

In this unit you'll learn about how the Earth is cracked into huge slabs – and how these are linked with earthquakes and volcanoes.

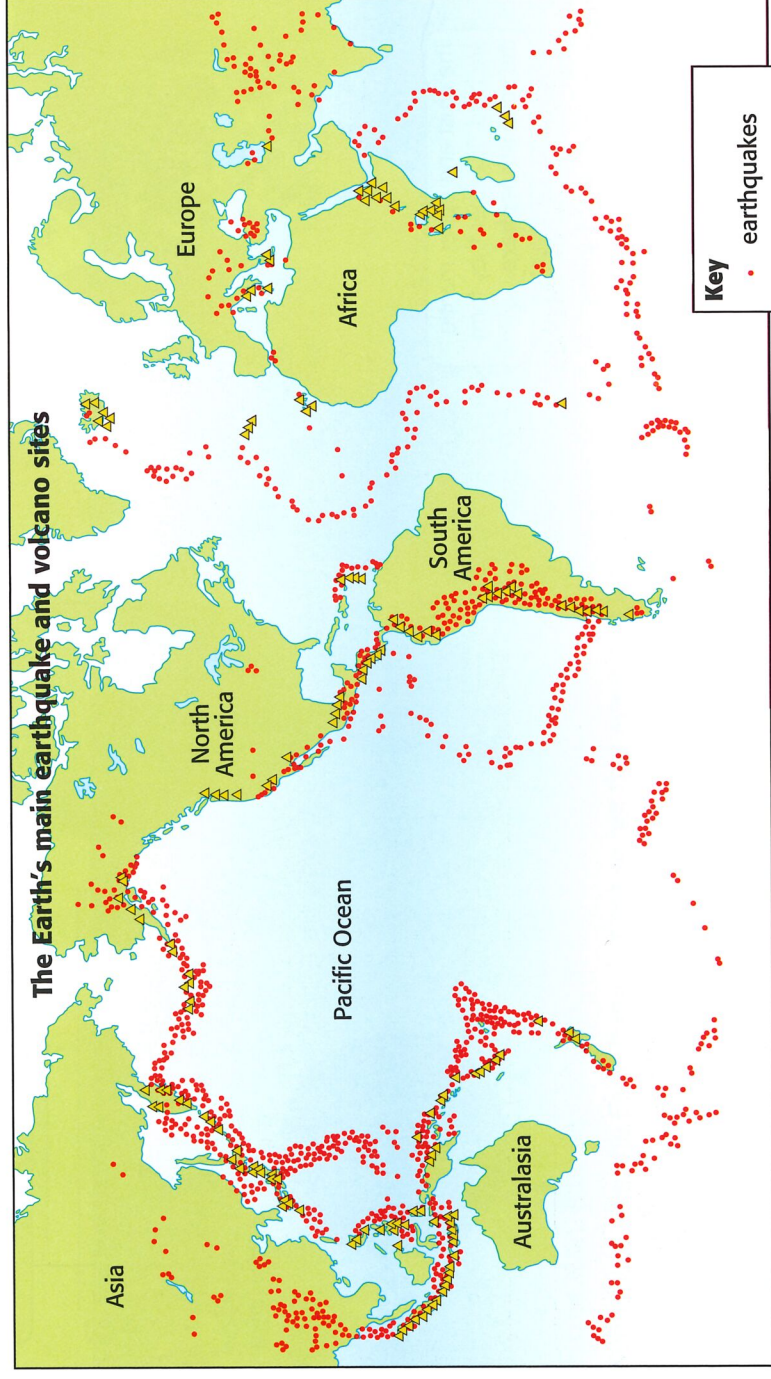
First, a puzzling pattern

An **earthquake** is caused by rock suddenly shifting.

A **volcano** forms when liquid rock spews out through the Earth's surface.

The world map below shows the main earthquake and volcano sites. (This view shows North and South America in the centre.)

Take a good look. Can you see any patterns?



Did you know?

The ring of volcanoes around the Pacific Ocean is known as the Ring of Fire.

The map shows that:

- Earthquakes and volcanoes don't happen just anywhere. They tend to occur along lines.
- They often occur together.
- They occur in the ocean as well as on land.

