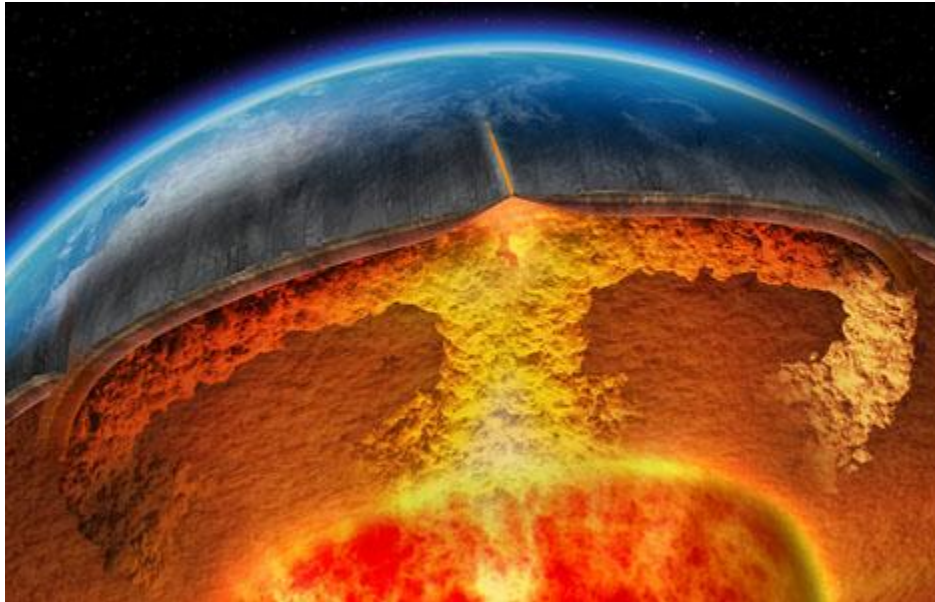


Effects of Plate Tectonic Movement



1. Tectonic plates push and pull against each other like bumper cars, and are responsible for some of earth's major features.
2. Mountain building

Mountain formation video

<http://www.youtube.com/watch?v=uoyrghUbiko>

Types of Mountains



Upwarped mountains



Volcanic mountains



Fault-block mountains



Folded (complex) mountains

a. **Folded Mountains**

- i. These are the most common types of mountains. These are formed when two continental tectonic plates collide and their edges crumble to form mountains. The crust is uplifted forming folds on top of the other. Vast mountain ranges stretching across thousands of kilometres are Fold Mountains. The Rocky Mountains in North America, the Alps in Europe, the Andes in South America, the Urals in Russia and the Himalayan Mountains in Asia are examples of Fold Mountains

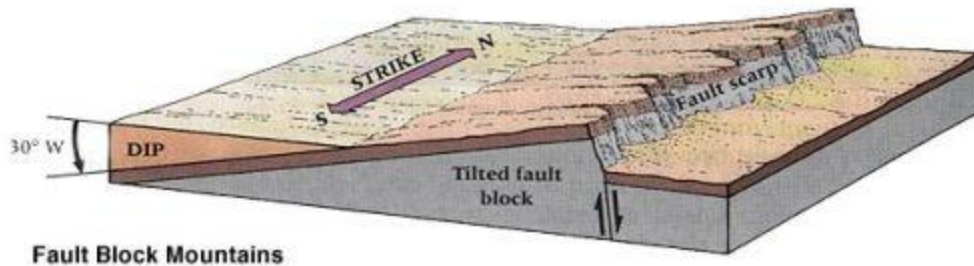




b. Fault Block Mountains

- i. The Fault-block Mountains or block mountains are created when faults or cracks in the Earth's crust force materials or blocks of rocks upward or down. The uplifted blocks are Block Mountains or *horsts*. The intervening dropped blocks are called *graben*, which can be small or form rift valley systems. These block mountains break up into chunks or blocks and move either up or down. When they move apart blocks of rock get stacked on one another. Fault-block Mountains usually have a steep front side and then a sloping back side. The Sierra Nevada Mountains in North America and the Harz Mountains in Germany are examples of Fault-Block Mountains.





