

Interactive comment on “Comparison of hydrological model structures based on recession and low flow simulations” by M. Staudinger et al.

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Dear Dr Andréassian,

Thank you very much for your encouraging comment on our manuscript. You are certainly right in your point that one single catchment is not sufficient to give generic answers about model structures. As you point out a case study, however, does allow us to look in more detail into the way model structures representing different concepts affect particular parts of the hydrograph. In the long run, this may help to develop a methodology, which can be used in future studies using more catchments. We suggest improving the justification of presenting one case study in the revised manuscript. The main reasons why we decided not to show hydrographs in this paper was that the

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visualization of 79 hydrographs (number of different models) is difficult and provides limited diagnostic value regarding the performance and range of individual models. If we choose instead some selected examples we cannot show the overall variability. That's why we decided to use, for instance, box plots that describe the performance of the different models in a more comprehensive way (see Fig.4) and not to show hydrographs. For your information a one-year hydrograph is included with this reply (Figure 1). Reading the part about recession analysis without the title of the section could lead to confusion, indeed. In the revised version we will improve and clarify the presentation to avoid any confusion. The recession curves or the FDC did, similar to the hydrographs, not serve the evaluation of the model performance in this paper. Therefore, we suggest to not include related figures (Figure 1 and 2 herein) in the revised paper. An example of FDCs derived using the whole simulation period is shown in Figure 2, and an example of simulated recessions can be seen in the attached hydrograph (Figure 1). We did not include a comprehensive review of model intercomparison studies as different approaches to the design of model intercomparisons were not the aim of our study. However, we agree that the list of examples is somewhat random and needs to be justified better with respect to what our study discusses. We appreciate your pointing this out and will consider the related (and interesting) paper by Perrin et al. (2001) in a revised and improved review. Its focus on the complexity of model structures certainly points in a similar direction as we are targeting and we agree that it is a relevant example of studies using different approaches to learn more about hydrological model structures.

Best regards,

Maria Staudinger (also on the behalf of the co-authors)

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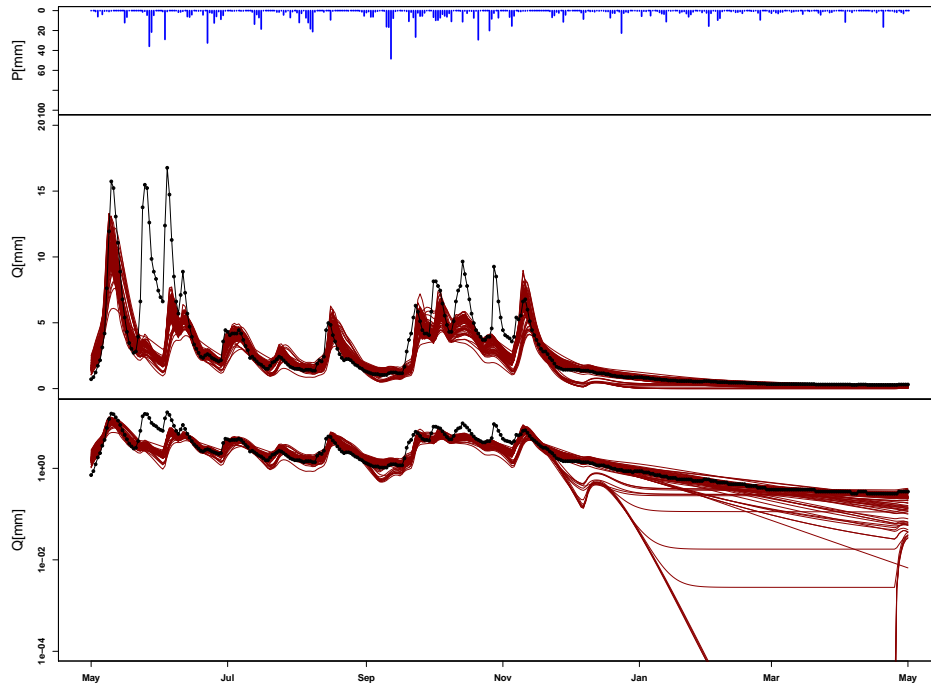


Fig. 1. Observed hydrograph in black and the 79 simulations in red. The upper graph shows the streamflow in a linear and lower graph a logarithmic scale.

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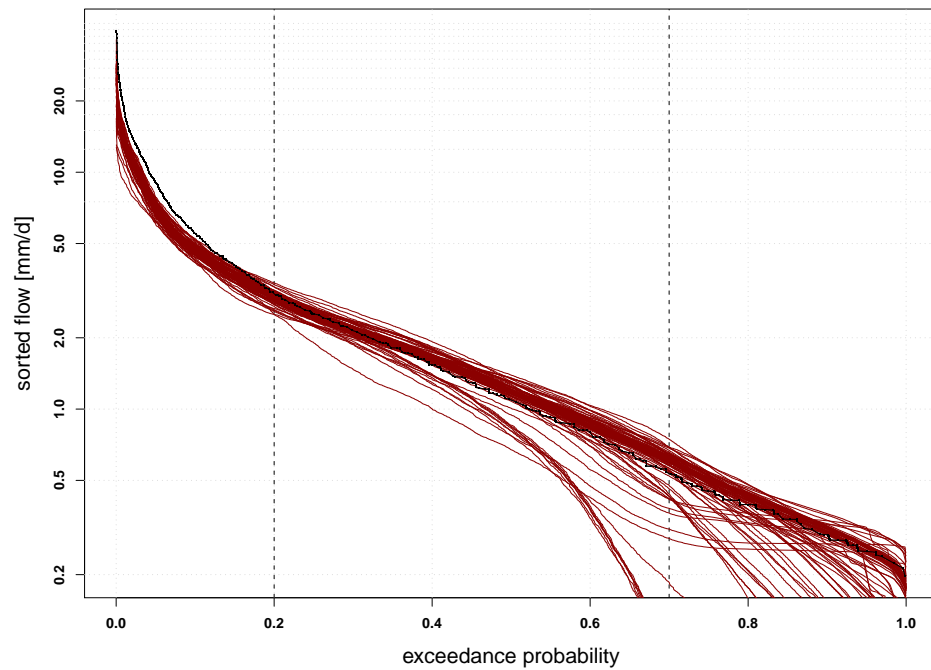


Fig. 2. Flow duration curve from the observed streamflow in black and from the 79 simulations in red.

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