

Interactive comment on “Streamflow response of a small forested catchment on different time scales” by A. Zabaleta and I. Antigüedad

Anonymous Referee #2

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I read with interest the paper of Zabaleta and Antigüedad. I believe the authors use an interesting approach combining (in successive steps) different types of analysis to understand the hydrological functioning of a forested temperate catchment. The results of a first analysis suggest some clues about the hydrological functioning of the catchment and further analysis (using different techniques and scales) help to check or deepen into that hydrological functioning. It could be compared to a “detective work” and in this sense the overall approach is very nice. However, I think the authors do not achieve it completely. I miss a closer relation (or better explanation) between the results obtained from the autocorrelation + spectral analysis at the daily scale and those obtained at the event scale (correlations between variables and EC evolution). For instance, they say “the catchment response has two components. The first corresponds to the influence

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of the quicker surface flow ... while the second component could be interpreted as the later influence of slower flow from other parts of the catchment. ...” The quickflow component could be related to i) saturation excess runoff or ii) infiltration excess runoff or even iii) translatory flow. The results at the event scale can not suggest whether is i, ii or iii? Other questions that arose through the reading: Have the authors observed soil saturation patterns? When you say “the influence of the quicker surface flow”, how do you know is surface flow? After reading the paper I could also think of translatory flow, ie, new water pushing old water..? Why the authors do not consider this process? Can they give details on where in the catchment they think “infiltration excess runoff” occurs (I believe it is a catchment cover by forest 100%..?) The authors talk about a slow flow component but do not mention subsurfaceflow (only at the very end there is a quick reference), is there a reason for that? Finally, they should better explain in the introduction why it is interesting this research. “Understanding those processes is essential for managing the quality and quantity of runoff especially when environmental conditions (climate or land use) are changing...” eg, is climate or land use changing in the study area?

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