Authors comment

Simulating permeability reduction by clay mineral nanopores in a tight sandstone by combining µXCT and FIB-SEM imaging

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The authors thank the referees for their time spent reviewing our manuscript. We appreciate the referees' comments and suggestions and agree with all the referees' statements. The corrections and suggested changes have been incorporated in the revised manuscript. The modified or added sentences can easily be found in the version where line numbers of the modifications are indicated in our specific responses provided in the table below.

	Anonymous referee #1:	Authors' reply:
1.	Line 40-41, in the Introduction section, the following references (Liuand Mostaghimi 2018; Liu et al. 2020) can't be ignored to discuss the recent advances in the pore-scale studies below µXCT resolution. Liu, M., & Mostaghimi, P. (2018). Reactive transport modelling in dual porosity media. Chemical Engineering Science,190, 436-442. Liu, M., Starchenko, V., Anovitz, L. M., & Stack, A. G. (2020). Grain detachment and transport clogging during mineral dissolution in carbonate rocks with C1SED Interactive comment Printer-friendly version Discussion paper permeable grain boundaries. Geochimica et Cosmochimica Acta, 280, 202-220.	We appreciate your comment and added the suggested references to line 40-42.
2.	Line 87, "The term....", this sentence seems have different font style with the context. Please check it through the paper.	We checked for different font styles and corrected it throughout the manuscript.

3.	Line 89, reference is needed for the definition of "nanoporous".	We added a description for the term "nanoporous" from line 88-90 (e.g. Tinet et al. 2020).
4.	Line 208, can the authors provide the values of the parameters used in Equation (1)?	Since line 208 does not contain information about the equation, we think you might have meant line 108. We added a section about the physical parameters which were used for the gas permeameter test (line 244-254). These include values of the applied differential pressure and size of the samples. Furthermore, we added an example for the applied pressures for sample F8 (Table 1).
5.	Scale bar is missing for Figure 2.	In Figure 3 (former Figure 2), there is a scale bar in the bottom left corner of the figure.
6.	Line 175, I think there should be more introduction about the machine learning method used in Figure 3.	*Ilastik* uses a Random Forest algorithm to provide different trees for the classification of the voxels/pixels. This is used to achieve a segmentation based on not only greyscale values, but shape as well. We added a section about the machine learning method from line 185-191.

References:

Tinet, A.-J., Corlay, Q., Collon, P., Golfier, F., Kalo, K.: Comparison of various 3D pore space reconstruction methods and implications on transport properties of nanoporous rocks, Advances in Water Resources, 141, doi: 10.1016/j.advwatres.2020.103615, 2020.