

Geosci. Model Dev. Discuss., referee comment RC1  
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## **Comment on gmd-2022-117**

Anonymous Referee #1

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Referee comment on "DeepISMNet: three-dimensional implicit structural modeling with convolutional neural network" by Zhengfa Bi et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2022-117-RC1>, 2022

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This manuscript presents a very interesting and promising approach to structural modelling. The described method can recreate models currently possible with existing methods, and the introduction does claim the method can produce complicated structural models. However, it is not clear how the Deep CNN method advances our ability to construct models either currently not possible, or constructed with great difficulty. By the author's own admission, this method is unable to model intrusions, unconformities and other genuinely complicated structures. I suspect they may be heavily constrained to the structures and geological object types seen in the synthetic training set. I don't believe these drawbacks are reasons to avoid using this method and I do see a neural net approach as an innovative direction to eventually construct these geologically complex scenarios. I encourage the authors to emphasise the benefits of this method especially in the discussion where it is possible to compare and contrast these aspects. I provide more detailed comments and suggestions in the attached pdf.

Please also note the supplement to this comment:

<https://gmd.copernicus.org/preprints/gmd-2022-117/gmd-2022-117-RC1-supplement.pdf>