

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

July to September 2022

**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 2022. It is the thirty-fifth report published in the form of a quarterly report and the thirty-second 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 Centre¹ (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 the Ecological and Environmental Monitoring Centre of Guangdong (GDEEMC), HKEPD, Environmental Protection Bureau of Macau SARG and the

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

Meteorological 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 Centres 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.

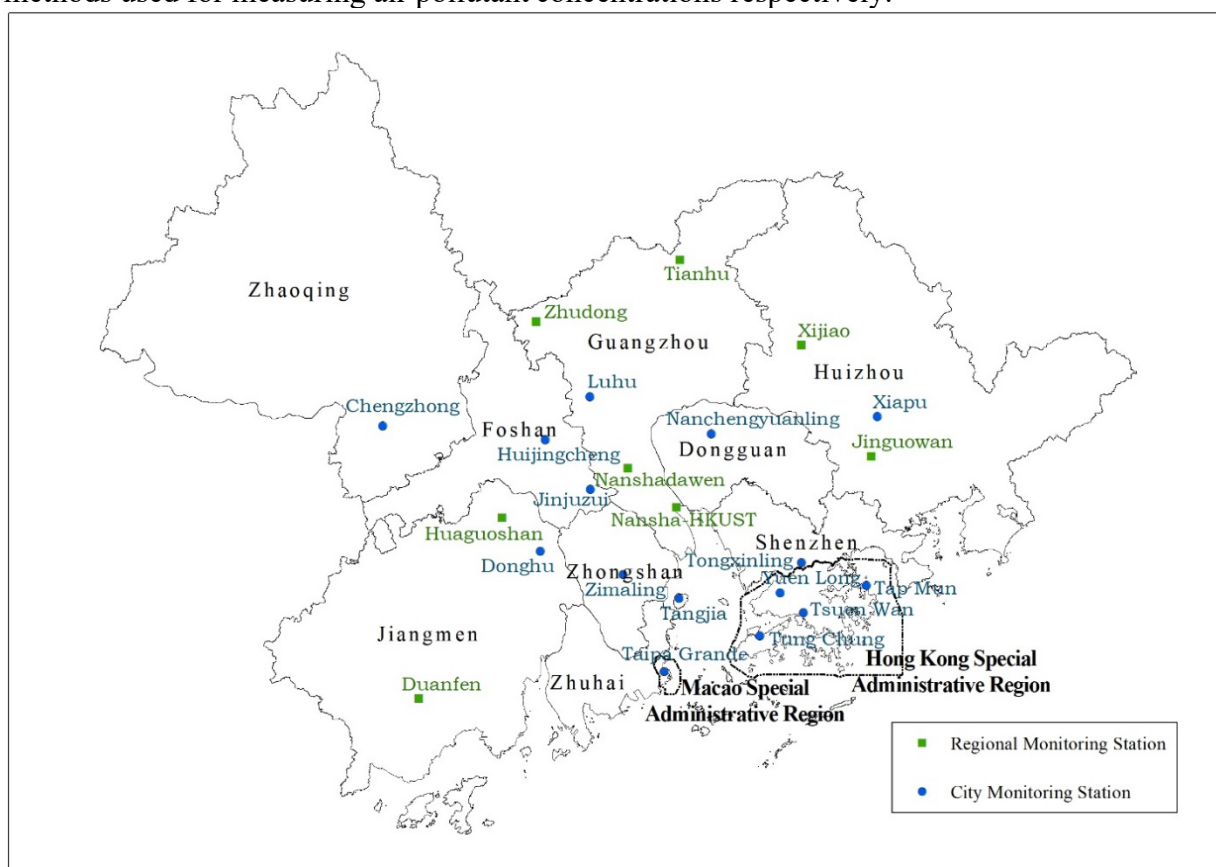


Figure 2.1: Spatial Distribution of Monitoring Stations in the Network

Remark: The above map was drawn with reference to the China National Standard Map "Map of the Pearl River Delta Region" (approval number: 粵S (2021) No. 169), and was re-submitted and approved for release. The approval number is GS粵 (2022) No. 378.

