



Coastal and Continental Temperature Ranges

Name _____

Per _____

Lab # _____

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Introduction: There are large variations in average monthly temperatures among cities located at the same latitude. This suggests that factors, besides the angle of insolation and duration of insolation, affect the rate (speed) of heating and cooling of any given location. Climographs which show the average monthly temperature and precipitation of various locations can be used to compare these rates.

Objective: At the end of this activity you should be able to describe how distance from a large body of water affects the rate of heating and cooling at any given location.

Procedure: *Follow each step and answer all questions in the spaces provided.*

PART I: Interpreting Climographs

- Using the four climographs provided, plot and label the four cities on the map of the United States using latitude and longitude.
- Look at two of the cities you plotted on the map that have similar latitudes.

Question: What can you infer about the intensity of insolation for both cities with similar latitudes?

- Coastal cities are ones near a large body of water, like an ocean or a large lake. Continental cities are surrounded by land and are far from a large body of water.

Question: Looking at your map, which two cities are considered coastal cities?

Question: Looking at your map, which two cities are considered continental cities?

- Using the climographs, fill in the chart below for each of the four cities:

City Name	High Temperature	Low Temperature	*Temperature Range

*** Hint: Temperature range is calculated by determining the difference between high and low temperatures.**

5. **Question:** How does the annual temperature range for a coastal city compare to the annual temperature range for a continental city?
6. **Question:** Using the climographs and the temperature ranges you calculated, how does the rate of heating and cooling for a coastal city compare to the rate of heating and cooling for a continental city?
7. Think back to the absorption and radiation lab you did with the beakers of soil and water.
Question: What causes the difference in the rate of heating and cooling for a coastal city compared to the rate of heating and cooling for a continental city?

PART II: Making Climographs

1. Plot and label the location of Albany, NY and Islip, NY on the map using the following data:

Albany, NY: Latitude = 43 degrees N, Longitude = 74 degrees W
 Islip, NY: Latitude = 41 degrees N, Longitude = 73 degrees W

2. On the back of the map, plot the average monthly temperatures (in degrees F) for Albany and Islip as line graphs, using the data below:

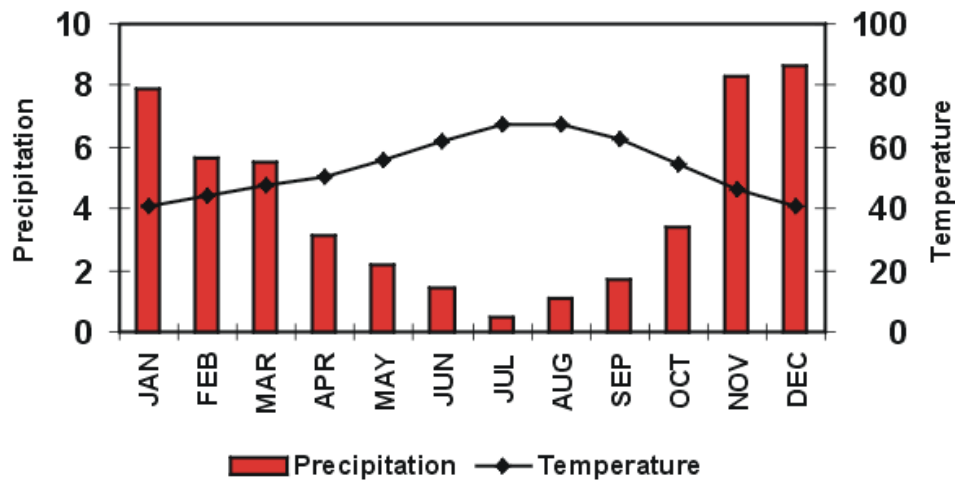
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Albany:	22	24	34	47	58	67	72	70	61	51	40	27
Islip:	31	34	40	49	59	69	74	73	65	55	45	36

3. **Questions:** What is the annual temperature range for Albany?

What is the annual temperature range for Islip?

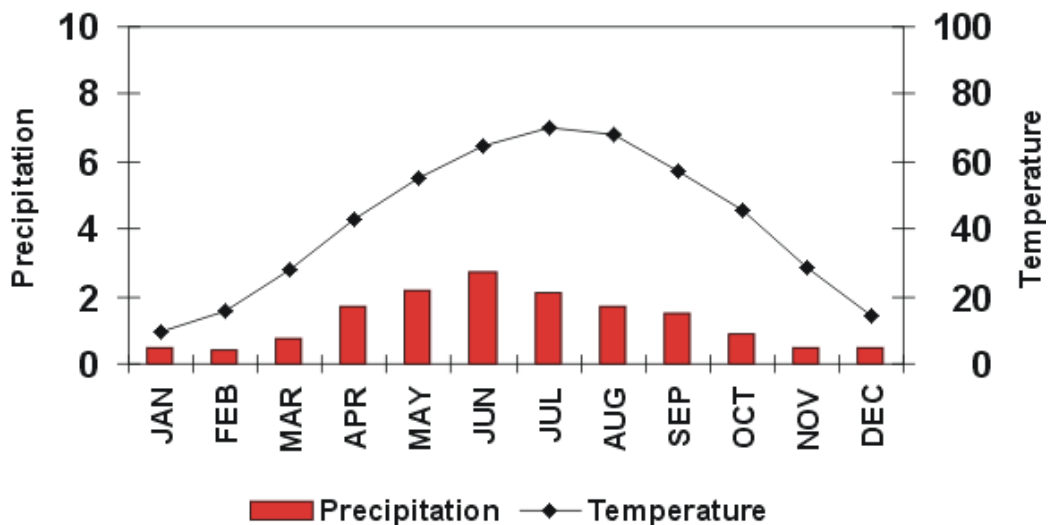
Why is there a difference in the annual temperature ranges for these two cities?

