

## Abstract

This master thesis deals with analysis of extreme hydrological phenomena in the Litavka river basin, located in central Bohemia, southwest of Prague. Hydrological extremes have been a frequently researched topic in the recent years due to their more frequent occurrence and at the same time more intense course. Due to the availability of hydroclimatic data series of different lengths, the basin was divided into two parts, the upper and the lower part of the river. Data series of 42 years were available for the upper part, the monitored period of the lower part was 25 years long. The data used came from two climatological and four limnigraphic stations. The main goal of this work was to evaluate the rainfall-runoff regime using homogeneity and trend tests. The Pettit, Buishand and SNHT tests were used to test homogeneity, and the Mann-Kendall test was used to find trends in the data series. The results of the statistical tests confirmed a rising trend in the data series of air temperatures. Precipitation totals in the basin remain constant for a long time. At the limnigraphic stations Čenkov and Beroun, the runoff regime curve levels out over the course of the year – the March maxima flatten out. The drought analysis in the basin of interest was carried out using the method of insufficient volumes, the threshold value method and using two drought indices – *LOWFLOW* and *BFI* (base flow index). The years 2020 and 2007 were evaluated as exceptionally low in water on the Čenkov, Hořovice and Beroun profile. The period of the beginning of the 1990s was evaluated as the most significant for drought on the Obecnice profile. High flows were assessed using N-year flow thresholds Q1, Q5 and Q10. The profiles of Čenkov on the upper part of the basin and Beroun on the lower part of the basin were the most affected by flooding.

## Keywords

the Litavka river — hydrological extremes — hydrological drought — floods — rainfall-runoff regime — climate change