The International ENVIRONMETRICS Society - TIES

Newsletter

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Editors: Michael Dowd and Alessandro Fassò

In This Issue:

1. A Message from the President,

David Brillinger (brill@stat.berkeley.edu)
Dept of Statistics,
University of California, Berkeley

I begin by setting down a bit of TIES history, then I present the results of a naive study of the Society's impact. I have in mind that some of our new and younger members might have an interest in these topics.

To get started, it seems that the word "environmetrics" was created at a 1976 meeting of the Committee on National Statistics created by Stu Hunter, now Professor Emeritus, School of Engineering and Applied Science at Princeton University. The Society itself was formed in 1989 by two Canadians from Southern Ontario, Abdel El-Shaarawi and Ian MacNeill. In 1993 it was incorporated as a non-profit corporation in Canada. It even has an official corporate embosser!

Environmetrics is the official journal of our Society. It too was created by Abdel and Ian. The journal's first number appeared in March 1990 having been prepared and developed in London, Ontario. In the course of writing this column I pulled out my copy of Volume 1, No. 1. The editors were Abdel and Ian. Impressively the opening words of their Editorial are,

"The environment has become a major issue of concern for people and governments around the word since it has been realized that the damage caused by poor environmental policies is extensive and sometimes appears irreversible."

What a tragedy that people didn't react more quickly and effectively to these concerns.

The opening/keynote paper in the journal was by Stu Hunter. I believe that the other papers are also from the First International Conference on Statistical Methods for the Environmental Sciences held in 1989 in Cairo, Egypt. On a re-reading, the papers stand the test of time well. Returning to Stu he is a Member of the Journal's Advisory Board to this very day.

In a minor attempt to learn something of the impact of "TIES" and "*Environmetrics*", I checked how many times these words turned up in Google and Yahoo searches. (Of course the reasons a word appears are varied, for example there are two businesses with "Environmetrics" in their names.) The results I obtained were:

- "environmetrics" Google 53,500 Yahoo 208,000 times
- "The International Environmetrics Society" Google 3740 Yahoo 6850 times
- "Environmetrics + journal" Google 27,500 Yahoo 120,000 times

Environmetrics clearly has a presence in cyber space.

The preceding are remarks focus on the past and present. Now the future. The Kelowna June meeting is soon upon us. The preparations are well advanced because of the very substantial efforts of Sylvia Esterby, a Past President of TIES. I suggest that you consult the website at

www.environmetrics.org

and start making some travel plans, and learn how to canoe. The website just referred to, was registered, created and developed by our webmaster, Grace Chiu. It is surely functioning well.

Possible future places for meetings of the Society include Corvalis, Venezuela, and Brazil. Discussions with the ISI continue re TIES joining their existing sections (Bernoulli, Education, Official, Survey, Computing, Business & Industrial), and becoming the Environmetrics Section.

It is perhaps worth mentioning that the *Encyclopedia of Environmetrics* is now available online with access via J. Wiley's website.

I end by thanking everyone who has taken some responsibility in keeping TIES functioning effectively. In particular I thank those who have been and will be helping TIES with conferences, *Environmetrics*, committees, Board responsibilities, refereeing and suggestions.

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2. TIES News

2.1. New Members

Kristina Voigt

Welcome to the 120 new members who joined TIES between December 2006 and November 2007.

Shafiqah Al-Awadhi	Kuwait
Fahima Al-Awadhi	Kuwait
Obaid Al-Saidy	Oman
Stewart Andrews	UK
José M. Angulo	Spain
Jaromír Antoch	Czech Republic
Luboš Bauer	Czech Republic
Moreno Bevilacqua	Italy
Peter Bloomfield	USA
Antonella Bodini	Italy
Marek Brabec	Czech Republic
Dick Brus	The Netherlands
Marie Budíková	Czech Republic
Anna Budka	Poland
Petr Bureš	Czech Republic
Adam Butler	UK
Barbara Cafarelli	Italy
Paulo Canas Rodrigues	Portugal
Annamaria Castrignano	Italy
Lubomíra Červová	Czech Republic
Lieven Clement	Belgium
Mark Clements	Australia
Massimiliano Copetti	Italy
Pavel Čupr	Czech Republic
Slavoj Czesaný	Czech Republic
Ladislav Dušek	Czech Republic
Rudolf Dutter	Austria

