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Predicting the ungauged basin: a Cambodian case study.

The Chamcar Bei catchment in southern Cambodia is a typical ungauged basin. Neither meteorological data or discharge measurements are available. In this catchment, local farmers are highly dependent on the irrigation system. However, due to the unreliability of the water supply, it was required to make a hydrological model, with which further improvements of the irrigation system could be planned. First, we used knowledge generated in the decade on Predictions in Ungauged Basins (PUB) to estimate the annual water balance of the Chamcar Bei catchment. Next, using remotely sensed precipitation, vegetation, elevation and transpiration data, a monthly rainfall-runoff model has been developed. The rainfall-runoff model was linked to the irrigation system reservoir, which allowed to validate the model based on soft data such as historical knowledge of the reservoir water level and groundwater levels visible in wells.
This study shows that the decade of PUB has led to useful knowledge on how to apply data sources and model structures in a real ungauged basin. The approach presented in this study can be applied in other ungauged basins, which can be extremely helpful in managing water resources in developing countries.