

Interactive comment on “Technical Note: Monitoring streamflow generation processes at Cape Fear” by Flavia Tauro et al.

Anonymous Referee #2

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The manuscript of Tauro et al. presents an artificial hillslope plot equipped with different devices for the measurement of output discharge, soil moisture, surface runoff, rainfall and sediment load. The aim of this paper is to show that the monitoring system is suited to study runoff generation and related processes at the hillslope scale. To this end, phenomena and fluxes observed during a natural storm event were presented and discussed. As a whole, the manuscript addresses relevant scientific questions within the scope of HESS. However, in my opinion, the Ms is in its current version not suitable for publication. Artificial hillslope plots are well-known. Thus, I believe that discussing the feasibility of the experimental setup for studying runoff generation processes is not enough for getting published in HESS. In my opinion, the paper would have a larger scientific impact if the authors show how they use their experimental design to address scientific questions as outlined at the end of the Ms (page 12, 5-10).

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Other comments 1. State of the art of artificial hillslope plots is not well covered in the introduction. Artificial hillslope plots are well-known. For instance, I have seen many of such plots in different regions of China. So, it needs to be shown what is new about the presented approach. 2. The structure of chapter 2 should be revised. (a) plot description, (b) devices/ measurements, (c) lab measurements, (d) specific field experiments (e.g. storm event). The rainfall simulator should be described as well. 3. Why do you not use HYDRUS 2/3D for modelling (page 7, 15-25)? Much more could be learned by combining your measurements with 2/3D modelling! The geometry of your plot, the upper and lower boundary condition as well as the outflow is well known. 4. I know the budget is always limited but if feasible I would recommend installing full-range tensiometer at different depths and positions. It would significantly improve your knowledge about the role of your soil in runoff generation. 5. You may do an irrigation experiment for the inverse determination of the soil hydraulic properties of your artificial plot (the plot needs to be covered by a plastic cover after irrigation). As mentioned before, soil pressure head measurements in combination with 2/3D Hydrus modelling would make that feasible. An evaporation experiment according to Wind might be also possible if you could install more soil moisture probes for accurate balancing of the evaporative fluxes.

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