Historical Climatology: Dayton, Ohio

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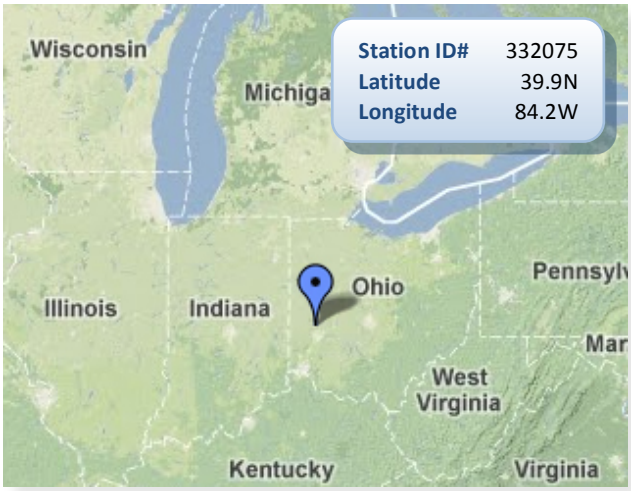
GREAT LAKES INTEGRATED SCIENCES + ASSESSMENTS



Map generated with Google Maps

Overview

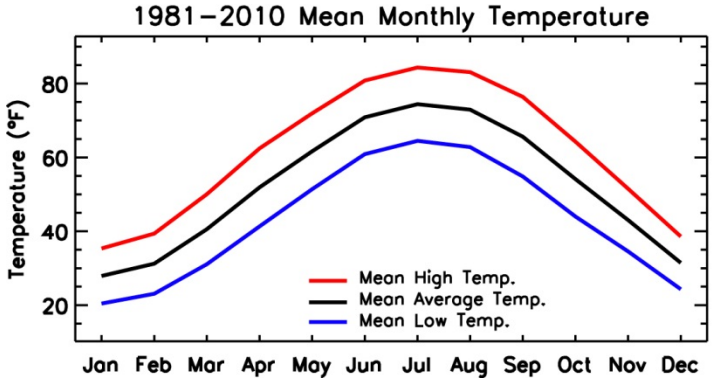
Dayton's climate features hot, humid summers and cold, dry winters. Winter temperatures are somewhat moderated by the downward slope of the Miami River, and cold polar air from the Great Lakes enhance cloudiness and increase the number of snow flurries, but snow accumulation is usually low. Dayton experiences severe weather typical of the Midwestern United States. Powerful thunderstorms occur more commonly than in areas to the north in the Great Lakes Region. Tornadoes are possible from the spring to the fall. The data reported here was collected at the Dayton International Airport, at an elevation of approximately 1,000 ft (304.8 m) and roughly 10 mi (16 km) to the north of downtown Dayton, which lies within the Miami Valley. As such, temperatures at the airport are often cooler than in downtown.

Geography

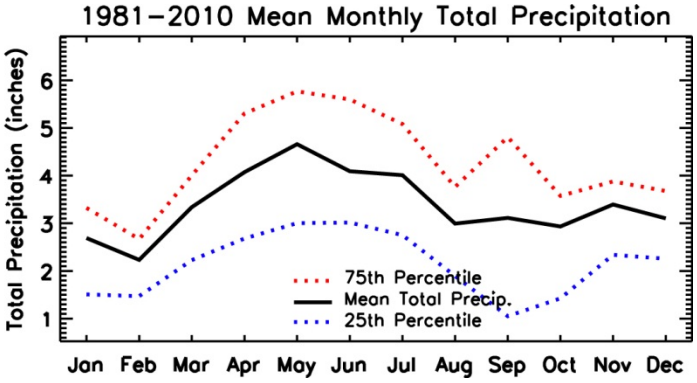
Dayton is situated near the center of the Miami River Valley, surrounded by a flat plain that is slightly below the elevation of the adjacent rolling countryside. The Mad River, the Stillwater River, and Wolf Creek, all tributaries of the Miami River, join the master branch inside the city boundary.

1981-2010 Temperature and Precipitation Summary

Mean Annual Temperature (°F)	52.2
Mean Annual Minimum Temperature (°F)	42.9
Mean Annual Maximum Temperature (°F)	61.6
Mean Number of Days per Year that exceed 90°F	11
Mean Number of Days per Year that fall below 32°F	105
Lowest Mean Annual Temperature (°F)	50.6
Highest Mean Annual Temperature (°F)	55.1
Mean Annual Total Precipitation (inches)	40.6
Lowest Mean Total Precipitation (inches)	24.7
Highest Mean Total Precipitation (inches)	59.8
Mean Number of Days/Year with > 0.1" Precip.	75
Mean Number of Days/Year with > 0.25" Precip.	50
Mean Number of Days/Year with > 0.5" Precip.	25
Mean Number of Days/Year with > 1" Precip.	9



Mean monthly high, average, and low temperatures for the period 1981-2010.



