FLUXES OF SOLUTE IN TWO CATCHMENTS WITH CONTRASTING DEPOSITION LOADS IN ATLANTIC FOREST (SERRA DO MAR/SP-BRAZIL).

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RESUMO

Fluxes of solutes for two small catchments with contrasting deposition loads (polluted and natural) in the Atlantic Forest (Serra do Mar/SP-Brazil) were computed for rainfall, throughfall, soil water and stream flow (December 1999 until May 2002). One catchment (URBAN) is inside the largest metropolis of South America (São Paulo city) and the other (REFERENCE) is located inside the Serra do Mar State Park. The determined chemicals in solution were: Na^+, K^+, Mg^{2+}, Ca^{2+}, NH_4^+, Cl^-, NO_3^- and SO_4^{2-}. The rainfall fluxes indicate that in the URBAN catchment the nitrate deposition is the main responsible for the rainfall acidity while in the REFERENCE there is no sign of acidic deposition. The net fluxes in throughfall are derived from dry deposition and rainwater interaction with the canopy and indicate a significant difference in the nutritional status of the vegetation. In the REFERENCE catchment the natural cycles are in equilibrium. This is indicated by the Cl^- input-output relationship and, therefore, this area can actually be used as a reference for small catchments comparative studies. The exports of base cations from the URBAN catchment are high mainly due to the presence of high amounts of strong acid anions in the input. The nutrient input-output relationship for the URBAN forest presents a strong indication that the atmospheric pollution is acidifying the drainage waters and damaging the vegetation. This acidification will lead to vegetation decline that, after a certain time, will make the forest susceptible to illnesses, droughts and insect attacks.