

The following application was submitted to the MARGINS Office:

Name:

Verne Pere

Category: Graduate Student

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Statement of interest:

I am currently undertaking an MSc thesis research project in the Ngatapa area, in one of the subsidiary catchments of the Waipaoa River system. An extensive high-level late Quaternary aggradational terrace in the upper Ngatapa catchment is inferred to have been formed by lacustrine and alluvial/fluviol processes upstream from a pre-historic large deep-seated landslide. My study aims include identification of the landslide feature, determination of the age and rate of the aggradational valley-fill succession, and an attempt to determine the timing of onset of terrace incision, as well as quantifying the amount and rate of subsequent sediment removal from the valley system.

My project supervisors are Associate Professor Jarg Pettinga and Dr Jim McKean. Dr McKean has recently resigned from the academic staff of the department and returned to a research position in the United States, but he will maintain an interest in the project through to completion. In addition I have been fortunate to have had support from Mike Marden (Landcare Research - Gisborne) and Noel Trustrum (Landcare Research - Palmerston North) during my fieldwork sessions in Gisborne. Through them I have also met with other researchers actively involved in the Margins program, in particular Professor Basil Gomez, during his field studies in the Waipaoa in January 2002.

The 2003 Margins workshop will be a valuable opportunity for me to be able to present and discuss my research findings on this tributary of the Waipaoa system, and place this in the context of the diversity of ongoing and proposed

future research within a group of people that have a direct interest in the Waipaoa system.

Short resume:
Personal details:

My name is Verne Pere and I am an MSc (Engineering Geology) post-graduate thesis research student nearing the completion of my degree (anticipated submission 1 July 2003).

Awards received:

Tuapapa Putaiao Maori Fellowship recipient 2002 - 2003: administered by the Foundation for Research, Science and Technology, New Zealand. Contract No. UOCX0217.

Publications:

Langridge, R.M.; Campbell, J.K.; Hill, N.; Pere, V.; Estrada, B.; Pettinga, J.R.; and Berryman, K.R. (in press): Preliminary Paleoseismic Results for the Conway Segment of the Hope Fault at Greenburn Stream, South Island, New Zealand. Journal Annali di Geofisica Special Issue "Ten Years of Paleoseismology in the ILP: Progress and Prospects".

Professional memberships:

Geological Society of New Zealand - Student member
New Zealand Geotechnical Society - Student member
Institute of Professional Engineers New Zealand - Student member
New Zealand Society for Earthquake Engineering - Student member
International Association for Engineering Geology - Student member

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ABSTRACT

Title:
The impact of a large landslide dam on late Quaternary sediment yield and catchment evolution, Ngatapa area, Gisborne

Authors:
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Abstract:

Numerous large, deep-seated landslides mapped within the Ngatapa catchment, a tributary of the Waipaoa River system, are the result of the combined effects of late Quaternary falling sea-level induced valley incision, tectonic uplift and tilt, and earthquake triggering. The large landslides are a crucial factor in terms of catchment hillslope evolution and erosion rates, as well as the associated sediment yield from individual catchments.

A sequence of late Quaternary lake sediments capped by a thin veneer of alluvial and fluvial deposits form an extensive aggradational terrace in the upper Ngatapa valley, trapped upstream of a now breached and largely removed landslide dam. Tephrae interbedded near the base within the lacustrine sediments, as well as those identified immediately underlying the terrace surfaces constrain the timing of formation of the landslide dam to prior to 28 kyr B.P., and imply breaching of the dam followed by rapid drainage system incision at about 3300 kyr B.P. Given the 20-25m thick aggradational paleo-lake sequence observed beneath the terrace system, it is possible to give an estimate of erosion rates within this semi-closed catchment.

Shallow high-frequency seismic reflection and refraction profiling is also providing some indication of a pre-Holocene valley profile at approximately 40m depth below the current Holocene surface in the lower reaches of the Ngatapa-Waikakariki Valley. The profiles reveal a paleo-channel entrenched in the north-eastern side of the valley, with an associated buried terrace or fan surface to the south-west. The temporal and spatial relationships of this buried paleo-surface to the aggradational terrace in the upper catchment remains problematic, but highlights the deep incision that has occurred here.

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