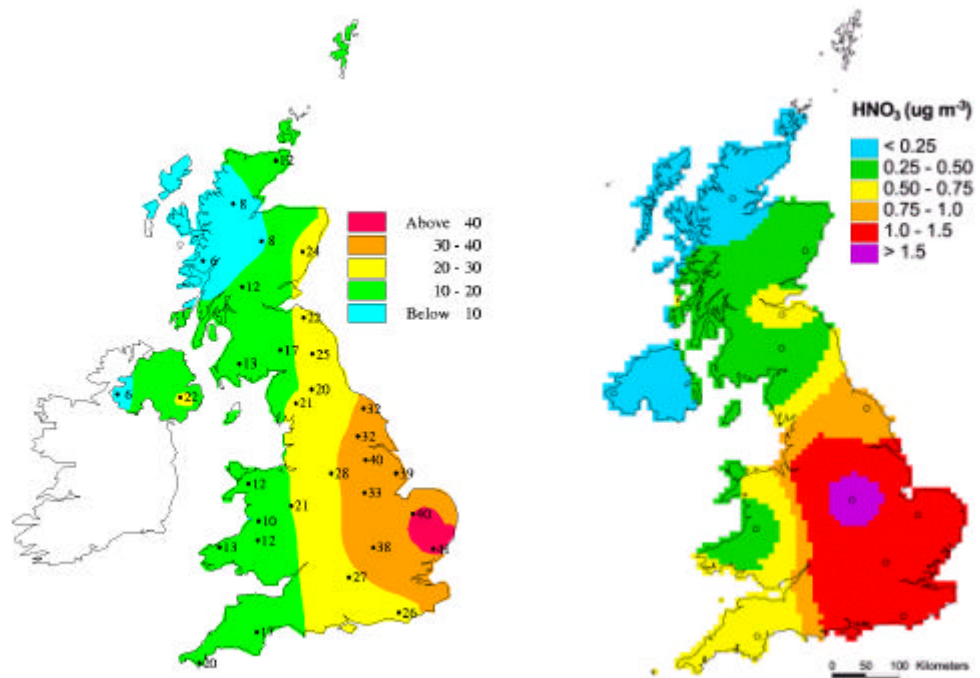


Operation and Management of the UK Acid Deposition Monitoring Networks: Data Summary for 2000

A report produced for the Department for Environment, Food and Rural Affairs



Maps of the Precipitation-weighted Concentration of Nitrate (in $\mu\text{eq l}^{-1}$) and of gaseous Nitric Acid (in $\mu\text{g m}^{-3}$) for 2000

November 2001

Operation and Management of the UK Acid Deposition Monitoring Networks: Data Summary for 2000

A report produced for the Department for
Environment, Food and Rural Affairs

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Executive Summary

The Acid Deposition Monitoring networks were established in 1986 to monitor the composition of precipitation and hence to provide information on deposition of acidifying compounds in the United Kingdom. The Acid Deposition Monitoring Networks comprise two monitoring networks in which rain water samples are collected and analysed. The aim of the first network, known as the “Primary” network, is to provide high quality data which can be used to identify trends with time. The second network, the “Secondary” network, provides information on the spatial distribution of acid deposition in the United Kingdom. The measurements made and their interpretation for the period 1986 to 1999 have been presented previously. In addition to the sampling of rainwater at both the Primary and Secondary Network sites, a range of other measurements are made which provide a more complete understanding of precipitation chemistry in the UK.

Throughout this period consistent operating and analytical procedures have been employed. The deposition data from the networks provide the foundation to the DEFRA-funded research programme that attempts to determine how acid rain is affecting sensitive ecosystems in the United Kingdom.

This report is the third annual report prepared under the current contract *The Operation and Management of the UK Acid Deposition Monitoring Networks* (EPG 1/3/137) and provides an overview of and the complete sets of measurements made in 2000.

Highlights of the 2000 Measurement

Wet Deposition

Rainfall was, as expected, higher in 2000 than in 1999 by between 2% and 46%. Increased rainfall was observed at all the sites apart from a few sites in Scotland (Polloch, Strathvaich Dam, Balquhidder and Achanarras) and Lough Navar in Northern Ireland. The rainfall in 2000 was also higher than the period mean (1986-2000) at 28 out of 31 sites by between 1% (Polloch) to 67% (Barcombe Mills) and the 30-year average for the period 1941-1970 at 14 of the sites by between 2% (Flatford Mills, Woburn) and 38% (Barcombe Mills).

Considering specific sites in sensitive areas:

- **Llyn Brienne (Mid Wales):** The rainfall measured at Llyn Brienne in 2000 was the highest observed during the period 1986-2000. The precipitation-weighted concentrations of non seasalt sulphate, nitrate and ammonium were lower than those observed in 1999 although the deposition of these ions was little changed. Analysis of the long term trends shows a significant decline in the concentration of sulphate and acidity. There is however no long-term trend in the concentrations of the nitrogen species although the recent increase in the deposition has levelled off.
- **Bannisdale (Lake District):** The rainfall in 2000 was about 30% higher than that measured in 1999 and higher by a similar amount than the period mean and the 30-year mean for 1941-1970. The trends in the concentrations of sulphate and acidity show statistically-significant reductions. The deposition of sulphate, ammonium and nitrate was slightly

higher than that observed in 1999 because of the higher rainfall. However, the long-term trends in the concentrations of the nitrogen species showed no real change.

- **Cow Green Reservoir (N Pennines):** The rainfall in 2000 was 22% greater than the rainfall measured in 1999 and 42% above the period mean for 1986-2000. Although the site is closer to the major power station sources of sulphur dioxide, the annual precipitation-weighted mean concentrations of non-seasalt sulphate and acidity are slightly smaller than those at Bannisdale and have shown a similar statistically-significant decline over the period 1986 to 2000. The deposition of nitrate and ammonium increased over the measurements made in 1998 and 1999, although the long-term trends in concentration are again not statistically significant.
- **Eskdalemuir (S Scotland):** The rainfall was 9% higher in 2000 than in 1999 and 13% higher than the period mean. The annual precipitation-weighted mean concentrations and deposition of non-seasalt sulphate and acidity were slightly lower in 2000. The measurements made in 2000 confirm the previous statistically-significant trends. The deposition of nitrate and ammonium was slightly lower in 2000 than that measured in 1999. The long-term trends in the concentrations of the nitrogen species were again not statistically significant.
- **Balquhiddy (SW Highlands):** Unlike other sites in the network, the rainfall was 11% lower in 2000 and 1% below the period mean. The annual precipitation-weighted mean concentration and deposition of ammonium were both notably lower in 2000. The inclusion of the 2000 measurement of non-seasalt sulphate now gives a statistically-significant trend. There is little change in nitrate and ammonium deposition.
- **Polloch, Strathvaich Dam (Northern and Western Highlands):** These sites are relatively unpolluted and, of all the sites in the network, should be most sensitive to the limiting effect of any “background” pollutant levels in precipitation from the Atlantic. The ammonium concentrations in many samples are below the detection limit. Annual mean non-seasalt sulphate concentrations at both sites were below $10 \mu\text{eq l}^{-1}$ in 2000. The inclusion of the 2000 measurements of non-seasalt sulphate now give a statistically-significant trend at Strathvaich Dam in the sulphate concentration over the full measurement period and confirm the downward trend at Polloch. Deposition of non-seasalt sulphate has declined at both sites, more noticeably at Polloch. Nitrate concentration and deposition show no change at the Strathvaich Dam site. As a result, the non-seasalt sulphate to nitrate ratios in both concentration and deposition have fallen.

Statistically significant downward trends have been observed in the precipitation-weighted concentrations of non-marine sea sulphate at nearly all of the monitoring sites, with the strongest trends being observed at sites close to major sources (Bottesford, Jenny Hurn, Stoke Ferry and Woburn). There is a similar pattern present in the trends of acidity, with the near-field sites (Bottesford, Jenny Hurn, High Muffles, Thorganby and Woburn) again showing the strongest trends. For nitrate and ammonium, there is no statistically-significant trend in concentration at the majority of the monitoring sites. However, the following near field sites (Bottesford, Thorganby and Compton) have marked downward trends for nitrate. These trends are consistent with the analysis presented in the report prepared by the Department’s National Expert Group on Transboundary Air Pollution (NEG-TAP).

Sulphur Dioxide, Particulate Sulphate and Nitrogen Dioxide

The annual mean sulphur dioxide concentration has decreased substantially at all sites over the period 1986 to 2000. For example, the annual mean concentration at High Muffles has decreased from an annual mean concentration of $7.3 \mu\text{g S m}^{-3}$ in 1987 to $1.2 \mu\text{g S m}^{-3}$ in 2000. Sulphate concentrations in rain do not obviously exhibit the same degree of decrease as that observed for sulphur dioxide. The highest concentrations were observed at Stoke Ferry and Barcombe Mills for the first half of the sampling period - since that time concentrations at both sites decreased by about 25%. The lowest concentrations were consistently measured at Strathvaich Dam.

The annual mean concentrations of nitrogen dioxide in 2000 were generally comparable to those measured in 1999 but higher than those measured in 1998. This is consistent with the higher concentrations measured for a range of pollutants in 2000. It is likely that the meteorological conditions led to poorer dispersion and dilution of emissions.

The Nitric Acid Monitoring Network

The new monthly nitric acid monitoring network, established at 12 sites during 1999 by the Centre for Ecology and Hydrology (Bush), has continued to operate very smoothly. The network has provided a record with very few missing points. The establishment of the daily site at Barcombe Mills was delayed while planning permission was sought and has only been operational since April 2000. Although most of the initial problems have been overcome, the day-to-day operation of the Chemspec system has been problematic with a large number of sampling problems leading to substantial down time. Since April 2001, the performance of the Chemspec system has improved significantly with little loss of data.

At the Eskdalemuir site, the daily filter pack sampling of total inorganic nitrogen (TIN) was continued to provide a period of overlap with the sum of measured HNO_3 and NO_3^- from the monthly DETLA sampling. The comparison has shown close agreement, indicating the robustness of the measurement approaches. The comparison of the corresponding total inorganic ammonium (TIA) with the sum of the NH_3 and NH_4^+ concentrations determined from the NH_3 Monitoring Network, operated by CEH for DEFRA under a separate contract, was also very good.

Valuable new data have been produced by the network on the behaviour of gaseous and aerosol species involved in transboundary and urban air pollution. In this report, the measurements made in the network from Autumn 1999 to June 2001 are presented. The measurement data have been used to derive the first maps of the spatial distribution of gaseous nitric acid and hydrogen chloride in the UK and of the corresponding aerosol components - nitrate and chloride. Despite the poor performance of the daily system, the results indicate several periods when elevated concentrations of nitric acid were measured.

Use of the Measurement Data

The UK network also forms part of the wider network of the European Monitoring and Evaluation Programme. Results from this network are used to underpin the modelling studies which form the basis of negotiation of UNECE Protocols for controlling the transboundary transport of acidifying pollutants.

The measurements made in the networks have been and continue to be key inputs into the expert reviews of our understanding of acid deposition provided formerly by the Review Group on Acid Rain and more recently by the National Expert Group on Transboundary Air Pollution (NEGTAP). NEGTAP was established to advise on transboundary air pollution issues and specifically whether the reductions in the emissions of acidifying pollutants have been effective in promoting the recovery of ecosystems affected by acid deposition.

Errata

1998 Data Report Hayman, G.D., K. Vincent, S. Hasler, S. Baker, B. Donovan, M. Smith, L. Sansom and H. Page (2000) *Acid Deposition Monitoring in the UK: 1986 to 1998*. AEA Technology Report AEAT/EEQC-0143. AEA Technology plc, E5 Culham, Abingdon, OX14 3ED.

Rainfall at Tycanol Wood: *In Issue 1 of the report, the sample collected at Tycanol Wood on 17/11/98 was shown to have a rainfall rainfall of 714.3 mm. This was incorrect as there was insufficient sample for analysis. The Table has been corrected in Issue 2 of the report and in the version placed on the National Air Quality Information Archive but the data in the Site Details has not been amended. The annual-mean precipitation weighted concentrations are however unaffected as this sample had been excluded from the calculations.*

1999 Data Report Hayman, G.D., Vincent, K., Hasler, S., Baker, S., Donovan, B., Smith, M., Sutton, M., Tang, Y.S., Dragosits, U., Love, L., Fowler, D., Sansom, L. and Page, H. (2001) *Acid Deposition Monitoring in the UK: 1986 to 1999*. AEA Technology Report AEAT/ENV/R/0523 Issue 1. AEA Technology plc, E5 Culham, Abingdon, OX14 3ED.

NO₂ Concentration Map: *The data used to produce the map shown in Figure 3.9 was incorrect. The revised map is shown below with the original map.*

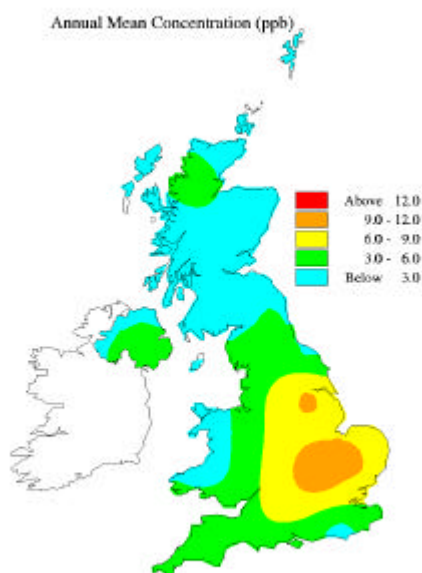


Figure 3.9 *Map of the Spatial Distribution of the Concentration of NO₂ in 1999.*

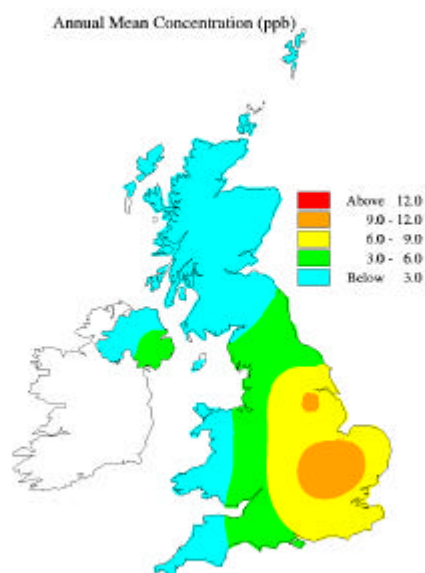


Figure 3.9 *Corrected Map of the Spatial Distribution of the Concentration of NO₂ in 1999.*

pH Measurement at Crai Reservoir: *In Issue 1 of the report, the sample collected on 23/4/99 was shown to have a pH of 3 and ion concentrations were given. This sample has subsequently been shown to have had acid added and hence has been excluded from the above table in Issue 2. As a result, the precipitation-weighted hydrogen ion concentration has been revised down from 32 $\mu\text{eq l}^{-1}$ to 12 $\mu\text{eq l}^{-1}$.*

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Appendices

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APPENDIX 4	Concentration Data for Sulphur Dioxide and Particulate Sulphate
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1. Introduction

This is the third annual report prepared on the contract *The Operation and Management of the UK Acid Deposition Monitoring Networks* (EPG 1/3/137), let by the Department of the Environment, Transport and the Regions. The Acid Deposition Monitoring networks were established in 1986 to monitor the composition of precipitation and hence to provide information on deposition of acidifying compounds in the United Kingdom.

The Acid Deposition Monitoring Networks comprise two monitoring networks in which rain water samples are collected and analysed. The aim of the first network, known as the “Primary” network, is to provide high quality data which can be used to identify trends with time. The second network, the “Secondary” network, provides information on the spatial distribution of acid deposition in the UK. The measurements made and their interpretation for the period 1986 to 1999 have been presented in previous reports [e.g. Campbell *et al.*, 1994, 1998; Vincent *et al.*, 1995, 1996, 1998; Hayman *et al.*, 2000, 2001c].

In addition to the sampling of rainwater at both the Primary and Secondary Network sites, a range of other measurements are made which provide a more complete understanding of precipitation chemistry in the United Kingdom. At the commencement of the contract, the measurement programme comprised the sampling and determination of:

- *rainwater composition using a wet-only collector at the “primary” sites on a daily basis;*
- *rainwater composition using a bulk collector at the Eskdalemuir site on a daily basis;*
- *rainwater composition using a bulk collector at 32 sites on a weekly basis;*
- *the concentrations of nitrogen dioxide using diffusion tubes on a monthly basis;*
- *the concentrations of particulate sulphate and sulphur dioxide concentrations at eight sites on a daily basis;*
- *total inorganic nitrate (TIN) and total inorganic ammonium (TIA) at two sites on a daily basis; and,*
- *nitric acid and the major constituents of particulate aerosol on a weekly basis at two sites.*

The measurement programme was reviewed in February 1999 and significant changes were made to the network. The current monitoring programme comprises:

- *the measurement of rainwater composition at the Eskdalemuir site using a wet-only collector on a daily basis and bulk collectors on a daily and weekly basis;*
- *the measurement of rainwater composition using bulk collectors at 38 other sites on either a weekly or fortnightly basis (following the installation of 7 new fortnightly sampling sites);*
- *the concentrations of nitrogen dioxide using diffusion tubes on a monthly basis at 32 sites;*
- *the concentrations of particulate sulphate and sulphur dioxide concentrations at eight sites on a daily basis;*
- *the measurement of nitric acid and other acidic species in both the gas- and aerosol-phases at 12 sites on a monthly basis (to replace the previous daily TIN/TIA and weekly nitric acid measurements);*
- *the measurement of nitric acid and other acidic species in both the gas- and aerosol-phases at Barcombe Mills on a daily basis.*

The measurements made in the networks have provided key inputs into the comprehensive reviews of our understanding of acid deposition undertaken by the Review Group on Acid Rain [RGAR, 1990; RGAR, 1997]. In particular, the third and fourth reports of RGAR covered the periods from 1986 to 1988 and from 1992 to 1994, respectively [RGAR, 1990; RGAR, 1997]. The results are currently being used to inform the deliberations of the National Expert Group on Transboundary Air Pollution (NEG-TAP) which the Department established in 1999 to advise on transboundary air pollution issues and specifically whether the reductions in the emissions of acidifying pollutants have been effective in promoting the recovery of ecosystems affected by acid deposition.

This report presents a comprehensive summary of the measurements made in the networks for 2000 and includes the measurements from the HNO₃ monitoring network. The report is structured as follows:

- a description of the sampling networks and the sampling techniques employed are presented in Section 2, together with the changes made to the network in 2000;
- an overview of the results from the Acid Deposition Networks for 2000 and concentration maps for non-seasalt sulphate, nitrate, ammonium, hydrogen ion and nitrogen dioxide are presented in Section 3, together with the trends in all acidifying components measured as part of the acid rain monitoring programme;
- a description of the nitric acid monitoring network and the measurements are presented in Section 4.

Summary tables of the weekly bulk precipitation composition data for 2000 at the individual sites are presented in Appendix 1. Time series graphs for data collected since 1986 and seasonal variation plots are presented, along with details of the sites themselves. Appendix 2 presents all the annual concentrations at each site since 1986, together with the annual rainfall amounts determined using the bulk rain collector. Appendix 3 describes the geostatistical techniques that have been used to calculate the concentration maps in this report. The individual measurements of sulphur dioxide and particulate sulphate made at the 8 daily sites are provided in Appendix 4, together with the monthly and annual mean concentrations calculated for each site. Appendix 5 provides a complete set of the measurements made in the HNO₃ Denuder Monitoring Network from commencement in the Autumn of 1999 to June 2001.

2. The Monitoring Programme

2.1 THE ACID DEPOSITION MONITORING NETWORKS

2.1.1 Site Locations

The Acid Deposition Monitoring Networks comprise two monitoring networks in which rainwater samples are collected and analysed. The aim of the first network, known as the “Primary” network, is to provide high quality data which can be used to identify trends with time. The second network, the “Secondary” network, provides information on the spatial nature of acid deposition in the UK. Originally there were 9 primary and 59 secondary sampling sites. Following recommendations from RGAR, both networks were reduced in size to the current 5 and 32 sites, respectively, in 1989. The spatial distribution of the sites is shown in Figure 2.1.

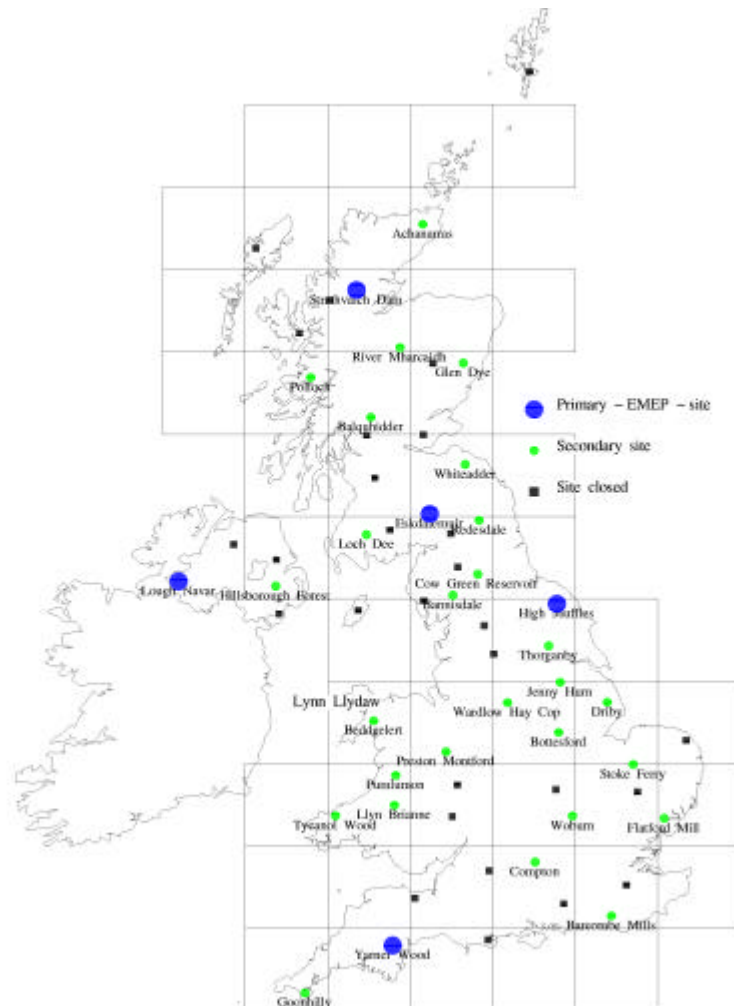


Figure 2.1: Location of the Current Primary and Secondary Sampling Sites (Also presented are the locations of the sites no longer operating. The 100 km squares show how the sampling site coverage meets the original coverage objective.)

Seven new sites were established in the early part of 1999 to monitor rainwater composition in ecologically-sensitive locations. The locations of the sites are

- Lochnagar
- Scoat Tarn
- River Etherow
- Llyn Llagi
- Loch Chon/Tinker
- Beaghs Burn
- Crai Reservoir (Head of the Valleys)

The sites are shown in Figure 2.2.

The rainwater samples are collected on a fortnightly basis using bulk collectors.

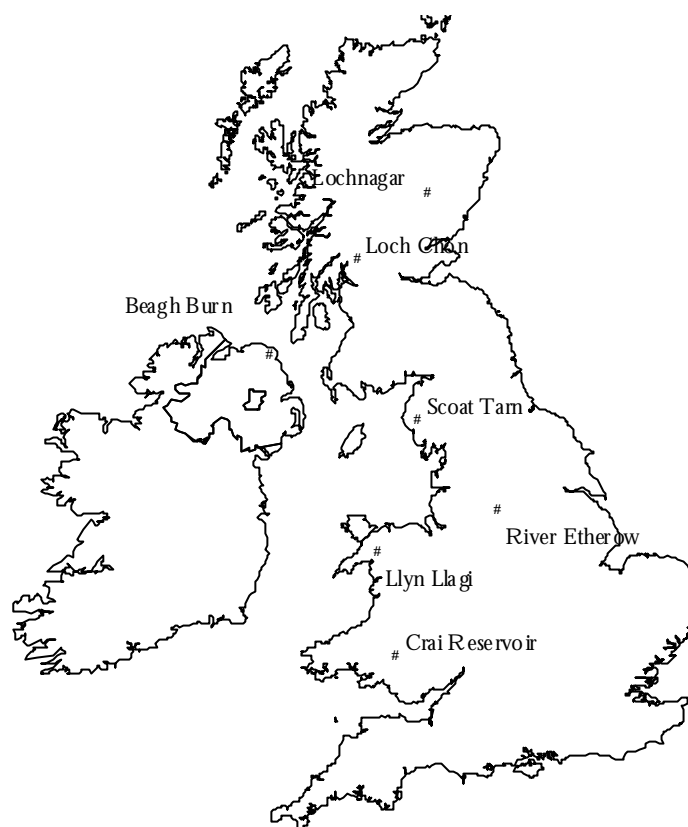


Figure 2.2: The New Bulk Rainwater Sites.

In addition to the sampling of rainwater composition, a range of other parameters are measured to provide a more complete understanding of precipitation chemistry in the United Kingdom. The measurement programme was reviewed in February 1999 by leading members of the UK Acid Rain community and significant changes were proposed and implemented. The current monitoring programme comprises the sampling and determination of:

- *rainwater composition using bulk and wet-only collectors at the Eskdalemuir site on a daily basis;*
- *rainwater composition using bulk collectors at the other 38 network sites on either a weekly or fortnightly basis;*
- *the concentrations of nitrogen dioxide using diffusion tubes on a monthly basis at 32 sites;*
- *the concentrations of particulate sulphate and sulphur dioxide concentrations at eight sites on a daily basis;*
- *the concentrations of nitric acid and other acidic species in both the gas- and aerosol-phases at 12 sites on a monthly basis (see Section 4);*
- *the concentrations of nitric acid and other acidic species in both the gas- and aerosol-phases at a single site on a daily basis.*

While the new nitric acid monitoring network was being established, the following measurements were continued to allow a period of overlap:

- *total inorganic nitrate and total inorganic ammonium at Eskdalemuir¹ on a daily basis, and*

¹ The TIN and TIA measurements at High Muffles were discontinued from 7th April 1999.

- *nitric acid and the major constituents of particulate aerosol on a weekly basis at High Muffles and Stoke Ferry.*

The sampling techniques used to make these measurements are summarised in Sections 2.2.

2.1.2 Site Operations

The sites in operation in 2000 are listed together with the local operators who perform the sample changeovers in Table 2.1, Table 2.2 and Table 2.3.

2.2 SAMPLING TECHNIQUES

2.2.1 Precipitation

Weekly or Fortnightly precipitation samples were collected in bulk collectors at 39 sites using a collector designed by Hall [1986]. An assessment of the collection efficiency of the bulk collector is provided by Stone and Tily [1992]. For the two year period 1986 to 1987, the bulk collector was found to have collection efficiencies which ranged from 77% to 99% when compared to the 5 inch meteorological rain gauge.

Acid deposition occurs primarily by wet and dry deposition. The wet-only collector, developed at the Warren Spring Laboratory (which now forms part of AEA Technology), is a daily precipitation collector. The collector incorporates a number of features designed to measure the wet deposition component, minimise the effect of dry deposition, preserve sample integrity, record associated tipping bucket volume data and allow unattended operation for up to eight days.

2.2.2 Sulphur Dioxide and Particulate Sulphate

The concentrations of particulate sulphate and sulphur dioxide were determined by first collecting a sample using eight-port bubbler instruments (AGL, Hitchin). Particulate sulphate was collected by drawing air through a Whatman 40 filter. Sulphur dioxide is collected by passing the air through a hydrogen peroxide solution where sulphur dioxide is oxidised to sulphate. The sulphate concentrations are determined by ion chromatography.

In addition to the daily sampling reported here, further monitoring of sulphur dioxide - *The Rural SO₂ Monitoring Network* - is undertaken as part of the Acid Deposition Processes contract let to the Centre for Ecology and Hydrology, Edinburgh.

2.2.3 Nitrogen Dioxide

Diffusion tubes have been used to measure nitrogen dioxide concentrations at the Primary and Secondary Network sites. Tubes are mounted on the upright of the rain collector stand and are exposed for twelve four or five week periods throughout each year.

2.2.4 Total Inorganic Nitrate and Total Inorganic Ammonium

Total inorganic nitrate (TIN) and total inorganic ammonium (TIA) were collected on a daily basis using single-stage filter packs impregnated with sodium hydroxide and citric acid to absorb

Table 2.1 - Primary Network Sites and Measurements Made in 2000

Measurement:	Precipitation				NO₂	SO₂	Part. SO₄	TIN /TIA	HNO₃ /NO₃
	<i>Frequency:</i>	<i>daily wet</i>	<i>daily bulk</i>	<i>week bulk</i>	<i>fort. bulk</i>	<i>monthly</i>	<i>daily</i>	<i>daily</i>	<i>weekly</i>
SITE:									
Yarner Wood	note 1		*		*	*	*		
Lough Navar	note 1		*		*	*	*		
High Muffles	note 2		*		*	*	*	note 3	* - 4, 5
Eskdalemuir	*	*	*		*	*	*	note 5	
Strathvaich Dam	note 2		*		*	*	*		

Notes (1) The daily wet-only measurement was stopped at 31st March 1999; (2) The daily wet-only measurement was stopped at 31st December 1999; (3) This measurement programme ended on 7th April 1999; (4) PTFE filters also analysed for the following ions: Na⁺, Cl⁻, NH₄⁺, SO₄²⁻ and NO₃⁻; (5) This measurement programme ended on 7th December 2000.

Table 2.2 - Secondary Network Sites and Measurements Made in 2000

Measurement:	Precipitation				NO₂	SO₂	Part. SO₄	TIN /TIA	HNO₃ /NO₃
	<i>Frequency:</i>	<i>daily wet</i>	<i>daily bulk</i>	<i>week bulk</i>	<i>fort. bulk</i>	<i>monthly</i>	<i>daily</i>	<i>daily</i>	<i>weekly</i>
SITE:									
Barcombe Mills			*		*	*	*		
Stoke Ferry			*		*	*	*		* - 1, 2
Glen Dye			*		*	*	*		
Goonhilly			*		*				
Compton			*		*				
Flatford Mill			*		*				
Woburn			*		*				
Tycanol Wood			*		*				
Llyn Brianne			*		*				
Pumlumon			*		*				
Preston Montford			*		*				
Bottesford			*		*				
Llyn Llydaw			*		*				
Wardlow Hay Cop			*		*				
Driby			*		*				
Jenny Hurn			*		*				
Thornganby			*		*				
Bannisdale			*		*				
Hillsborough For			*		*				
Cow Green Res			*		*				
Loch Dee			*		*				
Redesdale			*		*				
Whiteadder			*		*				
Balquhidder			*		*				
Polloch			*		*				
Allt a' Mharcaidh			*		*				
Achanarras			*		*				
Crai Reservoir - 3				*					
Beaghs Burn - 3				*					
Loch Chon - 3				*					
Lochnagar - 3				*					
River Etherow - 3				*					
Scoat Tarn - 3				*					
Llyn Llaji - 3				*					

Notes (1) PTFE filters also analysed for the following ions: Na⁺, Cl⁻, NH₄⁺, SO₄²⁻ and NO₃⁻; (2) This measurement programme was discontinued from December 2000; (3) New sites established in 1999.

Table 2.3 - Precipitation Composition Monitoring Sites, 2000
(those in *bold* are EMEP sites with the daily measurements made - wet-only sampling, sulphur dioxide and particulate sulphate - reported to EMEP).

Site Code	Site Name	O.S. Reference	Altitude (m)	Operator
5003	Goonhilly	SW 723214	108	British Telecom
5008	Yarner Wood	SX 786789	119	English Nature
5007	Barcombe Mills	TQ 437149	10	South East Water plc
5129	Compton	SU 512804	105	AEA Technology plc
5154	Crai Reservoir	SN 288222	310	Welsh Water plc
5024	Flatford Mill	TM 077333	5	Field Studies Council
5127	Woburn	SP 964361	89	Rothamsted Experimental Station
5123	Tycanol Wood	SN 093364	205	Countryside Council for Wales
5124	Llyn Brianne	SN 822507	420	Environment Agency. Forest Enterprise
5150	Pumlumon	SN 823854	390	Centre for Ecology and Hydrology (Bangor)
5004	Stoke Ferry	TL 700988	15	Kings Lynn and West Norfolk Borough Council
5023	Preston Montford	SJ 432143	70	Field Studies Council
5121	Bottesford	SK 797376	32	PowerGen
5160	Llyn Llagi	SH 647483	490	CEH Bangor
5153	Llyn Llydaw	SH 556518	358	Countryside Council for Wales
5158	River Etherow	SK 125986	485	ENSIS
5120	Wardlow Hay Cop	SK 177739	350	English Nature
5136	Driby	TF 386744	47	Anglian Water
5118	Jenny Hum	SK 816986	4	PowerGen
5117	Thorganby	SE 676428	8	Selby District Council
5009	High Muffles	SE 776939	267	Forest Enterprise
5111	Bannisdale	NY 515043	265	CEH Windermere
5149	Hillsborough Forest	J 243577	120	Department of Agriculture and Rural Development (NI)
5006	Lough Navar	H 065545	130	Forestry Service, Northern Ireland
5113	Cow Green Reservoir	NY 817298	510	English Nature
5159	Scoat Tarn	NY 158103	595	ENSIS
5107	Loch Dee	NX 468779	230	Scottish Environment Protection Agency/Forest Enterprise
5155	Beaghs Burn	D 165283	250	Department of Agriculture and Rural Development (NI)
5109	Redesdale	NY 833954	240	ADAS
5002	Eskdalemuir	NT 235030	259	Meteorological Office
5106	Whiteadder	NT 664633	250	East of Scotland Water
5156	Loch Chon	NN 429084	150	Freshwater Fisheries Laboratory
5152	Balquhiddier 2	NN 545207	135	Mountain Environments
5151	Polloch	NM 792689	30	Forest Enterprise
5157	Loch Nagar	NO 252859	785	ENSIS
5011	Glen Dye	NO 642864	185	Scottish Environment Protection Agency;
5103	Allt a' Mharcaidh	NH 876052	274	Freshwater Fisheries Laboratory
5010	Strathvaich Dam	NH 347750	270	Clova Environmental Research and Testing Services
5140	Achanarras	ND 151550	98	Mrs J. Erridge

TIN and TIA, respectively. The filter packs are held within a protective hood and exposed throughout the sampling period. This is a recommended EMEP method.

Following the strategic review of the networks in 1999, this sampling programme was replaced by the measurements made in the Nitric Acid Monitoring Network (see Section 4). The existing measurement programme was discontinued at High Muffles on the 7th April 1999 and was continued at Eskdalemuir until 7th December 2000 to allow a period of overlap with the replacement measurement programme.

2.2.5 Nitric Acid

A two-stage filter-pack is used in the monitoring network for nitric acid. Air is drawn through the filter pack at 5 l min⁻¹. Particles are trapped on the PTFE membrane while the nylon filter absorbs nitric acid (and other gases of interest such as HCl). The filters are exposed for weekly periods. The samples collected are extracted using an alkaline extractant and analysed by ion chromatography. The samples collected under dry summer conditions are likely to under-read as ammonium nitrate may volatilise during sampling. During cool wet winter conditions nitric acid may be absorbed by the front filter. The measurement technique does not give quantitative measurements and is used for indicative purposes only.

As part of the strategic review of the networks (Section 2.1), this sampling programme has been replaced by the new nitric acid monitoring programme (Section 4). The existing measurement programme was discontinued at the High Muffles and Stoke Ferry sites at the beginning of December 2000.

2.3 ANALYTICAL PROCEDURES

2.3.1 Sample Registration and Preparation

As for previous years, approximately 10,000 samples were received and analysed by the laboratory. Samples returned to AEA Technology were logged on a computerised sample register and their volumes recorded. Sample preparation and handling were carried out using standard operating procedures.

On receipt in the analytical laboratory rainwater samples were sub-sampled into polyethylene bottles (Nalgene). The pH and conductivity were recorded and the samples filtered through 1µm disposable filters to remove insoluble particulate material and micro-organisms that might compromise sample integrity before analysis. The samples were then stored at 4°C until analysis by ion chromatography. Samples were analysed for: sulphate, nitrate, chloride, phosphate, sodium, magnesium, calcium, potassium, pH and conductivity. Analysis was usually completed within one month.

2.3.2 Analysis

Samples were analysed using NAMAS accredited methods. All samples with exception of diffusion tubes are analysed using ion chromatography.

The rapid analysis of a large number of rain water samples in which concentrations vary over several orders of magnitude is a complex task. To verify the analytical results, the ion balance, I (Equation 1), is calculated for each rainwater sample.

$$I = \left| \frac{2(\Sigma c - \Sigma a)}{\Sigma c + \Sigma a} \right| \quad (\text{Equation 1})$$

where Σc = sum of cation concentrations in equivalents ($\mu\text{eq l}^{-1}$) and Σa = sum of anion concentrations in equivalents ($\mu\text{eq l}^{-1}$). A correction is estimated for the concentration of bicarbonate in samples which have a pH greater than 5.5. Samples which fall outside the criteria listed in Table 2.4 are submitted for reanalysis. The reanalysis is usually completed within four months of sampling.

Table 2.4 - Ion Balance Criteria Used to Select Samples for Reanalysis

Ionic strength concentration range ($\mu\text{eq l}^{-1}$)	Samples are resubmitted when the ion difference (%) is:
Less than 50	> 60
50-100	> 30
Greater than 100	> 15

Typically, 10-15% of the samples would fail the criteria and would be reanalysis. This failure rate would be reduced on reanalysis. In recent years, the number of samples failing the criteria has increased significantly because of the high calcium and magnesium ion concentrations measured using the existing ion chromatographs (see Section 2.3.3).

2.3.3 Introduction of New Ion Chromatographs

Two new ion chromatographs have been purchased by Harwell Scientifics during 2000. One ion chromatograph will be dedicated to the measurement of cations, the other to the determination of anions. Following extensive tests of the performance of the two new ion chromatographs, Harwell Scientifics Limited have gained formal accreditation for the new ion chromatographs from the United Kingdom Accreditation Service.

The tests undertaken have clearly indicated that the new instruments give very reproducible results and are in excellent agreement with the measurements made using the old chromatographs. The performance of the new instruments is better with regard to the measurement of the base cations, calcium and magnesium. The concentrations are generally lower than those measured on the old instruments. Extensive tests have been undertaken to understand this discrepancy but the origin has not been identified. Operationally, the high calcium and magnesium ion concentrations have resulted in a significant number of reanalyses. It is expected that the number of reanalyses required will be reduced as a result.

Following a review of the performance of the new instruments in the summer of 2000, the following changeover was implemented:

- Rainwater Samples: *All samples collected during 2000 would be analysed with the new ion chromatographs. The samples collected during 2000 which have been analysed so far using the old ion chromatograph will be reanalysed for cations.*

- Daily Bubbler Samples: *These are only analysed for sulphate. The intention was to continue to use the old ion chromatograph for these measurements.*
- Weekly Bubbler Samples: *This is the measurement programme undertaken in the Rural SO₂ Monitoring network, which AEA Technology operates under sub-contract to CEH Edinburgh as part of the Acid Deposition Processes project. The samples are only analysed for sulphate. The intention is to continue to use the old ion chromatograph for these measurements until the end of the contract which expired at the end of October.*

The tests undertaken by Harwell Scientifics Limited indicate that the performance of the two instruments are identical within their respective measurement errors. This is important as the data collected in the networks are used to identify trends over time. Any step changes introduced will make the identification of such trends more difficult.

2.3.4 Changes to the Sample Registration System

A new sample registration system has been developed to replace the existing system which is used to process the large number of samples collected in the networks. The new system has been developed using Microsoft ACCESS and is now fully operational. The system contains the following additional functionality:

- *Data Reconciliation*: For many of the samples collected, air is drawn through a filter paper (*e.g.*, the collection of aerosol material to give the particulate sulphate concentration) or a solution (*e.g.*, the hydrogen peroxide bubbler for SO₂). The analysis of the samples give the amount or concentration of material present in the solution or extract. The total volume of air drawn through the sampler is needed to convert the analytical results into air concentrations. Previously, the total volume was derived from the information placed in the sample registration system when the individual samples were registered. This had to be extracted from the sample registration system and combined with the analytical results. The process was inefficient as the sample volume and analytical results needed to be reconciled and the datasets were held on different computer platforms with different operating systems. A facility has been included to perform this calculation within the new registration system.
- *Data Verification*: A facility has also been added to calculate the ion balance of the rainwater samples automatically and hence to identify the samples which need to be reanalysed. In the previous sample registration system, this calculation was made outside the registration system. The incorporation of these calculations in the registration system has significantly streamlined the data verification process. It is intended that the sample registration system will produce a ratified dataset which can be placed on the National Air Quality Information Archive or into the existing Air Pollution database for further data analysis.

The presence of these functions in the new sample registration system has improved the efficiency of the sample registration and subsequent data processing and verification.

2.4 DATA REPORTING CYCLE

Sample collection, analysis, reanalysis and verification is a continuous process. Figure 2.3 and Figure 2.4 define the reporting cycles for the measurements made in the monitoring

programme. Reanalysis is only undertaken for the composition of precipitation using the ion balance as the criterion. Simple data verification is undertaken for the other measurements. The cycles show that the measurements made in Year *N* would be available by July of Year *N+1*. Although the existing cycles approach this, it is intended to adhere to these reporting cycles more closely.

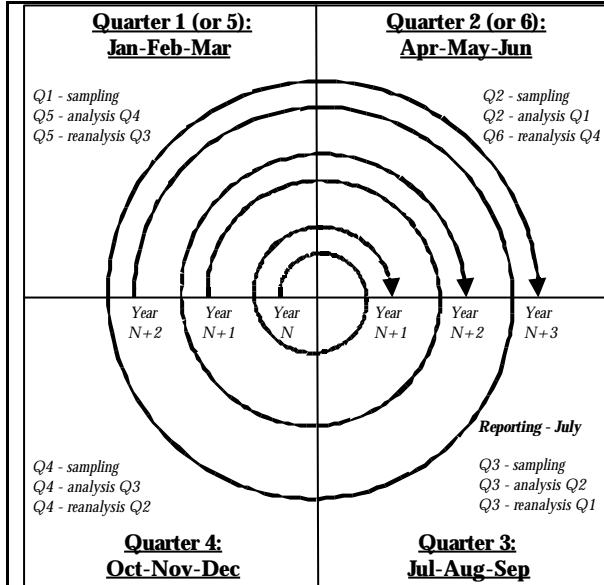


Figure 2.3 - Cycle for the Sample Collection, Analysis, Reanalysis and Reporting of the Composition of Precipitation.

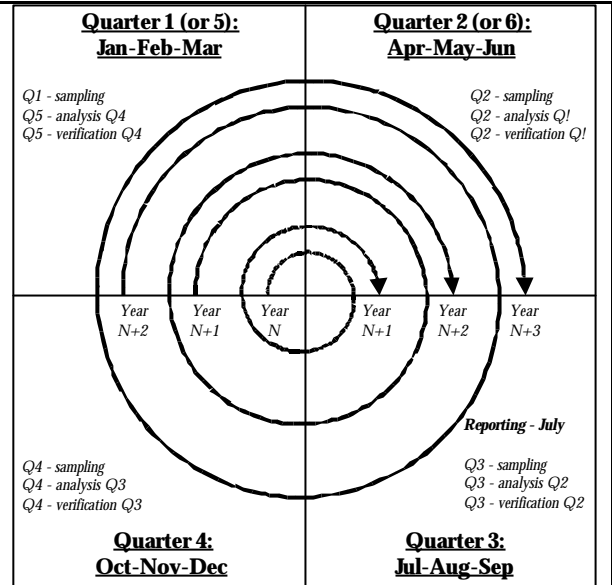


Figure 2.4 - Cycle for the Sample Collection, Analysis and Verification and Reporting of the Other Measurements.

3. 2000 Measurements and Trends

3.1 DATA SUMMARY

The complete set of precipitation measurements made in the Acid Deposition Monitoring Networks during 2000 is provided in Appendix 1. For each site, information is provided about the site and the measurements made. Plots are included in Appendix 1 which show (a) the trend in the annual precipitation-weighted mean concentrations for non-seasalt sulphate, nitrate, ammonium and hydrogen ion since 1986 and (b) the trend in the annual rainfall and in the corresponding annual deposition of the four species since 1986. It should be noted that the tables in Appendix 1 contain all the analytical results obtained, including those samples affected by contamination by birdstrike. A phosphate concentration $> 0.1 \text{ mg P l}^{-1}$ (or $> 9.7 \text{ } \mu\text{eq l}^{-1}$) was taken as evidence of contamination. Although all these samples have been included in the tables, they were not included in the calculation of annual mean precipitation-weighted ion concentrations. The mean annual rainfall and the precipitation-weighted mean annual concentrations of all ions for the period from 1986 to 2000 are also tabulated in Appendix 2. The rainfall totals presented in Appendix 2, Table 10 include all samples collected and are therefore sometimes higher than the totals used for the calculation of the annual mean concentrations.

The trends shown in the two plots varies from site to site (Appendix 1), although in general annual precipitation-weighted mean non-seasalt sulphate and hydrogen ion concentrations have tended to decline whereas nitrate and ammonium have not changed much at all. A box has been included in Appendix 1 which contains a statistical summary of the trends of the four ions shown in the plots.

Previously, Appendix 1 also included a figure for each site which showed the seasonal variation in the concentrations. The seasonal plots presented previously [see Hayman *et al.*, 2000, 2001] clearly showed that the largest concentrations of both non-seasalt sulphate and nitrate occur in the period from April to June at most of the sites. This is partly a consequence of the seasonal variation of emissions and of the oxidising capacity of the atmosphere, as demonstrated by the seasonal variation observed in particulate sulphate (see Figure 3.1). However, the variation in concentration of particulate sulphate concentration is much smaller than that of non-seasalt sulphate in precipitation. The concentrations of ions in precipitation are also affected by the seasonal variation in rainfall amount. The monthly mean rainfall amount tends to be smaller in early summer than in the rest of the year and the inverse

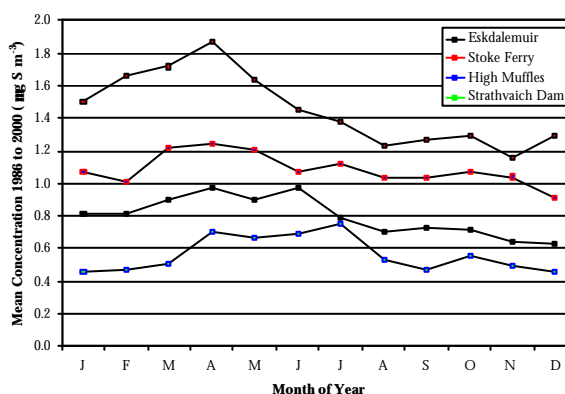


Figure 3.1 Seasonal Variation in the Particulate Sulphate Concentration at 4 of the 5 Primary Sites as Averages for the years 1986-2000.

correlation between rainfall amount and the concentrations of non-seasalt sulphate, nitrate, ammonium results in a corresponding opposite seasonal variation.

Appendix 3 describes the geostatistical techniques that have been used to calculate the concentration maps in this report. The individual measurements of sulphur dioxide and particulate sulphate made at the 8 daily sites are provided in Appendix 4, together with the monthly and annual mean concentrations calculated for each site.

3.2 PRECIPITATION CHEMISTRY

3.2.1 Data Capture at Loch Dee

There were issues of sample contamination and integrity at the Loch Dee site during 2000. Although this was resolved, the monitoring programme was disrupted and no samples were collected between August and December. For this reason, the annual mean rainfall has been deleted from the summary tables presented in Table A.2.10 of Appendix 2.

3.2.2 Acidity Measurements

Harwell Scientifics Ltd participated in the 18th EMEP intercomparison exercise [see Hayman *et al.*, 2001]. The results of the intercomparison demonstrated that the new ion chromatographs were working well and were producing analytical results in very good agreement with the expected concentrations. However, there was a clear discrepancy on the measurements of acidity, which are made using a pH probe. After a review of the implications of the discrepancy, a decision was made to remove the 2000 measurements from Tables included in Appendices 1 and 2.

3.2.3 Highlights of the 2000 Measurements

Rainfall was expected to be higher in 2000 than in 1999 and this was observed at all the sites apart from a few sites in Scotland (Polloch, Strathvaich Dam, Balquhidder, Loch Chon and Achanarras) and Lough Navar in Northern Ireland where the rainfall was lower. The rainfall was higher in 2000 than that measured in 1999 by between 2% and 46%. The rainfall in 2000 was also higher than the period mean (1986-2000) at 28 out of 31 sites by between 1% (Polloch) to 67% (Barcombe Mills) (see Table A.2.10 of Appendix 2). As indicated above, the rainfall measurement at Loch Dee was not valid as no samples were collected between August and December.

The rainfall in 2000 was higher than the 30-year average for the period 1941-1970 at 14 of the sites by between 2% (Flatford Mills, Woburn) and 38% (Barcombe Mills). The other sites had lower rainfall by between 4% (Goonhilly, Yarner Wood) and 39% (Achanarras).

Considering a selection of sites in sensitive areas in more detail:

- **Llyn Brienne (Mid Wales):** The rainfall measured at Llyn Brienne in 2000 was the highest observed during the period 1986-2000 and was 34% above the period mean. The precipitation-weighted concentrations of non seasalt sulphate, nitrate and ammonium were lower than those observed in 1999 although the deposition of these ions were little changed from 1999. Analysis of the long term trends shows a significant decline in the concentration

of sulphate and hydrogen. There is however no long-term trend in the concentrations of the nitrogen species although the recent increase in the deposition has levelled off.

- **Bannisdale (Lake District):** The rainfall in 2000 was about 30% higher than that measured in 1999 and higher by a similar amount than the period mean and the 30-year mean for 1941-1970. The trends in the concentrations of sulphate and acidity² show statistically-significant reductions. The deposition of sulphate, ammonium and nitrate was slightly higher than that observed in 1999 because of the higher rainfall. However, the long-term trends in the concentrations of the nitrogen species showed no real change.
- **Cow Green Reservoir (N Pennines):** The rainfall in 2000 was 22% greater than the rainfall measured in 1999 and 42% above the period mean for 1986-2000, although 25% lower than the 30-year mean for 1941-1970. Although closer to the major power station sources of sulphur dioxide, the annual precipitation-weighted mean concentrations of non-seasalt sulphate and acidity² are slightly smaller than those at Bannisdale and have shown a similar statistically-significant decline over the period 1986 to 2000. The deposition of nitrate and ammonium increased over the measurements made in 1998 and 1999, although the long-term trends in concentration are again not statistically significant.
- **Eskdalemuir (S Scotland):** The rainfall was 9% higher in 2000 than in 1999 and 13% higher than the period mean. The annual precipitation-weighted mean concentrations and deposition of non-seasalt sulphate was slightly lower in 2000. The measurements made in 2000 confirm the previous statistically-significant trends. The deposition of nitrate and ammonium was slightly lower in 2000 than that measured in 1999. The long-term trends in the concentrations of the nitrogen species were again not statistically significant.
- **Balquhiddar (SW Highlands):** Unlike most other sites in the network, the rainfall was 11% lower in 2000 and 1% below the period mean. The annual precipitation-weighted mean concentration and deposition of ammonium were both notably lower in 2000. The inclusion of the 2000 measurement of non-seasalt sulphate now gives a statistically-significant trend. The concentrations of the other species however show no statistically-significant trends. The site was moved in 1994 and some caution is needed in interpreting data since then. There is little change in nitrate and ammonium deposition despite the site relocation. 1996 was a very dry year and precipitation-weighted mean concentrations of all ions were unusually large.
- **Polloch, Strathvaich Dam (Northern and Western Highlands):** These sites are relatively unpolluted and, of all the sites in the network, should be most sensitive to the limiting effect of any “background” pollutant levels in precipitation from the Atlantic. The ammonium concentrations in many samples are below the detection limit. Annual mean non-seasalt sulphate concentrations at both sites were below 10 $\mu\text{eq l}^{-1}$ in 2000. The inclusion of the 2000 measurements of non-seasalt sulphate now give a statistically-significant trend at Strathvaich Dam in the sulphate concentration over the full measurement period and confirm the downward trend at Polloch. Deposition of non-seasalt sulphate has declined at both sites, more noticeably at Polloch. Nitrate concentration and deposition show no change at the Strathvaich Dam site. As a result, the non-seasalt sulphate to nitrate ratios in both concentration and deposition have fallen.

² There is no change in the trend from 1999 as the acidity measurements for 2000 have been removed.

3.2.4 Concentration Maps for 2000

The spatial concentration patterns for non-sea sulphate, nitrate and ammonium are presented in Figure 3.2 for the original 32 bulk rainwater sites in the networks for 1999 and 2000. Figure 3.2 also present the maps that include the measurements from the original 32 bulk rainwater sites in the network and the 7 new sites established in 1999. The parameters used in the interpolation are presented in Appendix 3. As indicated above, the acidity measurements were removed. For this reason, no maps of acidity were produced.

For the datasets up to and including the 1997 dataset, deposition maps were determined from the concentration maps using rainfall fields supplied by the Meteorological Office. As these data are no longer purchased through this contract, only concentration maps are now presented.

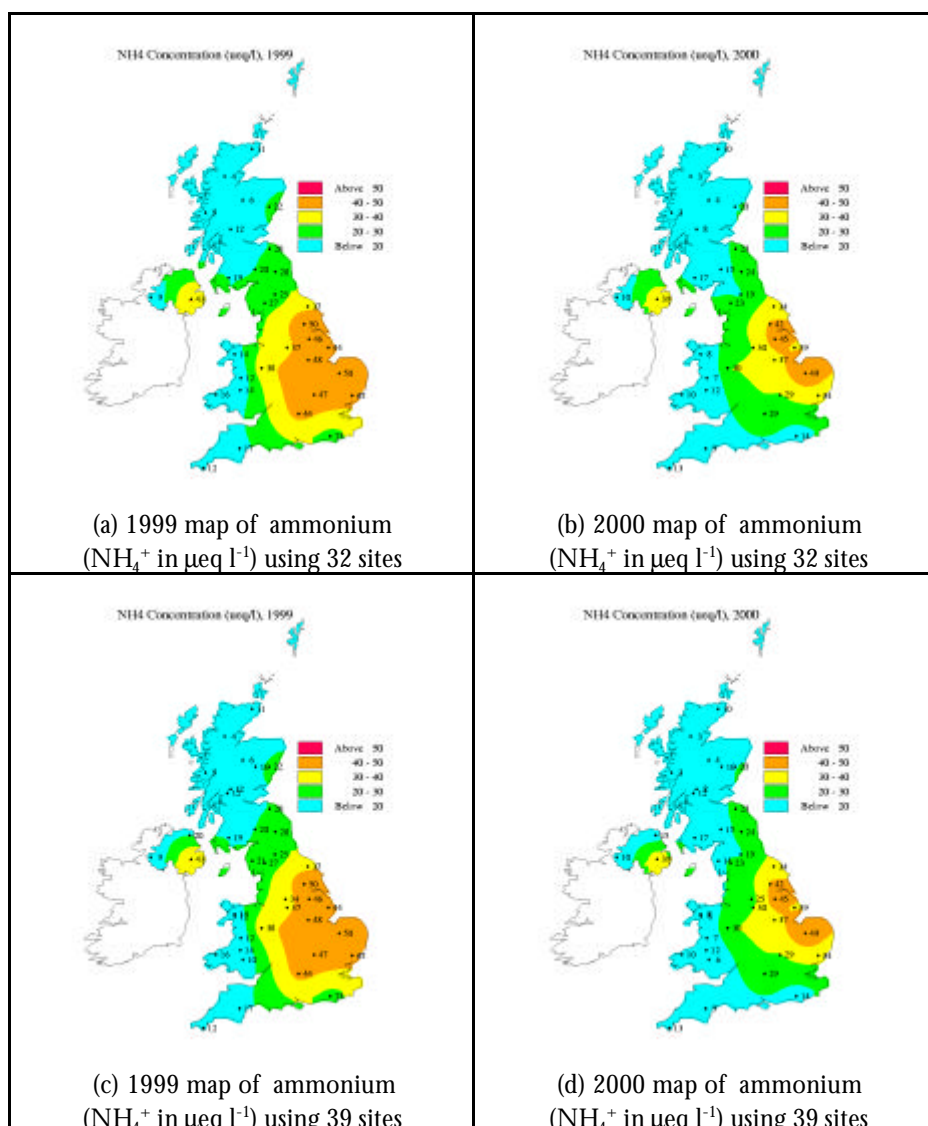


Figure 3.2a-d *Precipitation-weighted concentration maps of ammonium for 1999 and 2000.*

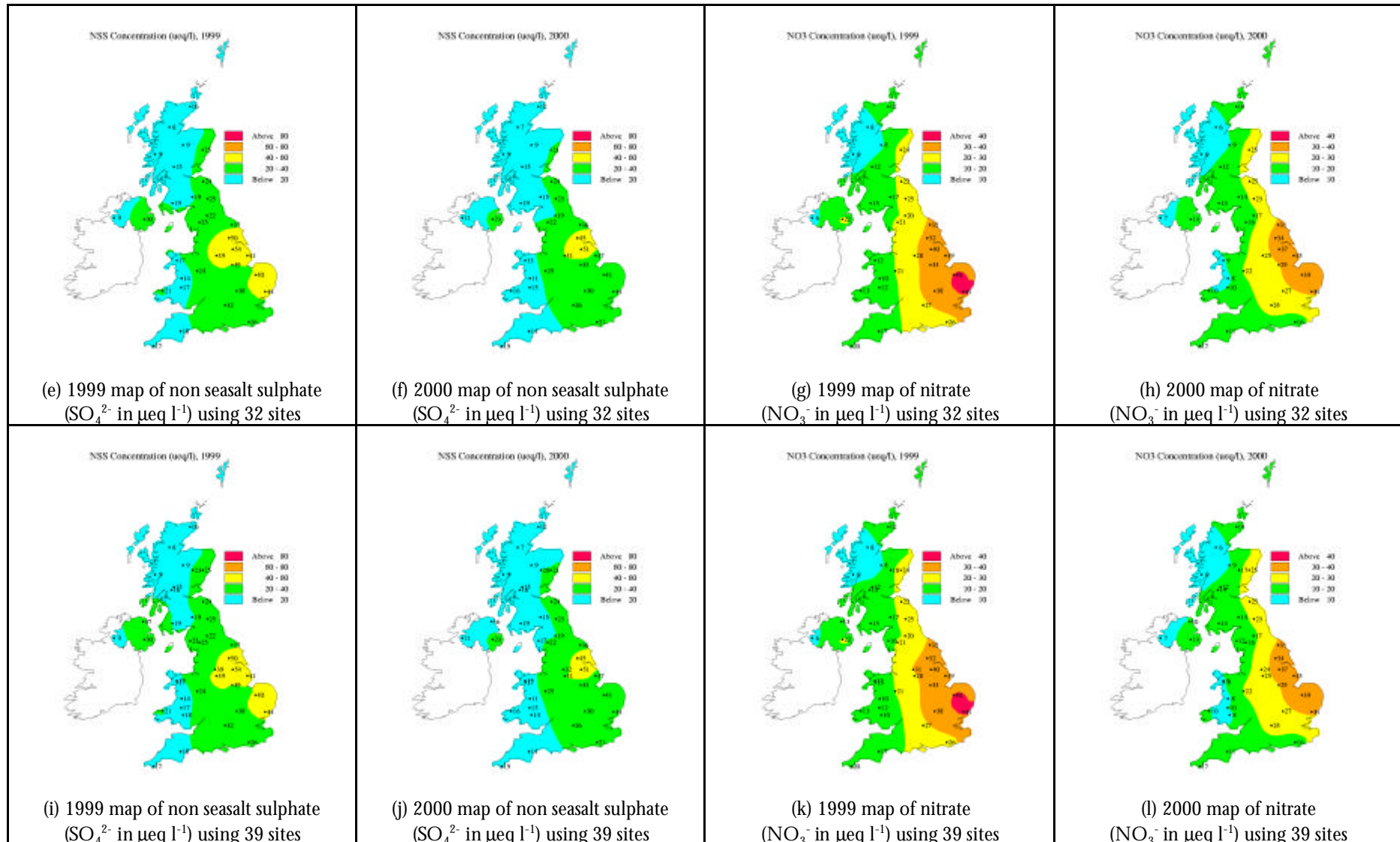


Figure 3.2e-l *Precipitation-weighted concentration maps of non seasalt sulphate and nitrate for 1999 and 2000.*

3.2.5 Precipitation Chemistry Trends

Figure 3.3 and Figure 3.4 show the monthly total and running annual average³ of the monthly total deposition for non-seasalt sulphate and nitrate at each of the primary sites in the network. The data shown in these figures were derived from the samples collected by the weekly bulk collectors. The plots show that there is (a) a large month-to-month variation in deposition at all sites, (b) a variation in the average deposition between sites and (c) a variation in the long-term trends in deposition over the period 1986 to 2000.

The spatial variation in the long-term trend in wet deposition is, perhaps, surprisingly small between these sites. For the sites at Yarner Wood, Barcombe Mills, Stoke Ferry, Eskdalemuir and Glen Dye, the average monthly deposition of sulphate was close to 0.4 to 0.5 kg S hectare⁻¹ month⁻¹ and nitrate deposition around 0.3 kg N hectare⁻¹ month⁻¹. There was greater wet deposition of sulphate at the High Muffles site (0.5 to 0.7 kg S hectare⁻¹ month⁻¹) than at the other sites. The wet deposition of nitrate was however similar to that at the other sites. The Strathvaich Dam and Lough Navar sites received less deposition of both pollutants, around 0.2 to 0.3 kg S hectare⁻¹ month⁻¹ and around 0.1 to 0.2 kg N hectare⁻¹ month⁻¹.

The concentrations of non-sea salt sulphate and nitrate in rainwater (and also of sulphur dioxide, and particulate sulphate) are clearly decreasing in some regions of the United Kingdom while in other regions the change in concentration is less easy to discern. At all sites, the wet deposition of sulphate has tended to decrease, albeit with varying significance. The greatest decreases were observed at Stoke Ferry and Barcombe Mills, both of which are close to major UK sources. The trend in nitrate deposition is more variable; there is no significant change.

Maximum monthly deposition totals of both nitrate and non-seasalt sulphate were as large at Yarner Wood and Glen Dye as at High Muffles, even though the latter is close to the largest UK point sources of sulphur dioxide. This illustrates the importance of episodic meteorological conditions at these sites. The impact of the March 1996 episode of long-range transported sulphate and nitrate can be clearly seen in the monthly curves for Glen Dye.

Analysis of the data has been undertaken to quantify the significance of the trends. The concentration data have been analysed using a linear least squares approach. The regression coefficient, or slope of the trend line, will have units of $\mu\text{eq l}^{-1} \text{year}^{-1}$. Associated with the regression analysis is a value called the F statistic. The F statistic is a measure of how successfully the linear regression can account for the variation in the dataset. It is formally defined as the ratio of the variance due to regression, standardised by the respective degrees of freedom (MS_R), to the variance about the regression also standardised by the respective degrees of freedom (MS_E). The value of the F statistic can be compared to points on an appropriate F distribution curve. If the value is greater than a certain (critical F) value, it is assumed that a real, statistically significant, change in the concentration has occurred.

In the analysis presented below, a 5% significance level has been used. This means that there is a 5% chance that the trend is not significant. Further, the “strength” of the observed trend is quantified using multiples of the ratio of the calculated F statistic to the critical F value. These multiples (more or less arbitrarily defined) are presented in Table 3.1.

³ In this report, the running annual mean is an average over 365 days and is centred on the midpoint of the interval. It removes the seasonal variation, thereby allowing the underlying trend to be discerned more clearly.

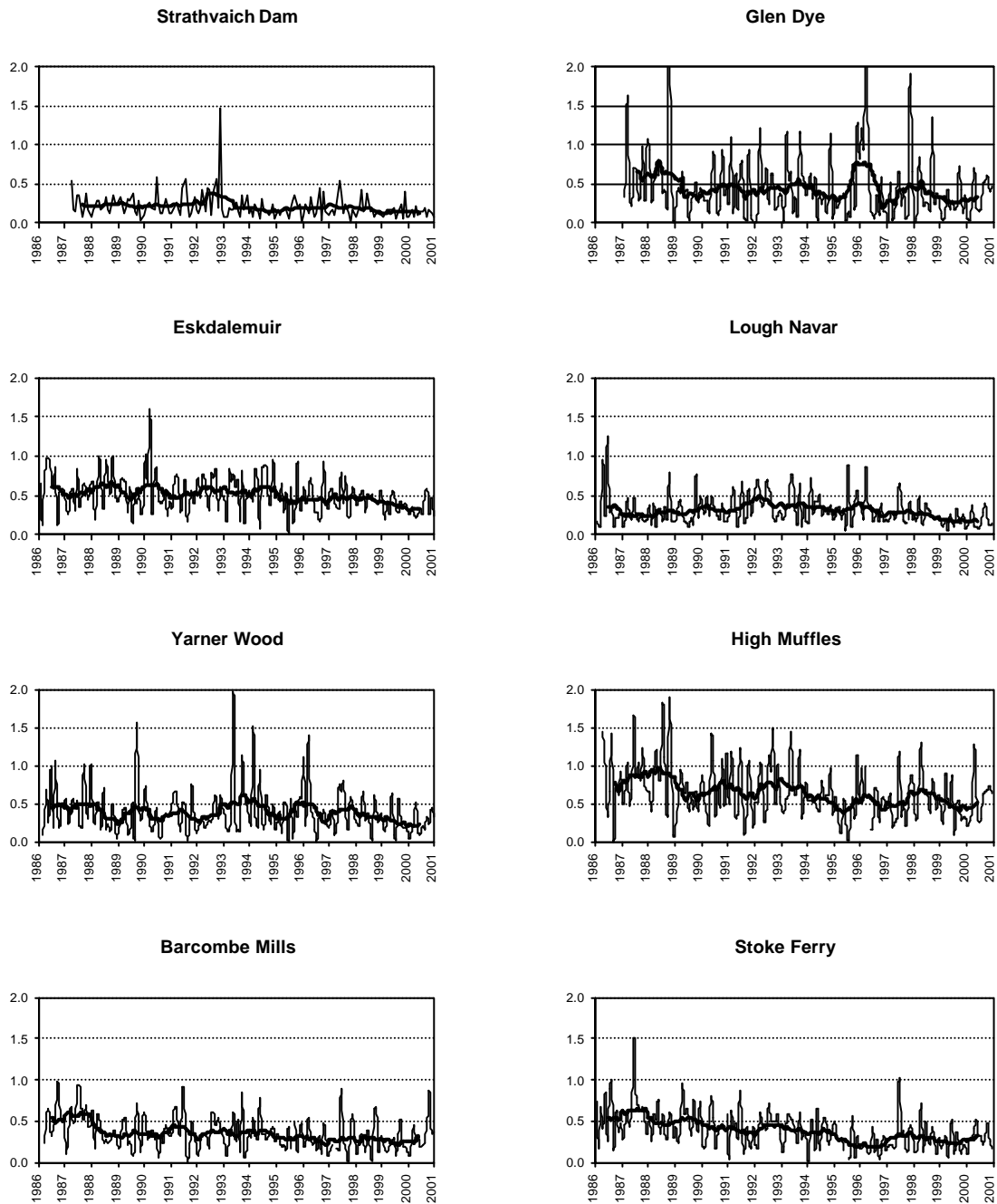


Figure 3.3: Monthly mean and running annual mean of wet deposited non-seasalt sulphate (kg S hectare⁻¹ month⁻¹)

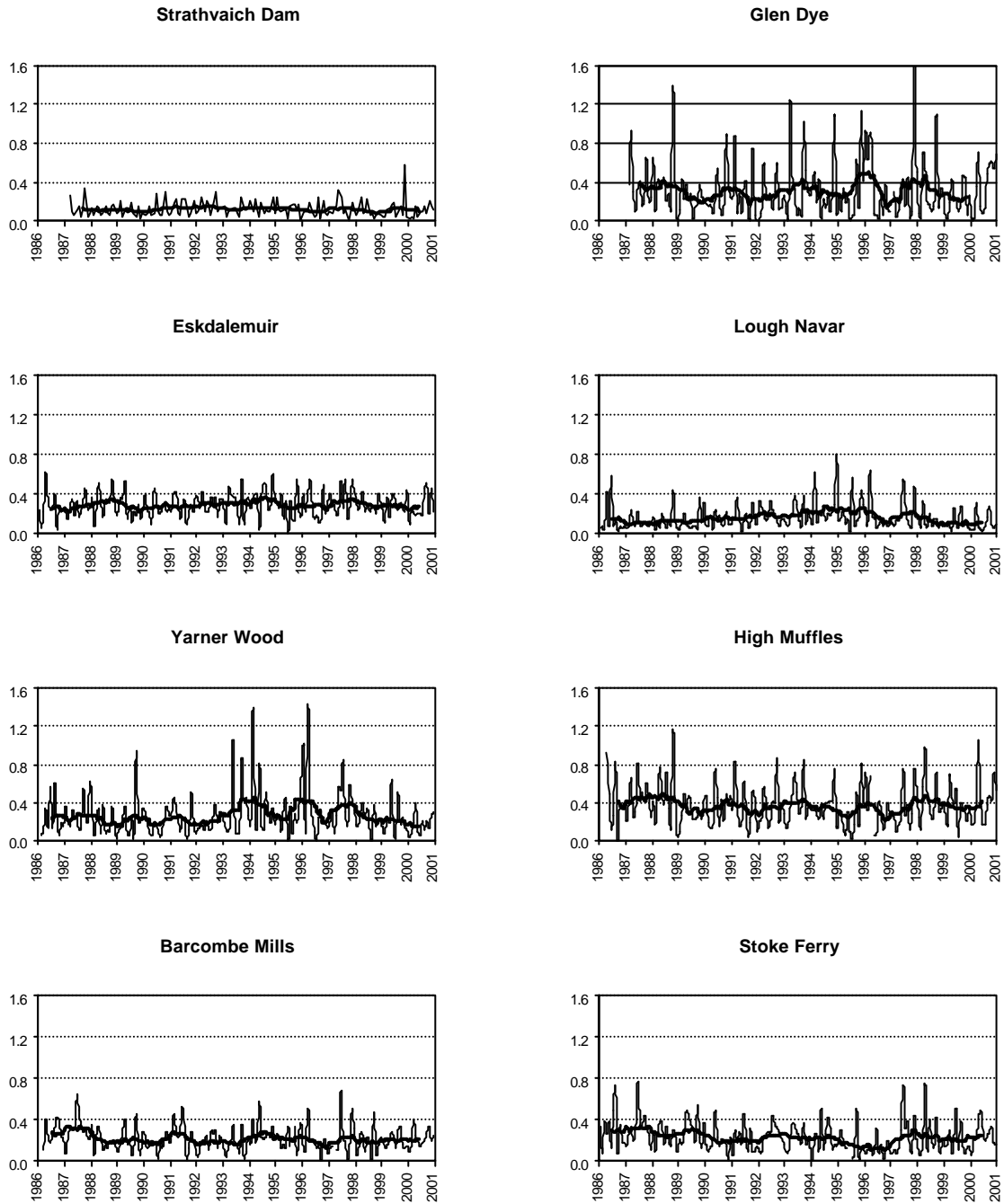


Figure 3.4: Monthly mean and running annual mean of wet deposited nitrate ($\text{kg N hectare}^{-1} \text{ month}^{-1}$)

Table 3.1: Strength of the Significance of the Trend.

Ratio	Value of ratio	Symbol	Comment
F calculated/F critical	ratio < 1	-	No Significant trend
F calculated/F critical	1 < ratio < 2	+	Significant trend detected
F calculated/F critical	2 < ratio < 5	++	Moderate trend detected
F calculated/F critical	5 < ratio < 10	+++	Strong trend detected
F calculated/F critical	10 < ratio < 20	++++	Very strong trend detected
F calculated/F critical	ratio > 20	+++++	Exceptionally strong trend detected

Table 3.2 presents a summary of the trend analysis performed on the non-sea salt sulphate and nitrate concentrations measured at the sampling sites in the acid rain monitoring network. Sites that show a very strong trend are situated in relatively dry locations, often downwind of major sources. Values of “ $F_{\text{calculated}}/F_{\text{critical}}$ ” less than one indicate that no statistically significant trend can be detected. This most often occurs for sites which are in the more remote parts of the United Kingdom.

Table 3.2: Summary of the Trend Analysis for nss-Sulphate and Nitrate Observed at the Acid Deposition Monitoring Network Sites and its Significance.

Sampling site	Site Code	Sulphate			Nitrate		
		$\mu\text{eq l year}^{-1}$	% change year ⁻¹	Trend Status	$\mu\text{eq l year}^{-1}$	% change year ⁻¹	Trend Status
Achanarras	5140	-1.05	-3.53	+++	-0.38	-1.76	-
Allt a' Mharcaidh	5103	-0.83	-3.71	++	-0.03	-0.32	-
Balquhidder	5152	-0.75	-2.58	+	-0.08	-0.53	-
Bannisdale	5111	-1.15	-2.54	++	0.04	0.22	-
Barcombe Mills	5007	-1.75	-3.56	+++	-0.58	-1.95	+
Bottesford	5121	-4.61	-4.73	+++++	-1.01	-2.28	++
Compton	5129	-3.66	-4.48	+++	-0.96	-2.40	++
Cow Green Reservoir	5113	-1.15	-2.82	++	-0.17	-0.76	-
Driby	5136	-2.86	-3.50	+++	-0.43	-0.92	-
Eskdalemuir	5002	-0.94	-2.81	+++	-0.04	-0.24	-
Flatford Mill	5024	-3.16	-4.02	+++	-0.67	-1.51	-
Glen Dye	5011	-1.48	-2.89	+	-0.26	-0.77	-
Goonhilly	5003	-0.74	-2.41	+	-0.02	-0.10	-
High Muffles	5009	-2.66	-3.37	+++	-0.72	-1.62	+
Hillsborough Forest	5149	-1.88	-3.55	++	-0.35	-1.48	-
Jenny Hurn	5118	-4.27	-3.88	+++++	-0.51	-1.09	-
Llyn Brianne	5124	-0.78	-2.64	++	-0.04	-0.29	-
Llyn Llydaw	5154	-1.58	-4.64	++	-0.26	-1.84	-
Loch Dee	5107	-0.99	-2.98	++	-0.12	-0.72	-
Lough Navar	5006	-0.40	-2.18	++	0.04	0.51	-
Polloch	5151	-0.97	-4.28	++	-0.46	-3.65	+
Preston Montford	5023	-2.15	-3.47	++	-0.34	-1.11	-
Pumlumon	5150	-0.82	-3.16	+	-0.19	-1.41	-
Redesdale	5109	-1.87	-3.43	++	-0.26	-0.81	-
Stoke Ferry	5004	-3.19	-3.81	+++++	-0.70	-1.48	+
Strathvaich Dam	5010	-0.45	-2.99	+	-0.04	-0.46	-
Thorganby	5117	-3.15	-3.25	++	-0.83	-1.79	++
Tycanol Wood	5123	-0.61	-2.20	++	-0.03	-0.22	-
Wardlow Hay Cop	5120	-2.64	-3.00	+++	-0.24	-0.74	-
Whiteadder	5106	-1.96	-3.61	+++	-0.64	-1.84	+
Woburn	5127	-3.45	-4.26	+++++	-0.54	-1.32	-
Yarner Wood	5008	-0.67	-2.27	-	0.09	0.48	-

Although the primary focus of the monitoring programme has been on the deposition of nitrate and non seasalt sulphate, there is increasing interest in the other components of rainwater, such as the base cations (Na, K, Mg and Ca).

3.3 SULPHUR DIOXIDE AND PARTICULATE SULPHATE

3.3.1 The 2000 Measurements

A summary of the measurements of sulphur dioxide and of particulate sulphate made at the eight daily sites is presented in Appendices 4.1 and 4.2 respectively.

The measurement of sulphur dioxide concentrations is also made in the Rural SO₂ Monitoring Network which is covered by a separate DEFRA contract (EPG 1/3/166 *Acid Deposition Processes in the UK*, under sub-contract from CEH Edinburgh). The mapping of the sulphur dioxide concentration is undertaken under that contract and is not discussed in this report. Data reports have been prepared for the years 1995 to 1999 by Vincent and Campbell [1996], Hasler and Downing [1999], Hasler *et al.* [2001], and Hayman *et al.* [2001a, b], respectively.

3.3.2 Trends in Sulphur Dioxide

Figure 3.5 shows both the monthly mean concentrations and running annual mean concentrations of sulphur dioxide at Eskdalemuir. As reported previously, the largest change in the concentration occurred between 1980 and 1990, during which time the average concentration decreased by a factor of three from around 4.5 ppb to 1.5 ppb. From 1990 to 2000, the concentration has decreased by a similar factor of two to three, to 0.4 ppb. The figure shows that the downward trend in the SO₂ concentrations follows the reduction in UK SO₂ emissions [Goodwin *et al.*, 2001], at least in the early years.

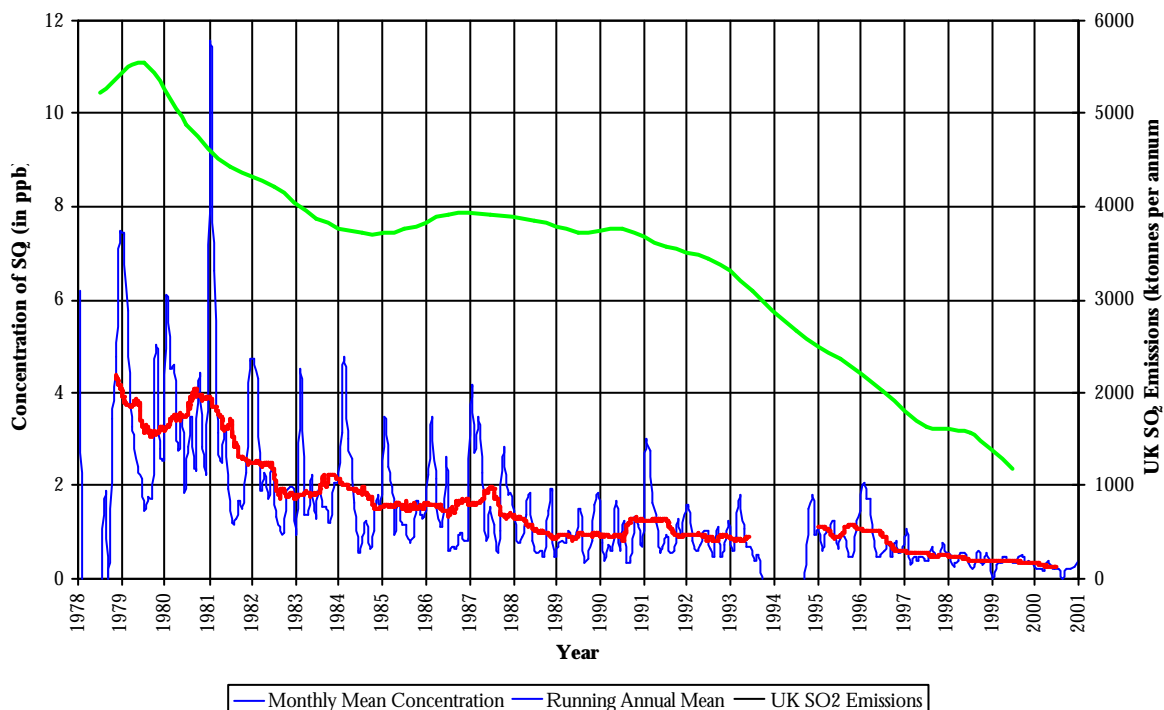


Figure 3.5: Trends in the concentration of sulphur dioxide observed at Eskdalemuir since 1978

Figure 3.5 also suggests that the large seasonal variation, where higher concentrations are observed during cold winter months, are no longer apparent. Higher concentrations are

expected during the winter period because of the relatively higher emissions at this time of the year, combined with poorer vertical dispersion of the emissions.

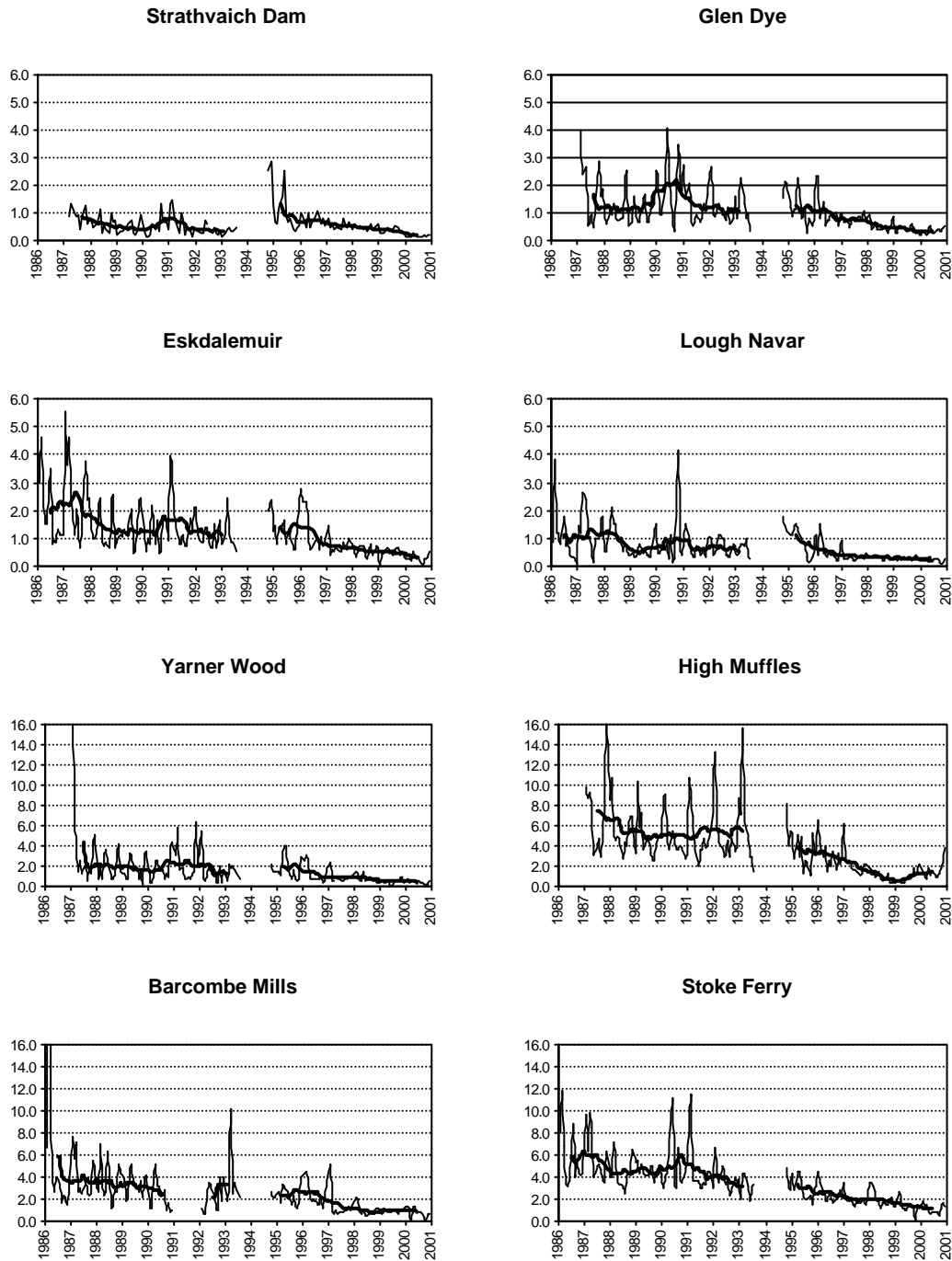


Figure 3.6: Monthly and Running Annual Mean Concentrations of Sulphur Dioxide at the Daily Sites, 1986 to 2000 ($\mu\text{g S m}^{-3}$).

The monthly and running annual mean concentrations of sulphur dioxide measured at each of the primary sites are presented in Figure 3.6. The strong seasonal variation is particularly noticeable at the High Muffles site, close to major sulphur dioxide sources, although, even here in recent years, the large seasonal variation is no longer apparent. The annual mean sulphur

dioxide concentration has decreased substantially at all sites with the exception of Strathvaich Dam over the period 1986 to 2000. For example, the annual mean at High Muffles has decreased from an annual mean concentration of $7.3 \mu\text{g S m}^{-3}$ in 1987 to $1.2 \mu\text{g S m}^{-3}$ in 2000.

At the low concentrations now observed at some sites, only very careful quality assurance and control of sampling can deliver valid data.

3.3.3 Trends in Particulate Sulphate

Figure 3.7 shows the monthly mean and running annual mean concentrations of particulate sulphate at Eskdalemuir. The decrease in the concentration of particulate sulphate is much less marked than that of sulphur dioxide. There is more variation around the running annual mean and there is an apparent increase in concentration from 1978 to 1984 followed by a decrease to 2000. Over the period from 1978 to 2000 the average concentration declined from around $1 \mu\text{g S m}^{-3}$ to about $0.4 \mu\text{g S m}^{-3}$. The high monthly mean concentration in March 1996, associated with a period of extended easterly flow, was one of the highest over the full time series and illustrates how the month-to-month variation is large relative to the long-term trend.

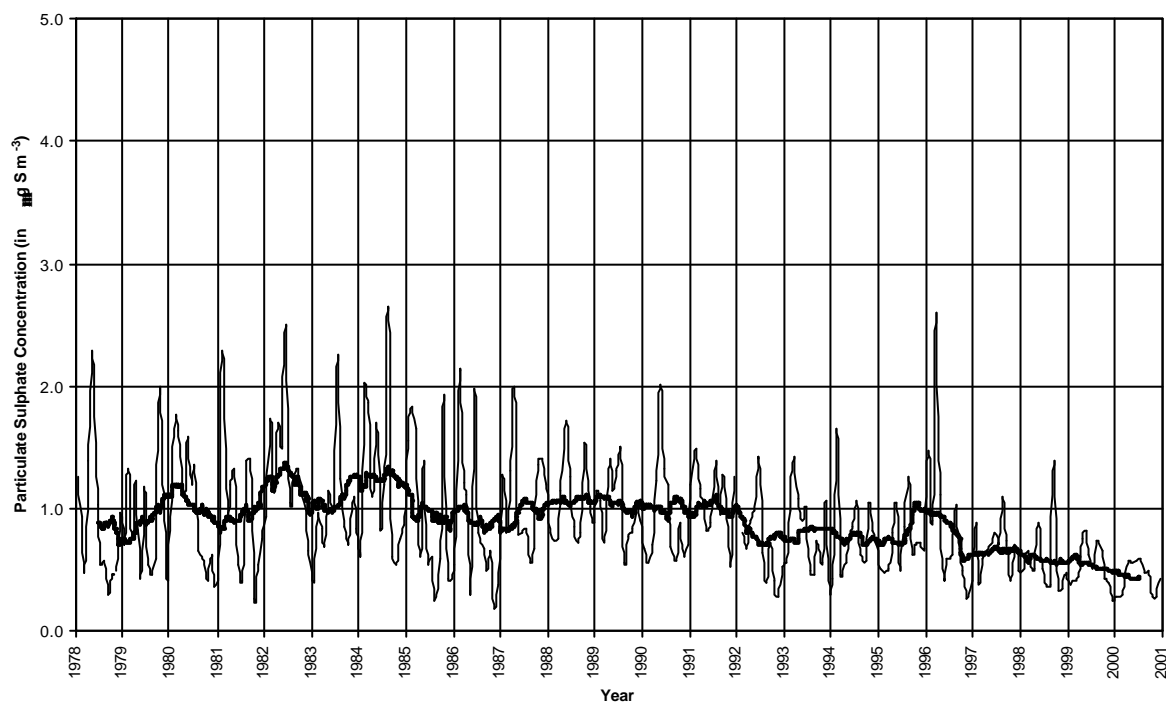


Figure 3.7: Trends in the particulate sulphate concentration observed at Eskdalemuir since 1978.

Sulphate concentrations at the other daily sites do not obviously exhibit the same degree of decrease as that observed for sulphur dioxide, as shown in Figure 3.8. The highest concentrations were observed at Stoke Ferry and Barcombe Mills for the first half of the sampling period - since that time concentrations at both sites decreased by about 25%. The lowest concentrations were consistently measured at Strathvaich Dam.

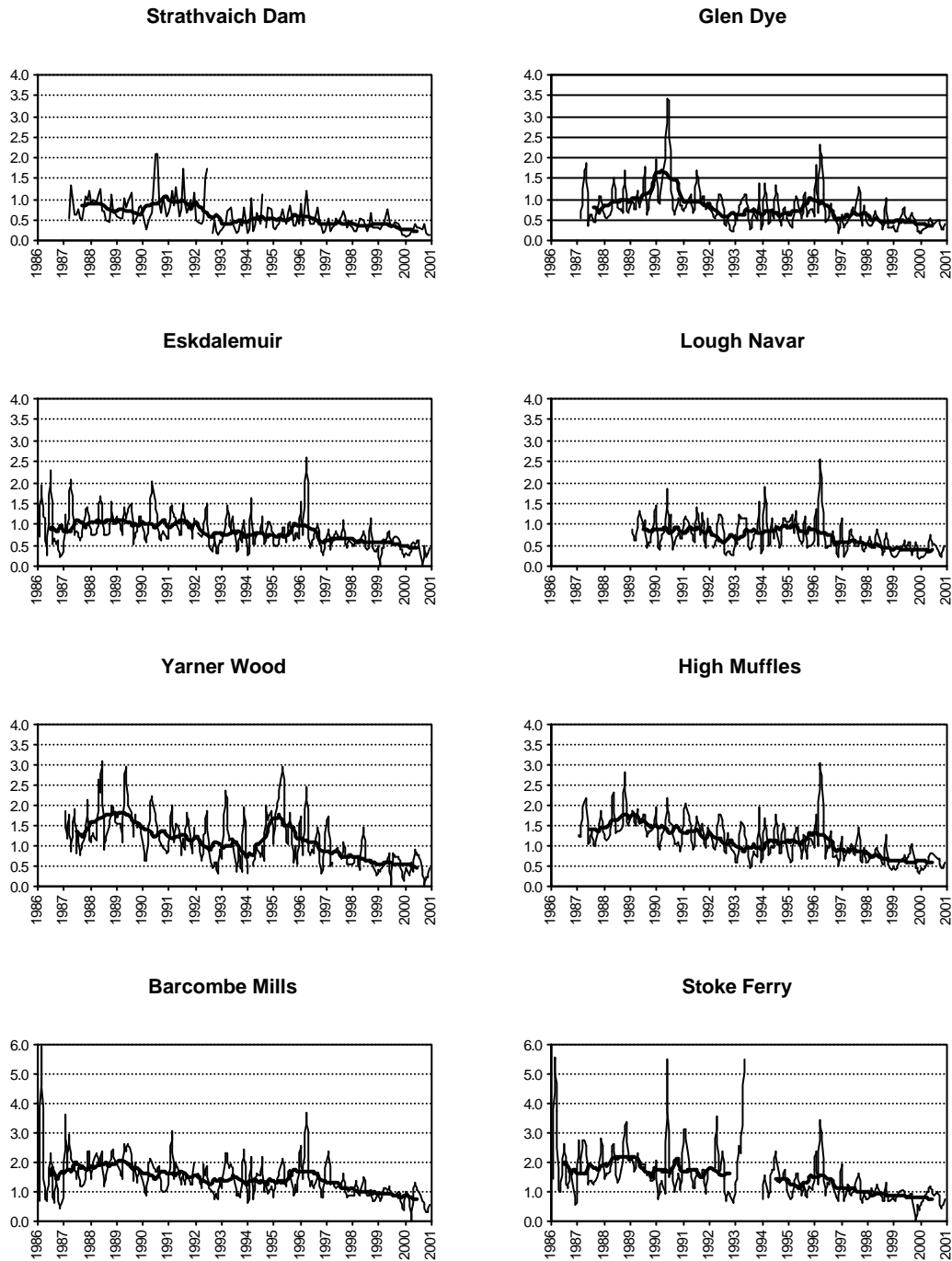


Figure 3.8: Monthly and Running Annual Mean Concentrations of Particulate Sulphate at the Daily Sites, 1986 to 2000 (mg S m^{-3}).

3.4 NITROGEN DIOXIDE

3.4.1 Concentration Map

The diffusion tube measurements have been used to produce a map of the rural nitrogen dioxide concentrations in the UK for 2000, as shown in Figure 3.9. The figure also shows the

1999 map for comparison. Both maps show that the highest concentrations were observed in the Midlands and southern England. In the main, this reflects the proximity to the sampling sites of roads and other aspects of urbanisation. There is little difference in the spatial patterns between 1999 and 2000.

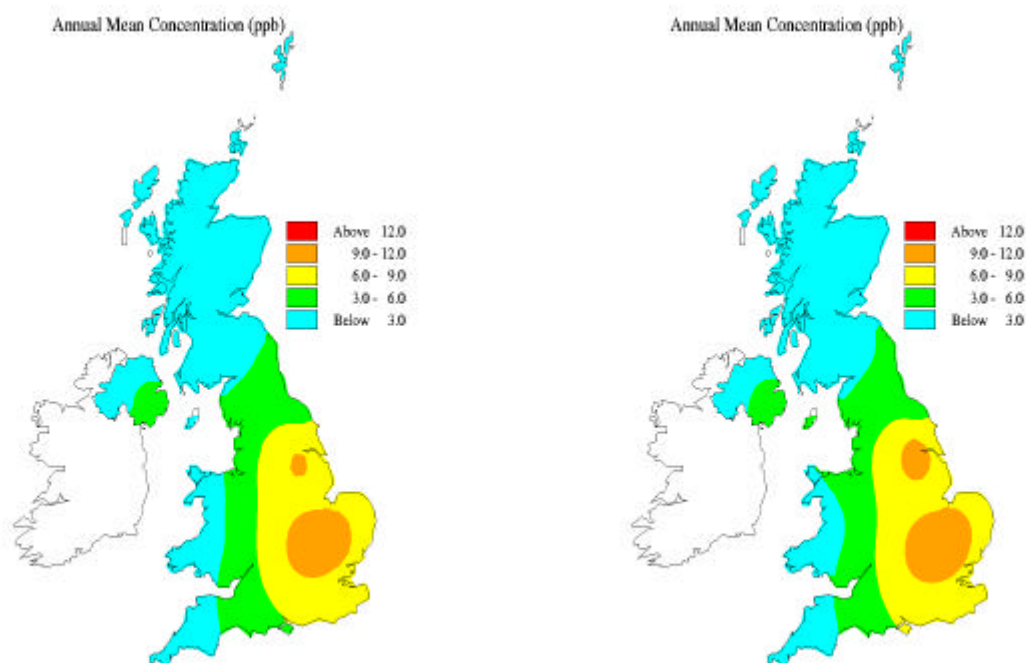


Figure 3.9: Interpolated nitrogen dioxide concentrations (in ppb) for 1999 (left-hand panel) and 2000 (right-hand panel)

The determination of nitrogen dioxide at the rural locations in the acid rain network provides a key input to the mapping of nitrogen dioxide in the United Kingdom [Stedman, 1997].

3.4.2 Trends in Nitrogen Dioxide

The calculated annual average concentrations for nitrogen dioxide measured at 8 sites are presented in Figure 3.10. The annual mean concentrations in 2000 were generally comparable to those measured in 1999 but higher than those measured in 1998. This is consistent with the generally higher concentrations measured for a range of pollutants in 2000. It is likely that the meteorological conditions led to poorer dispersion and dilution of emissions.

UK total emissions of nitrogen oxides have decreased since 1990 with the switch from coal to gas for power generation and the introduction of catalytic converters on petrol-engined vehicles. Given the relatively poor precision of the passive sampler method at low concentrations, the fall in nitrogen dioxide concentrations can only be observed at the relatively high concentration sites such as High Muffles, Stoke Ferry and Barcombe Mills. This is in marked contrast to the lack of a general trend in NO_2 at UK urban diffusion tube monitoring sites where the mean concentration may be limited by availability of atmospheric oxidant rather than nitrogen oxides.

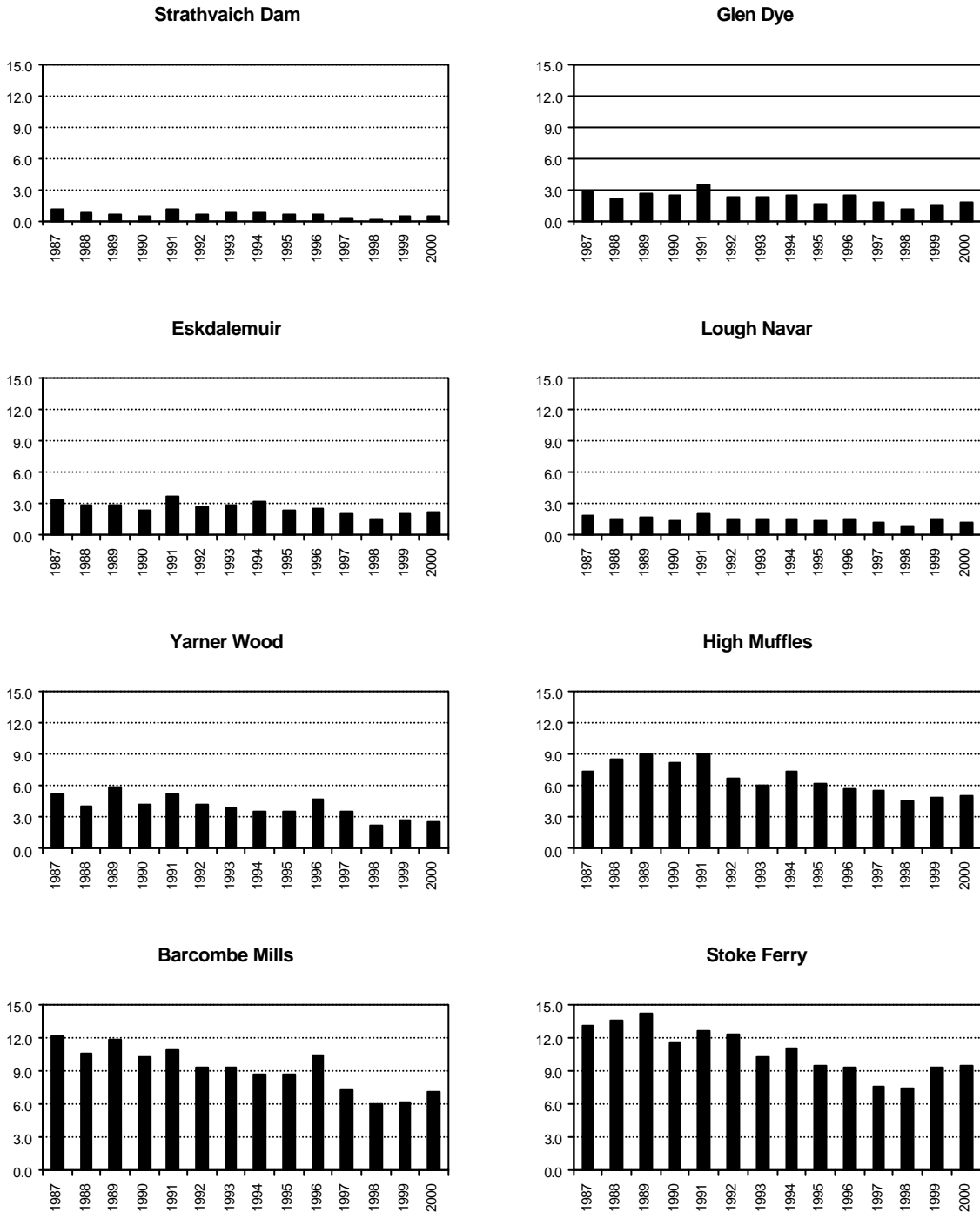


Figure 3.10: Annual average nitrogen dioxide concentration (ppb).

3.5 NITRIC ACID

Nitric acid is a key intermediate in the atmospheric oxidation and removal of nitrogen oxides. It is readily adsorbed at plant surfaces and hence rapidly dry deposited. It is highly soluble and hence readily removed by wet deposition. Ambient concentrations are therefore relatively small even though the species makes a significant contribution to the total oxidised nitrogen deposition budget.

A dual filter technique is used in the UK Acid Deposition Network for nitric acid. The measurement is indicative only. The samples collected under dry summer conditions are likely to under-read as ammonium nitrate may volatilise during sampling. During cool wet winter conditions nitric acid may be absorbed by the front filter.

The concentrations of nitric acid measured at High Muffles and Stoke Ferry are presented in Figure 3.11 and Figure 3.12. During conditions of elevated ozone concentrations in the summer [Campbell, 1990], the weekly mean concentrations at both sites occasionally reached 1 to 2 $\mu\text{g N m}^{-3}$. At other times and especially during the winter, nitric acid concentrations were small. The seasonal variation in nitric acid concentrations was therefore much more marked than that in total nitrate, an observation that is probably only partly due to measurement artefacts. Nitric acid is formed largely through the oxidation of NO_2 by OH, a process that will be faster in summer than in winter because of the increased photochemical activity. Particulate nitrate can be formed under winter conditions *via* night time oxidation of NO_3 by ozone and by heterogeneous processes involving N_2O_5 .

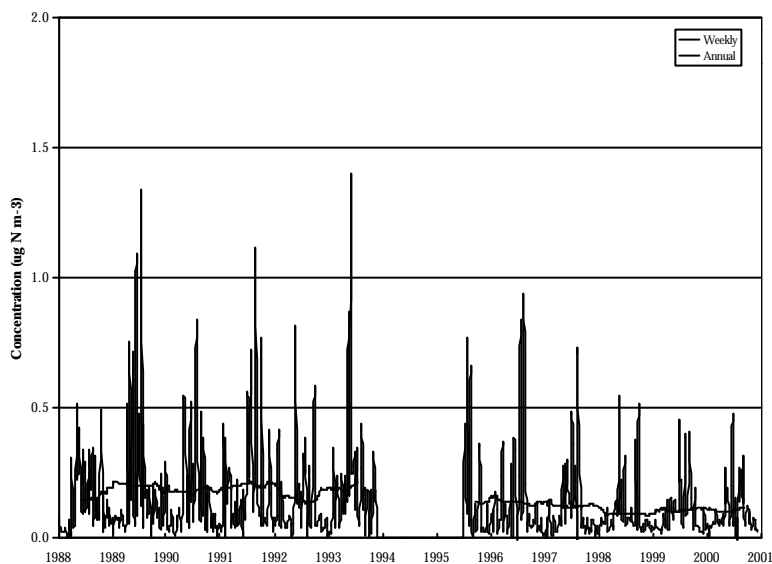


Figure 3.11: Weekly and Running Average Concentration of Nitric Acid at High Muffles ($\mu\text{g N m}^{-3}$)

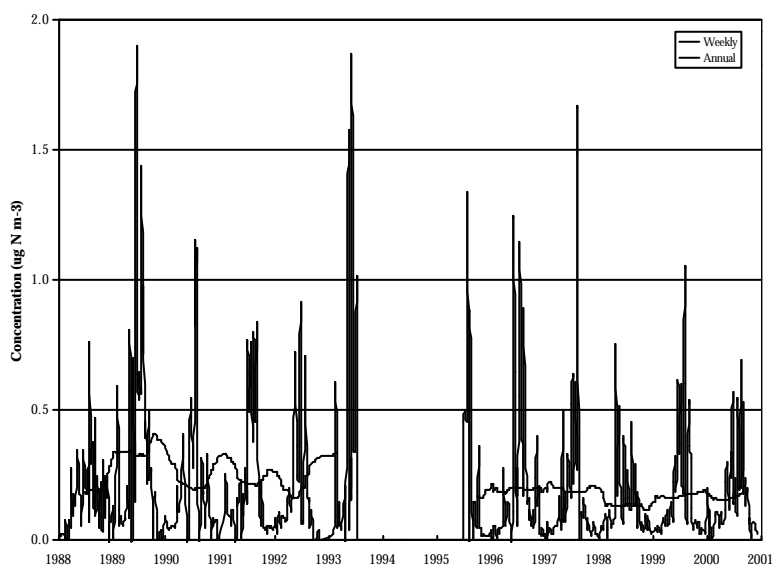


Figure 3.12: Weekly and Running Average Concentration of Nitric Acid at Stoke Ferry ($\mu\text{g N m}^{-3}$)

The annual mean concentration measured at High Muffles in 2000 was $0.11 \mu\text{g N m}^{-3}$. The concentration of HNO_3 shows a decrease over the period of the measurements. At Stoke Ferry, the annual mean concentration was higher at $0.17 \mu\text{g N m}^{-3}$. Again, the concentration of HNO_3 has tended to decrease over the period.

