



Tsunami

CONTENT TOPIC: Geology/Earth Structure

CONCEPT: A Tsunami is a huge, destructive wave caused by a certain type of earthquake.

CONTENT OBJECTIVE: To understand what a tsunami is and how it works

INSTRUCTIONAL OBJECTIVES: The learner will: discuss tsunamis.

OUTLINE OF CONTENT:

- I. What is a tsunami
- II. How is it destructive

GOAL: To enable students to demonstrate the process of science by posing questions and investigating phenomena through language, methods and instruments of science

BENCHMARK: Awareness of our surroundings is a result of individual observations and prior knowledge.

CLASSROOM CONNECTORS

TIME REQUIRED: 30 minutes

MATERIALS:

A plastic container, baggies of soil and sand. Paper and pencil to record findings.

SET:

Today we will study something called a tsunami. Did you hear about the tsunami that struck the Indian Ocean on Dec. 26th? Many people died because there was no warning that a tsunami would strike.

INSTRUCTION:

Tsunami (pronounced soo-nahm-ee) is a series of huge waves that happen after an undersea disturbance, such as an earthquake or volcano eruption. (Tsunami is from the Japanese word for harbor wave.) The waves travel in all directions from the area of disturbance, much like the ripples that happen after throwing a rock. The waves may travel in the open sea as fast as 450 miles per hour. As the big waves approach shallow waters along the coast they grow to a great height and smash into the shore. They can be as high as 100 feet. They can cause a lot of destruction on the shore. They are sometimes mistakenly called "tidal waves," but tsunamis have nothing to do with the tides.

Hawaii is the state at greatest risk for a tsunami. They get about one a year, with a damaging tsunami happening about every seven years. Alaska is also at high risk. California, Oregon and Washington experience a damaging tsunami about every 18 years.



Did you know:

In 1964, an Alaskan earthquake generated a tsunami with waves between 10 and 20 feet high along parts of the California, Oregon and Washington coasts.

In 1946, a tsunami with waves of 20 to 32 feet crashed into Hilo, Hawaii, flooding the downtown area.

The Tsunami Warning Centers in Honolulu Hawaii and Palmer Alaska monitor disturbances that might trigger tsunami. When a tsunami is recorded, the center tracks it and issues a warning when needed. Click on the camera to see photos and learn more about the buoy system.

SUPERVISED PRACTICE:

I am going to give each team a plastic container, a bag of soil and sand. Make a small “island” by first pouring a small pile of sand in your container. Next gently pour the soil on top of the sand making a little “island”. Next GENTLY add water to the container leaving a small portion of the “island” above the water.

- 1) Have a student from each team lightly strike the tabletop on the table’s front edge. Team members should observe the water and draw pictures of the waves they see in the box.
- 2) Instruct students to repeat the procedure two more times, lightly striking the table on its top, then on one of the side edges of the tabletop. Each time, students should observe the waves in the box and draw what they see, labeling their drawings “front,” “top,” and “side,” according to where the table was struck.
- 3) Tell students that the three directions in which earthquake waves vibrate determine how large the resulting sea waves will be. The front strike produces a P (primary) wave, the side strike produces an S (secondary) wave, and the top strike produces an L (surface) wave. L waves cause the most damage and set up tsunamis.
- 4) What happened to the “island” during all of this?

CLOSURE:

We can’t prevent tsunamis from happening, but we can get hours of warning. How can we better prepare for any tsunami’s in the future? Can a tsunami strike Texas? Why or why not? Tsunami’s are very destructive. By knowing what happens right before a tsunami hits (water in the ocean will quickly recede) we can try to get to safe ground that is as high as possible AWAY from the oceans edge. Our school is about 1025 feet above sea level (find out what your school’s elevation is), could a tsunami get here? Not likely...