

Earth, Spheres & Physical Processes



Forces of Change

Earthquake Aftermath







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Volcano Aftermath









Flood Aftermath









Tsunami Aftermath





The Cause

Weathering/Erosion

NK



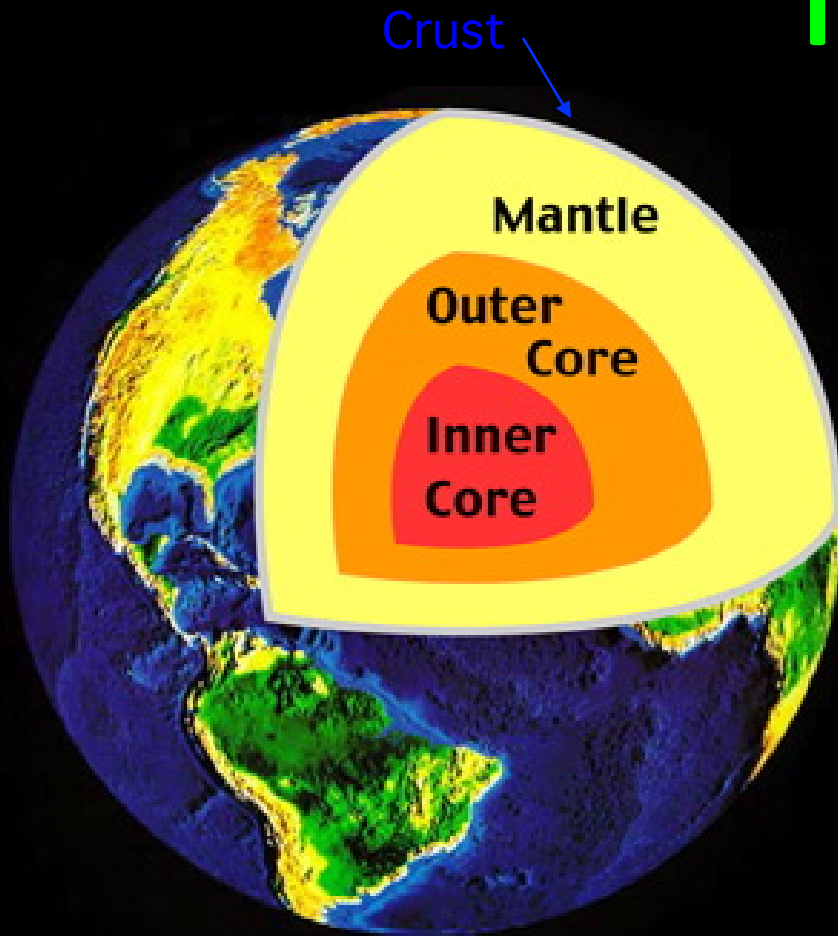






All About Earth...

The Earth's Layers



Core - hot metal, iron mixed with nickel

Inner Core - solid
Outer Core - liquid

Mantle - a thick layer of rock (1,800 miles thick). Mostly solid.

Crust - rocky surface layer.

Very thin...about 5 miles below ocean and about 22 miles from the continents.

Pangaea

This belief is known as the theory of Continental Drift.

A scientist, **Alfred Wegener**, believed that there was once one land, “**supercontinent**.”

He called it **Pangaea**.

Pan - all

Gaia - earth

Pangaea broke into separate continents.

