

**Pearl River Delta**  
**Regional Air Quality Monitoring Network**

**A Report of Monitoring Results in 2010**

**Report Number** : **PRDAIR-2010-2**

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Environmental Monitoring  
Centre**

**Environmental Protection  
Department, HKSAR**

**Approved by** : **Pearl River Delta Air Quality  
Management and Monitoring  
Special Panel**

**Security Classification** : **Unrestricted**

## **Purpose of the Report**

**This report provides the 2010 monitoring results from the Pearl River Delta Regional Air Quality Monitoring Network and their statistical analysis.**

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# 1. Introduction to the Pearl River Delta Regional Air Quality Monitoring Network

The Pearl River Delta (PRD) Regional Air Quality Monitoring Network (the 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 and it has been providing data for reporting of Regional Air Quality Index (RAQI) to the public since then.

The Network comprises 16 automatic air quality monitoring stations (see Figure 1) across the PRD region. Ten of these stations are operated by the Environmental Monitoring Centres of the individual cities in Guangdong while the 3 stations located in Hong Kong are managed by the HKEPD. The remaining 3 regional stations in the Network are operated by the GDEMC. The objectives of the Network are to :

- provide accurate air quality data that can help the Guangdong Provincial and HKSAR governments to appraise the air quality situation and pollution problems in the PRD region for formulating appropriate control measures;
- evaluate the effectiveness of the air pollution control measures through long-term monitoring;
- provide the public with information on the air quality of various places in the region.

In order to ensure the air quality monitoring results attain a high degree of accuracy and reliability, the two governments had jointly developed a set of “Standard Operating Procedures on Quality Assurance and Quality Control of the PRD Air Quality Monitoring System for Hong Kong and Guangdong” (QA/QC Operating Procedures). The design and operation of the Network comply with the requirements set out in the QA/QC Operating Procedures.

All stations are installed with equipment to measure the ambient concentrations 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>).

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 1 : Spatial distribution of the PRD Regional Air Quality Monitoring Stations

## 2. Operation of the Network

The Network was generally in smooth operation in 2010. The data capture rates of all monitoring stations in the Network averaged 95%.

In order to provide the public in both Guangdong and HKSAR with daily air quality information in different parts of the PRD region, the GDEMC and HKEPD established a daily reporting system of the Regional Air Quality Index (RAQI). The two Governments have been issuing the RAQI to the public at 4pm every day through the Internet since 30 November 2005.

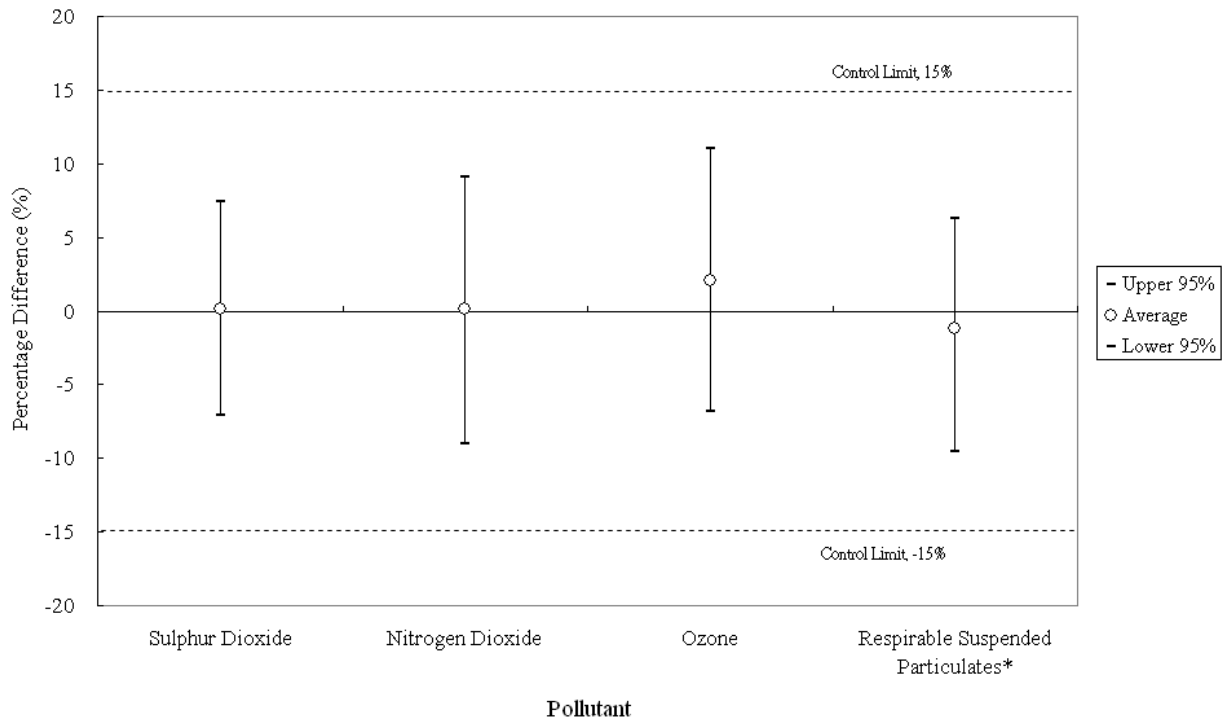
### 2.1 Quality Control (QC) and Quality Assurance (QA) Activities

The two governments have fully carried out the agreed QA/QC activities, which include zero/span checks, precision checks, dynamic calibration, etc., in accordance with the QA/QC Operating Procedures so as to ensure that the air quality data from the monitoring stations are highly accurate and reliable. To ensure the operation of the Network complies continuously with the QA/QC requirements, the GDEMC and HKEPD have jointly set up the Guangdong-Hong Kong Quality Management Committee for the PRD Regional Air Quality Monitoring Network (the Quality Management Committee, QMC) to review, on a quarterly basis, the set-up of the network, its performance in QA/QC and the operation status of its data transmission system. The QMC will also conduct system audit once a year to evaluate the effectiveness of the quality management system. The findings of the system audit will be reported. The deficiency found and corrective measures suggested will be listed and followed up by the QMC.

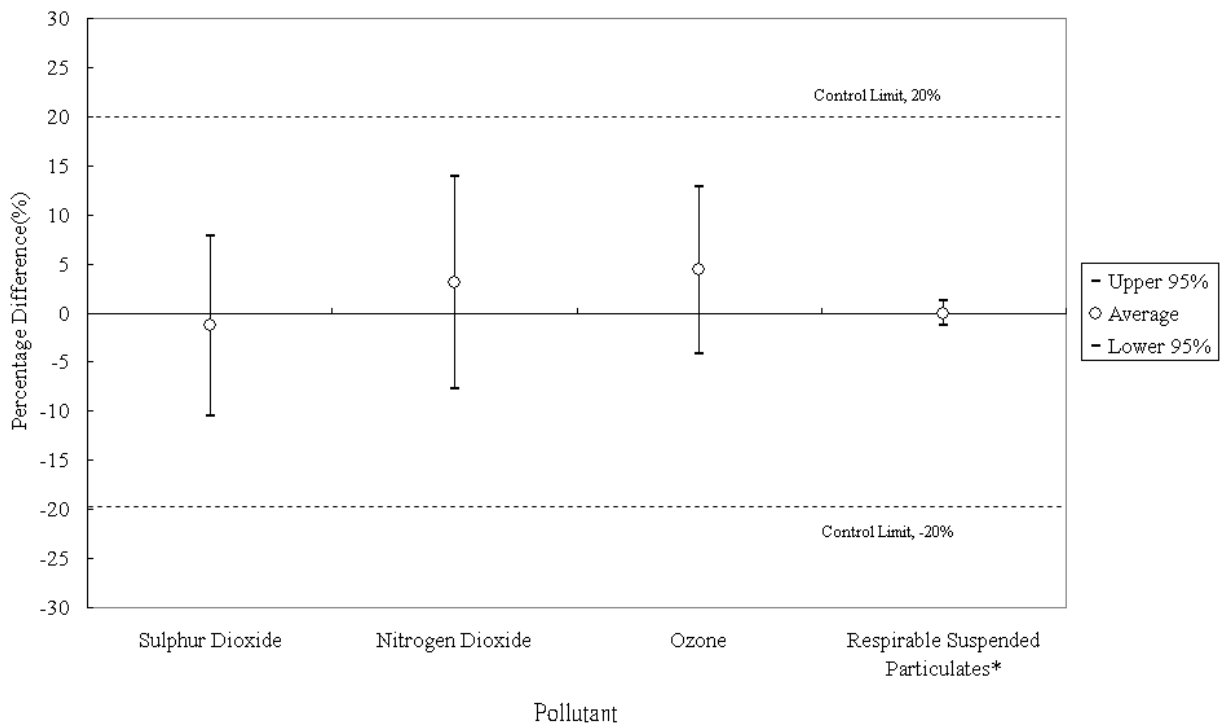
### 2.2 Accuracy and Precision

The accuracy of the Network is assessed by means of performance audits. The control limits set for the gaseous pollutants and respirable suspended particulates (PM<sub>10</sub>) are  $\pm 15\%$  and  $\pm 10\%$  respectively, these limits are similar to those of the United States Environmental Protection Agency and other international standards. In 2010, the GDEMC and HKEPD jointly carried out 377 audit checks on the analysers and samplers at the monitoring stations of the Network. The results showed that, based on the 95% probability limits, the accuracy of the Network varied between -9.5% to 11.0% and was within the specified control limits (see Figure 2).

Precision is a measure of repeatability and is calculated in accordance with the QA/QC Operating Procedures. The control limits adopted for the gaseous pollutants and respirable suspended particulates (PM<sub>10</sub>) are  $\pm 20\%$  and  $\pm 10\%$  respectively. In 2010, the GDEMC and HKEPD jointly carried out 1602 precision checks on the analysers and samplers at the monitoring stations of the Network. The results showed that, based on the 95% probability limits, the precision of the Network varied between -10.5% and 13.9% and was within the specified control limits (see Figure 3). Overall, the QA/QC performance of the monitoring network was good in 2010, and met all the requirements specified in the QA/QC Operating Procedures.



**Figure 2 : Accuracy of the PRD Regional Air Quality Monitoring Network in 2010**



**Figure 3 : Precision of the PRD Regional Air Quality Monitoring Network in 2010**

\* Both the accuracy and precision of the respirable suspended particulates (PM<sub>10</sub>) adopt a control limit of  $\pm 10\%$ .



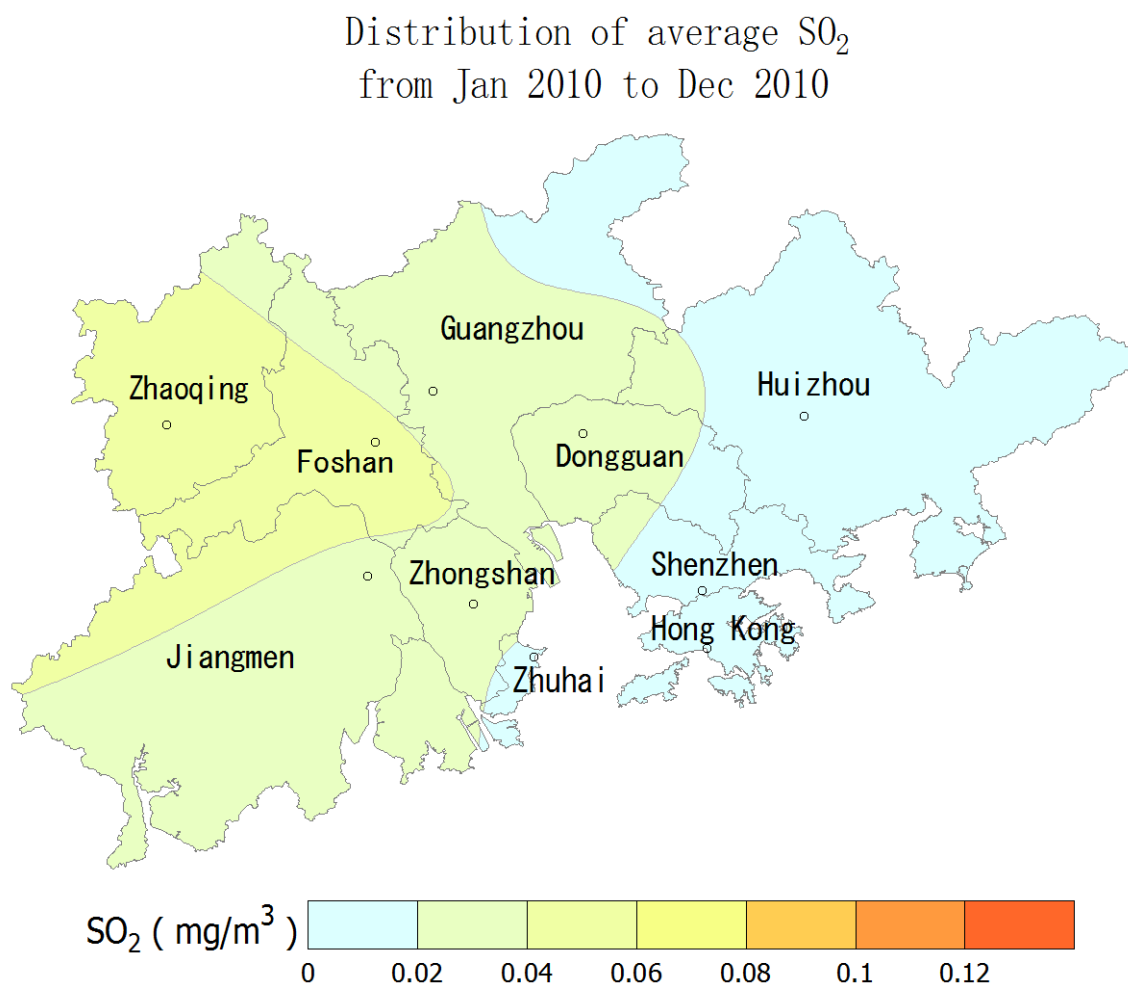
### 3. Statistical Analysis of Pollutant Concentrations

#### 3.1 Sulphur Dioxide (SO<sub>2</sub>)

Sulphur dioxide (SO<sub>2</sub>) comes mainly from the combustion of sulphur-containing fossil fuel. Its major sources of emissions include power plants, fuel combustion plants, vehicles and vessels. Apart from its impact on human respiratory system, SO<sub>2</sub> contributes substantially to acid rain. It can also be oxidized in the air to form sulphate which has a significant impact on the levels of respirable suspended particulates (PM<sub>10</sub>) and visibility in the region.

