

Lecture Questions: Global Warming

These questions are taken from chapter 3 of your textbook and from the "Summary for Policymakers" from the IPCC Working Group 1 Fourth Assessment Report. See your Class Schedule for links to the latter document.

1. How much of the sunlight that reaches the earth is:
 - (a) reflected back to space without being absorbed?
 - (b) absorbed by the atmosphere?
 - (c) absorbed by Earth's surface?
2. Describe the greenhouse effect. In your explanation, define *greenhouse gases* (GHGs) and list the five most important GHGs *naturally present* in the atmosphere.
3. What is the "enhanced" greenhouse effect?
4. What is the carbon cycle? List the main processes that contribute to the global carbon cycle.
5. The atmospheric concentration of the following GHGs have been increasing due to human activities. For each one, state the major activities that have caused the increase:
 - (a) carbon dioxide, CO₂
 - (b) methane, CH₄
 - (c) nitrous oxide, N₂O
 - (d) halocarbons such as halofluorocarbons (HFCs)
6.
 - (a) What is *radiative forcing*?
 - (b) What have been the major factors that have caused a positive forcing in the past century?
 - (c) What factors have caused a negative forcing?
7. The phrase *global climate change* covers a variety of trends and effects. List them.
8. What has been the average global surface temperature increase in the last century? What is the current rate of increase per decade?
9. What does the IPCC predict will happen to the global average temperature in the next 100 years?
10. Other than warming, what other changes are predicted in global climate in the next century?