

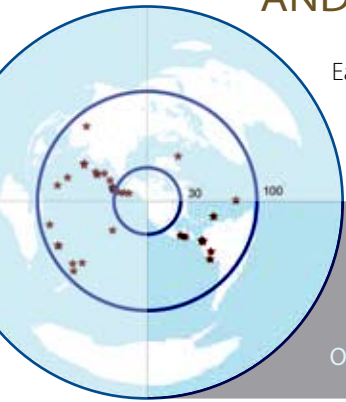


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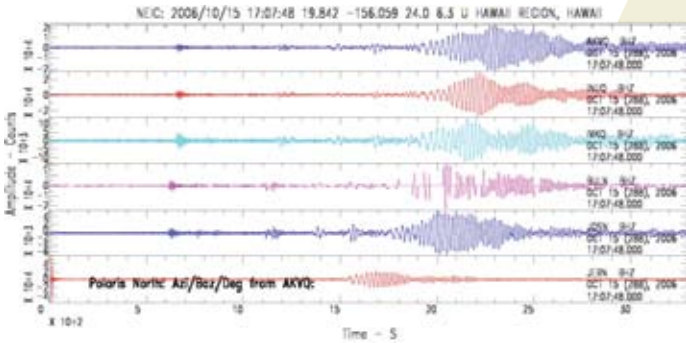


## THE DISTANT ASSISTANT REMOTE EARTHQUAKES AID MINERAL AND ENERGY EXPLORATION



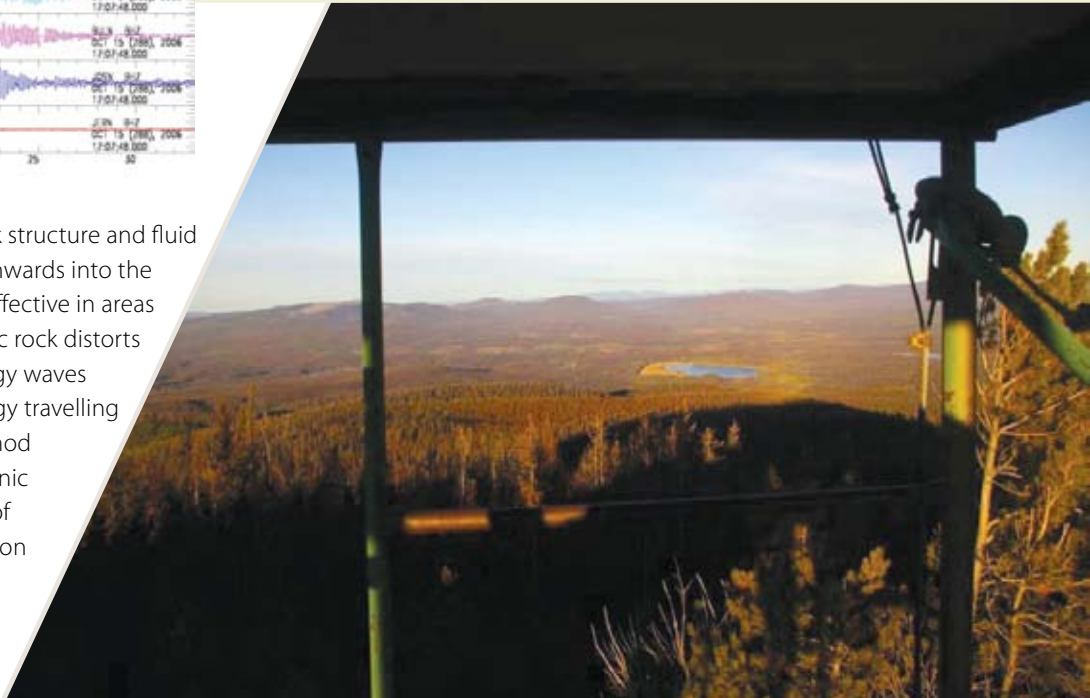
Earthquakes occurring thousands of kilometres away help geologists overcome a major obstacle in assessing resource potential beneath the Nechako Basin in central British Columbia.

FROM 2006 TO 2008 NATURAL RESOURCES CANADA SCIENTISTS OPERATED SEVEN SEISMIC STATIONS COVERING 33,000 KILOMETRES OF THE NECHAKO BASIN. THESE STATIONS RECORDED ENERGY WAVES FROM EARTHQUAKES OCCURRING 3,000 TO 11,000 KILOMETRES AWAY.



