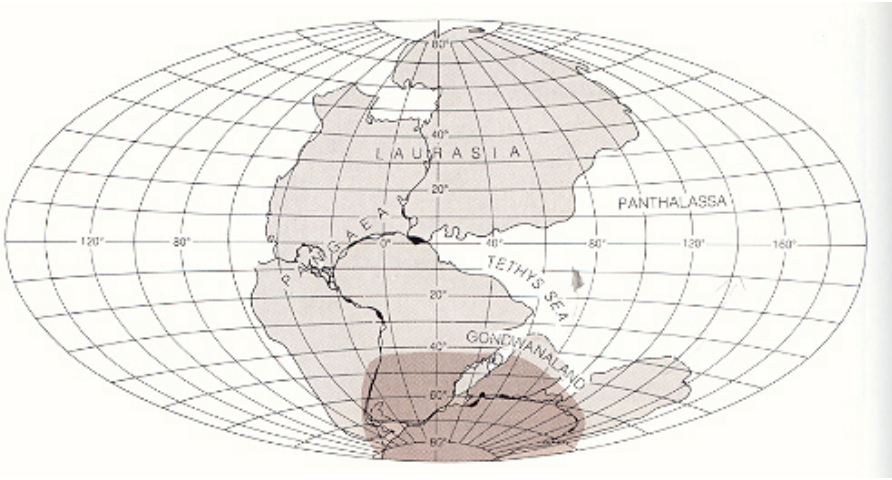
Ch 9.1 Notes

Objective: Be able to explain the theory of plate tectonics and be able to explain evidence that supports it.

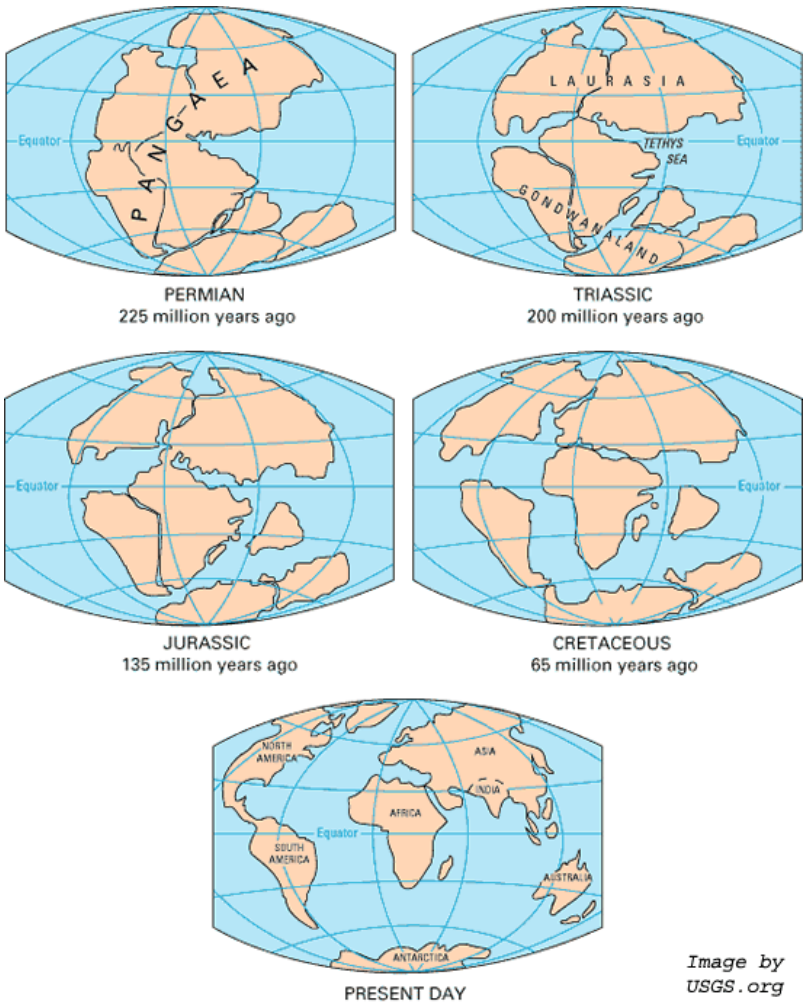
Pangaea

- Alfred Wegener proposed that land on Earth formed a single, huge landmass.
  - It was called **<u>Pangaea</u>**,
    - A Greek name that means "all lands."
  - About 225 million years ago, the land on Earth was part of one supercontinent called Pangaea.



