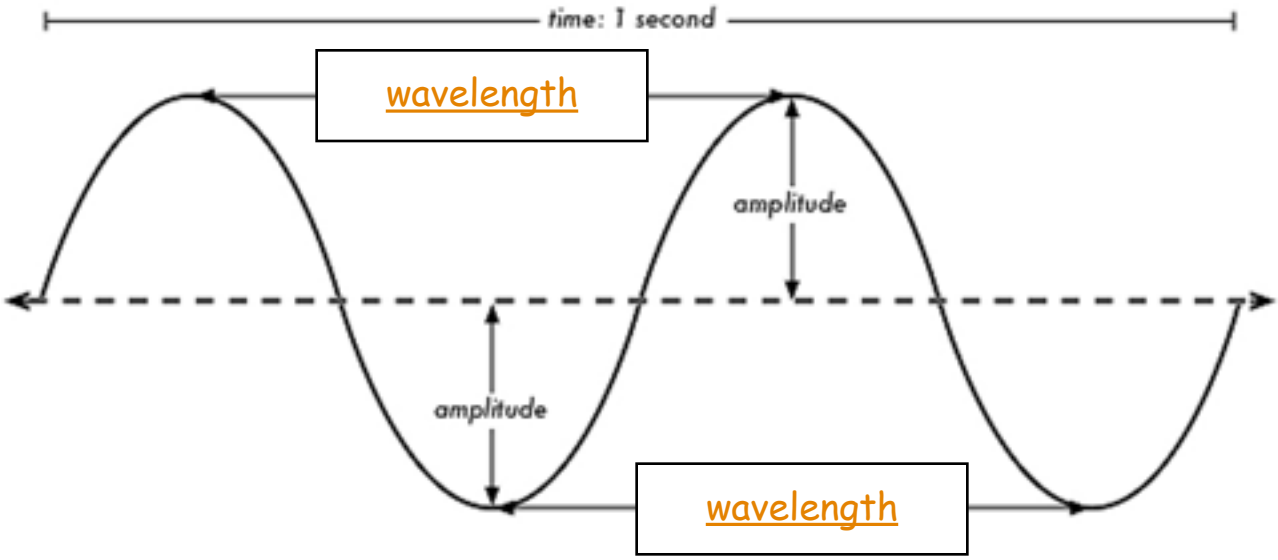
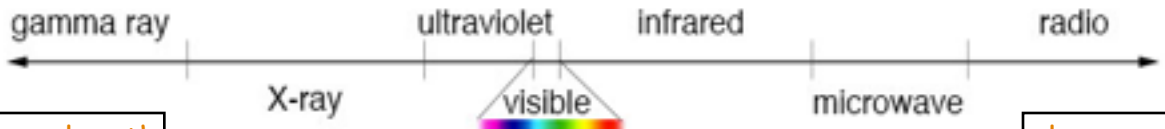
Sun's Energy & Climate

