Table S1 Concentrations of each VOC species at DZ and SS sites in Zibo (unit:ppb)

Group	component	Sampling sites	
		DZ	SS
Alkanes	ethane	6.47	6.14
	propane	6.48	8.97
	isobutane	0.74	0.68
	butane	1.30	1.19
	isopentane	1.23	1.72
	pentane	1.31	2.19
	cyclohexane	0.301	0.70
	n-hexane	1.17	1.22
	2,3-dimethylbutane	0.22	0.13
	3-methylpentane	0.19	0.11
	methylcyclohexane	0.21	0.89
	2,4-dimethylpentane	0.01	0.006
	heptane	0.02	0.17
	2,3,4-trimethylpentane	0.096	0.09
	3-methylheptane	0.074	0.07
	octane	0.299	0.29
	decane	0.22	0.22
	undecane	0.97	0.97
	dodecane	0.88	1.03
Alkenes	ethylene	3.85	3.21
	propene	1.49	5.8
	1,3-butadiene	1.82	1.28
	1-butene	0.41	0.83
	2-butene	0.069	0.05
	isoprene	0.15	0.15
	1-pentene	0.057	0.05
	1-hexene	0.33	0.18
Aromatics	benzene	1.32	0.99
	toluene	1.24	1.26
	styrene	0.77	0.78
	m/p-xylene	0.77	0.72
	ethylbenzene	0.59	0.59
	o-xylene	0.18	0.18
	1,2,3-trimethylbenzene	0.66	0.66
	1,2,4-trimethylbenzene	0.31	0.31
	isopropylbenzene	0.43	0.43

	n-propylbenzene	0.58	0.58
	3-ethyltoluene	0.51	0.51
	2-ethyltoluene	0.26	0.26
	1,2-diethylbenzene	0.58	0.38
	m-diethylbenzene	0.71	0.71
	1,4-diethylbenzene	0.70	0.70
Halohydrocarbons	Freon-11	0.28	0.24
	dichloromethane	4.12	17.16
	1,1-dichloroethane	0.30	0.33
	chloroform	0.32	0.93
	1,2-dichloroethane	0.85	0.79
	1,2-dichloropropane	0.89	0.94
	vinyl chloride	8.01	3.57
	carbon tetrachloride	0.45	0.38
OVOCs	formaldehyde	2.26	2.20
	acetaldehyde	4.02	4.23
	propanal	13.56	18.61
	acrolein	1.82	2.45
	butenal	2.01	2.10
	butanal	2.21	2.4
	pentanal	1.94	1.96
	hexanal	2.10	2.12
	methacrolein	1.97	1.98
	benzaldehyde	2.84	2.88
	m-methylbenzaldehyde	1.12	1.19
	acetone	2.88	4.33
	2-butanone	0.78	0.76
	cyclopentanone	0.34	0.34
	3-pentanone	0.33	0.36
	ethanol	6.75	5.96
	iso-propanol	0.94	0.73
	1-propanol	0.38	0.42
	1-butanol	0.78	1.21
	vinyl acetate	1.33	1.28
	ethyl acetate	1.25	1.78
	propyl acetate	0.33	0.34
Others	acrylonitrile	0.25	0.21
	acetonitrile	2.21	4.46
	carbon disulfide	0.55	0.53
	acetylene	2.29	2.00
	naphthalene	0.60	0.58
TVOC		113.12	139.40

Table S2 Top 10 VOCs contributed to L_{OH} and OFP at DZ and SS sites.

Period	Rank	Species	L_{OH} (s^{-1})	Species	OFP（μg/m^3）
DongZhang community	1	propanal	6.67	propanal	248.66
	2	butadiene	2.99	vinyl chloride	62.72
	3	hexanal	1.55	butenal	58.87
	4	acetaldehyde	1.49	butadiene	55.49
	5	pentanal	1.33	acetaldehyde	51.71
	6	butanal	1.31	ethylene	43.29
	7	styrene	1.10	1,2,3-trimethylbenzene	42.64
	8	propene	0.97	butanal	42.50
	9	benzaldehyde	0.84	hexanal	40.83
	10	ethylene	0.81	pentanal	37.78
	Sum		19.06		684.49
Special school	1	propanal	9.16	propanal	341.19
	2	propene	3.76	propene	127.52
	3	butadiene	2.11	butenal	61.72
	4	hexanal	1.57	acetaldehyde	54.43
	5	acetaldehyde	1.56	butanal	46.28
	6	butanal	1.42	acrolein	45.64
	7	pentanal	1.35	1,2,3-trimethylbenzene	42.63
	8	styrene	1.11	hexanal	41.19
	9	benzaldehyde	0.85	butadiene	39.17
	10	ethylene	0.67	pentanal	38.24
	Sum		23.56		838.01

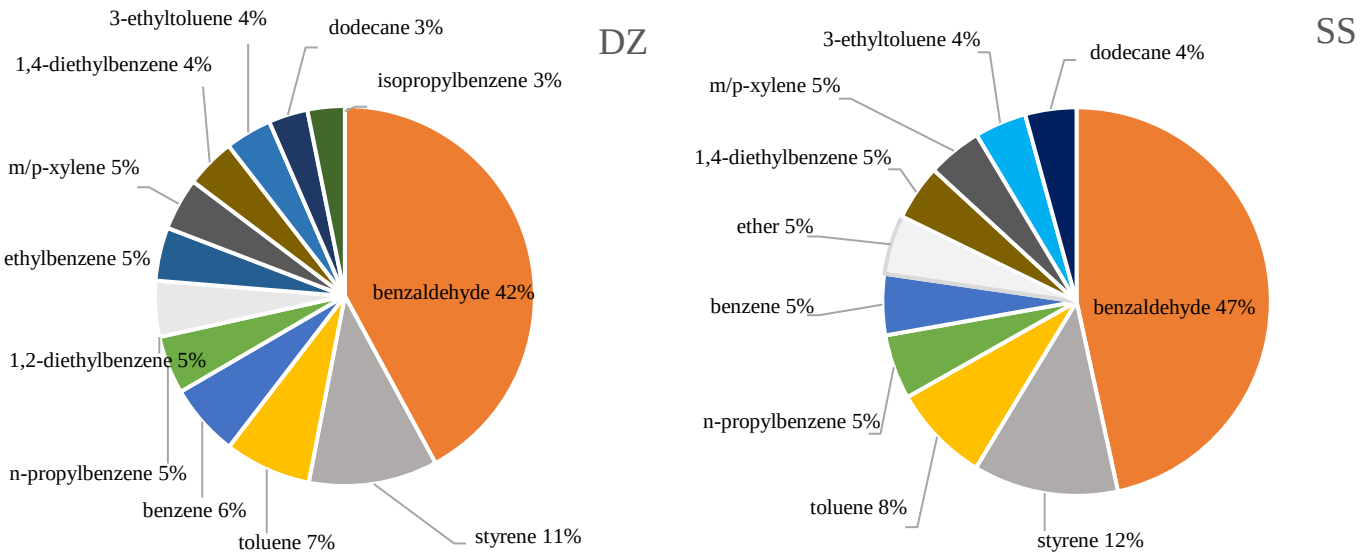

Figure S1. Contributions of the top 10 VOCs to the total SOAP at DZ and SS sites.