

## PALEOCLIMATIC STUDIES ON LAKE SEDIMENTS FROM BUENOS AIRES PROVINCE (ARGENTINA)

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The frequency of rainfall and drought periods, temperature changes, abundance of vegetation, difference of sedimentation rates of lake sediments, etc. are reflected in the variations of magnetic parameters.

Sequences of lake sediments are good sources of information because they provide continuous records of magnetic parameters and therefore, detailed records of paleoclimatic changes.

This study was carried out on bottom cores collected from Laguna La Brava, Argentina (37°52'S 57°59'W), an elongated lake of about 4.5km<sup>2</sup> area. The following measurements were performed: magnetic susceptibility at low frequency (specific  $\chi$ , and volumetric,  $k$ ) and high frequency; intensity of the natural remanent magnetisation (NRM), isothermal remanent magnetisation (IRM) in increasing steps up to 1.2T, reaching the saturation (SIRM); back-field, in growing steps until cancelling the magnetic remanence; anhysteretic remanent magnetisation (ARM<sub>95mT</sub>), with a direct field of 0.1mT and a peak alternating field of 95mT and anhysteretic susceptibility ( $k_{anh}$ ). Associated parameters also were calculated:  $S$  (IRM<sub>300mT</sub>/SIRM), %soft IRM ((SIRM-IRM<sub>40mT</sub>)/SIRM), %hard ((IRM<sub>300mT</sub>+SIRM)/2\*SIRM), coercivity remanent ( $H_{CR}$ ) and frequency-dependence magnetic susceptibility (F factor).

Measurements of Total Organic and Inorganic Carbon (TOC and TIC), Total Sulphur (TS), %sand, silt and clay, alkaline elements, light metals and heavy metals, were carried out by the Sanerlandt method. Carbonates were determined using a pressure calcimeter and the elements were analysed by atomic emission spectrometry using an inductively coupled plasma ICP-OES (solid state detector). Changes in vegetation communities were determined based on palynological studies, using physical-chemical extraction techniques like defloculation of clay, elimination of humic acids, carbonates, silicates and organic remains. The pollen identification and count was carried out using an optic microscope.

Five radiocarbon age determinations were made on samples of organic-rich clay and calibrated ages were calculated. A linear regression to the calibrated ages indicates that sediment accumulation rate averaged 1.22 mm/yr and a temporal extent of about 4500 calendar years.

Relationships between magnetic parameters, TOC, TIC, TS, different elements and pollen were analysed.

The results from the previous studies suggest periodic changes from cooler and moister conditions to climate improvement, changes in sediment contribution and depositional processes possibly caused by human impact, particularly use of natural resources. Some floods and lower lake level events were identified.

rock magnetism - paleoclimate – lake sediments

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