**How Do Glaciers Shape The Land?**

**I. Introduction**

 A glacier is a mass of snow and ice that moves slowly downhill due to its weight. Glaciers erode the land they pass over, carrying eroded material along and depositing it to form new landforms.

 In addition to glacier deposition, glacier erosion changes large areas of Earth. It results when glaciers move over land, forcefully pushing loose materials out of their path. Glaciers weather and erode rock and soil that is not loose. Erosion also occurs when glacial ice melts and seeps into cracks in rocks. The water in these cracks refreezes, expands, and fractures the rock into pieces. As the glacier flows over the loosened particles, it lifts out the rock pieces and carries them downslope. With the pieces of rock embedded in the bottom and sides of the ice, the base of the glacier is like a sheet of sandpaper scraping against the rock it travels across. When rock is gouged deeply by dragged rock fragments, parallel marks are left behind. These marks indicate the direction the glaciers moved.

 There are two main types of glaciers: continental glaciers and valley glaciers. Both types of glaciers are capable of altering the physical landscape by erosion and deposition, but each type has a different effect on land. Continental glaciers are huge masses of snow and ice. They level the land and cover most of the terrain they travel across. They cover much larger areas of land than valley glaciers, which have more of a carving effect on the valleys through which they move. Valley glaciers flow down mountain slopes and through valleys previously occupied by streams.

 In this Virtual Lab you will examine and identify landforms shown in photographs taken from various locations in the world.

**II. Procedure**

 1. Start the activity by going to the following website :

<http://www.glencoe.com/sites/common_assets/science/virtual_labs/ES07/ES07.html> .

 2. Examine landforms made by continental glaciers and valley glaciers by clicking the

 corresponding file tab. Click the labels on the diagram to obtain information about each

 landform.

 3. Examine the photograph taken from Site 1. Click the Clue button to obtain information about

 the landform(s) circled on the photograph.

 4. Using the landform diagrams on the file cards, determine what type of landform is shown in

 the photograph.

 5. Click the Landform arrow and select the landform shown in the photograph.

 6. Click the Check button. If the landform you selected is not the landform shown in the

 photograph, reexamine the diagrams on the file cards and try again.

 7. When you have correctly identified the landform shown in the photograph, read the travel

 notes to find out where the photograph was taken. Record this information in the Table.

 8. Click another site file tab to get a different photograph. Repeat the Virtual Lab until you have

 identified the landforms shown in the photographs taken from all six sites.

**III. Data**

 1. Record your observations in the table.

|  |  |  |
| --- | --- | --- |
| **Site** |  **Location Name** |  **Landform Identified** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

**IV. Analysis & Conclusions**

 **1. How is a glacier similar to a river?**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **2. How are continental glaciers different from valley glaciers? What are some differences**

 **in how these two types of glaciers effect the land?**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **3. What kind of terrain and landforms would indicate the prior existence of a valley glacier?**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 **4. What kind of terrain and landforms would indicate the prior existence of a continental**

 **glacier?**

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_