HIGH RESOLUTION MAGNETIC SURVEY FOR SOIL MONITORING: APPLICATION TO THE DETECTION OF DRAINAGE AND SOIL TILLAGE EFFECTS.

V. Mathé (1) and F. Lévêque (1)
(1) University of La Rochelle, Centre Littoral De Géophysique (vmathe@univ-lr.fr)

High resolution magnetic cartography realized with a caesium vapour magnetometer on plots of the West France marshes are presented. The clayey substratum homogeneity and the knowledge of plot exploitation history make the interest of this site. Wooden wagon and PVC rail allowed to acquire an accurate signal with dynamics of about 2 nT. A natural grassland presents weak decametric variations correlated to a micro-toposequence. In opposite, plots recently ploughed show linear magnetic anomalies. So, these anomalies are interpreted as the tillage influence on the soil properties. In addition, for drained plot case, wavelet transform emphasizes a frequency band close to the drain-pipe intervals. Moreover, linear magnetic anomalies are more marked above drain-pipes. It demonstrates a variation of the couple efficiency: drainage / soil tillage.