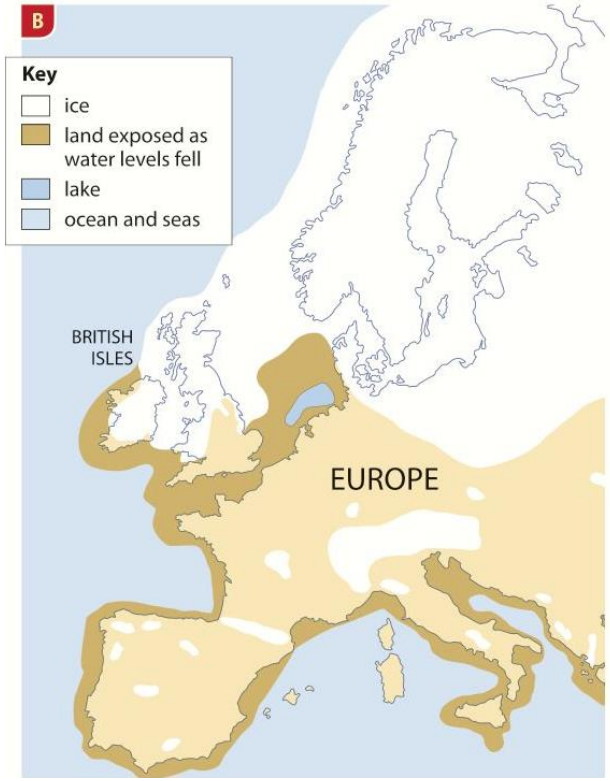
Year 8: Ice on the Land – Knowledge Organiser

Ice age: extremely cold periods, in which glaciers and ice sheets covered the majority of the land in the northern and southern hemispheres.

Europe 20,000 years ago



Around 110,000 years ago the Earth got colder and a new Ice Age began.

An ice sheet spread over much of northern Europe and most of the British Isles.

In areas where the ice sheet didn't cover the ground was still frozen and only melted in the summer. This area is called tundra.

The Ice Age ended around 10,000 years ago.

What is a Glacier?

Snow accumulates in the mountains. The snow compacts over many years and turns into ice. This river of ice is called a glacier.

Accumulation – When large amounts of something build up

Compaction – When snow builds up and gravity squashes it together, so it hardens, like a snowball

Key terms to help:

Ice sheet - a layer of ice covering the land for a long period of time.

Tundra – land that is *almost* permanently frozen and located near to an ice sheet.

Did you know?

Glaciers have changed the shape of our valleys from V shaped to U shaped

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Glacial Processes

Erosion- Glaciers pick up material from the ground surface

Transportation – Glaciers carry eroded material with them.

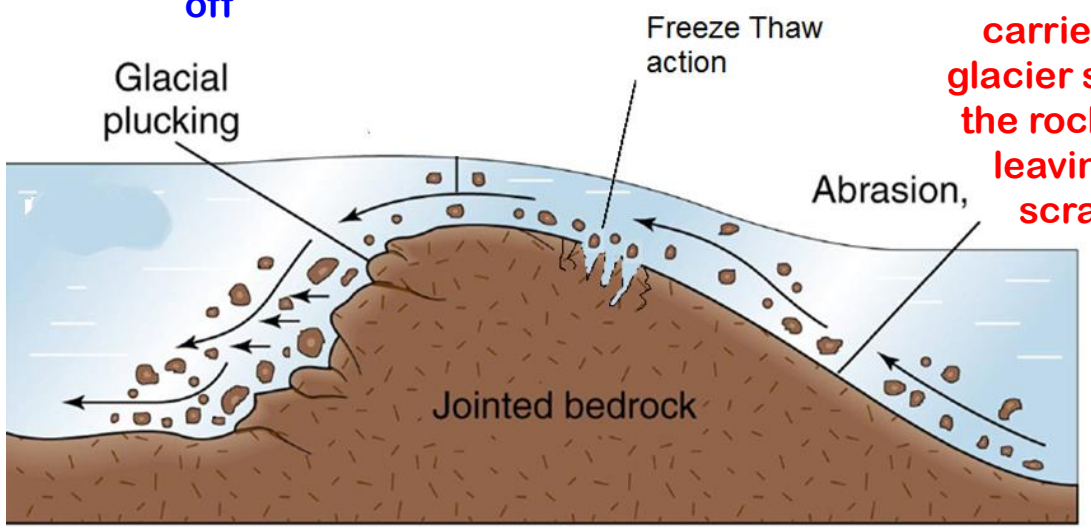
Deposition – Glaciers drop (deposit) material when they melt

