

Article

Ozone Formation at a Suburban Site in the Pearl River Delta Region, China: Role of Biogenic Volatile Organic Compounds

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Table S1. The average mixing ratios and 95% confidence intervals (95% C.I.) of TVOCs (pptv) measured during the four periods.

Species	MDL	P1	P2	P3	NP
		Mean	Mean	Mean	Mean
		(95 %)	(95 %)	(95 %)	(95 %)
Alkanes					
Ethane	39	1573 (494)	1299 (194)	1653 (143)	1517 (188)
Propane	31	4854 (2722)	3134 (2165)	3620 (1657)	3663 (1320)
i-Butane	14	2667 (2702)	3399 (2643)	3537 (2841)	2105 (1391)
n-Butane	21	5039 (5113)	4574 (3697)	5153 (4523)	3826 (2719)
i-Pentane	12	1248 (841)	551 (357)	703 (351)	1180 (616)
n-Pentane	8	690 (710)	209 (112)	272 (128)	517 (286)
2,2-Dimethylbutane	3	40 (19)	19 (11)	22 (9)	38 (18)
Cyclopentane	8	228 (155)	133 (42)	314 (62)	282 (100)
2,3-Dimethylbutane	9	131 (162)	59 (37)	119 (53)	148 (139)
2-Methylpentane	8	510 (265)	198 (142)	161 (75)	487 (269)
n-Hexane	8	296 (172)	183 (100)	270 (254)	375 (206)
Methylcyclopentane	7	80 (44)	50 (34)	56 (25)	84 (41)
2,4-Dimethylpentane	1	41 (28)	8 (3)	21 (8)	30 (15)
Cyclohexane	1	69 (41)	38 (31)	42 (19)	62 (27)
2-Methylhexane	7	120 (87)	79 (75)	87 (50)	100 (52)
2,3-Dimethylpentane	4	261 (264)	43 (36)	330 (301)	168 (82)
3-Methylhexane	9	40 (23)	279 (96)	333 (101)	53 (38)
2,2,4-Trimethylpentane	4	153 (118)	55 (42)	57 (27)	96 (58)
n-Heptane	6	153 (147)	89 (62)	88 (50)	129 (69)
Methylcyclohexane	1	84 (65)	47 (49)	57 (30)	58 (33)
2,3,4-Trimethylpentane	2	13 (12)	11 (5)	9 (4)	15 (6)
2-Methylheptane	8	26 (26)	18 (14)	17 (12)	60 (42)
3-Methylheptane	12	24 (18)	16 (11)	18 (8)	60 (42)
n-Octane	6	44 (35)	24 (9)	27 (11)	29 (12)
n-Nonane	6	19 (9)	20 (7)	30 (23)	16 (3)
n-Decane	6	93 (83)	44 (22)	43 (34)	58 (27)
n-Undecane	6	93 (128)	9 (0)	210 (112)	16 (4)
n-Dodecane	6	17 (10)	BDL	14 (4)	BDL
Alkenes					
Ethene	35	564 (290)	564 (155)	487 (105)	607 (130)
Propene	41	390 (129)	285 (99)	307 (92)	431 (161)
1-Butene	4	153 (80)	87 (27)	128 (72)	129 (65)