3. Operation of the Network

The overall operation of the Network was smooth in the third quarter of 2022. The average data capture rate of hourly air pollutant monitoring data measured at all monitoring stations was 96.7% 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 January to March 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 2022		August 2022		September 2022	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	9	1	14	1	11
Nanshadawen (Guangzhou)	6	15	3	23	3	18
Nansha-HKUST (Guangzhou)	5	15	6	12	4	19
Tianhu (Guangzhou)	6	13	6	12	5	20
Zhudong (Guangzhou)	5	21	4	14	6	20
Tongxinling (Shenzhen)	2	6	2	7	2	6
Jinjuzui (Foshan)	1	7	1	8	1	18
Huijingcheng (Foshan)	4	20	3	26	4	48
Tangjia (Zhuhai)	5	13	4	12	5	13
Donghu (Jiangmen)	4	12	4	14	5	20
Duanfen (Jiangmen)	1	10	2	12	3	20
Huaguoshan (Jiangmen)	2	59	2	68	2	80
Chengzhong (Zhaoqing)	10	70	5	203	1	39
Xiapu (Huizhou)	1	13	2	9	3	26
Xijiao (Huizhou)	2	9	2	5	--	--
Jinguowan (Huizhou)	5	15	2	13	3	14
Zimaling (Zhongshan)	2	14	2	10	3	14
Nanchengyuanling (Dongguan)	5	32	6	16	7	29
Tap Mun (Hong Kong)	7	14	7	16	7	14
Tsuen Wan (Hong Kong)	7	21	8	28	7	16
Yuen Long (Hong Kong)	2	21	2	8	2	10
Tung Chung (Hong Kong)	3	14	3	12	3	16
Taipa Grande (Macao)	2	7	2	6	0	11

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

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022		August 2022		September 2022	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	5	2	6	2	5
Nanshadawen (Guangzhou)	7	10	4	13	4	9
Nansha-HKUST (Guangzhou)	6	8	6	8	5	12
Tianhu (Guangzhou)	6	9	7	9	7	13
Zhudong (Guangzhou)	6	11	6	9	6	12
Tongxinling (Shenzhen)	3	4	2	4	3	5
Jinjuzui (Foshan)	1	3	1	4	1	8
Huijingcheng (Foshan)	4	10	4	11	6	18
Tangjia (Zhuhai)	6	10	5	8	5	8
Donghu (Jiangmen)	5	9	5	8	5	11
Duanfen (Jiangmen)	2	4	2	5	4	8
Huaguoshan (Jiangmen)	2	12	2	16	3	20
Chengzhong (Zhaoqing)	11	21	6	29	5	13
Xiapu (Huizhou)	2	5	2	4	5	10
Xijiao (Huizhou)	2	3	2	3	--	--
Jinguowan (Huizhou)	6	7	3	7	4	6
Zimaling (Zhongshan)	3	7	2	7	4	10
Nanchengyuanling (Dongguan)	6	13	7	10	8	14
Tap Mun (Hong Kong)	7	10	7	10	8	11
Tsuen Wan (Hong Kong)	7	11	8	13	8	12
Yuen Long (Hong Kong)	3	6	3	5	3	6
Tung Chung (Hong Kong)	3	6	4	6	4	8
Taipa Grande (Macao)	3	5	3	4	1	6

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

-- No monitoring data for the corresponding period.

