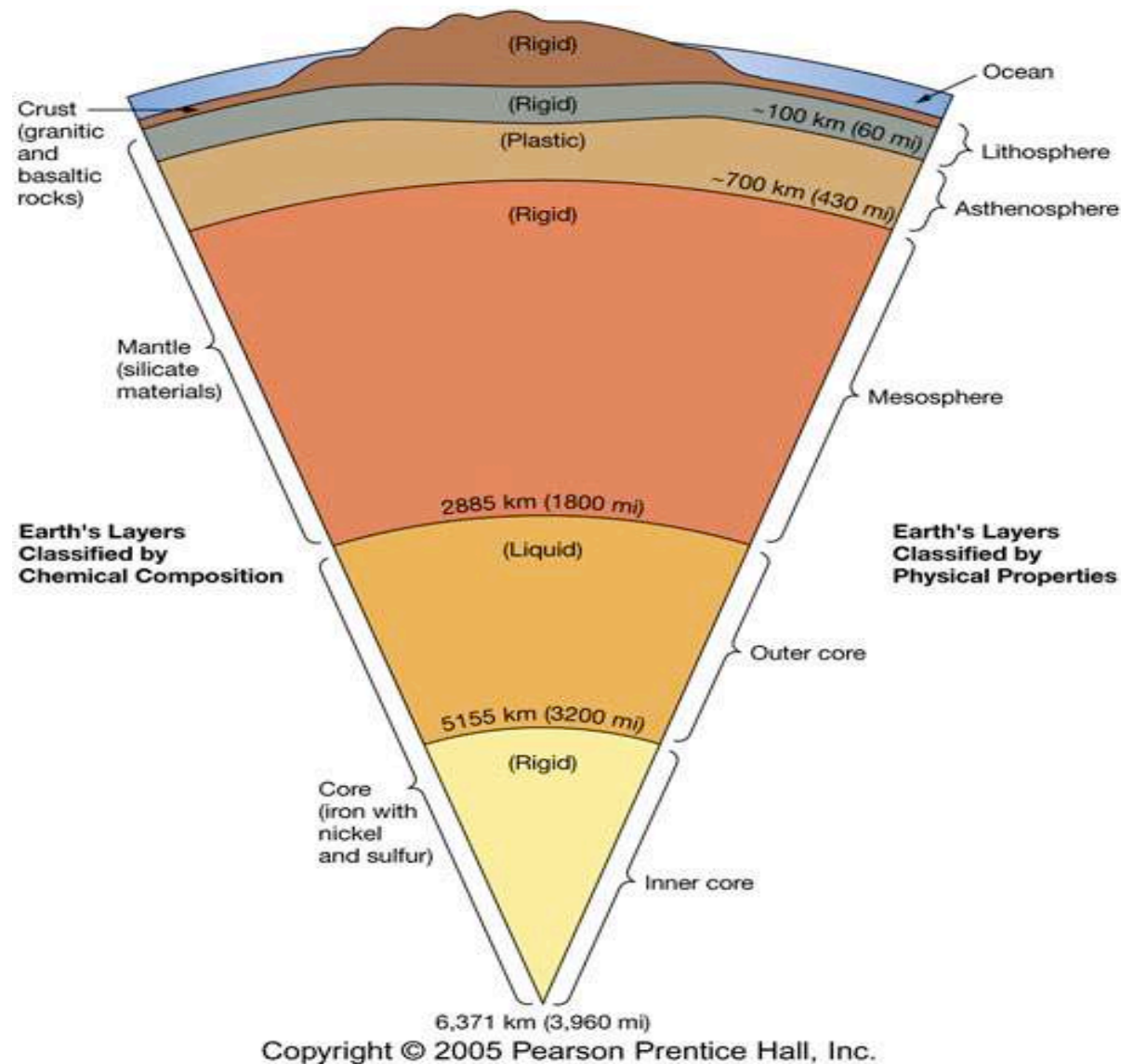


The Geosphere- Structure & Composition



Crust- composed of light elements. ex: rocks made of different minerals.

Mantle- molten iron-rich materials. The top mantle layer, the Asthenosphere, is made of thick, viscous, iron rich material that flows very slowly.

