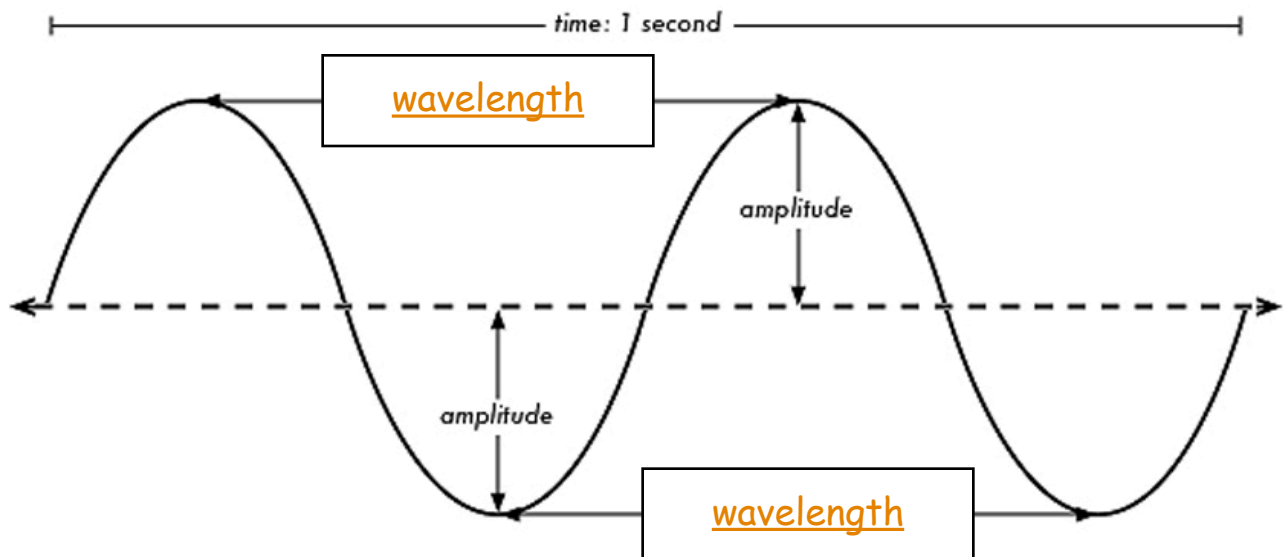




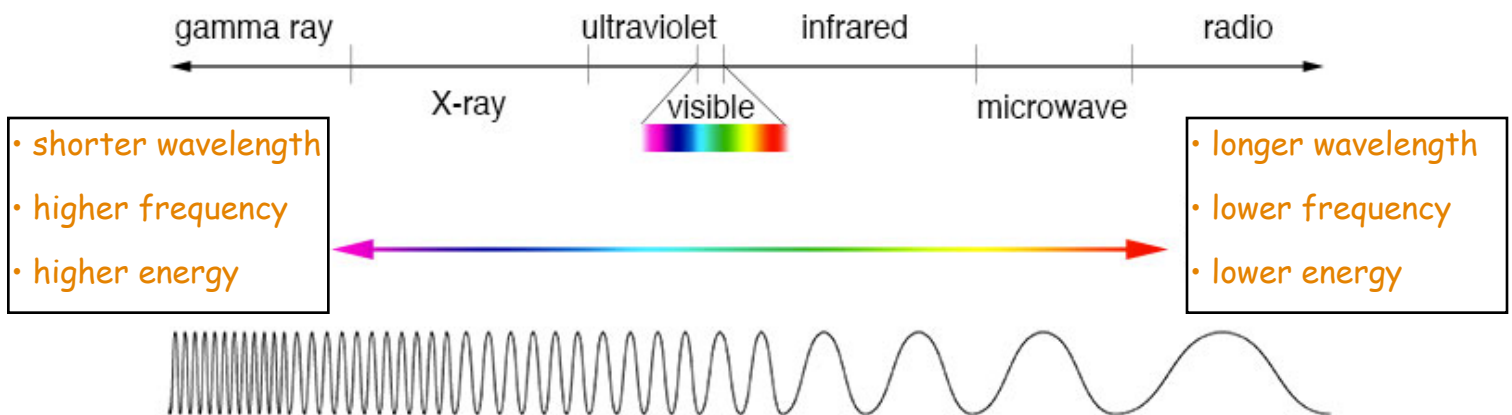
# Sun's Energy & Climate

## 1. Energy from the sun

- The transfer of energy through space is called radiation
- Travels as waves

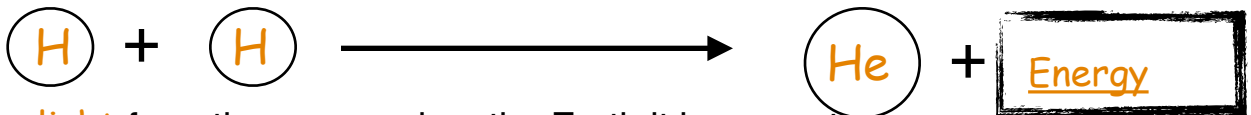


