Analysis of parametric uncertainty in a shot noise model

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All model calibrations are subject to uncertainty. Even when an optimization procedure is used, the specific calibration period strongly influences the parameter values and causes uncertainty in streamflow prediction. The present paper aims to study the influence that the dimension and the position of the sampling period have on the uncertainty of the response of a daily conceptual shot noise model. The simulations have been conducted using continuous daily series of discharges recorded for 76 years on the river basin of Oreto (Palermo, Italy). Many continuous sub-series for simulations have been obtained from the historical series available. In the first place many model calibrations have been carried out for variable dimension temporal windows, through an optimization procedure, obtaining different set of parameters. Consequently runoff predictions have been carried out, through Monte Carlo simulations. The proposed methodology contributes to determine the streamflow uncertainty bands for fixed quantile.