

Interactive comment on “Hydrologically transported dissolved organic carbon influences soil respiration in a tropical rainforest” by W.-J. Zhou et al.

Anonymous Referee #3

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General comments This study aimed to determine the relationship between the DOC transported by hydrological processes and the seasonal variation of soil respiration in a tropical rainforest. The authors measured not only the DOC flux and soil respiration, but also ^{13}C natural abundance for each DOC sources to discuss both of the production and transportation of DOC into soil. The idea is novel and worth. The writing is easy to follow. However, there are still several problems below.

(1) The authors found that there was clear seasonal variability in soil respiration, increasing in rainy season and decreasing in dry season. The variation of soil respiration strongly correlated with soil temperature, more than those with soil moisture content and water fluxes. Does this mean seasonal variation from rainy season to dry season

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was clearer in soil temperature than in soil moisture content and water fluxes? Since rainy and dry season is generally defined by the amount of precipitation, it is hard to understand why the seasonal variation of soil respiration was explained by temperature, not water relating factors. The author should add the seasonal data of these explanatory factors in Fig. 2 to show how it looks like and also check the auto-correlation between them.

(2) There are no information how many locations where soil moisture content was measured. Since spatial heterogeneity of soil moisture content is very high in tropical forest ecosystem, certain amount of replicate is necessary.

(3) It is questionable whether the sensitivity of soil respiration can be compared between the different explanatory variables that has different ranges of variation. I think the range of seasonal variation have to be standardized to compare the sensitivity of SR between different variables.

Specific comments (1) Line 102, relative high: What means “relatively”? With what do you compare? (2) Line 128: It is unclear how many replicate each group has. (3) Line 155, in the soil of tropical rainforests: Reference is needed. (4) Line 158: You just mentioned the information of gas analyzer. Please explain how you measured soil respiration using the analyzer. (5) Line 298 sensitivity indices: I recommend you to explain this in the Calculation and statistics. (6) Line 422-429: This is a repeat of previous sentences.

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