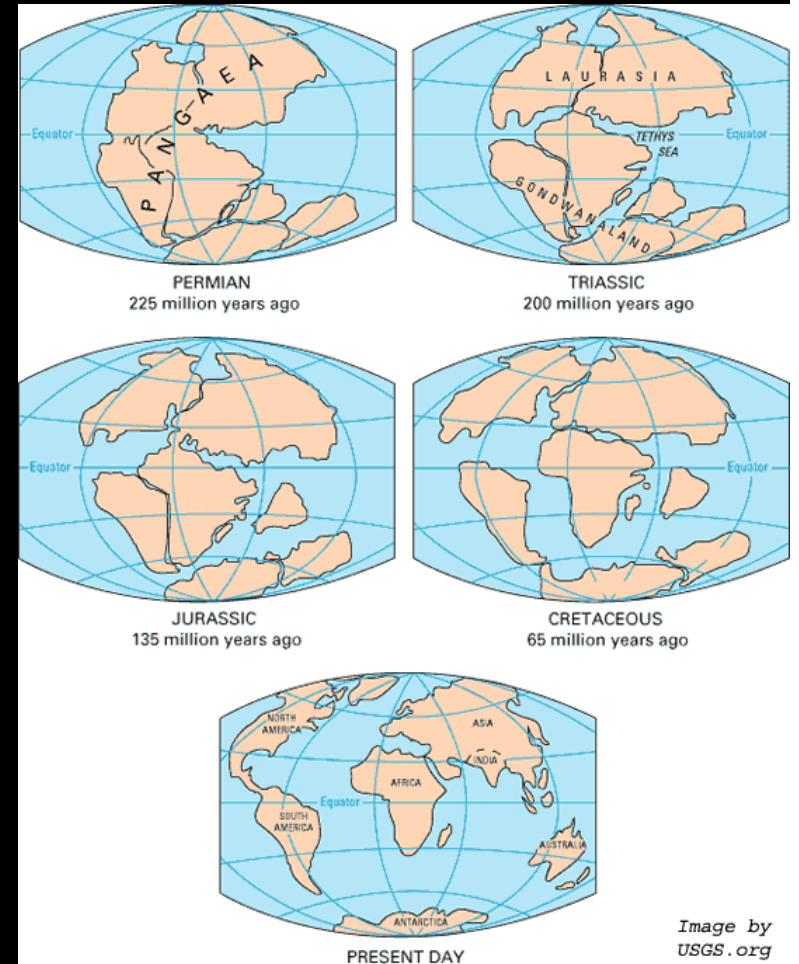


Image by
USGS.org

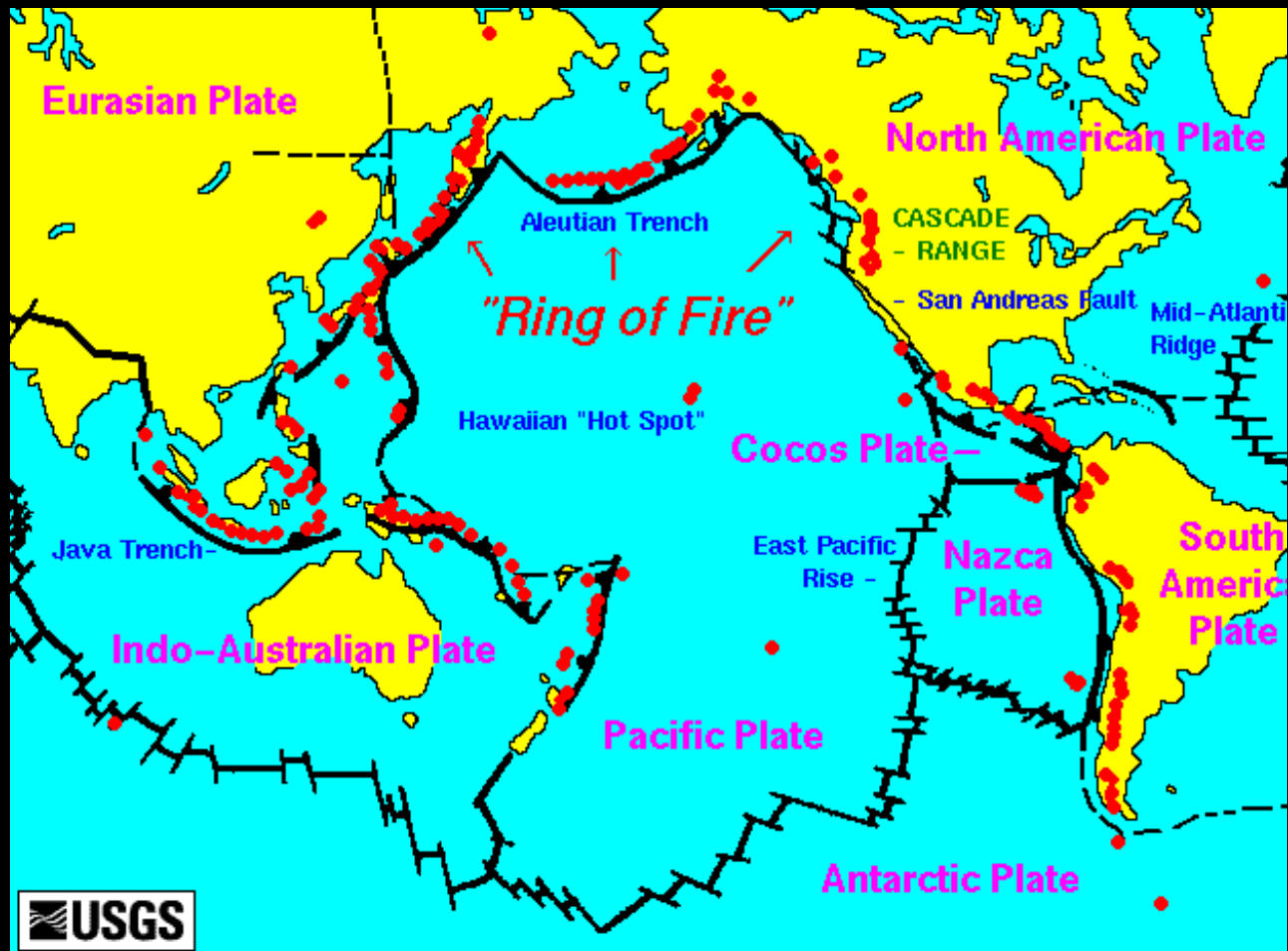
Plate Tectonics

The earth's outer shell is broken into a number of moving plates.

