



Interpretation of the ‘Trans European Suture Zone’ by a multiscale aeromagnetic dataset

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One of the main goals in crustal geomagnetic prospecting is to obtain information about the sources of magnetic anomalies in order to model the geological structure of the Earth’s crust. A “multiscale approach” is very useful to analyze, concurrently, the effects of sources placed at different depths, observing the potential field at various altitudes from the Earth’s surface. The aim of this work is the study of the main geological structure of Central Europe, the “Trans European Suture Zone”, using high-resolution aeromagnetic data. The ‘TESZ’ is the most prominent geological boundary in Europe, oriented NW-SE from the North Sea to the Black Sea and separating The Paleozoic platform in the south and west from the Precambrian East European craton. At high altitudes the European magnetic field is characterized by a large and extended magnetic low, which is related to the deep TESZ structure. The study of this anomaly field began by detecting the position of the anomaly sources using the properties of the Analytical Signal modulus (AS). The AS map presents anomalies in which the dipolar behavior of the magnetic anomaly field is substantially removed and the maxima are placed directly above the anomaly sources. The multiridge method has been applied to the Analytical Signal modulus in order to have information about the sources’ depths in the TESZ region. Many profiles were tracked transversely to the fault line in order to map at depth the main magnetic discontinuities. Cause of the low heat flow of the Central Europe, we were able to get information also in the lower crust and to map the deep Moho discontinuity. Available geological sections based on seismic data show consistent results with our interpretation.