

Climate of Kansas

Introduction

This publication consists of a narrative that describes some of the principal climatic features and a number of climatological summaries for stations in various geographic regions of the State. The detailed information presented should be sufficient for general use; however, some users may require additional information.

The National Climatic Data Center (NCDC) located in Asheville, North Carolina is authorized to perform special services for other government agencies and for private clients at the expense of the requester. The amount charged in all cases is intended to solely defray the expenses incurred by the government in satisfying such specific requests to the best of its ability. It is essential that requesters furnish the NCDC with a precise statement describing the problem so that a mutual understanding of the specifications is reached.

Unpublished climatological summaries have been prepared for a wide variety of users to fit specific applications. These include wind and temperature studies at airports, heating and cooling degree day information for energy studies, and many others. Tabulations produced as by-products of major products often contain information useful for unrelated special problems.

The Means and Extremes of meteorological variables in the Climatography of the U.S. No.20 series are recorded by observers in the cooperative network. The Normals, Means and Extremes in the Local Climatological Data, annuals are computed from observations taken primarily at airports.

The editor of this publication expresses his thanks to those State Climatologists, who, over the years, have made significant and lasting contributions toward the development of this very useful series.

State and Station Normals are available at:

<http://www5.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl>

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Topographic Features- Kansas has what is typically described as a continental climate, without the moderating influence of any major bodies of water. Elevations range from less than 900 feet in the southeast to more than 3,000 feet in the west. These differences in elevation, coupled with the decreasing rain shadow effect of the Rocky Mountains contribute to the wide difference in average annual rainfall across the State.

Temperature- Annual mean temperatures across Kansas range from 58 degrees Fahrenheit (° F) in the south-central and southeast to 52 in the extreme northwest. Summers are warm, with the majority of the annual precipitation occurring during this period. Winters tend to be cold with an occasional mild spell and moderate snowfall amounts. Sharp temperature changes occur many times during the year. In the winter, over the span of a few days, temperatures can swing from near 60° F to almost 0 then rebound. This type of temperature swing indicates the arrival of an arctic air mass followed by the return of a warm air mass, generally associated with southerly breezes.

Temperatures in excess of 100° F occur on an average of 10 days per year in the east and the west, and approximately 15 days per year in the central part of the State. The average number of days subzero ranges from two in the southeast to 10 in the northwest. The State's extreme temperatures range from 121° F (Fredonia, July 18, 1936 and Alton, July 24, 1936) to -40° F (Lebanon, February 13, 1905).

Precipitation- Annual average precipitation ranges across the State from more than 42 inches in the southeastern part to less than 20 inches in the western part. Annual average snowfall ranges from 40 inches in the northwest to less than 15 inches in the southeast. Snowfall variability is seen from year to year, with differences between the least and most snowiest years ranging from approximately 20 inches in the western regions to over 30 inches in the eastern portions of the State.

The prevailing wind direction for the State is from the south. The following lists the average annual wind speed for select Kansas cities: Dodge City 14.0 mph; Goodland 12.7 mph; Wichita 12.1 mph; Concordia 11.7 mph and Topeka 9.6 mph. Much of Kansas is windier than the "Windy City" of Chicago, which reports an annual average wind speed of 10.4 mph.

Although severe storms can result in considerable damage, they are for the most part short in duration. Kansas has, on average, 57 tornadoes per year. Dust storms are an occasional feature during drought periods, particularly in the western portion of the State where higher winds and fewer obstructions allow greater fetch. Floods are generally the result of intense rainfall events and generally occur in the spring and summer. Winter-type storms are regular features of the climate. These can include heavy snow, high winds and an occasional ice storm. These winter-type storms have occurred as early as September and as late as May.

Climate and the Economy- Beginning in the mid-1800s, Kansas had an economy based on the wheat cultivation and cattle production. As the demand for wheat increased, more of the prairies were brought under cultivation. The State suffered greatly during the “Dust Bowl” of the mid 1930s. During World War II, the manufacturing sector grew rapidly, and Wichita became an important aircraft-producing center. Today the state’s economy is diversified. Agriculture and mining remain important as the manufacturing and service industries continue to grow in significance.

Currently, agriculture is the largest segment of the United States’ economy and beef production is the largest segment of the United States’ agricultural economy. Kansas is the second largest cattle state in the United States with over \$4.5 billion in cash receipts and 38,000 cattle-related businesses.