CARBON FLUXES FROM THE PARAÍBA DO SUL RIVER BASIN TO THE SOUTH ATLANTIC

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During one year stream samples were collected at 7 stations in the lower portion of the Paraíba do Sul River Basin (57,000 km2), in Brazil Southeastern. Outlet flows ranged from 400 to 2350 m3.s-1 resulting in a discharge of 27 km3.year-1 that represented 28% and 6 % of Eastern and Southeastern South America estimatives, respectively. Organic and inorganic dissolved carbon, and total particulate carbon concentrations range were: DOC = 45-470 µM; DIC = 320-480 µM; CP = 1.8-6.5 %. Output fluxes (kg.ha-1.year) were: DOC = 14.6; DIC = 22.6; CP = 8.43. Elemental - (C:N)a - and isotopic - 13C – compositions of soils, bed fluvial sediments, and suspended particulate material were compared with those of some conceivable sources. Results indicated that the influence of the sugar cane production increasing C fluxes cannot be ignorred. Although the influence of domestic sewage has also been detected, this could not be evaluated. Terrestrial inputs from the surrounding soils were larger than those from insular soils, which seem to work primarily as biogeochemical barriers rather than as C sources. Phytoplankton was identified as an important component of the biogeochemical processes in low flow condition. Although the Paraíba do Sul River loads represent a small percentage of the fluvial input to global cycles, it was observed that together, this and other small and medium sized watersheds in South America make significant contributions to the continental material inputs to the South Atlantic, and that this fact has not been considered on the estimated global fluxes published.