

Landforms, Water, and Natural Resources



Objective

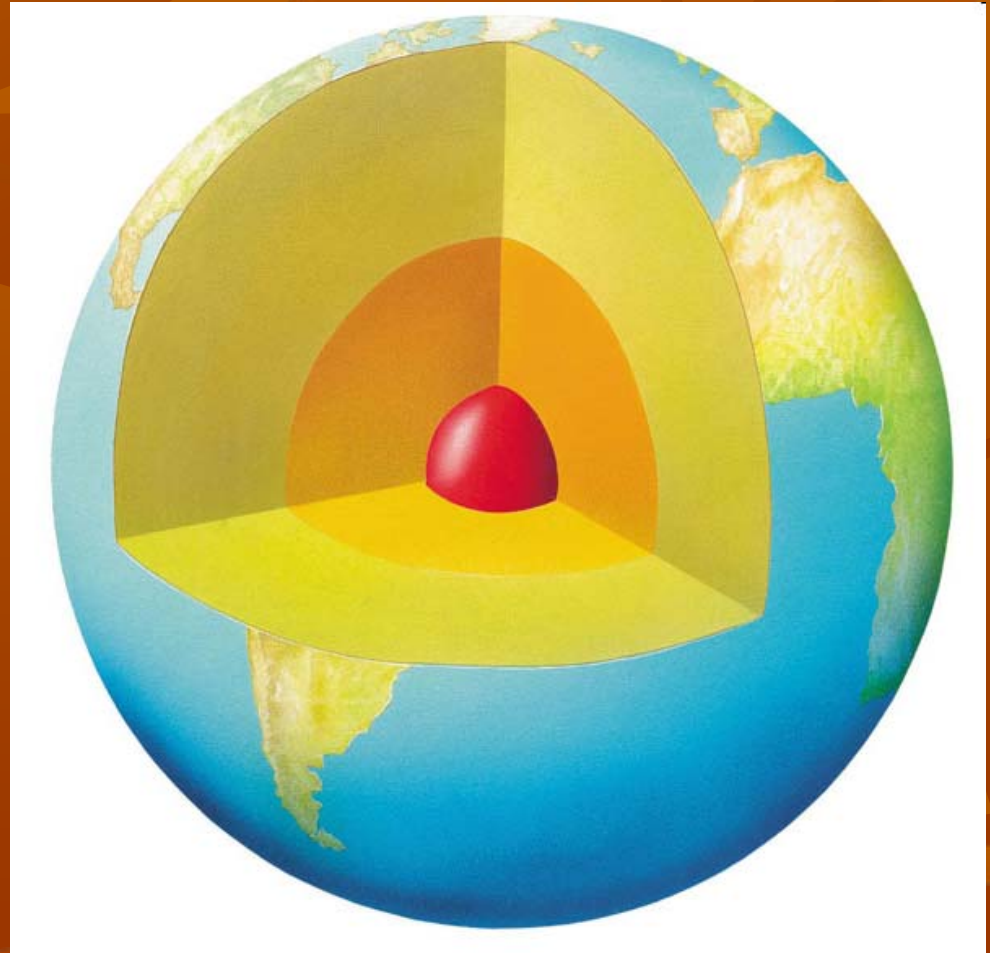
- Students will investigate the physical processes that shape the earth's surface

