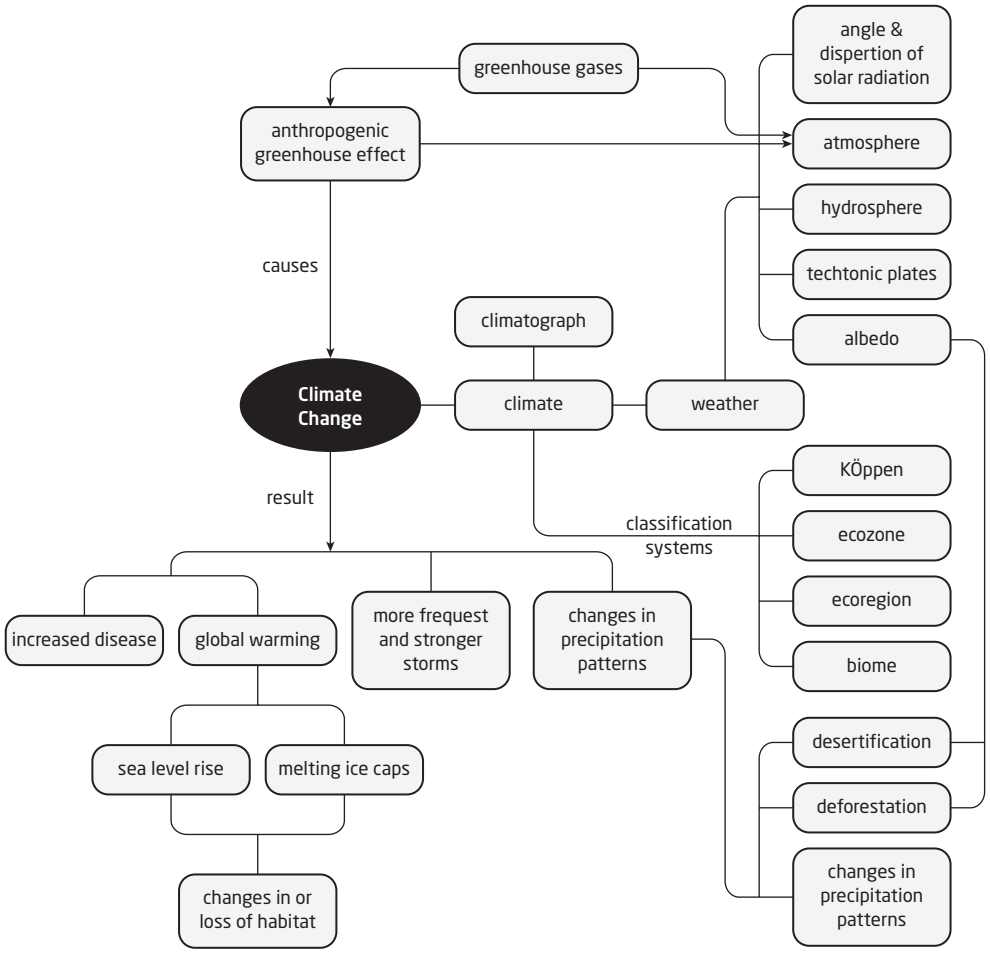
Chapter 7 Review Answers (Student textbook pages 306 and 307)

Please also see **BLM 7-15 Chapter 7 Review (Alternative Format).**

Make Your Own Summary



Reviewing Key Terms

1. climate
2. greenhouse effect
3. tectonic plates
4. anthropogenic
5. climatograph
6. biome
7. ecoregions
8. global warming
9. desertification
10. deforestation

Knowledge and Understanding

11. The hydrosphere is all the water in its different forms on Earth.
12. The yellow orbit provides Earth with more consistent intensity of energy throughout the year because it is circular.
13. The greenhouse effect is natural warming that is caused when gases in Earth's atmosphere absorb thermal energy that is radiated by the Sun and Earth.
14. Seasons are the result of a combination of Earth's annual orbit around the Sun and its tilted axis.
15. volcanic eruption, change in ocean currents, melting of polar icecap, formation of a mountain range
16. 15 to 35 percent
17. In order to be able to measure how climate is changing, scientists need to be able to describe and classify the climates that exist around the world today.
18. The formation of a mountain range could affect the pattern of wind and precipitation. Decreases in precipitation can lead to desertification.

