

## Preface

Over the past 18 years, the International Commission on Continental Erosion (ICCE) of the International Association of Hydrological Sciences (IAHS) has organized a number of highly successful symposia dealing with various aspects of erosion and sedimentation. These have included:

*The Symposium on Drainage Basin Sediment Delivery*, Albuquerque, New Mexico, USA, 1986;

*The Workshop on Erosion, Transport and Deposition Processes*, Jerusalem, Israel, 1987;

*The Symposium on Sediment Budgets*, Porto Alegre, Brazil, 1988;

*The Symposium on Sediment and the Environment*, Baltimore, USA, 1989;

*The Symposium on Erosion, Debris Flows and Environment in Mountain Regions*, Chengdu, China, 1992;

*The Symposium on Erosion and Sediment Transport Monitoring Programmes in River Basins*, Oslo, Norway, 1992;

*The Symposium on Sediment Problems: Strategies for Monitoring Prediction and Control*, Yokohama, Japan, 1993;

*The Symposium on Variability in Stream Erosion and Sediment Transport*, Canberra, Australia, 1994;

*The Symposium on the Effects of Scale on the Interpretation and Management of Sediment and Water Quality*, Boulder, USA, 1995;

*The Symposium on Erosion and Sediment Yield: Global and Regional Perspectives*, Exeter, UK, 1996;

*The Symposium on Human Impact on Erosion and Sedimentation*, Rabat, Morocco, 1997;

*The Symposium on Modelling Soil Erosion, Sediment Transport and Closely Related Hydrological Processes*, Vienna, Austria, 1998;

*The Symposium on the Role of Erosion and Sediment Transfer in Nutrient and Contaminant Transfer*, Waterloo, Canada, 2000;

*The Workshop on Erosion and Sediment Transport Measurement in Rivers: Technological and Methodological Advances*, Oslo, Norway, 2002;

*The Symposium on the Structure, Function and Management Implications of Fluvial Sedimentary Systems*, Alice Springs, Australia, 2002;

*The Symposium on Erosion Prediction in Ungauged Basins: Integrating Methods and Techniques*, Sapporo, Japan, 2003 .

The Moscow symposium on “Sediment Transfer through the Fluvial System” builds on, and extends, this coverage of key aspects of erosion and sedimentation, by focusing on the redistribution and storage of sediment within different parts of the fluvial system, as well as the fluvial system as a whole. Substantial progress has been achieved in this area in recent years, because the application of a range of different methods and techniques, many of them new, has provided detailed quantitative information on sediment behaviour and sediment transfer in small first order catchments, as well as in large river basins and their individual components (river channels, flood plains, etc.). An improved understanding of sediment transfer, storage and redistribution has many important practical applications, including soil conservation, catchment management, control of diffuse-source pollution, predicting and managing reservoir sedimentation, and the maintenance of irrigation systems and navigation channels, which link closely to the sustainable management of land, water and other natural resources. Co-sponsored by

UNESCO, the symposium represents a contribution to the International Sedimentation Initiative (ISI) of the UNESCO International Hydrological Programme (IHP VI).

The choice of Russia and Moscow as the venue for the symposium must be seen as particularly appropriate in view of the important contribution of Russian scientists to work in this field and the strong reputation of Moscow State University, which has undertaken much innovative work in this area. The Faculty of Geography of Moscow State University, which is the host of the Symposium, is the leading scientific centre in Russia and the former USSR for the study of erosion and sedimentation processes in different components of the fluvial system. The Laboratory for Soil Erosion and Fluvial Processes (LSEFP), within the Faculty of Geography, was founded in 1969 by Professor N. I. Makkaveev. In his well-known monograph *River Channels and Erosion in River Basins*, published in 1955, Professor Makkaveev sought to emphasize that all fluvial processes are interdependent and that it is essential to take account of sediment transfer and redistribution within the wider river basin, when studying sediment transfer within the river channel, and *vice versa*. This theme will be key to many of the topics addressed by the symposium. Furthermore, Moscow State University will celebrate the 250th Anniversary of its foundation in early 2005 and it is appropriate and timely that participants from more than 22 countries will gather there to exchange findings and ideas.

The 61 papers published in this proceedings volume address the problems of understanding sediment redistribution and storage in different components of the fluvial system within many different regions of the world, including North and South America, Australia, Europe and Asia. They have been grouped into five themes, which cover the various pathways and linkages within the fluvial system, extending from small hollows on the slopes of first order basins to the outlets of large river systems. The relationships between erosion, sediment redistribution and storage and sediment transfer in headwater areas, are addressed by a series of papers included within the section dealing with *Sediment redistribution within small catchments in different environments*. The papers in the following section, which focuses on the *Interaction of rivers and river catchments in undisturbed and intensively cultivated basins*, explore the influence of natural and accelerated erosion on the slopes of a catchment on sediment transport within the river channel at different scales, ranging from small and medium-sized basins, through large basins and whole countries, to entire continents. The papers in the third section which deal with *Large river system functioning*, address the problems of interaction between channel morphology and sediment transport, for large rivers draining different environments and under different degrees of anthropogenic influence. The development of physically-based models provides a key input to understanding sediment transfer in fluvial systems and the papers in the fourth section, dealing with *Modelling of erosion and deposition processes*, document a wide range of models, ranging from models of soil detachment to models of meander development. Finally, the problems of understanding the transfer of sediment-associated pollutants through the different pathways and linkages of the fluvial system provide the focus for the final group of papers dealing with *Implications for nutrient and contaminant transfer*.

The editors would like to express their gratitude to UNESCO, IAHS and the Faculty of Geography, Moscow State University for their technical and financial support for the symposium. Thanks are also extended to everyone who helped with the preparation of this volume and the organization of the symposium more generally. In particular we thank Penny Farnell and Cate Gardner of IAHS Press for coordinating the publication of this volume.

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