

Proposed Marine Seismic Survey offshore Oregon, Washington, and British Columbia in Support of Investigations for Geohazards in the Pacific Northwest

Scientists from a number of U.S. and Canadian academic and federal institutions are proposing to conduct geophysical investigations of the Cascadia subduction zone from Southern Oregon to British Columbia, within the region where “giant” earthquakes have occurred in the past along the fault zone between the oceanic Juan de Fuca plate and the North America continent. The portion of the fault zone that generates the largest earthquakes is located almost entirely offshore and marine surveys are needed to investigate its structure. The proposed investigations would use the scientific research vessel (RV) Langseth to collect modern deep penetration 2-D marine seismic reflection data using an acoustic sound source array and a hydrophone streamer and will be coordinated with concurrent marine and land deployments of seismometers. This scientific equipment would be towed behind the ship along predetermined lines extending from ~6-12 miles to ~62-124 miles offshore from southern Oregon to Vancouver Island. The acquired data would be used to construct detailed images and constrain physical properties of the slowly deforming sediments of the continental shelf and slope that lie above the earthquake-generating fault, the fault zone itself, and deep into the subducting oceanic crust below. The proposed survey would provide the observations and data necessary to address fundamental science questions relevant for understanding the structures and processes that contribute to, and result from, earthquakes, tsunamis, and their geohazards in the heavily populated Pacific Northwest. The proposed study would be the first such regional-scale seismic imaging investigation ever conducted spanning nearly the entire length of the Cascadia Subduction Zone and would move the region from arguably one of the least well characterized heavily populated megathrust regions in the world to one of the best.

For more information, please visit pnwgeohazards.whoi.edu.

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