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| **WEATHERING**  As soon as rock is exposed on the earth's surface, it is attacked by wind, water or ice--this is known as weathering. Why do rocks weather? Simply, weathering is the response of Earth materials to a changing environment.  Weathering, in more detail, is the breakdown of rocks or minerals at or near the surface as a result of the interaction of the atmosphere, water, and plant and animal life. Many of the minerals in rocks are stable at the high temperatures and pressures deep in the earth's crust, but they are chemically unstable in the oxygen-rich atmosphere. Rocks react chemically with the earth's damp atmosphere, which takes place right at the Earth's surface. Weathering contributes to the evolution of landforms.  There are several products of weathering. They include soil, petroleum and mineral products. Weathering also provides us with some very interesting and unusual rock formations. An example of this is Arches National Park in Utah. Wind has eroded the red desert rock into smooth, hollowed-out arches. Other geological features such as canyons, caves, and plateaus are created by weathering.  Weathering can be accomplished in two ways. First, physical, or mechanical, weathering results in the breaking up of rock into smaller fragments. It then exposes new surfaces to chemical weathering, resulting in a change in the composition of the original material so that the end product is something new. Physical weathering occurs in areas of high latitude and elevation.    **AGENTS OF PHYSICAL WEATHERING:**   * **Temperature**--During the day, rock may be heated by the sun. When the temperature drops at night, this change leads to cracking in rocks. * **Frost**--Frost action is the process in which water enters cracks or fractures in rock, freezes, and causes the rock to break apart. * **Exfoliation**--A physical weathering process in which curved layers are broken away from the rock mass. This is caused by pressure inside the rock forcing outer layers of rock outward. * **Water**--Water acts as a smoother and a breaker. In a quickly-running stream, a square rock would become rounded over time, due to the constant flow of water across it. If water gets into a crack or groove in a stone and then freezes, it can break the rock apart. * **Wind**--This is a strong weathering force, especially in the desert. Rocks that withstand many sandstorms eventually get pock-marks on them. The constant beating of sand against a stone would also smooth out any rough edges. * **Plant action**--Plants are of importance in the breakup of rock already affected by other physical and chemical processes. The roots of plants wedge in joints of rocks. As they grow, they enlarge the space between the rocks by exerting enough pressure to dislodge fragments. * **Animal action**--Burrowing animals, like rabbits, have an effect similar to that of plants. When the animals dig into a crack, rock particles are brought to the surface. The surfacing of the rock particles allows them to be weathered. * **Mass wasting**--The movement of a large amount of matter under the force of gravity can also contribute to the weathering process. A landslide is a good example of mass wasting. |

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| MONKEYSHINES (On Rocks and Minerals) 2000, pp. 56-58   |  | | --- | | Taken from Anne Arundel County Public Schools Library Catalog |   <http://discoverer.prod.sirs.com/discoweb/disco/do/subject?urn=urn:sirs:US;SUBJECT;0000028338&keyword1=Weathering> |