Massey University, New Zealand, is seeking a highly motivated PhD candidate for a 3-year research project in Hyperspectral Remote Sensing. The overarching topic is to explore the role of hydrothermal systems on active volcanoes using field-supported hyperspectral and thermal remote sensing. The PhD opportunity is funded through the Royal Society of New Zealand 'Caught in action - volcano surveillance with hyperspectral remote sensing' project (2021-2026).

Background: Understanding volcanic eruptions is challenging due to the complexity of the physical and chemical processes that precede them, most of which are hidden underground. Volcanic hydrothermal systems are windows to the volcano's evolution since they connect deep magma-generated heat, gasses and fluids with the surface. The resulting hydrothermal alteration can also degrade the rock's mechanical properties and lead to a partial collapse of the volcano. Hyperspectral remote sensing can reveal the extents, types and relationships of hydrothermally-altered minerals. When combined with traditional monitoring techniques (e.g. analysis of surface gases, fluids, and rocks) and geophysics (e.g. magnetic data), it can provide a new way to enrich our theoretical understanding of volcanic systems and to better anticipate their hazards.

The PhD research project has some flexibility in topic selection within the overarching brief above. Ideally, the PhD project would aim to develop new methods and data integration to use hyperspectral sensing at lab, field, airborne and satellite scales, to constrain the temporal and spatial evolution of hydrothermal systems and outgassing of active volcanoes. The research will focus on Mt Ruapehu and Tongariro volcanic complex (both from New Zealand) as method development sites. This project will utilize a combination of field mapping and sampling techniques, in-situ gas measurements with tandem airborne hyperspectral acquisitions, and some of the existing geophysical (e.g. aero-magnetic) and seismic datasets.

The candidate is expected to hold an MSc or BSc (Honours) degree or equivalent in Geophysics/Remote Sensing/Earth Science/, or any related fields.

English language requirements are: Academic IELTS score of 6.5 with no band less than 6.0 - this must be achieved in one sitting, or a minimum TOEFL iBT of 90 overall (minimum of 20 in writing). More information can be found at this page: https://www.massey.ac.nz/massey/research/higher-research-degrees/how-to-apply-for-the-phd/how-to-apply-for-the-phd.cfm

The scholarship includes a 25,000 NZD stipend (tax-free) and covers tuition fees, insurance, and a conference/research allowance. The successful candidate will join the Volcanic Risk Solutions group within the School of Agriculture and Environment, Massey University. The start date is negotiable.

Enquires are welcome. Candidates are encouraged to get in touch with Dr Gabor Kereszturi (G.Kereszturi@massey.ac.nz). Please send a CV and expression of research interests (maximum 1 page). The review of applications will start from 30 May 2021, until the position is filled.