



## **GEOPHYSICAL CHARACTERIZATION OF THE SEDIMENTARY ENVIRONMENTS IN LAGO PUYEHUE AND LAGO ICALMA (CHILEAN LAKE DISTRICT, SW ANDES)**

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The Chilean Lake District, located in Southern Chile, comprises 17 lakes at the foothill of the Cordillera de los Andes. These lakes, dammed by frontal moraines, were formed during the last deglaciation (12500-12000 BP). Their sedimentary infilling has the potential to contain a complete and continuous Holocene sedimentary record of environmental and climatic changes having affected the area.

High-resolution reflection seismic data (sparker and pinger) collected during the 2001-2002 expedition in the framework of the Belgian ENSO-CHILE project have allowed us to select two lakes for the collection of long and short sediment cores:

1. Lago Icalma (38°50'S, alt. 1150 m) is located in the Cordillera de los Andes, in the upper part of the Bio-Bio River. Its watershed (148 km<sup>2</sup>) is dominated by a soft post-glacial sediment cover, interrupted by two important pumice layers. According to the high-resolution seismic survey, the 70m-thick sedimentary infilling consists of morainic deposits, under- and interflows and laminated lacustrine deposits. The western part of the main basin represents an elevated platform, free of the influence of bottom-currents and turbidites and possibly consisting of interflow deposits. Core descriptions and physical property analyses of sediments (gamma-density, low and high-resolution magnetic susceptibility) suggest that the deposits consist of

an alternation of volcanic deposits and terrigenous sediments correlated on pinger profiles, showing the presence of several low-amplitude layers.

2. Lago Puyehue ( $40^{\circ}40'S$ , alt. 185 m) is located at the foothill of the Cordillera de los Andes and presents a glacial morphology much more complicated than Lago Icalma. Its watershed is larger (1267 km<sup>2</sup>) and dominated by Quaternary and Tertiary volcanic rocks. The lake is composed, in its western part, by a large basin, filled by 250 m of sediments, as can be deduced from sparker profiles. The eastern part of the lake presents a complex substratum morphology. However, it was possible to find a suitable location in underflow and interflow deposit areas for the collection of two long cores. Core description and physical property analyses of sediments of the interflow area suggest a good and continuous sedimentary record.

With this contribution, we wish to illustrate the potential of high resolution geophysical site-survey data for interpreting core descriptions and physical property analyses.