

**Guangdong-Hong Kong-Macao  
Pearl River Delta  
Regional Air Quality Monitoring Network  
January to March 2018  
Statistical Summary of the First 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<sub>2.5</sub> or FSP) were added to the report in addition to those of respirable suspended particulates (PM<sub>10</sub> or RSP), sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), and ozone (O<sub>3</sub>).

This report is the statistical summary of the monitoring results of the PRD Regional Air Quality Monitoring Network in the first quarter of 2018. It is the seventeenth report published in the form of a quarterly report and the fourteenth report with the statistical summaries of the six pollutants (i.e. PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub> 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<sub>2.5</sub>), 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 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 PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub> 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 116<sup>th</sup> Executive Meeting of the State Council on 16 December 2015.

### 3. Operation of the Network

The operation of the Network was smooth in the first quarter of 2018. The average data capture rate of hourly air pollutant monitoring data measured at all monitoring stations was 97.7% in the first quarter.

## 4. Statistical Results of Pollutant Concentrations

Tables 4.1a to 4.6b list the detailed statistical results of the ambient concentrations of the six air pollutants (SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, CO, PM<sub>10</sub> and PM<sub>2.5</sub>) from January to March 2018.

**Table 4.1a : The monthly maxima and minima of hourly averages of SO<sub>2</sub>**

Monitoring Station	January 2018		February 2018		March 2018	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	6	38	6	20	7	34
Modiesha (Guangzhou)	1	38	2	22	3	34
Wanqingsha (Guangzhou)	9	120	8	105	9	89
Tianhu (Guangzhou)	4	40	5	35	4	33
Zhudong (Guangzhou)	3	56	3	49	2	39
Liyuan (Shenzhen)	5	18	5	11	5	15
Jinjuzui (Foshan)	3	64	7	31	7	33
Huijingcheng (Foshan)	7	91	0	34	1	32
Tangjia (Zhuhai)	4	56	3	61	1	54
Donghu (Jiangmen)	2	62	2	39	2	40
Duanfen (Jiangmen)	4	45	3	20	3	34
Huaguoshan (Jiangmen)	9	132	8	103	9	41
Chengzhong (Zhaoqing)	2	123	2	78	3	147
Xiapu (Huizhou)	4	31	4	46	4	22
Xijiao (Huizhou)	2	80	2	92	1	34
Jinguowan (Huizhou)	6	20	7	24	6	34
Zimaling (Zhongshan)	5	43	5	46	5	43
Nanchengyuanling (Dongguan)	6	68	5	37	6	40
Tap Mun (Hong Kong)	4	28	5	23	5	21
Tsuen Wan (Hong Kong)	8	99	1	105	3	57
Yuen Long (Hong Kong)	6	55	6	26	6	45
Tung Chung (Hong Kong)	5	76	6	34	4	48
Taipa Grande (Macao)	2	42	1	21	1	40

Remark : All concentration units are in micrograms per cubic metre (µg/m<sup>3</sup>).

**Table 4.1b : The monthly maxima and minima of daily averages of SO<sub>2</sub>**

Monitoring Station	January 2018		February 2018		March 2018	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	7	19	6	16	7	19
Modiesha (Guangzhou)	2	18	2	11	4	16
Wanqingsha (Guangzhou)	11	42	9	28	12	40
Tianhu (Guangzhou)	4	22	5	16	6	15
Zhudong (Guangzhou)	6	24	5	15	7	22
Liyuan (Shenzhen)	5	9	5	10	5	9
Jinjuzui (Foshan)	5	28	7	19	8	17
Huijingcheng (Foshan)	9	46	0	17	2	15
Tangjia (Zhuhai)	9	26	6	17	4	22
Donghu (Jiangmen)	3	25	2	12	3	15
Duanfen (Jiangmen)	5	18	3	13	4	16
Huaguoshan (Jiangmen)	12	43	8	22	10	23
Chengzhong (Zhaoqing)	3	36	3	23	4	39
Xiapu (Huizhou)	4	16	5	17	5	12
Xijiao (Huizhou)	4	15	4	13	3	12
Jinguowan (Huizhou)	7	13	8	13	8	13
Zimaling (Zhongshan)	6	19	6	15	6	18
Nanchengyuanling (Dongguan)	7	32	6	17	7	19
Tap Mun (Hong Kong)	5	14	6	13	6	11
Tsuen Wan (Hong Kong)	9	35	1	22	3	18
Yuen Long (Hong Kong)	6	21	6	14	6	15
Tung Chung (Hong Kong)	5	23	7	19	6	20
Taipa Grande (Macao)	2	20	2	13	2	13

