

FOCUS ON CULTURE

The Tuareg of the Sahara

In the Sahara, the world's largest desert, temperatures can top 130°F (54°C). Yet the Tuareg (TWAH-reg) of North and West Africa call the Sahara home—and prefer it. The Tuareg have raised camels and other animals in the Sahara for more than 1,000 years. The animals graze on sparse desert plants. When the plants are gone, the Tuareg move on.

In camp, Tuareg families live in tents made from animal skins. Some wealthier Tuareg live in adobe homes. The men traditionally wear blue veils wrapped around their face and head. The veils help protect against windblown desert dust.

Summarizing How have the Tuareg adapted to life in a desert?



Tropical and Dry Climates

Are you the type of person who likes to go to extremes? Then tropical and dry climates might be for you. These climates include the wettest, driest, and hottest places on Earth.

Tropical Climates

Our tour of Earth's climates starts at the equator, in the heart of the tropics. This region extends from the Tropic of Cancer to the Tropic of Capricorn. Look back at the map to locate this region.

Humid Tropical Climate At the equator, the hot, damp air hangs like a thick, wet blanket. Sweat quickly coats your body.

Welcome to the humid tropical climate. This climate is warm, muggy, and rainy year-round. Temperatures average about 80°F (26°C). Showers or storms occur almost daily, and rainfall ranges from 70 to more than 450 inches (180 to 1,140 cm) a year. In comparison, only a few parts of the United States average more than 70 inches (180 cm) of rain a year.

Some places with a humid tropical climate have **monsoons**, seasonal winds that bring either dry or moist air. During one part of the year, a moist ocean wind creates an extreme wet season. The winds then shift direction, and a dry land wind creates a dry season. Monsoons affect several parts of Asia. For example, the town of Mawsynram, India, receives on average more than 450 inches (1,140 cm) of rain a year—all in about six months! That is about 37 feet (11 m) of rain. As you can imagine, flooding during wet seasons is common and can be severe.

The humid tropical climate's warm temperatures and heavy rainfall support tropical rain forests. These lush forests contain more types of plants and animals than anywhere else on Earth. The world's largest rain forest is in the Amazon River basin in South America. There you can find more than 50,000 species, including giant lily pads, poisonous tree frogs, and toucans.

Tropical Savanna Climate Moving north and south away from the equator, we find the tropical savanna climate. This climate has a long, hot, dry season followed by short periods of rain. Rainfall is much lower than at the equator but still high. Temperatures are hot in the summer, often as high as 90°F (32°C). Winters are cooler but rarely get cold.

This climate does not receive enough rainfall to support dense forests. Instead, it supports **savannas**—areas of tall grasses and scattered trees and shrubs.

Dry Climates

Leaving Earth's wettest places, we head to its driest. These climates are found in a number of locations on the planet.

Desert Climate Picture the sun baking down on a barren wasteland. This is the desert, Earth's hottest and driest climate. Deserts receive less than 10 inches (25 cm) of rain a year. Dry air and clear skies produce high daytime temperatures and rapid cooling at night. In some deserts, highs can top 130°F (54°C)! Under such conditions, only very hardy plants and animals can live. Many plants grow far apart so as not to compete for water. Others, such as cacti, store water in fleshy stems and leaves.

Steppe Climate Semidry grasslands or prairies—called **steppes** (STEPS)—often border deserts. Steppes receive slightly more rain than deserts do. Short grasses are the most common plants, but shrubs and trees grow along streams and rivers.

READING CHECK **Contrasting** What are some ways in which tropical and dry climates differ?

Temperate Climates

If you enjoy hot, sunny days as much as chilly, rainy ones, then temperate climates are for you. *Temperate* means “moderate” or “mild.” These mild climates tend to have four seasons, with warm or hot summers and cool or cold winters.

Temperate climates occur in the middle latitudes, the regions halfway between the equator and the poles. Air masses from the tropics and the poles often meet in these regions, which creates a number of different temperate climates. You very likely live in one, because most Americans do.

Mediterranean Climate Named for the region of the Mediterranean Sea, this sunny, pleasant climate is found in many popular vacation areas. In a Mediterranean climate, summers are hot, dry, and sunny. Winters are mild and somewhat wet. Plant life includes shrubs and short trees with scattered larger trees. The Mediterranean climate occurs mainly in coastal areas. In the United States, much of California has this climate.

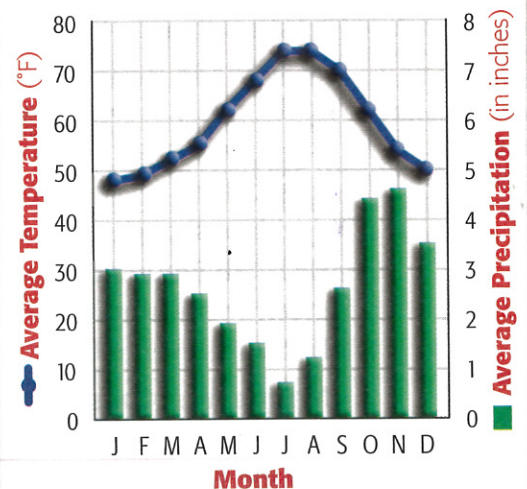
Mediterranean Climate

The climate graph shows average temperatures and precipitation for Nice (NEECE), France, which has a Mediterranean climate.