Fault Block Mountains

This figure shows why fault blocks are steeper on one side and slope on the other.

c. Dome Mountains

- i. Dome Mountains are also called Upwarped Mountains. These mountains are formed when large amounts of molten rock or magma push the earth's crust from underneath. The magma in this case never reaches the top surface of the earth. So even before it can erupt the source of magma goes away leaving the pushed up Rock as such. This rock then cools and forms a mountain. With time the mountain forms a dome shape, where it gets warped due to erosion. The Black hills of South Dakota in the USA and the Adirondack Mountains in New York are examples for Dome Mountains



d. Volcanic Mountains

- i. Volcanic mountains are created by volcanoes as the name suggests. They are created when magma pushes its way from beneath the earth to the crust, and when it reaches the surface, it erupts as lava, ash, rocks and volcanic gases. These erupting materials build around the vent through which they erupted. These mountains are then shaped by further eruptions, lava flows, and collapses. Mount Fuji in Japan, Mount Rainier in the US, including Mauna Loa and Mauna Kea on the Big Island of Hawaii are examples of volcanic mountains.



Mt. Fuji



Mt. Rainier

e. Plateaus

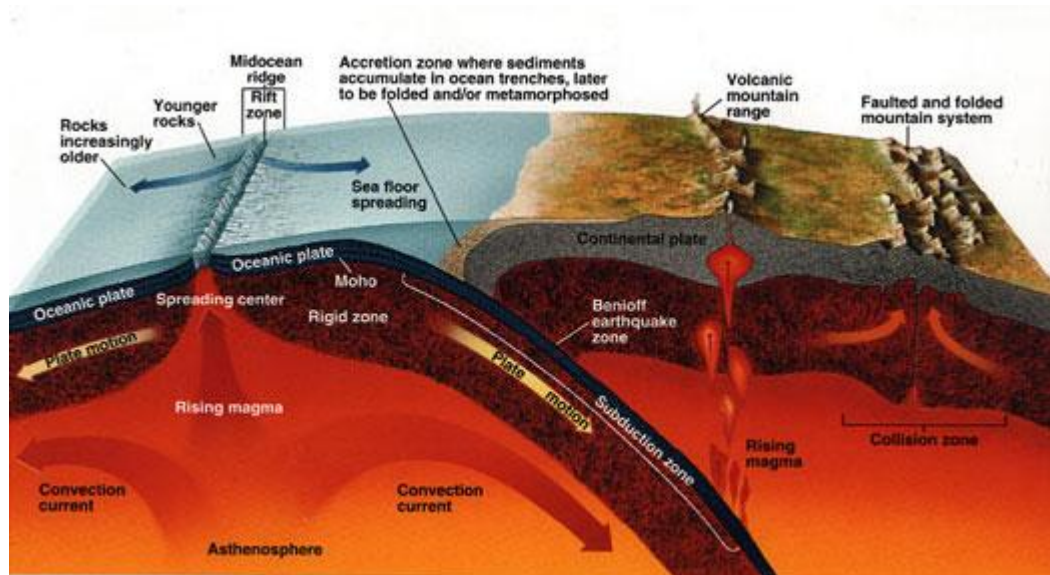
- i. Plateau Mountains are formed by Erosion. These are large areas of high levels of flat land, over 600 meters above sea level formed due to earth's internal activity. Over billions of years, the rivers can cut deep into a plateau and make tall mountains. These mountains are found near Fold Mountains. The mountains in New Zealand and the Catskills of New York are examples of Plateau Mountains.

