



Tsunami Warnings: Public Understanding and Expectations in Hawai'i

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The devastating southeast Asian tsunami of December 26, 2004 has brought home the destructive consequences of coastal hazards in an absence of effective warning systems for areas both near and far from the sources of tsunamis. In Hawai'i, a network of sirens was emplaced after the 1946 tsunami that destroyed much of Hilo, Hawai'i to provide an early public alert of future tsunamis. However, studies in the 1960s showed that understanding of the meaning of siren soundings was very low and that ambiguity in understanding had contributed to fatalities in the 1960 tsunami that again destroyed much of Hilo. The Hawaiian public has been exposed to monthly tests of the sirens since the 1970s and descriptions of the system have been widely published in telephone books since 1960; however, currently there is uncertainty in the level of public understanding of the sirens and their implications for behavioral response. We show from recent surveys of Hawai'i student and adult residents ($n = 956$) that awareness of the tests and test frequencies is high, but these factors do not correlate with increased understanding of the meaning of the siren, which remains low (mean = 12%).

Warning times for tsunamis generated locally in Hawai'i will be of the order of minutes to tens of minutes and limit the immediate utility of the sirens. Natural warning signs of tsunamis may therefore provide the earliest warning of future local tsunamis. Analysis of a survey subgroup from Hilo indicates that awareness of these natural signs is moderate, but a majority expects notification via alerts provided by official sources. This is problematic because public understanding of the meaning of the offi-

cial sirens is so low and official warnings may not be provided before local tsunamis impact areas at risk.

We conclude that 1) for local tsunamis, a single warning signal is needed that alerts at-risk people to evacuate to safe areas, 2) 'safe tsunami viewing areas' need to be considered in planning for public response to future tsunamis, 3) greater consistency of descriptions of natural warning signs of tsunamis are needed, which necessitates further research on the characteristics of these signs, and 4) that a major change is needed in tsunami education, even in Hawai'i, to increase public understanding of, and effective response to, both future siren soundings and natural warning signs of tsunami before the next damaging event.