1,3-Butadiene	7	36 (20)	75 (61)	87 (61)	48 (29)
Trans-2-Butene	5	51 (64)	72 (61)	107 (88)	46 (49)
Cis-2-Butene	8	159 (13)	29 (20)	48 (39)	28 (13)
3-Methyl-1-butene	2	7 (5)	6 (3)	7 (3)	7 (2)
1-Pentene	2	21 (11)	15 (7)	23 (9)	16 (4)
2-Methyl-1-butene	3	8 (4)	9 (4)	15 (7)	11 (3)
Trans-2-Pentene	2	BDL	BDL	3 (1)	BDL
Cis-2-pentene	1	7 (3)	5 (2)	10 (8)	8 (3)
2-Methyl-2-butene	2	7 (2)	6 (2)	10 (8)	9 (3)
Isoprene	6	1212 (1981)	2080 (1777)	2091 (944)	1752 (734)
α -pinene	6	9 (8)	16 (10)	29 (33)	23 (10)
β -pinene	6	16 (14)	11 (8)	18 (17)	17 (8)
Alkynes					
Acetylene	64	1085 (499)	868 (191)	1075 (255)	1092 (237)
Aromatics					
Benzene	15	325 (135)	282 (65)	322 (71)	249 (51)
Toluene	9	1466 (1065)	742 (770)	1108 (716)	1415 (837)
Ethylbenzene	9	295 (304)	89 (95)	141 (80)	199 (94)
m/p-Xylene	15	605 (552)	311 (427)	468 (322)	1151 (707)
Styrene	30	72 (36)	62 (14)	128 (78)	56 (11)
o-Xylene	7	264 (254)	114 (137)	172 (110)	239 (118)
Isopropylbenzene	1	17 (16)	6 (4)	10 (4)	7 (3)
n-Propylbenzene	1	24 (21)	8 (5)	9 (5)	14 (5)
m-Ethyltoluene	4	31 (27)	21 (11)	23 (13)	26 (12)
p-Ethyltoluene	1	27 (22)	12 (12)	44 (31)	10 (8)
1,3,5-Trimethylbenzene	2	27 (35)	15 (12)	16 (9)	19 (7)
o-Ethyltoluene	1	73 (75)	9 (7)	10 (6)	40 (23)
1,2,4-Trimethylbenzene	6	95 (98)	37 (29)	49 (29)	48 (22)
1,2,3-Trimethylbenzene	2	22 (22)	10 (8)	17 (10)	15 (6)
m-Diethylbenzene	6	BDL	BDL	BDL	BDL
p-Diethylbenzene	6	11 (4)	BDL	20 (8)	8 (1)
o-Diethylbenzene	6	13 (7)	BDL	BDL	11 (3)
Carbonyls					
Formaldehyde	19	9479 (2555)	5464 (813)	7361 (571)	7806 (762)
Acetaldehyde	34	3029 (1162)	1131 (466)	1556 (182)	2104 (534)
Acetone	21	4944 (572)	3090 (381)	4504 (328)	4103 (342)
Propionaldehyde	27	325 (152)	74 (45)	99 (25)	197 (62)
2-Butanone	25	688 (197)	298 (82)	432 (51)	492 (87)
Benzaldehyde	22	158 (70)	58 (41)	81 (20)	83 (34)
Glyoxal	14	345 (122)	162 (40)	341 (75)	254 (55)
Methylglyoxal	15	1193 (308)	754 (127)	1214 (172)	982 (94)

^aMDL: method detection limit, pptv. ^bBDL: below the detection limit.

Table S2. Top 10 VOC species with RIR values.

Rank	August 29	August 30	August 31	September 1	September 2	September 3
1	Formaldehyde	Isoprene	Isoprene	Isoprene	Isoprene	Isoprene
2	Methylglyoxal	Formaldehyde	Formaldehyde	Formaldehyde	Formaldehyde	Formaldehyde
3	Acetaldehyde	Methylglyoxal	Methylglyoxal	Methylglyoxal	Methylglyoxal	Methylglyoxal
4	m/p-Xylene	Acetaldehyde	Acetaldehyde	Acetaldehyde	α -pinene	α -pinene
5	Isoprene	m/p-Xylene	m/p-Xylene	α -pinene	Acetaldehyde	Acetaldehyde
6	n-Butane	Trans-2-butene	α -pinene	m/p-Xylene	Trans-2-butene	Trans-2-butene
7	Toluene	o-Xylene	Trans-2-butene	Trans-2-butene	Cis-2-butene	Cis-2-butene
8	o-Xylene	n-Butane	Propene	Propene	n-Butane	n-Butane
9	Cis-2-butene	Toluene	Toluene	n-Butane	Isobutane	Propene
10	TM124B	Cis-2-butene	n-Butane	Cis-2-butene	Propene	Isobutane

