

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

July to September 2016

Statistical Summary of the Third Quarter
Monitoring Results

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Report Prepared by : **Guangdong Provincial Environmental
Monitoring Centre**
**Environmental Protection Department,
Hong Kong SARG**
**Environmental Protection Bureau,
Macao SARG**
**Meteorological and Geophysical Bureau,
Macao SARG**

Approved by : **Quality Management Committee of
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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 Analysis of Pollutant Concentrations	4
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: The monthly maxima and minima of daily maximum 8-hour averages of O ₃	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: The monthly maxima and minima of daily averages of CO	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, it has been reporting PRD Regional Air Quality Index (RAQI) to the public on a daily basis. Starting from 2006, a half-yearly and an annual air quality monitoring reports were published every year. The network was enhanced and expanded in September 2014 and the network was renamed “Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network” (the “Network”) accordingly.

With the enhancement of the Network, the update of the national ambient air quality standards and the increase of reporting frequency of monitoring results, we have been reporting real time monitoring data of the Network on an hourly basis to replace the daily RAQI through a new internet platform and publish a quarterly air quality monitoring report to replace the previous half-yearly report and continue the publishing of annual air quality monitoring reports starting from 2014. The quarterly report is mainly a brief statistical summary of the monitoring results of the regional air quality in a quarter while the annual report, in addition to the reporting of the relevant data, will provide a more detailed analysis and comparison of the condition of air quality in the year. Since the fourth quarterly report in 2014, statistical results of carbon monoxide (CO) and fine suspended particulates (PM_{2.5} or FSP) have been added to the report in addition to those of respirable suspended particulates (PM₁₀ or RSP), sulphur dioxide (SO₂), nitrogen dioxide (NO₂), and ozone (O₃).

This report, “Statistical Summary of the 2016 Third Quarter Monitoring Results of PRD Regional Air Quality Monitoring Network”, is the eleventh one published in the form of a quarterly report and is the eighth one reporting the statistical summaries of the six pollutants (i.e. PM₁₀, PM_{2.5}, SO₂, NO₂, O₃ and CO) in the Network.

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. The network came into operation on 30 November 2005.

In view of the growing needs of air pollution control and economic development of the region, the environmental protection departments of Guangdong and Hong Kong have worked in collaboration with the environmental protection cum meteorological authority of Macao to enhance the network by extending the coverage of monitoring area to the 3 places, i.e. Guangdong, Hong Kong and Macao, in September 2014. The enhancement included the increase of number of monitoring station from 16 to 23 to further improve the spatial distribution; and the addition of two more monitoring parameters, i.e. carbon monoxide (CO) and fine suspended particulates (PM_{2.5}), to enrich the air quality monitoring information. The network was accordingly renamed “Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network” (the “Network”). The GDEMC, HKEPD, Environmental Protection Bureau of Macao SARG and Meteorological and Geophysical Bureau of Macao SARG have jointly established the "Quality Management Committee of Guangdong-Hong Kong-Macao Pearl River Delta Regional Air Quality Monitoring Network" to undertake quality management and dissemination of information for the Network.

The Network comprises 23 automatic air quality monitoring stations (see Figure 2.1) across the PRD region. Ten of these stations are operated by the Environmental Monitoring Centres of the individual cities in Guangdong while 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 equipment to measure the ambient concentrations of PM₁₀, PM_{2.5}, SO₂, NO₂, O₃ and CO.

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



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 operation of the Network was generally smooth in the third quarter of 2016. The average hourly data capture rate of all monitoring stations in the Network was 95.2%.

4. Statistical Analysis of Pollutant Concentrations

Table 4.1a to Table 4.6b list the statistical summaries of monitoring results of the ambient concentrations of the six air pollutants (SO₂, NO₂, O₃, CO, PM₁₀ and PM_{2.5}) during the reporting period from July to September 2016.