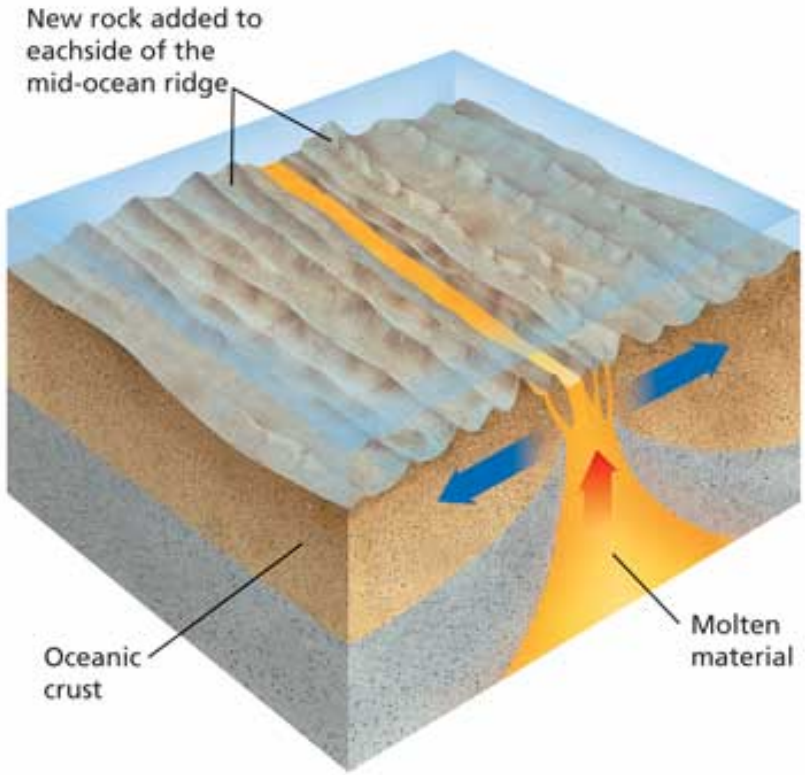
Evidence

- The pieces of Pangaea moved apart to form the seven continents.
  - This is called **continental drift**.
    - Evidence:
      - **Mountains from different continents matched up.**
      - **Same Fossils and plants found on different continents.**
      - **Glacier streak marks found on rocks in Africa, South America, and Australia.**
      - **Same rock types.**
      - **Continents fit like puzzle pieces.**
  - Wegener's idea was not accepted by everyone because it did not explain what caused the continents to move.



Mid-Ocean Ridges

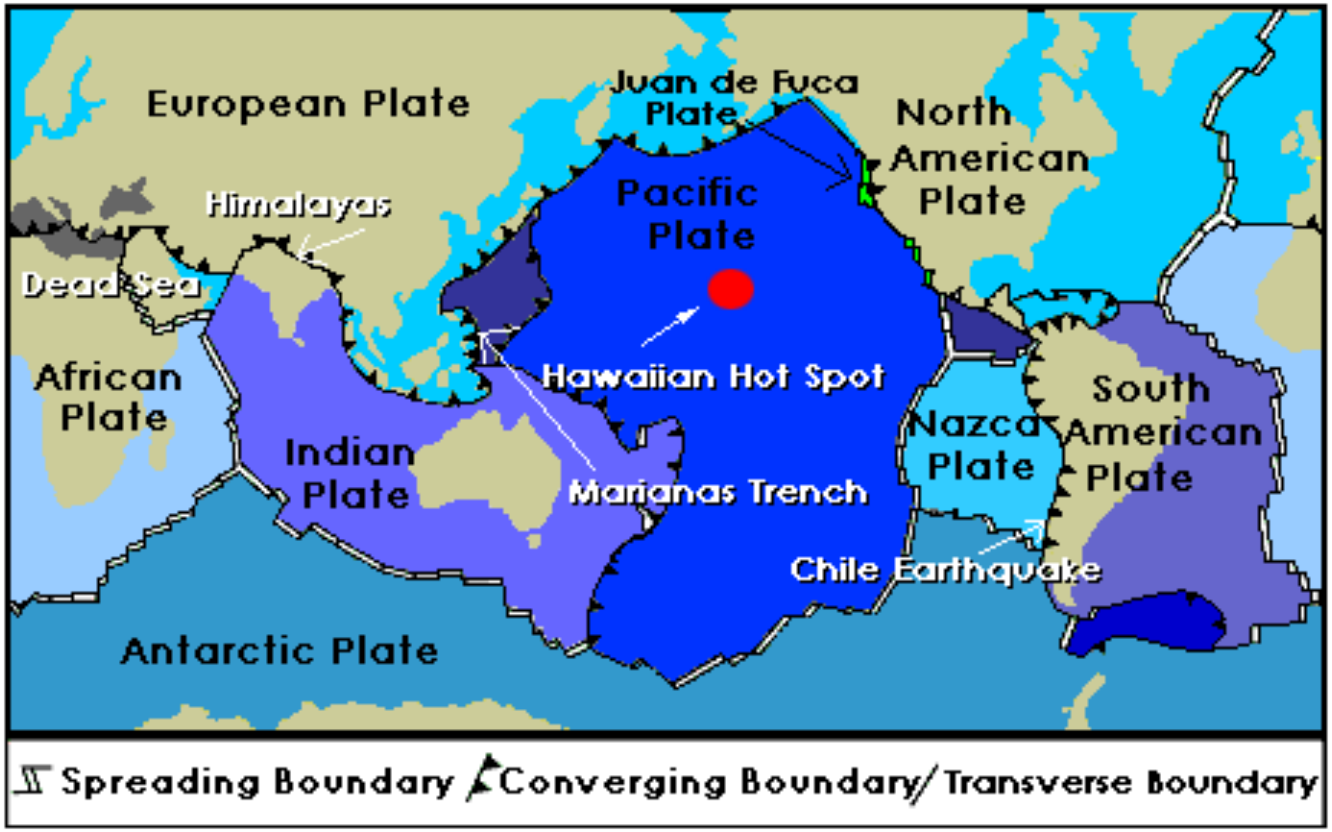
- In the middle of the Atlantic ocean there are mountain ranges called **mid-ocean ridges**.
  - The mountains are about 2.8 miles above the sea floor.
  - The ridges are spilt in the middle by either a valley or by a rise.



Ch 9.1 Notes

Objective: Be able to explain the theory of plate tectonics and be able to explain evidence that supports it.