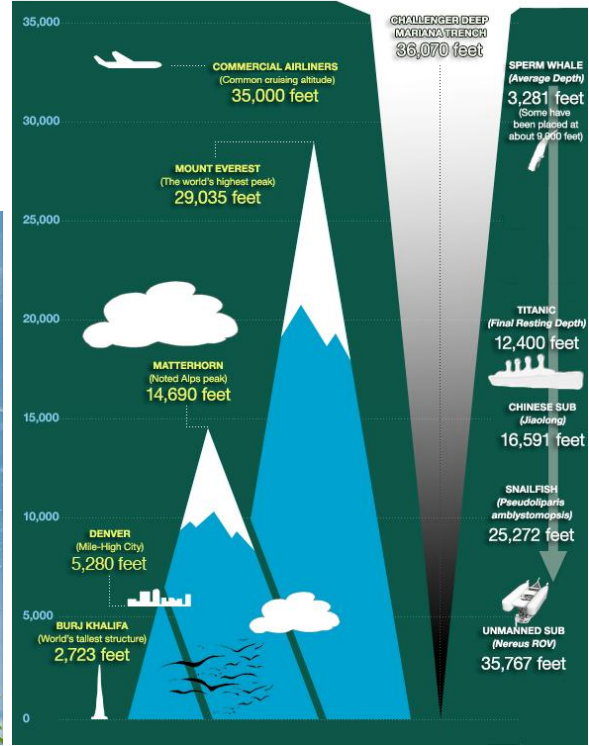


Catskills

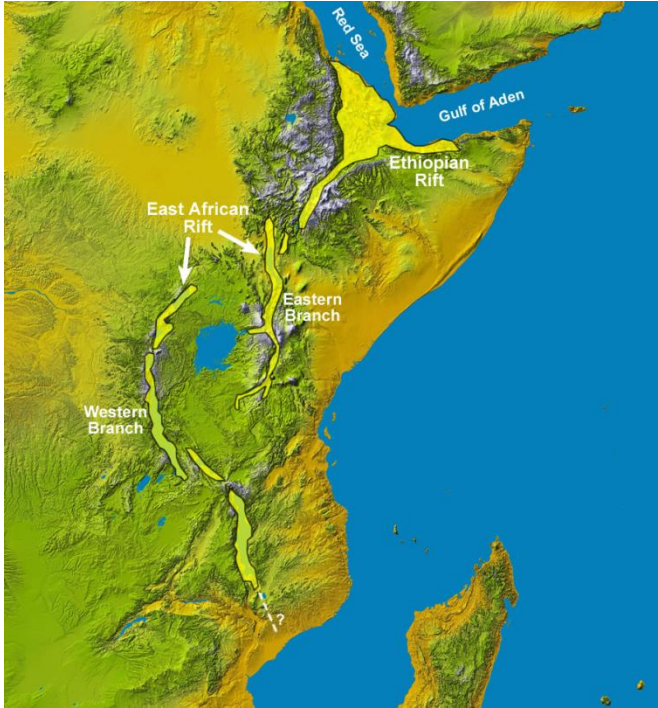
3. Sea floor spreading and rift valleys

- a. Where tectonic plates drift apart under the sea, magma rises up through the cracks.
- b. Mariana Trench





c. The Great Rift Valley



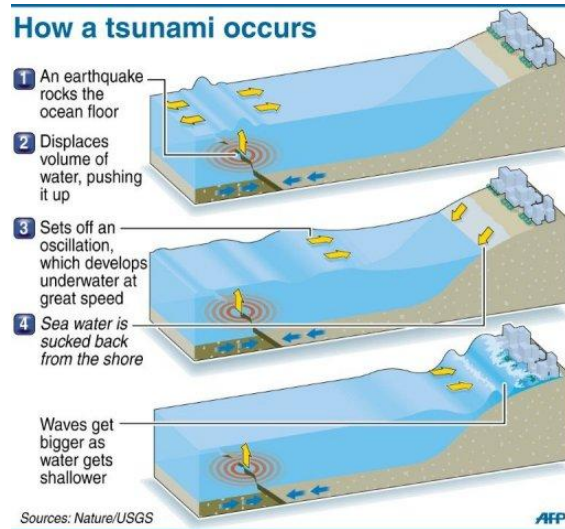
4. Earthquakes and Tsunamis

- a. Plate movements cause breaks in the earth's crust, known as faults.
 - i. Plate movements cause vibrations known as earthquakes
 - ii. Create tremendous stress at plate boundaries
 - iii. Eventually parts of the rocky crust break or "give way" sending vibrations known as seismic waves
 - iv. San Andreas Fault



