

Layers of the Earth

Two ways to label layers

Geologists can label the layers of the Earth in two ways each based on something different:

- Composition layers
- Physical layers

Composition Layers

- Crust
- Mantle
- Core

Crust

- Ranges from 5 to 100 km in thickness
- Thinnest layer of the Earth
- Split into two types: Continental and Oceanic
- The crust is relatively light and brittle
- Most earthquakes occur within the crust

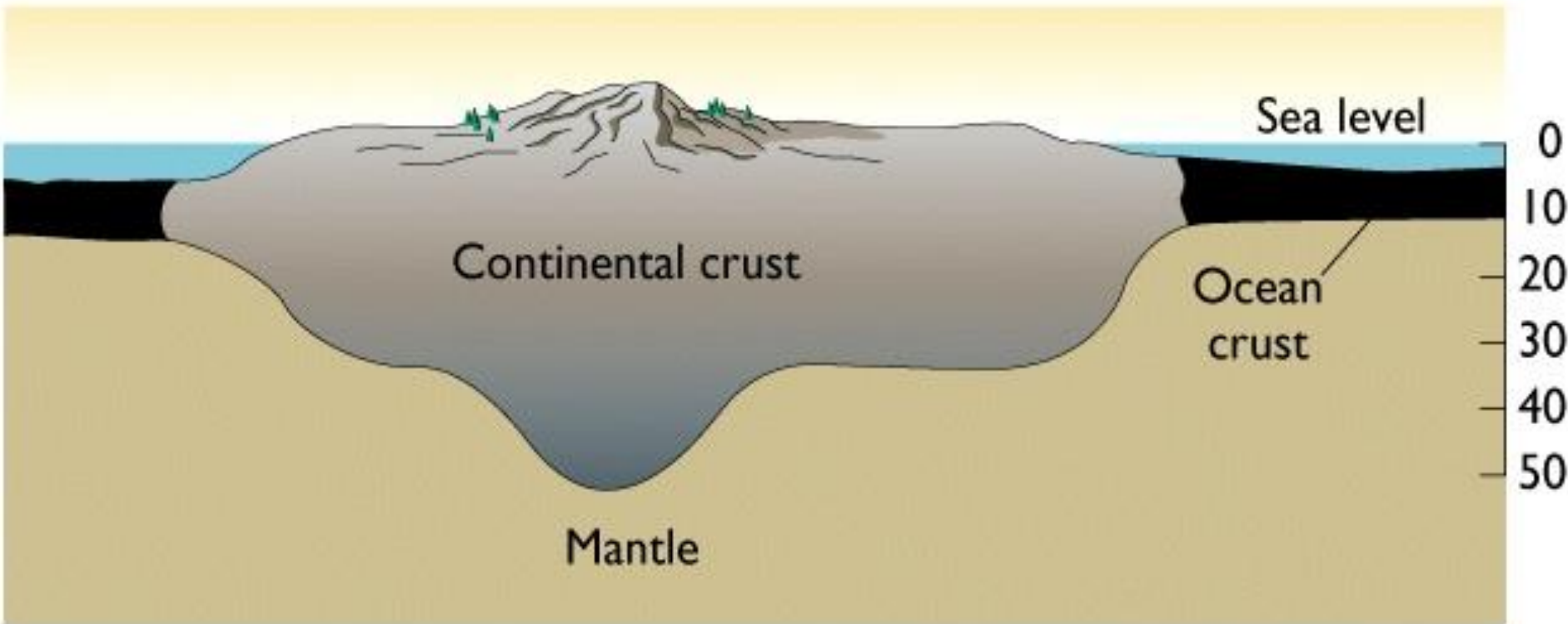
The Two Types of Crust

OCEANIC CRUST

- Only about 10 km thick.
- Composed of basaltic rocks, which are more dense than granitic rocks of the continental crust.
- So, oceanic crust is below sea level.

