

Environmental and Ecological Statistics

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Centrality of the Journal and the New Millennium

A new millennium began on 1 January 2001, and with it, the scientific journal *Environmental and Ecological Statistics* began its eighth year of publication. In that time, much has been accomplished. But, there is much more to accomplish as the Journal marches into this new millennium.

Environmental statistics is in a growth stage as the new millennium begins, demanding nontraditional statistical thinking to solve modern environmetric problems. This is due largely to the existence of spatial, temporal, nonidentical, and nonindependent environmental data (*see* **Spatial analysis in ecology; Time series, ecological**), involving sampling, assessment, and decision making for both policy and research.

The emphasis of *Environmental and Ecological Statistics* is, as its title declares, on statistics, ecology, and the environment. It acts as a forum for multidisciplinary communication and discussion on statistics, ecology, environment, and society. Its impact is cross-disciplinary, where environmentally related disciplines communicate with each other through its offerings. As a result, the Journal is not currently allied with any one professional society. This helps it reach a broad community, involved in a variety of environmental situations and the implicit statistical issues and solutions they bring about. The Journal is published by Kluwer Academic Publishers.

The purpose of the Journal is to provide a productive forum and springboard for constructive cross-disciplinary activity in statistical ecology (*see* **Ecological statistics**), environmental statistics (*see* **Environmetrics, overview**), and risk assessment (*see* **Risk assessment, ecological**). The centrality of the Journal lies in its support of practical and scholarly advances in modern environmental and ecological statistics. This is an important challenge, but also an opportunity for the needed integration of statistics, ecology, environment, and society.

The centrality of the Journal also lies in the challenge and opportunity for the discipline and the field,

whether seen as interdisciplinary, cross-disciplinary, multidisciplinary, or transdisciplinary, to help reduce the gap between theory and practice of effective environmetric methods.

The Journal publishes papers on practical applications of statistics and related quantitative methods to environmental science, addressing contemporary issues. Emphasis is on applied mathematical statistics, statistical methodology, data interpretation and improvement for future use, and advanced environmental theory and practice using valid statistics. Topics address all aspects of the collection, analysis, presentation, and interpretation of environmental data for research, policy, and regulation. Articles emphasize theory and methods, case studies and applications, environmental change and statistical ecology, environmental health statistics and stochastics, and related areas. From time to time, special features include invited discussion papers; research communications; technical notes and consultation corner; mini-reviews; letters to the Editor; news, views, and announcements; hardware and software reviews, data management, etc.

The content of a Journal is of course only as good as its authors, reviewers, and editors. An important cross-disciplinary editorial group consisting of over 100 environmetric professionals has provided timely advice and assistance. An impressive stream of timely manuscripts has been meticulously prepared by the environmental and ecological statistics community. These have led, in the Journal's first seven volumes (four issues per volume-year), to over 150 articles and editorials, spanning a broad spectrum of important, relevant issues and topics in environmental and ecological statistics. Several timely special issues were devoted to select themes, such as: Environmental Monitoring and Assessment (A.R. Olsen, Guest Editor); Space-Time Processes in Environmental and Ecological Studies (Peter Guttorp, Guest Editor); Statistical Design and Analysis with Ranked Set Samples (N. Phillip Ross and Lynne Stokes, Guest Editors); Statistical Toxicology (Wolfgang Urfer, Guest Editor); and Statistical Ecology and Forest Biometry (Timothy G. Gregoire and Michael Kohl, Guest Editors). Future special issues in development or production include the themes: Spatial Statistics for Production Ecology (Alfred Stein, Guest Editor); Adaptive Sampling (Steven K. Thompson, Guest Editor);

Statistical Design and Analysis with Composite Samples (Richard O. Gilbert and Barry D. Nussbaum, Guest Editors); Classified Raster Map Analysis and Cellular Automation for Environmental and Ecological Statistics (Wayne Myers and Charles Taillie, Guest Editors); and Regional Environmental Indicators and Their Integration (N. Phillip Ross and Ashbindu Singh, Guest Editors).

Centrality of the Journal and Its Roots

The Journal's roots can be traced back to the year 1994, which marked the 25th year of statistical ecology. This dating was based on the First International Symposium on Statistical Ecology, held at Yale University in 1969. The three symposium cochairs (G.P. Patil, E.C. Pielou, and W.E. Waters) represented the fields of statistics, theoretical ecology, and applied ecology, respectively. The Ford Foundation graciously provided support. Several well-known statisticians and ecologists came together and began a dialogue, leading to collaborative research and outreach in many different forms. This led to a Liaison Committee on Statistical Ecology between the International Association for Ecology, the International Statistical Institute, and the **International Biometric Society**. From this, a Statistical Ecology Working Group within the International Association for Ecology and a Statistical Ecology Section in the **Ecological Society of America** were formed. Further on, a standing Committee on Environmental Statistics was formed within the International Statistical Institute. The 'Environmental Section' and the 'Section on Statistics and the Environment' then followed in the **Royal Statistical Society** and the **American Statistical Association**, respectively. Also, a broadly based professional organization, **The International Environmetric Society**, began an effort to bring together practicing environmetricians from around the globe.

These various groups all helped solidify the growing interest and need for specific activity and dissemination of research in environmental statistics. The community of environmetricians grew, and brought with it the need for publication outlets for their rapidly developing work. *Environmental and Ecological Statistics* can trace its origins to these very important environmetric pioneers.

Over the past 25 years, statistical ecology has had a major impact on the collection, analysis, and interpretation of data on various fields of application and their theory, whether related to ecology in an obvious manner or not. There have been many successful applications of statistical ecology both in scientific discovery and public policy. The Journal has helped to bring these meaningful research advances to the attention of the larger scientific community.

While much progress has been made, the future promises even more rapid developments as sophisticated computing technology is utilized to apply newly developed statistical methods to increasingly detailed databases in both space and time. The Journal will strive to continue to be part of this exciting endeavor.

Journal Web Pages for Additional Information

You may wish to visit the following web pages for additional information

<http://www.wkap.nl/journalhome.htm/1352-8505>
<http://www.stat.psu.edu/~gpp/cross-di.htm>

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Further Reading

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- (See also **Center for Statistical Ecology and Environmental Statistics; *Environmetrics*, The Journal of the International Environmetric Society; *Journal of Agricultural, Biological, and Environmental Statistics***)

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