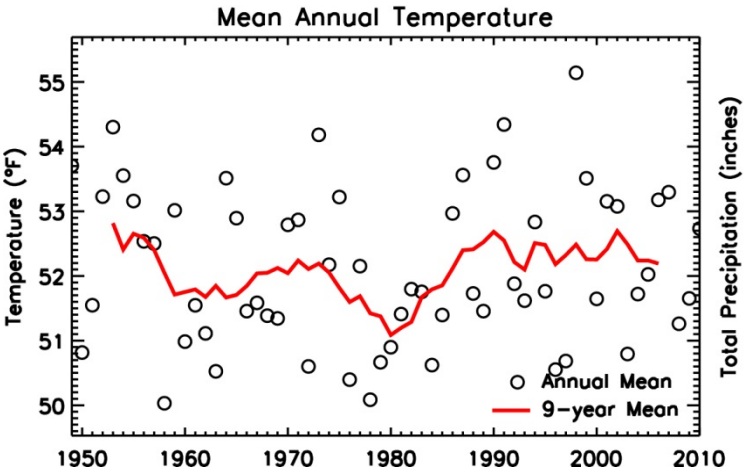
Mean monthly total precipitation with the 25th and 75th percentiles for the period 1981-2010.

Changes in Mean 1981-2010 Temperature from 1951-1980 (°F)

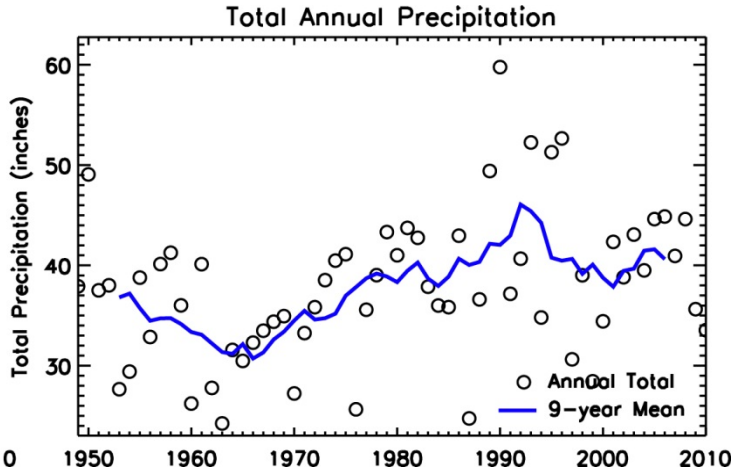
Annual	0.2
Winter, December-February	0.9
Spring, March-May	0.4
Summer, June-August	-0.2
Fall, September-November	0.0

Change in Mean 1981-2010 Total Precipitation from 1951-1980 (%)

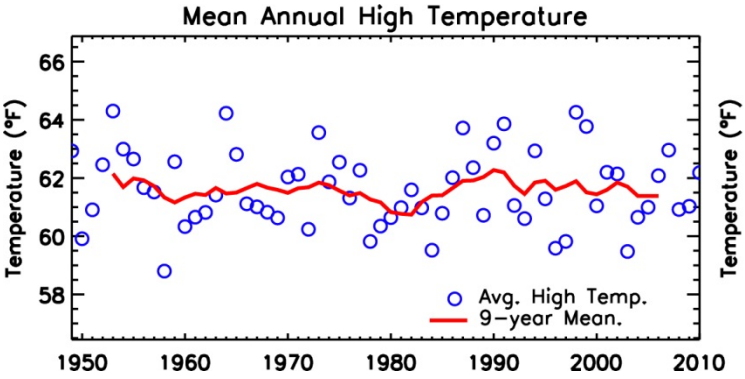
Annual	17.4
Winter, December-February	5.9
Spring, March-May	8.3
Summer, June-August	2.4
Fall, September-November	15.6



