

**Guangdong-Hong Kong-Macao
Pearl River Delta
Regional Air Quality Monitoring Network**

July to September 2021

**Statistical Summary of the Third quarter
Monitoring Results**

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1. Foreword

Since the Pearl River Delta (PRD) Regional Air Quality Monitoring Network came into operation on 30 November 2005, the PRD Regional Air Quality Index (RAQI) was reported to the public on a daily basis. Starting from 2006, half-yearly and annual air quality monitoring reports were also published every year. The network was subsequently enhanced and expanded in September 2014 and renamed to “Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network” (the “Network”).

To cope with the enhancement of the network, the update of the national ambient air quality standards as well as the need for improving the reporting frequency of monitoring results, starting from 2014, the real-time hourly monitoring data was reported on a new internet platform to replace the daily RAQI, the half-yearly report was also replaced by a quarterly report while the annual air quality monitoring report was maintained. The quarterly report is a brief statistical summary of the regional air quality monitoring results in a quarter. The annual report, in addition to the reporting of the monitoring data, provides a more detailed analysis and comparison of the air quality in the year. From the fourth quarter of 2014, the statistical results of carbon monoxide (CO) and fine suspended particulates (PM_{2.5} or FSP) were added to the report in addition to those of respirable suspended particulates (PM₁₀ or RSP), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and ozone (O₃).

This report is the statistical summary of the monitoring results of the PRD Regional Air Quality Monitoring Network in the third quarter of 2021. It is the thirty-first report published in the form of a quarterly report and the twenty-eighth report with the statistical summaries of the six pollutants (i.e. PM₁₀, PM_{2.5}, SO₂, NO₂, O₃ and CO).

2. Introduction to Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network

The PRD Regional Air Quality Monitoring Network was jointly established by the Guangdong Provincial Environmental Monitoring Center¹ (GDEMC) and the Environmental Protection Department of the Hong Kong Special Administrative Region (HKEPD) from 2003 to 2005, and commenced its operation to report the Regional Air Quality Index (RAQI) on 30 November 2005.

With the growing concerns of air pollution control and economic development of the region, the GDEMC¹ and HKEPD had worked in collaboration with the environmental protection cum meteorological authorities of Macao to enhance the network by extending the coverage of monitoring area to Guangdong, Hong Kong and Macao in September 2014. The enhancements included the addition of monitoring stations from 16 to 23 to further improve the spatial distribution and the inclusion of two new monitoring parameters, i.e. carbon monoxide (CO) and fine suspended particulates (PM_{2.5}), to enrich the air quality monitoring information. At the same time, the network was renamed to “Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network” (the “Network”) while the "Quality Management Committee of Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network", which was jointly established by Guangdong Ecological and Environmental Monitoring Center (GDEEMC), HKEPD, Environmental Protection Bureau of Macau SARG and the Meteorological

¹ Guangdong Provincial Environmental Monitoring Center was renamed as Guangdong Ecological and Environmental Monitoring Center in December 2020.

and Geophysical Bureau of Macao SARG, was responsible for quality management of the Network and dissemination of information.

The Network comprises 23 automatic air quality monitoring stations (see Figure 2.1) across the PRD region. Ten city stations are operated either by the Ecological and Environmental Monitoring Centers of the individual cities in Guangdong or the operation-cum-maintenance agencies commissioned by the State. Eight regional stations are operated by the GDEEMC, the four stations located in Hong Kong are managed by the HKEPD and the remaining one in Macao is operated by Meteorological and Geophysical Bureau of Macao SARG.

All stations are installed with monitoring equipment to measure the ambient concentrations of PM₁₀, PM_{2.5}, SO₂, NO₂, O₃ and CO.

Annexes A and B show the site information of the monitoring stations in the Network and the methods used for measuring air pollutant concentrations respectively.

