

Not My Fault: Whole lot of shakin' going on at the Humboldt County Fair

Lori Dengler/For the Times-Standard
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What happens when earthquakes occur during the Fair? It keeps us very busy. In the seven days of the fair run, we've had local earthquakes, a deadly distant quake, the largest earthquake of 2018, a major South American earthquake, and a regional earthquake.

The Humboldt County Fair opened on Thursday and the first event was 25 minutes after the opening bell, a M 3.4, 34 miles west of the fairgrounds. It was felt by a few people at the fair and also by some from Petrolia to Trinidad. It was followed by a M 3.2 at 3:10 pm centered onshore 10 miles NE of Trinidad that was also felt lightly.

There was nothing unusual about either earthquake. The first quake was an example of the most common type of North Coast earthquake – in the offshore part of the Gorda plate. The second one was in the subducted Gorda plate, where it dives beneath the North American plate. The Cascadia subduction zone interface is about 8 miles deep beneath most of coastal Humboldt County and the M 3.2 was more than 6 miles beneath it. Earthquakes in the subducted part of the plate are not as common as those offshore, but still occur frequently. Neither one is an indication that a bigger quake could occur soon, but larger earthquakes could happen at any time.

Day two and three was Indonesia's turn. A M 6.3 late Friday followed by a M 6.9 Saturday morning. Both were part of the still-developing Lombok sequence following earthquakes in late July and early August. The more recent quakes are to the east of the earlier ones, suggesting that stresses may be activating the same fault system or nearby ones to the east. Unfortunately, these earthquakes caused more damage, injuries and at least 14 additional casualties added to the 495 killed in the previous tremors. The repeated shaking causes more than physical damage. People on Lombok and neighboring Bali are finding the quakes combined with the uncertainty of what will happen next, psychologically stressful as well.

As if Lombok wasn't enough news for Saturday, at a little after 5 pm, a M 8.2 earthquake ruptured deep beneath

the Tonga Island arc in the Fiji Island area. In less than a minute, this earthquake released more seismic energy than all of the previous earthquakes of the year. Fortunately, this earthquake was centered 350 miles beneath the earth's surface. The great depth had two consequences. First, everyone was at least 350 miles away from the seismic wave source and people experienced only mild shaking. Second, there was no tsunami threat. To produce a tsunami, an earthquake needs to deform the sea floor surface and all of the fault displacement from this quake was much deeper.

The Fiji quake is interesting from a scientific perspective. Quakes deeper than 200 miles account for about 6% of the world's earthquakes – and only four have reached the magnitude 8 size since the era of seismographs at the beginning of the 20th century.

By Saturday, I was ready to say enough already. We did have a quiet Monday. But on Tuesday, a M 7.3 struck near the coast of Venezuela. My first thought was this could be bad. It was in a populated area and near offshore vacation spots. Fortunately depth comes to the rescue again. It was 76 miles deep and like the Fiji earthquake, depth weakened the shaking impacts. There were some reports of damage, including broken windows, cracks in walls and items knocked from shelves, but no reports of casualties or injuries.

By Wednesday morning I was nearly ready to file this column but Mother Nature still wasn't finished. A M 6.2 earthquake at 2:32 am located on the Blanco fault far off the coast of southern Oregon, 165 miles WNW of Bandon. It was reported felt lightly by a few people on the Oregon coast – but the earthquake was too far offshore to be felt widely or cause damage. Earthquakes of this size are not unusual on the Blanco fault, a close cousin of our Mendocino fault and earthquakes in the magnitude 4 and 5 range are quite common. Nine earthquakes in the magnitude 6 range have been recorded on the Blanco fault since 1980, the largest a 6.5 in 1985. The good news about Blanco earthquakes is that they are too far offshore to cause damage, and the wrong type of faulting (strike-slip) and too small to produce a damaging tsunami.

The inevitable question is are these earthquakes related? The short answer is yes and no. Yes because all are tectonic earthquakes related to the delicate dance of gravity and heat that cause our planet's surface to be constantly moving, changing and occasionally rupturing. No because none of these earthquakes directly caused one another. Earthquakes are 'clumpy.' This year was relatively quiet from March until the end of July, and that

quiet spell ended coincidentally with the fair. Does this mean more earthquakes? Of course. They could happen before the end of the fair, next week or next month. The only sure thing is that we are one day closer than we were yesterday and sooner or later a strong earthquake will happen here.

The Earthquake – Tsunami Room is in Hindley Hall, the Commercial Building at the Ferndale Fairgrounds and is open from noon to 9 pm from August 16 to 26th.

Preparedness tip for this week: It's better to have light than be in the dark when an earthquake occurs. Keep a flashlight close to your bed and check batteries regularly.

Lori Dengler is an emeritus professor of geology at Humboldt State University, an expert in tsunami and earthquake hazards. Questions or comments about this column, or want a free copy of the preparedness magazine "Living on Shaky Ground"? Leave a message at (707) 826-6019 or email Kamome@humboldt.edu <http://www.times-standard.com/opinion/20180822/lori-dengler-whole-lot-of-shakin-going-on-at-the-humboldt-county-fair>