*A magnitude 6.3 earthquake near Hawaii (left) is recorded at the Nechako seismic stations. Data generated from this study provide information on rock type, structure, and the make-up of layers below the Earth's surface.*

Normal exploration methods measure rock structure and fluid deposits by projecting energy waves downwards into the Earth's crust. But these methods aren't as effective in areas like the Nechako Basin where thick volcanic rock distorts the view. Passive seismic surveys use energy waves from distant earthquakes to measure energy travelling upwards from deep in the Earth. This method reduces the distortion caused by the volcanic rock, and provides a much clearer picture of what is beneath the surface. This information could lead to new resource exploration and economic opportunities in an area devastated by the mountain pine beetle.



The passive seismic survey is one of seven geoscience projects conducted by the Government of Canada under the Mountain Pine Beetle Program. The survey is a collaborative study by NRCan's Geological Survey of Canada, Geoscience BC, the University of Victoria, the University of Manitoba, and the BC Ministry of Energy, Mines, and Petroleum Resources. Funding is provided by Geoscience BC, Natural Resources Canada, and the BC Ministry of Energy, Mines, and Petroleum Resources.

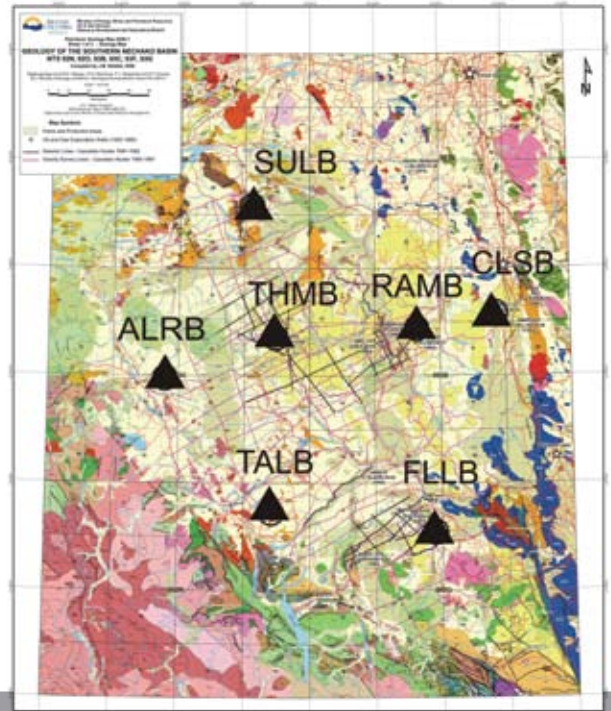


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Passive seismic surveys use free, natural energy and allow geologists to examine the Earth's structure directly beneath a recording site ▲. Scientists use earthquake waves approaching from different directions to create a 3-D image, similar to how a medical CAT-scan makes use of X-rays. In combination with other geoscience survey methods, these studies can verify results and provide a unique view of the geological structure beneath the surface.

Seismic data from this project are available at [earthquakescanada.nrcan.gc.ca](http://earthquakescanada.nrcan.gc.ca) to anyone interested, such as communities and First Nations making land-use decisions, or industry wanting to lower exploration risks and costs. A number of publications resulting from this study are available from the Geoscience BC website at [geosciencebc.com/s/2006-028.asp](http://geosciencebc.com/s/2006-028.asp).



HUNTING FOR MINERAL AND ENERGY RESOURCES REQUIRES SCIENTISTS TO LOOK ONLY A FEW KILOMETRES BELOW THE EARTH'S SURFACE. HOWEVER DURING THE PASSIVE SEISMIC SURVEY OF THE NECHAKO BASIN, THEY WERE ALSO ABLE TO MAP THE CRUST 20-30 KILOMETRES BELOW. THIS INFORMATION PROVIDES INSIGHT INTO HOW BRITISH COLUMBIA WAS FORMED AND WILL HELP WITH VOLCANO AND EARTHQUAKE RISK ASSESSMENT.



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*Natural Resources Canada's geoscience surveys funded through the Mountain Pine Beetle Program complement other public geoscience work in the region by the British Columbia Ministry of Energy, Mines and Petroleum Resources and by Geoscience BC.*

For more information on Natural Resources Canada's Mountain Pine Beetle Program visit [forest.forward.nrcan.gc.ca](http://forest.forward.nrcan.gc.ca)

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*Seismic station photos courtesy of Issam Al-Khoubbi.*

*Seismic station map courtesy of Janet Riddell, BC Ministry of Energy Mines and Petroleum Resources.*