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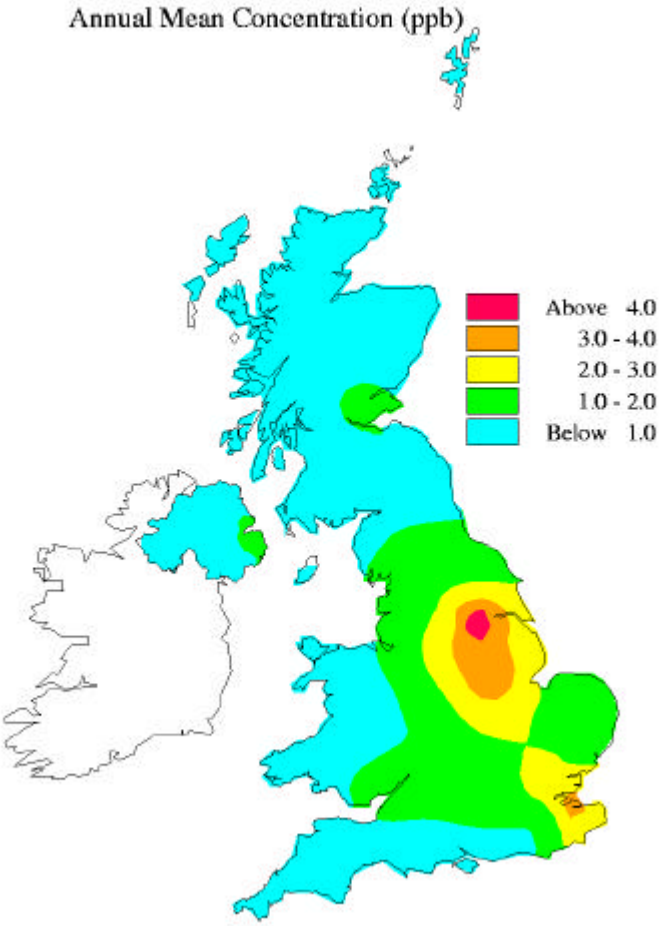

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Executive Summary

Sulphur deposition is known to have acidifying effects on freshwater, soils and vegetation. For these effects to be assessed the total sulphur deposition must be estimated from both its wet and dry deposition pathways. The Department of the Environment, Transport and the Regions has placed a contract with the Centre for Ecology and Hydrology at Edinburgh (CEH) on *Acid Deposition Processes* (EPG 1/3/94) to quantify *inter alia* the wet and dry deposition budgets of sulphur for the United Kingdom.

As part of this contract, AEA Technology was subcontracted to operate and manage the UK Rural Sulphur Dioxide Monitoring Network. This network provides monthly and annually-averaged concentrations of SO_2, which are subsequently used to produce concentration maps for the UK. The dry sulphur deposition across the UK is then derived by CEH by combining the sulphur dioxide (SO_2) concentration field with estimated deposition velocities.

This report provides a complete dataset of the 1998 measurements for all sites in the UK Rural Sulphur Dioxide Monitoring Network. The measurement data have already been provided to CEH for interpretation and further analysis as part of its programme of work under the Acid Deposition Processes contract.

Maps of the annual and monthly mean sulphur dioxide (SO_2) concentration fields have been derived for the UK. The spatial distribution of SO_2 is similar to that observed in 1996 and 1997 with the highest concentrations in the Yorkshire/Nottinghamshire and Thames estuary areas, where monitoring sites are located closer to the major UK SO_2 sources. The 1998 measurements show that SO_2 concentrations have continued to decline in rural areas, a trend which has been observed since the establishment of the network in the early 1990s. The trend for sites closest to emission sources is consistent with the reduction in UK SO_2 emissions calculated over this period.

The concentrations now being measured at some of the sites in the monitoring networks (*i.e.*, the UK Acid Deposition Monitoring networks and the UK Rural Sulphur Dioxide Monitoring network), especially the daily sites in remote areas, are at or below the Limit of Detection of the bubbler method. This will make it more difficult to determine reliable trends and could compromise the application of the monitoring data, for example, in identifying the cause of the non-linear response of ambient concentrations to change in emissions at such sites. A change in sampling method is required which will provide a lower Limit of Detection while retaining data integrity and consistency. A method intercomparison exercise was undertaken in collaboration with CEH at the Auchencorth Moss site near Edinburgh between September 1998 and May 1999 to evaluate potential replacement methods. A summary of the intercomparison exercise and the results obtained will be presented with the report on the 1999 measurements.

Contents

1 Introduction

Sulphur deposition is known to have acidifying effects on freshwater, soils and vegetation. For these effects to be assessed the total sulphur deposition must be estimated from both its wet and dry deposition pathways. The Department of the Environment, Transport and the Regions has placed a contract with the Centre for Ecology and Hydrology at Edinburgh (CEH) on *Acid Deposition Processes* (EPG 1/3/94) to quantify *inter alia* the wet and dry deposition budgets of sulphur for the United Kingdom.

As part of this contract, AEA Technology was subcontracted to operate and manage the UK Rural Sulphur Dioxide Monitoring Network. This network provides monthly and annually-averaged concentrations of SO_2, which are subsequently used to produce concentration maps for the UK. The dry sulphur deposition across the UK is then derived by CEH by combining the sulphur dioxide (SO_2) concentration field with estimated deposition velocities.

This report provides a complete dataset of the 1998 measurements for all sites in the UK Rural Sulphur Dioxide Monitoring Network. The measurement data have already been provided to CEH for interpretation and further analysis as part of its programme of work under the Acid Deposition Processes contract. The format of this report follows that used to report the measurements made in previous years [Hasler and Downing, 1998; Hasler *et al.*, 2001].

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2 Network and Sampling Details

2.1 THE MONITORING SITES

In 1998, the Rural Sulphur Dioxide Monitoring Network comprised 29 sites at which concentrations of SO_2 were measured on a weekly basis and one site (Bush) at which daily measurements were made. Siting criteria and individual site assessment are given in Downing and Campbell [1995]. In general, all the monitoring sites are located in rural areas which are largely unaffected by local domestic and industrial sources.

The main focus of this report is to provide a summary of the measurements made in the Rural Sulphur Dioxide Monitoring Network in 1998 and to present the concentration field of SO_2 derived for the UK. The concentration field is however significantly improved by including data which have been obtained in other SO_2 monitoring networks. These include:

(i) The two bubbler sites funded by the National Assembly for Wales which are sampled weekly, and managed by NETCEN.

(ii) The fifteen continuous monitoring sites operated by National Power and PowerGen as part of the Joint Environment Programme (JEP) of the power generating companies.

(iii) The two continuous monitoring sites from the Automatic Rural Network.

(iv) The two continuous monitoring sites operated by CEH.

The sampling sites and their locations are listed in Table 1 and presented in Figure 1.

2.2 SITE CHANGES WITHIN THE NETWORK IN 1998

The bubbler which had originally been operated at the Brockhill site (5301) was returned to the site in February following the completion of the extensive refurbishment of the building which housed the bubbler. The bubbler had temporarily been relocated to Burcot between 20th August 1997 until 16th February 1998.

A method intercomparison exercise was started at Auchencorth Moss, near Bush, in September 1998 in collaboration with CEH. The daily bubbler measurements were given the site code 5341 and the weekly bubbler measurements were reported as site code 5342.

2.3 THE SAMPLING TECHNIQUE

The hydrogen peroxide bubbler [Downing and Campbell, 1995] is used as the sampling technique within the Rural SO_2 Monitoring network. Air is drawn successively through a filter to remove any particulate matter (including particulate sulphate) and a hydrogen peroxide solution, where sulphur dioxide is absorbed and oxidised to sulphate. The sulphate

Table 1 - Rural SO_2 sampling sites in the United Kingdom.

Site code	Site name	Easting	Northing	Network and Measurement Technique
5002	Eskdalemuir	3235	6030	UK Acid Deposition Monitoring Networks
5004	Stoke Ferry	5700	2988	*- hydrogen peroxide bubbler (8-port)*
5006	Lough Navar	192	5212	*- daily measurements*
5007	Barcombe Mills	5437	1149	
5008	Yarner Wood	2786	789	
5009	High Muffles	4776	4939	
5010	Strathvaich Dam	2347	8750	
5011	Glen Dye	3642	7864	
5301	Brockhill 1	4002	2702	UK Rural SO_2 Monitoring Network
5303	Caenby 1	4993	3900	*- hydrogen peroxide bubbler (8- and single-port)*
5304	Camborne 1	1628	407	*- weekly measurements*
5305	Camphill 1	2274	6546	
5306	Cardington 2	5082	2464	
5308	Corpach 1	2054	7782	
5309	Cresselly 1	2064	2062	
5310	Etton 1	4980	4445	
5312	Husborne Crawley	4964	2361	
5313	Little Horkesley 1	5971	2312	
5314	Marshfield 1	3255	1830	
5315	Ratcliffe 13	4408	3278	
5316	Rockbourne 1	4116	1181	
5317	Wakefield 24	4352	4132	
5318	Waunfawr 1	2533	3607	
5319	Fort Augustus 2	2366	8091	
5320	Loch Leven 2	3159	6990	
5321	Redesdale 2	3833	5961	
5322	Hebden Bridge 2	4011	4327	
5323	Preston Montford 2	3432	3143	
5324	Bentra	1587	5459	
5325	Pitlochry	2918	7599	
5326	Bush	3246	6638	
5329	Cam Forest	1070	5785	
5330	Cwmystwyth	2774	2745	
5331	Rosemaund	3564	2476	
5333	Fairseat	5622	1615	
5338	Forsinain	2906	9486	
5339	Appleacre	3665	5208	
5340	Garrary	2531	5790	*site opened November 1997*
5334	Bylchau	2959	3596	Welsh Rural SO_2 Network
5335	Crai	2861	2183	*- hydrogen peroxide bubbler (8-port)*
6002	Fleet Hall	5895	1893	JEP (National Power) - Thames Estuary
6003	Hall Farm	5589	1848	*- UVF automatic analyser*
6004	Lower Shorne	5703	1728	
6005	Wingham	6243	1553	
6006	Wormdale	5858	1634	
6007	Carr Lane	4672	4274	JEP (National Power) - Yorkshire
6008	Hemingbrough	4669	4298	*- UVF automatic analyser site closed Apr 1998*
6009	Cliffe	4659	4336	
6010	North Duffield	4672	4373	*site closed Jul 1998*
6011	Wheldrake	4690	4448	*site closed Apr 1998*
6012	Dunnington	4674	4523	*site closed May 1998*
6013	Gateforth Hall	4557	4296	*site opened Mar 1998*
6014	North Featherstone	4427	4226	*site opened Feb 1998*
6015	North Howden	4769	4305	*site opened Nov 1998*
6016	Sherburn in Elmet	4494	4325	*site opened Mar 1998*
6017	Smeathalls Farm	4513	4252	*site opened in 1997*
6018	Temple Hirst	4625	4252	*site opened in 1997*
7001	Bottesford	4797	3376	JEP (PowerGen)
7002	Jenny Hurn	4816	3982	*- UVF automatic analyser*
8001	Ladybower	4164	3892	Automatic Rural Network
8002	Lullington Heath	5538	1016	*- UVF automatic analyser*
9001	Sutton Bonnington	4505	3267	CEH
9002	Auchencorth Moss	3221	6562	*- UVF automatic analyser*

Figure 1 - Location of the Sites Used to Monitor SO_2 Concentrations in the Rural SO_2 Monitoring Network

concentration in the solution is determined by ion chromatography. The ambient concentration of sulphur dioxide is derived from the concentration of sulphate determined analytically and the volumes of the air drawn through the bubbler during the sampling period and of the H_2O_2 solution.

There are three versions of the hydrogen peroxide bubbler used in the monitoring network:

- an 8-port bubbler is used at one site (Bush) and analysis of each daily sample is undertaken to give a daily measurement;
- an 8-port bubbler is used at 23 sites. The individual samples are bulked and a single analysis is undertaken to give a weekly measurement;
- a single-port bubbler is used at 6 sites. A single sample is collected and analysed to give a weekly measurement.

The single-port bubbler is used at the following 6 sites: Corpach (5308), Etton (5310), Marshfield (5314), Rockbourne (5316), Fort Augustus (5319) and Loch Leven (5320). The single-port bubbler is also operated in parallel with the 8-port bubblers located at Husborne Crawley (site codes: 5312 and 5336) and Ratcliffe (site codes: 5315 and 5337), although the single-port measurements at both sites ceased in May 1998.

2.4 EQUIPMENT MAINTENANCE

Regular equipment maintenance is needed to maximise data capture and sample quality. The sites within the network are visited annually to ensure all equipment is operated within acceptable working limits. The Table shown in Appendix 1 summarises when the annual site maintenance and other visits occurred.

The bubbler units are subject to a small amount of air ingress which tends to increase if they are not regularly maintained. A well maintained bubbler unit has a leak rate between 3 and 5%, and all the bubbler units used within the network are operated within these limits. If a bubbler unit is found to have a leak rate greater than 5% the unit is modified to reduce the leak rate or replaced immediately.

The bubbler unit is based on a simple design with few moving parts. However, the motors within the sampling pumps occasionally fail. Consequently, the airflows at all sites are routinely monitored so that failing pumps can be identified and replaced before complete failure occurs. The sampling flowrate is maintained between 2 and 4 m^3 per day.

To ensure airflows are recorded accurately the airflow meters are calibrated at least once a year against a certified wet gas meter (standard meter). The accepted tolerance for bubbler meters is where their measured air volume is within 3% of that measured by the standard meter. If meters are found to fall outside this criteria they are withdrawn from use and replaced.

2.5 SENSITIVITY OF THE BUBBLER TECHNIQUE

The ion chromatograph used to determine the concentration of sulphate has an analytical limit of detection of 0.01 mg [SO_4^{2-} as S] per litre of solution. This implies that the bubbler method has an intrinsic sensitivity of about 0.2 μg SO_2 as S m^{-3} or 0.15 ppb SO_2 for typical volumes of

solution analysed and air flow rates. In practice, the sensitivity is 0.4 μg SO_2 as S m^{-3} (0.3 ppb SO_2) taking into account leak rates and other measurement errors.

2.6 DATA CAPTURE

Annual and monthly mean concentrations are only calculated if the data capture exceeds 75%. There are a number of reasons why the concentrations cannot be determined for individual samples. These include:

Frequent	• The electricity supply is interrupted and the sample collected is not representative of that week's concentration. • A failure of the pump/meter/bubbler occurs.
Occasional	• The bubbler is switched off by the site operator when the site operator is unavailable. • A long sampling period occurs when the site operator is unavailable (2 weeks plus usually) which because of the lack of fluid reservoir is not representative of that sampling period (H_2O_2 falls below dreschel stems in bottles). • An error or mix-up is made by the site operator. • The sample solution partially or completely leaks during transit because the sample container lids were not secured effectively. The total sample volume is unknown and the concentration in air can not then be calculated. • The parcel is lost during transit.
Rare	• The sample is lost during analysis or sample registration. • Vandalism at the monitoring site may cause the sample to be lost.

As indicated in Section 2.2, the bubbler which had temporarily been operated at Burcot between 20th August 1997 until 16th February 1998 was reinstalled at Brockhill. The monitoring data from Burcot is presented with the Brockhill data as site code 5301. No data were lost.

At the Fort Augustus site (5319), the students, who were used to undertake the site operator tasks, had difficulties with the sample changeover. As a consequence, the samples collected during July and August have had to be discarded. Despite this, the overall data capture for the year was sufficient to allow an annual mean concentration to be calculated.

At Pitlochry (5325), there were recurrent problems with failing pumps which caused low air flow rates. This is a relatively-clean site and high flow rates are needed to obtain sufficient sample for analysis. As a result of these problems, the samples collected in the second half of 1998 have had to be discarded and no annual mean concentration could be calculated.

3 Results and Discussion

The complete data set of measurements for 1998 for (i) the 30 sites in the Rural Sulphur Dioxide Monitoring Network, (ii) the 8 sites in the UK Acid Deposition Monitoring Networks and (iii) the two sites operated for the National Assembly of Wales are given in Appendix 2. The data for individual sites are also presented graphically in Appendix 3. Monthly mean concentrations have only been calculated when the data capture is greater than75% and these are also presented in the Tables and Figures of Appendices 2 and 3.

3.1 ANNUAL MEAN CONCENTRATIONS

The annual mean concentrations are presented in Table 2 for the sites listed in Table 1. The annual mean concentrations observed in 1998 were generally lower than those reported in 1997 [Hasler *et al.*, 2001], as shown in Table 2.

Annual mean concentrations were not calculated for the two bubblers operated at Auchencorth Moss as part of the Method Intercomparison exercise. The single-port measurements made at the Husborne Crawley (5336) and Ratcliffe (5337) sites have also been omitted in preference for the 8-port bubbler measurements made at the same sites (5312 and 5315 respectively).

The highest annual mean concentrations were measured at the JEP sites in the Thames estuary, and Yorkshire[1]. These and nearly all the other sites with annual mean concentrations above 2.5 ppb are influenced by nearby major SO_2 emission sources. The lowest annual means were measured at Lough Navar (0.2 ppb) in Northern Ireland, Forsinain (0.3 ppb) and Strathvaich Dam (0.3 ppb) in Scotland. All of these sites are located in more remote and less populated areas of the UK, away from the direct influence of SO_2 emission sources.

Table 3 presents the maximum concentrations for a selection of sites. Many of the maximum daily and weekly SO_2 concentrations were observed during the autumn and winter, where maximum daily concentrations reached as high as 25.5 ppb at High Muffles (Yorkshire), and maximum weekly concentrations reached 12.6 ppb at Hebden Bridge (Lancashire) and 11.9 ppb at Caenby (Lincolnshire). The remainder of the year showed generally low concentrations with no pronounced winter peak.

Lough Navar (Northern Ireland) and Forsinain (Scotland) are remote sites and hence their maximum concentrations were much lower. The annual means at Lough Navar (0.2 ppb) and Forsinain (0.3 ppb) are comparable, but higher maximum concentrations are observed at Lough Navar (2.2 ppb) as compared to Forsinain (1.4 ppb). This reflects the temporal resolution of sampling. Daily sampling is carried out at Lough Navar and therefore shorter term episodes of SO_2 are captured in the data set.

[1] The data for these sites have been provided on condition that neither the measurements made at the sites nor the statistics derived are explicitly reported. The company involved considers that the measurements have commercial value and that a third party could benefit through their inclusion in this report.

Table 2 - Rural SO_2 Annual Mean Concentrations in 1997 and 1998

Site code	Site name	1997 Concentration/ppb	1998 Concentration/ppb
5002	Eskdalemuir	0.5	0.4
5004	Stoke Ferry	1.4	1.5
5006	Lough Navar	0.3	0.2
5007	Barcombe Mills	1.0	0.8
5008	Yarner Wood	0.7	0.5
5009	High Muffles	1.7	1.3
5010	Strathvaich Dam	0.4	0.3
5011	Glen Dye	0.6	0.4
5301	Brockhill 1	1.8	1.1
5303	Caenby 1	2.5	3.0
5304	Camborne 1	0.9	0.7
5305	Camphill 1	1.2	0.5
5306	Cardington 2 (Note 1)	3.3	3.9
5308	Corpach 1	0.9	0.6
5309	Cresselly 1	1.2	0.8
5310	Etton 1	2.7	2.6
5312	Husborne Crawley 1	2.1	1.8
5313	Little Horkesley 1	2.1	1.7
5314	Marshfield 1	1.4	1.2
5315	Ratcliffe 13	2.8	2.5
5316	Rockbourne 1	1.2	0.9
5317	Wakefield 24	3.1	2.5
5318	Waunfawr 1	0.8	0.7
5319	Fort Augustus 2	0.3	0.5
5320	Loch Leven 2	-	1.4
5321	Redesdale 2	0.9	0.6
5322	Hebden Bridge 2	2.9	1.8
5323	Preston Montford 2	1.4	0.8
5324	Bentra	1.6	1.3
5325	Pitlochry	0.5	-
5326	Bush	1.4	1.0
5329	Cam Forest	0.6	0.4
5330	Cwmystwyth	1.1	0.8
5331	Rosemaund	1.0	1.0
5333	Fairseat	1.6	1.4
5338	Forsinain	0.2	0.3
5339	Appleacre	1.3	1.2
5340	Garrary	Note (2)	0.3
5334	Bylchau	1.0	0.7
5335	Crai	1.0	0.9
6002	Fleet Hall	(Note 3)	(Note 3)
6003	Hall Farm, N	(Note 3)	(Note 3)
6004	Lower Shorne	(Note 3)	(Note 3)
6005	Wingham	(Note 3)	(Note 3)
6006	Wormdale	(Note 3)	(Note 3)
6007	Carr Lane	(Note 3)	(Note 3)
6008	Hemingbrough	(Note 3)	(Notes 3, 4)
6009	Cliffe	(Note 3)	(Note 3)
6010	North Duffield	(Note 3)	(Notes 3, 4)
6011	Wheldrake	(Note 3)	(Notes 3, 4)
6012	Dunnington	(Note 3)	(Notes 3, 4)
6013	Gateforth Hall	-	(Notes 3, 4)
6014	North Featherstone	-	(Notes 3, 4)
6015	North Howden	-	(Notes 3, 4)
6016	Sherburn in Elmet	-	(Notes 3, 4)
6017	Smeathalls Farm	-	(Notes 3, 4)
6018	Temple Hirst	-	(Notes 3, 4)
7001	Bottesford	2.7	3.9
7002	Jenny Hurn	4.8	4.0
8001	Ladybower	3.7	2.7
8002	Lullington Heath	1.7	1.4
9001	Sutton Bonnington	2.9	3.0
9002	Auchencorth Moss	0.7	0.6

Notes (1) Site not used for mapping purposes (see text); (2) New site (less than 50% data capture); (3) The data for these sites have been provided solely for use in generating the SO_2 concentration map and on condition that neither the measurements made at the sites nor the statistics derived are explicitly reported; (4) JEP site was either opened or closed during 1998.

Table 3 - Maximum Daily or Weekly SO_2 Concentrations at Selected Sites

Site	Day or week beginning	SO_2-S concentration in air (μgSm^{-3})	(ppb)
5006	01/04/98	2.2	1.7
Lough Navar	24/09/98	1.7	1.3
(daily)	25/09/98	1.5	1.2
	02/04/98	1.3	1.0
	03/10/98	1.2	0.9
5008	31/01/98	8.2	6.1
Yarner Wood	15/05/98	7.6	5.7
(daily)	28/01/98	4.0	3.0
	29/01/98	3.6	2.7
	20/05/98	3.5	2.6
5009	23/01/98	34.0	25.5
High Muffles	21/01/98	18.5	13.9
(daily)	22/01/98	15.6	11.7
	18/05/98	15.4	11.6
	20/02/98	12.4	9.3
	10/01/98	11.6	8.7
	10/03/98	10.5	7.9
	29/01/98	9.6	7.2
	21/04/98	9.5	7.1
	24/03/98	8.8	6.6
5301	23/01/98	12.3	9.2
Brockhill	13/02/98	5.3	4.0
(weekly)	16/01/98	3.1	2.3
	20/02/98	2.5	1.9
	15/05/98	2.2	1.7
5303	10/02/98	15.8	11.9
Caenby	11/08/98	7.3	5.5
(weekly)	03/02/98	6.7	5.0
	24/02/98	6.4	4.8
	07/07/98	6.1	4.6
5306	28/01/98	11.4	8.5
Cardington	17/06/98	11.1	8.3
(weekly)	16/12/98	10.7	8.0
	25/11/98	9.4	7.0
	11/11/98	8.2	6.1
5310	06/01/98	11.3	8.5
Etton	21/01/98	9.2	6.9
(weekly)	18/11/98	8.3	6.2
	16/06/98	8.0	6.0
	18/02/98	7.9	5.9
5322	13/05/98	16.8	12.6
Hebden Bridge	23/09/98	7.2	5.4
(weekly)	28/01/98	7.0	5.3
	21/01/98	4.9	3.7
	20/05/98	4.4	3.3
5333	12/05/98	12.8	9.6
Fairseat	19/05/98	4.8	3.6
(weekly)	17/03/98	4.1	3.1
	20/01/98	3.4	2.5
	05/05/98	3.3	2.5
5338	31/03/98	1.4	1.0
Forsinain	16/06/98	1.0	0.7
(weekly)	01/09/98	0.9	0.7
	18/08/98	0.9	0.6
	25/08/98	0.8	0.6

Overall, SO_2 concentrations in rural areas are observed to decrease between 1997 and 1998, which is in keeping with the decline in UK SO_2 emission estimates during this period [Goodwin *et al*., 2000]. Figure 2, adapted from Hayman *et al*. [2000], presents both the monthly and running annual mean SO_2 concentrations measured at Eskdalemuir. This is used as an example to illustrate the substantial decline in SO_2 concentrations since the early 1980s. The average concentration at Eskdalemuir has decreased by a factor of nine since 1980 from 4.5 ppb to 0.5 ppb. The figure shows that the downward trend in the SO_2 concentrations follows the reduction in UK SO_2 emissions.

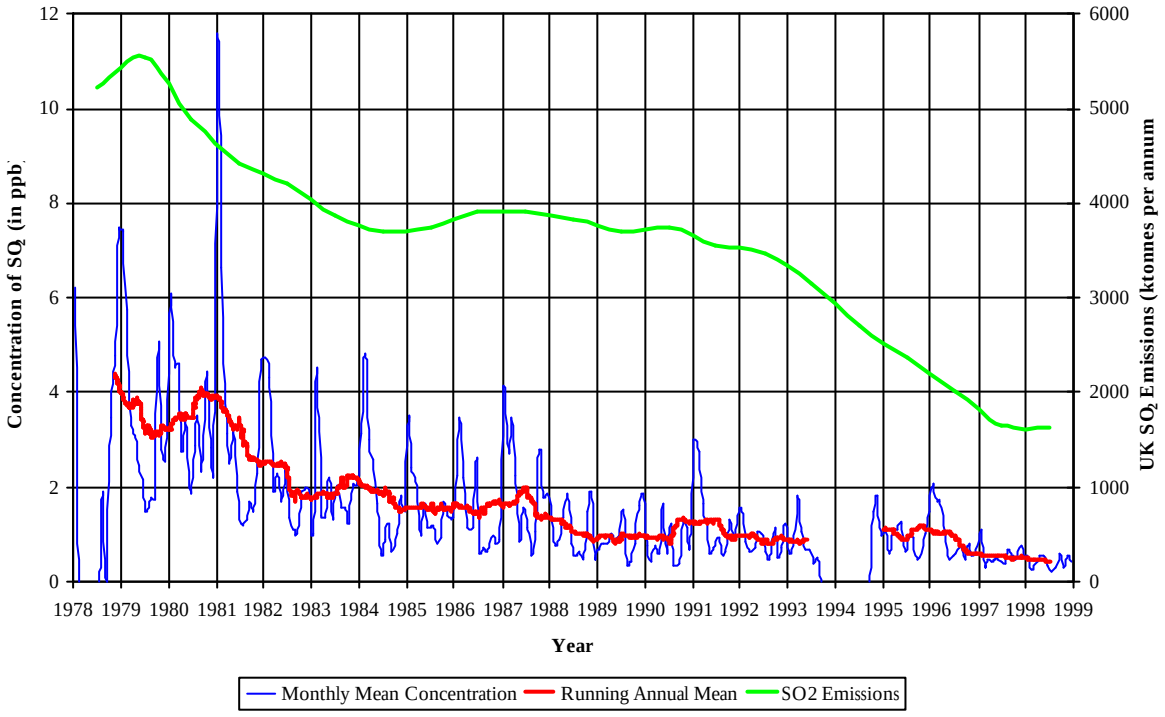

Figure 2 Trends in the concentration of sulphur dioxide observed at Eskdalemuir since 1978 and in the annual UK emissions of sulphur dioxide [Adapted from Hayman *et al.*, 2000].

