

Interactive comment on “Electrical Formation Factor of Clean Sand from Laboratory Measurements and Digital Rock Physics” by Mohammed Ali Garba et al.

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Referee Comment The suggestions for future work are as follows: 1) the filtering functions can be improved to avoid holes inside sand profiles; 2) the global threshold for two phase segmentation can be improved to obtain sharper outlines of sands and avoid connectivity between two sand profiles.

Authors Reply Thank you for your comment. We are indeed aware that the filtering and segmentation phases can be done in a different way and eventually improved. However we still want to keep the workflow as ‘light’ as possible to avoid excessive computational times while obtaining results as accurate as possible. As regard the 2-

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phase segmentation method, it gives some porosities of 0.36 and 0.37 for the two types of beach sand samples, which is totally reasonable for a ‘dense random pack’ (~ 0.36 e.g. Mavko et al., 2009) and in agreement with the experimentally measured porosities on the lab-scale samples (0.35 and 0.36), with the uncertainties of both methods. We thus considered that this segmentation method was enough for our study. As regard the filtering, our main concern was to remove the ring artefacts (and effect of the image acquisition process) and the non-local filter is indeed a good one for that purpose. Furthermore it does not introduce edge smoothing contrary to many other filters and thus does not require the use of an additional mask (see for example the review paper of Schluter et al., 2014)

Changes in the text To reflect the previous we have added a few justifications about the filter used L227: “Non-local means filter has been shown to effectively remove ring artefacts without introducing edge smoothing contrary to many other filters and thus does not require the use of an additional mask (see for example the review paper of Schluter et al., 2014)” We added the above reference too.

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