The annual averages of SO<sub>2</sub> at various monitoring stations in the Network ranged from 0.009 mg/m<sup>3</sup> to 0.048 mg/m<sup>3</sup> in 2010; all were in compliance with the national annual air quality standard<sup>#</sup> (0.06 mg/m<sup>3</sup>). As shown in Figure 4, the average levels of SO<sub>2</sub> at the western part of PRD were in general higher than those of other areas. Summary of the monthly and annual averages of SO<sub>2</sub> at various stations are in Table 3.1c.

During the year, 3 monitoring stations in the Network had recorded exceedance of the national hourly standard (0.50 mg/m<sup>3</sup>) of SO<sub>2</sub> while 4 monitoring stations had recorded exceedance of the national daily air quality standard (0.15 mg/m<sup>3</sup>) of SO<sub>2</sub>. Details are shown in Table 3.1a and Table 3.1b.



**Figure 4 : Spatial distribution of average concentrations of Sulphur Dioxide (SO<sub>2</sub>) in the Network**

<sup>#</sup> National Standards refer to Class 2 of the “National Ambient Air Quality Standards (GB 3095 – 1996 – revised version)” [NAAQS], which are applicable to residential, mixed commercial/residential, cultural, industrial and village areas.

**Table 3.1 a : The monthly maxima and minima of hourly averages of Sulphur Dioxide**

[Class 2 NAAQS (Hourly) : 0.50 mg/m<sup>3</sup>]

Monitoring Stations	Mth	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Exceed- ance Hours	Exceed- ance Rate
Luhu Park (Guangzhou)	Max	0.253	0.149	0.190	0.163	0.139	0.118	0.107	0.318	0.120	0.106	0.151	0.158	0	0.00%
	Min	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.006	0.002		
Wanqingsha (Guangzhou)	Max	0.255	0.215	0.700	0.199	0.181	0.214	0.095	0.264	0.253	0.249	0.280	0.271	1	0.01%
	Min	0.010	0.006	0.007	0.007	0.005	0.004	0.000	0.001	0.000	0.008	0.005	0.008		
Tianhu (Guangzhou)	Max	0.099	0.083	0.181	0.084	0.113	0.110	0.099	0.103	0.112	0.060	0.043	0.057	0	0.00%
	Min	0.000	0.001	0.000	0.003	0.005	0.001	0.005	0.000	0.002	0.002	0.003	0.002		
Liyuan (Shenzhen)	Max	0.076	0.038	0.060	0.076	0.032	0.091	0.036	0.077	0.090	0.038	0.033	0.095	0	0.00%
	Min	0.001	0.001	0.000	0.000	0.001	0.000	0.000	0.001	0.001	0.001	0.001	0.000		
Tangjia (Zhuhai)	Max	0.194	0.161	0.264	0.178	0.087	0.106	0.036	0.105	0.191	0.132	0.184	0.186	0	0.00%
	Min	0.004	0.001	0.000	0.000	0.000	0.000	0.001	0.003	0.000	0.004	0.000	0.003		
Jinjuzui (Foshan)	Max	0.241	0.271	0.346	0.398	0.237	0.143	0.251	0.285	0.224	0.164	0.197	0.208	0	0.00%
	Min	0.010	0.004	0.000	0.000	0.005	0.006	0.000	0.001	0.002	0.004	0.000	0.004		
Huijingcheng (Foshan)	Max	0.324	0.159	0.346	0.201	0.241	0.128	0.083	0.207	0.118	0.153	0.275	0.266	0	0.00%
	Min	0.023	0.012	0.015	0.018	0.007	0.007	0.000	0.001	0.000	0.004	0.010	0.012		
Donghu (Jiangmen)	Max	0.238	0.149	0.361	0.339	0.162	0.183	0.137	0.117	0.306	0.194	0.152	0.297	0	0.00%
	Min	0.009	0.003	0.007	0.005	0.005	0.000	0.000	0.000	0.002	0.000	0.000	0.001		
Chengzhong (Zhaoqing)	Max	0.311	0.168	0.251	0.210	0.201	0.205	0.187	0.160	0.196	0.146	0.318	0.522	1	0.01%
	Min	0.001	0.002	0.002	0.002	0.003	0.002	0.004	0.005	0.006	0.006	0.010	0.002		
Xiapu (Huizhou)	Max	0.061	0.027	0.070	0.058	0.063	0.036	0.047	0.070	0.066	0.071	0.071	0.065	0	0.00%
	Min	0.003	0.002	0.002	0.005	0.005	0.005	0.005	0.006	0.006	0.006	0.008	0.006		
Jinguowan (Huizhou)	Max	0.050	0.050	0.051	0.028	0.043	0.039	0.044	0.084	0.079	0.052	0.062	0.059	0	0.00%
	Min	0.011	0.003	0.002	0.000	0.001	0.000	0.002	0.000	0.002	0.002	0.007	0.000		
Haogang (Dongguan)	Max	0.244	0.154	0.238	0.293	0.171	0.127	0.120	0.229	0.558	0.254	0.155	0.272	3	0.03%
	Min	0.009	0.001	0.007	0.008	0.004	0.004	0.008	0.009	0.009	0.013	0.012	0.010		
Zimaling Park (Zhongshan)	Max	0.196	0.174	0.305	0.134	0.066	0.164	0.040	0.133	0.136	0.144	0.156	0.263	0	0.00%
	Min	0.004	0.002	0.001	0.002	0.000	0.001	0.001	0.002	0.003	0.003	0.002	0.005		
Tsuen Wan (HKSAR)	Max	0.156	0.110	0.108	0.141	0.119	0.186	0.070	0.098	0.170	0.043	0.064	0.127	0	0.00%
	Min	0.000	0.001	0.003	0.000	0.000	0.002	0.003	0.003	0.005	0.004	0.000	0.005		
Tap Mun (HKSAR)	Max	0.062	0.038	0.054	0.026	0.035	0.030	0.032	0.028	0.070	0.036	0.035	0.050	0	0.00%
	Min	0.003	0.003	0.003	0.005	0.005	0.006	0.007	0.003	0.003	0.005	0.003	0.003		
Tung Chung (HKSAR)	Max	0.111	0.090	0.107	0.118	0.114	0.111	0.040	0.096	0.118	0.111	0.098	0.124	0	0.00%
	Min	0.001	0.000	0.003	0.006	0.006	0.004	0.001	0.001	0.001	0.006	0.002	0.003		

**Table 3.1 b : The monthly maxima and minima of daily averages of Sulphur Dioxide**

[Class 2 NAAQS (Daily) : 0.15 mg/m<sup>3</sup>]

Monitoring Stations	Mth	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Exceed- ance Days	Exceed- ance Rate
Luhu Park (Guangzhou)	Max	0.086	0.058	0.072	0.058	0.051	0.056	0.041	0.048	0.050	0.060	0.055	0.073	0	0.00%
	Min	0.002	0.003	0.003	0.002	0.008	0.008	0.002	0.008	0.008	0.004	0.010	0.006		
Wanqingsha (Guangzhou)	Max	0.152	0.090	0.117	0.071	0.067	0.087	0.028	0.072	0.062	0.090	0.070	0.119	1	0.30%
	Min	0.021	0.007	0.011	0.010	0.005	0.006	0.005	0.001	0.002	0.017	0.015	0.029		
Tianhu (Guangzhou)	Max	0.033	0.037	0.071	0.025	0.051	0.049	0.047	0.040	0.042	0.028	0.035	0.044	0	0.00%
	Min	0.001	0.002	0.003	0.004	0.006	0.003	0.006	0.002	0.004	0.004	0.006	0.004		
Liyuan (Shenzhen)	Max	0.029	0.012	0.032	0.016	0.015	0.016	0.010	0.018	0.039	0.028	0.021	0.039	0	0.00%
	Min	0.005	0.001	0.002	0.002	0.002	0.002	0.001	0.003	0.003	0.002	0.004	0.002		
Tangjia (Zhuhai)	Max	0.101	0.074	0.098	0.051	0.036	0.059	0.012	0.049	0.043	0.048	0.055	0.074	0	0.00%
	Min	0.009	0.003	0.002	0.002	0.001	0.000	0.003	0.005	0.004	0.006	0.008	0.009		
Jinjuzui (Foshan)	Max	0.129	0.077	0.126	0.091	0.092	0.072	0.062	0.081	0.074	0.065	0.078	0.105	0	0.00%
	Min	0.021	0.011	0.014	0.013	0.018	0.019	0.012	0.023	0.011	0.008	0.012	0.010		
Huijingcheng (Foshan)	Max	0.190	0.079	0.178	0.123	0.077	0.068	0.032	0.065	0.055	0.071	0.115	0.151	8	2.40%
	Min	0.026	0.019	0.022	0.033	0.009	0.010	0.010	0.007	0.002	0.009	0.021	0.023		
Donghu (Jiangmen)	Max	0.129	0.061	0.162	0.086	0.082	0.085	0.030	0.045	0.044	0.069	0.070	0.106	1	0.30%
	Min	0.035	0.008	0.019	0.008	0.007	0.008	0.001	0.006	0.003	0.008	0.006	0.007		
Chengzhong (Zhaoqing)	Max	0.137	0.064	0.153	0.131	0.090	0.081	0.059	0.064	0.074	0.078	0.129	0.179	2	0.57%
	Min	0.011	0.004	0.006	0.010	0.022	0.005	0.011	0.011	0.017	0.009	0.025	0.011		
Xiapu (Huizhou)	Max	0.031	0.012	0.033	0.026	0.020	0.018	0.020	0.026	0.034	0.040	0.038	0.042	0	0.00%
	Min	0.005	0.002	0.006	0.008	0.008	0.007	0.009	0.009	0.007	0.012	0.015	0.010		
Jinguowan (Huizhou)	Max	0.037	0.022	0.023	0.018	0.017	0.016	0.020	0.023	0.034	0.039	0.031	0.043	0	0.00%
	Min	0.014	0.008	0.008	0.003	0.007	0.002	0.007	0.002	0.008	0.008	0.011	0.005		
Haogang (Dongguan)	Max	0.096	0.064	0.080	0.098	0.051	0.047	0.034	0.078	0.137	0.067	0.065	0.098	0	0.00%
	Min	0.021	0.007	0.010	0.012	0.011	0.007	0.012	0.016	0.015	0.016	0.022	0.025		
Zimaling Park (Zhongshan)	Max	0.123	0.085	0.118	0.075	0.031	0.078	0.015	0.032	0.042	0.071	0.074	0.120	0	0.00%
	Min	0.008	0.002	0.002	0.003	0.001	0.002	0.003	0.003	0.003	0.004	0.010	0.014		
Tsuen Wan (HKSAR)	Max	0.057	0.042	0.054	0.046	0.039	0.056	0.030	0.037	0.039	0.028	0.025	0.055	0	0.00%
	Min	0.004	0.004	0.005	0.003	0.003	0.004	0.003	0.006	0.007	0.005	0.010	0.007		
Tap Mun (HKSAR)	Max	0.025	0.014	0.021	0.014	0.016	0.017	0.015	0.014	0.035	0.031	0.022	0.041	0	0.00%
	Min	0.005	0.004	0.005	0.006	0.007	0.007	0.008	0.004	0.004	0.007	0.005	0.006		
Tung Chung (HKSAR)	Max	0.050	0.040	0.058	0.028	0.033	0.041	0.016	0.032	0.054	0.045	0.032	0.064	0	0.00%
	Min	0.004	0.002	0.004	0.007	0.007	0.005	0.005	0.006	0.004	0.007	0.007	0.005		

