



S A N A S



ACCREDITED
LABORATORY

T0107

Draft Monthly Report: March 2007

Prepared for

RBCAA

AQ002

8 May 2007



EXECUTIVE SUMMARY

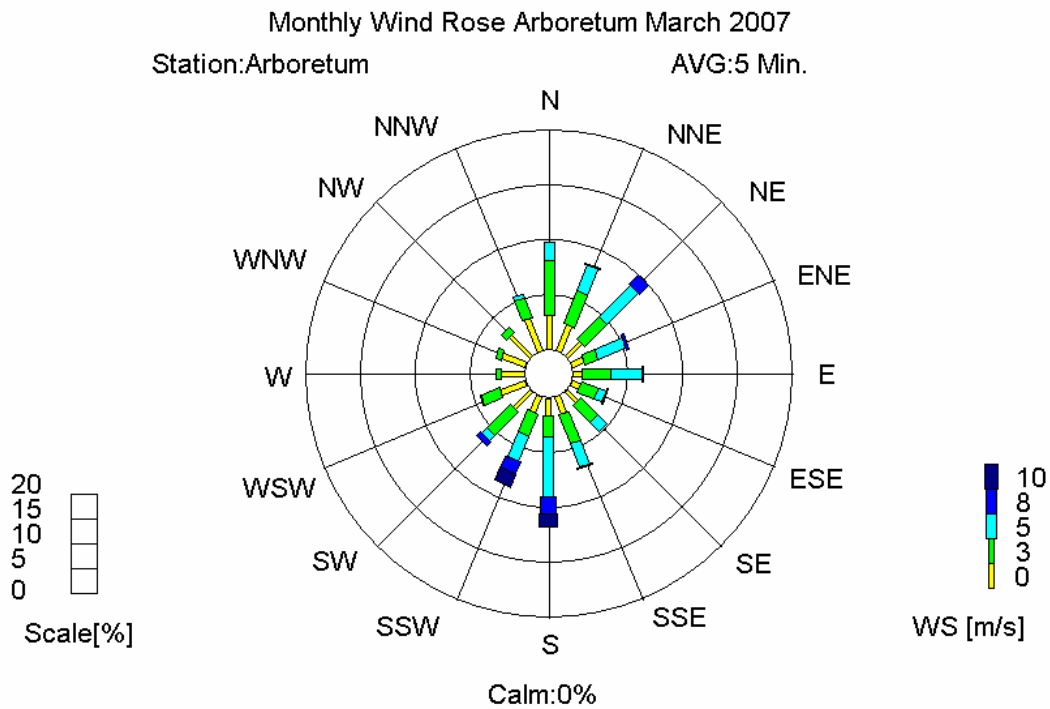
SO₂ guideline exceedances

Monthly average SO₂ concentrations

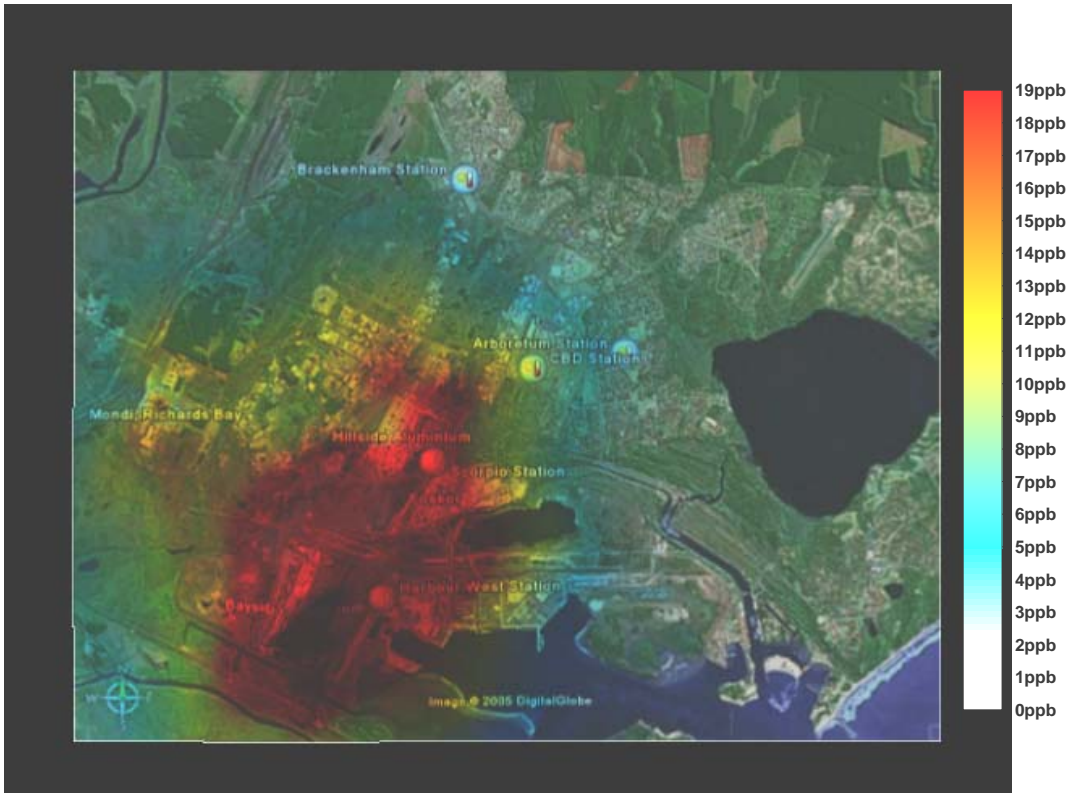
Data capture and analyser performance

DATA CAPTURE (%) FOR RBCAA SYSTEM DURING MARCH 2007					
Station	Data (%)	SO ₂ (%)	PM ₁₀ (%)	Ozone	TRS (%)
Arboretum	99.8	99.6			
Harbour West	99.6	99.2			
Brackenham	100.0	99.9		100	
CBD	90.8	89.8	0		98.9
Scorpio	99.5	99.2			

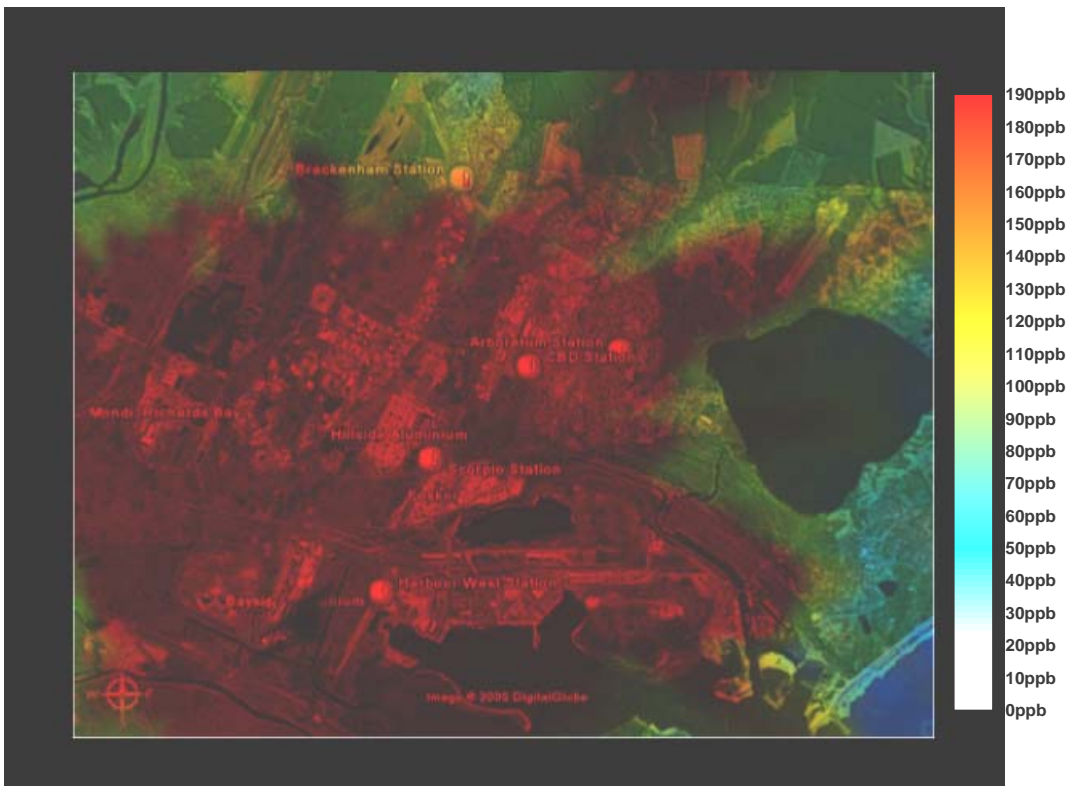
Wind rose for Arboretum for March 2007



March 2007 Monthly Average SO₂ Concentration Dose Map (Concentrations in ppb)

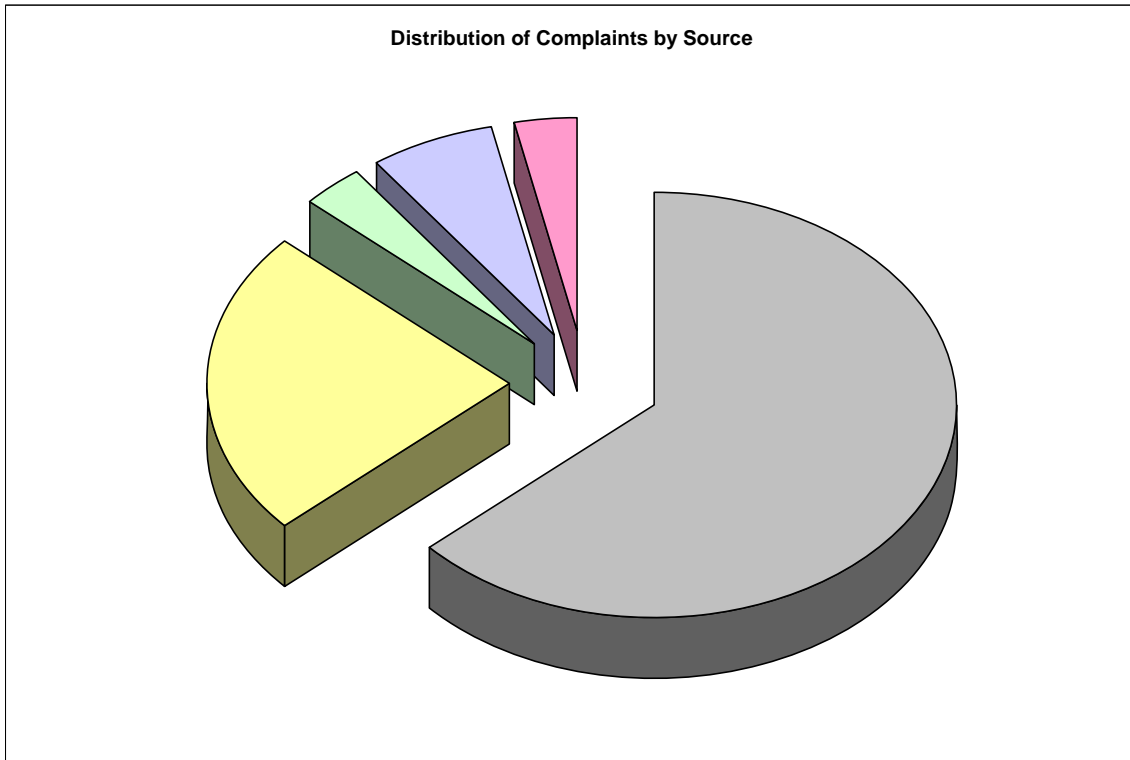


March 2007 Maximum 10 Minute Average SO₂ Concentration Dose Map (in ppb)

