

Parametric uncertainty or hydrological changes?

F. VIOLA, L. V. NOTO & D. PUMO

Dipartimento di Ingegneria Civile, Ambientale, Aerospaziale e dei Materiali, Università degli Studi di Palermo, Italy
francesco.viola77@unipa.it

Abstract The model calibration is the way of hydrologists for searching also a physical interpretation of complex interactions acting within a basin. Actually, it can be frequently noticed how model calibration performed on a given time-window may converge to a point in the parameter space that could be distant from another obtainable calibration of the model in the same basin but considering a different time window. Is that again parametric uncertainty or does the trajectory in the parametric space relate about to a slow hydrological basin change? This paper depicts a possible path for detecting changes' signatures in a streamflow time series. In particular, the paper seeks to draw a way to discern the random variability over different time-windows of the calibrated model parameters set from that induced by the variation in time of some boundary conditions and external forcings. To this purpose, we will refer to a conceptual lumped model for simulating daily streamflow, the EHSM (EcoHydrological Streamflow Model), and to a hypothetical case study. The selected hydrological model requires a total of seven parameters, some of which can be easily related to land use, while others rely on climate variables. The calibration of the EHSM parameters with regard to different time-windows and the analysis of potential impacts of the anthropic variation in land use and/or climatic variability on the calibrated parameters set, will support our investigation.

Key words coupled human-water systems; modelling; hydrological change