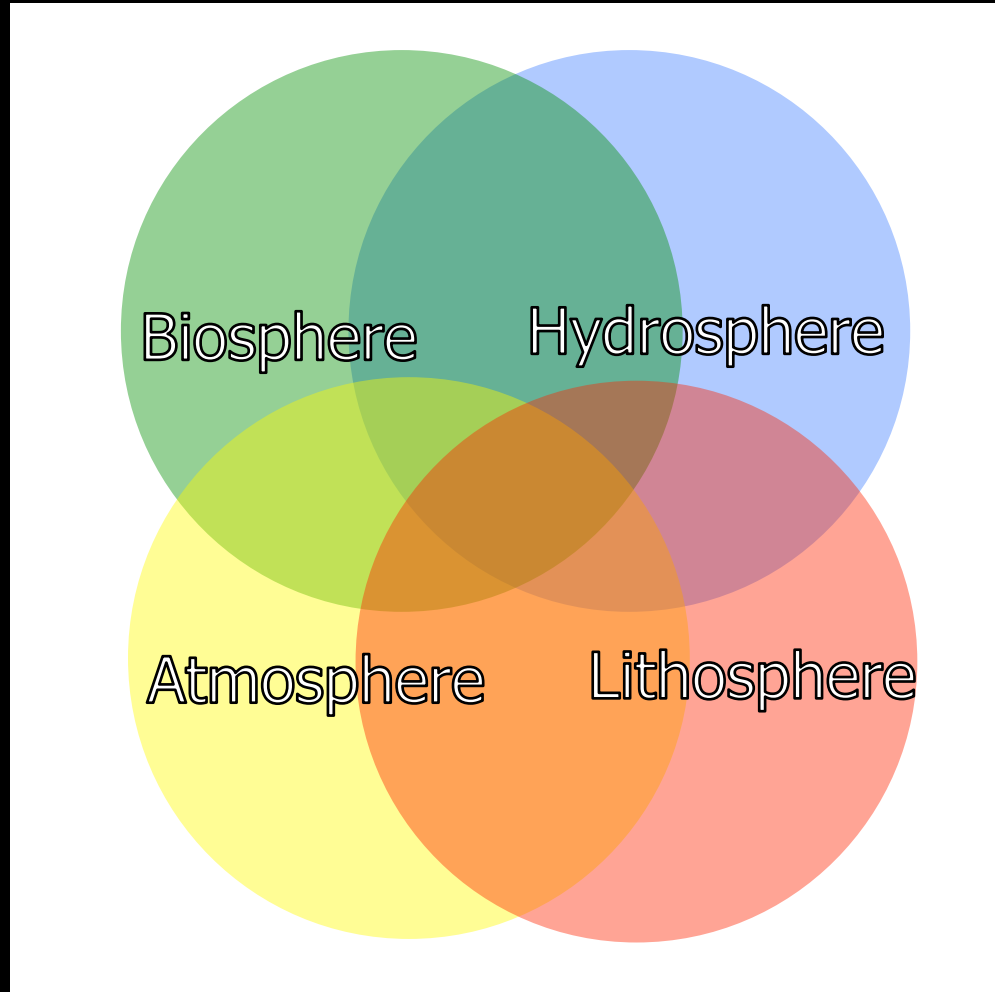


“Ring of Fire”

A circle of volcanoes surrounding the Pacific Ocean



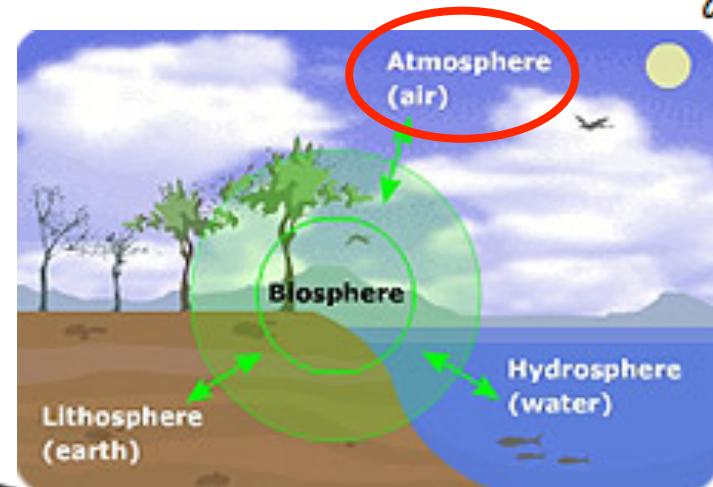
Earth's Spheres



Definition

the air surrounding
the earth

Drawing



Atmosphere

Characteristics

- oxygen
- nitrogen
- carbon dioxide

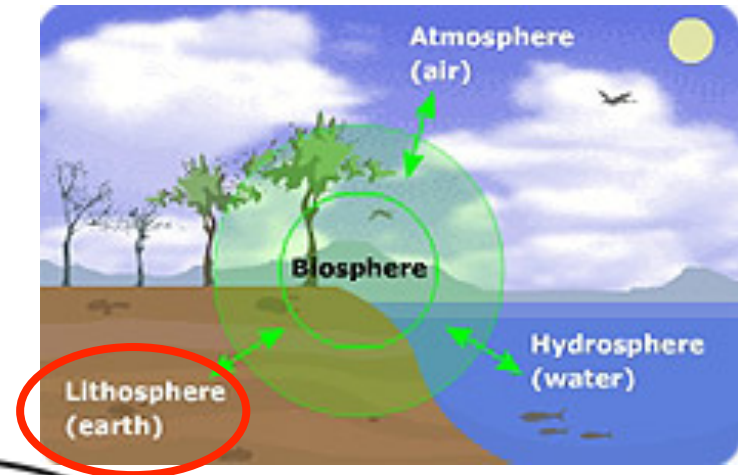
Why is it important?

- protects us by blocking out dangerous rays from the sun
- make this planet a place for plants and animals

Definition

the rocky surface of the earth

Drawing



Lithosphere

Characteristics

- soil
- nutrients
- minerals/fuels

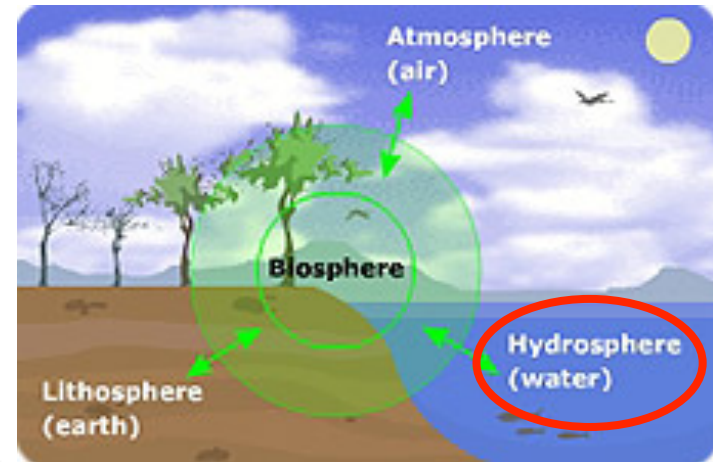
Why is it important?

