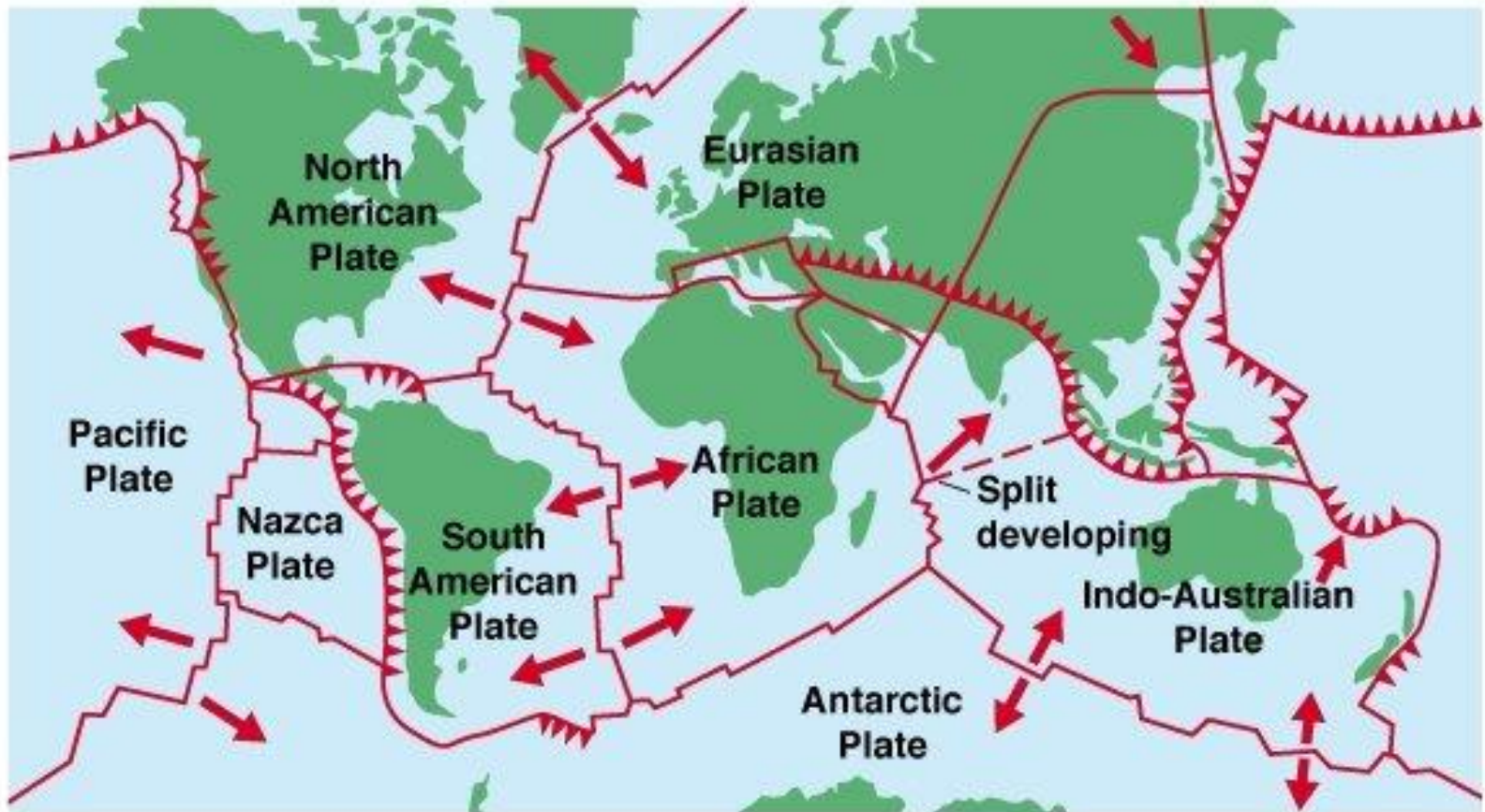


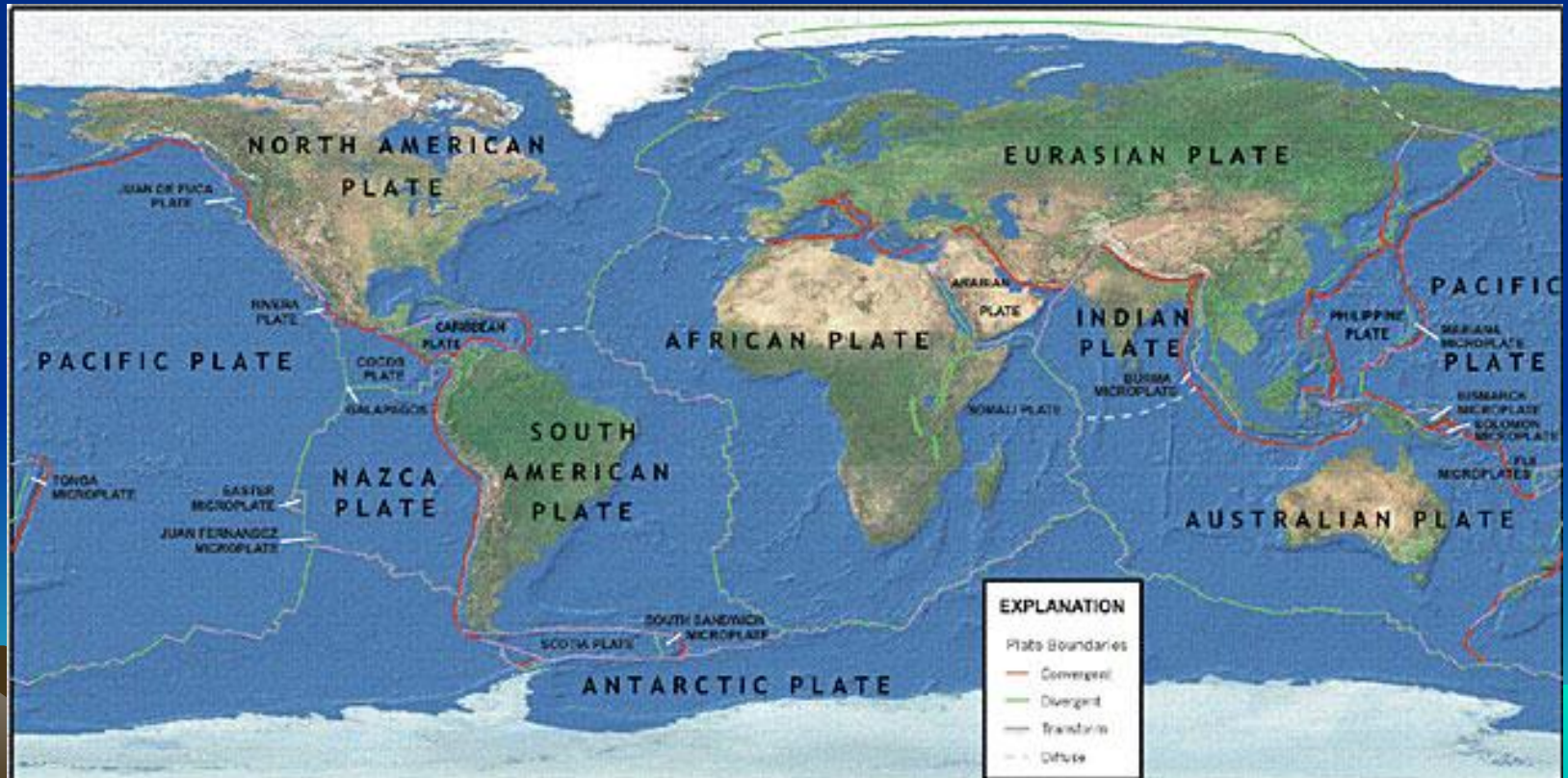
Plate Tectonics

Chapter 9, Section 2



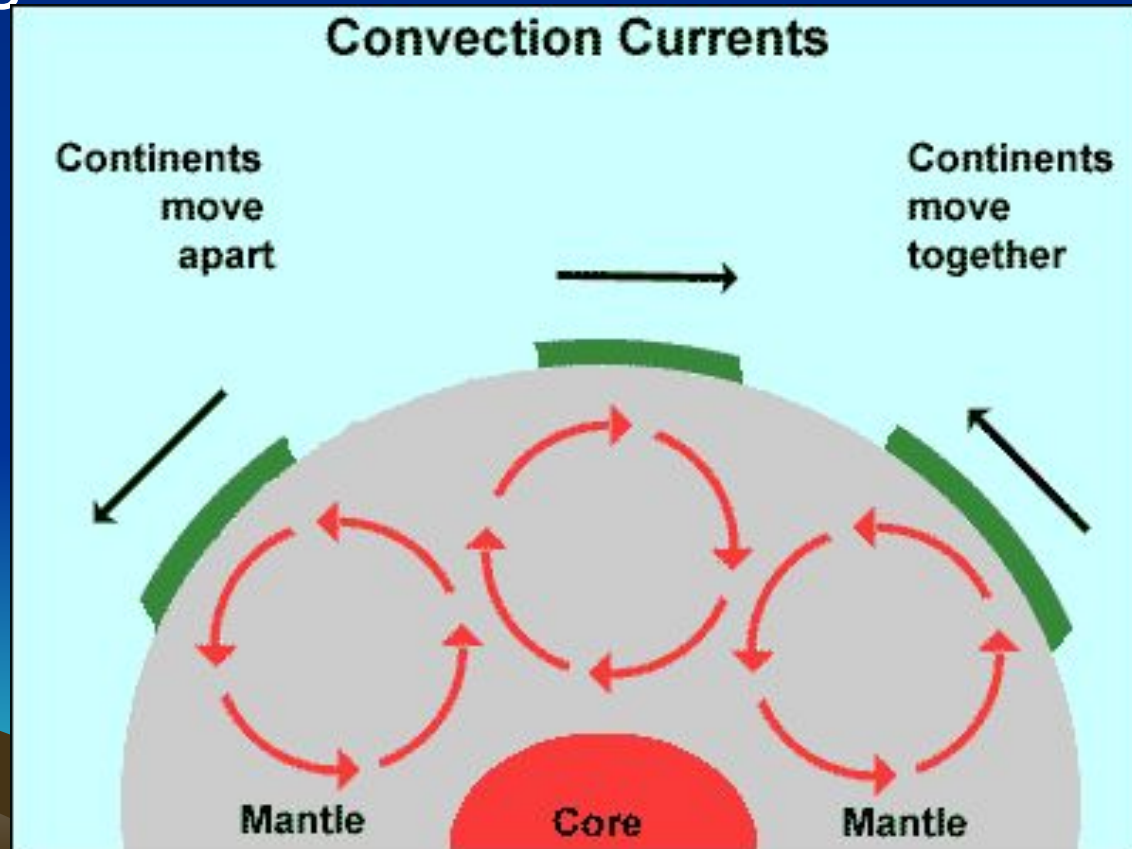
Lithosphere

- Earth's lithosphere or “skin” has tectonic plates
- Currently there are 12 large plates and several smaller ones



Put the Plates on the Mantle!

- These plates rest on a layer of rock called the mantle.
- The mantle moves very slowly, dragging the tectonic plates on top of it.



- Plates move as fast as your fingernails grow! (only 2 - 5cm per year)
- Over a very long period of time this can amount to thousands of miles of movement