Explaining the pattern

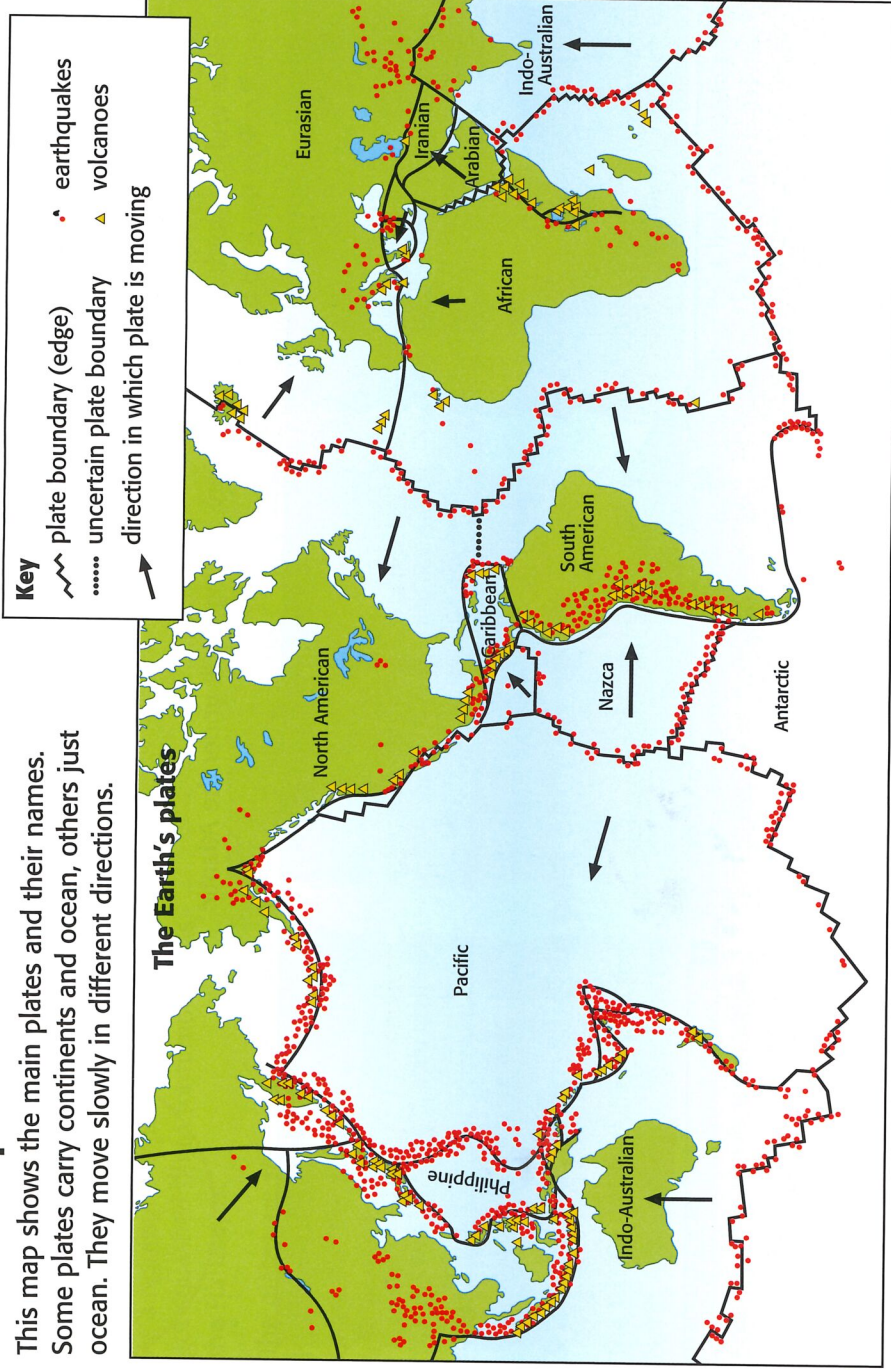
The pattern puzzled scientists for years. Then they found the explanation:

- The Earth's surface is cracked into big slabs. (It's like a big cracked eggshell.)
- The slabs are continually moving.
- This movement causes earthquakes, and volcanic eruptions, at the edges of the slabs.

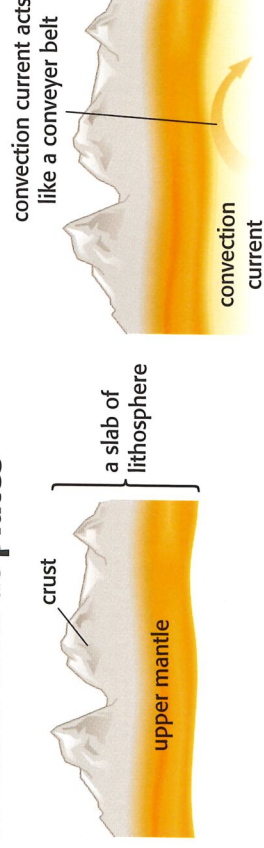
They called the big slabs **plates**.

The Earth's plates

This map shows the main plates and their names. Some plates carry continents and ocean, others just ocean. They move slowly in different directions.



A closer look at plates



Plates are slabs of the **lithosphere** – Earth's crust and upper mantle. They float on the soft hot rock below.

Plates move because they are dragged along by the powerful hot currents (or **convection currents**) in the soft hot rock.

Plates move just a few cm a year – but it all adds up! For example India has moved 2000 km north in the last 70 million years.

If I just lie still for 10 years I'll move half a metre.



Your turn

1 What is: **a** an earthquake? **b** a volcano? (Check the glossary?)

2 Name:

- a** the plate you live on
- b** a plate that is moving away from yours
- c** a plate that is moving north
- d** a plate that carries just ocean
- e** the plate off the west coast of South America
- f** the plate that's circled by the Ring of Fire.

3 Make a drawing of your own to show what plates are made of, and why they move. Give it a snappy title!

4 Earthquakes and volcanoes form a pattern around the Earth. Using the idea of plates, explain why.

5 The UK has no active volcanoes. Give a reason.

6 A challenge! Suppose our plate starts moving south at 5 cm a year. About how long will it take Newcastle to reach the equator? (Newcastle is about 55° N. A move of 1° south equals 440 km.)



Research ships like this one helped scientists solve the plate puzzle. They are used to study the ocean floor.