Preface

In recent years the International Commission on Continental Erosion (ICCE) of the International Association of Hydrological Sciences (IAHS) has organized a number of international symposia focusing on themes concerning erosion and sediment yield. Recent symposia include the Symposium on Sediment Budgets (Porte Alegre, 1988), the Symposium on Erosion and Sediment Transport Monitoring Programmes in River Basins (Oslo, 1992) and the Symposium on Sediment Problems: Strategies for Monitoring, Prediction and Control (Yokohama, 1993). In addition, there have been joint symposia held in conjunction with the IAHS International Commission on Water Quality – the Symposium on Sediment and Stream Water Quality in a Changing Environment: Trends and Explanation (Vienna, 1991) and the Symposium on Tracers in Hydrology (Yokohama, 1993). In most of these symposia, papers have raised the issue of variability in erosion and stream sediment transport. *The Symposium on Variability in Stream Erosion and Sediment Transport* arose from this background. It is fitting that the symposium was held in Canberra, Australia, as this is possibly the most hydrologically variable continent on Earth.

On a global scale soil erosion is one of the major contemporary environmental issues, while stream sediments provide the most common host for contaminants and nutrients. As a result, there is a growing need to understand better the processes involved in sediment erosion and transport in order to isolate sediment sources, characterize transport behaviour and determine the fate of eroded material. In many cases, an understanding of the processes involved is clouded by the natural variability within the sediment system at a range of spatial and temporal scales. Research designs and methodologies must be capable of accurately characterizing the sediment system especially with respect to its variability. This becomes more important as human impacts on stream systems increase and also if we are to make meaningful predictions of changes related to global environmental changes. In both cases we must be able to disentangle natural variability and that associated with basin change.

The 54 papers in this proceedings volume cover a wide range of topics. They have been grouped into six main themes. The papers on *Soil erosion, sediment transport and sediment tracers* examine variability in erosion and transport, especially the implications of variability on the techniques used. This theme continues in the next section on *Flood plains and lake sedimentation* which focuses on determining the fate of eroded material and the use of such deposits in the interpretation of past processes and environmental history. The next two sections, *Large basins and regional variation* and *Small basins*, concentrate on variability at a range of spatial scales. The penultimate section

examines *Human impacts* on erosion and sediment transport systems. The final section titled *Techniques* outlines the application of new research techniques. It is hoped that these papers will lead to greater consideration of the role of variability in erosion and sediment transport especially in the establishment of adequate research and monitoring designs.

Laurie Olive & Julie Kesby
Department of Geography and Oceanography, University College, University of New South Wales, Australian Defence Force Academy, Australia

Bob Loughran
Department of Geography, University of Newcastle, Australia