**Table 3.1 c : The monthly and annual averages of Sulphur Dioxide****[Class 2 NAAQS (Annual) : 0.06 mg/m<sup>3</sup>]**

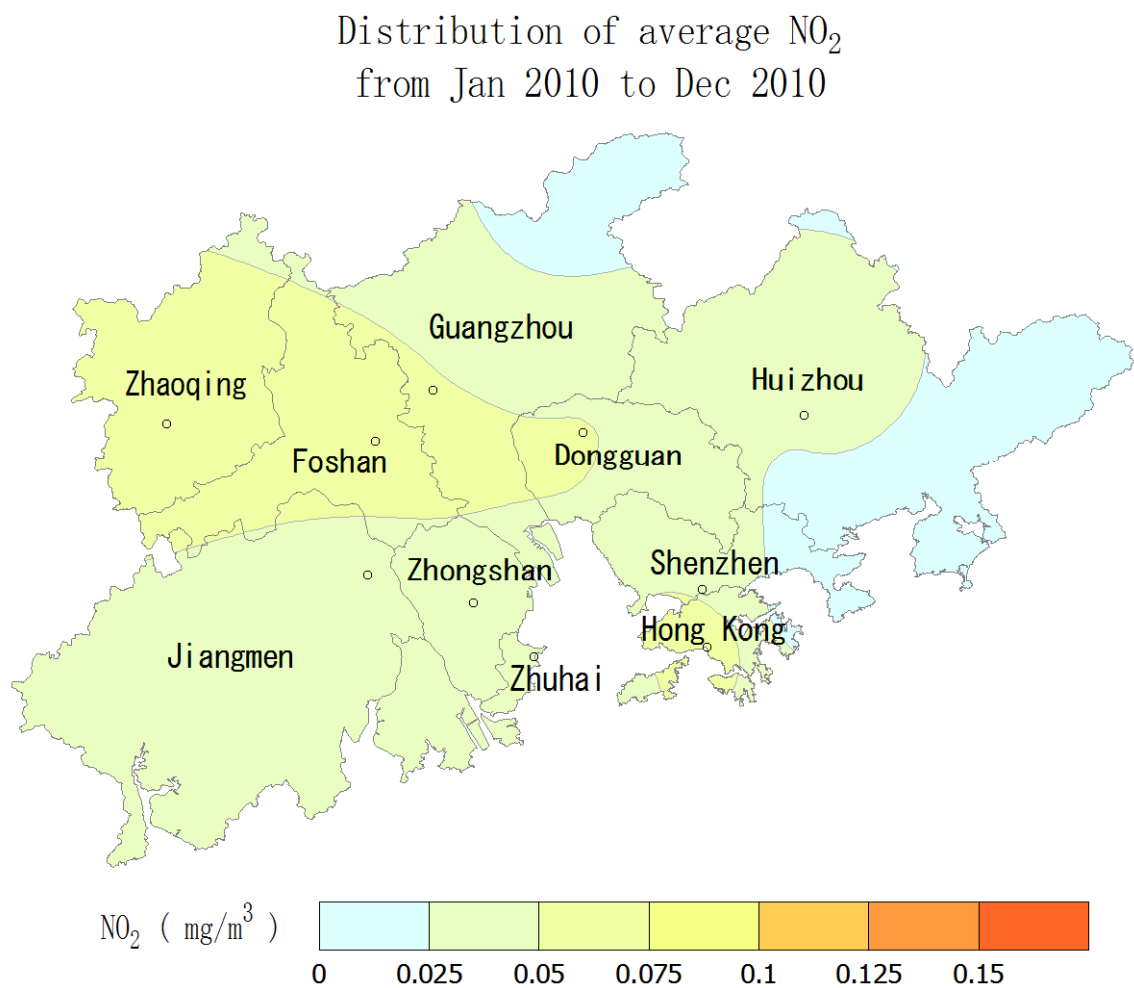
Monitoring Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Average
Luhu Park (Guangzhou)	0.039	0.022	0.036	0.028	0.027	0.023	0.027	0.024	0.029	0.021	0.025	0.033	0.028
Wanqingsha (Guangzhou)	0.063	0.026	0.038	0.029	0.019	0.020	0.012	0.022	0.025	0.042	0.045	0.055	0.034
Tianhu (Guangzhou)	0.010	0.010	0.021	0.011	0.017	0.019	0.021	0.019	0.017	0.011	0.015	0.016	0.016
Liyuan (Shenzhen)	0.012	0.005	0.008	0.006	0.005	0.005	0.004	0.008	0.011	0.011	0.012	0.016	0.009
Tangjia (Zhuhai)	0.037	0.013	0.019	0.016	0.007	0.007	0.007	0.014	0.013	0.023	0.024	0.028	0.018
Jinjuzui (Foshan)	0.068	0.034	0.058	0.041	0.040	0.038	0.033	0.046	0.041	0.034	0.035	0.050	0.043
Huijingcheng (Foshan)	0.089	0.044	0.072	0.065	0.042	0.033	0.020	0.025	0.019	0.031	0.053	0.071	0.048
Donghu (Jiangmen)	0.075	0.026	0.056	0.041	0.028	0.029	0.012	0.025	0.020	0.036	0.029	0.030	0.035
Chengzhong (Zhaoqing)	0.059	0.028	0.058	0.056	0.054	0.034	0.030	0.037	0.042	0.030	0.064	0.072	0.047
Xiapu (Huizhou)	0.014	0.007	0.017	0.013	0.012	0.012	0.013	0.016	0.017	0.019	0.024	0.026	0.016
Jinguowan (Huizhou)	0.020	0.013	0.015	0.010	0.010	0.010	0.013	0.010	0.013	0.018	0.022	0.018	0.014
Haogang (Dongguan)	0.041	0.019	0.031	0.028	0.022	0.021	0.020	0.034	0.047	0.037	0.040	0.046	0.033
Zimaling Park (Zhongshan)	0.052	0.014	0.028	0.021	0.007	0.015	0.005	0.009	0.013	0.032	0.038	0.050	0.024
Tsuen Wan (HKSAR)	0.015	0.015	0.022	0.015	0.015	0.018	0.015	0.017	0.022	0.013	0.016	0.020	0.017
Tap Mun (HKSAR)	0.012	0.007	0.010	0.010	0.010	0.009	0.010	0.008	0.010	0.014	0.013	0.016	0.011
Tung Chung (HKSAR)	0.014	0.008	0.014	0.013	0.012	0.010	0.009	0.012	0.014	0.017	0.016	0.020	0.013

Remark : All concentration units are in milligrams per cubic metre.

### 3.2 Nitrogen Dioxide (NO<sub>2</sub>)

Nitrogen Dioxide (NO<sub>2</sub>) is mainly formed from oxidization of nitrogen monoxide (NO) emitted in the process of combustion. Its major emission sources include power plants, vehicles, industrial combustion plants, etc. Apart from the impact on human respiratory system, it can also be oxidized in the air to form nitrate, which has significant impact on the levels of particulates, acid rain and visibility in the region.

The annual averages of NO<sub>2</sub> at various monitoring stations in the Network ranged from 0.014 mg/m<sup>3</sup> to 0.069 mg/m<sup>3</sup> in 2010, all were in compliance with the national annual air quality standard (0.08 mg/m<sup>3</sup>). During the year, 10 monitoring stations in the Network had recorded exceedance of the national hourly standard (0.24 mg/m<sup>3</sup>) while 11 monitoring stations had recorded exceedance of the national daily air quality standard (0.12 mg/m<sup>3</sup>) of NO<sub>2</sub>. Details are shown on Figures 5 and Tables 3.2a to 3.2c.



**Figure 5 : Spatial distribution of average concentrations of Nitrogen Dioxide (NO<sub>2</sub>) in the Network**

**Table 3.2 a : The monthly maxima and minima of hourly averages of Nitrogen Dioxide**

[Class 2 NAAQS (Hourly) : 0.24 mg/m3]

Monitoring Stations	Mth	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Exceed-ance Hours	Exceed-ance Rate
Luhu Park (Guangzhou)	Max	0.249	0.190	0.142	0.123	0.117	0.086	0.136	0.151	0.225	0.222	0.193	0.254	7	0.09%
	Min	0.029	0.007	0.009	0.018	0.010	0.004	0.000	0.000	0.014	0.014	0.002	0.007		
Wanqingsha (Guangzhou)	Max	0.193	0.130	0.181	0.183	0.126	0.155	0.111	0.150	0.107	0.113	0.155	0.268	4	0.05%
	Min	0.016	0.005	0.005	0.002	0.003	0.001	0.000	0.004	0.006	0.008	0.003	0.008		
Tianhu (Guangzhou)	Max	0.103	0.080	0.149	0.076	0.105	0.063	0.066	0.077	0.063	0.091	0.027	0.054	0	0.00%
	Min	0.003	0.004	0.003	0.004	0.001	0.000	0.000	0.001	0.000	0.001	0.004	0.002		
Liyuan (Shenzhen)	Max	0.305	0.136	0.162	0.231	0.114	0.111	0.086	0.152	0.213	0.198	0.205	0.258	9	0.11%
	Min	0.015	0.007	0.000	0.007	0.001	0.004	0.007	0.009	0.005	0.005	0.010	0.009		
Tangjia (Zhuhai)	Max	0.185	0.131	0.174	0.189	0.100	0.060	0.051	0.106	0.085	0.082	0.156	0.200	0	0.00%
	Min	0.000	0.001	0.003	0.006	0.001	0.005	0.000	0.000	0.000	0.003	0.011	0.010		
Jinjuzui (Foshan)	Max	0.241	0.144	0.189	0.174	0.181	0.142	0.088	0.134	0.137	0.177	0.247	0.296	10	0.12%
	Min	0.025	0.006	0.011	0.012	0.008	0.000	0.000	0.007	0.006	0.007	0.018	0.011		
Huijingcheng (Foshan)	Max	0.274	0.182	0.181	0.196	0.196	0.143	0.156	0.157	0.211	0.168	0.257	0.364	51	0.63%
	Min	0.024	0.017	0.020	0.023	0.025	0.019	0.015	0.020	0.016	0.011	0.000	0.026		
Donghu (Jiangmen)	Max	0.212	0.068	0.143	0.090	0.094	0.079	0.063	0.076	0.091	0.116	0.122	0.160	0	0.00%
	Min	0.015	0.004	0.006	0.006	0.007	0.001	0.001	0.000	0.002	0.002	0.007	0.001		
Chengzhong (Zhaoqing)	Max	0.299	0.141	0.159	0.141	0.186	0.122	0.106	0.127	0.125	0.141	0.198	0.228	3	0.04%
	Min	0.028	0.013	0.017	0.017	0.019	0.015	0.010	0.011	0.014	0.000	0.007	0.000		
Xiapu (Huizhou)	Max	0.136	0.096	0.134	0.179	0.085	0.079	0.232	0.092	0.101	0.136	0.163	0.189	0	0.00%
	Min	0.016	0.006	0.009	0.012	0.005	0.007	0.007	0.006	0.010	0.004	0.001	0.016		
Jinguowan (Huizhou)	Max	0.125	0.056	0.075	0.119	0.062	0.060	0.067	0.058	0.060	0.054	0.083	0.073	0	0.00%
	Min	0.006	0.001	0.003	0.003	0.004	0.003	0.002	0.001	0.003	0.000	0.009	0.011		
Haogang (Dongguan)	Max	0.204	0.150	0.178	0.191	0.169	0.131	0.144	0.186	0.140	0.125	0.196	0.277	5	0.06%
	Min	0.024	0.010	0.014	0.012	0.012	0.014	0.013	0.016	0.015	0.006	0.015	0.019		
Zimaling Park (Zhongshan)	Max	0.226	0.166	0.171	0.210	0.090	0.129	0.047	0.140	0.106	0.149	0.213	0.322	6	0.07%
	Min	0.006	0.001	0.001	0.003	0.002	0.003	0.001	0.004	0.002	0.007	0.017	0.012		
Tsuen Wan (HKSAR)	Max	0.301	0.157	0.210	0.195	0.154	0.183	0.100	0.247	0.240	0.154	0.227	0.258	8	0.09%
	Min	0.016	0.013	0.012	0.016	0.013	0.015	0.012	0.014	0.020	0.016	0.021	0.017		
Tap Mun (HKSAR)	Max	0.074	0.076	0.091	0.075	0.062	0.048	0.047	0.054	0.078	0.032	0.039	0.114	0	0.00%
	Min	0.002	0.003	0.003	0.001	0.004	0.002	0.002	0.002	0.002	0.002	0.005	0.007		
Tung Chung (HKSAR)	Max	0.251	0.205	0.200	0.199	0.158	0.198	0.078	0.149	0.180	0.168	0.279	0.276	6	0.07%
	Min	0.011	0.000	0.000	0.001	0.003	0.000	0.001	0.001	0.001	0.005	0.010	0.010		

**Table 3.2 b : The monthly maxima and minima of daily averages of Nitrogen Dioxide**

[Class 2 NAAQS (Daily) : 0.12 mg/m3]