Table 4.1c : The monthly averages of SO₂

Monitoring Station	July 2022	August 2022	September 2022
Luhu (Guangzhou)	4	4	4
Nanshadawen (Guangzhou)	8	8	6
Nansha-HKUST (Guangzhou)	7	7	8
Tianhu (Guangzhou)	7	7	9
Zhudong (Guangzhou)	8	7	8
Tongxinling (Shenzhen)	3	3	4
Jinjuzui (Foshan)	2	2	3
Huijingcheng (Foshan)	6	6	9
Tangjia (Zhuhai)	7	6	7
Donghu (Jiangmen)	7	6	8
Duanfen (Jiangmen)	3	4	5
Huaguoshan (Jiangmen)	6	7	10
Chengzhong (Zhaoqing)	14	12	9
Xiapu (Huizhou)	3	3	6
Xijiao (Huizhou)	2	2*	--
Jinguowan (Huizhou)	6	5	5
Zimaling (Zhongshan)	5	4	6
Nanchengyuanling (Dongguan)	8	8	11
Tap Mun (Hong Kong)	8	9	10
Tsuen Wan (Hong Kong)	9	9	9
Yuen Long (Hong Kong)	4	4	4
Tung Chung (Hong Kong)	4	5	6
Taipa Grande (Macao)	4	3	3

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%

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022		August 2022		September 2022	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	76	3	80	6	105
Nanshadawen (Guangzhou)	4	95	5	105	9	118
Nansha-HKUST (Guangzhou)	1	70	2	55	1	92
Tianhu (Guangzhou)	3	47	3	32	1	22
Zhudong (Guangzhou)	4	61	4	53	6	68
Tongxinling (Shenzhen)	1	67	1	52	3	93
Jinjuzui (Foshan)	1	58	1	54	3	75
Huijingcheng (Foshan)	4	62	7	88	8	101
Tangjia (Zhuhai)	1	41	1	54	3	47
Donghu (Jiangmen)	4	44	3	46	8	54
Duanfen (Jiangmen)	1	24	1	21	3	27
Huaguoshan (Jiangmen)	1	68	1	47	6	66
Chengzhong (Zhaoqing)	5	65	6	80	6	125
Xiapu (Huizhou)	5	48	5	58	7	69
Xijiao (Huizhou)	1	22	1	15	--	--
Jinguowan (Huizhou)	1	30	1	30	2	30
Zimaling (Zhongshan)	2	62	2	56	1	73
Nanchengyuanling (Dongguan)	4	71	4	92	8	89
Tap Mun (Hong Kong)	0	40	0	40	1	44
Tsuen Wan (Hong Kong)	3	92	3	123	7	117
Yuen Long (Hong Kong)	3	107	0	91	0	146
Tung Chung (Hong Kong)	1	81	0	75	2	85
Taipa Grande (Macao)	1	48	1	45	4	159

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

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022		August 2022		September 2022	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	8	31	11	35	21	65
Nanshadawen (Guangzhou)	9	44	14	42	19	62
Nansha-HKUST (Guangzhou)	5	32	10	39	5	41
Tianhu (Guangzhou)	3	18	4	13	3	12
Zhudong (Guangzhou)	7	26	8	27	14	28
Tongxinling (Shenzhen)	2	41	3	30	6	33
Jinjuzui (Foshan)	4	27	6	33	14	44
Huijingcheng (Foshan)	10	32	15	43	16	49
Tangjia (Zhuhai)	1	20	3	28	8	24
Donghu (Jiangmen)	6	23	9	23	14	30
Duanfen (Jiangmen)	2	9	3	10	7	14
Huaguoshan (Jiangmen)	3	29	7	23	15	34
Chengzhong (Zhaoqing)	9	35	10	35	8	48
Xiapu (Huizhou)	8	25	9	26	11	31
Xijiao (Huizhou)	2	8	2	6	--	--
Jinguowan (Huizhou)	2	17	4	14	6	14
Zimaling (Zhongshan)	3	29	6	30	9	35
Nanchengyuanling (Dongguan)	7	33	12	39	13	39
Tap Mun (Hong Kong)	1	18	2	16	3	14
Tsuen Wan (Hong Kong)	10	57	17	51	25	59
Yuen Long (Hong Kong)	7	62	14	53	16	69
Tung Chung (Hong Kong)	2	34	3	32	12	44
Taipa Grande (Macao)	2	21	4	31	9	42

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

-- No monitoring data for the corresponding period.

