

Atmos. Chem. Phys. Discuss., author comment AC1
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Reply on RC1

Harshvardhan Harshvardhan et al.

Author comment on "Vertical structure of biomass burning aerosol transported over the southeast Atlantic Ocean" by Harshvardhan Harshvardhan et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2021-846-AC1>, 2022

We would like to clear up a point that may not have been missed by the reviewers. No attempt has been made to conduct a true Lagrangian study since an aircraft cruising at 200 m/s cannot follow air parcels traveling at 10 m/s. We are working with the few days of data available in September 2016. The grid box pairs were chosen based on two criteria, (1) traversed by tracks on more than one day, (2) ability to identify upstream/downstream pairs in an AVERAGE sense.

Responding to RC1, based on the meteorology mentioned in Ryoo et al. (2021), the African Easterly Jet-south (AEJ-S) was active throughout the deployment period in September 2021 and was close to climatology. The A-B box pair was at the southern edge of the jet while the C-D pair was further south. Although the strength of the jet varied from day to day, the direction was essentially unchanged, which is why the HYSPLIT frequency plots (Fig. 3) appear as they do. We felt that Fig. 1 along with Fig. 3 would be sufficient to explain the meteorology and choice of grid boxes to compare. Fig. 3 provides the entire history of meteorology at 3.5 km from September 10 to 24. It shows the predominant track of air parcels at 3.5 km for the period of the data. As mentioned earlier, the pairs are only upstream and downstream in an average sense. We will certainly cite Ryoo et al. in the revision and include the above statements.

We are including figures showing MERRA-2 wind fields at 650 hPa from September 10 to 26 (every other day at 1200 UTC) and could, if requested by the reviewing editor, include these as supplementary figures. Our initial thought was that Fig. 1 and Fig. 3 would suffice.

Please also note the supplement to this comment:

<https://acp.copernicus.org/preprints/acp-2021-846/acp-2021-846-AC1-supplement.pdf>