CONTINENTAL CRUST

- Between 20 and 60 km thick.
- Composed of granitic rocks, which are less dense than basaltic rocks of the oceanic crust.
- So, most of continental crust is above sea level



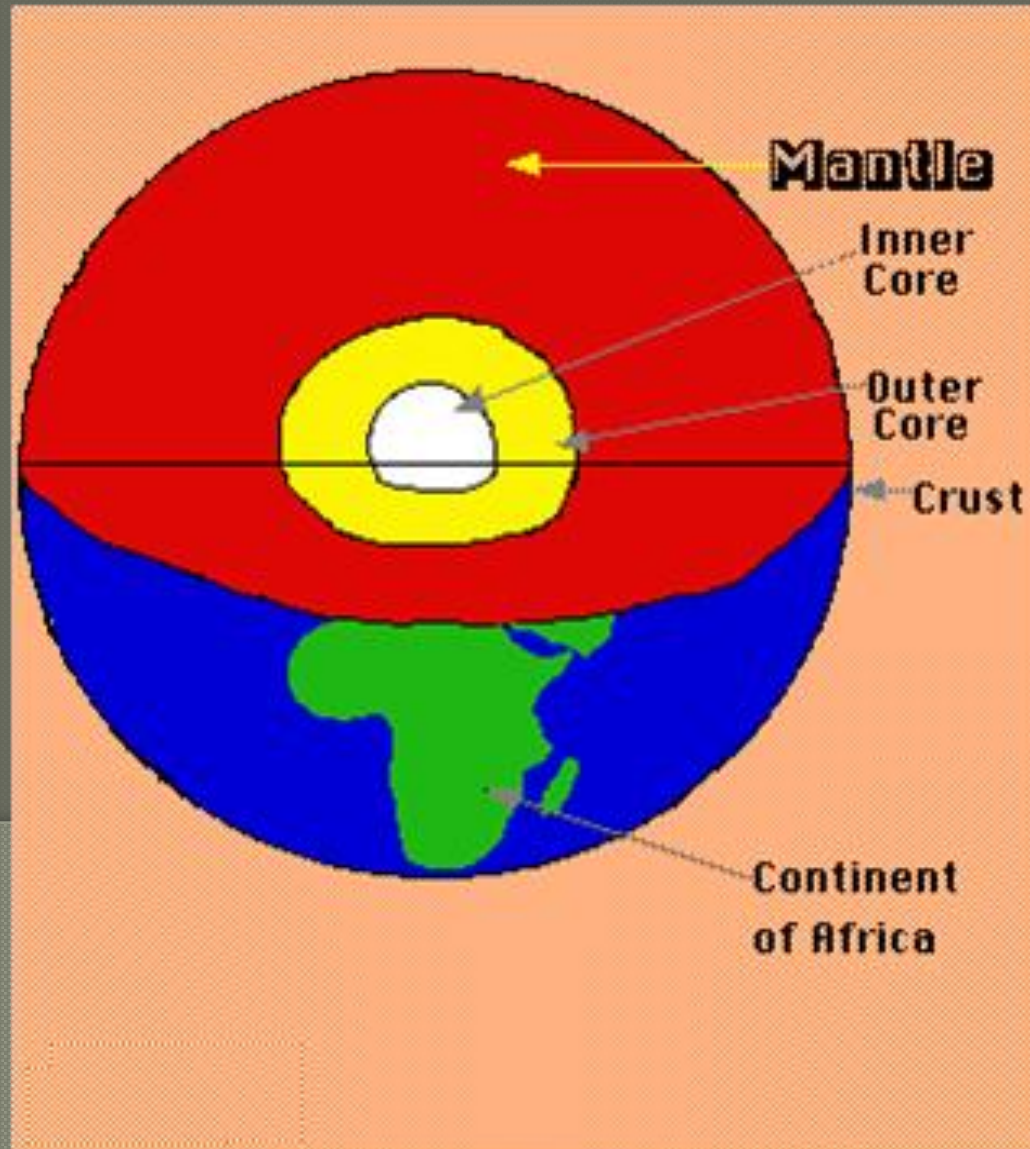
