

## **Erosion Activity**

Using erosion boxes with dirt, rock, and squirt bottles

*There are three plastic containers filled with dirt and rocks, and a fourth container that includes a bag of small pebbles and several squirt bottles.*

*Note: After the program, you can leave the boxes open for a day or two to allow the water to evaporate. Please empty the squirt bottles before returning them.*

*There are six empty plastic containers stacked together and stored with the geology supplies. They may be used when this program is presented to more than one class. Fill them with dirt before your program and return them empty, clean, and dry. Thanks!*

Ahead of time: Fill bottles with water, and bring ice cubes with you.

Theme: Erosion shapes the land in several ways, constantly changing the landscape.

What is erosion? It is the process that changes the surface of the earth through the forces of wind, water, and gravity.

### **Gravity**

Gravity is an invisible force—everything that has form and shape has gravity! But the earth itself is much bigger than anything on the surface, so everything falls to the lowest point.

*Demo: Hold a rock or other object in your hand above the ground. Ask the students what will happen if you let go. That's gravity!*

If rocks, dirt, or other debris come loose in the mountains, they will eventually end up at lower elevations. Water does the same thing—it always flows downhill because of gravity.

### **Wind**

Have you ever been in a huge windstorm when it's hard to even walk? Imagine what wind does to rocks, dirt, and sand.

*Demo: Place some of the pebbles on the ground in different spots. Have the students try to move the pebbles without touching them, just using their breath. They will be able to move the pebbles across the ground. The wind can blow a lot stronger than we can—imagine how wind can move objects!*

### **Water**

Where does our water come from here on the Front Range? It rains and snows, but most of our water is “stored” in the mountains in the form of snow on the peaks. As snow melts, it flows to a lower elevation, carving the landscape as it moves.

*Demo: Divide students into three groups with one erosion box each (or use one box per group if you have several stations). Give each group a squirt bottle. Create a "mountain" in the box with the dirt and rocks. Ask the students to make it rain. Each student will do five squirts of water on top of the mountain and then pass it to the next student. Have them observe what happens (the ground starts to get wet, then saturated, then eventually the water rolls down). You may have to go around the group several times with the squirt bottle but limiting it to five squirts each time keeps individual students from monopolizing the bottle. Eventually small rivers should form, and you will end up with a lake at the bottom.*

Water carves the landscape by flowing down. Over long periods of time, canyons are formed by mountain rivers (like Boulder Canyon and St. Vrain Canyon).

*Demo: Place an ice cube on top of one of the mountains. What will happen when it melts? This represents a glacier. We don't have as many glaciers today as in the past, but glaciers store water really well and slowly release it. If you have time, you can have your own glacier set up ahead of time so that the students can see what happens as it melts. They should notice the water that has gone downstream as well as the ice cube slowly descending. Valleys or canyons carved by glaciers are U-shaped, opposed to those carved by rivers, which are V-shaped.*

#### **Other Forces of Erosion**

Fires and floods contribute to erosion. Ground plants and grass are gone, making it easier for dirt and rocks to erode. During the flood of 2013, tons of rock, dirt, debris washed downstream and ended up on the plains, not only through erosion but also the powerful force of an immense amount of water rushing downstream all at once.

Conclusion: Erosion is one of the processes that keeps our Earth changing all the time!

*--Deborah Price, Education Liaison, November 2017*