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

Monitoring Station	July 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	3	37	1	284	1	38
Modiesha (Guangzhou)	3	49	4	44	4	41
Wanqingsha (Guangzhou)	6	49	6	60	7	43
Tianhu (Guangzhou)	6	34	4	21	5	26
Zhudong (Guangzhou)	6	66	6	61	6	68
Liyuan (Shenzhen)	5	29	4	26	4	22
Jinjuzui (Foshan)	4	37	7	81	4	75
Huijingcheng (Foshan)	1	83	2	45	0	51
Tangjia (Zhuhai)	1	15	1	21	2	49
Donghu (Jiangmen)	1	34	1	36	1	35
Duanfen (Jiangmen)	3	28	3	21	3	26
Huaguoshan (Jiangmen)	11	89	8	58	8	63
Chengzhong (Zhaoqing)	2	224	2	165	4	224
Xiapu (Huizhou)	4	65	6	68	1	36
Xijiao (Huizhou)	8	36	2	28	2	44
Jinguowan (Huizhou)	5	39	0	35	0	53
Zimaling (Zhongshan)	1	41	2	29	6	47
Nanchengyuanling (Dongguan)	2	64	3	53	3	66
Tap Mun (Hong Kong)	7	43	7	29	7	25
Tsuen Wan (Hong Kong)	7	49	7	62	7	43
Yuen Long (Hong Kong)	6	34	6	34	7	39
Tung Chung (Hong Kong)	10	37	4	45	4	55
Taipa Grande (Macao)	0	123	0	49	0	36

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

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

Monitoring Station	July 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	5	17	3	25	7	21
Modiesha (Guangzhou)	4	23	4	22	7	18
Wanqingsha (Guangzhou)	6	23	7	27	9	25
Tianhu (Guangzhou)	8	17	5	12	6	15
Zhudong (Guangzhou)	10	29	7	27	9	27
Liyuan (Shenzhen)	6	16	5	13	6	13
Jinjuzui (Foshan)	5	15	7	51	7	23
Huijingcheng (Foshan)	3	25	4	19	5	26
Tangjia (Zhuhai)	3	8	3	9	6	17
Donghu (Jiangmen)	2	18	3	15	4	22
Duanfen (Jiangmen)	3	8	3	14	3	13
Huaguoshan (Jiangmen)	11	28	11	30	15	31
Chengzhong (Zhaoqing)	9	64	5	43	5	32
Xiapu (Huizhou)	6	24	6	23	3	10
Xijiao (Huizhou)	9	29	2	18	2	20
Jinguowan (Huizhou)	7	20	3	15	4	20
Zimaling (Zhongshan)	3	21	4	14	7	23
Nanchengyuanling (Dongguan)	5	24	4	20	8	35
Tap Mun (Hong Kong)	7	16	7	12	7	16
Tsuen Wan (Hong Kong)	8	24	7	26	8	18
Yuen Long (Hong Kong)	8	18	7	15	8	16
Tung Chung (Hong Kong)	11	20	6	19	5	27
Taipa Grande (Macao)	0	20	0	10	0	10

