

## ***Interactive comment on “Seasonal provenance changes of present-day Saharan dust collected on- and offshore Mauritania” by Carmen A. Friese et al.***

**Carmen A. Friese et al.**

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Dear Dr. Schwarz,

thank you for the time you spent on assessing the manuscript ‘Seasonal provenance changes of present-day Saharan dust collected on- and offshore Mauritania’ by C. Friese et al.. We received two very good (anonymous) reviews with detailed constructive comments which helped to improve the interpretation as well as structure and clarity of the manuscript. Therefore, we would also like to thank the reviewers for the time they spent on evaluating the manuscript and for elaborating their comments.

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We received a number of similar comments from both reviewers. One dealt with the number of trajectories plotted in order to derive the likely source areas of the individual dust samples. Both reviewers recommended to show additional back trajectory heights because the shown back trajectory at 10 m may be prone to errors and the back trajectory at 4500 m may be higher than the SAL. We chose these back trajectory heights based on the studies of Skonieczny et al. (2013) and Stuu et al. (2005) who used these heights to represent the SAL and the trade-winds respectively. To improve the identification of likely dust sources, we additionally plotted back trajectories at a height of 100 m and 3000 m. This especially improved the determination of the sources of dust transported at low-level.

The reviewers asked for an explanation of ‘the sorting’ of a grain- size distribution and a definition of ‘well-sorted’. The sorting is a word used by sedimentologists to characterize the grain-size distribution: well-sorted refers to similar sizes and thus a low standard deviation of the grain-size distribution. To improve the clarity of the manuscript, we added this explanation to the text. Moreover, both reviewers suggested to exclude the comparison between the atmospheric dust fluxes at the continental site and the dust deposition fluxes at the oceanic sites. This of course makes sense because atmospheric dust fluxes are higher by 2 – orders of magnitude compared to depositional fluxes and therefore it is difficult to execute a quantitative comparison. Following the reviewers’ suggestion, we removed the comparison which further improved the content of the manuscript.

Please find each of the reviewers’ individual comments and our revisions based on the reviewers’ comments in the attached supplements as well as in the revised manuscript. The reviewer’s comments are given with black normal text and our reply to the comments are given with black italic text. We used different colours for the revisions in the manuscript in response to the respective reviewer (referee #1 = red, referee #2 = blue).

Thanks again for your time and we look forward to hearing from you.

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On behalf of all co-authors, yours sincerely,

Dr. Carmen Friese

Please also note the supplement to this comment:

<http://www.atmos-chem-phys-discuss.net/acp-2017-131/acp-2017-131-AC1-supplement.zip>

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Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-131>, 2017.

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