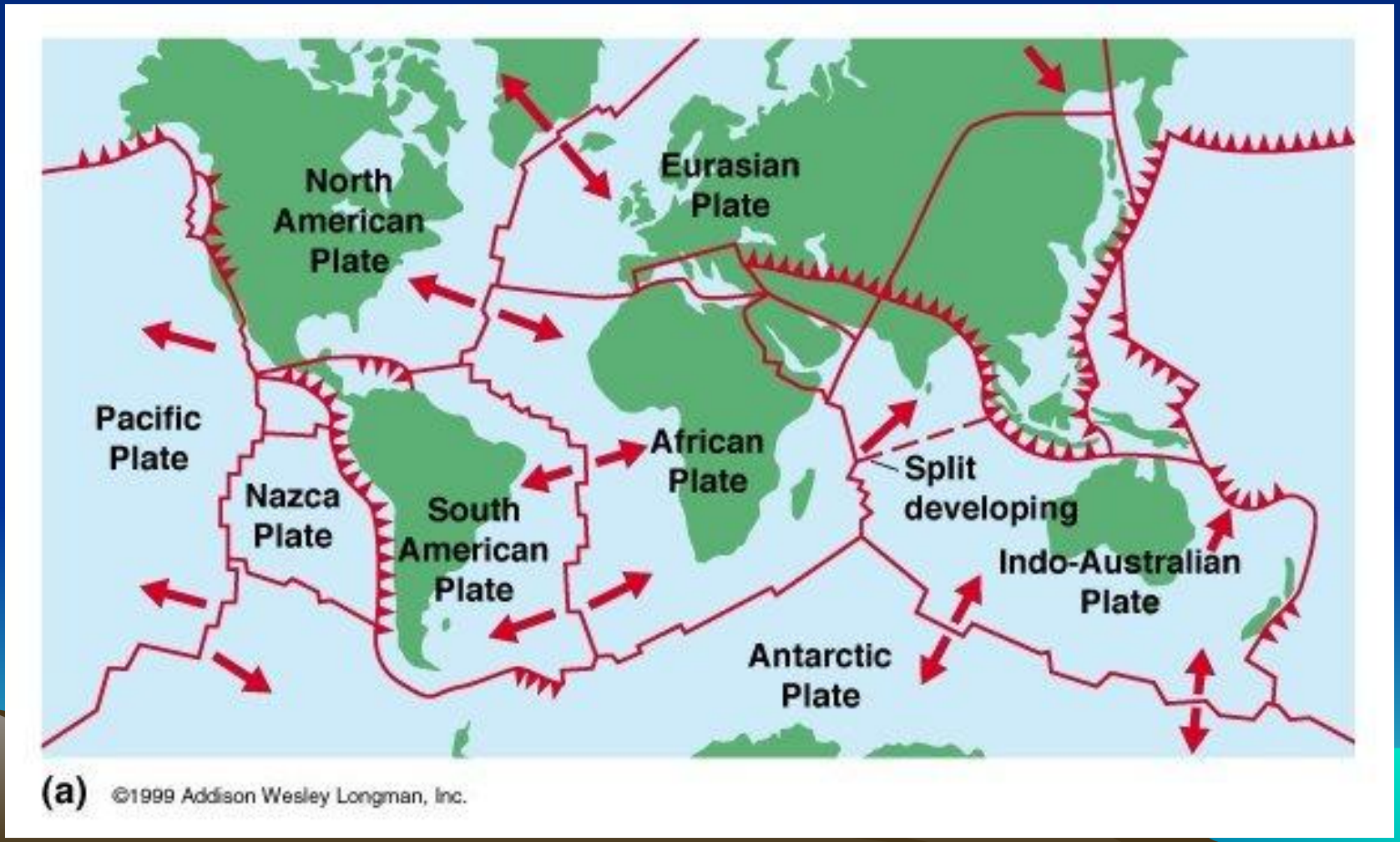
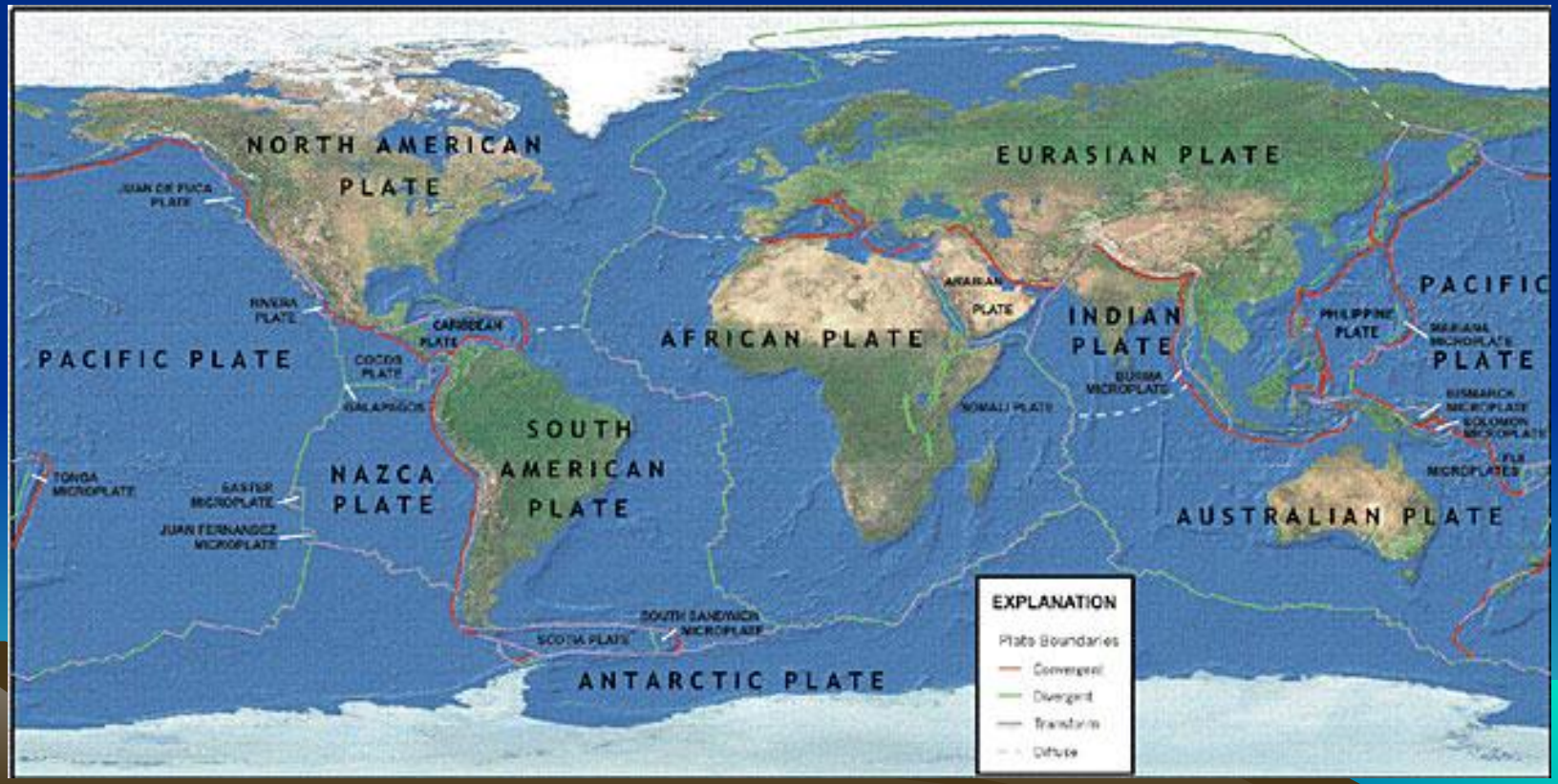
Plate Tectonics

