

CONCLUSION

The changes brought about by the Industrial Revolution were enormous and long-lasting. In industrialized countries, first in Britain and later almost everywhere in the world, society was transformed. Traditional rural life ended, to be replaced by urban and factory life. Working-class families had to learn to cope with city life and the factories, with their brutal conditions and low wages. On the other hand, the upper and middle classes profited greatly from the Industrial Revolution.

Eventually the cruelties of the factory system, and of life for the lower classes in general, shocked writers such as Charles Dickens, who helped to force change by appealing directly to middle-class people.

Gradually, industrialization began to make life better for all people. In time, laws were passed that ended child labour and other discriminatory practices.

Great improvements in transportation helped many people, not just the industrialists. Cities became more livable, with gas lights and better sanitation. Children started going to school. Mass entertainment—sports, like football, for example—became very popular. Before long, people forgot about the country life of earlier times and accepted the city as a place of opportunity and excitement.

The Industrial Revolution is not quite over. You are in a new phase of that great process, and you will have to adjust, just as your ancestors did, to the revolutionary changes that the future will bring.

SUMMARY ACTIVITIES

1. Prepare a protest poster against enclosure. Your poster should point out the negative aspects of enclosure and highlight the profits that will be made by landowners.
2. With a partner, or partners, draw up a submission to parliament which contains a list of recommendations for laws dealing with child labour. Your list should begin with a preamble—an explanation of what the recommendations are concerned with and why you feel it is necessary that they be adopted.
3. How did the Industrial Revolution spur the growth of colonies? What was the value of colonies to an industrialized nation? What were the benefits of being a colony? Were there any drawbacks?
4. The Industrial Revolution transformed life for the people of Britain. Develop a chart showing how life was transformed for various groups of people. Present a position paper on which social group's life changed the most.

ON YOUR OWN

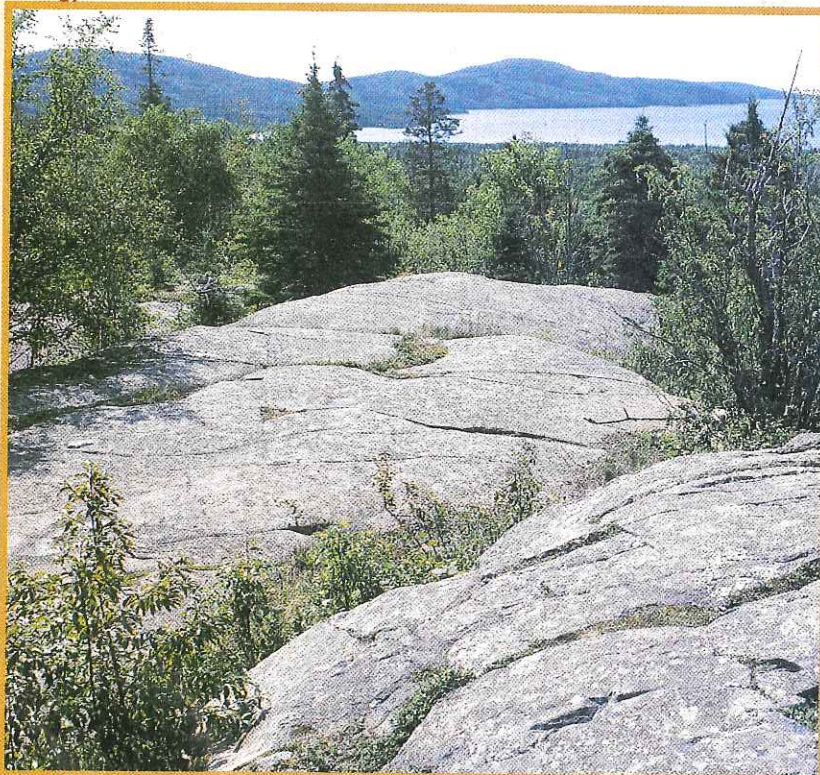
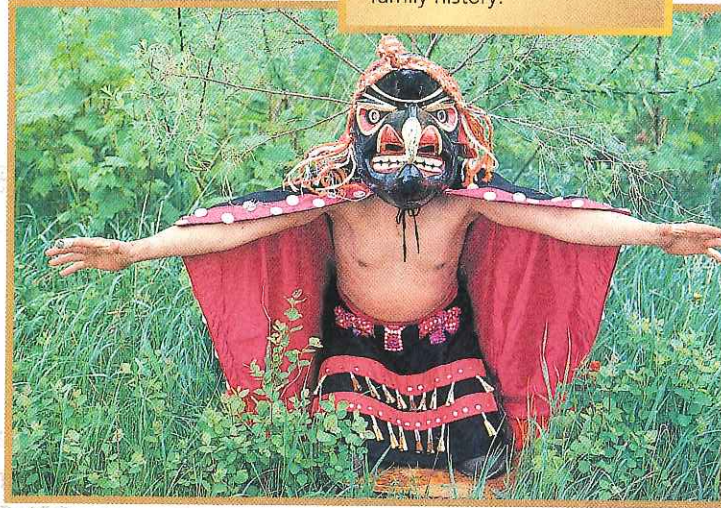
1. With a partner, write a business proposal to investors outlining your plans for a new railway that will connect two important English cities. To help plan your venture, use a good atlas map showing the topography of Britain. Be sure to include costs (in pounds), time needed, labour force required, and other factors that you think are important in your proposal. Your estimates need not be accurate, but should show that you have an understanding of the problems, and expected profits, of the venture.
2. Research the Peterloo Massacre, the Chartist Movement, and trade unions. Write a short report on attempts by working people to organize themselves in order to better their lives.
3. Imagine that you are a worker in a textile mill in England. Do research to find out more about working conditions in the mill. Write a letter to your MP, explaining your daily life in the mills and at home.
4. Compare the factories of today with the factories of the early Industrial Revolution. What aspects are the same? What aspects are different?
5. Research the impact of European immigration on the Native peoples of North America. Has the situation been resolved?

UNIT 2

NORTH AMERICA BECKONS

The European colonists who began to move to North America in ever-increasing numbers after 1600 usually found a land that was different from the land they had left. They discovered that the landscape, climate, and vegetation varied greatly from region to region in North America. Their first years were usually years of struggle as they adapted to the new environment.

The Northwest Coast peoples. Ritual dancing is an ancient feature of Northwest Coast aboriginal life. It reminds people of the importance of clan and family history.



This process of adaption would have been much more difficult without the assistance of the Native peoples of North America, who generously shared their expertise and knowledge with the newcomers. Having lived in North America for many thousands of years, the Native peoples understood the impact of the physical environment on their lives. Over the years, they had developed societies that expressed their values in harmony with their environment.

The Canadian Shield. The Canadian Shield has become symbolic of Canada. Images of the Shield were popularized by the Group of Seven painters.

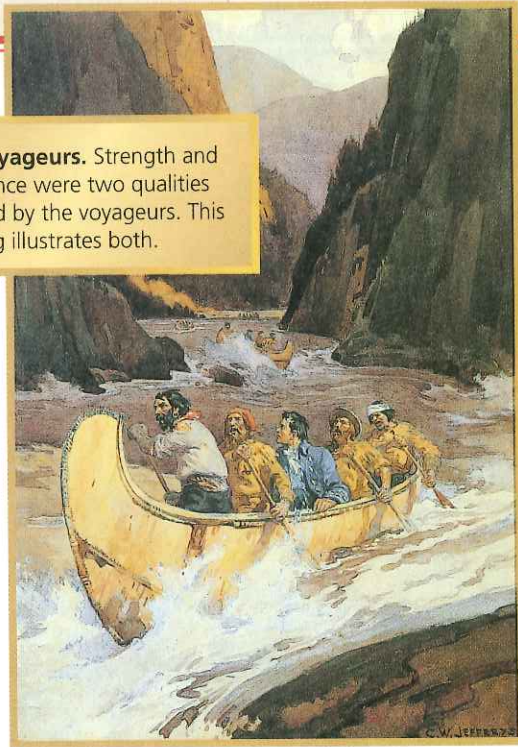
For many years, the French exploited the resources of New France—primarily fish and furs—without settling in the land. But after New France was made a royal colony in 1663, permanent settlements began to grow, and a French-Canadian sense of identity emerged. The French and the English competed for Native allies and the control of the fur trade. Eventually, they competed for control of the continent itself, and it became English.



The fur trade encouraged the British to move ever westward, seeking new supplies of fur. Eventually, Europeans reached both the Arctic and Pacific oceans. The first settlers in the west were those brought out by Lord Selkirk to the area that is now Winnipeg. The fur trade ensured that the northern half of the continent would be Canadian territory.

Back in the east, the face of British North America changed greatly with the results of the American Revolution. Canada gained new settlers as United Empire Loyalists moved north. Several of the many attempts to develop a government fair to both French and English inhabitants were also made at this time. A British and American dispute led to the War of 1812, the outcome of which determined that Canada would remain British.

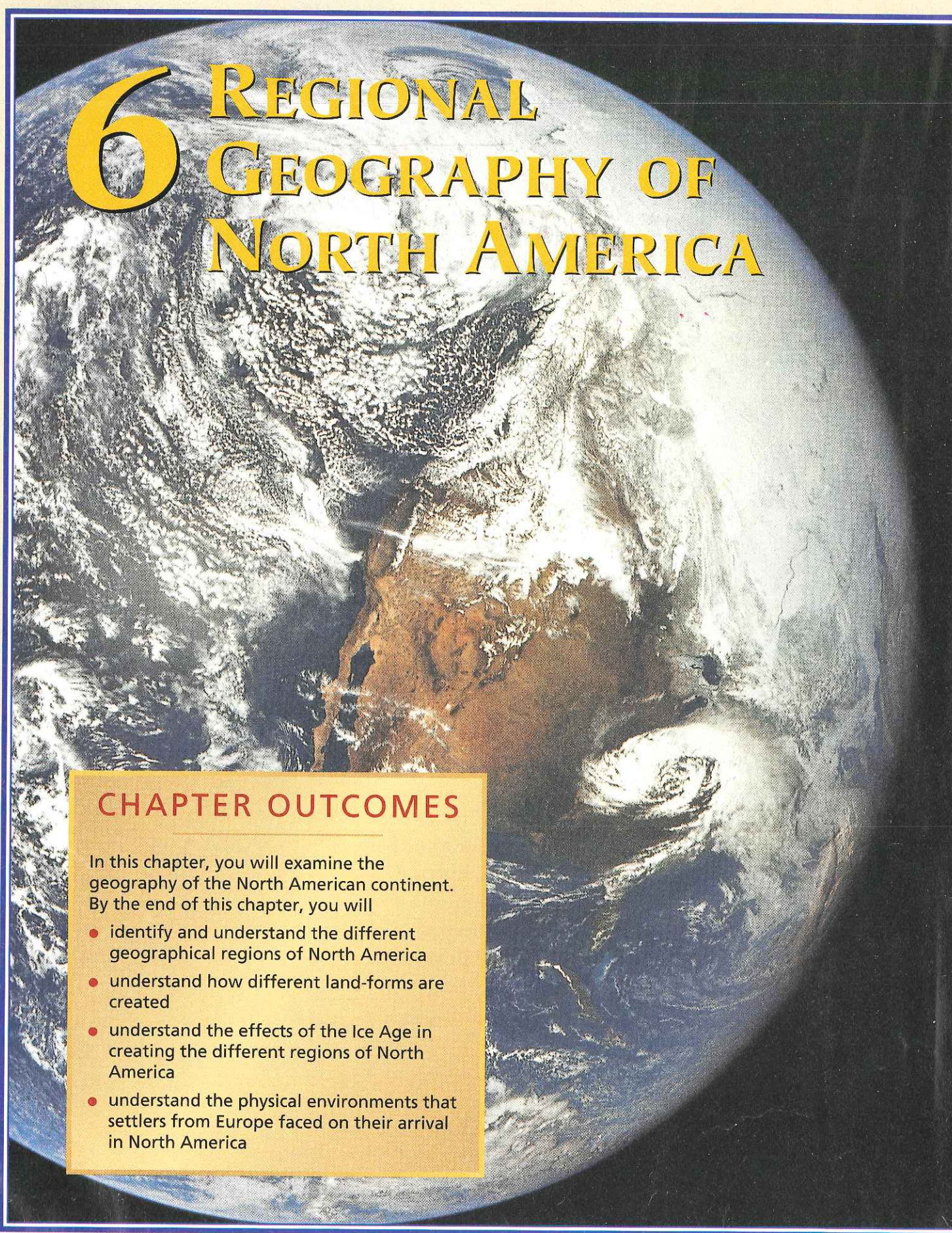
The voyageurs. Strength and endurance were two qualities required by the voyageurs. This painting illustrates both.