Horizontal distance not to scale

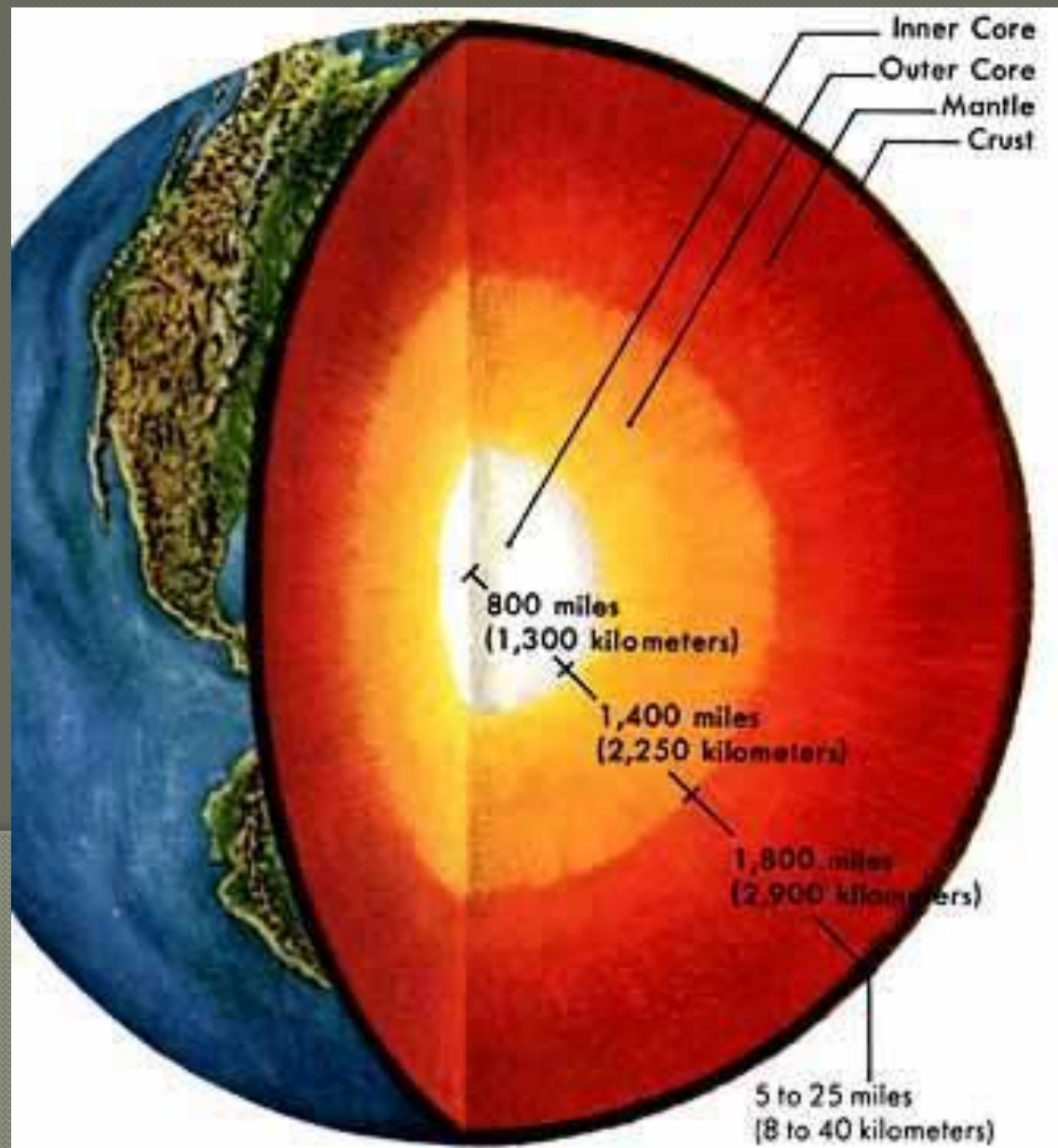
Mantle

- Roughly 2900 km thick
- 64% of mass of Earth
- The mantle is composed of hot iron-rich silicate rocks.
- Hot material in the mantle rises, cools and then sinks.
- Convection

