

Predicted ground motions for great earthquake in Pacific Northwest: Seattle, Victoria and Vancouver

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A new study evaluates expected ground motion in Seattle, Victoria and Vancouver from earthquakes of magnitude 7.5 - 9.0, providing engineers and policymakers with a new tool to build or retrofit structures to withstand seismic waves from large "subduction" earthquakes off the continent's west coast.

The Cascadia subduction zone in the [Pacific Northwest](#) has produced great earthquakes of magnitude 9.0 and larger, most recently in the 1700s. Now home to millions of people and a vast infrastructure of buildings and other man-made structures, scientists seek to determine the impact of large earthquakes on the region.

To simulate ground motions from a very large earthquake on the local region, this study combined detailed analysis of ground motions recorded from smaller earthquakes in the Pacific Northwest with recorded data from a severe subduction earthquake from another region - the M8.4 2003 Tokachi-Oki quake off the coast of Japan. The authors estimate ground motions for firm ground at the three sites and provide a model that engineers can adjust for local or site-specific soil conditions.

Co-author Gail Atkinson of the University of Western Ontario describes earthquakes in the Pacific Northwest as having rich energy content. "The expected ground motion may not be very large in amplitude - the peak accelerations are not that high - but the motion will go on for a very long

time," Atkinson explained. "The real hazard is that an [earthquake](#) here will affect a very large, very wide region - amplifying seismic motion and exciting vulnerable structures wherever there is an opportunity to do so."

Source: Seismological Society of America

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