

# Tsunami

A **Tsunami** is a term used to describe a series of giant ocean waves with long wavelengths that are caused due to an unexpected displacement in the ocean. This can happen due to many reasons such as volcanic eruptions, landslides, nuclear tests, earthquakes, and glacier calvings.

A Tsunami generally occurs due to a sudden shift in the tectonic plates of the ocean, usually due to an earthquake. This shifting of the plates causes the water to rise higher above the level of the ocean. Once the Tsunami waves approach the shore they tend to slow down but still cause extreme damage to the environment. The speed of the Tsunami waves is extremely high.

The largest Tsunami that has been recorded is the one that occurred in Lituya Bay, Alaska in 1958. The height of these waves was estimated to be 1700 feet and they caused damage to everything that was within a 5 square mile radius.

## Causes of Tsunami

As discussed above, Tsunami is an unexpected and dangerous event that can cause extreme damage to nature & human beings equally. The centre point of the Tsunami is the ocean floor where the tectonic plates get shifted from their original position. There are various causes that give rise to Tsunami waves such as the ones discussed below.

### Causes of Tsunami in Points

- **Volcanic eruptions** - An extremely powerful underwater eruption leads to heavy disturbance in the seawater and the displacement of the tectonic plates beneath the sea. This gives rise to Tsunami waves.
- **Landslides** - Whenever there is an earthquake or a volcanic eruption, it creates a disturbance on the earth's surface and leads to landslides, ice falls and rock falls. These landslides in turn disturb the oceans causing Tsunami waves that travel from their original source and cause damage to the surrounding coasts.
- **Earthquakes** - The most dangerous Tsunami waves are said to occur due to undersea earthquakes. These cause a major shift in the ocean or the sea bed. The tectonic plates when experience a movement disturb the ocean's activity causing the water level to rise.
- **Meteoroids & Asteroids** - There have not been too many such instances but if occurs a meteoroid or an asteroid when falling into the ocean may cause serious disturbance within the sea and can lead to a Tsunami.
- **Nuclear Tests** - As we know a nuclear test has an extremely high capacity of causing damage with heavy explosions. There has been an instance of an occurrence of a Tsunami due to a nuclear test done by the US in 1940 & the 1950s in Marshall Island.

## Characteristics of Tsunami

A Tsunami is a natural phenomenon that takes place very infrequently and due to various reasons as discussed above. It has the capability of causing extreme damage if reaches a higher magnitude. Generally, a Tsunami can be considered non-destructive being of a smaller magnitude. There are a few characteristics of a Tsunami that can be kept in mind by the aspirants preparing for the prestigious UPSC exam and can take down notes about Tsunami in English.

- A Tsunami is a series of strong tidal waves generated from the oceans that slow down once reach the shores.
- A Tsunami when originating from a deep ocean can have a wavelength of up to 200 Kms.
- There can be as long as more than an hour's difference between two waves.
- There has been evidence that the maximum occurrence of Tsunami waves has been seen in the Pacific Ocean. It usually occurs every 15 years in the Pacific Ocean.
- India faced serious repercussions of the Tsunami that occurred on 26th December 2004.
- The time required for a Tsunami to cover one end of the Pacific Ocean to the other end is just one day.
- The waves that follow the initial wave usually cause more damage.
- The speed of the Tsunami waves is usually higher in shallow waters as compared to deep waters. This is the reason why the effect of Tsunami waves is higher near the coast & less on the ocean.

## Types of Tsunami

On the basis of the magnitude, reach and place of occurrence of Tsunamis worldwide, they can be classified into three different types.

- **Local Tsunami** - occurs within a close range of the centre point where the original cause of the Tsunami (earthquake/landslide) occurred. It is usually within 100 kilometers.
- **Regional Tsunami** - occurs within a range of 100 - 1000 kilometers from the original source.
- **Distant Tsunami** - occurs beyond 1000 kilometers from the source of occurrence. As the name suggests, a distant Tsunami gives decent time to warn the surrounding areas but is expected to cause huge damage. It is also called a Teletsunami or ocean-wide Tsunami.

## Effects of Tsunami

Aspirants preparing for the UPSC exam need to be thorough with their knowledge of each and every subject and topic. Candidates should jot down notes about Tsunami in English and understand the topic well. There are a number of hazardous effects of a Tsunami that cause damage to human life & surroundings.

- A large number of people have been dead due to the sudden onset of a Tsunami.
- There has been an immense loss of property due to the Tsunami waves and a huge number of buildings and public property have been damaged.
- A dreadful and dangerous Tsunami can also cause physiographical changes on Earth changing the location & size of certain areas.
- As per a recent survey, earthquakes of large magnitude that result in Tsunami waves also caused a major shift in the Earth's rotational movement.
- The major effect is caused to the marine environment existing underwater as the complete process initiates under the sea. Some of the species may also become extinct & their regular activities may see a major change because of Tsunami.

## Tsunami Disaster Management

Considering the amount of hazard attached to the occurrence of a Tsunami, we need to take some serious mitigation measures. We need to adopt certain measures that can help us prevent excessive damage to human life & its surroundings. We can not stop or control the Tsunami waves as they are extremely strong. Some simple steps that can be taken if we are at a risk of facing such a Tsunami threat such as -

- Plant more and more trees such as in a village in Tamil Nadu.
- Appropriate relief and rescue measures should be taken.
- Spread knowledge and awareness among the people.
- We need to stay away from the rivers that lead to the ocean.
- Adopt detailed and advanced planning.