

Interactive comment on “On the skill of raw and postprocessed ensemble seasonal meteorological forecasts in Denmark” by Diana Lucatero et al.

Anonymous Referee #1

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This paper investigates the performance of precipitation and temperature forecasts from ECMWF System 4, as well as derived reference evapotranspiration. The authors also look at the impact of two simple postprocessing methods: linear scaling and quantile mapping, on the performance of these forecasts. Raw forecasts tended to be overconfident, and regions with biases also corresponded to regions with lower skill. Both linear scaling and quantile mapping performed well in removing biases, quantile mapping was better suited to improve statistical consistency.

General comment

I found the paper well-written and I think that it provides both didactic explanations for the methodology as well as an in-depth and comprehensive analysis of the skill and bias patterns. It also fits in the Subseasonal-to-seasonal special issue since it follows

C1

and complements nicely the paper by Crochemore et al. (2016) published in this same issue. I list below a few comments about this version of the paper. These comments are mainly technical. My main remark would be that the figures are generally too small and thus difficult for the reader to read and interpret. I detail this point further down.

Major comments and general questions

Section 2.2: What do you think is the impact of the interpolation method on the results and areas with skill? How common is the inverse distance weighting to interpolate meteorological variables? Couldn't this induce yet another bias in the forecasts? If observations had been upscaled to preserve the scale of the GCM forecasts, would you expect similar results?

Section 3.2.4 and Figure 11: It was unclear to me why linear scaling impacted the number of dry days. If dry days are defined as days with no precipitation, and linear scaling solely consists in applying a multiplicative factor, the number of zero-values should not be affected. Did you define a threshold to determine dry days? Please clarify this.

Technical comments

P2 L7: Replace “Despite of the efforts” by “Despite the efforts”.

P2 L35: I suggest adding “only” after “for precipitation”, for clarification.

P4 L2-4: Please check the indices in equations 1 and 2. It seems that index i is used to represent different things: the year for which the correction is applied and a sum that runs from 1 to N while excluding the year for correction itself (previously represented by i).

P4 L6: If I understand correctly, N is equal to the numbers you have, i.e. 24 years from 1990 to 2013. Is that correct?

P8 L35: Replace “thorough” with “through”.

C2

P9 L6-8: Could you please clarify this point?

P9 L11: Replace “The second and third columns column” by “The second and third rows”

P10 L27-29: “This fact may be ... in the raw forecasts (Fig. 7)” could you please reformulate this sentence?

P11 L13: It seems that in this context and given the following sentence, “sharpness” can hardly be an advantage.

P11 L21: I suggest replacing “act equally good” by “perform equally well”.

P11 L27-30: Please reformulate these sentences.

P12 L3: Replace “The second is that the exclusion” with “The second is the exclusion”.

Figures 1, 4 and 6 and maps in the Supplement: The maps are too small to easily distinguish the patterns. In addition, it is difficult to spot the stars in Figure 6, both due to the size and the colors. I suggest making the maps bigger, and if necessary, changing the color of the stars in Figure 6.

Figure 2: Please explain the x-axis somewhere or make the years fully explicit.

Figure 3: The x-axis is not the same size in all three graphs. The size used in the left-hand graph is easier to read.

Figure 5: Please increase the size of the axis labels. Consider replacing “It” by “lead times”. Please also reformulate the last sentence in the legend.

Figure 9 and similar graphs in the Supplement: Please also increase the labels here.

Figure 10: I recommend moving the legend to the first or second graph for readability.

Figure A12: I think $N(0,0.3)$ should be $N(0,0.3)$

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