

## Blowing in the wind: the climatic signal in the magnetic signature of the Lake Van sediments

Luigi Vigliotti (1), Mona Stockhecke (2), and Ola Kwiecien (3)

(1) Istituto di Scienze Marine, ISMAR-CNR, Bologna, Italy, (2) Eawag, Swiss Federal Institute of Aquatic Science and Technology, Dept. of Surface Waters Research and Management, Switzerland., (3) Ruhr-Universität Bochum, Institute for Geology, Mineralogy & Geophysics Bochum, Germany

The sediments of Lake Van in Eastern Anatolia (Turkey) (ICDP-5034) are a valuable climate archive strongly influenced by the North Atlantic sea level pressure that is responsible for rapid transitions from aridity to pluvial conditions.

The millennial-scale variability is recorded by several proxies including concentration-related magnetic parameters ([U+F06B], ARM, SIRM) that mirror the XRF data of detrital minerals (Fe, Ti, Al, Mn, K, Si). This indicates that a unique process is responsible for their supply and their variations mimic very well the dust flux reconstructed in the Greenland ice-core (Ngrip, 0-110 ka) and even in the Antarctica cores (EDC3, 0-360 ka).

In order to identify the source and the emplacement mechanism of the magnetic particles we investigate the rock-magnetic parameters ([U+F06B], ARM, SIRM) and interparametric ratios (SIRM/ARM, SIRM/[U+F063], KARM/[U+F06B], S-Ratio, HIRM) of trap sediments collected during the years 2006-2010 (Stockhecke et al. 2012).

The results indicate that the magnetic fraction follows the seasonal particle fluxes with higher values during spring and autumn whereas low values occurs in winter and summer. The carbonate content play a role on the magnetic properties whose flux appear controlled by the atmospheric circulation patterns. This is confirmed by a comparison of the results with a daily model elaborated by the numerical dust forecast (BSC Dust Numerical Database).

The similarity of the trap data with the results from whole core data (Vigliotti et al. 2014) and discrete samples collected from the ICDP Site 5034 indicates that the same mechanism was responsible for the sedimentation at least during the last 350 ka. The results confirm that the wind-blown dust play a key role in the depositional mechanism of the Lake Van sediments.

Stockhecke, M., Anselmetti, F.S., Meydan, A.F., Odermatt, D., and Sturm, M. (2012). The annual particle cycle in Lake Van (Turkey). *Palaeogeography, Palaeoclimatology, Palaeoecology*, 333–334, 148-159.

Vigliotti, L., Channell, J.E.T., Stockhecke, M. (2014). Paleomagnetism of Lake Van sediments: chronology and paleoenvironment since 350 ka. *Quat. Sci. Rev.* 104, 18-29.