Figure 2 also illustrates the large seasonal variation, where higher concentrations are observed during cold winter months when emissions are relatively high and the vertical dispersion of pollutants poor [Hayman *et al.*, 2000].

3.2 SPATIAL VARIATIONS

The geographical distribution of annual mean SO_2 concentrations is shown in Figure 3. A geostatistical kriging method developed by Webster *et al*. [1991] is used to calculate the annual concentration map. Appendix 4 provides a summary of the kriging method and the parameters used. Monthly mean SO_2 concentration maps are presented in Appendix 5, and have been calculated using bi-linear interpolation, a description of which is given by UNIRAS [1988].

Cardington has an annual mean of 3.9 ppb compared to the nearby site at Husborne Crawley which has an annual mean of 1.8 ppb. As in earlier years, the Cardington data have not been

used for mapping purposes because this site was originally established to determine the effect of specific factors which influenced local concentrations of SO_2 and not to determine regional patterns. The Cardington site is influenced by a local source. Downing and Campbell [1995] showed that the exclusion of the Cardington data does not greatly influence the reliability of the maps since there are good representative sites nearby (Woburn originally and then Husborne Crawley on relocation).

The spatial distribution of SO_2 is similar to that observed in for the years 1995 to 1997 [Hasler and Downing, 1998; Hasler *et al.*, 2001], where the highest concentrations were observed in the Yorkshire/Nottinghamshire area and the Thames Estuary. This is most probably because the sites in these areas are located closest to major UK SO_2 emission sources which have a strong influence on the concentrations in the region.

Most of the sites in the Yorkshire/Nottinghamshire area and the Thames Estuary are JEP sites that employ UVF (ultraviolet fluorescence) continuous monitors, whereas the majority of the other sites across the UK use the hydrogen peroxide bubbler measurement technique. Downing and Campbell [1995] have shown that some of the hydrogen peroxide bubblers measure SO_2 concentrations between 10% and 15% lower than UVF analysers. This could possibly explain some of the differences in the measurements although it is more likely that the high concentrations are a result of the proximity to emission sources.

It should be noted that the bubbler technique has a limit of detection in the region of 0.3 ppb and many of the concentrations measured at remote sites are close to this threshold. Consequently, measurements that fall close to the limit of detection will have greater inaccuracy.

Monthly mean concentration maps are presented in Appendix 5. It is interesting to note how the maps are influenced by the low values at Husborne Crawley in February, September and November. The maps show that SO_2 concentrations were more elevated across the UK in winter months (January and February), although very few individual sites display a pronounced winter peak. The higher concentrations observed in the winter are generally a result of higher emissions combined with periods of poorer pollutant dispersion. Higher concentrations are also evident in May. The lowest concentrations across the UK were observed in the summer months (July and August).

3.3 URBAN-ENHANCED MAP

The sites used to map the rural SO_2 concentration field are sited away from local sources of pollution so that they are representative of the region. The map of the rural SO_2 concentration field presented in Figure 3 shows that the concentrations observed are highest in those regions with major sources (*i.e.*, Yorkshire, Thames Estuary, *etc*). However, the maps produced using the rural concentration alone are not adequate to characterise fully the dry deposition to vegetation in the urban environment, or in rural locations that are on the fringes of urban areas. Hence, the deposition maps prepared using the rural concentration field alone would be inaccurate.

A simple methodology has been developed to estimate the correction needed [Stedman *et al.*, 2001a, 2001b]. The approach has been to take the difference in the urban SO_2 concentration (taken from automatic monitoring instruments in urban background locations) and the

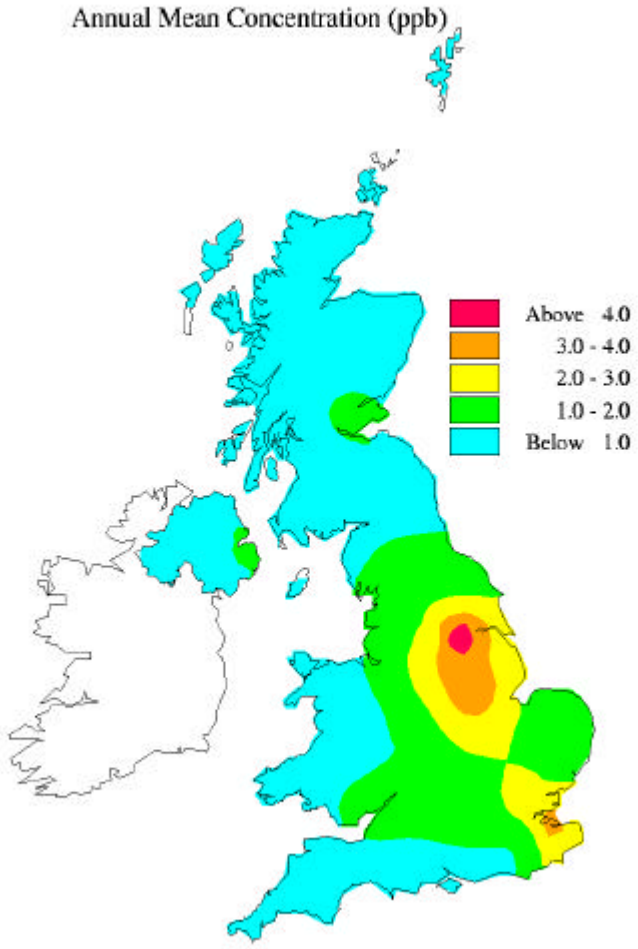

Figure 3 - Rural SO_2 concentrations (ppb) in 1998

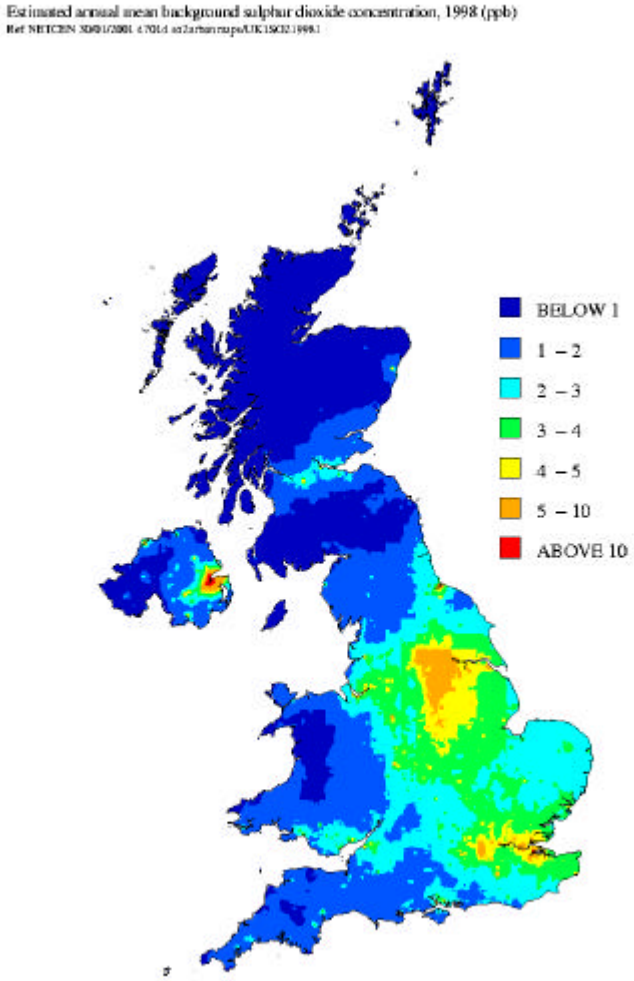

Figure 4 - Urban-corrected SO_2 concentrations (ppb) in 1998

corresponding rural background and to correlate this with a simple dispersion of the emissions from line and area sources (*i.e.*, excluding point sources) within a 35 km x 35 km area, weighted by distance and direction from the receptor. For the 1998 map, data from 51 automatic monitoring sites were used. The dispersion coefficients derived are then applied to the line and area sources in the National Atmospheric Emission Inventory to give the urban enhancement for each 1 km x 1km grid square covering the UK, as shown in Figure 4.

As the approach excludes the emissions from the major point sources, it is appropriate to include the JEP sites in the derivation of the base rural concentration field. However, sites such as Cardington which are unduly influenced by local sources should be excluded.

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With special thanks to all the site operators whose commitment to the network has helped provide such a comprehensive and high quality data set.

We would also like to take this opportunity to thank Steve Baker (AEA Technology) for his contribution to the smooth operation of the monitoring networks.

Appendix 1

ANNUAL SITE MAINTENANCE AND OTHER SITE VISITS

Site Code	Site Name	Date of Annual Site Visit	Other Site Visits/Comments
5002	Eskdalemuir (1)	7/7/98	Replacement valve sent to site operator.
		15/7/98	Site maintenance visit.
5004	Stoke Ferry (1)	19/1/98	Site maintenance visit.
		15/6/98	Site maintenance visit.
		19/10/98	Site maintenance visit.
5006	Lough Navar (1)	28/9/98	Bubbler replaced during site maintenance visit.
5007	Barcombe Mills (1)	10/3/98	Replacement pump sent to site operator.
		1/7/98	Site maintenance visit.
5008	Yarner Wood (1)	9/2/98	Pump, valve and inlet replaced during site maintenance visit.
		4/11/98	Site maintenance visit.
5009	High Muffles (1)	7/1/98	Emergency visit to replace valves on TIN/TIA sampler. Bubbler OK.
		23/1/98	Emergency visit to reprogramme/restart samplers after power loss.
		11/8/98	Pump replaced during site maintenance visit.
		21/10/98	Inlet replaced during site maintenance visit.
5010	Strathvaich Dam (1)	1/4/98	Pump and valve replaced during site maintenance visit.
		27/8/98	Site maintenance visit.
5011	Glen Dye (1)	16/7/98	Site maintenance visit.
5301	Brockhill 1	16/2/98	Bubbler was reinstalled at Brockhill from temporary location at Burcot. Valve replaced during visit.
5303	Caenby 1	8/5/98	Annual site maintenance visit.
		8/7/98	Replacement valve sent to site operator.
5304	Camborne 1	3/9/98	Pump and meter replaced during annual site maintenance visit.
5305	Camphill 1	17/11/98	Annual site maintenance visit - OK
5306	Cardington 2	8/7/98	Meter replaced during annual site maintenance visit.
5308	Corpach 1	1/7/98	Annual site maintenance visit.
5309	Cresselly 1	19/5/98	Annual site maintenance visit.
5310	Etton 1	6/5/98	Annual site maintenance visit.
		24/08/98	Emergency visit to resite bubbler.
5312	Husborne Crawley 1	17/6/98	Inlet tube, funnel and pump replaced during annual site maintenance visit.
5313	Little Horkesley 1	16/9/98	Inlet tubing and funnel replaced during annual site maintenance visit.
5314	Marshfield 1	18/5/98	Annual site maintenance visit.
5315	Ratcliffe 13	13/5/98	Bubbler replaced during annual site maintenance visit.
5316	Rockbourne 1	-	Annual site maintenance omitted.
5317	Wakefield 24	9/6/98	Pump and valve replaced during annual site maintenance visit.
5318	Waunfawr 1	15/4/98	Emergency visit to replace bubbler.
		8/9/98	Inlet tubing and funnel replaced during annual site maintenance visit.
5319	Fort Augustus 2	27/8/98	Meter replaced during annual site maintenance visit.
		July/August 98	Student site operator had difficulties with sample changeovers.
5320	Loch Leven 2	29/4/98	Annual site maintenance visit.
5321	Redesdale 2	26/2/98	Valve, pump and meter replaced during annual site maintenance visit.
		18/11/98	Meter, inlet and funnel replaced during annual site maintenance visit.
5322	Hebden Bridge 2	8/6/98	Annual site maintenance visit.
5323	Preston Montford 2	7/9/98	Inlet tubing and funnel replaced during annual site maintenance visit.
5324	Bentra	30/9/98	Annual site maintenance visit.
5325	Pitlochry	30/6/98	Pump replaced during annual site maintenance visit.
		24/11/98	Replacement pump sent to site operator.
5326	Bush	22/1/98	Replacement pump sent to site operator.
		29/4/98	Annual site maintenance visit.
5329	Cam Forest	29/9/98	Annual site maintenance visit.
5330	Cwmystwyth	10/9/98	Annual site maintenance visit.
5331	Rosemaund	8/7/98	Inlet tubing and funnel replaced during annual site maintenance visit.
5333	Fairseat	17/9/98	Pump, inlet tubing and funnel replaced during annual site maintenance visit.
5338	Forsinain	26/8/98	Bubbler replaced during annual site maintenance visit.
5339	Appleacre	5/5/98	Bubbler resited during annual site maintenance visit.
5340	Garrary	14/7/98	Annual site maintenance visit.
5334	Bylchau	8/9/98	Inlet tubing and funnel replaced during annual site maintenance visit.
5335	Crai	18/5/98	Valve replaced during annual site maintenance visit.
		22/7/98	Emergency visit to replace meter and bubbler cable.
		11/9/98	Emergency visit to replace bubbler.

Note (1) These sites are operated as part of the UK Acid Deposition Monitoring Networks and are visited more frequently given the more extensive monitoring programmes undertaken at most of the sites.

Appendix 2

DAILY, WEEKLY AND MONTHLY SO_2 CONCENTRATIONS

National Environmental Technology Centre

Daily Sites Analysed:

5002 Eskdalemuir
5004 Stoke Ferry
5006 Lough Navar
5007 Barcombe Mills
5008 Yarner Wood
5009 High Muffles
5010 Strathvaich Dam
5011 Glen Dye
5326 Bush
5341 Auchencorth Moss

Variables Analysed	Units	Specified Variable Limit
sulphur dioxide as S	$\mu g\ m^{-3}$	1.000

Time Period Covered:

January 1998 - December 1998

National Environmental Technology Centre
Site: 5002 Eskdalemuir - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.30	0.45	0.30	0.14	0.51	0.45	0.37	0.30	0.79	0.29	0.30	0.89
2 - 3	0.22	0.86	0.19	0.34	0.66	0.31	0.24	0.34	0.67	0.24	0.62	0.36
3 - 4	0.19	0.68	0.19	1.42	1.11	0.35	0.60	0.16	0.77	0.75	0.69	1.08
4 - 5	0.50	0.32	0.63	0.37	0.44	0.62	<0.10	<0.14	0.89	0.25	0.75	1.73
5 - 6	0.28	0.28	0.29	0.43	0.22	1.59	0.13	0.41	0.90	0.29	0.35	0.87
6 - 7	0.71	0.50	0.96	0.39	0.25	0.59	0.47	<0.11	2.44	0.22	0.31	1.25
7 - 8	0.35	0.35	0.24	0.31	0.24	0.20	0.52	0.22	0.42	1.89	0.69	0.44
8 - 9	0.31	0.26	0.40	0.17	0.60	0.31	0.15	0.44	0.32	0.69	0.31	0.33
9 - 10	0.28	0.24	2.32	0.23	0.64	0.26	0.13	1.08	0.54	0.24	0.42	0.76
10 - 11	1.06	0.30	0.71	0.91	0.71	0.41	0.41	0.65	0.24	0.42	0.21	0.27
11 - 12	0.34	0.19	0.69	0.70	0.28	0.42	0.20	0.43	0.22	0.26	1.05	0.48
12 - 13	0.38	0.14	0.30	1.00	0.25	0.77	0.46	<0.12	0.43	0.37	0.62	0.21
13 - 14	1.26	0.22	0.23	0.50	0.40	1.26	<0.12	<0.13	0.63	0.37	0.24	0.26
14 - 15	0.30	0.20	0.28	1.32	3.48	0.31	0.13	<0.13	0.43	0.20	0.42	0.26
15 - 16	0.33	0.38	0.90	0.64	1.69	0.27	<0.16	0.22	0.27	0.50	1.98	0.37
16 - 17	0.37	0.92	0.25	1.31	0.79	0.34	0.32	0.18	0.21	0.33	0.36	0.28
17 - 18	0.33	0.16	0.23	0.42	2.27	0.30	0.13	0.28	0.47	0.46	3.24	0.30
18 - 19	0.62	0.47	0.46	0.32	1.46	0.44	0.16	<0.14	0.46	0.29	1.77	<0.17
19 - 20	0.84	0.24	0.34	2.91	0.30	0.23	0.16	0.18	1.32	0.32	2.44	0.44
20 - 21	2.13	0.51	0.28	0.42	0.35	1.61	0.18	0.20	0.53	0.34	1.33	1.43
21 - 22	0.94	0.38	0.38	1.06	0.95	0.38	0.18	0.77	1.48	0.34	0.45	N
22 - 23	0.81	0.26	1.26	0.88	0.47	0.26	0.29	0.17	2.80	0.37	0.37	0.39
23 - 24	0.37	0.19	1.00	0.49	0.35	0.21	0.22	0.37	0.64	0.40	0.54	0.27
24 - 25	0.20	0.22	0.28	0.29	0.32	0.27	1.22	0.35	1.05	0.27	0.25	0.21
25 - 26	0.38	0.38	0.24	0.41	0.40	0.34	0.16	0.77	0.55	0.26	0.29	0.22
26 - 27	0.37	0.20	0.36	0.23	0.69	0.43	0.25	0.75	0.75	0.31	0.24	0.13
27 - 28	0.35	0.15	0.28	0.35	0.38	0.20	0.26	0.28	0.28	0.35	0.32	0.13
28 - 29	0.30	0.18	0.48	0.78	0.29	0.25	0.32	0.21	1.30	0.21	0.30	0.25
29 - 30	3.35		1.83	2.02	0.30	0.21	<0.12	1.05	1.13	0.29	0.29	1.31
30 - 31	1.22		0.29	0.45	0.39	0.29	0.26	0.56	0.56	0.22	0.26	0.35
31 - 1	1.43		0.24		0.65		0.39	0.99		0.26		0.74
Arithmetic Mean (3)	0.67	0.34	0.54	0.71	0.70	0.46	0.28	0.38	0.78	0.39	0.71	0.54
Standard Deviation (3)	0.67	0.20	0.50	0.61	0.69	0.38	0.23	0.30	0.61	0.31	0.73	0.43
Sample Size	31	28	31	30	31	30	31	31	30	31	30	30

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5004 Stoke Ferry - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.71	2.31	1.07	1.30	0.49	1.32	3.27	1.21	1.38	0.91	1.99	4.98
2 - 3	1.10	7.15	0.92	0.82	0.74	0.75	2.22	0.33	1.85	4.75	0.81	2.53
3 - 4	0.54	10.42	0.94	1.23	0.65	0.74	6.81	0.88	8.44	2.15	2.66	2.39
4 - 5	0.72	2.99	3.41	0.68	3.32	0.97	3.14	1.28	2.06	0.56	7.87	3.02
5 - 6	2.57	2.32	3.68	0.49	1.12	0.73	1.39	1.29	0.64	1.47	1.52	5.28
6 - 7	1.84	1.79	0.98	0.59	0.61	1.23	1.93	1.06	1.32	1.02	1.98	3.19
7 - 8	1.11	2.73	2.17	1.35	0.63	0.60	2.58	0.88	0.71	1.42	1.61	2.44
8 - 9	1.57	1.67	1.37	3.13	4.00	0.65	2.05	1.45	0.48	0.57	1.74	2.76
9 - 10	2.43	1.89	1.72	1.56	1.30	0.63	2.45	<0.12	0.64	2.45	0.87	1.01
10 - 11	1.76	1.71	1.49	3.27	1.61	0.52	2.53	1.72	0.96	5.82	1.20	1.57
11 - 12	1.65	3.25	1.24	1.40	1.67	1.11	0.89	N	0.76	0.92	2.23	1.00
12 - 13	2.13	2.05	3.48	5.56	0.66	1.35	0.81	1.12	1.83	4.85	1.61	0.69
13 - 14	1.68	3.43	3.92	4.22	2.93	1.03	1.71	1.68	0.99	1.30	1.00	0.87
14 - 15	2.36	2.65	6.43	1.50	3.28	0.98	1.31	0.73	1.36	1.55	1.35	0.72
15 - 16	1.27	N	3.95	1.91	3.49	2.36	1.39	0.80	0.90	1.12	1.50	1.94
16 - 17	9.42	1.95	4.85	2.20	1.27	4.44	1.94	1.08	1.10	1.10	1.82	1.05
17 - 18	1.64	2.39	3.84	1.31	1.43	1.33	1.01	0.94	3.28	0.67	1.34	1.09
18 - 19	1.05	4.02	3.82	2.63	1.03	0.67	0.86	2.34	1.28	2.17	0.52	1.03
19 - 20	4.04	1.78	4.62	1.21	0.85	0.78	1.02	2.68	1.62	2.39	0.68	1.61
20 - 21	12.76	3.78	2.96	1.50	2.89	2.58	0.82	0.93	0.66	2.72	1.21	1.35
21 - 22	2.54	1.09	1.13	2.75	2.82	0.66	1.03	1.18	0.69	1.11	4.11	4.10
22 - 23	3.98	6.37	1.81	3.29	1.57	0.72	0.64	1.03	0.73	0.61	N	1.65
23 - 24	5.13	3.15	1.89	1.73	2.29	0.68	1.67	0.58	1.39	1.18	N	0.77
24 - 25	2.92	3.32	4.43	1.18	1.53	0.61	2.04	0.62	2.40	1.30	1.45	1.07
25 - 26	0.68	6.83	1.12	0.65	2.05	1.26	1.43	1.16	1.48	0.98	8.44	0.50
26 - 27	7.66	1.93	1.26	0.57	3.31	0.64	1.47	1.50	1.41	1.68	1.71	0.47
27 - 28	7.66	1.75	1.17	0.87	4.66	0.51	0.88	4.95	0.77	1.28	1.25	0.56
28 - 29	12.93	1.97	1.53	0.94	1.74	0.73	0.66	3.79	4.31	0.68	1.19	0.62
29 - 30	3.99		3.96	1.54	1.55	0.79	0.59	5.79	2.32	1.83	1.40	1.22
30 - 31	4.75		0.89	1.36	0.90	1.63	0.67	0.51	0.83	2.26	3.30	1.56
31 - 1	1.36		4.34		0.87		1.15	0.51		0.89		1.00
Arithmetic Mean (3)	3.42	3.21	2.59	1.76	1.85	1.10	1.69	1.47	1.62	1.73	2.08	1.74
Standard Deviation (3)	3.34	2.13	1.54	1.18	1.14	0.80	1.20	1.29	1.54	1.29	1.88	1.27
Sample Size	31	27	31	30	31	30	31	30	30	31	28	31

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5006 Lough Navar - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.32	0.28	0.23	2.21	0.36	0.42	0.13	0.15	0.24	0.29	0.28	0.20
2 - 3	0.28	0.24	0.19	1.27	0.19	0.37	0.22	0.23	0.19	0.35	0.44	0.33
3 - 4	0.27	0.37	0.25	0.31	0.22	0.49	0.23	0.25	0.34	1.20	0.30	<0.14
4 - 5	<0.13	0.29	0.24	0.74	0.25	0.65	0.21	0.21	0.18	0.51	0.30	0.22
5 - 6	N	0.24	0.20	0.17	0.27	0.90	0.17	0.18	0.21	0.33	0.26	<0.16
6 - 7	N	0.33	0.19	0.26	0.23	0.25	<0.11	0.13	0.35	0.27	0.32	0.24
7 - 8	N	0.52	0.26	0.73	0.31	0.26	0.13	N	0.31	0.23	0.29	0.37
8 - 9	N	0.25	0.30	0.20	0.19	0.22	<0.14	N	0.22	0.25	0.25	0.33
9 - 10	N	0.21	N	0.24	0.25	0.27	<0.12	N	0.29	0.22	0.28	0.37
10 - 11	N	0.34	0.25	0.23	0.26	0.23	<0.12	0.25	0.19	0.28	0.26	0.26
11 - 12	<0.13	0.20	0.20	0.19	0.65	0.31	<0.11	0.20	0.21	0.27	0.26	0.24
12 - 13	0.57	0.23	0.23	0.19	0.46	0.27	<0.12	<0.11	0.20	0.27	0.35	0.26
13 - 14	0.43	0.50	0.23	0.24	1.06	0.29	<0.12	<0.15	0.23	0.26	0.22	N
14 - 15	0.30	0.38	0.24	0.26	0.28	0.62	0.25	<0.11	0.24	0.22	<0.19	0.22
15 - 16	0.42	0.33	0.35	0.27	0.27	0.21	0.23	0.17	0.27	0.18	0.26	0.32
16 - 17	0.33	0.31	0.30	0.26	0.24	0.22	0.16	<0.14	0.32	0.23	0.25	0.35
17 - 18	0.42	0.27	0.38	0.20	0.77	0.26	0.15	<0.12	0.47	0.19	0.34	0.36
18 - 19	0.22	0.21	0.29	0.25	0.52	0.35	0.21	0.17	0.27	0.30	0.19	0.19
19 - 20	0.24	0.34	0.32	0.19	0.59	0.38	<0.14	<0.12	0.42	0.25	0.28	<0.15
20 - 21	0.30	0.27	0.26	0.39	0.36	0.22	0.46	0.20	0.28	0.26	0.14	<0.18
21 - 22	0.23	0.32	0.24	0.16	0.31	0.30	0.28	0.18	0.53	0.29	0.16	0.37
22 - 23	0.16	0.37	0.66	0.20	0.37	0.24	0.27	0.13	0.55	0.24	N	0.32
23 - 24	0.39	0.31	0.41	0.26	0.30	0.23	0.26	0.16	0.75	0.28	0.23	0.38
24 - 25	0.25	0.29	0.23	0.24	0.33	0.22	0.23	0.29	1.67	0.27	0.19	0.37
25 - 26	0.24	0.37	0.29	0.44	0.32	0.22	0.26	0.23	1.55	0.28	0.22	0.47
26 - 27	0.22	0.28	0.35	0.18	0.34	0.17	N	0.18	0.38	0.32	0.25	N
27 - 28	0.74	0.22	0.62	0.17	0.33	0.22	0.17	0.20	0.32	0.29	0.27	N
28 - 29	0.62	0.26	0.32	0.18	0.65	0.19	0.15	0.26	0.43	0.45	0.62	N
29 - 30	0.36		0.39	0.23	0.27	0.23	0.12	0.34	0.31	0.20	0.23	N
30 - 31	0.31		0.23	0.45	0.47	0.19	0.21	0.49	1.06	0.26	0.30	0.30
31 - 1	0.24		0.34		0.46		0.19	0.43		0.28		<0.20
Arithmetic Mean (3)	0.32	0.30	0.30	0.38	0.38	0.31	0.17	0.19	0.43	0.31	0.27	0.26
Standard Deviation (3)	0.16	0.08	0.11	0.42	0.19	0.16	0.09	0.11	0.37	0.18	0.09	0.11
Sample Size	25	28	30	30	31	30	30	28	30	31	29	26