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

**Table 4.1c : The monthly averages of SO<sub>2</sub>**

Monitoring Station	January 2018	February 2018	March 2018
Luhu (Guangzhou)	12	10	12
Modiesha (Guangzhou)	9	6	9
Wanqingsha (Guangzhou)	23	17	19
Tianhu (Guangzhou)	12	9	9
Zhudong (Guangzhou)	15	9	11
Liyuan (Shenzhen)	7	7	7
Jinjuzui (Foshan)	17	12	14
Huijingcheng (Foshan)	21	9	7
Tangjia (Zhuhai)	16	12	9
Donghu (Jiangmen)	12	8	9
Duanfen (Jiangmen)	10	8	9
Huaguoshan (Jiangmen)	23	15	17
Chengzhong (Zhaoqing)	18	9	22
Xiapu (Huizhou)	10	8	8
Xijiao (Huizhou)	8	7	5
Jinguowan (Huizhou)	10	10	10
Zimaling (Zhongshan)	12	9	10
Nanchengyuanling (Dongguan)	17	11	13
Tap Mun (Hong Kong)	8	8	8
Tsuen Wan (Hong Kong)	15	11	8
Yuen Long (Hong Kong)	10	10	10
Tung Chung (Hong Kong)	10	11	10
Taipa Grande (Macao)	7	8	6

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 NO<sub>2</sub>**

Monitoring Station	January 2018		February 2018		March 2018	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	17	335	14	169	19	200
Modiesha (Guangzhou)	12	344	10	158	17	198
Wanqingsha (Guangzhou)	12	271	12	161	5	301
Tianhu (Guangzhou)	4	87	2	60	4	90
Zhudong (Guangzhou)	10	161	9	79	9	131
Liyuan (Shenzhen)	4	194	6	109	6	115
Jinjuzui (Foshan)	9	213	10	128	14	171
Huijingcheng (Foshan)	13	318	3	137	11	194
Tangjia (Zhuhai)	5	191	1	115	5	120
Donghu (Jiangmen)	13	197	3	112	4	140
Duanfen (Jiangmen)	7	121	3	87	4	47
Huaguoshan (Jiangmen)	12	165	0	119	0	119
Chengzhong (Zhaoqing)	8	164	3	106	3	137
Xiapu (Huizhou)	9	164	7	135	9	140
Xijiao (Huizhou)	4	46	4	38	5	109
Jinguowan (Huizhou)	8	83	7	47	7	67
Zimaling (Zhongshan)	17	181	4	108	1	95
Nanchengyuanling (Dongguan)	8	226	7	146	8	145
Tap Mun (Hong Kong)	4	99	3	60	2	48
Tsuen Wan (Hong Kong)	13	378	15	182	11	157
Yuen Long (Hong Kong)	11	248	11	139	11	126
Tung Chung (Hong Kong)	2	318	2	151	0	125
Taipa Grande (Macao)	10	205	7	114	5	113

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 NO<sub>2</sub>**

Monitoring Station	January 2018		February 2018		March 2018	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	33	205	26	99	33	106
Modiesha (Guangzhou)	28	190	20	92	26	101
Wanqingsha (Guangzhou)	29	162	23	88	29	174
Tianhu (Guangzhou)	5	42	7	23	6	41
Zhudong (Guangzhou)	20	82	16	55	21	82
Liyuan (Shenzhen)	16	84	10	51	13	65
Jinjuzui (Foshan)	34	148	24	91	21	86
Huijingcheng (Foshan)	32	218	19	93	23	97
Tangjia (Zhuhai)	23	84	5	60	16	76
Donghu (Jiangmen)	23	113	13	71	9	53
Duanfen (Jiangmen)	12	46	11	40	9	25
Huaguoshan (Jiangmen)	30	121	15	87	4	67
Chengzhong (Zhaoqing)	18	95	10	85	8	77
Xiapu (Huizhou)	17	79	12	50	17	51
Xijiao (Huizhou)	8	21	8	17	8	50
Jinguowan (Huizhou)	12	36	11	29	11	48
Zimaling (Zhongshan)	31	97	14	73	4	51
Nanchengyuanling (Dongguan)	20	130	14	64	17	80
Tap Mun (Hong Kong)	7	35	7	27	6	20
Tsuen Wan (Hong Kong)	35	206	36	118	35	89
Yuen Long (Hong Kong)	34	144	24	87	28	72
Tung Chung (Hong Kong)	16	145	22	82	13	85
Taipa Grande (Macao)	30	99	22	80	17	69