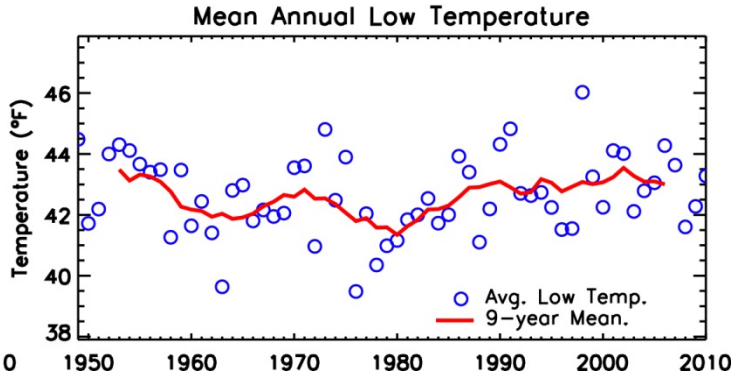
Mean annual temperatures from 1900 to 2010. An open circle represents the average temperature of a single year. The solid line represents the 9-year running mean.



Mean annual precipitation totals from 1900 to 2010. An open circle represents the total precipitation for a single year. The solid line represents the 9-year running mean.



Mean annual high temperatures from 1900 to 2010. An open circle represents the average high temperature of a single year. The solid line represents the 9-year running mean.

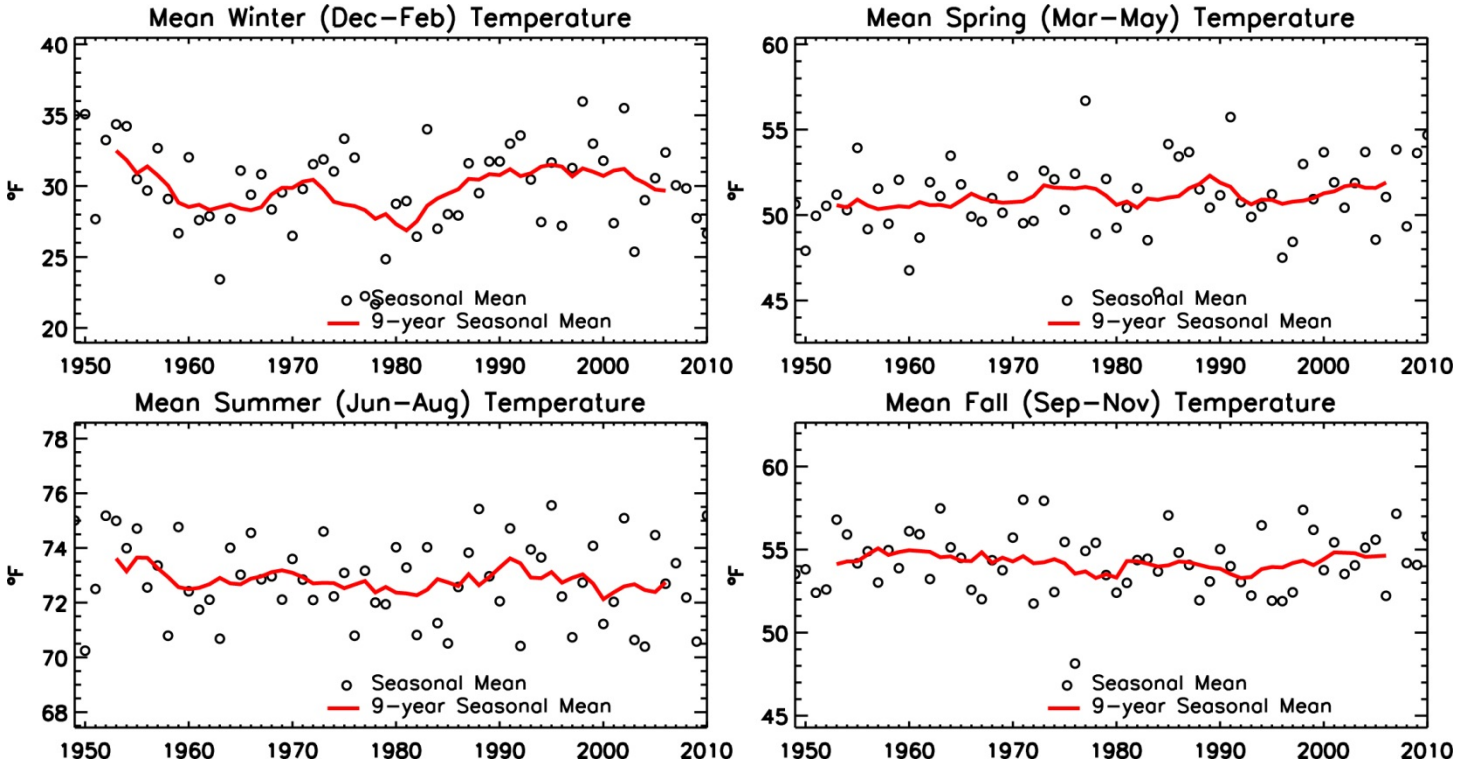


Mean annual low temperatures from 1900 to 2010. An open circle represents the average low temperature of a single year. The solid line represents the 9-year running mean.

