Earth's Changing Surface

Section 3: Erosion & Deposition: Wind & Water

Erosion is the process by which sediment, weathered rock, and soil are moved from one location to another. Moving water is a major agent of erosion, especially along streams and rivers, at beaches, and underground. Water erosion is a significant factor that has shaped Earth's land. Imagine standing on the top of a mountain and following the drops of rainfall at the source of a river all the way out to the crashing waves of the ocean. Because of gravity, runoff, and moving material, a **river** will form various features that shape the land. The river eventually leads out to the ocean, where waves are the primary force of erosion along coasts. They break down rocks and transport sand and sediment. A **stream** is an active channel that erodes land and transports sediment.

Through erosion, a river creates waterfalls, flood plains, meanders, and oxbow lakes. **Waterfalls** occur when a river meets an area of rock that erodes slowly. It forms where a flat layer of strong rock lies over a layer of softer rock. The harder rock pieces break off when softer rock erodes, creating a waterfall's sharp drop. **Flood plains** are a flat and vast area of land along a river that is often covered when the river overflows during a flood. A **meander** is a loop-like bend in the course of a river, becoming more curved over time. An **oxbow lake** is a meander that has been cut off from sediments being deposited and damming up the ends. Finally, a **delta** is sediment deposited where a river flows into an ocean or a lake that builds up a landform.

Not all water becomes runoff; some of it soaks into the ground. **Groundwater** is underground water that can cause erosion through chemical weathering, forming caves. Inside limestone caves, deposits called stalactites and stalagmites form. A **stalactite** is formed from deposits in dripping groundwater that hang on the roof of a cave. A **stalagmite** is formed through deposits that build up in a cone shape on the cave floor.

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Waves also shape coastlines through erosion by breaking down rock and transporting sand and other sediment. The energy a wave carries can erode the land by its force, which can cause rocks to break apart. Waves also erode by abrasion or grinding away at the shore. A sea arch is a landform created by wave erosion. It forms when waves erode a layer of softer rock under a layer of harder rock. Waves also shape coastlines when they deposit sediment. A **beach** is an area of deposited sediment carried in by a wave. Most beaches are made of sand, but several are also made of shells or fragments of corals.

While it's the weakest agent of erosion on its own, wind causes erosion by **deflation.** Deflation is the process by which wind removes surface materials. It can move fine particles that are carried through the air, and it can cause larger particles to slide or roll. The stronger the wind, the larger the particles it can pick up. Two common types of windblown deposits are dunes and loess. A **dune** is a pile of windblown sand that varies in shape and size. They move slowly over time, shifting with the wind. A **loess** is a crumbly, windblown deposit of silt and clay. They contain fertile soil, which can be valuable to farmlands.

Review:

1. What features are formed by rivers?
2. What is the difference between a stalactite and stalagmite?
3. Explain deflation.