Chapter 9, Section 2



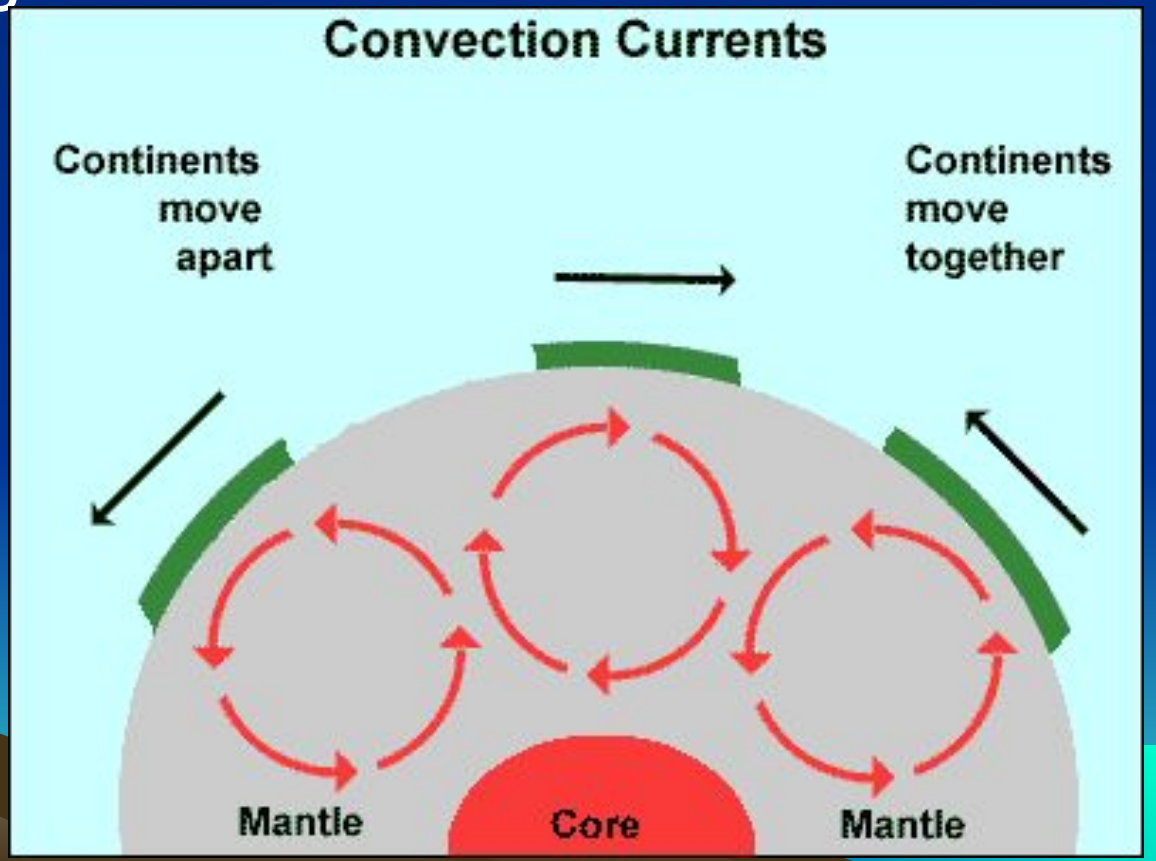
Lithosphere

- 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