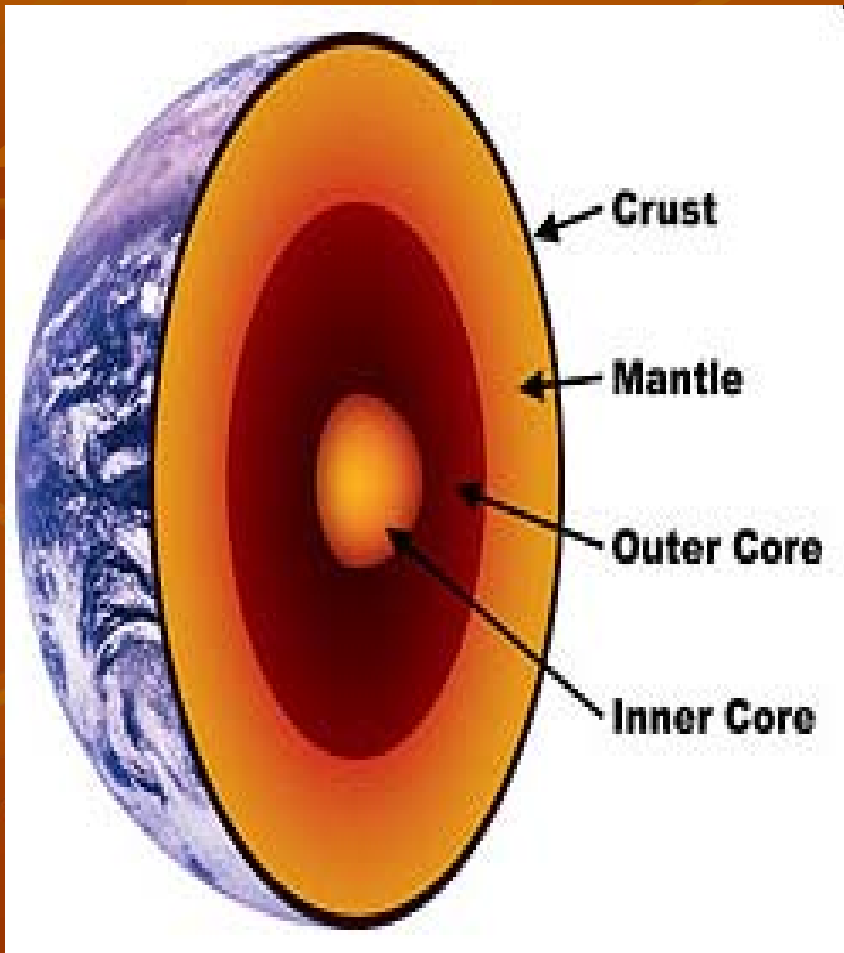
Energy

- Energy is something that the earth both gives off *and* absorbs. All living species absorb energy in some way.

Forces Below Earth's Surface

- Core
 - The core is like a nuclear furnace where decaying radioactive elements generate heat.





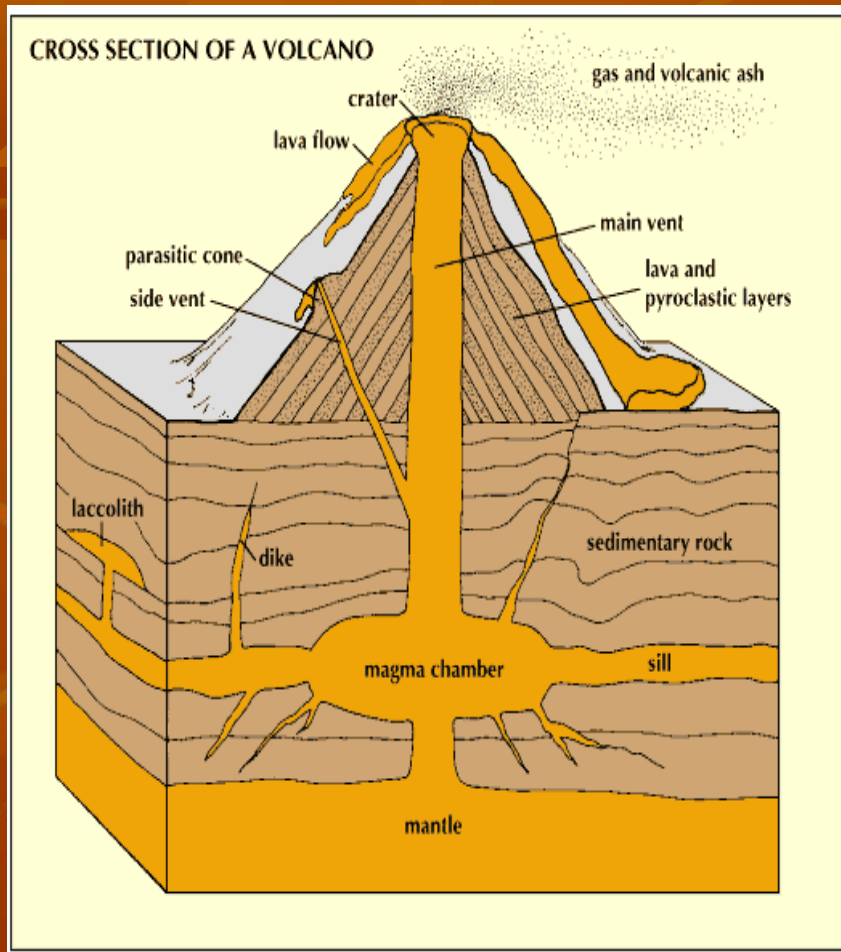
- Divided into *inner* and *outer* layers
 - *Inner Core* is solid
 - *Outer Core* is dense liquid metal, mainly iron and nickel

Mantle

- The mantle is just outside the outer core
 - It contains most of the earth's mass.



Crust



- The uppermost level is the crust.
- Even though the crust is 25 miles thick it is considered relatively thin.
- Huge currents carry heat from the core through the mantle to the crust

