



Climate Monitoring

Importance

Because of its crucial role in driving or regulating many biological and physical processes at the landscape scale, climate has been identified as a vital sign for all Northern Colorado Plateau Network (NCPN) parks. Rainfall and temperature are the primary factors that limit an ecosystem's structure and function. Secondary limiting factors include long-term climate patterns: the length and intensity of weather events, seasons in which they occur, and amount of variability between and among years. Together, these dynamics greatly influence the types of plant species that occur, and where; the ways in which nutrients are cycled; and the relationships between soil, plants, and water availability. They can also affect the susceptibility of an ecosystem to disturbance.

Monitoring Effort

The overarching goal of NCPN climate monitoring is to compile and present climate data in a form that helps us to understand the reasons for trends seen in other network vital signs monitoring efforts. The NCPN compiles climate data from seven regional climate monitoring programs, including data from 34 weather stations in and around NCPN parks. Parks are then provided with monthly and annual summaries of variables such as air temperature, precipitation, wind speed and direction, solar radiation, fuel temperature, and moisture.

Status and Trends

Preliminary assessments of NCPN weather-station data show a general trend also seen in broader, regional assessments: mean annual temperatures are increasing. For most NCPN

Cooperative weather station, Black Canyon of the Gunnison National Park.



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stations, a general increase in mean annual minimum temperature is evident over the past 25–47 years (see chart for example). Conversely, there is evidence for a declining trend in snowfall over the past 20–25 years. Historical records for NCPN stations indicate that annual precipitation has been highly variable; there is no strong, unidirectional trend evident for the observation period (20–42 years).

In 2008, temperature and snowfall deviated from long-term trends. Mean annual maximum and minimum temperatures were below average throughout much of the NCPN region, especially during the first half of the year. Snowfall was noticeably above long-term averages. Total precipitation varied over the region but was relatively close to long-term averages for weather stations with more than 20 years of data.

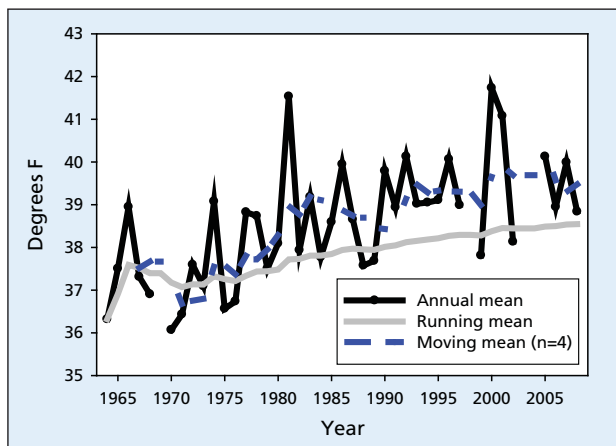
Contact

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Network park units where climate is being monitored

Arches NP	Dinosaur NM
Black Canyon of the Gunnison NP	Fossil Butte NM
Bryce Canyon NP	Golden Spike NHS
Canyonlands NP	Hovenweep NM
Capitol Reef NP	Natural Bridges NM
Cedar Breaks NM	Pipe Spring NM
Colorado NM	Timpanogos Cave NM
Curecanti NRA	Zion NP

NP = National Park; NM = National Monument;
NRA = National Recreation Area; NHS = National Historic Site



Average annual minimum temperature, Pipe Spring NM.