Supplementary Materials: Spatial and Temporal Distribution Characteristics and Source Apportionment of VOCs in Lian-yungang City in 2018

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Table S1. PCA analysis of VOCs at Supersite

VOCs species	Factor				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Ethane				.798	
Propane	.417			.432	
Isobutane	.931				
n-Butane	.899				
Isopentane	.845				
n-Pentane	.930				
n-Hexane			.507		
Ethylene				.833	
Propylene					.895
Isoprene		.629			
Acetylene				.789	
Benzene	.654		.596		
Toluene			.706		
Ethylbenzene		.495	.721		
m/p-Xylene		.655	.643		
Styrene		.727			
1,3,5-Trimethylbenzene		.923			
1,2,4- Trimethylbenzene		.866			
1,2,3- Trimethylbenzene		.727			
Variance contribution（%）	26.82	23.42	11.15	6.85	6.14
Sources	Fuel evaporation	Industrial emissions+plants	Vehicle exhaust	Combustion	Industrial raw materials

Extraction method: principal component analysis; rotation method: maximum variation method with Kaiser normalization; rotation convergence of four iterations.

Table S2. PCA analysis of VOCs at MDI

VOCs species	Factor				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5

VOCs species					
Ethane				.942	
Propane	.509			.442	
Isobutane	.951				
n-Butane	.933				
Isopentane	.850				
n-Pentane	.873				
n-Hexane					.838
Ethylene					
Propylene					.766
Isoprene		.654	.387		
Acetylene				.934	
Benzene	.697		.479		
Toluene	.558		.575		
Ethylbenzene			.880		
m/p-Xylene			.908		
Styrene		.496			
1,3,5-Trimethylbenzene		.960			
1,2,4- Trimethylbenzene		.941			
1,2,3- Trimethylbenzene		.492	.412		
Variance contribution（%）	26.25	21.02	10.98	9.28	7.38
Sources	Fuel evaporation	Industrial emissions+plants	Vehicle exhaust	Combustion	Industrial raw materials

Extraction method: principal component analysis; rotation method: maximum variation method with Kaiser normalization; rotation convergence of 7 iterations.

Table S3. PCA analysis of VOCs at DY

VOCs species	Factor			
	Factor 1	Factor 2	Factor 3	Factor 4
Ethane				
Propane		.932		
Isobutane		.669		.489
n-Butane		.753		.498
Isopentane			.942	
n-Pentane		.733		.641
n-Hexane	.607	.492		
Ethylene			.793	
Propylene	.918			

VOCs species	Factor 1	Factor 2	Factor 3	Factor 4
Isoprene	.800			
Acetylene				.740
Benzene		.950		
Toluene	.942			
Ethylbenzene	.805	.462		
m/p-Xylene	.953			
Styrene		.861		
1,3,5-Trimethylbenzene	.816			
1,2,4- Trimethylbenzene	.909			
1,2,3- Trimethylbenzene	.409	.884		
Variance contribution（%）	39.49	30.59	14.33	7.36
Sources	Industrial emissions+plants	Vehicle exhaust	Combustion	Fuel evaporation

Extraction method: principal component analysis; rotation method: maximum variation method with Kaiser normalization; rotation convergence of 16 iterations.

Table S4. PCA analysis of VOCs at HG

VOCs species	Factor				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Ethane			.812		
Propane		.752			
Isobutane		.801			
n-Butane		.808			
Isopentane		.879			
n-Pentane		.840			
n-Hexane					.870
Ethylene			.876		
Propylene	.432		.439		
Isoprene	.839				
Acetylene			.825		
Benzene		.543		.468	
Toluene	.428			.616	
Ethylbenzene				.795	
m/p-Xylene	.634			.615	
Styrene	.686				
1,3,5-Trimethylbenzene	.874				
1,2,4- Trimethylbenzene	.813				
1,2,3- Trimethylbenzene	.619				

Variance contribution (%)	26.8	21.42	13.34	7.31	6.26
Sources	Industrial emissions+plants	Fuel evaporation	Combustion	Vehicle exhaust	Solvent usage

Extraction method: principal component analysis; rotation method: maximum variation method with Kaiser normalization; rotation convergence of 6 iterations.

Table S5. PCA analysis of VOCs at YHB

| VOCs species | Factor | | | | |
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Ethane				.913	
Propane		.686			.429
Isobutane		.881			
n-Butane		.756	.435		
Isopentane		.843			
n-Pentane		.831			
n-Hexane					.760
Ethylene				.728	
Propylene			.729		
Isoprene	.873				
Acetylene				.816	
Benzene		.577	.527		
Toluene			.768		
Ethylbenzene			.859		
m/p-Xylene	.607		.654		
Styrene	.706				
1,3,5-Trimethylbenzene	.899				
1,2,4- Trimethylbenzene	.814				
1,2,3- Trimethylbenzene	.738				
Variance contribution (%)	27.71	24.14	11.04	7.62	5.89
Sources	Industrial emissions+plants	Fuel evaporation	Vehicle exhaust	Combustion	Solvent usage

Extraction method: principal component analysis; rotation method: maximum variation method with Kaiser normalization; rotation convergence of 6 iterations.