

## **Trapped water cause of regular tremors under Vancouver Island**

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University of British Columbia researchers are offering the first compelling evidence to explain regular tremors under Vancouver Island.

The Cascadia megathrust fault, named for its massive but infrequent earthquakes, runs along the length of North America's western coast from northern Vancouver Island to northern California and is the boundary between two of the Earth's tectonic plates. An area on the fault line - approximately 35 kilometres under Vancouver Island - has also seen surprisingly regular "slips," accompanied by small tremors - roughly every 14 months. The last tremors recorded in this area were in May and lasted for about month, although none were strong enough to be felt by humans.

Megathrust fault lines in the region where episodic tremors occur are structurally weak and prone to slip and slide, but until now scientists have been unable to explain why. In a study published in today's edition of the journal *Nature*, UBC researchers Pascal Audet, Michael Bostock, Nicolas Christensen and Simon Peacock demonstrate how water trapped in a portion of the fault area escapes periodically after pressure build-up, which in turn lubricates the tectonic plates and causes them to slip and slide.

"Scientists have offered different theories but this is the first detailed glimpse at the geological mechanics beneath the island," says lead author Audet, who conducted the study as a PhD student at UBC's Dept. of Earth and Ocean Sciences.



"While scientists are still a long way away from being able to predict earthquakes, this study brings us one step closer towards understanding the physical state of the megathrust fault and the earthquake cycle as a whole," says Audet, now a Miller Research Fellow at the University of California at Berkeley.

"Additional sensors on the Island, or expanding the sensor array into the waters west of Vancouver Island, could help researchers determine whether fault properties change over time, and where changes are most significant along the fault line," says Peacock, UBC Dean of Science and an expert in subduction zone areas, where tectonic plates dive into the Earth's mantle triggering great earthquakes and explosive volcanism.

Source: University of British Columbia

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