

# ***Interactive comment on “Effects of Micro-Arrangement of Solid Particles on PCE Migration and Its Remediation in Porous Media” by Ming Wu et al.***

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Comments accepted . We appreciate Dr. Pacheco’s conscientious and positive recommendation. We have made great efforts to implement the “minor revision” to improve our manuscript as suggested. This research aims at characterizing the important effect of micro-structure on macroscopic scale characteristics of aquifer and inner contaminant migration and remediation. To achieve the aim of this research, the first step is to explore the issue of theory and simulation. Fractal models of regular triangle arrangement (RTA) and square pitch arrangement (SPA) at microscale are developed to evaluate contaminant movement and associated contamination reme-

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diation for a synthetic heterogeneous PCE contaminated site. Results suggest the micro arrangement of particles has obvious effects on macroscopic PCE migration and remediation. As for the upscaling problem of the results obtained at micro-scale, it is very important and interesting, and many previously published studies [e.g., Pacheco et al., 2013, 2015; Dagan et al., 2013; Bakshevskaia and Pozdniakov, 2016] are available and worth referencing. The upscaling problem of the results obtained at the simulation scale ( $100 \times 25 \times 25$  m) is the basic research and the upscaling problem with more complex heterogeneities needs to be further investigated. We have made some progresses on upscaling problem from the aspects of experiment and simulation. On this basis, we have developed the microstructure of porous media and characterized the contaminant migration in porous media using fractal methods. So our next step is to apply these methods to real-world aquifers with highly heterogeneous conditions and to update our models according to general hydrogeological conditions. Considering Dr. Pacheco's concern, we have made additional and necessary explanation of upscaling issue in the section of Results and Discussion (lines 465-487) .

Please also note the supplement to this comment:

<https://www.hydrol-earth-syst-sci-discuss.net/hess-2017-493/hess-2017-493-AC1-supplement.pdf>

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