

## Mechanical Weathering

Weathering is the process of breaking down the lithosphere by wind, water, ice, plants, animals, or chemical change. There are two kinds of weathering: mechanical and chemical.

Mechanical weathering is the process of breaking down rock into smaller pieces. The makeup of the rock is not altered, only its size. There are five different ways that mechanical weathering can occur.

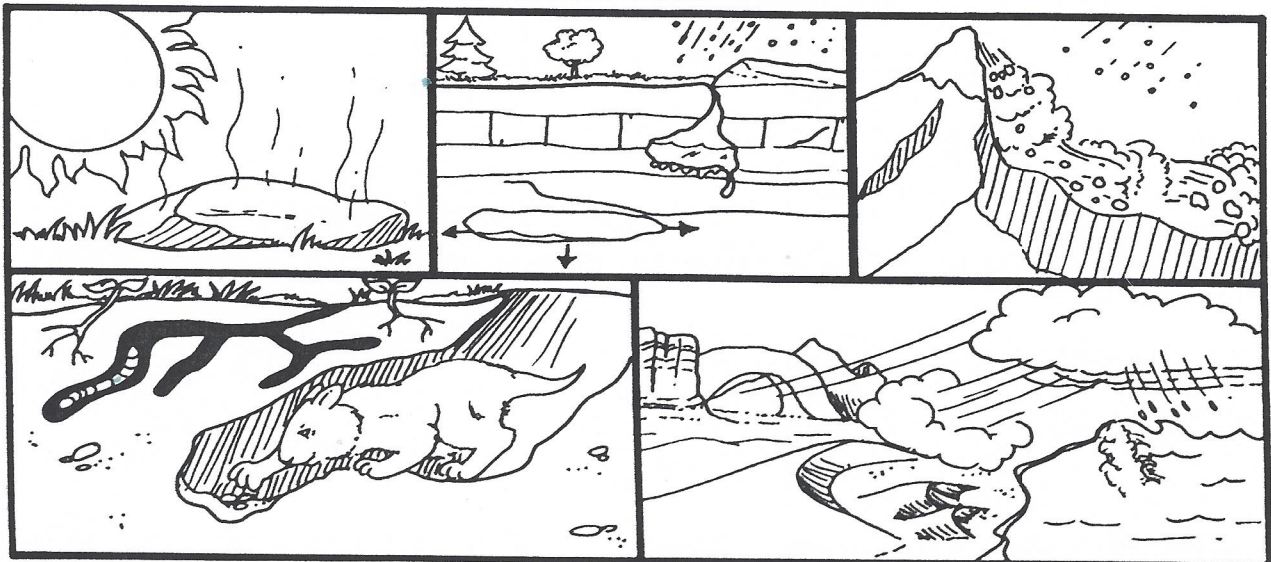
Temperature can produce mechanical weathering. During the day, the sun's energy heats a rock's surface. The internal temperature does not change. During the night, the rock's surface will cool. The following day, the heating and cooling begins again. The repeated change from hot to cold may cause the rock to peel or flake layers that are parallel to the rock's surface. This peeling or flaking is known as *exfoliation*.

A second type of mechanical weathering may be caused by frost. Water may enter a small crack or hole in a rock. As temperatures drop to freezing, the water will expand. As the water expands, it will make a larger crack or hole in the rock. When the water melts, it may move deeper into the bottom of the crack or hole and refreeze. Eventually the rock will break into pieces. The repeated freezing and melting is known as *ice wedging*. We are familiar with the effects of ice wedging—cracks in roads and potholes.

The third type of mechanical weathering is *organic activity*. This may be in the form of tree roots growing in a crack in a rock. As the tree grows and the roots expand, they will pry material loose. This is known as *root-pry*. Animals burrowing homes, such as ants, worms, and woodchucks, also contribute to organic weathering. People may also be responsible for organic weathering by digging, cutting stone, or even driving on roads.

*Gravity* is the fourth type of mechanical weathering. Landslides move downhill due to the force of gravity. As the rocks cascade down, they collide and break into smaller pieces.

The last type of mechanical weathering is called *abrasion*, which is the wearing away by solid particles carried by wind, water, or other forces. Wind-blown sand is an abrasive that will weather even some of the hardest rocks.



Mechanical weathering can be caused by exfoliation, ice wedging, gravity, organic activity, and abrasion.