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Not My Fault: We're inning a shaky game – but we can't win forever

Lori Dengler/For the Times-Standard
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Humboldt County is back on top. The December 8 magnitude 6.5 earthquake was the largest magnitude earthquake to occur anywhere in the lower 48 states this year.

Turns out we won every one of the past five years. I had to go back to 2011 for the first year that Humboldt didn't take the crown. That was the year two 5.7s - in Virginia and Oklahoma beat us out. We were back on top in 2010 with the memorable M 6.5 on January 9. Unlike more recent winners, that earthquake caused more than 20 million in damages and injured 35.

Why so many earthquakes here? Humboldt County and the adjacent offshore area occupy a unique geologic spot. Cape Mendocino marks a triple junction – a place where three plates of the earth's surface and three great fault systems meet. Earthquakes are concentrated along plate boundaries and we have more of them than any U.S. state except Alaska. Over the past 50 years, our area has accounted for just under half of all the seismic energy released in the contiguous 48 states. We are a big player in the US earthquake world.

This is perhaps not the best race to excel in. The good news is that most of our larger quakes, like the one on December 8th, have been centered offshore far enough away and caused little damage.

My experience during this last earthquake may have been similar to yours. I was half awake and vaguely aware that there was a little motion going on that was probably not my husband rolling over. By the time he said, "we are having an earthquake", I had to reluctantly agree. The shaking had been gentle and rolling – I figured it for an offshore quake in the 5 range.

Whenever a widely felt or a newsworthy quake occurs, I go to work. Anyone can get the particulars of recent quakes from the U.S. Geological Survey or many Apps that push out the USGS data. My job is to put the event in context and to look for misinformation and rumors that often crop up after felt events.

That Thursday was busy – interviews with radio and TV stations, updating the Humboldt Earthquake Hotline, our daily phone recording of earthquake activity (707-826-6020), and posting information on the Redwood Coast Tsunami Work Group's Facebook page (www.facebook.com/rctwg). I use Facebook because it is easy to update and anyone, even non-Facebook users, can access.

There were two dominant threads in the post December 8th discussions – first concern about a tsunami and second, why it was felt so gently or not felt at all by many.

The best way to allay any tsunami concerns is to sign up for texts directly from the National Tsunami warning Center or to get a NOAA Weather Radio with the EAS Alert feature. For texts, send a text message to 40404 with 'follow NWS_NTWC'. You will receive tsunami statements and alerts from the National Tsunami Warning Center as they are issued. The "No Tsunami" message popped up on my cell phone four minutes after the earthquake. This was no surprise to me – a magnitude 6.5 is not large enough to cause a tsunami.

Why such weak or gentle shaking? And before I get complaints, I know it wasn't weak for all of you – folks in Ferndale and the Eel River bottom got a pretty good jolt. But a lot of people were like me, a little surprised when they found out how large it was.

Earthquakes, like real estate, are all about location. The December 8th earthquake was centered nearly 100 miles off the coast. Distance makes the shaking weaker for two reasons. First, seismic waves spread out as they travel away from the epicenter –like the ripples when you throw a rock into a pond. The seismic waves expand spherically - both down into the earth and horizontally over the surface, losing amplitude rapidly just due to this geometric spreading.

Second, the earth acts as a filter and the higher frequency waves - the ones that vibrate more quickly - weaken faster than the long period ones. The high frequency is what gives you the perception of sharpness. The same thing happens with sound. If someone is playing a radio really loudly and you are in the same room - you hear the whole range of frequencies - both the high and low. But if you are in the apartment below, all you hear is the boom – boom – boom of the base.

A further contribution to the weakness of the December 8th earthquake is that it ruptured away from us. The

directionality meant lower frequency shaking for us on the coast – just like the Doppler effect when a train moves away from you.

I hope all of our "winning" tremors are like December 8th – no damage and just enough shaking to get people talking and interested in earthquakes. Unfortunately, this is wishful thinking. One of these days, nature won't be so kind. The earthquake will be closer or larger or both. But if this little shaker gets you to take a few actions to prepare and reduce your risk, then it will have a winning legacy. Call (707) 826-6019 to get a free copy of "Living on shaky Ground" to help you take the first steps now.

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