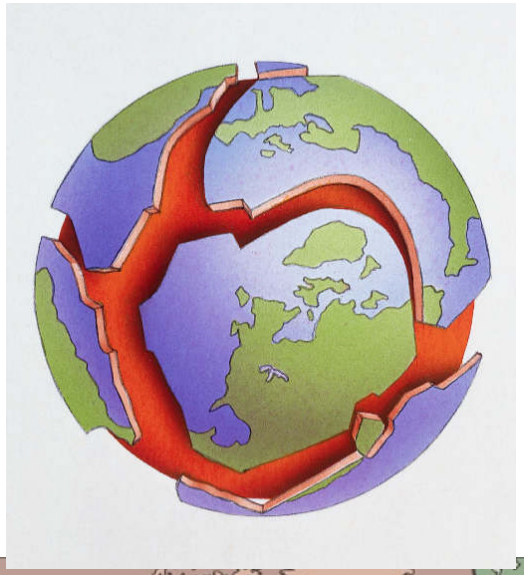
Ch 9.2 & 9.3: *Plate Tectonics*

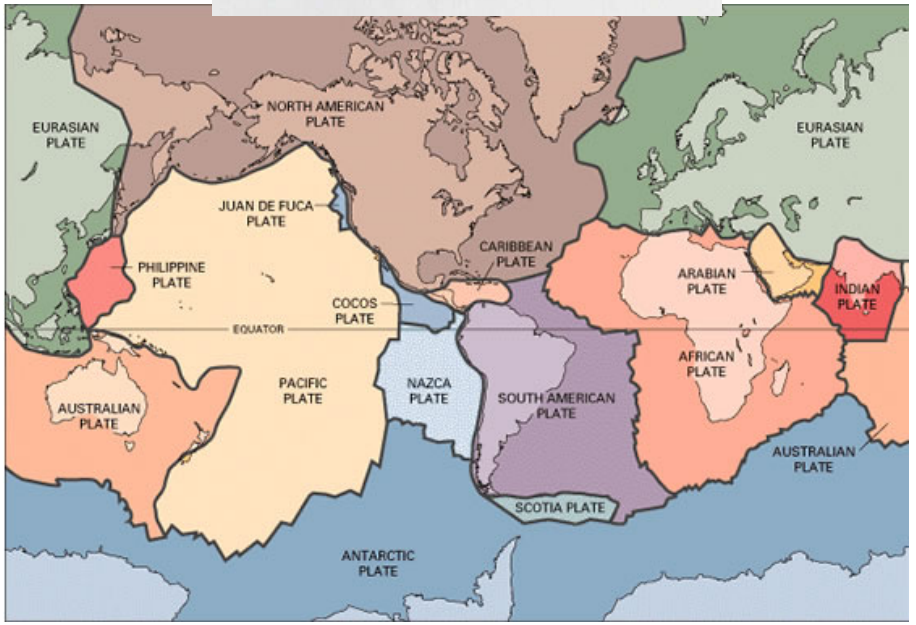


Objective: Be able to identify 3 types of plate boundaries.

Tectonic Plates

- Earth's crust is broken into many plates.
- How the continents moved is explained by a theory called **plate tectonics**.
  - Tectonics means construction or building.
  - The movement of the plates causes earthquakes and volcanoes.
  - North American plate is moving at a rate of 1 to 10 cm a year to the west.

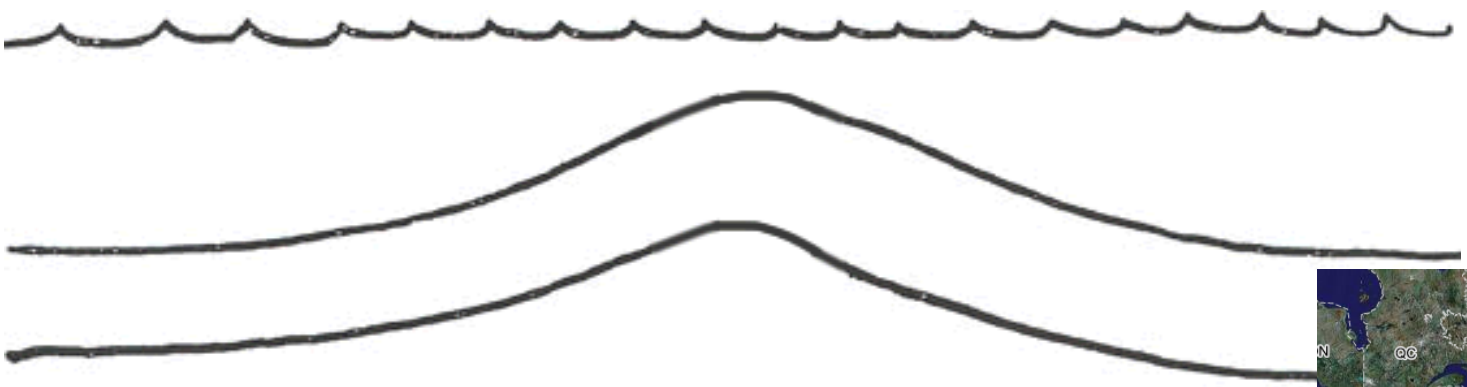




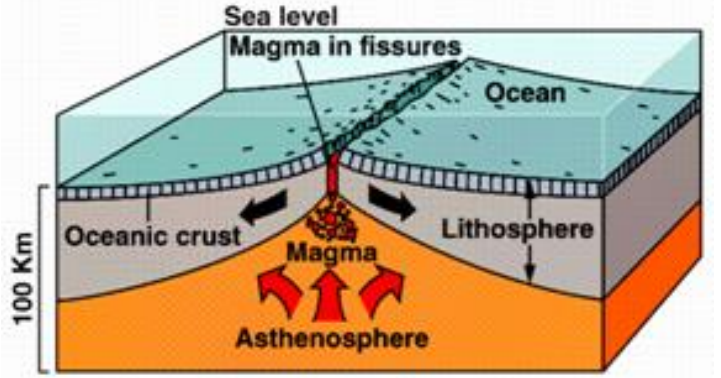
Types of Plate Boundaries

- Divergent (<- ->) – plates are moving away from each other.

Divergent Boundary – *moving away* (2 oceanic plates)



- Mid-ocean ridge will form
  - Inside the ridge a valley forms called a **<u>rift valley</u>**
- Volcanoes & earthquakes both occur.



