

# WHY IS CLIMATE IMPORTANT?

Hurricane Sandy is an example of weather (Figure 2.1). **Weather** describes the conditions of the air in a particular place and on a particular date. It describes what it is like outside today. A description of a day's weather could include the temperature, whether it is sunny or cloudy, whether there is rain or snow, and how windy it is. How does weather affect your day?

**Climate**, on the other hand, refers to the average weather of an area over decades or even centuries. It does not describe any particular event or any particular date. You can use climate information to predict what conditions might be like in a particular place at a certain time of year.

## HOW CLIMATE AFFECTS US

Just as landforms can shape our way of life, so can climate. Climate affects what we eat by limiting the types and amount of food that can be grown. For example, tropical fruits such as pineapples and bananas can grow only in warm, sunny climates.

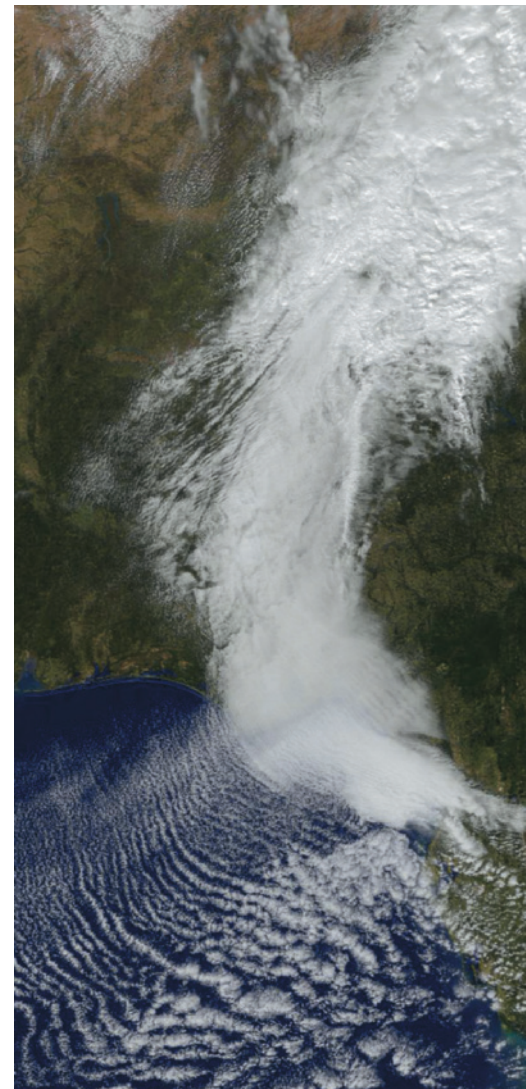
Climate also affects what we wear and the types of shelters we build. People living in colder climates wear warm clothes and live in shelters that protect them from harsh weather. People living in warmer climates wear light clothes and build shelters that protect them from the Sun and keep them cool.

## EARTH'S CHANGING CLIMATE

Earth has a long history of changing climate. Scientists have used samples of ancient ice to determine that Earth has gone through many periods of warming and cooling.

**Climate change** means a change in long-term weather patterns. This could include changes in temperature, moisture, or wind patterns. Climate change is natural. In the past, the climate changed over hundreds or thousands of years. Now, climate changes are happening over decades or even from year to year. Figure 2.2 shows how the Trift Glacier in Switzerland has changed since 1948.

Most geographers and other scientists agree that human actions are causing our climate to change more quickly than ever before. Global temperatures are getting warmer. The increase in average global temperatures is called **global warming**.



