UNIVERSITÄT STUTTGART

Abstract

Institut für Wasser- und Umweltsystemmodellierung
Lehrstuhl für Hydrologie und Geohydrologie

Masters of Science

by Sibghat Ullah

Natural hazard like flood can be threatening to the life and property of people all around the world. There is a great significance of an optimum hydrological model which could help in water resources management and flood forecast. Current study is based on the optimization of the Hydrologiska Byråns Vattenbalansavdelning (HBV) model with different methods to analyze the consequent response of hydrograph and improvement in the model efficiency on Neckar catchment area. The results of the study indicates that calibrating the model on only rising events simulates the high peaks efficiently and give insignificant response for other flows. Model efficiency is slightly enhanced with the increase in model parameters by introducing the additional betas which activate differently depending on rising, recession and threshold events. These events can be easily identified during model calibration when observed discharge series is available. During the model prediction in this study when observed discharge series is not available, few methods have been discussed and proposed to predict events of rising, recession and threshold so that the calibrated parameters along with right beta can be used.

Keywords: HBV Model · Floods · Model Optimization · Model Performance