



Properties and reactivity of aquatic organic matter from an Amazonian floodplain system

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The aim of this study was to characterize the nature of the bulk dissolved organic matter (DOM) in different types of environments in the Amazon River-floodplain system and determine the importance of two different fractions of dissolved organic matter onto adsorption processes that occurs through the transport of organic matter in the Amazon Basin. Seven samples were collected in the Amazon River – “Lago Grande de Curuá” floodplain system, in rising water levels cruise (March 2006). The samples were taken in the Amazon main stem, in white and black floodplain waters, and in the middle of a phytoplaktonic bloom. The bulk, dissolved (i.e. < 0.22 micrometer), hydrophobic (HPO) and transphilic (TPH) fractions extracted by XAD-8 and XAD-4 columns chromatography respectively were isolated. Organic carbon (OC) and total nitrogen (TN) concentrations, Specific UV absorbance (SUVA), Size-Exclusion Chromatography (SEC), d₁₃C and d₁₅N isotopes, and reactivity (acid-base titration) were characterized for these fractions. Adsorption experiments onto mineral phase from de surface sediment of the Curuá floodplain lake (rich in smectite and kaolinite) were realized with HPO and TPH fractions. The OC concentrations in the natural organic matter (Bulk and < 0.22 micrometer fractions) varied between 3.7-5.7 mg/L. The OC and TN concentrations varied between 510 – 528 mg C/g in the HPO fraction, and 408 – 462 mg C/g in the TPH compounds and between 14.3 – 17.6 mg N/g (HPO), and 22.1 – 30.0 mg N/g (TPH). The molecular weight of both fractions (HPO and TPH) didn't present significant variation. Both fractions presented high aromaticity and they were rich in carboxylic groups, although smaller values are systematically reported for the HPO fractions. The OM of the main stem was the most adsorbed, followed by the white water lake, the phytoplaktonic bloom, and black water lake sample. These results helped us to strengthen the hypothesis that the organic matter carried from the river and sediment in the floodplain is closely associated with mineral phase.