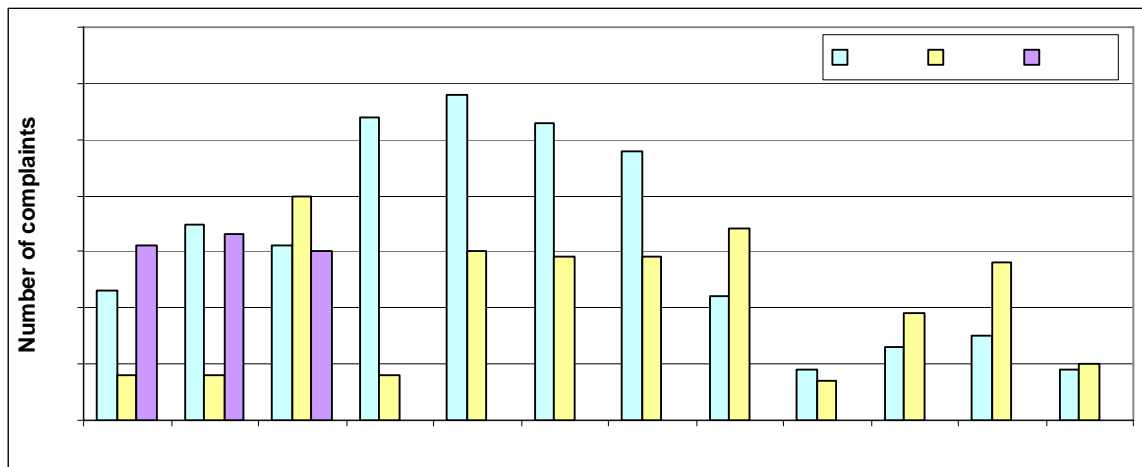


Air quality complaints

Air quality complaints by source



Comparison of number of air quality complaints per month



PM₁₀ data

TRS data

Ozone data

REPORT DETAILS

REFERENCE	AQ002
REPORT TITLE	Monthly report: March 2007
DATE SUBMITTED	8 May 2007
CLIENT	Sandy Camminga P O Box 21229, Richards Bay, 39001 (035) 786 0076
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APPROVER	Quentin Hurt Signed:
STATUS	Final (Version 3)
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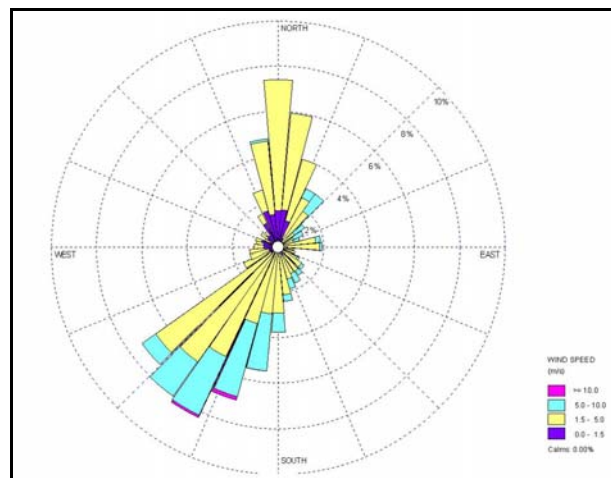
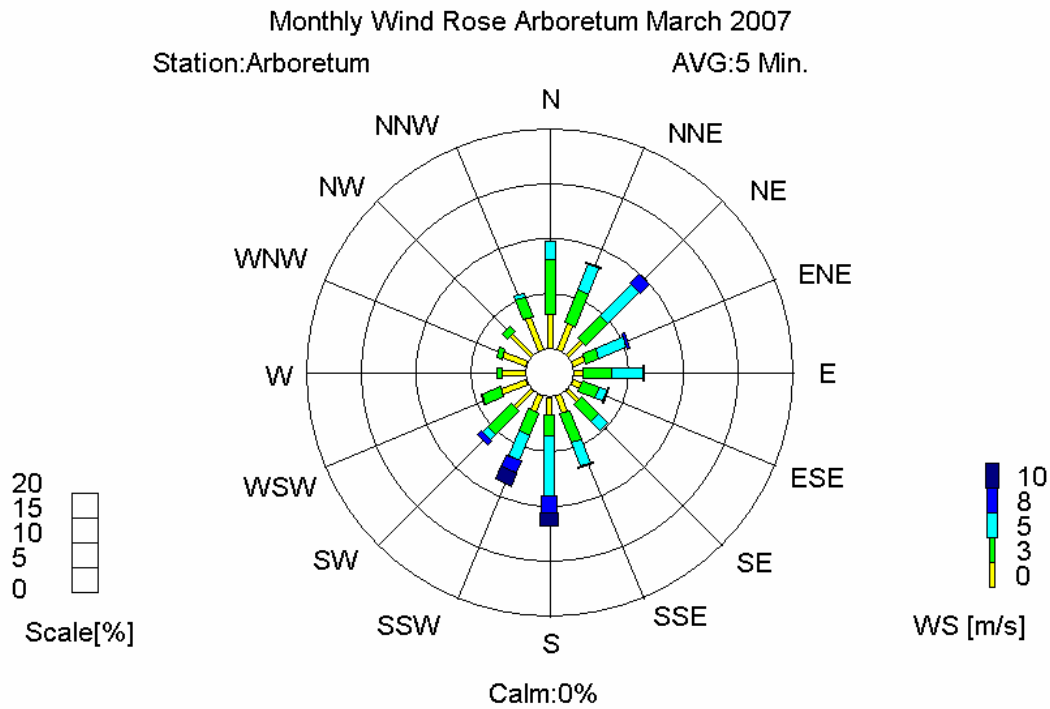
1 INTRODUCTION

TABLE 1 : NATIONAL AMBIENT AIR QUALITY STANDARDS				
Pollutant	10-minute average	1-hour average*	24-hour average	Annual average
Sulphur dioxide (SO ₂)	191 ppb	134 ppb	48 ppb	19 ppb

* SANS 1929 Standard published by DEAT 9 June 2006 for comment

2 PREVAILING WIND CONDITIONS

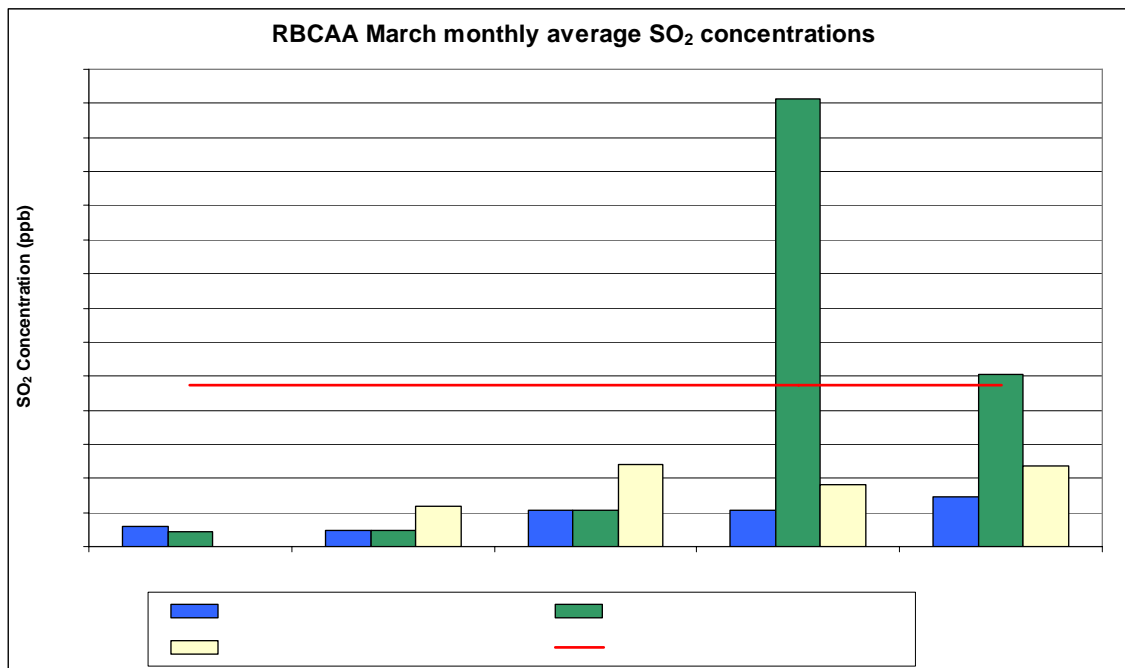
Figure 1: 5-minute average wind rose for the Arboretum station for March 2007, with comparison to the previous year.



3 MONITORING AND MODELLED RESULTS

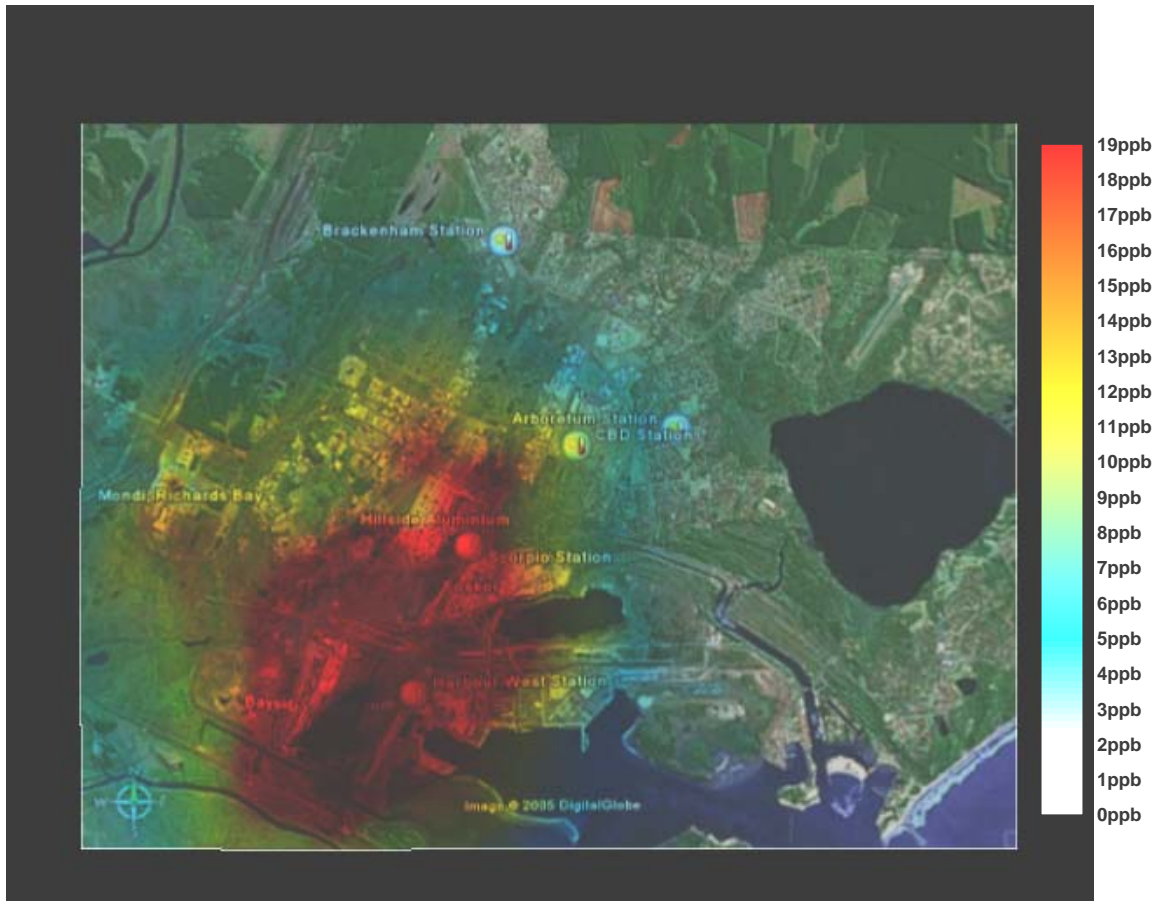
3.1.1 Monthly SO₂ averages and comparison to Hawk prediction

Figure 2: Monthly average SO₂ concentrations measured at fixed stations and comparison



