

Teacher subject knowledge guide for Year 5, Unit 1: Asia: Mountains, volcanoes, and earthquakes

Asia

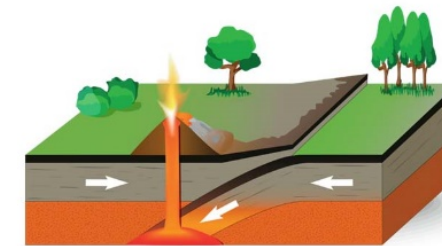


Boundaries for countries and regions are created by humans so there can be different opinions on where they begin and end. There are 49 countries in Asia. However, there are different views about what constitutes a country in this region, so this number can vary dependent on the source. For clarity, OUP takes no stance in relation to contested territories.

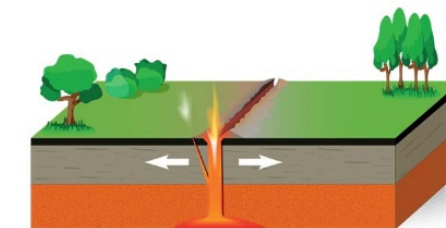
Plate boundaries

A **destructive boundary** is when the plates move towards each other and collide. A destructive plate boundary forms towering mountain ranges, like the Himalayas, as Earth's crust is crumpled and pushed upward.

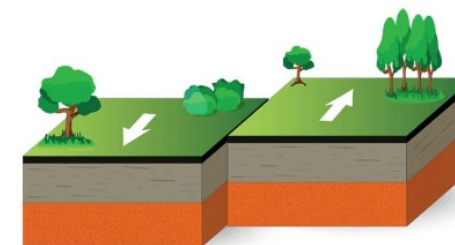
At some destructive boundaries, an oceanic plate collides with a continental plate. Oceanic crust tends to be denser and thinner than continental crust, so the denser oceanic crust gets bent and pulled under, or subducted, beneath the lighter and thicker continental crust. This forms what is called a subduction zone. The magma formed at a subduction zone rises toward Earth's surface and builds up in magma chambers, where it creates volcanoes on the overriding plate. When this magma finds its way to the surface through a vent in the crust, the volcano erupts.



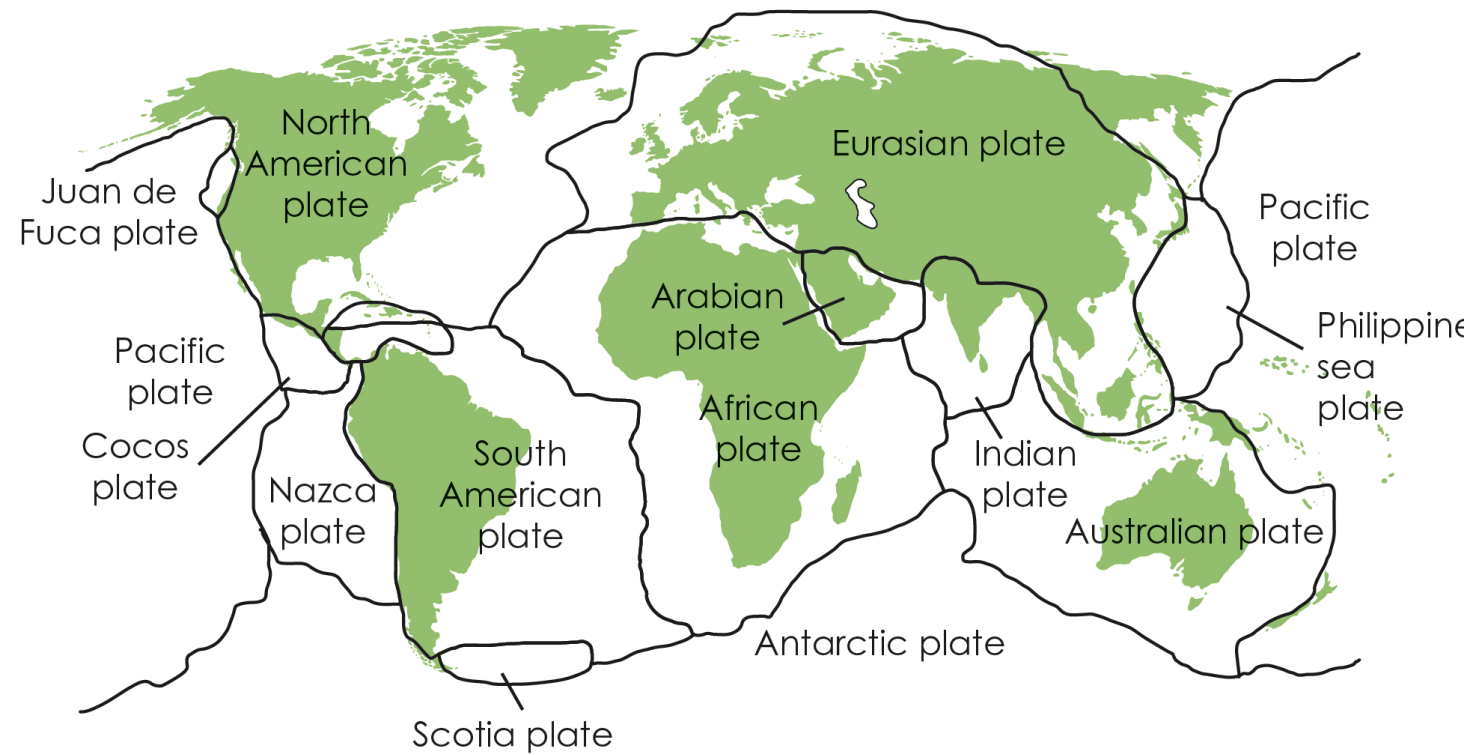
A **constructive boundary** is when the plates move apart. A constructive plate boundary often forms a mountain chain known as a ridge. This feature forms as magma escapes into the space between the spreading tectonic plates.



