

## ***Interactive comment on “HESS Opinions “Integration of groundwater and surface water research: an interdisciplinary problem?”” by R. Barthel***

**R. Barthel**

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I am glad to see that Referee #3 also considers my opinion paper to be a valuable one and I am also grateful for the critical comments pointing out several aspects that I missed. Yes, it is true that I have missed to mention even larger scales. I am aware of such studies, but it did not occur to me that they are relevant for my discussion (which they are). I will include this in a revision. This might be a difficult topic, though. I will look into this, but right now I don't think that I have a clear vision of groundwater and surface water research integration on those mega-scales.

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I am very grateful for the specific comments made about statements that are unclear or maybe even wrong. I should maybe say that there are many more locations in the paper where I thought while writing: “well, this is too simple” or: “this would in fact much longer explanation and discussion”. My attempts to keep the paper short led often to harsh simplifications.

To the specific comments:

Page 2022, 2nd paragraph: I think this might be simply a result of bad wording / language, i.e. of not explaining very well what I had in mind. Essentially, I agree with the reviewer, I need to explain this better.

Page 2022, 2nd paragraph: Again, I will try to find a better explanation here. The point that I wanted to make is not so much that river levels do not require interpretation/translation at all, but that their interpretation is much more straightforward (visible, comprehensible, even for laymen) than a piezometric head.

Page 2022, 3rd paragraph: Okay, this is the result of trying to express something complex in a simple, illustrative way. I will use the comment made by the reviewer directly to improve my statement.

Page 2023, 1st paragraph: Again, right. First part of the comment: What I wanted to say is that there is a tendency (which I think is rather strong) that surface water models are less physics based as subsurface water models. An yes, water goes into the atmosphere, I will correct this!

Page 2024: Yes, I am absolutely aware of this. A hydraulic conductivity, calibrated for a 100\*100m large cell might not have much to do with field observations in the area. But you are right, this discussion is an endless one.

Page 2026: I am not quite sure how to interpret this comment. As pointed out in my replies to the other referees, I would like to avoid to go into the details of how (where and why) coupling should be done. This is an important and complex question that is,

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as you point out, both complex and undecided. I just recently read a lot in Bronstert et al. (2005). Instead of including this discussion in my paper, I will provide a few references that point to the ongoing discussion of the issue.

Page 2027: I will

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 2011, 2014.

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