3.6 TOTAL INORGANIC NITRATE AND AMMONIUM

The concentrations of total inorganic nitrate (TIN), taken to be the sum of gaseous nitric acid and particulate nitrate, and of total inorganic ammonium (TIA), taken to be the sum of gaseous ammonia and particulate ammonium, have been measured on a daily basis at Eskdalemuir and High Muffles. During 1999, this measurement programme was replaced by separate measurements of the gaseous and particulate phases. The monitoring programme at High Muffles was discontinued on 7th April 1999 while that at Eskdalemuir was continue until December 2000 to provide overlap with the measurements from the new nitric acid monitoring network (Section 4).

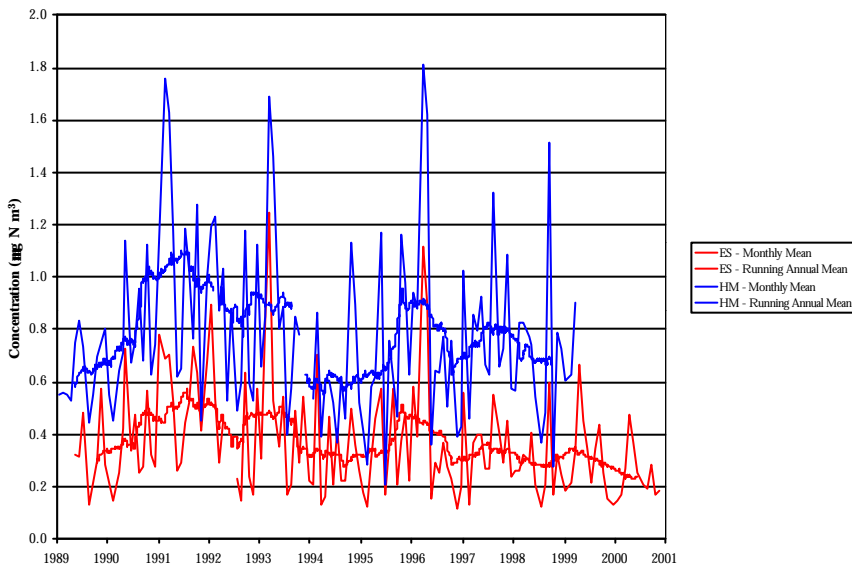


Figure 3.13: Monthly Mean and Annual Running Mean Concentrations of Total Inorganic Nitrate ($\mu\text{g N m}^{-3}$)

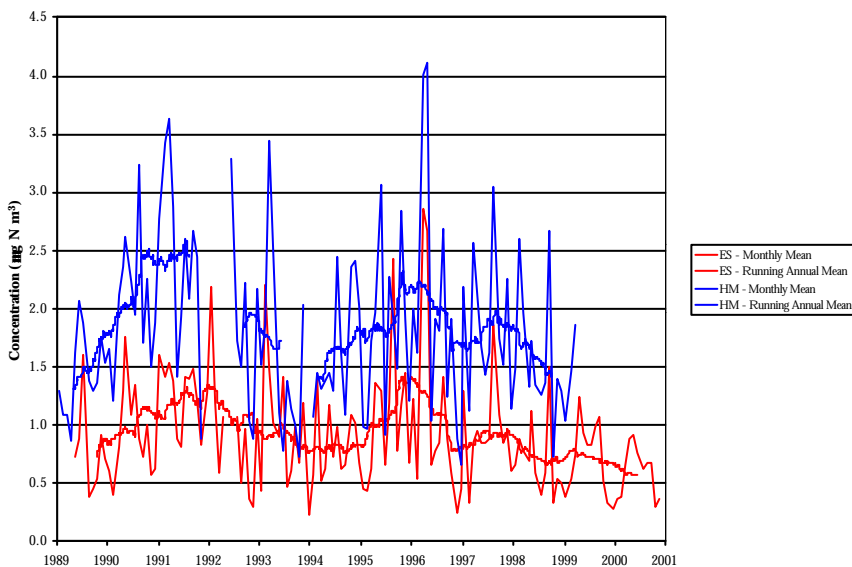


Figure 3.14: Monthly Mean and Annual Running Mean Concentrations of Total Inorganic Ammonium ($\mu\text{g N m}^{-3}$)

The monthly mean concentrations of TIN and TIA measured at Eskdalemuir and High Muffles are presented in Figure 3.13 (TIN) and Figure 3.14 (TIA). Running annual averages are included to remove seasonal effects and to aid the identification of trends. The TIN concentrations measured at High Muffles are approximately twice those measured at Eskdalemuir, which is similar to the ratio of nitrogen dioxide concentrations. This is consistent with the general trends in pollutant concentrations across the UK. There is no discernible trend in concentration at either site over this period. The influence of meteorology in causing episodes of increased concentration, such as that observed in March 1996, is evident. As for TIN, the concentrations of total inorganic ammonium measured at High Muffles are approximately twice those measured at Eskdalemuir. There is no significant trend at either site.

4. Nitric Acid Monitoring Network

As part of the review of monitoring strategies for acidifying pollutants, within the context of EMEP (*e.g.*, Schaug and Uhse, 1997; Lovblad and Sutton 1997), DEFRA (formerly DETR) established a new network to monitor for nitric acid and related species in the UK as part of the UK Acid Deposition Monitoring Networks. The new monitoring network was established during 1999 by the Centre for Ecology and Hydrology (CEH) at Edinburgh. CEH operate and manage the network under subcontract with the analysis being undertaken by Harwell Scientific Limited.

In this Section, the sampling methods are summarised and the measurements made between September 1999 and July 2001 are reported.

4.1 OBJECTIVES OF THE NETWORK

The former measurement programme of nitrogen species consisted of sampling total inorganic nitrate and ammonium on a daily basis at 2 sites (Section 2.2.3) and the indicative measurement of nitric acid on a daily basis at 2 sites (Section 2.2.5). These measurements were considered to have limited usefulness since gaseous and aerosol components were not separated, while the effort involved in daily sampling could be better distributed to include less frequent sampling at more sites over the UK. The new network has been established to provide:

- (a) monitoring of HNO_3 and related species at 12 locations over the UK on a monthly basis. The aim of these measurements is to explore spatial patterns, compare results with dispersion models, seasonality and contribute to national nitrogen deposition estimates.
- (b) monitoring of HNO_3 and related species at 1 site in a high HNO_3 concentration area of south east England on a daily basis. The aim of these measurements is to explore the dynamics of HNO_3 formation and concentrations in relation to other photochemical pollutants in order to improve the process based atmospheric chemistry and dispersion models. The effect of these changes should be seen in validation and improvement of the models in comparison with the observed occurrence of pollution episodes.

4.2 METHODS, SITES AND DATA COLLECTION

A map of the monthly HNO_3 monitoring network is shown in Figure 4.1. Nitric acid and related species are monitored on a monthly basis at 12 locations, and daily measurements are carried out at Barcombe Mills in East Sussex.

4.2.1 Monthly Sampling

The monthly monitoring has been implemented using the CEH DELTA (DEnuder for Long-Term Atmospheric sampling) system in an integrated fashion with the UK Ammonia Monitoring Network. Sampling commenced in September 1999.



Figure 4.1: Map of 12 monitoring sites for HNO_3 , NO_3^- and related acid gas/particle measurements.

The sampling train used in the CEH DELTA system is shown Figure 4.2. HNO_3 , SO_2 and HCl are removed by the first set of K_2CO_3 /glycerol coated denuders, and a second set of citric acid coated denuders removes NH_3 . Two sets of filter packs at the end of the sampling train removes the aerosol components - NO_3^- , SO_4^{2-} , Cl^- and NH_4^+ .

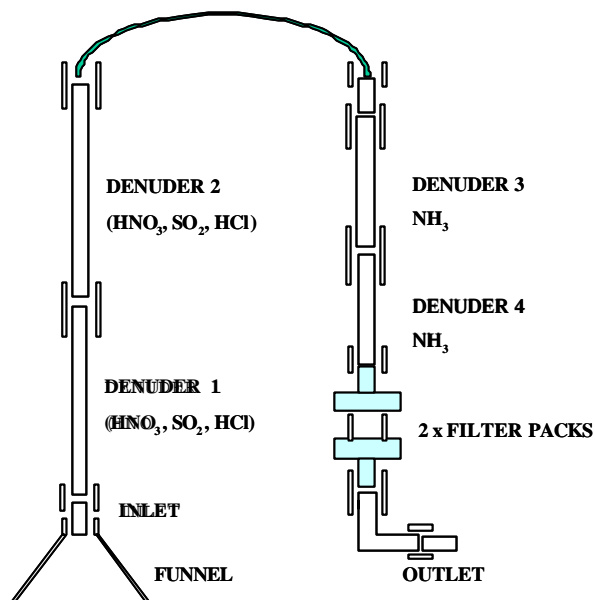


Figure 4.2: Sampling train for monthly air measurements.

Returned samples are stored in a cold room at 4 °C until analysis. For the denuders, 5 ml of 0.05 % H_2O_2 is added to both the first and second denuders, while the initial uncoated short length of Teflon inlet is not extracted. (Tests have shown that <1% of the total is captured in this portion.). Filters from the filter packs are also extracted in 0.05 % H_2O_2 . Extracted aqueous samples from the denuders and filter packs are sent to Harwell Scientifics Ltd for chemical analysis on a monthly basis. Denuder sample extracts are analysed for NO_3^- , SO_4^{2-} and Cl^- and filter sample extracts are analysed for NO_3^- , SO_4^{2-} , Cl^- , Na^+ , Mg^{2+} and Ca^{2+} .

The amount of a gas collected (Q) on a denuder due to air sampling is given by:

$$Q = (c_e - c_b) * v \quad (1)$$

where c_e is the liquid concentration of an exposed tube, c_b is the liquid concentration of a blank tube and v is the liquid volume of the extraction solution. The air concentrations (χ_a) of the gas of interest is then determined as:

$$\chi_a = Q/V \quad (2)$$

where V is the effective volume of air sampled. For denuder samples this is found directly from the gas meter readings, and is typically 15 m^3 per month.

4.2.2 Daily Sampling

The Chemspec™ model 2500 air sampling system, manufactured by R&P Co. Inc., was installed at the Barcombe Mill site in February 2000 and daily measurements commenced in April 2000. The principle of operation and calculation are the same as for the DELTA system, except that the ChemSpec is tuned for daily sampling. This consists of two annular denuder in series followed by a two-stage filter pack holding 47 mm filters and sampling at 15 l min^{-1} .

4.3 NITRIC ACID NETWORK MEASUREMENTS

4.3.1 Denuder Capture Efficiency

The use of 2 glass denuders in series allows the capture efficiency of every sample to be assessed, by comparing the amount of $\text{HNO}_3/\text{SO}_2/\text{HCl}$ in both tubes. A collection efficiency correction is applied to the measurement based on the capture efficiency. Where less than 75% of the total captured is recorded in the first denuder, data becomes less certain. It is possible that there is some loss of the gas which is then collected on the filter pack. At a typical capture efficiency of 90% in the first denuder, the correction represent 1% of the corrected air concentration. At 80%, 75% and 70% capture, the correction amounts to 6%, 11% and 17% of the total, respectively. The absolute amount of the correction is added to the value for the acid gas, and subtracted from the aerosol value. The monthly averaged denuder capture efficiency from the 12 monitoring sites for HNO_3 , SO_2 and HCl are shown in Figure 4.3. The quality control using a double denuder system confirms that the capture efficiency in the denuders is adequate and that the correction factors are small (typically $\sim 1\%$).

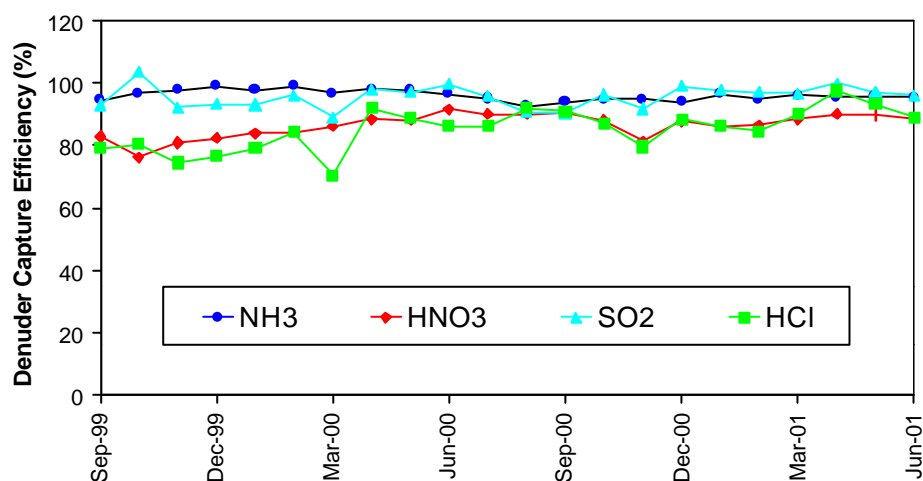


Figure 4.3 Monthly mean denuder capture efficiency for NH_3 , HNO_3 , SO_2 and HCl from the 12 monitoring sites (= amount in 1st Den / (Amounts captured in 1st + 2nd denuders)*100 %).

4.3.2 Measurement Overlap

The daily TIN filter pack sampling was continued at the Eskdalemuir site until December 2000 to provide a period of overlap with the measurements of HNO_3 and NO_3^- from the monthly DELTA denuder sampling. Figure 4.4 provides a comparison of the monthly-averaged total

inorganic nitrate measurements and the measured HNO_3 and NO_3^- from the monthly DELTA denuder sampling. The comparison of the measurements is very good and this is reflected in the near 1:1 regression and the excellent coefficient of determination ($R^2 = 0.934$) obtained from a regression of the denuder against the TIN measurements, as shown in Figure 4.5.

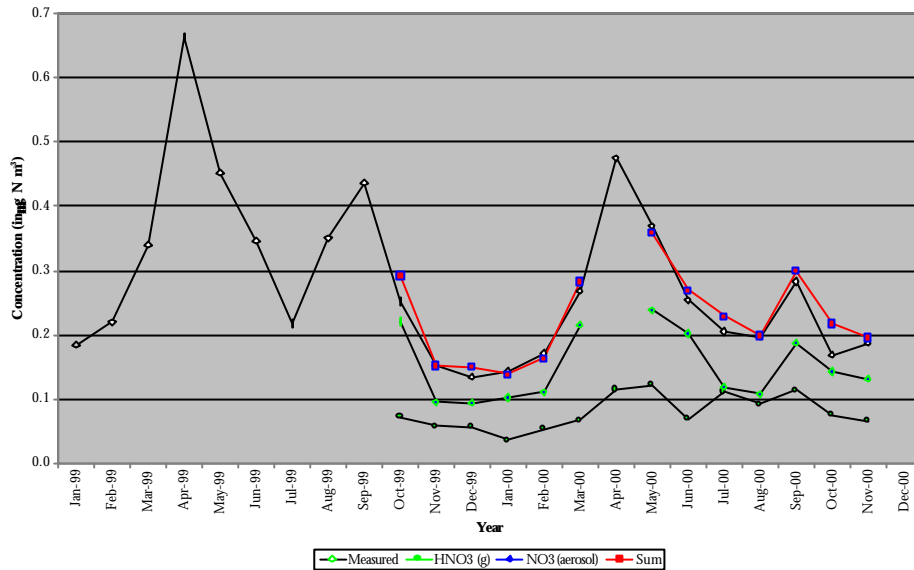


Figure 4.4 Comparison of the Monthly-averaged TIN Measurements (Black) and the Sum of the Measured Gaseous Nitric Acid (HNO_3) and Particulate Nitrate (NO_3^-) from the monthly DELTA denuder sampling (Red). The Component Gaseous Nitric Acid (HNO_3) and Particulate Nitrate (NO_3^-) Measurements are Shown in Green and Blue respectively.

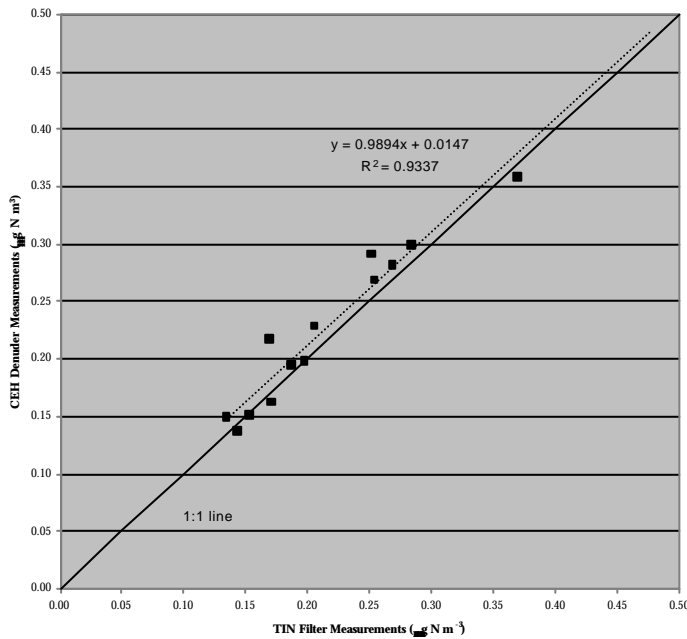


Figure 4.5 Regression Analysis of the Sum of the Measured Gaseous Nitric Acid (HNO_3) and Particulate Nitrate (NO_3^-) from the monthly DELTA denuder sampling against the Monthly-averaged TIN Measurements.

Similarly, daily measurements of total inorganic ammonium (TIA) were made as part of the monitoring programme in the Acid Deposition Monitoring Networks at Eskdalemuir (up to December 2000) and at High Muffles (up to April 1999). Denuder measurements of gaseous ammonia and particulate ammonium are made by CEH as part of another DEFRA contract (*Ammonia Monitoring in the UK*, EPG 1/3/136). Although there was overlap of the TIA and

denuder measurements for a longer period at both sites, Figure 4.6 provides a comparison of the monthly-averaged total inorganic ammonium measurements and the measured NH_3 and NH_4^+ from the monthly DELTA denuder sampling at Eskdalemuir between January 1999 and November 2000. The comparison of the measurements is again good and this is reflected in the regression coefficients obtained from a regression of the denuder against the TIA measurements, as shown in Figure 4.7.

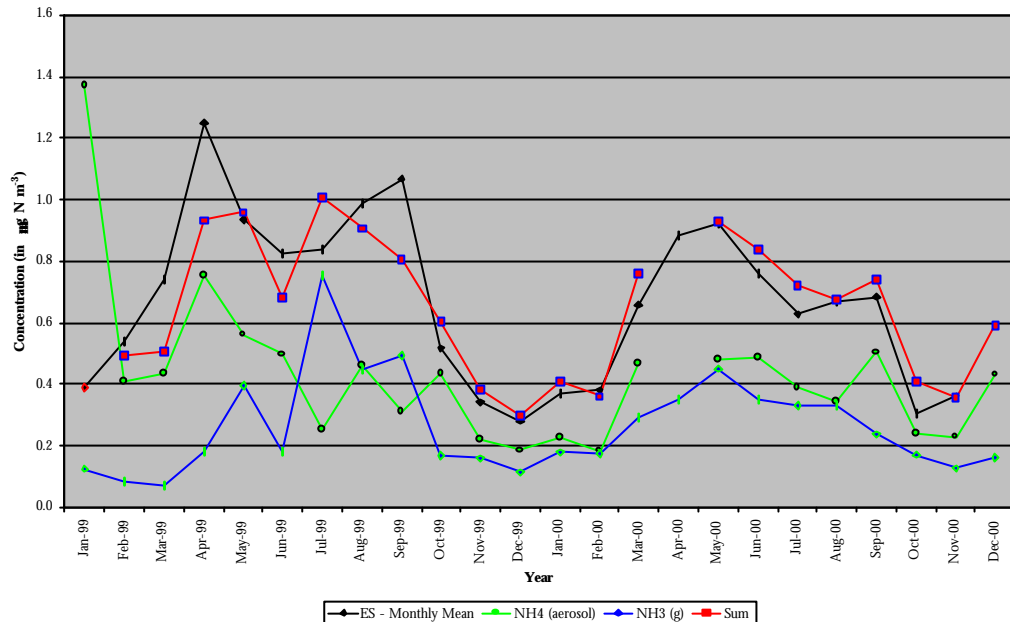


Figure 4.6 Comparison of the Monthly-averaged TIA Measurements (Black) and the Sum of the Measured Gaseous Ammonia (NH_3) and Particulate Ammonium (NH_4^+) from the monthly DELTA denuder sampling (Red). The Gaseous Ammonia (NH_3) and Particulate Ammonium (NH_4^+) Measurements are Shown in Green and Blue respectively.

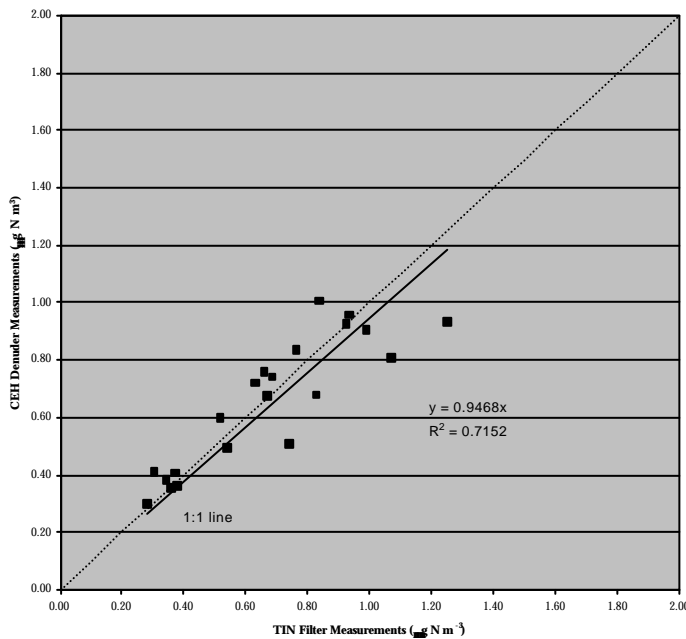


Figure 4.7 Regression Analysis of the Sum of the Measured Gaseous Nitric Acid (HNO_3) and Particulate Nitrate (NO_3^-) from the monthly DELTA denuder sampling against the Monthly-averaged TIN Measurements.

This comparison provides assurance of the TIN, TIA and denuder measurements and also of the analytical procedures.

4.3.3 Monthly Measurements

The monthly denuder measurements made at the 12 sites in the Nitric Acid Monitoring Network have been analysed from commencement to June 2001. The samples collected between July and October 2001 are under chemical analysis at Harwell Scientifics Limited at the time of writing of this report. The denuder sample extracts are analysed for NO_3^- , SO_4^{2-} and Cl^- to give measurements of the concentrations of HNO_3 , SO_2 and HCl in the gas phase. The filter sample extracts are analysed for NO_3^- , SO_4^{2-} , Cl^- , Na^+ , Mg^{2+} and Ca^{2+} to provide concentrations of these components in the particulate phase. A complete set of the measurements made between commencement and June 2001 can be found in Appendix 5.1.

The monthly-averaged concentrations of gaseous nitric acid (HNO_3) and particulate nitrate (NO_3^-) determined at each site are shown in Figure 4.8. The individual plots illustrate that the concentrations of both species are reasonably stable at a monthly level, and have a weak seasonal variability. Although not apparent at all sites, concentrations of HNO_3 are often seen to be highest in summer (*e.g.*, linked to photochemical activity), while concentrations of NO_3^- were largest in Spring 2000.

Although these graphs are shown here to illustrate the trends for HNO_3 and NO_3^- , parallel measurements have been made for HCl and Cl^- , SO_2 and SO_4^{2-} , as well as base cations. Figure 4.9 shows the annual cycle in the concentrations of the 3 gas phase and the 6 aerosol components, based on an average of the measurements made at the 12 sites in 2000.

The results from the other measurements are illustrated by scatter plots of the concentration between gas and aerosol phases of the different components (Figure 4.10). There is some correlation between the concentrations of all the pollutants, and much of this may be related to correlation in the emission distribution of precursor gases or the effect of long-range transport of aerosol across the UK and from Europe. The comparison of the gas phase concentrations shows that there is more NH_3 than either SO_2 or HNO_3 at these sites (on molar basis), while SO_2 is in excess over HNO_3 . The correlations are highest for the aerosol components. This reflects the longer residence time of these measurements leading to more representative sampling as well as the close coupling between acidic and basic aerosol components. As with the gases, reduced nitrogen (NH_4^+) is in molar excess over SO_4^{2-} and NO_3^- . However, aerosol NO_3^- is in molar excess over SO_4^{2-} and is even somewhat larger in terms of equivalents of H^+ .

The high correlations between the aerosol species also indicate the quality of the measurements, since uncertainty in the measurements on a monthly basis would propagate through to scatter in these plots.

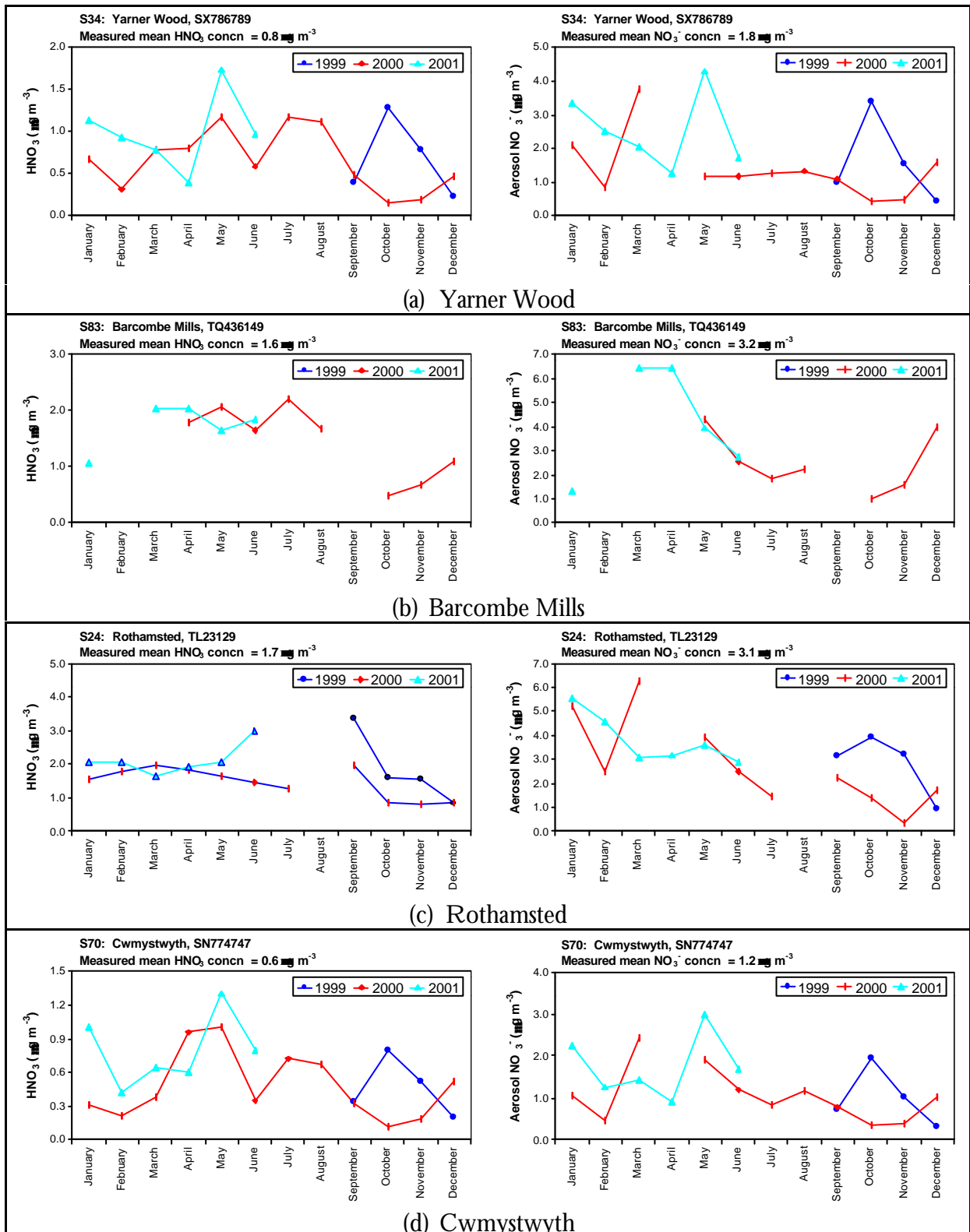


Figure 4.8 Measurements of Gaseous HNO_3 and aerosol NO_3^- made in the Nitric Acid Monitoring Network between September 1999 and June 2001.

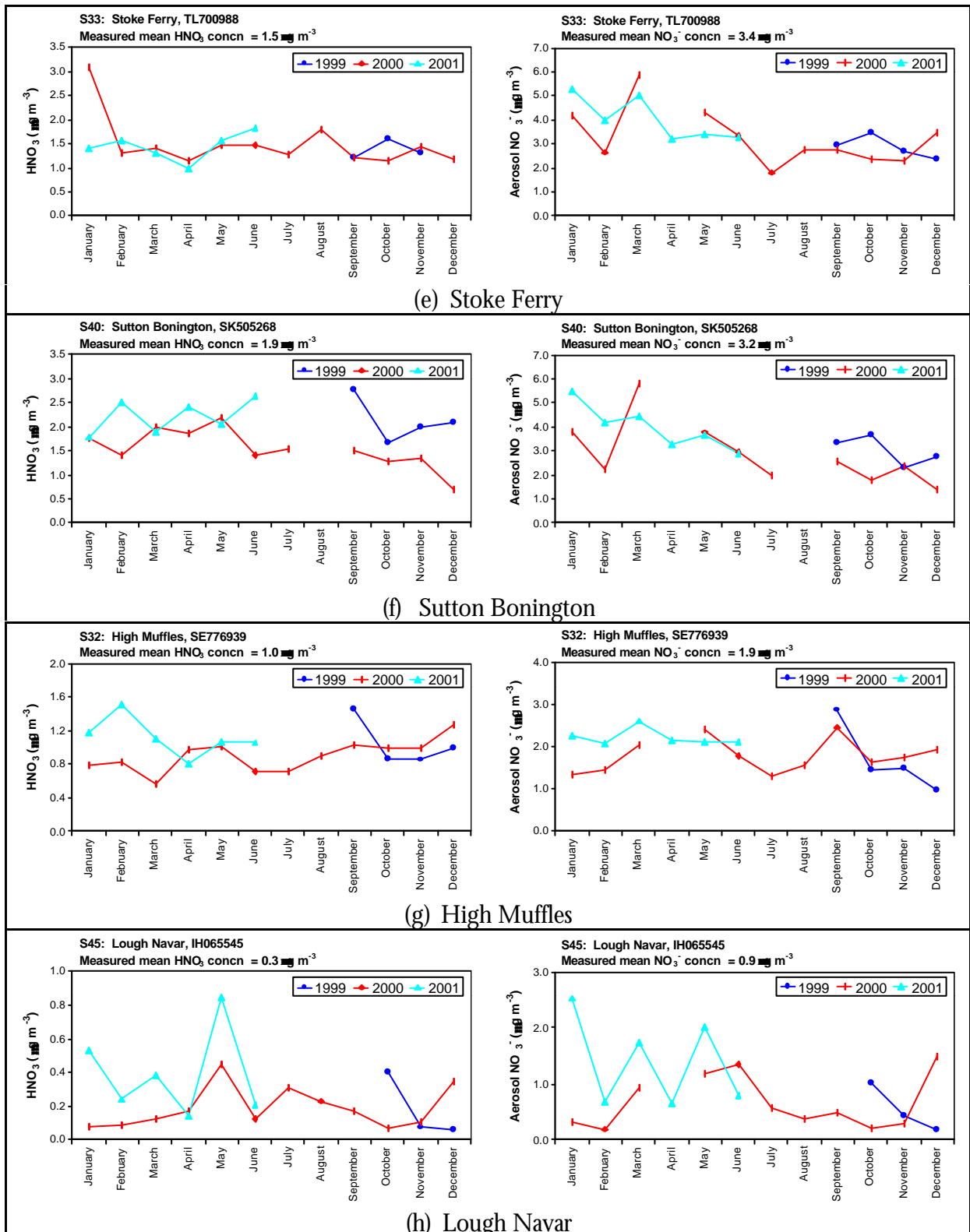


Figure 4.8 Measurements of Gaseous HNO₃ and aerosol NO₃⁻ made in the Nitric Acid Monitoring Network between September 1999 and June 2001. (cont)

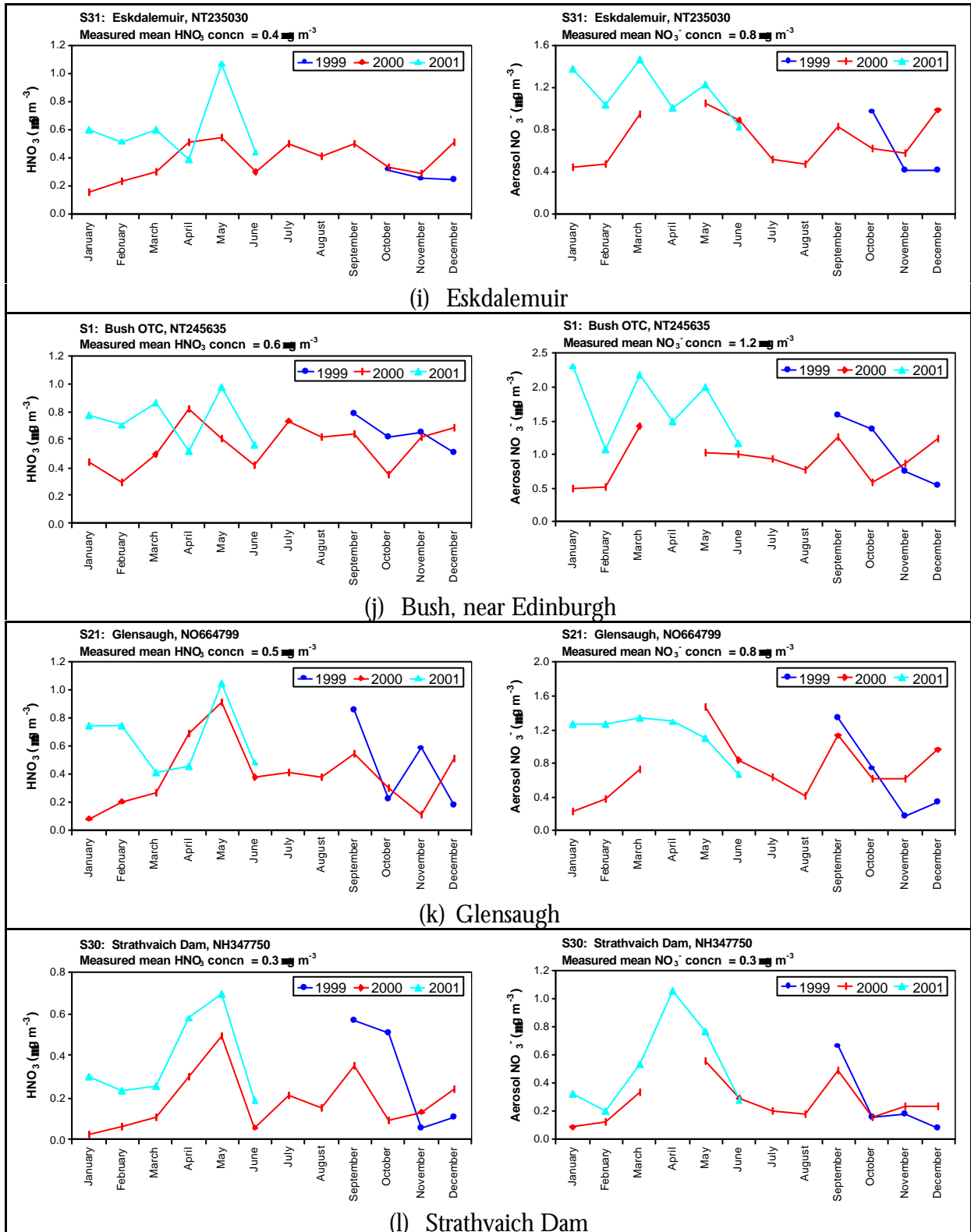


Figure 4.8 Measurements of Gaseous HNO_3 and aerosol NO_3^- made in the Nitric Acid Monitoring Network between September 1999 and June 2001. (continued)

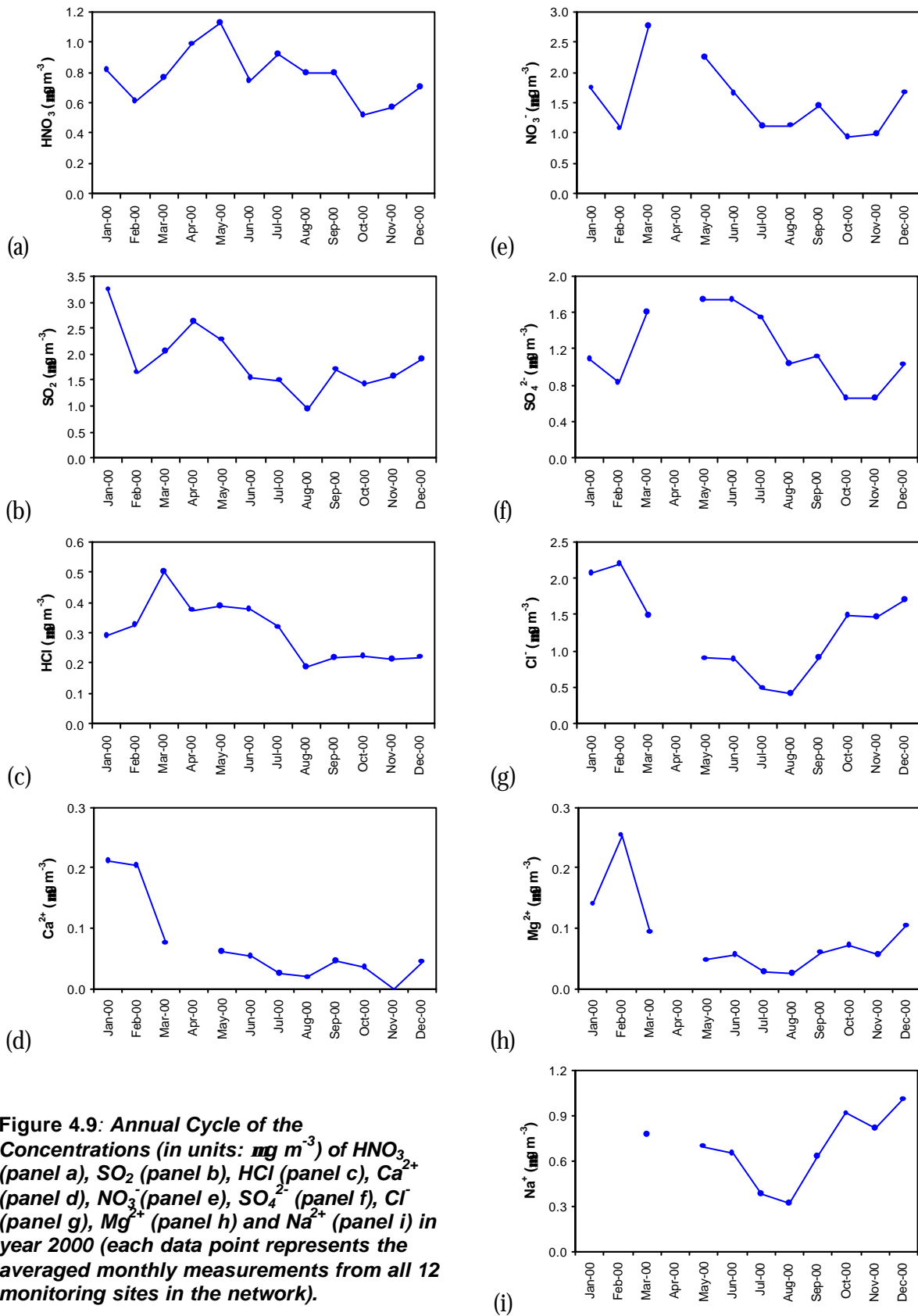


Figure 4.9: Annual Cycle of the Concentrations (in units: mg m^{-3}) of HNO_3 (panel a), SO_2 (panel b), HCl (panel c), Ca^{2+} (panel d), NO_3^- (panel e), SO_4^{2-} (panel f), Cl^- (panel g), Mg^{2+} (panel h) and Na^+ (panel i) in year 2000 (each data point represents the averaged monthly measurements from all 12 monitoring sites in the network).

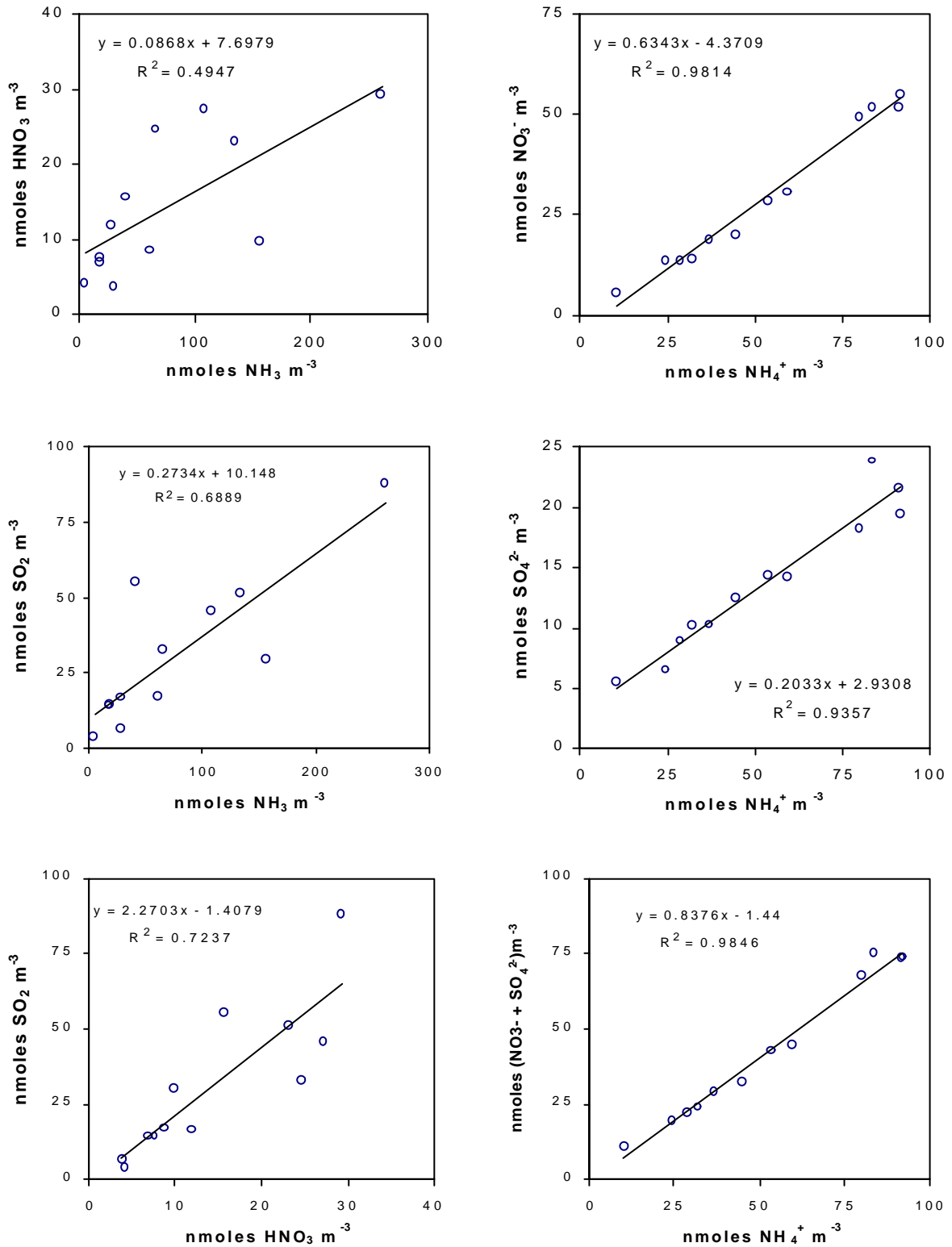


Figure 4.10: Scatter plots of showing the relationships between concentrations of HNO_3 , SO_2 , NO_3^- , and SO_4^{2-} from the monthly measurements at 12 sites (units: nmol m^{-3}).

Interpolated concentration fields across the UK from the 12 monitoring sites are shown in Figure 4.11. A bilinear interpolation procedure was used to provide the mean concentration field at a grid resolution of 10 km x 10 km. The spatial distributions of HNO_3 and NO_3^- are seen to be rather different to that of HCl and Cl^- . Both the nitrogen species are largest in central and south east England, with the lowest concentrations of HNO_3 in Scotland and Northern Ireland. HNO_3 is seen to be more spatially variable than NO_3^- aerosol, reflecting the long atmospheric residence time of the latter.

Figure 4.11 shows the distribution of annual mean SO_2 concentrations for 2000. The largest annual concentrations of $6 \mu\text{g m}^{-3}$ occurred at the Sutton Bonington site, derived from the DELTA measurements. It should be noted that a separate DEFRA network is dedicated to measurement of SO_2 concentrations. The DELTA system provides these estimates as an added benefit which is useful for the QA of the SO_2 network. SO_2 concentrations generally decreased towards the West and North of the UK, with the lowest concentrations of $< 0.5 \mu\text{g SO}_2 \text{ m}^{-3}$ in northern Scotland.

HCl concentrations are largest in the south east of England (Stoke Ferry, Rothamsted) and lowest in the west of the country (Lough Navar, Eskdalemuir and Cwmystwyth). In contrast, the highest concentrations of Cl^- are at Sutton Bonington and Yarnar Wood. This difference in distribution may reflect the dual contribution to atmospheric Cl^- anthropogenic and marine sources. With highest HCl in the south east, this is presumably largely product of emission or reaction with HNO_3 to produce HCl . In contrast, the larger concentration of Cl^- in the south west probably reflects a marine contribution to the aerosol.

4.3.4 Daily measurements

There were a large number of sampling problems with the Chemspec system which resulted in considerable down time in the period October 2000 to April 2001. The supplier of this equipment (which is highly rated internationally) was called out (under warrantee) on numerous occasions by CEH to fix the equipment. This included a broken temperature probe (replacement temperature probe took 6 weeks to arrive from the USA) and ongoing problems with the hardware controlling sampling in the instrument. After persistence by CEH, ChemSpec was removed from the site by the manufacturer in January 2001 to their own factory for extensive checks. The instrument was returned to the site at the end of March, but the instrument was still non-operational, and the problem was eventually traced. Data collection recommenced on the 11th April, and has been running smoothly since. A few gaps in the data set from the period April 2001 to July 2001 is due to absence of the site operator, or because of site operator error.

Nevertheless, despite these problems, this system has produced a substantial data series of daily concentrations. The results obtained during 2000 and 2001 for the concentrations of HNO_3 and of aerosol NO_3^- are presented in Figure 4.12, for the concentrations of SO_2 and of aerosol SO_4^{2-} in Figure 4.13 and for the concentrations of HCl and of aerosol Cl^- in Figure 4.14. Data are analysed up to June 2001, and those for July to October 2001 are under chemical analysis at Harwell Scientifics Limited at the time of writing of this report.

A complete set of the measurements made between commencement and July 2001 can be found in Appendix 5.2.

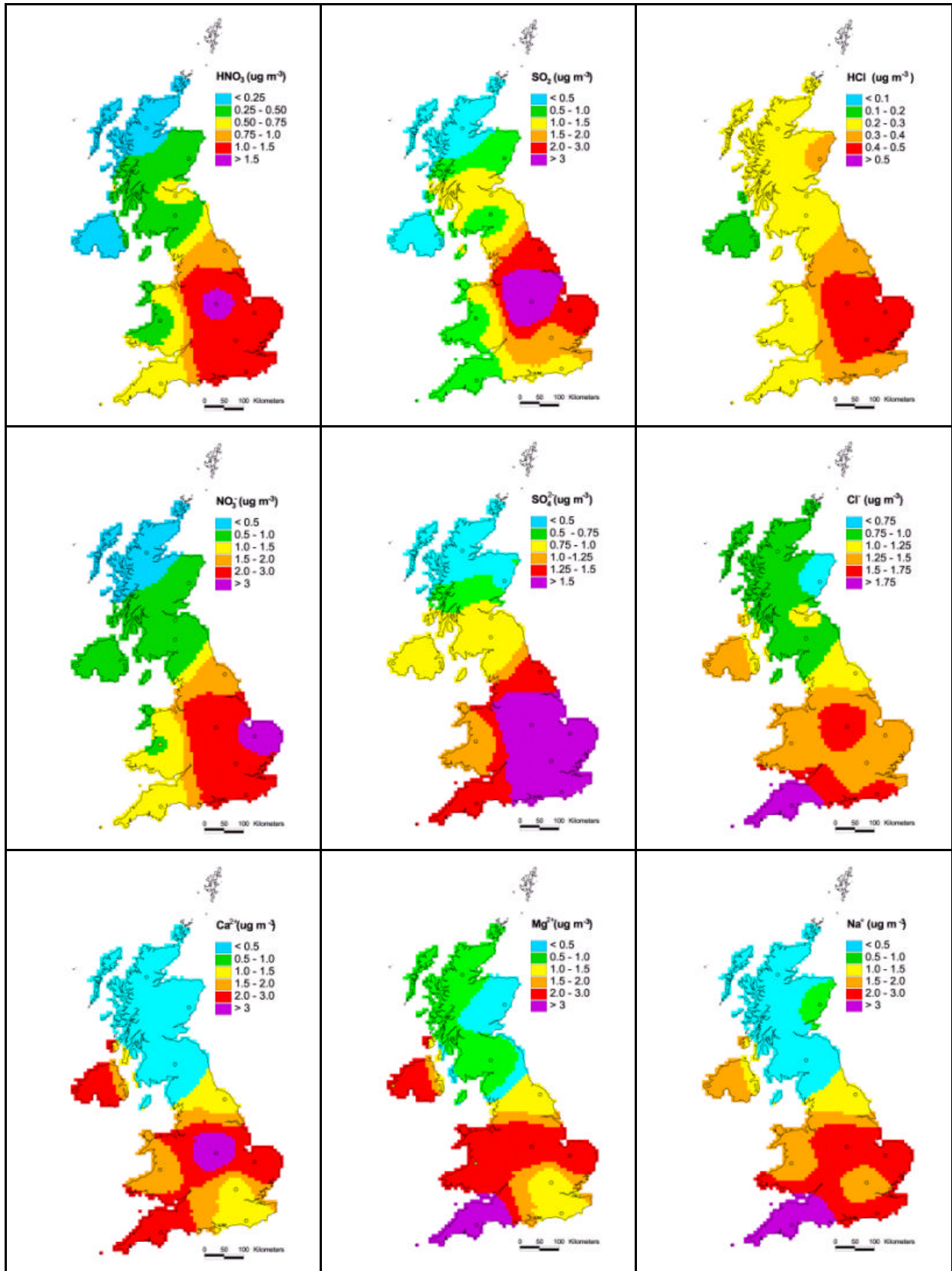


Figure 4.11 Spatial patterns of the concentrations of HNO₃, SO₂, HCl and of aerosol NO₃⁻, SO₄²⁻, Cl⁻, Ca²⁺, Mg²⁺ and Na⁺ concentrations in the UK from the averaged monthly measurements (Jan-00 to Dec-00).

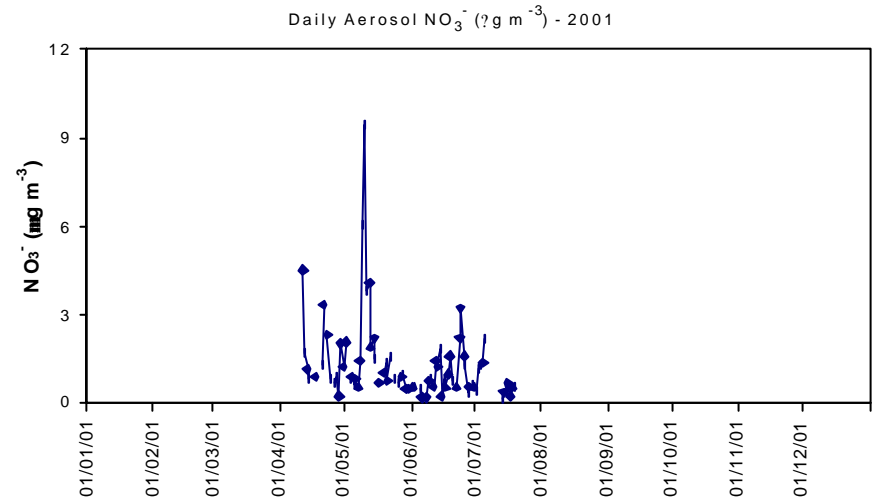
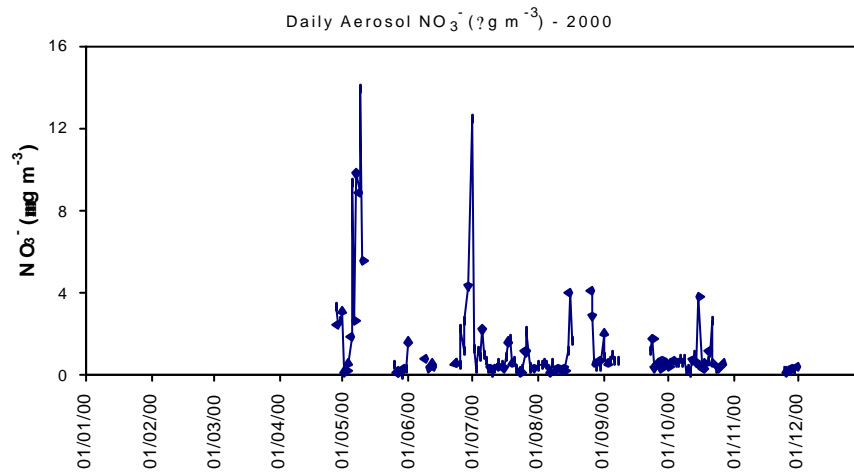
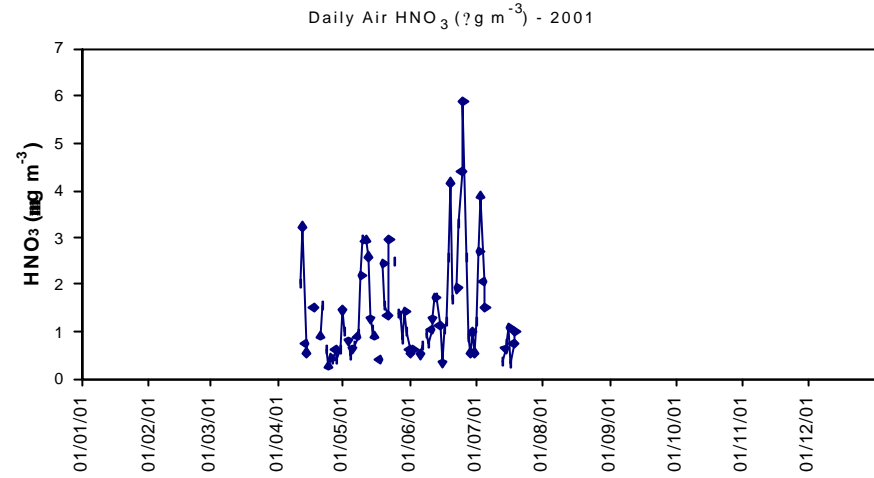
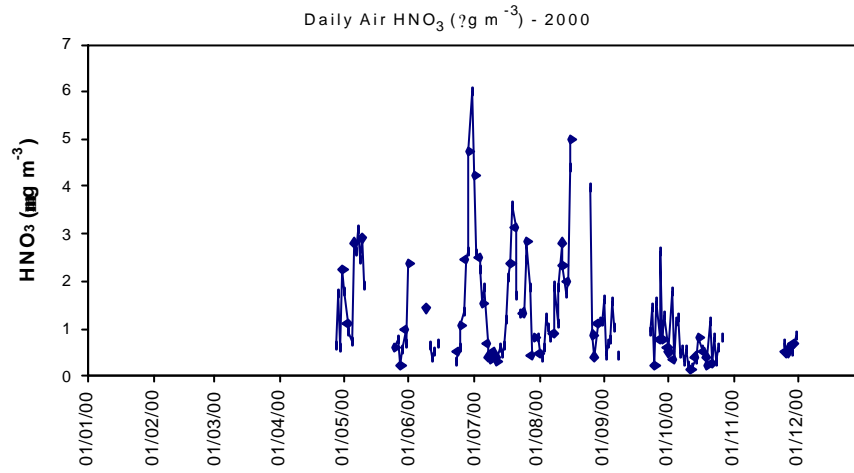


Figure 4.12 Record of Daily HNO₃ and Aerosol NO₃⁻ Concentrations at Barcombe Mills, Sussex from Commencement to June 2001

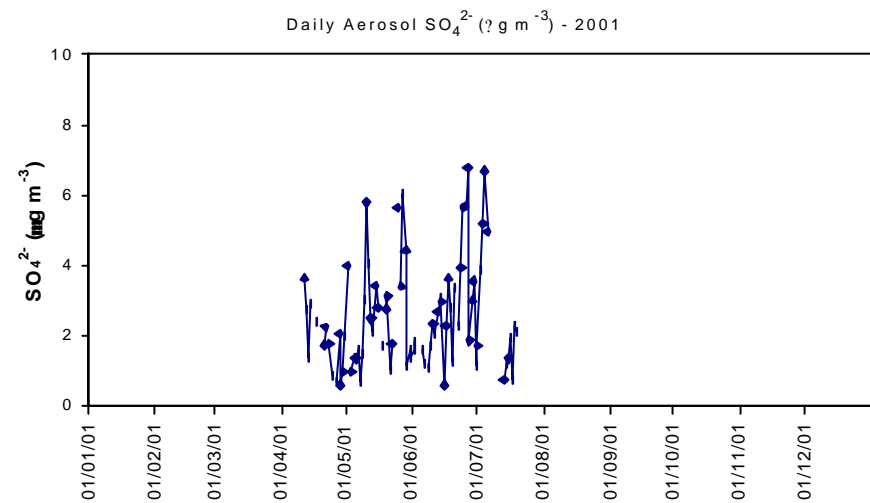
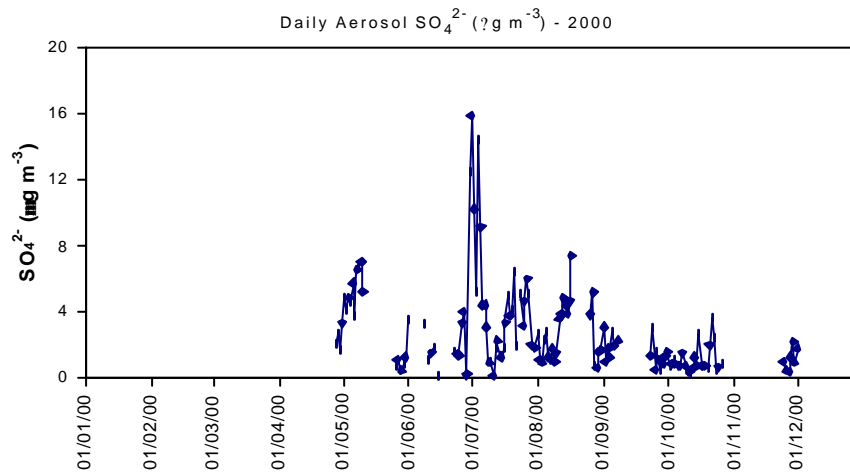
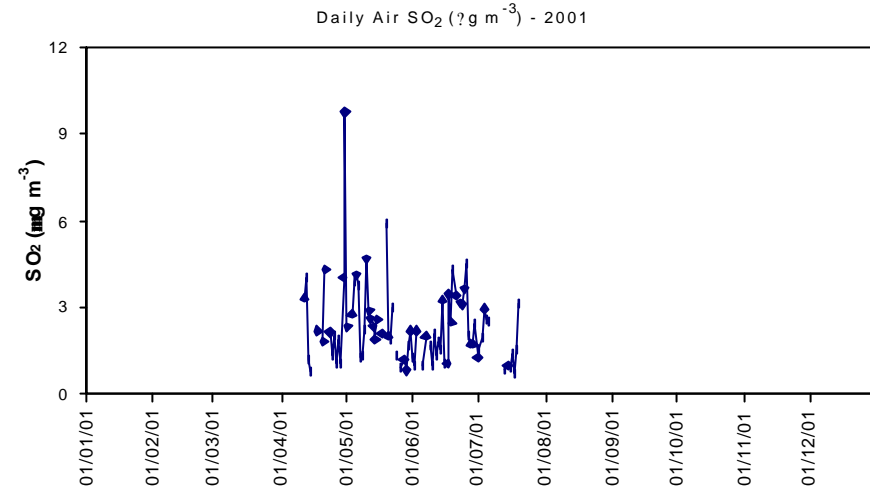
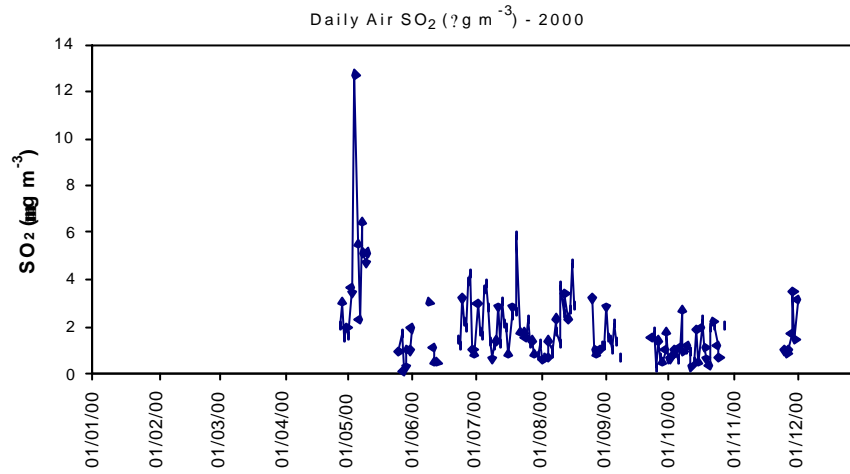


Figure 4.13 Record of Daily SO₂ and Aerosol SO₄²⁻ Concentrations at Barcombe Mills, Sussex from Commencement to June 2001

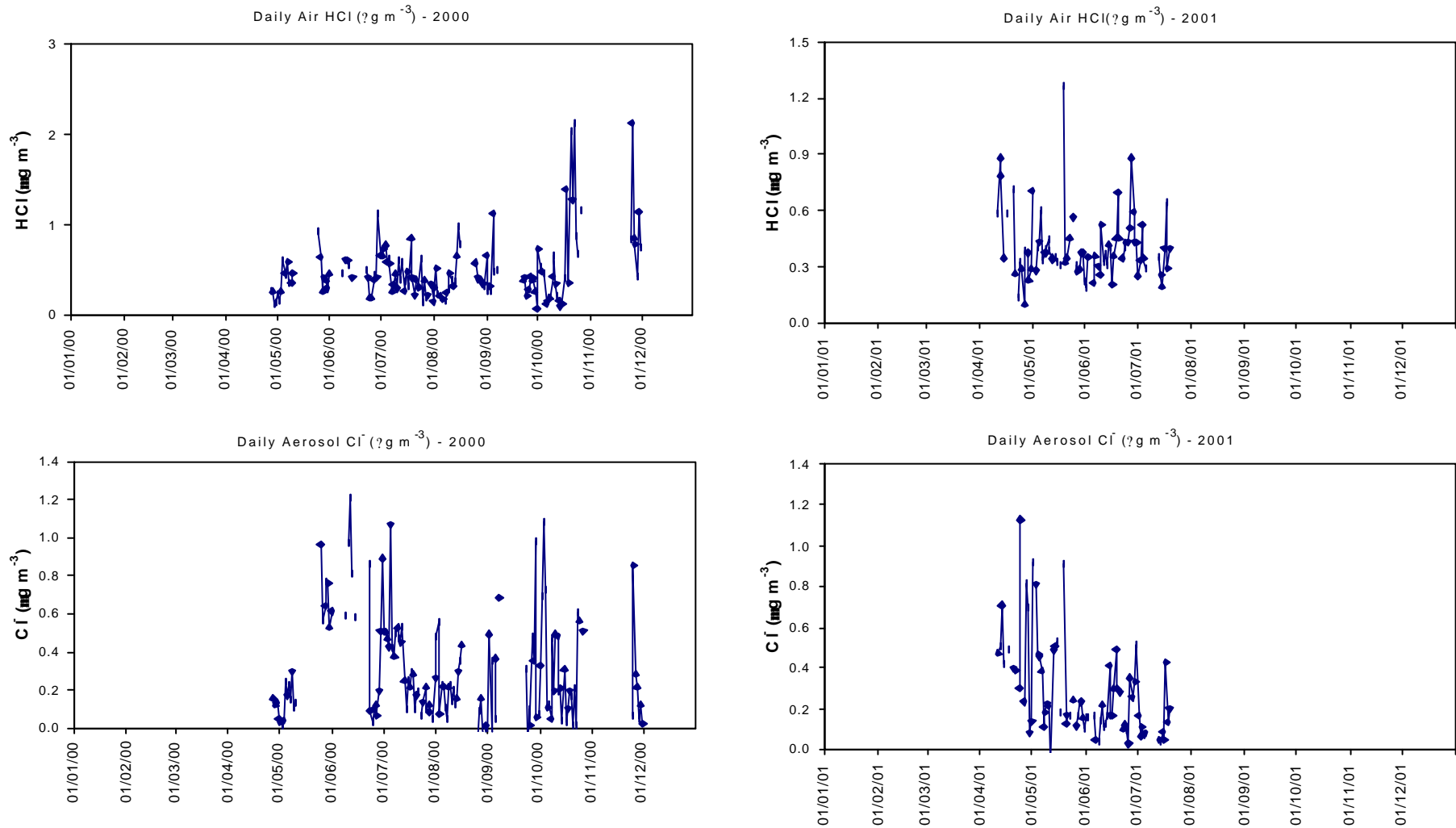


Figure 4.14 Record of Daily HCl and Aerosol Cl⁻ Concentrations at Barcombe Mills, Sussex from Commencement to June 2001

4.4 DISCUSSION

4.4.1 Measurement Methods

At the outset of the present project, a decision was made jointly with DEFRA to utilize denuder – filter pack sampling to measure gaseous nitric acid and nitrate aerosol. Previous measurements made under the EMEP protocol (EMEP 1996) used filter pack sampling on a daily basis to provide total inorganic nitrate (TIN) and total inorganic ammonium (TIA). As part of the EMEP/WMO meeting to review monitoring strategies (Shaug and Uhse 1997), it was noted that this daily sampling requires huge resources, while at the same time the speciation between aerosol and gas is critical in terms of the fate of the pollutants. With this in mind, it was recommended that decreased resources be given to un-specified daily sampling and that more effort should be given to lower frequency sampling, but separating gaseous HNO_3 from NO_3^- aerosol (Lovblad and Sutton, 1997).

The agreed strategy for monitoring HNO_3 and NO_3^- in the UK under this project represented an active response to the recommendations of the EMEP workshop. Daily measurements (using classical annular denuder technology) have been made at just one site, while monthly measurements have been made at twelve sites in order to provide a basic estimate of the spatial variability of these components across the UK. For the monthly sampling, a new measurement system was necessary and this was provided by a recent modification of the CEH DENuder for Long-Term Atmospheric sampling (DELTA). The DELTA system has been established by CEH for use under the DEFRA National Ammonia Monitoring Network, and was extended through the use of additional denuders and filter packs in series to monitor the acid gases and other aerosol.

At the Eskdalemuir site, the daily TIN filter pack sampling was continued to provide a period of overlap with the sum of measured HNO_3 and NO_3^- from the monthly DELTA sampling. This comparison has shown close agreement, indicating the robustness of the measurement approaches. While the DELTA system is robust, it has also proved cost effective, since monthly sampling is quite sufficient to show the main seasonal and inter-annual trends. In addition, by locating the HNO_3 network sites at existing sites of the National Ammonia Monitoring Network (operated by CEH), the infrastructural costs have been minimized. It should be noted that with NH_3 sampling it is possible (within certain limits) to sample *via* an inlet line, and that this is not possible when sampling HNO_3 (which is adsorbed to the line surfaces). Therefore, site selection for the HNO_3 network was restricted to locations that were already operating or could be modified to operate as “outdoor” sampling systems with no inlet line.

It was agreed that sampling on a daily basis at one site was a priority for DEFRA. The reasons for this were to generate data that can be related to individual pollution events, and, for example, suitable for back trajectory analysis of HNO_3 and NO_3^- aerosol pollution. While the techniques for these measurements were already available (*e.g.*, Allegrini et al. 1987, EMEP 1996), and the labour requirements appreciated, this part of the work still ended up requiring more resources than had been anticipated. It is a substantial logistical task to prepare and post all the required denuders, while minimizing breakages, and it also proved a challenge for the local site operator. The major limitation, however, was the unreliability of the Chemspec automated daily denuder system, which required substantial effort by CEH and frequent repairs (under warranty) by the manufacturer. Following these substantial teething problems, the Chemspec system has operated without fault since April 2001.

4.4.2 Spatial Patterns in Acid Gas and Aerosol Concentrations

The main features of the spatial distribution the pollutants measured are shown in the maps of Figure 4.11. In general, there is a reasonable correlation between the concentrations of the different pollutants at the 12 monthly monitoring sites, and for some species there are very high spatial correlations. In the case of the gases this can be attributed to the regional distribution of sources being similar, while for aerosol the chemistry must obviously balance between major cations and anions. Figure 4.10 shows that there is in general a low correlation between concentrations of gaseous NH_3 and those of SO_2 and HNO_3 , and this may be attributed to the different sources of these pollutants, with NH_3 predominantly from agricultural sources, and SO_2 and HNO_3 from combustion sources. Table 4.1 summarizes the coefficients of determination between the different pollutant species for measurements up to November 2000. The only component that is not correlated is aerosol chloride, and this may be related to the large contribution due to sea salt aerosol. It is notable, however, that Cl^- and HCl are not correlated, but that HCl is most closely correlated to HNO_3 . This suggests the importance of HNO_3 as a source of atmospheric HCl production. The high correlation of HNO_3 and NO_3^- aerosol indicates the link between these two species with NO_3^- being a further reaction product of HNO_3 . One of the main routes is through reaction with NH_3 to form NH_4NO_3 . This reaction appears to be of major importance, since the highest correlation ($R^2 = 0.95$) is for aerosol NH_4^+ and NO_3^- . It should also be noted that NH_4NO_3 is, now in molar terms, the largest component of inorganic aerosol (see Figure 4.10). Following reductions in SO_2 emissions in recent years, ammonium sulphate is now only the second most predominant component.

Table 4.1 Coefficients of Determination (R^2) for different species between the 12 measurement sites.

	HNO_3	HCl	SO_2	NO_3^-	Cl^-	SO_4^{2-}	NH_4^+
HNO_3	1.000	0.772 ^{***}	0.678 ^{***}	0.942 ^{***}	0.164 ^{NS}	0.849 ^{***}	0.890 ^{***}
HCl	-	1.000	0.682 ^{***}	0.756 ^{***}	0.074 ^{NS}	0.424 ^{**}	0.618 ^{**}
SO_2	-	-	1.000	0.705 ^{***}	0.178 ^{NS}	0.491 ^{**}	0.891 ^{***}
NO_3^-	-	-	-	1.000	0.255 ^{NS}	0.809 ^{***}	0.952 ^{***}
Cl^-	-	-	-	-	1.000	0.299 ^{NS}	0.309 ^{NS}
SO_4^{2-}	-	-	-	-	-	1.000	0.891 ^{***}
NH_4^+	-	-	-	-	-	-	1.000

Note: Critical values for significance of R^2 are : P=0.05: 0.332; P=0.01: 0.501; P=0.001: 0.678

It should be noted that the maps of the acid gas and aerosol concentrations (Figure 4.11) are constructed using bi-linear interpolation. This is because the number of sites is not sufficient to permit more sophisticated interpolation methods (e.g. krigging) and provides no estimate of uncertainty in the interpolation. It is clear, however, from the maps that each part of the country is fully dependent on only one point in the interpolation and that, while there is a high correlation between the pollutants measured at the sites, there are major differences in concentrations between all adjacent sites. It is clear therefore, that the present network of 12 sites is an absolute minimum and that an increase in site density would be warranted. Such an increase (e.g., to 20-30 sites) would allow interpolation uncertainties to be quantified and could also be expected to change the estimates of regional dry deposition budgets. For example, with the current UK dry deposition of HNO_3 at $\sim 60 \text{ kt N yr}^{-1}$ there could easily be errors of 20 kt N yr^{-1} due to use of only 12 sites in the present network.

4.4.3 Temporal Trends in Acid Gas and Aerosol Concentrations

The daily sampling at Barcombe Mills illustrates the high temporal structure of these pollutants. The variation in HNO_3 reflects a close linkage to production in photochemical episodes as well as a relatively short lifetime before it is removed either by dry deposition or conversion to aerosol NO_3^- . Although, NO_3^- aerosol has a longer lifetime in the atmosphere (of a few days) there is still substantial temporal variability, reflecting either the effect of different precipitation histories or the different wind directions and the different composition of air masses advected over the site. It is notable that different photochemical episodes may be detected in these daily data. An example of this appears to be at the beginning of July 2000, when NO_3^- aerosol are initially also high. After some days, while HNO_3 remains high, NO_3^- aerosol are reduced while SO_4^{2-} aerosol increase to high levels. This may reflect a change of air mass and the reversible nature of NH_4NO_3 aerosol, which in the presence of acidic sulphate aerosol may evaporate to liberate HNO_3 and form $(\text{NH}_4)_2\text{SO}_4$ aerosol. At the same time it is notable that HCl is not strongly correlated with the summer HNO_3 episodes at this site, with higher concentrations occurring in autumn and winter.

These points illustrate the potential of these data for detailed further analysis of air chemistry interactions. By contrast, the monthly site data provide information on the overall seasonal behaviour of the different pollutants. Figure 4.8 illustrate the monthly changes at each site, but with only full year being 2000, it is difficult from these figures to generalize concerning seasonal trends. Figure 4.9 shows the average seasonal changes for 2000 from all of the sites, and indicate more clearly the main differences for the pollutants. HNO_3 , HCl and NO_3^- have a maximum during late spring and early summer, which may reflect the importance of photochemical production processes. Conversely, SO_2 , Na^+ and Cl^- have maxima during winter, reflecting the importance of combustion processes for SO_2 and marine sources in winter for sea salt. The reasons for the observed seasonal trends in SO_4^{2-} , Mg^{2+} and Ca^{2+} are less clear.

4.4.4 Concluding Remarks

Overall, it is apparent that this new network for nitric acid, aerosol nitrate and other species has provided a great deal of fresh information. The daily site provides temporally resolved monitoring of speciated gas and aerosol for nitrate and chloride for the first time in the UK. Moreover, the 12 site monthly network is the first of its kind internationally and is providing data on spatial variability of the pollutants and seasonal patterns extremely cost effectively. The monthly network, in particular, therefore provides a sound basis for future long term monitoring of acid gases and inorganic aerosols. As policy measures such as the Gothenburg Protocol and the planned National Emissions Ceilings Directive are put in place, ongoing monitoring following the methods measurements established in this project will therefore provide an important tool to evaluate the success of the abatement measures.

5. Other Issues

5.1 MEASUREMENT OF MAGNESIUM AND CALCIUM

The rainwater samples collected in the Acid Deposition Monitoring Networks are analysed for the following anions and cations using ion chromatography: sulphate, nitrate, chloride, phosphate, sodium, magnesium, ammonium, calcium, potassium as well as pH and conductivity. To verify the analytical results, the ion balance is calculated for each rainwater sample. A correction is estimated for the concentration of bicarbonate in samples which have a pH greater than 5.5. Samples which fall outside specified ion balance criteria are reanalysed.

The determination of the concentrations of calcium and magnesium ions in rainwater have recently become a subject of concern. The concentrations are determined using ion chromatography by Harwell Scientifics Limited (formerly Warren Spring Laboratory). The ion chromatograph replaced a direct-coupled plasma instrument in 1992 and was itself replaced by a new ion chromatograph in 2000. In recent years, the problem has manifested itself mainly in the large number of samples failing the ion balance criteria and the poor repeatability for the base cations when samples were subsequently reanalysed.

More recently, Professor Fowler (CEH Edinburgh) has presented an analysis comparing the trends in non-seasalt magnesium at five UK sites with data for sites in Norway. He has concluded that the non-sea salt Mg deposition for the UK between 1993 and 1998 had been overestimated by about 12%. As Professor Fowler has noted, this overestimate is important in the calculation of exceedance of critical loads. He has also suggested that the calcium concentrations could be similarly affected.

The sea salt magnesium concentration is derived using the sodium ion concentration which is all presumed to derive from sea salt and a fixed sodium:magnesium concentration ratio in sea water of 8.35 to 1 (mg l⁻¹ concentration units). An analysis of the data at the 5 primary UK monitoring sites indicates that the sea salt magnesium and the measured magnesium concentrations did start to diverge in 1993, as shown in Figure 5.1. Before this, the concentrations tracked one another almost exactly indicating the dominating influence of sea salt as a source of magnesium in rainwater.

5.1.1 Approach to Provide an Accurate Concentration Field for Base Cations

Figure 5.1 shows that the non-sea salt magnesium concentration for remote westerly locations is small – typically about 1- 3 µeq l⁻¹. After 1992, the concentration increases to values in the range 5-10 µeq l⁻¹, although the concentration can be much larger at some sites for some years. It does appear that the concentrations have been overestimated.

If the calcium and magnesium concentrations are to be used for critical load assessment work then a more accurate concentration field will need to be produced. There are three approaches that could be considered:

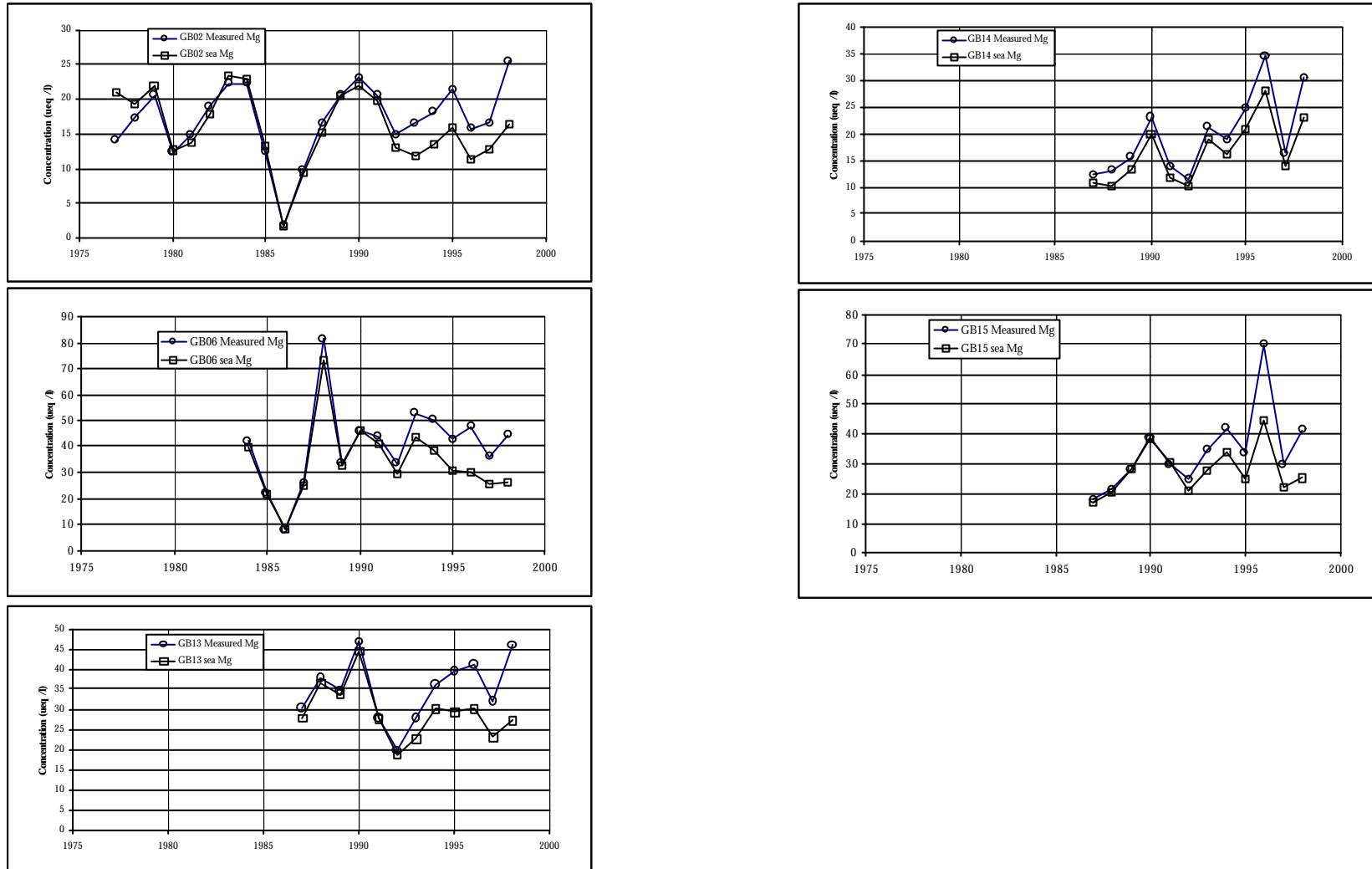


Figure 5.1 A comparison of measured and sea salt magnesium concentrations. Site codes are as follow GB02- Eskdalemuir; GB06 – Lough Navar; GB13 - Yarnier Wood; GB14 – High Muffles; GB15 - Strathvaich Dam

1. Quantify the overread using the EMEP laboratory intercomparison reports
2. Quantify the overread using intercomparison of the old and new IC instruments. The intercomparison involved the analysis of about 230 rainwater samples on both instruments. This was to ensure that the new IC would give at least an effective performance as the instrument that it was replacing.
3. As shown later, the new IC instrument clearly gives a better performance than the previous instrument. The non-sea salt magnesium and calcium concentrations determined in 2000 are probably the most reliable of those determined in recent years. The concentration fields resulting may need to be retrospectively applied to all years back to 1993.

5.1.2 EMEP Intercomparison Reports

Each year, the EMEP Chemical Co-ordinating Committee (CCC) at NILU coordinate a laboratory intercomparison of analytical methods. For rainwater samples, each participating laboratory measures the ion concentrations for four samples. Concentrations are then reported back to the CCC who then release the theoretical or expected concentrations. This gives the participating laboratories the opportunity to rectify gross errors such as transcriptions error etc. A statistical summary is then used to assess performance. Statistics calculated include the standard deviation and mean concentration.

Figure 5.2 and Figure 5.3 show the performance of the ion chromatograph used by Harwell Scientifics Ltd in measuring magnesium and calcium ion concentrations in the last five intercomparisons. Measured and expected concentrations are compared for each of the last five intercomparison exercises. The two figures shows that for the 18th intercomparison the new IC performed very well. The percentage differences between measured and expected magnesium ranged from 2.8 to 4.6 %. For calcium, the percentage differences ranged from 0.8 to 2.5 %. Such agreement is regarded as excellent.

For the earlier intercomparisons excercises, it is clear that the measured concentrations were consistantly higher than the expected concentration. It should however be noted that there is a larger spread in the calcium concentrations compared to the magnesium concentrations amongst all the participating laboratories.

An attempt has been made to view this spread against the concentrations measured by the analytical laboratory. This involved calculating the arithmetic mean standard deviation from the standard deviations derived for each sample for each year. The mean standard deviation for the magnesium concentration was 1.2 $\mu\text{eq l}^{-1}$ and for calcium 2.8 $\mu\text{eq l}^{-1}$. These values are presented as offsets from the 1: 1 line on Figure 5.2 and Figure 5.3, respectively. For the 14th to 17th intercomparisons slightly less than half the samples are greater than the mean standard deviation. Samples analysed as part of the 17th intercomparison appear to have performed particularly poorly.

Based on the regression relationship between the measured and expected magnesium concentrations derived from the 14th to 17th intercomparison, **Corrected Mg^{2+} concentration = measured Mg^{2+} concentration \times 0.89**. Annual mean magnesium concentrations for years 1993 to 1999 should be multiplied by 0.89 which is very close to that estimated by David Fowler.

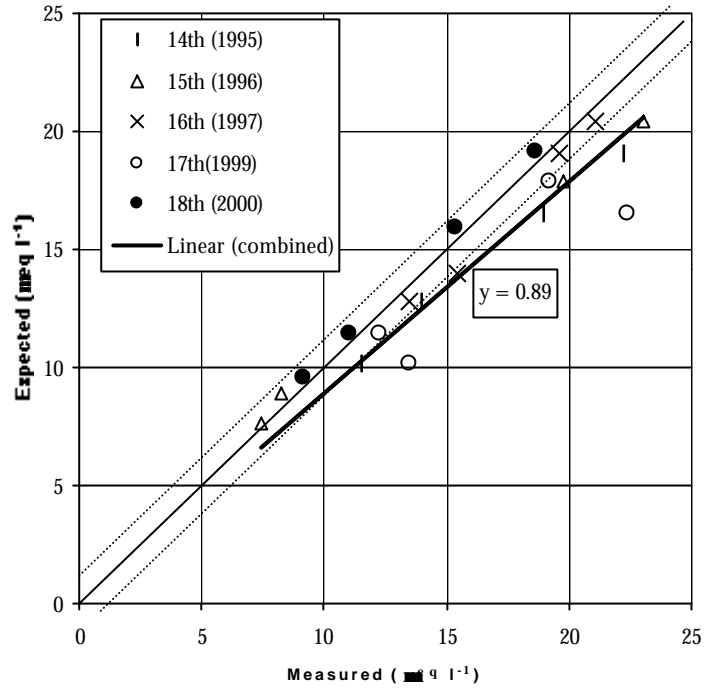


Figure 5.2 Comparison of measured and expected magnesium concentrations in the EMEP Intercomparison Exercises

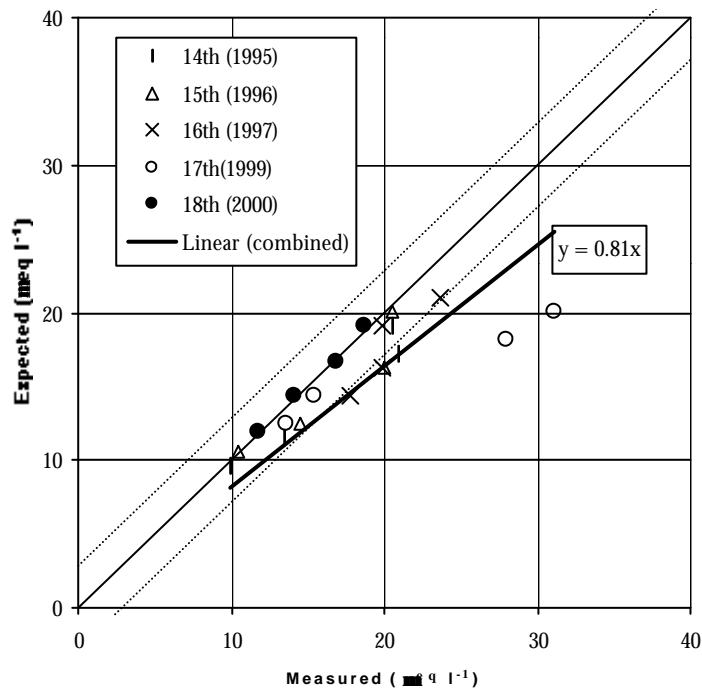


Figure 5.3 Comparison of Measured and Expected Calcium Concentrations in the EMEP Intercomparison Exercises

Based on the regression relationship between the measured and expected calcium concentrations derived from the 14th to 17th intercomparison, **Corrected Ca²⁺ concentration = measured Ca²⁺ concentration × 0.81**. Annual mean calcium concentrations for years 1993 to 1999 should therefore be multiplied by 0.81.

5.1.3 Intercomparison of the old and new IC Instruments.

In 2000, Harwell Scientifics bought a new ion chromatography instrument. Before it was brought into service for measuring concentrations as part of the acid rain monitoring programme (and received UKAS accreditation), a detailed comparison of the performance was undertaken. The results of that intercomparison were sent to DEFRA and Professor Fowler as part of a progress report on the project.

In addition to the tests outlined above, a number of rainwater samples collected in 2000 (approximately 230) were reanalysed using the new ion chromatograph to ensure a consistent dataset for 2000. Figure 5.4 shows that the reproducibility for the monovalent ions was excellent for both sets of instruments.

For magnesium and calcium the agreement was poor and the overread was significant. For magnesium, the arithmetic mean concentration on the old IC was 80 µeq l⁻¹ and on the new one 50 µeq l⁻¹. For calcium, the mean concentrations were 44 µeq l⁻¹ and 21 µeq l⁻¹, respectively. From the scatter shown in the plots, it would prove to be very difficult to correct the divalent cation concentrations of the samples collected between 1993 and 1999.

5.1.4 Conclusions

While the performance of the old ion chromatograph for determining the concentrations of the monovalent cations (Na⁺, K⁺ and NH₄⁺) was acceptable, it is clear that concentrations of magnesium and calcium have been overestimated between 1993 and 1999. This can be clearly attributed to the performance of the old ion chromatograph for divalent ions.

Possible approaches to correct the measurements might be

1. the retrospective correction of the data based on the EMEP laboratory intercomparisons. This suggests that the magnesium and calcium ion concentrations should be reduced by 11% and 19% respectively.
2. to assume that magnesium concentrations have continued to be dominated by the marine source and thus to calculate its concentration using the sodium ion concentration and the seawater concentration ratios.

Alternatively, the performance of the new instrument will allow the accurate determination of the non-seasalt magnesium and calcium concentrations for all years from 2000 onwards. The concentration field calculated for 2000 may be the most accurate base cation field that we can estimate and this could be used for all years back to 1993.

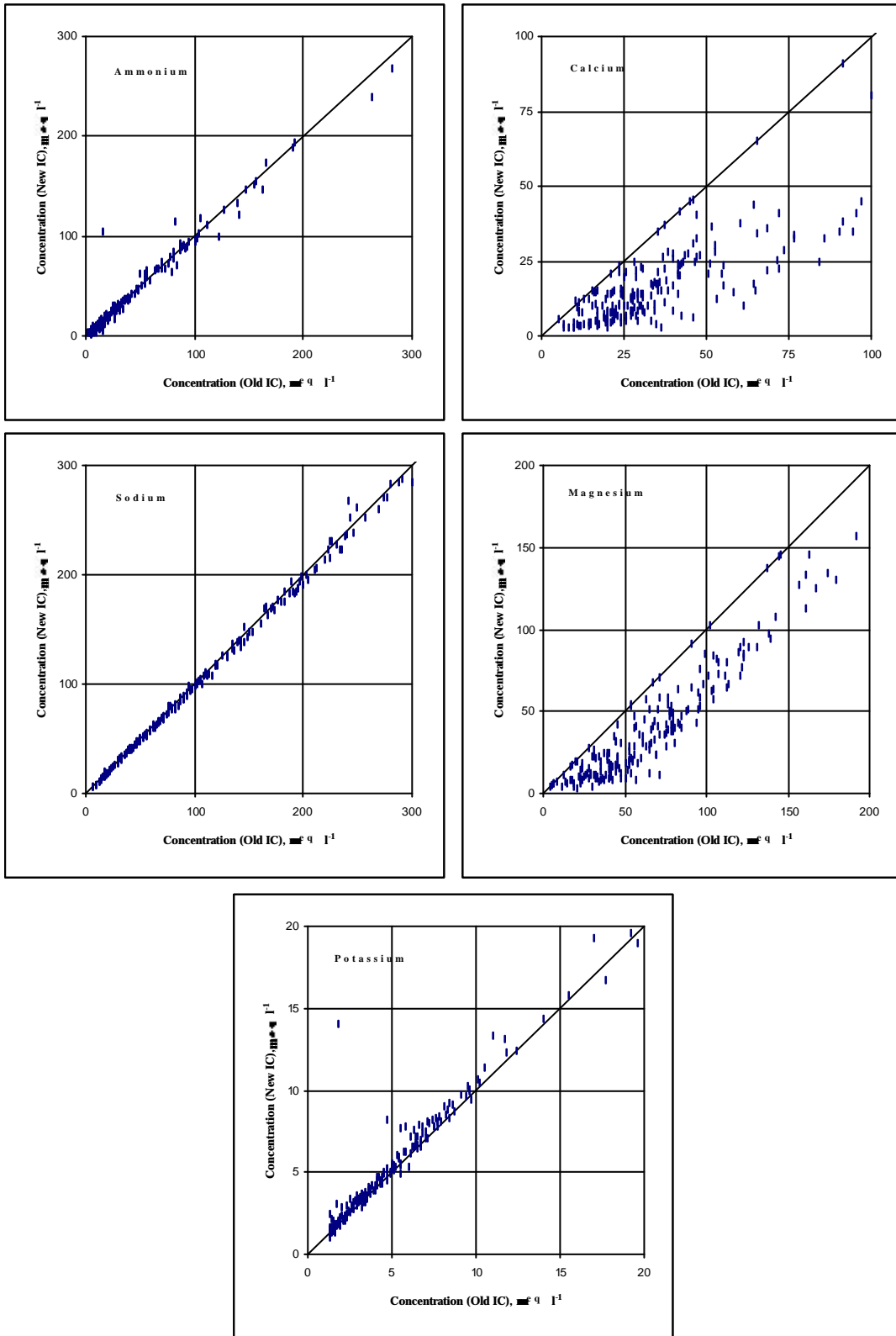


Figure 5.4 A Comparison of Cation Concentrations Measured with the Old and New IC's

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We would like to acknowledge the dedication and contribution of Steve Baker (AEA Technology) who was involved in the monitoring programme until October 2000.

Appendices

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Appendix 1	Weekly Bulk Precipitation Data, 2000
Appendix 2	Tables of Mean Concentration and Total Rainfall, 1986 to 2000
Appendix 3	Geostatistics
Appendix 4	Concentration Data for Sulphur Dioxide and Particulate Sulphate, 2000
Appendix 5	HNO ₃ Denuder Measurements

Appendix 1

Weekly data, 2000

Notes to Appendix 1

There are two pages of information for each site. The first includes site characteristics, time and seasonal trends; the second page presents individual concentrations for all samples collected (including those samples contaminated with bird strike). Also included are the Ordnance Survey co-ordinates, latitude and longitude and altitude of the site and the average rainfall for the 5 x 5 km square containing the site for the years 1941 to 1970.

Abbreviations for monitoring equipment, which also includes co-located sampling instrumentation, are given below:

- WOC Wet-only collector for daily measurement of rainfall composition
- DT Monthly diffusion tube. Measurement for nitrogen dioxide
- Daily SO₂ Daily measurements of SO₂ by hydrogen peroxide bubbler and of particulate sulphate on a Whatman 40 filter with ion chromatographic analysis
- Weekly SO₂ Weekly measurements of SO₂ by hydrogen peroxide bubbler with ion chromatographic analysis
- TIN Daily measurements of total inorganic nitrate using a filter pack
- TIA Daily measurements of total inorganic ammonium using a filter pack
- ozone Hourly measurements surface ozone
- SO₂ Hourly measurements of SO₂
- NO_x Hourly measurements of NO_x
- WF Weekly measurements of nitric acid and nitrate, sulphate, ammonium, sodium and chloride particles using a filter pack
- Met Meteorological measurements.
- UKAWMN Catchment monitored by the UK Acid Waters Monitoring Network.
- EMEP Daily data from this site are made available to EMEP

In the tables of data, a '-' indicates a missing value. A dry week is indicated by a complete row of '-'. Some weeks only have rainfall volumes reported; this is because no analyses were carried out on very low volume rainfall samples or on samples that were visibly contaminated. Individual ion concentrations or conductivities are missing for some low volume weeks, due to there being insufficient sample for complete analysis. A '< Value' indicates that the concentration was less than the detection limit of the analysis. Annual precipitation-weighted mean concentrations and rainfall total are included at the bottom of the table.

A phosphate concentration was also determined for each rainwater sample. A phosphate concentration > 0.1 mg P l⁻¹ (or > 9.7 µeq l⁻¹) using the old ion chromatograph [or > 0.01 mg P l⁻¹ (or > 0.97 µeq l⁻¹) using the new ion chromatograph] was taken as evidence of contamination by birds. Although all these samples have been included in the tables, they were not included in the calculation of annual means. The rainfall totals presented in Appendix 2, Table 10 include all samples collected and are therefore sometimes higher than the totals presented in this section.