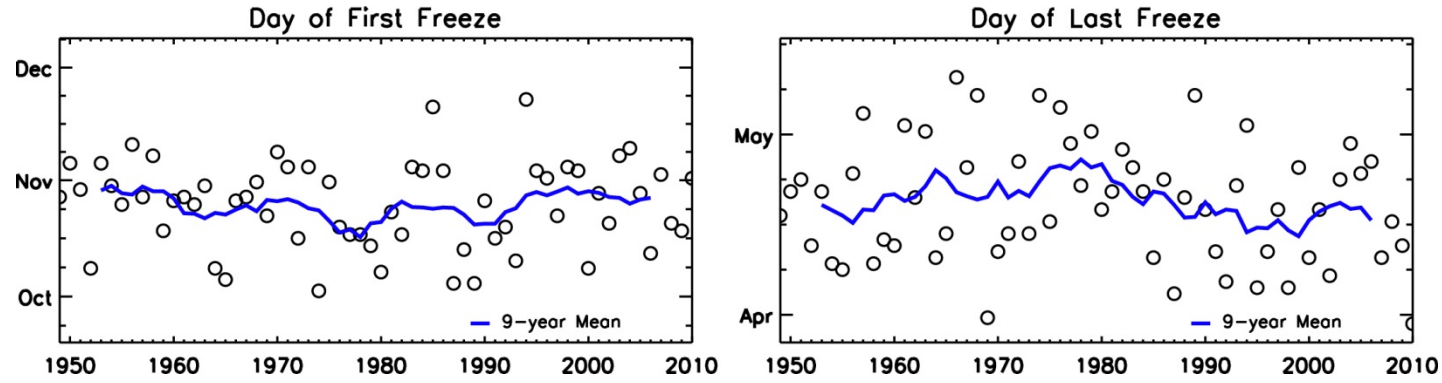
Unless otherwise stated, daily observations are used to calculate quantities in this document only if they satisfy a number of quality control tests and there is a high level of data coverage for the period in question. Nine-year running means are calculated for periods only when at least 5 of the 9 years are available. For more information on quality controls and data reliability requirements please see the *Historical Climatologies: Quality Control* document available on the GLISA website or email GLISA-info@umich.edu.

Many factors can influence long-term trends in precipitation and temperature. While human-caused climate change may be a major driver, other factors, such as natural variability, changes in nearby land use, urban heat-island effects, movement of the exact location of the observing station, and changes in measurement procedure can also play a role in climate trends over the station record.

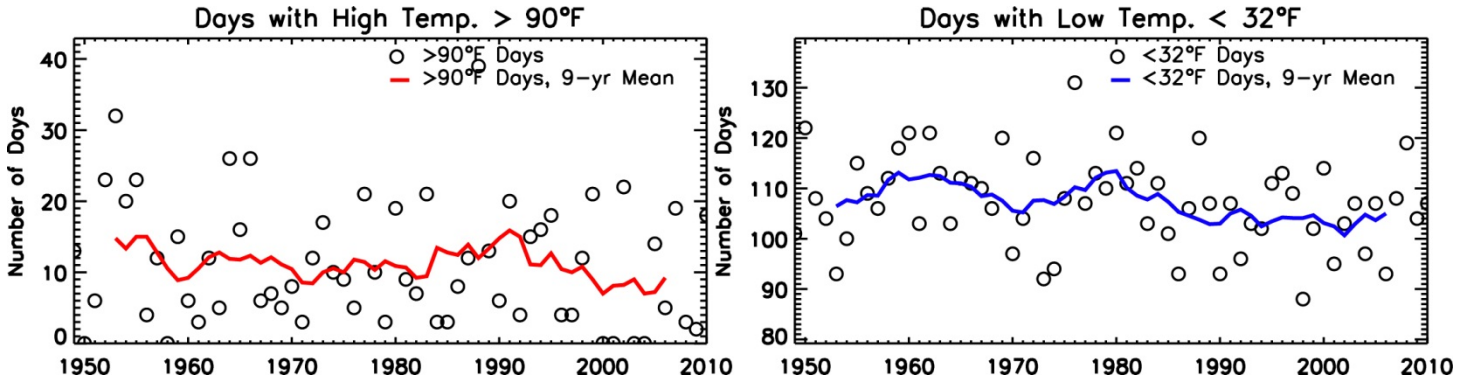
The measurements of a single station do not necessarily represent global or regional trends in temperature and precipitation. Each station records the conditions at a given place over time.



