



## The National Research Center for Statistics and the Environment

The University of Washington  
March 28, 2000

### RECOGNITION AND AWARDS

#### **Alison Cullen**

Alison Cullen will be promoted to Associate Professor with tenure in the Daniel J. Evans School of Public Affairs effective September of this year.

#### **Thomas Richardson**

Effective Sept. 16, Thomas Richardson will be promoted to Associate Professor of Statistics with tenure.

#### **Nicolle Mode and Marianne Turley**

As institutional member of the International Environmetric Society (TIES), the Center receives two full memberships, which the executive committee has decided to award to outstanding research assistants. The 2000 award went to Nicolle Mode and Marianne Turley.

#### **Jon Wakefield**

New member Jon Wakefield was awarded the annual Guy Medal in Bronze for 2000 by the Royal Statistical Society for his recent work in research on the development of statistical methods, particularly for spatial epidemiology and population pharmacokinetic modeling.

#### **Loveday Conquest**

The ASA announced that Loveday Conquest was one of two winners of the "Member Get a Member" campaign. She will receive free round-trip airfare to the 2000 JSM in Indianapolis, free hotel and registration.

### PAPERS SUBMITTED/PUBLISHED BY CENTER MEMBERS

"MCMC for contingency tables", by Florentina Bunea and Julian Besag, Fields Institute Communications (in press), Tech Report, 37.

"Effects of ambient fine and coarse particles on mortality in Phoenix, Arizona", by Merlise Clyde, Peter Guttorp and Erin Sullivan, to the Journal of Exposure and Environmental Epidemiology, Tech Report, 40.

"Inference for Deterministic Simulation Models: The Bayesian Melding Approach" was accepted by the Journal of the American Statistical Association, by David J. Poole and Adrian E. Raftery (2000).

"Bayesian Estimation of Non-Stationary Semi-Parametric Spatial Covariance Structures", by Doris Damian, Paul D. Sampson and Peter Guttorp, to Environmetrics, Tech Report, 39.

"A review of statistical methods for the meteorological adjustment of tropospheric ozone", by Mary Lou Thompson, Joel Reynolds, Lawrence Cox, Peter Guttorp and Paul Sampson, to Atmospheric Environment, Tech Report, 26 (revised).

The "Environmental Monitoring Surveys Over Time" workshop (April 1998 that Tony Olsen and Loveday Conquest worked on, co-sponsored by NRCSE and the USDA Forest Service), just had its papers published in a special volume of the Journal of Agricultural, Biological and Environmental Statistics, Dec. 1999, Vol. 4, Number 4. There are 12 papers, an editorial by Bryan Manly, and an introduction by Tony Olsen and Eric Smith.

## **WORKSHOPS/SEMINARS**

### **IMPACT Meeting**

Paul Sampson attended the kick-off meeting of the European Commission funded "IMPACT" study involving a range of coordinated studies aiming to identify and quantify anthropogenic impact on water and air quality. Collaborators are from Italy, France, Germany, Sweden, England, and Finland. The meeting took place at the Joint Research Center of the European Commission in Ispra, Italy.

### **Las Vegas EPA Workshop**

A group of eight NRCSE members visited the EPA National Ecological Research Laboratory at Las Vegas on December 13-14. This is the second such workshop that NRCSE and EPA have conducted, the first was last April in Corvallis. We gave presentations on NRCSE research areas that the EPA scientists had expressed interest in, ranging from Tom Lewandowski's work on toxicodynamic/toxicokinetic modelling to Adrian Raftery's description of methods for incorporating expert opinion in deterministic models. These presentations alternated with group discussions of statistical issues arising in the EPA Lab's work. For example, there was a lively discussion of the best ways to sample to assess pollution levels in industrial sites, and the best ways to handle possibly inadequate sets of measurements. There have been at least two follow-up contacts between the lab and the Center related to this visit, and we hope that this and future workshops will help bring EPA and NRCSE researchers closer together.

### **PM 2000**

The PM 2000 conference on Particulate Matter and Health was held January 24-28, 2000. Its goal was to assist EPA with their scientific review of the literature for the upcoming Criteria Document revision. This was done by providing a forum for presentation of the latest scientific research and expediting the publication process for this research. Several NRCSE members, visitors, and friends participated in at least eleven of the papers presented. A few of these papers will appear in an upcoming issue of *Environmetrics* that will focus on particulate matter research. Topics ranged from design bias in case-crossover studies, application of Bayesian model selection to determining the relative importance of coarse and fine PM on mortality, threshold dependence of PM effects on mortality, incorporating spatial predictions of ambient PM into the analysis of PM effects on asthma hospital admissions, and assessing the role of location and atmospheric conditions on PM exposures.

