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ATMOSPHERIC DEPOSITION OF TRACE ELEMENTS IN OMBROTROPHIC PEAT AS A RESULT OF ANTHROPIC ACTIVITIES

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Ombrotrophic peat can be defined as a soil rich in organic matter, formed from the partial decomposition of vegetable organic material in a humid and anoxic environment, where the accumulation of material is necessarily faster than the decomposition. From the physical-chemical point of view, it is a porous and highly polar material with high adsorption capacity and cation exchange. The high ability of trace elements to undergo complexation by humic substances happens due to the presence of large amounts of oxygenated functional groups in these substances. Since the beginning of industrialization human activities have scattered a large amount of trace elements in the environment. Soil contamination by atmospheric deposition can be expressed as a sum of site contamination by past/present human activities and atmospheric long-range transport of trace elements. Ombrotrophic peat records can provide valuable information about the entries of trace metals into the atmosphere and that are subsequently deposited on the soil. These trace elements are toxic, non-biodegradable and accumulate in the food chain, even in relatively low quantities. Thus studies on the increase of trace elements in the environment due to human activities are necessary, particularly in the southern hemisphere, where these data are scarce. The aims of this study is to evaluate the concentrations of mercury in ombrotrophic peat altomontanas coming from atmospheric deposition. The study is conducted in the Itatiaia National Park, Brazilian conservation unit, situated between the southeastern state of Rio de Janeiro, São Paulo and Minas Gerais. An ombrotrophic peat core is being sampled in altitude (1980m), to measure the trace elements concentrations of this material. As it is conservation area, the trace elements found in the samples is mainly from atmospheric deposition, since in Brazil don't exist significant lithology of trace elements. The samples are characterized by organic matter content which is determined by calcination and pH. For the determination of mercury, an aliquot of 10 mL of sample with 5 mL of the reducing agent 2 % SnCl2, purged with air by atomic absorption spectrophotometry by cold vapor, EAAVF is being used. The determination of other trace elements (Zn, Cd and Pb) is analyzed by flame atomic absorption spectroscopy (FAAS).