



Supplement of

Influence of terrestrial and marine air mass on the constituents and intermixing of bioaerosols over a coastal atmosphere

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Table S1 Sample classification and description influenced by different air masses

Group		Samples									
	Date	19-Jan	20-Jan	1-Mar	9-Mar	11-Mar	12-Mar	22-Mar	23-Mar	24-Mar	25-Mar
TE	PM _{2.5}	51.35	124.67	30.58	16.5	65.63	38.21	53.05	77.46	84.42	60.83
	Sample	WH_1	WH_2	WH_7	WH_8	WH_10	WH_11	WH_15	WH_16	WH_17	WH_18
	Date	21-Jan	16-Mar	21-Mar	29-Mar	30-Mar	31-Mar				
MA	PM _{2.5}	7.92	12.38	15.37	25.38	25.42	28.83				
	Sample	WH_3	WH_13	WH_14	WH_22	WH_23	WH_24				
	Date	26-Feb	27-Feb	28-Feb	10-Mar	14-Mar	26-Mar	27-Mar	28-Mar		
MIX	PM _{2.5}	41.12	60.61	41	51.63	36.42	52.58	64.69	48.58		
	Sample	WH_4	WH_5	WH_6	WH_9	WH_12	WH_19	WH_20	WH_21		
PM _{2.5} concentration (µg/m ³)	<35	35-75	75-150	150-250	>250						

TE, terrestrial air mass; MA, marine air mass; MIX, mix air mass.

Table S2 Indicator bacterial and fungal species influenced by different air masses

Group	Bacteria			Fungi		
	TE	MA	MIX	TE	MA	MIX
TE/MA/MIX	Enhydrobacter	Comamonas				
	Cellulosimicrobium	Streptococcus	Enhydrobacter	Cladosporium	Aspergillus	Malassezia
TE/MA	Pleomorphomonas	Novosphingobium	Lactobacillus		Coprinellus	Alternaria
	Lactobacillus	Aerococcus				
TE/MA	Deinococcus	Delftia		Cladosporium		
	Enhydrobacter	Erysipelothrix		Alternaria	Coprinellus	
MA/MIX	Sphingomonas	Chryseobacterium		Malassezia		
			Enhydrobacter			
MA/MIX		Comamonas	Lactobacillus			
		Streptococcus	Cloacibacterium		Aspergillus	Malassezia
MA/MIX		Novosphingobium	Cellulosimicrobium		Coprinellus	Alternaria
		Aerococcus	Pleomorphomonas			
			Deinococcus			
			Sphingomonas			

TE, terrestrial air mass; MA, marine air mass; MIX, mix air mass.

Table S3 Ecological of functions of bacterial and fungal communities influenced by different air masses

Group	Bacteria			Fungi		
	TE	MA	MIX	TE	MA	MIX
TE/MA/MIX	animal_parasites_or_symbionts		aerobic_chemoheterotrophy	Animal Pathogen-Undefined		Animal Pathogen-Undefined Saprotroph
	human_pathogens_al	hydrocarbon_degradati	animal_parasites_or_symbionts	Saprotroph	Dung Saprotroph-Plant Saprotroph-	Animal Pathogen-Endophyte-Plant
	1	human_gut	human_pathogens_a	Endophyte-Plant Pathogen-Wood	Wood Saprotroph	Pathogen-Wood Saprotroph
		mammal_gut	II	Saprotroph		
TE/MA		aromatic_compound_degradation		Animal Pathogen-Endophyte-Lichen Parasite-Plant Pathogen-Wood Saprotroph		
	animal_parasites_or_symbionts	human_gut		Saprotroph	Dung Saprotroph-Plant Saprotroph-	
	human_pathogens_al	mammal_gut		Animal Pathogen-Endophyte-Plant Pathogen-Wood	Wood Saprotroph	
	1	hydrocarbon_degradati		Pathogen-Wood Saprotroph		
	plant_pathogen	aromatic_hydrocarbon_degradation		Saprotroph		
		plastic_degradation		Animal Pathogen-Undefined Saprotroph		

				Animal Pathogen- Undefined Saprotroph
	aerobic_chemoheterotr			Animal Pathogen- Endophyte-Plant
	ophy	hydrocarbon_degra		Pathogen-Wood
MA/MIX	animal_parasites_or_sy	dation	Dung Saprotroph- Plant Saprotroph- Wood Saprotroph	Saprotroph
	mbionts	human_gut		Animal Pathogen- Endophyte-Lichen
	human_pathogens_all	mammal_gut		Parasite-Plant
	nitrate_reduction			Pathogen-Wood Saprotroph

TE, terrestrial air mass; MA, marine air mass; MIX, mix air mass.