A harvest festival. This painting of people going to church for a harvest festival shows the importance of good crops to the inhabitants of New France.



The price of being a Loyalist. This painting shows a Loyalist being strung up from a liberty pole. This is an example of the humiliation the Loyalists endured at the hands of the Sons of Liberty, an extreme revolutionary group.

A satellite photograph of the Earth, showing the Western Hemisphere with North America prominently in the center. The image shows cloud patterns, the Atlantic Ocean to the west, and the Pacific Ocean to the east. The title is overlaid on the top left of the image.

6 REGIONAL GEOGRAPHY OF NORTH AMERICA

CHAPTER OUTCOMES

In this chapter, you will examine the geography of the North American continent. By the end of this chapter, you will

- identify and understand the different geographical regions of North America
- understand how different land-forms are created
- understand the effects of the Ice Age in creating the different regions of North America
- understand the physical environments that settlers from Europe faced on their arrival in North America

INTRODUCTION

From the seventeenth century on, increasing numbers of Europeans left Europe for a new life in North America. Sometimes their reasons were political. Other times they left for economic or religious reasons.

Colonizers arriving in North America found extremely varied landscapes. The look of the land differed greatly from **region** to region, reflecting the great geographic diversity of the continent. North America had a very diverse population of Native peoples too. You will read about these peoples in Chapter 7. This chapter, however, will introduce you to the physical geography of North America.

The earth is 4.5 billion years old. It is composed of three layers—the crust, the mantle, and the core. The Earth's crust is a thin layer of rock, about 5 kilometres to 35 kilometres thick. It is broken

into large and small pieces called "plates." Under the crust is the mantle, which consists of molten rock called "magma." In the centre of the Earth is the core, a hot, dense mass that is solid in the middle. The intense heat of the core is responsible for melting the rock of the mantle. The magma is very thick material that slowly swirls around like boiling water, causing the plates of the crust to move or to break. This process has been going on for billions of years. About 2 billion years ago, the Canadian Shield was formed by the action of **tectonic** forces. From 600 to 225 million years ago, the continents of North America, Africa, and Europe were joined. Over the last 250 million years, the continent of North America began to evolve into the continent we know today.

When two plates are pushed together over millions

of years, the rock layers of the crust crumple up into **fold mountains**. The Rocky Mountains and the Appalachian Mountains of North America, for example, are fold mountains.

Sometimes the crust breaks while it is folding. Molten rock from the mantle then pushes up through the break to erupt as a volcano. With each eruption, another layer of molten rock reaches the Earth's surface, where it cools and hardens. This process builds **volcanic mountains**. The Canadian Shield and the coastal ranges along the North American west coast are volcanic mountains.

Just as tectonic forces built up the features of North America, the Ice Age began to **erode** them. The Earth began a prolonged period of cooling about 60 million years ago. By 2.5 million years ago, **glaciation** of the northern

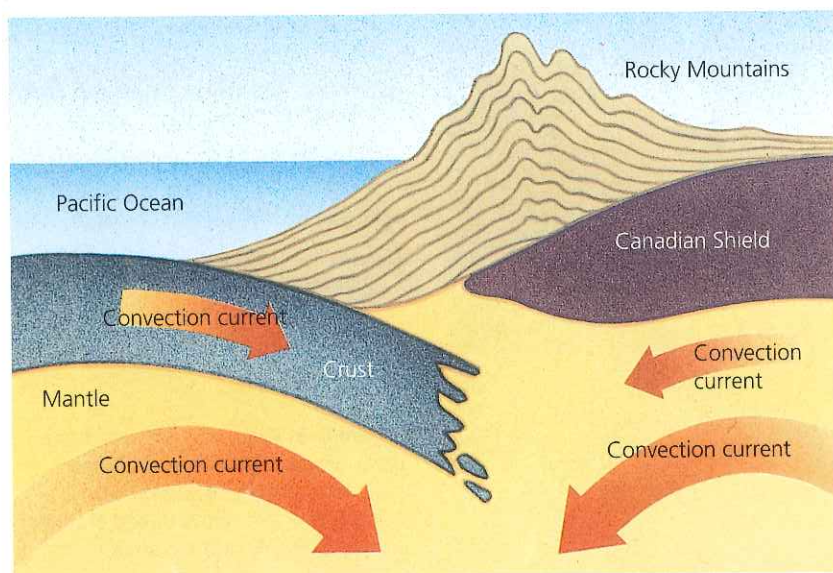


Figure 6-1 The formation of fold mountains

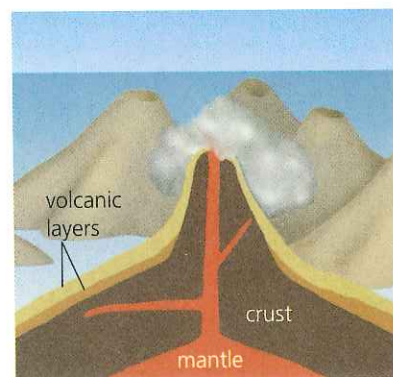


Figure 6-2 The formation of volcanic mountains

hemisphere was widespread. The glaciers expanded and retreated for hundreds of thousands of years.

During the last Ice Age, about 25 000 to 10 000 years ago, glaciers covered most of the northern and central parts of North America. A glacier is massive, weighing millions of tonnes. It is literally a river of ice that slowly flows downhill, scraping the land beneath.

By 12 000 years ago, the ice sheets had begun a period of melting. The advance and retreat of the ice sheets changed the landscape of North America.

Most of the melted water eventually drained into the world's oceans. Some of the melted water, however, was blocked by the debris the

glaciers had scraped away. This debris acted like dams, forming lakes, which only later could drain away. In areas covered by these lakes, deposits of silt were laid down. Much of the southern prairies of Canada, for example, were covered by Lake Agassiz, which, when it drained, left behind a broad expanse of flat, bare land. In other areas, such as the Canadian Shield, the glaciers scraped the rocks bare, leaving only thin layers of soil. In yet other areas, the glaciers left mounds of debris, which became hills.

Before the arrival of European settlers, North America was largely a wilderness of forests, swamps, and deserts. The original inhabitants of North America

had not changed the basic nature of the environment to any great extent. The colonists from Europe behaved quite differently. From their perspective, the natural environment was there to be used and modified to accommodate their needs. Once Europeans reached North America, the existing patterns of the physical environment gradually began to change. By the twentieth century, the landscape had been transformed.

Even though North American regions have similar **topography**, many variations in **climate** and **vegetation** can occur as you move from north to south. As you read through the next pages, keep in mind the similarities and differences within these regions, depending on their location.

region: an area with similar characteristics

tectonic: to do with the structure of the Earth's crust

fold mountains: mountains created by the bending of rock layers

volcanic mountains: mountains created by breaks in the Earth's crust

erode: to wear down the surface of the Earth

glaciation: land being covered with thick, moving ice

vegetation: plants that grow naturally in an area

topography: the shape of the land

climate: the prevailing conditions of temperature and precipitation

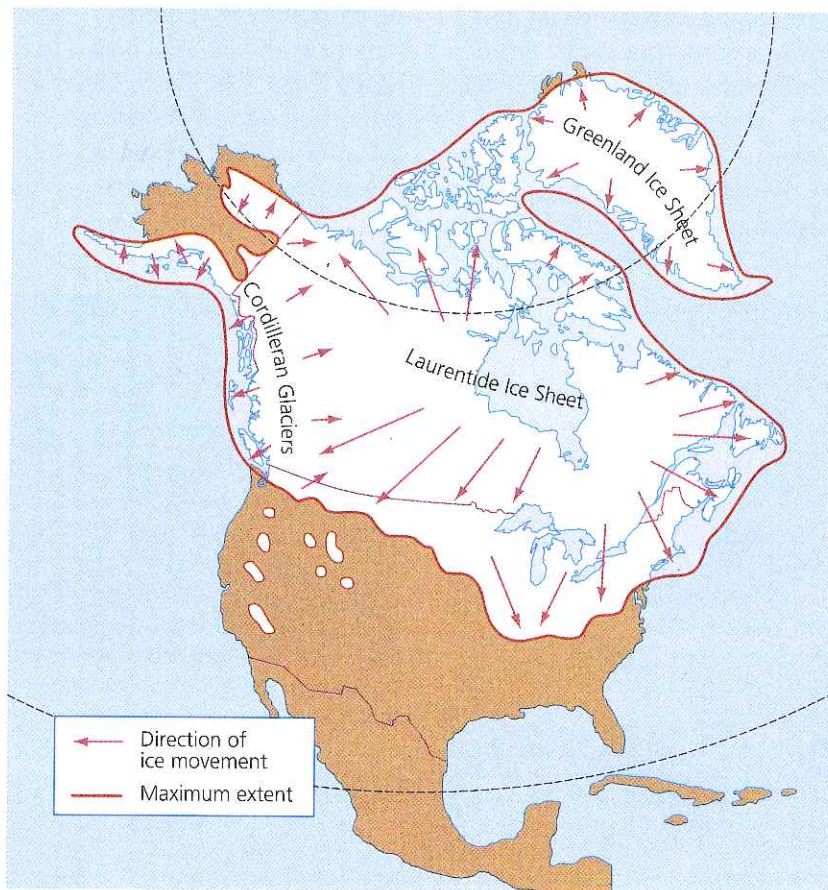


Figure 6-3 The glaciers flowed from areas where the snow was greatest, such as the Rocky Mountains and Hudson Bay. Glaciers are large enough to flow over hills and mountains. The Greenland Ice Sheet is a remnant of the continental ice sheet.

Figure 6-4 The physical and political regions of North America. Geographically, North America is divided into a number of regions. These divisions are based primarily on topography. Generally, while the national boundaries of North America run east-west, many of the geographic regions run north-south.



APPALACHIAN REGION

The Appalachian Region is a mountainous area on the east coast of North America. It extends for 2400 kilometres, from Newfoundland in the north, west through the Maritime provinces, and south through the US as far as Alabama and Georgia. The width of this mountain region varies between 160 to 480 kilometres. The Appalachians are fold mountains, caused by two plates coming together.

Topography

The Appalachian Mountains are made up of many different mountain ranges. They are old mountains, formed about 300 000 000 years ago. This makes them relatively low as mountain ranges go, because erosion has reduced their once sharp, ragged peaks into rolling mountains and hills.

