

Call for Applications for 3-yr PhD Scholarship on Dynamic Landslide Hazard

University of Canterbury, Ōtautahi Christchurch, Aotearoa New Zealand



Landslides triggered by the 2016 Kaikōura earthquake caused significant damage to transport routes in the upper South Island resulting in over \$2 billion in direct losses. Being able to model the risk landslides present to people and infrastructure is a critical goal for NZ.

Project: Improved modelling and understanding of dynamic landslide hazard and risk in Aotearoa New Zealand

Globally, landslides account for an average of ~5000 deaths each year, while in Aotearoa New Zealand they have claimed more lives than earthquakes. Economically, aseismic landslides account for an average of NZ\$250-300 million in losses each year, while landslide losses during earthquakes have previously been in excess of \$1 billion for a single event.

While landslide susceptibility modelling is well established, current approaches are temporally static and fail to adequately model landslide risk. Most notably, current susceptibility models rarely capture important landslide attributes such as movement style, material type, volume, and landslide runout paths. Nor do they consider how hazard and susceptibility – and consequently risk – can change with time due to both internal and external factors. Improving our understanding and ability to model dynamic landslide hazard and risk through time remains a critical research question.

As part of the [Hōretireti Whenua | Sliding Lands research programme](#), this Ph.D. project aims to develop new approaches to model dynamic landslide hazard and risk by advancing current static approaches to model landslide susceptibility. The project will involve a combination of field studies, geospatial statistical and physics-based modelling techniques that will generate datasets that feed into hazard and risk analyses. Key research topics that will be explored include:

- How does landslide behaviour evolve and change through time?
- Do reactivated landslides require different triggering thresholds to new landslides?
- How can we better capture the dynamic nature of landslide initiation in hazard and risk models?

The project will be based in Christchurch, New Zealand, in the School of Earth and Environment | Te Kura Aronukurangi at the University of Canterbury, with the opportunity to spend time at GNS Science in Wellington New Zealand. The Scholarship funding includes Tuition and Enrolment fees and a competitive annual stipend of NZ\$35,000 for 3 yrs. For International Students, health insurance will be included. The project is part of a wider NZ-funded programme led by GNS Science, with international collaboration. This PhD project will be closely linked to another PhD project based at Durham

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Te Kura Aronukurangi

University, UK, and it is anticipated that the candidate will undertake a placement at Durham during the project.

Eligibility:

The scholarship supports study towards a PhD in Disaster Risk Reduction. The successful candidate must have an Honours or Master's degree (with a Research Thesis component) in a relevant subject such as Physical Geography, Geology, or Engineering Geology with a strong background in landslide hazard and earth surface processes. Field experience and a good grasp of Geospatial analyses, including GIS skills are necessary. Experience in statistical/computational/modelling processes is an advantage, but not a requirement.

The scholarship is open to domestic and international candidates, and international candidates moving to New Zealand pay domestic tuition fees. The successful candidate will be enrolled full-time at the University of Canterbury and reside full-time in New Zealand for the duration of the PhD project. Candidates must meet [the PhD eligibility criteria](#) for enrolling at University of Canterbury.

How to apply:

Interested candidates should apply via email with the subject line “*Dynamic Landslide Modelling PhD Application*” to Dr Tom Robinson thomas.robinson@canterbury.ac.nz. Applications should include:

1. A Curriculum Vitae (including publication list, if any)
2. Academic transcript(s)
3. A 1-page cover letter outlining your motivation, experience and interest in the topic

Timetable:

- PhD Commencement on or before **1 April 2025**

About Hōretireti Whenua Sliding Lands Project:

This PhD will be part of a broader five-year project funded through the MBIE Endeavor Research Programme, titled, “Hazard, risk and impact modelling for fast moving landslides: Hōretireti Whenua Sliding Lands”. This research programme seeks to plan for, invest smartly, and reduce our risk from landslides. This project aims to create, for the first-time, national scale models that characterise and quantify the risk from earthquake- and rainfall-induced landslides.

The research involves a large team of interdisciplinary researchers from across New Zealand and internationally, including GNS Science (lead organisation), Massey University, Manaaki Whenua, University of Auckland, and Durham University. The wider project includes multiple PhD projects and the successful candidate will be part of a wider Early Career network with opportunities to engage with the wider research team and develop their research networks in New Zealand and globally.