

Preface

Over recent years, remote sensing and geographic information systems have become of increasing importance in hydrology. Due to technical obstacles, conventional applications most commonly used either remote sensing or geographic information systems (GIS). It is only during the last five years that an integration of remote sensing and geographic information systems with hydrological models became technologically feasible. It is, therefore, interesting to see the first applications of such an integration and to compare current investigations and applications in this field.

Due to the fact that modern technology (remote sensing, GIS, image processing, digital elevation models, digital maps, etc.) allows the replacement of classical hydrological models of the lumped system type by more complex model structures of the distributed type, a new generation of deterministic hydrological models has emerged during the last decade. The implementation of information based on these technologies in hydrological modelling enables these new models to be not only more physically based but also to incorporate temporal and spatial changes (e.g. land-use changes, climate changes) into the modelling efforts. This represents not only a higher level of model sophistication and, thus, an improved accuracy of results but also a more efficient use of such models in the field of water resources management. This is equally valid for conventional regional water management as well as for continental or global water resources considerations as can be presently observed in the field of coupling macroscale hydrological and atmospheric models, e.g. in the World Climate Research Programme of the United Nations and the International Council of Scientific Unions.

Many authors responded to the announcement on Symposium 3 (Remote Sensing and Geographic Information Systems for Design and Operation of Water Resources Systems) at the Fifth IAHS Scientific Assembly in Rabat, Morocco, by submitting abstracts. However, the number of papers which could be presented during the two days of the symposium had to be limited. Consequently, many promising contributions had to be refused for oral presentation. All those contributions which could not be presented orally have the chance to be discussed during the poster sessions. The papers included in this volume give the reader a selected but excellent and interesting overview of the wide field of applications of remote sensing and geographic information systems in hydrology. The papers are organized in the following sections:

- Water Resources Management
- Snow Hydrology
- Surface Water and Groundwater
- New Technologies in Remote Sensing and GIS

Each section is introduced by a keynote paper. It is hoped that the papers presented here provide many readers, especially those from developing countries, with an overview of the current state of the art in remote sensing and geographic information systems for hydrological applications.

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