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Matching ERS scatterometer based soil moisture patterns with simulations of a conceptual dual layer hydrologic model over Austria

J. Parajka^{1,3}, V. Naeimi², G. Blöschl¹, and J. Komma¹

¹Institute for Hydraulic and Water Resources Engineering, Vienna University of Technology, Austria

²Institute of Photogrammetry and Remote Sensing, Vienna University of Technology, Austria

³Institute of Hydrology, Slovak Academy of Sciences, Bratislava, Slovakia

Abstract. This study compares ERS scatterometer top soil moisture observations with simulations of a dual layer conceptual hydrologic model. The comparison is performed for 148 Austrian catchments in the period 1991–2000. On average, about 5 to 7 scatterometer images per month with a mean spatial coverage of about 37% are available. The results indicate that the agreement between the two top soil moisture estimates changes with the season and the weight given to the scatterometer in hydrologic model calibration. The hydrologic model generally simulates larger top soil moisture values than are observed by the scatterometer. The differences tend to be smaller for lower altitudes and the winter season. The average correlation between the two estimates is more than 0.5 in the period from July to October, and about 0.2 in the winter months, depending on the period and calibration setting. Using both ERS scatterometer based soil moisture and runoff for model calibration provides more robust model parameters than using either of these two sources of information.

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