Magma

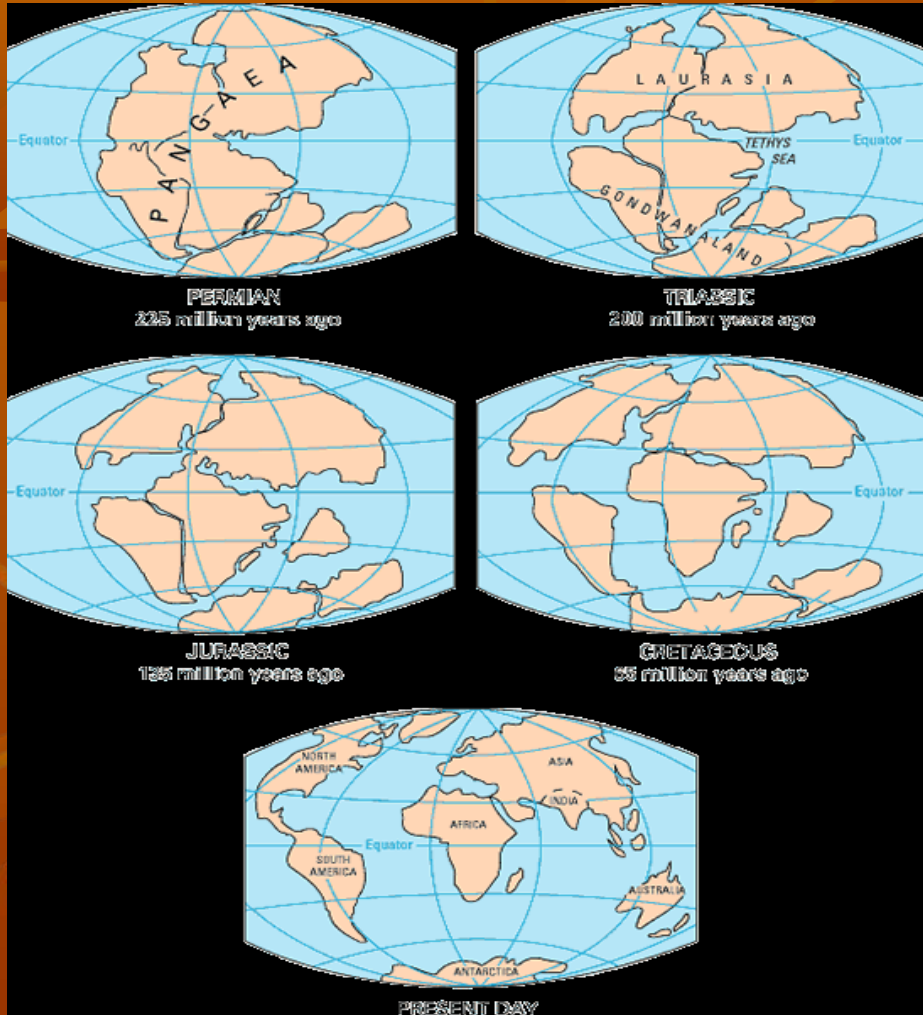
- *Magma* is liquid rock beneath the earth's surface.
- *Lava* is liquid rock above the earth's surface



Plate Tectonics

- Plate tectonics explains how forces within the planet create landforms.
- This theory says that Earth's crust is divided into more than a dozen rigid, slow moving plates.
 - They can move as little as one inch per year.
 - (see overhead)

