• What is climate?

• How do landforms and bodies of water affect climate?
Weather

- What you check before you go outside in the morning
- Day-to-day changes in the air
- Measured primarily by temperature and precipitation

Climate

- What you know from experience happens from year to year
- The average weather over many years
- The Earth has many climate regions.
- Climates are different in low, middle, and high altitudes because latitude affects temperature.
- Landforms, wind, and water also affect climates.
Wind and water help spread the sun’s heat and keep the Earth from overheating.

Winds blow east–west and west–east in part because of Earth’s rotation.

Winds blow north–south and south–north because:

- Hot air rises and circulates toward regions where the air is not as hot. Hot, moist air from the Equator rises and moves toward the North Pole or South Pole.
- Cold air sinks and moves toward regions where the air is warmer. Cold, dry air from the poles moves toward the Equator.
The Earth’s rotation creates ocean currents. Warm water from the Equator flows north or south to colder parts and cold water from the poles flows toward the warm areas near the Equator.
Chapter 2, Section 3

Ocean Currents: Hot and Cold

The Earth’s rotation creates ocean currents. Warm water from the Equator flows north or south to colder parts and cold water from the poles flows toward the warm areas near the Equator.
Bodies of water affect climate in another way too: Why is a beach on a hot summer day cooler by the ocean?

- Water takes longer to heat or cool than land.
- In the summer, a place near the ocean or a lake will be cooler than an area farther away. The water currents are colder than the air, so the current absorbs heat, making the temperature fall.
- In the winter, that area will be warmer. The water currents are warmer than the air, so the current gives off its warmth and the air temperature rises.
Wind and water can make climates milder, but they also can create storms. Some storms create great destruction.

**Hurricanes**
- Wind and rain storms that form in the tropics in the Atlantic Ocean
- The winds at the center travel over 73 miles per hour.
- They produce huge waves called storm surges, which flood over shorelines and can destroy homes and towns.

**Typhoons**
- Similar to hurricanes, they take place in the Pacific Ocean.

**Tornadoes**
- Swirling funnels of wind that can reach 200 miles per hour. The powerful winds can wreck almost anything in a tornado’s path.
- However, they only average about one half mile in diameter. Therefore they affect a more limited area than hurricanes.
Chapter 2, Section
Climate and What Influences It–Assessment

Latitudes and Landforms
- Climates are different in the low, middle, and high latitudes because latitude affects temperature
- Mountains and other landforms affect climate in surrounding areas

Wind
- The Earth's rotation creates wind
- Wind moves air in an east-west direction
- Hot air rises and circulates towards cooler regions; cold air sinks and moves toward warmer regions
- Wind also contributes to storms such as hurricanes and typhoons

Water
- The Earth's rotation creates ocean currents
- Cold water from the North and South Poles flows toward the Equator; warm water from the Equator moves north or south
- Water takes longer to heat or cool than land, so places near the water may have different climates than places inland along the same latitude
- Hurricanes can produce storm surges that cause devastating floods

CLIMATE
Average weather of a place over many years
Explain the difference between weather and climate.

Weather is the day-to-day condition of the air in terms of temperature and precipitation. Climate is the average weather conditions that occurs over many years in a region.

How does latitude affect climate?

Hot air masses form in the low latitudes and rise and move to higher latitudes where air is cooler. Cold air from the higher latitudes sinks and moves to the lower latitudes where air is warmer.

How do mountains affect neighboring climates?

Climates on the coastal side of mountains tend to be moist. Climates on the inland side of mountains tend to be dry.