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CHEMICAL CHARACTERIZATION OF BOTTOM SEDIMENT SAMPLES FROM ADMIRALTY BAY, KING GEORGE ISLAND, ANTARCTIC

D.I.T. Favaro[1], G.P. M. Cavallaro[1], P.S.C. Silva[1], B.P. Mazzilli[1], E.S. Braga[2], G.B.B. Berbel[2]

[1]Instituto de Pesquisas Energeticas e Nucleares /CNEN -SP, São Paulo, São Paulo, Southeast, Brazil, [2]Instituto Oceanográfico - Universidade de São Paulo, São Paulo, São Paulo, Southeast, Brazil

In the context of the Brazilian Antarctic Program (PROANTAR) two sampling trips were undertaken in two Antarctic summer periods (2003/2004 and 2004/2005). In this paper the results obtained in these campaigns for the elemental characterization of the upper bottom sediments are presented. About 20 samples were collected in Admiralty Bay, on Bransfield strait, King George V (62°05'S and 58°25'W) Island. Trace elements (As, Ba, Br, Co, Cr, Cs, Hf, Rb, Sb, Sc, Ta, Tb, Th, U, Zn), rare earth elements (Ce, Eu, La, Lu, Nd, Sm, Tb and Yb) and major elements (Fe, K and Na) were determined by using instrumental neutron activation analysis. Organic carbon, nitrogen, sulphur and phosphorus were determined in the sediment samples as well. For total mercury determination FIA-CV-AAS technique was employed. The validation of both methodologies was performed by certified reference materials analysis. The concentration of total mercury in the sediment samples varied from 10 to 70 μg kg^{-1} in all samples distributed along Admiralty Bay. The mean concentrations obtained for all elements analyzed, considering all sampling points in each campaign, are close to previous results (summer campaign 2002/2003) confirming that they represent the background of the region. The results obtained for As and Hg concentrations in sampling point 18 located at Mackellar Inlet are higher than expected for the region. Such behavior was verified in a previous campaign (2002/2003) confirming that this point is under influence of accumulation processes or intense input from the soil of the region. In summer 2004/2005, the average value of organic carbon was 0.19% (<0.01 % to 0.41 %). In relation to the total nitrogen, all values were less than 0.17 %, while total sulphur in the sediments varied from 0.10 to 1.64 %. The average value for organic phosphorus was 3.69 μmol.g^{-1} (0.48 to 10.66 μmol.g^{-1}), while the inorganic phosphorus presented values between 24.71 to 50.18 μmol.g^{-1}, corresponding to a range from 73 to 99 % of total phosphorus. ANOVA will be applied to the elemental concentrations obtained in both campaigns for the sediment samples in order to verify if there is significative difference among these values.