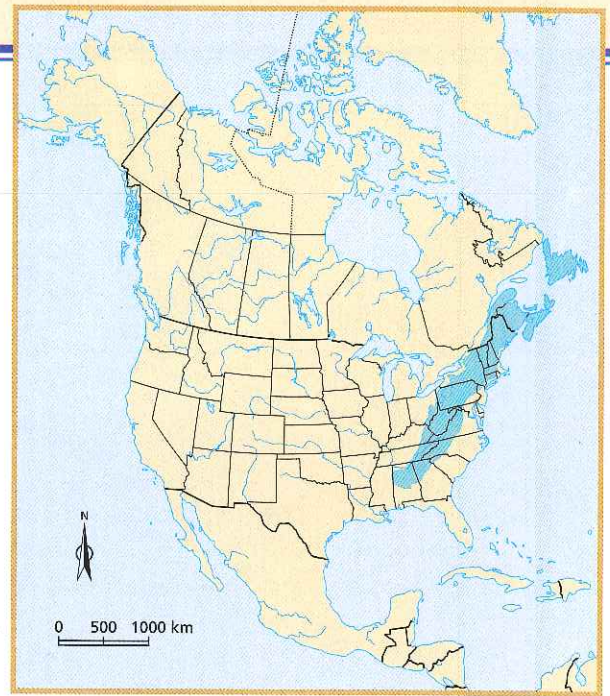


Figure 6-5 The Appalachian Region

The region is not wholly mountainous. It also contains fertile plateaus and river valleys. The many rivers of the Appalachian Region provide transportation. In addition, many deposits of coal, oil, and gas can be found in the sedimentary layers of rock.

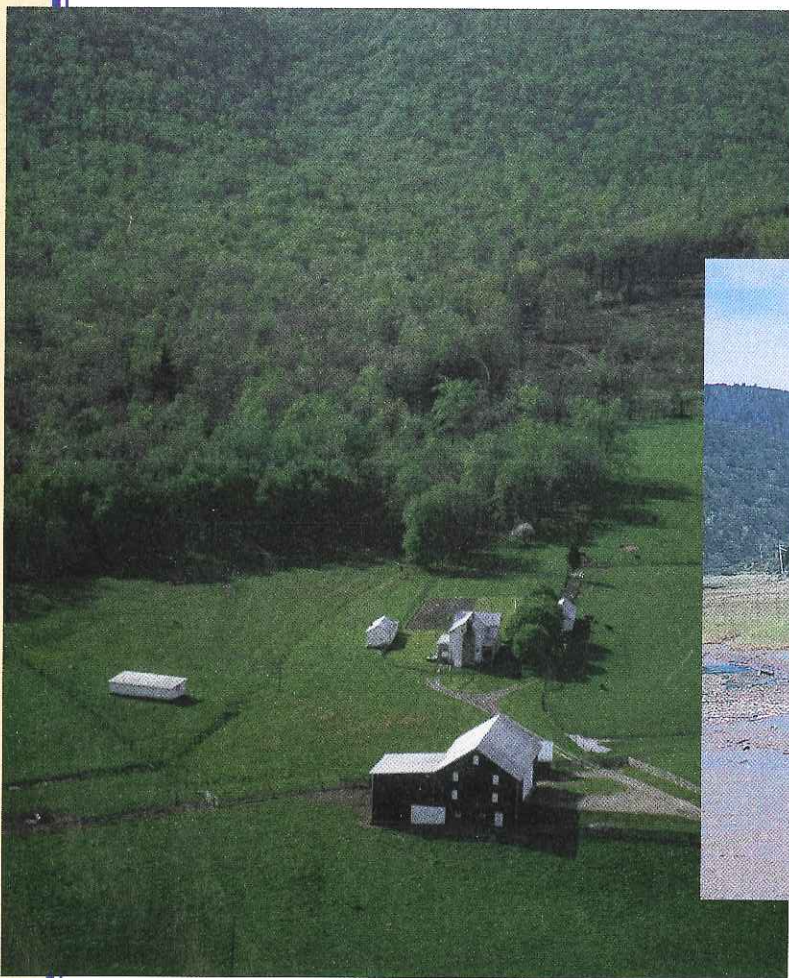


Figure 6-7 Shenandoah Valley farm, Virginia



Figure 6-6 Coniferous forest in Alma, New Brunswick

Climate

The climate of the Appalachian Region is affected by two ocean currents. The Labrador Current brings cold water south from the Arctic and causes freezing during the winter months in the northern parts of the region. The Gulf Stream brings warm water north from the Caribbean and along the coast of North America before it turns east, crossing the Atlantic Ocean to Europe. The meeting of the Gulf Stream and the Labrador current also provides an ideal breeding ground for fish by encouraging the growth of plankton, microscopic organisms that provide food for fish. The Grand Banks, off the northeast coast of North America, once teemed with many different varieties of fish, one of the main attractions of North America for Europeans.

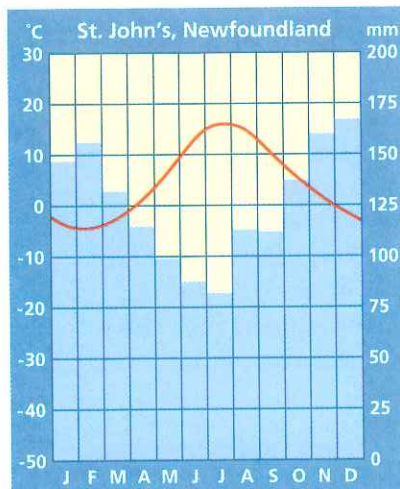


Figure 6-8 St. John's, Newfoundland

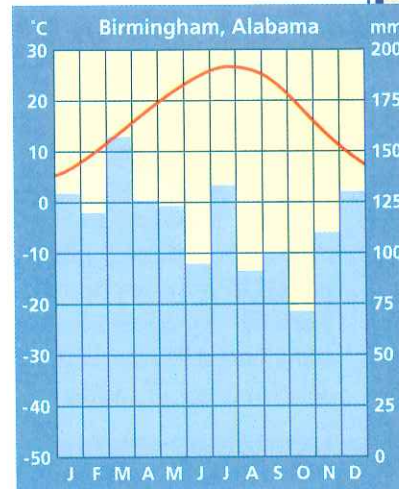


Figure 6-9 Birmingham, Alabama

DID YOU KNOW?

The forces of erosion help to create landscapes. Erosion is the process of wearing down land. Over thousands of years, water can wear down high ridges and create deep valleys. When rain falls more quickly than the ground can absorb it, the water runs off the

surface, carrying with it a great deal of soil. This process can carve channels into the surface, forming valleys. Water, as it freezes and thaws, can also pry apart rocks. Wind is also a force of erosion, gradually wearing away the surface of rocks.

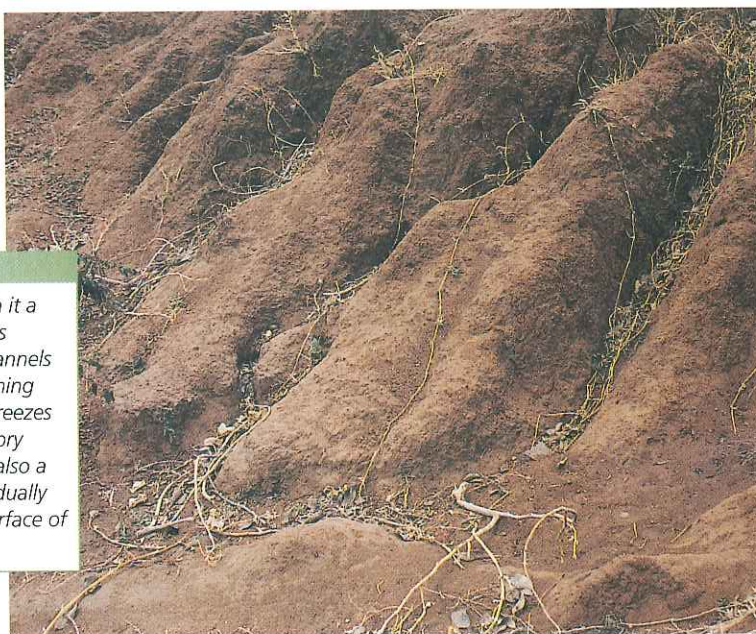


Figure 6-10 Water is carrying soil away, carving channels in the hill.

Vegetation

Originally, the Appalachian Region was heavily forested with mixed **coniferous** and **deciduous** trees. These could survive in the poor and unproductive mountain soil, and flourish on the plateaus and in the river valleys, where the soil was much more productive.

coniferous: evergreens—trees or shrubs bearing cones

deciduous: trees that shed their leaves annually

sedimentary: the type of rock formed by the erosion of other rocks, after this loose material has hardened

ACTIVITIES

1. Using the climate graphs in Figure 6-8 and 6-9, compare the climate of the northern and southern portions of the Appalachian Region.
2. How would the Appalachian Mountains act as a barrier to colonization?

THE COASTAL PLAINS

The Coastal Plains are a lowland area that stretches for 3200 kilometres from Cape Cod, along the Atlantic coast, including Florida, then turning westward and continuing along the Gulf of Mexico into Mexico. They extend some 50 to 100 kilometres inland from the ocean. The streams from the Appalachians become very rapid as they enter the Coastal Plains, making them important in the development of industry.

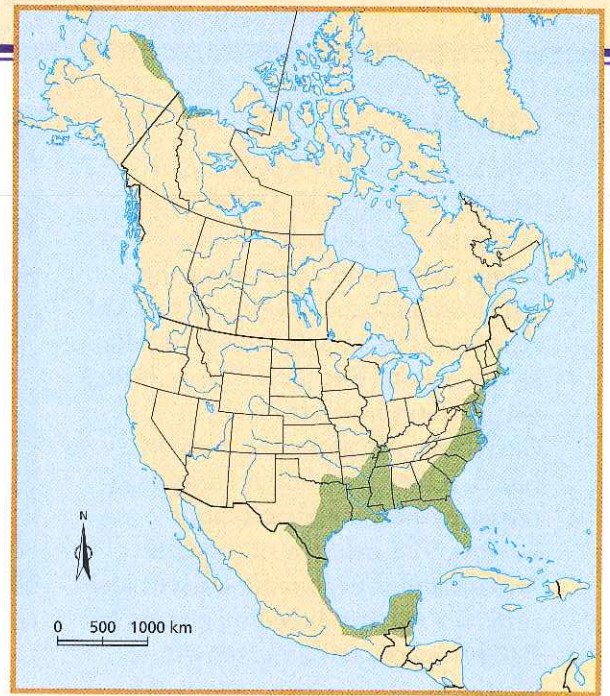


Figure 6-11 The Coastal Plains



Figure 6-12 Farm land around Chesterton, Maryland

Topography

The Coastal Plains have an average elevation of less than 200 metres above sea level. The surface is mostly flat, or gently rolling. More than half the Coastal Plains is less than 30 metres above sea level.

