DESCRIPTION

A comprehensive treatment of statistical applications for solving real-world environmental problems

A host of complex problems face today's earth science community, such as evaluating the supply of remaining non-renewable energy resources, assessing the impact of people on the environment, understanding climate change, and managing the use of water. Proper collection and analysis of data using statistical techniques contributes significantly toward the solution of these problems. Statistics for Earth and Environmental Scientists presents important statistical concepts through data analytic tools and shows readers how to apply them to real-world problems.

The authors present several different statistical approaches to the environmental sciences, including Bayesian and nonparametric methodologies. The book begins with an introduction to types of data, evaluation of data, modeling and estimation, random variation, and sampling—all of which are explored through case studies that use real data from earth science applications. Subsequent chapters focus on principles of modeling and the key methods and techniques for analyzing scientific data, including:


- Interval estimation and Methods for analyzing hypothesis testing of means time series data
Most statistical models are introduced by concept and application, given as equations, and then accompanied by heuristic justification rather than a formal proof. Data analysis, model building, and statistical inference are stressed throughout, and readers are encouraged to collect their own data to incorporate into the exercises at the end of each chapter. Most data sets, graphs, and analyses are computed using R, but can be worked with using any statistical computing software. A related website features additional data sets, answers to selected exercises, and R code for the book’s examples.

Statistics for Earth and Environmental Scientists is an excellent book for courses on quantitative methods in geology, geography, natural resources, and environmental sciences at the upper-undergraduate and graduate levels. It is also a valuable reference for earth scientists, geologists, hydrologists, and environmental statisticians who collect and analyze data in their everyday work.

ABOUT THE AUTHOR

John H. Schuenemeyer, PhD, is President of Southwest Statistical Consulting, LLC and Professor Emeritus of Statistics, Geography, and Geology at the University of Delaware. A Fellow of the American Statistical Association, Dr. Schuenemeyer has more than thirty years of academic and consulting experience and was the recipient of the 2004 John Cedric Griffiths Teaching Award, awarded by the International Association for Mathematical Geosciences.

Lawrence J. Drew, PhD, is Research Scientist at the U.S. Geological Survey. Dr. Drew has published more than 200 scientific papers on the role of quantitative methods in petroleum and mineral resource assessment, and he is currently is working on an
analysis of environmental data. Dr. Drew is the winner of the 2005 Krumbein Medal, awarded by the International Association for Mathematical Geosciences.

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