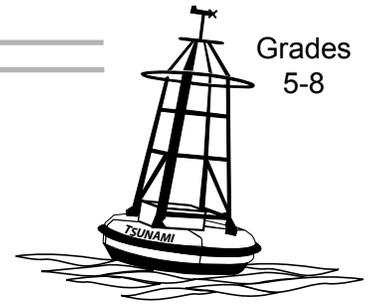


Tsunami Sources

Grades
5-8



Overview:

Newspapers are an often-overlooked source of information. Facts on File, an online database made available to all Alaskans through the Statewide Library Electronic Doorway, allows users to browse and search newspapers from around the world. In this lesson, students use “Facts on File Science Today” to find information about the 2004 tsunami that devastated Thailand and learn facts about tsunamis.

Targeted Alaska Grade Level Expectations:

Science

- [5-8] 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.
- [6] SD2.3 The student demonstrates an understanding of the forces that shape Earth by describing how the surface can change rapidly as a result of geological activities (i.e., earthquakes, tsunamis, volcanoes, floods, landslides, avalanches) [Note: Earthquakes and tsunamis are discussed here, volcanoes, landslides, and avalanches are investigated in Units 2 and 3.]

Reading

- [5-6] R2.2.1 The student comprehends literal or inferred meaning from text by locating information explicitly stated in narrative and informational text to answer literal comprehension questions.
- [7] R3.2.2 The student reads text aloud by reading aloud short factual information (e.g. reports, articles).
- [5-6] R2.5.2 The student demonstrates an understanding of the main idea by locating information in the narrative and informational text to answer questions related to main ideas or key details.

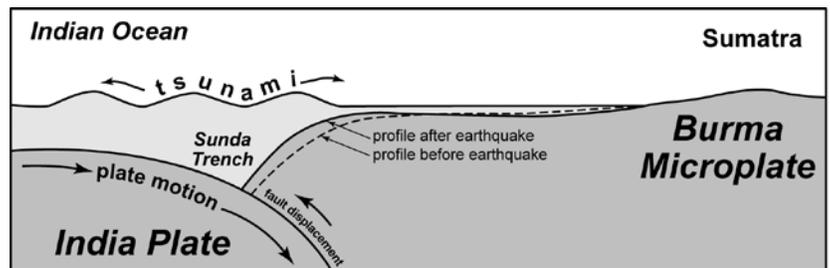
Objectives:

The student will:

- locate information in newspapers;
- utilize NewsBank to browse and search; and
- describe the effects of earthquakes and tsunamis on Earth's surface.

Materials:

- Computer with Internet access
- World map
- STUDENT WORKSHEET:
“Fact vs. Opinion”



NOTE: Map not to scale.

Science Basics:

The 2004 Indian Ocean tsunami event was the result of a magnitude 9.1 earthquake, named the Sumatra Earthquake, which jolted the ocean floor just north of Simeulue Island, off the coast of Sumatra.

The earthquake occurred along a fault in the subduction zone where the India Plate dives under the Burma Microplate. During the earthquake, the vertical motion of the overlying Burma Microplate displaced 7 cubic miles of water, causing the tsunami waves that radiated outward from the rupture zone. Out in the deep water, the waves formed a small hump that was barely noticeable. However, as the waves reached shallower water, the tsunami slowed down and formed large waves, some of which reached a height of 80 feet when coming ashore.

Activity Preparation:

Following the steps below, navigate to Newspaper Source and print out the article to be used during class discussion and in answering STUDENT WORKSHEET questions.

1. Using an Internet browser, navigate to <http://sled.alaska.edu/databases/home.html>.
2. Scroll to the bottom of the page and read the section that starts with "Need a password in Alaska." Call the number listed and listen to the automated message to retrieve the database password. Note the login and password so that it can be provided to students later in the lesson.
3. Scroll back to the top of the page and click on "Facts on File Today's Science," located in the "K-12 Student Resources" section.
4. In the search field at the top left corner of the page, type "tsunamis." Under available databases, choose "SEARCH ALL." In the date range section, choose 2004 to 2005 (you may leave the month and day fields blank). Click "Go."
5. Click on the article "Underwater Earthquake Spawns Tsunami."
6. To switch to a printer friendly version, click "Print/Citation" in the upper right corner of the page. Make copies for students to read alone or in pairs.

Activity Procedure:

Note: Facts on File, like any Internet resource, changes with time. The number of results and the exact results displayed by Facts on File may vary. Adjust this lesson as necessary. It may be helpful to invite volunteers into the classroom to help students with this activity.

