

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

April to June 2019

**Statistical Summary of the Second Quarter
Monitoring Results**

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Contents

	<u>Page</u>
1. Foreword	3
2. Introduction to Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network	3
3. Operation of the Network	4
4. Statistical Results of Pollutant Concentrations	5
Annex A : Site Information of Monitoring Stations	21
Annex B : Measurement Methods of Air Pollutant Concentration	22

List of Tables

	<u>Page</u>
Table 4.1a : The monthly maxima and minima of hourly averages of SO ₂	5
Table 4.1b : The monthly maxima and minima of daily averages of SO ₂	6
Table 4.1c : The monthly averages of SO ₂	7
Table 4.2a : The monthly maxima and minima of hourly averages of NO ₂	8
Table 4.2b : The monthly maxima and minima of daily averages of NO ₂	9
Table 4.2c : The monthly averages of NO ₂	10
Table 4.3a : The monthly maxima and minima of hourly averages of O ₃	11
Table 4.3b : Daily maximum 8-hour averages of O ₃ (the monthly maxima, minima and the 90 th percentile)	12
Table 4.3c : The monthly averages of O ₃	13
Table 4.4a : The monthly maxima and minima of hourly averages of CO	14
Table 4.4b : Daily averages of CO (the monthly maxima, minima and the 95 th percentile)	15
Table 4.4c : The monthly averages of CO	16
Table 4.5a : The monthly maxima and minima of daily averages of PM ₁₀	17
Table 4.5b : The monthly averages of PM ₁₀	18
Table 4.6a : The monthly maxima and minima of daily averages of PM _{2.5}	19
Table 4.6b : The monthly averages of PM _{2.5}	20

List of Figures

	<u>Page</u>
Figure 2.1 : Spatial Distribution of Monitoring Stations in the Network	4

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 second quarter of 2019. It is the twenty-second report published in the form of a quarterly report and the nineteenth 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 Centre (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 GDEMC 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 GDEMC, HKEPD, Environmental Protection Bureau of Macao SARG and the 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 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 GDEMC, 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.°665 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 second quarter of 2019. The average data capture rate of hourly air pollutant monitoring data measured at all monitoring stations was 96.9% in the second 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 April to June 2019. 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	April 2019		May 2019		June 2019	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	4	12	4	15	4	12
Modiesha (Guangzhou)	9	29	9	24	10	20
Nansha-HKUST (Guangzhou)	5	24	4	28	4	16
Tianhu (Guangzhou)	1	9	1	11	2	11
Zhudong (Guangzhou)	4	62	4	22	4	24
Tongxinling (Shenzhen)	5	16	5	6	5	8
Jinjuzui (Foshan)	2	36	2	23	3	26
Huijingcheng (Foshan)	1	43	1	21	4	35
Tangjia (Zhuhai)	1	12	2	13	1	10
Donghu (Jiangmen)	3	30	3	19	3	22
Duanfen (Jiangmen)	4	17	4	16	4	20
Huaguoshan (Jiangmen)	1	86	1	57	1	70
Chengzhong (Zhaoqing)	2	52	2	52	3	69
Xiapu (Huizhou)	4	24	3	18	3	18
Xijiao (Huizhou)	1	16	1	13	1	12
Jinguowan (Huizhou)	1	16	1	11	2	9
Zimaling (Zhongshan)	3	17	1	16	1	7
Nanchengyuanling (Dongguan)	6	24	5	21	5	18
Tap Mun (Hong Kong)	5	10	5	9	1	10
Tsuen Wan (Hong Kong)	6	21	6	15	5	13
Yuen Long (Hong Kong)	0	36	2	10	3	16
Tung Chung (Hong Kong)	1	18	3	14	5	13
Taipa Grande (Macao)	0	16	0	10	0	7