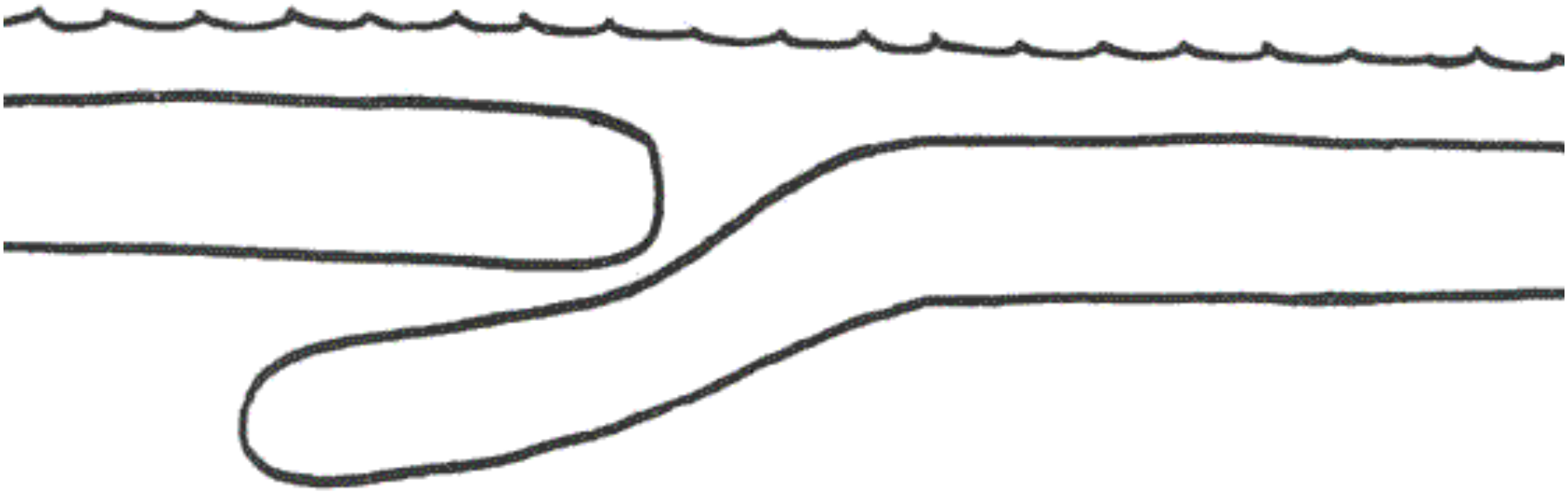
Divergent Boundary – *moving away* (2 continental plates)

- Earthquakes and volcanic activity occur here.

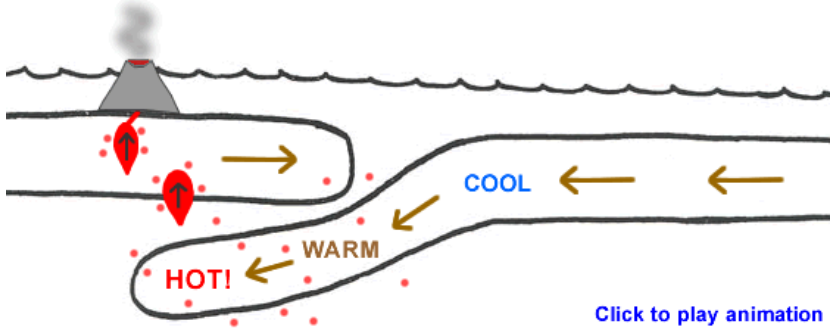
Types of Plate Boundaries

- Convergent (-> <-) – plates are moving towards each other.

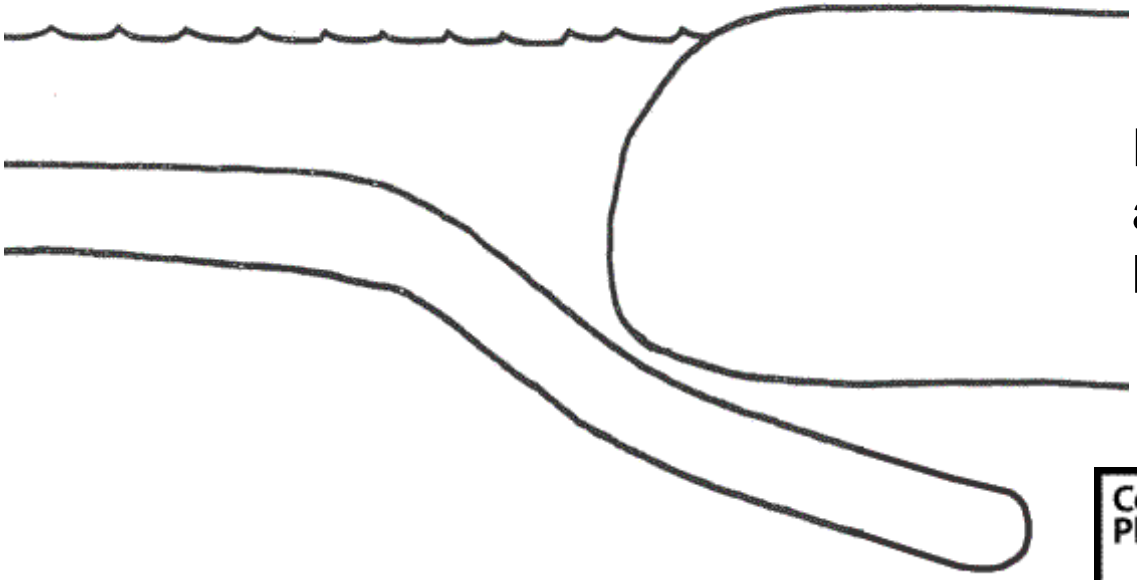
Convergent Boundary – *moving towards* (2 oceanic plates)



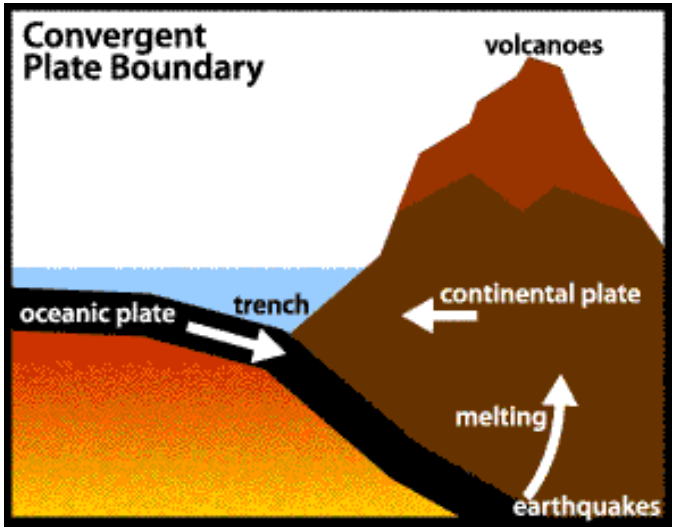
- Molten rock rises to the surface to form a chain of volcanic islands called an **island arc**



