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	Autore	Sansò Fernando
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	Soggetti	Machine learning
		Stochastic models
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		Geography - Mathematics
		Mathematical statistics
		Machine Learning
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	Nota di contenuto	- 1. Probability and Frequency -- 2. The Sources of Stochasticity -- 3. Statistical Inference: The Theory of Estimation -- 4. Statistical Inference: Model Verification -- 5. Finite vs Infinite, Discrete vs Continuous -- 6. A Look at Machine Learning -- 7. Some Conclusions.
	Sommario/riassunto	This book investigates the relationship between empirical reality and theoretical modelling in Earth sciences, focusing on how empirical experiments and theoretical models interact. It explores the connection between statistics and probability theory, emphasizing the importance of these tools in understanding the physical world. The first chapter addresses the frequency-probability antinomy, while the second chapter discusses the sources of randomness in modelling. Chapters 3 and 4 delve into statistical inference, covering estimation theory and

testing theory. Chapter 5 examines the relationship between discrete-finite models and continuous-infinite dimensional models, particularly random fields, making the concepts accessible to geodesists and geophysicists. Chapter 6 explores modern machine learning and deep learning, highlighting their roots in traditional statistical methods and neural networks. The book concludes with a caution against relying solely on empirical evidence and "black box" algorithms, advocating for the integration of physical laws with empirical models to advance understanding of the physical world. The book is primarily intended for graduate students and researchers in the field of earth sciences with a basic background in probability theory and statistics.