

Manuscript HESS-2016-307: Picturing and modelling catchments by representative hillslopes by Loritz et al.

The authors carefully revised the manuscript according to comments and suggestions raised by the two reviewers as well as the editor. The revised version of the manuscript improved significantly compared with the original submission. Nevertheless, I ask the authors to consider the technical details/comments listed below when they elaborate the revision.

Detailed comments

Lines 12-3: Justify the need of this approach at the beginning of the abstract.

L66-70: Diffusion equation for lateral flow has been recently coupled with 1D vertical dual-continuum Richards equation for prediction of preferential hillslope stormflow.

L131-3: Add a few references on the previous applications of this idea.

L193-4: Delete areas in the parentheses, these are presented once again below.

L202-3: Refer to Figure 2A.

L216-7: “The lack of significant observations of base flow ...” – this is awkward, rephrase.

L273-4: Was ERT surveying performed also in marl area? Perhaps not, please explain the reason. It would be good to have ERT representation from both areas (hillslopes).

L298-300: Show the stations in Figure 1.

L325-6: Improve English.

L343-5: Delete “along the soil surface”.

L374-5: Description of seepage face boundary condition is not clear. I assume the outflow only under saturated and no flow under unsaturated conditions.

L383-6: Compare Figure 5A and 5B.

L483-4: Can you provide individual flow contribution (overland and subsurface) to hydrograph?

L556-8: “18 mm min⁻¹”.

L561-3: Maybe I missed it, but how were the infiltration fluxes treated during the winter periods on the soil surface boundary (atmospheric boundary condition)? How was snowmelt determined?

L569-72: Value of saturated hydraulic conductivity was most likely increased instead.

L608-10: Close the parenthesis.

L622-5: This might be also explained by the calibration curve used to obtain soil moisture data. No information on this was given. It is very unlikely that permanent wilting point was reached during the winter period.

L632-4: Use “... the simulated transpiration fluxes ...” rather than “the simulations”.

L638-40: Delete “presented model”.

L643-5: Delete “partly”.

L669-72: Delete comma after the reference.

L681-4: I would also mention hillslope and catchment water storage.

L705-6: Need to show units.

L709-12: Delete the first “that”.

L725-7: Delete “it”.

L752-3: “... we are aware of the fact that ...”

L802-5: Improve English.

L819-21: Delete comma after the reference.

L979-80: Technical report?

L1074-5: Improve the reference.

L1232-3: Instead of “measured” use “determined”.

L1233-5: “Though” – typo.

L1278-80: Delete the units.

L1288-90: Sink term represents mass change per volume. How the water stress function is incorporated in the model (Feddes type)?

Figure 1: The boundary of Attert catchment is shown as dashed line on map, while solid line is used in the legend.

Briefly indicate what information is obtained from the cluster stations.

Figure 3: Color of the vertical and lateral macropores at Wollefsbach catchment (D) is not similar to red color shown in the legend.

Figure 4: Add the dimension of the square(s).

Figure 7: Please check the units of soil water content.

Table 3: Please check the horizontal alignment of logNSE values.