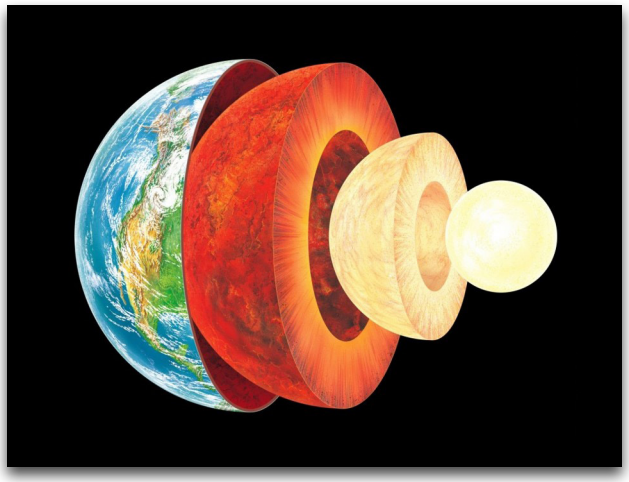
Tectonic Plates

Our planet is not made of the same thing all the way through, but instead is made up of several layers. There is the inner core, outer core, the mantle and the crust. You can see them in this picture, where we have cut the Earth in two and separated out the layers so you can see them better.

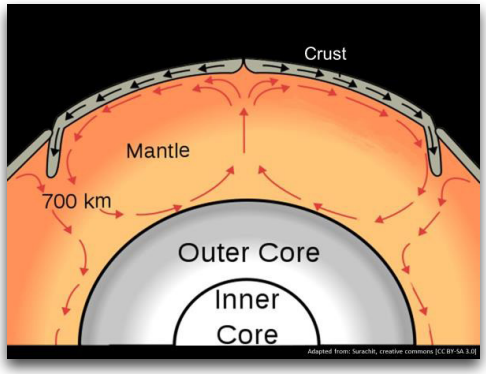


The Core

The core is the very centre of our planet and made of two parts, the inner and the outer core. The core of the Earth is very hot, in fact, it is the same temperature as the surface of the sun! It is also under huge amounts of pressure, because the rest of the Earth is squashing down on it. The core is mainly made of a metal called iron. This would usually melt at high temperatures, but the pressure is so huge and the core is so squashed, that the inner core is solid. The outer core, however, is a liquid. It is not possible to dig all the way down to the core, but if we did the rocks would look a bit like this.

The Mantle

The mantle is still quite hot and still getting squashed, but not as much as the core. It is made of rocks, like the ones in this picture. Due to the very high pressure and temperature, the rocks act very strangely. Most of the time they feel like a solid, but very slowly, over a very long time, the mantle flows like a liquid. The rocks move in big cycles, which you can see in the picture below, called convection currents. These currents are driven by the hotter rocks near the core trying to rise up and the cooler ones near the surface trying to sink down.

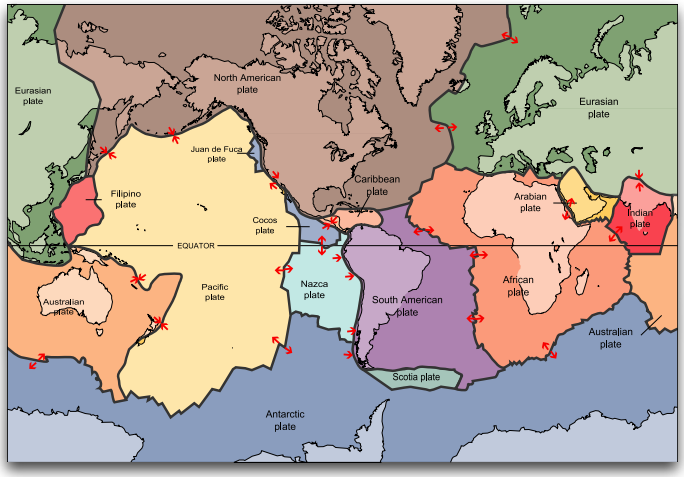


The Crust

The crust is the surface of the Earth; it is the part of the planet we see everyday and is made up of lots of different types of rocks. Because the hard crust sits on top of the mantle, which is always moving, it gets pushed and pulled by the mantle and breaks up into different pieces. We call these the tectonic plates and it is movement of these plates which cause volcanoes and earthquakes. The picture on the next page shows all the tectonic plates.

Make a tectonic plate jigsaw

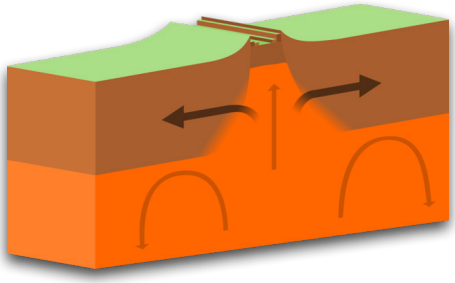
Print the picture of the tectonic plates on the next page and cut them out along the big black lines (this is pretty tricky so you might want to get a grown up to help you). Now mix them up and see if you can re-assemble the tectonic plate jigsaw of our planet. To make it easier to reassemble you can leave some of the smaller plates attached to the bigger ones and stick it to a piece of card first to make the pieces a little stronger.



