



8000 years of geomagnetic field Secular Variation in the Balkan Peninsula based on archaeomagnetic data

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We present here the first archaeomagnetic secular variation (SV) curves for the southern Balkan Peninsula that cover the last 8000 years. The obtained curves are based on a bulk number of data that are included in a 700 km circle centred at Thessaloniki (40.60°N, 23.00° E) and allow a complete description of the full geomagnetic field vector (declination, inclination and intensity) in this area. The reference dataset consists of 325 directional and 557 intensity data mainly coming from Greece, Bulgaria, Serbia and Southern Hungary. Some data from Southern Italy are also included. The sliding moving window technique with windows of 100 years shifted by 50 years was used to calculate a continuous SV curve for intensity while the directional SV curve was calculated using the bivariate extension of the Fisher statistics. The obtained curves are well constrained and clearly show the main features of the geomagnetic field variation during the last 8 millennia. Comparison with the predictions of the SCHA.DIF.3K and SCHA.DIF.8K regional and the CALS7K and ARCH3K global geomagnetic field models shows a very good agreement for the last 3000 years but important differences for older times. The bulk number of reference data used to calculate the proposed Balkan curves improves the resolution and the age coverage and thus the reliability, when compared to the curves constructed using limited data of single countries. The new Balkan curves identify several rapid changes of the geomagnetic field in Eastern Europe and can be used as reference curves for archaeomagnetic dating in the southern Balkan Peninsula.