ANALYZING GRAPHS During which month is precipitation lowest?



Climate Graph for Nice, France



Source: The Weather Channel Interactive, Inc.

Highland Climates

Mount Kilimanjaro is the tallest mountain in Africa. Although Kilimanjaro is only about 200 miles (320 km) south of the equator, snow blankets its highest peak.

Kilimanjaro rises to 19,341 ft (5,895 m). The snow-covered summit has an ice cap climate.

Climate and plant life ranges from rain forest, to steppe, to desert, to tundra.

A tropical savanna climate is found around the base of Mount Kilimanjaro.

ANALYSIS SKILL

ANALYZING VISUALS

Which type of climate is found on the top of Mount Kilimanjaro?

ACADEMIC VOCABULARY

distinct
clearly different
and separate

Humid Subtropical Climate The southeastern United States is an example of the humid subtropical climate. This climate occurs along east coasts near the tropics. In these areas, warm, moist air blows in from the ocean. Summers are hot and muggy. Winters are mild, with occasional frost and snow. Storms occur year-round. In addition, hurricanes can strike, bringing violent winds, heavy rain, and high seas.

A humid subtropical climate supports mixed forests. These forests include both deciduous trees, which lose their leaves each fall, and coniferous trees, which are green year-round. Coniferous trees are also known as evergreens.

Marine West Coast Climate Parts of North America's Pacific coast and of western Europe have a marine west coast climate. This climate occurs on west coasts where winds carry moisture in from the seas.

The moist air keeps temperatures mild year-round. Winters are foggy, cloudy, and rainy, while summers can be warm and sunny. Dense evergreen forests thrive in this climate.

Humid Continental Climate Closer to the poles, in the upper-middle latitudes, many inland and east coast areas have a humid continental climate. This climate has four **distinct** seasons. Summers are short and hot. Spring and fall are mild, and winters are long, cold, and in general, snowy.

This climate's rainfall supports vast grasslands and forests. Grasses can grow very tall, such as in parts of the American Great Plains. Forests contain both deciduous and coniferous trees, with coniferous forests occurring in the colder areas.

READING CHECK **Categorizing** Which of the temperate climates is too dry to support forests?

Polar and Highland Climates

Get ready to feel the chill as we end our tour in the polar and highland climates. The three polar climates are found in the high latitudes near the poles. The varied highland climate is found on mountains.

Subarctic Climate The subarctic climate and the tundra climate described below occur mainly in the Northern Hemisphere south of the Arctic Ocean. In the subarctic climate, winters are long and bitterly cold. Summers are short and cool. Temperatures stay below freezing for about half the year. The climate's moderate rainfall supports vast evergreen forests, or taiga (TY-guh).

Tundra Climate The tundra climate occurs in coastal areas along the Arctic Ocean. As in the subarctic climate, winters are long and bitterly cold. Temperatures rise above freezing only during the short summer. Rainfall is light, and only plants such as mosses, lichens, and small shrubs grow.

In parts of the tundra, soil layers stay frozen all year. **Permanently frozen layers of soil are called permafrost.** Frozen earth absorbs water poorly, which creates ponds and marshes in summer. This moisture causes plants to burst forth in bloom.

Ice Cap Climate The harshest places on Earth may be the North and South poles. These regions have an ice cap climate. Temperatures are bone-numbingly cold, and lows of more than -120°F (-84°C) have been recorded. Snow and ice remain year-round, but precipitation is light. Not surprisingly, no vegetation grows. However, mammals such as penguins and polar bears thrive.

Highland Climates The highland climate includes polar climates plus others. In fact, this mountain climate is actually several climates in one. As you go up a mountain, the climate changes. Temperatures drop, and plant life grows sparser. Going up a mountain can be like going from the tropics to the poles. On very tall mountains, ice coats the summit year-round.

FOCUS ON READING

What is the effect of elevation on climate?

READING CHECK **Comparing** How are polar and highland climates similar?

SUMMARY AND PREVIEW As you can see, Earth has many climates, which we identify based on temperature, precipitation, and native plant life. In the next section you will read about how nature and all living things are connected.

Section 2 Assessment

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ONLINE QUIZ

Reviewing Ideas, Terms, and Places

- a. **Recall** Which three major climate zones occur at certain latitudes?

b. **Summarize** How do geographers categorize Earth's different climates?
- a. **Define** What are **monsoons**?

b. **Make Inferences** In which type of dry climate do you think the fewest people live, and why?
- a. **Identify** What are the four temperate climates?

b. **Draw Conclusions** Why are places with a Mediterranean climate popular vacation spots?
- a. **Describe** What are some effects of **permafrost**?

b. **Explain** How are highland climates unique?

Critical Thinking

- Categorizing** Create a chart like the one below for each climate region. Then use your notes to describe each climate region's average temperatures, precipitation, and native plant life.



FOCUS ON VIEWING

- Discussing World Climates** Add information about the climate of the place you have selected, such as average temperature and precipitation.