Alice Dvorská	Czech Republic
Kryštof Eben	Czech Republic
Václav Faltus	Czech Republic
Lee Fawcett	UK
Eva Fišerová	Czech Republic
Marie Forbelská	Czech Republic
Ali Gargoum	United Arab Erimates
Sarah Germain	UK
Tomas Goicoa	Spain
Allen Green	UK
Daniel Hlubinka	Czech Republic
Christoph Hofer	Switzerland
Ivan Holoubek	Czech Republic
Joanna Horabik	Poland
Karel Hron	Czech Republic
Nan-Jung Hsu	Taiwan
Hsin-Cheng Huang	Taiwan
Todor Ivanov	USA
Venkata K. Jandhyala	USA
Jiří Jarkovský	Czech Republic
Daniela Jarušková	Czech Republic
Jill Suzanne Johnson	UK
Giovanna Jona Lasinio	Italy
Pavel Jurus	Czech Republic
Dariusz Kayzer	Poland
Jana Klánová	Czech Republic
Radim Klapka	Czech Republic
Thomas Kneib	Germany
Jan Koláček	Czech Republic
Lucie Komolíková	Czech Republic
Franz Konecny	Austria
Galina Koptsik	Russia
Sergey Koptsik	Russia
Milena Kovářová	Czech Republic
Lubomír Kubáček	Czech Republic
Klára Kubošová	Czech Republic
Jan Kyselý	Czech Republic
Agnieszka Lacka	Poland
Giovanna Jona Lasinio	Italy
Jiří Létal	Czech Republic
Ana Teresa Lima	Portugal
Igor Liska	Austria
Renjun Ma	Canada
Ana Esther Madrid	Spain
Laure Malherbe	France
Patrice Marek	Czech Republic
Tetsuya Matsui	Japan
Miloslav Mikulík	Czech Republic
Ana F. Militino	Spain
Ivo Moll	Czech Republic
Darren Murray	UK
Tomoki Nakaya	Japan
Danka Némethová	Czech Republic
Martina Neumanová	Czech Republic
Jakub Odehnal	Czech Republic
Simone Padoan	Italy
Jan Pavlovič	Czech Republic
Katarzyna Paw lowska	Poland
Antonio Paz González	Spain
Alessandra Petrucci	Italy
Ondřej Pokora	Czech Republic
Jitka Poměnková	Czech Republic
Emilio Porcu	Spain
Zdeněk Pospíšil	Czech Republic
Jacqueline Potts	UK
Jaroslav Ráček	Czech Republic
Suhasini Rao	USA
Monika Rencová	Czech Republic
Marija Romic	Croatia
María D. Ruiz-Medina	Spain
Hagen Scherb	Germany
Michael G. Schimek	Austria
Peter Schlattmann	Germany
Elizabeth Louise Smith	UK
Eva Sovjáková	Czech Republic
Bernhard Spangl	Austria
Ernst Stadlober	Austria
Milan Stehlik	Austria
Robert Szava-Kovats	Estonia
Matthias Templ	Austria
Tetsuji Tonda	Japan
Lola Ugarte	Spain
Kamila Vopatová	Czech Republic
Rasmus Waagepetersen	Denmark
David Walshaw	UK
Gejza Wimmer	Czech Republic

Tsutomu Yagihashi	Japan
Thomas Yee	New Zealand
Jiří Zelinka	Czech Republic
Zhengyuan Zhu	USA
Alessandro Zini	Italy
Jan Žižka	Czech Republic
Jana Zvárová	Czech Republic

2.2 Society News

TIES 2007 Student Paper Competition

Simone Padoan won the Student Paper competition at the TIES 2007 conference in Mikulov, Czech Republic. He has written a report on his research below

I would like to thank the Environmetrics journal for giving me the opportunity to write this article. In particular the Newsletter Editor Prof. Alessandro Fasso. I am honored to have received the "the best student award" in TIES 2007. I would like also to thank my advisor Prof. Stuart Coles for introducing me to extreme value theory, for his guidance and complete support.

I was born in Padua, a small city in the north of Italy where I received my degree in Statistics and where I am completing my Ph.D. in the same area. During the second year of my Ph.D. I had the great opportunity of researching in the School of Mathematics and Statistics of the University of New South Wales, Sydney Australia, where I spent half of my Ph.D. time.

I started to be interested in studying Environmental processes due to its connection with the extreme value theory, my Ph.D topic. In fact, we have seen that environmental extreme events may have a massive impact on everyday life such as hurricanes and floods etc. There is a substantial interest in studying, understanding and predicting the nature of such phenomena and the problems caused by them but also in virtue of the possible link between extreme climate events and global warming or climate change.

