

Glacier Notes

Glacier Terms

1. Glaciers – rivers of ice

- a. How do glaciers form?

snow accumulates in winter + doesn't melt in summer; becomes solid ice – "firn"



- b. Snow line - lowest level that permanent snow reaches in the summer.

- c. How do glaciers erode the bed rock?

rocks frozen in the ice are used as cutting tools

2. Glacier Types

- a. Alpine/Valley Glaciers - Wedge-shaped stream of ice found in mountains.

- b. Continental Glacier - Moves outward from center as gravity squishes. Covers large areas. Also called Ice Sheet.

- c. Hanging Valley - Small (tributary) glacial valley cut off by larger glacier. (Often have waterfalls when glacier melts.)



3. Erosional Features - material is removed, leaving the feature behind.

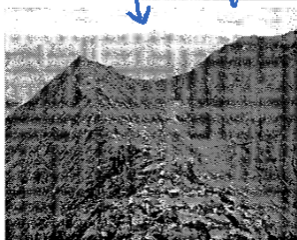
- a. Striation - Long parallel scratches left by coarse sand, pebbles, sharp boulders that are imbedded in the ice and dragged over other rocks (bedrock).

- b. Cirque - Semicircular basin formed at the head of a glacial valley.

- c. arête - Knife edge ridge between 2 cirques on a peak or between 2 U-shaped valleys.

- d. horn - formed by 3 or more glaciers sliding down from the peak of a mountain.

- e. U-shaped valley



4. Depositional Features - material is deposited, as glacier melts, to form the feature.

- a. drift - all deposits of glacial origin are called this

- b. fill - large buildups of rock pieces carried in the bottom of the glacier – deposits under the glacier - blanket of material, also called ground moraine

- c. outwash - deposits made by streams of glacial meltwater

- d. Moraines - long lines of rock. There are various types:

- i. Lateral Moraine - As a glacial moves down a valley, rocks from the valley walls fall onto the glacier. When the glacier melts, the rocks are deposited (dumped) along the sides of the valley.

- ii. Medial Moraine - If two glaciers from separate valleys join into one valley, the two central lateral moraines join to become one. When the glacier melts, the rocks are deposited in the middle of the valley.



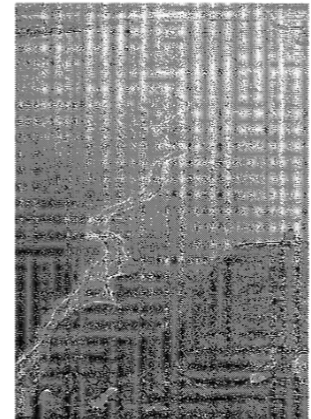
End Moraine - Formed at the end of a glacier. There are two types:

1. Terminal Moraine - As a glacier moves it bulldozes material in front of it, making a line of rock at the toe. - *furthest glacier has been*
2. Recessional Moraine - As a glacier retreats (melts faster than it moves forward) it temporarily stops (melts at the same rate as it is moving forward) and all the rocks in the ice that is melting at the toe are deposited at that one spot. *(there may be several)*

- e. Erratic - Large boulders that have been transported to an area by a glacier but don't belong there.
- f. Outwash plains - glacial meltwater forms streams, from end of glacier -- alluvial fans (deltas out of water) formed, overlap and form plains.
- g. Esker - Meandering stream tunnels in/under glacier become partly filled with rocks. When glacier melts material is deposited in stratified s-shaped curves. These streams erode up since ice is softer than rocks below!
- h. Kame - Cone-shaped hill formed when streams on top of glacier deposit rocks in lakes on top of glacier. When glacier melts, rocks deposited in stratified cone.
- i. delta - When streams empty into still water (lakes/oceans), alluvial fan in water.

5. Other Features

- a. drumlin - Long, smooth, canoe-shaped hills made of till formed when advancing glacier runs over earlier deposited moraine.
- b. Kettle - Circular hollows on terminal moraines and out washed plains- large lump of ice left imbedded in out washed material then ice melts, leaving a hole.



6. Glacial Lakes

- a. cirque lake - Formed when water fills the cirque basin left by alpine glaciers, also called tarns. Ex. Lake Louise
- b. Kettle Lake - Formed when water fills kettles
- c. Moraine dammed lake - River valley (used to be glacial valley) blocked by moraines EX. Moraine dammed lake on \$20 bill.

