

Geosci. Model Dev. Discuss., referee comment RC2
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Comment on gmd-2021-368

Anonymous Referee #2

Referee comment on "Climate Services Toolbox (CSTools) v4.0: from climate forecasts to climate forecast information" by Núria Pérez-Zanón et al., Geosci. Model Dev. Discuss., <https://doi.org/10.5194/gmd-2021-368-RC2>, 2022

The paper of Pérez-Zanón et al. presents a flexible toolbox, supporting stakeholders in multiple sectors to correctly manage climate forecasts from seasonal to multi-annual scales. The developed toolbox provides several functions that allow relatively straightforward extraction of useful and concise information from large datasets (I particularly liked Fig. 4) that, indeed, can be handled with difficulty even by experts. The range of functions is large enough to allow quite elaborated reanalyses. I have tested successfully the examples available on the CRAN repository, which were relatively easy to run.

In summary, I believe this tool, even though not provide any new modelling option (but this was not the aim of the authors), is a valuable contribution and has good potential to impact several sectoral applications. Nevertheless, I believe some more details must be provided to make it really accessible to the wider public (i.e., even stakeholders not particularly expert in forecasting issues) and, in some cases, even experts. In particular, I refer to the data retrieval and formatting section, which could be very "labour-intensive" as the same authors state. All the examples provided use either link to static paths (in the paper) or already pre-processed input data (vignettes). I suggest the authors go more into detail on that and provide at least one example starting from raw data.

Still concerning input data, another common feature of the examples offered is that they seem to rely only on global/large scale gridded datasets. In my experience, I've learned that such datasets often don't fit adequately ground observations for specific regions. If the monitoring network (e.g. rain gauges) is dense enough, it can be used in turn to prepare one's own high-resolution (let's say) dataset. It's not clear to me if/how such datasets can be included, for example for correction or validation purposes.

Another comment concerns the structure of the three use cases provided. I suggest describing them more homogeneously and streamlining them. The third use case is a bit sacrificed, in my opinion.

Finally, I suggest organizing better (in a more straightforward way) the connection between functions developed and corresponding literature references, to support the user in going into details with the theoretical aspects behind them. Maybe, some synoptic tables (even as an appendix), in addition to existing text, could help.

Below I provide some specific comments (and highlight some typos). I recommend careful re-reading of the manuscript. I hope my review helps improve the overall quality of the manuscript and makes more accessible the interesting toolbox developed.

L 66: as illustrated in Fig. 1

L100: R-based

L104: please check this sentence

L130: maybe "each function"?

L191: to automatically interpolate

L193: lotlan_data for temperature? Please check

L197: downloaded into (or simply "in")

L244: "The amount of categories can be changed and are taken as..." please check this sentence. To which subject is the verb "are" referred? To the categories?

L291: not clear: is this function available only for the Iberian Peninsula? Will it be available for other areas in the future?

L301: not clear: here, too, is this function available only for NAO?

L375: A comparison ... IS also possible

L386: three example case studies

L399: the link does not work. However, I would prefer some more technical link than that to a newspaper

L401: I guess IP stands for Iberian Peninsula. But his term is used only some words before, so please check the sentence and rephrase

L453: by?

L503: "only one member": it's better to tell how many members make up the ensemble

L509: please explain what "ensemble dressing" means.

L545: I would write "agriculture and industry, while meltwater shortage ..."

L597: "the result is" (better) or "the results are"

Figure 6a: I guess this map shows one of the 25 possible precipitation fields for 11 December 1993 given by the SEAS5 ensemble

L719 (and elsewhere): please check throughout the text if there are shifts using tenses (from the present to the past and vice versa)

LL719-720: not clear if these operations were made through CSTools (please refer also to main comments)

L723: "the SNOWPACK model is run for each of the 21 seasonal forecasts over the hindcast period 1996-2016". Only here the objective of the use case is clearly stated. I suggest declaring it at the beginning of the section.

L741: again, for what period? State clearly the objectives of the exercise at the beginning of the section.

L794: at the end of this section, I realize that the fact that the SCHEME hydrological model is used is not so relevant, after all. The case study could be generalized to any (semi-distributed or even distributed) hydrological model requiring precipitation and temperature forecasts.

L804: "(see e.g. Fig. 4)" I would remove this text in brackets.

L813: also, agricultural issues are involved (drought, irrigation needs, water resources management, etc.)

L815: what about the other features? I think this sentence underestimates other aspects of the tool. Please explain in more detail.

Please note: Appendixes A and B are not referred to in the main text. They should be and contextualized.