My research focuses on statistical modelling and methods for making inferences about extreme events for two types of process. First, non-stationary univariate processes; second, spatial stationary processes.

In practice I worked on mixed model-based splines for extremal models with the aim to analyze, for example the trend of the annual maximum temperatures which can dependent on covariates such as time, precipitation amount, etc.

Mixed model-based splines for extremal models are flexible devices in order to detect complex and unconventional patterns of real data, but they involve complications for inference. However, inference for them can be provided by using extensions of standard likelihood methods. I worked on a relatively quick and simple procedure for the model fitting. Analysis of the England and Switzerland maximum temperatures supported the assumptions of nonlinearity of these processes and that the nonparametric approach is adequate.

My second research interest focuses on studying environmental processes such as rainfall which have a natural spatial domain. I worked for instance on studying the spatial dependence of the annual maximum rainfall levels recorded by weather stations, spread over the USA territory. Roughly, the spatial analogue of univariate or multivariate extreme value models is a class of stochastic processes that derives as an infinite dimensional extension of the multivariate extreme value theory. They provide a general and useful approach to model extremal processes incorporating temporal or, more commonly, spatial dependence. On the statistical side, likelihood methods for such models are complicated by the intractability of density functions in all but the most trivial cases. Nonetheless, I explored some statistical methods for inference with max-stable processes based on the composite (or pseudo-likelihood) and on the class of recently developed procedures referred to as Approximate Bayesian Computation. These methods perform reasonably well and serve as a useful surrogate of the full likelihood for data analysis of practical problems. Currently, I am still working on extreme value theory with application to environmental processes at the Ecole Polytechnique Federale De Lausanne jointly with Prof. Marc Perlange and Prof. Anthony Davison as part of the extremes value research group http://www.cces.ethz.ch/projects/hazri/EXTREMES

Simone Padoan
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3. Environmetrics Conferences

3.1. Forthcoming TIES Conferences

TIES 2008, the 19th Annual Conference of The International Environmetrics Society, Kelowna, British Columbia, Canada, June 8-13, 2008

The conference site is the University of British Columbia Okanagan located north of the city of Kelowna and a 5 minute drive from the International Airport. Kelowna is located on Lake Okanagan which stretches for 135 km in the valley between the Cascade and Monashee Ranges in interior British Columbia.

Conference theme: *Quantitative Methods for Environmental Sustainability*.

The program will consist of plenary sessions, invited sessions and contributed oral and poster sessions. A best student paper and a best poster competition are open to participants.

For 2008, the special TIES lectures are:

- J. Stuart Hunter Lecture, Jef Teugels, Katholieke Universiteit Leuven.
- President's Invited Lecture, Peter Guttorp, University of Washington.

Invited Sessions to date:

William Christensen:	Pollution Source Apportionment
Michael Dowd:	Marine Ecology
Alessandro Fasso:	Spatio-temporal Models for Air Quality and Epidemiology
Montserrat Fuentes:	Spatial Temporal Modelling of Environmental Health Data
Paramjit Gill:	Monitoring, Modelling and Managing Environmental Systems
Paramjit Gill:	Ecological Sampling
Peter Guttorp:	Communicating Risk and Uncertainty
Bronwyn Harch:	Landscape Level Risk
Jason Loeppky:	Applications of Computer Models
Rejun Ma:	Modelling of Covariates in Environmental Studies
Ron McRoberts:	Forest Biodiversity
Nathaniel Newlands:	Ecosystem Modeling

Other sessions being organized: Spatial Modelling; Fire spread; Sustainability and Point Processes; Proxy Climatological Modelling; Fuzzy data, Statistics and Environmental Data; Modelling Mountain Pine Beetle Spread; Change-Point Analysis of Environmental Time Series.

Papers are invited within the scope of the conference topics: Agro-climate Risk; Analysis of Extremes; Assessing Status and Trends; Design and Analysis of Computer Experiments; Environmental Reporting and Indicators; Environmental Risk Assessment; Environmental Standards; Monitoring, Modelling and Managing Environmental Systems;

Network Design and Efficient Data Collection; Space-time Modelling. Application areas include: Biodiversity, Climate Change, Sustainable Agriculture, Air Quality, Water Quality, Soil Contamination, Energy, Environmental Economics, Ecosystem and Human Health.