b. Tsunamis

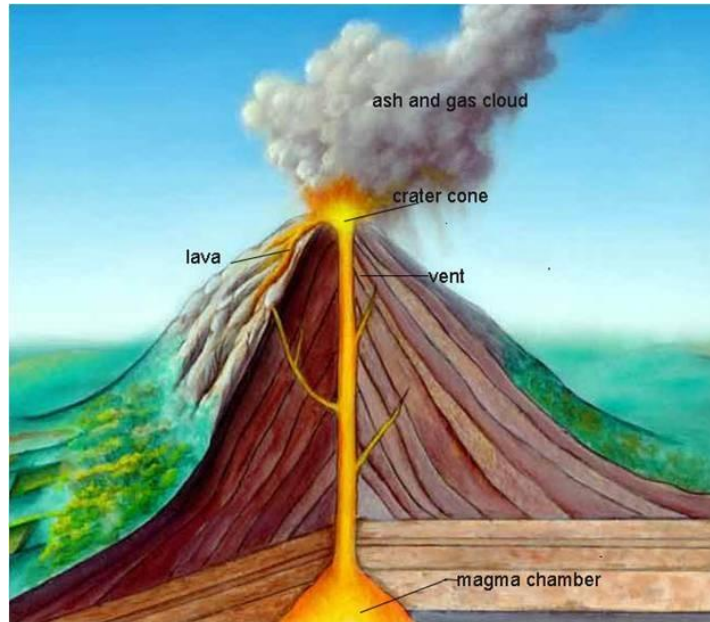
- i. When an earthquake occurs under or near the ocean, it creates immense ocean waves of destructive force



