

Anastasios A. Tsonis, James B. Elsner
(Editors)



Nonlinear Dynamics in Geosciences

 Springer

Contents

Contributors	xiii
1. Introducing Networks in Climate Studies	1
<i>Anastasios A. Tsonis</i>	
2. Two Paradigms in Landscape Dynamics: Self-Similar Processes and Emergence	17
<i>A. Brad Murray</i>	
3. Effects of Systematic and Random Errors on the Spatial Scaling Properties in Radar-Estimated Rainfall	37
<i>Gabriele Villarini, Grzegorz J. Ciach, Witold F. Krajewski, Keith M. Nordstrom, and Vijay K. Gupta</i>	
4. Nonlinear Dynamics in the Earth's Magnetosphere	53
<i>Daniel N. Baker, Alexander J. Klimas, and Dimitris Vassiliadis</i>	
5. Microseism Activity and Equilibrium Fluctuations	69
<i>Antoni M. Correig, Mercè Urquizu, Josep Vila, and Ramon Macià</i>	
6. An Exponential Langevin-type Model for Rainfall Exhibiting Spatial and Temporal Scaling	87
<i>Victor B. Sapozhnikov and Efi Foufoula-Georgiou</i>	

- 7. Storm Tracking and Ensemble Prediction.....101**
Lizzie S. R. Froude, Lennart Bengtsson, and Kevin I. Hodges
- 8. Towards a Nonlinear Geophysical Theory of Floods in River Networks: An Overview of 20 Years of Progress121**
Vijay K. Gupta, Brent M. Troutman, and David R. Dawdy
- 9. Investigations of Wave-induced Nonlinear Response of Minor Species with the KBM Averaging Method.....153**
Tai-Yin Huang
- 10. ENSO Signal Propagation Detected by Wavelet Coherence and Mean Phase Coherence Methods167**
Svetlana Jevrejeva, John C. Moore, and Aslak Grinsted
- 11. 25 Years of Nonlinearity in Oceanography from the Lagrangian Perspective177**
A. D. Kirwan, Jr., Bruce L. Lipphardt, Jr., Andrew C. Poje, Lakshmi Kantha, and Melissa Zweng
- 12. Self-Scaling of the Statistical Properties of a Minimal Model of the Atmospheric Circulation197**
Valerio Lucarini, Antonio Speranza, Renato Vitolo
- 13. Hindcast AGCM Experiments on the Predictability of Stratospheric Sudden Warming221**
Hitoshi Mukougawa, Toshihiko Hirooka, Tomoko Ichimaru and Yuhji Kuroda
- 14. Self Organized Criticality and/or Low Dimensional Chaos in Second Earthquake Processes: Theory and Practice in Hellenic Region235**
Giorgos P. Pavlos, A. C. Iliopoulos, M. A. Athanasiu
- 15. Analysis of Nonlinear Biophysical Time Series in Aquatic Environments: Scaling Properties and Empirical Mode Decomposition261**
François G. Schmitt, Yongxiang Huang, Zhiming Lu, Sylvie Zongo Brizard, Juan Carlos Molinero, and Yulu Liu
- 16. The Arctic Ocean as a Coupled Oscillating System to the Forced 18.6 Year Lunar Gravity Cycle.....281**
Harald Yndestad

- 17. Dynamical Synchronization of Truth and Model as an Approach to Data Assimilation, Parameter Estimation, and Model Learning.....291**
Gregory S. Duane and Joseph J. Tribbia
- 18. Scale, Scaling and Multifractals in Geosciences: Twenty Years On.....311**
Shaun Lovejoy and Daniel Schertzer
- 19. Statistics of Return Intervals and Extreme Events in Long-Term Correlated Time Series.....339**
Armin Bunde, Jan F. Eichner, Jan W. Kantelhardt, and Shlomo Havlin
- 20. Statistical Properties of Mid-Latitude Atmospheric Variability369**
Sandro Calmanti, Alessandro Dell'Aquila, Valerio Lucarini, Paulo M. Ruti, and Antonio Speranza
- 21. On the Spatiotemporal Variability of the Temperature Anomaly Field393**
Leila M. V. Carvalho, Anastasios A. Tsonis, and Charles Jones
- 22. Time Evolution of the Fractal Dimension of Electric Self-Potential Time Series407**
Francisco Cervantes-De la Torre, Carlos G. Pavia-Miller, Alejandro Ramirez-Rojas, Fernando Angulo-Brown
- 23. Diffusion Entropy Analysis in Seismicity.....419**
Abigail Jimenez, Kristy F. Tiampo, and Antonio M. Posadas
- 24. Snow Avalanches as a Non-Critical, Punctuated Equilibrium System429**
David M. McClung
- 25. Evidence from Wavelet Lag Coherence for Negligible Solar Forcing of Climate at Multi-year and Decadal Periods457**
John Moore, Aslak Grinsted, and Svetlana Jevrejeva
- 26. From Diversity to Volatility: Probability of Daily Precipitation Extremes465**
Anna K. Panorska, Alexander Gershunov and Tomasz J. Kozubowski
- 27. Stochastic Linear Models of Nonlinear Geosystems485**
Cecile Penland

28. Reducing Forecast Uncertainty to Understand Atmospheric Flow Transitions.....	517
<i>Paul J. Roebber and Anastasios A. Tsonis</i>	
29. The Role of El Niño—Southern Oscillation in Regulating its Background State.....	537
<i>De-Zheng Sun</i>	
30. Nonlinear Dynamics of Natural Hazards.....	557
<i>Donald L. Turcotte, Sergey G. Abaimov, Robert Shcherbakov, John B. Rundle</i>	
31. Predicting the Multifractal Geomagnetic Field.....	581
<i>Dimitris Vassiliadis, Antti Pulkkinen, Alexander J. Klimas, Daniel N. Baker</i>	
Index	601