Authors' responses to the comments of anonymous Reviewer 1

We would like to thank Reviewer 1 for the constructive criticisms and the suggestions made. We have revised the manuscript in accordance with the suggestions. Below, we are responding to the Reviewer's comments, point-by-point.

1. Please check the use of the words "significant" and "significantly" throughout the manuscript, since readers may associate them with "statistically significant" – even if you are not meaning that.

Corrected according to the reviewer's recommendation.

2. P6, L7-8: I think that an explanation on how you obtain deterministic forecasts from ensemble forecasts – although provided later in the manuscript – should go here

Corrected according to the reviewer's recommendation.

3. P10, L8-11: The authors might want to consider putting these results into a table, for both calibration and validation periods.

We would prefer keeping these results as a text, not a table

4. P12, L10-11: The think the ensemble sizes (51 and 1000) should be specified in the Method section

Corrected according to the reviewer's recommendation.

5. Conclusions: I suggest the authors connecting their future work with existing literature on data assimilation for hydrological forecasting (e.g., Clark et al. 2006; McMillan et al. 2013; Dechant and Moradkhani 2011; DeChant and Moradkhani 2014; Huang et al. 2016) and weather forecast post-processing – also referred to as pre-processing (e.g., Hamill et al. 2004, 2008; Fraley et al. 2010; Schmeits and Kok 2010; Verkade et al. 2013; Crochemore et al. 2016)

Several suggested references have been added according to the reviewer's recommendation.

Authors' responses to the comments of anonymous Reviewer 2

We would like to thank Reviewer 2 for the constructive criticisms and the suggestions made. We have revised the manuscript in accordance with the suggestions. Below, we are responding to the Reviewer's comments, point-by-point.

1. Subsection 4.2: Results of parameter estimation and model testing are described and referred to the supplementary materials, however I did not find an actual "discussion" on the findings.

Discussion is enhanced in accordance with the Reviewer's recommendation. The following fragment is added.

> Figs 1S and 8S demonstrate the ability of the developed weather generator to reproduce annual and monthly mean values of air temperature, precipitation and humidity deficit. Fig. 8S demonstrates good correspondence between the distributions of the observed and modelled precipitation, as well as Fig. 2S where a good match between the observed and the modelled coefficient of variation can be seen. Despite some bias, the model errors do not appear to be systematic. The ability of the generator to preserve the spatial structure of the weather variables was examined by evaluating the spatial correlation curves (Fig. 7s) for temperature and precipitation, which demonstrate close match for both daily temperature and precipitation.

2. Subsection 4.3.2: Figure 6 is presented and shortly described yet I expected a brief discussion on the behaviour of daily forecast ensembles in comparison to the observed inflow data before seeing the boxplots on figure 7

Brief discussion is added in accordance with the Reviewer's recommendation.

> Fig. 6 shows the outcome of the anomalous weather conditions that led to earlier increase of the inflow in mid-March (see panel (a)), which was not captured by the mean ensemble hydrograph of the forecast issued on March 1st. However, several scenarios of the ensemble show the behavior of inflow similar to the observed one. The forecast issued on March 27th showed the ongoing increase in inflow discharge, however the colder weather conditions led to inflow stabilization, not captured by the forecast. One can see visible improvement of the mean ensemble hydrograph issued on March 27th (Fig. 6b) comparing with the one issued on March 1st (Fig. 6a).

3. On section 5 I recommend to summarize the main findings of the investigation in only two main points, in order to match the research questions, thus points 1 and 2 could be merged into one. In addition, instead of discussing/presenting current and future work specific to the authors I would prefer to read your opinion on future advancements on the research field in general on the basis of your findings. Hence I suggest rephrasing this last paragraph.

Points 1 and 2 are merged into one, to fit the research questions, and the last paragraph is corrected according to the reviewer's recommendation.

P3.L33: Replace "sreamflow" with "streamflow"

Corrected according to the reviewer's recommendation.

P9.L28: The notation "Figure x" is used here while in the rest of the manuscript the notation adopted was "Fig. x". Please choose one formatting and adapt in order to be consistent.

Corrected according to the reviewer's recommendation.

P13.L18: Replace "respecrively" with "respectively"

Corrected according to the reviewer's recommendation.

P20.L5-11: I would prefer to see this as part of section 4.

We appreciate this comment, and the reason for it (to have all "methods" in one place, which is, formally speaking, a usual arrangement). However, after discussion, we came to a conclusion (or rather a suggestion) that for a reader's benefit, it would be better to keep this particular piece (Eq 4) in section 4.3.3. From our point of view, it would be easier for a reader to appreciate Fig 9 which immediately follows Eq 4 which explains how CDF is formed.

P23.L6-15: I would prefer to see this as part of section 4, from "A two sided…"

We appreciate this comment, but would like to present the same arguments, as just have been given for the previous comment, and suggest to keep Equ 6-9 . in section 4.3.4.

P24.L12: Remove the parenthesis in "(Weigel et al., 2007)"

Corrected according to the reviewer's recommendation.

Figure 1: Please improve figure resolution, whereas words are a bit hard to read. Also check the legend, I am not sure what the orange circle with black dots represents since it is not mentioned anywhere in the text. If they are not necessary please remove them from the map.

Corrected according to the reviewer's recommendation.

Figure 3: Please re-arrange order in the caption so as to present panels in alphabetical order, I believe this would make the reading easier. I also suggest removing the black line since it is not necessary and brings confusion on the plot.

The captions are corrected according to the reviewer's recommendation. As to the black line, we would prefer keeping it as is. We believe that the black 1:1 line helps the reader to evaluate how far the model is from perfect correspondence with the observed values and in what value range the deviance is detected. In order to further clarify the plot content, we added a line to the figure caption.

Figure 5: I find the legend confusing since black triangles and black circles supposedly represent ESP and WG based forecasts in general while at the same time represent ESP and WG based forecasts for "number of days with inflow discharge above maximum (NqMax)". Instead of representing "W", "Qmax", "Nq" and "Nqmax" with coloured squares, which are not observed after in the Taylor diagram, I suggest to use a different type of polygon or symbol representing "W", "Qmax", "Nq" and "Nqmax", maybe empty instead, and to colour them on the basis of ESP or WG based forecasts. I also suggest making polygons or symbols larger, since they look rather small compare to the entire graph. In this way, one colour defines whether the forecast is ESP of WG based and the polygon/symbol indicates type of forecast.

Corrected according to the reviewer's recommendation.

Figure 7: Please re-arrange order in the caption so as to present panels in alphabetical order, I believe this would make the reading easier. Also describe in the caption what is the black continuous line representing.

Corrected according to the reviewer's recommendation.

Figure 9: Colours described in the caption do not match the observed in the figure. Please correct.

Corrected according to the reviewer's recommendation.

Figure 10: I am not sure if is a resolution problem or type of file format, however colours are kind of washed out in this figure. It would be better to see it as the other figures.

Corrected according to the reviewer's recommendation.

Table 1: I would prefer to see the measurement units on the first column in between parenthesis.

Corrected according to the reviewer's recommendation.

Table 2: Same as table 1.

Corrected according to the reviewer's recommendation.

References:P28.L25: Replace "Sum-mary" with "Summary"

Corrected according to the reviewer's recommendation.