

PhD in Quaternary Tectonics & Luminescence thermochronometry

University of Canterbury, New Zealand

Where: School of Earth and Environment, University of Canterbury, Christchurch, New Zealand

Duration: 3 years

Start date: July 2026

PhD project:

Spatial variation in fault activity and seismic impact across the South Island, Aotearoa New Zealand

Project overview:

Stretching ~600 km along the spine of Aotearoa New Zealand's South Island | Te Waipounamu, the Alpine Fault is a major plate-boundary system capable of generating large-magnitude earthquakes. This PhD project aims to investigate how fault activity varies along the Alpine Fault and how these variations control earthquake behaviour and landscape evolution.

The candidate will conduct fieldwork across three key transects, collecting samples for **luminescence thermochronometry** to quantify the timing, rates, and variability of fault motion. This approach will provide unprecedented insights into regional differences in paleo-earthquake activity, helping to link fault dynamics with seismic hazard.

The project combines **field observations, laboratory analyses, and landscape evolution modelling**, and may be complemented by LiDAR-based geomorphic studies, paleoseismic trenching, and sedimentological investigations. By integrating these approaches, the candidate will explore how tectonic forcing shapes topography and how fault behaviour influences earthquake risk.

Candidate profile:

We are seeking highly motivated candidates with a strong background in tectonics, seismology, geomorphology, geochronology, or computational modelling. Experience in luminescence, thermochronology, or numerical modelling, is desirable but not essential, training will be provided. The ideal candidate is curious, independent, and excited to work in a dynamic, active tectonic setting.

Applicants should have:

- A Master's degree in Geology, Physical Geography, Earth Sciences or a related discipline.
- Strong analytical skills and passion for fieldwork.
- Proficiency in English.

Financial support: Stipend of NZD \$35,000 per annum, including tuition fees.

All fieldwork costs will be covered by the project. The successful candidate will spend several months each year at partner laboratories: Lausanne, Switzerland (1st year), and Meizhou, China (2nd and possibly 3rd year) to prepare and measure samples using luminescence thermochronometry.

How to apply:

Please contact Chloé Bouscary (chloebouscary@gmail.com), Andy Nicol (andy.nicol@canterbury.ac.nz), and Camilla Penney (camilla.penney@canterbury.ac.nz).

In your email, please include:

- A short cover letter (1–2 pages) outlining your research interests, your career aspirations, and how this PhD will support your professional goals.
- A copy of your undergraduate and/or Master's academic transcripts.
- Your CV.
- Contact details for two academic referees.

Deadline for applications: 31st March 2026.

Shortlisted candidates will be interviewed via Zoom starting in mid-April.