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5007 Barcombe Mills - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.47	4.04	0.60	0.32	0.27	0.54	1.01	0.52	1.19	0.60	1.16	2.74
2 - 3	0.56	2.00	0.58	0.34	0.43	0.47	1.53	0.55	0.91	1.89	0.48	2.32
3 - 4	0.36	2.20	0.61	0.18	0.31	0.34	0.75	0.47	1.33	0.84	1.28	2.65
4 - 5	0.29	1.99	0.96	0.27	0.75	0.68	0.80	1.29	0.85	1.38	1.94	3.93
5 - 6	1.96	1.54	0.97	0.37	0.23	0.92	0.54	0.56	0.54	1.99	0.47	2.67
6 - 7	0.65	1.09	0.58	0.20	0.25	0.72	0.69	0.57	0.61	1.46	0.50	3.99
7 - 8	0.35	0.63	0.72	N	0.51	0.51	1.33	0.38	0.33	0.56	0.91	1.20
8 - 9	0.50	0.95	0.88	N	0.81	0.39	0.67	0.54	0.32	0.39	0.34	0.62
9 - 10	1.75	0.83	N	N	0.37	0.37	0.32	0.41	0.39	0.58	0.30	0.43
10 - 11	1.35	0.85	N	N	1.12	0.35	0.66	1.14	0.36	0.42	0.43	0.95
11 - 12	0.91	1.56	N	N	2.33	0.51	0.43	0.55	0.39	0.47	0.54	0.40
12 - 13	2.09	1.87	N	N	N	0.48	0.21	0.75	0.45	0.78	1.04	0.40
13 - 14	0.94	1.93	N	N	N	0.32	0.49	0.41	0.94	0.27	0.40	0.40
14 - 15	0.71	1.76	N	0.30	3.52	0.44	N	0.36	0.86	0.59	1.09	0.59
15 - 16	0.44	1.25	N	N	2.29	0.90	N	0.21	0.52	0.43	1.88	0.49
16 - 17	1.39	1.19	N	N	0.98	0.45	0.43	0.52	0.42	0.25	1.51	1.38
17 - 18	0.75	2.48	2.10	N	0.63	0.52	0.48	0.31	0.61	0.56	0.47	0.66
18 - 19	0.44	1.17	1.84	N	0.62	0.30	0.50	0.90	0.54	0.52	0.83	0.47
19 - 20	3.51	1.77	3.50	N	0.99	0.55	0.82	0.77	0.97	1.04	1.39	0.56
20 - 21	4.36	2.46	2.48	N	N	0.91	0.60	0.59	0.75	0.77	1.11	2.51
21 - 22	0.88	0.57	0.62	N	N	0.36	0.54	0.30	1.56	0.27	3.15	1.83
22 - 23	3.49	0.85	1.24	0.53	1.51	0.29	N	0.60	1.28	0.86	1.39	0.25
23 - 24	3.60	0.62	0.72	0.30	1.28	0.35	N	0.28	1.10	0.45	1.48	0.40
24 - 25	4.85	1.05	4.95	0.31	0.91	0.57	0.38	0.53	0.94	0.28	0.55	0.29
25 - 26	2.54	5.46	0.35	0.54	0.48	0.39	0.70	0.87	0.70	0.56	1.80	0.24
26 - 27	1.47	1.86	0.34	0.30	0.59	0.28	0.50	0.70	0.45	0.52	0.55	0.28
27 - 28	2.08	0.52	0.57	0.24	1.66	0.46	0.38	3.09	0.56	0.45	0.63	0.24
28 - 29	13.87	0.97	0.67	0.36	2.10	0.45	0.35	0.91	1.28	0.40	0.33	2.02
29 - 30	5.12		0.42	0.71	0.59	0.48	0.67	1.09	0.80	0.51	2.17	0.65
30 - 31	0.67		0.26	0.49	0.88	0.92	0.44	1.83	0.43	0.76	5.83	0.72
31 - 1	2.73		0.74		0.48		0.53	0.91		0.54		0.92
Arithmetic Mean (3)	2.10	1.62	-	-	0.99	0.51	0.62	0.74	0.75	0.69	1.20	1.20
Standard Deviation (3)	2.60	1.07	-	-	0.79	0.19	0.29	0.55	0.34	0.44	1.10	1.10
Sample Size	31	28	23	16	27	30	27	31	30	31	30	31

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5008 Yarner Wood - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.42	2.49	0.34	0.41	2.63	1.08	2.23	0.63	0.49	0.76	N	1.91
2 - 3	0.33	0.65	0.40	<0.26	2.66	0.58	1.69	0.49	0.18	0.62	0.21	N
3 - 4	0.41	0.73	0.40	<0.31	1.61	0.45	2.56	0.36	0.15	0.47	1.14	N
4 - 5	<0.37	0.58	0.40	<0.32	0.57	N	0.37	<0.33	0.24	0.73	0.43	0.53
5 - 6	<0.40	0.60	0.42	0.28	0.37	1.55	<0.34	0.35	0.22	1.32	0.17	0.27
6 - 7	N	0.53	<0.30	0.47	0.44	0.60	<0.32	<0.29	0.36	0.81	0.72	1.20
7 - 8	<0.37	1.46	<0.30	N	0.36	0.57	1.24	<0.33	0.24	2.23	N	0.50
8 - 9	0.34	0.65	0.61	0.78	0.94	0.45	<0.31	<0.31	1.87	2.50	0.33	0.36
9 - 10	0.74	N	1.43	N	0.56	0.49	<0.34	1.12	0.19	0.44	2.03	0.30
10 - 11	0.93	N	0.42	1.17	0.92	0.38	<0.32	0.98	0.15	0.19	0.22	0.15
11 - 12	0.56	1.33	N	0.47	0.88	0.51	<0.35	0.26	0.26	0.22	0.39	0.47
12 - 13	0.56	1.39	0.45	0.53	2.28	0.42	<0.29	<0.22	0.29	0.21	0.18	0.13
13 - 14	0.42	1.21	0.42	0.61	1.86	0.51	<0.30	0.44	0.38	0.15	0.15	0.20
14 - 15	0.36	0.60	0.57	N	1.10	0.63	<0.30	<0.21	N	0.28	0.22	0.19
15 - 16	0.38	1.21	0.52	0.85	7.56	0.58	<0.31	<0.26	0.46	0.23	N	0.15
16 - 17	0.37	0.55	0.50	0.84	1.89	0.69	<0.36	<0.27	0.21	0.26	0.76	0.66
17 - 18	0.32	0.71	0.44	0.73	0.72	0.39	0.46	<0.22	0.29	N	0.42	0.29
18 - 19	0.38	0.86	<0.31	0.44	1.07	0.31	<0.36	<0.32	0.16	0.25	0.41	0.20
19 - 20	1.04	0.65	N	<0.39	1.51	0.90	0.64	0.34	0.42	0.17	0.50	1.19
20 - 21	1.54	0.82	1.18	N	3.46	1.25	0.37	<0.32	2.23	0.38	0.22	0.79
21 - 22	0.39	0.54	3.44	N	1.45	0.40	0.47	<0.33	1.49	0.17	0.62	0.36
22 - 23	1.68	0.48	0.98	0.77	1.53	0.41	0.49	0.45	1.46	0.12	0.35	0.33
23 - 24	3.14	<0.14	0.96	0.35	1.15	0.39	<0.33	0.40	0.36	0.18	0.48	<0.12
24 - 25	1.36	0.64	N	0.40	0.72	0.32	<0.29	0.28	1.54	0.13	0.32	0.16
25 - 26	1.26	0.79	0.41	0.46	0.87	0.42	0.62	0.43	0.68	0.14	0.19	<0.10
26 - 27	2.83	0.45	<0.34	0.48	0.87	0.36	0.66	1.08	0.35	0.17	0.18	0.13
27 - 28	2.64	0.40	0.49	0.39	2.37	0.36	<0.35	N	0.40	0.14	0.20	0.14
28 - 29	3.99	0.50	0.85	0.42	1.26	0.40	<0.32	0.68	0.14	0.15	0.18	0.09
29 - 30	3.57		1.38	0.81	0.80	0.43	<0.32	0.62	0.43	N	0.22	0.51
30 - 31	2.71		0.35	1.21	1.18	0.77	<0.33	2.00	0.26	0.16	1.65	0.24
31 - 1	8.16		0.45		0.97		0.67	1.67		0.48		0.32
Arithmetic Mean (3)	1.38	0.80	0.66	0.54	1.50	0.57	0.50	0.48	0.55	0.48	0.48	0.41
Standard Deviation (3)	1.70	0.48	0.64	0.29	1.35	0.29	0.62	0.47	0.57	0.59	0.46	0.41
Sample Size	30	26	28	25	31	29	31	30	29	29	27	29

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5009 High Muffles - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	2.60	3.13	1.65	0.47	0.75	0.68	0.29	0.34	1.33	0.44	0.23	0.80
2 - 3	1.88	5.89	2.46	0.51	0.70	0.49	0.40	0.98	1.74	0.36	0.23	0.31
3 - 4	0.43	0.96	2.30	6.50	0.87	0.62	1.11	1.41	2.17	0.40	0.22	0.27
4 - 5	1.76	0.59	0.78	1.66	0.58	6.82	0.75	0.40	5.32	0.30	0.29	0.34
5 - 6	2.10	1.34	1.05	1.27	0.48	0.88	0.55	<0.30	1.13	0.29	0.17	1.08
6 - 7	6.18	3.67	1.04	2.01	0.80	1.03	0.77	<0.32	4.52	0.32	0.28	0.69
7 - 8	1.24	1.00	0.50	0.60	1.31	0.57	1.58	<0.33	8.30	0.47	1.01	1.22
8 - 9	1.61	1.72	0.41	0.33	4.04	3.71	<0.32	<0.32	3.20	0.54	0.23	0.65
9 - 10	4.65	2.07	5.60	0.33	1.80	1.72	0.47	<0.32	1.35	1.37	0.27	0.51
10 - 11	11.63	1.50	10.54	0.30	0.61	0.57	0.57	0.84	0.80	1.37	0.22	0.53
11 - 12	5.45	1.01	3.63	2.02	0.35	0.93	0.74	1.55	1.16	0.33	0.56	0.34
12 - 13	8.70	0.44	1.98	2.90	0.41	1.38	0.55	<0.22	0.75	0.75	0.33	0.16
13 - 14	6.22	0.79	4.15	1.61	0.79	1.33	<0.30	0.24	3.37	1.61	0.15	0.26
14 - 15	2.57	2.05	2.34	1.22	1.45	0.48	<0.31	<0.22	1.34	0.39	0.14	0.18
15 - 16	1.51	2.80	0.48	1.44	1.38	0.40	<0.29	0.32	0.59	0.58	0.42	0.16
16 - 17	2.52	1.04	0.46	1.16	1.32	2.43	0.78	0.32	0.64	2.68	0.24	0.39
17 - 18	2.04	0.44	0.48	0.72	2.41	0.72	0.72	1.43	1.00	1.03	1.22	0.43
18 - 19	1.05	4.81	5.49	0.77	15.44	1.93	0.87	1.04	1.95	1.84	0.44	0.26
19 - 20	0.91	3.62	2.52	1.20	1.47	5.99	2.91	0.43	0.85	0.45	0.20	0.37
20 - 21	2.20	12.42	2.73	1.05	1.60	8.03	7.21	0.29	3.00	4.48	1.03	0.56
21 - 22	18.51	2.26	1.03	9.45	0.82	0.63	0.89	0.24	2.23	0.64	0.87	0.61
22 - 23	15.56	1.30	3.56	4.54	2.34	0.83	2.67	1.17	1.29	0.84	0.72	0.32
23 - 24	33.96	0.53	4.66	8.40	3.14	0.87	<0.31	2.32	0.86	0.24	0.64	0.19
24 - 25	0.58	0.42	8.75	3.68	1.73	4.08	<0.30	1.15	1.14	0.58	0.31	0.22
25 - 26	0.53	0.91	6.38	1.09	0.82	0.73	0.33	1.06	0.99	0.22	0.22	0.21
26 - 27	0.36	0.74	1.28	2.72	0.83	3.75	4.19	<0.20	0.70	0.34	0.16	N
27 - 28	2.91	0.41	2.31	3.71	1.17	0.53	<0.31	<0.20	0.43	0.17	0.29	N
28 - 29	4.13	0.58	5.52	2.46	0.49	0.49	<0.32	<0.21	1.04	0.20	0.19	0.21
29 - 30	9.56		3.05	1.75	1.60	0.32	<0.33	<0.22	1.91	0.18	0.34	0.30
30 - 31	3.86		1.61	0.66	2.38	0.41	0.80	0.99	0.73	0.18	0.25	0.32
31 - 1	1.67		0.76		4.51		<0.31	0.76		0.39		0.20
Arithmetic Mean (3)	5.12	2.09	2.89	2.22	1.88	1.78	0.99	0.60	1.86	0.77	0.39	0.42
Standard Deviation (3)	6.94	2.47	2.51	2.30	2.71	2.05	1.47	0.57	1.69	0.90	0.29	0.27
Sample Size	31	28	31	30	31	30	31	31	30	31	30	29

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5010 Strathvaich Dam - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	<0.38	1.01	0.58	<0.31	0.74	0.35	N	<0.27	<0.32	0.42	0.35	N
2 - 3	<0.41	0.58	0.73	0.73	0.32	0.48	0.28	<0.27	0.42	0.38	0.45	N
3 - 4	<0.39	0.49	<0.38	0.28	0.29	0.33	0.46	<0.28	0.38	0.84	<0.30	N
4 - 5	<0.40	0.44	<0.39	<0.28	0.32	0.34	0.27	<0.31	0.43	0.46	<0.30	N
5 - 6	0.51	<0.41	<0.38	0.29	0.33	1.74	0.41	<0.29	0.87	0.45	0.30	N
6 - 7	0.61	0.42	0.51	0.62	0.27	0.48	0.45	<0.29	1.25	0.37	0.30	N
7 - 8	0.45	0.40	0.43	0.34	0.27	0.40	<0.31	<0.29	1.82	0.36	0.37	N
8 - 9	0.97	0.42	0.39	<0.26	0.25	0.42	<0.30	<0.29	0.47	0.39	0.37	N
9 - 10	0.49	0.40	0.49	<0.25	0.36	0.41	0.30	<0.31	0.45	0.40	0.28	N
10 - 11	0.42	0.41	0.45	0.25	0.27	0.43	<0.31	0.57	0.64	0.36	0.39	N
11 - 12	0.59	0.43	0.43	0.71	0.39	<0.33	<0.28	<0.37	0.72	0.32	0.63	N
12 - 13	<0.41	<0.44	0.56	0.32	0.36	0.37	<0.27	<0.34	0.85	0.37	0.97	N
13 - 14	<0.41	<0.44	0.57	0.31	0.76	0.42	<0.28	<0.33	0.51	0.40	0.31	N
14 - 15	<0.43	0.45	0.47	0.40	0.72	0.35	<0.27	0.33	0.40	0.35	<0.31	N
15 - 16	0.39	0.82	0.57	0.40	0.37	<0.31	<0.27	<0.35	0.76	0.30	<0.30	0.32
16 - 17	<0.37	0.46	<0.35	0.29	0.35	<0.30	0.43	<0.36	0.54	0.39	<0.29	0.46
17 - 18	0.45	0.44	0.47	0.38	0.47	<0.28	0.37	<0.36	0.40	0.39	0.63	<0.29
18 - 19	<0.39	<0.42	<0.40	0.35	0.41	0.35	<0.30	0.48	0.36	0.38	0.74	<0.29
19 - 20	0.39	0.56	0.43	0.91	0.47	0.33	<0.30	0.35	0.45	0.35	1.67	<0.29
20 - 21	0.99	<0.41	0.47	0.67	0.42	0.61	0.31	0.30	0.51	0.47	0.50	<0.29
21 - 22	<0.43	0.68	0.41	1.10	0.46	N	0.29	0.33	0.55	0.38	<0.32	0.50
22 - 23	<0.43	<0.41	0.78	1.00	0.47	N	<0.30	0.70	0.54	0.33	<0.31	<0.30
23 - 24	0.51	<0.41	0.39	<0.26	0.43	<0.31	<0.30	0.37	0.91	0.45	<0.31	<0.29
24 - 25	0.40	<0.39	<0.40	0.26	0.41	0.34	<0.30	0.34	0.70	0.37	0.32	<0.29
25 - 26	0.56	0.36	<0.42	<0.26	0.40	0.37	<0.30	0.47	0.40	0.40	<0.28	<0.29
26 - 27	0.77	<0.37	<0.41	0.28	0.48	0.35	<0.31	0.43	0.43	0.38	0.37	0.30
27 - 28	0.68	0.38	0.42	0.27	0.41	0.32	0.24	0.46	0.42	0.38	0.42	<0.29
28 - 29	0.65	<0.39	<0.38	0.75	0.47	0.35	<0.23	0.38	0.44	0.53	<0.29	0.29
29 - 30	0.58		0.45	0.82	0.45	0.32	<0.27	0.40	0.37	0.63	N	1.28
30 - 31	0.45		0.40	0.51	0.45	N	<0.27	0.54	0.33	0.38	N	0.48
31 - 1	0.49		<0.34		0.35		<0.27	1.13		0.41		1.14
Arithmetric Mean (3)	0.44	0.40	0.40	0.43	0.42	0.39	0.22	0.32	0.58	0.41	0.39	-
Standard Deviation (3)	0.23	0.20	0.17	0.28	0.13	0.29	0.11	0.22	0.32	0.10	0.32	-
Sample Size	31	28	31	30	31	27	30	31	30	31	28	17

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5011 Glen Dye - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.46	0.26	0.46	0.33	N	0.28	<0.16	0.22	0.64	0.23	0.24	0.25
2 - 3	1.56	0.30	0.39	<0.18	0.17	0.29	0.25	0.50	0.47	0.29	0.30	<0.17
3 - 4	0.22	0.25	0.31	0.23	0.24	0.25	<0.12	0.28	0.43	0.16	0.39	<0.18
4 - 5	0.18	0.27	0.19	0.25	0.18	0.48	<0.13	0.21	0.50	0.17	0.22	<0.19
5 - 6	<0.17	0.21	0.19	0.27	0.28	0.82	<0.15	0.17	0.25	0.26	0.47	<0.17
6 - 7	0.86	2.04	0.28	0.57	0.24	0.25	<0.14	0.16	0.92	0.50	0.38	<0.18
7 - 8	1.77	0.24	0.17	0.23	0.22	0.40	<0.12	0.24	2.95	0.21	0.59	3.94
8 - 9	1.64	0.23	1.11	0.22	0.39	0.36	<0.14	<0.10	0.43	0.20	1.03	0.23
9 - 10	0.44	0.21	1.53	0.21	0.32	0.43	<0.14	0.34	0.76	0.29	0.39	0.97
10 - 11	2.08	1.20	0.50	0.18	0.34	0.20	<0.14	1.98	0.19	0.18	1.39	0.37
11 - 12	1.55	0.22	0.23	0.24	0.34	0.19	<0.12	0.84	0.33	0.17	0.57	0.45
12 - 13	1.65	0.19	0.18	0.20	0.32	0.22	<0.17	<0.14	0.29	0.21	0.23	0.19
13 - 14	0.42	0.26	0.20	0.25	0.56	0.26	<0.16	<0.15	0.21	0.29	0.20	0.44
14 - 15	0.21	0.20	0.19	0.26	0.95	0.40	0.19	0.17	0.25	0.18	0.21	0.21
15 - 16	0.49	1.26	0.21	0.24	N	0.26	0.27	<0.13	0.21	<0.17	0.20	N
16 - 17	0.28	0.24	0.23	0.27	0.20	0.37	0.44	0.17	0.25	0.23	<0.21	N
17 - 18	0.29	0.31	0.21	0.22	0.41	0.29	<0.16	<0.13	0.41	<0.17	2.99	N
18 - 19	0.25	0.31	0.17	0.25	0.30	0.40	<0.16	0.21	0.22	<0.18	1.08	0.18
19 - 20	0.26	1.10	0.16	0.62	0.28	0.54	0.30	<0.15	0.31	0.17	1.71	0.22
20 - 21	2.86	0.54	0.20	0.78	0.29	1.91	0.80	<0.15	0.46	0.64	2.36	2.16
21 - 22	8.10	0.24	0.17	3.61	0.32	0.56	0.93	<0.16	2.67	0.30	1.37	N
22 - 23	0.30	0.23	0.17	2.69	N	0.28	0.32	<0.14	0.66	0.21	0.75	0.28
23 - 24	0.17	0.19	1.75	0.79	0.20	0.31	<0.17	<0.17	0.16	0.29	0.18	<0.18
24 - 25	0.25	0.18	0.26	1.59	0.24	0.26	<0.14	<0.15	0.18	0.20	0.26	0.42
25 - 26	0.19	0.36	1.38	0.47	0.22	0.50	0.30	0.29	0.50	0.20	0.84	<0.18
26 - 27	0.49	0.23	<0.16	0.92	0.29	0.34	0.32	0.35	0.14	0.43	0.30	0.25
27 - 28	0.27	0.32	1.20	0.23	0.26	0.24	0.25	0.16	0.18	0.21	0.90	<0.18
28 - 29	0.37	0.26	1.02	2.08	0.39	0.19	0.19	0.90	0.21	0.24	0.20	0.27
29 - 30	0.19		0.96	0.64	0.32	0.20	0.30	0.34	0.33	0.20	<0.17	1.41
30 - 31	0.18		0.46	0.25	0.22	0.24	<0.18	0.52	0.22	0.22	0.24	1.68
31 - 1	0.45		0.28		0.22		0.31	1.43		0.23		2.11
Arithmetic Mean (3)	0.92	0.42	0.48	0.64	0.31	0.39	0.21	0.33	0.52	0.24	0.67	0.62
Standard Deviation (3)	1.51	0.44	0.47	0.82	0.15	0.32	0.21	0.43	0.65	0.11	0.69	0.90
Sample Size	31	28	31	30	28	30	31	31	30	31	30	27

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5326 Bush - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	N	N	1.27	1.08	2.66	0.76	1.09	0.98	0.94	0.61	0.48	0.51
2 - 3	N	1.98	0.62	0.78	3.57	1.80	6.20	0.35	1.08	1.13	1.38	1.64
3 - 4	0.49	0.55	0.56	1.02	0.99	1.72	0.99	<0.19	0.97	0.58	6.60	0.43
4 - 5	1.03	0.35	1.01	1.64	0.38	0.72	<0.22	0.27	1.61	1.13	2.86	1.02
5 - 6	0.63	0.32	0.99	1.70	0.39	4.39	0.26	0.33	2.42	1.62	0.65	1.29
6 - 7	1.18	1.32	2.78	3.43	0.53	1.40	3.91	0.26	2.97	1.15	1.49	2.35
7 - 8	1.16	N	1.56	1.13	0.48	0.46	1.62	0.35	1.94	2.52	0.64	0.98
8 - 9	1.35	N	0.98	1.24	0.80	0.75	0.51	0.77	0.55	1.92	0.58	0.78
9 - 10	0.69	N	2.73	1.48	1.15	0.73	0.32	0.95	0.46	0.46	0.39	0.61
10 - 11	1.06	1.48	1.29	1.17	0.98	0.56	0.51	1.65	0.89	2.39	0.32	0.53
11 - 12	1.80	0.62	2.01	0.92	1.06	2.26	0.39	0.82	0.93	0.33	1.01	0.55
12 - 13	0.78	0.57	0.87	0.70	1.30	1.68	1.24	<0.21	2.15	0.57	2.06	0.68
13 - 14	1.99	0.51	0.41	2.39	0.46	2.20	0.43	0.51	4.74	0.56	0.72	0.49
14 - 15	3.73	0.45	0.58	3.38	1.70	0.81	0.39	<0.19	2.57	0.35	1.43	0.31
15 - 16	0.85	0.82	0.43	4.86	2.04	0.68	<0.22	0.29	0.48	0.47	0.82	0.48
16 - 17	N	0.97	0.41	3.45	13.04	2.37	0.42	<0.22	2.25	0.87	2.22	0.48
17 - 18	N	0.62	0.46	1.00	2.46	0.59	0.24	0.27	3.22	0.51	2.37	0.46
18 - 19	N	0.71	0.55	1.21	1.79	7.70	0.50	0.34	0.48	0.62	3.69	0.59
19 - 20	N	0.67	0.49	2.55	1.58	1.22	0.74	<0.21	1.02	0.33	3.16	2.68
20 - 21	N	0.77	3.19	4.68	2.63	1.29	0.59	0.33	0.59	0.58	2.00	1.58
21 - 22	N	0.41	3.25	1.29	1.99	1.44	0.45	0.35	3.40	0.35	0.43	1.38
22 - 23	N	0.45	1.57	1.50	1.12	0.38	0.47	0.63	13.41	0.43	0.54	0.59
23 - 24	N	0.35	2.08	2.01	0.75	0.35	0.80	1.00	0.87	0.52	0.83	0.48
24 - 25	N	0.36	0.75	0.63	0.84	0.51	1.07	1.45	1.02	0.55	0.60	0.38
25 - 26	N	0.64	0.76	0.52	0.56	0.48	0.26	2.38	2.24	0.38	0.52	0.31
26 - 27	0.91	0.37	0.40	0.50	2.05	0.49	0.37	1.69	1.65	0.59	0.44	0.34
27 - 28	1.28	0.38	0.65	0.55	0.96	1.13	0.42	2.33	1.67	0.65	0.57	0.40
28 - 29	2.89	0.55	0.66	2.99	3.09	0.40	<0.21	1.60	3.60	0.64	0.38	0.57
29 - 30	3.80		2.27	3.78	4.44	0.42	<0.22	1.89	2.19	0.36	0.37	N
30 - 31	N		0.84	6.19	2.68	0.81	1.32	2.24	1.20	0.35	0.46	0.81
31 - 1	N		1.42		0.51		3.32	1.00		3.40		1.40
Arithmetic Mean (3)	-	0.68	1.22	1.99	1.90	1.35	0.94	0.82	2.12	0.87	1.33	0.84
Standard Deviation (3)	-	0.40	0.86	1.47	2.31	1.48	1.30	0.72	2.39	0.75	1.36	0.60
Sample Size	17	24	31	30	31	30	31	31	30	31	30	30

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5341 Auchencorth Moss - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Daily measurements - Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2										0.36	0.29	0.18
2 - 3										0.48	0.42	0.38
3 - 4										0.34	1.59	0.25
4 - 5										0.49	1.55	1.27
5 - 6										1.02	0.55	0.59
6 - 7										0.70	1.22	0.75
7 - 8										3.64	0.33	0.22
8 - 9									0.54	0.82	0.26	0.28
9 - 10									0.25	0.36	0.18	0.23
10 - 11									0.33	0.96	0.22	0.17
11 - 12									1.39	0.24	0.76	0.16
12 - 13									1.35	0.31	1.39	0.13
13 - 14									2.10	0.29	0.71	0.19
14 - 15									0.70	0.29	1.60	0.17
15 - 16									0.44	0.35	1.06	0.21
16 - 17									0.56	0.30	1.25	0.23
17 - 18									1.95	0.34	1.97	0.21
18 - 19									0.60	0.48	2.30	0.20
19 - 20									1.44	0.24	1.19	0.84
20 - 21									0.50	0.24	N	1.10
21 - 22									2.84	0.19	0.30	0.56
22 - 23									3.09	0.40	0.20	0.15
23 - 24									0.77	0.25	0.40	0.20
24 - 25									0.88	0.27	0.21	0.23
25 - 26									0.71	0.32	0.29	0.20
26 - 27									0.60	0.31	0.31	0.19
27 - 28									0.79	0.22	0.26	0.24
28 - 29									3.90	0.28	0.21	0.28
29 - 30									1.20	0.30	0.22	1.03
30 - 31									0.57	0.31	0.20	0.40
31 - 1										1.19		0.34
Arithmetic Mean (3)									1.19	0.53	0.74	0.37
Standard Deviation (3)									0.97	0.63	0.62	0.31
Sample Size	0	0	0	0	0	0	0	0	23	31	29	31

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre

Weekly Sites Analysed:

5301 Brockhill 1
5303 Caenby 1
5304 Camborne 1
5305 Camphill 1
5306 Cardington 2
5308 Corpach 1
5309 Cresselly 1
5310 Etton 1
5312 Husborne Crawley 1
5313 Little Horkesley 1
5314 Marshfield 1
5315 Ratcliffe 13
5316 Rockbourne 1
5317 Wakefield 24
5318 Waunfawr 1
5319 Fort Augustus 2
5320 Loch Leven 2
5321 Redesdale 2
5322 Hebden Bridge 2
5323 Preston Montford 2
5324 Bentra
5325 Pitlochry
5329 Cam Forest
5330 Cwmystwyth
5331 Rosemaund
5333 Fairseat
5334 Bylchau
5335 Crai
5336 Husborne Crawley 2
5337 Ratcliffe 18
5338 Forsinain
5339 Appleacre
5340 Garrary
5342 Auchencorth Moss

