



Overview:

Students identify and simulate sounds that may precede a tsunami.

Targeted Alaska Grade Level Expectations:

Science

- [3,4] SA1.1 The student demonstrates an understanding of the processes of science by asking questions, predicting, observing, describing, measuring, classifying, making generalizations, inferring, and communicating.
- [4] SD2.2 The student demonstrates an understanding of the forces that shape Earth by identifying causes (i.e., earthquakes, tsunamis, volcanoes, landslides, and avalanches) of rapid changes on the surface.

Objectives:

The student will:

- simulate auditory sounds that may precede a tsunami; and
- identify sounds that may precede a tsunami.

Materials:

- Playdough
- 2 large, heavy-duty balloons
- Straws
- Cups
- Water
- (2) 9x13 inch plastic container with lids
- 2 cups of popcorn kernels
- VISUAL AID: "A Wave of Sounds"
- STUDENT WORKSHEET: "Sounds Before a Tsunami"

Science Basics:

Some of the observable signs of an incoming tsunami may include sounds. Sucking, hissing, bubbling and boiling may be heard as rocks, pebbles and water are drawn out to sea. There may be an eerie silence along a coast that usually pounds with the sound of surf. Elena Suleimani, a Tsunami Modeler/Research Analyst at the Geophysical Institute, describes that the sound is like distant thunder at first, then a low-flying helicopter or a loud roar from the ocean. Interviewed after the 1964 earthquake and tsunami, Victor Zeeder of Kaguyak remembered, "I heard the water. Like the wind, you know. She was noisy." Regarding Old Harbor, Alutiiq Elder Nick Alokli said, "We could just hear SSHHHH!! – Just so loud. It was just boiling, I think." Other people of Old Harbor stated, "The men in the village heard clam shells rolling and ran for the hill." Right before the final major wave hit Old Harbor, Larry Matfay and Mike T. "jumped off the boat, held each other by the hand, and ran up the beach. They 'could feel it coming, the roar.'"

Source: Davis, Nancy Yaw. *The Effects of the 1964 Earthquake, Tsunami, and Resettlement on Two Koniag Eskimo Villages*. Unpublished Ph.D. Dissertation, University of Washington, 1971.

Activity Preparation:

1. Form four to six marble-sized balls with playdough. Elongate them to fit into the opening of the balloon. Reshape them into balls once they are inside the large part of the balloon. Blow up each balloon and tie them off.
2. Prepare the plastic containers by placing a cup of popcorn kernels into each container. Cover the containers with lids.
3. Fill the cups $\frac{1}{2}$ full with water and place a straw in each cup.

Activity Procedure:

1. Explain that students will learn about the sounds they might hear before a tsunami strikes shore.
2. Explain that students will hear some information about sounds before a tsunami. Let students know that they will need to listen carefully because afterwards they will help make a list of sounds a person might hear right before a tsunami. Read the information from Science Basics. Request responses for sounds that may be heard. Write responses on the board.
3. Display VISUAL AID: "A Wave of Sounds." Explain that the poem reveals some of the sounds a person may hear before a tsunami reaches shore. Read the poem aloud.
4. After the poem has been read, explain that sound effects will be added. Distribute sound effect supplies to some of the students. Practice making the sounds at the appropriate points in the poem. At the end of the second stanza, students blow bubbles in the cups of water. At the end of the third stanza, two students shake the balloons with the balls of playdough to simulate the thunderous roar. After the word "But..." two students slowly roll the popcorn kernels in the plastic container to simulate wave action. Continue to roll them until the words "eerie silence."
5. Repeat the choral reading of the poem, incorporating the sound effects at the appropriate times.
6. Distribute the STUDENT WORKSHEET: "Sounds Before a Tsunami." Ask students to write or draw three things that represent sounds that may be heard before a tsunami reaches shore

Answers:

Correct answers should depict three of the following sounds through writing or illustration:

- *sucking, hissing, bubbling and boiling sounds as rocks, pebbles and water are drawn out to sea*
- *an eerie silence along a coast that usually pounds with the sound of surf*
- *distant thunder*
- *a low-flying helicopter*
- *a loud roar*
- *(noisy) wind*
- *clam shells rolling*