

What Lies Beneath Our Feet

**An exploration of the
layers of the Earth**

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Hello! My name is Earth. I am the planet that you live on.

When you think of me, you probably think of cities, mountains, forests or the ocean.

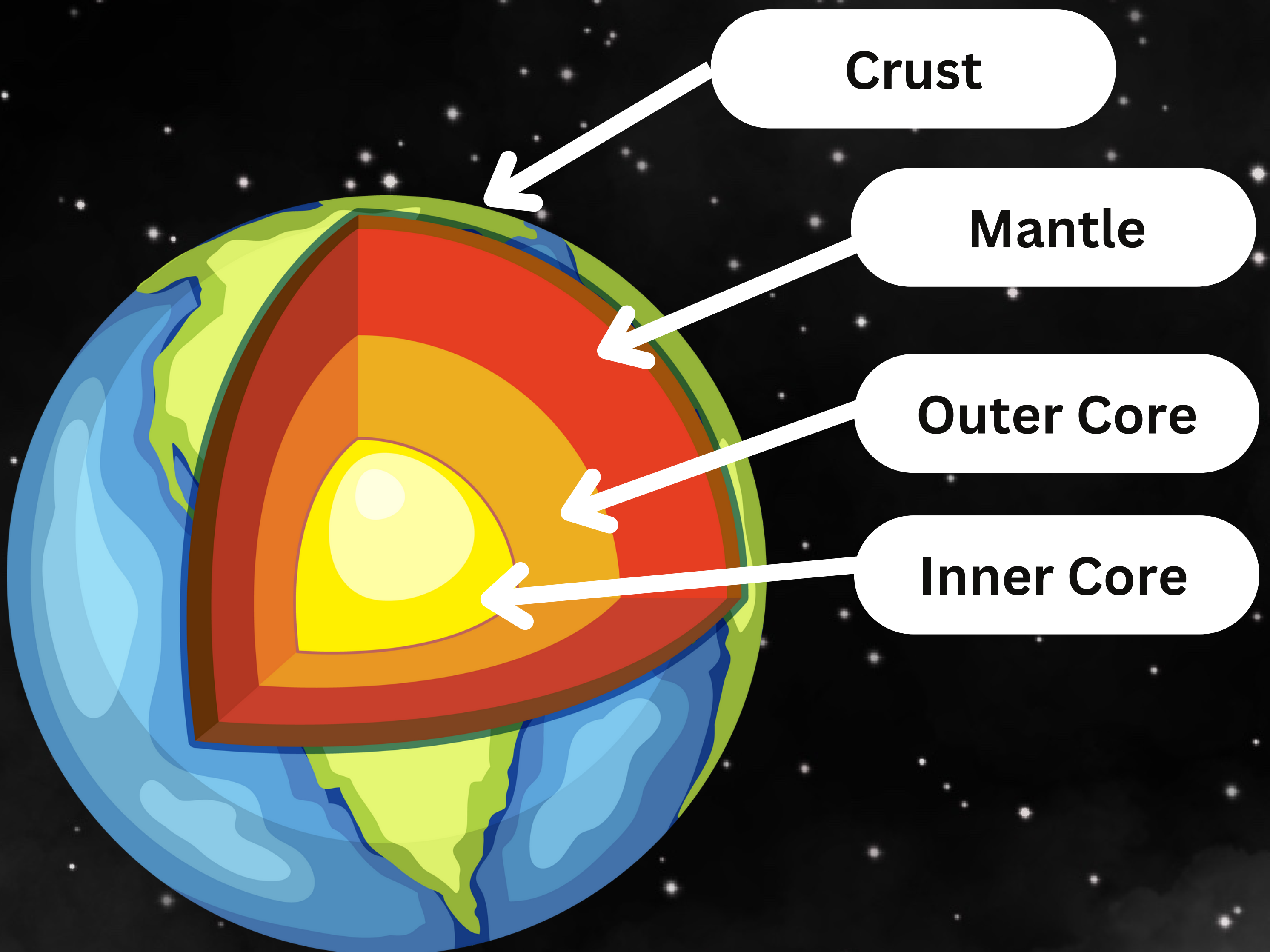


But have you ever wondered what I look like on the inside? Let's explore together!





