

Preface

Groundwater is a major source of water across much of the world and acts as a component of the global water cycle on the Earth. Groundwater has the capacity to balance large variations of precipitation and associated increased demands during water shortage, and may provide valuable alternative water sources when surface-water resources are close to the limits of sustainability. However, groundwater resources may be threatened by the uncertainty of climate change and increased water demand from human activities.

This book focuses on three major objectives: (1) to overview the current knowledge of groundwater resources and management in a changing climate and society, (2) to make adaptation, alternatives, and resilience the strategies for groundwater management in changing environments, and (3) to discuss new directions and initiatives of hydrological study, particularly of groundwater.

One of the groundwater resources assessment programs related to climate change is the GRAPHIC project (Groundwater Resources Assessment under the Pressures of Humanity and Climate Change), which was initiated by UNESCO's International Hydrological Programme (IHP) in 2004. The project provides a platform for communication and exchange of knowledge among groundwater and climate experts around the world. This book includes some of the research results from GRAPHIC projects.

The book also contains contributions from the intensive training course on groundwater resources, science, and management which accounted for a portion of Japan's contribution to UNESCO's IHP. The course was composed of a series of lectures, symposiums, and practice sessions led by experts in the field and laboratory, and of several technical field visits. The 20th IHP training course was organized by the Research Institute for Humanity and Nature (RIHN), Kyoto; Nagoya University; and Kyoto University.

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