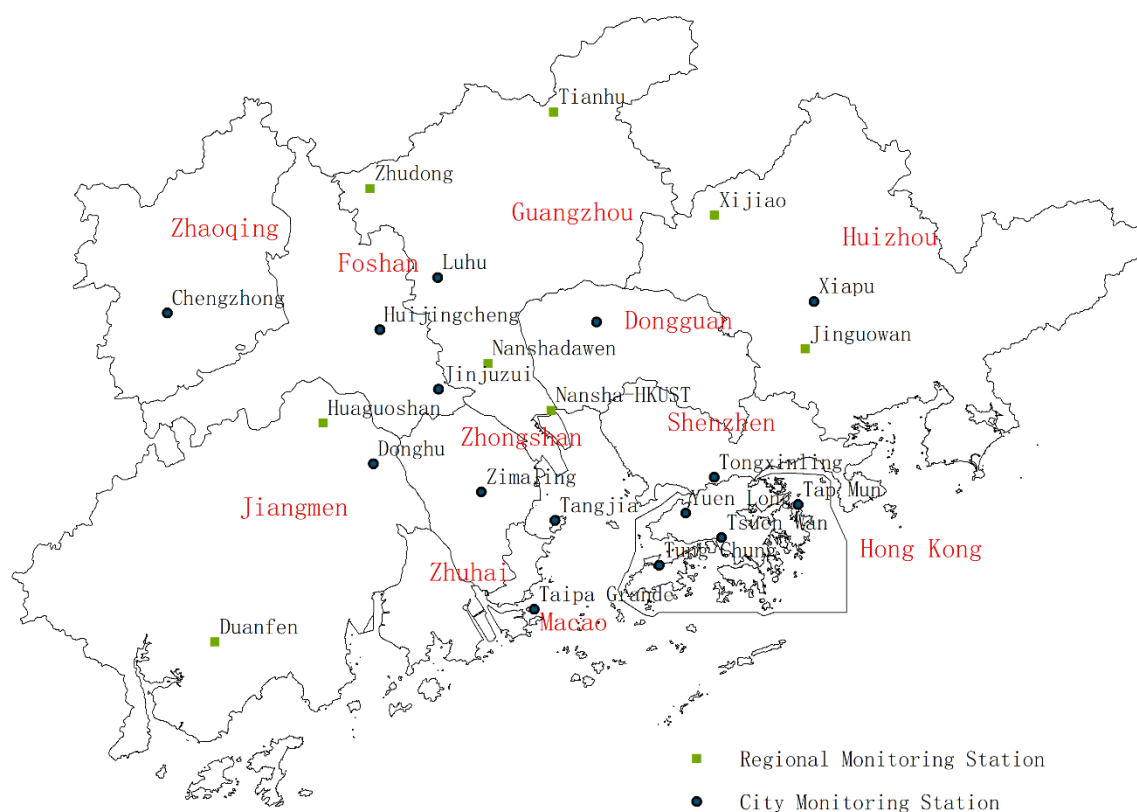


Figure 2.1: Spatial Distribution of Monitoring Stations in the Network

Remark: For the boundary of the administrative division of the Macao Special Administrative Region, according to the Decree n.º665 of the State Council of the People’s Republic of China, “the map of the administrative division of the Macao Special Administrative Region” was approved at the 116th Executive Meeting of the State Council on 16 December 2015.

3. Operation of the Network

The overall operation of the Network was smooth in the third quarter of 2021. The average data capture rate of hourly air pollutant monitoring data measured at all monitoring stations was 97.4% in the third quarter.

4. Statistical Results of Pollutant Concentrations

Tables 4.1a to 4.6b list the detailed statistical results of the six air pollutants (SO₂, NO₂, O₃, CO, PM₁₀ and PM_{2.5}) from July to September 2021. Per the amended *GB 3095-2012: Ambient Air Quality Standards*, starting from 2019, the concentrations of gaseous pollutants are calculated at a reference temperature of 298.15K and a pressure of 101.325 kPa, while the concentrations of PM₁₀ and PM_{2.5} are measured at real-time temperature and atmospheric pressure during monitoring.

Table 4.1a: The monthly maxima and minima of hourly averages of SO₂

Monitoring Station	July 2021		August 2021		September 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	4	13	4	11	4	10
Nanshadawen (Guangzhou)	8	16	9	21	3	19
Nansha-HKUST (Guangzhou)	5	13	5	22	6	12
Tianhu (Guangzhou)	4	11	5	10	5	12
Zhudong (Guangzhou)	5	24	6	17	6	18
Tongxinling (Shenzhen)	3	6	4	7	4	12
Jinjuzui (Foshan)	1	9	1	20	1	11
Huijingcheng (Foshan)	1	31	2	27	4	36
Tangjia (Zhuhai)	4	18	3	10	3	9
Donghu (Jiangmen)	4	16	4	17	3	16
Duanfen (Jiangmen)	3	16	1	12	2	23
Huaguoshan (Jiangmen)	1	185	2	78	2	100
Chengzhong (Zhaoqing)	5	144	5	53	6	73
Xiapu (Huizhou)	4	16	4	14	5	22
Xijiao (Huizhou)	1	7	1	5	2	8
Jinguowan (Huizhou)	1	13	1	8	2	10
Zimaling (Zhongshan)	2	9	3	10	1	11
Nanchengyuanling (Dongguan)	5	21	4	18	4	20
Tap Mun (Hong Kong)	4	8	4	8	5	12
Tsuen Wan (Hong Kong)	3	15	3	18	3	13
Yuen Long (Hong Kong)	8	15	8	13	8	19
Tung Chung (Hong Kong)	4	13	5	10	5	16
Taipa Grande (Macao)	3	13	3	9	1	17

Remark : All concentration units are in micrograms per cubic metre (µg/m³).

