

Preface

Man's continuing exploitation of the planet has created water problems that require scientific understanding to provide the basis for sound planning and management. One problem is the increasing demand for fresh water of good quality. Until recently, most of the water resource problems concentrated on providing adequate quantities of water with generally less concern for good water quality. In many cases, exploitation and poor management practices have resulted in a degradation of the available resources, but scientists are only now developing tools to evaluate changes or trends in sediment content and quality of the water in streams and rivers. As man continues to develop the earth, by harvesting nonrenewable resources such as fossil fuels, metals, and in some cases water and by disposing of wastes, he will continue to affect water resources.

Individual scientific disciplines have focused on water problems within generally narrow fields of study. For example, geomorphologists have been studying the effects of a range of land uses on the erosion, transport and deposition of sediment. Also, geochemists have investigated factors controlling the release and transport of a variety of solutes derived from natural and man-influenced sources. These studies are important in themselves, but many of the solutes found in stream waters are affected by the sediment, and in many cases the solute concentrations also conversely affect the behavior of sediment, and either may affect the aquatic ecosystem. By combining the two major disciplines, *Continental Erosion* and *Water Quality*, it was hoped that a useful contribution to the scientific understanding of factors affecting sediment and water quality may be provided.

One particular aspect of the science that needs continued assessment through the development of new techniques is the evaluation of spatial and temporal changes in the sediment and water quality of streams. But, to say that some aspect of sediment transport has changed in a given stream system is not sufficient for the development of a management strategy. There is a need to understand the factors causing the change and also the effect of the change on other aspects of the water system, such as the linkage between water quality and sediment or water quality and biota. The need to understand these causal relations is highlighted whenever a more tangible end product is observed, such as fish kills, eutrophication, or out-of-bank deposition of poor-quality sediment from a flood event. Intricately tied to all of these processes is the hydrology.

The objective of the symposium, for which these proceedings were compiled, was to foster a dialog between scientists researching sediment-related issues and those researching water-quality-related issues. A specific focus is the evaluation of

existing knowledge of the effects of environmental change on sediment transport, stream water quality, and the interactions between sediment and water quality. In particular, there is an interest in trend detection as it might relate to some control/explanation. One section of these proceedings is dedicated to sediment-related issues including land-use effects on sediment transport. The second section is dedicated to water-quality issues including effects of water quality on biota. Many of the papers in these two sections deal with land-use impacts on the receiving stream water, particularly the effects of agricultural and forest management practices. The third and last section of the proceedings is dedicated to linkages between sediment and water quality. Investigations of metal partitioning and nutrient transport are highlighted in this section.

The symposium was jointly organized by the International Commissions on Continental Erosion and on Water Quality of the International Association of Hydrological Sciences (IAHS). Support from the IAHS is gratefully acknowledged.

Principle convenors: N. E. Peters
*U. S. Geological Survey, WRD
6481-B Peachtree Industrial Blvd.
Doraville, Georgia 30360 USA*

D. E. Walling
*University of Exeter
Department of Geography
Amory Building, Rennes Drive
Exeter, Devon EX4 4RJ UK*

Co-convenors: F. Schöberl
*Institut für Konstruktiven
Wasserbau und Tunnelbau
Universität Innsbruck
Technikerstraße 13
A-6020 Innsbruck, Austria*

M. Sturm
*Eidgenössische Anstalt für Wasserversorgung
Abwasserreinigung und Gewässerschutz
Überlandstraße 133
CH-8600 Dübendorf, Austria*