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Hydrology and Earth System Sciences
Discussions

Interactive comment on "On the value of water quality data and informative flow states in karst modelling" *by* Andreas Hartmann et al.

A. Malard (Referee)

arnauld.malard@isska.ch

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This paper intends to provide an approach for reducing uncertainties in the Varkarst simulation model (= lumped model divided in compartments). 500'000 parameters sets have been confined using discharge, NO3- and SO42- measurements, (i) together or in a separate way and (i) applied on the whole time series or in sub-series corresponding to expected flow processes (floods, recession, mid-stages). Besides, datasets have been resampled in the range of the 25th to 75th percentiles using soft rules in order to assess how the observations contribute to describe the parameter. Finally, repeated simulations using the reduced 250'000 sets of parameters make it possible for the authors to identify that: - "NO3- provides most information to identify the model parameters controlling soil and epikarst dynamics for unsaturated -flow state (i.e. flood

events" - "SO42- and discharge data provides most information to identify the model parameters for saturated-flow state (i.e. recession periods).

The approach sounds coherent but authors might provide more information on the model timestep and the timestep used for applying the Kling-Gupta coefficient. Indeed, measurements are of lower resolution and it is not mentioned how the authors managed that.

A few other comments - and minor corrections in the attached .pdf

Few more words on the soft rules would also be appreciated

Please also note the supplement to this comment:
https://www.hydrol-earth-syst-sci-discuss.net/hess-2017-230/hess-2017-230-RC2-supplement.pdf

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