- Frequency the number of waves per unit of time
- Wavelength and frequency have inverse relationship



- 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

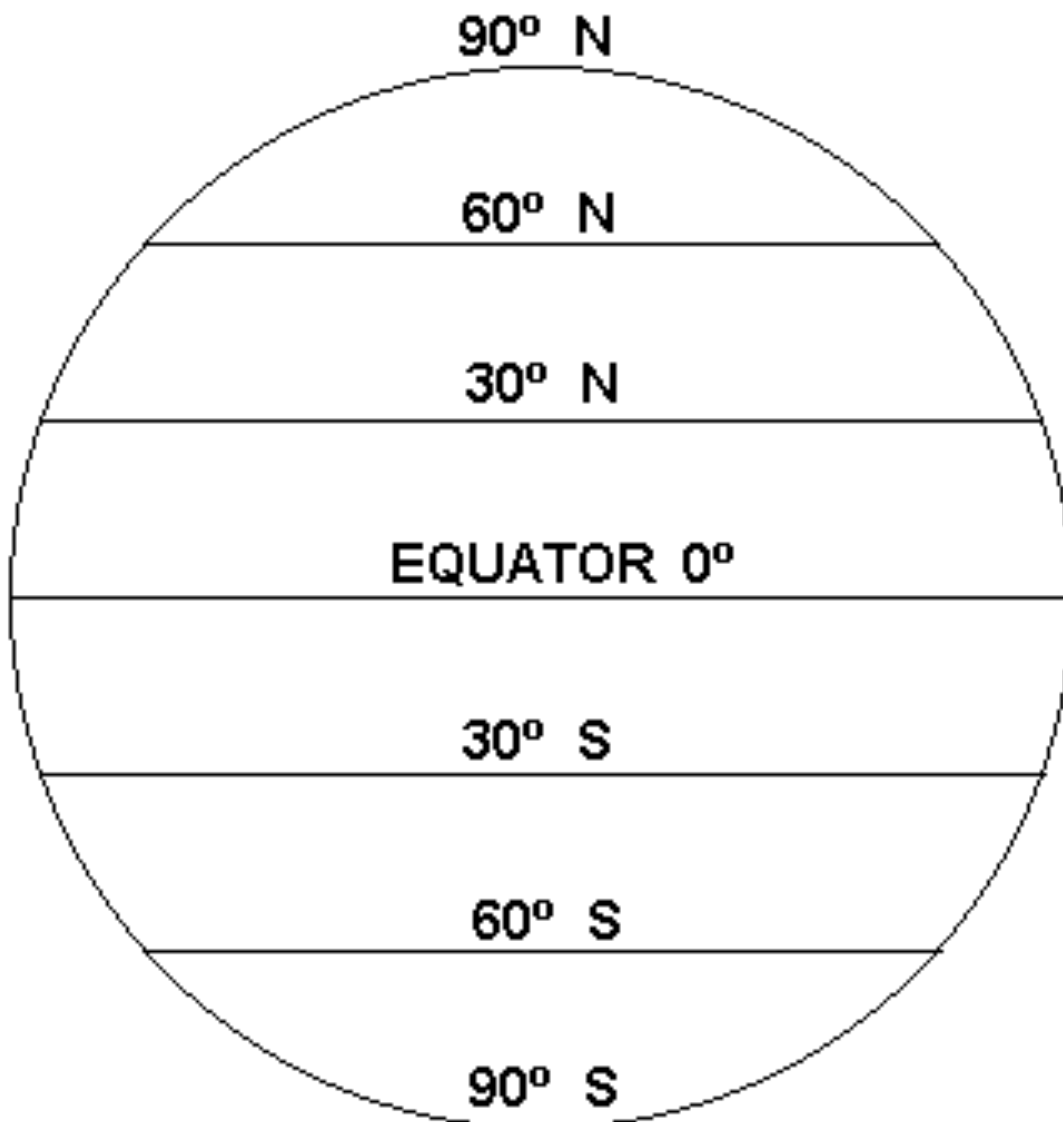
Δ 90° angle = direct light = higher temperatures