- source of minerals/fuels
- provides nutrients to the plants (plants are the source of food for man and all other animals)

Definition

the water on the Earth

Drawing



Hydrosphere

Characteristics

- ocean
- snow/ice
- fresh water
- water vapors

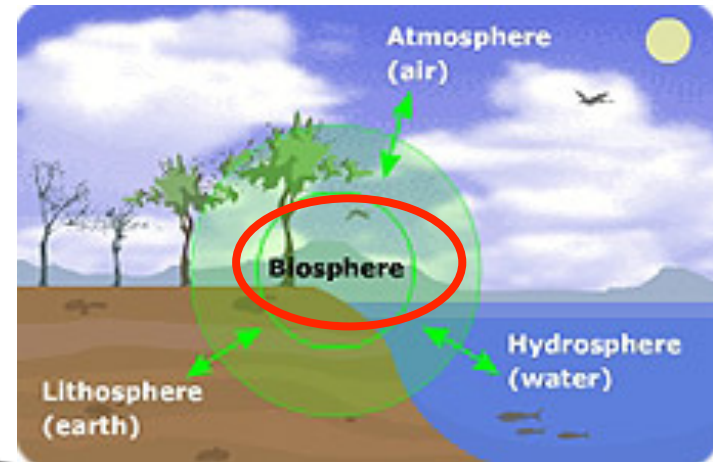
Why is it important?

- makes up a majority of most organisms
- some organisms are made up of 95% water (almost all are made from more than half water)

Definition

the area of the earth
where life exists

Drawing



Biosphere

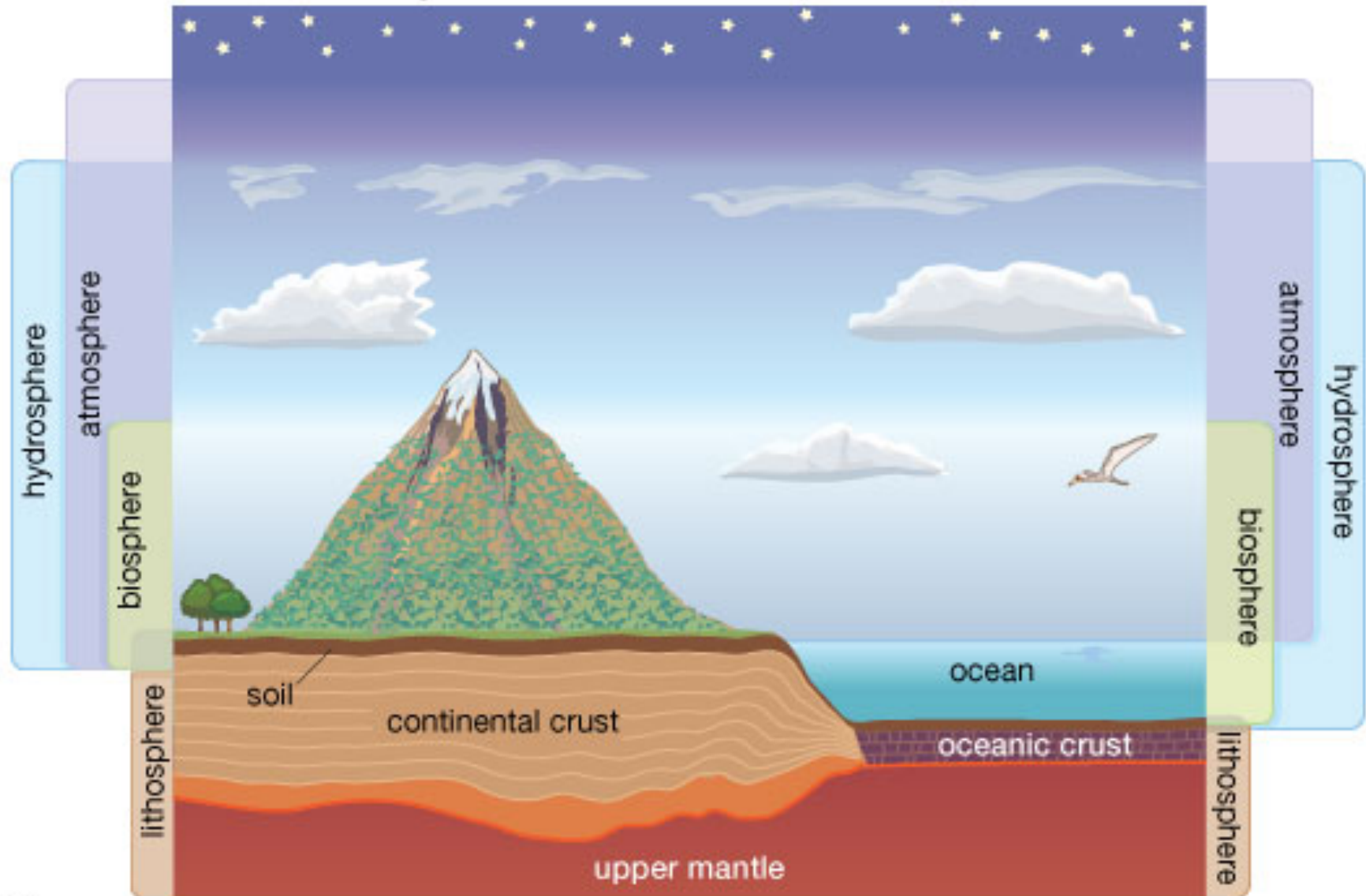
Characteristics

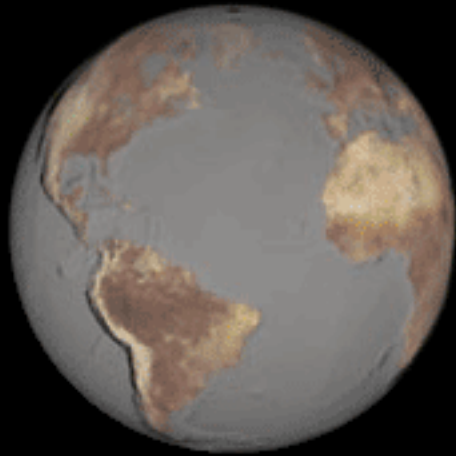
all living organisms on
earth

Why is it important?