Table 4.2c: The monthly averages of NO₂

Monitoring Station	July 2022	August 2022	September 2022
Luhu (Guangzhou)	19	23	34
Nanshadawen (Guangzhou)	22	26	35
Nansha-HKUST (Guangzhou)	15	18	21
Tianhu (Guangzhou)	10	7	8
Zhudong (Guangzhou)	18	17	21
Tongxinling (Shenzhen)	12	13	15
Jinjuzui (Foshan)	13	17	24
Huijingcheng (Foshan)	19	24	29
Tangjia (Zhuhai)	7	10	16
Donghu (Jiangmen)	12	16	20
Duanfen (Jiangmen)	5	6	11
Huaguoshan (Jiangmen)	11	14	23
Chengzhong (Zhaoqing)	22	22	31
Xiapu (Huizhou)	16	15	17
Xijiao (Huizhou)	5	4*	--
Jinguowan (Huizhou)	9	8	9
Zimaling (Zhongshan)	10	14	21
Nanchengyuanling (Dongguan)	20	24	25
Tap Mun (Hong Kong)	6	6	8
Tsuen Wan (Hong Kong)	34	33	38
Yuen Long (Hong Kong)	28	26	34
Tung Chung (Hong Kong)	14	17	25
Taipa Grande (Macao)	7	12	19

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%

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022		August 2022		September 2022	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	268	3	225	3	280
Nanshadawen (Guangzhou)	3	288	2	221	2	290
Nansha-HKUST (Guangzhou)	1	349	1	222	1	296
Tianhu (Guangzhou)	13	230	15	193	31	209
Zhudong (Guangzhou)	1	224	1	216	2	268
Tongxinling (Shenzhen)	1	261	1	208	2	292
Jinjuzui (Foshan)	2	228	1	199	2	262
Huijingcheng (Foshan)	2	247	2	235	6	294
Tangjia (Zhuhai)	3	243	3	270	11	379
Donghu (Jiangmen)	3	209	2	211	11	296
Duanfen (Jiangmen)	6	165	5	134	10	256
Huaguoshan (Jiangmen)	1	170	2	185	2	244
Chengzhong (Zhaoqing)	9	172	3	196	9	270
Xiapu (Huizhou)	4	239	3	205	12	237
Xijiao (Huizhou)	3	232	3	189	--	--
Jinguowan (Huizhou)	1	255	1	183	6	240
Zimaling (Zhongshan)	2	251	2	243	3	330
Nanchengyuanling (Dongguan)	5	265	4	243	8	305
Tap Mun (Hong Kong)	5	278	7	272	15	309
Tsuen Wan (Hong Kong)	1	210	1	205	3	294
Yuen Long (Hong Kong)	0	201	0	255	4	357
Tung Chung (Hong Kong)	2	213	2	259	3	325
Taipa Grande (Macao)	11	170	1	252	8	341

