

We would like to thank the anonymous referee for his comments mentioning different points listed below. The reviewer's comments are in black, and the answers are in red. New information and explanations in the new version of the article are italicized.

Anonymous Referee 3

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The authors have taken all of my comments into consideration and have either provided acceptable responses or acceptable revisions to the manuscript. I recommend this manuscript is published as is. I did note a typo in Figure A7-A with 'vertical velocity'. I presume this can be corrected during the publication process.

10 The correction has now been made.

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Anonymous Referee 2

5 The further revised manuscript does dig deeper in the relationship between longwave aerosol scattering and the feedback observed with the other model variables, though the full explanation of the model changes remains tricky.

10 Some of the new sections are somewhat speculative regarding particular feedbacks and I feel they confuse a bit more the explanation of the results. For example:

lines 278-285: I still find puzzling the coincident stabilization of the lower layers together with an increased deep convection above 700 hPa in the same region. Lines 283-285 are speculative, and I find to not help clarifying the whole situation.

15 line 289-290: again, quite speculative especially because the actual anomaly is not shown. If the observation is not clear, I don't think it should be mentioned if it does not help the explanation.

20 Indeed, these sentences can complicate the results. We have therefore decided to remove them to clarify the text. We have also moderated the conclusions, and explained that these are only hypotheses to explain the changes in clouds and precipitation caused by the adding of longwave scattering by aerosols.

25 The various changes are highlighted in the text of the article. The following sentence has been added to the results section: *"To summarize, it would appear that the addition of aerosol diffusion in the LW contributed to opposite changes in the lower layers (reduced convection and increased humidity) and the middle and upper troposphere (increased convection and clouds) in the Sahel in September, with a potential important role of wind."* Another sentence has also been added to the conclusion: *"These decreases in surface temperature are associated with changes in clouds, wind circulation and atmospheric stability, varying from month to month and from region to region."*

30 I think the uncertainty of the links connecting the activation of longwave aerosol scattering and changes in the model should be acknowledged more clearly in the conclusion, together with the limitations already discussed. In particular, some of the observed effects might be model-specific.

35 To take account of these uncertainties, the following sentence has been added to the conclusion: *"The results presented here may also be model-dependent, and further studies using different climate models would be valuable to assess the robustness of these findings."*