Weather/Climate and Energy

Climate describes the average weather of an area over a 30 year period. Weather is a result of the movement of energy around the planet. If something impacts the way energy moves around the Earth the climate of an area will eventually change.

This energy comes from the sun.

This energy evaporates water causing the water cycle and creates areas of warm (low density) and cold (high density) areas on the planet. As these areas move around they cause global wind currents and ocean currents.

Factors That Influence Weather - over time the climate

1. The Sun - the main source of energy for the planet
    a. Nuclear Reaction - Like all reactions sometimes there are fluctuations in the amount of energy produced. Just like a campfire, the Sun has a cycle of high and low energy output

    b. Solar Wind - Particles from the Sun interact with our atmosphere to create the Northern Lights or also called the Aurora Borealis

2. The Earth
    a. Round - the shape of the Earth causes uneven heating of the planet. The Equator receives solar radiation directly

(hot) and the poles receive solar radiation at an angle (cold).

b. Rotation - creates night and day so the surface of the Earth is always getting warmer and cooling down and because the Earth spins it causes the air and the oceans to spin as well (Coriolis Effect)

c. Revolution - as the Earth moves around the Sun the distance from the Sun changes. More energy is received when the Earth gets closer

d. Tilted - as the Earth spins on an angle and moves around the Sun the planet gets Seasons

3. The global air currents - look at the vegetation pattern of the Earth (link on website). If you compare the wind patterns to the vegetation patterns you can make two conclusions. Areas of low pressure match rainy conditions and lots of vegetation. Areas of high pressure match sunny dry areas with deserts. If we alter global wind patterns we alter patterns of vegetation.

4. Ocean currents - when we compare ocean currents to vegetation patterns we can make two conclusions. Land near warm ocean currents has lots of vegetation (lots of precipitation). Land near cold ocean currents has very little vegetation (not very much precipitation)

5. Methods of Energy Transfer

a. Radiation (Light) - energy travelling as waves. Earth receives all of the Sun's energy from this method. Some forms of radiation from the Sun can enter our atmosphere and some gets reflected and some get absorbed.

b. Conduction - heating of material due to slow moving particles colliding with faster moving particles. (Only occurs in solids). As the surface of the Earth absorbs radiation air particles directly above the surface get energy by the collisions of particles on the ground.

c. Convection - method of energy transfer due to high energy particles moving around (only in a liquid or gas) as the air particles get more energy they move faster and create areas of low density. This low density air is pushed up by cooler high density air causing convection currents