

Effects of the coring and sampling techniques on the palaeomagnetic record and magnetic fabric in the Tertiary and Quaternary preglacial sediments (Różce profile, Grójec area, Mazovian, Poland) – preliminary interpretations

Tomasz Werner ¹, Rafał Szaniawski ¹, Elżbieta Król ¹, Łukasz Bujak ²

¹ Institute of Geophysics, Polish Academy of Sciences, Warsaw, Poland

² Faculty of Geodesy and Cartography, Warsaw University of Technology, Warsaw, Poland

Corresponding author: twerner@igf.edu.pl

Abstract: The core of preglacial deposits in the Różce profile, Grójec area, Mazovian, Poland was studied paleomagnetically in addition to the detailed mineralogical, paleobotanical and palinological studies. The study was focused on the detection of the polarity changes that may help to set the time of the deposition. More than 140 m long core was obtained in sediments that probably include a long time gap between preglacial and glacial deposits. Due to limited funding only detailed magnetic susceptibility profile was obtained (more than 55 m in two segments was sampled) to correlate susceptibility changes with paleoclimatic data. Paleomagnetic sampling was much less dense with 80 samples in 85m of profile (depths 25-105m) in silts and clays with cores oriented vertically. After AF stepwise demagnetization the characteristic remanence inclination profile does not show a consistent pattern. The changes in the intensity of NRM indicates a sharp change from upper segment (60m) indicated glacial deposits from igneous sources in Scandinavia to the lower preglacial deposits. The declination of the ChRMs show some ordering that may reflect the potential to acquire some viscous remanence in the present Earth magnetic field direction. This effect is present in both segments of the core (upper glacial and lower preglacial). We correlate this effect with the magnetizing the core segments while stored after the coring before the sampling of the core segments for the paleomagnetic studies. Additional rock-magnetic studies indicate some contribution of SP fraction in preglacial deposits. Viscous remanence was also confirmed in the consecutive studies of remagnetization effects on samples on the laboratory. Therefore only the anhysteretic remanence susceptibility that was also determined can be only a reliable parameter in ferromagnetic phase that may be employed in further palaeoclimatic correlations. We have also planned to use the anisotropy of magnetic susceptibility fabric for some relative orientation of neighbouring cores segments. AMS shows a varying pattern along the profile. It has higher P_j values (1.07-1.20) for glacial deposits (above 60m) and it was generally weak below ($P_j < 1.03$) of but its good correlations along the

profile indicates that it was affected by the sampling of the cube samples from the core.

Keywords: viscous remanence, preglacial deposits, sampling procedure