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# Spatio-temporal variation in canopy and forest floor interception measurements and uncertainties

A.M.J. Gerrits (1,2), L. Pfister (2), and H.H.G. Savenije (1)

(1) Delft University of Technology, Water Resources Section, Delft, Netherlands (a.m.j.gerrits@tudelft.nl), (2) Public Research Center - Gabriel Lippmann, Belvaux, Luxembourg

Interception is often neglected in hydrological models, regularly leading to poor model performance. Interception can be seen as a threshold process: a certain amount of water is needed before a successive process (e.g., infiltration or runoff) is triggered. Generally, a fixed value based on field experiments is chosen for this threshold. However, this value differs per vegetation type, may vary over the season, and is heterogeneous in space. The objective of this study is to investigate 1) the variations of evaporation from interception in time; 2) the variations of the maximum interception capacity in time; 3) the spatial distribution and 4) the consequences of the variations in the storage capacity on an interception model in time and space.

In an experimental plot in Luxembourg interception is intensively measured since 2003, while, besides canopy interception, also forest floor interception is investigated. Canopy interception is determined by subtracting throughfall and stemflow from gross precipitation. For measuring forest floor interception a special device has been developed. Two aluminium basins are mounted above each other and placed into the ground. The upper basin is permeable and contains the forest floor. By weighing both basins continuously, evaporation from the forest floor can be determined.

The observations show a clear seasonal effect in the evaporation from the canopy, but less in the forest floor. Similar results are found for the storage capacities. The storage capacity of the canopy shows an increase during summer and the storage capacity of the forest floor is quite constant over the year with a slight increase during fall. Furthermore, the observations show that the variations in the determination of the canopy storage capacity are larger during summer, than during winter. For the forest floor the opposite is true. The consequences of these variations are investigated with a Rutter model, which is extended with a forest floor component.

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