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 2016	August 2016	September 2016
Luhu (Guangzhou)	9	16	12
Modiesha (Guangzhou)	10	11	11
Wanqingsha (Guangzhou)	12	14	17
Tianhu (Guangzhou)	11	8	9
Zhudong (Guangzhou)	17	13	17
Liyuan (Shenzhen)	8	8	8
Jinjuzui (Foshan)	9	19	13
Huijingcheng (Foshan)	10	10	11
Tangjia (Zhuhai)	4	6	13
Donghu (Jiangmen)	5	7	9
Duanfen (Jiangmen)	4	6	8
Huaguoshan (Jiangmen)	19	19	21
Chengzhong (Zhaoqing)	24	20	15
Xiapu (Huizhou)	11	10	6
Xijiao (Huizhou)	15	5	5
Jinguowan (Huizhou)	9	6	8
Zimaling (Zhongshan)	9	8	13
Nanchengyuanling (Dongguan)	10	12	15
Tap Mun (Hong Kong)	9	9	10
Tsuen Wan (Hong Kong)	14	14	12
Yuen Long (Hong Kong)	11	10	11
Tung Chung (Hong Kong)	13	13	9
Taipa Grande (Macao)	2	2	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	July 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	1	126	2	155	4	197
Modiesha (Guangzhou)	10	145	9	156	16	140
Wanqingsha (Guangzhou)	0	83	2	117	7	120
Tianhu (Guangzhou)	0	50	1	42	1	32
Zhudong (Guangzhou)	5	77	4	105	6	94
Liyuan (Shenzhen)	7	115	2	114	7	133
Jinjuzui (Foshan)	0	76	2	115	0	97
Huijingcheng (Foshan)	0	137	4	152	11	156
Tangjia (Zhuhai)	1	59	7	63	2	68
Donghu (Jiangmen)	3	88	3	52	2	72
Duanfen (Jiangmen)	0	25	0	29	0	48
Huaguoshan (Jiangmen)	5	68	0	69	4	157
Chengzhong (Zhaoqing)	1	62	2	94	1	107
Xiapu (Huizhou)	6	72	4	76	1	59
Xijiao (Huizhou)	4	71	0	34	3	37
Jinguowan (Huizhou)	1	56	2	49	4	66
Zimaling (Zhongshan)	1	87	2	53	1	102
Nanchengyuanling (Dongguan)	2	99	1	104	2	124
Tap Mun (Hong Kong)	0	59	1	62	2	103
Tsuen Wan (Hong Kong)	9	222	6	209	10	151
Yuen Long (Hong Kong)	8	150	4	131	12	128
Tung Chung (Hong Kong)	2	116	2	128	7	169
Taipa Grande (Macao)	3	115	5	85	7	92

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 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	14	65	15	73	27	87
Modiesha (Guangzhou)	22	80	21	107	26	70
Wanqingsha (Guangzhou)	6	41	11	50	18	57
Tianhu (Guangzhou)	4	20	3	19	6	17
Zhudong (Guangzhou)	18	40	10	58	10	55
Liyuan (Shenzhen)	14	55	12	63	16	75
Jinjuzui (Foshan)	11	42	11	59	26	52
Huijingcheng (Foshan)	17	70	14	73	24	66
Tangjia (Zhuhai)	6	28	13	39	11	46
Donghu (Jiangmen)	6	40	8	31	12	37
Duanfen (Jiangmen)	1	10	2	15	2	30
Huaguoshan (Jiangmen)	8	39	7	38	13	45
Chengzhong (Zhaoqing)	10	36	9	48	7	63
Xiapu (Huizhou)	15	43	12	41	12	34
Xijiao (Huizhou)	11	24	5	22	8	21
Jinguowan (Huizhou)	5	24	5	24	7	32
Zimaling (Zhongshan)	5	32	8	31	8	44
Nanchengyuanling (Dongguan)	7	46	10	63	9	64
Tap Mun (Hong Kong)	1	37	5	24	5	48
Tsuen Wan (Hong Kong)	37	98	38	96	39	95
Yuen Long (Hong Kong)	22	79	22	74	33	81
Tung Chung (Hong Kong)	6	64	8	61	22	102
Taipa Grande (Macao)	8	43	13	45	13	60

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 2016	August 2016	September 2016
Luhu (Guangzhou)	34	45	50
Modiesha (Guangzhou)	37	52	48
Wanqingsha (Guangzhou)	20	29	35
Tianhu (Guangzhou)	9	9	10
Zhudong (Guangzhou)	29	26	29
Liyuan (Shenzhen)	29	35	35
Jinjuzui (Foshan)	24	33	36
Huijingcheng (Foshan)	35	46	47
Tangjia (Zhuhai)	15	22	21
Donghu (Jiangmen)	15	19	23
Duanfen (Jiangmen)	4	7	11
Huaguoshan (Jiangmen)	19	24	28
Chengzhong (Zhaoqing)	22	32	23
Xiapu (Huizhou)	25	24	20
Xijiao (Huizhou)	16	11	13
Jinguowan (Huizhou)	14	12	15
Zimaling (Zhongshan)	13	19	23
Nanchengyuanling (Dongguan)	27	32	34
Tap Mun (Hong Kong)	11	11	13
Tsuen Wan (Hong Kong)	53	63	58
Yuen Long (Hong Kong)	38	49	52
Tung Chung (Hong Kong)	24	39	44
Taipa Grande (Macao)	17	27	28

