

We very much appreciate the comment by the Anonymous Reviewer #1.

As stated by Refsgaard et al. (2012) uncertainty in groundwater modeling arises from three sources: (1) uncertainty of the structure of the geological settings, (2) uncertainty of the large-scale or effective hydraulic properties of the individual structural elements, and (3) uncertainty due local-scale spatial variations of the hydraulic properties within the individual structural elements.

The reviewer is correct in pointing out that in our analysis we have only addressed error sources (1) and (2). We fully acknowledge that within facies variability also impact groundwater simulations and transport simulations in particular. We have not included this uncertainty source in our analysis as it would add significantly to the already large number of model simulations carried out. Moreover, the aquifer system considered in the analysis is a highly heterogeneous system with clay and sand units of relatively small spatial extent compared to the overall scale of the system and with no overall large-scale spatial structure. Thus, the impact of within facies variability appears of less significance for the given system and we decided to only consider the effect of geological structures and effective model parameters. We realize that this assumption is not stated clearly in the manuscript which we will do in the revised version.

Despite the neglect of the third error source we believe that our analysis is an interesting and valid comparison of the impact of structural geological uncertainty and effective parameter uncertainty on groundwater flow and particle tracking, and that the research provides a significant contribution to the area of groundwater modeling uncertainty.

Literature:

Refsgaard, J.C., Christensen, S., Sonnenborg, T.O., Seifet, D., Højberg, A.L., Trolborg, T., Review of strategies for handling geological uncertainty in groundwater flow and transport modeling, *Advances in Water Resources* 36, 36–50, 2012.