

***Interactive comment on “HESS Opinions  
“Crash tests for a standardized evaluation of  
hydrological models”” by V. Andréassian et al.***

**V. Andréassian et al.**

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Dear Dr McIntyre,

Thank you for your comment.

You are right to mention the need for diagnostic measures, aimed at stating the adequacy or inadequacy of models. Our opinion, as stated in the paper, is that model adequacy cannot be defined in absolute terms, and that model evaluation is only meaningful in a comparative framework (a model can only be ranked good in comparison with alternative models). In our past tests, we have never been able to show any significant impact of climate on the relative ranking of the best model variants that we were test-

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ing, but this is for sure something that must be tested: this is why we believe that the large datasets should be made of varied catchments.

On the data quality issue, we know that most of our colleagues disagree with our point of view. Let us try to clarify our position:

- . we do not argue for using purposely wrong data sets during the crash test (there is some place for this but only in an sensitivity analysis context, where we document the impact of the progressive failure of a model encountering more and more input errors or missing values : see e.g. Oudin et al., 2006 and Perrin et al., 2007);
- . but testing only models on "high quality" datasets is in our view dangerous, because deciding which data set is of "high quality" will require using a model (implicit or explicit), and this will flaw the test (i.e. make the reasoning circular). On this topic, perhaps the analogy proposed by Dr Clarke in his comment would be more convincing. He compared hydrology with plant breeding, and argued for the need of testing models/plants in field-conditions after the greenhouse conditions. In the field, pests occur: they are part of the "field-conditions", just as data errors are part of hydro-meteorological data sets. Agronomists do not introduce them on purpose, but they consider that they are an unavoidable part of the experiment.

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