Core

- Made of HOT iron and nickel
- Split into two parts: Outer Core and Inner Core





Physical Layers

- ◉ Lithosphere
- ◉ Asthenosphere
- ◉ Mesosphere
- ◉ Outer Core
- ◉ Inner Core

Lithosphere

- Crust and upper layer of Mantle
- Contains the tectonic plates
- Cold and easily broken

Asthenosphere

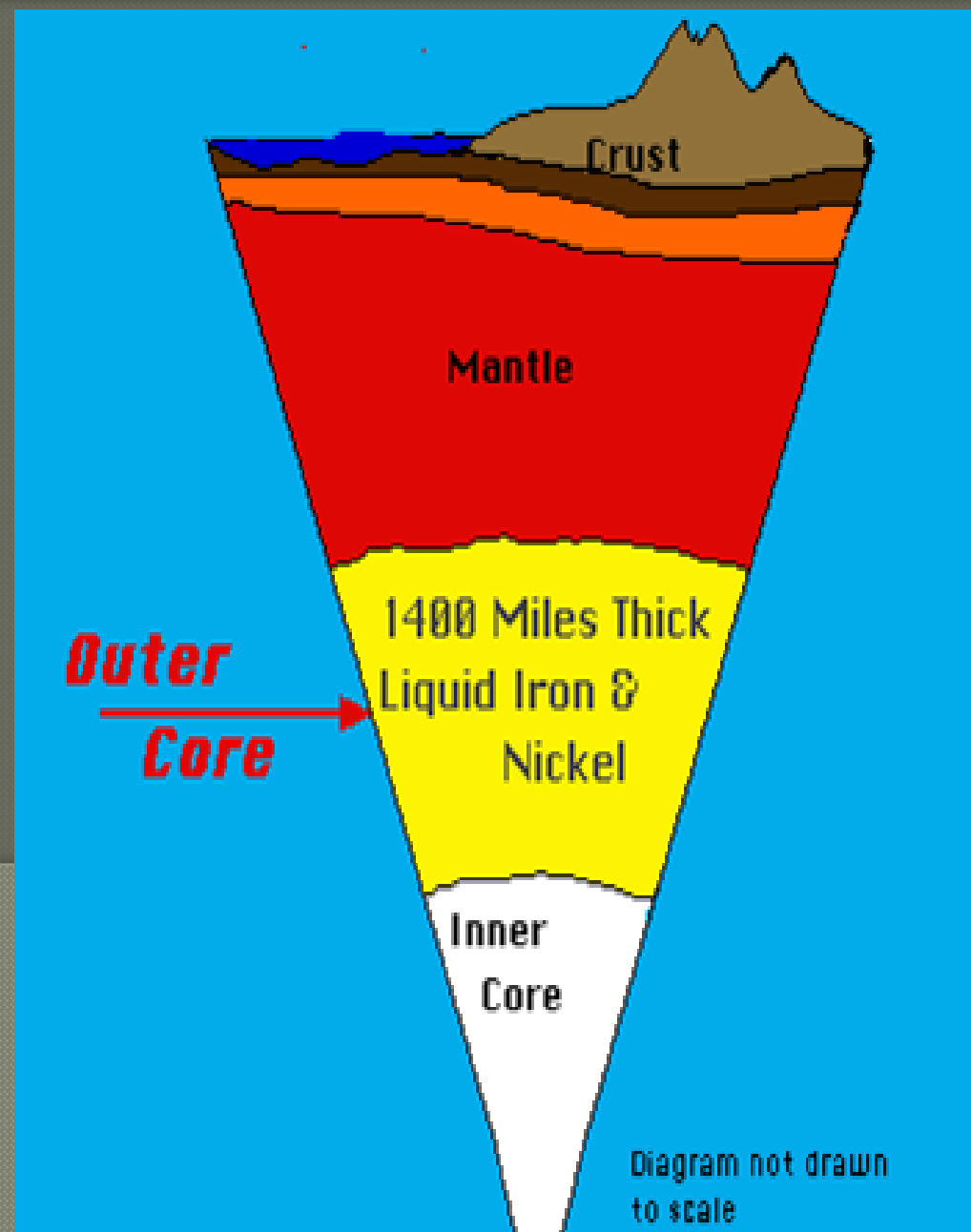
- Middle layer of Mantle
- Flows like warm tar or honey