I am made up of four main layers: the crust, the mantle, the outer core and the inner core. Let's explore each one more in depth.





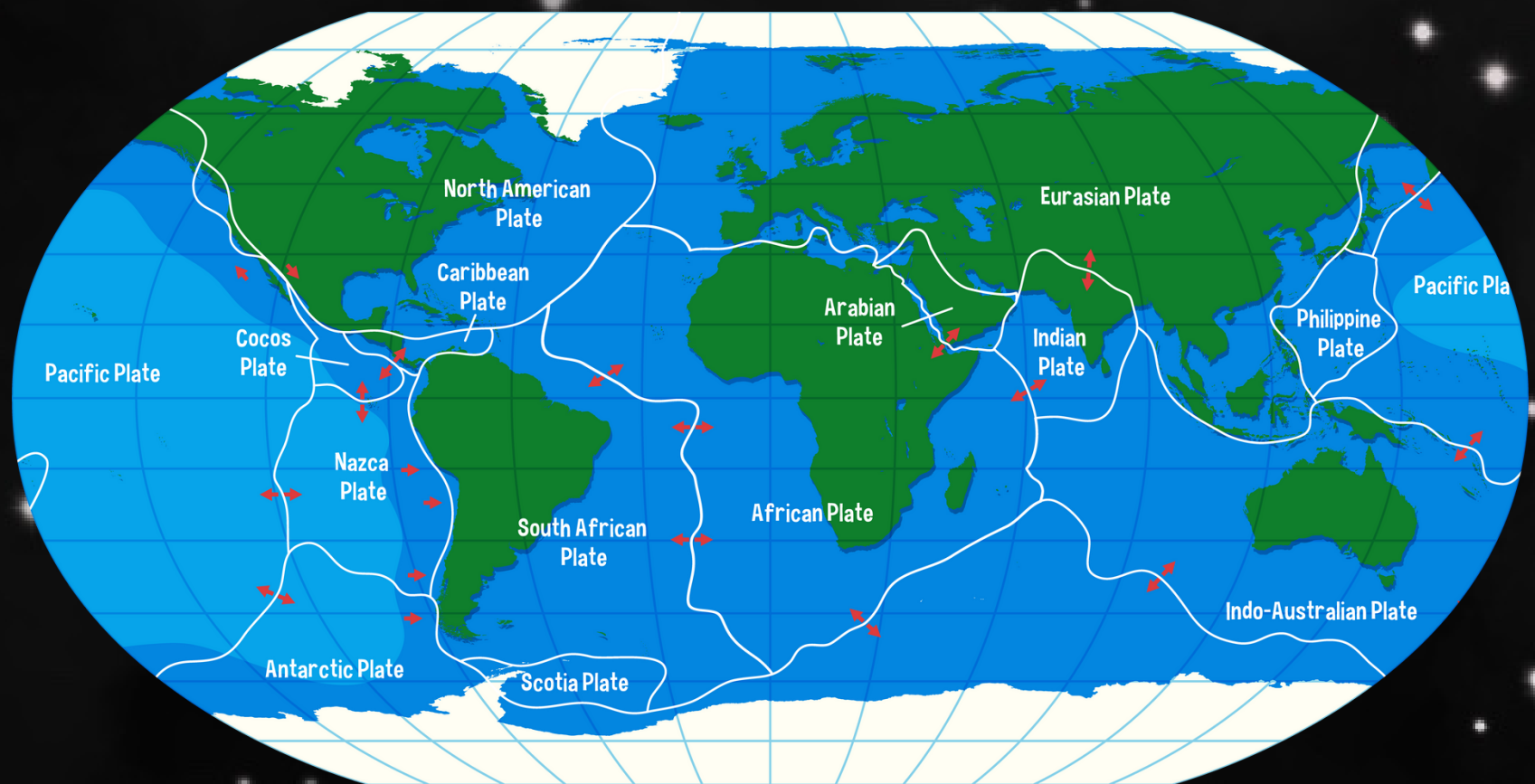
The **crust** includes the land that we stand on and all the oceans. It's about 40 km thick and is made up of rocks and minerals.

That might seem thick, but if we think of the Earth like an egg, the crust is like the thin eggshell.