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	April 2019		May 2019		June 2019	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	4	7	4	8	5	7
Modiesha (Guangzhou)	9	16	10	15	10	12
Nansha-HKUST (Guangzhou)	6	12	5	11	5	9
Tianhu (Guangzhou)	1	4	1	7	3	5
Zhudong (Guangzhou)	5	13	5	13	6	9
Tongxinling (Shenzhen)	5	7	5	6	5	6
Jinjuzui (Foshan)	3	9	4	10	4	9
Huijingcheng (Foshan)	6	21	3	13	8	15
Tangjia (Zhuhai)	4	7	3	7	4	6
Donghu (Jiangmen)	4	11	3	12	4	8
Duanfen (Jiangmen)	4	7	4	7	4	6
Huaguoshan (Jiangmen)	2	18	1	14	1	13
Chengzhong (Zhaoqing)	4	17	3	17	6	16
Xiapu (Huizhou)	5	13	4	7	4	7
Xijiao (Huizhou)	2	6	1	5	2	4
Jinguowan (Huizhou)	3	8	5	8	5	8
Zimaling (Zhongshan)	3	10	2	7	2	4
Nanchengyuanling (Dongguan)	6	15	5	14	6	11
Tap Mun (Hong Kong)	5	6	5	7	2	7
Tsuen Wan (Hong Kong)	6	9	6	9	6	9
Yuen Long (Hong Kong)	1	7	2	5	3	6
Tung Chung (Hong Kong)	2	6	4	10	7	9
Taipa Grande (Macao)	1	6	1	3	1	3

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	April 2019	May 2019	June 2019
Luhu (Guangzhou)	6	6	6
Modiesha (Guangzhou)	13	11	11
Nansha-HKUST (Guangzhou)	8	7	6
Tianhu (Guangzhou)	2	3	4
Zhudong (Guangzhou)	9	8	7
Tongxinling (Shenzhen)	6	5	5
Jinjuzui (Foshan)	6	5	5
Huijingcheng (Foshan)	9	7	11
Tangjia (Zhuhai)	6	5	5
Donghu (Jiangmen)	6	6	5
Duanfen (Jiangmen)	5	5	4
Huaguoshan (Jiangmen)	6	3	4
Chengzhong (Zhaoqing)	9	8	10
Xiapu (Huizhou)	7	5	5
Xijiao (Huizhou)	3	2	3
Jinguowan (Huizhou)	6	7	7
Zimaling (Zhongshan)	5	4	3
Nanchengyuanling (Dongguan)	11	10	7
Tap Mun (Hong Kong)	5	6	5
Tsuen Wan (Hong Kong)	7	7	7
Yuen Long (Hong Kong)	3	3	4
Tung Chung (Hong Kong)	3	5	7
Taipa Grande (Macao)	3	3	3

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

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

Monitoring Station	April 2019		May 2019		June 2019	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	14	123	12	111	8	85
Modiesha (Guangzhou)	21	143	5	120	7	94
Nansha-HKUST (Guangzhou)	4	128	6	84	4	89
Tianhu (Guangzhou)	3	35	2	51	1	34
Zhudong (Guangzhou)	7	88	5	87	4	63
Tongxinling (Shenzhen)	3	67	3	66	4	60
Jinjuzui (Foshan)	5	87	1	78	1	75
Huijingcheng (Foshan)	9	100	5	92	5	91
Tangjia (Zhuhai)	1	92	1	86	1	64
Donghu (Jiangmen)	3	97	3	80	1	71
Duanfen (Jiangmen)	1	54	1	67	1	26
Huaguoshan (Jiangmen)	1	96	1	67	1	43
Chengzhong (Zhaoqing)	9	104	8	99	4	66
Xiapu (Huizhou)	8	79	5	63	5	60
Xijiao (Huizhou)	5	42	3	48	4	31
Jinguowan (Huizhou)	1	41	2	30	1	40
Zimaling (Zhongshan)	1	78	1	82	1	52
Nanchengyuanling (Dongguan)	8	83	8	84	6	74
Tap Mun (Hong Kong)	4	59	4	57	0	39
Tsuen Wan (Hong Kong)	2	148	0	140	1	100
Yuen Long (Hong Kong)	5	120	3	121	1	86
Tung Chung (Hong Kong)	3	114	1	94	1	95
Taipa Grande (Macao)	2	80	0	67	2	65