**FIGURE 2.1** This satellite image shows Hurricane Sandy over the Atlantic Ocean, moving north.

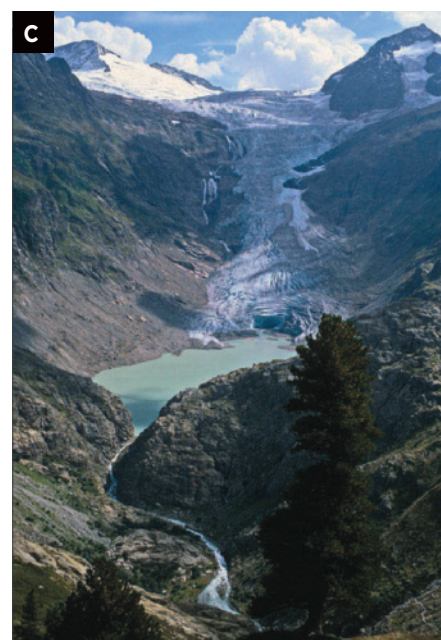
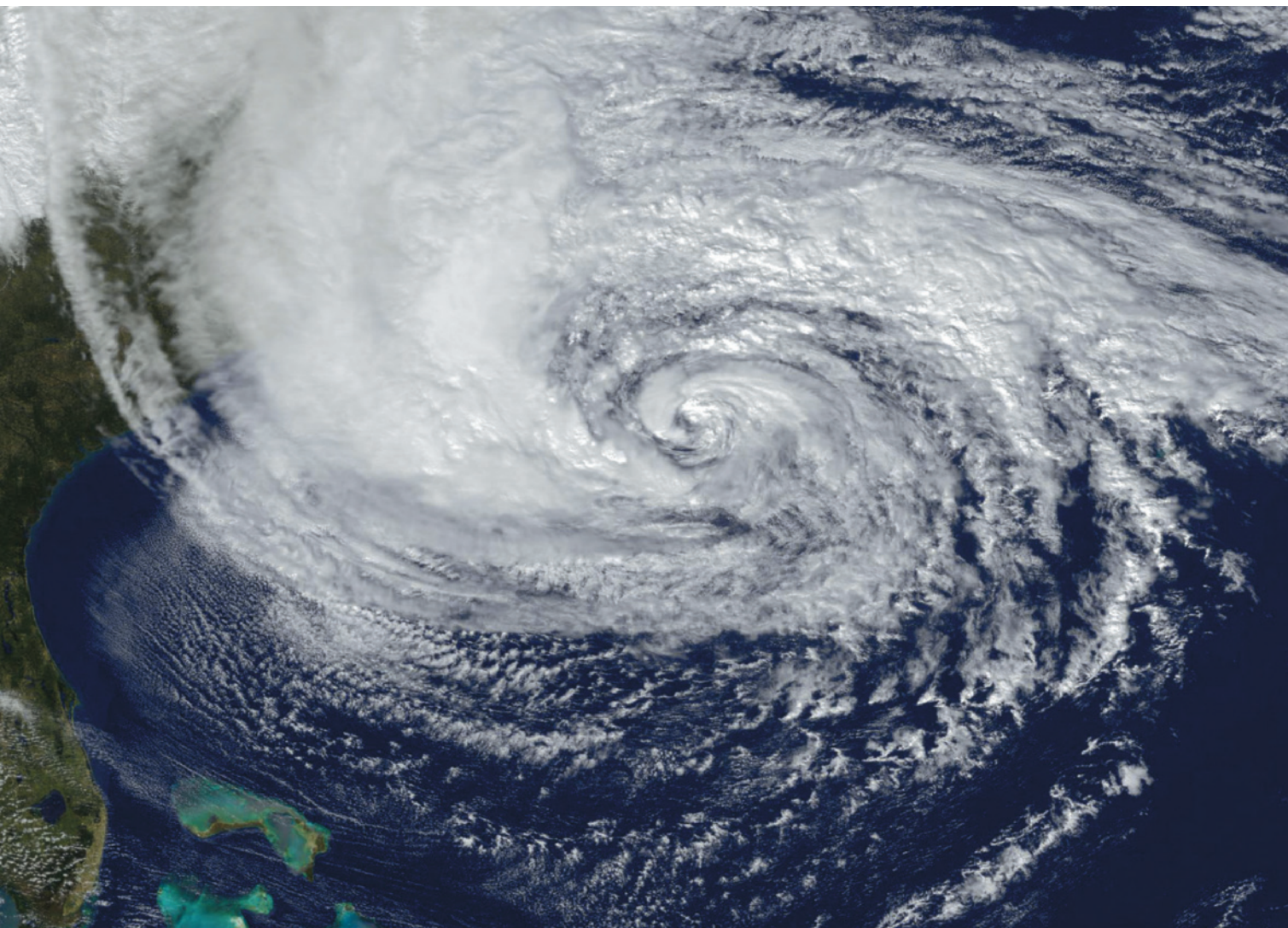
How can technology help me to understand and predict weather?

**weather** the short-term conditions of the air in a particular place and on a particular date

**climate** the average weather of an area over a long period of time

**climate change** changes in long-term weather patterns caused by natural events or human activity

**global warming** an increase in average global temperatures near Earth's surface



**FIGURE 2.2** The Trift Glacier in Switzerland has noticeably shrunk in the past 50 years. This rapidly shrinking glacier is one piece of evidence that our climate is becoming warmer. (A) 1948; (B) 2002; (C) 2006

I wonder what other glaciers are affected by climate change?