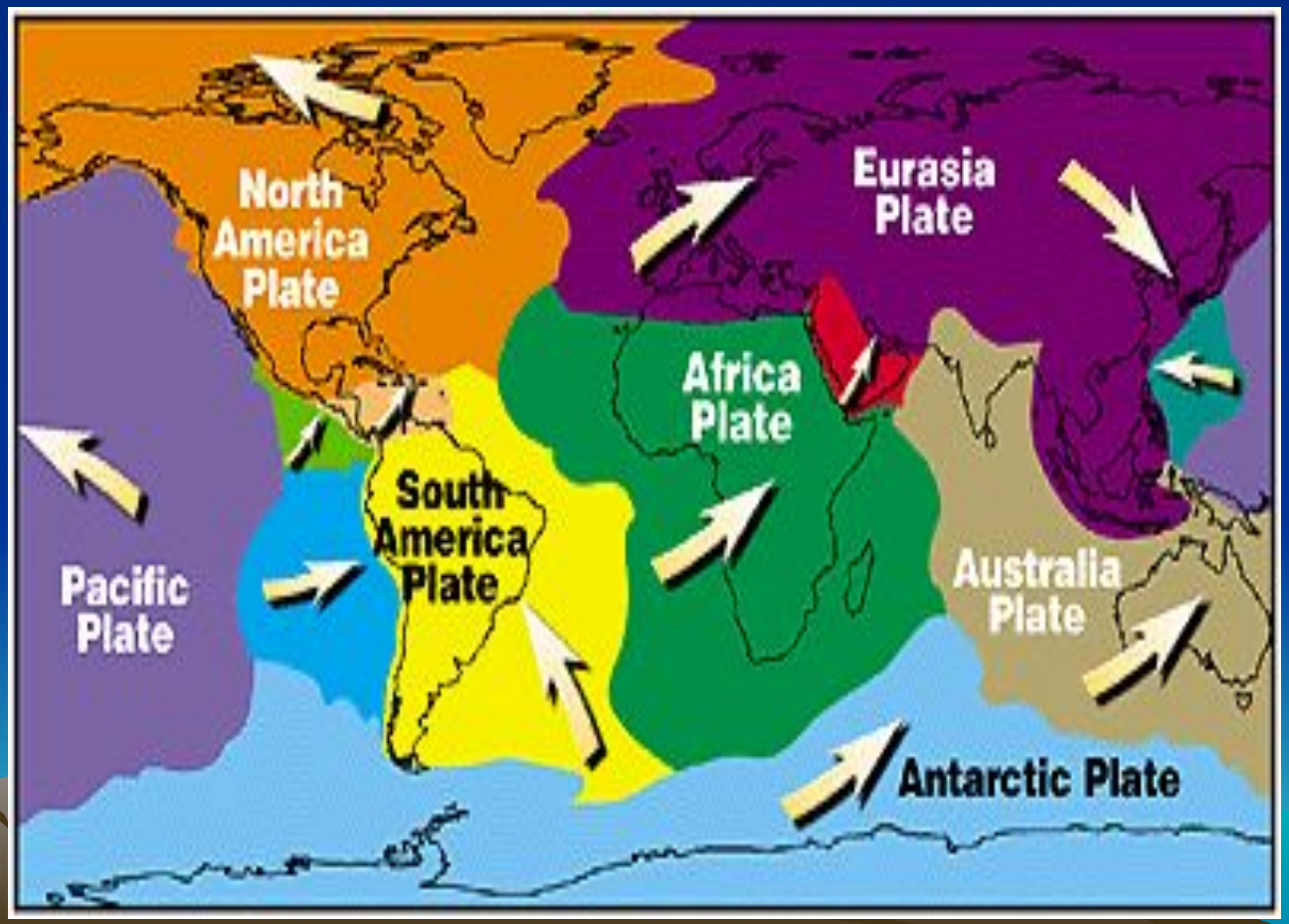
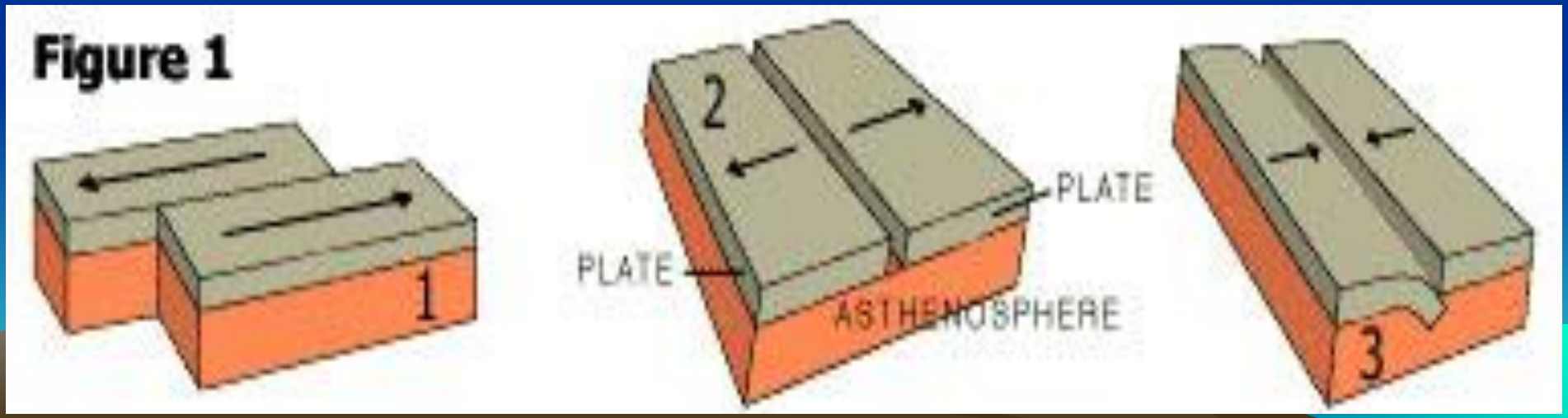


