

Experimental constraints on hydrothermal and magmatic system of the Lutao volcanic island

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The Lutao volcanic island is situated at the northern end of the Luzon arc, which was created by the Pleistocene volcanism driven by the eastward subduction of the South China Sea plate beneath the western Philippine Sea plate. Researchers have conducted extensive investigations on the Luzon arc and produced large amounts of new data and competing models. However, several geological issues remain unresolved and controversial, which has significantly hampered further understanding of its magmatic-hydrothermal processes. In this contribution, we use zircon U–Pb dating, Lu–Hf and Oxygen isotope analysis to constrain the age, origin, and fluid-rock interactions of the volcanic rocks from Lutao Island. Comparison with literature data from across the islet and adjacent region allows a discussion of the timing and magmatic-hydrothermal processes of Lutao Island with a better understanding of the northern Luzon arc system.