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Discussions

Interactive comment on "Modelling Hydrological Ecosystem Services – A state of the art model comparison" *by* Anna Lüke and Jochen Hack

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The modelling of ecosystem services is a highly discussed topic among the scientific community. Different simulation models that have been developed in the past are still under a dynamic scientific debate. Several scientific publications (among them publications in the HESS journal; e.g. Doku et al. 2015) discuss or compare the applicability of models developed to quantify and map ecosystem services. The number of scientific publications dedicated to this topic illustrated the scientific significance of the assessment and comparison of ecosystem service model applications well. However, in the field of hydrology and water management traditional hydrological models have been applied to model (hydrological) ecosystem service. As stated in this publication, there are also numerous scientific papers on the application of traditional hydrological

models for ecosystem service modelling. Nevertheless, there are no scientific comparisons (documented, understandable and reproducible) of applications of specialize ecosystem service models AND traditional hydrological models for the modelling of hydrological ecosystem services for the same study area. This is what is essentially new in this publication. Moreover, the publication goes beyond simple model application but modifies the models in their pre- and post-processing to achieve comparable results among the different models and to increase their applicability in scientific problem contexts. The inclusion of ecosystem service beneficiaries in the application of the hydrological model is especially innovative. The modelling results of the three models and their comparison represent new scientific insights and may guide future modelling of hydrological ecosystems services. The focus of the model comparison is placed on applying the model for decision support, not on model theory. This means usability and applicability in decision-making context (e.g. for the establishment of payment schemes for ecosystem services) is regarded in this publication while discussions of the model's theory have been published elsewhere. The authors endorse the publication of this manuscript as a research article rather than a technical note.

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