Monitoring Stations	Mth	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Exceed-ance Days	Exceed-ance Rate
Luhu Park (Guangzhou)	Max	0.147	0.115	0.095	0.076	0.064	0.052	0.088	0.072	0.104	0.112	0.114	0.120	2	0.60%
	Min	0.043	0.016	0.020	0.025	0.020	0.015	0.023	0.013	0.039	0.030	0.034	0.021		
Wanqingsha (Guangzhou)	Max	0.128	0.095	0.117	0.108	0.062	0.079	0.035	0.079	0.051	0.055	0.091	0.163	6	1.78%
	Min	0.043	0.012	0.013	0.013	0.010	0.012	0.006	0.012	0.015	0.024	0.041	0.032		
Tianhu (Guangzhou)	Max	0.040	0.033	0.063	0.025	0.047	0.023	0.026	0.040	0.029	0.034	0.017	0.022	0	0.00%
	Min	0.008	0.006	0.008	0.006	0.007	0.001	0.002	0.006	0.005	0.003	0.006	0.005		
Liyuan (Shenzhen)	Max	0.130	0.082	0.120	0.117	0.067	0.066	0.047	0.082	0.088	0.072	0.098	0.159	6	1.75%
	Min	0.041	0.023	0.010	0.025	0.017	0.015	0.019	0.020	0.022	0.022	0.031	0.031		
Tangjia (Zhuhai)	Max	0.119	0.100	0.091	0.077	0.036	0.028	0.018	0.041	0.037	0.043	0.071	0.119	0	0.00%
	Min	0.015	0.011	0.010	0.013	0.006	0.008	0.003	0.002	0.005	0.017	0.030	0.028		
Jinjuzui (Foshan)	Max	0.144	0.092	0.128	0.082	0.075	0.085	0.060	0.078	0.089	0.072	0.123	0.170	11	3.26%
	Min	0.041	0.016	0.020	0.026	0.023	0.004	0.013	0.023	0.023	0.021	0.052	0.028		
Huijingcheng (Foshan)	Max	0.169	0.136	0.140	0.112	0.098	0.099	0.101	0.105	0.105	0.080	0.162	0.251	26	7.88%
	Min	0.033	0.029	0.033	0.043	0.037	0.032	0.029	0.035	0.042	0.024	0.056	0.043		
Donghu (Jiangmen)	Max	0.140	0.045	0.093	0.062	0.060	0.053	0.032	0.048	0.051	0.062	0.076	0.084	3	1.06%
	Min	0.027	0.010	0.012	0.014	0.013	0.013	0.009	0.016	0.013	0.023	0.014	0.010		
Chengzhong (Zhaoqing)	Max	0.165	0.100	0.130	0.106	0.095	0.079	0.058	0.066	0.079	0.085	0.123	0.130	13	3.86%
	Min	0.042	0.021	0.027	0.034	0.032	0.032	0.019	0.022	0.033	0.028	0.047	0.027		
Xiapu (Huizhou)	Max	0.067	0.058	0.072	0.071	0.038	0.043	0.037	0.045	0.056	0.054	0.072	0.104	0	0.00%
	Min	0.028	0.013	0.017	0.026	0.023	0.020	0.018	0.018	0.024	0.018	0.030	0.027		
Jinguowan (Huizhou)	Max	0.053	0.031	0.042	0.047	0.023	0.033	0.034	0.034	0.027	0.027	0.033	0.051	0	0.00%
	Min	0.020	0.010	0.007	0.009	0.007	0.008	0.007	0.005	0.005	0.012	0.019	0.017		
Haogang (Dongguan)	Max	0.119	0.082	0.100	0.116	0.090	0.072	0.071	0.076	0.068	0.058	0.094	0.149	3	0.86%
	Min	0.041	0.016	0.024	0.026	0.017	0.028	0.022	0.030	0.033	0.011	0.031	0.028		
Zimaling Park (Zhongshan)	Max	0.149	0.110	0.099	0.078	0.056	0.093	0.025	0.049	0.054	0.076	0.089	0.160	6	1.77%
	Min	0.024	0.004	0.005	0.005	0.006	0.007	0.008	0.009	0.010	0.017	0.035	0.024		
Tsuen Wan (HKSAR)	Max	0.155	0.099	0.141	0.114	0.094	0.126	0.063	0.119	0.115	0.086	0.110	0.146	9	2.52%
	Min	0.048	0.030	0.040	0.052	0.045	0.037	0.035	0.038	0.045	0.045	0.061	0.043		
Tap Mun (HKSAR)	Max	0.036	0.040	0.034	0.023	0.036	0.025	0.023	0.027	0.046	0.020	0.021	0.030	0	0.00%
	Min	0.009	0.007	0.009	0.008	0.007	0.005	0.004	0.004	0.006	0.006	0.011	0.011		
Tung Chung (HKSAR)	Max	0.152	0.110	0.138	0.129	0.088	0.094	0.042	0.081	0.094	0.081	0.121	0.162	6	1.69%
	Min	0.028	0.003	0.004	0.006	0.010	0.011	0.010	0.013	0.015	0.021	0.036	0.034		

**Table 3.2 c : The monthly and annual averages of Nitrogen Dioxide**

[Class 2 NAAQS (Annual) : 0.08 mg/m<sup>3</sup>]

Monitoring Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Average
Luhu Park (Guangzhou)	0.079	0.056	0.051	0.044	0.042	0.030	0.038	0.032	0.066	0.053	0.067	0.063	0.052
Wanqingsha (Guangzhou)	0.071	0.040	0.047	0.053	0.037	0.033	0.021	0.033	0.034	0.040	0.059	0.085	0.047
Tianhu (Guangzhou)	0.017	0.019	0.024	0.014	0.015	0.013	0.015	0.020	0.012	0.008	0.010	0.013	0.015
Liyuan (Shenzhen)	0.059	0.042	0.043	0.043	0.036	0.034	0.030	0.043	0.050	0.040	0.057	0.074	0.046
Tangjia (Zhuhai)	0.049	0.032	0.036	0.039	0.018*	0.018*	0.011	0.015	0.018	0.031	0.048	0.062	0.033
Jinjuzui (Foshan)	0.074	0.044	0.058	0.051	0.044	0.035	0.028	0.040	0.047	0.045	0.077	0.089	0.053
Huijingcheng (Foshan)	0.081	0.058	0.072	0.071	0.063	0.056	0.046	0.054	0.065	0.053	0.089	0.114	0.069
Donghu (Jiangmen)	0.064	0.024	0.033	0.031	0.033*	0.024*	0.020	0.029	0.028	0.036	0.034	0.031*	0.033
Chengzhong (Zhaoqing)	0.086	0.050	0.062	0.065	0.054	0.049	0.033	0.041	0.048	0.044	0.081	0.077	0.058
Xiapu (Huizhou)	0.042	0.030	0.039	0.038	0.030	0.030	0.027	0.028	0.034	0.032	0.045	0.058	0.036
Jinguowan (Huizhou)	0.033	0.017	0.020	0.019	0.013	0.015	0.016	0.014	0.015	0.018*	0.024	0.025	0.019
Haogang (Dongguan)	0.068	0.044	0.055	0.054	0.046	0.048	0.039	0.046	0.048	0.034	0.060	0.078	0.052
Zimaling Park (Zhongshan)	0.064	0.028	0.041	0.041	0.020	0.025	0.014	0.022	0.027	0.043	0.066	0.083	0.040
Tsuen Wan (HKSAR)	0.072	0.062	0.072	0.069	0.067	0.060	0.044	0.059	0.076	0.065	0.090	0.093	0.069
Tap Mun (HKSAR)	0.017	0.013	0.016	0.013	0.013	0.012	0.011	0.011	0.017	0.013	0.015	0.017	0.014
Tung Chung (HKSAR)	0.061	0.037	0.052	0.045	0.040	0.036	0.020	0.038	0.043	0.050	0.079	0.081	0.049

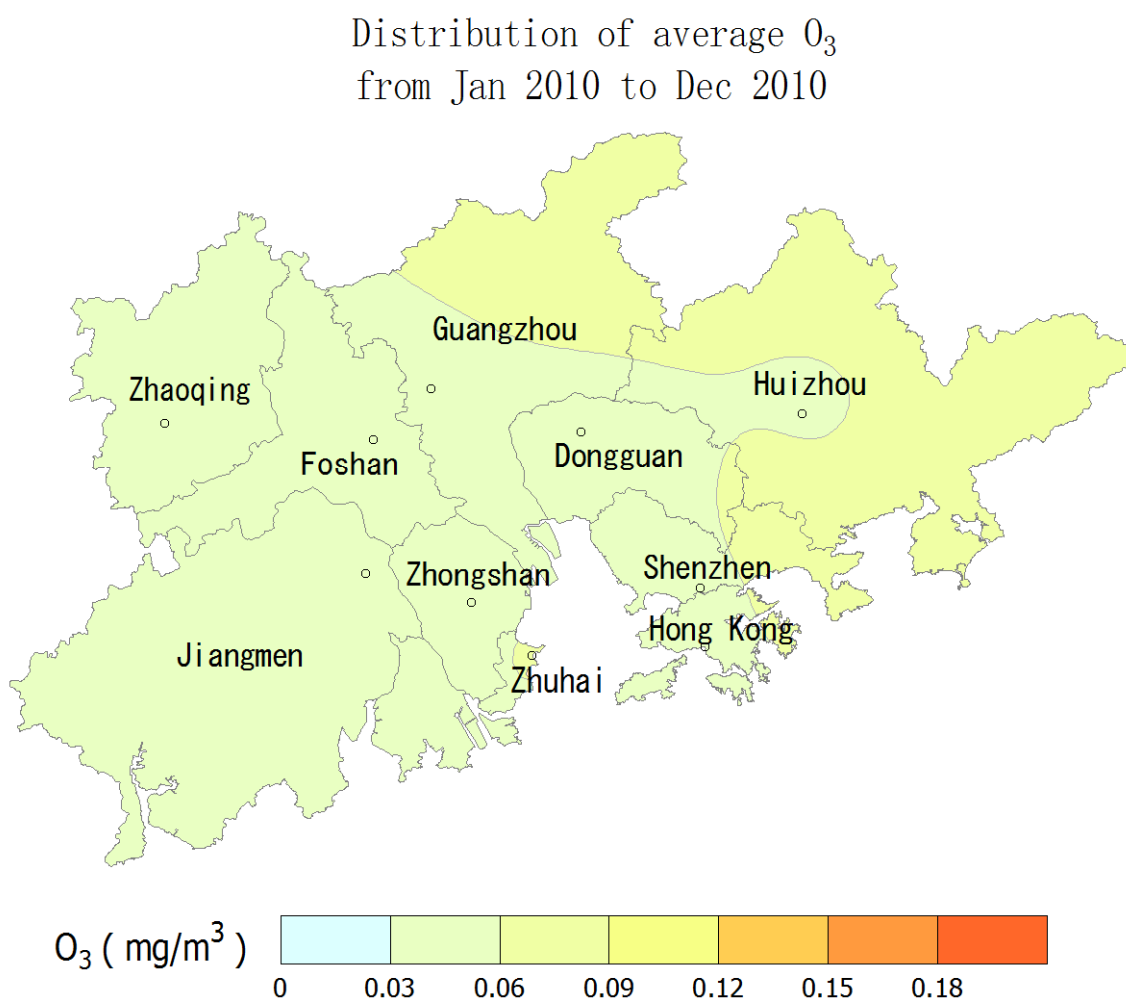
Remark : 1. All concentration units are in milligrams per cubic metre.

2. “\*\*” denotes that the data capture rate does not meet the minimum requirements for determining a representative value.

### 3.3 Ozone (O<sub>3</sub>)

Ozone (O<sub>3</sub>) is not directly emitted from emission sources. It is formed by the photochemical reaction of oxygen, nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOCs) in the air under sunlight, and is the main component of photochemical smog. Ozone can cause irritation to the eyes, nose and throat. At elevated levels, it can increase a person's susceptibility to respiratory diseases and aggravate pre-existing respiratory diseases such as asthma.

The precursors of O<sub>3</sub> (NO<sub>x</sub> and VOCs) mainly originate from pollution sources in urban areas. However, as it usually takes several hours for O<sub>3</sub> to be formed and rise to its peak level, and O<sub>3</sub> and its precursors can be transported to other areas downwind of their sources during this period. The concentrations of O<sub>3</sub> in rural areas are therefore often higher than those in the urban areas. In 2010, the annual averages of O<sub>3</sub> recorded by the Network ranged from 0.033 mg/m<sup>3</sup> to 0.086 mg/m<sup>3</sup> with higher average values being recorded in rural areas such as Tianhu of Guangzhou, Tap Mun of Hong Kong and Jinguowan of Huizhou. During the year, all 16 monitoring stations in the Network had recorded exceedance of the national hourly standard (0.2 mg/m<sup>3</sup>) of O<sub>3</sub>. Details are shown on Figures 6 and Tables 3.3a to 3.3c.