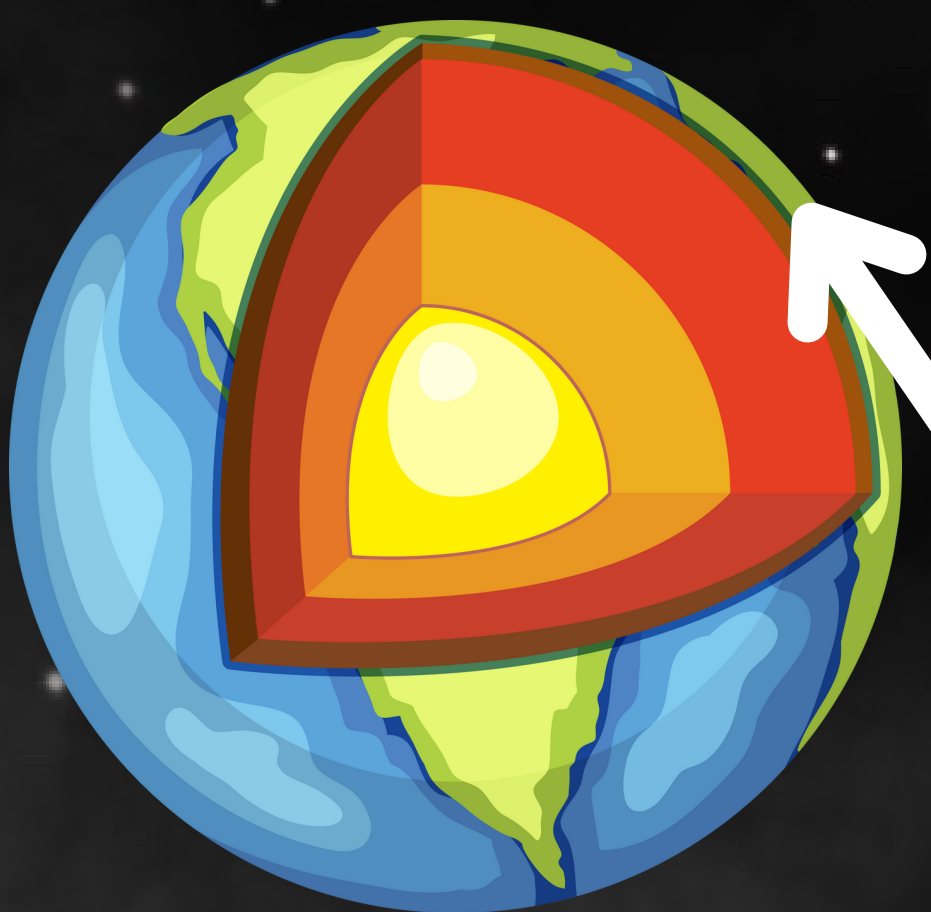


DID YOU KNOW?

The crust is not solid. It's actually broken up into 7 main pieces, called *tectonic plates*, that move very slowly.



How slowly?
About the same speed as your fingernails grow!



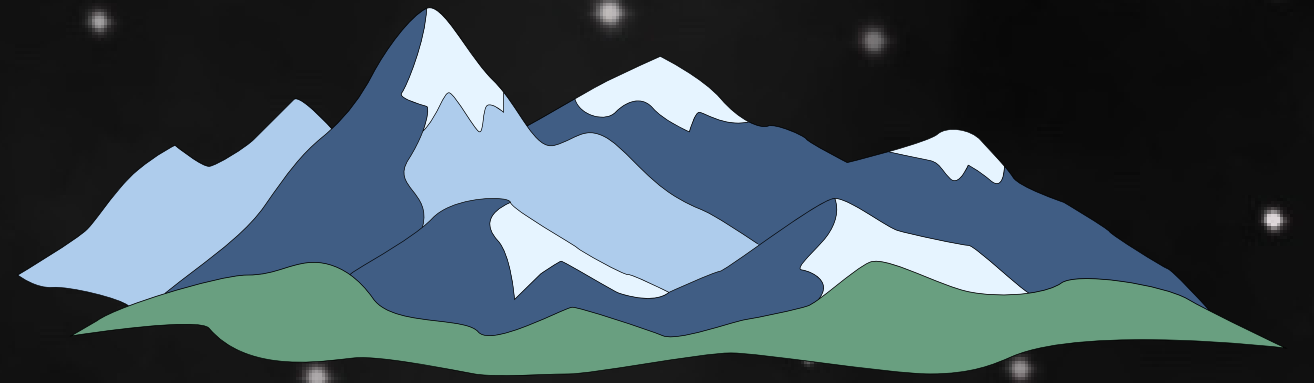
Crust



But wait! If the tectonic plates move so slowly, how do we know they are moving at all?



