Hydrology and
Earth System
Sciences
Discussions

# Interactive comment on "Sensitivity and identifiability of hydraulic and geophysical parameters from streaming potential signals in unsaturated porous media" *by* Anis Younes et al.

## Anonymous Referee #1

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The authors performed modelling of fluid flow in a charged porous media. They used Global Sensitivity Analysis (GSA) and parameter estimation to assess the effect of hydraulic and geophysical parameters on the streaming potentials. The subject is interesting, important and useful and deserves to be published. However, there are still some key points need to be addressed. This reviewer recommends to do some revision taking into account the below comments. 1. A section should be added for the numerical how to solve Eqs. (1-7), such as grid strategy, discrete method and converge criteria. If use a commercial software, the software needs to be cited. 2. Line 141, this section is the test case, and therefore, this should not be called conceptual model. Furthermore, a schematic of the test case should be added to show

main dimensions and boundaries 3. Line 162, what is "the standard finite volume method"? Finite volume method is a big family to solve partial differential equations, such as a first-order and second-order approximation/discretion. 4. Although the authors have performed a good review of literature of streaming potential signals, other literatures of unsaturated porous media should be introduced, such as Deng and Wang, Saturated-unsaturated groundwater modelling using 3D Richards equation with a coordinate transform of nonorthogonal grids, Applied Mathematical Modelling 2017, 50: 39–52.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., https://doi.org/10.5194/hess-2017-730, 2018.