

EGU21-9464, updated on 17 Oct 2021

<https://doi.org/10.5194/egusphere-egu21-9464>

EGU General Assembly 2021

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Modeling winter season fluxes of water and energy in a temperate montane forest

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Winter regimes affect significantly the long-term water and energy balance of mountainous areas in Central Europe. A recently developed numerical model is used to study near-surface fluxes of water and energy in the Liz catchment — a small headwater catchment of the Otava River, situated in the Southern Bohemia. The results of the numerical simulations are compared with high-resolution data recorded at the site of interest. The forest floor of the catchment is mostly covered by snow during winter. However, the snowpack is usually exposed to several snowmelt episodes over the season. The intensity, duration and frequency of these episodes is irregular and seems to be highly sensitive to changing climate. Increasing frequency of winter periods with limited or missing snow cover affects both water flow and heat transport in the catchment. Changes in the temporal distribution of snowmelt are reflected in changing runoff patterns.