Δ less than 90° angle = energy is more spread out = lower temperatures.

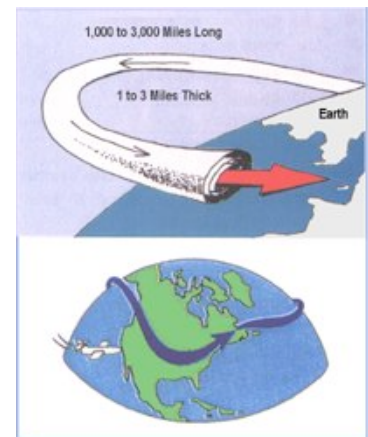
# Global Winds



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.

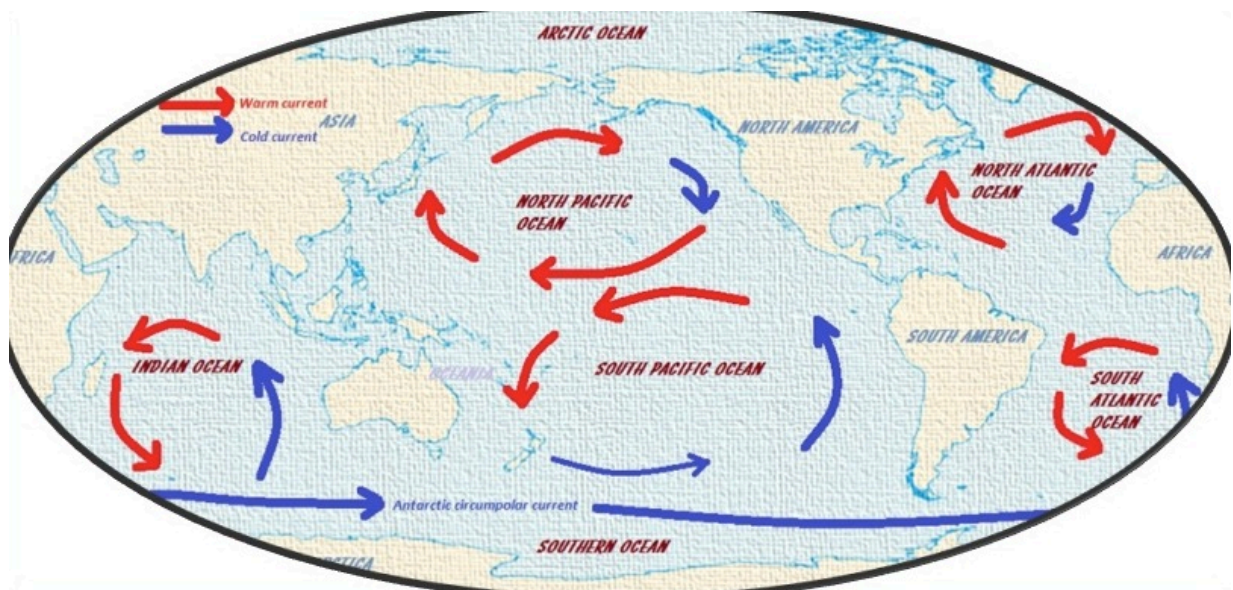


- e. Jet Stream narrow band of wind in the upper atmosphere that helps push weather across N. America



## 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 large temperature variations

Δ Seasons greater seasonal variations, cold winters, hot summers