



## **Karst Polje Flood Frequency Analysis – 176 Years Long Record of Water Level on Planinsko Polje (Central Slovenia)**

Mateja Jelovcan, Mihael Brencic, and Ines Vidmar

University of Ljubljana, Faculty of Natural Sciences and Engineering, Department of Geology, Ljubljana, Slovenia  
(matejaa.jelovcan@gmail.com)

Planinsko polje is the most northern polje in the Notranjska poljes system of Dinaric karst in the central Slovenia. In the area, there is a system of springs (south part of polje) and ponors (north and east part of polje). Polje recharges from several directions (Cerknica, Javorniki and Pivka) and discharges to Ljubljansko barje. Planinsko polje was developed along one of the most important fault in Slovenia – Idrija fault. The main river in the polje is the Unica River. Planinsko polje is frequently flooded.

Gauging station Haasberg on the river Unica is one of the oldest operating stations in Slovenia. From the web archive of Slovenian Environment Agency the first daily data are available from year 1926 until present but from the literature, it was previously known that hydrological measurements at gauging station Haasberg were already performed in 19th century (1850 and earlier). This data was not available so it was believed to be lost. With careful analysis of various older literature and archival material in the Central Humanities Library and Archive of Republic of Slovenia we reconstructed an almost continuous data set of Unica River water levels at the gauging station Haasberg.

All reconstructed data are available on the daily basis starting in 1841 and ending in 2016 with three longer and some shorter gaps.

Karst poljes are flooded on an annual basis, but the lengths and intensities of floods vary year to year. Long data sets are very important in trend, frequency and probability analysis of flooding.

The newly reconstructed data set of Unica River water levels was analyzed to gain knowledge on long term hydrological behavior of karst polje. We established that prevailing floods have lower water levels and last for a shorter period of time. The maximum and average annual water levels have no trends through time. At the whole time periods there are also no significant trends in the length of periods in between flooding events.