Because of mountains!



And volcanoes!

And earthquakes!

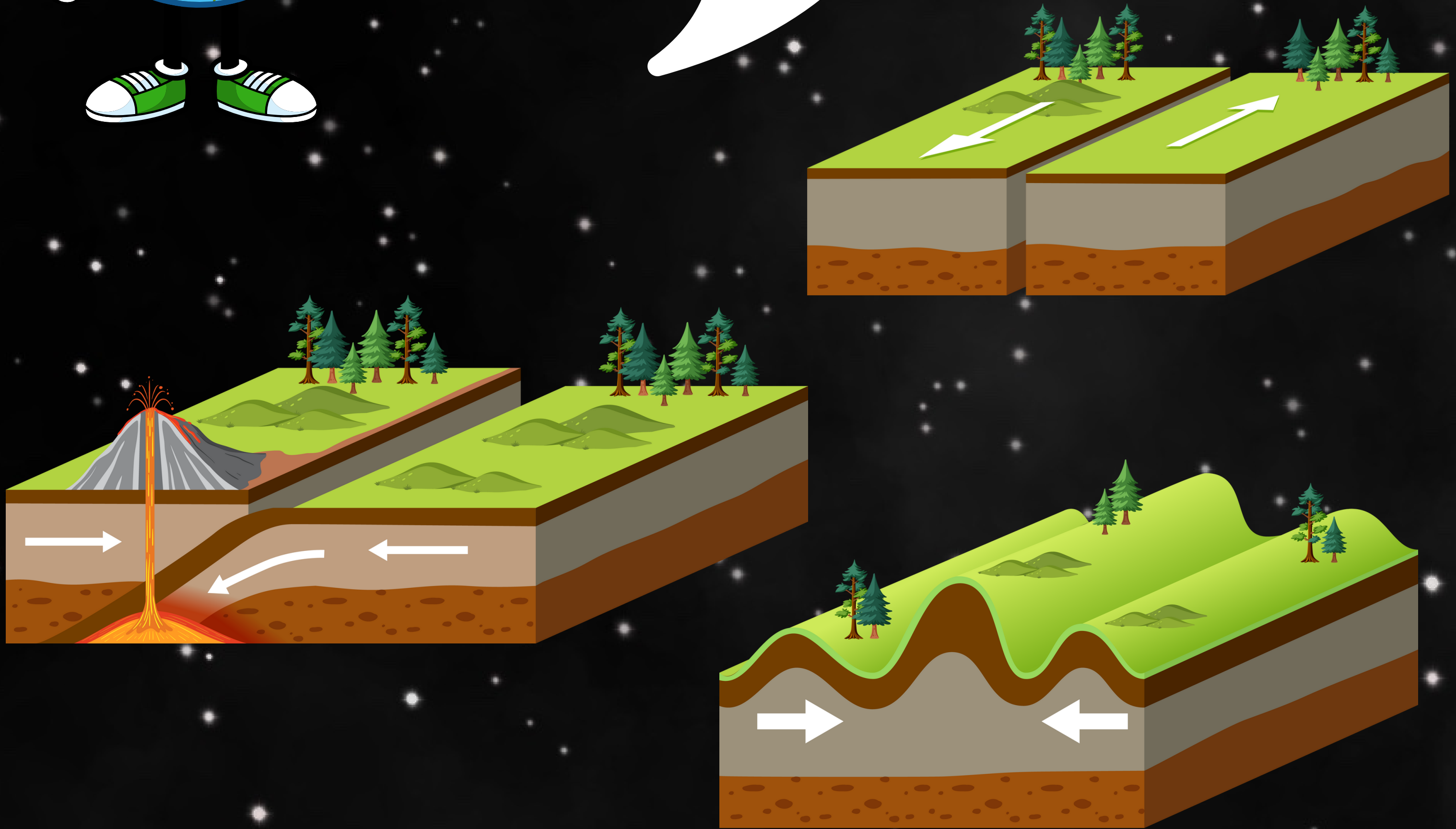


And rocks and fossils!

