

A13: Weathering, Erosion, Deposition

Guiding Question: What happens when earth (geoscience) processes move soil and rocks from one place to another?

What's another name for earth processes?

Activity:

Read the excerpts from the text below. Then answer the “STOP TO THINK” questions.

The cracks in this boulder are due to the process of weathering.



Pg. 74 - “ The earth (geoscience) processes weathering, erosion and deposition occur on the surface of Earth. Weathering is the process that breaks down rocks into smaller pieces. Over time, rocks crack, crumble and are broken apart by water and wind. Water can dissolve chemicals in some rocks, creating small holes and cracks in the rock. When the water in the rock freezes and turns to ice, it can push the rock apart. Gravity causes broken rock pieces to fall or roll. Smaller rock sediment is more easily moved by wind and water. Moving water and air with rock pieces can cut into the ground and form channels. Over time as water continues to flow, channels become canyons (like the Grand Canyon).

STOP TO THINK 1: What are four agents that can break down and/or move earth material?



(Left) Glaciers caused these landforms in Yosemite National Park. (Right) The projections from the roof and the floor were formed from water that dripped into the cave. The water contained dissolved minerals that were left behind when the water evaporated."

Pg. 74 - Erosion over long periods of time has created many landforms, such as rivers, hills, canyons, and caves. Snow and ice glaciers also cause erosion. Slow moving glaciers can gouge and scrape the land which can form valleys and lakes.

STOP TO THINK 2: What are some natural landforms made by erosion?



The rock layers shown above are made of limestone and shale. Notice how the two kinds of rock erode differently.

Pg. 75 - “Erosion is often a slow, gradual process that changes the landscape over thousands of years. However a single natural event, such as a flood, mudslide or tsunami can cause dramatic erosion in a matter of minutes.

The rate of erosion depends not only on the speed and amount of water involved, but also on the earth material across which it flows. Some rocks like limestone erode more easily than other rocks like granite.”

STOP TO THINK 2: Do Geological Processes like weathering, erosion, and deposition occur quickly and/or slowly? Do they occur over small and/or large areas of the Earth’s surface. Explain using evidence from the text.



In this suburban neighborhood, sediments were washed into the street by the rain because the soil was not protected during house construction.



On this farm, rains have damaged crops by eroding soil from one place and depositing it in another location.

P. 76 - “Activities like farming, animal grazing, mining, or building speed up the process of erosion. Building structures such as retaining walls and levees protect areas from erosion. Planting and maintaining vegetation help protect against erosion because roots help keep soil in place, and the plant parts that are above ground protect the soil from wind and rain. When vegetation is replaced by building materials, such as concrete, metal, and asphalt, less water soaks into the ground and more becomes runoff. Increased runoff often causes faster, and more erosion.”

STOP TO THINK 4: What are some ways that people mitigate the process of erosion?



Constructive earth processes build up a delta where this river meets a lake.

Pg. 77 - “Deposition is the adding of sediments to an area. When erosion carries sediments away from one place, the sediments are left, or deposited, somewhere else.

The driving force for deposition is gravity, which pulls the sediments down and out of the water, ice and air. Most deposition occurs when flowing water or wind slows down and is no longer powerful enough to overcome gravity and carry the sediments.”

STOP TO THINK 4: What is the driving force of erosion? Deposition? Explain.

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