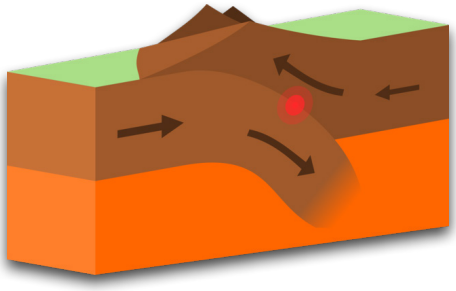
Volcanoes and Earthquakes

Look at your jigsaw and you will see red arrows. These show the direction the tectonic plates are moving.

If you have a place where the plates are moving either towards (→ ←) or away (← →) from each other you will get volcanoes. You can see why in the pictures below.

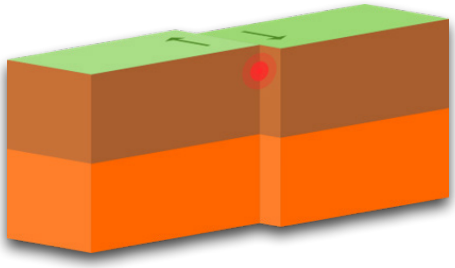


As plates pull apart a gap is made where melted rocks can rise to the surface through a volcano.

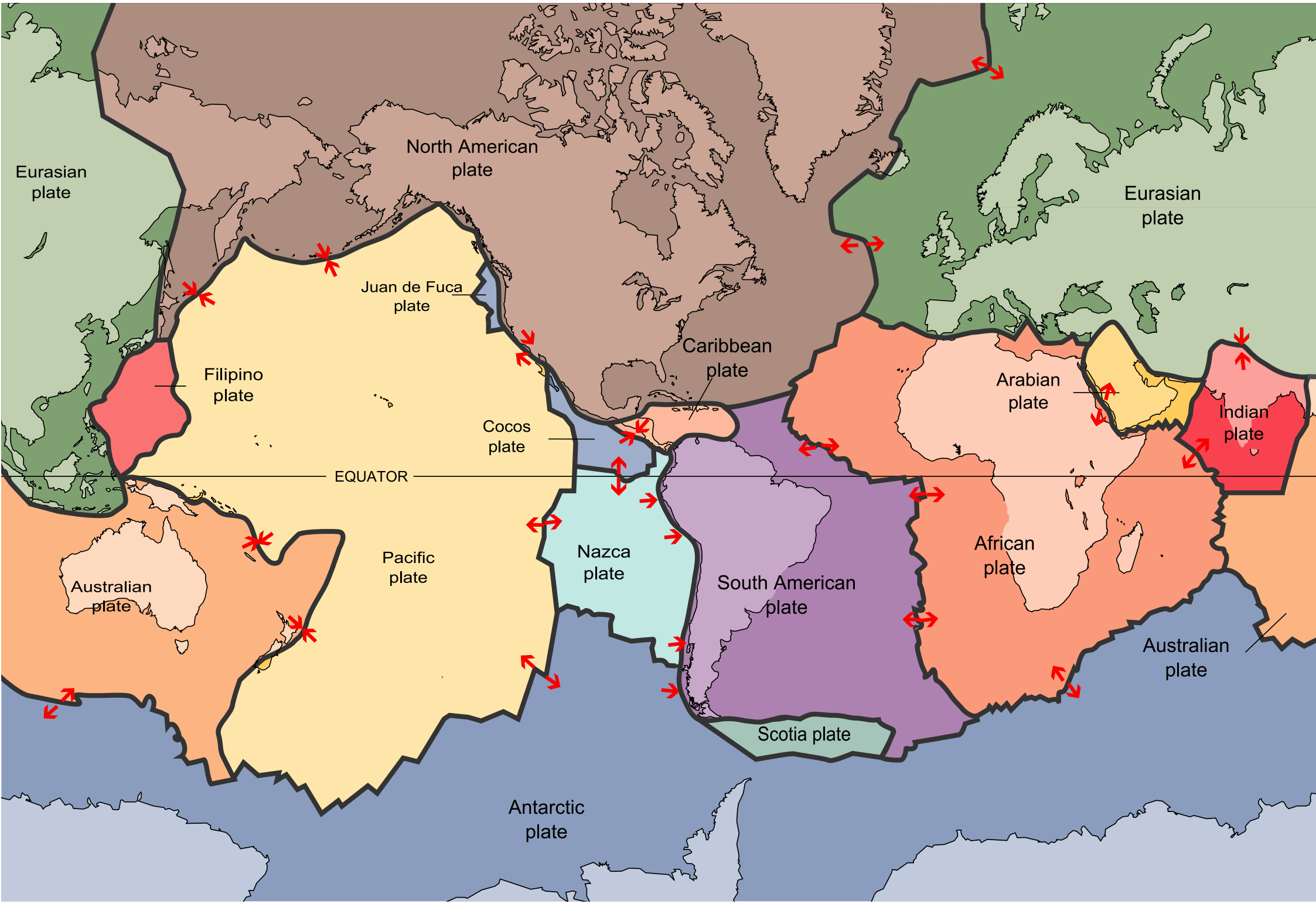


As plates crash together one is pulled under the other. This lower plate melts and makes magma which then erupts in a volcano.

If you have plates sliding past (⇇ ⇉) each other then you will get earthquakes.



As plates slide past each other they rub together which makes the ground shake in an earthquake.


Eurasian plate
North American plate
Eurasian plate
Juan de Fuca plate
Caribbean plate
Filipino plate
Arabian plate
Indian plate
Cocos plate
EQUATOR
Pacific plate
Nazca plate
African plate
Australian plate
South American plate
Australian plate
Scotia plate
Antarctic plate