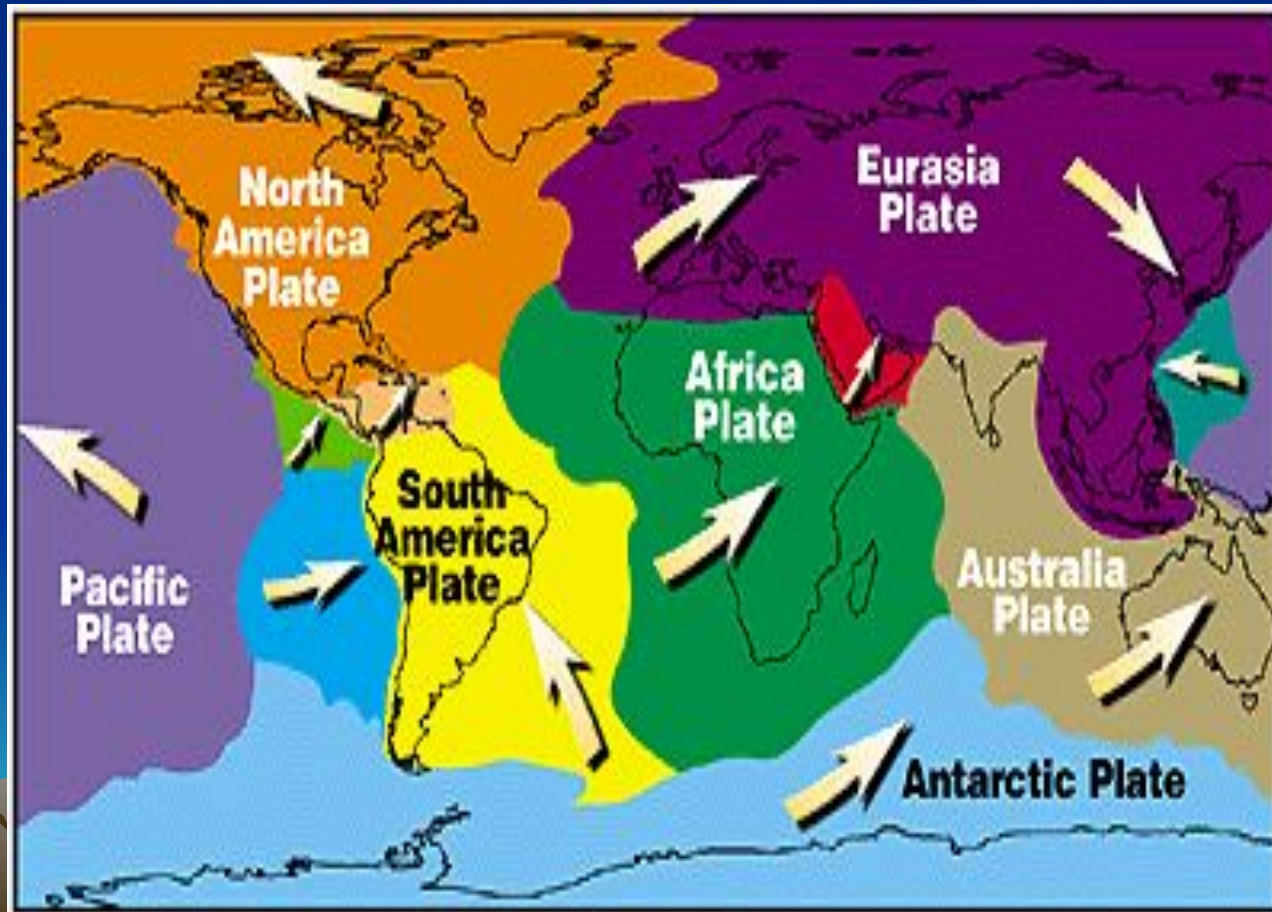
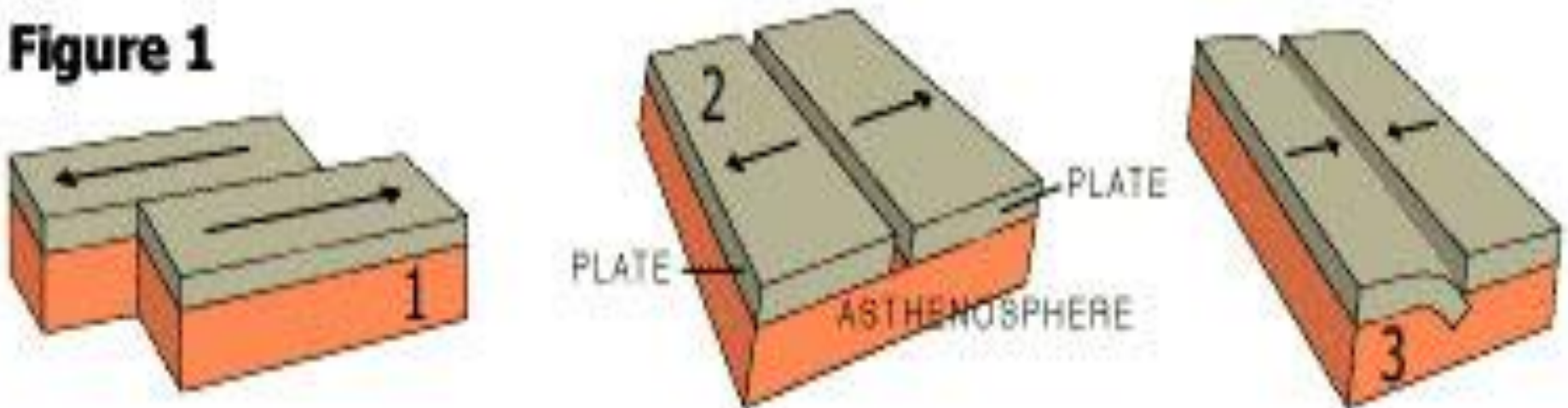


