UNIT 2

The United States and Canada

Grand Canyon, Arizona, United States
Why It Matters

The United States and Canada are peaceful neighbors, sharing the longest undefended border in the world. These two countries have many things in common, including similar ways of life and a democratic heritage. In recent years, free trade has brought their economies closer together. In each country, one finds an increasing number of products that were made in the other country.
The United States and Canada

**Physical Geography** The United States and Canada span North America, stretching from the Pacific Ocean to the Atlantic. These two huge countries share many physical features. Mountains frame their eastern and western edges, cradling a central region of vast plains.

When people first arrived on these plains, they found an immense sea of grass. Beneath the gently rolling landscape lay dark, fertile soil that settlers eventually transformed into some of the world’s most productive farmland. To the east of the plains stand the ancient, rounded Appalachian Mountains. To the west are the much younger Rocky Mountains. Almost every imaginable type of climate—from tundra to desert to tropical wet—can be found within the borders of these two diverse countries.

1. **Plains and Plateaus** Located along the Utah-Arizona border, the sandstone rock forms known as the Two Mittens attract tourists from around the world.

2. **Lakes and Rivers** Long rivers, such as the Fraser located in British Columbia, have played an important role in trade and industry in the United States and Canada.

3. **Mountains** The Rocky Mountains are the longest mountain range in North America, stretching from British Columbia in Canada to New Mexico in the United States.
4 **NATURAL RESOURCES** Oil is a vital resource. The Trans-Alaska Pipeline transports approximately 1 million barrels of crude oil a day across 800 miles (1,300 km) of rough Alaskan terrain to the port of Valdez in southern Alaska.
United States and Canada

Cultural Geography  North America is a land of immigrants. It is believed the first peoples, ancestors of the Native Americans, came to the region from Asia. In the 1500s, immigrants began arriving from Europe. In the centuries that followed, others came from Africa, Asia, and Latin America. Many made this land their home by choice. Others were forced to come as exiles or slaves. Together these groups have shaped the culture of the region.

Regional Time Line

- **10,000 B.C.** Land bridge crossing/early settlement of indigenous peoples
- **A.D. 1607** First English settlement at Jamestown
- **A.D. 1776** U.S. independence declared
- **A.D. 1789** George Washington is elected president of the United States
- **10,000 B.C.**
- **A.D. 1000**
- **A.D. 1600**
- **A.D. 1700**
- **A.D. 970–1020** Leif Eriksson first European in Americas
- **A.D. 1756–63** Seven Years’ War; Britain awarded all French possessions in North America
- **A.D. 1775–1783** American Revolution
1 **ECONOMY** Today the service industry employs most of the workers in the United States and Canada. Many of these jobs are located in urban centers such as Toronto, Canada’s largest city.

2 **CULTURE** Immigration to the United States and Canada from other areas of the world has had a dramatic effect on the cultures of the two countries. Parades celebrating these cultural roots are common throughout the region.

3 **PEOPLE** This Cherokee woman is creating beadwork. Despite being the first peoples to inhabit the region, Native Americans were pushed from their ancestral lands by European settlers.
Obstacles and Opportunities

The landscapes of the United States and Canada are marked by a variety of physical features that act both as obstacles and as opportunities for progress. As you study the maps and graphics on these pages, look for the geographical features that make the region unique. Then answer the questions below on a separate sheet of paper.

1. What physical features have acted as barriers to settlement in the United States and Canada?

2. What benefits has the Great Lakes—St. Lawrence Seaway System provided to the cities located along the Great Lakes?

3. What has contributed to the wearing away of the Appalachian Mountains? What predictions can be made about the future of other geographically younger mountain ranges such as the Rockies?

**Very Different Mountain Ranges**

Length of mountain chains (mi/km)

<table>
<thead>
<tr>
<th>Appalachian</th>
<th>Rockies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,500 miles (2,414 km)</td>
<td>3,000 miles (4,828 km)</td>
</tr>
</tbody>
</table>

**Great Lakes System Profile**

Source: U.S. Army Corps of Engineers, Detroit District.
Comparing Past and Present

The cultures of the United States and Canada have been impacted by the cultures of those who have settled the region. As you compare the maps on these pages, look for patterns that may provide information about the cultures of the United States and Canada today. Then answer the questions below on a separate sheet of paper.

1. What conclusions can be drawn about the European settlement of the United States and Canada? What factors contributed to these settlement patterns?
2. Which country had a greater variety of Native American groups? What factors may have contributed to this situation?
3. How may location contribute to the differences between the Native American culture groups?
Industrialization and the Environment

The United States and Canada have used their vast energy resources to industrialize their countries. Industrialization has in turn had an impact upon the environment. As you study the maps and graphics on these pages, look for the effects of industrial pollution such as acid rain upon the region. Then answer the questions below on a separate sheet of paper.

1. Why might the eastern section of the United States and Canada experience higher levels of acid rain than the extreme northern and western sections of the region?

