

# Comparing Climates in the United States

*Ideas for a Secondary Research Project*



When meteorologists talk about the “weather,” they describe the current conditions in the atmosphere, like the temperature, humidity, how windy it will be or whether it will rain. Knowing the weather tells us what is happening right now. But in order to predict the weather, meteorologists first need to know what conditions they might normally expect on any given day for a specific location. To do so, they can access data about their city’s climate.



“Climate” describes an average of weather conditions over a long time (such as 30 year period). It is useful for putting the weather on any given day in perspective. Today might be a very cold day, but is it any colder than previous years? Climate is also useful for comparing the typical weather conditions of two cities. If we just look at one day’s weather we might get the wrong idea. For example, say we would like to move to somewhere where it doesn’t rain much. If we looked at today’s weather and saw it was sunny Seattle while it was raining in New York, we might decide to move to

Seattle, only to be disappointed by how often it actually rains there. We would have gotten a more accurate picture by researching its climate.

Many things affect the climate of a city. How far North of the equator is it? Is it near an ocean? Is it next to a lake? How high above the sea is it (elevation)? Is it next to a mountain? Some of these factors affect temperature, some affect rain or snowfall, and some affect both. You can easily analyze these effects by comparing the climates of two or more cities together.

## ***Things to Think About Before You Start Your Research***

- What is climate?
- What is the difference between climate and weather?
- What factors can influence climate variability?
- What processes can cause climate to change over time?

## ***Research Questions***

- Do cities at the same latitude (their north/south position) have the same climate?
- What differences in climate are there between northern and southern cities?
- Do mountains or the Great Lakes affect the rain or snowfall amounts of cities nearby?
- How does the weather in the Great Plains compare with that along the coasts?

## **Cool Datasets**



The City-Data site includes ready-made climate graphs for hundreds of cities across the US.

<http://city-data.com/>

If you would like to make your own graphs using Microsoft Excel or another program, you can obtain monthly climate data easily for many cities from the following NOAA site.

<http://ols.nndc.noaa.gov/plolstore/plsql/olstore.prodspecific?prodnum=C00095-PUB-A0001#TABLES>

## **Example References**

- NOAA Climate Information – <http://www.noaa.gov/climate.html>
- State Climate Descriptions – [http://cdo.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl?directive=prod\\_select2&prodtype=CLIM60](http://cdo.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl?directive=prod_select2&prodtype=CLIM60)
- National Color Climate Atlas Maps – <http://gis.ncdc.noaa.gov/website/ims-climatls/>