Abstract

This master thesis focuses on an analysis of surface water chemistry, long-term trends and the impact of drought on changes in concentrations of selected parameters in the upper Svatava, Rolava and Načetínský potok basins located in the Ore Mountains. Research on water quality in mountain spring areas is important, the consequences of various changes can be easily observed there. This work analyses the changes in surface water chemistry and discusses their possible causes, especially the impact of peat bogs and dry episodes. The parameters of water temperature, conductivity, pH, BOD_5, COD, TOC, concentration of nitrate nitrogen, total phosphorus, phosphates, sodium, potassium, calcium and iron were investigated for the period 1993–2018. The available data are analysed using evaluation methods according to ČSN 75 7221 as well as box plots, Pearson correlation coefficient, PCA analysis and Mann-Kendall test. The greatest anthropogenic influence exhibited in Svatava, almost all concentrations reached their highest values there. In the Rolava and Načetínský potok basins, the influence of peatlands manifested itself by increasing the concentrations of iron, TOC and COD. The results of trends showed an increase both in pH and in surface water temperature related to an increase in air temperature, on the other hand the results detected a decrease in conductivity, nitrate nitrogen, potassium and calcium concentrations. In all studied catchment areas the period of hydrological drought caused a general increase in concentrations values, especially in the pH parameter, conductivity, total phosphorus and basic ions.

Key words: water quality, spring areas, peatlands, hydrological drought, Mann-Kendall test