

RESPONSES TO REFEREE 1

First of all, the authors acknowledge referee 1 and the editor for the time spent to review this manuscript and also for their constructive comments. The modifications are indicated by red bold fonts in the revised manuscript.

REFEREE 1

Page 2

Line 16: "modulate" -> "modulating". Insert "by" before "up to"?

Line 20: "aerosols" -> "aerosol"

Authors: As suggested by the referee 1, it was corrected in the revised manuscript

REFEREE 1

Page 3

Line 1: Two commas in a row

Line 5: Perhaps add "typically" or "usually" before "considered"?

Line 30: "aerosols" -> "aerosol"

Authors: As suggested by the referee 1, it was corrected in the revised manuscript

REFEREE 1

Page 4

Line 15/16: There were many more papers than those cited here that discussed. Suggest you add Schwartz et al., 2020 (doi:10.1029/2020gl090831), Santee et al., 2022 (doi:10.1029/2021gl096270), Solomon et al., 2023 (doi:10.1038/s41586-022-05683-0) among others.

Authors: We thank the referee 1 for these relevant references. These references have been included in the revised manuscript

REFEREE 1

Page 5

Line 33: "Aerosols" -> "Aerosol"

Authors: As suggested by the referee 1, it was corrected in the revised manuscript

REFEREE 1

Page 6

Line 18: "needed" -> "necessary"

Line 19: "The background profile" -> "This profile"

Authors: As suggested by the referee 1, it was corrected in the revised manuscript

REFEREE 1

Page 10

Line 11: It looks like you give the URL for an older version of the MLS document, describing v4.2. Update

Authors: The referee 1 is right. The right URL has been included in the revised manuscript.

Line 19: I'm not sure about "physico-chemical" perhaps simply "microphysical and chemical"?

Authors: It was corrected in the revised manuscript

REFEREE 1

Page 11

Line 1: "on" -> "to"

Line 9: "taking" -> "taken". Also suggest deleting "Then"

Line 22: "discuss on" -> "evaluate"

Authors: It was corrected in the revised manuscript.

REFEREE 1

Page 16

Line 31: "worthwhile" -> "worth"

Authors: It was corrected in the revised manuscript.

REFEREE 1

Page 18:

Line 24: Add comma after "significant" and delete the "and" that follows. Also insert "The" or "A" before "Time-averaged"

Authors: As suggested by the referee 1, it was corrected in the revised manuscript

REFEREE 1

Page 19

Line 7: Anomalies from what? Is it some kind of map, or is it a broader regional average. Specifically, if it's a map, does that mean that a region with an anomaly near zero could still be convective, reflecting a climatological situation? Why not just show OLR rather than anomalies?

Interesting comment from the reviewer as its stated in line 7 the anomalies are of OLR and there is a map: fig 10c, so I don't understand the question.

Authors: This figure depicts a time-average map of the OLR anomalies from 16th and 29th January 2020. The daily anomalies are calculated as a relative difference by considering the standard deviation of the monthly background means as the reference values. The background period is defined as the period ranging from January 2010 to December 2018. The daily maps of OLR anomalies are averaged for the period ranging from 16th to 29th January 2020. The use of the OLR anomalies is helpful to evaluate the significance of the convective activity during this period by comparing it to background values.

Line 12: Why is this not shown? You have the space for it – it's a 2x2 figure with nothing in the bottom right corner.

Authors: We think that the OLR anomalies should be sufficient. Furthermore, the average position of the ITCZ was added to Figure 10 in the revised manuscript. The ITCZ has its widest seasonal shift in the Indian Ocean region. Ultimately, what is making the most sense, is where were the convection hotspots and to what extent they are a capable of lifting BB plume in the UTLS

REFEREE 1

Page 21

Line 17: Delete ", only"

Line 18: Delete comma after "fires)"

Line 19: Add "information" after "inventory"

Authors: As suggested by the referee 1, it was corrected in the revised manuscript

REFEREE 1

Line 25: "A possible" -> "One possible"

Line 26: Delete "due to"

Authors: As suggested by the referee 1, it was corrected in the revised manuscript

Line 27: Is "address" the right word? Might "test" be better? Also, in the remainder of this sentence, perhaps remind us what the original model approach had been.

Authors: This point was clarified in the revised manuscript. Furthermore, the approach was reminded in the revised manuscript.

REFEREE 1

Page 22

Line 3: "2" -> "two"

Line 7: "on" -> "to"

Line 10: "have" -> "has"

Line 27/28: Delete "One can observe that"

Line 28: Comma needed after "Africa"

Line 29: "21th" -> "21st"

Line 32: Perhaps add "a process" before "taken into account"

Authors: It was corrected in the revised manuscript

REFEREE 1

Page 23

Line 4: "to trigger" -> "for triggering"

Line 23: "modulate" -> "modulation of"

Line 25: "suggested" -> "suggests". Add comma after "that"

Authors: It was corrected in the revised manuscript

REFEREE 1

Page 24

Line 20: "by the funding of" -> "by funding from"

Authors: It was corrected in the revised manuscript

REFEREE 1

References: There is inconsistency between the citations here. Some have journals in italics, others do not. Also, Clain et al., is missing a journal, Hu et al., Ohneiser et al., and Pizzo et al., seem to be printed in a grey font.

Authors: This point was clarified in the revised manuscript.

REFEREE 1

Figures: I suggest you remove all the black boxes around multi-panel figures. They are overly distracting (and may not be allowed by the journal in any case).

Authors: We understand the point of view of the referee 1. As the consequence, the black boxes around multi-panel figures were removed in the revised manuscript.

REFEREE 1

Figure 1: The "axes" in 1a are way too thick. Fonts in 1b are way too small

Authors: The style of axes in 1a and 1b was homogenized in the revised manuscript.

REFEREE 1

Figure 2 caption:

Line 3: "on" -> "to"

Line 4: Add comma after "(2013)" and replace "that" with "which".

Line 5: "on" -> "of". Add comma after "properties". Change "Namely" to "Specifically"

Authors: It was corrected in the revised manuscript.

REFEREE 1

Figure 3 caption, line 3: Insert "the" before "SKYNET"?

Authors: It was included in the revised manuscript.

REFEREE 1

Figure 7: Overly tight/cramped layout. Make fonts in color bars bigger (perhaps only label every other level)

Authors: This figure was re-plotted in the revised manuscript.

REFEREE 1

Figure 8: White points and black crosses too hard to see. Make them bigger?

Authors: This figure was re-plotted in the revised manuscript.

REFEREE 1

Figure 12: Delete "in" in caption line 4

Authors: It was corrected in the revised manuscript.

REFEREE 1

Figure 13, line 5: Call it "OMPS-LP", rather than just OMPS?

Authors: It was corrected in the revised manuscript.