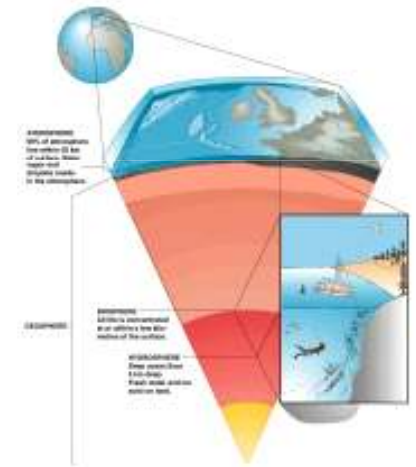


Earth's Systems

- Earth Science
 - Integrated study of the Earth's history, composition and structure, its atmosphere and oceans, and its environment in space. A knowledge of Earth Science is important because most human activities are related to interaction with the planet Earth.
- The Earth's Four Realms
- Geologic Time
- The Hot Earth
- Earth Systems
- Rates of Change in Earth History

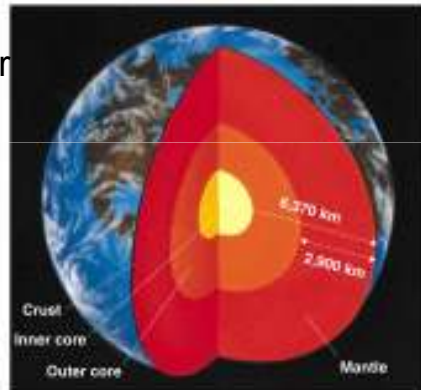
Earth Realms

- Most of the Earth is rock (geosphere), surrounded by the hydrosphere, the biosphere, and the atmosphere.
 - Geosphere
 - Hydrosphere
 - Biosphere
 - Atmosphere



The Earth's Four Realms

- The Geosphere is divided into three major layers: the crust, mantle, and core.
 - Crust – solid, brittle
 - Mantle – solid, plastic
 - Core
 - Inner - solid
 - Outer - liquid



Geosphere

- The Earth's crust is made up of different kinds of rock.
 - Sedimentary
 - Igneous
 - Metamorphic



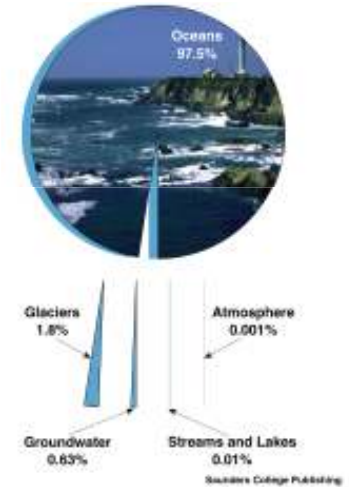
Geosphere

- The Hot Earth
 - Internal heat from the core
 - Lava - liquid rock is how heat escapes to Earth' surface



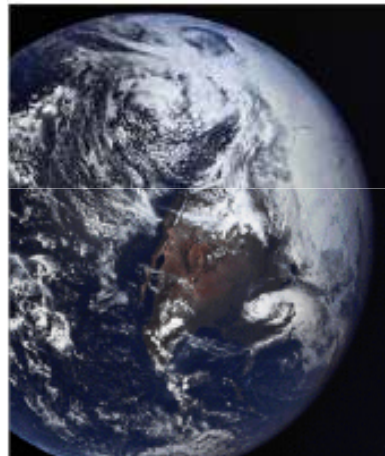
Hydrosphere

- The oceans contain most of the Earth's surface water. Most fresh water is frozen into glaciers. Most available fresh water is stored underground as ground water.



Atmosphere

- Winds often drive clouds into great swirls. At the same time, global winds carry warm air to cooler regions and cool air to equatorial parts of the Earth, making the climates of both more favorable.



Atmosphere

- Atmospheric Gases
 - Nitrogen
 - Oxygen
 - Carbon dioxide
 - Argon



Biosphere

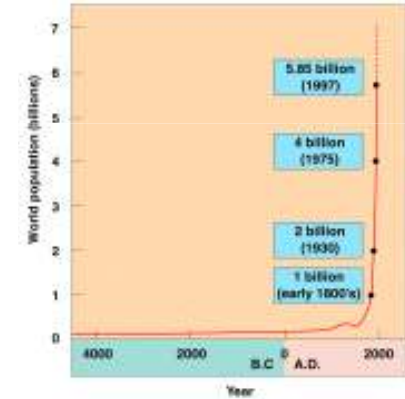
- Biosphere

- Irregularly shaped envelope of the earth's air, water, and land encompassing the heights and depths at which living things exist.
- Past and present.



Biosphere

- The human population has increased rapidly since the 1700s. For most of human history, there were fewer than one-half billion people on Earth. In 1997, 5.85 billion people inhabited our planet.



