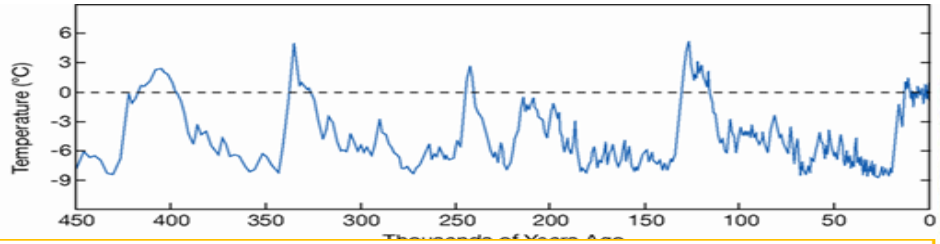
Cryosphere Knowledge Organiser

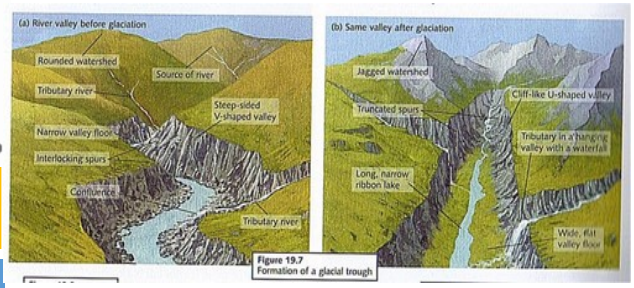
What is Glaciation?- This is the process by which ice accumulates (builds up) in places to create distinct sheets known as glaciers. These move very slowly and erode the landscape.

What causes Earth to go into Glacial time?
Earths Orbit, Volcanic activity and Sunspots



A graph showing the changes in global temperature over the last 450,000 years.

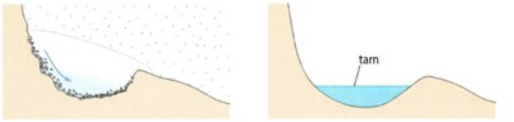
Distribution of Polar Regions
Antarctic
A continent south of latitude 60°S around the South Pole.
Climate
Polar areas are very cold with temperatures rarely reaching above 0 °C. Winters average below -40 °C with summers a maximum of only 10 °C. Rainfall is low throughout the year.



Corrie
A **corrie** begins as a sheltered hollow, where snow builds up year after year.

1 The snow compacts to ice. When the ice is thick enough, it starts to flow. Now it's a glacier! First it flows within the hollow.

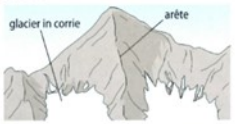
2 Through plucking and abrasion, the hollow grows deeper, and the walls steeper. Freeze-thaw weathering helps.



3 Eventually the glacier is big enough to flow over the edge of the corrie. It's off on its journey down the mountain.

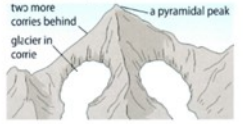
4 Later, when the glacier melts, the corrie is revealed. It may have a lake in it. These corrie lakes are often called **tarns**.

Arête



Sometimes two corries form side by side. The glaciers erode the rock between them, leaving a sharp ridge of rock. It is called an **arête**.

Pyramidal peak



Imagine three or four corries around a mountain top. The glaciers erode their back walls, cutting into the mountain top. It becomes a **pyramidal peak**.

Case Study: Global Scale Sustainable Management: The Antarctic Treaty System

Background

Signed by 50 nations in 1961, the Treaty sets aside Antarctica as a scientific preserve, establishes freedom of scientific investigation and bans military activity.

Basic Principles of the Antarctic Treaty

•Bans mining and resource extraction. •Prevents territorial disputes of the continent. •Promotes scientific research and co-operation. •Protects the fragile environments and its wildlife by preventing and managing waste/pollution.

Successful?

Stayed in place for 50 years with more countries signing up to enforce strict controls and improve its stability.

Effects of Human Activity in Polar Regions

Oil & Gas exploration	Whaling
•Large amount of untapped oil and gas. •Oil spills would threaten ecosystems as clean up operations would be slow.	•Hunting of whales is a major industry – this led to a rapid decline •Many countries have banned whaling, but some still continue
Fishing	**Tourism**
•Has made area possible to fish large untapped stocks. •The polar areas are difficult to police due to harsh conditions. •Collapse of the fish stocks	•The tourism industry is steadily growing within polar regions. •Travel by tourist increase emissions further. •Wildlife may become disturbed by tourists