For the living things to
survive; however, it cannot
survive without the other 3
spheres.

Earth's environmental spheres

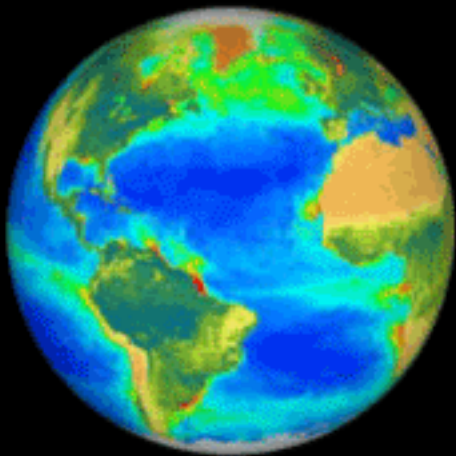




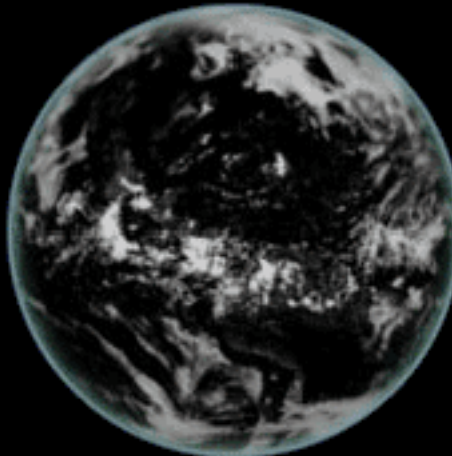
Geosphere



Hydrosphere



Biosphere

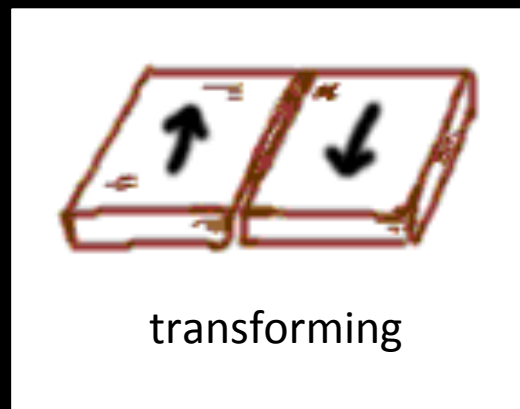
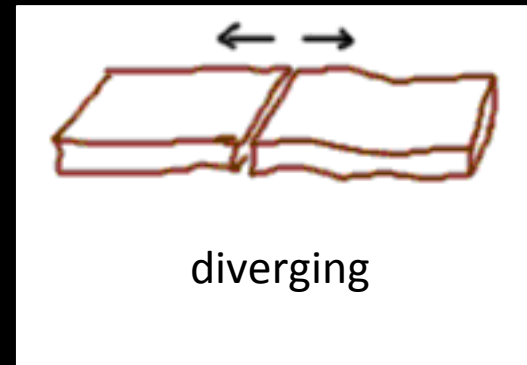
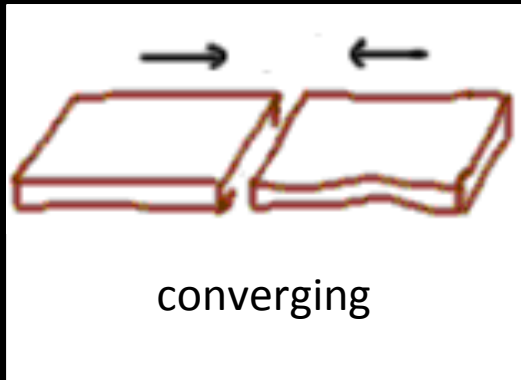


Atmosphere

Internal Forces

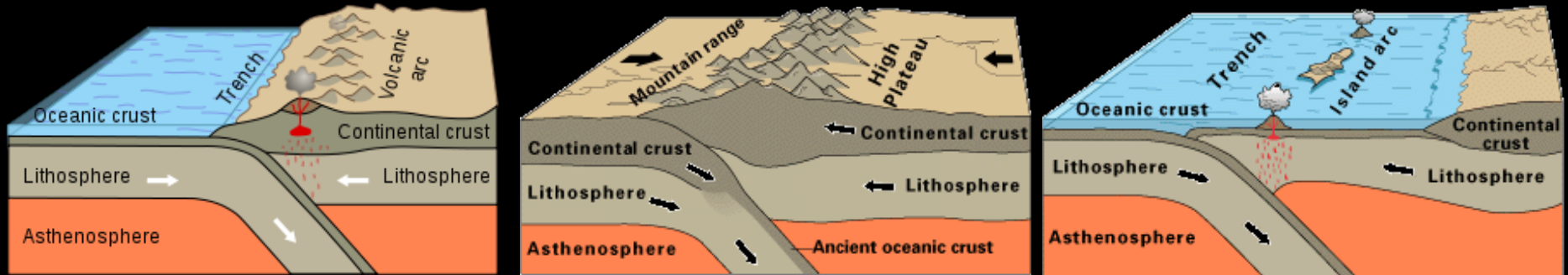
3 Types of Plate Movement

(Internal Forces)



