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

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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We present here three unpublished archaeomagnetic directional results carried out from a small Etruscan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.