19. There is a large difference between Earth's albedo during the last glacial period and its albedo today. The albedo would have been much higher during the last glacial period because ice reflects more energy than other surfaces.

20. Scientists do not classify climates based only on temperature records because temperature is only one component of climate. Other components include precipitation rates and biotic factors. Including these factors helps scientists better compare different areas and determine whether changes are taking place.

Thinking and Investigating

21. A decrease in precipitation could decrease the levels of water in reservoirs and decrease ground water used for drinking water.

22. Volcanic eruptions introduce gases and particles into the air that affect the reflection and absorption of energy from the Sun. The particles can reflect solar radiation and have a cooling effect on the global climate. Volcanic eruptions can also increase temperatures by releasing greenhouse gases.

23. There is a large variation in monthly precipitation in Welland, according to the graph. Precipitation peaks in July with an average of about 60 mm and is lowest in March with almost 0 mm of precipitation.

24. Scientists can use climate models based on indicators and different data on how factors affect climate to predict the climate for 10 years in the future.

25. Some consequences to having a warmer climate in Canada include rising sea levels, which could affect Canada's coasts, the habitat of animals, such as seals and polar bears, and the culture and lifestyle of people in Canada; an increase in serious diseases, including waterborne diseases, caused by infectious agents; and an increase in allergens and asthma triggers, including smog.

Communication

26. Example: The Sun's rays strike Ontario at an angle because of the province's latitude. As a result, the energy in the rays is spread over a larger area compared to places closer to the equator, where the Sun's rays strike perpendicular to Earth's surface. Ontario is close to large bodies of water, which influence climate because they have a large specific heat capacity compared with other substances. Jet streams are high-altitude winds that affect precipitation. They can carry warm, moist air or dry, cool air to Ontario.

27.

Factor	Affect on Climate Change
solar activity	increased sunspot activity raises temperature
Earth's orbit	temperature differences greater between summer and winter during slightly elliptical phase in 100 000 year cycle
Earth's tilt	temperature differences greater between summer and winter when angle greatest (41 000 year period)
Earth's rotation	none, only day and night
latitude	warmer climates closer to the equator
winds	distribute heat around Earth
ocean currents	store and release heat over long periods
albedo	increases/decreases radiation reflected into atmosphere (where it feeds warming loop)
tectonic plate movement	changes wind/ocean currents, volcanoes release GHGs and cloud atmosphere
human activity	increased greenhouse effect, changes in ground cover increase radiation reflected into atmosphere (increasing temperature)

28. Example: Narrative lines show loss of habitat for polar bears as well as a longer growing season, dried up lakes, and increased spread of disease.

29. Presentations should show how changes to ground cover and increasing production of greenhouse gases have directed more radiation back at the atmosphere and trapped it there. Suggested courses of action might include reducing GHG production and replanting vegetation.

30. increase temperature → diseases thrive
↓
increased habitat → diseases spread

Application

31. Increased albedo would reflect heat away from soil and water bodies where it is stored. Increased cloud cover could exclude radiation from reaching Earth.

32. By comparing current rate of change to past rates as stored in the fossil and ice records.

33. The edges of the hurricane systems will bring increased wind and rain.

34. The left scale represents precipitation (the bar graph) whereas the right scale represents temperature (the line).

35. If the cycle lasts 1000 years, and we are just starting to see an increase, the intensity and frequency of hurricanes will continue to increase over the next few decades, until we reach the middle of that cycle and start down the other side.