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Palaeointensity investigations on historical lava flows from the Kameni Islands (Santorini, Greece) using the Microwave system

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The 8 historical eruptions (46-47 AD to 1950 AD) that have formed the Kameni Islands inside Santorini's caldera (Greece) offer good means to gather palaeointensities from a single site at different time periods.

Rock magnetic investigations (hysteresis loops, thermomagnetic curves, susceptibility and Mössbauer measurements) have been conducted on samples from the 8 eruptions (lava flows and craters walls). Differences have been found between samples from different eruptions and in some cases also from the same eruptive episode.

Similarly, palaeomagnetic intensities have been systematically obtained on samples from the 8 events using the 8 GHz Microwave system. For the 6 most recent eruptions, assessment and comparison of the results is enabled on account of existing models of the Earth's magnetic field.

Intensive measurements and data treatment were performed to ensure statistical significance of all parameters measured. The lowest Mrs/Ms values correlates with recorded palaeointensity values lower than expected. Good archaeointensity estimations have been found on lavas from 1707-11's eruption, and with less approval to other 3 events. For 726 AD, 46 μT is suggested as the intensity of the Earth's magnetic field at Santorini.

Future work will even enlarge the number of analysed samples and extend the analysis to the conventional thermal palaeointensity determination methods.