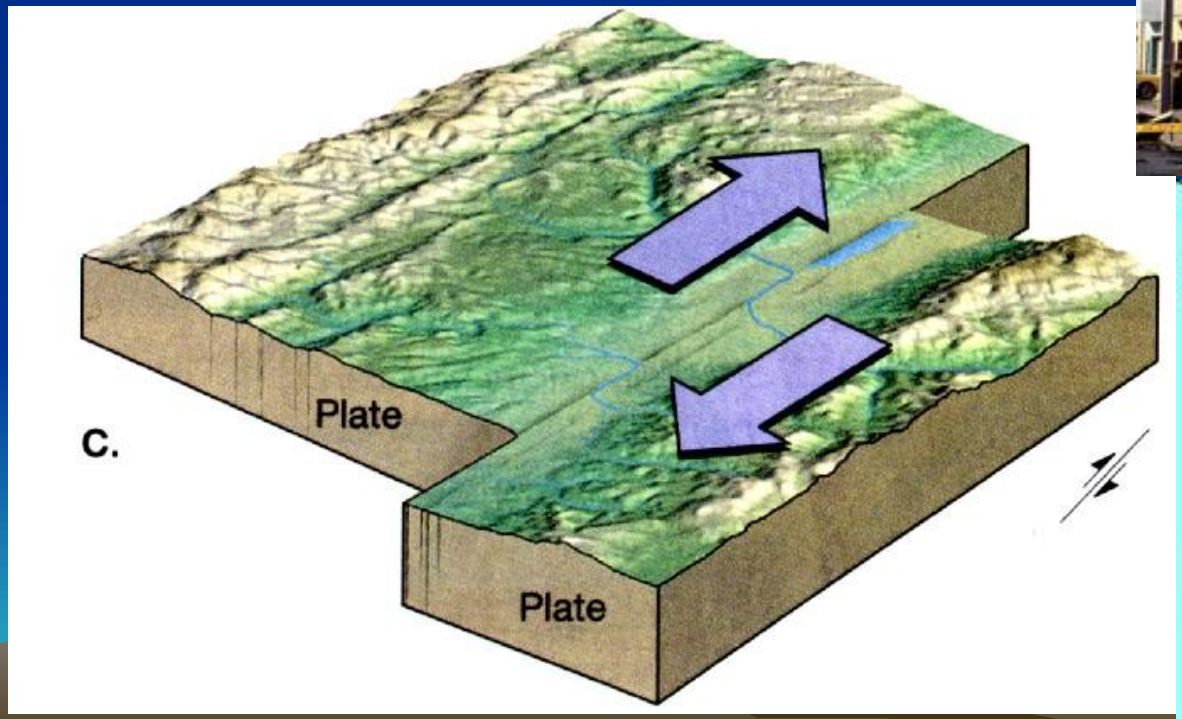
Plate Boundaries

- **TRA**nsform Boundaries = plates slide horizontally (plates **TRA**vel 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)



