

Interactive comment on “Uncertainty assessment for 3D geologic modeling of fault zones based on geologic inputs and prior knowledge” by Ashton Krajnovich et al.

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The authors truly appreciate the detailed clarifying comments, especially regarding the description of the simulation approach. The authors acknowledge that there was confusion regarding how the simulation approach was described, primarily in the erroneous usage of the term Markov Chain Monte Carlo (MCMC) when the method applied in the study is in fact simply Monte Carlo sampling to explore the set of input probability distributions. The authors wish to reaffirm that the methodology employed in the study is intended to be that which the reviewer identified: the use of Monte Carlo sampling to explore the prior uncertainty space of geologic modeling

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inputs. As is, the analysis performed in the study does not contain any use of Bayesian inference via MCMC (i.e., no likelihood functions were defined or used), nor was this an intended description of the methodology employed. The authors have taken steps throughout the text to remove any erroneous descriptions of the methodology and clarify the intended use of Monte Carlo sampling. A broad overview of the changes made to rectify this error include (i) removal of any mention of MCMC or posterior distributions and replacement with appropriate terminology and (ii) the removal of trace plots and a rethinking of the simulation quality assessment section.

Please refer to the attached supplement (.pdf) for the full, detailed replies to all comments of RC1 (general and specific) and the proposed changes to the manuscript.

Please also note the supplement to this comment:

<https://www.solid-earth-discuss.net/se-2020-21/se-2020-21-AC1-supplement.pdf>

Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2020-21>, 2020.

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