3.1.2 Monthly Average Dose Map for SO₂

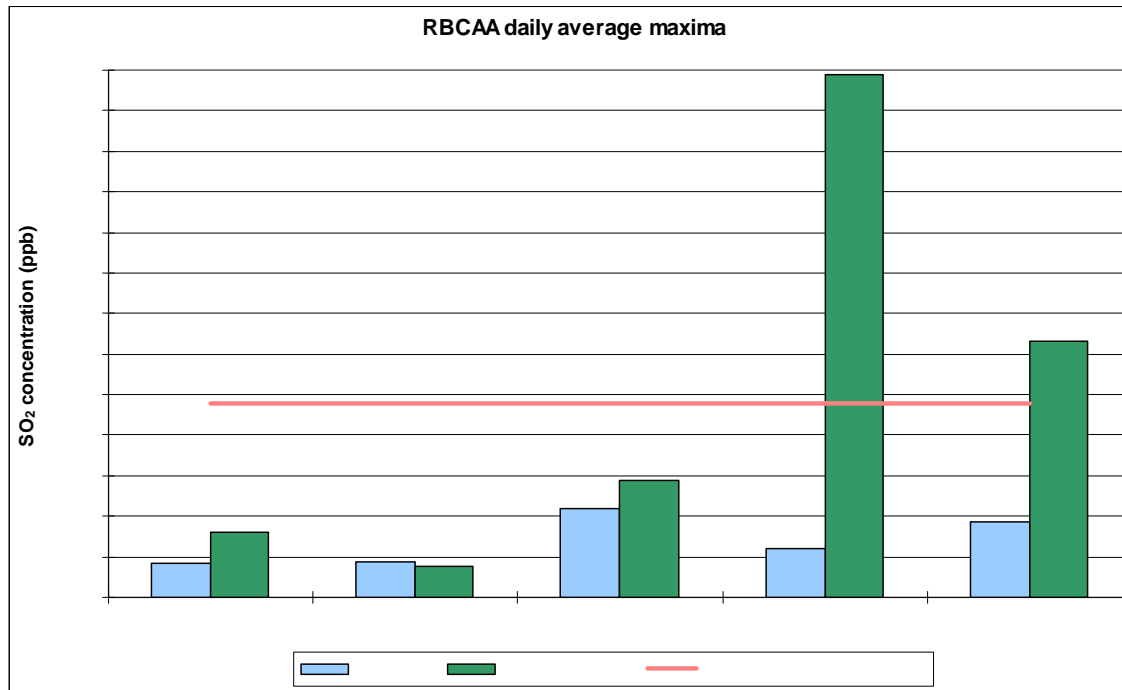
Figure 3: March 2007 monthly average SO₂ concentration dose map (Concentrations in ppb)



3.2 Daily Average Information

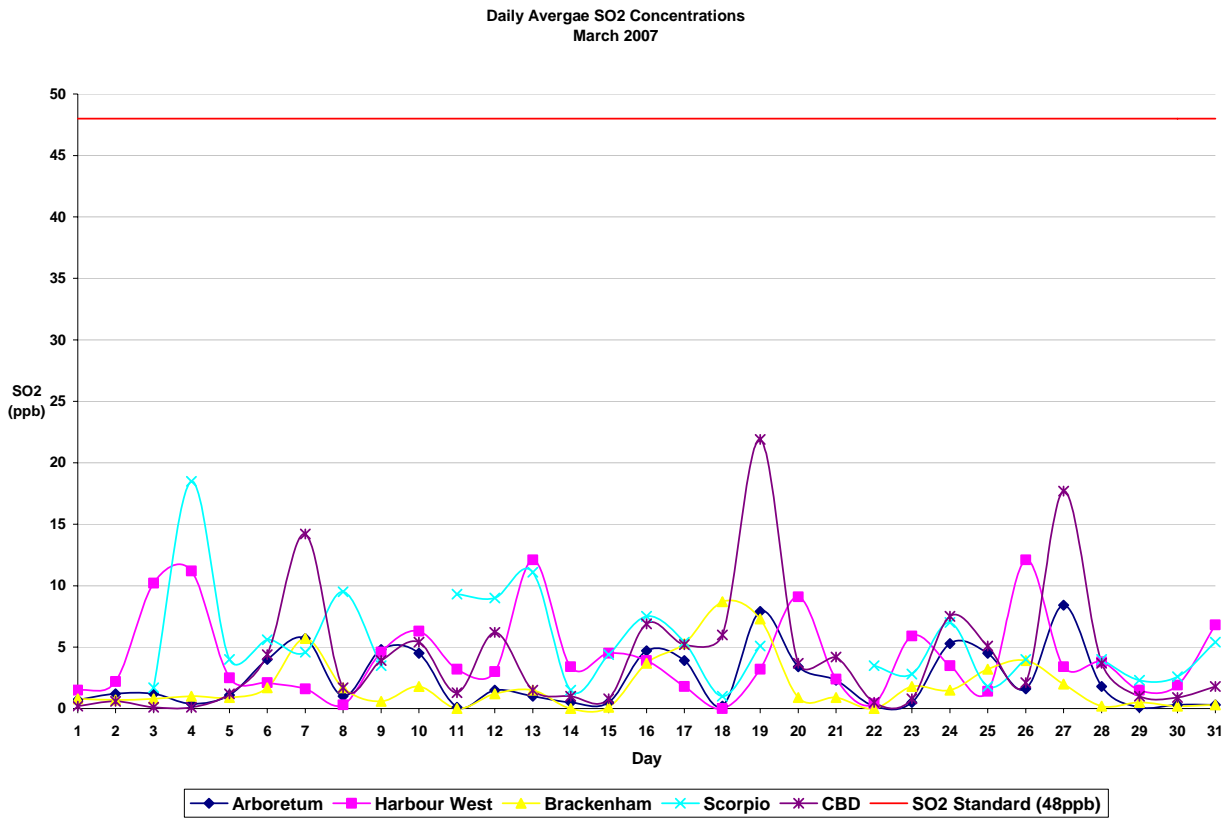
3.2.1 Maximum daily SO₂ averages and comparison with Hawk prediction

Figure 4: Comparison of Hawk predicted and measured maximum daily average SO₂ concentrations.



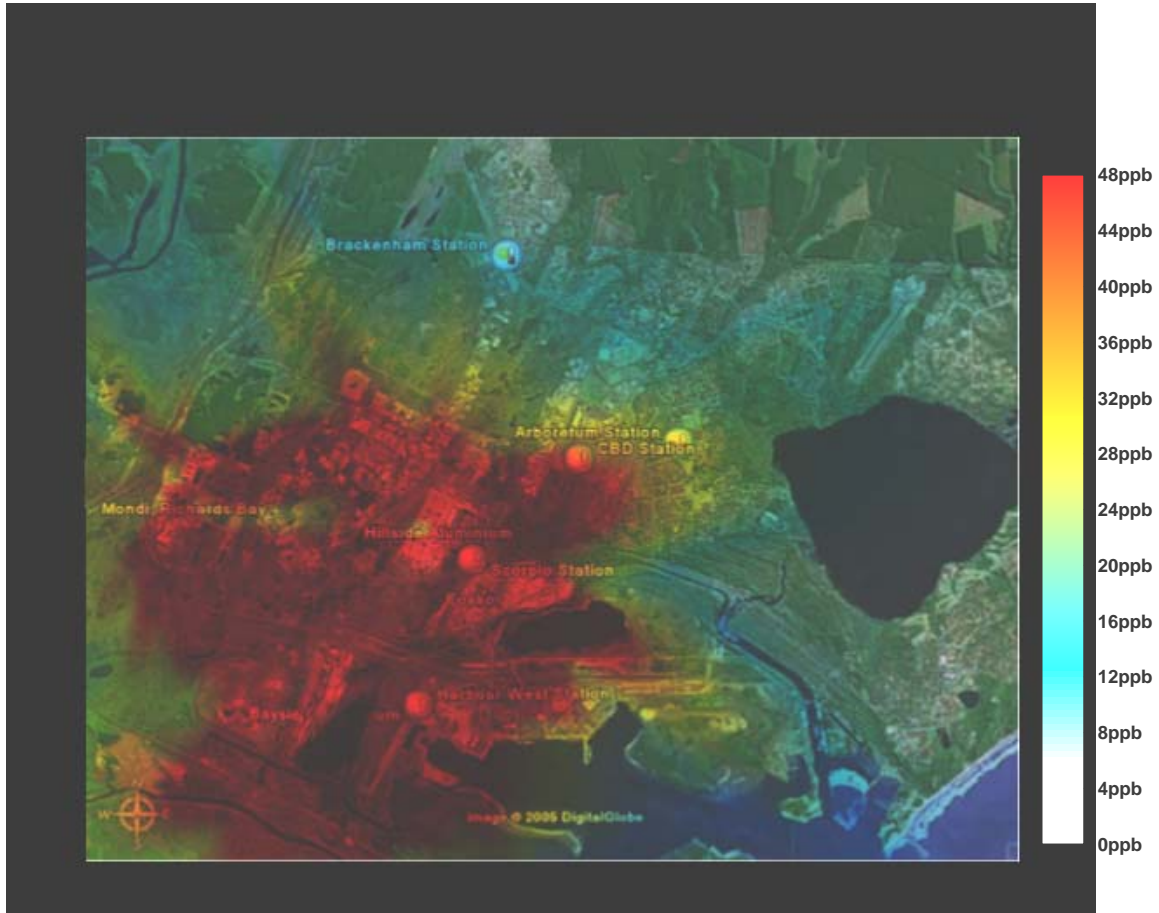
3.2.2 Measured daily average SO₂ during March

Figure 5: Daily average SO₂ concentrations measured at the fixed stations for March 2007
(National standard = 48 ppb)



3.2.3 Maximum daily average dose map for SO₂

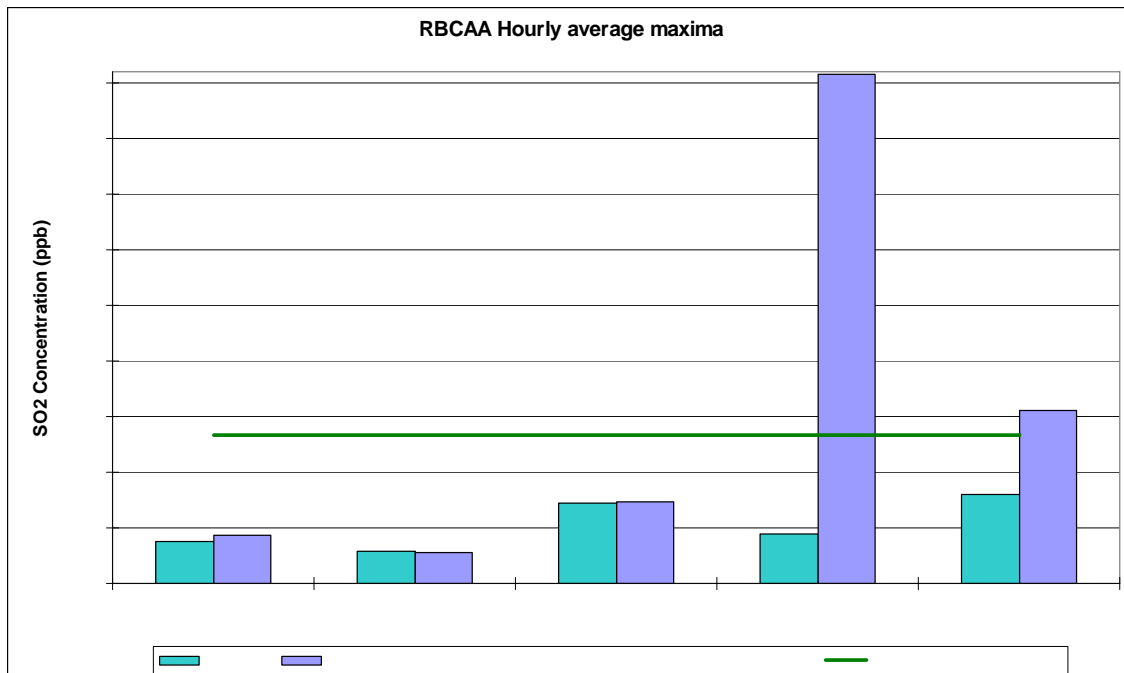
Figure 6: March 2007 maximum daily average SO₂ concentration dose map (concentrations in ppb).