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	July 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	2	393	2	351	1	453
Modiesha (Guangzhou)	1	385	1	311	1	308
Wanqingsha (Guangzhou)	9	339	6	352	5	327
Tianhu (Guangzhou)	4	262	9	262	20	269
Zhudong (Guangzhou)	0	322	0	330	7	323
Liyuan (Shenzhen)	12	280	13	289	2	261
Jinjuzui (Foshan)	4	314	4	344	4	299
Huijingcheng (Foshan)	1	330	3	318	2	257
Tangjia (Zhuhai)	11	125	13	163	15	212
Donghu (Jiangmen)	1	369	1	269	1	258
Duanfen (Jiangmen)	3	242	0	275	5	260
Huaguoshan (Jiangmen)	2	352	0	210	3	186
Chengzhong (Zhaoqing)	2	301	2	306	3	262
Xiapu (Huizhou)	1	266	1	321	1	196
Xijiao (Huizhou)	0	119	2	306	3	186
Jinguowan (Huizhou)	5	318	4	330	4	226
Zimaling (Zhongshan)	2	283	2	305	2	288
Nanchengyuanling (Dongguan)	1	317	2	317	2	371
Tap Mun (Hong Kong)	2	381	3	235	2	235
Tsuen Wan (Hong Kong)	1	263	1	195	1	220
Yuen Long (Hong Kong)	3	351	3	273	3	290
Tung Chung (Hong Kong)	8	304	7	215	1	263
Taipa Grande (Macao)	0	186	8	251	7	307

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

Table 4.3b : The monthly maxima and minima of daily maximum 8-hour averages of O₃

Monitoring Station	July 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	24	297	36	237	9	258
Modiesha (Guangzhou)	12	301	44	252	15	249
Wanqingsha (Guangzhou)	32	273	53	274	27	277
Tianhu (Guangzhou)	62	238	54	197	42	234
Zhudong (Guangzhou)	34	278	54	309	34	259
Liyuan (Shenzhen)	39	253	47	207	26	190
Jinjuzui (Foshan)	24	250	41	272	17	238
Huijingcheng (Foshan)	20	287	36	261	25	197
Tangjia (Zhuhai)	33	92	35	141	39	182
Donghu (Jiangmen)	28	330	15	214	22	228
Duanfen (Jiangmen)	37	219	56	228	44	219
Huaguoshan (Jiangmen)	31	305	43	177	30	145
Chengzhong (Zhaoqing)	23	258	60	262	47	238
Xiapu (Huizhou)	43	210	37	239	39	184
Xijiao (Huizhou)	11	103	46	243	31	168
Jinguowan (Huizhou)	51	212	47	280	40	194
Zimaling (Zhongshan)	29	214	43	234	12	235
Nanchengyuanling (Dongguan)	45	238	45	246	27	335
Tap Mun (Hong Kong)	41	310	53	189	39	183
Tsuen Wan (Hong Kong)	13	198	15	134	6	172
Yuen Long (Hong Kong)	21	289	21	199	9	187
Tung Chung (Hong Kong)	34	247	30	168	6	193
Taipa Grande (Macao)	20	174	32	194	26	222

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 2016	August 2016	September 2016
Luhu (Guangzhou)	57	61	54
Modiesha (Guangzhou)	55	62	54
Wanqingsha (Guangzhou)	59	82	79
Tianhu (Guangzhou)	80	82	86
Zhudong (Guangzhou)	65	75	75
Liyuan (Shenzhen)	51	67	67
Jinjuzui (Foshan)	51	67	70
Huijingcheng (Foshan)	45	59	55
Tangjia (Zhuhai)	41	50	72
Donghu (Jiangmen)	46	61	55
Duanfen (Jiangmen)	47	71	82
Huaguoshan (Jiangmen)	52	56	52
Chengzhong (Zhaoqing)	54	72	81
Xiapu (Huizhou)	59	63	65
Xijiao (Huizhou)	41	61*	60
Jinguowan (Huizhou)	59	72	67
Zimaling (Zhongshan)	55	77	75
Nanchengyuanling (Dongguan)	57	75	74
Tap Mun (Hong Kong)	52	69	79
Tsuen Wan (Hong Kong)	23	30	47
Yuen Long (Hong Kong)	34	46	53
Tung Chung (Hong Kong)	44	45	51
Taipa Grande (Macao)	40	56	70

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

*The hourly data capture rate of the pollutant is below 85%.