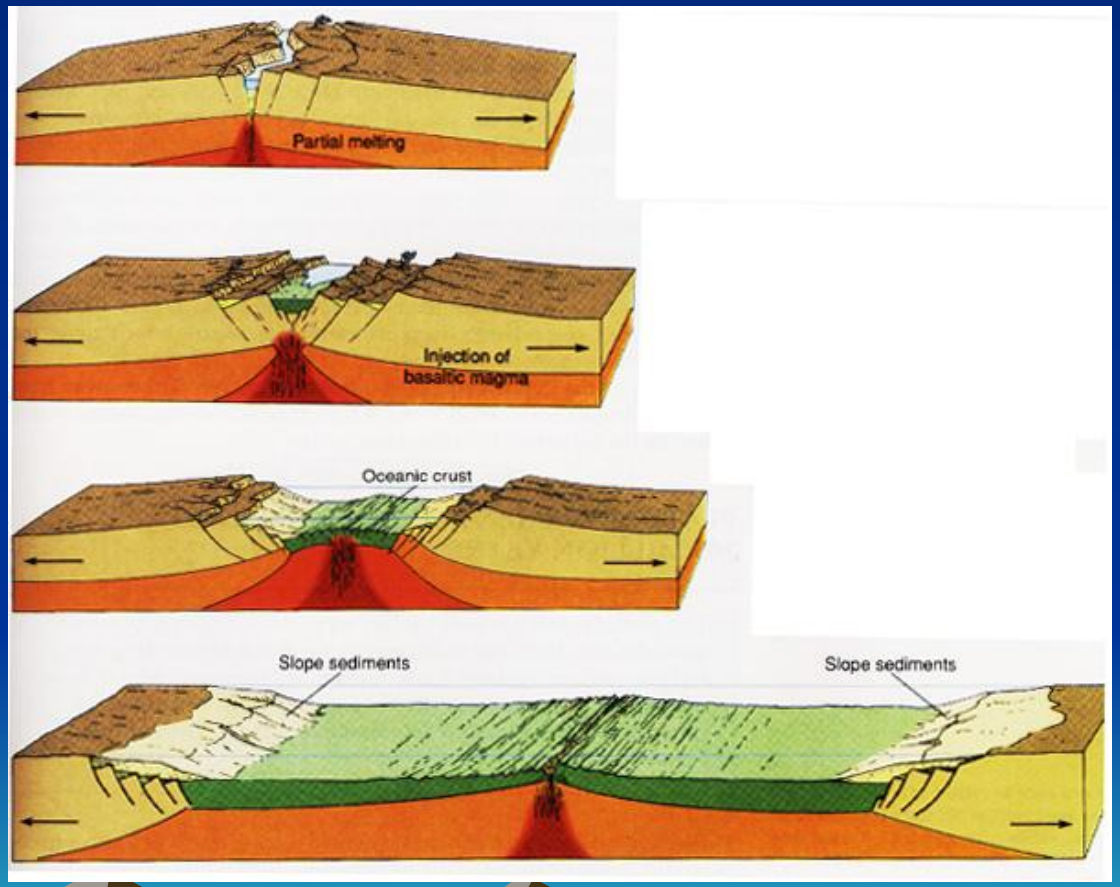
TRAnsform Boundaries

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



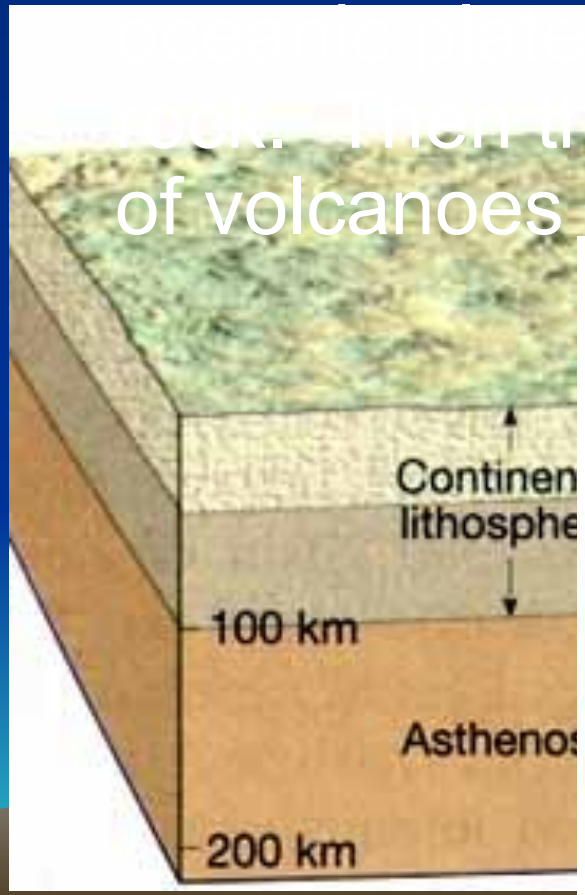
DIVergent Boundaries

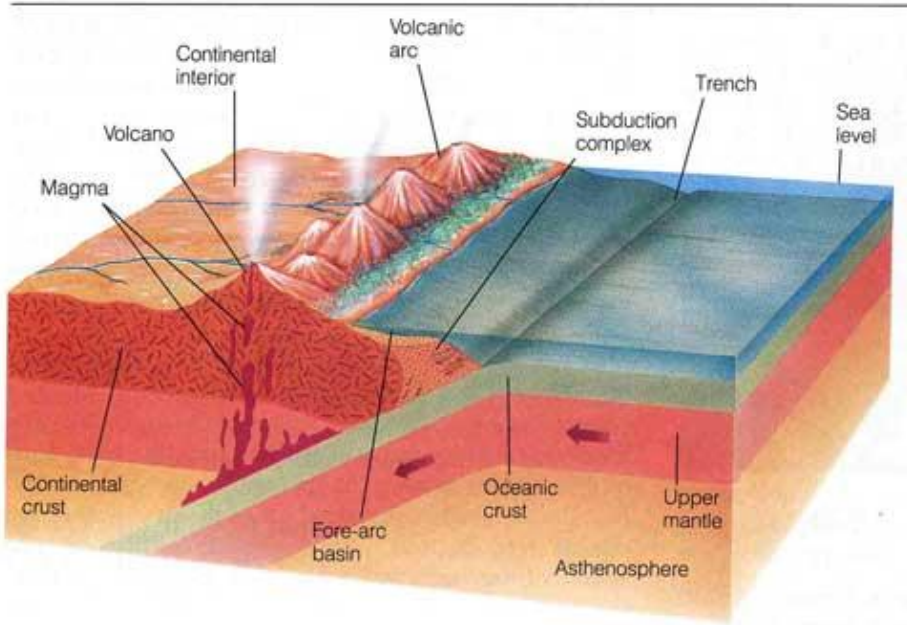
- Plates that DIVide produce a “rift” – a giant crack
- If a rift tears apart a continent and widens for millions of years, a new sea forms (and can gradually form a new ocean)



