

Preface

Today's highly dynamic social development is dramatically dependent on water. Population growth and land-use dynamics are intimately intertwined with freshwater resources. The pressing need for an integrated approach to water resources management that considers both natural and human systems, and accounts for their mutual dependencies, requires an improved understanding of the coupling between societal and hydrological processes.

In addition, water resources are unevenly distributed: access to clean water supplies and sanitation is a crucial problem for billions of people living in water-stressed areas. For this reason, identifying ways for improving water resources systems management and governance in relation to societal changes is critical to addressing water insecurity issues, especially in emerging economies, where a rapid decline in quantity and quality of water resources is already experienced day by day and cannot but increase, given the expansion of demand by a wealthier and always larger population.

With this general picture in the background, the International Commission on Water Resources Systems (ICWRS) of IAHS organized the 6th International Symposium on Integrated Water Resources Management (IWRM) in collaboration with the International Union of Geodesy and Geophysics (IUGG), European Geosciences Union (EGU), Department of Civil, Chemical, Environmental and Materials Engineering, University of Bologna (DICAM) and Italian Hydrological Society (SII-HIS).

The conference title “Evolving Water Resources Systems – Understanding, Predicting and Managing Water-Society Interactions” brings together scientists and practitioners from different countries and areas of expertise to present research ideas and results bringing hydrology into the future by reaching an improved connection with society. The conference is framed within the Panta Rhei IAHS research initiative (<http://www.iahs.info/pantarhei>) and constitutes an important benchmark for water resources management during the IAHS Scientific Decade 2013–2022.

The present volume collects a selection of 89 peer-reviewed papers presented by research groups active in 31 different countries from five continents (Fig. 1).

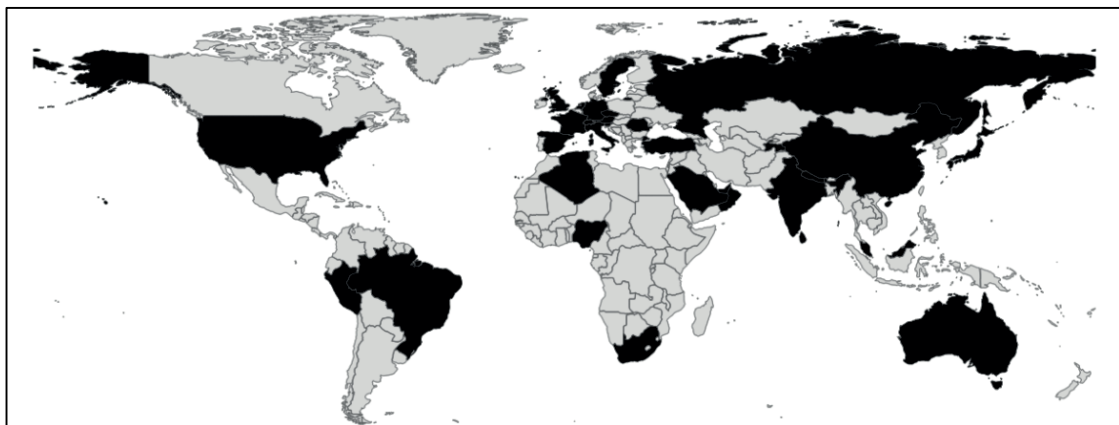


Fig. 1 Countries of origin of the international research groups that contributed to this volume.

The papers focus on a broad variety of topics associated with water resources assessment and management in a changing environment, and concentrate in particular on the two-way interaction between water and society. Water resources systems, catchment hydrology, eco-hydrology, groundwater hydrology, water security and socio-hydrology are driving scientific areas, which are grouped in this volume in four chapters associated with the following main

themes (see also Fig. 2): (1) Hydrological processes in a changing environment: Coping with uncertainties; (2) Floods, droughts and water risks in a changing socio-hydrological context: Feedbacks between water resources and social systems; (3) Water resources: Monitoring, integrated assessment and management; (4) Optimization of water resources systems: changing boundary conditions, targets and criteria of water management.

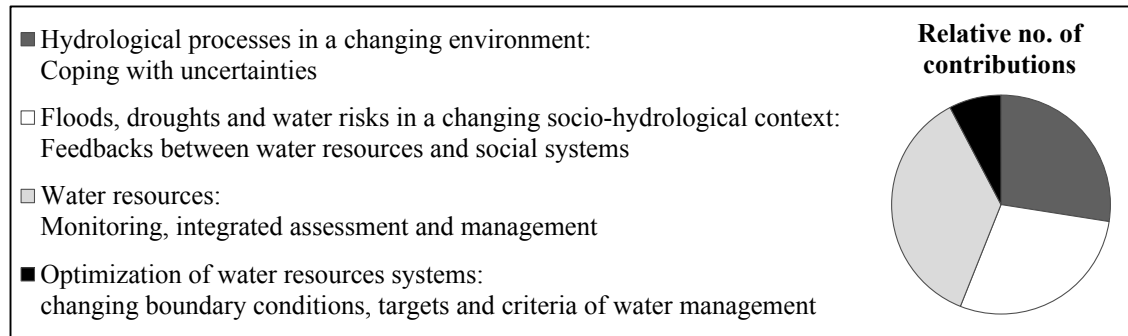


Fig. 2 Main themes of “Evolving Water Resources Systems: Understanding, Predicting and Managing Water–Society Interactions” and relative number of contributions in this volume.

The collection of papers included in this volume, by virtue of the broad spectrum of geographic and climatic conditions, and the composite palette of emerging and topical water issues addressed by the studies, represents a unique piece of knowledge for advancing our understanding of water–society interactions, improving integrated water resources systems management and governance, and addressing the water problems for the next generations.

EDITORS

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