### **Society of Risk Analysis**

In December of 1999, Alison Cullen attended the annual meeting of the Society for Risk Analysis in Atlanta, Georgia. In addition to hosting a diverse array of sessions, workshops and talks, the Society finalized plans for a World Congress on Risk for the year 2000. Ten white papers have been commissioned on a range of topics in the risk analysis field. Alison has been asked to write about the history and application of quantitative methods to risk and uncertainty. The World Congress will be held June 21-25 in the DC area.

### **Internal Workshop**

The NRCSE conducted an internal review meeting on January 20, 2000 to review current projects and explore future research directions. The day-long conference, held in Parrington Hall on the UW campus, included seven invited talks, 13 poster presentations, and small group discussions. Information on speakers, their titles and posters are on the NRCSE web page: <http://www.nrcse.washington.edu/review/irsched.asp>.

Small group discussions focussed on defining areas of future research and included topics "Monitoring and Network Design", "Maintaining a Relationship to EPA Science", and "Goals and Structure of NRCSE". The review was attended by about 35 center members and students, and members of the NRCSE advisory committee.

### **Statistics for Large Datasets**

In July, 2000, the National Center for Atmospheric Research will have a workshop in Boulder, CO. This workshop, sponsored by NRCSE, the Geophysical Statistics Project, and NCAR will 1) acquaint statisticians with substantive scientific problems that hinge on the analysis of large data sets, these can be either observational or generated as the output of numerical models and 2) present recent statistical advances for large problems. Topics include visualization strategies, computational algorithms and new methods, including techniques from data mining. Although the statistical methodology will be relevant to wide range of problems, the focus will be on continuous variables and multivariate or spatial-temporal contexts. Funding is available to support attendance with special emphasis given to graduate students and other young researchers. Statisticians not working directly in the geosciences but interested in these are also welcome to apply. For information about support, a tentative program, and other details see <http://www.cgd.ucar.edu/stats/workshop> or contact Elizabeth Rothney (rothney@ucar.edu). Deadline for applications is April 31, 2000.

## Workshops/Seminars cont.

**Downscaling Workshop in May**

There will be an afternoon workshop on Wednesday, May 24 in the Statistics Conference Room C301 entitled "Statistical Downscaling of Precipitation: Methods and Applications". In this workshop, there will be a brief history of downscaling, describing one or more methods currently in use, providing applications of their use, and a discussion on current research issues in this area. If you have any further questions on this workshop, you can contact Jim Hughes at [hughes@biostat](mailto:hughes@biostat).

**Geostats 2000**

Tilmann Gneiting attended the Geostats 2000 conference in Cape Town, South Africa, April 10 - 14 and the title of his talk was, "Covariance Functions for Spatial and Spatio-Temporal Data: Recent Developments".

**VISITORS**

**Moshe Pollak**, from the Hebrew University of Jerusalem, visited Oct. 10-13, and gave a NRCSE/Statistics joint seminar on "A Likelihood Approach to Control Charts".

**Pierre Goovaerts**, from the University of Michigan Dept of Civil and Environmental Engineering, visited on December 2-4, 1999. He was here to discuss interests in monitoring network design with Paul Sampson and Peter Guttorp.

**Hans Barring**, from the University of Amsterdam in the Netherlands visited in early December. He met with Peter Guttorp and Paul Sampson.

**Hans van Storch**, came January 6-7, from GKSS in Germany. He visited with Mike Wallace and Peter Guttorp.

**Abdel El-Shaarawi, Larry Cox and Paul Switzer**, the NRCSE Advisory Committee, visited for our Internal Review meeting on January 20th. Abdel El-Shaarawi is from the Canadian National Water Research Institute, Larry Cox is from the EPA and Paul Switzer is from Stanford University.

**N. Scott Urquhart** from Oregon State University visited on February 7-10. He met with Loveday Conquest and Pip Courbois and gave a seminar talk for the Teaching Academy entitled "Using Dynamic Graphics to Teach Statistics to a Diverse Audience".

