

Presentation code: P-063

Topic:

210Pb GEOCHRONOLOGY AND CHEMICAL CHARACTERIZATION OF SEDIMENT CORES FROM LAKES OF THE PARANÁ RIVER ALLUVIAL PLAIN

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Abstract text

The floodplain of the upper Paraná River is located among the lakes formed by the Brazilian hydroelectric plants being the last part of the Paraná river, in Brazil, where there is an ecosystem with interaction river-floodplain. This floodplain has considerable habitat variability, with great diversity of terrestrial and aquatic species, and the floods are the main factor that regulates the operation of this ecosystem. The seasonality of the flood pulses is mainly influenced by the El Niño phenomenon, which increases precipitation in the drainage basin of the floodplain of the upper Paraná River. Because of its unique characteristics this ecosystem is the subject of intense study since 1980, mainly from the ecological point of view. Therefore, two sediment cores were collected in the ponds formed by the floods, Patos pond and Garças pond, in order to characterize the sediment chemically and evaluate a possible historic contamination. The trace element concentrations As, Ba, Br, Ce, Co, Cr, Cs, Eu, Hf, La, Lu, Nd, Rb, Sb, Sc, Sm, Ta, Tb, Th, U, Yb and Zn (mg.kg^{-1}) and the major elements Si, Al, Fe, Ti, K, Ca, Mg, P, V, Mn, and Na (%) were determined in the sediment cores dated by ^{210}Pb method, using instrumental neutron activation analysis, X-ray fluorescence and gross beta counting, respectively. The results obtained for the elements Ce, Cr, Cs, La, Nd, Sc, Sm and Th are higher than the values of Upper Continental Crust for both ponds. The sedimentation rates obtained for Garça pond, 0.77 cm.y^{-1} , and Patos pond, 0.62 cm.y^{-1} are in agreement with studies performed in sedimentary environments similar to the present work, such as Brazilian wetland Pantanal. The enrichment factor and the geoaccumulation index were used to assess the presence of anthropogenic sources of pollution.