Variables Analysed	Units	Specified Variable Limit
sulphur dioxide as S	$\mu g\ m^{-3}$	1.000

Time Period Covered:

January 1998 - December 1998

National Environmental Technology Centre
Site: 5301 Brockhill 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	02/01 - 09/01	1.26	30/01 - 13/02	0.85	27/02 - 06/03	1.09	03/04 - 09/04	1.29	01/05 - 08/05	1.60	29/05 - 05/06	1.31
	09/01 - 16/01	1.41	13/02 - 20/02	5.34	06/03 - 13/03	0.83	09/04 - 17/04	1.26	08/05 - 15/05	1.66	05/06 - 12/06	0.58
	16/01 - 23/01	3.08	20/02 - 27/02	2.54	13/03 - 20/03	1.07	17/04 - 24/04	1.23	15/05 - 22/05	2.23	12/06 - 19/06	1.03
	23/01 - 30/01	12.27			20/03 - 27/03	1.12	24/04 - 01/05	1.05	22/05 - 29/05	1.59	19/06 - 26/06	0.63
					27/03 - 03/04	0.79					26/06 - 03/07	1.50
Arithmetic Mean		4.50		2.91		0.98		1.21		1.77		1.01
Standard Deviation		5.24		2.27		0.16		0.11		0.31		0.40
Valid Samples		4		3		5		4		4		5

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	03/07 - 10/07	1.26	07/08 - 14/08	0.57	28/08 - 11/09	1.12	02/10 - 09/10	1.45	30/10 - 06/11	0.80	04/12 - 11/12	1.21
	10/07 - 17/07	0.66	14/08 - 21/08	0.81	11/09 - 18/09	0.82	09/10 - 16/10	0.66	06/11 - 13/11	0.64	11/12 - 18/12	0.54
	17/07 - 24/07	0.47	21/08 - 28/08	1.03	18/09 - 25/09	0.96	16/10 - 23/10	0.61	13/11 - 20/11	0.83	18/12 - 31/12	0.43
	24/07 - 07/08	N			25/09 - 02/10	1.10	23/10 - 30/10	0.73	20/11 - 27/11	0.68		
									27/11 - 04/12	1.44		
Arithmetic Mean		0.79		0.80		1.00		0.86		0.88		0.72
Standard Deviation		0.41		0.23		0.14		0.40		0.33		0.43
Valid Samples		3		3		4		4		5		3

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5303 Caenby 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/12 - 08/01	2.96	03/02 - 10/02	6.73	03/03 - 10/03	4.55	31/03 - 07/04	3.03	28/04 - 06/05	3.31	02/06 - 09/06	2.16
	08/01 - 13/01	3.97	10/02 - 17/02	15.85	10/03 - 17/03	4.90	07/04 - 14/04	2.63	06/05 - 12/05	1.86	09/06 - 16/06	3.68
	13/01 - 20/01	4.73	17/02 - 24/02	3.93	17/03 - 31/03	2.16	14/04 - 21/04	3.48	12/05 - 19/05	2.04	16/06 - 23/06	5.09
	20/01 - 27/01	3.64	24/02 - 03/03	6.42			21/04 - 28/04	4.51	19/05 - 26/05	3.96	23/06 - 30/06	4.55
	27/01 - 03/02	5.09							26/05 - 02/06	3.12		
Arithmetic Mean		4.08		8.23		3.87		3.41		2.86		3.87
Standard Deviation		0.85		5.23		1.49		0.81		0.89		1.28
Valid Samples		5		4		3		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/06 - 07/07	N	04/08 - 11/08	4.18	02/09 - 08/09	3.62	01/10 - 06/10	1.16	03/11 - 10/11	3.48	01/12 - 08/12	3.25
	07/07 - 14/07	6.08	11/08 - 18/08	7.31	08/09 - 15/09	3.77	06/10 - 13/10	2.33	10/11 - 17/11	3.18	08/12 - 15/12	1.97
	14/07 - 21/07	3.75	18/08 - 25/08	5.31	15/09 - 22/09	4.49	13/10 - 20/10	3.69	17/11 - 24/11	2.18	15/12 - 22/12	4.57
	21/07 - 28/07	4.72	25/08 - 02/09	3.03	22/09 - 01/10	2.48	20/10 - 27/10	2.98	24/11 - 01/12	1.73	22/12 - 05/01	2.62
	28/07 - 04/08	2.62					27/10 - 03/11	4.66				
Arithmetic Mean		4.29		4.96		3.59		2.96		2.64		3.10
Standard Deviation		1.47		1.83		0.83		1.33		0.82		1.11
Valid Samples		4		4		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5304 Camborne 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	29/12 - 05/01	N	02/02 - 09/02	1.40	02/03 - 09/03	0.55	30/03 - 06/04	0.68	04/05 - 11/05	1.08	01/06 - 08/06	0.96
	05/01 - 12/01	0.80	09/02 - 16/02	1.01	09/03 - 16/03	0.94	06/04 - 13/04	0.70	11/05 - 18/05	1.78	08/06 - 15/06	0.85
	12/01 - 19/01	0.49	16/02 - 23/02	0.94	16/03 - 23/03	1.42	13/04 - 20/04	1.91	18/05 - 25/05	1.68	15/06 - 22/06	0.70
	19/01 - 26/01	1.49	23/02 - 02/03	0.80	23/03 - 30/03	0.84	20/04 - 27/04	0.64	25/05 - 01/06	1.22	22/06 - 29/06	0.54
	26/01 - 02/02	2.95					27/04 - 04/05	1.28				
Arithmetic Mean		1.43		1.04		0.94		1.04		1.44		0.76
Standard Deviation		1.09		0.26		0.36		0.55		0.34		0.18
Valid Samples		4		4		4		5		4		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	29/06 - 06/07	1.10	03/08 - 10/08	<0.32	31/08 - 07/09	1.30	28/09 - 05/10	0.96	02/11 - 09/11	0.54	30/11 - 07/12	1.24
	06/07 - 13/07	0.84	10/08 - 16/08	1.00	07/09 - 14/09	0.83	05/10 - 12/10	1.10	09/11 - 16/11	0.52	07/12 - 14/12	0.48
	13/07 - 20/07	0.48	16/08 - 24/08	0.67	14/09 - 21/09	1.05	12/10 - 19/10	0.61	16/11 - 23/11	0.62	14/12 - 21/12	0.46
	20/07 - 27/07	0.49	24/08 - 31/08	1.07	21/09 - 28/09	1.44	19/10 - 26/10	0.47	23/11 - 30/11	0.49	21/12 - 28/12	0.59
	27/07 - 03/08	<0.35					26/10 - 02/11	0.39			28/12 - 04/01	0.56
Arithmetic Mean		0.62		0.72		1.16		0.71		0.54		0.67
Standard Deviation		0.36		0.41		0.27		0.31		0.06		0.33
Valid Samples		5		4		4		5		4		5

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5305 Camphill 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	31/12 - 08/01	0.51	29/01 - 05/02	1.11	26/02 - 05/03	N	02/04 - 09/04	1.22	30/04 - 07/05	1.10	04/06 - 11/06	0.40
	08/01 - 15/01	0.72	05/02 - 12/02	0.39	05/03 - 12/03	0.87	09/04 - 16/04	0.65	07/05 - 14/05	2.79	11/06 - 18/06	0.51
	15/01 - 22/01	0.79	12/02 - 19/02	0.46	12/03 - 19/03	0.30	16/04 - 23/04	1.08	14/05 - 21/05	0.85	18/06 - 25/06	0.44
	22/01 - 29/01	1.96	19/02 - 26/02	0.23	19/03 - 26/03	0.46	23/04 - 30/04	0.96	21/05 - 28/05	0.44	25/06 - 02/07	0.61
					26/03 - 02/04	0.74			28/05 - 04/06	0.39		
Arithmetic Mean		0.99		0.55		0.59		0.98		1.11		0.49
Standard Deviation		0.65		0.39		0.26		0.24		0.98		0.09
Valid Samples		4		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	02/07 - 09/07	0.49	30/07 - 06/08	<0.23	03/09 - 10/09	0.63	01/10 - 08/10	0.46	29/10 - 05/11	0.44	03/12 - 10/12	0.55
	09/07 - 16/07	0.42	06/08 - 13/08	<0.22	10/09 - 17/09	0.66	08/10 - 15/10	0.34	05/11 - 12/11	0.37	10/12 - 17/12	0.26
	16/07 - 23/07	<0.21	13/08 - 20/08	<0.24	17/09 - 24/09	0.56	15/10 - 22/10	0.33	12/11 - 19/11	1.18	17/12 - 24/12	0.48
	23/07 - 30/07	0.29	20/08 - 27/08	0.54	24/09 - 01/10	0.87	22/10 - 29/10	0.34	19/11 - 26/11	0.74	24/12 - 31/12	N
			27/08 - 03/09	0.70					26/11 - 03/12	0.27		
Arithmetic Mean		0.33		0.32		0.68		0.37		0.60		0.43
Standard Deviation		0.17		0.28		0.13		0.06		0.37		0.15
Valid Samples		4		5		4		4		5		3

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5306 Cardington 2 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	06/01 - 14/01	4.25	04/02 - 11/02	6.63	04/03 - 11/03	5.33	01/04 - 09/04	2.57	29/04 - 06/05	2.71	03/06 - 10/06	3.03
	14/01 - 21/01	7.95	11/02 - 18/02	6.43	11/03 - 18/03	7.63	09/04 - 15/04	3.67	06/05 - 13/05	2.90	10/06 - 17/06	4.64
	21/01 - 28/01	3.13	18/02 - 25/02	7.14	18/03 - 25/03	4.36	15/04 - 22/04	5.53	13/05 - 20/05	2.27	17/06 - 24/06	11.10
	28/01 - 04/02	11.37	25/02 - 04/03	6.36	25/03 - 01/04	2.77	22/04 - 29/04	3.72	20/05 - 27/05	3.64	24/06 - 01/07	7.11
									27/05 - 03/06	2.24		
Arithmetic Mean		6.67		6.64		5.02		3.87		2.75		6.47
Standard Deviation		3.74		0.35		2.03		1.23		0.57		3.51
Valid Samples		4		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	5.04	29/07 - 05/08	3.35	03/09 - 09/09	2.66	30/09 - 07/10	1.28	28/10 - 05/11	8.16	02/12 - 09/12	7.97
	08/07 - 15/07	6.66	05/08 - 12/08	4.14	09/09 - 16/09	3.39	07/10 - 14/10	4.32	05/11 - 11/11	6.51	09/12 - 16/12	5.59
	15/07 - 22/07	4.75	12/08 - 19/08	4.57	16/09 - 23/09	3.74	14/10 - 21/10	6.28	11/11 - 18/11	8.18	16/12 - 23/12	10.65
	22/07 - 29/07	3.43	19/08 - 27/08	4.70	23/09 - 30/09	3.49	21/10 - 28/10	4.47	18/11 - 25/11	5.10	23/12 - 30/12	4.48
			27/08 - 03/09	3.96					25/11 - 02/12	9.36		
Arithmetic Mean		4.97		4.14		3.32		4.09		7.46		7.17
Standard Deviation		1.33		0.54		0.46		2.07		1.67		2.74
Valid Samples		4		5		4		4		5		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5308 Corpach 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	07/01 - 14/01	0.26	04/02 - 11/02	0.49	04/03 - 12/03	1.03	01/04 - 07/04	0.48	29/04 - 06/05	0.82	03/06 - 11/06	2.42
	14/01 - 21/01	0.59	11/02 - 18/02	2.02	12/03 - 18/03	0.39	07/04 - 22/04	N	06/05 - 13/05	0.68	11/06 - 17/06	1.95
	21/01 - 28/01	2.01	18/02 - 25/02	0.33	18/03 - 26/03	0.35	22/04 - 29/04	2.19	13/05 - 20/05	N	17/06 - 01/07	1.82
	28/01 - 04/02	0.88	25/02 - 04/03	0.63	26/03 - 01/04	0.72			20/05 - 27/05	0.53		
									27/05 - 03/06	1.09		
Arithmetric Mean		0.93		0.87		0.62		-		0.78		2.06
Standard Deviation		0.76		0.78		0.32		-		0.24		0.32
Valid Samples		4		4		4		2		4		3

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	0.47	29/07 - 05/08	0.49	02/09 - 09/09	1.28	01/10 - 08/10	1.01	04/11 - 18/11	0.62	03/12 - 10/12	1.06
	08/07 - 15/07	0.52	05/08 - 12/08	1.22	09/09 - 16/09	0.64	08/10 - 14/10	0.31	18/11 - 25/11	0.64	10/12 - 17/12	0.23
	15/07 - 22/07	0.93	12/08 - 19/08	0.52	16/09 - 23/09	N	14/10 - 21/10	0.44	25/11 - 03/12	0.24	17/12 - 06/01	0.62
	22/07 - 29/07	0.49	19/08 - 02/09	1.07	23/09 - 01/10	0.35	21/10 - 28/10	0.31				
							28/10 - 04/11	0.81				
Arithmetric Mean		0.60		0.82		0.76		0.58		0.50		0.64
Standard Deviation		0.22		0.37		0.48		0.32		0.23		0.41
Valid Samples		4		4		3		5		3		3

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5309 Cresselly 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	07/01 - 14/01	0.83	04/02 - 11/02	0.73	04/03 - 11/03	1.04	01/04 - 08/04	0.94	29/04 - 06/05	1.14	03/06 - 10/06	1.28
	14/01 - 21/01	0.77	11/02 - 18/02	1.19	11/03 - 18/03	0.57	08/04 - 15/04	0.93	06/05 - 13/05	1.84	10/06 - 17/06	0.87
	21/01 - 28/01	2.38	18/02 - 25/02	0.84	18/03 - 25/03	1.02	15/04 - 22/04	0.88	13/05 - 20/05	3.52	17/06 - 24/06	0.59
	28/01 - 04/02	3.24	25/02 - 04/03	0.77	25/03 - 01/04	1.48	22/04 - 29/04	0.49	20/05 - 28/05	0.68	24/06 - 01/07	0.68
									28/05 - 03/06	2.15		
Arithmetic Mean		1.80		0.88		1.03		0.81		1.86		0.85
Standard Deviation		1.21		0.21		0.37		0.22		1.09		0.30
Valid Samples		4		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	0.68	29/07 - 05/08	0.70	02/09 - 09/09	0.48	30/09 - 07/10	1.48	04/11 - 11/11	0.87	02/12 - 09/12	2.00
	08/07 - 15/07	0.76	05/08 - 12/08	1.30	09/09 - 16/09	0.63	07/10 - 14/10	0.88	11/11 - 18/11	1.10	09/12 - 16/12	0.43
	15/07 - 22/07	0.75	12/08 - 19/08	0.54	16/09 - 23/09	1.40	14/10 - 21/10	0.89	18/11 - 25/11	1.07	16/12 - 23/12	0.56
	22/07 - 29/07	0.40	19/08 - 26/08	0.61	23/09 - 30/09	1.56	21/10 - 28/10	0.62	25/11 - 02/12	0.99	23/12 - 07/01	0.40
			26/08 - 02/09	0.86			28/10 - 04/11	0.82				
Arithmetic Mean		0.65		0.80		1.02		0.94		1.01		0.85
Standard Deviation		0.17		0.30		0.54		0.32		0.10		0.77
Valid Samples		4		5		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5310 Etton 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	06/01 - 13/01	11.30	03/02 - 10/02	4.46	04/03 - 11/03	3.34	31/03 - 08/04	3.18	28/04 - 05/05	1.21	31/05 - 02/06	1.34
	13/01 - 21/01	2.93	10/02 - 18/02	7.15	11/03 - 17/03	0.98	08/04 - 14/04	0.82	05/05 - 14/05	2.58	02/06 - 09/06	3.58
	21/01 - 28/01	9.24	18/02 - 24/02	7.89	17/03 - 24/03	2.52	14/04 - 21/04	2.52	14/05 - 20/05	2.66	09/06 - 16/06	1.70
	28/01 - 03/02	4.21	24/02 - 04/03	5.85	24/03 - 31/03	7.89	21/04 - 28/04	7.51	20/05 - 26/05	1.01	16/06 - 23/06	8.01
									26/05 - 31/05	N		
Arithmetic Mean		6.92		6.34		3.68		3.51		1.86		3.66
Standard Deviation		3.99		1.51		2.97		2.85		0.88		3.06
Valid Samples		4		4		4		4		4		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	23/06 - 28/07	N	04/08 - 11/08	2.44	01/09 - 08/09	2.84	29/09 - 06/10	0.67	04/11 - 10/11	2.99	01/12 - 08/12	0.86
	28/07 - 04/08	1.76	11/08 - 18/08	2.72	08/09 - 15/09	1.91	06/10 - 14/10	1.02	10/11 - 18/11	2.12	08/12 - 15/12	4.34
			18/08 - 24/08	4.55	15/09 - 22/09	3.44	14/10 - 21/10	1.88	18/11 - 24/11	8.27	15/12 - 22/12	4.86
			24/08 - 01/09	2.11	22/09 - 29/09	0.87	21/10 - 27/10	2.54	24/11 - 01/12	0.40	22/12 - 04/01	4.49
							27/10 - 04/11	1.32				
Arithmetic Mean		-		2.95		2.26		1.49		3.44		3.64
Standard Deviation		-		1.09		1.12		0.74		3.39		1.87
Valid Samples		1		4		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5312 Husborne Crawley 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/12 - 06/01	1.17	03/02 - 10/02	3.82	03/03 - 10/03	1.16	31/03 - 07/04	1.40	28/04 - 05/05	2.76	02/06 - 09/06	1.57
	06/01 - 13/01	1.92	10/02 - 17/02	2.72	10/03 - 17/03	4.11	07/04 - 14/04	2.37	05/05 - 12/05	3.74	09/06 - 23/06	1.64
	13/01 - 20/01	1.89	17/02 - 24/02	2.95	17/03 - 24/03	4.04	14/04 - 21/04	2.62	12/05 - 19/05	5.84	23/06 - 30/06	0.93
	20/01 - 27/01	5.78	24/02 - 03/03	2.35	24/03 - 31/03	1.89	21/04 - 28/04	2.02	19/05 - 26/05	3.00		
	27/01 - 03/02	8.52							26/05 - 02/06	2.36		
Arithmetic Mean		3.86		2.96		2.80		2.10		3.54		1.38
Standard Deviation		3.17		0.62		1.50		0.53		1.38		0.39
Valid Samples		5		4		4		4		5		3

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/06 - 07/07	3.00	04/08 - 11/08	1.34	01/09 - 08/09	2.65	29/09 - 06/10	1.96	03/11 - 10/11	1.24	01/12 - 08/12	4.84
	07/07 - 14/07	1.75	11/08 - 18/08	1.18	08/09 - 15/09	1.16	06/10 - 13/10	1.37	10/11 - 17/11	1.82	08/12 - 15/12	0.93
	14/07 - 21/07	0.81	18/08 - 25/08	1.26	15/09 - 22/09	1.13	13/10 - 20/10	1.19	17/11 - 24/11	2.50	15/12 - 22/12	1.68
	21/07 - 28/07	1.30	25/08 - 01/09	2.84	22/09 - 29/09	2.37	20/10 - 27/10	N	24/11 - 01/12	3.48	22/12 - 29/12	0.71
	28/07 - 04/08	1.67					27/10 - 03/11	0.98				
Arithmetic Mean		1.71		1.65		1.83		1.37		2.26		2.04
Standard Deviation		0.81		0.79		0.80		0.42		0.96		1.91
Valid Samples		5		4		4		4		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5313 Little Horkesley 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	31/12 - 07/01	2.13	04/02 - 11/02	3.69	04/03 - 11/03	2.01	01/04 - 08/04	2.63	29/04 - 06/05	1.31	03/06 - 10/06	1.51
	07/01 - 14/01	2.44	11/02 - 18/02	3.27	11/03 - 18/03	2.93	08/04 - 15/04	2.11	06/05 - 13/05	2.36	10/06 - 17/06	1.61
	14/01 - 21/01	1.94	18/02 - 25/02	2.44	18/03 - 25/03	2.56	15/04 - 22/04	2.95	13/05 - 20/05	3.22	17/06 - 24/06	1.63
	21/01 - 28/01	4.88	25/02 - 04/03	1.75	25/03 - 01/04	3.60	22/04 - 29/04	2.67	20/05 - 27/05	1.52	24/06 - 01/07	1.57
	28/01 - 04/02	7.13							27/05 - 03/06	2.45		
Arithmetic Mean		3.71		2.79		2.77		2.59		2.17		1.58
Standard Deviation		2.25		0.86		0.67		0.35		0.77		0.05
Valid Samples		5		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	1.96	29/07 - 05/08	0.81	02/09 - 09/09	2.58	30/09 - 07/10	1.49	28/10 - 05/11	N	02/12 - 09/12	4.47
	08/07 - 15/07	1.21	05/08 - 12/08	2.26	09/09 - 16/09	1.38	07/10 - 14/10	0.96	05/11 - 11/11	1.57	09/12 - 16/12	1.45
	15/07 - 22/07	1.95	12/08 - 19/08	1.60	16/09 - 23/09	1.63	14/10 - 21/10	1.49	11/11 - 18/11	1.89	16/12 - 23/12	2.44
	22/07 - 29/07	1.74	19/08 - 26/08	1.89	23/09 - 30/09	3.09	21/10 - 28/10	0.85	18/11 - 25/11	2.39	23/12 - 30/12	0.98
			26/08 - 02/09	2.79					25/11 - 02/12	3.18		
Arithmetic Mean		1.71		1.87		2.17		1.20		2.26		2.33
Standard Deviation		0.35		0.74		0.80		0.34		0.70		1.55
Valid Samples		4		5		4		4		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5314 Marshfield 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/12 - 06/01	0.97	03/02 - 10/02	1.51	03/03 - 10/03	1.21	31/03 - 07/04	1.43	28/04 - 05/05	2.53	02/06 - 09/06	1.76
	06/01 - 13/01	1.65	10/02 - 17/02	1.64	10/03 - 17/03	1.20	07/04 - 15/04	2.15	05/05 - 12/05	1.19	09/06 - 16/06	0.59
	13/01 - 20/01	1.28	17/02 - 24/02	1.47	17/03 - 24/03	2.62	15/04 - 21/04	1.26	12/05 - 19/05	5.50	16/06 - 23/06	1.03
	20/01 - 27/01	3.07	24/02 - 03/03	1.64	24/03 - 31/03	1.18	21/04 - 28/04	1.13	19/05 - 26/05	3.22	23/06 - 30/06	0.68
	27/01 - 03/02	4.70							26/05 - 02/06	1.91		
Arithmetic Mean		2.33		1.56		1.55		1.49		2.87		1.02
Standard Deviation		1.55		0.09		0.71		0.45		1.65		0.53
Valid Samples		5		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/06 - 07/07	2.83	04/08 - 11/08	1.63	01/09 - 08/09	1.08	29/09 - 06/10	1.54	03/11 - 10/11	1.05	01/12 - 08/12	3.57
	07/07 - 14/07	0.79	11/08 - 18/08	0.68	08/09 - 15/09	0.67	06/10 - 13/10	1.32	10/11 - 17/11	1.20	08/12 - 15/12	0.74
	14/07 - 21/07	0.65	18/08 - 25/08	1.28	15/09 - 22/09	1.39	13/10 - 20/10	N	17/11 - 24/11	1.86	15/12 - 22/12	0.97
	21/07 - 28/07	0.65	25/08 - 01/09	1.31	22/09 - 29/09	0.39	20/10 - 27/10	3.64	24/11 - 01/12	1.60	22/12 - 30/12	0.50
	28/07 - 04/08	0.85					27/10 - 03/11	0.99				
Arithmetic Mean		1.15		1.22		0.88		1.87		1.43		1.44
Standard Deviation		0.94		0.40		0.44		1.20		0.37		1.43
Valid Samples		5		4		4		4		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5315 Ratcliffe 13 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	29/12 - 05/01	2.36	29/01 - 05/02	6.76	26/02 - 05/03	7.12	02/04 - 09/04	2.90	30/04 - 07/05	9.56	04/06 - 11/06	1.69
	05/01 - 08/01	2.55	05/02 - 12/02	3.65	05/03 - 12/03	2.96	09/04 - 16/04	3.25	07/05 - 14/05	N	11/06 - 18/06	1.77
	08/01 - 15/01	1.96	12/02 - 19/02	5.35	12/03 - 19/03	2.22	16/04 - 23/04	2.95	14/05 - 21/05	6.20	18/06 - 25/06	2.42
	15/01 - 22/01	3.00	19/02 - 26/02	3.13	19/03 - 26/03	4.42	23/04 - 30/04	2.95	21/05 - 28/05	3.04	25/06 - 02/07	4.13
	22/01 - 29/01	4.94			26/03 - 02/04	2.54			28/05 - 04/06	3.00		
Arithmetic Mean		2.96		4.72		3.85		3.01		5.45		2.50
Standard Deviation		1.17		1.65		2.01		0.16		3.13		1.13
Valid Samples		5		4		5		4		4		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	02/07 - 09/07	4.22	30/07 - 06/08	2.67	03/09 - 10/09	2.06	01/10 - 08/10	3.42	29/10 - 05/11	3.21	03/12 - 10/12	3.27
	09/07 - 16/07	2.85	06/08 - 13/08	4.22	10/09 - 17/09	2.74	08/10 - 15/10	2.36	05/11 - 12/11	3.57	10/12 - 17/12	1.29
	16/07 - 23/07	1.49	13/08 - 20/08	1.78	17/09 - 24/09	2.01	15/10 - 22/10	2.03	12/11 - 19/11	4.02	17/12 - 24/12	2.65
	23/07 - 30/07	3.84	20/08 - 27/08	1.76	24/09 - 01/10	4.34	22/10 - 29/10	2.87	19/11 - 26/11	2.71	24/12 - 31/12	1.44
			27/08 - 03/09	7.55					26/11 - 03/12	2.45		
Arithmetic Mean		3.10		3.60		2.79		2.67		3.19		2.16
Standard Deviation		1.22		2.43		1.08		0.61		0.63		0.96
Valid Samples		4		5		4		4		5		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5316 Rockbourne 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	31/12 - 07/01	0.61	04/02 - 11/02	1.08	04/03 - 11/03	0.73	01/04 - 08/04	0.69	29/04 - 06/05	2.72	03/06 - 10/06	1.21
	07/01 - 14/01	0.95	11/02 - 18/02	1.22	11/03 - 18/03	2.19	08/04 - 15/04	0.92	06/05 - 13/05	2.76	10/06 - 17/06	0.68
	14/01 - 21/01	1.44	18/02 - 25/02	1.53	18/03 - 25/03	2.07	15/04 - 22/04	1.30	13/05 - 20/05	2.22	17/06 - 24/06	0.95
	21/01 - 28/01	2.56	25/02 - 04/03	0.83	25/03 - 01/04	1.03	22/04 - 29/04	0.74	20/05 - 27/05	1.41	24/06 - 01/07	0.63
	28/01 - 04/02	3.34							27/05 - 03/06	0.72		
Arithmetic Mean		1.78		1.16		1.50		0.91		1.96		0.87
Standard Deviation		1.14		0.29		0.73		0.27		0.88		0.27
Valid Samples		5		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	1.65	29/07 - 05/08	0.32	02/09 - 09/09	0.87	30/09 - 07/10	1.03	04/11 - 11/11	0.81	02/12 - 09/12	1.85
	08/07 - 15/07	0.45	05/08 - 12/08	0.88	09/09 - 16/09	0.88	07/10 - 14/10	1.75	11/11 - 18/11	1.00	09/12 - 16/12	0.39
	15/07 - 22/07	0.69	12/08 - 19/08	0.57	16/09 - 23/09	1.49	14/10 - 21/10	0.95	18/11 - 25/11	1.42	16/12 - 23/12	1.00
	22/07 - 29/07	0.50	19/08 - 26/08	0.62	23/09 - 30/09	1.68	21/10 - 28/10	0.54	25/11 - 02/12	1.30	23/12 - 30/12	0.43
			26/08 - 02/09	1.84			28/10 - 04/11	1.12				
Arithmetic Mean		0.82		0.85		1.23		1.08		1.13		0.92
Standard Deviation		0.56		0.59		0.42		0.43		0.28		0.68
Valid Samples		4		5		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5317 Wakefield 24 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	31/12 - 07/01	4.00	04/02 - 11/02	2.01	04/03 - 11/03	1.80	01/04 - 08/04	2.90	29/04 - 06/05	1.69	03/06 - 10/06	2.77
	07/01 - 14/01	6.02	11/02 - 18/02	2.19	11/03 - 18/03	1.74	08/04 - 15/04	2.02	06/05 - 13/05	4.26	10/06 - 17/06	4.90
	14/01 - 21/01	5.70	18/02 - 25/02	4.08	18/03 - 25/03	4.84	15/04 - 22/04	2.08	13/05 - 20/05	7.82	17/06 - 24/06	2.53
	21/01 - 28/01	7.40	25/02 - 04/03	1.64	25/03 - 01/04	4.94	22/04 - 29/04	2.85	20/05 - 27/05	3.19	24/06 - 01/07	1.24
	28/01 - 04/02	9.02							27/05 - 03/06	9.86		
Arithmetic Mean		6.43		2.48		3.33		2.46		5.36		2.86
Standard Deviation		1.89		1.09		1.80		0.48		3.38		1.52
Valid Samples		5		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	1.91	29/07 - 05/08	2.55	02/09 - 09/09	2.87	30/09 - 07/10	2.93	04/11 - 11/11	2.23	02/12 - 09/12	5.75
	08/07 - 15/07	0.97	05/08 - 12/08	2.48	09/09 - 16/09	0.99	07/10 - 14/10	1.23	11/11 - 18/11	2.90	09/12 - 16/12	3.80
	15/07 - 22/07	1.43	12/08 - 19/08	0.71	16/09 - 23/09	3.76	14/10 - 21/10	1.70	18/11 - 25/11	7.91	16/12 - 23/12	3.13
	22/07 - 29/07	0.95	19/08 - 26/08	0.99	23/09 - 30/09	4.11	21/10 - 28/10	1.09	25/11 - 02/12	3.85	23/12 - 30/12	3.31
			26/08 - 02/09	3.13			28/10 - 04/11	1.71				
Arithmetic Mean		1.32		1.97		2.93		1.73		4.22		4.00
Standard Deviation		0.46		1.06		1.39		0.72		2.55		1.20
Valid Samples		4		5		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5318 Waunfawr 1 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	07/01 - 14/01	0.69	04/02 - 11/02	1.27	04/03 - 11/03	0.72	01/04 - 08/04	N	29/04 - 06/05	1.21	03/06 - 10/06	0.87
	14/01 - 21/01	0.39	11/02 - 19/02	0.63	11/03 - 18/03	0.76	08/04 - 15/04	N	06/05 - 13/05	0.71	10/06 - 17/06	0.60
	21/01 - 28/01	0.81	19/02 - 25/02	0.93	18/03 - 25/03	0.91	15/04 - 22/04	2.39	13/05 - 20/05	2.04	17/06 - 24/06	0.51
	28/01 - 04/02	0.98	25/02 - 04/03	0.76	25/03 - 01/04	0.76	22/04 - 29/04	1.36	20/05 - 27/05	0.64	24/06 - 01/07	0.46
									27/05 - 03/06	1.18		
Arithmetic Mean		0.72		0.90		0.79		-		1.15		0.61
Standard Deviation		0.25		0.28		0.08		-		0.56		0.18
Valid Samples		4		4		4		2		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	0.52	29/07 - 05/08	0.37	02/09 - 09/09	0.63	30/09 - 07/10	3.84	04/11 - 11/11	0.85	02/12 - 09/12	2.09
	08/07 - 15/07	0.39	05/08 - 12/08	0.52	09/09 - 16/09	0.70	07/10 - 14/10	1.02	11/11 - 18/11	1.05	09/12 - 16/12	0.64
	15/07 - 22/07	0.31	12/08 - 19/08	0.44	16/09 - 23/09	1.62	14/10 - 21/10	0.74	18/11 - 25/11	1.16	16/12 - 23/12	0.66
	22/07 - 29/07	0.26	19/08 - 26/08	0.35	23/09 - 30/09	2.97	21/10 - 28/10	0.63	25/11 - 02/12	1.35	23/12 - 04/01	0.89
			26/08 - 02/09	0.57			28/10 - 04/11	0.84				
Arithmetic Mean		0.37		0.45		1.48		1.41		1.10		1.07
Standard Deviation		0.11		0.09		1.09		1.37		0.21		0.69
Valid Samples		4		5		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5319 Fort Augustus 2 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/12 - 05/01	<0.43	03/02 - 09/02	<0.40	02/03 - 09/03	0.34	30/03 - 06/04	0.32	04/05 - 11/05	0.34	26/05 - 08/06	0.27
	05/01 - 12/01	0.35	09/02 - 16/02	0.32	09/03 - 16/03	0.90	06/04 - 14/04	0.28	11/05 - 18/05	0.84	08/06 - 22/06	0.25
	12/01 - 19/01	<0.35	16/02 - 23/02	0.37	16/03 - 23/03	0.31	14/04 - 20/04	0.59	18/05 - 26/05	0.74	22/06 - 06/07	0.28
	19/01 - 26/01	0.41	23/02 - 02/03	0.33	23/03 - 30/03	0.33	20/04 - 27/04	0.70				
	26/01 - 03/02	0.35					27/04 - 04/05	0.43				
Arithmetic Mean		0.30		0.30		0.47		0.46		0.64		0.27
Standard Deviation		0.10		0.07		0.29		0.18		0.27		0.01
Valid Samples		5		4		4		5		3		3