Goonhilly

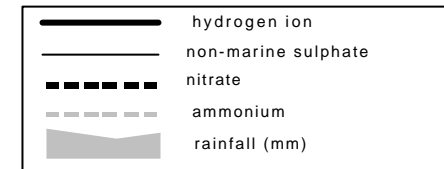
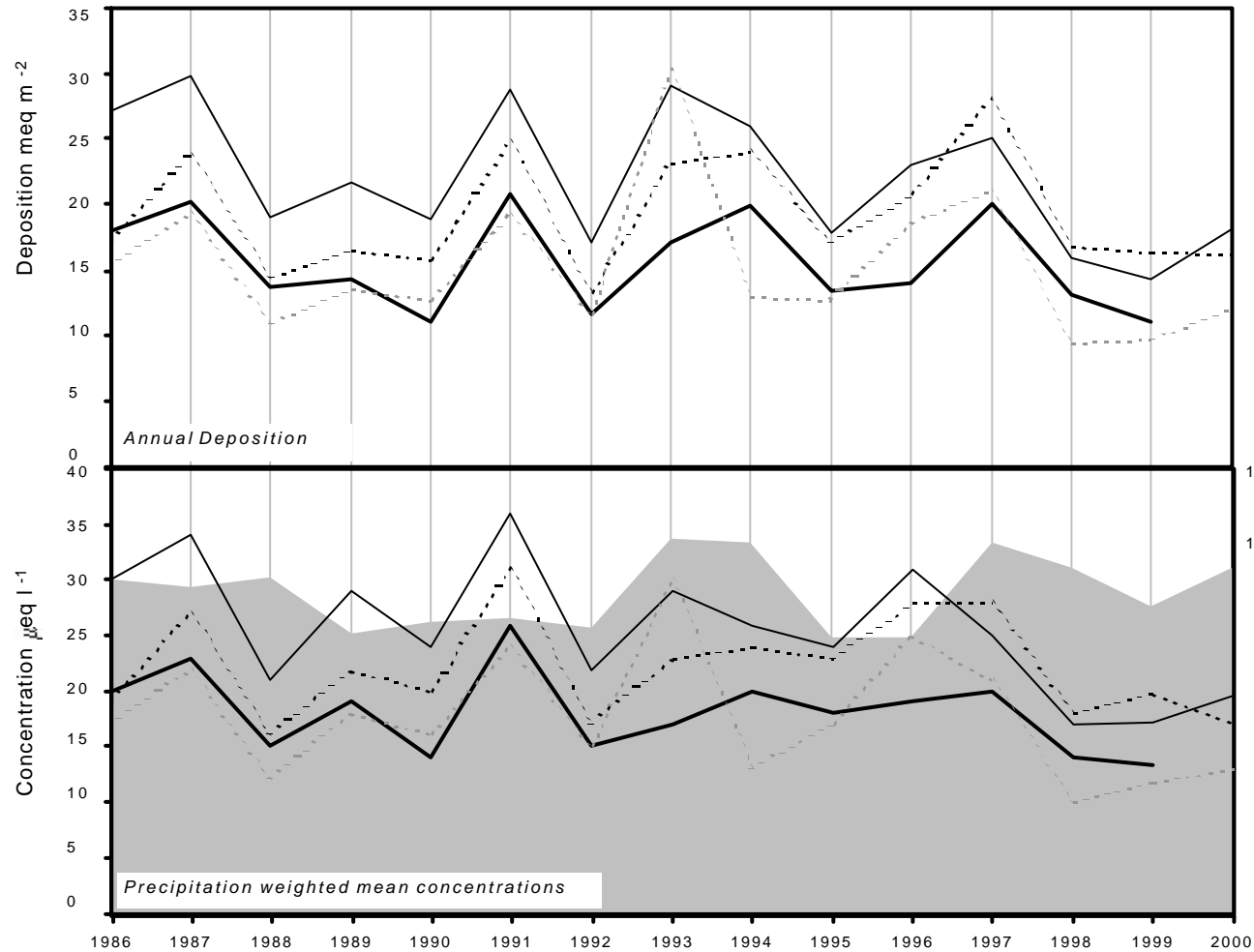
2000

Site Code: 5003
 Easting: 1723
 Northing: 214
 Latitude: 50 02 54 N
 Longitude: 05 10 52 W
 Altitude (m): 108
 Rainfall (mm): 973
 [30 year mean 1940 - 1971]

Site Environment:
 Open moorland, Satellite tracking station

Other measurements:
 DT

Site Operator:
 British Telecom



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-0.30 ueq/l (-1.50 %/year): 14 years' data - No significant trend detected
non-marine sulphate	-0.74 ueq/l (-2.41 %/year): 15 years' data + Significant trend detected
nitrate	-0.02 ueq/l (-0.10 %/year): 15 years' data - No significant trend detected
ammonium	-0.27 ueq/l (-1.40 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
10/01/00	13/01/00	-	69.4	23.3	8.8	435.0	122.8	35.3	484.3	9.6	< 9.7	17.0	-	75.0	7.2
13/01/00	27/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
27/01/00	03/02/00	-	62.2	33.9	14.5	365.5	106.0	28.5	405.4	9.1	< 9.7	18.1	-	73.0	17.9
03/02/00	10/02/00	-	67.6	14.2	3.4	483.9	144.6	45.8	560.3	12.4	< 9.7	9.3	-	86.0	24.7
10/02/00	16/02/00	-	62.9	11.4	3.4	431.3	137.2	37.3	508.3	8.7	< 9.7	10.9	-	81.0	17.0
16/02/00	24/02/00	-	91.3	21.7	9.1	573.2	157.2	40.0	652.4	11.8	< 9.7	22.3	-	105.0	15.9
24/02/00	20/03/00	-	70.8	21.3	11.3	385.8	125.6	71.8	444.4	8.4	< 9.7	24.4	-	73.0	27.6
20/03/00	23/03/00	-	124.7	119.7	105.3	285.8	75.8	166.2	263.4	44.6	< 9.7	90.3	-	78.0	2.7
23/03/00	30/03/00	-	208.1	49.3	425.8	659.4	409.4	97.1	788.7	103.7	< 9.7	128.7	-	190.0	3.7
30/03/00	06/04/00	-	51.4	36.6	28.3	62.3	14.5	5.8	71.8	1.8	< 1.0	43.9	-	38.0	36.2
06/04/00	13/04/00	-	75.6	67.9	64.3	294.6	66.4	34.1	332.7	8.1	< 9.7	40.1	-	69.0	8.3
13/04/00	20/04/00	-	35.8	17.6	15.3	147.4	29.0	10.6	161.8	7.1	< 9.7	18.1	-	30.0	30.8
20/04/00	27/04/00	-	44.9	10.9	< 2.1	259.8	58.7	12.5	304.1	6.8	< 9.7	13.6	-	53.0	33.1
27/04/00	04/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
04/05/00	11/05/00	-	191.1	416.1	256.1	210.3	58.9	177.3	116.9	17.8	< 1.0	165.8	-	98.0	3.4
11/05/00	18/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
18/05/00	25/05/00	-	50.3	12.0	14.1	179.8	39.3	11.5	201.4	3.9	< 1.0	28.6	-	42.0	17.1
25/05/00	31/05/00	-	28.7	8.4	7.3	125.4	27.8	7.3	141.9	4.0	< 1.0	13.6	-	29.0	39.3
31/05/00	08/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
08/06/00	15/06/00	-	173.7	57.2	66.4	450.1	102.3	28.1	496.9	11.0	< 1.0	119.5	-	107.0	4.4
15/06/00	22/06/00	-	172.5	102.8	62.8	417.8	97.3	59.3	444.9	11.1	< 1.0	122.1	-	106.0	6.3
22/06/00	05/07/00	-	69.4	39.4	18.9	97.5	23.0	10.9	89.4	2.7	< 1.0	57.6	-	43.0	29.2
05/07/00	17/07/00	-	40.1	12.5	17.1	174.7	39.6	11.7	214.3	4.4	< 1.0	19.1	-	41.0	18.3
17/07/00	21/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/07/00	03/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
03/08/00	10/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/08/00	17/08/00	-	27.1	14.7	24.0	55.3	10.8	7.2	58.8	3.8	< 1.0	20.5	-	15.0	13.8
17/08/00	23/08/00	-	18.0	6.4	2.7	63.1	13.7	4.0	74.5	1.4	< 1.0	10.4	-	18.0	21.8
23/08/00	31/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
31/08/00	06/09/00	-	91.1	54.9	35.5	446.9	99.1	34.0	517.2	12.5	< 1.0	37.2	-	83.0	5.2
06/09/00	15/09/00	-	24.6	14.2	8.9	55.0	12.7	4.9	61.5	1.9	< 1.0	18.0	-	18.0	30.4
15/09/00	21/09/00	-	32.5	13.5	4.5	101.7	23.1	6.0	119.9	2.0	< 1.0	20.2	-	31.0	28.2
21/09/00	28/09/00	-	35.7	9.8	9.8	169.8	36.7	9.8	184.5	7.0	< 1.0	15.2	-	34.0	48.5
28/09/00	05/10/00	-	49.4	8.3	7.5	311.8	71.7	14.7	381.0	6.7	< 1.0	11.8	-	59.0	17.1
05/10/00	12/10/00	-	37.0	4.5	3.9	256.2	56.5	11.9	319.1	5.1	< 1.0	6.1	-	49.0	49.3
12/10/00	19/10/00	-	42.5	14.9	16.0	197.4	42.6	12.4	220.1	6.1	< 1.0	18.7	-	41.0	13.5
19/10/00	26/10/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/10/00	03/11/00	-	97.0	4.8	4.3	728.7	167.6	33.3	856.2	15.5	< 1.0	9.2	-	126.0	48.1
03/11/00	09/11/00	-	47.1	9.8	6.4	270.1	60.1	12.5	314.5	5.6	< 1.0	14.6	-	55.0	27.3
09/11/00	22/11/00	-	38.2	3.9	2.9	242.8	56.2	11.6	323.1	5.6	< 1.0	8.9	-	46.0	79.8
22/11/00	29/11/00	-	95.5	5.5	2.8	715.0	163.3	31.6	881.1	15.5	< 1.0	9.4	-	124.0	26.8
29/11/00	07/12/00	-	70.2	13.3	4.0	455.5	106.9	21.4	532.4	10.3	< 1.0	15.3	-	87.0	28.2
07/12/00	20/12/00	-	49.3	9.5	5.2	332.9	74.0	14.9	413.1	6.9	< 1.0	9.2	-	61.0	67.3
20/12/00	28/12/00	-	67.0	46.0	28.1	308.6	70.1	16.2	358.3	7.0	< 1.0	29.9	-	76.0	34.3
28/12/00	03/01/01	-	71.8	6.3	3.3	517.6	115.9	22.6	609.0	10.4	< 1.0	9.4	-	91.0	46.7

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5003	-	55.5	17.3	13.0	299.1	72.6	19.8	353.0	7.6	-	19.5	-	60.2	934.5
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Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	60.8	20.6	15.2	300.0	82.9	22.0	327.8	6.5	< 9.7	24.7	-	55.0	3.8
12/01/00	19/01/00	-	56.6	26.1	23.9	160.7	43.4	14.1	177.2	4.7	< 9.7	37.2	-	40.0	4.4
19/01/00	26/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
26/01/00	02/02/00	-	29.6	19.4	16.3	135.9	52.4	27.4	145.7	3.2	< 9.7	13.2	-	28.0	3.8
02/02/00	09/02/00	-	22.8	5.2	2.3	135.5	56.2	61.4	146.0	2.9	< 9.7	6.5	-	-	1.9
09/02/00	16/02/00	-	19.9	4.7	< 0.7	120.2	26.7	7.4	133.0	3.6	< 1.0	5.4	-	26.0	32.7
16/02/00	23/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
23/02/00	29/02/00	-	17.7	5.8	4.5	66.0	14.8	5.3	74.8	1.5	< 1.0	9.8	-	17.0	21.2
29/02/00	08/03/00	-	53.3	14.5	< 0.7	145.8	40.3	139.5	166.9	5.4	< 1.0	35.8	-	44.0	15.8
08/03/00	15/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
15/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/03/00	29/03/00	-	64.8	48.4	62.2	115.0	39.4	131.6	134.7	16.7	< 1.0	50.9	-	48.0	12.6
29/03/00	05/04/00	-	28.3	22.3	13.4	15.8	4.0	4.8	25.7	0.6	< 1.0	26.4	-	20.0	33.6
05/04/00	12/04/00	-	31.0	26.0	6.9	20.3	4.3	3.3	70.9	< 1.3	< 9.7	28.6	-	-	6.8
12/04/00	19/04/00	-	30.0	23.4	16.4	21.7	< 4.1	5.3	57.4	1.4	< 9.7	27.4	-	23.0	59.6
19/04/00	26/04/00	-	20.2	9.7	5.3	67.7	15.3	4.6	76.5	1.3	< 1.0	12.0	-	20.0	103.4
26/04/00	03/05/00	-	38.0	34.2	22.0	52.2	12.8	14.5	57.5	1.3	< 1.0	31.7	-	25.0	8.0
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/05/00	17/05/00	-	135.8	150.3	299.4	125.0	36.0	44.9	124.8	19.9	82.7	120.7	-	72.0	17.9
17/05/00	24/05/00	-	189.3	13.7	1590.9	167.6	53.9	73.3	209.2	116.9	365.5	169.1	-	238.0	13.7
24/05/00	31/05/00	-	13.5	8.2	6.3	38.3	8.4	4.2	45.4	1.0	< 1.0	8.9	-	13.0	35.6
31/05/00	07/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
07/06/00	14/06/00	-	71.0	43.6	37.8	22.2	10.0	36.0	19.5	3.9	< 1.0	68.3	-	26.0	3.4
14/06/00	22/06/00	-	65.0	20.6	87.9	110.3	34.9	17.3	114.8	11.2	32.2	51.7	-	37.0	12.9
22/06/00	28/06/00	-	43.7	11.2	29.8	152.7	33.0	16.0	184.7	3.9	< 1.0	25.3	-	-	1.9
28/06/00	05/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	12.8
05/07/00	12/07/00	-	27.0	24.4	21.1	28.6	7.0	6.0	34.4	1.7	< 1.0	23.5	-	20.0	53.1
12/07/00	19/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/07/00	02/08/00	-	65.0	54.7	32.0	102.4	25.7	50.4	102.3	5.7	3.3	52.7	-	31.0	2.4
02/08/00	09/08/00	-	18.4	11.8	13.2	39.3	8.8	6.4	45.5	1.9	< 1.0	13.7	-	13.0	12.6
09/08/00	16/08/00	-	25.5	14.6	20.2	19.4	4.6	3.9	21.2	1.3	< 1.0	23.2	-	13.0	27.1
16/08/00	23/08/00	-	8.3	5.3	2.7	18.1	3.9	3.1	20.1	1.2	< 1.0	6.1	-	< 10.0	24.1
23/08/00	30/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30/08/00	05/09/00	-	24.3	15.5	12.9	58.7	13.4	11.0	74.6	1.8	< 1.0	17.2	-	19.0	10.6
05/09/00	13/09/00	-	63.0	37.5	63.5	90.0	20.3	15.6	94.7	4.7	< 1.0	52.1	-	-	1.9
13/09/00	20/09/00	-	12.7	9.4	6.3	11.4	2.8	2.0	13.1	< 0.5	< 1.0	11.4	-	< 10.0	50.5
20/09/00	27/09/00	-	28.2	14.5	14.9	60.6	13.5	5.2	68.1	2.0	< 1.0	20.9	-	21.0	43.2
27/09/00	04/10/00	-	28.0	6.1	5.1	151.5	35.1	10.1	178.6	3.2	< 1.0	9.7	-	32.0	44.9
04/10/00	11/10/00	-	14.8	3.2	2.3	76.8	17.0	4.8	94.1	1.6	< 1.0	5.5	-	17.0	49.7
11/10/00	18/10/00	-	17.6	11.5	7.9	60.7	13.7	4.3	73.8	1.7	< 1.0	10.3	-	18.0	29.5
18/10/00	25/10/00	-	22.3	12.9	8.6	66.3	14.3	6.1	75.8	1.9	< 1.0	14.3	-	21.0	13.6
25/10/00	01/11/00	-	31.9	2.7	1.7	214.5	47.7	10.6	268.0	6.2	< 1.0	6.1	-	39.0	118.0
01/11/00	08/11/00	-	24.2	4.5	7.0	110.7	25.7	5.3	141.0	2.6	< 1.0	10.8	-	25.0	45.6
08/11/00	15/11/00	-	14.6	4.0	2.9	72.1	16.2	4.4	85.3	2.0	8.1	6.0	-	18.0	26.8
15/11/00	22/11/00	-	26.3	4.5	4.6	151.4	34.2	8.2	186.9	4.6	< 1.0	8.0	-	31.0	55.6
22/11/00	30/11/00	-	43.8	12.9	14.2	216.0	48.5	11.6	236.8	4.6	< 1.0	17.8	-	44.0	58.8
30/11/00	06/12/00	-	35.2	8.9	8.8	199.4	41.9	9.8	224.5	4.8	< 1.0	11.2	-	40.0	53.7
06/12/00	13/12/00	-	25.8	6.7	6.4	145.2	33.6	7.2	173.6	3.3	< 1.0	8.3	-	31.0	74.6
13/12/00	20/12/00	-	31.7	16.7	14.1	107.7	25.1	6.6	119.8	2.4	< 1.0	18.7	-	29.0	18.7
20/12/00	27/12/00	-	38.8	51.5	37.5	34.1	7.8	4.7	40.1	1.5	< 1.0	34.7	-	31.0	18.6
27/12/00	03/01/01	-	22.2	4.8	4.9	126.5	28.2	6.3	150.5	2.9	< 1.0	6.9	-	27.0	73.5

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5008	-	26.5	11.2	9.2	103.7	23.6	10.0	124.4	2.9	-	14.0	-	25.9	1314.9
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Barcombe Mills

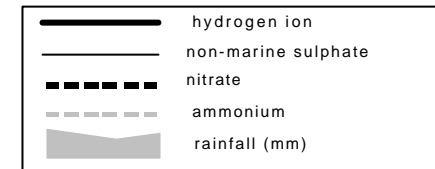
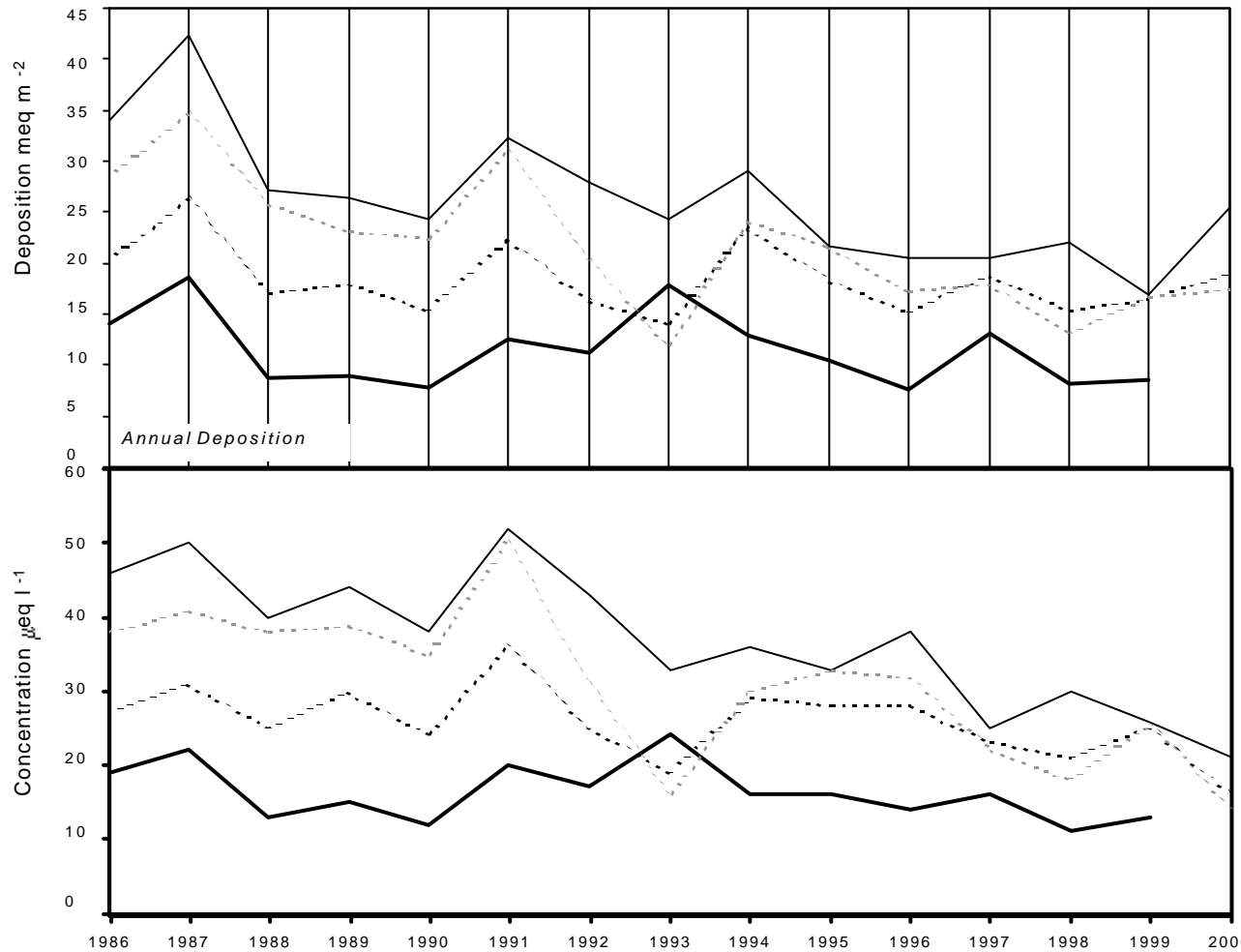
2000

Site Code: 5007
 Easting: 5437
 Northing: 1149
 Latitude: 50 54 54 N
 Longitude: 00 02 40 E
 Altitude (m): 10
 Rainfall (mm): 876
 [30 year mean 1940 - 1971]

Site Environment:
 Water pumping site

Other measurements:
 DT, Daily SO₂, Daily SO₄, EMEP

Site Operator:
 South East Water plc



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-0.38 ueq/l (-2.01 %/year): 14 years' data - No significant trend detected
non-marine sulphate	-1.75 ueq/l (-3.56 %/year): 15 years' data +++ Strong trend detected
nitrate	-0.58 ueq/l (-1.95 %/year): 15 years' data + Significant trend detected
ammonium	-1.68 ueq/l (-3.95 %/year): 15 years' data ++ Moderately strong trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	11/01/00	-	146.1	90.9	87.0	640.6	163.1	47.2	747.5	15.5	< 9.7	69.0	-	126.0	2.7
11/01/00	18/01/00	-	97.1	101.2	94.6	256.9	62.5	23.3	292.6	7.7	< 9.7	66.1	-	77.0	3.5
18/01/00	25/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4
25/01/00	01/02/00	-	92.0	33.8	41.4	400.3	97.7	47.6	461.1	22.8	< 9.7	43.7	-	76.0	2.1
01/02/00	08/02/00	-	49.0	23.7	28.6	176.6	65.7	51.1	202.6	6.4	< 9.7	27.7	-	40.0	13.8
08/02/00	15/02/00	-	67.6	13.7	14.3	382.5	119.3	42.5	435.2	8.1	< 9.7	21.5	-	72.0	13.7
15/02/00	22/02/00	-	46.6	34.8	28.8	140.8	44.1	21.5	160.6	3.8	< 9.7	29.7	-	41.0	6.2
22/02/00	29/02/00	-	60.6	23.9	22.8	324.7	102.6	41.6	372.3	8.4	< 9.7	21.4	-	64.0	13.7
29/02/00	07/03/00	-	135.4	1.5	< 0.7	530.0	133.0	172.9	640.4	19.4	< 1.0	71.6	-	109.0	4.7
07/03/00	14/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/03/00	28/03/00	-	92.2	67.2	99.9	77.5	24.7	97.9	90.5	9.3	< 1.0	82.9	-	43.0	12.6
28/03/00	04/04/00	-	80.8	85.8	100.7	43.6	10.9	14.0	47.0	4.0	< 9.7	75.5	-	43.0	23.6
04/04/00	11/04/00	-	68.7	73.1	70.2	128.8	30.9	41.2	140.8	8.6	< 9.7	53.2	-	41.0	4.0
11/04/00	18/04/00	-	45.8	40.6	27.1	102.2	19.8	9.9	115.6	7.4	< 9.7	33.5	-	38.0	27.7
18/04/00	25/04/00	-	56.1	27.6	33.1	59.7	13.1	11.7	64.4	3.1	< 9.7	48.9	-	29.0	6.8
25/04/00	02/05/00	-	31.8	40.2	27.7	13.7	4.4	12.9	19.1	1.5	< 9.7	30.2	-	22.0	5.6
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
16/05/00	23/05/00	-	45.0	25.7	5.9	70.8	14.7	4.4	70.6	1.4	< 9.7	36.5	-	29.0	21.1
23/05/00	30/05/00	-	18.5	9.7	19.7	53.1	11.1	3.6	24.5	1.3	< 9.7	12.1	-	11.0	86.2
30/05/00	06/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
06/06/00	12/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7
12/06/00	20/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/06/00	27/06/00	-	95.1	46.1	65.5	162.1	42.0	57.7	197.6	15.4	5.1	75.6	-	50.0	7.0
27/06/00	04/07/00	-	86.1	84.0	75.9	18.0	4.5	24.1	17.7	4.7	< 1.0	83.9	-	42.0	7.3
04/07/00	11/07/00	-	22.3	19.1	3.4	14.8	3.1	4.3	16.7	2.3	< 1.0	20.5	-	19.0	56.6
11/07/00	18/07/00	-	63.1	46.3	29.8	86.8	16.1	23.8	94.5	9.5	< 1.0	52.7	-	-	1.7
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25/07/00	01/08/00	-	79.1	102.0	100.6	138.6	18.3	87.7	130.8	29.2	3.0	62.4	-	48.0	1.3
01/08/00	08/08/00	-	16.4	10.8	12.1	27.8	5.9	4.9	30.9	1.5	< 1.0	13.1	-	13.0	48.6
08/08/00	15/08/00	-	23.6	22.5	14.4	8.8	2.7	13.5	9.1	2.6	< 1.0	22.5	-	13.0	6.3
15/08/00	22/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/08/00	29/08/00	-	135.1	152.2	113.3	96.4	30.9	252.7	103.1	20.1	< 1.0	123.5	-	65.0	2.8
29/08/00	06/09/00	-	12.7	6.6	4.2	42.8	9.6	5.0	48.6	1.4	< 1.0	7.6	-	12.0	52.9
06/09/00	12/09/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/09/00	19/09/00	-	36.8	17.5	20.1	30.9	7.2	6.1	36.1	2.1	< 1.0	33.0	-	21.0	42.7
19/09/00	26/09/00	-	36.1	22.2	23.5	38.4	8.9	10.8	46.8	2.1	< 1.0	31.4	-	20.0	33.2
26/09/00	03/10/00	-	35.2	11.0	14.5	162.1	37.0	17.8	192.5	6.6	< 1.0	15.7	-	36.0	43.1
03/10/00	10/10/00	-	38.5	8.1	2.0	200.6	45.8	19.3	249.5	8.5	< 1.0	14.4	-	43.0	50.2
10/10/00	17/10/00	-	27.7	4.6	2.2	155.1	36.4	12.4	185.3	4.4	< 1.0	9.0	-	32.0	149.6
17/10/00	24/10/00	-	48.7	21.4	10.4	98.4	27.7	35.8	143.4	24.0	< 1.0	36.8	-	36.0	26.0
24/10/00	31/10/00	-	125.9	3.7	< 0.7	879.8	194.8	70.3	1075.2	37.3	< 1.0	19.9	-	153.0	71.7
31/10/00	07/11/00	-	40.1	4.9	1.3	242.4	53.8	13.3	278.9	5.9	< 1.0	10.9	-	48.0	94.6
07/11/00	14/11/00	-	62.5	12.8	10.9	332.3	78.7	20.8	413.6	9.2	< 1.0	22.4	-	68.0	27.5
14/11/00	21/11/00	-	29.6	6.9	5.7	148.5	33.4	8.5	176.3	3.2	< 1.0	11.7	-	33.0	28.0
21/11/00	29/11/00	-	57.2	9.9	6.0	340.0	80.4	22.3	417.9	9.0	< 1.0	16.2	-	66.0	44.6
29/11/00	05/12/00	-	26.2	11.8	13.0	88.0	20.5	6.5	101.4	2.7	< 1.0	15.5	-	24.0	38.3
05/12/00	12/12/00	-	47.0	12.7	13.4	267.2	63.5	17.0	322.5	6.7	< 1.0	14.8	-	54.0	58.4
12/12/00	19/12/00	-	77.2	10.4	10.3	480.8	115.7	29.0	581.4	12.1	< 1.0	19.3	-	89.0	31.7
19/12/00	28/12/00	-	96.9	95.0	76.1	268.4	62.1	30.2	321.0	8.9	< 1.0	64.6	-	83.0	4.3
28/12/00	02/01/01	-	46.2	7.6	9.2	255.8	58.8	14.2	316.9	5.8	< 1.0	15.4	-	53.0	34.2
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5007		-	45.0	15.7	14.3	199.3	46.8	19.8	236.6	7.4	-	21.0	-	44.0	1215.0

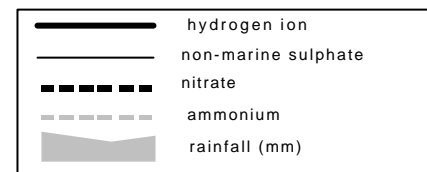
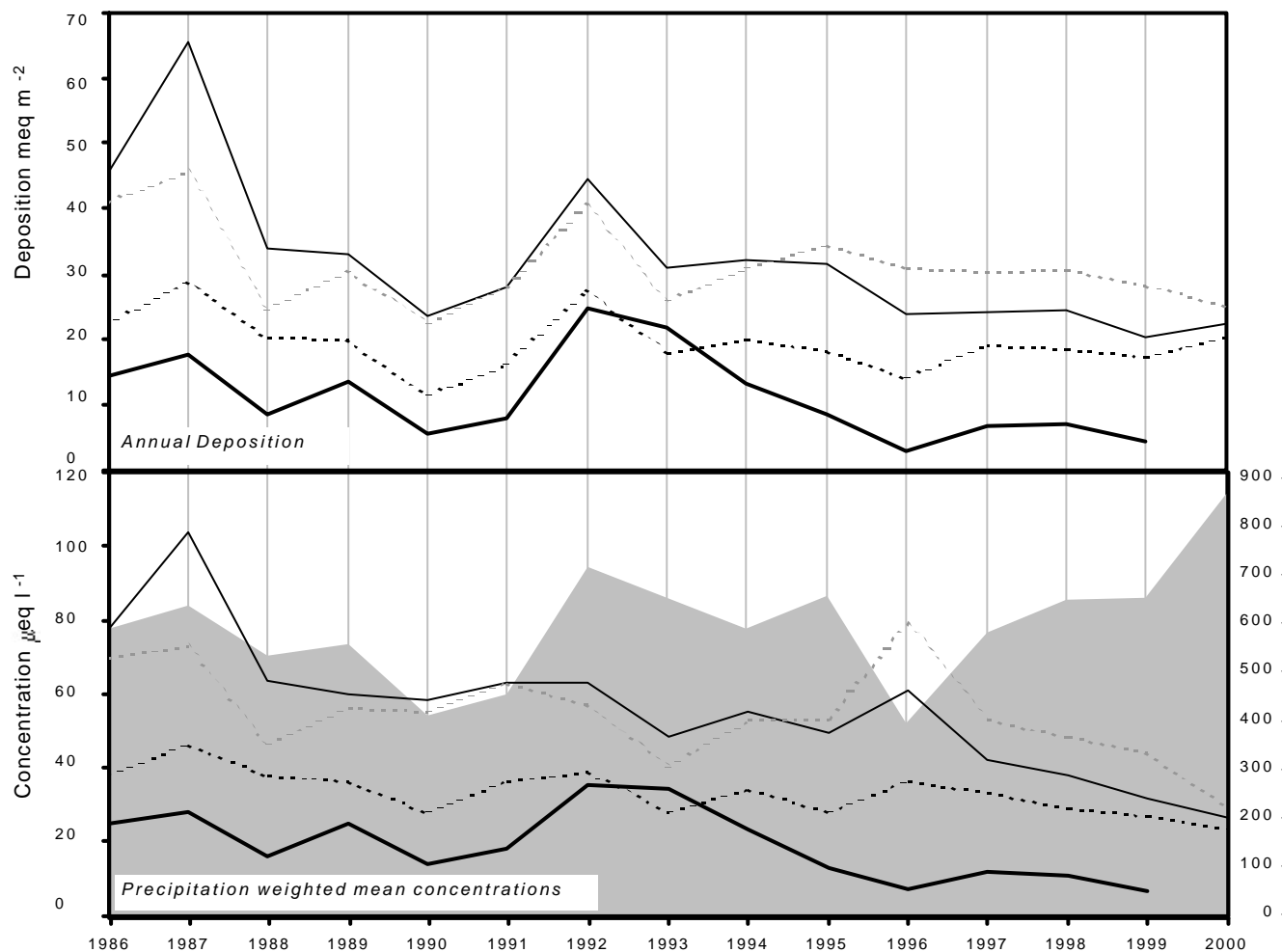
Compton

2000 Site Code: **5129**
 Easting: **4512**
 Northing: **1804**
 Latitude: **51 31 11 N**
 Longitude: **01 15 43 W**
 Altitude (m): **105**
 Rainfall (mm): **707**
 [30 year mean 1940 - 1971]

Site Environment:
Rough meadow, near pumping station

Other measurements:
DT

Site Operator:
AEA Technology plc



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-1.27 $\mu\text{eq/l}$ (-4.65 %/year): 14 years' data + Significant trend detected
non-marine sulphate	-3.66 $\mu\text{eq/l}$ (-4.48 %/year): 15 years' data +++ Strong trend detected
nitrate	-0.96 $\mu\text{eq/l}$ (-2.40 %/year): 15 years' data ++ Moderately strong trend detected
ammonium	-1.48 $\mu\text{eq/l}$ (-2.27 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	10/01/00	-	140.7	52.3	125.8	369.4	85.9	32.6	445.3	12.0	< 1.0	96.2	-	83.0	1.9
10/01/00	17/01/00	-	159.6	75.8	204.7	175.5	38.2	20.0	217.9	5.6	< 1.0	138.5	-	64.0	4.5
17/01/00	24/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/01/00	31/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
31/01/00	07/02/00	-	26.5	15.1	19.8	43.1	9.2	15.1	49.4	1.7	< 1.0	21.4	-	16.0	13.9
07/02/00	14/02/00	-	45.6	9.6	19.6	194.9	43.7	22.4	233.0	5.0	< 1.0	22.2	-	43.0	14.6
14/02/00	21/02/00	-	60.6	22.9	57.5	134.0	26.2	23.0	145.0	3.5	< 1.0	44.5	-	35.0	5.6
21/02/00	28/02/00	-	20.3	15.2	21.7	28.5	5.7	7.6	32.4	1.1	< 1.0	16.9	-	11.0	22.4
28/02/00	06/03/00	-	28.9	9.2	7.4	58.6	15.3	43.8	67.5	2.2	< 1.0	21.8	-	17.0	19.7
06/03/00	13/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13/03/00	20/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/03/00	27/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
27/03/00	03/04/00	-	49.6	40.3	80.0	39.5	8.3	8.3	44.9	1.5	< 1.0	44.9	-	22.0	26.2
03/04/00	10/04/00	-	47.5	29.4	46.8	63.5	13.5	8.2	82.8	1.8	< 1.0	39.8	-	30.0	31.6
10/04/00	17/04/00	-	34.2	39.4	31.0	14.3	3.0	6.2	20.1	2.0	< 1.0	32.5	-	26.0	61.6
17/04/00	25/04/00	-	29.9	18.5	18.4	49.2	10.8	7.0	57.3	3.3	< 1.0	23.9	-	< 10.0	37.4
25/04/00	02/05/00	-	48.2	79.6	79.1	18.3	5.7	13.3	21.7	9.3	< 1.0	46.0	-	30.0	15.1
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/05/00	15/05/00	-	74.4	111.8	133.9	17.5	8.6	53.4	19.0	2.8	< 1.0	72.3	-	33.0	7.7
15/05/00	22/05/00	-	20.5	13.8	11.9	26.4	6.6	18.6	31.9	3.6	< 1.0	17.3	-	12.0	18.2
22/05/00	31/05/00	-	18.7	12.2	11.5	23.0	5.3	15.9	27.3	2.5	< 1.0	15.9	-	10.0	56.8
31/05/00	05/06/00	-	51.4	65.0	45.6	18.1	5.9	30.6	20.9	4.4	< 1.0	49.2	-	31.0	1.9
05/06/00	12/06/00	-	57.7	47.8	56.4	29.0	8.6	69.9	33.4	4.1	< 1.0	54.2	-	23.0	5.2
12/06/00	19/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/06/00	26/06/00	-	32.9	23.1	33.3	66.7	14.7	32.3	73.8	3.5	< 1.0	24.8	-	21.0	8.3
26/06/00	03/07/00	-	98.0	114.5	102.7	21.0	8.4	42.3	20.3	3.4	< 1.0	95.5	-	49.0	14.0
03/07/00	11/07/00	-	45.6	38.2	36.0	6.1	1.9	6.3	9.7	0.8	< 1.0	44.8	-	26.0	33.5
11/07/00	17/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17/07/00	25/07/00	-	55.7	60.7	23.1	27.4	11.4	66.4	29.9	6.5	< 1.0	52.4	-	30.0	2.8
25/07/00	02/08/00	-	33.9	51.9	56.5	9.6	5.4	70.8	11.2	3.9	< 1.0	32.7	-	19.0	2.3
02/08/00	07/08/00	-	17.6	14.6	34.5	21.2	5.9	27.8	25.7	2.0	< 1.0	15.0	-	13.0	8.4
07/08/00	14/08/00	-	27.7	33.8	46.1	5.1	4.7	47.2	5.0	8.5	4.6	27.1	-	15.0	4.8
14/08/00	21/08/00	-	26.5	15.8	19.5	25.1	6.0	9.2	29.2	1.2	< 1.0	23.5	-	13.0	21.3
21/08/00	30/08/00	-	45.6	39.9	32.3	12.0	7.1	65.5	13.4	2.8	< 1.0	44.2	-	20.0	12.2
30/08/00	04/09/00	-	46.7	42.3	58.1	20.1	6.5	28.1	30.9	2.6	< 1.0	44.3	-	21.0	5.5
04/09/00	11/09/00	-	55.5	35.3	78.2	29.1	8.2	26.5	39.0	4.7	< 1.0	52.0	-	20.0	5.1
11/09/00	18/09/00	-	25.6	23.1	32.7	12.9	4.8	22.1	13.7	3.3	< 1.0	24.0	-	12.0	8.0
18/09/00	25/09/00	-	22.8	27.2	24.7	12.0	3.5	6.7	13.4	1.2	< 1.0	21.4	-	13.0	29.1
25/09/00	02/10/00	-	19.3	10.4	17.8	27.6	5.8	4.9	32.7	2.0	< 1.0	15.9	-	11.0	26.4
02/10/00	09/10/00	-	30.6	13.6	24.9	58.3	13.8	15.4	72.1	2.2	< 1.0	23.5	-	18.0	14.9
09/10/00	17/10/00	-	12.4	6.0	8.8	15.7	3.7	5.3	17.5	1.6	< 1.0	10.5	-	< 10.0	42.5
17/10/00	23/10/00	-	32.7	42.6	32.5	19.2	4.5	6.9	48.5	2.0	< 1.0	30.4	-	38.0	15.8
23/10/00	30/10/00	-	14.3	3.6	7.4	56.4	12.7	13.4	72.5	11.6	< 1.0	7.5	-	15.0	63.0
30/10/00	06/11/00	-	17.0	5.7	8.7	36.1	8.3	5.9	45.3	1.6	< 1.0	12.6	-	13.0	41.9
06/11/00	13/11/00	-	25.2	22.0	20.0	48.0	12.8	31.2	62.2	3.6	< 1.0	19.4	-	17.0	19.5
13/11/00	20/11/00	-	22.1	8.4	19.0	36.2	8.0	13.8	46.1	3.0	< 1.0	17.7	-	12.0	14.8
20/11/00	27/11/00	-	41.0	15.6	37.9	128.4	28.3	12.0	154.4	4.5	< 1.0	25.6	-	32.0	17.1
27/11/00	04/12/00	-	23.1	11.7	21.1	50.1	11.3	5.5	64.8	3.1	< 1.0	17.1	-	16.0	26.8
04/12/00	12/12/00	-	29.2	13.0	20.8	92.1	20.8	8.4	109.6	3.5	< 1.0	18.1	-	24.0	35.9
12/12/00	18/12/00	-	32.4	7.7	19.3	156.8	34.8	11.2	181.8	4.2	< 1.0	13.5	-	32.0	12.6
18/12/00	27/12/00	-	56.3	55.5	63.8	16.5	5.0	14.8	23.4	1.4	< 1.0	54.3	-	28.0	11.3
27/12/00	02/01/01	-	46.5	12.6	36.5	161.5	34.5	15.4	198.8	6.7	< 1.0	27.1	-	39.0	12.7

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5129	-	31.8	23.6	29.3	45.1	10.5	14.7	55.2	3.3	-	26.4	-	19.6	855.6
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Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
14/01/00	28/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4
28/01/00	11/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/02/00	25/02/00	-	27.9	6.5	5.1	131.5	30.5	7.3	153.0	2.9	< 1.0	12.0	-	30.0	77.8
25/02/00	10/03/00	-	25.1	6.4	4.0	57.7	14.5	17.1	68.4	1.5	< 1.0	18.2	-	16.0	146.9
10/03/00	24/03/00	-	48.7	28.6	37.5	13.0	6.2	25.4	13.9	1.4	< 1.0	47.1	-	17.0	25.1
24/03/00	07/04/00	-	31.5	19.5	22.4	53.9	12.2	6.2	60.6	1.4	< 1.0	25.0	-	22.0	40.5
07/04/00	21/04/00	-	21.6	17.9	15.0	19.1	4.6	4.4	21.9	0.9	< 1.0	19.3	-	15.0	86.4
21/04/00	05/05/00	-	29.2	15.6	8.8	63.1	14.7	6.2	79.8	1.6	< 1.0	21.6	-	23.0	102.6
05/05/00	19/05/00	-	43.1	21.1	24.3	77.2	18.5	21.1	90.9	5.0	< 1.0	33.8	-	25.0	29.7
19/05/00	02/06/00	-	14.7	5.6	1.6	23.1	5.4	3.4	26.9	0.6	< 1.0	12.0	-	12.0	90.7
02/06/00	16/06/00	-	28.4	6.5	< 0.7	21.1	7.0	7.7	24.3	7.0	< 1.0	25.9	-	15.0	71.3
16/06/00	30/06/00	-	21.9	4.9	3.0	73.3	17.1	7.2	92.2	2.9	< 1.0	13.1	-	19.0	51.5
30/06/00	14/07/00	-	43.5	29.3	22.8	30.4	7.4	7.4	33.4	0.4	< 1.0	39.8	-	28.0	80.9
14/07/00	28/07/00	-	28.4	18.6	13.0	8.8	4.2	10.5	7.9	4.8	< 1.0	27.4	-	13.0	16.0
28/07/00	11/08/00	-	18.0	6.6	7.2	41.5	9.0	5.8	48.8	1.5	< 1.0	13.1	-	14.0	48.0
11/08/00	25/08/00	-	17.4	6.4	1.8	33.0	7.1	4.4	38.6	1.2	< 1.0	13.4	-	14.0	38.8
25/08/00	08/09/00	-	33.7	20.3	20.4	34.3	9.5	16.2	39.2	1.5	< 1.0	29.5	-	18.0	29.3
08/09/00	22/09/00	-	15.5	6.2	1.5	16.8	3.7	3.4	20.8	0.5	< 1.0	13.5	-	11.0	92.7
22/09/00	06/10/00	-	21.9	4.0	3.6	87.3	19.9	5.6	105.4	2.6	< 1.0	11.4	-	20.0	151.6
06/10/00	23/10/00	-	19.1	5.4	4.7	64.6	15.3	5.4	75.0	3.6	< 1.0	11.4	-	17.0	119.8
23/10/00	03/11/00	-	23.3	2.6	1.7	147.2	32.5	6.4	184.4	3.2	< 1.0	5.5	-	30.0	247.8
03/11/00	17/11/00	-	18.2	4.4	4.0	88.9	19.7	5.7	111.4	2.9	< 1.0	7.5	-	20.0	127.8
17/11/00	01/12/00	-	32.8	5.4	3.1	192.3	43.0	9.2	231.7	4.4	< 1.0	9.6	-	40.0	236.8
01/12/00	15/12/00	-	36.6	4.9	1.7	231.3	53.6	10.7	285.9	4.8	< 1.0	8.7	-	44.0	296.2
15/12/00	29/12/00	-	29.7	28.2	19.6	27.8	6.2	4.7	32.9	2.5	< 1.0	26.3	-	20.0	27.4
29/12/00	12/01/01	-	23.7	7.2	8.1	82.3	18.2	5.5	99.8	2.4	< 1.0	13.8	-	23.0	53.5

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5154	-	26.8	8.2	5.9	102.9	23.6	8.0	125.3	2.9	-	14.4	-	25.4	2292.5
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Flatford Mill

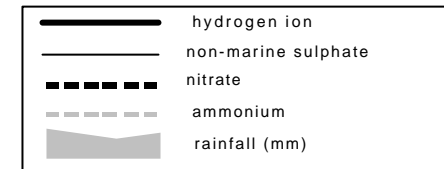
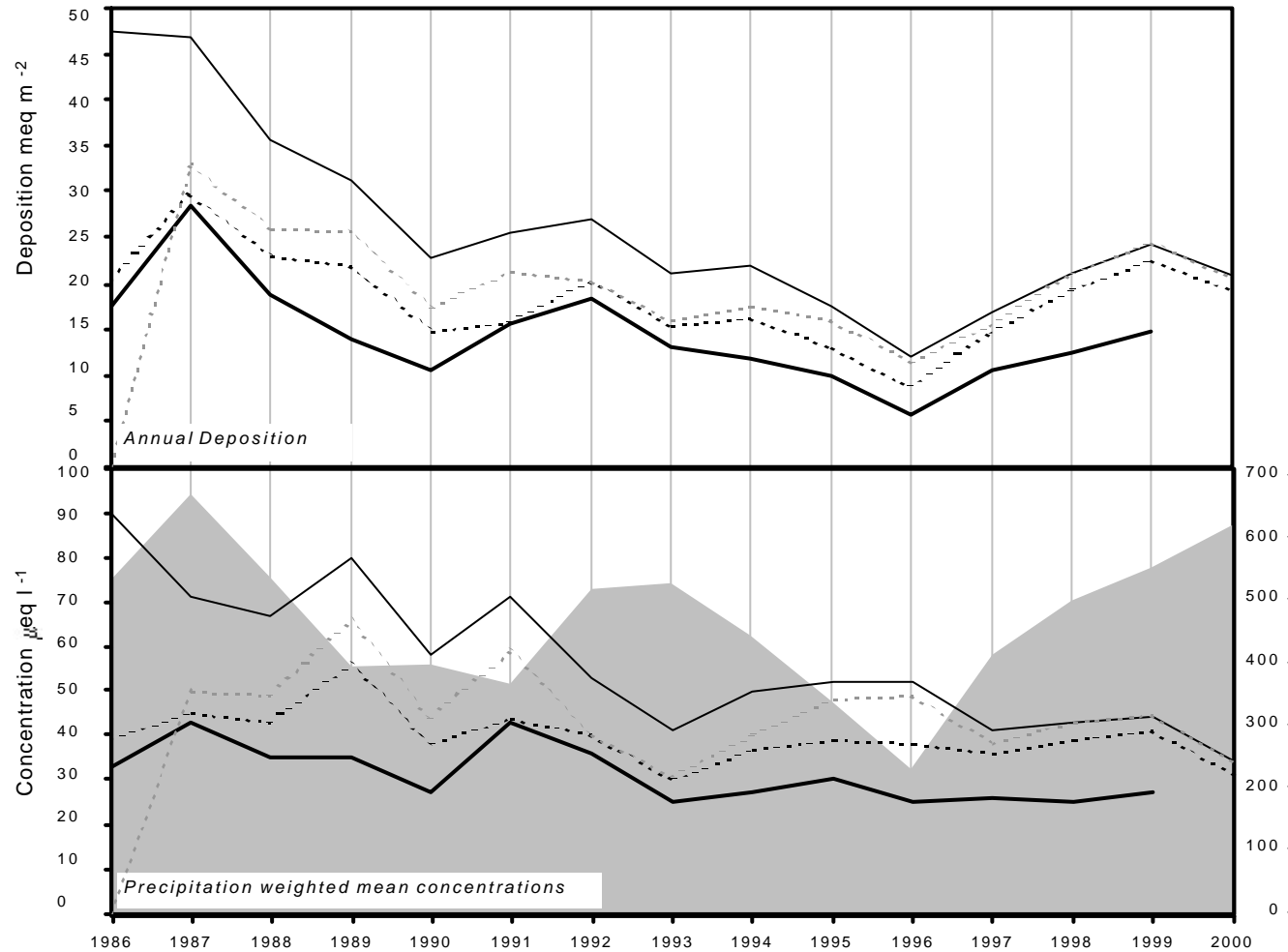
2000

Site Code: 5024
 Easting: 6077
 Northing: 2333
 Latitude: 51 57 32 N
 Longitude: 01 01 24 E
 Altitude (m): 5
 Rainfall (mm): 599
 [30 year mean 1940 - 1971]

Site Environment:
Open meadow near River Stour

Other measurements:
DT

Site Operator:
Field Studies Council



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-1.03 $\mu\text{eq/l}$ (-2.73 %/year): 14 years' data ++ Moderately strong trend detected
non-marine sulphate	-3.16 $\mu\text{eq/l}$ (-4.02 %/year): 15 years' data +++ Strong trend detected
nitrate	-0.67 $\mu\text{eq/l}$ (-1.51 %/year): 15 years' data - No significant trend detected
ammonium	-1.15 $\mu\text{eq/l}$ (-2.13 %/year): 14 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	106.8	66.7	100.0	222.0	56.1	25.6	244.8	5.1	< 9.7	80.0	-	62.0	2.2
12/01/00	19/01/00	-	81.2	63.4	100.4	145.2	47.1	23.7	163.2	5.1	< 9.7	63.7	-	51.0	5.6
19/01/00	26/01/00	-	100.1	45.8	83.8	248.5	71.2	38.3	280.9	7.4	< 9.7	70.1	-	-	2.9
26/01/00	02/02/00	-	33.7	30.4	33.6	36.9	6.9	13.6	39.3	1.5	< 1.0	29.3	-	19.0	10.9
02/02/00	09/02/00	-	52.4	25.1	27.7	105.3	37.6	52.5	126.2	2.7	< 9.7	39.8	-	34.0	7.2
09/02/00	16/02/00	-	49.1	23.8	31.7	66.2	22.5	29.2	81.0	2.3	< 9.7	41.1	-	25.0	6.6
16/02/00	23/02/00	-	48.3	46.9	50.5	70.6	23.3	24.5	83.1	2.4	< 9.7	39.8	-	32.0	9.5
23/02/00	01/03/00	-	24.3	21.3	17.6	28.9	6.8	7.8	34.8	1.3	< 1.0	20.8	-	17.0	23.7
01/03/00	08/03/00	-	64.8	22.0	35.2	62.1	15.9	47.7	71.7	4.9	< 1.0	57.3	-	25.0	3.4
08/03/00	15/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
15/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/03/00	31/03/00	-	175.9	111.5	191.6	280.2	91.2	104.1	304.5	8.3	< 9.7	142.1	-	85.0	7.2
31/03/00	05/04/00	-	63.7	52.5	88.5	107.7	24.4	16.6	121.9	3.3	< 9.7	50.8	-	36.0	13.8
05/04/00	12/04/00	-	96.9	159.9	154.6	145.6	35.2	25.3	173.8	6.6	< 9.7	79.4	-	80.0	5.5
12/04/00	19/04/00	-	39.1	40.3	30.1	39.7	8.8	7.6	46.5	< 1.3	< 9.7	34.3	-	31.0	25.1
19/04/00	26/04/00	-	43.9	38.7	32.7	20.1	6.3	9.7	25.5	4.4	< 9.7	41.5	-	25.0	20.9
26/04/00	03/05/00	-	74.9	111.7	111.4	14.8	9.4	60.7	20.8	4.0	< 9.7	73.1	-	36.0	6.3
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
10/05/00	17/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
17/05/00	24/05/00	-	49.1	34.1	37.3	18.0	5.5	15.0	22.0	1.8	< 1.0	46.9	-	24.0	18.0
24/05/00	31/05/00	-	21.2	18.4	18.7	21.0	4.9	4.5	24.5	0.9	< 1.0	18.6	-	14.0	68.0
31/05/00	07/06/00	-	63.6	65.8	48.8	14.9	6.9	26.1	17.1	6.8	3.2	61.8	-	34.0	6.9
07/06/00	14/06/00	-	292.1	216.0	252.5	70.6	60.6	274.0	89.5	71.2	18.8	283.6	-	-	0.9
14/06/00	21/06/00	-	108.5	91.4	109.1	20.0	17.1	95.3	19.0	17.5	9.2	106.0	-	35.0	4.7
21/06/00	28/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28/06/00	05/07/00	-	57.3	58.2	72.2	6.2	3.1	7.8	10.2	2.4	< 1.0	56.6	-	28.0	12.7
05/07/00	12/07/00	-	19.7	11.3	9.1	7.5	2.3	3.9	8.3	0.9	< 1.0	18.8	-	12.0	26.4
12/07/00	19/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/07/00	02/08/00	-	51.1	34.4	112.2	30.9	10.0	38.0	31.8	9.2	10.0	47.4	-	35.0	12.7
02/08/00	09/08/00	-	29.6	37.3	47.9	23.2	6.3	22.9	29.7	4.3	< 1.0	26.8	-	16.0	3.1
09/08/00	23/08/00	-	47.1	58.0	39.3	24.7	7.8	30.5	26.9	8.5	3.7	44.1	-	26.0	15.9
23/08/00	30/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
30/08/00	06/09/00	-	38.7	33.7	52.7	41.6	10.3	16.9	51.9	9.5	9.1	33.7	-	19.0	7.1
06/09/00	13/09/00	-	88.8	88.7	125.0	58.2	16.6	58.6	68.5	10.3	2.5	81.8	-	37.0	2.1
13/09/00	20/09/00	-	53.2	33.0	39.4	16.1	4.8	11.9	18.3	1.6	< 1.0	51.3	-	24.0	38.8
20/09/00	27/09/00	-	73.0	55.2	69.1	44.3	12.3	26.1	46.5	5.0	< 1.0	67.6	-	32.0	9.1
27/09/00	04/10/00	-	41.5	24.4	50.3	65.7	15.0	15.4	79.6	4.8	< 1.0	33.6	-	23.0	5.5
04/10/00	11/10/00	-	25.2	12.6	9.3	73.9	16.1	11.1	89.8	6.8	< 1.0	16.3	-	21.0	39.7
11/10/00	25/10/00	-	48.5	40.9	37.9	28.4	8.5	14.6	36.9	11.3	< 1.0	45.0	-	26.0	13.7
25/10/00	01/11/00	-	25.4	8.5	11.8	57.6	13.3	9.4	70.0	4.6	< 1.0	18.4	-	17.0	39.9
01/11/00	08/11/00	-	39.2	18.7	12.4	159.5	36.0	15.6	200.8	7.3	< 1.0	20.0	-	40.0	49.2
08/11/00	15/11/00	-	58.5	30.7	40.7	124.2	29.4	18.9	146.5	6.3	< 1.0	43.6	-	40.0	9.5
15/11/00	22/11/00	-	23.9	18.3	16.6	39.5	8.8	5.9	50.6	2.7	< 1.0	19.2	-	17.0	3.4
22/11/00	29/11/00	-	25.2	17.8	16.1	61.4	14.4	7.9	77.9	4.6	< 1.0	17.8	-	21.0	17.1
29/11/00	06/12/00	-	24.4	15.1	20.3	73.7	17.8	10.4	93.2	5.8	< 1.0	15.6	-	22.0	8.4
06/12/00	13/12/00	-	39.9	19.1	25.6	108.8	24.7	10.9	126.7	5.5	< 1.0	26.8	-	30.0	19.8
13/12/00	20/12/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9
20/12/00	03/01/01	-	46.2	32.2	24.8	139.5	32.8	12.5	165.1	4.6	< 1.0	29.4	-	42.0	24.5
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5024	-	-	42.0	31.5	33.9	63.1	15.9	15.5	75.5	4.2	-	34.3	-	26.8	613.1

Woburn

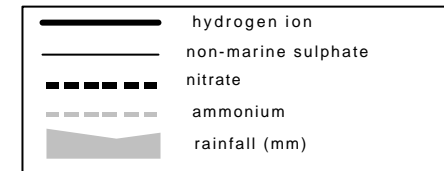
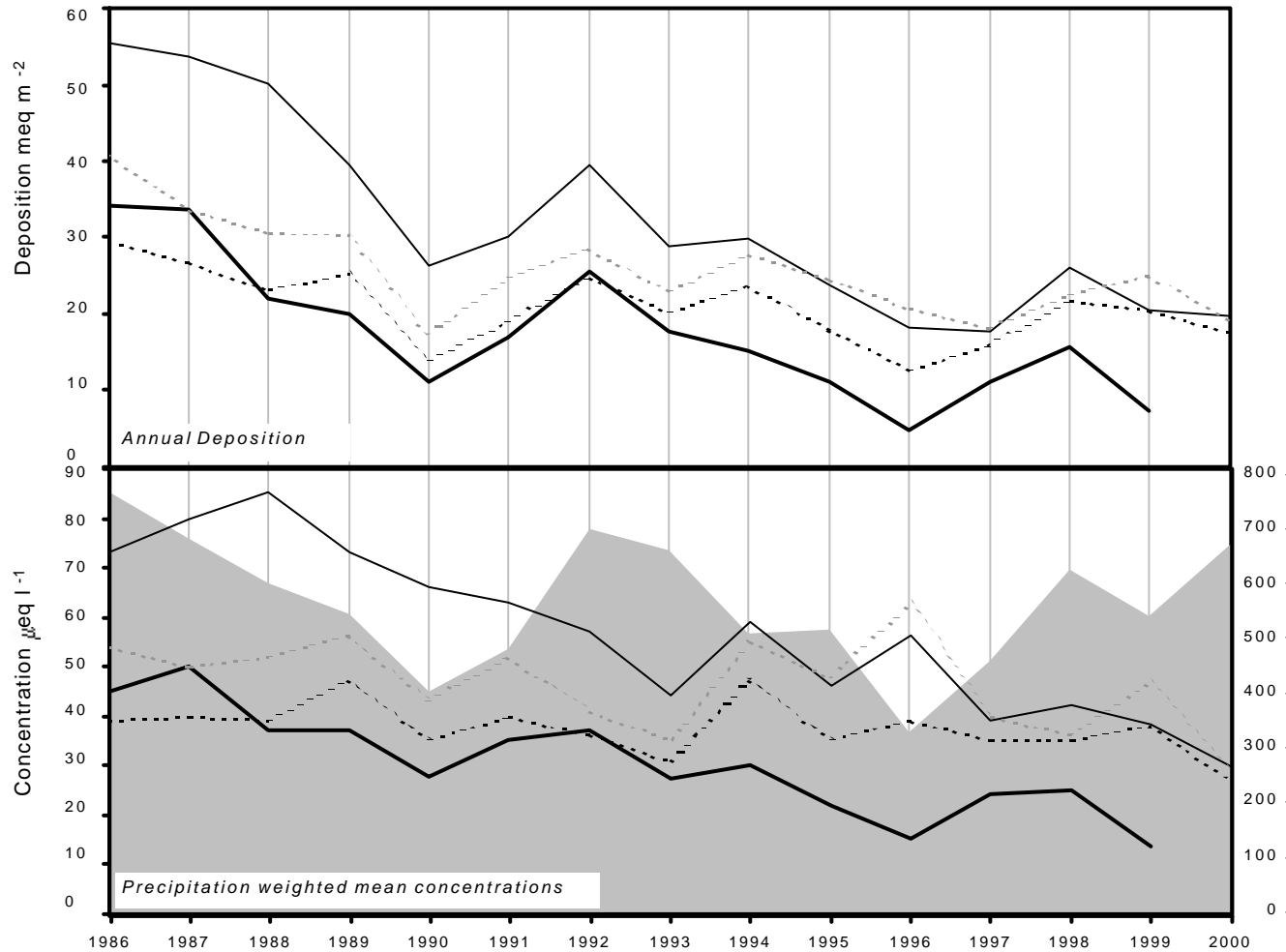
2000

Site Code: 5127
 Easting: 4964
 Northing: 2361
 Latitude: 52 00 52 N
 Longitude: 00 35 43 W
 Altitude (m): 89
 Rainfall (mm): 646
 [30 year mean 1940 - 1971]

Site Environment:
Pasture

Other measurements:
DT, Weekly SO₂, Met

Site Operator:
Rothamsted Experimental Station



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-2.22 ueq/l (-4.95 %/year): 14 years' data +++ Strong trend detected
<i>non-marine sulphate</i>	-3.45 ueq/l (-4.26 %/year): 15 years' data ++++ Very strong trend detected
<i>nitrate</i>	-0.54 ueq/l (-1.32 %/year): 15 years' data - No significant trend detected
<i>ammonium</i>	-0.98 ueq/l (-1.83 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	11/01/00	-	88.7	34.2	57.6	210.1	45.3	17.7	241.7	4.7	< 1.0	63.4	-	55.0	3.5
11/01/00	18/01/00	-	69.8	70.6	64.6	126.3	26.3	13.0	143.7	4.5	< 1.0	54.5	-	53.0	4.9
18/01/00	25/01/00	-	148.8	66.5	137.0	241.2	43.5	47.4	314.7	5.5	< 1.0	119.7	-	81.0	2.0
25/01/00	01/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8
01/02/00	08/02/00	-	41.0	26.9	28.1	70.3	16.6	16.7	84.5	1.8	< 1.0	32.5	-	26.0	14.3
08/02/00	15/02/00	-	66.4	23.0	34.6	260.5	57.8	27.9	312.7	5.6	< 1.0	35.0	-	52.0	4.4
15/02/00	22/02/00	-	53.0	40.9	46.5	104.2	21.7	18.0	118.6	2.3	< 1.0	40.5	-	33.0	5.2
22/02/00	29/02/00	-	17.1	14.3	11.5	24.0	5.0	5.8	28.0	1.2	< 1.0	14.2	-	12.0	30.2
29/02/00	07/03/00	-	44.6	19.1	25.9	48.4	11.6	27.9	55.0	1.5	< 1.0	38.8	-	19.0	6.8
07/03/00	14/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/03/00	28/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
28/03/00	04/04/00	-	65.6	46.9	81.1	46.7	10.0	9.2	52.2	2.9	< 1.0	60.0	-	30.0	29.8
04/04/00	11/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
11/04/00	19/04/00	-	50.3	47.5	36.2	30.3	6.8	6.4	37.5	1.0	< 1.0	46.7	-	36.0	26.3
19/04/00	25/04/00	-	40.4	33.1	29.1	43.8	9.5	7.6	47.1	1.4	< 1.0	35.1	-	26.0	15.9
25/04/00	02/05/00	-	31.8	38.9	34.0	15.1	4.4	14.4	16.9	3.3	< 1.0	29.9	-	19.0	9.5
02/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
10/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
16/05/00	23/05/00	-	42.0	23.6	35.0	20.7	6.3	18.9	24.6	1.8	< 1.0	39.5	-	17.0	20.2
23/05/00	30/05/00	-	20.1	17.2	11.9	12.1	2.6	4.5	13.4	0.7	< 1.0	18.7	-	14.0	56.4
30/05/00	06/06/00	-	48.1	47.8	17.6	17.9	7.8	30.3	16.4	2.3	< 1.0	45.9	-	26.0	5.0
06/06/00	13/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
13/06/00	20/06/00	-	182.4	192.6	118.6	43.9	53.5	208.5	56.5	66.9	24.5	177.1	-	63.0	2.5
20/06/00	27/06/00	-	55.9	14.6	16.3	58.9	14.0	21.8	72.5	1.3	< 1.0	48.8	-	30.0	5.4
27/06/00	04/07/00	-	171.2	177.6	166.1	15.2	7.2	44.5	16.0	4.4	3.1	169.3	-	84.0	8.0
04/07/00	11/07/00	-	43.4	37.2	44.0	6.4	2.4	7.7	9.1	1.1	< 1.0	42.6	-	22.0	12.0
11/07/00	18/07/00	-	31.0	29.0	19.7	26.5	7.5	21.8	24.5	1.8	< 1.0	27.8	-	15.0	1.7
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4
25/07/00	01/08/00	-	51.8	46.3	73.8	10.1	5.9	38.0	9.9	3.6	< 1.0	50.5	-	20.0	6.8
01/08/00	08/08/00	-	69.7	46.6	74.5	26.3	9.4	47.1	30.7	4.6	< 1.0	66.5	-	24.0	5.1
08/08/00	15/08/00	-	44.8	38.4	57.8	5.1	3.3	24.2	8.1	4.8	< 1.0	44.2	-	16.0	8.3
15/08/00	22/08/00	-	31.9	29.3	29.1	15.5	4.2	9.5	16.6	1.8	< 1.0	30.1	-	17.0	23.3
22/08/00	29/08/00	-	46.2	42.2	55.4	12.3	7.0	49.1	14.5	5.0	< 1.0	44.7	-	19.0	16.9
29/08/00	05/09/00	-	45.2	69.6	46.1	22.6	8.8	38.7	21.3	5.4	< 1.0	42.5	-	25.0	4.8
05/09/00	12/09/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
12/09/00	19/09/00	-	40.1	35.4	49.2	13.9	4.4	14.7	15.2	1.8	< 1.0	38.4	-	17.0	6.0
19/09/00	26/09/00	-	28.8	21.3	20.8	9.5	2.8	7.3	8.4	0.9	< 1.0	27.7	-	16.0	35.0
26/09/00	03/10/00	-	23.7	24.4	25.4	33.6	7.7	5.8	41.9	1.3	< 1.0	19.6	-	16.0	22.0
03/10/00	10/10/00	-	24.9	13.2	16.8	25.9	6.4	6.2	32.0	0.9	< 1.0	21.7	-	14.0	28.5
10/10/00	17/10/00	-	33.4	31.7	19.9	25.5	8.6	16.6	35.8	1.0	< 1.0	30.4	-	21.0	7.0
17/10/00	24/10/00	-	135.6	35.7	995.4	67.6	38.2	57.3	30.2	91.0	281.2	127.5	-	144.0	26.7
24/10/00	31/10/00	-	10.8	4.0	5.1	25.1	5.9	3.4	31.1	0.9	< 1.0	7.7	-	< 10.0	45.5
31/10/00	07/11/00	-	16.4	12.8	7.9	28.5	6.6	3.6	34.7	0.9	< 1.0	13.0	-	15.0	37.4
07/11/00	14/11/00	-	21.1	14.8	20.9	37.4	8.0	6.8	44.6	1.6	< 1.0	16.6	-	17.0	10.9
14/11/00	21/11/00	-	21.2	13.5	21.2	33.5	7.4	7.6	43.6	1.8	< 1.0	17.2	-	13.0	11.0
21/11/00	28/11/00	-	23.1	16.1	14.1	60.8	13.0	6.3	73.1	1.4	< 1.0	15.7	-	22.0	22.3
28/11/00	05/12/00	-	19.1	13.4	15.8	47.5	10.8	6.2	57.1	1.2	< 1.0	13.4	-	16.0	14.5
05/12/00	12/12/00	-	22.4	16.9	16.9	51.4	11.9	5.1	59.7	1.3	< 1.0	16.2	-	19.0	20.8
12/12/00	19/12/00	-	33.3	25.5	25.8	84.6	18.4	8.8	100.4	2.8	< 1.0	23.1	-	25.0	5.2
19/12/00	02/01/01	-	31.3	28.0	28.9	34.6	7.5	6.3	43.8	1.3	< 1.0	27.1	-	22.0	32.9
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total Rainfall	
5127	-	33.8	26.7	28.9	33.6	8.0	11.0	39.8	1.7	-	29.8	-	20.1	662.6	

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	11/01/00	-	47.2	19.1	10.3	263.2	59.2	12.2	328.3	6.0	< 1.0	15.5	-	51.0	34.7
11/01/00	18/01/00	-	36.8	5.4	5.1	144.4	32.1	6.5	170.8	2.9	< 1.0	19.4	-	34.0	62.2
18/01/00	25/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
25/01/00	01/02/00	-	67.1	27.3	36.2	379.8	83.0	20.4	437.0	7.5	< 1.0	21.3	-	72.0	10.5
01/02/00	08/02/00	-	32.3	11.2	5.6	99.5	22.8	15.9	115.6	2.6	< 1.0	20.3	-	24.0	45.3
08/02/00	15/02/00	-	39.3	4.4	3.3	259.6	58.5	11.5	309.4	5.2	< 1.0	8.0	-	48.0	35.0
15/02/00	22/02/00	-	34.7	15.0	16.2	151.6	34.3	10.6	175.2	3.7	< 1.0	16.5	-	33.0	19.2
22/02/00	29/02/00	-	23.9	7.2	9.3	69.9	15.5	4.2	82.2	1.4	< 1.0	15.5	-	19.0	66.3
29/02/00	07/03/00	-	61.7	14.4	12.1	279.0	64.5	92.4	320.2	6.9	< 1.0	28.1	-	56.0	10.4
07/03/00	14/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/03/00	28/03/00	-	60.4	34.1	59.6	100.5	22.1	34.9	109.9	2.6	< 1.0	48.3	-	32.0	16.4
28/03/00	04/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0
04/04/00	11/04/00	-	55.9	39.7	85.0	185.7	34.4	41.8	192.9	24.4	< 1.0	33.6	-	51.0	10.0
11/04/00	18/04/00	-	46.3	37.3	34.4	61.6	14.0	5.6	74.0	1.3	< 1.0	38.9	-	29.0	25.3
18/04/00	25/04/00	-	22.8	9.2	10.5	93.7	20.4	5.8	110.0	2.5	< 1.0	11.5	-	22.0	58.2
25/04/00	02/05/00	-	22.1	36.1	12.6	29.5	7.3	8.6	30.8	1.1	< 1.0	18.6	-	21.0	10.5
02/05/00	09/05/00	-	77.2	103.6	122.6	13.5	7.9	60.1	13.5	2.7	< 1.0	75.6	-	30.0	6.8
09/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
16/05/00	23/05/00	-	27.5	< 0.7	< 0.7	66.6	18.4	9.6	74.3	10.6	< 1.0	19.5	-	20.0	37.4
23/05/00	30/05/00	-	22.7	3.7	4.6	69.2	15.0	4.3	82.1	1.6	< 1.0	14.3	-	20.0	17.1
30/05/00	06/06/00	-	29.6	9.0	8.6	17.2	4.1	2.0	19.7	0.6	< 1.0	27.6	-	17.0	40.4
06/06/00	13/06/00	-	49.9	22.7	32.5	83.3	18.8	7.9	93.0	2.4	< 1.0	39.8	-	30.0	20.9
13/06/00	20/06/00	-	69.0	45.1	44.3	82.9	18.2	40.3	77.7	15.5	< 1.0	59.0	-	27.0	6.0
20/06/00	27/06/00	-	29.4	4.2	6.2	128.9	28.8	6.7	152.2	2.9	< 1.0	13.9	-	29.0	25.2
27/06/00	04/07/00	-	61.8	33.4	136.1	32.6	6.9	6.2	36.0	15.6	30.7	57.9	-	30.0	26.5
04/07/00	11/07/00	-	29.8	21.5	22.1	42.8	9.2	4.2	53.8	3.5	< 1.0	24.7	-	21.0	38.9
11/07/00	18/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25/07/00	01/08/00	-	27.9	15.2	7.7	25.3	6.0	4.2	29.7	0.8	< 1.0	24.8	-	19.0	24.2
01/08/00	08/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
08/08/00	15/08/00	-	29.3	12.6	15.9	22.8	5.6	4.4	27.4	1.3	< 1.0	26.6	-	16.0	24.4
15/08/00	22/08/00	-	36.7	11.6	11.8	39.7	8.5	6.8	45.9	1.9	< 1.0	31.9	-	22.0	22.3
22/08/00	29/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
29/08/00	05/09/00	-	69.6	28.2	22.5	43.7	10.4	8.3	51.9	2.6	< 1.0	64.4	-	22.0	23.2
05/09/00	12/09/00	-	39.3	11.4	19.3	146.3	33.0	13.1	173.7	4.1	< 1.0	21.7	-	31.0	6.7
12/09/00	19/09/00	-	26.0	5.3	54.8	37.1	8.2	6.0	36.9	19.4	9.9	21.6	-	20.0	44.2
19/09/00	26/09/00	-	38.0	21.7	18.8	87.4	19.2	9.5	99.3	5.1	< 1.0	27.5	-	28.0	41.3
26/09/00	04/10/00	-	27.6	6.1	6.4	137.1	30.7	6.8	160.6	2.8	< 1.0	11.1	-	30.0	103.1
04/10/00	11/10/00	-	14.7	2.8	3.0	67.4	14.1	5.2	78.7	1.8	< 1.0	6.6	-	16.0	54.7
11/10/00	18/10/00	-	33.1	10.0	162.7	71.9	18.6	5.2	93.2	13.9	38.9	24.4	-	38.0	61.9
18/10/00	25/10/00	-	26.8	6.4	6.7	131.1	28.6	6.7	149.1	3.3	< 1.0	11.0	-	28.0	48.1
25/10/00	01/11/00	-	31.7	1.5	3.8	223.6	50.9	10.8	301.1	5.2	< 1.0	4.7	-	43.0	95.8
01/11/00	08/11/00	-	30.6	9.3	7.1	146.6	32.9	6.8	169.8	3.1	< 1.0	12.9	-	32.0	53.0
08/11/00	15/11/00	-	29.1	4.6	6.3	163.6	35.9	9.0	193.1	4.0	< 1.0	9.4	-	32.0	33.4
15/11/00	22/11/00	-	29.2	5.0	7.8	164.7	36.5	8.0	194.3	3.9	< 1.0	9.3	-	33.0	48.9
22/11/00	29/11/00	-	86.6	6.6	4.7	608.0	137.9	27.8	748.1	13.1	< 1.0	13.4	-	106.0	52.0
29/11/00	06/12/00	-	24.4	7.3	6.8	114.9	25.8	5.5	136.8	2.5	< 1.0	10.6	-	27.0	135.1
06/12/00	13/12/00	-	37.2	6.3	3.6	235.5	53.9	10.5	280.6	4.9	< 1.0	8.8	-	46.0	119.9
13/12/00	20/12/00	-	26.3	11.8	9.8	82.4	18.7	5.8	99.5	2.1	< 1.0	16.4	-	22.0	34.7
20/12/00	27/12/00	-	27.6	50.7	34.5	12.6	4.0	12.1	13.2	1.2	< 1.0	26.1	-	20.0	5.7
27/12/00	03/01/01	-	18.9	4.4	6.6	110.5	23.9	5.2	139.6	2.3	< 1.0	5.6	-	23.0	68.1
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5123	-	33.6	10.2	10.4	143.8	32.4	9.6	173.0	3.8	-	16.2	-	32.4	1734.6	

Llyn Brianne

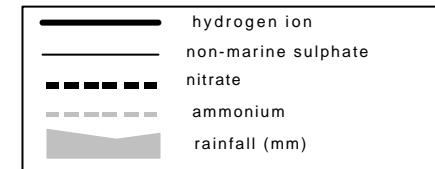
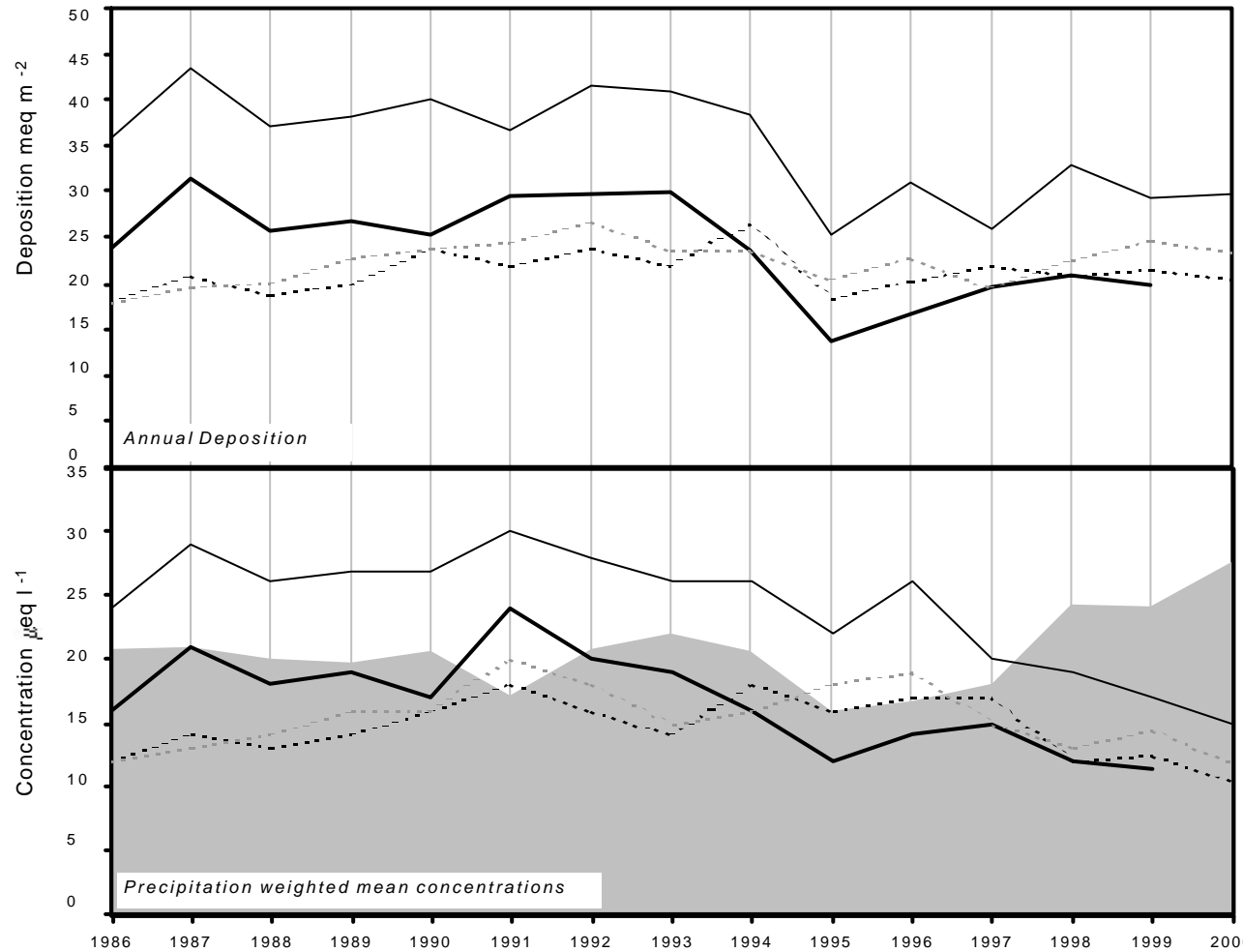
2000

Site Code: 5124
 Easting: 2807
 Northing: 2492
 Latitude: 52 07 32 N
 Longitude: 03 44 34 W
 Altitude (m): 372
 Rainfall (mm): 1774
 [30 year mean 1940 - 1971]

Site Environment:
 Open moorland, upland hill farming

Other measurements:
 DT, UKAWMN (nearby), Met

Site Operator:
 Environment Agency



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-0.60 ueq/l (-2.89 %/year): 14 years' data ++ Moderately strong trend detected
non-marine sulphate	-0.78 ueq/l (-2.64 %/year): 15 years' data ++ Moderately strong trend detected
nitrate	-0.04 ueq/l (-0.29 %/year): 15 years' data - No significant trend detected
ammonium	0.00 ueq/l (0.01 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	34.9	7.7	11.8	191.5	43.4	8.5	212.9	3.9	< 1.0	11.9	-	38.0	32.8
12/01/00	18/01/00	-	24.5	10.6	12.3	57.5	11.9	3.4	64.1	2.6	< 1.0	17.6	-	18.0	25.9
18/01/00	26/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
26/01/00	02/02/00	-	22.0	8.8	24.8	59.8	11.7	10.9	65.6	3.1	< 1.0	14.8	-	16.0	66.4
02/02/00	10/02/00	-	32.8	9.4	7.3	138.5	30.7	14.7	160.1	2.9	< 1.0	16.2	-	29.0	45.6
10/02/00	17/02/00	-	31.6	6.0	8.5	178.9	38.5	8.4	216.0	3.5	< 1.0	10.0	-	35.0	27.5
17/02/00	23/02/00	-	38.2	13.2	15.6	140.4	30.5	8.2	156.8	2.6	< 1.0	21.3	-	34.0	25.1
23/02/00	01/03/00	-	17.7	5.3	7.7	41.0	9.8	2.8	50.7	1.2	< 1.0	12.8	-	13.0	75.8
01/03/00	08/03/00	-	24.8	8.5	6.4	62.2	15.0	24.6	67.6	2.2	< 1.0	17.3	-	16.0	47.8
08/03/00	16/03/00	-	105.4	40.4	110.0	105.8	24.0	52.7	117.4	13.6	< 1.0	92.7	-	-	4.6
16/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
22/03/00	29/03/00	-	41.4	18.4	53.4	63.7	11.9	9.2	70.5	5.8	< 1.0	33.7	-	22.0	38.7
29/03/00	05/04/00	-	26.1	29.4	23.2	18.0	3.9	6.7	19.6	2.7	< 1.0	24.0	-	18.0	16.8
05/04/00	11/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	4.4
11/04/00	19/04/00	-	25.9	26.7	21.8	26.3	5.5	3.7	31.1	0.7	< 1.0	22.7	-	22.0	28.8
19/04/00	26/04/00	-	20.4	9.5	7.0	64.3	13.6	4.7	74.6	1.7	< 1.0	12.7	-	20.0	85.6
26/04/00	03/05/00	-	32.6	38.0	15.5	5.7	1.8	3.8	6.6	0.4	< 1.0	31.9	-	28.0	21.8
03/05/00	11/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/05/00	17/05/00	-	53.5	30.0	38.7	101.8	23.0	21.9	112.1	5.1	< 1.0	41.2	-	29.0	12.0
17/05/00	25/05/00	-	22.8	7.9	16.0	56.6	11.9	6.5	62.6	1.5	< 1.0	16.0	-	16.0	37.1
25/05/00	31/05/00	-	16.3	6.6	9.8	40.1	8.5	3.3	45.7	1.3	< 1.0	11.5	-	13.0	42.3
31/05/00	06/06/00	-	12.8	9.7	7.4	5.1	1.6	1.2	6.2	< 0.5	< 1.0	12.2	-	< 10.0	58.9
06/06/00	14/06/00	-	44.8	22.8	27.8	48.9	10.9	5.9	54.9	1.2	< 1.0	38.9	-	25.0	19.5
14/06/00	21/06/00	-	66.6	31.8	49.2	62.7	14.8	23.4	68.0	4.3	< 1.0	59.1	-	27.0	11.2
21/06/00	28/06/00	-	40.8	5.4	12.7	156.0	34.0	9.2	193.7	3.2	< 1.0	22.0	-	35.0	21.1
28/06/00	04/07/00	-	61.4	62.3	69.6	9.1	4.2	18.2	10.4	1.1	< 1.0	60.3	-	28.0	38.5
04/07/00	12/07/00	-	35.7	15.6	27.1	59.3	13.0	5.8	67.6	1.8	< 1.0	28.6	-	22.0	47.5
12/07/00	19/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/07/00	04/08/00	-	20.2	11.2	14.3	40.1	9.1	6.1	47.4	0.9	< 1.0	15.4	-	14.0	51.6
04/08/00	09/08/00	-	22.8	18.3	26.5	14.2	3.7	5.6	13.8	1.2	< 1.0	21.0	-	10.0	7.5
09/08/00	16/08/00	-	22.0	10.4	25.5	24.3	4.0	4.9	26.3	4.3	< 1.0	19.1	-	10.0	5.1
16/08/00	23/08/00	-	23.4	8.8	8.4	52.1	11.6	7.0	58.6	2.6	< 1.0	17.1	-	17.0	9.9
23/08/00	30/08/00	-	58.6	56.1	63.3	61.7	16.0	43.9	64.3	4.2	< 1.0	51.2	-	28.0	10.4
30/08/00	06/09/00	-	25.7	19.5	23.2	31.4	6.7	6.1	33.9	2.7	< 1.0	21.9	-	15.0	27.5
06/09/00	20/09/00	-	18.5	9.9	10.2	26.0	5.8	3.5	27.3	0.9	< 1.0	15.3	-	12.0	66.8
20/09/00	25/09/00	-	17.9	8.5	6.7	30.1	6.6	4.6	31.7	1.5	10.9	14.3	-	13.0	18.1
25/09/00	03/10/00	-	21.5	3.9	0.8	108.5	25.4	6.0	128.7	2.2	< 1.0	8.4	-	26.0	105.4
03/10/00	11/10/00	-	28.1	5.0	5.4	131.1	29.1	6.9	155.8	2.7	< 1.0	12.3	-	28.0	74.0
11/10/00	18/10/00	-	14.1	8.2	4.2	33.2	7.3	2.8	42.4	1.3	< 1.0	10.1	-	12.0	39.7
18/10/00	23/10/00	-	23.5	9.2	6.0	71.2	16.4	5.2	87.3	3.5	< 1.0	15.0	-	20.0	20.8
23/10/00	01/11/00	-	20.6	1.9	3.4	126.0	27.1	6.2	143.4	3.8	< 1.0	5.4	-	24.0	144.3
01/11/00	08/11/00	-	15.6	6.7	4.9	65.8	15.1	3.7	84.1	2.0	< 1.0	7.7	-	18.0	31.9
08/11/00	16/11/00	-	25.0	5.0	4.6	136.8	31.6	7.1	162.8	2.9	< 1.0	8.6	-	30.0	57.4
16/11/00	22/11/00	-	21.3	7.3	7.4	102.5	22.7	6.0	129.9	3.0	< 1.0	9.0	-	24.0	87.4
22/11/00	29/11/00	-	44.0	7.8	4.8	253.0	55.9	11.9	310.0	5.8	5.9	13.5	-	50.0	63.9
29/11/00	06/12/00	-	21.6	6.1	3.4	109.9	25.0	5.5	131.9	2.3	< 1.0	8.3	-	25.0	115.9
06/12/00	12/12/00	-	17.8	6.1	2.2	102.1	23.0	5.4	119.4	2.7	< 1.0	5.5	-	22.0	108.6
12/12/00	18/12/00	-	36.5	6.1	5.6	245.5	54.4	12.4	289.2	7.2	< 1.0	6.9	-	47.0	34.1
18/12/00	27/12/00	-	39.0	37.7	24.2	12.2	3.4	3.6	15.0	0.9	< 1.0	37.5	-	25.0	9.9
27/12/00	04/01/01	-	20.8	8.0	6.7	82.7	18.3	4.9	97.5	2.0	< 1.0	10.8	-	22.0	57.3
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5124	-	25.8	10.4	11.8	89.7	20.0	7.4	105.5	2.6	-	15.0	-	22.9	1983.6	

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	11/01/00	-	25.6	5.6	6.3	99.1	21.6	5.4	118.6	2.0	< 9.7	13.7	-	23.0	29.9
11/01/00	18/01/00	-	9.1	2.2	< 2.1	23.2	4.7	2.5	27.5	< 1.3	< 9.7	6.3	-	< 10.0	35.7
18/01/00	25/01/00	-	81.6	27.3	42.7	403.5	87.2	24.2	466.3	8.1	< 9.7	33.0	-	74.0	4.7
25/01/00	02/02/00	-	21.4	7.3	22.9	53.7	11.1	3.0	60.7	< 1.3	< 9.7	14.9	-	14.0	129.6
02/02/00	08/02/00	-	22.4	6.0	< 2.1	59.8	14.4	18.8	71.0	1.6	< 9.7	15.2	-	15.0	72.8
08/02/00	15/02/00	-	17.4	< 2.1	< 2.1	93.0	19.8	4.6	108.9	1.7	< 9.7	6.2	-	20.0	50.4
15/02/00	22/02/00	-	22.2	5.6	3.7	101.4	22.8	5.5	122.7	2.0	< 9.7	10.0	-	23.0	24.3
22/02/00	29/02/00	-	10.8	3.6	< 2.1	23.8	5.0	< 2.5	27.9	< 1.3	< 9.7	7.9	-	< 10.0	87.0
29/02/00	14/03/00	-	28.7	10.3	3.4	61.4	15.3	29.6	68.9	2.3	< 9.7	21.3	-	17.0	94.0
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/03/00	29/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
29/03/00	11/04/00	-	44.9	23.4	188.6	21.6	8.0	6.7	30.8	27.3	49.4	42.3	-	45.0	10.3
11/04/00	18/04/00	-	31.8	32.8	26.6	15.0	< 4.1	3.7	19.9	< 1.3	< 9.7	30.0	-	21.0	44.5
18/04/00	25/04/00	-	18.2	8.5	5.9	54.3	11.9	4.9	62.3	< 1.3	< 9.7	11.6	-	16.0	40.4
25/04/00	02/05/00	-	30.3	48.0	23.2	5.9	2.3	4.8	8.0	< 0.5	< 1.0	29.6	-	30.0	24.4
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16/05/00	23/05/00	-	17.4	< 0.7	< 0.7	53.9	11.6	5.3	61.2	0.5	< 1.0	10.9	-	15.0	70.9
23/05/00	30/05/00	-	17.9	7.0	6.6	42.3	8.6	3.9	49.2	0.3	< 1.0	12.9	-	14.0	12.4
30/05/00	06/06/00	-	7.5	6.9	2.4	4.2	1.1	< 1.0	4.4	< 0.5	< 1.0	7.0	-	< 10.0	77.2
06/06/00	13/06/00	-	45.6	19.0	33.2	62.4	12.8	5.7	71.6	6.5	< 1.0	38.1	-	25.0	20.5
13/06/00	20/06/00	-	8.2	5.0	< 0.7	6.7	2.1	3.8	7.6	< 0.5	< 1.0	7.4	-	< 10.0	45.6
20/06/00	27/06/00	-	19.8	4.9	5.3	60.4	12.3	4.8	73.0	1.1	< 1.0	12.6	-	17.0	36.3
27/06/00	05/07/00	-	57.8	53.2	55.2	8.2	3.2	8.3	9.5	0.8	< 1.0	56.8	-	33.0	14.3
05/07/00	11/07/00	-	18.8	6.4	8.3	35.6	7.6	3.2	44.3	0.9	< 1.0	14.5	-	15.0	61.5
11/07/00	25/07/00	-	41.6	40.4	30.4	66.6	16.1	16.7	67.1	2.4	< 1.0	33.5	-	23.0	6.1
25/07/00	02/08/00	-	18.7	11.9	11.0	33.4	7.6	5.2	39.7	0.8	< 1.0	14.7	-	14.0	29.6
02/08/00	15/08/00	-	11.3	7.3	2.0	11.2	2.6	2.3	13.3	< 0.5	< 1.0	10.0	-	< 10.0	73.2
15/08/00	22/08/00	-	23.0	7.0	13.9	58.1	12.4	4.8	65.5	1.3	< 1.0	16.0	-	17.0	23.0
22/08/00	29/08/00	-	516.9	75.7	1904.7	1105.2	47.5	68.2	267.0	321.2	2233.9	383.7	-	394.0	3.8
29/08/00	05/09/00	-	18.7	12.9	11.6	32.8	7.3	4.2	37.1	1.1	< 1.0	14.8	-	14.0	27.0
05/09/00	19/09/00	-	18.9	5.8	57.8	23.3	6.6	2.3	28.1	6.1	12.6	16.1	-	13.0	64.2
19/09/00	27/09/00	-	11.7	8.7	1.7	21.2	4.9	2.9	24.2	< 0.5	< 1.0	9.2	-	13.0	76.0
27/09/00	03/10/00	-	29.2	< 0.7	< 0.7	171.3	39.2	9.0	207.2	3.4	< 1.0	8.6	-	33.0	52.1
03/10/00	10/10/00	-	35.0	5.6	5.5	177.7	39.0	9.9	209.6	4.2	< 1.0	13.6	-	36.0	91.4
10/10/00	17/10/00	-	14.8	8.3	3.4	49.9	11.3	4.0	60.6	1.1	< 1.0	8.8	-	16.0	45.1
17/10/00	24/10/00	-	28.4	7.5	9.9	133.2	30.1	6.6	163.0	3.0	< 1.0	12.4	-	29.0	27.5
24/10/00	31/10/00	-	23.5	1.5	2.9	162.2	35.9	7.3	184.0	3.6	< 1.0	3.9	-	30.0	189.1
31/10/00	08/11/00	-	17.4	7.0	5.4	78.9	18.3	4.6	96.1	1.9	< 1.0	7.9	-	20.0	98.0
08/11/00	15/11/00	-	22.8	5.7	7.2	118.1	26.2	6.4	142.3	2.4	< 1.0	8.6	-	26.0	88.4
15/11/00	29/11/00	-	29.6	7.6	5.4	174.8	38.2	8.3	216.1	4.4	< 1.0	8.6	-	35.0	227.2
29/11/00	06/12/00	-	20.6	6.0	3.9	106.3	23.3	5.6	121.8	2.4	< 1.0	7.8	-	26.0	48.0
06/12/00	12/12/00	-	14.2	5.3	3.7	69.5	16.1	3.6	85.0	1.5	< 1.0	5.9	-	17.0	148.8
12/12/00	18/12/00	-	65.1	4.3	3.2	483.2	111.2	22.0	571.0	10.2	< 1.0	6.9	-	87.0	52.4
18/12/00	04/01/01	-	24.2	15.8	13.9	64.7	15.1	4.7	81.6	1.6	< 1.0	16.4	-	21.0	50.1

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5150	-	22.4	7.5	6.6	92.5	20.6	6.9	109.8	2.1	-	11.3	-	-	21.8	2410.5
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Stoke Ferry

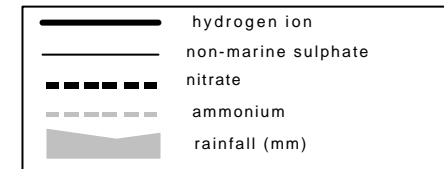
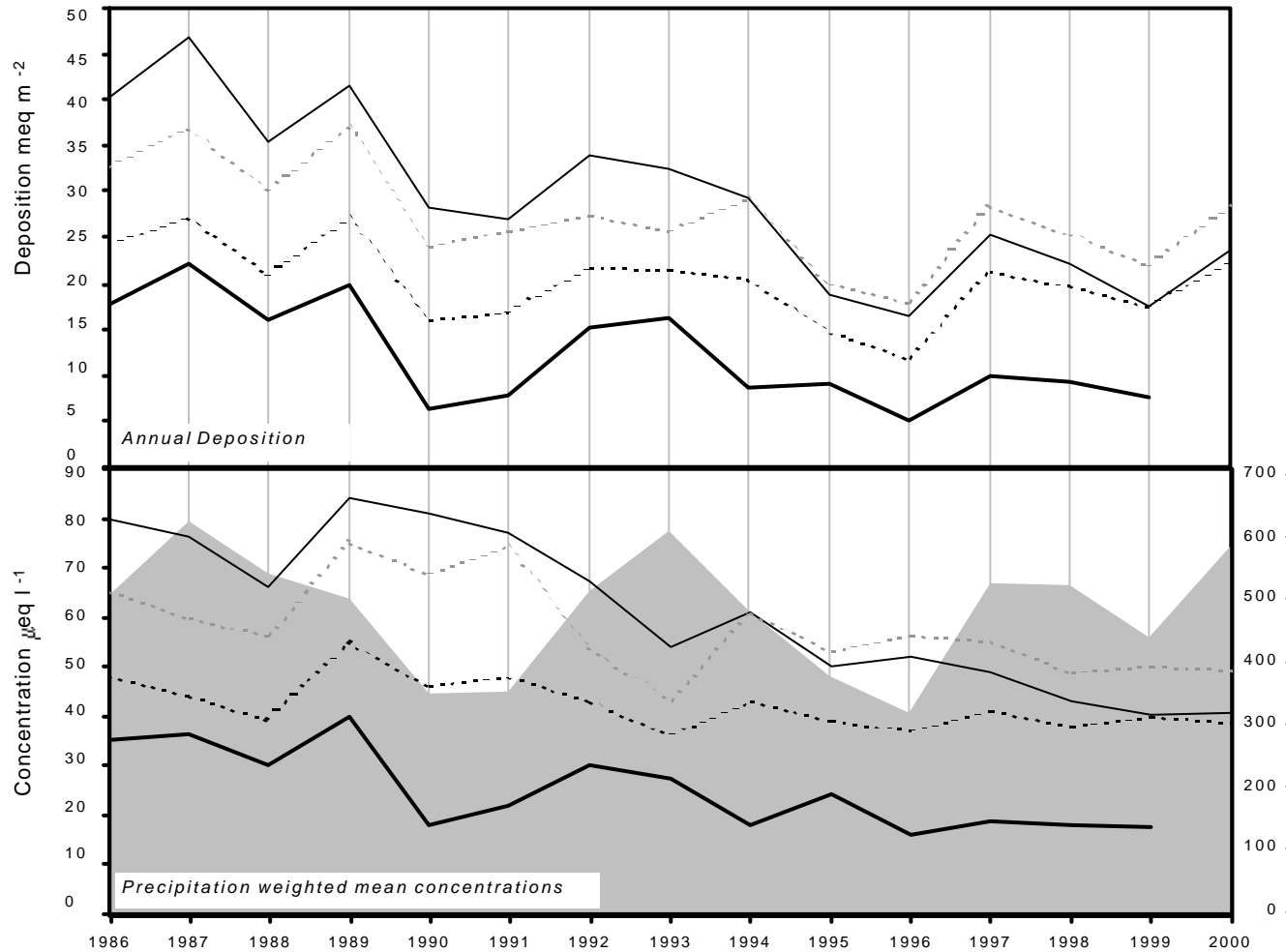
2000

Site Code: 5004
 Easting: 5700
 Northing: 2988
 Latitude: 52 33 36 N
 Longitude: 00 30 29 E
 Altitude (m): 15
 Rainfall (mm): 629
 [30 year mean 1940 - 1971]

Site Environment:
 Grassed land at water treatment works

Other measurements:
 DT, Daily SO₂, Daily SO₄, WF, EMEP

Site Operator:
 Kings Lynn and West Norfolk BC



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-1.49 ueq/l (-4.30 %/year): 14 years' data ++ Moderately strong trend detected
<i>non-marine sulphate</i>	-3.19 ueq/l (-3.81 %/year): 15 years' data ++++ Very strong trend detected
<i>nitrate</i>	-0.70 ueq/l (-1.48 %/year): 15 years' data + Significant trend detected
<i>ammonium</i>	-1.28 ueq/l (-1.91 %/year): 15 years' data + Significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	11/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/01/00	18/01/00	-	53.6	52.6	48.0	104.5	31.1	20.7	114.4	3.5	< 9.7	41.0	-	41.0	5.7
18/01/00	25/01/00	-	123.1	30.4	77.4	342.9	95.5	47.0	413.3	9.6	< 9.7	81.8	-	73.0	4.5
25/01/00	01/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
01/02/00	08/02/00	-	41.5	29.7	35.8	45.9	11.1	15.2	55.3	2.7	< 1.0	36.0	-	23.0	17.9
08/02/00	15/02/00	-	73.4	37.8	67.9	141.4	32.4	32.7	161.8	6.6	< 1.0	56.4	-	41.0	5.2
15/02/00	22/02/00	-	61.7	46.1	68.6	75.6	17.0	17.1	91.0	5.2	< 1.0	52.6	-	34.0	7.2
22/02/00	29/02/00	-	38.3	29.4	38.1	37.8	8.8	14.7	44.5	2.2	< 1.0	33.7	-	20.0	16.3
29/02/00	07/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7
07/03/00	14/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/03/00	28/03/00	-	96.3	62.5	99.3	84.5	22.8	69.2	99.3	3.4	< 1.0	86.1	-	40.0	10.8
28/03/00	04/04/00	-	110.9	79.7	128.2	204.1	46.5	25.4	237.9	5.7	< 1.0	86.3	-	64.0	10.6
04/04/00	11/04/00	-	393.6	157.7	203.1	1901.2	441.6	143.6	2219.0	43.7	< 9.7	164.6	-	-	1.6
11/04/00	18/04/00	-	69.6	68.3	103.2	39.0	9.0	16.5	43.6	1.4	< 9.7	64.9	-	33.0	22.0
18/04/00	25/04/00	-	39.7	29.0	42.0	50.8	10.6	12.4	52.2	1.6	< 9.7	33.6	-	21.0	14.0
25/04/00	02/05/00	-	22.5	31.9	24.6	5.8	2.5	12.2	5.9	0.6	< 1.0	21.8	-	14.0	21.8
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/05/00	16/05/00	-	177.5	224.4	296.2	48.2	17.2	72.0	50.4	5.7	3.4	171.7	-	73.0	6.1
16/05/00	23/05/00	-	48.9	41.1	50.6	13.8	3.7	15.5	16.9	1.6	< 1.0	47.3	-	24.0	20.2
23/05/00	30/05/00	-	24.5	24.0	27.9	12.0	2.9	4.9	14.3	0.8	< 1.0	23.0	-	15.0	46.6
30/05/00	06/06/00	-	31.9	41.5	30.4	8.0	2.7	14.3	7.8	3.2	< 1.0	30.9	-	17.0	5.1
06/06/00	13/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7
13/06/00	20/06/00	-	101.2	50.9	85.5	28.7	10.7	60.8	36.1	4.9	< 1.0	97.8	-	29.0	2.4
20/06/00	27/06/00	-	81.2	79.2	65.5	52.1	15.7	66.2	58.1	5.6	< 1.0	74.9	-	35.0	7.6
27/06/00	04/07/00	-	119.4	153.8	158.8	15.6	5.2	18.9	19.2	2.5	< 1.0	117.6	-	69.0	10.3
04/07/00	11/07/00	-	53.3	33.0	46.2	32.1	7.1	6.6	38.4	1.2	< 1.0	49.4	-	29.0	26.8
11/07/00	18/07/00	-	111.9	43.1	94.5	136.9	33.9	39.2	165.1	4.9	< 1.0	95.4	-	46.0	2.4
18/07/00	27/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27/07/00	01/08/00	-	237.0	245.9	231.0	11.9	9.0	108.7	22.6	6.4	2.3	235.5	-	104.0	1.9
01/08/00	08/08/00	-	170.2	144.4	228.0	79.2	26.2	149.1	78.6	12.4	27.0	160.6	-	64.0	1.5
08/08/00	15/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15/08/00	22/08/00	-	57.7	66.8	79.1	20.5	6.2	31.9	17.6	4.7	< 1.0	55.3	-	24.0	12.6
22/08/00	29/08/00	-	76.1	121.9	56.9	47.7	15.9	93.5	38.5	14.3	2.9	70.4	-	38.0	2.4
29/08/00	05/09/00	-	45.5	50.1	44.5	47.1	10.6	21.2	50.2	3.6	< 1.0	39.8	-	28.0	11.7
05/09/00	12/09/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
12/09/00	19/09/00	-	35.4	37.0	44.6	12.1	3.8	17.3	14.3	1.2	< 1.0	33.9	-	17.0	26.9
19/09/00	26/09/00	-	42.5	34.2	45.5	16.9	5.1	14.2	15.8	1.9	< 1.0	40.5	-	17.0	23.3
26/09/00	03/10/00	-	45.1	40.5	74.4	70.1	14.9	23.8	81.7	3.6	< 1.0	36.7	-	26.0	3.7
03/10/00	10/10/00	-	31.4	19.9	25.8	24.7	6.7	11.0	31.2	2.0	< 1.0	28.4	-	17.0	18.8
10/10/00	17/10/00	-	74.2	31.3	32.6	29.3	11.2	50.2	40.4	2.2	< 1.0	70.7	-	25.0	9.1
17/10/00	24/10/00	-	33.4	35.8	37.6	12.2	3.0	4.4	13.8	1.0	< 1.0	31.9	-	22.0	26.3
24/10/00	31/10/00	-	13.9	6.8	11.0	20.5	4.9	4.9	23.1	1.0	< 1.0	11.4	-	< 10.0	45.1
31/10/00	07/11/00	-	22.4	15.9	22.1	44.2	10.2	5.7	57.6	1.5	< 1.0	17.1	-	16.0	29.5
07/11/00	14/11/00	-	21.7	19.9	32.3	13.1	3.7	6.1	18.9	2.2	< 1.0	20.1	-	12.0	15.3
14/11/00	21/11/00	-	47.5	23.5	62.4	30.1	6.1	9.5	42.9	4.7	< 1.0	43.9	-	18.0	9.3
21/11/00	28/11/00	-	30.1	20.8	27.5	37.3	8.5	6.2	50.2	3.4	< 1.0	25.6	-	19.0	25.4
28/11/00	05/12/00	-	44.5	27.6	48.5	65.0	15.7	12.7	77.7	2.7	< 1.0	36.7	-	24.0	5.3
05/12/00	12/12/00	-	32.2	29.1	42.7	71.9	15.3	10.1	83.9	2.8	< 1.0	23.6	-	24.0	12.6
12/12/00	19/12/00	-	68.3	42.1	81.6	131.9	28.6	21.9	168.5	4.6	< 1.0	52.4	-	37.0	3.2
19/12/00	27/12/00	-	32.6	34.0	33.9	25.1	5.9	7.0	29.3	1.1	< 1.0	29.5	-	20.0	15.0
27/12/00	02/01/01	-	33.9	19.4	35.3	63.4	14.3	7.7	84.1	1.9	< 1.0	26.2	-	21.0	8.6
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5004		-	46.0	38.6	49.3	43.6	10.8	16.2	51.5	2.4	-	40.7	-	23.5	576.9

