

# Earth Science

## Chapter 4

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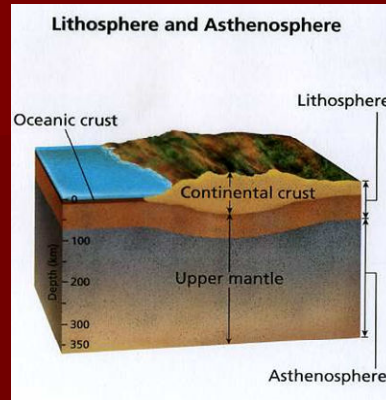
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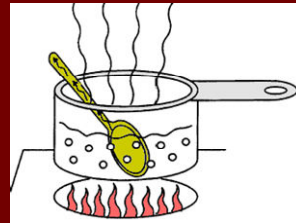
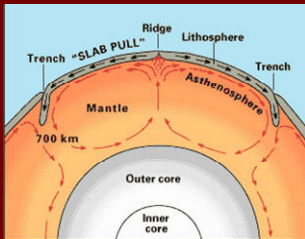
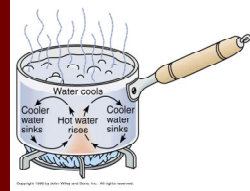
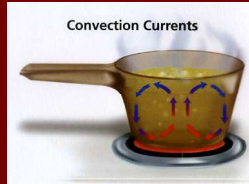
**Oceanic crust & Continental crust** is less dense than the mantle and "floats" on top of the mantle.

Typically, oceanic crust is composed of the more dense igneous rock, basalt. The continental crust is composed of the less dense granite. When they collide, the oceanic crust sinks below the continental crust.



# Convection and the Mantle

- There are three types of heat transfer: **radiation**, **conduction**, and **convection**.
- Convection currents move because hotter material is less dense than cooler material and will rise/float. Cooler material is more dense & sinks.



## Continental Drift

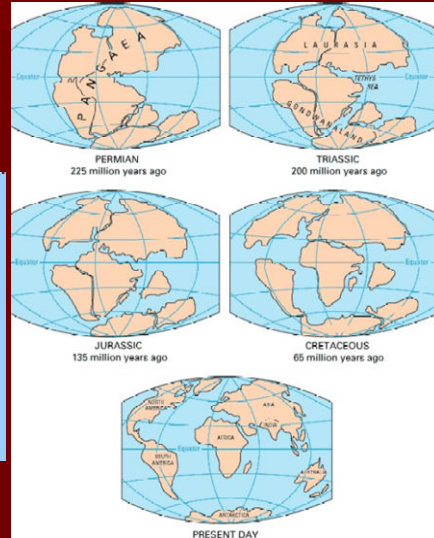
- **Wegener's hypothesis** was that all the continents were once joined together in a single landmass and have since drifted apart.



Alfred Wegener

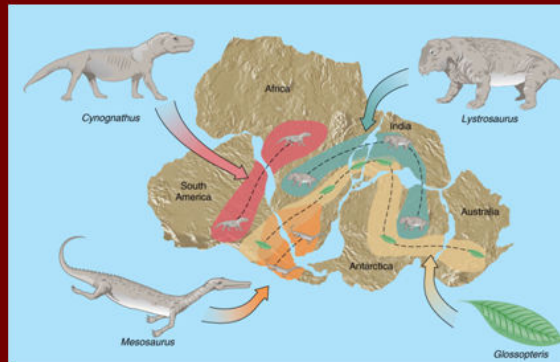
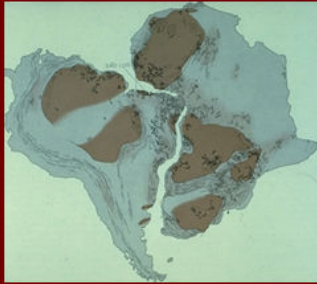
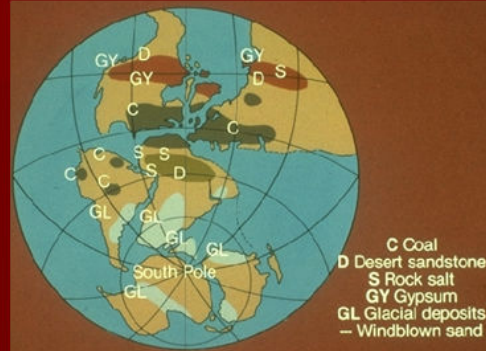