Erosion

Water underneath the glacier flows into cracks in the rock. When the water freezes it expands and cracks the rock open further and pieces may be separated

Ice freezes to the rock under the glacier and 'plucks' pieces of rock off

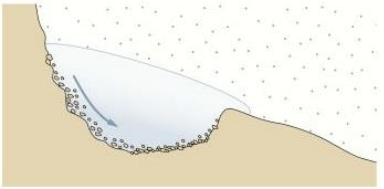
Pieces of rock being carried by the glacier scrape off the rock surface leaving deep scratches



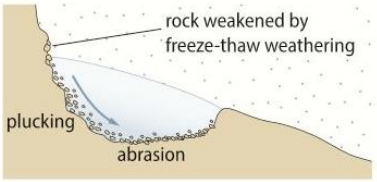
How do Corries form?

1. A glacier begins to form in a hollow on the mountainside. When it becomes large enough it begins to flow with gravity in the hollow

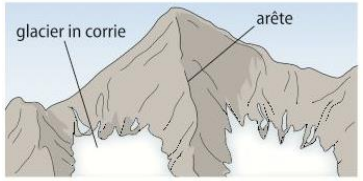
2. Through plucking and abrasion the hollow becomes deeper, and the walls become steeper. Freeze thaw weathering also speeds up the process.



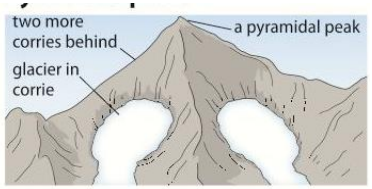
3. Eventually the glacier is large enough to flow over the edge of the hollow. It carries on its journey down the mountain side



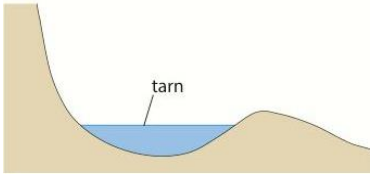
4. When two corries have formed side by side they erode the rock between them. This forms a very sharp edged ridge called an arête.



5. When 3 or 4 corries form on one mountain they all erode the back walls – cutting into the mountain top. This forms a pyramidal peak.