Preston Montford

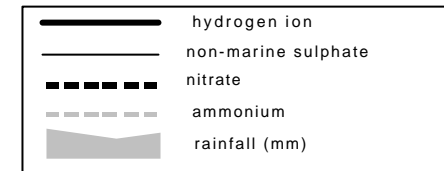
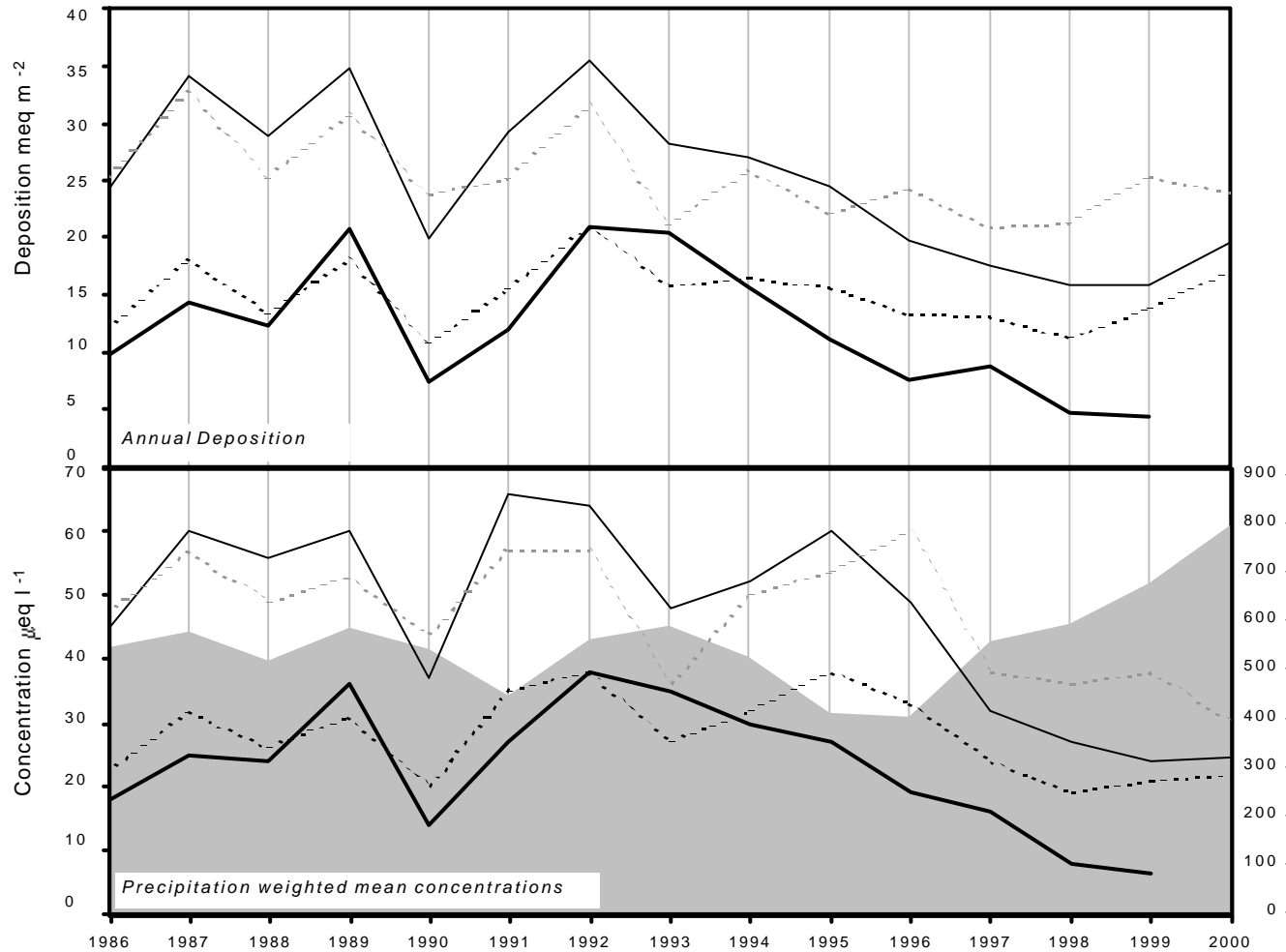
2000

Site Code: 5023
 Easting: 3432
 Northing: 3143
 Latitude: 52 43 23 N
 Longitude: 02 50 17 W
 Altitude (m): 70
 Rainfall (mm): 695
 [30 year mean 1940 - 1971]

Site Environment:
 Field adjacent to Study Centre

Other measurements:
 DT, Weekly SO₂, Met

Site Operator:
 Field Studies Council



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-1.00 ueq/l (-3.39 %/year): 14 years' data - No significant trend detected
<i>non-marine sulphate</i>	-2.15 ueq/l (-3.47 %/year): 15 years' data ++ Moderately strong trend detected
<i>nitrate</i>	-0.34 ueq/l (-1.11 %/year): 15 years' data - No significant trend detected
<i>ammonium</i>	-1.15 ueq/l (-2.08 %/year): 15 years' data + Significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	53.1	10.8	54.1	101.7	53.2	35.0	118.7	4.4	< 9.7	40.9	-	24.0	1.8
12/01/00	19/01/00	-	21.0	12.5	34.2	19.5	20.3	36.3	23.5	< 1.3	< 9.7	18.7	-	11.0	9.8
19/01/00	26/01/00	-	72.7	30.3	140.0	125.7	53.9	55.0	141.0	6.2	< 9.7	57.6	-	-	1.1
26/01/00	03/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
03/02/00	09/02/00	-	45.8	7.0	8.3	225.1	50.4	37.0	258.7	8.0	< 1.0	18.7	-	44.0	8.9
09/02/00	16/02/00	-	22.7	4.1	13.9	100.8	21.3	8.5	122.5	5.6	< 1.0	10.5	-	22.0	14.8
16/02/00	23/02/00	-	47.7	14.3	47.2	197.7	90.8	45.0	223.8	6.5	< 9.7	23.9	-	44.0	5.6
23/02/00	01/03/00	-	8.4	3.4	19.9	16.0	27.9	12.6	18.3	< 1.3	< 9.7	6.5	-	< 10.0	25.3
01/03/00	08/03/00	-	45.6	15.6	171.7	85.0	16.5	33.8	105.4	5.1	< 1.0	35.3	-	42.0	4.8
08/03/00	15/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
15/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/03/00	29/03/00	-	105.2	59.6	155.7	21.7	19.3	91.2	26.6	2.3	< 9.7	102.6	-	35.0	6.6
29/03/00	05/04/00	-	30.9	24.8	45.1	5.7	< 4.1	6.5	11.9	< 1.3	< 9.7	30.2	-	12.0	27.6
05/04/00	12/04/00	-	34.3	32.7	24.6	13.2	< 4.1	11.5	18.1	1.7	< 9.7	32.7	-	20.0	14.7
12/04/00	19/04/00	-	51.4	61.2	73.3	14.7	< 4.1	4.9	22.9	< 1.3	< 9.7	49.6	-	31.0	18.0
19/04/00	26/04/00	-	30.8	21.7	31.7	43.8	10.8	6.6	53.0	1.8	< 1.0	25.5	-	19.0	24.7
26/04/00	03/05/00	-	97.1	134.6	125.1	8.5	5.5	28.0	24.0	2.2	< 9.7	96.1	-	67.0	10.0
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/05/00	17/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
17/05/00	24/05/00	-	25.3	10.2	23.7	41.3	9.1	6.1	47.7	3.6	< 9.7	20.3	-	14.0	16.2
24/05/00	31/05/00	-	16.0	10.2	20.7	19.2	4.6	3.6	23.2	1.7	< 1.0	13.7	-	< 10.0	20.7
31/05/00	07/06/00	-	19.2	14.8	26.4	1.3	0.8	1.9	3.4	0.7	< 1.0	19.1	-	< 10.0	31.3
07/06/00	14/06/00	-	57.6	36.3	53.7	18.9	6.8	13.2	23.5	4.1	< 1.0	55.3	-	23.0	12.2
14/06/00	20/06/00	-	34.5	17.9	47.7	18.4	17.5	39.0	28.0	43.7	8.2	32.3	-	22.0	1.6
20/06/00	28/06/00	-	26.0	5.2	22.6	56.5	10.4	11.7	67.2	12.0	< 1.0	19.2	-	16.0	2.7
28/06/00	05/07/00	-	97.9	110.4	82.7	9.3	3.2	9.5	11.5	1.6	< 1.0	96.8	-	67.0	34.1
05/07/00	12/07/00	-	35.4	14.7	27.5	26.5	7.0	7.4	37.5	2.8	< 1.0	32.2	-	16.0	27.7
12/07/00	19/07/00	-	25.3	17.6	127.9	11.7	4.5	8.9	18.6	8.0	19.2	23.9	-	19.0	1.8
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/07/00	02/08/00	-	23.3	22.6	52.2	6.6	2.5	7.1	8.2	1.5	< 1.0	22.5	-	11.0	24.3
02/08/00	09/08/00	-	8.7	11.9	29.0	5.8	1.9	3.6	6.7	2.3	< 1.0	8.0	-	< 10.0	16.8
09/08/00	16/08/00	-	19.5	14.6	106.4	9.5	3.0	5.6	5.1	13.0	10.3	18.3	-	17.0	3.2
16/08/00	23/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23/08/00	30/08/00	-	63.4	52.0	110.3	16.9	12.6	84.8	18.7	19.7	11.8	61.4	-	36.0	10.9
30/08/00	06/09/00	-	26.0	24.0	62.2	11.2	3.9	11.6	11.4	3.6	2.4	24.7	-	12.0	16.1
06/09/00	13/09/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13/09/00	20/09/00	-	26.2	17.7	2.2	7.4	3.2	6.9	11.1	10.2	< 1.0	25.3	-	19.0	43.5
20/09/00	27/09/00	-	19.0	15.3	16.6	9.0	2.0	5.2	9.4	1.4	< 1.0	17.9	-	12.0	37.5
27/09/00	04/10/00	-	12.0	7.3	3.1	18.5	4.0	4.2	21.2	1.2	< 1.0	9.7	-	11.0	14.9
04/10/00	11/10/00	-	14.7	8.0	15.8	23.2	5.8	3.9	31.5	1.7	< 1.0	11.9	-	10.0	25.3
11/10/00	18/10/00	-	28.8	16.4	44.3	35.9	7.4	6.3	46.0	2.3	< 1.0	24.5	-	16.0	5.4
18/10/00	25/10/00	-	37.4	25.7	47.1	85.3	19.9	11.7	104.7	4.0	< 1.0	27.2	-	27.0	6.1
25/10/00	01/11/00	-	8.4	1.5	3.8	44.3	11.1	5.3	55.6	3.3	< 1.0	3.1	-	11.0	69.4
01/11/00	08/11/00	-	16.7	18.0	12.2	11.3	3.1	2.5	17.5	0.9	< 1.0	15.3	-	15.0	45.8
08/11/00	15/11/00	-	21.3	6.9	28.8	66.3	13.1	4.2	81.3	2.3	< 1.0	13.3	-	18.0	20.9
15/11/00	22/11/00	-	25.2	13.2	26.6	31.2	6.3	4.1	50.7	2.8	< 1.0	21.5	-	18.0	18.1
22/11/00	30/11/00	-	21.7	5.8	10.3	98.9	20.9	9.0	122.0	7.3	< 1.0	9.7	-	24.0	20.5
30/11/00	06/12/00	-	29.7	16.6	31.0	88.2	19.4	8.6	126.3	3.1	< 1.0	19.1	-	24.0	10.8
06/12/00	13/12/00	-	18.3	8.0	5.3	45.1	10.3	3.9	53.2	1.4	< 1.0	12.9	-	15.0	49.6
13/12/00	20/12/00	-	70.7	33.5	65.9	187.0	44.8	14.9	253.7	5.6	< 1.0	48.2	-	49.0	5.3
20/12/00	27/12/00	-	58.7	77.6	104.3	7.2	2.1	6.4	15.6	1.4	< 1.0	57.9	-	30.0	9.0
27/12/00	03/01/01	-	29.0	10.9	37.8	58.8	11.2	4.6	76.0	3.2	< 1.0	21.9	-	18.0	11.1
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5023	-	28.7	21.6	30.3	33.2	9.4	8.6	42.1	2.9	-	24.7	-	18.8	789.2	

Bottesford

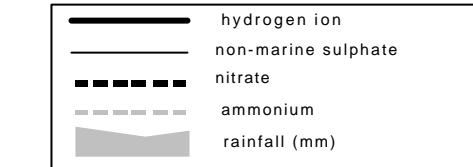
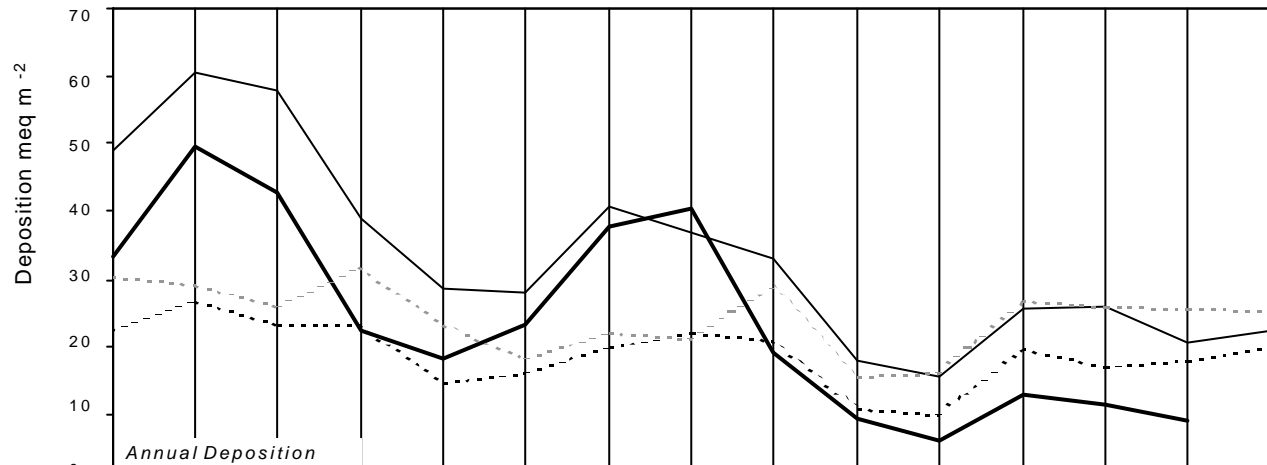
2000

Site Code: 5121
 Easting: 4797
 Northing: 3376
 Latitude: 52 55 46 N
 Longitude: 00 48 51 W
 Altitude (m): 32
 Rainfall (mm): 561
 [30 year mean 1940 - 1971]

Site Environment:
 Rural pasture

Other measurements:
 DT, SO2 (PowerGen), ozone (PowerGen)

Site Operator:
 PowerGen



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-4.51 ueq/l (-5.98 %/year): 14 years' data +++ Strong trend detected
non-marine sulphate	-4.61 ueq/l (-4.73 %/year): 15 years' data ++++ Very strong trend detected
nitrate	-1.01 ueq/l (-2.28 %/year): 15 years' data ++ Moderately strong trend detected
ammonium	-0.73 ueq/l (-1.37 %/year): 15 years' data - No significant trend detected

Rainfall (mm)

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	11/01/00	-	121.2	37.2	106.2	192.4	46.3	25.8	246.5	9.8	< 1.0	98.1	-	60.0	1.5
11/01/00	18/01/00	-	52.7	33.2	41.8	77.7	18.1	14.6	104.0	2.2	< 1.0	43.3	-	33.0	8.1
18/01/00	25/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
25/01/00	01/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	2.4
01/02/00	08/02/00	-	69.8	40.2	64.3	121.9	30.5	36.4	162.5	4.3	< 1.0	55.1	-	37.0	2.3
08/02/00	15/02/00	-	46.1	12.6	31.9	124.6	28.5	17.9	155.3	3.5	< 1.0	31.1	-	31.0	12.2
15/02/00	22/02/00	-	44.9	24.6	42.8	60.0	12.7	11.7	75.3	1.7	< 1.0	37.6	-	25.0	8.8
22/02/00	29/02/00	-	23.9	14.0	37.3	16.3	3.4	4.4	20.3	0.8	< 1.0	21.9	-	11.0	20.2
29/02/00	07/03/00	-	78.1	19.7	60.5	76.8	20.0	60.8	91.1	4.0	< 1.0	68.9	-	32.0	4.2
07/03/00	14/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/03/00	28/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	5.6
28/03/00	04/04/00	-	37.8	24.8	38.4	45.1	10.3	6.0	53.2	1.3	< 1.0	32.3	-	21.0	44.4
04/04/00	11/04/00	-	162.6	166.4	208.9	159.6	43.1	87.4	177.5	9.6	< 1.0	143.4	-	73.0	3.3
11/04/00	18/04/00	-	45.7	62.2	58.8	25.1	5.8	5.6	35.5	1.5	< 1.0	42.7	-	34.0	29.7
18/04/00	25/04/00	-	26.7	20.8	19.8	21.9	5.3	4.9	27.1	1.2	< 1.0	24.1	-	17.0	33.6
25/04/00	02/05/00	-	38.9	44.5	43.5	13.7	5.9	27.9	17.4	1.7	< 1.0	37.3	-	18.0	5.4
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
09/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
16/05/00	23/05/00	-	32.7	16.8	45.3	15.2	5.2	12.4	21.0	1.9	3.1	30.8	-	13.0	22.8
23/05/00	30/05/00	-	17.0	14.9	14.6	7.7	2.5	4.2	11.0	0.8	< 1.0	16.1	-	14.0	46.6
30/05/00	06/06/00	-	49.5	48.3	32.7	5.6	2.8	11.5	8.3	1.1	< 1.0	48.8	-	31.0	19.7
06/06/00	13/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
13/06/00	20/06/00	-	70.0	29.0	73.9	15.1	6.9	25.5	24.5	7.2	< 1.0	68.1	-	21.0	6.4
20/06/00	27/06/00	-	62.2	26.7	69.5	29.6	9.5	27.3	35.4	6.0	< 1.0	58.6	-	20.0	3.1
27/06/00	04/07/00	-	66.0	79.2	127.9	9.2	3.2	9.4	12.5	1.9	< 1.0	64.8	-	29.0	31.2
04/07/00	11/07/00	-	76.6	62.1	72.1	12.1	4.6	14.2	19.9	1.6	< 1.0	75.2	-	40.0	12.3
11/07/00	18/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25/07/00	01/08/00	-	87.1	60.1	87.0	6.0	4.6	30.5	10.9	3.0	< 1.0	86.4	-	33.0	15.1
01/08/00	08/08/00	-	93.3	53.0	57.6	13.1	8.8	69.1	43.2	6.8	2.4	91.8	-	39.0	6.2
08/08/00	15/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15/08/00	22/08/00	-	29.6	28.2	42.2	7.1	2.7	9.0	9.9	1.4	< 1.0	28.8	-	13.0	20.7
22/08/00	29/08/00	-	83.2	79.5	62.0	21.8	16.5	125.8	21.1	9.8	< 1.0	80.6	-	29.0	4.1
29/08/00	05/09/00	-	72.1	61.8	60.2	44.9	16.0	60.4	43.0	7.9	3.0	66.7	-	27.0	3.1
05/09/00	12/09/00	-	89.8	26.5	105.7	69.2	14.7	31.8	90.0	6.1	< 1.0	81.4	-	31.0	1.9
12/09/00	19/09/00	-	31.9	17.8	19.3	2.5	0.9	4.1	3.8	< 0.5	< 1.0	31.6	-	19.0	36.1
19/09/00	26/09/00	-	20.2	18.0	17.5	4.9	1.0	5.1	4.4	0.8	< 1.0	19.6	-	14.0	41.6
26/09/00	03/10/00	-	32.5	29.4	27.9	20.0	5.3	9.7	23.5	1.4	< 1.0	30.1	-	19.0	10.6
03/10/00	10/10/00	-	26.2	10.2	12.0	12.5	3.5	5.3	16.3	0.7	< 1.0	24.7	-	14.0	14.5
10/10/00	17/10/00	-	30.4	22.6	19.6	11.3	3.8	11.2	16.9	1.1	< 1.0	29.1	-	18.0	11.7
17/10/00	24/10/00	-	31.7	46.1	24.5	13.5	3.9	6.3	26.2	< 0.5	< 1.0	30.1	-	31.0	10.3
24/10/00	31/10/00	-	14.2	5.4	12.3	18.1	4.7	5.0	24.6	3.3	< 1.0	12.0	-	< 10.0	27.7
31/10/00	07/11/00	-	14.3	14.3	12.7	16.7	4.0	2.7	20.8	0.7	< 1.0	12.3	-	12.0	45.2
07/11/00	14/11/00	-	22.2	19.8	25.3	9.1	3.2	5.8	30.3	0.9	< 1.0	21.1	-	21.0	9.4
14/11/00	21/11/00	-	37.4	13.5	33.6	26.6	5.7	9.7	31.7	3.1	< 1.0	34.2	-	12.0	6.3
21/11/00	28/11/00	-	20.0	14.8	14.1	32.8	7.6	4.8	40.9	1.3	< 1.0	16.0	-	17.0	26.7
28/11/00	05/12/00	-	25.2	19.4	22.3	60.2	15.4	12.7	73.4	2.8	< 1.0	17.9	-	19.0	6.2
05/12/00	12/12/00	-	20.8	15.2	21.7	39.2	8.7	5.1	47.3	1.5	< 1.0	16.1	-	16.0	23.4
12/12/00	19/12/00	-	80.4	38.3	76.1	139.8	32.5	18.8	180.0	4.5	< 1.0	63.6	-	49.0	7.2
19/12/00	27/12/00	-	39.4	63.9	48.7	23.3	5.5	5.5	29.6	1.1	< 1.0	36.6	-	33.0	18.6
27/12/00	02/01/01	-	29.9	16.3	30.4	46.7	9.9	9.0	61.4	1.8	< 1.0	24.2	-	18.0	9.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5121	-	-	36.1	29.3	37.3	24.7	6.4	10.4	32.0	1.7	-	33.1	-	20.7	682.3

Llyn Llagi

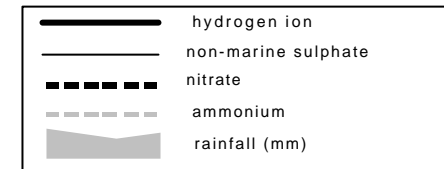
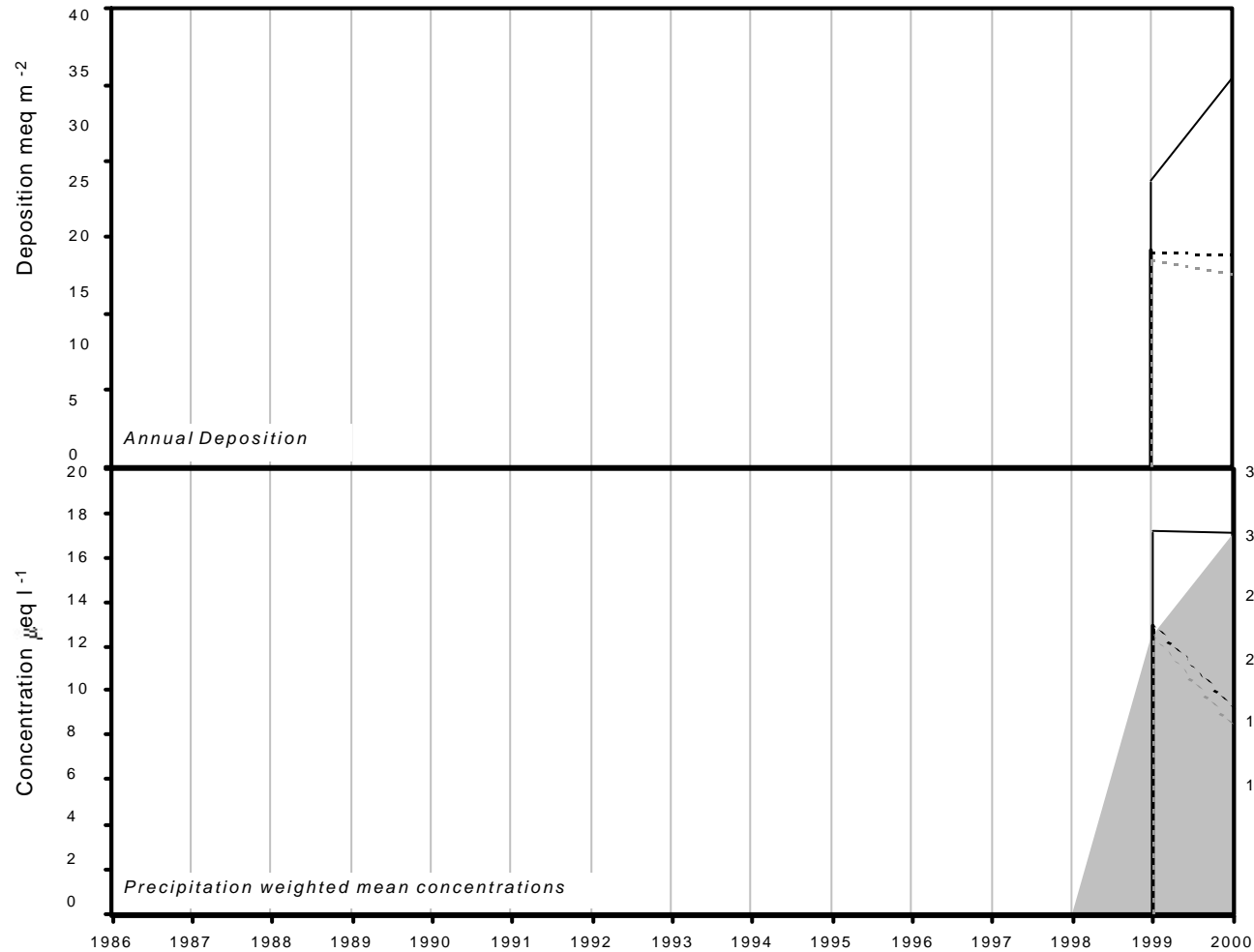
2000

Site Code: 5160
 Easting: 2647
 Northing: 3483
 Latitude: 53 01 48 N
 Longitude: 04 01 82 W
 Altitude (m): 380
 Rainfall (mm): -
 [30 year mean 1940 - 1971]

Site Environment:
Grassland and moorland

Other measurements:
UKAWMN. Lakewater chemistry.

Site Operator:
CEH Bangor



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	0.00 ueq/l (0.00 %/year): 1 years' data n/a Insufficient Data
<i>non-marine sulphate</i>	0.00 ueq/l (0.00 %/year): 1 years' data n/a Insufficient Data
<i>nitrate</i>	0.00 ueq/l (0.00 %/year): 1 years' data n/a Insufficient Data
<i>ammonium</i>	0.00 ueq/l (0.00 %/year): 1 years' data n/a Insufficient Data

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
14/01/00	24/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/01/00	07/02/00	-	33.8	10.3	9.8	99.5	23.5	12.0	113.4	2.4	< 1.0	21.8	-	25.0	150.4
07/02/00	23/02/00	-	26.7	8.2	5.2	138.4	31.6	6.8	163.8	2.7	< 1.0	10.0	-	31.0	130.8
23/02/00	06/03/00	-	24.0	6.7	5.0	77.4	18.7	14.5	91.3	1.9	< 1.0	14.7	-	19.0	177.3
06/03/00	20/03/00	-	44.5	20.9	32.7	86.5	21.7	25.9	103.4	2.7	< 1.0	34.0	-	26.0	21.9
20/03/00	03/04/00	-	39.3	33.7	38.3	73.4	17.7	11.5	82.6	1.9	< 1.0	30.4	-	28.0	44.3
03/04/00	17/04/00	-	44.0	44.0	37.5	64.6	15.5	8.2	71.3	1.7	< 1.0	36.3	-	35.0	33.4
17/04/00	03/05/00	-	29.7	30.0	18.8	56.6	13.8	7.1	70.8	1.4	< 1.0	22.9	-	28.0	63.0
03/05/00	17/05/00	-	44.5	82.6	32.0	77.9	21.9	61.7	72.4	3.4	< 1.0	35.1	-	31.0	16.0
17/05/00	30/05/00	-	14.6	5.0	5.9	41.8	9.0	3.6	48.4	1.1	< 1.0	9.5	-	12.0	120.1
30/05/00	14/06/00	-	19.6	8.6	7.9	35.3	8.1	2.7	42.3	1.0	< 1.0	15.3	-	15.0	175.3
14/06/00	26/06/00	-	30.5	8.3	9.6	115.8	25.6	8.5	123.8	3.4	< 1.0	16.6	-	27.0	62.3
26/06/00	12/07/00	-	34.9	17.3	22.4	53.4	12.6	5.4	63.8	1.4	< 1.0	28.4	-	24.0	71.4
12/07/00	24/07/00	-	39.0	23.1	421.2	221.3	12.0	73.6	248.8	162.6	< 1.0	12.4	-	103.0	5.5
24/07/00	07/08/00	-	117.3	< 0.7	0.8	45.9	11.0	34.2	45.3	4.9	7.9	111.8	-	328.0	114.5
07/08/00	23/08/00	-	14.4	6.7	2.9	19.8	4.3	2.4	25.7	0.8	< 1.0	12.1	-	11.0	134.4
23/08/00	04/09/00	-	48.0	45.8	44.8	31.8	10.5	36.5	36.8	2.3	< 1.0	44.2	-	21.0	45.9
04/09/00	20/09/00	-	21.3	11.4	11.0	34.9	8.0	3.1	38.4	0.8	< 1.0	17.0	-	16.0	179.4
20/09/00	02/10/00	-	17.9	6.4	3.8	75.5	17.5	4.5	96.0	1.8	< 1.0	8.8	-	19.0	133.5
02/10/00	16/10/00	-	22.7	5.7	4.1	99.8	24.1	5.3	119.1	2.1	< 1.0	10.6	-	25.0	171.2
16/10/00	30/10/00	-	15.0	2.7	3.2	88.2	19.1	4.7	101.5	2.8	< 1.0	4.4	-	18.0	275.8
30/10/00	13/11/00	-	26.9	6.6	5.9	139.2	32.4	7.0	168.0	2.8	< 1.0	10.1	-	31.0	220.7
13/11/00	28/11/00	-	25.5	6.8	4.4	132.5	30.6	6.5	160.6	2.9	< 1.0	9.5	-	30.0	255.0
28/11/00	11/12/00	-	22.2	4.8	1.2	143.5	31.9	6.6	169.0	2.9	< 1.0	5.0	-	28.0	218.8
11/12/00	27/12/00	-	29.6	8.1	4.2	148.4	33.8	7.3	183.3	3.1	< 1.0	11.7	-	34.0	106.0
27/12/00	09/01/01	-	30.2	10.1	10.4	136.1	31.2	7.2	167.8	3.0	< 1.0	13.8	-	32.0	52.2

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5160	-	27.9	9.3	8.5	90.0	20.7	8.5	106.4	2.6	-	17.1	-	35.2	2979.1
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Total Rainfall

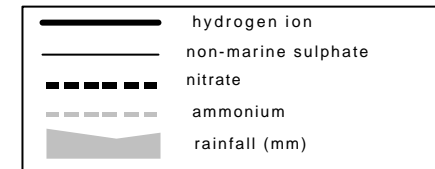
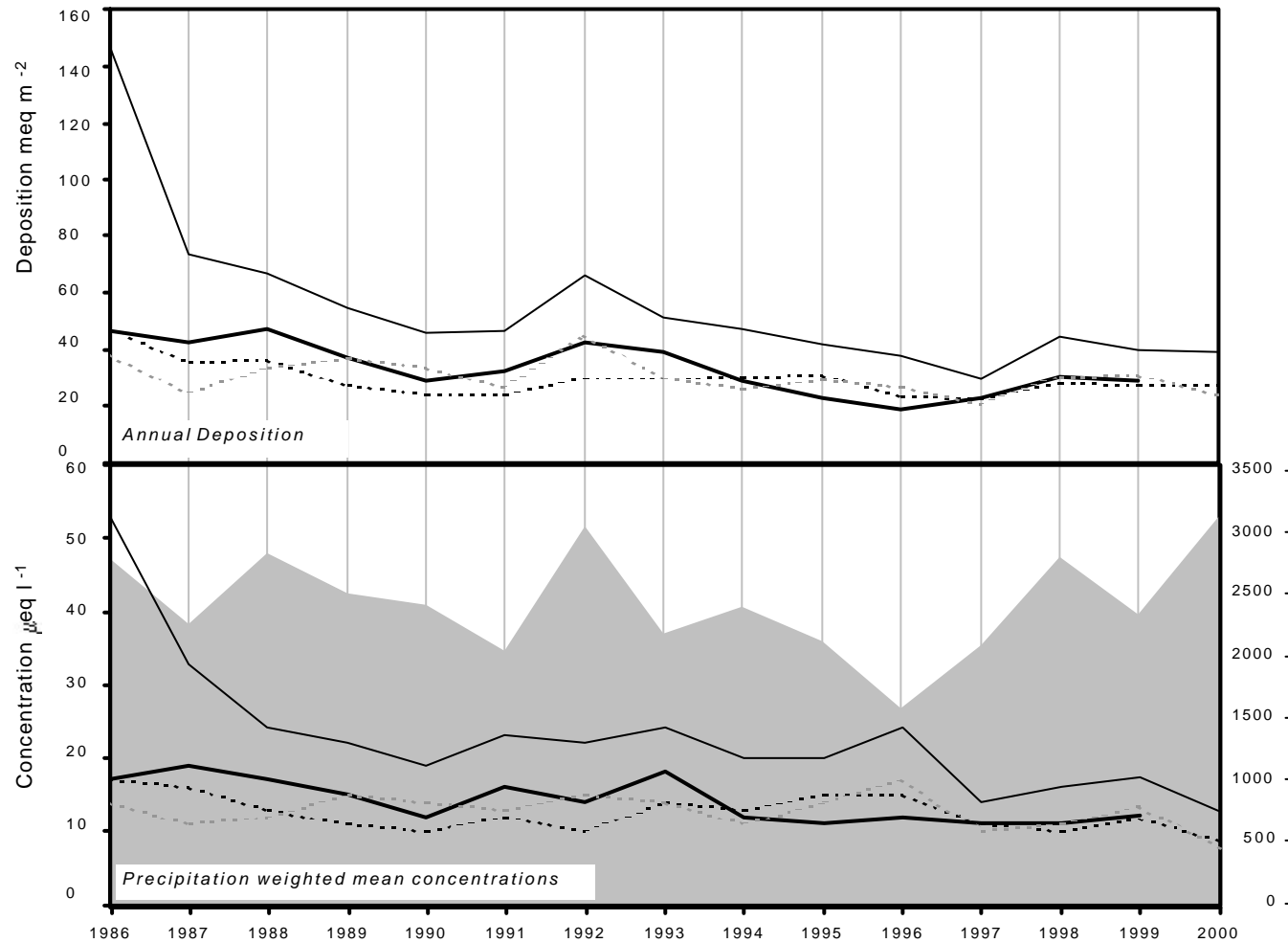
Llyn Llydaw

2000 Site Code: **5153**
 Easting: **2638**
 Northing: **3549**
 Latitude: **53 04 35 N**
 Longitude: **04 01 42 W**
 Altitude (m): **490**
 Rainfall (mm): **2417**
 [30 year mean 1940 - 1971]

Site Environment:
Very open moorland in Snowdon Horseshoe

Other measurements:
DT

Site Operator:
Countryside Council for Wales



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-0.52 ueq/l (-2.98 %/year): 14 years' data n/a Insufficient Data
non-marine sulphate	-1.58 ueq/l (-4.64 %/year): 15 years' data n/a Insufficient Data
nitrate	-0.26 ueq/l (-1.84 %/year): 15 years' data n/a Insufficient Data
ammonium	-0.17 ueq/l (-1.19 %/year): 15 years' data n/a Insufficient Data

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	12.7	2.6	2.6	49.7	10.3	3.9	82.7	1.5	< 9.7	6.7	-	16.0	166.8
12/01/00	19/01/00	-	10.6	8.0	3.1	29.3	6.7	2.8	36.5	< 1.3	< 9.7	7.1	-	11.0	11.2
19/01/00	26/01/00	-	-	-	-	-	-	-	-	-	-	-	-	124.0	1.7
26/01/00	02/02/00	-	22.0	6.6	15.1	36.7	7.8	2.7	49.8	< 1.3	< 9.7	17.5	-	13.0	89.7
02/02/00	09/02/00	-	24.3	5.1	2.7	87.7	19.2	15.3	112.5	2.1	< 9.7	13.7	-	22.0	51.0
09/02/00	17/02/00	-	27.5	1.6	< 0.7	165.2	37.5	7.9	200.5	3.3	< 1.0	7.6	-	33.0	79.7
17/02/00	23/02/00	-	28.6	14.8	6.4	94.0	20.9	6.8	112.5	2.1	< 9.7	17.3	-	28.0	38.2
23/02/00	01/03/00	-	12.4	3.9	3.2	30.0	6.8	3.0	34.4	< 1.3	< 9.7	8.8	-	10.0	109.2
01/03/00	08/03/00	-	29.3	8.3	4.7	47.6	12.5	26.3	70.8	2.6	< 9.7	23.6	-	17.0	67.6
08/03/00	15/03/00	-	70.5	39.7	50.8	88.8	19.7	39.0	113.1	3.2	< 9.7	59.8	-	32.0	4.8
15/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/03/00	29/03/00	-	34.8	22.2	25.0	47.6	11.5	8.3	60.8	1.4	< 9.7	29.0	-	21.0	34.3
29/03/00	05/04/00	-	71.9	66.7	62.3	23.6	6.3	10.7	37.3	1.5	< 9.7	69.1	-	34.0	13.4
05/04/00	12/04/00	-	31.5	33.3	22.1	33.8	8.0	8.4	40.7	1.4	< 9.7	27.4	-	20.0	8.6
12/04/00	19/04/00	-	39.0	26.2	17.1	53.2	11.5	4.3	66.0	1.4	< 9.7	32.6	-	29.0	71.2
19/04/00	26/04/00	-	21.4	11.6	5.6	79.6	19.0	14.6	88.0	2.1	< 9.7	11.9	-	21.0	52.9
26/04/00	03/05/00	-	166.6	259.3	150.0	34.4	10.9	34.9	37.1	2.9	< 9.7	162.4	-	118.0	4.9
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/05/00	17/05/00	-	31.5	25.2	13.0	40.8	10.5	29.5	45.3	1.8	< 1.0	26.6	-	17.0	19.2
17/05/00	24/05/00	-	16.2	5.5	6.2	42.2	8.8	3.8	49.4	1.0	< 1.0	11.1	-	13.0	88.7
24/05/00	31/05/00	-	18.3	8.3	11.7	41.4	8.7	4.4	51.1	0.8	< 1.0	13.3	-	14.0	25.7
31/05/00	07/06/00	-	14.9	9.7	6.1	14.5	3.1	2.4	15.2	0.8	< 1.0	13.2	-	11.0	49.7
07/06/00	14/06/00	-	29.6	15.4	22.7	37.4	8.3	3.9	42.6	0.8	< 1.0	25.1	-	18.0	36.2
14/06/00	21/06/00	-	31.8	22.4	17.0	24.4	6.4	11.3	24.9	1.6	< 1.0	28.9	-	18.0	15.4
21/06/00	28/06/00	-	22.7	4.3	7.7	85.3	18.0	5.3	98.1	1.8	< 1.0	12.4	-	20.0	12.2
28/06/00	05/07/00	-	400.9	145.3	3357.5	193.2	173.2	34.0	142.4	469.5	1003.9	377.6	-	548.0	11.4
05/07/00	12/07/00	-	31.4	10.5	15.1	46.0	10.6	4.7	51.1	1.0	< 1.0	25.8	-	20.0	55.3
12/07/00	19/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	3.2
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
26/07/00	02/08/00	-	19.2	9.4	10.1	35.9	7.8	3.0	38.8	1.0	< 1.0	14.9	-	14.0	67.2
02/08/00	09/08/00	-	25.2	15.7	20.2	25.8	6.0	3.8	29.3	0.6	< 1.0	22.1	-	15.0	26.9
09/08/00	16/08/00	-	11.5	5.2	8.8	14.8	3.2	2.7	16.8	0.6	< 1.0	9.7	-	< 10.0	119.6
16/08/00	23/08/00	-	42.7	31.4	28.2	71.8	16.3	12.6	77.0	1.7	< 1.0	34.0	-	26.0	3.8
23/08/00	30/08/00	-	75.3	66.6	79.4	40.1	14.8	86.7	38.1	5.7	< 1.0	70.4	-	29.0	5.3
30/08/00	06/09/00	-	26.8	19.6	27.9	23.1	5.2	2.7	26.5	0.7	< 1.0	24.0	-	16.0	63.2
06/09/00	13/09/00	-	23.1	12.9	18.2	21.3	5.1	3.0	23.9	0.7	< 1.0	20.5	-	14.0	39.5
13/09/00	20/09/00	-	16.7	11.9	6.0	17.6	4.2	2.0	22.2	< 0.5	< 1.0	14.6	-	12.0	58.8
20/09/00	27/09/00	-	13.3	8.5	6.8	26.4	6.0	3.0	29.5	0.7	< 1.0	10.1	-	11.0	83.4
27/09/00	04/10/00	-	18.0	3.5	< 0.7	94.6	20.9	5.3	115.3	1.8	< 1.0	6.6	-	21.0	109.0
04/10/00	11/10/00	-	22.4	4.5	4.4	101.9	22.3	5.5	115.8	2.3	< 1.0	10.1	-	21.0	110.5
11/10/00	18/10/00	-	13.3	8.1	4.4	40.7	8.7	3.2	51.1	0.9	< 1.0	8.4	-	13.0	75.2
18/10/00	25/10/00	-	14.5	3.1	4.3	75.7	17.1	3.0	92.7	1.3	< 1.0	5.3	-	17.0	101.3
25/10/00	01/11/00	-	13.4	1.9	2.9	77.6	17.0	4.1	90.2	2.0	< 1.0	4.0	-	16.0	179.4
01/11/00	08/11/00	-	22.6	12.5	7.2	77.6	17.7	4.6	99.5	1.7	< 1.0	13.3	-	23.0	186.1
08/11/00	15/11/00	-	22.2	4.0	6.0	116.7	26.6	5.8	136.6	2.4	< 1.0	8.1	-	26.0	97.9
15/11/00	22/11/00	-	19.0	9.8	8.2	61.4	13.9	4.0	72.9	2.0	< 1.0	11.6	-	19.0	104.0
22/11/00	29/11/00	-	28.6	6.1	3.7	165.8	37.2	8.3	211.8	3.8	< 1.0	8.6	-	35.0	116.2
29/11/00	06/12/00	-	16.7	5.1	2.7	84.3	18.4	4.2	95.2	1.9	< 1.0	6.6	-	20.0	125.1
06/12/00	13/12/00	-	23.3	4.4	2.2	135.6	30.2	5.9	157.0	2.7	< 1.0	6.9	-	28.0	184.1
13/12/00	20/12/00	-	26.9	17.0	10.6	69.1	15.7	4.7	83.5	1.7	< 1.0	18.6	-	25.0	36.5
20/12/00	27/12/00	-	75.0	86.1	62.7	30.7	9.1	7.4	34.4	1.3	< 1.0	71.3	-	50.0	4.6
27/12/00	04/01/01	-	17.5	7.4	5.7	71.5	15.9	3.9	90.6	1.5	< 1.0	8.9	-	18.0	65.0

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5153	-	21.1	8.8	7.7	69.6	15.6	5.7	84.9	1.7	-	12.7	-	19.3	3085.9
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Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
11/01/00	25/01/00	-	50.7	33.3	52.5	96.7	21.2	9.1	118.0	2.9	< 1.0	39.1	-	33.0	11.5
25/01/00	08/02/00	-	46.0	15.8	35.4	91.9	21.1	16.3	110.1	2.1	< 1.0	34.9	-	27.0	67.4
08/02/00	22/02/00	-	34.6	14.3	14.9	119.8	27.3	10.1	146.2	2.5	< 1.0	20.1	-	32.0	59.1
22/02/00	07/03/00	-	33.6	11.5	6.0	47.6	13.2	24.9	56.9	1.6	< 1.0	27.8	-	17.0	54.6
07/03/00	21/03/00	-	60.3	21.8	45.3	47.9	11.9	15.3	59.6	1.6	< 1.0	54.5	-	25.0	23.4
21/03/00	04/04/00	-	104.6	115.4	143.9	68.5	16.9	31.0	88.7	2.9	< 1.0	96.3	-	57.0	23.9
04/04/00	17/04/00	-	78.1	82.9	87.9	34.0	8.0	9.1	48.1	1.2	< 1.0	74.0	-	52.0	35.2
17/04/00	03/05/00	-	42.1	25.3	21.8	18.6	4.9	10.3	23.7	0.8	< 1.0	39.8	-	23.0	25.5
03/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
16/05/00	30/05/00	-	33.0	16.6	18.8	29.7	7.2	7.5	36.3	0.8	< 1.0	29.4	-	19.0	90.9
30/05/00	13/06/00	-	55.0	37.1	28.4	11.8	3.6	10.5	13.4	0.6	< 1.0	53.6	-	32.0	75.9
13/06/00	27/06/00	-	51.4	31.2	31.3	46.2	12.0	34.7	53.3	2.0	< 1.0	45.8	-	22.0	14.5
27/06/00	11/07/00	-	79.9	56.3	29.0	12.2	5.5	10.6	23.4	3.2	< 1.0	78.5	-	49.0	35.4
11/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
25/07/00	08/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9
08/08/00	25/08/00	-	39.4	33.2	35.1	16.5	4.7	19.1	16.6	1.6	< 1.0	37.4	-	17.0	15.8
25/08/00	05/09/00	-	50.2	43.5	63.2	22.0	5.8	23.9	24.9	4.0	< 1.0	47.6	-	21.0	8.9
05/09/00	19/09/00	-	45.1	27.0	36.8	32.6	7.8	11.0	38.9	1.2	< 1.0	41.2	-	23.0	40.4
19/09/00	03/10/00	-	28.9	22.3	18.7	14.8	3.7	5.4	18.0	0.7	< 1.0	27.1	-	19.0	95.7
03/10/00	17/10/00	-	28.3	11.8	10.9	41.6	9.7	5.4	51.5	1.1	< 1.0	23.3	-	20.0	72.7
17/10/00	03/11/00	-	19.1	9.9	11.1	55.9	13.0	6.4	69.2	1.6	< 1.0	12.4	-	18.0	115.5
03/11/00	15/11/00	-	23.9	17.9	16.0	24.8	6.1	3.0	31.3	1.1	< 1.0	20.9	-	21.0	116.0
15/11/00	28/11/00	-	26.7	12.8	14.8	67.1	15.6	6.4	81.3	1.6	< 1.0	18.6	-	24.0	110.2
28/11/00	13/12/00	-	27.5	15.7	15.9	67.2	15.2	7.3	80.6	1.8	< 1.0	19.4	-	23.0	56.4
13/12/00	27/12/00	-	35.1	33.0	32.7	32.5	8.0	4.4	49.7	1.1	< 1.0	31.1	-	27.0	24.6
27/12/00	09/01/01	-	36.1	17.7	22.3	68.4	14.6	7.2	82.0	1.8	< 1.0	27.9	-	27.0	29.7

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5158	-	37.5	23.6	24.9	46.3	11.1	9.6	57.0	1.5	-	32.0	-	25.1	1205.6
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Wardlow Hay Cop

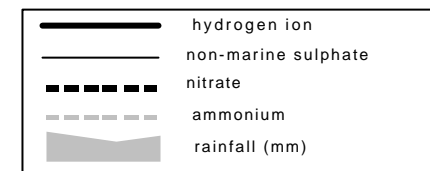
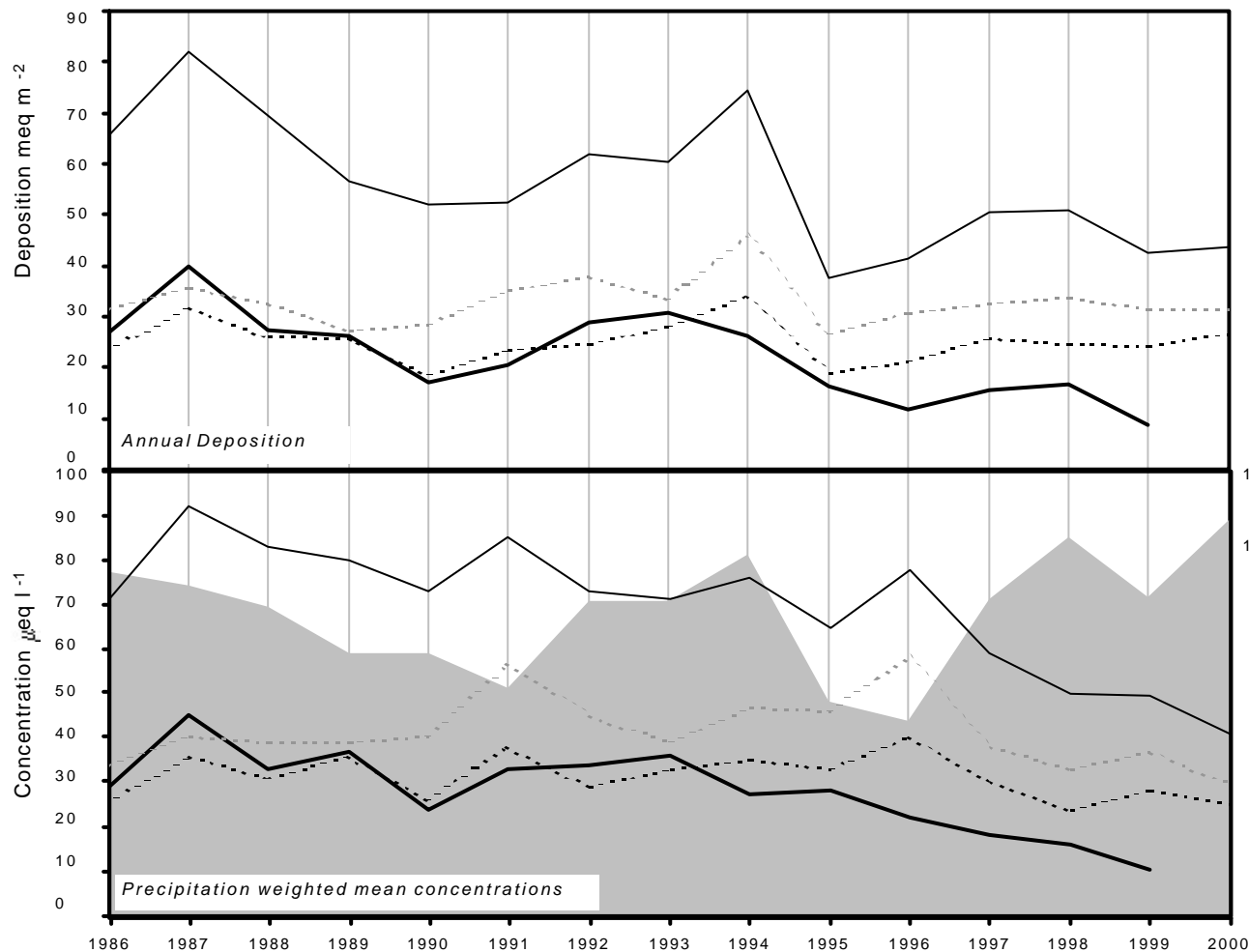
2000

Site Code: 5120
 Easting: 4177
 Northing: 3739
 Latitude: 53 55 41 N
 Longitude: 01 44 05 W
 Altitude (m): 350
 Rainfall (mm): 1081
 [30 year mean 1940 - 1971]

Site Environment:
Open moorland

Other measurements:
DT

Site Operator:
English Nature



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-1.75 ueq/l (-4.45 %/year): 14 years' data ++ Moderately strong trend detected
<i>non-marine sulphate</i>	-2.64 ueq/l (-3.00 %/year): 15 years' data +++ Strong trend detected
<i>nitrate</i>	-0.24 ueq/l (-0.74 %/year): 15 years' data - No significant trend detected
<i>ammonium</i>	-0.18 ueq/l (-0.42 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
02/01/00	09/01/00	-	84.1	15.6	41.7	139.7	27.3	45.9	176.2	4.4	< 9.7	67.3	-	33.0	7.4
09/01/00	16/01/00	-	42.2	20.7	25.1	59.1	11.4	21.3	72.0	14.2	< 9.7	35.1	-	22.0	16.6
16/01/00	23/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9
23/01/00	30/01/00	-	67.9	14.2	30.6	86.5	18.4	95.6	108.9	2.8	< 9.7	57.4	-	33.0	13.6
30/01/00	06/02/00	-	106.9	23.7	46.5	115.1	24.6	127.6	147.9	3.6	< 9.7	93.0	-	42.0	5.2
06/02/00	13/02/00	-	59.4	8.1	8.0	225.3	43.9	76.4	237.3	4.7	< 9.7	32.2	-	47.0	21.7
13/02/00	20/02/00	-	64.8	12.7	18.0	104.7	23.0	52.0	133.9	3.0	< 9.7	52.2	-	31.0	24.1
20/02/00	26/02/00	-	78.9	34.8	41.8	93.7	21.7	81.3	115.2	3.0	< 9.7	67.6	-	35.0	5.9
26/02/00	05/03/00	-	29.3	8.8	< 2.1	19.2	4.6	15.7	40.6	< 1.3	< 9.7	27.0	-	13.0	48.6
05/03/00	12/03/00	-	53.5	17.6	59.0	46.8	10.0	54.3	53.4	2.2	< 9.7	47.8	-	25.0	13.9
12/03/00	19/03/00	-	212.3	50.9	74.2	119.0	28.7	201.8	152.7	9.1	< 9.7	197.9	-	59.0	3.5
19/03/00	28/03/00	-	188.5	159.8	265.3	57.2	18.0	127.2	74.2	3.5	< 9.7	181.6	-	64.0	4.6
28/03/00	04/04/00	-	82.5	56.1	57.6	46.0	11.8	35.2	59.8	2.1	< 9.7	76.9	-	40.0	14.8
04/04/00	09/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
09/04/00	19/04/00	-	53.9	52.9	52.2	12.8	< 4.1	22.0	19.5	< 1.3	< 9.7	52.4	-	30.0	36.7
19/04/00	23/04/00	-	28.3	16.3	17.6	18.9	4.3	7.3	28.3	< 1.3	< 9.7	26.0	-	15.0	24.3
23/04/00	01/05/00	-	49.4	39.1	24.6	9.3	< 4.1	8.2	19.4	< 1.3	< 9.7	48.3	-	29.0	20.8
01/05/00	07/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/05/00	14/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/05/00	21/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	43.7
21/05/00	28/05/00	-	2.0	1.4	3.7	1.0	0.9	1.8	4.1	< 0.5	< 1.0	1.9	-	< 10.0	35.6
28/05/00	04/06/00	-	53.9	38.9	34.4	9.6	3.2	31.2	14.7	1.0	< 1.0	52.8	-	26.0	26.5
04/06/00	11/06/00	-	85.5	57.9	80.7	32.9	10.5	69.8	34.2	3.5	< 1.0	81.5	-	27.0	7.2
11/06/00	18/06/00	-	50.8	22.9	32.2	46.3	7.9	144.2	39.4	6.7	< 1.0	45.2	-	32.0	3.4
18/06/00	25/06/00	-	64.6	24.2	46.5	79.4	15.9	64.4	85.9	9.0	< 1.0	55.1	-	29.0	11.9
25/06/00	02/07/00	-	226.6	231.9	197.8	18.5	12.0	92.1	28.5	5.0	< 1.0	224.4	-	112.0	10.8
02/07/00	09/07/00	-	121.1	67.3	66.7	12.4	6.2	22.6	24.1	1.5	< 1.0	119.6	-	62.0	26.3
09/07/00	16/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7
16/07/00	23/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
23/07/00	02/08/00	-	123.8	72.5	75.2	27.9	13.5	169.4	37.3	7.7	< 1.0	120.5	-	40.0	9.7
02/08/00	06/08/00	-	58.4	49.0	49.6	22.8	6.5	84.0	24.5	3.6	< 1.0	55.6	-	22.0	3.1
06/08/00	15/08/00	-	95.0	32.1	134.2	179.6	7.6	90.2	167.4	66.4	< 1.0	73.4	-	58.0	6.1
15/08/00	27/08/00	-	68.8	59.1	72.3	22.9	8.7	78.3	26.4	6.7	< 1.0	66.0	-	28.0	17.3
27/08/00	05/09/00	-	48.9	28.3	40.2	25.6	6.7	43.5	27.0	3.9	< 1.0	45.8	-	19.0	12.3
05/09/00	10/09/00	-	77.4	21.5	100.6	128.2	26.6	70.0	152.7	6.0	< 1.0	62.0	-	42.0	4.4
10/09/00	19/09/00	-	46.2	21.4	28.0	11.3	3.9	45.2	15.6	1.6	< 1.0	44.8	-	14.0	31.5
19/09/00	03/10/00	-	29.1	17.7	18.9	17.9	4.5	8.1	22.1	0.8	< 1.0	26.9	-	16.0	101.1
03/10/00	08/10/00	-	50.5	15.2	25.4	39.1	9.7	24.5	51.2	1.6	< 1.0	45.8	-	21.0	23.2
08/10/00	15/10/00	-	27.3	10.0	11.9	21.7	5.1	13.5	28.0	0.8	< 1.0	24.7	-	14.0	38.4
15/10/00	23/10/00	-	63.0	42.6	38.0	45.8	11.4	53.6	60.8	2.3	< 1.0	57.5	-	27.0	14.1
23/10/00	29/10/00	-	40.0	10.2	23.0	73.4	16.4	29.3	91.0	2.8	< 1.0	31.1	-	21.0	30.5
29/10/00	05/11/00	-	20.1	5.6	9.4	35.5	8.5	15.9	49.1	1.2	< 1.0	15.9	-	11.0	50.7
05/11/00	12/11/00	-	22.6	16.3	13.9	14.9	3.8	6.6	19.4	0.7	< 1.0	20.8	-	16.0	79.9
12/11/00	19/11/00	-	38.6	11.7	24.7	71.1	16.0	23.1	87.2	2.5	< 1.0	30.0	-	21.0	25.6
19/11/00	26/11/00	-	27.7	15.6	17.9	39.1	8.8	11.3	50.9	1.4	< 1.0	23.0	-	18.0	49.6
26/11/00	03/12/00	-	43.1	26.2	30.1	44.1	10.5	14.4	74.0	1.4	< 1.0	37.8	-	29.0	14.3
03/12/00	10/12/00	-	24.2	13.8	16.2	33.9	7.5	4.7	44.4	1.0	< 1.0	20.1	-	18.0	56.2
10/12/00	17/12/00	-	23.6	7.8	13.8	70.0	15.1	12.4	84.8	1.7	< 1.0	15.2	-	17.0	31.1
17/12/00	25/12/00	-	74.4	93.7	86.1	18.7	4.7	8.8	36.1	1.3	< 1.0	72.2	-	54.0	14.4
25/12/00	31/12/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4
31/12/00	06/01/01	-	40.3	17.5	26.4	47.5	10.8	16.8	55.0	2.1	< 1.0	34.6	-	22.0	22.5
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5120	-	45.3	25.1	29.6	39.5	9.0	27.7	50.3	2.4	-	40.6	-	23.6	1068.1	

Driby

2000

Site Code: 5136
 Easting: 5386
 Northing: 3744
 Latitude: 53 14 54 N
 Longitude: 00 04 39 E
 Altitude (m): 47
 Rainfall (mm): 737
 [30 year mean 1940 - 1971]

Site Environment:

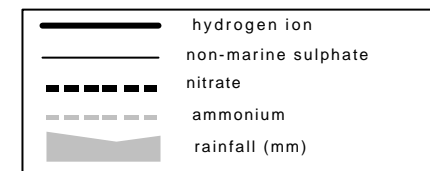
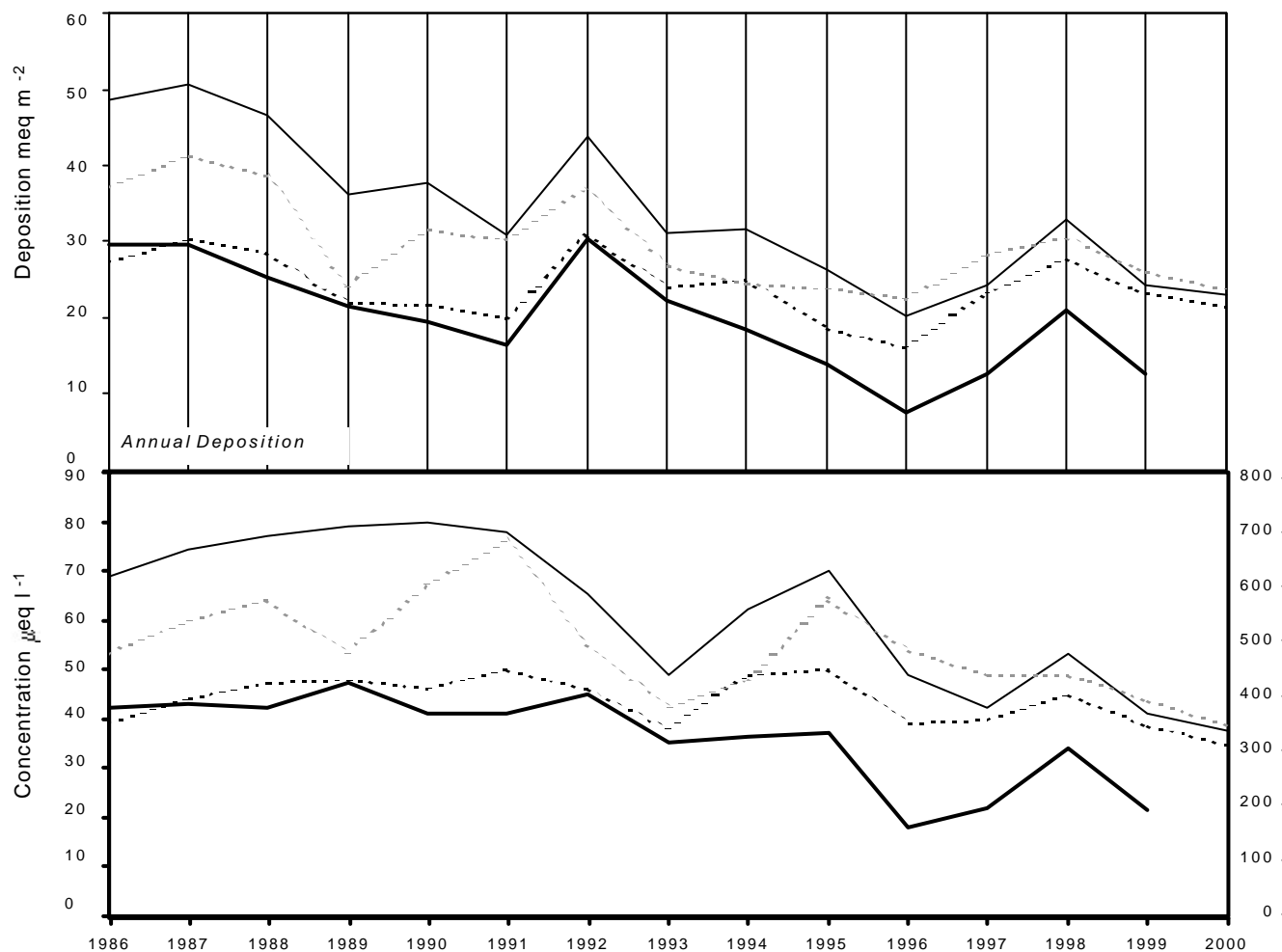
Sheep pasture

Other measurements:

DT, Met

Site Operator:

Anglian Water Services Ltd



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-1.75 ueq/l (-3.69 %/year): 14 years' data ++ Moderately strong trend detected
non-marine sulphate	-2.86 ueq/l (-3.50 %/year): 15 years' data +++ Strong trend detected
nitrate	-0.43 ueq/l (-0.92 %/year): 15 years' data - No significant trend detected
ammonium	-1.28 ueq/l (-2.02 %/year): 15 years' data + Significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
12/01/00	26/01/00	-	64.6	39.7	44.9	175.7	40.7	15.6	216.0	4.1	< 9.7	43.5	-	53.0	14.9
26/01/00	02/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
02/02/00	09/02/00	-	48.7	19.9	40.1	103.0	23.0	28.5	126.5	2.9	< 9.7	36.3	-	29.0	7.0
09/02/00	16/02/00	-	52.2	24.2	49.4	85.3	19.5	13.2	109.9	2.0	< 9.7	41.9	-	30.0	11.4
16/02/00	23/02/00	-	51.3	43.5	44.2	72.2	16.8	15.5	96.3	1.8	< 1.0	42.6	-	36.0	7.3
23/02/00	01/03/00	-	31.9	17.7	23.4	22.4	5.3	9.5	26.7	< 1.3	< 9.7	29.2	-	17.0	17.8
01/03/00	08/03/00	-	69.7	22.8	48.5	87.2	21.9	39.7	109.1	2.6	< 9.7	59.2	-	31.0	8.4
08/03/00	15/03/00	-	217.5	107.2	211.3	156.7	45.2	116.9	197.8	6.7	< 9.7	198.6	-	-	0.9
15/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
22/03/00	29/03/00	-	116.2	69.5	141.2	150.3	37.3	66.2	186.5	4.2	< 9.7	98.1	-	57.0	13.4
29/03/00	05/04/00	-	74.4	48.3	75.4	225.6	50.2	13.5	251.3	5.0	< 9.7	47.2	-	59.0	48.9
05/04/00	12/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
12/04/00	19/04/00	-	52.5	64.6	40.6	59.7	13.1	6.1	65.6	1.6	< 9.7	45.3	-	46.0	39.9
19/04/00	26/04/00	-	26.1	22.4	25.9	21.5	5.0	5.1	25.0	< 1.3	< 9.7	23.5	-	15.0	28.4
26/04/00	03/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
10/05/00	17/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
17/05/00	24/05/00	-	41.5	23.3	40.2	15.5	4.9	16.3	22.0	1.0	< 1.0	39.7	-	17.0	24.6
24/05/00	02/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
02/06/00	07/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6
07/06/00	14/06/00	-	130.3	100.0	74.1	66.3	26.9	113.9	71.2	10.8	< 1.0	122.3	-	-	1.5
14/06/00	28/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
28/06/00	05/07/00	-	162.0	185.3	131.7	23.7	7.8	19.2	33.5	4.4	< 1.0	159.2	-	110.0	8.8
05/07/00	12/07/00	-	73.2	38.2	38.6	77.6	18.3	9.7	100.6	2.8	< 1.0	63.9	-	49.0	22.3
12/07/00	19/07/00	-	63.0	24.3	36.9	43.5	12.9	28.6	61.9	3.5	< 1.0	57.8	-	27.0	2.8
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/07/00	09/08/00	-	81.1	54.3	68.8	10.5	5.9	27.4	17.3	4.1	< 1.0	79.8	-	34.0	15.4
09/08/00	16/08/00	-	42.0	52.4	60.2	25.1	7.0	14.9	29.2	2.8	< 1.0	39.0	-	25.0	9.1
16/08/00	23/08/00	-	41.5	55.9	69.5	12.2	8.2	48.9	18.9	6.8	4.3	40.1	-	20.0	3.8
23/08/00	06/09/00	-	55.6	48.6	51.2	54.1	16.7	38.5	65.5	5.5	< 1.0	49.1	-	32.0	3.7
06/09/00	13/09/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
13/09/00	27/09/00	-	30.0	25.7	28.6	21.1	5.2	8.1	27.1	1.6	< 1.0	27.5	-	17.0	42.4
27/09/00	11/10/00	-	29.6	25.6	19.2	19.8	5.2	8.6	24.6	0.9	< 1.0	27.3	-	19.0	34.3
11/10/00	25/10/00	-	29.2	25.0	20.4	19.3	5.3	7.4	24.7	1.2	< 1.0	26.9	-	19.0	72.9
25/10/00	01/11/00	-	14.2	8.5	14.7	25.1	5.8	4.3	31.2	0.8	< 1.0	11.2	-	11.0	28.0
01/11/00	08/11/00	-	21.5	17.8	13.1	69.4	15.8	5.2	84.4	1.7	< 1.0	13.1	-	23.0	59.6
08/11/00	15/11/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15/11/00	22/11/00	-	39.1	27.3	44.8	62.6	13.5	6.9	81.4	2.4	< 1.0	31.6	-	25.0	17.2
22/11/00	29/11/00	-	23.6	20.4	19.9	28.1	5.7	4.9	34.5	1.6	< 1.0	20.3	-	17.0	28.3
29/11/00	06/12/00	-	46.9	34.4	47.4	100.3	21.9	13.5	114.2	3.4	< 1.0	34.9	-	30.0	7.3
06/12/00	13/12/00	-	27.6	23.1	28.1	48.9	11.0	6.3	59.5	1.4	< 1.0	21.7	-	18.0	9.6
13/12/00	20/12/00	-	109.3	81.9	115.9	95.1	24.2	21.5	133.1	3.2	< 1.0	97.9	-	54.0	3.2
20/12/00	27/12/00	-	46.7	56.0	38.8	102.0	21.4	10.9	116.1	5.3	< 1.0	34.5	-	39.0	3.0
27/12/00	03/01/01	-	45.0	55.2	35.5	86.4	20.7	9.2	105.9	2.3	< 1.0	34.6	-	42.0	15.1

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5136	-	44.7	34.8	38.6	62.4	14.7	12.2	74.9	2.2	-	37.2	-	30.0	616.1
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Total Rainfall

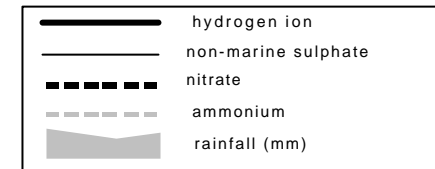
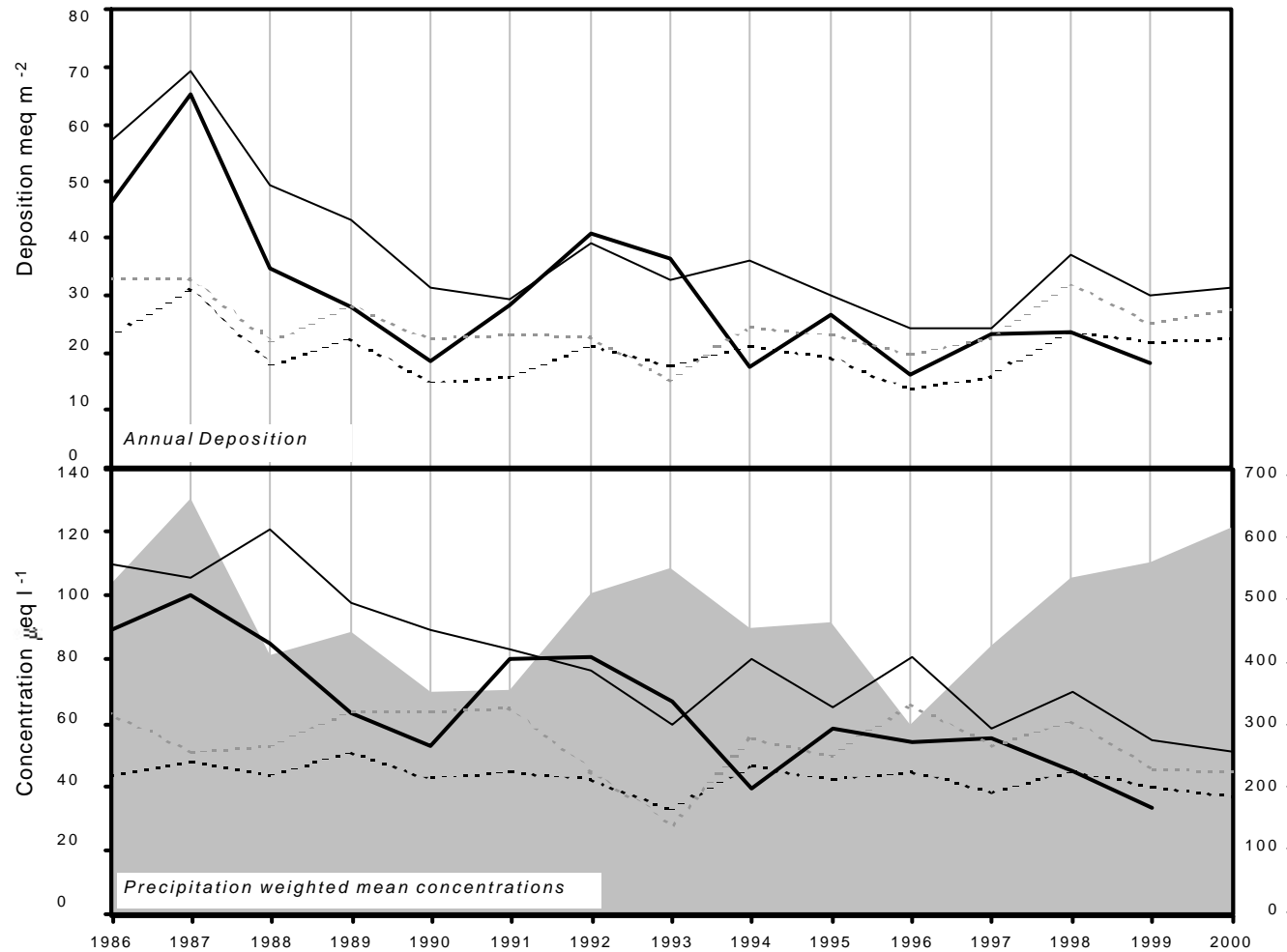
Jenny Hurn

2000 Site Code: **5118**
 Easting: **4816**
 Northing: **3986**
 Latitude: **53 28 39 N**
 Longitude: **00 46 13 W**
 Altitude (m): **4**
 Rainfall (mm): **563**
 [30 year mean 1940 - 1971]

Site Environment:
Open arable land

Other measurements:
DT, SO2 (PowerGen)

Site Operator:
PowerGen



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-3.90 ueq/l (-4.35 %/year): 14 years' data +++ Strong trend detected
non-marine sulphate	-4.27 ueq/l (-3.88 %/year): 15 years' data ++++ Very strong trend detected
nitrate	-0.51 ueq/l (-1.09 %/year): 15 years' data - No significant trend detected
ammonium	-0.65 ueq/l (-1.11 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	11/01/00	-	99.9	37.4	105.4	149.4	41.9	38.6	212.5	8.9	< 1.0	81.9	-	51.0	1.8
11/01/00	18/01/00	-	40.1	38.4	38.3	89.9	20.8	11.4	110.7	2.4	< 1.0	29.3	-	35.0	9.6
18/01/00	25/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3
25/01/00	01/02/00	-	37.4	12.2	14.8	58.8	17.3	25.3	63.9	1.9	< 1.0	30.3	-	18.0	7.0
01/02/00	08/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7
08/02/00	15/02/00	-	96.1	19.7	32.6	233.5	57.1	35.2	287.2	5.4	< 1.0	68.0	-	60.0	7.8
15/02/00	22/02/00	-	65.6	30.7	36.9	70.7	22.0	25.7	115.8	2.3	< 1.0	57.1	-	41.0	5.9
22/02/00	29/02/00	-	271.2	16.0	4701.5	134.0	17.7	15.1	69.7	452.3	527.3	255.0	-	575.0	15.6
29/02/00	07/03/00	-	73.1	18.3	71.1	89.9	24.0	39.9	115.3	3.9	< 1.0	62.3	-	33.0	3.4
07/03/00	14/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/03/00	28/03/00	-	159.0	128.4	258.3	88.1	26.4	68.4	106.3	4.0	< 1.0	148.4	-	65.0	9.4
28/03/00	04/04/00	-	36.7	24.4	42.8	27.4	8.2	10.7	34.7	1.1	< 1.0	33.4	-	17.0	18.1
04/04/00	11/04/00	-	115.3	78.4	108.7	167.3	43.4	42.7	193.9	4.4	< 1.0	95.2	-	50.0	6.8
11/04/00	18/04/00	-	64.1	76.8	68.0	38.2	11.7	16.5	47.2	1.4	< 1.0	59.5	-	41.0	25.3
18/04/00	25/04/00	-	31.9	21.8	22.4	13.6	3.7	4.3	27.1	0.7	< 1.0	30.3	-	22.0	33.2
25/04/00	02/05/00	-	43.8	27.5	18.2	7.1	2.8	9.6	31.7	0.6	< 1.0	42.9	-	33.0	8.2
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.5
09/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16/05/00	23/05/00	-	64.2	24.6	56.6	15.3	8.4	20.6	29.3	0.9	< 1.0	62.3	-	23.0	24.6
23/05/00	30/05/00	-	32.3	21.4	19.1	9.8	4.9	9.8	24.4	0.8	< 1.0	31.2	-	21.0	36.5
30/05/00	06/06/00	-	75.6	56.2	49.6	14.4	5.5	11.4	28.2	1.3	< 1.0	73.8	-	45.0	26.4
06/06/00	13/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
13/06/00	20/06/00	-	145.8	47.6	48.3	56.5	25.8	69.5	114.5	7.0	< 1.0	139.0	-	-	0.9
20/06/00	27/06/00	-	81.3	25.1	61.3	24.3	12.3	34.1	33.3	3.6	< 1.0	78.3	-	23.0	4.5
27/06/00	04/07/00	-	346.0	328.7	283.4	32.0	23.2	88.3	54.0	5.9	< 1.0	342.1	-	183.0	6.0
04/07/00	11/07/00	-	39.3	22.2	18.0	9.1	5.5	15.1	18.3	25.2	4.1	38.3	-	15.0	21.4
11/07/00	18/07/00	-	78.6	22.1	40.4	39.6	22.1	53.3	64.7	5.2	< 1.0	73.8	-	26.0	4.8
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25/07/00	01/08/00	-	136.3	102.5	119.5	6.9	10.3	46.5	46.5	4.5	4.0	135.5	-	70.0	10.6
01/08/00	08/08/00	-	50.3	32.4	35.4	18.2	13.7	45.1	20.5	6.9	< 1.0	48.1	-	17.0	4.0
08/08/00	15/08/00	-	86.9	45.6	62.5	6.8	20.1	72.7	26.2	9.5	2.2	86.1	-	24.0	3.1
15/08/00	22/08/00	-	62.0	41.4	52.1	15.0	7.7	20.2	44.6	3.6	< 1.0	60.2	-	32.0	14.0
22/08/00	29/08/00	-	157.4	91.5	101.1	29.8	28.1	142.9	39.5	11.8	8.9	153.8	-	-	4.1
29/08/00	05/09/00	-	83.6	60.1	83.6	39.0	16.3	45.5	64.6	6.1	6.6	78.9	-	38.0	8.6
05/09/00	12/09/00	-	129.3	77.6	126.5	79.3	25.0	54.6	96.4	7.8	< 1.0	119.8	-	44.0	2.2
12/09/00	19/09/00	-	46.2	17.7	30.6	4.9	3.6	9.6	12.1	0.9	< 1.0	45.6	-	21.0	31.0
19/09/00	26/09/00	-	34.4	36.4	53.2	10.3	3.5	9.4	11.3	1.1	< 1.0	33.2	-	15.0	45.4
26/09/00	03/10/00	-	66.1	41.6	47.5	22.6	9.6	42.9	50.1	1.3	< 1.0	63.4	-	32.0	14.3
03/10/00	10/10/00	-	43.2	16.1	30.5	30.4	14.6	31.1	54.2	2.0	< 1.0	39.5	-	20.0	20.7
10/10/00	17/10/00	-	50.1	24.5	38.2	17.4	8.0	16.1	32.2	0.9	< 1.0	48.0	-	23.0	12.6
17/10/00	24/10/00	-	57.4	62.1	57.2	23.4	6.5	9.3	60.9	1.0	< 1.0	54.6	-	43.0	4.9
24/10/00	31/10/00	-	40.1	6.7	13.0	28.0	10.1	12.5	49.3	1.2	< 1.0	36.7	-	24.0	28.0
31/10/00	07/11/00	-	27.1	24.9	19.5	40.8	10.8	7.9	53.0	1.7	< 1.0	22.2	-	21.0	31.6
07/11/00	14/11/00	-	23.3	17.9	17.7	9.9	4.1	5.4	22.8	1.5	< 1.0	22.1	-	19.0	19.8
14/11/00	21/11/00	-	76.2	34.8	76.8	49.1	15.9	27.3	108.1	4.3	< 1.0	70.2	-	43.0	3.0
21/11/00	28/11/00	-	32.5	21.1	17.7	24.2	6.3	5.5	52.1	1.1	< 1.0	29.6	-	31.0	24.6
28/11/00	05/12/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8
05/12/00	12/12/00	-	27.3	21.4	22.4	28.5	7.1	4.4	55.0	1.0	< 1.0	23.9	-	27.0	18.5
12/12/00	19/12/00	-	-	-	-	-	-	-	-	-	-	-	-	-	5.4
19/12/00	27/12/00	-	66.0	70.9	53.3	77.0	20.0	14.9	97.8	2.4	< 1.0	56.7	-	50.0	10.4
27/12/00	02/01/01	-	25.9	13.6	24.5	30.6	6.6	6.6	40.7	0.9	< 1.0	22.2	-	15.0	9.9
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5118	-	54.6	36.9	45.1	29.9	10.2	18.7	46.9	2.8	-	51.0	-	29.5	610.4	

Thorganby

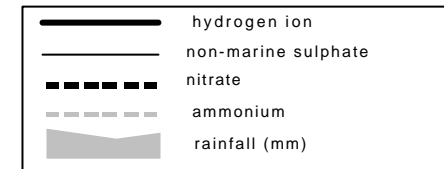
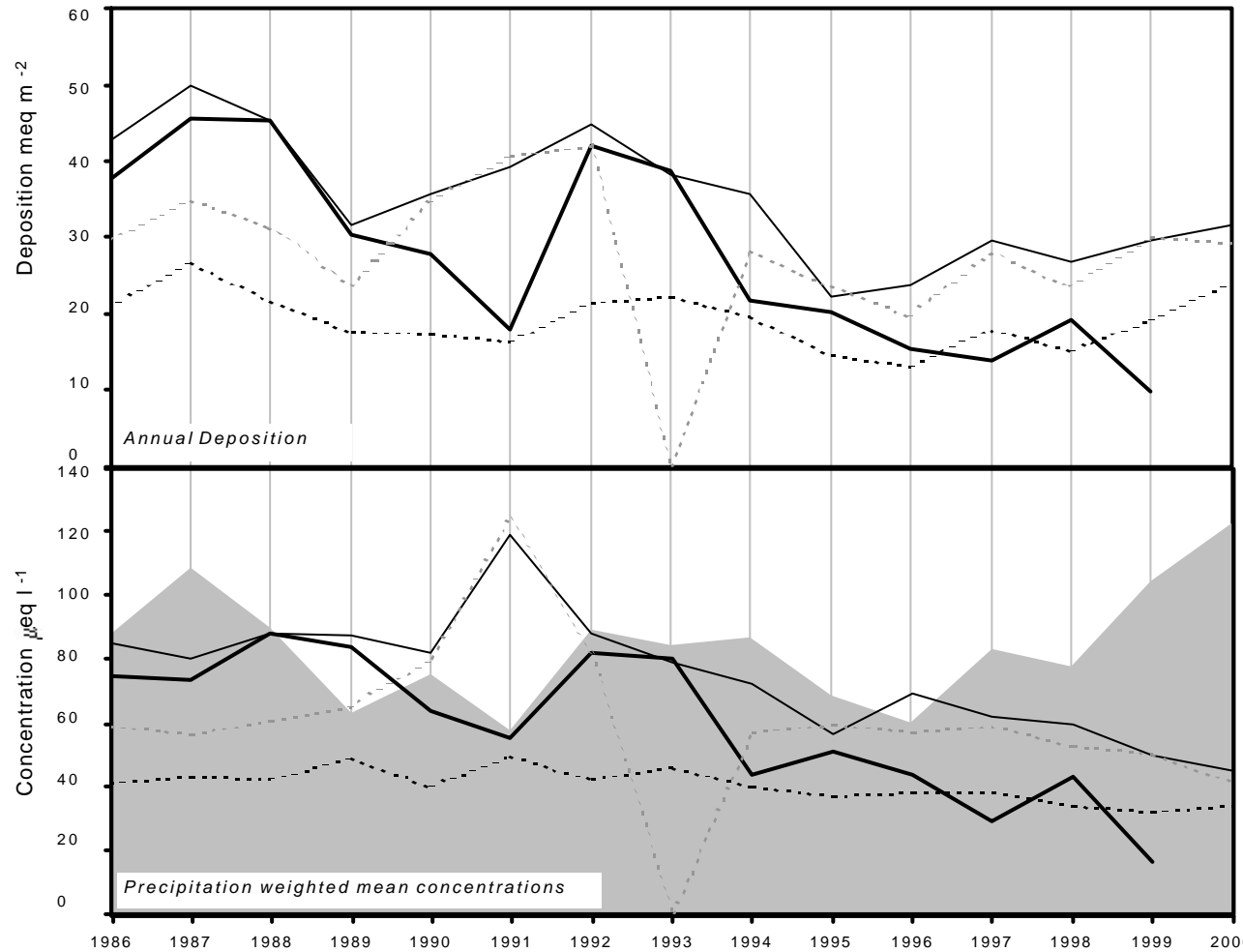
2000

Site Code: 5117
 Easting: 4676
 Northing: 4428
 Latitude: 53 52 36 N
 Longitude: 00 58 19 W
 Altitude (m): 8
 Rainfall (mm): 565
 [30 year mean 1940 - 1971]

Site Environment:
Open meadow and arable land

Other measurements:
DT

Site Operator:
Selby District Council



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-4.41 ueq/l (-5.02 %/year): 14 years' data +++ Strong trend detected
non-marine sulphate	-3.15 ueq/l (-3.25 %/year): 15 years' data ++ Moderately strong trend detected
nitrate	-0.83 ueq/l (-1.79 %/year): 15 years' data ++ Moderately strong trend detected
ammonium	-1.61 ueq/l (-2.10 %/year): 14 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	124.4	25.5	87.6	182.0	44.1	36.8	239.3	5.0	< 1.0	102.5	-	62.0	3.9
12/01/00	19/01/00	-	51.5	32.2	47.0	105.4	25.3	16.7	161.7	3.0	< 1.0	38.8	-	49.0	15.8
19/01/00	26/01/00	-	192.0	43.6	172.7	349.1	74.3	39.0	431.5	9.7	< 1.0	150.0	-	-	1.2
26/01/00	02/02/00	-	177.6	47.8	151.2	223.1	56.2	54.7	264.4	6.7	< 1.0	150.7	-	70.0	1.9
02/02/00	09/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6
09/02/00	16/02/00	-	63.5	18.6	35.6	182.5	46.6	39.9	251.5	4.6	< 1.0	41.5	-	54.0	11.1
16/02/00	23/02/00	-	54.5	27.7	38.3	77.7	20.0	45.7	126.1	3.4	< 1.0	45.1	-	37.0	6.6
23/02/00	01/03/00	-	45.7	17.5	29.1	51.9	14.7	28.3	64.0	1.7	< 1.0	39.5	-	20.0	11.0
01/03/00	08/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
08/03/00	15/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
15/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
22/03/00	29/03/00	-	118.7	128.3	129.0	58.5	24.3	87.2	88.3	7.5	< 1.0	111.6	-	57.0	11.8
29/03/00	05/04/00	-	64.3	49.6	69.8	36.2	9.8	14.2	48.8	1.4	< 1.0	60.0	-	33.0	15.0
05/04/00	12/04/00	-	88.9	175.7	152.0	87.5	27.1	47.7	117.0	14.6	5.2	78.4	-	66.0	8.7
12/04/00	19/04/00	-	47.5	52.5	47.7	27.8	7.4	8.5	41.3	2.2	< 1.0	44.2	-	32.0	21.4
19/04/00	26/04/00	-	40.0	27.4	30.3	17.3	5.7	8.4	25.1	0.8	< 1.0	37.9	-	21.0	43.2
26/04/00	03/05/00	-	97.1	79.5	87.9	31.8	12.9	69.1	68.7	5.4	< 1.0	93.2	-	43.0	2.3
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
10/05/00	17/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17/05/00	24/05/00	-	41.5	24.8	33.3	22.3	8.9	19.6	30.9	1.8	< 1.0	38.8	-	18.0	27.9
24/05/00	31/05/00	-	34.7	29.5	29.1	10.1	4.9	11.3	19.4	0.9	< 1.0	33.5	-	22.0	37.8
31/05/00	07/06/00	-	57.0	39.2	34.6	11.9	4.4	9.2	17.7	0.8	< 1.0	55.5	-	34.0	33.2
07/06/00	14/06/00	-	244.6	139.3	181.2	216.0	85.0	202.0	318.1	73.3	23.7	218.6	-	98.0	2.3
14/06/00	21/06/00	-	175.1	139.1	118.4	54.4	77.1	277.9	212.6	119.8	20.8	168.6	-	84.0	1.5
21/06/00	28/06/00	-	115.3	94.3	112.8	43.4	26.6	69.1	65.7	14.3	6.2	110.1	-	43.0	6.9
28/06/00	05/07/00	-	71.5	60.6	38.2	4.8	2.7	9.3	10.1	1.3	< 1.0	70.9	-	46.0	7.8
05/07/00	12/07/00	-	31.3	13.8	37.2	27.5	4.5	10.4	32.3	4.4	< 1.0	28.0	-	14.0	11.1
12/07/00	19/07/00	-	305.3	19.7	1159.6	273.1	134.7	192.3	221.4	89.5	245.6	272.4	-	196.0	3.6
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
26/07/00	02/08/00	-	104.2	57.3	92.0	13.8	10.7	42.8	30.6	4.4	2.3	102.6	-	39.0	17.7
02/08/00	09/08/00	-	107.0	64.9	102.0	16.8	19.7	75.4	42.1	9.7	7.2	105.0	-	32.0	4.3
09/08/00	16/08/00	-	66.8	25.2	49.9	11.5	11.9	41.8	31.2	4.6	< 1.0	65.4	-	20.0	9.7
16/08/00	23/08/00	-	63.1	51.0	64.2	12.7	6.5	19.2	19.5	2.1	< 1.0	61.6	-	31.0	19.1
23/08/00	30/08/00	-	141.9	88.4	125.2	43.0	19.5	122.0	53.7	13.2	3.4	136.8	-	46.0	6.8
30/08/00	06/09/00	-	56.8	40.0	51.0	32.1	12.7	35.6	51.2	4.1	1.7	53.0	-	22.0	11.7
06/09/00	13/09/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
13/09/00	20/09/00	-	31.3	26.4	37.1	8.9	3.4	6.0	14.1	0.7	< 1.0	30.2	-	17.0	52.3
20/09/00	27/09/00	-	60.5	41.2	45.6	29.0	8.1	13.9	39.8	1.4	< 1.0	57.0	-	31.0	19.6
27/09/00	04/10/00	-	35.0	16.0	6.0	40.7	8.5	8.3	24.8	0.9	< 1.0	30.1	-	15.0	13.5
04/10/00	11/10/00	-	36.6	14.3	16.7	17.7	5.5	7.3	38.9	0.9	< 1.0	34.5	-	22.0	41.9
11/10/00	18/10/00	-	58.5	32.9	60.3	34.7	8.6	18.0	57.3	4.4	< 1.0	54.3	-	27.0	9.5
18/10/00	25/10/00	-	65.9	50.2	56.4	42.9	13.7	25.0	65.3	3.4	< 1.0	60.7	-	40.0	10.6
25/10/00	02/11/00	-	26.6	7.0	12.8	33.0	8.8	8.1	54.5	1.3	< 1.0	22.6	-	20.0	54.2
02/11/00	22/11/00	-	25.4	20.3	20.1	28.7	7.4	5.4	40.0	1.4	< 1.0	21.9	-	18.0	80.8
22/11/00	29/11/00	-	61.5	43.6	45.5	65.6	18.6	18.7	113.5	2.2	< 1.0	53.6	-	50.0	9.9
29/11/00	06/12/00	-	47.8	28.1	41.1	42.4	11.5	14.3	69.7	1.6	< 1.0	42.6	-	33.0	9.8
06/12/00	13/12/00	-	32.6	20.6	30.6	25.8	7.3	9.2	38.4	1.2	< 1.0	29.5	-	20.0	20.0
13/12/00	20/12/00	-	90.8	62.7	93.7	65.9	17.9	17.1	89.6	3.1	< 1.0	82.9	-	45.0	5.1
20/12/00	27/12/00	-	69.5	67.0	91.2	57.6	15.6	15.5	71.3	2.6	< 1.0	62.5	-	36.0	7.1
27/12/00	03/01/01	-	38.1	17.6	36.3	33.5	7.4	7.5	52.9	3.8	< 1.0	34.1	-	21.0	9.0
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5117	-	49.2	34.0	41.8	33.2	10.1	17.5	49.3	2.4	-	45.2	-	27.3	702.7	

High Muffles

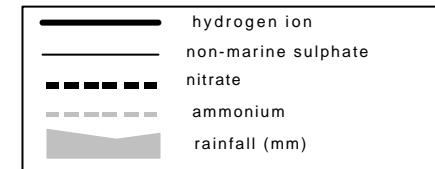
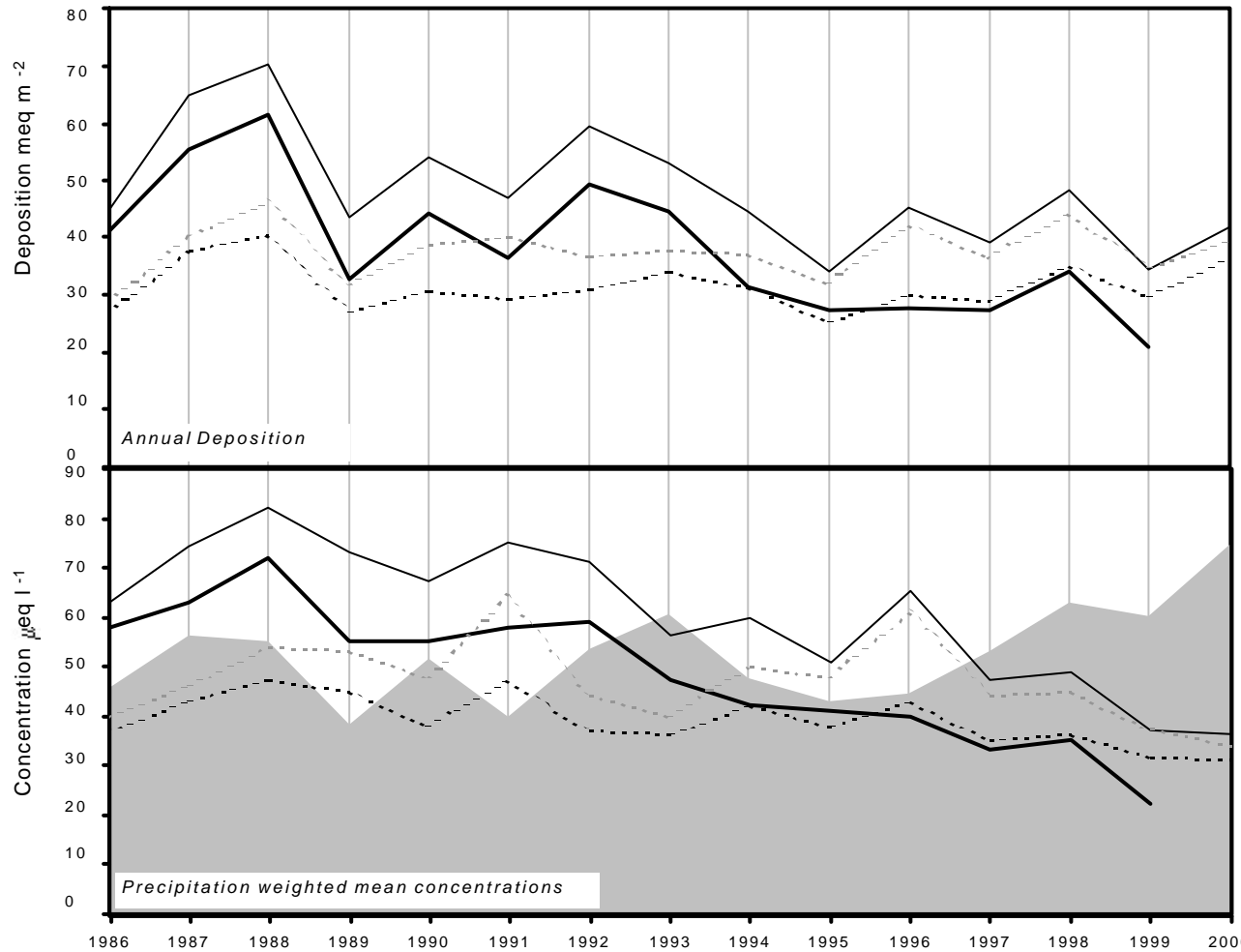
2000

Site Code: 5009
 Easting: 4776
 Northing: 4939
 Latitude: 54 20 05 N
 Longitude: 00 48 23 W
 Altitude (m): 267
 Rainfall (mm): 897
 [30 year mean 1940 - 1971]

Site Environment:
Forestry plantation

Other measurements:
 DT, Daily SO₂, Daily SO₄, TIN, TIA, WF, ozone, EMEP

Site Operator:
Forest Enterprise



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-2.99 ueq/l (-4.40 %/year): 14 years' data ++++ Very strong trend detected
<i>non-marine sulphate</i>	-2.66 ueq/l (-3.37 %/year): 15 years' data +++ Strong trend detected
<i>nitrate</i>	-0.72 ueq/l (-1.62 %/year): 15 years' data + Significant trend detected
<i>ammonium</i>	-0.59 ueq/l (-1.14 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	91.9	35.5	90.8	141.7	44.2	37.1	169.1	3.2	< 9.7	74.8	-	52.0	5.3
12/01/00	19/01/00	-	37.7	16.8	3.1	234.0	70.2	16.2	264.2	4.8	< 9.7	9.5	-	51.0	37.7
19/01/00	26/01/00	-	73.7	12.8	9.6	467.3	131.7	36.8	541.7	9.5	< 9.7	17.4	-	83.0	13.5
26/01/00	02/02/00	-	52.8	30.3	67.0	64.4	14.0	10.3	83.2	1.7	< 1.0	45.0	-	25.0	7.2
02/02/00	09/02/00	-	85.2	20.5	39.9	204.7	48.4	35.2	245.1	5.0	< 1.0	60.5	-	55.0	5.2
09/02/00	16/02/00	-	43.4	17.0	29.7	76.3	17.6	12.7	96.2	1.7	< 1.0	34.2	-	27.0	13.6
16/02/00	23/02/00	-	38.3	43.3	41.6	58.5	16.7	11.4	73.2	1.7	< 9.7	31.3	-	35.0	15.9
23/02/00	01/03/00	-	92.7	44.0	102.6	100.3	34.3	52.6	123.9	2.6	< 9.7	80.6	-	43.0	5.4
01/03/00	08/03/00	-	90.9	43.0	74.6	192.5	43.5	41.4	225.3	5.1	< 1.0	67.7	-	54.0	4.1
08/03/00	15/03/00	-	34.7	30.9	46.5	31.8	16.3	28.0	32.8	1.9	< 9.7	30.9	-	-	1.4
15/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/03/00	29/03/00	-	115.0	141.3	190.5	101.6	29.5	51.6	113.0	3.0	< 9.7	102.7	-	64.0	13.2
29/03/00	05/04/00	-	42.2	22.3	22.4	124.6	26.9	9.6	142.2	3.3	< 9.7	27.2	-	35.0	41.0
05/04/00	12/04/00	-	59.8	81.8	81.6	46.2	10.1	9.4	49.7	1.7	< 9.7	54.2	-	40.0	24.9
12/04/00	19/04/00	-	68.1	46.4	53.0	91.3	21.6	7.3	103.3	2.4	< 9.7	57.1	-	45.0	72.3
19/04/00	26/04/00	-	40.7	30.8	28.5	21.3	5.1	5.4	27.0	< 1.3	< 9.7	38.1	-	25.0	55.3
26/04/00	03/05/00	-	65.5	54.5	34.2	32.2	8.9	21.8	39.2	1.5	< 9.7	61.6	-	40.0	7.1
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/05/00	17/05/00	-	387.7	157.2	1680.0	265.9	151.2	307.6	314.2	348.4	344.5	355.7	-	-	1.3
17/05/00	24/05/00	-	50.4	31.5	43.9	18.3	4.9	8.6	23.7	< 1.3	< 9.7	48.2	-	25.0	21.6
24/05/00	31/05/00	-	28.9	20.8	23.4	10.6	4.5	10.7	13.2	1.9	< 1.0	27.6	-	16.0	30.9
31/05/00	07/06/00	-	47.7	38.7	30.3	23.7	6.1	5.9	25.0	1.4	< 1.0	44.9	-	32.0	40.8
07/06/00	14/06/00	-	104.6	55.6	113.6	96.6	29.2	87.0	109.9	22.5	2.9	93.0	-	47.0	1.7
14/06/00	21/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/06/00	28/06/00	-	106.0	29.8	80.7	29.4	12.4	53.4	38.6	2.1	< 1.0	102.5	-	27.0	3.5
28/06/00	05/07/00	-	162.4	151.0	88.5	16.7	5.1	15.6	18.7	1.9	< 1.0	160.4	-	101.0	7.0
05/07/00	12/07/00	-	34.1	10.4	9.8	134.8	30.3	7.5	158.0	3.2	< 1.0	17.9	-	33.0	44.2
12/07/00	19/07/00	-	64.8	20.9	30.7	74.0	24.4	31.4	91.2	7.6	< 1.0	55.9	-	27.0	3.5
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
26/07/00	02/08/00	-	50.5	33.5	46.1	3.6	2.8	17.4	7.6	1.4	< 1.0	50.1	-	23.0	18.5
02/08/00	09/08/00	-	49.6	23.2	25.1	20.0	5.8	8.8	22.9	1.0	< 1.0	47.2	-	25.0	9.2
09/08/00	16/08/00	-	113.1	47.8	90.2	15.1	9.7	73.8	23.6	3.7	< 1.0	111.3	-	27.0	2.9
16/08/00	23/08/00	-	41.1	32.2	42.5	7.9	2.6	7.7	11.4	1.1	< 1.0	40.1	-	21.0	25.7
23/08/00	30/08/00	-	59.2	42.1	55.1	17.0	8.3	64.1	19.5	2.2	< 1.0	57.1	-	21.0	14.4
30/08/00	06/09/00	-	52.1	33.7	43.1	61.8	14.9	11.4	73.3	4.0	< 1.0	44.6	-	29.0	27.1
06/09/00	13/09/00	-	67.1	48.5	46.2	22.7	6.7	13.4	31.9	1.9	< 1.0	64.4	-	38.0	16.9
13/09/00	20/09/00	-	24.4	18.6	18.8	14.2	3.5	3.8	17.6	0.8	< 1.0	22.7	-	15.0	60.1
20/09/00	27/09/00	-	45.6	41.3	37.3	30.6	7.7	8.2	35.4	1.2	< 1.0	41.9	-	28.0	24.9
27/09/00	04/10/00	-	46.5	30.3	33.4	30.9	8.0	7.1	42.0	1.1	< 1.0	42.7	-	31.0	14.8
04/10/00	11/10/00	-	28.4	14.5	20.0	24.4	6.2	5.5	31.1	1.0	< 1.0	25.4	-	15.0	53.0
11/10/00	18/10/00	-	62.8	48.0	58.4	27.3	7.4	10.2	40.6	1.4	< 1.0	59.5	-	35.0	17.4
18/10/00	25/10/00	-	50.7	48.9	48.4	35.0	9.2	10.3	46.2	1.9	< 1.0	46.5	-	33.0	15.2
25/10/00	01/11/00	-	18.1	8.6	11.1	22.0	5.6	2.3	30.7	0.7	< 1.0	15.5	-	13.0	77.4
01/11/00	08/11/00	-	20.4	16.5	11.2	61.4	13.6	3.1	74.7	1.4	< 1.0	13.0	-	20.0	118.3
08/11/00	15/11/00	-	45.9	35.0	39.9	50.2	12.1	8.0	71.0	2.1	< 1.0	39.8	-	33.0	10.1
15/11/00	22/11/00	-	33.0	34.1	38.6	30.5	7.0	5.2	46.0	1.4	< 1.0	29.4	-	27.0	20.9
22/11/00	29/11/00	-	49.4	52.9	41.4	52.8	12.8	8.8	86.5	1.8	< 1.0	43.0	-	46.0	19.7
29/11/00	06/12/00	-	37.2	29.2	32.6	34.1	8.4	5.7	52.0	1.1	< 1.0	33.1	-	31.0	36.1
06/12/00	13/12/00	-	30.3	22.4	25.8	28.4	6.7	5.2	36.6	1.0	< 1.0	26.9	-	20.0	40.4
13/12/00	20/12/00	-	88.2	69.3	93.1	36.3	9.0	6.6	51.3	1.6	< 1.0	83.8	-	51.0	17.3
20/12/00	27/12/00	-	73.2	71.1	62.1	194.9	45.6	14.7	224.7	4.7	< 1.0	49.7	-	59.0	16.0
27/12/00	03/01/01	-	31.2	22.1	20.7	40.0	9.7	4.4	52.5	1.2	< 1.0	26.4	-	24.0	24.9
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total Rainfall	
5009	-	43.5	31.4	33.8	60.6	15.4	10.0	73.0	1.9	-	36.2	-	30.0	1159.9	

