

PREFACE TO VOLUME III

The third volume in the series of textbooks on the environmental isotopes in the hydrological cycle deals with surface water. From man's perspective, this is perhaps the most visible and most accessible part of the global hydrological cycle. Indeed, development of human civilisation over the past millennia was always intimately linked to availability of water; civilisations flourished and died in the rhythm of climatic cycles controlling availability and abundance of freshwater in many parts of the world.

The industrialised world brought new dimensions into ever-persisting relationship between man and water. Particularly this century saw dramatic impact of man's activities on surface water systems in a form of massive and widespread pollution of these systems with numerous pollutants of various nature: organic compounds, heavy metals, oil products, agrochemicals, etc. In many instances natural cleaning capacities of those systems were surpassed with the resulting conversion of numerous rivers and lakes into biologically dead sewage channels and reservoirs. Although growing concern has led in many parts of the world to gradual control of this impact, pollution of surface water systems still remains one of the central problems related to management of global water resources.

This series of 6 volumes are meant to be in first instance textbooks helping young people to apply environmental isotope methodologies in addressing various practical problems related to the hydrological cycle. Practical approach was adopted also throughout Volume III. Three core chapters of this volume (Chapter 2, 3 and 4) deal with rivers, estuaries and lake systems, respectively. Systematic presentation of possibilities offered by various isotope tracers in addressing questions related to the dynamics of surface water systems, their interaction with groundwater and vulnerability to pollution is pursued throughout those two chapters. Practical hints and suggestions are given how to carry on environmental isotope investigation. The volume closes with an outlook to future of surface water systems in the light of anticipated global warming induced by greenhouse gases.

Krakow, Vienna, Groningen

K. Rozanski
K. Froehlich
W. G. Mook