The Coastal Plains contain many **swamps** and **marshes**. In the past, the gradual sinking of the land allowed the sea to submerge the lower reaches of many streams that cross the plains. Some of the rivers can be navigated for many miles inland. The Hudson River, for

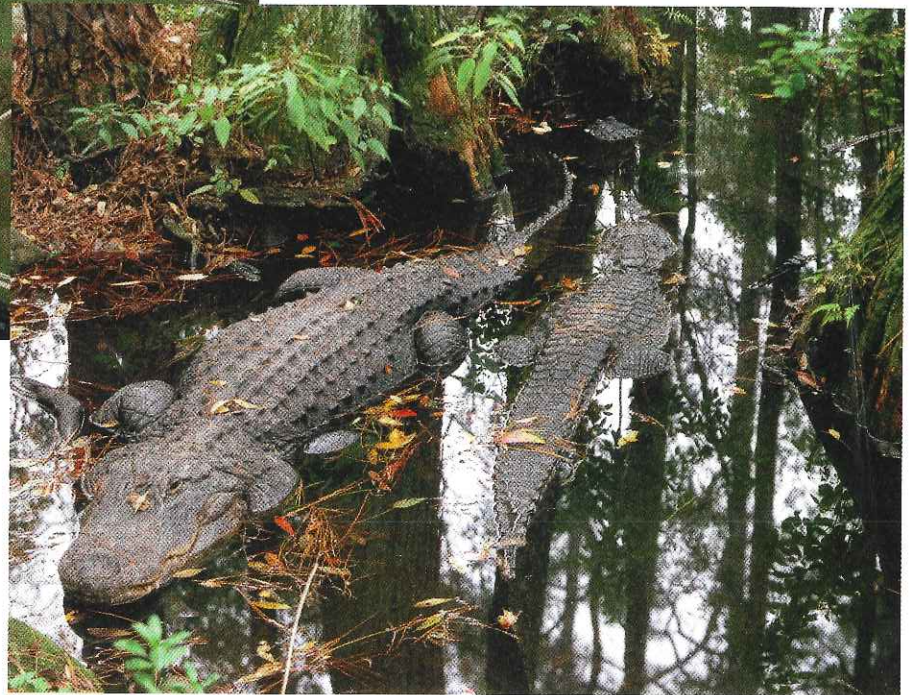


Figure 6-13 Okefenokee Swamp, on the Georgia-Florida border

example, can be navigated as far inland as Albany. An important feature of the Gulf Coastal Plain is the **Mississippi Delta**—where the Mississippi empties into the Gulf of Mexico, creating a wide belt of fertile agricultural land.

As well as providing transportation routes and agricultural land, the swamp, and marshes of the Coastal Plains are also important sources of shellfish and other aquatic life forms.

Climate

Climate varies greatly in the Coastal Plains. In the north, it is characterized by cold and snowy winters and hot, humid summers. The southern portions have a sub-tropical climate, with mild to warm winters. The southern portions of the region are also subject to hurricanes. Hurricane season occurs between late summer and early winter.

swamp: wet, spongy land

marsh: low land that is flooded in wet weather and almost always wet

delta: an area of soil or silt deposits built up at the mouth of a river

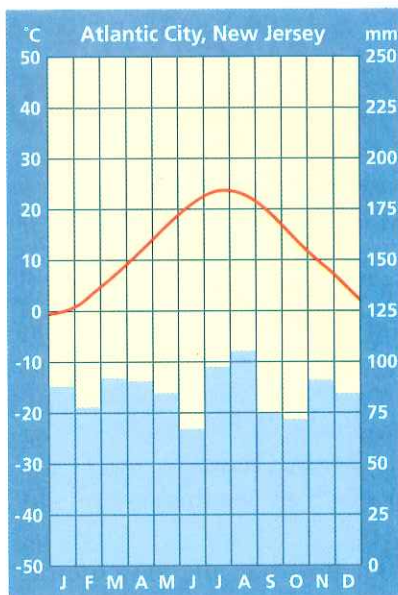


Figure 6-14 Atlantic City, New Jersey

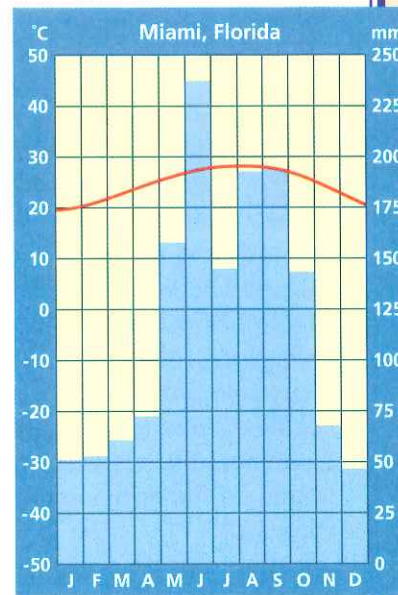
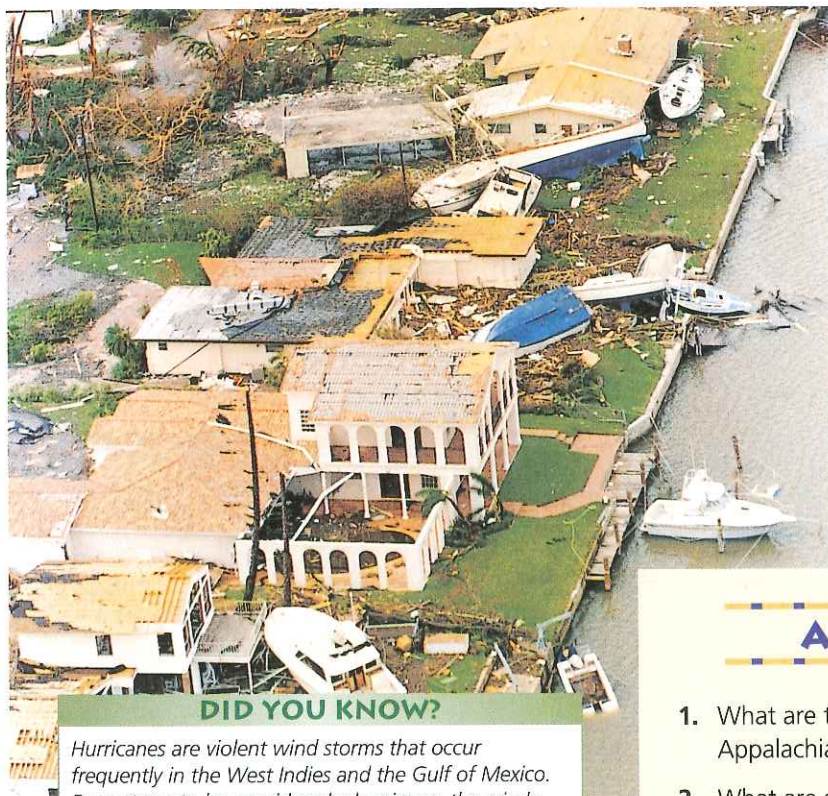


Figure 6-15 Miami, Florida



Vegetation

The soils of the Coastal Plains are mainly very sandy. The natural vegetation adapted to this sandy soil, and in some areas (Mexico) lush jungles developed. The original vegetation of the area was pine forests.

Figure 6-16 Some of the damage caused by Hurricane Andrew in Florida

DID YOU KNOW?

Hurricanes are violent wind storms that occur frequently in the West Indies and the Gulf of Mexico. For a storm to be considered a hurricane, the winds must reach speeds of more than 120 kilometres an hour. Often, hurricane winds reach as much as 240 kilometres an hour.

Hurricanes form in the tropics over large bodies of water. They are caused by convectional heating. Warm, moist air at the water surface is lighter than the surrounding air and, as it rises, it is replaced by cooler, heavier air. Sometimes this cooler, heavier air blows inward in a spiral, causing a hurricane.

ACTIVITIES

1. What are the biggest differences between the Appalachian Region and the Coastal Plains?
2. What are some of the similarities between the two regions?
3. Compare the climate graphs in this region with those of the Appalachian Region. What are the differences?
4. In terms of climate, why is Florida an important tourist centre today?

THE GREAT LAKES-ST. LAWRENCE LOWLAND

The Great Lakes-St. Lawrence Lowland is the smallest geographical region in Canada. It includes the triangle formed by Lakes Huron, Ontario, and Erie. The region contains several **escarpments**, the best known being the Niagara Escarpment, which extends from Niagara Falls to Manitoulin Island. The region is also cut by a short extension of the Shield near Kingston, and then continues along the St. Lawrence River. It also includes the Ile d'Anticosti, a small island in the Gulf of the St. Lawrence. The region is bounded by the Canadian Shield, to the north, and the Appalachian Mountains to the south.

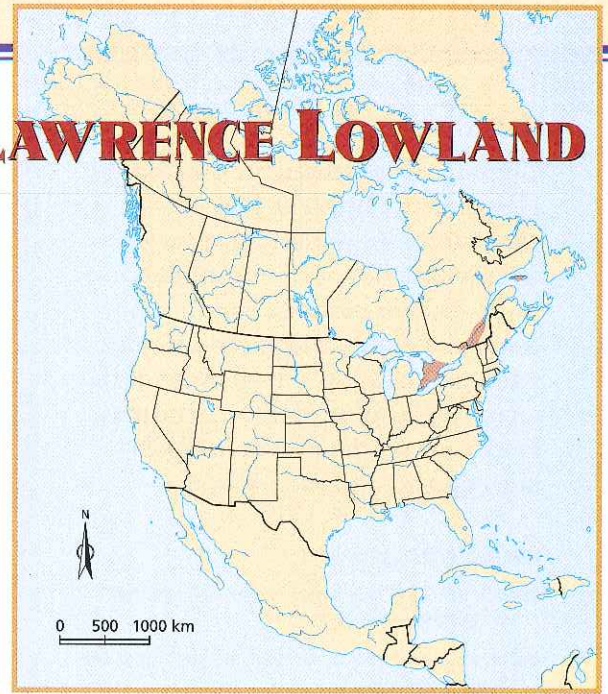


Figure 6-17 The Great Lakes-St. Lawrence Lowland



Figure 6-18 A vineyard near Inniskillen, Ontario

Topography

The Great Lakes section of this region has a rolling landscape, created mainly by glaciation. Flat plains are broken by hills and deep river valleys. The St. Lawrence section consists of flat plains on either side of the river, which gradually begin to rise into the Canadian Shield and the Appalachians.

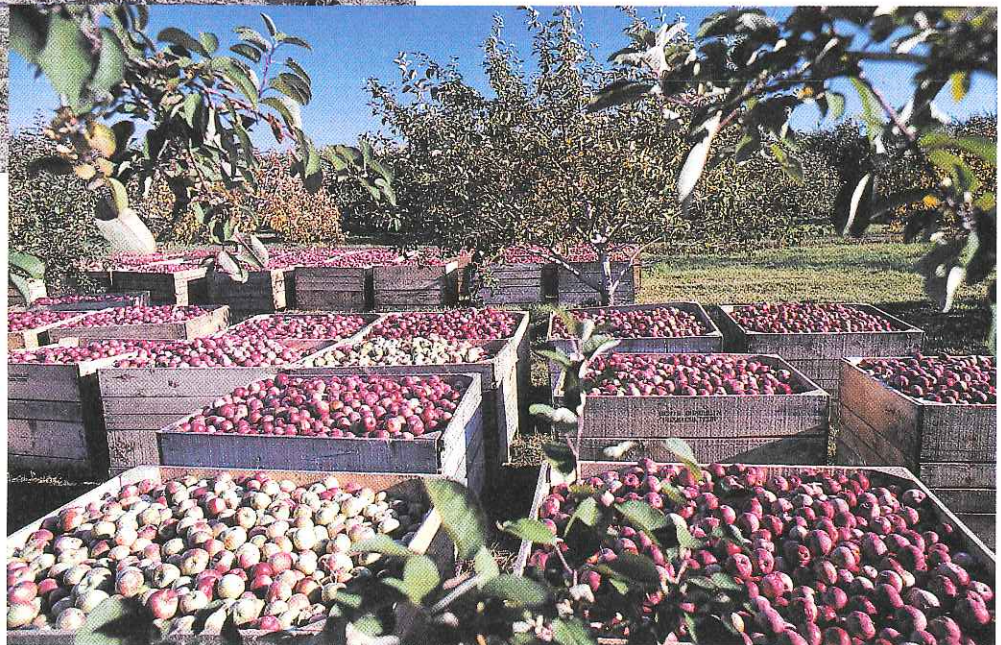


Figure 6-19 Apple-harvesting in Quebec

Climate

The climate is essentially a humid **continental climate**. It is humid because of the presence of the Great Lakes. The Great Lakes tend to cool the temperature during the summer. By storing heat, the Great Lakes warm the surrounding areas in winter. Winters vary from cool to cold, and summers from warm to hot.