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	April 2019		May 2019		June 2019	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	31	66	19	72	14	53
Modiesha (Guangzhou)	38	82	19	83	17	59
Nansha-HKUST (Guangzhou)	16	61	18	46	11	40
Tianhu (Guangzhou)	5	21	3	23	4	19
Zhudong (Guangzhou)	19	50	12	42	12	36
Tongxinling (Shenzhen)	6	34	6	31	6	40
Jinjuzui (Foshan)	13	59	6	48	4	41
Huijingcheng (Foshan)	16	52	11	45	8	56
Tangjia (Zhuhai)	6	40	6	42	3	26
Donghu (Jiangmen)	9	59	7	46	5	29
Duanfen (Jiangmen)	2	24	2	38	1	15
Huaguoshan (Jiangmen)	4	63	3	43	5	21
Chengzhong (Zhaoqing)	17	82	15	58	12	41
Xiapu (Huizhou)	19	42	11	32	11	32
Xijiao (Huizhou)	8	26	6	21	7	15
Jinguowan (Huizhou)	3	21	5	17	6	17
Zimaling (Zhongshan)	2	38	2	45	2	25
Nanchengyuanling (Dongguan)	13	50	14	57	14	48
Tap Mun (Hong Kong)	6	22	5	17	4	17
Tsuen Wan (Hong Kong)	21	74	22	78	15	56
Yuen Long (Hong Kong)	21	64	16	60	9	52
Tung Chung (Hong Kong)	6	54	8	57	6	56
Taipa Grande (Macao)	8	41	2	32	5	34

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	April 2019	May 2019	June 2019
Luhu (Guangzhou)	46	39	33
Modiesha (Guangzhou)	55	42	36
Nansha-HKUST (Guangzhou)	40	32	24
Tianhu (Guangzhou)	12	9	10
Zhudong (Guangzhou)	30	27	24
Tongxinling (Shenzhen)	17	16	18
Jinjuzui (Foshan)	34	27	20
Huijingcheng (Foshan)	31	26	30
Tangjia (Zhuhai)	22	20	12
Donghu (Jiangmen)	27	23	15
Duanfen (Jiangmen)	9	12	8
Huaguoshan (Jiangmen)	25	21	12
Chengzhong (Zhaoqing)	39	31	25
Xiapu (Huizhou)	29	20	21
Xijiao (Huizhou)	14	12	12
Jinguowan (Huizhou)	11	9	11
Zimaling (Zhongshan)	17	18	8
Nanchengyuanling (Dongguan)	35	30	29
Tap Mun (Hong Kong)	12	9	9
Tsuen Wan (Hong Kong)	43	40	35
Yuen Long (Hong Kong)	39	33	28
Tung Chung (Hong Kong)	23	25	20
Taipa Grande (Macao)	21	14	15

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

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

Monitoring Station	April 2019		May 2019		June 2019	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	2	169	2	260	2	241
Modiesha (Guangzhou)	2	182	1	254	6	231
Nansha-HKUST (Guangzhou)	1	197	1	229	1	281
Tianhu (Guangzhou)	9	196	4	295	10	238
Zhudong (Guangzhou)	1	216	1	326	1	220
Tongxinling (Shenzhen)	5	203	5	154	5	206
Jinjuzui (Foshan)	3	286	4	279	4	250
Huijingcheng (Foshan)	1	236	3	276	3	257
Tangjia (Zhuhai)	6	217	8	196	12	197
Donghu (Jiangmen)	1	285	1	271	1	244
Duanfen (Jiangmen)	12	115	11	142	25	110
Huaguoshan (Jiangmen)	3	229	3	202	6	197
Chengzhong (Zhaoqing)	1	142	2	214	3	244
Xiapu (Huizhou)	3	232	3	203	3	202
Xijiao (Huizhou)	2	200	2	258	2	260
Jinguowan (Huizhou)	1	191	3	173	2	136
Zimaling (Zhongshan)	4	194	4	203	3	253
Nanchengyuanling (Dongguan)	2	270	2	273	2	259
Tap Mun (Hong Kong)	3	178	11	181	6	193
Tsuen Wan (Hong Kong)	0	145	0	146	0	197
Yuen Long (Hong Kong)	4	194	5	134	4	262
Tung Chung (Hong Kong)	5	189	4	143	4	224
Taipa Grande (Macao)	0	159	2	163	5	225