Pangaea – the super continent



## Evidence of Continental Drift

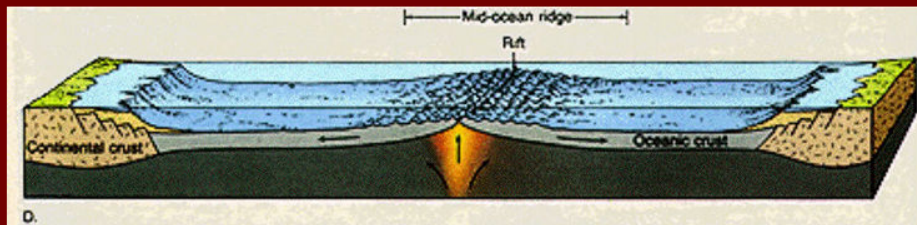
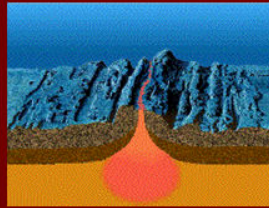
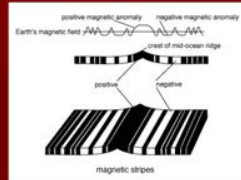
Alfred Wegener identified:





# Sea-Floor Spreading

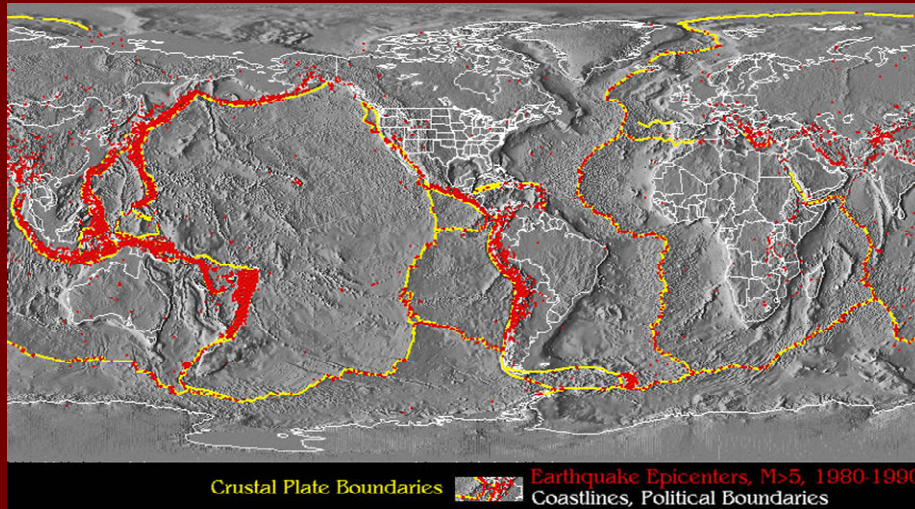
- The longest chain of mountains in the world is the system of **mid-ocean ridges**.
- In sea-floor spreading, the sea floor spreads apart along both sides of a mid-ocean ridge as new crust is added. As a result, the ocean floors move like **conveyor belts**, carrying the continents along with them.
- Evidence supported the theory of sea-floor spreading: eruptions of **molten material**, **magnetic stripes** in the rock of the ocean floor, and the **ages** of the rocks themselves.



D.

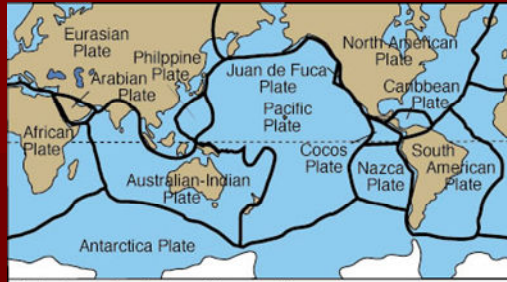
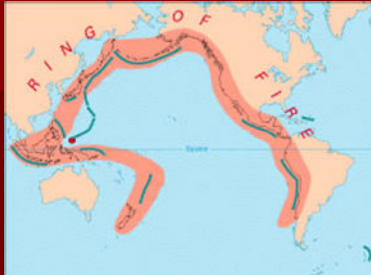
# The Theory of Plate Tectonics

- **The theory of plate tectonics explains the formation, movement, and subduction of Earth's plates.**