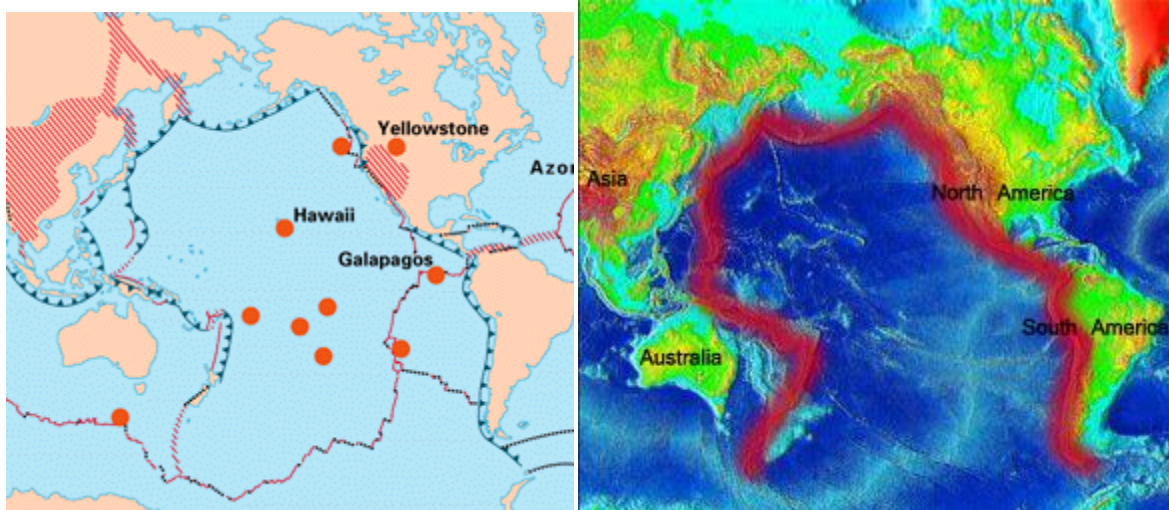
c. Volcanoes

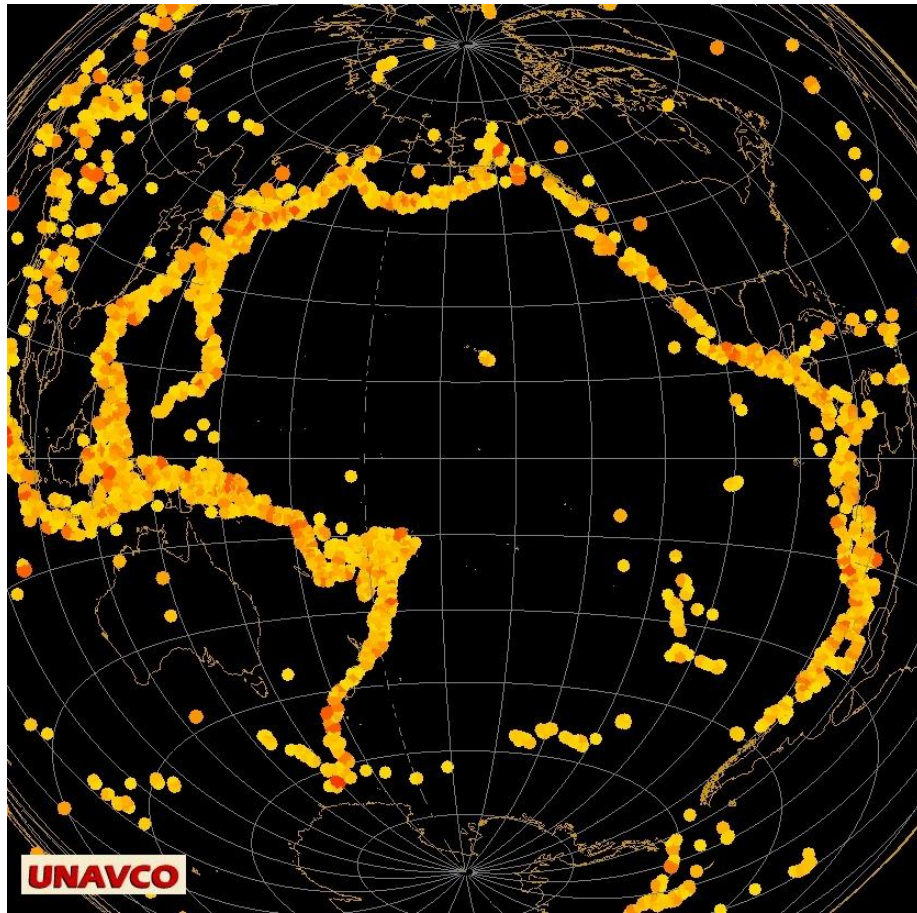
- i. Located in places where tectonic plates diverge or where one plate dives under another
- ii. Pressure in the Earth's mantle is reduced
- iii. Some of the hot, solid rock turns to liquid

- iv. Pockets of molten rock form beneath the surface
- v. Magma may break through weaknesses in the Earth's crust
- vi. Magma and gasses erupt and form a volcano
- vii. Magma that has reached the Earth's surface is called lava



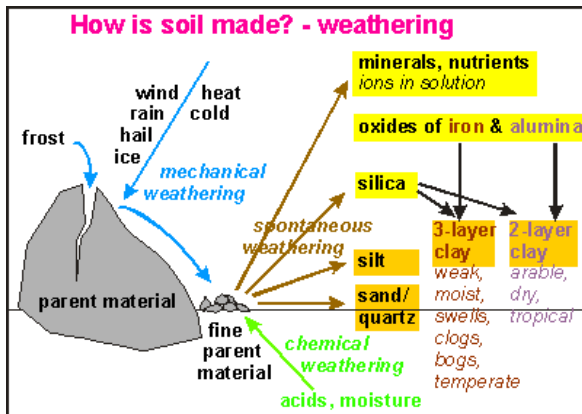
- viii. The location of most volcanoes and earthquakes has been shown to be almost identical with the location of plate boundaries
- ix. Ring of Fire
 1. A zone of volcanoes and frequent earthquakes, coincides with the boundaries of the Pacific tectonic plate.
 2. The Hawaiian Islands are actually tops of volcanoes in the Pacific Ocean





5. Weathering

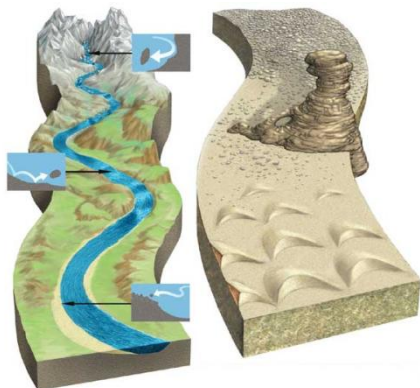
- a. The wearing down of rocks at the Earth's surface by the actions of wind, water, ice and living things
- b. Water and Sand
 - i. Seeps into cracks and expands when it freezes, breaking rock apart