**Figure 6 : Spatial distribution of average concentrations of Ozone (O<sub>3</sub>) in the Network**

**Table 3.3 a : The monthly maxima and minima of hourly averages of Ozone**

[Class 2 NAAQS (Hourly) : 0.20mg/m3]

Monitoring Stations	Mth	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Exceed- ance Hours	Exceed- ance Rate
Luhu Park (Guangzhou)	Max	0.171	0.100	0.181	0.168	0.249	0.214	0.261	0.310	0.324	0.215	0.230	0.253	113	1.37%
	Min	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.002	0.009	0.027	0.001		
Wanqingsha (Guangzhou)	Max	0.244	0.123	0.282	0.305	0.392	0.354	0.351	0.408	0.353	0.325	0.319	0.346	335	4.01%
	Min	0.006	0.000	0.005	0.006	0.007	0.007	0.000	0.003	0.000	0.000	0.005	0.001		
Tianhu (Guangzhou)	Max	0.274	0.211	0.277	0.188	0.251	0.284	0.290	0.259	0.303	0.221	0.195	0.172	139	1.67%
	Min	0.000	0.009	0.005	0.006	0.003	0.005	0.004	0.004	0.008	0.006	0.043	0.006		
Liyuan (Shenzhen)	Max	0.166	0.084	0.190	0.161	0.197	0.212	0.113	0.258	0.269	0.198	0.244	0.166	27	0.32%
	Min	0.002	0.001	0.000	0.002	0.001	0.000	0.007	0.000	0.013	0.031	0.001	0.000		
Tangjia (Zhuhai)	Max	0.270	0.120	0.318	0.225	0.430	0.402	0.133	0.371	0.322	0.315	0.357	0.307	286	3.43%
	Min	0.000	0.001	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001		
Jinjuzui (Foshan)	Max	0.188	0.108	0.200	0.256	0.370	0.284	0.232	0.403	0.305	0.254	0.336	0.214	192	2.28%
	Min	0.005	0.000	0.005	0.003	0.000	0.006	0.005	0.000	0.004	0.004	0.004	0.003		
Huijingcheng (Foshan)	Max	0.153	0.148	0.319	0.128	0.331	0.297	0.272	0.264	0.314	0.240	0.229	0.246	117	1.42%
	Min	0.014	0.007	0.007	0.008	0.004	0.000	0.001	0.001	0.000	0.004	0.000	0.002		
Donghu (Jiangmen)	Max	0.172	0.111	0.266	0.164	0.298	0.215	0.195	0.368	0.272	0.309	0.344	0.306	228	2.77%
	Min	0.002	0.002	0.001	0.001	0.000	0.002	0.001	0.000	0.003	0.000	0.005	0.005		
Chengzhong (Zhaoqing)	Max	0.141	0.096	0.188	0.196	0.370	0.201	0.196	0.251	0.269	0.246	0.200	0.183	46	0.56%
	Min	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
Xiapu (Huizhou)	Max	0.150	0.149	0.189	0.200	0.194	0.205	0.288	0.245	0.278	0.163	0.191	0.221	58	0.70%
	Min	0.002	0.003	0.003	0.003	0.004	0.002	0.000	0.000	0.001	0.003	0.001	0.001		
Jinguowan (Huizhou)	Max	0.177	0.166	0.193	0.200	0.246	0.171	0.221	0.249	0.297	0.181	0.193	0.209	51	0.61%
	Min	0.002	0.000	0.000	0.008	0.010	0.005	0.006	0.005	0.007	0.017	0.014	0.008		
Haogang (Dongguan)	Max	0.202	0.163	0.228	0.198	0.238	0.256	0.239	0.237	0.289	0.225	0.215	0.221	76	0.88%
	Min	0.005	0.005	0.001	0.001	0.000	0.000	0.000	0.004	0.004	0.004	0.000	0.000		
Zimaling Park (Zhongshan)	Max	0.174	0.114	0.193	0.187	0.325	0.268	0.240	0.341	0.312	0.288	0.272	0.241	148	1.74%
	Min	0.000	0.001	0.000	0.000	0.000	0.000	0.002	0.009	0.010	0.010	0.008	0.010		
Tsuen Wan (HKSAR)	Max	0.111	0.070	0.121	0.138	0.124	0.142	0.061	0.262	0.239	0.196	0.153	0.187	8	0.09%
	Min	0.000	0.003	0.001	0.002	0.004	0.006	0.007	0.007	0.004	0.005	0.003	0.002		
Tap Mun (HKSAR)	Max	0.163	0.145	0.222	0.205	0.180	0.176	0.122	0.275	0.283	0.218	0.224	0.193	36	0.43%
	Min	0.003	0.003	0.003	0.004	0.004	0.008	0.003	0.003	0.003	0.028	0.014	0.005		
Tung Chung (HKSAR)	Max	0.156	0.109	0.180	0.178	0.184	0.292	0.100	0.373	0.313	0.236	0.351	0.206	58	0.68%
	Min	0.005	0.005	0.006	0.003	0.003	0.004	0.004	0.003	0.001	0.000	0.001	0.003		

**Table 3.3 b : The monthly maxima and minima of daily averages of Ozone**

Monitoring Stations	Mth	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Luhu Park (Guangzhou)	Max	0.050	0.055	0.067	0.060	0.093	0.103	0.066	0.077	0.145	0.148	0.174	0.131
	Min	0.000	0.003	0.003	0.004	0.005	0.002	0.005	0.005	0.003	0.049	0.062	0.013
Wanqingsha (Guangzhou)	Max	0.077	0.078	0.114	0.131	0.158	0.150	0.089	0.159	0.135	0.121	0.122	0.113
	Min	0.007	0.008	0.008	0.012	0.034	0.019	0.026	0.026	0.023	0.036	0.049	0.006
Tianhu (Guangzhou)	Max	0.176	0.108	0.147	0.128	0.145	0.146	0.139	0.132	0.156	0.155	0.185	0.140
	Min	0.028	0.039	0.038	0.035	0.029	0.040	0.029	0.028	0.043	0.056	0.075	0.025
Liyuan (Shenzhen)	Max	0.077	0.058	0.080	0.114	0.119	0.095	0.054	0.098	0.116	0.117	0.129	0.082
	Min	0.006	0.013	0.006	0.021	0.013	0.013	0.022	0.032	0.033	0.052	0.042	0.010
Tangjia (Zhuhai)	Max	0.088	0.085	0.112	0.133	0.159	0.126	0.063	0.135	0.145	0.132	0.131	0.116
	Min	0.002	0.004	0.001	0.010	0.030	0.031	0.013	0.015	0.024	0.035	0.056	0.008
Jinjuzui (Foshan)	Max	0.052	0.052	0.099	0.098	0.147	0.095	0.067	0.120	0.137	0.110	0.110	0.079
	Min	0.006	0.005	0.007	0.012	0.011	0.021	0.013	0.010	0.022	0.019	0.018	0.005
Huijingcheng (Foshan)	Max	0.056	0.051	0.093	0.049	0.147	0.103	0.079	0.109	0.095	0.103	0.114	0.077
	Min	0.015	0.009	0.011	0.011	0.013	0.005	0.004	0.008	0.015	0.018	0.034	0.005
Donghu (Jiangmen)	Max	0.050	0.055	0.083	0.084	0.121	0.084	0.063	0.103	0.106	0.118	0.109	0.096
	Min	0.003	0.005	0.003	0.003	0.005	0.006	0.013	0.011	0.029	0.021	0.052	0.010
Chengzhong (Zhaoqing)	Max	0.050	0.045	0.099	0.093	0.169	0.087	0.075	0.093	0.094	0.093	0.121	0.078
	Min	0.002	0.003	0.004	0.002	0.007	0.006	0.008	0.010	0.008	0.006	0.036	0.004
Xiapu (Huizhou)	Max	0.082	0.067	0.103	0.135	0.127	0.119	0.103	0.094	0.108	0.119	0.123	0.110
	Min	0.007	0.015	0.010	0.013	0.016	0.016	0.017	0.020	0.020	0.037	0.032	0.009
Jinguowan (Huizhou)	Max	0.110	0.091	0.118	0.142	0.121	0.125	0.091	0.095	0.120	0.138	0.130	0.118
	Min	0.009	0.002	0.020	0.038	0.031	0.027	0.026	0.024	0.035	0.048	0.058	0.018
Haogang (Dongguan)	Max	0.074	0.072	0.092	0.117	0.126	0.093	0.075	0.086	0.104	0.079	0.081	0.088
	Min	0.011	0.016	0.009	0.012	0.014	0.006	0.011	0.014	0.020	0.031	0.041	0.007
Zimaling Park (Zhongshan)	Max	0.068	0.072	0.084	0.105	0.130	0.109	0.065	0.116	0.120	0.116	0.108	0.098
	Min	0.006	0.004	0.003	0.004	0.005	0.017	0.012	0.018	0.032	0.032	0.045	0.013
Tsuen Wan (HKSAR)	Max	0.057	0.041	0.085	0.102	0.081	0.079	0.022	0.086	0.085	0.093	0.088	0.079
	Min	0.010	0.006	0.006	0.006	0.006	0.008	0.010	0.011	0.008	0.024	0.012	0.010
Tap Mun (HKSAR)	Max	0.110	0.088	0.134	0.151	0.137	0.134	0.061	0.106	0.122	0.138	0.169	0.131
	Min	0.011	0.022	0.017	0.041	0.029	0.026	0.018	0.019	0.029	0.039	0.063	0.045
Tung Chung (HKSAR)	Max	0.073	0.088	0.117	0.126	0.100	0.089	0.053	0.121	0.123	0.109	0.117	0.095
	Min	0.007	0.011	0.008	0.017	0.019	0.009	0.018	0.013	0.008	0.020	0.021	0.017



**Table 3.3 c : The monthly and annual averages of Ozone**

Monitoring Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Average
Luhu Park (Guangzhou)	0.015	0.016	0.024	0.014	0.028	0.026	0.036	0.042	0.081	0.096	0.095	0.056	0.045
Wanqingsha (Guangzhou)	0.031	0.035	0.056	0.050	0.071	0.060	0.051	0.073	0.078	0.082	0.080	0.056	0.060
Tianhu (Guangzhou)	0.088	0.072	0.081	0.069	0.076	0.083	0.074	0.084	0.084	0.097	0.123	0.095	0.086
Liyuan (Shenzhen)	0.038	0.029	0.038	0.050	0.056	0.042	0.036	0.056	0.065	0.088	0.074	0.046	0.052
Tangjia (Zhuhai)	0.033	0.036	0.055	0.056	0.086	0.064	0.041	0.062	0.069	0.086	0.091	0.069	0.063
Jinjuzui (Foshan)	0.020	0.025	0.039	0.038	0.052	0.044	0.042	0.057	0.059	0.069	0.064	0.039	0.046
Huijingcheng (Foshan)	0.031	0.025	0.037	0.020	0.047	0.032	0.044	0.053	0.050	0.064	0.061	0.033	0.041
Donghu (Jiangmen)	0.020	0.026	0.039	0.024	0.046	0.034	0.032	0.052	0.065	0.081	0.079	0.050	0.045
Chengzhong (Zhaoqing)	0.019	0.025	0.047*	0.025	0.048	0.028	0.032	0.044	0.047	0.067	0.057	0.034	0.040
Xiapu (Huizhou)	0.036	0.037	0.052	0.049	0.068	0.052	0.055	0.057	0.062	0.073	0.067	0.055	0.055
Jinguowan (Huizhou)	0.055	0.050	0.066	0.068	0.081	0.059	0.053	0.056	0.072	0.086	0.092	0.076	0.067
Haogang (Dongguan)	0.032	0.042	0.046	0.040	0.054	0.039	0.045	0.051	0.057	0.060	0.061	0.046	0.048
Zimaling Park (Zhongshan)	0.024	0.033	0.049	0.041	0.051	0.046	0.041	0.058	0.064	0.071	0.068	0.053	0.050
Tsuen Wan (HKSAR)	0.031	0.019	0.027	0.035	0.034	0.024	0.016	0.027	0.029	0.057	0.050	0.040	0.033
Tap Mun (HKSAR)	0.069	0.056	0.072	0.082	0.087	0.056	0.037	0.053	0.066	0.100	0.113	0.088	0.073
Tung Chung (HKSAR)	0.039	0.039	0.047	0.055	0.051	0.042	0.032	0.041	0.047	0.068	0.065	0.050	0.048

Remark : 1. All concentration units are in milligrams per cubic metre.

