

Ecosystems :

Ecosystem: self sustaining collection of biotic and abiotic components

- Abiotic components
 - Solar energy
 - Water
 - Temperature
 - Wind

Example Ecosystem: Freshwater

- Solar energy
 - What effect on the zones of a pond?
- Littorial zone- light but increase temperature?
- Limnetic zone- light similar to littorial but lower area not warmed during the day
- Profundal zone –little light

Water: Why is water so important?

Properties of Water

Properties due to the hydrogen bonding

High heat capacity– ability to stabilize temperature

- Specific heat = amount of heat lost or gained for 1 gram of substance to change 1 ° C.
 - water = 1 cal/gram/ ° C
 - iron = 0.1 cal/gram/ ° C
 - ethyl alcohol = 0.6 cal/gram/ ° C

Temperature

- Temperature changes with latitude

-The sun's rays strike the equatorial regions vertically which results in warmer temperatures

Winds

- Air heated at the equator rises, moves northward
- As it cools it drives downward movement at $\sim 30^\circ$ from the equator; this movement is coupled to movement of air from the north
- Movement of extreme northerly and southerly polar air is along the surface, driven by its density (cold air is dense)

Effect of Elevation on Ecosystems

Rain shadows

Land Ecosystems

- Biome - Terrestrial ecosystem that occurs over a broad area and characterized by a particular climate and defined group of organisms.

Earth's Biomes

Seven major terrestrial Biomes

- Tropical Rain Forests
 - Over 250 cm annual rainfall.
 - Contain at least half earth's terrestrial plant and animal species.

- Savannas
 - Season rainfall (75-125 cm annually).
 - Dry tropical grassland transitioning from tropical rainforests to deserts.

Seven major terrestrial Biomes

- Deserts
 - Less than 25 cm annual rainfall.
 - Plants and animals adapted for water conservation.
- Grasslands
 - Highly productive temperate regions.

- Herds of grazing mammals.

Seven major terrestrial Biomes

- Deciduous Hardwoods
 - Mild climate with plentiful rainfall.
 - Trees drop leaves in winter.

- Taiga
 - Long cold winter.
 - Coniferous trees.

Seven major terrestrial Biomes

- Tundra
 - Open, windswept, and boggy.
 - Permafrost (permanent ice) exists within a meter of the surface.