

Not My Fault: Tsunami alerts depend on you

Lori Dengler/For the Times-Standard
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I may have left a wrong impression in last week's column. The delay in getting a tsunami alert to the West Coast was a problem in 1964, but it wasn't the main reason ten people died in Crescent City.

Tsunamis are tricky. The first surges are never the largest. In Crescent City, the highest waves are well into the wave train. In 1946, it was the seventh wave and in 1960 it was the twelfth, more than ten hours after the first. There may be tens of minutes between successive peaks. In between surges, a bystander may think little is happening or the event is over.

March 27th, 1964 was Good Friday and families were gathering and making plans for the Easter weekend. The skies were clear, the moon was full and an eight-foot high tide occurred at 11:30 PM. For people still awake, the 11 PM news was the first indication that something was amiss. TV stations interviewed seismologists from UC Berkeley excited about the big earthquake in Alaska. No one knew what had happened in Alaska because the earthquake severed communication.

The possibility of tidal waves, the common term at the time, got a mention in the coverage but no specifics. In 1964, Crescent City residents were well aware of them. The '46 and '57 tsunamis had been observed and in '52 and '60 tsunamis caused some flooding and damage. Years ago, I met Wally Griffin who ran the Crescent City Printing Company for decades and published a remembrance of the 1964 tsunami. He also observed the tsunami flooding from 1960 and left me with a sketch of the inundation zone.

I'm sure that memories of 1960 were in many people's minds when the tsunami struck in 1964. The first wave was nearly the same height as the peak 1960 waves and eyewitnesses say it flooded Front Street in almost the same way as shown in Wally's 1960 map.

This first surge was 6.4 feet high, and sitting on top of a high tide, made a total water height of 14.5 feet. The water ebbed, and a second surge arrived thirty minutes

later. It was 2.5 feet smaller than the first and caused only minor flooding.

And then came a long pause. No waves for nearly an hour. What might be your thoughts? The first surge is almost exactly what you experienced less than four years ago. The second surge was smaller and now nothing much seems to be happening. You are a rational person and you base your decisions on your own experience. The tsunami is over.

Many people must have had similar thoughts and returned to the coast. Some people owned homes or businesses near the waterfront and were concerned about damage. Others just wanted to see what had happened. One group headed to a restaurant near Citizen's Dock to celebrate a birthday. Unfortunately, they weren't aware of just how tricky tsunamis can be.

It's now after 1 AM, and although the moon is bright, most can't see what is happening in the harbor. Much of the water drained away and a third surge arrives just before 1:30. We know this surge is larger than the first as it knocks over the tide gauge house. Again the water ebbs, this time exposing the entire harbor floor. The largest surge rushes in perhaps 25 minutes later. It towers more than 16 feet and, with the tidal boost, reaches a height of 22 feet relative to low tide, high enough to flood 29 city blocks.

It is also the deadly surge, catching both people who never evacuated and those who had returned to coastal areas.

1964 was a sea change for both the study of great earthquakes and tsunamis. A tsunami warning center was established in Palmer, Alaska in 1967. Under the auspices of the Coast and Geodetic Survey, its primary purpose was to provide timely and effective warnings to Alaska Communities. Later it became part of the Weather Service and in 1982, became the West Coast Alaska Tsunami Warning Center adding the US and Canadian Pacific Coasts to its Area of Responsibility.

I can't overemphasize the trickiness of tsunamis. They can fool people who know about tsunamis. In 2006, we nearly lost then Crescent City Harbor Master Rich Young and an assistant when they tried to re-secure boats. Rich knew that a tsunami statement had been issued after a major earthquake north of Japan. The statement gave a Crescent City arrival time of 11:38 AM, but all alerts had been cancelled early that morning.

Rich kept a watchful eye on the harbor from 11 to 12 but observed nothing. Two hours later, he noticed agitation in the harbor and headed out to secure the boats. They were lucky to scramble to safety just as the dock they were on began to break up. For this tsunami, the largest surge was number seven, arriving about two hours after the first. He didn't realize that a tsunami could behave that way.

What people believe, how they interpret information and their past experiences are just as important as the technical delivery of a warning message. This is not unique to tsunamis. There are volumes of studies showing the same for hurricanes, flash floods, wildfires, and other short trigger events. Omitting human behavior in the design and effectiveness of warning systems will doom them to failure.

Note: To get a feeling of what happened to Crescent City in 1964, watch CBS News and a very young Terry Drinkwater on scene two days later at https://youtu.be/_jYT1TTdPo8. Crescent City created a walking tour in the area flooded in 1964. It is worth taking the time to visit if you are in the area. You can visit remotely at <https://www.crescentcity.org/tsunamitour/>.

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