3.3 Hourly Average Information

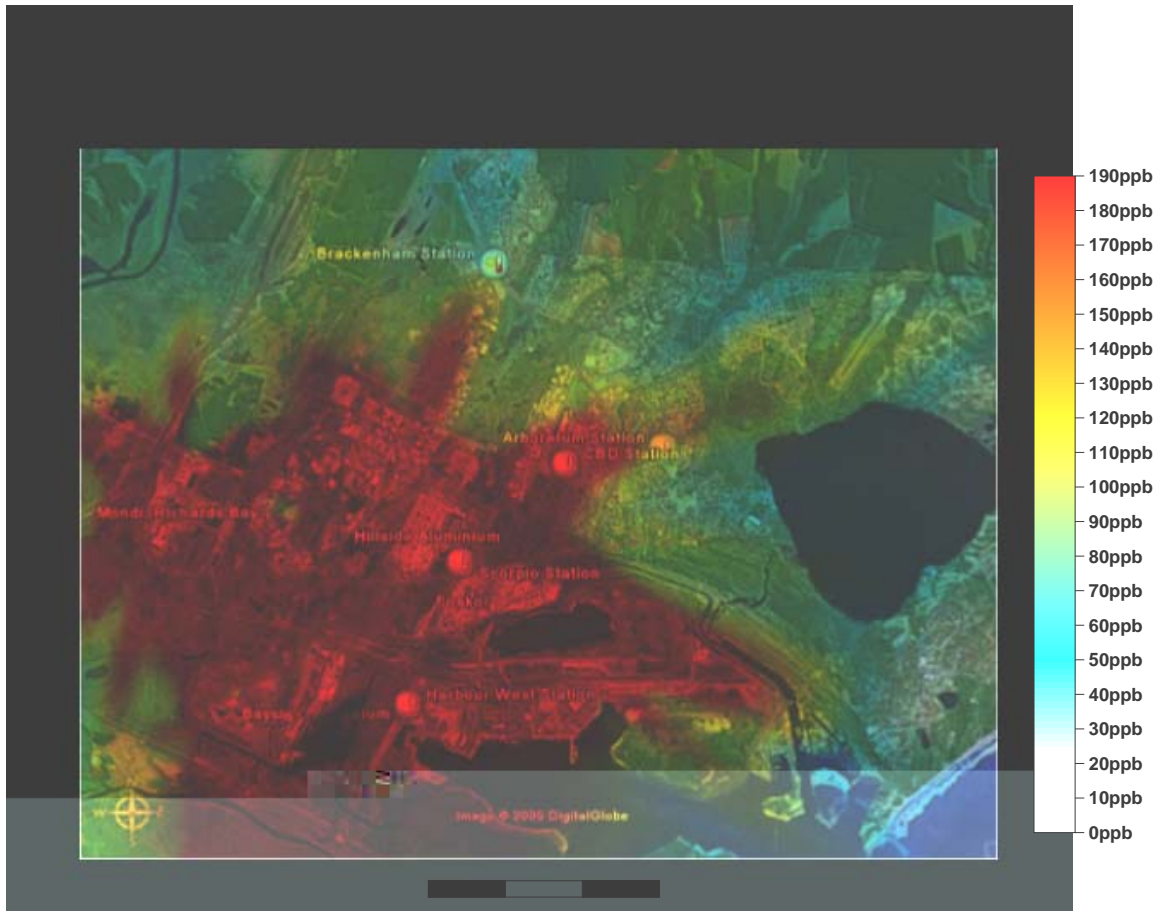
3.3.1 Maximum hourly SO₂ averages and comparison with Hawk results

Figure 7: Comparison of Hawk predicted and measured maximum hourly average SO₂ concentrations during March 2007



3.2.4 Maximum hourly average dose map for SO₂

Figure 8: March 2007 maximum hourly average SO₂ concentration dose map (concentrations in ppb).



3.3.2 Measured hourly average SO₂ trends

Figure 9: Hourly mean concentration at the Arboretum station (Monthly average = 2.3ppb)

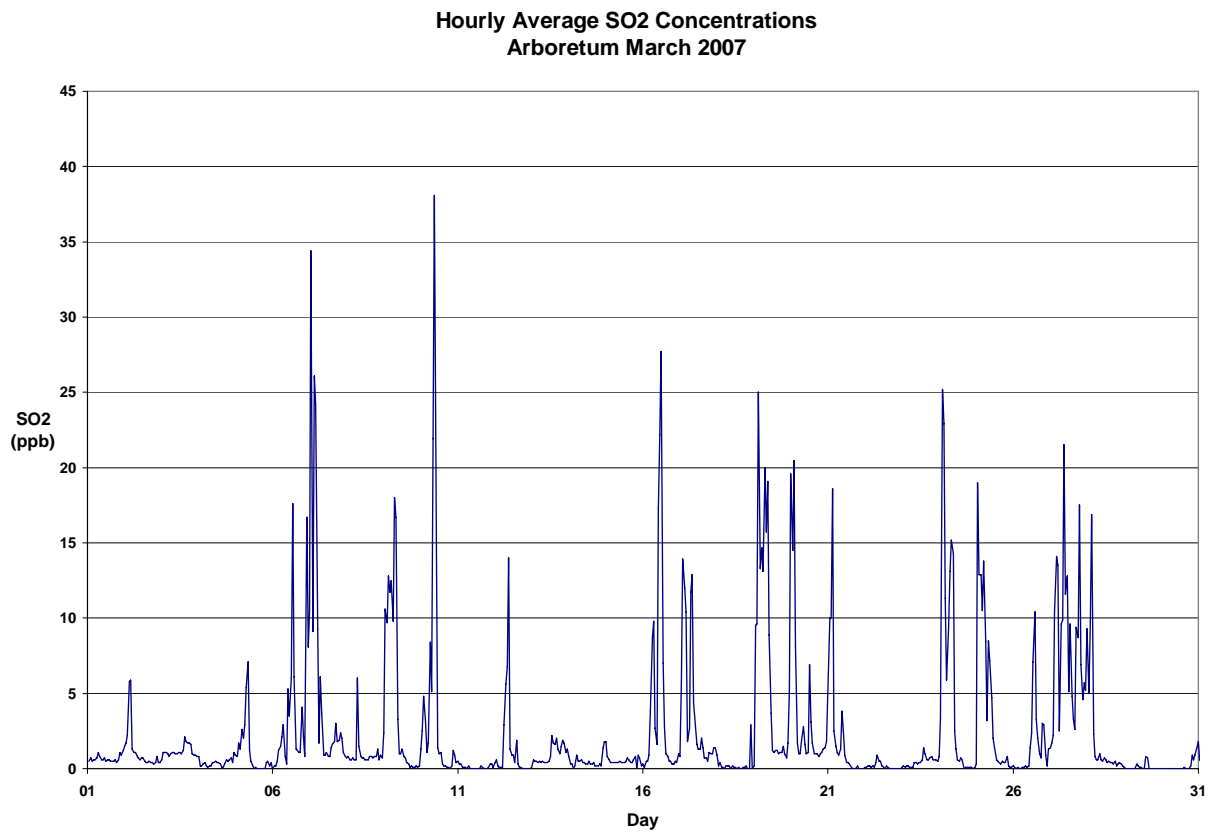


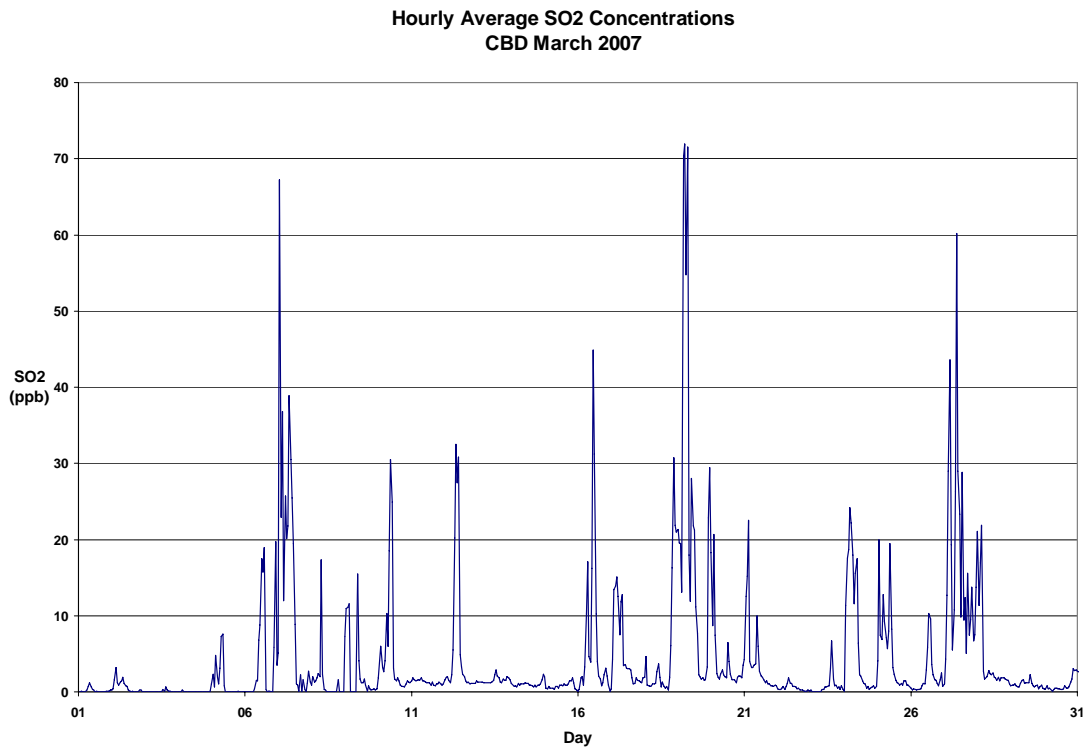
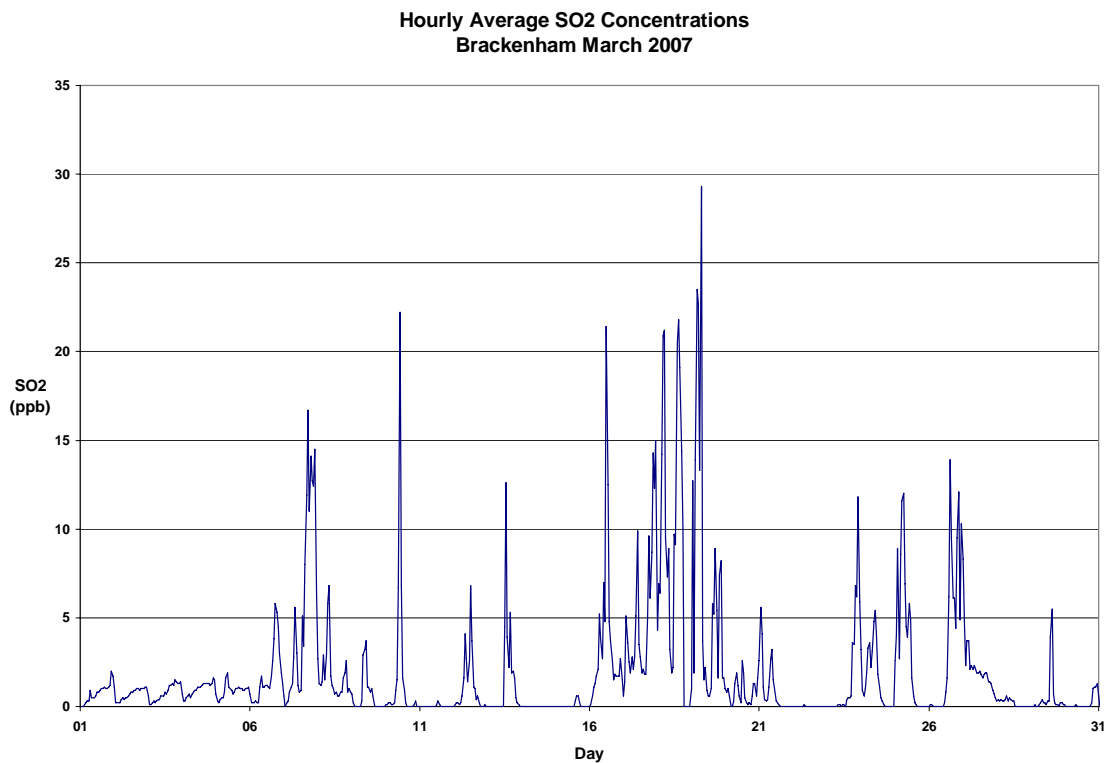
Figure 10: Hourly mean concentration at the CBD station (Monthly average = 4.2ppb)**Figure 11: Hourly mean concentration at the Brackenhams station (Monthly average = 1.9ppb)**

