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Investigating the deposition temperatures of the first pyroclastic products of the Minoan eruption (Santorini, Greece) through palaeomagnetic analysis on pottery

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Thermal remanent magnetization analyses were carried out on Late Bronze Age pottery fragments in order to estimate the deposition equilibrium temperature of the fall pyroclastic deposits of the Minoan eruption (Santorini, Greece) and their thermal effect on the pre- Minoan habitation level. The collected pottery samples were laying on the pre-Minoan palaeosoil surface and were completely covered and buried by the first pyroclastic pumice fall products of the eruption. Samples come from various sites, mainly situated at the southern part of the island. Stepwise thermal demagnetizations reveal that the pottery fragments carried a two-component remanent magnetization. Interpretation of the demagnetization results using the normalised intensity decay curves and the orthogonal projection diagrams indicates that most samples were re-heated at temperatures around 160-260 oC. The estimated temperatures represent the equilibrium temperatures obtained after the deposition of the pumice fall and show that the pyroclastic fall deposits at distances of around 6-9 km from the eruption vent maintained a temperature high enough to reheat the buried pottery at temperatures around 160-260 oC.