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	April 2019			May 2019			June 2019		
	Min	Max	90 th per	Min	Max	90 th per	Min	Max	90 th per
Luhu (Guangzhou)	8	135	105	14	218	134	23	192	149
Modiesha (Guangzhou)	12	137	103	33	221	146	22	199	148
Nansha-HKUST (Guangzhou)	22	155	111	28	155	120	28	190	145
Tianhu (Guangzhou)	30	174	148	48	267	178	64	181	149
Zhudong (Guangzhou)	11	157	114	20	266	167	39	193	166
Tongxinling (Shenzhen)	31	180	113	42	146	133	31	179	113
Jinjuzui (Foshan)	16	237	129	30	235	141	31	208	137
Huijingcheng (Foshan)	9	179	91	10	232	127	16	225	146
Tangjia (Zhuhai)	49	183	114	44	169	128	36	183	98
Donghu (Jiangmen)	12	199	111	28	207	126	34	211	112
Duanfen (Jiangmen)	40	101	92	45	131	88	37	102	78
Huaguoshan (Jiangmen)	5	179	95	19	178	110	42	169	118
Chengzhong (Zhaoqing)	12	121	97	28	192	127	37	212	157
Xiapu (Huizhou)	36	183	127	42	165	127	41	162	122
Xijiao (Huizhou)	32	152	122	47	211	146	48	191	145
Jinguowan (Huizhou)	31	161	116	33	146	109	33	124	104
Zimaling (Zhongshan)	24	166	109	41	157	124	44	221	127
Nanchengyuanling (Dongguan)	34	190	139	48	220	151	38	202	178
Tap Mun (Hong Kong)	36	168	129	46	169	146	39	165	115
Tsuen Wan (Hong Kong)	14	125	97	10	114	102	12	171	98
Yuen Long (Hong Kong)	36	171	98	32	118	104	28	189	103
Tung Chung (Hong Kong)	40	154	108	26	130	109	26	187	111
Taipa Grande (Macao)	26	132	97	30	140	109	32	204	104

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	April 2019	May 2019	June 2019
Luhu (Guangzhou)	30	46	46
Modiesha (Guangzhou)	28	52	46
Nansha-HKUST (Guangzhou)	38	47	40
Tianhu (Guangzhou)	67	79	77
Zhudong (Guangzhou)	35	54	58
Tongxinling (Shenzhen)	65	72	45
Jinjuzui (Foshan)	43	58	53
Huijingcheng (Foshan)	29	48	51
Tangjia (Zhuhai)	61	63	50
Donghu (Jiangmen)	42	52	49
Duanfen (Jiangmen)	54	60	62
Huaguoshan (Jiangmen)	37	46	48
Chengzhong (Zhaoqing)	34	52	51
Xiapu (Huizhou)	55	64	53
Xijiao (Huizhou)	52	60	58
Jinguowan (Huizhou)	52	56	40
Zimaling (Zhongshan)	55	58	57
Nanchengyuanling (Dongguan)	54	61	59
Tap Mun (Hong Kong)	70	83	51
Tsuen Wan (Hong Kong)	44	49	27
Yuen Long (Hong Kong)	52	55	37
Tung Chung (Hong Kong)	60	61	45
Taipa Grande (Macao)	52	57	50

