

Abstract

This bachelor thesis focuses on the development of snowpack in connection with effects of different physical-geographical factors, especially with the strong influence of vegetation on components of energy balance of the snowpack, including rainfall and runoff regimes of the area. The main aim of this thesis is to investigate the differences in snowmelt characteristics in an open area, under healthy coniferous forest and under forest infected by the bark beetle (*Ips typographus*). The snow depth and snow water equivalent data were obtained by field measurements at selected study sites in the experimental basin of Ptačí Brook in the Šumava Mountains during winter 2015/2016. The data were evaluated by simple conceptual method based on degree-day approach (temperature index), which examines the relationship between the snowmelt rate and air temperature. According to vegetation, degree-day factors were defined for each type of area as $1.71 \text{ mm } ^\circ\text{C}^{-1} \text{ d}^{-1}$ for healthy coniferous forest, $2.07 \text{ mm } ^\circ\text{C}^{-1} \text{ d}^{-1}$ in forest infected by the bark beetle and $2.68 \text{ mm } ^\circ\text{C}^{-1} \text{ d}^{-1}$ in an open area. A simple model is a part of the thesis. It predicts the development of snow water equivalents using melt factors and it was used to evaluate the snow storages during snowmelt in study sites. Furthermore, it showed, that the most intensive decrease of snow water equivalent is typical for open areas, whereas snowmelt is reduced by the interception under healthy coniferous forest.

Key words: melt factor, snowmelt, degree-day approach, forest disturbances