

Remapping ancient Hong Kong volcanoes yields new insights into New Zealand's Taupo Volcanic Zone

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Denise Tang with a volcanic rock generated from an eruption about 140 million years ago. The twisted pattern of the rock developed as the rock cooled.

A study by Denise Tang, who graduates with a PhD in Geology next week, investigated the evolution of ancient explosive volcanoes in Hong Kong that were active between 164 and 140 million years ago.

Denise looked at how the volcanoes connect to large bodies of molten rock (now cooled as a type of rock called plutons) feeding them beneath the surface.

"We found that in individual large [volcanic systems](#), the temperature and composition of the magma may change over millions of years, generating two distinct groups of [volcanic rocks](#) and plutons. This finding allows us to better understand the long-term development of large volcanoes."

By looking at the rocks expelled from the ancient volcanoes, Denise was able to look into the past to see how they developed.

"My work provides new insights into how explosive volcanoes operate and link with their sub-surface plutonic sources. We can compare and contrast Hong Kong with similar, modern volcanic systems like the highly active Taupo Volcanic Zone in the central North Island.

"The magmatic sources of modern volcanoes like the Taupo Volcanic Zone are hidden underground and cannot be studied directly. So this research was able to give strong evidence that a large plutonic body must exist underneath the Taupo Volcanic Zone as a counterpart for the large explosive eruptions."

Denise says that her findings have updated the eruption history of ancient volcanoes and the post-volcanic tectonic history of Hong Kong. "This new information is important for interpreting the regional geology of southeast China".

Denise, who came to Victoria from Hong Kong for her PhD, carried out her research using fieldwork coupled with chemical analyses and dating techniques on many volcanic and plutonic samples. She has now returned to her homeland to continue working as a mapping geologist for the

government.

Provided by Victoria University

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