

Review of the Revised Manuscript

“Downward cloud venting of the Central African biomass burning plume during the West Africa summer monsoon” by Dajuma et al. acp-2019-617

We thank the Editor for the time and effort to edit our manuscript in such a thoughtful way. Please find below our answer to the Editor’s final comment.

I have several very minor comments remaining regarding Figure 12 that should be addressed. Once these changes have been made, I intend to accept your manuscript for publication. The concerns are related to Figure 12. Firstly, your caption does not adequately describe the various components of Figure 12, including what the different dotted and solid lines are supposed to indicate, what the yellow arrow indicates, what the 'X' within the circle (flow into the page) actually indicates, the circular arrows and so on. Clearly while most of these could be correctly guessed, and while some of these are addressed in the text, such as the yellow arrow, your captions should include all of the symbols used within the figure. Then, I do have some concerns that in your middle panel you have downdrafts without any precipitation. Can downdrafts exist without precipitation below cloud base? Yes, they can, and one such mechanism, for example, would be the case in which all of the precipitation fully evaporates just as the downdraft exits cloud base (there are other mechanisms too). However, it is far more likely that there is still some precipitation evident below cloud base. I would therefore recommend that you indicate the presence of light precipitation, especially as you have included the presence of heavy precipitation in the right panel. If you purposefully do not want to indicate the presence of light precipitation, then it would make sense to include a statement in the paper explaining why there is no precipitation and as to which process is responsible for the downdrafts and associated vertical transport into the boundary (as there are a number of processes that could be driving these). In this way, it makes the figure more consistent.

We agree that the caption and figure need more details. Figure 12 has been updated now with light precipitation below cloud base in the middle panel. The caption of Fig. 12 now reads

Figure 12: ... Blue solid (black stippled) arrows indicate downdrafts from below cloud base (cloud edges) of different strengths. Easterly flow at mid-levels is indicated by yellow arrows while the southerly monsoon flow at low levels is marked by yellow circles with crosses. Turbulent diffusion is indicated by black swirls.