Plate Tectonics

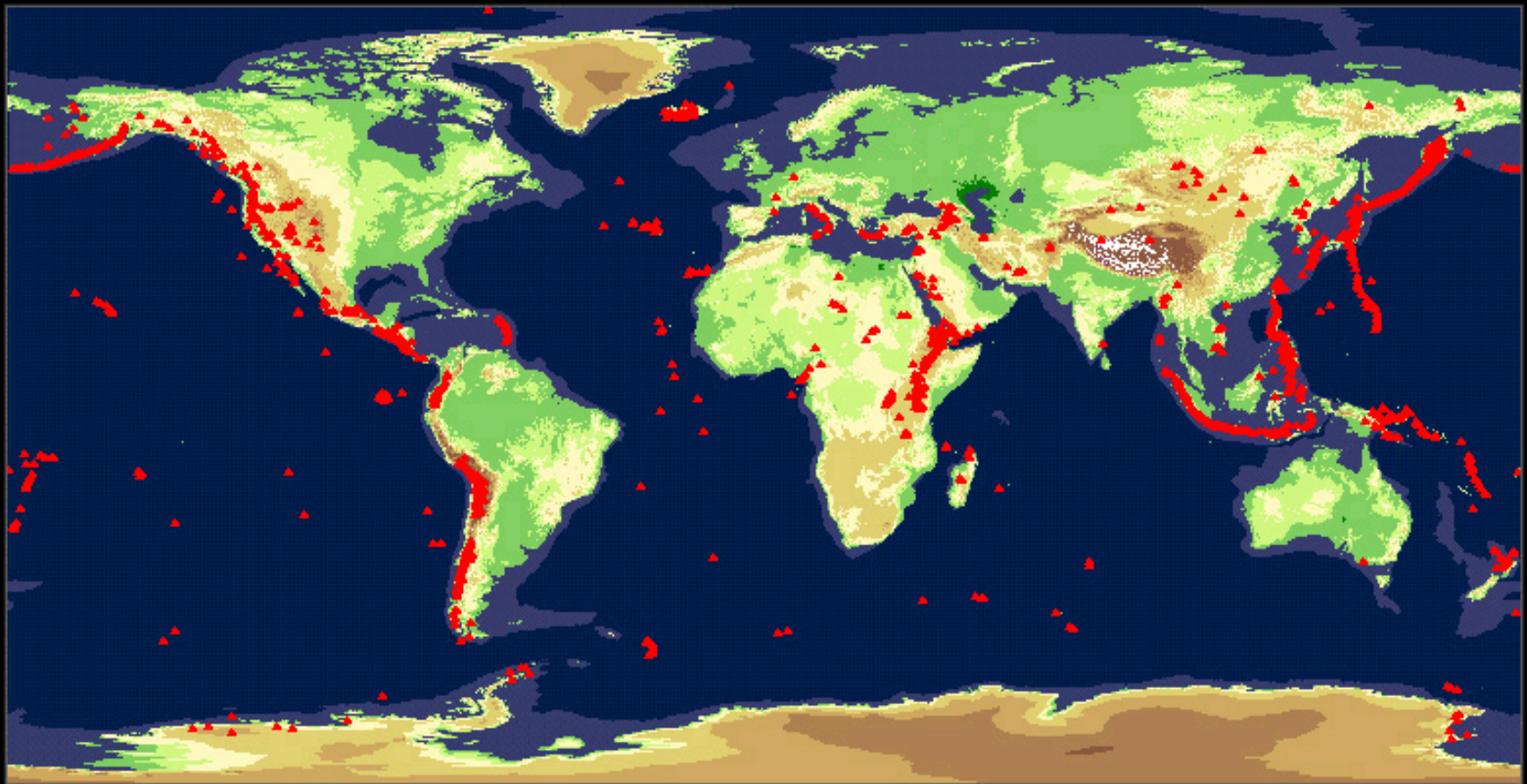


- This process is called continental drift.
- Along plate boundaries the crust is subject to stresses that lead to melting, bending, and breaking.
- In the middle of the plates little tectonic activity occurs.

- Plate boundaries are usually signaled by the appearance of volcanoes
- Scientists believe that this theory can explain the long history of the earth's surface.



