

Earthquakes tied to, but not result of, volcanoes

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Are the clusters of earthquakes off the Oregon Coast a result of recent volcanic activity?

“These earthquakes are not directly related to volcanic eruption, but they are indirectly, yes,” said Scott Burns, professor emeritus of geology and past-chair of the Department of Geology at Portland State University.

According to Burns, 90% of the Oregon Coast earthquakes - including the most recent cluster of seismic activity - occur within the Blanco Fault Zone.

Surrounding the Blanco Fault Zone are the Juan de Fuca and Gorda plates, which include a series of volcanoes that over time impact the zone.

“We have got 200 miles off the coast a chain of volcanoes and magma that creates a plate that is moving toward North America and is being subducted underneath North America called the Juan de Fuca,” said Burns.

According to Burns, the Juan de Fuca moves about two centimeters a year.

“That’s about the size of your fingernail,” he said.

“What happens, as it is subducted underneath North America, is it builds up, builds up, and then it breaks,” said Burns. “It can break every 500 years and create a 9.0 earthquake. That’s called a subduction zone earthquake.”

For many years, geologists believed that the Juan de Fuca plate was too warm to generate earthquakes - that its plate deformed like warm wax and so it wouldn’t fracture. However, sediment studies have shown the opposite to be true, and that as many as 12 powerful subduction-related earthquakes have occurred over the last 7,700 years.

Burns added that the Gorda moves south and is a smaller segment that subducts below the Klamath Mountains at a slower rate of no more than 10 feet per 100 years.

Burns described the recent quakes as “fun and exciting” from a geologist perspective, and that there’s not too much cause for concern.

“Nobody has really picked up that there's more activity in the volcanoes out there, but just that there has been a meeting of the two plates moving at different rates so they're building up pressure,” he said.

Still, Burns said it doesn’t hurt to be prepared.

“These recent quakes remind us that we live in earthquake country,” Burns said. “It’s not these small earthquakes we should be concerned about. It’s the big one. So we need to be prepared at home and at work.”