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Update of the U.S. States and Territories National Tsunami Hazard Assessment: Historical Record and Sources for Waves

Details

Meeting	2013 Fall Meeting
Section	Natural Hazards
Session	Innovations in Tsunami Hazard Analysis, Mitigation, and Preparedness I Posters
Identifier	NH41B-1720 Dunbar, P K*, NOAA, Boulder, CO, USA
Authors	Goldfinger, C, College of Earth, Ocean and Atmospheric Sciences, Oregon State University, Corvallis, OR, USA Disaster risk analysis and assessment [4333]
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Abstract

The NOAA-National Geophysical Data Center (NGDC) and the U.S. Geological Survey (USGS) collaborated to conduct the first qualitative United States tsunami hazard assessment, published in 2008 by the National Tsunami Hazard Mitigation Program (NTHMP). Since that time, significant events such as the 2009 Samoa and 2011 Tohoku tsunamis have affected the U.S. and reinforced the importance of considering all of the evidence when conducting an assessment. In addition, there has been progress in tsunami research that reduces some of the earlier uncertainties. In 2011, the National Academies released their assessment of the U.S. Tsunami Program recommending that NOAA and its NTHMP partners, in collaboration with researchers in social and physical sciences, should complete an initial national assessment of tsunami risk and should institute a periodic assessment of the sources of tsunamis that threaten the United States. Therefore, the NTHMP is updating the national tsunami hazard assessment. Although the second assessment will not be a national probabilistic tsunami hazard assessment, areas where there is progress in this methodology will be presented. As a result, a national tsunami vulnerability and risk assessment is not possible at this time, but examples of ongoing work will be presented. This paper looks at the data sources in the first report, including an examination of the NGDC historical tsunami database that resulted in a qualitative assessment based on the distribution of runup heights and the frequency of tsunami runups. Although tsunami deaths are a measure of risk rather than hazard, the known tsunami deaths were compared with the qualitative assessments

based on frequency and amplitude. The 2009 American Samoa tsunami resulted in a change for the U.S. Pacific island territories qualitative tsunami hazard assessment from “Moderate” to “High”. The NGDC tsunami database contains reported tsunamis and is therefore limited to written records existing for an area. Some of the uncertainty in the completeness of the written record has been reduced by investigating the history of tide gauges in the different regions. The first tsunami hazard assessment also used the USGS National Seismic Hazard Map (NSHM) databases to partially extend the time interval. These databases are primarily meant to assess earthquakes affecting U.S. possessions and do not include all possible seismogenic tsunami sources in the Pacific and Atlantic Basins. However, the databases make it possible to estimate the rate of occurrence of larger magnitude earthquakes that could generate a tsunami. The USGS NSHM databases are based on tectonic models, and paleoseismic and paleotsunami data. These databases are periodically updated with new research. Inclusion of updated information can reduce uncertainties in tsunami sources such as the Cascadia subduction zone and others.

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