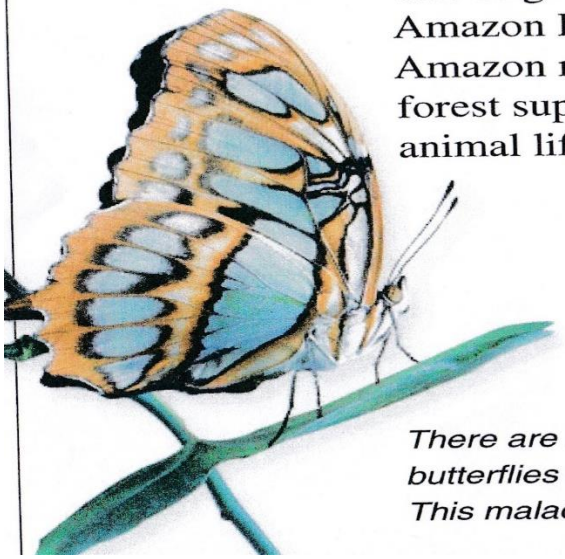
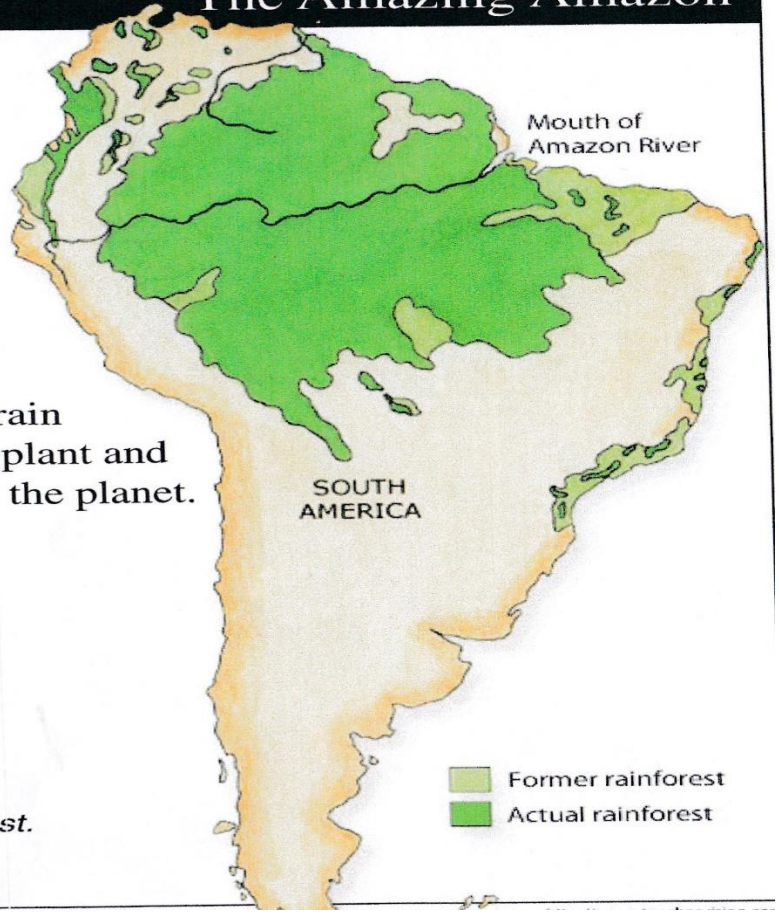
The Amazing Amazon

What's the one thing that defines every rain forest? Water, of course! It drips and puddles and pours—and eventually drains into huge rivers.

The largest river in the world—the Amazon River—flows through the Amazon rain forest. This amazing rain forest supports a greater variety of plant and animal life than any other place on the planet.