6. Later when the glacier melts the corrie is revealed. It will often have a lake in it – called a tarn.



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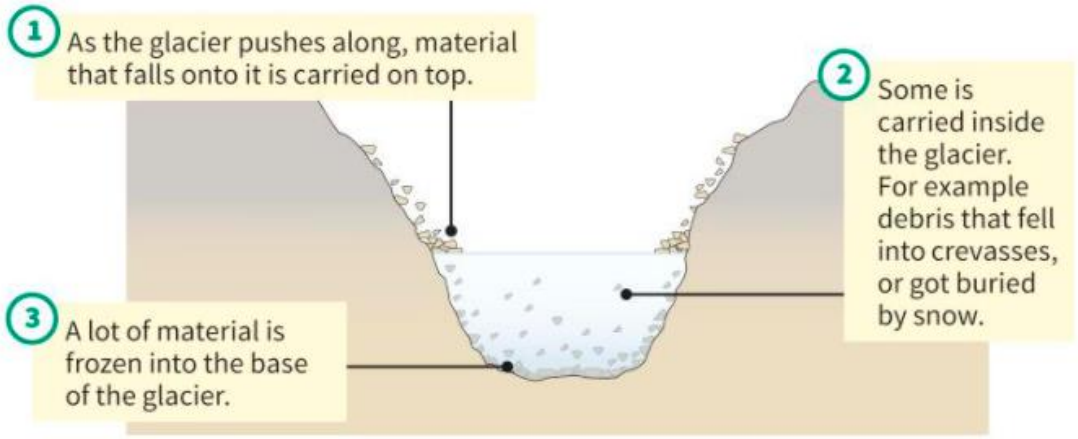
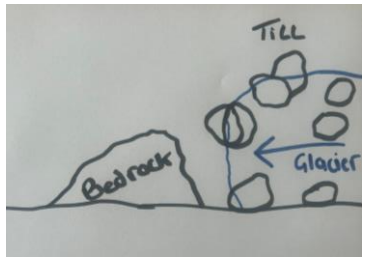
Transportation

The glacier then carries away the material it has eroded. This drawing shows a slice through the glacier. Look how the material is carried.

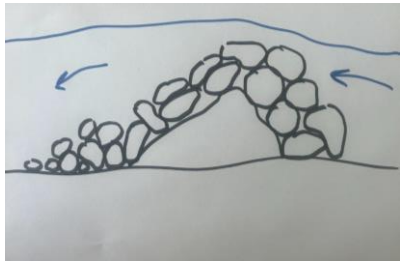


Depositional Landform - Drumlin

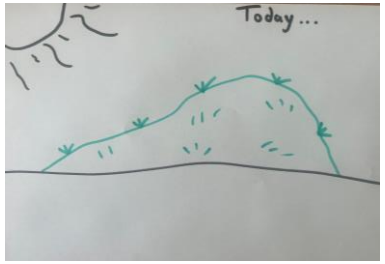


1. A glacier encounters a change in gradient (an outcrop on in the bedrock)

2. This causes immediate deposition in that position – The glacier's till cannot move, so is dropped by the glacier



3. As the glacier passes over the obstacle, it slowly drops more sediment behind the obstacle – The glacier drops a lot of it's material because it has lost speed!