A short course on Extremes will be given Sunday June 8. Conference registration opens the afternoon of Sunday June 8, with a Welcome Reception Sunday

evening. Scientific Sessions begin the morning of June 9 and end Friday June 13. Mid-conference tours will be held Wednesday June 11 and the conference banquet, with winery tour and tasting, will be at the Summerhill Winery June 12.

Modern and affordable hotel-like accommodation has been reserved on campus and also blocks of rooms at hotels in the city, with varying deadlines for reservations. Book early since the tourist season has begun by June.

For further information and to register, please see: http://web.ubc.ca/okanagan/msp/TIES2008.html

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TIES 2009, the 20th Annual Conference of The International Environmetrics Society, is tentatively scheduled to take place in Bologna, Italy from July 5-9, 2009

3.2 Meeting Reports

TIES 2007, the 18th Annual Conference of The International Environmetrics Society, Mikulov, Czech Republic

The 2007 meeting of The International Environmetrics Society took place in Czech Republic from August 16-20, 2007. The meeting was Satellite to the 56th Session of the International Statistical Institute which took place the following week in Lisboa, Portugal. The theme of the meeting was Computational Environmetrics: Protection of Renewable Environment and Human and Ecosystem Health. It took place in the beautiful historical town of Mikulov in southern Moravia, on the Austrian-Czech border, close to Vienna and to Brno. The venue for conference talks and events was the hilltop Renaissance chateau. Social highlights include excursions to Pavlov Uplands and Lednice.

Over 150 participants from North and South America, Europe, Asia, and Australia/New Zealand attended with up to three parallel scientific sessions taking place. Highlights included the J. Stuart Hunter Lecture entitled "Global Change and Natural Variability" given by Peter Bloomfield. Plenary Sessions were also given by David R. Brillinger, Abdel El-Shaarawi, Lubomír Kubácek, Thomas Kneib, and Michael G. Schimek.

Thanks are also extended to the general Sponsors VSN International and the organizing sponsors at Masaryk University, Czech Statistical Society, and the Union of Czech Mathematicians and Physicists. Special thanks is also extended in appreciation of all the efforts of Ivana Horova, Jan Kolacek and the many others who worked hard to make this event a great success.

Report on First North American Regional TIES Meeting

The first North American regional meeting of TIES took place in Seattle June 19-21, 2007. Ninety registered participants enjoyed a variety of talks, many geared towards the conference theme of "Climate change and its environmental effects: monitoring, measuring, and predicting."

The conference started in the afternoon of the first day with a session on inference for mechanistic models, with Tilmann Gneiting, Mark Berliner and Derek Bingham as speakers. The first keynote address followed, with Paul Switzer presenting "Regional time trends in climate model simulations." The opening mixer, with five poster presentations, concluded the first day's activities.

The second day saw two invited sessions on Monitoring the environment and biota on landscape to continental scales. The speakers were Jay Breidt, Jason Legg, Gretchen Moisen, Don Stevens and Mevin Hooten. An invited session on Paleoclimatic temperature reconstruction had talks by Edward Cook, David Schneider and Bo Li. Elizabeth Shamseldin, Georg Lindgren and Slava Kharin were invited speakers in a session on Assessing trends in extreme climate events. In parallel, a special session by conference sponsor National Oceanic and Atmospheric Administration included Bill Peterson, Peter Lawson, Kerym Aydin and Lisa Crozier. The conference dinner took place in one of the dorms, but the catered food was several levels above regular dorm food!

The final day had a morning invited session on Agroclimate risk assessment with Nathaniel Newlands, Jim Ramsay and Nhu Le. After the coffee break two parallel invited sessions took place: one on The role of statistics in public policy with Paul McElhany, Tanja Srebotnjak and Marianne Turley, and the other on Measuring biodiversity and species interaction, having speakers Andy Royle and Emily Silverman.

The second keynote address was by TIES president David Brillinger, and was entitled "Probabilistic risk modeling at the wildland-urban interface: the 2003 Cedar Fire." The final invited session was about Forests, fires and stochastic modeling. Speakers were Mike Flannigan, Haiganoush Preisler and Steve Taylor.

Throughout the program there were contributed sessions on Inference for mechanistic and stochastic models; Spatial methods; Methods in ecology; Forest fires, remote sensing and stochastic models; and Climate.

