

Surviving by learning from experience

Lori Dengler, Times-Standard, 3-26-11

Dengler is professor and chair of the Humboldt State University Geology Department. She wrote a series of columns during Tsunami Preparedness and Awareness Week.

In 2005, I was on a tsunami team studying the impacts of the tsunami in the hardest hit areas of Northern Sumatra. We visited community after community in Aceh where all the buildings had been leveled and very few people had survived. Our last stop was Langi Village on Simeulue Island. Langi was the community closest to the epicenter of the December 26, 2004, magnitude 9.2 earthquake. On Dec. 26, the earthquake damaged many of their buildings and first tsunami surges arrived only eight minutes later. Surges continued for hours, the highest reaching 30 to 40 feet and leveling every structure in the village.

I expected the same desolation to greet me in Langi that I had seen on the Aceh coast. I was wrong. We were greeted by throngs of villagers. In Langi, not a single man, woman, or child died in the tsunami. The people in Langi had the shortest amount of time between the earthquake and the tsunami as any place in the Indian Ocean, and yet every one of them had survived.

Why were there no casualties? Langi has no electricity, no computers, and no technological warning system. What the people of Simeulue Island do have is an oral tradition. They have passed stories about the dangers of tsunamis from one generation to the next. If the ground shakes for a minute or longer, everyone knows exactly what to do. Adults grab the children and use carts to wheel the elderly and sick up the hill to an evacuation site where they have stashed supplies and temporary building supplies.

In California, I often hear people expressing concerns about the Cry Wolf syndrome -- if people are asked to evacuate and nothing happens, they will be less likely to do so the next time. So I was very interested in how the Simeulue Islanders dealt with this issue. Earthquakes are fairly common in Sumatra, but great tsunamis are rare. The last deadly tsunami occurred in 1907. When I asked them if they were concerned about "false warnings," they looked at me as if I were crazy and told me that every earthquake is an opportunity to practice their evacuation skills whether it produces a tsunami or not. On Dec. 26, 2004, they got it perfectly right.

So how does this translate to the North Coast? I'm confident that we can handle the next tsunami that comes to us from far away. We might have less time than on March 11, it could be bigger, and there's a good chance it won't strike at low tide. If we learn from the successes and mistakes of March 11, and continue to have drills and tests, we will do fine in the next distant tsunami.

But a very large earthquake nearby is more difficult. If you live in Humboldt or Del Norte County, you live atop a subduction zone, the same type of fault system that produced the Japan and Indonesian earthquakes. We call it the Cascadia subduction zone and it extends from Northern California to Vancouver Island, Canada. The last great earthquake on the Cascadia subduction zone occurred in 1700 and was probably very similar to the March 11 earthquake, just in reverse. The ground shaking affected California, Oregon, Washington and British Columbia. The tsunami arrived at our coast in less than 15 minutes and tsunami surges still large enough to cause damage began arriving in Japan a little over nine hours later.

It's easy to become dismayed at the prospect of a Cascadia earthquake. I've watched the videos from Japan and it seems impossible to survive such a major tsunami. The only way to guarantee survival is to stay dry. The tsunami maps, and the Entering and Leaving Tsunami Zone signs posted on the North Coast are your visual

guide to areas that are safe. And they are based on the largest earthquake we can possibly squeeze into the Cascadia subduction zone -- a magnitude 9.0.

The North Coast is a special place and I feel extremely fortunate to live here. We have some of the highest volunteerism rates in the nation, we have an amazing entrepreneurial spirit, and we lead the nation in our tsunami preparedness efforts. It's not an accident or coincidence. It is because of our natural setting, not in spite of it. It creates self-reliance, and we should be thankful for that. If the Simeulue Islanders can do it, so can we.

Find out more about the Cascadia subduction zone and the March 11 Japan earthquake and tsunami this Monday's community forum in the Kate Buchanan Room, Humboldt State University, 5:30 to 7 p.m. Call 826-3931 for more information.