

INVESTIGATION 33



Project

Global Climate Change

PURPOSE

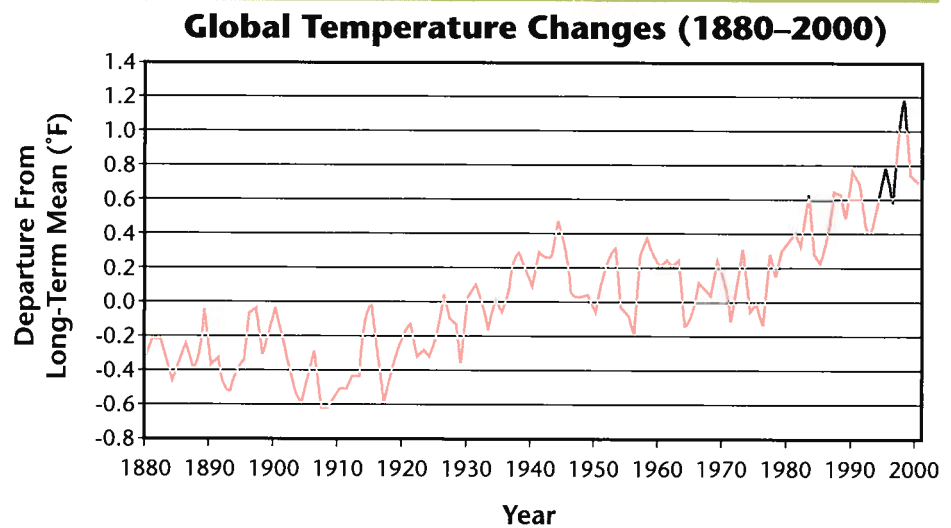
- Analyze and graphically depict interrelationships among a complex of effects of global warming
- Apply the analysis of effects to environmental, economic, and sociopolitical events, both locally and generally

INTRODUCTION

Research has shown that the surface temperature of Earth has risen about 1°F over the last one hundred years and the warming has been accelerating for the last 20 years, as shown in **Fig. 33-1**. The evidence is becoming overwhelming that humans are responsible for much of the warming over the last 50 years by adding large amounts of carbon dioxide, nitrous oxide, and methane to the atmosphere.

Fig. 33-1

The rise in temperature above the long-term mean appears to have accelerated since about 1980.



For purposes of this investigation you will ignore the causes—and the blame—for global warming and concentrate on finding patterns in its comprehensive, large-scale effects. For example, increasing atmospheric temperature seems to be causing glaciers to recede, polar ice to thin and retreat, and plants to flower sooner in the spring. In addition, warm-climate southern plants and trees are migrating towards northern latitudes and up mountain slopes, the seasons are becoming more intensely hot and cold, some rainfall patterns may be changing, and there seems to be a bleaching of coral reefs. In this investigation you will connect and draw relationships among eleven other effects of global warming, using reliable sources to support your conclusions.

Materials

- print and Internet sources for researching effects of global warming

Procedure

- Step 1** Write the name of each event below on a single post-it note.
- increased water runoff
 - more frequent droughts and floods
 - coastal flooding and damage
 - reduced irrigation capacity
 - overuse and pollution of water
 - erosion and silting
 - extreme weather
 - acid rain
 - sea level rise
 - insect infestation
 - changes in the water cycle (transpiration rate, soil moisture, rainfall patterns)
- Step 2** Carry out research as needed to discover the causes and effects of the listed events.
- Step 3** Refer to **Fig. 33-2**. Using the graphic organizer as a template, place the post-it notes in the ovals in such a way as to best illustrate the cause-and-effect relationships.