The program committee consisted of Peter Guttorp, University of Washington (chair), Ashley Steel, NOAA Fisheries Seattle, Emily Silverman, USFWS Maryland, Joel Reynolds, USFWS Alaska, Eliane Rodrigues, UNAM, Mexico City and Jim Zidek, University of British Columbia Vancouver BC. The local organizing committee was Paul Sampson, University of Washington, together with Guttorp and Steel.

The conference had financial support from the US National Science Foundation, the Pacific Institute of Mathematical Sciences, and the US National Oceanic and Atmospheric Administration. In particular this enabled us to fund the travel for many of the 26 students at the meeting.

We are hopeful that there will be another North American Regional Meeting, perhaps in 2009. Don Stevens of Oregon State (stevens@science.oregonstate.edu) is looking for volunteers to help organize it.

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4. Environmetrics Forum

4.1 Young Environmetrician:

Agnieszka Łacka (aga@riders.pl)

I would like to begin with expressing my gratitude for granting me an opportunity to introduce myself to the Young Environmetricians section. Moreover, I would like to thank the

organizers of TIES 2007 Conference for making it possible for me to participate in this very interesting meeting. During the time I spent in Mikulov, I was able to meet great scientists and get acquainted with their research.

My name is Agnieszka Łacka, I am a PhD student at the Department of Mathematical and Statistical Methods at the Agricultural University of Poznan (Poland), managed by Professor Anita Dobek, where I work under the supervision and guidance of Professor Maria Kozłowska. The topic of my dissertation is planning and analysis of factorial experiments with one control treatment in a block design with nested rows and columns for environmental and plant protection research. Working at this department gives me the opportunity to develop my interests, and people working there are inestimably helpful in solving scientific issues. Special thanks for support and motivation go to Prof. Kozłowska. I would also like to thank Professor Stanisław Mejza for his help and Professor Tadeusz Caliński whose knowledge and experience are the source of all our scientific inspiration.

Generally speaking environmentalists focus their attention on problems that are a "nuisance to the environment" which means physical phenomena, or states, making life more difficult or onerous to the surrounding environment, especially noise, vibrations, air pollution and pollution with wastes. It is crucial to remember about existing bonds between agricultural and environmental problems. These problems are the subject of my scientific interest. The aim of agricultural research is improving the quality and standard of society's life. It can be done by, inter alia, improving the quality and efficiency of cultures by applying proper protection against diseases and pests and also decreasing prices of agricultural products by minimizing the costs of agrotechnical procedures, related to their cultivation. In such research, it is crucial to test the influence of applying typical as well as recommended and new plant protection chemicals and fertilizers, not only regarding their influence on improving the quality of the harvest, but also from the point of view of their influence on wildlife, soil and water quality and, the most important, people's health. In the mentioned scientific issues, the main role is played by the location of experiment. Thus, it is very important to apply a proper research design. In all types of experiments, the estimation of efficiency of experimental levels is based on a homogenous experimental material. When the experimental material is not homogenous, in order to eliminate this heterogeneity one needs to group experimental units in blocks, or use more complicated block structures. This aiming at homogeneity leads to procuring the comparability of studied treatments. When working with heterogenous experimental material, one should apply block systems perpendicular to the variability directions. Block designs with nested rows and columns (NRC designs) ensure that we eliminate this heterogeneity. Due to economical and practical factors, the important aspect in experimentation is to carry out research upon many experimental factors simultaneously (for example, to compare the influence of various plant protection chemicals applied in various concentrations on a studied feature). In such research, the main goal is to determine the efficiency of the applied methods. To realize this aim, at the experiment planning stage, next to test objects, one has to consider also the zero control (meaning no procedure) in relation to which we will be studying the efficiency of experimental combinations. In my research, I am mostly interested in the aspect of planning and modeling of the factorial experiments with the control treatment in the NRC design.

Until now, I have been considering such NRC designs properties as orthogonality, balance, C-property and the property which - when fulfilled - makes a NRC design a type S design. Recently, I have been studying group divisible designs. The aim of my research is to find the construction of the NRC design that increases efficiency of contrast estimation for the main effects of studied factors, interaction contrasts and zero control contrast with test treatments.

The subject of my research is very extensive and versatile, and it definitively requires lots of work to be done. If I succeeded in making any of you interested in this topics, I warmly invite you to start collaboration.

4.2 AusCan scholar 2008 visit to Canada

In January and February 2008, TIES member Dr Melissa Dobbie of Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) visits Canada as the 2008 AusCan Scholar. This is a program initiated by the Statistical Societies of Australia and Canada to promote scientific interaction between the two statistical communities and to provide opportunity for the scholar to enhance their professional development and interact with leading researchers in the country visited.

