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THE LOCAL STORAGE COEFFICIENT OF A LAYERED SOIL

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Abstract

Analytical equations for the variation of soil moisture content and for the local storage coefficient for a layered soil with a relatively shallow water table were developed in this study, based on a linear distribution law of the moisture retention on soil's profile, and the van Genuchten-Mualem parametrical model for the moisture–suction curve.

By considering this mathematical model, an original computer code was written in MATLAB to determine and then to graphically represent the functions of moisture variation (for a constant depth of the water table), and the variation law of the local storage coefficient as a function of a variable water table depth, both for a layered soil and also for a homogenous one, with the same total thickness.

Theoretical results and the computer code were applied for a representative case study. Thus, it was possible to obtain a valid comparative analysis concerning the nature of the soil (layered / homogeneous), and a graphical representation of the moisture distribution and the local storage coefficient.

Key words: layered soil, local storage coefficient, *van Genuchten-Mualem* model

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