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Titolo	Modelling water flow in unsaturated porous media : accounting for nonlinear permeability and material heterogeneity // Adam Szymkiewicz
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Descrizione fisica	1 online resource (253 p.)
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Disciplina	551.48
Soggetti	Groundwater flow - Mathematical models Porous materials - Permeability - Mathematical models Transport theory - Mathematical models
Lingua di pubblicazione	Inglese
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Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Introduction -- Mathematical Models of Flow in Porous Media -- Numerical Solution of Flow Equations -- Computation of Inter-Nodal Permeabilities for Richards Equation -- Upscaling from Darcy Scale to Field Scale -- Flow in Binary Media with Heterogenous Hydraulic Diffusivity -- Flow in Binary Media with Heterogenous Air-Entry Pressure.
Sommario/riassunto	The book focuses on two issues related to mathematical and numerical modelling of flow in unsaturated porous media. In the first part numerical solution of the governing equations is discussed, with particular emphasis on the spatial discretization of highly nonlinear permeability coefficient. The second part deals with large scale flow in heterogeneous porous media of binary structure. Upscaled models are developed and it is shown that the presence of material heterogeneities may give rise to additional non-equilibrium terms in the governing equations or to hysteresis in the averaged constitutive relationships.