What is a glacier?

KS2 KS3 Ages 7-14 ⏰ 4 min read

Glaciers look solid and permanent — frozen in time, immovable. They're neither. Glaciers are always moving, always changing, constantly reshaping the land beneath them. They're rivers, just extremely slow ones — and they contain about 69% of all the fresh water on Earth.

How does a glacier form?

Glaciers form in places where more snow falls each winter than melts each summer. Year after year, snow accumulates. Under the weight of newer layers, older snow compresses into dense, blue ice. Once this body of ice is thick enough — typically over 50 metres — it begins to flow under its own weight, pulled downhill by gravity. That's the definition of a glacier: a persistent body of ice thick enough to flow.

🍯 Ice flows like an extraordinarily thick, slow liquid. Think of honey poured very slowly over a surface — it creeps along under gravity, going around obstacles, filling depressions. A glacier does the same thing, just over thousands of years instead of seconds. Put it under enough pressure and ice deforms and flows, rather than staying rigid. The pressure of millions of tonnes of ice above does exactly that to the ice at the bottom of a glacier.

How do glaciers shape landscapes?

Glaciers are among the most powerful forces of erosion on Earth. As they move, they pick up rocks frozen into their base and drag them across the bedrock below, grinding and carving like colossal sandpaper. This is how the U-shaped valleys of the Alps and the Scottish Highlands were carved — not by rivers (which create V-shaped valleys) but by glaciers. Fjords are glacially carved valleys flooded by the sea. The Great Lakes of North America were scoured out by the Laurentide Ice Sheet during the last ice age. Much of the flat, fertile landscape of northern Europe was shaped by glacial deposition.

Why are glaciers retreating?

Almost all of the world's glaciers are shrinking. The reason is straightforward: warmer temperatures mean more melt in summer and less accumulation in winter. Glaciers that have been stable for thousands of years are now in dramatic retreat. The implications are serious: glaciers provide meltwater to rivers that hundreds of millions of people depend on for drinking water, agriculture, and hydropower. As glaciers shrink, those rivers first grow (from increased melt) and then, eventually, as the ice runs out, begin to dwindle. Some major glacial rivers could diminish significantly within this century.