

Chapter 9

Addressing Climate Change

What You Will Learn

In this chapter, you will learn how to...

- **identify** the tools used to measure past and present climate change
- **investigate** how scientists predict future climate
- **describe** Canada's contribution to climate change

Why It Matters

How humans react to the changes in climate will affect the lives of future generations. However, we have to give up some conveniences in order to make global changes and avert potential climatic disasters.

Skills You Will Use

In this chapter, you will learn how to...

- **analyze** different sources of scientific data for evidence of climate change
- **assess** the effectiveness of programs and initiatives to address the issue of climate change
- **investigate** cause-and-effect relationships related to climate change

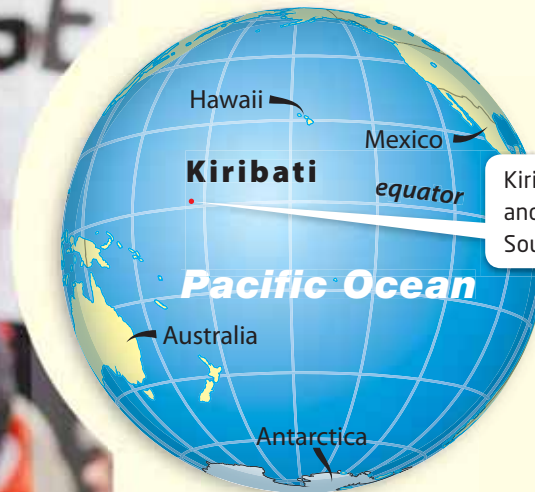
In 2005, hundreds of people gathered in Montréal, Québec, to protest government policies regarding climate change and to raise awareness of the dangers of climate change. In this chapter, you will learn how to evaluate climate data, how individuals and governments have joined forces to address issues related to climate change, and how you can reduce your own contribution to climate change.



Activity 9-1

Who Is Responsible for Responding to Climate Change?

The island nation of Kiribati is expected to be completely submerged before 2020 as a result of rising sea level. Because humans may have played a role in the rise of the sea level, how much should the global community be responsible for the effects on low-lying nations?



Kiribati's capital and largest city, South Tarawa

The island nation of Kiribati lies in the Pacific Ocean between Hawaii and Australia. Although the 32 islands that make up the nation of Kiribati are spread over an area of 3 500 000 km², their total land area is smaller than the island of Hawaii.

Procedure

1. Form groups of four people.
 - a. One person will role-play an islander from Kiribati. This person will try to negotiate details related to a new home to which the 10 000 islanders can move.
 - b. The other three group members will role-play government officials from Australia, Canada, and the United States. None of these nations wants to imply that they are responsible for the situation in Kiribati.
2. Take turns trying to negotiate a deal for resettling the people of Kiribati. Each person should have three chances to speak.
3. After everyone has spoken three times, write out your position on what should happen to the people of Kiribati and who should help.

Question

1. The people affected most by changing climate are often those who have contributed the least to that change. What is our responsibility to help these people deal with the situation that we helped create? Explain your answer.

Study Toolkit

These strategies will help you use this textbook to develop your understanding of science concepts and skills. To find out more about these and other strategies, refer to the Study Toolkit Overview, which begins on page 560.

Organizing Your Learning

Identifying Cause and Effect

A **cause-and-effect map** can help you identify causal relationships. For example, examine this passage and the cause-and-effect map below it:

Most climate scientists agree that an increase in greenhouse gases is the largest single cause of current climate change. The main human causes of this increase are activities that produce air pollution and activities that reduce the ability of natural cycles to absorb greenhouse gases (such as cutting down forests).

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graph TD; A[activities that produce air pollution] --> B[increase in greenhouse gases]; C[activities that reduce the ability of natural cycles to absorb greenhouse gases] --> B; B --> D[current climate change]
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Use the Strategy

Read the second paragraph under “Reducing Your Carbon Footprint” on page 374. Make a cause-and-effect map to show causal relationships.

Word Study

Creating a Word Map

A **word map** can help you grasp the meaning of a new word or concept.

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graph TD; A[Target Word or Concept: climate] --- B[Definition (in your own words): the long-term pattern of weather conditions in a region]; A --- C[Facts/Characteristics: includes temperature, winds, precipitation, and other factors]; A --- D[Examples OR illustration: The Canadian Arctic has a cold climate with little precipitation and low temperatures.]; A --- E[Related Words: climate change, climatic, climate zone]
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Use the Strategy

As you read this chapter, create a word map for *paleoclimatologist*. Compare your completed map with a partner’s map. If your partner has any information that helps you understand the word better, add it to your word map.

Reading Effectively

Identifying the Main Ideas and Details

The title, headings, and subheadings of a chapter can help you identify and organize the main ideas and details, as shown in the example on the right.

Use the Strategy

Skim Chapter 9 and make an outline like the one on the right, using the title, the section headings, and at least two subheadings.

You can use outlines like this one to preview a chapter, and then use it to take notes to help prepare for a test.

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graph TD; A[Overall Main Idea: Dynamics of Climate Change] --- B[Three influences on climate change:]; B --- B1[Energy Transfer in the Climate System]; B --- B2[Greenhouse Gases and Human Activities]; B --- B3[Cycling of Matter and the Climate System]; A --- C[Two biogeochemical cycles that affect climate:]; C --- C1[The Carbon Cycle]; C --- C2[The Nitrogen Cycle]
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