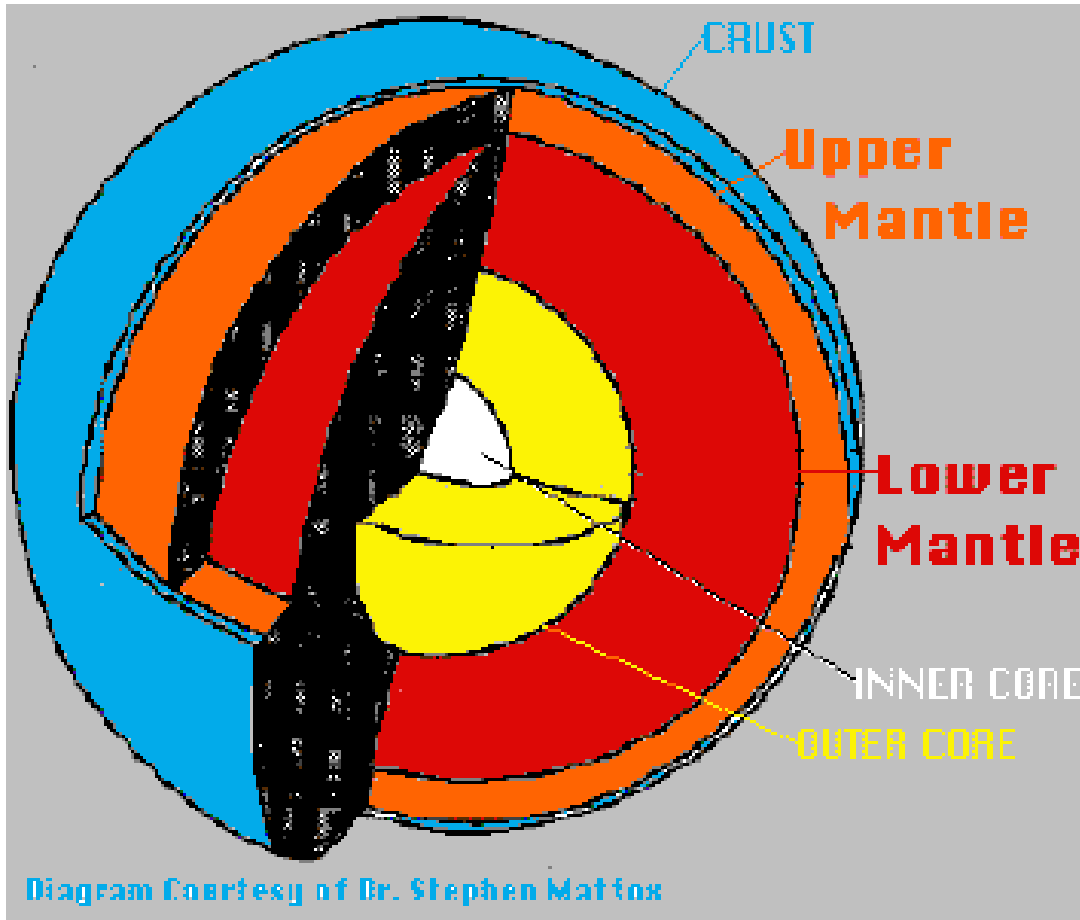


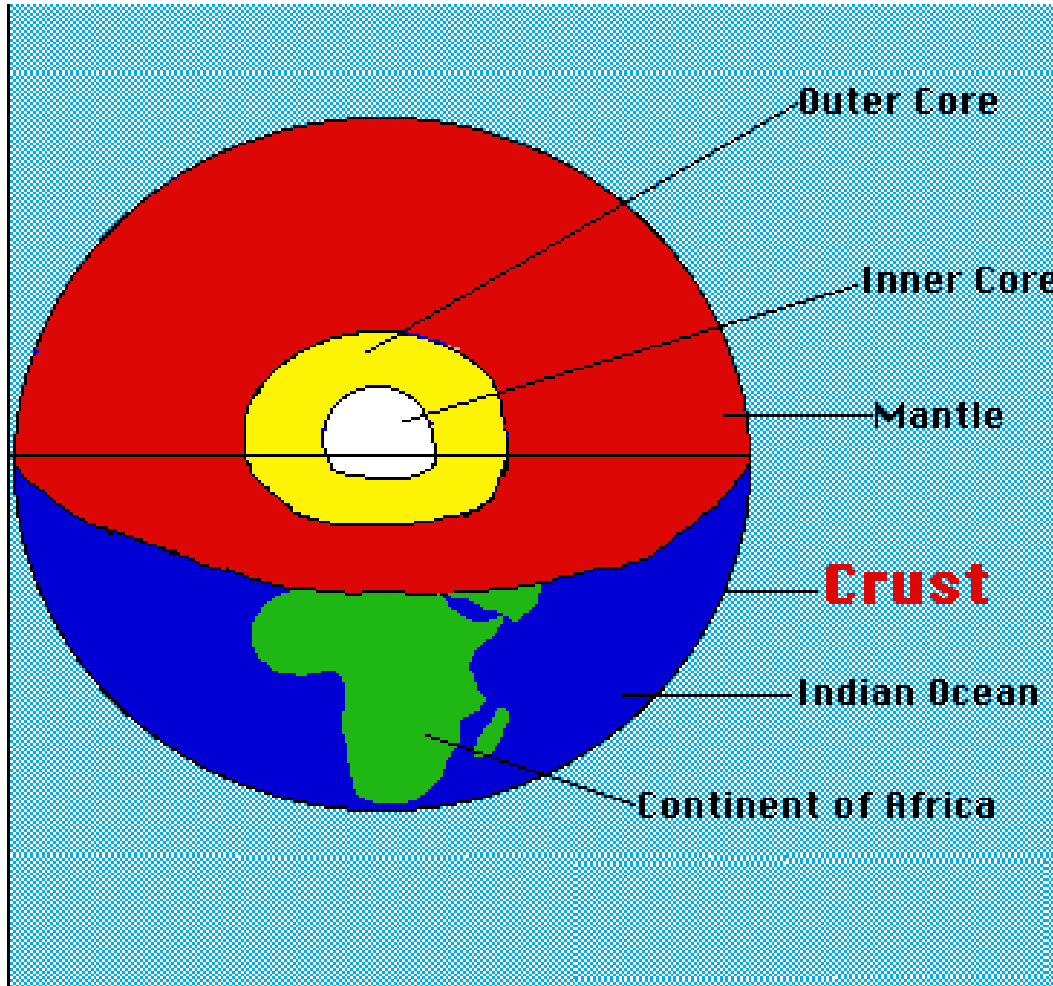
# Earth Structure Notes

# The Four Layers



The Earth is composed of layers. The **crust** is the layer that you live on, and it is the most widely studied and understood. The **mantle** is much hotter and has the ability to flow. The **outer core and inner core** are even hotter with pressures so great you would be squeezed into a ball smaller than a marble if you were able to go to the center of the Earth!