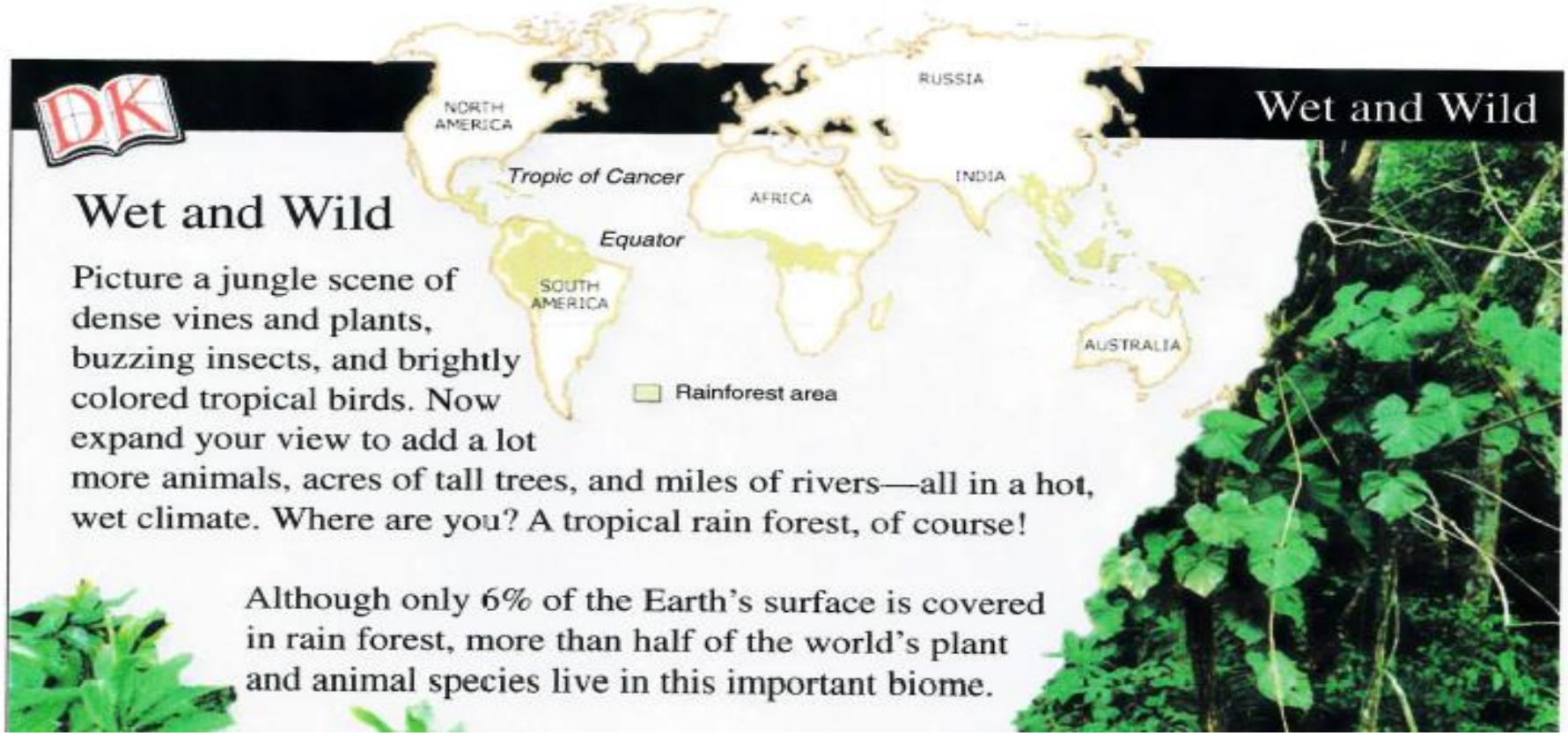
There are more than 2,000 species of butterflies found in the Amazon rain forest. This malachite butterfly is one of them.



The Amazing Amazon

The rain forest is awash with water. It drips from the leaves, collects in puddles, runs down mountainsides, and eventually drains into huge, meandering rivers. The Amazon is the largest river of all. Together with its tributaries, which number 1,000 or more, it holds two-thirds of the world's freshwater. There is an incredible diversity of life supported by this vast water system. It contains around 5,000 species of freshwater fish, and there may be another 2,000 awaiting discovery.