Vegetation

Originally this region, which has very fertile soils, was heavily treed. The Great Lakes portion once had Canada's largest broad-leafed forests, because its soil and climate conditions allowed maple, beech, hickory, and black walnut trees to thrive. Elsewhere in the region, the vegetation was mixed forest of both deciduous and conifers, such as maple, beech, oak, ash, and birch, along with spruce, fir, pine, and cedar.

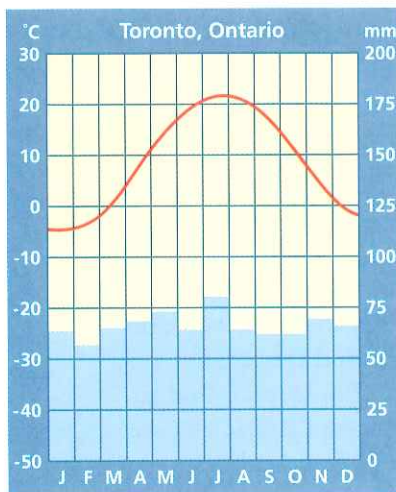


Figure 6-20 Toronto, Ontario

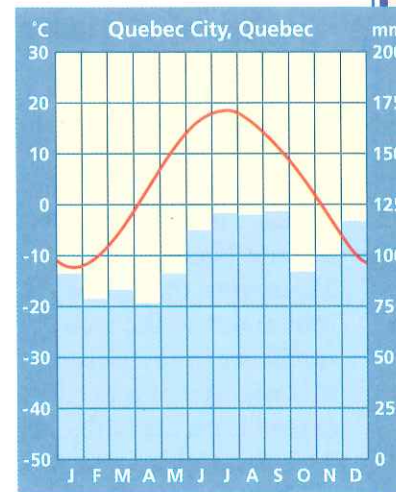


Figure 6-21 Quebec City, Quebec



Figure 6-22 Dairy farming in the region

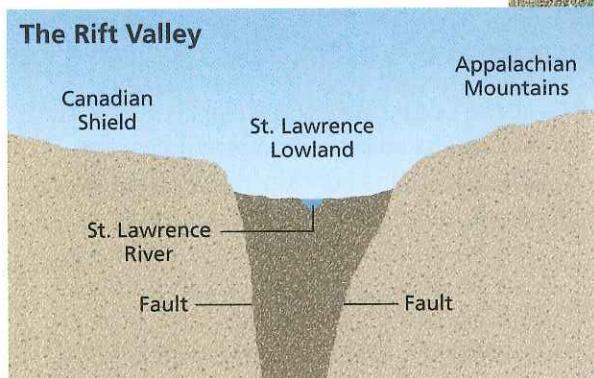


Figure 6-23 The formation of a rift valley

escarpment: a steep cliff formed by erosion or faulting

continental climate: a climate type that develops away from the influence of oceans. The temperature range tends to be large and precipitation is low.

rift valley: a valley that is created when the portion of land between two faults (cracks in the Earth's crust) drops down

faulting: movement along a crack (fault) or cracks in the Earth's crust

DID YOU KNOW?

The St. Lawrence lowland was formed in a different way than the Great Lakes lowland. First, a **rift valley** was created by **faulting**. Then, towards the end of the last Ice Age, cracks in the Earth's surface caused the

area around the St. Lawrence to sink. It was then flooded by a part of the Atlantic Ocean, which laid down the sediments that gave this flat area its excellent soils.

ACTIVITIES

1. Why has the Great Lakes-St. Lawrence Lowland become the most populous region of Canada, even though it is the smallest region?
2. Why is this region the most favourable in Canada for agriculture?

THE INTERIOR PLAINS

The Interior Plains are a vast sweep of plain, but they are not entirely flat. In most places the land is composed of gently rolling hills and deep river valleys. In the United States, the Interior Plains run between the Appalachian Mountains, on the east coast, and the Rocky Mountains in the west. In Canada, the Interior Plains run between the Canadian Shield and the Rocky Mountains. From north to south, the Interior Plains extend from the Gulf of Mexico to the Arctic Ocean. Because of its huge size, the region is very diverse.



Figure 6-25 Sprinkler irrigating a farm in the Interior Plains



Figure 6-26 Wheat-farming in Saskatchewan

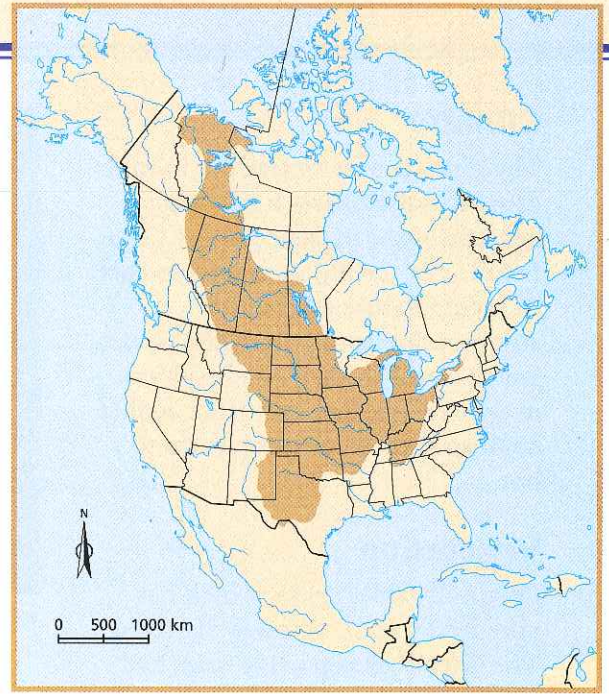


Figure 6-24 The Interior Plains

Topography

In the US, the Interior Plains are divided into the Central Lowland and the Great Plains. The northern boundary of the Central Lowland is formed by the Canadian Shield, the Great Lakes, and the St. Lawrence River.

The Great Plains are higher in elevation than the Central Lowland, rising from about 600 metres to 1500 metres above sea level in the west.

In Canada's Prairie provinces, the Interior Plains contain three different elevations, which are separated by escarpments. In general, the plains are gently rolling, gradually sloping down from west to east. To the north of the Prairies, the Interior Plains continue to the Arctic Ocean.

tornado: a brief, but very destructive storm characterized by a wind funnel

funnel: the usual shape of a tornado; a tube of winds spiralling at high speeds

vortex: a mass of fluid or air that whirls in a rotary direction

Climature

The climate of the Interior Plains is a continental climate, affected by its location in the heart of the continent—far from the moderating influence of the oceans. It is a climate of extremes, including long, hot, summers, cold winters, and little precipitation. Farther north, the winters are colder and longer, and summers are shorter and cool. The northern portion of the region has an Arctic climate, with extremely long, cold winters, and short, cool summers.

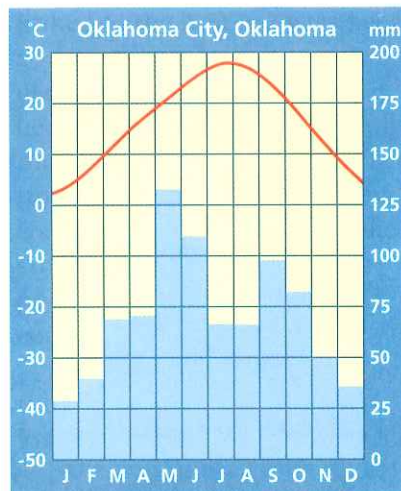


Figure 6-27 Oklahoma City, Oklahoma

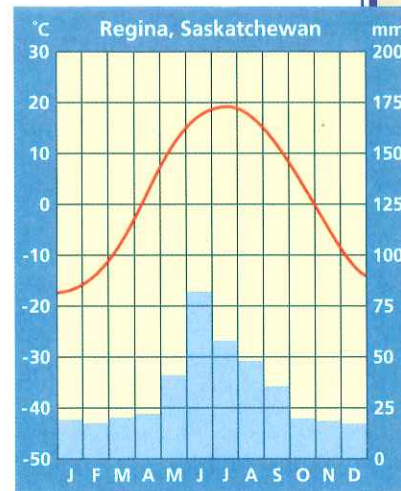


Figure 6-28 Regina, Saskatchewan

DID YOU KNOW?

The American Midwest is often subject to **tornadoes**, most of which occur during March and June during the hottest time of the day. They occur when dry, cold air from the north collides with warm, moist air from the south.

Tornadoes are extremely destructive. The winds inside the tornado's **funnel** move in a counter-clockwise direction at speeds of up to 650 kilometres an hour. The area inside the funnel is called the **vortex** and is usually 300 to 400 metres wide, and up to 7 kilometres in length. The vortex moves along the ground at 60 kilometres an hour.



Figure 6-29 A tornado

Vegetation

Originally, the Central Lowland east of the Mississippi was covered with mixed deciduous trees and scattered evergreens. West of the Mississippi, in the Great Plains, prairie grasses grew as tall as a person. The natural vegetation of the Canadian prairies was also grassland—trees grew only in the river valleys. In the northern portion of the Interior Plains, boreal forest grows, gradually becoming tundra towards the Arctic Ocean.

ACTIVITIES

1. Explain why there is so much diversity in the Interior Plains region.
2. Using the climate graphs, explain why farmers need to use irrigation.
3. Find out what the term "dryland farming" means, then suggest the areas of this region where dryland farming occurs.

THE CANADIAN SHIELD

The Canadian Shield is more than 2 billion years old. It consists of great volcanic mountains that were levelled by millions of years of erosion. It is the geographic foundation of Canada, covering more than half of its surface area. It consists of a platform of rocks that stretches from Labrador, around Hudson Bay and James Bay, in the east, south to the Great Lakes, and west to the Interior Plains. The Shield overlaps the US in two areas.

