



Parsimonious entropy-based stochastic modelling for changing hydroclimatic processes

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Change, which is omnipresent in hydroclimatic processes, can be represented by stationary stochastic models with long-term persistence. The latter property can theoretically be derived by maximizing entropy production. Maximum entropy considerations also enable parsimonious modelling of natural processes. Based on such considerations, a general methodology for theoretically justified stochastic processes, which evolve in continuous time, is presented. The discrete-time properties thereof are theoretically derived from the continuous-time ones and a general simulation methodology in discrete time is built, which explicitly handles the effects of discretization and truncation. Some additional modelling issues are discussed with focus on model identification and fitting, which are often made using inappropriate methods.