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"Gheorghe Asachi" Technical University of Iasi, Romania

Book Review

ENCYCLOPEDIA OF ENVIRONMETRICS

Edited by
Abdel H. El-Shaarawi[1], Walter W. Piegorsch[2]

[1]National Water Research Instiute, Burlington, Ontario, Canada and Department of Mathematics and Statistics McMaster University, Hamilton, Canada and The Department of Mathematics and Actual Science, The American University in Cairo, Egypt
[2]BIO5 Institute, University of Arizona, Tuscon, USA

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The *Encyclopedia of Environmetrics* is addressed to students, researchers, environmental managers, regulators and policy makers which are interested in environmetrics. The authors provide valuable reference sources in volume 4, where 113 articles are included.

The entries are from *M* to *Q*:

Max-stable processes – the article include basic definitions, spectral representation useful in simulation of max stable processes.

Maximum entropy sampling – the article provide information about environmental monitoring, computational complexity, heuristics, branch and bound and remote sampling.

Maximum likelihood estimation – the likelihoods function and estimating equations are explained.

Maximum likelihood estimation, nonregular – estimation techniques are discussed.

Measurement error – the measurement error in the normal linear model are presented.

Meta-analysis – the applications in the area of physical environments and synthesis of quantitative data.

Meteorological extremes – the basic principle of the statistical analysis of large values, role of relevant meteorological data sets, the interaction between extreme values modeling process and application in engineering are discussed.

Microbial bioremediation of metals and radionuclides – information about microbial processes for metal removal and recovery, metal solubilisation, immobilization and transformation, also the mycoremediation and phytoremediation are presented.

Microbial regulations – the health risks are identified, regulation are established and presented.

Missing data – some problems related with the environmental data are discussed.

Mixed effects – mixed models are explained.

Mixed outcomes – the models based on factorization and direct joint modeling are presented.

Mixing distribution –three types of mixture models are described.

Model uncertainty – sources of uncertainty, model building, and utilization of model are discussed.

Model assisted sampling – the model is explained.

Model based inference – the method is presented.

Modeling, environmental – statistical analysis under mechanistic environmental models is discussed.

Monitoring, biological – the article contains a brief description about biological monitoring.

Morbidity and mortality – some measures of morbidity and mortality are presented.

Morphometrics – geometric morphometrics, shape spaces for landmarks and deformation information and examples are provided.

Multicollinearity – detection of multicollinearity and possible solutions are discussed.

Multinominal distribution – the algorithm of calculation is provided.

Multinominal distribution, inferences for – multinominal experiment, asymptotics and statistical inference are discussed.

Multiphase sampling – description and examples are provided.

Multiple comparisons – presents families of comparisons, strength of inference, error rates, examples, options for errors.

Multiple endpoints –advanced specification of priorities, correction of multiple testings, global test statistic, flexibility and data exploration are discussed.

Multiple outcomes – approaches for analyzing multiple outcomes are presented.

Multistage design – description of multistage sampling is provided.

Multivariate adaptive regression splines – adaptive splines in one dimension is discussed, details for the type of stepwise algorithms are provided.

Multivariate analysis of hydrological variables – multivariate setting in hydrology, steps of hydrological frequency analysis, software and resources are presented.

Multivariate covariogram models – the proportional and linear coregionalization models are explained.

Multivariate extremes – methodology of calculation is provided.

Multivariate kriging – simple and ordinary cokriging are discussed.

Mutagenesis environmental – brief description of this area of investigation.

Nanoparticles: environmental effects – determination of nanoparticles ecotoxicity, mechanisms of action and environmental toxicity of silver nanoparticles are discussed.

Nanoparticles: environmental fate and transport – nanoparticles discharge and transport processes and exposure and environmental effects are presented.

Nanotechnology: environmental applications – the article includes information regarding nanostructured semiconductors for photocatalysis, nanomaterials for desinfection, reactive metal nanoparticles for environmental remediation, ferrate, membrane nanotechnologies.

National Institute of Statistical Sciences (NISS), US – provide a brief description of the institute.

National Resources Inventory (NRI), US – is designed to assess conditions and trends for soil, water and related natural resources on non-federal lands of US; sample design, data collection and database construction are presented.

Natural disturbance processes – fire, biotic, landslide and flooding disturbance are discussed.

Natural resources modeling – univariate and multivariate methods for predicting the data at unsampled sites from observations at sampled sites are described.

Nearest neighbor methods – methods for studying spatial point processes and analyzing field experiments and nearest neighbour designs for field experiments are discussed.

Negative binomial distribution – testing and accounting for overdispersion are presented, inferences on the negative binomial distribution and the negative binomial regression model are described.

Nelder plots – can be used to observe in a single plot plants at many different densities; an anlysis is presented in the article.

Nested experimental designs – nested block design are explained.

Network ecology – the origins of network ecology, construction of ecological energy-matter flow networks, network ecology algorithms and some applications of network ecology are provided.

Neural network – a brief description of the models used in neural networks is provided.

Neurotoxicology, environmental – include some explanation about exposure levels, number of and classification of endpoints.

Neyman-Pearson Lemma – some applications to standard one-sided one-parameter problems are described.

