

Luis Chicharo · Felix Müller  
Nicola Fohrer *Editors*

# Ecosystem Services and River Basin Ecohydrology

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# Foreword

The visionary UN document “The future we want”, formulated at Rio +20, defines sustainability as a strategic goal for humanity in the twenty-first century, which means harmonization of social needs with biosphere potential. Such a broadly accepted approach focuses on the human being as the central reference point for sustainability efforts.

However, such approach has been steadily contributing to habitat degradation and disruption of ecological cycles, and to the decline of ecosystem services and overall biosphere potential.

The dynamic and diversified status of the biosphere is best described by the Greek expression *panta rei*, which means that biological evolution is, primarily, the function of the process of which the major driver has been the water cycle. Therefore, the critical condition for harmonizing the biosphere potential with increasing demography and consumption, is the understanding of the “water-biota interplay” as the basis for the enhancement of the ecological potential of ecosystems modified by humans.

Consequently, the major goal of ecohydrology as a “problem-solving science”, is the enhancement of the ecosystems carrying capacity based on the understanding of the “dual regulation” interactions between water-biota, for the regulation of the hydrological cycle, as a way to facilitate the ecosystems adaptation to global change (Zalewski 2006).

Coastal zones are critical for biogeosphere sustainability because they are inhabited by more than half of humanity (Chicharo et al. 2009). Such interfaces between continental land masses and oceans are vulnerable to climatic changes owing to sea-level increase, acidification and habitat degradation. Ecotone zones between continental masses and oceans present a high potential for the biological productivity, biodiversity and resilience. This book explores key issues for achieving “the future we want” by providing fundamentals of the knowledge about the dependence of ecosystem services on three-dimensional interactions: oceans/coastal, terrestrial and freshwater ecosystems. The subsequent chapters of *Ecosystem Services and River Basin Ecohydrology* provide sound examples for assessing and enhancing ecosystem services for solving the sustainability problem, using the different

disciplines of environmental science, which in turn provides a new, holistic perspective for enhancement of ecosystem potential and its harmonization with society needs.

Finally, this book will encourage scientists and practitioners acting at multi-dimensional and multi-scale levels at the continuum river basin-coastal areas, to consider a synergetic integrative approach between the biological, physical and chemical processes with the services provided by the ecosystems, in order to generate a sustainable coexistence between the humanity and the biogeosphere.

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