1. Explain to students that, while there is a great deal of information on the Internet searchable by Google, Yahoo and similar search engines, there also is a great deal of information in databases.
2. Explain that a database is a collection of material that has been assigned categories and made searchable within a specific document or Web site. Most databases focus on a specific topic, such as science or music. Others contain similar types of materials, such as oral history or photographs.
3. In an Internet browser, navigate to <http://sled.alaska.edu/databases/home.html>. Click on the link to "Facts on File Science Today" in the K-12 Student Resources section. Explain that Facts on File Science Today is a database, which houses newspaper and magazine articles related to science.
4. Discuss what type of information one might find in a newspaper or magazine about a tsunami. Compare and contrast the two resources.
5. Inform the class that you wish to find information on the 2004 tsunami that devastated many communities in South and Southeast Asia. On a world map, point out where South and Southeast Asia are located in relation to Alaska and the names of the countries in South/Southeast Asia.
6. Ask the class what to do to find that information using Science Today. Try several different searches.
7. Guide students in narrowing the date range. Since the tsunami event occurred in 2004, students can narrow the date range to articles that were written in 2004. However, this may eliminate the possibility of follow-up articles, such as "one year later" features.

8. Explain that students can narrow or expand their search by database. Point out that currently the class is examining the Science Today database. By selecting, "SEARCH ALL" under "Available Databases" the search can be expanded. Discuss why someone may or may not want to limit his or her search to one database (to find specific types of articles, articles written within a specific time frame, or articles on a specific topic).
9. Type "tsunami" in the "Search" field, and "2004 to 2005" in the "Optional Date Range" field. Click "Go." Make sure the "Available Databases" is limited to "Today's Science."
10. Point out the number of results. Repeat the search, but this time, choose "SEARCH ALL" in the "Available Databases." Point out that there are now more results.
11. Click on the article titled "Underwater Earthquake Spawns Tsunami." Hand out the printed version to make it easier for students to follow along. As a class, read the article. Discuss how tsunamis cause destruction and affect homes, food and water supply.
12. Provide students with a copy of the article and the STUDENT WORKSHEET: "Tsunami News." Instruct students to complete the worksheet in pairs. Students will need Internet access to complete the last question on the worksheet.

Critical Thinking:

Think-Pair-Share Method: Ask students the following questions: Are newspaper articles always factual? How can they tell the difference between fact and opinion in a newspaper article? Ask students to pair up and talk about the question. Once they have explored the question, ask students to share their ideas with the class.

Extension Idea:

- Invite a health official such as a nurse or doctor to visit the class and discuss the health related effects of disasters such as tsunamis. Have students prepare questions for the guest ahead of time. The class may wish to examine purified drinking water and water from a stream or ocean under a microscope.
- *Ask students to take their article home to read and discuss with parents.*

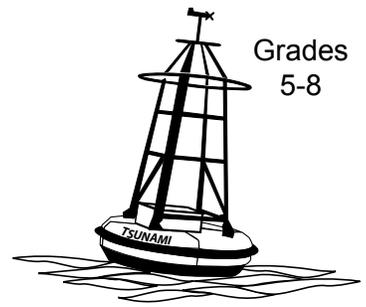
Answers:

1. *a. collection of material that has been assigned categories*
2. *c. search*
3. *b. harbor wave*
4. *550 mph (890 km/hour)*
5. *100 feet (30 meters)*
6. *answers will vary*
7. *c. Lituya Bay, Alaska*
8. *The seawater destroys the fresh water supply. There is a chance for water-borne illnesses.*
9. *a. Deep-ocean Assessment and Reporting of Tsunamis.*
10. *Students should attach the article they found during their search.*

Name: _____

Student Worksheet

Fact vs. Opinion (page 1 of 2)



1. What is a database?
 - A. collection of material that has been assigned categories
 - B. a phonebook
 - C. an Internet search engine

2. In which field would you type "tsunami" to limit your search results to materials on tsunamis?
 - A. optional date range
 - B. available databases
 - C. search

Using the information provided in the article "Underwater Earthquake Spawns Tsunamis," answer the following questions:

3. What does the term "tsunami" mean in Japanese?
 - A. ocean wave
 - B. harbor wave
 - C. tidal wave

4. How fast can a tsunami travel? _____

5. How high can a tsunami wave reach? _____

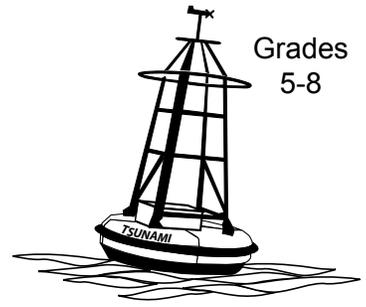
6. How does a tsunami change the surface of Earth? _____

7. Where did the biggest tsunami wave on record strike?
 - A. Kodiak, Alaska
 - B. Cuddalore, India
 - C. Lituya Bay, Alaska

Name: _____

Student Worksheet

Fact vs. Opinion (page 2 of 2)



8. Why do tsunami victims need fresh food and water?

9. What does DART stand for?

- a. Deep-ocean Assessment and Reporting of Tsunamis
- b. Daring Arctic Rescue Team
- c. Deep-ocean Arctic Response of Tsunamis

10. Complete the following:

STEP 1. Using an Internet browser, navigate to <http://sled.alaska.edu/databases/home.html>.

STEP 2. Click on "Facts on File Today's Science," located in the "K-12 Student Resources" section.

STEP 3. If asked for a password, request that information from the teacher.

STEP 4. Using the skills learned in today's activity, perform a search for an article on the 2004 tsunami event that would include information on destruction caused by the tsunami.

STEP 5. Print the article and attach it to this worksheet.