The Amazonian rain forest is still the largest in the world but, like all tropical forests, it is being overexploited. Twenty percent of it has been lost already, much of it transformed into pasture for cattle. Only small pockets of Atlantic coastal forest remain today.



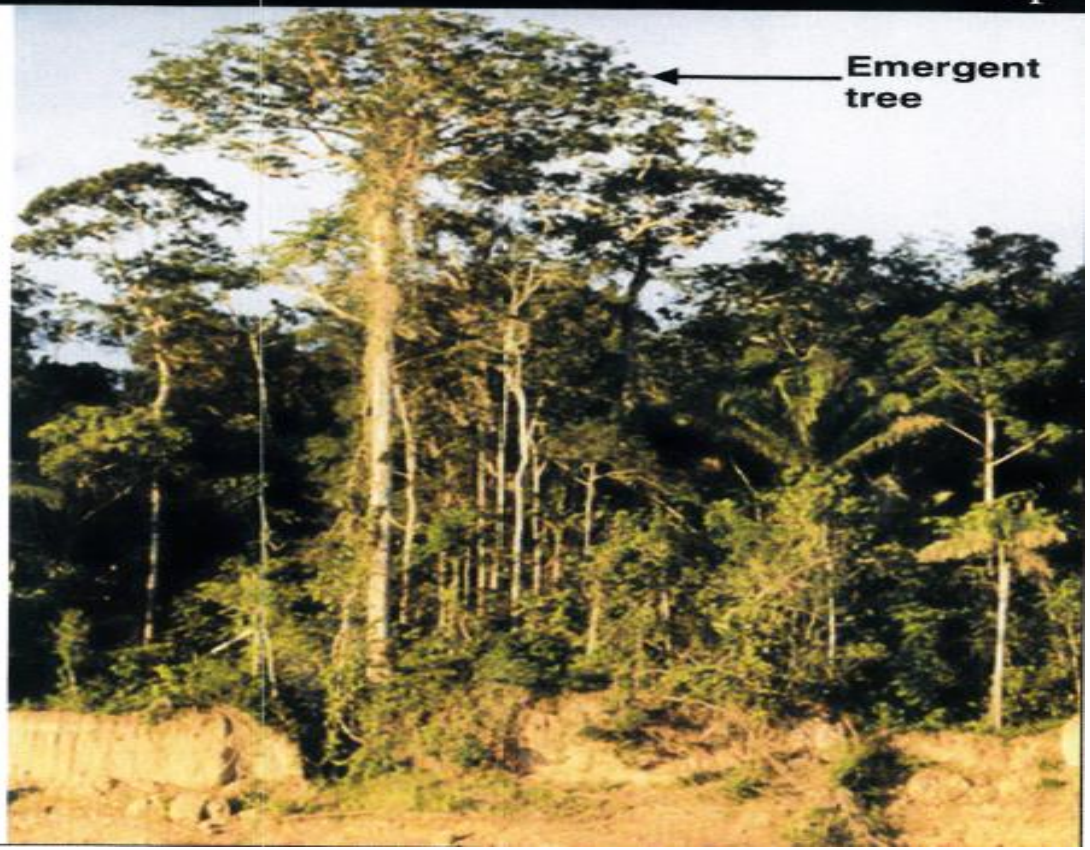
Wet and Wild

There are a number of different types of rain forest. Tropical lowland rain forest is found near the equator and gets about 80 inches (200 cm) of rain a year. Nearer to the Tropics, conditions become more variable, especially in Asia, which has a monsoon climate. Here the rain forest is different because it is subject to seasonal changes, and has only 50 inches (125 cm) of rain a year. In coastal areas, the rain forest species are often replaced by mangroves. Tropical rain forest also changes with increasing altitude. It is richest and most diverse in lowland areas, progressing to montane forest at about 3,300 ft (1,000 m). High montane forest at over 6,600 ft (2,000 m) is often enveloped in cloud and mist—hence, its alternative name of cloud forest.