Volcanoes of the World



Oceanic
Continental
Shelf

Data Source: Smithsonian Institution, Global Volcanism Program.



Pangea



- Scientists believe that 200 million years ago all of the earth's continents were connected into one super continent.

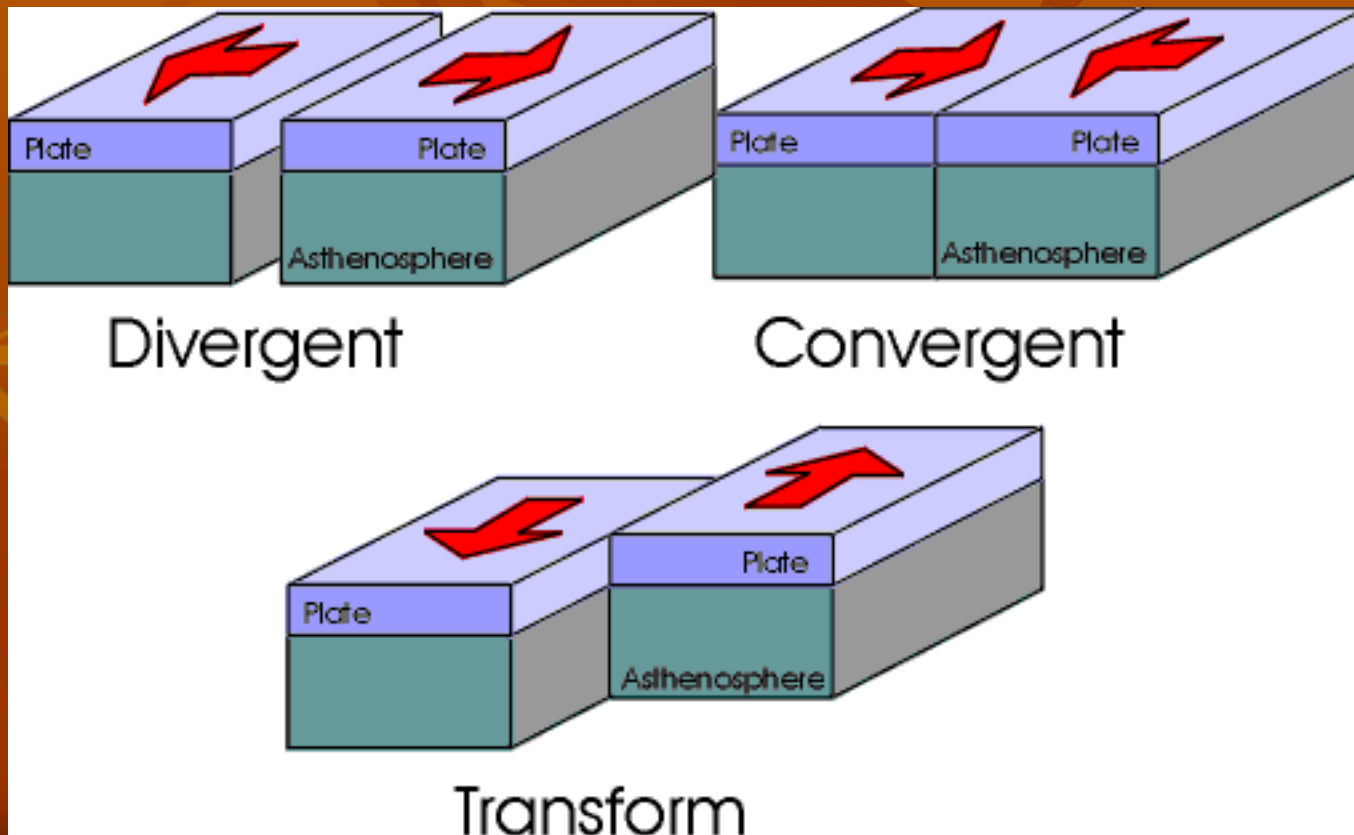
The Split

- As Pangea split, it formed two smaller super continents called:
 - Gondwanaland and
 - Laurasia

