



## **Role of floodplains on particulate organic matter transported by the Amazon River: nature, flux and composition**

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Amazon River and its large tributaries are accompanied along their middle and lower courses by large floodplain lakes which cover an area of about 300 000-500 000 km<sup>2</sup>. Water and matter are constantly exchanged between river channels and floodplain lakes. The flux at which organic matter is transferred to and from lakes such as the nature and composition of organic matter exchanged between the two systems, and the residence time of floodplain storage, are few known and have a special importance for the carbon cycle in Amazon basin. The nature, composition, sources and exchange of particulate organic matter have been studied in an Amazonian river-floodplain system during different water periods along five years. The floodplain selected for this study was the “Varzea do Lago Grande de Curuai” a typical floodplain of the lower Amazon River region.

The results show that the organic matter exchanged between systems is particularly influenced by the temporal hydrology patterns. The Amazon River organic matter was relatively homogenous at different water periods; contrarily, the floodplain organic matter presents a spatial and temporal variation, attesting the high complexity of this system.

The nature of the organic matter imported by the floodplain from the River shows a very refractory and detrital feature. On the other hand, the organic matter produced by the floodplain and, in great portion, exported to the River is characterized by being very labile and fresh. This organic fresh matter is mainly composed of phytoplankton and macrophytes detritus. The organic matter produced in the floodplain can be degraded on the water column or on the superficial sediments or exported to the Amazon River, mainly during the falling water period, while a fraction can be buried in the floodplain mixed with the organic refractory matter transported by the Amazon River. During the rising-high water period, Amazonian organic matter sources are dominant in the floodplain, whereas during the falling-low water period, autotrophic organic matter dominates in the floodplain. Our results show that the Amazon floodplains are important sources of young and labile particulate organic matter to the Amazon River and seem to be a sink to the most refractory organic carbon transported by the Amazon River.