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Biogeosciences Discussions

Interactive comment on "Rainfall leads to increased pCO_2 in Brazilian Coastal Lakes" *by* H. Marotta et al.

Anonymous Referee #2

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Reviewer comments on "Rainfall leads to increased pCO2 in Brazilian coastal lakes" by Marotta et al. submitted to Biogeosciences.

This paper deals with changes in CO2 concentrations/emissions, pH, salinity and dissolved organic carbon (DOC) induced by rainfalls in 12 tropical coastal lakes located in Brazil. Even there are growing evidences that the carbon transferred from the watershed to lakes contribute very significantly to aquatic food webs and subsequent CO2 emissions (i.e., continental waters are "hot spots" for CO2 emissions), to the best of my knowledge, this is the first clear evidence that the transport of allochthonous carbon occurs during "hot moments", a few days after rainy events.

The main weakness of this good study is the lack of evidence of clear evidences for the proposed carbon routes. As mentioned by J Downing, the temperature dependence

of the pCO2 has to be evaluated. If available, analyses of the changes in conductivity or passive tracer concentrations (i.e., chloride...) could provide valuable information about the hydrology and thus potential CO2 and organic matter sources in these coastal lakes. In absence of such evidences, the statement that most of the additional CO2 found in lakes after strong rainfall events comes from groundwater is probably too strong. Is this hypothesis valuable for all the studied lakes?

Technical comments: in addition to the technical corrections mentioned by J Downing, details about replicates and analytic precision are required.

Interactive comment on Biogeosciences Discuss., 6, 11521, 2009.