2. Where is Canada’s greatest concentration of fossil fuel resources located?

3. Describe the process by which pollution becomes acid rain. What effect does acid rain have upon surrounding vegetation?
<table>
<thead>
<tr>
<th>Country, Capital, &amp; Area</th>
<th>Population &amp; Density</th>
<th>Life Expectancy at Birth</th>
<th>GDP Per Capita*</th>
<th>% Urban</th>
<th>Literacy Rate (%)</th>
<th>Years of Compulsory Education</th>
<th>Phone Lines/Cell Phones (per 1,000 people)</th>
<th>Internet Users (per 1,000 people)</th>
<th>Flag &amp; Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>UNITED STATES</td>
<td>296,500,000</td>
<td>80 yrs.</td>
<td>$40,100</td>
<td>79</td>
<td>97.0</td>
<td>12</td>
<td>646/488</td>
<td>551.4</td>
<td>English</td>
</tr>
<tr>
<td></td>
<td>32,000,000</td>
<td>80 yrs.</td>
<td>$31,500</td>
<td>79</td>
<td>97.0</td>
<td>11</td>
<td>635/377</td>
<td>512.8</td>
<td>English/French</td>
</tr>
</tbody>
</table>


U.S. State Names: Meaning and Origins

*The CIA calculates per capita GDP in terms of purchasing power parity. This formula allows us to compare the figures among different countries.

Note: Land areas and flags are not drawn to scale.
Canadian Province and Territory Names: Meaning and Origins

**ALBERTA**
- Named for the daughter of England's Queen Victoria.

**BRITISH COLUMBIA**
- Named for the province's British heritage and the Columbia River.

**MANITOBA**
- Named for English royal family of Brunswick-Luneberg.

**NEW BRUNSWICK**
- Named for the strait of the spirit (Cree).

**NEWFOUNDLAND AND LABRADOR**
- “New found land,” named by explorer John Cabot in 1497; Labrador, “landholder” (Portuguese).

**NORTHWEST TERRITORIES**
- Named for lands north and west of Lake Superior.

**NOVA SCOTIA**
- Latin term for “New Scotland,” based on province’s Scottish heritage.

**NUNAVUT**
- “our land” (Inuktitut).

**ONTARIO**
- “beautiful lake” or “sparkling beautiful water” (Native American).

**PRINCE EDWARD ISLAND**
- Named for the son of England’s King George III.

**QUEBEC**
- “place where the river narrows” (Algonquian).

**SASKATCHEWAN**
- “fast flowing river” (Cree).

**YUKON**
- “great river” (Native American).
Why It Matters
You have seen stories in the news about the importance of the environment and conservation in the United States and Canada. Studying the physical geography will explain the importance of the region’s natural features and how the environment affects people in the region.

Section 1: The Land
Changes occur in the use, distribution, and importance of natural resources. A variety of landforms, water systems, and natural resources have played an important and changing role in the development of the United States and Canada.

Section 2: Climate and Vegetation
Geographers organize Earth into regions that share common characteristics. Location and landforms affect climate regions and natural vegetation of the United States and Canada.

Geography ONLINE
Chapter Overview Visit the World Geography and Cultures Web site at glencoe.com and click on Chapter Overviews—Chapter 5 to preview information about the physical geography of the United States and Canada.

Niagara Falls displays its beauty and power at the border between the United States and Canada.
Compare and Contrast  Make a Three-Tab Book with a Venn diagram to help you compare and contrast the physical geography of the United States and Canada.

UNITED STATES AND CANADA

Reading and Writing  As you read this chapter, write about physical features of the two countries that are similar under the center tab of the diagram. Note features and areas that differ under the outer tabs.
The United States and Canada form a geographic region of enormous physical variety and natural wealth. This wealth includes breathtaking landforms shaped by the forces of water, wind, and geology over millions of years. These landforms, such as the rugged, mountainous areas near Yellowstone National Park, have attracted adventurers and inspired writers for decades.

**Voices Around the World**

“From my cabin in Teton Valley, Idaho, . . . [t]here is a snow-covered meadow, and beyond that a stand of bare grey aspen trees, and beyond that a spill of sun-stunned white until the Earth rears back on itself and makes the Rocky Mountains. It is a landscape that has inspired . . . a great many acts of poetry, but I measure it by its ordinary day-to-day gifts. . . . Today . . . the slipping hold of winter is still evident. . . . And flies, giddy with the promise of longer days, seep out of the logs of my cabin and fall in exhausted layers on the window-sills. Life, in all its dangerous, complicated, annoying glory, has returned to this corner of the sun-tilted world.”

—Alexandra Fuller, “Yellowstone & Grand Teton National Parks,” National Geographic, November 2003

**Guide to Reading**

**Section Preview**

This section discusses the landforms, water systems, and natural resources that play an important and changing role in the development of the United States and Canada.