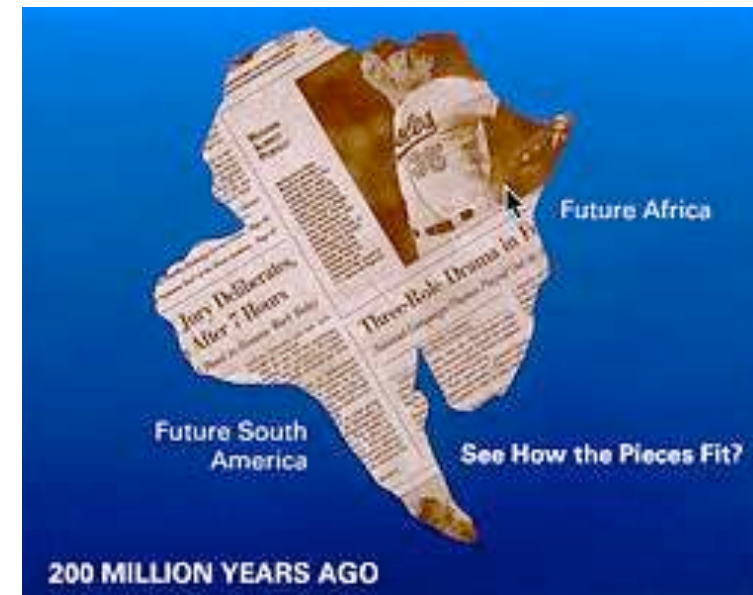
Outer Core- made of liquid nickel and iron.

Inner Core- solid nickel and iron.

Plate Tectonics Theory

"It is just as if we were to refit the torn pieces of a newspaper by matching their edges, and then check whether the lines of print run smoothly across. If they do, there is nothing left but to conclude that the pieces were in fact once joined in this way."

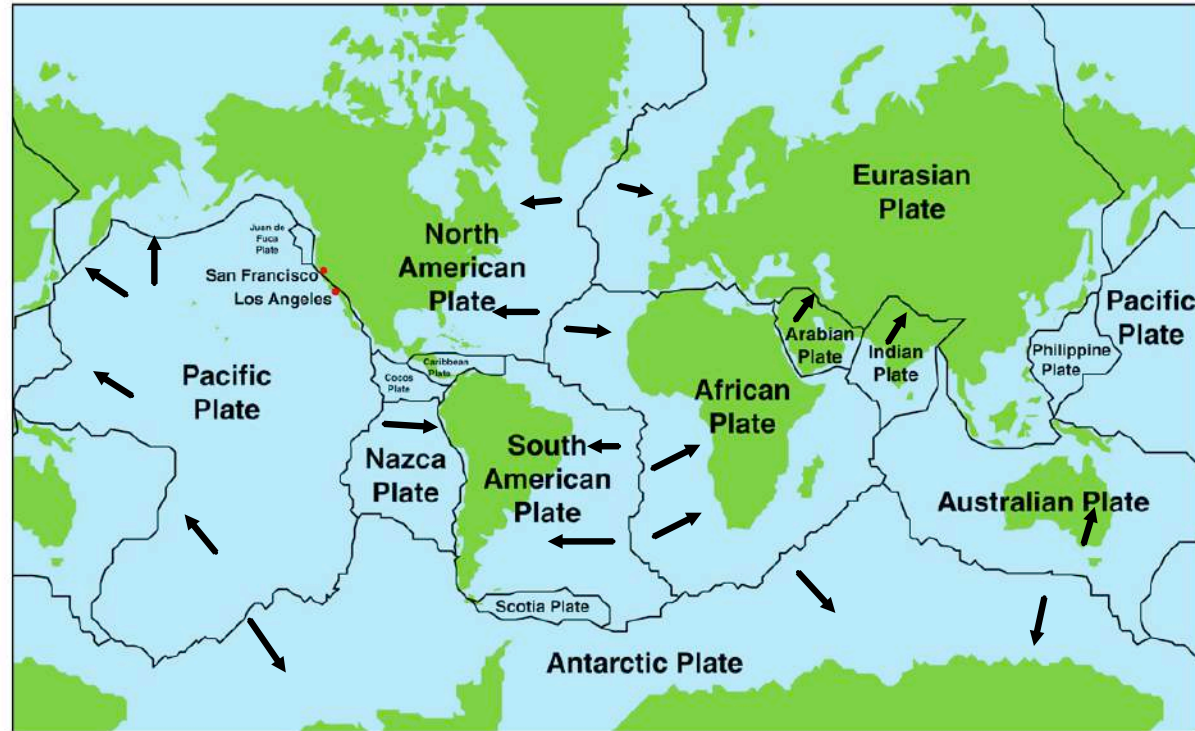
– Alfred Wegener (1929)



