

2.7

GLACIER DYNAMICS

How can you change the speed of a glacier?

Activity Time: 45 minutes

Background

In the Polar Regions, glaciers are frozen to the bedrock and move very slowly each year. During a surge, glaciers can move as much as 250 feet per day and then return to their slower flow. Scientists use remote sensing to study this movement and to discover the reasons behind it. This lesson allows students to choose a variable, make a prediction and compare their results with other variables in the class.

Directions

1. Use your recorded time from the lesson “How is glacier goo similar to a real glacier?” for the control in this investigation, or time a goo trial while students are performing their experiments. Use the entire bag of goo, press it into the surface (without a variable) and use a timer to determine how long it takes to flow down the chute. Using a predetermined measurement length on the chute for the whole class would help manage activity time.
2. Ask each team to choose an available variable, design their experiment, make a prediction and conduct their experiment.
3. Ask each team to record their observations, draw a scientific diagram and record their finish time.
4. Compare each team’s results and make a line graph, using variables as the X axis.

Discussion

- How did your design affect the speed of the glacier?
- What causes a glacier to flow faster at the bedrock?
- What causes a glacier to flow slowly?
- What else could be tested that might change the speed of a glacier?
- In the Polar Regions, what changes the speed of a glacier?

Assessment

Use **Rubric 2.7** to evaluate their inquiry design.

Extension

Test goo that is room temperature, cold, or warm (micro waved) for speed.

Materials

Per Team

- 1 bag of glacier goo (**see attached recipe**)
- 1 chute - paint tray, cookie sheet, or PV pipe cut in half horizontally
- Pieces of foil, sand paper, or waxed paper to cover chute
- Rocks with modeling clay attached on one side

Related Activities

- What makes a glacier slip? (**2.8**)

Vocabulary

Remote Sensing: the process of gathering information about an object without actually being in contact with it.

ALIGNMENT TO NGSS:

Scientific and Engineering Practices

- Asking questions
- Using models
- Planning and carrying out investigations
- Using mathematics and computational thinking
- Analyzing and interpreting data
- Constructing explanations
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

Crosscutting Concepts

- Cause and effect
- Systems and models
- Stability and change

Disciplinary Core Ideas

- K-5: ESS1.C; ESS2A; ESS2.C
- 6-8: ESS1.C; ESS2A; ESS2.C