

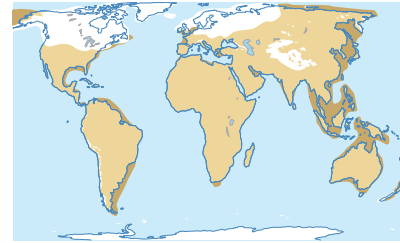
Here you'll find out where the ice is on Earth today – and start learning about glaciers!

## Glaciers

During the last ice age, ice covered about a third of Earth's land. Today, it covers about a tenth.

The ice does not just sit there. It flows! We call it **glaciers**.

Glaciers are large masses of ice, that flow across the land, and down slopes. Giant glaciers, that cover huge areas, are called **ice sheets**.



▲ Ice over Earth in the last ice age.

## Where are the glaciers?

As you'd expect, glaciers are found in Earth's coldest places.



### Did you know?

- ◆ Earth is flatter at the South Pole than the North Pole ...
- ... because of the weight of Antarctica's ice.

**1** Far from the Equator, at the top and bottom of the world, ice sheets cover Antarctica and most of Greenland. Between them, they have over 99% of Earth's ice. They are more than 4 km thick in places. Picture that!

**2** Earth's other glaciers are much smaller. Most are high up in mountains, where it is also very cold. Most of Earth's big mountain ranges have glaciers. We call them **mountain glaciers** in this chapter.

## Glaciers depend on snow

Rivers depend on **rain** falling from the sky. Glaciers depend on **snow**!

In those cold places, snow falls layer upon layer. Over time, the layers below get compacted to ice, like when you squeeze a snowball very hard. It could take over 10 metres depth of snow to make a layer of ice 1 metre thick.

As it gets thicker, the ice gets heavier and heavier. And eventually it starts to flow, under the pressure of its own weight. A glacier is born!

### Did you know?

- ◆ Glaciers are only on land.
- ◆ The ice that forms when an ocean freezes over is called sea ice.

## Glaciers flow

Glaciers don't just sit there. They flow.

How can ice flow? First, ice flows *inside* the glacier, because the ice crystals slide over each other, under pressure. And second, the ice at the bottom of the glacier may melt; then the whole glacier slides along on the water.

Ice sheets flow just a few metres a year. Mountain glaciers flow faster down their slopes – 300 metres a year or more.

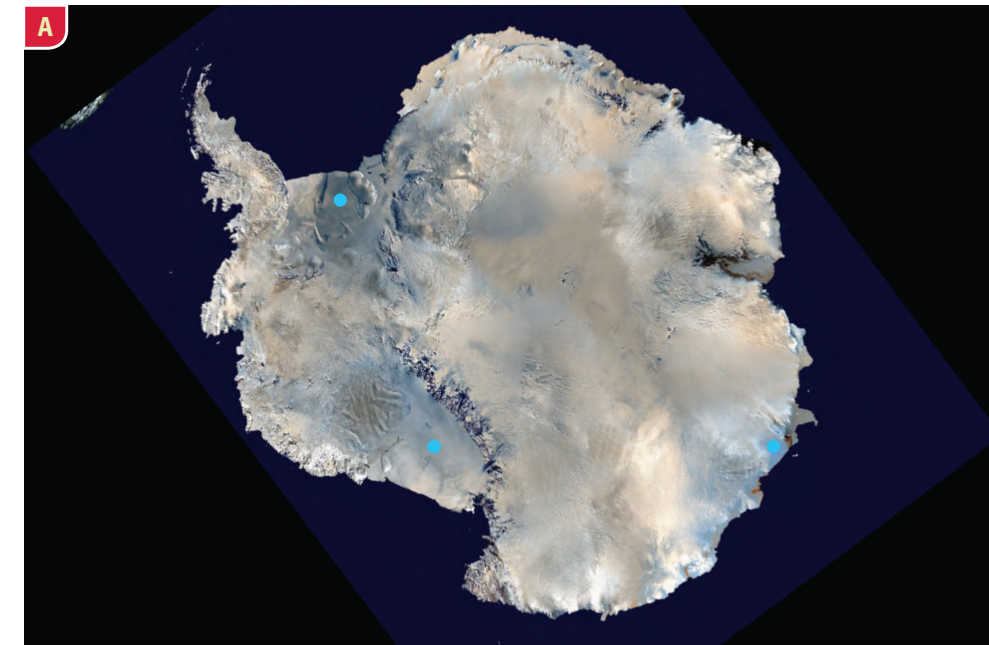
## Where do they flow to?

A mountain glacier flows down the side of the mountain, in a valley. And eventually it reaches a place where it melts.

In ice sheets, the ice flows out to the thinnest parts, like when you pour syrup. In Antarctica, it flows into the ocean in places, and floats as an **ice shelf**. Bits of the ice shelf break off now and then to form **icebergs**.



▲ A river of ice. This is the Aletsch Glacier in Switzerland.



▲ Looking down on Antarctica from space. The flat parts are ice shelves, where the ice sheet flows into the water. (We've put blue dots on them for you.)



▲ Made it! As a glacier flows, cracks or **crevasses** form where the ice gets squashed or stretched. For example where the glacier flows round a bend.

## Your turn

- What is: **a** a glacier? **b** an ice sheet?
- The UK has no glaciers today. Why not?
- See if you can name five countries that have mountain glaciers today. The map on page 140 might help!
- Image **A** was taken by a satellite high above Earth. Which part of Earth was it over, when it took the shot?  
**a** the North Pole **b** the South Pole **c** the UK  
Explain your choice.
- You are a scientist. Your job is to study the glacier in photo **B**.  
**a** How could you prove that it was flowing? Tell us!  
**b** How would you work out how fast it was flowing?  
**c** The middle of a glacier flows faster than the edges. Think of a way to prove this too, for your glacier.
- Crevasses can open up quickly – and close up quickly too. Imagine that's you, in photo **C** above. How are you feeling? What will you do?