



Trajectory bounds for a hydrological system with threshold behaviour when only cumulative precipitation sums are known

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Hydrological systems, even in pristine state, contain feedback mechanisms that determine their behaviour. When they are modelled, either with physical or conceptual models, this should be taken into account. In effect the models are always models of controlled systems, because the natural system contains feedback loops. Therefore the study of these systems should be done in the context of control theory, especially when we want to determine their properties. Questions of observability and controllability need to be asked and eventually answered. In this context a particular problem arises, for some systems only the accumulated input is known and this input has time steps that are not necessarily small in the mathematical sense, that is small relative to the response time scales in the system. The effect of the form of the input and its interaction with system thresholds was studied for given inputs. Interval analysis was used as a tool to do so.