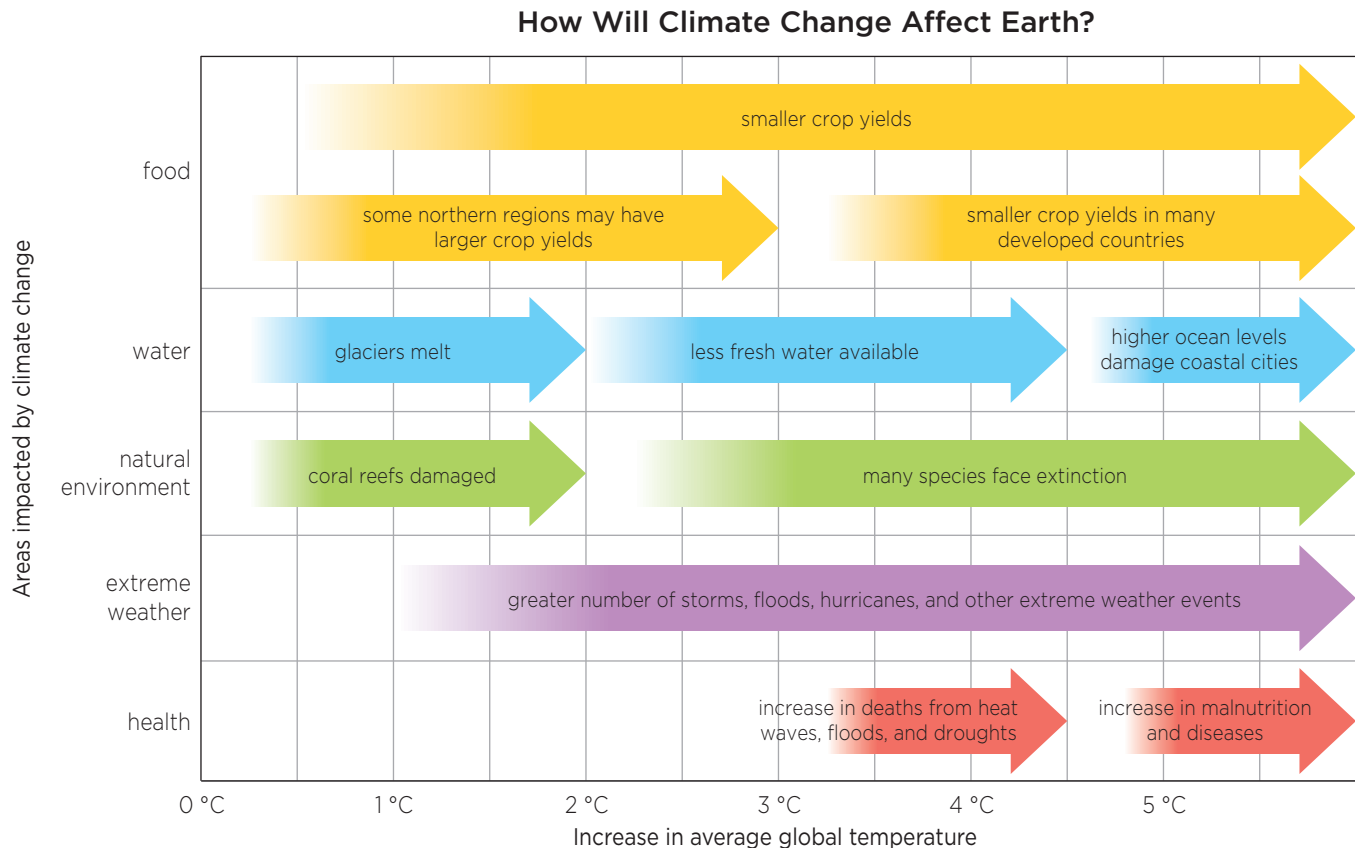
## IMPACTS OF A CHANGING CLIMATE

Climate change will have a significant impact on how people live around the globe. Hotter, drier climates are changing the types and amounts of crops that can be grown. Some areas are experiencing drought, or severe water shortages.

Global warming is also melting ice around the world. The area and thickness of Arctic sea ice has decreased dramatically. Ice sheets in Greenland and Antarctica as well as glaciers in other parts of the world are melting. The water from the melting ice is causing sea levels to rise. Some coastal areas are experiencing damaging conditions due to the increase in sea level.

Climate change will also increase the occurrence of extreme weather events such as Hurricane Sandy, as well as floods and tornadoes. Communities around the world, including Canada, will have to make major changes to protect their safety. **Figure 2.3** identifies some projected impacts of climate change.

