

Supplementary

Persistent and non-negligible aerodynamic entrainment during dust emission: new evidence from field observations and wind tunnel experiments

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Table S1. Statistics of observation plot information

Plots	Land use	Mean wind speed at 1 m	Mean wind profile R^2	Z_0 (m)	Observation scenarios
M01	Crop land	3.54	0.91	0.003	II and IV
M02	Crop land	2.09	0.95	0.006	II and IV
M03	Crop land	2.70	0.91	0.006	II and IV
M04	Shrub land	4.93	0.94	0.008	I, II, III and IV
M05	Crop land	5.88	0.94	0.005	II, III and IV
M06	Crop land	5.41	0.91	0.007	I, II, III, and IV
M07	Crop land	3.93	0.92	0.005	II and IV
M08	Crop land	2.62	0.90	0.017	II and IV
M09	Crop land	6.77	0.89	0.008	I, II, III, and IV
M10	Crop land	6.76	0.93	0.009	I, II, III, and IV
M11	Crop land	4.80	0.89	0.005	I, II, III, and IV
M12	Crop land	4.08	0.91	0.009	II
M13	Bare land	7.93	0.84	0.004	II
M14	Crop land	4.98	0.90	0.006	I, II, III, and IV
M15	Sandy land	6.62	0.91	0.005	I, II, III, and IV
M16	Sandy land	5.52	0.91	0.004	I, II, III, and IV
M17	Bare land	5.40	0.90	0.004	I, II, III, and IV
M18	Sandy land	4.12	0.96	0.010	I, II, III, and IV
S01	Grassland	10.83	0.92	0.036	I and IV
S02	Grassland	8.69	0.93	0.032	II and IV
S03	Grassland	6.10	0.97	0.029	IV
S04	Grassland	4.25	0.93	0.019	IV
S05	Sandy land	7.91	0.94	0.009	I, II, III and IV
S06	Grassland	3.18	0.92	0.053	II and IV
S07	Grassland	8.86	0.92	0.050	I, II and IV
S08	Grassland	5.98	0.91	0.011	II, III and IV
S09	Grassland	7.32	0.92	0.015	IV

