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Discussions

Interactive comment on "High-resolution estimation of the water balance components from high-precision lysimeters" *by* M. Hannes et al.

Anonymous Referee #1

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Overview

The study investigates different filtering schemes for processing lysimeter measurements in order to obtain high temporal resolution data of the different fluxes, i.e., precipitation, evapotranspiration and drainage. Two months of data obtained from 18 lysimeters of the TERENO SoilCan research site in Germany are used as case study.

General Comments

The paper is well written and clear and the topic is of interest for the readers of HESS journal. Indeed, the possibility to obtain high temporal resolution of precipitation and evapotranspiration from lysimeter data is an important result that can be very useful in many applications. However, I found the paper describing a technical procedure with

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little advances in terms of science. Therefore, I found the paper more appropriate as technical note instead of scientific paper. I listed below three general comments to be addressed before the publication.

1) The first question raised in my mind is related to the costs. It is shown in the paper that lysimeters can be very useful for estimating high-quality rainfall, evapotranspiration and drainage fluxes, also with high temporal resolution. However, I was wondering what are the costs of a lysimeter measurement system? I believe that a network of 18 lysimeter sensors is quite expensive, but likely I am wrong. How do they compare with standard raingauge or eddy-covariance sensors? What are the maintenance costs? What is the actual applicability of lysimeter data for hydrological applications? I would like the authors address some of these questions in the paper.

2) I was wondering what is the impact of using a dataset for a period of only 2 months on the results. I am aware that it is not easy to obtain lysimeter data, but I believe that the analysis with only 2-month might be not enough to really understand the goodness of the filtering scheme proposed in the paper. Very likely, in another season different results will be obtained. Is it possible to extend the analysis period? If this is not the case, I suggest the authors to add some comments on this issue.

3) The first step of the processing scheme is the manual filter. While I fully understand the importance of the visual inspection of the data, this manual step does not allow applying the filter automatically, and hence may strongly limit the operational use of lysimeter data (e.g., for flood forecasting as reported in the Introduction of the paper). Can the authors add some comments on that? Specifically, what is the impact on the results if the manual filtering step is removed? We can accept a slight deterioration of the results if the processing scheme can be applied automatically.

4) Finally, I believe that the authors should add the information about the availability of the filtering code. Do the authors make the code freely available? This would be highly important for the users of lysimeter data and it will be important to increase the

relevance of the paper (at least in my opinion).

Below I added some specific comments that should be addressed.

On this basis, I believe the paper deserves to be published after a moderate revision.

Specific Comments (P: page or pages, L: line or lines)

P572,L20: typo: "ocuur"

P575,L1: typo: "floodforecasting"

P575,L5: change "to what extend" in "to what extent"

P579,L2: Can the authors quantify "noticeable deviations"?

P580,L13: Is ET the potential or the actual evapotranspiration? Please specify.

P590,L15: "on the detailed control of the pumps at the lower boundary". Can the authors specify better this sentence?