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

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

Monitoring Station	April 2019		May 2019		June 2019	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	0.2	1.3	0.5	1.5	0.5	2.0
Modiesha (Guangzhou)	0.2	1.7	0.2	1.1	0.4	1.1
Nansha-HKUST (Guangzhou)	0.7	1.5	0.3	1.3	0.3	0.8
Tianhu (Guangzhou)	0.6	1.4	0.2	1.2	0.4	1.0
Zhudong (Guangzhou)	0.1	1.8	0.0	0.8	0.0	0.9
Tongxinling (Shenzhen)	0.3	1.2	0.3	0.9	0.2	0.9
Jinjuzui (Foshan)	0.2	1.3	0.3	1.3	0.3	2.3
Huijingcheng (Foshan)	0.1	1.5	0.2	1.1	0.2	1.0
Tangjia (Zhuhai)	0.2	0.9	0.3	1.0	0.1	1.0
Donghu (Jiangmen)	0.4	1.8	0.4	1.7	0.3	1.6
Duanfen (Jiangmen)	0.4	1.3	0.2	1.2	0.1	0.7
Huaguoshan (Jiangmen)	0.4	1.4	0.3	1.4	0.3	1.3
Chengzhong (Zhaoqing)	0.5	1.9	0.5	1.5	0.4	1.6
Xiapu (Huizhou)	0.4	1.5	0.3	0.9	0.3	0.8
Xijiao (Huizhou)	0.4	1.0	0.2	1.1	0.1	1.1
Jinguowan (Huizhou)	0.4	1.3	0.4	1.2	0.4	0.9
Zimaling (Zhongshan)	0.1	1.1	0.0	1.2	0.3	1.2
Nanchengyuanling (Dongguan)	0.3	1.3	0.4	1.1	0.5	1.2
Tap Mun (Hong Kong)	0.2	0.9	0.2	0.8	0.0	0.5
Tsuen Wan (Hong Kong)	0.4	1.4	0.3	1.1	0.2	1.0
Yuen Long (Hong Kong)	0.1	1.0	0.1	0.9	0.1	1.0
Tung Chung (Hong Kong)	0.3	1.0	0.3	1.0	0.3	0.9
Taipa Grande (Macao)	0.4	1.2	0.3	1.0	0.2	1.3

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	April 2019			May 2019			June 2019		
	Min	Max	95 th per	Min	Max	95 th per	Min	Max	95 th per
Luhu (Guangzhou)	0.5	1.1	1.0	0.7	1.1	1.0	0.5	1.0	0.9
Modiesha (Guangzhou)	0.3	1.3	1.2	0.3	0.8	0.8	0.5	0.9	0.9
Nansha-HKUST (Guangzhou)	0.7	1.2	1.1	0.3	1.2	1.1	0.4	0.7	0.7
Tianhu (Guangzhou)	0.7	1.2	1.1	0.5	1.0	1.0	0.6	0.9	0.9
Zhudong (Guangzhou)	0.2	1.2	1.2	0.1	0.6	0.6	0.2	0.6	0.5
Tongxinling (Shenzhen)	0.4	0.8	0.8	0.4	0.8	0.8	0.3	0.7	0.7
Jinjuzui (Foshan)	0.3	1.0	1.0	0.4	0.8	0.7	0.4	0.7	0.7
Huijingcheng (Foshan)	0.3	1.0	1.0	0.4	0.8	0.8	0.2	0.6	0.6
Tangjia (Zhuhai)	0.4	0.8	0.8	0.4	0.9	0.9	0.3	0.7	0.6
Donghu (Jiangmen)	0.5	1.2	1.1	0.5	1.0	0.9	0.4	0.9	0.8
Duanfen (Jiangmen)	0.4	1.0	1.0	0.3	1.0	0.9	0.3	0.6	0.5
Huaguoshan (Jiangmen)	0.5	1.3	1.0	0.4	1.1	1.1	0.3	0.7	0.7
Chengzhong (Zhaoqing)	0.5	1.4	1.3	0.6	1.1	1.1	0.4	0.9	0.8
Xiapu (Huizhou)	0.5	1.0	0.9	0.4	0.9	0.7	0.4	0.6	0.6
Xijiao (Huizhou)	0.4	0.7	0.7	0.3	0.9	0.8	0.3	0.9	0.8
Jinguowan (Huizhou)	0.6	1.1	1.0	0.4	1.1	1.0	0.4	0.7	0.7
Zimaling (Zhongshan)	0.3	0.8	0.8	0.2	0.8	0.8	0.3	0.9	0.8
Nanchengyuanling (Dongguan)	0.4	1.0	0.9	0.5	0.9	0.8	0.5	1.1	1.0
Tap Mun (Hong Kong)	0.3	0.7	0.6	0.3	0.7	0.6	0.1	0.4	0.4
Tsuen Wan (Hong Kong)	0.5	0.9	0.9	0.4	0.9	0.8	0.3	0.6	0.6
Yuen Long (Hong Kong)	0.2	0.7	0.7	0.2	0.8	0.6	0.2	0.8	0.7
Tung Chung (Hong Kong)	0.4	0.7	0.7	0.4	0.9	0.8	0.3	0.7	0.7
Taipa Grande (Macao)	0.4	0.8	0.8	0.3	0.8	0.7	0.3	0.6	0.6