**Content Vocabulary**

- accumulated (p. 132)
- enormous (p. 133)
- crucial (p. 133)
- divide (p. 132)
- fossil fuel (p. 134)
- headwaters (p. 132)
- fishery (p. 135)
- tributary (p. 132)
- aquaculture
- fall line (p. 133)
- (p. 135)

**Academic Vocabulary**

- accumulate (p. 132)
- enormous (p. 133)
- crucial (p. 133)

**Places to Locate**

- Mount McKinley (p. 131)
- Rocky Mountains (p. 131)
- Canadian Shield (p. 132)
- Appalachian Mountains (p. 132)
- Mississippi River (p. 132)
- Great Lakes (p. 133)

**Reading Strategy**

Organizing Complete a web diagram similar to the one below by listing the major minerals found in the United States and Canada.

![Minerals Diagram](image)
Landforms

**MAIN Idea** Water, wind, and geologic forces shape the landscapes of the United States and Canada.

**GEOGRAPHY AND YOU** What landforms are part of the area in which you live? Read to learn about the many different landforms that exist in the United States and in Canada.

As the physical map on page 120 shows, mountains rise at the eastern and western edges of the United States and Canada. In the west, young, sharp-edged mountain ranges tower above plateaus that descend to vast plains. These plains extend across the continent to meet the lower, more eroded mountains in the east.

**Western Mountains, Plains, and Plateaus**

Collisions between tectonic plates millions of years ago thrust up a series of sharp-peaked mountains called the Pacific Ranges. These ranges include the Sierra Nevada, the Cascade Range, the Coast Range, and the Alaska Range. The Alaska Range gives rise to the highest point on the continent, Mount McKinley, at 20,320 feet (6,194 m).

Like the Pacific Ranges, the **Rocky Mountains** grew as geologic forces heaved slabs of rock upward. The Rocky Mountains link the United States and Canada, stretching more than 3,000 miles (4,828 km) from New Mexico to Alaska. Some peaks of the Rockies soar to more than 14,000 feet (4,267 m).

Dry basins and plateaus fill the area between the Pacific Ranges and the Rockies. The Columbia Plateau in the north was formed by lava that seeped from cracks in the earth. The heavily eroded Colorado Plateau displays flat-topped mesas and the majestic Grand Canyon of the Colorado River. At its deepest, the canyon’s steep walls plunge 6,000 feet (1,829 m). The Great Basin cradles Death Valley, the lowest place in the United States. Canada’s plateaus are colder and narrower than those in the United States.

East of the Rockies, the land falls and flattens into the Great Plains, which extend 300 to 700 miles (483 to 1,126 km) across the center of the region. The Great Plains reach elevations up to 6,000 feet (1,829 m). Although the plains appear flat, the land slopes downward at about 10 feet per mile (about 2 m per km) to the Central Lowlands along the Mississippi River.
Eastern Mountains and Lowlands

East of the Mississippi, the land rises slowly into the foothills of the Appalachian Mountains. At the edge of the Canadian plains, the **Canadian Shield**, a giant core of rock centered on the Hudson and James Bays, anchors the continent. This stony land makes up the eastern half of Canada and the northeastern United States. In northern Quebec the Canadian Shield descends to the Hudson Bay.

The heavily eroded **Appalachian Mountains** are North America’s oldest mountains. They are the continent’s second-longest mountain range, extending about 1,500 miles (2,414 km) from Quebec to central Alabama. The Appalachians were formed by powerful upheavals within the Earth’s crust and shaped over time by ice and running water. Coastal lowlands lie east and south of the Appalachians. Between the mountains and the coastal lowlands is the Piedmont, a wide area of rolling hills. Many rivers cut through the Piedmont, flowing east across the Atlantic Coastal Plain in the Carolinas. In the southeast, the Gulf Coastal Plain extends westward to Texas.

Islands

The islands of the United States and Canada were created in part by geologic forces. Oceanic islands, such as Hawaii, are volcanic. With each volcanic eruption, lava **accumulated** on the floor of the ocean until it pushed through the water’s surface. Volcanic mountaintops emerging from the Pacific Ocean formed the 8 major and 124 smaller islands of Hawaii. Continental islands are unsubmerged parts of the continental shelf—a shallow, underwater platform that forms a continental border. Many larger islands, such as Greenland, near the coast of Canada’s Ellesmere Island, are the continental type. An overseas territory of Denmark, Greenland is the world’s largest island at 840,325 square miles (2.2 million sq. km). Newfoundland, Prince Edward Island, and Cape Breton Island in the east and Vancouver Island in the west play important roles in Canada’s economy. New York City’s Manhattan Island, at the mouth of the Hudson River, is a major U.S. and world economic center.

**Reading Check** Regions What are some important similarities between the physical geography of the United States and the physical geography of Canada?

Water Systems

**MAIN Idea** Lakes and rivers in the United States and Canada are important to economic development in the region.

**GEOGRAPHY AND YOU** Can you name major U.S. cities and towns that are located close to waterways? Read to learn how waterways encourage the growth of cities and industrial centers.

