Preface

Over a period of more than a decade the International Commission on Continental Erosion (ICCE) of the International Association of Hydrological Sciences (IAHS) has organized a number of internationally important symposia and workshops focusing on themes related to erosion and sediment yield: *Symposium on Drainage Basin Sediment Delivery* (Albuquerque, 1986), *Symposium on Sediment Budgets* (Porte Alegre, 1988), *Workshop on Erosion, Transport and Deposition Processes* (Jerusalem, 1987), *Symposium on Sediment and the Environment* (Baltimore, 1989), *Symposium on Debris Flows and Environment in Mountain Regions* (Chengdu, 1992), *Symposium on Erosion and Sediment Transport Monitoring Programmes in River Basins* (Oslo, 1992), *Symposium on Sediment Problems: Strategies for Monitoring, Prediction and Control* (Yokohama, 1993), *Symposium on Variability in Stream Erosion and Sediment Transport* (Canberra, 1994), *Erosion and Sediment Yield: Global and Regional Perspectives* (Exeter, 1996).

The interdisciplinary contributions by scientists and engineers active in the field of hydrology, hydraulics, hydrogeology, geomorphology, earth and environmental sciences, etc. focus on erosion and sedimentation processes as an important part of the geological evolution of a landscape. Erosion of the earth's surface by the action of water, wind, ice and waves has occurred throughout the ages. Transport and deposition of the material are natural processes, visible any time and anywhere. But increasingly, in most inhabited regions of the world, erosion and sedimentation processes are strongly affected by man. In many environments, soil erosion induced by man is the predominant erosion process, whereas the natural geological erosion is of only secondary importance. The excess production of sediment in a headwater area leads to an increase in the yield of material to rivers and reservoirs. Problems arising in one specific area may be solved by applying suitable practices at another location. The whole river basin must be looked at as a compound unit, although it often consists of small units of unique and singular characteristics. Thus, the developments in erosion and sediment transport modelling are the only available tool to predict the consequences of natural as well as man-induced environmental changes and impacts on the sediment dynamics. Its efficient management—global as well as regional and local—within an interdisciplinary approach is much in demand by the public as well as their responsible representatives. An efficient basis for effective decisions could be created by relevant expert systems and/or decision support systems considering all the different environmental aspects in an integrated way. Thus, the *International Symposium on Modelling Soil Erosion, Sediment Transport and Closely Related Hydrological Processes* was organized by ICCE in cooperation with the Institute for Land and Water Management Research of the Austrian Federal Agency for Water Management and the Austrian Ministry for Agriculture and Forestry to focus on the state-of-the-art in relevant achievements. The symposium was co-sponsored by UNESCO as it constitutes a contribution to UNESCO's IHP-V framework related to its activities for "Vegetation, Land-Water Use and Erosion Processes" and "Land Use, Deforestation, Erosion and Sedimentation in the Humid Tropics". Other co-sponsors

were the International Atomic Energy Agency (IAEA), the International Research and Training Centre on Erosion and Sedimentation (Beijing) and WMO as their mission also includes the symposium topic.

The International Atomic Energy Agency is at present supporting several technical cooperation projects in developing countries on the use of nuclear techniques to study soil erosion, sedimentation and reservoir siltation. Since 1994, a Research Coordination Project on the same subject is being implemented, with the participation of 17 countries from five continents, aiming at the standardization of the ^{137}Cs technique in all its steps, as well as the development of other nuclear techniques in this particular subject, to provide reliable information on soil erosion as a managerial tool for sustainable development.

The symposium was held in Vienna, Austria, 13–17 July 1998, at the conference facilities of the IAEA headquarters. It focused on the developments in erosion and sediment transport modelling. The 50 papers selected for this publication consider theoretical aspects of modelling, the validation of these models including necessary monitoring strategies, and model applications on various scales, as well as in different global regions. The symposium provided an international forum for academic and scientific contributions to meet with applied engineering.

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