

Chapter 19: Climate Disruption and Ozone Depletion

1. What kind of data from Greenland's melting glaciers provide evidence that climate disruption is occurring?
2. Explain why weather and climate are not the same.
3. Describe atmospheric warming and cooling over the past 900,000 years and during the last century.
4. How do scientists get information about past temperatures and climates?
5. What is the greenhouse effect and why is it so important to life on the earth?
6. How have human activities affected atmospheric greenhouse gas levels during the last 275 years and especially in the last 30 years?
7. List the major human activities that add CO₂, CH₄, and N₂O to the atmosphere.
8. After studying past climate change and the nature of the earth's climate system for almost three decades, what two general conclusions did most of the world's climate scientists agree on about atmospheric warming over the past 30 years?
9. What do a number of climate models project about temperature changes during this century?
10. What are three effects of increasing atmospheric CO₂ levels on the oceans?
11. Briefly describe how projected climate disruption is likely to affect: (a) drought, (b) ice cover, (c) permafrost, (d) sea levels, (e) extreme weather, (f) biodiversity, (g) crop yields, and (h) human health during this century.
12. Describe how melting permafrost, drought, and diminished ice cover can become part of a positive feedback loop leading to climate disruption.
13. List seven examples of climate tipping points we could be approaching.
14. What are five factors that make it difficult to deal with the problem of projected climate disruption?
15. Describe John Sterman's bathtub analogy as it applies to CO₂ emissions.
16. What is carbon capture and storage (CCS)?
17. What is cap-and-trade and what are the advantages and disadvantages of using it to help reduce greenhouse gas emissions?
18. What is China doing to help reduce its contribution to the climate disruption?

19. What is the United States doing to help reduce its contribution to this problem?
20. Describe how human activities have depleted ozone in the stratosphere, and list five harmful effects of such depletion.
21. List the names of the international treaties that have helped reduce the threat from ozone depletion in the stratosphere.
22. What are the expected effects of decreased levels of stratospheric ozone on human health, and the environment?