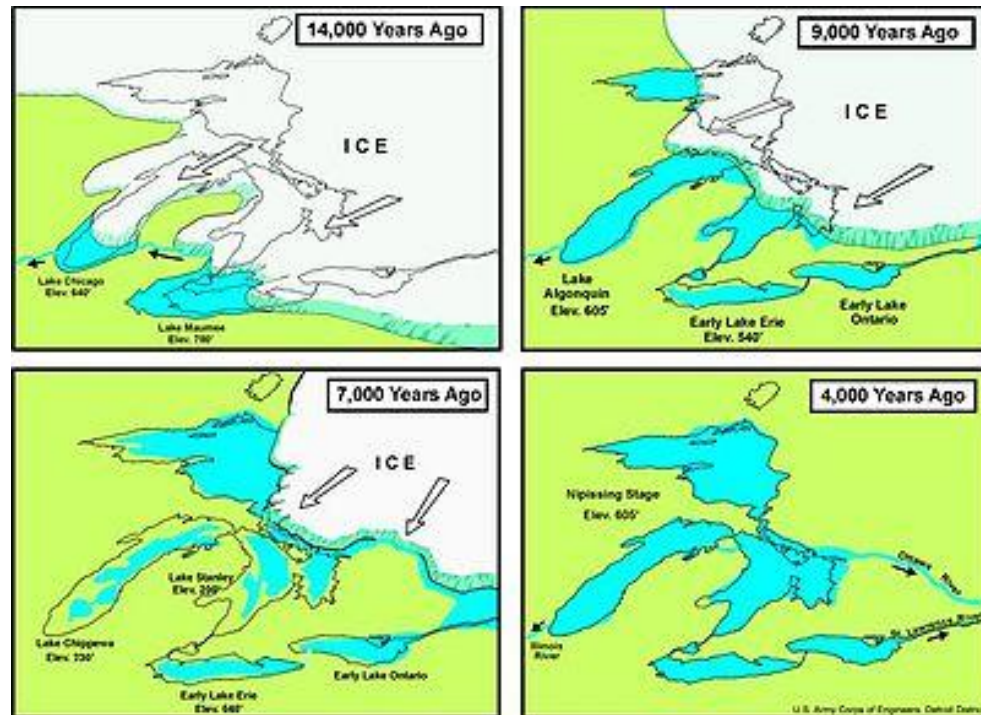
6. Erosion

- a. The process by which rock, sand and soil are broken down and carried away
- b. Erosion can cut “The Grand Canyon” through solid rock
- c. An icy glacier can carve and wear away a region, leaving behind valleys and lakes, such as the Great Lakes





Formation of the Great Lakes



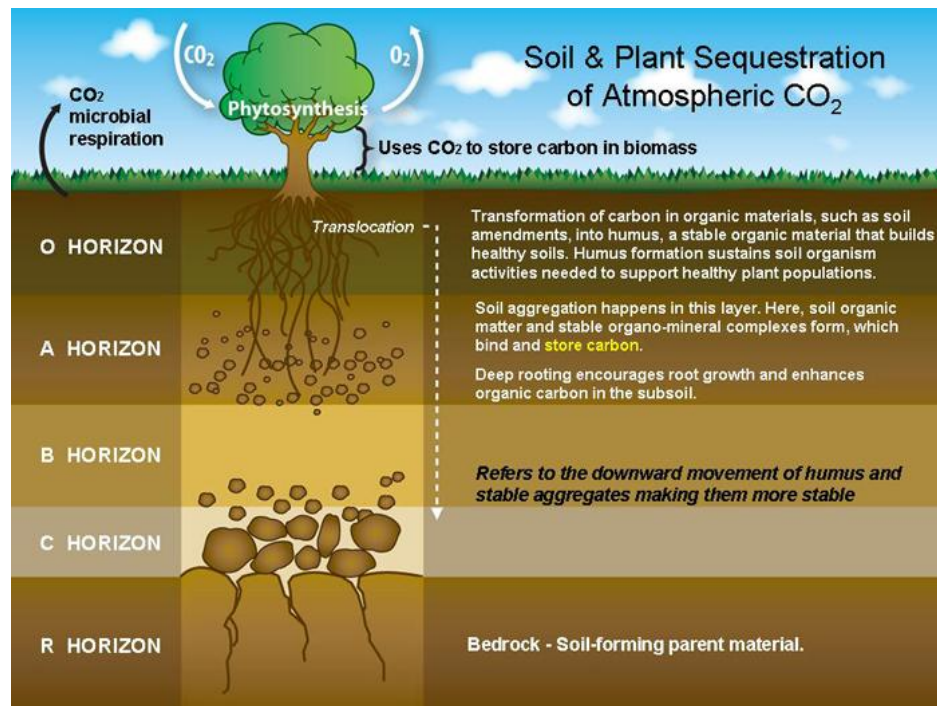
The Great Lakes today



7. Soil

- a. Weathering breaks down rocks on Earth's surface
- b. The material left from the rocks mixes with decaying plants and animals to make soil
- c. Soil is therefore a mixture of several materials in varying amounts:
 - i. Sand
 - ii. Clay