Converging

(When two plates move towards each other, they would collide)



Oceanic-Continental

Continental-Continental

Oceanic-Oceanic



Subduction is the process in which one plate is pushed downward beneath another plate into the underlying mantle when plates move towards each other. The plate that is denser will slide under the thicker, less dense plate. **Trenches, mountains, and volcanoes are created.**

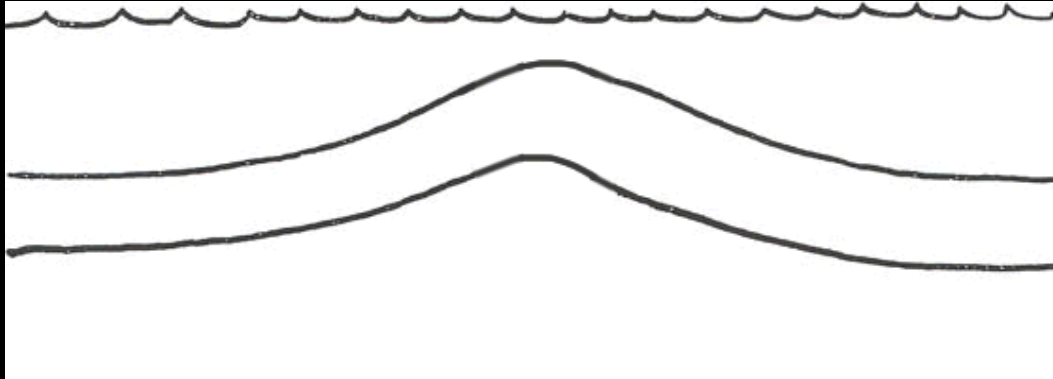
Andes Mountains

(longest mountain range in the world)



Diverging

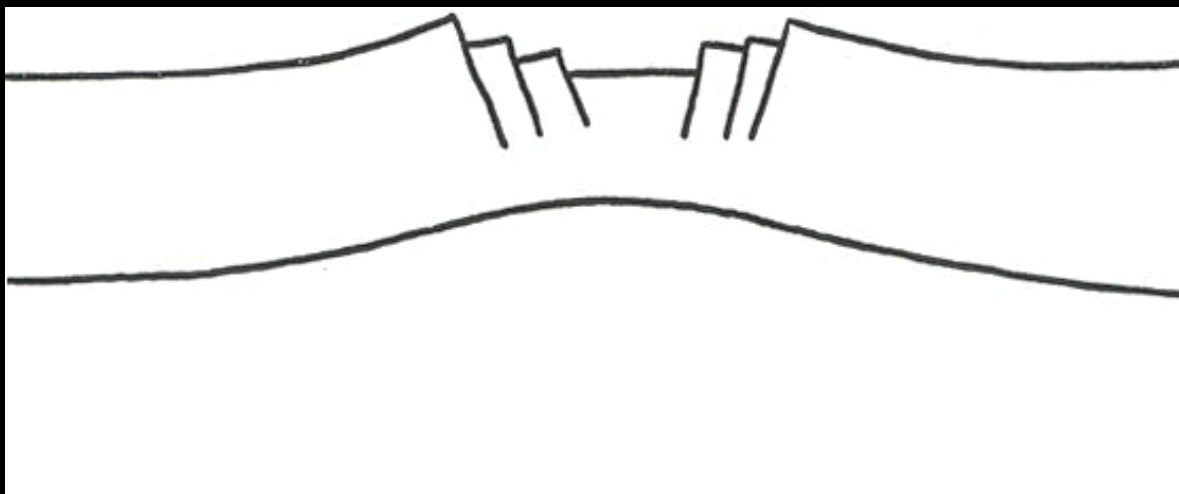
(plates are moving away from one another, also can be called “spreading”)



Oceanic



Continental

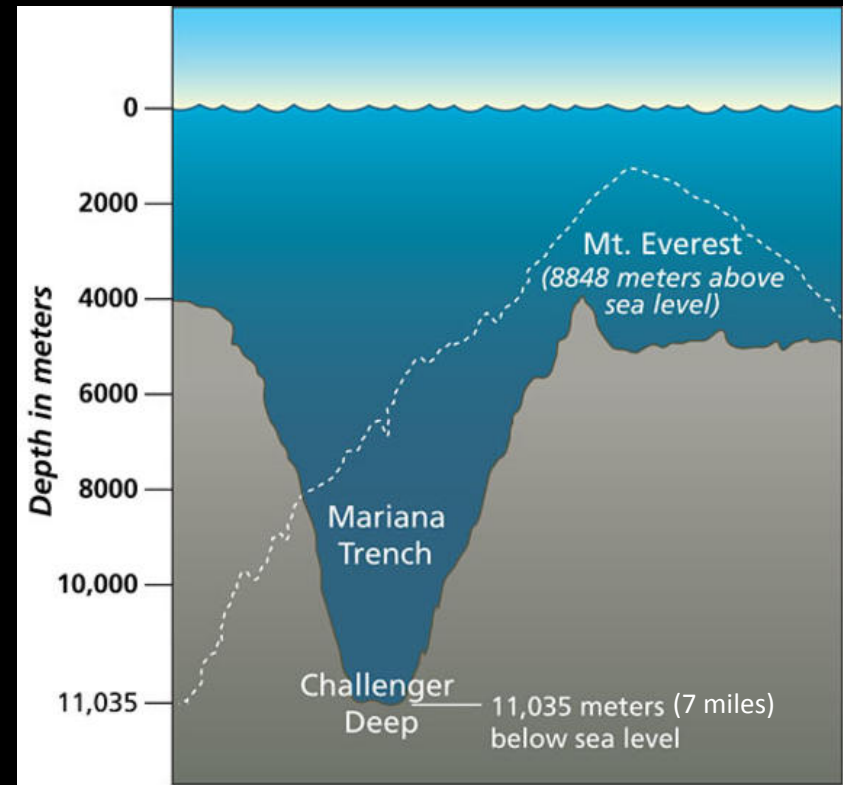


Types of landforms created:

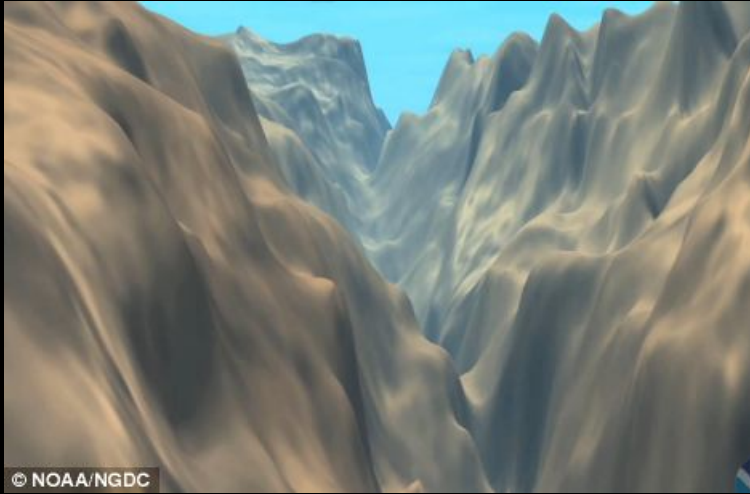
- Trenches
- Mountains
- Volcanoes
- Valleys
- Lakes
- Horst/Graben

Mariana Trench

(the deepest part of the world's oceans, and the lowest elevation of the surface of the Earth's crust)



Mariana Trench



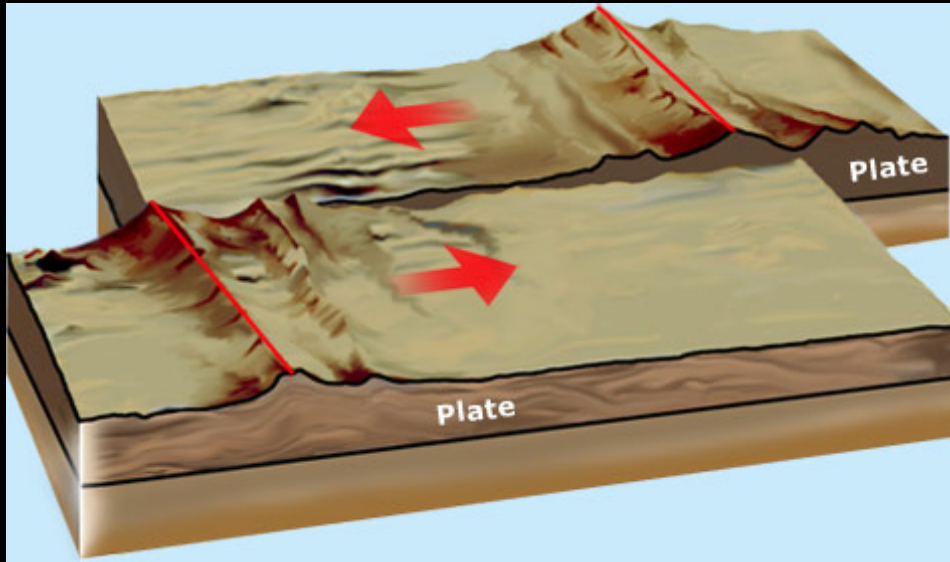
Stauroteuthis syrtensis
Glowing sucker octopus

Depth: down to 2500 m
Size: up to 50 cm



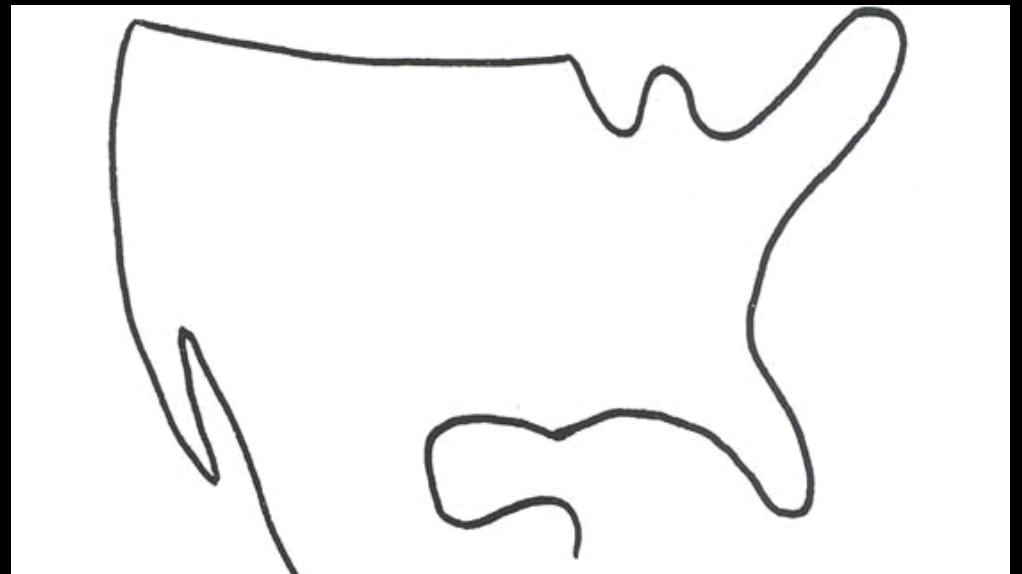
Transforming

(two plates slide past one another)

