

Response:

Editor's comments

Thanks for addressing the comments and making more substantial changes to the manuscript. Unlike the first 3 reviewers, RC4 was not convinced that your paper makes enough of a contribution to warrant publication in GMD. Having reviewed all the comments and your replies, i think that this paper does indeed make a contribution worth publishing, and hence, I am happy to accept the revised manuscript for final publication in GMD.

In reviewing your manuscript, i noticed a few minor corrections which should be made: Provide a version number for ORCHIDEE in the abstract please.

You use way too many UN-necessary acronyms in the abstract, for no particular reason. The CCDAS and GCP acronyms are defined, but only used once? Why do you define in acronym in an abstract if you only use it once? The LMDz acronym is used without even being defined?

The Rayner et al 2005 paper has no journal in the reference list?

I believe the Raoult et al paper how now been accepted in GMD, you should used the GMD and not GMDD reference.

Double check all your refs please.

Response:

We thank the editor to accept this paper for publication in GMD and for the additional suggestions to improve the manuscript.

- We have dropped in the abstract the un-necessary acronyms: CCDAS, GPP and GCP.
- We have also defined both in the abstract and in the text the LMDz acronyms as follow: “the general circulation model of the Laboratoire de Météorologie Dynamique (LMDz)”
- We now provide a version number for the ORCHIDEE model in the abstract: “version 1.9.5 used for CMIP5 simulations”
- We have checked the references and we made the following changes: we included the journal name for Rayner et al. (2015); we changed the year for Avitabile et al. to 2016; we provide the GMD reference for Raoult et al. (2016) instead of GMDD; we updated Dufresnes et al. (2013) reference;

Finally, we have slightly changed figure 10 in order to improve its readability. The information content of the figure is kept the same; we have only simplified the bar plot for the NEE as there was no need for separated bars for the total NEE given that the total is also clearly depicted by the stacked bars of the three latitude bands.