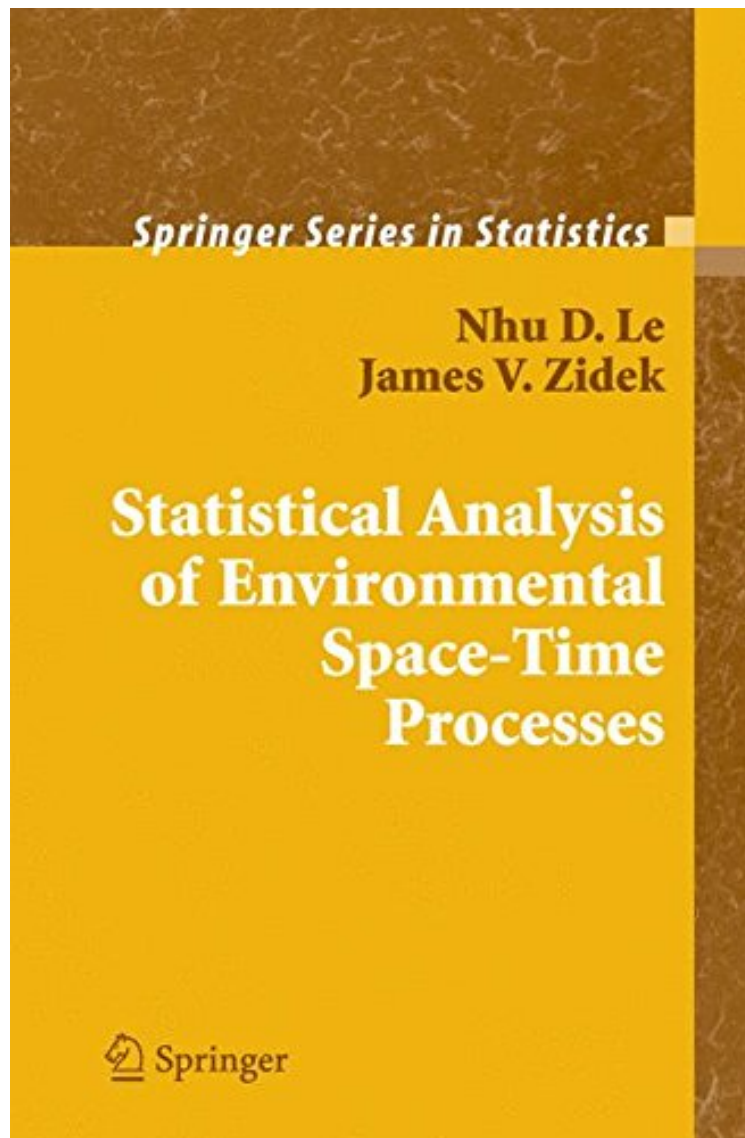


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This book provides a broad introduction to the subject of environmental space-time processes, addressing the role of uncertainty. It covers a spectrum of technical matters from measurement to environmental epidemiology to risk assessment. It showcases non-stationary vector-valued processes, while treating stationarity as a special case. In particular, with members of their research group the authors developed within a hierarchical Bayesian framework, the new statistical approaches presented in the book for analyzing, modeling, and monitoring environmental spatio-temporal processes. Furthermore they indicate new directions for development.

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It is also self-contained and nits material flows in a natural and systematic order. Each chapter starts with motivating examples, which help to orient the reader to the broader picture. ...I give the authors a very high mark for producing such an excellent book, one that will be of great service to the field of environmental statistics." Abdel El-Shaarawi, Environmetrics, January 2007 "Le and Zideks well-written book presents a predominantly Bayesian approach to spatiotemporal statistics, with an emphasis on entropy-based sampling design methods. They provide a superb review of spatial statistics . The books main selling points are its readability and coverage of methods not found elsewhere in a single volume . Le and Zidek have provided an excellent reference on design-based models for environmental processes ." (Mevin B. Hooten, Journal of the American Statistical Association, Vol. 102 (480), 2007) From the Back Cover This book provides a broad introduction to the fascinating subject of environmental space-time processes; addressing the role of uncertainty. Within that context, it covers a spectrum of technical matters from measurement to environmental epidemiology to risk assessment. It showcases non-stationary vector-valued processes, while treating stationarity as a special case. The contents reflect the authors cumulative knowledge gained over many years of consulting and research collaboration. In particular, with members of their research group, they developed within a hierarchical Bayesian framework, the new statistical approaches presented in the book for analyzing, modeling, and monitoring environmental spatio-temporal processes. Furthermore they indicate new directions for development. This book contains technical and non-technical material and it is written for statistical scientists as well as consultants, subject area researchers and students in related fields. Novel chapters present the authors hierarchical Bayesian approaches to spatially interpolating environmental processes designing networks to monitor environmental processes multivariate extreme value theory incorporating risk assessment. In addition, they present a comprehensive and critical survey of other approaches, highlighting deficiencies that their method seeks to overcome. Special sections marked by an asterisk provide rigorous development for readers with a strong technical background. Alternatively readers can go straight to the tutorials supplied in chapter 14 and learn how to apply the free, downloadable modeling and design software that the authors and their research partners have developed. Nhu Le is a Senior Scientist in Cancer Control Research and a former Director of the Occupational Oncology Research Program at the British Columbia Cancer Agency (BCCA). An Adjunct Professor of Statistics at the University of British Columbia since 1992, he also teaches graduate courses and supervises graduate students. He is heavily involved in epidemiological research and the impact environmental and occupational factors have on cancer development. He has published over 100 peer-reviewed research articles in statistical- and subject-area journals. He received his Ph.D. in statistics from the University of Washington in Seattle. Jim Zidek is a Professor Emeritus and Founding Head of the Department of Statistics at the University of British Columbia. He has served on a number of scientific advisory committees, most notably on the United States EPAs Clean Air Scientific Advisory Committees Ozone Panel. 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