



Chapter 2: Part 4

Regional Factors:

Altitude

- Altitude is defined as the height of an object or point in relation to sea level or ground level.
- As a rule: the higher up you go, the colder it becomes.

Bodies of water

- Bodies of water like lakes and oceans have a major influence on climate. In the summer they tend to cool down a location, while in the winter they tend to keep a place warmer. This happens because water is slower to heat up in the spring/summer, but is slower to cool in the fall/winter.

Mountain Barriers

- Mountains tend to have a major impact on a climate.
- Typically, mountains will have a rainy side and a dry side. The dry side is often called the rain shadow.
- What happens is the prevailing winds will bring moisture up the mountain. As the air cools the water molecules are released as a form of precipitation. As the wind carries the air over the top of the mountain, the majority of the water has been released on the windward side of the mountain making the leeward side very dry. See diagram on next side.
- See diagram on next slide

The rainshadow effect: the process

The rain shadow effect is a result of orographic lift. In orographic lift, mountains act as a barrier to clouds' movement and precipitation is lifted over the mountains. The windward side of the mountain receives plenty of rain, while the leeward side is much drier, resulting in a desert.

Where can you find it?



■ Sonoran Desert ■ Mojave Desert
■ Chihuahuan Desert ■ Great Basin Desert

NOTE: This effect can also be seen to a lesser extent in other places in the U.S.

Infographic by: Lindsay Dubois Sources: Wikipedia, Desert USA

1 Water evaporates into the air.

2 Wind pushes clouds toward the mountains. The clouds rise, the air cools and the water vapor condenses.

3 The windward side of the mountains get rainfall.

4 As the clouds come over the mountains, they lose their water, then fall and heat up again, leaving little rain for the leeward side of the mountain.



The deserts that are left behind...

Due to irrigation, the **Sonoran Desert** has many fertile agricultural areas. It is the hottest of the North American deserts, with the most biological diversity. Parts of the desert receive **10-12 inches** of rain a year.



The **Chihuahuan Desert** is the largest desert in North America and most of it lies south of international borders. It has cool summers and extremely hot summers, receiving less than **10 inches** of rainfall a year.

The **Great Basin** is the largest desert in the United States. It is usually cold due to high latitude and elevation. It gets about **7-12 inches** of precipitation a year - rain and snow.



The **Mojave Desert** receives less than **6 inches** of rain a year due to the rain shadow effect created by the Sierra Nevada and other mountain ranges within the desert.

- Complete Apply and Extend on page 38

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- Complete worksheet on Climate Regions in Canada.

