



Name: _____

Education and Research: Testing Hypotheses

Date: _____

Period: _____

“I’m Melting, I’m Melting!”

Flubber Lab Activity **Answer sheet**

Objectives:

- To see where glaciers flow the fastest
- To observe the formation of a moraine and understand how moraines form
- To change variables (temperature, viscosity, slope, sediment) to see how the changes affect glacial flow

Materials:

- Flubber
- PVC pipe
- Toothpicks
- Sediment
- Colored pencils

Vocabulary:

- Moraine - **accumulation of rock debris (till) carried or deposited by a glacier. The material, which ranges in size from blocks or boulders (usually faceted or striated) to sand and clay, is unstratified when dropped by the glacier and shows no sorting or bedding**
- Viscosity - **the extent to which a fluid resists a tendency to flow**

Directions:

Control. See where glaciers flow the fastest. Put your flubber together where there are multiple layers of flubber, using different colors for each layer. Use colored pencils and draw the layers every 5 minutes to see the progression of the glacier.

Top of the glacier

Start	5 min	10 min	15 min	20 min	25 min
Should see a progression of layers down the pvc pipe	Middle moves faster than side of glacier				

Bottom of the glacier

Test 1: Which part of the control glacier moves the fastest? Push 2 toothpicks vertically into the surface of the flubber. One should be in the middle and one should be on the side of the flubber. Draw how they move and change direction (as you look at the flubber from the side) during the experiment.

Start	5 min	10 min	15 min	20 min	25 min
<p>Toothpicks should start out vertical and wind up horizontal.</p>					

Cut away part of the flubber to represent glacial retreat. Draw the shape the of moraine and the size of the sediments left behind.

Moraine debris is typically sub-angular to **rounded** in shape. Moraines may be on the glacier's surface or deposited as piles or sheets of debris where the glacier has melted.

Now that the class has determined what would happen to a control glacier, draw the initial and final conditions of the test that you perform. For the remaining 4 tests, discuss with your classmates to determine what happened in their experiments. Be sure to take note of the initial conditions, final conditions, and any unique occurrences for each setup. Use additional sheets of paper if necessary.

Top of the glacier

Start	5 min	10 min	15 min	20 min	25 min

Bottom of the glacier

Test 2: How does sediment affect glacial movement?

Sediment creates friction so the sediment should slow down the progression of the glacier.

Test 3: How does viscosity affect glacial movement?

The more viscous the flubber, the slower the progression of the glacier.

Test 4: How does temperature affect glacial movement?

The hotter the temperature of the flubber, the lower the viscosity, making the progression of the glacier faster.

Test 5: How does glacial type affect glacial movement?

Not sure how the liquid starch or borax will affect the movement as I haven't done this before.

Test 6: How does slope affect glacial movement?

The greater the slope, the faster the progression of the glacier.

Questions:

1. Under which conditions did the flubber move the fastest? Why do you think that is?

Not sure which will have the largest effect as I haven't tried all of these changes.

2. What shaped valleys do glaciers form?

U shaped valleys. Streams and rivers form V shaped valleys.

3. Describe the sediment that was left behind by the glacier. Use glacial vocabulary.

The sediment is generally rounded and unsorted.

Bonus- What part of New York State is a moraine? Long Island