



Dissolution and neo-formation of magnetic mineralogical phases with depth in muddy coastal sediments of NW Spain. A combined petromagnetic and geochemical approach.

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Our main focus is to study the magnetic and geochemical properties of 4 cores taken along the main axis of the Ria de Vigo, on the NW coast of Spain. The cores were taken from different environments of the ria and range in length from 402 cm to 78 cm. Bulk magnetic properties (k, ARM, IRM) show the typical profile associated with diagenetic dissolution of magnetic minerals, with high values in the upper part of the cores that rapidly decrease with depth until a stable value is reached. Measurement of the temperature dependence of magnetisation, hysteresis loops and FORC distributions, were carried out to further investigate the origin of the observed signals in terms of concentration of magnetic minerals (k, ARM, IRM), composition of the magnetic mineral assemblage (IRM component analysis, Hcr, S-ratios, HIRM), magnetic grain size (ARM/IRM, Day and King Plots) and magnetic interaction (Wohlfarth ratios, FORC distributions). The results show the occurrence of three main magnetic components whose relative importance changes with depth, as a function of natural dissolution and/or neo-formation diagenetic processes. Unusually to this type of environments no evidence for biogenic magnetite was found.

Paper No. 343 Grupo de Geología Marina y Ambiental (GEOMA), University of Vigo. Contribution to projects REN2003-02822 MAR, REN2003-03233 MAR, VEM2003-20093-C03-03 of the MCYT y PGDIT03RMA30101PR of the Xunta of Galicia (XUGA). This research was partially financial supported by Ministry of the Environment of Spain.