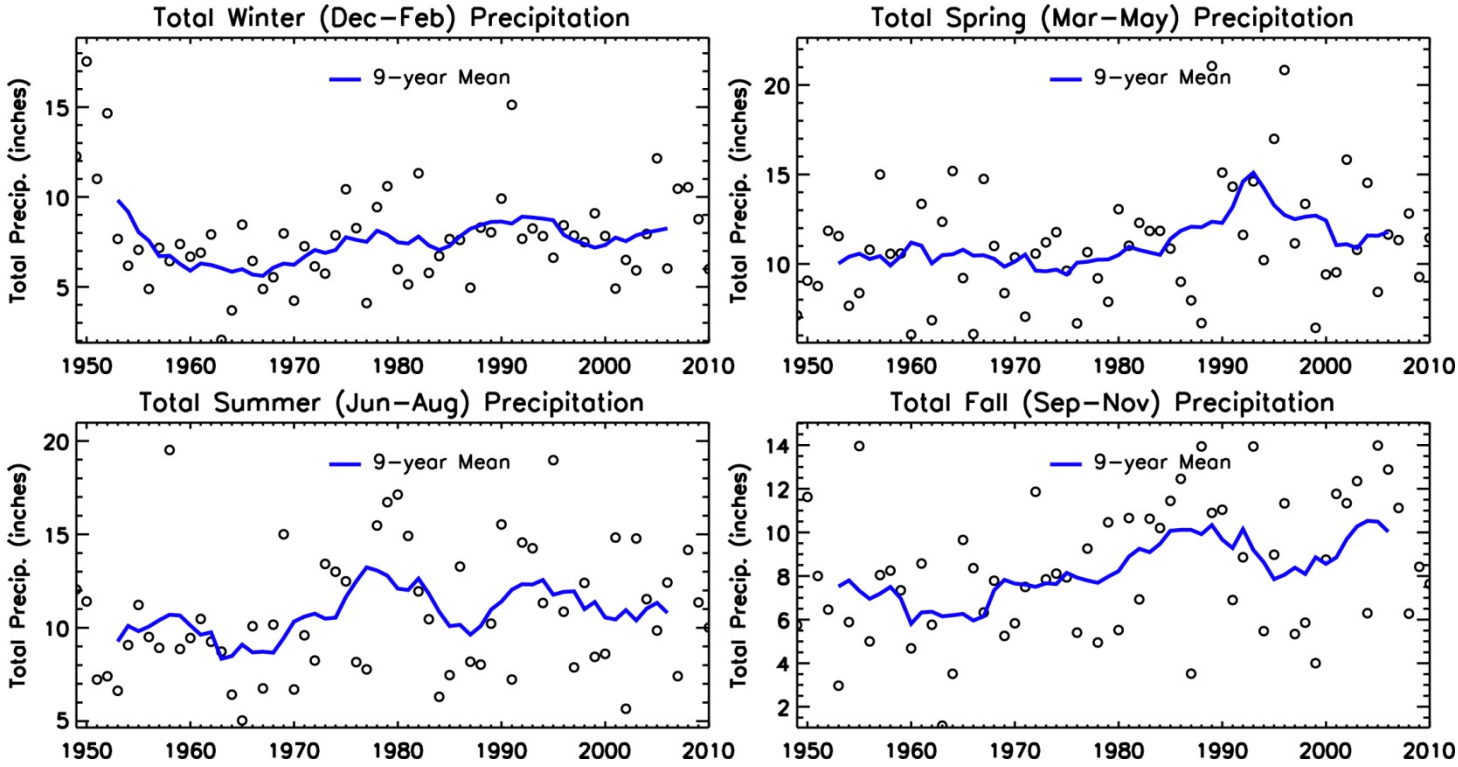
Mean seasonal temperatures from 1900 to 2010. An open circle represents the average seasonal temperature of a single year. The solid line is the 9-year running mean.



