

Short Warning Time Adds to Tsunami Peril:[Home Edition]

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Full Text (537 words)

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The tsunami that struck the coast of Papua New Guinea on Friday was one of the most dangerous kinds: It resulted from an undersea earthquake just 12 miles offshore, allowing almost no time for a warning.

As in the case of the tsunami that struck Japan's Okushiri island on July 12, 1993, killing 190 people, the villagers in New Guinea had just minutes to flee their seaside homes.

Sometimes, by contrast, there can be hours of advance warning--such as when a tsunami is generated thousands of miles away, even though it moves at speeds ranging higher than 500 mph.

This latter scenario most frequently occurs in the Pacific Ocean, and U.S. tsunami warning centers in Hawaii and Alaska have time to spread the word.

A tsunami is a series of gigantic waves. Whether localized or long distance, what causes them to begin moving, scientists said Sunday, is the sudden dislocation of a relatively large amount of water.

The most common cause is an earthquake, sometimes of the thrust variety, resulting in deformation of the sea floor, a slumping, or a subterranean slide of earth.

A volcanic eruption or even a huge meteor striking the ocean also can cause a tsunami.

Once the series of waves starts moving, it causes no perceptible rise in the open sea, where each wave can be 60 miles long. When the waves approach land, however, they bunch up and crash, more slowly, but with telling effect.

Charles McCreery, the geophysicist in charge of the Pacific Tsunami Warning Center in Honolulu, said Sunday that "waves" may actually be something of a misnomer.

"In the few films available, you can see the behavior is more like a flash flood, a rush of water onto the shore, a big turbulent wall of water," he said.

The run-up on land can be substantial, as high as 50 or 100 feet above sea level. Just before the run-up occurs, the ocean appears to retreat to an unusually low level as it is sucked into the impending rush of water.

McCreery expressed surprise that a magnitude 7 earthquake, such as the one that occurred Friday off

the New Guinea coast, could have generated such a powerful tsunami.

Edward N. Bernard, director of the National Oceanic and Atmospheric Administration's tsunami research center in Seattle, said Sunday it is important that seaside residents be educated to know, without being told, to flee to higher ground if they feel powerful shaking.

Bernard observed that a tsunami is certainly conceivable on the Southern California coast, although the six that struck the Southland in the past 180 years all were small.

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Perhaps the most notable locally generated tsunami hit on Aug. 30, 1930, when a man drowned in Redondo Beach after a magnitude 5.2 earthquake caused undersea landslides in Santa Monica Bay.

The last tsunami to hit California was very small, barely noticeable, and followed an April 25, 1992, quake off the Humboldt County coast, he said.

Bernard noted that a USC professor, Costas Synolakis, is now preparing potential tsunami inundation maps for Long Beach Harbor and Santa Monica Bay.

Similar inundation maps also are underway for NOAA along the Washington, Oregon and Northern California coasts, Bernard said.

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