

Carbon in the Amazon Basin: Behaviour, Distribution and Flux

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The Amazon basin is one of the greatest in the world. The largest tributaries are: the Negro characterized by low pH, low mineral content and high carbon concentrations; the Solimões and Madeira which are characterized by a pH between 6 and 7, high mineral content and lower concentrations of carbon.

During four years (1994-1998), intensive cruises has been performed in the Amazon basin to determine the distribution, behavior and flux of organic particulate and dissolved carbon in five tributaries and in the Amazon mainstream.

Carbon concentrations in the different tributaries were very variable, but dissolved organic carbon always represent the major fraction of total organic carbon (~70%). Mean concentration of dissolved organic carbon in the Madeira was 6.1mg l⁻¹, in the Solimões, 5.83 mg l⁻¹, and in the Negro river, 12.7mg l⁻¹. Percentage in weight of particulate organic carbon varied inversely to suspended matter, which is a normal pattern in almost all rivers of the world. In Madeira river particulate organic carbon represents 16% of the total organic carbon, in the Solimões 19% and in the Negro 9%. The greatest contribution in carbon to Amazon river mainstream is by Solimões river c.a. 500 kg C s⁻¹ in high water stage and c.a. 300 kg C s⁻¹ in low water stage.

Finally, implication on these results on the carbon fluxes from Amazon River to the Atlantic Ocean is discussed.