Nonlinear regression – models, techniques, inference, measures are presented.

Nonparametric curve estimator – estimation of a univariate probability density function mode, advantage and limitation of nonparametric curve estimator are presented and applications of nonparametric curve estimator are discussed.

Nonparametric regression model – the available methods and their applicability to problems are presented.

Normal and multinormal distribution – definitions and main properties and also inference for univariate and multivariate normal distribution are described.

Numerical integration – methods for conducting approximations are explained.

Nutrient cycling – carbon and nitrogen cycles are presented.

Occupancy problem – the occupancy probability function, sample size are described.

Occupational mortality – include information about statistical aspects, standardized proportional mortality, stratification and model, interpretation and criticisms of standard mortality rate, estension of the SMR model.

Ocean acidification – chemistry of ocean acidification, ocean acidification and geological record, marine organisms, ecosystems and impacts of ocean acidification on human communities are presented.

Oceanographic dispersion – the tools for measure and interpret characteristics of the small scale ocean processes that results in vertical diffusion and various processes generated are discussed.

Oceanography – typical problems such as fisheries management, dispersal of pollutants, search and rescue, storm surge prediction are presented.

Official environmental statistics – the evolving status of official environmental statistics is discussed.

Optimal design – linar regression and nonlinear models, numerical methods are explained.

Optimization – Newton's method, quasi-newton methods, Fisher's method and noderivate methods are presented.

Order restricted inference – the article include estimation of isotonic parameter, testing of isotonic hypothesis, stochastically ordered distributions and applications.

Ordinal response – a brief description is provided.

Ornithological data – is focused on observational data.

Outcome – dependent selection models – the case control studies and other schemes are presented.

Outliers – univariate and multivariate outliers are described and outliers in high dimensional data and dependent data are provided.

Outliers, multivariate – the principles for detecting multivariate outliers, methods and models are presented.

Ozone – include description of ozone formation process, photochemical reactions, models, studies etc.

P value – presentation of the tool is provided.

Panarchy – brief presentation of this term which describes hierarchical systems.

Parallel computing: statistical and environmetric uses – include parallel computing terminology, statistical uses of parallel and distributed computing and some additional remarks.

Pattern recognition – various forms of patterns and signals are discussed and two examples are provided.

Pelagic ecology –pelagic adaptations, ecological organization of pelagic communities, carbon and energy flow in pelagic food webs are described.

Permutation tests – methodology for conducting permutation tests is presented.

Personal exposure monitoring – a brief description is provided.

Phi-divergence statistic – the calculation method is described.

Piecewise linear model – two models are presented: model with no continuity restriction and model under continuous regression function.

Plant epidemics, models and analysis – is focused on studing plant disease epidemics.

Plant strategies – description of plant strategies and development of associated quantitative approaches are presented.

Point processes, dynamic – addressed dynamic point process models.

Point processes, spatial – parameters, special models and statistical inference are discussed.

Point processes, spatial-temporal – characterization and models are presented.

Point processes, temporal – include an example, quations, representations, distinctions, parameters, processes, extensions.

Poisson cluster process – definitions and examples are provided.

Poisson distribution – is provided definition of Poisson distribution and some properties and statistical inference in Poisson sample are discussed.

Poisson intensity – examples and some data regarden simulation and estimation are presented.

Poisson process – description of the process is provided.

Population dynamics – estimation of animal abundance and some models are presented.

Population ecology – is focused on major uses of statistical models in population ecology.

Population health surveillance – some important aspects and temporal, spatial and spatiotemporal issues are discussed.

Population viability analysis – include measures of threat and linking theory to applications.

Posterior distribution – an example is provided.

Power analysis – a classical power analysis with the steps in conducting the analysis is provided, utilization in designing contemporany samplig programs are discussed.

Precautionary principle – definitions, critique, statistics and properties are presented.

Precision agriculture – a brief description is provided.

Prediction intervals, spatial – describe the explicit predictive distribution and prediction intervals.

Predictive scores – proper scoring rules for probabilistics forecast are discussed.

Principal components – the multivariate analysis tehniques is described.

Prior distributions – an example is provided and some information about the theory.

Probabilistic geotechnical hydraulics – the failure mechanisms and the random fields are presented.

Probabilistic models – a brief description of these models is given.

Probit model – model and overdispersion and random effects are presented.

Process models – include a short presentation of models.

Proportional hazards model – the model is described.

Pseudo-likelihood function – the function and method are presented.

Pseudoreplication – some experimental and observational examples are discussed.

Quantal response data – is focused on algorithm of calculation.

Quantiles – include applications of quantiles in environmental science, results, estimation of quantiles, etc.

Quantile regression –information about quantiles, ranks and optimization are presented, an example is provided, is showed how to interpret quantile regression and also discuss some aspects of quantile regression.

Quantitative structure-activity relationships (QSARs) – some approaches regarding these relationships are presented.

Quasi-likelihood – explanation of this method is provided.

Cristina Ghinea
Maria Gavrilescu
Department of Environmental Engineering and Management
Faculty of Chemical Engineering and Environmental Protection
"Gheorghe Asachi" Technical University of Iasi, Romania