

AGU FALL MEETING

San Francisco | 14 – 18 December 2015

GP23A-1297: Archaeointensity Determination of the Earth's Magnetic Field in Coastal Ecuador During the last six Millennia: New data from Ecuadorian Potsherds

ABSTRACT



Tuesday, 15 December 2015

13:40 - 18:00

Moscone South - Poster Hall

We present new absolute archaeointensity data from five archaeological sites in coastal area of Ecuador (South America). Potsherd fragments come from the archaeological excavations of Guayas Province (ca. 535-1535 AD, Manteño Period), Nido de Las Lechusas (ca. 55-755 AD, Guangala Period, and ca. 470-1470 AD, Panzaleo Period), Santa Elena (ca. 4530-2030 BC, Valdivia Period) and Valdivia (ca. 4530-2030 BC, Valdivia Period) respectively, based on available radiocarbon dating. Successful archaeointensity data have been obtained from thirty seven potsherds using the Thellier-Coe protocol. Rock magnetic experiments including low-field magnetic susceptibility versus temperature (k-T) plots, Isothermal Remanent Magnetization (IRM) acquisition curves, as well as hysteresis loops and back-fields, have been performed in order to characterize the magnetic behavior of the samples and determine their main magnetic carriers. The Curie temperatures indicate the presence of at least two magnetic mineral phases (i.e. 560-575⁰C and 610-620⁰C), with predominant Curie temperatures typical of magnetite. The results of the magnetic grain size analyses suggest the presence of particles in the Pseudo-Single Domain (PSD) range, according to the distribution on the modified Day plots (Dunlop 2002 a and b) for magnetite. The successful absolute paleointensity determinations yielded archaeointensity values of $17.3 \pm 0.5 \mu\text{T}$ for Guayas (Manteno Period), $29.13 \pm 0.61 \mu\text{T}$ for Nido de Las Lechusas (Guangala Period), $35.45 \pm 1.6 \mu\text{T}$ for Nido de Las Lechusas ((Panzaleo Period), $27.3 \pm 1.0 \mu\text{T}$ for Santa Elena (Valdivia Period) and $25.82 \pm 1.82 \mu\text{T}$ for Valdivia (Valdivia Period). The new results are in good correlation with archaeomagnetic data from the earlier published data from the coastal Valdivia in Ecuador. These new archaeointensity data from Ecuador for the last 4530-2030 BC years aim to enrich our knowledge of the geomagnetic field intensity variations in the south hemisphere, together with previously published data from South America.

Authors

[Emilio Herrero-Bervera](#)

University of Hawaii at Manoa

[Evdokia Tema](#)

University of Turin

[J. Stephen Athens](#)

IARII

View Related Events

Session: [Reconstructing the Secular Variation of the Earth's Magnetic Field in the Past: Recent Methodological Advances and New Palaeomagnetic and Archaeomagnetic Data III Posters](#)

Section/Focus Group: [Geomagnetism and Paleomagnetism](#)

Day: [Tuesday, 15 December 2015](#)

