

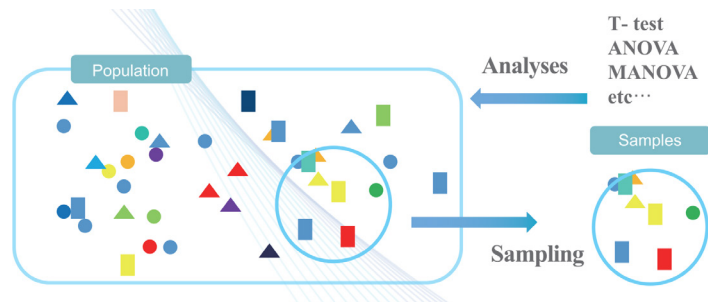
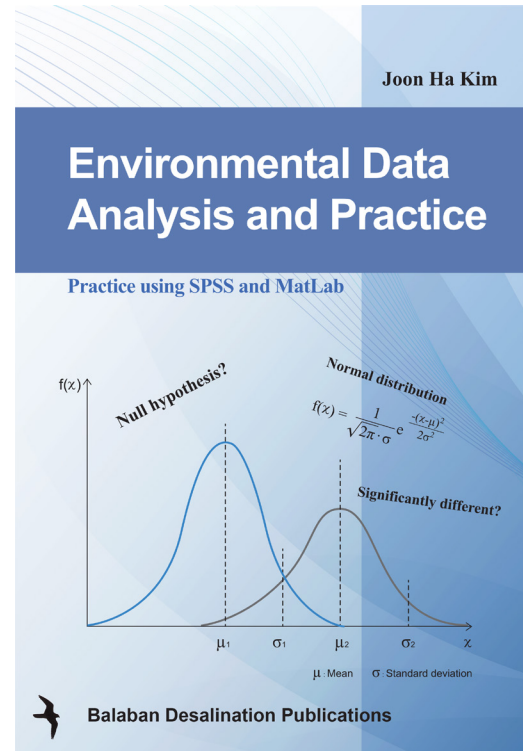
Environmental Data Analysis and Practice

by Joon Ha Kim

This book introduces students and researchers of environmental engineering, earth science, meteorology, and oceanography to basic statistical theories and their applications; to how one can collect meaningful monitoring data in the field; and how to apply data sets to statistical concepts. Outstanding examples are provided for students' self-study and practice using a step-by-step approach. The book is organized in a way that helps readers to analyze both small and large amounts of data easily and logically; these data can be achieved from discrete laboratory experiments and real-time field monitoring sensors.

A general outline of the book:

- Properties of Environmental Data and Basic Statistics
- Software Tools for Environmental Data Analysis
 - SPSS
 - MATLAB
- Hypothesis Testing
 - t-tests
 - ANOVA: ANalysis Of VAriance
 - Multivariate Analysis of Variance (MANOVA)
 - Non-Parametric Test
 - Correlation Analysis
 - Regression Analysis
 - Curve Fitting Analysis
 - Time-Series Analysis
 - Spatial and Temporal Data Analyses
 - Principal Component Analysis (PCA)
 - Cluster Analysis
 - Monte Carlo Simulation
 - Sensitivity Analysis
 - Uncertainty Analysis
- Other Analyses
 - Artificial neural network (ANN)
 - Support vector machine (SVM)
 - Self-organizing map (SOM) analysis
- Appendix. MATLAB Codes for Practices
 - t-test
 - ANOVA
 - MANOVA
 - Kruskal-Wallis test
 - Correlation
 - Regression, curve fitting, time series analysis: use "cftool;"
 - Spatial and temporal data analysis
 - Principal component analysis
 - Cluster analysis
 - Monte Carlo simulation
 - Sensitive analysis
 - Artificial neural network (ANN)
 - Support vector machine (SVM)
 - Self organizing map (SOM)



Joon Ha Kim



Joon Ha Kim is a professor in the School of Environmental Science and Engineering at the Gwangju Institute of Science and Technology (GIST), Korea. Professor Kim has a background in chemical and Environmental Engineering disciplines from Korea University and the University of California, Irvine, USA. He has researched for more than 15 years, studying the academic area of environmental systems engineering associated with complex environmental systems. He has published more than 100 papers in many prominent international journals in the field of environmental science and engineering. He is one of the leading experts in environmental data analysis and mining, statistical and deterministic modeling and optimization to mitigate the problems caused by the intrinsic complexities of environmental systems.

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