



## The Water Cycle

Water continually changes its form. The heat of the sun evaporates water and changes it into water vapour. The water vapour, being warm, rises, high and gradually cool down and condenses to form cloud. This causes rain, snowfall, hailstorm and the water returns to the earth falling on land or sea, etc. Water that falls on land collect in rivers which carry it back to the oceans. This continuous movement of water is called the water-cycle or the hydrological cycle. The sun's heat causes evaporation of water vapour. When the water vapour cool down, it condenses and form clouds. From there it may fall on the land or sea in the form of rain, snow or sleet. The process by which water continually changes its form and circulates between oceans, atmosphere and land is known as the water cycle.

Our earth is like a terrarium. The same water that existed centuries ago still exists today. The major sources of fresh water are the rivers, ponds, spring and glaciers. The ocean bodies and the seas contain salty water. The water of the ocean is salty or saline as it contains large amount of dissolved salt.

## Distribution of water bodies

Three-fourth of the earth surface is covered by water. About 2/3<sup>rd</sup> of the earth is covered with water yet the water fit for human consumption is only 97% of the water on the earth is saline water and is found in oceans and seas. Out of the 3% of freshwater, 2% is in the form of ice caps and glaciers and only 1% is available in the form of surface water. This is found in river, lake, ground water or in the gaseous form as water vapour in the atmosphere.

## Major water bodies

### Oceans

Oceans are very large water bodies surrounding the continents. There are four main oceans on the surface of the earth. These are the Pacific ocean, the Atlantic ocean the Indian ocean and the Arctic ocean. The ocean water is never still. Its movement can be categorised as waves, tides and currents. These movement are caused due to difference in temperature salinity and prevailing winds.

### The Pacific ocean

It is the largest of all the oceans, covering nearly one-third of the earth's surface. It is also deepest ocean and includes the Mariana Trench, The deepest place on the earth's surface. It is bordered by the continents of North America and south America in the east and Asia and Australia in the west. In the north, it is joined to the Arctic ocean through the narrow Bering Strait. In the south, it merges with the Atlantic and the Indian ocean.

### The Atlantic Ocean

It is the second largest ocean of the world, covering about one-sixth of the Earth's surface. Its shape is like the alphabet 'S'. The continents of Europe and Africa border this ocean in the east and north America and south America make up its western boundary. In the northern, it stretches up to the Arctic circle and in the south, it merges with the Pacific and the Indian oceans.

### The Indian Ocean

It is the only ocean to be named after a country. Its shape is roughly triangular. It is bordered in the north by the continent of Asia. Indian lies at the head of this ocean. Arabian sea and bay of Bengal are the two northward extension of the



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Indian ocean. To the east of this ocean lies Australia and to the west lies Africa. In the south it merges with the Atlantic and the pacific ocean. The deepest point in this ocean is the sunda Trench.

### The Arctic Ocean

It lies around the north pole and extends southward up to the Arctic circle. North America, Europe and Asia are the three continents that border this ocean in the south.

### Waves

When the water on the surface of the ocean rises and falls alternately, They are called waves. An earthquake, a volcanic eruption or underwater landslides can shift large amount of ocean water. As a result a huge tidal wave called tsunami, that may be as high as 15m, is formed. The largest tsunami ever measured was 150m. high. These waves travel at a speed of more than 700km. per hour. The tsunami of 2004 caused wide spread damage in the Andaman and Nicobar islands got submerged after the tsunami.

### Tides

The rhythmic rise and fall of ocean water twice in a day is called a tide. It is high tide when water cover much of the shore by rising to its highest level. It is low tide when water falls to its lowest level and recedes from the shore. The strong gravitational pull exerted by the sun and the moon on the earth's surface causes the tide. The water of the earth closer to the moon gets pulled under the influence of the moon gravitational force and causes high tide. During the full moon and new moon days, the sun, the moon and the earth are in the same line and the tides are highest. These tides are called spring tides. When the moon is in its first and last quarter, the ocean water get drawn in diagonally opposite directions by the gravitational pull of sun and earth resulting in low tides. These tides are called neap tides.

### Ocean currents

Ocean currents are streams of water flowing constantly on the ocean surface in definite directions. The ocean currents may be warm or cold. Generally, the warm ocean currents originate near the equator and move towards the poles. The cold currents carry water from polar or higher latitudes to tropical or lower latitudes. The ocean current influence the temperature conditions of the area. Warm currents bring about warm temperature over land surface.

### Effects of ocean currents

Ocean currents have great influence on the climate and economic activities of the coastal regions.

- Warm ocean currents raise the temperature of the costs along which they flow while cold ocean currents lower the temperature.
- Winds blowing over warm currents are moist and bring rainfall to the coastal regions. Winds blowing over cold currents are dry and cool and hence they hardly carry any moisture.
- In places where warm and cold ocean currents meet, dense fog is produced. It reduces visibility and can cause dangerous accident.
- Ocean currents influence navigation. Ships sailing along the current will sail faster and save time and fuel. Which currents help to melt icebergs, which are a potential danger to ships.

