Response to the interactive comment on the manuscript hess-2020-372

"Event and seasonal hydrologic connectivity patterns in an agricultural headwater catchment"

by Lovrenc Pavlin, Borbála Széles, Peter Strauss, Alfred Paul Blaschke, Günter Blöschl

We wish to thank the Editor and the two Referees for the time they spent on our manuscript and for the chance to improve it by giving us positive and constructive comments. In the following document, we reproduce all the comments of the Referees in *italic characters* followed by our answers. Numbers in brackets (highlighted in yellow) indicate the line numbers in the Marked Manuscript with tracked changes (deleted text is in ~~red~~ and new text in blue characters), which was uploaded as a separate PDF. The revised manuscript without the tracked changes was also uploaded as a separate PDF.

Editor

Dear authors,
The revised version of your manuscript has been positively evaluated by two anonymous referees. I concur with both reviewers that your study needs minor revisions.
Please, prepare a revised paper along with a response letter indicating your changes.
Many thanks.
Kind regards,
Mariano Moreno de las Heras
Handling Editor

> We are thankful for the positive evaluation and the opportunity to improve our manuscript. We have carefully considered and addressed the Referees' comments and adapted the manuscript accordingly as detailed below. We also proofread the manuscript to improve its readability.

Anonymous referee #1:

We thank the Anonymous referee for the thorough read of the manuscript. We accept the proposed spelling and grammatical corrections.

We added the missing symbol for groundwater stations in Fig. 1. We also added the TPI and slope ranges for each landscape unit to the figure caption as requested.

We rephrased the description of variables in the equation (1), as: "where θ is the mean volumetric soil moisture content; θ_i is the volumetric soil moisture content at *i*-th sensor and D is the soil column depth (60 cm). d_i is representative column height of *i*-th sensor determined as the distance between midpoints to the sensor above and below *i*-th sensor (e.g. d_1 to d_4 are 7.5, 7.5, 20 and 25 cm). Representative column of top-most and bottom-most sensors extend up to the ground surface and down to D, respectively. If measurements from one or two sensors are missing the d_i are adjusted so that working sensors represent more of the soil column." (lines 154-160)

The referee's comment: "Are these values larger than the measurement errors?" about the minimum change in the groundwater table and soil moisture content (Section 2.5).

> The selected the minimum change values are larger than the resolution of the measurement devices and in the same order of magnitude as the accuracy. We use these limits to differentiate between event responses and random fluctuations. We visually inspected the responses close to these limits.

Anonymous referee #2:

There is only one minor issue related to the new sentence in L662 "Previously, Exner-Kittridge et al. (2016) found that in the HOAL about 39% of the yearly stream baseflow was due to the net diffuse groundwater flow from the riparian zone and that they are positively correlated". It is not clear what "they" refers to?

> We rephrased the paragraph as: "Previously, Exner-Kittridge et al. (2016) found that in the HOAL about 39% of the yearly stream baseflow was due to the net diffuse groundwater flow from the riparian zone. Baseflow and diffuse groundwater flow were also positively correlated. This is consistent with the high seasonal correlation between streamflow and groundwater in the riparian and lower slope stations."(lines 651-654)