



Groundwater infiltration from alluvial aquifer into karstic aquifer - case study of recharge from river Iška to Ižica karstic springs

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River Iška and Ižica karstic springs are situated in the central part of Slovenia (approximately 20 km south from city Ljubljana) on southern edge of Barje, a tectonic depression field with mostly Holocene and Pleistocene lacustrine and rivers' sediments. Barje is surrounded with hills, which on the southern part consists mostly of Triassic dolomite and Jurassic limestone as well as the basement of Barje in this area. Recharge area of Iška River and Ižica karstic springs is covering around 102 km² of the southern hilly edge of Barje. Iška River is a torrent with springs on Bloška planota and flows towards Barje to the north. River formed deep narrow valley that slightly opens at the beginning of Iški Vintgar, where flows on a shallow gravel river bed deposited on karstic aquifer. The valley opens on Ljubljansko Barje at village Iška vas. Ižica karstic springs are situated on the contact of karst aquifer and Barje intergranular aquifer east of Iška valley.

After a big flood event on 18th of September 2010 Iška River disappeared in the karstic fissures on the river bottom, near bridge in Iška village. One day later infiltration point moved 1070 meters upstream. This extreme event caused around 40% higher base flow discharge of Ižica River and total disappearance of Iška River for a few days. The analyzed discharge data in the year 2010 of the Iška and Ižica River, gave a new understanding of the discharge of Iška River and groundwater flow in the area. Before this extreme event discharge of the Iška River was measured at different profiles in the channel and reduction of discharge was observed along the course indicating that Iška recharges Ižica springs.

Analyses presented were performed in the frame of INCOME project and are aimed to improve understanding of hydrogeological conditions in the catchment area of Barje aquifer which is exploited for the public water supply of Ljubljana.