

Weathering and Erosion

Discussion Questions:

- 1) What is weathering?
- 2) What is erosion?
- 3) What are the main erosive processes?
- 4) What landscapes are formed by weathering and erosion?
- 5) What type of rocks weather more easily?

What is Weathering and Erosion?

Weathering

Weathering is the mechanical and chemical breakdown of rocks.

Mechanical Weathering occurs when rocks are broken down by physical force.

Chemical Weathering occurs when rocks are broken down by chemical changes within the rock.

Erosion

Erosion is the movement of weathered particles by the action of natural forces such as wind, water and ice.

Rocks can be broken apart by movements in the earth's crust during an earthquake.



Rocks can be broken apart by the action of moving water.



Rocks can be broken down by the action of moving ice.

Although they move slowly, glaciers move a huge amount of debris along their path.

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Rocks can be broken apart by extreme changes in temperature.

Deserts experience extreme temperatures. It can be extremely hot during the day and bitterly cold overnight.

Different minerals in the rocks expand at different rates causing stress fractures which may peel off layers of rock.

Chemical Weathering occurs when rocks are broken down by chemical changes within the rock.

Chemical change occurs with the addition of :

water (hydrolysis)

oxygen (oxidation)

carbon dioxide (carbonation)

acids (from lichens or from acid rain)

The action of *water* can dissolve elements in the rock, breaking it down and changing it into a softer material. This process is called *hydrolysis*. This is how clay is formed.



The action of *oxygen* causes iron to rust. This process is called *oxidation*. Rocks that contain iron will turn a rust-brown colour where they have oxidised.



The action of *carbon dioxide* dissolved in *rainwater* forms carbolic acid which can break down and wash away elements in a rock. This process is called *carbonation*. Stalactites and stalagmites are formed in limestone caves by this type of chemical weathering.



Wind and water can erode particles loosened by mechanical and chemical weathering.



Amazing sculptures can form as a result of weathering and erosion.

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Constantly moving water wears away at the rough edges of rocks, smoothing and rounding them.



Some rocks are more easily weathered than others.



What do you think?

What type of weathering caused this rock formation?

