

Anna WOJAS<sup>1</sup>, Teresa GRABOWSKA<sup>1</sup>, Mateusz MIKOŁAJCZAK<sup>2</sup>

<sup>1</sup>*AGH University of Science and Technology, Krakow, Poland, Faculty of Geology, Geophysics and Environmental Protection, awojas@agh.edu.pl*

<sup>2</sup>*Polish Academy of Sciences, Krakow, Poland, Institute of Geological Sciences, Krakow Research Centre*

## Relative Secular Variations of the Geomagnetic Field along the Zgorzelec-Wizajny Profile, Poland

The paper presents results of the study on relative secular variations of total magnetic intensity (TMI) of the geomagnetic field along the 700 km long profile crossing the area of Poland. Measurements were carried out at annual intervals (50 measurement series) between 1966 and 2016, in GPS-determined 31 measurement points (secular points) separated by about 12 km. The research profile of the SW-NE direction, called Zgorzelec-Wizajny (Z-W), crosses large parts of the main geotectonic units of Europe, namely the Paleozoic Platform of the Central and Western Europe (PLZ) and the East European Craton (EEC), connected by the Trans-European Suture Zone (TESZ). Magnetic measurements were made using proton magnetometers with sensitivity of 0.1 nT. Using the original methodology of analysis of measured data, reduced to the values of geomagnetic field recorded at the Central Geophysical Observatory of the Institute of Geophysics in Belsk, the relative secular variations of TMI with the magnetic anomalies ( $\Delta T$ ) and with the terrestrial heat flow density ( $Q$ ) were graphically presented.

The results of the study indicate clear differences in trend of the relative secular variations of TMI along the Z-W profile. The slower changes, than in the PLZ and the TESZ area, are characterized the cratonic region (EEC) with a strongly differentiated magnetic anomalies ( $\Delta T$ ) pattern and the lowered values of a heat flow. The faster relative secular variations are attributed to the area of the PLZ within which the growth of a terrestrial heat flow density is observed. Taking into account the study on relative secular variations of TMI, the results of deep seismic surveys (POLONAISE'97) and geothermal research, the differences in relative secular variations between the PLZ and the Precambrian craton may be related to the geodynamic processes occurring in the crust-upper mantle contact zone.