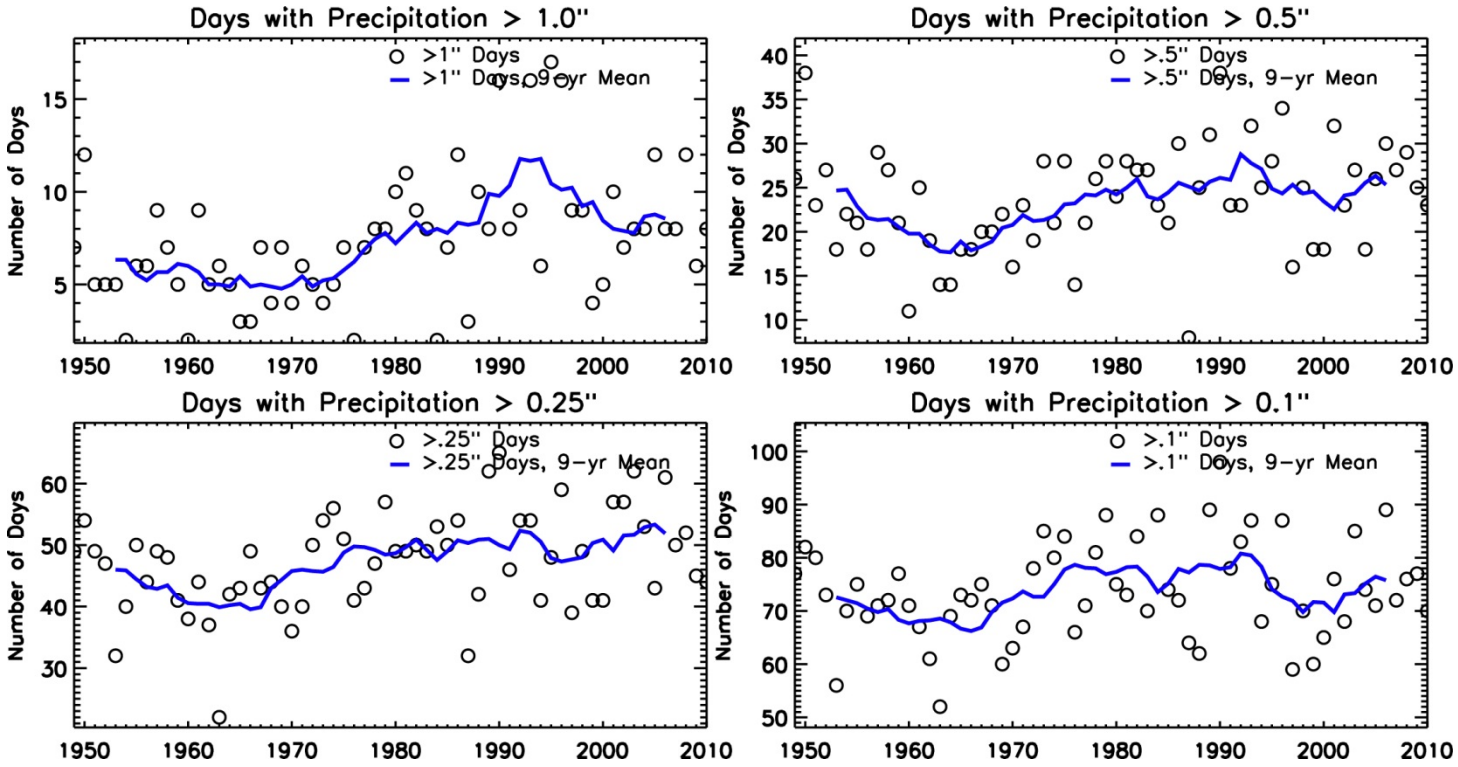
Open circles represent the first (left) and last (right) winter freeze of the year (daily low temperature < 32°F) from 1900-2010. The solid line is the 9-year running mean.



Open circles represent the number of days per year in which the daily high temperature exceeded 90°F (left) and where the daily low temperature dropped below 32°F (right) in a single year. The solid line is the 9-year running mean.



Mean total precipitation by season from 1900 to 2010. An open circle represents the total seasonal precipitation for a single year. The solid line represents the 9-year running mean of the total seasonal precipitation.



Number of days per year that exceeded the indicated daily precipitation totals. The solid line represents the 9-year running mean. Days that exceeded a higher threshold are included in days exceeding lower thresholds.