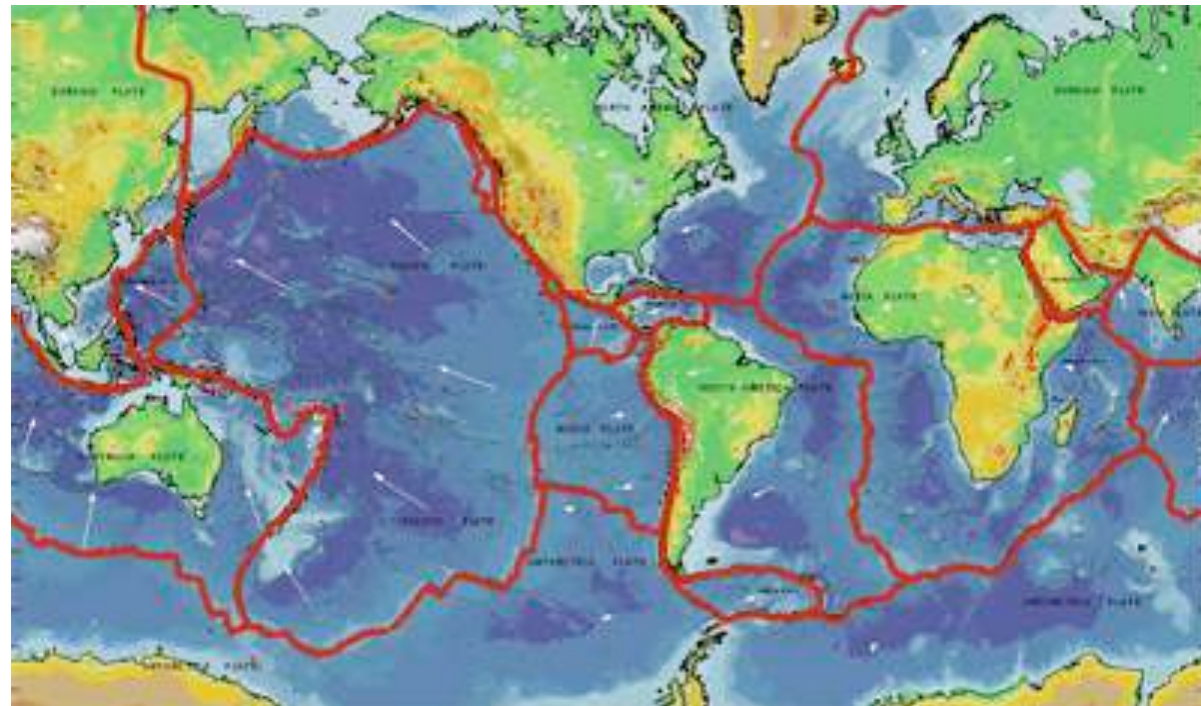
*The Earth is composed of a patchwork of thin, rigid plates, that move horizontally with respect to one another, while they float on the upper layer of the Mantle (called the Asthenosphere), much like icebergs floating on water.

*The interaction of these plates as they move builds features of Earth's crust (mountain ranges, volcanoes, and ocean basins).

Approximately 12 major lithospheric plates which move very slowly.



