

Water Erosion and Deposition

Erosion can come in many different forms, but the wettest of all is water erosion. So be prepared to make a big splash in this lesson as we learn all about how water fits in with the erosion and deposition process.

Streams and rivers move materials broken off by weathering. The particulate they carry comes in three different forms. Dissolved loads are materials easily dissolved in the water. Suspended loads are rocks that are transported as solids in the water. Faster moving currents allow for larger particles to be suspended. Bed loads are large particles being pushed along the stream bed. When the rocks settle back down into the stream bed and don't move, it's called saltation.

Water speed can determine the size of particles that are moved by the river or stream. Speed is determined by things like the steepness of the land that the river is moving through. Steep slopes increase the current, while flatter ground slows the current down and deposits materials. The swifter the current, the more materials the water can move.

Rivers and streams don't just carry particulate they erode the area themselves. At high elevations, streams have small channels and steep gradients, causing fast currents that erode the streambed. At low elevations, the water channels are wider and the gradients flatter, slowing the current down and instead eroding the stream banks. This can cause a flood plain, which is a flat, level area surrounding the stream channel.

Once a stream approaches the ocean, it gets close to sea level, and velocity decreases. It stops eroding and starts depositing materials, beginning with the heaviest. By depositing these larger materials, streams can sometimes end up creating their own natural levees or banks that are built to prevent the outflow of water.

Deltas are flat-topped triangular-shaped deposits of sediment that form when a river meets standing water. Three types of riverbeds can make up a delta, a foreset, bottomset, and topset bed.

If a river suddenly reaches flat ground, an alluvial fan develops. Alluvial fans are curved top, fan-shaped deposits of coarse sediment that drop off and spread out as a stream suddenly loses velocity.

But rivers aren't the only source of water erosion because there's also groundwater. Groundwater is exactly what it sounds like, water in the ground. That's how things like caves and sinkholes form. Caves are formed by carbonic acid from rain dissolving limestone, and sinkholes are when an underground cave collapses.

Inside caves, stalactites and stalagmites form from calcium carbonate in water. A lot of groundwater is hard water, meaning it has lots of calcium carbonate in it. Hard water gets treated to make our drinking water.

Stalactites are icicle-like deposits that form as calcium-carbonate rich water drips from the cave ceiling, while stalagmites are rounded deposits of calcium carbonate forming on cave floors.

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You stalagmite have been wondering why you needed to learn about water erosion and deposition, but now I'm sure you'll agree that this video was stalactite.