Figure 6-30 The Canadian Shield

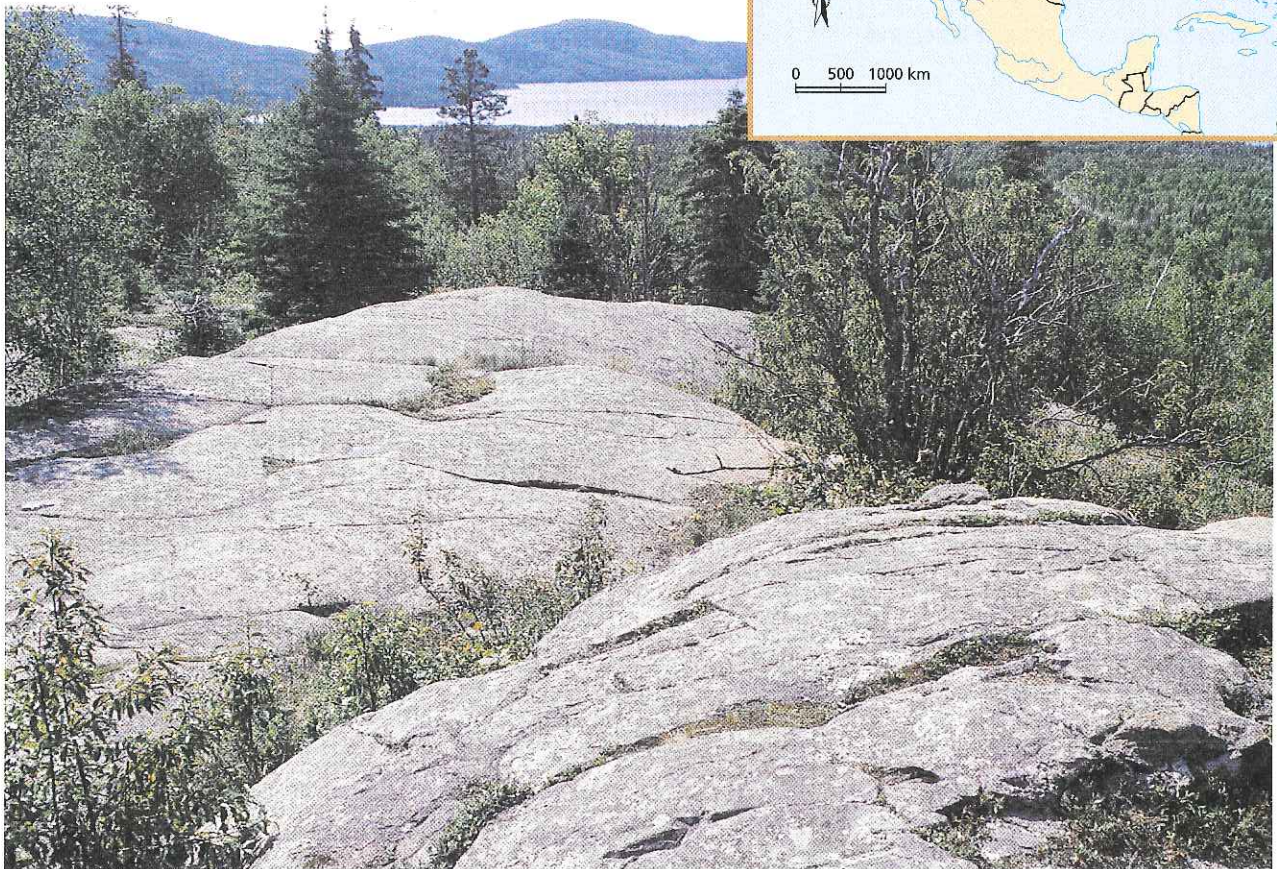
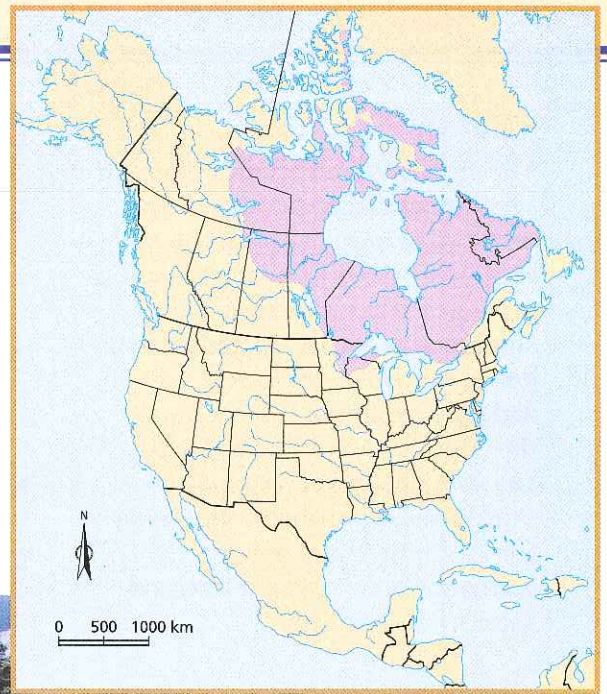


Figure 6-31 The varied landscape of the Shield—rocks, trees, and lakes—north of Lake Superior

Topography

During the Ice Age, glaciers removed most of the soil, leaving a barren rock surface in many places. As well, the retreat of the glaciers affected the drainage of the Shield to a significant degree. Debris deposited by the glaciers damned up rivers, or forced

them to flow in different directions. As a result, the Shield consists of a chaotic pattern of rivers, lakes, swamps, and **muskeg**.

The average elevation of the Shield is about 100 metres above sea level in the north, rising to about 500 metres in

the south. The centre of the Shield is much lower in elevation than its outer portion. The areas around Hudson Bay and James Bay are lowland areas covered with clay. As a result, most rivers in this region flow into these two bays.

Climate

The climate varies throughout the vast area covered by the Canadian Shield. As you travel north, the winters become increasingly long and cold, with the summers becoming shorter and cooler.

Vegetation

Boreal forest covers most of the Shield, since evergreens, such as spruce, pine, and fir, are more suited to the thin, sandy soil. Some deciduous trees, such as poplar and white birch, are also present. These trees are small and weak, more suited to the pulp and paper industry than to lumbering. North of the tree-line, however, no trees are able to grow—the growing season is too short, there is too little precipitation, and there is permafrost.

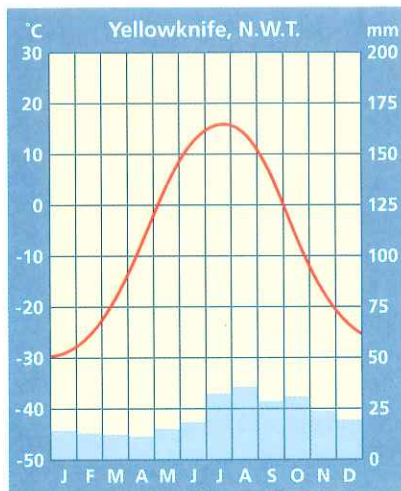


Figure 6-32 Yellowknife, NWT

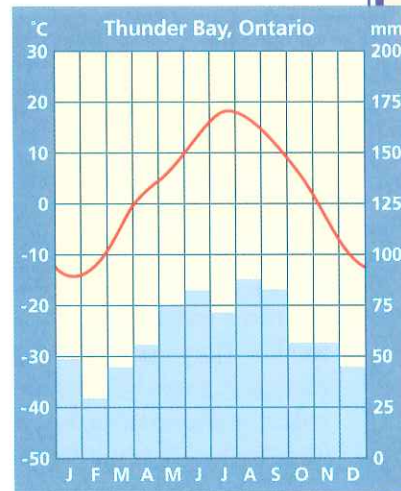


Figure 6-33 Thunder Bay, Ontario

DID YOU KNOW?

The Canadian Shield is a storehouse of valuable minerals—such as lead, copper, gold, zinc, and nickel. The causes for these deposits can be found long ago in the past, when magma forced its way through the cracks in the Shield's rock. The glaciers stripped the top layers, making these mineral formations easy to detect. This later attracted many mining companies to the area.

muskeg: a level bog or swamp, found in Canada

boreal: Northern, or of the Arctic

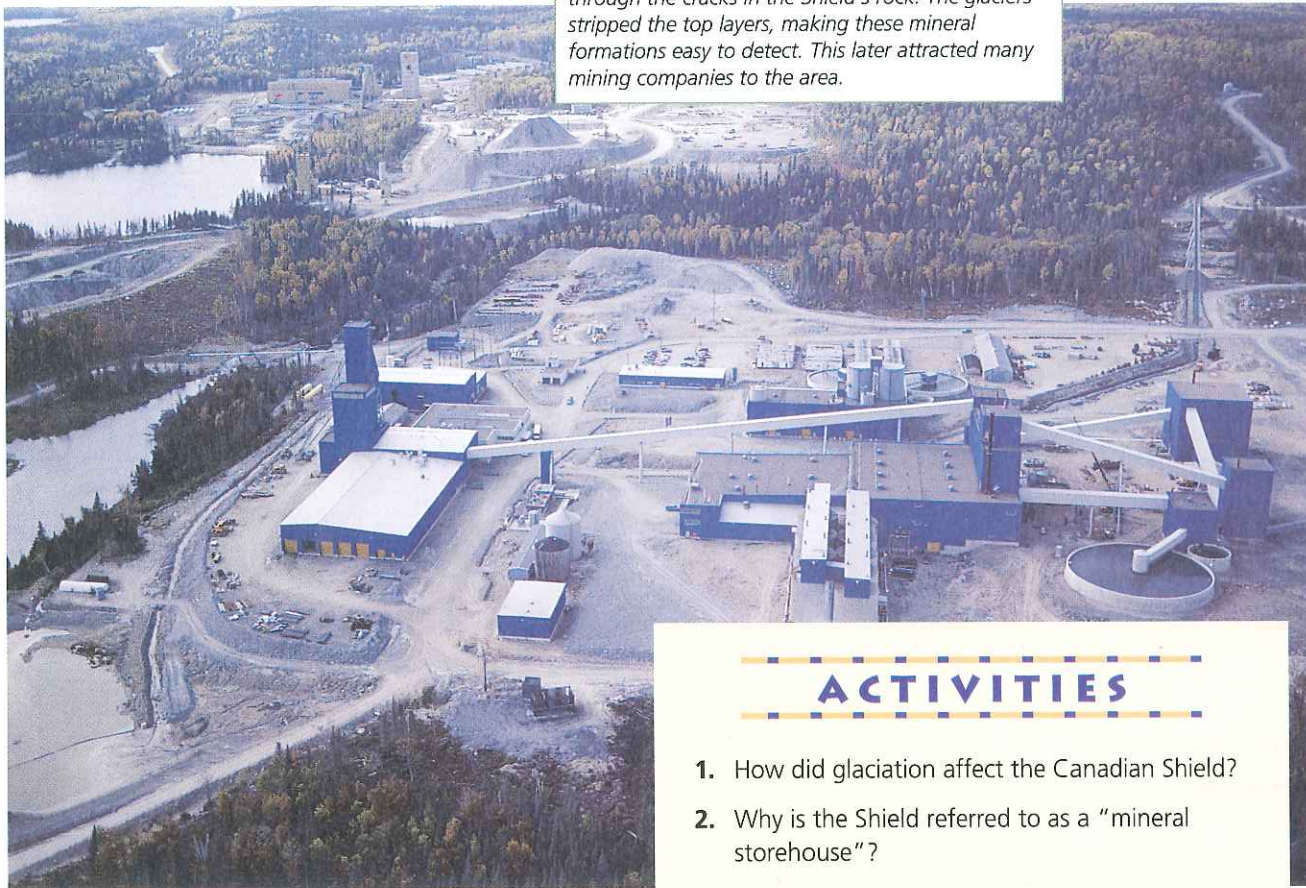


Figure 6-34 The Hemlo gold mines near Marathon, Ontario

ACTIVITIES

1. How did glaciation affect the Canadian Shield?
2. Why is the Shield referred to as a "mineral storehouse"?
3. Apart from forestry, what other important industry is found in the Shield today?

THE WESTERN CORDILLERA

The Western Cordillera Region runs along the west coast of North America. It consists of range after range of mountains, separated by plateaus and valleys. The Rocky Mountains are the most easterly range of mountains of this region. In the US, they veer towards the interior of the continent, to a great extent. The coastal chains of mountains are volcanic mountains, but the inner ranges of mountains (the Rocky Mountains) are fold mountains.