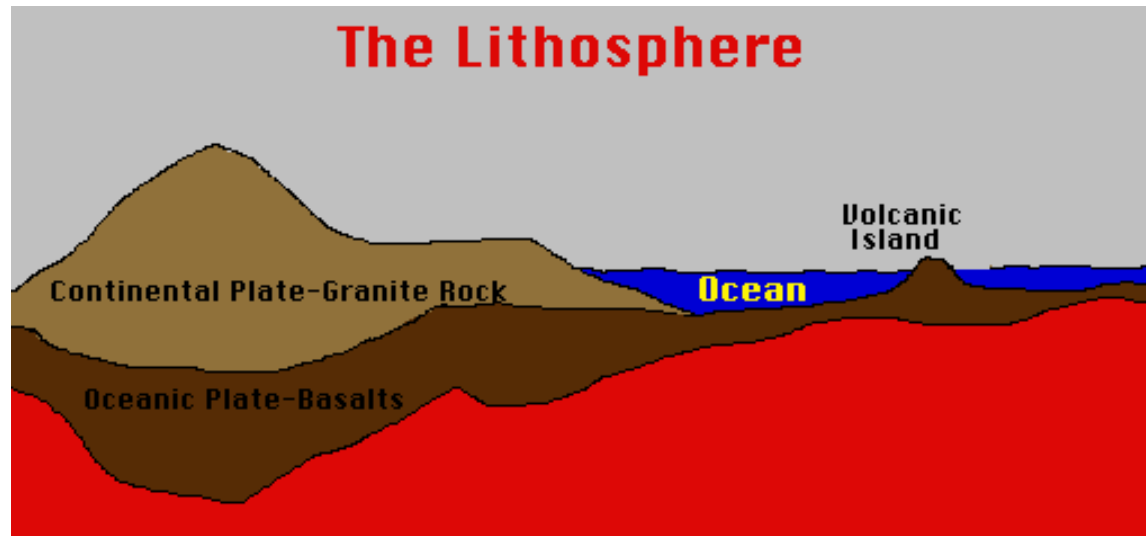
# The Crust



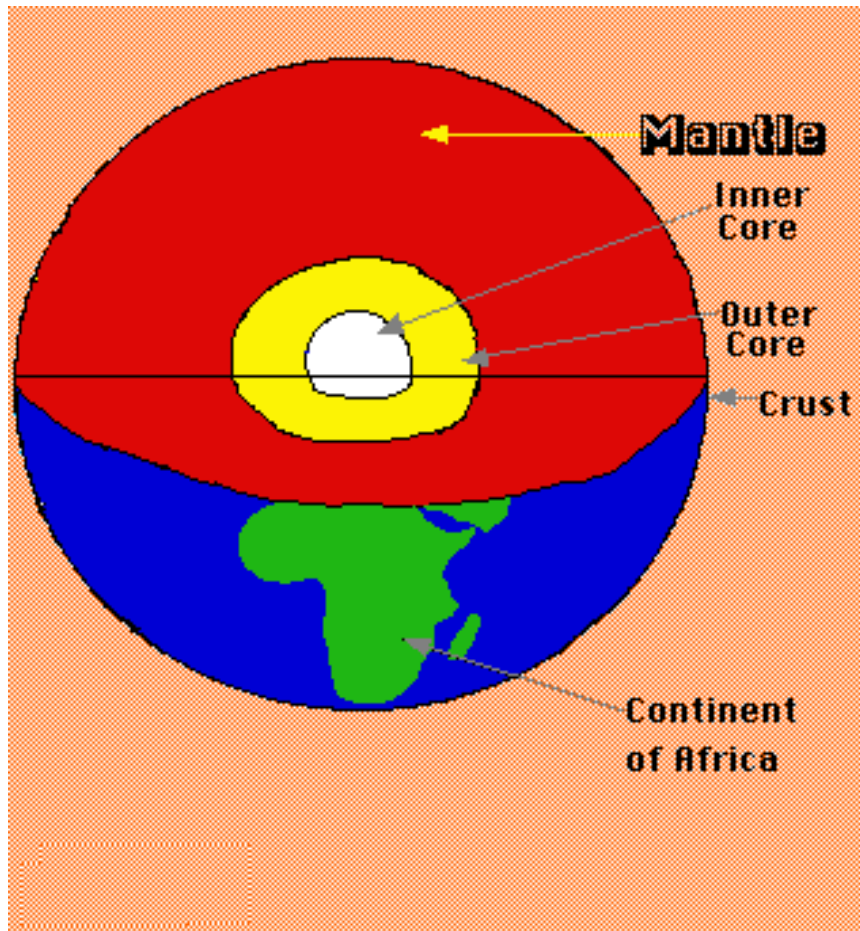
The Earth's **Crust** is like the skin of an apple. It is very thin in comparison to the other three layers. The crust is only about 3-5 miles (8 kilometers) thick under the oceans (**oceanic crust**) and about 25 miles (32 kilometers) thick under the continents (**continental crust**). The crust is broken into pieces called tectonic plates. It is made mostly of oxygen and silicon.

# The Lithosphere

The **crust and the upper layer of the mantle** together make up a zone of rigid, brittle rock called the **Lithosphere**. It's solid and made mostly of Oxygen and silicon



# The Mantle



Made mostly of iron and magnesium.