At the Top

The tall, giant trees that poke above most others form the emergent layer of a rain forest. These trees get the greatest amount of sunlight. But they are also exposed to higher temperatures and wind.

The rare Harpy eagle uses its post in the emergent layer to spot prey below.

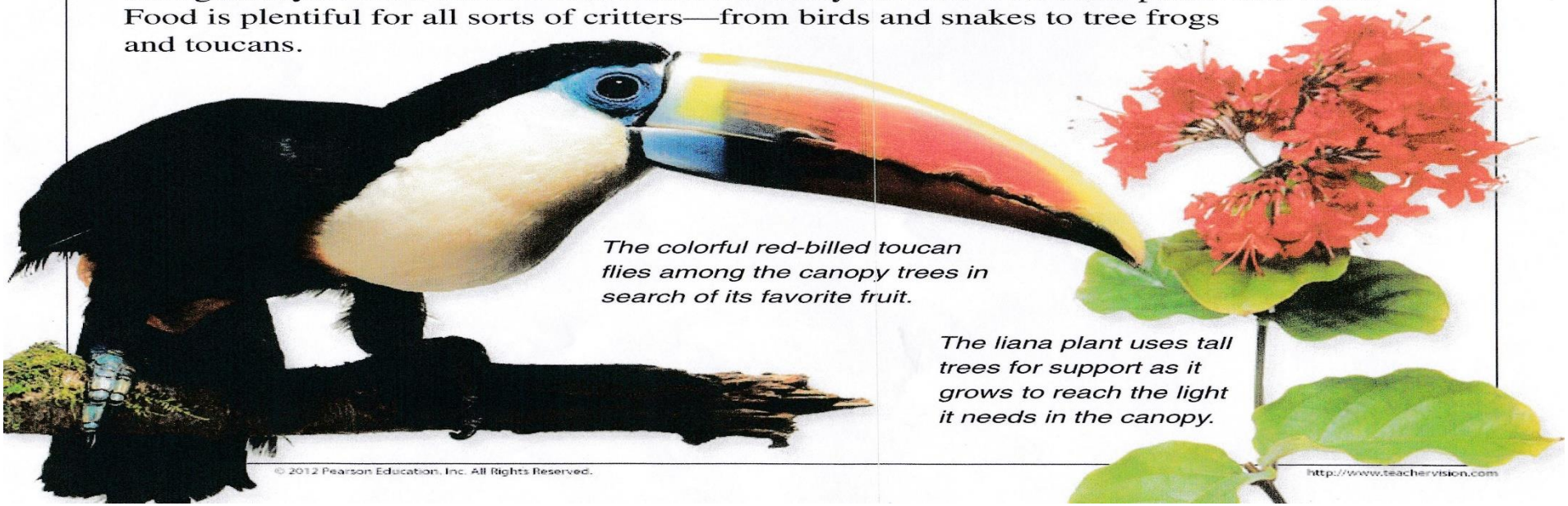


At the Top

Tall emergent trees tower above the rest of the jungle canopy, a few reaching heights of 200–230 ft (60–70 m). These scattered trees have straight trunks, often buttressed at the base and with a cauliflower-shaped crown. It is hotter and drier at the top of the canopy, with greater changes in temperature and humidity. The trees are also much more windblown, and the fruit or seeds of some species are dispersed by the moving air. Many emergent trees are leafless for short periods of time, but seldom all shed their leaves at once. The epiphytes that live on the boughs of these trees include drought-resistant species of bromeliads, lichens, and cacti.

Crowded Canopy

Most of the animals in the rain forest live in the canopy layer which is directly below the emergent layer. Here the tree branches are densely covered with other plants and vines. Food is plentiful for all sorts of critters—from birds and snakes to tree frogs and toucans.



