Hydrology and Earth System Sciences Discussions

Interactive comment on "A past discharge assimilation system for ensemble streamflow forecasts over France – Part 2: Impact on the ensemble streamflow forecasts" *by* G. Thirel et al.

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ï¿£We thank the reviewer for carefully reading our manuscript and for his/her comments in the text. We have revised the manuscript following all received corrections/comments:

- Specific comments - The methodology is complex because it requires a hydro-meteorological suite, the use of EPS, an assimilation system, and an experimental set-up combining all these components. All information necessary to understand the methodology and the discussion is included in the paper. However the presentation of

the methodology could be improved.

For instance, more about the SAFRAN analysis sub-system could be said already in 2.1 (partly moved from 2.3, Page 2460, 4, P. 2463, 4.2, P.2467) and the different uses of the word "analysis" could be made clearer (e.g. Lines 1 – 5 on P. 2463).

Authors response: The comments given on the SAFRAN analysis in parts 2.3, 4 and 4.2 are specific for this study and for the section in which they are presented. That is why it is not relevant if we put them together in the previous section concerning the presentation of the model.

- The set-up for the impact assessment could be a separate subsection of 4. A synopsis could be provided for a typical hindcast with the day and time of the data used for the SAFRAN analysis, of the data used for the assimilation, of the simulated streamflow analyzed in Part 1, of the state variable in ISBA, of EPS, of ensemble streamflow forecasts (and observed data used for verification).

Authors response: A new sub-section, dedicated to this, has been created.

- The scores were averaged for the (148 or 49) stations. This justifies the use of relative values of spread and RMSE, and the use of skill scores (BSS and RPSS). The so-called ratio-spread and ratio-RMSE are normalized with averaged observations in the verification sample, whereas BSS and RPSS are calculated relative the long-term frequency. Skill scores should be used also for the resolution and the reliability.

Authors response: The reviewer indeed points out a very interesting lack. The reliability and the resolution have been replaced by their skill scores. However, the conclusions drawn in the first version of the manuscript were not modified.