Melissa is an environmental statistician with CSIRO and over the past five years, Melissa has been

working on some challenging environmental problems motivated by applications in ecosystem health monitoring. The work has required statistical expertise in all facets of monitoring, but particularly with designing monitoring studies.

Her visit to Canada will see her visiting statisticians at Simon Fraser University, the University of British Columbia, Dalhousie University, several universities in the Toronto area, and Environment Canada's National Water Research Institute.

Further information about Melissa is available from http://www.csiro.au/people/Melissa.Dobbie.html and about the AusCan scholarship from http://www.ssc.ca/main/about/auscan_e.html

5. Forthcoming papers in *Environmetrics*

Abdel El-Shaarawi, Editor-in-Chief

http://www3.interscience.wiley.com/cgi-bin/jissue/93013115

- Using the Kalman filter for parameter estimation in biogeochemical models. C. M. Trudinger, M. R. Raupach, P. J. Rayner, I. G. Enting. DOI: 10.1002/env.910

- Geoadditive Bayesian models for forestry defoliation data: a case study. Monica Musio, Nicole H. Augustin, Klaus von Wilpert. DOI: 10.1002/env.903

- A bivariate stochastic Gompertz diffusion model: statistical aspects and application to the joint modeling of the Gross Domestic Product and CO2 emissions in Spain. R. Gutiérrez, R. Gutiérrez-Sánchez, A. Nafidi. DOI: 10.1002/env.906

- Smoothing and bootstrapping the PROMETHEUS fire growth model. Tanya Garcia, John Braun, Robert Bryce, Cordy Tymstra. DOI: 10.1002/env.907

- Simultaneous prediction of toxicity of multiple chemicals to multiple species using multi-dimensional functional relationships. Richard Morton, Michael St. J. Warne, Raymond L. Correll. DOI: 10.1002/env.892

- Design-based empirical orthogonal function model for environmental monitoring data analysis. Breda Munoz, Virginia M. Lesser, Fred L. Ramsey. DOI: 10.1002/env.904

- Generation of synthetic sequences of half-hourly temperature. L. Magnano, J. W. Boland, R. J. Hyndman. DOI: 10.1002/env.905

- Monitoring gasoline blending rates for compliance. Ryan S. Gill, Jerome P. Keating.DOI: 10.1002/env.893

- Modelling the effects of air pollution on health using Bayesian dynamic generalised linear models. Duncan Lee, Gavin Shaddick. DOI: 10.1002/env.894

- Bayesian analysis of dynamic factor models: an application to air pollution and mortality in São Paulo, Brazil. T. Sáfadi, D. Peña. DOI: 10.1002/env.899

- Dirichlet based Bayesian multivariate receptor modeling. Jeff W. Lingwall, William F. Christensen, C. Shane Reese. DOI: 10.1002/env.902

- Enhanced process monitoring for wastewater treatment systems. Chang Kyoo Yoo, Kris Villez, Stijn W.H. Van Hulle, Peter A. Vanrolleghem. DOI: 10.1002/env.900

- Regression with spatially misaligned data. L. Madsen, D. Ruppert, N. S. Altman. DOI: 10.1002/env.888

- Modelling spatio-temporal variation in exposure to particulate matter: a two-stage approach. T. R. Fanshawe, P. J. Diggle, S. Rushton, R. Sanderson, P. W. W. Lurz, S. V. Glinianaia, M. S. Pearce, L. Parker, M.

Charlton, T. Pless-Mulloli. DOI: 10.1002/env.889

- Sinusoidal modeling applied to spatially variant tropospheric ozone air pollution. Nicholas Z. Muller, Peter C. B. Phillips. DOI: 10.1002/env.897

- A space-time model for joint modeling of ocean temperature and salinity levels as measured by Argo floats. Sujit K. Sahu, Peter Challenor. DOI: 10.1002/env.895

- Comparing strategies for modeling tree diameter percentiles from remeasured plots. Lauri Mehtätalo, Timothy G. Gregoire, Harold E. Burkhart. DOI: 10.1002/env.896

- Linear and nonlinear alignment of time series with applications to varve chronologies. Bjørn H. Auestad, Robert H. Shumway, Dag Tjøstheim, Kenneth L. Verosub. DOI: 10.1002/env.887

