Geophysical Research Abstracts
Vol. 18, EGU2016-14852, 2016
EGU General Assembly 2016

New archaeomagnetic data recovered from the study of celtiberic remains from central Spain (Numancia and Ciadueña, III-I BC).

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Variation of geomagnetic field changes in the Iberian Peninsula between prior to roman times remain very poorly constrained. Here we report results from the archeomagnetic study carried out on four set of ceramics and one combustion structure recovered in two pre-roman (celtiberic) archeological sites in central Spain. Rock magnetic experiments indicate the ChRM is carried by magnetite. Archaeointensity determinations were carried out by using the classical Thellier-Thellier experiment including tests and corrections for magnetic anisotropy and magnetic cooling rate dependency. Well heated specimens (red ceramic fragments and well heated samples from the kiln) show one single well defined component of magnetisation going through the origin and a linear arai plot providing successful archaeointensity determinations. The effect of anisotropy of the termoremanent magnetization (ATRM) on paleointensity analysis was specially investigated obtaining very high ATRM corrections on fine pottery specimens. With differences between the uncorrected and ATRM corrected paleointensity values that reached up to 80-100%. Mean intensity values obtained from three selected groups were 61.1 $\pm$5.9μT; 57.6$\pm$3.3 and 56.4$\pm$ 4.7μT which allows delineate the evolution of the paleofield intensity in central Iberia during the III-I centuries BC. The new archaeointensity data disagrees with previous results from Iberian ceramics which were not corrected by the ATRM effect. But they are in agreement with the most recent French paleointensity curve and latest European intensity model. Both based on a selection of high quality paleointensity data. This result reinforces the idea that the puzzling scatter often observed in the global paleointensity database is likely due to differences in the laboratory protocol. Further data from well contrasted laboratory protocols are still necessary to delineate confidently the evolution of the geomagnetic paleofield during the first millennium BC.