COnvergent Boundaries

- When two continental (land) plates COme together, a mountain belt is formed
- But when a continental plate COllides with an
- [illegible] molten rock rises and [illegible] of volcanoes

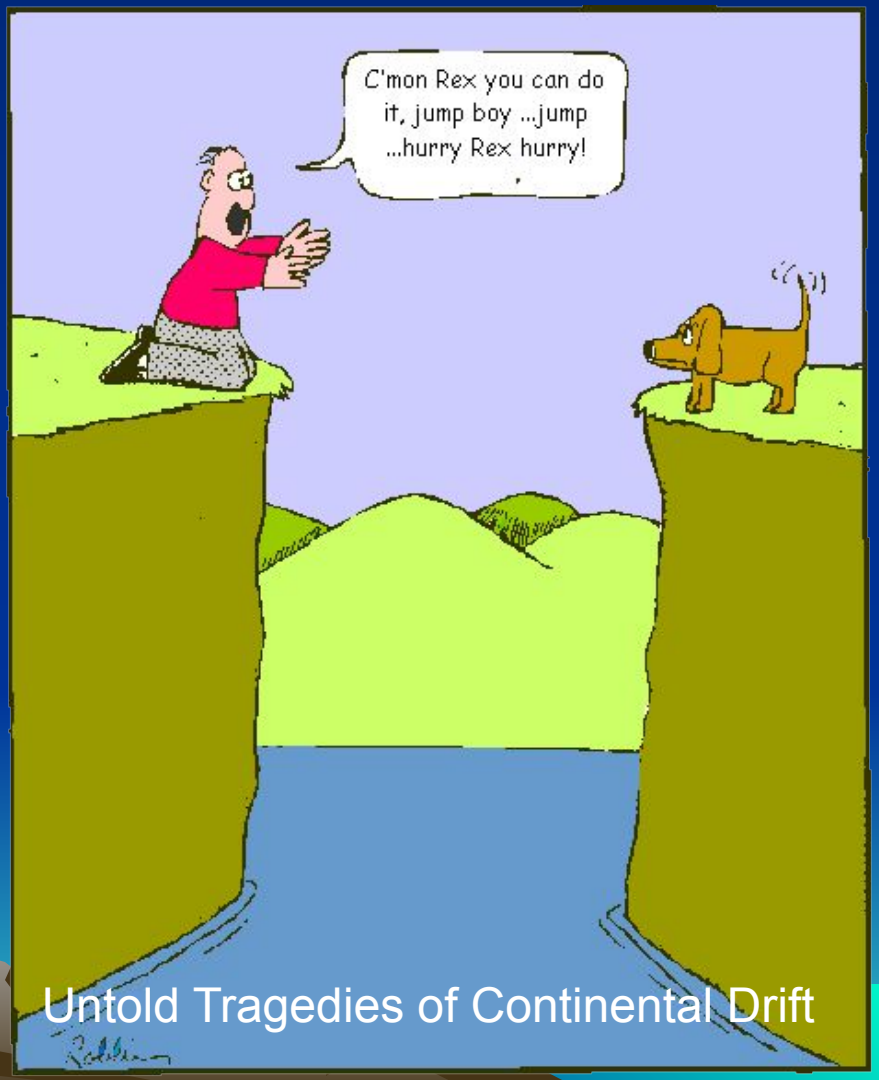




◆ FIGURE 1.12 Convergent plate boundary between oceanic crust and continental crust. Because the oceanic crust is denser, it is subducted under the continental crust. A chain of volcanic mountains forms on the continental plate as a result of rising magma.

