6-4 Charting a Course for the Future
Ozone Depletion

• 20 to 50 km above the Earth’s surface is a layer of ozone (O$_3$) gas called the ________________

• The ozone layer absorbs harmful __________________________________________________________
  (the Earth’s sunscreen)
Human Activities Significantly Alter the Abiotic Environment

- **Stratosphere** (contains ozone layer)
- **Ozone layer** ($O_3$)
- **Troposphere** contains most of atmospheric gases
- **Mount Everest**
- **Concorde**

Altitude (kilometers) vs. Altitude (miles)
Ozone Depletion

- Chlorofluorocarbons (__________) have been linked to the breakdown of the ____________________________
- The use of ____________________________ was banned in the U.S. in ___________
Environmental news isn’t all bad: with the sharp reduction of trifluorocarbons (ozone depleting chemicals), ozone levels are returning to normal.
Greenhouse Effect

- Greenhouse Gases
  - Include ________________, methane, nitrous oxide, and ____________________________
  - Serve as a “____________________” for stable planetary temperatures
  - Mars freezes overnight; Venus stays too hot; Earth…just right
Greenhouse Effect

- Normally green house gases hold in some of the ________________, which keeps Earth warm enough for water to be present in all ______________ phases, which allows ___________ to exist
Greenhouse Gases and Global Warming

- Greenhouse gases
- Heat trapped
- High-energy sun rays
- Reflection of low-energy radiation (heat)
Natural Global Warming

Historical global ____________ and ______________ is a fact. __________ periods show evidence of ______________ levels of atmospheric ____________, while __________________ periods show evidence of ______________ levels of atmospheric ________
Global Climate Change

• ______________ _______________ have increased the amount of greenhouse gases (mainly _______), which has intensified the ______________ ________________

• _______________ in the average ______________ in the biosphere is called ________________
Global Climate Change

• Evidence that global warming is occurring: average __________ of 1 degree Celsius, ______________ polar ice and ______________, _________________ sea levels
Glaciers are Receding Worldwide

The Andean Qori Kalis Glacier in 1978 (left) and 2000 (right).
Global Climate Change

• Possible effects of global warming: sea levels may rise enough to flood some ___________ ____________, ecosystem __________________ (more endangered and invasive species), __________________________ in North America
Ecological Effects

• Caterpillar eggs usually hatch a few days before baby bird eggs hatch. This ensures plenty of food for baby birds.

• Caterpillar eggs are laid earlier now because of earlier warm temperatures causing earlier migration back to the states. What happens to baby birds if the caterpillars are in chrysalis form when the baby birds are born?
Homework

• Write a paragraph comparing and contrasting global warming and the hole in the ozone layer. These are two separate problems with different causes, different effects, and different possible solutions.