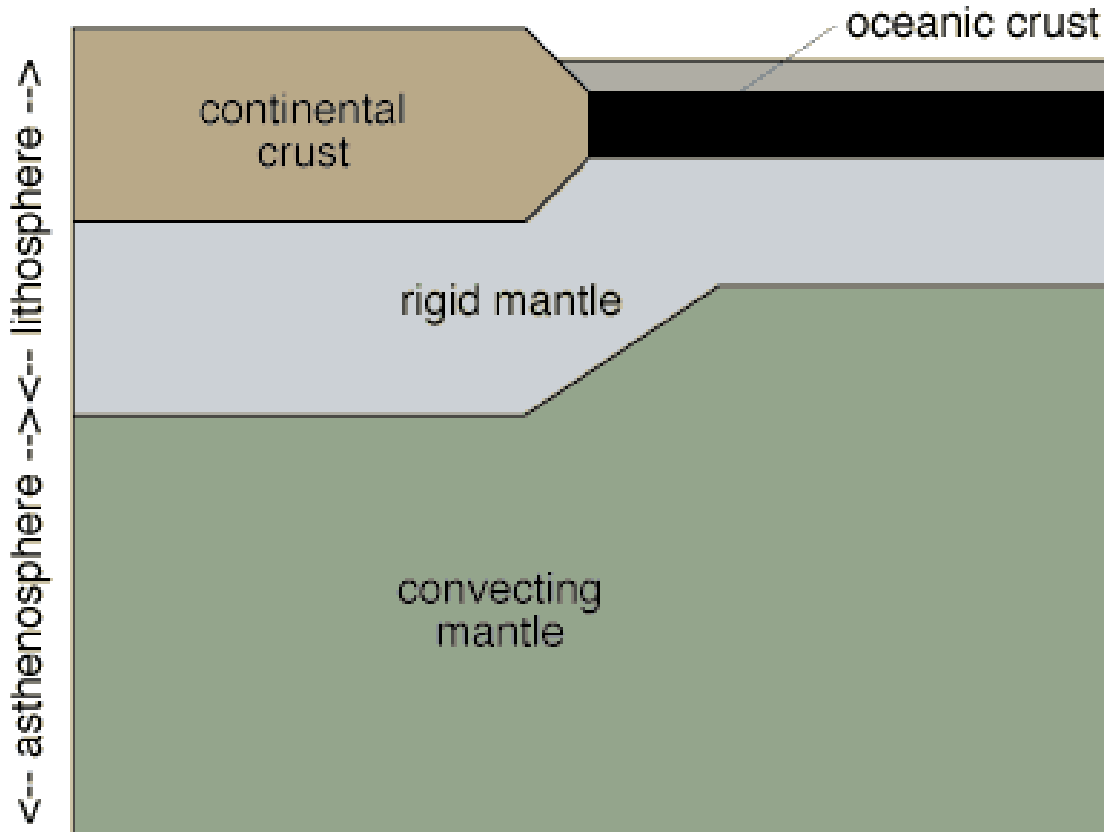
2,900 km thick, the thickest layer.

Solid near the outer core.

Upper portion is semisolid, magma.

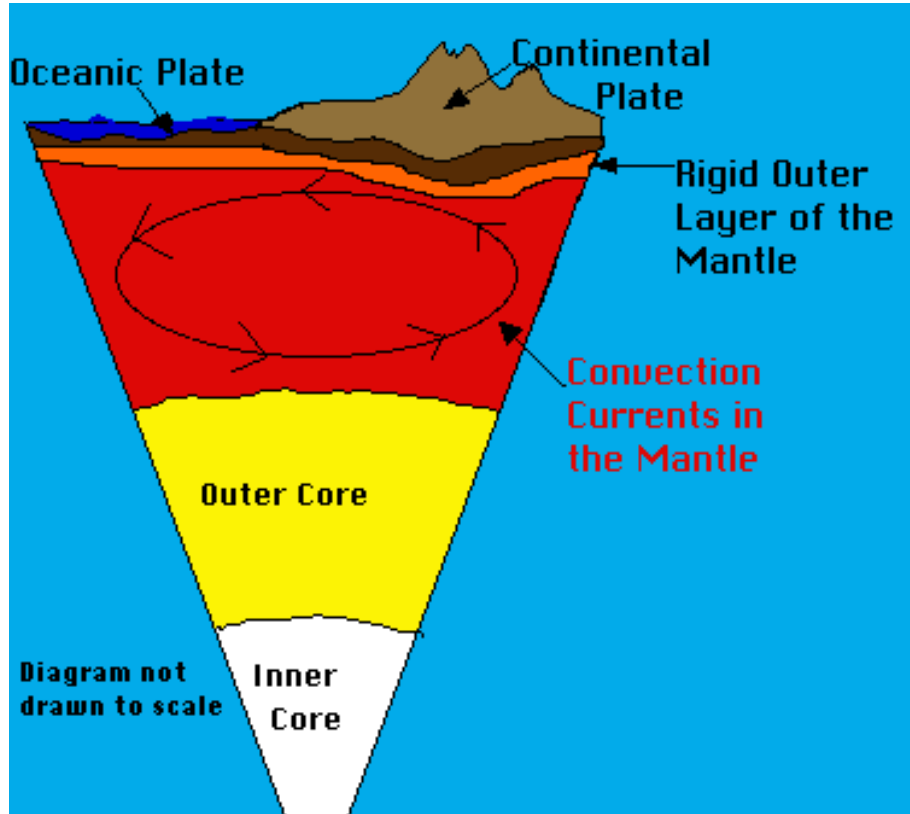
Semisolid property is called plasticity – flows like a liquid.