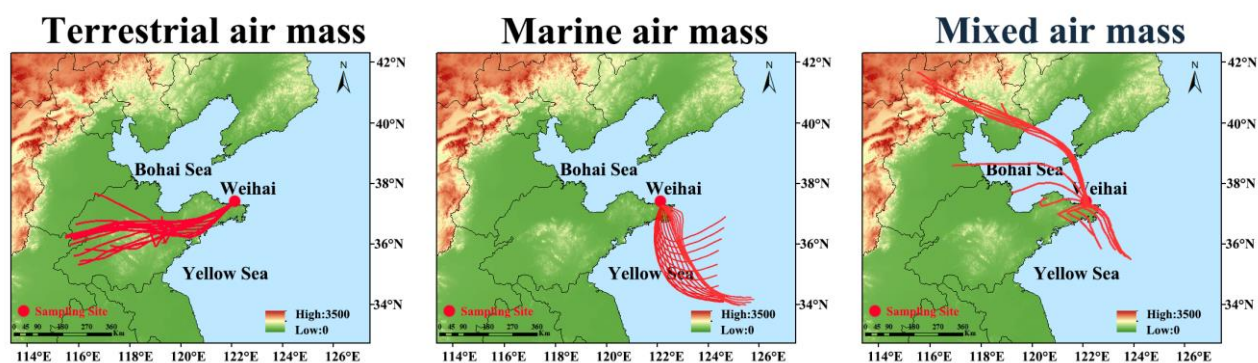


Fig. S1 The Sampling site in the coastal city of Weihai, Northern China, and the typical terrestrial, marine, and mixed air-mass are indicated.

