

Chapter 17 Climate

SECTION 1 WHAT IS CLIMATE?

1. temperature and precipitation
2. The sun's energy is focused on a small area.
3. The equator receives about the same amount of sunlight all year round.
4. differences in air pressure
5. west to east
6. Temperature decreases as elevation increases.
7. The air cools as it rises and drops below its dew point.
8. Water absorbs and releases heat more slowly than land, so the water helps to stabilize the temperatures on land.
9. The cool water absorbs heat from the air, causing the temperature of the air to decrease.
10. a warm current
11. latitude
12. tropical zone
13. The climate of an area affects the organisms that live there.
14. along the equator

Review

1. Climate describes the average weather conditions in an area over a long period of time. Weather describes the state of the atmosphere in a specific location at a specific point in time.
2. San Diego receives more sunlight because it lies closer to the equator.
3. Earth is tilted on its axis of rotation, causing some areas to receive more sunlight during some parts of the year than during others.
4. latitude, large bodies of water, topography, ocean currents, winds
5. Air rises to move over a mountain. The air cools as it rises, causing the water vapor in the air to condense into clouds. Precipitation falls on the windward side of the mountain, causing the area to have a wet climate. The air rises over the mountain and sinks. As it sinks, it gets warmer and causes water to evaporate from the land on the other side of the mountain. As a result, the far side of the mountain has a dry climate.

SECTION 2 THE TROPICS

1. They receive different amounts of rain and have different kinds of soil.
2. between 23.5°N and 23.5°S latitude
3. It gets about the same amount of sunlight all year long.
4. Nutrients are quickly used up by plants or washed away by rain.
5. Possible answer: Many plants would die out because they rely on fires for survival or reproduction.
6. about 3 ft
7. The temperature in a desert can be much lower at night than during the day.

Review

1. tropical rain forest, tropical desert, tropical savanna
2. high temperatures
3. First row, from left to right: over 200 cm per year, fern
Second row, from left to right: tropical savanna, poor, thorny shrub
Third row, from left to right: tropical desert, less than 25 cm per year, scorpion
4. No, because it is not located in the Tropics.
5. Africa
6. tropical deserts have the largest temperature range; tropical rain forests have the smallest temperature range.

SECTION 3 TEMPERATE AND POLAR ZONES

1. They all experience seasonal changes in weather.
2. chaparral
3. They are probably evergreens, because they still have leaves in the winter and they are found in a temperate forest.
4. grass
5. waxy coatings on leaves to prevent water loss
6. Possible answer: Temperate deserts have a larger temperature range.
7. North America, Asia, Europe
8. The ice in it melts, but the permafrost prevents the water from draining away.
9. 16 in. to 24 in.
10. the climate of a small area

Review

1. temperate forest, temperate grassland, chaparral, temperate desert
2. between 23.5° and 66.5° north or south latitudes
3. They have clear skies and low humidity. This allows the land to heat up a lot during the day and the heat to move easily into the atmosphere at night.
4. The pavement and other structures in cities absorb solar energy and heat up, causing the climate to be warmer.
5. The main plants in the taiga are evergreens with acidic compounds in their leaves. When the leaves fall to the ground and decay, they make the soils acidic.
6. They both receive little to no precipitation.
7. They do not get enough rain.

SECTION 4 CHANGES IN CLIMATE

1. An ice age is a time period in which glaciers are found at lower latitudes than at other times.
2. Ocean water freezes to form ice. As a result, global sea level drops, exposing more land.
3. Probably not, because these changes take place over tens of thousands of years.
4. Sometimes it is more circular than others.
5. It was colder and covered with ice.
6. Energy from the sun powers many cycles on Earth.
7. Animals use plants for food.
8. Both release dust into the air, which blocks sunlight from reaching the Earth's surface. This causes the temperature to decrease.
9. a gradual increase in global temperatures
10. animals breathing, volcanoes
11. Polar ice could melt, putting more water into the oceans and making them deeper.

Review

1. Global warming can happen because of an increase in the greenhouse effect.
2. Changes in Earth's orbit and tilt can cause changes in the climate.
3. When continents move, they may be exposed to more or less solar radiation, which can change their climate. Also, continents deflect wind and ocean currents, so changes in their locations can have significant impacts on global climate.

4. Coastal cities could flood due to increases in global sea level.
5. Burning fossil fuels and trees can increase CO₂ in the atmosphere. Cutting down trees prevents them from removing CO₂ from the atmosphere. Using less electricity that comes from the burning of fossil fuels can help reduce the amount of CO₂ that is added to the atmosphere.