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By Grace Toohey, Karen Garcia and Rong-Gong Lin II

The California tsunami danger is real. The 7.0 off-shore earthquake is a wake-up call to be prepared.

Fear, anxiety and confusion swept across the West Coast on the morning of December 5, 2024 when a tsunami warning was issued for parts of Northern California and southern Oregon following a magnitude 7 earthquake that occurred 55 miles off the shore of Eureka CA (325 miles south of Depoe Bay). It's a reminder to prepare and know how to respond in case of such emergencies.

Evacuations were ordered. Sirens went off. Service was suspended on the Bay Area's commuter rail through its underwater Transbay Tube. But in about an hour, the warning was canceled. Though the circumstances were right, no major tsunami formed — this time.

The conditions could have produced a dangerous tsunami, but there's no way to predict such an event accurately ahead of time. "We're completely reactionary to an earthquake event," said Dave Snider, at the National Tsunami Warning Center in Alaska. "Time has to be respected to get people to safety." So his team errs on the side of caution, especially when the earthquake hits closer to the coast — as this one did — and could more quickly inundate populated areas.

Tsunami warnings remain rare for the West Coast, and actual major tsunamis are even more unusual. But they do happen, which is why it's important for residents to be prepared and know how to respond.

This latest earthquake is a good reason to refresh what it means to live in tsunami country.

A brief history of tsunamis in California

The last time the U.S. West Coast saw a tsunami advisory was in January, 2022 after the eruption of an underwater volcano in a remote corner of the South Pacific touched off a powerful tsunami.

California experienced relatively minor effects, but at Santa Cruz Harbor, waves flooded streets and a parking lot, where cars floated about like toy boats. Water poured into bathrooms and electrical transformers onshore. It caused an estimated \$6 million in damage to Santa Cruz alone, officials later said.

In 2011, a tsunami from the devastating Japan earthquake also battered some coastal areas of California, resulting in more than \$100 million in damage at marinas and harbors. In Crescent City, residents reported that about three dozen boats were “crushed” in the harbor and that surging waters significantly damaged or destroyed many docks. One person died after being swept into the sea, reportedly when taking pictures of the tsunami.

The Del Norte County city has experienced two other tsunamis in recent history. In 2006, Crescent City residents were caught off-guard by significant seawater surge hours after a tsunami warning expired, causing significant harbor damage.

Most notably, the Alaskan Earthquake of 1964 set off a catastrophic tsunami that devastated Crescent City, washing away 29 city blocks and killing at least 11 people. A series of nighttime waves crashed through the coastal city, destroying or damaging 91 houses and 172 businesses.

California officials also have records of tsunamis hitting Northern California in 1960 and 1946, which each left at least one person dead. The 1946 tsunami, triggered by a magnitude 8.6 earthquake near Alaska, flooded parts of Half Moon Bay.

Among the earliest records of a tsunami in California is an event in 1812 when a large earthquake in the Santa Barbara area “was followed by a tsunami that wiped out many coastal villages and destroyed ships in the harbor,” according to the U.S. Geological Survey.

And there was the catastrophic mega-tsunami of 1700, originating from a magnitude 9 earthquake over the Cascadia fault system which runs offshore from Northern California to Vancouver Island for 700 miles. That earthquake was so powerful, entire sections of the Pacific coastline dropped

by as much as 5 feet. In the Pacific Northwest, Native American stories told of “how the prairie became ocean” and canoes were flung into trees.

Should a similar earthquake happen today, scientists say a giant tsunami would wash away coastal towns, destroy U.S. 101 and cause \$70 billion in damage over a large swath of the Pacific Coast. More than 100 bridges would be lost, power lines toppled and coastal towns isolated. Residents would have as little as 15 minutes' notice to flee to higher ground, and as many as 10,000 would perish, according to a scenario published more than a decade ago.

Can you prepare for a tsunami?

These rare systems are hard to predict, but there are ways to prepare and know what factors can spur such dangerous events. The natural warning signs include feeling a strong or long earthquake. If you're by the beach and see a sudden rise or fall of the ocean or hear a loud roar, it's time to head inland.

If you are on the beach or in a harbor and feel an earthquake, immediately move inland or go to high ground. If strong shaking lasts for 20 seconds or more, everyone within the tsunami evacuation area should evacuate as soon as it is safe to do so.

Be aware if you live or frequently visit a tsunami evacuation zone. Look out for tsunami hazard maps in your area. If maps or signs are not available, state officials suggest getting to an area 100 feet above sea level or two miles inland. If you cannot get this far, go as high as possible. Every foot inland or upwards can make a difference.

How should you respond after a tsunami warning?

Evacuate the area by foot and get to higher ground. Don't get in your car and try to drive away from the hazardous area — evacuating by car could create a traffic jam. If you feel the earthquake: drop to the floor, take cover and hold on until the shaking stops.

If you evacuated from a coastal area, stay away until officials permit you to return. Do not go toward the coast to watch a tsunami. Tsunamis move faster than a person can run.

Don't let your guard down after the first tsunami wave. The first one usually is not the highest one. Large tsunami waves might be more than 50 feet high in some areas close to the coast. Tsunami waves can last for hours.

Do not attempt to surf or watch a tsunami. [You cannot surf a tsunami](#), as there is no face to a tsunami wave. Regular waves flow in a circle without flooding higher areas. Tsunami waves are unpredictable and flood the land like a wall of water.

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