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

Table 4.4c : The monthly averages of CO

Monitoring Station	April 2019	May 2019	June 2019
Luhu (Guangzhou)	0.8	0.8	0.8
Modiesha (Guangzhou)	0.8	0.6	0.7
Nansha-HKUST (Guangzhou)	0.9	0.6	0.5
Tianhu (Guangzhou)	0.9	0.7	0.7
Zhudong (Guangzhou)	0.7	0.4	0.3
Tongxinling (Shenzhen)	0.6	0.5	0.5
Jinjuzui (Foshan)	0.7	0.6	0.5
Huijingcheng (Foshan)	0.6	0.6	0.4
Tangjia (Zhuhai)	0.6	0.6	0.5
Donghu (Jiangmen)	0.8	0.7	0.6
Duanfen (Jiangmen)	0.7	0.5	0.4
Huaguoshan (Jiangmen)	0.8	0.8	0.5
Chengzhong (Zhaoqing)	0.9	0.8	0.7
Xiapu (Huizhou)	0.7	0.5	0.5
Xijiao (Huizhou)	0.6	0.6	0.5
Jinguowan (Huizhou)	0.8	0.7	0.6
Zimaling (Zhongshan)	0.5	0.5	0.5
Nanchengyuanling (Dongguan)	0.7	0.7	0.8
Tap Mun (Hong Kong)	0.4	0.4	0.2
Tsuen Wan (Hong Kong)	0.7	0.6	0.4
Yuen Long (Hong Kong)	0.4	0.4	0.5
Tung Chung (Hong Kong)	0.5	0.5	0.5
Taipa Grande (Macao)	0.6	0.5	0.4

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	April 2019		May 2019		June 2019	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	20	67	10	77	14	42
Modiesha (Guangzhou)	20	69	9	77	17	45
Nansha-HKUST (Guangzhou)	15	65	10	48	12	42
Tianhu (Guangzhou)	7	49	5	69	8	51
Zhudong (Guangzhou)	14	79	14	98	20	116
Tongxinling (Shenzhen)	17	62	13	46	11	29
Jinjuzui (Foshan)	19	54	13	54	15	33
Huijingcheng (Foshan)	18	84	17	66	20	44
Tangjia (Zhuhai)	15	87	7	43	9	36
Donghu (Jiangmen)	26	87	20	71	19	47
Duanfen (Jiangmen)	11	42	7	60	11	40
Huaguoshan (Jiangmen)	21	97	16	89	17	51
Chengzhong (Zhaoqing)	17	125	11	75	17	47
Xiapu (Huizhou)	16	75	10	62	15	36
Xijiao (Huizhou)	11	55	8	63	10	44
Jinguowan (Huizhou)	9	51	6	47	15	29
Zimaling (Zhongshan)	15	59	13	49	11	33
Nanchengyuanling (Dongguan)	19	69	13	64	15	41
Tap Mun (Hong Kong)	13	52	11	52	11	34
Tsuen Wan (Hong Kong)	12	53	7	39	10	28
Yuen Long (Hong Kong)	13	59	10	44	8	30
Tung Chung (Hong Kong)	11	59	7	35	7	28
Taipa Grande (Macao)	12	54	7	41	7	32

