Times Standard

Not My Fault: The best antidote to earthquake jitters is preparedness action

Lori Dengler for the Times-Standard
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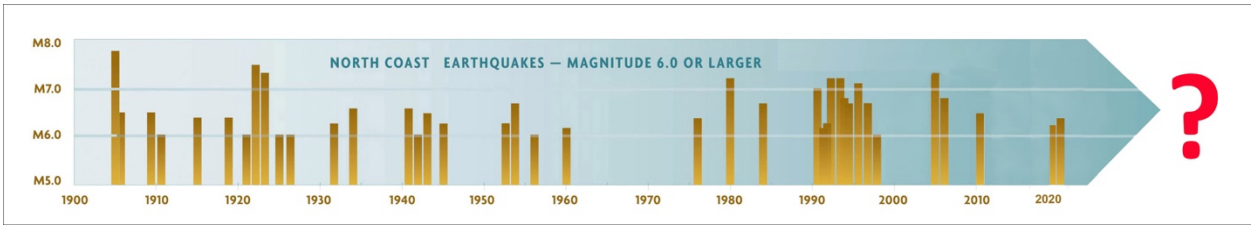

Magnitude 6 and larger earthquakes on or near the North Coast since 1900

There's a theme to many conversations these days – we are so over earthquakes, wind, and rain. The combination of atmospheric rivers and tremors has everyone on edge. Was that an earthquake or a gust? Air pressure changes as storms move in and out can cause a house to creak or shudder in an earthquake-like way.

If it makes you feel better, there is no correlation between earthquakes and weather. Storms have no impact on what is happening many miles beneath the surface where earthquakes are centered. Variations in surface conditions never reach those depths. Temperatures are only controlled by the heat coming from deep in the earth.

Our last three damaging earthquakes occurred in midwinter – the recent M6.4, the 2021 M6.2, and the Eureka earthquake of January 9th, 2010. Pure coincidence and no more unusual than being in a group of twenty people and finding out two share the same birthday. Earthquakes are all-weather and all-seasons events that occur in icy cold or searingly hot conditions.

Rainfall also plays no role. Our quakes are far below the water table and the weight a big storm adds is negligible compared to other forces like the twice daily tidal push and pull. The reverse, however, can be true. Earthquake slip changes the pressure in surrounding rock and affect the water table. There are many documented reports of wells suddenly gushing or going dry after earthquakes.

Fluids and fluid pressure are important in earthquake genesis. Injection of drilling waste fluids into deep wells has clearly triggered an increase in earthquake activity in the Midwest. But we need to forcibly get those fluids to great depths to have any effect. Discharging that waste into a surface reservoir or streams as was common prior to the 2000s had no impact.

Large reservoirs may also trigger earthquakes. The the 1975 M5.9 Oroville earthquake may have been triggered by rapid fluctuations as the dam was filled. Large quakes in India and

China have also been linked to reservoirs. Congress approved the Auburn Dam project in 1965 but the near failure of the Van Norman Dams in the 1971 San Fernando earthquake and the possible triggering link at Oroville halted construction. In recent years California's water woes have revived discussions on Auburn Dam so the Auburn Dam story may not be over.

In the past week only one Ferndale earthquake aftershock has been recorded. There have been several other felt earthquakes, but it looks like this aftershock sequence is losing steam. I hope so but wouldn't bet on it. And on the North Coast there is always a chance another fault could get into the act.

We have good records of earthquakes since 1970. In that period, the North Coast has earned its place as the most seismically active region in the lower 48 states, racking up nearly 30% of the M6s and five of the nine M7s. Since 1900, 39 earthquakes have made the M6 threshold in our area. If earthquakes recurred like clockwork, we'd have one about every three years. But earthquakes are clumpy, and I can't give you a three-year reprieve before the next one. We had a 15-year quiet spell in the 60s and early 70s. In 1992, we were hit with three strong quakes in a 15-hour period.

The best antidote to fear and worry about the next quake is taking action to make you, your family, and your workplace safer before the next inevitable earthquake. I'll start with the easy ones that take little effort and no expense.

What to do when the earth shakes? The 2:34 AM Ferndale quake provides a good lesson. Most of you were sound asleep. The earthquake woke you up (very rudely) and you stayed where you were. You didn't have time to react. As a result, injuries were very low. I was recently on a call with the North Coast's Medical Advisory Committee where they mentioned surprise at only 17 injuries and very few walk-ins to hospitals, even in hard-hit Fortuna.

There have been several studies on what causes injuries in California earthquakes. The one factor that rises to the top is how much people move while the ground is shaking. Five feet is the magic number – move any further and you begin increasing your odds of falling or being struck by falling objects. And the further you move, the more your odds go up.

Had the Ferndale earthquake occurred when you were up and about, the urge to bolt would have overtaken some of you, and like our daytime quakes in 1992 and 2010 we would have seen more injuries and more traffic to health centers. Your home is also a safer place to be than most workplaces and public spaces where there are more things to fall.

Our mantra is Drop, Cover, and Hold On. It's good advice when you are awake and inside. The most important part is Drop because once you are on the ground it is hard to bolt. Always cover the back of your neck with an arm or a pillow and, if there is a table or desk nearby, slide under it.

But some of us aren't agile enough to Drop, and for the 33% of the time earthquakes hit while sleeping, we won't have time to do that anyway. Here's where a little more effort is involved. Make your sleeping area as safe as you can. My first earthquake memory was being in bed when I was seven and a M6.4 earthquake struck 40 miles away from our home in Rancho

Mirage. All the books in the bookcase above the bed tumbled down on top of me. I doubt if that had much to do with my subsequent choice of career, but it did make an impression.

Take a moment today to survey where you sleep and where your children or mobility-restricted relatives spend most of their time. Cribs on wheels need to be anchored, remove heavy objects that can fall. Tie a tote to your bedframe to store flashlight, gloves, and glasses. Soled slippers by the bed are good but flip them upside down so they don't collect broken shards.

Many more preparedness tips in Living on Shaky Ground (https://rctwg.humboldt.edu/prepare/shaky-ground). Next week I'll take on some of the harder steps.

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