

This book seeks to fill the gap between traditional geostatistical methodology tools for reservoir modeling and characterization, and inverse procedures for integrating different data within the geo-modeling workflow. It begins with a review of stochastic sequential simulation. The geostatistical inversion algorithms introduced here were presented to be used as a first approach by anyone, from student to geoscientists, generating reservoir models on a daily basis.

We hope to have aroused curiosity to engage in further research and embark in new developments in important fields, ranging from petrophysics to reservoir engineering. We believe the

new and challenging environments, such as deep offshore, require integrative and multidisciplinary approaches that incorporate knowledge from different scientific areas. Moreover, due to their complexity we should never forget uncertainty that is always present at every stage—from data processing to modeling and characterization. This uncertainty should be assessed at all stages and integrated within entire production chain. Improved uncertainty assessment allows for better decision making with fewer risks and greater success. We hope that we have been able to show that the methodologies presented here can help achieve this goal.