Freshwater lakes and rivers have helped make the United States and Canada prosperous. Abundant water satisfies the needs of cities and rural areas, provides power for homes and industries, and moves resources across the continent.

**Rivers**

In North America the high ridge of the Rockies is called the Continental Divide, or the Great Divide. A **divide** is a high point or ridge that determines the direction in which rivers flow. East of the Continental Divide, waters flow toward the Arctic Ocean, Hudson Bay, the Atlantic Ocean, and the Mississippi River system, which empties into the Gulf of Mexico. To the west, waters flow into the Pacific Ocean. Rivers—such as the Colorado and the Rio Grande—have their **headwaters**, or source, in the Rockies. Many **tributaries**, or smaller rivers and streams, connect with one of these two large rivers. Northeast of the Rockies, the Mackenzie River, which flows from the Great Slave Lake to the Arctic Ocean, drains much of Canada’s northern interior.

The **Mississippi River**, one of North America’s longest rivers, flows 2,350 miles (3,782 km) from its source. It begins in Minnesota as a stream so narrow that a person can easily jump across it:

> “When I was nine years old, I jumped across the Mississippi. . . . My parents let me know this modest stream I’d taken in stride was actually one of the Earth’s great corridors, dominion of paddleboats and Huck Finn, prime mover of food, fertility, and commerce across our land.”

From a narrow stream at its source, the Mississippi River reaches a width of 1.5 miles (2.4 km) as it empties into the Gulf of Mexico. The river drains 1,200,000 square miles (3,108,000 sq. km) of land, including all or part of 31 U.S. states and 2 Canadian provinces. This enormous reach makes the Mississippi one of the world’s busiest commercial waterways.

In the eastern United States, a boundary called the fall line marks the place where the higher land of the Piedmont drops to the lower Atlantic Coastal Plain. Along the fall line, eastern rivers break into rapids and waterfalls, blocking ships from traveling farther inland.

Canada’s St. Lawrence River flows for 750 miles (1,207 km) from Lake Ontario to the Gulf of St. Lawrence in the Atlantic Ocean, forming part of the border between Canada and the United States. The Canadian cities of Quebec, Montreal, and Ottawa grew up along the St. Lawrence River and its tributaries and depend on these waters for trade.

Niagara Falls, on the Niagara River, forms another part of the border between Canada and the United States. Two separate drops form the falls—the Horseshoe Falls, adjoining the Canadian bank of the river, and the American Falls, adjoining the U.S. bank. The falls are a major source of hydroelectric power for both countries.

Lakes and Other Waterways

In northern Canada, glacial dams created Great Bear Lake and Great Slave Lake. Glaciers also gouged the Canadian Shield and tore at the central section of the continent, leaving glacial basins that filled and became the Great Lakes. Large deposits of coal, iron, and other minerals near the lakes favored the development of industries and urban growth in the area.

Providing a link between inland and coastal waterways has been crucial to the economic development of North America. The greatest of these connections is the Great Lakes-St. Lawrence Seaway System—a series of canals, the St. Lawrence River, and other inland waterways that link the Great Lakes and the Atlantic Ocean. The seaway helped make cities along the Great Lakes powerful trade and industrial centers.

**Map Study**

The fall line of the eastern United States indicates where the higher land of the Piedmont drops to meet the Atlantic Coastal Plain.

1. **Human-Environment Interaction** Why did cities such as Philadelphia, Baltimore, and Washington, D.C., spring up along the fall line?

2. **Regions** How did location along the fall line affect the economies of towns in the South?
Natural Resources

MAIN Idea Abundant natural resources have made the United States and Canada wealthy, but these resources and the areas in which they are found need protection.

GEOGRAPHY AND YOU What natural resources are important to activities in your everyday life? Read to learn about the vital natural resources of the United States and Canada.

Ample freshwater is only one of the many natural resources of the United States and Canada. The same geologic processes that shaped the North American landscape left the region rich in a wide variety of resources. Access to this natural wealth has helped speed industrialization.

Fossil Fuels and Minerals

The United States and Canada have important energy resources, such as petroleum and natural gas. Texas and Alaska rank first and second in petroleum reserves in the United States. Texas also has the greatest reserves of natural gas. Most of Canada’s petroleum and natural gas reserves lie in or near Alberta. Coal in the Appalachians, Wyoming, and British Columbia has been mined for more than 100 years.

Coal, petroleum, and natural gas are forms of fossil fuels. Such fuels were formed in the Earth from the buried plant and animal remains of a previous geologic time hundreds of millions of years ago. Fossil fuels must be conserved because they are nonrenewable, which means they cannot be replaced naturally in a short period of time. Currently there is much interest in finding new sources of fossil fuels in North America, in Alaska for example, without disrupting the natural environments in which they are found.

