

**CAREER****● Seismologist**

*As a seismologist, **Hiroo Kanamori** studies how earthquakes occur and tries to reduce their impact on our society. He also analyzes the effects of earthquakes on oceans and how earthquakes cause tsunamis (tsuo NAH mez). He has discovered that even weak earthquakes can create tsunamis.*

Because most tsunamis are caused by underwater earthquakes, scientists can monitor earthquakes to predict when and where a tsunami will hit land. But the predictions are not always accurate. Very weak earthquakes should not create powerful tsunamis, yet they do. Kanamori calls these special events *tsunami earthquakes*, and he has learned how to predict the size of the resulting tsunamis.

A tsunami can be more dangerous than an earthquake. When people feel the tremors created when the plates slide, they don't always realize that a large tsunami may be on the way. Because of this, people don't expect a tsunami and don't leave the area.

**Measuring Tsunami Earthquakes**

As tectonic plates grind against each other, they send out seismic waves. These waves travel through the earth's crust and can be recorded by a sensitive machine. But when the plates grind very slowly, only long period seismic waves are recorded. When Kanamori sees a long period wave, he knows that a tsunami will form.

"The speed of the average tsunami is about 800 km/h, which is much slower than the speed of the long period waves at 15,000 km/h. So these special seismic waves arrive at distant recording stations much earlier than a tsunami," explains Kanamori. This important fact lets scientists like Kanamori warn people in the tsunami's path so they can leave the area.

**An Interesting Career**

Kanamori finds his work very rewarding. "It is always good to see how what we learned in the classroom can solve our real-life problems," he explains. "We can see how physics and mathematics work to explain seemingly complex natural events, such as earthquakes, volcanoes, and tsunamis."

**A Challenge**

The depth of an ocean influences how fast a tsunami travels. To investigate, fill a 0.5 m long tub with 5 cm of water. Tap the tub. How long does it take for the wave to go back and forth? Add more water, and tap it again. Did the wave move faster or slower?