# The Asthenosphere



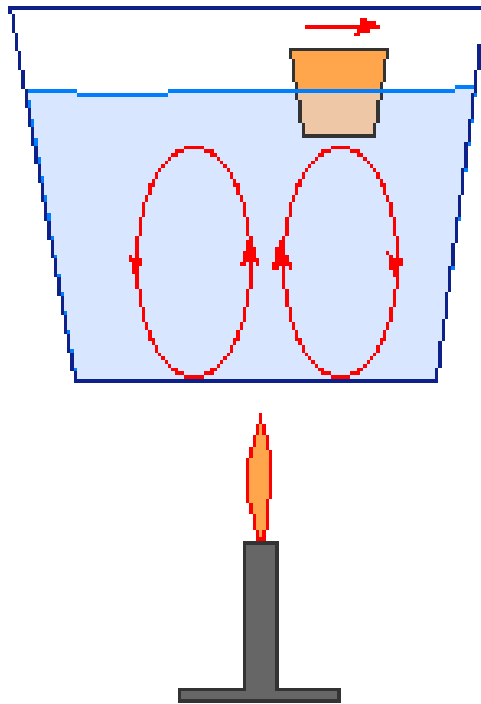
The upper part of the mantle.

# Convection Currents



The middle mantle "flows" because of convection currents. **Convection currents** are caused by the very hot material at the deepest part of the mantle rising, then cooling and sinking again --repeating this cycle over and over.

