WHAT LANDFORMS AND PROCESSES OF TRANSPORTATION AND DEPOSITION ARE THERE?

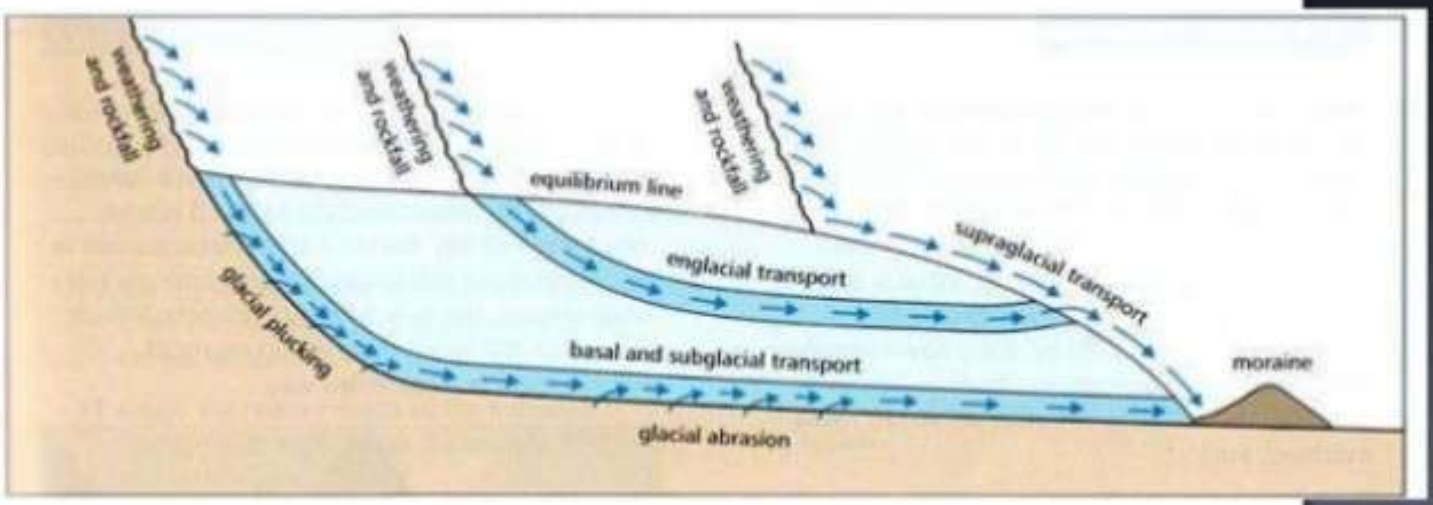
Destination: understand how moraine is transported and deposited to form landforms

Route: examine the different types of moraine, drumlins, glacial till and erratics. Identify, describe and explain them.

TRANSPORTATION

- Glaciers transport large amounts of debris.
- The debris may be derived from rockfalls on the valley sides.
- It can be transported on the surface of the glacier (supraglacial debris).
- It can be buried within the ice (englacial)
- It may be at the base of the glacier (subglacial)
- It will eventually be deposited, mainly by melting at the snout

Processes of Glacial transport



As well as eroding the rock over which it flows, a valley glacier is also capable of transporting large amounts of debris.

Glacier sole

The lower few metres of a glacier that contain debris picked up from the bed.

Rhonegletscher, Swiss Alps.

Subglacial debris

Debris which has been released from ice at the base of a glacier. Individual stones usually show signs of rounding as a result of abrasion at the contact between ice and bedrock.

Taylor Glacier, Victoria Land, Antarctica, showing the formation of subglacial debris (basal till) that has melted out from the dark striped basal ice layer