Mesosphere

- Rest of the Mantle
- Much stronger and hotter than the Asthenosphere

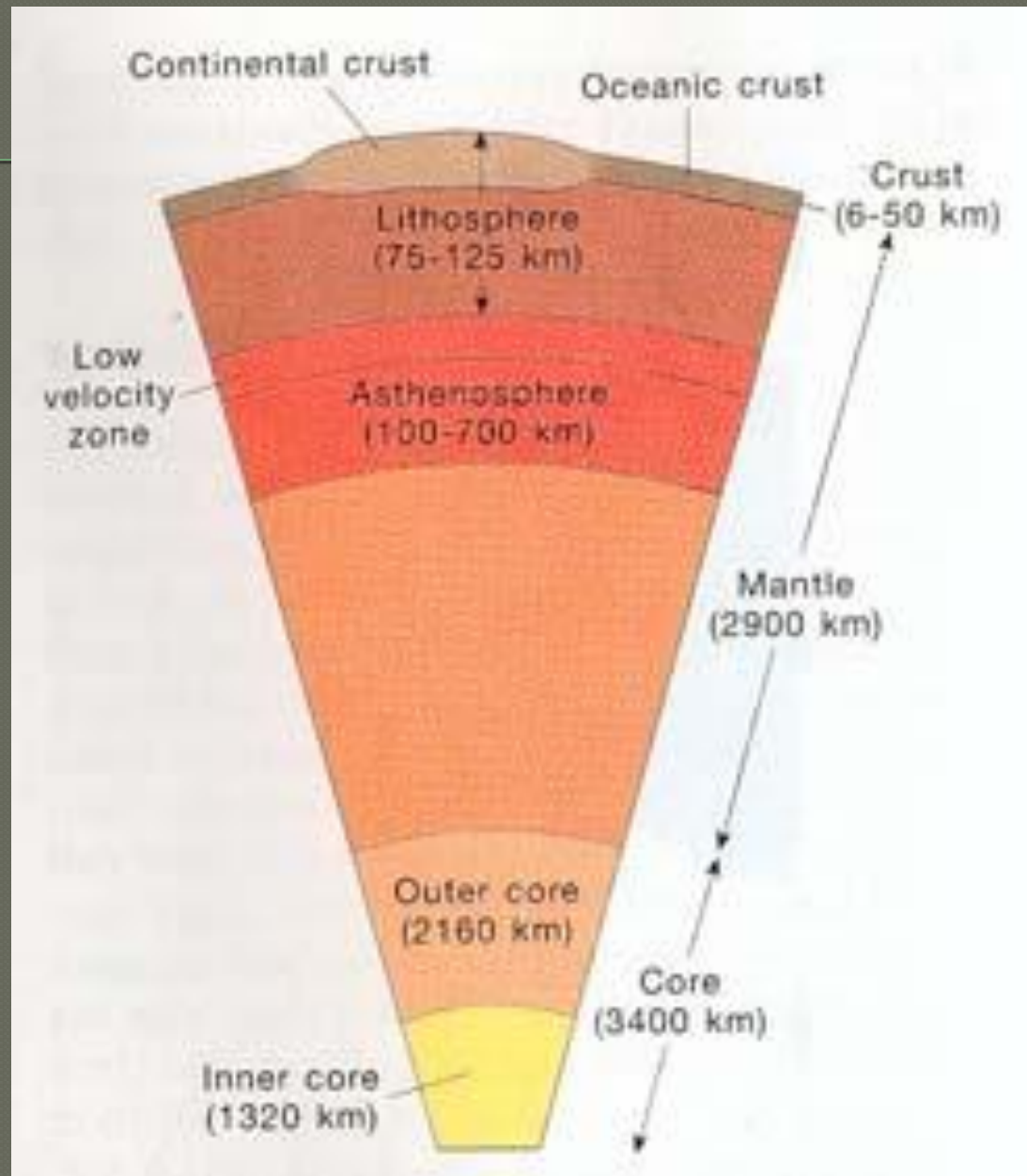
Outer Core

- Less pressure than the inner core so iron and nickel are in liquid form
- Molten outer core flows which makes an electrical current.
- This electrical current powers the earth's magnetic field.



Inner Core