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	06/07 - 14/07	N	04/08 - 17/08	0.91	27/08 - 08/09	N	28/09 - 05/10	2.60	02/11 - 12/11	1.05	07/12 - 14/12	N
	14/07 - 20/07	N	17/08 - 24/08	N	08/09 - 14/09	0.35	05/10 - 12/10	0.87	12/11 - 16/11	N	14/12 - 21/12	N
	20/07 - 27/07	N	24/08 - 27/08	N	14/09 - 21/09	0.56	12/10 - 19/10	0.84	16/11 - 23/11	0.95		
	27/07 - 04/08	N			21/09 - 28/09	2.85	19/10 - 26/10	0.68	23/11 - 07/12	0.38		
							26/10 - 02/11	0.69				
Arithmetic Mean		-		-		1.26		1.14		0.79		-
Standard Deviation		-		-		1.39		0.82		0.36		-
Valid Samples		0		1		3		5		3		0

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5320 Loch Leven 2 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	29/12 - 05/01	2.20	02/02 - 09/02	4.53	02/03 - 09/03	1.24	30/03 - 06/04	0.83	04/05 - 11/05	2.22	01/06 - 07/06	1.26
	05/01 - 12/01	2.16	09/02 - 16/02	3.81	09/03 - 16/03	2.17	06/04 - 13/04	<0.75	11/05 - 18/05	1.58	07/06 - 15/06	0.94
	12/01 - 19/01	3.13	16/02 - 23/02	4.56	16/03 - 23/03	1.22	13/04 - 20/04	1.28	18/05 - 25/05	0.97	15/06 - 29/06	1.45
	19/01 - 26/01	1.43	23/02 - 02/03	2.77	23/03 - 30/03	1.57	20/04 - 27/04	2.09	25/05 - 01/06	0.50		
	26/01 - 02/02	2.05					27/04 - 04/05	1.95				
Arithmetic Mean		2.19		3.92		1.55		1.30		1.32		1.21
Standard Deviation		0.61		0.84		0.44		0.73		0.75		0.26
Valid Samples		5		4		4		5		4		3

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	29/06 - 08/07	0.55	03/08 - 10/08	1.58	31/08 - 07/09	2.67	28/09 - 05/10	1.40	02/11 - 09/11	1.40	30/11 - 07/12	<0.61
	08/07 - 13/07	1.08	10/08 - 17/08	2.29	07/09 - 14/09	1.29	05/10 - 12/10	2.44	09/11 - 16/11	1.80	07/12 - 14/12	4.73
	13/07 - 20/07	1.15	17/08 - 24/08	1.37	14/09 - 21/09	1.82	12/10 - 19/10	1.97	16/11 - 23/11	1.56	14/12 - 21/12	4.04
	20/07 - 27/07	1.18	24/08 - 31/08	2.01	21/09 - 28/09	2.27	19/10 - 26/10	0.80	23/11 - 30/11	2.35	21/12 - 29/12	5.44
	27/07 - 03/08	0.68					26/10 - 02/11	1.48				
Arithmetic Mean		0.93		1.81		2.01		1.62		1.78		3.63
Standard Deviation		0.29		0.41		0.59		0.62		0.42		2.29
Valid Samples		5		4		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5321 Redesdale 2 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/12 - 06/01	0.66	03/02 - 10/02	0.81	03/03 - 10/03	1.07	31/03 - 07/04	0.87	28/04 - 05/05	1.35	02/06 - 09/06	0.58
	06/01 - 13/01	1.44	10/02 - 17/02	0.55	10/03 - 17/03	0.71	07/04 - 14/04	0.27	05/05 - 12/05	1.27	09/06 - 16/06	0.95
	13/01 - 20/01	0.72	17/02 - 24/02	1.05	17/03 - 24/03	0.64	14/04 - 21/04	0.74	12/05 - 19/05	1.67	16/06 - 23/06	0.35
	20/01 - 27/01	0.62	24/02 - 03/03	1.05	24/03 - 31/03	1.26	21/04 - 28/04	1.96	19/05 - 26/05	0.53	23/06 - 30/06	0.93
	27/01 - 03/02	0.56							26/05 - 02/06	N		
Arithmetic Mean		0.80		0.87		0.92		0.96		1.21		0.70
Standard Deviation		0.36		0.24		0.30		0.72		0.48		0.29
Valid Samples		5		4		4		4		4		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/06 - 07/07	0.46	04/08 - 11/08	<0.12	01/09 - 08/09	1.00	29/09 - 06/10	0.78	03/11 - 10/11	1.15	01/12 - 08/12	0.39
	07/07 - 14/07	0.51	11/08 - 18/08	0.45	08/09 - 15/09	0.52	06/10 - 13/10	0.36	10/11 - 17/11	0.71	08/12 - 15/12	1.07
	14/07 - 21/07	0.41	18/08 - 25/08	0.49	15/09 - 15/09	0.46	13/10 - 20/10	0.88	17/11 - 24/11	2.23	15/12 - 22/12	1.95
	21/07 - 28/07	0.53	25/08 - 01/09	0.82	22/09 - 22/09	0.56	20/10 - 27/10	0.42	24/11 - 01/12	1.49	22/12 - 29/12	2.40
	28/07 - 04/08	0.72					27/10 - 03/11	0.62				
Arithmetic Mean		0.53		0.45		0.64		0.61		1.39		1.45
Standard Deviation		0.12		0.31		0.25		0.22		0.65		0.90
Valid Samples		5		4		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5322 Hebden Bridge 2 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	07/01 - 14/01	2.76	04/02 - 11/02	1.78	04/03 - 11/03	2.36	01/04 - 08/04	2.29	29/04 - 06/05	2.52	03/06 - 10/06	2.49
	14/01 - 21/01	1.69	11/02 - 18/02	2.26	11/03 - 17/03	1.59	08/04 - 15/04	1.46	06/05 - 13/05	1.84	10/06 - 17/06	1.04
	21/01 - 28/01	4.93	18/02 - 25/02	2.08	17/03 - 25/03	2.53	15/04 - 22/04	2.64	13/05 - 20/05	16.78	17/06 - 24/06	1.66
	28/01 - 04/02	7.04	25/02 - 04/03	1.34	25/03 - 01/04	2.79	22/04 - 29/04	2.69	20/05 - 27/05	4.38	24/06 - 01/07	0.75
									27/05 - 03/06	2.57		
Arithmetic Mean		4.11		1.86		2.31		2.27		5.62		1.48
Standard Deviation		2.38		0.40		0.52		0.57		6.31		0.77
Valid Samples		4		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	1.26	29/07 - 05/08	0.57	02/09 - 09/09	1.82	30/09 - 07/10	1.43	04/11 - 11/11	1.25	02/12 - 09/12	1.92
	08/07 - 15/07	0.78	05/08 - 12/08	2.83	09/09 - 16/09	0.91	07/10 - 14/10	N	11/11 - 18/11	2.67	09/12 - 16/12	1.74
	15/07 - 22/07	0.81	12/08 - 19/08	<0.19	16/09 - 23/09	4.16	14/10 - 21/10	1.39	18/11 - 25/11	4.05	16/12 - 23/12	1.58
	22/07 - 29/07	0.61	19/08 - 26/08	0.94	23/09 - 30/09	7.23	21/10 - 28/10	1.04	25/11 - 02/12	3.03	23/12 - 30/12	1.22
			26/08 - 02/09	1.96			28/10 - 04/11	1.06				
Arithmetic Mean		0.86		1.28		3.53		1.23		2.75		1.61
Standard Deviation		0.28		1.11		2.82		0.21		1.16		0.30
Valid Samples		4		5		4		4		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5323 Preston Montford 2 - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	31/12 - 07/01	0.46	04/02 - 11/02	0.62	03/03 - 11/03	1.19	01/04 - 08/04	2.94	29/04 - 06/05	3.41	02/06 - 10/06	2.77
	07/01 - 14/01	1.03	11/02 - 18/02	0.73	11/03 - 18/03	0.48	08/04 - 15/04	1.66	06/05 - 13/05	1.85	10/06 - 17/06	0.57
	14/01 - 21/01	0.69	18/02 - 25/02	0.56	18/03 - 25/03	2.40	15/04 - 22/04	1.51	13/05 - 20/05	N	17/06 - 24/06	0.56
	21/01 - 28/01	5.81	25/02 - 03/03	0.46	25/03 - 01/04	2.00	22/04 - 29/04	0.54	20/05 - 27/05	1.29	24/06 - 01/07	0.51
	28/01 - 04/02	1.92							27/05 - 02/06	2.41		
Arithmetic Mean		1.98		0.59		1.52		1.66		2.24		1.10
Standard Deviation		2.21		0.11		0.86		0.98		0.90		1.11
Valid Samples		5		4		4		4		4		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	0.56	29/07 - 05/08	0.34	05/09 - 09/09	0.77	30/09 - 06/10	2.28	04/11 - 11/11	0.39	02/12 - 09/12	0.84
	08/07 - 16/07	<0.21	05/08 - 12/08	0.89	09/09 - 16/09	0.29	06/10 - 14/10	0.95	11/11 - 18/11	0.48	09/12 - 16/12	0.28
	16/07 - 22/07	<0.30	12/08 - 19/08	<0.23	16/09 - 23/09	1.19	14/10 - 22/10	0.32	18/11 - 25/11	1.14	16/12 - 23/12	0.48
	22/07 - 29/07	0.51	19/08 - 26/08	0.42	23/09 - 30/09	3.77	22/10 - 28/10	0.35	25/11 - 02/12	0.53	23/12 - 30/12	0.31
			26/08 - 05/09	0.53			28/10 - 04/11	0.60				
Arithmetic Mean		0.33		0.46		1.51		0.90		0.64		0.48
Standard Deviation		0.23		0.29		1.55		0.81		0.34		0.26
Valid Samples		4		5		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5324 Bentra - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/12 - 07/01	2.24	04/02 - 11/02	3.38	04/03 - 10/03	1.53	02/04 - 08/04	1.46	29/04 - 05/05	1.45	02/06 - 09/06	1.98
	07/01 - 13/01	2.72	11/02 - 17/02	2.26	10/03 - 18/03	0.93	08/04 - 15/04	0.99	05/05 - 12/05	1.71	09/06 - 16/06	1.48
	13/01 - 20/01	1.97	17/02 - 25/02	2.46	18/03 - 24/03	N	15/04 - 22/04	1.37	12/05 - 19/05	N	16/06 - 23/06	1.53
	20/01 - 27/01	1.74	25/02 - 04/03	1.30	24/03 - 02/04	1.35	22/04 - 29/04	1.98	19/05 - 27/05	1.36	23/06 - 01/07	1.63
	27/01 - 04/02	2.23							27/05 - 02/06	1.09		
Arithmetic Mean		2.18		2.35		1.27		1.45		1.40		1.66
Standard Deviation		0.37		0.86		0.31		0.41		0.25		0.23
Valid Samples		5		4		3		4		4		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	1.06	29/07 - 04/08	<0.44	01/09 - 08/09	1.59	30/09 - 06/10	1.29	03/11 - 11/11	1.77	02/12 - 08/12	2.89
	08/07 - 15/07	0.71	04/08 - 11/08	0.91	08/09 - 16/09	0.98	06/10 - 13/10	1.46	11/11 - 18/11	1.19	08/12 - 15/12	2.56
	15/07 - 21/07	1.17	11/08 - 18/08	1.95	16/09 - 23/09	2.77	13/10 - 21/10	1.16	18/11 - 25/11	N	15/12 - 22/12	3.13
	21/07 - 29/07	1.44	18/08 - 26/08	1.16	23/09 - 30/09	1.84	21/10 - 27/10	1.68	25/11 - 02/12	1.49	22/12 - 29/12	2.59
			26/08 - 01/09	1.92			27/10 - 03/11	0.97				
Arithmetic Mean		1.09		1.23		1.79		1.31		1.48		2.79
Standard Deviation		0.30		0.73		0.74		0.27		0.29		0.27
Valid Samples		4		5		4		5		3		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5325 Pitlochry - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	05/01 - 09/01	0.66	29/01 - 05/02	0.55	27/02 - 05/03	0.62	03/04 - 09/04	0.45	30/04 - 07/05	0.58	04/06 - 11/06	0.88
	09/01 - 15/01	0.45	05/02 - 12/02	0.44	05/03 - 12/03	0.60	09/04 - 20/04	0.43	07/05 - 15/05	0.55	11/06 - 18/06	0.51
	15/01 - 22/01	0.68	12/02 - 19/02	0.36	12/03 - 19/03	0.44	20/04 - 23/04	1.86	15/05 - 21/05	0.51	18/06 - 25/06	0.56
	22/01 - 29/01	0.74	19/02 - 27/02	<0.36	19/03 - 26/03	0.42	23/04 - 30/04	0.74	21/05 - 28/05	0.57	25/06 - 02/07	0.41
					26/03 - 03/04	0.42			28/05 - 04/06	0.51		
Arithmetic Mean		0.63		0.38		0.50		0.87		0.54		0.59
Standard Deviation		0.12		0.16		0.10		0.67		0.03		0.20
Valid Samples		4		4		5		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	02/07 - 09/07	N	30/07 - 06/08	N	03/09 - 10/09	N	02/10 - 08/10	1.60	30/10 - 05/11	1.57	04/12 - 11/12	N
	09/07 - 16/07	N	06/08 - 13/08	N	10/09 - 17/09	2.82	08/10 - 16/10	1.53	05/11 - 12/11	1.43	11/12 - 18/12	N
	16/07 - 24/07	N	13/08 - 20/08	N	17/09 - 28/09	N	16/10 - 22/10	1.14	12/11 - 19/11	N	18/12 - 24/12	0.84
	24/07 - 30/07	N	20/08 - 27/08	N	28/09 - 02/10	1.82	22/10 - 30/10	1.77	19/11 - 26/11	N	24/12 - 31/12	0.94
			27/08 - 03/09	N					26/11 - 04/12	N		
Arithmetic Mean		-		-		-		1.51		-		-
Standard Deviation		-		-		-		0.26		-		-
Valid Samples		0		0		2		4		2		2

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5329 Cam Forest - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	02/01 - 09/01	0.48	30/01 - 06/02	0.61	27/02 - 06/03	0.53	03/04 - 10/04	0.55	29/04 - 20/05	N	29/05 - 05/06	0.42
	09/01 - 16/01	0.40	06/02 - 13/02	0.41	06/03 - 13/03	0.41	10/04 - 17/04	0.46	20/05 - 22/05	N	05/06 - 12/06	N
	16/01 - 23/01	0.35	13/02 - 20/02	0.42	13/03 - 20/03	0.37	17/04 - 24/04	0.56	22/05 - 29/05	0.47	12/06 - 19/06	1.15
	23/01 - 30/01	1.04	20/02 - 27/02	0.42	20/03 - 27/03	0.43	24/04 - 29/04	0.64			19/06 - 26/06	<0.39
					27/03 - 03/04	0.60					26/06 - 03/07	0.58
Arithmetic Mean		0.57		0.46		0.47		0.55		-		0.59
Standard Deviation		0.32		0.10		0.09		0.07		-		0.41
Valid Samples		4		4		5		4		1		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	03/07 - 10/07	0.54	31/07 - 07/08	<0.33	03/09 - 11/09	0.57	02/10 - 09/10	0.69	30/10 - 06/11	0.47	04/12 - 11/12	0.29
	10/07 - 17/07	<0.33	07/08 - 14/08	<0.36	11/09 - 18/09	0.63	09/10 - 16/10	0.51	06/11 - 17/11	0.30	11/12 - 18/12	<0.23
	17/07 - 24/07	<0.36	14/08 - 21/08	0.48	18/09 - 25/09	1.49	16/10 - 23/10	0.29	17/11 - 20/11	0.60	18/12 - 25/12	0.35
	24/07 - 31/07	<0.34	21/08 - 28/08	0.52	25/09 - 02/10	0.81	23/10 - 30/10	0.53	20/11 - 27/11	0.31	25/12 - 01/01	<0.22
			28/08 - 03/09	0.76					27/11 - 04/12	0.56		
Arithmetic Mean		0.26		0.42		0.87		0.51		0.45		0.22
Standard Deviation		0.18		0.25		0.42		0.17		0.14		0.12
Valid Samples		4		5		4		4		5		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5330 Cwmystwyth - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	31/12 - 07/01	0.90	04/02 - 10/02	0.89	04/03 - 12/03	0.83	01/04 - 08/04	1.11	29/04 - 11/05	N	29/05 - 09/06	1.06
	07/01 - 13/01	1.11	10/02 - 18/02	2.75	12/03 - 18/03	0.69	08/04 - 15/04	0.79	11/05 - 18/05	N	09/06 - 16/06	0.87
	13/01 - 21/01	0.65	18/02 - 25/02	0.83	18/03 - 25/03	1.99	15/04 - 22/04	1.16	18/05 - 22/05	1.27	16/06 - 23/06	0.98
	21/01 - 28/01	3.71	25/02 - 04/03	0.50	25/03 - 01/04	0.77	22/04 - 29/04	0.86	22/05 - 29/05	1.28	23/06 - 30/06	0.76
	28/01 - 04/02	3.62										
Arithmetic Mean		2.00		1.24		1.07		0.98		-		0.92
Standard Deviation		1.53		1.02		0.61		0.18		-		0.13
Valid Samples		5		4		4		4		2		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/06 - 07/07	0.95	30/07 - 08/08	<0.27	28/08 - 07/09	N	30/09 - 06/10	2.99	04/11 - 12/11	0.52	30/11 - 08/12	1.75
	07/07 - 16/07	0.34	08/08 - 16/08	0.75	07/09 - 14/09	0.72	06/10 - 13/10	1.30	12/11 - 19/11	0.74	08/12 - 17/12	0.38
	16/07 - 24/07	0.45	16/08 - 21/08	<0.48	14/09 - 21/09	0.64	13/10 - 20/10	0.68	19/11 - 30/11	0.61	17/12 - 24/12	1.13
	24/07 - 30/07	<0.42	21/08 - 28/08	0.74	21/09 - 30/09	1.34	20/10 - 28/10	0.28			24/12 - 30/12	0.54
							28/10 - 04/11	0.81				
Arithmetic Mean		0.49		0.47		0.90		1.21		0.62		0.95
Standard Deviation		0.32		0.33		0.38		1.06		0.11		0.62
Valid Samples		4		4		3		5		3		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5331 Rosemaund - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	07/01 - 14/01	0.74	04/02 - 11/02	0.95	04/03 - 11/03	0.77	01/04 - 08/04	1.68	29/04 - 06/05	2.50	03/06 - 10/06	1.51
	14/01 - 21/01	0.67	11/02 - 18/02	0.84	11/03 - 18/03	0.37	08/04 - 15/04	1.36	06/05 - 13/05	2.29	10/06 - 17/06	0.58
	21/01 - 28/01	3.87	18/02 - 25/02	0.81	18/03 - 25/03	1.99	15/04 - 22/04	1.37	13/05 - 20/05	7.09	17/06 - 24/06	0.60
	28/01 - 04/02	4.57	25/02 - 04/03	0.74	25/03 - 01/04	0.89	22/04 - 29/04	0.74	20/05 - 27/05	1.36	24/06 - 01/07	0.49
									27/05 - 03/06	1.75		
Arithmetic Mean		2.46		0.84		1.00		1.29		3.00		0.79
Standard Deviation		2.05		0.09		0.69		0.39		2.33		0.48
Valid Samples		4		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	2.75	29/07 - 05/08	<0.24	02/09 - 09/09	0.76	30/09 - 07/10	3.04	04/11 - 11/11	0.55	02/12 - 09/12	5.03
	08/07 - 15/07	0.27	05/08 - 12/08	0.57	09/09 - 16/09	0.75	07/10 - 15/10	0.73	11/11 - 18/11	0.72	09/12 - 16/12	0.67
	15/07 - 22/07	0.42	12/08 - 19/08	0.63	16/09 - 23/09	0.90	15/10 - 21/10	1.16	18/11 - 25/11	0.83	16/12 - 23/12	1.08
	22/07 - 29/07	0.38	19/08 - 26/08	0.56	23/09 - 30/09	1.93	21/10 - 28/10	0.47	25/11 - 02/12	1.82	23/12 - 30/12	0.46
			26/08 - 02/09	1.28			28/10 - 04/11	0.57				
Arithmetic Mean		0.95		0.63		1.09		1.19		0.98		1.81
Standard Deviation		1.20		0.41		0.57		1.07		0.57		2.16
Valid Samples		4		5		4		5		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5333 Fairseat - Sulphur Dioxide as S (SO2 - S)
Concentration in air (µg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/12 - 06/01	N	03/02 - 10/02	2.60	03/03 - 10/03	0.80	31/03 - 07/04	N	28/04 - 05/05	1.47	02/06 - 09/06	1.08
	06/01 - 13/01	0.50	10/02 - 17/02	1.71	10/03 - 17/03	2.21	07/04 - 14/04	1.75	05/05 - 12/05	3.31	09/06 - 16/06	0.76
	13/01 - 20/01	0.78	17/02 - 24/02	1.39	17/03 - 24/03	4.14	14/04 - 21/04	1.82	12/05 - 19/05	12.83	16/06 - 23/06	1.25
	20/01 - 27/01	3.37	24/02 - 03/03	1.63	24/03 - 31/03	0.55	21/04 - 28/04	0.85	19/05 - 26/05	4.80	23/06 - 30/06	0.45
	27/01 - 03/02	N							26/05 - 02/06	N		
Arithmetic Mean		1.55		1.83		1.93		1.47		5.60		0.89
Standard Deviation		1.58		0.53		1.65		0.54		5.01		0.35
Valid Samples		3		4		4		3		4		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/06 - 07/07	1.81	03/08 - 04/08	N	01/09 - 08/09	1.70	29/09 - 04/10	2.44	03/11 - 10/11	1.18	08/12 - 15/12	0.65
	07/07 - 14/07	1.38	04/08 - 12/08	1.45	08/09 - 15/09	1.45	04/10 - 06/10	N	10/11 - 17/11	2.00	15/12 - 22/12	2.12
	14/07 - 21/07	0.75	12/08 - 18/08	0.78	15/09 - 22/09	2.18	06/10 - 13/10	1.14	17/11 - 23/11	2.71	22/12 - 29/12	0.44
	21/07 - 28/07	1.06	18/08 - 25/08	1.35	22/09 - 29/09	1.99	13/10 - 20/10	1.21	23/11 - 08/12	N		
	28/07 - 03/08	0.76	25/08 - 01/09	3.19			20/10 - 27/10	0.91				
							27/10 - 03/11	0.90				
Arithmetic Mean		1.15		1.69		1.83		1.32		1.96		1.07
Standard Deviation		0.45		1.04		0.32		0.64		0.76		0.91
Valid Samples		5		4		4		5		3		3

