



Time-series analyses of the groundwater dynamics of a mountainous karst aquifer: the Javorniki massif (Slovenia)

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The Javorniki Mountains are located in SW Slovenia and range from an elevation of 550 m to approximately 1250 m high. The massif is constituted mostly of limestones and dolomites and belongs to the catchment of the Malni spring that covers an area of about 746 km². It is a typical example of a karst aquifer characterized by several hundred meters thick vadose zone. Even if more than 21.000 people are supplied by water from this area, the aquifer is still under-exploited due to recurrent pollution sources. In addition, large fluctuations of the groundwater reserves during the year and temporary changes of the main flow directions within the cave network are making water-management issues critical. A monitoring network has been established in the main water-active caves, springs and ponors of the catchment since 2016 and records water level, electrical conductivity and water temperature at a half-hourly time step. This work aims to identify the main groundwater dynamics of the system. To do so, an analysis of the recorded time-series separating both high and low flow periods was carried out. The results shows the existence of an obvious hydraulic connection between both sides of the Javorniki massif, which is characterized by a very quick hydraulic response during high-water periods.