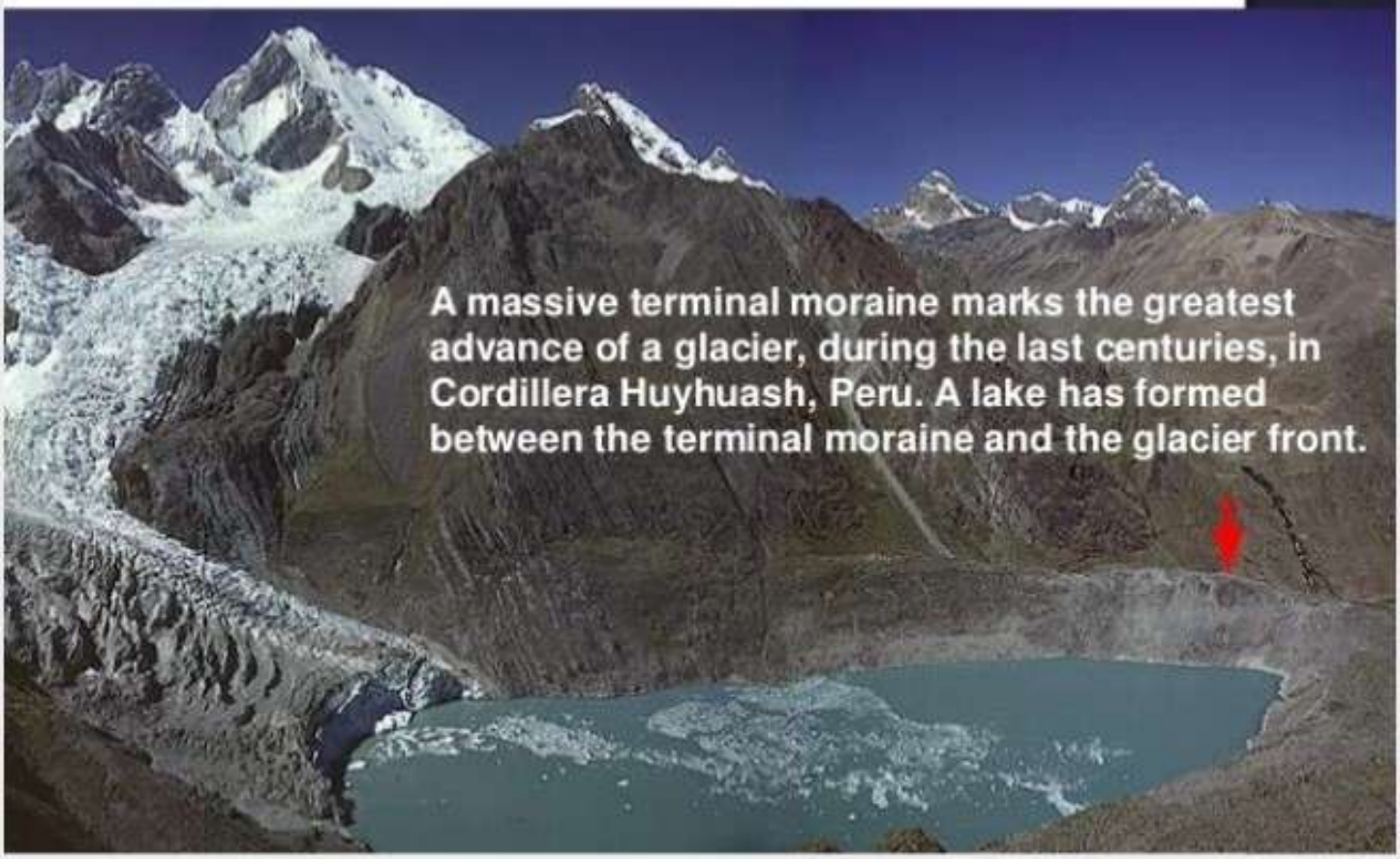
MORAINES

- Lines or series of mounds of material mainly running across glacial valleys.
- Main type is terminal/end moraine found at snout

Terminal moraines:

1. Ridge of material (or several mounds) across glacial valley
2. Elongated at right angles to ice advance
3. Steep-sided, particularly at ice-contact side, reaching heights of 50-60m
4. Crescent-shaped, moulded to form of snout
5. Formed from unsorted ablation material
6. Formed when ice melts during snout standstill.

Terminal moraine A prominent ridge of glacial debris formed when a glacier reached its maximum limit during a sustained advance.