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5334 Bylchau - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	24/12 - 15/01	N	28/01 - 05/02	2.47	24/02 - 12/03	N	03/04 - 09/04	0.32	30/04 - 06/05	1.33	03/06 - 11/06	1.43
	15/01 - 22/01	0.37	05/02 - 12/02	0.35	12/03 - 18/03	<0.31	09/04 - 15/04	0.64	06/05 - 13/05	1.14	11/06 - 18/06	0.41
	22/01 - 28/01	4.28	12/02 - 19/02	N	18/03 - 26/03	<0.37	15/04 - 22/04	0.90	13/05 - 20/05	2.29	18/06 - 24/06	0.40
			19/02 - 24/02	0.88	26/03 - 03/04	3.09	22/04 - 30/04	0.43	20/05 - 27/05	0.52	24/06 - 01/07	0.24
									27/05 - 03/06	2.25		
Arithmetic Mean		-		1.24		1.14		0.57		1.50		0.62
Standard Deviation		-		1.10		1.68		0.26		0.76		0.55
Valid Samples		2		3		3		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 09/07	0.34	31/07 - 06/08	<0.18	02/09 - 09/09	0.44	30/09 - 07/10	3.99	29/10 - 04/11	0.39	02/12 - 10/12	1.06
	09/07 - 15/07	<0.21	06/08 - 13/08	0.42	09/09 - 17/09	0.21	07/10 - 15/10	0.34	04/11 - 11/11	0.20	10/12 - 16/12	2.30
	15/07 - 23/07	0.19	13/08 - 26/08	0.21	17/09 - 30/09	1.83	15/10 - 22/10	0.48	11/11 - 18/11	0.77	16/12 - 23/12	0.27
	23/07 - 31/07	<0.15	26/08 - 02/09	0.60			22/10 - 29/10	0.37	18/11 - 25/11	0.57	23/12 - 30/12	<0.17
									25/11 - 02/12	1.04		
Arithmetic Mean		0.18		0.33		0.82		1.30		0.59		0.93
Standard Deviation		0.12		0.22		0.88		1.80		0.33		1.01
Valid Samples		4		4		3		4		5		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5335 Crai - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/01 - 09/01	0.63	29/01 - 06/02	1.28	27/02 - 06/03	0.47	03/04 - 10/04	0.63	01/05 - 08/05	1.05	29/05 - 05/06	N
	09/01 - 16/01	0.95	06/02 - 13/02	2.01	06/03 - 13/03	0.70	10/04 - 17/04	0.64	08/05 - 15/05	2.67	05/06 - 12/06	0.65
	16/01 - 23/01	1.63	13/02 - 20/02	4.35	13/03 - 20/03	0.21	17/04 - 24/04	1.29	15/05 - 22/05	3.48	12/06 - 18/06	0.43
	23/01 - 29/01	5.72	20/02 - 27/02	1.06	20/03 - 27/03	1.35	24/04 - 01/05	1.26	22/05 - 29/05	1.33	18/06 - 26/06	0.26
					27/03 - 03/04	1.37					26/06 - 03/07	1.55
Arithmetic Mean		2.23		2.17		0.82		0.96		2.13		0.72
Standard Deviation		2.36		1.50		0.52		0.37		1.14		0.57
Valid Samples		4		4		5		4		4		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	03/07 - 10/07	0.29	31/07 - 07/08	0.47	04/09 - 11/09	0.48	02/10 - 09/10	1.82	30/10 - 06/11	0.46	04/12 - 11/12	1.40
	10/07 - 17/07	N	07/08 - 14/08	0.68	11/09 - 18/09	0.42	09/10 - 16/10	0.52	06/11 - 13/11	0.51	11/12 - 18/12	1.47
	17/07 - 24/07	N	14/08 - 21/08	0.37	18/09 - 25/09	0.80	16/10 - 23/10	0.55	13/11 - 20/11	1.99	18/12 - 24/12	1.02
	24/07 - 31/07	0.67	21/08 - 28/08	0.33	25/09 - 02/10	0.74	23/10 - 30/10	0.31	20/11 - 27/11	N	24/12 - 31/12	0.28
			28/08 - 04/09	1.09					27/11 - 04/12	5.90		
Arithmetic Mean		-		0.59		0.61		0.80		2.22		1.04
Standard Deviation		-		0.31		0.19		0.69		2.56		0.55
Valid Samples		2		5		4		4		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5336 Husborne Crawley 2 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/12 - 06/01	1.09	03/02 - 10/02	4.02	03/03 - 10/03	1.34	31/03 - 07/04	1.43	28/04 - 05/05	4.03	02/06 - 09/06	
	06/01 - 13/01	1.60	10/02 - 17/02	4.14	10/03 - 17/03	5.00	07/04 - 14/04	2.98	05/05 - 12/05	5.47	09/06 - 16/06	
	13/01 - 20/01	2.69	17/02 - 24/02	1.90	17/03 - 24/03	5.02	14/04 - 21/04	3.38	12/05 - 19/05	N	16/06 - 23/06	
	20/01 - 27/01	5.54	24/02 - 03/03	2.28	24/03 - 31/03	1.98	21/04 - 28/04	1.90	19/05 - 26/05		23/06 - 30/06	
	27/01 - 03/02	N							26/05 - 02/06			
Arithmetic Mean		2.73		3.08		3.34		2.42		-		-
Standard Deviation		1.99		1.16		1.95		0.91		-		-
Valid Samples		4		4		4		4		2		0

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/06 - 07/07		04/08 - 11/08		01/09 - 08/09		29/09 - 06/10		03/11 - 10/11		01/12 - 08/12	
	07/07 - 14/07		11/08 - 18/08		08/09 - 15/09		06/10 - 13/10		10/11 - 17/11		08/12 - 15/12	
	14/07 - 21/07		18/08 - 25/08		15/09 - 22/09		13/10 - 20/10		17/11 - 24/11		15/12 - 22/12	
	21/07 - 28/07		25/08 - 01/09		22/09 - 29/09		20/10 - 27/10		24/11 - 01/12		22/12 - 29/12	
	28/07 - 04/08						27/10 - 03/11					
Arithmetic Mean		-		-		-		-		-		-
Standard Deviation		-		-		-		-		-		-
Valid Samples		0		0		0		0		0		0

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5337 Ratcliffe 18 - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	29/12 - 05/01	2.91	29/01 - 05/02	5.88	26/02 - 05/03	6.61	02/04 - 09/04	3.09	30/04 - 07/05	9.23	03/06 - 10/06	
	05/01 - 08/01	1.85	05/02 - 12/02	1.88	05/03 - 12/03	2.63	09/04 - 16/04	3.16	07/05 - 13/05	8.23	10/06 - 17/06	
	08/01 - 15/01	1.44	12/02 - 19/02	5.52	12/03 - 19/03	N	16/04 - 23/04	2.62	13/05 - 20/05		17/06 - 24/06	
	15/01 - 22/01	2.84	19/02 - 26/02	3.16	19/03 - 26/03	N	23/04 - 30/04	2.42	20/05 - 27/05		24/06 - 01/07	
	22/01 - 29/01	5.40			26/03 - 02/04	4.13			27/05 - 03/06			
Arithmetic Mean		2.89		4.11		-		2.83		-		-
Standard Deviation		1.54		1.91		-		0.36		-		-
Valid Samples		5		4		3		4		2		0

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07		29/07 - 05/08		02/09 - 09/09		30/09 - 07/10		04/11 - 11/11		02/12 - 09/12	
	08/07 - 15/07		05/08 - 12/08		09/09 - 16/09		07/10 - 14/10		11/11 - 18/11		09/12 - 16/12	
	15/07 - 22/07		12/08 - 19/08		16/09 - 23/09		14/10 - 21/10		18/11 - 25/11		16/12 - 23/12	
	22/07 - 29/07		19/08 - 26/08		23/09 - 30/09		21/10 - 28/10		25/11 - 02/12			
			26/08 - 02/09				28/10 - 04/11					
Arithmetic Mean		-		-		-		-		-		-
Standard Deviation		-		-		-		-		-		-
Valid Samples		0		0		0		0		0		0

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5338 Forsinain - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/12 - 06/01	0.22	03/02 - 10/02	0.23	03/03 - 10/03	0.29	31/03 - 07/04	1.40	28/04 - 05/05	0.69	02/06 - 09/06	0.40
	06/01 - 13/01	0.23	10/02 - 17/02	0.22	10/03 - 17/03	0.18	07/04 - 14/04	0.60	05/05 - 12/05	0.25	09/06 - 16/06	0.19
	13/01 - 20/01	0.22	17/02 - 24/02	0.22	17/03 - 24/03	0.21	14/04 - 21/04	0.62	12/05 - 19/05	0.39	16/06 - 23/06	0.99
	20/01 - 27/01	0.23	24/02 - 03/03	0.25	24/03 - 31/03	0.22	21/04 - 28/04	0.41	19/05 - 26/05	0.24	23/06 - 30/06	0.29
	27/01 - 03/02	0.31							26/05 - 02/06	0.17		
Arithmetic Mean		0.24		0.23		0.22		0.75		0.35		0.47
Standard Deviation		0.04		0.02		0.04		0.44		0.21		0.36
Valid Samples		5		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	30/06 - 07/07	N	04/08 - 11/08	0.23	01/09 - 08/09	0.92	29/09 - 06/10	0.27	03/11 - 10/11	0.22	01/12 - 08/12	<0.23
	07/07 - 14/07	<0.16	11/08 - 18/08	<0.17	08/09 - 15/09	0.74	06/10 - 13/10	0.24	10/11 - 17/11	0.27	08/12 - 15/12	0.35
	14/07 - 21/07	0.28	18/08 - 25/08	0.86	15/09 - 22/09	N	13/10 - 20/10	0.18	17/11 - 24/11	0.41	15/12 - 22/12	0.44
	21/07 - 28/07	0.21	25/08 - 01/09	0.84	22/09 - 29/09	0.67	20/10 - 27/10	0.23	24/11 - 01/12	0.25	22/12 - 29/12	N
	28/07 - 04/08	<0.19					27/10 - 03/11	0.30				
Arithmetic Mean		0.16		0.51		0.78		0.25		0.29		0.30
Standard Deviation		0.10		0.41		0.13		0.05		0.08		0.17
Valid Samples		4		4		3		5		4		3

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5339 Appleacre - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	31/12 - 07/01	1.42	04/02 - 11/02	1.63	04/03 - 11/03	1.83	01/04 - 08/04	2.08	29/04 - 06/05	1.87	03/06 - 10/06	1.10
	07/01 - 14/01	2.43	11/02 - 18/02	1.24	11/03 - 18/03	2.62	08/04 - 15/04	2.79	06/05 - 13/05	0.76	10/06 - 17/06	0.79
	14/01 - 21/01	3.25	18/02 - 25/02	2.44	18/03 - 25/03	2.38	15/04 - 22/04	2.99	13/05 - 20/05	2.99	17/06 - 24/06	0.85
	21/01 - 28/01	4.67	25/02 - 04/03	2.00	25/03 - 01/04	1.74	22/04 - 29/04	1.55	20/05 - 27/05	0.73	24/06 - 01/07	0.42
	28/01 - 04/02	3.29							27/05 - 03/06	0.70		
Arithmetic Mean		3.01		1.83		2.14		2.35		1.41		0.79
Standard Deviation		1.20		0.51		0.42		0.66		1.01		0.28
Valid Samples		5		4		4		4		5		4

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	01/07 - 08/07	0.72	29/07 - 05/08	0.49	02/09 - 09/09	1.60	30/09 - 07/10	0.99	04/11 - 11/11	1.72	02/12 - 09/12	2.95
	08/07 - 15/07	0.23	05/08 - 12/08	0.78	09/09 - 16/09	0.62	07/10 - 14/10	1.76	11/11 - 18/11	2.65	09/12 - 16/12	1.55
	15/07 - 22/07	0.40	12/08 - 19/08	0.18	16/09 - 23/09	1.63	14/10 - 21/10	N	18/11 - 25/11	4.08	16/12 - 23/12	1.81
	22/07 - 29/07	0.37	19/08 - 26/08	0.37	23/09 - 30/09	1.37	21/10 - 28/10	0.94	25/11 - 02/12	1.85	23/12 - 30/12	1.85
			26/08 - 02/09	1.03			28/10 - 04/11	1.85				
Arithmetic Mean		0.43		0.57		1.31		1.39		2.57		2.04
Standard Deviation		0.21		0.34		0.47		0.49		1.09		0.62
Valid Samples		4		5		4		4		4		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5340 Garrary - Sulphur Dioxide as S (SO2 - S)
Concentration in air (μg S m^{-3})

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN		FEB		MAR		APR		MAY		JUN	
	Start End		Start End		Start End		Start End		Start End		Start End	
	02/01 - 09/01	0.39	30/01 - 06/02	0.34	27/02 - 06/03	0.26	02/04 - 10/04	0.40	01/05 - 08/05	0.38	29/05 - 05/06	0.48
	09/01 - 16/01	0.47	06/02 - 13/02	0.38	06/03 - 12/03	0.41	10/04 - 17/04	0.68	08/05 - 15/05	0.66	05/06 - 12/06	0.74
	16/01 - 23/01	0.40	13/02 - 20/02	0.37	12/03 - 20/03	0.27	17/04 - 24/04	0.56	15/05 - 22/05	0.85	12/06 - 19/06	0.54
	23/01 - 30/01	0.69	20/02 - 27/02	0.35	20/03 - 26/03	0.33	24/04 - 01/05	0.45	22/05 - 29/05	0.40	19/06 - 26/06	0.40
					26/03 - 02/04	<0.29					26/06 - 03/07	0.36
Arithmetic Mean		0.49		0.36		0.28		0.52		0.57		0.50
Standard Deviation		0.14		0.02		0.10		0.13		0.22		0.15
Valid Samples		4		4		5		4		4		5

MONTH	JUL		AUG		SEP		OCT		NOV		DEC	
	Start End		Start End		Start End		Start End		Start End		Start End	
	03/07 - 10/07	<0.25	31/07 - 06/08	0.26	04/09 - 11/09	0.57	02/10 - 09/10	0.46	30/10 - 06/11	0.28	04/12 - 11/12	0.27
	10/07 - 17/07	0.70	06/08 - 14/08	0.49	11/09 - 18/09	0.33	09/10 - 16/10	0.23	06/11 - 13/11	0.21	11/12 - 18/12	0.16
	17/07 - 24/07	0.52	14/08 - 21/08	<0.12	18/09 - 25/09	0.64	16/10 - 23/10	0.23	13/11 - 20/11	0.79	18/12 - 25/12	0.20
	24/07 - 31/07	0.29	21/08 - 28/08	0.18	25/09 - 02/10	0.40	23/10 - 30/10	0.19	20/11 - 27/11	0.28	25/12 - 01/01	0.30
			28/08 - 04/09	0.58					27/11 - 04/12	0.16		
Arithmetic Mean		0.41		0.32		0.49		0.28		0.34		0.23
Standard Deviation		0.25		0.22		0.15		0.12		0.26		0.06
Valid Samples		4		5		4		4		5		4

Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

National Environmental Technology Centre
Site: 5342 Auchencorth Moss - Sulphur Dioxide as S (SO2 - S)
Concentration in air ($\mu g\ S\ m^{-3}$)

Weekly measurements, collection-day - non standard
Summary for January 1998 to December 1998

MONTH	JAN	FEB	MAR	APR	MAY	JUN
	Start End	Start End	Start End	Start End	Start End	Start End
	02/01 - 09/01	30/01 - 06/02	27/02 - 06/03	03/04 - 10/04	01/05 - 08/05	29/05 - 05/06
	09/01 - 16/01	06/02 - 13/02	06/03 - 13/03	10/04 - 17/04	08/05 - 15/05	05/06 - 12/06
	16/01 - 23/01	13/02 - 20/02	13/03 - 20/03	17/04 - 24/04	15/05 - 22/05	12/06 - 19/06
	23/01 - 30/01	20/02 - 27/02	20/03 - 27/03	24/04 - 01/05	22/05 - 29/05	19/06 - 26/06
			27/03 - 03/04			26/06 - 03/07
Arithmetic Mean	-	-	-	-	-	-
Standard Deviation	-	-	-	-	-	-
Valid Samples	0	0	0	0	0	0

MONTH	JUL	AUG	SEP	OCT	NOV	DEC
	Start End	Start End	Start End	Start End	Start End	Start End
	03/07 - 10/07	31/07 - 07/08	04/09 - 11/09	02/10 - 09/10 1.02	30/10 - 06/11 0.92	04/12 - 11/12 0.49
	10/07 - 17/07	07/08 - 14/08	11/09 - 18/09 1.09	09/10 - 16/10 0.39	06/11 - 13/11 0.36	11/12 - 18/12 0.24
	17/07 - 24/07	14/08 - 21/08	18/09 - 25/09 1.15	16/10 - 23/10 0.29	13/11 - 20/11 1.17	18/12 - 25/12 0.50
	24/07 - 31/07	21/08 - 28/08	25/09 - 02/10 1.02	23/10 - 30/10 0.35	20/11 - 27/11 0.31	25/12 - 01/01 0.35
		28/08 - 04/09			27/11 - 04/12 0.33	
Arithmetic Mean	-	-	1.09	0.51	0.62	0.39
Standard Deviation	-	-	0.07	0.34	0.40	0.13
Valid Samples	0	0	3	4	5	4

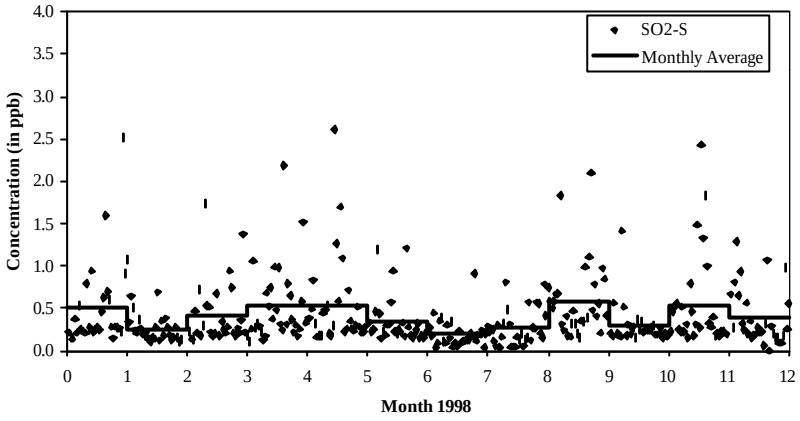
Notes (1) N = no measurement; (2) Measurements preceded by < are below the Limit of Detection. The measurement has been included in the calculation of the statistical parameters at 50% of its value; (3) Statistical parameters calculated only if data capture is greater than 75%.

Appendix 3

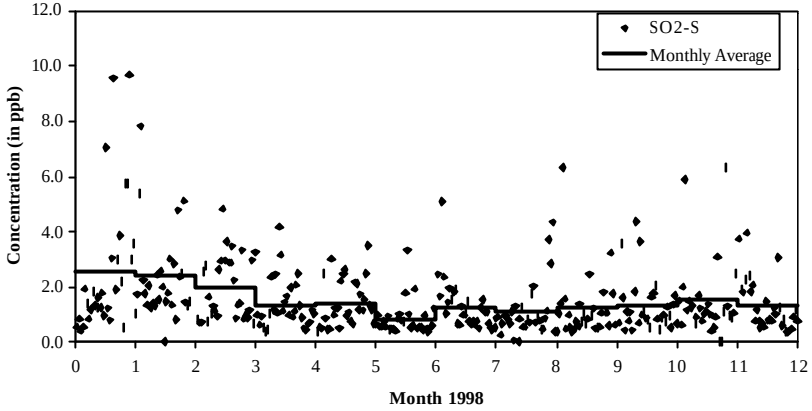
GRAPHS OF MEASURED AND MONTHLY MEAN SO_2 CONCENTRATIONS

Note: In the graphs that follow, the monthly-averaged concentration has been set to zero if the data capture was less than 75% for the month.

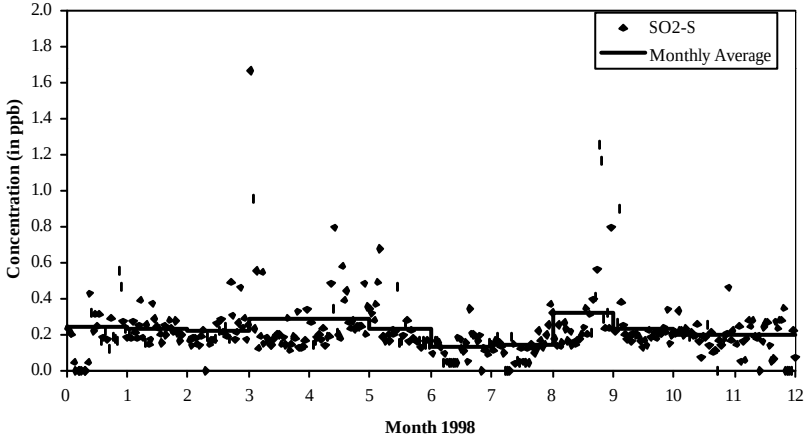
5002 Eskdalemuir



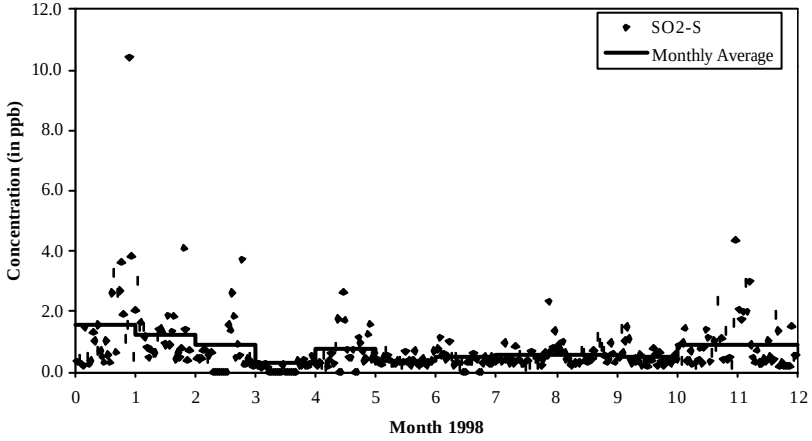
5004 Stoke Ferry



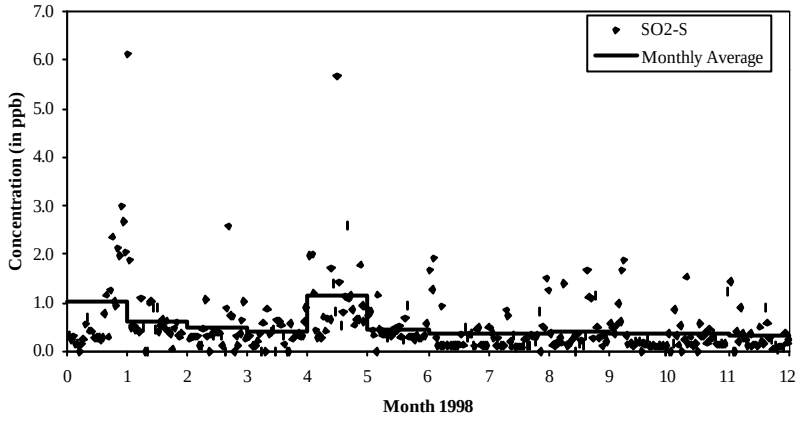
5006 Lough Navar



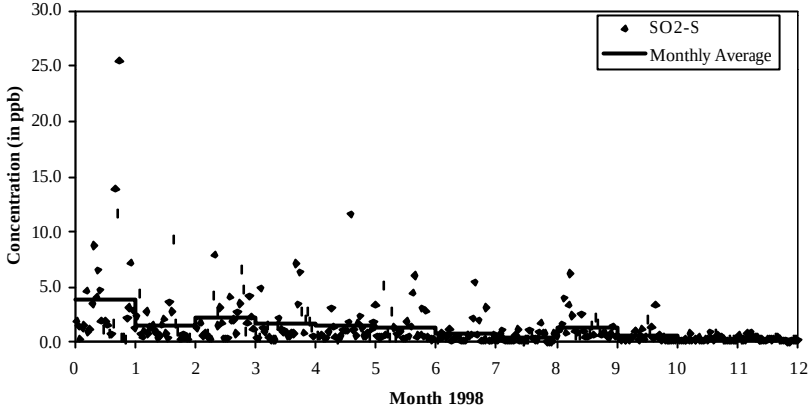
5007 Barcombe Mills



5008 Yarner Wood



5009 High Muffles



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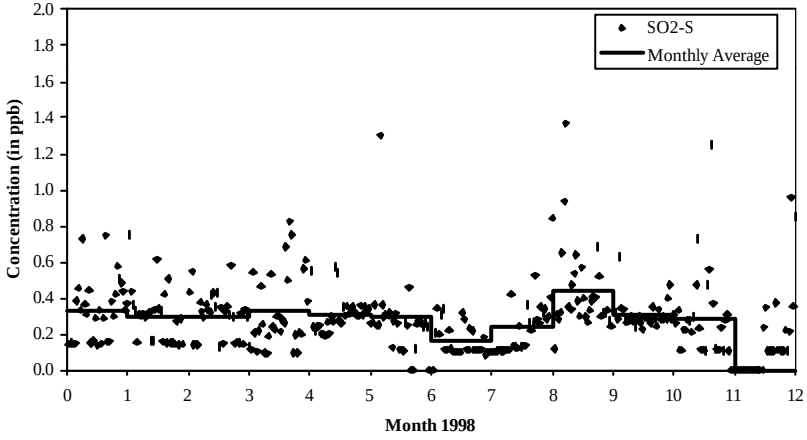

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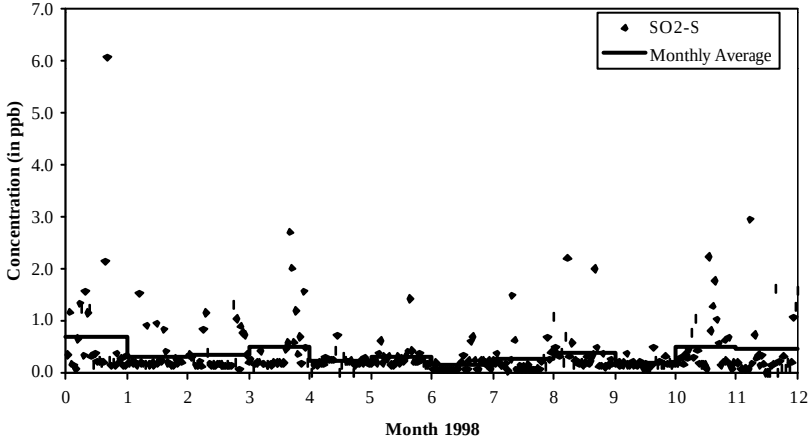

