

1.5 Rain Forests and Climate Change

TECHTREK

myNconnect.com For a graph on deforestation and photos of the rain forest

Maps and Graphs

Digital Library

Main Idea The health of the Amazon rain forest can influence climate change across the globe.

Climate change and global warming are topics that are often in the news. In order to understand how these topics are connected to rain forests, it helps to understand the scientific processes that keep rain forests healthy.

Rain forests are complex ecosystems. As you have read, thousands of different animals, birds, and insects live in the Amazon rain forest. Many unusual plants grow there, too. Some of these plants are used to fight deadly diseases like malaria and cancer.

How Rain Forests Work

Through a process called **transpiration**, plants and trees release water vapor into the air. As the water vapor rises, it cools, forming thick clouds that then produce rain. The warm air and moist soil support the growth of vegetation. In fact, trees grow so high and thick that sometimes sunlight does not reach the forest floor.

The plants in the Amazon rain forest perform an important function. They absorb greenhouse gases from Earth's atmosphere. A **greenhouse gas** is a gas that traps heat energy, warming the earth. Burning fossil fuels such as coal and oil produces greenhouse gases like carbon dioxide.

Too much carbon dioxide in the air causes the atmosphere to warm because it reflects heat energy back to Earth. Rain forest plants and trees naturally absorb this carbon dioxide from the air. In this way, rain forests help clean Earth's air.

Before You Move On

Summarize Why are rain forests important?

KEY VOCABULARY

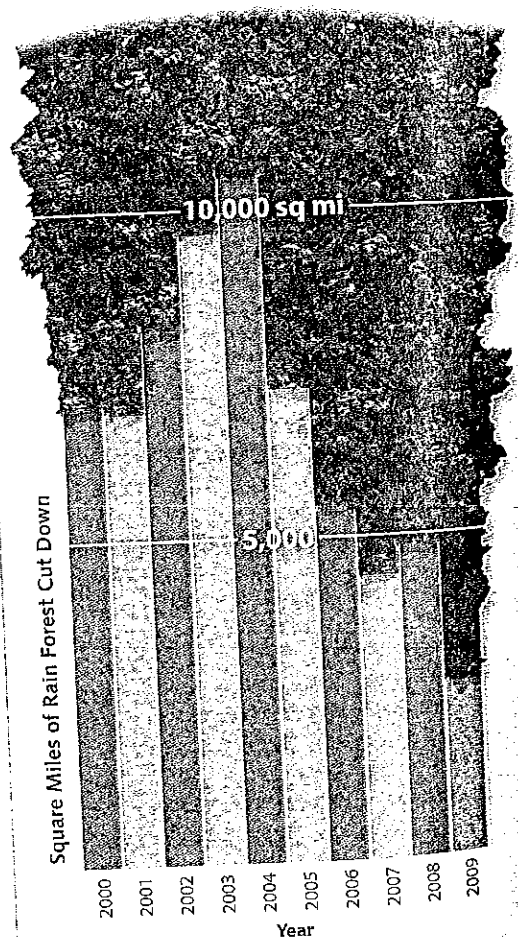
transpiration, n., the process by which plants release water vapor into the air

greenhouse gas, n., a gas that absorbs heat energy and reflects it back to Earth

ACADEMIC VOCABULARY

acknowledge, v., to recognize

DEFORESTATION IN BRAZIL, 2000–2009



Source: National Institute for Space Research, Brazil, 2010



Changes in the Rain Forest

Since the mid-20th century, large sections of the Amazon rain forest have been cut down. In *National Geographic*, journalist Scott Wallace reported that 20 percent of the rain forest has been lost in the last 40 years. (January 2007)

Widespread deforestation threatens the biodiversity of the Amazon. As more of the rain forest is lost, fewer trees and plants remain to produce moisture and cloud cover and to remove greenhouse gases from the air. These changes are having a global impact.

COMPARE ACROSS REGIONS

A Global Climate Challenge

Changes in the Amazon rain forest are partly responsible for changes in climate identified by scientists. Climate change is a gradual shift in Earth's climate due to natural causes. In its history, Earth has undergone many climate changes.

Global warming, on the other hand, is a term used by some scientists to describe the rapid warming of Earth's surface observed over the last century. They argue that the heavy use of fuels that release carbon dioxide contributes to rising temperatures. Since the beginning of the 20th century, the average temperature of the globe has risen 1.4°F. While that number might seem small, scientists **acknowledge**, or recognize, that a change of even one or two degrees is cause for concern. Rapid changes in average temperature can destroy habitats and change ecosystems.



Deforestation is underway in the Amazon rain forest near Rondonia State, Brazil.

Protecting the Amazon and other rain forests around the world is critical to the health of the planet. Many countries in South America are working to protect the Amazon rain forest. Across the Atlantic, countries in the African rain forest of the Congo River Basin face similar challenges. Leaders of Cameroon, Democratic Republic of Congo, Guinea, and Ghana are cooperating to manage sustainable forestry operations and to protect easily-damaged wildlife habitats.

Before You Move On

Monitor Comprehension What problems threaten the health of the Amazon rain forest?

ONGOING ASSESSMENT

READING LAB

- 1. Summarize** What is the difference between climate change and global warming?
- 2. Describe** In what ways do rain forests clean Earth's air?
- 3. Interpret Graphs** According to the graph, what has been the general trend in deforestation since 2004? What do you think caused this trend?