REPLY TO REFEREE 2

Overview

This study addresses the decline in in-situ observations in climate reanalysis, aiming to enhance localized meteorological information by leveraging its connection to large-scale patterns via the analog method. The authors have created an open-source, object-oriented Python package to streamline the workflow. Validation was performed against widely used reanalysis products at four stations in Spain, encompassing three mountainous areas and one urbanized area. The method demonstrated improvements in key statistical measures.

Overall, the manuscript is of high quality, featuring well-structured text and informative figures. The reasoning process is scientifically sound, and the analysis is precise. The method has been shown to work as expected. I have only a few minor comments listed below. Once these are addressed, I recommend the work be accepted for publication.

Specific comments

- The writing of the last two paragraphs of the Introduction section is a bit disconnected. What's missing is the description of how this study will fill the mentioned gap.

  We agree that the line of thought of the introduction and motivation was not very clear. Following your relevant remarks and in accordance with comments from another referee we have rebuilt this section merging both sections trying to simplify the message and be more concise. We hope it is more clear now.

- The analog method: it would be more precise if the authors could summarize the method in mathematical equations in addition to the text description.

  You are right. We added a mathematical description of the method in section 2 “Method”

- Font size in Figs. 4-7: the font size of the legends is a bit small. Please adjust to make them more readable.

  You are right, we changed the font to a bigger one.

- The legends in Figs. 4-7, etc.: it's not necessary to label every ensemble member. There's no way that the readers can really distinguish them. Using one line/marker style with one label saying "Reanalysis ensemble members" is just enough.

  Thank you for your feedback, we changed it now.

- The Jupyter notebook in the Github repository (https://github.com/alvaro-gc95/RASCAL/blob/master/RASCAL_evaluation.ipynb) has a cell with errors in section "1.9) Yearly Taylor diagram", with the later sections not executed as a showcase. It would be more informative if the author can run them through for the potential users. After all, Jupyter notebook is not only about sharing the code but also about presenting the results.

  As the Jupyter notebook is designed to serve as an example of code and a tool for the validation of user-generated reconstructions, we have modified it to run the validation of a reconstruction of an example station, given that we are unable to disseminate the original AEMET observation data. The new Jupyter notebook is fully functional for new users and all the cells are run with the new example data, so now it does not present the data used in the original manuscript.

- It seems that the documentation website (https://rascalv100.readthedocs.io/en/latest/index.html) is still under construction. As a software endeavor, the documentation should be in a finished status before the manuscript gets published.

  You are right. The documentation website has been expanded, adding a more detailed description of the installation of the package, and tutorials with code snippets to facilitate its usage by new users.