A multiproxy approach to reconstruct the environmental changes in Lago Toncek (Patagomia, Argentina): Preliminary studies

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Abstract: Lake sediments are excellent sources of palaeoenvironmental and palaeoclimatic information because they provide continuous and high-resolution records. They are also first class recorders of magnetic parameters widely used around the world as proxies for paleoenvironmental variations, because every change in the catchment area (rainfall and drought periods, temperature changes, differences in sedimentation rates) is likewise reflected in variations of the magnetic parameters. This study was carried out on cores collected from the Laguna Toncek (41°11'52.72"S, 71°29'17.45" W, 1750 m asl), a small lake with 0.03 km^2 surface area and 12m maximum depth of glacial origin, situated in Catedral mountain in the Nahuel Huapi National Park of northern Patagonia. Lake Toncek watershed is dominated by rocky ground deposits, and scattered timberline forest (*Nothofagus pumilio*) and high-Andean vegetation (*Gaultheria pumila, Baccharis magellanica, among others*). This work is part of a multidisciplinary project which aim is to provide paleoenvironmental information about the almost unexplored remote wetland areas of the Nahuel Huapi National Park in Patagonia. A combination of rock magnetic parameters with paleolimnological analysis (diatoms, chironomids, ostracods, and geochemistry) from remote lakes such as Laguna Toncek will be used to develop a detailed history of environmental changes during the past hundred years in the area of Bariloche (Patagonia, Argentina). The following measurements were performed on 41 samples: magnetic susceptibility at low frequency (specific χ, and volumetric, k) and high frequency; isothermal remanent magnetisation reaching the saturation (SIRM); back-field, in growing steps until cancelling the magnetic remanence; anhysteretic remanent magnetisation (ARM), with a direct field of 0.1mT and a peak alternating field of 100mT. Particularly, the concentration parameters show notorious changes, a high

amount of magnetic minerals was found in these sediments with k reaching values of 600-700x10^{-5}SI.

Keywords: northern Patagonia, high Andean lakes, Multi-proxy studies