1. Energy from the sun
    a. The transfer of energy through space is called radiation
    b. Travels as waves



c. Frequency the number of waves per unit of time

d. Wavelength and frequency have inverse relationship

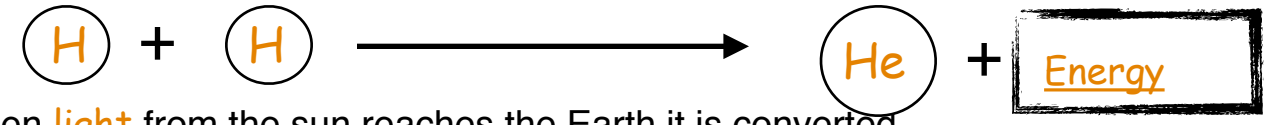


- shorter wavelength
- higher frequency
- higher energy

- longer wavelength
- lower frequency
- lower energy

- This reaction produces a lot of energy in the form of

light, uv rays, microwaves, radio waves, x-rays



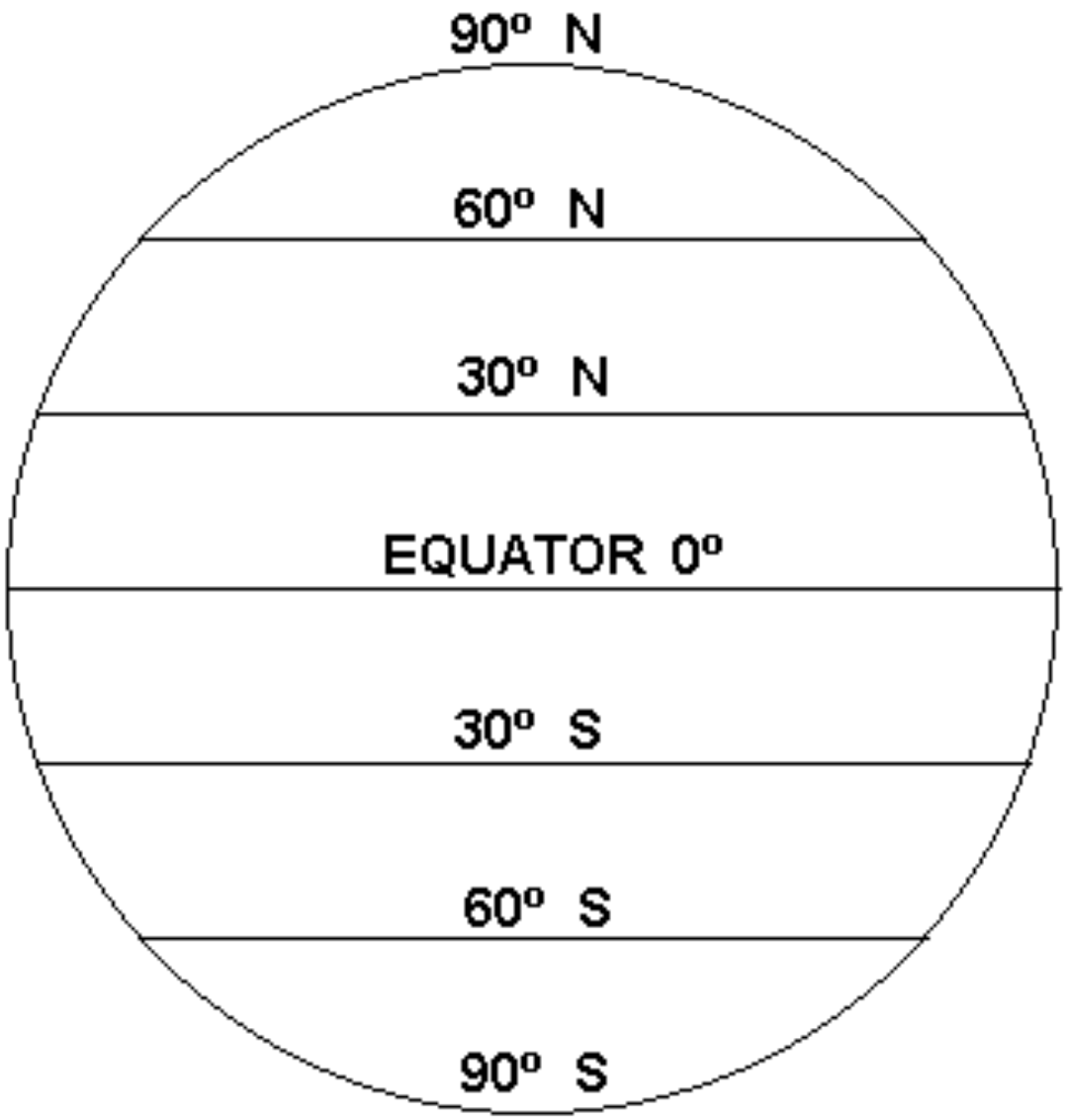
3. When light from the sun reaches the Earth it is converted to heat
   a. light can travel through the atmosphere but heat gets trapped causing the Greenhouse Effect

4. Transfer of heat
   a. Conduction transfer of energy through direct contact = happens at at the surface of the land and water
   b. Convection transfer of energy through a fluid such as air or water
      - Δ Warm air/water rises and cold air/water sinks creating convection currents
      - Δ Most heat in atmosphere is transferred by convection.

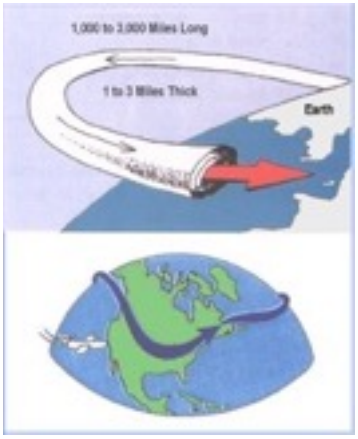
4. Temperature variations
   a. the amount of radiant energy received by the Earth is determined by
      - Δ angle at which light strikes the earth
      - Δ 90° angle = direct light = higher temperatures
      - Δ less than 90° angle = energy is more spread out = lower temperatures.

