



Bronze Age Archaeointensity data from the Levant and Anatolia: Constraining the Temporal and Geographic Extent of Archaeomagnetic Jerks

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In order to understand the behaviour of the Earth's magnetic field on decadal to millennial timescales and to produce reliable field models, globally distributed archaeointensity data are required. Such well constrained models will also enable us to test hypotheses of geomagnetic-climate coupling during the Holocene.

Here, we will present new high quality archaeointensity data spanning the age range 2200 BC to 700 BC from Turkey. Additionally we will present the first archaeointensity data for Cyprus from 2400 BC to 2000 BC. The intensity results and associated rock magnetic data were obtained from unoriented pottery samples and oriented burnt mud bricks from two Bronze Age archaeological sites in Southern Turkey: Tell Atchana and Kilise Tepe and from two Bronze Age sites in Central and Northern Cyprus: Marki Alonia and Bellapais Vounous. Strict criteria were applied to the results of archaeointensity measurements made using microwave and thermal techniques. Archaeointensity experiments followed both the Coe and IZZI Thellier-type protocols. A success rate of 32% from a total of 174 samples was recorded. The results were corrected for cooling rate and the anisotropy of the samples shaped the experiment design.

The age of the samples were constrained by site stratigraphy, carbon dating of suitable related material, and pottery typology. For each archaeological context/ age group studied a variety of pottery types were analysed to improve the robustness of the results. In addition, a burnt in situ mud brick wall was analysed.

The geographic location of these sites within the Levant and Anatolia enables comparison with the archaeointensity results presented by previous authors who measured exceptionally high ancient fields over the time period presented here. Some of these previous studies have correlated periods of high intensity (so called "archaeomagnetic jerks") with periods of cooling in the North Atlantic and fluctuations in the length of Swiss glaciers. The implication of our new dataset for these potential links will be presented and discussed.