

Name _____
Date _____

MODEL GLACIERS - FLUBBER INVESTIGATIONS

In your group, each person will make one batch of flubber. The flubber will simulate Kronebreen glacier and viscous flow.

1. In a small cup, mix 1 tbsp. of glue with 15 ml. of water. Stir with the craft stick until it is a smooth consistency.
2. Add 2 tsp. of the Borax solution (skim off the top) to the water-glue mixture. Stir quickly until it holds together than take out of the cup and knead in your hands until firm and dry.
3. Prop one end of the PVC half pipe up 16 mm.
4. Combine the flubber from your entire group to make one big lump. Position your flubber at the top of the PVC pipe and observe with the intent of figuring out a way to measure the velocity of the model glacier.

As you observe, consider the following questions:

- Is the top of the glacier moving at the same velocity as the bottom?
- Are the sides of the glacier moving at the same velocity as the middle?
- Is the glacier thinning?
- What factors are determining the glacier's speed?

Experiment in as many ways as possible to investigate. Ideas:

- Make additional batches of flubber and add food coloring. Combine with your existing flubber, making alternate stripes or other patterns to distinguish areas with different velocities.
- Use toothpicks as "stakes" and observe what happens. In addition to driving the toothpicks in vertically, you can also try inserting them in toward the bottom of the glacier from the sides.
- Place a line of beads across the glacier and observe what happens.
- Create holes in the glacier and observe what happens.
- Use a ruler to measure thickness. Does it change? Does it change consistently across all areas of the glacier?
- Apply water, sand or oil to the PVC pipe and evaluate how this changes the glacier's velocity.

With your group, brainstorm a list of ideas for accurately measuring the velocity of your model glacier in a way that reflects all aspects of the glacier and corresponding velocities. Record this list, with any necessary explanations on the back.