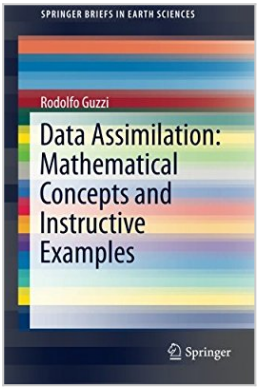

Data Assimilation: Mathematical Concepts and Instructive Examples (SpringerBriefs in Earth Sciences)

By Rodolfo Guzzi

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This book endeavours to give a concise contribution to understanding the data assimilation and related methodologies. The mathematical concepts and related algorithms are fully presented, especially for those facing this theme for the first time.

The first chapter gives a wide overview of the data assimilation steps starting from Gauss' first methods to the most recent as those developed under the Monte Carlo methods. The second chapter treats the representation of the physical system as an ontological basis of the problem. The third chapter deals with the classical Kalman filter, while the fourth chapter deals with the advanced methods based on recursive Bayesian Estimation. A special chapter, the fifth, deals with the possible applications, from the first Lorenz model, passing trough the biology and medicine up to planetary assimilation, mainly on Mars.

This book serves both teachers and college students, and other interested parties providing the algorithms and formulas to manage the data assimilation everywhere a dynamic system is present.

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Editorial Review

Review

“This is a very nice book for non-experts who would like to get into the area of data assimilation. The well-organized structure and the step-by-step introduction of the concepts with the help of illustrative examples also make it suitable as a textbook for graduate courses. … A good amount of historical information and background material is included in this book … . the book would be more appealing and provide direction to young researchers.” (Nan Chen, Mathematical Reviews, March, 2016)

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