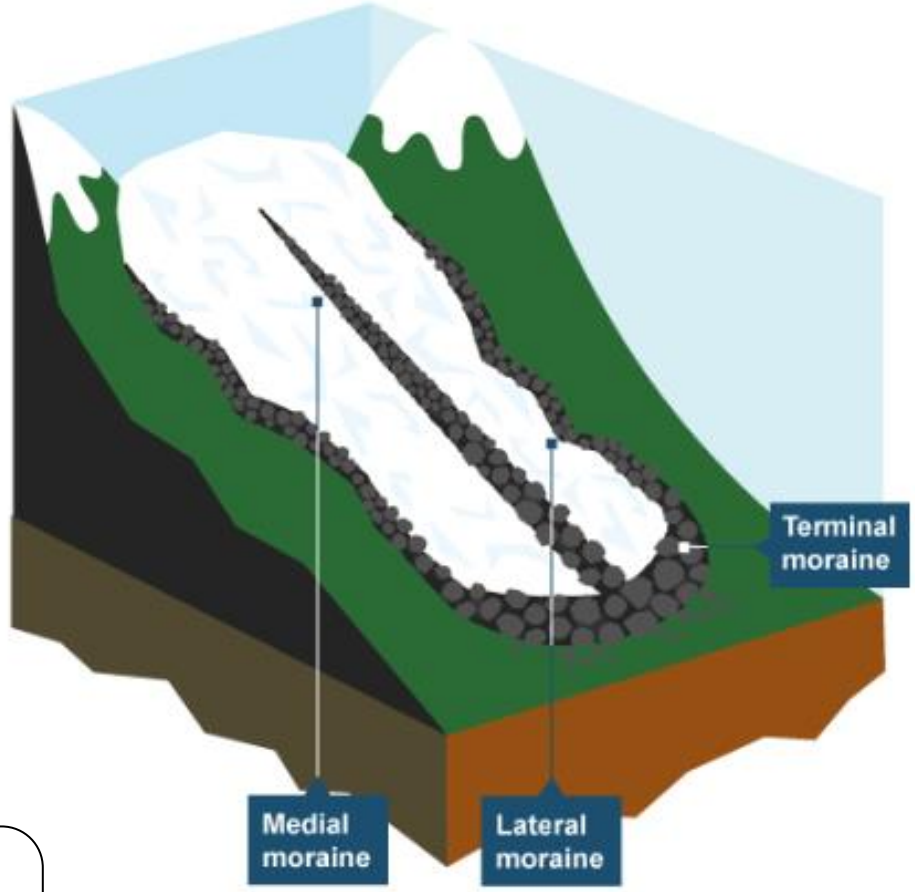


4. Once the glacier has retreated/melted, it leaves behind a drumlin. Today, drumlins look like grassy hills because soil and grass has been able to form and grow on top of this deposited rock!

Deposition

As a glacier deposits material, it leaves us depositional landforms known as Moraine.

- Terminal moraine is moraine deposited at the end of the glacier.
- Lateral moraines are found deposited along the sides of the glacier.
- Medial moraines are found at the junction between two glaciers.



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An avalanche is a rapid downhill **movement of a mass of snow**, ice and rocks usually in a mountainous environment. It can lead to injury and death if people are too close.

They kill around 150 people each year!

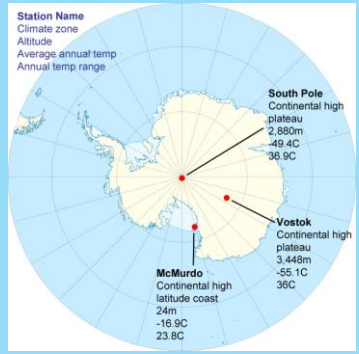
Slab avalanches occur when a slab of snow breaks free and flows downslope. They are usually triggered by people and are responsible for 90% of avalanche deaths.

Powder avalanches occur when individual particles of snow move downhill after heavy snowfall. They are responsible 10% of avalanche deaths.

Antarctica – What is the climate like?

	J	F	M	A	M	J	J	A	S	O	N	D
Temp.	3	-5	-12	-19	-30	-42	-23	-17	-15	-8	-2	4
Rainfall	2	5	10	2	5	9	8	6	7	5	4	6

Here is some climate data from the McMurdo Station in Antarctica. The coldest temperature is in June with -42'C, the most rainfall is in March with 10mm.



There are **8 countries** located in the Arctic Circle

- Canada
- USA
- Greenland
- Norway
- Iceland
- Finland
- Sweden
- Russia

There are lots of **challenges** to living in the Arctic, so Inuit have had to **adapt** to survive

Extremely Cold	Wear thick warm clothes
Months of Darkness	Build Igloo
Polar Bears	Houses on sledges
Lack of Vegetation	Eat a diet of fatty fish

How have animals adapted to survive in Antarctica?

EMPEROR PENGUINS

Small feet and beaks to reduce heat loss,
Huddle for warmth

WEDDELL SEAL

Sharp teeth for breaking air holes in the ice,
Layer of fat for warmth

KILLER WHALE

Use their fins to push prey off icebergs,
Blubber for warmth

The Antarctic Treaty

The Antarctic Treaty was signed in Washington on **1 December 1959** by twelve nations (Argentina, Australia, Belgium, Chile, France, Japan, New Zealand, Norway, South Africa, United Kingdom, United States and USSR). Today, the **Antarctic Treaty has 54 signatures**, as many other nations agree with the preservation of Antarctica and working together to develop key scientific research. The treaty prohibits any dumping of toxic waste or war. However, military research is allowed.