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Helder I. Chaminé • Maurizio Barbieri
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Editors

Advances in Sustainable and Environmental Hydrology, Hydrogeology, Hydrochemistry and Water Resources

Proceedings of the 1st Springer Conference
of the Arabian Journal of Geosciences
(CAJG-1), Tunisia 2018

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Preface

Water is a dynamic, finite, and vulnerable—but resilient—natural resource to be protected in an environmentally sustainable way. Water systems require a comprehensive understanding, among others, of climatology, geology, hydrogeology, hydrochemistry, hydrodynamics, and surface hydrology. In addition, the important role of variability and climate change in water systems, and hydrological cycles—particularly in times of severe weather, water scarcity and other natural disasters and hazards—must be highlighted. Furthermore, water has always had a vital significance to the entire socioeconomic sector and permanently shaped the development of civilizations through the ages.

This volume gives a general overview on current research, focusing on water issues and challenges, as well as its applications to a variety of problems worldwide—with a focus on the Middle East and Mediterranean zone and surrounding regions. Moreover, it includes a wide variety of unique contributions to environmental and hydrologic systems, and water-related research and practice. Regrettably, at present, the Mediterranean and Middle East regions have not yet been deeply investigated and assessed, compared with other regions around the world such as Europe and North America.

This volume of Proceedings is based on selected papers accepted for presentation during the 1st Springer Conference of the Arabian Journal of Geosciences (CAJG-1), Tunisia 2018. The main topics include: (i) Hydrology, Climatology and Water-Related Ecosystems; (ii) Hydrochemistry and Isotopic Hydrology; (iii) Groundwater Assessment and Management: Mapping, Exploration, Abstraction and Modelling; (iv) Water Resources Sustainability and Climate Change; (v) Hydrologic Engineering and Urban Groundwater.

This volume provides new insights into characterization, evaluation, quality, management, protection, modeling on environmental hydrology, groundwater, hydrochemistry and isotopic hydrology, and sustainable water resources studies and hydrologic engineering approaches by international researchers. So, it is possible to improve the ability to manage water resources, help the identification of potential sources of contamination, and provide potential solutions to water quality problems.

The volume will also be of interest to researchers and practitioners in the field of hydrology, hydrogeology, hydrochemistry, and water resources, as well as those engaged in environmental sciences, water technologies, and earth sciences. Graduate students and water-related professionals will also find the book to be of value for further research in water and environment.

The volume includes international case studies that illustrate how water sciences and technology can contribute to promoting a more sustainable design that respects nature and the environment. In particular, it discusses the latest advances in water sciences from diverse

backgrounds, and highlights the role of the variability and climate change in hydrological systems. Finally, it is vital that water issues be seen in the overall framework of global sustainable development while considering all the ethical aspects.

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July 2018

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About the 1st Springer Conference of the Arabian Journal of Geosciences (CAJG-1), Tunisia 2018



The *Arabian Journal of Geosciences (AJG)* is a Springer journal publishing original articles on the entire range of Earth sciences in partnership with the Saudi Society for Geosciences. The journal focuses on, but not limited to, research themes which have regional significance to the Middle East, the Euro-Mediterranean, Africa, and Asia. The journal receives on average 2000 submissions a year and accepts around 500 papers for publication in its 24 annual issues (acceptance rate 25%). It enjoys the participation of an editorial team of 100 international associate editors who generously help in evaluating and selecting the best papers.

In 2008, Prof. Abdullah Al-Amri, in close partnership with Springer, founded the Arabian Journal of Geosciences (AJGS). In this year, the journal celebrates its tenth anniversary. On this occasion and to mark this event, the Founder and Editor-in-Chief of the AJGS Prof. Al-Amri organized in close collaboration with Springer the 1st Conference of the Arabian Journal of Geosciences (1st CAJG) in Hammamet, Tunisia, from November 12 to 15, 2018 (www.cajg.org).

The conference was an occasion to endorse the journal's long-held reputation for bringing together leading authors from the Middle East, the Euro-Mediterranean, Africa, and Asia who work in the wide-ranging fields of Earth sciences. The conference covered all cross-cutting themes of Geosciences and focused principally on the following ten tracks:

- Track 1. Climate, paleoclimate and paleoenvironmental changes
- Track 2. Geoinformatics, remote sensing, geodesy
- Track 3. Geoenvironmental engineering, geomechanics and geotechnics, geohazards
- Track 4. Geography, geoecology, geoarcheology, geotourism
- Track 5. Geophysics, seismology
- Track 6. Hydrology, hydrogeology, hydrochemistry
- Track 7. Mineralogy, geochemistry, petrology and volcanology
- Track 8. Petroleum engineering and petroleum geochemistry
- Track 9. Sedimentology, stratigraphy, palaeontology, geomorphology, pedology
- Track 10. Structural/petroleum/mining geology, geodynamics, marine geology

The dynamic four-day conference provided more than 450 attendees with opportunities to share their latest unpublished findings and learn the newest geoscience studies. The event also allowed attendees to meet and discuss with the journal's editors and reviewers.

More than 950 short contributing papers to the conference were submitted by authors from more than 70 countries. After a pre-conference peer review process by more than 500 reviewers, 700 papers were accepted. These papers were published as chapters in the conference proceedings by Springer.

The conference proceedings consist of ten edited volumes, each edited by the following group of *Arabian Journal of Geosciences* (AJGS) editors and other guest editors:

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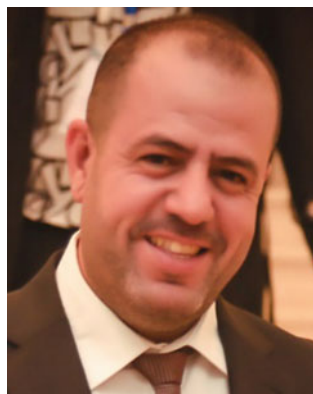
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He has co-authored over 195 publications in indexed journals, conference proceedings/full papers, book chapters, as well as technical and professional papers. He co-edited five conference volumes, three special volumes, one special issue for the “Environmental Earth Sciences” journal (2015, Springer). He is presently involved in editing themed issues for two journals: “Sustainable Water Resources Management” (IAH+Springer) and “Geotechnical Research” (ICE). He has a huge responsibility as a referee for several international journals. He served as invited Expert Evaluator of Bologna Geoscience programme for DGES (Portugal) and Scientific Projects Evaluation for NCST (Kazakhstan), as well as Coordinator of “Geology on Summer/Ciência Viva” programme at ISEP for geosciences dissemination. He has also been active teaching and supervising the work of many Ph.D., M.Sc., and undergraduate students.

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