Abbreviations

There are many abbreviations for many variables and datasets. However they are not used consistently. In some figures all of a sudden variable names are spelled out,abbreviations are used in uppercase and lowercase letters. More consistency would help the readers I think.

Reply: Thank you for noting the inconsistency in abbreviations. We have made changes to the figure titles, variable names and the figure caption to ensure consistency. Here we attach one example figure which is representative of all the figures' titles, and captions are consistent with this format. For correlation matrices, the space in figure is limited, therefore we used abbreviations explicitly defined in the captions.

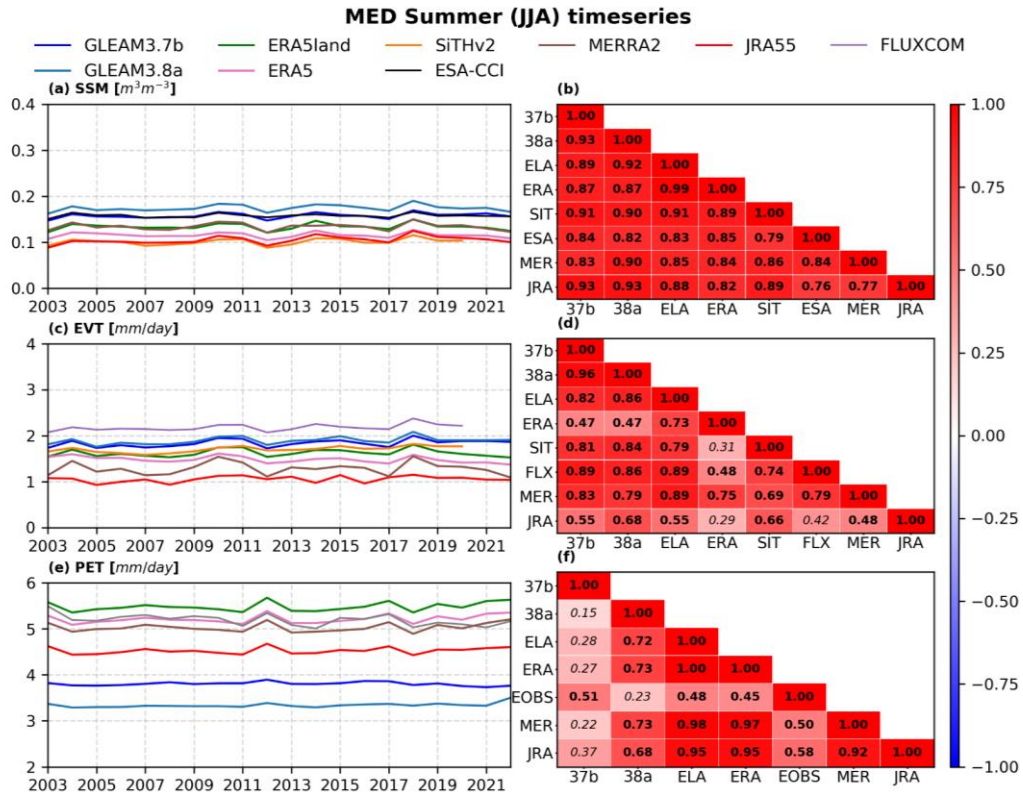


Fig 3: Timeseries (left) and correlation matrices (right) of SSM, EVT, and PET over MED. In the correlation matrices the datasets names are abbreviated as follows: GLEAM 3.7b as 37b, GLEAM 3.8a as 38a, ERA5land as ELA, ERA5 as ERA, ESA-CCI as ESA, SiTHv2 as SIT, FLUXCOM as FLX, MERRA2 as MER, and JRA55 as JRA. The correlation coefficient values in bold are significant at 95\% level and non-significant correlations are in *italic*.

Figures

In the Lineplots colors are hard to distinguish. Maybe different line styles would help?Letters are also on the small side and could be increased.

Reply: Thank you for your suggestions to improve readability of the figures. We have increased the thickness of the lines in the lineplots and also adjusted the font size for better readability. Please check the figure above.

e.g. for Figures 3 and 4 you could pick the most important region, increase Figures and lettering and put the other 3 regions into Appendix/Supplementary material?

Reply: Thank you for your suggestion, for both figure 3 and 4 we have kept only one region (MED; please check the above figure) in the manuscript and have moved the figures for the other regions to the supplementary.

Colors should have a meaning. E.g. why are subtitles in figure 5 red? Decreases readability

Reply: Thank you for noting this. We have changed the subtitle colors to black and bold letters in all the figures. The name of regions are written in blue in the subtitles in figure 2,4,5 and all the supplementary figures just make it visibly distinct and catchy from the subtitles.

Figure 3A is very distorted

Reply: Thank you for pointing this out. We have fixed it, you can see in supplementary figure A2.

References

The references seem to ignore any rules about capitalization.

Reply: Thanks for this comment. We did a check, now the reference style follows the journal's guidelines with capitalization of the authors name and the title of the paper.

Example: Dorigo, W., Wagner, W., Albergel, C., Albrecht, F., Balsamo, G., Brocca, L., Chung, D., Ertl, M., Forkel, M., Gruber, A., et al.: ESA CCI Soil Moisture for

improved Earth system understanding: State-of-the art and future directions, Remote Sensing of Environment, 203, 185–215, 2017.