- iii. Rocks
 - iv. Water
 - v. Fungi
 - vi. Bacteria
 - vii. Decayed plants and animal material (humus)
- d. There are many different types of soil, based on different mixtures of its basic ingredients
- e. Each type of soil has its own texture, ability to hold water, and ability to support plant life
- i. Clay
 - 1. Can hold large amounts of water
 - 2. Soils with large amounts of clay and decayed material can hold more water than sandy soils



- f. Soil quality
- i. The type of soil in an area greatly affects the type of plant (and animal) life that can grow there.
 - 1. Sands of the Sahara will not support many forms of life



2. Oasis



Oases are formed from underground rivers or aquifers such as an [artesian aquifer](#), where water can reach the surface naturally by pressure or by man made wells.

3. Amazon Rainforest

- a. Tropical soils with very few nutrients and minerals
- b. Rain quickly washes nutrients away
- c. Plants take their nutrients, instead, from plants and animals that are still decomposing.



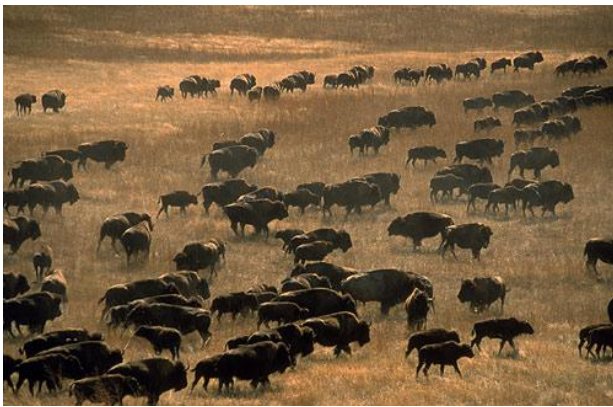
4. Grassland: Great Plains, Pampas, Steppes

- a. Hold a great deal of organic matter and are the best for farming

Steppes of Central Asia



Grassland of the Great Plains

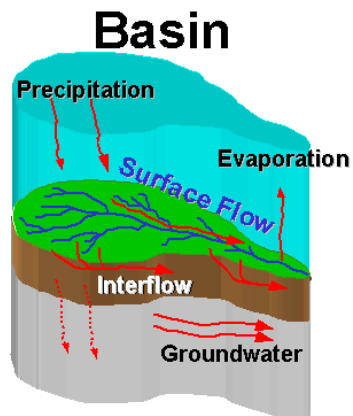


Pampas of Argentina



8. Earth's major landforms

- a. Mountains: formed by the collision of tectonic plates. Can be thousands of feet in elevation.
- b. Plateaus: a flat highland, whose sides drop suddenly due to erosion.
- c. Valleys: long, low areas between mountain ranges, hills or uplands. Often created by erosion, and may have a river or stream running through the bottom.
- d. Canyon: a deep gorge or ravine between cliffs, often carved from the landscape by a river.
- e. Basin: A **drainage basin** is an extent or an area of land where [surface water](#) from [rain](#) and [melting snow](#) or [ice](#) converges to a single point, usually the exit of the basin, where the waters join another waterbody, such as a [river](#), [lake](#), [reservoir](#), [estuary](#), [wetland](#), [sea](#), or [ocean](#).



- f. Archipelago: a group or chain of islands.



- g. Fjord: a long, narrow [inlet](#) with steep sides or cliffs, created in a valley carved by [glacial activity](#).



- h. Peninsula: a body of land surrounded by water on three sides.



- i. Strait: a narrow throughway of water with two larger bodies of water on either side. See above for the Strait of Gibraltar
- j. Delta: the triangular shaped formation where the mouth of a river empties into a sea or ocean