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

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022			August 2022			September 2022		
	Min	Max	90 th per	Min	Max	90 th per	Min	Max	90 th per
Luhu (Guangzhou)	40	236	217	28	196	170	51	226	119
Nanshadawen (Guangzhou)	50	255	231	31	169	149	36	245	109
Nansha-HKUST (Guangzhou)	45	268	191	28	199	144	26	252	65
Tianhu (Guangzhou)	55	219	196	47	180	133	65	188	136
Zhudong (Guangzhou)	41	210	189	35	188	151	78	226	121
Tongxinling (Shenzhen)	38	229	171	21	190	133	39	234	60
Jinjuzui (Foshan)	42	184	161	33	169	156	30	245	91
Huijingcheng (Foshan)	42	223	203	46	193	172	40	244	104
Tangjia (Zhuhai)	47	158	147	37	217	171	40	311	70
Donghu (Jiangmen)	44	186	163	45	174	156	27	260	79
Duanfen (Jiangmen)	43	136	108	46	113	98	35	222	62
Huaguoshan (Jiangmen)	36	143	126	29	147	111	26	218	68
Chengzhong (Zhaoqing)	32	163	139	49	152	129	48	229	83
Xiapu (Huizhou)	40	225	205	36	168	156	59	205	104
Xijiao (Huizhou)	53	197	159	38	168	106	--	--	--
Jinguowan (Huizhou)	32	231	190	21	157	144	44	206	84
Zimaling (Zhongshan)	46	204	173	39	191	163	33	288	78
Nanchengyuanling (Dongguan)	48	236	219	37	206	165	53	250	98
Tap Mun (Hong Kong)	47	215	146	43	224	113	51	275	65
Tsuen Wan (Hong Kong)	14	155	88	17	118	78	51	253	34
Yuen Long (Hong Kong)	29	147	127	14	221	124	32	304	50
Tung Chung (Hong Kong)	32	154	115	21	173	115	34	277	49
Taipa Grande (Macao)	31	126	116	28	229	129	40	277	53

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

-- No monitoring data for the corresponding period.

Table 4.3c: The monthly averages of O₃

Monitoring Station	July 2022	August 2022	September 2022
Luhu (Guangzhou)	70	54	93
Nanshadawen (Guangzhou)	67	51	97
Nansha-HKUST (Guangzhou)	61	52	109
Tianhu (Guangzhou)	89	68	119
Zhudong (Guangzhou)	66	54	91
Tongxinling (Shenzhen)	56	48	106
Jinjuzui (Foshan)	56	49	104
Huijingcheng (Foshan)	72	61	114
Tangjia (Zhuhai)	59	58	125
Donghu (Jiangmen)	63	55	122
Duanfen (Jiangmen)	51	47	92
Huaguoshan (Jiangmen)	50	41	92
Chengzhong (Zhaoqing)	58	55	99
Xiapu (Huizhou)	70	56	102
Xijiao (Huizhou)	57	42*	--
Jinguowan (Huizhou)	55	42	86
Zimaling (Zhongshan)	60	57	119
Nanchengyuanling (Dongguan)	69	55	111
Tap Mun (Hong Kong)	55	56	118
Tsuen Wan (Hong Kong)	32	28	97
Yuen Long (Hong Kong)	38	36	104
Tung Chung (Hong Kong)	41	38	96
Taipa Grande (Macao)	50	49	125

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%

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022		August 2022		September 2022	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	0.5	1.1	0.5	1.3	0.5	1.6
Nanshadawen (Guangzhou)	0.4	1.0	0.3	1.0	0.2	1.6
Nansha-HKUST (Guangzhou)	0.3	0.8	0.2	1.1	0.0	0.9
Tianhu (Guangzhou)	0.4	1.1	0.3	1.0	0.3	0.8
Zhudong (Guangzhou)	0.3	0.8	0.4	1.0	0.3	1.2
Tongxinling (Shenzhen)	0.3	1.3	0.4	1.2	0.4	1.1
Jinjuzui (Foshan)	0.0	0.8	0.2	0.9	0.3	1.1
Huijingcheng (Foshan)	0.4	0.8	0.4	0.9	0.4	1.2
Tangjia (Zhuhai)	0.2	0.7	0.2	0.7	0.2	0.8
Donghu (Jiangmen)	0.3	1.3	0.3	1.0	0.4	1.1
Duanfen (Jiangmen)	0.2	1.0	0.2	0.7	0.3	0.8
Huaguoshan (Jiangmen)	0.2	1.0	0.2	1.0	0.4	1.2
Chengzhong (Zhaoqing)	0.4	1.2	0.3	1.0	0.4	1.0
Xiapu (Huizhou)	0.2	0.7	0.2	0.8	0.5	1.0
Xijiao (Huizhou)	0.3	0.8	0.3	0.8	--	--
Jinguowan (Huizhou)	0.2	0.9	0.2	0.9	0.1	0.6
Zimaling (Zhongshan)	0.3	1.1	0.2	1.5	0.1	0.9
Nanchengyuanling (Dongguan)	0.3	1.2	0.4	1.2	0.4	1.3
Tap Mun (Hong Kong)	0.3	0.8	0.4	0.9	0.6	1.1
Tsuen Wan (Hong Kong)	0.3	1.0	0.1	0.9	0.2	1.3
Yuen Long (Hong Kong)	0.3	1.2	0.4	1.0	0.5	1.2
Tung Chung (Hong Kong)	0.1	0.8	0.2	0.8	0.3	0.9
Taipa Grande (Macao)	0.4	0.9	0.3	1.2	0.4	1.3