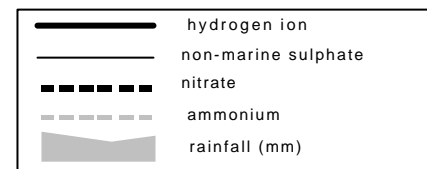
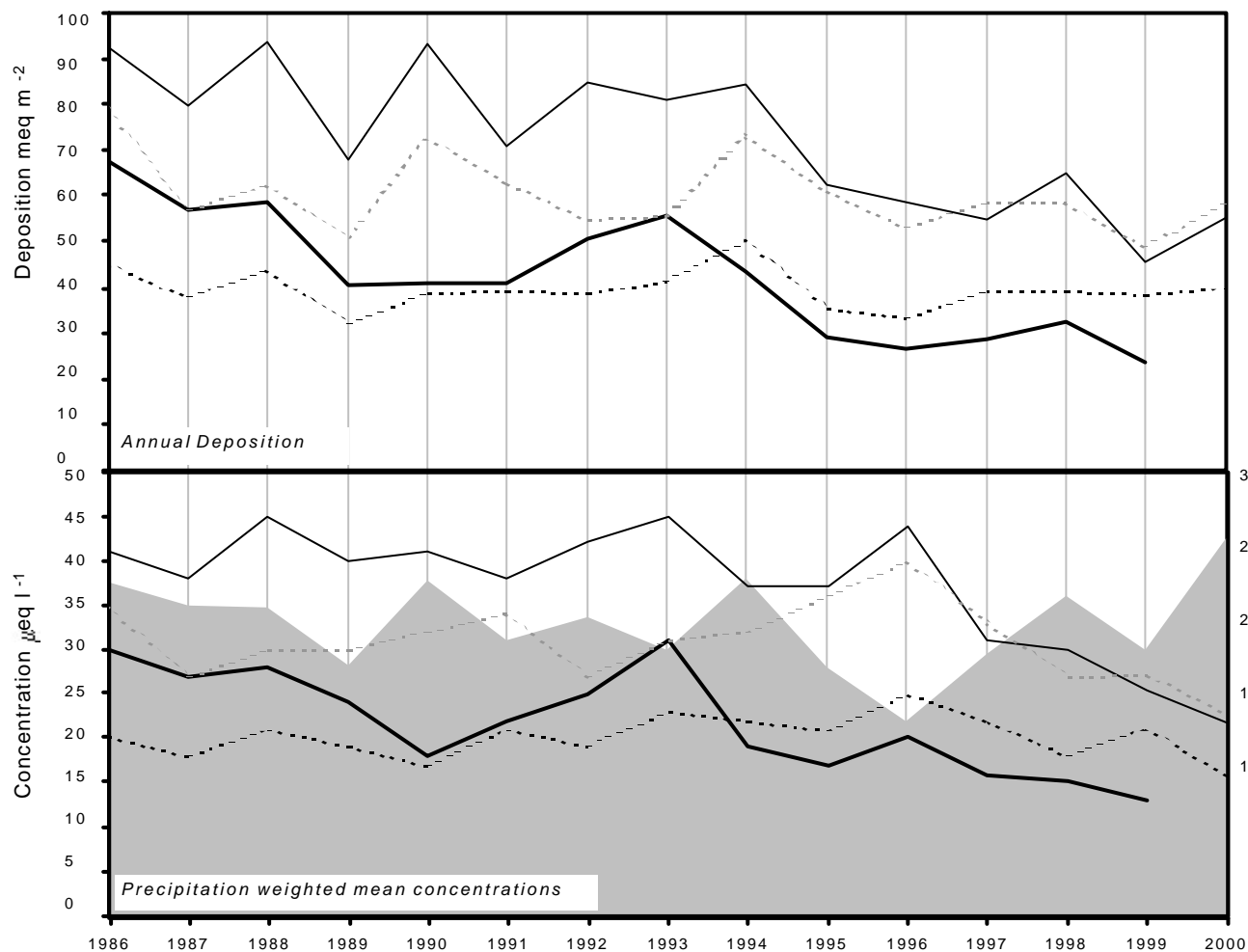
Bannisdale

2000 Site Code: **5111**
 Easting: **3515**
 Northing: **5043**
 Latitude: **54 25 54 N**
 Longitude: **02 44 52 W**
 Altitude (m): **265**
 Rainfall (mm): **1972**
 [30 year mean 1940 - 1971]

Site Environment:
Open moorland, sheep grazing

Other measurements:
DT

Site Operator:
CEH Windermere



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-1.09 ueq/l (-3.78 %/year): 14 years' data ++ Moderately strong trend detected
non-marine sulphate	-1.15 ueq/l (-2.54 %/year): 15 years' data ++ Moderately strong trend detected
nitrate	0.04 ueq/l (0.22 %/year): 15 years' data - No significant trend detected
ammonium	-0.19 ueq/l (-0.59 %/year): 15 years' data - No significant trend detected

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ eq l ⁻¹)	(µ S cm ⁻¹)	mm
05/01/00	10/01/00	-	53.4	8.5	19.2	285.8	63.8	14.9	342.0	6.1	< 1.0	19.0	-	56.0	29.2
10/01/00	18/01/00	-	8.7	4.7	5.3	24.2	5.2	1.9	26.5	< 0.5	< 1.0	5.8	-	< 10.0	90.9
18/01/00	25/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
25/01/00	01/02/00	-	28.1	7.9	33.0	98.8	21.0	6.4	111.8	2.2	< 1.0	16.2	-	22.0	150.5
01/02/00	07/02/00	-	45.4	11.7	9.1	125.5	30.7	34.6	140.8	3.5	< 1.0	30.3	-	29.0	68.7
07/02/00	15/02/00	-	52.3	6.5	6.9	338.4	75.7	17.5	382.3	7.0	< 1.0	11.5	-	60.0	61.3
15/02/00	22/02/00	-	26.5	16.2	22.7	93.1	21.4	6.3	108.9	2.2	< 1.0	15.3	-	25.0	60.4
22/02/00	03/03/00	-	30.8	12.3	22.4	63.9	15.8	11.1	74.7	1.7	< 1.0	23.1	-	21.0	142.7
03/03/00	10/03/00	-	34.2	13.2	34.8	53.9	12.6	8.2	57.3	1.5	< 1.0	27.7	-	18.0	71.2
10/03/00	17/03/00	-	133.5	57.1	142.3	93.8	24.0	47.7	103.1	4.6	< 1.0	122.2	-	42.0	5.1
17/03/00	24/03/00	-	105.7	153.4	197.2	20.6	8.1	34.4	26.3	2.8	< 1.0	103.3	-	54.0	10.5
24/03/00	31/03/00	-	45.4	28.5	63.7	59.0	12.8	9.4	65.7	1.5	< 1.0	38.3	-	23.0	12.2
31/03/00	07/04/00	-	66.1	49.6	77.7	53.8	12.6	31.2	61.6	2.0	< 1.0	59.7	-	31.0	10.5
07/04/00	14/04/00	-	48.5	44.7	77.1	30.9	7.3	13.1	34.7	1.5	< 1.0	44.8	-	23.0	32.0
14/04/00	20/04/00	-	37.7	38.4	52.0	12.7	4.4	11.9	14.7	0.7	< 1.0	36.1	-	19.0	28.8
20/04/00	28/04/00	-	30.0	22.2	32.4	26.5	6.6	6.1	30.6	1.2	< 1.0	26.8	-	18.0	76.9
28/04/00	05/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
05/05/00	12/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/05/00	19/05/00	-	33.2	18.0	26.4	45.1	11.3	18.2	49.2	3.2	< 1.0	27.7	-	19.0	28.5
19/05/00	26/05/00	-	31.0	16.4	35.0	24.9	6.4	4.7	29.1	1.1	< 1.0	28.0	-	21.0	25.1
26/05/00	02/06/00	-	36.4	28.0	15.9	25.5	6.4	7.5	28.0	3.2	< 1.0	33.4	-	23.0	46.0
02/06/00	09/06/00	-	24.5	16.2	20.4	9.2	2.7	4.0	9.5	0.7	< 1.0	23.4	-	14.0	49.5
09/06/00	16/06/00	-	74.0	42.1	68.8	159.8	37.5	21.7	172.0	4.2	< 1.0	54.8	-	48.0	27.2
16/06/00	23/06/00	-	49.3	16.8	39.5	62.0	14.8	12.8	76.9	2.1	< 1.0	41.9	-	23.0	23.9
23/06/00	30/06/00	-	160.7	81.0	316.1	95.2	38.7	27.4	98.8	16.6	130.9	149.2	-	63.0	4.6
30/06/00	07/07/00	-	172.8	159.3	144.3	8.4	5.8	35.6	13.5	2.6	< 1.0	171.8	-	86.0	3.0
07/07/00	14/07/00	-	14.8	8.2	13.8	7.4	1.8	2.1	6.4	< 0.5	< 1.0	13.9	-	< 10.0	33.8
14/07/00	21/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/07/00	28/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
28/07/00	04/08/00	-	26.9	14.1	27.1	25.0	5.1	3.9	28.9	0.8	< 1.0	23.9	-	13.0	38.9
04/08/00	11/08/00	-	22.7	12.3	27.6	8.6	2.1	3.8	9.7	0.7	< 1.0	21.6	-	< 10.0	20.8
11/08/00	18/08/00	-	41.7	23.9	111.5	34.1	10.8	28.6	30.8	8.6	32.4	37.6	-	31.0	55.1
18/08/00	25/08/00	-	33.5	33.5	45.5	8.0	2.2	5.4	9.5	0.7	< 1.0	32.5	-	17.0	11.4
25/08/00	01/09/00	-	59.4	56.6	73.0	14.8	6.2	33.3	16.3	2.6	< 1.0	57.6	-	21.0	30.0
01/09/00	08/09/00	-	21.2	11.9	19.3	39.0	8.9	4.4	44.9	1.0	< 1.0	16.5	-	14.0	53.1
08/09/00	15/09/00	-	44.9	33.0	58.8	26.5	6.5	11.0	31.6	1.1	< 1.0	41.7	-	17.0	11.0
15/09/00	22/09/00	-	15.9	10.6	9.5	21.9	5.1	2.6	25.8	0.7	< 1.0	13.2	-	12.0	99.8
22/09/00	29/09/00	-	27.1	14.6	14.4	17.3	4.4	3.2	20.7	0.6	< 1.0	25.0	-	18.0	92.4
29/09/00	06/10/00	-	31.6	15.0	17.9	49.5	12.5	7.5	59.5	1.4	< 1.0	25.7	-	22.0	48.5
06/10/00	13/10/00	-	15.5	9.4	7.6	31.6	7.6	2.7	37.1	0.8	< 1.0	11.7	-	13.0	58.2
13/10/00	20/10/00	-	28.5	16.5	18.8	64.9	14.7	3.8	74.7	1.3	< 1.0	20.7	-	22.0	66.2
20/10/00	27/10/00	-	26.9	10.5	16.1	90.4	20.9	5.7	108.3	2.4	< 1.0	16.1	-	23.0	108.4
27/10/00	03/11/00	-	25.0	4.7	6.3	140.2	31.1	6.6	164.9	4.4	< 1.0	8.2	-	29.0	151.0
03/11/00	10/11/00	-	21.2	13.4	13.3	20.7	10.5	4.5	26.3	9.0	< 1.0	18.7	-	10.0	56.7
10/11/00	17/11/00	-	30.1	12.8	21.2	79.8	17.6	5.6	99.3	2.6	< 1.0	20.5	-	22.0	106.6
17/11/00	24/11/00	-	34.4	27.3	20.9	84.9	19.5	6.9	97.8	2.3	< 1.0	24.2	-	31.0	23.5
24/11/00	01/12/00	-	25.8	14.8	15.2	77.2	17.6	5.7	94.8	1.7	< 1.0	16.5	-	25.0	135.2
01/12/00	08/12/00	-	33.2	14.8	24.7	98.5	22.3	7.1	114.7	2.9	< 1.0	21.4	-	26.0	68.3
08/12/00	15/12/00	-	29.8	10.0	11.7	130.1	29.1	6.3	154.5	2.7	< 1.0	14.1	-	30.0	152.8
15/12/00	22/12/00	-	42.2	32.7	23.7	12.2	2.8	3.8	14.8	0.8	< 1.0	40.7	-	29.0	14.6
22/12/00	05/01/01	-	38.5	29.4	38.8	71.5	16.2	6.4	86.9	1.8	< 1.0	29.9	-	27.0	54.7
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total Rainfall	
5111	-	30.8	15.6	22.9	75.7	17.5	8.2	88.3	2.3	-	21.7	-	22.8	2552.0	

Hillsborough Forest

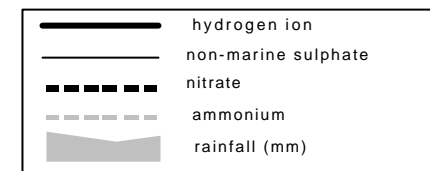
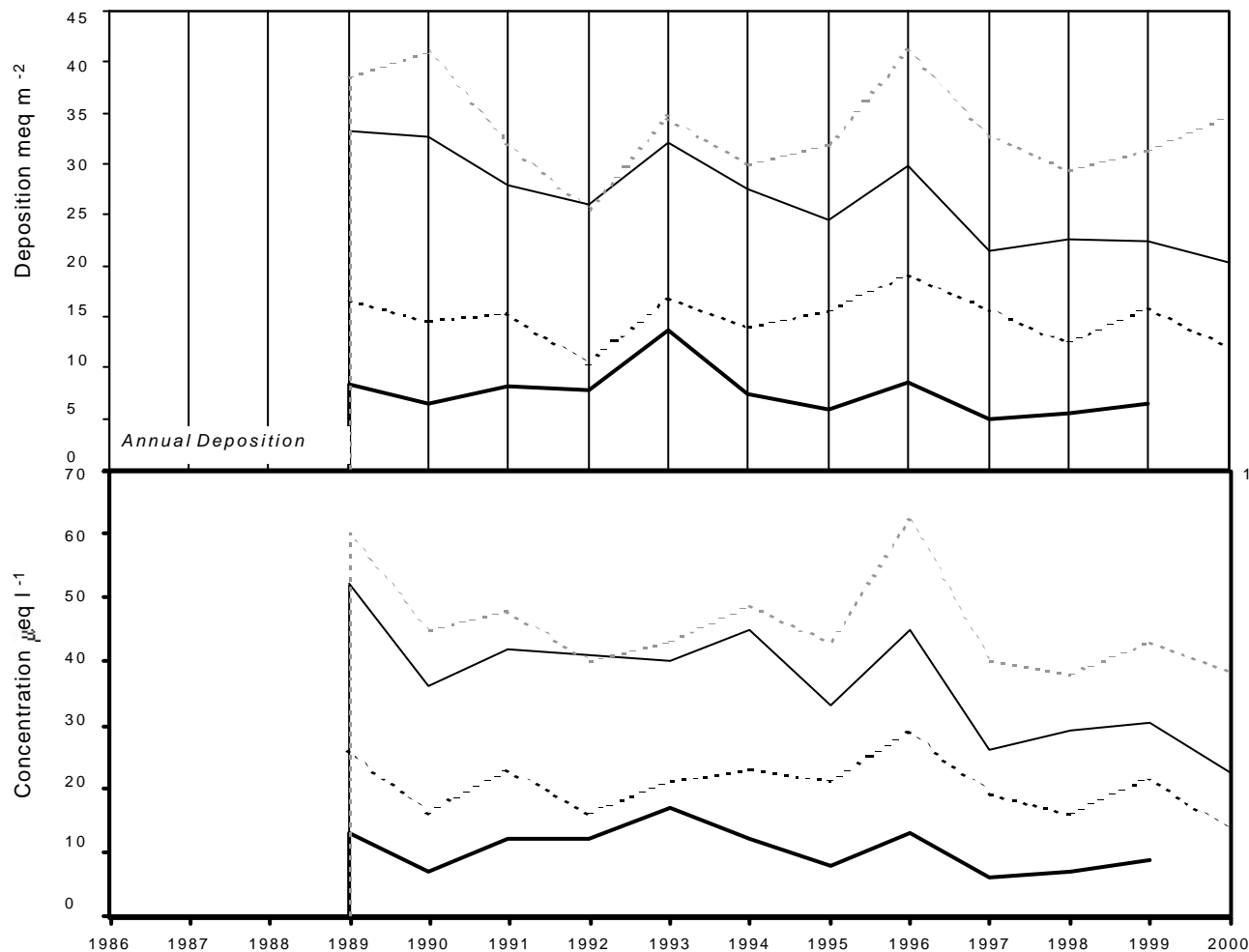
2000

Site Code: 5149
 Easting: 1349
 Northing: 5156
 Latitude: 54 27 09 N
 Longitude: 06 05 03 W
 Altitude (m): 120
 Rainfall (mm): 863
 [30 year mean 1940 - 1971]

Site Environment:
 Open arable, cows graze in summer

Other measurements:
 DT

Site Operator:
 Department of Agriculture NI



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-0.42 ueq/l (-3.00 %/year): 11 years' data - No significant trend detected
non-marine sulphate	-1.88 ueq/l (-3.55 %/year): 12 years' data ++ Moderately strong trend detected
nitrate	-0.35 ueq/l (-1.48 %/year): 12 years' data - No significant trend detected
ammonium	-0.95 ueq/l (-1.77 %/year): 12 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µ S cm ⁻¹)	mm
07/01/00	20/01/00	-	26.7	4.6	12.4	75.8	15.9	6.7	86.9	1.7	< 9.7	17.5	-	20.0	20.4
20/01/00	27/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4
27/01/00	04/02/00	-	49.5	5.3	11.0	166.6	35.6	22.1	195.3	2.4	< 9.7	29.4	-	37.0	10.4
04/02/00	10/02/00	-	87.2	3.8	10.8	616.0	142.3	36.5	743.8	13.0	< 9.7	13.0	-	110.0	17.3
10/02/00	17/02/00	-	41.7	3.2	15.3	239.3	54.0	13.5	274.9	4.7	< 9.7	12.8	-	46.0	14.0
17/02/00	24/02/00	-	38.1	8.6	30.0	131.6	30.3	10.4	155.6	2.6	< 9.7	22.2	-	30.0	12.2
24/02/00	02/03/00	-	27.4	4.3	20.3	84.9	18.4	7.9	100.7	2.0	< 9.7	17.2	-	20.0	18.9
02/03/00	09/03/00	-	44.9	6.4	41.9	118.4	26.8	36.8	139.8	2.8	< 9.7	30.6	-	32.0	7.6
09/03/00	16/03/00	-	54.4	12.8	33.0	79.4	19.2	32.7	95.0	3.0	< 9.7	44.8	-	27.0	6.4
16/03/00	24/03/00	-	176.7	112.1	244.8	121.4	29.8	44.3	142.4	4.4	< 9.7	162.0	-	63.0	3.7
24/03/00	30/03/00	-	106.1	612.7	471.3	194.7	32.2	29.2	112.9	70.3	118.3	82.6	-	130.0	5.8
30/03/00	06/04/00	-	90.8	80.6	104.6	54.6	14.0	20.1	65.2	2.7	< 9.7	84.2	-	46.0	9.5
06/04/00	13/04/00	-	62.4	41.8	53.2	113.1	25.5	24.4	127.1	2.3	< 9.7	48.7	-	37.0	14.7
13/04/00	19/04/00	-	92.1	66.0	64.6	227.7	54.5	31.6	255.7	4.9	< 9.7	64.7	-	66.0	5.4
19/04/00	27/04/00	-	36.8	16.0	14.0	61.9	13.7	6.1	70.8	1.4	< 1.0	29.3	-	27.0	35.1
27/04/00	04/05/00	-	39.7	48.3	41.6	8.0	4.3	9.7	9.0	0.7	< 1.0	38.7	-	23.0	5.1
04/05/00	11/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11/05/00	18/05/00	-	38.1	23.2	33.7	37.9	10.0	18.4	38.0	2.1	< 1.0	33.5	-	17.0	26.2
18/05/00	25/05/00	-	57.1	243.7	113.9	149.1	53.1	61.1	118.7	51.4	56.1	39.1	-	91.0	12.7
25/05/00	01/06/00	-	113.3	19.7	209.8	258.6	50.5	135.9	384.4	61.9	20.9	82.1	-	100.0	10.2
01/06/00	08/06/00	-	27.3	8.4	16.3	38.2	8.4	11.3	43.1	1.1	< 1.0	22.7	-	14.0	33.2
08/06/00	15/06/00	-	44.9	8.4	36.2	101.3	20.2	20.2	119.2	2.0	< 1.0	32.7	-	25.0	5.8
15/06/00	22/06/00	-	36.6	9.3	226.4	37.9	16.9	16.3	31.0	23.2	48.4	32.0	-	44.0	22.5
22/06/00	29/06/00	-	597.5	19.5	1917.5	172.8	52.2	41.6	185.7	271.0	1431.0	576.7	-	295.0	3.1
29/06/00	06/07/00	-	228.9	269.0	381.4	98.3	33.5	79.2	69.6	18.3	4.0	217.1	-	87.0	1.5
06/07/00	20/07/00	-	37.9	6.7	45.0	72.4	14.1	13.5	85.6	3.3	< 1.0	29.2	-	22.0	9.0
20/07/00	27/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27/07/00	03/08/00	-	16.7	11.7	30.0	18.4	5.3	8.9	19.5	1.7	< 1.0	14.5	-	10.0	24.4
03/08/00	10/08/00	-	18.6	6.7	21.6	14.6	6.5	18.4	15.0	5.9	< 1.0	16.9	-	10.0	8.7
10/08/00	17/08/00	-	16.4	6.4	31.1	14.9	3.6	7.7	11.7	1.1	< 1.0	14.6	-	< 10.0	41.5
17/08/00	24/08/00	-	39.4	16.4	90.9	24.4	6.7	14.5	25.0	5.9	< 1.0	36.5	-	18.0	2.8
24/08/00	31/08/00	-	101.5	43.6	725.2	28.4	7.3	20.9	20.9	71.7	266.5	98.1	-	118.0	25.5
31/08/00	07/09/00	-	23.2	11.9	425.9	33.7	8.8	15.1	43.2	3.6	< 1.0	19.1	-	63.0	9.6
07/09/00	14/09/00	-	34.2	27.3	287.7	47.8	10.9	16.6	58.5	2.2	< 1.0	28.4	-	48.0	15.6
14/09/00	21/09/00	-	17.2	11.5	148.6	22.1	5.0	5.8	25.7	28.0	29.0	14.6	-	32.0	35.2
21/09/00	28/09/00	-	22.9	18.0	23.2	28.9	7.3	4.8	33.2	1.2	< 1.0	19.4	-	16.0	21.2
28/09/00	05/10/00	-	25.6	5.8	13.2	117.7	26.8	8.7	137.5	3.3	< 1.0	11.4	-	24.0	21.7
05/10/00	12/10/00	-	16.7	4.6	10.4	43.0	9.8	4.2	52.7	1.0	< 1.0	11.5	-	12.0	46.4
12/10/00	19/10/00	-	35.3	< 0.7	269.1	56.2	19.7	26.1	76.9	43.3	12.3	28.5	-	49.0	29.4
19/10/00	26/10/00	-	32.3	9.7	74.6	157.1	39.2	25.7	185.0	12.3	< 1.0	13.4	-	44.0	25.7
26/10/00	02/11/00	-	19.7	2.5	16.6	69.7	15.2	6.7	78.0	1.5	< 1.0	11.3	-	16.0	24.1
02/11/00	09/11/00	-	33.8	15.8	12.6	115.0	26.3	6.0	138.8	2.3	< 1.0	20.0	-	33.0	69.4
09/11/00	16/11/00	-	-	-	-	-	-	-	-	-	-	-	-	-	12.7
16/11/00	23/11/00	-	39.1	14.1	40.8	89.7	18.7	7.2	101.0	4.6	< 1.0	28.3	-	25.0	16.3
23/11/00	01/12/00	-	34.3	1.3	36.4	135.7	28.2	9.5	164.5	17.3	< 1.0	17.9	-	32.0	38.3
01/12/00	07/12/00	-	18.6	5.2	9.7	93.4	20.3	6.1	110.3	2.1	< 1.0	7.3	-	20.0	20.5
07/12/00	14/12/00	-	14.4	10.3	9.0	19.0	4.6	2.3	22.3	0.5	< 1.0	12.1	-	11.0	53.2
14/12/00	21/12/00	-	25.5	13.3	27.7	38.4	8.6	3.0	44.6	1.0	< 1.0	20.9	-	15.0	21.1
21/12/00	04/01/01	-	60.0	17.6	56.9	144.5	32.0	8.7	179.3	3.3	< 1.0	42.6	-	36.0	26.0

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5149	-	33.5	13.4	38.6	90.1	20.5	11.0	106.1	3.5	-	22.6	-	26.3	900.4
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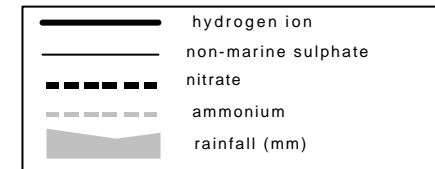
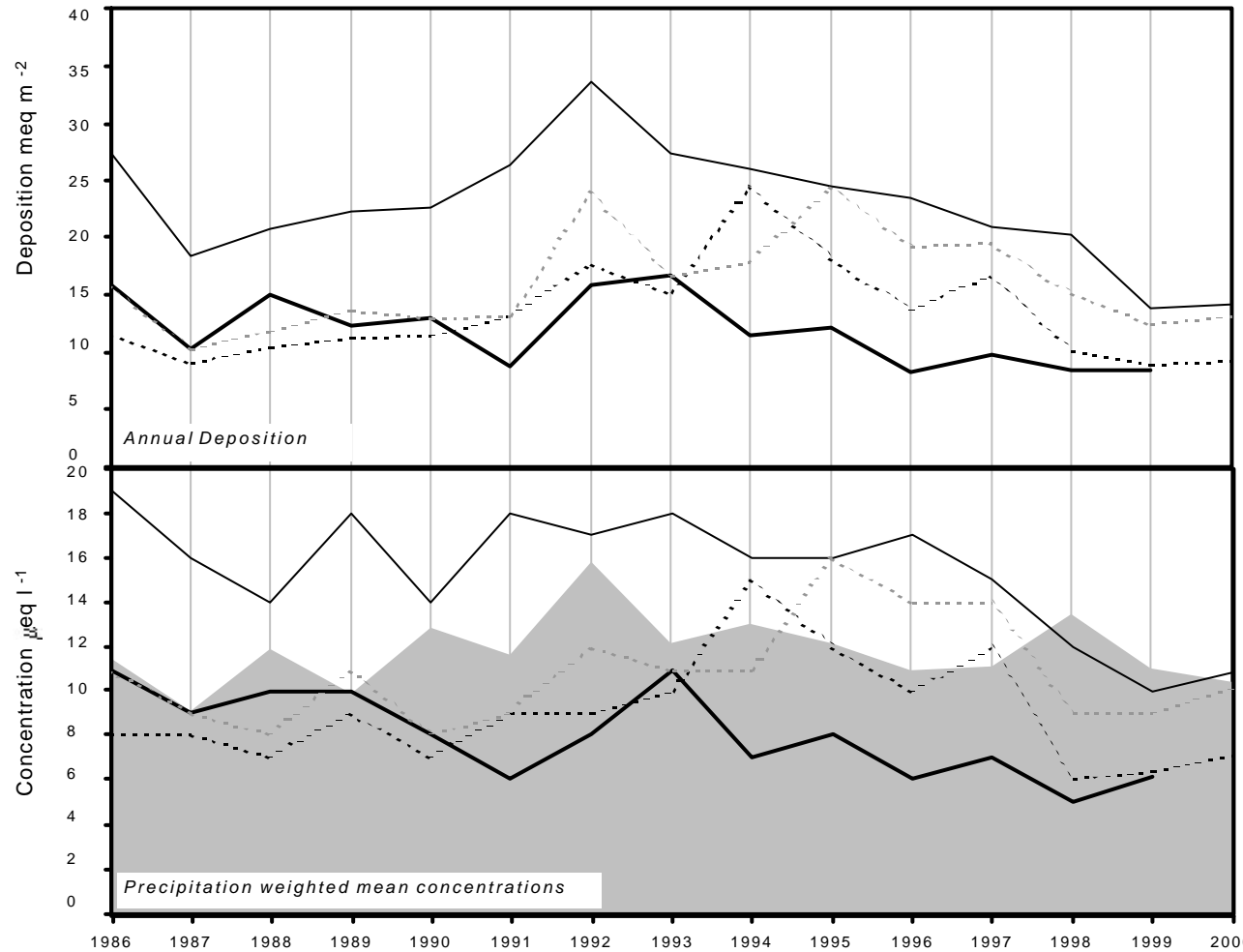
Lough Navar

2000 Site Code: **5006**
 Easting: **192**
 Northing: **5212**
 Latitude: **54 26 20 N**
 Longitude: **07 54 00 W**
 Altitude (m): **130**
 Rainfall (mm): **1412**
 [30 year mean 1940 - 1971]

Site Environment:
Clearing near Forestry Offices

Other measurements:
DT, Daily SO₂, Daily SO₄, ozone, EMEP

Site Operator:
Forestry Service NI



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-0.34 ueq/l (-3.37 %/year): 14 years' data ++ Moderately strong trend detected
<i>non-marine sulphate</i>	-0.40 ueq/l (-2.18 %/year): 15 years' data ++ Moderately strong trend detected
<i>nitrate</i>	0.04 ueq/l (0.51 %/year): 15 years' data - No significant trend detected
<i>ammonium</i>	0.15 ueq/l (1.53 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
03/01/00	10/01/00	-	39.9	2.3	< 0.7	267.4	58.5	13.6	320.9	8.0	< 1.0	7.7	-	49.0	50.9
10/01/00	17/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6
17/01/00	24/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
24/01/00	31/01/00	-	44.2	2.1	< 2.1	337.9	107.6	33.8	386.8	9.4	< 9.7	3.5	-	59.0	34.8
31/01/00	07/02/00	-	65.5	3.5	< 2.1	499.3	142.6	43.2	558.4	10.2	< 9.7	5.3	-	85.0	29.8
07/02/00	14/02/00	-	114.3	< 2.1	< 2.1	953.3	380.2	64.2	1122.2	19.2	< 9.7	< 0.6	-	156.0	54.7
14/02/00	21/02/00	-	42.8	< 0.7	< 0.7	324.9	71.3	14.8	385.2	7.1	< 1.0	3.7	-	57.0	49.2
21/02/00	28/02/00	-	15.2	1.9	2.3	84.9	18.5	5.4	99.3	1.9	< 1.0	5.0	-	18.0	52.7
28/02/00	06/03/00	-	28.5	1.6	2.0	133.2	30.7	13.2	164.1	3.2	< 1.0	12.5	-	27.0	49.0
06/03/00	13/03/00	-	14.9	4.3	3.3	35.1	8.4	5.9	41.7	1.3	< 1.0	10.7	-	11.0	40.7
13/03/00	20/03/00	-	37.8	10.7	< 0.7	84.0	20.3	24.4	102.7	3.3	< 1.0	27.7	-	28.0	8.8
20/03/00	27/03/00	-	46.1	52.1	86.9	110.4	45.2	39.9	129.0	5.8	< 9.7	32.8	-	32.0	6.7
27/03/00	03/04/00	-	48.5	52.5	68.7	9.0	2.1	8.9	16.1	2.0	< 1.0	47.4	-	26.0	30.0
03/04/00	10/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3
10/04/00	17/04/00	-	23.4	7.7	13.6	78.6	16.6	9.5	94.9	2.7	< 1.0	13.9	-	19.0	24.4
17/04/00	24/04/00	-	24.4	8.2	33.0	89.6	19.0	15.0	106.1	2.8	< 1.0	13.6	-	22.0	22.9
24/04/00	01/05/00	-	26.0	20.2	25.9	17.9	4.0	5.3	22.7	1.4	< 1.0	23.8	-	13.0	4.0
01/05/00	08/05/00	-	22.8	24.9	30.9	9.7	2.9	27.9	9.9	3.3	< 1.0	21.6	-	-	1.9
08/05/00	15/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15/05/00	22/05/00	-	28.2	3.8	4.5	171.3	37.1	22.8	195.1	3.8	< 1.0	7.6	-	33.0	40.4
22/05/00	29/05/00	-	15.6	3.9	7.7	53.2	11.5	7.5	62.5	1.8	< 1.0	9.2	-	13.0	31.1
29/05/00	05/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
05/06/00	12/06/00	-	25.9	5.5	13.1	95.6	21.4	13.6	113.5	2.7	< 1.0	14.4	-	22.0	22.9
12/06/00	19/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.7
19/06/00	26/06/00	-	34.4	9.3	20.2	87.9	21.4	70.3	101.6	2.5	< 1.0	23.8	-	27.0	7.3
26/06/00	03/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6
03/07/00	10/07/00	-	27.5	11.2	15.5	53.8	12.8	27.2	61.7	1.6	< 1.0	21.0	-	17.0	24.1
10/07/00	17/07/00	-	42.9	8.2	6.5	197.4	43.8	24.3	224.8	6.2	< 1.0	19.2	-	39.0	5.2
17/07/00	24/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/07/00	31/07/00	-	18.7	14.6	22.0	4.6	3.4	30.3	5.3	0.6	< 1.0	18.2	-	< 10.0	16.8
31/07/00	07/08/00	-	18.7	5.4	20.9	58.4	10.1	13.4	61.8	2.7	< 1.0	11.6	-	13.0	4.3
07/08/00	14/08/00	-	10.3	3.3	3.7	13.6	3.4	4.6	16.4	0.6	< 1.0	8.6	-	< 10.0	34.1
14/08/00	21/08/00	-	10.6	4.2	9.8	10.9	2.3	4.2	12.0	0.9	< 1.0	9.3	-	< 10.0	60.0
21/08/00	28/08/00	-	23.5	21.0	24.9	10.3	3.2	11.1	10.6	1.0	< 1.0	22.2	-	11.0	35.6
28/08/00	04/09/00	-	19.4	7.0	13.2	43.0	8.7	13.1	48.5	1.9	< 1.0	14.2	-	13.0	7.0
04/09/00	11/09/00	-	26.4	11.7	23.9	54.2	12.4	11.4	70.0	2.2	< 1.0	19.9	-	16.0	22.6
11/09/00	18/09/00	-	55.8	49.3	60.0	54.4	15.2	36.7	68.9	5.5	< 1.0	49.3	-	24.0	21.4
18/09/00	25/09/00	-	18.6	9.4	14.0	32.7	7.9	5.4	38.5	1.5	< 1.0	14.7	-	13.0	51.5
25/09/00	02/10/00	-	20.9	7.2	7.2	103.2	23.7	6.5	126.2	2.4	< 1.0	8.5	-	24.0	26.9
02/10/00	09/10/00	-	32.1	2.6	50.5	123.6	26.1	18.2	141.8	8.2	< 1.0	17.2	-	30.0	6.5
09/10/00	16/10/00	-	23.3	5.9	3.2	131.7	29.9	7.9	158.2	2.7	< 1.0	7.4	-	28.0	32.7
16/10/00	23/10/00	-	18.7	2.7	48.6	51.4	11.2	8.0	58.6	9.0	19.9	12.5	-	17.0	33.0
23/10/00	30/10/00	-	24.0	1.4	2.1	174.3	38.4	8.4	197.8	4.6	< 1.0	3.0	-	32.0	56.0
30/10/00	06/11/00	-	20.5	3.2	2.5	117.5	26.8	6.3	147.5	2.9	< 1.0	6.4	-	24.0	47.4
06/11/00	13/11/00	-	21.8	3.5	3.5	139.1	31.8	9.8	169.7	3.6	< 1.0	5.0	-	29.0	30.1
13/11/00	20/11/00	-	29.8	2.5	1.2	200.7	44.4	12.8	237.3	5.5	< 1.0	5.7	-	37.0	44.2
20/11/00	27/11/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27/11/00	04/12/00	-	16.1	4.1	8.4	60.0	13.2	5.5	70.5	1.6	< 1.0	8.8	-	15.0	45.9
04/12/00	11/12/00	-	10.3	7.0	4.1	30.0	6.3	3.8	35.9	1.2	< 1.0	6.7	-	10.0	56.0
11/12/00	18/12/00	-	16.6	3.7	7.8	77.6	17.7	5.8	93.9	2.0	< 1.0	7.3	-	18.0	30.5
18/12/00	25/12/00	-	-	-	-	-	-	-	-	-	-	-	-	-	3.9
25/12/00	01/01/01	-	9.7	4.9	13.3	20.9	3.8	2.1	21.3	1.4	< 1.0	7.2	-	< 10.0	33.2

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5006	-	29.1	7.1	10.1	151.7	42.9	14.7	178.6	4.0	-	10.9	-	30.5	1297.3
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Cow Green Reservoir

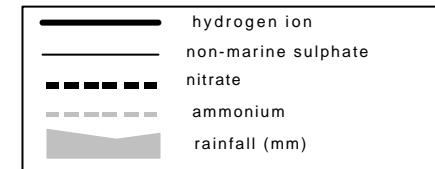
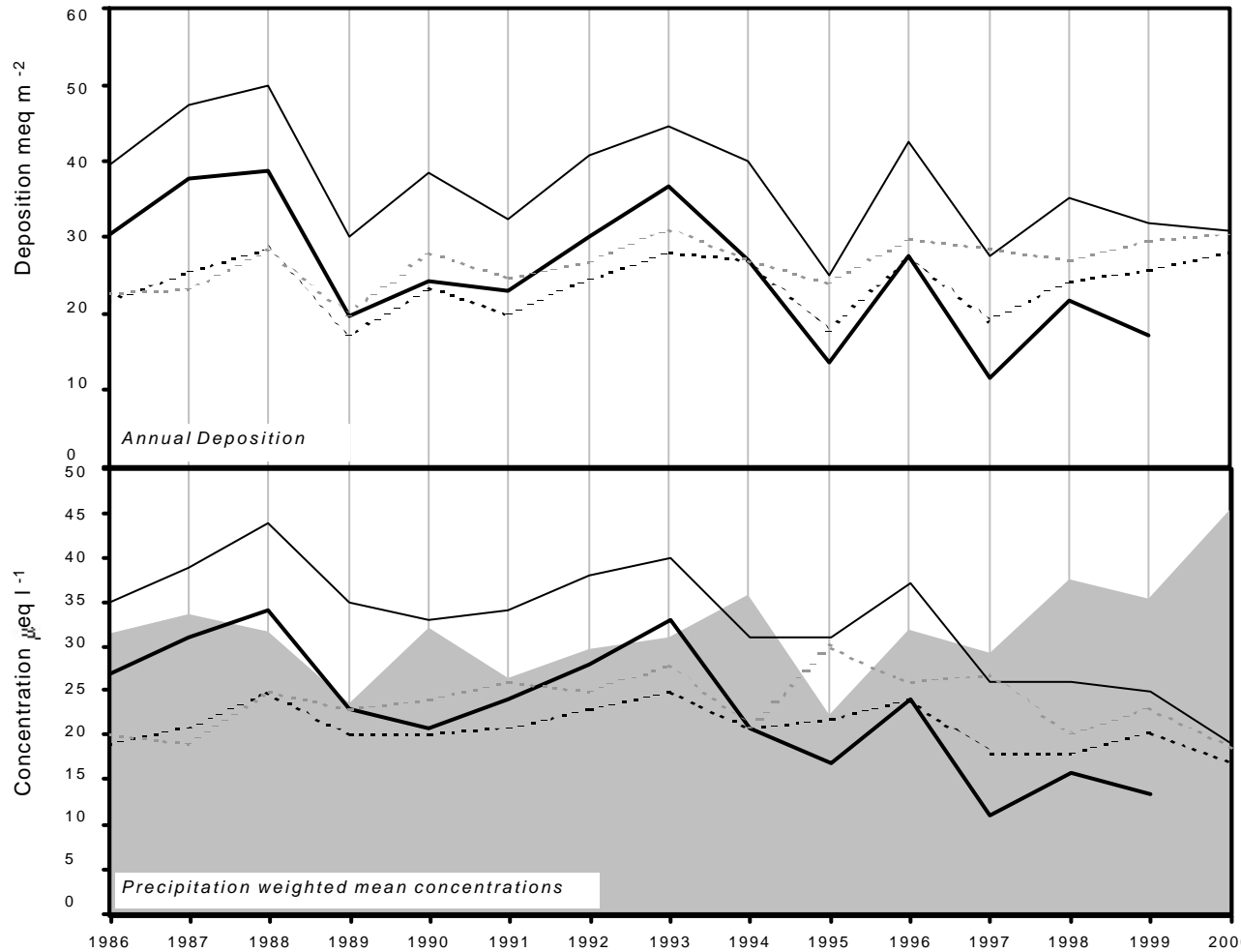
2000

Site Code: 5113
 Easting: 3817
 Northing: 5298
 Latitude: 54 39 46 N
 Longitude: 02 17 01 W
 Altitude (m): 510
 Rainfall (mm): 2175
 [30 year mean 1940 - 1971]

Site Environment:
Very open moorland

Other measurements:
DT, Met

Site Operator:
English Nature



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-1.24 ueq/l (-3.99 %/year): 14 years' data ++ Moderately strong trend detected
<i>non-marine sulphate</i>	-1.15 ueq/l (-2.82 %/year): 15 years' data ++ Moderately strong trend detected
<i>nitrate</i>	-0.17 ueq/l (-0.76 %/year): 15 years' data - No significant trend detected
<i>ammonium</i>	0.06 ueq/l (0.25 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
06/01/00	12/01/00	-	17.9	6.1	6.8	102.5	22.5	6.4	124.3	2.1	< 1.0	5.5	-	22.0	51.9
12/01/00	19/01/00	-	9.6	12.8	5.8	32.4	6.0	8.1	38.4	1.8	< 1.0	5.7	-	-	2.1
19/01/00	26/01/00	-	60.3	31.2	71.9	250.4	44.3	21.3	276.4	16.8	< 1.0	30.2	-	-	1.9
26/01/00	09/02/00	-	26.0	7.2	16.1	123.8	27.7	11.7	147.9	2.8	< 1.0	11.0	-	26.0	99.9
09/02/00	23/02/00	-	31.2	12.3	16.9	142.6	32.2	9.6	162.8	2.9	< 1.0	14.1	-	32.0	49.8
23/02/00	01/03/00	-	35.1	11.2	16.8	149.3	34.8	12.0	185.3	3.0	< 1.0	17.1	-	33.0	45.9
01/03/00	09/03/00	-	14.8	6.2	11.8	26.3	6.0	6.5	31.1	0.8	< 1.0	11.7	-	< 10.0	96.1
09/03/00	17/03/00	-	58.6	23.5	58.1	111.3	25.2	32.1	134.6	3.2	< 1.0	45.2	-	31.0	3.8
17/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
22/03/00	29/03/00	-	96.6	154.8	198.5	39.0	9.5	14.3	51.8	2.0	< 1.0	91.9	-	58.0	19.9
29/03/00	05/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0
05/04/00	12/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/04/00	20/04/00	-	39.3	39.2	35.0	34.6	8.1	9.8	37.2	1.4	< 1.0	35.1	-	27.0	49.6
20/04/00	27/04/00	-	28.3	16.3	17.1	19.9	4.8	5.1	22.7	0.7	< 1.0	26.0	-	18.0	58.2
27/04/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/05/00	17/05/00	-	72.4	48.0	37.8	39.6	13.6	35.7	29.4	2.3	< 1.0	67.6	-	28.0	13.3
17/05/00	24/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/05/00	31/05/00	-	18.9	13.7	15.0	24.7	5.8	5.9	28.8	0.6	< 1.0	15.9	-	13.0	58.3
31/05/00	28/06/00	-	27.7	17.3	16.3	35.3	9.1	11.5	38.0	2.2	< 1.0	23.5	-	17.0	98.9
28/06/00	05/07/00	-	115.5	78.4	66.0	65.4	18.3	33.2	65.7	8.5	< 1.0	107.6	-	51.0	7.2
05/07/00	14/07/00	-	35.9	19.4	18.0	12.2	3.0	5.9	13.5	< 0.5	< 1.0	34.4	-	19.0	30.2
14/07/00	19/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/07/00	02/08/00	-	20.8	20.5	31.3	10.2	2.9	6.4	12.1	0.6	< 1.0	19.6	-	10.0	47.9
02/08/00	09/08/00	-	36.7	34.7	43.2	31.3	7.4	13.3	31.7	1.2	< 1.0	33.0	-	17.0	4.3
09/08/00	16/08/00	-	20.0	20.0	22.8	17.3	4.3	6.8	21.1	0.9	< 1.0	17.9	-	12.0	16.7
16/08/00	23/08/00	-	43.8	38.8	24.1	26.8	6.2	7.0	35.1	0.9	< 1.0	40.6	-	33.0	12.5
23/08/00	30/08/00	-	38.8	41.0	48.2	14.1	6.1	34.1	13.2	1.4	< 1.0	37.1	-	15.0	16.4
30/08/00	06/09/00	-	22.0	22.6	26.0	20.7	4.9	4.8	22.4	0.8	< 1.0	19.5	-	14.0	38.7
06/09/00	13/09/00	-	28.1	14.6	17.6	32.9	8.1	7.2	39.5	1.0	< 1.0	24.2	-	17.0	24.7
13/09/00	20/09/00	-	20.6	31.1	31.9	6.4	1.8	3.2	6.8	< 0.5	< 1.0	19.8	-	15.0	69.2
20/09/00	27/09/00	-	31.3	29.1	26.1	14.6	3.3	6.0	16.5	0.7	< 1.0	29.6	-	19.0	47.9
27/09/00	04/10/00	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7
04/10/00	11/10/00	-	10.4	5.5	3.9	16.4	3.6	2.3	19.4	0.5	< 1.0	8.4	-	< 10.0	82.0
11/10/00	18/10/00	-	20.5	16.1	11.8	49.3	11.2	4.0	62.7	0.8	< 1.0	14.6	-	18.0	22.0
18/10/00	25/10/00	-	15.2	7.8	8.0	53.9	11.9	3.9	63.9	1.4	< 1.0	8.7	-	15.0	61.9
25/10/00	01/11/00	-	26.5	5.0	7.4	130.3	27.7	8.7	151.5	4.0	< 1.0	10.8	-	27.0	72.9
01/11/00	08/11/00	-	14.7	10.6	7.2	20.2	4.6	2.1	23.2	0.6	< 1.0	12.3	-	12.0	74.2
08/11/00	15/11/00	-	19.9	8.9	8.9	52.7	12.0	3.7	65.6	1.3	< 1.0	13.6	-	18.0	34.0
15/11/00	23/11/00	-	27.9	21.7	22.0	44.9	10.0	7.0	56.6	1.4	< 1.0	22.5	-	21.0	36.4
23/11/00	29/11/00	-	20.1	9.7	6.8	60.5	13.0	6.1	70.2	2.5	< 1.0	12.8	-	18.0	65.9
29/11/00	05/12/00	-	29.5	15.1	10.4	85.9	20.5	6.1	114.0	2.0	< 1.0	19.2	-	24.0	67.8
05/12/00	13/12/00	-	18.0	7.9	7.8	76.3	17.2	4.5	91.6	1.7	< 1.0	8.8	-	20.0	112.2
13/12/00	21/12/00	-	50.0	34.9	34.0	55.4	13.0	5.2	71.6	1.9	< 1.0	43.3	-	35.0	20.8
21/12/00	03/01/01	-	45.3	45.4	40.8	82.0	19.0	8.2	100.8	2.5	< 1.0	35.4	-	37.0	11.6

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5113	-	25.6	17.2	18.6	55.3	12.7	7.4	65.7	1.6	-	19.0	-	19.3	1633.2
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Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
12/01/00	26/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/01/00	09/02/00	-	29.4	8.8	13.1	91.1	21.2	17.1	105.5	2.3	< 1.0	18.4	-	22.0	258.5
09/02/00	23/02/00	-	39.7	18.7	19.0	172.0	39.5	8.5	201.5	3.6	< 1.0	19.0	-	42.0	74.8
23/02/00	09/03/00	-	26.9	8.6	15.0	69.6	16.4	7.7	81.9	1.9	< 1.0	18.5	-	19.0	159.8
09/03/00	22/03/00	-	67.9	23.9	67.6	80.6	19.1	21.3	92.5	2.8	< 1.0	58.2	-	29.0	26.9
22/03/00	05/04/00	-	60.7	78.3	78.6	57.9	14.7	16.0	59.9	2.0	< 1.0	53.7	-	38.0	17.6
05/04/00	19/04/00	-	46.8	47.3	50.9	41.6	9.6	7.5	42.9	1.5	< 1.0	41.8	-	29.0	38.0
19/04/00	04/05/00	-	34.4	25.0	21.7	39.4	9.4	6.6	47.6	1.0	< 1.0	29.6	-	25.0	55.7
04/05/00	17/05/00	-	32.1	29.2	28.4	29.1	7.6	18.3	31.2	1.7	< 1.0	28.6	-	19.0	25.2
17/05/00	31/05/00	-	19.2	10.9	6.4	35.9	7.9	5.1	43.3	0.8	< 1.0	14.8	-	16.0	96.1
31/05/00	14/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/06/00	28/06/00	-	40.1	11.3	18.4	91.8	20.5	8.0	107.5	2.7	< 1.0	29.1	-	27.0	46.0
28/06/00	12/07/00	-	37.1	21.0	136.2	11.0	6.8	3.1	16.0	15.5	24.4	35.7	-	26.0	124.0
12/07/00	26/07/00	-	162.0	20.8	479.9	79.5	37.9	14.9	83.9	77.6	333.2	152.4	-	94.0	11.4
26/07/00	10/08/00	-	31.1	10.0	240.9	21.8	8.2	3.6	29.0	21.4	41.6	28.5	-	39.0	158.0
10/08/00	23/08/00	-	17.3	10.8	11.6	11.9	2.6	3.0	13.0	1.3	< 1.0	15.9	-	11.0	124.6
23/08/00	06/09/00	-	20.7	16.7	19.3	18.9	4.5	5.8	21.1	1.2	< 1.0	18.5	-	12.0	126.6
06/09/00	20/09/00	-	21.1	12.3	14.7	32.9	6.9	3.2	38.8	0.8	< 1.0	17.1	-	14.0	90.4
20/09/00	04/10/00	-	22.2	10.8	13.1	31.2	7.2	3.6	37.9	0.8	< 1.0	18.4	-	15.0	191.7
04/10/00	18/10/00	-	21.0	8.5	6.3	79.7	18.1	3.8	94.9	1.5	< 1.0	11.4	-	21.0	215.3
18/10/00	31/10/00	-	23.7	5.8	8.0	117.8	25.7	6.2	132.8	3.1	< 1.0	9.5	-	25.0	186.1
31/10/00	16/11/00	-	22.0	9.8	10.1	73.8	16.5	4.0	88.2	1.6	< 1.0	13.2	-	21.0	213.4
16/11/00	29/11/00	-	18.2	9.0	8.6	68.5	16.9	4.5	84.8	1.6	< 1.0	10.0	-	20.0	161.1
29/11/00	12/12/00	-	25.7	10.2	11.3	100.9	23.6	5.3	124.6	2.3	< 1.0	13.5	-	25.0	221.0
12/12/00	27/12/00	-	34.7	20.6	16.5	83.1	18.8	5.5	105.3	2.2	< 1.0	24.7	-	29.0	37.9
27/12/00	10/01/01	-	25.8	13.1	18.1	68.9	15.4	3.7	82.4	2.4	< 1.0	17.5	-	22.0	67.4

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5159	-	25.5	12.1	14.0	70.5	16.2	6.7	83.4	1.8	-	17.1	-	21.0	2727.5
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Loch Dee

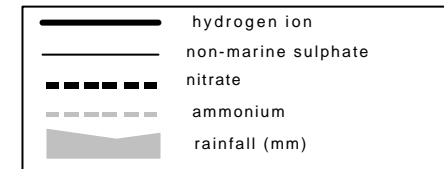
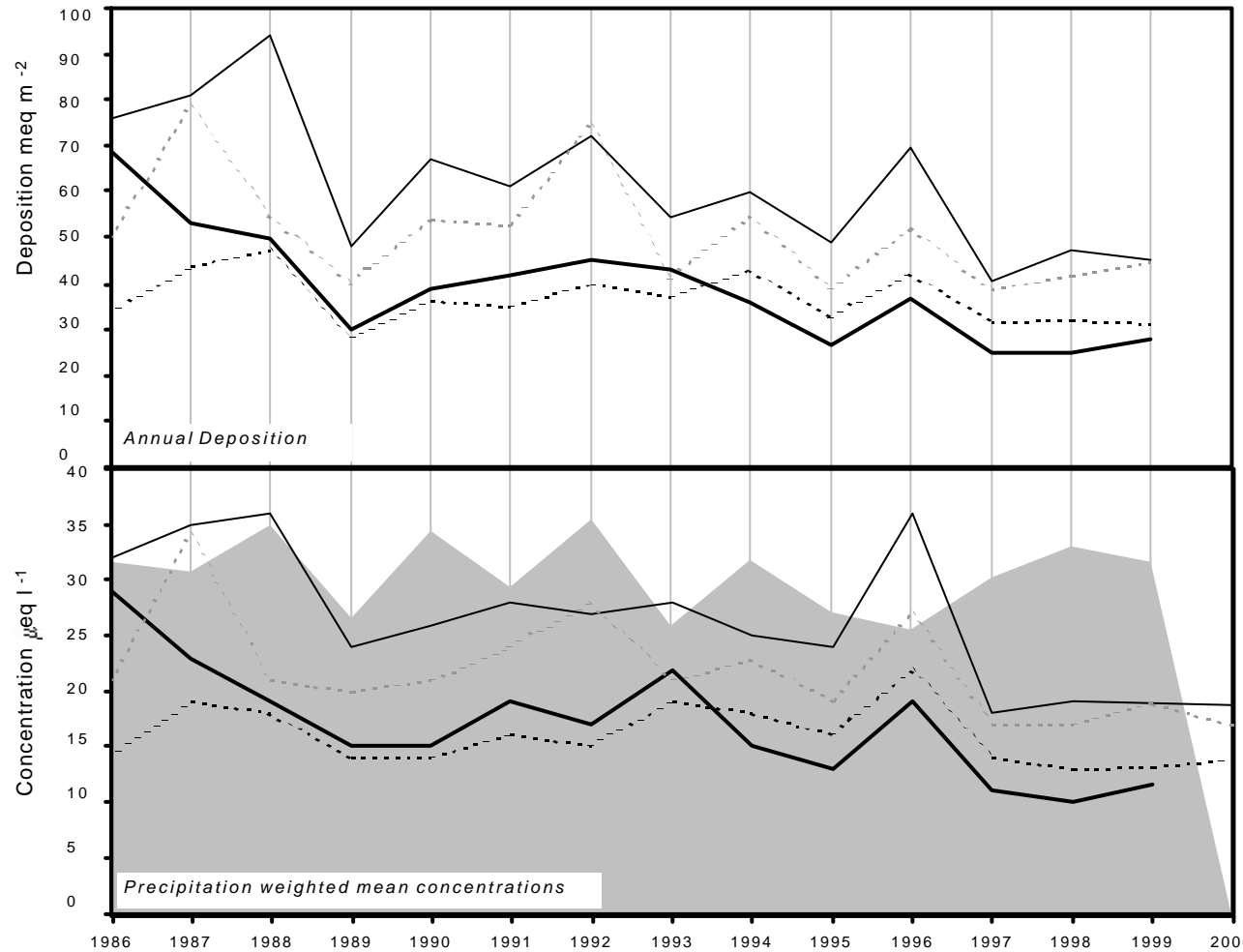
2000

Site Code: 5107
 Easting: 2468
 Northing: 5779
 Latitude: 55 04 19 N
 Longitude: 04 23 59 W
 Altitude (m): 230
 Rainfall (mm): 1949
 [30 year mean 1940 - 1971]

Site Environment:
Open moorland

Other measurements:
DT

Site Operator:
SEPA; West Region



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-0.95 ueq/l (-4.08 %/year): 14 years' data ++ Moderately strong trend detected
<i>non-marine sulphate</i>	-0.99 ueq/l (-2.98 %/year): 15 years' data ++ Moderately strong trend detected
<i>nitrate</i>	-0.12 ueq/l (-0.72 %/year): 15 years' data - No significant trend detected
<i>ammonium</i>	-0.53 ueq/l (-2.05 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	35.2	5.9	9.8	210.0	46.5	10.1	234.3	4.5	< 1.0	9.9	-	41.0	81.6
12/01/00	19/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4
19/01/00	28/01/00	-	46.1	9.2	25.1	87.1	67.2	23.5	114.0	2.1	< 9.7	35.6	-	27.0	3.6
28/01/00	03/02/00	-	34.8	5.6	17.7	165.0	36.1	8.0	188.8	3.7	< 1.0	14.9	-	34.0	103.6
03/02/00	09/02/00	-	65.4	7.7	3.8	423.4	138.5	65.2	500.9	8.6	< 9.7	14.4	-	77.0	73.2
09/02/00	17/02/00	-	50.7	4.1	< 2.1	340.0	107.0	24.1	405.3	6.4	< 9.7	9.7	-	63.0	68.3
17/02/00	02/03/00	-	45.0	15.2	36.2	127.7	28.5	10.0	148.4	3.3	< 1.0	29.6	-	31.0	32.9
02/03/00	07/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
07/03/00	22/03/00	-	22.1	5.8	12.2	47.9	10.9	7.0	56.0	1.3	< 1.0	16.3	-	15.0	97.3
22/03/00	28/03/00	-	53.5	96.6	111.2	17.9	< 4.1	10.3	24.3	1.5	< 9.7	51.4	-	36.0	22.4
28/03/00	06/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6
06/04/00	12/04/00	-	28.8	33.6	29.2	34.3	8.4	10.7	34.8	0.9	< 1.0	24.7	-	20.0	17.2
12/04/00	20/04/00	-	38.7	26.8	13.5	109.1	24.3	9.2	129.3	2.2	< 1.0	25.5	-	40.0	30.1
20/04/00	26/04/00	-	34.6	25.0	30.6	27.3	6.4	8.4	29.8	0.8	< 1.0	31.3	-	19.0	17.2
26/04/00	03/05/00	-	54.4	43.1	21.0	10.0	3.6	9.3	11.4	1.6	< 1.0	53.2	-	36.0	8.4
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/05/00	18/05/00	-	20.0	10.6	9.5	24.6	5.7	4.7	27.0	1.4	< 1.0	17.1	-	13.0	68.9
18/05/00	25/05/00	-	18.7	5.3	38.5	37.4	7.7	3.5	47.4	6.8	5.7	14.2	-	15.0	45.3
25/05/00	01/06/00	-	62.0	14.7	206.6	39.2	8.6	5.9	45.0	22.9	127.5	57.3	-	28.0	16.2
01/06/00	08/06/00	-	32.2	12.6	143.9	26.6	5.1	7.1	26.4	23.5	22.5	29.0	-	30.0	12.8
08/06/00	29/06/00	-	41.5	15.9	< 0.7	74.8	17.3	9.6	92.1	6.1	7.5	32.5	-	27.0	110.8
29/06/00	13/07/00	-	21.7	10.1	47.8	9.4	2.0	2.1	10.9	5.1	< 1.0	20.6	-	11.0	45.5
13/07/00	20/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/07/00	27/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
27/07/00	03/08/00	-	20.3	9.3	17.0	23.3	4.6	2.5	25.2	1.2	< 1.0	17.5	-	12.0	76.1
03/08/00	10/08/00	-	22.5	8.0	57.2	27.0	5.7	3.6	29.9	6.4	17.2	19.2	-	14.0	7.3
10/08/00	17/08/00	-	12.1	7.5	11.9	13.3	3.5	2.7	16.1	1.0	< 1.0	10.5	-	< 10.0	79.2

No samples were collected between August and December.

05/12/00	12/12/00	-	16.7	8.8	5.9	58.0	13.0	3.2	69.8	1.6	< 1.0	9.7	-	17.0	133.3
12/12/00	19/12/00	-	24.0	19.1	23.5	20.8	5.3	7.8	25.6	0.9	< 1.0	21.5	-	14.0	142.7
19/12/00	27/12/00	-	34.0	19.1	21.2	124.8	29.2	6.7	156.4	3.0	< 1.0	19.0	-	34.0	37.1
27/12/00	03/01/01	-	33.8	28.6	24.4	85.2	19.8	5.1	108.9	2.1	< 1.0	23.5	-	32.0	105.5

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5107	-	30.9	13.9	17.1	101.2	26.7	10.3	119.7	3.1	-	18.7	-	26.9	1437.5	Total Rainfall
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Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	3.6
12/01/00	25/01/00	-	38.5	5.7	13.1	246.7	53.7	11.1	295.7	4.6	< 1.0	8.8	-	43.0	32.6
25/01/00	08/02/00	-	56.5	4.7	14.7	378.6	81.7	22.0	450.4	7.1	< 1.0	10.9	-	66.0	51.2
08/02/00	21/02/00	-	53.2	3.8	5.6	378.3	85.0	16.4	457.5	7.2	< 1.0	7.7	-	67.0	70.7
21/02/00	07/03/00	-	24.6	3.5	10.7	117.6	26.1	6.6	140.3	1.8	< 1.0	10.5	-	25.0	87.5
07/03/00	21/03/00	-	40.7	7.7	27.4	163.4	35.6	15.2	190.6	3.4	< 1.0	21.0	-	36.0	41.8
21/03/00	04/04/00	-	80.8	72.3	82.8	90.5	20.9	8.5	103.4	1.8	< 1.0	69.9	-	56.0	43.4
04/04/00	18/04/00	-	30.7	21.2	25.9	82.9	18.0	9.1	89.2	2.9	< 1.0	20.7	-	24.0	29.7
18/04/00	02/05/00	-	33.8	17.1	10.0	48.7	10.2	3.8	55.0	3.0	< 1.0	27.9	-	26.0	76.0
02/05/00	16/05/00	-	58.6	58.6	60.2	88.9	21.0	30.6	78.6	6.8	< 1.0	47.9	-	34.0	5.1
16/05/00	30/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
30/05/00	13/06/00	-	33.6	13.1	70.8	57.1	11.6	6.0	59.5	3.6	7.6	26.7	-	23.0	43.8
13/06/00	27/06/00	-	71.8	< 0.7	< 0.7	333.9	196.1	289.1	415.7	7.0	< 1.0	31.6	-	103.0	177.9
27/06/00	10/07/00	-	21.4	8.8	20.7	42.7	9.3	4.1	45.8	1.4	< 1.0	16.2	-	12.0	37.2
10/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
26/07/00	08/08/00	-	18.1	8.6	33.5	24.9	5.1	4.0	25.0	3.2	< 1.0	15.1	-	10.0	43.8
08/08/00	22/08/00	-	11.6	6.2	20.5	8.5	2.0	2.7	10.3	< 0.5	< 1.0	10.5	-	< 10.0	64.5
22/08/00	05/09/00	-	23.5	18.9	25.0	13.7	4.0	11.3	15.0	1.0	< 1.0	21.8	-	10.0	36.0
05/09/00	19/09/00	-	26.6	20.8	31.6	47.1	10.4	5.1	54.8	1.5	< 1.0	20.9	-	18.0	48.3
19/09/00	03/10/00	-	26.1	14.7	11.6	84.7	19.0	6.0	100.1	2.0	< 1.0	15.9	-	26.0	97.3
03/10/00	17/10/00	-	23.0	7.0	5.9	130.8	28.8	6.6	153.3	3.1	< 1.0	7.3	-	28.0	94.6
17/10/00	31/10/00	-	16.7	3.0	6.9	88.6	19.4	4.8	102.8	2.3	< 1.0	6.0	-	18.0	106.2
31/10/00	14/11/00	-	30.6	6.9	5.6	191.8	43.9	8.9	223.7	4.2	< 1.0	7.5	-	39.0	125.4
14/11/00	28/11/00	-	31.6	10.5	8.7	202.6	40.3	8.3	218.2	3.9	< 1.0	7.2	-	39.0	115.7
28/11/00	12/12/00	-	21.3	10.0	8.1	71.1	16.7	4.1	85.2	1.7	5.6	12.7	-	20.0	128.1
12/12/00	22/12/00	-	26.7	11.3	6.1	133.6	30.7	6.9	159.9	2.8	< 1.0	10.6	-	31.0	55.0
22/12/00	09/01/01	-	26.4	8.7	11.5	135.4	30.7	6.7	163.0	2.9	< 1.0	10.1	-	29.0	78.5

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5155	-	34.3	10.2	14.6	150.5	46.0	37.3	178.2	3.4	-	16.2	-	37.5	1694.7
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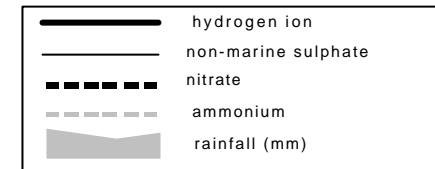
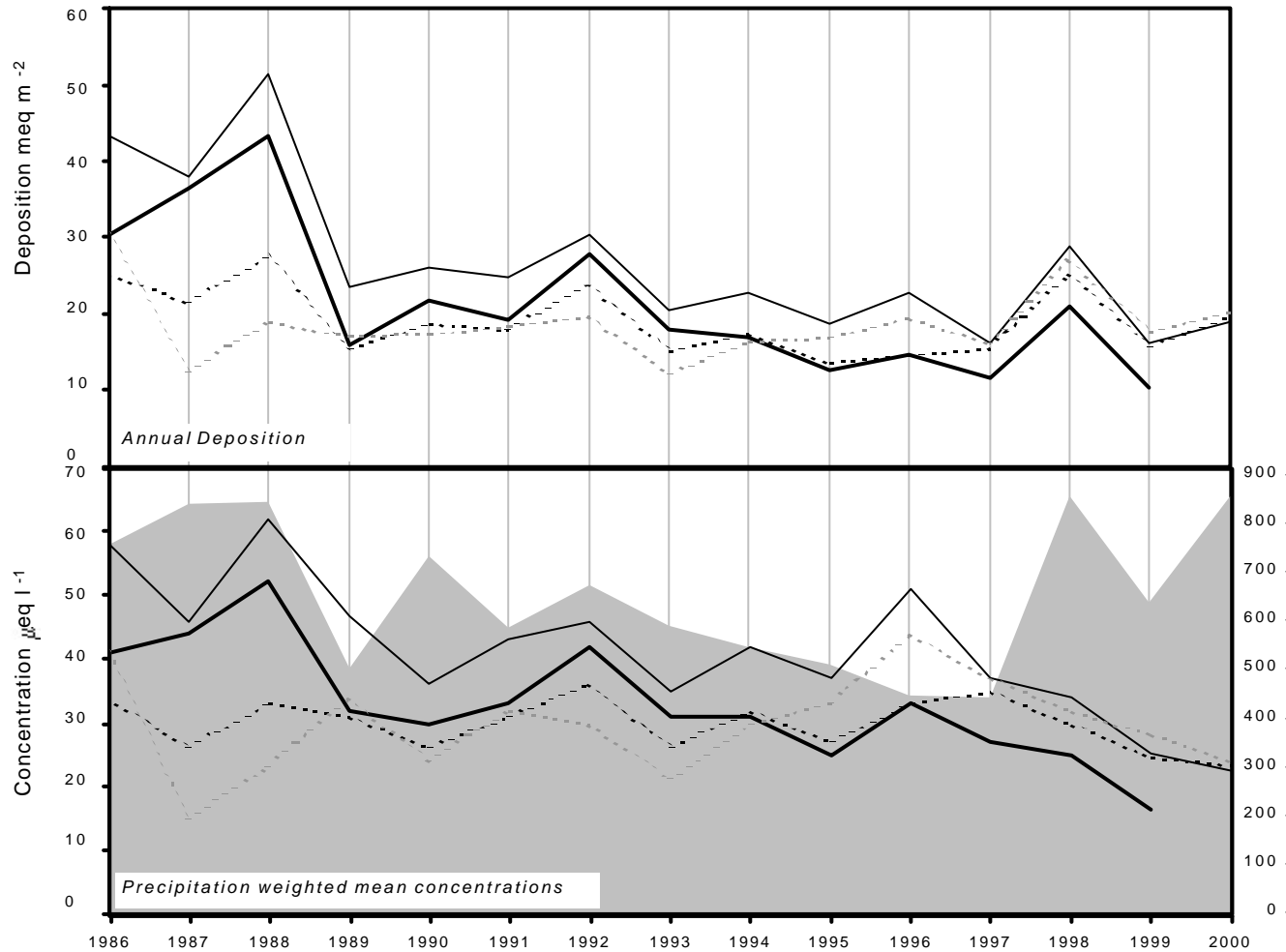
Redesdale

2000 Site Code: **5109**
 Easting: **3833**
 Northing: **5954**
 Latitude: **55 14 59 N**
 Longitude: **02 15 46 W**
 Altitude (m): **240**
 Rainfall (mm): **875**
 [30 year mean 1940 - 1971]

Site Environment:
Open moorland, very open sheep farming land

Other measurements:
DT

Site Operator:
ADAS Redesdale



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-1.74 ueq/l (-3.92 %/year): 14 years' data ++ Moderately strong trend detected
<i>non-marine sulphate</i>	-1.87 ueq/l (-3.43 %/year): 15 years' data ++ Moderately strong trend detected
<i>nitrate</i>	-0.26 ueq/l (-0.81 %/year): 15 years' data - No significant trend detected
<i>ammonium</i>	0.28 ueq/l (1.00 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	12/01/00	-	18.5	4.6	5.6	94.0	39.6	11.3	110.8	1.8	< 9.7	7.2	-	20.0	30.9
12/01/00	18/01/00	-	29.6	9.9	9.9	186.8	70.1	21.6	216.3	3.6	< 9.7	7.1	-	38.0	4.4
18/01/00	25/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
25/01/00	01/02/00	-	21.7	6.1	-	-	-	-	90.3	-	< 9.7	-	-	22.0	17.9
01/02/00	08/02/00	-	63.5	15.7	19.0	380.0	122.4	68.2	433.1	7.6	< 9.7	17.7	-	73.0	6.7
08/02/00	15/02/00	-	26.6	4.7	3.3	153.1	33.7	10.4	201.0	3.7	< 1.0	8.2	-	34.0	16.2
15/02/00	22/02/00	-	16.7	13.9	5.0	31.1	7.6	3.3	50.9	1.7	< 1.0	12.9	-	17.0	12.1
22/02/00	29/02/00	-	27.7	8.7	11.0	103.6	45.8	20.9	119.0	1.9	< 9.7	15.2	-	24.0	22.9
29/02/00	07/03/00	-	25.9	9.7	12.4	47.5	10.7	5.8	62.9	1.3	< 1.0	20.2	-	18.0	9.8
07/03/00	14/03/00	-	13.6	10.8	3.9	13.6	3.3	4.7	20.3	1.2	< 1.0	12.0	-	11.0	8.3
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/03/00	28/03/00	-	112.9	185.8	281.6	73.8	23.9	41.3	83.5	3.2	< 9.7	104.0	-	58.0	6.3
28/03/00	04/04/00	-	109.4	129.2	125.8	90.4	20.8	15.9	110.9	3.1	< 1.0	98.5	-	70.0	7.6
04/04/00	11/04/00	-	141.7	155.1	172.9	322.3	73.9	49.6	347.5	8.7	< 1.0	102.9	-	-	1.6
11/04/00	18/04/00	-	52.5	52.7	53.9	81.3	18.9	6.2	100.3	2.0	< 1.0	42.7	-	42.0	40.8
18/04/00	25/04/00	-	41.4	46.2	38.8	27.0	7.0	9.7	30.9	1.0	< 1.0	38.2	-	29.0	25.7
25/04/00	02/05/00	-	29.0	32.1	17.6	3.3	1.3	3.9	4.3	0.6	< 1.0	28.6	-	23.0	9.6
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16/05/00	23/05/00	-	40.0	32.4	38.1	23.7	6.2	9.8	22.2	1.5	< 1.0	37.2	-	18.0	7.4
23/05/00	30/05/00	-	21.8	22.7	29.7	22.2	4.8	3.8	26.5	0.6	< 1.0	19.1	-	14.0	26.4
30/05/00	06/06/00	-	17.6	13.1	13.6	24.1	5.3	3.4	27.9	0.6	< 1.0	14.7	-	13.0	38.7
06/06/00	13/06/00	-	42.5	37.4	53.7	43.2	10.5	12.3	46.7	1.6	< 1.0	37.3	-	18.0	11.5
13/06/00	20/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/06/00	27/06/00	-	26.0	20.4	28.7	22.9	5.8	13.1	26.3	0.9	< 1.0	23.3	-	12.0	8.6
27/06/00	04/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4
04/07/00	11/07/00	-	17.0	11.1	10.7	7.8	2.1	2.2	8.5	0.8	< 1.0	16.1	-	11.0	45.9
11/07/00	18/07/00	-	74.1	23.2	39.9	57.3	14.8	19.6	65.1	2.6	< 1.0	67.2	-	32.0	3.2
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25/07/00	01/08/00	-	23.6	27.2	47.2	4.8	1.6	4.1	4.6	0.9	< 1.0	23.0	-	10.0	19.3
01/08/00	08/08/00	-	24.0	18.3	17.7	8.8	2.3	3.6	10.6	1.6	< 1.0	23.0	-	15.0	11.4
08/08/00	15/08/00	-	12.3	11.9	26.9	3.1	1.0	2.8	3.2	1.6	< 1.0	11.9	-	< 10.0	10.8
15/08/00	22/08/00	-	28.1	27.0	17.3	8.6	2.4	4.3	11.3	0.8	< 1.0	27.0	-	21.0	52.1
22/08/00	29/08/00	-	61.5	53.4	69.4	15.6	7.9	46.3	14.7	2.0	< 1.0	59.6	-	22.0	11.2
29/08/00	05/09/00	-	46.5	54.3	58.1	42.1	10.0	9.5	47.9	2.3	< 1.0	41.5	-	28.0	8.8
05/09/00	12/09/00	-	44.3	30.4	35.2	21.2	5.2	4.1	28.0	0.8	< 1.0	41.7	-	25.0	27.3
12/09/00	19/09/00	-	16.7	15.1	18.3	13.0	3.0	5.0	13.1	2.2	< 1.0	15.1	-	< 10.0	8.6
19/09/00	26/09/00	-	32.3	37.2	30.6	22.7	6.2	5.6	26.0	1.1	< 1.0	29.5	-	29.0	47.4
26/09/00	03/10/00	-	19.2	10.8	2.1	12.1	3.7	6.1	12.7	< 0.5	< 1.0	17.8	-	13.0	16.3
03/10/00	10/10/00	-	14.2	7.7	6.7	12.6	3.0	2.3	14.5	< 0.5	< 1.0	12.7	-	10.0	32.9
10/10/00	18/10/00	-	16.0	17.8	12.4	31.2	6.8	2.5	38.0	0.8	< 1.0	12.3	-	15.0	17.6
18/10/00	24/10/00	-	37.0	24.4	38.0	114.2	24.8	9.5	137.6	2.3	< 1.0	23.3	-	28.0	3.1
24/10/00	31/10/00	-	29.6	5.2	8.8	163.6	36.3	7.8	196.0	3.4	< 1.0	9.9	-	34.0	31.0
31/10/00	07/11/00	-	20.8	17.6	10.9	69.6	15.9	7.0	80.7	1.8	< 1.0	12.4	-	22.0	69.3
07/11/00	14/11/00	-	18.3	9.8	11.1	41.4	9.5	2.9	50.4	1.0	< 1.0	13.3	-	15.0	28.6
14/11/00	21/11/00	-	13.4	13.7	14.1	24.3	5.3	5.3	30.3	1.1	< 1.0	10.4	-	< 10.0	7.7
21/11/00	28/11/00	-	33.5	33.1	21.5	72.6	16.2	5.8	95.7	1.9	< 1.0	24.7	-	32.0	18.6
28/11/00	05/12/00	-	16.2	8.2	9.1	47.7	10.7	5.5	61.3	1.3	< 1.0	10.4	-	14.0	29.7
05/12/00	12/12/00	-	23.2	21.2	15.5	55.9	13.0	4.1	66.3	1.6	< 1.0	16.4	-	21.0	23.4
12/12/00	19/12/00	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2
19/12/00	27/12/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
27/12/00	02/01/01	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5109	-	28.4	23.4	23.9	49.5	13.3	7.6	60.0	1.5	-	22.6	-	21.9	842.3
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Eskdalemuir

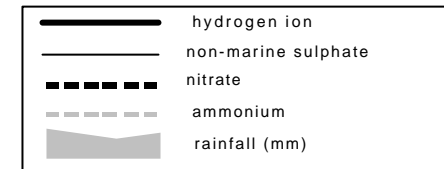
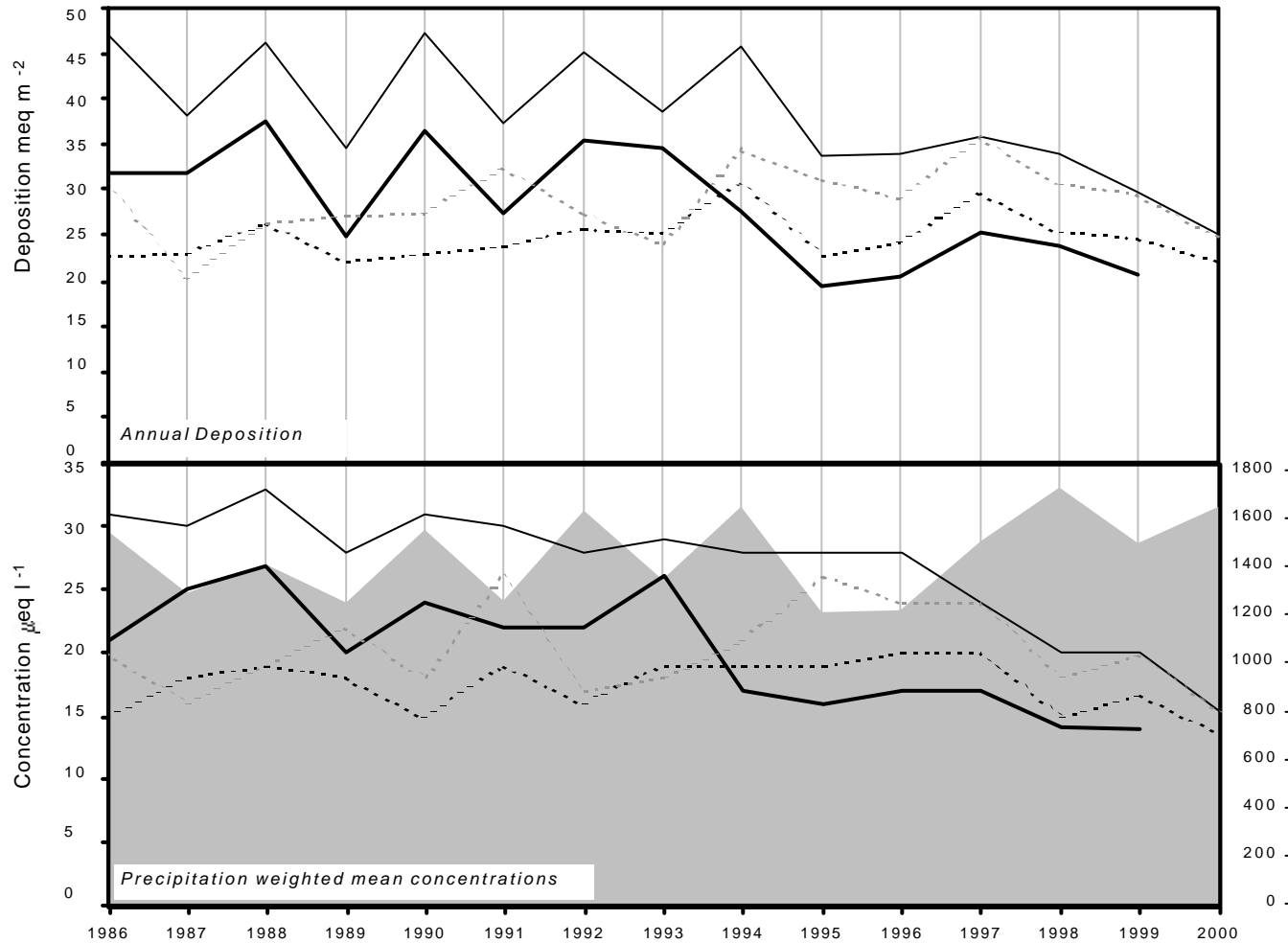
2000

Site Code: 5002
 Easting: 3235
 Northing: 6030
 Latitude: 55 18 54 N
 Longitude: 03 12 20 W
 Altitude (m): 259
 Rainfall (mm): 1745
 [30 year mean 1940 - 1971]

Site Environment:
 Open moorland, Met Office Observatory

Other measurements:
 WOC, DT, Daily SO₂, Daily SO₄, TIN, TIA, WF, ozone,
 Met, EMEP

Site Operator:
 Meteorological Office



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-0.82 ueq/l (-3.23 %/year): 14 years' data ++ Moderately strong trend detected
non-marine sulphate	-0.94 ueq/l (-2.81 %/year): 15 years' data +++ Strong trend detected
nitrate	-0.04 ueq/l (-0.24 %/year): 15 years' data - No significant trend detected
ammonium	0.05 ueq/l (0.27 %/year): 15 years' data - No significant trend detected

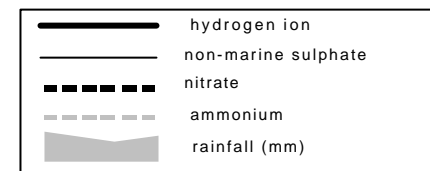
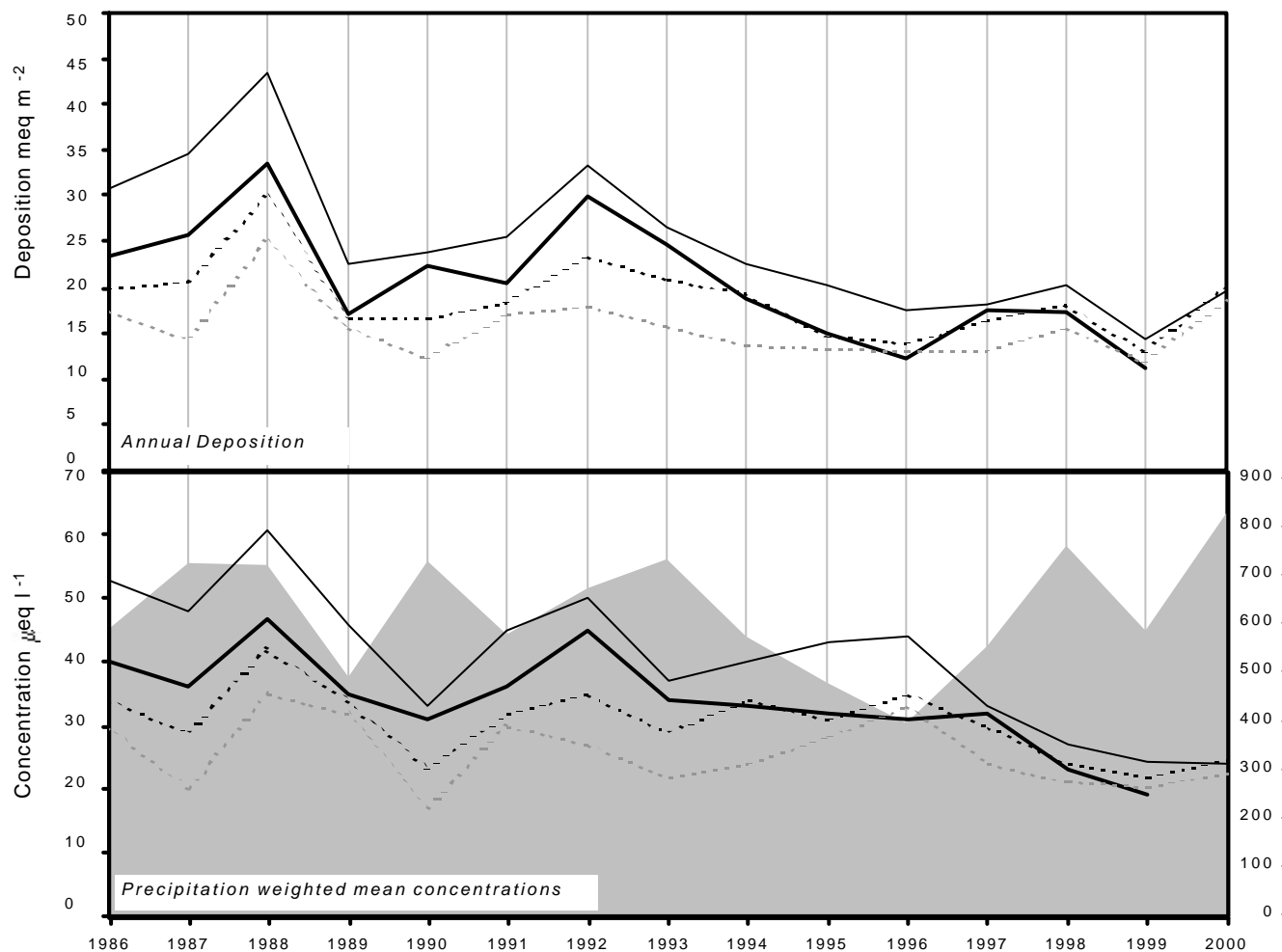
ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	12/01/00	-	30.4	5.4	4.8	160.1	36.4	7.9	190.0	3.2	< 1.0	11.2	-	34.0	48.3
12/01/00	19/01/00	-	62.0	31.8	54.5	240.6	76.4	47.8	273.3	6.1	< 9.7	33.0	-	-	1.3
19/01/00	26/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
26/01/00	02/02/00	-	25.1	6.6	19.3	85.7	19.0	4.5	102.5	1.8	< 1.0	14.7	-	21.0	69.9
02/02/00	09/02/00	-	57.7	9.3	11.0	339.5	112.3	41.6	403.0	6.8	< 9.7	16.8	-	64.0	33.1
09/02/00	16/02/00	-	28.0	3.8	6.6	191.2	80.5	28.2	217.4	6.7	< 9.7	4.9	-	36.0	49.8
16/02/00	23/02/00	-	32.3	28.3	30.1	49.9	11.5	4.4	59.5	1.8	< 1.0	26.3	-	24.0	27.5
23/02/00	01/03/00	-	18.7	7.0	7.8	58.2	12.8	4.9	67.1	1.4	< 1.0	11.7	-	17.0	56.1
01/03/00	08/03/00	-	20.6	8.0	16.9	43.9	9.8	4.1	50.3	1.0	< 1.0	15.3	-	14.0	56.3
08/03/00	15/03/00	-	20.8	8.8	10.9	51.6	11.6	8.1	61.6	1.4	< 1.0	14.5	-	15.0	18.7
15/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
22/03/00	29/03/00	-	47.0	87.2	80.5	29.4	7.9	11.1	34.6	< 1.3	< 9.7	43.4	-	33.0	2.4
29/03/00	05/04/00	-	97.9	117.6	91.3	100.7	23.8	15.7	117.7	2.7	< 9.7	85.8	-	75.0	5.5
05/04/00	12/04/00	-	59.7	58.7	117.8	81.0	16.7	7.5	87.9	11.3	27.5	50.0	-	34.0	20.4
12/04/00	19/04/00	-	51.3	21.3	407.4	57.3	19.9	5.5	63.0	26.7	57.3	44.4	-	65.0	12.6
19/04/00	26/04/00	-	38.5	29.2	33.3	54.4	11.9	7.3	61.7	5.3	11.2	31.9	-	26.0	43.6
26/04/00	03/05/00	-	26.6	15.9	< 2.1	4.3	< 4.1	4.5	7.1	4.2	25.9	26.1	-	19.0	6.9
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/05/00	17/05/00	-	30.7	15.2	172.5	25.4	6.9	4.4	20.7	13.7	58.8	27.6	-	36.0	27.2
17/05/00	24/05/00	-	25.6	18.7	26.9	18.1	4.4	4.9	21.9	< 1.3	< 9.7	23.4	-	14.0	17.3
24/05/00	31/05/00	-	20.4	19.4	20.6	22.6	4.5	3.7	22.2	< 1.3	< 9.7	17.7	-	12.0	15.3
31/05/00	07/06/00	-	31.5	22.0	43.0	30.9	7.6	4.1	31.1	8.7	19.1	27.8	-	17.0	26.6
07/06/00	14/06/00	-	40.1	24.5	30.5	32.6	7.3	4.4	35.3	< 1.3	< 9.7	36.2	-	21.0	38.6
14/06/00	21/06/00	-	58.8	37.6	15.8	18.7	4.7	8.5	45.0	< 1.3	< 9.7	56.5	-	28.0	8.1
21/06/00	28/06/00	-	22.8	7.5	6.2	54.2	10.8	3.5	59.8	< 1.3	< 9.7	16.3	-	19.0	18.4
28/06/00	05/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.4
05/07/00	12/07/00	-	32.3	21.1	23.7	4.4	< 4.1	3.2	11.2	< 1.3	< 9.7	31.8	-	18.0	33.5
12/07/00	19/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/07/00	02/08/00	-	16.3	12.7	15.7	17.5	4.0	2.7	20.8	0.9	< 1.0	14.2	-	10.0	44.0
02/08/00	09/08/00	-	9.9	7.4	5.4	12.3	3.5	2.2	14.3	1.0	< 1.0	8.4	-	< 10.0	24.1
09/08/00	16/08/00	-	10.4	9.3	10.5	6.4	1.6	1.7	6.7	0.8	< 1.0	9.6	-	< 10.0	42.3
16/08/00	23/08/00	-	17.5	15.1	14.3	9.8	2.3	2.2	11.3	0.7	< 1.0	16.4	-	12.0	25.3
23/08/00	30/08/00	-	57.0	69.5	80.5	14.0	6.6	38.2	15.1	2.0	< 1.0	55.3	-	23.0	15.6
30/08/00	06/09/00	-	24.9	22.2	19.6	20.4	4.7	3.2	25.1	0.7	< 1.0	22.5	-	17.0	58.6
06/09/00	13/09/00	-	30.0	23.6	32.6	16.1	3.9	3.1	19.6	0.8	< 1.0	28.0	-	17.0	47.2
13/09/00	20/09/00	-	20.3	23.5	22.9	16.4	4.9	3.1	18.8	0.6	< 1.0	18.3	-	16.0	45.7
20/09/00	27/09/00	-	25.2	24.2	15.8	15.7	4.0	3.7	18.2	0.7	< 1.0	23.3	-	21.0	44.1
27/09/00	04/10/00	-	21.9	13.2	24.6	47.2	10.5	4.6	56.0	1.5	< 1.0	16.2	-	15.0	27.0
04/10/00	11/10/00	-	13.5	9.1	4.9	30.7	7.4	2.4	35.5	0.7	< 1.0	9.8	-	13.0	49.2
11/10/00	18/10/00	-	17.4	11.3	14.0	48.3	9.0	3.5	59.0	3.2	< 1.0	11.6	-	14.0	26.5
18/10/00	25/10/00	-	10.5	4.9	8.5	31.1	6.4	1.5	36.5	0.7	< 1.0	6.7	-	< 10.0	95.0
25/10/00	01/11/00	-	19.0	5.0	8.2	106.1	23.4	5.4	125.9	2.4	< 1.0	6.2	-	21.0	37.0
01/11/00	08/11/00	-	15.1	12.3	7.1	32.5	7.7	1.9	39.6	0.9	< 1.0	11.2	-	15.0	47.3
08/11/00	15/11/00	-	18.9	9.9	13.7	68.3	15.3	3.7	83.1	1.4	< 1.0	10.6	-	18.0	49.6
15/11/00	22/11/00	-	24.7	18.1	16.7	49.4	11.3	5.6	58.7	2.4	< 1.0	18.8	-	20.0	8.6
22/11/00	29/11/00	-	21.2	15.1	11.8	54.8	11.8	5.4	69.2	2.2	< 1.0	14.6	-	18.0	69.1
29/11/00	06/12/00	-	18.9	8.7	10.0	101.7	23.7	5.3	127.3	2.2	< 1.0	6.6	-	25.0	107.3
06/12/00	13/12/00	-	13.7	8.4	7.2	51.3	11.3	3.1	60.1	1.1	< 1.0	7.5	-	15.0	91.6
13/12/00	20/12/00	-	36.5	33.3	20.0	43.4	10.2	3.6	52.2	1.6	< 1.0	31.3	-	29.0	9.4
20/12/00	27/12/00	-	44.1	29.0	26.3	199.4	46.6	12.8	238.1	5.0	< 1.0	20.1	-	43.0	2.8
27/12/00	03/01/01	-	31.2	19.7	25.9	104.8	23.9	5.9	123.9	3.0	< 1.0	18.5	-	28.0	21.9
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5002	-	22.7	13.6	15.2	61.0	15.9	6.0	72.7	1.7	-	15.4	-	19.0	1628.1	

Whiteadder

2000 Site Code: **5106**
 Easting: **3664**
 Northing: **6633**
 Latitude: **55 51 42 N**
 Longitude: **03 32 13 W**
 Altitude (m): **250**
 Rainfall (mm): **1050**
 [30 year mean 1940 - 1971]

Site Environment:
Open moorland
 Other measurements:
DT
 Site Operator:
East of Scotland Water



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-1.30 ueq/l (-3.07 %/year): 14 years' data ++ Moderately strong trend detected
<i>non-marine sulphate</i>	-1.96 ueq/l (-3.61 %/year): 15 years' data +++ Strong trend detected
<i>nitrate</i>	-0.64 ueq/l (-1.84 %/year): 15 years' data + Significant trend detected
<i>ammonium</i>	-0.40 ueq/l (-1.39 %/year): 15 years' data - No significant trend detected

Rainfall (mm)

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	12/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.0
12/01/00	19/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5
19/01/00	25/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
25/01/00	01/02/00	-	28.8	6.2	7.0	183.5	41.8	10.2	218.4	4.4	< 1.0	6.7	-	36.0	16.1
01/02/00	08/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
08/02/00	16/02/00	-	57.1	4.7	4.5	415.5	139.2	41.9	493.0	8.2	< 9.7	7.0	-	73.0	14.0
16/02/00	22/02/00	-	14.3	10.8	2.0	37.2	8.0	8.5	43.5	1.4	< 1.0	9.8	-	15.0	7.0
22/02/00	29/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7
29/02/00	07/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
07/03/00	14/03/00	-	23.0	14.1	3.4	50.4	12.6	11.3	58.4	2.0	< 1.0	16.9	-	20.0	8.5
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/03/00	28/03/00	-	97.7	129.5	131.7	70.9	18.2	14.8	87.0	3.4	< 1.0	89.1	-	68.0	22.4
28/03/00	04/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
04/04/00	11/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
11/04/00	18/04/00	-	95.0	70.7	76.1	275.2	60.4	20.8	321.8	6.7	< 1.0	61.9	-	69.0	23.3
18/04/00	25/04/00	-	34.8	29.6	34.6	40.1	9.3	6.0	48.3	1.3	< 1.0	30.0	-	23.0	31.0
25/04/00	02/05/00	-	23.9	18.7	10.0	26.1	6.5	5.5	32.1	0.9	< 1.0	20.8	-	19.0	29.0
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16/05/00	23/05/00	-	48.4	25.2	26.8	21.1	5.8	9.3	22.0	1.4	< 1.0	45.9	-	21.0	12.0
23/05/00	30/05/00	-	9.7	6.6	3.8	9.5	2.5	2.0	11.2	0.5	< 1.0	8.6	-	13.0	33.9
30/05/00	06/06/00	-	21.0	14.8	13.9	65.4	10.2	7.8	64.5	7.3	< 1.0	13.1	-	15.0	14.0
06/06/00	13/06/00	-	75.7	52.0	53.8	29.0	6.5	10.6	29.3	3.7	< 1.0	72.2	-	41.0	22.4
13/06/00	20/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20/06/00	27/06/00	-	52.3	33.4	50.5	47.2	11.6	20.1	51.0	3.5	< 1.0	46.6	-	22.0	3.8
27/06/00	04/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.6
04/07/00	11/07/00	-	32.8	16.3	8.5	20.9	4.3	4.5	23.0	1.5	< 1.0	30.3	-	22.0	17.8
11/07/00	18/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25/07/00	01/08/00	-	38.6	21.5	37.4	9.9	2.3	4.5	8.3	2.1	< 1.0	37.4	-	15.0	25.4
01/08/00	08/08/00	-	17.9	23.2	18.8	6.9	2.0	4.6	9.2	0.5	< 1.0	17.1	-	14.0	26.7
08/08/00	15/08/00	-	12.6	8.8	10.9	2.1	1.0	2.7	1.8	0.6	< 1.0	12.3	-	< 10.0	39.3
15/08/00	22/08/00	-	22.9	17.5	20.5	17.0	3.3	4.3	18.1	2.9	< 1.0	20.9	-	11.0	31.4
22/08/00	29/08/00	-	25.3	16.8	15.8	9.2	2.8	13.3	8.6	1.3	< 1.0	24.2	-	11.0	27.9
29/08/00	05/09/00	-	47.8	64.0	46.5	96.2	21.2	11.4	113.3	6.2	< 1.0	36.2	-	40.0	18.0
05/09/00	12/09/00	-	26.9	14.1	19.4	26.6	5.6	7.0	28.4	3.0	< 1.0	23.6	-	14.0	29.0
12/09/00	19/09/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6
19/09/00	26/09/00	-	38.5	48.5	37.3	49.0	11.5	7.9	57.6	2.1	< 1.0	32.6	-	31.0	31.1
26/09/00	03/10/00	-	24.8	22.6	24.6	47.2	10.5	4.6	47.2	1.5	< 1.0	19.1	-	15.0	17.2
03/10/00	10/10/00	-	24.6	11.1	11.6	36.9	8.4	4.6	44.7	1.8	< 1.0	20.2	-	16.0	27.9
10/10/00	18/10/00	-	23.4	17.7	9.1	81.9	17.5	7.2	96.9	3.8	< 1.0	13.5	-	23.0	23.0
18/10/00	22/10/00	-	24.5	15.0	24.7	68.1	13.5	7.8	76.0	3.6	< 1.0	16.3	-	17.0	6.9
22/10/00	07/11/00	-	45.6	15.1	10.9	266.4	59.2	11.9	333.5	5.9	< 1.0	13.5	-	54.0	109.5
07/11/00	14/11/00	-	29.4	12.5	9.2	127.1	28.8	6.3	152.6	2.6	< 1.0	14.1	-	31.0	54.7
14/11/00	21/11/00	-	30.4	32.9	12.6	88.8	19.7	6.8	103.7	3.0	< 1.0	19.7	-	33.0	18.3
21/11/00	28/11/00	-	18.0	18.4	12.3	44.2	10.1	5.0	51.3	1.3	< 1.0	12.7	-	17.0	11.0
28/11/00	05/12/00	-	38.9	18.7	22.7	179.5	39.1	12.4	214.2	6.4	< 1.0	17.3	-	38.0	17.5
05/12/00	12/12/00	-	19.6	16.1	10.8	41.9	9.3	3.5	44.7	1.5	< 1.0	14.6	-	18.0	25.4
12/12/00	19/12/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9
19/12/00	27/12/00	-	47.3	61.4	36.7	92.8	19.8	11.6	104.4	8.3	< 1.0	36.1	-	36.0	5.2
27/12/00	04/01/01	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5106		-	35.3	24.6	22.6	93.2	21.7	8.6	111.7	3.1	-	24.0	-	29.1	816.8

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	19/01/00	-	23.1	4.2	4.6	136.6	30.2	6.2	152.3	2.6	< 1.0	6.7	-	28.0	84.1
19/01/00	01/02/00	-	17.9	2.1	< 0.7	137.3	30.2	5.8	160.7	2.7	< 1.0	1.3	-	26.0	117.8
01/02/00	16/02/00	-	50.7	4.8	1.3	359.4	82.2	19.3	418.8	7.6	< 1.0	7.4	-	64.0	39.1
16/02/00	01/03/00	-	23.3	8.5	5.6	129.5	28.8	7.1	147.1	2.7	< 1.0	7.7	-	29.0	116.8
01/03/00	15/03/00	-	13.6	4.4	< 0.7	47.4	11.0	6.2	57.4	1.2	< 1.0	7.9	-	13.0	99.8
15/03/00	29/03/00	-	73.4	83.7	97.9	23.0	5.8	4.6	31.9	1.1	< 1.0	70.7	-	45.0	69.4
29/03/00	12/04/00	-	59.8	79.5	64.5	34.5	8.3	9.4	33.9	1.3	< 1.0	55.7	-	39.0	10.3
12/04/00	26/04/00	-	439.5	61.4	3117.6	205.1	182.6	51.5	184.5	414.1	1256.9	414.8	-	545.0	40.1
26/04/00	10/05/00	-	260.1	16.4	1847.4	102.3	25.7	18.5	70.8	161.5	695.9	247.8	-	251.0	10.7
10/05/00	24/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/05/00	07/06/00	-	266.0	227.2	2080.5	188.7	93.3	60.1	117.3	389.0	730.2	243.3	-	379.0	36.7
07/06/00	21/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/06/00	05/07/00	-	40.8	17.0	24.5	20.4	5.8	7.1	19.9	1.6	< 1.0	38.3	-	19.0	12.0
05/07/00	19/07/00	-	18.6	4.2	< 0.7	5.5	1.8	4.1	3.7	0.8	< 1.0	18.0	-	12.0	26.5
19/07/00	02/08/00	-	25.2	14.3	9.2	10.5	2.8	2.9	10.7	< 0.5	< 1.0	24.0	-	15.0	41.8
02/08/00	16/08/00	-	23.3	8.3	40.5	8.4	1.6	1.7	4.5	2.8	2.3	22.3	-	< 10.0	41.5
16/08/00	30/08/00	-	35.4	23.3	20.0	5.6	2.1	7.1	3.7	0.9	< 1.0	34.7	-	19.0	47.1
30/08/00	13/09/00	-	15.9	7.5	7.0	41.1	9.3	3.7	48.2	1.3	< 1.0	10.9	-	13.0	117.7
13/09/00	27/09/00	-	33.7	29.7	26.5	13.0	2.8	3.0	16.2	0.7	< 1.0	32.1	-	21.0	117.9
27/09/00	11/10/00	-	18.3	9.8	6.2	43.4	9.6	3.0	48.9	1.0	< 1.0	13.1	-	16.0	122.2
11/10/00	25/10/00	-	14.2	7.9	7.1	37.5	8.3	1.6	46.7	0.6	< 1.0	9.7	-	13.0	131.6
25/10/00	08/11/00	-	16.7	3.3	0.7	95.0	21.7	4.6	112.9	2.0	< 1.0	5.2	-	21.0	93.6
08/11/00	22/11/00	-	17.3	11.0	6.4	55.2	12.3	4.2	66.0	2.8	< 1.0	10.6	-	17.0	63.7
22/11/00	06/12/00	-	21.0	10.7	7.7	73.8	17.2	5.3	93.7	1.6	< 1.0	12.1	-	21.0	211.8
06/12/00	20/12/00	-	25.6	19.9	9.3	43.2	10.3	3.2	53.4	1.2	< 1.0	20.4	-	22.0	110.5
20/12/00	04/01/01	-	28.1	15.4	12.3	90.5	20.6	5.2	112.5	2.2	< 1.0	17.2	-	26.0	75.2