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

**Table 4.2c : The monthly averages of NO<sub>2</sub>**

Monitoring Station	January 2018	February 2018	March 2018
Luhu (Guangzhou)	74	49	64
Modiesha (Guangzhou)	78	42	63
Wanqingsha (Guangzhou)	71	43	60
Tianhu (Guangzhou)	15	12	19
Zhudong (Guangzhou)	44	26	48
Liyuan (Shenzhen)	35	27	24
Jinjuzui (Foshan)	69	44	51
Huijingcheng (Foshan)	82	40	51
Tangjia (Zhuhai)	51	26	39
Donghu (Jiangmen)	58	29	30
Duanfen (Jiangmen)	32	20	14
Huaguoshan (Jiangmen)	66	34	30
Chengzhong (Zhaoqing)	57	29	40
Xiapu (Huizhou)	38	26	31
Xijiao (Huizhou)	15	12	16
Jinguowan (Huizhou)	23	16	19
Zimaling (Zhongshan)	55	32	27
Nanchengyuanling (Dongguan)	60	32	46
Tap Mun (Hong Kong)	13	12	11
Tsuen Wan (Hong Kong)	67	68	58
Yuen Long (Hong Kong)	56	54	51
Tung Chung (Hong Kong)	46	51	38
Taipa Grande (Macao)	52	45	39

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 O<sub>3</sub>**

Monitoring Station	January 2018		February 2018		March 2018	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	2	217	2	159	2	282
Modiesha (Guangzhou)	0	236	1	163	0	286
Wanqingsha (Guangzhou)	7	414	7	178	6	310
Tianhu (Guangzhou)	3	283	2	208	8	211
Zhudong (Guangzhou)	2	232	3	163	4	279
Liyuan (Shenzhen)	5	218	5	149	5	217
Jinjuzui (Foshan)	5	279	7	175	7	229
Huijingcheng (Foshan)	3	218	5	164	7	274
Tangjia (Zhuhai)	5	337	9	173	1	221
Donghu (Jiangmen)	1	338	1	178	1	280
Duanfen (Jiangmen)	4	196	5	171	6	186
Huaguoshan (Jiangmen)	2	327	4	172	4	262
Chengzhong (Zhaoqing)	4	265	5	152	5	277
Xiapu (Huizhou)	3	143	3	134	3	179
Xijiao (Huizhou)	5	173	4	159	4	264
Jinguowan (Huizhou)	2	184	4	172	2	222
Zimaling (Zhongshan)	3	320	4	166	4	214
Nanchengyuanling (Dongguan)	2	220	3	166	2	278
Tap Mun (Hong Kong)	4	220	7	168	4	181
Tsuen Wan (Hong Kong)	0	139	1	112	1	148
Yuen Long (Hong Kong)	2	212	2	130	3	149
Tung Chung (Hong Kong)	2	245	1	114	1	143
Taipa Grande (Macao)	0	372	3	158	1	176

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 O<sub>3</sub> (the monthly maxima, minima and the 90<sup>th</sup> percentile)**