Figure 12: Hourly mean concentration at the Harbour West station (Monthly average = 4.1 ppb)

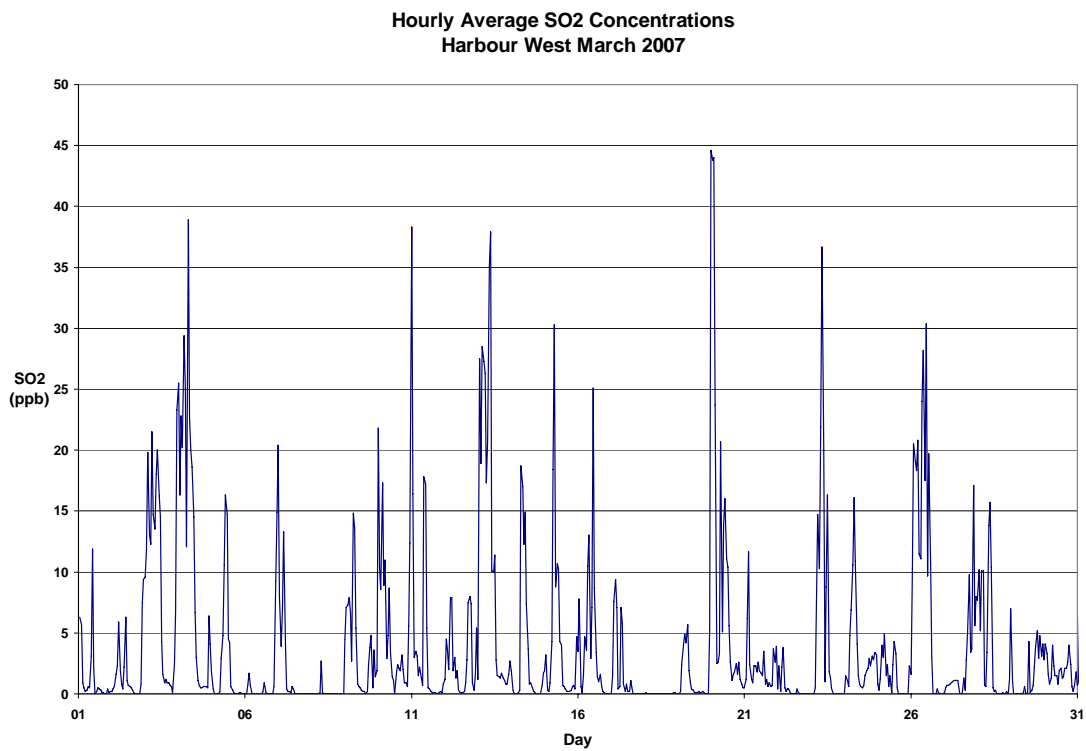
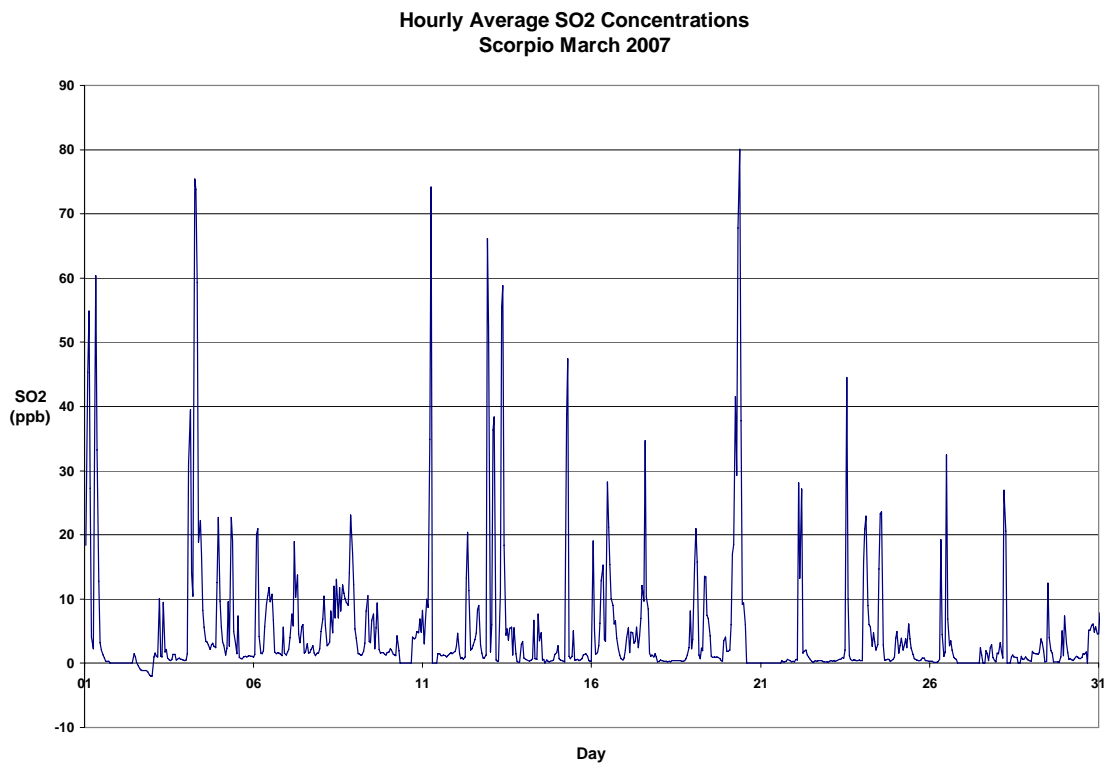
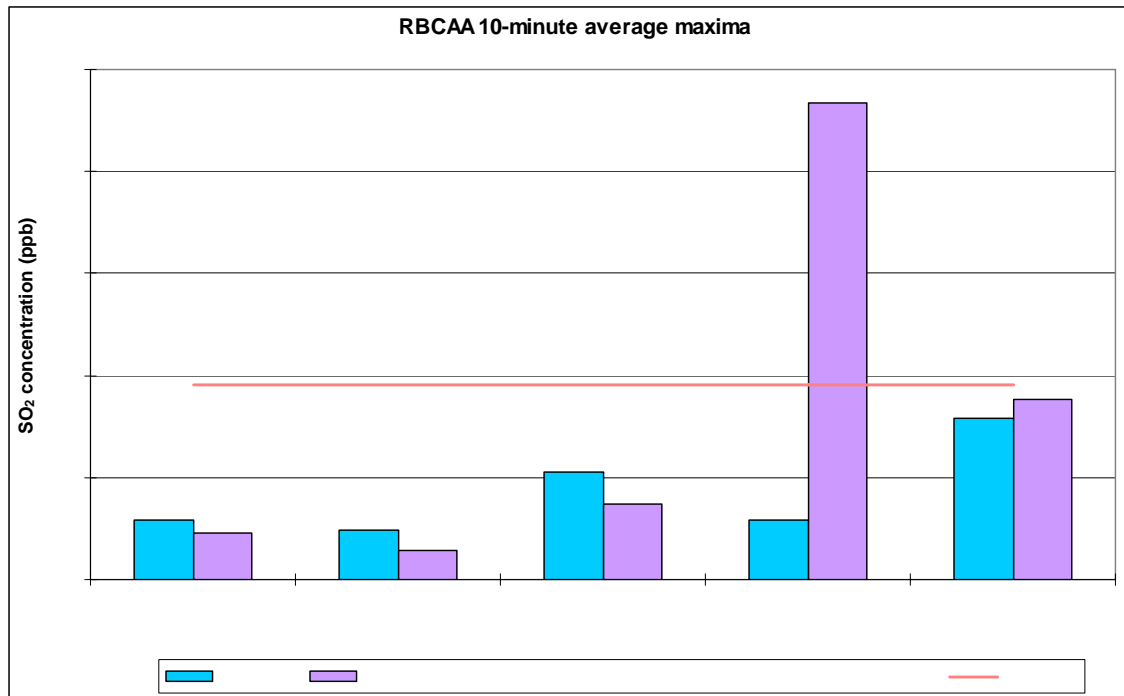


Figure 13: Hourly mean concentration at the Scorpio station (Monthly average = 5.7ppb)



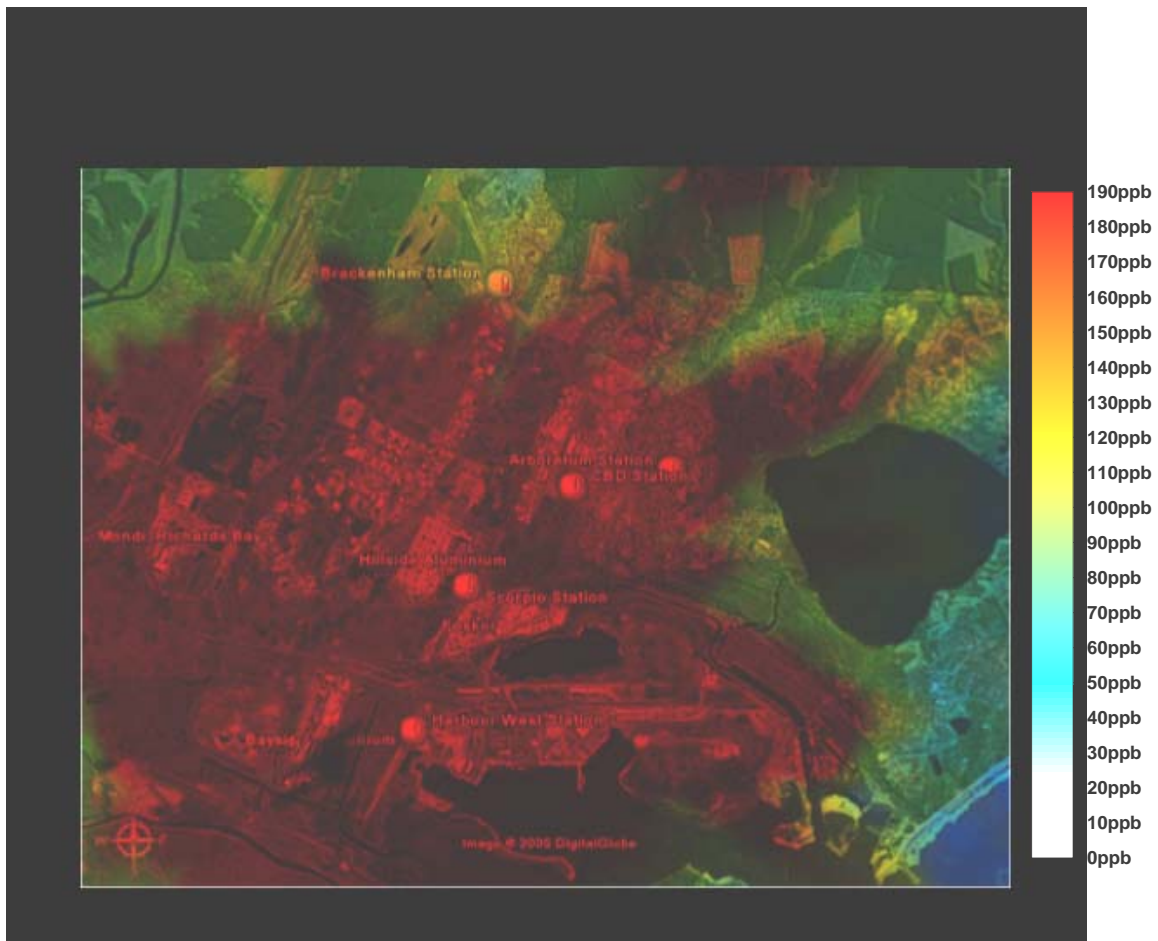
3.3 Maximum 10-Minute average SO_2

Figure 14: Comparison of Hawk predicted and maximum measured 10-minute average SO_2 concentrations.



