

An Updated Catalogue of Italian Palaeomagnetic Data from Volcanic Rocks and Archaeological Artifacts

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Abstract

An updated catalogue of Italian palaeomagnetic data published in international journals and small archaeological reports or university thesis during the last decades has been compiled. The new dataset includes data from both archaeological artifacts and volcanic rocks and aims to better constrain the full vector geomagnetic field secular variation (SV) in Italy during the last 8000 years. In respect to the previously published Italian directional SV curve, 24 new directional data from archaeological baked clays have been added while the contribution of directions coming from volcanic rocks importantly enrich the dataset mainly for the last millennium. One of the main problems with the Italian volcanic data is their precise dating and for this reason all data coming from lava and pyroclastic flows have been controlled. Only data with undisputable age have been accepted for further considerations. The available intensity dataset from Italy still remains poor, even when the intensities from volcanic rocks are included. The updated dataset shows that reliable considerations about the SV in Italy can be done only for the last three millennia while data from older periods are extremely scarce for any further elaboration. Comparison of the Italian data with the predictions of European and global geomagnetic field models shows a good agreement suggesting the great potential of the Italian SV dataset for reliable dating of archaeological artifacts, and lava flows emplaced during the last 3000 years.

Keywords: geomagnetic field records, volcanic rocks, archaeological artifacts, Italy.