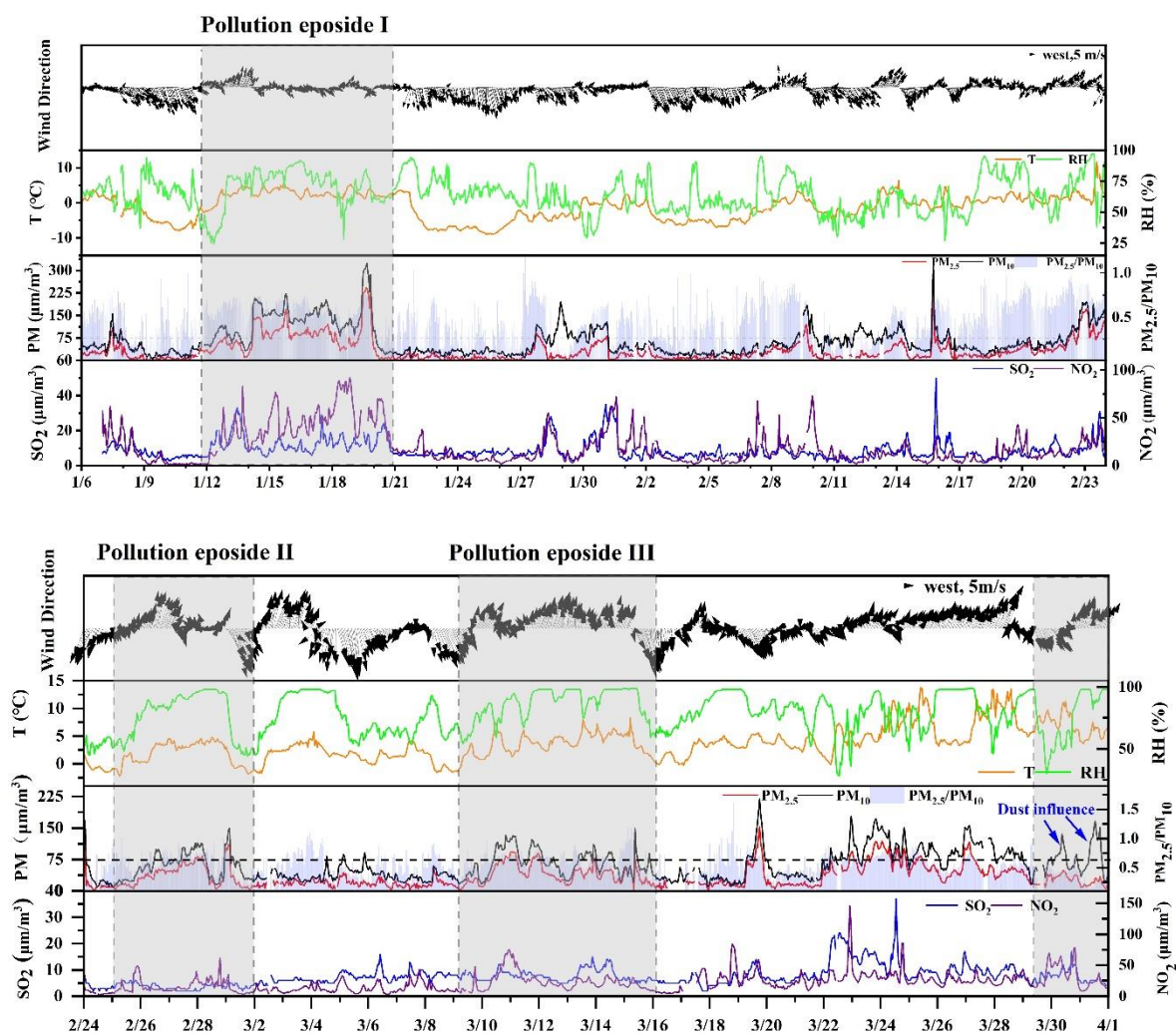


Fig. S2 Air pollutants and meteorological condition of three typical pollution episodes during the sampling period

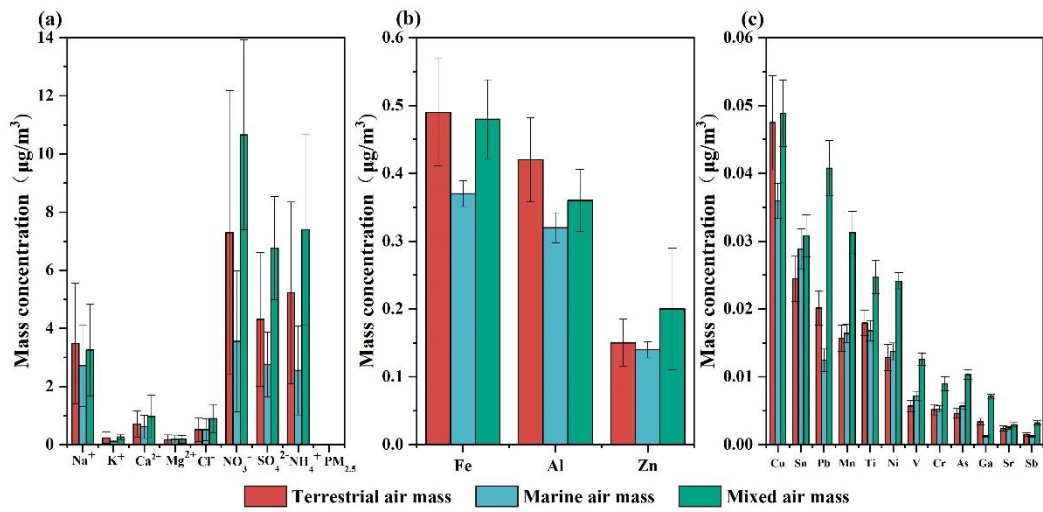


Fig.S3. Water-soluble ions (a) and metal element concentration (b, c) in $\text{PM}_{2.5}$ influenced by terrestrial, marine and mix air mass.

