

Not My Fault: Don't let jurisdictional boundaries get in the way of preparing for a major Cascadia earthquake

Lori Dengler/For the Times-Standard

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There are many different moving parts to building resilient communities. There are multiple private and public entities, the built environment and infrastructure, and diverse economic interests. There are cultural issues and socio-economic ones, and everyone has their own priorities. The day-to-day priorities of jobs, deadlines, childcare, or elder care make it easy to shove planning for events that don't seem imminent to the side.

Each individual, family, business, or other organization has a role in resilience – to reduce our hazards, know what to do during shaking, and have supplies to be on our own for weeks if necessary. But government has important responsibilities as well. It is very hard to prepare for something you don't know much about. When a Cascadia earthquake occurs, what will be the pattern of ground shaking and how far inland could a tsunami penetrate? How will roads, buildings and infrastructure be affected? It's not possible to come up with precise answers, but with geophysical studies and engineering modeling, a general picture can be drawn.

The government role in hazard assessment is to build and sustain robust research capabilities in both public and academic institutions, to learn from similar events elsewhere and freely exchange ideas. Let's use a Cascadia earthquake as an example. It's the worst-case event for our area and certainly on the top five list of potential US catastrophic natural disasters in terms of scale, long term impact and damage.

We have two government agencies working hard on assessing the Cascadia hazard. The USGS is focused on the earthquake shaking side and has developed ShakeMaps showing the likely extent and pattern of ground motion we could experience. Ocean hazards are NOAA's responsibility and over the past three decades, the agency has acquired better ocean depth data and improved numerical models.

It is not unusual for governments to divide solid earth and ocean hazards between different agencies. I've worked in Peru, Chile, and New Zealand which have similarly delegated these responsibilities. Most of the time it works well. The overwhelming majority of earthquake impacts are related to shaking and most marine hazards don't involve earthquakes. But great subduction zone earthquakes like Cascadia blur those lines.

The USGS routinely issues loss estimations after earthquakes. These estimates are based on the population, types of construction, and the shaking strength. Usually available within thirty minutes, they provide a quick picture of the scale of impacts and spotlights the areas likely to need response and relief efforts. These estimates only cover shaking impacts and the USGS notes that tsunami impacts are not included. It is certainly possible to make similar loss estimates for tsunamis, but that is under NOAA's jurisdiction and at present, is not included.

Earthquake early warning is another area where more integration between the USGS and NOAA could be helpful. If you were in Humboldt County and signed up for MyShake last December, you likely received an alert on your phone a few seconds before or just as you began to feel ground shaking. It's great to have a heads up to put your head down and under a table before the shaking arrives. But there was nothing in that alert about tsunamis. The December 20th earthquake was not large enough to cause a tsunami and NOAA's National Tsunami Warning Center issued that information about 4 minutes after the earthquake. It would have been so nice to have that information fed onto your cell phone after we got the shaking alert.

This isn't a problem in Japan where both earthquakes and tsunamis are housed in the Japan Meteorological Agency under the same roof. The earthquake shaking alert and tsunami forecasts are disseminated on the same platform and tsunami evacuation advice is provided as well as Drop, Cover, Hold On.

The tsunami/shaking divide has found its way into outreach as well. I have been fortunate to get grant funding through both NOAA's tsunami program and FEMA (Federal Emergency Management Agency) earthquake hazard reduction program and until recently, I've been able to blend shaking and tsunami hazards in our products. But this year a new barrier seems to be in place. I've been told FEMA funding can't be used for tsunamis. That's why you

won't hear tsunami mentioned in our new Mendocino triple junction video

<https://www.youtube.com/watch?v=qhDdzHae4Rc> even though the small tsunami the 1992 earthquake produced was one of the most important lessons.

I am currently in a small kerfuffle over next year's FEMA funding. We hope to update the Living on Shaky Ground magazine to include earthquake early warning and new tsunami alert messaging. They are balking at any mention of tsunamis in the project, and I am having to bend over backwards to demonstrate that we will use other funds for the four tsunami pages in the magazine. I'm sure NOAA and the USGS fully understand the earthquake/tsunami overlap but other bureaucracies are constructing what I consider an artificial and potentially harmful barrier.

Other jurisdictional boundaries can also get in the way of resiliency. Another FEMA responsibility is hosting exercises to respond to disasters. The larger the event, the more complex the response, relief, and recovery. Two weeks ago, FEMA held an exercise to practice government response to a great earthquake and tsunami on the Cascadia subduction zone. The exercise called Cascadia Rising22, brought emergency managers, planners, and government officials together to discuss operational activities, logistics, resource management, and communications for response operations.

Billed as a "comprehensive exercise," alas it was not. It only included FEMA region X participants and that left out California. California is in FEMA region IX as is Hawaii and the Pacific territories, all of which will be impacted by a Cascadia earthquake/tsunami.

California State emergency officials are on top of this and rattling the chains. This November, FEMA IX will hold a Cascadia exercise and when planning starts for Cascadia28, I'm crossing fingers that we will be included.

Lori Dengler is an emeritus professor of geology at Humboldt State University, an expert in tsunami and earthquake hazards. The opinions expressed are hers and not the Times-Standard's. All Not My Fault columns are archived online at

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