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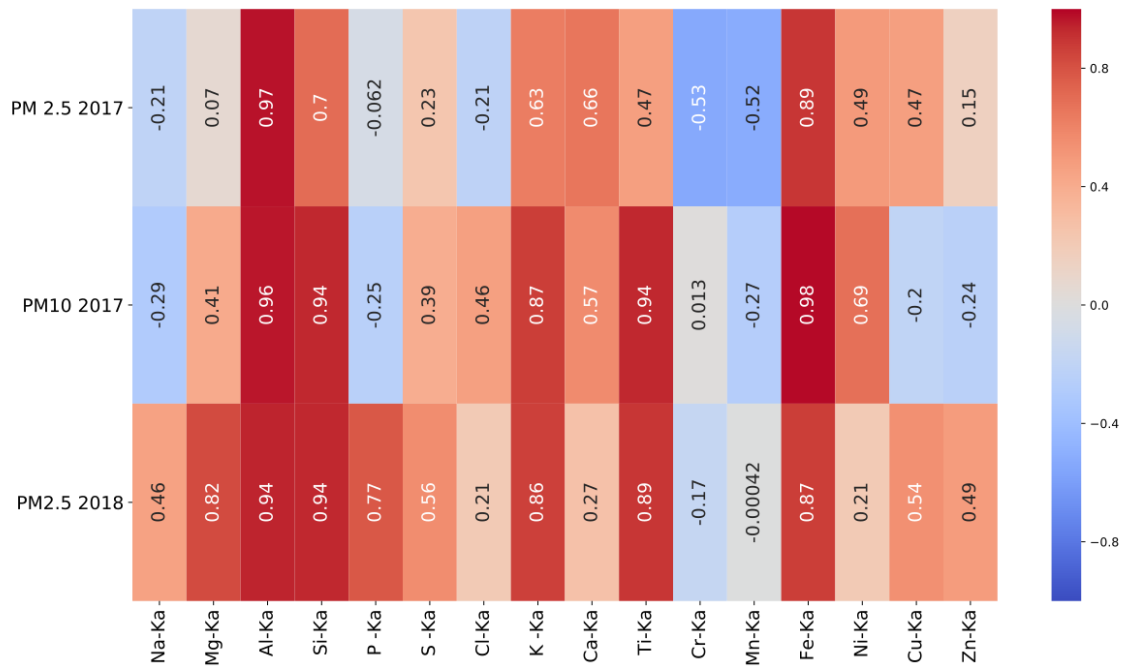
*Supplement of*

