

Abstract

The thesis deals with water retention potential in soils of experimental catchment areas in Šumava Mts. Water storage in the landscape is a question not only of the water storage capacity, but also of the infiltration rate or total redistribution of infiltrated water in the soil environment. This chosen topic is analyzed by detailed pedological survey, processing and evaluation of rainfall events, chemistry of stream water and methods of stable isotopes hydrogen and oxygen and methods based on dyes or tracers. The runoff formation process in the Šumava Mts. is connected with the presence of hydromorphous soils as Histosols and their water saturation. Histosols and similar types of soils form a considerable supply of water in dry seasons, however, water is mainly retained in soil with a minimal impact on local streams. In the period of high saturation, the volume of outflow increases due to surface runoff and preferential pathways. At mineral soils in the Šumava region deep percolation usually occurs into aquifers in the subsoil, which then can supply springs during dry periods. From the agricultural exploited parts of the Šumava Mts., the meadow basins have higher retention capacity thanks to the drainage systems. On the other hand, soil surface and drainage systems of local meadows accelerate the outflow during heavy-rain events. Nowadays, when floods alternated with drought, it is important to consider water retention / storage in the landscape not only of water retention capacity but of preferential flow, infiltration rate and stream water subsidy.

Key words: water retention, water in soil, subsurface flow, runoff formation