Plate Boundaries

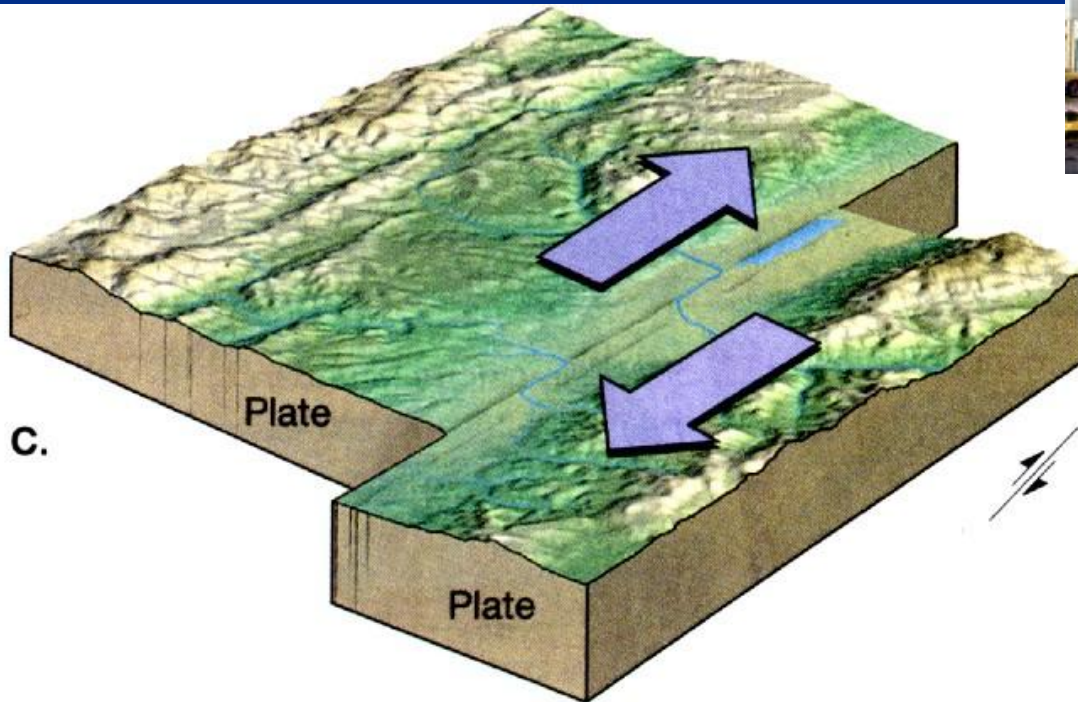
- **TR**ansform Boundaries = plates slide horizontally (plates **TR**avel side by side)
- **DIV**ergent Boundaries = plates move apart (plates **DIV**ide or plates **DIV**orce)
- **CO**nvergent Boundaries = plates move toward each other (plates **CO**me together and **CO**llide)