Table 4.1b: The monthly maxima and minima of daily averages of SO₂

Monitoring Station	July 2021		August 2021		September 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	4	8	4	6	5	6
Nanshadawen (Guangzhou)	8	13	10	13	5	15
Nansha-HKUST (Guangzhou)	5	8	6	8	6	8
Tianhu (Guangzhou)	5	9	6	8	6	8
Zhudong (Guangzhou)	5	12	6	10	6	9
Tongxinling (Shenzhen)	4	4	4	5	4	8
Jinjuzui (Foshan)	2	4	1	7	2	8
Huijingcheng (Foshan)	4	14	4	13	5	14
Tangjia (Zhuhai)	5	7	4	8	4	6
Donghu (Jiangmen)	5	9	5	9	4	9
Duanfen (Jiangmen)	3	6	2	4	2	5
Huaguoshan (Jiangmen)	1	34	4	20	5	27
Chengzhong (Zhaoqing)	10	26	7	19	8	18
Xiapu (Huizhou)	4	7	4	7	6	9
Xijiao (Huizhou)	1	2	1	2	2	2
Jinguowan (Huizhou)	1	5	1	3	3	5
Zimaling (Zhongshan)	3	6	3	7	2	5
Nanchengyuanling (Dongguan)	6	11	4	11	5	9
Tap Mun (Hong Kong)	4	6	5	7	5	8
Tsuen Wan (Hong Kong)	3	7	4	8	4	7
Yuen Long (Hong Kong)	8	10	8	10	8	11
Tung Chung (Hong Kong)	5	8	5	7	6	9
Taipa Grande (Macao)	4	8	4	5	1	6

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.1c : The monthly averages of SO₂

Monitoring Station	July 2021	August 2021	September 2021
Luhu (Guangzhou)	5	5	5
Nanshadawen (Guangzhou)	10	12	10
Nansha-HKUST (Guangzhou)	6	7	7
Tianhu (Guangzhou)	7	7	7
Zhudong (Guangzhou)	8	7	7
Tongxinling (Shenzhen)	4	5	5
Jinjuzui (Foshan)	3	3	4
Huijingcheng (Foshan)	8	6	7
Tangjia (Zhuhai)	6	6	5
Donghu (Jiangmen)	6	7	6
Duanfen (Jiangmen)	5	3	3
Huaguoshan (Jiangmen)	10	10	11
Chengzhong (Zhaoqing)	14	12	12
Xiapu (Huizhou)	6	5	7
Xijiao (Huizhou)	2	1	2*
Jinguowan (Huizhou)	4	3	4
Zimaling (Zhongshan)	4	5	4
Nanchengyuanling (Dongguan)	8	9	6
Tap Mun (Hong Kong)	5	6	6
Tsuen Wan (Hong Kong)	5	6	6
Yuen Long (Hong Kong)	8	9	10
Tung Chung (Hong Kong)	6	6	7
Taipa Grande (Macao)	5	5	4

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

* The capture rate of validated daily data per month is below 85%

Table 4.2a: The monthly maxima and minima of hourly averages of NO₂

Monitoring Station	July 2021		August 2021		September 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	7	94	7	82	8	104
Nanshadawen (Guangzhou)	4	72	4	98	4	112
Nansha-HKUST (Guangzhou)	1	66	2	69	5	112
Tianhu (Guangzhou)	2	36	2	26	2	35
Zhudong (Guangzhou)	4	58	6	63	5	80
Tongxinling (Shenzhen)	3	61	4	56	3	60
Jinjuzui (Foshan)	1	57	1	78	1	81
Huijingcheng (Foshan)	4	125	7	79	8	72
Tangjia (Zhuhai)	2	42	1	46	2	55
Donghu (Jiangmen)	5	36	5	55	5	62
Duanfen (Jiangmen)	1	31	1	27	1	27
Huaguoshan (Jiangmen)	4	37	4	54	4	58
Chengzhong (Zhaoqing)	8	102	8	57	10	95
Xiapu (Huizhou)	4	64	5	60	6	51
Xijiao (Huizhou)	1	30	1	22	1	23
Jinguowan (Huizhou)	1	32	1	44	1	57
Zimaling (Zhongshan)	1	45	1	49	3	54
Nanchengyuanling (Dongguan)	5	58	6	69	8	102
Tap Mun (Hong Kong)	0	52	1	39	1	54
Tsuen Wan (Hong Kong)	5	130	8	120	7	138
Yuen Long (Hong Kong)	7	105	8	96	9	114
Tung Chung (Hong Kong)	0	66	0	53	3	95
Taipa Grande (Macao)	2	44	2	54	3	51

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.2b: The monthly maxima and minima of daily averages of NO₂

Monitoring Station	July 2021		August 2021		September 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	12	36	16	47	18	51
Nanshadawen (Guangzhou)	14	38	15	47	17	52
Nansha-HKUST (Guangzhou)	5	32	9	36	16	49
Tianhu (Guangzhou)	3	17	3	14	3	17
Zhudong (Guangzhou)	12	30	17	33	18	34
Tongxinling (Shenzhen)	6	27	9	30	7	33
Jinjuzui (Foshan)	2	35	6	38	9	49
Huijingcheng (Foshan)	10	37	11	44	16	44
Tangjia (Zhuhai)	3	21	3	25	6	24
Donghu (Jiangmen)	7	24	9	30	9	27
Duanfen (Jiangmen)	5	11	2	14	5	11
Huaguoshan (Jiangmen)	6	23	10	28	12	26
Chengzhong (Zhaoqing)	14	36	16	34	20	46
Xiapu (Huizhou)	9	26	11	27	12	30
Xijiao (Huizhou)	3	15	2	10	2	7
Jinguowan (Huizhou)	2	16	6	21	5	28
Zimaling (Zhongshan)	3	21	3	28	9	25
Nanchengyuanling (Dongguan)	9	32	13	45	20	54
Tap Mun (Hong Kong)	2	22	5	20	4	33
Tsuen Wan (Hong Kong)	20	61	29	67	22	59
Yuen Long (Hong Kong)	16	51	23	54	21	68
Tung Chung (Hong Kong)	4	31	6	32	10	54
Taipa Grande (Macao)	4	19	5	28	7	27

