

Preface

Headwaters are the places where rivers are born. They are the furthest, highest, and most remote regions of a watershed. Frequently, headwaters are wildernesses and steeplands. Their main economic activities include agriculture, forestry, mining, tourism, hydroelectric power and water supply. Many headwater regions are critical to water resources development. Traditionally, their low level of human activity, rugged landscape, and isolation from major industrial centres have made them valued for the purity of their landscapes and their surface and groundwater production. Today, this water purity is threatened by atmospheric acid deposition, by erosion associated with accelerating land-use conversion and development, and by the pollution associated with increasingly intensive agriculture, mining, road and tourist development.

Headwater regions may also be of major importance as conservation areas for natural ecosystems and wildlife. Ecosystems in headwater areas are fragile (higher elevation, steeper slope, extreme precipitation and temperature), very sensitive to environmental pollution and decline.

The keywords of HeadWater'98 were: hydrology, water resources and ecology. **Hydrology** (including meteorology and hydraulics) regards water as the most important driving force in headwater regions, and relates to abiotic aspects. In the context of HeadWater'98, **ecology** includes both the response of the biological environment, in terms of biotic aspects (e.g. terrestrial and aquatic ecology), and the response of the physical environment, in terms of abiotic aspects, such as geomorphology and erosion. The issue of **water resources** is a part of the socio-economic aspects, the latter representing human response and impact. In addition to water resources, the socio-economic aspects include ecological protection, integrated land management, risks, etc. Obviously, interdisciplinary approaches are indispensable for sound decision-making regarding the self-sustainable management of headwaters.

The HeadWater'98 Conference was the fourth meeting of the Headwater Control group (Standing Committee on Headwater Control). The previous conferences were held in 1989, 1992 and 1995. The specific aim of HeadWater'98 was to consider in more depth the role of hydrology and water resources, in addition to ecology and socio-economic aspects. This broadening of the conference theme of HeadWater'98, compared to the previous meetings of the Headwater Control group, is reflected by the involvement of organizations in the conference preparation other than the Standing Committee on Headwater Control (SCHC). The important role of Dr Martin Haigh and Dr Josef Krecek, both among the SCHC "founding fathers" of the conferences

on headwater control, and members of the HeadWater'98 Organizing Committee is acknowledged.

HeadWater'98 focused on the interdisciplinary aspects of scientific and applied water resource management. It aimed to link the perspectives of the scientist, the land management practitioner, and those involved in policy formulation through consideration of the problems caused by pollution, land erosion, and environmental degradation. The conference provided an international forum for state-of-the-art presentations on relevant methodologies and techniques, and to identify the needs for future developments. It also gave an opportunity for the evaluation of alternative land management, environmental protection and land reclamation practices and policies.

This volume contains 69 papers spread over 10 topics. The papers were selected by the Scientific Advisory Committee from more than 300 submitted abstracts.

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