The Amazon River: behaviour of particulate and dissolved matter in the initial mixing at the Rio Negro/Solimoes confluence

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We studied the changes in major elements and organic carbon concentrations during the initial stage of the mixing of black (Rio Negro) and white (Rio Solimoes) waters in the Amazon River basin to understand the geochemical processes that could control the redistribution between particulate and dissolved fractions. Water samples were collected at 13 stations including the Rio Negro and the Rio Solimões and stations downstream from the confluence. The relative contributions of the two tributaries were determined using a single tracer approach. Particulate (>0.2 μm) and dissolved (<0.2 μm) concentrations of major elements (Ca, Mg, Fe, Al, Si) and organic carbon (POC and DOC) were measured. Major elements in the particulate fraction were found to have a nonconservative behaviour in the initial stage of the mixing due to mineral removal. In the dissolved fraction, conversly to previous results [1], the DOC, behaved conservatively. The Fe losses could be due to preferential removal of Fe bound to N-rich organic matter (OM) and/or to preferential removal of Fe oxyhydroxides. The increasing dissolved manganese content in the dissolved phase could be explained by a reductive dissolution of manganese oxides due to massive inputs of phenolic-rich OM from lateral inputs like floodplains.

[1] Aucour *et al* (2003) *Chemical Geology* **197** 271–285