Section 11.1
Natural Climate Change
Study Notes

By the end of section 11.1 you should be able to understand the following:

- ❒ "Climate" describes a region's long-term weather patterns.
- ❒ Geologic evidence indicates that there have been many climate changes in earth's history.
- ❒ Climate change occurs due to factors such as Earth's radiation budget, and the transfer of thermal energy.
- ❒ Natural processes that affect climate include Earth's tilt and orbit, solar activity, greenhouse gases, thermal energy transfer in oceans, and catastrophic events such as volcanic eruptions.

NOTES

Define the term "climate. What conditions are considered when describing the climate of a region?	1.	
	2.	3.
	4.	5.
	6.	7.
List the five climates found in British Columbia.	1.	
	2.	
	3.	
	4.	
	5.	

NOTES

What is a paleoclimatologist? What are some observations a paleoclimatologist might make about a region's past? According to evidence like this, what climatic event occurred 12 000 years ago across most of Canada?	1. 2. 3. 4. 5.
	Do the Reading Check on page 467
Why is Earth's atmosphere like a greenhouse? How does this help support life on our planet	1. 2.
What evidence do glaciers provide climatologists? How far into the past does this evidence allow them to observe?	1. 2.
Earth's tilt, rotation and orbit around the Sun influence climate. Give two reasons why summers are warm and winters are cold in the northern hemisphere.	1. 2.

NOTES

How do Earth's tilt, rotation and orbit change over long periods of time?	1. 2. 3. **Do the Reading Check on page 470**
Why is evaporated water an important part of climate? In what two ways could having more evaporated water in the water cycle influence climate?	1. 2. 3.
Both surface currents and deep-ocean currents can influence climate. Deep-ocean currents are essentially giant convection currents. What two factors can influence the speed, volume and even direction of these deep-ocean convection currents?	1. 2.
What are the differences between El Nino and La Nina?	1. 2. **Do the Reading Check on page 473**

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Ocean water at the North and South poles is usually very salty. Why could global warming change the salinity of the polar oceans?	1.

NOTES

Surface currents in the ocean are separated from deep, cold water by a thermocline layer. What is upwelling, and what is the name of the upwelling that can cause cooler, wetter weather in BC?

1.

2.

Do the Reading Check on page 473

CO_2 is an important greenhouse gas that can greatly influence atmospheric temperatures. The carbon cycle helps to balance CO_2 levels. Where are the largest carbon sinks? How is carbon released from these carbon sinks?

1.

2.

3.

4.

Do the Reading Check on page 474

How does a large volcanic eruption potentially change global climate conditions? What type of event causes the largest catastrophic climate changes? What impact can these events have on all of Earth's life forms?

1.

2.

3.