**Future Visitors to NRCSE**

Bryson Bates, CSIRO, Australia, May 1-May 28

Kirsten Bjorkestol, from Agder University College Norway, August.-June, 01

David Harte, Victoria University, NZ, May 8-14

Caren Marzban, National Severe Storms Lab, NOAA, September 1-June 01

Paul Murtaugh, Oregon State, September 1-June 01

Ronit Nirel, Hebrew University, July 1-Aug. 15

Olivier Perrin, University of Toulouse, France, August - September

Bruno Sanso, Universidad Simon Bolivar, Caracas, Venezuela, July-August

Alexandra Schmidt, University of Sheffield, England, August 17-25

Alfred Stein, Wageningen University, The Netherlands, May 17-19

Claudia Tebaldi, NCAR, April 9-May 31

David Vere-Jones, Victoria University, New Zealand, May 8-14

**PROPOSALS****Wavelet Proposal**

Center members Peter Guttorp, Chris Bretherton and Don Percival recently submitted a proposal to NSF entitled "Wavelet-Based Statistical Analysis for Physical Applications". Their proposed research would look into wavelet-based methods for (i) bootstrapping commonly used statistics (e.g., sample cross correlations); (ii) simulating non-Gaussian and nonstationary time/space processes; (iii) estimating second order parameters for a random process dependent on a covariate  $z$  from observations during which  $z$  changes slowly; and (iv) detecting trends in time/space processes. If funded, the proposed work will be carried out over a three year period and will include funding for a graduate student.

## NEW PEOPLE AT THE CENTER

### Jean-Yves “Pip” Courbois

Pip Courbois is the new VIGRE postdoc with the UW Statistics Department. He received his Ph.D. from Oregon State University. His recently finished dissertation is entitled "Tools for Environmental Statistics: Creative Visualization and Variance estimation from Complex Designs." Publications from the dissertation will follow.

Research interests include design and analysis of surveys and multivariate-data visualization. For the former topic, Pip is interested in the estimation of variance components from complex surveys. This research includes exploring the linkages between survey design and experimental design. For multivariate-data visualization/exploration Pip explored in his thesis optimization in Projection-Pursuit guided tours. At present he is thinking about implementation these ideas.

He is sharing space with the Center and is located in B207 so feel free to stop by and say hello.

### Fadoua Balabdoui

Fadoua Balabdoui is visiting from the Ecole des Mines de Paris, but she is originally from Morocco. She is working with Adrian Raftery and is located in Room B213 until the end of April. Her research interest is to assess the causes of the fertility decline in thirty-five developing countries.

### Frede Aakmann Toegersen

Frede Aakmann Toegersen, M. Sc., Ph.D.-student, is visiting from the Danish Institute of Agricultural Research, Foulum, Denmark. He is currently working on deconvolution of kernel-smoothed spatial processes and is located in Room B213 until end of June.

## EXECUTIVE COMMITTEE NEWS

### New Center Member

Jon Wakefield was recently voted in as a Center Member. He is an Associate Professor in Statistics and Biostatistics.

## FROM THE DIRECTOR

The use of advanced computer technology at NRCSE is an issue of considerable importance. For example, member Thomas Richardson, while on leave in the U.K., has been communicating with his students and colleagues using Netmeeting software. I “write” this editorial by dictating to my computer. Our seminars and workshops have been made available to the community via web technology. On the other hand, software developed at the Center should be made available to a larger community. We currently have an undergraduate helping to put the POMAC software on the web, and other programs are also being prepared for web distribution.

As a result of our internal workshop in January, a committee on technology exchange is being formed with the task of considering developments in this area, with particular emphasis on exchange of technology and ideas with the EPA. I am working on the exact brief for this committee, and would appreciate input from any of you.

I am grateful to all of you participating in the January workshop. It was an impressive manifestation of the breath and depth of the Center research. Next, we will present Center activities at EPA North Carolina in June. Paul Sampson is organizing this trip and you may already have heard from him.

## NOTICES

### New Software Product

David Ford, Marianne Turley, and Joel Reynolds have developed a software product for using evolutionary computation with process models. Evolutionary computation is a stochastic optimization algorithm which allows a modeler to assess a model on multiple criteria simultaneously. Version 1.0 software and a user’s manual will be available on the NRCSE webpage very soon.