

Times Standard

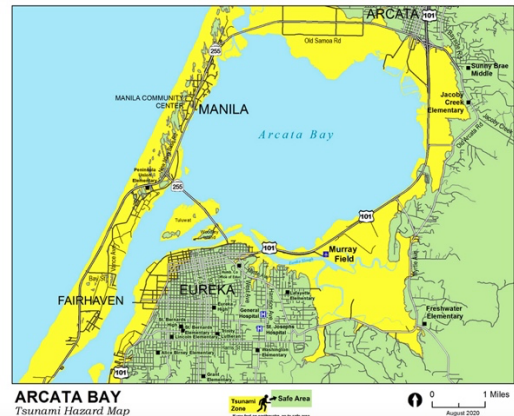
Not My Fault: North Coast Counties test tsunami communications on Wednesday

Lori Dengler for the Times-Standard

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Not My Fault in today's Times-Standard

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Tsunamis are tricky. They come from nearby or far away. The first surge may arrive in minutes or take many hours to arrive. They can last for days. Although called “waves,” tsunamis don’t crest or break. They more closely resemble a sloping wall of water or a river in flood filled with debris. Even smaller ones can produce currents strong enough to rip boats away from docks and destroy harbor infrastructure even if the peak heights never exceed high tide.

It's Tsunami Preparedness Week in California. March was chosen because California’s two worst tsunamis occurred in this month: the 1964 tsunami triggered by the Great Alaska earthquake and the 2011 Great East Japan earthquake. But there’s nothing special about March. Tsunamis can happen at any time of year.

The most dangerous tsunami is the one that comes from nearby. For California’s North Coast, that means the Cascadia subduction zone, the fault system that extends from Humboldt County to British Columbia. In my last two columns, I’ve focused on the shaking part of a Cascadia earthquake. Today it’s the tsunami’s turn.

Here’s where it gets tricky. We don’t know where the next Cascadia earthquake will begin. It could be anywhere between Humboldt and Canada’s Vancouver Island. We don’t know how much of the Cascadia fault system will rupture. If the full 650 miles long zone breaks, it will be about a magnitude 9. If only a portion ruptures, it might be an 8.5.

We don’t know how strong the shaking will be; that depends on the characteristics of the rupture. It could be strong enough to make it difficult to stand or more rolling. Whether strong

or moderate, the shaking will last a very long time, at least four of five times longer than last December's magnitude 6.4, longer than any earthquake you've felt before.

We don't know how high the tsunami will be or how far inland it will penetrate. The height can't be described by a single number. It depends on the amount of fault slip that deforms the seafloor. Some areas will slip more than others producing larger surges. In Humboldt County some of the rupture will be on land right beneath us. The plus side is that the slip beneath the land won't contribute to the tsunami, one of the reasons the tsunami in Northern California might not be as large as further north.

Once the tsunami begins, the shape of the sea floor and the coastline will modify it. On a steep ocean cliff, tsunamis won't travel inland; where the land is low and flat, a tsunami may reach areas several miles from the coast. In some tsunamis, bays will funnel and amplify a tsunami, and for another approaching from a different direction, the same bay might be protected and have lower heights.

We don't know how many large surges will strike our coast or how much time will elapse between them. The first surge could arrive only minutes after the earthquake, but it won't be the largest. Successive surges will be spaced irregularly, some an hour or more apart and others possibly piggy backing on each other with only minutes in between. And just when you think it is all over, another stronger surge may arrive.

The tsunami team at the California Geological Survey has compiled tsunami maps that show our worst possible tsunami threat. That threat varies in different parts of the State. For Humboldt and Del Norte County, it's the tsunami produced by a Cascadia earthquake. You can view the maps online at <https://rctwg.humboldt.edu/tsunami-hazard-maps> or pick up printed brochures at the National Weather Service Office on Woodley Island.

These maps show green safe areas and yellow zones where you might be at risk. They are conservative, including a margin of safety for high tide and large storm waves. If They've done the job right, the water won't get near the line between the green and the yellow. Become familiar with these maps, especially if you live or work in the tsunami zone. Practice how to evacuate and get to a safe area. In a Cascadia earthquake, communications will probably be disrupted, and you need to recognize the shaking was your signal to evacuate. There won't be sirens, airplanes, or officials knocking at your door.

Our next tsunami will more likely come from far away. You won't feel any shaking for earthquakes centered in Alaska, Chile, or Japan. There are hours before the first surges reach us and time to issue warnings and order evacuations. This Wednesday, March 29, Del Norte, Humboldt, and Mendocino Counties will conduct our annual Tsunami Communications Test aimed at distant source tsunamis. There are three things you need to know about this test:

- The Emergency Alert System (EAS) will be activated.
- The test is for tsunamis that take hours to reach our coast, not the potentially larger tsunamis from nearby.
- Tell everyone you know about the test; don't be alarmed. You don't need to do anything.

What to expect during the Tsunami Communications Test between 11 AM and noon on Wednesday:

Watching TV? You may see a crawler that a tsunami warning has been issued for the region. A voice over will explain it is only a test. Local stations will carry the test; satellite TV and many cable stations will not. You don't need to do anything.

Listening to radio? Broadcast will be interrupted by alert tones and a voice will explain this is a test of the tsunami warning system. You don't need to do anything.

If you have signed up for emergency notifications in Humboldt or Del Norte Counties, you should receive a message via text, email, or telephone. Please confirm that you received the message; you don't need to do anything else.

NOAA Weather Radios will carry the test. If you have a radio with the Public Alert feature, it should automatically turn on. You don't need to do anything.

In a few areas you may hear sirens. Triggering EAS automatically activates coastal sirens. One of the purposes of the test is to see how well this works. Sirens are located in select areas near harbors and busy beaches where people congregate outside. You are unlikely to hear a siren inland or in other beach areas. You don't need to do anything.

If weather conditions permit, you may see a civil air patrol plane with loudspeakers announcing the test is in progress. The plane could fly over coastal areas anywhere between 11 AM and noon. If you live away from the coast, you probably won't see or hear it. You don't need to do anything.

Not all distant tsunamis are caused by earthquakes. In January 2022, a volcano erupted in the Southwestern Pacific producing the largest explosion ever recorded on instruments. It also produced a tsunami never before observed, produced by a pressure wave in the atmosphere. I'll be talking about it on Monday March 27 in a free talk sponsored by Cal Poly Humboldt's Osher Lifelong Learning Institute. The talk will be archived at:
<https://extended.humboldt.edu/event/tonga-volcanic-blast>.

Lori Dengler is an emeritus professor of geology at Cal Poly Humboldt and 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 <https://kamome.humboldt.edu/resources> and may be reused for educational purposes. Leave a message at (707) 826-6019 or email rctwg@humboldt.edu for questions and comments about this column, or to request a free copy of the North Coast preparedness magazine "Living on Shaky Ground."