

TSUNAMI HAZARD MITIGATION AND RESEARCH

How do scientists and engineers study tsunamis?

What is tsunami modeling?

How do WSSPC members work to mitigate tsunami hazards?

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There are different aspects of tsunamis, and these are studied by different types of scientists. For example, oceanographers study the tsunami wave itself, and attempt to develop computer models that can predict tsunami wave behavior. Geologists excavate and analyze sediment deposits in tsunami-prone areas, looking for evidence of past tsunamis. Pre-disaster, social scientists might conduct studies on how people would respond to a tsunami in order to identify the best ways to teach tsunami preparedness and the natural warning signs preceding a tsunami; post-disaster, they might study the social and economic impacts of the tsunami on the lives of the survivors and communities. Engineers study the effects of a tsunami on buildings and infrastructure to design more tsunami-resistant structures.

What is tsunami modeling?

Tsunami modeling refers to the process of designing and using computer systems to simulate tsunami events using mathematical equations. “Forecast models” usually provide an estimate of wave arrival time, wave height, and inundation area for an event in real time. Forecast models have to perform very quickly to allow the information to be used as part of a tsunami warning system; they start by selecting pre-loaded scenarios based on the location of the earthquake or other initiating event, then update the information as the tsunami wave passes over Deep Ocean Assessment of Tsunami (DART) buoys in the open ocean.

“Inundation” models are designed to reproduce wave height, speed and arrival time, as well as the maximum inundation line, for different tsunami scenarios, in order to develop information that can be used in tsunami preparedness and hazard mitigation planning and education efforts.

How do WSSPC members work to mitigate tsunami hazards?

State geological survey agencies prepare statewide tsunami inundation maps for use by emergency management agencies and prepare disaster preparedness information for residents. Emergency managers develop emergency response protocols, publish evacuation routes, conduct public education and outreach programs, and hold disaster drills to train emergency personnel and first-responders. Seismic safety councils may study the economic impact of tsunamis on coastal communities to develop and implement loss-reduction policies or collaborate on tsunami-planning efforts. WSSPC member agencies also participate in tsunami policy committees, develop K-12 tsunami curriculum and produce reports for use by state and local jurisdictions. More information on WSSPC member tsunami initiatives can be found on the [WSSPC Member Tsunami Pages](#).

Additional Resources

Washington Division of Geology and Earth Resources - TsuInfo Alert

<http://www.dnr.wa.gov/researchscience/topics/geologypublicationslibrary/pages/tsuinfo.aspx>

University of Alaska, Fairbanks/Institute of Marine Sciences, Physical Oceanography - Tsunami Research Group

<http://www.sfos.uaf.edu/tsunami/>

University of Hawaii, National Disaster Preparedness Training Center - Whole Community Concept Integration into National Disaster Preparedness Training Center

<https://ndptc.hawaii.edu/static/public/files/NDPTC-WholeCommunity.pdf>

Oregon's Tsunami Hazard Mitigation Program (THMP)

<http://www.oregongeology.org/tsuclearinghouse/thmp.htm>

Fisheries and Oceans in Canada - Tsunami and Tsunami Research

<http://www.pac.dfo-mpo.gc.ca/science/oceans/tsunamis/index-eng.htm>

NOAA Center for Tsunami Research - Tsunami Forecasting

<http://nctr.pmel.noaa.gov/tsunami-forecast.html>

PBS - Catching a Tsunami in the Act

<http://www.pbs.org/wnet/savageearth/tsunami/html/sidebar1.html>