ΠΕΔΟΜΕΤRON

From the (new) Chair

As most of you are aware by now, the chair of the Working Group on Pedometrics (WG-PM) of the International Union of Soil Sciences (formerly International Soil Science Society) has changed. On the successful pre-conference meeting in Montpellier, last August, Alex McBratney, who acted as chairman for the last four years, and Jaap de Gruijter, who was secretary from the very beginning of the creation of the WG-PM in September 1988, stepped down. To both the WG is very much indebted and Pierre and I feel honored to be their successors.

Alex' enthusiasm and vibrant intelligence stimulated us all on many occasions, not the least by his contributions to Pedometron, the newsletter of the WG-PM. Before 1994, Pedometron had appeared only once (in 1991). Four years later we issue number eight (without counting two intermediate quick-flyers). Novel were many of the ideas he launched, like those on Pedodiversity, triggering vibrant discussions in Pedometron. We hope he will continue to contribute to Pedometron.

INSIDE THIS ISSUE

Jaap was much more the "quiet thinker" without whom it all wouldn't have been possible. He represented the foundation on which the WG was built and he provided continuity over many years. His commitment to the WG stood without discussion and the fact that he was secretary for so long reflects the depth of his engagement. We count on his guidance for future activities.

Alex and Jaap launched the "Award of the Best Pedometrics Paper", first issued in 1994. This excellent initiative raised much interest by many of us. To belong to the nominated papers is already a recognition of high quality and the prize itself is just a further confirmation by the whole PM community.

Pierre and I intend to continue the organization of the WG-PM along the same lines. This newsletter should be a first proof of that. Many interesting issues are included : a report of the past activities of the WG-PM as presented to the ISSS, a report on the pre-conference meeting of our WG, the announcement of the Pedometrics conference next year in Sydney, and the nominations for the Award of the best Pedometrics paper 1997. However, there is one big difference : **the newsletter goes electronic**. To avoid the printing and mailing costs (the WG-PM receives no funds), we decided to distribute it by e-mail and to open a Pedometrics home page where all past newsletters can be consulted. We contacted all 200 addresses in the PM mailing list and urged the members to send their e-mail address to Pierre at **goovaert@engin.umich.edu.** If you know somebody who might be interested in receiving this newsletter and who is currently not in the mailing list, please ask him to contact Pierre.

We hope you enjoy to be part of the Working Group on Pedometrics.

Marc Van Meirvenne and Pierre Goovaerts

Chairman and Secretary of the WG-PM

ISSS Working Group on Pedometrics

REPORT 1994-1998

The past four years can be characterized as a period in which the Working Group flourished, with a high rate of successful initiatives and activities. This is clearly the result of the enthusiasm and inspiration of the chair, Alex McBratney.

Meetings of the Working Group

1995, October 30, St. Louis, U.S.A.: "Fuzzy sets in soil science" (with the Annual Meetings of the ASA, CSSA-SSSA). The proceedings have been published as a Special Issue of Geoderma (1997, Vol.77, Nos. 2-4: 85-339).

1996, July, Melbourne, Australia: Pedometrics session (in Joint Australian and New Zealand Soil Science Societies Conference), organised by our Working Group and the Australian Collaborative Land Evaluation Program. This was quite successful and very well attended. The Keynote Address by Johan Bouma appeared as a Discussion Paper in Geoderma (1997, Vol.78: 1-12).

1996, August 7-9, Wageningen, The Netherlands: "Soil and Water Quality at Different Scales" (together with the Working Groups on Soil and Moisture Variability, and Soil Pollution). The proceedings have been published as a Special Issue of Nutrient Cycling in Agroecosystems (1998, Vol 50, Nos. 1-3: 1-324).

1997, August 18-20, Madison (Wisconsin), U.S.A.: 2nd International Conference on Pedometrics (Pedometrics '97). Some 60 delegates from a dozen countries took part. McBratney reported:

"The program consisted of morning oral presentations with poster presentations and round table discussions in the afternoon. The talks had two main themes. There were methodological reviews of familiar topics such as soil geostatistics and sampling and reviews of newer topics such as neural networks and fractals. The second major theme focussed on spatial prediction methods. It was clear that there were two (somewhat distinct) approaches to spatial prediction.