All of these give scientists clues about how the tectonic plates are moving.



A tectonic plate can scrape by, bump into or be pushed under another tectonic plate.

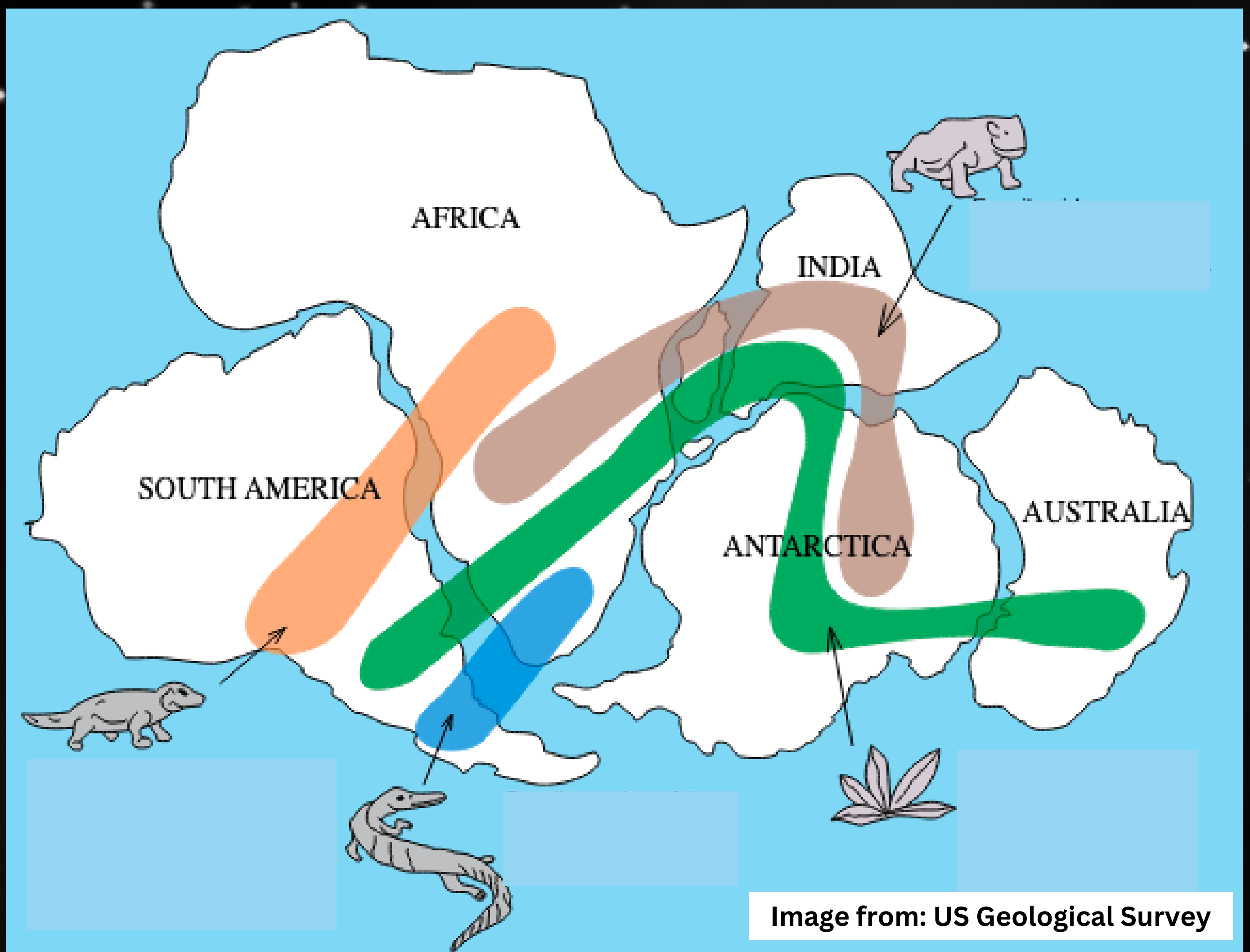


These movements can cause earthquakes, volcanoes and even the formation of mountains! Without the movement of tectonic plates, the surface of the Earth would be completely flat.