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

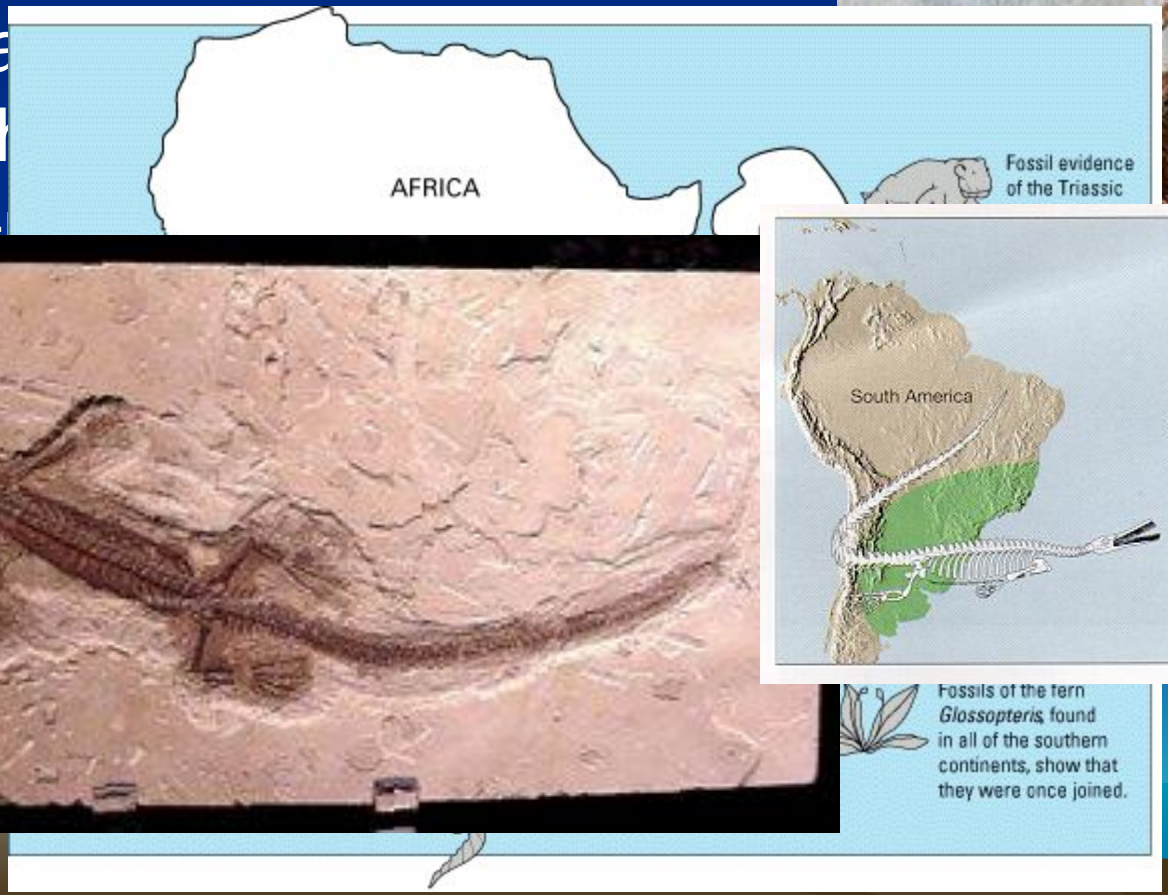


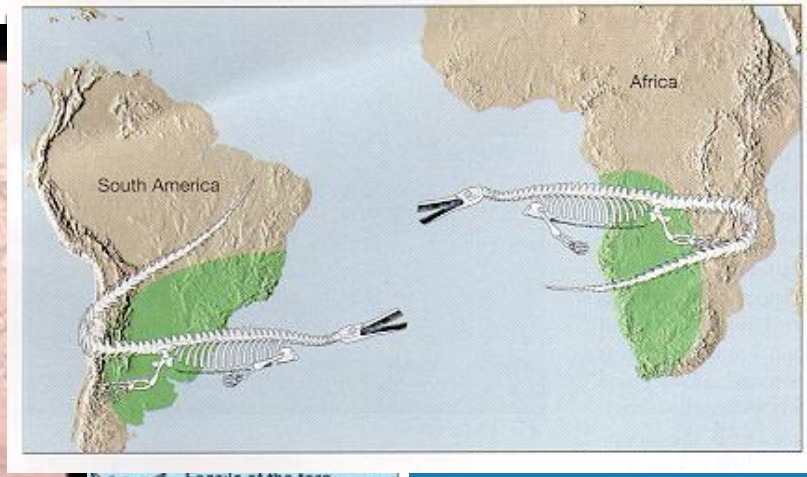
Geologic Evidence of Continental Drift

- 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

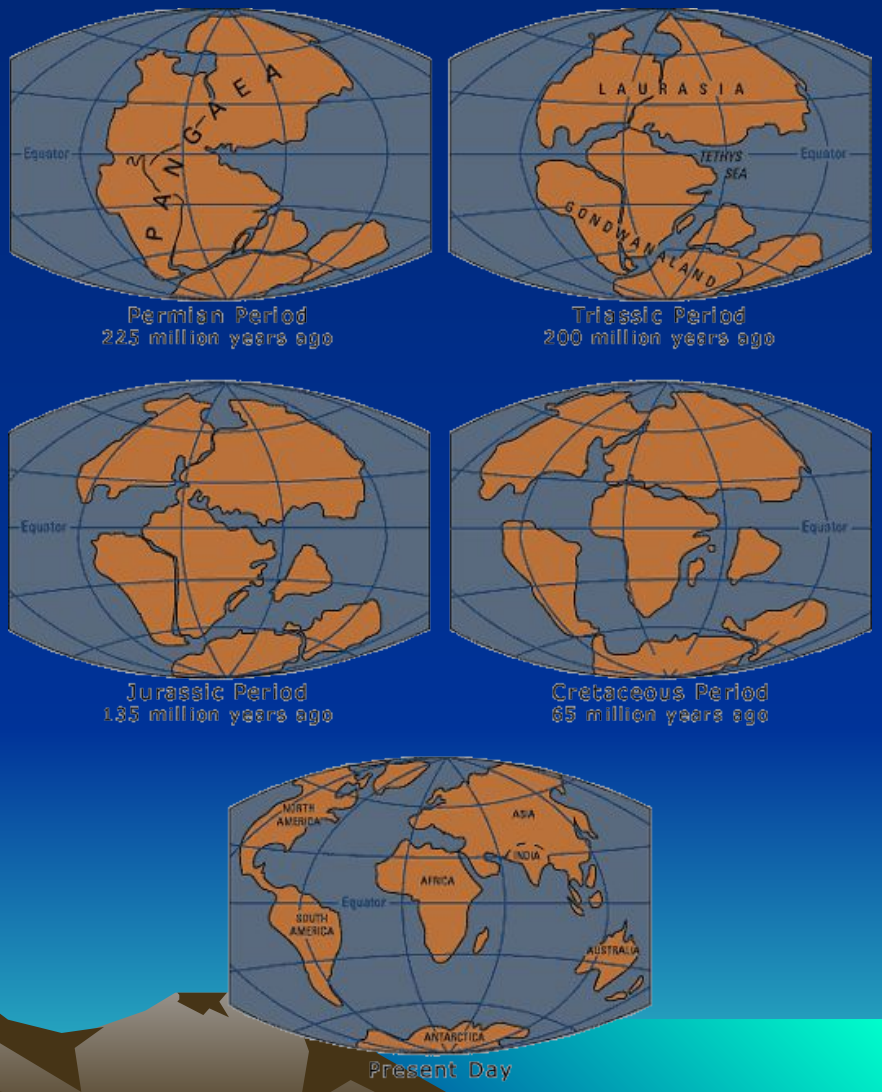
- Common fossils are found on continents that are now separated by oceans.
- *Mesosa*
  in South
- Today t