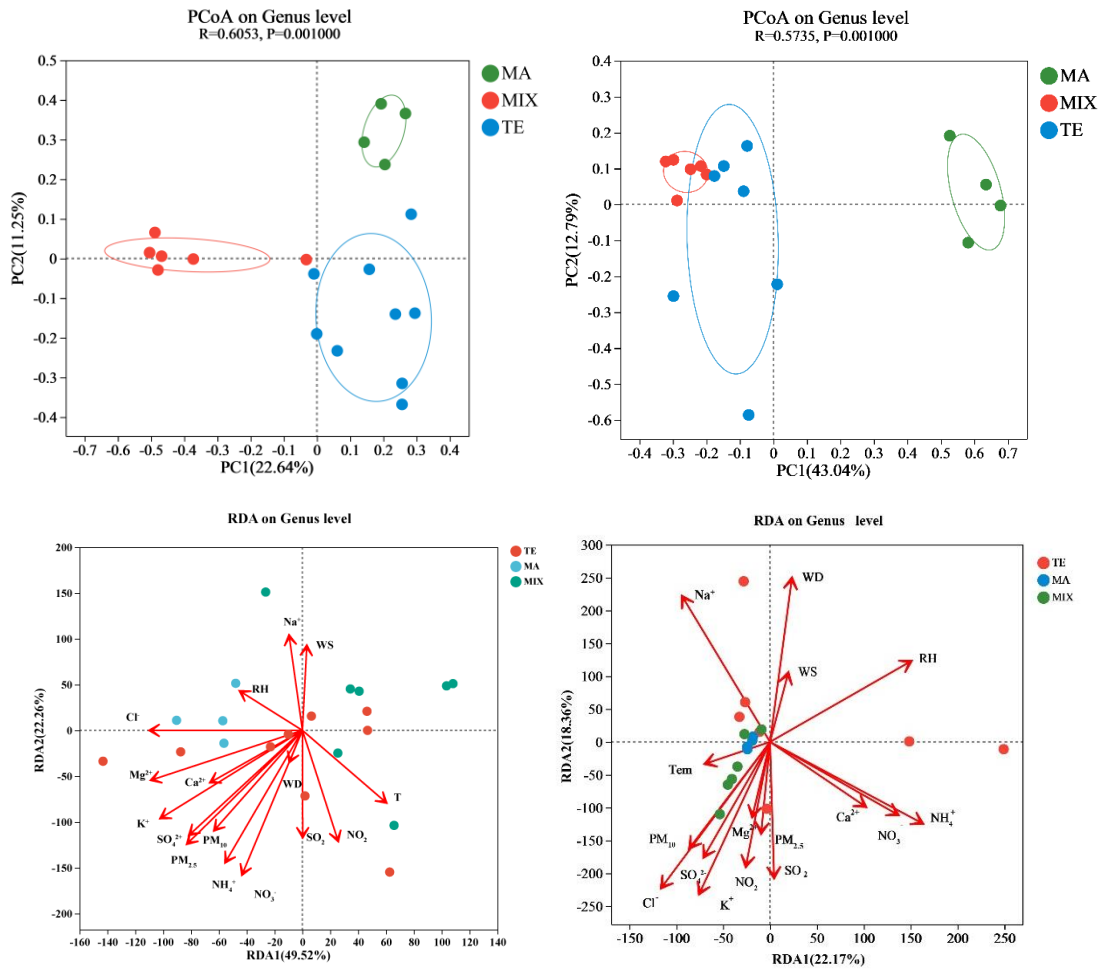
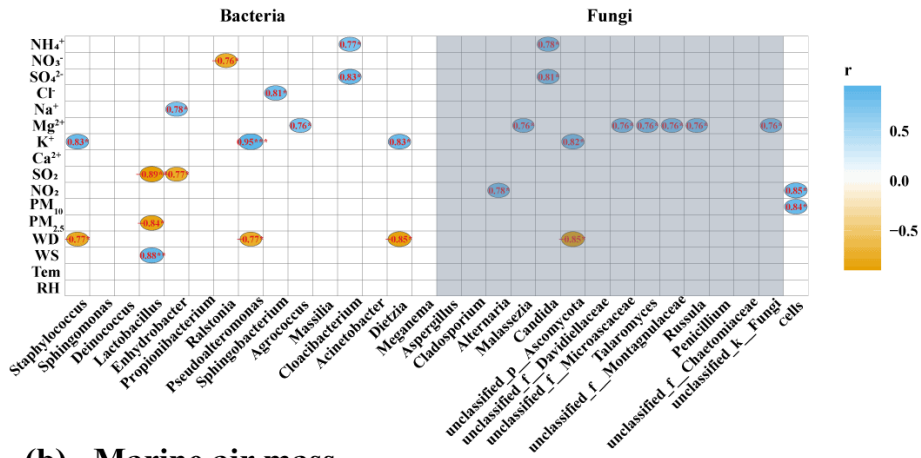
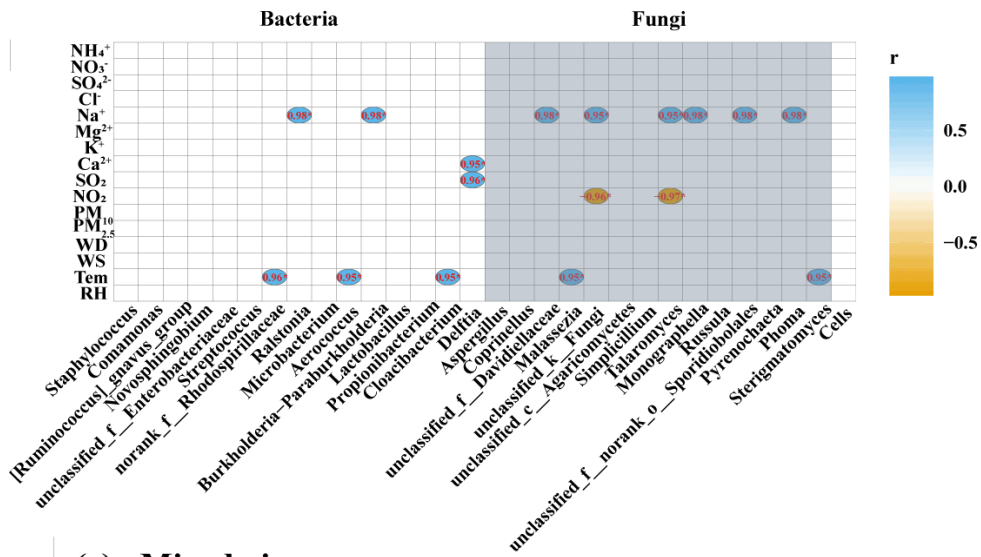


