

## Magnetic proxies in continental records; what are they telling about environmental changes?

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**Abstract:** Since the study of the magnetic susceptibility of varved sediments from a Sweden lake in 1927 by Ising (Ising, 1943), magnetic properties of sediments have been increasingly used within the years to decipher erosion, transportation, new formation, deposition and postdepositional alteration of magnetic minerals related to environmental changes (Liu et al., 2012). Due to the wide array of processes that a specific concentration, grain size or type of magnetic mineral can reflect in a continental environment, it is necessary to understand the sedimentary evolution of the lake, thus additional proxies such as geochemical (organic, inorganic carbon content, qualitative and quantitative analyses of major element), sedimentological observations (smear slides, grain size), biological (chironomids, diatoms) are a requirement. Above all, a reliable age model is necessary in order to compare the continental record with regional and even global environmental changes that will explain the observed local changes.

In the Iberian Peninsula, magnetic proxy investigations in continental environments are scarce (Larrasoña et al., 2010; Gómez-Paccard et al., 2013). However, new

magnetic data from alluvial fan (Añavieja basin, late Pleistocene-Holocene) and three mountain lakes (Marboré, Holocene; Enol, Late-Pleistocene-Holocene and Basa de la Mora, Late Pleistocene-Holocene) are investigated in order to unravel the significance of the magnetic changes respect to the geochemical and sedimentological variations found in the geological record. Preliminary results suggest that diagenesis and changes in the redox conditions alter the concentration of magnetic minerals more in lakes than in alluvial fan settings. Although the time-resolution depends on the age model, the concentration of magnetic minerals seems to reflect the main global millennial-scale fluctuations during the Late Pleistocene and Holocene and underlines their value as environmental and paleoclimate archives.

**Keywords:** continental records, environmental proxy, magnetic minerals, environmental changes

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