Introductory editorial: thematic issue: progress in karst research

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Karst landforms are developed in soluble carbonate and evaporite rocks under different climatic and hydrological conditions. The action of water has generated a great range of karstic features that often serves as cropland or as substrates for other human activity. Nevertheless, karst is highly vulnerable and exploitation of its resources or utilization of the land inappropriately provokes environmental problems (water pollution, subsidence, flooding, changes in the subterranean environment, etc.). Therefore, more investigation, specific forums and scientific discussion and publications are necessary to improve the management and protection of karst environments.

During the last few decades, Karst Hydrogeology has become more consolidated into a distinct scientific field. Specific international journals and conferences have addressed this topic and international organizations have established committees to coordinate studies on the subject. One example is the Karst Commission of the International Association of Hydrogeologists (IAH, www.iah.org/karst). A recent conference on this subject is the fifth International Symposium on Karst Aquifers (ISKA5). This conference has been organized every 4 years since 1992 in Malaga, Spain, with the last one being in October 2014. This fifth Symposium in the series was organized by the Centre of Hydrogeology at the University of Malaga and the Spanish Geological Survey (IGME) in the framework of their “Advanced Hydrogeological Studies” partnership. Partners were UNESCO, the Nerja Cave Foundation, the Academy of Sciences of Málaga, the Spanish Groundwater Club

(CAS) and the IAH Karst Commission. Utilizing the framework of ISKA5 and that of the International Conference on Limestone Hydrology (ICLH, Besançon, France and Neuchâtel, Switzerland), a new biannual conference has been created. This combined conference will be known as Eurokarst and the first meeting will be in Neuchâtel, Switzerland in September 2016. Both ISKA and ICLH have served as international forums for scientific debate on progress made in research into karst environments. At ISKA5, the main objective was to discuss and to disseminate the latest trends in research into karst aquifers and water resources. These trends are based on results obtained from application of different methodologies in various karst areas in the world in addition to results of geomorphological, engineering and karst cavity investigations.

This thematic issue includes expanded versions of selected contributions from ISKA5 which have been peer reviewed by international experts under the supervision of the Editorial Board of the Environmental Earth Sciences. Three contributions concern groundwater recharge, both autogenic (in Mediterranean countries such as Italy and Spain) and allogenic (in Edwards Aquifer, USA). Several manuscripts relate to the use of hydrochemical tools to determine the functionality and karstification development of the aquifers and to characterize problems related to a dam. Another chapter is about the influence of a tunnel in a karst aquifer in Switzerland, along with one on the use of dye tracers to characterize the functioning of the epikarst over a cave in Belgium. In regards to protection of karst aquifers, a case study from the Balkans has been included. Modeling is another subject covered, both in karst network development and in use of neural networks for spring groundwater management in France. Last, but not the least, three chapters are dedicated to karst cavities, concerning speleological development, variations of environmental

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parameters such as carbon dioxide, and use of speleothems for paleoclimatic and paleohydrological records.

As a compilation of recent investigations, this publication provides a reference of interest for all those investigating the karst medium, particularly for ongoing international projects such as the following: Environmental Change and Sustainability in Karst Systems (IPGC-598 of UNESCO); International Hydrological Programme of UNESCO; and Dinaric Karst Transboundary Aquifer System (DIKTAS project of UNESCO).

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