A **conservative boundary** is when the plates grind past each other along strike-slip faults. These boundaries do not produce spectacular features like mountains or oceans, but enormous amounts of energy can be released in the form of earthquakes.



**Tectonic plates**



The movement of the tectonic plates can be a difficult concept for pupils to grasp. Once pupils have a clear understanding of Earth's layers, they can better understand the plate movements. Modelling each of the movements physically may help pupils to see how the different plate boundaries move and therefore how volcanoes and earthquakes occur. Placing arrows on the map to show the direction they move would also be useful.

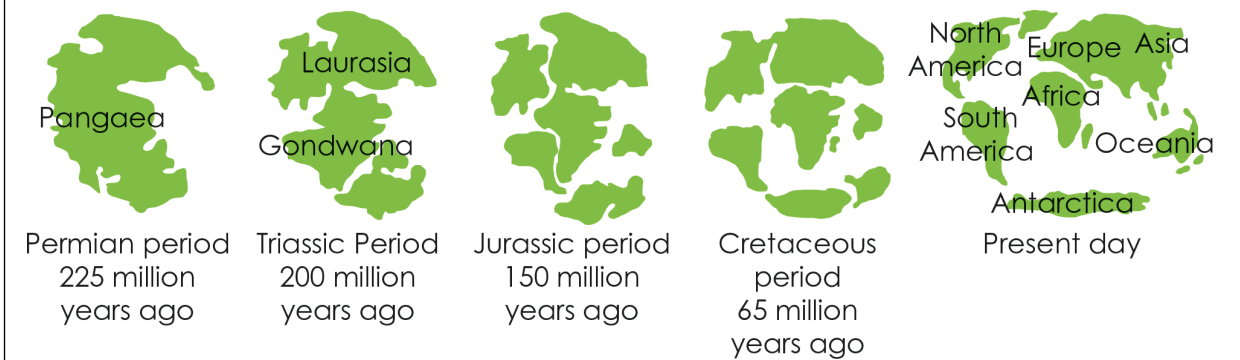
Tectonic plates are large pieces of Earth. They are invisible boundaries. The heat from the mantle makes them slightly soft and this causes the plates to move. Most tectonic activity takes place where these plates meet. They collide, tear apart, or slide against each other. Earth's crust becomes unstable as the plates push against each other, or ride under or over each other. Earthquakes and volcanic eruptions happen at the boundaries between plates, and the crust may 'crumple' to form mountain ranges.

**Continental drift**

The modern science of plate tectonics was preceded by the theory of continental drift, which the scientist Alfred Wegener used in the early twentieth century to try to explain why continents move.

Wegener's theory was that the continental landmasses were 'drifting' across Earth—a process he called continental drift. Wegener believed a single supercontinent once existed, which he called Pangaea. Over millions of years, this huge landmass broke up into pieces, which drifted apart and slowly moved into the positions that the continents occupy today.

Pangaea existed around 300 million years ago, and it had begun breaking up by about 200 million years ago. Scientists believe that it is not the only supercontinent to have formed and broken up. Before Pangaea were Pannotia (which formed around 600 million years ago) and Rodinia (around a billion years ago). Other supercontinents have also formed and broken up at different times, and the continents continue to move at about 2.5 centimetres per year.



Initially, Wegener's theory of continental drift was not widely accepted, partly because scientists did not have a good explanation for why and how the continents moved. Wegener incorrectly suggested that the rotation of the Earth made the continents move around. Since then, scientists have developed the theory of plate tectonics. Scientists now believe that the movement of tectonic plates is the result of convection currents beneath the Earth's surface.