RECESSIONAL MORAINES

- As glacier retreats, a series of moraines forms along valley, marking points where the retreat halted for some time

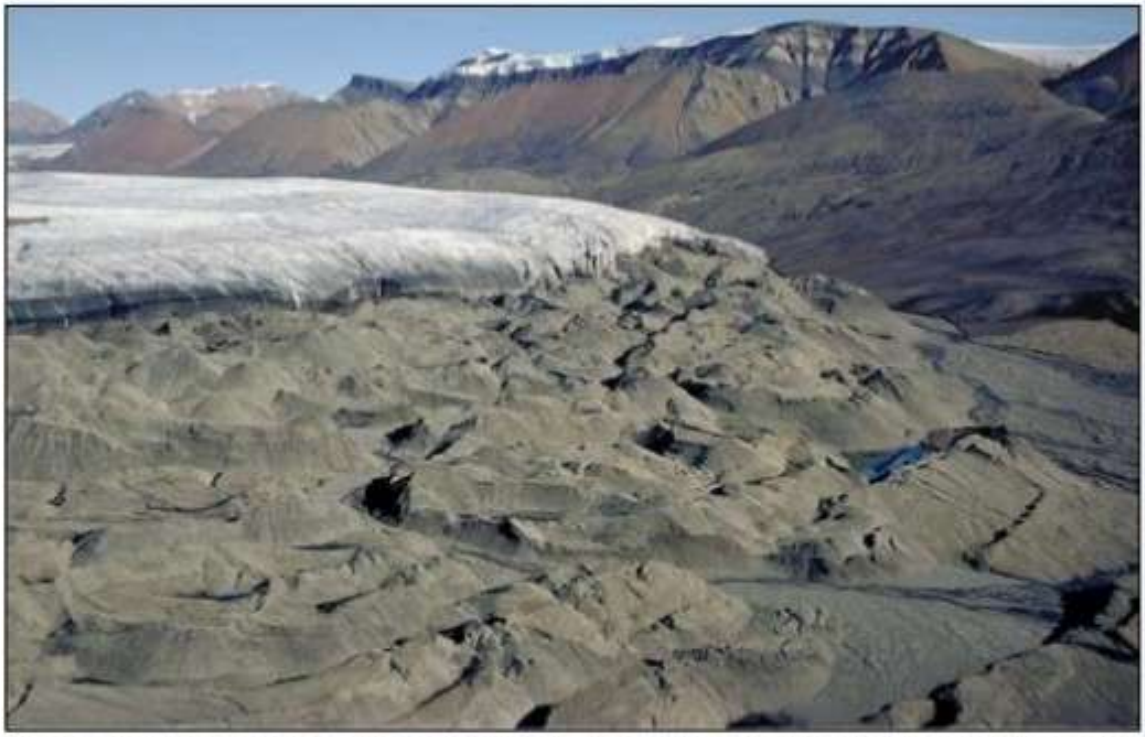
- If there is climate cooling, previously deposited moraine may be shunted up into a mound called a 'push moraine'

Recessional moraine Ridge of debris representing a stationary phase during otherwise general retreat.

Recessional moraines deposited in the 1920s by Steigletscher, Bernese Alps, Switzerland act as a dam for the lake in the centre of the photo.

Push moraine

A complex landform ranging from a few metres to tens of metres in height comprising assorted debris that has been pushed up by a glacier during an advance.



Push moraine in front of Thompson Glacier, Axel Heiberg Island, Canadian Arctic.

