

We thank the three reviewers for their valuable and constructive suggestions, which led to significant improvements of the quality of our manuscript. Below we detailed how their comments are addressed in the revised version of the manuscript. The corrections made in the manuscript and cited in this document appear in italic.

Reviewer #1

Page 1, Line 3: Delete "Moreover."

This has been corrected

Page 1, Line 24: "Main" not "mains."

This has been corrected

Page 10: I still think it would be useful to have an equation 2 with the values plugged into equation 1 — it's really hard to intuitively see what's happening in equation 1 but the formula is quite simple and easy to understand once the ones/zeros are plugged in.

We thank the reviewer for his suggestion to add an equation 2 with the values plugged into equation 1. The simplified equation has been added in the new version.

Report#2

Reviewer #3

Review for “Low level stratiform clouds and dynamical features observed within the Southern West African Monsoon” by Cheikh Dione et al.

The authors have engaged very well with the reviewers’ comments and the manuscript is now in a state that is nearly ready for publication. Two figures should still be adjusted to improve legibility, but these are minor (technical) corrections.

Figure 4:

Considering this figure in the context of the manuscript, the barbs are not essential to this figure. It appears that wind direction is relevant for the identification of the NLLJ, as described on page 9 lines 17-18, but this is not referred to again when discussing figure 4. The barbs therefore clutter the figure while their information is summarized by the black vertical line for NLLJ onset.

The panels also contain an unnecessary dashed line at zero height, to separate the coloured figure from the line plot below. I propose the following improvements:

1. Remove the wind barbs. If the authors believe this is essential information for the paper (which is possible, given the barbs inform the NLLJ detection), then they can be included as a separate, supplementary figure. To reiterate, the authors do not mention wind direction in their discussion of Figure 4, so it does not appear essential for this figure.
2. Slightly detach the coloured figure from the line plot below, so that the need for the dashed line is removed. It will allow the y-axis label (Height) to be centered on the coloured figure and allow a separate y-axis (FLF?) for the line graph below.

We thank the reviewer for his suggestion that can help us to improve the readability of Figure 4. We overplotted the wind direction in the figure to show the day-to-day variability of the monsoon flow characteristics and the NLLJ. The wind direction allows to understand the change in wind direction from westerlies to the easterlies above the monsoon flow, and then the minimum wind detected above the NLLJ. However, we agree with the reviewer that the information from the wind barbs isn't described anywhere in the document. Thus we added some comments in the text about the direction especially on the easterly wind. We updated the lower panels of the figure 4 following the suggestions.

Figure 10:

This figure does not require “the mean color of the IR cloud sky camera image” to be included. It is clear from Figure 9 how LLC onset and break are determined from the IR imagery, so the key point of Figure 10 is to show how LLC onset and break vary with NLLJ onset and break. The colours distract from this information.

Also, the black stars are difficult to discern, partly because of the colours, but also because markers are used for the four lines. Please remove the markers (currently squares) for those lines, so that the black stars stand out as the only markers of interest.

We agree with the reviewer that the key point of Figure 10 is showed on figure 9 concerning the LLC

onset and break up time and on the fact that the colors distract from this information. Thus, we decided to modify this Figure following the suggestions of the reviewer. However, for the publication of our manuscript, we prefer the old version of this figure with mean color of the IR cloud sky camera.

Minor comments:

Page 4, line 1-2: Please include the Dee et al. (2011) reference for ERA-Interim:

Dee, D.P., Uppala, S.M., Simmons, A.J., Berrisford, P., Poli, P., Kobayashi, S., Andrae, U., Balmaseda, M.A., Balsamo, G., Bauer, D.P. and Bechtold, P., 2011. The ERA-Interim reanalysis: Configuration and performance of the data assimilation system. Quarterly Journal of the royal meteorological society, 137(656), pp.553-597.

We thank the reviewer for his suggestion. We added the reference in the new version of the manuscript.

Page 8, line 1: “3th” Should this be “1.5 UHF wind profiler gates”?

Here, we means “3rd UHF wind profiler gates”. The UHF wind profiler gates in his low mode are spaced by 75 m (i.e., his vertical resolution). The 3rd gate of this radar correspond with the height 225 m. We corrected in the new version of the manuscript.

Page 9, line 21: “satisfied for at least two hours” – this part of the NLLJ onset criterion is not reflected in Figure 4 and the discussion, e.g. page 11, line 3-4: “the wind vertical profile reaches the threshold of 5 m/s at 2100 UTC, which is the onset time of the NLLJ”. Should the onset time be 2300 UTC, or does the two-hour criterion only apply to wind direction and/or surface sensible heat flux?

We agree with the reviewer and apologize for uncorrected legend of the figure 4. The label of the vertical lines indicating NLLJ onset and MI arrival time were switched. We corrected the caption of Figure 4 in the new version of the manuscript. *“Time-height sections of (color) wind speed and (arrows) direction from the UHF wind profiler, on the nights of (a) 2-3 July, (b) 7-8 July, and (c) 9-10 July 2016. A leftward horizontal arrow indicates an easterly wind, an arrow from bottom to top, a southerly wind. The black open circles indicate the jet core height detected with a maximum wind speed of at least 5 m s^{-1} , the magenta rectangles indicate the height of the minimum wind speed above the jet core and red open circles indicate the monsoon flow depth. The black, blue, and red lines in the lower box indicate the three fuzzy logic functions of the wind speed, temperature and their mean, respectively. The vertical red and black dashed lines indicate the MI arrival time estimated using two different criteria: (1) the $FLF_{mean} > 1$ criterion, and (2) the 302 K isentrope criterion, respectively. The vertical black line indicates the NLLJ onset.”*

Dear Editor,

Please find below some modifications, we made on our manuscript for it improvement. All the modifications appear in blue in the document.

1. pg. 5, l 10: we removed "those structures;"
2. pg. 5, l 23: We replaced "studies" with "*data sets*"
3. pg. 5, l 12: We replaced "Fifteen" with "15"
4. pg. 6, l 13: We added the missing reference in ()?
5. pg. 6, l 20: We replaced "Frequency" with "*frequency*"
6. pg. 12, l 32: We replaced "important" with "*pronounced*"
7. pg. 15, l 17-18: We found that there is a repetition of lines 11-12, e.g. it is doubling, so we reworded the sentence L17-18 as: "*LLSCs always clear up after the NLLJ breakup time.*"
8. pg. 15, l 31-32: We replaced "15" with "11"
9. pg. 16, l 10: We deleted "their"
10. pg. 16, l 8-9. We removed the end of this sentence "because rain and/or density currents were measured at Savè"
11. pg. 16, l 16: We replaced "stoppage" with "*break*"
12. pg. 16, l 16-18: We added at the end of this sentence a new reference (*Babic et al., 2019b*)
13. pg. 16, l 19. We added "*depth*" after 1500-m, i.e. 1500 m.

14. pg. 17, l 2: We reworded this sentence as: *“It also depends on the capability of the turbulent mixing to balance monsoon flow, which slows the front progression inland.”*

15. pg. 17, l 3-4: We broke this sentence in two and reworded the last one as: *“They are sometimes difficult to distinguish.”*