Mountains are the water towers of the world. However, they are not only an important source of water but also a source of key resources such as energy, minerals, and forest and agricultural products. They offer a multitude of recreational opportunities, and probably most importantly, serve as storehouses for biological diversity. Mountains provide the living space for about 10% of the world’s population. A much larger percentage of the population profits from the various services of mountains, most of which depend on water.

Mountains play a key role in the global water cycle as well as in numerous regional water cycles. Mountain waters often are subject to a manifold of conflicting interests and pressures. Because of growing populations and needs for economic development, water demands for humans, food, energy, and industry will certainly increase. Furthermore, climate change will lead to extended periods of drought, higher flood risks, altered physical, chemical, and biological properties of water, and to increased demands for irrigation. At the same time, the ecological functioning of our waters must be maintained and improved. As a consequence, the diverse pressures on mountain waters will likely rise dramatically in the future. Aiming towards sustainable mountain water management is a highly significant and important future challenge.

The aim of this book is to extensively portray the highly diverse attributes of mountain waters. With this aim, we hope to not only convey a sound scientific insight but also to demonstrate the paramount importance of mountain waters for future ecological and societal development.

The book starts off with a synthesis on mountain water features and management concerns. This chapter summarizes and complements the contents in the following chapters, and hence aims at transmitting a comprehensive view on the diverse mountain water issues, in general. The book is then divided into four parts comprising 13 chapters:

Part I, *Alpine Water Resources*, examines the hydrological basics, the impacts of climate change in the Swiss Alps, and human interventions in mountain waters. Part II, *Biogeochemistry and Pollution of Alpine Waters*, deals with the chemistry of mountain rivers, the effects of acid deposition on high elevation lakes, the glaciers as archives of atmospheric deposition, and the occurrence of persistent organic contaminants.
Part III, *Ecology of Alpine Waters*, discusses the ecological relationship between different water sources and associated habitats, important abiotic factors, and the biology of alpine streams.

Part IV, *Case Studies*, presents four studies on integrated water assessment and management.

The discussion of important scientific basics is supplemented with considerations on the various uses of mountain waters, needs for management actions, and on future challenges towards sustainable water management. This overview is set not only on mountain areas themselves, but also on downriver reaches and the surrounding lowlands, and hence on the relationship between mountain and lowland water issues. The book has a clear focus on the European Alps but some chapters refer to mountains on other continents. Most of the generalities regarding the natural processes governing mountain waters, on conflicting water uses, and on management needs will be universally valid. This also holds true for the three case studies elaborated in Switzerland (Part IV) whose findings and insights are certainly of general significance. A further case study examines a highly challenging water situation in the Middle Mountains watersheds in the Himalayas.

Elaboration of the book has turned out to be a demanding and, at the same time, productive task for the contributing editors, authors, and editorial assistants. The chapter contributions demonstrate the high competence and great passion of the authors regarding mountain waters. The outstanding collegial spirit in the preparation of the book resulted in a delightful experience. To all who have contributed to the book, I express my warmest thanks and my great appreciation.

Dübendorf, Switzerland
September 2009

Ulrich Bundi
Principal editor
Alpine Waters
Bundi, U. (Ed.)
2010, XIV, 278 p. 88 illus., 32 illus. in color., Hardcover
ISBN: 978-3-540-88274-9