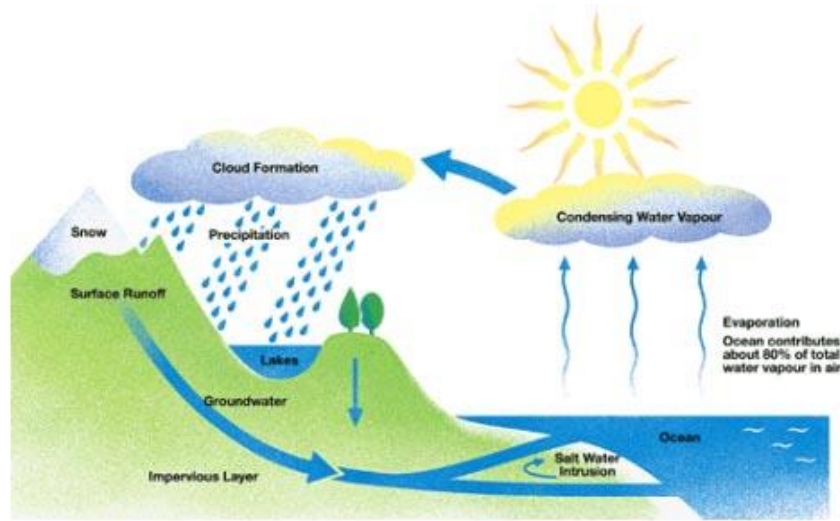
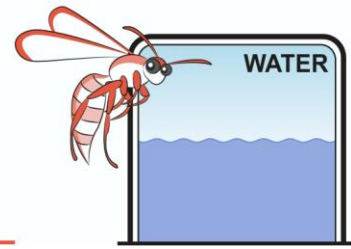


# Water Cycle - Teacher Background



Courtesy of wetfeet uk

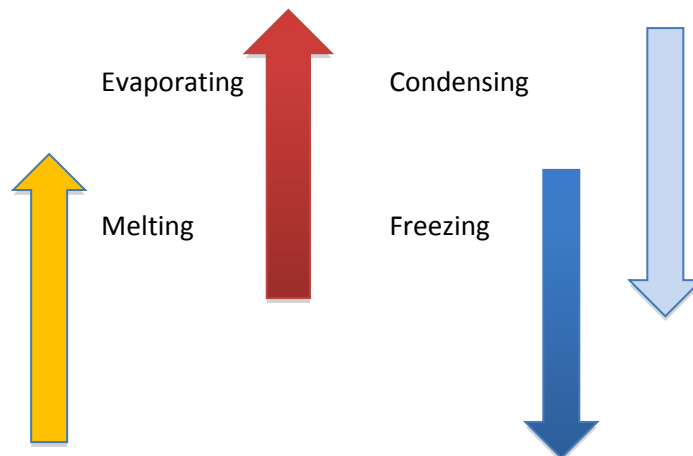
## Kinetic Theory Background

Students are not required to understand kinetic theory until Year 8. Kinetic theory explains how substances can change from being solid (constant volume, constant shape) to liquid (constant volume but varying shape) to gas (varying shape and varying volume). Molecules of water are in constant vibration. At low temperatures the force of attraction between the water molecules is greater than their capacity to move so the water remains as a solid, ice. With increasing heat the molecules have sufficient energy to slide over each other but still not enough to separate. They can change shape and become liquid water. With even more heat they can break the bond of attraction, fly apart and become a gas, water vapour.

**GAS** water vapour

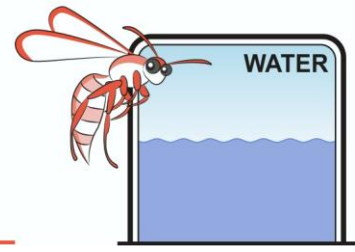
**LIQUID** water

**SOLID** ice



Melting can be demonstrated by moving ice cubes out of the fridge. Evaporation can be demonstrated by a pot or kettle of boiling water and watching the water vapour (steam) rise. Condensing can be demonstrated by holding a cold plate against steam rising from a kettle. Freezing can be demonstrated by making ice cubes. These changes are called physical changes or changes of state. No new material is formed.

## Water Cycle - Teacher Background



Water will change from solid to liquid to gas as it moves through the water cycle. The driving forces are heat (or lack of it) from the Sun and gravity.

Seawater evaporates to form cloud vapour. Vapour condenses to form rain that falls to Earth. Rain percolates through the soil to be held underground as groundwater. This eventually re-joins the sea and the cycle repeats.

Water cycles through many temporary reservoirs, leaving the sea to eventually return there. The portion of the earth and its atmosphere that is made up of water (in any state) is known as the hydrosphere.

### *Possible sequence of activities:*

#### **1. Water In The Atmosphere**

- Rate of Evaporation – Student Activity
- Rain – Student Activity
- Clouds – Teacher Demonstration

#### **2. Water On Land**

- Sources of Water - Student Research
- Permeability - Student Activity

#### **3. Water For Humans**

- The Water Cycle – Student Activity
- Waste Water – Student Activity
- Drinking Water – Student Activity
- Student Quiz
- Water Cycle – Cloze Worksheet

#### **4. Water An Aboriginal and Indian Perspective**

- An Aboriginal Perspective – Student Activity
- An Indian Perspective – Student Activity