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Lake system in Southern Chile: Climatic and volcanic controls for the last 600 yr.

X. Boes (1), N. Fagel (2)

Clays and Paleoclimate Research Unit, Geology Department, University of Liege, Allée du 6 Aout, B18, B-4000 Liege, Belgium. (Tel: +32.4.3662210; Fax: +32.4.3662202; *Xavier.boes@ulg.ac.be)

The Southern Chilean Lakes, i.e. Lake District (39-41°S), present important continental archives to reconstruct extreme latitude climate changes driven by Southern Pacific oceanic circulation: Southern Westerlies are particularly efficient between 40° to 55°S of latitude. In addition to climate control, Southern Chile is also influenced by regional volcanic/seismic events that may disturb lake sediments by intercalated deposits. The 40-42°S area present a dozen of still active volcanoes which are part of Southern active Volcanic Zone of Chile (33-47°S). Climate and volcanic influences on lake system are assessed from Lago Puyehue (40°S) varve record over the last 600 yr. Sediments are investigated from large thin-sections for varve-counting and varve thickness measurements. First, varved chronology is used for dating the intercalated deposits. Second, varve record is compared to local climate instrumental data (i.e. precipitations) to understand sedimentary processes and climate-varve relationships. Climatic and volcanic controls are discussed.