Monitoring Station	January 2018			February 2018			March 2018		
	Min	Max	90 <sup>th</sup> per	Min	Max	90 <sup>th</sup> per	Min	Max	90 <sup>th</sup> per
Luhu (Guangzhou)	5	151	113	22	127	117	21	209	176
Modiesha (Guangzhou)	2	145	120	20	133	118	20	208	172
Wanqingsha (Guangzhou)	16	255	188	30	161	120	27	222	193
Tianhu (Guangzhou)	19	185	137	33	122	112	41	173	157
Zhudong (Guangzhou)	6	182	150	40	137	123	32	243	200
Liyuan (Shenzhen)	25	167	127	51	128	117	32	162	142
Jinjuzui (Foshan)	6	203	147	27	148	128	28	198	170
Huijingcheng (Foshan)	6	125	115	24	142	121	29	238	182
Tangjia (Zhuhai)	13	290	171	46	144	131	21	186	150
Donghu (Jiangmen)	2	246	168	35	152	131	36	226	203
Duanfen (Jiangmen)	6	173	145	34	148	123	41	156	149
Huaguoshan (Jiangmen)	7	244	157	30	148	125	26	211	184
Chengzhong (Zhaoqing)	8	162	113	28	135	116	46	230	172
Xiapu (Huizhou)	11	111	105	34	116	105	35	156	146
Xijiao (Huizhou)	13	145	129	39	135	124	32	197	174
Jinguowan (Huizhou)	10	150	132	36	143	120	57	166	155
Zimaling (Zhongshan)	6	221	147	30	145	120	39	167	157
Nanchengyuanling (Dongguan)	10	176	136	31	141	119	37	215	179
Tap Mun (Hong Kong)	35	195	165	75	146	134	29	169	155
Tsuen Wan (Hong Kong)	15	95	92	8	96	87	5	131	111
Yuen Long (Hong Kong)	16	147	98	29	107	86	18	123	113
Tung Chung (Hong Kong)	12	135	96	13	90	82	8	131	105
Taipa Grande (Macao)	14	291	142	25	124	117	30	149	142

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

**Table 4.3c : The monthly averages of O<sub>3</sub>**

Monitoring Station	January 2018	February 2018	March 2018
Luhu (Guangzhou)	29	49	51
Modiesha (Guangzhou)	31	51	50
Wanqingsha (Guangzhou)	51	64	69
Tianhu (Guangzhou)	69	74	84
Zhudong (Guangzhou)	42	61	61
Liyuan (Shenzhen)	61	67	77
Jinjuzui (Foshan)	42	62	67
Huijingcheng (Foshan)	30	57	66
Tangjia (Zhuhai)	58	69	67
Donghu (Jiangmen)	39	59	77
Duanfen (Jiangmen)	60	69	79
Huaguoshan (Jiangmen)	44	61	71
Chengzhong (Zhaoqing)	38	60	65
Xiapu (Huizhou)	48	59	72
Xijiao (Huizhou)	52	65	71
Jinguowan (Huizhou)	60	73	87
Zimaling (Zhongshan)	45	56	70
Nanchengyuanling (Dongguan)	45	61	65
Tap Mun (Hong Kong)	85	88	88
Tsuen Wan (Hong Kong)	46	43	57
Yuen Long (Hong Kong)	45	42	53
Tung Chung (Hong Kong)	45	33	52
Taipa Grande (Macao)	66	64	74

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	January 2018		February 2018		March 2018	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	0.4	2.7	0.2	1.8	0.4	2.0
Modiesha (Guangzhou)	0.2	3.6	0.2	1.6	0.1	1.9
Wanqingsha (Guangzhou)	0.4	1.9	0.3	1.1	0.3	1.0
Tianhu (Guangzhou)	0.3	1.5	0.1	1.6	0.2	1.4
Zhudong (Guangzhou)	0.4	1.8	0.4	1.3	0.3	1.7
Liyuan (Shenzhen)	0.5	1.9	0.4	1.3	0.4	1.3
Jinjuzui (Foshan)	0.4	3.1	0.2	1.8	0.4	1.7
Huijingcheng (Foshan)	0.0	4.7	0.2	1.7	0.2	1.7
Tangjia (Zhuhai)	0.3	1.6	0.3	1.8	0.2	1.1
Donghu (Jiangmen)	0.4	4.9	0.4	2.1	0.3	1.9
Duanfen (Jiangmen)	0.3	2.0	0.1	1.2	0.1	1.3
Huaguoshan (Jiangmen)	0.2	2.0	0.0	1.2	0.1	1.4
Chengzhong (Zhaoqing)	0.7	2.4	0.4	2.1	0.5	1.7
Xiapu (Huizhou)	0.5	2.2	0.4	2.1	0.1	1.6
Xijiao (Huizhou)	0.3	1.8	0.3	1.2	0.3	2.4
Jinguowan (Huizhou)	0.1	1.3	0.4	1.1	0.1	1.4
Zimaling (Zhongshan)	0.0	1.8	0.0	1.3	0.2	1.1
Nanchengyuanling (Dongguan)	0.5	3.1	0.7	1.6	0.6	1.7
Tap Mun (Hong Kong)	0.1	1.2	0.2	0.9	0.3	1.0
Tsuen Wan (Hong Kong)	0.4	1.8	0.6	1.6	0.3	1.7
Yuen Long (Hong Kong)	0.1	1.5	0.2	1.3	0.3	1.2
Tung Chung (Hong Kong)	0.4	1.9	0.3	1.6	0.2	1.2
Taipa Grande (Macao)	0.3	1.4	0.3	1.1	0.3	1.4

