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Interception and groundwater dynamics of an alder forest and a neighbouring wet meadow

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Riparian vegetation forms have strong dependence on hydrological factors. Forests and meadows in valley locations are strictly protected in many cases. Knowledge of the changes in their water balance in context of climate change is critical in terms of their survival.

We studied the hydrology of a riparian alder forest and a neighbouring wet meadow at the outlet of the Hidegvíz valley experimental catchment (eastern foothills of the Alps). Interception loss (significant element of forest water balance) and groundwater uptake importance were analyzed. LAI and forest structural parameters were measured for calculating interception and remote sensing information were also used. We settled groundwater wells for groundwater level dynamics analysis. Meteorological parameters that we used for this analysis were measured in an open-air plot next to the examined ecosystems.

Remote sensing data is useful for determination of LAI and so vegetation storage capacity dynamically in an interception model. Field interception measurement is important for exact model calibration. Measurements of groundwater levels with high frequency give us the possibility to determine groundwater dynamics and to estimate vegetation water uptake. On the basis of the results, interception loss and groundwater uptake of alder forest are significantly higher, so riparian forests have greater water demand for their survival in the changing climate.

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