

Carbon dynamics along small streams in agriculture catchments in Eastern Amazonia

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Carbon dioxide evasion from aquatic ecosystems in Amazonia has been shown to be important in the regional carbon balance. It has been suggested that the main source of the evaded CO₂ in a river basin is the particulate and dissolved organic matter that is exported from the forest at headwaters and along the river and stream edges. In this context studies have been conducted to trace dissolved organic carbon (DOC) and pCO₂ fluxes at the water-atmosphere interface, searching to identify the main sources of carbon responsible for the carbon input to water bodies in the Amazon region. The work presented here has been developed in three small catchments (Cumarú, São João and Pachibá) in northeast of Pará state, in Brazil. These catchments are mainly occupied by small farms where cassava, corn, rice, cow pea, passion fruit and pepper are planted after slash-and-burn of the secondary vegetation (capoeira), which together with small pastures cover the rest of the catchments. Sampling for DOC and pCO₂ began in January 2006 and May 2006 respectively. We plan to sample until April 2007 but present here the first results. A trend of increasing DOC downstream has been identified. DOC concentrations ranged from 0.50 to 3.24 mg L⁻¹ in headwaters and from 1.92 to 9.00 mg L⁻¹ downstream in Cumarú. In the São João stream DOC concentrations ranged from: 0.21 to 3.69 mg L⁻¹ (headwaters) and 1.18 to 3.61 mg L⁻¹ (downstream). In the Pachibá stream the DOC range was: 0.79 to 4.32 mg L⁻¹ (headwaters) and 1.05 to 4.10 mg L⁻¹ (downstream). After complete surveys in soil characterization, land use and land cover, we will try to relate DOC spatial patterns to variation with physical properties of the catchments.

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