Times Standard

Not My Fault: Remembering the 1964 Alaska tsunami in California

Lori Dengler for the Times-Standard

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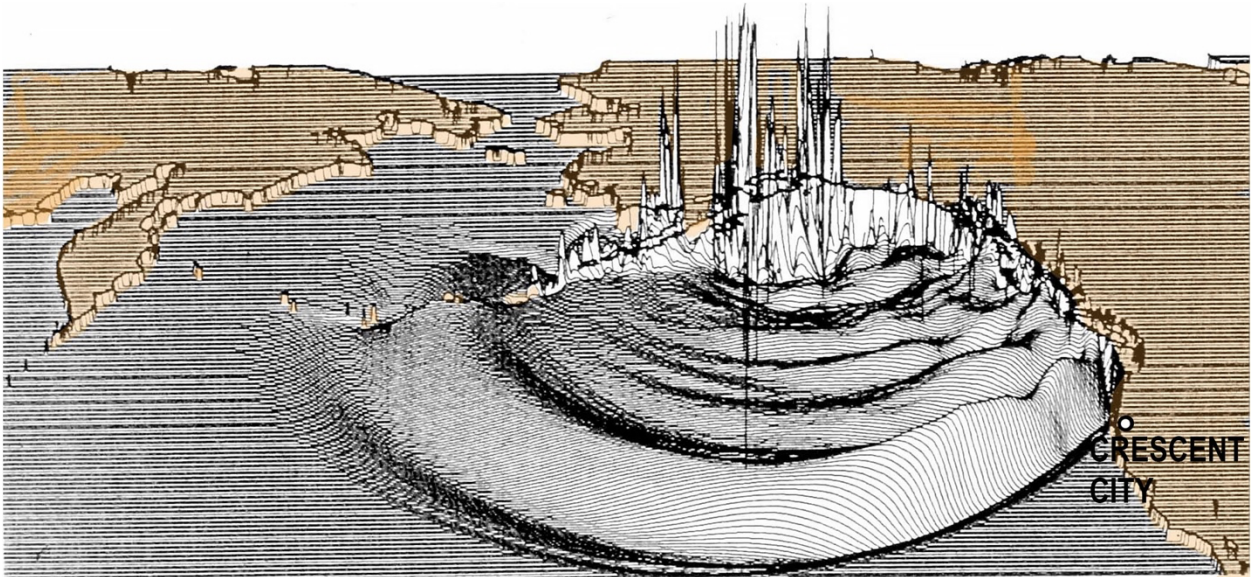

Snapshot from a numerical model of the 1964 tsunami at about three hours after the earthquake. This was roughly the time Del Nort County was first notified that a tsunami could be on its way. Vertical scale is highly exaggerated.

Today my focus is California after the 1964 Alaska earthquake, how our tsunami warning system has changed since then, and preparing for the next tsunami coming from Alaska or elsewhere in the Pacific.

Turn back the clock to March 27, 1964. The U.S. had established our planet's first tsunami warning system in 1949. The Honolulu Observatory in Hawaii built in 1902 to measure magnetic properties was partly repurposed to include tsunamis after the devastating 1946 tsunami that killed 159 people in Hawaii.

The Observatory had a seismograph on site but no other real time information. It also only operated on weekdays. The seismograph had an alarm that alerted duty personnel living nearby to return to the site when it detected large signals.

The earthquake occurred at 7:36 PM PST. It took about five minutes for the first seismic waves to reach the Observatory's seismograph and another three to accumulate enough information to trigger the alarm. It was clear a large earthquake had occurred, but you need more than one instrument to find out where it was.

Thirty-six minutes after the earthquake a teletype request was sent to other observatories in the Pacific and over the next hour, seismologists retrieved their paper seismograms and noted seismic wave arrival times. The Philippines was the first to respond, supplying their readings six minutes later. Slowly the other sites responded – Hong Kong, Guam, Japan, Berkeley, Tucson – and at 8:52 PM PST they finally had an epicenter, just offshore of Seward, Alaska.

Why didn't the Honolulu Observatory just call Alaska to see what had happened? All communication systems had been knocked out by the earthquake. It would take more than a day for the military to restore any communications in Anchorage and many towns and villages were cut off for weeks.

