Introduction To The Numerical Modeling Of Groundwater And Geothermal Systems

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Summary : Free introduction to the numerical modeling of groundwater and geothermal systems pdf download - this book provides an introduction to the scientific fundamentals of groundwater and geothermal systems in a simple and didactic manner the different water and energy problems existing in deformable porous rocks are explained as well as the corresponding theories and the mathematical and numerical tools that lead to modeling and solving them this approach provides the reader with a thorough understanding of the basic physical laws of thermoporoelastic rocks the partial differential equations representing these laws and the principal numerical methods which allow finding approximate solutions of the corresponding mathematical models the book also presents the form in which specific useful models can be generated and solved the text is introductory in the sense that it explains basic themes of the systems mentioned in three areas engineering physics and mathematics all the laws and equations introduced in this book are formulated carefully based on fundamental physical principles this way the reader will understand the key importance of mathematics applied to all the subjects simple models are emphasized and solved with numerous examples for more sophisticated and advanced models the numerical techniques are described and developed carefully this book will serve as a synoptic compendium of the fundamentals of fluid solute and heat transport applicable to all types of subsurface systems ranging from shallow aquifers down to deep geothermal reservoirs the book will prove to be a useful textbook to senior undergraduate and graduate students postgraduates professional geologists and geophysicists engineers mathematicians and others working in the vital areas of groundwater and geothermal resources

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