Canopy and forest floor interception and transpiration measurements in a mountainous beech forest in Luxembourg

A. M. J. GERRITS\textsuperscript{1,2}, H. H. G. SAVENIJ\textsuperscript{E} & L. PFISTER\textsuperscript{2}

\textsuperscript{1}Water Resources Section, Faculty of Civil Engineering and Geosciences, Delft University of Technology, PO Box 5048, 2600 GA Delft, The Netherlands
am.j.gerrits@tudelft.nl

\textsuperscript{2}Department Environment and Agro-biotechnologies, Centre de Recherche Public – Gabriel Lippmann, 41, rue du Brill, L-4422 Belvaux, Luxembourg

Abstract Evaporation from interception and transpiration are important processes in the water balance of a forest. They determine to a large extent the amount of water which is available as soil moisture and hence impact on runoff. Both interception and transpiration strongly depend on vegetation cover. Therefore both processes were intensively measured in a beech forest in the Huewelerbach catchment (Luxembourg) during the summer of 2006. Canopy interception is determined by subtracting the measured throughfall and stemflow from the open field precipitation. Forest floor interception is measured with a newly developed device and transpiration is estimated by sapflow measurements (thermal dissipation method). From the results it can be concluded that evaporation of intercepted water and transpiration strongly reduce the amount of water that can percolate to the groundwater (only 54\% of the rainfall) depending on the season.

Keywords canopy and forest floor interception; throughfall; stemflow; sapflow; beech