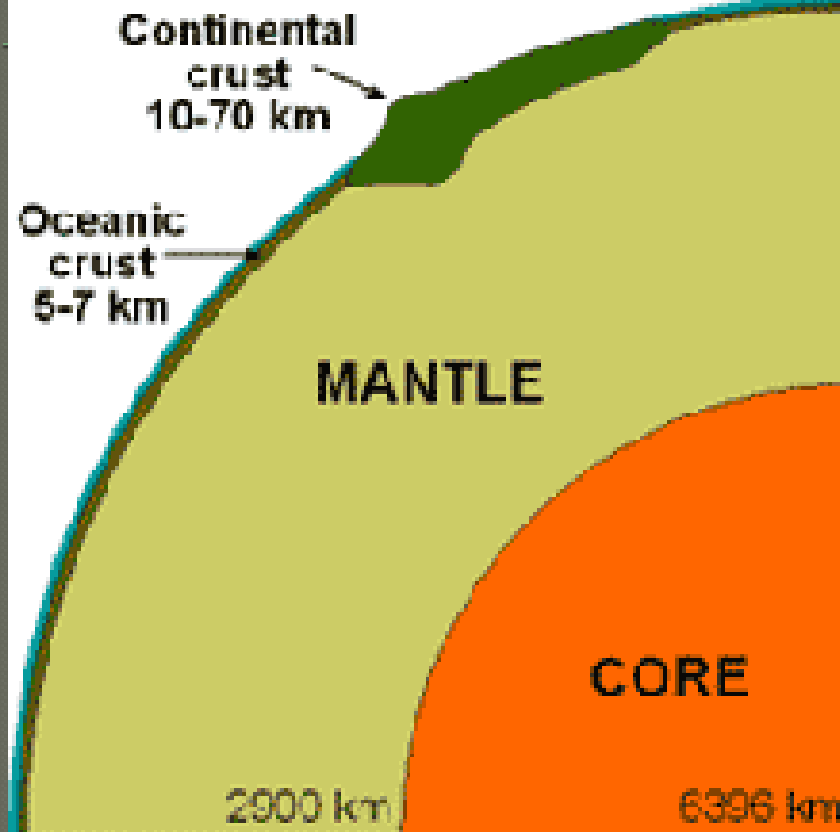
- High pressure so iron and nickel are in solid form
- Hotter than the surface of the Sun
- Temperatures are really hot but pressure is too great to let the iron and nickel melt so they are solid



Comparison

Crust	Lithosphere
Mantle	Asthenosphere
	Mesosphere
Core	Outer Core
	Inner Core

Compositional Layers



Mechanical Layers

