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Effect of dust on rainfall over the Red Sea coast based on WRF-Chem model simulations

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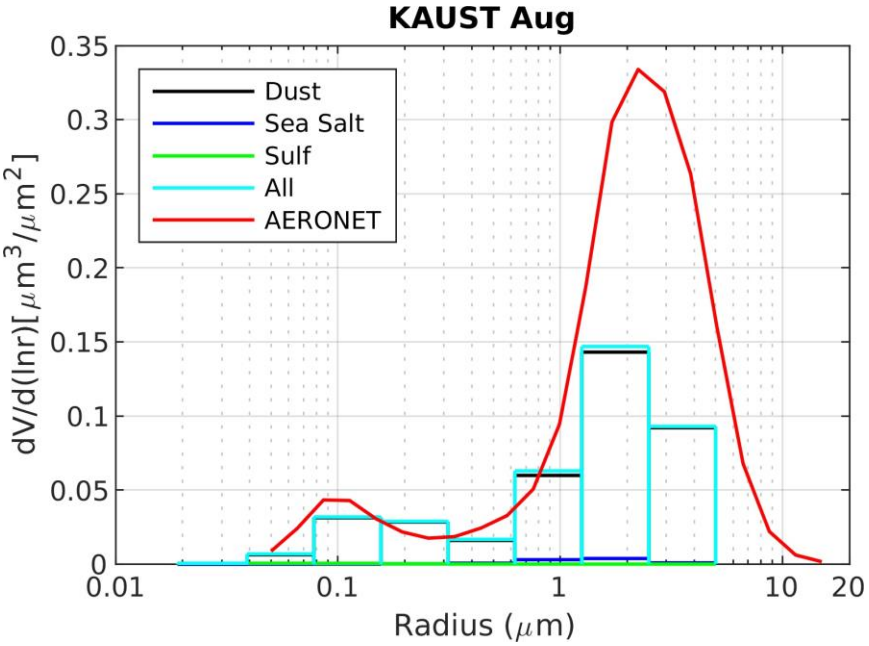

Figure S1. Model-simulated (WRF-Chem) aerosol volume size distribution as compared to AERONET data. Data averaged over the period of August 1-22, 2015 at KAUST.

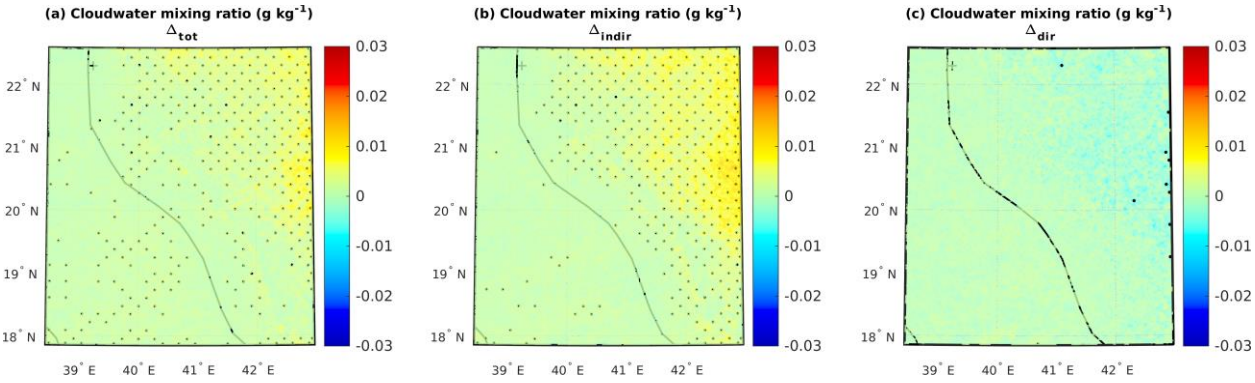

Figure S2. Spatial pattern of cloudwater mixing ratio at a cloud-level height (~570 hPa, ~ 4.6 km) in terms of total, indirect, and direct effects averaged for August 4-31 (2006-2015). Areas where the change is statistically significant at 5% significance level are marked by black dots.

Table S1. Dust emission size fractions* used in WRF-Chem.

Size bins, radius ($\boldsymbol{\mu m}$)	Default fractions	Modified fractions
0.1-1.0	0.1074	0.20
1.0-1.8	0.1012	0.19
1.8-3.0	0.2078	0.32
3.0-6.0	0.4817	0.19
6.0-10.0	0.1019	0.10

*subroutine phys/module_data_gocart_dust.F

Table S2. MOSAIC dust size fractions used in WRF-Chem.

Size bins, radius (μm)	Default Fractions	Modified fractions
0.019-0.039	1.00E-08	1.00E-08
0.039-0.078	1.00E-06	0.01
0.078-0.156	3.00E-04	0.022
0.156-0.312	3.50E-03	0.01
0.312-0.625	0.018	0.008
0.625-1.250	0.070	0.04
1.250-2.500	0.259	0.21
2.500-5.000	0.420	0.42

*Subroutine chem/module_mosaic_addemiss.F