

## **Not My Fault: This is the third time in the last year the National Tsunami Warning Center has left us dangling**

Lori Dengler/For the Times-Standard  
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On July 28, a M8.2 earthquake ripped a 100-mile-long patch along the Alaska-Aleutian subduction zone south of the Alaska Peninsula. You may not have heard about the earthquake; it caused no damage and merited little media coverage. Lack of damage doesn't mean it hasn't a story to tell or lessons to learn.

The USGS has named it the Chignik earthquake for Chignik Mountain, the closest geographic feature on the Peninsula. It was in the same region as the M7.8 on July 21, 2020, and the 7.6 last October. These three earthquakes are part of a sequence; the M8.2 has now become the mainshock and the previous two earthquakes, foreshocks. It is the largest magnitude earthquake of 2021, narrowly edging the March 4 M8.1 in the Kermadec Islands. It is also the largest earthquake to occur in the United States since the M8.7 Rat Islands quake of 1965.

What did it do? The USGS estimates 360,000 people Alaskans felt the earthquake, including the greater Anchorage area (500 miles away), and Unalaska in the Aleutians 550 miles distant.

Only the small communities of Perryville and Sand Point were close enough to the rupture to experience strong shaking. No significant damage or injuries have been reported.

What about a tsunami? Earthquakes of M7 or larger in Alaska merit tsunami concern. The National Tsunami Warning Center (NTWC) in Palmer, Alaska issued a tsunami warning six minutes after the earthquake. The initial alert bulletin placed the Alaska Peninsula coast, the Eastern Aleutians, and the Southern Alaska coast into a Warning category, mentioning that tsunami waves could arrive in as little as thirty minutes.

Tsunami sirens blared on Kodiak Island and emergency officials ordered evacuation of ports, harbors, and low-lying areas in the warning zone. A small tsunami was

observed – measuring 8 inches on Kodiak Island and 6 inches at Sand Point. The Tsunami Warning was downgraded to an Advisory about two hours later, meaning that flooding wasn't expected but strong currents were possible on beaches and in harbors. NTWC cancelled the advisory three hours after the earthquake.

The Pacific Tsunami Warning Center issued bulletins for Hawaii and other regions of the Pacific. The initial bulletin placed the Hawaiian Islands in a Tsunami Watch. A Watch means the event is under evaluation and could become a Warning if further analyses warrant. It means emergency officials should be on standby to order evacuations if needed. In this case, the analysis showed no significant threat, and the Watch was cancelled a little more than an hour later.

And what about us and other areas of the North American West Coast? We were lost in the shuffle. The initial NTWC bulletin stated our threat was being evaluated. The same statement was repeated in the next five bulletins. Three hours later, when the Alaska alerts were cancelled, there was no mention of the West Coast at all and State OES officials had to call the NTWC to get their evaluation of no threat.

This is the third time in the last year the NTWC has left us dangling. The 7.8 in July 2020 and the 7.6 in October both triggered alerts from the warning center and each time, California and the other West Coast areas had to wait two or more hours in a "being evaluated" state. I was at a ZOOM meeting with tsunami officials shortly after the 7.6 and complained about the lack of timely response. I was told that we could assume there was no major concern for us since they hadn't put us in a threat category.

My response was "what?" Are we supposed to second guess our threat level by what was NOT included in the official bulletin? Some of you might think this is quibbling about something unimportant. Not so. We learned in 1964 that tsunamis from Alaska pose a threat to us. We also learned that time is of the essence. A safe, coordinated evacuation takes time – a least three hours. Personnel need to be placed in strategic locations and everyone in the affected area needs to be reached – difficult in daytime and more difficult in the middle of the night. It's time for our officials to complain to NOAA and the NTWC that we aren't being well-served.

And, it turns out, we may have had a threat after all. The day after the tsunami, I got an email from my good friend Donald Forrest. We've worked together on tsunami projects in the past and I've trained him to be aware of

tsunami hazards. Donald had a fishing trip scheduled that morning and dutifully checked the tsunami.gov website to see if there were any alerts. None were posted and the weather conditions were fine for crossing the bar out of Humboldt Bay.

Quoting Donald, "Crossed the bar at 8:15 at the middle of a moderate outgoing tide. It was sloppy short and crosswise. Tall lumps very close together from different directions ...

lotsa chatter from old salt on the channel, worst crossing in memory. "His comment was enough to make me look at the North Spit tide gauge – and there it was, a beautiful recording of the tsunami beginning at about 3:30 AM and lasting more than 24 hours. The peak amplitudes were right when Donald was heading out of the Bay, between 7:30 and 10 AM.

We have now collected several corroborating accounts and hope to get more. We were also able to get plots from instruments that measure currents that also show unusual signals in the channel. I'm not quite ready to conclude that the hazardous bar conditions were tsunami-caused. I am a scientist and am open minded about looking for alternate explanations. If we rule out other causes, we need to understand what was special that morning to amplify currents. If a tsunami source is confirmed, it's something that should be incorporated into alerts and even small tsunamis could pose a risk to Humboldt Bay mariners.

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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 <https://kamome.humboldt.edu/resources> and may be reused for educational purposes. Leave a message at (707) 826-6019 or email [rctwg@humboldt.edu](mailto: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."