Global Winds

1. Global wind patterns are caused by a combination of factors
   a. Unequal heating air at the equator is warmer and colder at poles,
   b. Convection circulation of air away from equator and toward poles
   b. Coriolis effect Earth's rotation causes winds to shift to the right in the Northern hemisphere.
   c. Draw and label the global wind belts below.

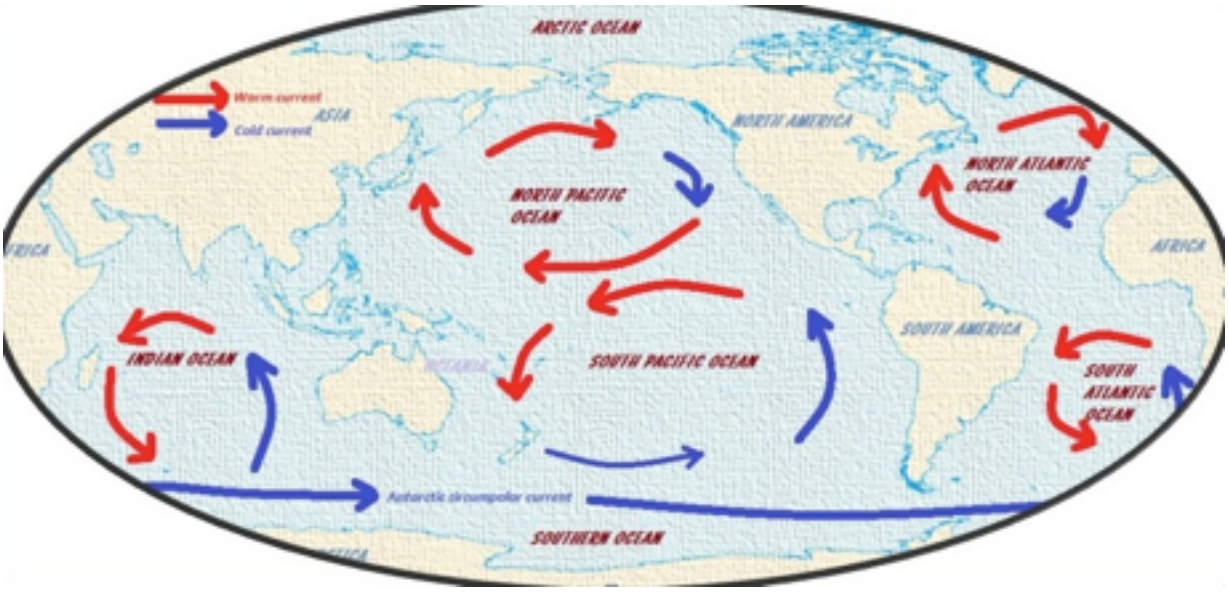


e. Jet Stream narrow band of wind in the upper atmosphere that helps push weather across N. America



Ocean Currents

1. Surface currents are caused by a combination of factors
   a. Unequal heating water at the equator is warm and colder at poles
   b. Convection water begins to flow away from the equator
   c. Coriolis effect Earth's rotation causes current to curve to the right
   d. Wind pushes on the surface of the water



Climate

1. Climate is the long term conditions for an area over a long period of time
    a. Determined by temperature and precipitation
2. Factors that affect climate: See tables

Climate Zones

1. Polar
    a. Between 60 & 90 latitude
    b. Temperatures lowest temperature zone, avg below 0°C
    c. Seasons no summer
    d. Precipitation very little precipitaion
    e. Global Winds Polar easterlies

2. Temperate
    a. Between 30 & 60 latitude
    b. Temperatures vary greatly with latitude
    c. Seasons greatest seasonal variation
    d. Precipitation varies
    e. Global Winds prevailing westerlies

3. Tropical
    a. Between 0 & 30 latitude
    b. Temperatures high temperature and humidity
    c. Seasons no winter
    d. Precipitation highest precipitation
    e. Global Winds trade winds (easterlies)

4. Variations within climate zones
    a. Water holds more heat than land.
    a. Marine / Maritime Climates
        - Δ Location near large bodies of water
        - Δ Precipitation higher than inland
        - Δ Temperatures less temperature variation
        - Δ Seasons moderate, warm summers, mild winters
    b. Continental Climates
        - Δ Location in the center of large land masses
        - Δ Precipitation lower than near the coast
        - Δ Temperatures larte temperature variations
        - Δ Seasons greater seasonal variations, cold winters, hot summers