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.2c: The monthly averages of NO₂

Monitoring Station	July 2021	August 2021	September 2021
Luhu (Guangzhou)	25	30	34
Nanshadawen (Guangzhou)	24	28	32
Nansha-HKUST (Guangzhou)	18	21	25
Tianhu (Guangzhou)	9	8	7
Zhudong (Guangzhou)	20	25	25
Tongxinling (Shenzhen)	15	18	17
Jinjuzui (Foshan)	16	19	25
Huijingcheng (Foshan)	21	27	29
Tangjia (Zhuhai)	10	11	14
Donghu (Jiangmen)	13	16	17
Duanfen (Jiangmen)	8	6	8
Huaguoshan (Jiangmen)	16	15	20
Chengzhong (Zhaoqing)	25	24	31
Xiapu (Huizhou)	15	19	18
Xijiao (Huizhou)	8	6	5*
Jinguowan (Huizhou)	7	11	11
Zimaling (Zhongshan)	10	12	15
Nanchengyuanling (Dongguan)	21	26	28
Tap Mun (Hong Kong)	7	10	9
Tsuen Wan (Hong Kong)	38	42	39
Yuen Long (Hong Kong)	31	34	38
Tung Chung (Hong Kong)	14	17	25
Taipa Grande (Macao)	9	12	14

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

* The capture rate of validated daily data per month is below 85%

Table 4.3a: The monthly maxima and minima of hourly averages of O₃

Monitoring Station	July 2021		August 2021		September 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	250	3	244	2	257
Nanshadawen (Guangzhou)	2	295	2	255	1	296
Nansha-HKUST (Guangzhou)	3	278	2	252	2	316
Tianhu (Guangzhou)	7	200	22	211	25	253
Zhudong (Guangzhou)	2	249	1	392	1	254
Tongxinling (Shenzhen)	1	304	1	164	1	282
Jinjuzui (Foshan)	2	306	2	272	2	273
Huijingcheng (Foshan)	4	270	2	285	3	314
Tangjia (Zhuhai)	1	245	2	156	1	263
Donghu (Jiangmen)	2	279	2	225	2	267
Duanfen (Jiangmen)	3	203	6	131	5	165
Huaguoshan (Jiangmen)	2	193	2	181	1	223
Chengzhong (Zhaoqing)	4	243	4	254	4	247
Xiapu (Huizhou)	4	214	3	204	3	216
Xijiao (Huizhou)	2	252	2	170	2	190
Jinguowan (Huizhou)	1	204	1	191	1	245
Zimaling (Zhongshan)	2	257	2	200	2	269
Nanchengyuanling (Dongguan)	5	264	5	292	4	277
Tap Mun (Hong Kong)	7	329	4	144	3	344
Tsuen Wan (Hong Kong)	1	313	1	109	1	219
Yuen Long (Hong Kong)	1	336	1	156	1	277
Tung Chung (Hong Kong)	2	270	3	159	3	236
Taipa Grande (Macao)	2	205	9	173	9	239

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.3b: Daily maximum 8-hour averages of O₃ (the monthly maxima, minima and the 90th percentile)

Monitoring Station	July 2021			August 2021			September 2021		
	Min	Max	90 th per	Min	Max	90 th per	Min	Max	90 th per
Luhu (Guangzhou)	35	192	178	25	208	141	39	217	174
Nanshadawen (Guangzhou)	38	245	217	36	189	159	53	252	228
Nansha-HKUST (Guangzhou)	32	228	205	38	186	116	34	255	221
Tianhu (Guangzhou)	55	173	163	67	190	154	63	226	163
Zhudong (Guangzhou)	57	194	185	46	288	162	67	221	199
Tongxinling (Shenzhen)	34	259	164	28	120	98	28	226	177
Jinjuzui (Foshan)	35	257	214	41	194	125	45	225	203
Huijingcheng (Foshan)	36	212	176	43	197	157	48	273	226
Tangjia (Zhuhai)	35	219	159	21	127	92	28	198	168
Donghu (Jiangmen)	42	245	208	49	160	133	52	241	206
Duanfen (Jiangmen)	40	166	124	34	110	90	40	149	138
Huaguoshan (Jiangmen)	40	160	116	42	130	101	42	192	161
Chengzhong (Zhaoqing)	53	201	150	47	194	129	71	201	173
Xiapu (Huizhou)	39	167	153	46	179	146	49	190	175
Xijiao (Huizhou)	39	183	154	55	141	129	46	137	115
Jinguowan (Huizhou)	34	146	134	32	159	129	30	207	183
Zimaling (Zhongshan)	38	236	173	29	141	107	34	222	204
Nanchengyuanling (Dongguan)	42	203	168	49	240	148	65	250	207
Tap Mun (Hong Kong)	39	269	155	37	100	96	41	296	176
Tsuen Wan (Hong Kong)	18	200	115	12	79	51	15	164	119
Yuen Long (Hong Kong)	27	281	157	13	99	78	20	203	166
Tung Chung (Hong Kong)	27	201	106	17	109	73	22	184	152
Taipa Grande (Macao)	28	182	130	30	149	89	31	169	158

