* Lecture Notes for 10/7 *

The Earth - Our Home Planet

- The Earth as a planet
  - Oblaque - (bulges in the middle = SPINNING)
    - Spenod (a lot of water / a lot of loose rock - tidal forces from the moon)
- 2 different types of materials that Earth is made up of
  1. silicate rocks (silicon)
  2. iron
     - measure w/ Earthquakes waves to determine interior of Earth

2 types of Earthquake waves
- P waves transverse
- S waves kind of transverse

- fission (radio-active decay) → heating up inside of the earth (responsible for)
  - 2 atoms join together (hydrogen / nitrogen)
    - heavier atoms and they split / particles break off
  - happens on a really small scale

- Left over heat from early collisions that planets suffered
  - responsible for heating up inside of the earth.

Earths Interior = Crust (South Africa → deepest mine in the world - diamond mines) (REALLY HOT!!) Silicates
= mantle silicates, sulfur?
= liquid core — iron / nickel
= inner core — iron / nickel

- Age of the Earth: can be determined by
  - 4.5 Billion Years = rocks undergoing radio-active decay
  - (Age of the Universe - 9 - 15 billion Years) - Doppler Shift / Red Shift
  - Earliest life form on the Earth? procaryotic cell (1st cells found) (asexual, sexual)
    - eucaryotic cell (more advanced)
- Atmosphere - came from impacts
  - nitrogen, carbon dioxide, water vapor (1st three)
  - oxygen came from organisms (2nd) (volcanoes)

Earth has ability to mix rocks up - sends back down

Recycle Rock =
- big convection currents = bring rocks up to surface
- Mid-Atlantic Ridge (new rocks forming everyday)

subduction zone = rocks going back done into the mantle
ex: South America (West coast)

Terrain features formed by:
ice; water; erosion due to water; cracking of rocks - freezing; volcanic activity

3 basic types of rocks = sediments (dead animals, rocks - settle on floor) compacted
1. Sedimentary (crust earth covers) form on bottom of bodies of water lithification
2. Igneous - lava - volcanoes; result of volcanic activity
3. metamorphic = metamorphnos = "To change" (most challenging to analyze)
segmentary or igneous rock that has changed due to heat or pressure
ex: slate (very useful in what happened to the earth)

Sedimentary rocks
1. Sandstone
2. Limestone

- Idaho has
  - metamorphic
  - igneous

Igneous rocks:
form rapidly; has a bunch of info @ the time rock condensed

Convection - Atmosphere (transfer heat through a fluid)
(warm will rise through a cool fluid)

Motion of Continents - Plate Tectonics
convection motions make large thin areas of crust slide over mantle rock - Plate Tectonics
- Movement of earth's crust - a lot of terrain features
- collision of plates buckles crust - mountain ranges
- Seperation of plates often rifts - some ocean basins

- plate motion also triggers volcanic eruptions along some plate edges.

- biggest earthquake in continental U.S. → Missouri 1833 (reverse of river for a day)

- Dormant volcanoes
- Active volcanoes

Formed from a bunch of dust (planet testable)

2 Sources of internal heat
radio-active decay
left over heat from early collisions

Early Atmosphere - collisions
volcanic activity

Geological
volcanism
continental drift