[GMDD]

Interactive
comment

Interactive comment on "Randomly correcting model errors in the ARPEGE-Climate v6.1 component of CNRM-CM: applications for seasonal forecasts" *by* Lauriane Batté and Michel Déqué

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Reply to interactive comment by anonymous referee #2 by Lauriane Batté

We wish to start by thanking the reviewer for his/her constructive comments on our manuscript.

1) Reply to comments:

"I commend the authors for being clear about the limitations of their technique and not overselling their results. Yet, I think the manuscript would benefit from establishing clear

expectations of the technique – and the abstract, the introduction and the conclusions are not very coherent. [. . .] I suggest that the authors a. formulate a coherent goal for the manuscript b. include [. . .] a discussion where they see the further potential of the technique."

Thank you for this valuable comment. We tried to address these points by reformulating the abstract, introduction and conclusion.

"Also, as a comment, I think the differences/improvements in figure 6 are not small."

I agree. This aspect of model improvement with the introduction of these perturbations is primordial, also in the sense that it seems to translate into improvements in the representation of North Atlantic weather regimes.

"The split up of the model (experiment) description between section 2.1 and 4.1 was not entirely intuitive to me. Could the two sections be combined within section 2? Also, is the horizontal resolution mentioned anywhere?

I originally placed the experiment description in 4.1, since some settings for the perturbation frequency were motivated by analyses presented in section 3. To take into account your comment, I combined the experiment description in section 2.1 (regarding initial conditions, re-forecast period, ensemble size) with the details on stochastic dynamics settings presented originally in 4.1 into a section 2.3 on seasonal re-forecast experiments description.

Thank you for pointing out that the horizontal resolution isn't mentioned. Section 2.1 was corrected accordingly.

"I think section 4.5.1 could do with a mentioning of the recent results of NAO skill (e.g. Scaife et al., Butler et al.; including Weisheimer et al., if the authors wish to question the results)."

I included these references and additional discussion in section 4.5.1.

"I noticed that the references to figures are sometimes with "Fig." and sometimes with "figure". Also, are the supplementary figures cited (in the right order)? Maybe I overlooked it, but where is figure S2 cited?"

My intention was to use "Fig." when inside a sentence, and "Figure" at the beginning of the sentence. Some occurrences may have been left out, but as you mentioned, this should undergo proofreading later on. Figure S2 (now S3) is cited in page 9 – line 15 alongside figure S1 (now S2). The formulation wasn't very clear, I clarified this in the revised version of the manuscript by "Results for 500 hPa geopotential height are shown in supplementary fig. S2 for November and fig. S3 for DJF."

2) Changes in the manuscript

Changes to the manuscript can be tracked in the supplement to this comment, with red crossed text indicating suppressions and underlined blue text indicating additions with respect to the original submission.

Please also note the supplement to this comment:
http://www.geosci-model-dev-discuss.net/gmd-2015-270/gmd-2015-270-AC2-supplement.pdf

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Interactive comment on Geosci. Model Dev. Discuss., doi:10.5194/gmd-2015-270, 2016.