Remark : All concentration units are in milligrams per cubic metre (mg/m<sup>3</sup>).

**Table 4.4b : Daily averages of CO (the monthly maxima, minima and the 95<sup>th</sup> percentile)**

Monitoring Station	January 2018			February 2018			March 2018		
	Min	Max	95 <sup>th</sup> per	Min	Max	95 <sup>th</sup> per	Min	Max	95 <sup>th</sup> per
Luhu (Guangzhou)	0.5	2.1	1.9	0.3	0.9	0.9	0.5	1.2	1.1
Modiesha (Guangzhou)	0.6	1.9	1.8	0.5	1.4	1.3	0.5	1.2	1.1
Wanqingsha (Guangzhou)	0.5	1.3	1.1	0.4	0.9	0.9	0.3	0.7	0.7
Tianhu (Guangzhou)	0.4	1.3	1.3	0.4	1.4	1.3	0.4	1.3	1.0
Zhudong (Guangzhou)	0.5	1.6	1.5	0.5	1.1	1.1	0.4	1.1	1.0
Liyuan (Shenzhen)	0.6	1.1	1.1	0.5	1.0	0.9	0.4	0.9	0.9
Jinjuzui (Foshan)	0.6	1.8	1.8	0.3	1.1	1.0	0.5	1.0	1.0
Huijingcheng (Foshan)	0.3	2.4	1.7	0.4	1.0	1.0	0.4	0.9	0.9
Tangjia (Zhuhai)	0.5	1.1	1.0	0.4	1.0	1.0	0.3	0.8	0.8
Donghu (Jiangmen)	0.6	1.9	1.7	0.5	1.2	1.1	0.5	1.1	1.0
Duanfen (Jiangmen)	0.4	1.2	1.1	0.4	0.9	0.9	0.2	0.7	0.7
Huaguoshan (Jiangmen)	0.6	1.8	1.5	0.5	1.0	1.0	0.5	1.0	0.9
Chengzhong (Zhaoqing)	0.8	1.7	1.7	0.7	1.3	1.2	0.7	1.4	1.2
Xiapu (Huizhou)	0.6	1.5	1.4	0.5	1.2	1.1	0.2	0.8	0.8
Xijiao (Huizhou)	0.4	1.2	0.9	0.4	0.9	0.9	0.4	1.8	1.0
Jinguowan (Huizhou)	0.1	1.2	1.0	0.5	1.0	0.9	0.2	1.0	0.9
Zimaling (Zhongshan)	0.3	1.3	1.2	0.2	0.9	0.8	0.4	0.9	0.8
Nanchengyuanling (Dongguan)	0.7	1.7	1.7	0.8	1.1	1.1	0.7	1.1	1.1
Tap Mun (Hong Kong)	0.2	1.2	0.9	0.3	0.8	0.7	0.4	0.9	0.8
Tsuen Wan (Hong Kong)	0.5	1.3	1.3	0.9	1.4	1.3	0.4	1.2	1.2
Yuen Long (Hong Kong)	0.3	1.0	0.9	0.4	0.8	0.8	0.4	0.8	0.8
Tung Chung (Hong Kong)	0.4	1.2	1.2	0.5	1.0	1.0	0.3	0.7	0.7
Taipa Grande (Macao)	0.3	1.0	1.0	0.4	0.8	0.8	0.4	0.8	0.8

Remark : All concentration units are in milligrams per cubic metre (mg/m<sup>3</sup>).