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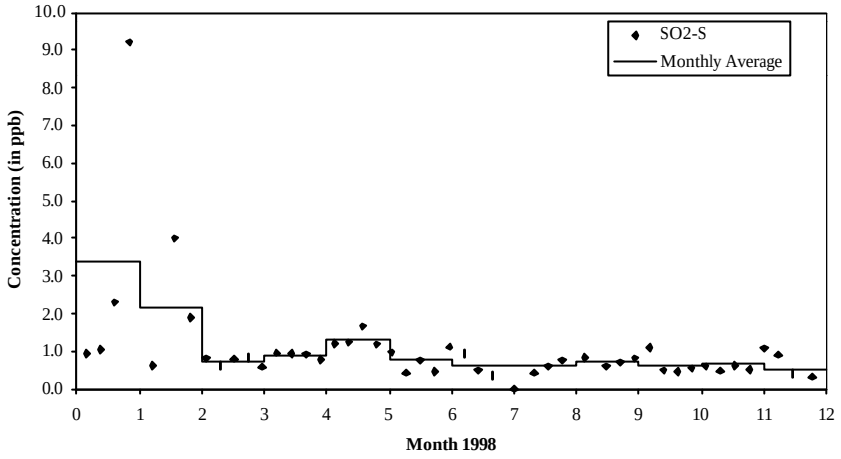

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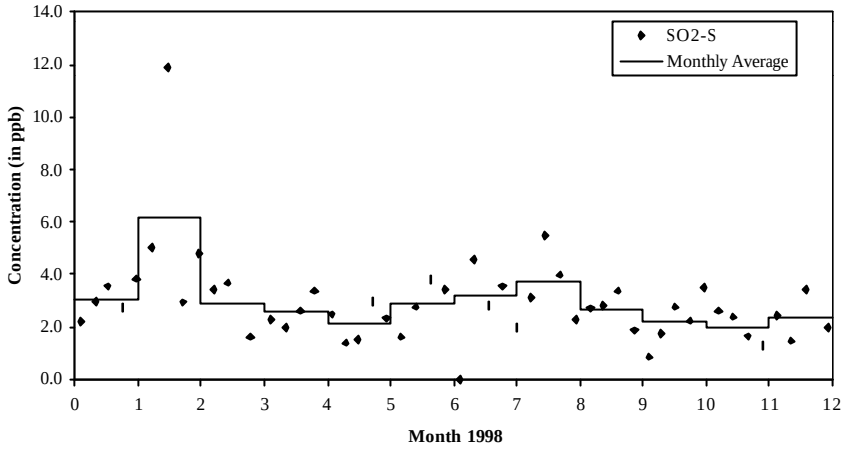

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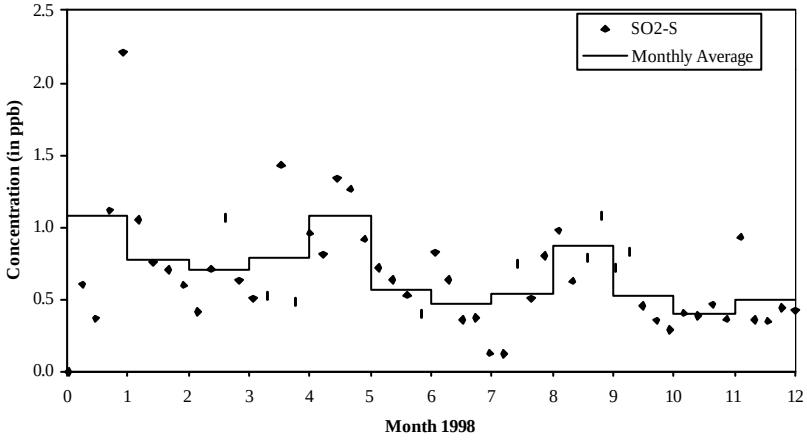

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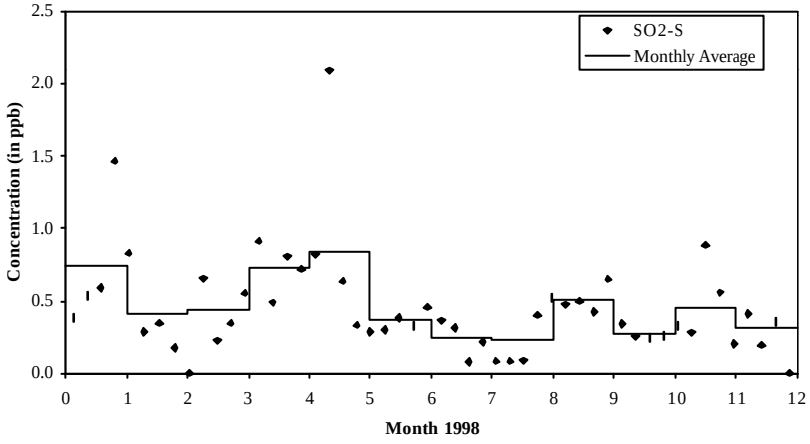

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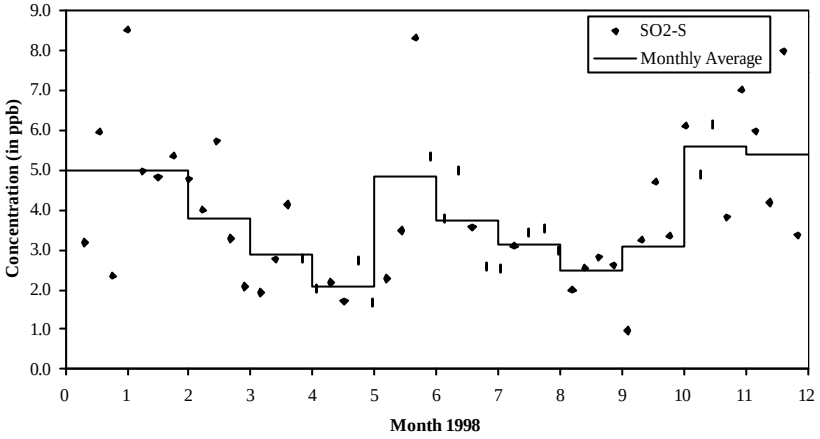

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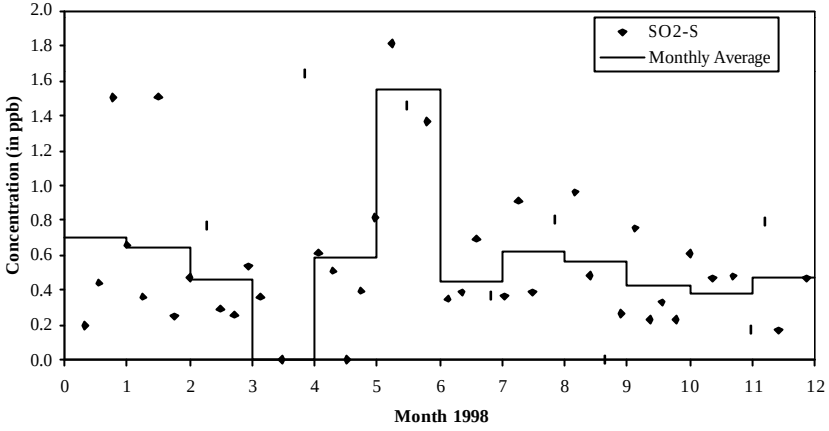

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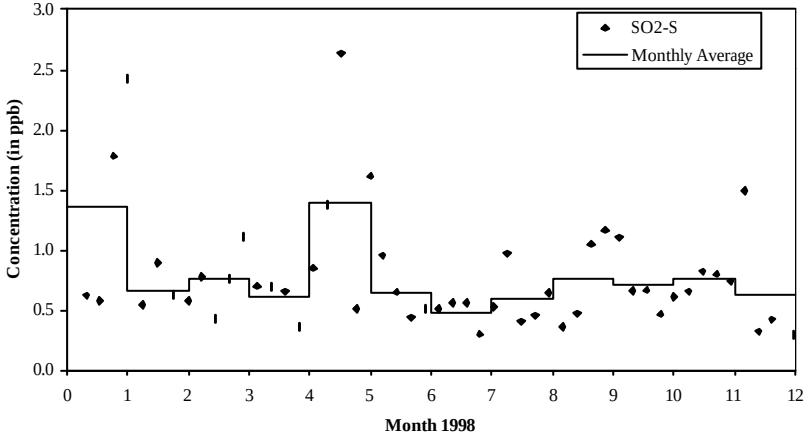

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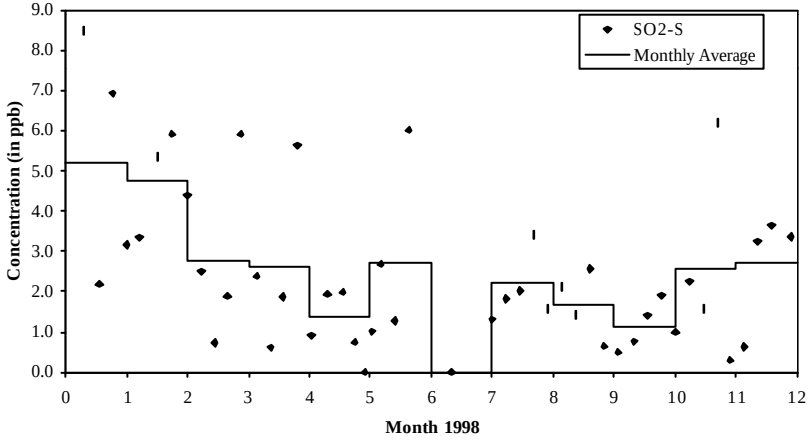

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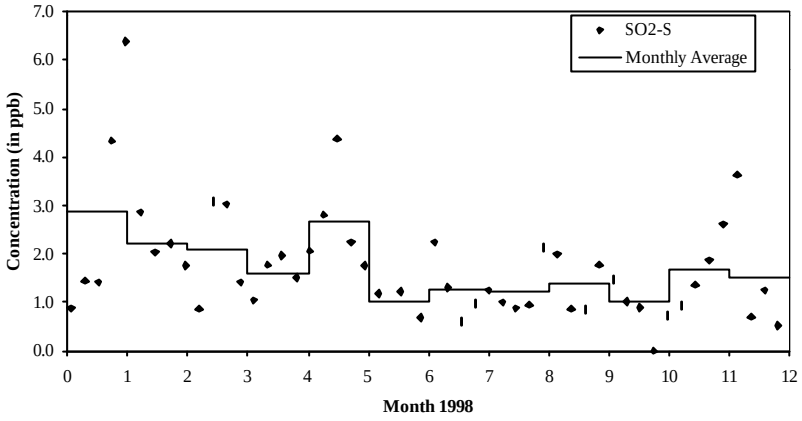

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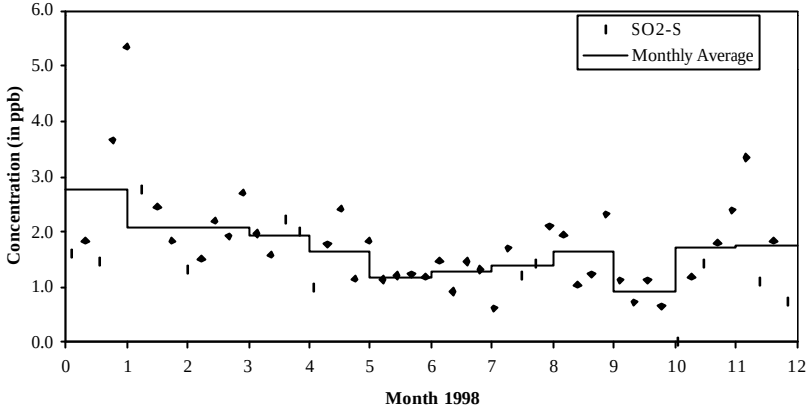

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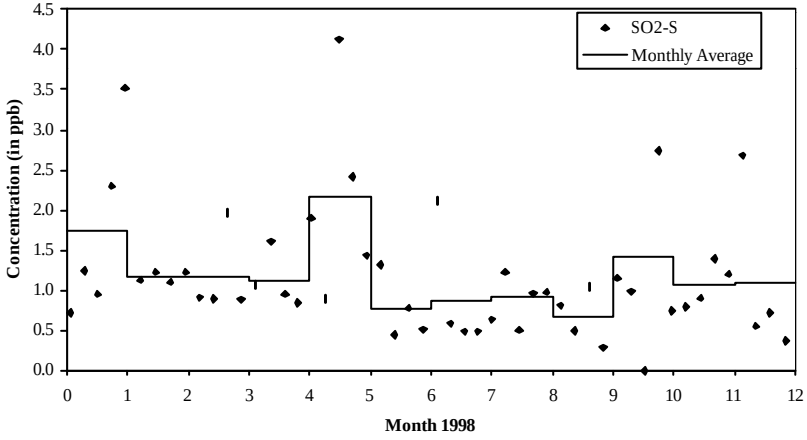
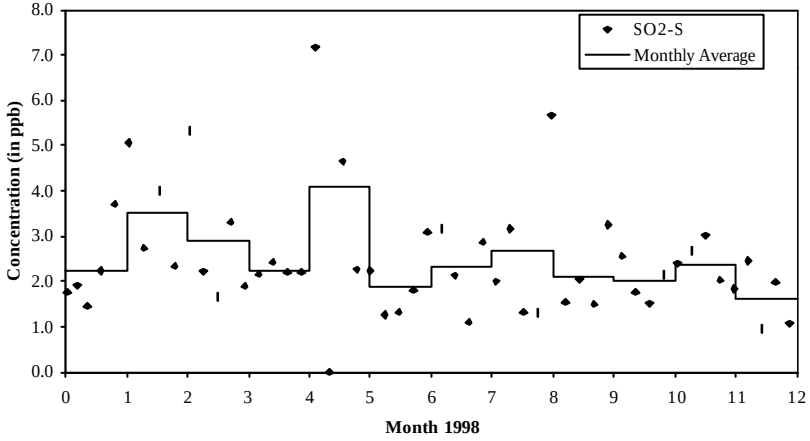


5315 Ratcliffe 13



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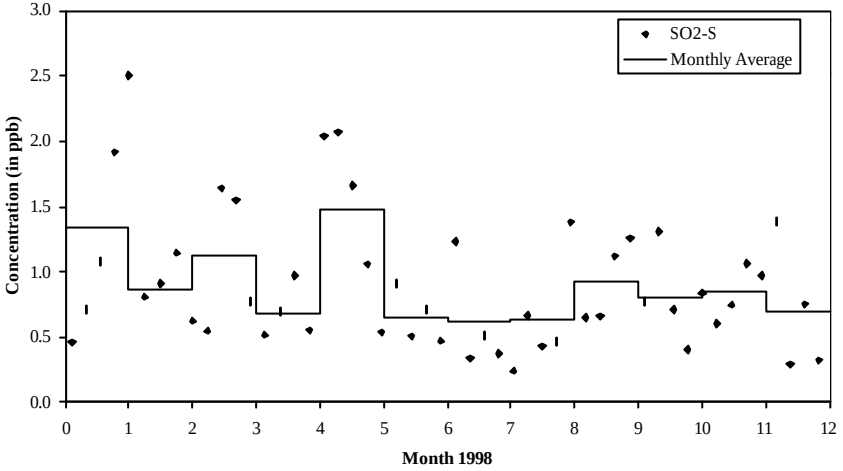

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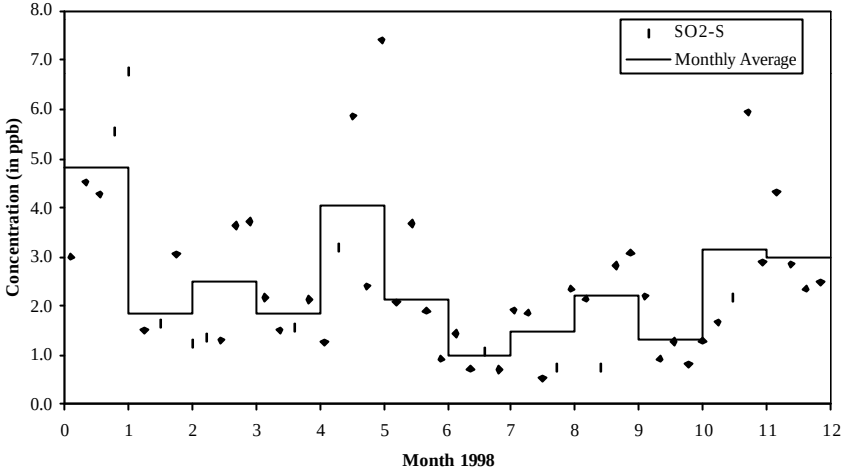

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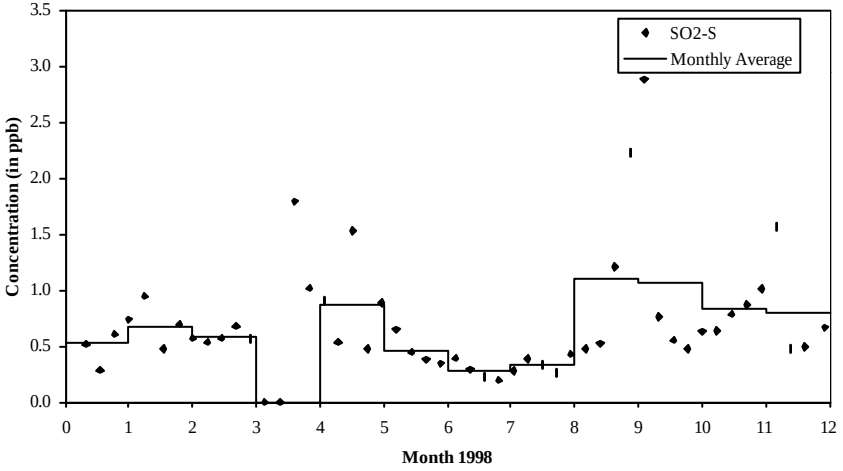

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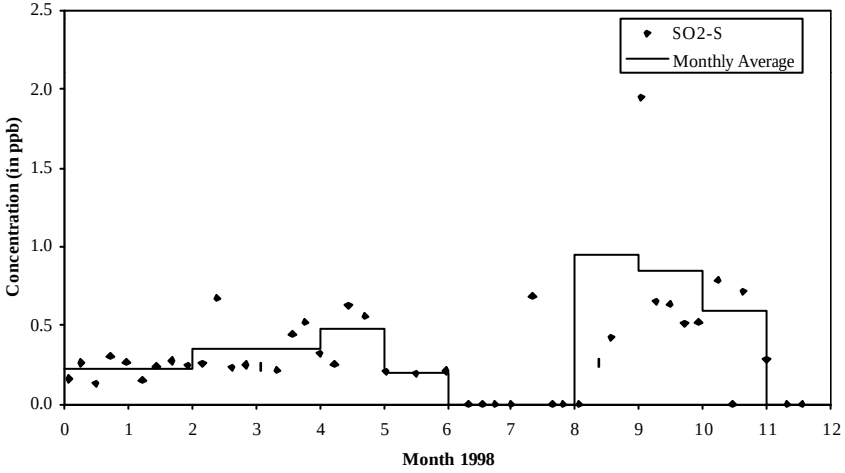

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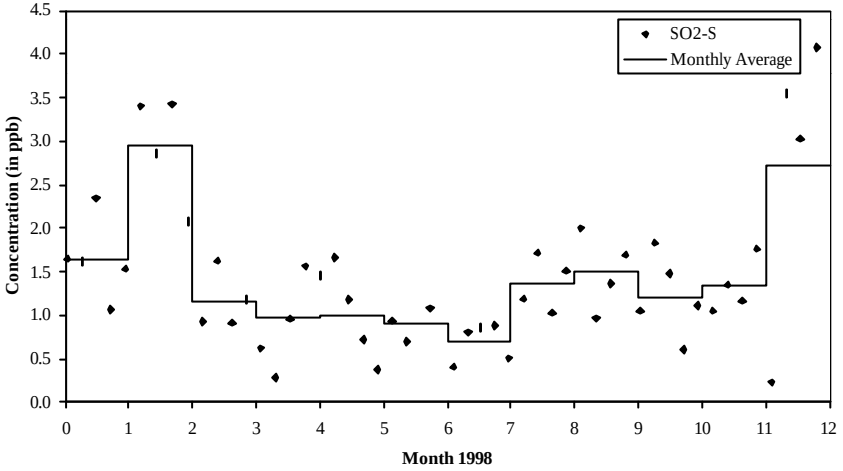

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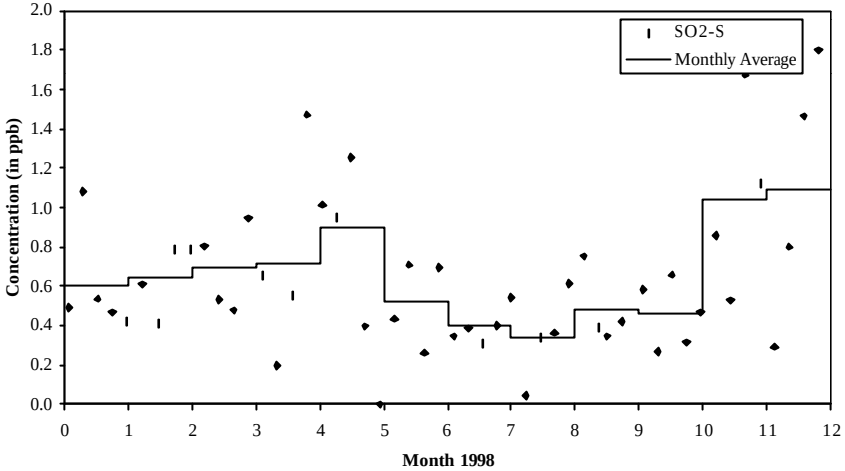

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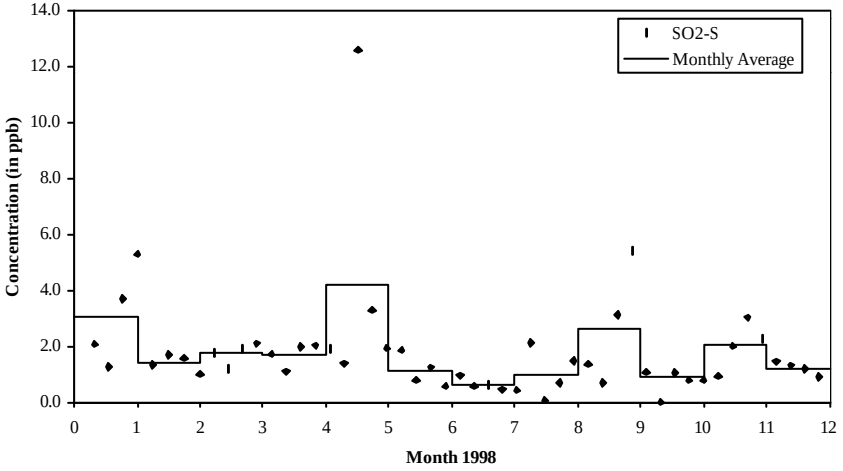

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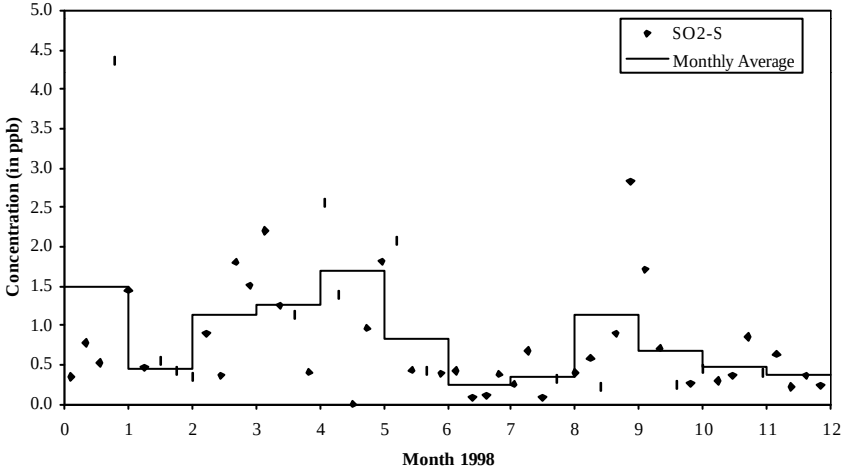

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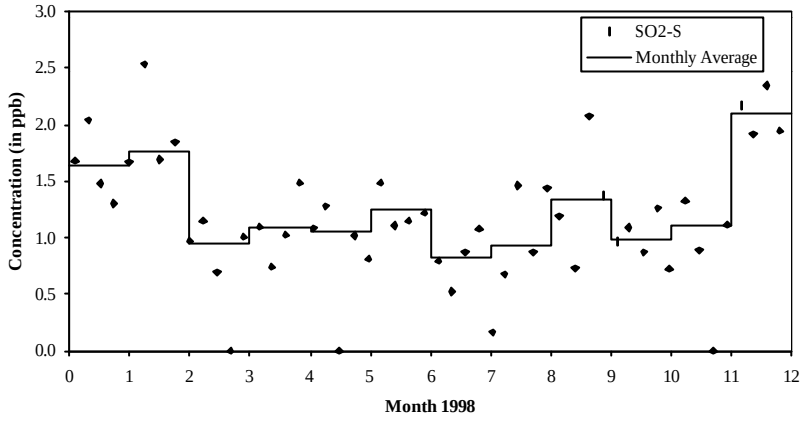

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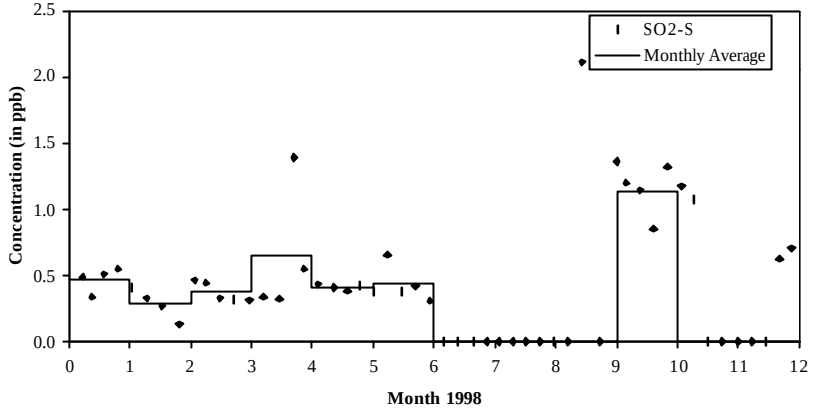

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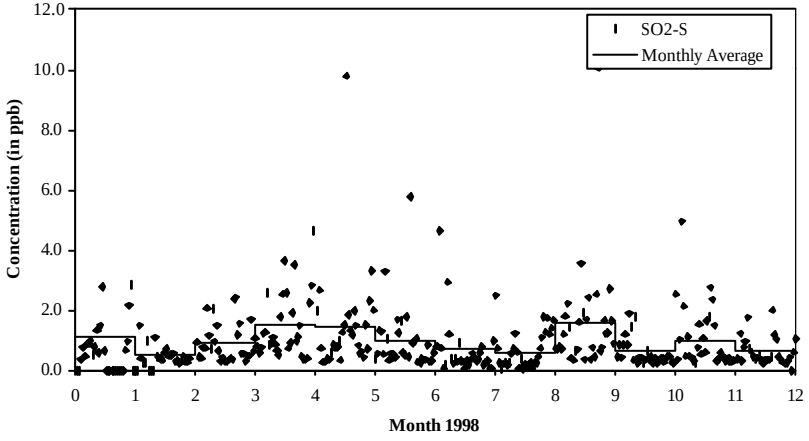