Figure 1



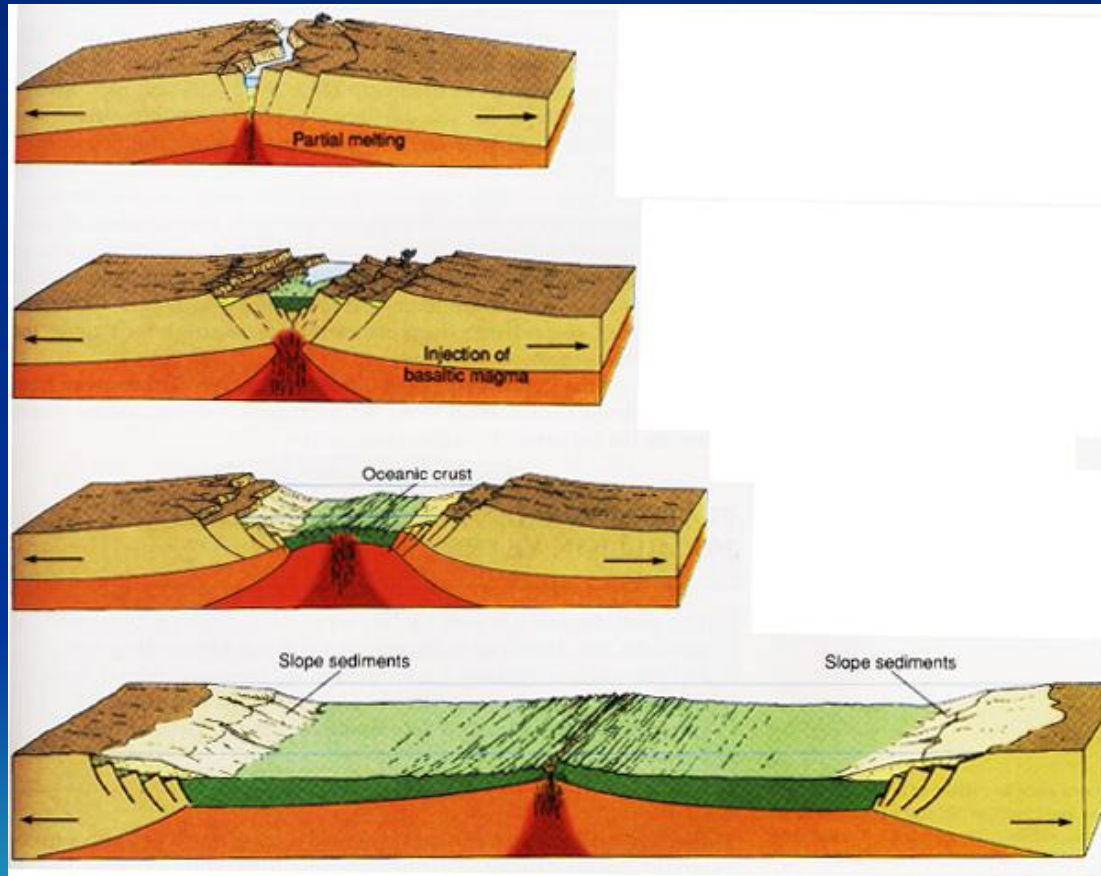
TRAnSform Boundaries

- Two plates that TRAVel side by side can cause an earthquake



DIVERgent Boundaries

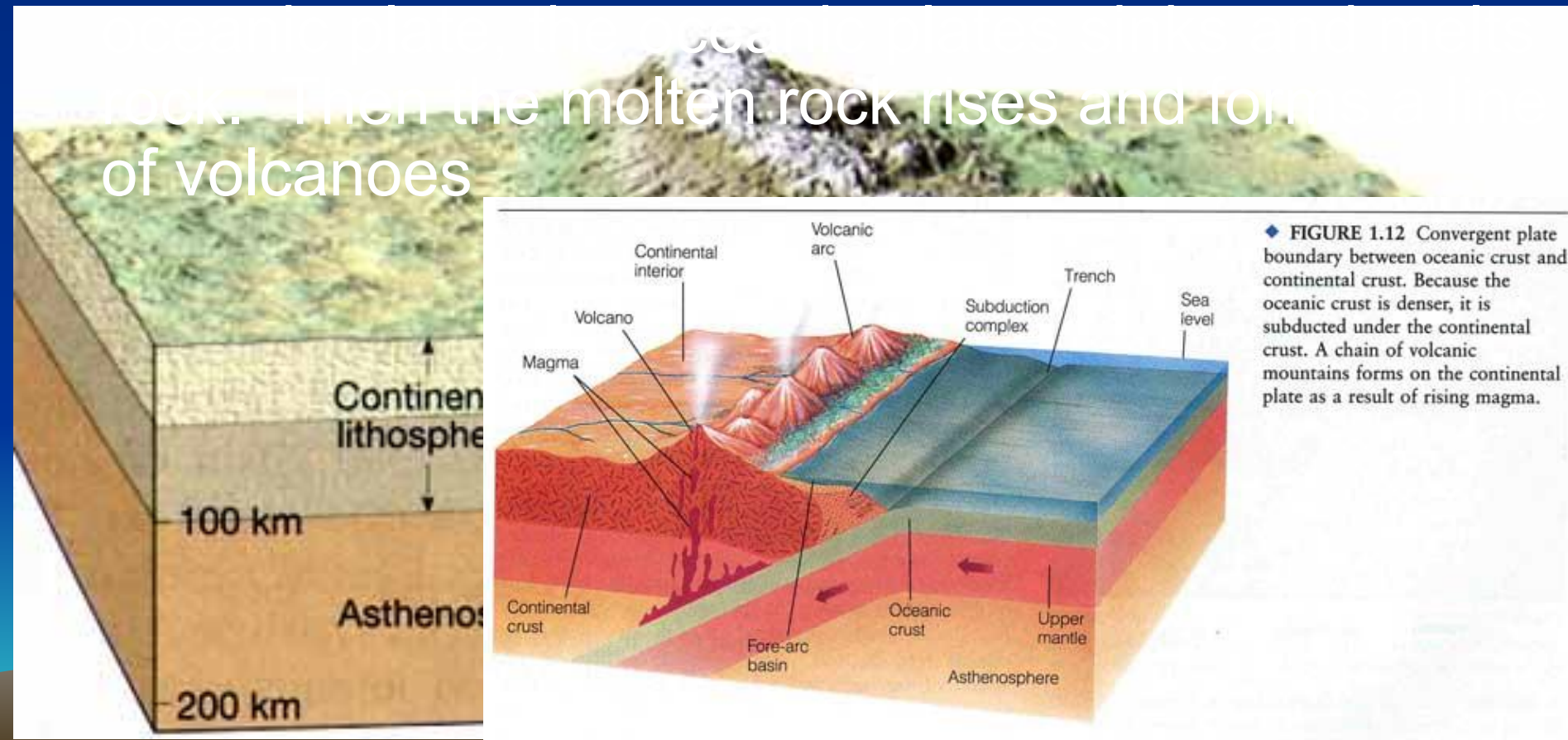
- Plates that DIVide produce a “rift” – a giant crack
- If a rift tears apart a continent and widens for millions of years, a new sea forms (and can gradually form a new ocean)