**Table 4.4c : The monthly averages of CO**

Monitoring Station	January 2018	February 2018	March 2018
Luhu (Guangzhou)	1.3	0.6	0.8
Modiesha (Guangzhou)	1.1	0.9	0.8
Wanqingsha (Guangzhou)	0.9	0.6	0.5
Tianhu (Guangzhou)	0.9	0.8	0.8
Zhudong (Guangzhou)	1.0	0.8	0.8
Liyuan (Shenzhen)	0.8	0.8	0.7
Jinjuzui (Foshan)	1.3	0.7	0.8
Huijingcheng (Foshan)	1.1	0.7	0.6
Tangjia (Zhuhai)	0.8	0.7	0.6
Donghu (Jiangmen)	1.1	0.8	0.7
Duanfen (Jiangmen)	0.8	0.7	0.5
Huaguoshan (Jiangmen)	1.1	0.7	0.7
Chengzhong (Zhaoqing)	1.3	0.9	0.9
Xiapu (Huizhou)	1.0	0.8	0.5
Xijiao (Huizhou)	0.7	0.6	0.6
Jinguowan (Huizhou)	0.6	0.7	0.6
Zimaling (Zhongshan)	0.8	0.6	0.6
Nanchengyuanling (Dongguan)	1.2	1.0	0.9
Tap Mun (Hong Kong)	0.6	0.5	0.6
Tsuen Wan (Hong Kong)	0.9	1.1	1.0
Yuen Long (Hong Kong)	0.6	0.6	0.6
Tung Chung (Hong Kong)	0.8	0.8	0.5
Taipa Grande (Macao)	0.7	0.6	0.6

Remark : All concentration units are in milligrams per cubic metre (mg/m<sup>3</sup>).



**Table 4.5a : The monthly maxima and minima of daily averages of PM<sub>10</sub>**

Monitoring Station	January 2018		February 2018		March 2018	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	15	171	10	105	11	117
Modiesha (Guangzhou)	18	178	9	144	22	140
Wanqingsha (Guangzhou)	20	177	15	97	15	96
Tianhu (Guangzhou)	6	101	6	81	9	90
Zhudong (Guangzhou)	9	151	12	163	15	131
Liyuan (Shenzhen)	9	135	14	86	18	78
Jinjuzui (Foshan)	21	153	10	95	12	85
Huijingcheng (Foshan)	23	200	10	107	14	100
Tangjia (Zhuhai)	15	174	17	101	21	72
Donghu (Jiangmen)	20	216	10	102	16	117
Duanfen (Jiangmen)	9	114	10	85	26	77
Huaguoshan (Jiangmen)	17	199	14	127	16	110
Chengzhong (Zhaoqing)	14	188	7	127	13	112
Xiapu (Huizhou)	13	115	11	187	13	83
Xijiao (Huizhou)	9	83	9	81	9	68
Jinguowan (Huizhou)	5	120	5	92	8	80
Zimaling (Zhongshan)	12	121	10	87	13	78
Nanchengyuanling (Dongguan)	16	151	9	127	10	105
Tap Mun (Hong Kong)	5	77	12	63	11	58
Tsuen Wan (Hong Kong)	5	135	12	78	19	57
Yuen Long (Hong Kong)	4	121	9	89	14	63
Tung Chung (Hong Kong)	5	157	10	74	15	56
Taipa Grande (Macao)	0	156	14	105	17	77

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

**Table 4.5b : The monthly averages of PM<sub>10</sub>**

Monitoring Station	January 2018	February 2018	March 2018
Luhu (Guangzhou)	73	52	58
Modiesha (Guangzhou)	85	56	70
Wanqingsha (Guangzhou)	75	55	50
Tianhu (Guangzhou)	49	46	46
Zhudong (Guangzhou)	80	63	72
Liyuan (Shenzhen)	57	51	44
Jinjuzui (Foshan)	72	51	49
Huijingcheng (Foshan)	84	49	53
Tangjia (Zhuhai)	66	61	43
Donghu (Jiangmen)	98	64	63
Duanfen (Jiangmen)	55	53	48*
Huaguoshan (Jiangmen)	96	66	67
Chengzhong (Zhaoqing)	88	62	62
Xiapu (Huizhou)	61	56	49
Xijiao (Huizhou)	46	47	45
Jinguowan (Huizhou)	47	43	42
Zimaling (Zhongshan)	59	51	43
Nanchengyuanling (Dongguan)	76	53	58
Tap Mun (Hong Kong)	37	38	33
Tsuen Wan (Hong Kong)	43	44	35
Yuen Long (Hong Kong)	49	50	38
Tung Chung (Hong Kong)	45	45	32
Taipa Grande (Macao)	53	61	45

