

## Author's response (third revision of MAR v3.14 manuscript)

Dear Dr. Mann,

Thank you for your comments on our revised manuscript and for your suggestions to further improve the language. Since the suggested revisions were straightforward, I applied all of them, though I used a slightly different wording for two of them (see under *Additional comments on revisions*). I also made additional minor revisions to further improve language (see under *Additional revisions*).

Regarding the spacing issue that occurred with acronyms in the previous TC-manuscript, I must admit that I didn't spot it at the time of submitting the previous revision. I did use `latexdiff` to quickly generate the track-changes file, though I had to reduce the font size in some tables myself to make sure they could be reviewed to their full extent.

After looking into the problem, it turned out `latexdiff` was bothered by my acronym commands. For each acronym I use in a LaTeX document, I have the habit to define a LaTeX command instead of writing it in plain text so I don't have to change the whole manuscript if I have to change the capitalization or spelling of the name of a tool, institution, etc. Thus, each time `latexdiff` found a change containing such acronym command(s), it ended then re-started its own commands around them, and this cancelled a white space that followed each acronym command. You can find an example below.

```
\DIFaddbegin \DIFadd{By including and tuning } \ecrad \DIFadd{in } \mar \DIFadd{, we also  
aim at ensuring } \mar \DIFadd{no longer needs such a mechanism.  
} \DIFaddend
```

A quick though manual solution I found is to edit the LaTeX code around acronyms encompassed by changes to remove closure/restart around them.

```
\DIFaddbegin \DIFadd{By including and tuning } \ecrad in \mar, we also  
aim at ensuring \mar no longer needs such a mechanism.  
} \DIFaddend
```

The new TC-manuscript should no longer feature this spacing issue around acronyms, which is absent from the final manuscript.

Thank you again for your feedback and for overseeing the peer-review process of our paper !

Best regards,

Jean-François Grailet

## Additional comments on revisions

- 2) Lines 438-439: The sentence here begins "On the one hand, . . .", but there is no corresponding "on the other hand" to follow later. The sentence seems fine to simply begin "These seasonal statistics" rather than "On the one hand, these seasonal statistics", and please re-word for that.

There was actually a "*on the other hand*" a bit farther in the same paragraph (at L442 in the previous TC-manuscript), but there was an intermediate sentence ("*In particular, the correlation coefficients [...]*") to detail the observed trends. To improve the text, I decided to remove the "*on the one hand*" in the text above (L395 in the new TC-manuscript) and to replace the "*on the other hand*" found a bit later by "*however*". The new text is given below (L397 in the new TC-manuscript).

[...] during this season, *M1* and *M2* provide equivalent or better results. **However**, the seasonal statistics for *M1* and *M2* show non-negligible seasonal disparities regardless of tuning the heat fluxes.

- 3) Line 482 – The "lie in" in the wording "The differences between these configurations lie in the choice of the cloud fraction parameterization..." seems somehow not quite right. Please replace "line in" with "are from", as this would be better wording.

I rephrased this sentence as suggested, but using a slightly different wording, as shown below (L426 in the new TC-manuscript).

*These configurations only differ in the choice of the cloud fraction parameterization and the  $f_w$  parameter.*

## Additional revisions

### Reworded “on the one hand... on the other hand...” (x2)

Since I used a few times “*on the one hand... on the other hand*” several sentences apart a few more times in the previous TC-manuscript, I decided to remove and/or reword these occurrences to be consistent with the revision suggested for Lines 438–439 (previous TC-manuscript). The changes are listed below, using the line numbers of the new TC-manuscript.

- L357: “*Table 4 demonstrates, on the one hand, that all experiments performed well with respect to the RMIB products [...]*”.
- L361: “*The average statistics for radiative fluxes, on the other hand, are more contrasted.*”.
- L624: “[...] to assess the current limits of MAR v3.14. *On the one hand, Table 5 from Sect. 4.2 [...]*”.
- L633: “***Another shortcoming of MAR v3.14, hinted by Sect. 3.1, is the limited temporal resolution of greenhouse gas and aerosol concentrations, due to the initial forcings consisting of monthly means.***”.

### Too many “in particular”

While revising Section 4, I realized I used a bit too many times “*in particular*” throughout the manuscript, with two occurrences in at least two paragraphs of Section 4.2. I decided to improve this by rewording some occurrences or removing them altogether when they felt unnecessary. These changes are listed below, using the line numbers of the new TC-manuscript.

- L362: “***For example, E1, which used none of the adjustments described in Sect. 3, yielded a mean shortwave flux difference of +12 W m^-2***”.
- L370: removal of the sentence “*In particular, the mean differences are continuously decreasing for both shortwave and longwave radiation from E1 to E4*”: on second thought, it did not bring much with respect to the previous sentence.
- L404: removal of the sentence “*In particular, all seasonal mean differences are below 5 W m^-2 in absolute value with the exception of the summer*”: it added an anecdotal observation with respect to the previous comments in the same paragraph.
- L626: “*In particular, as highlighted in Sect. 5.2 (with the help of Fig. 8), MAR struggles to correctly predict cloud cover during the summer*”.
- L677: “[...] to produce new forcings for other computer models, and ***especially*** those requiring spectral shortwave fluxes in the photosynthetically active region”.