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Automated and manual interception measurements and associated errors

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Interception refers to the part of precipitation that does not reach the soil surface, but is instead intercepted by the leaves, branches of plants and the forest floor. Interception is a very important element of forest water balance, depending on tree type, age and forest stand structure, even 35-40% of gross precipitation can be consumed by it. Exact quantification of this water balance element is important for climate change effect analysis because hydrology is a crucial point of forest survival in the region of xeric limit.
Interception loss cannot be measured directly but it can be calculated from other precipitation elements. Collecting data manually is simple but labour-intensive, automatization of the measurement is possible but there are quite a lot of possible measurement errors.
This study represents an experience of manual and automated indirect interception measurement for calculating interception loss in the year 2017 in an alder forest of Hidegvíz Valley Experimental Catchment. The study area can be found in a valley location at the eastern foothills of the Alps (western part of Hungary) in Sopron Hills.
The manual measurement was based on the measurement of collected rainwater after each rainfall event from barrels connected to the trunk collars to measure the stemflow and from containers that collect the througfall. Tanks for collection of stemflow and througfall were used also in automated measurements, but in this case the water stages in the tanks were sampled in every 10 minutes by pressure transducers. Automated measurements can represent the interception process in good time resolution but with some typical errors caused by the changing environmental parameters (e.g. temperature). Manually collected data can serve as a calibration information to automated measurements for enhancing the quality of the time series collected by pressure transducers.

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