TSUNAMI

What does "tsunami" mean?

Tsunami is a Japanese word with the English translation, "harbor wave." "Tsu," means harbor, and "nami," means waves. In the past, tsunamis were sometimes called "tidal waves" by the general public, and as "seismic sea waves" by the scientific community. A tsunami`s influence on a coastline is dependent on the tidal level at the time a tsunami strikes, tsunamis are not connected to the tides. Tides result from the imbalanced, extraterrestrial, gravitational influences of the moon, sun, and planets.

How do tsunamis differ from other water waves?

Tsunamis are not like wind-generated waves, which many of us may have observed on a local lake or at a coastal beach, because they are shallow-water waves, with long periods and wave lengths.

How do earthquakes generate tsunamis?

Tsunamis can be generated when the sea floor suddenly deforms and vertically moves the overlying water. Tectonic earthquakes are a particular kind of earthquake that are associated with the earth's crustal deformation. Waves are formed when the displaced water mass, which is influenced by gravity tries to get its balance. When large areas of the sea floor rise or fall, a tsunami can be created.

What happens to a tsunami as it approaches land?

As a tsunami leaves the deep water of the open ocean and travels into the shallower water near the coast, it transforms. Tsunami travels at a speed which is related to the water depth. When it decreases, the tsunami slows. The tsunami's energy flux, which is dependent on both its wave speed and wave height, remains nearly constant. A tsunami, invisible at sea, may grow to be several meters or more in height near the coast. When it finally reaches the coast, a tsunami may appear as a rapidly rising or falling tide, a series of breaking waves.

What happens when a tsunami reaches land?

As a tsunami approaches shore, it begins to slow and grow in height. Just like other water waves, tsunamis begin to lose energy as they come onshore. Part of its energy is reflected on the sea. Tsunamis have great erosional influence. It takes away the sand from the beaches and it may take years for the trees and other vegetation to grow up again.Tsunamis may reach a maximum height onshore of 10, 20, and even 30 meters**.**

How much destruction do they cause?

Besides the horrible destruction of life that tsunamis cause, they have also caused massive physical damage. They have entirely destroyed buildings and left towns looking like a nuclear war zone.

Can we detect them before they hit?

Yes. About 35 years ago, countries around the Pacific set up the Pacific Tsunami Warning System. A group of seismic monitoring stations are used for detection. The biggest problem with this system is that it is difficult to predict how large and destructive the waves will be. Scientists are now working on better predictive tools.

The most destructive tsunamis in history were:

- 1782 –South China Sea
- 1883- South Java Sea
- 1868- Chile
- 1975-Hawaii

Scientists have found traces of an asteroid crash which might have created an enormous tsunami around the Earth 4 billion years ago. The coastline of the continents was changed drastically and almost all life on land was destroyed. This is the first know meteor crash on Earth and one of the four which are known in 300 million years. However, scientists say that it is not known where the meter hit, but it was probably close to the place where the stones of the meteorit werw found. They think this happened in water not on the land.

I think I must explain also some information about tsunami

• When the ocean is deep, tsunamis can travel unnoticed on the surface at speeds up to 800 kilometers per hour. Scientists are able to calculate arrival times of tsunamis.

• A tsunami may be less than 30 centimeters in height on the surface of the open ocean, which is why they are not noticed by sailors. But the powerful shock wave of energy travels rapidly through the ocean as fast as a commercial jet. Once a tsunami reaches shallow water near the coast it is slowed down. The top of the wave moves faster than the bottom, causing the sea to rise dramatically.

Many people have said a tsunami sounds like a freight train.

I want to tell you something about the last great tcunami in Indian ocean

The epicenter of the 9.0 magnitude quake was under the Indian Ocean near the west coast of the Indonesian island of Sumatra. A violent movement of the Earth's tectonic plates displaced an enormous amount of water, sending powerful shock waves in every direction.

The Indian Ocean tsunami caused waves as high as 9 meters in some places, according to news reports. In other places witnesses described a rapid rising of the ocean.

• The Indian Ocean tsunami is the most dectructive on record. By the end of the day more than 150,000 people were dead or missing and millions more were homeless in 11 countries, making it perhaps the most destructive tsunami in history. A third of the people who died in the Indian Ocean tsunami were children; many of them would not have been strong enough to resist the force of the water.

Many people were killed by the Indian Ocean tsunami because they went down to the beach to watch the ocean exposing the seafloor.

Within hours killer waves radiating from the epicenter hit the coastline of 11 Indian Ocean countries, snatching people out to sea, drowning others in their homes or on beaches, and destroying property from Africa to Thailand.

Tsunamis have been relatively rare in the Indian Ocean. They are most common in the Pacific.

However many countries are at risk.

The earthquake that generated the great Indian Ocean tsunami of 2004 is estimated to have released the energy of 23,000 Hiroshima-type atomic bombs, according to the U.S.

Geographical Knowledge Saved Lives

People who knew geography knew what the withdrawal ocean meant. Survivors who knew it meant trouble reported how they ran for high ground, rounded up family and friends, and tried to warn people who were drawn to the water's edge. Experts say that withdrawing ocean may give people as much as five minutes' warning to escape to high ground. That may have been enough time for many of the people who were killed by the 2004 tsunami to save themselves, if only they knew what to do.

A British newspaper reported that a school student, on vacation in Thailand, recalled a geography lesson about tsunamis and what the withdrawal of the ocean meant. She warned her family and they saved themselves.

In India a man told the Associated Press how he saved his village of some 1,500 people because he remembered watching a National Geographic television documentary about tsunamis [*Killer Wave*], and remembered that when the ocean withdrawal it was a sign of danger. He sounded the alarm and led the people to high ground, saving almost the entire village.

Somehow the animals also seemed to know that disaster was coming. Many people reported that they saw animals running away for high ground minutes before the tsunami arrived. Very few animal bodies were found afterwards.

A baby was found floating safely on a mattress.

The Indian Ocean tsunami destroyed thousands of miles of coastline and even submerged entire islands permanently.

And in the end:

The strongest earthquake to hit our planet in the last 40 years has just caused a series of tsunamis that have greatly destroyed the coasts of India, Thailand and many Indonesian islands. The destruction and loss of life has been so catastrophic that the whole world stood in

shock at the power of nature. Many are worried that this could happen again, somewhere else. Maybe at a coast near you.

Three days ago there was a great earthquake magnitude of 8.3, near the island of Sumatra again. The people were very frightened. A lot of them went on high grounds because they thought that tsunami might be created. Many people were hurt and a lot of buildings were destroyed.

generate - to generate a form of energy or power means to produce it

crust- the earth`s crust is its outer layer

shallow-if something is shallow it has a short distance from the bottom to the surface

displace-if one thing displaces another, it forces the other thing out of its place, position and then occupies that place, position

tide- is the regular change in the level of the sea on the shore

onshore- means happening on or near land, rather than at sea

offshore- means situated or happening in the sea, near to the coast

erosion- is the gradual destruction and removal or rock or soil in a particular area by rivers, the sea, or the wather

monitors- if you monitor something, you regularly check its development or progress, and sometimes comment on it

according to-if something is according to something else, then the first thing changes in order to be suitable and correct for the second thing

devastating-if you describe something as devastating you are saying that it is very harmful or damaging

resist-if you resist someone or resist an attack by them, you fight back against them

surface- of something is the flat top part of it or outside of it.

rapid- a rapid change is one that happens very quickly

withdrawal-the withdrawal of something is the act or process of removing it, or ending it

random-a random sample or method is one in which all the people or things involved have an equal chance of being chosen