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

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022			August 2022			September 2022		
	Min	Max	95 th per	Min	Max	95 th per	Min	Max	95 th per
Luhu (Guangzhou)	0.5	0.8	0.8	0.6	1.0	0.9	0.6	1.0	0.9
Nanshadawen (Guangzhou)	0.4	0.7	0.7	0.4	0.8	0.8	0.4	1.1	1.1
Nansha-HKUST (Guangzhou)	0.3	0.7	0.6	0.3	0.8	0.8	0.3	0.8	0.7
Tianhu (Guangzhou)	0.4	1.0	0.9	0.4	0.8	0.8	0.4	0.7	0.7
Zhudong (Guangzhou)	0.4	0.7	0.6	0.5	0.8	0.8	0.4	0.9	0.9
Tongxinling (Shenzhen)	0.3	0.9	0.9	0.4	0.7	0.7	0.5	0.9	0.9
Jinjuzui (Foshan)	0.3	0.6	0.6	0.3	0.6	0.6	0.4	0.9	0.8
Huijingcheng (Foshan)	0.4	0.7	0.7	0.4	0.8	0.7	0.5	0.8	0.8
Tangjia (Zhuhai)	0.2	0.6	0.6	0.2	0.5	0.5	0.2	0.7	0.7
Donghu (Jiangmen)	0.3	0.6	0.6	0.4	0.7	0.6	0.5	0.8	0.8
Duanfen (Jiangmen)	0.3	0.5	0.5	0.3	0.5	0.5	0.4	0.7	0.7
Huaguoshan (Jiangmen)	0.4	0.8	0.7	0.4	0.8	0.7	0.5	0.9	0.9
Chengzhong (Zhaoqing)	0.5	0.8	0.8	0.4	0.7	0.7	0.5	0.8	0.8
Xiapu (Huizhou)	0.3	0.6	0.6	0.3	0.7	0.7	0.5	0.9	0.8
Xijiao (Huizhou)	0.3	0.5	0.5	0.3	0.5	0.5	--	--	--
Jinguowan (Huizhou)	0.2	0.8	0.8	0.2	0.7	0.7	0.2	0.5	0.5
Zimaling (Zhongshan)	0.5	1.0	0.9	0.3	0.9	0.8	0.2	0.7	0.7
Nanchengyuanling (Dongguan)	0.5	1.0	1.0	0.6	0.8	0.8	0.6	1.0	1.0
Tap Mun (Hong Kong)	0.4	0.8	0.8	0.4	0.7	0.7	0.6	1.0	1.0
Tsuen Wan (Hong Kong)	0.3	0.9	0.8	0.3	0.8	0.8	0.3	1.1	1.0
Yuen Long (Hong Kong)	0.4	0.8	0.8	0.6	0.9	0.8	0.5	1.0	0.9
Tung Chung (Hong Kong)	0.1	0.5	0.5	0.2	0.7	0.6	0.4	0.8	0.7
Taipa Grande (Macao)	0.4	0.6	0.6	0.3	0.8	0.8	0.4	1.1	1.1

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

-- No monitoring data for the corresponding period.