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5156	-	24.3	14.0	12.4	69.2	15.7	4.8	81.9	1.7	-	15.9	-	21.7	1837.9
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Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µeq l ⁻¹)	(µ S cm ⁻¹)	mm
02/01/00	07/01/00	-	28.3	2.9	< 2.1	162.2	35.0	7.2	189.8	2.9	< 9.7	8.8	-	34.0	83.2
07/01/00	14/01/00	-	22.0	< 2.1	< 2.1	134.6	28.7	6.0	153.9	2.6	< 9.7	5.8	-	27.0	71.4
14/01/00	21/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/01/00	30/01/00	-	30.4	< 2.1	< 2.1	155.9	33.3	6.3	264.2	3.2	< 9.7	11.6	-	43.0	32.8
30/01/00	04/02/00	-	15.0	< 2.1	< 2.1	93.7	20.0	7.3	111.3	1.9	< 9.7	3.7	-	19.0	109.3
04/02/00	13/02/00	-	52.2	5.5	< 2.1	346.4	77.6	21.5	390.4	7.6	< 9.7	10.4	-	65.0	89.5
13/02/00	20/02/00	-	13.0	6.0	< 2.1	63.0	13.1	4.5	71.3	1.5	< 9.7	5.5	-	15.0	24.2
20/02/00	01/03/00	-	26.1	8.4	< 2.1	147.9	32.7	6.8	170.3	2.8	< 9.7	8.3	-	31.0	115.1
01/03/00	04/03/00	-	13.3	< 2.1	< 2.1	60.1	12.2	3.4	68.9	< 1.3	< 9.7	6.0	-	14.0	15.9
04/03/00	12/03/00	-	12.6	< 2.1	< 2.1	27.3	5.9	4.5	31.4	< 1.3	< 9.7	9.3	-	10.0	47.8
12/03/00	18/03/00	-	41.6	17.2	13.7	67.2	17.0	43.7	77.2	3.2	< 9.7	33.5	-	23.0	3.4
18/03/00	26/03/00	-	64.2	98.9	98.6	17.2	4.9	6.7	23.7	1.4	< 9.7	62.1	-	41.0	3.9
26/03/00	03/04/00	-	62.0	87.0	52.4	9.4	< 4.1	4.4	19.0	< 1.3	< 9.7	60.8	-	49.0	11.9
03/04/00	10/04/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
10/04/00	16/04/00	-	47.4	58.5	37.1	21.2	4.8	6.8	35.7	< 1.3	< 9.7	44.9	-	-	6.0
16/04/00	22/04/00	-	34.6	25.0	20.8	81.2	17.7	8.3	102.2	2.1	< 9.7	24.8	-	29.0	18.2
22/04/00	30/04/00	-	26.1	20.2	5.0	5.9	< 4.1	< 2.5	11.3	< 1.3	< 9.7	25.4	-	21.0	49.0
30/04/00	06/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
06/05/00	14/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
14/05/00	31/05/00	-	31.9	20.0	25.8	40.0	9.6	6.5	51.8	1.3	< 1.0	27.1	-	20.0	32.1
31/05/00	05/06/00	-	15.7	9.5	4.8	26.2	5.4	3.3	28.4	0.8	< 1.0	12.5	-	12.0	19.3
05/06/00	12/06/00	-	25.3	12.9	12.6	37.3	8.0	3.3	43.0	1.0	< 1.0	20.8	-	18.0	41.5
12/06/00	17/06/00	-	77.7	9.6	7.4	535.7	120.7	27.6	653.1	11.4	< 1.0	13.1	-	92.0	10.0
17/06/00	26/06/00	-	33.6	16.7	16.1	8.8	2.8	5.3	8.7	0.7	< 1.0	32.5	-	17.0	21.7
26/06/00	03/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/07/00	10/07/00	-	25.1	12.9	3.6	2.8	1.8	2.7	1.6	1.6	< 1.0	24.8	-	16.0	35.2
10/07/00	16/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16/07/00	24/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/07/00	31/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31/07/00	07/08/00	-	29.2	15.1	18.0	10.8	2.5	4.1	11.0	1.7	< 1.0	27.9	-	13.0	5.2
07/08/00	16/08/00	-	37.4	11.2	17.6	46.5	5.4	112.4	48.9	6.3	< 1.0	31.8	-	26.0	4.2
16/08/00	21/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21/08/00	27/08/00	-	68.6	63.5	54.2	10.6	6.1	46.2	11.3	1.9	< 1.0	67.4	-	28.0	13.4
27/08/00	04/09/00	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7
04/09/00	11/09/00	-	13.7	5.1	4.4	55.4	12.5	4.3	65.9	1.5	< 1.0	7.0	-	15.0	58.0
11/09/00	19/09/00	-	25.6	30.8	26.4	12.1	3.0	4.8	12.9	1.3	< 1.0	24.2	-	20.0	53.5
19/09/00	27/09/00	-	35.6	29.1	17.0	19.0	4.2	7.8	21.3	2.9	< 1.0	33.3	-	25.0	33.6
27/09/00	05/10/00	-	19.4	14.9	10.0	27.2	5.9	3.8	33.5	2.0	< 1.0	16.1	-	15.0	62.5
05/10/00	11/10/00	-	15.3	8.5	3.8	29.5	5.9	1.9	36.8	1.9	< 1.0	11.7	-	13.0	42.0
11/10/00	16/10/00	-	31.9	19.1	18.1	79.8	18.0	7.1	92.4	2.3	< 1.0	22.3	-	25.0	11.3
16/10/00	23/10/00	-	26.9	19.0	17.8	52.8	12.2	4.1	64.1	1.4	< 1.0	20.5	-	22.0	36.7
23/10/00	31/10/00	-	9.5	2.2	0.9	41.9	9.3	2.4	51.0	1.3	< 1.0	4.4	-	11.0	92.1
31/10/00	06/11/00	-	16.6	9.5	2.9	67.2	15.5	7.3	87.2	1.7	< 1.0	8.5	-	18.0	9.2
06/11/00	14/11/00	-	19.8	12.9	9.5	47.6	10.8	4.1	58.2	1.7	< 1.0	14.1	-	18.0	27.2
14/11/00	22/11/00	-	22.1	18.4	9.4	63.6	14.4	4.4	78.8	1.7	< 1.0	14.5	-	23.0	15.4
22/11/00	29/11/00	-	26.1	22.4	10.2	49.4	11.4	8.6	58.4	2.5	< 1.0	20.2	-	21.0	40.5
29/11/00	04/12/00	-	20.7	10.0	10.3	73.4	17.0	4.4	81.5	1.8	28.9	11.9	-	21.0	108.8
04/12/00	11/12/00	-	15.2	9.9	4.0	43.9	9.7	3.0	52.5	1.3	< 1.0	9.9	-	16.0	96.0
11/12/00	18/12/00	-	14.9	10.6	8.3	41.7	9.7	3.5	49.3	2.3	< 1.0	9.9	-	13.0	31.9
18/12/00	27/12/00	-	37.0	40.9	26.7	7.9	1.7	3.0	7.2	1.0	< 1.0	36.1	-	28.0	41.1
27/12/00	02/01/01	-	19.4	11.9	7.8	43.6	10.1	2.5	52.6	1.0	< 1.0	14.1	-	18.0	47.2
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5152	-	24.7	12.3	7.9	82.5	18.3	6.6	98.0	2.2	-	14.8	-	23.9	1674.2	

Polloch

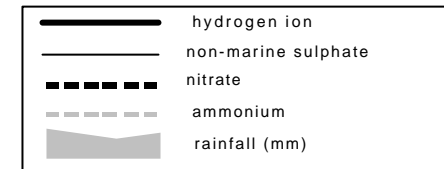
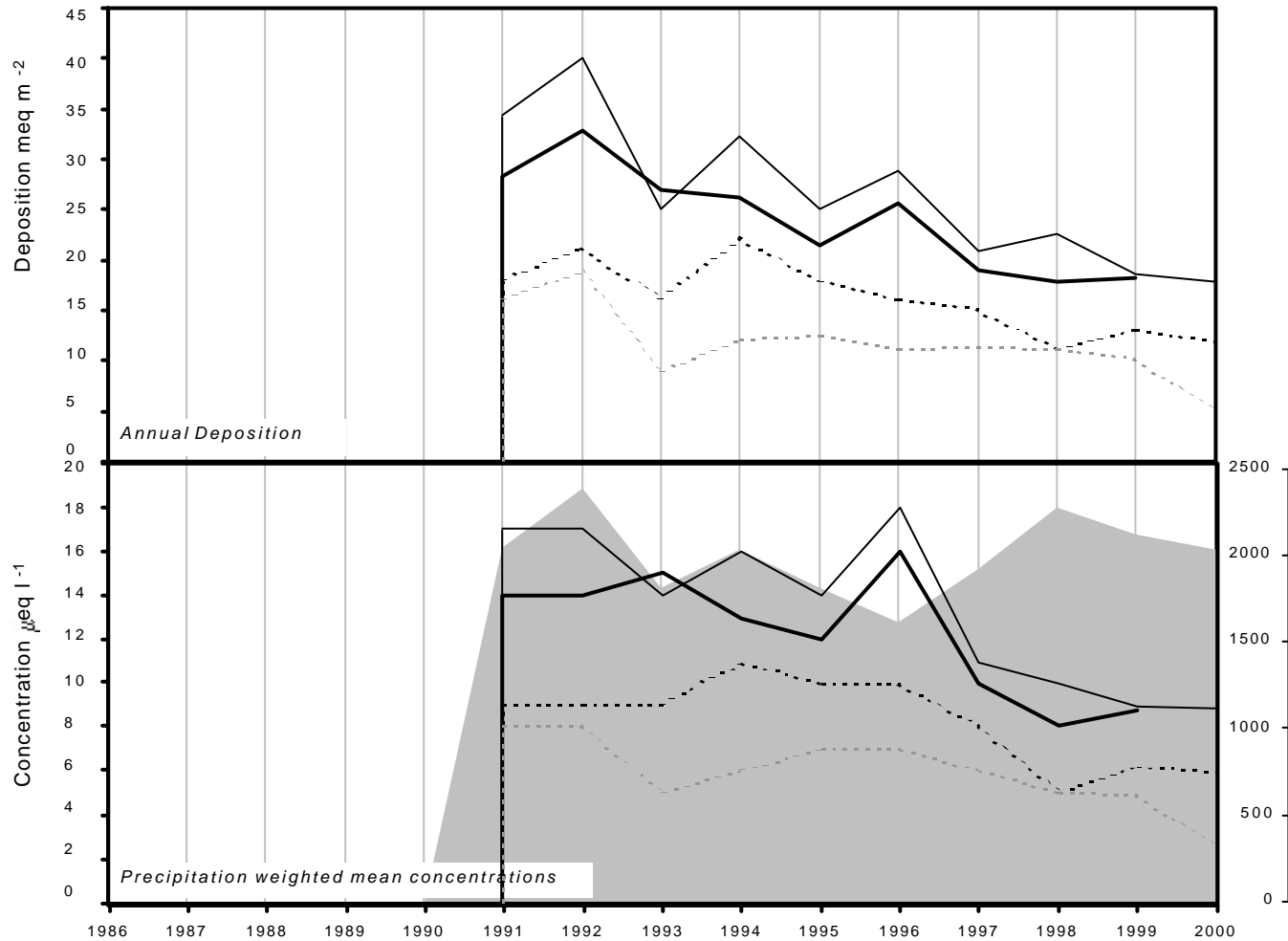
2000

Site Code: 5151
 Easting: 1792
 Northing: 7689
 Latitude: 56 45 34 N
 Longitude: 05 36 46 W
 Altitude (m): 30
 Rainfall (mm): 2170
 [30 year mean 1940 - 1971]

Site Environment:
Open moorland, in forest area

Other measurements:
DT, UKAWMN

Site Operator:
Forest Enterprise



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-0.77 ueq/l (-3.99 %/year): 9 years' data + Significant trend detected
non-marine sulphate	-0.97 ueq/l (-4.28 %/year): 10 years' data ++ Moderately strong trend detected
nitrate	-0.46 ueq/l (-3.65 %/year): 10 years' data + Significant trend detected
ammonium	-0.43 ueq/l (-4.29 %/year): 10 years' data ++ Moderately strong trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
07/01/00	11/01/00	-	63.2	< 2.1	< 2.1	276.5	105.0	21.4	548.0	10.0	< 9.7	29.9	-	81.0	9.0
11/01/00	18/01/00	-	15.4	< 2.1	< 2.1	81.5	17.5	4.3	96.3	1.7	< 9.7	5.6	-	17.0	29.1
18/01/00	25/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9
25/01/00	01/02/00	-	51.4	< 2.1	< 2.1	394.4	91.4	17.0	477.2	8.1	< 9.7	3.9	-	71.0	75.8
01/02/00	08/02/00	-	109.0	< 2.1	< 2.1	771.0	188.8	45.9	987.3	18.0	< 9.7	16.1	-	141.0	79.2
08/02/00	15/02/00	-	76.0	1.2	< 2.1	582.5	132.3	26.3	701.8	11.9	< 9.7	5.8	-	102.0	70.2
15/02/00	22/02/00	-	19.6	< 2.1	< 2.1	107.8	23.4	5.0	127.1	2.1	< 9.7	6.7	-	22.0	56.9
22/02/00	29/02/00	-	35.4	< 2.1	< 2.1	247.2	55.9	10.9	284.5	4.9	< 9.7	5.6	-	47.0	69.7
29/02/00	07/03/00	-	19.2	< 2.1	< 2.1	97.5	21.0	4.9	114.5	2.3	< 9.7	7.5	-	21.0	86.0
07/03/00	14/03/00	-	38.1	< 2.1	< 2.1	231.7	52.2	19.0	260.0	4.9	< 9.7	10.2	-	43.0	68.0
14/03/00	21/03/00	-	57.8	4.6	< 2.1	239.9	56.1	25.7	272.4	5.5	< 9.7	28.9	-	51.0	21.8
21/03/00	28/03/00	-	40.0	42.9	42.2	45.3	10.0	5.4	53.0	< 1.3	< 9.7	34.6	-	30.0	29.0
28/03/00	04/04/00	-	18.5	13.2	< 2.1	10.4	2.3	9.1	14.4	< 1.3	< 9.7	17.3	-	11.0	14.7
04/04/00	11/04/00	-	19.3	17.2	5.2	49.6	10.8	6.2	55.2	1.4	< 9.7	13.3	-	19.0	16.1
11/04/00	18/04/00	-	23.6	30.8	23.7	12.1	< 4.1	5.9	18.3	< 1.3	< 9.7	22.1	-	17.0	6.9
18/04/00	25/04/00	-	29.6	18.0	4.6	106.0	23.6	8.6	121.5	2.1	< 9.7	16.8	-	30.0	31.8
25/04/00	02/05/00	-	27.8	20.9	2.7	6.6	< 4.1	3.7	12.0	< 1.3	< 9.7	27.0	-	20.0	20.0
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9
09/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
16/05/00	23/05/00	-	23.3	8.2	3.0	80.0	16.8	6.4	91.3	1.9	< 9.7	13.7	-	21.0	33.3
23/05/00	30/05/00	-	16.9	2.2	< 2.1	72.7	15.4	4.0	80.9	1.4	< 9.7	8.2	-	17.0	36.5
30/05/00	06/06/00	-	20.2	8.1	4.6	47.1	10.1	4.3	54.6	1.1	< 1.0	14.5	-	15.0	23.6
06/06/00	13/06/00	-	18.5	5.6	< 0.7	71.6	15.3	4.5	87.1	1.4	< 1.0	9.9	-	20.0	60.9
13/06/00	20/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0
20/06/00	27/06/00	-	22.7	9.3	11.9	39.0	8.4	5.4	45.7	0.9	< 1.0	18.0	-	15.0	39.3
27/06/00	04/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/07/00	11/07/00	-	17.9	5.1	< 0.7	12.2	3.0	1.9	13.2	0.3	< 1.0	16.4	-	12.0	34.9
11/07/00	18/07/00	-	26.0	4.0	< 0.7	109.5	24.0	6.4	135.1	2.3	< 1.0	12.8	-	25.0	7.8
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
25/07/00	01/08/00	-	13.9	10.8	9.5	13.5	2.7	3.8	11.6	1.0	< 1.0	12.3	-	< 10.0	15.5
01/08/00	07/08/00	-	13.4	4.0	7.1	37.0	4.4	5.6	35.4	5.3	< 1.0	9.0	-	< 10.0	5.0
07/08/00	15/08/00	-	9.2	5.8	1.2	6.7	1.6	1.6	1.8	< 0.5	< 1.0	8.4	-	< 10.0	63.4
15/08/00	22/08/00	-	13.1	3.2	< 0.7	18.7	3.9	2.5	21.8	1.0	< 1.0	10.9	-	10.0	24.5
22/08/00	29/08/00	-	44.9	29.9	93.7	17.1	6.7	11.8	17.6	7.6	9.8	42.8	-	21.0	24.5
29/08/00	05/09/00	-	18.7	15.3	16.8	15.9	3.6	4.6	17.0	0.8	< 1.0	16.8	-	11.0	19.3
05/09/00	12/09/00	-	17.3	3.1	3.0	99.5	22.7	5.2	119.9	2.2	< 1.0	5.3	-	21.0	89.8
12/09/00	19/09/00	-	14.7	10.5	3.6	28.2	7.7	5.8	31.7	1.8	< 1.0	11.3	-	12.0	27.5
19/09/00	03/10/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
03/10/00	10/10/00	-	13.7	9.1	3.1	46.7	10.7	2.9	56.3	1.0	< 1.0	8.1	-	15.0	102.2
10/10/00	17/10/00	-	15.8	3.4	< 0.7	79.3	18.6	4.2	97.7	2.0	< 1.0	6.2	-	19.0	54.7
17/10/00	24/10/00	-	16.4	2.4	< 0.7	100.6	23.1	4.6	118.4	2.1	< 1.0	4.2	-	22.0	113.3
24/10/00	31/10/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
31/10/00	07/11/00	-	19.4	3.7	0.8	132.0	29.7	6.4	156.5	2.9	< 1.0	3.5	-	27.0	23.4
07/11/00	14/11/00	-	14.5	3.9	< 0.7	83.9	18.6	4.1	96.4	1.7	< 1.0	4.4	-	19.0	17.2
14/11/00	21/11/00	-	27.6	2.6	< 0.7	192.0	43.6	8.4	211.5	3.9	< 1.0	4.4	-	37.0	39.0
21/11/00	28/11/00	-	11.5	9.6	< 0.7	41.2	9.6	3.1	48.6	0.9	< 1.0	6.5	-	15.0	54.0
28/11/00	05/12/00	-	16.1	4.8	0.9	92.4	20.6	6.4	105.5	2.2	< 1.0	5.0	-	20.0	142.4
05/12/00	12/12/00	-	11.5	13.5	1.4	46.4	10.7	2.8	54.6	1.1	< 1.0	5.9	-	16.0	75.0
12/12/00	19/12/00	-	44.4	3.7	< 0.7	336.7	74.7	14.9	398.5	6.7	< 1.0	3.9	-	58.0	51.6
19/12/00	26/12/00	-	7.5	10.6	< 0.7	2.2	< 0.8	1.1	1.6	< 0.5	< 1.0	7.2	-	< 10.0	43.5
26/12/00	02/01/01	-	14.6	5.4	3.2	73.4	15.9	3.5	84.3	1.5	< 1.0	5.8	-	18.0	95.5

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5151	-	26.9	5.9	2.5	149.7	34.5	8.7	180.1	3.3	-	8.9	-	31.6	2010.5
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Lochnagar

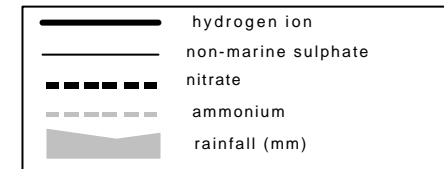
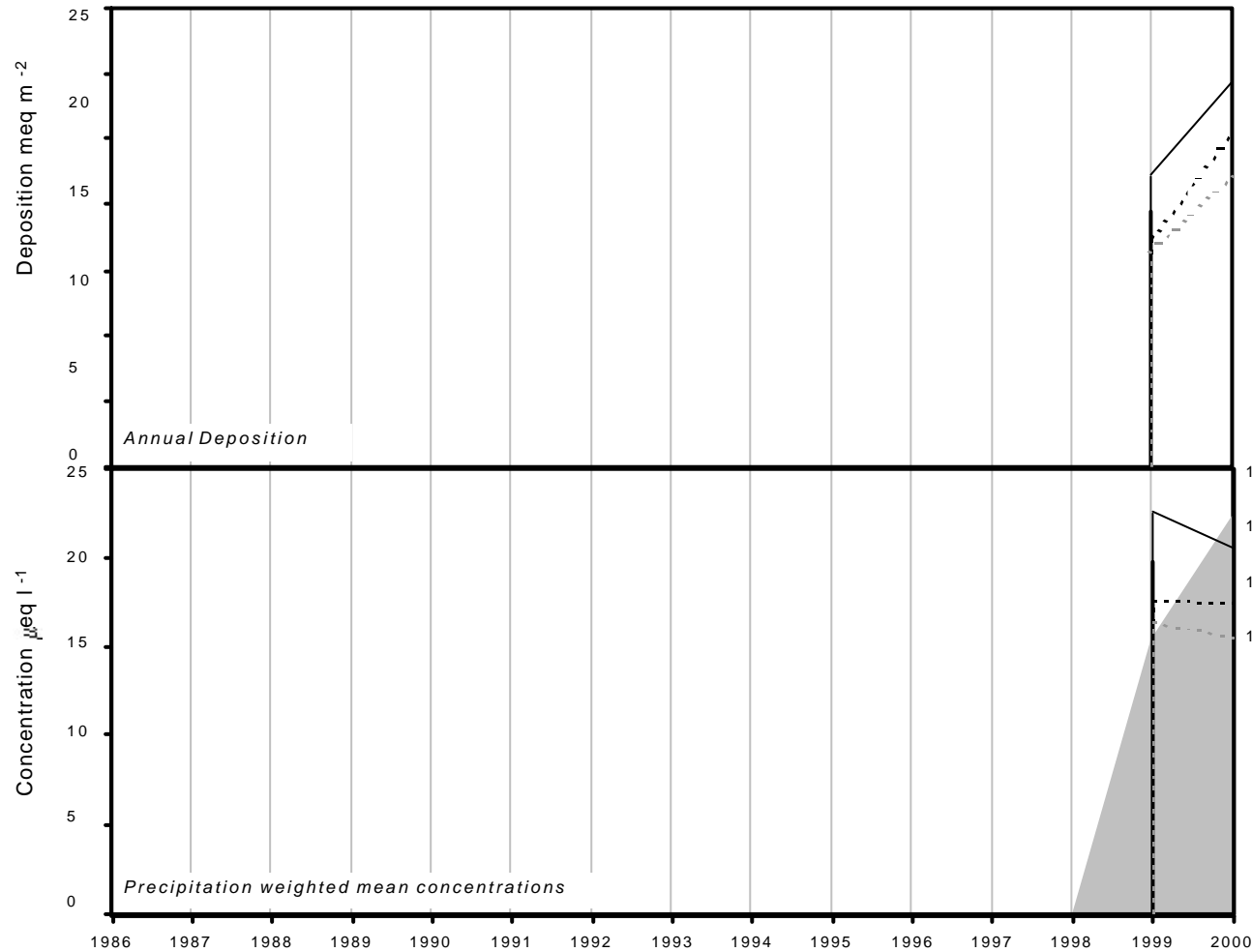
2000

Site Code: 5157
 Easting: 3252
 Northing: 7859
 Latitude: 56 57 29N
 Longitude: 03 13 51 W
 Altitude (m): 785
 Rainfall (mm): -
 [30 year mean 1940 - 1971]

Site Environment:
 Heathland 60% and bare ground 40%

Other measurements:
 UKAWMN. Automatic weather station

Site Operator:
 ENSIS



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	0.00 ueq/l (0.00 %/year): 1 years' data n/a Insufficient Data
<i>non-marine sulphate</i>	0.00 ueq/l (0.00 %/year): 1 years' data n/a Insufficient Data
<i>nitrate</i>	0.00 ueq/l (0.00 %/year): 1 years' data n/a Insufficient Data
<i>ammonium</i>	0.00 ueq/l (0.00 %/year): 1 years' data n/a Insufficient Data

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
12/01/00	26/01/00	-	51.2	11.4	2.9	328.9	73.9	17.0	381.2	6.5	< 1.0	11.6	-	58.0	3.6
26/01/00	09/02/00	-	18.0	5.0	3.1	63.1	13.9	6.2	74.5	1.6	< 1.0	10.4	-	16.0	46.8
09/02/00	23/02/00	-	21.4	12.5	10.2	78.1	17.6	5.5	91.6	1.8	< 1.0	11.9	-	21.0	38.1
23/02/00	08/03/00	-	14.3	7.6	6.2	29.7	6.5	3.7	35.2	0.9	< 1.0	10.7	-	10.0	8.2
08/03/00	22/03/00	-	22.8	10.2	< 0.7	55.8	13.8	16.5	61.7	1.8	< 1.0	16.1	-	15.0	7.5
22/03/00	05/04/00	-	55.1	59.5	65.6	44.6	10.8	5.5	54.8	1.4	< 1.0	49.7	-	37.0	19.1
05/04/00	19/04/00	-	38.0	36.1	27.6	109.2	24.7	12.7	114.0	2.4	< 1.0	24.9	-	30.0	11.5
19/04/00	03/05/00	-	23.0	16.3	9.8	24.1	5.6	4.0	29.2	0.5	< 1.0	20.1	-	18.0	70.8
03/05/00	17/05/00	-	43.5	28.7	19.5	13.8	4.4	12.3	12.5	1.1	< 1.0	41.8	-	24.0	17.8
17/05/00	31/05/00	-	23.4	14.2	9.9	11.1	3.2	7.3	12.9	0.6	< 1.0	22.0	-	15.0	57.5
31/05/00	14/06/00	-	37.6	20.4	15.4	78.2	17.4	5.7	89.3	1.9	< 1.0	28.2	-	32.0	55.7
14/06/00	28/06/00	-	34.7	20.8	12.8	19.3	5.2	9.7	18.8	1.0	< 1.0	32.4	-	19.0	26.9
28/06/00	12/07/00	-	15.3	9.5	6.6	15.4	3.3	2.1	15.1	0.9	< 1.0	13.4	-	10.0	40.5
12/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26/07/00	09/08/00	-	17.5	9.7	7.5	3.9	1.3	1.8	3.7	< 0.5	< 1.0	17.0	-	11.0	50.7
09/08/00	23/08/00	-	10.8	9.0	6.8	4.5	1.2	1.7	5.6	< 0.5	< 1.0	10.2	-	< 10.0	47.6
23/08/00	06/09/00	-	31.6	27.0	27.1	8.9	2.4	3.0	11.2	< 0.5	< 1.0	30.5	-	19.0	98.0
06/09/00	20/09/00	-	26.2	18.8	47.5	27.9	6.2	3.3	32.9	4.4	< 1.0	22.9	-	15.0	104.0
20/09/00	04/10/00	-	31.9	24.4	20.1	20.9	5.1	3.1	27.7	0.9	< 1.0	29.4	-	21.0	119.2
04/10/00	18/10/00	-	10.7	9.4	2.5	21.0	4.4	1.2	26.0	< 0.5	< 1.0	8.2	-	10.0	69.0
18/10/00	01/11/00	-	18.9	12.2	9.8	35.4	8.1	2.9	41.8	1.7	< 1.0	14.6	-	16.0	95.9
01/11/00	15/11/00	-	19.2	13.2	9.4	44.9	10.1	2.7	51.6	1.2	< 1.0	13.8	-	17.0	94.5
15/11/00	29/11/00	-	25.2	24.2	9.0	47.6	10.9	4.0	61.0	1.3	< 1.0	19.4	-	25.0	58.2
29/11/00	13/12/00	-	19.6	11.5	8.1	36.8	8.3	2.4	42.1	0.8	< 1.0	15.2	-	17.0	210.2
13/12/00	10/01/01	-	37.3	32.8	24.9	39.0	8.6	2.5	47.7	1.1	< 1.0	32.6	-	30.0	84.5

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

5157	-	24.5	17.5	15.5	33.1	7.6	3.7	39.0	1.2	-	20.5	-	18.4	1435.8
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Glen Dye

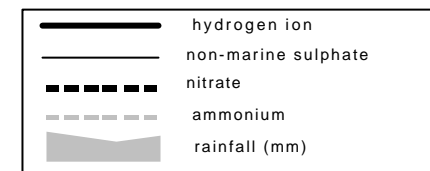
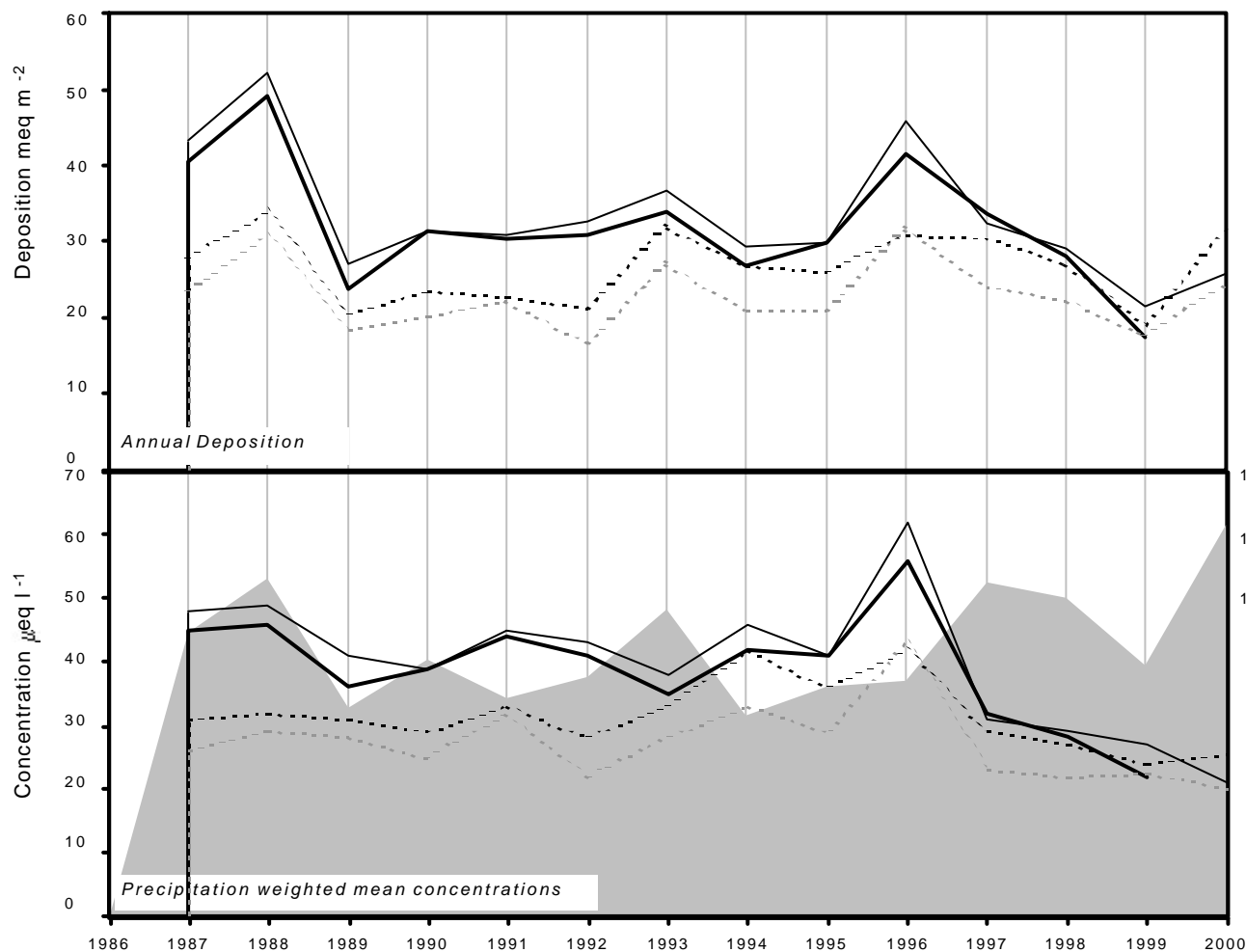
2000

Site Code: 5011
 Easting: 3642
 Northing: 7864
 Latitude: 56 58 03 N
 Longitude: 02 35 20 W
 Altitude (m): 185
 Rainfall (mm): 1311
 [30 year mean 1940 - 1971]

Site Environment:
Open moorland

Other measurements:
 DT, Daily SO₂, Daily SO₄, EMEP

Site Operator:
SEPA; North Region



long-term trends in concentration (+x = increase; -x = decrease)	
<i>hydrogen ion</i>	-1.09 ueq/l (-2.34 %/year): 13 years' data - No significant trend detected
<i>non-marine sulphate</i>	-1.48 ueq/l (-2.89 %/year): 14 years' data + Significant trend detected
<i>nitrate</i>	-0.26 ueq/l (-0.77 %/year): 14 years' data - No significant trend detected
<i>ammonium</i>	-0.31 ueq/l (-1.04 %/year): 14 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	11/01/00	-	29.8	7.2	7.5	136.1	30.4	7.6	153.7	3.8	< 1.0	13.4	-	31.0	18.6
11/01/00	18/01/00	-	27.9	4.2	2.2	183.7	41.4	9.7	210.7	3.9	< 1.0	5.8	-	36.0	8.7
18/01/00	25/01/00	-	39.4	4.0	5.4	277.3	94.8	27.7	313.4	5.4	< 9.7	6.0	-	51.0	7.2
25/01/00	01/02/00	-	28.5	7.4	2.6	186.7	41.5	12.0	208.5	4.5	< 1.0	6.1	-	37.0	8.4
01/02/00	08/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
08/02/00	15/02/00	-	40.5	10.9	9.9	223.6	78.5	34.7	247.8	4.9	< 9.7	13.6	-	42.0	4.5
15/02/00	22/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.2
22/02/00	29/02/00	-	44.0	23.8	27.7	110.9	39.5	27.3	125.7	2.2	< 9.7	30.7	-	29.0	3.3
29/02/00	07/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.5
07/03/00	14/03/00	-	21.9	13.2	5.5	40.0	10.9	28.9	43.9	2.1	< 1.0	17.0	-	13.0	4.7
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
21/03/00	28/03/00	-	60.1	76.6	81.7	60.7	13.9	6.9	75.0	2.4	< 1.0	52.8	-	42.0	25.2
28/03/00	04/04/00	-	18.9	18.2	13.7	24.5	4.7	< 2.5	25.9	< 1.3	< 9.7	15.9	-	14.0	32.5
04/04/00	11/04/00	-	26.5	27.1	18.1	51.9	12.6	12.2	50.7	2.1	< 9.7	20.3	-	18.0	5.6
11/04/00	18/04/00	-	62.8	65.8	90.1	144.4	32.9	9.4	168.2	3.2	< 9.7	45.5	-	47.0	46.1
18/04/00	25/04/00	-	46.6	41.0	29.8	31.9	7.6	6.8	34.7	< 1.3	< 9.7	42.8	-	31.0	29.7
25/04/00	02/05/00	-	13.4	8.3	< 2.1	14.2	< 4.1	< 2.5	20.8	< 1.3	< 9.7	11.7	-	11.0	81.8
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/05/00	16/05/00	-	87.9	105.5	96.5	41.9	21.0	37.0	28.6	22.1	< 9.7	82.8	-	34.0	1.7
16/05/00	23/05/00	-	35.0	23.7	24.3	20.0	4.7	5.5	25.1	< 1.3	< 9.7	32.6	-	20.0	8.5
23/05/00	30/05/00	-	15.5	10.9	5.2	9.9	< 4.1	< 2.5	15.1	< 1.3	< 9.7	14.3	-	11.0	30.7
30/05/00	06/06/00	-	59.9	39.7	33.4	184.1	41.6	12.3	209.6	5.4	< 1.0	37.7	-	54.0	8.7
06/06/00	13/06/00	-	60.1	37.4	43.6	30.0	7.2	5.2	32.6	1.5	< 1.0	56.5	-	32.0	11.1
13/06/00	20/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
20/06/00	27/06/00	-	37.0	20.3	28.0	8.7	2.4	3.9	11.0	< 0.5	< 1.0	36.0	-	19.0	9.4
27/06/00	04/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.3
04/07/00	11/07/00	-	21.1	16.7	17.2	12.8	3.2	3.7	13.0	0.6	< 1.0	19.5	-	14.0	17.1
11/07/00	18/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25/07/00	01/08/00	-	23.3	21.7	33.5	2.6	1.4	2.1	4.1	2.0	< 1.0	22.9	-	12.0	32.6
01/08/00	08/08/00	-	13.2	12.3	14.3	21.3	5.1	11.3	21.8	1.9	< 1.0	10.7	-	< 10.0	5.0
08/08/00	15/08/00	-	13.4	8.4	10.9	2.4	0.8	2.3	2.8	0.6	< 1.0	13.1	-	< 10.0	26.1
15/08/00	22/08/00	-	19.0	12.0	51.3	10.6	2.3	1.4	7.4	5.9	9.8	17.8	-	11.0	36.6
22/08/00	29/08/00	-	34.1	37.4	37.8	14.8	4.2	7.4	17.0	1.0	< 1.0	32.3	-	21.0	41.8
29/08/00	05/09/00	-	62.0	55.3	158.6	51.1	13.5	4.9	55.9	15.6	41.9	55.8	-	35.0	27.9
05/09/00	12/09/00	-	9.8	6.7	4.5	14.8	3.4	2.1	17.7	1.2	< 1.0	8.0	-	< 10.0	48.5
12/09/00	19/09/00	-	19.9	15.3	14.6	10.1	2.7	5.4	8.1	1.2	< 1.0	18.6	-	10.0	7.3
19/09/00	26/09/00	-	63.6	66.3	56.4	115.4	26.6	9.3	130.5	3.2	< 1.0	49.7	-	50.0	45.7
26/09/00	03/10/00	-	28.9	26.5	13.3	44.2	9.7	4.3	49.2	1.4	< 1.0	23.6	-	25.0	24.8
03/10/00	10/10/00	-	24.3	11.7	11.2	71.5	16.6	4.5	84.5	1.6	< 1.0	15.7	-	22.0	63.3
10/10/00	17/10/00	-	14.2	13.7	3.2	60.5	13.4	3.4	76.7	1.6	< 1.0	6.9	-	19.0	74.5
17/10/00	24/10/00	-	43.1	45.0	30.9	91.5	22.0	6.8	109.1	2.2	< 1.0	32.1	-	39.0	20.0
24/10/00	31/10/00	-	19.1	10.6	7.1	42.2	9.6	3.3	49.6	2.3	< 1.0	14.0	-	16.0	35.0
31/10/00	07/11/00	-	39.5	20.5	13.6	186.0	43.3	8.7	222.6	4.5	< 1.0	17.1	-	44.0	65.0
07/11/00	14/11/00	-	21.7	17.5	8.2	82.7	18.3	5.2	92.4	1.9	< 1.0	11.8	-	26.0	33.7
14/11/00	21/11/00	-	10.7	12.8	4.0	21.7	4.9	2.2	26.9	0.9	< 1.0	8.0	-	12.0	38.6
21/11/00	28/11/00	-	45.1	46.3	13.2	163.9	36.5	8.4	181.9	3.6	< 1.0	25.4	-	53.0	35.3
28/11/00	05/12/00	-	24.2	19.7	15.9	60.6	14.3	4.2	73.3	1.5	< 1.0	16.9	-	24.0	58.7
05/12/00	12/12/00	-	16.4	17.0	7.7	40.7	9.3	2.7	45.3	1.0	< 1.0	11.5	-	18.0	52.8
12/12/00	19/12/00	-	22.9	21.0	10.8	67.7	15.5	4.2	83.7	1.5	< 1.0	14.8	-	25.0	20.5
19/12/00	26/12/00	-	47.7	58.2	27.6	163.2	32.5	10.0	178.7	19.6	< 1.0	28.1	-	47.0	50.4
26/12/00	02/01/01	-	31.6	22.7	15.2	96.5	21.5	5.5	116.2	2.4	< 1.0	20.0	-	32.0	28.3

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5011	-	29.5	25.5	19.8	71.1	16.4	5.6	82.8	2.7	-	20.9	-	25.9	1237.9
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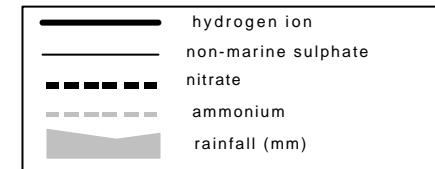
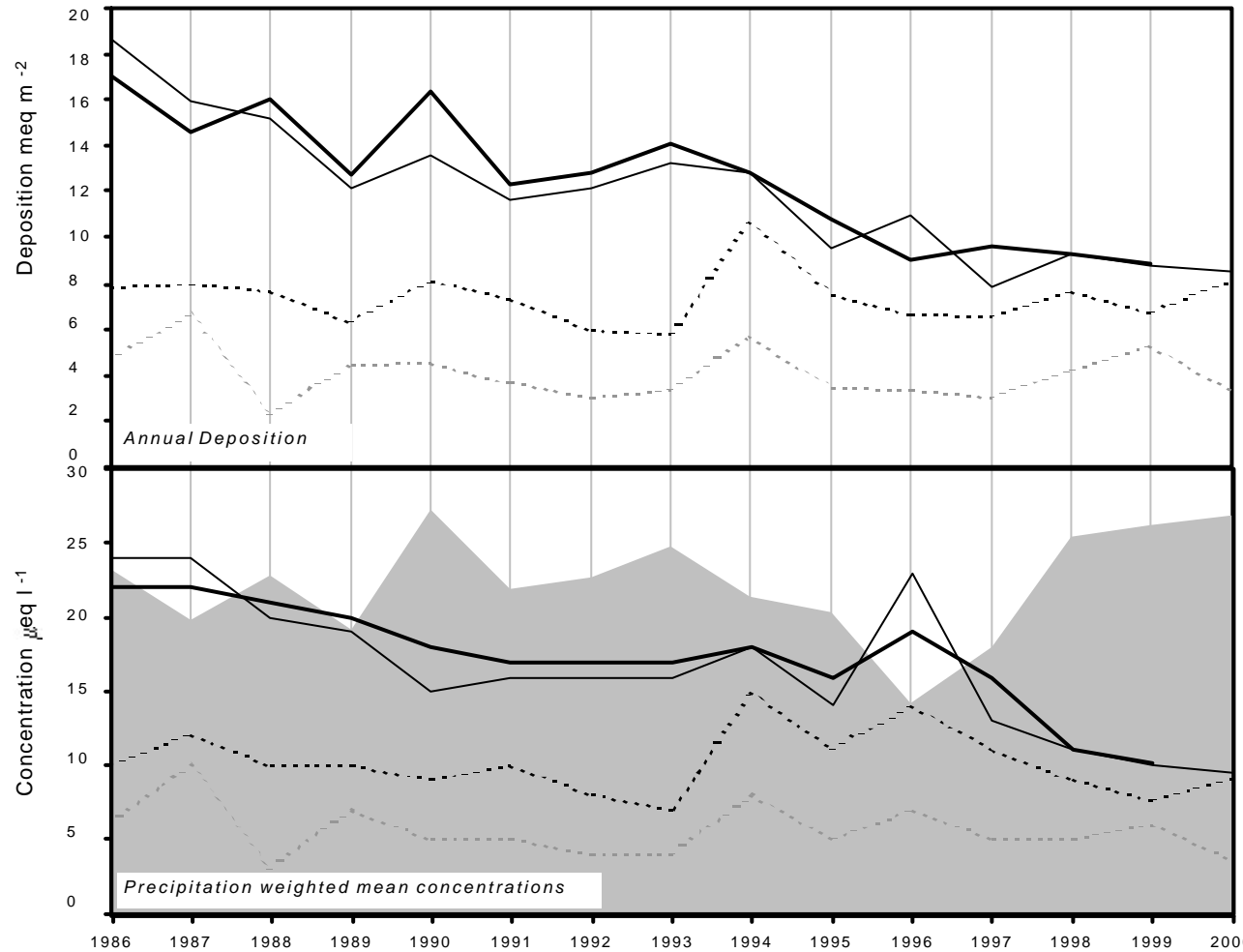
2000

Site Code: 5103
 Easting: 2876
 Northing: 8052
 Latitude: 57 07 27 N
 Longitude: 03 51 24 W
 Altitude (m): 274
 Rainfall (mm): 1221
 [30 year mean 1940 - 1971]

Site Environment:
Moorland, in forestry SW Cairngorms

Other measurements:
DT, UKAWMN

Site Operator:
Freshwater Fisheries Laboratory



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-0.73 ueq/l (-3.30 %/year): 14 years' data +++ Strong trend detected
non-marine sulphate	-0.83 ueq/l (-3.71 %/year): 15 years' data ++ Moderately strong trend detected
nitrate	-0.03 ueq/l (-0.32 %/year): 15 years' data - No significant trend detected
ammonium	-0.10 ueq/l (-1.59 %/year): 15 years' data - No significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
05/01/00	10/01/00	-	20.7	< 0.7	< 0.7	167.4	35.1	8.5	193.8	3.7	< 1.0	0.5	-	31.0	23.4
10/01/00	17/01/00	-	9.7	< 0.7	< 0.7	62.0	12.5	5.2	70.3	1.6	< 1.0	2.3	-	14.0	19.0
17/01/00	24/01/00	-	61.2	5.2	< 2.1	402.4	120.1	41.4	488.6	7.8	< 9.7	12.7	-	69.0	3.8
24/01/00	31/01/00	-	34.3	< 0.7	< 0.7	278.7	61.8	12.0	312.3	5.6	< 1.0	0.8	-	50.0	33.8
31/01/00	07/02/00	-	7.7	< 0.7	< 0.7	38.4	8.5	7.3	45.7	0.9	< 1.0	3.1	-	< 10.0	24.4
07/02/00	14/02/00	-	24.6	< 0.7	< 0.7	191.9	43.0	9.0	225.5	4.0	< 1.0	1.5	-	36.0	39.8
14/02/00	21/02/00	-	22.5	13.5	< 2.1	92.1	40.7	18.7	102.3	1.9	< 9.7	11.4	-	22.0	9.9
21/02/00	28/02/00	-	17.4	< 2.1	< 2.1	118.9	53.9	15.4	134.2	1.9	< 9.7	3.0	-	23.0	36.6
28/02/00	06/03/00	-	26.4	1.4	< 2.1	176.9	70.8	20.9	202.0	3.4	< 9.7	5.1	-	33.0	17.8
06/03/00	13/03/00	-	13.8	2.6	< 0.7	33.9	7.5	8.9	37.9	1.7	< 1.0	9.7	-	11.0	7.2
13/03/00	20/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1
20/03/00	27/03/00	-	33.2	45.1	30.8	29.1	6.5	12.2	30.2	3.4	< 9.7	29.7	-	28.0	7.7
27/03/00	10/04/00	-	12.5	10.4	5.5	33.0	7.2	3.7	38.1	1.2	< 1.0	8.5	-	12.0	15.9
10/04/00	17/04/00	-	28.4	16.1	20.2	93.5	20.1	5.5	109.0	2.0	< 1.0	17.1	-	26.0	34.9
17/04/00	24/04/00	-	18.4	13.1	7.3	28.3	6.7	3.8	32.9	0.8	< 1.0	14.9	-	14.0	33.5
24/04/00	01/05/00	-	7.0	3.3	< 0.7	10.9	2.4	1.2	13.6	< 0.5	< 1.0	5.7	-	< 10.0	71.3
01/05/00	08/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
08/05/00	15/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.1
15/05/00	22/05/00	-	10.1	4.6	0.8	9.9	2.8	2.8	10.8	1.0	< 1.0	8.9	-	< 10.0	12.9
22/05/00	29/05/00	-	9.8	8.1	1.1	9.8	2.6	1.9	11.3	1.2	< 1.0	8.7	-	< 10.0	24.7
29/05/00	05/06/00	-	34.5	14.5	3.2	74.0	18.6	7.1	83.6	10.0	< 1.0	25.5	-	24.0	5.7
05/06/00	12/06/00	-	21.2	6.6	3.3	35.7	9.0	5.3	38.2	7.7	< 1.0	16.9	-	11.0	9.3
12/06/00	19/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9
19/06/00	26/06/00	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5
26/06/00	03/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3
03/07/00	10/07/00	-	8.1	7.5	1.2	5.6	1.7	2.7	5.7	< 0.5	< 1.0	7.4	-	< 10.0	22.7
10/07/00	17/07/00	-	48.5	15.1	11.1	169.6	35.7	24.0	216.9	3.1	4.2	28.0	-	-	1.4
17/07/00	24/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
24/07/00	31/07/00	-	11.7	9.6	8.8	2.7	1.2	2.2	2.1	0.5	< 1.0	11.4	-	< 10.0	33.5
31/07/00	07/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3
07/08/00	14/08/00	-	5.9	5.6	0.7	2.1	0.9	3.7	2.4	0.4	< 1.0	5.7	-	< 10.0	17.2
14/08/00	21/08/00	-	15.0	14.1	4.5	5.9	1.5	1.5	5.8	0.9	< 1.0	14.3	-	13.0	26.0
21/08/00	28/08/00	-	37.1	48.6	25.6	7.4	3.0	9.4	9.9	1.5	< 1.0	36.2	-	31.0	6.7
28/08/00	04/09/00	-	-	-	-	-	-	-	-	-	-	-	-	-	17.8
04/09/00	11/09/00	-	10.1	4.5	2.0	45.1	10.2	3.5	52.8	1.0	< 1.0	4.7	-	12.0	21.2
11/09/00	18/09/00	-	5.8	3.4	4.1	3.6	1.4	3.9	2.2	0.6	< 1.0	5.4	-	< 10.0	9.4
18/09/00	25/09/00	-	18.9	18.9	8.4	8.4	1.7	3.0	8.9	0.8	< 1.0	17.9	-	19.0	23.4
25/09/00	02/10/00	-	21.9	30.8	6.3	9.6	2.0	2.4	10.1	< 0.5	< 1.0	20.7	-	22.0	17.6
02/10/00	09/10/00	-	17.7	7.6	9.4	31.2	7.4	5.8	37.1	1.0	< 1.0	13.9	-	11.0	6.8
09/10/00	16/10/00	-	12.7	14.1	1.2	23.4	5.7	1.2	27.5	0.6	< 1.0	9.9	-	15.0	71.4
16/10/00	23/10/00	-	40.5	18.3	9.4	73.3	16.6	9.9	87.2	1.4	< 1.0	31.6	-	27.0	6.1
23/10/00	30/10/00	-	9.3	3.4	< 0.7	37.0	7.6	2.9	40.3	1.7	< 1.0	4.9	-	11.0	29.0
30/10/00	06/11/00	-	26.9	20.2	11.1	74.1	18.0	8.6	85.2	2.6	< 1.0	18.0	-	21.0	2.7
06/11/00	13/11/00	-	22.7	8.8	< 0.7	106.7	24.5	6.1	129.7	2.1	< 1.0	9.9	-	28.0	43.0
13/11/00	20/11/00	-	6.9	3.3	< 0.7	32.8	7.0	2.7	36.0	0.9	< 1.0	3.0	-	< 10.0	16.7
20/11/00	27/11/00	-	27.0	32.0	5.5	26.6	6.3	3.4	31.5	0.8	< 1.0	23.8	-	27.0	10.1
27/11/00	04/12/00	-	25.7	13.9	5.0	54.2	11.9	8.7	61.2	1.2	< 1.0	19.2	-	20.0	9.0
04/12/00	11/12/00	-	6.8	11.7	1.7	18.2	3.4	1.7	19.0	0.6	< 1.0	4.6	-	10.0	30.8
11/12/00	18/12/00	-	-	-	-	-	-	-	-	-	-	-	-	-	13.1
18/12/00	27/12/00	-	28.7	33.0	9.8	23.6	6.5	4.6	28.7	0.6	< 1.0	25.9	-	25.0	9.1
27/12/00	03/01/01	-	15.8	12.0	3.4	33.4	7.9	3.1	37.3	0.9	< 1.0	11.8	-	16.0	9.7
Precipitation weighted annual mean for site: samples containing phosphate are excluded.															Total Rainfall
5103	-	-	17.1	9.1	3.7	63.4	16.5	5.6	73.1	1.7	-	9.5	-	17.8	895.2

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
04/01/00	11/01/00	-	36.4	< 0.7	< 0.7	281.8	63.5	12.2	339.6	5.8	< 1.0	2.4	-	50.0	77.0
11/01/00	18/01/00	-	13.8	1.8	< 0.7	45.8	10.4	2.7	59.5	1.0	< 1.0	8.3	-	10.0	24.3
18/01/00	25/01/00	-	92.9	6.1	< 2.1	707.3	191.2	45.8	797.5	14.0	< 9.7	7.7	-	121.0	12.1
25/01/00	01/02/00	-	48.7	< 2.1	< 2.1	396.8	130.6	33.3	463.3	7.7	< 9.7	0.9	-	70.0	67.4
01/02/00	08/02/00	-	33.5	< 0.7	< 0.7	234.1	52.1	14.9	273.2	5.0	< 1.0	5.3	-	42.0	50.1
08/02/00	15/02/00	-	62.5	< 2.1	< 2.1	504.6	160.5	46.2	577.0	10.2	< 9.7	1.7	-	88.0	64.5
15/02/00	22/02/00	-	12.8	4.3	< 0.7	79.0	17.8	3.9	92.1	1.5	< 1.0	3.3	-	18.0	30.6
22/02/00	29/02/00	-	24.0	< 0.7	< 0.7	172.2	38.4	7.8	203.7	3.4	< 1.0	3.2	-	32.0	67.9
29/02/00	07/03/00	-	28.7	2.2	< 2.1	189.4	66.9	16.6	217.0	3.3	< 9.7	5.9	-	37.0	60.4
07/03/00	14/03/00	-	31.1	2.4	< 0.7	200.1	44.8	14.9	226.7	4.2	< 1.0	7.0	-	37.0	48.8
14/03/00	21/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	2.8
21/03/00	28/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.7
28/03/00	04/04/00	-	7.0	4.9	1.1	29.9	7.4	3.6	34.0	1.0	< 1.0	3.4	-	10.0	12.7
04/04/00	11/04/00	-	20.3	11.3	6.4	86.2	17.5	8.9	91.2	2.3	< 9.7	9.9	-	19.0	4.2
11/04/00	18/04/00	-	23.1	12.7	10.8	75.6	15.8	3.4	84.9	1.4	< 9.7	14.0	-	21.0	55.5
18/04/00	25/04/00	-	19.3	12.3	6.2	25.9	5.9	2.7	29.8	< 1.3	< 9.7	16.2	-	14.0	17.2
25/04/00	02/05/00	-	22.5	5.9	< 2.1	111.7	24.5	4.3	132.4	2.0	< 9.7	9.1	-	26.0	28.9
02/05/00	09/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/05/00	16/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16/05/00	23/05/00	-	17.8	7.0	3.5	46.6	9.7	3.4	48.3	< 1.3	< 9.7	12.1	-	14.0	17.0
23/05/00	30/05/00	-	19.1	6.7	< 2.1	67.1	14.0	4.2	72.2	1.6	< 9.7	11.0	-	19.0	21.5
30/05/00	06/06/00	-	27.3	12.3	3.9	95.9	21.2	6.9	107.8	1.9	< 9.7	15.8	-	26.0	9.6
06/06/00	13/06/00	-	41.1	4.2	3.0	272.4	60.8	13.7	323.6	5.8	< 1.0	8.3	-	51.0	24.2
13/06/00	20/06/00	-	47.1	28.7	39.4	108.5	25.8	16.4	120.7	2.5	< 1.0	34.1	-	33.0	18.8
20/06/00	27/06/00	-	16.1	10.2	4.0	26.6	5.8	6.0	28.9	1.3	< 1.0	12.9	-	13.0	6.7
27/06/00	04/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
04/07/00	11/07/00	-	9.8	5.0	1.7	18.5	4.1	1.8	21.3	< 0.5	< 1.0	7.6	-	10.0	19.8
11/07/00	18/07/00	-	31.1	4.1	2.9	99.1	22.1	11.4	117.3	1.5	< 1.0	19.2	-	24.0	3.5
18/07/00	25/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25/07/00	01/08/00	-	50.8	44.0	34.2	3.2	1.8	4.9	5.3	< 0.5	< 1.0	50.4	-	33.0	13.8
01/08/00	08/08/00	-	5.8	2.7	< 0.7	14.5	3.3	1.8	15.5	0.6	< 1.0	4.1	-	< 10.0	18.2
08/08/00	15/08/00	-	6.6	7.2	4.3	4.1	1.0	2.9	3.5	0.7	< 1.0	6.1	-	< 10.0	12.1
15/08/00	22/08/00	-	7.5	2.9	< 0.7	6.2	1.4	1.5	5.6	0.5	< 1.0	6.8	-	< 10.0	33.1
22/08/00	29/08/00	-	22.4	17.4	16.8	7.6	1.9	6.7	7.7	1.1	< 1.0	21.5	-	12.0	19.7
29/08/00	05/09/00	-	22.6	28.9	17.5	14.5	3.4	3.2	14.9	0.7	< 1.0	20.9	-	18.0	16.3
05/09/00	12/09/00	-	31.3	3.6	2.6	214.8	48.5	11.8	258.6	4.8	< 1.0	5.4	-	41.0	16.9
12/09/00	19/09/00	-	8.5	6.0	3.5	7.7	2.0	5.6	9.1	0.7	< 1.0	7.5	-	< 10.0	9.9
19/09/00	26/09/00	-	33.3	40.8	28.5	22.2	5.3	6.9	24.4	2.3	< 1.0	30.6	-	25.0	9.0
26/09/00	03/10/00	-	19.8	15.8	5.4	64.6	14.3	7.5	72.8	1.4	< 1.0	12.0	-	17.0	7.6
03/10/00	10/10/00	-	11.3	4.0	1.4	48.8	11.0	3.3	60.3	1.2	< 1.0	5.4	-	13.0	50.1
10/10/00	17/10/00	-	13.4	12.5	1.7	58.9	13.0	3.8	75.2	1.4	< 1.0	6.3	-	19.0	66.6
17/10/00	24/10/00	-	18.5	3.9	< 0.7	118.3	27.5	5.6	151.4	2.3	< 1.0	4.3	-	25.0	14.6
24/10/00	31/10/00	-	16.3	2.9	< 0.7	108.1	24.0	5.5	130.7	3.0	< 1.0	3.3	-	22.0	87.9
31/10/00	07/11/00	-	19.3	10.4	4.4	106.4	23.6	6.2	127.1	3.1	< 1.0	6.5	-	23.0	10.4
07/11/00	14/11/00	-	27.4	8.2	< 0.7	186.0	42.4	8.0	221.8	3.9	< 1.0	5.0	-	39.0	40.2
14/11/00	21/11/00	-	21.4	1.8	< 0.7	156.8	34.5	7.5	183.7	3.2	< 1.0	2.5	-	29.0	51.2
21/11/00	28/11/00	-	11.1	18.5	2.8	28.7	6.4	2.9	33.4	0.8	< 1.0	7.7	-	17.0	28.3
28/11/00	05/12/00	-	13.7	6.9	0.9	48.6	11.3	3.8	63.7	1.2	< 1.0	7.8	-	14.0	28.0
05/12/00	12/12/00	-	10.3	11.9	1.7	41.1	8.6	3.0	47.8	2.0	< 1.0	5.3	-	14.0	35.2
12/12/00	19/12/00	-	21.3	3.5	< 0.7	150.3	33.8	6.7	177.1	3.0	< 1.0	3.2	-	28.0	53.0
19/12/00	26/12/00	-	14.1	20.9	2.7	36.1	8.2	3.4	41.6	1.0	< 1.0	9.8	-	20.0	9.2
26/12/00	02/01/01	-	18.2	17.7	4.7	70.0	16.3	4.8	88.0	1.6	< 1.0	9.8	-	21.0	5.4

Precipitation weighted annual mean for site: samples containing phosphate are excluded.

Total Rainfall

5010	-	25.5	6.4	3.0	152.9	39.8	10.5	178.9	3.3	-	7.1	-	31.4	1383.9
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Achanarras

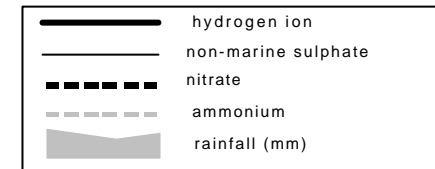
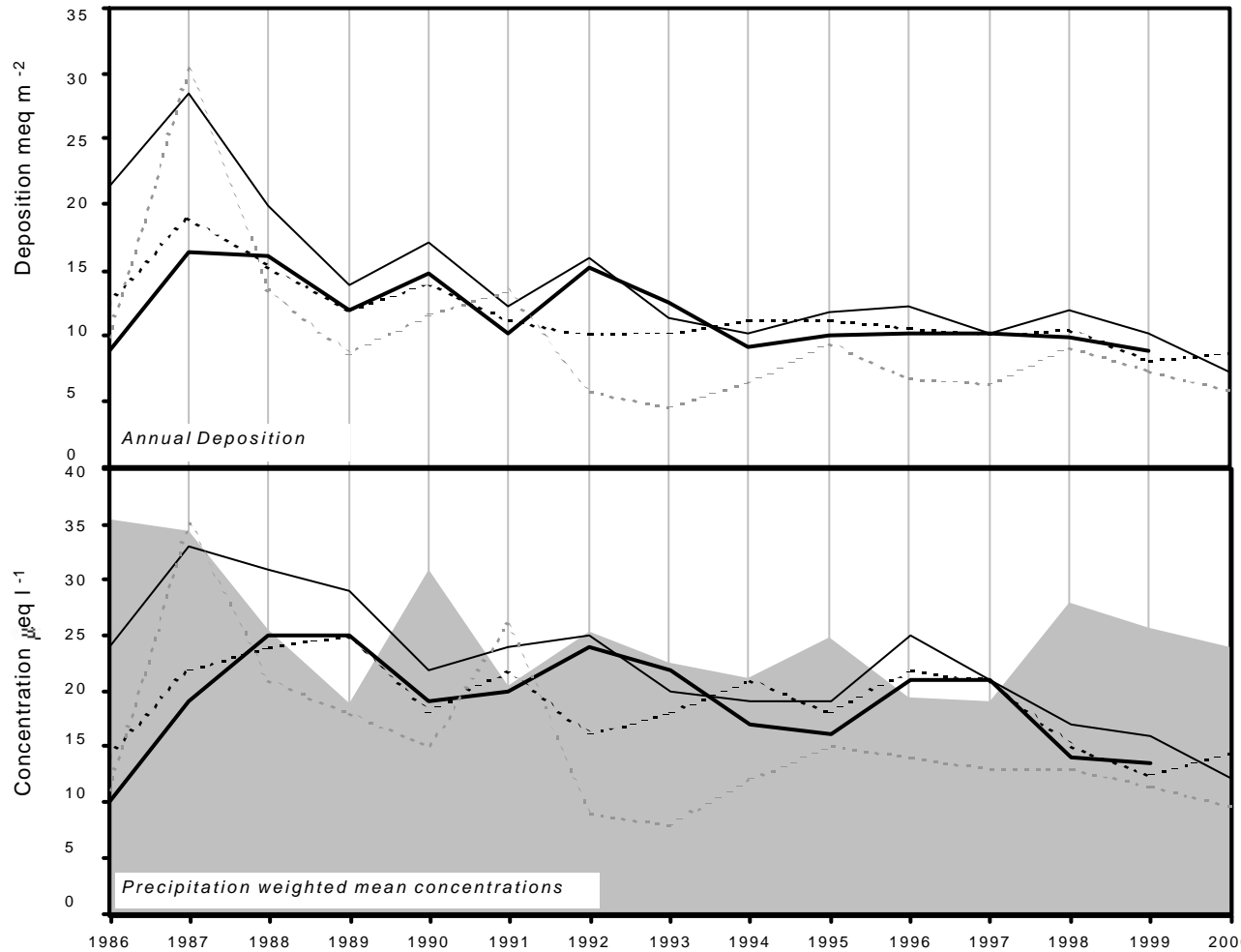
2000

Site Code: 5140
 Easting: 3151
 Northing: 9550
 Latitude: 58 28 31 N
 Longitude: 03 27 21 W
 Altitude (m): 98
 Rainfall (mm): 973
 [30 year mean 1940 - 1971]

Site Environment:
Open moorland, farm pastures

Other measurements:
DT

Site Operator:
Mrs. J Erridge



long-term trends in concentration (+x = increase; -x = decrease)	
hydrogen ion	-0.22 ueq/l (-1.05 %/year): 14 years' data - No significant trend detected
non-marine sulphate	-1.05 ueq/l (-3.53 %/year): 15 years' data +++ Strong trend detected
nitrate	-0.38 ueq/l (-1.76 %/year): 15 years' data - No significant trend detected
ammonium	-0.83 ueq/l (-3.91 %/year): 15 years' data + Significant trend detected

ACID DEPOSITION DATA REPORT, 2000

Sampling		pH	SO ₄	NO ₃	NH ₄	Na	Mg	Ca	Cl	K	PO ₄	nss-SO ₄	H	conductivity	rainfall
Start Date	End Date		($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{eq l}^{-1}$)	($\mu\text{S cm}^{-1}$)	mm
02/01/00	05/01/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8
05/01/00	12/01/00	-	57.4	< 2.1	< 2.1	453.7	104.8	19.3	537.0	9.0	< 9.7	2.8	-	80.0	12.2
12/01/00	19/01/00	-	74.7	< 2.1	< 2.1	556.9	122.3	24.9	634.7	11.6	< 9.7	7.6	-	97.0	10.5
19/01/00	26/01/00	-	108.7	2.7	2.8	816.8	189.1	36.6	996.4	16.5	< 9.7	10.3	-	144.0	9.5
26/01/00	01/02/00	-	124.9	< 2.1	< 2.1	979.1	219.9	49.3	1133.0	21.3	< 9.7	7.0	-	168.0	10.7
01/02/00	09/02/00	-	79.5	6.7	< 2.1	615.0	140.3	33.1	865.7	12.6	< 9.7	5.4	-	109.0	18.1
09/02/00	16/02/00	-	96.0	< 2.1	< 2.1	770.8	171.4	33.6	911.6	15.3	< 9.7	3.1	-	131.0	10.0
16/02/00	23/02/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8
23/02/00	01/03/00	-	70.2	2.9	< 2.1	502.1	111.4	22.9	574.1	9.9	< 9.7	9.7	-	90.0	11.1
01/03/00	08/03/00	-	27.2	2.4	< 2.1	185.0	43.1	9.6	222.9	3.6	< 9.7	4.9	-	37.0	29.9
08/03/00	15/03/00	-	58.2	4.1	< 2.1	424.1	97.3	24.2	499.5	8.6	< 9.7	7.1	-	96.0	12.9
15/03/00	22/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
22/03/00	29/03/00	-	-	-	-	-	-	-	-	-	-	-	-	-	3.7
29/03/00	05/04/00	-	22.5	8.6	7.2	127.1	27.9	8.6	156.2	3.0	< 1.0	7.1	-	27.0	13.3
05/04/00	12/04/00	-	41.3	19.0	23.9	187.2	41.5	10.5	221.1	4.4	< 1.0	18.7	-	41.0	15.3
12/04/00	19/04/00	-	30.5	24.1	14.4	107.3	24.7	8.3	131.6	2.2	< 1.0	17.5	-	32.0	22.3
19/04/00	26/04/00	-	34.4	9.7	10.8	150.1	33.2	9.1	182.7	3.1	< 1.0	16.3	-	35.0	20.3
26/04/00	03/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.2
03/05/00	10/05/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
10/05/00	17/05/00	-	58.7	84.7	39.4	169.6	40.3	40.0	145.6	7.5	< 1.0	38.3	-	-	2.4
17/05/00	24/05/00	-	31.4	10.5	12.1	88.3	19.4	8.4	99.0	2.6	< 1.0	20.8	-	23.0	7.8
24/05/00	31/05/00	-	32.9	22.0	12.1	83.6	19.7	9.1	94.2	2.1	< 1.0	22.8	-	29.0	20.5
31/05/00	07/06/00	-	40.5	14.1	7.7	201.6	44.3	12.3	234.3	4.6	< 1.0	16.2	-	41.0	8.7
07/06/00	14/06/00	-	39.6	12.5	9.5	181.2	40.0	12.0	216.9	4.4	< 1.0	17.8	-	38.0	6.6
14/06/00	21/06/00	-	36.1	29.5	38.7	37.1	9.5	10.9	39.4	1.5	< 1.0	31.6	-	17.0	10.7
21/06/00	28/06/00	-	26.0	6.5	4.7	93.2	19.6	7.3	104.5	2.1	< 1.0	14.8	-	21.0	10.4
28/06/00	05/07/00	-	78.8	45.2	66.6	266.4	50.8	28.2	298.7	8.1	< 1.0	46.7	-	-	1.6
05/07/00	12/07/00	-	30.9	8.9	17.1	97.6	21.4	7.3	113.2	2.4	< 1.0	19.1	-	25.0	10.8
12/07/00	19/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9
19/07/00	26/07/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
26/07/00	02/08/00	-	149.8	47.1	1160.9	34.1	19.2	9.6	45.1	66.4	234.7	145.7	-	152.0	2.2
02/08/00	09/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	-
09/08/00	16/08/00	-	10.2	6.2	55.8	19.1	2.8	1.9	18.8	3.1	7.3	7.9	-	11.0	2.7
16/08/00	23/08/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3
23/08/00	30/08/00	-	19.9	20.9	13.5	5.7	2.0	3.7	5.9	0.6	< 1.0	19.2	-	14.0	17.6
30/08/00	06/09/00	-	23.7	31.4	21.6	62.2	15.1	9.3	72.8	2.7	< 1.0	16.2	-	23.0	7.7
06/09/00	13/09/00	-	34.2	11.9	12.6	196.7	42.8	11.6	217.8	4.3	< 1.0	10.5	-	37.0	9.5
13/09/00	20/09/00	-	120.4	18.6	381.3	147.5	34.5	15.2	195.9	49.4	216.6	102.6	-	85.0	11.4
20/09/00	27/09/00	-	75.9	109.1	62.3	306.1	70.5	22.3	343.6	9.6	< 1.0	39.0	-	76.0	6.7
27/09/00	04/10/00	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9
04/10/00	11/10/00	-	64.3	24.4	113.3	265.1	66.0	17.4	316.0	28.0	45.9	32.4	-	69.0	37.4
11/10/00	18/10/00	-	35.0	18.8	7.4	218.2	48.7	11.4	278.2	5.2	< 1.0	8.8	-	44.0	14.6
18/10/00	25/10/00	-	24.4	9.7	16.6	133.0	28.8	7.4	157.0	4.6	< 1.0	8.3	-	26.0	9.9
25/10/00	01/11/00	-	42.1	5.3	2.2	323.9	69.1	16.7	383.9	6.6	< 1.0	3.1	-	58.0	5.7
01/11/00	08/11/00	-	38.4	10.4	2.9	271.0	59.0	12.3	307.9	5.4	< 1.0	5.8	-	52.0	25.2
08/11/00	15/11/00	-	15.4	7.9	3.5	85.2	19.2	4.9	105.2	2.1	< 1.0	5.2	-	20.0	37.3
15/11/00	22/11/00	-	28.3	13.8	7.8	170.0	37.4	8.1	195.8	4.0	< 1.0	7.8	-	37.0	44.7
22/11/00	29/11/00	-	41.3	38.4	18.2	137.9	33.0	11.8	171.2	3.5	< 1.0	24.7	-	42.0	8.1
29/11/00	06/12/00	-	35.3	25.9	23.7	143.8	31.4	10.6	174.8	3.5	< 1.0	18.0	-	38.0	4.5
06/12/00	13/12/00	-	36.5	10.8	4.2	237.0	53.5	10.7	294.3	4.7	< 1.0	7.9	-	46.0	45.8
13/12/00	20/12/00	-	109.8	50.4	17.6	674.9	155.7	31.6	820.2	14.5	< 1.0	28.5	-	130.0	10.4
20/12/00	27/12/00	-	73.4	46.1	32.7	454.5	101.5	24.1	540.7	9.2	4.0	18.6	-	80.0	3.4
27/12/00	03/01/01	-	35.6	12.9	12.9	186.5	42.4	9.7	231.8	4.0	< 1.0	13.2	-	38.0	4.7
Precipitation weighted annual mean for site: samples containing phosphate are excluded.														Total Rainfall	
5140	-	42.3	14.4	9.7	251.3	56.6	13.7	302.1	5.5	-	12.1	-	50.8	598.1	

Appendix 2

Tables of Annual Mean Concentrations and Total Rainfall, 1986 TO 2000

Table A.2.1 - Precipitation-weighted Annual Mean Acidity, 1986 to 2000 ($\mu\text{eq l}^{-1}$)

Site	Year	Precipitation-weighted Annual Mean Acidity ($\mu\text{eq l}^{-1}$)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		20	23	15	19	14	26	15	17	20	18	19	20	14	13	-
Yarner Wood		17	20	14	20	13	17	18	17	18	15	18	18	12	14	-
Barcombe Mills		19	22	13	15	12	20	17	24	16	16	14	16	11	13	-
Compton		25	28	16	25	14	18	35	34	23	13	7	12	11	7	-
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	12	-
Flatford Mill		33	43	35	35	27	43	36	25	27	30	25	26	25	27	-
Woburn		45	50	37	37	28	35	37	27	30	22	15	24	25	14	-
Tycanol Wood		16	17	15	18	14	21	21	17	14	14	16	13	11	11	-
Llyn Brianne		16	21	18	19	17	24	20	19	16	12	14	15	12	11	-
Pumlumon		-	-	-	14	12	16	18	19	13	14	15	12	9	10	-
Stoke Ferry		35	36	30	40	18	22	30	27	18	24	16	19	18	17	-
Preston Montford		18	25	24	36	14	27	38	35	30	27	19	16	8	7	-
Bottesford		61	76	81	48	42	62	68	62	36	29	22	22	20	17	-
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	13	-
Beddgelert		17	19	17	15	12	16	14	18	12	11	12	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	-	11	11	12	-
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	25	-
Wardlow Hay Cop		29	45	33	37	24	33	34	36	27	28	22	18	16	10	-
Driby		42	43	42	47	41	41	45	35	36	37	18	22	34	21	-
Jenny Hurn		89	100	85	63	53	80	81	67	39	58	54	55	45	33	-
Thorganby		75	73	88	84	64	55	82	80	44	51	44	29	43	16	-
High Muffles		58	63	72	55	55	58	59	47	42	41	40	33	35	22	-
Bannisdale		30	27	28	24	18	22	25	31	19	17	20	16	15	13	-
Hillsborough Forest		-	-	-	13	7	12	12	17	12	8	13	6	7	9	-
Lough Navar		11	9	10	10	8	6	8	11	7	8	6	7	5	6	-
Cow Green Reservoir		27	31	34	23	21	24	28	33	21	17	24	11	16	13	-
Scot Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	14	-
Loch Dee		29	23	19	15	15	19	17	22	15	13	19	11	10	12	-
Beags Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	9	-
Redesdale		41	44	52	32	30	33	42	31	31	25	33	27	25	16	-
Eskdalemuir		21	25	27	20	24	22	22	26	17	16	17	17	14	14	-
Whiteadder		40	36	47	35	31	36	45	34	33	32	31	32	23	19	-
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	16	-
Balquhiddy		21	32	24	20	16	22	20	24	22	18	29	15	15	12	-
Polloch		-	-	-	-	-	14	14	15	13	12	16	10	8	9	-
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	20	-
Glen Dye		-	45	46	36	39	44	41	35	42	41	56	32	28	22	-
Allt a' Mharcaidh		22	22	21	20	18	17	17	17	18	16	19	16	11	10	-
Strathvaich Dam		-	16	16	13	11	15	20	13	11	10	13	12	10	10	-
Achanarras		10	19	25	25	19	20	24	22	17	16	21	21	14	14	-

Table A.2.2 - Precipitation-weighted Annual Mean Non-marine Sulphate, 1986 to 2000 ($\mu\text{eq l}^{-1}$)

Site	Year	Precipitation-weighted Annual Mean Acidity ($\mu\text{eq l}^{-1}$)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		30	34	21	29	24	36	22	29	26	24	31	25	17	17	20
Yarner Wood		27	37	22	27	19	28	25	28	28	24	33	27	18	18	14
Barcombe Mills		46	50	40	44	38	52	43	33	36	33	38	25	30	26	21
Compton		78	104	64	60	58	63	63	48	55	49	61	42	38	32	26
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	18	14
Flatford Mill		90	71	67	80	58	71	53	41	50	52	52	41	43	45	34
Woburn		73	80	85	73	66	63	57	44	59	46	56	39	42	38	30
Tycanol Wood		27	26	23	26	22	31	27	22	22	22	27	19	18	21	16
Llyn Brianne		24	29	26	27	27	30	28	26	26	22	26	20	19	17	15
Pumlumon		-	-	-	19	19	24	24	23	18	21	23	17	14	14	11
Stoke Ferry		80	76	66	84	81	77	67	54	61	50	52	49	43	40	41
Preston Montford		45	60	56	60	37	66	64	48	52	60	49	32	27	24	25
Bottesford		90	93	109	83	66	75	73	57	63	55	54	43	45	39	33
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	17	17
Beddgelert		53	33	24	22	19	23	22	24	20	20	24	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	-	14	16	17	13
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	39	32
Wardlow Hay Cop		71	92	83	80	73	85	73	71	76	65	78	59	50	49	41
Driby		69	74	77	79	80	78	65	49	62	70	49	42	53	41	37
Jenny Hurn		110	106	121	98	89	83	77	60	80	65	81	58	70	54	51
Thorganby		85	80	88	87	82	119	88	79	72	56	69	62	60	50	45
High Muffles		63	74	82	73	67	75	71	56	60	51	65	47	49	37	36
Bannisdale		41	38	45	40	41	38	42	45	37	37	44	31	30	25	22
Hillsborough Forest		-	-	-	52	36	42	41	40	45	33	45	26	29	31	23
Lough Navar		19	16	14	18	14	18	17	18	16	16	17	15	12	10	11
Cow Green Reservoir		35	39	44	35	33	34	38	40	31	31	37	26	26	25	19
Scoat Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	23	17
Loch Dee		32	35	36	24	26	28	27	28	25	24	36	18	19	19	19
Beaghs Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	37	16
Redesdale		58	46	62	47	36	43	46	35	42	37	51	37	34	25	23
Eskdalemuir		31	30	33	28	31	30	28	29	28	28	28	24	20	20	15
Whiteadder		53	48	61	46	33	45	50	37	40	43	44	33	27	24	24
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	16	16
Balquhiddy		26	33	28	24	22	27	23	26	22	21	38	21	19	15	15
Polloch		-	-	-	-	-	17	17	14	16	14	18	11	10	9	9
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	23	21
Glen Dye		-	48	49	41	39	45	43	38	46	41	62	31	29	27	21
Allt a' Mharcaidh		24	24	20	19	15	16	16	16	18	14	23	13	11	10	10
Strathvaich Dam		-	16	14	12	10	13	18	11	9	10	16	12	9	8	7
Achanarras		24	33	31	29	22	24	25	20	19	19	25	21	17	16	12

Table A.2.3 - Precipitation-weighted Annual Mean Nitrate, 1986 to 2000 ($\mu\text{eq l}^{-1}$)

Site	Year	Precipitation-weighted Annual Mean Acidity ($\mu\text{eq l}^{-1}$)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		19	27	16	22	20	31	17	23	24	23	28	28	18	20	17
Yarner Wood		16	24	14	18	13	19	16	20	25	21	31	27	14	17	11
Barcombe Mills		27	31	25	30	24	36	25	19	29	28	28	23	21	25	16
Compton		38	46	38	36	28	36	39	28	34	28	36	33	29	27	24
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	10	8
Flatford Mill		39	45	43	56	38	44	40	30	37	39	38	36	39	41	32
Woburn		39	40	39	47	35	40	36	31	47	35	39	35	35	38	27
Tycanol Wood		12	15	12	15	11	18	14	12	16	15	18	16	11	13	10
Llyn Brianne		12	14	13	14	16	18	16	14	18	16	17	17	12	13	10
Pumlumon		-	-	-	10	9	14	13	13	12	15	16	14	7	10	8
Stoke Ferry		48	44	39	55	46	48	43	36	43	39	37	41	38	40	39
Preston Montford		22	32	26	31	20	35	38	27	32	38	33	24	19	21	22
Bottesford		41	41	44	50	34	43	36	34	40	33	34	33	30	33	29
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	13	9
Beddgelert		17	16	13	11	10	12	10	14	13	15	15	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	-	11	10	12	9
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	31	24
Wardlow Hay Cop		25	36	31	36	26	38	29	33	35	33	40	30	24	28	25
Driby		39	44	47	48	46	50	46	38	49	50	39	40	45	39	35
Jenny Hurn		44	48	44	51	43	45	42	33	47	42	45	38	45	40	37
Thorganby		41	43	42	49	40	50	42	46	40	37	38	38	34	32	34
High Muffles		37	43	47	45	38	47	37	36	42	38	43	35	36	32	31
Bannisdale		20	18	21	19	17	21	19	23	22	21	25	22	18	21	16
Hillsborough Forest		-	-	-	26	16	23	16	21	23	21	29	19	16	22	13
Lough Navar		8	8	7	9	7	9	9	10	15	12	10	12	6	7	7
Cow Green Reservoir		19	21	25	20	20	21	23	25	21	22	24	18	18	20	17
Scot Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	16	12
Loch Dee		14	19	18	14	14	16	15	19	18	16	22	14	13	13	14
Beaghs Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	13	10
Redesdale		34	26	33	31	26	31	36	26	32	27	33	35	30	25	23
Eskdalemuir		15	18	19	18	15	19	16	19	19	19	20	20	15	17	14
Whiteadder		34	29	42	34	23	32	35	29	34	31	35	30	24	22	25
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	19	14
Balquhiddy		13	21	16	13	10	17	13	18	17	14	24	16	13	12	12
Polloch		-	-	-	-	-	9	9	9	11	10	10	8	5	6	6
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	18	18
Glen Dye		-	31	32	31	29	33	28	33	42	36	42	29	27	24	26
Allt a' Mharcaidh		10	12	10	10	9	10	8	7	15	11	14	11	9	8	9
Strathvaich Dam		-	10	8	7	6	9	9	8	9	9	10	10	6	8	6
Achanarras		14	22	24	25	18	22	16	18	21	18	22	21	15	13	14

Table A.2.4 - Precipitation-weighted Annual Mean Ammonium, 1986 to 2000 (mg l^{-1})

Site	Year	Precipitation-weighted Annual Mean Acidity ($\mu\text{eq l}^{-1}$)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		17	22	12	18	16	24	15	30	13	17	25	21	10	12	13
Yarner Wood		15	28	14	19	13	22	17	23	25	20	37	26	14	17	9
Barcombe Mills		38	41	38	39	35	50	31	16	30	33	32	22	18	25	14
Compton		70	73	46	56	55	63	57	40	53	53	79	53	48	44	29
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	10	6
Flatford Mill		-	50	49	66	44	59	40	31	40	48	49	38	43	45	34
Woburn		54	50	52	56	43	52	41	35	55	48	63	40	36	47	29
Tycanol Wood		13	15	13	15	14	19	13	11	15	18	22	15	12	16	10
Llyn Brianne		12	13	14	16	16	20	18	15	16	18	19	15	13	14	12
Pumlumon		-	-	-	13	13	17	20	14	13	21	18	16	10	12	7
Stoke Ferry		65	60	56	75	69	74	54	43	61	53	56	55	49	50	49
Preston Montford		47	57	49	53	44	57	57	36	50	54	60	38	36	38	30
Bottesford		56	45	49	68	54	48	40	33	55	48	56	45	45	48	37
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	12	9
Beddgelert		14	11	12	15	14	13	15	14	11	14	17	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	-	10	11	14	8
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	34	25
Wardlow Hay Cop		34	40	39	39	40	57	45	39	47	46	58	38	33	37	30
Driby		53	60	64	53	67	76	55	42	48	64	54	49	49	44	39
Jenny Hurn		64	51	53	64	64	65	45	28	55	50	66	53	61	46	45
Thorganby		59	56	61	65	80	124	82	-	57	60	57	59	53	50	42
High Muffles		40	46	54	53	48	64	44	40	50	48	61	44	45	37	34
Bannisdale		35	27	30	30	32	34	27	31	32	36	40	33	27	27	23
Hillsborough Forest		-	-	-	60	45	48	40	43	49	43	62	40	38	43	39
Lough Navar		11	9	8	11	8	9	12	11	11	16	14	14	9	9	10
Cow Green Reservoir		20	19	25	23	24	26	25	28	21	30	26	27	20	23	19
Scot Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	21	14
Loch Dee		21	34	21	20	21	24	28	21	23	19	27	17	17	19	17
Beaghs Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	20	15
Redesdale		41	15	23	34	24	32	30	21	30	33	44	37	32	28	24
Eskdalemuir		20	16	19	22	18	26	17	18	21	26	24	24	18	20	15
Whiteadder		30	20	35	32	17	30	27	22	24	28	33	24	21	20	23
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	12	12
Balquhidder		14	15	12	14	11	16	16	15	12	12	24	18	14	12	8
Polloch		-	-	-	-	-	8	8	5	6	7	7	6	5	5	3
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	16	16
Glen Dye		-	26	29	28	25	32	22	28	33	29	43	23	22	22	20
Allt a' Mharcaidh		6	10	3	7	5	5	4	4	8	5	7	5	5	6	4
Strathvaich Dam		-	4	3	4	3	5	5	4	4	5	5	6	4	4	3
Achanarras		11	35	21	18	15	26	9	8	12	15	14	13	13	11	10

Table A.2.5 - Precipitation-weighted Annual Mean Sodium, 1986 to 2000 (meq l⁻¹)

Site	Year	Precipitation-weighted Annual Mean Acidity (µeq l ⁻¹)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		264	206	212	276	506	327	238	227	265	270	313	284	292	292	299
Yarner Wood		98	125	150	166	245	140	104	101	123	128	127	118	127	88	104
Barcombe Mills		186	255	153	204	359	137	128	98	147	176	195	164	154	173	199
Compton		54	67	70	84	129	71	40	55	64	64	76	77	58	55	45
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	96	103
Flatford Mill		99	60	54	79	79	70	57	54	73	79	76	60	59	49	63
Woburn		71	65	50	60	87	54	28	41	56	51	61	58	36	46	34
Tycanol Wood		116	90	104	232	232	163	120	119	164	157	146	159	145	151	144
Llyn Brianne		94	68	83	112	152	111	72	97	90	84	94	96	90	103	90
Pumlumon		-	-	-	104	141	102	72	69	73	79	81	113	95	85	93
Stoke Ferry		74	49	50	58	84	75	57	53	54	46	71	55	56	55	44
Preston Montford		86	38	86	39	100	164	38	66	58	64	35	80	40	54	33
Bottesford		82	35	59	47	62	54	35	35	39	49	58	27	33	39	25
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	110	90
Beddgelert		126	75	122	134	193	162	95	111	98	129	97	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	-	107	88	104	70
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	60	46
Wardlow Hay Cop		71	52	90	57	140	131	57	95	94	66	82	60	65	70	40
Driby		95	53	64	98	91	103	67	70	83	100	121	58	77	65	62
Jenny Hurn		97	47	80	68	104	55	37	47	53	54	73	36	61	51	30
Thorganby		74	50	52	69	90	96	50	51	52	51	59	45	67	53	33
High Muffles		61	63	67	95	83	103	78	111	88	113	153	82	106	76	61
Bannisdale		122	62	133	116	161	182	91	106	95	129	95	156	101	131	76
Hillsborough Forest		-	-	-	89	140	107	72	87	125	108	107	78	97	90	90
Lough Navar		248	102	317	139	261	192	133	187	174	125	116	131	136	171	152
Cow Green Reservoir		74	40	69	76	90	84	74	72	77	93	91	99	89	100	55
Scot Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	85	71
Loch Dee		116	54	136	132	147	123	86	79	92	106	91	109	91	124	101
Beaghs Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	171	151
Redesdale		114	44	66	91	67	80	59	73	76	75	93	55	65	65	50
Eskdalemuir		86	37	62	81	86	2	53	63	77	88	63	66	76	102	61
Whiteadder		112	53	83	92	78	59	79	103	120	100	121	93	80	86	93
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	112	69
Balquhiddy		122	45	59	110	100	89	61	145	120	71	122	87	81	123	83
Polloch		-	-	-	-	-	213	118	204	155	168	148	127	161	195	150
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	39	33
Glen Dye		-	52	73	83	81	78	65	86	108	98	121	112	91	83	71
Allt a' Mharcaidh		90	37	45	88	62	46	57	143	92	57	66	70	65	83	63
Strathvaich Dam		-	83	109	126	174	147	121	212	154	102	130	116	122	180	153
Achanarras		231	145	217	277	212	235	186	224	217	169	219	167	202	249	251

Table A.2.6 - Precipitation-weighted Annual Mean Magnesium, 1986 to 2000 ($\mu\text{eq l}^{-1}$)

Site	Year	Precipitation-weighted Annual Mean Acidity ($\mu\text{eq l}^{-1}$)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		61	48	49	63	19	77	57	54	64	73	86	82	87	93	73
Yarner Wood		23	30	35	38	58	32	26	28	33	38	37	35	41	37	24
Barcombe Mills		44	62	35	49	85	34	33	28	40	48	58	48	48	57	47
Compton		13	19	21	21	31	18	11	15	18	20	25	26	26	27	11
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	40	24
Flatford Mill		32	17	16	23	22	19	15	15	18	20	21	17	20	18	16
Woburn		9	11	13	18	24	14	9	12	15	15	18	18	13	19	8
Tycanol Wood		27	21	24	53	54	39	29	31	43	45	43	45	48	54	32
Llyn Brianne		21	16	20	27	36	27	19	26	25	24	29	27	32	41	20
Pumlumon		-	-	-	24	32	23	19	20	23	25	25	33	35	37	21
Stoke Ferry		20	12	13	16	23	18	16	15	16	12	21	16	19	22	11
Preston Montford		21	11	22	11	24	43	11	18	20	42	15	25	25	27	9
Bottesford		26	11	18	16	18	16	11	10	12	14	16	10	14	17	6
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	40	21
Beddgelert		29	18	26	31	44	37	24	29	28	37	31	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	-	32	33	41	16
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	21	11
Wardlow Hay Cop		18	15	25	17	35	32	15	25	27	18	24	18	23	27	9
Driby		24	14	18	27	27	26	18	22	22	26	34	18	23	24	15
Jenny Hurn		36	16	30	25	35	21	14	16	22	19	24	13	22	20	10
Thorganby		22	16	17	23	27	31	16	15	19	15	19	16	23	27	10
High Muffles		15	17	19	23	29	27	19	30	23	29	39	21	30	26	15
Bannisdale		29	15	33	27	38	43	23	27	27	35	27	41	32	48	18
Hillsborough Forest		-	-	-	21	31	24	20	25	36	34	29	27	42	38	21
Lough Navar		57	24	80	32	60	47	34	48	48	38	37	40	53	63	43
Cow Green Reservoir		17	10	17	18	22	20	19	19	22	25	25	29	29	41	13
Scoat Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	32	16
Loch Dee		29	12	31	31	35	29	22	22	25	31	28	34	35	48	27
Beaghs Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	64	46
Redesdale		26	12	19	23	18	19	15	20	21	21	27	17	21	27	13
Eskdalemuir		20	9	15	20	21	25	14	17	22	26	20	20	30	41	16
Whiteadder		26	13	22	23	20	15	19	26	33	26	31	26	25	33	22
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	40	16
Balquhiddy		29	11	14	26	24	21	16	37	31	22	33	24	28	52	18
Polloch		-	-	-	-	-	48	30	52	40	46	41	37	54	68	35
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	17	8
Glen Dye		-	12	18	21	21	19	16	22	26	25	30	28	26	29	16
Allt a' Mharcaidh		21	8	12	20	15	11	14	35	24	16	20	19	23	36	17
Strathvaich Dam		-	20	25	28	39	32	31	51	42	31	40	33	42	69	40
Achanarras		55	37	46	64	49	54	46	56	58	45	59	43	61	83	57

Table A.2.7 - Precipitation-weighted Annual Mean Calcium, 1986 to 2000 ($\mu\text{eq l}^{-1}$)

Site	Year	Precipitation-weighted Annual Mean Acidity ($\mu\text{eq l}^{-1}$)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		16	15	14	18	31	22	18	18	19	24	23	21	27	31	20
Yarner Wood		11	15	12	13	17	15	12	13	18	18	16	16	20	22	10
Barcombe Mills		20	29	22	30	33	32	22	20	28	29	37	25	49	43	20
Compton		23	51	33	22	32	30	23	20	34	41	55	34	61	36	15
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	18	8
Flatford Mill		33	21	27	37	29	24	18	21	25	21	22	18	26	26	16
Woburn		23	30	38	28	32	24	19	18	24	21	34	23	28	33	11
Tycanol Wood		12	9	9	31	17	13	11	10	14	17	16	15	19	26	10
Llyn Brianne		7	8	9	10	15	10	10	10	12	12	12	11	17	19	7
Pumlumon		-	-	-	7	11	11	9	7	9	12	10	12	14	17	7
Stoke Ferry		31	22	24	28	45	33	32	25	30	22	35	34	33	39	16
Preston Montford		14	19	19	14	14	37	18	17	24	76	28	18	34	28	9
Bottesford		36	33	50	33	23	29	19	17	23	29	25	21	31	31	10
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	16	9
Beddgelert		9	10	13	9	12	11	11	11	14	18	13	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	-	11	14	16	6
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	22	10
Wardlow Hay Cop		47	59	56	55	75	57	55	52	64	55	69	64	89	92	28
Driby		18	19	27	34	33	27	18	19	28	35	30	21	26	26	12
Jenny Hurn		56	45	73	48	50	39	27	26	60	31	35	23	44	38	19
Thorganby		25	25	30	37	35	67	27	24	67	29	32	33	53	57	18
High Muffles		13	21	23	27	20	23	21	19	25	26	23	21	20	28	10
Bannisdale		13	12	14	13	15	16	15	14	16	17	16	17	20	28	8
Hillsborough Forest		-	-	-	13	14	17	16	15	24	25	24	21	36	34	11
Lough Navar		17	10	21	12	18	25	19	24	27	26	25	23	29	33	15
Cow Green Reservoir		7	8	12	12	13	11	13	12	13	16	14	13	16	23	7
Scoat Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	16	7
Loch Dee		10	9	11	9	11	10	11	9	11	14	10	12	23	19	10
Beags Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	61	37
Redesdale		12	10	20	18	11	14	13	10	18	13	16	13	13	19	8
Eskdalemuir		7	5	8	21	8	10	8	9	14	13	8	10	17	17	6
Whiteadder		14	14	20	16	11	13	12	12	18	19	15	13	14	19	9
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	13	5
Balquhiddy		8	5	6	9	8	11	8	11	10	9	10	9	16	19	7
Polloch		-	-	-	-	-	16	13	13	14	13	12	11	20	24	9
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	10	4
Glen Dye		-	7	10	11	9	9	10	10	12	10	10	10	10	15	6
Allt a' Mharcaidh		10	8	7	8	7	6	9	11	12	7	11	9	13	17	6
Strathvaich Dam		-	7	7	8	13	9	10	13	14	11	15	11	16	20	11
Achanarras		16	15	20	20	21	17	17	18	18	17	18	15	20	28	14

Table A.2.8 - Precipitation-weighted Annual Mean Chloride, 1986 to 2000 (meq l⁻¹)

Site	Year	Precipitation-weighted Annual Mean Acidity (µeq l ⁻¹)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		311	242	253	322	595	373	265	255	296	313	368	320	324	325	353
Yarner Wood		118	152	180	190	291	160	122	116	139	147	149	133	143	98	124
Barcombe Mills		226	310	186	252	427	161	156	115	166	202	230	187	180	195	237
Compton		54	92	94	110	159	89	54	73	74	81	91	89	68	64	55
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	116	125
Flatford Mill		109	80	70	99	95	88	71	67	79	95	90	68	69	57	76
Woburn		82	82	61	75	109	69	38	50	64	61	66	64	41	52	40
Tycanol Wood		141	109	123	266	268	190	135	135	178	184	171	178	162	170	173
Llyn Brianne		107	83	99	131	178	129	81	109	100	95	107	106	101	117	106
Pumlumon		-	-	-	124	165	118	83	76	83	91	95	127	108	97	110
Stoke Ferry		95	65	66	73	101	90	72	63	62	57	86	62	63	62	52
Preston Montford		109	56	114	59	123	203	50	83	72	84	46	94	47	63	42
Bottesford		115	58	100	78	97	85	62	63	55	67	74	37	42	43	32
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	124	106
Beddgelert		154	83	137	156	225	185	107	128	105	149	112	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	-	120	99	120	85
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	69	57
Wardlow Hay Cop		99	85	131	84	183	163	78	121	113	87	104	74	78	80	50
Driby		128	76	90	126	135	123	88	84	98	125	144	69	90	78	75
Jenny Hurn		169	99	151	123	170	124	86	84	83	99	111	72	89	68	47
Thorganby		140	102	121	139	166	180	123	106	96	96	90	64	107	73	49
High Muffles		89	96	106	131	146	140	110	139	108	146	187	98	126	88	73
Bannisdale		148	75	168	141	193	213	107	124	109	151	113	178	114	149	88
Hillsborough Forest		-	-	-	106	165	123	84	102	140	130	123	89	110	102	106
Lough Navar		293	125	409	166	298	222	153	215	191	144	135	150	155	188	179
Cow Green Reservoir		91	52	85	91	107	98	86	84	89	108	105	117	100	113	66
Scot Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	95	83
Loch Dee		152	66	159	159	173	144	96	89	106	121	106	123	102	138	120
Beaghs Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	194	178
Redesdale		133	54	84	112	83	97	72	92	86	89	108	62	74	73	60
Eskdalemuir		105	47	76	97	103	118	65	71	85	101	74	74	87	113	73
Whiteadder		129	64	100	110	93	69	93	117	132	115	139	104	91	97	112
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	129	82
Balquhiddy		146	58	70	131	125	104	70	166	135	83	146	100	92	140	98
Polloch		-	-	-	-	-	249	135	226	169	191	176	143	183	226	180
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	43	39
Glen Dye		-	64	86	98	98	91	78	102	124	115	146	124	103	93	83
Allt a' Mharcaidh		104	39	52	104	72	53	65	158	99	66	76	82	75	93	73
Strathvaich Dam		-	101	129	148	207	168	138	227	169	116	149	131	138	202	179
Achanarras		280	174	253	317	251	272	209	255	245	195	246	189	225	280	302

Table A.2.9 - Precipitation-weighted Annual Mean Sulphate, 1986 to 2000 ($\mu\text{eq l}^{-1}$)

Site	Year	Precipitation-weighted Annual Mean Acidity ($\mu\text{eq l}^{-1}$)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		61	59	47	63	85	75	50	57	58	56	69	59	53	51	56
Yarner Wood		39	52	40	47	49	44	38	40	43	39	48	41	34	28	27
Barcombe Mills		68	80	58	68	82	68	58	45	54	54	61	45	48	47	45
Compton		84	112	72	70	73	71	67	55	63	57	70	51	45	38	32
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	29	27
Flatford Mill		102	78	73	89	67	79	59	48	58	62	61	48	50	50	42
Woburn		82	86	91	81	76	70	60	49	66	52	63	46	46	44	34
Tycanol Wood		41	37	36	54	50	51	41	37	42	40	45	38	36	39	34
Llyn Brianne		36	37	36	40	46	43	36	38	37	32	38	31	30	29	26
Pumlumon		-	-	-	32	35	34	32	31	27	30	33	31	26	23	22
Stoke Ferry		89	82	72	91	91	86	74	60	68	56	61	55	49	47	46
Preston Montford		56	65	66	65	49	85	69	56	59	68	53	42	31	31	29
Bottesford		100	98	116	89	73	82	77	62	67	61	61	47	49	43	36
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	30	28
Beddgelert		61	39	39	38	42	43	34	38	32	35	35	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	-	27	27	30	21
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	46	38
Wardlow Hay Cop		80	98	94	86	90	100	80	83	87	73	88	66	58	58	45
Driby		80	80	85	91	91	90	73	58	72	82	64	49	62	49	45
Jenny Hurn		121	112	130	107	101	90	81	66	86	72	90	62	78	60	55
Thorganby		94	86	94	96	93	126	94	85	78	62	76	68	69	56	49
High Muffles		70	82	90	85	77	87	80	69	70	65	83	57	62	46	44
Bannisdale		56	45	61	54	60	60	53	57	48	53	55	50	42	39	31
Hillsborough Forest		-	-	-	62	53	55	50	51	60	46	58	36	41	41	34
Lough Navar		48	28	34	34	46	41	33	40	37	31	31	31	28	30	29
Cow Green Reservoir		44	43	53	44	44	44	47	49	40	43	48	38	36	34	26
Scoat Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	33	26
Loch Dee		47	41	52	39	43	42	37	38	36	37	47	31	29	34	31
Beaghs Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	58	34
Redesdale		72	51	70	58	44	52	53	44	51	46	63	44	42	33	28
Eskdalemuir		41	35	41	38	42	43	34	37	38	38	36	32	30	31	23
Whiteadder		66	55	72	58	42	52	59	49	54	55	58	44	37	35	35
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	27	24
Balquhiddy		41	39	35	37	34	38	31	43	38	30	52	31	29	29	25
Polloch		-	-	-	-	-	42	31	39	34	33	36	26	30	32	27
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	27	25
Glen Dye		-	54	58	51	49	54	51	48	60	53	76	44	40	35	30
Allt a' Mharcaidh		35	29	26	29	23	22	23	32	29	21	31	22	19	19	17
Strathvaich Dam		-	26	27	27	31	30	33	35	28	22	32	26	24	26	26
Achanarras		52	50	57	63	48	52	47	47	45	40	51	41	41	46	42

Table A.2.10 - Annual volume of Rain Samples collected in the Secondary Network*, 1986 to 2000 (mm)

Site	Year	Precipitation-weighted Annual Mean Acidity ($\mu\text{eq l}^{-1}$)														
		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Goonhilly		907	879	910	753	790	800	776	1008	999	744	743	1000	936	831	935
Yarner Wood		1150	1015	1123	1131	1174	1058	1049	1398	1333	1135	1007	1218	1383	1106	1315
Barcombe Mills		740	849	678	597	639	620	653	738	806	652	539	818	733	655	1215
Compton		586	629	530	550	407	449	709	644	586	647	392	576	642	644	856
Crai Reservoir		-	-	-	-	-	-	-	-	-	-	-	-	-	2190	2293
Flatford Mill		528	660	532	392	393	362	510	518	438	335	231	409	493	546	613
Woburn		758	672	592	540	400	478	694	655	505	515	328	456	620	537	663
Tycanol Wood		1508	1318	1385	1340	1437	1422	1572	1692	1460	1320	1366	1589	1547	1246	1735
Llyn Brianne		1491	1497	1434	1417	1483	1224	1488	1573	1474	1143	1195	1296	1737	1725	1984
Pumlumon		-	-	-	1896	1936	1908	2129	2123	2445	1622	1554	1780	2641	2230	2411
Stoke Ferry		503	617	537	495	348	350	508	601	479	375	318	519	517	435	577
Preston Montford		539	570	514	580	538	443	554	585	520	409	403	550	590	666	789
Bottesford		545	651	531	469	434	377	557	651	526	327	289	596	573	540	682
Llyn Llagi		-	-	-	-	-	-	-	-	-	-	-	-	-	2177	2979
Beddgelert		2758	2231	2794	2480	2394	2028	3013	2152	2375	2097	747	-	-	-	-
Llyn Llydaw		-	-	-	-	-	-	-	-	-	-	827	2068	2777	2313	3086
River Etherow		-	-	-	-	-	-	-	-	-	-	-	-	-	876	1206
Wardlow Hay Cop		928	889	837	708	711	617	849	852	977	581	530	853	1018	860	1068
Driby		702	685	605	457	473	398	676	636	513	375	415	578	620	598	616
Jenny Hurn		518	652	409	443	351	354	505	546	452	460	301	423	530	554	610
Thorganby		503	625	516	364	434	329	511	485	496	395	348	477	448	597	703
High Muffles		711	875	855	599	806	626	836	947	740	670	693	827	980	936	1160
Bannisdale		2249	2101	2091	1699	2270	1857	2027	1794	2290	1690	1328	1771	2167	1798	2552
Hillsborough Forest		-	-	-	642	909	668	635	802	614	742	662	824	777	730	900
Lough Navar		1439	1144	1492	1242	1617	1459	1977	1517	1631	1521	1373	1395	1686	1383	1297
Cow Green Reservoir		1129	1216	1138	858	1165	957	1073	1118	1293	807	1149	1058	1353	1275	1633
Scot Tarn		-	-	-	-	-	-	-	-	-	-	-	-	-	2110	2728
Loch Dee		2373	2311	2619	2001	2574	2196	2659	1950	2393	2036	1928	2269	2473	2373	-
Beaghs Burn		-	-	-	-	-	-	-	-	-	-	-	-	-	1417	1695
Redesdale		745	828	832	499	724	581	662	585	541	507	444	437	843	632	842
Eskdalemuir		1523	1275	1396	1236	1528	1248	1609	1330	1631	1202	1211	1487	1700	1479	1628
Whiteadder		584	718	712	489	721	569	665	722	566	473	395	546	750	583	817
Loch Chon		-	-	-	-	-	-	-	-	-	-	-	-	-	2123	1838
Balquhidder		2008	1428	1736	1967	2398	1683	1814	1575	1547	1637	1096	1579	1540	1863	1674
Polloch		-	-	-	-	-	2021	2355	1790	2012	1788	1606	1904	2250	2099	2011
Loch Nagar		-	-	-	-	-	-	-	-	-	-	-	-	-	988	1436
Glen Dye		-	898	1067	659	809	691	758	969	637	724	740	1049	1005	792	1238
Allt a' Mharcaidh		777	664	761	638	907	729	757	826	714	678	477	601	846	874	895
Strathvaich Dam		-	959	1205	1357	1713	1396	1609	1147	1272	1282	885	1200	1458	1444	1384
Achanarras		889	864	642	476	776	512	635	567	535	622	488	478	700	646	598

* All samples including those with phosphate contamination

Appendix 3

Geostatistics

GEOSTATISTICS

The use of geostatistics in the analysis of United Kingdom precipitation composition was described by Webster *et al.* (1991). A brief discussion is reproduced here. In a geostatistical treatment of spatial variability the concentration of an ion in precipitation, 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 x 20 km grid square the variance would probably be smaller than within a 200 km x 200 km square. The dependence of the variance on separation (usually termed the lag) is described by a quantity known as the semi-variance:

$$\gamma(h) = \frac{\sum (z_1 - z_2)^2}{2n} \quad 1$$

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

$$\gamma(h) = c_0 + c_1 (1 - e^{-h/a}) \quad 2$$

Spherical

$$\gamma(h) = c_0 + \frac{c_1}{2} \left\{ \frac{3h}{a} - \left(\frac{h}{a} \right)^3 \right\} \quad 3$$

Linear

$$\gamma(h) = c_0 + \omega h^\theta \quad 4$$

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 variate has an unlimited capacity for spatial dispersion. There is no sill and the parameter ω is called the factor and θ 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 $l_1 z_1 + l_2 z_2 + \dots$. 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.

