

Interactive comment on “Small farm dams: impact on river flows and sustainability in a context of climate change” by F. Habets et al.

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Received and published: 23 January 2014

This paper makes an interesting contribution to understanding the impact of small reservoirs - a river basin process that may add considerable non-linearity to the catchment response, in particular under changing climate conditions. As for large-scale river basin modelling small farm dams often are a heterogeneous and diverse sub-scale feature that is difficult to represent in a model, the authors note that there are only few studies that comprehensively analyze the effect of a large number of small dams on river basin hydrology. As one of the few examples, the authors may add the semi-arid North-east of Brazil to their introduction, where a huge number of reservoirs of different sizes exist, with an important impact on river runoff, water availability and catchment

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connectivity, reported on in the literature (e.g. Güntner et al. 2004, Malveira et al. 2012). The authors may compare their farm dam model to a large-scale modelling approach for small reservoirs by Güntner et al. (2004) in terms of model simplifications such as reservoir volumes, contributing catchment areas and reservoir in- and outflows, and discuss their results on the hydrological impact of small reservoirs also relative to the results of studies that have been performed for north-eastern Brazil.

Güntner, A., Krol, M. S., de Araújo, J. C., Bronstert, A. (2004): Simple water balance modelling of surface reservoir systems in a large data-scarce semiarid region. - Hydrological Sciences Journal - Journal des Sciences Hydrologiques, 49, 5, 901-918.

Malveira, V. T. C., de Araujo, J. C., Güntner, A. (2012): Hydrological Impact of a High-Density Reservoir Network in Semiarid Northeastern Brazil. - Journal of Hydrologic Engineering, 17, 1, 109-117.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 10, 14391, 2013.

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