Table 4.4c: The monthly averages of CO

Monitoring Station	July 2022	August 2022	September 2022
Luhu (Guangzhou)	0.7	0.8	0.8
Nanshadawen (Guangzhou)	0.6	0.6	0.8
Nansha-HKUST (Guangzhou)	0.4	0.5	0.5
Tianhu (Guangzhou)	0.7	0.6	0.5
Zhudong (Guangzhou)	0.5	0.6	0.8
Tongxinling (Shenzhen)	0.5	0.6	0.7
Jinjuzui (Foshan)	0.5	0.4	0.6
Huijingcheng (Foshan)	0.6	0.6	0.7
Tangjia (Zhuhai)	0.4	0.3	0.5
Donghu (Jiangmen)	0.4	0.5	0.7
Duanfen (Jiangmen)	0.4	0.4	0.6
Huaguoshan (Jiangmen)	0.5	0.6	0.7
Chengzhong (Zhaoqing)	0.6	0.6	0.7
Xiapu (Huizhou)	0.5	0.4	0.7
Xijiao (Huizhou)	0.4	0.4*	--
Jinguowan (Huizhou)	0.5	0.5	0.4
Zimaling (Zhongshan)	0.6	0.6	0.5
Nanchengyuanling (Dongguan)	0.7	0.7	0.8
Tap Mun (Hong Kong)	0.6	0.5	0.8
Tsuen Wan (Hong Kong)	0.6	0.5	0.7
Yuen Long (Hong Kong)	0.6	0.6	0.8
Tung Chung (Hong Kong)	0.3	0.4	0.6
Taipa Grande (Macao)	0.5	0.5	0.7

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

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

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022		August 2022		September 2022	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	12	55	11	50	20	91
Nanshadawen (Guangzhou)	14	51	9	48	22	83
Nansha-HKUST (Guangzhou)	13	50	9	38	16	77
Tianhu (Guangzhou)	9	58	7	47	15	69
Zhudong (Guangzhou)	9	56	11	51	15	69
Tongxinling (Shenzhen)	9	53	9	38	14	69
Jinjuzui (Foshan)	9	49	7	40	13	84
Huijingcheng (Foshan)	6	60	5	54	20	104
Tangjia (Zhuhai)	6	40	5	34	14	76
Donghu (Jiangmen)	15	54	9	45	15	77
Duanfen (Jiangmen)	9	34	6	29	6	58
Huaguoshan (Jiangmen)	9	62	10	48	21	93
Chengzhong (Zhaoqing)	8	53	8	49	14	74
Xiapu (Huizhou)	10	63	9	52	23	84
Xijiao (Huizhou)	9	47	10	40	--	--
Jinguowan (Huizhou)	12	58	10	44	18	71
Zimaling (Zhongshan)	9	57	9	50	8	88
Nanchengyuanling (Dongguan)	10	61	11	44	22	86
Tap Mun (Hong Kong)	3	38	4	31	12	50
Tsuen Wan (Hong Kong)	6	43	6	35	7	69
Yuen Long (Hong Kong)	5	28	5	41	9	70
Tung Chung (Hong Kong)	5	42	6	43	7	66
Taipa Grande (Macao)	4	48	3	54	12	80

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

-- No monitoring data for the corresponding period.

