



Simulation of high mountainous discharge: how much information do we need?

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Continuous simulation of discharge has become a standard tool for water management in high mountainous catchments and namely for the prediction of climate and land use change impacts. These precipitation-runoff models are generally calibrated based on historic discharge measurements. However, in glacierized catchments, closing the water balance is a difficult task since on one hand, observed meteorological data is sparse but the variability in the natural processes is high and on the other hand, glaciers represent an important storage term about which little is known.

Based on recent seasonal glacier mass balance data from Swiss glaciers, we investigate the question whether conceptual precipitation-runoff models calibrated exclusively on (1) runoff or on (2) runoff and annual glacier mass balance data can reproduce the seasonal glacier mass balances or whether in-situ glacier measurements are required to estimate the snow and ice accumulation and ablation processes. A reliable simulation of these components is a pre-condition to use such a calibrated model to predict glacier storage changes or future hydrological regimes.

We present first conclusions and discuss strategies to improve discharge modelling in drainage basins with a substantial glacier coverage based on seasonal glacier mass balance data.