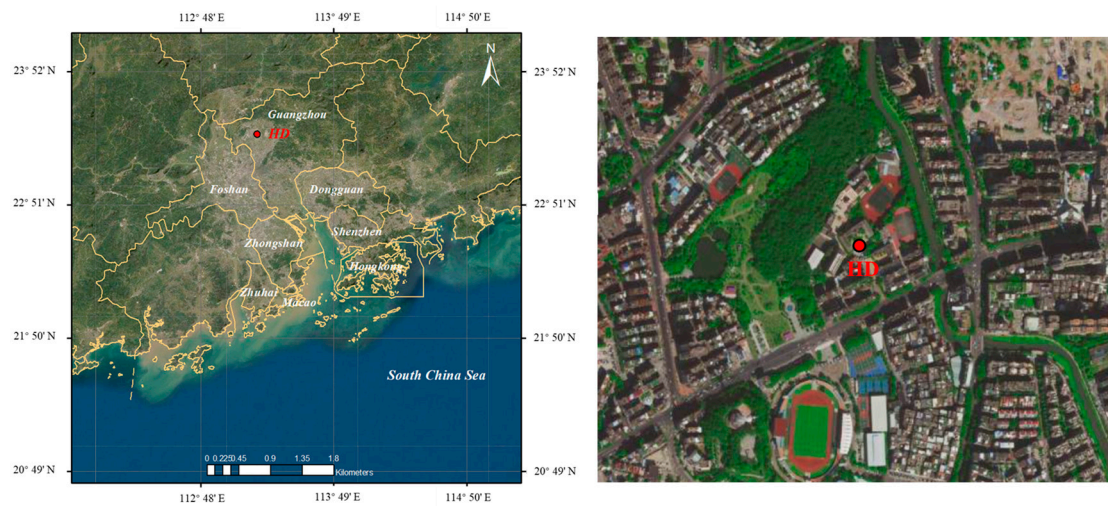


Figure S1. Location of the HD sampling site.

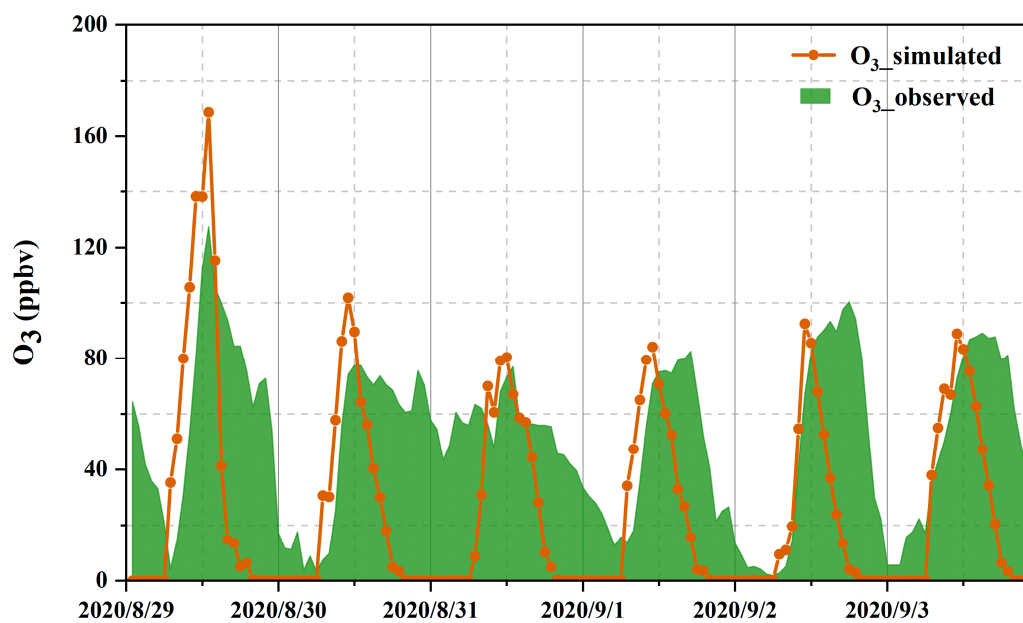


Figure S2. Simulated and observed O₃ during O₃ pollution (O₃ episode days) and clean (non-O₃ episode days) days.

