Charcoal Particles Deposition in Three Tropical Lakes as Indicators of Regional Paleofires in Brazil

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Paleofires registrations were obtained through the charcoal particles flux analyses in lacustrine sediments of three Brazilian lakes: Dom Helvécio Lake (Minas Gerais, southeastern Brazil), Carajás N4 Lake (Pará, southeastern Amazonia) and Caracaranã Lake (Roraima, northeastern Amazonia). The charcoal particle flux is consequence of vegetation burning caused by dry climates associated or not to anthropogenic action. The charcoal deposition analysis could have a great importance for an evaluation of dry climate impacts in different tropical regions. Determination of the history of fires, their frequencies and intensity is the first step to understand the carbon transference between terrestrial and atmospheric systems. In D. Helvécio Lake, which is surrounded by semi-decidual forest, the fires occurrences were between 8,420 and 6,420 cal years BP, with maximum charcoal flux (36,500 particles cm^2 yr^{-1}) at 7,510 cal years BP. In Carajás Lake, surrounded by tropical rain forest, the fires occurrences were between 8,000 and 5,300 cal years BP, with maximum values (63,740 particles cm^2 yr^{-1}) at 7,180 cal years BP. In Caracaranã Lake, surrounded by grass savanna, after a fire occurrence phase at the beginning of Holocene, a second phase is marked by charcoal peaks at 7,680, 6,990 and 6,460 cal yrs BP, with maximum value of 3,640 particles cm^2 yr^{-1} at the middle peak. The synchronism among the fires occurrences show a good relation with the middle Holocene dry climate phase in Brazil. Differences in the flux values can be attributed to burning biomass availability and to intensity of dry events.