



Modelling runoff in the Atlas Mountains: the role of snowmelt and evaporation

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ABSTRACT: Water management in semi-arid regions can be essentially improved by runoff predictions. Due to extreme soil degradation and several drought years in the area south of the Atlas mountains, the water stress might become threateningly high in the near future. One of the objectives of the IMPETUS project is the interdisciplinary investigation of the water cycle in the Oued Drâa catchment south of the Atlas mountains.

As part of a multiscale modelling system, a quasi-operational runoff model was developed. Since high sophisticated physically based hydrological modelling demands input data which are not deliverable in shorter times, two simple models parameterizing physics in a statistically based way – a meteorological diagnostic boundary layer model and a hydrological runoff model of the simpler kind – are combined to predict runoff in the Drâa valley. Because the required model input is scalable, the model can be calibrated statistically taking into account the amount of data accessible for the model verification. Additionally, a detailed error analysis shows the uncertainties of the model. A special interest of the calculations is to estimate the influence of snowmelt, evaporation from snow and of evaporation in the whole basin on the runoff, which is yet not well known in high mountain areas.