Review for HESSD 12, 3477–3526, 2015
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Title: Towards ecosystem accounting: a comprehensive approach to modelling multiple hydrological ecosystem services
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General Comments:
The article has greatly improved after the previous revision and most points of criticism have been adequately included in the new version of the manuscript.
There are three minor points which I would like to comment on:
1. The calibration plots in Figure 2 and 3 show that the model underestimates water and matter flow, please comment somewhere what this means regarding error propagation: if less water runs off, does it mean that you overestimate your soil moisture and groundwater recharge?
2. The new section 5.1 on model uncertainty and limitations addresses a few crucial short-comings of the usage of a catchment model. Maybe it could be extended with a comment on the current implementation of erosion quantification, which might be considered over-simplified and not applicable to many environments for which the USLE was not designed for.
3. In the conclusion, you draw a very optimistic picture on how ecosystem accounting with a model such as SWAT could be used for decision-making. You might want to include some comments regarding the weakness of the SWAT model here. Maybe you could discuss a potential application in decision-making by giving spatial risk assessments and uncertainties, which could be derived by multiple model runs including uncertainties regarding parameterisation, drivers and model equations. However, this would be clearly a new study, and could be suggested as a next step towards the usage of such a framework for decision-making.

I like the article as it is, and would suggest that it should be published in HESS after some minor modifications (without the need for a further review).

Minor comments:
Could you include the river network in Figure 1?
Please add a scale to all figures
The text in Figures 2 and 3 is difficult to read.
Figure 3, left lower picture has a wrong y-axis (should be nitrogen not sediment load)