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Geoscientific Instrumentation Methods and Data Systems Discussions

Interactive comment on "The influence of sample geometry on the permeability of a porous sandstone" *by* Michael J. Heap

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The author of "The influence of sample geometry on the permeability of a porous sandstone" studies the permeability fluctuations for rock samples of a similar origin (sandstone) for different lengths, diameters and aspect ratios. The author shows that, under the range of sample volume and aspect ratio taken into consideration, there are very limited variations of permeability. This study therefore provides results of broad interest for researchers studying permeability of rocks and is an essential step towards a community consensus for permeability measurements.

The manuscript is clearly written, easy to follow. To my opinion, the manuscript is already suitable as it isfor publication. I only provide a couple of minor comments for

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Discussion paper

the author.

Minor comments

Last page of the discussion, line 2-4 The author discuss the use of X-ray computed tomography on small-diameter cores and proposes that laboratory measurements of permeability might bring confidence on the results of XCT. Studies of pore structure using XCT frequently focus on even smaller rock samples (diameter and height <5mm). Would the author expect that such volumes would still be representative for the Darley Dale sandstones studied here? Or does the author expect a scattering of permeability values at volumes smaller than those analyzed in this study? At which critical volume would this scattering occur? It already looks from Figure 3b that there is slightly more variability of the permeability at low volume of interest

Line 5 Pore size, shape, aperture size, anisotropy, tortuosity and connectivity will likely all have a role for other types of samples.

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