The models fitted to the experimental points in the variogram for \log_e [acidity], non-marine sulphate, nitrate and ammonium are listed in Table A.3.1.

Table A.3.1 - Variogram Models fitted to 2000 Annual Mean Concentrations of the Major Ions

Ion	Model	Sill ($\mu\text{eq l}^{-1}$) ²	Range (km)
acidity (\log_e transformed)	exponential	0.45	260
non-marine sulphate	exponential	400	300
nitrate	exponential	200	260
ammonium	exponential	400	260

Appendix 4

Sulphur Data, 2000

A4.1	Sulphur Dioxide
A4.2	Particulate Sulphate

Appendix 4.1

Sulphur Dioxide Data, 2000

Monthly and Annual Mean Concentrations of Sulphur Dioxide as S (SO₂ - S) in 2000
Concentration in Air (µg S m⁻³)

Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean
Eskdalemuir	0.27	0.29	0.22	0.52	0.35	0.27	0.30	-	0.29	0.24	0.35	0.51	0.35
Stoke Ferry	1.75	1.24	1.48	1.24	0.73	0.90	0.83	0.78	0.57	1.21	1.61	1.27	1.14
Lough Navar	0.21	0.19	0.22	0.29	0.31	0.18	0.28	0.28	0.15	0.09	0.13	0.28	0.22
Barcombe Mills	1.39	0.76	-	1.20	1.25	0.87	0.75	0.67	0.39	-	0.46	0.69	0.85
Yarner Wood	0.79	0.30	0.54	0.56	0.58	0.49	0.37	0.32	0.16	0.09	0.24	0.48	0.42
High Muffles	1.47	1.06	0.64	1.84	1.09	1.42	0.85	1.14	1.26	1.80	2.31	3.76	1.55
Strathvaich Dam	0.15	0.15	0.13	0.24	0.21	0.13	0.16	0.17	0.22	0.17	0.21	0.23	0.18
Glen Dye	0.23	0.31	0.19	0.41	0.50	0.31	0.25	0.37	0.38	0.34	0.45	0.53	0.35

Note: - indicates that no average was determined as the data capture was less than 75%.

National Environmental Technology Centre
 Site: 5002 Eskdalemuir - Sulphur Dioxide as S (SO₂ - S)
 Concentration in air (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.29	0.16	0.33	0.44	1.36	0.17	1.52	N	<0.20	0.71	<0.22	<0.23
2 - 3	0.20	<0.19	<0.15	0.21	0.41	0.51	0.31	N	0.27	0.52	0.72	0.29
3 - 4	0.31	<0.14	0.35	0.42	0.13	0.35	0.19	N	0.21	<0.20	<0.24	<0.23
4 - 5	<0.14	<0.10	0.21	2.76	0.26	0.15	0.44	N	0.90	<0.23	<0.25	0.37
5 - 6	<0.13	<0.13	0.27	1.06	0.15	0.15	0.30	N	<0.17	<0.21	0.42	<0.24
6 - 7	0.16	<0.12	0.14	0.56	0.25	0.18	0.14	N	<0.19	<0.20	<0.23	0.23
7 - 8	<0.14	0.17	<0.12	0.97	0.19	0.20	0.16	N	<0.28	0.30	0.37	0.32
8 - 9	0.21	<0.13	<0.12	0.35	0.42	0.28	0.13	N	<0.19	0.20	1.11	<0.24
9 - 10	0.18	0.18	<0.13	0.20	0.52	0.24	0.28	N	<0.19	0.27	0.83	<0.25
10 - 11	0.20	0.27	0.13	0.22	0.14	0.31	0.34	N	<0.22	<0.20	0.47	<0.25
11 - 12	0.20	<0.13	0.14	0.18	0.12	0.22	0.55	N	0.27	0.26	<0.24	<0.23
12 - 13	0.13	0.15	0.15	0.65	0.71	0.16	0.22	1.85	<0.18	0.60	<0.27	<0.23
13 - 14	0.34	<0.14	<0.11	1.22	0.93	0.16	0.12	0.80	<0.19	0.26	<0.27	<0.24
14 - 15	0.88	0.18	0.16	0.42	1.33	0.26	0.14	0.43	<0.19	0.34	<0.22	0.95
15 - 16	0.61	0.11	<0.14	0.40	0.31	0.20	0.38	0.89	0.53	<0.23	N	1.18
16 - 17	0.17	0.26	<0.12	0.34	0.49	0.68	0.21	0.60	0.21	<0.22	N	0.27
17 - 18	0.16	0.22	0.20	0.21	0.39	0.36	0.36	0.82	<0.18	0.22	N	0.45
18 - 19	0.28	0.34	0.16	0.53	0.14	0.34	0.21	0.41	<0.22	N	N	0.34
19 - 20	0.30	0.79	0.12	0.36	0.29	0.42	0.27	1.66	0.76	N	N	1.25
20 - 21	0.11	1.13	0.11	0.19	0.17	<0.13	0.17	1.46	<0.19	N	N	1.31
21 - 22	0.18	0.15	0.16	0.23	0.17	0.15	0.33	0.29	0.29	N	N	1.08
22 - 23	1.07	2.32	0.40	0.15	0.24	0.10	0.16	0.34	<0.20	N	0.25	0.98
23 - 24	0.50	0.22	1.08	0.23	0.17	<0.08	0.15	0.27	0.72	N	<0.26	0.26
24 - 25	0.47	0.22	0.16	0.53	0.26	0.33	0.32	0.19	0.21	N	0.36	<0.27
25 - 26	0.57	0.27	0.25	0.20	0.16	0.55	0.27	1.22	0.60	0.51	0.53	<0.23
26 - 27	0.15	0.18	0.38	0.37	0.19	<0.10	0.22	0.24	<0.21	0.24	0.38	0.51
27 - 28	<0.12	0.19	0.40	0.75	0.19	0.93	0.23	1.13	0.25	<0.21	0.39	0.48
28 - 29	<0.15	N	0.12	0.75	0.13	0.18	N	0.24	0.25	<0.24	0.31	1.98
29 - 30	<0.12	0.13	0.13	0.30	0.26	0.11	N	0.35	0.77	<0.19	0.57	1.54
30 - 31	<0.12		0.16	0.27	0.18	0.10	N	0.29	1.05	<0.20	0.31	0.32
31 - 1	0.13		0.63		0.17		N	0.25		<0.23		0.47
Arithmetic Mean (3)	0.27	0.29	0.22	0.52	0.35	0.27	0.30	-	0.29	0.24	0.35	0.51
Standard Deviation (3)	0.24	0.46	0.21	0.51	0.32	0.20	0.27	-	0.28	0.18	0.26	0.50
Sample Size	31	28	31	30	31	30	27	20	30	24	23	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: 5004 Stoke Ferry - Sulphur Dioxide as S (SO₂ - S)
 Concentration in air (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	N	4.26	2.20	0.63	0.87	0.60	1.06	0.51	0.55	0.52	1.06	0.46
2 - 3	N	2.34	1.65	1.08	N	1.22	0.37	0.53	0.55	0.73	1.05	0.38
3 - 4	N	1.81	2.41	2.03	N	1.58	0.54	0.66	0.58	0.49	0.74	0.59
4 - 5	0.55	1.31	2.06	4.78	<0.19	0.20	1.71	1.43	1.07	0.91	1.90	0.64
5 - 6	1.21	1.44	1.63	2.70	0.83	0.90	1.01	0.46	0.63	1.98	0.76	1.02
6 - 7	1.11	0.62	1.02	0.60	1.53	0.80	0.34	1.26	0.49	3.72	0.84	1.53
7 - 8	0.87	0.78	0.53	0.92	0.41	0.82	1.04	2.94	0.82	0.68	2.16	0.71
8 - 9	0.64	0.79	0.22	2.03	0.27	0.63	1.21	1.44	0.21	1.02	3.03	0.43
9 - 10	1.35	0.86	1.54	0.64	N	1.29	0.39	0.41	1.66	0.67	1.04	0.38
10 - 11	1.50	0.82	1.13	1.34	N	0.99	0.48	0.81	0.33	0.35	1.56	0.53
11 - 12	1.31	1.27	1.34	1.15	0.40	0.43	1.01	0.60	1.72	1.18	0.34	0.36
12 - 13	0.58	0.64	0.82	0.58	0.27	0.26	1.31	1.72	0.67	0.30	1.42	0.31
13 - 14	1.39	1.12	1.70	0.64	1.43	0.66	0.89	0.28	0.81	8.04	1.22	0.44
14 - 15	1.19	0.99	1.78	2.94	0.94	0.86	2.12	0.37	0.22	0.74	1.21	1.33
15 - 16	1.17	1.15	2.08	1.67	0.91	0.79	0.53	0.58	0.39	0.94	10.99	3.35
16 - 17	3.81	1.04	4.94	1.74	N	1.11	0.80	0.53	<0.20	1.03	1.23	2.07
17 - 18	3.89	1.71	2.38	1.57	N	2.67	1.70	0.66	0.40	2.42	1.93	5.54
18 - 19	1.36	0.84	0.54	N	1.50	1.60	N	0.40	0.42	0.77	1.55	0.64
19 - 20	1.40	0.78	0.55	N	0.90	N	N	0.41	0.31	0.60	1.06	0.62
20 - 21	3.25	0.90	0.69	0.28	0.41	0.63	0.91	1.32	0.27	1.52	2.23	0.99
21 - 22	3.68	1.19	0.80	0.15	0.24	0.51	0.56	0.36	0.73	1.53	0.96	0.88
22 - 23	2.25	2.86	0.73	0.43	1.29	0.62	0.33	0.69	0.24	0.70	0.61	0.58
23 - 24	0.90	1.15	1.19	0.25	<0.21	1.72	0.22	0.25	0.89	1.04	2.08	0.82
24 - 25	1.59	1.16	0.54	0.41	1.34	0.67	0.30	0.79	0.27	0.73	1.25	0.27
25 - 26	2.80	0.68	0.98	N	1.10	0.60	0.58	0.66	0.64	0.52	0.57	0.41
26 - 27	3.60	1.05	0.86	N	0.67	0.61	N	0.79	0.52	0.45	0.90	N
27 - 28	2.18	0.53	2.79	1.11	0.21	1.78	1.41	0.35	0.53	0.95	0.73	0.82
28 - 29	1.94	0.75	0.68	1.82	0.80	0.59	0.56	0.59	0.21	0.55	1.86	2.44
29 - 30	1.50	N	1.63	0.36	0.67	0.38	0.82	1.45	0.60	0.48	0.80	3.89
30 - 31	0.72		3.23	0.32	0.61	0.45	0.46	0.43	0.28	0.56	1.21	4.93
31 - 1	1.36		1.35		0.51		0.64	0.59		1.26		0.88
Arithmetic Mean (3)	1.75	1.24	1.48	1.24	0.73	0.90	0.83	0.78	0.57	1.21	1.61	1.27
Standard Deviation (3)	1.03	0.79	0.98	1.06	0.45	0.55	0.48	0.56	0.38	1.45	1.87	1.39
Sample Size	28	28	31	26	25	29	28	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: 5006 Lough Navar - Sulphur Dioxide as S (SO₂ - S)
 Concentration in air (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.15	0.16	0.37	0.10	0.44	0.19	0.64	0.12	0.12	<0.14	0.15	<0.13
2 - 3	0.16	0.14	<0.11	0.14	0.25	N	0.46	0.14	0.14	<0.12	0.29	<0.14
3 - 4	0.36	0.20	0.20	0.30	0.18	0.17	0.40	0.15	0.19	<0.13	<0.14	<0.15
4 - 5	0.27	0.18	0.15	0.50	0.40	<0.14	0.54	0.12	0.14	<0.12	<0.14	<0.14
5 - 6	0.21	0.33	0.51	0.56	N	<0.11	N	0.14	0.13	<0.12	<0.15	0.13
6 - 7	0.21	0.14	0.18	0.69	0.73	0.07	0.16	0.14	0.15	<0.13	0.15	<0.15
7 - 8	0.16	0.18	0.15	0.52	N	<0.11	0.13	0.23	0.17	<0.13	<0.14	0.26
8 - 9	0.16	0.25	0.21	0.17	0.64	0.13	<0.14	0.38	0.11	<0.13	<0.13	<0.14
9 - 10	0.17	0.18	0.27	0.51	0.65	<0.10	0.16	0.16	<0.12	<0.13	0.18	<0.15
10 - 11	0.14	0.17	0.13	N	0.52	0.14	<0.11	0.26	<0.13	<0.12	<0.14	0.17
11 - 12	0.24	0.13	0.15	0.47	0.49	<0.13	0.10	0.23	0.13	<0.14	<0.14	0.21
12 - 13	0.16	0.11	0.14	0.36	0.54	0.13	0.14	0.16	0.12	<0.13	<0.15	0.22
13 - 14	0.48	0.17	0.13	0.44	0.44	0.15	0.13	0.20	0.36	<0.13	<0.20	<0.14
14 - 15	0.31	0.16	0.15	0.21	0.40	0.10	0.11	0.16	0.13	0.14	<0.19	0.20
15 - 16	0.19	0.16	0.12	<0.20	N	0.21	0.13	0.23	0.14	0.24	0.48	<0.14
16 - 17	<0.13	0.18	0.13	0.15	0.18	0.44	0.11	0.16	<0.12	N	0.22	<0.14
17 - 18	0.14	0.20	0.14	0.54	0.13	0.11	0.13	0.16	0.16	N	<0.20	<0.16
18 - 19	0.13	0.16	0.11	0.18	0.17	0.19	0.18	0.23	0.16	N	<0.20	0.26
19 - 20	0.12	0.17	0.18	0.21	N	0.34	0.17	0.13	0.22	N	<0.21	0.23
20 - 21	0.16	0.18	0.18	0.13	0.17	0.26	0.14	0.16	0.15	N	0.15	0.18
21 - 22	0.34	0.22	0.18	0.16	0.48	0.12	0.16	0.75	0.16	N	0.20	0.98
22 - 23	0.13	0.29	0.11	0.22	0.20	0.10	1.21	0.72	0.21	N	0.17	1.05
23 - 24	<0.12	0.23	0.14	0.14	0.12	0.16	0.28	1.44	0.15	0.14	0.20	1.04
24 - 25	0.16	0.18	0.15	0.40	0.12	0.13	0.56	0.29	<0.11	<0.14	<0.15	0.47
25 - 26	0.19	0.29	0.19	0.19	0.11	0.13	0.48	0.64	0.25	0.13	0.15	0.47
26 - 27	0.39	0.21	0.11	0.14	0.11	0.31	0.72	0.15	<0.13	<0.14	<0.15	0.42
27 - 28	0.31	0.15	0.41	0.14	0.13	0.29	0.20	0.14	<0.13	0.13	0.20	0.32
28 - 29	0.13	0.17	0.16	0.18	<0.12	0.28	0.13	0.20	0.15	<0.13	<0.14	0.30
29 - 30	0.43	0.31	1.08	0.24	0.13	0.63	0.20	0.17	<0.12	<0.13	<0.13	0.56
30 - 31	0.17		0.39	0.28	0.23	0.19	0.14	0.40	0.32	0.24	<0.15	0.31
31 - 1	0.17		0.19		N		0.36	0.14		<0.13		0.17
Arithmetic Mean (3)	0.21	0.19	0.22	0.29	0.31	0.18	0.28	0.28	0.15	0.09	0.13	0.28
Standard Deviation (3)	0.10	0.05	0.19	0.17	0.20	0.13	0.25	0.27	0.07	0.05	0.09	0.28
Sample Size	31	29	31	29	26	29	30	31	30	24	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: 5007 Barcombe Mills - Sulphur Dioxide as S (SO₂ - S)
 Concentration in air (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.55	0.40	2.08	0.56	0.58	0.44	0.76	0.60	0.31	0.22	0.29	0.36
2 - 3	0.63	0.83	1.20	0.90	1.64	0.49	0.34	0.57	0.76	<0.17	0.24	0.46
3 - 4	0.50	1.42	1.55	2.77	1.61	0.41	0.36	0.29	0.44	N	0.59	0.53
4 - 5	0.59	0.95	1.83	0.86	4.02	0.60	0.43	0.37	1.02	N	0.61	0.59
5 - 6	0.48	1.14	1.23	2.58	3.49	2.15	N	0.53	0.47	N	0.39	N
6 - 7	0.53	1.29	N	1.16	1.25	0.52	0.44	0.50	0.40	N	0.28	N
7 - 8	0.33	0.87	N	2.20	2.05	0.77	1.14	0.61	0.34	N	1.04	N
8 - 9	0.48	0.48	N	1.56	2.09	0.95	0.40	0.70	0.37	N	1.29	N
9 - 10	0.50	0.78	N	1.96	2.16	0.87	0.25	0.49	0.29	N	0.93	N
10 - 11	0.52	0.62	N	0.85	1.78	0.66	0.48	0.47	0.32	N	0.69	N
11 - 12	0.62	0.69	N	0.95	0.83	0.43	0.95	0.58	0.63	N	0.38	N
12 - 13	0.39	0.69	N	0.77	1.66	0.43	0.78	1.10	0.38	N	0.27	0.33
13 - 14	3.93	0.56	N	1.61	1.63	0.49	1.20	0.52	0.38	N	0.50	0.17
14 - 15	2.29	0.31	N	2.45	1.71	1.13	0.75	0.24	0.49	N	0.29	0.42
15 - 16	1.11	0.56	0.95	0.87	1.65	0.51	0.95	0.54	0.40	N	0.44	0.96
16 - 17	2.08	0.32	1.62	0.97	0.81	0.72	0.47	0.48	0.49	N	0.52	0.54
17 - 18	5.43	0.25	2.31	0.79	0.50	0.90	0.98	0.54	0.51	0.53	0.61	0.39
18 - 19	1.92	0.46	0.92	1.30	0.50	1.35	1.11	1.29	0.28	0.24	0.23	0.23
19 - 20	1.15	1.32	1.28	1.46	0.50	0.93	1.03	0.36	0.24	0.17	0.43	0.43
20 - 21	1.14	0.63	1.48	0.53	1.12	0.97	1.91	0.59	0.23	0.19	0.26	0.44
21 - 22	3.06	0.58	1.14	0.66	0.58	0.48	1.50	0.41	0.43	0.40	0.23	0.66
22 - 23	2.42	1.23	3.89	0.57	0.81	1.12	0.29	0.70	0.41	0.31	<0.12	0.52
23 - 24	2.37	0.82	N	0.67	0.50	0.43	0.38	0.89	0.45	0.19	0.22	0.48
24 - 25	3.68	1.23	0.58	1.18	0.69	1.00	1.05	1.09	0.28	0.39	0.18	1.49
25 - 26	1.65	0.41	0.38	0.70	0.61	1.00	0.53	3.09	0.22	0.46	0.14	0.64
26 - 27	0.84	1.46	0.58	0.76	0.50	0.84	1.10	0.34	0.43	0.61	0.24	0.93
27 - 28	1.81	0.67	1.38	1.26	0.39	1.58	0.58	0.29	<0.16	N	0.21	1.98
28 - 29	0.76	0.30	1.30	1.05	0.28	1.59	0.46	0.33	<0.17	0.18	0.93	0.69
29 - 30	0.46	0.87	0.66	0.90	0.41	0.79	0.44	0.53	0.32	0.25	0.52	1.26
30 - 31	0.51		1.09	1.08	N	1.67	0.88	0.63	0.17	0.19	0.76	1.13
31 - 1	0.46		1.34		N		0.58	1.09		0.49		0.91
Arithmetic Mean (3)	1.39	0.76	-	1.20	1.25	0.87	0.75	0.67	0.39	-	0.46	0.69
Standard Deviation (3)	1.26	0.36	-	0.62	0.92	0.44	0.39	0.52	0.19	-	0.30	0.43
Sample Size	31	29	21	30	29	30	30	31	30	16	30	24

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 (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.18	0.41	0.50	0.19	1.12	0.21	0.20	0.20	0.15	<0.12	<0.10	0.14
2 - 3	0.19	0.34	0.39	0.37	0.49	0.16	0.24	0.32	0.22	0.17	<0.13	0.19
3 - 4	0.21	0.20	0.37	0.73	0.89	0.23	0.37	0.29	0.60	<0.10	0.11	0.22
4 - 5	0.30	0.27	0.34	2.15	2.79	0.16	N	0.19	0.35	0.12	0.23	0.19
5 - 6	0.28	0.43	0.46	1.47	1.62	0.21	0.19	0.19	N	0.10	<0.13	0.33
6 - 7	0.33	0.18	0.22	0.77	1.50	0.29	0.30	0.36	N	0.16	2.06	0.19
7 - 8	0.27	0.15	0.20	1.01	1.30	0.50	0.37	0.38	N	<0.11	0.22	0.33
8 - 9	0.17	0.17	0.20	0.21	0.85	0.47	0.17	0.21	N	0.09	0.25	0.14
9 - 10	0.20	0.28	0.13	0.75	1.69	0.27	0.13	0.21	N	<0.12	0.25	0.16
10 - 11	0.22	N	0.32	N	0.58	0.20	0.19	0.19	N	<0.10	<0.16	0.19
11 - 12	0.31	0.41	0.21	N	0.87	0.13	0.21	0.26	N	<0.10	0.19	0.13
12 - 13	0.38	0.18	0.35	0.65	0.24	0.13	<0.18	0.28	N	<0.14	0.15	0.14
13 - 14	0.56	0.30	0.27	0.44	0.26	<0.13	0.21	0.27	0.17	<0.18	<0.15	0.12
14 - 15	2.12	0.21	0.21	1.58	0.24	N	0.36	0.17	0.12	<0.14	0.57	0.14
15 - 16	1.45	0.47	0.19	N	0.31	0.25	0.34	0.17	<0.12	<0.12	0.13	0.20
16 - 17	1.32	0.24	0.26	0.58	0.28	0.81	0.71	0.19	0.15	<0.19	0.16	0.15
17 - 18	0.80	0.30	0.97	0.19	0.21	0.68	0.50	0.19	<0.13	0.14	0.18	0.13
18 - 19	1.41	0.17	1.11	0.16	0.16	1.45	0.42	<0.14	<0.13	N	0.21	0.19
19 - 20	2.16	0.36	2.85	0.22	0.18	0.31	0.67	0.20	<0.13	N	0.15	0.45
20 - 21	1.46	0.97	0.71	0.23	0.13	0.23	0.54	0.32	0.19	N	0.15	0.54
21 - 22	1.44	0.46	1.40	0.20	0.16	0.18	1.62	0.13	0.14	N	0.23	1.86
22 - 23	0.32	0.39	1.21	0.22	0.18	N	0.48	0.49	0.15	N	0.20	1.44
23 - 24	1.06	0.17	0.29	0.25	0.19	0.24	0.24	0.89	0.27	N	0.12	1.24
24 - 25	0.91	0.17	0.27	0.20	0.22	0.29	0.23	0.89	0.18	N	0.14	0.83
25 - 26	3.21	0.28	0.18	0.16	0.23	0.33	0.63	0.84	0.13	0.18	0.20	0.44
26 - 27	1.37	0.34	0.20	0.16	0.16	1.29	0.32	0.17	0.15	0.11	0.10	0.73
27 - 28	1.00	0.17	N	0.26	0.11	1.31	0.22	0.10	<0.13	<0.13	0.15	2.18
28 - 29	0.29	0.16	0.20	0.24	0.11	1.50	0.15	0.13	0.13	0.15	0.45	0.21
29 - 30	0.18	0.33	0.45	0.33	0.17	1.47	0.19	0.21	<0.12	<0.13	0.17	1.04
30 - 31	0.20		1.06	1.30	0.17	0.40	0.33	1.03	0.12	0.12	N	0.35
31 - 1	0.33		0.63		0.57		0.41	0.45		<0.14		0.20
Arithmetic Mean (3)	0.79	0.30	0.54	0.56	0.58	0.49	0.37	0.32	0.16	0.09	0.24	0.48
Standard Deviation (3)	0.75	0.17	0.56	0.52	0.63	0.46	0.29	0.25	0.12	0.04	0.37	0.54
Sample Size	31	28	30	27	31	28	30	31	22	24	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
 Site: 5009 High Muffles - Sulphur Dioxide as S (SO₂ - S)
 Concentration in air (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.85	0.48	1.34	2.40	0.58	0.75	1.16	0.50	0.48	5.83	0.52	6.02
2 - 3	1.72	0.22	0.88	0.21	1.05	0.23	0.14	2.59	0.76	0.63	0.77	3.36
3 - 4	0.35	0.85	1.61	0.15	0.20	0.16	0.11	1.24	0.59	6.54	0.29	3.27
4 - 5	2.79	0.46	0.63	0.70	0.16	0.10	0.18	0.46	1.51	1.38	0.32	4.11
5 - 6	5.22	1.25	0.66	0.35	0.21	0.16	0.35	0.30	0.67	0.68	1.23	6.17
6 - 7	0.97	2.57	0.33	4.51	0.32	0.94	0.20	1.17	0.37	0.99	0.27	6.25
7 - 8	0.89	1.81	0.23	10.82	0.42	0.55	0.60	0.17	1.21	2.89	0.23	3.87
8 - 9	0.37	0.52	0.28	0.46	0.29	3.56	0.32	0.62	0.37	0.18	2.15	1.12
9 - 10	0.76	1.57	0.14	0.50	0.84	2.82	0.73	N	0.43	1.91	1.59	1.93
10 - 11	2.69	0.35	0.14	0.37	0.26	0.85	0.20	1.76	0.40	1.29	2.57	1.10
11 - 12	0.53	0.73	0.37	1.57	0.27	0.54	1.48	1.04	2.73	0.93	2.74	1.02
12 - 13	0.73	0.13	0.31	0.36	0.53	0.90	0.99	2.75	1.21	1.56	0.94	3.56
13 - 14	2.50	0.28	0.17	0.33	0.82	0.24	0.17	0.63	1.00	1.95	0.74	0.43
14 - 15	0.18	2.45	0.69	0.26	4.12	0.78	1.24	0.41	0.62	2.39	3.30	2.35
15 - 16	2.12	1.25	0.18	0.39	3.30	0.48	0.16	N	0.21	2.34	N	3.54
16 - 17	0.69	1.24	0.89	0.17	5.84	1.43	0.28	0.37	0.67	0.89	N	6.00
17 - 18	4.18	1.29	0.85	2.05	0.25	3.96	1.40	0.21	0.77	4.33	N	13.56
18 - 19	1.01	0.51	0.33	5.12	0.28	2.99	2.22	4.27	1.59	1.14	N	0.90
19 - 20	0.53	0.88	0.37	3.06	0.37	4.91	2.43	1.38	0.51	1.32	N	5.24
20 - 21	7.15	N	0.27	3.95	2.09	8.26	0.52	1.11	2.98	2.13	N	0.98
21 - 22	1.24	N	0.30	2.11	0.58	1.17	1.19	0.45	2.31	1.62	N	1.07
22 - 23	0.76	N	1.80	0.81	0.53	1.39	0.13	0.19	1.12	5.38	1.62	0.66
23 - 24	2.73	N	0.50	1.73	2.60	N	0.13	0.25	1.26	1.45	8.27	0.46
24 - 25	2.15	0.47	3.47	1.12	0.45	0.80	0.21	1.35	1.16	0.90	3.63	0.23
25 - 26	0.58	1.11	0.71	3.14	0.20	0.26	0.54	1.66	1.92	0.30	3.15	0.34
26 - 27	0.37	2.65	0.57	3.00	2.36	0.86	3.28	1.28	1.63	0.68	0.35	5.33
27 - 28	0.32	1.28	0.17	3.23	0.33	0.65	1.85	0.21	3.88	1.18	3.88	9.93
28 - 29	0.31	1.48	0.23	0.28	1.19	0.22	0.84	0.84	4.25	1.18	4.73	15.28
29 - 30	0.16	0.61	0.28	1.36	0.71	0.25	1.32	0.60	0.93	0.88	4.46	3.39
30 - 31	0.15		0.20	0.70	0.65	1.09	0.41	0.69	0.29	0.37	5.34	2.18
31 - 1	0.46		0.98		2.09		1.70	4.61		0.70		3.00
Arithmetic Mean (3)	1.47	1.06	0.64	1.84	1.09	1.42	0.85	1.14	1.26	1.80	2.31	3.76
Standard Deviation (3)	1.62	0.73	0.68	2.22	1.33	1.81	0.80	1.13	1.04	1.61	2.06	3.67
Sample Size	31	25	31	30	31	29	31	29	30	31	23	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: 5010 Strathvaich Dam - Sulphur Dioxide as S (SO₂ - S)
 Concentration in air (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	<0.30	0.11	0.15	<0.10	0.14	0.10	<0.14	0.24	<0.19	1.37	<0.12	0.16
2 - 3	<0.29	<0.08	0.17	0.14	0.17	0.12	<0.14	0.21	<0.17	0.12	<0.12	<0.14
3 - 4	<0.28	<0.10	0.14	0.15	0.18	0.12	0.14	0.14	<0.17	<0.16	0.12	<0.13
4 - 5	<0.27	0.14	0.21	0.14	0.21	0.13	<0.11	0.14	<0.18	<0.13	<0.15	0.16
5 - 6	<0.31	0.09	0.18	0.22	0.16	0.15	0.12	0.22	0.37	<0.13	<0.12	<0.12
6 - 7	0.29	0.11	0.18	0.59	0.24	<0.14	0.10	0.14	<0.16	<0.13	0.13	0.17
7 - 8	<0.28	0.07	0.16	0.38	0.53	0.15	<0.14	0.13	<0.15	0.16	<0.12	0.24
8 - 9	0.27	0.12	<0.11	N	0.32	0.20	<0.13	0.18	<0.15	<0.12	<0.13	<0.13
9 - 10	<0.28	0.11	0.12	0.16	0.36	0.13	0.16	0.16	<0.18	0.24	<0.13	<0.13
10 - 11	<0.31	0.14	<0.11	0.15	0.12	0.12	<0.12	0.16	0.14	<0.13	0.16	<0.14
11 - 12	<0.29	0.37	<0.11	0.13	0.15	0.13	<0.14	0.17	<0.17	0.40	0.62	<0.12
12 - 13	<0.27	0.14	0.17	0.17	0.22	<0.13	<0.15	0.20	<0.17	<0.13	0.14	<0.12
13 - 14	<0.31	0.09	0.13	0.18	0.24	<0.13	<0.12	0.18	<0.13	<0.13	<0.13	<0.12
14 - 15	<0.28	0.13	0.11	0.13	0.52	<0.12	<0.14	0.19	<0.14	<0.13	<0.19	<0.14
15 - 16	<0.30	0.12	0.15	0.23	0.14	<0.11	<0.16	0.14	<0.13	<0.14	0.23	<0.12
16 - 17	<0.29	<0.09	0.11	0.16	0.20	0.27	0.14	0.19	<0.13	<0.13	<0.13	<0.12
17 - 18	<0.30	0.15	0.13	0.15	0.12	0.26	<0.15	0.20	<0.17	N	<0.16	1.02
18 - 19	<0.28	0.14	0.18	0.16	0.19	0.16	0.16	0.14	<0.16	N	0.29	0.77
19 - 20	<0.26	0.11	<0.12	0.83	0.28	0.18	0.19	0.14	0.51	N	0.27	0.86
20 - 21	<0.23	0.29	0.13	0.19	0.34	<0.15	0.21	0.14	0.36	N	0.50	0.43
21 - 22	<0.27	0.10	0.12	0.13	0.22	0.21	0.38	0.17	1.02	N	0.99	0.33
22 - 23	<0.26	0.27	0.15	0.12	0.16	<0.14	0.31	0.15	<0.12	N	0.16	<0.14
23 - 24	<0.26	<0.10	0.22	0.13	0.16	<0.14	0.26	0.12	1.17	N	0.18	0.15
24 - 25	<0.21	0.10	0.11	0.14	0.27	0.16	0.33	<0.15	0.29	0.18	0.21	0.09
25 - 26	0.10	0.16	0.17	0.29	0.16	0.13	0.20	0.23	0.23	0.12	0.38	0.12
26 - 27	0.13	0.13	0.14	0.18	0.14	<0.12	0.32	0.20	0.15	<0.12	0.16	0.12
27 - 28	0.13	0.19	0.15	0.30	0.16	0.47	0.24	0.16	<0.13	<0.14	0.16	0.21
28 - 29	0.11	0.13	0.21	0.67	0.17	0.13	0.17	0.12	0.25	0.27	0.31	0.17
29 - 30	0.15	0.51	<0.12	0.51	0.13	<0.14	0.19	0.21	0.52	<0.13	0.14	0.11
30 - 31	0.14		<0.12	0.15	<0.12	<0.12	0.17	0.21	0.19	<0.12	0.40	<0.14
31 - 1	0.17		0.11		0.11		0.41	<0.18		0.13		1.01
Arithmetic Mean (3)	0.15	0.15	0.13	0.24	0.21	0.13	0.16	0.17	0.22	0.17	0.21	0.23
Standard Deviation (3)	0.04	0.10	0.05	0.18	0.11	0.09	0.10	0.04	0.27	0.27	0.20	0.28
Sample Size	31	29	31	29	31	30	31	31	30	24	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: 5011 Glen Dye - Sulphur Dioxide as S (SO₂ - S)
 Concentration in air (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.27	<0.18	0.41	<0.20	0.18	0.22	0.13	0.26	0.32	1.11	<0.19	0.51
2 - 3	0.22	0.29	0.36	<0.20	0.23	0.18	0.26	0.58	0.14	0.53	<0.19	0.86
3 - 4	0.24	0.27	0.18	<0.19	<0.17	0.22	0.15	0.28	0.27	0.69	0.22	0.58
4 - 5	0.54	<0.19	0.18	0.38	0.18	0.20	0.22	0.28	0.76	<0.17	<0.17	0.70
5 - 6	0.83	<0.21	<0.19	0.51	0.32	0.26	0.18	0.20	N	<0.17	0.19	0.45
6 - 7	0.80	0.39	0.29	1.23	0.36	0.37	0.19	0.20	0.23	<0.18	<0.20	0.72
7 - 8	0.21	0.25	<0.16	0.22	0.26	0.49	0.16	0.33	<0.17	0.38	<0.19	0.56
8 - 9	<0.21	0.25	0.16	0.20	0.44	0.63	0.16	0.27	0.17	<0.19	<0.19	0.23
9 - 10	0.88	0.32	0.25	<0.19	0.41	0.32	0.18	0.25	0.17	0.46	<0.19	0.21
10 - 11	0.41	0.19	<0.18	N	0.30	0.39	<0.18	0.16	<0.20	0.34	1.04	0.34
11 - 12	<0.22	0.29	<0.18	<0.20	0.23	<0.15	0.16	0.46	<0.22	0.21	0.49	0.94
12 - 13	<0.21	<0.19	<0.17	0.23	0.48	0.15	1.09	0.69	<0.22	<0.19	0.99	0.67
13 - 14	<0.22	0.23	<0.19	<0.20	0.57	0.17	<0.15	0.44	0.52	<0.19	<0.19	<0.18
14 - 15	<0.23	0.25	0.20	0.20	3.65	0.19	<0.16	0.21	0.19	0.38	N	<0.20
15 - 16	<0.19	0.46	<0.17	0.63	2.02	0.17	0.15	N	<0.18	0.85	N	<0.20
16 - 17	<0.19	0.19	<0.19	<0.20	0.65	0.23	0.17	0.20	<0.16	<0.19	N	<0.19
17 - 18	<0.20	0.33	<0.18	<0.21	0.16	0.62	0.18	0.24	0.32	N	N	1.35
18 - 19	<0.20	<0.22	0.61	0.19	0.19	0.85	0.24	0.22	0.35	N	N	1.60
19 - 20	<0.20	<0.21	<0.18	0.76	0.21	0.27	0.24	0.19	0.40	N	N	0.65
20 - 21	<0.21	0.98	<0.16	0.44	0.82	0.79	0.23	0.18	0.81	N	N	2.52
21 - 22	<0.20	0.18	<0.19	0.46	0.73	0.34	0.22	N	1.92	N	0.43	0.26
22 - 23	<0.20	1.55	<0.18	0.50	0.36	0.24	0.21	0.21	<0.19	N	<0.19	<0.19
23 - 24	<0.20	0.61	<0.19	1.04	0.62	0.23	0.18	0.93	0.74	N	0.23	<0.19
24 - 25	0.20	<0.21	0.26	2.43	0.19	0.23	0.50	0.25	0.34	0.32	0.31	<0.20
25 - 26	<0.19	<0.18	0.45	<0.19	0.16	0.32	0.27	1.48	0.40	<0.13	0.90	0.20
26 - 27	<0.20	0.53	0.36	<0.19	0.51	0.24	0.29	0.26	0.25	0.25	0.19	<0.21
27 - 28	0.20	<0.20	<0.22	1.11	0.22	0.35	0.62	<0.20	0.23	0.15	0.90	0.23
28 - 29	0.21	0.21	0.45	<0.19	0.30	0.17	0.32	<0.21	0.73	0.46	0.97	<0.22
29 - 30	<0.18	0.43	<0.21	<0.13	0.20	0.19	0.19	0.32	1.15	0.62	0.71	<0.22
30 - 31	0.25		<0.19	0.32	0.19	<0.18	0.31	0.79	<0.15	0.22	1.87	0.20
31 - 1	<0.20		<0.21		0.29		0.38	0.75		0.37		1.70
Arithmetic Mean (3)	0.23	0.31	0.19	0.41	0.50	0.31	0.25	0.37	0.38	0.34	0.45	0.53
Standard Deviation (3)	0.23	0.31	0.14	0.51	0.68	0.19	0.19	0.30	0.40	0.27	0.47	0.58
Sample Size	31	29	31	29	31	30	31	29	29	24	23	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%.

Appendix 4.2

Particulate Sulphate Data, 2000

Monthly and Annual Mean Concentrations of Particulate Sulphate as S (SO₄ - S) in 2000
Concentration in Air (µg S m⁻³)

Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean
Eskdalemuir	0.29	0.29	0.47	0.59	0.54	0.59	0.60	-	0.50	0.21	0.29	0.43	0.44
Stoke Ferry	0.64	0.66	0.98	0.97	1.17	1.07	0.85	0.99	0.71	0.42	0.54	0.78	0.82
Lough Navar	0.23	0.22	0.36	0.39	0.73	0.54	0.52	0.40	0.33	0.22	0.41	0.50	0.40
Barcombe Mills	1.00	0.71	-	0.82	1.30	1.05	0.98	0.67	0.54	0.30	0.31	0.57	0.78
Yarner Wood	0.46	0.29	0.61	0.37	0.91	0.79	0.76	0.43	-	0.24	0.21	0.47	0.50
High Muffles	0.43	0.43	0.57	0.71	0.80	0.80	0.76	0.67	0.62	0.43	0.47	0.57	0.61
Strathvaich Dam	0.11	0.11	0.22	0.27	0.39	0.30	0.33	0.25	0.40	0.16	0.15	0.15	0.24
Glen Dye	0.18	0.27	0.31	0.40	0.54	0.45	0.41	0.49	0.49	0.30	0.27	0.42	0.38

Note: - indicates that no average was determined as the data capture was less than 75%.

National Environmental Technology Centre
 Site: 5002 Eskdalemuir - Sulphate as S (SO₄ - S)
 Concentration in air ($\mu\text{g S m}^{-3}$)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.48	0.23	0.16	1.40	1.07	0.46	2.02	N	0.50	0.94	0.17	0.27
2 - 3	0.36	0.17	0.18	0.86	0.83	0.40	1.72	N	0.41	0.17	0.34	0.34
3 - 4	0.35	0.34	0.15	0.22	0.56	0.35	2.08	N	0.62	0.44	0.07	0.33
4 - 5	0.28	0.51	0.14	0.20	0.47	1.12	0.81	N	0.73	0.13	0.11	0.38
5 - 6	0.32	N	0.49	0.18	0.55	0.67	0.32	N	0.27	0.09	0.40	0.41
6 - 7	0.24	0.28	0.44	0.45	1.01	0.42	0.14	N	0.15	0.09	0.13	0.36
7 - 8	0.31	0.36	0.18	1.21	0.76	0.55	0.19	N	<0.35	0.09	0.22	0.53
8 - 9	0.27	0.27	0.09	0.43	0.74	0.52	0.13	N	0.32	0.17	0.12	0.05
9 - 10	0.31	0.39	0.16	1.24	1.03	0.35	0.19	N	0.32	0.13	0.13	0.33
10 - 11	0.40	0.30	0.57	0.60	0.65	0.45	0.25	N	0.30	0.14	0.27	0.23
11 - 12	0.07	0.40	0.27	0.30	0.58	0.37	0.20	N	1.21	0.13	0.12	0.16
12 - 13	0.22	0.16	0.43	1.10	0.97	0.38	0.39	0.08	0.50	0.20	0.24	0.18
13 - 14	0.16	0.19	0.33	1.10	0.80	0.28	0.15	0.14	0.32	0.15	0.10	0.21
14 - 15	0.23	0.27	0.26	0.31	1.63	0.31	0.30	0.26	0.56	0.43	0.13	0.14
15 - 16	0.20	0.20	0.29	0.33	0.64	0.21	0.33	0.30	0.48	0.40	0.21	N
16 - 17	0.14	0.10	0.44	0.41	0.37	0.84	0.39	0.21	0.29	0.18	0.08	0.14
17 - 18	0.12	0.19	N	0.24	0.17	1.52	0.31	0.28	0.27	0.27	0.23	0.36
18 - 19	0.23	0.33	0.61	0.63	0.16	1.11	0.36	0.12	0.12	0.17	0.18	0.53
19 - 20	0.50	0.19	0.49	0.64	0.52	1.21	N	0.33	0.43	0.14	0.14	0.76
20 - 21	0.16	0.43	0.53	0.36	0.47	0.87	0.22	0.33	0.31	0.20	0.34	2.10
21 - 22	0.24	0.11	0.62	0.38	0.25	0.37	0.59	0.64	0.46	0.09	1.13	1.45
22 - 23	0.18	0.43	0.87	0.61	0.22	0.25	0.48	0.85	0.23	0.49	0.30	1.23
23 - 24	0.13	0.31	1.89	0.37	0.20	0.13	0.43	0.80	1.41	0.15	0.98	0.62
24 - 25	0.20	0.28	0.96	0.55	0.29	0.27	0.71	0.48	1.38	0.12	0.43	0.12
25 - 26	0.25	0.41	0.39	0.21	0.20	0.38	0.50	1.13	0.44	0.12	0.29	0.12
26 - 27	0.67	0.41	0.60	0.34	0.31	0.64	1.05	1.39	0.32	0.12	0.19	0.13
27 - 28	0.78	0.23	0.41	0.59	0.24	1.41	1.45	0.20	0.20	0.21	0.28	0.18
28 - 29	0.23	N	0.53	0.92	0.17	0.92	N	0.33	0.17	0.19	0.57	0.38
29 - 30	0.28	0.21	0.53	0.80	0.18	0.45	N	0.68	0.95	0.15	0.36	0.14
30 - 31	0.25		0.78	N	0.18	0.46	N	1.02	1.26	0.18	0.50	0.25
31 - 1	0.50		0.23		0.36		N	0.58		0.14		0.53
Arithmetic Mean (3)	0.29	0.29	0.47	0.59	0.54	0.59	0.60	-	0.50	0.21	0.29	0.43
Standard Deviation (3)	0.16	0.11	0.35	0.35	0.35	0.37	0.58	-	0.37	0.17	0.24	0.44
Sample Size	31	27	30	29	31	30	26	20	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 - Sulphate as S (SO₄ - S)
 Concentration in air (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	N	1.04	0.39	1.50	0.31	0.87	2.30	0.44	0.44	0.50	N	0.49
2 - 3	N	0.44	0.56	1.39	N	2.44	1.26	0.43	1.11	0.33	N	0.40
3 - 4	N	0.48	0.34	0.82	N	2.63	1.31	0.76	0.64	0.52	N	0.42
4 - 5	0.23	1.46	0.27	2.04	4.02	1.17	1.36	1.59	0.66	0.38	N	0.48
5 - 6	0.55	1.63	0.51	2.25	1.28	0.83	0.62	1.75	0.85	0.33	N	0.53
6 - 7	0.41	0.71	0.87	0.44	1.38	0.92	0.85	0.70	1.29	0.36	N	0.49
7 - 8	0.18	0.39	0.63	0.77	1.12	0.66	0.44	0.98	0.69	0.54	N	0.68
8 - 9	0.51	0.33	0.41	0.90	2.16	1.16	0.64	1.24	0.40	0.29	0.67	0.23
9 - 10	0.30	0.38	0.73	0.96	N	1.24	0.49	0.68	0.72	0.29	0.40	0.27
10 - 11	0.47	0.67	1.40	0.75	N	0.58	0.45	1.12	0.62	0.22	0.37	0.37
11 - 12	0.54	0.28	0.40	0.95	0.68	0.44	0.42	1.03	1.75	0.25	0.21	0.30
12 - 13	1.01	0.27	1.55	1.10	5.24	0.94	0.76	1.89	1.17	0.26	0.24	0.32
13 - 14	0.63	0.55	1.14	N	1.36	0.42	0.61	2.72	0.90	1.58	0.28	0.24
14 - 15	0.89	0.54	0.76	0.76	1.70	0.78	0.46	0.63	1.15	0.35	0.48	0.40
15 - 16	0.52	0.29	0.93	1.73	1.67	0.61	0.33	2.96	1.13	0.70	2.05	0.66
16 - 17	0.72	0.32	0.76	1.27	N	0.99	0.51	0.46	0.38	0.56	0.35	0.87
17 - 18	1.00	1.47	0.57	0.32	N	1.84	1.00	0.46	0.76	0.33	0.47	1.89
18 - 19	0.33	0.42	0.68	N	0.48	0.93	N	0.46	0.25	0.28	0.49	0.95
19 - 20	0.42	0.51	0.40	N	0.37	1.72	N	0.49	0.57	0.30	0.32	2.25
20 - 21	1.02	0.51	0.91	0.53	0.98	2.26	0.77	0.62	0.33	0.84	0.56	2.36
21 - 22	0.83	0.54	1.39	0.64	0.65	0.54	0.61	0.89	0.60	0.40	0.58	1.49
22 - 23	0.28	1.12	4.00	0.45	0.81	0.48	0.56	0.56	0.43	0.86	0.42	2.12
23 - 24	0.32	0.81	3.38	0.65	0.37	0.69	0.69	1.40	1.02	0.32	0.69	1.51
24 - 25	0.73	0.31	0.86	0.14	0.68	0.48	0.51	0.39	0.63	0.32	0.45	0.34
25 - 26	1.21	0.90	0.40	N	0.46	0.34	1.36	1.42	0.28	0.25	0.45	0.19
26 - 27	1.64	0.60	0.78	N	0.55	1.04	N	1.94	0.81	0.27	0.25	N
27 - 28	1.14	1.60	0.53	1.23	0.32	2.40	1.74	0.48	0.32	0.37	0.45	0.80
28 - 29	0.75	0.24	0.97	0.69	0.35	1.23	N	0.47	0.30	0.36	0.89	0.81
29 - 30	0.30	0.45	1.36	0.79	0.66	0.54	0.78	0.83	0.59	0.16	0.51	0.73
30 - 31	0.41		1.05	1.18	0.98	1.04	1.56	0.24	0.62	0.15	0.75	0.41
31 - 1	0.69		1.46		0.55		0.54	0.56		N		0.35
Arithmetic Mean (3)	0.64	0.66	0.98	0.97	1.17	1.07	0.85	0.99	0.71	0.42	0.54	0.78
Standard Deviation (3)	0.35	0.42	0.81	0.51	1.17	0.65	0.48	0.68	0.35	0.28	0.37	0.64
Sample Size	28	29	31	25	25	30	27	31	30	30	23	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: 5006 Lough Navar - Sulphate as S (SO4 - S)
 Concentration in air ($\mu\text{g S m}^{-3}$)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.28	0.15	0.25	1.15	0.93	0.23	2.64	0.24	0.46	0.44	0.28	0.28
2 - 3	0.30	0.20	0.23	0.17	0.95	N	1.81	0.34	0.83	0.15	0.45	0.18
3 - 4	0.37	0.13	0.22	0.16	0.84	0.52	0.22	0.25	0.73	0.14	0.17	0.25
4 - 5	0.16	0.47	0.22	0.15	1.48	0.34	0.11	0.28	0.47	0.13	0.22	0.32
5 - 6	0.21	0.52	0.30	0.33	1.21	0.45	N	0.15	0.24	0.06	0.50	0.26
6 - 7	0.20	0.24	0.17	0.61	1.98	0.24	0.29	0.11	0.26	0.41	0.59	1.04
7 - 8	0.18	0.41	0.13	0.93	2.08	0.26	0.22	0.28	0.27	0.23	0.27	0.91
8 - 9	0.13	0.26	0.29	0.21	1.00	0.22	0.12	0.41	0.22	0.07	0.23	0.14
9 - 10	0.25	0.31	0.57	0.65	1.33	0.30	0.20	0.18	0.22	0.09	0.18	0.23
10 - 11	0.18	0.18	0.73	0.42	1.82	0.21	0.21	0.12	0.40	0.06	0.25	0.17
11 - 12	0.22	0.22	0.28	0.70	1.06	0.20	0.30	0.75	0.89	0.20	0.26	0.41
12 - 13	0.16	0.13	0.34	0.21	1.66	0.22	0.19	0.17	0.14	0.21	0.37	0.18
13 - 14	0.11	0.18	0.23	0.23	1.46	0.22	0.26	0.24	0.30	0.15	0.37	0.09
14 - 15	0.16	0.22	0.13	0.17	0.96	0.26	0.24	0.15	0.23	0.31	0.36	0.12
15 - 16	0.15	0.10	0.22	0.03	0.36	0.29	0.26	0.13	0.21	0.33	0.20	0.33
16 - 17	0.07	0.16	0.20	0.32	0.14	0.69	0.31	0.11	0.16	0.10	0.25	0.16
17 - 18	0.13	0.19	0.29	0.51	0.18	0.61	0.25	0.17	0.13	0.16	0.33	0.44
18 - 19	0.20	0.20	0.25	0.28	0.12	0.97	0.12	0.22	0.12	0.19	0.16	0.80
19 - 20	0.58	0.23	0.32	0.59	N	2.27	0.15	0.21	0.16	N	0.54	0.46
20 - 21	0.14	0.31	0.36	0.24	0.09	0.57	0.14	0.21	0.15	N	0.26	0.72
21 - 22	0.25	0.16	0.20	0.30	0.21	0.14	0.28	0.63	0.20	0.12	1.00	1.95
22 - 23	0.31	0.22	0.31	0.31	0.18	0.25	0.96	1.22	0.20	0.17	0.42	1.92
23 - 24	0.15	0.23	1.47	0.26	0.18	0.20	1.08	1.71	0.70	0.09	0.39	1.81
24 - 25	0.13	0.13	0.30	0.52	0.10	0.20	1.10	1.01	0.17	0.68	0.63	0.24
25 - 26	0.16	0.18	0.20	0.20	0.09	0.14	0.72	1.02	0.24	0.17	0.49	0.22
26 - 27	0.48	0.31	0.20	0.13	0.10	0.39	1.19	0.47	0.34	0.14	0.22	0.19
27 - 28	0.53	0.11	0.36	0.14	0.09	0.59	0.85	0.13	0.15	0.39	0.54	0.18
28 - 29	0.10	0.13	0.19	0.54	0.11	0.86	0.25	0.19	0.20	0.36	1.60	0.28
29 - 30	0.25	0.14	0.93	0.43	0.17	1.99	0.26	0.21	0.12	0.30	0.34	0.22
30 - 31	0.25		0.79	0.70	0.16	1.80	0.52	0.76	0.86	0.35	0.46	0.64
31 - 1	0.40		0.60		N		0.43	0.17		0.21		0.24
Arithmetic Mean (3)	0.23	0.22	0.36	0.39	0.73	0.54	0.52	0.40	0.33	0.22	0.41	0.50
Standard Deviation (3)	0.13	0.10	0.28	0.26	0.67	0.56	0.57	0.39	0.24	0.14	0.29	0.52
Sample Size	31	29	31	30	29	29	30	31	30	29	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: 5007 Barcombe Mills - Sulphate as S (SO4 - S)
 Concentration in air ($\mu\text{g S m}^{-3}$)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	1.60	0.48	0.42	1.08	1.88	0.88	1.52	0.43	0.35	0.30	0.16	0.38
2 - 3	0.57	0.39	0.92	0.90	1.84	0.65	0.83	0.39	0.63	0.17	0.12	0.37
3 - 4	0.58	1.86	0.86	1.50	1.78	0.71	0.73	0.56	0.39	0.27	0.26	0.31
4 - 5	0.60	1.38	0.65	0.51	1.90	0.71	0.89	1.24	0.70	0.20	0.50	0.43
5 - 6	0.98	1.25	0.64	0.56	2.14	1.42	N	0.83	0.67	0.17	0.25	N
6 - 7	0.48	1.00	N	0.69	1.46	0.55	1.22	0.40	0.26	0.23	0.21	N
7 - 8	0.60	N	N	0.92	2.12	0.54	1.09	0.44	0.53	0.35	0.41	N
8 - 9	0.43	0.34	N	0.91	2.33	0.99	0.51	0.07	1.10	0.26	0.26	N
9 - 10	0.48	0.49	N	1.27	2.56	0.86	0.39	0.96	0.93	0.19	0.19	N
10 - 11	0.69	0.47	N	0.84	1.99	0.51	0.40	0.57	0.71	0.14	0.23	N
11 - 12	1.19	0.35	N	0.60	1.32	0.39	0.62	0.92	1.39	0.13	0.37	N
12 - 13	1.22	0.33	N	0.65	1.97	0.79	0.58	1.26	0.53	0.16	0.17	0.35
13 - 14	0.99	0.33	N	0.99	1.97	0.85	0.56	1.07	0.46	0.40	0.24	0.16
14 - 15	0.76	0.09	N	1.48	2.89	0.76	0.42	0.53	0.79	0.26	0.33	0.20
15 - 16	0.63	0.39	0.48	0.75	2.69	0.61	0.64	0.35	1.12	0.73	0.38	0.32
16 - 17	0.91	0.15	1.87	0.85	1.05	1.28	0.85	0.61	0.46	0.32	0.20	0.36
17 - 18	2.22	0.06	2.35	0.38	0.45	1.42	1.43	0.42	0.46	0.22	0.34	0.52
18 - 19	0.88	0.65	1.44	0.73	0.36	0.65	1.30	0.48	0.17	0.22	0.29	0.39
19 - 20	0.55	0.61	1.06	0.66	0.32	2.39	1.25	0.29	0.27	0.15	0.45	0.72
20 - 21	1.39	0.62	1.25	0.74	0.64	2.14	1.97	0.44	0.28	0.59	0.24	0.78
21 - 22	1.01	0.62	1.69	0.76	0.45	0.33	1.00	0.30	0.43	0.94	0.24	1.11
22 - 23	0.59	1.45	1.78	0.73	0.97	0.43	0.75	0.73	0.42	0.71	0.21	1.34
23 - 24	0.60	2.07	1.57	0.93	0.43	0.55	1.52	1.05	0.85	0.21	0.26	1.16
24 - 25	2.42	0.71	0.91	0.59	0.60	0.41	1.14	1.72	0.32	0.27	0.32	1.09
25 - 26	1.62	0.41	0.32	0.37	0.42	0.98	1.37	0.05	0.38	0.26	0.23	0.37
26 - 27	1.25	0.84	0.70	0.56	0.45	1.01	1.76	1.55	0.37	0.29	0.21	0.62
27 - 28	1.87	1.52	1.04	0.79	0.27	2.53	1.65	0.44	0.18	N	0.36	0.52
28 - 29	0.77	0.54	1.21	1.21	0.25	2.34	0.82	0.34	0.23	0.41	0.81	0.51
29 - 30	0.43	0.55	2.09	0.54	0.33	0.69	0.50	0.53	0.37	0.17	0.38	0.48
30 - 31	1.78		2.40	1.06	N	3.07	0.68	0.73	0.33	0.12	0.64	0.36
31 - 1	0.87		2.40		N		0.93	0.97		0.17		0.70
Arithmetic Mean (3)	1.00	0.71	-	0.82	1.30	1.05	0.98	0.67	0.54	0.30	0.31	0.57
Standard Deviation (3)	0.54	0.52	-	0.28	0.86	0.72	0.44	0.40	0.30	0.20	0.15	0.32
Sample Size	31	28	22	30	29	30	30	31	30	30	30	24

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 - Sulphate as S (SO₄ - S)
 Concentration in air (µg S m⁻³)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.27	0.69	0.19	0.29	0.94	0.46	0.54	0.28	0.21	0.31	0.13	0.12
2 - 3	0.25	0.16	0.26	0.60	1.15	0.04	0.52	0.26	0.51	0.35	0.11	0.20
3 - 4	0.08	0.17	0.20	0.34	1.31	0.52	0.58	0.70	0.45	0.46	0.13	0.22
4 - 5	0.18	0.77	0.19	0.32	2.42	0.37	N	0.30	N	0.17	0.15	0.52
5 - 6	0.31	1.15	0.25	0.40	1.69	0.93	0.95	0.48	N	0.17	0.15	N
6 - 7	0.14	0.17	0.33	0.47	2.16	0.34	1.58	0.89	N	0.24	0.44	0.26
7 - 8	0.13	0.17	0.33	0.56	1.48	0.41	1.03	0.27	N	0.50	0.30	0.37
8 - 9	0.11	0.13	0.09	0.04	2.75	0.62	0.21	0.15	N	0.18	0.17	0.26
9 - 10	0.14	0.22	0.15	1.10	3.15	0.35	0.16	0.22	N	0.11	0.14	0.26
10 - 11	0.16	N	0.76	N	2.10	0.23	0.26	0.33	N	0.15	0.10	0.40
11 - 12	0.20	0.10	0.38	N	1.25	0.24	0.27	0.44	N	0.14	0.16	0.12
12 - 13	0.34	0.20	0.14	0.57	0.60	0.21	N	0.41	N	0.22	0.10	0.25
13 - 14	0.23	0.19	0.07	0.48	0.61	0.26	1.24	0.34	0.28	0.84	0.09	0.22
14 - 15	0.54	0.24	0.17	0.96	1.24	N	0.40	0.20	0.63	0.28	0.15	0.19
15 - 16	0.51	0.11	0.47	N	0.97	0.22	0.58	0.18	0.41	0.24	0.13	0.17
16 - 17	0.69	0.11	0.81	0.48	0.33	1.77	0.84	0.22	0.27	N	0.17	0.25
17 - 18	1.23	0.20	0.90	0.10	0.30	1.42	0.86	0.21	0.21	0.19	0.25	0.21
18 - 19	0.98	0.18	1.23	0.17	0.26	0.99	0.64	0.18	0.16	0.31	0.15	0.69
19 - 20	1.25	0.36	1.11	0.19	0.24	1.97	0.84	0.24	0.24	0.19	0.21	0.81
20 - 21	0.96	0.49	1.82	0.21	0.40	0.63	0.70	0.19	0.23	0.16	0.10	0.81
21 - 22	0.62	0.17	1.27	0.14	0.33	0.15	1.42	0.29	N	0.12	0.23	1.52
22 - 23	0.23	0.18	1.15	0.25	0.38	N	1.17	0.42	N	0.27	0.25	1.64
23 - 24	0.36	0.16	1.05	0.16	0.27	0.27	1.07	0.84	N	0.16	0.21	1.72
24 - 25	0.91	0.14	0.14	0.24	0.23	0.26	0.77	1.06	0.94	0.17	0.19	0.73
25 - 26	1.17	0.14	0.09	0.12	0.19	0.40	1.83	1.00	0.45	0.20	0.30	0.33
26 - 27	0.61	0.90	0.04	0.33	0.13	1.10	1.41	0.87	0.24	0.18	0.25	0.39
27 - 28	0.53	0.43	N	0.22	0.10	1.66	0.77	N	0.37	0.17	0.30	0.30
28 - 29	0.27	0.12	N	0.37	0.13	2.32	0.36	0.37	0.26	0.19	0.70	0.23
29 - 30	0.16	0.19	1.30	0.32	0.19	2.49	0.28	0.63	0.40	0.22	0.30	0.31
30 - 31	0.32		1.69	0.66	0.31	1.51	0.33	N	0.30	0.13	N	0.32
31 - 1	0.53		1.14		0.56		0.42	0.49		0.12		0.24
Arithmetic Mean (3)	0.46	0.29	0.61	0.37	0.91	0.79	0.76	0.43	-	0.24	0.21	0.47
Standard Deviation (3)	0.35	0.27	0.54	0.25	0.85	0.71	0.44	0.27	-	0.15	0.12	0.44
Sample Size	31	28	29	27	31	28	29	29	18	30	29	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: 5009 High Muffles - Sulphate as S (SO4 - S)
 Concentration in air ($\mu\text{g S m}^{-3}$)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.55	0.31	0.25	1.90	0.82	0.70	2.17	0.47	0.71	1.06	0.24	0.48
2 - 3	0.57	0.32	0.31	0.67	1.11	0.37	0.57	0.45	0.42	0.38	0.23	0.47
3 - 4	0.46	0.61	0.27	0.22	0.57	0.20	0.50	1.11	0.27	0.97	0.17	0.59
4 - 5	0.33	0.78	0.18	0.23	0.44	0.22	0.68	0.59	0.99	0.38	0.48	0.51
5 - 6	0.50	1.31	0.46	0.19	0.55	0.52	0.35	0.31	0.92	0.20	0.63	0.48
6 - 7	0.33	0.55	0.57	0.72	1.14	0.63	0.35	0.43	0.21	0.20	0.58	0.53
7 - 8	0.35	0.44	0.36	1.38	0.69	0.47	0.34	0.24	0.40	0.45	0.18	0.75
8 - 9	0.31	0.27	0.17	0.89	1.10	1.33	0.28	0.78	0.25	0.21	0.45	0.34
9 - 10	0.58	0.42	0.14	1.23	3.35	1.27	0.47	N	0.35	0.38	0.49	0.29
10 - 11	0.96	0.26	0.59	1.17	0.76	0.60	0.29	0.69	0.40	0.24	0.29	0.29
11 - 12	0.41	0.35	0.25	0.81	0.66	0.36	0.28	0.90	1.71	0.36	0.27	0.40
12 - 13	0.27	0.16	0.52	1.62	0.62	1.10	0.50	0.84	0.93	0.86	0.23	0.31
13 - 14	0.37	0.30	0.51	0.73	0.59	0.37	0.23	0.61	0.65	0.53	0.40	0.26
14 - 15	0.19	0.56	0.26	0.22	2.58	0.74	0.36	0.39	0.57	0.52	0.64	0.29
15 - 16	0.36	0.35	0.30	0.19	2.01	0.34	0.24	N	0.28	0.82	0.82	0.28
16 - 17	0.15	0.23	0.67	0.35	0.99	0.84	0.32	0.40	0.37	0.67	0.32	0.48
17 - 18	0.30	0.39	0.49	0.70	0.30	2.11	N	0.42	0.54	0.35	0.27	1.09
18 - 19	0.20	0.25	0.69	0.58	0.18	1.73	0.30	0.69	0.38	0.46	0.44	0.82
19 - 20	0.45	0.33	0.57	0.60	0.20	2.08	0.47	0.65	0.61	0.44	0.25	0.96
20 - 21	0.50	N	0.60	0.45	0.90	2.30	0.45	0.80	0.59	0.71	0.93	1.08
21 - 22	0.30	N	0.76	0.40	0.83	0.60	0.69	0.62	0.72	0.24	0.97	1.05
22 - 23	0.22	N	1.15	0.33	0.44	0.42	0.63	0.42	0.44	0.84	0.44	0.94
23 - 24	0.49	N	2.15	0.56	0.50	N	0.69	0.52	1.32	0.31	0.70	1.09
24 - 25	0.56	0.27	1.44	0.63	0.37	0.38	0.23	1.17	1.21	0.30	0.57	0.14
25 - 26	0.48	0.37	0.64	0.52	0.28	0.22	0.73	1.01	0.67	0.26	0.43	0.10
26 - 27	0.79	0.72	0.60	0.48	0.54	0.76	2.71	1.24	0.68	0.23	0.26	0.62
27 - 28	0.94	0.46	0.60	0.78	0.27	0.99	1.69	0.46	0.38	0.31	0.42	0.66
28 - 29	0.48	0.33	0.45	0.61	0.36	0.47	1.89	0.77	0.53	0.31	0.66	1.11
29 - 30	0.24	0.37	0.38	1.55	0.41	0.41	1.89	0.35	0.68	0.19	0.52	0.39
30 - 31	0.29		0.26	0.53	0.45	0.73	1.63	0.77	0.42	0.09	0.70	0.29
31 - 1	0.46		1.01		0.65		0.90	1.22		0.18		0.53
Arithmetic Mean (3)	0.43	0.43	0.57	0.71	0.80	0.80	0.76	0.67	0.62	0.43	0.47	0.57
Standard Deviation (3)	0.20	0.24	0.41	0.45	0.69	0.59	0.67	0.28	0.34	0.26	0.22	0.31
Sample Size	31	25	31	30	31	29	30	29	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: 5010 Strathvaich Dam - Sulphate as S (SO₄ - S)
 Concentration in air ($\mu\text{g S m}^{-3}$)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.13	0.11	0.10	0.04	0.51	0.15	0.26	0.19	0.63	1.29	0.07	0.18
2 - 3	0.19	0.25	0.11	0.11	0.79	0.20	0.46	0.28	0.46	0.28	0.09	0.04
3 - 4	0.16	0.05	0.10	0.12	0.19	0.31	0.71	0.14	0.20	0.07	0.12	0.10
4 - 5	0.09	0.05	0.20	0.11	0.15	0.30	0.25	0.20	0.59	0.08	0.09	0.21
5 - 6	0.07	0.11	0.08	0.17	0.31	0.32	0.14	0.04	0.19	0.09	0.07	0.12
6 - 7	0.16	0.12	0.03	0.69	0.61	0.31	0.10	0.23	0.17	0.12	0.21	0.10
7 - 8	0.13	0.06	0.13	0.32	1.23	0.20	0.09	0.12	0.22	0.08	0.21	0.32
8 - 9	0.17	0.19	0.19	0.25	0.98	0.43	0.05	0.11	0.18	0.04	0.03	0.05
9 - 10	0.13	0.15	0.08	0.32	0.91	0.25	0.13	0.16	0.14	0.17	0.04	0.10
10 - 11	0.14	0.12	0.11	0.12	0.28	0.22	0.06	0.10	0.17	0.11	0.08	0.12
11 - 12	0.10	0.09	0.21	0.16	0.38	0.16	0.17	0.51	0.12	0.19	0.15	0.16
12 - 13	0.04	0.08	0.06	0.22	0.38	0.16	0.20	0.32	0.07	0.14	0.19	0.15
13 - 14	0.08	0.12	0.22	0.13	0.48	0.17	0.17	0.24	0.23	0.13	0.09	0.07
14 - 15	0.11	0.15	0.14	0.14	1.20	0.14	0.65	0.23	0.17	0.19	0.04	0.08
15 - 16	0.07	0.17	0.33	0.29	0.46	0.16	0.29	0.14	0.16	0.25	0.06	0.05
16 - 17	0.11	0.03	0.28	0.18	0.21	0.40	0.24	0.11	0.16	0.08	0.22	0.04
17 - 18	0.06	0.03	0.36	0.17	0.15	0.69	0.16	0.13	0.12	0.10	0.13	0.18
18 - 19	0.12	0.11	0.33	0.14	0.11	0.34	0.17	0.16	0.10	0.09	0.11	0.42
19 - 20	0.10	0.09	0.42	0.63	0.12	0.30	0.15	0.21	0.44	0.10	0.05	0.48
20 - 21	0.08	0.20	0.14	0.23	0.48	0.81	0.29	0.21	0.49	0.18	0.13	0.07
21 - 22	0.21	0.08	0.13	0.07	0.21	0.28	0.28	0.26	0.54	0.07	0.38	0.35
22 - 23	0.10	0.17	0.14	0.33	0.19	0.25	0.43	0.30	0.18	0.27	0.15	0.49
23 - 24	0.10	0.20	0.29	0.17	0.17	0.87	0.54	0.25	1.29	0.05	0.17	0.18
24 - 25	0.17	0.06	0.78	0.06	0.08	0.20	0.09	0.27	1.59	0.08	0.13	0.08
25 - 26	0.09	0.10	0.22	0.08	0.09	0.20	0.27	0.34	1.00	0.17	0.32	0.05
26 - 27	0.03	0.16	0.30	0.19	0.09	0.24	0.26	0.66	0.76	0.07	0.14	0.04
27 - 28	0.06	0.06	0.27	0.54	0.23	0.38	0.98	0.37	0.15	0.10	0.07	0.05
28 - 29	0.08	0.10	0.29	0.84	0.65	0.31	0.85	0.37	0.25	0.17	0.37	0.06
29 - 30	0.15	0.12	0.30	0.76	0.13	0.18	0.43	0.29	0.51	0.05	0.19	0.06
30 - 31	0.08		0.34	0.50	0.14	0.03	0.39	0.38	0.73	0.09	0.24	0.04
31 - 1	0.10		0.11		0.18		0.99	0.30		0.11		0.16
Arithmetic Mean (3)	0.11	0.11	0.22	0.27	0.39	0.30	0.33	0.25	0.40	0.16	0.15	0.15
Standard Deviation (3)	0.04	0.06	0.15	0.22	0.33	0.19	0.26	0.13	0.37	0.22	0.09	0.13
Sample Size	31	29	31	30	31	30	31	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: 5011 Glen Dye - Sulphate as S (SO4 - S)
 Concentration in air ($\mu\text{g S m}^{-3}$)

Daily measurements - Summary for January 2000 to December 2000

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
DATE												
1 - 2	0.41	0.12	0.19	0.06	0.86	0.49	0.25	0.21	0.99	1.68	0.07	0.56
2 - 3	0.31	0.17	0.15	0.11	0.95	1.02	1.18	0.83	0.33	0.27	0.20	0.31
3 - 4	0.17	0.16	0.14	0.14	0.17	0.27	0.80	0.38	0.19	0.69	0.13	0.46
4 - 5	0.28	0.22	0.24	0.26	0.28	0.33	0.35	0.22	0.95	0.16	0.06	0.56
5 - 6	0.29	0.76	0.22	0.57	0.42	0.47	0.21	0.10	N	0.10	0.16	0.48
6 - 7	0.28	0.27	0.08	0.75	0.91	0.68	0.11	0.20	0.23	0.11	0.35	0.72
7 - 8	0.23	1.03	0.14	0.35	1.37	0.43	0.11	0.21	0.15	0.22	0.28	0.76
8 - 9	0.13	0.26	0.17	0.36	0.82	0.71	0.13	0.75	0.13	0.07	0.12	0.15
9 - 10	0.42	0.37	0.12	0.23	0.96	0.47	0.35	0.36	0.13	0.24	0.08	0.26
10 - 11	0.26	0.20	0.08	N	0.51	0.39	0.30	0.09	0.11	0.17	0.22	0.25
11 - 12	0.33	0.42	0.14	0.30	0.50	0.21	0.16	0.48	0.06	0.26	0.19	0.26
12 - 13	0.10	0.12	0.13	0.70	0.64	0.30	0.37	0.46	0.10	0.24	0.26	0.43
13 - 14	0.13	0.17	0.10	0.22	0.50	0.21	0.11	0.45	0.51	0.26	0.07	0.05
14 - 15	0.16	0.23	0.22	0.18	2.19	0.20	0.29	0.15	0.38	0.40	0.07	0.09
15 - 16	0.11	0.18	0.30	0.27	0.98	0.21	0.26	N	0.13	0.63	0.37	0.10
16 - 17	0.12	0.08	0.38	0.18	0.47	0.42	0.29	0.12	0.18	0.24	0.09	0.09
17 - 18	0.10	0.17	0.39	0.28	0.11	1.14	0.28	0.21	0.23	0.27	0.12	0.30
18 - 19	0.11	0.21	0.52	0.28	0.28	1.23	0.18	0.39	0.16	0.41	0.07	0.86
19 - 20	0.14	0.16	0.30	0.89	0.12	0.41	0.42	0.69	0.75	0.38	0.03	0.63
20 - 21	0.11	0.49	0.12	0.41	0.34	1.32	0.31	0.28	0.59	0.41	0.13	2.07
21 - 22	0.14	0.14	0.15	0.39	1.14	0.59	0.44	N	0.83	0.07	0.52	0.96
22 - 23	0.11	0.53	0.24	0.29	0.21	0.20	0.47	0.47	0.43	0.60	0.30	1.06
23 - 24	0.10	0.46	0.37	0.71	0.31	0.16	0.54	1.51	1.38	0.18	0.46	0.34
24 - 25	0.16	0.09	1.34	0.33	0.11	0.13	0.19	0.57	1.74	0.11	0.36	0.13
25 - 26	0.20	0.17	0.41	0.09	0.14	0.21	0.31	0.63	1.06	0.07	0.56	0.12
26 - 27	0.08	0.44	0.50	0.21	0.39	0.30	0.30	0.90	0.55	0.10	0.17	0.08
27 - 28	0.09	0.11	0.42	0.97	0.15	0.51	0.91	0.54	0.35	0.18	0.47	0.05
28 - 29	0.04	0.09	0.39	0.41	0.19	0.32	0.52	0.22	0.50	0.28	0.62	0.18
29 - 30	0.13	0.16	0.37	0.90	0.13	0.18	0.62	0.27	0.59	0.19	0.56	0.13
30 - 31	0.18		0.50	0.69	0.13	0.14	1.06	1.15	0.52	0.15	0.90	0.09
31 - 1	0.19		0.79		0.43		0.96	1.30		0.14		0.51
Arithmetic Mean (3)	0.18	0.27	0.31	0.40	0.54	0.45	0.41	0.49	0.49	0.30	0.27	0.42
Standard Deviation (3)	0.10	0.22	0.25	0.26	0.47	0.33	0.29	0.36	0.42	0.30	0.21	0.42
Sample Size	31	29	31	29	31	30	31	29	29	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%.

Appendix 5

Denuder Measurements

A5.1	Monthly Denuder Measurements
A5.2	Daily Denuder Measurements at Barcombe Mill

Appendix 5.1

Monthly Denuder Measurements

Table A5.1.1 provides a listing of the measurements of the monthly concentrations of HNO_3 , SO_2 and HCl in the gas phase and of NO_3^- , SO_4^{2-} , Cl^- , Na^+ , Mg^{2+} and Ca^{2+} in the aerosol phase. Table A5.1.2 presents the summary statistics of the measurements made of the monthly concentrations of HNO_3 , SO_2 and HCl in the gas phase and of NO_3^- , SO_4^{2-} , Cl^- in the aerosol phase.

The 12 sites which comprise the network are listed below:

Site No.	Name	Grid Ref
1	Bush OTC	nt245635
21	Glensaugh	no664799
24	Rothamsted	tl123129
30	Strathvaich Dam	nh347750
31	Eskdalemuir	nt235030
32	High Muffles	se776939
33	Stoke Ferry	tl700988
34	Yarner Wood	sx786789
83	Barcombe Mills	tq438149
40	Sutton Bonington	sk505268
45	Lough Navar	ih065545
70	Cwmystwyth	sn771742

**Table A5.1.1a Monthly Concentrations of HNO₃ and of Aerosol NO₃⁻
Measured at the 12 Monitoring Sites in the Nitric Acid Monitoring Network between September 1999 and June 2001.**

Nitric Acid: $\mu\text{g HNO}_3 \text{ m}^{-3}$

Month	Site 1	Site 21	Site 24	Site 30	Site 31	Site 32	Site 33	Site 34	Site 83	Site 40	Site 45	Site 70
Sep-99	0.78	0.86	3.35	0.57		1.46	1.22	0.40		2.76		0.34
Oct-99	0.62	0.23	1.60	0.51	0.32	0.86	1.61	1.28		1.66	0.40	0.80
Nov-99	0.65	0.59	1.54	0.05	0.25	0.85	1.31	0.79		2.00	0.07	0.51
Dec-99	0.51	0.19	0.83 ²	0.10	0.25	0.98	ND ⁴	0.23		2.07	0.06	0.20
Jan-00	0.44	0.09	1.55	0.03	0.16	0.78	3.09	0.67		1.77	0.08	0.31
Feb-00	0.29	0.21	1.79	0.06	0.24	0.83	1.30	0.31		1.41	0.08	0.21
Mar-00	0.50	0.27	1.98	0.11	0.30	0.57	1.41	0.78		2.00	0.12	0.39
Apr-00	0.82	0.70	1.83	0.30	0.51	0.98	1.14	0.81	1.78	1.86	0.17	0.96
May-00	0.60	0.92	1.63	0.49	0.55	1.01	1.47	1.17	2.06	2.19	0.45	1.01
Jun-00	0.41	0.39	1.47	0.06	0.31	0.72	1.48	0.59	1.65	1.41	0.12	0.35
Jul-00	0.73	0.42	1.29 ²	0.21	0.50	0.72	1.27	1.17	2.19	1.53	0.31	0.72
Aug-00	0.62	0.38	ND ¹	0.15	0.41	0.90	1.79	1.12	1.68	ND ¹	0.23	0.68
Sep-00	0.64	0.55	1.98 ²	0.35	0.51	1.03	1.22	0.49	ND ⁴	1.51	0.17	0.32
Oct-00	0.35	0.31	0.85 ²	0.10	0.34	0.98	1.15	0.15	0.49	1.29	0.07	0.12
Nov-00	0.61	0.11	0.80 ²	0.13	0.29	0.99	1.43	0.19	0.67	1.35	0.10	0.19
Dec-00	0.68	0.51	0.87 ²	0.24	0.51	1.27	1.18	0.47	1.10	0.70	0.35	0.52
Jan-01	0.78	0.75 ³	2.06	0.30	0.60	1.17	1.40	1.13	1.07	1.78	0.53	1.01
Feb-01	0.70	0.75 ³	2.07	0.23	0.52	1.52	1.57	0.93	ND ⁴	2.52	0.24	0.42
Mar-01	0.86	0.42	1.66	0.25	0.61	1.10	1.31	0.78	2.03 ³	1.88	0.39	0.64
Apr-01	0.52	0.46	1.91	0.58	0.39	0.80	0.99	0.39	2.03 ³	2.41	0.15	0.25
May-01	0.98	1.05	2.06	0.70	1.08	1.07	1.57	1.74	1.64	2.06	0.84	1.30
Jun-01	0.56	0.49	2.97	0.19	0.44	1.06	1.82	0.97	1.84	2.63	0.20	0.80

Mean	0.62	0.48	1.72	0.26	0.43	0.98	1.46	0.75	1.56	1.85	0.25	0.55
Min	0.29	0.09	0.80	0.03	0.16	0.57	0.99	0.15	0.49	0.70	0.06	0.12
Max	0.98	1.05	3.35	0.70	1.08	1.52	3.09	1.74	2.19	2.76	0.84	1.30
SD	0.17	0.27	0.64	0.20	0.20	0.23	0.43	0.41	0.55	0.50	0.19	0.32
CV (%)	27.2	54.9	37.3	75.2	45.3	23.3	29.2	54.5	35.4	27.1	79.5	59.4

Note:

ND¹: Power off during sampling period

Data² = Flow < 0.2 l/min (pump not working properly, or intermittent power cuts)

Data³ = Samples exposed for more than one month

ND⁴ = Samples lost

Aerosol Nitrate: $\mu\text{g NO}_3^- \text{ m}^{-3}$

Month	Site 1	Site 21	Site 24	Site 30	Site 31	Site 32	Site 33	Site 34	Site 83	Site 40	Site 45	Site 70
Sep-99	1.55	1.33	3.16	0.67		2.88	2.95	1.00		3.31		0.71
Oct-99	1.38	0.74	3.89	0.16	0.98	1.47	3.48	3.39		3.65	1.02	1.93
Nov-99	0.74	0.17	3.22	0.18	0.42	1.51	2.66	1.56		2.30	0.43	1.03
Dec-99	0.53	0.34	0.94 ²	0.08	0.41	0.98	2.35	0.44		2.74	0.18	0.32
Jan-00	0.49	0.22	5.20	0.09	0.45	1.34	4.19	2.10		3.77	0.31	1.06
Feb-00	0.51	0.37	2.50	0.13	0.49	1.45	2.65	0.86		2.23	0.19	0.47
Mar-00	1.41	0.73	6.24	0.34	0.95	2.05	5.84	3.75		5.81	0.92	2.42
Apr-00	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵
May-00	1.02	1.46	3.94	0.57	1.05	2.42	4.32	1.17	4.30	3.76	1.17	1.90
Jun-00	1.00	0.85	2.51	0.29	0.89	1.80	3.36	1.19	2.58	2.96	1.35	1.18
Jul-00	0.93	0.64	1.44 ²	0.21	0.52	1.32	1.81	1.27	1.82	1.99	0.56	0.84
Aug-00	0.77	0.42	ND ¹	0.18	0.47	1.58	2.73	1.34	2.20	ND ¹	0.38	1.18
Sep-00	1.26	1.13	2.21 ²	0.49	0.83	2.48	2.74	1.10	ND ⁴	2.54	0.49	0.78
Oct-00	0.58	0.62	1.41 ²	0.16	0.63	1.66	2.35	0.45	1.03	1.78	0.20	0.35
Nov-00	0.83	0.61	0.36 ²	0.24	0.58	1.75	2.32	0.46	1.61	2.37	0.30	0.39
Dec-00	1.23	0.96	1.72 ²	0.23	0.99	1.94	3.46	1.60	3.99	1.42	1.49	1.00
Jan-01	2.30	1.27 ³	5.56	0.33	1.39	2.27	5.30	3.33	1.35	5.50	2.53	2.23
Feb-01	1.02	1.27 ³	4.57	0.20	1.05	2.09	3.96	2.53	ND ⁴	4.17	0.67	1.26
Mar-01	2.17	1.34	3.09	0.54	1.48	2.63	5.05	2.05	6.44 ³	4.45	1.74	1.41
Apr-01	1.49	1.29	3.18	1.06	1.01	2.15	3.22	1.25	6.44 ³	3.25	0.66	0.92
May-01	1.98	1.10	3.58	0.77	1.23	2.12	3.37	4.30	3.95	3.67	2.00	2.99
Jun-01	1.16	0.67	2.87	0.28	0.84	2.11	3.29	1.72	2.77	2.85	0.78	1.68

Mean	1.16	0.84	3.08	0.34	0.83	1.91	3.40	1.76	3.21	3.23	0.87	1.24
Min	0.49	0.17	0.36	0.08	0.41	0.98	1.81	0.44	1.03	1.42	0.18	0.32
Max	2.30	1.46	6.24	1.06	1.48	2.88	5.84	4.30	6.44	5.81	2.53	2.99
SD	0.53	0.41	1.54	0.25	0.32	0.48	1.05	1.11	1.85	1.16	0.66	0.72
CV (%)	45.5	48.5	50.2	73.8	39.0	25.4	31.0	63.4	57.7	36.0	76.1	58.2

Note:

ND¹: Power off during sampling period

Data² = Flow < 0.2 l/min (pump not working properly, or intermittent power cuts)

Data³ = Samples exposed for more than one month

ND⁴ = Samples lost

ND⁵ = Problems with Aerosol Sampling

Table A5.1.1b Monthly Concentrations of SO₂ and of Aerosol SO₄²⁻ Measured at the 12 Monitoring Sites in the Nitric Acid Monitoring Network between September 1999 and June 2001.

