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Towards improved conceptualization in hydrological modelling: a case study on interception.

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This work describes a sequence of improvements to a conceptual model with a view to a more accurate description of hydrological processes and patterns. The overall correspondence between observed and simulated behaviour is evaluated statistically, while a multi-objective approach is used to track changes in performance as model structures are modified.

Hydrological model improvements concern the conceptualization of the interception process. The simplest model does not consider interception, subsequently a simple interception storage is included, and finally distributed interception storage in agreement with the network of raingauges is considered.

The reason why the focus is on interception is that this process, while an important component of the water balance, is often neglected in conceptual models. This study shows that an improved conceptualization of interception results in better model performance and that it increases the model's capacity to describe the observed catchment dynamics.

This outcome is also used to trigger a discussion about the role of complex information on model performance. With this respect, it is argued that the modelling of processes that influence the fast catchment response benefits more from complex conceptualizations and detailed information than the modelling of relatively slow processes.