Mineral resources are also plentiful. The Rocky Mountains yield gold, silver, and copper. Parts of the Canadian Shield are rich in iron and nickel. Iron ore exists in northern Minnesota and Michigan. Canada’s minerals include 28 percent of the world’s supply of potash (a mineral salt used in fertilizers), 18 percent of its copper, 14 percent of its gold, and 12 percent of its silver. Conservation and land preservation are important issues for today’s mining industry.

Like fossil fuels, mineral resources are nonrenewable and could become depleted. Because mining involves heavy equipment, uses large quantities of water, and moves a great deal of rock and other natural materials, it can damage land, water, and air systems. In the past, people did not pay a great deal of attention to preserving the environment while mining. Today, the challenge for mining companies in the United States and Canada is finding ways to remove and process minerals and metal resources with the least disruption to surrounding ecosystems. One aspect of these efforts involves restoring land used in mining when mining operations in a particular area have finished. This reclaimed land can then be used for activities such as wildlife parks, tree farms and orchards, public hunting and fishing areas, and grazing livestock.

Human-Environment Interaction How are mining companies working to reduce the impact of mining on the environment?
Timber and Fishing

Timber is a vital resource for the United States and Canada. The circle graph below shows the various ways in which forestland in the United States is used. Forests and woodlands once covered large expanses of both countries. Today, however, forests cover less than 50 percent of Canada and only about 33 percent of the United States. Commercial lumber operations face the challenge of harvesting the region’s precious timber resources responsibly.

Trees are a renewable resource, but only if people take steps to protect forests and the ecosystems they sustain. Positive efforts to preserve forests include replanting trees to replace those cut for lumber, cooperating to protect the 1,000 species of native forest animals, and preserving old-growth forests.

The coastal waters of the Atlantic and Pacific Oceans and the Gulf of Mexico have been essential to the region’s economy. Rich with fish and shellfish, these waters were important fisheries, or places for catching fish and other sea animals. The Grand Banks, once one of the world’s richest fishing grounds, covers about 139,000 square miles (360,000 sq. km) off of Canada’s southeast coast. In recent years, overfishing has caused fish stocks to decrease rapidly, leading the Canadian government to ban cod fishing. Both countries of the region now are working to protect species that have been or are in danger of becoming overfished. After a steep decline in fishing, aquaculture, or fish farming, has become a growing economic activity.

READING CHECK

Place: What industries are supported by the natural resources of the United States and Canada?

SECTION I REVIEW

Vocabulary
1. Explain the significance of: divide, headwaters, tributary, fall line, fossil fuel, fishery, aquaculture.

Main Ideas
2. Explain how each of the following factors—water, wind, and tectonic forces—has influenced landscapes in the United States and Canada.
3. What types of natural resources have made the United States and Canada wealthy? Why do such resources need protection? What efforts have been made to preserve forests in the United States and Canada?
4. How are lakes and rivers important to economic development in the United States and Canada? On a sheet of paper, fill in a chart like the one below that lists examples of each for both countries.

<table>
<thead>
<tr>
<th></th>
<th>Lakes</th>
<th>Rivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Critical Thinking
5. In what ways has the physical geography of the United States and Canada contributed to the development of the region?
6. Making Inferences Why is it in the best interest of industries to use natural resources responsibly?
7. Analyzing Visuals
Study the circle graph above. What is the primary reason for owning forestland? Which reasons for owning forestland are economic in nature?

Writing About Geography
8. Expository Writing Write a paragraph describing the effects of a physical process, such as weather or gravity, on the flow of rivers in the United States and Canada.

Geography ONLINE

Study Central™ To review this section, go to glencoe.com and click on Study Central.
**Awful Aftermath**

**Disaster**  A record-breaking 26 named tropical storms, including 13 hurricanes, formed during the 2005 Atlantic hurricane season. Katrina, Rita, and Wilma devastated the Gulf Coast with destructive winds, mountainous waves, torrential rains, storm surges, and tornadoes. After Katrina’s storm surge breached the levees, 80 percent of New Orleans flooded. Along the coast, whole towns were wiped out. The storm’s effects were felt as far north as Ontario, Canada.

**What was the cost of Katrina?**  Katrina was the most destructive and the costliest natural disaster in the history of the United States, with property damage estimates of $75 billion. To clean up the debris and toxins and to rebuild will cost billions more.
Katrina was born from a cluster of thunderstorms near the Bahamas. Like other hurricanes, Katrina formed from high humidity, light winds, and water temperatures of at least 80°F (27ºC). Katrina became the largest hurricane of its strength ever to hit the United States. With 125 mph winds, gusting to 215 mph, and a 34-foot (10.4-m) storm surge, Katrina had the energy of 10,000 nuclear bombs.

What was the human toll? Thousands were left battered, displaced, and homeless. The official death toll was 1,383, but months later, more than 4,000 people were still unaccounted for. For more information, visit Beyond the Textbook/Hurricane Katrina at glencoe.com.

**Thinking Geographically**

1. **Environment and Society** Conduct research to learn how individuals and communities prepared for Katrina. Then create a multimedia presentation detailing your findings.