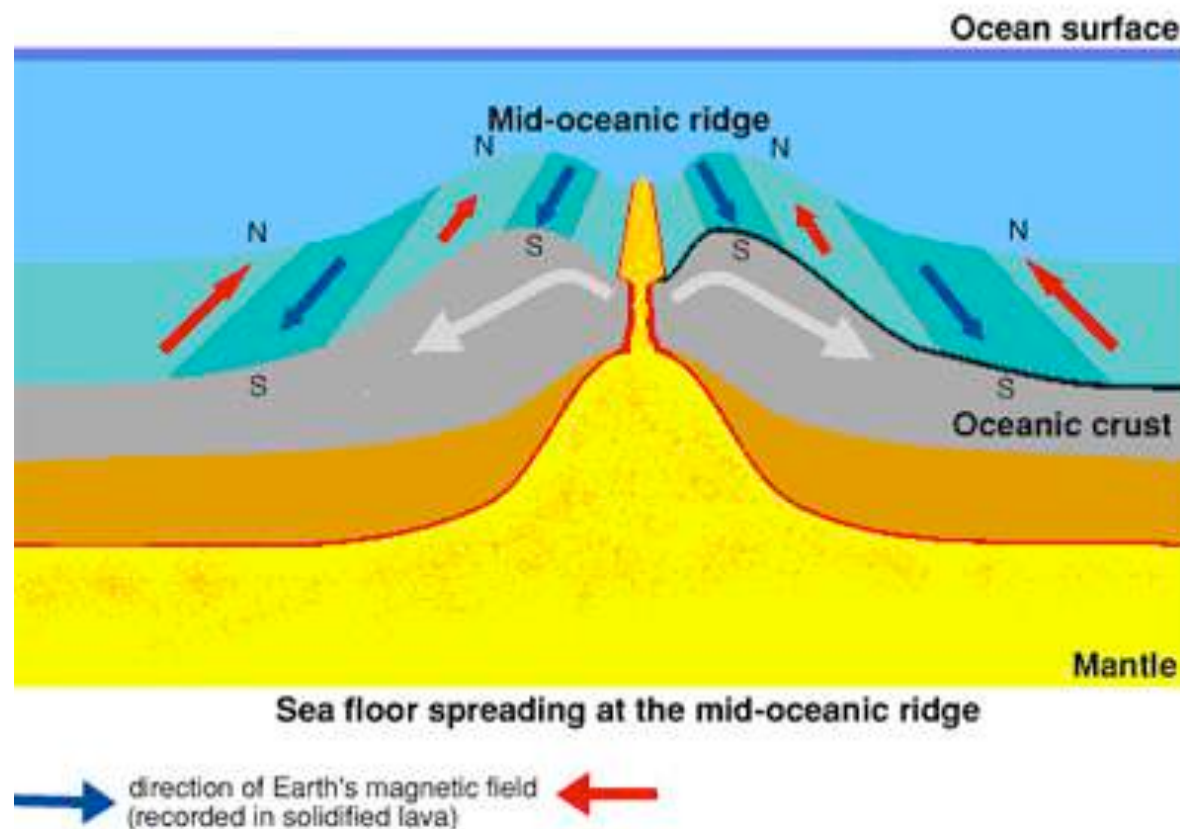
90% of boundaries occur on the seafloor



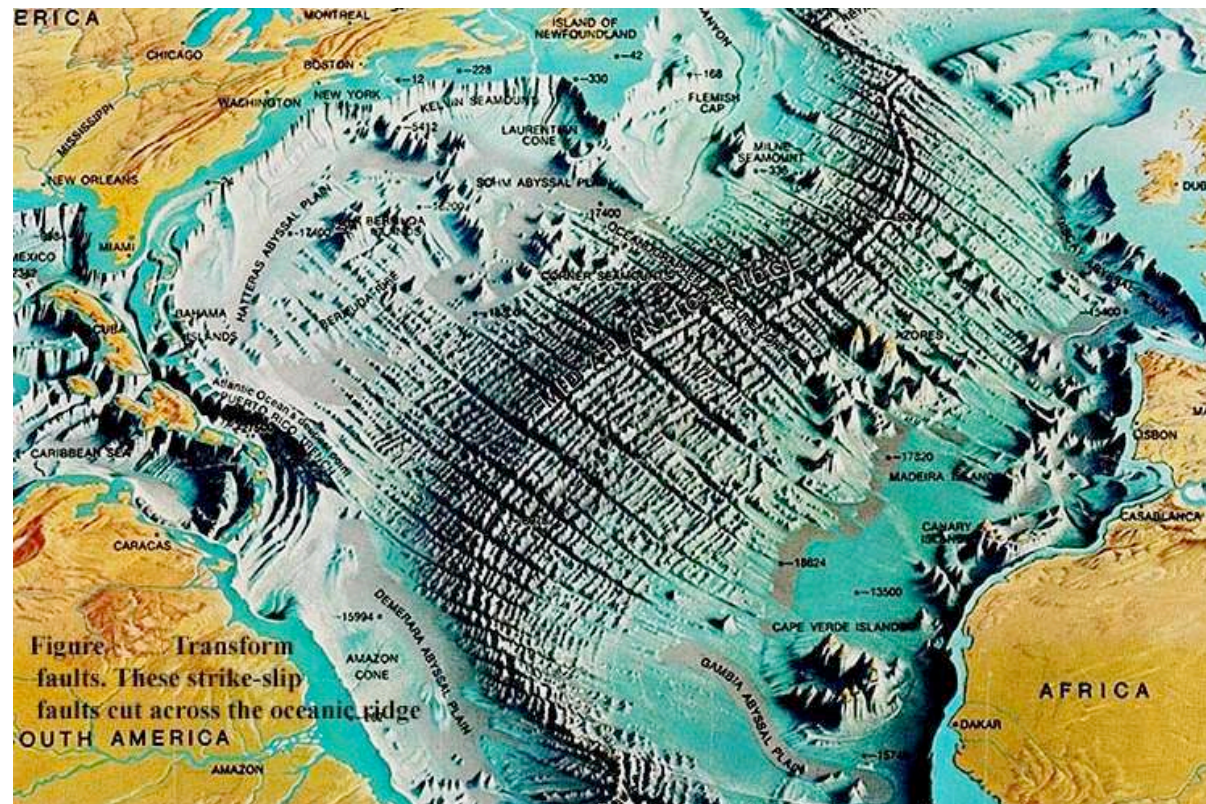
There are three types of Plate Boundaries:

1. **Diverging Boundaries:** plates move away from each other.
 - Site of sea floor spreading.
 - Occur at the bottom of Rift Valleys in the Mid-Ocean Ridges.
 - Most occur in oceans. Ex. Mid-Atlantic Ridge, East Pacific Rise.
 - Some occur on land and will eventually become an Ocean Basin.
Ex. East African Rift Valley

Note: Red Sea and Gulf of California started as rift valleys on a Continent.