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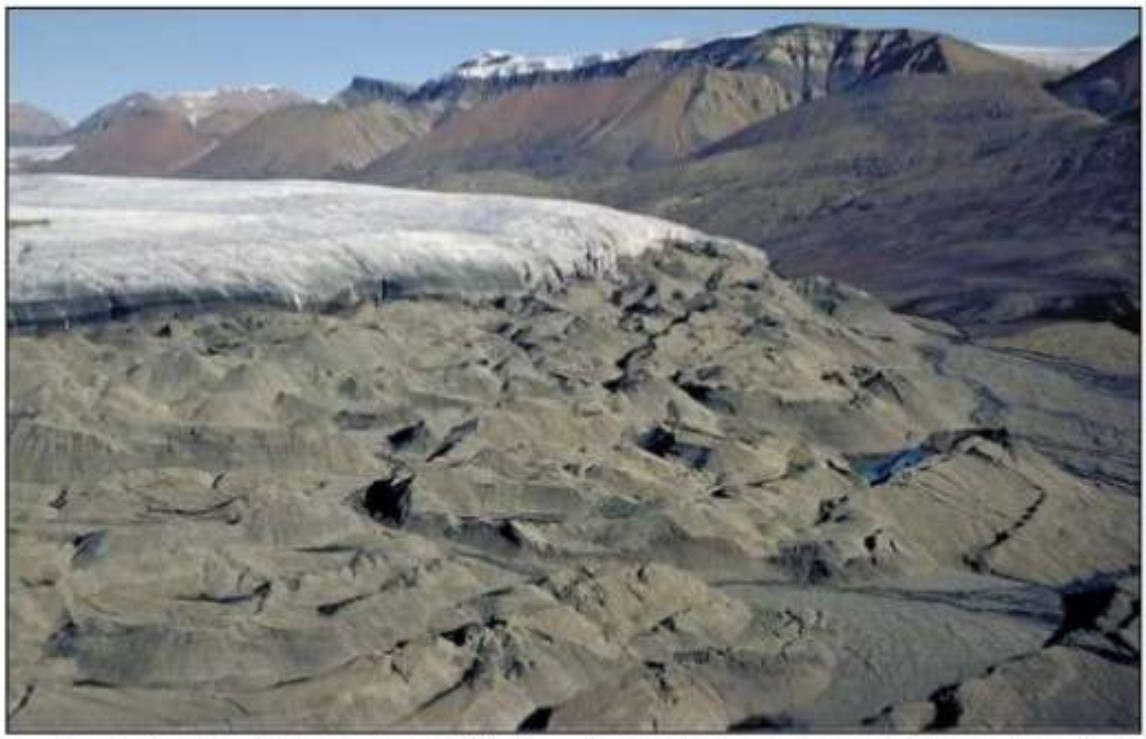
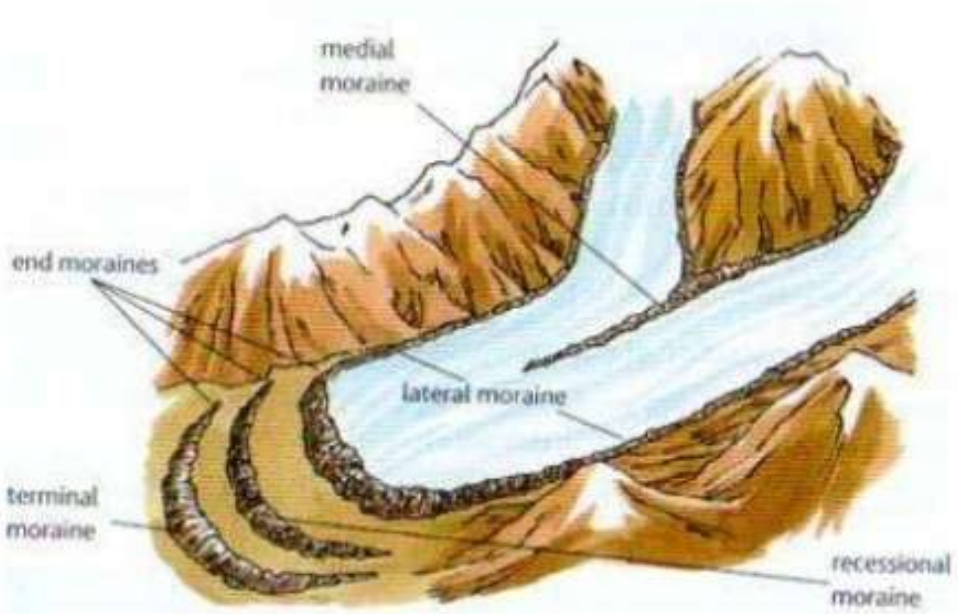


Push moraine in front of Thompson Glacier, Axel Heiberg Island, Canadian Arctic.

Different types of moraine

Moraine is a type of landform which develops when the debris carried by a glacier is deposited.



Lateral moraine Debris deposited along the side of a glacier, comprising both rockfall debris from above and debris ground up by ice-marginal processes.

A pair of lateral moraines Vadret da Tschierva, Grisons, Switzerland

Medial moraine Distinct ridge of debris occurring on the surface of a glacier where two streams of ice merge.

Medial moraines on a tributary of the Kaskawulsh Glacier, Icefield Ranges, Yukon, Canada.

SUMMARY:
IT IS POSSIBLE TO RECOGNISE 5 TYPES OF MORAINE

- Lateral moraine
- Medial moraine
- Terminal moraine
- Recessional moraine
- Push moraine