2. **Human Systems** Why might people not want to leave their homes before a hurricane hits? Why might people choose to rebuild homes in areas often affected by hurricanes?
Climate and Vegetation

**Diversity of climate and vegetation** characterizes the region of the United States and Canada. Conditions in this vast region include the wet and dry seasons of the southern United States, the bitter cold of high-latitude areas, the radically changing seasons of the interior regions, and the cool, wet climates of the Pacific Coast.

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**Voices Around the World**

“Off the west coast of British Columbia’s Vancouver Island, Bob Van Pelt tramped ahead across a smaller isle named Meares. We were in woods as old, quiet, green, and wet as a forest can be. Even the air felt soaked. It was hard to tell how much of the moisture came from the chilly rain, how much was fog, and how much was steam rising off the burly figure of a bearded Van Pelt, also known as Big Tree Bob. . . . When we reached a giant that the locals call Big Mother, Van Pelt . . . took precise measurements . . . and announced that this western red cedar would probably rank among the ten largest known on the continent.”


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Old-growth cedar, Vancouver
Southern Climates

**MAIN Idea** Location near the coast, as well as prevailing wind patterns, results in the warm and wet climates and warm and dry climates of the southern United States.

**GEOGRAPHY AND YOU** Have you ever been at the beach and experienced warm winds blowing off the water? Read to learn how the Atlantic Ocean and the Pacific Ocean influence climate in some parts of the United States.

Subtropical, tropical, desert, and Mediterranean climates are found primarily in the southern United States. The climate map on page 140 shows that these climate zones are part of an area that extends from about 25° N to about 40° N.

**Warm and Wet Climates**

The humid subtropical climate of the Southeast is rainy with long, muggy summers and mild winters. Because the Southeast borders a major source of water—the Atlantic Ocean—there is no dry season. Deciduous forests extend as far south as Louisiana, but land has been cleared for farming along the Mississippi River. Wetlands and swamps like Florida’s Everglades shelter a great variety of vegetation and wildlife. In late summer and early autumn, hurricanes—ocean storms hundreds of miles wide with winds of 74 miles per hour (119 km per hour) or more—can pound the region’s coastlines.

Within the contiguous United States, the 48 states whose borders touch, only the extreme southern tip of Florida has a tropical climate that has a distinct dry season. Florida’s dry season is in winter. Hawaii, about 2,400 miles (3,862 km) west of the mainland, and the Caribbean island of Puerto Rico have tropical wet climates. These tropical wet climates support lush rain forests.

**Warm and Dry Climates**

The rain shadow effect creates desert areas when dry air moves down the leeward side of a mountain. This effect keeps the plateaus and basins between the Pacific Ranges and the Rocky Mountains hot and dry. Such a climate often contributes to problems with water quantity. Much of the area has a steppe or desert climate. Deserts in this area, including Death Valley, bake under the relentless sun. Death Valley has the highest temperature ever recorded in the United States, 134°F (57°C).

A Mediterranean climate is characteristic of central and southern California. Such a climate is confined to coastal areas and is characterized by mild, wet winters and hot, dry summers. The vegetation in this area is a drought-resistant woodland of twisted, hard-leaved trees. In this region of the world, such Mediterranean scrub vegetation is known as chaparral (sha•puh•RAL). Under natural conditions, chaparral’s growth depends on regular burning. However, these fires create a major hazard in the hills around Los Angeles and Oakland. Scheduled burning often escalates to widespread brush fires when the hot, dry Santa Ana winds blow down the mountain slopes from the inland plateaus.

**READING Check** Regions What four climates are found in the southern United States?
Northern Climates

**MAIN Idea** Variations in climate and vegetation in most of the United States and Canada are the result of the combined effects of latitude, elevation, ocean currents, and rainfall.

**GEOGRAPHY AND YOU** Have you ever experienced a tornado? Read to learn how the variation in climate in the region’s interior can result in violent weather phenomena.

Most of the contiguous United States and the southern one-third of Canada—from about 40° N to 50° N—experiences variations in climate and vegetation. The area’s climate ranges from hot and humid to cool and wet.

**Interior Climates**

Far from large bodies of water that tend to moderate climate, the Great Plains, in the center of the continent, has a humid continental climate with bitterly cold winters and hot summers. Although western mountains block moisture-bearing Pacific winds, the Great Plains benefits from warm, moist winds that blow north along the Rockies from the Gulf of Mexico and cold, moist winds that blow south from the Arctic. The climate map above shows that a humid continental climate extends into southern Canada. Such a climate also extends from the northeastern United States into southeastern Canada.