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

Monitoring Station	July 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	0.3	1.9	0.3	1.6	0.3	1.9
Modiesha (Guangzhou)	0.1	1.4	0.2	1.5	0.6	1.8
Wanqingsha (Guangzhou)	0.2	1.3	0.3	1.1	0.3	1.3
Tianhu (Guangzhou)	0.4	1.2	0.3	1.3	0.3	1.1
Zhudong (Guangzhou)	0.3	1.3	0.2	1.3	0.2	1.3
Liyuan (Shenzhen)	0.2	1.4	0.5	1.3	0.4	1.6
Jinjuzui (Foshan)	0.6	1.8	0.5	1.6	0.5	1.6
Huijingcheng (Foshan)	0.3	1.7	0.5	1.4	0.4	1.5
Tangjia (Zhuhai)	0.2	1.0	0.2	1.0	0.4	1.2
Donghu (Jiangmen)	0.1	1.9	0.2	1.6	0.3	1.7
Duanfen (Jiangmen)	0.2	1.0	0.2	1.0	0.3	1.2
Huaguoshan (Jiangmen)	0.1	1.4	0.2	1.4	0.2	1.6
Chengzhong (Zhaoqing)	0.4	1.4	0.5	1.5	0.5	1.6
Xiapu (Huizhou)	0.3	1.3	0.5	1.8	0.4	1.7
Xijiao (Huizhou)	0.0	1.1	0.2	1.3	0.2	1.1
Jinguowan (Huizhou)	0.3	1.1	0.4	1.4	0.4	1.5
Zimaling (Zhongshan)	0.3	1.6	0.4	1.5	0.4	1.4
Nanchengyuanling (Dongguan)	0.3	1.5	0.5	1.4	0.4	1.6
Tap Mun (Hong Kong)	0.3	0.9	0.4	1.1	0.7	1.6
Tsuen Wan (Hong Kong)	0.3	1.0	0.3	1.4	0.4	1.5
Yuen Long (Hong Kong)	0.2	1.2	0.1	1.6	0.3	1.4
Tung Chung (Hong Kong)	0.4	1.1	0.2	1.4	0.1	1.4
Taipa Grande (Macao)	0.4	1.4	0.0	1.5	0.3	1.4

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

Table 4.4b : The monthly maxima and minima of daily averages of CO

Monitoring Station	July 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	0.5	1.4	0.3	1.0	0.4	1.1
Modiesha (Guangzhou)	0.2	0.9	0.4	1.1	0.7	1.3
Wanqingsha (Guangzhou)	0.3	1.1	0.4	0.8	0.4	0.9
Tianhu (Guangzhou)	0.5	1.1	0.5	1.1	0.4	1.0
Zhudong (Guangzhou)	0.4	0.8	0.3	0.8	0.4	0.9
Liyuan (Shenzhen)	0.3	0.9	0.5	1.0	0.6	1.3
Jinjuzui (Foshan)	0.7	1.2	0.6	1.3	0.6	1.3
Huijingcheng (Foshan)	0.5	1.0	0.6	1.2	0.5	1.2
Tangjia (Zhuhai)	0.3	0.7	0.2	0.7	0.5	1.0
Donghu (Jiangmen)	0.3	1.2	0.5	1.0	0.4	1.2
Duanfen (Jiangmen)	0.2	0.8	0.3	0.7	0.4	0.9
Huaguoshan (Jiangmen)	0.3	1.1	0.4	1.1	0.4	1.4
Chengzhong (Zhaoqing)	0.5	0.9	0.5	1.0	0.6	1.1
Xiapu (Huizhou)	0.5	1.0	0.6	1.2	0.7	1.1
Xijiao (Huizhou)	0.3	0.9	0.2	0.8	0.3	0.8
Jinguowan (Huizhou)	0.4	0.9	0.5	1.0	0.5	1.0
Zimaling (Zhongshan)	0.5	1.0	0.6	1.2	0.5	1.0
Nanchengyuanling (Dongguan)	0.5	1.0	0.6	1.1	0.5	1.4
Tap Mun (Hong Kong)	0.3	0.7	0.4	1.0	0.8	1.3
Tsuen Wan (Hong Kong)	0.4	0.9	0.5	0.8	0.5	1.2
Yuen Long (Hong Kong)	0.3	1.1	0.4	1.1	0.5	1.1
Tung Chung (Hong Kong)	0.5	0.9	0.4	1.0	0.2	1.2
Taipa Grande (Macao)	0.4	0.7	0.0	0.7	0.4	1.2