The first is the geostatistical approach - using various forms of kriging. The second approach is what I call the 'clorp(t)' approach, named from Jenny's equation. In this approach prediction of soil properties is made from other environmental variables, principally derived from digital elevation models. The synthesis of these two approaches was not really discussed. This will be an area for much further research in Pedometrics. The poster and discussion sessions were excellent. The discussion was open, detailed and thought-provoking. I'd certainly recommend this format for future conferences. All in all the format of the Conference was a great success and much of that is due to Kevin McSweeney. Thanks Kevin.

The final afternoon was spent in the field looking at soil profiles in a prairie environment, nitrogen modelling and ended up with a very pleasant visit to a vineyard." The proceedings will appear shortly as a Special Issue of Geoderma.

1998, August 19, Montpellier, France: One-day Symposium on Soil Geostatistics, prior to the World Congress on Soil Science.

1999, September 27-29, Sydney, Australia. PLANNED: 3rd International Conference, ISSS-PM '99. The theme is "Estimating uncertainty in Soil Models". The first announcement has been issued.

2001, Gent, Belgium. PLANNED: 4th International Conference.

Awards for the best Pedometrics paper

At the inaugural conference of the Working Group held in 1992 in Wageningen, it was resolved that the Group issue a yearly award for the best paper in Pedometrics.

Nominations of papers published in a particular year are made by a well-known expert selected by the Chair and/or Secretary of the Group. The nominator preselects about 5 papers, from which the readership of PEDOMETRON vote for the best. In the reporting period the following papers have won the award.

1994: Bierkens, M.F.P. & Weerts, H.J.T.: Application of indicator simulation to modelling the lithological properties of a complex layer. Geoderma 62: 265-284.

1995: Papritz, A. & Webster, R.: Estimating temporal change in soil monitoring. European Journal of Soil Science 46: 1-27.

1996: Brus, D.J., de Gruijter, J.J., Marsman, B.A., Visschers, R., Bregt, A.K., Breeuwsma, A. & Bouma, J.: The performance of spatial interpolation methods and choropleth maps to estimate properties at points: A soil survey case study. Environmetrics 7: 1-16.

Newsletter of the Working Group

Since 1994 six issues of PEDOMETRON have been published and distributed to members. Dr lnakwu Odeh has kindly been editing the Newsletter. It proved to be a useful medium for communicating news about the activities of the Working Group, especially the conferences, but also doctoral theses and publications in Pedometrics. It also served as a medium for discussion.

Officers of the Working Group

Chair: Sept. 1988 - Oct. 1990   R. Webster

         Oct. 1990 - July 1994   D. Myers

         July 1994 - Aug. 1998   A.B. McBratney

Vice Chair: Aug. 1990 to present   J. Bouma

Secretary: Sept. 1988 - Aug. 1998   J.J. de Gruijter

Pedometron Editor:

Sept. 1994 - Aug. 1998   I.O.A. Odeh

J.J. de Gruijter

Montpellier, the World Soil Conference and Pedometrics

Between 19 and 26 August 1998, Montpellier, France, was crowded with thousands (around 3200) soil scientists from all over the world. The occasion : the 16th World Soil Conference, being organized every fourth year by the International Soil Science Society (ISSS). At the end of the conference, the ISSS changed its name to the "International Union of Soil Sciences", IUSS. The most important consequence of this change is that all members of national soil science societies will become *automatically* member of the IUSS. Consequently the number of members will boost from the present 7500 (ISSS) to some 45000 (IUSS).

Regretfully, the organizers had decided to dedicate none of the 45 symposia to our Working Group, despite repeated proposals of the former chair to participate. Apparently a similar attitude was taken towards some other working groups. It is difficult to understand the logic behind this. How can on the one hand an organization create and stimulate working groups, and on the other hand, if there are clear indications that they raise interests inside the soil science community, not allow them to participate as a WG in the world conference it organizes ? Nevertheless, the IUSS decided to continue to support the WG-PM. And we are currently in contact with the organizers of the 17th World Soil Conference, which will be in Bangkok in 2002, to make understand that our WG deserves some space on the time schedule.