## **African dust particles over the western Caribbean – Part I: Impact on air quality over the Yucatán Peninsula**

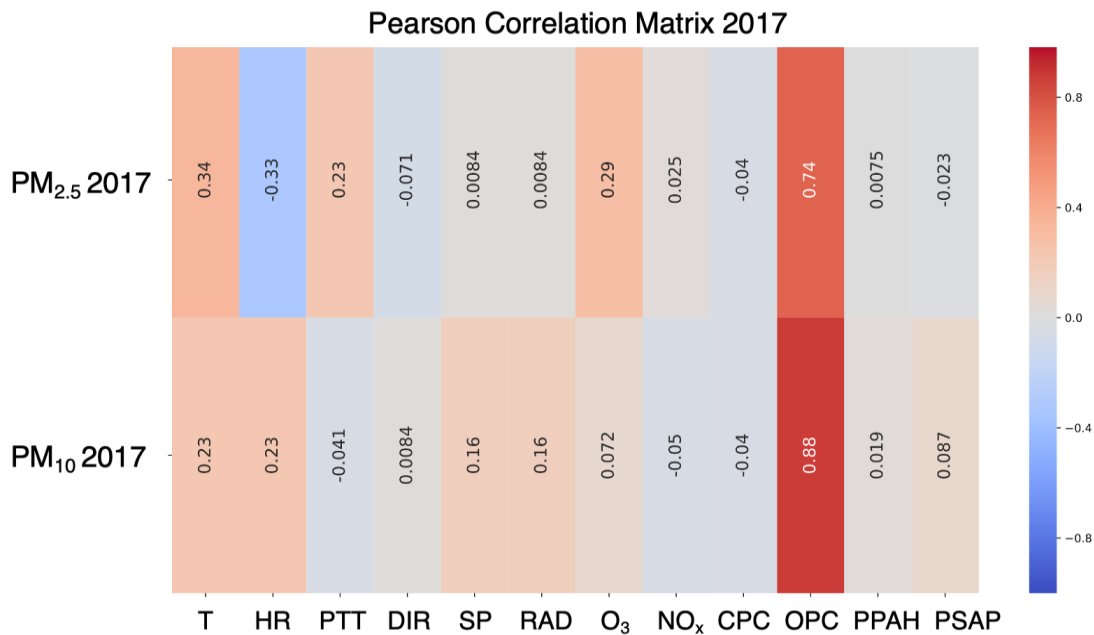
**Carolina Ramí et al.**

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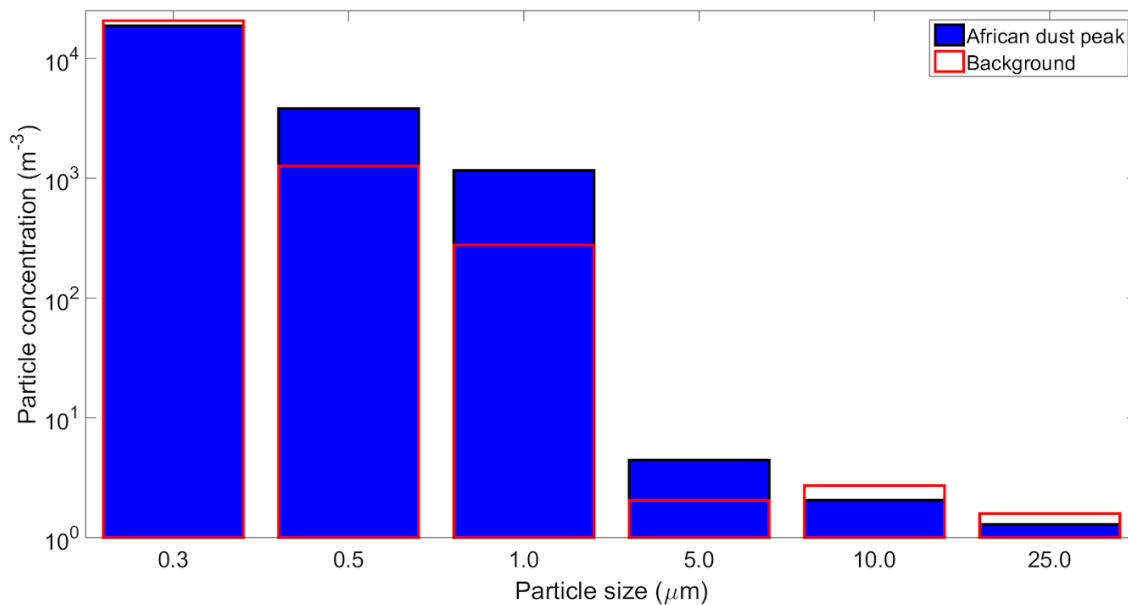
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**Figure S1.** Correlation coefficients between  $PM_{2.5}$  and  $PM_{10}$  with each of the 16 elements analyzed by X-ray fluorescence for both field campaigns.