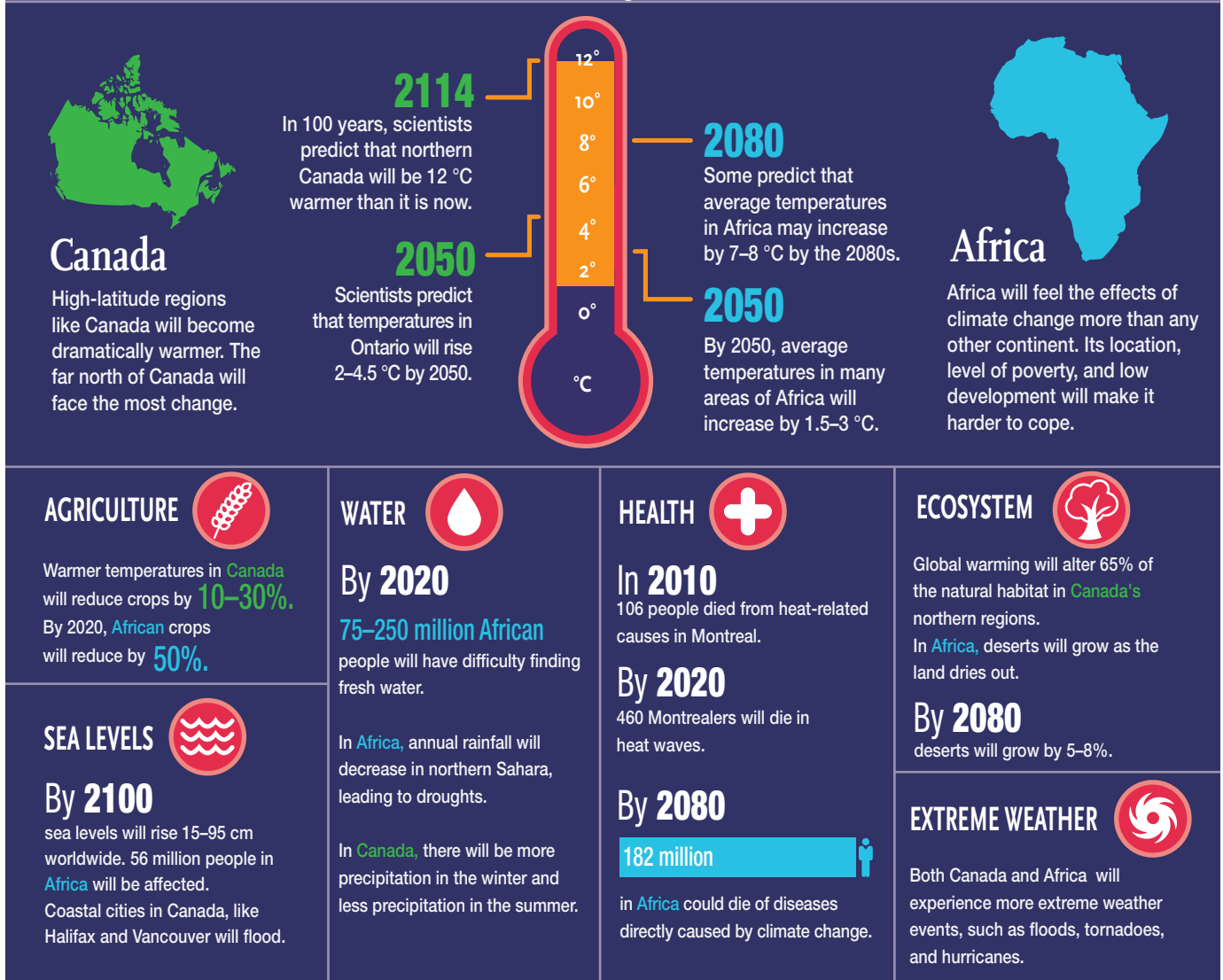
**FIGURE 2.3** Even a small increase in average global temperature can have large impacts on many areas of our lives.



Wealthier countries, such as Canada, have many advantages that can help overcome changing climate conditions. Some areas within developing regions, such as areas in Africa, Asia, and Central America, already struggle to live with poor climate conditions. Climate change will have a greater negative impact on them because they do not have enough money to build stronger shelters and buy more resources. For people in these regions, climate change is a life-or-death situation (**Figure 2.4**).

# COMPARING THE EFFECTS OF CLIMATE CHANGE

Let's examine how climate change will affect Canada and Africa.



**FIGURE 2.4** Climate change will affect food production, water supply, and frequency of extreme weather events.

## CHECK-IN

- INTERRELATIONSHIPS** How does the climate where you live affect your way of life and day-to-day activities?
- GATHER AND ORGANIZE** Think about the information you need in order to better understand the challenges of climate change. Make a list of topics you need more information about. As you work through this chapter, keep notes about your selected topics.
- EVALUATE AND DRAW CONCLUSIONS** What can you do to protect yourself from the effects of climate change where you live?
- GEOGRAPHIC PERSPECTIVE** With a partner study **Figure 2.4**. Discuss what other aspects of our lives would be affected by climate change. Choose one aspect. Write a brief paragraph comparing how it would affect Canada and one other country.