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Snow- and icemelt contribution of Alpine catchments on different spatial scales: the transferability of model parameters

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Snow- and icemelt has been simulated as a part of a water balance model on an hourly time step on three different spatial scales of 10, 80 and 600 km^2. Therefore the input of a high resolution DTM, landcover and glacier surface data as well as meteorological data like air temperature and precipitation have been used. Due to the good availability and a dense network of air temperature stations a temperature index based melt approach, which takes potential solar radiation into account has been applied. Parameters, which are mainly describing hydrological storages had to be calibrated for each basin scale using observed runoff hydrographs. For each, the calibration and the validation period time series of three years have been available. The snow accumulation has been verified by comparing the simulated snow covered area (SCA) with satellite observations (LANDSAT and ASTER). An additional possibility for the model validation has been used by checking the simulated glacier mass balances compared to nearby observations at different glaciers. The extreme summer of 2003 has been part of the validation period and has shown a very high glacier melt contribution during August for all of the different spatial scales.