MSc:

How did Taranaki's deep water sedimentary systems respond to Aotearoa's largest ever submarine mega landslide?

Supervisors:
Lorna Strachan, University of Auckland
Suzanne Bull, GNS Science
Jess Hillman, GNS Science
Sally Watson, National Institute of Water & Atmosphere Research (NIWA)

Keywords: submarine landslides, marine geology, sedimentology, 2D & 3D seismic reflection interpretation, bathymetry, paleoceanography.

As part of a new project funded by the New Zealand MBIE Endeavour Fund focusing on the tsunamigenic potential of giant underwater landslides in northwest New Zealand, we are looking to recruit an MSc student (**fully funded for 12 months** at the University of Auckland) to analyse the Pleistocene-Holocene sedimentary succession, deposited and burying Aotearoa's largest ever recorded submarine mega-landslide.

The mega-landslide is the most recent of at least 5 events that have occurred throughout the Plio-Pleistocene (5 Myrs) in Deepwater Taranaki Basin. The mega-landslide extends >200 km from the shelf break to basin floor. Initial modelling suggests that the mega-landslide generated a tsunami which had a severe impact on the northwest coastline of New Zealand. Repeated mega-landslides in the area are linked to rapid uplift and erosion of the Southern Alps, and high rates of sediment delivery to the West Coast. The sediments were transported northwards to Taranaki by oceanic currents and rapidly deposited, leading to a cycle of rapid continental shelf build-out punctuated by periodic slope collapse. However, there is insufficient data to determine the precise age of the most recent landslide (estimated at 1 Ma), and the sediments that overlie and bury it.

The **aim** of the MSc project is to answer the following question: How did Taranaki's deep water sedimentary systems respond to Aotearoa's largest ever submarine mega landslide? The project will use new geophysical data (multi-beam bathymetry, TOPAS sub bottom-profiles and multi-channel seismic reflection profiles) and sediment samples (rock dredge, cores) collected via a research voyage on the *R/V Tangaroa*, scheduled for March 2022. These data will be used to understand sedimentary processes, accumulation rates and sediment dispersal pathways to constrain the timing of the most recent mega-landslide and determine if conditions for a future reoccurrence exist today.

While based at the University of Auckland, and dependant on future COVID restrictions, the student will spend time at GNS Science and NIWA, located in Wellington and have the opportunity to participate in the R/V Tangaroa voyage if they wish to experience going to sea.

The project is available to start as early as March 2022 or as late as March 2023.

Application

Applicants need to demonstrate a good level of sedimentological or geophysical proficiency, an aptitude to work as part of a team, and a willingness to learn new techniques. Individuals with a BSc Honours are preferred, but if you have recently completed your undergraduate degree and think this project is for you please get in touch. The project is open to NZ students.

To apply or for further questions, please send a Cover letter and CV to Suzanne Bull s.bull@gns.cri.nz and Lorna Strachan l.strachan@auckland.ac.nz