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

Table 4.4c : The monthly averages of CO

Monitoring Station	July 2016	August 2016	September 2016
Luhu (Guangzhou)	0.9	0.7	0.7
Modiesha (Guangzhou)	0.5	0.8	1.0
Wanqingsha (Guangzhou)	0.6	0.5	0.6
Tianhu (Guangzhou)	0.8	0.8	0.7
Zhudong (Guangzhou)	0.6	0.6	0.7
Liyuan (Shenzhen)	0.5	0.8	0.8
Jinjuzui (Foshan)	0.9	1.0	0.9
Huijingcheng (Foshan)	0.6	0.8	0.9
Tangjia (Zhuhai)	0.5	0.4	0.7
Donghu (Jiangmen)	0.7	0.8	0.8
Duanfen (Jiangmen)	0.4	0.5	0.6
Huaguoshan (Jiangmen)	0.7	0.7	0.8
Chengzhong (Zhaoqing)	0.7	0.8	0.8
Xiapu (Huizhou)	0.8	0.9	0.9
Xijiao (Huizhou)	0.5	0.5	0.5
Jinguowan (Huizhou)	0.6	0.7	0.7
Zimaling (Zhongshan)	0.7	0.8	0.8
Nanchengyuanling (Dongguan)	0.7	0.8	0.9
Tap Mun (Hong Kong)	0.5	0.7	0.9
Tsuen Wan (Hong Kong)	0.5	0.6	0.7
Yuen Long (Hong Kong)	0.6	0.7	0.8
Tung Chung (Hong Kong)	0.6	0.7	0.7
Taipa Grande (Macao)	0.5	0.5	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 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	20	75	14	97	21	110
Modiesha (Guangzhou)	31	99	18	136	25	121
Wanqingsha (Guangzhou)	15	85	18	76	19	111
Tianhu (Guangzhou)	13	57	9	102	11	85
Zhudong (Guangzhou)	22	74	13	109	16	120
Liyuan (Shenzhen)	13	78	14	66	19	84
Jinjuzui (Foshan)	19	79	17	73	31	108
Huijingcheng (Foshan)	20	73	16	83	22	102
Tangjia (Zhuhai)	10	69	15	71	11	99
Donghu (Jiangmen)	25	107	24	91	28	107
Duanfen (Jiangmen)	13	59	13	67	12	87
Huaguoshan (Jiangmen)	20	101	16	90	20	113
Chengzhong (Zhaoqing)	25	70	20	116	15	146
Xiapu (Huizhou)	17	68	12	80	19	89
Xijiao (Huizhou)	20	70	12	94	19	71
Jinguowan (Huizhou)	19	73	14	83	19	119
Zimaling (Zhongshan)	13	74	14	61	16	93
Nanchengyuanling (Dongguan)	22	85	17	83	25	125
Tap Mun (Hong Kong)	11	76	10	50	13	82
Tsuen Wan (Hong Kong)	9	34	7	53	14	87
Yuen Long (Hong Kong)	7	70	9	62	16	84
Tung Chung (Hong Kong)	7	52	6	46	10	101
Taipa Grande (Macao)	16	66	11	73	15	113