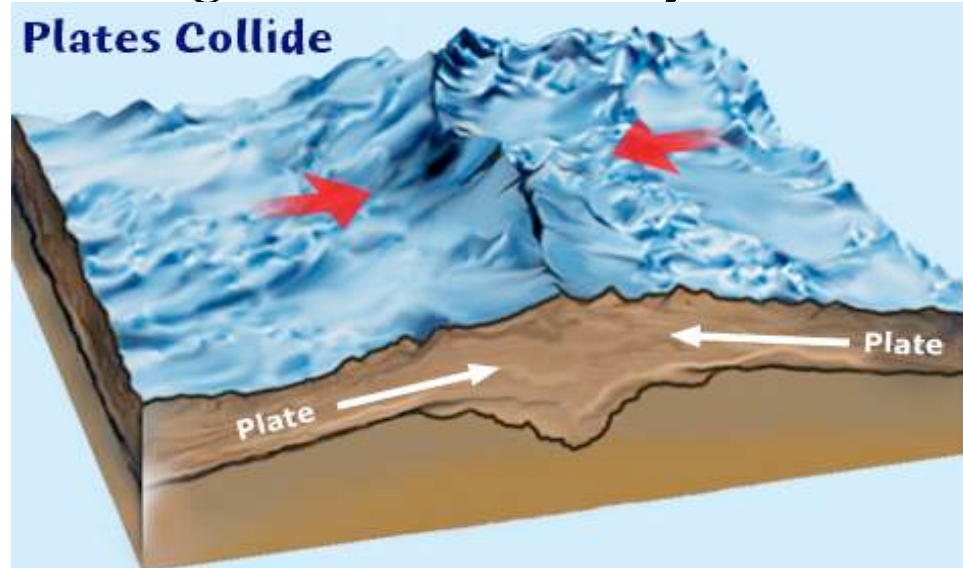


Mid-Ocean Ridge System-is a diverging boundary

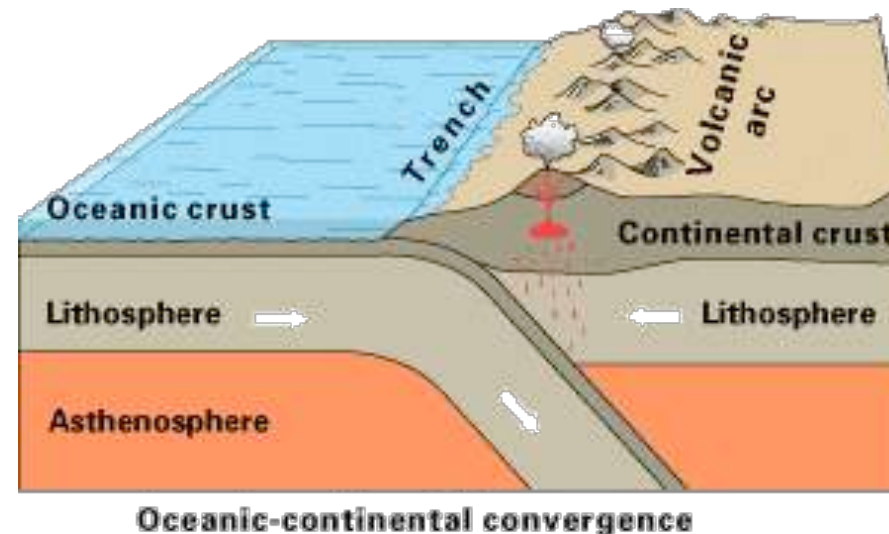


2. Converging Boundaries: plates move toward each other.

- a. *Collision boundary*- both plates are pushed upward creating mountain ranges. ex. Himalayan mountain range.



- b. *Subduction boundary*- one plate plunges under the other. When this occurs where ocean crust and continental crust converge, ocean crust subducts underneath the continental crust. This produces an ocean trench and volcanic mountains on the edge of a continent.



3. **Transform (Sliding) Boundaries:** plates slide past each other.
ex. San Andreas Fault