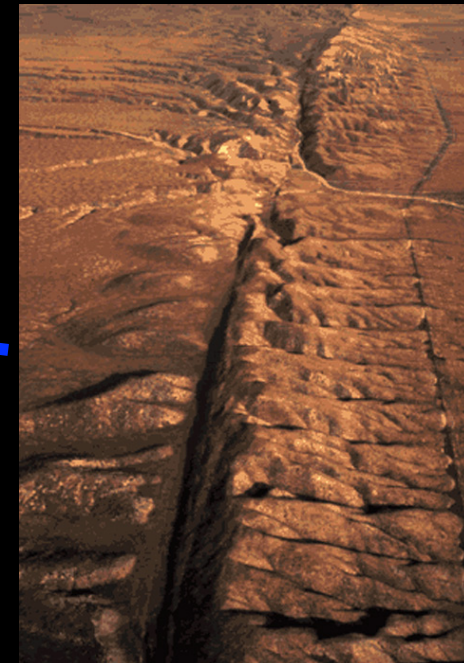


Types of landforms created:

- Valleys
- Escarpments
- Cliffs



San Andreas Fault



External Forces

3 Types of External Forces



Erosion

Removal of pieces of rock or soil through wind, glaciers, or water



Weathering

Breakdown of rock and other materials into smaller pieces



Deposition

Dropping off rock particles in a new location

Weathering

Mechanical Weathering

Mechanical weathering is the physical breakdown of rocks and minerals.

The most common mechanical weathering occurs when water freezes in cracks in rock.

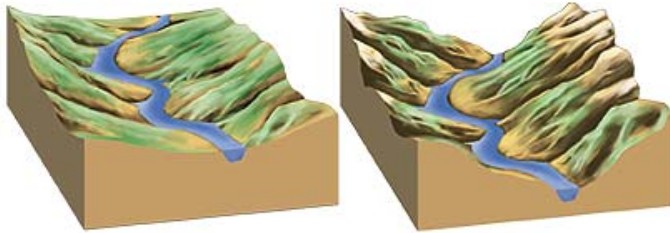
Chemical Weathering

Chemical weathering is the breakdown of rocks and minerals through chemical processes.

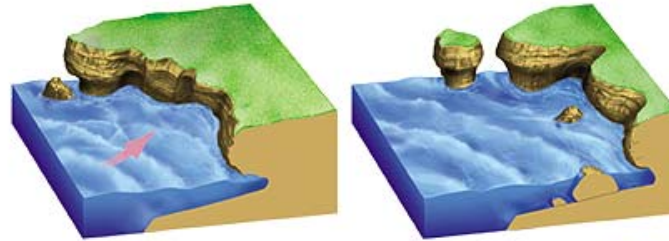
Water and carbon dioxide are the most important factors.

Erosion

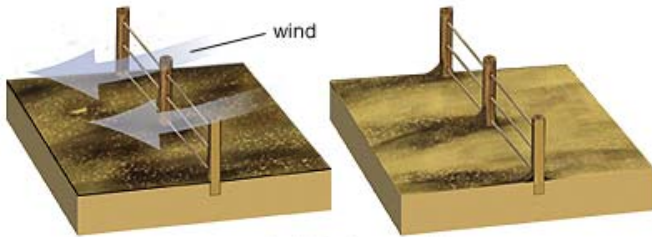
Types of Erosion



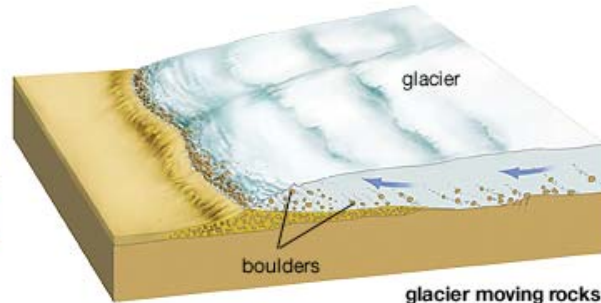
river carving a valley



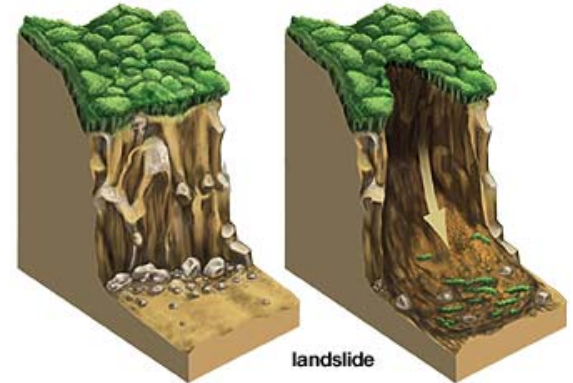
waves cutting back cliffs



wind blowing topsoil



glacier moving rocks



landslide

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Water, Wind, Glaciers

- **Glaciers**, huge, slow-moving sheets of ice, are also major agents of erosion, as they pick up and drag along dirt, rocks, and boulders.
- During the Ice Ages, glaciers covered up to a third of the earth's surface.
- In places where glaciers have melted and receded, they have left behind ridge-like piles of rocks and debris called **moraines**.