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	April 2019	May 2019	June 2019
Luhu (Guangzhou)	38	34	27
Modiesha (Guangzhou)	42	36	29
Nansha-HKUST (Guangzhou)	31	31	21
Tianhu (Guangzhou)	26	27	22
Zhudong (Guangzhou)	40	40	45
Tongxinling (Shenzhen)	30	28	18
Jinjuzui (Foshan)	33	31	22
Huijingcheng (Foshan)	41	36	29
Tangjia (Zhuhai)	28	28	17
Donghu (Jiangmen)	42	39	29
Duanfen (Jiangmen)	22	29	19
Huaguoshan (Jiangmen)	47	41	28
Chengzhong (Zhaoqing)	45	35	30
Xiapu (Huizhou)	38	33	27
Xijiao (Huizhou)	30	29	24
Jinguowan (Huizhou)	27	23	21
Zimaling (Zhongshan)	29	29	19
Nanchengyuanling (Dongguan)	39	36	27
Tap Mun (Hong Kong)	25	26	17
Tsuen Wan (Hong Kong)	23	22	15
Yuen Long (Hong Kong)	25	26	15
Tung Chung (Hong Kong)	24	21	13
Taipa Grande (Macao)	25	25	13*

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	April 2019		May 2019		June 2019	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	14	43	6	44	8	29
Modiesha (Guangzhou)	9	38	3	42	7	23
Nansha-HKUST (Guangzhou)	9	37	5	27	6	22
Tianhu (Guangzhou)	5	34	3	48	8	28
Zhudong (Guangzhou)	15	41	20	62	23	59
Tongxinling (Shenzhen)	11	46	8	29	6	23
Jinjuzui (Foshan)	13	34	9	34	8	21
Huijingcheng (Foshan)	14	64	14	50	10	29
Tangjia (Zhuhai)	7	45	4	26	4	22
Donghu (Jiangmen)	12	46	9	33	7	26
Duanfen (Jiangmen)	5	25	3	24	3	18
Huaguoshan (Jiangmen)	13	66	10	56	6	26
Chengzhong (Zhaoqing)	10	87	5	47	7	26
Xiapu (Huizhou)	11	52	7	29	7	18
Xijiao (Huizhou)	8	42	6	45	6	42
Jinguowan (Huizhou)	10	38	5	26	7	18
Zimaling (Zhongshan)	6	39	5	27	4	22
Nanchengyuanling (Dongguan)	10	47	9	40	7	25
Tap Mun (Hong Kong)	7	30	5	27	5	20
Tsuen Wan (Hong Kong)	8	40	6	23	5	19
Yuen Long (Hong Kong)	8	29	6	22	6	18
Tung Chung (Hong Kong)	8	44	5	20	5	19
Taipa Grande (Macao)	4	31	3	21	2	16

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	April 2019	May 2019	June 2019
Luhu (Guangzhou)	22	20	16
Modiesha (Guangzhou)	21	18	14
Nansha-HKUST (Guangzhou)	20	18	10
Tianhu (Guangzhou)	18	20	18
Zhudong (Guangzhou)	26*	31*	32*
Tongxinling (Shenzhen)	22	18	11
Jinjuzui (Foshan)	21	19	14
Huijingcheng (Foshan)	28	24	19
Tangjia (Zhuhai)	18	16	9
Donghu (Jiangmen)	22	20	13
Duanfen (Jiangmen)	13	13	8*
Huaguoshan (Jiangmen)	29	24	15
Chengzhong (Zhaoqing)	30	21	15
Xiapu (Huizhou)	23	17	12
Xijiao (Huizhou)	22	20	17
Jinguowan (Huizhou)	18	16	11
Zimaling (Zhongshan)	18	16	9*
Nanchengyuanling (Dongguan)	26	19	14
Tap Mun (Hong Kong)	16	14	9
Tsuen Wan (Hong Kong)	16	14	9
Yuen Long (Hong Kong)	16	15	10
Tung Chung (Hong Kong)	16	12	8
Taipa Grande (Macao)	12	11	5

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
Modiesha (Guangzhou)	Modiesha Street, Haizhu District	City	95m	45m	Dec 2011
Nansha-HKUST ⁽¹⁾ (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 ⁽²⁾ (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 (Huizhou)	Xijiao Village Committee, Boluo County	Rural	39m	12m	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
Nanchengyuanling (Dongguan)	Nanchengyuanling Community, Dongguan	Mixed residential/commercial/industrial	33 m	18m	Sep 2010
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⁾ Nansha HKUST Station was originally named as Wanqingsha prior to 2019.

⁽²⁾ Tongxinling Station was originally named as Liyuan prior to 2019.

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