However, during several symposia important topics related with pedometrics were raised. Often returning was the topic of sampling strategy. Ranging from urban soils to precision agriculture, sampling strategy is always crucial and many soil scientists could use some support from pedometricians to answer their questions. One entire symposium came close to the activities of our working group : symposium 17 on "Advances in soil survey using modern tools : methods and results". Several speakers addressed topics directly related to pedometrics, and Alex McBratney was asked to present an "Overview of pedometric techniques for use in soil survey". Although the link between Pedometrics and soil survey is strong and historical, we have also a lot to offer to many other fields of soil science.

To compensate for the absence on the conference the WG-PM organized a pre-conference workshop on

"Advances in Soil Geostatistics". Marc Voltz organized it in an excellent way, and we extend our grateful thanks to him. Fifty-two participants were present, of which many traveled to Montpellier solely for this day. The program is given elsewhere in this newsletter, and as can be observed, it contained a versatile scope of interesting topics. All presentations were of a high quality and interesting discussions often followed. Gradually the WG-PM builds a tradition of organizing small but high-quality meetings worthwhile to participate.

Hope to meet you all in Sydney in September '99 !

Marc Van Meirvenne

Workshop of the Working Group on Pedometrics "Advances in Soil Geostatistics", Montpellier, France, 19 August 1998

8h30-9h00 - Reception of participants

9h00-9h10   Welcome: *A. McBratney and M Voltz*

9h10-9h20   Presentation of the Agricultural University and INRA in Montpellier : J.*C. Rémy.*

9h20-9h50   Introductory talk: Is soil random ? - *R. Webster*

9h50-10h15   Mapping Soil Properties with the Mixed Model of Spatial Variation - *G.B.M. Heuvelink & W. Sinowski.*

10h15-10h40   Combining Minimum Error Variance and Spatial Variability in the Mapping of Soil Properties - *P. Goovaerts.*

10h40-11h00 - Coffee break

11h00-11h25   Updating groundwater table class maps 1:50 000 by statistical methods: an analysis of quality versus cost - *P.A. Finke.*

11h25-11h50   Mapping the probability of exceeding a local sanitation threshold of cadmium in

Belgium – *J. Mohammadi, M Van Meirvenne & P. Goovaerts.*

11h50-12h15   Spatial variability of some soil properties on two contrasting land uses in Spain - *S.R. Vieira, A. Paz & T. Taboada.*

12h15-14h00 - Lunch

14h00-14h25   Compositional kriging - *D.J.J Walvoort & J.J. De Gruijter.*

14h25-14h50   Designing sampling schemes with spatial simulated annealing - *J. W. Groeningen & A. Stein.*

14h50-15h15   Spatio-temporal kriging of soil water content *G.B.M Heuvelink, P. Musters & E. Pebesma.*

15h15-15h40   A combined proximal sensing and profile reconstruction technique for use in quantitative soil survey - *A.B. McBratney, T.R. Bishop & I. Teliatnikov.*

15h40-16h05   Prediction of soil properties using sample information from a mapped reference area: further results - *P. Lagacherie & M. Voltz.*

16h05-16h25 - Coffee break

16h25-16h50   Modelling soil spatial distribution: sensitivity to DEM resolutions and pedological data availability - *V. Chaplot, C. Walter & P. Curmi.*

16h-50-17h15   Using NOAA advanced very high resolution radiometric imageries for regional soil inventory - *1.O.A. Odeh & A.B. McBratney.*

17h15-17h40   Sensitivity of the external drift and linear regression methods to the sampling density of the variables of interest - *H. Bourennane, D. King & A. Couturier.*

17h40 - 18h30 Discussion about the Pedometrics working group

Soil Geostatistics at GeoEnv 98

The second European Conference of Geostatistics for Environmental Applications, known as GeoENV98, was held at the Technical University of Valencia, Spain, in 18-20 November 1998. The objective of this biennial conference is to show the state of the art of geostatistics in environmental applications. This year, the conference attracted 100 participants from 21 countries. The scientific program included 48 presentations which covered different topics, such as hydrogeology (8), ecology (6), soil (14), air pollution (10), climatology (5) and others (5). It was a pleasant surprise to see that 25% of the presentations were dealing with soil applications and, in the following, I give a brief overview of that part of the program. The title and authors of the papers presented in soil sessions are given below.