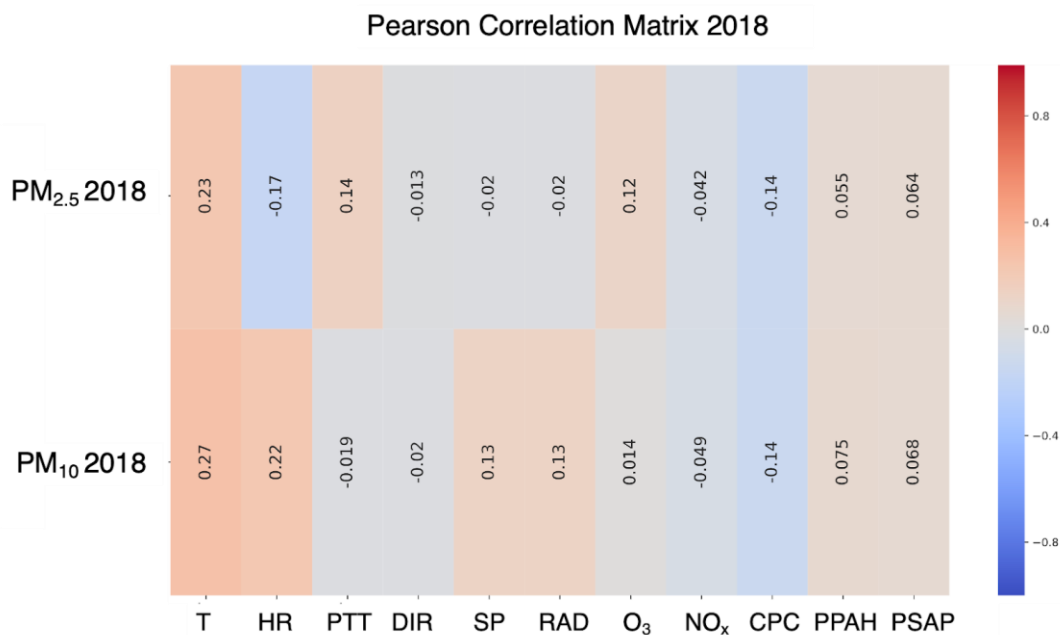


5 **Figure S2.** Correlation coefficients between  $PM_{2.5}$  and  $PM_{10}$  with other measured variables for 2017. T, RH, PTT, DIR, SP, RAD, O<sub>3</sub>, NO<sub>x</sub>, CPC, OPC, PPAH, and PSAP refers to temperature, relative humidity, precipitation, wind direction, wind speed, solar radiation, ozone concentration, nitrogen oxides concentration, total particle concentration (>30 nm), “coarse” particle concentration (>500 nm), particle-bound polycyclic aromatic hydrocarbons concentration, and black carbon content, respectively.



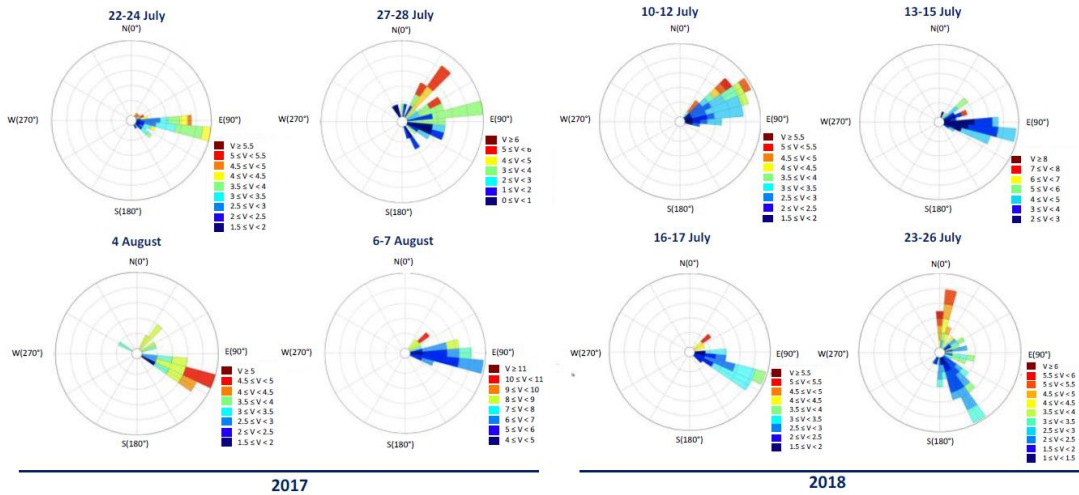
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**Figure S3.** Particle size distribution before (red) and after (blue) the arrival of the African dust for the peak observed between July 22 and 24, 2017.