Scientists have also found fossils of the same plants and animals across different continents around the world.

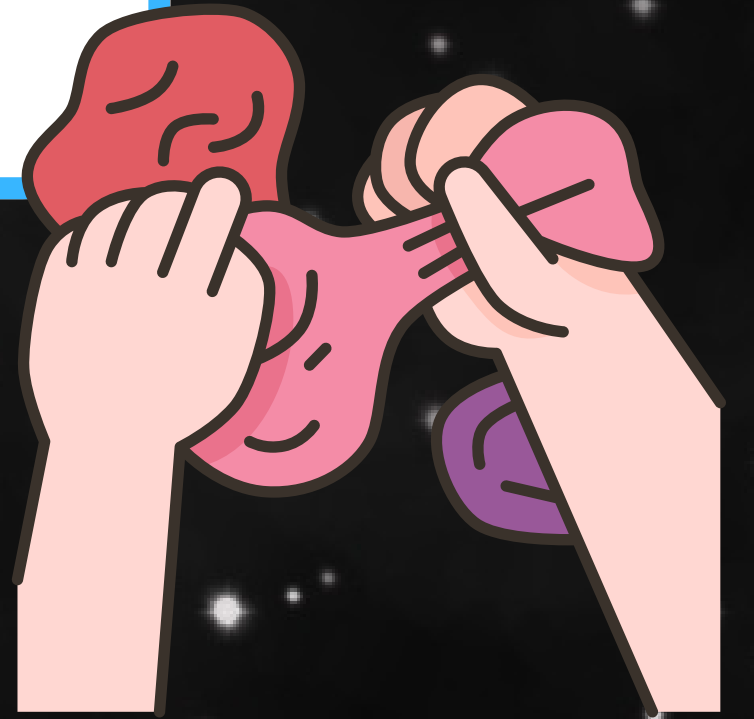


This tells them that the tectonic plates used to be in a different place than they are now, and that they must have been slowly moving over millions of years.



The **mantle** comes next. It is about 2900 km thick and is made of super hot rock that is under a lot of pressure.

You can think of the mantle like plasticine or thick playdough. It can squish and move the pieces of crust sitting on top.



Did You Know?

The mantle makes up most of the Earth - almost 84% of its volume!

The temperature of the mantle ranges from 1000° C to almost 4000° C!

HOT!

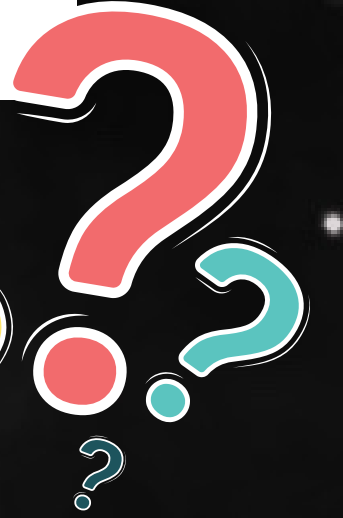


Mantle



Next is the outer core. It is 2200 km thick and it is made of liquid metal, mostly iron and nickel.

But wait - metal can be a liquid?



Yes! If it gets hot enough. The temperature in the outer core is between 4500° C and 5500° C!



Did You Know?

The outer core is very important. It spins when the Earth rotates and makes a *magnetic field* layer around the Earth. This layer protects the Earth from radiation, a type of dangerous energy, from the Sun.



Outer Core





Finally, right in the center, is the **inner core**. It is 1250 km thick and made of solid metal.

Even though it is almost 5200° C in the inner core, it is solid because of the huge pressure - almost 3.6 million times that at the surface!

