



Limits of acceptability as a non-statistical method for model testing when faced with epistemic uncertainty

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Model diagnostics must allow for uncertainty in both input and output error when evaluating model residuals. All too often in hydrological examples, such errors involve epistemic uncertainties that will interact with the model structure in the evaluation period. Treating such errors within a statistical framework will often overestimate the information content of the observations in conditioning the model. They can also lead to the possibility of making Type II errors when a good model is rejected because of uncertainty in either inputs or outputs. Thus a degree of compromise needs to be allowed in how far we expect the model to fit the observations, some limits for acceptability. Such limits might be based on expectations of error in inputs and outputs, or on expectations of fitness for purpose for the application at hand. In this paper some example studies from catchments in Japan are reported, comparing statistical and limits of acceptability approaches in model testing.