Prairies, naturally treeless expanses of grasses, spread across the Great Plains of the continent’s midsection. Each year, rainfall ranging from 10 to 30 inches (26 to 76 cm) waters tall prairie grasses, such as switchgrass and bluestem. Towering 6 to 12 feet (1.8 to 3.7 m) high, these grasses can grow as much as half an inch (1.3 cm) a day. In the Great Plains and the eastern United States, violent spring and summer thunderstorms called supercells often spawn tornadoes, twisting funnels of air with winds that can reach 300 miles (483 km) per hour.
Coastal Climates

The interplay of ocean currents and westerly winds with the Pacific Ranges gives the Pacific coast from northern California to southern Alaska a marine west coast climate. The mountain barrier forces the warm, wet ocean air upward, where it cools and releases moisture. As a result, parts of this region receive more than 100 inches (254 cm) of rain each year. Winters are overcast and rainy. Summers are cloudless and cool. Ferns, mosses, and coniferous forests grow here.

Settlers on the Great Plains broke up the densely packed sod to grow crops. When dry weather blanketed the plains in the 1930s, winds eroded the topsoil, reducing farmlands across several U.S. states to a barren wasteland called the Dust Bowl. The resulting economic hardships, made worse by the Great Depression, caused people to migrate out of the area. Since the 1930s, improved farming and conservation methods have restored the soil.

Some areas west of the Great Plains experience a steppe climate with a mixture of vegetation, depending on latitude or elevation. Steppe climates are transitional climates that occur between the dry desert climates and the humid interior climates.

Elevation gives the higher reaches of the Rockies and Pacific Ranges a highland climate. Coniferous forests cover the middle elevations of the ranges. Beyond the timberline, the elevation above which trees cannot grow, lichens and mosses grow. In early spring, a warm, dry wind called the chinook (shuh•NUK) blows down the eastern slopes of the Rockies, melting snow.

Natural vegetation reflects the region’s climatic variety.

1. **Location** How does location affect the climate and vegetation of the western coast of Canada?

2. **Location** In what climate region are most of Canada’s forests?

Coastal Climates

The interplay of ocean currents and westerly winds with the Pacific Ranges gives the Pacific coast from northern California to southern Alaska a marine west coast climate. The mountain barrier forces the warm, wet ocean air upward, where it cools and releases moisture. As a result, parts of this region receive more than 100 inches (254 cm) of rain each year. Winters are overcast and rainy. Summers are cloudless and cool. Ferns, mosses, and coniferous forests grow here.

**READING Check** Location How do the western Rocky Mountains affect climate and vegetation in the United States and Canada?
High-Latitude Climates

**MAIN Idea** Parts of the United States and Canada are located in the high latitudes and experience a harsh, subarctic climate.

**GEOGRAPHY AND YOU** Think about the coldest temperatures you have experienced. Read to learn about the coldest temperatures in North America.

Large parts of Canada and Alaska lie in the high latitudes and have a subarctic climate with frigid winters. Winter temperatures can fall to −70°F (−57°C) in some places. A high atmospheric pressure area that lingers over the Canadian subarctic spawns the cold winds that chill much of the United States during the winter.

Many parts of northern North America experience winter **blizzards** with winds of more than 35 miles per hour (56 km per hour), heavy or blowing snow, and **visibility** of less than 1,320 feet (402 m) for three hours or more.

The vegetation map on page 141 shows that a band of coniferous and mixed deciduous and coniferous forests sweeps from **Newfoundland** into the subarctic **Yukon Territory**. Lands along the Arctic coast fall into the tundra climate zone. Bitter winters and cool summers in this vast expanse of wilderness make it inhospitable for most plants, and few people live there. Along the coasts of Greenland, sparse tundra vegetation consists of sedge, cotton grass, and lichens. The island’s small ice-free areas have few trees, but some dwarfed birch, willow, and alder scrubs do survive. As in other northern areas, few people inhabit Greenland because of its harsh climate.

The interior parts of Greenland have an ice cap climate. This type of climate is characterized by layers of ice and snow, often more than 2 miles (3 km) thick, that constantly cover the ground. The only form of vegetation that can survive here is lichens.

**Regions** What are the characteristics of a blizzard?

<table>
<thead>
<tr>
<th>City</th>
<th>Average Number of Days Below 32°F/0°C</th>
<th>Average Winter Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicago, Illinois</td>
<td>132</td>
<td>25°F/−3°C</td>
</tr>
<tr>
<td>Yellowknife, Northwest Territories</td>
<td>224</td>
<td>−10°F/−23°C</td>
</tr>
</tbody>
</table>

Source: www.weatherbase.com

### Vocabulary

1. Explain the significance of: hurricane, chaparral, prairie, supercell, timberline, chinook, blizzard.

### Main Ideas

2. How do location near the coast and prevailing wind patterns affect climate in the southern United States?
3. What causes variations in climate and vegetation in most of the United States and Canada?
4. Describe the climate and vegetation of the high-latitude regions in the United States and Canada.
5. Use a Venn diagram like the one below to compare and contrast the climate and vegetation of the United States and Canada.