The opening session of the congress was devoted to soil geostatistics, with a keynote address by R. Webster entitled "Sampling, estimating and understanding soil pollution". Richard discussed how geostatistics and design-based estimations can be used to answer common questions, such as "Is the soil polluted? If so by how much and where? Is it getting worse (or better)? What is or was the source of pollution?". He also emphasized the need for research and developments to combine models of physical processes with our geostat models of spatial random processes to improve prediction. An example was given in Charnok et *al*'s presentation where a gaussian atmospheric model is used to generate a plume of radionuclides which is then incorporated as an external trend in geostatistical prediction. In the case of accidental release of radioactive material in the environment, there is little time to process the data and provide decision-makers with information about the spatial distribution of radionuclides. A second difficulty resides in the quick updating of geostatistical models as more data are collected after the accident.

Two presentations dealt with the important issue of data collection and monitoring. Galego *et al*. presented an approach to optimize the size of sampling units in an area frame, that is to choose the size that leads to the more homogeneous units for a fixed cost. Correlograms are used to compute the intracluster correlation, which is a measure of homogeneity. Scholz *et al.* investigated the impact of reducing the sampling density (i.e. increasing the grid spacing from 5km to 20km) on the degradation of the ordinary kriging prediction of topsoil Zn across England and Wales.

Several papers showed applications of routine interpolation or simulation algorithms (ordinary kriging, sequential Gaussian simulation) to the mapping of salt content in soil (Pepiol *et al*), electrical conductivity and exchangeable sodium percentage (Ortiz Olguin *et al*), soil acidity and salinity in cropped and uncropped australian soils (Bloom and Kentwell). Two other studies presented applications of more sophisticated techniques, such as sequential Gaussian cosimulation for the Chernobyl fallout (Savelieva *et al*) or simple updating to incorporate geological and land use classification into the interpolation of ground quality parameters.

Oliver *et al* presented an application of kriging analysis to the mapping of short and long-range spatial components of NDVI in a spot image. The maps of the short-range components seem to represent the patchiness in the ground cover, whereas the long-range component seems to reflect the coarse pattern imposed by the gross physiography. Goovaerts showed how the kriging analysis filtering can enhance the correlation between primary and secondary variables, leading to more accurate predictions when filtered secondary data instead of raw measurements are used in techniques, such as simple kriging with varying local mean, kriging with an external drift or cokriging.

The last two papers presented a performance comparison of (non)linear kriging techniques for pollution risk assessment. Benamghar and Sonnet showed that the use of class instead of cumulative indicators yields worst prediction of the risk of exceeding critical thresholds for heavy metals. Papriz and Dubois did not find any remarkable difference in the performances of lognormal, disjunctive and indicator kriging. Sampling fluctuations appeared to be the dominant factor determining failure or success of all the methods.

Although it was not presented in a soil session, it is worth mentioning a paper by Monestiez *et al.* where kriging with an external drift is used to account for thematic maps (e.g. soil or land use maps) in spatial prediction. It offers an interesting alternative to within-stratum interpolation or kriging of residuals that have been mostly used so far.

In summary, the meeting gave rise to a combination of case studies and innovative papers on soil geostatistics. The next meeting will be hosted by INRA Avignon (P.

Monestiez) in 2000. For the ones who missed the chance to visit Valencia and its beautiful sandy beach, another opportunity to visit Spain will be GeoENV 2002 that is already planned to take place in Barcelona.

Pierre Goovaerts

Soil Sessions at GeoEnv 98

Sampling, estimating and understanding soil pollution; **WEBSTER, R.**

Image filtering by kriging analysis; **OLIVER, M., WEBSTER, R. AND SLOCUM, K.**

Geostatistical estimation techniques applied to radionuclide deposition; **CHARNOCK, T. W., DANIELS, W. M. AND HIGGINS, N. A.**

Interpolation of groundwater quality parameters using geological and land use classification; **BÁRDOSSY, A., GIESE, H. AND GRIMM-STRELE, J.**

Geostatistical study of salt distribution in Laguna de Salinas, Alicante, Spain; **PEPIOL SALOM, E., BATLLE SALES, J. AND BORDÁS VALLS, V.**

A geostatistical analysis of cropped and uncropped soil from the Jimperding Brook catchment of western Australia; **BLOOM, L. M. AND KENTWELL, D. J.**

Conditional stochastic cosimulations of the Chernobyl fallout; **SAVELIEVA, E., KANEVSKI, M., DEMYANOV, V., CHERNOV, S. AND MAIGNAN, M.**