3.4.2 Maximum 10-Minute average dose map for SO₂

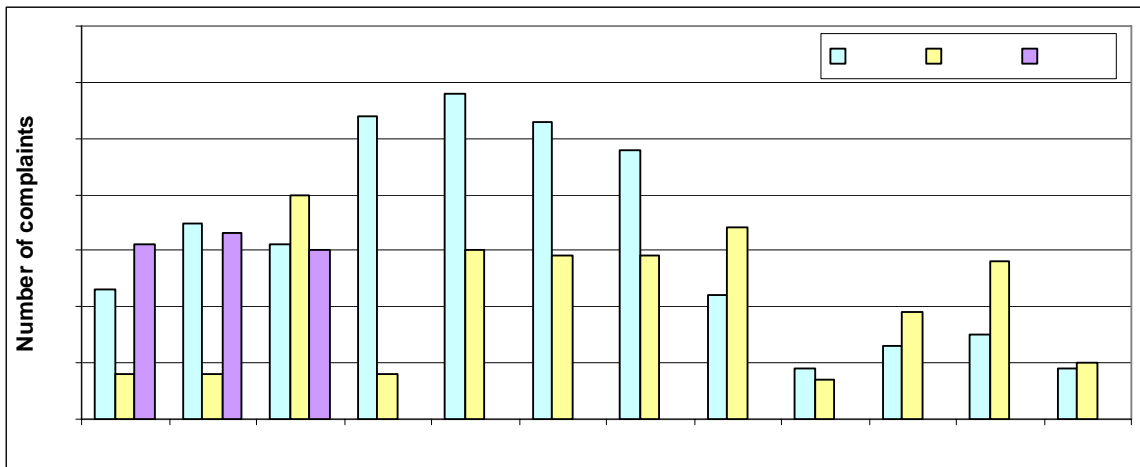
Figure 15: March 2007 maximum 10-Minute average SO₂ concentration dose map



4 AIR QUALITY COMPLAINTS

4.1 Field Observations

Figure 16: Comparison of number of complaints per month



4.2 Distribution of Complaints by Source

Figure 17: March 2007 distribution of complaints by source

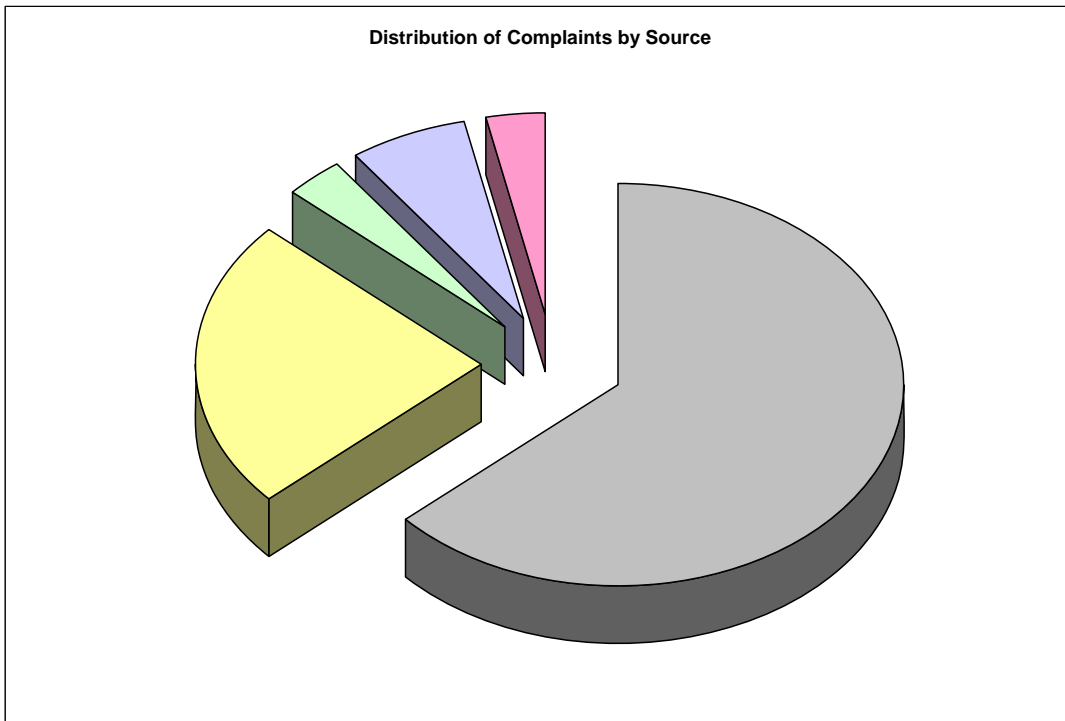
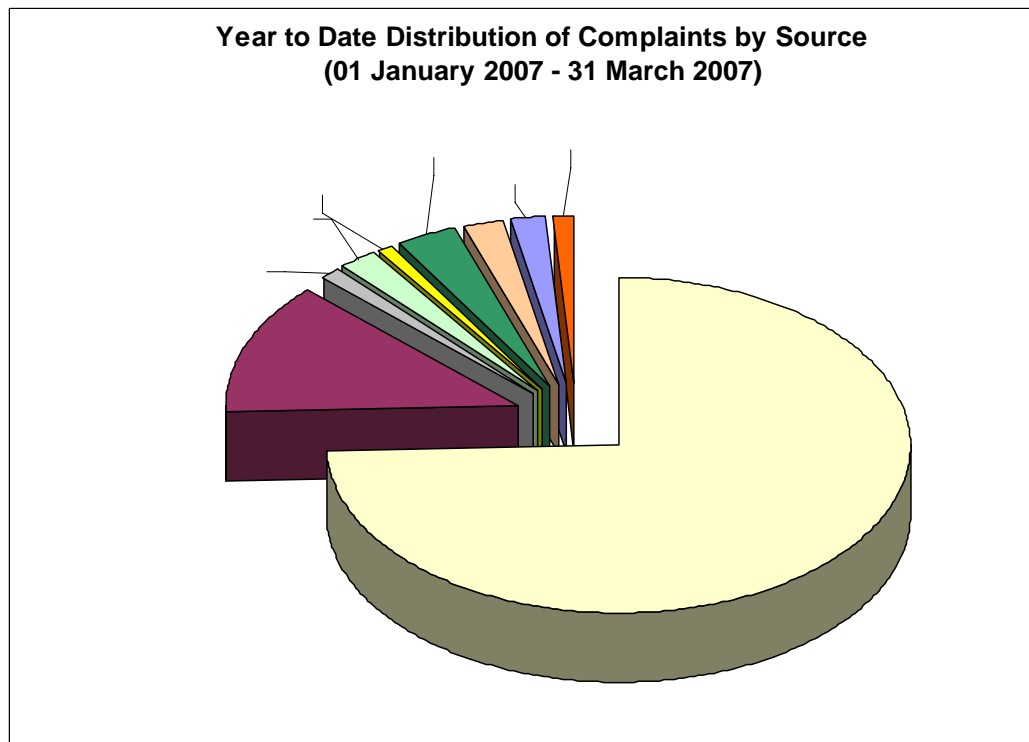


Figure 18: 2007 Year-to-date distributions of complaints by source



4.3 Distribution of Complaints by Region

Figure 19: March 2007 distribution of complaints by area

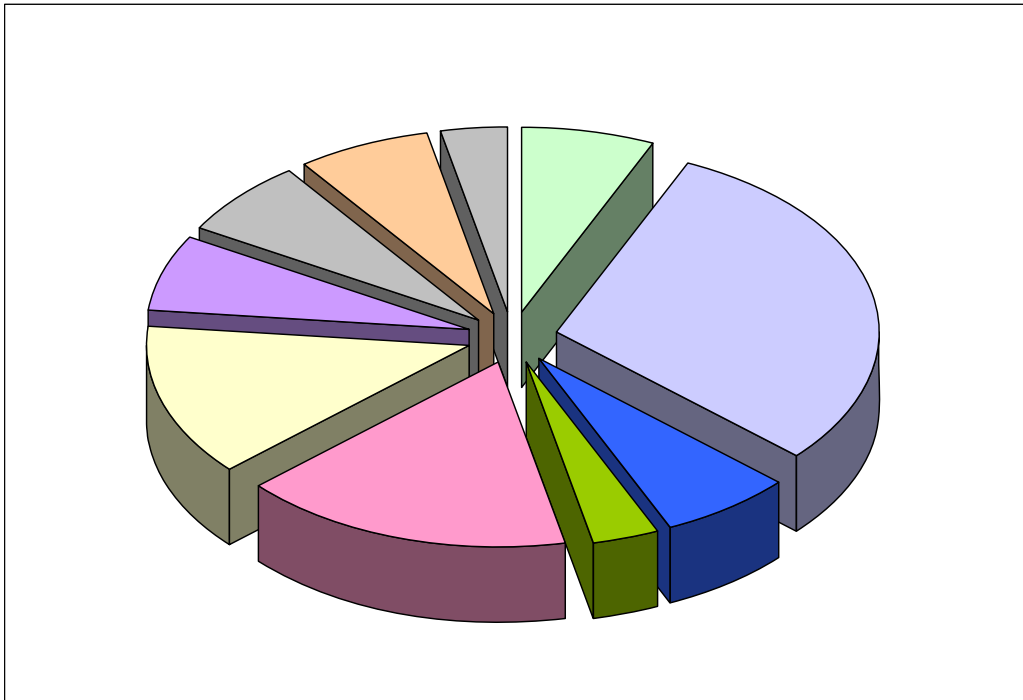
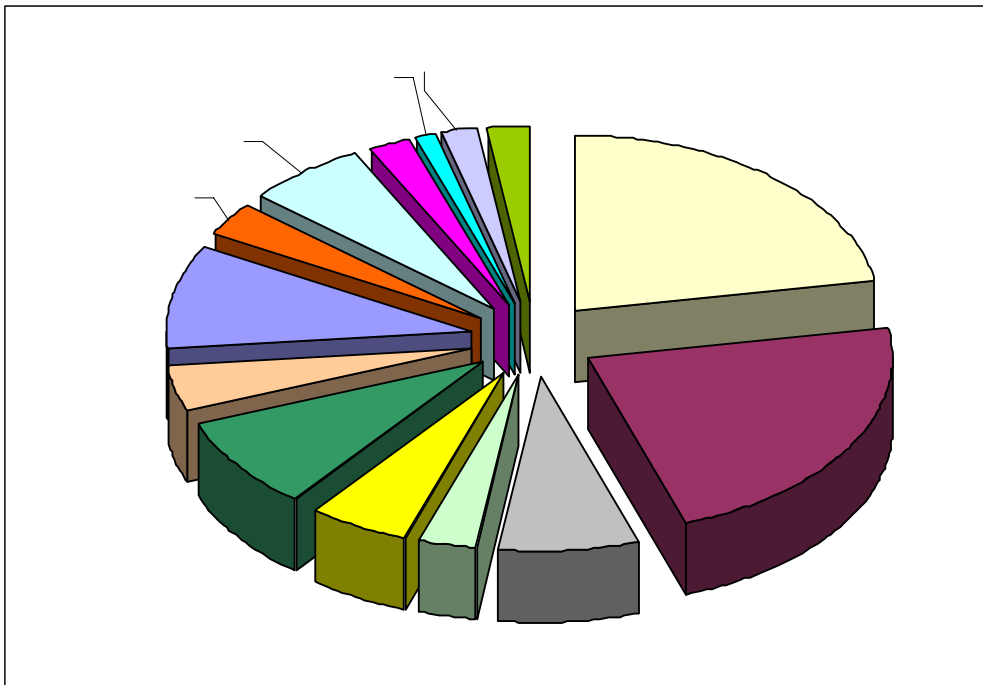


