MUCH TO WIN, EVEN MORE TO LOSE: ASSESSING KARST WATER AVAILABILITY IN TIMES OF ENVIRONMENTAL CHANGE

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Many regions across the world are dependent on drinking water from karst aquifers. Globally, around a quarter of the world's population completely or partially depends on karst water resources. Karst develops due to the dissolution of carbonate rock and creates pronounced surface and subsurface heterogeneity in their hydrological flow and storage behavior. Consequently, water resources management faces significant challenges in karst regions, in particular at times of environmental change.

This lecture will provide an overview of established approaches that can be used to assess the impacts of environmental change on karst water resources. A walk-across-scales, from the scale of individual caves to the scale of entire continents, will elaborate (1) how understanding of their processes can be obtained, (2) how dominant processes can be identified, and (3) how this understanding can be incorporated into karst specific modelling approaches. Using two recent large-scale studies, Dr. Hartmann will contrast the opportunities and challenges of managing karst aquifers across different climatic regions. The former will demonstrate that, presently and in the future, disproportionally large amounts of drinking water are available in karst regions compared to non-karstic areas. The later will quantify the contamination risk of karst water resources that can go along with inadequate management, and how this risk may be altered through environmental change.

These findings will be linked to the Puerto Rican karst and climate. Finally, Dr. Hartmann will propose some possible directions for future research in karst hydrology.