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Hydrological monitoring on a Reka river catchment

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The Reka river is the widest known sinking stream of the Classical Karst area in Slovenia, and it has been studied since the Antiquity. The river sinks into the Škocjan Cave system, which was proclaimed by UNESCO as a World Heritage Site in 1986. The Reka river basin is situated in the southern part of Slovenia and has an area of 442 km2 and a mean discharge of 8.2 m3/s. The basin has a unique geological structure; it is situated on the Brkini syncline Eocene flysch rocks surrounded by a large karstic region. The stream network density is about 1.696 km/km2. The water from the northern karstic formation belongs to the Danube River Basin, while the water from the southern part drains into the Adriatic Sea. There is an underground bifurcation from which the surface water flows to the Danube River and the underground water drains in the Bistrica Spring, a tributary of the Reka River.

As the Reka river flows from the flysch parts of the watershed towards the karstic area, low discharges are continuously decreasing as a result of infiltration of water from the stream into the karstic bedrock. The infiltration of water from the stream into the underground usually begins approx. 600 meters downstream of the Cerkvenikov mlin river station, however, the infiltration position and intensity depends on hydrological and morphological conditions which are continuously changing after each high flow occurrence. During the low summer flows, almost all the discharge disappears before the Reka river actually reaches the Škocjan Caves. During 1982 and 1983, even the mean flows of the Reka River disappeared underground before the river reached the caves, which were without the river inflow for 120 days. After that the riverbed clogged again.

In order to trace the hydrological characteristics of the Reka river along its path on the flysch-karst contact, 3 limnigraphs are operational and continuously measure water levels. Additionally, synchronous measurements of the Reka river discharge were performed at 4 different points along the river and at water stations during low flow periods in different seasons. Results show that during low flow conditions on average 0.5 m3/s infiltrates along the 7.8 km long river reach between the river station Cerkvenikov mlin and Škocjan caves. Changeably decreasing discharges along the Reka river path therefore present specific situation and additional challenge for possible planning of the future Reka river catchment management and preservation of this unique hydrological system.