Global Climate Change

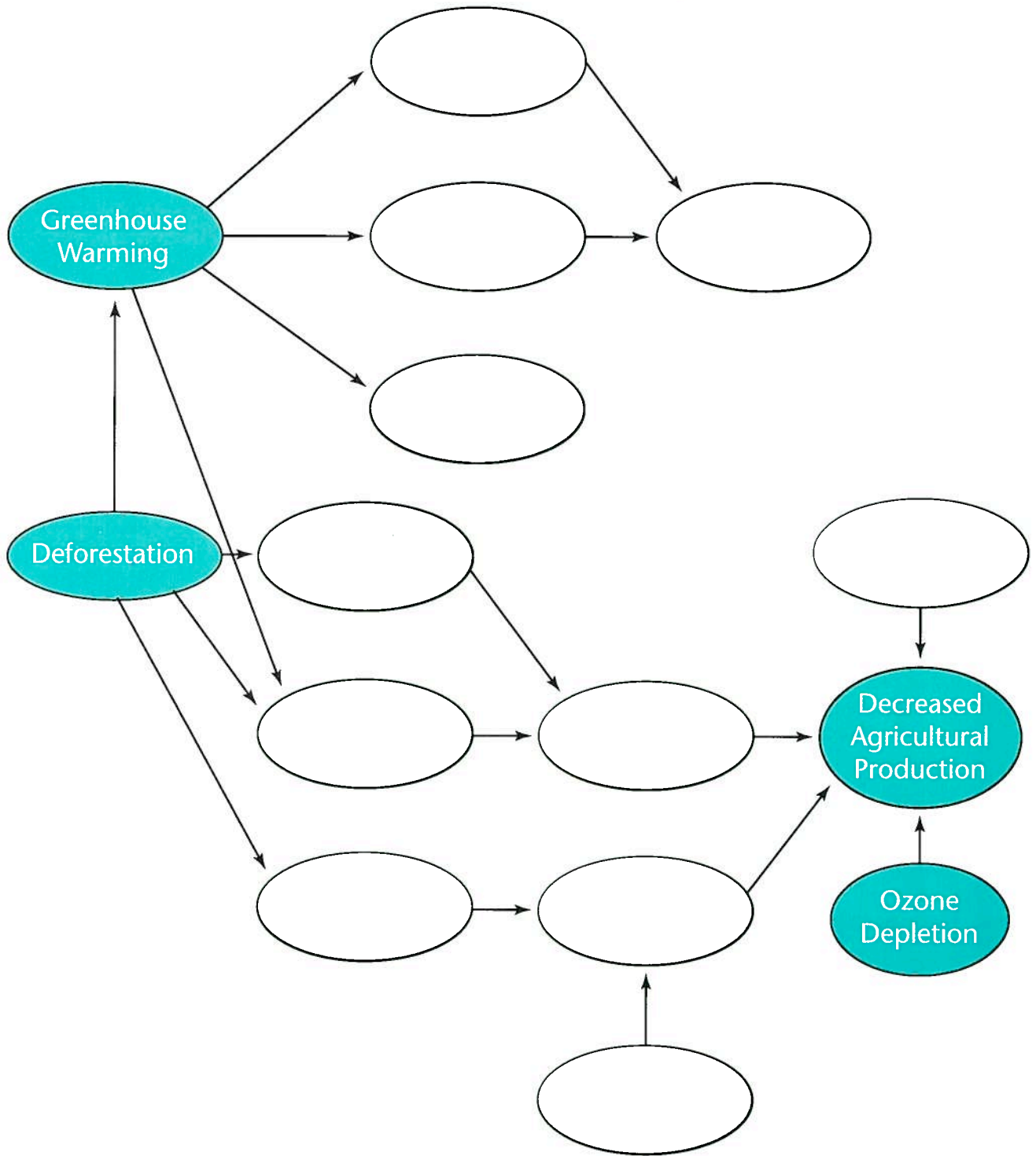


Fig. 33-2

Problems

1. Describe how two events in the organizer would directly impact your community.

2a. Follow one series of connections from the far left to the far right of the organizer. Describe in some detail how the cause on the left leads to the effect on the right.

b. Outline two economic consequences of these events.

c. Outline two social or political consequences of these events.

3a. Describe one food web in your region and how it would be impacted by the same changes you depicted in response to Question 2a.

b. Explain specifically why some populations would increase and others would be harmed.

4. Develop an argument that predicts that agricultural land would be degraded by nutrient loss if carbon dioxide levels continue to climb at the present rate or faster.
