Station 1: The Great Lakes—St. Lawrence Lowlands

Experiment—

Objective: The purpose of this experiment is to show how glacial deposition takes place.

Materials: Ice, tub, door wedge or other object on a diagonal plane, sand/cookie crumbs, heat source.

Procedure:

1. Set up the slanted block on a stable surface inside the tub.
2. Sprinkle sand/cookie crumbs on the slanted surface.
3. Place the ice block on top of the slanted surface.
4. Sprinkle sand/cookie crumbs on top of the ice block in a straight line down.
5. At the base of the ice block start heating it up and observe what happens.
6. Note down the observations.

Observations:

~~Student take notes here~~

Discussion:

1. Imagine the ice as a glacier, the slanted surface as a mountain, and the sand as depositional materials. This is how glaciers move materials down a mountain and create a region somewhat similar to the St. Lawrence Lowlands.
2. What happens to the top of the sand as the front of the ice block melts away? (It gets deposited in front) What happens to the sand at the bottom of the ice block? (It also moves to the front). One of the things when you observe this process is that the ice flattens the materials that get deposited to form a compacted region full of glacial deposits called glacial till. A glacier is so massive that it crushes and compacts materials and removes materials from the sides so that it shapes our landscapes to some of what we see when we look at the coastal mountain regions in Vancouver today.
3. What happens to the water when it melted?

Conclusion:

This experiment serves as a model for how glaciers deposit materials they pick up as they move down a mountain. However, the model is not good enough to show how a glacier advances or retreats. See supplementary handout.

Mr. Chau’s Lecture 101

**How a glacier advances:**

When a glacier “advances” –it actually means the glacier is getting bigger. Think of how a glacier is sitting on top of a slanted mountain. When it snows at the top of the mountain, as time progresses, it adds ice to one side of the glacier. This makes the glacier heavier and wants to move down the mountain. As the glacier moves down the mountain, it compacts the material it just deposited in front and creates glacial till. This is what it means when someone talks about how a glacier “advances”.

**How a glacier retreats:**

If the head of the glacier melts faster than ice accumulates at the top of the glacier, the weight would not be heavy enough to continue to push that block of ice down the mountain. Instead, you will see the ice melt back up towards the mountain as if the glacier looks like it’s “retreating”.

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block:\_\_\_\_\_

# Station 1 Worksheet: The Great Lakes—St. Lawrence Lowlands

Describe how the St. Lawrence Lowlands have fertile soils for vegetation to flourish in the region.

**Glacial Ice melts into giant meltwater lake. Lake shrinks to the size of the Great Lakes today. When the lake shrinks it leaves behind fertile soils.**

Describe in your own words how a glacier:

1. Advances:\_ **When a glacier “advances” –it actually means the glacier is getting bigger. Think of how a glacier is sitting on top of a slanted mountain. When it snows at the top of the mountain, as time progresses, it adds ice to one side of the glacier. This makes the glacier heavier and wants to move down the mountain. As the glacier moves down the mountain, it compacts the material it just deposited in front and creates glacial till. This is what it means when someone talks about how a glacier “advances”.**
2. Retreats: **If the head of the glacier melts faster than ice accumulates at the top of the glacier, the weight would not be heavy enough to continue to push that block of ice down the mountain. Instead, you will see the ice melt back up towards the mountain as if the glacier looks like it’s “retreating”.**

How does a glacier deposit materials as it makes its way down a mountain?

**Sediment on top of ice falls in front of glacier + sediment at the bottom of the glacier gets carried down the mountain as the glacier moves down.**

How is glacial till formed? **As the glacier moves down the mountain, it compacts the material it just deposited in front and creates glacial till.**

Describe the topography, climate, and vegetation of this area:

1. Topography:

**-Rolling landscape created mainly by glaciation**

**-Flat plans with hills and deep river valleys**

1. Climate:

**-Humid, continental climate**

**-Winters are cool to cold**

**-Summers are warm to hot**

1. Vegetation:

**-Used to have a lot of trees—after colonization, people cut a lot of it down**

**-Maple, birch, beech, oak, ash trees**

**-Spruce, fir, pine and cedar trees**