



## **Characterization of organic sedimentation in an Amazonian floodplain by lignin phenols, Lago Santa Ninha, PA, Brazil.**

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Floodplains are areas of carbon production, storage and exportation. The Amazon River and its tributaries are accompanied in its low course by floodplains that cover an area of about 300,000-500,000 km<sup>2</sup>. There are many different vegetal communities in the floodplain and its drainage basin. Changes in the community structures have an influence in the quantities and kinds of organic matter deposited. The TA11 core was collected in the Santa Ninha Lake, 3.5 km from the channel that connects the floodplain to the Amazonas River. Samples have been collected from the following plants found in the region: Aquatic *poaceae*, *Pistia stratiotes*, *Echinochloa polystachia*, *Echinochloa spectabilis*, *Eichornia azurea*, *Eichornia crassipes* and *Paspalum repens*. Elementary analysis (C,N), isotopic analysis (C,N) and molecular analysis (lignin phenols) have been performed on these samples and on the sediment.

Lignin is a biomarker found in the vascular plants. It is divided in four different groups of phenols and the reasons between the groups reveal the contribution of the terrestrial vegetation to the whole organic matter and may be used to set apart different organic matter sources. Researches about the vegetal distribution and the focus of phenols that come from the lignin of lacustrine cores may reveal information about the taxonomic changes in the terrestrial paleovegetation and consequently about the

paleoenvironments and paleohydrology of the floodplain.

The aquatic *poaceae*, *Echinochloa polystachia*, *Echinochloa spectabilis*, and *Paspalum repens* present the highest values from  $\delta^{13}\text{C}$  (-12.5; -12.7 and -13.1 respectively), typical of C4 plants and high values of lignin (5.97; 8.51 e 16.50 mg/100mg CO). Three different rates of sedimentation have been observed in the TA11 core: 0,42; 1,16 and 1,10 g m<sup>-2</sup> yr<sup>-1</sup> which allowed to estimate the core base age at about 110 years. The core average for lignin is 1.96mg/100mg CO. At the depths of 30.5; 30 e 110 cm, lignin values are 3.23; 3.86 and 2.95 mg/100mg CO respectively, some of the largest in the region. In all the sub-samples analyzed, the values of the Siringil group were larger than the values of the Vanilil group. These data indicate a high contribution of organic matter from woody origin in the floodplain sedimentation. Although phytoplankton production is high in these systems, this more labile matter is probably degraded in the water column during settling and resuspension phases.