

Preface

The chapters in this book mostly started as presentations at the Terrain Analysis and Digital Terrain Modelling conference hosted by Nanjing Normal University in November 2006. As far as I am aware this was the first international conference devoted specifically to this area of research, and since it was also my first visit to China it was an exciting and unique experience for me. The participants ranged from leaders in the field discussing visions and challenges for the future to students grappling with the possibilities and exploring new directions. These papers are a selection of the many presentations at the conference and give some indication of the breadth of research on show at the meeting.

Digital terrain analysis has moved beyond a research tool into routine application, such as determination of catchment areas and flow pathways in hydrological analysis, supporting soil mapping through spatial prediction and the definition of landform elements, and the use of slope and other attributes for land capability analysis. But there are still many areas of active research refining these methods or exploring new approaches, as this book shows.

One recent development explored in several of the papers in this book is the availability of global or near-global terrain data in several forms, GTOPO-30 and SRTM 3 second data being the most significant. Reliable global topographic data opens the doors for truly global analysis, consistent analysis on different continents and the generation of collective experience that is transforming the field of geomorphometry into a robust science.

Another theme reflected in these papers is the increasing sophistication in our understanding of issues related to scale, accuracy, uncertainty and error propagation in digital terrain analysis. As these methods are increasingly used to support important decisions, information on uncertainty becomes vital for the rational use of predictions. There is still some way to go before we have tools for estimating and representing uncertainties that meet the needs of our user community.

Other papers demonstrate the continued demand for improved methods to classify and segment the land surface into useful units for land management or mapping; showcase innovations in representing and characterising the land surface; highlight a growing focus on processes rather than statistical correlations for understanding the earth's surface; and exemplify the ongoing development and testing of new algorithms addressing deficiencies in quality and efficiency of existing methods.

At the Nanjing conference, I was astonished by the number of students from China and elsewhere training in this research area and by the variety and innovation of their work. I was also impressed by their probing questions and contributions to the discussions. The conference provided an opportunity to renew some old friendships, make new friends and meet for the first time some of the people whose names I knew from their published papers. I greatly enjoyed the interaction with so many disciples in the field of terrain analysis and consider myself fortunate to have had the opportunity to participate in this meeting. I am hopeful of many more stimulating and rewarding meetings and discussions as part of the TADTM initiative in the coming years.

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