Convergent Boundary – *moving towards* (oceanic & continental plates)

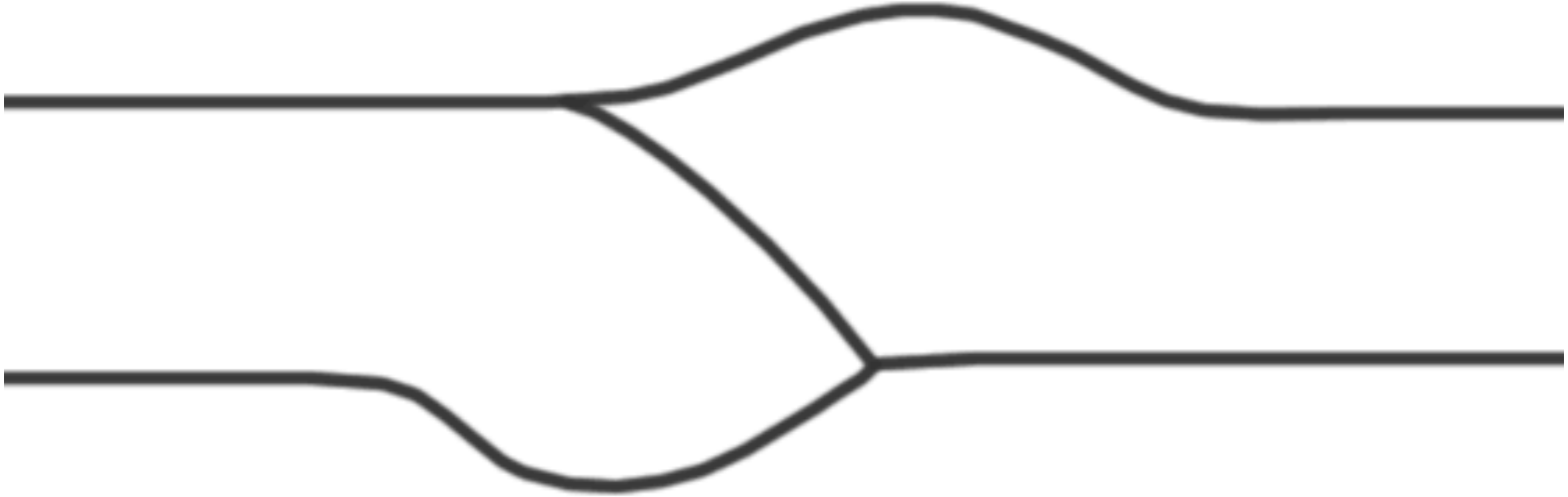


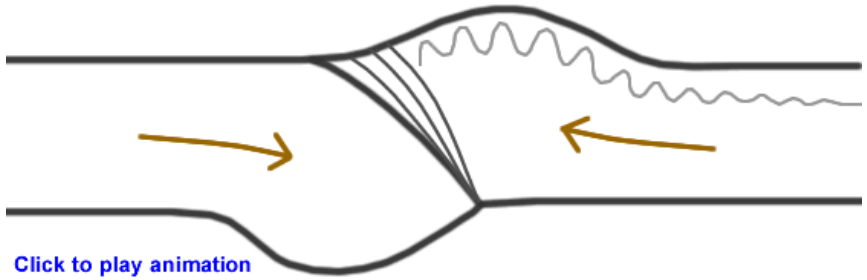
Earthquakes, volcanic activity, and mountains happen here.



- Where one plate moves under another plate is called the **subduction zone**.
- A deep **ocean trench** forms along the subduction zone.

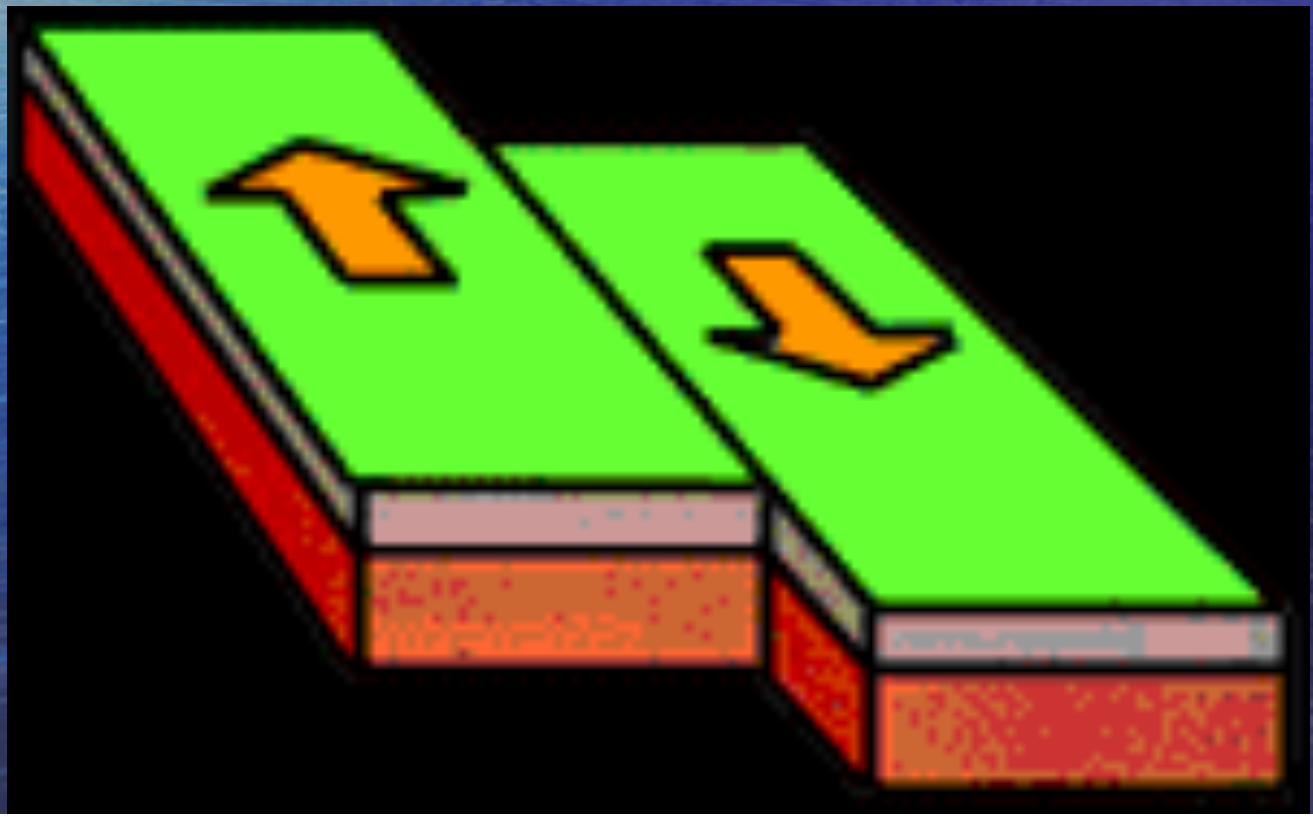
Convergent Boundary – *moving towards*
(2 continental plates)





