The joint meeting of

The Sixth International Symposium
On Spatial Accuracy Assessment
In Natural Resources and Environmental Sciences

And

The International EnvironMETRICS Society - TIES

The Fifteenth Annual Conference of TIES,
The International Environmetrics Society

Portland, Maine, USA
June 28 – July 1, 2004

Editors:

H. Todd Mowrer, Rocky Mountain Research Station
Ronald McRoberts, North Central Forest Experiment Station
Paul C. VanDeusen, National Council for Air and Stream Improvement

Supporting Organizations:

US Department of Agriculture, Forest Service
International Union of Forest Research Organizations
American Statistical Association, Section on Statistics and the Environment
International Statistical Institute, Committee on Probability and Statistics in the Physical Sciences – The Bernoulli Society
National Council for Air and Stream Improvement

PREFACE

The 6th International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences and the 15th Annual Conference of The Environmetrics Society (TIES) met jointly June 28 – July 1, 2004, at the Holiday Inn By The Bay in Portland, Maine, USA. The objectives of the meeting reflected the continuing emphases of both series: (1) to establish a forum for the exchange of views among experts from environmental sciences, natural resources, spatial statistics, and geographic information science, and (2) to develop further the theory and practice of the quantification of environmental and natural resource processes and the uncertainties associated with them. Success was due primarily to over 100 excellent presentations by plenary speakers, authors of invited and contributed papers, and a variety of posters. Topics discussed reflected the diversity of interests and high level of expertise among the international participants

Both series have a long international history. The Spatial Accuracy Symposium series began in Williamsburg, Virginia, USA in 1994, followed by meetings in Fort Collins, Colorado, USA in 1996; in Quebec, Canada in 1998; in Amsterdam, The Netherlands in 2000; and in Melbourne, Australia in 2002. The most recent annual TIES conferences were in Sheffield, England in 2000; in Portland, Oregon, USA in 2001; in Genoa, Italy in 2002; and in Johannesburg, South Africa in 2003. This joint meeting in 2004 continued the tradition of excellence of both series, while promoting greater interaction among their respective participants. To this end, the organizers gratefully acknowledge the contributions of the following alphabetically listed members of the Program Committee: Montserrat Fuentes (North Carolina State University, USA), Anders Grimval (Linköpings Universitet, Sweden), Gerard B.M. Heuvelink (Wageningen University and Research Centre, The Netherlands), H. Todd Mowrer (Rocky Mountain Research Station, USA), Elena N. Naumova (Tufts University, USA), Gregory A. Reams (Southern Research Station, USA), E. Marian Scott (University of Glasgow, UK), Paul C. Van Deusen (National Council for Air and Stream Improvement, USA), and James Zidek (University of British Columbia, Canada).

As a step in the continuing evolution of the Spatial Accuracy Symposium series, the editors of these joint proceedings decided to move from formal – and expensive – hard-copy print publication to this electronic format. With authors already submitting manuscripts electronically in professional format, it seemed a logical step to simply compile the "papers" on an inexpensive CD for distribution to participants at the conference. Participants can then read and/or download those papers of most interest to them. We greatly appreciate the extra effort of the authors in carefully following the formatting instructions designed by our editorial consultant Bob Hamre, retired editor for the Rocky Mountain Research Station. Because the manuscripts were submitted in pdf files, they did not receive conventional editing after submission, and there will likely be some minor formatting inconsistencies – a small price to pay for the speed and economy of electronic publication. The views expressed in each paper are those of the author(s), of course, and not necessarily those of the sponsoring organizations or the USDA Forest Service (which is underwriting the publication costs).

June 2004

Ronald E. McRoberts, Program Chair

INVITED PRESENTATIONS

Brillinger, David R., University of California, USA "Wildfire chances and probabilistic assessment"

Calder, Catherine, Ohio State University, USA "Efficient posterior inference and prediction of space-time processes using dynamic process convolutions"

Fasso, Alessandro, University of Bergamo, Italy "Data quality and uncertainty in fine particulate monitoring"

Goovaerts, Pierre, Biomedware, Inc., USA "Modeling uncertainty about pollutant concentration and human exposure using geostatistics and a space-time information system: application to arsenic in groundwater of southeast Michigan"

Lowell, Kim, University of Laval, Canada "Estimating boundary existence and width from a single forest map"

Myers, Donald, University of Arizona, USA "Estimating and modeling space-time variograms"

Quintanilha, J.A., Universidade de São Paulo, Brazil "Wildfire threat count analysis by longitudinal models"

Scott, Marian, University of Glasgow, Scotland "Spatial scale and its effects on comparisons of airborne and ground-based gamma-ray spectrometry for mapping environmental radioactivity"

CONTRIBUTED PRESENTATIONS

Aberg, Sofia, Lund University, USA "A space-time dynamic model based on image warping"

