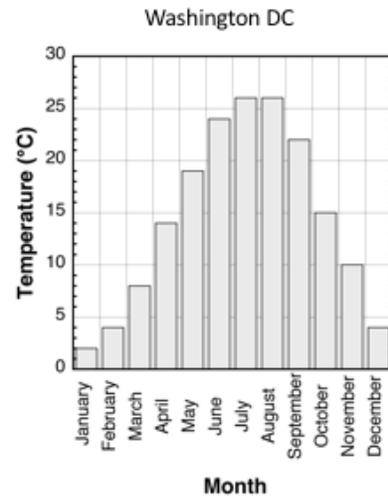
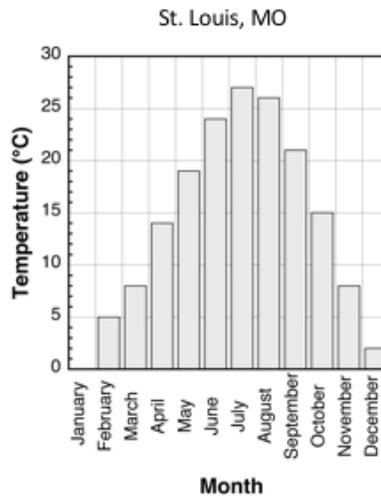
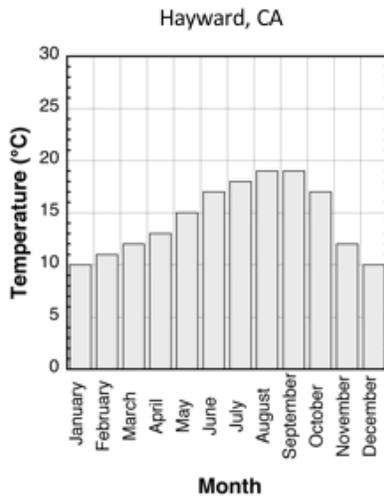


A Tale of Three Cities – Teacher Instructions

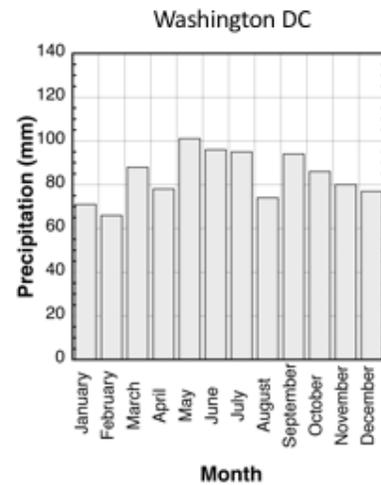
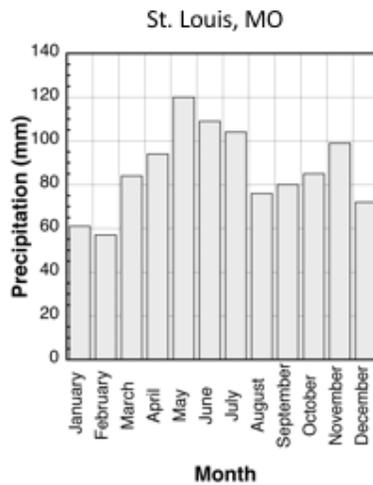
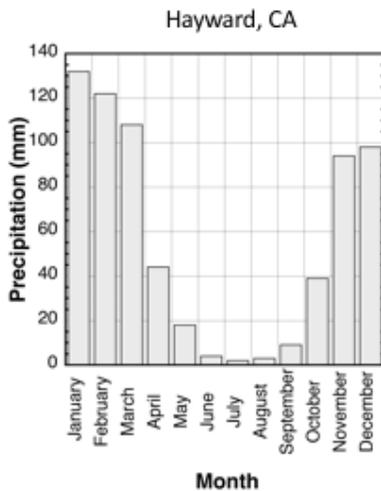
This exercise may be run as a gallery walk activity in class. Students should be divided into six different groups and each group should be assigned one data set to plot as a bar graph (city and precipitation or temperature).

After students have plotted the data, they should be displayed on a wall for students to examine and compare the temperature and precipitation data for the three cities. The plotted data are below:

TEMPERATURE



PRECIPITATION



Teacher Background

In this activity, students examine climate data for three different locations. The term *climate* refers to long-term weather data and trends. The data in this activity are monthly averages for precipitation and temperature collected over many years. This permits the direct comparison of different locations in order to determine the average weather conditions for a region.

All three cities are at approximately the same latitude (~38°N) and elevation (<500 feet or 152 meters).

Thus, the differences in the climate for these cities is **not** due to differences in latitude or elevation. The weather for these cities are dominated by the westerlies. The westerlies are prevailing winds that blow from the west to the east between 30° and 60° latitude. This activity is a good opportunity to introduce prevailing winds such as the westerlies and the trade winds.

Hayward, CA is located on the west coast and is dominated by air masses from the Pacific Ocean. Since the ocean temperature along the California coast is low, the temperature is moderated by the cool air coming from the Pacific Ocean. Thus, the summers are not hot and the winters are not cold.

St. Louis, MO is located in the middle of the continent. The westerlies guide air masses from the continental interior that affect the weather and climate. An important consideration is the differential heating and cooling of land and water surfaces. Land surfaces heat and cool more rapidly than water. Thus, areas that are dominated by air brought by the prevailing wind from a land surface (continental influence) generally experience greater seasonal changes in temperature than areas that are dominated by air that comes from the ocean (marine influence).

Washington DC's proximity to the Atlantic coast does not strongly influence its climate. Since the westerlies bring air with a continental influence, its climate and weather are very similar to St. Louis.

California has a Mediterranean climate where the temperatures are relatively mild. Summers tend to be dry and most of the rain falls during the winter. Precipitation in St. Louis and Washington DC fall throughout the year.