Fig. S4 PCoA and RDA analysis of bacterial and fungal community with environmental parameters.

(a) Terrestrial air mass



(b) Marine air mass



(c) Mixed air mass

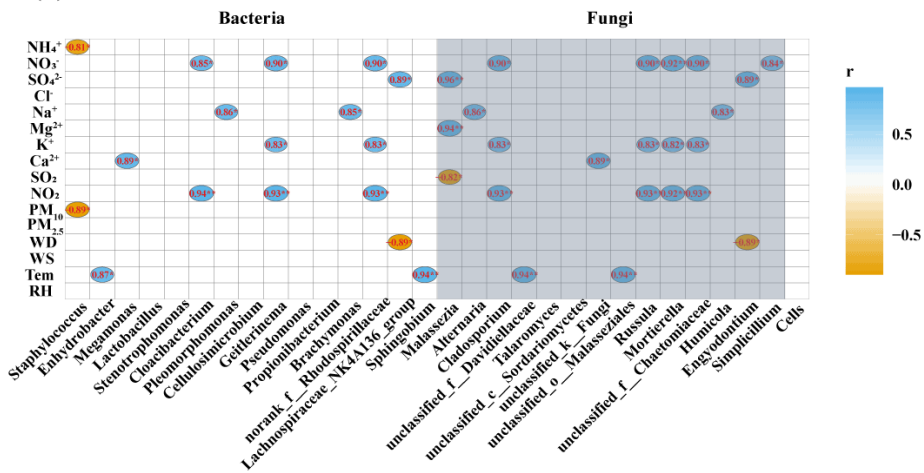


Fig. S5 Relationships between microorganisms and environmental factors under the influence of different air masses, continental air masses (a) marine air masses (b) and mixed air masses (c).