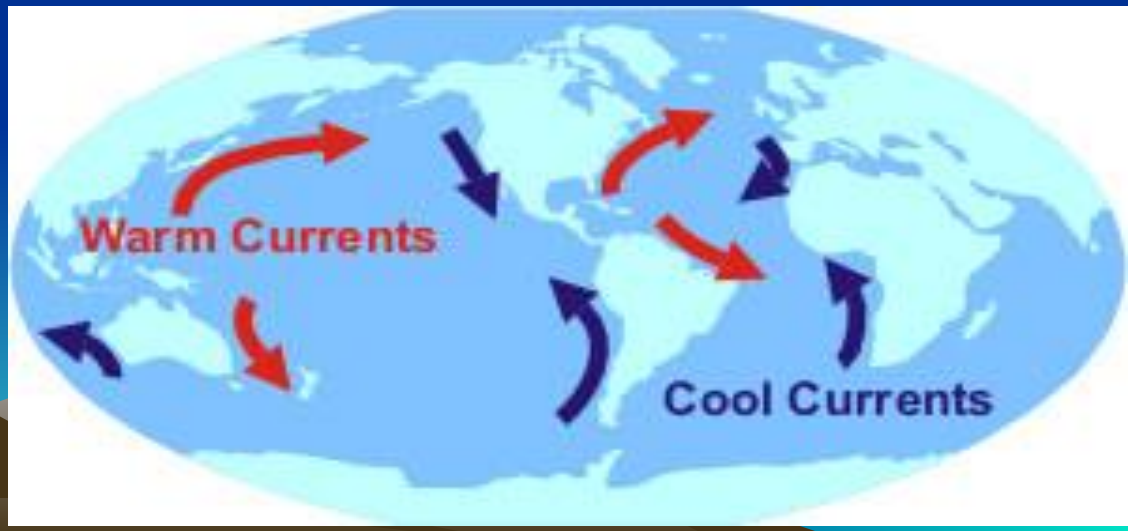
History of Continental Drift

- 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.



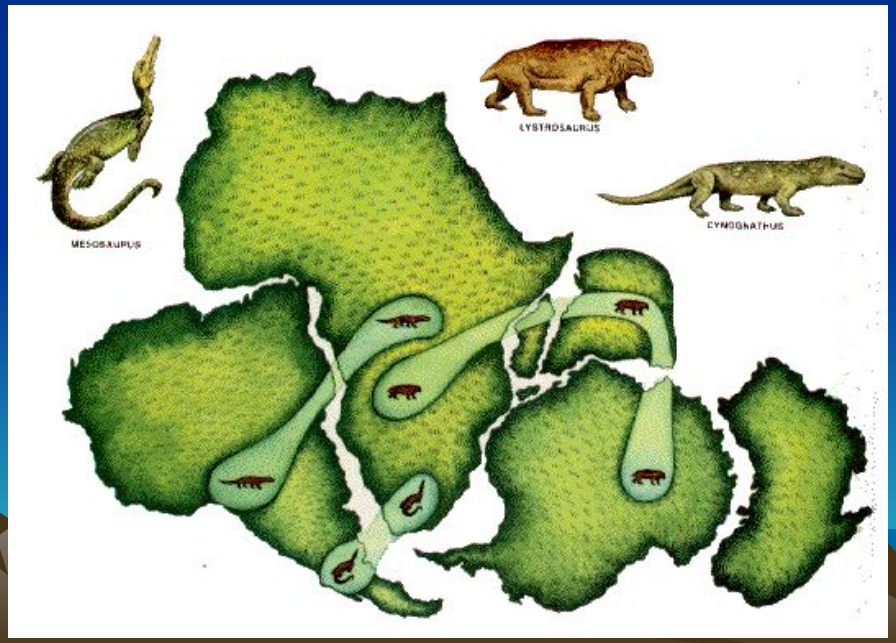
Changes in Climate

- 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