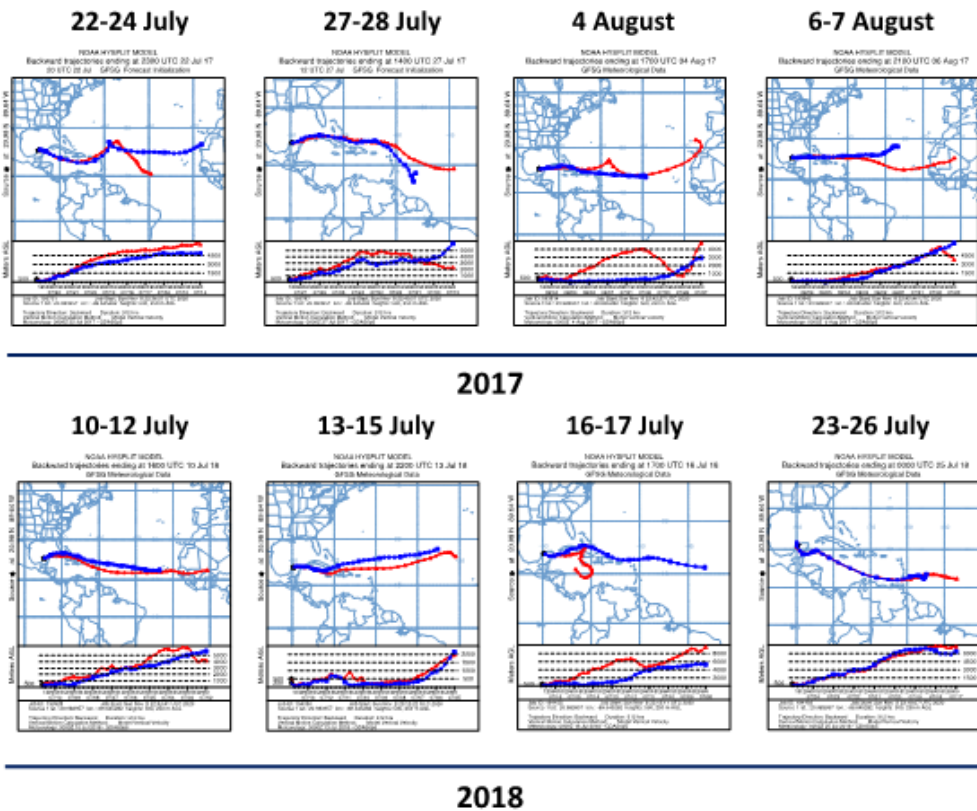
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**Figure S4.** Correlation coefficients between PM<sub>2.5</sub> and PM<sub>10</sub> with other measured variables for 2018. T, RH, PTT, DIR, SP, RAD, O<sub>3</sub>, NO<sub>x</sub>, CPC, PPAH, and PSAP refers to temperature, relative humidity, precipitation, wind direction, wind speed, solar radiation, ozone concentration, nitrogen oxides concentration, total particle concentration (>30 nm), particle-bound polycyclic aromatic hydrocarbons concentration, and black carbon content, respectively.



