

Interactive comment on “Long-term study on coarse mode aerosols in the Amazon rain forest with the frequent intrusion of Saharan dust plumes” by Daniel Moran-Zuloaga et al.

Anonymous Referee #1

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General comments

In past the aerosol science has mostly been concentrated on fine particles, but scientists are starting to recognize the importance of the coarse fraction in biogeochemical cycling and also atmospheric processes such as ice nucleation.

The paper synthesizes a large amount of data on coarse particles gathered in the Amazon Tall Tower Observatory.

Large fraction of coarse aerosol in Amazon is of biogenic origin, consisting of fungal spores, bacteria, and plant debris. The manuscript provides a valuable source of information to reduce the large uncertainties that exist in understanding the amount and

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emission fluxes of these particles.

The episodic nature of the transport of Saharan dust has made it challenging to quantify the amounts transported and deposited to Amazon Basin. The manuscript provides a detailed description of the necessary conditions for these transport episodes to occur.

Impressive amount of data has been brought together and analysed in this manuscript. The paper is well written and clearly understandable. I suggest publishing it with minor revisions.

Specific comments

1) Section 2.5, Fig S2 The comparison between the gravimetric and OPS derived aerosol concentrations is made for periods in dry season, where majority of the coarse mode particles is expected to be of primary biogenic origin with densities close to 1g/cm^3 . Would it be possible to compare the OPS derived and gravimetric mass concentrations also for the wet season or specific LRT episodes? Or at least estimate the implications of the densities of both major contributors to the long range transported coarse aerosol - dust and sea salt - being substantially higher than 1g/cm^3 ?

2) Page 15, lines 16-29. Is the precipitation along the back trajectories considered at ground level or 3D? Do you take into account the option of the dust plume transport above the rain clouds followed by downwards mixing?

Technical corrections

Page 3, line 10 – correct to “focused on “

Page 15, line 9 – correct “this study clearly shows”

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-1043>, 2017.

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