

Pore-Scale Simulations of the Diffusion in the Fluid-Saturated Porous Sediments using X-ray Microtomographic Images

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The material transfer through the microscopic pores in fluid-saturated porous sediments is one of important subjects in sedimentology. We report the results of the application of computer simulations using three-dimensional pore-scale images to the diffusion in porous sediments(Ref.1). Some sets of three-dimensional digital images of sediment samples were obtained by X-ray microtomography. The steady-state diffusion or random-walk simulations were performed on the percolated pores of the images. The results show that (i) it is possible to complete the simulations using a commonplace 64-bit PC in a reasonable time and (ii) the spatial resolution of the CT apparatus is critical. This study was supported by JSPS KAKENHI (No. 23241012).

Ref.1: Nakashima et al. (2011) <http://dx.doi.org/10.1007/s11270-010-0473-2>

Keywords: sediment, X-ray microtomography, computer simulation, diffusion, porous media