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

**Table 4.6a : The monthly maxima and minima of daily averages of PM<sub>2.5</sub>**

Monitoring Station	January 2018		February 2018		March 2018	
	Min	Max	Min	Max	Min	Max
Luhu (Guangzhou)	17	172	12	92	13	79
Modiesha (Guangzhou)	11	97	4	112	7	59
Wanqingsha (Guangzhou)	10	121	13	64	11	54
Tianhu (Guangzhou)	7	72	4	64	7	50
Zhudong (Guangzhou)	16	92	8	116	10	68
Liyuan (Shenzhen)	6	99	10	61	13	47
Jinjuzui (Foshan)	15	101	7	73	9	48
Huijingcheng (Foshan)	17	152	8	104	10	69
Tangjia (Zhuhai)	3	137	9	85	11	45
Donghu (Jiangmen)	10	113	9	63	5	60
Duanfen (Jiangmen)	2	73	4	55	8	51
Huaguoshan (Jiangmen)	14	162	12	89	11	86
Chengzhong (Zhaoqing)	16	170	11	113	10	90
Xiapu (Huizhou)	9	84	11	151	11	50
Xijiao (Huizhou)	5	62	6	58	7	42
Jinguowan (Huizhou)	5	64	5	67	8	39
Zimaling (Zhongshan)	13	86	10	61	11	49
Nanchengyuanling (Dongguan)	16	136	13	106	12	79
Tap Mun (Hong Kong)	3	46	6	41	7	31
Tsuen Wan (Hong Kong)	3	101	11	58	13	39
Yuen Long (Hong Kong)	2	80	7	58	9	40
Tung Chung (Hong Kong)	4	119	6	53	11	36
Taipa Grande (Macao)	0	106	3	61	6	41

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

**Table 4.6b : The monthly averages of PM<sub>2.5</sub>**

Monitoring Station	January 2018	February 2018	March 2018
Luhu (Guangzhou)	65	43	41
Modiesha (Guangzhou)	45	32	34
Wanqingsha (Guangzhou)	49	37	31
Tianhu (Guangzhou)	33	29	28
Zhudong (Guangzhou)	49	38	40
Liyuan (Shenzhen)	40	36	28
Jinjuzui (Foshan)	45	34	29
Huijingcheng (Foshan)	58	38	36
Tangjia (Zhuhai)	46	42	27
Donghu (Jiangmen)	51	40	33
Duanfen (Jiangmen)	32	28	23
Huaguoshan (Jiangmen)	72	49	44
Chengzhong (Zhaoqing)	73	52	44
Xiapu (Huizhou)	44	42	31
Xijiao (Huizhou)	32	33	29
Jinguowan (Huizhou)	27	29	25
Zimaling (Zhongshan)	41	37	26
Nanchengyuanling (Dongguan)	61	43	41
Tap Mun (Hong Kong)	21	23	20
Tsuen Wan (Hong Kong)	30	31	22
Yuen Long (Hong Kong)	28	33	23
Tung Chung (Hong Kong)	28	28	18
Taipa Grande (Macao)	29	31	22

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. 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

## Annex B : Measurement Methods of Air Pollutant Concentration

Pollutants	Measuring Principles
Sulphur dioxide (SO <sub>2</sub> )	UV fluorescence / Differential Optical Absorption Spectroscopy
Nitrogen dioxide (NO <sub>2</sub> )	Chemiluminescence / Differential Optical Absorption Spectroscopy
Ozone (O <sub>3</sub> )	UV absorption / Differential Optical Absorption Spectroscopy
Respirable suspended particulates (PM <sub>10</sub> )	Oscillating microbalance (TEOM) / Beta particulate monitor
Fine suspended particulates (PM <sub>2.5</sub> )	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