- A class of nonseparable and nonstationary spatial temporal covariance functions. Montserrat Fuentes, Li Chen, Jerry M. Davis. DOI: 10.1002/env.891

- A real-time assimilation algorithm applied to near-surface ocean wind fields. Anders Malmberg, Jan Holst, Ulla Holst. DOI: 10.1002/env.886

- Generalized Pareto models with application to drought data. Saralees Nadarajah. DOI: 10.1002/env.885

- Estimating the number of ozone peaks in Mexico City using a non-homogeneous Poisson model. Jorge A. Achcar, Adrián A. Fernández-Bremauntz, Eliane R. Rodrigues, Guadalupe Tzintzun. DOI: 10.1002/env.890

- INAR(1) modeling of overdispersed count series with an environmental application. Harry Pavlopoulos, Dimitris Karlis. DOI: 10.1002/env.883

- A generalized time-effect factor model and its application: recovering trend of temperature by pollen data. Yu-Pin Hu, Rouh-Jane Chou. DOI: 10.1002/env.884

- On estimation of bivariate biomarkers with known detection limits. Haitao Chu, Lei Nie, Motao Zhu. DOI: 10.1002/env.868

- Outlier detection in functional data by depth measures, with application to identify abnormal NOx levels. Manuel Febrero, Pedro Galeano, Wenceslao González-Manteiga. DOI: 10.1002/env.878

- Prediction error estimators in Empirical Bayes disease mapping. M. D. Ugarte, A. F. Militino, T. Goicoa. DOI: 10.1002/env.874

- Improved likelihood inference for the roughness parameter of the GA0 distribution. Michel Ferreira da Silva, Francisco Cribari-Neto, Alejandro C. Frery. DOI: 10.1002/env.881

- Description of earthquake aftershock sequences using prototype point patterns. Frederic Paik Schoenberg, Katherine E. Tranbarger. DOI: 10.1002/env.867

- Fitting copulas to bivariate earthquake data: the seismic gap hypothesis revisited. Aristidis K. Nikoloulopoulos, Dimitris Karlis. DOI: 10.1002/env.869

- Generalized Birnbaum-Saunders distributions applied to air pollutant concentration. Víctor Leiva, Michelli Barros, Gilberto A. Paula, Antonio Sanhueza. DOI: 10.1002/env.861

- Analysis of annual maximal and minimal temperatures for some European cities by change point methods. Daniela Jaruscaronková, Monika Rencová. DOI: 10.1002/env.865

6. Books

6.1 Recently Published Books

Michael Dowd

"*Environmental and Ecological Statistics with R*" by S. S. Qian; Chapman & Hall/CRC.

"*Environmental Chemometrics: Principles and Modern Applications*" by G. Hanrahan; CRC.

"*Principles of Modeling Uncertainties in Spatial Data and Spatial Analysis*" by W. Shi; CRC.

"*geoENV VI Geostatistics for Environmental Applications*" by A. Soares, M.J. Pereira, R. Dimitrakopoulos; Springer.

"*Statistical Analysis of Ocean Waves and Other Environmental Data*" by L. E. Borgman, N. W. Scheffner, M Petrakos; World Scientific Publishing Company.

"*Statistical Methods for Trend Detection and Analysis in the Environmental Sciences*" by R. Chandler; John Wiley & Sons.

"*Statistics for Environmental Science and Management*" by B. F. J. Manly; Taylor & Francis.

"*Advances in Spatio-Temporal Analysis*" by X. Tang, Y. Liu, J. Zhang, W. Kainz; CRC.

"*Sampling Strategies for Natural Resources and the Environment*" by T. G. Gregoire, H. T. Valentine; Chapman & Hall/CRC.

"*Probability and Statistics Applications for Environmental Science*" by S. J. Shaefer, L. Theodore; CRC.

"*Bayesian Modeling of Ecological Data*" by E. Parent, E. Rivot, E. Prevost; Chapman & Hall/CRC.

"*Geostatistics: Spatial Information Modeling and Mapping for Natural Resources, Ecological and Environmental Applications*" by M. A. Kalkhan; CRC.

"*Multivariate Geostatistical Models: Inference and Computation*" by H. Zhang; Chapman & Hall/CRC.

"*Principles of Modeling Uncertainties in Spatial Data and Spatial Analysis*" by W. Shi; CRC.

"*The Analysis of Ecological Data Using R*" by T. C. Edwards, D. R. Cutler; Chapman & Hall/CRC.

