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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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I am submitting this comment as I was explicitly asked by the authors in one of their comments to express my opinion. Actually, I found the discussion about the suitability of the term "orthogonal" worth adding one more consideration. In point of fact, it is the first time that I see the terminology "orthogonal data" to mean an independent source of information in hydrology (I use here the term "independent" to mean that the second information is derived independently of the first one). I believe that the discussion about the suitability of the term orthogonal in this case might be essentially philosophical, in the sense that the conclusion might be a matter of personal opinions.

In order to derive some indications, one may consider that in statistics "orthogonal" usually means "statistically unrelated". Therefore it would not be a suitable term in the present case, as we cannot exclude that the GRACE storages are correlated with the ones simulated by the two models.

However, in the dynamical system theory the term "orthogonal" is used to mean a design that guarantees that the dynamics of one system component do not affect the dynamics of other components. This definition of "orthogonal" seems to be much more in agreement with the meaning the authors are referring to within the manuscript. Nevertheless, it is my personal opinion that this definition as well does not allow us to ultimately deduce that the term "orthogonal" is correctly used in the paper.

From a more practical point of view, I would like to emphasize once again that the term "orthogonal" is not commonly used in hydrology to mean "independently derived data". Therefore, it is probably not the best choice in order to ensure a clear presentation.

Basing on the above considerations, I would conclude that it would be better to substitute the terminology "orthogonal data" with a much more understandable expression, like for instance "additional data". This is just my opinion, that does not condition at all the suitability of the manuscript.

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Interactive Comment