

## ***Interactive comment on “Automated Monte Carlo-based Quantification and Updating of Geological Uncertainty with Borehole Data (AutoBEL v1.0)” by Zhen Yin et al.***

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Dear authors,

This paper presents an automated workflow to build geo-model using some hard data. The work is very interesting and the paper is well written. I strongly suggest publication after some revision. I have a few questions and comments. I hope authors can clarify it.

1. In BEL, you mentioned prediction. There is nothing related prediction from the field case, am I right? It seems to me this work is mainly related model building using data.

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The prediction variable  $h$  is the model parameters, right?

2. Using observation  $d_{\text{obs}}$ , you can detect some outlier realizations. Do you just remove these realizations from your prior in practice?

3.  $h^*$ ,  $d^*$  are some subspace of  $h$  and  $d$ , right? If we talking permeability field with millions of cells, could you give me roughly number of  $h^*$  compared to  $h$ ? Is Formula (9) standard way to formula linear-Gauss problem?

4. Your Python tool can be used to build geo-mode  $l(\text{grid}, \text{etc.})$ ?

5. After CCA, elements in  $h^*$  is more independent (less correlated), right?

6. I am very interested in “sequential update model”. It will be nice if the authors can describe this in more details.

7. Every time you update a parameter, do you use the posterior as a prior for next parameter update?

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