Abstract

The bachelor thesis analyzed the variability in shortwave and longwave radiation at three locations with different canopy structure in the Ptaci brook basin in the Sumava Mts. The canopy structure was quantified by Leaf Are Index calculated from hemispherical images of the canopy. The shortwave and the longwave radiation were measured by radiometer at all locations. In the healthy forest, the average transmittance of the shortwave radiation was 6,5 % and did not change between individual study years. On the contrary, the transmittance of shortwave radiation increased in the damaged forest during study period. The transmittance relatively increased with increasing incoming shortwave radiation. The net longwave radiation was influenced by several factors which included not only the effect of the canopy structure but also transmittance of incoming longwave radiation and the total magnitude of the incoming solar radiation. The net longwave radiation was positive in the healthy forest, negative in the open area and changing from positive to negative in the damaged forest. The differences in the net longwave radiation lead to different dynamic of snowmelt. The net longwave radiation was correlated with incoming shortwave radiation ($r = 0.68$) in the healthy forest. The net longwave radiation gradually decreased during study period in the damaged forest. The median value decreases in the final difference to 33,04 W/m^2 between the years 2016 and 2019.