

## Tsunami - What it is?



The word tsunami (pronounced soo-NAH-mee) is Japanese, and it means 'harbour wave'.

A tsunami is a huge volume of moving seawater and has nothing to do with tides although it is sometimes mistakenly called a tidal wave.

These giant waves can travel for thousands of miles across the sea and still create a lethal energy that destroys buildings, trees, wildlife and people.

If you throw a stone in a pond it will create a series of ripples. A tsunami is just like those ripples but the disturbance that sets them moving is much greater than a small stone. It can be triggered an undersea earthquake, landslide or volcanic eruption.

Sediment (light brown & green colour) left after the tsunami can be seen along the coast of northeast Sri Lanka. (Image courtesy of ESA, Envisat MERIS image dated 28 December 2004)

The most frequent tsunami-maker is the buckling of the seafloor caused by an undersea earthquake. Large volumes of seawater are displaced creating a tsunami.

Where do these undersea earthquakes occur?

The earth is made up of several pieces of hard rock that fit together a bit like a jigsaw. These are called tectonic plates, and they move very slowly. Oceanic plates are denser/heavier than continental plates and so they slide under the continental plates. Where this happens it is called a subduction zone. There are subduction zones off Chile, Nicaragua, Mexico and Indonesia. These areas are prone to earthquakes, which happen when the plates suddenly move against each other.

What other things could create a tsunami?

Sometimes when an ocean island collapses it causes a huge displacement of water which can also create a tsunami. Very rarely, a tsunami can be created by a giant meteor hitting the ocean!

Scientists found traces that a huge meteor rock collided with the Earth 3.5 billion years ago and landed in the ocean which may have created a giant tsunami that drastically changed coastlines and wiped out almost all life on land.

In deep water tsunami waves can reach speeds of 500mph, almost fast enough to keep pace with a jet airplane. The waves spread out with hundreds of miles between wave crests that may be just a few feet high.

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A tsunami wave also extends thousands of feet deep into the ocean.

As a tsunami reaches the shore it gradually slows down and increases in height.

Source of information:

<http://www.pbs.org/wnet/savageearth/tsunami/>

[http://news.nationalgeographic.com/news/2004/12/1228\\_041228\\_tsunami.html](http://news.nationalgeographic.com/news/2004/12/1228_041228_tsunami.html)

[http://en.wikipedia.org/wiki/2004\\_Indian\\_Ocean\\_earthquake](http://en.wikipedia.org/wiki/2004_Indian_Ocean_earthquake)

[http://news.bbc.co.uk/1/hi/in\\_depth/4136289.stm](http://news.bbc.co.uk/1/hi/in_depth/4136289.stm)

<http://www.crew.org/region/coast.html>



The initial tsunami waves resulting from the undersea earthquake that occurred on 26 December 2004 off the island of Sumatra, Indonesia, took a little over 2 hours to reach the teardrop-shaped island of Sri Lanka. Additional waves continued to arrive for many hours afterward. NASA's Terra satellite passed overhead capturing this image of deep ocean tsunami waves about 30-40 kilometers from Sri Lanka's southwestern coast. The image covers an area of 208 kilometers x 207 kilometers.

The effects of the tsunami along the southwestern shores of Sri Lanka was not as severe as along the eastern coast, though there was still substantial damage in this region. (Image courtesy of NASA Jet

## Propulsion Laboratory (NASA-JPL)

? The Pacific Ocean experiences more tsunamis than anywhere else in the world. Tsunamis have also occurred in the Caribbean and Mediterranean Seas, and the Indian and Atlantic Oceans.

? In 1775, the Lisbon earthquake created a tsunami in the North Atlantic that killed as many as 60 000 people in Portugal, Spain and North Africa. This quake caused a tsunami as high as 23 feet in the Caribbean.

### Facts:



? The December 2004 Asian tsunami is the deadliest in recorded history with a death toll of nearly 300,000. It was triggered by the fourth most powerful earthquake since 1900, estimated to measure 9.15 on the Richter scale.

? Many people were killed by the Asian tsunami because they went down to the beach to see the exposed seafloor caused by the retreating of the ocean. If you see the ocean receding unusually quickly or far it's a good sign that a big wave is on its way.

? The Indian Ocean tsunami travelled as much as 3,000 miles to Africa and still had enough force to cause enormous destruction. For example, Somalia was hit harder than Bangladesh despite being much further away.

? Before 2004 the most damaging tsunami on record was in 1782, following an earthquake in the South China Sea, which killed an estimated 40,000 people.

? In the Pacific there were 17 tsunamis from 1992 to 1996 and they claimed nearly 1,700 lives.

? An earthquake off the coast of Chile in 1960 produced a tsunami that had enough force to kill 150 people in Japan after a journey of 22 hours and 10,000 miles.

? Prior to the Asian tsunami, the most deadly tsunami in recorded history followed the eruption of Krakatoa in 1883, which destroyed the volcano completely and killed more than 36,500 people across the South Java Sea.

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