



## **Uncertainties in hydrological modelling and its consequences for water management in Central Asia**

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Central Asia features an extreme continental climate with mostly arid to semi-arid conditions. Due to low precipitation and therefore low water availability, water is a scarce resource and often the limiting factor in terms of socio-economic development. The aim of this model study is to compare the uncertainties of hydrological modelling induced by global and regional climate datasets and to calculate the impacts on estimates of local water resources. Within this integrated model study the hydrological and water use model WaterGAP 3 (Global Assessment and Prognosis) is being applied to all river basins located in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, and Mongolia in five arc minutes spatial resolution ( $\sim 6 \times 9$  km per grid cell). First of all, water abstractions for the sectors households, irrigation, livestock, manufacturing industries, and electricity production are being computed and fed into the hydrological module of WaterGAP. Then, water fluxes of the terrestrial water cycle are being modelled. The performance of the model is then being evaluated by comparing modelled and observed river discharge for the time period 1971 to 2000. As WaterGAP input, various global and regional climate datasets are available for the study region. In detail, these are the global TS dataset of the Climate Research Unit (CRU), the WATCH forcing data (WFD) developed within the EU-FP6 Project WATER and global CHange (WATCH) and the regional Aphrodite's Water Resources dataset. Finally, the uncertainties in modelled water availability induced by the different datasets are quantified to point out the consequences for a sustainable water management. The results show that the datasets differ in both aspects, temporal and spatial goodness. At this, not only differences between the regional and the global datasets, but also among the global datasets are evident.