Class: 7
Geography
Chapter: 5- Water
Module: 2/3

Ocean Circulation-

Unlike the calm water of ponds and lakes, ocean water keeps moving continuously. This continuous movement is called as ocean circulation.

These movements that occur in oceans can be broadly classified as: waves, tides and currents.

March 22 is celebrated as World Water Day.

Waves -

When the water on the surface of the ocean rises and falls alternately they are called as waves.

Waves are formed when wind scrape across the ocean surface. The stronger the wind blows the bigger the wave becomes.

During a storm the winds blowing at a very high speed and form huge waves. These waves may cause tremendous destruction.

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, 15 m., is formed.

The largest tsunami ever measured was 150 m. high. These waves travel at a speed of more than 700km/hr.

Tsunami is a Japanese word that means "Harbour waves" as the harbours get destroyed whenever there is tsunami.

The Tsunami of 2004 caused wide spread damage in coastal areas of India.

The Indira point in the Andaman and Nicobar Islands got submerged after the tsunami.

Tsunami – The earth's Pandemonium

Tsunami wave struck havoc in the Indian Ocean on the 26 December 2004. The wave was the result of the earthquake that had its epicenter close to the western boundary of Sumatra. The magnitude of the earthquake was 9.0 on the Richter scale. As the Indian plate went under the Burma plate, there was a sudden movement of the sea floor, causing the earthquake. The ocean floor was displaced by about 10-20m and tilted in a downwardly direction. A huge mass of ocean water flowed to fill in the gap that was being created by the displacement. This marked the withdrawal of the water mass from the coastlines of the landmasses in the south and Southeast Asia.

After thrusting of the Indian plate below the Burma plate, the water mass rushed back towards the coastline. Tsunami travelled at a speed of about 800km. per hour, comparable to speed of commercial aircraft and completely washed away some of the islands in the Indian ocean.

The Indira point in the Andaman and Nicobar islands that marked the southernmost point of India got completely submerged. As the wave moved from earthquake epicenter from Sumatra towards the Andaman islands and Sri Lanka the wave length decreased with decreasing depth of water. The travel speed also declined from 700-900 km. per hour to less than 70 km. per hour .

Tsunami waves travelled upto a depth of 3 km. from the coast killing more than 10,000 people and affected more than lakh of houses.

In India, the worst affected were the coastal areas of Andhra Pradesh, Tamil Nadu, Kerala, Pondicherry and the Andaman and Nicobar islands.

While the earthquake cannot be predicted in advance, it is possible to give a three-hour notice of a potential tsunami. Such early warning systems are in place across the Pacific Ocean, but not in the Indian Ocean. Tsunamis are rare in the Indian Ocean as the seismic activity is less as compared to the Pacific.

The tsunami that ravaged the south and south east Asian coasts in December 2004, is the most devastating tsunami in the last several hundred years. The large damage caused to life and property was primarily a result of lack of monitoring, the early warning systems and knowledge among the coast dwellers of Indian Ocean.

The first indication that Tsunami is approaching is the rapid withdrawal of water from the coastal region, followed by destructive wave. When this happened on the coast, instead of people going to high ground, they started assembling at the coast to view the miracle. As a consequence there was a large casualty of curious onlookers when the gigantic wave (Tsunami) struck.

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