Figure 6–35 The Western Cordillera

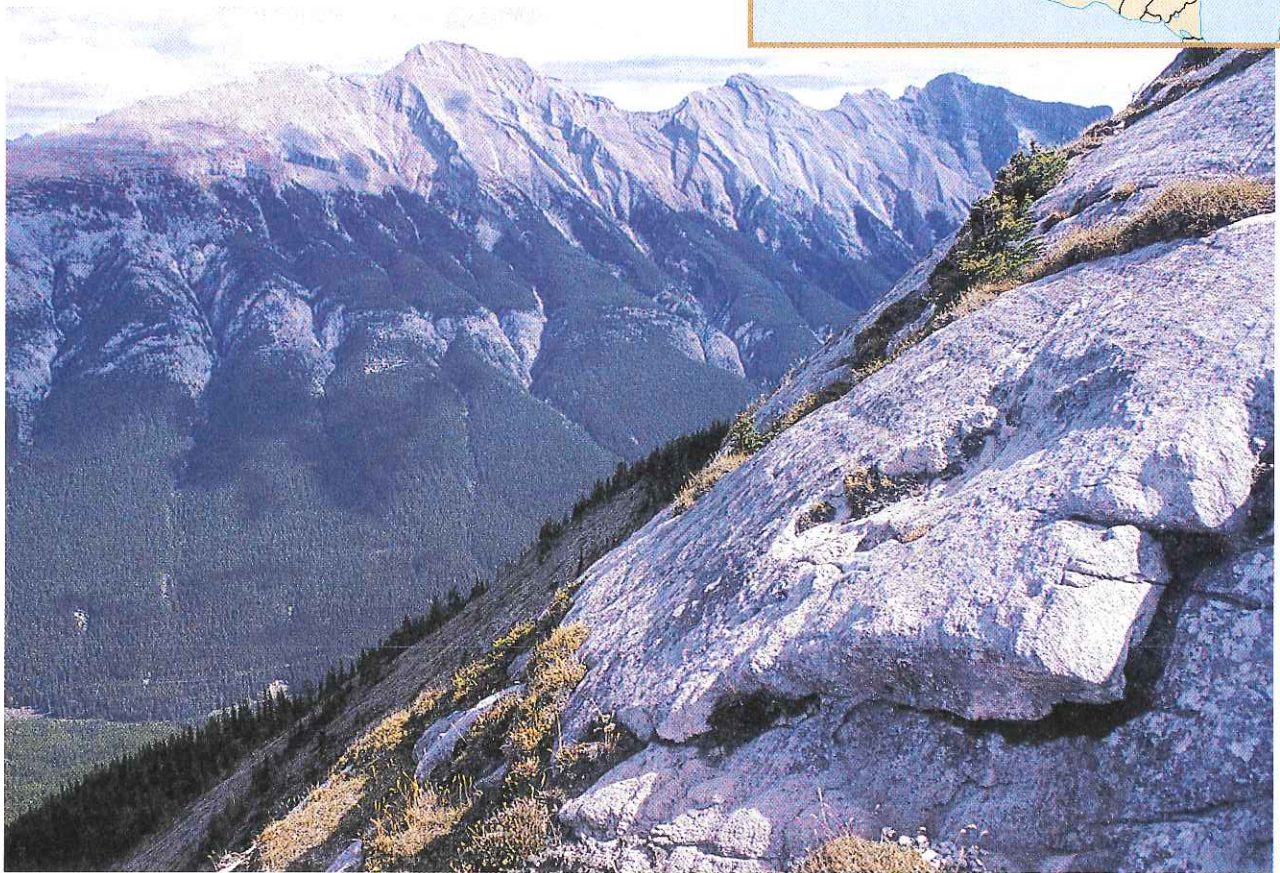
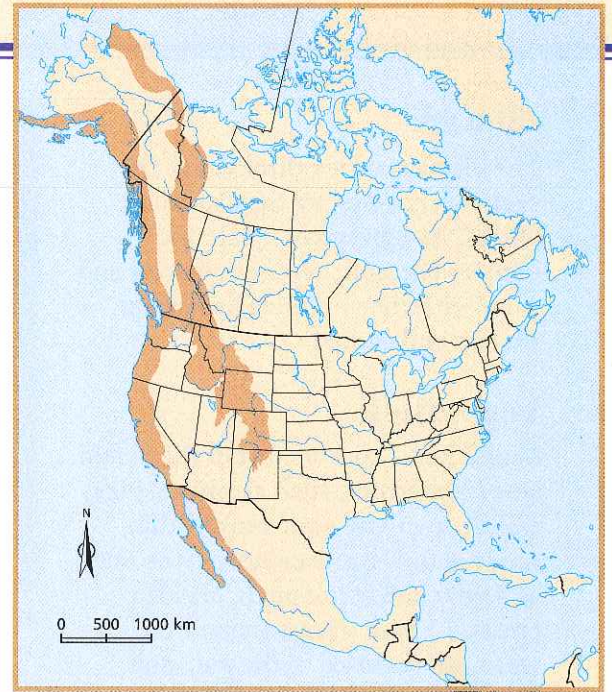


Figure 6–36 Mount Rundle (on the right), close to Banff, Alberta

Topography

The Western Cordillera is comprised of new mountains not yet worn down by erosion. They are more than twice as high as the Appalachian Mountains in the east. There are many different mountain ranges in this region. The Rocky Mountains, to the east, form the Continental

Divide. All the rivers east of the Rockies flow east, finding their outlets in the Gulf of Mexico or the Arctic Ocean, or Hudson Bay and James Bay. West of the Rockies, rivers drain towards the Pacific Ocean.

Climate

The west coast has a **maritime climate**. Although it varies from north to south, the west coast is moist and mild—in fact, parts of it are among the wettest regions on Earth. Moderated by the water of the Pacific Ocean, winters are usually above freezing. Summers are cooler than in the interior of the continent. Valleys are warmer than mountain slopes, and windward slopes are much wetter than leeward slopes, which are often very dry because of the **rain-shadow** effect (see page 177).

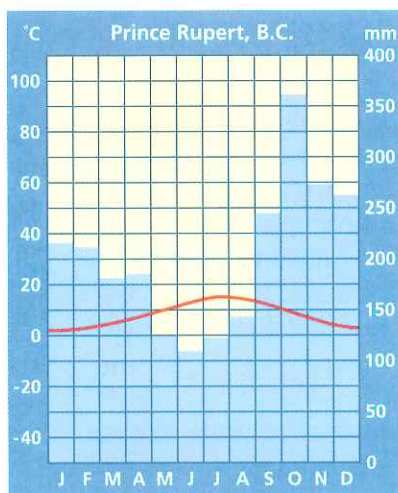


Figure 6-37 Prince Rupert, B.C.

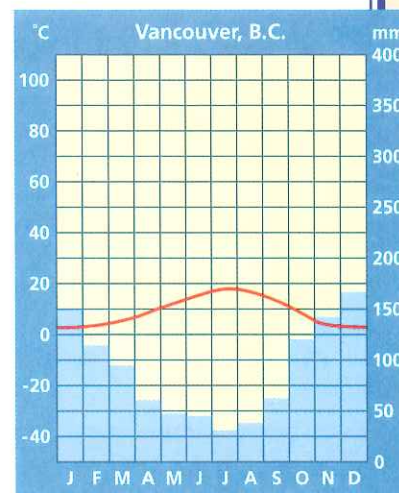


Figure 6-38 Vancouver, B.C.

Note: The scale of these climate graphs differs from others in this chapter. Why is this so?



Figure 6-39 Why do lumber companies prize these trees?

Vegetation

Western Cordilleran vegetation varies enormously from one side of a mountain to the other. On the moist, windward slopes, evergreens, such as Douglas fir, western hemlock, and western red cedar, grow to tremendous age and size on the lower slopes. Some are as high as a 30-storey office building. The giant sequoia, the largest tree in the world, grows near Yosemite. Higher up, the trees are smaller. At the very tops of the mountains, the vegetation becomes similar to that of the tundra, or it ceases entirely. On the leeward slopes, grasses and cactuses grow in the dry valleys. Farther south, the great evergreens no longer grow, since the rainfall is less.

maritime climate: a climate that is strongly influenced by the closeness of a large body of water. The annual temperature range tends to be small and precipitation is high.

temperate: climate that has warm summers and cool winters

DID YOU KNOW?

The Pacific North American forest can be categorized as a rain forest. Usually, people think of rain forests as being tropical because of the amount of rainfall needed. The Pacific coast of North America is **temperate**, but it receives as much rain as tropical rainforests.

ACTIVITIES

1. What is unusual about the climate of the Western Cordillera?
2. What is unusual about its vegetation?
3. How does the Western Cordillera differ from the Appalachian Region?

THE INTERMOUNTAIN REGION

The Intermountain Region is an area in the US and Canada that lies between the Rocky Mountains and the Coast Mountains, the Cascades, and the Sierra Nevada. It is a thinly populated area of high **plateaus** and isolated mountains, and contains the only deserts in the US. In Canada, the region consists of the interior plateau valleys of British Columbia and the Yukon.

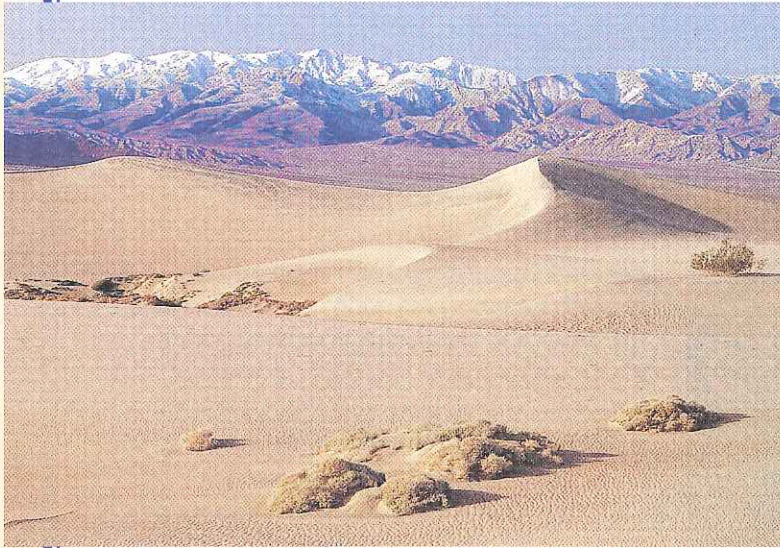


Figure 6-41 Death Valley, California, is 86 metres below sea level.



Figure 6-42 The plateau around the Thompson River and its tributaries is very rugged, and the rivers have eroded huge canyons in the landscape.

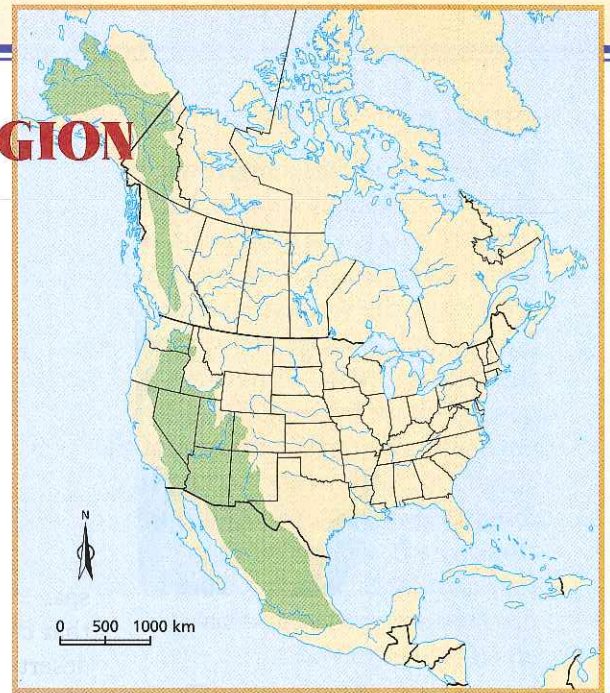


Figure 6-40 The Intermountain Region

Topography

In many areas, the streams and rivers of the Intermountain Region's mountains and plateaus never reach the sea. Instead, they flow into **brackish** lakes, such as the Great Salt Lake in Utah, or disappear into desert **sinks**. In other areas of the region,

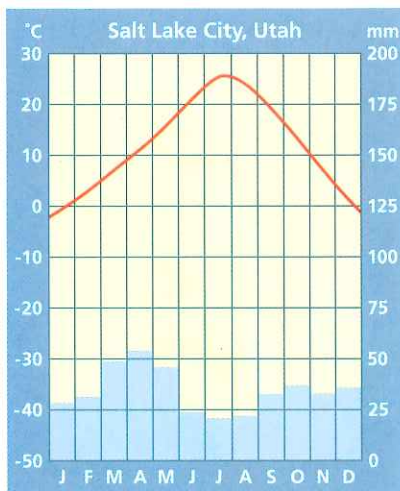
some rivers do find a way to the ocean. In some portions of the region, there are areas that can be made productive by irrigation. In other areas, cattle-ranching is possible.

