

## **Not My Fault: The tsunami of April 1, 1946 was no April Fools joke**

Lori Dengler/For the Times-Standard  
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April 1st 2018 marked the first time in 62 years that Easter fell on April Fools day. It also signaled the end of Tsunami Awareness Week in California and the beginning of Tsunami Month in Hawaii. Hawaii takes tsunamis very seriously. Tsunamis are the State's number one natural hazard and have claimed an order of magnitude more lives in the state than any other type of hazard.

The most famous of Hawaii's tsunamis fell on April Fools Day 1946 and it was no joke. It was caused by an earthquake on the Alaska-Aleutian trench about 85 miles south of Unimak Island at 3:28 am AST. The earthquake was strong enough to wake the off duty staff at the coastguard lodging and would have been felt by the five-man crew in the Scotch Cap Lighthouse. About 45 minutes after feeling the earthquake, the log from the off duty personnel reported, "Heard terrific roaring of the sea followed by huge sea immediately." They ordered the evacuation of the lighthouse, but it was too late. In the morning, only the foundations of the six-year old edifice remained. Debris attributed to the tsunami was found at an elevation of nearly 140 feet above sea level. The crew was never found, and to this day the 1946 destruction of the Scotch Cap Lighthouse remains the worst disaster to strike a land-based Coast Guard facility in history.

The tsunami generated by the earthquake continued south, reaching the Hawaiian Islands a little over four hours after the earthquake. It was a beautiful Monday morning in Hawaii and people were headed to work and school. There was no tsunami warning system at the time and the first indications that people had of the danger was seeing the water retreat or hearing the loud crash of the onrushing surges. Children and adults, surprised to see the sea floor exposed as the water's edge withdrew, rushed to collect shells and fish on the newly exposed sea floor. Unfortunately, many perished as the waters rushed back in.

When all was said and done, at least 159 people died in Hawaii, and all of the populated islands were impacted. Worst hit was Hilo where the V-shaped harbor amplified waves and population was concentrated near the water. The water heights weren't nearly as high as in Alaska, but the nearly 30 foot high surges in Hilo Bay were more than

enough to sweep away the entire district of Shinmachi (new town), and destroy the harbor and vicinity.

At just about the same time the tsunami was hitting Hilo, it also arrived along the California Coast, causing damage from Noyo Harbor in Mendocino County to San Luis Obispo and at Catalina Island. A man walking on the beach at Santa Cruz was knocked into the water and drowned.

The tsunami continued south, destroying houses in Samoa. Nearly ten hours after the earthquake, water heights reaching 65 feet high arrived in French Polynesia's Marquesa Islands, more the 7300 miles away from the earthquake source region. A mother and her infant were swept away, the furthest casualties in the 1946 tsunami. In the Juan Fernandez Islands off the Chilean coast, after traveling for 17 hours, the tsunami was strong enough to sink boats in the harbor. About 22 hours after the earthquake and nearly 10,000 miles, the tsunami reached Antarctica with still enough height and energy to destroy a hut in Graham Land.

The 165 deaths on US territories make the 1946 tsunami the worst historic tsunami disaster on US soil. The real tragedy of the April Fools Day events was that no system was in place to warn people that a great earthquake had occurred with the potential to send deadly surges in their direction.

By 1946, seismographic stations had been established in many areas of the world and seismologists were quite capable of locating major earthquakes and estimating their size from any part of the planet. But nothing was done in real time. Seismologists in Germany, Japan, England, the US and elsewhere in the world would read the traces on their instruments and over days or weeks, share information to determine the location, size and origin time. It was clear to many of them that it could be possible to speed up the assessment of the potential tsunami hazard when large earthquakes occurred. But this would require a new kind of seismology where the clock would be ticking and require coordination and faster data analysis to be of use in warning communities before the tsunami struck.

In 1949, the first tsunami warning center became operational. Housed at Ewa Beach near Pearl Harbor on Oahu, a system was established for seismological centers around the Pacific to read their records and telephone information to the Oahu site. In those early days, it typically took an hour or more for the center to determine a reliable estimate of location and tsunami potential and

begin disseminating information to communities that may be at risk.

Much has changed since those early days in Ewa Beach. Seismic feeds from instruments throughout the Pacific are now available in real time along with water height data from coastal tide gauges and deep ocean sensors. Numerical modeling allows estimates of not only the time tsunami surges will arrive, but also their size. Improved analysis methods have cut down the average time to issue warnings from over an hour to under ten minutes. If the 1946 earthquake were to occur today, we would likely receive an initial notification about four minutes after the earthquake and a warning three hours before the first surges arrive on the Northern California coast. But, in order to work as intended, it must be maintained and understood. And it must be tested – that is why last week's North Coast Tsunami Warning was really worth doing.

Interested in an account of what it was like to be caught in the 1946 tsunami? See <http://www.hawaiinewsnow.com/story/27350169/exclusive-27-hours-adrift> for the account of a Laupāhoehoe High School student.

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