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.3c: The monthly averages of O₃

Monitoring Station	July 2021	August 2021	September 2021
Luhu (Guangzhou)	62	46	66
Nanshadawen (Guangzhou)	64	51	79
Nansha-HKUST (Guangzhou)	57	46	80
Tianhu (Guangzhou)	79	78	94
Zhudong (Guangzhou)	71	63	76
Tongxinling (Shenzhen)	48	35	61
Jinjuzui (Foshan)	59	45	69
Huijingcheng (Foshan)	67	57	88
Tangjia (Zhuhai)	52	41	59
Donghu (Jiangmen)	64	50	78
Duanfen (Jiangmen)	52	45	54
Huaguoshan (Jiangmen)	49	44	59
Chengzhong (Zhaoqing)	62	51	70
Xiapu (Huizhou)	57	51	70
Xijiao (Huizhou)	52	46	38
Jinguowan (Huizhou)	45*	41	58
Zimaling (Zhongshan)	60	45	69
Nanchengyuanling (Dongguan)	64	52	79
Tap Mun (Hong Kong)	55	41	73
Tsuen Wan (Hong Kong)	31	21	42
Yuen Long (Hong Kong)	39	28	45
Tung Chung (Hong Kong)	43	31	52
Taipa Grande (Macao)	53	49	69

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

* The capture rate of validated daily data per month is below 85%

Table 4.4a: The monthly maxima and minima of hourly averages of CO

Monitoring Station	July 2021		August 2021		September 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	0.3	1.4	0.4	1.4	0.5	1.3
Nanshadawen (Guangzhou)	0.3	1.8	0.4	1.2	0.4	1.6
Nansha-HKUST (Guangzhou)	0.2	0.9	0.2	1.5	0.2	1.2
Tianhu (Guangzhou)	0.5	1.0	0.2	1.1	0.2	0.8
Zhudong (Guangzhou)	0.3	0.9	0.4	1.0	0.4	1.2
Tongxinling (Shenzhen)	0.3	0.9	0.3	0.9	0.3	1.1
Jinjuzui (Foshan)	0.2	0.9	0.3	1.0	0.3	1.2
Huijingcheng (Foshan)	0.1	1.0	0.3	1.0	0.3	1.0
Tangjia (Zhuhai)	0.2	0.9	0.2	0.9	0.3	0.8
Donghu (Jiangmen)	0.2	0.9	0.3	1.4	0.3	1.1
Duanfen (Jiangmen)	0.2	1.3	0.3	0.7	0.3	1.0
Huaguoshan (Jiangmen)	0.3	0.8	0.3	0.9	0.4	1.1
Chengzhong (Zhaoqing)	0.3	0.9	0.3	1.0	0.3	1.5
Xiapu (Huizhou)	0.3	0.9	0.3	0.9	0.3	1.0
Xijiao (Huizhou)	0.3	1.0	0.3	1.6	0.1	0.7
Jinguowan (Huizhou)	0.1	1.0	0.2	0.7	0.3	1.6
Zimaling (Zhongshan)	0.4	1.1	0.1	0.9	0.2	0.9
Nanchengyuanling (Dongguan)	0.3	0.9	0.3	1.2	0.3	1.0
Tap Mun (Hong Kong)	0.1	0.6	0.2	0.6	0.3	0.8
Tsuen Wan (Hong Kong)	0.3	1.1	0.3	1.0	0.2	0.9
Yuen Long (Hong Kong)	0.1	0.9	0.4	1.1	0.3	1.3
Tung Chung (Hong Kong)	0.2	0.7	0.2	0.7	0.2	1.0
Taipa Grande (Macao)	0.1	1.3	0.3	1.2	0.4	1.1

Remark : All concentration units are in milligrams per cubic metre (mg/m³).

Table 4.4b: Daily averages of CO (the monthly maxima, minima and the 95th percentile)

