

MARSDEN FUND TE PŪTEA RANGAHAU A MARSDEN

Volcanic Carbon Dioxide

An Institute of Geological and Nuclear Sciences scientist will be making the first ever measurement-based estimate of carbon dioxide emissions from the Taupo Volcanic Zone, a 250km-long zone of intense volcanism that marks the boundary of the Australian and Pacific tectonic plates. Dr Cynthia Werner has been awarded a Fast-Start Marsden grant to compare the carbon emissions from the Taupo Volcanic Zone with those from Yellowstone National Park in the United States. The Fast-Start programme is an initiative to give promising, early-career researchers the opportunity to explore an innovative idea, helping them to develop their skills and establish their careers.

Carbon dioxide buildup in the atmosphere is a key element in climate change, and volcanic activity, while less important than human activity, has long been recognised as a globally important source. However, it is now believed that diffuse carbon dioxide emissions from thermal areas are as high as emissions from active volcanoes. For example, Yellowstone's carbon dioxide emissions are as large as some of the largest active volcanoes ever measured.

While the Taupo Volcanic Zone and Yellowstone have similar sizes and heat outputs, scientific modelling suggests that emissions from the Taupo area are about 50 times lower than those at Yellowstone. Dr Werner, who is based at the Wairakei Research Centre in Taupo, believes the carbon dioxide emissions of the Taupo Volcanic Zone may be higher than this but, because of its setting at the boundary of two tectonic plates, won't be as high as those at Yellowstone.

Dr Werner's study will generate a better understanding of the factors and processes controlling carbon dioxide emissions, provide essential data for modelling long-term carbon recycling on Earth, and improve hazards forecasting in New Zealand.

Total Funding: \$140,000 over 2 years

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Full details of all Marsden grants: www.rsnz.org/funding/