Sulphur Dioxide: $\mu\text{g SO}_2 \text{ m}^{-3}$

Month	Site 1	Site 21	Site 24	Site 30	Site 31	Site 32	Site 33	Site 34	Site 83	Site 40	Site 45	Site 70
Sep-99	1.17	1.32	2.44	0.57		4.25	2.30	0.54		4.48		0.51
Oct-99	2.25	0.79	4.34	0.09	0.82	2.17	3.85	1.42		3.03	0.40	1.30
Nov-99	2.40	2.19	2.80	0.09	1.45	3.11	4.07	2.20		7.47	0.36	1.73
Dec-99	1.58	0.67	2.28²	0.23	1.01	5.28	ND⁴	0.56		5.50	0.24	0.55
Jan-00	1.53	0.23	7.54	0.11	0.61	3.33	9.44	1.79		10.09	0.14	0.82
Feb-00	0.89	0.57	2.64	0.13	0.64	3.36	3.10	0.43		5.47	0.27	0.58
Mar-00	2.38	0.85	3.86	0.33	0.58	1.35	3.84	1.30		6.85	0.28	1.06
Apr-00	3.30	0.83	2.60	0.29	1.13	3.73	4.18	1.19	2.34	8.74	0.41	2.84
May-00	1.89	1.09	1.81	0.24	0.57	2.46	2.57	1.14	2.69	10.86	0.48	1.55
Jun-00	2.13	0.64	2.41	0.08	0.47	3.12	2.33	0.65	1.78	3.86	0.45	0.57
Jul-00	2.60	0.33	0.94²	0.08	0.42	1.71	2.82	0.65	1.75	5.58	0.33	0.75
Aug-00	1.03	0.45	ND¹	0.10	0.40	2.22	1.97	0.74	1.57	ND¹	0.29	0.62
Sep-00	1.47	1.14	2.20²	0.51	0.88	3.87	3.49	0.51	ND⁴	4.06	0.19	0.45
Oct-00	1.10	1.11	2.37²	0.11	0.81	3.96	2.75	0.14	0.88	3.44	0.16	0.19
Nov-00	1.70	0.35	1.73²	0.19	0.79	5.25	3.02	0.34	1.13	3.88	0.20	0.38
Dec-00	1.73	1.21	1.37²	0.23	1.16	7.09	3.23	0.75	2.26	2.31	0.56	0.89
Jan-01	1.80	1.89³	5.03	0.35	1.45	4.08	3.80	1.73	1.89	4.69	0.82	2.35
Feb-01	2.16	1.89³	3.42	0.60	1.86	6.92	3.39	2.27	ND⁴	6.48	0.37	2.05
Mar-01	2.93	1.08	2.27	0.29	1.51	3.88	2.30	1.56	3.28³	4.66	1.14	1.07
Apr-01	1.19	0.75	3.75	0.23	1.28	2.95	2.41	0.93	3.28³	7.30	0.25	0.43
May-01	3.66	0.73	2.02	0.32	1.06	1.82	1.87	1.94	2.66	3.90	0.98	2.55
Jun-01	1.35	0.49	3.58	0.10	0.43	2.31	2.15	0.82	1.78	5.65	0.27	0.81

Mean	1.92	0.94	2.92	0.24	0.92	3.56	3.28	1.07	2.10	5.63	0.41	1.09
Min	0.89	0.23	0.94	0.08	0.40	1.35	1.87	0.14	0.88	2.31	0.14	0.19
Max	3.66	2.19	7.54	0.60	1.86	7.09	9.44	2.27	3.28	10.86	1.14	2.84
SD	0.74	0.53	1.45	0.16	0.42	1.53	1.58	0.62	0.74	2.27	0.27	0.76
CV (%)	38.7	56.3	49.7	66.0	45.2	43.1	48.2	58.1	35.5	40.2	65.0	69.7

Note:

ND¹: Power off during sampling period

Data² = Low Flow < 0.2 L/min (pump not working properly, or intermittent power cuts)

Data³ = Samples exposed for more than one month

ND⁴ = Samples lost

Aerosol Sulphate: $\mu\text{g SO}_4^{2-} \text{ m}^{-3}$

Month	Site 1	Site 21	Site 24	Site 30	Site 31	Site 32	Site 33	Site 34	Site 83	Site 40	Site 45	Site 70
Sep-99	1.27	0.99	2.02	0.85		1.89	1.61	1.11		1.73		0.92
Oct-99	1.04	0.58	1.62	0.48	0.92	1.01	1.64	1.70		2.01	1.15	1.11
Nov-99	0.64	0.08	1.37	0.36	0.62	0.96	1.33	1.02		1.29	0.81	1.18
Dec-99	0.54	0.31	0.60²	0.28	0.47	0.77	1.10	0.58		1.39	0.41	0.52
Jan-00	0.12	0.37	2.28	0.23	0.64	1.18	1.79	1.56		2.21	0.67	0.86
Feb-00	0.69	0.29	1.28	0.33	0.57	1.08	1.36	1.01		1.32	0.57	0.68
Mar-00	1.12	0.30	2.92	0.39	0.92	1.55	3.06	2.07		2.66	0.96	1.69
Apr-00	ND⁵	ND⁵	ND⁵	ND⁵	ND⁵	ND⁵	ND⁵	ND⁵	ND⁵	ND⁵	ND⁵	ND⁵
May-00	0.86	0.82	2.25	0.68	1.01	1.72	2.29	1.69	2.53	3.84	1.42	1.82
Jun-00	0.86	0.83	2.42	0.55	1.20	1.76	2.44	1.69	3.05	2.76	1.53	1.80
Jul-00	1.27	0.63	1.40²	0.52	0.96	1.53	1.76	2.22	2.42	2.69	0.99	2.13
Aug-00	0.81	0.40	ND¹	0.40	0.74	1.24	1.84	1.08	2.01	ND¹	0.79	1.06
Sep-00	1.17	0.60	1.61²	0.72	0.87	1.51	1.58	1.09	ND⁴	1.45	0.76	0.88
Oct-00	0.55	0.32	0.57²	0.30	0.53	0.95	1.05	0.59	1.09	0.95	0.47	0.49
Nov-00	0.61	0.36	0.06²	0.24	0.52	1.00	1.00	0.62	1.12	1.27	0.48	0.56
Dec-00	0.92	0.60	0.91²	0.32	0.83	1.23	1.90	1.11	1.74	0.82	1.13	0.82
Jan-01	1.45	0.89³	2.65	0.49	1.16	1.49	2.87	1.46	1.36	3.38	1.36	1.50
Feb-01	0.73	0.89³	2.26	0.43	0.62	1.16	2.30	1.35	ND⁴	2.55	0.76	0.83
Mar-01	1.71	0.95	1.79	0.71	1.23	1.84	2.56	1.50	4.02³	2.67	1.53	1.39
Apr-01	1.17	0.88	1.69	0.97	0.96	1.37	1.42	1.10	4.02³	1.82	1.05	1.03
May-01	1.95	1.09	2.16	1.27	1.26	1.56	1.74	2.27	1.76	2.20	1.56	1.80
Jun-01	1.24	0.69	2.99	0.58	1.08	1.83	2.35	1.93	2.27	2.59	0.99	1.94

Mean	0.99	0.61	1.74	0.53	0.85	1.36	1.86	1.37	2.28	2.08	0.97	1.19
Min	0.12	0.08	0.06	0.23	0.47	0.77	1.00	0.58	1.09	0.82	0.41	0.49
Max	1.95	1.09	2.99	1.27	1.26	1.89	3.06	2.27	4.02	3.84	1.56	2.13
SD	0.43	0.29	0.79	0.26	0.26	0.34	0.58	0.51	1.00	0.82	0.37	0.51
CV (%)	43.1	46.6	45.6	49.8	30.0	24.7	31.4	37.0	43.8	39.2	38.1	42.7

Note:

ND¹: Power off during sampling period

Data² = Flow < 0.2 l/min (pump not working properly, or intermittent power cuts)

Data³ = Samples exposed for more than one month

ND⁴ = Samples lost

ND⁵ = Problems with Aerosol Sampling

**Table A5.1.1c Monthly Concentrations of HCl and of Aerosol Cl⁻
Measured at the 12 Monitoring Sites in the Nitric Acid Monitoring Network between September 1999 and June 2001.**

Hydrochloric Acid: $\mu\text{g HCl m}^{-3}$

Month	Site 1	Site 21	Site 24	Site 30	Site 31	Site 32	Site 33	Site 34	Site 83	Site 40	Site 45	Site 70
Sep-99	0.49	0.49	0.57	0.53		0.59	0.60	0.52		0.66		0.44
Oct-99	0.68	0.19	0.72	0.26	0.22	0.39	0.58	0.39		0.57	0.30	0.32
Nov-99	0.24	0.37	0.50	0.23	0.22	0.32	0.48	0.44		0.41	0.21	0.40
Dec-99	0.23	0.52	0.39 ²	0.24	0.17	0.26	ND ⁴	0.20		0.35	0.05	0.25
Jan-00	0.23	0.25	0.47	0.22	0.16	0.28	0.73	0.07		0.47	0.06	0.24
Feb-00	0.26	0.30	0.43	0.61	0.21	0.30	0.40	0.32		0.40	0.12	0.26
Mar-00	0.55	0.60	0.66	0.43	0.50	0.69	0.60	0.51		0.66	0.16	0.17
Apr-00	0.28	0.54	0.47	0.25	0.29	0.43	0.47	0.37	0.21	0.62	0.10	0.45
May-00	0.39	0.34	0.62	0.22	0.21	0.50	0.44	0.30	0.44	0.71	0.16	0.31
Jun-00	0.38	0.36	0.72	0.20	0.25	0.38	0.44	0.31	0.47	0.53	0.31	0.19
Jul-00	0.28	0.25	0.64 ²	0.20	0.17	0.34	0.39	0.29	0.44	0.44	0.18	0.20
Aug-00	0.13	0.14	ND ¹	0.14	0.12	0.22	0.31	0.33	0.30	ND ¹	0.07	0.13
Sep-00	0.21	0.28	0.36 ²	0.23	0.15	0.28	0.29	0.16	ND ⁴	0.26	0.06	0.11
Oct-00	0.20	0.33	0.28 ²	0.15	0.15	0.25	0.28	0.15	0.30	0.42	0.08	0.10
Nov-00	0.24	0.06	0.24 ²	0.16	0.14	0.29	0.30	0.20	0.35	0.35	0.08	0.14
Dec-00	0.15	0.21	0.24 ²	0.13	0.16	0.33	0.30	0.27	0.25	0.28	0.13	0.18
Jan-01	0.17	0.33 ³	0.27	0.21	0.22	0.36	0.30	0.41	0.42	0.25	0.13	0.20
Feb-01	0.35	0.33 ³	0.46	0.45	0.21	0.37	0.36	0.46	ND ⁴	0.40	0.12	0.84
Mar-01	0.33	0.26	0.41	0.24	0.24	0.33	0.43	0.39	0.69 ³	0.47	0.16	0.29
Apr-01	0.33	0.26	0.49	0.22	0.28	0.29	0.38	0.24	0.69 ³	0.48	0.15	0.08
May-01	0.31	0.29	0.36	0.23	0.19	0.86	0.53	0.38	0.56	0.36	0.17	0.28
Jun-01	0.21	0.31	0.50	0.20	0.20	0.31	0.52	0.33	0.49	0.48	0.12	0.17

Mean	0.30	0.32	0.47	0.26	0.21	0.38	0.44	0.32	0.43	0.46	0.14	0.26
Min	0.13	0.06	0.24	0.13	0.12	0.22	0.28	0.07	0.21	0.25	0.05	0.08
Max	0.68	0.60	0.72	0.61	0.50	0.86	0.73	0.52	0.69	0.71	0.31	0.84
SD	0.13	0.13	0.15	0.13	0.08	0.15	0.12	0.12	0.15	0.13	0.07	0.17
CV (%)	44.6	40.5	31.7	48.9	37.5	40.7	28.3	36.5	35.4	29.1	50.5	63.9

Note:

ND¹: Power off during sampling period

Data² = Flow < 0.2 l/min (pump not working properly, or intermittent power cuts)

Data³ = Samples exposed for more than one month

ND⁴ = Samples lost

Aerosol Chloride: $\mu\text{g Cl}^{-} \text{m}^{-3}$

Month	Site 1	Site 21	Site 24	Site 30	Site 31	Site 32	Site 33	Site 34	Site 83	Site 40	Site 45	Site 70
Sep-99	0.75	0.62	1.40	0.64		0.85	1.57	2.53		1.43		1.36
Oct-99	2.48	0.91	1.60	1.17	1.46	1.67	1.69	2.30		1.92	2.02	1.75
Nov-99	1.20	0.45	2.11	1.43	1.68	1.97	1.99	2.00		1.95	1.36	1.74
Dec-99	1.83	1.23	2.41 ²	2.04	1.17	1.73	1.68	2.27		2.73	1.63	2.11
Jan-00	1.62	1.04	2.74	1.45	1.61	2.75	2.43	2.19		2.56	2.49	1.94
Feb-00	1.93	0.90	2.49	1.86	1.90	2.25	2.01	3.31		2.28	2.55	2.71
Mar-00	1.10	0.75	2.15	1.42	0.72	1.32	2.18	1.63		2.38	1.33	1.36
Apr-00	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵
May-00	0.90	0.48	1.01	0.50	0.64	0.99	1.07	1.01	1.14	1.26	0.83	0.95
Jun-00	1.12	0.75	0.72	0.90	0.91	0.92	0.61	1.03	0.86	0.73	1.15	0.95
Jul-00	0.43	0.28	0.24 ²	0.36	0.28	0.65	0.58	0.67	0.46	0.65	0.59	0.66
Aug-00	0.28	0.17	ND ¹	0.44	0.27	0.34	0.37	0.78	0.76	ND ¹	0.43	0.36
Sep-00	0.89	0.64	0.67 ²	0.84	0.63	0.94	0.95	1.74	ND ⁴	0.83	0.86	0.93
Oct-00	1.50	0.80	1.23 ²	1.11	0.98	1.13	1.30	2.32	2.70	1.07	1.95	1.69
Nov-00	0.87	0.58	0.75 ²	0.73	0.85	0.93	1.61	2.35	3.72	2.18	1.48	1.56
Dec-00	1.08	0.89	2.84 ²	0.83	0.93	1.27	2.42	3.67	1.05	2.17	1.39	1.83
Jan-01	1.02	0.98 ³	1.62	0.43	0.83	1.11	1.92	2.23	3.63	2.09	1.25	1.35
Feb-01	1.10	0.98 ³	1.30	0.43	0.81	1.20	1.54	1.74	ND ⁴	1.79	1.36	1.22
Mar-01	1.08	0.87	0.88	1.09	0.69	1.00	1.22	2.21	3.38 ³	1.25	0.94	1.50
Apr-01	0.86	0.77	1.19	0.44	0.71	1.34	1.37	1.43	3.38 ³	1.40	1.39	0.74
May-01	0.64	0.28	0.50	0.58	0.34	0.60	0.76	0.56	1.19	0.63	0.61	0.67
Jun-01	0.66	0.31	0.44	0.56	0.57	0.62	0.60	0.91	0.61	0.62	1.08	0.69

Mean	1.11	0.70	1.42	0.92	0.90	1.22	1.42	1.85	1.91	1.60	1.34	1.34
Min	0.28	0.17	0.24	0.36	0.27	0.34	0.37	0.56	0.46	0.62	0.43	0.36
Max	2.48	1.23	2.84	2.04	1.90	2.75	2.43	3.67	3.72	2.73	2.55	2.71
SD	0.52	0.29	0.80	0.49	0.46	0.58	0.62	0.83	1.32	0.69	0.58	0.58
CV (%)	46.8	40.9	56.7	53.7	51.0	47.9	43.6	45.0	69.4	43.5	43.6	43.4

Note:

ND¹: Power off during sampling period

Data² = Flow < 0.2 l/min (pump not working properly, or intermittent power cuts)

Data³ = Samples exposed for more than one month

ND⁴ = Samples lost

ND⁵ = Problems with Aerosol Sampling

**Table A5.1.1d Monthly Concentrations of Aerosol Ca²⁺ and Mg²⁺
Measured at the 12 Monitoring Sites in the Nitric Acid Monitoring Network between September 1999 and June 2001.**

Calcium: $\mu\text{g Ca}^{2+} \text{ m}^{-3}$

Month	Site 1	Site 21	Site 24	Site 30	Site 31	Site 32	Site 33	Site 34	Site 83	Site 40	Site 45	Site 70
Sep-99	0.15	0.12	0.08	0.04		0.09	0.10	0.09		0.16		0.06
Oct-99	-0.03	0.08	0.13	0.09	0.10	0.11	0.15	0.18		0.19	0.25	0.13
Nov-99	-0.02	0.00	0.04	0.06	0.04	0.05	0.07	0.10		0.07	0.04	0.12
Dec-99	0.05	-0.02	-0.11 ²	-0.01	0.01	0.04	0.05	0.08		0.15	0.07	0.12
Jan-00	0.15	0.32	0.23	0.05	0.09	0.15	0.23	0.20		0.27	0.38	0.26
Feb-00	0.11	0.18	0.19	0.17	0.17	0.19	0.22	0.28		0.28	0.26	0.22
Mar-00	-0.03	-0.02	0.13	0.05	0.02	0.08	0.14	0.14		0.14	0.08	0.10
Apr-00	0.07	0.18	0.01	0.07	0.08	0.07	0.11	0.10	0.00	0.04	0.09	0.07
May-00	0.03	-0.03	0.10	0.04	0.03	0.08	0.10	0.10	0.07	0.12	0.05	0.05
Jun-00	0.05	0.00	0.07	0.01	0.05	0.06	0.07	0.05	0.05	0.10	0.08	0.05
Jul-00	0.03	-0.01	0.03 ²	0.00	0.00	0.03	0.04	0.04	0.00	0.07	0.03	0.04
Aug-00	0.02	-0.03	ND ¹	0.01	0.01	0.03	0.05	0.04	0.04	ND ¹	0.02	0.01
Sep-00	0.03	0.03	0.10 ²	0.04	0.02	0.06	0.08	0.04	ND ⁴	0.06	0.02	0.03
Oct-00	0.03	0.01	0.04 ²	0.03	0.02	0.03	0.05	0.05	0.03	0.04	0.04	0.03
Nov-00	0.00	-0.02	-0.16 ²	-0.01	0.01	0.00	0.04	0.04	0.05	0.01	0.02	0.01
Dec-00	0.02	0.01	0.07 ²	0.01	0.02	0.04	0.09	0.08	0.04	0.04	0.05	0.05
Jan-01	0.04	0.03 ³	0.04	0.01	0.02	0.03	0.06	0.06	0.11	0.06	0.04	0.04
Feb-01	0.00	0.03 ³	0.02	-0.04	0.00	0.03	0.06	0.05	ND ⁴	0.05	0.02	0.01
Mar-01	0.02	0.00	0.02	0.04	0.01	0.03	0.07	0.05	0.12 ³	0.05	0.04	0.05
Apr-01	0.01	0.02	0.07	0.01	0.01	0.04	0.04	0.05	0.12 ³	0.06	0.07	0.03
May-01	0.02	0.00	0.04	0.03	0.02	0.03	0.07	0.06	0.07	0.07	0.03	0.07
Jun-01	0.03	-0.08	0.04	0.02	0.02	0.04	0.08	0.04	0.05	0.06	0.03	0.05

Mean	0.04	0.04	0.06	0.03	0.04	0.06	0.09	0.09	0.06	0.10	0.08	0.07
Min	-0.03	-0.08	-0.16	-0.04	0.00	0.00	0.04	0.04	0.00	0.01	0.02	0.01
Max	0.15	0.32	0.23	0.17	0.17	0.19	0.23	0.28	0.12	0.28	0.38	0.26
SD	0.05	0.09	0.08	0.04	0.04	0.04	0.05	0.06	0.04	0.07	0.10	0.06
CV (%)	134.7	240.6	148.5	134.3	114.1	75.0	58.6	70.3	69.3	73.9	117.4	87.6

Note:

ND¹: Power off during sampling period

Data² = Flow < 0.2 l/min (pump not working properly, or intermittent power cuts)

Data³ = Samples exposed for more than one month

ND⁴ = Samples lost

ND⁵ = Problems with Aerosol Sampling

Magnesium: $\mu\text{g Mg}^{2+} \text{ m}^{-3}$

Month	Site 1	Site 21	Site 24	Site 30	Site 31	Site 32	Site 33	Site 34	Site 83	Site 40	Site 45	Site 70
Sep-99	0.08	0.15	0.11	0.09		0.09	0.13	0.24		0.11		0.14
Oct-99	0.14	0.26	0.17	0.14	0.17	0.18	0.20	0.26		0.21	0.27	0.18
Nov-99	0.06	0.24	0.17	0.14	0.15	0.15	0.18	0.20		0.15	0.12	0.13
Dec-99	0.09	0.11	0.06 ²	0.10	0.10	0.12	0.14	0.21		0.23	0.15	0.22
Jan-00	0.00	0.04	0.14	0.05	0.10	0.17	0.19	0.20		0.19	0.26	0.19
Feb-00	0.15	0.20	0.24	0.22	0.22	0.24	0.26	0.37		0.29	0.31	0.30
Mar-00	0.02	0.06	0.13	0.10	0.06	0.09	0.14	0.11		0.13	0.10	0.09
Apr-00	0.01	0.04	0.01	0.01	0.01	0.01	0.02	0.02	0.00	0.01	0.02	0.01
May-00	0.04	0.00	0.06	0.02	0.04	0.05	0.07	0.06	0.07	0.07	0.04	0.05
Jun-00	0.07	0.05	0.05	0.05	0.06	0.06	0.05	0.07	0.06	0.05	0.07	0.06
Jul-00	0.02	0.01	0.01 ²	0.02	0.01	0.04	0.04	0.05	0.03	0.04	0.04	0.04
Aug-00	0.01	0.00	ND ¹	0.02	0.01	0.02	0.03	0.05	0.05	ND ¹	0.02	0.02
Sep-00	0.06	0.06	0.05 ²	0.06	0.05	0.07	0.08	0.04	ND ⁴	0.06	0.05	0.06
Oct-00	0.08	0.07	0.06 ²	0.06	0.06	0.06	0.08	0.05	0.03	0.06	0.11	0.10
Nov-00	0.05	0.04	-0.02 ²	0.04	0.05	0.04	0.10	0.04	0.05	0.11	0.09	0.09
Dec-00	0.08	0.08	0.17 ²	0.05	0.06	0.07	0.14	0.22	0.07	0.12	0.09	0.11
Jan-01	0.05	0.09 ³	0.07	0.03	0.05	0.07	0.10	0.13	0.23	0.08	0.07	0.09
Feb-01	0.07	0.09 ³	0.07	0.04	0.05	0.07	0.10	0.13	ND ⁴	0.09	0.09	0.08
Mar-01	0.07	0.08	0.07	0.08	0.05	0.07	0.10	0.13	0.21 ³	0.08	0.06	0.08
Apr-01	0.05	0.06	0.09	0.03	0.05	0.09	0.10	0.10	0.21 ³	0.09	0.10	0.06
May-01	0.04	0.04	0.04	0.04	0.03	0.05	0.06	0.05	0.09	0.05	0.04	0.05
Jun-01	0.05	0.01	0.05	0.04	0.05	0.05	0.06	0.08	0.06	0.05	0.07	0.05

Mean	0.06	0.08	0.09	0.07	0.07	0.09	0.11	0.13	0.09	0.11	0.10	0.10
Min	0.00	0.00	-0.02	0.01	0.01	0.01	0.02	0.02	0.00	0.01	0.02	0.01
Max	0.15	0.26	0.24	0.22	0.22	0.24	0.26	0.37	0.23	0.29	0.31	0.30
SD	0.04	0.07	0.07	0.05	0.05	0.06	0.06	0.09	0.08	0.07	0.08	0.07
CV (%)	65.1	89.5	76.6	77.8	77.8	65.9	56.7	72.1	85.2	64.8	79.3	70.6

Note:

ND¹: Power off during sampling period

Data² = Flow < 0.2 l/min (pump not working properly, or intermittent power cuts)

Data³ = Samples exposed for more than one month

ND⁴ = Samples lost

ND⁵ = Problems with Aerosol Sampling

**Table A5.1.1e Monthly Concentrations of Aerosol Na⁺
Measured at the 12 Monitoring Sites in the Nitric Acid Monitoring Network between September 1999 and June 2001.**

Sodium: $\mu\text{g Na}^+ \text{m}^{-3}$

Month	Site 1	Site 21	Site 24	Site 30	Site 31	Site 32	Site 33	Site 34	Site 83	Site 40	Site 45	Site 70
Sep-99												
Oct-99												
Nov-99												
Dec-99												
Jan-00												
Feb-00												
Mar-00	-0.44	0.51	1.18	0.94	0.53	0.83	1.22	0.95		1.17	0.82	0.78
Apr-00	0.04	0.27	-0.24	0.09	-0.15	0.06	0.22	0.30	-0.91	0.25	0.15	0.12
May-00	0.69	0.17	1.46	0.43	0.64	0.71	0.76	0.85	0.80	0.69	0.52	0.60
Jun-00	0.77	0.57	0.65	0.59	0.62	0.71	0.52	0.79	0.67	0.55	0.72	0.63
Jul-00	0.33	0.27	0.16 ²	0.27	0.25	0.49	0.48	0.55	0.30	0.45	0.42	0.58
Aug-00	0.22	0.14	ND ¹	0.30	0.18	0.26	0.34	0.59	0.59	ND ¹	0.29	0.26
Sep-00	0.64	0.47	0.40 ²	0.61	0.46	0.63	0.71	1.11	ND ⁴	0.62	0.59	0.69
Oct-00	0.96	0.54	0.71 ²	0.68	0.65	0.69	0.84	1.36	1.75	0.61	1.08	1.07
Nov-00	0.52	0.39	-0.12 ²	0.47	0.52	0.46	1.02	1.39	2.05	1.19	0.86	1.02
Dec-00	0.64	0.57	1.76 ²	0.53	0.59	0.74	1.38	2.06	0.61	1.28	0.90	1.02
Jan-01	0.63	0.94 ³	0.83	0.32	0.56	0.75	1.02	1.35	2.64	0.91	0.73	0.85
Feb-01	0.83	0.94 ³	0.78	0.47	0.55	0.79	1.07	1.40	ND ⁴	0.92	0.89	0.84
Mar-01	0.80	0.70	0.70	0.79	0.54	0.72	0.96	1.34	2.14 ³	0.79	0.61	0.92
Apr-01	0.53	0.51	0.83	0.19	0.46	0.88	0.94	0.89	2.14 ³	0.84	1.01	0.27
May-01	0.46	0.24	0.42	0.45	0.24	0.48	0.58	0.48	0.90	0.44	0.40	0.42
Jun-01	0.56	0.29	0.50	0.41	0.54	0.55	0.58	0.84	0.58	0.50	0.79	0.55
Mean	0.51	0.47	0.67	0.47	0.45	0.61	0.79	1.02	1.10	0.75	0.67	0.66
Min	-0.44	0.14	-0.24	0.09	-0.15	0.06	0.22	0.30	-0.91	0.25	0.15	0.12
Max	0.96	0.94	1.76	0.94	0.65	0.88	1.38	2.06	2.64	1.28	1.08	1.07
SD	0.35	0.24	0.54	0.22	0.22	0.22	0.32	0.45	0.99	0.30	0.27	0.29
CV (%)	67.6	51.6	80.0	46.6	48.0	35.8	40.9	44.3	89.9	40.7	39.3	43.7

Note:

ND¹: Power off during sampling period

Data² = Flow < 0.2 l/min (pump not working properly, or intermittent power cuts)

Data³ = Samples exposed for more than one month

ND⁴ = Samples lost

ND⁵ = Problems with Aerosol Sampling

Table A5.1.2a Summary of Statistics for the Monthly Denuder Measurement Data for September to December 1999.

Summary (Sep-99 to Dec-99): Gaseous Components

No.	Name	Grid Ref	HNO ₃ (nmoles m ⁻³)					SO ₂ (nmoles m ⁻³)					HCl (nmoles m ⁻³)				
			Mean	Min	Max	SD	N	Mean	Min	Max	SD	N	Mean	Min	Max	SD	N
1	Bush OTC	nt245635	10.2	8.1	12.4	1.8	4	28.9	18.4	37.6	9.0	4.0	11.2	6.2	18.7	6.0	4
21	Glensaugh	no664799	7.4	2.9	13.7	5.1	4	19.5	10.5	34.3	10.8	4.0	10.8	5.3	14.2	4.0	4
24	Rothamstead	tl123129	29.1	13.3	53.2	17.0	4	46.3	35.6	67.8	14.7	4.0	14.9	10.7	19.7	3.8	4
30	Strathvaich Dam	nh347750	4.9	0.8	9.0	4.2	4	3.8	1.4	8.9	3.5	4.0	8.6	6.4	14.6	4.0	4
31	Eskdalemuir	nt235030	4.4	4.0	5.1	0.6	3	17.0	12.8	22.6	5.0	3.0	5.6	4.7	6.1	0.8	3
32	High Muffles	se776939	16.5	13.5	23.1	4.5	4	57.9	34.0	82.5	21.1	4.0	10.7	7.2	16.2	3.9	4
33	Stoke Ferry	tl700988	21.9	19.4	25.5	3.2	3	53.2	36.0	63.5	15.0	3.0	15.1	13.1	16.3	1.7	3
34	Yarner Wood	sx786789	10.7	3.6	20.3	7.4	4	18.4	8.4	34.4	12.4	4.0	10.6	5.6	14.2	3.7	4
83	Barcombe Mills	tq438149															
40	Sutton Bonnington	sk505268	33.7	26.3	43.8	7.3	4	80.0	47.3	116.8	29.2	4.0	13.7	9.6	18.2	4.0	4
45	Lough Navar	ih065545	2.8	0.9	6.4	3.1	3	5.2	3.8	6.2	1.3	3.0	5.1	1.4	8.3	3.5	3
70	Cwmystwyth	sn771742	7.4	3.2	12.6	4.1	4	16.0	8.0	27.0	9.3	4.0	9.6	6.7	12.1	2.4	4

Summary (Sep 99 to Dec-99): Aerosol Components

No.	Name	Grid Ref	NO ₃ ⁻ (nmoles m ⁻³)					SO ₄ ²⁻ (nmoles m ⁻³)					Cl ⁻ (nmoles m ⁻³)				
			Mean	Min	Max	SD	N	Mean	Min	Max	SD	N	Mean	Min	Max	SD	N
1	Bush OTC	nt245635	16.9	8.5	25.1	8.0	4	9.1	5.6	13.2	3.6	4	44.1	21.1	69.8	21.2	4
21	Glensaugh	no664799	10.4	2.8	21.5	8.3	4	5.1	0.9	10.3	4.0	4	22.6	12.7	34.6	9.6	4
24	Rothamstead	tl123129	45.2	15.2	62.8	20.8	4	14.6	6.3	21.1	6.2	4	53.0	39.5	67.9	13.0	4
30	Strathvaich Dam	nh347750	4.4	1.3	10.7	4.3	4	5.1	2.9	8.9	2.6	4	37.2	18.0	57.4	16.4	4
31	Eskdalemuir	nt235030	9.7	6.7	15.8	5.2	3	7.0	4.9	9.6	2.4	3	40.4	32.9	47.2	7.2	3
32	High Muffles	se776939	27.6	15.9	46.5	13.2	4	12.0	8.0	19.6	5.2	4	43.8	23.9	55.6	13.8	4
33	Stoke Ferry	tl700988	46.1	37.8	56.1	7.8	4	14.8	11.4	17.1	2.7	4	48.8	44.2	55.9	5.0	4
34	Yarner Wood	sx786789	25.8	7.2	54.7	20.6	4	11.5	6.0	17.7	4.8	4	64.1	56.3	71.4	6.2	4
83	Barcombe Mills	tq438149															
40	Sutton Bonnington	sk505268	48.4	37.0	58.8	9.7	4	16.7	13.4	20.9	3.4	4	56.5	40.2	76.8	15.1	4
45	Lough Navar	ih065545	8.8	3.0	16.4	6.9	3	8.3	4.3	12.0	3.9	3	47.1	38.4	57.0	9.3	3
70	Cwmystwyth	sn771742	16.1	5.2	31.2	11.1	4	9.7	5.4	12.3	3.1	4	49.0	38.4	59.4	8.6	4

Table A5.1.2b Summary of Statistics for the Monthly Denuder Measurement Data for January to December 2000.

Summary (Jan-00 to Dec-00): Gaseous Components

No.	Name	Grid Ref	HNO ₃ (nmoles m ⁻³)					SO ₂ (nmoles m ⁻³)					HCl (nmoles m ⁻³)				
			Mean	Min	Max	SD	N	Mean	Min	Max	SD	N	Mean	Min	Max	SD	N
1	Bush OTC	nt245635	8.9	4.6	13.0	2.5	12	28.3	13.8	51.6	11.0	12	7.5	3.4	15.1	3.2	12
21	Glensaugh	no664799	6.4	1.4	14.6	3.8	12	11.4	3.6	19.0	5.5	12	8.4	1.6	16.5	4.1	12
24	Rothamstead	tl123129	23.1	12.7	31.4	7.1	11	41.9	14.7	117.8	27.9	11	12.8	6.6	19.7	4.8	11
30	Strathvaich Dam	nh347750	3.0	0.4	7.8	2.2	12	3.1	1.2	8.0	2.0	12	6.7	3.5	16.7	3.8	12
31	Eskdalemuir	nt235030	6.1	2.5	8.7	2.1	12	11.0	6.2	18.1	4.0	12	5.8	3.2	13.8	2.9	12
32	High Muffles	se776939	14.3	9.1	20.2	3.0	12	54.0	21.0	110.7	24.5	12	9.8	5.9	19.0	3.6	12
33	Stoke Ferry	tl700988	23.7	18.1	49.0	8.5	12	55.7	30.8	147.6	30.5	12	11.4	7.8	20.1	3.8	12
34	Yarner Wood	sx786789	10.5	2.4	18.6	5.7	12	12.5	2.1	27.9	7.3	12	7.5	2.0	14.1	3.2	12
83	Barcombe Mills	tq438149	23.0	7.8	34.8	10.0	8	28.1	13.7	42.0	9.6	8	9.4	5.8	12.9	2.6	8
40	Sutton Bonington	sk505268	24.5	11.2	34.7	6.4	11	92.5	36.2	169.7	44.7	11	12.8	7.2	19.5	4.1	11
45	Lough Navar	ih065545	3.0	1.1	7.1	1.9	12	4.9	2.2	8.8	2.1	12	3.5	1.7	8.6	2.0	12
70	Cwmystwyth	sn771742	7.6	1.9	16.0	4.7	12	13.9	2.9	44.4	11.1	12	5.7	2.7	12.4	2.8	12

Summary (Jan-00 to Dec-00): Aerosol Components

No.	Name	Grid Ref	NO ₃ ⁻ (nmoles m ⁻³)					SO ₄ ²⁻ (nmoles m ⁻³)					Cl ⁻ (nmoles m ⁻³)				
			Mean	Min	Max	SD	N	Mean	Min	Max	SD	N	Mean	Min	Max	SD	N
1	Bush OTC	nt245635	14.7	7.9	22.7	5.0	11	8.5	1.2	13.2	3.4	11	30.0	7.8	54.5	13.7	11
21	Glensaugh	no664799	11.7	3.6	23.6	5.8	11	5.2	3.0	8.6	2.1	11	18.6	4.9	29.2	7.5	11
24	Rothamstead	tl123129	44.4	5.8	100.7	29.6	10	16.4	0.6	30.4	9.4	10	41.8	6.8	80.0	27.4	10
30	Strathvaich Dam	nh347750	4.3	1.4	9.1	2.4	11	4.4	2.4	7.5	1.8	11	26.7	10.3	52.5	13.2	11
31	Eskdalemuir	nt235030	11.5	7.3	17.0	3.7	11	8.3	5.4	12.5	2.3	11	24.9	7.7	53.7	14.0	11
32	High Muffles	se776939	29.0	21.2	39.9	6.4	11	14.0	9.9	18.3	3.0	11	34.5	9.5	77.4	19.6	11
33	Stoke Ferry	tl700988	52.4	29.2	94.1	18.7	11	19.0	10.4	31.9	6.3	11	39.8	10.4	68.4	21.4	11
34	Yarner Wood	sx786789	22.4	7.2	60.5	14.7	11	13.9	6.2	23.1	5.7	11	53.0	18.9	103.2	28.2	11
83	Barcombe Mills	tq438149	40.4	16.5	69.4	19.8	7	20.8	11.4	31.8	7.6	7	43.0	13.0	104.9	34.0	7
40	Sutton Bonington	sk505268	46.2	22.9	93.7	20.9	10	20.8	8.5	40.0	10.3	10	45.4	18.4	72.2	21.6	10
45	Lough Navar	ih065545	10.8	3.1	24.1	7.7	11	9.3	4.9	16.0	3.7	11	38.6	12.1	71.9	20.1	11
70	Cwmystwyth	sn771742	17.0	5.6	39.1	10.2	11	12.1	5.1	22.2	6.1	11	38.3	10.1	76.5	19.0	11

Table A5.1.2c Summary of Statistics for the Monthly Denuder Measurement Data for January to June 2001.

Summary (Jan-01 to Jun-01): Gaseous Components

No.	Name	Grid Ref	HNO ₃ (nmoles m ⁻³)					SO ₂ (nmoles m ⁻³)					HCl (nmoles m ⁻³)				
			Mean	Min	Max	SD	N	Mean	Min	Max	SD	N	Mean	Min	Max	SD	N
1	Bush OTC	nt245635	11.6	8.3	15.5	2.8	6	34.1	18.6	57.2	15.0	6.0	7.7	4.6	9.5	2.0	6
21	Glensaugh	no664799	10.4	6.6	16.6	3.8	6	17.8	7.6	29.6	9.6	6.0	8.1	7.0	9.1	0.9	6
24	Rothamstead	tl123129	33.7	26.4	47.1	7.0	6	52.3	31.6	78.6	17.1	6.0	11.4	7.5	13.7	2.4	6
30	Strathvaich Dam	nh347750	6.0	3.0	11.0	3.3	6	4.9	1.5	9.4	2.6	6.0	7.0	5.5	12.2	2.6	6
31	Eskdalemuir	nt235030	9.7	6.3	17.1	3.9	6	19.7	6.6	29.1	7.6	6.0	6.0	5.2	7.5	0.9	6
32	High Muffles	se776939	17.8	12.8	24.1	3.7	6	57.2	28.5	108.2	28.4	6.0	11.5	7.9	23.5	6.0	6
33	Stoke Ferry	tl700988	22.9	15.7	28.9	4.5	6	41.5	29.3	59.3	11.9	6.0	11.5	8.3	14.5	2.5	6
34	Yarner Wood	sx786789	15.7	6.2	27.6	7.1	6	24.1	12.7	35.5	8.9	6.0	10.1	6.7	12.6	2.1	6
83	Barcombe Mills	tq438149	27.4	17.1	32.3	6.3	5	40.3	27.7	51.3	11.4	5.0	15.6	11.4	19.0	3.3	5
40	Sutton Bonington	sk505268	35.1	28.2	41.8	5.6	6	85.1	61.0	114.1	19.9	6.0	11.1	6.8	13.2	2.5	6
45	Lough Navar	ih065545	6.2	2.3	13.4	4.1	6	10.0	4.0	17.7	6.1	6.0	3.9	3.2	4.6	0.6	6
70	Cwmystwyth	sn771742	11.7	4.0	20.7	6.1	6	24.1	6.7	39.8	13.8	6.0	8.5	2.1	23.0	7.4	6

Summary (Jan-01 to Jun-01): Aerosol Components

No.	Name	Grid Ref	NO ₃ ⁻ (nmoles m ⁻³)					SO ₄ ²⁻ (nmoles m ⁻³)					Cl ⁻ (nmoles m ⁻³)				
			Mean	Min	Max	SD	N	Mean	Min	Max	SD	N	Mean	Min	Max	SD	N
1	Bush OTC	nt245635	27.2	16.4	37.2	8.7	6	14.3	7.6	20.3	4.5	6	25.2	18.2	30.9	5.7	6
21	Glensaugh	no664799	18.7	10.8	21.6	4.1	6	9.4	7.2	11.4	1.3	6	19.6	7.8	27.5	9.1	6
24	Rothamstead	tl123129	61.4	46.2	89.7	16.9	6	23.5	17.6	31.1	5.2	6	27.9	12.5	45.6	13.1	6
30	Strathvaich Dam	nh347750	8.5	3.3	17.1	5.3	6	7.7	4.5	13.2	3.3	6	16.6	12.0	30.7	7.2	6
31	Eskdalemuir	nt235030	18.8	13.6	23.8	3.9	6	10.9	6.4	13.1	2.5	6	18.4	9.4	23.3	5.1	6
32	High Muffles	se776939	36.0	33.8	42.4	3.3	6	16.1	12.1	19.1	2.7	6	27.6	16.9	37.9	8.7	6
33	Stoke Ferry	tl700988	65.0	52.0	85.5	15.0	6	23.0	14.8	29.9	5.6	6	34.8	16.9	54.2	13.9	6
34	Yarner Wood	sx786789	40.8	20.2	69.4	18.1	6	16.7	11.5	23.6	4.4	6	42.6	15.8	62.7	19.2	6
83	Barcombe Mills	tq438149	67.6	21.8	103.9	36.3	5	28.0	14.1	41.8	13.1	5	68.7	17.2	102.2	40.0	5
40	Sutton Bonington	sk505268	64.2	46.0	88.6	15.2	6	26.4	18.9	35.2	5.4	6	36.5	17.6	58.7	16.8	6
45	Lough Navar	ih065545	22.5	10.7	40.8	12.9	6	12.6	7.9	16.3	3.4	6	31.2	17.1	39.1	8.4	6
70	Cwmystwyth	sn771742	28.2	14.9	48.2	12.1	6	14.7	8.7	20.2	4.5	6	28.9	18.9	42.2	10.5	6

Table A5.1.2d Summary of Statistics for the Monthly Denuder Measurement Data for September 1999 to June 2001.

Summary (Sep 99 to Jun-01): Gaseous Components

No.	Name	Grid Ref	HNO ₃ (nmoles m ⁻³)					SO ₂ (nmoles m ⁻³)					HCl (nmoles m ⁻³)				
			Mean	Min	Max	SD	N	Mean	Min	Max	SD	N	Mean	Min	Max	SD	N
1	Bush OTC	nt245635	9.9	4.6	15.5	2.7	22	30.0	13.8	57.2	11.6	22.0	8.2	3.4	18.7	3.7	22
21	Glensaugh	no664799	7.7	1.4	16.6	4.2	22	14.6	3.6	34.3	8.2	22.0	8.7	1.6	16.5	3.5	22
24	Rothamstead	tl123129	27.3	12.7	53.2	10.2	21	45.7	14.7	117.8	22.7	21.0	12.8	6.6	19.7	4.1	21
30	Strathvaich Dam	nh347750	4.1	0.4	11.0	3.1	22	3.8	1.2	9.4	2.5	22.0	7.1	3.5	16.7	3.5	22
31	Eskdalemuir	nt235030	6.9	2.5	17.1	3.1	21	14.4	6.2	29.1	6.5	21.0	5.8	3.2	13.8	2.2	21
32	High Muffles	se776939	15.6	9.1	24.1	3.6	22	55.6	21.0	110.7	24.0	22.0	10.4	5.9	23.5	4.2	22
33	Stoke Ferry	tl700988	23.2	15.7	49.0	6.8	21	51.3	29.3	147.6	24.7	21.0	11.9	7.8	20.1	3.4	21
34	Yarner Wood	sx786789	12.0	2.4	27.6	6.5	22	16.8	2.1	35.5	9.7	22.0	8.8	2.0	14.2	3.2	22
83	Barcombe Mills	tg438149	24.7	7.8	34.8	8.7	13	32.8	13.7	51.3	11.6	13.0	11.8	5.8	19.0	4.2	13
40	Sutton Bonnington	sk505268	29.3	11.2	43.8	7.9	21	88.0	36.2	169.7	35.4	21.0	12.5	6.8	19.5	3.6	21
45	Lough Navar	ih065545	3.9	0.9	13.4	3.1	21	6.4	2.2	17.7	4.2	21.0	3.8	1.4	8.6	1.9	21
70	Cwmystwyth	sn771742	8.7	1.9	20.7	5.2	22	17.1	2.9	44.4	11.9	22.0	7.1	2.1	23.0	4.6	22

Summary (Sep 99 to Jun-01): Aerosol Components

No.	Name	Grid Ref	NO ₃ ⁻ (nmoles m ⁻³)					SO ₄ ²⁻ (nmoles m ⁻³)					Cl ⁻ (nmoles m ⁻³)				
			Mean	Min	Max	SD	N	Mean	Min	Max	SD	N	Mean	Min	Max	SD	N
1	Bush OTC	nt245635	18.7	7.9	37.2	8.5	21	10.3	1.2	20.3	4.4	21	31.3	7.8	69.8	14.7	21
21	Glensaugh	no664799	13.5	2.8	23.6	6.5	21	6.4	0.9	11.4	3.0	21	19.7	4.9	34.6	8.1	21
24	Rothamstead	tl123129	49.7	5.8	100.7	24.9	20	18.1	0.6	31.1	8.3	20	39.9	6.8	80.0	22.6	20
30	Strathvaich Dam	nh347750	5.5	1.3	17.1	4.1	21	5.5	2.4	13.2	2.7	21	25.8	10.3	57.4	13.9	21
31	Eskdalemuir	nt235030	13.4	6.7	23.8	5.2	20	8.9	4.9	13.1	2.7	20	25.3	7.7	53.7	12.9	20
32	High Muffles	se776939	30.7	15.9	46.5	7.8	21	14.2	8.0	19.6	3.5	21	34.3	9.5	77.4	16.4	21
33	Stoke Ferry	tl700988	54.8	29.2	94.1	17.0	21	19.3	10.4	31.9	6.1	21	40.1	10.4	68.4	17.5	21
34	Yarner Wood	sx786789	28.3	7.2	69.4	17.9	21	14.3	6.0	23.6	5.3	21	52.1	15.8	103.2	23.5	21
83	Barcombe Mills	tg438149	51.7	16.5	103.9	29.8	12	23.8	11.4	41.8	10.4	12	53.7	13.0	104.9	37.3	12
40	Sutton Bonnington	sk505268	52.0	22.9	93.7	18.7	20	21.7	8.5	40.0	8.5	20	45.0	17.6	76.8	19.5	20
45	Lough Navar	ih065545	14.0	3.0	40.8	10.7	20	10.1	4.3	16.3	3.8	20	37.6	12.1	71.9	16.4	20
70	Cwmystwyth	sn771742	20.0	5.2	48.2	11.6	21	12.4	5.1	22.2	5.3	21	37.7	10.1	76.5	16.4	21

Appendix 5.2

Daily Denuder Measurements

Table A5.2.1 Daily Concentrations of HNO₃, HNO₂, SO₂, and HCl Measured at Barcombe Mills between April 2000 and July 2001.

Date	HNO ₃ (µg m ⁻³)	HNO ₂ (µg m ⁻³)	SO ₂ (µg m ⁻³)	HCl (µg m ⁻³)
27-Apr-00	0.84	0.51	2.04	0.27
28-Apr-00	1.74	0.48	3.05	0.26
29-Apr-00	0.57	0.38	1.50	0.12
30-Apr-00	2.25	0.44	1.98	0.14
01-May-00	1.77	0.10	1.65	0.23
02-May-00	1.11	0.17	3.65	0.17
03-May-00	0.94	0.23	3.43	0.26
04-May-00	0.71	0.56	12.69	0.60
05-May-00	2.83	1.02	5.50	0.47
06-May-00	2.64	0.67	2.26	0.45
07-May-00	3.06	1.25	6.44	0.59
08-May-00	2.44	1.19	5.15	0.36
09-May-00	2.90	0.65	4.75	0.35
10-May-00	1.93	0.62	5.12	0.47
11-May-00				
12-May-00				
13-May-00				
14-May-00	NO			
15-May-00	DATA			
16-May-00	SITE			
17-May-00	OPERATOR			
18-May-00	ON			
19-May-00	SICK			
20-May-00	LEAVE			
21-May-00				
22-May-00				
23-May-00				
24-May-00				
25-May-00	0.62	0.24	0.97	0.93
26-May-00	0.79	0.27	1.79	0.64
27-May-00	0.21	< 0.01	0.15	0.26
28-May-00	0.56	0.53	0.35	0.42
29-May-00	0.98	1.38	1.14	0.39
30-May-00	0.71	0.22	1.05	0.30
31-May-00	2.39	0.67	2.00	0.45
01-Jun-00	NO			
02-Jun-00	DATA			
03-Jun-00	SITE			
04-Jun-00	OPERATOR			
05-Jun-00	DID NOT			
06-Jun-00	START			
07-Jun-00	PROGRAM			
08-Jun-00	1.42	0.62	3.23	0.47
09-Jun-00	FAILED			
10-Jun-00	0.65	0.14	1.41	0.61
11-Jun-00	0.38	0.15	0.60	0.60
12-Jun-00	0.53	0.15	0.62	0.56
13-Jun-00	FAILED			
14-Jun-00	0.68	0.12	0.18	0.42
15-Jun-00	NO			
16-Jun-00	DATA			
17-Jun-00	PROBLEMS			
18-Jun-00	WITH			
19-Jun-00	FLAP			
20-Jun-00	DOOR			
21-Jun-00				
22-Jun-00	0.29	0.15	1.47	0.50
23-Jun-00	0.53	0.35	1.19	0.42
24-Jun-00	0.60	0.52	3.22	0.19
25-Jun-00	1.04	0.70	2.19	0.18
26-Jun-00	1.35	0.50	1.98	0.39
27-Jun-00	2.44	0.63	3.94	0.44
28-Jun-00	2.64	0.81	4.24	0.41
29-Jun-00	4.73	0.93	1.07	1.12
30-Jun-00	6.03	1.13	0.80	0.67
01-Jul-00	4.25	0.65	2.98	0.65

Date	HNO ₃ (µg m ⁻³)	HNO ₂ (µg m ⁻³)	SO ₂ (µg m ⁻³)	HCl (µg m ⁻³)
02-Jul-00	2.58	0.52	1.82	0.72
03-Jul-00	2.50	0.71	1.61	0.77
04-Jul-00	2.24	0.17	3.56	0.59
05-Jul-00	1.55	0.21	3.84	0.63
06-Jul-00	1.87	0.43	2.81	0.57
07-Jul-00	0.67	0.44	1.37	0.25
08-Jul-00	0.41	0.07	0.62	0.34
09-Jul-00	0.36	0.25	1.25	0.45
10-Jul-00	0.51	0.32	1.41	0.30
11-Jul-00	0.40	0.49	2.84	0.61
12-Jul-00	0.31	0.19	1.26	0.39
13-Jul-00	0.61	0.27	3.06	0.60
14-Jul-00	0.45	0.33	2.14	0.28
15-Jul-00	0.65	0.79	2.01	0.36
16-Jul-00	1.19	0.69	0.81	0.48
17-Jul-00	2.07	0.47	2.42	0.31
18-Jul-00	2.39	1.24	2.84	0.85
19-Jul-00	3.59	0.85	2.63	0.42
20-Jul-00	3.13	0.75	5.90	0.22
21-Jul-00	1.72	0.28	1.74	0.39
22-Jul-00	FAILED			
23-Jul-00	1.32	0.26	1.76	0.31
24-Jul-00	1.33	0.55	1.52	0.62
25-Jul-00	2.45	0.96	2.29	0.14
26-Jul-00	2.86	0.81	1.26	0.38
27-Jul-00	1.85	0.22	1.40	0.20
28-Jul-00	0.45	0.29	0.79	0.22
29-Jul-00	FAILED			
30-Jul-00	0.82	0.39	0.73	0.34
31-Jul-00	0.81	0.43	1.30	0.15
01-Aug-00	0.46	0.32	0.58	0.30
02-Aug-00	0.37	0.21	0.68	0.52
03-Aug-00	0.59	0.50	0.73	0.23
04-Aug-00	1.25	0.95	1.39	0.21
05-Aug-00	1.02	0.46	1.07	0.19
06-Aug-00	0.82	0.78	0.90	0.17
07-Aug-00	0.89	0.89	2.34	0.16
08-Aug-00	1.91	0.54	1.82	0.24
09-Aug-00	1.11	0.49	1.28	0.28
10-Aug-00	1.87	0.24	3.72	0.47
11-Aug-00	2.81	0.48	2.57	0.39
12-Aug-00	2.32	0.68	3.38	0.31
13-Aug-00	1.73	0.52	2.36	0.37
14-Aug-00	2.00	0.44	2.75	0.65
15-Aug-00	4.42	0.56	4.68	0.99
16-Aug-00	4.99	0.53	2.92	0.79
17-Aug-00	NO DATA: Site operator left key at home!			
18-Aug-00	Blank			
19-Aug-00	values			
20-Aug-00	unexposed			
21-Aug-00	samples			
22-Aug-00	returned by			
23-Aug-00	mistake?			
24-Aug-00				
25-Aug-00		0.69	3.19	0.58
26-Aug-00	0.88	0.28	0.98	0.42
27-Aug-00	0.42	0.31	0.80	0.39
28-Aug-00	1.10	0.19	1.04	0.39
29-Aug-00	1.12	0.74	1.17	0.35
30-Aug-00	1.15	0.29	1.20	0.32
31-Aug-00	1.63	0.23	2.86	0.66
01-Sep-00	0.43	0.23	1.52	0.27
02-Sep-00	0.71	0.34	1.44	0.32
03-Sep-00	0.78	0.40	1.07	0.27
04-Sep-00	1.58	0.26	2.18	1.13

Table A5.2.1 Daily Concentrations of HNO₃, HNO₂, SO₂, and HCl Measured at Barcombe Mills between April 2000 and July 2001.

Date	HNO ₃ (µg m ⁻³)	HNO ₂ (µg m ⁻³)	SO ₂ (µg m ⁻³)	HCl (µg m ⁻³)
05-Sep-00	1.00	0.12	1.35	0.48
06-Sep-00	FAILED			
07-Sep-00	0.43	0.14	0.72	0.50
08-Sep-00				
09-Sep-00				
10-Sep-00	NO			
11-Sep-00	DATA			
12-Sep-00	PROBLEMS			
13-Sep-00	WITH			
14-Sep-00	FLAP			
15-Sep-00	DOORS			
16-Sep-00	JAMMED			
17-Sep-00	OPEN			
18-Sep-00				
19-Sep-00				
20-Sep-00				
21-Sep-00				
22-Sep-00	0.94	0.64	1.53	0.38
23-Sep-00	1.44	0.18	1.80	0.41
24-Sep-00	0.22	0.12	0.26	0.21
25-Sep-00	2.23	0.12	1.42	0.29
26-Sep-00	1.06	-0.10	0.68	0.43
27-Sep-00	3.45	0.07	0.45	0.38
28-Sep-00	0.74	0.06	1.07	0.41
29-Sep-00	2.13	0.35	1.76	0.25
30-Sep-00	0.60	0.24	0.63	0.07
01-Oct-00	0.51	0.10	0.61	0.73
02-Oct-00	1.76	0.55	0.81	0.53
03-Oct-00	0.35	0.15	1.00	0.48
04-Oct-00	1.13	0.20	0.56	0.47
05-Oct-00	1.26	0.35	1.13	0.12
06-Oct-00	0.47	0.36	2.68	0.15
07-Oct-00	0.54	0.31	0.95	0.18
08-Oct-00	0.31	0.29	1.05	0.20
09-Oct-00	0.54	0.06	1.24	0.43
10-Oct-00	0.22	0.01	0.91	0.67
11-Oct-00	0.13	-0.02	0.29	0.35
12-Oct-00	0.17	0.29	0.53	0.22
13-Oct-00	0.42	0.98	1.89	0.16
14-Oct-00	0.34	0.44	0.45	0.09
15-Oct-00	0.81	1.15	1.99	0.12
16-Oct-00	0.56	0.31	2.25	0.41
17-Oct-00	0.53	0.14	1.13	1.39
18-Oct-00	0.40	0.47	0.67	0.36
19-Oct-00	0.19	0.53	0.35	0.35
20-Oct-00	1.13	0.36	1.98	2.04
21-Oct-00	0.27	1.30	2.22	1.28
22-Oct-00	0.81	0.10	2.05	2.13
23-Oct-00	0.32	0.16	1.24	0.87
24-Oct-00	0.58	0.02	0.72	0.68
25-Oct-00	FAILED			
26-Oct-00	0.80	0.14	2.02	1.16
27-Oct-00				
28-Oct-00	NO			
29-Oct-00	DATA			
30-Oct-00	PROBLEMS			
31-Oct-00	WITH			
1-Nov-00	FLAP			
2-Nov-00	DOORS			
3-Nov-00	JAMMED			
4-Nov-00	OPEN			
5-Nov-00				
6-Nov-00	ALSO			
7-Nov-00	PROBLEMS			
8-Nov-00	WITH			

Date	HNO ₃ (µg m ⁻³)	HNO ₂ (µg m ⁻³)	SO ₂ (µg m ⁻³)	HCl (µg m ⁻³)
9-Nov-00	TEMPERATURE			
10-Nov-00	SENSOR			
11-Nov-00				
12-Nov-00				
13-Nov-00				
14-Nov-00				
15-Nov-00				
16-Nov-00				
17-Nov-00				
18-Nov-00				
19-Nov-00				
20-Nov-00				
21-Nov-00				
22-Nov-00				
23-Nov-00				
24-Nov-00	0.67	0.19	1.01	0.83
25-Nov-00	0.48	0.05	0.85	2.13
26-Nov-00	0.49	0.30	1.01	0.85
27-Nov-00	0.59	0.20	1.67	0.79
28-Nov-00	0.52	0.51	3.53	0.43
29-Nov-00	0.68	0.33	1.46	1.15
30-Nov-00	0.83	0.32	3.13	0.75
1-Dec-00				
2-Dec-00	NO			
3-Dec-00	DATA			
4-Dec-00	TEMPERATURE			
5-Dec-00	PROBE			
6-Dec-00	BROKEN			
7-Dec-00				
8-Dec-00	AWAITING			
9-Dec-00	REPAIR			
10-Dec-00				
11-Dec-00				
12-Dec-00				
13-Dec-00				
14-Dec-00				
15-Dec-00				
16-Dec-00				
17-Dec-00				
18-Dec-00				
19-Dec-00				
20-Dec-00				
21-Dec-00				
22-Dec-00				
23-Dec-00				
24-Dec-00				
25-Dec-00				
26-Dec-00				
27-Dec-00				
28-Dec-00				
29-Dec-00				
30-Dec-00				
Mean	1.31	0.43	1.93	0.49
SD	1.11	0.30	1.56	0.35
% CV	84.7	70.4	80.9	72.3
N	134	133	134	134

Table A5.2.1 Daily Concentrations of HNO₃, HNO₂, SO₂, and HCl Measured at Barcombe Mills between April 2000 and July 2001.

Date	HNO ₃ (µg m ⁻³)	HNO ₂ (µg m ⁻³)	SO ₂ (µg m ⁻³)	HCl (µg m ⁻³)
11/04/01	2.00	1.31	3.33	0.59
12/04/01	3.23	0.57	4.01	0.38
13/04/01	0.77	0.66	1.19	0.79
14/04/01	0.56	0.62	0.75	0.35
15/04/01	FAILED			
16/04/01	FAILED			
17/04/01	1.52	0.68	2.20	0.59
18/04/01	Delayed sample			
19/04/01	Changeover			
20/04/01	0.90	0.28	1.81	0.72
21/04/01	1.57	0.44	4.32	0.26
22/04/01	FAILED			
23/04/01	0.63	0.59	2.15	0.13
24/04/01	0.26	0.28	1.34	0.33
25/04/01	0.44	0.27	2.02	0.29
26/04/01	0.40	0.44	1.03	0.10
27/04/01	0.62	0.20	1.92	0.39
28/04/01	0.41	0.15	1.03	0.38
29/04/01	0.62	0.33	4.03	0.23
30/04/01	1.46	0.32	9.75	0.29
01/05/01	1.03	0.26	2.32	0.70
02/05/01	FAILED			
03/05/01	0.83	0.29	2.73	0.28
04/05/01	0.50	0.22	3.90	0.41
05/05/01	0.64	0.29	4.12	0.44
06/05/01	0.69	0.27	3.75	0.60
07/05/01	0.89	0.21	1.25	0.34
08/05/01	0.97	0.26	1.33	0.38
09/05/01	2.19	0.51	2.22	0.40
10/05/01	2.97	1.01	4.68	0.45
11/05/01	2.93	0.37	2.91	0.39
12/05/01	2.59	0.37	2.63	0.34
13/05/01	1.27	0.36	2.34	0.34
14/05/01	1.06	0.40	1.91	0.35
15/05/01	0.90	0.19	2.57	0.33
16/05/01	FAILED			
17/05/01	0.41	0.18	2.07	0.31
18/05/01				
19/05/01	2.44	1.34	5.88	1.27
20/05/01	1.56	0.22	1.99	0.32
21/05/01	1.34	0.19	1.88	0.35
22/05/01	2.97	0.19	2.96	0.45
23/05/01	FAILED			
24/05/01	2.51	0.17	1.33	0.56
25/05/01	FAILED			
26/05/01	1.39	0.20	0.91	0.31
27/05/01	1.33	0.31	1.18	0.27
28/05/01	0.86	0.26	0.79	0.29
29/05/01	1.43	0.35	1.65	0.38
30/05/01	1.01	0.29	2.17	0.38
31/05/01	0.62	0.31	1.29	0.22
01/06/01	0.55	0.21	0.96	0.19
02/06/01	0.62	0.27	2.17	0.35
03/06/01	Power			
04/06/01	Failure			
05/06/01	0.54	0.21	0.96	0.22
06/06/01	0.69	0.23	1.99	0.36
07/06/01	Power Failure			
08/06/01	0.96	0.27	1.68	0.30
09/06/01	0.75	0.29	0.98	0.26
10/06/01	1.04	0.34	2.09	0.52
11/06/01	1.28	0.16	1.31	0.33
12/06/01	1.72	0.31	1.79	0.37
13/06/01	1.71	0.26	1.50	0.31
14/06/01	1.14	0.39	3.25	0.42
15/06/01	0.35	0.13	1.04	0.41

Date	HNO ₃ (µg m ⁻³)	HNO ₂ (µg m ⁻³)	SO ₂ (µg m ⁻³)	HCl (µg m ⁻³)
16/06/2001	1.05	0.31	1.03	0.20
17/06/2001	1.23	0.44	3.47	0.36
18/06/2001	2.55	0.35	2.48	0.45
19/06/2001	4.18	0.40	4.33	0.70
20/06/2001	1.68	0.57	3.40	0.45
21/06/2001	Engineer servicing equipment			
22/06/2001	1.93	0.30	3.18	0.35
23/06/2001	3.30	0.42	3.08	0.40
24/06/2001	4.41	0.38	3.66	0.43
25/06/2001	5.88	0.33	4.51	0.43
26/06/2001	2.57	0.26	2.03	0.51
27/06/2001	0.87	0.24	1.72	0.88
28/06/2001	0.55	0.28	1.73	0.59
29/06/2001	1.01	0.26	2.43	0.43
30/06/2001	0.57	0.23	1.26	0.43
01/07/2001	1.21	0.47	1.50	0.26
02/07/2001	2.73	0.46	1.95	0.34
03/07/2001	3.87	0.62	2.92	0.53
04/07/2001	2.08	0.81	2.54	0.35
05/07/2001	1.52	0.52	2.50	0.30
06/07/2001	Site			
07/07/2001	Operator			
08/07/2001	Did			
09/07/2001	Not			
10/07/2001	Start			
11/07/2001	Program			
12/07/2001				
13/07/2001	0.39	0.27	0.86	0.36
14/07/2001	0.63	0.28	0.96	0.26
15/07/2001	0.75	0.30	0.90	0.19
16/07/2001	1.12	0.29	1.39	0.40
17/07/2001	0.31	0.12	0.71	0.65
18/07/2001	0.76	0.27	1.53	0.29
19/07/2001	1.01	0.47	3.13	0.40
20/07/2001	Awaiting			
21/07/2001	Analysis			
22/07/2001	data			
23/07/2001	from			
24/07/2001	Harwell Scientifics Ltd			
25/07/2001				
26/07/2001				
27/07/2001				
28/07/2001				
29/07/2001				
30/07/2001				
31/07/2001				

Mean	1.42	0.37	2.31	0.41
SD	1.08	0.19	1.41	0.18
CV (%)	76.2	52.9	60.8	44.8
N	79	79	79	79

Table A5.2.2 Daily Concentrations of Aerosol NO₃⁻, SO₄²⁻ and Cl⁻ Measured at Barcombe Mills between April 2000 and July 2001.

Date	NO ₃ ⁻ (µg m ⁻³)			SO ₄ ²⁻ (µg m ⁻³)			Cl ⁻ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
27-Apr-00	3.15	0.16	3.31	2.13	-0.04	2.09	0.12	0.03	0.15
28-Apr-00	2.07	0.41	2.48	2.69	-0.03	2.67	0.03	0.09	0.12
29-Apr-00	2.35	0.25	2.60	1.66	-0.03	1.64	0.10	0.03	0.13
30-Apr-00	2.87	0.18	3.06	3.39	-0.04	3.35	0.02	0.03	0.05
01-May-00	0.02	0.14	0.16	4.81	-0.02	4.78	0.00	0.03	0.04
02-May-00	0.06	0.12	0.18	4.06	0.00	4.06	0.00	0.02	0.02
03-May-00	0.39	0.15	0.54	4.82	0.00	4.82	0.02	0.02	0.04
04-May-00	1.78	0.12	1.90	4.54	0.02	4.56	0.11	0.13	0.25
05-May-00	8.55	0.76	9.31	5.70	0.01	5.71	0.07	0.11	0.17
06-May-00	1.84	0.76	2.60	3.71	0.02	3.73	0.10	0.13	0.23
07-May-00	9.11	0.68	9.79	6.53	0.01	6.54	0.07	0.08	0.15
08-May-00	8.20	0.67	8.87	6.57	0.05	6.62	0.14	0.16	0.30
09-May-00	13.48	0.43	13.91	6.94	0.05	6.98	0.09	0.02	0.11
10-May-00	5.27	0.29	5.56	5.22	0.03	5.25	0.10	0.03	0.13
11-May-00									
12-May-00									
13-May-00									
14-May-00		NO							
15-May-00		DATA							
16-May-00		SITE							
17-May-00		OPERATOR							
18-May-00		ON							
19-May-00		SICK							
20-May-00		LEAVE							
21-May-00									
22-May-00									
23-May-00									
24-May-00									
25-May-00	0.48	-0.03	0.45	0.74	0.01	0.76	0.47	0.50	0.97
26-May-00	0.26	-0.11	0.15	1.10	-0.01	1.09	0.08	0.49	0.57
27-May-00	0.17	-0.13	0.04	0.56	-0.03	0.53	0.15	0.49	0.64
28-May-00	0.15	-0.13	0.03	0.42	-0.03	0.39	0.09	0.68	0.77
29-May-00	0.40	-0.12	0.29	0.81	-0.02	0.79	0.07	0.70	0.77
30-May-00	0.35	-0.09	0.26	1.30	-0.04	1.26	0.04	0.49	0.53
31-May-00	1.68	-0.07	1.61	3.55	-0.04	3.50	0.08	0.53	0.61
01-Jun-00		NO							
02-Jun-00		DATA							
03-Jun-00		SITE							
04-Jun-00		OPERATOR							
05-Jun-00		DID NOT							
06-Jun-00		START							
07-Jun-00		PROGRAM							
08-Jun-00	0.92	-0.11	0.81	3.22	<0.01	3.22	0.05	0.54	0.59
09-Jun-00	FAILED								
10-Jun-00	0.49	-0.12	0.36	1.12	<0.01	1.12	0.24	0.73	0.97
11-Jun-00	0.68	-0.13	0.55	1.46	<0.01	1.46	0.65	0.56	1.21
12-Jun-00	0.50	-0.13	0.37	1.83	<0.01	1.83	0.08	0.73	0.81
13-Jun-00	FAILED								
14-Jun-00	0.00	-0.14	-0.14	0.08	<0.01	0.08	0.01	0.57	0.58
15-Jun-00		NO							
16-Jun-00		DATA							
17-Jun-00		PROBLEMS							
18-Jun-00		WITH							
19-Jun-00		FLAP							
20-Jun-00		DOOR							
21-Jun-00									
22-Jun-00	0.52	0.02	0.54	1.53	0.01	1.54	0.76	0.10	0.86
23-Jun-00	0.54	0.03	0.57	1.40	0.00	1.40	0.03	0.06	0.09
24-Jun-00	0.43	0.03	0.45	1.31	0.00	1.31	0.01	0.02	0.03
25-Jun-00	2.26	0.04	2.30	3.32	0.00	3.32	0.02	0.08	0.10
26-Jun-00	1.13	0.07	1.20	3.94	0.00	3.95	0.01	0.11	0.12
27-Jun-00	2.57	0.06	2.63	0.18	0.00	0.19	0.04	0.04	0.07
28-Jun-00	4.10	0.14	4.24	0.21	0.00	0.21	0.09	0.11	0.20
29-Jun-00	4.19	0.12	4.31	12.44	<0.01	12.44	0.05	0.46	0.51
30-Jun-00	11.91	0.56	12.48	15.86	<0.01	15.86	0.25	0.65	0.89
01-Jul-00	0.90	0.35	1.25	10.22	<0.01	10.22	0.03	0.48	0.51

Date	NO ₃ ⁻ (µg m ⁻³)			SO ₄ ²⁻ (µg m ⁻³)			Cl ⁻ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
02-Jul-00	0.16	0.09	0.25	5.21	<0.01	5.21	0.02	0.48	0.50
03-Jul-00	1.05	0.14	1.19	14.32	<0.01	14.32	0.01	0.46	0.47
04-Jul-00	0.81	0.07	0.88	9.12	<0.01	9.12	0.03	0.40	0.43
05-Jul-00	2.18	0.00	2.18	4.36	<0.01	4.36	0.57	0.51	1.07
06-Jul-00	0.97	0.04	1.01	4.32	0.03	4.36	0.03	0.39	0.42
07-Jul-00	0.65	0.02	0.67	3.08	0.03	3.11	0.03	0.34	0.37
08-Jul-00	0.24	0.01	0.25	0.91	0.02	0.93	0.13	0.37	0.50
09-Jul-00	0.32	0.01	0.33	0.95	0.03	0.98	0.19	0.33	0.53
10-Jul-00	0.01	0.02	0.03	0.84	0.01	0.85	0.06	0.42	0.48
11-Jul-00	0.27	0.02	0.29	1.78	0.02	1.80	0.03	0.42	0.45
12-Jul-00	0.60	0.01	0.61	2.19	0.02	2.21	0.15	0.38	0.53
13-Jul-00	0.31	0.06	0.37	1.37	-0.04	1.33	0.02	0.23	0.25
14-Jul-00	0.39	0.06	0.45	1.30	-0.05	1.24	0.03	0.07	0.10
15-Jul-00	0.31	0.05	0.36	1.89	-0.04	1.84	0.03	0.22	0.25
16-Jul-00	0.76	0.08	0.84	3.35	-0.04	3.31	0.01	0.20	0.21
17-Jul-00	1.44	0.14	1.57	4.95	-0.01	4.94	0.01	0.29	0.29
18-Jul-00	1.59	0.13	1.72	3.80	-0.05	3.76	0.01	0.27	0.28
19-Jul-00	0.36	0.16	0.52	4.19	-0.05	4.14	0.01	0.09	0.10
20-Jul-00	0.43	0.26	0.69	6.37	-0.01	6.37	0.01	0.17	0.17
21-Jul-00	0.18	0.11	0.29	1.69	0.23	1.91	0.01	0.19	0.19
22-Jul-00	FAILED								
23-Jul-00	0.10	0.05	0.15	5.07	-0.01	5.07	0.00	0.07	0.07
24-Jul-00	0.19	0.05	0.24	3.14	-0.02	3.12	0.06	0.08	0.14
25-Jul-00	0.97	0.17	1.15	4.48	0.15	4.62	0.02	0.20	0.22
26-Jul-00	2.04	0.06	2.10	5.99	-0.01	5.98	0.03	0.07	0.10
27-Jul-00	0.30	0.07	0.37	5.05	0.02	5.07	0.00	0.09	0.08
28-Jul-00	0.20	0.06	0.26	1.91	0.05	1.96	0.01	0.11	0.12
29-Jul-00	FAILED								
30-Jul-00	0.24	0.06	0.30	1.85	0.01	1.86	0.02	0.03	0.05
31-Jul-00	0.31	0.11	0.43	2.62	0.01	2.63	0.01	0.26	0.27
01-Aug-00	0.41	0.04	0.46	1.06	0.04	1.11	0.32	0.16	0.48
02-Aug-00	0.39	0.04	0.44	0.88	0.01	0.89	0.54	0.01	0.55
03-Aug-00	0.53	0.10	0.63	2.36	0.00	2.36	0.01	0.07	0.08
04-Aug-00	0.31	0.15	0.46	2.70	0.14	2.85	0.00	0.22	0.22
05-Aug-00	0.10	0.15	0.26	1.01	0.22	1.22	0.00	0.22	0.22
06-Aug-00	0.08	0.04	0.12	1.12	0.00	1.12	0.00	0.11	0.11
07-Aug-00	0.51	0.09	0.60	1.65	0.09	1.74	0.00	0.06	0.05
08-Aug-00	0.05	0.16	0.21	0.62	0.40	1.02	0.00	0.21	0.21
09-Aug-00	0.12	0.05	0.17	1.24	0.27	1.51	0.01	0.21	0.22
10-Aug-00	0.29	0.07	0.35	3.61	-0.03	3.59	0.00	0.15	0.15
11-Aug-00	0.10	0.10	0.21	3.82	-0.03	3.79	-0.01	0.21	0.20
12-Aug-00	0.26	0.09	0.35	4.85	-0.01	4.84	0.01	0.12	0.13
13-Aug-00	0.12	0.07	0.19	4.42	-0.01	4.41	0.00	0.16	0.16
14-Aug-00	1.13	0.04	1.17	3.87	0.01	3.88	0.03	0.27	0.30
15-Aug-00	3.81	0.17	3.98	4.62	0.01	4.63	0.03	0.32	0.36
16-Aug-00	1.28	0.38	1.66	7.44	-0.02	7.42	0.00	0.44	0.43
17-Aug-00	NO DATA: Site operator left key at home!								
18-Aug-00	Blank								
19-Aug-00	values								
20-Aug-00	unexposed								
21-Aug-00	samples								
22-Aug-00	returned by								
23-Aug-00	mistake?								
24-Aug-00									
25-Aug-00	3.87	0.21	4.08	3.85	-0.06	3.80	-0.02	-0.03	-0.06
26-Aug-00	2.81	0.09	2.90	5.17	-0.02	5.15	0.02	0.07	0.09
27-Aug-00	0.50	0.03	0.53	0.73	0.00	0.73	0.20	-0.04	0.16
28-Aug-00	0.35	0.03	0.38	0.63	-0.02	0.60	-0.04	0.03	-0.01
29-Aug-00	0.59	0.06	0.66	1.62	-0.02	1.60	-0.10	-0.01	-0.11
30-Aug-00	0.38	0.03	0.40	1.67	-0.02	1.65	0.05	-0.04	0.01
31-Aug-00	1.89	0.11	2.00	3.12	-0.02	3.09	-0.01	-0.01	-0.02
01-Sep-00	0.87	0.00	0.87	1.04	-0.03	1.01	-0.05	0.54	0.49
02-Sep-00	0.52	0.02	0.54	1.72	-0.01	1.71	-0.02	0.00	-0.02
03-Sep-00	0.67	-0.01	0.66	1.27	-0.03	1.24	-0.13	0.48	0.35
04-Sep-00	1.00	0.01	1.01	2.90	-0.05	2.85	-0.13	0.50	0.36

Table A5.2.2 Daily Concentrations of Aerosol NO₃⁻, SO₄²⁻ and Cl⁻ Measured at Barcombe Mills between April 2000 and July 2001.

Date	NO ₃ ⁻ (µg m ⁻³)			SO ₄ ²⁻ (µg m ⁻³)			Cl ⁻ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
05-Sep-00	0.64	0.04	0.68	1.87	0.02	1.89	0.13	-0.08	0.05
06-Sep-00	FAILED								
07-Sep-00	0.67	0.01	0.67	2.28	-0.01	2.27	0.71	-0.03	0.68
08-Sep-00									
09-Sep-00									
10-Sep-00									
11-Sep-00		NO							
12-Sep-00		DATA							
13-Sep-00		PROBLEMS							
14-Sep-00		WITH							
15-Sep-00		FLAP							
16-Sep-00		DOORS							
17-Sep-00		JAMMED							
18-Sep-00		OPEN							
19-Sep-00									
20-Sep-00									
21-Sep-00									
22-Sep-00		1.22	1.22		1.33	1.33		0.31	0.31
23-Sep-00	1.66	0.05	1.71	3.04	-0.02	3.01	-0.07	0.00	-0.07
24-Sep-00	0.32	0.01	0.33	0.48	0.00	0.49	0.06	0.03	0.10
25-Sep-00	0.52	0.01	0.53	1.59	-0.02	1.57	0.02	-0.01	0.01
26-Sep-00	0.48	0.00	0.48	1.09	-0.02	1.07	0.49	-0.01	0.48
27-Sep-00	0.29	0.01	0.30	0.54	-0.05	0.49	0.35	0.00	0.35
28-Sep-00	0.70	0.00	0.70	0.89	-0.02	0.87	0.28	0.70	0.98
29-Sep-00	0.60	0.00	0.60	1.24	0.12	1.36	0.00	0.06	0.06
30-Sep-00	0.49	0.01	0.50	1.44	0.13	1.57	0.03	0.04	0.07
01-Oct-00	0.40	0.01	0.41	0.58	0.17	0.75	0.29	0.04	0.33
02-Oct-00	0.57	0.03	0.60	0.74	0.11	0.85	0.65	0.04	0.69
03-Oct-00	0.58	0.05	0.64	0.98	0.10	1.09	1.02	0.06	1.08
04-Oct-00	0.53	0.05	0.58	0.66	0.13	0.80	0.65	0.08	0.72
05-Oct-00	0.49	0.13	0.62	0.64	0.15	0.78	0.04	0.07	0.11
06-Oct-00	0.81	0.00	0.82	0.73	0.04	0.77	0.13	0.00	0.13
07-Oct-00	0.59	-0.01	0.58	1.48	0.05	1.53	0.03	0.02	0.05
08-Oct-00	0.82	-0.02	0.80	0.68	0.03	0.71	0.46	0.01	0.47
09-Oct-00	0.22	-0.01	0.21	0.37	0.11	0.48	0.19	0.01	0.20
10-Oct-00	0.27	0.01	0.27	0.30	0.03	0.33	0.49	0.00	0.49
11-Oct-00	0.09	-0.02	0.07	0.12	0.15	0.27	0.46	0.02	0.49
12-Oct-00	0.75	-0.02	0.73	0.52	0.07	0.59	0.17	0.02	0.19
13-Oct-00	1.00	0.01	1.01	1.29	-0.02	1.27	0.20	0.01	0.21
14-Oct-00	0.62	0.00	0.62	0.77	-0.02	0.74	0.04	0.00	0.04
15-Oct-00	3.78	0.03	3.80	2.71	-0.02	2.68	0.30	0.01	0.31
16-Oct-00	0.33	0.10	0.43	0.79	0.00	0.79	-0.04	0.07	0.03
17-Oct-00	0.24	0.03	0.27	0.70	0.01	0.71	0.08	0.02	0.10
18-Oct-00	0.55	0.02	0.56	0.72	0.01	0.73	0.16	0.03	0.20
19-Oct-00	0.66	0.00	0.66	0.58	0.00	0.58	0.17	0.00	0.17
20-Oct-00	1.07	0.06	1.12	2.00	0.03	2.03	0.06	-0.04	0.02
21-Oct-00	2.54	0.03	2.57	3.59	0.04	3.63	0.26	-0.05	0.21
22-Oct-00	0.50	0.06	0.56	2.37	0.04	2.42	0.04	-0.03	0.02
23-Oct-00	0.24	0.02	0.26	0.46	0.01	0.46	0.65	-0.04	0.61
24-Oct-00	0.34	0.02	0.36	0.68	0.02	0.70	0.60	-0.04	0.56
25-Oct-00									
26-Oct-00	0.52	0.04	0.56	0.80	0.05	0.85	0.55	-0.04	0.51
27-Oct-00									
28-Oct-00		NO							
29-Oct-00		DATA							
30-Oct-00		PROBLEMS							
31-Oct-00		WITH							
01-Nov-00		FLAP							
02-Nov-00		DOORS							
03-Nov-00		JAMMED							
04-Nov-00		OPEN							
05-Nov-00									
06-Nov-00		ALSO							
07-Nov-00		PROBLEMS							
08-Nov-00		WITH							

Date	NO ₃ ⁻ (µg m ⁻³)			SO ₄ ²⁻ (µg m ⁻³)			Cl ⁻ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
09-Nov-00	TEMPERATURE								
10-Nov-00	SENSOR								
11-Nov-00									
12-Nov-00									
13-Nov-00									
14-Nov-00									
15-Nov-00									
16-Nov-00									
17-Nov-00									
18-Nov-00									
19-Nov-00									
20-Nov-00									
21-Nov-00									
22-Nov-00									
23-Nov-00									
24-Nov-00	0.18	0.01	0.20	0.97	0.00	0.97	0.05	0.02	0.07
25-Nov-00	0.15	0.01	0.16	0.43	0.00	0.43	0.79	0.06	0.85
26-Nov-00	0.19	0.02	0.21	0.33	0.00	0.33	0.29	0.00	0.29
27-Nov-00	0.20	0.01	0.21	1.28	0.00	1.28	0.22	0.00	0.22
28-Nov-00	0.30	0.02	0.32	2.16	0.00	2.16	0.05	0.00	0.05
29-Nov-00	0.20	0.01	0.21	0.87	0.00	0.87	0.14	-0.01	0.12
30-Nov-00	0.39	0.03	0.42	1.76	0.02	1.78	0.03	-0.01	0.02
01-Dec-00									
02-Dec-00									
03-Dec-00									
04-Dec-00	TEMPERATURE								
05-Dec-00									
06-Dec-00									
07-Dec-00									
08-Dec-00									
09-Dec-00									
10-Dec-00									
11-Dec-00									
12-Dec-00									
13-Dec-00									
14-Dec-00									
15-Dec-00									
16-Dec-00									
17-Dec-00									
18-Dec-00									
19-Dec-00									
20-Dec-00									
21-Dec-00									
22-Dec-00									
23-Dec-00									
24-Dec-00									
25-Dec-00									
26-Dec-00									
27-Dec-00									
28-Dec-00									
29-Dec-00									
30-Dec-00									
31-Dec-00									
Mean	1.21	0.09	1.29	2.64	0.03	2.65	0.13	0.17	0.30
SD	2.08	0.18	2.18	2.65	0.14	2.63	0.21	0.21	0.28
% CV	171.9	209.0	169.3	100.2	445.2	99.2	158.4	121.7	91.5
N	133	134	134	133	134	134	133	134	134

Table A5.2.2 Daily Concentrations of Aerosol NO₃⁻, SO₄²⁻ and Cl⁻ Measured at Barcombe Mills between April 2000 and July 2001.

Date	NO ₃ ⁻ (µg m ⁻³)			SO ₄ ²⁻ (µg m ⁻³)			Cl ⁻ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
11-Apr-01	1.84	2.69	4.53	3.64	0.00	3.64	-0.02	0.50	0.47
12-Apr-01	0.44	1.25	1.69	2.71	0.00	2.71	0.25	0.27	0.51
13-Apr-01	0.74	0.39	1.13	1.32	0.07	1.39	0.25	0.46	0.71
14-Apr-01	0.32	0.48	0.80	2.91	0.00	2.91	0.00	0.42	0.42
15-Apr-01	FAILED								
16-Apr-01	FAILED								
17-Apr-01	0.56	0.34	0.90	2.41	0.00	2.41	0.09	0.40	0.49
18-Apr-01	Delayed sample								
19-Apr-01	Changeover								
20-Apr-01	0.70	0.60	1.31	1.43	0.32	1.75	0.09	0.31	0.40
21-Apr-01	0.72	2.62	3.34	1.32	0.92	2.23	0.00	0.39	0.39
22-Apr-01	FAILED								
23-Apr-01	0.54	1.78	2.32	1.00	0.78	1.79	0.00	0.30	0.30
24-Apr-01	0.80	0.04	0.84	0.85	0.03	0.87	1.03	0.10	1.13
25-Apr-01	FAILED								
26-Apr-01	0.61	0.12	0.73	0.60	0.07	0.67	0.05	0.18	0.24
27-Apr-01	0.54	0.38	0.92	1.87	0.17	2.05	0.55	0.26	0.82
28-Apr-01	0.22	0.03	0.25	0.39	0.18	0.57	0.58	0.11	0.70
29-Apr-01	0.17	1.84	2.01	0.96	0.02	0.98	-0.02	0.10	0.08
30-Apr-01	0.34	0.90	1.25	1.45	0.52	1.96	0.01	0.12	0.14
01-May-01	1.72	0.36	2.08	3.93	0.04	3.97	0.17	0.75	0.92
02-May-01	FAILED								
03-May-01	0.73	0.13	0.86	0.77	0.21	0.98	0.57	0.24	0.81
04-May-01	0.81	0.09	0.90	1.37	0.01	1.38	0.23	0.24	0.47
05-May-01	0.49	0.11	0.59	1.32	0.02	1.34	0.22	0.23	0.46
06-May-01	0.69	0.10	0.79	1.61	0.01	1.62	0.17	0.21	0.38
07-May-01	0.35	0.18	0.53	0.65	0.02	0.67	0.00	0.11	0.11
08-May-01	0.77	0.62	1.40	1.49	0.02	1.51	0.00	0.18	0.18
09-May-01	3.83	2.25	6.07	2.99	0.03	3.02	0.01	0.21	0.23
10-May-01	7.61	1.86	9.47	5.74	0.03	5.77	0.02	0.20	0.22
11-May-01	0.15	3.69	3.83	4.06	-0.01	4.05	-0.04	-0.05	-0.09
12-May-01	0.70	3.38	4.08	2.00	0.48	2.48	-0.01	-0.02	-0.03
13-May-01	0.99	0.88	1.87	2.09	0.01	2.10	0.07	0.42	0.49
14-May-01	0.73	1.48	2.22	3.43	0.00	3.43	0.03	0.48	0.51
15-May-01	0.50	0.99	1.49	2.81	0.00	2.80	0.29	0.25	0.53
16-May-01	FAILED								
17-May-01	0.64	0.07	0.71	1.70	-0.01	1.69	0.14	0.04	0.18
18-May-01	FAILED								
19-May-01	0.65	0.39	1.04	0.64	2.13	2.77	0.00	0.91	0.91
20-May-01	0.16	1.20	1.37	3.02	0.08	3.10	0.00	0.13	0.13
21-May-01	0.36	0.39	0.76	0.93	0.10	1.03	0.02	0.15	0.17
22-May-01	0.45	1.09	1.54	1.62	0.14	1.77	0.00	0.16	0.16
23-May-01	FAILED								
24-May-01	0.21	0.64	0.85	5.00	0.63	5.63	0.00	0.24	0.24
25-May-01	FAILED								
26-May-01	0.06	0.65	0.71	2.49	0.91	3.39	0.03	0.09	0.12
27-May-01	0.05	0.87	0.91	5.98	0.03	6.01	0.00	0.17	0.17
28-May-01	0.10	0.83	0.93	4.38	0.04	4.42	0.00	0.23	0.23
29-May-01	0.16	0.33	0.49	0.71	0.45	1.16	0.00	0.24	0.24
30-May-01	0.17	0.31	0.49	1.67	-0.05	1.62	0.00	0.15	0.15
31-May-01	0.11	0.35	0.46	1.32	0.06	1.37	0.00	0.11	0.11
01-Jun-01	0.14	0.36	0.50	1.60	0.01	1.61	0.01	0.15	0.16
02-Jun-01	0.20	0.30	0.50	1.71	0.12	1.83	0.02	0.14	0.16
03-Jun-01	Power								
04-Jun-01	Failure								
05-Jun-01	0.25	0.22	0.47	1.57	0.02	1.59	0.04	0.13	0.16
06-Jun-01	0.15	0.05	0.20	1.15	0.03	1.18	0.01	0.04	0.05
07-Jun-01	Power Failure								
08-Jun-01	0.08	0.13	0.21	1.03	0.05	1.07	0.00	0.04	0.04
09-Jun-01	0.09	0.68	0.76	1.42	0.27	1.69	0.01	0.13	0.14
10-Jun-01	0.18	0.69	0.87	2.22	0.09	2.32	0.00	0.22	0.22
11-Jun-01	0.05	0.51	0.55	0.91	1.15	2.06	0.00	0.11	0.11
12-Jun-01	0.14	1.33	1.47	2.66	0.02	2.68	0.00	0.13	0.13
13-Jun-01	0.22	1.01	1.24	2.49	0.57	3.06	0.03	0.14	0.17
14-Jun-01	0.66	1.17	1.83	2.89	0.05	2.95	0.07	0.34	0.41
15-Jun-01	0.17	0.04	0.22	0.60	0.01	0.61	0.10	0.07	0.17

Date	NO ₃ ⁻ (µg m ⁻³)			SO ₄ ²⁻ (µg m ⁻³)			Cl ⁻ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
16-Jun-01	0.06	0.74	0.80	0.74	1.54	2.28	0.00	0.17	0.17
17-Jun-01	0.10	0.43	0.53	3.53	0.08	3.61	0.00	0.30	0.30
18-Jun-01	0.07	0.93	1.00	2.09	0.70	2.79	0.02	0.48	0.49
19-Jun-01	0.02	1.58	1.60	0.00	1.24	1.24	0.02	0.28	0.30
20-Jun-01	0.07	0.66	0.73	3.16	0.17	3.33	0.00	0.28	0.28
21-Jun-01	Engineers servicing equipment								
22-Jun-01	0.10	0.40	0.50	2.36	-0.09	2.27	0.01	0.09	0.10
23-Jun-01	0.07	2.12	2.19	3.55	0.38	3.94	-0.01	0.13	0.12
24-Jun-01	0.10	3.16	3.27	4.44	1.19	5.63	0.01	0.09	0.09
25-Jun-01	0.10	1.50	1.59	5.71	0.00	5.72	0.01	0.02	0.03
26-Jun-01	0.13	1.14	1.27	6.83	-0.07	6.76	-0.01	0.36	0.35
27-Jun-01	0.26	0.06	0.32	1.93	-0.09	1.84	0.04	0.22	0.26
28-Jun-01	0.47	0.11	0.58	3.05	-0.06	3.00	0.04	0.21	0.25
29-Jun-01	0.09	0.54	0.63	3.34	0.19	3.52	0.01	0.33	0.34
30-Jun-01	0.42	0.08	0.50	1.07	0.06	1.13	0.30	0.21	0.51
01-Jul-01	0.12	0.29	0.40	1.78	-0.07	1.71	0.01	0.16	0.17
02-Jul-01	0.11	1.06	1.17	3.93	-0.07	3.86	0.00	0.06	0.06
03-Jul-01	0.07	1.26	1.33	5.11	0.10	5.21	-0.02	0.13	0.11
04-Jul-01	0.24	1.12	1.36	6.73	-0.02	6.71	0.01	0.06	0.07
05-Jul-01	1.37	0.77	2.14	5.02	-0.07	4.94	0.00	0.08	0.08
06-Jul-01	Site								
07-Jul-01	Operator								
08-Jul-01	Did								
09-Jul-01	Not								
10-Jul-01	Start								
11-Jul-01	Program								
12-Jul-01									
13-Jul-01	0.13	0.03	0.16	0.89	-0.16	0.74	0.03	0.01	0.04
14-Jul-01	0.05	0.31	0.36	1.32	-0.15	1.17	0.02	0.02	0.04
15-Jul-01	0.04	0.30	0.34	1.36	-0.03	1.34	0.01	0.08	0.09
16-Jul-01	0.06	0.58	0.65	2.10	-0.17	1.94	0.01	0.03	0.05
17-Jul-01	0.22	0.03	0.24	0.76	-0.02	0.74	0.33	0.10	0.43
18-Jul-01	0.09	0.42	0.51	2.40	-0.12	2.28	-0.02	0.15	0.13
19-Jul-01	0.12	0.44	0.55	2.19	-0.11	2.07	0.00	0.20	0.20
20-Jul-01	Awaiting								
21-Jul-01	Analysis								
22-Jul-01	data								
23-Jul-01	from								
24-Jul-01	Harwell Scientifics Ltd								
25-Jul-01									
26-Jul-01									
27-Jul-01									
28-Jul-01									
29-Jul-01									
30-Jul-01									
31-Jul-01									

Mean	0.50	0.81	1.31	2.34	0.19	2.53	0.08	0.20	0.28
SD	0.97	0.79	1.37	1.56	0.42	1.53	0.17	0.16	0.24
CV (%)	195.0	97.0	104.6	66.8	213.0	60.4	224.2	77.6	85.2
N	78	78	78	78	78	78	78	78	78

Table A5.2.3 Daily Concentrations of Aerosol Ca²⁺, Mg²⁺ and Na⁺ Measured at Barcombe Mills between April 2000 and July 2001.

Date	Ca ²⁺ (µg m ⁻³)			Mg ²⁺ (µg m ⁻³)			Na ⁺ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
27-Apr-00	0.00	0.02	0.02	0.01	< 0.005	0.01	0.06	0.00	0.07
28-Apr-00	-0.01	-0.01	-0.02	0.01	< 0.005	0.01	0.02	0.01	0.03
29-Apr-00	0.03	0.03	0.06	0.01	< 0.005	0.01	0.05	0.01	0.06
30-Apr-00	-0.02	0.01	0.00	< 0.005	< 0.005	< 0.005	0.00	< 0.005	0.00
01-May-00	0.03	0.00	0.03	0.01	< 0.005	0.01	0.02	0.00	0.02
02-May-00	-0.01	0.07	0.06	0.01	< 0.005	0.01	0.03	0.05	0.08
03-May-00	0.01	-0.01	0.00	0.01	< 0.005	0.01	0.03	0.00	0.03
04-May-00	0.05	0.01	0.06	0.02	< 0.005	0.02	0.14	< 0.005	0.14
05-May-00	0.01	0.00	0.02	0.01	< 0.005	0.01	0.05	< 0.005	0.05
06-May-00	0.02	0.05	0.07	0.01	< 0.005	0.01	0.05	0.02	0.06
07-May-00	0.01	0.00	0.01	0.01	< 0.005	0.01	0.06	< 0.005	0.06
08-May-00	0.03	0.01	0.04	0.01	< 0.005	0.01	0.05	< 0.005	0.05
09-May-00	0.06	0.08	0.13	0.01	< 0.005	0.01	0.05	< 0.005	0.05
10-May-00	0.00	0.02	0.02	0.01	< 0.005	0.01	0.06	< 0.005	0.06
11-May-00									
12-May-00									
13-May-00									
14-May-00	NO								
15-May-00	DATA								
16-May-00	SITE								
17-May-00	OPERATOR								
18-May-00	ON								
19-May-00	SICK								
20-May-00	LEAVE								
21-May-00									
22-May-00									
23-May-00									
24-May-00									
25-May-00	0.07	0.62	0.69	0.06	0.02	0.08	0.44	0.16	0.60
26-May-00	0.03	0.01	0.04	0.03	< 0.01	0.03	0.17	0.08	0.25
27-May-00	0.02	0.02	0.04	0.03	< 0.01	0.03	0.18	0.02	0.20
28-May-00	-0.01	0.00	0.00	0.02	< 0.01	0.02	0.08	0.07	0.14
29-May-00	-0.01	0.01	-0.01	0.02	< 0.01	0.02	0.10	0.04	0.14
30-May-00	-0.01	0.03	0.02	0.01	< 0.01	0.01	0.02	0.05	0.08
31-May-00	0.05	0.04	0.09	0.02	< 0.01	0.02	0.12	0.03	0.16
01-Jun-00									
02-Jun-00									
03-Jun-00									
04-Jun-00									
05-Jun-00									
06-Jun-00									
07-Jun-00									
08-Jun-00	0.25	0.03	0.28	0.03	< 0.01	0.03	0.40	0.18	0.59
09-Jun-00	FAILED								
10-Jun-00	0.01	0.01	0.01	0.04	< 0.01	0.04	0.31	0.05	0.37
11-Jun-00	0.07	0.08	0.15	0.09	< 0.01	0.09	0.68	0.07	0.75
12-Jun-00	-0.02	0.00	-0.02	0.03	0.01	0.04	0.15	0.07	0.23
13-Jun-00	FAILED								
14-Jun-00	0.01	0.04	0.05	0.02	0.01	0.02	0.11	0.08	0.19
15-Jun-00	NO								
16-Jun-00	DATA								
17-Jun-00	PROBLEMS								
18-Jun-00	WITH								
19-Jun-00	FLAP								
20-Jun-00	DOOR								
21-Jun-00									
22-Jun-00	0.00	0.01	0.01	0.07	< 0.01	0.07	0.76	-0.02	0.74
23-Jun-00	-0.01	0.00	-0.01	0.03	< 0.01	0.03	0.25	0.02	0.28
24-Jun-00	-0.02	-0.01	-0.03	0.01	< 0.01	0.01	0.11	-0.01	0.10
25-Jun-00	0.00	-0.01	-0.01	0.01	< 0.01	0.01	0.07	-0.01	0.06
26-Jun-00	-0.01	-0.03	-0.04	0.01	< 0.01	0.01	0.09	-0.02	0.07
27-Jun-00	0.02	0.04	0.06	0.01	< 0.01	0.01	0.06	0.00	0.06
28-Jun-00	0.02	-0.01	0.00	0.01	< 0.01	0.01	0.08	-0.01	0.08
29-Jun-00	0.02	0.01	0.02	0.01	< 0.01	0.01	0.10	0.00	0.10
30-Jun-00	0.03	0.00	0.02	0.02	< 0.01	0.02	0.16	0.01	0.18
01-Jul-00	0.00	-0.01	-0.01	0.03	< 0.01	0.03	0.25	0.01	0.26

Date	Ca ²⁺ (µg m ⁻³)			Mg ²⁺ (µg m ⁻³)			Na ⁺ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
02-Jul-00	0.04	-0.02	0.03	0.05	< 0.01	0.05	0.44	0.01	0.45
03-Jul-00	0.03	-0.01	0.02	0.05	< 0.01	0.05	0.38	0.01	0.39
04-Jul-00	0.03	0.00	0.03	0.04	< 0.01	0.04	0.39	0.01	0.40
05-Jul-00	0.01	-0.01	0.00	0.11	< 0.01	0.11	1.05	0.02	1.07
06-Jul-00	0.03	0.04	0.08	0.02	< 0.01	0.02	0.16	0.05	0.21
07-Jul-00	0.08	0.03	0.11	0.01	< 0.01	0.01	0.05	0.03	0.08
08-Jul-00	0.05	0.03	0.08	0.02	< 0.01	0.02	0.18	0.06	0.24
09-Jul-00	0.07	0.04	0.11	0.05	< 0.01	0.05	0.34	0.04	0.38
10-Jul-00	0.04	0.04	0.08	0.02	< 0.01	0.02	0.11	0.03	0.14
11-Jul-00	0.06	0.03	0.09	0.04	< 0.01	0.04	0.13	0.02	0.15
12-Jul-00	0.06	0.03	0.09	0.03	< 0.01	0.03	0.21	0.02	0.23
13-Jul-00	0.29	0.21	0.50	0.02	0.01	0.03	0.17	0.01	0.18
14-Jul-00	-0.01	0.00	-0.02	0.02	< 0.01	0.02	0.18	0.00	0.18
15-Jul-00	0.01	0.00	0.01	0.02	0.01	0.03	0.17	0.01	0.18
16-Jul-00	0.15	-0.01	0.14	0.02	< 0.01	0.02	0.17	0.01	0.18
17-Jul-00	0.02	0.10	0.12	0.01	< 0.01	0.01	0.09	0.01	0.10
18-Jul-00	0.08	-0.01	0.07	0.01	< 0.01	0.01	0.07	0.01	0.08
19-Jul-00	0.02	0.01	0.04	0.01	< 0.01	0.01	0.04	0.00	0.04
20-Jul-00	-0.01	0.01	0.00	0.01	0.01	0.01	0.02	0.00	0.02
21-Jul-00	0.01	-0.01	0.00	0.02	0.01	0.03	0.12	0.05	0.17
22-Jul-00	FAILED								
23-Jul-00	-0.01	0.00	-0.02	0.02	< 0.01	0.02	0.16	0.00	0.16
24-Jul-00	-0.01	-0.01	-0.02	0.01	< 0.01	0.01	0.12	0.00	0.12
25-Jul-00	0.02	0.05	0.07	0.01	0.01	0.02	0.04	0.06	0.11
26-Jul-00	-0.03	0.05	0.02	< 0.01	0.01	0.01	0.02	0.03	0.05
27-Jul-00	-0.06	0.06	0.00	0.01	< 0.01	0.01	0.07	0.00	0.07
28-Jul-00	0.00	0.15	0.15	0.02	0.01	0.03	0.15	0.03	0.18
29-Jul-00	FAILED								
30-Jul-00	-0.06	0.04	-0.02	0.02	< 0.01	0.02	0.14	0.02	0.16
31-Jul-00	0.12	0.12	0.24	0.01	0.01	0.02	0.06	0.26	0.32
01-Aug-00	-0.05	0.07	0.02	0.05	0.01	0.05	0.40	0.01	0.41
02-Aug-00	0.16	0.05	0.21	0.06	< 0.01	0.06	0.54	0.02	0.56
03-Aug-00	0.04	0.02	0.06	0.01	< 0.01	0.01	0.06	0.00	0.06
04-Aug-00	0.07	-0.01	0.06	0.01	< 0.01	0.01	0.07	0.01	0.08
05-Aug-00	-0.04	0.02	-0.01	0.01	< 0.01	0.01	0.03	0.00	0.03
06-Aug-00	-0.05	0.02	-0.03	< 0.005	< 0.01	< 0.005	0.02	0.00	0.03
07-Aug-00	-0.04	0.09	0.05	< 0.005	< 0.01	< 0.005	0.02	0.01	0.02
08-Aug-00	-0.04	0.00	-0.04	< 0.005	< 0.01	< 0.005	0.00	0.01	0.01
09-Aug-00	0.00	0.04	0.04	0.01	0.01	0.02	0.07	0.01	0.07
10-Aug-00	0.07	0.03	0.10	0.03	0.01	0.04	0.37	0.01	0.38
11-Aug-00	0.12	0.00	0.11	0.01	< 0.01	0.01	0.15	0.01	0.16
12-Aug-00	0.28	0.03	0.31	0.00	< 0.01	0.00	0.08	0.00	0.08
13-Aug-00	0.28	0.03	0.31	0.00	< 0.01	0.00	0.08	0.00	0.08
14-Aug-00	0.11	0.00	0.11	0.01	< 0.01	0.01	0.11	0.00	0.11
15-Aug-00	0.15	0.02	0.16	0.03	0.01	0.04	0.37	0.00	0.38
16-Aug-00	0.11	0.02	0.12	0.03	< 0.01	0.03	0.33	0.00	0.33
17-Aug-00	NO DATA: Site operator left key at home!								
18-Aug-00	Blank								
19-Aug-00	values								
20-Aug-00	unexposed								
21-Aug-00	samples								
22-Aug-00	returned by								
23-Aug-00	mistake?								
24-Aug-00									
25-Aug-00	-0.09	-0.03	-0.12	< 0.01	< 0.01	< 0.01	< 0.01	-0.03	< 0.01
26-Aug-00	0.00	-0.02	-0.03	0.01	< 0.01	0.01	0.09	-0.03	0.06
27-Aug-00	-0.04	-0.02	-0.06	0.03	< 0.01	0.03	0.30	-0.03	0.27
28-Aug-00	-0.05	-0.03	-0.09	0.02	< 0.01	0.02	0.12	-0.02	0.10
29-Aug-00	-0.06	-0.05	-0.11	0.01	< 0.01	0.01	0.05	0.04	0.09
30-Aug-00	-0.02	-0.04	-0.06	0.01	< 0.01	0.01	0.03	0.00	0.03
31-Aug-00	-0.03	-0.02	-0.06	0.02	< 0.01	0.02	0.18	-0.03	0.15
01-Sep-00	-0.04	0.00	-0.04	0.03	< 0.01	0.03	0.24	-0.04	0.20
02-Sep-00	-0.05	-0.03	-0.08	0.03	< 0.01	0.03	0.23	-0.07	0.16
03-Sep-00	-0.05	-0.04	-0.08	0.02	< 0.01	0.02	0.23	-0.03	0.20
04-Sep-00	-0.05	-0.06	-0.11	0.02	< 0.01	0.02	0.16	-0.03	0.13

Table A5.2.3 Daily Concentrations of Aerosol Ca²⁺, Mg²⁺ and Na⁺ Measured at Barcombe Mills between April 2000 and July 2001.

Date	Ca ²⁺ (µg m ⁻³)			Mg ²⁺ (µg m ⁻³)			Na ⁺ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
05-Sep-00	-0.04	0.03	-0.01	0.04	< 0.01	0.04	0.33	-0.07	0.26
06-Sep-00	FAILED								
07-Sep-00	0.02	0.01	0.03	0.09	< 0.01	0.09	0.80	-0.03	0.77
08-Sep-00									
09-Sep-00									
10-Sep-00									
11-Sep-00	NO								
12-Sep-00	DATA								
13-Sep-00	PROBLEMS								
14-Sep-00	WITH								
15-Sep-00	FLAP								
16-Sep-00	DOORS								
17-Sep-00	JAMMED								
18-Sep-00	OPEN								
19-Sep-00									
20-Sep-00									
21-Sep-00									
22-Sep-00									
23-Sep-00	-0.09		-0.09	0.01		0.01	0.11		0.11
24-Sep-00	-0.07		-0.07	0.01		0.01	0.13		0.13
25-Sep-00	-0.11		-0.11	0.02		0.02	0.19		0.19
26-Sep-00	0.07		0.07	0.06		0.06	0.55		0.55
27-Sep-00	0.01		0.01	0.04		0.04	0.35		0.35
28-Sep-00	0.08		0.08	0.02		0.02	0.22		0.22
29-Sep-00	-0.09		-0.09	0.02		0.02	0.19		0.19
30-Sep-00	0.21		0.21	0.01		0.01	0.11		0.11
01-Oct-00	-0.11		-0.11	0.03		0.03	0.30		0.30
02-Oct-00	0.09		0.09	0.06		0.06	0.52		0.52
03-Oct-00	-0.11		-0.11	0.08		0.08	0.72		0.72
04-Oct-00	-0.07		-0.07	0.05		0.05	0.47		0.47
05-Oct-00	-0.03		-0.03	0.01		0.01	0.09		0.09
06-Oct-00	0.03		0.03	0.02		0.02	0.14		0.14
07-Oct-00	0.02		0.02	0.01		0.01	0.08		0.08
08-Oct-00	0.00		0.00	0.03		0.03	0.27		0.27
09-Oct-00	-0.06		-0.06	0.02		0.02	0.17		0.17
10-Oct-00	-0.03		-0.03	0.04		0.04	0.33		0.33
11-Oct-00	-0.05		-0.05	0.03		0.03	0.27		0.27
12-Oct-00	0.03		0.03	0.01		0.01	0.10		0.10
13-Oct-00	0.02		0.02	0.00		0.00	0.02		0.02
14-Oct-00	-0.01		-0.01	0.00		0.00	0.02		0.02
15-Oct-00	-0.03		-0.03	0.00		0.00	0.03		0.03
16-Oct-00	-0.02		-0.02	0.01		0.01	0.07		0.07
17-Oct-00	-0.03		-0.03	0.01		0.01	0.12		0.12
18-Oct-00	0.00		0.00	0.02		0.02	0.20		0.20
19-Oct-00	-0.03		-0.03	0.01		0.01	0.07		0.07
20-Oct-00	0.18		0.18	0.02		0.02	0.12		0.12
21-Oct-00	0.02		0.02	0.01		0.01	0.03		0.03
22-Oct-00	0.02		0.02	0.02		0.02	0.10		0.10
23-Oct-00	0.00		0.00	0.05		0.05	0.43		0.43
24-Oct-00	0.02		0.02	0.06		0.06	0.47		0.47
25-Oct-00									
26-Oct-00	0.03		0.03	0.05		0.05	0.47		0.47
27-Oct-00									
28-Oct-00	NO								
29-Oct-00	DATA								
30-Oct-00	PROBLEMS								
31-Oct-00	WITH								
01-Nov-00	FLAP								
02-Nov-00	DOORS								
03-Nov-00	JAMMED								
04-Nov-00	OPEN								
05-Nov-00									
06-Nov-00	ALSO								
07-Nov-00	PROBLEMS								
08-Nov-00	WITH								

Date	Ca ²⁺ (µg m ⁻³)			Mg ²⁺ (µg m ⁻³)			Na ⁺ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
09-Nov-00	TEMPERATURE								
10-Nov-00	SENSOR								
11-Nov-00									
12-Nov-00									
13-Nov-00									
14-Nov-00									
15-Nov-00									
16-Nov-00									
17-Nov-00									
18-Nov-00									
19-Nov-00									
20-Nov-00									
21-Nov-00									
22-Nov-00									
23-Nov-00									
24-Nov-00	0.00		0.00	0.02	0.01	0.03	0.08		0.08
25-Nov-00	0.02		0.02	0.07	0.10	0.17	0.59		0.59
26-Nov-00	-0.01		-0.01	0.03	0.02	0.06	0.24		0.24
27-Nov-00	-0.01		-0.01	0.04	0.03	0.07	0.29		0.29
28-Nov-00	0.01		0.01	0.02	0.03	0.05	0.11		0.11
29-Nov-00	0.02		0.02	0.03	0.05	0.07	0.21		0.21
30-Nov-00	0.06		0.06	0.02	0.07	0.09	0.08		0.08
01-Dec-00									
02-Dec-00	NO								
03-Dec-00	DATA								
04-Dec-00	TEMPERATURE								
05-Dec-00	PROBE								
06-Dec-00	BROKEN								
07-Dec-00									
08-Dec-00	AWAITING								
09-Dec-00	REPAIR								
10-Dec-00									
11-Dec-00									
12-Dec-00									
13-Dec-00									
14-Dec-00									
15-Dec-00									
16-Dec-00									
17-Dec-00									
18-Dec-00									
19-Dec-00									
20-Dec-00									
21-Dec-00									
22-Dec-00									
23-Dec-00									
24-Dec-00									
25-Dec-00									
26-Dec-00									
27-Dec-00									
28-Dec-00									
29-Dec-00									
30-Dec-00									
31-Dec-00									
Mean	0.02	0.02	0.03	0.02	0.02	0.03	0.19	0.02	0.20
SD	0.07	0.07	0.11	0.02	0.02	0.02	0.18	0.05	0.19
% CV	394.2	315.7	306.5	80.6	112.8	89.3	96.4	260.4	92.7
N	133	93	133	127	134	128	132	86	132

Table A5.2.3 Daily Concentrations of Aerosol Ca²⁺, Mg²⁺ and Na⁺ Measured at Barcombe Mills between April 2000 and July 2001.

Date	Ca ²⁺ (µg m ⁻³)			Mg ²⁺ (µg m ⁻³)			Na ⁺ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
11-Apr-01	0.05			0.03			0.16		
12-Apr-01	0.04			0.05			0.41		
13-Apr-01	0.01			0.05			0.46		
14-Apr-01	0.01			0.03			0.21		
15-Apr-01	FAILED								
16-Apr-01	FAILED								
17-Apr-01	0.04			0.04			0.33		
18-Apr-01	Delayed sample								
19-Apr-01	Changeover								
20-Apr-01	0.61			0.05			0.31		
21-Apr-01	0.12			0.03			0.09		
22-Apr-01	FAILED								
23-Apr-01	0.21			0.02			0.09		
24-Apr-01	0.07			0.11			0.86		
25-Apr-01	FAILED								
26-Apr-01	0.04			0.04			0.20		
27-Apr-01	-0.02			0.08			0.62		
28-Apr-01	0.02			0.06			0.44		
29-Apr-01	-0.04			0.01			0.05		
30-Apr-01	0.01			0.03			0.14		
01-May-01	0.05			0.12			0.92		
02-May-01	FAILED								
03-May-01	0.03			0.07			0.58		
04-May-01	-0.13			0.05			0.44		
05-May-01	-0.10			0.04			0.34		
06-May-01	0.26			0.05			0.34		
07-May-01	-0.09			0.02			0.14		
08-May-01	0.04			0.03			0.14		
09-May-01	0.08			0.09			0.09		
10-May-01	0.04			0.02			0.05		
11-May-01	0.02			0.02			0.07		
12-May-01	0.22			0.01			0.06		
13-May-01	0.15			0.06			0.43		
14-May-01	0.09			0.05			0.33		
15-May-01	0.00			0.07			0.54		
16-May-01	FAILED								
17-May-01	0.10			0.04			0.34		
18-May-01	FAILED								
19-May-01	-0.03			0.00			0.14		
20-May-01	0.03			0.02			0.09		
21-May-01	0.09			0.03			0.13		
22-May-01	0.15			0.02			0.08		
23-May-01	FAILED								
24-May-01	0.23			0.03			0.16		
25-May-01	FAILED								
26-May-01	0.07			0.01			0.04		
27-May-01	-0.04			0.02			0.09		
28-May-01	-0.05			0.02			0.13		
29-May-01	-0.06			0.02			0.09		
30-May-01	-0.05			0.02			0.12		
31-May-01	-0.02			0.01			0.05		
01-Jun-01	-0.10			0.01			0.10		
02-Jun-01	-0.07			0.02			0.12		
03-Jun-01	Power								
04-Jun-01	Failure								
05-Jun-01	-0.04			0.02			0.15		
06-Jun-01	-0.07			0.01			0.08		
07-Jun-01	Power Failure								
08-Jun-01	0.05			0.01			0.04		
09-Jun-01	0.09			0.01			0.04		
10-Jun-01	0.18			0.01			0.06		
11-Jun-01	0.00			0.00			0.02		
12-Jun-01	0.01			0.01			0.06		
13-Jun-01	0.06			0.01			0.05		
14-Jun-01	0.23			0.04			0.28		
15-Jun-01	0.03			0.02			0.15		

Date	Ca ²⁺ (µg m ⁻³)			Mg ²⁺ (µg m ⁻³)			Na ⁺ (µg m ⁻³)		
	Teflon	Nylon	Sum	Teflon	Nylon	Sum	Teflon	Nylon	Sum
16-Jun-01	-0.02			0.00			0.02		
17-Jun-01	-0.03			0.02			0.11		
18-Jun-01	-0.03			0.01			0.04		
19-Jun-01	0.00			0.01			0.00		
20-Jun-01	-0.03			0.02			0.12		
21-Jun-01	Engineer servicing equipment								
22-Jun-01	-0.24			0.01			0.06		
23-Jun-01	-0.25			0.01			0.05		
24-Jun-01	-0.15			0.01			0.05		
25-Jun-01	-0.19			0.01			0.05		
26-Jun-01	-0.11			0.03			0.21		
27-Jun-01	-0.22			0.03			0.29		
28-Jun-01	-0.26			0.04			0.33		
29-Jun-01	0.12			0.02			0.14		
30-Jun-01	0.15			0.05			0.41		
01-Jul-01	0.07			0.02			0.12		
02-Jul-01	0.11			0.02			0.07		
03-Jul-01	0.11			0.01			0.04		
04-Jul-01	0.20			0.03			0.12		
05-Jul-01	0.24			0.01			0.02		
06-Jul-01	Awaiting								
07-Jul-01	Analysis								
08-Jul-01	data								
09-Jul-01	from								
10-Jul-01	Harwell Scientifics Ltd								
11-Jul-01									
12-Jul-01									
13-Jul-01	0.03			0.02			0.12		
14-Jul-01	0.21			0.01			0.04		
15-Jul-01	0.07			0.01			0.02		
16-Jul-01	0.13			0.01			0.05		
17-Jul-01	0.04			0.04			0.37		
18-Jul-01	0.16			0.01			0.10		
19-Jul-01	0.03			0.01			0.12		
20-Jul-01	Awaiting								
21-Jul-01	Analysis								
22-Jul-01	data								
23-Jul-01	from								
24-Jul-01	Harwell Scientifics Ltd								
25-Jul-01									
26-Jul-01									
27-Jul-01									
28-Jul-01									
29-Jul-01									
30-Jul-01									
31-Jul-01									

Mean	0.04			0.03			0.19		
SD	0.13			0.02			0.19		
CV (%)	371.4			81.2			101.3		
N	78			78			78		