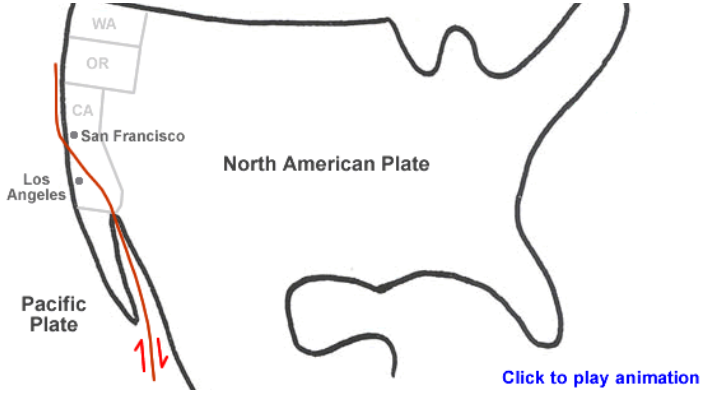
Types of Plate Boundaries

- Transform – plates are sliding past each other.



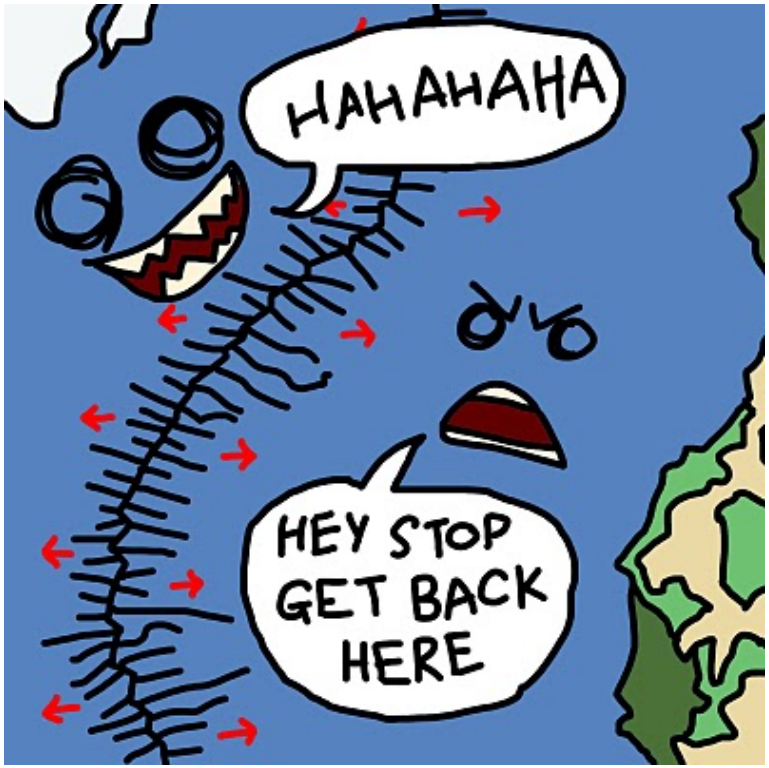
Transform Boundary – *grind past each other*

