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Influence of snow thawing regime changes on the outflow from karstic aquifer

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Savica River is a natural phenomenon with wide spectrum of different high Alpine karstic features interesting for thorough and precise hydrogeological. It flows out from the 300 m long flooded cave, represents one of the largest Slovenian karstic springs and the main tributary to the biggest Slovene natural lake, Lake Bohinj. The discharge of Savica is in the interval between 0.03 m^3/s to 132 m^3/s. The annual discharge hydrograph of Savica consist of two different parts, first part belongs to long spring thawing period that lasts up to 4 months, and the other part is typical for the fast infiltration and fast outflow represented with high discharges in autumn months. High Q_{max}/Q_{min} ratio indicates highly developed karstic channel network inside of the Dachstein carbonate rocks. In the major part of recharge area average annual precipitation is up to 3200 mm/year. Real evapotranspiration is low and well below 550 m/year. Average annual number of days with the air temperature bellow frost point is estimated between 70 to 100 days and average fresh snow thickness for the period between 1961 and 1990 was over 4.2 m. In the Savica River hinterland typical weather situation is represented by incoming wet and relatively warm air masses coming from the southwest.

In the Julian Alps where recharge area of Savica River is positioned diminishing of snow water equivalent and the thickness of the snow cover is experienced. Dynamics of snow thawing has consequences on the outflow regime in Savica River and the level of theses influences is investigated with the analyses of the Savica River total hydrograph.

Total available hydrograph of river Savica consists of data in the period between year 1954 and year 2009, with gaps between years 1973 and 1983 and years 1990 and 1996. Annual hydrograph was divided into snow thawing dominated period and rainfall dominated period. It was determined that during observation period the ratio between snow dominated to rainfall dominated period in average drops from 73% to 55%. Drop in total volume of annual outflow was also observed.