The Honolulu Observatory sent out a first bulletin at 9:02 PM PST. The bulletin mentions a "severe earthquake" had occurred in Alaska and that a "tidal wave advisory" was in effect, giving an estimate for the first wave arrival in Honolulu. A second bulletin a half hour later still doesn't confirm a tsunami but includes several West Coast locations as well as Hawaii. It's now nearly two hours after the earthquake and Crescent City was given an arrival time of midnight.

You might think that Del Norte County would immediately get into action alerting residents living near the harbor. But in 1964, counties didn't receive these alerts directly. It went to the California Civil Defense Office (predecessor of today's Office of Emergency Services) and for reasons I don't know, took more than an hour for the State to send it to the counties. Del Norte didn't get the alert until 11:08 PM PST, less than an hour before the first wave was expected.

Del Norte Sheriff's deputies immediately went into action, going door to door notifying residents a tsunami may be on its way. Most people responded quickly and moved away from the coast, but the deputies hadn't made it to everyone before the first surge arrived.

A tide gauge had been established on the Lumber Dock in Crescent Harbor in 1933 and gives us a clear record of the initial part of the tsunami. The first wave was positive, water quickly rising about 5 feet above the tide and not preceded by any lowering of the water. It was high enough to flood the harbor area and inland to Front Street. A second smaller surge arrived a half hour later.

I've talked to many Crescent City survivors and have read the excellent compilation of accounts in Dark Disaster (published on the 20-year anniversary of the tsunami and still available through the Del Norte Historical Society). We know from the tide gauge recording that there was nearly an hour of quiet after the second surge. Many people returned to the harbor area – some out of curiosity and others to check on homes or businesses.

Their sense that the tsunami was over was supported by Crescent City's experience less than four years earlier. The May 1960 tsunami from Chile also caused flooding in Crescent City and several people told me that the first 1964 surge produced almost the same inundation as 1960. It was logical to think this is what tsunamis did and it was now finished.

Except it wasn't. A third surge poured into the harbor area and toppled the tide gauge at 1 AM. From this point I rely on eyewitness accounts to describe what happened next. We don't know how high it peaked, but certainly larger than the first. The water then receded so far people could see the sea floor in the bright light of the full moon.

It was the fourth surge that caused catastrophe. It flooded 29 city blocks, damaging homes and businesses and claiming ten lives in the city limits. It was high enough to top the sea barrier on the west side of the harbor. The 15.7-foot-high tsunami was still riding a high tide, for a total water height of almost 22 feet.

Much has changed in the tsunami warning system since 1964. California now gets tsunami information from the National Tsunami Warning Center in Palmer Alaska, staffed 24-7 with real-time seismic and water-level information. The DART instruments directly measures deep ocean water levels and can forecast how high a tsunami will likely be. Our first bulletin will arrive in less than four minutes and go directly to counties. State and county OES offices can mobilize evacuation plans quickly.

No warning system will work unless those of us in harm's way get the information and know how to respond. This is Tsunami Preparedness Week in California, a time to focus on the last mile of the tsunami warning system. There are a number of activities on the North Coast (see https://rctwg.humboldt.edu/tsunami-preparedness-week). Next Wednesday is the Tsunami Communication Test in Del Norte, Humboldt, and Mendocino Counties. This test uses the real codes as if an actual tsunami had occurred. The EAS system will be activated which means radio and tv programing will be briefly interrupted. If you are signed up for County Emergency Notifications, you will get a text, phone, or email message about the test Wednesday morning. If weather permits, Civil Air Patrol planes will fly over the coast announcing the test. In a few areas, you may hear a siren. IT IS ONLY A TEST – you don't need to do anything.

After the warning test, California emergency managers will participate in a playbook exercise, practicing how to respond to another great earthquake and tsunami coming from Alaska. And remember that the next tsunami might come from an earthquake nearby. That case is very different from the California experience of 1964. You will get a warning, but it won't be from any official or the tsunami warning centers. It will be shaking that seems to go on forever. If you are in a tsunami zone – immediately head inland or to high ground.

Want to learn more about the 1964 tsunami? I am giving a free talk this Monday March 25 at 12 PM through the Humboldt Osher Lifelong Learning Institute – just click the JOIN A PRESENTATION link at https://extended.humboldt.edu/olli/events/brown-bag-lunch-presentations.

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/taxonomy/term/5 and may be reused for educational purposes. Leave a message at (707) 826-6019 or email Kamome@humboldt.edu for questions and comments about this column. The new edition of the preparedness

magazine “Living on Shaky Ground” is posted at https://rctwg.humboldt.edu/prepare/shaky-ground.