Performance comparison of cumulative and class indicator approaches for pollution risk assessment; **BENAMGHAR, A. AND SONNET, PH.**

Optimizing the size of sampling units in an area frame; **GALLEGO, F. J., FEUNETTE, I. AND CARFAGNA, E.**

Regional modelling of soil acidification using Latin Hypercube sampling of Gaussian random fields; **PEBESMA, E. J., HEUVELINK, G. B. M. AND KROS, J.**

Accounting for scale-dependent correlation in the spatial prediction of soil properties; **GOOVAERTS, P.**

Geostatistical survey and amelioration of an inland salt affected area in the lake of Texcoco, México; **ORTÍZ OLGUÍN, M., BATLLE-SALES, J. AND GARCÍA CALDERÓN, N. E.**

Designing a soil monitoring network; **SCHOLZ, M., OLIVER, M. A., WEBSTER, R., LOVELAND, P. J. AND MCGRATH, S. P.**

Mapping heavy metals in soil by (non-)linear kriging: an empirical validation; **PAPRITZ, A. AND DUBOIS,J.P.**

A preferential sampling of eminent pedometricians after a morning session on soil geostatistics and a good French meal washed down with in-house wine, Montpellier, August 1998.
(Photo: Courtesy of Marc Voltz).

Z

We left the Z
Hanging in a wardrobe
Back in 1980
Cast off
Pour le mode nouveau francais
A fine new 2D uniform
Of haphazard plaid
Increasing and decreasing hemlines
Dromedary and bactrian coats
A little moth-eaten
Still hanging there
But fashion never remembers
It reinvents itself
Every time
This season
A bright new z
A zetetic zeitgeist
A zealous zoot suit
Accessorised with a zamarra
And a zuchetto

- David van der Linden

Best Paper Award 1997

In continuation of nomination and selection of the yearly best paper in Pedometrics, published in the leading international Journals, it is now time to elect the best paper for 1997. This year, **Dr. M. Bierkens** made the pre-selection of five papers which are listed below, with their abstract. Readers should read through the abstracts (or preferably the full papers) and e-mail to the editor (goovaert@engin.umichal.edu) using a form similar to the one provided next page. The election will proceed as follows:

1. Only pedometricians on the <u>mailing list</u> are considered as eligible voters.

2. Each vote must consist of a ranking of <u>all five</u> papers, with 5 for the highest preference to 1 for the lowest.

3. The votes must be received by <u>February 1, 1999</u>.

The nominated papers are:

P.A. Burrough, P.F.M. van Gaans & R. Hootsmans 1997. Continuous classification in soil survey: spatial correlation, confusion and boundaries. Geoderma 77: 115-135 .

Abstract
This article traces the development of conceptual paradigms of soil classification and mapping from the pre-1960's model of crisp classes in attribute space linked to crisply delineated mapping units in geographical space, to modern approaches using fuzzy classification and geostatistical interpolation for simultaneously handling continuous variation in both attributes and location. Continuous classification yields a separate map of class membership values for every class the dominance of any class at each location can be expressed by a confusion index, CI. If spatial correlation is strong, zones of high CI are concentrated in narrow geographical transition zones between locally dominant classes: these zones can be refined to delineate automatically class specific boundaries. If spatial correlation in membership values is weak then broad zones of large values of CI occur all over the map. Simulation modelling and two case studies demonstrate that contiguity in geographical space is more important for successful mapping than attribute class compactness. The studies show that soil information systems must take the spatial aspects of soil variation into account; further improvements in identifying and mapping significant soil groupings should be possible using numerical models of soil processes together with the methods presented here.

J.J. De Gruijter , D.J.J. Walvoort & P.F.M. van Gaans 1997. Continuous soil maps - a fuzzy set approach to bridge the gap between aggregation levels of process and distribution models. Geoderma 77: 169-195.

Abstract
Soil maps as multi-purpose models of spatial soil distribution have a much higher level of aggregation (map units) than the models of soil processes and land-use effects that need input from soil maps. This mismatch between aggregation levels is particularly detrimental in the context of precision agriculture. It is argued that, in order to bridge the gap, soil distribution modelling should be based on a new classification paradigm: that of fuzzy set theory. In geographic space, this enables representation of gradual as well as abrupt transitions, i.e., soil distribution models that can predict variables at pedon level.

