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# Variations of the geomagnetic field geometry during the past 5000 years

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A number of studies were recently dedicated to the investigation of the global geomagnetic field variation over the last several thousand years. These studies were either based on archeomagnetic data or on historical field recordings. Here, we present a combined analysis of both, archeomagnetic and historic field data in order to obtain a low-degree geomagnetic field model for the last 5000 years. This is accomplished by a Bayesian inversion technique, which minimizes the total variational power at the core-mantle boundary under data constraints. Since the resulting inversion equation is linear, it is fast, easy to apply and very stable with respect to changes in the input parameters. The used data sets comprise full vector, directional, but also pure intensity data. Since the inversion works reliably even on a smaller base of good data, we carefully selected the input data to include only the most trustworthy. In its basic structure, the finally obtained field evolution scenario is similar to earlier models. However, our technique for the first time successfully reproduces archeomagnetic jerks, which particularly are observed in western Europe. Furthermore, since our inversion method leads to a unique solution and is very fast, it allows for a detailed statistical investigation of the influence of data uncertainties by using a bootstrap type statistical analysis.