



Isotope supported recession analysis to assess hydraulic properties of karst aquifers across Austria

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Austria obtains almost half of its drinking water from karst aquifers. To manage karst aquifers in a sustainable way, reliable estimations of available karst water resources, their renewal rates and their hydrodynamics are of utmost importance. Hydrological models, which are a common tool for water resources assessment and planning, are difficult to apply at karst aquifers as their strong heterogeneity of hydraulic properties requires detailed measurements that are mostly not available.

Here, we present the preliminary results of the first attempt to assess karst aquifer hydraulic properties at a national scale. Our approach uses karst specific recession analysis that is supported by water isotope measurements. We show for a subset of test sites that isotopic information results in a more realistic description of recession properties. Through this combined approach, we can approximate the degree of karstification by comparing the recession of the slow and diffuse parts of the aquifer and the recession of the fast and concentrated parts of the karst aquifers. In the future, we will use a much larger set of water isotope measurements (>7,000 water samples) at a large number of karst springs across Austria and apply landscape descriptors, such as river network density, to upscale the approximated degree of karstification from the karst springs to all karst areas in Austria.