In a case study we used fuzzy k-means with extragrades to derive a continuous classification from data on thicknesses of 25 layers measured in 552 soil profiles. For interpolation of the class memberships we developed a new method. Compositional Kriging, which takes into account that the memberships have the structure of compositional data: they must be positive and add up to a constant (1) for each individual. These conditions were added to the regular Kriging equations. For cartographic representation of the continuous soil distribution models we developed a new technique, the Pixel Mixture technique, by which we generated a large number of small coloured pixels in each raster cell of the map. The colours of the pixels symbolize the classes, and the proportions of iso-coloured pixels in a cell symbolize the grades of the class memberships as predicted for that cell.

The combination of continuous classification and Compositional Kriging convincingly bridged the gap between aggregation levels, and with the aid of the Pixel Mixture technique the resulting soil distribution model could also be visualized at the appropriate level of aggregation. The continuous soil map showed both the general landscape structure, as well as the varying degree of variability within the study area. Based on this multi-purpose continuous soil model, functional models of soil processes and land-use effects can be developed.

E.J. Burke, R.J. Gurney, L.P. Simmonds & T.J. Jackson 1997. Calibrating a soil water and energy budget model with remotely sensed data to obtain quantitative information about the soil. Water Resources Research 33: 1689-1697.

Abstract
 A soil water energy and transpiration model (SWEAT) coupled with a microwave emission model (MICRO-SWEAT) was used to predict the microwave brightness temperature of both bare and corn plots during a drying cycle. The predicted microwave brightness temperatures compared favorably to measurements made with an L band (21 cm, 1.4 GHz) passive microwave radiometer. In addition, SVVTAT successfully modeled time series of soil water content and soil temperature. The modeled brightness temperature for the bare soil was most sensitive to the parameters describing the soil water retention and conductivity characteristics. These were predicted by varying each parameter in turn until there was a minimum between the measured and modeled brightness temperature. The predicted parameters were in agreement with the measured values to within the experimental error. The microwave brightness temperatures estimated for the corn soil were sensitive to the vegetation parameters as well as to the soil hydraulic properties.

L.J.A. Munro, E.C. Penning-Roswell, H.R. Barnes, M.H. Fordham & D. Jarrett 1997. Infant mortality and soil type: a case study in south-central England (with discussion). European Journal of Soil Science 48: 1-17.

Abstract
 We have analysed the differences in infant mortality for 1981 to 1990 in areas of contrasting soil types in south-central England. The soils overlie rocks of varied lithology and hydrology, ranging from porous and permeable Chalk and limestones, to the generally wet and impermeable Oxford and Lower Jurassic Clays. The study area comprises 504 administrative wards, for each of which the soil has been classified as being predominantly 'Wet', 'Intermediate' or 'Dry', depending on the degree of seasonal or periodic waterlogging. The soil classes used are those mapped by the Soil Survey of England and Wales and relate closely to the underlying geology. We find proportionately more infant deaths on the 'Wet' soils, and a gradation towards lower infant mortality rates on the drier soils. Overall, infant mortality on the 'Wet' soils is 31.9 percent greater than on the 'Dry' soils, for reasons that remain unexplained. This relation between infant mortality and soil moisture remains after the effect of social class has been removed.

J. Zhang & T.-C. Jim Yeh 1997. An iterative geostatistical inverse method for steady flow in the vadose zone. Water Resources Research 33: 63-71.

Abstract
 An iterative geostatistical inverse approach is developed to estimate conditional elective unsaturated hydraulic conductivity parameters, soil-water pressure head, and degree of saturation in heterogeneous vadose zones. This approach is similar to the classical cokriging technique, and it uses a linear estimator that depends on covariances and cross covariances of unsaturated hydraulic parameters, soil-water pressure head, and degree of saturation. The linear estimator is, however, improved successively by solving the governing flow equation and by updating the residual covariance and crosscovariance functions in an iterative manner. As a result, the nonlinear relationship between unsaturated hydraulic conductivity parameters and head is incorporated in the estimation and the estimated fields are approximate conditional means. The ability of the iterative approach is demonstrated through some numerical examples.