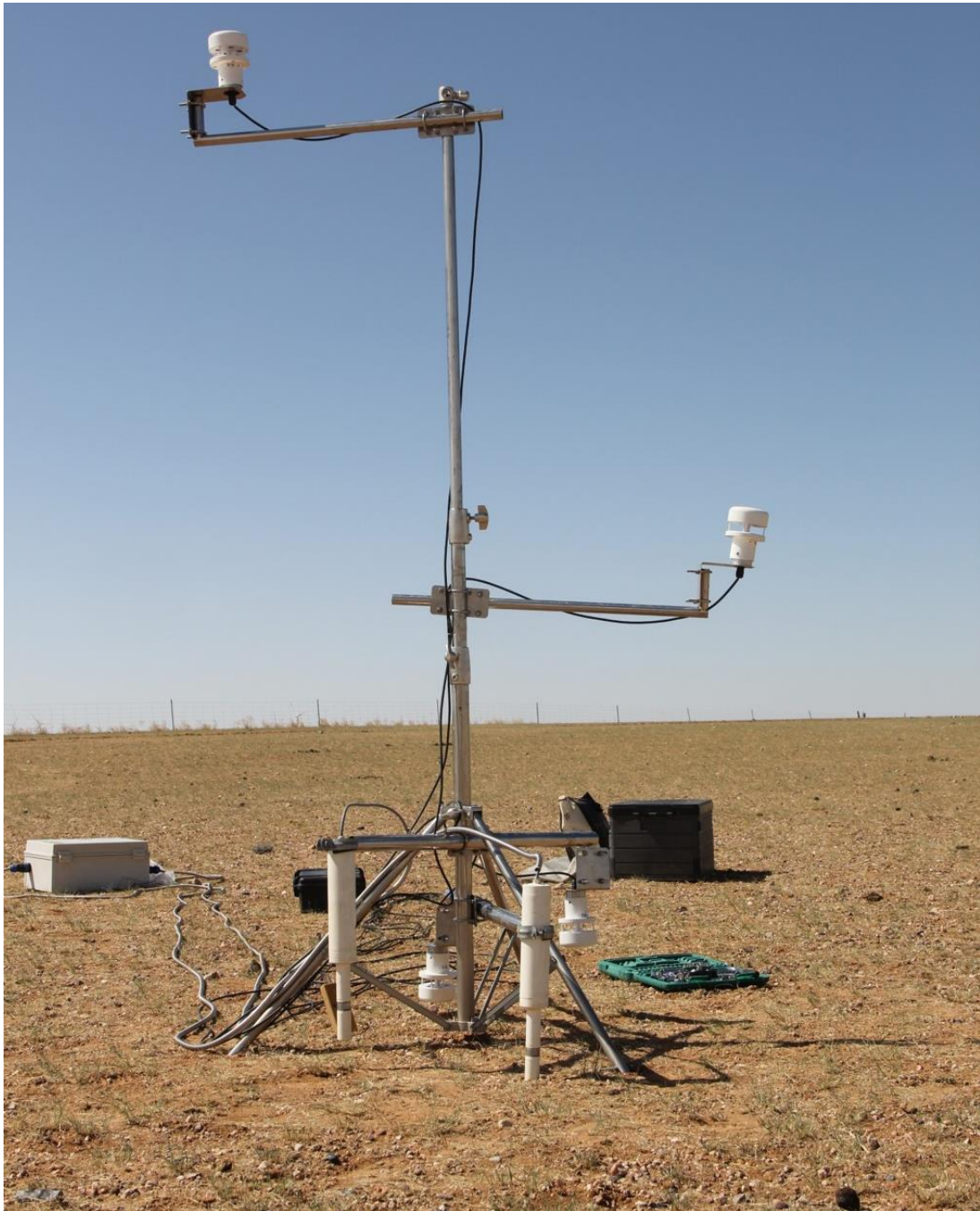


Figure S1. Photograph of the observation plot in the desert steppe of central Inner Mongolia

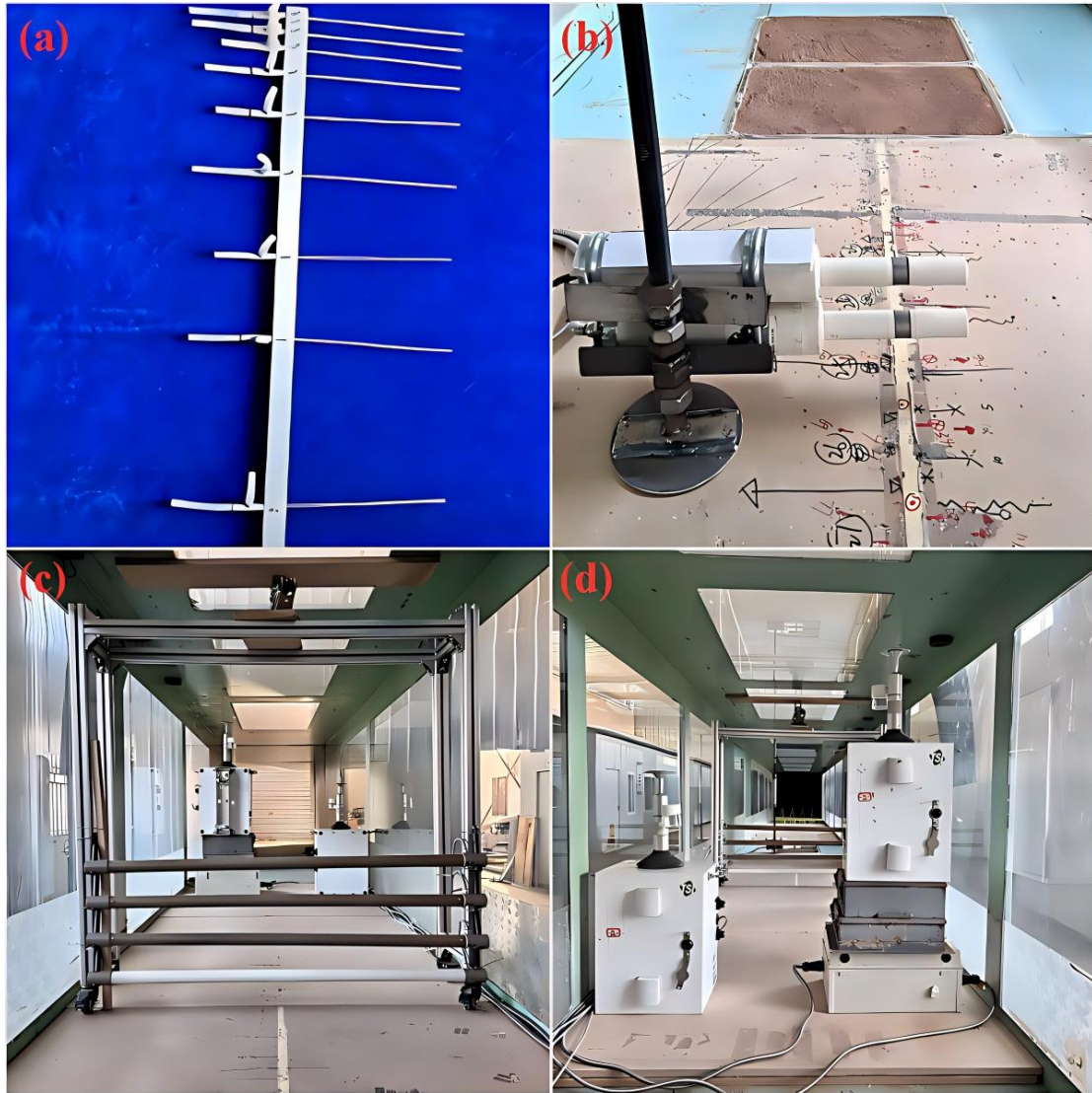


Figure S2. Photograph of the cross-sectional arrangement of the KIMO Pitot tubes, Sensit wind-erosion sensors, SandFlow4 sand-flow sensors and DustTrak aerosol monitors, respectively.

