



Estimation of ground water recharge using SWAP model for an alpine area in Austria

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Groundwater is an important resource for drinking water in Austria and therefore quantity and quality need to be protected.

Objective of this study was to assess ground water recharge rates for a forested site located in the North Tyrolean limestone Alps in Achenkirch, Austria. In 1997 the Hydrographic Survey in Austria started a soil water monitoring station equipped with FDR-sensors to measure soil water content and with tensiometers for matric potential measurement in four depths (5 cm, 15 cm, 25 cm and 50 cm). Data was collected in 4 hour intervals. Additionally runoff plots were installed to collect surface runoff during the study period. SWAP model was used to predict ground water recharge using climatic data (1997-2007) and measured data. The necessary soil input parameters were derived from field measured data using pedotransfer functions and additional investigations of soil hydraulic parameters in the field.

The total ground water recharge during the study period ranged from 527 mm in year 2003 to 1126 mm in year 1999 with an annually average of 765 mm. SWAP model showed a good fit between the measured and the simulated soil water contents as well as interception data. Less fit was obtained for soil water tension results during some years.

This study will continue to improve parameters to simulate soil tension and also to estimate the ground water recharge using other models.