

Abstract

The Brzina river drainage basin in the Sedlčany region was affected by drought between 2015 and 2019. The Brzina river dried up repeatedly during the summer and the whole drainage basin suffered from a lack of groundwater. The aim of the bachelor thesis is to verify the influence of evapotranspiration from the river floodplain on the drying up of the Brzina river. The input data for the calculations are the historical time series provided by CHMI and the data from piezometers. The theoretical part of the bachelor thesis deals with the assessment of methods of individual calculations used in the practical part, i. e. the antecedent precipitation index, baseflow and evapotranspiration. It also deals with the influence of vegetation on the total runoff from the river drainage basin and with various calculations of evapotranspiration from groundwater level records. In the practical part of the bachelor's thesis a potential evapotranspiration is calculated using selected methods, the baseflow is separated from streamflow and the influence of components of the hydrological balance on the loss of water from the river drainage basin is verified by other methods. Recorded groundwater abstractions have an insignificant effect on the hydrological balance. The underground runoff under the Brzina riverbed is also insignificant due to the low transmissibility of the hardrock environment. The evapotranspiration from river floodplain forests and the evaporation from water bodies in the river drainage basin therefore have by far the largest share in the water loss in the river drainage basin. The Brzina river dries up if the difference between the total precipitation and potential evapotranspiration is in negative values for several years. The evapotranspiration calculated from the groundwater level records shows higher values than the potential evapotranspiration calculated from average daily temperature data, probably due to the uncertainty in storativity values.

Keywords: The Brzina river, antecedent precipitation index, potential evapotranspiration, baseflow, riparian zone.