P.A. Burrough, P.F.M. van Gaans, R. Hootsmans	
J.J. De Gruijter , D.J.J. Walvoort, P.F.M. van Gaans.	
E.J. Burke, R.J. Gurney, L.P. Simmonds, and T.J. Jackson	
L.J.A. Munro, E.C. Penning-Roswell, H.R. Barnes, M.H. Fordham & D. Jarrett.	
J. Zhang & T.-C. Jim Yeh	

From the (new) Newsletter Editor

Besides a new chair and secretary for the working group, there is also a new editor for his Newsletter! First, I would like to thank Dr. Inakwu Odeh for his time and patience to edit the first six issues of *Pedometron*. Completing this issue, I am realizing how much energy it takes to assemble the different articles and I hope that, as in the past, at least two issues will appear every year! In fact, the success of a newsletter depends very much on the contributions of his readers, and so we are inviting you to contribute items for inclusion in the next issue, such as: a short review of a Pedometrics topic, an abstract of a recent publication or thesis, announcements or minutes of a meeting or a conference. The new format of the newsletter offers many advantages in terms of time of publication, length of articles, use of color illustrations, and I would like everyone to grasp the opportunity of letting us know what he or she is doing. All the contributions can be sent to me in Word or text format. Comments to improve the presentation or content of the Newsletter are also welcome.

Pierre Goovaerts

3rd Conference of the Working Group on Pedometrics of the International Union of Soil Science (IUSS)
September 27-29, 1999

Web page:
http://www.usyd.edu.au/su/agric/news/pedoconf.html

CALL FOR ABSTRACTS

The Organising Committee for the 3rd Conference of the Working Group on Pedometrics of the International Union of Soil Science (IUSS-PM '99) is pleased to inform you of the Conference, to be held at the University of Sydney, New South Wales, Australia, from September 27-29, 1999. The conference will consist of three-day intensive oral presentations and discussion on a wide range of topics in Pedometrics with the main goal of disseminating recent advances in the field. An invitation is now extended to all interested scientists to submit a one-page abstract for preliminary review. Those who have already expressed interest to attend and present papers at the conference are also invited to send their abstracts.

The theme of the Conference is **Estimating Uncertainty in Soil Models**. The Conference theme is designed to cover a wider range of topics in Pedometrics.

The Conference topics are:
a) Sampling for land resource modelling
b) Quantifying uncertainty in spatial models of soil
c) Aggregation and disaggregation in spatial scales
d) Deterministic/mechanistic and stochastic/empirical models in Soil Science
e) Soil spatial models using environmental correlation
f) Modelling spatio-temporal variability in soil

Authors are invited to submit the one-page abstract (maximum of 500 words- A4 size) on or before December 31, 1998. Papers will be reviewed by a panel and, those accepted will be allocated to either oral or poster session. Authors of each accepted paper would be required to prepare and submit a two-page extended abstract by June 30, 1999, for inclusion in the conference Proceedings (to be available to all registrants at the conference). It is also the Committee's plan for all the accepted papers to be published either in a book by a publisher or in a special Issue of a Journal, preferably Geoderma.

Registration fee:
- AU$250 (by July 31, 1999);
- AU$300 (after July 31, 1999 until the Conference);
- Student (AU$150; AU$175 after July 31, 1998)

Post-Conference Tour

A post-conference tour is being organised to last for five days, depending on whether we have enough people that show interest. The tour will involve visits to a number of interesting sites in the eastern half of Australia The cost of the tour is AU$550 (approximately US$350 based on the current exchange rate).

Send your abstracts

Please send your A4-size abstract(s) (indicating your affiliation, E-mail address, your preference of presentation and whether you are or not interested in the post-Conference tour) post-Mail to:
Dr Inakwu Odeh,
CRC for Sustainable Cotton Production,
Department of Agricultural Chemistry
and Soil Science,
The University of Sydney,
NSW 2006, AUSTRALIA

Or by E-mail (as an attached Microsoft word document) to
pedometron@sola.agric.usyd.edu.au

FUZME please

A program for fuzy K-means with extragrades (FUZMe) is available from the Australian Centre for precision Agriculture website at http://www.usyd.edu.au/su/agric/acpa/fkme/FkME.html. The program can be downloaded and run on Windows machines. Further details can be found at the website.

Alex. McBratney