

## ***Interactive comment on “Locality-based 3-D multiple-point statistics reconstruction using 2-D geological cross-sections” by Qiyu Chen et al.***

**Anonymous Referee #1**

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This paper presents another approach to handle the problem of lacking three-dimensional training images for multiple-point geostatistical simulations. The authors explain the differences between their approach and previously existing ones and perform thorough sensitivity analyses on the new parameters required by their implementation. However, they take some prior important decisions that go unchallenged, such as the choice of the probability aggregation methods, and the parameters used in them. A sensitivity analysis of these decisions would provide a more solid basis for the usage of the new approach.

My major criticism is on the tests performed during the benchmarking. They are purely statistical, yet this is a journal very much related to surface and subsurface hydrology. Readers of HESS and potential users of this method would be more appealed to use it

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if the benchmark would include, for instance, some solute transport simulations.

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