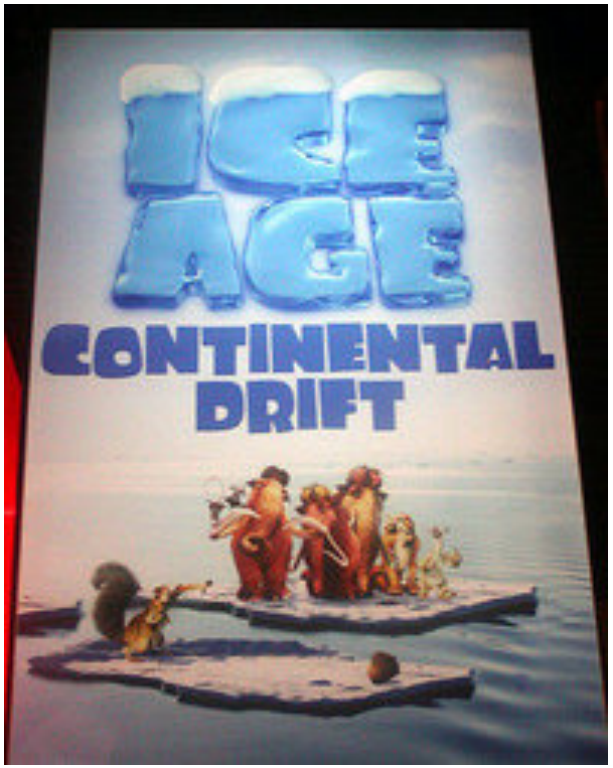
- Earthquakes only



San Andres Fault

- Earthquakes only





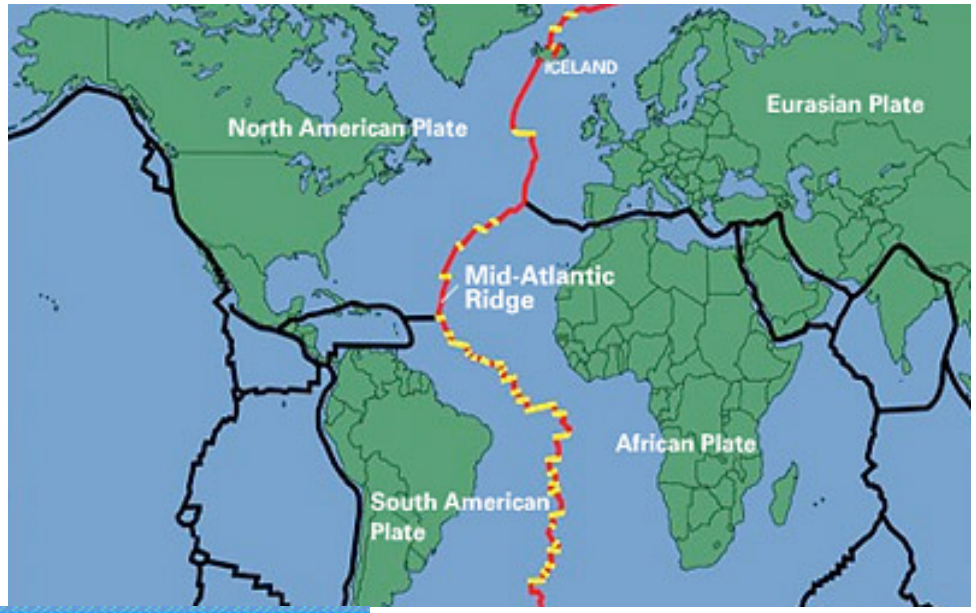
Ch 9.4 and 9.5 Notes

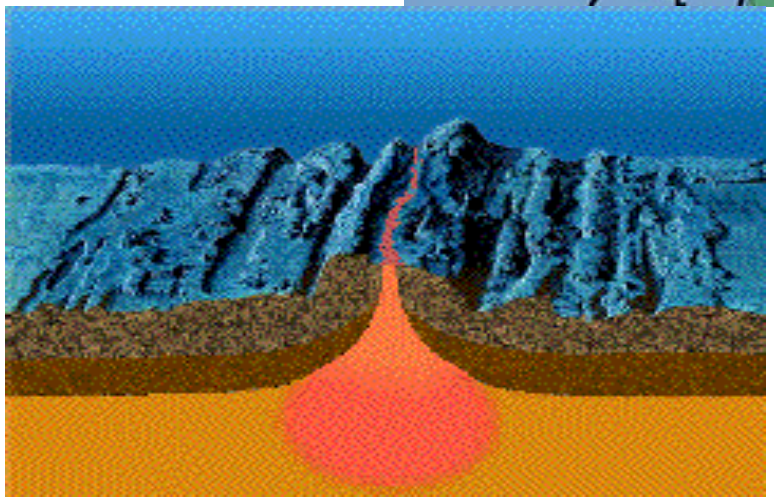
Be able to…

- *What is seafloor spreading?*
- *How does paleomagnetism support the theory of plate tectonics.*
- *Identify what a hot spot is.*

Seafloor Spreading

- Sea-floor spreading describes the sea floor on either side of a mid-ocean ridge as moving away from the ridge.

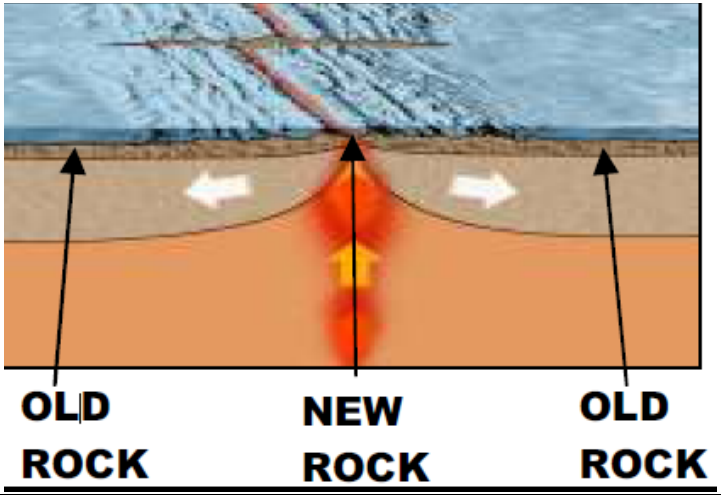


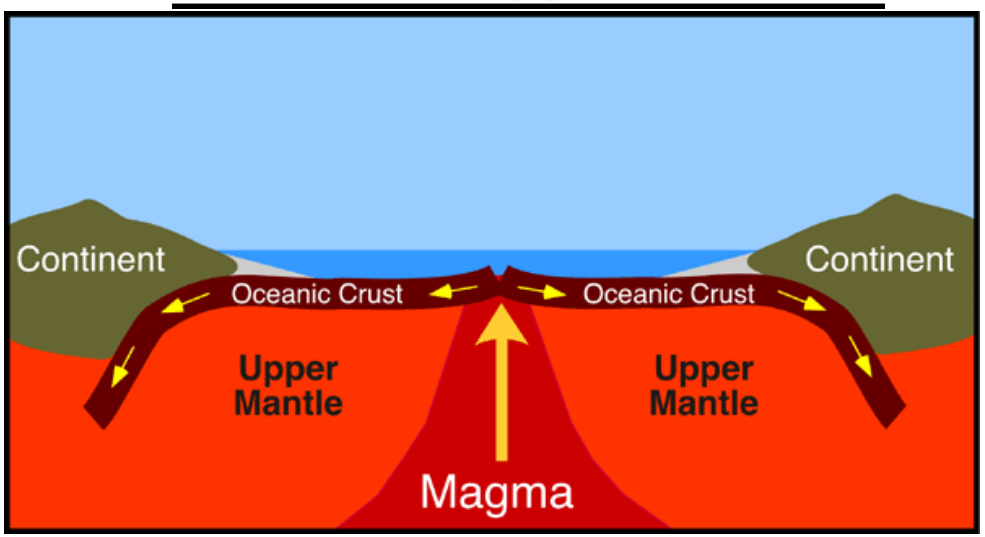


Seafloor Spreading & Ocean Drilling

- Seafloor spreading is a process that produces new oceanic crust.

