

Interactive comment on “The role of aerosol-cloud interactions in linking anthropogenic pollution over southern West Africa and dust emission over the Sahara” by Laurent Menut et al.

Anonymous Referee #2

Received and published: 4 October 2019

The paper entitled “The role of aerosol-cloud interactions in linking anthropogenic pollution over southern West Africa and dust emission over the Sahara” studies the aerosol direct and indirect effects over West Africa during the DACCIWA in July 2016 using the WRF-CHIMERE coupled model. A reference case is compared against two scenarios with halved emissions of mineral dust and anthropogenic sources, obtaining significant results, even though the impact of the direct and indirect effects is moderate. The paper is a significant contribution to the field and the obtained results are of interest. The paper is well written and the structure is clear. My recommendation is publication after minor revisions.

C1

General comments:

The results section is slightly descriptive and a deeper discussion of the results is missing at some points, especially in Section 4 where the modelled data are compared to observations. How does the differences observed here between the model and the data affect the results of the study? What are the uncertainties? Additionally, it is necessary to revise the whole manuscript for typos, paying special attention to the references format.

Specific comments:

Page 6, Line 160: Given the importance of biomass burning aerosols, as explained by the authors in the introduction, why is it not included in the analysis?

Page 9, Line 240: Is there any possible explanation for this bias in Savè?

Figure 8: The crosses and wind arrows are difficult to distinguish. Please improve the readability of the figure.

Page 21, line 414: Could you provide a quantitative estimate of this percentage?

Page 21, lines 414-415: “Furthermore, the direct and indirect effects appear to be increasing with time.” It is not clear to me how you reach to this conclusion. Please, explain.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2019-658>, 2019.

C2