

In December 2004, an underwater earthquake triggered a string of tsunamis along the Indian Ocean with devastating effects. Now, scientists have found ways nature is preventing some deep ocean earthquakes and save lives. Strong underwater earthquakes start off silent -- until their tsunami waves roar on shore, destroying property and lives. But now, geophysicists and oceanographers have found a break in studying sea floor faults. Faults aren't one continuous line. Instead, they are broken up into sections and the edges of the faults are full of cracks as the earth's crust on both sides of the fault slides past each other. "Large scale earthquakes don't occur on the sea faults," explains Patricia Gregg, graduate student from M.I.T. and Woods Hole Oceanographic Institution Joint Program in Oceanography in Woods Hole, Mass.

Molten rock -- or magma -- from under-sea volcanoes lubricates the fault, reducing the amount of friction that could cause another earthquake. By analyzing data collected by sea vessels, they discovered volcanic activity may be weakening fault lines. The hot rock could be serving as a geological lubricant, making the fault line more malleable. Less friction means less of a quake. "So, the scale of the earthquake is smaller because the volcanism warms up the fault line and makes it more difficult to break rocks," Gregg says.

"Our ultimate purpose is to forecast earthquakes on land because earthquakes cause so much damage and kill so many people," says Jian Lin, Ph.D., senior scientist in the Department of Geology & Geophysics at Woods Hole Oceanographic Institution. By understanding what happens below the Earth's surface, geophysicists are hoping to be able to send a warning to those above-ground. The researchers say it is easier to study fault lines below sea level. They are simple in their geology and history. Fault lines on land have layers of history that make it harder to understand the physics of how they began.

*The Incorporated Research Institutions for Seismology and the American Geophysical Union contributed to the information contained in the TV portion of this report.*

Use the passage "Geophysicists Discover Slippery Secret of Weaker Underwater Earthquakes" to answer questions 1-5

1. Why are scientists interested in studying underwater earthquakes?
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|--|--|
| a. to help forecast earthquakes underwater | b. because large scale earthquakes don't occur on the sea faults |
| c. to save lives                           | d. because they are easier to understand than land earthquakes   |
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2. In this passage, what does the term "fault" mean?
- |                   |                                |
|-------------------|--------------------------------|
| a. guilt or blame | b. mistake or error            |
| c. crack or break | d. a part of the earth's crust |
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3. Why does the author mention the tsunami in 2004?
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|--|---|
| a. to create sympathy for the victims                                  | b. to persuade people to help                                 |
| c. to show an example of a scientific problem they are trying to solve | d. to illustrate how destructive natural disasters can become |
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4. What is the main purpose of this article?
- a. to create awareness about a growing problem
  - b. to describe scientific breakthroughs in an area
  - c. to ensure students understand the dangers of tsunamis
  - d. to predict possible solutions to a problem

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5. As a result of volcanic activity underwater
- a. earthquakes are getting stronger
  - b. earthquakes are getting weaker
  - c. the scale of the earthquake rises
  - d. tsunamis occur

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