Monitoring Station	July 2021			August 2021			September 2021		
	Min	Max	95 th per	Min	Max	95 th per	Min	Max	95 th per
Luhu (Guangzhou)	0.4	0.8	0.7	0.5	0.8	0.8	0.5	0.9	0.9
Nanshadawen (Guangzhou)	0.3	0.8	0.7	0.4	1.0	0.9	0.5	0.9	0.9
Nansha-HKUST (Guangzhou)	0.4	0.7	0.7	0.3	0.8	0.7	0.2	0.9	0.7
Tianhu (Guangzhou)	0.6	1.0	0.9	0.3	0.9	0.9	0.3	0.7	0.6
Zhudong (Guangzhou)	0.4	0.7	0.7	0.5	0.8	0.8	0.5	1.0	0.9
Tongxinling (Shenzhen)	0.4	0.7	0.7	0.3	0.8	0.8	0.4	0.8	0.8
Jinjuzui (Foshan)	0.3	0.7	0.6	0.4	0.9	0.7	0.4	0.9	0.9
Huijingcheng (Foshan)	0.3	0.6	0.6	0.4	0.8	0.7	0.4	0.7	0.7
Tangjia (Zhuhai)	0.3	0.7	0.6	0.3	0.6	0.6	0.3	0.7	0.6
Donghu (Jiangmen)	0.3	0.6	0.6	0.4	0.7	0.7	0.4	0.8	0.7
Duanfen (Jiangmen)	0.3	0.5	0.5	0.3	0.5	0.5	0.4	0.7	0.6
Huaguoshan (Jiangmen)	0.3	0.6	0.5	0.3	0.7	0.7	0.5	0.8	0.8
Chengzhong (Zhaoqing)	0.4	0.6	0.6	0.3	0.6	0.6	0.4	0.8	0.7
Xiapu (Huizhou)	0.5	0.7	0.6	0.5	0.8	0.7	0.4	0.8	0.7
Xijiao (Huizhou)	0.3	0.8	0.8	0.4	0.9	0.8	0.2	0.6	0.6
Jinguowan (Huizhou)	0.2	0.8	0.8	0.3	0.7	0.6	0.5	0.9	0.8
Zimaling (Zhongshan)	0.4	0.7	0.7	0.2	0.8	0.8	0.2	0.7	0.6
Nanchengyuanling (Dongguan)	0.5	0.8	0.7	0.4	0.9	0.8	0.5	0.8	0.8
Tap Mun (Hong Kong)	0.2	0.5	0.5	0.3	0.5	0.5	0.3	0.7	0.7
Tsuen Wan (Hong Kong)	0.4	0.9	0.8	0.4	0.8	0.8	0.3	0.7	0.7
Yuen Long (Hong Kong)	0.3	0.7	0.6	0.5	0.8	0.8	0.4	1.0	0.9
Tung Chung (Hong Kong)	0.2	0.5	0.5	0.3	0.6	0.6	0.2	0.5	0.5
Taipa Grande (Macao)	0.2	0.8	0.7	0.4	0.8	0.8	0.5	0.9	0.9

Remark : All concentration units are in milligrams per cubic metre (mg/m³).

Table 4.4c: The monthly averages of CO

Monitoring Station	July 2021	August 2021	September 2021
Luhu (Guangzhou)	0.6	0.7	0.8
Nanshadawen (Guangzhou)	0.6	0.7	0.7
Nansha-HKUST (Guangzhou)	0.5	0.6	0.5
Tianhu (Guangzhou)	0.7	0.6	0.5
Zhudong (Guangzhou)	0.5	0.7	0.7
Tongxinling (Shenzhen)	0.5	0.5	0.5
Jinjuzui (Foshan)	0.5	0.6	0.7
Huijingcheng (Foshan)	0.5	0.5	0.6
Tangjia (Zhuhai)	0.4	0.4	0.5
Donghu (Jiangmen)	0.5	0.5	0.6
Duanfen (Jiangmen)	0.4	0.4	0.5
Huaguoshan (Jiangmen)	0.5	0.5	0.7
Chengzhong (Zhaoqing)	0.5	0.5	0.6
Xiapu (Huizhou)	0.5	0.6	0.6
Xijiao (Huizhou)	0.5	0.6	0.4
Jinguowan (Huizhou)	0.5	0.4	0.6
Zimaling (Zhongshan)	0.6	0.5	0.5
Nanchengyuanling (Dongguan)	0.6	0.6	0.6
Tap Mun (Hong Kong)	0.3	0.4	0.5
Tsuen Wan (Hong Kong)	0.6	0.5	0.5
Yuen Long (Hong Kong)	0.5	0.6	0.7
Tung Chung (Hong Kong)	0.3	0.4	0.3
Taipa Grande (Macao)	0.5	0.6	0.7

Remark : All concentration units are in milligrams per cubic metre (mg/m³).

Table 4.5a: The monthly maxima and minima of daily averages of PM₁₀

Monitoring Station	July 2021		August 2021		September 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	17	48	18	47	15	65
Nanshadawen (Guangzhou)	15	60	16	48	16	83
Nansha-HKUST (Guangzhou)	12	43	9	42	8	57
Tianhu (Guangzhou)	11	47	13	35	10	60
Zhudong (Guangzhou)	16	55	25	60	25	79
Tongxinling (Shenzhen)	6	44	8	32	8	52
Jinjuzui (Foshan)	11	53	16	50	15	62
Huijingcheng (Foshan)	16	62	15	50	17	74
Tangjia (Zhuhai)	4	37	4	29	5	43
Donghu (Jiangmen)	13	45	13	40	12	67
Duanfen (Jiangmen)	6	34	6	25	7	40
Huaguoshan (Jiangmen)	15	57	20	41	22	75
Chengzhong (Zhaoqing)	16	41	17	43	16	66
Xiapu (Huizhou)	14	56	15	48	19	72
Xijiao (Huizhou)	12	38	12	35	13	48
Jinguowan (Huizhou)	6	49	15	41	14	50
Zimaling (Zhongshan)	8	53	10	35	11	55
Nanchengyuanling (Dongguan)	15	45	16	39	18	64
Tap Mun (Hong Kong)	2	33	4	20	2	37
Tsuen Wan (Hong Kong)	5	36	6	26	7	42
Yuen Long (Hong Kong)	5	41	7	28	8	49
Tung Chung (Hong Kong)	4	40	5	29	3	41
Taipa Grande (Macao)	5	41	8	27	5	46

