

A 500-YR RECORD OF NORTHERN PATAGONIAN ENVIRONMENTAL CHANGES: LAGO PLOMO AND LAGO BERTRAND

Fagel, N.¹, Brix, J.¹, El Ouahabi, M.¹, Lepoint, G.²,
Schmidt, S.³, Araneda, A.^{4,5} and Urrutia, R.^{4,5}

1. AGEs - Clays, Sedimentary environments and Geochemistry, Department of Geology, University of Liege, Allée du 6 aout, B-4000, Liège, Belgique
2. Marine Research Centre (Mare), Laboratory of Oceanology, ULg, Belgium;
3. EPOC, Département de Géologie et Océanographie, Bordeaux, France
4. Aquatic Systems Research Unit, EULA – Chile Environmental Sciences Centre, University of Concepcion, Casilla 160-C, Concepcion, Chile
5. Patagonian Ecosystems Research Center (CIEP), Coyhaique, Chile

e-mail address: Nathalie.fagel@ulg.ac.be

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We study the sedimentary records of two interconnected lakes from Chilean Patagonia (46.5°S 72.5°W). Lake Bertrand is adjacent to the pro-glacial lake, Lake Plomo. The connection between both lakes is limited by a morainic barrier. The coring sites were selected after a bathymetric survey using an echo-sounder. Short cores were retrieved in 2009 using a gravity corer. For Lake Plomo radiocarbon, ²¹⁰Pb and ¹³⁷Cs data are consistent with a constant accumulation range of 2 mm/yr. ²¹⁰Pb data support a lower sedimentation rate for Lake Bertrand. To reconstruct past climate changes, we conduct a multiproxy study combining sedimentology and geochemistry. Lake Plomo sediments are made by light brown silts with 20% of clay but no sand. X-ray radiographies demonstrate that the sediment is finely laminated, rich in organic macro-remains. The C/N ratio is stable, the average value of 15 supports the important terrestrial supply to the lake. The organic content of the sediment, calculated from 550°C loss of ignition, represent a few percents. The biogenic silica content of the sediment, estimated by atomic absorption after NaOH leaching, is very low (<5%). Microscopic slides reveal the sparse occurrence of small 6 to 10 μm diatoms. The Plomo sedimentary record contrasts with the adjacent lacustrine record, Lake Bertrand. The sediment is made by homogeneous silts with some clays (< 20%) and 5 to 10% of sand. Lake Bertrand is characterized by lower C/N ratio (10) supporting a more important aquatic productivity. Diatoms are abundant and larger in size (50-100 μm). The biogenic silica profile evidences two peaks (Si bio>30%) above a 5% background level. They probably record a major climate change in North Patagonian Andes. Even further sedimentological and geochemical analyses are in progress our observations evidence the potential of such lacustrine records to reconstruct the Last Millennium climate changes in North Patagonia.

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pages-valdivia@cecs.cl