THICKNESS VARIATION OF SEDIMENT LAMINATION IN PUYEHUE LAKE (LAKE DISTRICT, SOUTHERN CHILE) DURING THE LAST MILLENNIUM: A REGIONAL SOUTHERN HEMISPHERE RECORD OF EL NIÑO?

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Lake District (Southern Chile) is investigated as a new regional record of past climate changes in Southern Hemisphere, in particular in order to evidence any regional impact of ENSO in South-America. We analyzed three short cores (60 cm) from the key-site of Puyehue Lake (40°S) which has been selected for multiproxy analyses (Bertrand et al., this session). Sedimentation model is related by a laminated mud increment mainly controlled by the biogenic activity and by the annual thermal lake cycles (turn-over of the nutrients during autumn and winter-time). We analysed lamination occurrence and thickness from enlarged images of thin-sections preparation (magnitude 5x) in order to increase sediment resolution. The age-model of the cores is based on counting laminations, assuming that sedimentation is varved. Indeed, this varve sedimentation model is in accordance with chronology based on the decrease of 210Pb rates and peaks of 137Cs. Variation of the lamination thickness shows four different phases of sedimentation. (1) Since c.a. 1350 A.D. (base of the cores) to 1460 A.D., varve-thickness ranges around 400 μm and sedimentation rates are 0,5 mm/yr. (2) From 1460 A.D. to 1890 A.D., varve-thickness is about 600 μm with a minimum at 1730 A.D., and sedimentation rates increases from 0,7 to 1,2 mm/yr. (3) From 1890 A.D. to c.a 1930 A.D., varve-thickness increases up to 2000 μm, and sedimentation rates vary between 1,2 to 2,3 mm/yr. (4) From c.a. 1930 A.D. to Actual, varves are about 500 μm with a destratified layer coincident with the 1960 seismic event of Val-
divia; sedimentation rates are between 0.6 to 1.2 mm/yr. The four phases are discussed according to variations of the lake palaeoproductivity by respect with river run-off detrital supplies; the influence of the westerlies on the variations of the lamination thickness is discussed in term of possible regional impact of ENSO.