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Testing the transferability of regression equations derived from small sub-catchments to a large area in central Sweden

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Abstract. There is an ever increasing need to apply hydrological models to catchments where streamflow data are unavailable or to large geographical regions where calibration is not feasible. Estimation of model parameters from spatial physical data is the key issue in the development and application of hydrological models at various scales. To investigate the suitability of transferring the regression equations relating model parameters to physical characteristics developed from small sub-catchments to a large region for estimating model parameters, a conceptual snow and water balance model was optimised on all the sub-catchments in the region. A multiple regression analysis related model parameters to physical data for the catchments and the regression equations derived from the small sub-catchments were used to calculate regional parameter values for the large basin using spatially aggregated physical data. For the model tested, the results support the suitability of transferring the regression equations to the larger region.

Keywords: water balance modelling,large scale, multiple regression, regionalisation

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