EARTH'S CRACKED CRUST:

The science behind plate tectonics

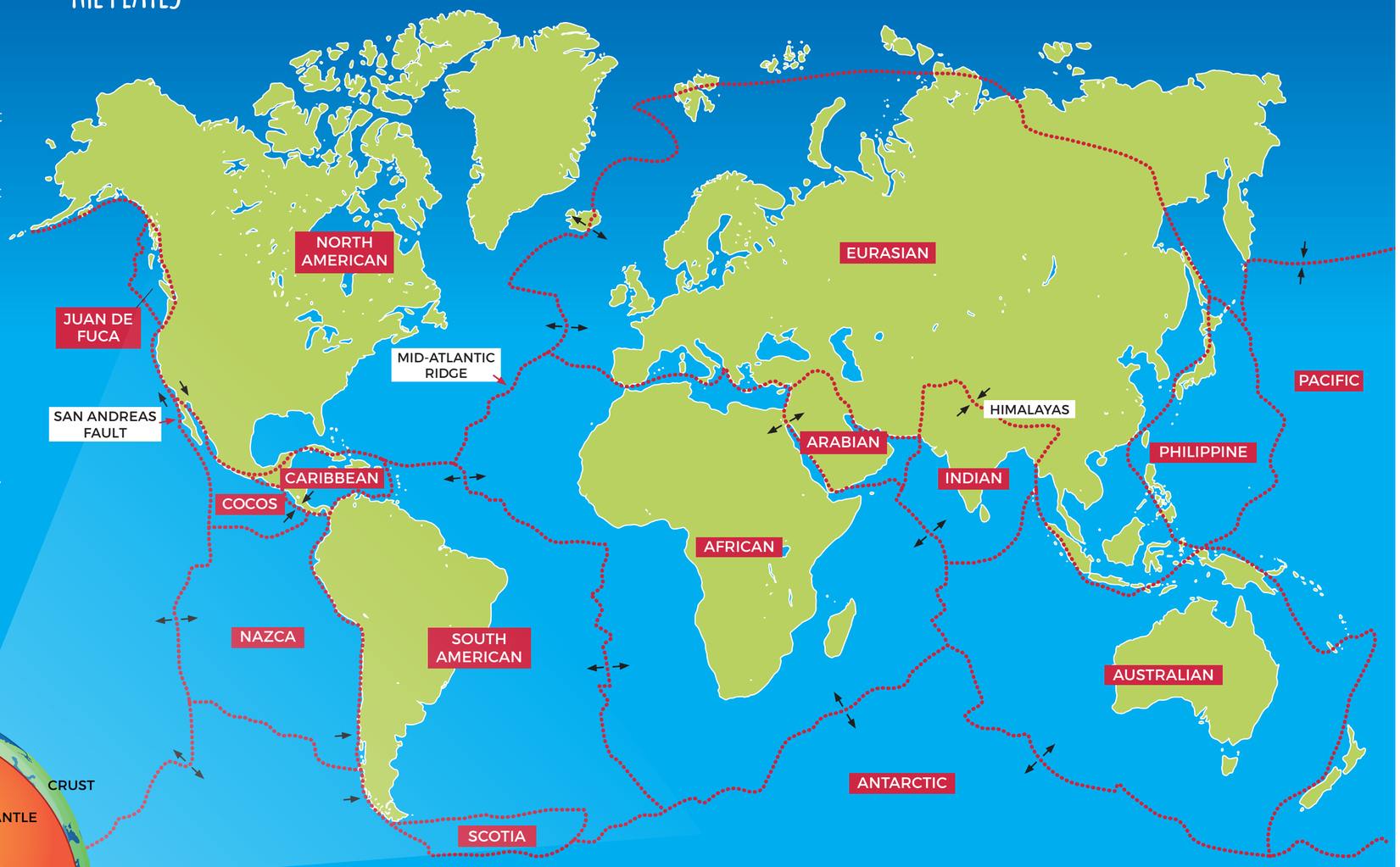
PLATE BOUNDARIES & THEIR INTERACTIONS

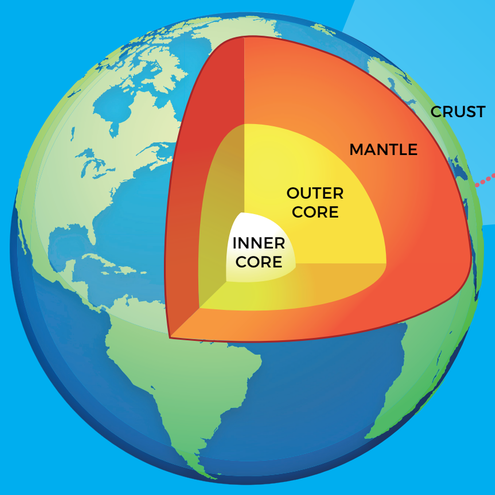
The Earth's crust is broken up into pieces called plates. The movement of the plates, and the activity inside the Earth, is called **plate tectonics**. There are a number of theories that attempt to explain what drives the movement of plates. Three of the forces that have been proposed as the main drivers of tectonic plate movement are: **mantle convection currents**, **ridge push** and **slab pull**.

Recent research has shown that the major driving force for most plate movement is slab pull. However ridge push is also a force that drives the movement of plates.

Plate tectonics cause earthquakes and volcanoes. The point where two plates meet is called a **plate boundary**. Earthquakes and volcanoes are most likely to occur either on or near plate boundaries.

THE PLATES



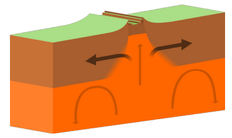


WEGENER'S THEORY

The theory of **plate tectonics** was established by Alfred Wegener, who proposed the theory of continental drift in 1912. His idea was that the Earth's continents were once joined together, but gradually drifted apart over millions of years. It offered an explanation of the existence of similar fossils and rocks on continents that are far away from each other but it took a long time for the idea to become accepted by other scientists.

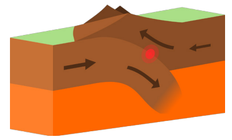
DIFFERENT PLATE BOUNDARIES

Divergent boundary



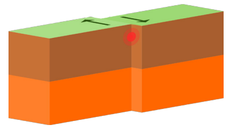
At a divergent (or constructive) boundary, the plates move apart. As the plates pull apart, magma rises from the mantle and eventually erupts through the surface of the Earth forming volcanoes along the plate boundary. Constructive boundaries tend to be found under the sea, (for example, the Mid Atlantic Ridge).

Convergent boundary



At a convergent (or destructive) boundary, the plates move towards each other. Where a continental plate and an oceanic plate push together, the denser oceanic plate is forced beneath the continental plate. The point at which this happens is called the **subduction zone**. Earthquakes may occur and the oceanic plate melts to form magma, which may then rise up through cracks in the continental crust. As pressure builds up, a volcanic eruption may occur. Where continental plates push together, the density of the two plates is usually equal and so the crust is squashed and forced upwards. This is called **folding**. The process of folding creates fold mountains, such as the Himalayas.

Transform boundary



At a transform (or conservative) boundary, the plates slide or grind past each other, often causing earthquakes. As the plates on either side of a transform boundary are merely sliding past each other and not tearing or crunching each other, transform boundaries lack the spectacular features found at convergent and divergent boundaries. The San Andreas Fault is a good example of a continental transform fault.