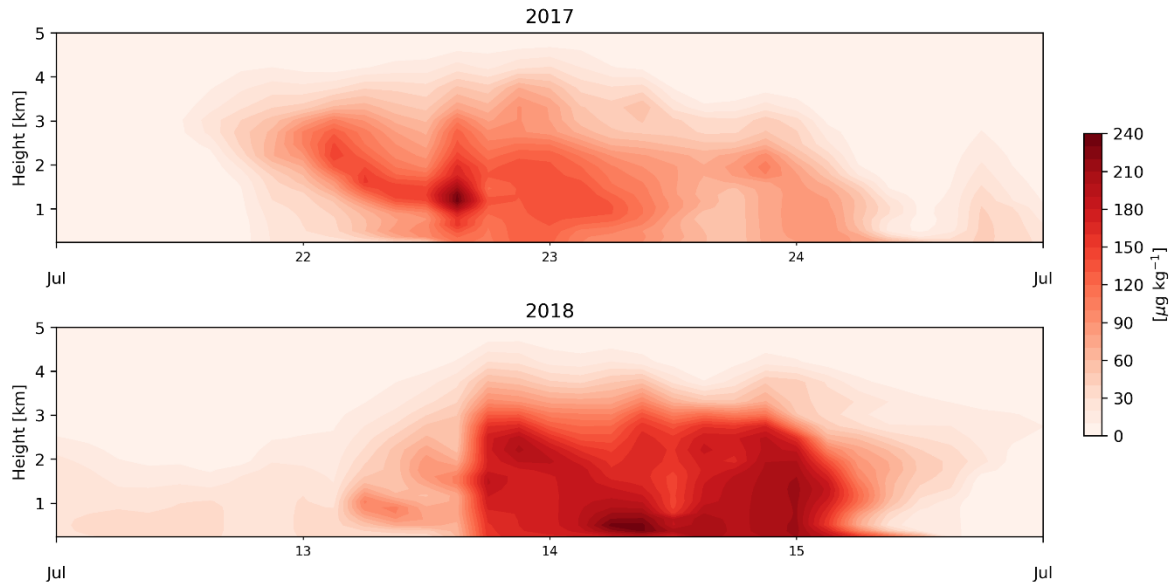
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**Figure S5.** Wind roses of the average speed of the African dust peaks found in left) 2017 and, right) 2018.