Eugene, Oregon



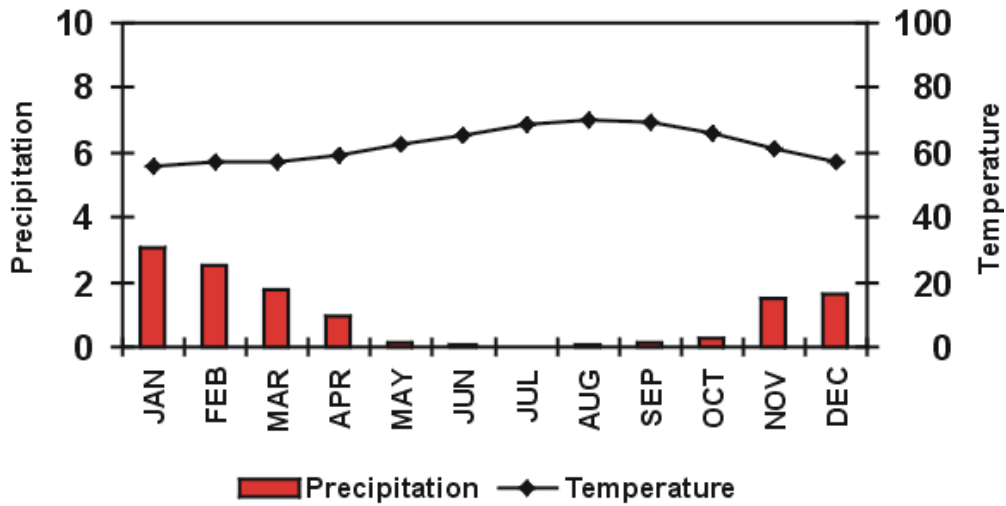
Lat.: 44° 07' N
 Long.: 123° 13' W
 Elevation: 359 ft. asl
 Total Annual Precip.: 49.37"
 Avg. Annual Temp.: 53.3°F

Bismarck, North Dakota



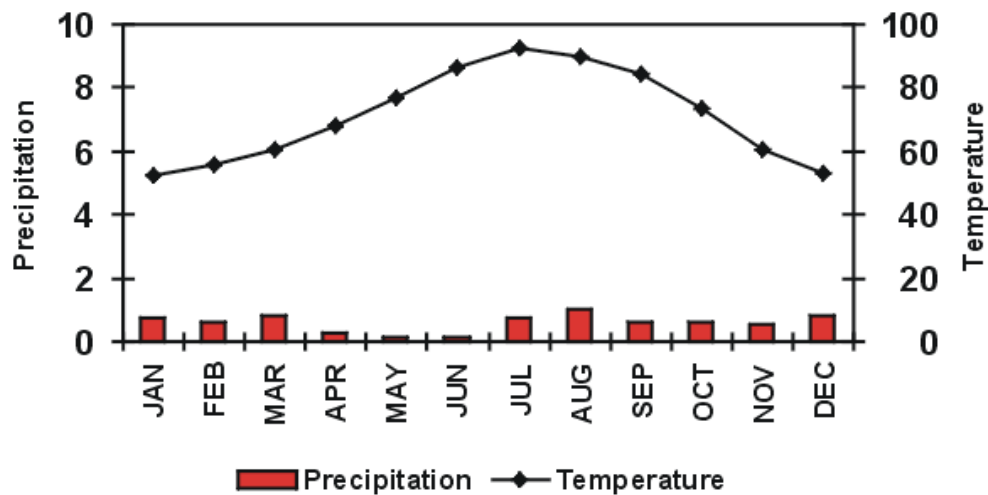
Lat.: 46° 46' N
 Long.: 100° 45' W
 Elevation: 1,647 ft. Asl
 Total Annual Precip.: 15.47"
 Avg. Annual Temp.: 41.6°F

Los Angeles, California



Lat.: 33° 56' N
 Long.: 118° 24' W
 Elevation: 97 ft. asl
 Total Annual Precip.: 12.08"
 Avg. Annual Temp.: 62.6°F

Phoenix, Arizona



Lat.: 33° 26' N
 Long.: 112° 01' W
 Elevation: 1,110 ft. asl
 Total Annual Precip.: 7.11"
 Avg. Annual Temp.: 71.2°F