plateau: a flat area at a high elevation

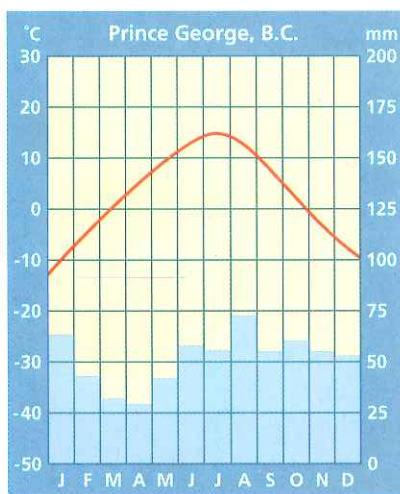
brackish: somewhat salty

sink: a place in which liquid collects

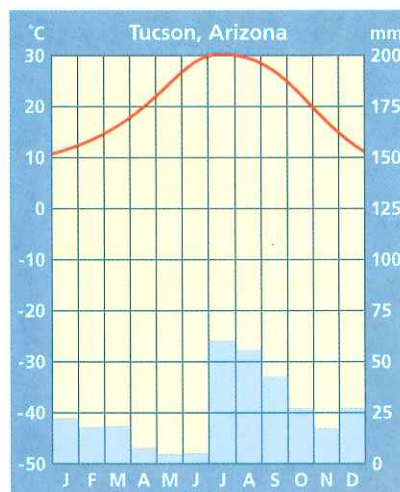
rain-shadow: area on the leeward slope of mountains, with little precipitation



Figures 6-43 Salt Lake City, Utah



Figures 6-44 Prince George, B.C.



Figures 6-45 Tucson, Arizona

Climate

The climate of the Intermountain Region is affected by its location and by its elevation. Winters can be cool and wet or hot and dry, depending on the region. In the southern portions of the region, winters are short and warm with very little precipitation. The northern portions of the region also lack precipitation, although the climate is more moderate, with moist winters and hot dry summers.

Vegetation

The vegetation of the Intermountain Region generally ranges between sparse grassland to plants that can survive in semi-desert or desert conditions. The higher areas are covered in thin pine forest.

DID YOU KNOW?

One of the reasons that the Intermountain Region is so dry is that it lies in the **rain-shadow** of the coastal mountains of the west coast. As moist air is forced to rise up the windward slope of a mountain range, it cools. When cool, it can hold less water vapour. At a certain point the air becomes saturated with water vapour and condensation occurs. This produces clouds and, eventually, rain or snow. As the cool air descends the leeward slope of the mountain range, the opposite occurs. The warmer air can hold more moisture, the clouds evaporate, and no rain or snow falls. The result is a very dry climate area.

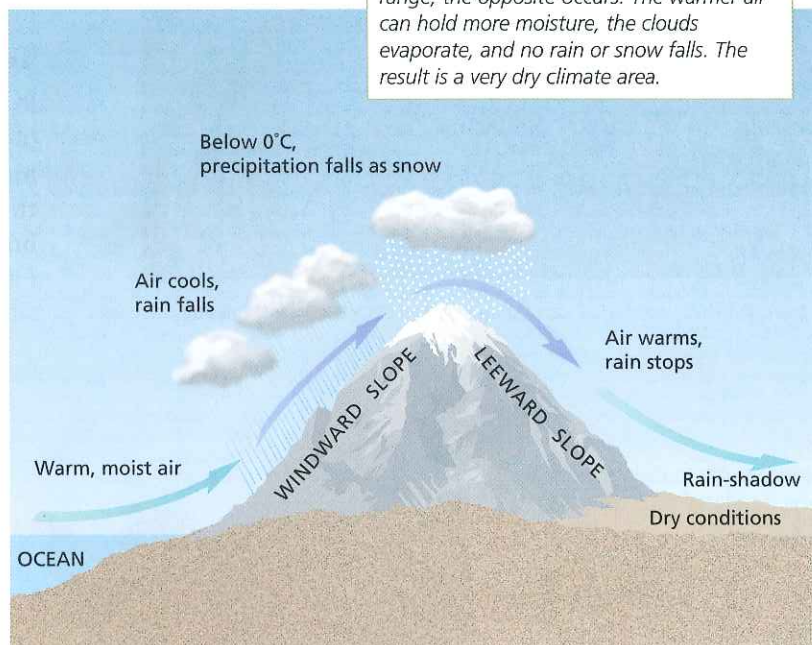


Figure 6-46 The effects of rain-shadow

ACTIVITIES

1. What are the greatest hindrances to human occupation of the Intermountain Region?
2. What actions have humans undertaken to make this region more hospitable to human habitation?

THE ARCTIC

The Arctic Region in northern Canada is a combination of lowlands and mountains. The lowlands are found in a series of islands lying to the north of Hudson Bay. The mountains are found in the extreme northwest border.

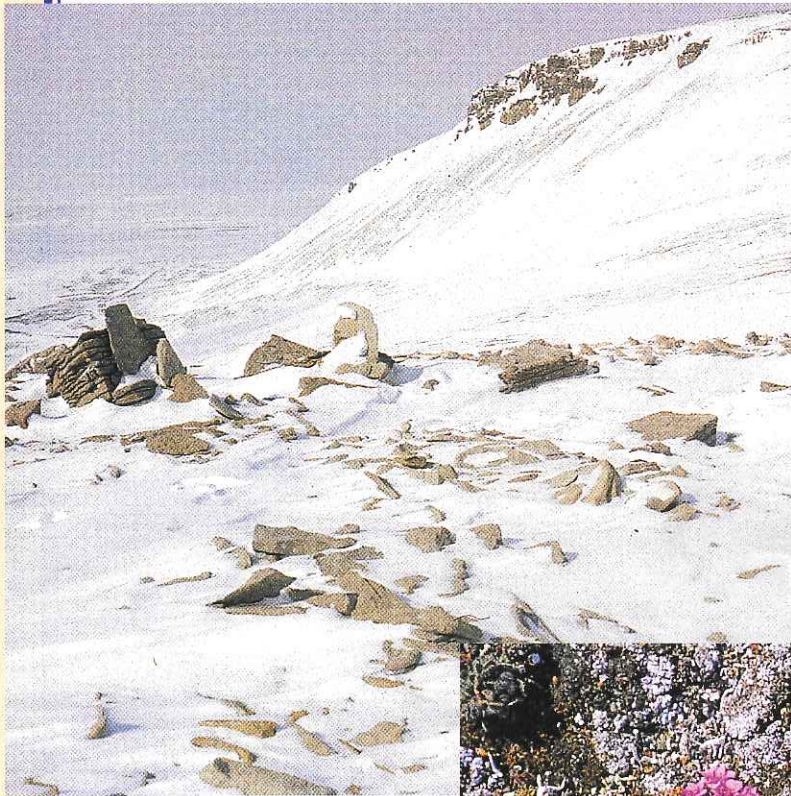


Figure 6-48 Inuitian region near Resolute Bay, NWT

Figure 6-49 Purple saxifrage, a low-lying plant that grows in the Arctic

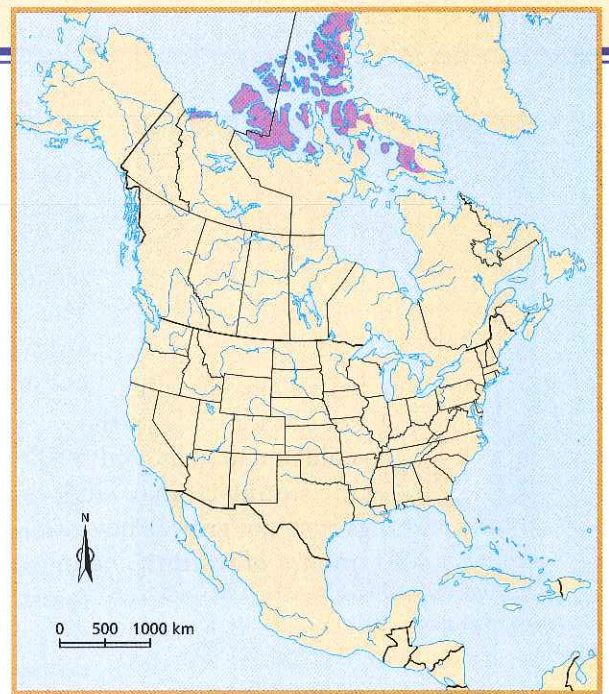


Figure 6-47 The Arctic

Topography

Much of the Arctic near the ocean is very flat. The mountains of the far north were formed by folding and are presently covered by glaciers.

Climate

The Arctic climate is very severe because it is so far from the equator. Winter lasts for ten months in the far north. Summer is very short, and not very warm. Because it has little precipitation, the Arctic is actually a desert.

Vegetation

Very few life forms, beyond lichen, can grow on the mountains of the Arctic. Trees cannot grow on the **tundra**, either, because the climate is too cold and dry, and only a small amount of thawing occurs during the summer. Small shrubs, mosses, and lichens are the only things that can grow. They cling to the ground, soaking up the small amount of warmth and moisture available.

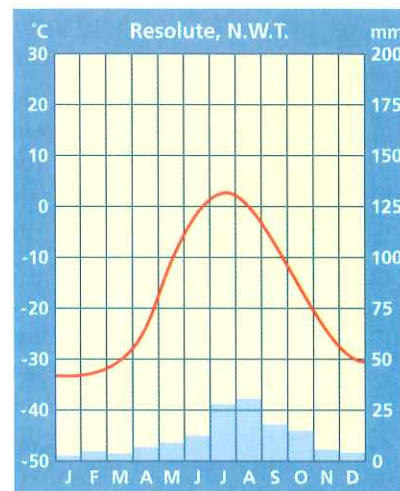


Figure 6-50 Resolute, NWT

DID YOU KNOW?

Permafrost is characteristic of the Arctic—it means that the ground is permanently frozen, except for the few inches at the surface that thaw during the summer. Building is a problem because of the permafrost. Water and sewage must be carried in large, above-ground pipes called “utilidors.”



Figure 6-51 Utilidors in Iqaluit

ACTIVITIES

tundra: northernmost vegetation region found in areas too cold for trees to grow. Bushes, grasses, mosses, and similar plants dominate.

1. Using an atlas, find out how many daylight hours there are in the Arctic over the course of a year?
2. Do a PMI on the advantages or disadvantages of living in the Arctic. (See page 143 for a model.)

CONCLUSION

The settlers who came to North America found a wilderness rich in diversity and natural resources. They exploited these natural resources and, over time, created whole new environments.

European attitudes towards the environment contrasted sharply with the attitudes of the original inhabitants of North America, who saw themselves

as conservators, rather than exploiters.

The results of industrialization and development have led us to a situation where the very future of the Earth is threatened—we suffer from many forms of pollution, many of which we may or may not be able to counteract. What questions should we be asking ourselves, now, as we near the next millennium?

SUMMARY ACTIVITIES

1. Create an organizer to compare the regions on the basis of climate, vegetation, and economic activities.
2. Using an atlas and an outline map of North America, show the different climatic regions of the continent.

Make an annotated legend to accompany the map, describing the characteristics of the climate regions.

3. Do the same activity as in question 2, but for the vegetation regions of North America.

ON YOUR OWN

1. Research some of the current major environmental issues affecting each of the regions of North America. (For example, mining, forestry practices, fisheries

depletion, global warming, acid rain, and ozone depletion.) You could add these to the summary chart you made above.