



Extremely different hydrological characteristics of two neighbouring sinking karst rivers Lika and Gacka (Dinaric karst, Croatia)

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The Lika and Gacka Rivers are located in the central part of the Dinaric karst region of Croatia. These two rivers are probably largest European sinking rivers. They have been regulated for hydroelectric power generation since the 1966. The total length (in natural conditions before the hydroelectrical development) of the Lika and Gacka Rivers from their springs to the mouths in the large swallow-hole zones are about 70 km and 60 km respectively. Altitude of swallow-holes zone of the Lika and Gacka Rivers are at about 430 m a. s. l. and 415 m a. s. l., respectively. Water inflowing into these swallow-hole zones appears at the numerous coastal and submarine karst springs along the Adriatic Sea coast. The exact hydrological catchment areas and boundaries are not known, although numerous investigations and groundwater tracings have been carried out. The joint hydrologic catchment area is estimated to cover about 2450 km². With regard to hydrogeology-hydrology, the catchment is divided into “direct” and “indirect” parts. The western “direct” part represents the topographic catchment. The “indirect” part is connected with the Lika and Gacka Rivers by karst underground flow only. Hydrologic catchment area of the Lika River is estimated to cover about 1600 km², while for the Gacka River it is estimated to cover about 850 km². Climatological regimes on the catchments of both analysed rivers are almost identical, while geological settings are relatively different. The Lika and Gacka Rivers have extremely different hydrological regimes. The Lika River has torrential water regime. Its minimum, mean and maximum discharges in the 1951-2005 period are: 0 m³/s (dry); 24.5 m³/s; 729 m³/s. During the same period the Gacka River has next char-

acteristic discharges: 2.2 m³/s; 14.7 m³/s; 75.5 m³/s. Along some sections of their open watercourses there are considerable water losses. They appear when the regional groundwater level is low, mostly during hot, dry summer period. The water losses are especially great on the Lika River watercourse. Because of topographic relations, as well as karst geological setting it is possible that water from the Lika River watercourse recharges the karst springs of the Gacka River. The aim of this paper is to analyse the hydrological regimes of the Lika and Gacka Rivers, and to try to find whether and how their hydrological-hydrogeological regimes are interconnected. Hypothetical conceptual model of their hydrogeological-hydrological functioning is given.