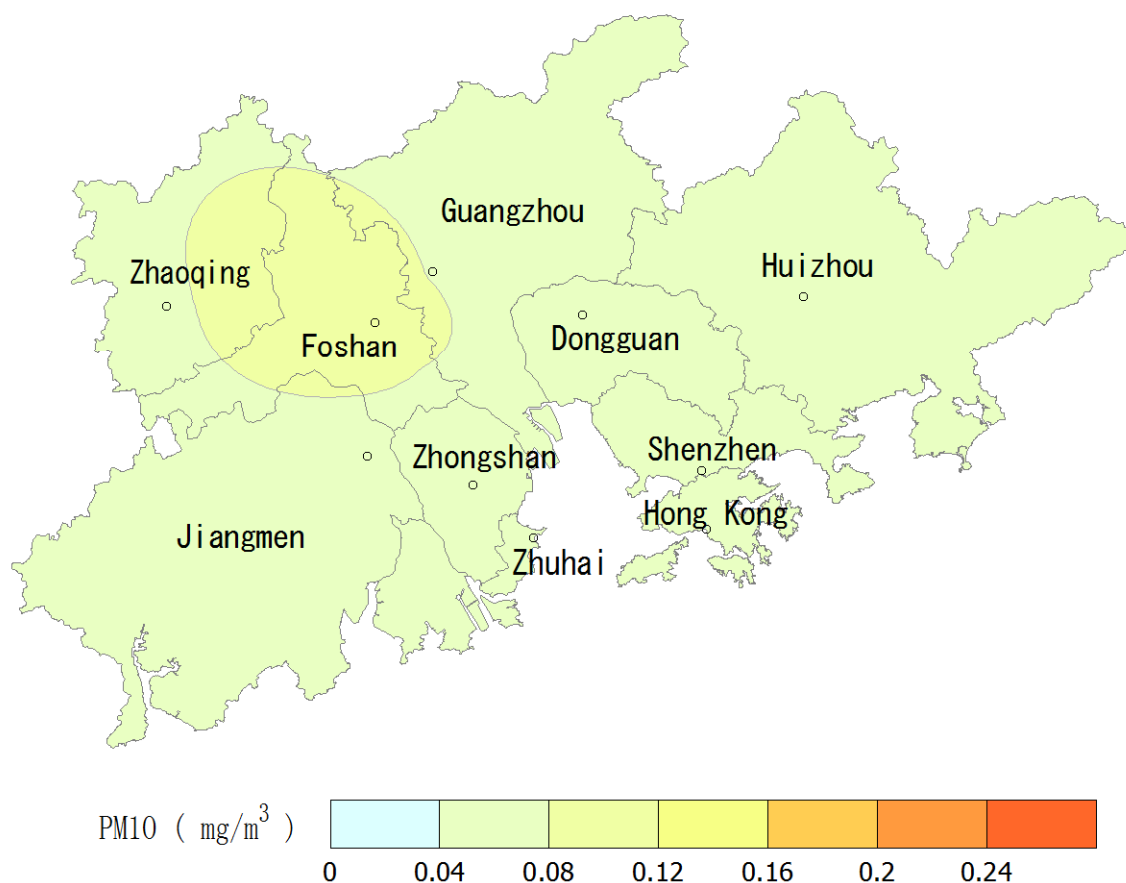
2. “\*” denotes that the data capture rate does not meet the minimum requirements for determining a representative value.

### 3.4 Respirable Suspended Particulates (PM<sub>10</sub>)

Respirable suspended particulates (PM<sub>10</sub> or RSP) in the atmosphere come from a great variety of emission sources, such as power plants, vehicles, cement and pottery manufacturing, fugitive dust etc, while some are products of oxidization of gaseous pollutants in the air (e.g. sulphate formed from oxidation of SO<sub>2</sub>) or from photochemical reactions. PM<sub>10</sub> can penetrate deeply into human lungs and cause impact on human respiratory system. Furthermore, finer particles in PM<sub>10</sub> have significant effect on visibility.

In 2010, the annual averages of PM<sub>10</sub> at various monitoring stations in the Network ranged from 0.045 mg/m<sup>3</sup> to 0.112 mg/m<sup>3</sup>. As shown in Figure 7, the average levels of PM<sub>10</sub> in the central to north-western part of PRD were relatively higher than those in the coastal areas in the south. Only 1 monitoring station in the Network had recorded exceedance of the national annual air quality standard (0.10 mg/m<sup>3</sup>) of PM<sub>10</sub> in 2010 while 15 monitoring stations had recorded exceedance of the national daily standard (0.15mg/m<sup>3</sup>) of PM<sub>10</sub>. Details are shown on Tables 3.4a to 3.4c.

Distribution of average PM10  
from Jan 2010 to Dec 2010



**Figure 7 : Spatial distribution of average concentrations of Respirable Suspended Particulates (PM<sub>10</sub>) in the Network**

**Table 3.4 a : The monthly maxima and minima of hourly averages of Respirable Suspended Particulates**

Monitoring Stations	Mth	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Luhu Park (Guangzhou)	Max	0.396	0.210	0.281	0.212	0.178	0.349	0.167	0.153	0.197	0.167	0.229	0.278
	Min	0.003	0.016	0.003	0.005	0.005	0.005	0.003	0.028	0.025	0.016	0.024	0.006
Wanqingsha (Guangzhou)	Max	0.445	0.208	0.499	0.405	0.261	0.483	0.162	0.234	0.278	0.195	0.288	0.432
	Min	0.002	0.002	0.000	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.022	0.002
Tianhu (Guangzhou)	Max	0.236	0.129	0.366	0.175	0.186	0.195	0.141	0.122	0.185	0.098	0.181	0.179
	Min	0.000	0.001	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.011	0.000
Liyuan (Shenzhen)	Max	0.353	0.149	0.652	0.259	0.224	0.171	0.129	0.155	0.233	0.229	0.332	0.334
	Min	0.001	0.001	0.000	0.002	0.001	0.000	0.001	0.003	0.001	0.004	0.015	0.000
Tangjia (Zhuhai)	Max	0.331	0.245	0.656	0.427	0.171	0.306	0.170	0.164	0.188	0.216	0.311	0.254
	Min	0.000	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.007	0.000
Jinjuzui (Foshan)	Max	0.435	0.591	0.356	0.387	0.186	0.296	0.166	0.188	0.217	0.234	0.234	0.332
	Min	0.009	0.000	0.000	0.000	0.000	0.003	0.000	0.003	0.000	0.000	0.020	0.000
Huijingcheng (Foshan)	Max	0.513	0.341	0.361	0.348	0.198	0.212	0.249	0.224	0.302	0.175	0.461	0.529
	Min	0.035	0.029	0.024	0.031	0.020	0.017	0.020	0.004	0.024	0.027	0.044	0.013
Donghu (Jiangmen)	Max	0.469	0.216	0.251	0.234	0.202	0.258	0.116	0.198	0.215	0.239	0.344	0.342
	Min	0.001	0.006	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Chengzhong (Zhaoqing)	Max	0.531	0.269	0.397	0.320	0.272	0.233	0.172	0.192	0.183	0.181	0.317	0.394
	Min	0.000	0.003	0.001	0.000	0.003	0.000	0.002	0.000	0.001	0.008	0.032	0.000
Xiapu (Huizhou)	Max	0.358	0.231	0.567	0.247	0.111	0.140	0.084	0.108	0.140	0.152	0.199	0.348
	Min	0.006	0.003	0.003	0.002	0.004	0.005	0.005	0.004	0.002	0.010	0.003	0.005
Jinguowan (Huizhou)	Max	0.398	0.156	0.763	0.213	0.213	0.112	0.148	0.345	0.209	0.230	0.232	0.278
	Min	0.005	0.003	0.003	0.001	0.001	0.000	0.000	0.000	0.000	0.001	0.020	0.000
Haogang (Dongguan)	Max	0.386	0.258	0.415	0.354	0.243	0.252	0.249	0.207	0.240	0.205	0.358	0.341
	Min	0.003	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.001
Zimaling Park (Zhongshan)	Max	0.362	0.283	0.617	0.316	0.228	0.264	0.158	0.195	0.236	0.208	0.356	0.304
	Min	0.003	0.001	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Tsuen Wan (HKSAR)	Max	0.368	0.177	0.798	0.158	0.109	0.182	0.059	0.168	0.151	0.142	0.156	0.194
	Min	0.005	0.004	0.000	0.003	0.003	0.006	0.004	0.003	0.005	0.015	0.009	0.001
Tap Mun (HKSAR)	Max	0.120	0.083	0.780	0.140	0.139	0.083	0.039	0.098	0.148	0.124	0.145	0.219
	Min	0.003	0.004	0.004	0.002	0.004	0.002	0.002	0.005	0.001	0.015	0.011	0.000
Tung Chung (HKSAR)	Max	0.337	0.220	0.699	0.136	0.133	0.169	0.040	0.159	0.162	0.147	0.215	0.263
	Min	0.002	0.003	0.004	0.001	0.002	0.002	0.003	0.002	0.003	0.007	0.009	0.002

**Table 3.4 b : The monthly maxima and minima of daily averages of Respirable Suspended Particulates**

[Class 2 NAAQS (Daily) : 0.15 mg/m<sup>3</sup>]

Monitoring Stations	Mth	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Exceed- ance Days	Exceed- ance Rate
Luhu Park (Guangzhou)	Max	0.252	0.126	0.218	0.151	0.128	0.126	0.112	0.106	0.139	0.113	0.136	0.138	8	2.33%
	Min	0.034	0.027	0.024	0.024	0.046	0.041	0.039	0.045	0.048	0.028	0.041	0.021		
Wanqingsha (Guangzhou)	Max	0.276	0.164	0.401	0.224	0.108	0.188	0.056	0.099	0.118	0.147	0.173	0.296	29	8.84%
	Min	0.030	0.020	0.022	0.025	0.028	0.023	0.021	0.016	0.013	0.036	0.039	0.025		
Tianhu (Guangzhou)	Max	0.114	0.080	0.149	0.126	0.101	0.111	0.065	0.066	0.101	0.073	0.142	0.143	0	0.00%
	Min	0.007	0.005	0.003	0.007	0.012	0.007	0.007	0.004	0.006	0.018	0.032	0.017		
Liyuan (Shenzhen)	Max	0.131	0.071	0.524	0.097	0.120	0.081	0.032	0.088	0.105	0.129	0.147	0.183	5	1.45%
	Min	0.020	0.011	0.016	0.023	0.015	0.010	0.016	0.017	0.015	0.029	0.043	0.016		
Tangjia (Zhuhai)	Max	0.205	0.178	0.547	0.175	0.086	0.143	0.030	0.127	0.141	0.117	0.152	0.161	8	2.52%
	Min	0.032	0.018	0.022	0.022	0.005	0.015	0.017	0.013	0.013	0.034	0.038	0.011		
Jinjuzui (Foshan)	Max	0.291	0.194	0.213	0.145	0.101	0.150	0.065	0.122	0.137	0.122	0.128	0.191	20	6.10%
	Min	0.036	0.025	0.021	0.020	0.036	0.029	0.019	0.023	0.019	0.028	0.045	0.020		
Huijingcheng (Foshan)	Max	0.327	0.287	0.272	0.199	0.125	0.146	0.133	0.138	0.179	0.125	0.275	0.377	63	19.33%
	Min	0.058	0.049	0.044	0.053	0.056	0.046	0.045	0.045	0.047	0.042	0.079	0.044		
Donghu (Jiangmen)	Max	0.217	0.117	0.165	0.152	0.119	0.120	0.044	0.145	0.159	0.107	0.169	0.174	10	2.98%
	Min	0.028	0.018	0.021	0.015	0.017	0.015	0.013	0.012	0.015	0.032	0.051	0.024		
Chengzhong (Zhaoqing)	Max	0.374	0.171	0.240	0.217	0.137	0.133	0.090	0.113	0.090	0.129	0.156	0.259	28	7.98%
	Min	0.012	0.020	0.015	0.010	0.032	0.029	0.031	0.017	0.014	0.035	0.054	0.020		
Xiapu (Huizhou)	Max	0.164	0.103	0.427	0.115	0.079	0.075	0.055	0.083	0.092	0.106	0.140	0.143	4	1.15%
	Min	0.020	0.021	0.015	0.013	0.025	0.017	0.019	0.017	0.012	0.028	0.044	0.028		
Jinguowan (Huizhou)	Max	0.136	0.077	0.457	0.107	0.085	0.063	0.077	0.107	0.099	0.125	0.176	0.160	6	1.81%
	Min	0.031	0.017	0.018	0.020	0.025	0.016	0.014	0.021	0.015	0.035	0.078	0.022		
Haogang (Dongguan)	Max	0.171	0.125	0.334	0.180	0.089	0.113	0.072	0.095	0.091	0.101	0.171	0.189	11	3.16%
	Min	0.024	0.013	0.019	0.013	0.026	0.025	0.022	0.020	0.019	0.008	0.046	0.022		
Zimaling Park (Zhongshan)	Max	0.264	0.181	0.464	0.118	0.078	0.123	0.042	0.137	0.165	0.136	0.165	0.169	18	5.16%
	Min	0.024	0.015	0.029	0.019	0.023	0.010	0.010	0.009	0.011	0.033	0.043	0.010		
Tsuen Wan (HKSAR)	Max	0.142	0.068	0.581	0.077	0.071	0.093	0.033	0.098	0.101	0.095	0.106	0.151	3	0.82%
	Min	0.021	0.012	0.017	0.021	0.021	0.015	0.016	0.013	0.016	0.029	0.030	0.019		
Tap Mun (HKSAR)	Max	0.098	0.050	0.664	0.072	0.079	0.052	0.026	0.073	0.092	0.102	0.119	0.162	4	1.11%
	Min	0.018	0.012	0.013	0.017	0.014	0.009	0.010	0.010	0.010	0.028	0.040	0.022		
Tung Chung (HKSAR)	Max	0.163	0.121	0.519	0.065	0.064	0.090	0.023	0.101	0.129	0.109	0.115	0.173	4	1.12%
	Min	0.020	0.012	0.020	0.021	0.013	0.011	0.009	0.008	0.010	0.026	0.040	0.025		

