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Titolo	Mathematical Principle and Fractal Analysis of Mesoscale Eddy / / by Shu-Tang Liu, Yu-Pin Wang, Zhi-Min Bi, Yin Wang
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ISBN	981-16-1839-9
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Descrizione fisica	1 online resource (260 pages)
Collana	Intelligent Technologies and Robotics Series
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Soggetti	Automatic control Engineering mathematics Control and Systems Theory Engineering Mathematics Vòrtexs Models matemàtics Llibres electrònics
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Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Preliminaries -- Universal Mathematical Model of Mesoscale Eddy -- Semi-stable Limit Cycle in Mathematical Model of Mesoscale Eddy -- Semi-stable Limit Cycles and Mesoscale Eddies -- Example Verification -- Spatiotemporal Structure of Mesoscale Eddies: Self-similar Fractal Behavior -- Mesoscale Eddies: Disc and Columnar Shapes -- Fractal Analysis and Prediction of Mesoscale Eddy Spatiotemporal Complexity -- Nonlinear Characteristics of Universal Mathematical Model of Mesoscale Eddy -- Same Solution between Momentum Balance Equations and Mesoscale Eddies -- Momentum Balance Equation Based on Truncation Function and Mathematical Model of Mesoscale Eddies -- Interpolation Prediction of Mesoscale Eddies -- Random Elliptic Curve and Brownian Motion Trajectory of Mesoscale Eddy -- Mathematical Model for Edge Waves of Mesoscale Eddies and Its Spatio-temporal Fractal Structures.
Sommario/riassunto	This book focuses on universal nonlinear dynamics model of mesoscale eddies. The results of this book are not only the direct-type applications of pure mathematical limit cycle theory and fractal theory

in practice but also the classic combination of nonlinear dynamic systems in mathematics and the physical oceanography. The universal model and experimental verification not only verify the relevant results that are obtained by Euler's form but also, more importantly, are consistent with observational numerical statistics. Due to the universality of the model, the consequences of the system are richer and more complete. The comprehensive and systematic mathematical modeling of mesoscale eddies is one of the major features of the book, which is particularly suited for readers who are interested to learn fractal analysis and prediction in physical oceanography. The book benefits researchers, engineers, and graduate students in the fields of mesoscale eddies, fractal, chaos, and other applications, etc.