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## Predictability and Nonlinear Modelling in Natural Sciences and Economics

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By Grasman, J. / Straten, Gerrit van

Book Condition: New. Publisher/Verlag: Springer Netherlands | Researchers in the natural sciences are faced with problems that require a novel approach to improve the quality of forecasts of processes that are sensitive to environmental conditions. Nonlinearity of a system may significantly complicate the predictability of future states: a small variation of parameters can dramatically change the dynamics, while sensitive dependence of the initial state may severely limit the predictability horizon. Uncertainties also play a role. This volume addresses such problems by using tools from chaos theory and systems theory, adapted for the analysis of problems in the environmental sciences. Sensitive dependence on the initial state (chaos) and the parameters are analyzed using methods such as Lyapunov exponents and Monte Carlo simulation. Uncertainty in the structure and the values of parameters of a model is studied in relation to processes that depend on the environmental conditions. These methods also apply to biology and economics. For research workers at universities and (semi)governmental institutes for the environment, agriculture, ecology, meteorology and water management, and theoretical economists. | 1. Geophysics.- Karl Popper and the accountability of scientific models.- Evaluation of forecasts.- The Liouville equation and prediction of forecast skill.- An improved formula to describe...



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