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| Autore | Kulasiri Don |
| Titolo | Non-fickian Solute Transport in Porous Media : A Mechanistic and Stochastic Theory / / by Don Kulasiri |
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| Soggetti | Geophysics<br>Fluids<br>Mathematical models<br>Geophysics/Geodesy<br>Fluid- and Aerodynamics<br>Mathematical Modeling and Industrial Mathematics |
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| Nota di bibliografia | Includes index. |
| Nota di contenuto | NonFickian Solute Transport -- Stochastic Differential Equations and Related Inverse Problems -- A Stochastic Model for Hydrodynamic Dispersion -- A Generalized Mathematical Model in One-dimension -- Theories of Fluctuations and Dissipation -- Multiscale, Generalised Stochastic Solute Transport Model in One Dimension -- The Stochastic Solute Transport Model in 2-Dimensions -- Multiscale Dispersion in 2 dimensions. |
| Sommario/riassunto | The advection-dispersion equation that is used to model the solute transport in a porous medium is based on the premise that the fluctuating components of the flow velocity, hence the fluxes, due to a porous matrix can be assumed to obey a relationship similar to Fick’s law. This introduces phenomenological coefficients which are dependent on the scale of the experiments. This book presents an approach, based on sound theories of stochastic calculus and differential equations, which removes this basic premise. This leads to a multiscale theory with scale independent coefficients. This book |

illustrates this outcome with available data at different scales, from experimental laboratory scales to regional scales.