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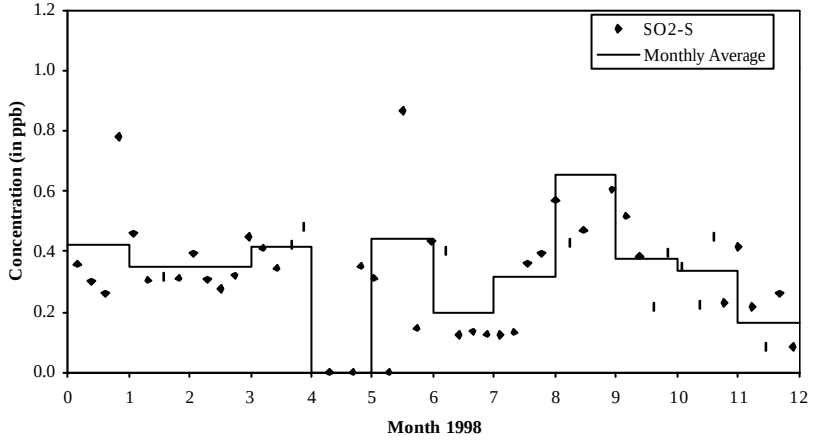

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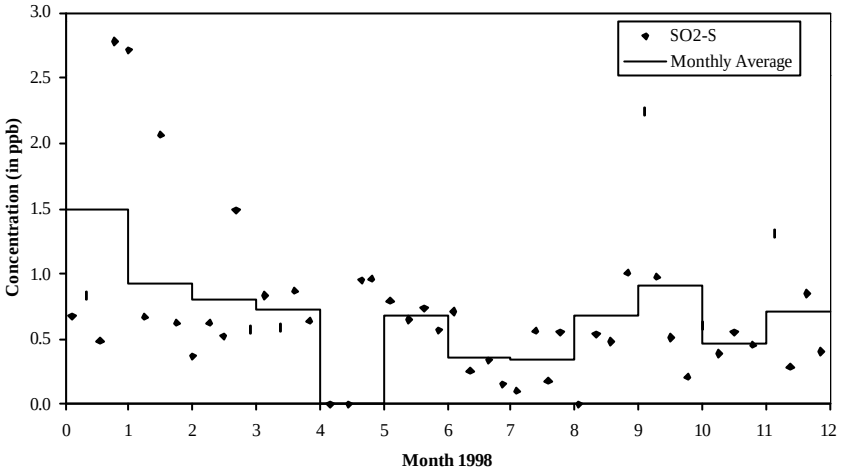
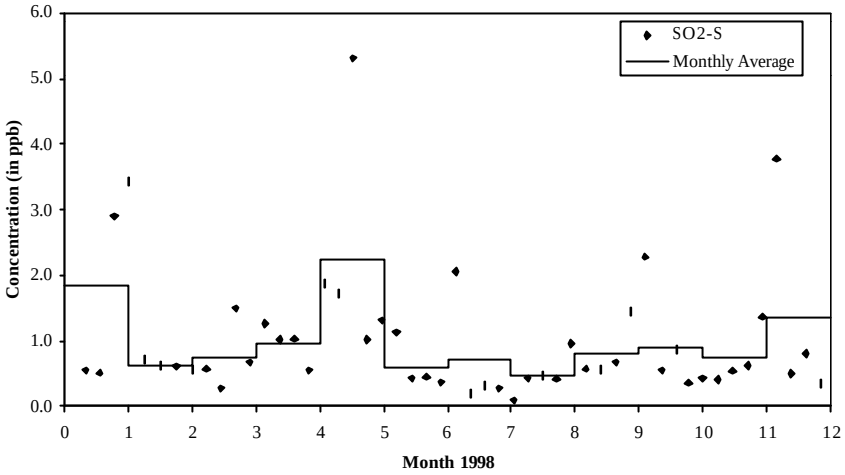


5331 Rosemaund



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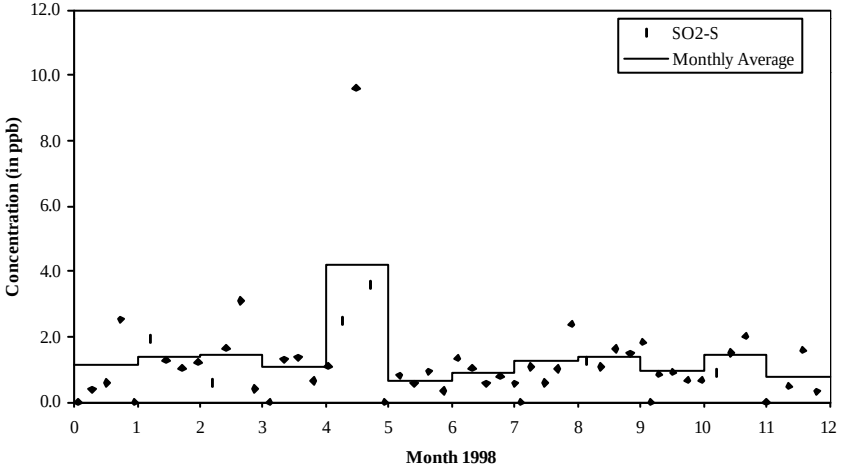

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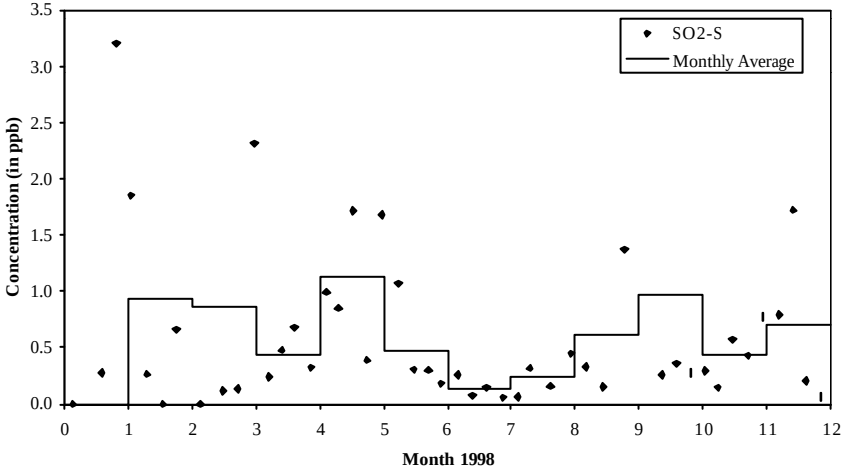

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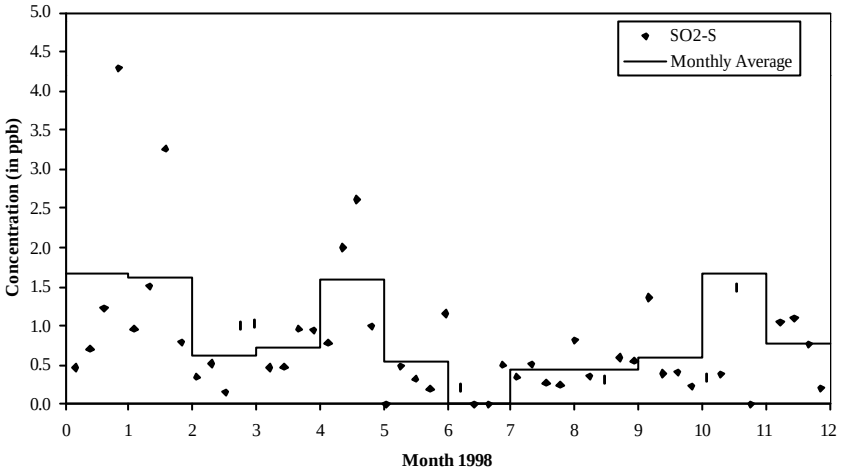

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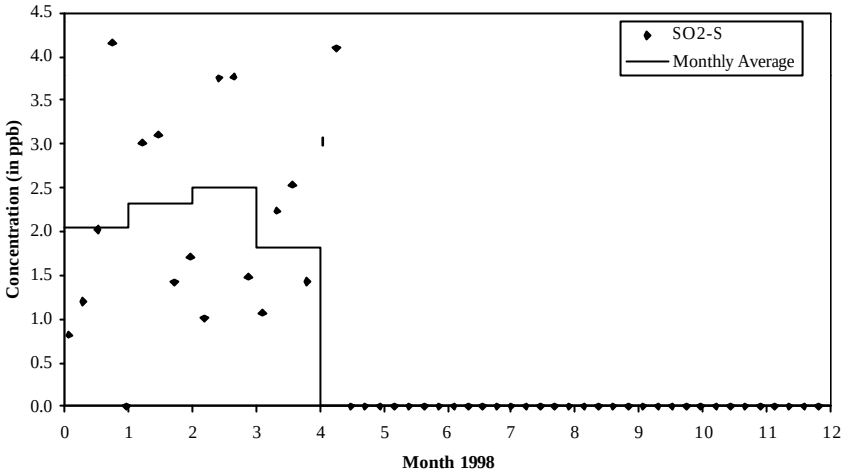
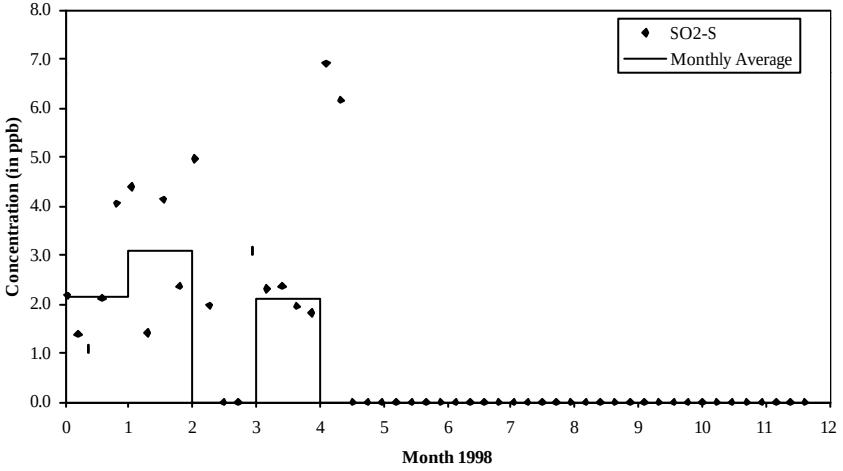


5337 Ratcliffe 18



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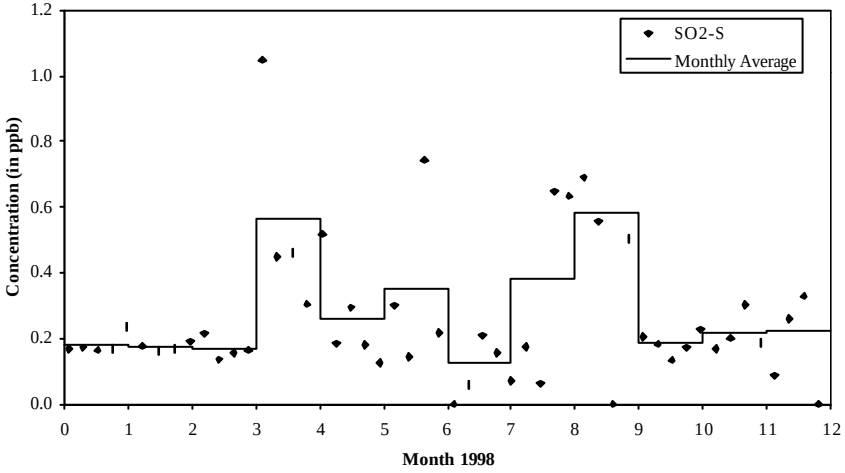

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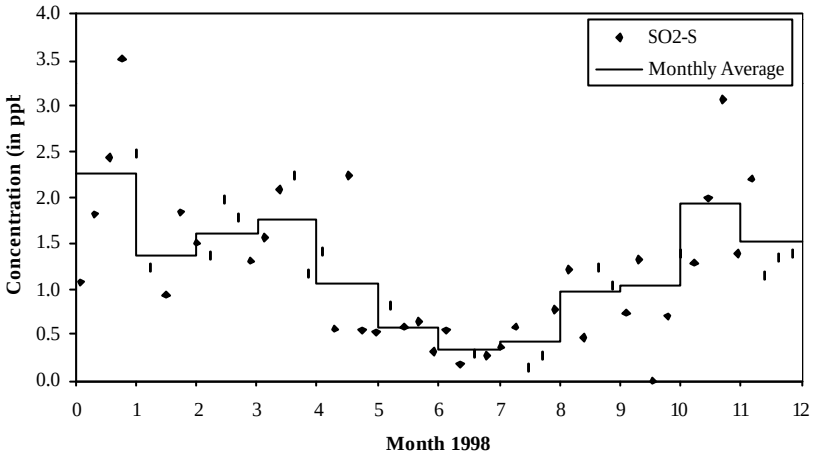

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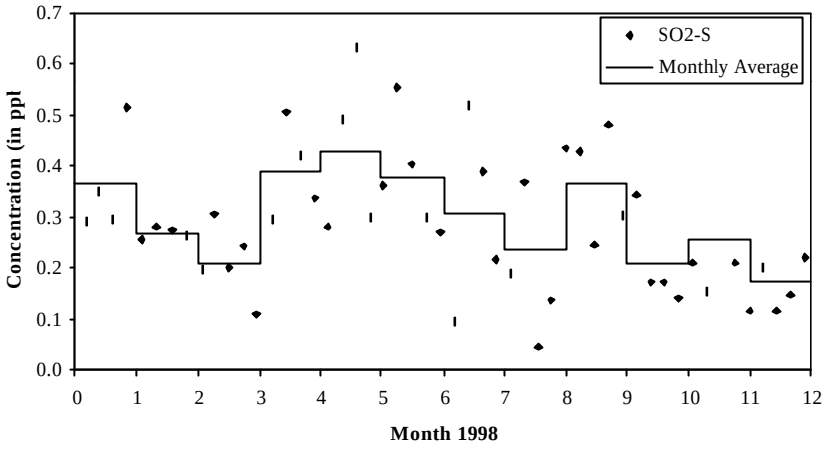
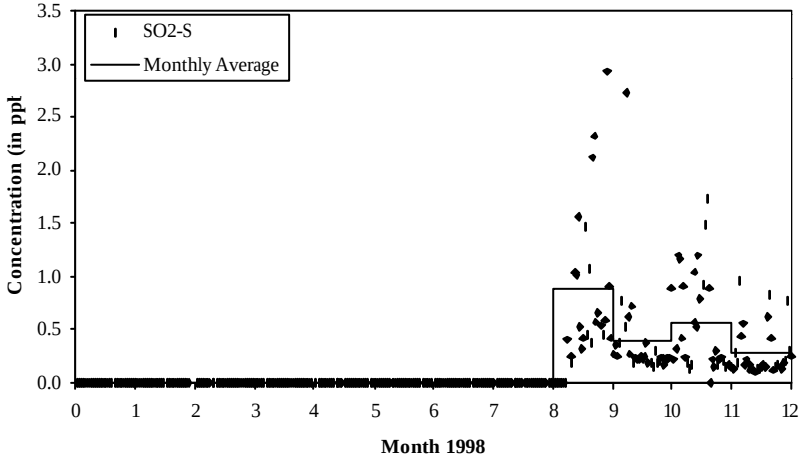


5341 Auchencorth Moss



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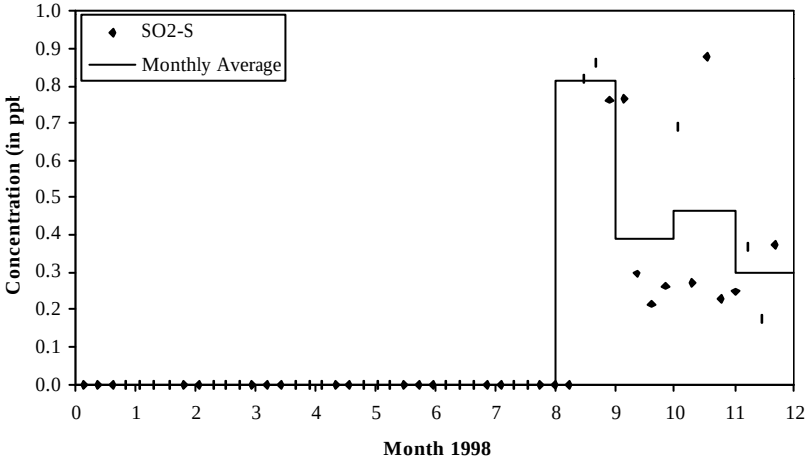


Appendix 4

GEOSTATISTICS

GEOSTATISTICS

The use of geostatistics in the analysis of United Kingdom precipitation composition concentrations is described by Webster *et al*. (1991). A geostatistics analysis may also be made of UK sulphur dioxide concentrations. A brief discussion is reproduced here. In a geostatistical treatment of spatial variability the concentration of sulphur dioxide in ambient air, averaged over a time period of one year, is treated as a regionalised random variable. It is assumed that the values at the sites are drawn from the distribution of a random variable with a constant mean. The variance, however, depends on the separation of the sites. For example, within one 20 km grid square the variance would probably be smaller than within a 200 km square. The dependence of the variance on separation (usually termed the lag) is described by a quantity known as the semi-variance:

$$g(h) = \frac{1}{2}\frac{\Sigma(z_1 - z_2)^2}{n} \qquad 1$$

Where there are n pairs of data z_1, z_2 separated by a distance h. A plot of the semi-variance against lag is called a **variogram**.

It can be shown that the variogram function (usually termed the variogram model) must be selected from one of a few allowed forms, each of which has one or more variable parameters which must be fitted to the experimental data. Models that are allowed are:

Exponential

$$g(h) = c_0 + c_1(1 - e^{-\frac{h}{a}}) \qquad 2$$

Spherical

$$g(h) = c_0 + c_1(\frac{3}{2}\frac{h}{a} - \frac{1}{2}(\frac{h}{a})^3) \qquad 3$$

Linear

$$g(h) = c_0 + w h^q \qquad 4$$

The parameter c_0, known as the "nugget", is the residual variance for collocated measurements and is a result of measurement error or variability on a scale smaller than the separation of the measurement sites. The "range", "a", is a measure of the separation beyond which the measurements are uncorrelated, and the "sill", "c_0+c_1", is the maximum semi-variance. The linear model applies when the regionalised varia has an unlimited capacity for spatial dispersion. There is no sill and the parameter w is called the factor and q the exponent.

Once a variogram model has been found it can be used in an interpolation procedure known as kriging to produce contour maps from irregularly spaced data. In the kriging process the interpolated value is expressed as a linear combination of the measured data $l_1 z_1 + l_2 z_2 + \ldots$. Using the variogram model the variance of the interpolated estimate can be expressed in terms of

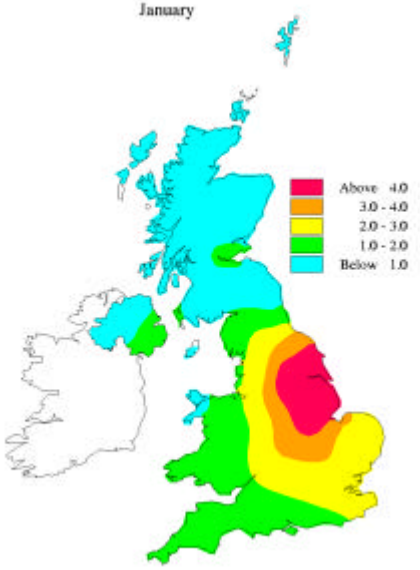
the l_i and this variance is then minimised subject to the constraint that the l_i sum to 1. The result is the best unbiased linear estimate in that it has the smallest error in the statistical sense. A further advantage of using kriging is that the interpolation variance is known for each interpolated estimate and this can be mapped along with the concentration to provide a measure of the reliability of the map.

An exponential model is fitted to the experimental points in the variogram for SO_2, using a sill of 3.5 ppb, a range of 200 km and a nugget of 0.4 ppb.

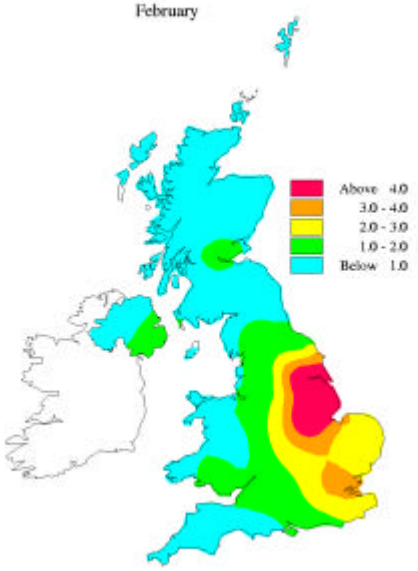
Appendix 5

MONTHLY MEAN SO_2 CONCENTRATION MAPS

January



February



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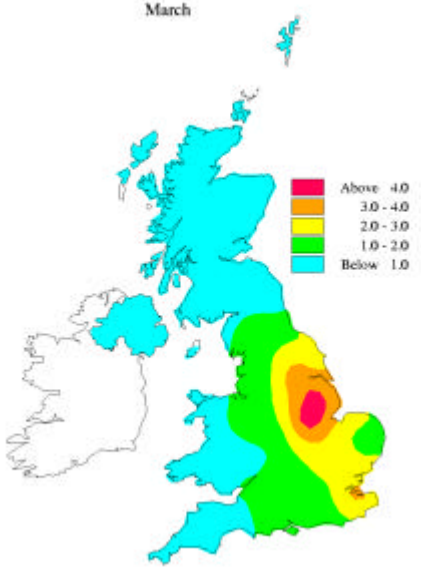
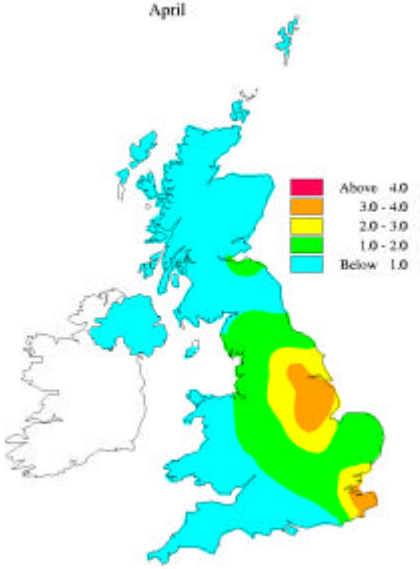
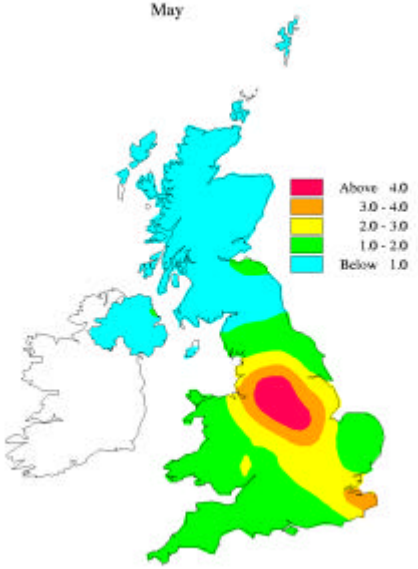


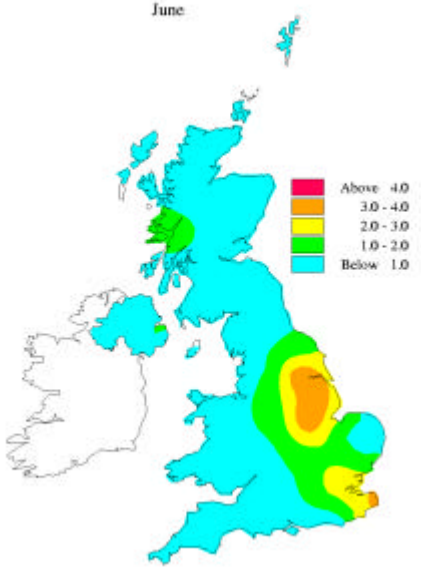
April



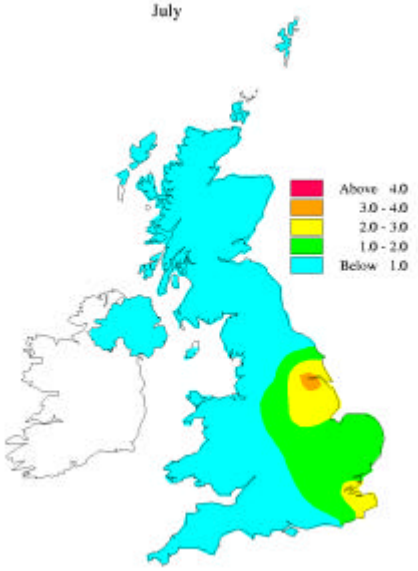
May



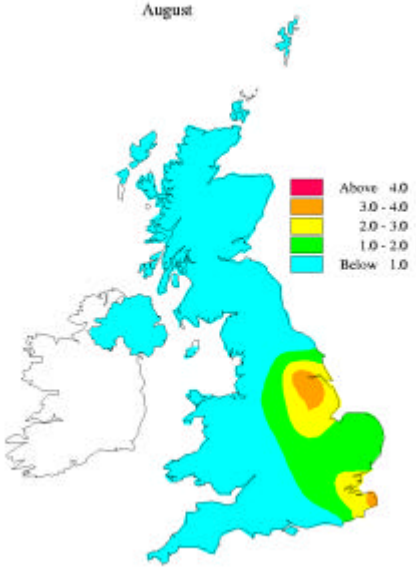
June



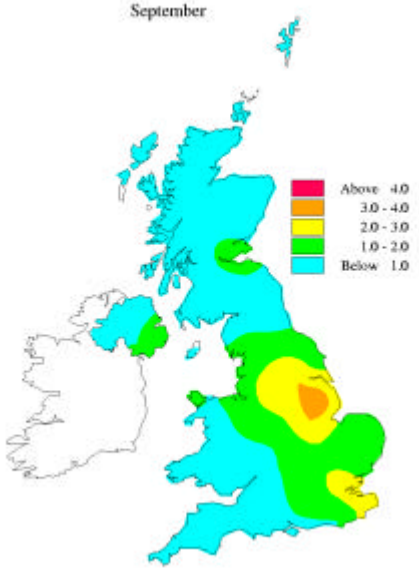
July



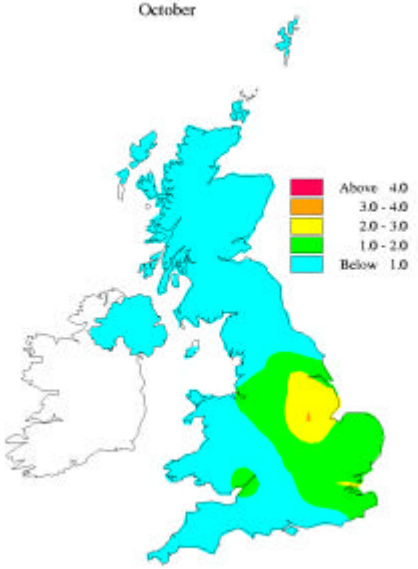
August



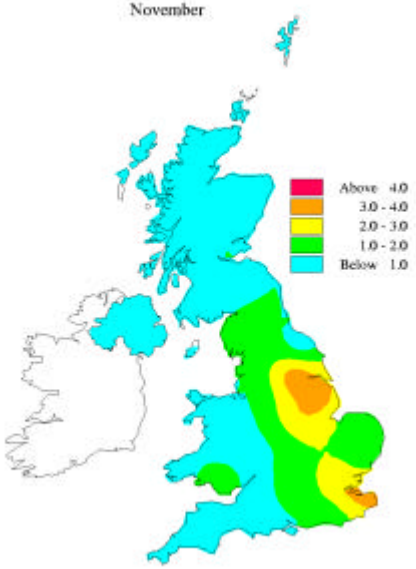
September



October



November



December