Hydrol. Earth Syst. Sci. Discuss., 11, C352–C354, 2014
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Hydrology and Earth System Sciences
Discussions

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

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Received and published: 10 March 2014

Short comment

I think that this manuscript is a valuable contribution about the lack and the need of integration in the different scientific communities. There are a number of interesting examples related to groundwater and surface water research and extensive discussion. In particular, I appreciated how it is underlined that interdisciplinary research limits research funding, publications and, very important for young scientists, career advancement. The descriptions of some parts of the manuscript could be improved but,

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Interactive Discussion

Discussion Paper

probably, specific suggestions/comments will be addressed by the official reviewers (as I already noticed with the first one). Below I write some more general suggestions that I hope could be useful to extend the discussion.

1. This contribution mainly focuses on the integration of surface water (SW) and groundwater (GW) research. On the other hand (par 5.2), it is also invoked the need of integration in a broader sense: integrating socio-economic studies (P2033L23) and the importance of participated approaches (P2034L2). So, my question is: what about the other scientific communities related to the hydrological cycle? E.g., vadoze zone hydrologists, soil scientists among others (but for some definitions see also Gupta et al., 2012). If it is true, for example, that a lot of case studies related to soil hydrology are at plot/field scale, it is also not rare the contribution of this community at basin regional scale (identified also by the author as the scale of interest when integrated water resources is considered). It is not necessary to treat also all the other communities with the same extensive examples presented for SW and GW, but it would be important to clarify in the manuscript that integration of SW and GW does not necessarily mean obtaining integrated water resources research. In this sense, the present manuscript could be used for asking similar evaluation for other scientific communities.

2. A topic that I would suggest also to extend is that (at least my impression) the scientific communities tend to incorporate the term integration in their own ground (conferences, papers, and initiatives). Instead, I believe that it would be more profitable if the integration (e.g. of water resources) is conducted in a new neutral ground. Integration is in fact the result of compromises (in methods, complexity etc.) and the best practice in one community could be not the best in integrated approach. This compromise could be not well accepted in the specific community or it could mislead the target of the specific community. As a further example, even if I think there are good journals and conferences related to the integrated water resources, I have the impression that well identified journals or conferences about the topic that are well recognize and considered by all the communities still lack.

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11, C352–C354, 2014

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3. I'm completely in favor of integration as a learning process for scientists/ researchers. On the other hand, as it was also underlined in this contribution, it is difficult to imagine integrated approach driven by only scientific interest. In most of the cases integrated approach is driven by practical problems/solutions. In this context, it is worth to mention that exactly at this practical level of problems/solutions the usefulness and efficiency of integrated approaches is still debated. Specific discussion can be found in Giordano and Shah (2014) and references herein. In this sense I found the manuscript a bit too optimistic presenting the integrated approach as the solution of the problems and I suggest the author to integrate also this discussion.

Gupta, H.V., Clark, M.P., Vrugt, J.A., Abramowitz, G., Ye, M., 2012. Towards a comprehensive assessment of model structural adequacy. Water Resour. Res. 48.

Giordano, M., Shah, T., 2014. From IWRM back to integrated water resources management. Int. J. Water Resour. Dev. 1–13.

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