

THE WESTHOME SIREN

Special Tsunami Bulletin Serving the greater Westhome, Oregon, area!

2004 Indian Ocean Tsunami

Widespread devastation - thousands die



Stars on map indicate the reach of the tsunami.

On December 26, a huge earthquake (9.0 on the Richter scale) in the Indian Ocean caused a series of tsunamis. No one knows for sure, but officials think that 226,000 people were killed. This is the deadliest tsunami in recorded history.

The tsunami killed people near the earthquake in Indonesia, Thailand and the northwestern coast of Malaysia. It also killed people thousands of miles away in India and Africa.

The tsunami changed the Indian Ocean. The ocean no longer matches existing maps and charts. Islands have vanished. Coastlines have been altered. The water along coastlines and ports is filled with debris. Shipping lanes are now too shallow for large boats to travel in them.

On land, entire towns are gone. Roads are destroyed. Without roads, relief efforts are difficult or impossible.

The Indian Ocean has no tsunami alert service. The last major tsunami in the Indian Ocean was in 1883 when the volcano Krakatoa erupted. At that time, 36,000 people were killed. Now people are calling for a global tsunami monitoring system.

(See related story about the Pacific Ocean alert system on page 2.)

Northwest Tsunamis in History

Scientists say that great earthquakes and tsunamis have hit America's northwestern coast about 20 times in the last 10,000 years. Four happened in the past 1,600 years. The last one was in 1700. It was caused by the Cascadia Subduction Zone.

The tsunami in 1700 struck Kuwagasaki, Japan. Written records have been found. "At midnight a tsunami struck the village. Villagers went to the hills. Fires broke out and 20 houses were burned. In addition, 13 houses were reported to have been destroyed by the tsunami. Because the tsunami and fires happened at the same time, villagers were unable to move anything, let alone furniture or tools..."

Pacific Northwest coastal tribes tell tales about

earthquakes and tsunamis. The Yuroks in Northern California tell of beings named Earthquake and Thunder. These beings made the ground shake and caused flooding. Geologists confirm the tales.

In 1946, a tsunami struck Hilo, Hawaii. Waves reached 10 to 20 feet high. Downtown Hilo was flooded.

In 1964, an earthquake (8.4 on the Richter scale) hit Prince William Sound, Alaska. The tsunami also hit California, Oregon, Washington and Hawaii. The earthquake and tsunami killed 122 people. Over \$106 million dollars in damage was reported.

(See related story about the Cascadia Subduction Zone on page 2.)

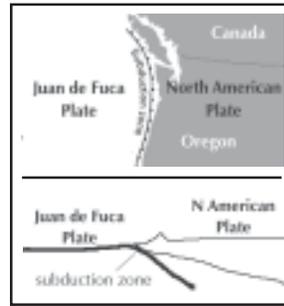
The Tsunami Warning System

There is a tsunami warning system in the Pacific Ocean. It watches for earthquakes that could cause a tsunami. A tsunami “warning” alerts coastal towns that a tsunami could arrive within hours. The warning gives predicted tsunami arrival times. A tsunami “watch” is issued for areas the tsunami might hit later.

Commercial radio and television stations issue tsunami watch, warning and information bulletins. They are also issued by the NOAA Weather Radio System (National Oceanic and Atmospheric Administration) and the US Coast Guard.

The entire Northwest coast is served by the Alaska Tsunami Warning Center in Palmer, Alaska.

Oregon is “in the zone”



The surface of the earth is made of plates that move slowly and continuously. The Juan de Fuca and the North American plates meet and parallel the Oregon coast about 75 miles out. The Juan de Fuca plate is being pushed under the North

American plate. This process is called subduction. This area is named the Cascadia Subduction Zone. If the plates move suddenly, an earthquake occurs. The earthquake may trigger a tsunami.

Did you know?

津波

“Tsunami” is a Japanese word which translates into English as “harbor wave.” The top character, “tsu,” means harbor and the bottom character, “nami,” means wave.

- Tsunamis striking the Pacific Rim are almost always caused by earthquakes.
- All low-lying coastal areas are at risk of tsunamis.
- Tsunamis consist of a series of waves. The first may not be the biggest. The danger period can last for several hours.
- Tsunamis are extremely powerful. Rocks weighing several tons, boats, and debris can be moved far inland by the force of the tsunami.
- Tsunamis can travel up rivers that join the ocean.
- Tsunamis can occur at any time of the day or night.

Physics of Tsunamis

What is a tsunami? A tsunami (pronounced soo-nah-mee) is a great sea wave or series of waves. A tsunami is caused by an undersea earthquake or volcanic eruption, landslide or a meteorite striking. The tsunami waves move out in concentric circles in all directions from the disturbance, like the ripples caused by throwing a rock into water.

How do earthquakes cause tsunamis? Earthquakes abruptly change the sea floor. They cause it to raise or sink and the water above the earthquake is moved vertically. Waves form as the water tries to regain its balance.

What else can cause a tsunami? Any disturbance that displaces a large mass of water from its balanced position can cause a tsunami. The disturbance can occur underwater. Undersea volcanic eruptions or landslides abruptly changing the sea floor are examples. Tsunamis can be triggered from above. Landslides along the shoreline or a meteor falling into the water are examples of things causing tsunamis from above the ocean.

What happens to a tsunami as it nears land? As a tsunami nears land it moves more slowly and grows taller.

How big might a tsunami become? On the open ocean, a fast moving tsunami might be a wave only three to four feet high. One hundred miles might separate wave crests. Tsunami waves in Oregon coastal areas have been 20 to 45 feet high at the shoreline. A really big one could be as high as 100 feet. Tsunami waves can move inland several hundred feet.

What happens when a tsunami reaches land? Tsunamis are still very powerful when they reach land. They can erode the shore, strip plant life away, crush buildings and flood areas far above the usual high-water level.