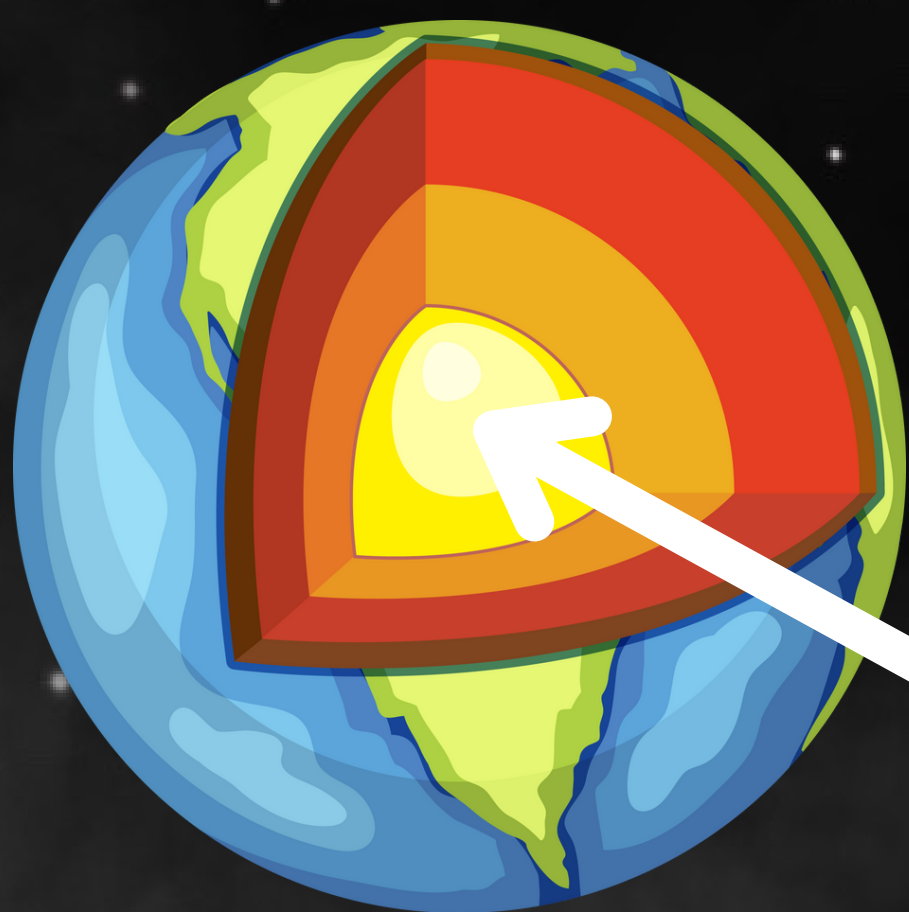


Did You Know?

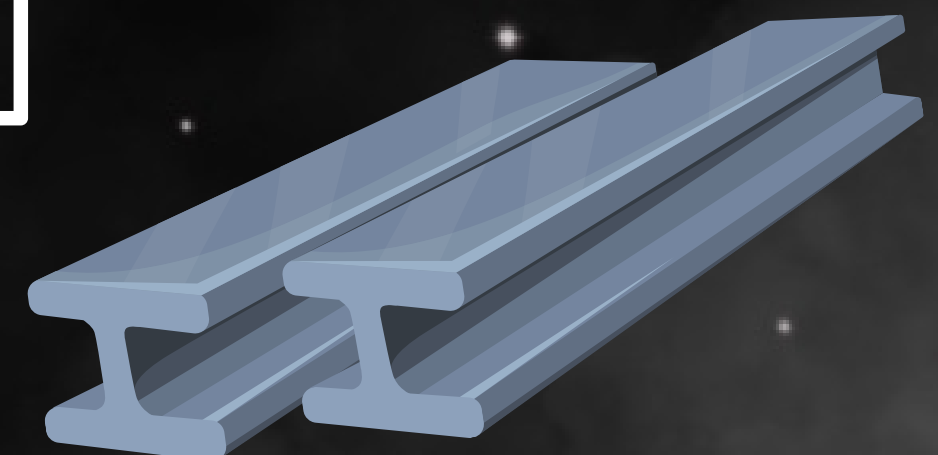
The Earth is cooling a tiny bit every year. This causes the inner core to grow by about a millimetre each year.



