Improving volcanic ballistic hazard and risk assessments

Date: Wednesday 27th September
Time: 2.30pm – 3.30pm
Location: Room 208, Te Ao Marama Building
Presenter: **Rebecca Fitzgerald**

Abstract:

Volcanic ballistic projectiles (fragments of lava or rock ejected in an explosive eruption) are a major hazard to both life and infrastructure during volcanic eruptions. Projectiles range from 6 cm to tens of metres in diameter, can travel hundreds of metres per second and land up to ~10 km from the vent. Their high impact and sometimes thermal energies can result in death or serious injury, building and environmental damage, and ignition of both buildings and the environment they impact. Regularly erupting (magmatic) volcanoes often attract tourists, such as Yasur volcano, Vanuatu, increasing the volume of people exposed to ballistic hazard. Additionally, some eruptions can have little to no precursory signals of volcanic unrest, making them hard to predict and warn the exposed population of the potential hazard. In New Zealand volcanoes are frequented by more than 100,000 tourists and hikers every year. Additionally, up to 1.4 million people in Auckland live in an active volcanic field where ballistics will be a hazard during a future Auckland Volcanic Field eruption.

The impacts of volcanic hazards such as ballistic projectiles can be reduced through volcanic risk management. Effective risk management must be underpinned by detailed volcanic hazard and risk assessments, however in the case of volcanic ballistics both hazard and risk assessment methodology and applications are underdeveloped compared to other natural hazard/risk assessment. This talk will focus on two case studies where two different mapping techniques have been applied to better understand the ballistic hazard from each area and how these results can be used at other volcanoes worldwide.

Biography:

Rebecca (Ngāi Tahu) completed her Bachelor of Science in Geology and Geography, followed by her Masters of Science in Geology at UC. She is currently studying towards her PhD focussing on improving volcanic ballistic hazard and risk assessments, supported by the Ngāi Tahu Research Centre. This research has recently been presented to the International Association of Volcanology and Chemistry of the Earth's Interior conference in Portland, Oregon (August 2017) and the Cities on Volcanoes conference in Puerto Varas, Chile (November 2016).