Earth Science 11
Unit 2 – The Geology of Earth
Day 2 – Layers of the Earth

Name: Schaub

Date: _____

Block: _____

The Continental Drift Hypothesis: Wegener said that the continents had been part of a single land mass called Pangaea surrounded by a single sea called Panthalassa
According to his hypothesis, about 200 million years ago, Pangaea started to break up into smaller continenents and drift to their current locations

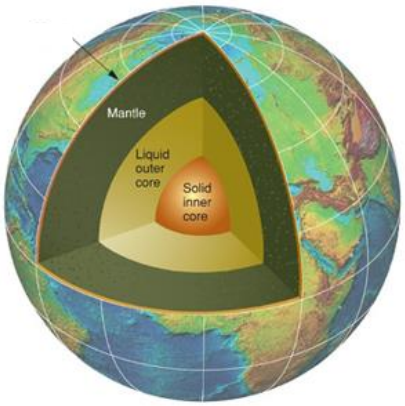
Pangea: the name for the continents as a single land mass

Snowball Earth: hypothesis proposes that, during one or more of Earth's icehouse climates, the planet's surface became entirely or nearly entirely frozen

Crust: Thin rocky outer layer of Earth

Oceanic Crust:
About 7km thick.
Rocks are much younger than the continental crust.

Continental Crust:
About 8-75 km thick



Mantle:
Solid rocky shell that extends to a depth of 2890km

Partially melted state

Over 82% of Earths Volume

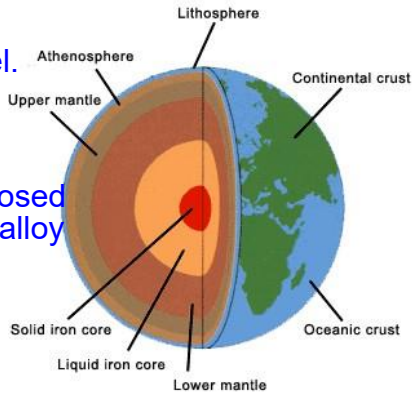
Oceanic Crust: The crust found under oceans.

Continental Crust: The crust found on continents (on land)

Outer Core:
Core in general: Sphere in the center of Earth consists of iron and nickel.
Density is about 13 g/cm3.

Outer cor: Liquid layer is 2260 km thick.
Generates the Earth's magnetic field.

Core is composed of iron-nickel alloy



Inner Core: Solid layer that is 1220 km thick
Despite extremely high temperatures it is under immense pressure and is condensed into a solid

Lithosphere: Rigid outer most layer of Earth consists of the crust and upper mantle

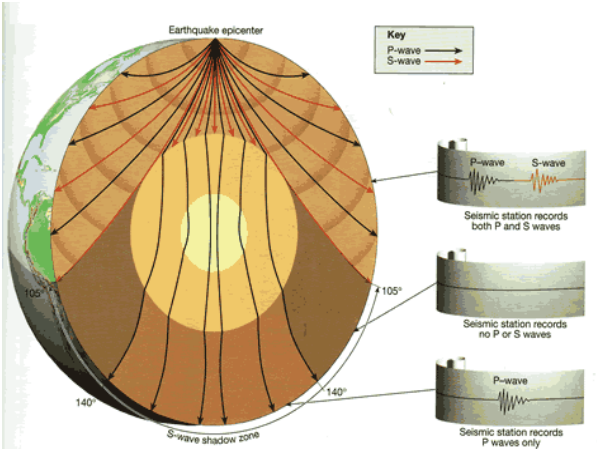
Asthenosphere: Highly viscous layer of the upper mantle

(Layer is weak because the temperature and pressure are just above melting point)

Discovering Earths Layers: Seismic waves from earthquakes travel through the earth

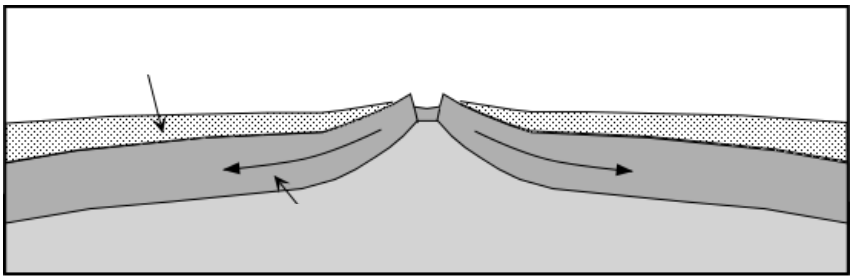
Velocity of seismic waves increases just below the crust and above the mantle known as the Mohorovicic discontinuity. Shortened to Moho

Example: Antarctica has records from earthquakes that occurred in California and Italy



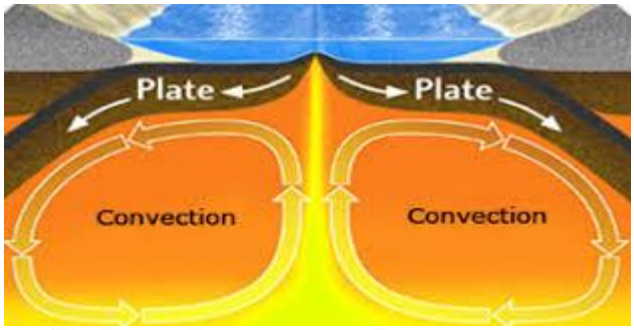
Sea floor spreading:

In 1947, a group of scientists set out to map the Mid-Atlantic Ridge, an undersea mountain range The scientists found that the ocean floor was very young compared with the age of continental rocks. None of the rocks were more than 150 million years old, yet the oldest continental rocks were about 4 billion years old.



Mantle Convection: Mantle convection describes the movement of the mantle as it transfers heat from the white-hot core to the brittle lithosphere. The mantle is heated from below, cooled from above, and its overall temperature decreases over long periods of time. All these elements contribute to mantle convection

Slab Pull: Slab pull is a force that results from denser oceanic plates sinking beneath less dense continental plates along convergent boundaries and subduction zones. The gravitation force of the sinking oceanic plate drags the rest of the oceanic plate along with the portion experiencing slab pull.



Ridge Push:

Ridge push or sliding plate force is a proposed driving force for plate motion in plate tectonics that occurs at mid-ocean ridges as the result of the rigid lithosphere sliding down the hot, raised asthenosphere below mid-ocean ridges.