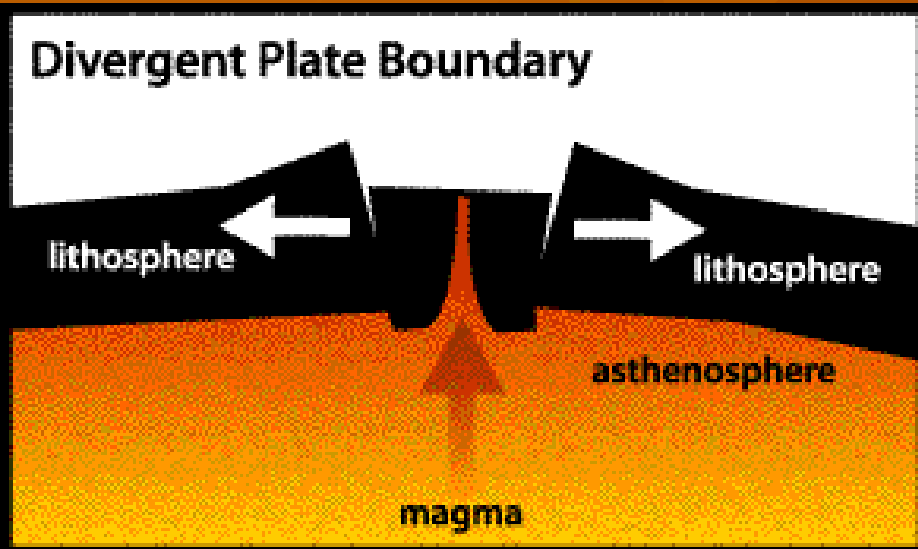


Plate Movement

- When plates move they can move in 3 different ways

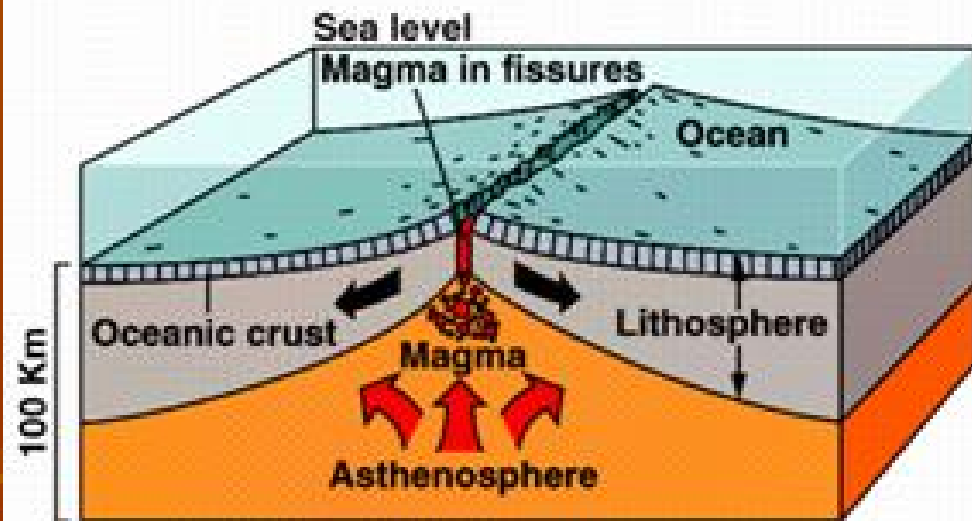


1. They can spread (Divergent)

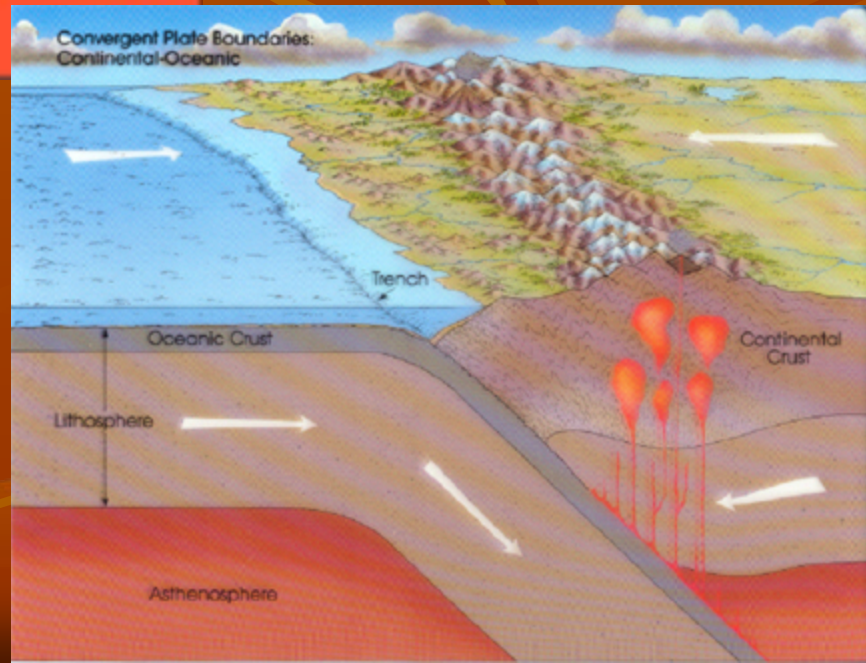
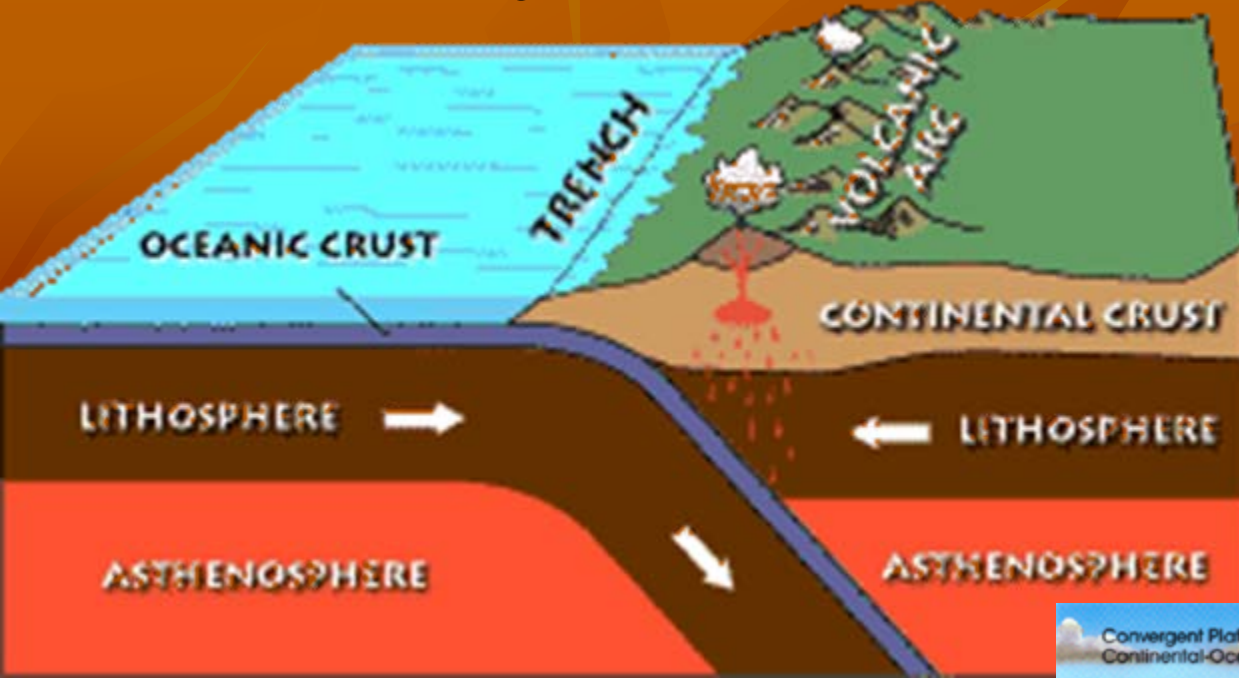


