

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

### **Anonymous Referee #3**

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In this study, the authors develop a comprehensive and robust workflow with clean sand from two beaches. Electrical conductivities are measured in laboratory. Characteristic electrical formation factor versus porosity relationships are obtained for each sand type. In other hand, 3-D micro-computed tomography images of each sand sample from the experimental sand pack are acquired at different resolutions. The images are used to compute the effective electrical conductivity of the sub-cubes using a Finite Element electrostatic modelling. For the samples, a good agreement between laboratory measurements and computation from digital cores is found with the sub-cube size REV is reached some conditions. Computed digital rock images of the clean sands opens a way forward in getting the formation factor within a shortest possible time. This topic

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is welcomed in fields of reservoirs and geophysics. However, this paper is more general and should be improved in many places. 1. Besides experiments, there also are some theoretical and modeling works on electrical properties of rocks/porous media, these should be well summarized and reviewed. 2. Writing should be improved and concised. Many basic descriptions are not necessary. 3. Please discuss the limitation of your work/method, such as for tight or low permeability rocks.

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Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2018-133>, 2019.

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