

Tsunami Warning System Challenges

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The Tsunami Warning System is somewhat unique in comparison with other natural hazard warning systems. While most of these systems can directly monitor the hazard for which they respond (for example, hurricanes, tornados, and solar storms), tsunami warning centers must initially issue warnings based on associated data such as seismic signal, which is only indirectly related to tsunami intensity. In order to notify residents who are at greatest risk, warnings must be issued prior to direct recording of a wave; either on coastal tide gages or deep ocean sensors. This fact induces warning centers to extract as much information as possible from the seismic signal, to search for new ways to monitor tsunamis directly, and to use conservative warning protocols.

Other challenges faced by the tsunami warning system are related to hazard definition, especially in areas with little historic information on tsunami impact. Quantifying potential tsunami generating sources is critical when defining hazard zones along the coast. An excellent example is the U.S. east coast. If one were to characterize the hazard there based strictly on historic information, the hazard could be defined as none. However, if the same methodology were used in November 2004 to define the hazard in the Maldives, their hazard would also be defined as none. The December 2004 event showed otherwise. More tsunami source analysis must be included in hazard definition.

Perhaps the biggest challenge the warning system faces is the rarity of the events and the complacency it can bring. Knowledgeable coastal emergency management and residents within their jurisdictions are required for a tsunami warning system to be effective. Emergency management are responsible for everything from terrorist attacks to fires. Often planning and community preparedness activities for tsunamis falls behind these and other threats.