Minor comments

L40: dot after reference

Reply: Thank you for noting this, we have corrected the mis-placed dot in the manuscript

L52: I think there is a reference missing after "extremes".

Reply: Thank you for the comment. We have now included references in the sentence.

"Scarce precipitation in preceding seasons can trigger this feedback loop and amplify hot summer temperature extremes (Miralles et al., 2019; Byrne, 2021; Mukherjee et al., 2023)." (line 53-55)

L53-54: rephrase sentence to "...CMIP model which represent stronger land-atmosphere coupling in the present climate have most likely a tendency to ..."?

Reply: Thank you for this suggestion, we have corrected that sentence in the manuscript

L59-60: I would avoid the phrase "In conclusion" in the introduction, maybe "hence"?

Reply: Thank you, we have changed the wording accordingly.

L99: no dot before reference

Reply: Thank you for pointing out the misplaced dot before reference, we have corrected this in the manuscript

L167: vegetation instead of vegatation

Reply: Thank you, we have corrected the typo.

L216: unit missing for SR

Reply: Thank you for pointing this out, we have now included the unit for SR in the manuscript

L217: units missing for Ra, Tmax, Tmin

Reply: Thank you for noting this, we have included these units in the revised manuscript

L243: annual cycles instead of annual cycle

Reply: Thank you, we have corrected in the manuscript

L252: This sentence is not complete, there are missing articles. Rephrase to e.g. "Forthe SSM annual cycle (Fig. 2a), SiTHv2 and MERRA2 differ significantly from the rest of the data across all regions."

Reply: Thank you for noting this, we have reworded the sentence following your suggestion.

L257: missing article before "entire"

Reply: Thank you for noting this, we have added "the" before "entire"

L265: missing verb and article, GLEAM versions are about 2 factors less than the rest of L266: PET variation follows a similar pattern…

Reply: Thank you for pointing out these typos, we have corrected them in the manuscript

L268: missing word between "winter" and "no", winter with no variability?

Reply: Thank you for noting this, we have corrected in the manuscript

L276: missing article, "using the same equation"

Reply: Thank you for pointing out, we have corrected in the manuscript

L321: double the the

Reply: Thank you, we have corrected the typo.

L322: it is not clear which drough event is referred to by "The strong drought event is".The sentence before mentions 2021 and 2017 so either "these drought events" or specify which one is referred to.

Reply: Thank you for noting this ambiguity, we have now clarified this in the manuscript.

"The strong drought event in 2018 is mentioned in many previous studies (Rousi et al., 2023; Bakke et al., 2020)," (line 336-337)

Figure 3 caption: lowercase abbreviations inconsistent with text

Reply: Thank you for the suggestion, we have corrected in the manuscript. Now this figure is included as a supplementary figure.

Figure A2: Timeseries (left) and correlation matrices (right) of SSM, EVT, and PET over NEU ((a), (b), (c), (d), (e), (f)), EEU ((g), (h), (i), (j), (k), (l)). In the correlation matrices the datasets names are abbreviated as follows: GLEAM 3.7b as 37b, GLEAM 3.8a as 38a, ERA5land as ELA, ERA5 as ERA, ESA-CCI as ESA, SiTHv2 as SIT, FLUXCOM as FLX, MERRA2 as MER, and JRA55 as JRA. The correlation coefficient values in bold are significant at 95% level and rnon-significant correlations are in *italic*.

L370: missing articles in sentence

Reply: Thank you for pointing out, we have corrected in the manuscript

Figure 5 caption: missing space before (

Reply: Thank you for pointing this out, we have corrected this in the manuscript

Figure 5: I am wondering if it would be better to reduce this to the datasets which provide both variables? From what I understand some of the calculated variables show a different behaviour and do not make the Figure clearer. There are quite a few lines in these plots which are hard to see, so reducing the datasets might help.

Reply: We have carefully considered your suggestion, but have good reasons to keep the datasets not providing all variables in the figure. Often, the purely observation-

based (satellite or in-situ) datasets only provide specific variables, while reanalyses by construction provide the whole set of variables. Excluding the observation-based datasets from the coupling analysis would disregard important aspects of the evaluation. The choices we made are described in the methodology subsection.

“To study the coupling metrics of land and atmosphere in the best possible way, the ERA5-land and SiThv2 data variables are re-gridded to the resolution of the ERA5 data. Similarly, the ESA-CCI and E-OBS data are re-gridded to the FLUXCOM resolution. As each of these datasets provides one variable for this land-atmospheric coupling study, unlike the other reanalysis datasets, we are using these dataset combinations to represent the different couplings(i.e., land coupling, atmospheric coupling, and land-atmospheric coupling). For this analysis, these three datasets are considered over the common period from 2003 to 2020. Similarly, both the GLEAM versions and SiTHv2 are similar to the reanalysis data and do not provide surface air temperature as a variable, we use ERA5 surface air temperature data in combination with GLEAM (both versions) and SiTHv2 for this coupling study.” (line 204-213)

L385: the before in situ data not needed

Reply: Thank you for noting, we have corrected in the manuscript

L450: represents is not the right word here, shows?

Reply: Thank you, we replaced “represents” with “shows” in the manuscript