



Try This at Home Science: Water Erosion

Activity Overview:

Watch how rainfall changes the environment through erosion using an aluminum foil mountain model!

Materials:

- 9x13 container
- 2 pieces of aluminum foil
- Cocoa powder
- Flour
- Nerds candy (optional)
- Food coloring
- Fork or toothpick
- Sponge or paper towel
- Additional towels for clean up
- Large and small spoon
- Bowl
- Warm water

Try this!

1. Place the container flat on a table and keep the towels nearby.
2. Take the flour and create 2 small piles, one on either end of the container.
3. Take one aluminum foil piece and lightly crumple it to create a textured surface before forming a cone shaped "mountain" and placing it over one pile of flour.
4. Repeat Step 3, but use the fork tine to create 4 small holes in the aluminum foil "mountain".
5. Lightly sprinkle the flour, cocoa powder, and Nerds on top of each aluminum foil "mountain".
6. Fill your bowl with warm water and add a few drops of food coloring and stir with the fork to reach the desired color.
7. Take the sponge and dip it into the colored water until it is soaked, remove the sponge and carefully move it over each aluminum foil "mountain" before lightly squeezing to make it "rain". This is your "rain cloud" moving over the mountain. Refill the sponge as needed.
8. Observe what happens on the surface and at the base of your aluminum foil "mountain".
9. Remove both aluminum foil "mountains" from the container and observe what has happened under each "land mass". Does either mountain show evidence of erosion underneath?
10. Clean up by throwing away the aluminum foil, washing the container, and use the towels to clean up any messes.

What's happening?

We have replicated two different effects that rainfall has on ecosystems! As the water is not absorbed by the aluminum foil, the water runs off the side of the aluminum foil mountain and as the water flows it grabs onto rocks, soil, and pollutants (the flour, cocoa powder, and Nerds candy). The water took the flour, cocoa powder, and Nerds candy with it as it ran off the sides of the mountain demonstrating how the rain will erode and wash away the loose bits that sit on the Earth's surface. The aluminum foil mountain that had holes punctured in it helped to demonstrate how water erosion can carve through rocks over time creating new paths for water to flow. This is how underground rivers are formed, and as the water travels below the surface it can erode the substrate creating caverns and underground cave systems.



How does this relate to agriculture?

Farmers rely on the sale of their crops in order to keep their families and communities fed. In order to have the largest crop possible farmers will modify the landscape to maximize the amount of land they can plant on. By better understanding how water flows over the surface of the Earth, farmers can better plan for where to plant fields of crops to prevent the fields from flooding. Many farmers plant their crops on mostly flat fields surrounded by irrigation ditches in the low lying areas to help funnel the excess water off the fields to prevent flooding. However, in cases of excessive rainfall, as seen in the image to the left, sometimes that is not enough; the crop is lost and the landscape is changed. When excessive rainfall in summer 2020 caused two dams in Midland, Michigan to fail within 24 hours of each other, the water running through the community picked up debris and caused the Tittabawassee River to rise over 35 feet and displaced over 10,000 residents.



Now try...

- Reset the experiment but try to create a path for the water to run-off the mountain in a controlled path. What do you notice? Is it easy to direct the water to flow where you want it? How can you modify your design to better direct the water without harming the ecosystem?
- Replace the aluminum foil with rocks or water proof toys. Repeat the experiment. What do you notice? Were you able to see how the water can flow between the rocks to create underground streams?

Additional Information

Watch a how-to video for a similar experiment here [Make your Own Erosion - SciShow Kids](#)

For more information on the different types of erosion watch this video [Erosion Lab - skeysience](#)

For more “Try This at Home Science” activities, visit www.mi-sci.org.