

Interactive comment on “Estimates of direct radiative forcing due to aerosols from the MERRA-2 reanalysis over the Amazon region” by Brunna Penna et al.

Anonymous Referee #2

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This study presents clear-sky direct aerosol radiation forcing results for a period of 16 years over the Amazon area. The scientific hypothesis is based on the comparison between MERRA-2 reanalysis data with and without aerosol loading and using two different methods to obtain the direct aerosol radiative forcing (M1 and M2). Although this is an interesting topic I suggest that this manuscript cannot be accepted in ACP at this stage. My main concerns are: (1) It is not clear what is the added value of using method 1. The authors should either elaborate more to show if there is any scientific significance in including M1 results or they should eliminate these results from their study. (2) The authors should provide physically based explanations on the large deviations between different datasets and methods (e.g. in Table 2). (3)

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The authors should state clearly and justify if there is any improvement in aerosol radiative forcing constraints compared to previous relevant studies. (4) The cloud-free radiation estimations presented here are most probably irrelevant when it comes to actual climate change considerations.

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