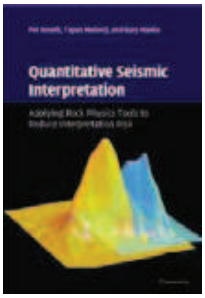
Quantitative Seismic Interpretation



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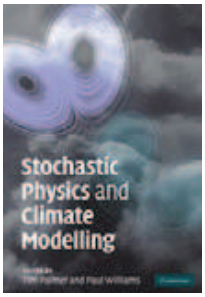
Seismic data analysis is one of the key technologies for characterizing reservoirs and monitoring subsurface pore fluids. While there have been great advances in 3D seismic data processing, the quantitative interpretation of the seismic data for rock properties still poses many challenges. Quantitative Seismic Interpretation demonstrates how rock physics can be applied to predict reservoir parameters, such as lithologies and pore fluids, from seismically derived attributes. It shows how the multidisciplinary combination of rock physics models with seismic data, sedimentological information, and stochastic techniques can lead to more powerful results than can be obtained from a single technique. The authors provide an integrated methodology and practical tools for quantitative interpretation, uncertainty assessment, and characterization of subsurface reservoirs using well-log and seismic data. They illustrate the advantages of these new methodologies, while providing advice about limitations of the methods and traditional pitfalls. This book is aimed at graduate students, academics, and industry professionalsworking in the areas of petroleum geoscience and exploration seismology. It will also interest environmental geophysicists seeking a quantitative subsurface characterization from shallow seismic data. The book includes case studies and problem sets.

Stochastic Physics and Climate Modelling



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This is the first book to promote the use of stochastic, or random, processes to understand, model and predict our climate system. One of the most important applications of this technique is in the representation of comprehensive climate models of processes which, although crucial, are too small or fast to be explicitly modelled. The book shows how stochastic methods can lead to improvements in climate simulation and prediction, compared with more conventional bulk-formula parameterization procedures. Beginning with expositions of the relevant mathematical theory, the book moves on to describe numerous practical applications. It covers the complete range of time scales of climate variability, from seasonal to decadal, centennial, and millennial. With contributions from leading experts in climate physics, this book is invaluable to anyone working on climate models, including graduate students and researchers in the atmospheric and oceanic sciences, numerical weather forecasting, climate prediction, climate modelling and climate change.