

## **MAGMATIC SYSTEM EVOLUTION UNDER THE ACTIVE VOLCANO OF DECEPTION ISLAND (ANTARCTICA): EVIDENCES FROM STABLE ISOTOPES**

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Deception Island is one of the most active volcanoes in Antarctica, with more than twenty explosive eruptions documented over the past two centuries. Volatiles can provide insights into the magmatic processes and evolution of active volcanoes, which can be implemented into volcanic hazards assessment. Stable isotopes (hydrogen and oxygen) on trapped volatiles in volcanic rocks of Deception Island give essential information for better understanding the genesis, eruptive mechanism(s) and volcanic hazards underneath this active volcano. The results combined with exhaustive petrologic information [1] have direct implications on the future eruption forecasting in the island by revealing (i) clear systematics among D/H values, volcanic stage (pre-, syn- and post-caldera), water source (meteoric vs. oceanic), and location over two main fault systems within the island, favouring magma ascent; (ii) a significant rapid magma ascent rates during the explosive hydrovolcanic eruptions evidenced by the negligible secondary hydration by meteoric or glacial melt waters after degassing of the primary magma.

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[1] Geyer *et al.* (2019) *Scientific Reports* **9**, 373