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# Flood forecasting in mountaineous catchments : performance and challenges

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Flood forecasting in mountaineous catchments presents difficulties due to the small spatial and temporal scales of the meteorological and hydrological processes. The limited accuracy of quantitative precipitation and temperature forecasts leads to high uncertainties in the predicted discharges of basins with small to average surfaces up to several thousands $km^2$. However, the need for quantitative information exists, particularly for flood or reservoir management purposes.

A semi-distributed hydrological model was developed for the upper Rhone River basin in Switzerland to provide 72 h lead time discharge forecasts for the optimization of a multireservoir system during floods. The model takes into account the presence of the multiple hydropower schemes as well as the different hydrological processes such as snow melt, glacier melt, soil infiltration and surface runoff.

The performance of the model is presented and correlated with the spatial distribution of the hydrological processes. Moreover, the assimilation of the meteorological forecasts is presented and its performance for decision-making is assessed.