

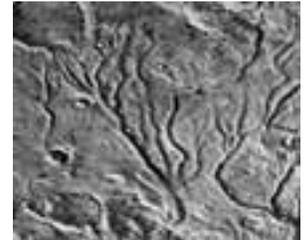


How Does Flowing Water Shape a Planet's Surface?

Grades 6-12, Two to Three Days

Purpose

To determine whether water could have flowed across the Martian surface, students examine shapes made by flowing water and compare them to landforms on Mars.



Overview

Using a stream table and setting it at various inclinations, students develop an eye for features associated with flowing water. To consider the idea of whether water once flowed on the surface of Mars, students choose three Martian landforms that seem to have been shaped or created by flowing surface water and discuss how they may have formed both with and without flowing water. Also, by examining how flowing water sorts particles according to size, students see what sediment can reveal about the speed of the water that deposited it. Finally, students examine images of Mars to see if there are any features suggesting the presence of flowing water at one time or another.

Content Goals

- Flowing water creates characteristic features that can be used to interpret water flow.
- Most river and stream beds have inclinations below 5 degrees.
- Small, light sediments are carried more easily by flowing water than large, heavy ones.
- Gently-flowing water sorts sediments in predictable, consistent ways.
- Models such as stream tables can represent real-world processes.
- Various Martian landforms seem to support the idea that water flowed across the surface.

Skill Goals

- Observing and recording the features created by the flowing water.
- Hypothesizing about the effects of using different angles, amounts of water, and rates of release, and then testing these ideas through experimentation.

Possible Misconceptions

- River beds are commonly quite steep, certainly above 10 degrees. Ask: How steep is a typical river bed?
- Water alters the land only minimally. Ask: In what ways does water affect the land?

Materials

Calibrated stream tray (a lightweight plastic tray about a meter long and 10 cm. wide which costs about \$1 in a paint store), sand, water jug, stand (or pile of blocks), protractor, dice or similar 1 cm. cubes, small (i.e., nine-ounce) paper cups, large (i.e. 24-ounce) cups

Preparation

- Mark cm. lines along both sides of a wallpaper tray. Be sure both sides have zero at the same end of the tray.
- Read Mike Caplinger's essay, "Channels and Valleys," at the end of this activity.

Time

2-3 class periods

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