CO nvergent Boundaries

- When two continental (land) plates COme together, a mountain belt is formed
- But when a continental plate COLLIDES with an

oceanic plate, then the molten rock rises and forms a chain of volcanoes



Continental Drift

- As tectonic plates move, they carry the continents (with rocks and fossils) along with them
- Continental drift = describes how continents have moved over Earth's surface



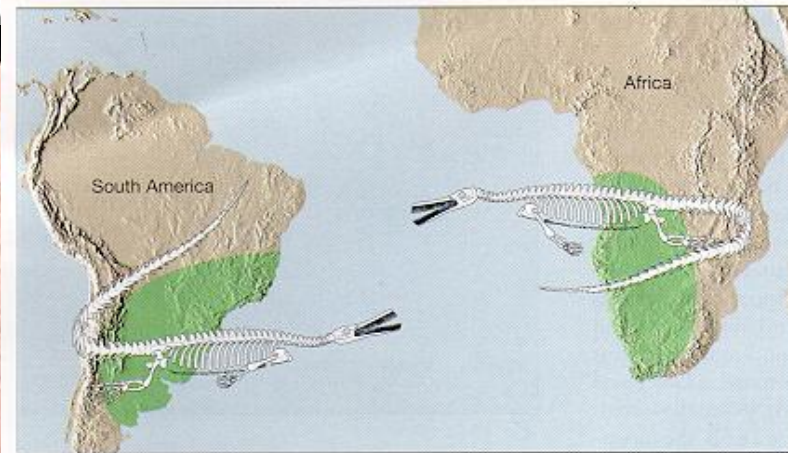
Geologic Evidence of Continental Drift

- Rocks in India have glacier scratches and scars so ice must have once covered India
- South Africa and Brazil have ice-scratched rocks of the same age... and so at one time they were all probably joined



Fossil Evidence of Continental Drift

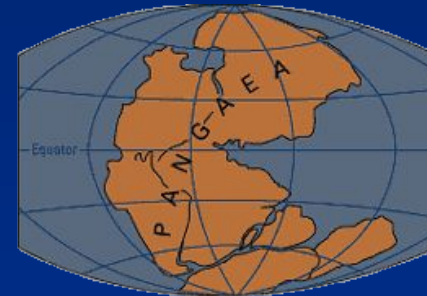
- Common fossils are found on continents that are now separated by oceans.
- *Mesosaurus* in South America and Africa
- Today, the continents of South America and Africa are separated by the Atlantic Ocean.



Fossils of the fern *Glossopteris*, found in all of the southern continents, show that they were once joined.

History of Continental Drift

- Looking at a map of the Earth, it seemed that the continents could fit together like a jigsaw puzzle.
- Alfred Wegener came up with the idea of "continental drift."
- Wegener suggested that a single "supercontinent" called Pangea once existed in the past.