Figure 20: 2007 Year-to-date distribution of complaints by area



4.4 Complaints by type

Figure 21: March 2007 distribution of complaints by type

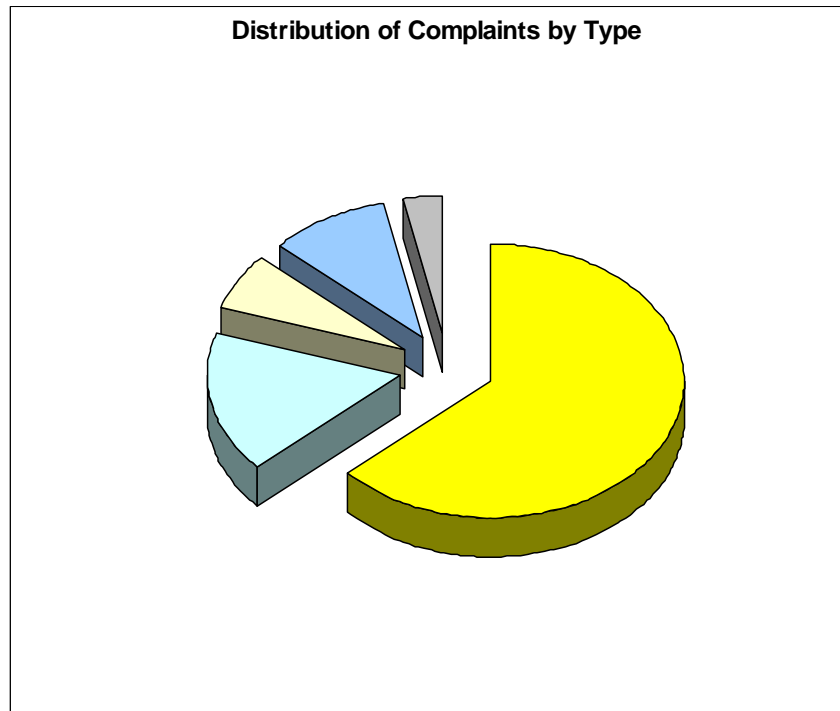
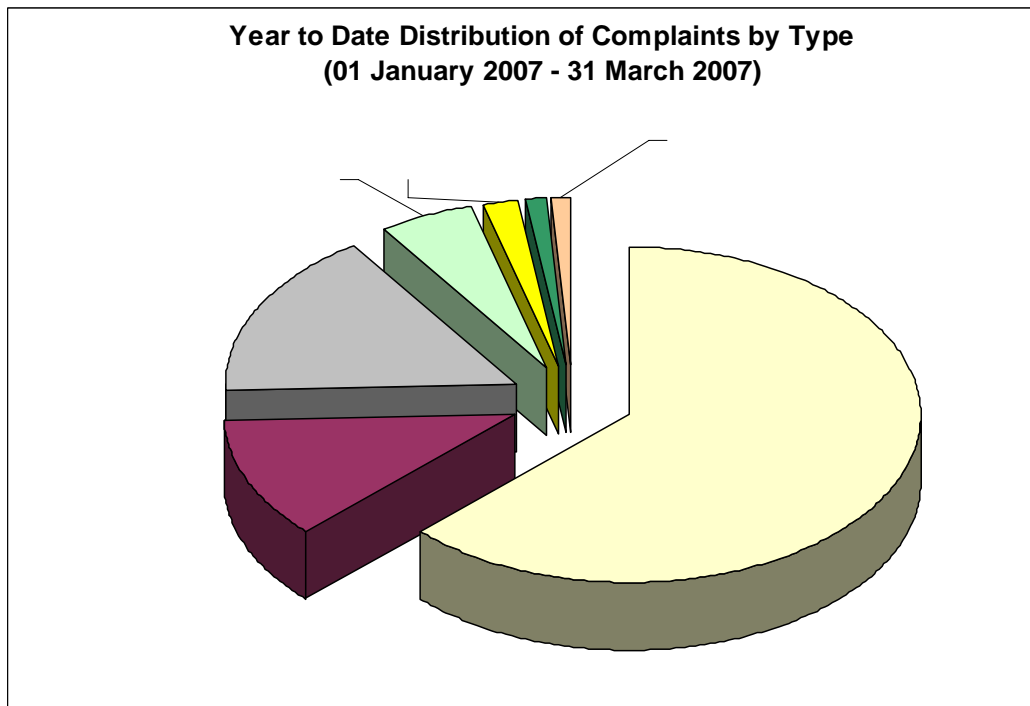
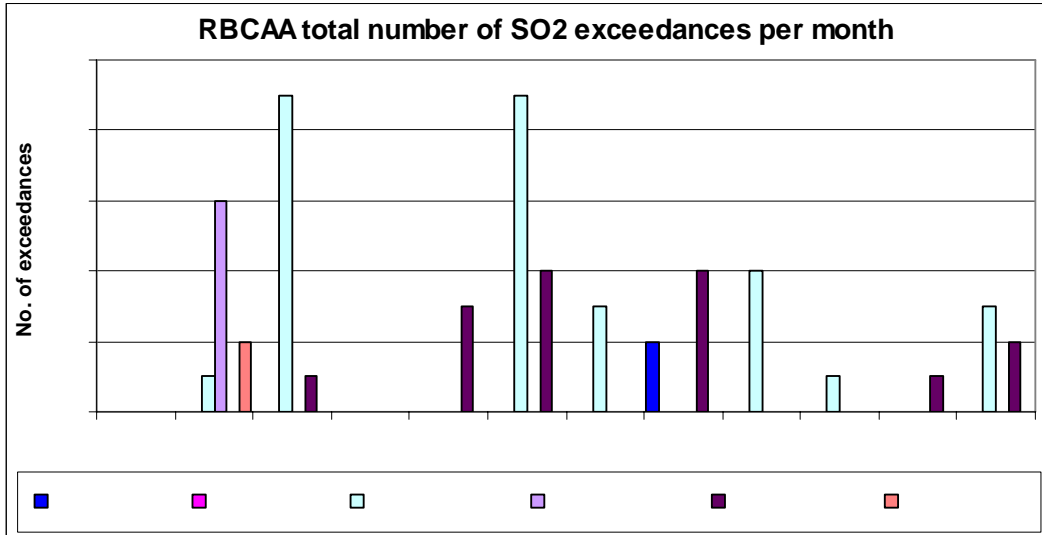


Figure 22: 2007 Year-to-date distribution of complaints by type



5 COMPLIANCE WITH GUIDELINES

Figure 23: Comparison of number of exceedances per month



APPENDIX 1

SANAS Requirements

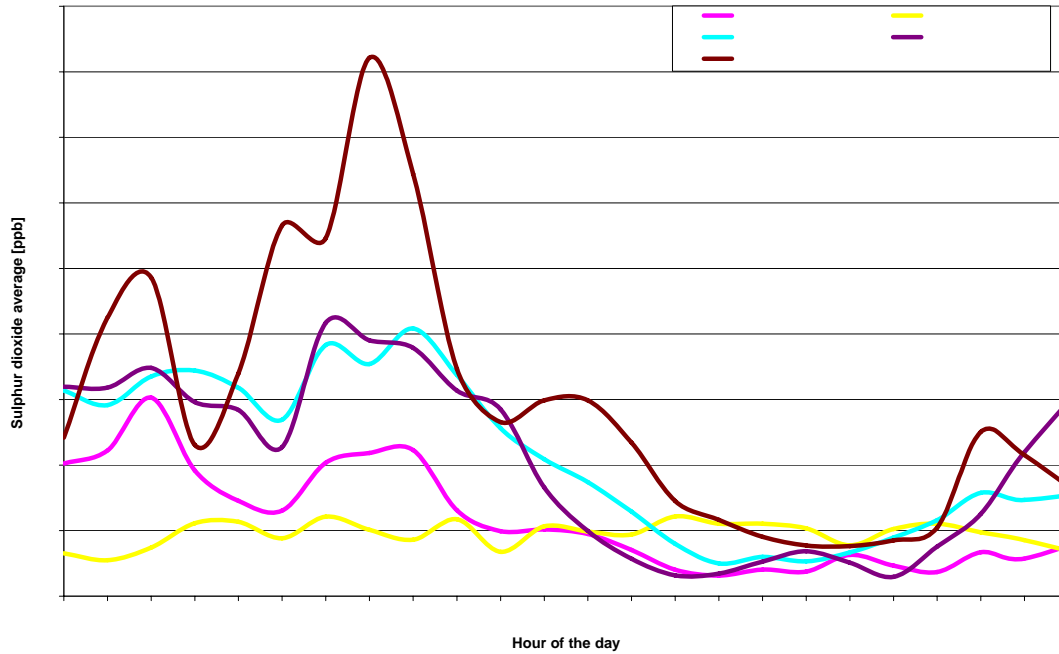
APPENDIX 2

Data capture and analyser performance

DATA CAPTURE (%) FOR RBCAA SYSTEM DURING MARCH 2007					
Station	Data (%)	SO ₂	PM ₁₀	Ozone	TRS (%)
Arboretum	99.8	99.6			
Harbour West	99.6	99.2			
Brackenham	100.0	99.9		100	
CBD	90.8	89.8	0		98.9
Scorpio	99.5	99.2			

APPENDIX 3

Diurnal Trends



APPENDIX 5

Air Quality Complaints Log

Complainant	Date and time	Location	Description	Results	Resolution
Mr. R. Camminga 0832514969	03 Mar 10h30	Port of R/Bay	Pools of acid all over the road	Foskor's environmental standby person was contacted. The source was confirmed as Foskor's underground pipeline. See report from municipality below.	Resolved
Mr. V. Sciba	03 Mar 10h30	Port of R/Bay	Pools of acid all over the road	Foskor's environmental standby person was contacted. The source was confirmed as Foskor's underground pipeline. See report from municipality below.	Resolved
S. Camminga	07 Mar 06h00	Veldenvlei, Heideheuvel	Awful Mondi odour causing sinus and headache	Mondi: Our investigations have indicated that a low chip bin level was experienced which resulted in odorous emissions. The drop in the chip bin level was due to stoppages on the chip feed system due to metal detection. In addition to the chip bin odour, there were problems experienced at both the lime kiln and the recovery boiler during the two hours prior to this complaint. Based on the above info, Mondi was the likely source of odour.	Resolved
R. Camminga	07 Mar 06h00	Veldenvlei, Heideheuvel	Awful Mondi odour causing sinus and headache		
K. Camminga	07 Mar 06h00	Veldenvlei, Heideheuvel	Awful Mondi odour causing sinus and headache		
Thelma 7535959	07 Mar 07h15	JR Highway, just before Hillside (from Empangeni)	"Sickly sweet" odour	Mondi: Although there were process conditions which would have contributed to odorous emissions at this time, the wind direction was not towards the John Ross Highway. Based on the wind direction it is not likely that Mondi was the source of this odour. Awaiting response from Foskor and Mondi requested to re-investigate. Municipality: Mhlathuze Water Surge Tower in Alton was contacted. They claimed that they are not responsible for such complaint. Further investigations are undertaken. Mhlathuze Water to provide map with location of breather points.	
Mr. Harbals 7981707	07 Mar 20h40	Brackenham, Fern View Mondi Flats	Sewerage odour	Mondi: Internal investigations have indicated that there was a purge of the black liquor guns at this time. The TRS levels from the recovery boilers return to normal levels within an hour of the event. Based on the above information Mondi is the likely source of this odour.	Resolved
Mr. Pillay 7898941	07 Mar 22h41	Brackenham	Sewerage odour	Mondi: Internal investigations have indicated that there was a purge of the black liquor guns at this time. The TRS levels from the recovery boilers return to normal levels within an hour of the event. Based on the above information Mondi is the likely source of this odour.	Resolved
Gugu Gazu 0834702812	09 Mar 07h00	Veldenvlei	"Rotten egg" odour	Mondi: Internal investigations have revealed that problems were	Resolved