# Convection Currents

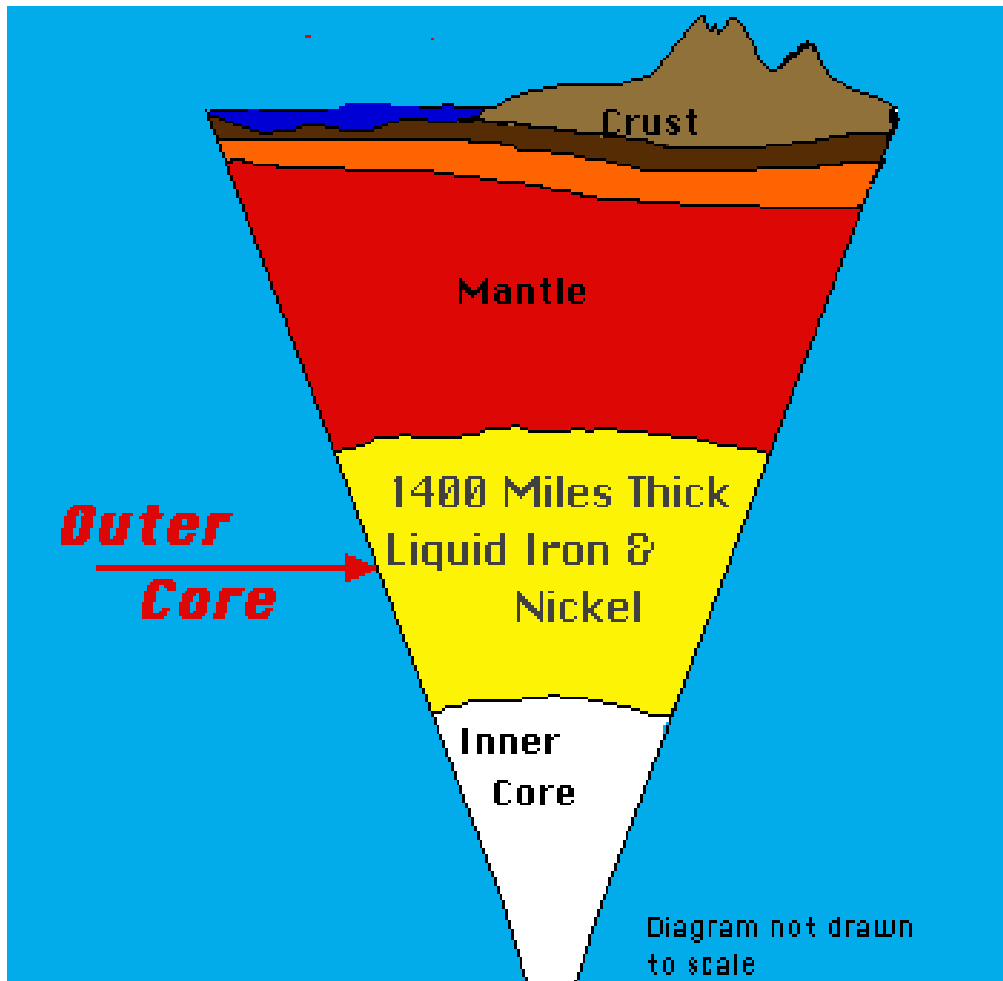


The next time you heat anything like soup or water in a pan you can watch the **convection currents** move in the liquid. When the convection currents flow in the **asthenosphere** they also move the crust. The crust gets a free ride with these currents, like the **cork** in this illustration.

**Safety Caution:** Don't get your face too close to the boiling water!

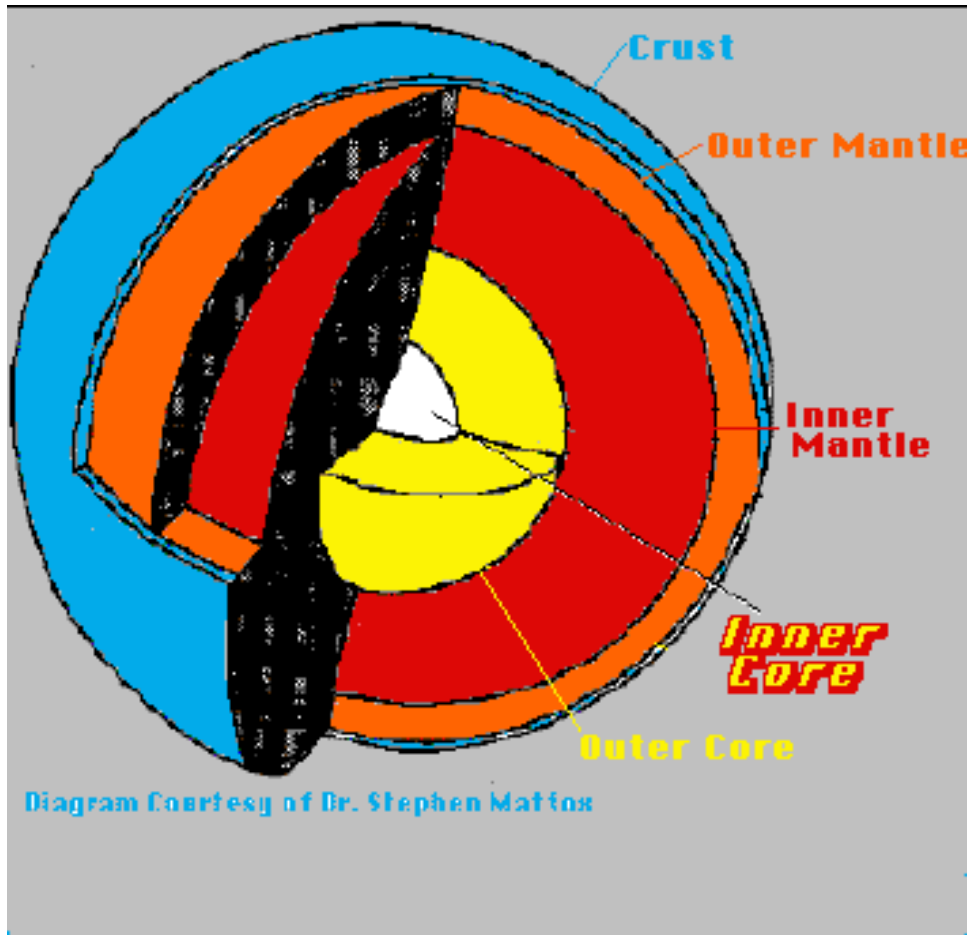


# The Outer Core



The core of the Earth is like a ball of very hot metals, 4,000-5,000 C. The **outer core** is so hot that the metals in it are all in the liquid state. The outer core is composed of the melted metals of **nickel and iron.**

# The Inner Core



The **inner core** is the deepest layer because it contains the densest material, iron. It's very hot, 6000C and 1,250 km thick. It has extreme pressure resulting in a solid state of matter.