Abstract

The diploma thesis deals with changes in the physico-chemical parameters of surface flows in response to extremes, especially increased flows due to higher precipitation totals or melting snow. The basin of the upper Rolava with peat bogs in the basin and minimal anthropogenic influence was used. The main goal of the work was the analysis of the behavior of electrical conductivity during events when there was an increase in flow rates and the categorization of individual events according to this behavior. Furthermore, the influence of the pre-condition of the watershed on the events and the subsequent behavior of the electrical conductivity was also investigated. The 10-minute electrical conductivity and flow data from the automatic stations of the ecohydrology team of the Faculty of Science, UK, or ČHMÚ were used. Among the methods are data homogenization, construction of hysteresis loops, categorization of loops, calculation of indices for hysteresis loops and PCA analysis for the pre-condition of the watershed. In most cases, a reverse relationship of electrical conductivity behavior was observed during these events, the most common types of electrical conductivity behavior during flow increases include a slow decrease in conductivity with minimum values after the peak of flow (in light precipitation, gradual snow melting) and a decrease in electrical conductivity with minimum values still before the culmination of the flow, when the electrical conductivity values rise again during the culmination (with heavy precipitation totals). It was observed that the slow response of electrical conductivity also resulted in a decrease in water temperature and pH values more often, suggesting an increased peat water subsidy during the given events.

Key words: electrical conductivity, physico-chemical parameters of surface waters, peatland in the basin, hysteresis loops, preconditions of the basin, extreme events