Complainant	Date and time	Location	Description	Results	Resolution
Dr Heyneke 9075003	09 Mar 07h20	CBD, Civic Centre offices	"Rotten egg" odour	experienced with the washing performance of the lime mud washer resulting in higher TRS from the lime kiln. Shortly after the excursion on TRS, the lime mud washer was taken offline for a water wash and TRS levels returned to below 1ppm within 30 minutes. Based on the above information Mondri was the likely source of these odours.	
Fred Phillips 0836571193	09 Mar 07h20	CBD, Civic Centre offices	"Rotten egg" odour		
Pat Hamilton 7892392	11 Mar 08h20	Arboretum, Geelhoutkruin	"Rotten egg" odour	Mondri: Based on the WD it is not likely that Mondri was the source of the odour.	
Thelma 7535959	13 Mar 07h20	JR Highway, Mondri intersection	Mondri odour	Mondri: Internal investigations have revealed that problems were experienced with firing non condensable gases in the lime kiln. In order to reduce the TRS emissions the gases were fired in the flare until the problem was resolved. Based on the above information Mondri was the likely source of this odour.	Resolved
Anonymous	15 March 06h00	JR Highway	Excessive emissions emanating from Mondri	Mondri: The visual emissions were as a result of the start of up Recovery Boiler No. 1. The boiler was in the process of starting up at that time and it is likely that the emissions reported were as a result of this. The boiler was down for a water wash due to internal blockage of the boiler bank area. The opacity was on average 290 mg/Nm ³ for an hour before the complaint and was less than 95 mg/Nm ³ by 06:10.	Resolved
R. Camminga	15 March 06h45	CBD	Black smoke coming from Mondri plant	Mondri: On Thursday morning we experienced an explosion in the cyclone of the lime kiln, separating the flue gas from the lime dust. The explosion was limited to this vessel, and the damage is relatively minor. Vessel repairs have been completed and the kiln is operational again.	Resolved
S. Camminga	22 March 07h00	Veldenvlei	Awful "tar" type odour causing headache	Mondri: Based on the wind direction it is not likely that Mondri was the source of this odour.	
S. Camminga	23 March entire day	Richards Bay and Empangeni	Area covered in a blanket of smoke causing eye and respiratory irritation		
S. Camminga	23 March 14h00	JR Highway	Excessive dust from Exxaro mining operations	Based on analysis of wind direction, Exxaro could be responsible for the visual dust that was seen from the John Ross Highway.	Resolved
S. Camminga	23 March 14h20	JR Highway (adjacent to Alton macerator station)	Awful sewage odour emanating from the vicinity of the Alton macerator station		

Complainant	Date and time	Location	Description	Results	Resolution
S. Camminga	24 March 07h30	Veldenvlei	Nauseating Mondi odour	Mondi: Internal investigations have revealed that problems were experienced with firing non condensable gases in the lime kiln. In order to reduce the TRS emissions the gases were fired in the flare until the problem was resolved. Based on the WD and the above information Mondi was the likely source of this odour.	Resolved
S. Camminga	25 March 06h30	Veldenvlei	Mondi "guava" odour causing nausea and headache	Mondi: Internal investigations have revealed that a short TRS spike from the kiln as a result of a problem with firing non condensable gases from the hardwood. Once the kiln had stabilized the TRS emissions were back in control within half an hour. Based on the above information Mondi was the likely source of this odour.	Resolved
Anonymous	26 March 07h00	Alton	Excessive dust emanating from LaFarge Plant	LaFarge: Our cement mill was shut down yesterday evening and this morning before starting up at 09H00 we emptied the dust collector bins and sweep floors. The only time you can have visible dust through our stack in our operations is when the plant is running and some bags in the dust collectors are torn. In this case people have been sweeping the floors and emptying the two dust collector bins and there is no way that the dust can even reach our offices situated at about 20 m from the plant and let alone our neighbours. Thirdly our plant is enclosed and the dust during sweeping of floors would be minimal and would be contained within buildings. The Mhlathuze environmental officer has also visited our premises and she would also give her own assessment of the situation.	Unresolved
David Davidson	26 March 13h50	Enseleni	Very smelly cat urine odour	Internal investigations have revealed that problems were experienced with the lime kiln wash water which resulted in a brief spike of TRS emissions from the kiln. The problem was resolved and the wash water flow was brought back to normal and TRS emissions from the lime kiln were reduced within 30 minutes. In addition, the secondary air fan on recovery boiler 1 failed due to an electrical fault. Liquor firing in CRU1 was dropped to a minimum until the fan could be restarted within half an hour. Based on the above information Mondi was the likely source of this odour.	Resolved
S. Camminga	26 March 14h35	N2 (between R/Bay turn off and Enseleni reserve)	Awful Mondi odour		
S. Camminga	26 March 17h00	N2 (between R/Bay turn off and Enseleni reserve)	Awful Mondi odour		
Mrs Davidson	26 March 17h30	Enseleni	Terrible Mondi odour		

Complainant	Date and time	Location	Description	Results	Resolution
S. Camminga	27 March 06h40	Veldenvlei	Mondi odour	Mondi: Internal investigations have revealed that problems were experienced with firing non condensable gases in the lime kiln. In order to reduce the TRS emissions the gases were fired in the flare until the problem was resolved. Based on the above information Mondri was the likely source of this odour.	Resolved
Bell Equipment	27-Mar (no date specified)	Alton	Ammonia odour	In response to the ammonia complaint lodged by Bell equipment, I wish to advise as follows: Mr. Steve McDonald advised that they experienced a problem in their process and also experienced a change in their wind direction at the same time. they, however, measured the ammonia levels at the open veld across their premises and found the levels to be within the limits (9ppm). Further more, a meeting has been arranged between this office and Chem Alum for Friday morning (30 March 07).	Resolved
Piet Volschenk	27-Mar *	Felixton	Dust fallout measurement in excess of guideline	Analysis of the weather data by Exxaro did not indicate that the dust would have arising from their mining operation.	
S. Camminga	27 March 06h40	CBD	Mondi odour	Mondi: Internal investigations have revealed that problems were experienced with firing non condensable gases in the lime kiln. In order to reduce the TRS emissions the gases were fired in the flare until the problem was resolved. Based on the above information Mondri was the likely source of this odour.	Resolved

APPENDIX 6

PM₁₀ data

PM₁₀ standards

μ

μ

TABLE 6.1 PM ₁₀ DAILY AVERAGE STANDARDS (μg/ m ³)		
Pollutant	SANS	National

APPENDIX 7

TRS Data

TABLE 7.1 MAXIMUM TRS CONCENTRATIONS (PPB) DURING MARCH			

Figure 1: Hourly average TRS at the CBD station during March 2007

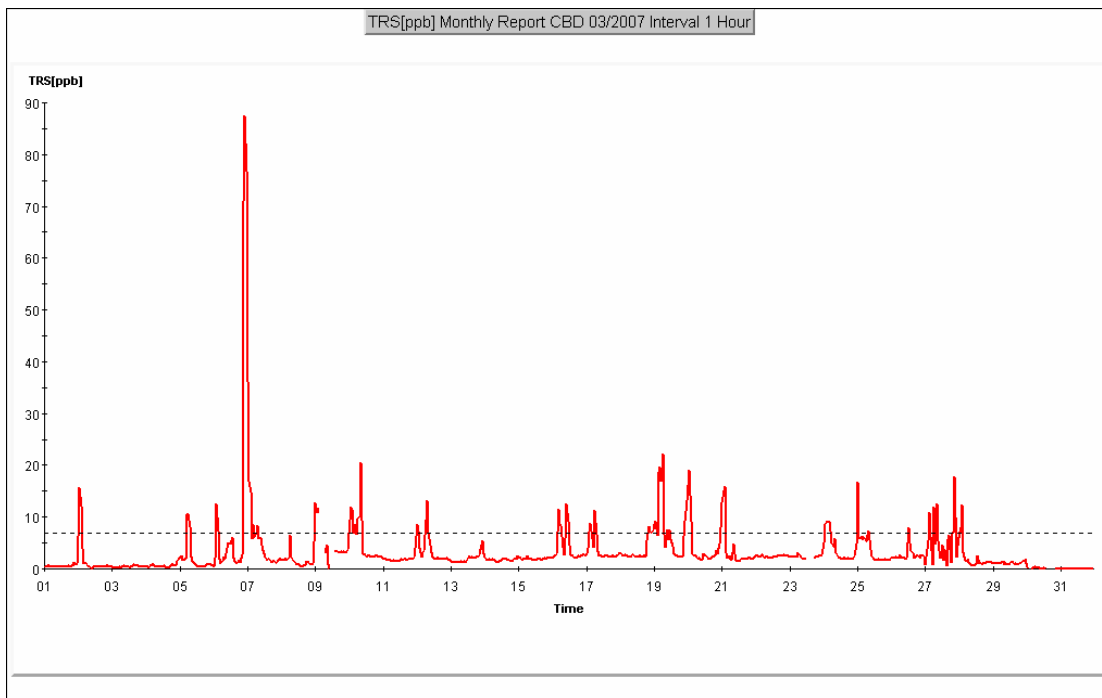
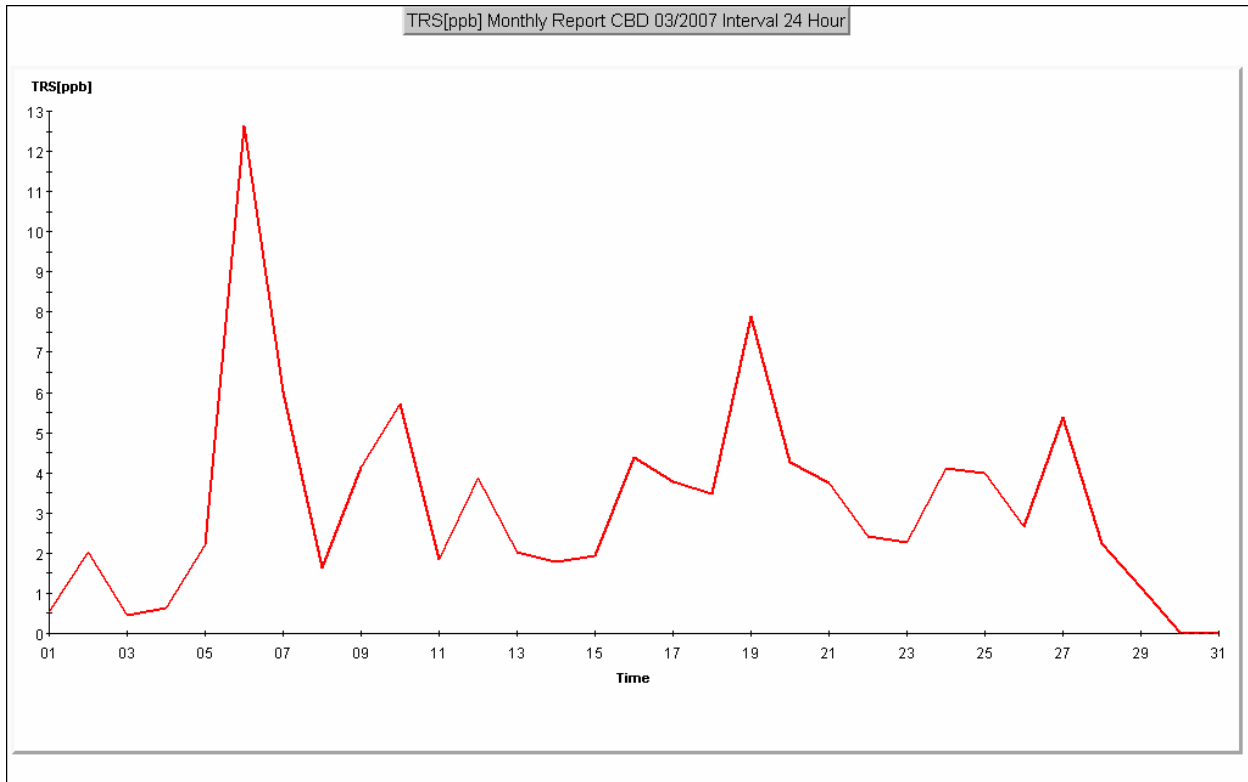


Figure 2: Daily average TRS at the CBD station during March 2007



APPENDIX 8

Ozone Data

Table 1: O ₃ standards and target values		
Instant peak	250 ppb	N/A
Hourly average	120 ppb	102 ppb
8-Hour running average	N/A	61 ppb

Figure 1: Average O₃ at Brackenhams during March 2007



APPENDIX 9

Hawk Dispersion Model Parameters

Dispersion Coefficients	
Met Stations Used	
Roughness Length	

Averaging Time	
Resolution	
Averaging Options	
Maximum Concentration Calculation	
Divergence Criterion	
Wind directional change for full mass balance calculation	
Wind directional change for full mass balance calculation	
Interpolation Radius of Influence	
Barrier Limiting Height	
Maximum Puff Separation Distance	
Puff Diffusion Update Time Interval	
Puff Advection Update Time Interval	
Dosage Time Step Time Interval	