

Otago geologists help probe Alpine Fault's secrets

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Brett Carpenter (Penn State University) and Dr Virginia Toy (Otago) with a drill core that contains the Alpine Fault.

(PhysOrg.com) -- University of Otago geologists are part of an ambitious project currently drilling two boreholes into New Zealand's Alpine Fault to learn more about how large faults evolve and how they produce earthquakes.

The [boreholes](#) will be about 130m to 200m deep and up to 60m apart at Gaunt Creek near Whataroa, north of Franz Josef on the West Coast of the South Island. The work started this week and is scheduled to be completed by mid-February.

The aims of the project are to collect and analyse rock core from inside the [fault](#) zone, collect geophysical information from the walls of the

boreholes, and install permanent instruments to measure physical and chemical conditions at various depths inside the boreholes.

This is first time a major active fault has been investigated by this technique in [New Zealand](#). By mid-February scientists hope to have installed a range of sensors down one of the boreholes to create an underground fault zone observatory.

As drill core is extracted from the borehole, it is cut into 1m lengths and analysed on-site before being taken to the University of Otago for further study, storage, and distribution to overseas collaborators.

Researchers at GNS Science, the University of Otago, and Victoria University of Wellington are coordinating the project, in collaboration with colleagues at The University of Auckland, the University of Canterbury, Liverpool University in Britain and the University of Bremen in Germany. Scientists from the United States and Canada are also participating.

Otago Department of Geology researcher Dr Virginia Toy is co-ordinator of the working group undertaking drill-core-sample recovery and logging, while colleague Dr Andrew Gorman is co-ordinating a seismic surveying project, using explosives, along a 6.5km-long section of the Whataroa Valley, to gain a clearer picture of the Fault structure to a depth of up to 5km.

More information: Project updates can be viewed at:
wiki.gns.cri.nz/DFDP/DFDP-1_Ga...P-1_Progress_Reports

Provided by University of Otago

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