

Interactive comment on “Multiple-point statistical simulation for hydrogeological models: 3D training image development and conditioning strategies” by Anne-Sophie Høyer et al.

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Received and published: 28 December 2016

The study aims to establish a workflow to carry out Multi-Point Statistics modeling for a testing area in Denmark using alternative 3D training images and various conditioning strategies. The research topic is of high relevance to those who work with hydrogeological modeling. The manuscript is well written with accurate language, rational methodology and convincing results. I recommend the manuscript is accepted for publication with minor revision. However, there are several details to be considered which are listed as follows:

As stated in the abstract, the introduction and the conclusion sections, one of the most important steps of the workflow is to develop 3D TIs in an iterative way. However, this

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part is only briefly mentioned in the method section and not at all mentioned in the result section. I am curious about how the TIs are evolved gradually with feedback information after each step of adjustment, namely from the initial TI to the final TI. Additionally, is Fig 9 showing the initial or the finally TI?

In the introduction section, I would suggest to add a few sentences indicating the main objectives of the study.

Lin 210-211. The moving window for calculating the borehole uncertainty in the vertical direction is 20 m. Meanwhile, in Fig 7(b), the thickness of the Miocene layer is about 150 m, which in principle corresponds to 7 to 8 intervals in each borehole at maximum. However, as far as I can count, there are usually more than 7 color blocks in each borehole. Am I mistaken for something?

Fig 7, when interpolating the borehole uncertainty, are the borehole data outside the model domain being considered, both horizontally and vertically? If not, would there be extrapolation instead of interpolation towards the edges of the model domain?

In the results section, L259-266, there are two TIs being tested, one clearly has more layers than the other. Do these two TIs have any relation to the iterative approach the authors try to present in the study? Or is it a separate issue here? Moreover, it says the second TI is chosen because it is closer to what has been presented in Kristensen et al., 2015. So maybe it is better to describe very briefly what is in the Kristensen's study, and why that one is used as benchmark.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., doi:10.5194/hess-2016-567, 2016.