Alo, Aga, Clement Clark University, USA "Detecting the influence of protection on landscape transformation in southwestern Ghana"

Bhanu, Bir Rui Li, University of California, Riverside, USA "Indexing structure for handling uncertain spatial data"

Bhattacharya, S, Trinity College, Ireland "Bayesian paleoclimate reconstruction"

Cooley, Daniel, University of Colorado, USA "Spatio-temporal analysis of extreme values from lichenometric studies and their relationships to climate"

Cooper, Cynthia, Oregon State University, USA "Characterizing design-based properties of a spatial sample to quantify design-based variance of model-based estimators"

Coulston, John, North Carolina State University, USA "The effects of blurred plot coordinates on ozone risk assessments"

Davis, C.A., National Center for Atmospheric Research, USA "An object-based method for quantifying errors in meteorological models"

Di Battista T., Università "G. D'Annunzio" Chieti, Italy "Non-parametric confidence bands for β diversity profiles"

Dorren, Luuk, Cemagref, France "Effect of support size on the accuracy of spatial models: findings of rockfall simulations on forested slopes"

Engel, D.W., Pacific Northwest National Laboratory, USA "An interative uncertainty assessment technique for environmental modeling"

Fefferman, Nina H., Tufts University, USA "Two-stage wavelet analysis assessment of dependencies in time series of disease incidence"

Gadish, David, California State University, Los Angeles, USA "Evaluating patterns of spatial relations to enhance data quality"

Giannitrapani, Marco, University of Glasgow, UK "Analysis of sulphur dioxide trends across Europe"

Gilleland, Eric, National Center for Atmospheric Research, USA "Optimizing METAR network design for verification of cloud ceiling height and visibility forecasts"

Grunwald, S., University of Florida, USA "Characterization of the spatial and parameter variability in a subtropical wetland"

Hrdličková, Zuzana Masaryk, University Brno, Czech Republic "Powers of ANOVA tests for variables with general distribution from the exponential class"

Ignaccolo, Rosario, University degli Studi di Torino, Italy "Model testing for spatial strong-mixing data"

Iiames, J.S., US EPA, USA "Accounting for error propagation in the development of a leaf area index (LAI) reference map to assess MODIS MOD15A LAI products"

Jacquez, Geoffrey M. BioMedware, USA "Compex systems analysis using space-time information systems and model transition sensitivity analysis"

Kronenfeld, Barry, State University of New York at Buffolo, USA "Minimizing information loss in continuous representations: a fuzzy classification technique based on principal components analysis"

Kuzera, Kristopher, Clark University, USA "Using popular coefficients of agreement to assess soft-classified maps at multiple resolutions"

Libiseller, Claudia, Linköping University, Sweden "Comparison of methods for normalization and trend testing of water quality data"

Liknes, Greg, USDA Forest Service, USA "Evaluating classified MODIS satellite imagery as a stratification tool"

Lilburne, Linda, Landcare Research, New Zealand "Sources of uncertainty in landuse pressure mapping"

Madsen, Lisa, Oregon State University, USA "Maximum likelihood estimation of regression parameters with spatially misaligned data"

Mecklin, Christopher J., Murray State University, USA "The credible diversity plot: a graphic for comparison of biodiversity"

Orzanco, Maria-Gabriela, Université Laval, Canada "Assessing the spatial uncertainty of boundaries on forest maps using an ecological similarity index"

Paladino, Louis, Clark University, USA "Accuracy assessment and uncertainty in baseline projections for land-use change forestry projects"

Pontius R. Gil and Christopher D. Lippit, Clark University, USA "Detecting true land change with confused classifiers"

Rennolls, Keith, University of Greenwich, UK "Use of remote sensed image-banks in forest information systems: data-fusion of imagery over space and time for forest change detection"

Shekhar, Sashi, University of Minnesota, USA "Digital road map accuracy evaluation: a buffer-based approach"

Sinha, Gaurav, University at Buffalo, USA "Quantifying the efficacy of multicriteria generalization (MGC) of geospatial data for AEM groundwater modeling"

Splitstone, Douglas E., Splitstone and Associates; Michael E. Ginevan, Blasland, Bouck and Lee, Inc., USA "A Bayesian approach to determining the 'paternity' of environmental contamination"

Switzer, Paul, Stanford University, USA "Visualizing spatial uncertainty of geological structure based on multiple simulations"

Voigt, Kristina, National Research Center for Environment and Health, Germany "Method of evaluation by order theory (METEOR) applied on the topic of water contamination with pharmaceuticals"

Wahlin, Karl, Linköping University, Sweden "Reduced models of the retention of nitrogen in catchments"

Xi, L, Shire Pharma, Rockville, Maryland, USA and I.B. Macneill "Detection of Boundaries in Regression Data in the Presence of Spatial Correlation"