The colorful red-billed toucan flies among the canopy trees in search of its favorite fruit.

The liana plant uses tall trees for support as it grows to reach the light it needs in the canopy.

Crowded Canopy

In the canopy of a rain forest, reaching 80–150 ft (25–45 m) above the ground, it is always green and leafy. The crown of each tree is taller than it is broad, making a sun-speckled layer around 20–23 ft (6–7 m) thick. This leafy roof shields the ground and absorbs most of the sunlight. It also lessens the impact of heavy rainfall and high winds. The teeming life of a jungle canopy is only glimpsed from below. Some creatures are so well adapted to their treetop existence that they seldom, if ever, descend to the forest floor. It is difficult even to match up fallen fruits or flowers with the surrounding tree trunks. Many species were totally unknown—or their numbers grossly underestimated—before walkways strung up in the canopy allowed biologists to research and find out what life was really like in the treetops.

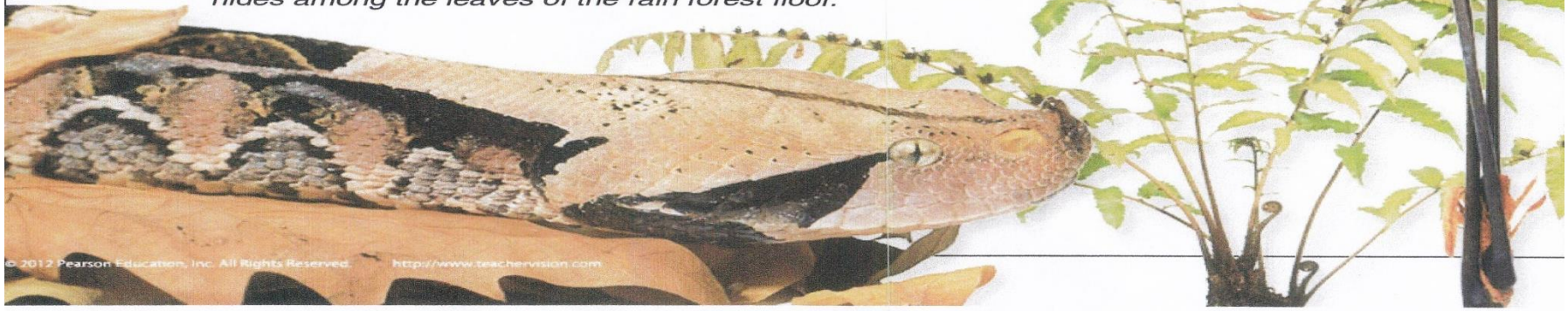
The Light Grows Dim

The canopy of a rain forest is so thick it blocks much of the sunlight from getting to the understory layer beneath it. Although plants can still grow in the understory, they are more of the shade-loving variety.

Once you get to the forest floor, the light can be very dim. The leaves that fall to the rain forest floor decay, or break down, very quickly.

Shade-loving Elephant ear plants and ferns can grow beneath the canopy in the understory.

This gaboon viper is almost invisible when it hides among the leaves of the rain forest floor.



The Light Grows Dim

In lowland rain forest close to the equator, the air near the forest floor is still and sultry. Only about two percent of light reaching the canopy penetrates the thick blanket of foliage. Small plants that do not need much light, such as ferns and mosses, grow here. Only when a tree falls can lianas, saplings, and other herbaceous plants get the light they need to grow and they do so rapidly. Monsoon rain-forest canopies are much more open and because there is more light, there is a vigorous growth of vegetation in the understory and on the forest floor.

The gaboon viper is patterned just like the sun-flecked leaves on the forest floor. It remains motionless and invisible until a small mammal or bird strays too close. Its 2 in (5 cm) long fangs inject a venom that is almost instantly fatal.

