

Dissolved organic and inorganic carbon in small streams in Eastern Amazonia

Fabiola Fernandes Costa, Embrapa Amazônia Oriental, fabiolaffc@yahoo.com.br (Presenting)
Ricardo de Oliveira Figueiredo, Embrapa Amazônia Oriental, ricardo@cpatu.embrapa.br
Daniel Markewitz, The University of Georgia, DMARKE@warnell.uga.edu
Eric Atlas Davidson, The Woods Hole Research Center, edavidson@whrc.org

We conducted this study in streams situated in Paragominas and Igarapé-açu counties, in Pará state, Eastern Amazonia during the year of 2005. The streams in Paragominas were: Cinquenta e Quatro (Cq), Sete (St) e Pajeú (Pj). In all three catchments, the dominant soil type is clay Oxisols. Remnant forests are common in the headwater areas and other land use (pastures, crops, and secondary vegetation) dominate downstream. The stream in Igarapé-açu was Cumarú, where the soils are sandy and small farms are the most important land use class, with areas of headwaters protected by secondary vegetation. The objective of this work was to evaluate the dynamics of dissolved organic and inorganic carbon (DOC and DIC) in these water bodies and its relationships with land use, identifying sources that contribute to the aquatic ecosystem and the seasonality of their concentrations. The maximum values in the Paragominas streams sampling stations were (Cq, St and Pj, respectively): pH (6.30; 4.66 and 4.82), conductivity (59.8; 32.7 and 75.8 $\mu\text{S cm}^{-1}$) and dissolved oxygen (DO) (6.32; 7.94 and 7.35 mg L^{-1}). The minimum values were: pH (4.23; 4.05 and 4.04), conductivity (25.5; 26.2 and 30.5 $\mu\text{S cm}^{-1}$) and DO (2.14; 4.10 and 1.83 mg L^{-1}). In these streams the concentrations of DOC varied between 0.24 and 9.84 mg L^{-1} , and DIC ranged from 0.33 to 8.43 mg L^{-1} . At Cumarú stream, in Igarapé-açu, the maximum and minimum values were: pH (6.22 and 3.62 - headwater; 6.11 and 3.85 - main channel), conductivity (62.0 and 3.7 $\mu\text{S cm}^{-1}$ - headwater; 39.7 and 7.7 $\mu\text{S cm}^{-1}$ - main channel) and DO (8.60 and 2.00 mg L^{-1} - headwaters; 8.70 and 3.30 mg L^{-1} - main channel). DOC varied between 0.01 and 15.13 mg L^{-1} (headwaters) and 0.56 and 16.00 mg L^{-1} (main channel). The highest DOC concentrations are related to higher discharges in both regions (Paragominas and Igarapé-açu). Higher DOC concentrations in Igarapé-açu compared with Paragominas data point to larger organic carbon leaching in sandy soils than in clay soils. Other conclusions can be reached after the finalization of the complementary studies that focus on the differences in land use, especially agriculture, the characteristics of the soils, leaching and overland flow processes.

Science Theme: ND (Nutrient Dynamics)

Presentation Type: Poster

Abstract ID: 99