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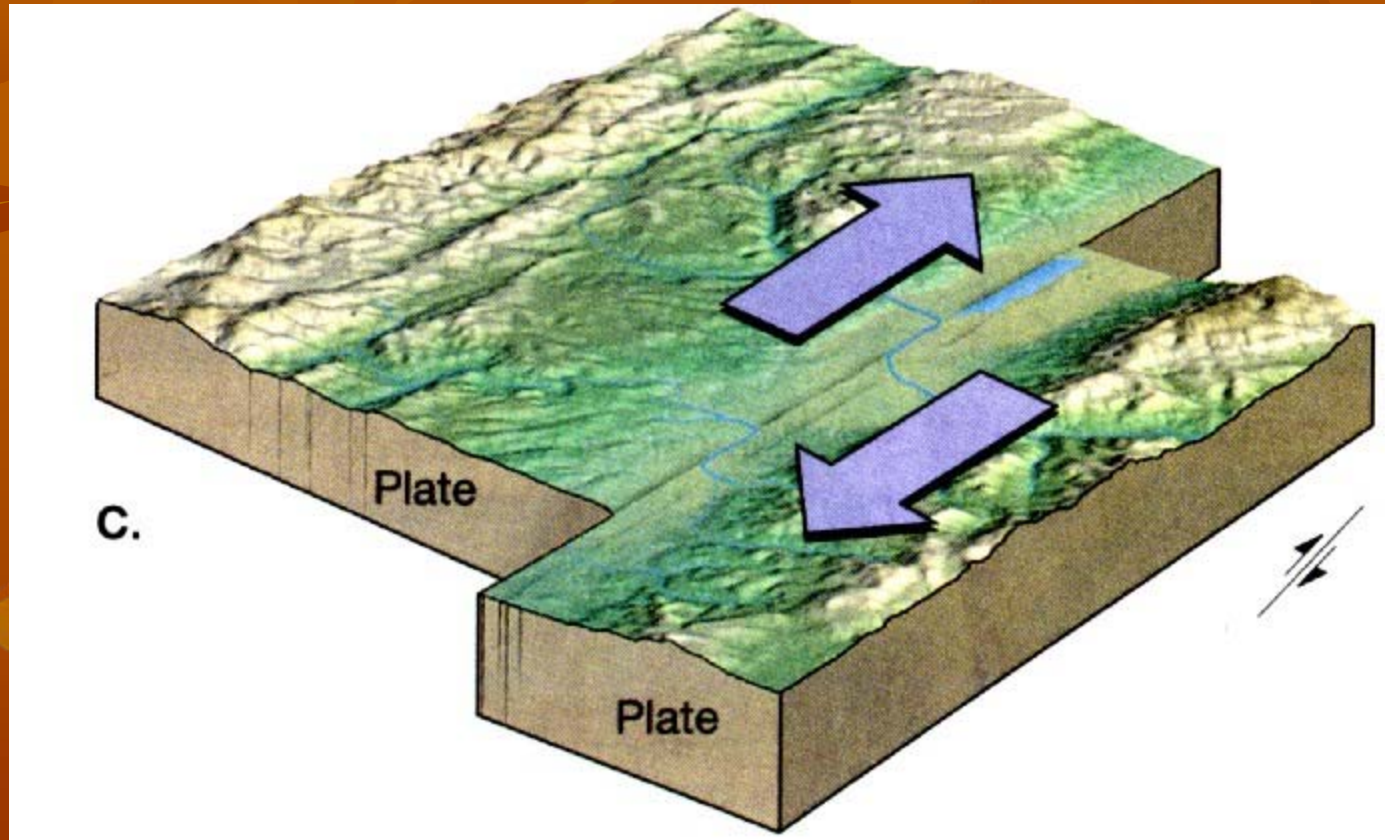
A Divergent Boundary



2. They can collide (Convergent)



3. They can move past each other laterally (Transform)



- Over millions of years the earth's crust settled itself into two layers.
 - The lower layer is made up of really heavy rock, usually found on the ocean floor.
 - The upper layer is made up of lighter rock, usually makes up continental landmasses.