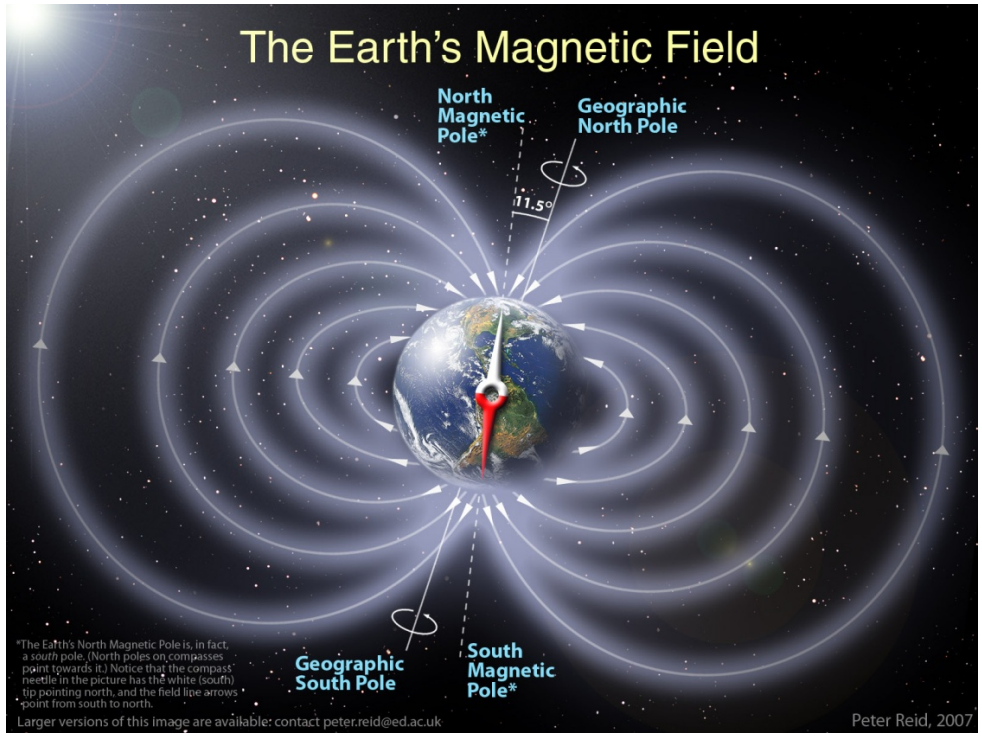
- Youngest oceanic crust is at the ridge.
- Oldest oceanic crust is farthest away from the center, or closer to the continents.





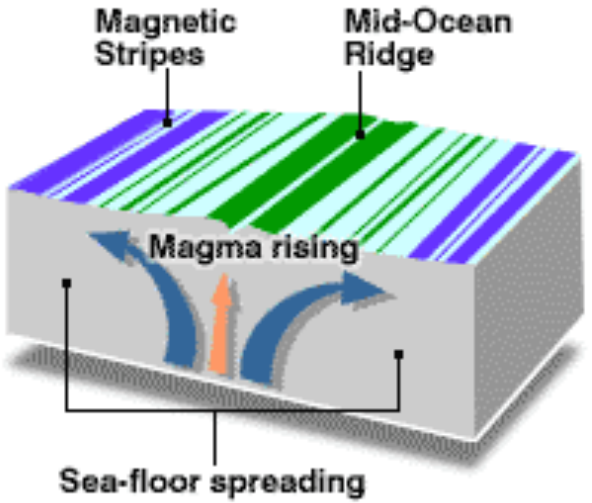
Paleomagnetism

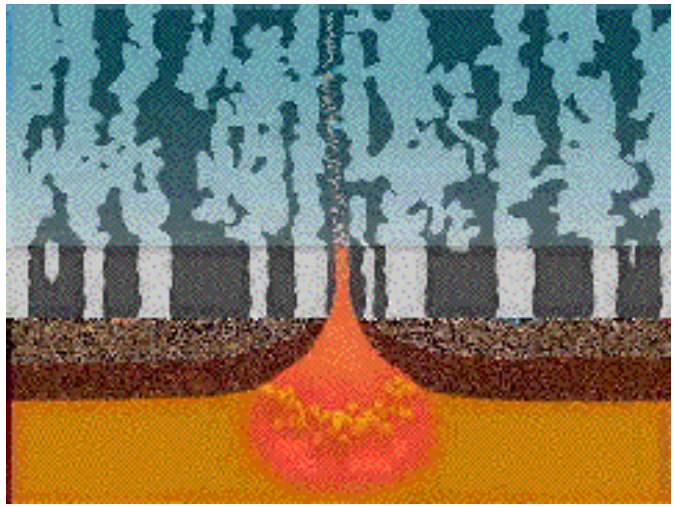
- As rocks cool the iron in then becomes magnetized in the direction of Earth's magnetic field.



Paleomagnetism

- Rocks that show the same magnetism as present magnetic field are described as having ***normal polarity*.**
- Rocks that are opposite have ***reversed polarity***.





Hot Spots

- A rising plume of mantle melting the crust creates a hot spot or volcanic area.