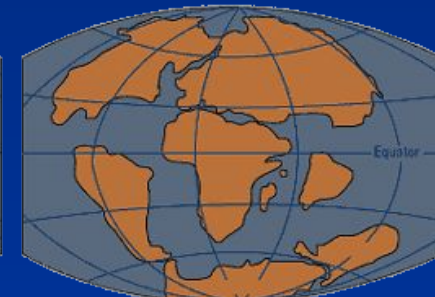
Permian Period
225 million years ago



Triassic Period
200 million years ago



Jurassic Period
135 million years ago



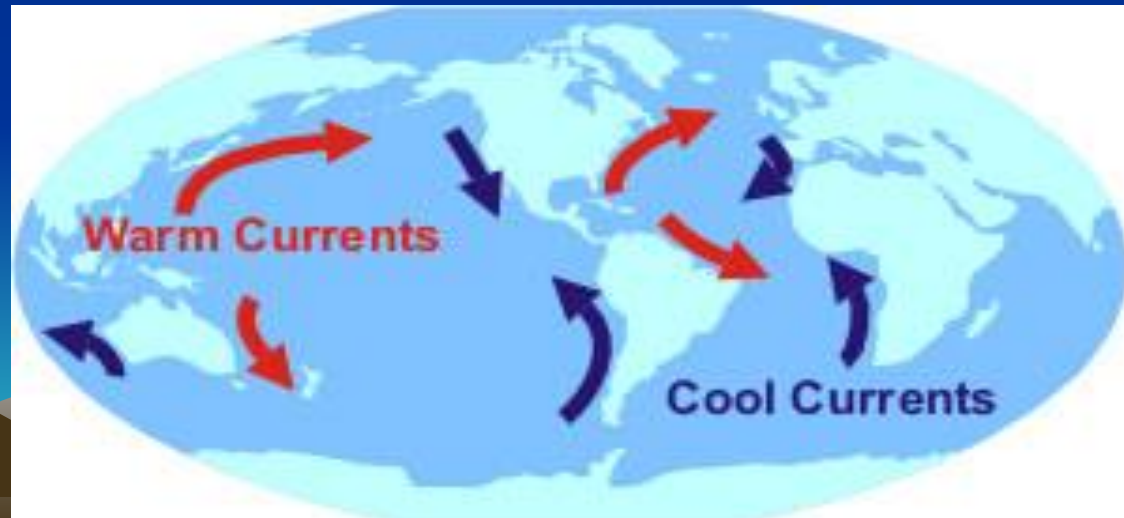
Cretaceous Period
65 million years ago



Present Day

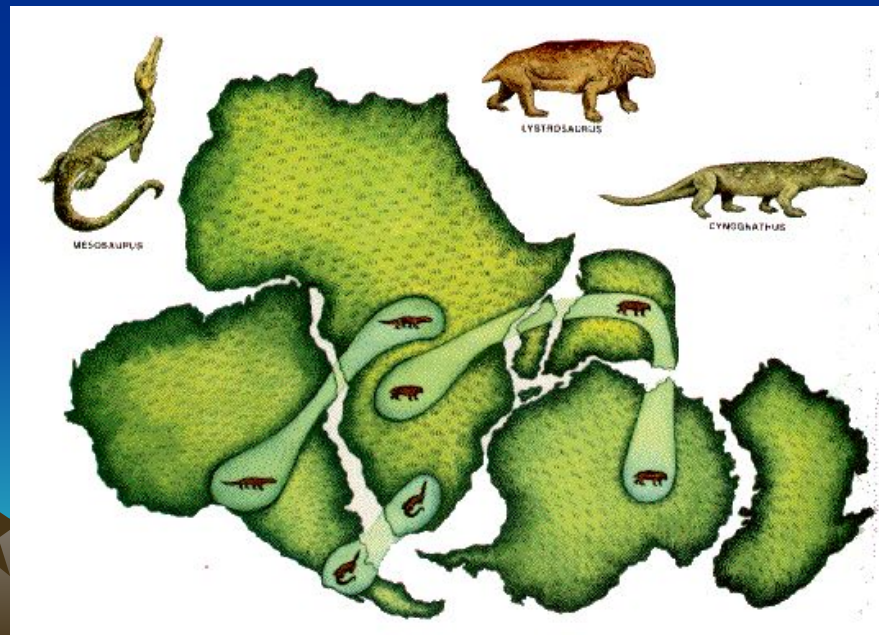
Changes in Climate

- Continents that have drifted closer to the equator are warmer because the sun's rays hit them directly.
- Continental drift also changed the flow of ocean currents and wind flows.



Changes in Life

- As environments changed, so did the organisms
- Life on land changed as continents drifted apart
- Sea life changed as new oceans were formed
- Changes in climate led to new adaptations



Pop Quiz

- 1. Earth has _____ large tectonic plates and several smaller ones
12
- 2. **CO**nvergent boundaries are where plates _____ together
COme
- 3. _____ drift = describes how continents have moved over Earth's surface
Continental
- 4. It's believed that a single "supercontinent" called _____ once existed
Pangea

