



Recession of spring hydrographs: Influence of initial conditions

Steffen Birk (1) and Stefan Hergarten (2)

(1) Institut für Erdwissenschaften, NAWI Graz Geocenter, Karl-Franzens-Universität Graz, Graz, Austria (steffen.birk@uni-graz.at), (2) Institut für Geo- und Umweltnaturwissenschaften, Albert-Ludwigs-Universität Freiburg, Freiburg im Breisgau, Germany (stefan.hergarten@geologie.uni-freiburg.de)

The hydrograph recession of karst springs is known to provide information about the aquifer properties. However, it has been shown (e.g. Birk and Hergarten, *J. Hydrol.*, 2010) that the early stage of the recession is dependent on the initial condition at the onset of the recession and thus on the preceding recharge events. This contribution provides a summary of the effects of the initial conditions on the recession behaviour. In addition to the recession hydrographs, showing the spring discharge as a function of time, we examine how different initial conditions affect the relationship between the discharge and its first time derivatives ('Brutsaert-Nieber plot'). The latter appears to be rarely considered in karst hydrogeology, but is frequently used for baseflow recession analysis in hydrology, as it eliminates the need to identify the onset of the recession. We argue, first, that this approach might be also useful for the analysis of the hydrograph recession of karst aquifers, and second, that the effect of the initial condition on the slope in the Brutsaert-Nieber plot needs to be understood and considered in the analysis.