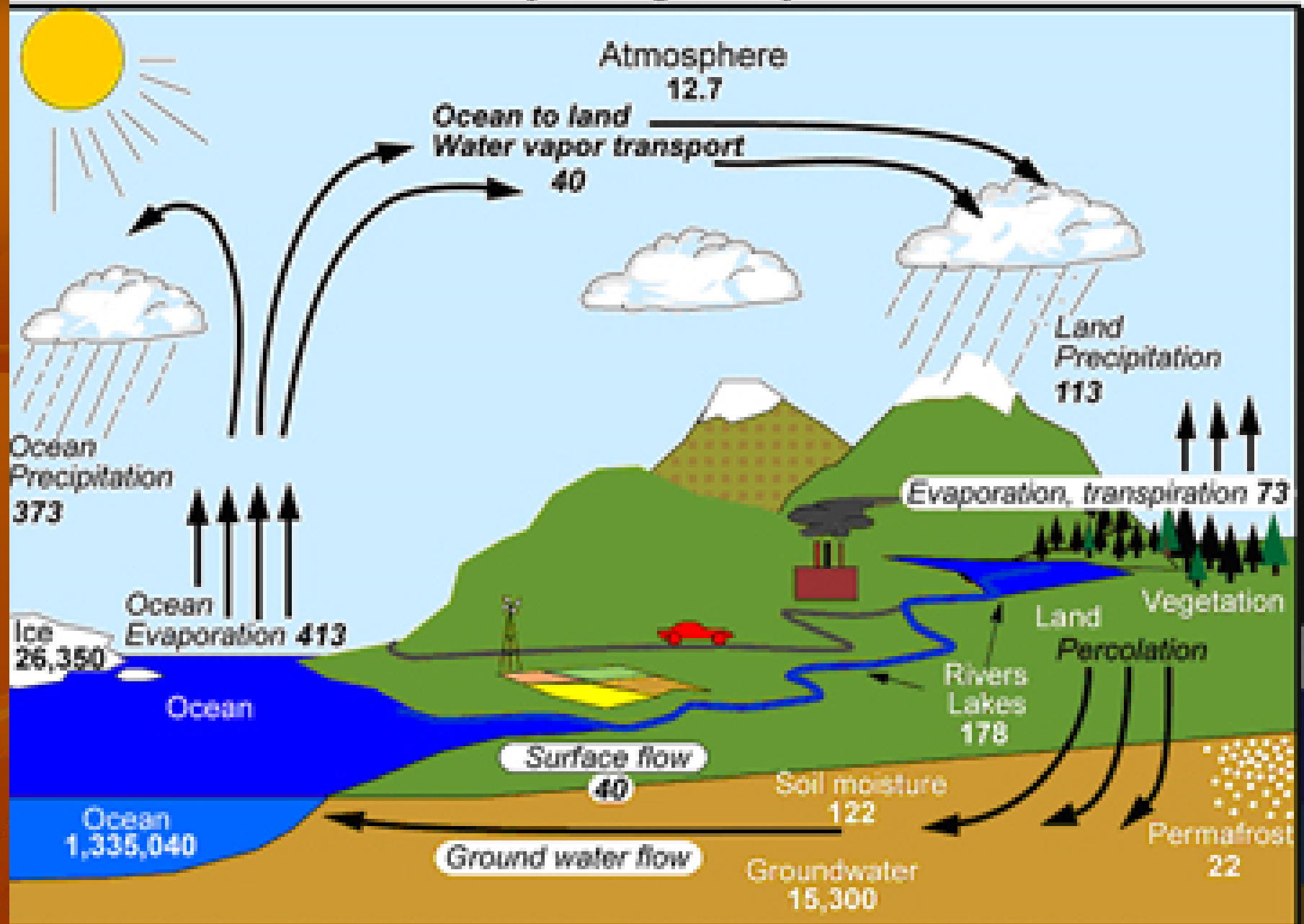
H₂O= Water

- Water is a huge part of the Earth.
- Water is the basis for life on this planet and without it life could not exist.
- Water is such a large part of the Earth that it covers 70% of the planet.

Percentages

- Water is abundant on Earth but not all of it can be easily used or accessed.
- 97%- of the world's water is in oceans and is too salty to use.
- 3%- of the world's water is fresh, but most of it is frozen in the polar ice caps.
- This leaves very little for human use.

Hydrological Cycle



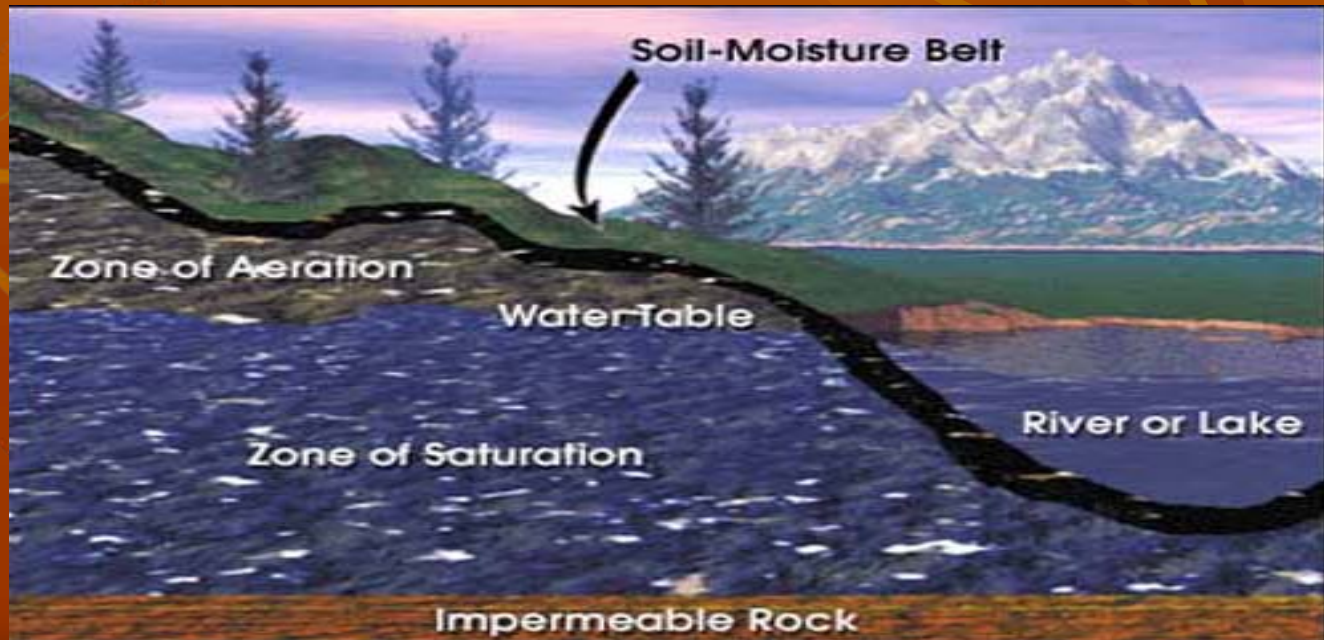
Units: Thousand cubic km for storage, and thousand cubic km/yr for exchanges

Surface Water

- *Watershed* – the whole region drained by a river and its tributaries.
- *Desalinization* – the removal of salt from water
- *Tributary* – any smaller stream or river that flows into a larger stream or river

Water

- *Groundwater* – water found below ground
- *Water Table* – level where water fills all spaces underground.



Vocabulary

- Weathering: the process where rocks break and decay over time.
- Erosion: The movement of surface material from one location to another caused by water, wind, and ice.
- Deposition: Debris, or sediment which settles in an area after being moved