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Effect of Preferential flow on the water storage of a forest top soil

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Soil water content and matric potential were measured on a forested slope. The observed fluctuations of water content and matric potential under storm event were irregular. This indicated preferential flow caused by structural heterogeniety and soil water repellency. Transient water storage capacities calculated from measured water content were larger in dry period than in wet period. This tendency can be explained as follows. In dry period, soil water repellency appears and preferential flow is generated in the top soil layer. As a result, some part of soil aggregate could not participate in water storage. Contrary in wet period, the most part of soil aggregete was wettable and diffusive infiltration could occur.