

Interactive comment on “African Dust Particles over the Western Caribbean Part I: Impact on air quality over the Yucatan Peninsula” by Carolina Ramirez-Romero et al.

Anonymous Referee #1

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General comment This manuscript reports on the identification of African dust transport and their role in impacting air quality in the Caribbean region (Yucatan Peninsula, Mexico). Authors have used multiple observations, including ground level PM₁₀, 2.5 measurement, elemental characteristics of aerosols, radiosonde profiles as well as satellite observation (MODIS) and reanalyses data (HYSPLIT and MEERA-2), to decouple dusty period and normal days. Using these data, they are successful in inferring high mass loading is resulted from the African dust transport rather from local emissions. Authors claim, this is first data on aeolian dust concentration and characteristics reported from this study region. Such studies at regional scale are important towards our understanding of dust transport and their cycling. The paper is well written and I

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recommend publication after addressing concerns stated in my specific comments.

Specific comments: 1. Introduction is too long and exhaustive. Several information is not needed for examples: Line 81-83: CALIPSO discussion is not needed here. There are several (Line 120-140), which can be removed and make it focussed. 2. Line 243-245: How background concentrations are estimated? 3. Line: Line 307-311: these need to be rephrased. Correlation between Ozone and PM infers what? Not clear. 4. Line 325: How PWV is estimated both using radiosonde and MEERA-2? A detailed methodology need to be discussed in section 2. 5. Line 375-377: Figure shows $r = 0.72$ for 2017 and $r = 0.70$ for 2018, contrary to stated here. Please check. 6. Conclusion need to be modified significantly. Statements related to health impacts are highly speculative and cannot be stated in the conclusion. Line 384-394 can be removed or can be stated in introduction. I suggest Authors to highlight outcome of their study.

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