



## **Characteristic of water level changes in river-bed during the 2012 drought in context of ground water levels in a small catchment**

Michał Wasilewicz (1), Ewa Kaznowska (2), and Leszek Hejduk (3)

(1) Warsaw University of Life Sciences -SGGW, Department of Hydraulic Engineering, Warsaw, Poland (michal\_wasilewicz@sggw.pl), (2) Warsaw University of Life Sciences -SGGW, Department of Hydraulic Engineering, Warsaw, Poland (ewa\_kaznowska@sggw.pl), (3) Warsaw University of Life Sciences -SGGW, Department of Hydraulic Engineering, Warsaw, Poland (leszek\_hejduk@sggw.pl)

The objective of this paper is to characterize the water level changes in river bed during the 2012 drought, in the context of ground water levels in the catchment. During the growing season, and long-lasting lack of precipitation causes atmospheric drought. Prolonged lack of precipitation causes depletion of water resources in the saturated zone. Groundwater recharge of rivers decreases, and hence streamflow droughts (summer droughts) occur, which is identified as hydrological droughts. In the phase of hydrological drought a much stronger relationship between surface and ground waters is observed. The study area is the Zagożdżonka river. The Zagożdżonka catchment is situated in the strip of the Central Polish Lowlands, in the region where droughts are the most frequent. The basin is the research area of the Department of Hydraulic Engineering of WUoLS-SGGW in Warsaw. It is one of the few catchments in Poland, with long-term records of rainfall and runoff occurrences. Hydrometeorological measurements are carried out from July 1962. The catchment area is mainly covered by one Quaternary aquifer. Quaternary layer is composed mostly of Pleistocene sands and gravels, with thickness from 4 to 40 m. Aquifer is at a depth of 1 to 12 m below ground level and is unconfined and fed by direct infiltration of precipitation. The Zagożdżonka river is the main drainage in the local hydrologic cycle. There is a strong relationship between surface waters and occurring in the Quaternary sediments. In the hydrological year 2012 hydrological and atmospheric drought occurred. The duration and deficit of streamflow drought (defined by with the Q90 % truncation level) in 2012 was three times greater than the average value from the multi-annual period, which influenced the groundwater level fluctuations.

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