

Interactive
Comment

Interactive comment on “Multi-model ensemble: technique and validation” by J. R. Rozante et al.

J. R. Rozante et al.

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“We thank the referee 2 for their corrections.”

Major Comments:

1. The authors develop a multi-model weighting technique to estimate an improve forecast, but do not cite previous relevant work done in the area. In particular, there are a number of methods that are closely related to the technique in the manuscript, such as the Unweighted Multi-Model Ensemble Average [1, 3, 5], the Reliable Ensemble Averaging Technique [2], and the Modied REA with Bayesian Analysis [4] to name a few. What is the dierence or advantage of the method presented by the authors the these

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methods? Please include the proper literature citations and a brief paragraph on the advantages and/or differences between the method presented in the manuscript and those already published in the literature.

Was included in introduction section these paragraphs:

The technique of combining forecasts made by numerical models has been well explored by various researchers (Tebaldi et al., 2004; Weigel et al., 2010; Chandler et al., 2013). Almost all of the articles that have been written on this subject agree that the combination of several different forecasts provides significant improvements. The questions that do occur are those with having to with the method used to combine the forecasts. Recent research in climate modeling suggests that combination schemes with unweighted means provide better results than schemes with weighting based on the performance of each model (Christensen et al., 2010; Déqué and Somot, 2010). And, according to Weigel et al. (2010) and Knutti et al. (2010), the combination of models taking into account the concept of weighting must be treated with great care, principally when applied to climate change.

Now in the area of weather forecasting, intercomparisons among forecasts from different types of numerical models have shown that the performance of each can vary in time as well as in space (Saul et al. 2001; Silva Dias et al. 2006). Thus, a combination among the results of various types of models, considering the performance of each model can produce forecasts of greater reliability (Johnson and Swinbank, 2009; Roy Bhowmik and Durai, 2010; Kotal and Roy Bhowmik, 2011). The concept of using the combination of a set of numerical results for the improvement of the prediction models was first discussed by Krishnamurti et al. (1999, 2000, 2000b), and has been widely used (Yun et al 2003; Chakraborty et al. 2007; Lenartz et al. 2010).

2.

a. In page 2936, line 20, the authors mention that “Grid Analysis and Display System (GrADS) was used to calculate the weights”, what does this mean?

The Grid Analysis and Display System (GrADS) is an interactive desktop tool that is used for easy access, manipulation, and visualization of earth science data.

b. Were all the computations for the method done in GrADS?

Yes, all the computations were made in GrADS.

c. Is there a scripting language?

Yes, more information about GrADS scripts can be found in <http://iges.org/grads/gadoc/script.html> intro.

d. Why was this scripting language selected over more traditional languages, such as C, Fortran or even Python?

Similar to Fortran 90, GrADS allows to work with matrix and it also is fast. Beside, GrADS is also a viewer program, thus is possible easily validate the results.

3. **On page 2938, lines 5, the first equation contains $nD(DEZ)$ and $nD(FEV)$, what are these variables? Please include a description of these variables in the text.**

Sorry, we forgot to translate those months to English, the correct is: $nD(DEC)$ and $nD(FEB)$.

4. **The labels, text, color legends and titles of all of the plots are very hard to read, if they can be spotted at all. I strongly encourage the authors to use bigger, more clear fonts and/or formatting to make the plots readable.**

We have improved the display of all figures of the article.

5. **On Figure 3, what is FCT in the x-axis?**

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FCT means forecast. We changed the label of the x-axis from “FCT” to “Hours Forecast”

6. **On Figure 6, I strongly encourage the authors to put plot (f) as a separate figure, it is not aesthetically pleasing to see it crammed in the same figure as the other plots.**

We agree with you and separated this figure in two figures (6 and 7).

7. **Figure 8 and 9 are extremely hard to read, please use better formatting of the fonts and/or better plots.**

We have improved the display these figures.

Minor Comments:

1. **Please review the manuscript for grammatical errors and typos**

We reviewed the text and fixed some grammatical errors.

2. **There is a comma missing at the end of Equation (2)**

It was included.

3. **There is a dot missing at the end of Equation (3)**

It was included.

Interactive comment on Geosci. Model Dev. Discuss., 7, 2933, 2014.

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