

# How does erosion happen?

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These rock formations, in Bryce Canyon National Park, Utah, are called hoodoos. Although the soft sandstone was carved away by the erosion of wind, water and ice, tall hoodoos stand as the result of sturdy limestone caps protecting the sandstone underneath. Photo by: Luca Galuzzi - [www.galuzzi.it](http://www.galuzzi.it) from Wikipedia.

Erosion occurs when the Earth wears away. It can be caused by water, wind or ice. A similar process is called weathering. It breaks down or weakens rock, or turns it into tiny fragments. No rock is hard enough to resist it. Weathering and erosion shaped the peaks of the Himalaya mountains in Asia and the rock towers of Bryce Canyon in Utah.

Erosion moves bits of rock or soil from one place to another. Most erosion is caused by water, wind, or ice usually in the form of a glacier. If water is muddy, it is a sign that erosion is taking place. It means that bits of rock and soil are floating in the water. This material is called sediment.

When wind or water slows down or ice melts, sediment is left behind in a new place. As sediment builds up, it creates fertile land.

## **Erosion By Water**

Moving water is the major cause of erosion. Rain carries away bits of soil and washes away pieces of rock. Rushing streams and rivers wear away their banks, and create larger valleys. Over 5 million years, the Colorado River cut deep into the land, eventually forming the Grand Canyon. The Grand Canyon is more than 1 mile deep and as much as 18 miles wide.



Erosion by water changes the shape of coastlines. Waves crash against shores. They pound rocks into pebbles and turn the pebbles to sand. Water sometimes washes sand away from beaches. This moves the coastline farther inland.

The ocean waves also erode seaside cliffs. They sometimes bore holes that form caves.

## **Erosion By Wind**

Wind also erodes land. It carries dust, sand, and volcanic ash from one place to another. Wind can sometimes blow sand to create towering dunes. Some sand dunes in the Badain Jaran area of the Gobi Desert in China reach more than 1,300 feet high.

Wind is responsible for the arches that give Arches National Park, in Utah, its name. Wind can also erode rock until nothing remains at all.



## **Erosion By Ice**

Ice can also erode the land. Glaciers are huge pieces of ice that move slowly downhill and across the land. As they move, they pick up everything in their path, from tiny grains of sand to huge boulders.

The rocks carried by a glacier rub against the ground below. They erode both the ground and the rocks. Moving glaciers carve out basins and form mountain valleys.

During several times in Earth's history, vast glaciers covered parts of the Northern Hemisphere. These periods are known as ice ages. Glaciers created parts of the North American and European landscape. They formed the bottom of what are now the Finger Lakes in New York.

## Erosion And People

Erosion is a natural process. Human activity can make it happen more quickly. Trees and plants hold soil in place. When people cut down forests or plow up grasses, the soil washes away or blows away more easily. Landslides become more common. Water also rushes over the soil rather than soaking into it, causing flooding.

Erosion control means reducing erosion. Sometimes, engineers install structures to keep rocks or soil in place.

Erosion control can also be done by changing the landscape. Living shorelines are a form of erosion control for wetland areas. They are built by placing native plants, stone, sand, and even living organisms such as oysters along wetland coasts. These plants help anchor the soil to the area.

Global warming is speeding up the pace erosion. The change in climate has been linked to more frequent and more severe storms. Large waves after hurricanes and typhoons can erode miles of coastline.

The rise in temperature is also melting glaciers. The sea level to rise and beaches erode more quickly. Chesapeake Bay is in Virginia and Maryland. Experts say that if the sea rises 3 to 4 inches, will erode enough land to threaten buildings, roads and tunnels.

**Quiz**

1 What effect do humans have on erosion?

- (A) they can cause it
- (B) they can make it stop
- (C) they can create or eliminate it
- (D) they can speed it up or reduce it

2 What is the relationship between glaciers and water erosion?

- (A) Melting glaciers cool the ocean, slowing water erosion.
- (B) Melting glaciers cause the sea to rise, increasing water erosion.
- (C) Water erosion causes glaciers to form.
- (D) Water erosion occurs as a result of glaciers melting.

3 Read the following selection from the section "Erosion And People."

*Erosion is a natural process. Human activity can make it happen more quickly. Trees and plants hold soil in place. When people cut down forests or plow up grasses, the soil washes away or blows away more easily.*

What is the meaning of the phrase "natural process" as it is used in the selection above?

- (A) a process in nature not including human activities
- (B) a process in nature that includes human activities
- (C) a process caused by human interactions with nature
- (D) a process that only uses natural products and not man-made ones

4 The word "erosion" is essential to understanding the article.

Which sentence from the article BEST explains what "erosion" is?

- (A) Erosion occurs when the Earth wears away.
- (B) Erosion by water changes the shape of coastlines.
- (C) Erosion is a natural process.
- (D) Erosion control means reducing erosion.