### Critical Thinking

6. **Habits** How does location of a place near a large body of water influence its climate?
7. **Making Comparisons** How do the Pacific winds and the Arctic winds differ in their impact on climate?
8. **Problem Solving** How might the conditions that caused the 1930s Dust Bowl disaster have been avoided?
9. **Analyzing Visuals** Study the climate map on page 140. How does the climate pattern of the western United States reflect the occurrence of the rain shadow effect?

### Writing About Geography

10. **Expository Writing** Write an essay describing how the climate and vegetation of the United States and Canada may have influenced human settlement in the region.

### Geography ONLINE

**Study Central™** To review this section, go to glencoe.com and click on Study Central.
A **Fossil Fuels**
- Petroleum and natural gas deposits in Texas, Alaska, and Alberta
- Coal mined in Appalachian Mountains, Wyoming, and British Columbia for more than 100 years
- Issues of using fossil fuels while protecting the environment

B **Canadian Shield**
- Located east of the Canadian plains
- Rocky core centered on the Hudson and James Bays
- Subarctic climate with coniferous forests

C **Timber and Fishing**
- Timber is important for the region, but lumber operations face the challenge of harvesting trees responsibly.
- Coastal waters are home to fisheries, but some areas have been overfished.

D **Great Lakes**
- Five lakes created by movement of glaciers
- Deposits of coal and iron fueled industrial development
- Linked to the Atlantic Ocean by the St. Lawrence Seaway

E **Appalachian Mountains**
- Extend from Quebec to central Alabama
- North America’s oldest mountains shaped over time by ice, wind, and running water
- Midlatitude climates with coniferous and deciduous forests

F **Rocky Mountains**
- Stretch from New Mexico to Alaska, linking the United States and Canada
- Young mountains created through tectonic activity
- Highland climate varies with elevation

G **Mississippi River**
- Headwaters in Minnesota and mouth in Louisiana
- Drains all or part of 31 U.S. states and 2 Canadian provinces
- One of the world’s busiest commercial waterways
Reviewing Vocabulary
Directions: Choose the word or words that best complete the sentence.

1. At the _______ are rapids and waterfalls that blocked ships from traveling farther upstream.
   A Piedmont
   B coastal plain
   C Appalachian Mountains
   D fall line

2. _______ were formed in the Earth millions of years ago and can be burned for energy.
   A Renewable resources
   B Minerals
   C Fossil fuels
   D Mountains

3. Thunderstorms that can cause tornadoes are _______.
   A hurricanes
   B supercells
   C prairies
   D cold fronts

4. Trees cannot grow above _______.
   A the timberline
   B the fall line
   C latitude lines
   D boundaries

Reviewing Main Ideas
Directions: Choose the best answers to the following questions.

Section 1 (pp. 130–135)
5. Why is it especially important to conserve fossil fuels?
   A They are nonrenewable.
   B People do not understand how to find them.
   C People do not know how to use them.
   D The government owns all the sources.

6. As commercial fishing has declined, what activity has taken its place?
   A agriculture
   B lumbering
   C aquaculture
   D conservation

Section 2 (pp. 138–142)
7. The highest temperature ever recorded in the United States was in _______.
   A the Florida Everglades
   B Death Valley
   C Phoenix, Arizona
   D Las Vegas, Nevada

8. The interior parts of _______ have an ice cap climate.
   A Alaska
   B Yukon Territory
   C Northwest Territories
   D Greenland
Critical Thinking

Directions: Choose the best answers to the following questions.

9. Aside from latitude, what other factor greatly influences climate in North America?
   A. trees
   B. grasslands
   C. large landforms
   D. rivers

Base your answer to question 10 on the map and on your knowledge of Chapter 5.

10. What type of climate dominates the extreme southeastern United States?
    A. tropical dry
    B. humid subtropical
    C. humid continental
    D. subarctic

Document-Based Questions

Directions: Analyze the document and answer the short-answer questions that follow the document.

This excerpt discusses the practice of mountaintop mining in the Appalachian Mountains.

Coal miner.

Those words may conjure the image of a man with a light on his helmet and a pick in his hand. But more than two-thirds of this country’s coal comes from surface mines—strip mines, or in their latest, largest incarnation, mountaintop removal mines. Instead of tunneling into a mountain and hauling out its coal, strip miners move chunks of mountain out of the way until the coal is at the surface.

In mountaintop removal mining—just like it sounds—the mountaintop is pulverized to get at the coal. Begun in West Virginia and Kentucky in the late 1960s, the pace of mountaintop removal has picked up in the past decade as demand for coal has grown with the rise in the cost of other fuels. And with the increase in mountaintop removal has come greater outcry about the effects of the practice. . . .

Opposition groups blame strip mining and the clear-cutting that precedes it for flooding. They say it damages wildlife habitat. They worry about sludge ponds, filled with the liquid waste created in the coal-cleaning process. . . .


11. How does strip mining differ from the traditional practice of tunneling into the mountain?

12. According to its opponents, what environmental problems are caused by the practice of mountaintop removal mining?

Extended Response

13. Describe the effect that lakes and rivers have had upon the economic development of the United States and Canada.