

Interactive comment on “Technical note: Water table mapping accounting for river-aquifer connectivity and human pressure” by Mathias Maillot et al.

Anonymous Referee #1

Received and published: 24 July 2019

Thank you for your reply to my comments. Nevertheless, I would like to point out a number of issues that have not properly been addressed. Below, page and line numbers refer to the new version of the article.

Regarding question (i) stated at the end of the introduction: I understand you do not want to make the suggested additional work, because you simply modified this question. It would have been more honest saying it explicitly... And it is a pity: the paper would greatly benefit from highlighting the improvements induced by the proposed methodological refinements.

Regarding question (ii) stated at the end of the introduction: you explicitly replied that

C1

you do not address this question in this paper. Fair enough, but then, the question should be removed!!

P1 L14: Refer to Brunner et al. (2009) for these three connectivity status.

P1 L20: The reference to Bresciani et al. (2016) should better be put at the end of the sentence together with the reference already there.

P2 L14: Bresciani et al. (2018) did not use fuzzy logic or neural network. They used the diffusion kernel interpolation method. Please correct this.

P2 L27: “Thereafter” should be removed and a new sentence should start.

P2 L27: Change “shallow groundwater” for perhaps “relatively humid climate”.

P4 L7-8: I still do not understand the reason for smoothing the DEM. How are your UZD measurements taken? If they are taken from dipper, I would think that the exact topographic level must be used, and not a smoothed one.

P4 L 8-9: Again, clarify the search radius. “in agreement with...” is cryptic. What did you precisely do?

P4 L10-13: This is also unclear: what did you do about this bias?

P4 L18-29: This part is still very much unclear. First of all, there should be a conceptual discussion about the effect of pumping. Namely, it must be recognized that the effect of pumping is not only punctual. Hence, nowhere will the water table be really natural/unaffected. In this view, it is not even clear why any data should be removed. Secondly, you write that the location of pumping wells is required. Do you have these data? It seems not, otherwise you would not need to use a threshold value on UZD. But this should be said! Thirdly, a rationale for the employed 10 m threshold is still lacking. Fourthly, you write that the variographic studies are performed on the second category of data. Does this mean that the rest of the analysis uses all the data from both categories?

C2

P6 L19-30: Regarding the riverbed thickness (i.e. clogging layer), you replied that you assume that there is no clogging layer. Then, this assumption should be explicitly mentioned in the text.

P10 L16: Here I guess you are referring to the transition case, and not the disconnection case. The way you wrote this is quite confusing.

P10 L30: Why would the optimal value be reached when the relative numbers of matched cross sections are equal?? This would only be true in the very special case where there are equal numbers of connected and disconnected cross sections.

Fig. 2: River names are still lacking.

Also note that my comment on “favor river infiltration towards the aquifer” in Section 3.7 was not addressed at all. Please address it.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2019-101>, 2019.