



Archaeomagnetic investigation of three Etruscan firing structures in Pisa - Data for the Italian Secular Variation Curve

Claudia Principe (1), Jonas Malfatti (1,2), Maxime Le Goff (3), Giuditta Grandinetti (4), Emanuela Paribeni (5), and Claudio Arias (1)

(1) Geosciences and Earth Resources, National Researches Council, Pisa, Italy (c.principe@igg.cnr.it), (2) Università degli Studi di Pisa, Facoltà di Lettere e Filosofia, Dipartimento di Scienze Archeologiche, Pisa, Italy, (3) Laboratoire de Geomagnetisme de l'Institut de Physique du Globe de Paris, Saint Maur des Fosses, France, (4) Museo di Storia Naturale del Mediterraneo, Livorno, Italy, (5) Soprintendenza per i Beni Archeologici della Toscana, Firenze, Italy

Archaeomagnetic studies have recently undergone a significant progress in Italy, and a preliminary Italian Secular Variation Curve (Tema et al., 2007) for the last three millennia is available as a useful reference curve to compare archaeomagnetic directions from both archaeological and geological undated burnt features. However the number of well-dated and accurate archaeomagnetic directional results in our country is still far away to build a reliable dating tool, above all for times older than the 6 century BC.

We present here three unpublished archaeomagnetic directional results carried out from a small Etruscan archaeological area excavated in Pisa, Tuscany (Italy). The importance of this study, a small settled area from the Orientalizzante phase (IX-VI centuries BC) with a well defined metallurgical area inside, is underlined by the fact that, at the moment, these are the only Italian directional investigations coming from a well-dated and constrained archaeological (stratigraphic) context for this time period.

In particular, we sampled two different kind of structures (two firing plains and a circular oven) which were used during the iron ore reduction activities; according with different historical sources, the iron ore was probably from the Elba island deposit (Tuscany, Italy), famous for its abundance during Etruscan and Roman times.

In addition we present also an updated list of our previous archaeomagnetic investigations from other Etruscan and Roman archaeological structures, in order to contribute improving the non-uniform dataset used to build the preliminary Italian Secular Variation Curve for the period BC.

All the presented archaeological structures have been collected by using the modified "Thellier&Thellier" technique, while the analytical measurements have been carried out thanks to a joint collaboration between the IGG-CNR and the Paleomagnetic Laboratory of Institute the Physique du Globe de Paris (IPGP). The thermo-remanent magnetization index has been measured using a large cell induction magnetometer specially designed for large samples, and the characteristic remanent magnetization (ChRM) has been successfully isolated after an alternating field demagnetization (AF) cleaning procedure for several samples