Geophysical Research Abstracts, Vol. 9, 02099, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-02099

Biogeochemistry of organic matter in an Amazonian floodplain lake, Lake of Curuai, Brazil

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The present study was carried out at Várzea do Curuai, an Amazon floodplain, Brazil. The floodplain is composed of white and black water lakes interconnected and permanently connected to the Amazon River. Dissolved and particulate suspended matter were collected on several periods according to the hydrological cycle (rising, high, falling and low water) at the different lakes and at the Amazon River in order to investigate the hydrological influence on organic matter sources. Dissolved (DOC) and particulate organic carbon (POC), dissolved (DON), particulate organic nitrogen (PON) and isotopic stable carbon (δ^{13}C) were determined. The results about two years (2004 and 2005) have showed that higher means of DOC were found in white water lakes (6.127-6.583 mg/L). These values are similar to founded at Óbidos (6.913 mg/L). Particulate fraction presented higher concentrations at the floodplain than Amazon River. PON and POC means observed at Óbidos were 0.194 e 1.892 mg/L, respectively. DOC was the main fraction during the rising and high water periods. However, particulate fraction dominated the whole system on the low water period, probably due to ressuspension process from surficial sediments. Higher values of C/N rate were observed during rising and high water periods and the lowest ones were founded on low water period. The C/N rates ranged between 6 (phytoplanktonic sources) and 12 (terrigenous organic matter from Amazon basin). The means of δ^{13}C founded at Amazon River (-27.04‰ e -28.02‰) were higher than it were noticed for white water lakes (-22.96‰ to -27.50‰), while the means of black water lakes ranged from -26.19‰ to -31.03‰. These results suggest the organic matter of the floodplain present spatial and temporal variations, showing the complexity of this system.