



Master of Science Position in River Flood modelling

We have an opening for a motivated student to undertake a Masters research that will improve flood resilience of New Zealand communities through developing methods to improve hydrological model river discharge representation during flood events.

One position is available and will be financially supported by NIWA for one year. The Master student will be co-hosted by the Geospatial Research Institute at the University of Canterbury, New Zealand, in conjunction with NIWA. A scholarship of NZ\$15,000 is available to successful applicants, with \$7,500 starting from December 2021-June 2022, and subject to satisfactory performance, another \$7,500 from July 2022-December 2022.

The Masters will address aspects of hydrological model river discharge representation from model parameter uncertainty with a focus on flood events. The student will quantify NIWA's hydrological model parameter sensitivity at the Waikanae catchment during flood events and investigate key model parameter uncertainty based on the Generalised Likelihood Uncertainty Estimation (GLUE) framework. This work will contribute towards improving ensemble flood forecasting in ungauged catchment¹, and hydrodynamics modelling that will also benefit the NIWA-led MBIE National Flood Risk Assessment Endeavour programme².

Programming literacy (e.g. Matlab, Python or similar), knowledge of hydrological modelling and statistics are highly desirable. Numeracy and excellent written and oral communication skills are essential. Familiarity with the Unix environment would be ideal, the candidate will have the opportunity to run simulations on NIWA's High Performance Computing System (HPC)³ which is part of the New Zealand eScience Infrastructure (NeSI).

Please direct all enquiries to the project co-supervisors Dr. Celine Cattoen-Gilbert (NIWA Taihoro Nukurangi Celine.Cattoen-Gilbert@niwa.co.nz) and Prof. Matt Wilson (University of Canterbury, matthew.wilson@canterbury.ac.nz). Applications should be sent by email care of the GRI Manager, Dr. Melanie Tomintz (gri-enquiries@canterbury.ac.nz) no later than 4th October 2021. Please submit the following documents as part of your application:

1. A full curriculum vitae;
2. A cover letter outlining your motivation and suitability for the research project; and
3. Contact details of at least two referees.

¹ <https://niwa.co.nz/climate/research-projects/river-flow-forecasting>

² <https://niwa.co.nz/natural-hazards/research-projects/m%C4%81-te-haumaru-%C5%8D-te-wai-increasing-flood-resilience-across-aotearoa-0>

³ <https://niwa.co.nz/our-services/high-performance-computing-facility/nesi-the-new-zealand-escience-infrastructure>