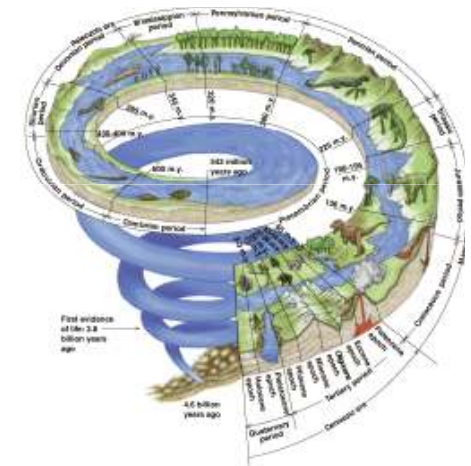
Biosphere

- Approximately 50 percent of the Earth's land surface has been radically transformed by humans. Here, suburban development is spreading over the high plains of Colorado toward the Rocky Mountains.



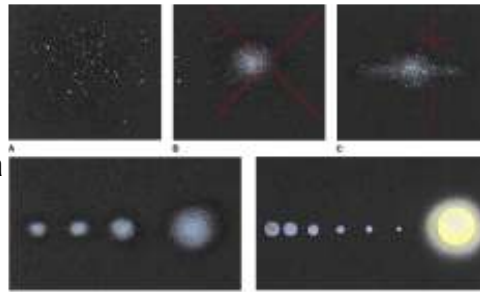
Geologic Time

- Earth - 4.6 billion
 - First Life - 3.8 billion
 - Abundant life - 543 million
 - Age of reptiles - 225 million
 - Age of mammals - 65 million
 - Early man - 2 to 4 million



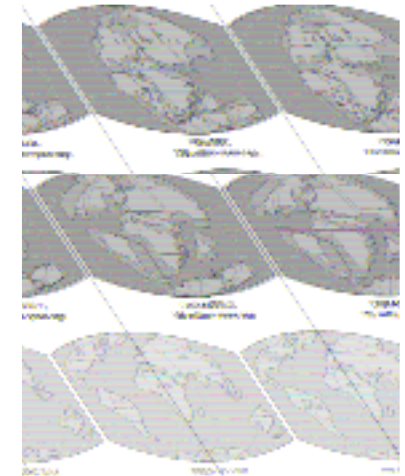
Origin of Earth & Solar System

- The Solar System
 - began as dust and gas,
 - which coalesced due to gravity
 - The mass distorted into a disk
 - the center of which formed the Sun
 - The outer portion evolved into the planets.



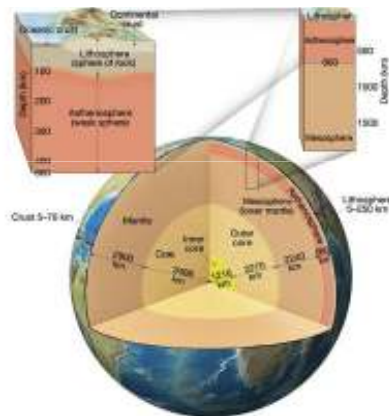
The Modern Earth

- Rigid plates
 - Earth's internal heat
 - Constant motion
 - Continental growth
 - Opening and closing of Oceans
 - Earthquakes
 - Volcanoes



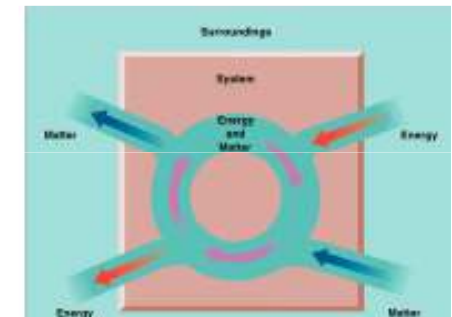
The Modern Earth

- Divergent Boundary
 - Spreading Center
 - Mid-Ocean Ridge
 - Rift Valley
- Convergent Boundary
 - Continent-Continent
 - Ocean-Ocean
 - Ocean Continent
 - Transform Boundary



Earth Systems

- A system receives energy and matter from its surroundings. The system uses the energy and matter, alters them, and releases both energy and waste materials.



Rates of Change

- Gradual changes - gradualism or uniformitarianism



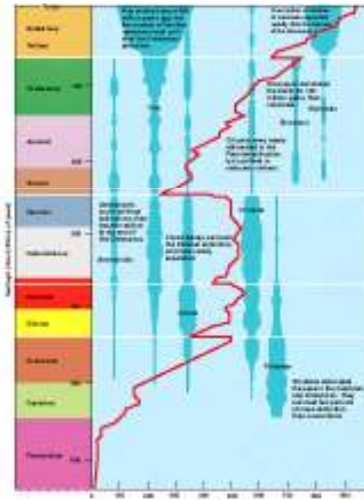
Rates of Change

- Rapid Changes - Catastrophism
 - Threshold and feedback effects



Mass Extinctions

- Four major mass extinction's and numerous smaller ones



Earth's Systems

- Earth Science
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- Rates of Change in Earth History