

# ABSTRACT

The object of this work is an analysis of the influence of extreme hydrological events (floods and droughts) in terms of interaction between groundwater and surface water in the river floodplain. The aim of this thesis is also the evaluation of the hydrological regime of the upper Lužnice basin and evidence of retention potential preserved natural floodplain.

The selected objectives of the work were resolved on the basis of the values of groundwater levels and surface water in the area of interest. Based on data from underground wells and a digital terrain model, it was possible to create an image of the distribution of groundwater levels in river floodplains during selected hydrological situations. Data from surface flow was obtained from several habitats in the flow direction Lužnice. This has enabled graphically illustrate individual flood waves and characterize their size, speed and transformation after the passage of a preserved natural floodplain of Lužnice river.

Carried out research has been confirmed retention capacity of the floodplain, which is most significant at flow rates slightly in excess of the flow capacity of the river bed. However, extreme floods or in periods with many culminations in a relatively short time leads to reduces water retention capability of the floodplain. In contrast, dry season leads to turning of groundwater flow gradient, and floodplain begins to subsidize the river.

Based on the obtained data it can be concluded that the presence of naturally preserved floodplain ameliorates the effects of extreme hydrological situations, whether floods or droughts. The results of this thesis supports original working hypothesis, which was based on findings from Czech and foreign resources.

## **Keywords:**

floodplain area; Lužnice river; flood, hydrological drought, transformation of flood wave, water retention