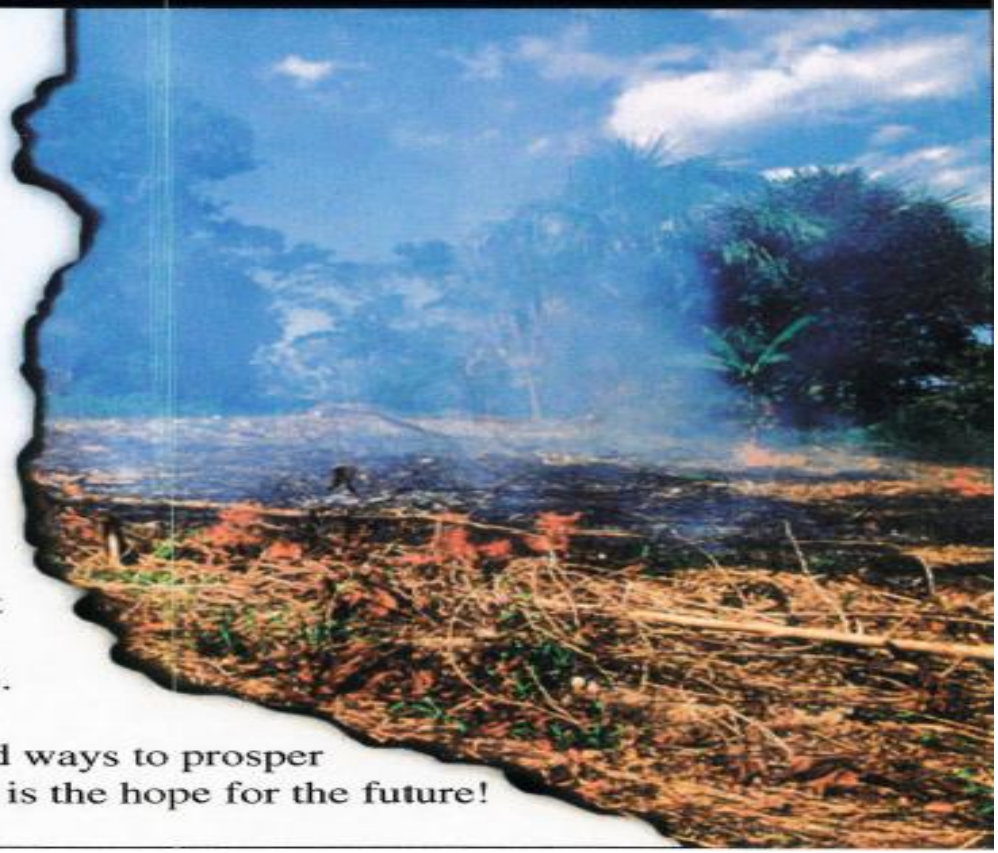
Under Threat

In recent decades, rain forests have been greatly reduced. Why should we care? Lots of reasons!

Many medicines have come from rain forest plants. Valuable products like fruits, nuts, coffee and chocolate also come from the rain forests.

Just as importantly, the balance of nature may be at stake. When animal habitats are lost, whole species can be wiped out. Also, the plants in rain forests take in great amounts of carbon dioxide and release life-giving oxygen (during photosynthesis).

Can people who live in the rain forests find ways to prosper while still protecting the rain forests? That is the hope for the future!



Under Threat

In South and Central America, cleared tropical rain forest provides pasture for beef cattle. When ranchers move into the forest, they burn trees to clear the land for farming. After five years, each animal needs 12.5 acres (50,000 sq m) to graze. After 10 years the land is useless. Overgrazing, the impact of the animals' hooves, and the loss of the trees lead to soil erosion.

Rain forests influence the carbon cycle and have a profound effect on rainfall. The uneven surface of treetops causes air turbulence that increases the amount of water evaporating from the forest. This forms clouds that fall as rain. If the forests disappear, less rain will fall, it will drain more quickly, and air and soil temperatures will rise. Green plants take up carbon dioxide, which they convert to sugars by means of photosynthesis, a process during which oxygen is released into the air.