Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Investigating Glaciers

Objectives

* Discover some causes and effects of increasing global temperature.
* Determine the environmental factors that affect the motion and size of glaciers.
* Explain how glaciers can shape the Earth’s surface.

PART A: Glaciers

1. Open up the PhET Glaciers simulation (<http://phet.colorado.edu/en/simulation/glaciers>) and play with the sim for five minutes. What do you find? Discuss your ideas with your partner.

2. Observe what happens to the glacier as you adjust different parameters in the simulation. Record your observations in the table.

|  |  |  |
| --- | --- | --- |
| Action | Glacier Movement | Maximum Thickness |
| Decrease the average annual snowfall | ☐ Advances ☐ Retreats ☐ None | ☐ Increases ☐ Decreases ☐ No Change |
| Increase the average annual snowfall | ☐ Advances ☐ Retreats ☐ None | ☐ Increases ☐ Decreases ☐ No Change |
| Decrease the air temperature | ☐ Advances ☐ Retreats ☐ None | ☐ Increases ☐ Decreases ☐ No Change |
| Increase the air temperature | ☐ Advances ☐ Retreats ☐ None | ☐ Increases ☐ Decreases ☐ No Change |

3. Observe the different flow velocities using the coring machine and the flags. Where is the glacier flowing the fastest and the slowest? Suggest a reason for this difference.

4. What claims can you make about the relationship between the amount of snowfall and the movement and thickness of glaciers? Provide evidence for your claims.

5. What claims can you make about the relationship between the average temperature and the movement and thickness of glaciers? Provide evidence for your claims.

6. Look at the rocky debris that the glacier is picking up and transporting. Where is the debris being deposited? What happens if the glacier stops for a while then retreats? What is left behind? What is this pile called?