

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

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We thank Referee #2 for the review of our work. Here, we clarify several issues and provide responses to major comments raised by the Referee.

We are grateful that Referee #2 correctly stated the objective of our manuscript. In our opinion, our work is in line with the requirements of HESS Technical Notes and is expected to help experimental hydrologists by describing novel methods and techniques for scientific observations. In the following we reply to the specific points raised by Referee #2.

1. Artificial catchments are far from being a well-known topic and several research groups worldwide are building their own experimental setups to test hydrological hypotheses and questions. Most frequently, relatively small plots or flumes are routinely

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established at the laboratory scale to respond to simplified questions. More comprehensive “hybrid” outdoor setups, such as the one presented in our work, that interact with external natural agents, are more rarely designed and reported in the literature. We agree with Referee #2 that the literature cited in the Introduction could be improved upon his/her suggestion of specific studies related to our work. However, we remark that we have done our best to cover the existing literature on the subject, and Referee #2 did not provide any additional reference to previous work on artificial hillslopes. Thus, in variance with the Referee’s statement, we do believe that the topic is not settled yet, being still a matter of research. Our manuscript for HESS Tech-note has also the scope of forming a contribution to a discussion on this topic while providing some preliminary outcomes.

2. We agree with Referee #2 that Section 2 on Materials and Methods could be somewhat restructured according to his/her suggestions. We will be happy to include a thorough characterization of the rainfall simulators which was left out from the original submission for the sake of brevity.

3. With regards to HYDRUS-1D simulation, the analysis was conducted to provide simple but sound insights on soil functioning at Cape Fear, not a thorough simulation of water flow in the soil. Such analysis provided a benchmark to test the reliability of the soil response recorded by the sensors and the accuracy of the laboratory-based soil hydraulic characterization. We will better point out the objectives of the analysis in the revised version of the manuscript.

4. We agree with Referee #2 that much more could be learned by combining our measurements with modelling with HYDRUS 2/3D. Indeed, the preliminary soil characterization was purposely conducted in the laboratory on soil samples. Higher dimension investigation of Cape Fear soil response is the objective of future studies.

5. As correctly suggested by Referee #2, future studies will also aim at conducting a hillslope-scale evaporation experiment. While these research directions are certainly

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interesting, in our opinion, they deserve dedicated analyses and contributions, well beyond the present Technical Note.

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