Table 4.5b: The monthly averages of PM₁₀

Monitoring Station	July 2022	August 2022	September 2022
Luhu (Guangzhou)	29	26	51
Nanshadawen (Guangzhou)	26	23	51
Nansha-HKUST (Guangzhou)	24	21	49
Tianhu (Guangzhou)	27	19	37
Zhudong (Guangzhou)	30	24	40
Tongxinling (Shenzhen)	21	18	42
Jinjuzui (Foshan)	25	20	49
Huijingcheng (Foshan)	29	21	59
Tangjia (Zhuhai)	16	14	43
Donghu (Jiangmen)	26	22	53
Duanfen (Jiangmen)	18	13	37
Huaguoshan (Jiangmen)	28	24	58
Chengzhong (Zhaoqing)	29	25	48
Xiapu (Huizhou)	31	24	49
Xijiao (Huizhou)	26	19*	--
Jinguowan (Huizhou)	24	21	41
Zimaling (Zhongshan)	24	20	50
Nanchengyuanling (Dongguan)	31	26	54
Tap Mun (Hong Kong)	12	13	32
Tsuen Wan (Hong Kong)	15	15	36
Yuen Long (Hong Kong)	16	14	37
Tung Chung (Hong Kong)	14	13	36
Taipa Grande (Macao)	15	13	49

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%.

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022		August 2022		September 2022	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	35	6	29	10	56
Nanshadawen (Guangzhou)	6	35	6	24	17	57
Nansha-HKUST (Guangzhou)	4	29	4	22	5	50
Tianhu (Guangzhou)	4	35	3	28	7	43
Zhudong (Guangzhou)	8	41	8	34	10	51
Tongxinling (Shenzhen)	2	36	2	25	5	50
Jinjuzui (Foshan)	4	28	4	21	6	47
Huijingcheng (Foshan)	2	38	5	32	8	61
Tangjia (Zhuhai)	3	30	3	25	6	61
Donghu (Jiangmen)	4	31	5	24	6	51
Duanfen (Jiangmen)	4	27	5	20	3	44
Huaguoshan (Jiangmen)	3	41	2	35	12	68
Chengzhong (Zhaoqing)	4	32	4	30	9	49
Xiapu (Huizhou)	4	27	3	22	9	46
Xijiao (Huizhou)	6	26	6	14	--	--
Jinguowan (Huizhou)	8	42	7	28	10	53
Zimaling (Zhongshan)	5	33	2	28	3	54
Nanchengyuanling (Dongguan)	4	33	3	23	9	50
Tap Mun (Hong Kong)	2	28	2	22	4	41
Tsuen Wan (Hong Kong)	3	29	4	27	6	54
Yuen Long (Hong Kong)	3	23	2	30	6	51
Tung Chung (Hong Kong)	3	32	2	32	3	49
Taipa Grande (Macao)	2	29	2	32	3	57

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

-- No monitoring data for the corresponding period.

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

Monitoring Station	July 2022	August 2022	September 2022
Luhu (Guangzhou)	16	14	31
Nanshadawen (Guangzhou)	15	14	36
Nansha-HKUST (Guangzhou)	13	11	28
Tianhu (Guangzhou)	14	9	23
Zhudong (Guangzhou)	22	16	29
Tongxinling (Shenzhen)	10	8	26
Jinjuzui (Foshan)	12	10	27
Huijingcheng (Foshan)	15	14	32
Tangjia (Zhuhai)	10	8	27
Donghu (Jiangmen)	12	10	29
Duanfen (Jiangmen)	10	7	26
Huaguoshan (Jiangmen)	17	15	40
Chengzhong (Zhaoqing)	16	14	30
Xiapu (Huizhou)	12	9	23
Xijiao (Huizhou)	12	8*	--
Jinguowan (Huizhou)	15	13	27
Zimaling (Zhongshan)	12	10	28
Nanchengyuanling (Dongguan)	14	12	28
Tap Mun (Hong Kong)	7	6	20
Tsuen Wan (Hong Kong)	7	10	25
Yuen Long (Hong Kong)	8	9	24
Tung Chung (Hong Kong)	9	9	23
Taipa Grande (Macao)	7	5	29

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%

-- No monitoring data for the corresponding period.

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. Due to the site load-bearing issue, the station is out of service from 00:00 on August 23, 2022.

Because of the impact of covid-19 pandemic, the station is still under construction.

(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
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