

Interfacing Geostatistics and GIS

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Preface

Most of the papers contained in this volume grew out of presentations given at the International Workshop StatGIS03 – Interfacing Geostatistics, GIS and Spatial Data Bases, which was held in Pörtlach, Austria, Sept. 29–Oct. 1, 2003, and ensuing discussions, afterwards. Some of the papers are new and have not been given at the conference. Therefore, most of the papers should not be considered as conference proceedings in its original sense but rather more as self-contained and actual contributions to the theme of the conference, the interfacing between geostatistics, geoinformation systems and spatial data base management.

Although some progress has been made toward interfacing, we still feel that there is only little overlap between the different communities. The present volume is intended to provide a bridge between specialists working in different areas. According to the topics of the above mentioned workshop, this volume has been divided into three parts:

Part I starts with general aspects of geostatistical model building (Pebesma) and then new methodological developments in geostatistics are presented, in particular this pertains to neural networks (Parkin and Kanevski), Gibbs fields as used in statistical physics (Hristopulos). Furthermore, new developments in Bayesian spatial interpolation with skewed heavy-tailed data and new classification methods based on wavelets (Hofer et al.) and support vector machines (Chaouch et al.) are presented.

Part II contains applications of geostatistics to such diverse areas as geodetic network modelling (Čepel and Pytel), land use policy (Müller and Munroe), precipitation fields modelling (Ahrens), air pollution monitoring (Shibli and Dubois), soil characterization (Sunila and Hortalainen) and soil contamination modelling (Palaseanu-Lovejoy et al.). But also new application areas such as traffic modelling (Braxmeier et al.) and spatial modelling of entrepreneurship data (Breitenecker et al.) are touched.

Part III is devoted to the issues of the integration of different types of information systems. The paper by Krivoruchko and Bivand deals with the problems of interfacing GIS and spatial statistics software systems, from the

perspectives of users and developers. An application of GIS in connection with spatial analysis of remotely sensed agricultural data is reported by Sambrakos and Tsiligridis.

The advance of the integration efforts with regard to epidemiological information systems is documented in the paper by Gómez-Rubio et al., similar issues arising in biostatistical applications such as acute coronary heart disease are considered by Niyonsenga et al. Non-standard developments and applications of temporal GIS are reported by G. and N. Andrienko, whereas A. Gebhardt reports on several possibilities for combining open-source (spatial) databases and GIS.

Finally we would like to thank the Springer Publishing House for offering us the opportunity to publish the present material on the important aspects of integration and combination of spatial modelling branches which previously had developed in a more or less isolated manner. We are looking forward to reporting on further progress in this direction very soon.

Klagenfurt, Spring 2008

Jürgen Pilz