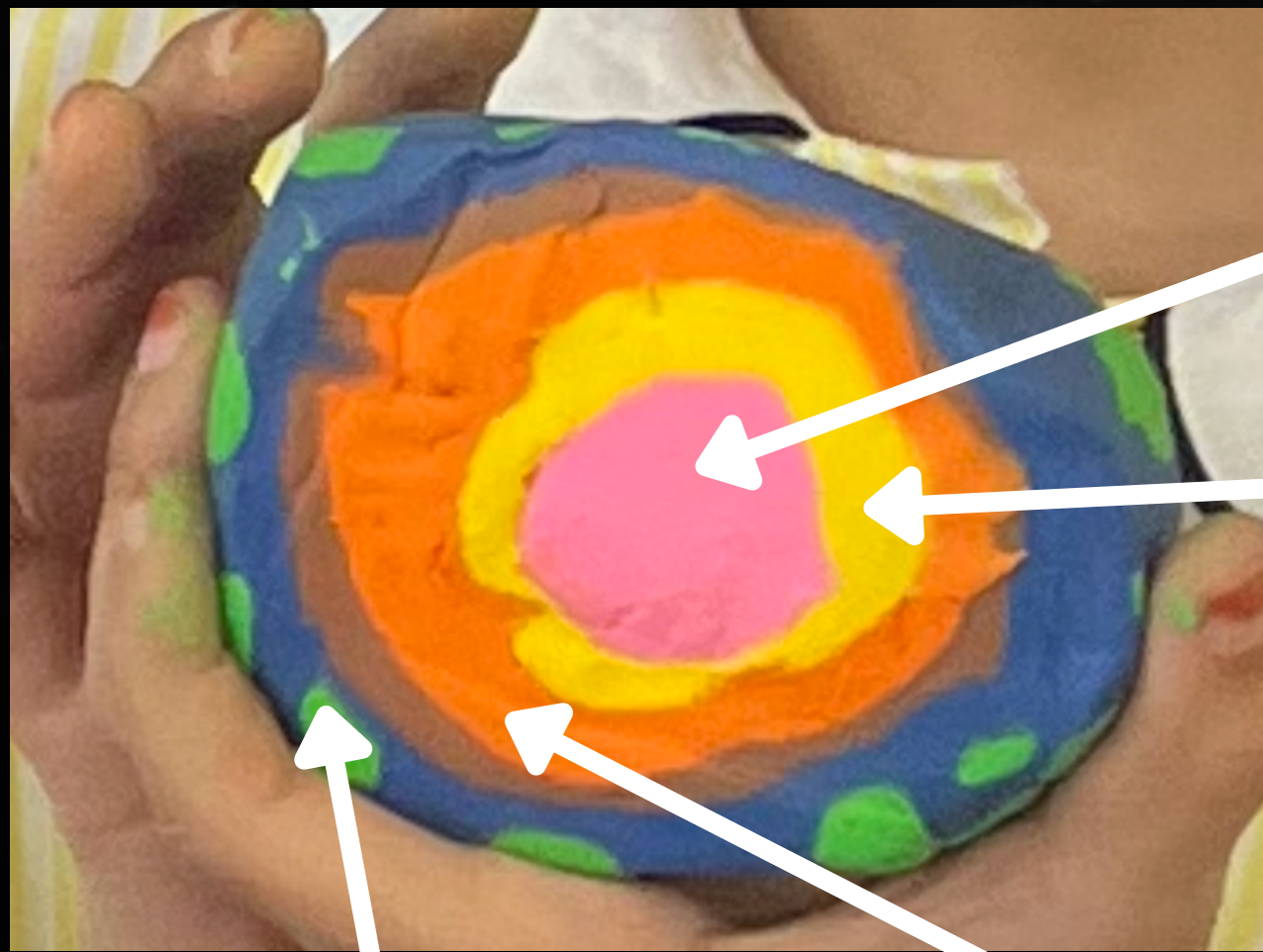
The inner core is made up of mostly iron, the same metal used to make steel.



Inner Core



Make your own model of the Earth out of clay!



Inner Core

Outer Core

Mantle

Crust

Materials

- Red/pink, yellow, orange, blue and green playdough
- Fishing line, dental floss or a very sharp knife (with adult supervision!)

Instructions

1. Start by making a small ball of red or pink playdough to represent the inner core.
2. Wrap this ball in yellow playdough to represent the outer core.
3. Next, wrap it in orange playdough to represent the mantle.
4. Finally, wrap it in a thin layer of blue playdough to represent the oceans on the crust.
5. Use the green playdough to add land on top of the oceans.
6. Finally, use fishing line, dental floss or a very sharp knife to slowly cut through the middle of your "Earth".