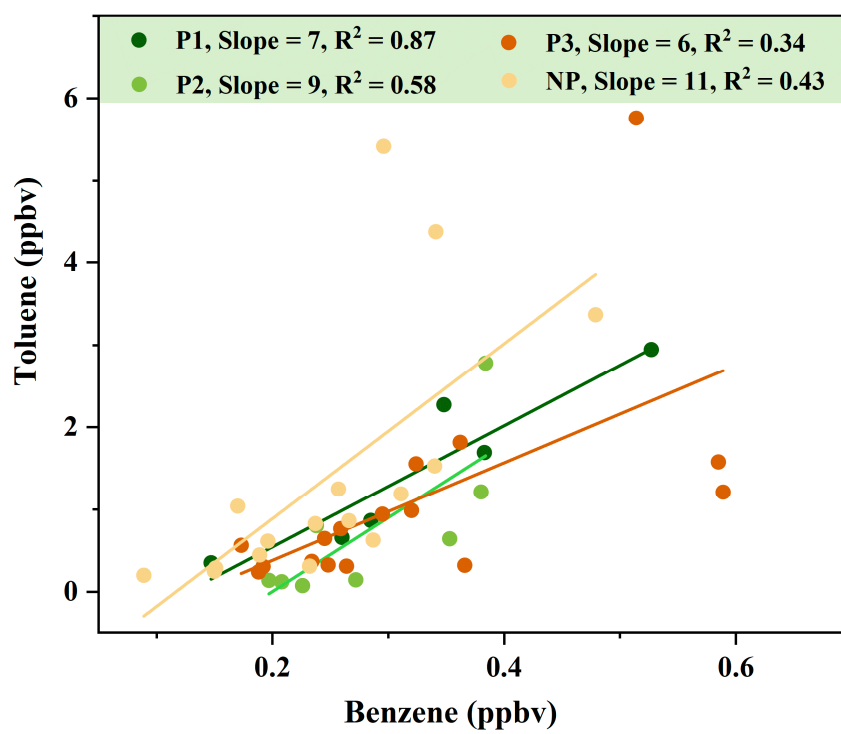


Figure S3. Scatter plots of toluene to benzene during four periods.

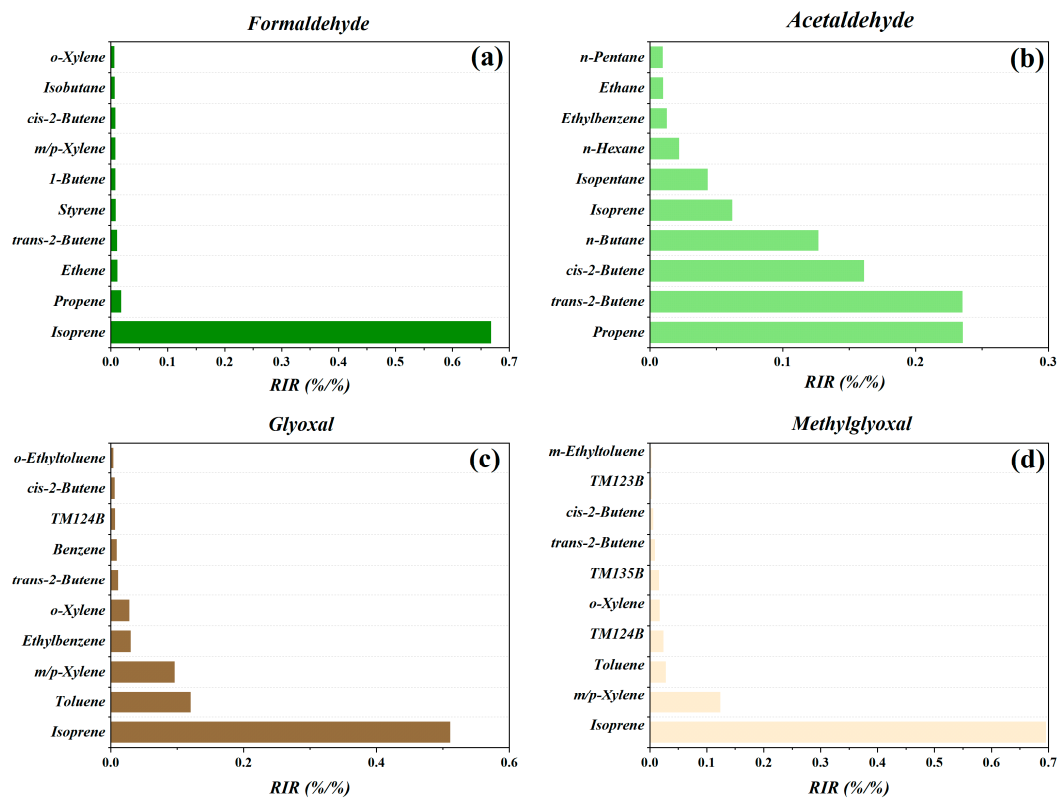


Figure S4. Average RIR values of the top 10 VOC species for (a) formaldehyde, (b) acetaldehyde, (c) glyoxal and (d) methylglyoxal during the whole campaign (TM123B: 1,2,3-trimethylbenzene; TM124B: 1,2,4-trimethylbenzene; TM135B: 1,3,5-trimethylbenzene).