

## Preface

This issue of *Geoderma* contains the proceedings of the first conference of the Working Group on Pedometrics of the International Society of Soil Science (ISSS). The International Society recognized the Working Group provisionally in 1989 and formally established it in the following year at its congress in Kyoto. The conference was the Group's first big event. It attracted some 80 participants from all quarters of the globe, and judging from the coverage and the quality of the contributions it was clearly relevant and timely.

Although the Working Group is new, its field of interest, namely quantitative methods for dealing with uncertainty in soil science, is certainly not. As outlined by Webster (1994, this issue), this century has seen an ever broadening stream of research and literature in what we now may call pedometrics. This has accelerated in the last twenty years, as activities of the former ISSS Working Group on Information Systems bear witness. Those activities covered pedometrics as well as aspects of computer usage, and they were described at its meetings in Wageningen (Bie, 1975), Canberra (Moore and Bie, 1977), Varna (Sadovski and Bie, 1978), Canberra (1980), Paris (Girard, 1981) and Bolkesjø (Burrough and Bie, 1984).

This might be the first occasion on which many readers will have encountered "pedometrics" and its meaning. The term was coined by A.B. McBratney, and to explain it we can do no better than quote from his original communication:

"Pedometrics is a neologism derived from the Greek roots (*πεδος*, *pedos*, soil) and (*μετρον*, *metron*, measurement) and is formed and used analogously to other words such as biometrics, psychometrics, econometrics, chemometrics and the oldest of all, geometrics."

McBratney (1986) went on to define pedometrics as "the application of mathematical and statistical methods to the description of soil. This definition covers the two main ideas associated with pedometrics but in a slightly restricted way. We see that measurement has been restricted to mathematical and statistical methods, and the soil part corresponds to that branch of soil science we call pedology.

An alternative (problem-oriented) definition is 'soil science under uncertainty'. This then says that pedometrics deals with soil science and soil-related problems when there is uncertainty due to deterministic or stochastic variation, vagueness and lack of knowledge of soil properties and processes.

This definition allows for both mathematical statistical and numerical methods. It can include numerical approaches to classification — ways of

dealing with a supposed deterministic variation. Whereas simulation models per se might not be considered pedometric (though to dismiss models of pedogenesis would be inappropriate, even foolish) models that incorporate uncertainty by adopting chaos, statistical distributions or fuzziness should be embraced.

The definition is certainly incomplete but as the subject grows its core will become well defined. Nevertheless, it will always intergrade to all areas of soil science and quantitative methods and no definition by circumscription or complete enumeration of methods can be unequivocal.”

The theme of the conference was “developments in spatial statistics for soil science”. This was elaborated in a plenary review by R. Webster, a session on spatial interpolation with a keynote by D.E. Myers and volunteered papers, similar sessions on multivariate spatial statistics (H. Wackernagel), sampling strategies (A.B. McBratney) and the use of prior information in spatial statistics (A. Stein). Posters illustrated case studies, and there was a final rejoinder session by P.A. Burrough, J. Bouma and S. Yates. Afterwards participants were invited to a seminar on the application of fuzzy set theory, organized by A.B. McBratney.

We sincerely thank all participants for their co-operation and valuable contributions. Thanks are also due to colleagues for helping us to review the scripts. Finally, we hope that the proceedings, like the conference itself, will stimulate the further development of pedometrics as an aid to better understanding and to better use and management of the soil, both strengthening research and co-operation between soil scientists.

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