



Identification of descriptive parameters of gradated soils using column experiments and analysis of CT data

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In this contribution, we present a method that combines experimental and micro-tomographic information to derive parameters of the pore structure of gradated soils. High-resolution CT data of samples of gradated soils are acquired. Parameters such as the pore positions and the pore sizes, the pore paths, and the pore constrictions are computed by applying methods of image analysis. Further, specific parameters of the pore and soil structure are determined using column and compacting experiments based on model soils. The grain size and effluent quantity of potentially mobile particles are identified, as well as the characteristics of the supporting skeleton of the model.

The results of a comparison of both methods suggest that column experiments in combination with automatic image processing methods can provide suitable geometric parameters of real grain and pore structure for analyzing suffosive erosion phenomena. This visualization allows a better understanding of the various physical processes within the pore structure. But for a qualitative approach these parameters can be incorporated into pore-network models to verify existing transport models. This research is a part of a comprehensive research project on suffusion of soils.