**Table 3.4 c : The monthly and annual averages of Respirable Suspended Particulates****[Class 2 NAAQS (Annual) : 0.10 mg/m<sup>3</sup>]**

Monitoring Stations	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Annual Average
Luhu Park (Guangzhou)	0.109	0.062	0.082	0.071	0.088	0.065	0.069	0.067	0.088	0.064	0.079	0.074	0.077
Wanqingsha (Guangzhou)	0.104	0.044	0.080	0.060	0.056	0.062	0.034	0.041	0.059	0.084	0.101	0.136	0.074
Tianhu (Guangzhou)	0.053	0.037	0.063	0.048	0.043	0.041	0.038	0.037	0.039	0.043	0.067	0.060	0.048
Liyuan (Shenzhen)	0.069	0.035	0.088	0.046	0.049	0.030	0.022	0.035	0.045	0.071	0.099	0.100	0.058
Tangjia (Zhuhai)	0.083	0.043	0.086	0.052	0.043	0.041*	0.022*	0.039	0.043	0.074	0.089	0.084	0.060
Jinjuzui (Foshan)	0.122	0.073	0.078*	0.073	0.060	0.057	0.037	0.053	0.073	0.076	0.084	0.096	0.074
Huijingcheng (Foshan)	0.152	0.112	0.131	0.103	0.087*	0.075	0.067	0.074	0.101	0.085	0.153	0.180	0.112
Donghu (Jiangmen)	0.094	0.041	0.065	0.052	0.042	0.036	0.021	0.046	0.056	0.071	0.082	0.081	0.058
Chengzhong (Zhaoqing)	0.126	0.057	0.106	0.086	0.079	0.061	0.051	0.042	0.048	0.060	0.090	0.111	0.077
Xiapu (Huizhou)	0.084	0.051	0.091	0.054	0.044	0.039	0.035	0.042	0.050	0.066	0.073	0.087	0.060
Jinguowan (Huizhou)	0.075	0.040	0.079	0.052	0.046	0.035	0.038	0.048	0.054	0.069	0.106	0.077	0.060
Haogang (Dongguan)	0.096	0.050	0.084	0.065	0.055	0.044	0.034	0.045	0.058	0.056	0.092	0.099	0.065
Zimaling Park (Zhongshan)	0.093	0.045	0.103	0.060	0.043	0.044	0.026	0.044	0.056	0.082	0.096	0.083	0.065
Tsuen Wan (HKSAR)	0.059	0.036	0.084	0.043	0.039	0.031	0.022	0.031	0.037	0.059	0.074	0.073	0.049
Tap Mun (HKSAR)	0.054	0.028	0.089	0.039	0.034	0.019	0.016	0.024	0.033	0.058	0.077	0.069	0.045
Tung Chung (HKSAR)	0.063	0.033	0.077	0.038	0.034	0.028	0.016	0.026	0.036	0.063	0.082	0.082	0.049

Remark : 1. All concentration units are in milligrams per cubic metre.

2. “\*”denotes that the data capture rate does not meet the minimum requirements for determining a representative value.

### 3.5 Monthly Variations of Pollutant Concentrations

Figure 8 shows the monthly variations of the major pollutants ( $\text{SO}_2$ ,  $\text{NO}_2$ ,  $\text{O}_3$ , and  $\text{PM}_{10}$ ) recorded by the Network in 2010. The overall concentrations of  $\text{SO}_2$ ,  $\text{NO}_2$  and  $\text{PM}_{10}$  were generally higher during the winter season (first and fourth quarters of year) and relatively lower in the summer months. The lower pollutants levels in summer were mainly due to the relatively clean maritime air stream prevailed in the PRD region under the influence of southern monsoon together with the higher mixing layer height that favoured the dispersion of pollutants. As for ozone, the highest monthly averages occurred in October and November because of more days in the period with meteorological conditions that favoured photochemical reactions (such as strong solar radiation, less amount of clouds, weak wind speed etc.), hence causing more ozone formation.

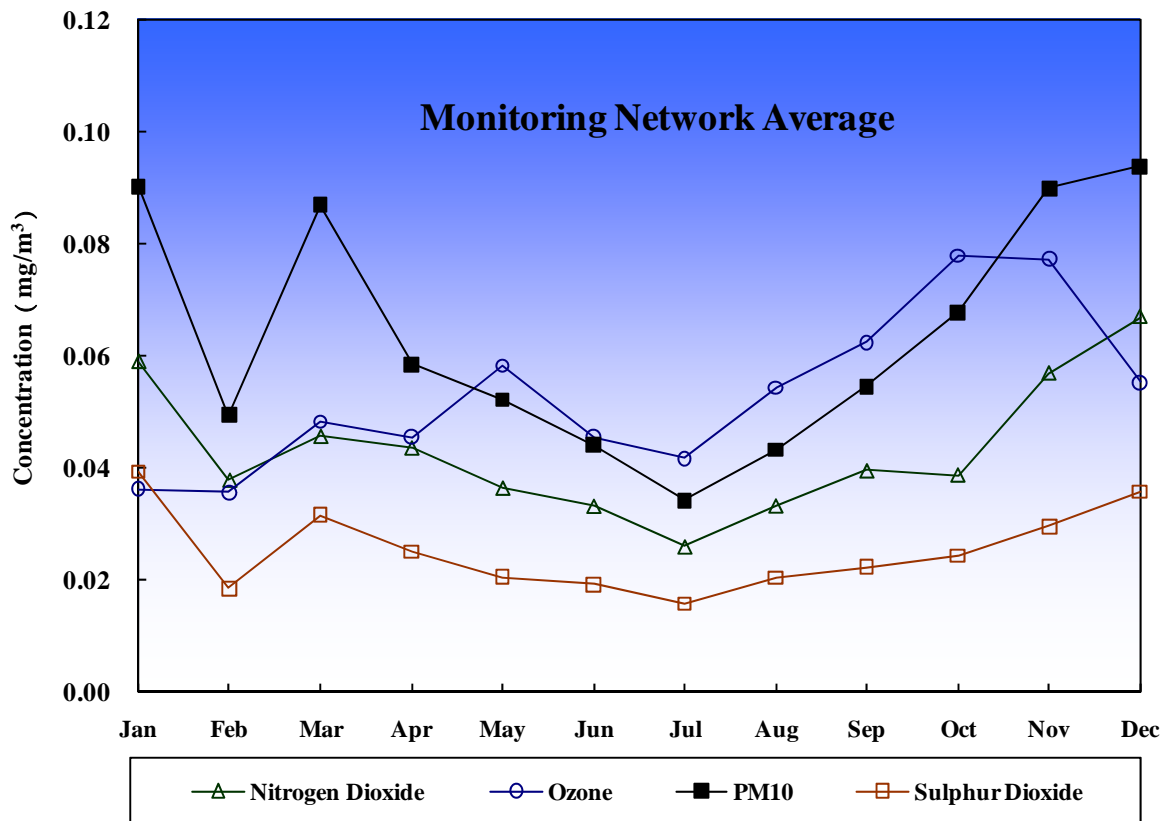


Figure 8 : Monthly variations of average pollutant concentrations measured by the Network

### 3.6 Annual Variations of Pollutant Concentrations (2006-2010)

Table 3.6 shows the annual mean concentrations of the major pollutants (SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub>, and PM<sub>10</sub>) recorded by the Network from 2006 to 2010.

From 2006 to 2010, the annual averages recorded by the Network for SO<sub>2</sub>, NO<sub>2</sub>, and PM<sub>10</sub> decreased by 47%, 7% and 14% respectively. These reductions reflected the measures implemented in recent years by Guangdong and Hong Kong, including the retrofitting of power plants with flue-gas desulphurization facilities, tightening the vehicle emission standards and fuel specifications, phasing out the more polluting industrial facilities in the PRD, etc., had brought improvements in the overall air quality in the Pearl River Delta region. However, the Network had recorded an increase of 10% in the annual ozone average in the same period, reflecting that the photochemical smog pollution in the region has not yet improved. The Guangdong and Hong Kong governments will continue to implement emission reduction measures to further improve the air quality in the region and tackle the photochemical pollution problem.

**Table 3.6 : Annual averages of the pollutants from the monitoring network**

	Sulphur Dioxide	Nitrogen Dioxide	Ozone	Respirable Suspended Particulates
2006	0.047	0.046	0.048	0.074
2007	0.048	0.045	0.051	0.079
2008	0.039	0.045	0.051	0.070
2009	0.029	0.042	0.056	0.069
2010	0.025	0.043	0.053	0.064

Remark : All concentration units are in milligrams per cubic metre.

## 4. Statistical Analysis of the Regional Air Quality Index (RAQI)

The two governments of Guangdong and HKSAR jointly started reporting the RAQI since 30 November 2005 to provide the public with information about the air quality in different parts of the PRD region.

The RAQI is a composite indicator of the aggregate level of the four major regional air pollutants, namely sulphur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>) and respirable suspended particulates (PM<sub>10</sub>). The higher the index value, the higher the regional air pollution levels. The RAQI is divided into the following five grades:

Grade	Regional Air Quality Index (RAQI) value <sup>#</sup>	Air Quality Condition in the Monitored Area
I	0 – 1	Concentrations of all pollutants are well within Class 2 of the National Ambient Air Quality Standards (NAAQS)
II	1 – 2	Concentrations of all pollutants are generally within Class 2 NAAQS
III	2 – 3	Concentrations of individual pollutants may approach or exceed Class 2 NAAQS
IV	3 – 4	Class 2 NAAQS are generally exceeded
V	>4	Class 2 NAAQS are significantly exceeded

The formula for calculating the RAQI is as follows:

$$I_c = \sum_{i=1}^4 \frac{C_i}{R_i}$$

where  $I_c$  stands for the RAQI, an indicator of the aggregate pollution level of four pollutants, namely, SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub> and PM<sub>10</sub>. For SO<sub>2</sub>, NO<sub>2</sub> and PM<sub>10</sub>,  $C_i$  is the daily average concentration while  $R_i$  represents the daily average concentration limits of the corresponding pollutants as specified in Class 2 NAAQS. For O<sub>3</sub>,  $C_i$  is the highest hourly average of a day while  $R_i$  represents the hourly average concentration limit in Class 2 NAAQS (refer to Class 2 NAAQS (GB 3095 – 1996) revised version).

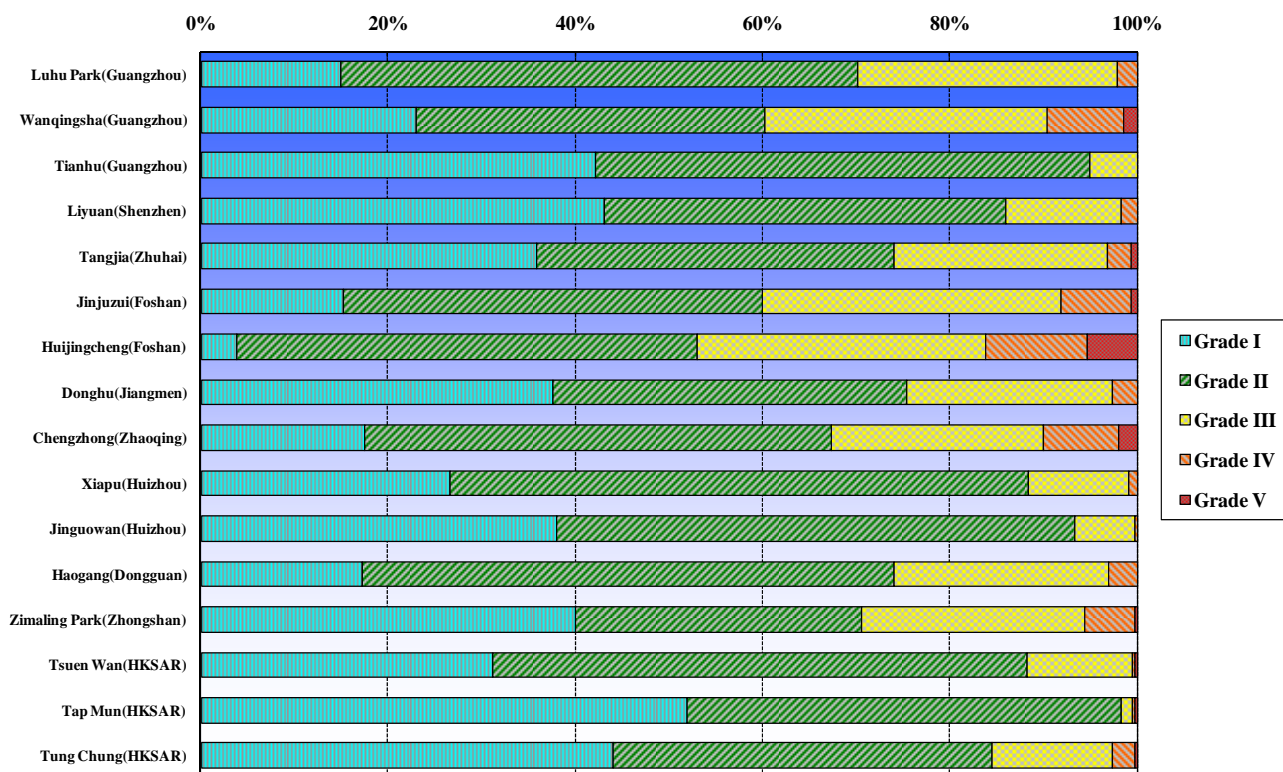
<sup>#</sup> The upper limits of the range of Grades I, II, III and IV of the RAQI are inclusive.

