

Geosci. Model Dev. Discuss., referee comment RC1
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Comment on gmd-2022-83

Anonymous Referee #1

Referee comment on "Mapping 3D Structure of Loose Quaternary Deposits Combining Deep Learning and Multiple-point Statistics: An example in Chencun, Northern Pearl River Delta" by Weisheng Hou et al., Geosci. Model Dev. Discuss.,
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This paper gives a new solution for the model construction with DANN and MPS. The DANN extract global characteristics of geological structures. and the MPS simulation with Expectation-Maximization-like iteration process for local characteristics of the geobodies. The idea is interesting and may attract the focus of the modeller. Because in real reservoir, to guarantee the long range connectivity and characteristics of small architectural elements is often a difficult task for modellers. The method will be adopted for modeling facies in oilfield. In my opinion the paper is excellent and should be accepted if some comments are addressed:

1. The cross section for global structure is parallel, why? is it sufficient for the reproduction of the characteristics. In another direction, the structure may be different, how to reproduce in 3D space with DANN? please clarify

2. The small structure is reproduced with the constrain of trenches to update the initial global structure. is it a 3D template for comparison. How to guarantee the consistency between the global structures and the local trenches. May be an illustration is needed.

3. In line 261-263. the method of constructing 3D models from 2D training image is studied. So maybe a revised depiction is suitable.