



## **Relation between groundwater and river under damming conditions – case study from Črneče (N Slovenia)**

Mihael Brenčič (1,2) and Teja Keršmanc (1)

(1) University of Ljubljana, Faculty of Natural Sciences and Engineering, Department of geology, Ljubljana, Slovenia (mihael.brencic@geo.ntf.uni-lj.si), (2) Geological Survey of Slovenia, Dimičeva ulica 14, SI-1000 Ljubljana, Slovenia

The paper presents an analysis of the nine-year long data set of groundwater levels measurements in the influence area of the Drava River in Črneče of southern Koroška (Carinthia – N Slovenia). Statistical analysis of the groundwater levels fluctuations, flow rates and stages of the Drava River were performed. It is followed by analysis of the interrelation between the groundwater level observations and adjacent observation boreholes by means of indicator diagrams and mutual comparison between the groundwater level and river stages. Particular emphasis is placed on the analysis of the impact of extreme flood event on November 5th 2012, which caused catastrophic flooding throughout the whole Slovenian part of Drava Valley. With the help of groundwater contour maps it is illustrated that in the bank zone of the river intensive change in the shape of groundwater surface is undergoing, as well as changes in the direction of its flow. We are dealing with both the ingress of river water in the aquifer, as the outflow of groundwater into the river, and sometimes with the flow of groundwater, which is parallel to the river bank; from that it follows that interaction between river and groundwater is three dimensional phenomena.