6.2 Book Review

Data Assimilation: The Ensemble Kalman Filter (2007) by Geir Evensen. Springer, hardcover, 279 p, ISBN 978-3-540-38300

Michael Dowd

This book treats the topic of data assimilation, which may be defined as the class of statistical estimation problems that make use of differential equations (DE) models. The motivation for the book comes from oceanography and atmospheric sciences, and the concern is largely state and parameter estimation for very large dimension problems, typically those arising from partial differential equation based numerical models (often with 10^6 or more state variables). However, these estimation methods are also broadly applicable to the environmental sciences for cases in which DE based mechanistic models exist, and it is desired to use their information in order to inform statistical estimation problems through the blending dynamics and measurements. In this book, the central emphasis is a sequential Monte Carlo method developed by Geir Evensen: the ensemble Kalman filter (enKF). Other approaches are also treated, albeit with less detail.

Evensen's book treats state and parameter estimation for dynamic systems in general, and the enKF in particular, from a broad statistical foundation. It begins with relevant statistical definitions and reviews pertinent concepts in spatial analysis. Similarly, Chapters 5 and 6 overview the more

classical inverse problems solved using the calculus of variations. These optimization approaches often formulated as nonlinear least squares and have to date been the mainstay of applications of data assimilation.

The core materials are introduced in Chapter 3 and involve sequential methods for time dependent state estimation problems for linear and nonlinear dynamic systems, i.e. the Kalman filter and its nonlinear extensions. This is a preamble to the thorough development of the Monte Carlo based enKF. This approach uses a sampling based solution for nonlinear stochastic dynamic prediction, and then uses an update step based on the Kalman filter to assimilate observations. It is designed for large scale and nonlinear dynamics. It is, however, a suboptimal solution with first and second moment properties of the nonlinear filter maintained, but still an effectively Gaussian approximation.

The probabilistic and Bayesian interpretations of the enKF are introduced in Chapters 7 and 8. The remainder of the book is devoted to an examination of sequential Monte Carlo (MC) methods from the perspective of the enKF. A great number of practical issues are examined especially with regard to effective stochastic simulation and sample generation. A smoother is also examined, as well as various further approximations aimed at large scale operational systems.

The target audience of this book is largely ocean and atmospheric scientists and many illustrative and realistic examples are provided. The material however should also be of great interest to applied statisticians, and practitioners of environmental statistics and environmental science. The main shortcoming of the book is in its limited examination of sequential MC approaches that have become extremely popular in Statistics and Engineering. This choice is however conscious and the rationale is that the resampling and MCMC based approaches have been examined elsewhere and not yet been proven effective for large scale practical problem of interest here. Hence, the approximate ensemble Kalman filter therefore offers an alternative approach, but has been largely unexamined by statisticians. Yet it has proven effective as a state space modeling approach for applications to extremely large-scale estimation problems, such as numerical weather prediction.

7. TIES Board of Directors

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TIES Newsletter is a publication of The International Environmetrics Society (TIES). It is published semi-annually, or whenever the need arises by The International Environmetrics Society and distributed to TIES members as part of their annual dues. Contact David Brillinger ,

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Objectives of the Newsletter include (but are not limited to):

- To keep TIES members informed of what is happening within the Society;
- To cover news in latest developments in theory and applications of environmetrics;
- To be a forum for discussion of a broad range of issues which are of interest to members of TIES and are consistent with the objectives of the Society.
- To facilitate communication between environmental scientists and statisticians about research problems of mutual interest.
- To provide details about upcoming conferences and workshops related to Environmetrics;
- To announce members' news that are worthy of notice or recognition (e.g., awards, prizes and honours received, promotions, appointments, etc.)

Communications, (e.g., contributions, comments and suggestions) regarding this publication should be addressed to the TIES Newsletter editors: Michael Dowd (mdowd@mathstat.dal.ca), and Alessandro Fasso (alessandro.fasso@unibg.it). The Editors would like to encourage TIES members to submit items for publication in the Newsletter. We would like to have a very comprehensive publication that is of interest to our members by including items such as members' and regional news, Environmetrics and related conferences, research projects and programmes, book reviews, letters to the editor and articles of general interest.

We would like to thank the members who responded to our call and contributed to this issue. It is our hope that the Newsletter will be a valuable platform for discussion and exchange of ideas among us. We will be happy to hear your views about the contents and style of this issue. We hope that you will be a reader as well as a contributor.

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