

Rangitoto research prompts rethink of Auckland volcanoes

April 11 2013

(Phys.org) —University of Auckland scientists have discovered that Rangitoto erupted not once or twice as previously believed, but multiple times over a period of 1,000 years, prompting a rethink of how Auckland volcanoes may behave in the future.

Rangitoto is the most recent [volcano](#) to erupt in Auckland. "Previously Rangitoto was thought to have formed 550-500 years ago," explains lead researcher Associate Professor Phil Shane.

"We have found that in fact, Rangitoto erupted intermittently or semi-continuously from about 1,500 years ago to 500 years ago. That's much longer than we've traditionally believed for basaltic volcanoes of this kind, not only in Auckland but anywhere in the world,"

The findings are important for understanding the risk posed by volcanoes in the Auckland region, and perhaps elsewhere. "The old paradigm was that these volcanoes erupt suddenly in a new location each time, and only live for months to a year or two," says Dr Shane. "This needs to be revisited in light of the new Rangitoto history of activity."

It may be that there is something unique about the location where Rangitoto erupted, but based on the findings: "We cannot rule out long-lived activity in the future, or eruptions at sites that have experienced previous activity. The Auckland volcanic field could be going into a new mode of operation. If so we need to think about hazard planning and risk in a very different way."

The scientists found frequent small pulses of [volcanic activity](#) at Rangitoto from around 1,500 years ago all the way up to more substantial eruptions around 550 and 500 years later. These latter two eruptions have been known about for some time, but the earlier activity is an entirely [new discovery](#).

The work was done by examining the [deposition](#) of Rangitoto ash in the sediments of nearby Lake Pupuke. The sediments have built up slowly over time and can be very accurately dated. By studying the abundance and [chemical fingerprint](#) of tiny [volcanic glass](#) shards in the [sediment](#), the researchers could determine when the eruptions occurred.

This is an entirely new approach. Most studies use radiocarbon dating to determine the age of samples taken directly from a volcano. However lake bed sediments can be dated on a much finer scale, and may be able to detect evidence of activity that cannot be seen on the volcano itself because it is buried by later eruptions.

Human activity has disrupted the younger sediments in the lake bed so the scientists cannot say with confidence whether there was any further activity at Rangitoto in the past 500 years, and they plan future work to address this.

The study is part of an ongoing research project into the history of volcanic eruptions and lakes in the Auckland region involving Dr Phil Shane, Associate Professor Paul Augustinus, and PhD student Ola Zawalna-Geer, all from The University of Auckland's School of Environment. The work has been published in the latest issue of the *Journal of Volcanology and Geothermal Research*.

Provided by University of Auckland

Citation: Rangitoto research prompts rethink of Auckland volcanoes (2013, April 11) retrieved 26 April 2024 from

<https://phys.org/news/2013-04-rangitoto-prompts-rethink-auckland-volcanoes.html>

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