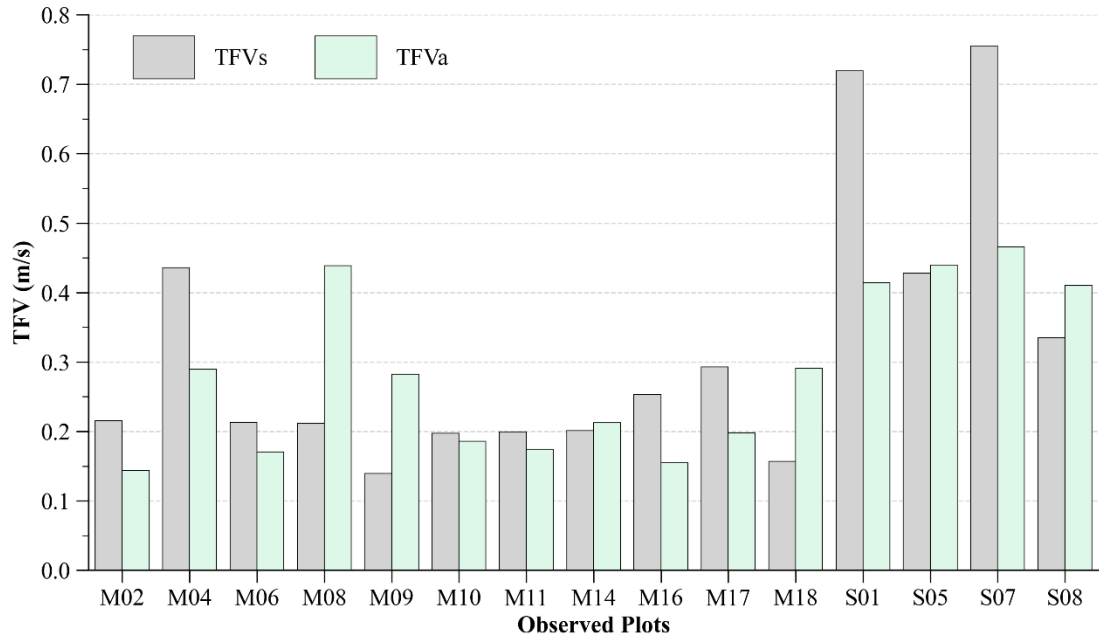


Figure S3. Calculated TFVa and TFVs for sites where both aerodynamic entrainment and saltation bombardment were observed.

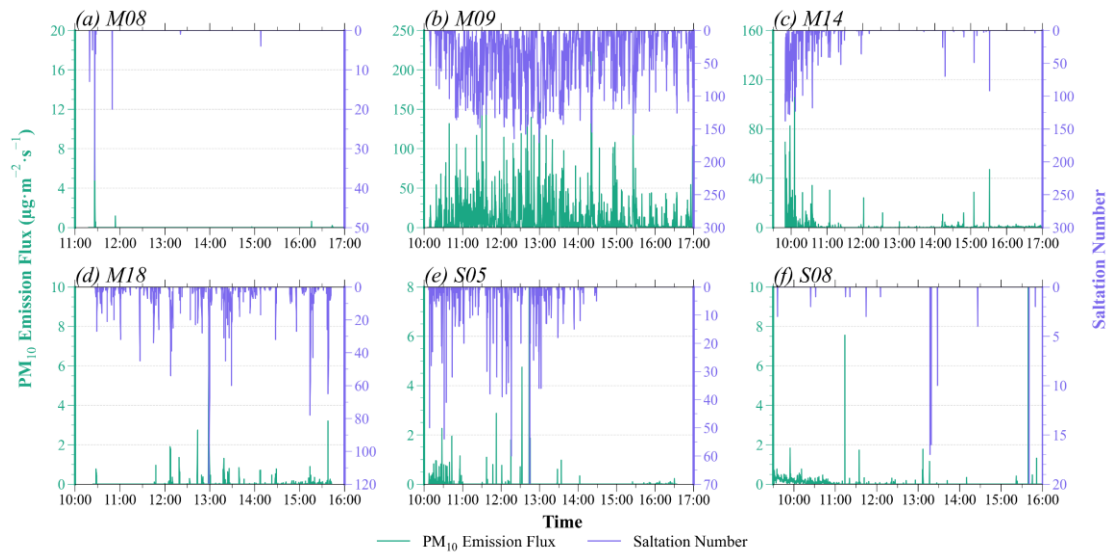


Figure S4. Time-series variations of PM₁₀ emission flux and the corresponding number of saltating particles at plots where TFVa exceeds TFVs.