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Hydrology and Earth System Sciences Discussions

Interactive comment on "Comparison of two model approaches in the Zambezi river basin with regard to model reliability and identifiability" *by* H. C. Winsemius et al.

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We would like to give a short reaction on the further comments of dr. Koren.

1. We have introduced the term 'orthogonal' as an indication of independent data sources. We do not mean that data sources have no correlation. We merely mean quantifiable data of a completely different variable within the river basin. We hope that the editor will make a final statement on this issue

2. The thresholds within our model structure represent a physical threshold. Indeed these thresholds are not completely the same within the river basin (e.g. due to topographic variability) but nevertheless they represent the same physical process in each location in the river basin, which makes them representable parameters for a lumped

model. A clear example of a threshold that we expect to be variable is the soil moisture capacity: its variability has been described by a distribution function, although it is indeed a threshold. This causes the representative processes to occur not as a jump but fairly gradual. The wetland compartments on the contrary probably represent a relatively homogeneous threshold, since terrain is not very variable in the neighbourhood of wetlands.

3. We agree with the referee on comment 3. Indeed in LEW we have been looking for a larger spatial scale to apply the model on.

4. This point is clear to us. The monthly time step will indeed not merit any additional information when applied on a highly spatial distributed model except for relatively small extra runoff contributions due to local threshold exceedance when spatial distributed rainfall is used.

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