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 2016	August 2016	September 2016
Luhu (Guangzhou)	41	54	54
Modiesha (Guangzhou)	53	64	63
Wanqingsha (Guangzhou)	35	45	54
Tianhu (Guangzhou)	32	39	35
Zhudong (Guangzhou)	40	48	56
Liyuan (Shenzhen)	28	37	39*
Jinjuzui (Foshan)	38	48	52
Huijingcheng (Foshan)	36	42*	50
Tangjia (Zhuhai)	24	32	41
Donghu (Jiangmen)	41	56	60
Duanfen (Jiangmen)	25	33	44
Huaguoshan (Jiangmen)	37	50	59
Chengzhong (Zhaoqing)	41	56	55
Xiapu (Huizhou)	40	38	40
Xijiao (Huizhou)	36	40	40
Jinguowan (Huizhou)	39	49*	45
Zimaling (Zhongshan)	26	35	42
Nanchengyuanling (Dongguan)	39	51	53
Tap Mun (Hong Kong)	22	27	35
Tsuen Wan (Hong Kong)	18	26	32
Yuen Long (Hong Kong)	21	29	39
Tung Chung (Hong Kong)	16	22	31
Taipa Grande (Macao)	28	36	46

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

*The hourly data capture rate of the pollutant is below 85%.

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

Monitoring Station	July 2016		August 2016		September 2016	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	12	55	7	78	13	76
Modiesha (Guangzhou)	11	54	5	62	11	76
Wanqingsha (Guangzhou)	6	53	10	48	13	70
Tianhu (Guangzhou)	7	37	2	72	5	60
Zhudong (Guangzhou)	13	53	7	85	10	88
Liyuan (Shenzhen)	6	59	7	45	10	60
Jinjuzui (Foshan)	10	49	9	52	16	74
Huijingcheng (Foshan)	12	70	12	74	18	81
Tangjia (Zhuhai)	5	55	6	51	7	62
Donghu (Jiangmen)	5	75	14	64	15	73
Duanfen (Jiangmen)	3	38	2	44	3	53
Huaguoshan (Jiangmen)	8	67	7	58	10	69
Chengzhong (Zhaoqing)	14	46	14	84	9	102
Xiapu (Huizhou)	8	36	6	53	11	53
Xijiao (Huizhou)	13	57	6	72	13	55
Jinguowan (Huizhou)	8	40	5	50	10	66
Zimaling (Zhongshan)	6	53	6	43	8	64
Nanchengyuanling (Dongguan)	10	56	11	55	18	78
Tap Mun (Hong Kong)	5	49	4	35	6	50
Tsuen Wan (Hong Kong)	6	27	5	40	9	66
Yuen Long (Hong Kong)	4	46	7	39	10	56
Tung Chung (Hong Kong)	3	41	3	35	5	75
Taipa Grande (Macao)	3	38	1	41	0	67

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 2016	August 2016	September 2016
Luhu (Guangzhou)	26	35	31
Modiesha (Guangzhou)	24	33	37
Wanqingsha (Guangzhou)	19	28	33
Tianhu (Guangzhou)	19	21	23
Zhudong (Guangzhou)	26	35	39
Liyuan (Shenzhen)	16	23	25
Jinjuzui (Foshan)	22	31	34
Huijingcheng (Foshan)	30	44	43
Tangjia (Zhuhai)	15	22	24
Donghu (Jiangmen)	20	34	39
Duanfen (Jiangmen)	10	18	25
Huaguoshan (Jiangmen)	20	31	36
Chengzhong (Zhaoqing)	27	40	39
Xiapu (Huizhou)	19	22	24
Xijiao (Huizhou)	25	27	29
Jinguowan (Huizhou)	17	22	25
Zimaling (Zhongshan)	15	24	28
Nanchengyuanling (Dongguan)	24	34	36
Tap Mun (Hong Kong)	13	16	20
Tsuen Wan (Hong Kong)	12	18	22
Yuen Long (Hong Kong)	14	20	24
Tung Chung (Hong Kong)	10	15	21
Taipa Grande (Macao)	11	15	20

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

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
Wanqingsha (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
Liyuan (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. 17, Qintian Road, Zhaoqing	Urban: mixed residential/commercial	21m	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

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