

Interactive comment on “Groundwater vulnerability assessment to assist the measurement planning of the water framework directive – a practical approach with stakeholders” by K. Berkhoff

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I accept that in the manuscript it was not described adequately on what scale the evaluation scheme is able to support the implementation of the WFD, in particular in regard to stakeholder participation. I tried to focus on that in the revised manuscript. The aim of the study presented in the paper was to develop an evaluation scheme which is suitable for spatially explicit groundwater vulnerability assessment according to the WFD. This evaluation scheme is presented in the paper and applied to the study area. For preparation of the Programme of Measures of the WFD, a three step approach is proposed: 1) Spatially explicit assessment of the current groundwater status

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on catchment level, 2) spatially explicit assessment of the current groundwater status on local (field) level, 3) joint evaluation of the ecological, economic and social consequences of the measures on farm level. Only the first step can be done with the aid of the new evaluation scheme. To stress this, it is proposed to change the title of the paper into "Spatially explicit groundwater vulnerability assessment to support the implementation of the water framework directive – a practical approach with stakeholders". The approach is clearly focused on an assessment of whole catchments. It is model-based and uses only data which are generally available for larger areas. Both the STOFFBILANZ model and the DRASTIC index were calculated on a 500x500 m grid. Thus, the evaluation scheme is only one part of the process of measurement planning, the other steps should be done subsequently, but were not an integral part of the study presented. Examples of how to implement steps 2) and 3) are given in the paper, relating to project and modelling activities currently taking place in the study area. Model application in the stakeholder process is proposed to take place in step 2) and 3), because on this scale, the local perception of stakeholders can be met by local-scale models. Despite the fact that the regional scale is not optimal to involve stakeholders, stakeholder participation already in step 1) of the scheme took place in the study presented here. Model application in this study served the purpose of integrating stakeholder knowledge into the STOFFBILANZ model and further, providing a common knowledge base of nutrient emissions in the study area to the stakeholders. A more detailed description of the DRASTIC and the STOFFBILANZ model and the reasons of their choice is included now, as well as a description of model application in the stakeholder process. Concerning the Programme of Measures, only the ecological efficiency can be computed by the STOFFBILANZ model. It was combined in the study with cost estimations by stakeholders to roughly estimate cost efficiency. But for an analysis of the economic and social impacts of measures it is referred to model approaches which allow for farm type specific investigation of impacts. In the conclusions section, three questions are answered: 1) Was the evaluation scheme suitable for identifying vulnerable areas according to the WFD? 2) Was stakeholder knowledge

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successfully integrated into the STOFFBILANZ model? 3) Did the stakeholders benefit from the model results? The technical corrections were considered. International references were added, as far as it is reasonable for this German case study.

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