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.5b: The monthly averages of PM₁₀

Monitoring Station	July 2021	August 2021	September 2021
Luhu (Guangzhou)	28	28	37
Nanshadawen (Guangzhou)	34	30	41
Nansha-HKUST (Guangzhou)	23	22	32
Tianhu (Guangzhou)	25	21	26
Zhudong (Guangzhou)	39	39	47
Tongxinling (Shenzhen)	19	18	25
Jinjuzui (Foshan)	28	29	36
Huijingcheng (Foshan)	32	28	41
Tangjia (Zhuhai)	15	14	20
Donghu (Jiangmen)	25	24	34
Duanfen (Jiangmen)	19	15	18
Huaguoshan (Jiangmen)	33	30	41
Chengzhong (Zhaoqing)	29	27	37
Xiapu (Huizhou)	30	29	38
Xijiao (Huizhou)	27	22	26*
Jinguowan (Huizhou)	25*	24	29
Zimaling (Zhongshan)	23	20	28
Nanchengyuanling (Dongguan)	28	26	36
Tap Mun (Hong Kong)	12	11	16
Tsuen Wan (Hong Kong)	15	14	19
Yuen Long (Hong Kong)	16	15	23
Tung Chung (Hong Kong)	13	14	17
Taipa Grande (Macao)	15	15	21

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

* The capture rate of validated daily data per month is below 85%

Table 4.6a: The monthly maxima and minima of daily averages of PM_{2.5}

Monitoring Station	July 2021		August 2021		September 2021	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	7	29	8	23	5	41
Nanshadawen (Guangzhou)	4	33	3	24	4	43
Nansha-HKUST (Guangzhou)	7	31	3	32	2	40
Tianhu (Guangzhou)	4	32	4	22	3	39
Zhudong (Guangzhou)	11	38	19	44	15	53
Tongxinling (Shenzhen)	2	29	4	23	3	41
Jinjuzui (Foshan)	6	30	8	27	7	36
Huijingcheng (Foshan)	7	32	6	23	6	41
Tangjia (Zhuhai)	3	22	2	16	2	30
Donghu (Jiangmen)	5	33	4	21	5	41
Duanfen (Jiangmen)	5	23	4	15	5	35
Huaguoshan (Jiangmen)	10	44	9	33	10	60
Chengzhong (Zhaoqing)	8	28	8	24	8	40
Xiapu (Huizhou)	6	31	6	22	5	40
Xijiao (Huizhou)	7	30	6	19	6	20
Jinguowan (Huizhou)	6	38	10	22	8	43
Zimaling (Zhongshan)	3	38	4	20	3	38
Nanchengyuanling (Dongguan)	9	32	13	45	20	54
Tap Mun (Hong Kong)	2	24	3	16	2	29
Tsuen Wan (Hong Kong)	3	27	5	21	4	32
Yuen Long (Hong Kong)	3	29	5	22	4	37
Tung Chung (Hong Kong)	3	30	4	25	2	33
Taipa Grande (Macao)	2	28	3	17	2	32

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

Table 4.6b: The monthly averages of PM_{2.5}

Monitoring Station	July 2021	August 2021	September 2021
Luhu (Guangzhou)	15	15	21
Nanshadawen (Guangzhou)	13	11	19
Nansha-HKUST (Guangzhou)	15	13	19
Tianhu (Guangzhou)	12	9	13
Zhudong (Guangzhou)	25	27	30
Tongxinling (Shenzhen)	10	10	15
Jinjuzui (Foshan)	14	14	18
Huijingcheng (Foshan)	16	13	20
Tangjia (Zhuhai)	8	8	10
Donghu (Jiangmen)	13	11	17
Duanfen (Jiangmen)	11	9	14
Huaguoshan (Jiangmen)	20	17	28
Chengzhong (Zhaoqing)	17	15	22
Xiapu (Huizhou)	13	13	18
Xijiao (Huizhou)	16*	9*	9
Jinguowan (Huizhou)	15	14	19
Zimaling (Zhongshan)	12	9	14
Nanchengyuanling (Dongguan)	21	26	28
Tap Mun (Hong Kong)	7	6	11
Tsuen Wan (Hong Kong)	10	10	13
Yuen Long (Hong Kong)	10	10	15
Tung Chung (Hong Kong)	9	11	12
Taipa Grande (Macao)	8	7	11

Remark : All concentration units are in micrograms per cubic metre ($\mu\text{g}/\text{m}^3$).

