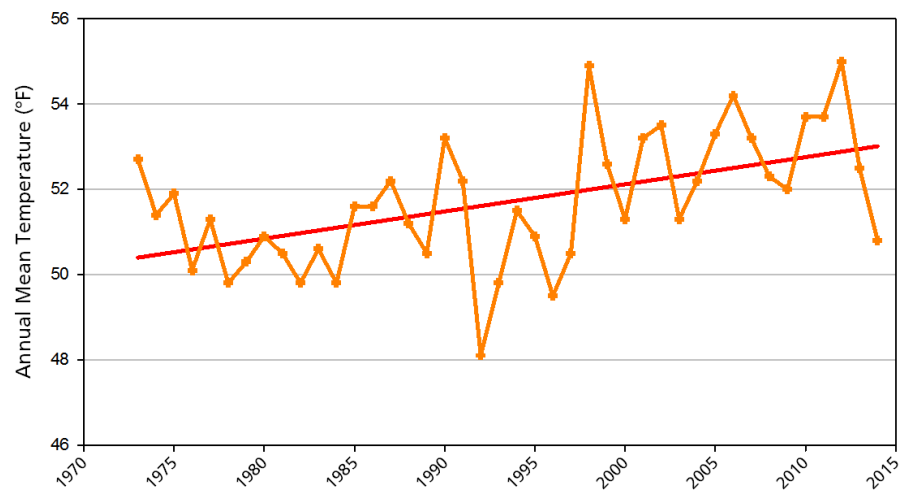
Climate change will affect natural and cultural resources in parks across the country. In order to characterize the extent of the threat, the National Park Service recently completed a climate change exposure assessment for 289 parks. In the study, recent climate conditions were compared to historical normals (i.e. post 1901). For both Gettysburg NMP and Eisenhower NHS, none of the

recent temperature metrics assessed were considered to be abnormal. In contrast, recent precipitation patterns and amounts are now vastly different than those in the past. There is now increased precipitation overall and wet periods are wetter. In addition, dry periods are also drier. For details, please see <http://www.nps.gov/subjects/climatechange/climateexposure.htm>.



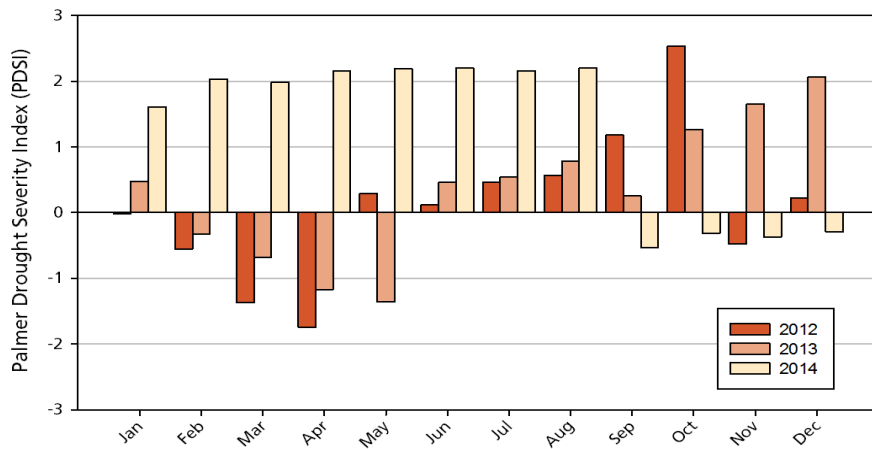
Long-term Trends

A trend assessment of many weather metrics was conducted in 2014. The annual mean temperature for a nearby weather station (Biglerville, 1973-2014) is shown to the right. The trend line (in red) indicates that annual mean temperatures have increased almost 3°F (2°C) at Biglerville. This is a single station and weather data can be highly variable. Temperatures at the station can also be influenced by local conditions. Results should be interpreted with caution.



2014 Status & Trends...

22nd wettest since 1895. May 16th was the wettest day of the year with 3.4 in (86 mm) of rain.



Palmer Drought Severity Index (PDSI) for the Lower Susquehanna, 2012–2014. Positive values indicate periods of above normal soil moisture (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).

In contrast to the spring, the summer season was below normal for precipitation, largely due to a very dry July and September. Precipitation totals were less than 60% of normal during those

months. Ultimately, it was the 33rd driest summer on record.

Autumn began wet with precipitation of 129% of normal at Biglerville during the month of October. Nevertheless, November and December were below normal. There were no direct effects of tropical storms during 2014.

Drought: According to the Palmer Drought Severity Index, soil moisture was relatively high until the dry summer dropped values below normal. Compared with prior years, 2014 was moister for the first eight months but drier during the late summer and fall.

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

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We thank Paul Knight, Kyle Imhoff, Chad Bahrmann, and Sonya Miller at the Pennsylvania State Climate Office for their assistance. Photos by Theresa Rasmussen (front header), James Comiskey (front footer), and Nicolas Raymond (below).

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.



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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

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