

SOURCES OF ORGANIC MATTER TRANSFERED FROM SOILS TO RIVERS IN THE RIO NEGRO BASIN

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Despite their low abundance in soils, dissolved organic matter (DOM) play a major role in pedogenesis and in the fate of different elements in soils because of their reactivity and mobility. For example, their acidic and complexing properties can enhance mineral weathering. They can form soluble organo-mineral complexes with the metals subsequently released (e.g. Fe, Al) and therefore enhance the mobility of these elements and play a key role in their transport. The migration of DOM, possibly complexed with metals, can lead to the redistribution of organic carbon within soil profiles and to their exportation towards river networks. Both phenomena are implied in podzolisation. In the upper Amazon Basin, this pedogenetic process is widespread. In podzolic systems, the exportation of brown-coloured OM, together with Fe and Al, is responsible for the coloration of black waters in the Rio Negro basin (Patel-Sorrentino *et al.*, 2007). However, little is known about the characteristics of DOM in podzolic systems of the low elevation plateaux in the Rio Negro basin, and about the contribution of the different soil horizons to the exportation of elements.

In order to address the aforementioned questions, water-soluble compounds were studied in a representative soil catena showing the transition between a latosol and a well-developed podzol (Nascimento *et al.*, 2004). Seven key samples were studied in order to account for both vertical and lateral differentiation of podzols. In order to get enough material, aqueous extracts of air-dried samples were studied instead of soil solutions. Water-soluble organic matter thus obtained therefore represent compounds which are potentially mobile in the sequence. The aqueous extracts were compared with natural waters draining the soil catena. These natural water samples were collected from the perched water table bathing the podzols and the brook draining the sequence. As a large part of organic matter is present in the colloidal form in the Rio Negro, aliquots of both aqueous extracts and natural waters were

treated with Tangential-Flow Ultrafiltration (TFU) in order to get size fractions corresponding to particulate, colloidal and dissolved organic matter.

Conductivity, pH and dissolved organic carbon were measured and UV analyses were performed on all aqueous extracts. Comparison with natural waters reveals similarities between the DOM exported from the sequence and the DOM present in the water extract of deep B horizons in the well-developed podzol. Additional spectroscopic (FTIR) and pyrolytic analyses are under progress in order to characterize at a molecular level the chemical structure of organic matter in aqueous extracts and natural water samples. This will allow to test the general character of the previous observations.

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