* The capture rate of validated daily data per month is below 85%

Annex A: Site Information of Monitoring Stations

Monitoring Stations	Address	Area Type	Sampling Height (Above P.D.)	Above Ground	Date Commenced Operation
Luhu (Guangzhou)	Jufong Garden of Luhu Park (Big yard, No. 11 Luhu Park)	City	30m	9m	1993
Nanshadawen ⁽¹⁾ (Guangzhou)	Shinan Road, Dongchong Town, Nansha	City	23m	10m	Jan 2021
Nansha-HKUST ⁽²⁾ (Guangzhou)	HKUST Fok Ying Tung Research Institute, Nansha	Mixed educational/commercial and residential/industrial	54m	28m	Oct 2004
Tianhu (Guangzhou)	Tianhu Park, Conghua	Background : rural	251m	13m	Oct 2004
Zhudong (Guangzhou)	Zhudong Village Committee, Chini Town, Huadu District	Rural	19m	10m	Dec 2011
Tongxinling ⁽³⁾ (Shenzhen)	Shennan Zhong Road, Futian District	City	38m	12m	Sep 1997
Jinjuzui (Foshan)	Foshan City Communist Party School, Jinjuzui, Shunde District	Tourist and cultural /educational	27m	17m	Oct 1999
Huijingcheng (Foshan)	No. 127, Fenjiang Nan Road, Chancheng District	Urban: mixed residential/commercial/industrial	24m	14m	Feb 2000
Tangjia (Zhuhai)	Qiao Island Mangrove Monitoring Station, Tangjia Town	Mixed educational/commercial and residential/industrial	13m	13m	Jan 2010
Donghu (Jiangmen)	Donghu Park, Jiangmen	City	17.5m	5m	Nov 2001
Duanfen (Jiangmen)	Duanfen Middle School, Taishan	Rural	15m	12m	Dec 2011
Huaguoshan (Jiangmen)	Huaguoshan, Taoyuan, Heshan	Rural	25m	15m	Feb 2012
Chengzhong (Zhaoqing)	No. 63, Zhengdong Road, Duanzhou District	Urban: mixed residential/commercial	38m	16m	Jun 2001
Xiapu (Huizhou)	No. 4 Xiabuhengjiang Road No. 3, Huicheng District	Urban: commercial	49m	20m	Dec 1999
Xijiao ⁽⁴⁾ (Huizhou)	Zhangbei Yaowei She Nationality Primary School, Henghe Town	Rural	44m	10m	Dec 2011
Jinguowan (Huizhou)	Jinguowan Ecological Farm, Huizhou	Residential	77m	8m	Oct 2004

Monitoring Stations	Address	Area Type	Sampling Height (Above P.D.)	Above Ground	Date Commenced Operation
Zimaling (Zhongshan)	Zimaling Park, Zhongshan	Mixed residential/commercial	45 m	7m	Aug 2002
Nancheng-yuanling ⁽⁵⁾ (Dongguan)	Dongguan administration center	Mixed residential/commercial/industrial	40 m	19m	May 2021
Tap Mun (Hong Kong)	Tap Mun Police Station	Background: rural	26m	11m	Apr 1998
Tsuen Wan (Hong Kong)	60 Tai Ho Road, Tsuen Wan	Urban: mixed residential/commercial/industrial	21m	17m	Aug 1988
Yuen Long (Hong Kong)	Yuen Long District Office, 269 Castle Peak Road, Yuen Long	New Town: residential	31m	25m	Jul 1995
Tung Chung (Hong Kong)	6 Fu Tung Street, Tung Chung	New Town: residential	34.5m	27.5m	Apr 1999
Taipa Grande (Macao)	Rampa do Observatorio, Taipa Grande	Rural	120m	10m	Mar 1999

Remarks:

- (1) Modiesha station closed permanently owing to insufficient space after the extensive renovation work at station, whereas Nanshadawen station joined the network in the 1st quarter of 2021.
- (2) Wanqingsha station was renamed as Nansha-HKUST station in the 1st quarter of 2019.
- (3) Liyuan station was renamed as Tongxinling station in the 1st quarter of 2019.
- (4) Xijiao station was relocated to Zhangbei Yaowei She Nationality Primary School, Henghe Town, Boluo County, in the 4th quarter of 2019. The distance between the old and new sites is about 200 metres.
- (5) Nancheng-yuanling station was relocated to Dongguan administration center in May 2021. The distance between the old and new sites is about 600 metres.

Annex B: Measurement Methods of Air Pollutant Concentration

Pollutants	Measuring Principles
Sulphur dioxide (SO ₂)	UV fluorescence / Differential Optical Absorption Spectroscopy
Nitrogen dioxide (NO ₂)	Chemiluminescence / Differential Optical Absorption Spectroscopy
Ozone (O ₃)	UV absorption / Differential Optical Absorption Spectroscopy
Respirable suspended particulates (PM ₁₀)	Oscillating microbalance (TEOM) / Beta particulate monitor
Fine suspended particulates (PM _{2.5})	Oscillating microbalance (TEOM) / Beta particulate monitor / Hybrid nephelometric / radiometric particulate mass monitor
Carbon monoxide (CO)	Gas filter correlation infrared absorption method / Non-dispersive infrared absorption method