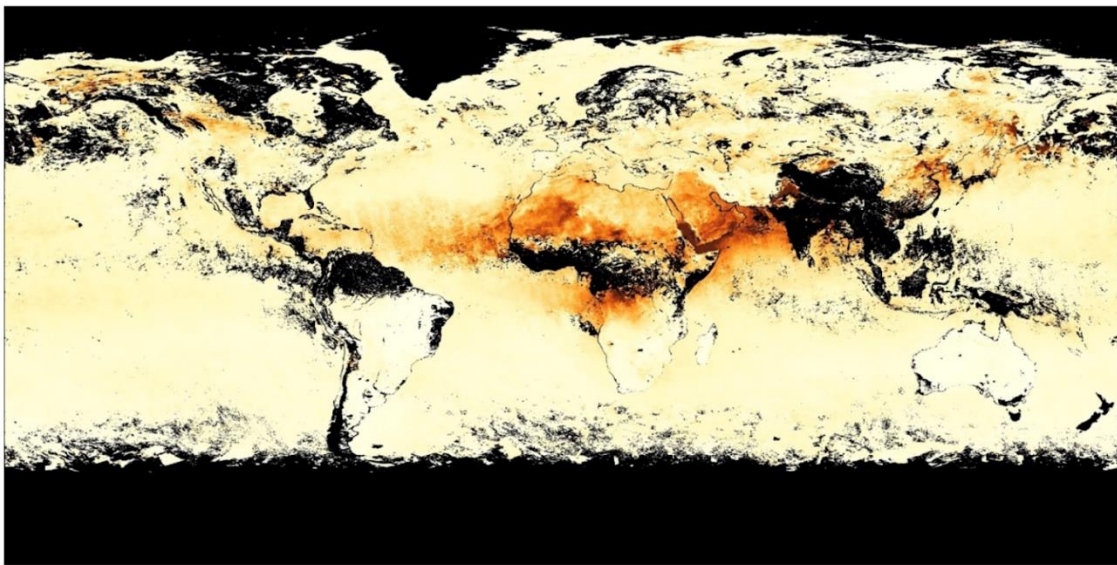


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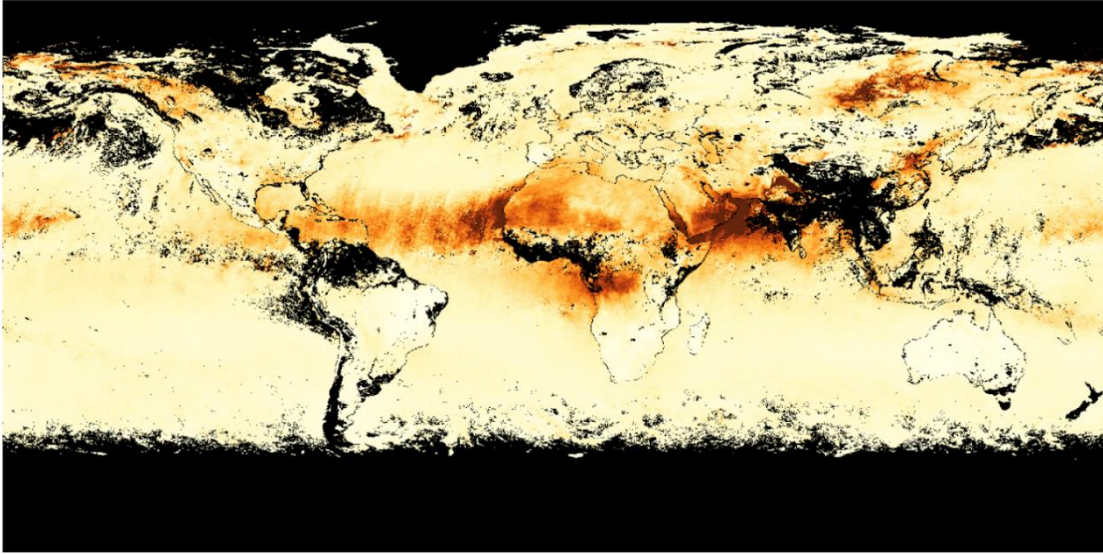
**Figure S6.** HYSPLIT back trajectories run for 13 days at 250 m (blue) and 500 m (red) agl. Top and bottom trajectories are related to the African dust peaks identified for 2017 and 2018, respectively.



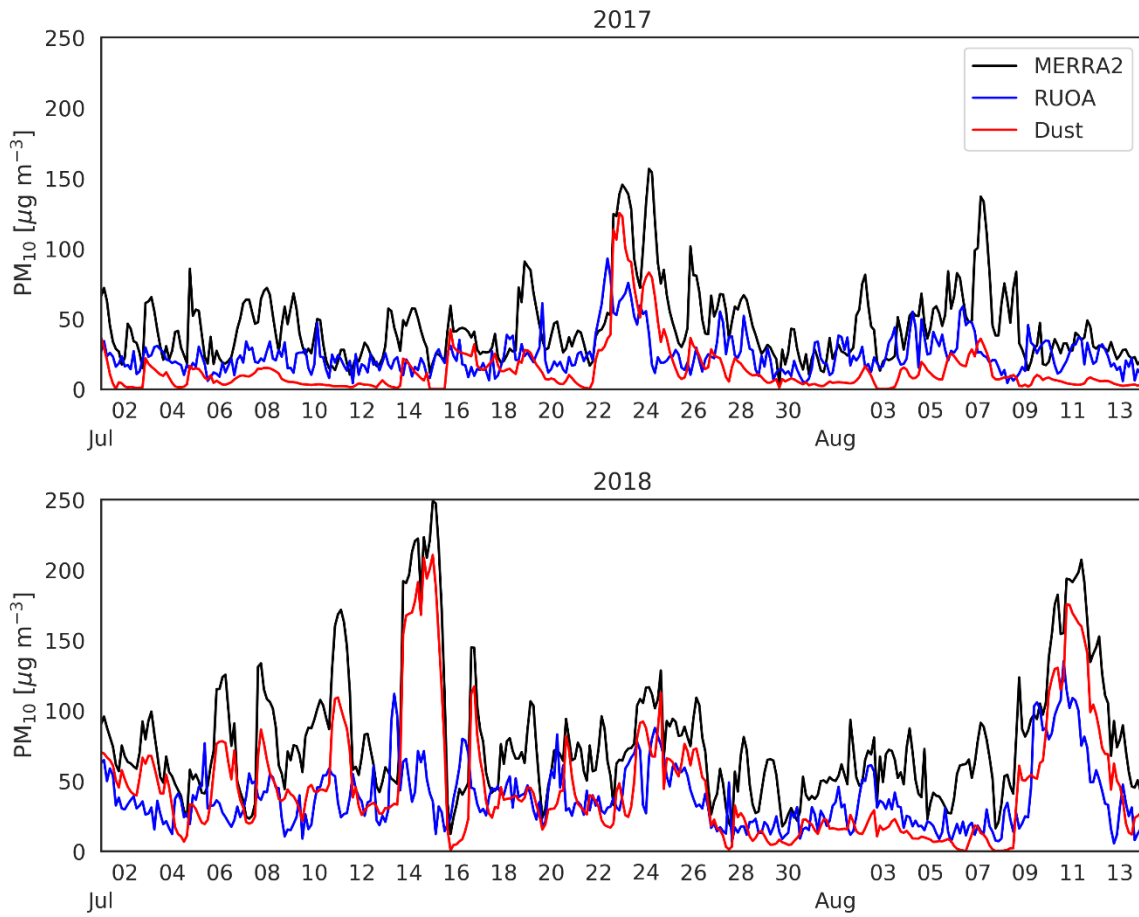
**Figure S7.** 3-hour time series of the vertical profile of the estimated dust content from MERRA-2 for July 21 to 25, 2017 period (above) and the July 12 to 16, 2018 period (below), showing dust arrival events in Mérida.



