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Pacific Northwest has same volatile zones that led to Samoan, Indonesian quakes

By **Abby Haight, The Oregonian**
October 01, 2009, 4:00PM

The features that led to deadly earthquakes this week in the Samoan Islands and Indonesia exist off the Pacific Northwest coast, researchers at the Oregon State University say.

Volatile subduction zones often produce the most devastating earthquakes and tsunamis as tectonic plates collide and scrape past each other.

At least 119 people were killed Tuesday from a powerful earthquake south of the Samoan Islands. Tsunami waves 15- to 20-feet high swept over the islands less than 20 minutes later, causing most of the deaths.

An unrelated earthquake and powerful aftershock struck near Sumatra, killing at least 100. Scientists say the quakes were on the same fault line that spawned the 2004 earthquake and Indian Ocean tsunami that killed 230,000 people in a dozen nations.

Researchers at OSU who have studied and mapped the subsea terrain in the South Pacific Ocean said the Samoa earthquake occurred in a complex geological area where two of Earth's great plates collide.

"In this area, the Pacific plate and the Australian plate are colliding, and it's further complicated by a transition from a subduction zone to strike-slip fault such as the San Andreas fault in California," said **Dawn Wright**, a professor of geosciences who has done extensive bathymetric mapping in the South Pacific Ocean region.

"In the process, the Pacific plate is also tearing at this transition zone, and such forces make it especially vulnerable to large earthquakes," Wright said.

In the Tonga earthquake, two giant plates of earth surged in different directions and heaved the ocean water above them, resulting in a tsunami.

The **Cascadia Subduction Zone** off the Pacific Northwest could shift in a similar, cataclysmic way.

"Like many places on what's called the 'ring of fire,' these deep, high magnitude earthquakes hold the potential for dangerous tsunamis," Wright said.

Engineers at OSU are working with community leaders from Cannon Beach to design and build what would become the nation's **first tsunami-resistant structure**, where people could seek shelter when there may be only minutes before a deadly wave strikes.

-- **Abby Haight**

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