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How long does the snow water stay in a catchment?

M. Dosa, L. Holko, and Z. Kostka
Institute of Hydrology, SAS, Slovakia (misodosa@gmail.com)

Diurnal variation of catchment runoff in the mountain catchment of the Jalovecký creek, northern Slovakia, indicates presence of melting snow also in periods when very little snow remained in the catchment. Stable water isotopes were used to calculate mean transit time of snow water in the catchment. The isotopic composition of snowmelt water was measured during snowmelt period 2011. Although the winter was snow-poor, we were able to sample the unusually short snowmelt period in the second half of March. The snowmelt water samples were taken from three snow lysimeters situated near the meteorological station at the catchment mean altitude (1500 m a.s.l.). The samples were collected every 2-3 days. The samples from the stream were collected at catchment outlet (820 m a.s.l) every 6 hours. Lumped parameter model was used to calculate mean transit time of snow water in the catchment (area 22 km2). Calculated mean transit times varied between 40-45 days. Isotopic composition of soil water at depth of 70 cm (at catchment mean altitude) indicated presence of light water for about 100 days.