**Suffusion evaluation of coarse-graded soils from Rhine dikes**

An experimental study on internal erosion of coarse-grained soils collected from the Rhine River is presented. The tests performed on laboratory column aim to assess the potential of such soils to suffusion and to characterize their stability and the variation of the soil physical parameters during the suffusion process. An experimental device (large vertical column with 60 cm of height and 26 cm of diameter) has been developed, which allows the application of upward flow to non-cohesive soils under controlled hydraulic loading. The investigation of the parameters affecting the suitability of the soils to suffusion leads to the identification of the hydraulic gradient that initiates the migration of particles to the outlet. The results show an increase in permeability, which is related to the migration and the washing out of fine particles in the upper layer. The particle size distribution of the downward soil layer after test is performed, and the analysis corroborates the localization of particles suffusion. The grain size analysis of the outlet shows that eroded particles are smaller than 500 lm and their size rather increases with increasing hydraulic load. Usual methods based on geometrical criteria proved to overestimate the susceptibility to suffusion of soils from the Rhine, and, therefore, one considers that, for such soils, it is preferable to carry out laboratory tests to evaluate the suffusion process.