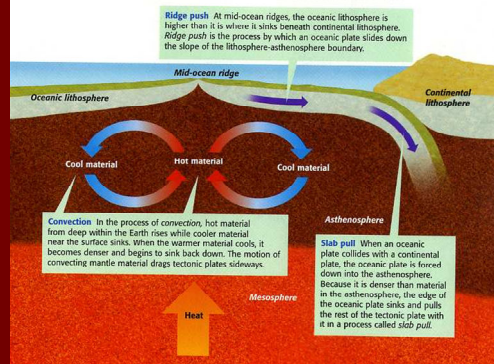


# Plate Tectonics



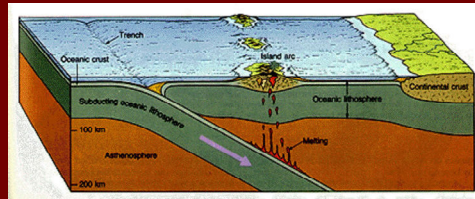
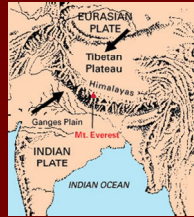
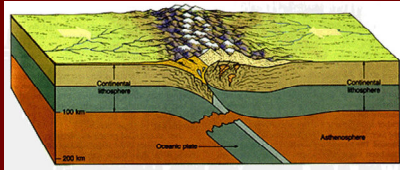
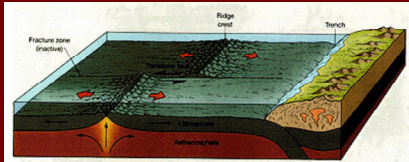
Major tectonic plates of the world.

## Possible Causes of Tectonic Plate Motion



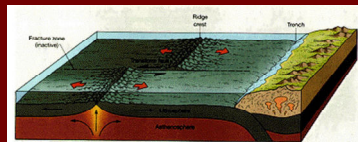
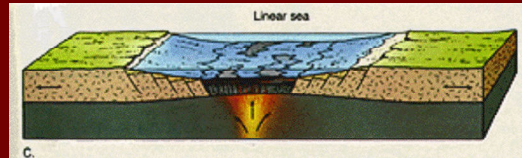
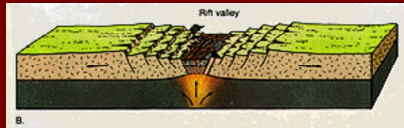
# Plate Boundaries

- There are three kinds of plate boundaries:
- **Divergent**: spreading boundaries
- **Convergent**: colliding boundaries
- **Transform**: sliding boundaries.



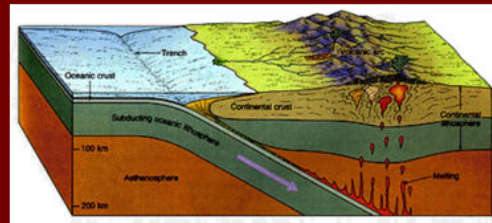
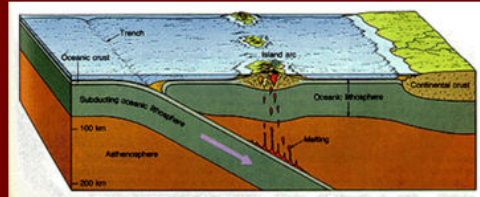
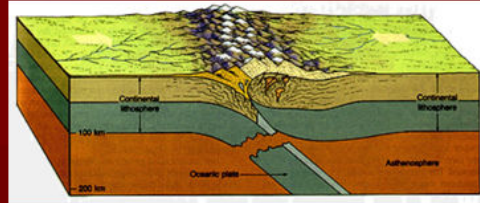
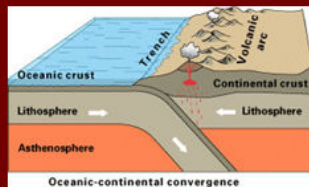
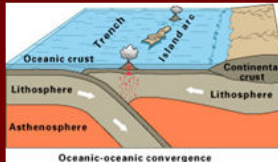
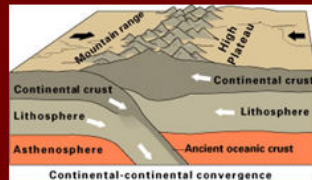
# Divergent Boundaries

- The place where two plates move apart
- **Sea Floor Spreading**: most spreading boundaries occur at the mid-ocean ridge.
- A deep valley called a **rift valley** forms along the spreading boundary



## Convergent Boundaries

- Continental – Continental
- Oceanic – Oceanic
- Continental - Oceanic



# Transform Boundaries

- AKA Strike-Slip

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