

Not My Fault: A major earthquake and a little tsunami buzz

Lori Dengler/For the Times-Standard
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It didn't take long into the second half of the year for an earthquake to take over the top spot for US earthquakes. It's also the largest earthquake anywhere in the world in 2020.

Late on Tuesday evening (11:12 pm PDT), a magnitude 7.8 earthquake ruptured a 125 by 90-mile patch of the Alaska-Aleutian subduction zone south of the Alaska Peninsula. The earthquake was no surprise to scientists. This is one of the most seismically active regions of the planet. Tuesday's earthquake was in the same area as a magnitude 8.3 in 1938 and just to the west of the Great 1964 M9.2 rupture.

The shaking was a surprise to the nearly 2000 people on the Alaska Peninsula, triggering landslides and slumping that blocked or made some roads impassable and tossing items from shelves in Sand Point, Cold Bay, Chignik and King Cove. It was felt by some in Anchorage, more than 500 miles away. The closest populated areas were over 70 miles from the epicenter, the region is very sparsely populated and no significant damage or injuries were reported.

If you regularly read this column, you are thinking "What about the tsunami?" For anyone living in these small coastal communities, that should have been their first thought as well. Most people in these areas felt a minute of shaking shaking. The long duration is an immediate indication that a tsunami was on the way. Many people heeded this natural warning and began heading to high ground as soon as they could safely move.

If the natural warning hadn't been sufficient to get you moving, you may have gotten an official warning as well. The National Tsunami Warning Center (NTWC) in Palmer, Alaska issued their first bulletin about seven minutes after the earthquake, estimating a magnitude of 7.4 and putting much of the Southern Alaska coast into a Warning. For other coastal areas including the US West Coast, the hazard was being evaluated.

Sirens sounded at Homer and on Kodiak Island and evacuation centers were opened in schools and churches.

The Warning was disseminated on radio stations and by cell phones and most people appeared to comply. Alaska Public Radio reminded evacuees to take facemasks and hand sanitizer with them.

The NTWC bulletin put the staff at the NWS Office in Eureka into alert mode. Ryan Aylward, our Warning Coordination Meteorologist, immediately went into action, monitoring information from the NTWC, informing the Emergency managers in our region of what was happening and that there was a small possibility of an alert for our area.

There are several reasons that this bulletin was of concern to the US West Coast. A magnitude 7.4 is not likely to be large enough to pose a problem this far away, but initial magnitude estimates almost always change as more analysis is complete. The actual magnitude could end up larger or smaller. While low to mid 7s aren't of great concern, upper 7s or low 8s would be.

A second concern is the source region was in the area identified by tsunami modelers as a potentially greater threat than the 1964 tsunami. A study (SAFFR Tsunami Scenario) led by the USGS, examined the likely impacts of the magnitude 9 earthquake in this region. Other studies of the tsunami potential of this region led by the California Geological Survey show that south of Humboldt County, this "Eastern Aleutians/Peninsula" source could produce the largest tsunami likely to hit the California coast. Not only could it produce a major tsunami, we don't have a lot of time to react. The time for the first surges to reach Humboldt County was under five hours.

So wait you may say, all this was happening Tuesday night and I didn't know anything about it? Don't worry, you have company. I was happily sleeping Tuesday night and was unaware of the excitement until Wednesday morning. While the initial magnitude estimate did turn out to be low (it was finalized at 7.8 about two hours afterwards), the DART ocean instruments showed no tsunami activity.

I've talked about the Deep-ocean Assessment and Reporting of Tsunami array in past columns. On Tuesday night and early Wednesday morning, they showed their value. The DART pressure sensors lie on the deep ocean floor. One instrument was less than 200 miles from the epicenter and recorded the signals that a tsunami would have made only a half hour after the earthquake. There were no tsunami traces on any of the closest DART stations.

A little more than an hour after the earthquake, NTWC issued their 3rd bulletin and announced that while the Warning remained in effect for Alaska, there was no tsunami threat to the US West Coast. The DARTS showed nothing was headed our way and the nearest tide gauge at Sand Point, Alaska had measured a ten-inch high tsunami. It turned out there was no need to wake either you or me up and I know I appreciated getting a good night's sleep. An hour after that, NTWC canceled the Warning for Alaska.

To all the people who did evacuate on Tuesday night, bravo. You did the right thing. Just because the tsunami was small, doesn't mean the next one won't be very large. Think about the options: 1) a small tsunami and you didn't evacuate, 2) a small tsunami and you did evacuate, 3) a large tsunami and you did evacuate, and 4) a large tsunami and you didn't evacuate. Seems like a no-brainer to me – just evacuate, develop the mindset and muscle memory and know that it is the best way to keep you and your family safe.

More on why I never call an alert a “false alarm” at <https://www.alaskapublic.org/2020/07/23/listen-why-ignoring-tsunami-warnings-even-after-false-alarms-could-kill-you/>

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