## 4.1 Statistics on RAQI Grades

Table 4.1 summarise the statistics on the RAQI grades and effective days of RAQI for all monitoring stations in the Network from January to December 2010.

**Table 4.1 : Statistics on RAQI grades of individual monitoring stations**

Monitoring Stations	District	Days with valid RAQI	Ratio of valid RAQI	Distribution of RAQI grades in 2010 (%)				
				Grade I	Grade II	Grade III	Grade IV	Grade V
Luhu Park	Guangzhou	341	93%	14.96	55.13	27.86	2.05	0.00
Wanqingsha	Guangzhou	344	94%	22.97	37.21	30.23	8.14	1.45
Tianhu	Guangzhou	332	91%	42.17	52.71	5.12	0.00	0.00
Liyuan	Shenzhen	350	96%	43.14	42.86	12.29	1.71	0.00
Tangjia	Zhuhai	343	94%	35.86	38.19	22.74	2.62	0.58
Jinjuzui	Foshan	330	90%	15.15	44.85	31.82	7.58	0.61
Huijingcheng	Foshan	340	93%	3.82	49.12	30.88	10.88	5.29
Donghu	Jiangmen	333	91%	37.54	37.84	21.92	2.70	0.00
Chengzhong	Zhaoqing	349	96%	17.48	49.86	22.64	8.02	2.01
Xiapu	Huizhou	342	94%	26.61	61.70	10.82	0.88	0.00
Jinguowan	Huizhou	332	91%	37.95	55.42	6.33	0.30	0.00
Haogang	Dongguan	354	97%	17.23	56.78	22.88	3.11	0.00
Zimaling Park	Zhongshan	343	94%	39.94	30.61	23.91	5.25	0.29
Tsuen Wan	HKSAR	350	96%	31.14	57.14	11.14	0.29	0.29
Tap Mun	HKSAR	352	96%	51.99	46.31	1.14	0.28	0.28
Tung Chung	HKSAR	348	95%	43.97	40.52	12.93	2.30	0.29



**Figure 9 : Stacked column chart of RAQI grades of individual monitoring stations**



Figure 10 shows the overall distribution of different RAQI grades recorded by the Network in 2010. As a whole, 77.4% of the RAQI values are at Grade I to II, meaning the pollutant concentrations are generally within Class 2 of the NAAQS, followed by 18.4% at Grade III, 3.5% at Grade IV and 0.7% at Grade V.

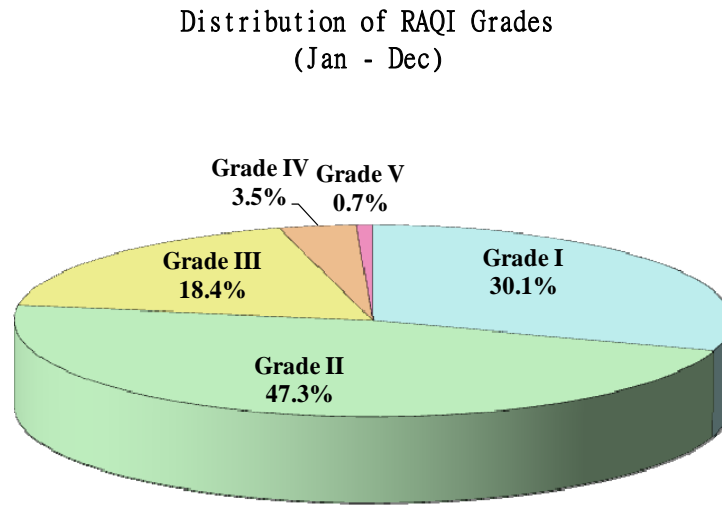


Figure 10 : Distribution of RAQI grades in the Network

#### 4.2 Spatial Distribution of Average RAQI at Monitoring Stations in the Network

##### Distribution of average RAQI from Jan 2010 to Dec 2010

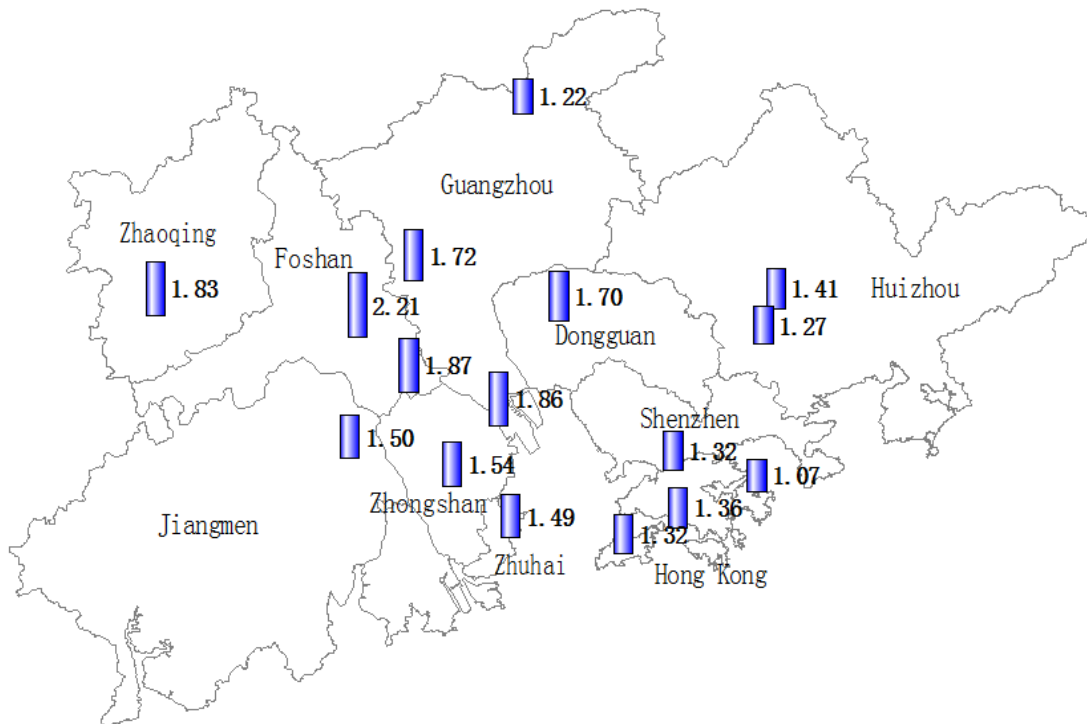


Figure 11 : Spatial distribution of average RAQI at Monitoring Stations in the Network

Figure 11 shows the spatial distribution of RAQI annual average in 2010 at monitoring stations in the network. The average values ranged from Grade II to Grade III. .

### 4.3 Monthly Variations of Average RAQI

Figure 12 shows the monthly variations in the average RAQI values of the Network from January to December 2010. Except for November and December where the average RAQI values had reached the Grade III level, the values in other months were within the Grade II category. The maximum and minimum RAQI values were recorded in November and February respectively.

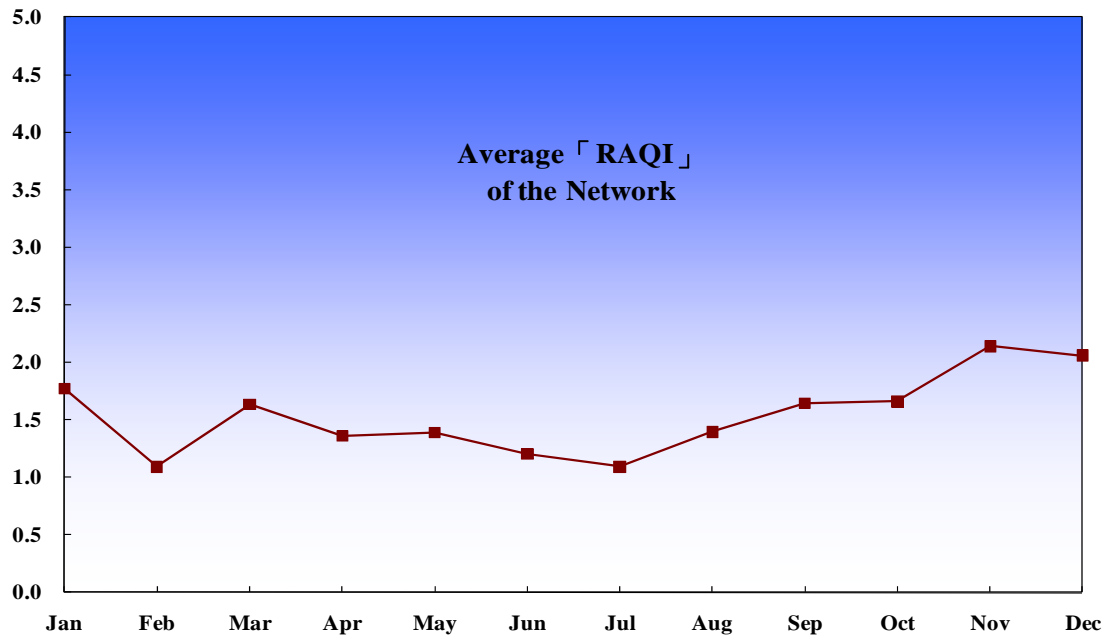


Figure 12 : Monthly variations in average RAQI

## Annex A : Site Information of Monitoring Stations

Monitoring Stations	Address	Area Type	Sampling Height (Above P.D.)	Above Ground	Date Commenced Operation
Luhu Park (Guangzhou)	Inside Jufong Garden of Luhu Park (Big yard, No. 11 Luhu Park)	City	30m	9m	1993
Wanqingsha (Guangzhou)	Wanqingsha Secondary School, Nansha	Mixed educational/commercial and residential/industrial	13m	12m	Oct 2004
Tianhu (Guangzhou)	Tianhu Park, Conghua City	Background : rural	251m	13m	Oct 2004
Liyuan (Shenzhen)	Shennan Zhong Road, Shenzhen City	City	38m	12m	Sep 1997
Tangjia (Zhuhai)	Building No. 1, Rong Yuan, Zhongshan University, Tangjia, Zhuhai City	Mixed educational/commercial and residential/industrial	24m	19m	Jan 2003
Jinjuzui (Foshan)	Roof-top of Educational Building, Foshan City Communist Party Shunde Jinjuzui	Tourist and cultural/educational	27m	17m	Oct 1999
Huijingcheng (Foshan)	No. 127, Fenjiang Nan Road, Chancheng Area	Urban: mixed residential/commercial/industrial	24m	14m	Feb 2000
Donghu (Jiangmen)	Inside Donghu Park, Jiangmen City	City	17.5m	5m	Nov 2001
Chengzhong (Zhaoqing)	No. 17, Qintian Road, Zhaoqing City	Urban: mixed residential/commercial	21m	16m	Jun 2001
Xiapu (Huizhou)	No. 4 Xiabuhengjiang Road No. 3, Huicheng Area	Urban: commercial	49m	20m	Dec 1999
Jinguowan (Huizhou)	Jinguowan Ecological Farm, Huizhou City	Residential	77m	8m	Oct 2004
Haogang (Dongguan)	Haogang Primary School, NanchengQu, Dongguan City	Mixed residential/commercial/industrial	18 m	14m	1998
Zimaling Park (Zhongshan)	Zimaling Park, Zhongshan City	Mixed residential/commercial	45 m	7m	Aug 2002
Tsuen Wan (HKSAR)	60 Tai Ho Road, Tsuen Wan	Urban: mixed residential/commercial/industrial	21m	17m	Aug 1988
Tap Mun (HKSAR)	Tap Mun Police Station	Background: rural	26m	11m	Apr 1998
Tung Chung (HKSAR)	6 Fu Tung Street, Tung Chung	New Town: residential	34.5m	27.5m	Apr 1999

## Annex B : Measurement Methods of Air Pollutant Concentration

<b>Pollutants</b>	<b>Measuring Principles</b>
Sulphur Dioxide	UV fluorescence / Differential Optical Absorption Spectroscopy
Nitrogen Dioxide	Chemiluminescence / Differential Optical Absorption Spectroscopy
Ozone	UV absorption / Differential Optical Absorption Spectroscopy
Respirable Suspended Particulates	Oscillating microbalance (TEOM) Beta particulate monitor