



The role of soil-forming factors and anthropogenic pollution for the magnetic signature of soil profiles from East Bulgaria

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Magnetic mineralogy of different soil types represented generally by iron oxides is one of the main indicators about the genetic soil-forming processes. That is why rock magnetic and mineral magnetic studies are an important aspect of soil characterization. The aim of the present investigation is to reveal the behavior of a number of rock magnetic parameters (magnetic susceptibility, frequency-dependent magnetic susceptibility, laboratory imparted isothermal and anhysteretic remanences) along the depth of several different soil profiles – Chernozem-like alluvial soil; Rendzina developed on limestones; Yellow podzolic soil (Acrisol) on sandstones and schists. Pedogenic magnetic mineralogy deduced from thermomagnetic analysis of susceptibility is presented by magnetite-like phases for the soils of temperate climatic belt, while the Mediterranean-type Acrisol contains mainly hematite and oxyhydroxides. Different degree of anthropogenic impact on the studied soils is revealed by the magnetometry. Strongly magnetic industrially-derived particles with typical shape and morphology contribute to the magnetic signal of the Chernozem and Rendzina profiles. Their input determines the particular magnetically harder behavior of the samples from the uppermost 10-20cm of the solum. An approach for quantitative magnetic discrimination between the pedogenic and anthropogenic signals will be proposed.