30 **Figure S8.** Aerosol optical depth (AOD) detected by the MODIS satellite for July 2017.

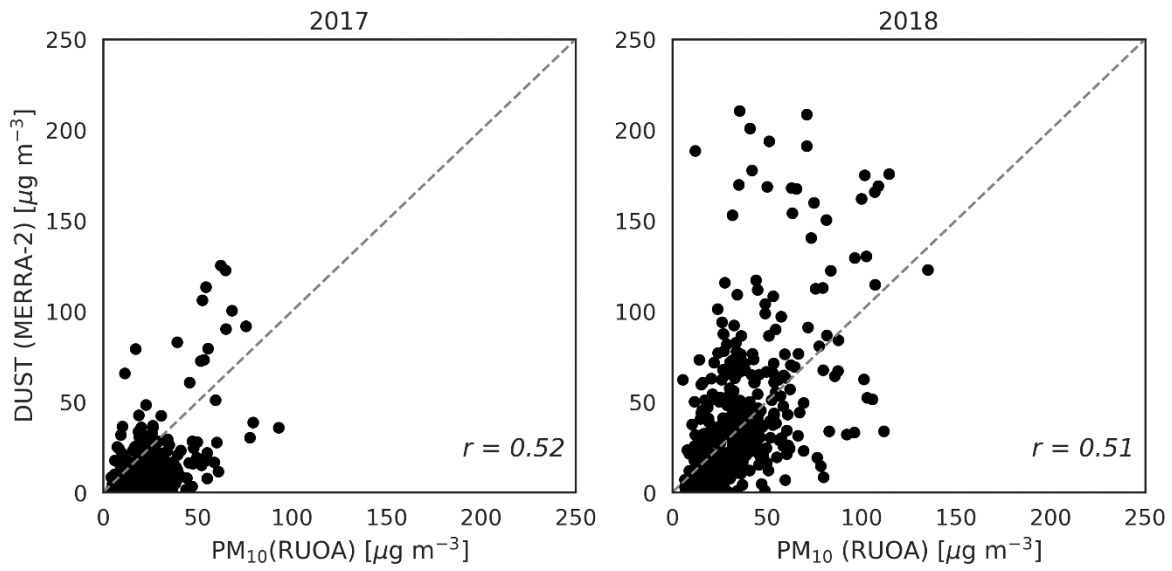


**Figure S9.** Aerosol optical depth (AOD) detected by the MODIS satellite for July 2018.



**Figure S10.** 3 h  $PM_{10}$  estimated from MERRA-2 (black line), measured by the RUOA station (blue line), and estimated dust mixing ratio content of MERRA-2 (red line).

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**Figure S11.** Dispersion plot of 3-H surface dust mixing ratio from MERRA-2 (y-axis) vs. the PM<sub>10</sub> from the RUOA station for the periods shown in Figure 5 for a) 2017 and b) 2018.