**10.2 The Water Cycle.**

* Water on earth exists in solid, liquid and gaseous states and readily changes from one to another.
* The water cycle page 189
  + Evaporation of water from oceans (solar energy being the major energy source)
  + Evaporation also occurs from lakes and rivers
  + Human activities such combustion also contribute
  + Water vapour is transport around the planet until it condenses to form clouds.
  + It precipitates as rain or occasionally hail or snow.
  + Most will then flow back into the oceans
* Water is involved in the reactions of life
  + Photosynthesis and respiration

6H20(l) + 6CO2(G) chlorophyll / Sunlight C6H12O6(s) + 6O2(g)

* Water is absorbed into the cells and used to manufacturing glucose.
* Cells of all oxygen-using life forms use forms of glucose as their energy source.
* This reaction between glucose and oxygen produces carbon dioxide and water.
* Water removed from the atmosphere during photosynthesis is returned by respiration

C6H12O6(s) + 6O2(g) 6H2O(l) + 6CO2(g)

* Water fulfils several other functions in plants and animals.
  + It provides a system to transport nutrients and soluble wastes
    - Water has the ability to act as a solvent and dissolve a wide range of materials
  + It provides a system to transfer heat
    - Water has the capacity to store a large amount of heat energy and provides an efficient heat transfer system
  + It provides a system to cool the body
    - The evaporation of water from a surface is the major cooling mechanism available to living things.

**Water and Climate**

* Water collects dissolved minerals when it penetrates the earth’s surface into the ground water where it slowly transports them back to the oceans. The rest runs into lakes and rivers and eventually the ocean. The evaporation stage produces water free of dissolved substances.
* The water cycle is also a major means of distributing heat around the planet.
* Warm water-laden air for the equator blows towards the poles.
* The ocean currents also distribute heat around the world.
* Disruptions to these currents such as El Nino can have global effects.
* El Nino – dry La Nina – Wet

Textbook Questions 1 and 2.